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Certified Management Systems

IXYS
A Littelfuse Technology

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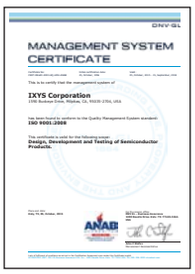
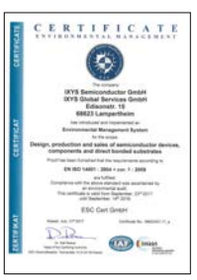
IXYS Milpitas / USA	ISO 9001:2008	
IXYS Beverly / USA	ISO 9001:2008	
IXYS Lampertheim / Germany	ISO/TS 16949:2009 (includes ISO 9001:2008) EN ISO 14001:2009 OHSAS 18001:2007 DIN EN ISO 50001:2011	
IXYS Chippenham / UK	ISO 9001:2008 EN ISO 14001:2009	

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Symbols and Terms

a	Acceleration
BV_{CES}	Collector emitter breakdown voltage
BV_{DSS}	Drain source breakdown voltage
C_{ies}, C_{iss}	Input capacitance
C_{oes}, C_{oss}	Output capacitance
C_{res}, C_{rss}	Reverse transfer (Miller) capacitance
d	Duty cycle
d_A	Strike distance through air
di/dt, $-di/dt$	Rate of change of current
$(di/dt)_{cr}$	Critical rate of rise of current
di_F/dt, $-di_F/dt$	Rate of change of forward current
d_S	Creep distance on surface
dv/dt	Rate of rise of voltage
$(dv/dt)_{cr}$	Critical rate of rise of voltage
E_{AR}	Repetitive avalanche energy
E_{AS}	Non-repetitive avalanche energy
E_{off}	Turn-off energy per pulse
E_{on}	Turn-on energy per pulse
$E_{rec(off)}$	Reverse recovery losses at turn-off
$F_{(mounting)}$	Required force to mount hole-less discretes on heat sink
g_{fs}	Forward transconductance
I_{AR}	Repetitive avalanche current
I_{AVM}	Maximum average forward current
I_{BO}	Breakover current
$I_{C(on)}$	Short circuit current
I_C	Collector current
I_{C25}	Continuous DC collector current at T_C = 25°C
I_{C90}	Continuous DC collector current at T_C = 90°C
I_{CES}	Collector emitter leakage current
I_{CM}	Maximum pulsed collector current
I_D	Drain current
I_{DD}	Module supply current, operating mode
I_{DD0}	Module supply current, standby mode
$I_{D(cont)}$	Continuous drain current
I_{D25}	Continuous drain current at T_C = 25°C
I_{DAV}	Average DC output current
$I_{D(AV)M}$	Maximum average DC output current
I_{DM}	Maximum pulsed drain current
I_{DRM}	Maximum repetitive off-state current
$I_{D(RMS)}$	RMS output current
I_{DSS}	Drain source leakage current
I_F, I_T	Forward current
I_{FM}	Maximum forward current
I_{FAV}	Average forward current
$I_{F(AV)M}$, $I_{T(AV)M}$	Maximum average forward current
I_{FLT}	Sink current of fault terminal
I_{FRM}	Maximum repetitive forward current
$I_{F(RMS)}$, $I_{T(RMS)}$	RMS forward current
I_{FSM}, I_{TSM}	Maximum surge forward current
I_G, I_{GT}	Trigger gate current
I_{GD}	Non-trigger gate current
I_{GES}	Gate emitter leakage current
I_H	Holding current
$I_{IN(H)}$	Signal input current (high level)
$I_{IN(L)}$	Signal input current (low level)
I_{ISOL}	RMS current for isolation test
I_L	Latching current
I_R	Reverse current
I_{RM}	Maximum reverse recovery current
I_{RMS}	RMS current
I_{RRM}	Maximum repetitive reverse current
I_S	Continuous source current
I_{SM}	Maximum pulsed source current
I^2t	I^2t value for fusing
I_{TSM}	Maximum surge on-state current
K_f	Characteristic factor
K_p	Coeff. for energy per pulse Ep (material constant)
K_T	Temperature coefficient of VBO
L	Series stray inductance
M_d	Mounting torque
P_C	Collector power dissipation
P_D	Power dissipation
P_{GAV}	Average gate power dissipation
$P_{G(AV)M}$	Maximum average gate power dissipation
P_{GM}	Maximum gate power dissipation
P_{RSM}	Maximum surge reverse power dissipation
P_T, P_{tot}	Total power dissipation
Q_g	Total gate charge
Q_{gc}	Gate collector (Miller) charge
Q_{gd}	Gate drain (Miller) charge
Q_{ge}	Gate emitter charge
Q_{gs}	Gate source charge
Q_r	Reverse recovery charge
Q_{RM}	Reverse recovery charge (intrinsic diode)
Q_S	Recovered charge to IRM

Symbols and Terms

RBSOA	Reverse Bias Safe Operating Area
$R_{DS(on)}$	Static drain source on resistance
R_{FI}	Radio frequency interference (= EMI)
R_G	Gate resistance
R_{GE}	Gate emitter resistance
rT	Slope resistance (for power loss calculation only)
R_{thCK}; R_{thCH}	Thermal resistance case to heatsink
R_{thJA}	Thermal resistance junction to ambient
R_{thJC}	Thermal resistance junction to case
R_{thJK}; R_{thJH}	Thermal resistance junction to heatsink
R_{thJS}	Thermal resistance junction to heatsink
R_{thJW}	Thermal resistance junction to water
R_{thKA}	Thermal resistance heatsink to ambient
SCSOA	Short Circuit Safe Operating Area
T_{amb}, T_A	Ambient (cooling medium) temperature
T_C, T_{case}	Case temperature
$t_{d(off)}$	Turn-off delay time
$t_{d(on)}$	Turn-on delay time
t_{fi}	Current fall time (inductive load)
t_{fr}	Forward recovery time
t_{FLT}	Overcurrent or short circuit trip delay time
t_{gd}	Gate controlled delay time
T_J, T_{VJ}	Virtual junction temperature
T_{JM}, T_{VJM}	Maximum virtual junction temperature
T_K, T_H, T_S	Heatsink temperature
T_L	Lead temperature
$T_{S(max)}$	Maximum allowable heatsink temperature
T_{stg}	Storage temperature
t_P	Pulse time
t_q	Turn-off time
t_r	Current rise time
t_{rr}	Reverse recovery time
t_{rv}	Rise time of collector emitter voltage
t_{SC}	Short circuit duration
V_{BO}	Breakover voltage
V_{CE}	Collector emitter voltage
$V_{CE(sat)}$	Collector emitter saturation voltage
$V_{CE(sat)FLT}$	Collector emitter saturation voltage to indicate fault
V_{CEK}	Collector emitter clamp voltage on chip level
V_{CES}	Collector emitter voltage
V_{CGR}	Collector gate voltage
V_{DD}	Module supply voltage
$V_{DD\ FLT}$	Module supply voltage without fault
V_{DGR}	Drain gate voltage
V_{DRM}	Maximum repetitive forward blocking voltage
V_{DS}	Drain source voltage
V_{DSM}	Max. non-repetitive forward blocking voltage
V_{DSS}	Drain source breakdown voltage
Version	Various construction designs of products
V_F	Forward voltage
V_{FLT}	Voltage at fault terminal
V_{FR}	Forward recovery voltage
V_{GD}	Gate non-trigger voltage
V_{GE}	Gate emitter voltage
$V_{GE(th)}$	Gate emitter threshold voltage
V_{GEM}	Maximum transient collector gate voltage
V_{GES}	Maximum DC gate voltage
V_{GS}	Gate source voltage
$V_{GS(th)}$	Gate threshold voltage
V_{GSM}	Maximum transient gate source voltage
V_{GT}	Gate trigger voltage
V_H	Holding voltage
V_{IN}	Input control voltage
$V_{IN(H)}$	Input voltage threshold for IGBT turn-on
$V_{IN(L)}$	Input voltage threshold for IGBT turn-off
V_{ISOL}	Isolation voltage
V_R	Reverse voltage
V_{RES}	Input voltage threshold for Reset = active
V_{RGM}	Maximum reverse gate voltage
V_{RRM}	Maximum repetitive reverse voltage
V_{RSM}	Maximum non-repetitive reverse voltage
VSD	Forward voltage drop
V_T	Forward voltage
V_{T0}	Threshold voltage (for power loss calculation)
Z_{thJC}	Transient thermal impedance junction to case
Z_{thJK}, Z_{thJH}	Transient thermal impedance junction to heatsink

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Note
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Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. Terms of delivery and rights to change design or specifications are reserved.
Changes have been made to earlier published specifications. The data herein supersedes all previously published informations.

Life support applications
IXYS products used in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury must be expressly authorized for such purposes.

Nomenclature

Capsule devices - excluding IGBT's

W	0646	W	C	15	0

Device type

W	Rectifier diode
M	Fast/soft recovery diode
F	Extra fast diode
E	HP Sonic-FRD™
N	Phase control thyristor
R	Distributed gate thyristor
P	Fast turn-off thyristor
K	Medium voltage thyristor
A	Asymmetric thyristor
S	Symmetrical gate turn-off thyristor
H	Fast symmetrical gate turn-off thyristor
G	Asymmetric gate turn-off thyristor
Y	Pulse Thyristor

Device nominal current rating

0646

*****

For devices exceeding 9999 Amperes, digit 5 of the part number changes to C (x100)

Electrode diameter

W	19mm
Y	25mm
K	29mm
J	32mm
L	34mm
Q	38mm
D	44mm ('B' thickness only), 110mm
N	47mm
M	50mm
P	57mm
V	63mm
H	66mm/68mm
Z	73mm
T	75mm
E	85mm
F	99mm
G	125mm

t_q Code			
0	No code		
A	10	M	70
B	12	N	100
C	15	P	120
D	20	R	140
E	25	S	160
F	30	T	200
G	35	V	250
H	40	W	300
J	50	X	400
K	60	Y	500
L	65	Z	1000

Housing type *(electrode diameter in brackets)*

A	26mm reverse build
B	8mm (D)
C	Standard outline - 14mm (W, Y), 16mm (K), 26mm (L, Q, M, T, E), 26.5mm (N), 33mm (V), 36mm (F, G), 37mm (Z)
D	21mm (N), 24mm (V, Z), 26mm (F, G)
E	35mm inverse build (T, M, Q, E)
F	19.5mm (L), 26mm (K, N, V), 35mm (6.5kV Sonic diode)
G	35mm (L, N)
H	14mm (N), 26mm (Y)
J	19.5mm (N), 25.8mm (V), 26mm (T)
K	Wespack 14.5mm (J, Q, M, H)
L	Wespack 26mm (Q, M)
M	Wespack 33mm (H)
N	14mm (W, Y), 26mm (L)
R	Wespack 14mm (Q), 26mm (N)

V_{RRM} % of V_{DRM} for GTO's (S and H types only)	
0	100%
D	80%
Y	100 V

15 ***Voltage grade - V_{RRM}, VDRM/100***

Special code

0	t_q code (thyristors), V_{RRM} % of V_{DRM} for Gate turn-off thyristors - See relevant tables
P	PIN diode (Product groups: W, M, F, E)
R	Rotating package (N, K, W)
A	Avalanche rated diode (W)

Nomenclature

PRESS-PACK IGBT CAPSULE DEVICES

T 0240 N B 45 E

Device type
T Press-pack IGBT

Device pulse current rating
0240

Electrode diameter
Q 38mm
N 47mm
V 63mm
H 66mm
T 75mm
E 85mm
A 96mm
D 110mm
G 125mm
B 132mm

Die series
B
D
F

Voltage grade - V_{RRM} /100
45

Build description for multiple square die
A Reverse conducting
E Asymmetric
G Reverse Conductiing (IGBT to diode ratio of 2:1)

STUD DEVICES

W 0508 S A 04 0

Device type
W Rectifier diode
M Fast/Soft recovery diode

Phase control thyristor
N Fast turn-off thyristor
P ***Symmetrical Gate turn-off thyristor***
S

Device nominal current rating
0508

Device polarity
S Stud Anode
R Stud Cathode

Package

3/4" stud glass/metal
A
C 3/4" stud ceramic
E 3/4" HV ceramic stud with lug
F 3/4" HV ceramic stud

1/2“ ceramic stud
H
J 1/2" ceramic stud with flag
L M12 stud ceramic with lug

3/8" stud ceramic
M
R M20 stud ceramic with lug & gate leads

Voltage grade - VRRM, VDRM/100
04

tq code - See table for relevant code
0

All IXYS UK stud devices are available with or without leads, sleeving and nuts and washers

Please add one of the following three-letter codes, based on what options are required, to the end of the part number when ordering

000 – Leaded stud, no sleeving, no nuts and washers supplied

S0L - Leaded stud, with standard* sleeving, nuts and washers supplied loose

00L - Leaded stud, no sleeving, nuts and washers supplied loose

NLL - Non-leaded stud, nuts and washers supplied loose (Applies also to devices with flag/tag terminal)

S0F - Leaded stud, with standard* sleeving, nuts and washers fitted

00F - Leaded stud, no sleeving, nuts and washers fitted

NLF - Non-leaded stud, nuts and washers fitted (Applies also to devices with flag/tag terminal)

S00 - Leaded stud, with standard* sleeving, no nuts and washers supplied

NLS - Non-leaded stud, no nuts and washers fitted (Applies also to devices with flag/tag terminal)

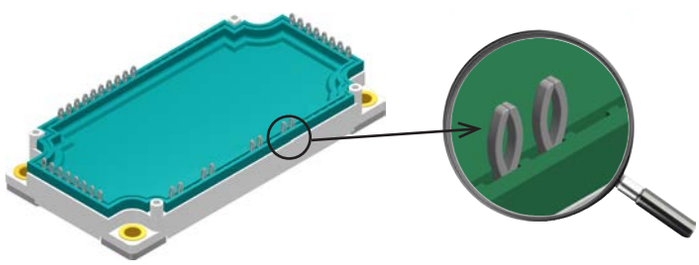
** - Standard sleeving means the following*
Red for all thyristor studs
Blue for ‘S’ polarity diode studs
Red for ‘R’ polarity diode studs

NEW Pressfit Pin PACKAGES

Pressfit Pin for E2, E3 and SimBus F Module Packages

IXYS presents a new Press-Fit-Pin for E2 and E3 module packages. Modules equipped with those pins can be connected to the PCB without a further solder process. For the pressing process either hand tools or pressing machines can be used. Benefits for the assembly are:

- simplified process
- reduced mounting time
- no risk of bad solder contacts
- reduced aging of pin contact
- no thermal stress for the PCB assembly
- press out possible for maintenance



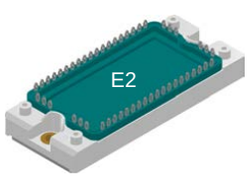
The pin concept is based on the proven „Bizon“-Pin concept.
Pressing process is a plastic deformation of pin and via of the board ending in a cold welding.
Pin features are:

- Pin concept based on successfully proven „Bizon“-Pin concept
- Pin qualification according to IEC 60352-5
- High conductive Cu alloy with Ni / gal. Tin surface
- Very low contact resistance
- Low press-in force per pin and PCB hole diameter independent press-out force
- Press-Fit-Pin usable for PCB‘s designed for competitor devices

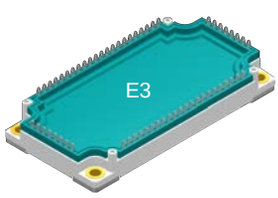
Started with the following modules types:

Pin configuration see Data Sheets

Board and Via Requirements E2 and E3			
	min.	**typical**	**max.**
Drill hole diameter		2.35 mm	
Final hole diameter	2.14 mm	2.20 mm	2.29 mm
Cu thickness inside the hole	>25 µm		
Sn thickness inside the hole			<15 µm
Cu thickness for PCB tracks	35 µm	70 µm 105 µm	
PCB thickness	1.60 mm	2.00 mm	
Metallization PCB	chem. Tin		
Board and Via Requirements SimBus F			
	min.	**typical**	**max.**
Drill hole diameter		1.16 mm	
Final hole diameter	1.00 mm	1.05 mm	1.10 mm
Cu thickness inside the hole	>25 µm		
Sn thickness inside the hole			<15 µm
Cu thickness for PCB tracks	35 µm	70 µm 105 µm	
PCB thickness	1.60 mm	2.00 mm	
Metallization PCB	chem. Tin		

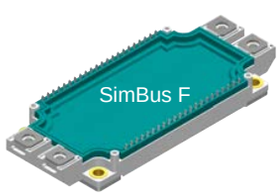


MDNA 240U2200ED
MCMA 240UI1600PED
MDMA 210UB1600PTED
MDMA 280UB1600PTED
MDMA 360UB1600PTED



MIXG 120W1200PTEH
MIXG 180W1200PTEH
MIXG 240W1200PTEH

MDMA 450U1600PTEH
MDMA 660U1600PTEH
MDMA 900U1600PTEH
MDNA 660U2200PTEH



MIXG 330PF1200PTSF
MIXG 490PF1200PTSF
MIXG 300PF1700PTSF
MIXG 450PF1700PTSF

MIXA 225RF1200PTSF
MIXG 450RF1700PTSF

MDMA 600P1600PTSF
MDNA 600P2200PTSF
MCNA 360PD2200PTSF
MCMA 400PD1600PTSF
MCNA 500PD2200PTSF
MCMA 550PD1600PTSF

MCNA 360P2200PTSF
MCMA 400P1600PTSF
MCNA 500P2200PTSF
MCMA 550P1600PTSF

High Voltage TO-263 (D^2-Pak) package

✓ **improved pin spacing** (no middle pin)
✓ **creepage distance pins to copper of backside:** 4.7 mm for new TO-263ABHV package

Type ➢ New	Technology	Config.	V_{RRM} V	I_{FAV} / I_D A	@ T_C °C	Package style Outline drawings on pages O-36...O-59
Diode						
➢ **DMA 10IM1200UZ**	Standard diode	Single	1200	10	150	
➢ **DMA 10IM1600UZ**			1600			
➢ **IXTY 1R4N100PHV**	Standard MOSFET	Single	1200	1.4	25	
➢ **DMA 30IM1600PZ**	Standard	Single	1600	30	140	
➢ **DNA 30E2200PZ**			2200	30	140	
➢ **DNA 30EM2200PZ**				30	140	
DMA 10P1600PZ		Phase Leg	2x 1600	10	150	
➢ **DMA 10P1800PZ**			2x 1800	10	150	
➢ **DAA 10EM1800PZ**	Avalanche	Single	1800	10	150	
➢ **DAA 10P1800PZ**		Phase Leg	2x 1800	10	150	
FRED / HiPerFRED						
DSEI 12-12AZ	FRED	Single	1200	11	100	
DSEP 12-12AZ	High Performance			12	135	
DSEP 12-12BZ				15	130	
Thyristor						
➢ **CLA 5E1200PZ**	High Efficiency	Single	1200	5	135	
➢ **CLA 30E1200NPZ**				30	115	
➢ **CLB 30I1200PZ ***				30	115	
➢ **CLB 40I1200PZ**				40	125	X011c **TO-263ABHV**
➢ **CMA 20E1600PZ**	Standard		1600	20	115	
CMA 30E1600PZ				30	115	
➢ **CME 30E1600PZ**	Fast			30	80	
Triac						
➢ **CLA 15E1200NPZ**	High Efficiency	Triac	1200	15	120	
➢ **CLA 40E1200NPZ**				40	125	
➢ **CLA 30MT1200NPZ**				15	120	
➢ **CLA 40MT1200NPZ**				20	115	

Creepage (min):

pin/pin: 4.2 mm
pin/Cu back-side: 4.7 mm

For more details see outline drawings

***** Anode gated

Type ✧ under development	Technology	Config.	V_{CES} V	I_{C25} A	V_{CEsat} V
IGBT & BiMOS					
✧ **IXA 4IF1200PZ**	XPT IGBT	Copack	1200	9	1.8
➢ **IXA 20I1200PZ**		Single		38	1.8
IXXA 30N65C3HV	GenX3™ XPT IGBT		650	52	2.2
➢ **IXYA 20N120C3HV**	Fast XPT IGBT		1200	40	3.4
➢ **IXGA 20N250HV**	High Voltage NPT IGBT		2500	30	3.1
IXBA 16N170AHV	High Voltage BiMOS	Single	1700	16	6.0
IXBA 10N300HV			3000	34	2.8
IXBA 14N300HV				38	2.7

Type ➢ New	Technology	Config.	V_{DSS} V	I_{D25} A	R_{DSon} max. Ω
MOSFET					
➢ **IXFA 8N85XHV**	X-Class HiPerFET™	Single	850	8	0.85
➢ **IXFA 14N85XHV**				14	0.55
➢ **IXFA 20N85XHV**				20	0.33
➢ **IXTA 08N100D2HV**	Depletion Mode MOSFET		1000	0.8	21.0
IXTA 3N100D2HV				3.0	6.0
➢ **IXTA 05N100HV**	High Voltage MOSFET			0.75	17.0
➢ **IXTA 3N120HV**			1200	3.0	4.5
➢ **IXTA 3N150HV**			1500	2.0	7.3
➢ **IXTA 4N150HV**				4.0	6.0
IXTA 1N200P3HV			2000	1.0	40.0
IXTA 02N250HV			2500	0.2	450

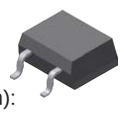
High Voltage TO-252 (D-Pak) package

✓ **improved pin spacing** (no middle pin)
✓ **creepage distance pins to copper of backside:** 2.5/5.8 mm for new packages

Type ➢ New	Technology	Config.	V_{RRM} V	I_{FAV} / I_D A	@ T_C °C
Diode					
➢ **DMA 10IM1200UZ**	Standard diode	Single	1200	10	150
➢ **DMA 10IM1600UZ**			1600		
➢ **IXTY 1R4N100PHV**	Standard MOSFET	Single	1200	1.4	25

Package style
Outline drawings on pages O-36...O-59

X004a **TO-252AA**



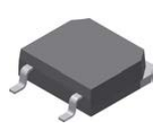
Creepage (min):
pin/pin: 3.6 mm
pin/Cu back-side: 2.5 mm

High Voltage TO-268 (D^3-Pak) package

Type ➢ New	Technology	Config.	V_{RRM} V	I_{DAV} / I_{TAV} A	@ T_C °C
Rectifier					
➢ **DSEI 120-12AZ**	FRED	Single	1200	109	60
DSP 45-12AZ	Standard diode	Phase leg	2x 1200	45	130
DSP 45-16AZ			2x 1600	45	130
CLA 60MT1200NTZ	High Efficiency Triac	Triac	1200	30	120
CMA 50E1600TZ	Standard Thyristor	Single	1600	50	110

Type ✧ under development	Technology	Config.	V_{CES} / V_{DSS} V	I_{C25} / I_{D25} A	V_{CEsat} typ. V	R_{DSon} max. (m)Ω
IGBT						
IXYT 30N65C3H1HV	GenX3™ XPT IGBT	Single	650	60	2.7	-
IXYT 20N120C3D1HV			1200	36	3.4	-
IXGT 25N250HV	High Voltage NPT IGBT		2500	60	2.9	-
➢ **IXYT 25N250CHV**	High Voltage XPT™ IGBT			95	4.0	-
➢ **IXYT 30N450HV**			4500	60	3.9	-
➢ **IXBT 16N170AHV**	High Voltage BIMOS		1700	16	6.0	-
➢ **IXBT 22N300HV**			3000	60	2.7	-
➢ **IXBT 32N300HV**				80	2.8	-
IXBT 42N300HV				104	3.0	-
➢ **IXBT 20N360HV**			3600	70	3.4	-
MOSFET						
➢ **IXTT 440N04T4HV**	TrenchT4™ MOSFET	Single	40	440	-	(1.25)
IXFT 60N65X2HV	X2-class HiPerFET™		650	60	-	(52)
IXFT 80N65X2HV				80	-	(38)
IXTT 34N65X2HV				34	-	(96)
➢ **IXFT 30N85XHV**	X-class HiPerFET™		850	30	-	(230)
➢ **IXFT 40N85XHV**				40	-	(145)
➢ **IXFT 50N85XHV**				50	-	(105)
✧ **MCB 40I1200TZ**	SiC Power MOSFET		1200	60		(52)
➢ **MCB 60I1200TZ**				90	-	(34)
➢ **IXTT 4N150HV**	High Voltage MOSFET		1500	4	-	6
➢ **IXTT 12N150HV**				12	-	2
IXTT 3N200P3HV			2000	3	-	8
IXTT 1N250HV			2500	1.5	-	40
➢ **IXTT 1N300P3HV**			3000	1	-	50
➢ **IXTT 2N300P3HV**				2	-	21
IXTT 02N450HV			4500	0.2	-	625
IXTT 1N450HV				1	-	80
➢ **IXTT 140N075L2HV**	Linear MOSFET		75	140	-	(11)
➢ **IXFT 140N20X3HV**	Ultra Junction Power MOSFET		200	140	-	(96)
➢ **IXFT 180N20X3HV**				180	-	(75)
➢ **IXFT 220N20X3HV**				220	-	(62)
➢ **IXFT 120N25X3HV**			250	120	-	(120)
➢ **IXFT 150N25X3HV**				150	-	(90)
➢ **IXFT 170N25X3HV**				170	-	(74)
➢ **IXFT 100N30X3HV**			300	100	-	(135)
➢ **IXFT 120N30X3HV**				120	-	(110)
➢ **IXFT 150N30X3HV**				150	-	(83)

X019a **TO-268AAHV**



Creepage (min):
pin/pin: 9.4 mm
pin/Cu back-side: 5.8 mm

For more details see outline drawings

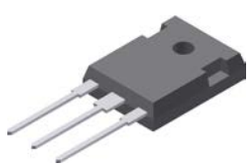
High Voltage TO-247HV and PLUS247HV packages

- ✓ improved pin spacing for high potential
- ✓ creepage distance pins to copper of backside: > 5.7 mm
- ✓ creepage distance between high voltage pins (collector/emitter or drain/source): > 7.0 mm

Type ➢ New	Technology	V_{CES} / V_{DSS} V	I_{C25} / I_{D25} (I_{C110}) A	V_{CEsat} typ. V	w /Diode	$R_{DS(on)}$ max. Ω	Fig. No.	Package style Outline drawings on pages O-36...O-59
➢ **IXYH 8N250CHV**	XPT™ IGBT	2500	(8)	4.0		-	X014c	
➢ **IXYH 8N250CV1HV**			(8)	4.0	•	-		
➢ **IXYH 12N250CHV**			(12)	4.5		-		
➢ **IXYH 12N250CV1HV**			(12)	4.5	•	-		
➢ **IXYH 16N250CV1HV**			(16)	4.0	•	-		
➢ **IXYH 25N250CHV**			(25)	4.0		-		
➢ **IXYX 25N250CV1HV**			(25)	4.0	•	-	X015c	X014c **TO-247HV**
➢ **IXYX 40N250CHV**			(40)	4.0		-		
IXYH 30N450HV		4500	(30)	3.9		-	X014c	
IXYX 40N450HV			35	3.9		-	X015c	
IXBH 10N300HV	BiMOSFET	3000	34	2.8		-	X014c	
IXBH 14N300HV			38	2.7		-		
IXBH 22N300HV			60	2.7		-		
IXBX 28N300HV			62	2.7		-	X015c	
➢ **IXBH 32N300HV**			(32)	2.8		-	X014c	
IXBH 42N300HV			(42)	2.5		-		
➢ **IXBH 16N360HV**		3600	48	2.5		-	X014c	
IXBH 20N360HV			70	3.4		-		
IXBX 50N360HV			125	2.9		-	X015c	
IXTH 02N450HV	MOSFET	4500	0.2	-		625	X014c	X015c **PLUS247HV**
IXTH 1N450HV			1.0	-		80		
➢ **IXTX 1R4N450HV**			1.4	-		40	X015c	
IXTH 1N200P3HV	Polar 3 MOSFET	2000	1.0	-		40	X014c	
IXTH 3N200P3HV			3	-		8		
IXTX 6N200P3HV			6	-		4	X015c	
IXTH 06N220P3HV		2200	0.6	-		80	X014c	
IXTH 1R8N220P3HV			1.8	-		21.5		
IXTH 05N250P3HV		2500	0.5	-		110	X014c	
IXTH 04N300P3HV		3000	0.4	-		190	X014c	
IXTH 1N300P3HV			1.0	-		50		
➢ **IXTH 2N300P3HV**			2	-		21		
IXTX 4N300P3HV			4	-		12.5	X015c	

ISO247 package

- ✓ **3000V isolation**
- ✓ **Excellent thermal performance**
- ✓ **100% mechanical fit to TO-247**

Type ➢ New	Technology	Configuration	V_{RRM} V	I_{DAV} / I_{TAV} A	@ T_C °C	Package style Outline drawings on pages O-36...O-59
Diode						
DSA 90C200HR	Schottky Diode	Common Cathode	200	2x 45	145	
DPF 30P600HR	HiPerFRED	Phase Leg	2x 600	30	130	
➢ **DMA 50P1200HR**	Standard	Phase Leg	2x 1200	50	105	
➢ **DMA 30P1600HR**			2x 1600	30	105	
✧ **DCG 10P1200HR**	SiC Schottky Diode	Phase Leg	2x 1200	10	80	
✧ **DCG 17P1200HR**				17	80	
✧ **DCG 20C1200HR**		Common Cathode	1200	2x 10	80	
✧ **DCG 35C1200HR**				2x 17	80	
Thyristor						
➢ **CLA 40E1200HR**	High Efficiency	Single	1200	40	95	
➢ **CMA 40E1600HR**	Standard		1600	40	90	
Triac						
➢ **CLA 40MT1200NHR**	High Efficiency	Triac	1200	20	110	
CLA 60MT1200NHR				30	100	X016c **ISO247™**
➢ **CLA 80MT1200NHR**				40	100	
➢ **CMA 60MT1600NHR**	Standard		1600	30	90	
➢ **CMA 80MT1600NHR**				40	95	

Type ✧ under development	Technology	Config.	V_{CES} / V_{DSS} V	I_{C25} / I_{D25} A	V_{CEsat} typ. V	R_{DSon} max. Ω
IGBT						
✧ **IXA 20IF1200HR**	XPT™ IGBT	Copack	1200	33	1.8	-
✧ **IXA 30IF1200HR**				48	1.8	-
✧ **IXA 40IF1200HR**				63	1.8	-
➢ **ITF 48IF1200HR**	Fast Trench IGBT			72	2.4	-
MOSFET						
➢ **IXFJ 80N25X3**	X3-Class HiPerFET™	Single	250	44	-	0.018
IXFJ 26N50P3	Polar3™ HiperFET™		500	14	-	0.265
➢ **MKH 24I650HR**	Superjunction [1] CFD		650	25	-	0.08
➢ **IXFJ 20N85X**	X-Class HiPerFET™		850	9.5	-	0.360
➢ **IXTJ 3N150**	High Voltage MOSFET		1500	2.3	-	8.0
➢ **IXTJ 4N150**				2.5	-	6.0
➢ **IXTJ 6N150**				3.0	-	3.85

[1] Powered by Infineon CoolMOS™ superjunction bare die C6

ISOPLUS-SMPD™ **ISOPLUS-DIL™**

ISOPLUS i4-PAC™ **ISOPLUS264™**

ISO247™ **ISOPLUS247™** **ISOPLUS220™**

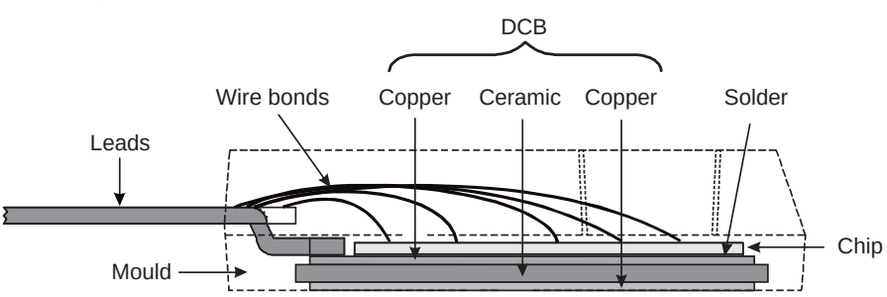
Isolated Discrete Packages

ISOPLUS247™ is the DCB isolated version of the PLUS247™ package (TO-247 without a mounting hole). The design of this patented package is revolutiory: the silicon chip is soft soldered onto a Direct Copper Bond (DCB) substrate instead of the usual copper lead frame. The DCB ceramic, the same substrate material as used in the high power modules, not only provides high isolation capability (2500 V_{RMS}) but also unbeatable low thermal resistance compared to conventiol, exterlly mounted isolation materials.

Advantages:

- Isolation capability from leads to backside 2500 V_{RMS} – no exterl isolation foil needed
- Thermal resistance from Junction to Case only slightly higher as for non-isolated version
- Increased power- and temperature cycling capability
- DCB can be patterned like printed circuit boards – allowing special functions to be realized

Package cross section



While the junction-to-case thermal resistance is higher than an equivalent. non-isolated device, what really matters is the total thermal resistance from junction-to-heatsink (R_{thJH}). Comparing a device in ISOPLUS247™ to its companion in the non-isolated package with an exterl isolation foil, one can see that the overall R_{th} is now lower for the part in the already isolated package (see example).

Due to the matched thermal expansion coefficients of silicon and DCB ceramic, mechanical stress to the die and solder caused by power and temperature cycling is reduced so that reliability is improved. Mounting is done with clips, which not only saves time but also guarantees constant pressure force over the whole lifetime of the assembly.

Parts in the **ISOPLUS247™** housing can be identified by the letter "**R**" in the IXYS part number. Potentially all devices now encapsulated in TO-247. TO-264 and PLUS247™ housings can be molded in the ISOPLUS247™. There are already more than 100 different ISOPLUS247™ types available.

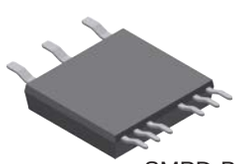
Another interesting feature is the capability to pattern the DCB substrate like a printed circuit board. Now additiol special functions can be realized, e.g. the **series connection of single** diode chips within one package.

ISOPLUS220™. **ISOPLUS247™** and **ISOPLUS264™** are the DCB substitutes for the corresponding standard packages.

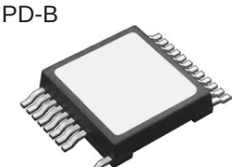
A larger version of this packaging technology is med **ISOPLUS i4-PAC™**. It has up to five termil pins, making it possible to build up full diode bridges, phase-leg transistor configurations, buck and boost converters and much more within one isolated discrete package.

ISOPLUS-DIL™ 37.5 mm long and 25 mm wide provides the largest mounting area within the ISOLPLUS™ family. It is available in 2 pin out version: „GWM" configuration with plar power pins for 300 A RMS on one side and 12 control pins on the oposite side and the „GMM" configuration with 12 pins on either side. The package is intented for high current low voltage (< 200 V) applications either as single switch or 6-pack. With highest power density and high reliability ISOPLUS-DIL™ is recommended for the use in automotive designs.

ISOPLUS-SMPD™ is the latest member of IXYS ISOPLUS™ family and provides an increased creepage distance between pins to DCB (>4 mm) and pin to pin (up to 7 mm).



SMPD-B



SMPD-X

Example: ISOPLUS247™ compared to conventiol isolated device

Type	Package	Isolation	R_{thJC} K/W	R_{thCK} K/W	Total K/W	Factor
IXF**R** 180N10	ISOPLUS247™	internal DCB	0.3	0.15	0.45	1
IXF**X** 180N10	PLUS247™	**external foil**	0.22	**1.02**	1.24	**2.8**

DCB isolated SMPD package for simplified mounting and high circuit flexibility

Reducing assembly costs is a continual demand of the semiconductor user. One of the various approaches is the usage of SMD packages which is successfully introduced by utilization of Power Semiconductors packaged in TO-263 (D^2Pak) or TO-268 (D^3Pak). If heat sinking is required designers have to look for solutions providing isolation and creepage distance.

ISOPLUS-SMPD™ package is the IXYS answer to the challenge to make designer's life easier as it provides an SMD device featuring:

- 2.5 kV isolation to heatsink (UL rating)
- low thermal impedance for good cooling by only 0.38 mm thick ceramic
- more than 4 mm creepage distance from pin to mounting surface
- up to 7 mm creepage from pin to pin (depending on package type)
- high integration such as phase leg or 3~ input rectifier in one package
- automatic mounting by pick & place possible (packaged in Tape & Reel)

This ebles the engineer to make flat designs with a concept of distributed power dissipation. The latter allows utilization of heatsinks with a thinner base reducing weight and cost.

The new ISOPLUS-SMPD™ package is small and light weight with two rows of pins. resembling an IC. It allows the assembly to the board in standard SMD pick & place equipment. together with other standard SMD components. ISOPLUS-SMPD™ devices are available in Tape & Reel or in a Blister Tray option.
The complete board including the power components can run through a standard SMD soldering process.

Two types are available, ISOPLUS-SMPD™-B (Fig. 1) is optimized for implementing more complex configurations like phase-legs, buck and boost chopper as well as single – or 3-phase input rectifier bridges, which can ideally be used as building blocks for inverters. ISOPLUS- SMPD™-X (Fig. 2) with a larger number of pins on either side allows the integration of large dies for very high current capability up to 600 A per unit.

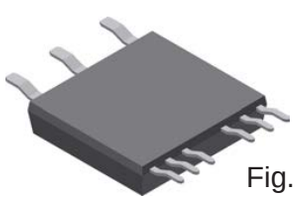


Fig. 1 SMPD-B

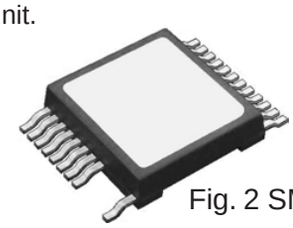


Fig. 2 SMPD-X

Both designs benefit from the ISOPLUS™ construction with low mechanical stress for the die because of a good match in the thermal expansion coefficient of die and DCB resulting in long term reliability.

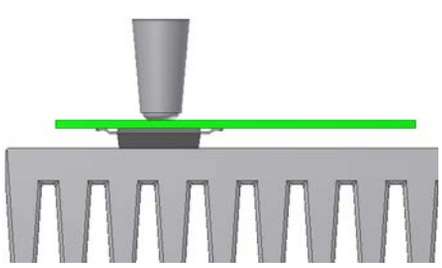


Fig. 3 Mounting example

As normal these devices require a layer of thermal interface material (heat transfer paste) to be applied to the backside of the power devices (or to the heat sink surface altertively). Then the devices can be mounted together with the PCB to a heat sink.
These power devices need to be pressed down to the heat sink to ensure low thermal resistances. Pressure can be applied in different ways, for example using a mounting clip or a post, applying pressure via the PCB directly to the power device (see Fig. 3 and Fig. 4).

The high package flexibility allows to offer

- high current single Trench MOSFET
- high current single IGBT
- buck and boost converters
- phase-legs with desaturation diodes for switch control
- 1~ or 3~ input rectifiers
- multiple boost stages
- cascade configurations

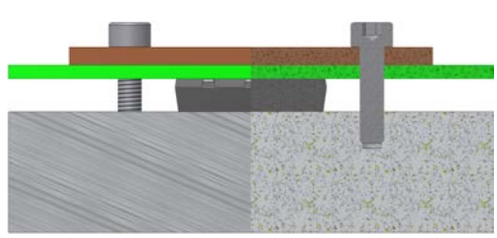
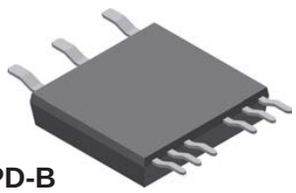


Fig. 4 Mounting example

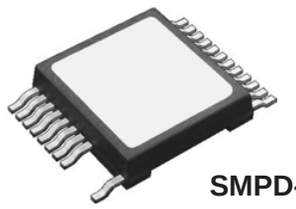
Customer specific designs are feasable.

IGBT Modules – SMPD Converter Building Blocks

ISOPLUS™ Technology

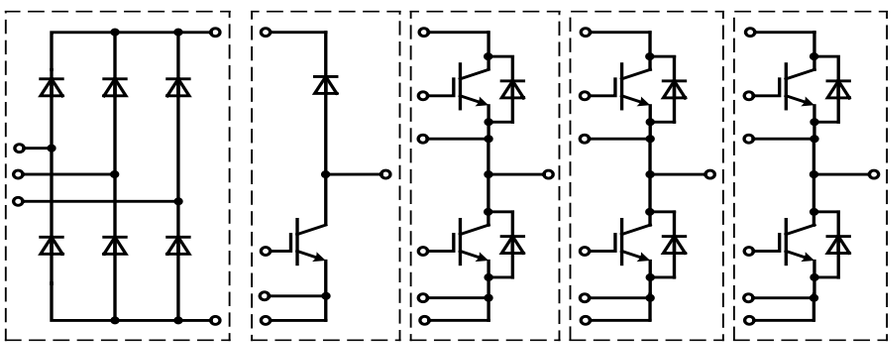


SMPD-B



SMPD-X

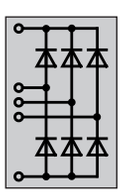
- 2500 V UL rated electrical isolation
- low thermal resistance
- increased power & temperature cycling
- saves space
- replaces multiple discretes
- reduces parasitic inductance & capacitance
- reduces EMI
- heat spreading



Rectifier

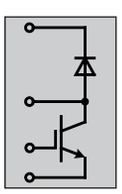
Brake & Boost

Inverter

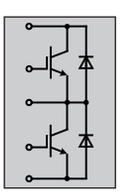


Line Rectifier
DMA 90U1800LB

SONIC-FRD
DHG 60U1200LB

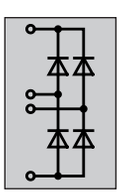


XPT-IGBT
IXA 20RG1200DHGLB
IXA 30RG1200DHGLB
IXA 40RG1200DHGLB



XPT-IGBT
IXA 20PG1200DHGLB
IXA 30PG1200DHGLB
IXA 40PG1200DHGLB

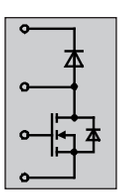
ITF 40PF1200DHGTLB



Line Rectifier
DLA 100B1200LB
DLA 100B800LB

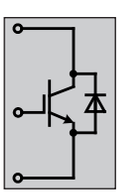
Fast Rectifier

DPG 60B600LB	HiPerFRED
DCG 20B650LB	SiC
DHG 40B1200LB	SONIC
DCG 20B1200LB	SiC



CoolMOS™ Boost

MKE 38RK600DFELB	& FRED Diode
MKG 40RK600LB	& SONIC Diode
MKH 17RP650DCGLB	Dual Boost & SiC

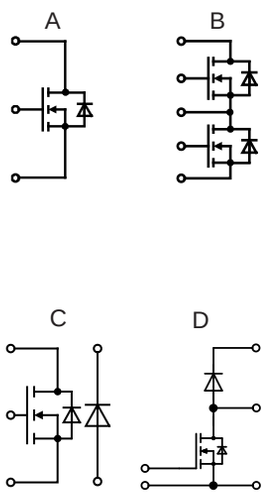


XPT-IGBT
MMIX 1X100N60B3H1
MMIX 1X200N60B3H1
MMIX 1Y82N120C3H1
MMIX 1Y100N120C3H1

IXG 70IF1200LB

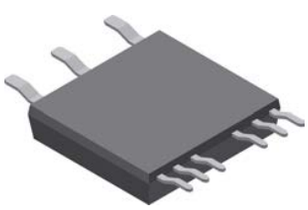
MOSFETs

Type ○ Not for new design ✧ under development ➢ New	Circuit diagram / Technology	V_{DSS} V	I_{D25} T_C = 25°C A	$R_{DS(on)}$ max. T_C = 25°C mΩ	Q_G nC	Fig. No.	Circuit Diagram
SINGLE							
➢ **MMIX 1T600N04T2**	A Trench2	40	600	1.3	590	X031a	
➢ **MMIX 1T550N055T2**	A Trench2	55	550	1.3	595		
➢ **MMIX 1F520N075T2**	A Trench2 HiPerFET™	75	500	1.6	545		
MMIX 1F420N10T	A Trench HiPerFET™	100	334	2.6	670		
MMIX 1F360N15T2	A Trench2 HiPerFET™	150	235	4.4	715		
MMIX 1F230N20T	A Trench HiPerFET™	200	156	8.3	358		
MMIX 1F180N25T	A Trench HiPerFET™	250	132	13	364		
MMIX 1F160N30T	A Trench HiPerFET™	300	102	20	376		
MMIX 1F210N30P3	A Polar3 HiPerFET™		108	16	268		
MMIX 1F132N50P3	A Polar3 HiPerFET™	500	63	43	267		
MMIX 1F44N100Q3	A Q3 HiPerFET™	1000	30	245	264		
MMIX 1F40N110P	A Polar HiPerFET™	1100	24	290	310		
BUCK / BOOST							
MKE 38RK600DFELB	C MOSFET ① CP & FRED	600	50	45	150	X030a	
○ **MKG 40RK600LB**	C MOSFET ① C6 & SONIC		54	41	290		
➢ **MKH 17RP650DCGLB**	G Dual MOSFET① CFD & SiC	650	2x 22	110	118		
✧ **MCB 25R1200LB**	D SiC MOS & SiC Diode	1200	32	98 (80 typ.)	62		
✧ **MCB 25RP1200LB**	G Dual SiC MOS & Diode		2x 32	98 (80 typ.)	62		
✧ **MCB 30RL1200TLB**	E SiC & Bypass & NTC		37	52 (40 typ.)	115		
✧ **MCB 45R1200LB**	D SiC MOS & SiC Diode		55	52 (40 typ.)	115		
✧ **MCB 35R1700LB**	D SiC MOS & SiC Diode	1700	35	70 (45 typ.)	188		
PHASE-LEG							
➢ **MMIX 2F150N20T**	B Trench™ HiPerFET™	200	84	16.5	177	X031a	
➢ **MMIX 2F94N30T**	B Trench™ HiPerFET™	300	52	40	190		
➢ **MMIX 2F60N50P3**	B Trench™ HiPerFET™	500	30	110	96		
MKE 38P600LB	B MOSFET ① CP	600	50	40	150	X030a	
✧ **MCB 20P1200LB**	B SiC	1200	22	98 (80 typ.)	62		
✧ **MCB 25P1200TLB**	F SiC & NTC		32	98 (80 typ.)	62		
➢ **MCB 30P1200LB**	B SiC		37	52 (40 typ.)	115		
➢ **MCB 40P1200LB**	B SiC		58	34 (25 typ.)	161		
✧ **MCB 45P1200TLB**	F SiC & NTC		55	52 (40 typ.)	115		
✧ **MCB 60P1200TLB**	F SiC & NTC		77	34 (25 typ.)	161		
✧ **MCB 35P1700TLB**	F SiC & NTC	1700	35	70 (45 typ.)	188		
SINGLE with Current and Temperature Sense							
➢ **MMIX 1T132N50P3**	H Polar3™	500	63	43	267	X031a	



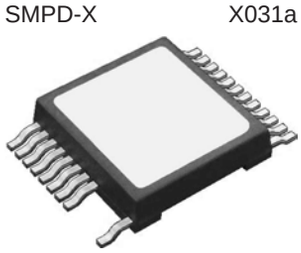
① Powered by Infineon CoolMOS™ superjunction bare die

SMPD-B X030a



Outline drawings on pages O-36...O-59

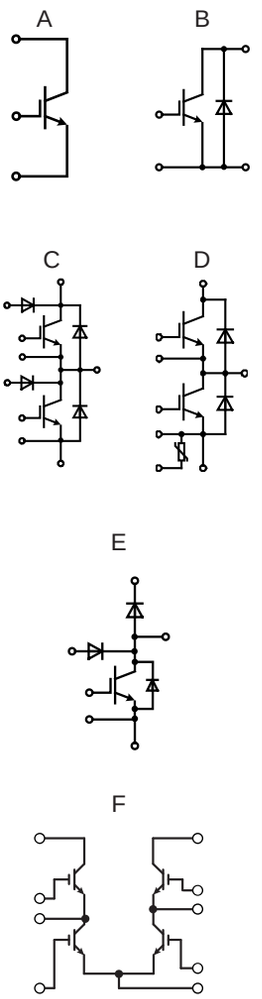
SMPD-X X031a



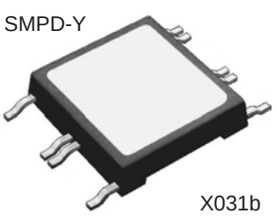
See data sheet for pin arrangement

IGBTs

Type ➢ New ✧ under development	Circuit Diagram No. / Technology	V_{CES} V	I_{C25} T_C = 25°C A	$V_{CE(sat)}$ typ. T_C = 25°C V	E_{off} typ. T_J = 150°C (125°C) mJ	Fig. No.	Circuit Diagram
SINGLE and COPACK							
MMIX 1X200N60B3	A XPT	600	223	1.40	3.45	X031a	
MMIX 1X100N60B3H1	B XPT & SONIC		145	1.50	2.80		
MMIX 1X200N60B3H1	B XPT & SONIC		175	1.40	3.45		
MMIX 1X340N65B4	A XPT™ IGBT GenX4™		450	1.40	2.54	X031a	
MMIX 1Y82N120C3H1	B XPT fast & SONIC	1200	78	2.90	(3.70)		
MMIX 1Y100N120C3H1	B XPT fast & SONIC		92	2.90	3.55		
✧ **IXG 70IF1200LB**	B X2PT & SONIC2		105	1.9 (70A)	5.3 (50A)	X030a	
MMIX 1G120N120A3V1	B GenX3 IGBT @ SONIC		110	1.85	58	X031a	
MMIX 1G75N250	A IGBT for cap discharge	2500	110	2.50	-		
➢ **MMIX 1B15N300C**	B BiMOSFET™	3000	37	4.70	-		
➢ **MMIX 1B20N300C**	B BiMOSFET™		50	4.50	-		
BOOST							
IXA 20RG1200DHGLB	E XPT & SONIC	1200	32	1.80	1.7	X030a	
IXA 30RG1200DHGLB	E XPT & SONIC		43	1.90	3.0		
IXA 40RG1200DHGLB	E XPT & SONIC		63	1.85	4.1		
PHASE-LEG							
IXA 20PG1200DHGLB	C XPT & SONIC	1200	32	1.80	1.7	X030a	
IXA 30PG1200DHGLB	C XPT & SONIC		43	1.90	3.0		
IXA 40PG1200DHGLB	C XPT & SONIC		63	1.85	4.1		
✧ **ITF 40PF1200DHGTLB**	D Trench IGBT & SONIC & NTC		56	2.05	2.6		
✧ **ITF 40PG1200DHGLB**	C Trench IGBT & SONIC		56	2.05	2.6		
FULL-BRIDGE							
MMIX 4G20N250	F IGBT for cap discharge	2500	23	3.1 max	-	X031b	



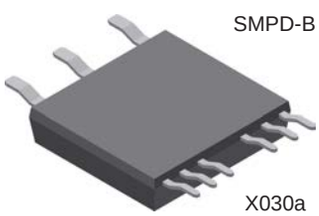
SMPD-Y



X031b

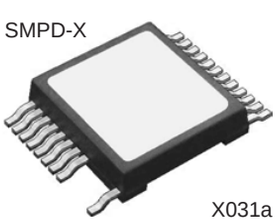
Outline drawings on pages O-36...O-59

SMPD-B



X030a

SMPD-X



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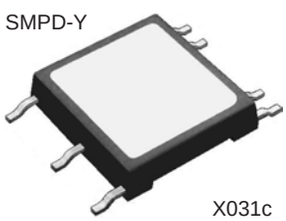


X031c

ISOPLUS-SMPD™

Diodes

Type ➢ New ✧ under development	Circuit diagram / Diode type	V_{RRM} V	$I_{D(AV)M}$ A	@ T_C °C	Fig. No.	Circuit Diagram
DUAL						A
DSA 120X150LB	A Schottky	150	2x 60	150	X030a	
DSA 120X200LB	A Schottky	200	2x 60	150		
✧ **DSA 240X200LB**	A Schottky		2x 120			
✧ **DCG 40X1200LB**	A SiC	1200	2x 14.5	80		
1~ BRIDGE						B
DPG 60B600LB	B HiPerFRED	600	60	110	X030a	
➢ **DCG 20B650LB**	B SiC	650	21	80		
DLA 100B800LB [1]	B Rectifier	800	124	80		
DLA 100B1200LB	B Rectifier	1200	124	80		
➢ **DHG 40B1200LB**	B SONIC		34	80		C
✧ **DCG 20B1200LB**	B SiC		18	80		
3~ BRIDGE						
DHG 60U1200LB	C SONIC	1200	62	80	X030a	
DMA 90U1800LB	C Rectifier	1800	99	80		D

[1] AECQ qualified
* in progress

Thyristors, Triacs

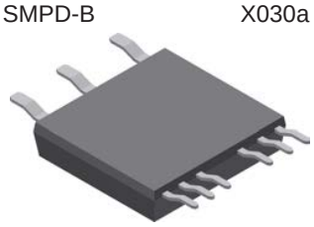
Type ✧ under development	Circuit diagram / Bipolar type		V_{RRM} V	I_{TAV} A	@ T_C °C	Fig. No.	
DUAL							E
✧ **CLA 60MU1200LB**	2x D	Triac	1200	2x 30	100	X030a	
PHASE-LEG							
✧ **CMA 50P1600LB**	E	Thyristor	2x 1600	50	90		F

MOS-Gated Thyristors

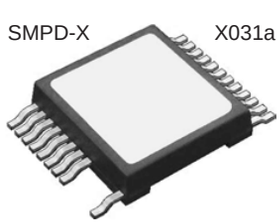
Type	V_{DM} V	I_{TSM} 1µs T_C = 25°C kA	I_{TSM} 10µs T_C = 25°C kA	r_T typ mΩ	V_T max V	$Q_{g(on)}$ typ nC	t_{ri} typ T_C = 25°C ns	$V_{GK(th)}$ max V	Circuit Diagram	Fig. No.	G
MMJX 1H40N150	1500	15.5	6.4	1.2	6	99	100	5	F	X032	
MMIX 1H60N150V1	1500	32.0	11.8	1.2	6	180	100	5	G	X031a	

Outline drawings on pages O-36...O-59

SMPD-B X030a



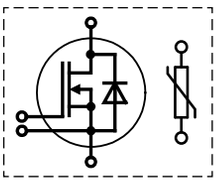
SMPD-X X031a



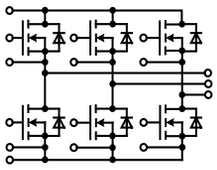
See data sheet for pin arrangement

MiniSMPD X032

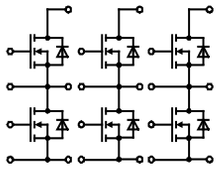
ISOPLUS-DIL™



MTC...X...TGD



MTI..W...GC



MTI...WX...GD / GMM

SINGLE high current Switch with NTC

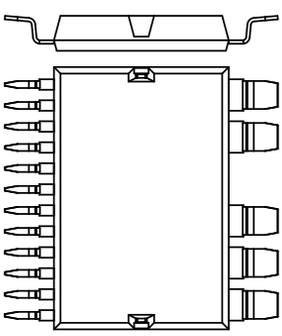
Type ✧ under development	V_{DSS} V	I_{D25} T_C = 25°C A	I_{D90} T_C = 90°C A	R_{DSon} typ. T_J = 25°C mΩ	C_{iss} typ nF	Q_g typ nC	R_{thJC} K/W	Fig. No.
✧ **MTC 960X55TGD**	55	2x 640	2x 480	1.1	2x 40	2x 595	0.16	X026d
✧ **MTC 840X75TGD**	75	2x 550	2x 420	1.3	2x 40	2x 545	0.16	

Six-Pack Trench MOSFET

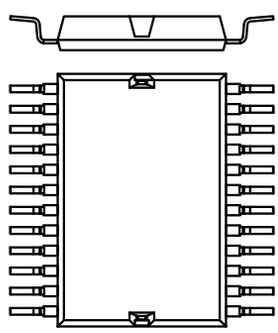
Type ➢ New	V_{DS} max. V	I_{D25} T_C = 25°C A	I_{D90} T_C = 90°C A	$R_{DS(on)}$ typ. T_C = 25°C mΩ	C_{iss} typ nF	Q_g typ nC	R_{thJC} K/W	Fig. No.
➢ **MTC 120W55GC**	55	160	120	2.2	7.0	110	1.00	X026c
MTI 85W100GC	100	110	83	3.2	6.3	90	1.45	
Six-Pack 3x Phase Leg								
➢ **MTC 120WX55GD**	55	160	120	2.2	7.0	110	1.00	X026d
➢ **MTC 120WX75GD**	75	160	120	2.2	10.5	178	0.80	
MTI 200WX75GD		265	200	1.1	10.8	155	0.85	
MTI 145WX100GD	100	190	145	1.7	11.0	155	0.85	
GMM 3x60-015X2	150	50	38	19.0	5.8	97	1.00	

Customized configurations possible

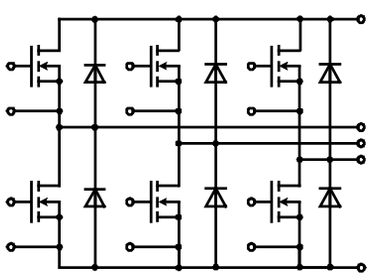
Outline drawings on pages O-36...O-59



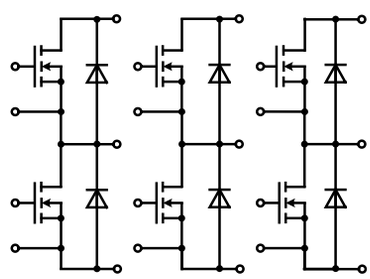
MTI...W..GC
SURFACE MOUNT DEVICE



MTI...WX...GD; MTC...X...TGD; GMM...
SURFACE MOUNT DEVICE



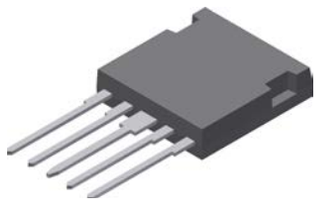
X026c **ISOPLUS-DIL™**



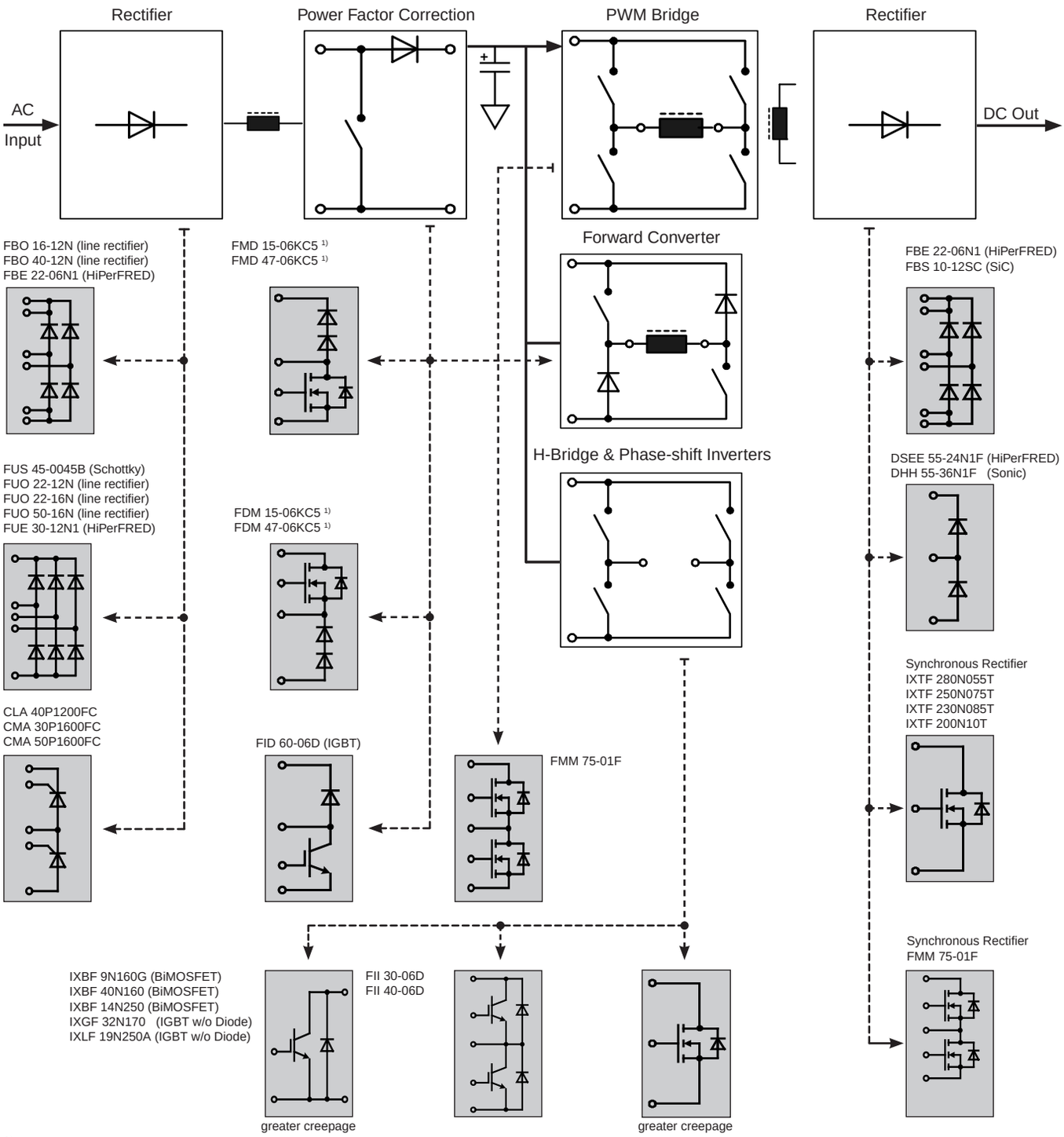
X026d **ISOPLUS-DIL™**

ISOPLUS™ i4-PAC™

3, 4 and 5 leaded packages for various circuit topologies



DCB base plate
- 2500 V electrical isolation
- low thermal resistance
- increased power & temperature cycling
- saves space
- replaces multiple discretes
- reduces parasitic inductance and capacitance
- reduces EMI
- less weight



1) Powered by Infineon CoolMOS™ superjunction bare die

See application note „Combining the features of modules and discretes in a new Power Semiconductor packages“ for general description of the packaging technologies.

See alphanumeric index for the page number of the particular product.

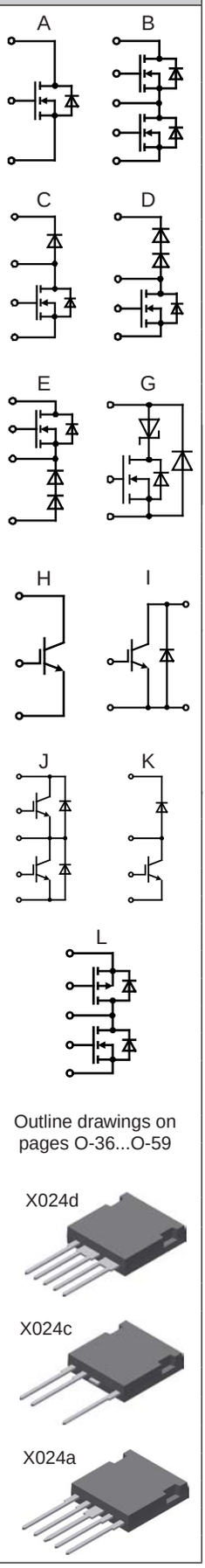
MOSFETs

Type ➢ New ○ Not for new design	Configu-ration	Circuit diagram / Technology	V_{DSS} V	I_{D25} T_C = 25°C A	$I_{D90/110}$ T_C = 90°C (110°C) A	$R_{DS(on)}$ T_C = 25°C typ. mΩ (Ω)	Fig. No.
IXTF 200N10T	single	A Trench MOSFET	100	90	na	70	X024d
IXKF 40N60SCD1		G MOSFET ① & serial Schottky & HiPerFRED free wheeling Diode	600	41	29	60	X024a
➢ **IXTF 6N200P3**		A Polar3™ High Voltage MOSFET	2000	4.0	(2.3)	max. (4.2)	X024c
➢ **IXTF 2N300P3**		A Polar3™ High Voltage MOSFET	3000	1.6	(0.9)	max. (21)	
➢ **IXTF 1N250**		A High Voltage MOSFET	2500	1.0	na	(40)	
IXTF 1R4N450		A High Voltage MOSFET	4500	1.4	na	max. (40)	
IXTF 02N450		A High Voltage MOSFET		0.2	na	(750)	
IXTF 1N450		A High Voltage MOSFET		0.9	na	(85)	
○ **FDM 47-06KC5**	buck	E MOSFET ① & HiPerDynFRED	600	47	32	40	X024a
FMD 21-05QC	boost	E HiPerFET & HiPerDynFRED	500	21	15	180	
FMD 15-06KC5		D MOSFET ① & HiPerDynFRED	600	15	11	150	
FMD 40-06KC		D MOSFET ① & HiPerDynFRED		38	25	60	
○ **FMD 47-06KC5**		D MOSFET ① & HiPerDynFRED		47	32	40	
FMM 75-01F	phase leg	B HiPerFET	100	75	55	25	
FMP 76-010T *		L Trench™ P & N-Channel	±100	-54 / 62		24 / 11	
FMP 36-015P *		L Polar™ P & N-Channel	±150	-22 / 36		110 / 40	
FMP 26-02P *		L Polar™ P & N-Channel	±200	-17 / 26		170 / 60	
FMM 60-02TF		B Trench HiPerFET	200	33	-	40	
FMM 50-025TF		B Trench HiPerFET	250	30	-	50	
FMM 22-05PF		B PolarHV™ HiPerFET	500	13	-	270	
FMM 22-06PF		B PolarHV™ HiPerFET	600	12	-	350	

***** high side switch: p-channel; low side switch: n-channel ① Powered by Infineon CoolMOS™ superjunction bare die

IGBTs / BiMOSFETs

Type ○ Not for new design	Configu-ration	Circuit diagram / Technology	V_{CES} V	I_{C25} T_C = 25°C A	$I_{C90/110}$ T_C = 90°C (110°C) A	$V_{CE(sat)}$ typ. T_C = 25°C V	Fig. No.
○ **IXBF 9N160G**	single	I BiMOSFET	1600	7	4	4.9	X024c
IXYF 30N170CV1		I High voltage XPT™ IGBT	1700	36	(20)	3.5	
IXGF 32N170		H High voltage IGBT		44	(19)	max. 3.5	
IXGF 20N250		H High voltage IGBT	2500	23	14	max. 3.1	
IXGF 25N250		H High voltage IGBT		30	15	max. 2.9	
IXLF 19N250A		H High voltage IGBT		32	19	max. 3.9	
IXYF 16N250CV1		I High voltage XPT™ IGBT		26	(14)	3.3	
IXGF 20N300		H High voltage IGBT	3000	22	(14)	max. 3.2	
IXGF 25N300		H High voltage IGBT		27	(16)	max. 3.0	
IXGF 36N300		H High voltage IGBT		36	18	max. 2.7	
IXBF 14N300		I BiMOSFET		28	14	2.2	
IXBF 22N300		I BiMOSFET		38	22	2.2	
IXBF 32N300		I BiMOSFET		40	22	2.8	
IXBF 28N300		I BiMOSFET		50	28	2.3	
IXBF 42N300		I BiMOSFET		60	(24)	2.5	
IXBF 55N300		I BiMOSFET		86	(34)	2.7	
IXBF 16N360		I BiMOSFET	3600	26	16	2.5	
IXBF 20N360		I BiMOSFET		45	(18)	2.9	
IXBF 50N360		I BiMOSFET		92	(28)	2.4	
IXYF 30N450		A High voltage XPT™ IGBT	4500	23	(17)	3.2	
IXYF 40N450		A High voltage XPT™ IGBT		60	(32)	3.2	
FID 60-06D	boost	K NPT IGBT & HiPerFRED	600	65	40	1.6	X024a
○ **FII 30-06D**	phase leg	J NPT IGBT	600	30	18	1.9	
○ **FII 40-06D**		J NPT IGBT		40	25	1.8	



Outline drawings on pages O-36...O-59

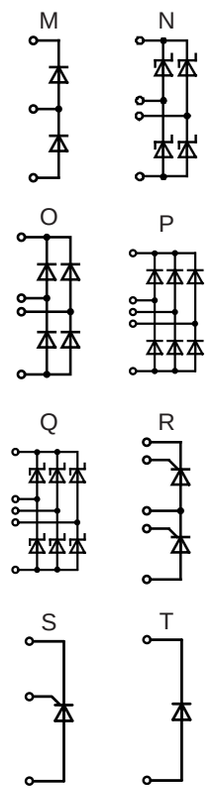
X024d

X024c

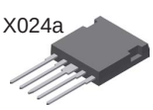
X024a

Bipolar

Type ○ Not for new design	Configuration	Circuit diagram / Diode type	Voltage V	$I_{D(AV)M}$ T_C = 90°C A	Fig. No.	Circuit Diagram
CS 20-22moF1	single part. high voltage	S Thyristor	2200	18	X024c	
DNA 30E2200FE		T Rectifier		30	X024e	
CS 20-25mo1F		S Thyristor	2500	18	X024c	
CLA 40P1200FC	phase leg	R Thyristor	2x 1200	40	X024a	
DSEE 55-24N1F		M HiPerFRED		55	X024b	
CMA 30P1600FC		R Thyristor	2x 1600	30	X024a	
CMA 50P1600FC		R Thyristor		50		
DHH 55-36N1F		M Sonic-FRD	2x 1800	50	X024b	
FBE 22-06N1	1-phase bridge	O HiPerFRED	600	20	X024a	
FBS 10-12SC		N Si-Carbide	1200	10		
FBO 16-12N		O Rectifier		22		
FBO 40-12N		O Rectifier		40		
○ **FUS 45-0045B**	3-phase bridge	Q Schottky	45	45		
FUO 22-12N		P Rectifier	1200	27		
FUE 30-12N1		P HiPerFRED		30		
FUO 22-16N		P Rectifier	1600	27		
FUO 50-16N		P Rectifier		50		



Outline drawings on pages O-36...O-59

X024a 

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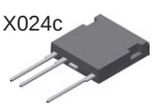
X024c 

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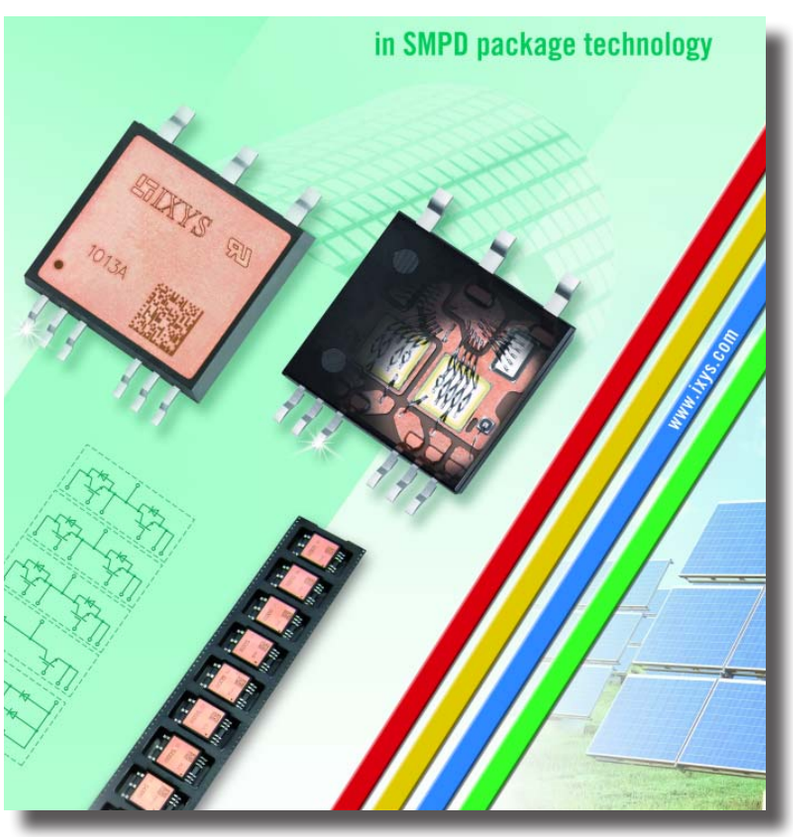


Insulated Gate Bipolar Transistors (IGBT)

The Insulated Gate Bipolar Transistor (IGBT) is a three termil device combining high efficiency with fast switching capabilities. IXYS offers various IGBT technologies optimized for the many topologies, circuits and requirements in today's varied power semiconductor applications. As a guide to the multiple technologies of IGBT on offer from IXYS please refer to the following characteristics.

$V_{CE(sat)}$ – a measure of on-state losses, i.e. power dissipation when the device is passing forward current. The higher the $V_{CE(sat)}$ the higher the losses in the forward direction.

Switching Speed – an IGBT with fast switching speed will have higher efficiency during the transition from on to the off state and vice versa. Low switching speed versions are often combined with low $V_{CE(sat)}$ for low frequency applications. Higher speed IGBT tend to have higher $V_{CE(sat)}$.

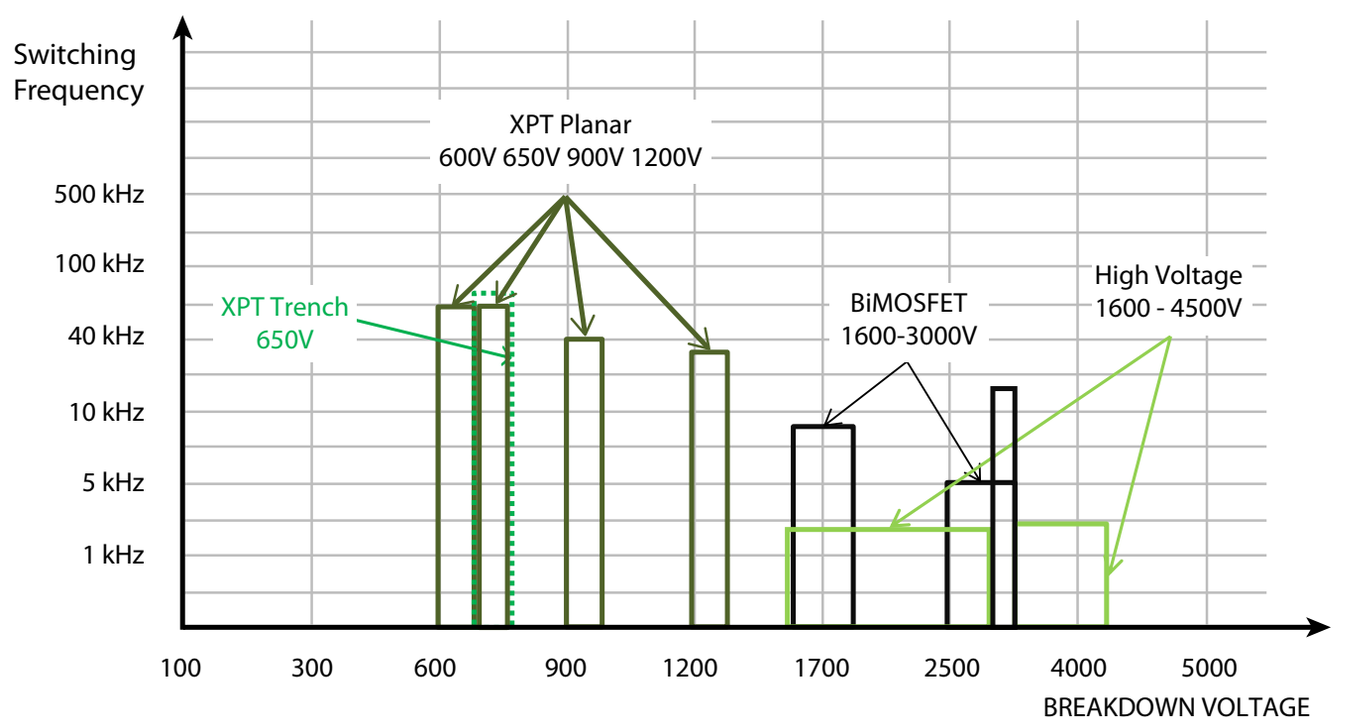
Temperature Coefficient – this determines the device $V_{CE(sat)}$ trend against temperature. A device is said to have a positive temperature coefficient if the $V_{CE(sat)}$ rises when the junction temperature increases. Likewise a negative temperature coefficient is when the devices $V_{CE(sat)}$ reduces when the junction temperature increases. A positive temperature coefficient is required when operating IGBT in parallel. A negative temperature coefficient device cannot be operated in parallel but may have lower losses at higher temperatures.

Safe Operating Area (SOA) – the ability for an IGBT to sustain voltage and current in shorter time scales without failure. Forward bias (FBSOA) is SOA when turning the IGBT into the on-state. Reverse Bias (RBSOA) is SOA when turning to the off-state. Short circuit SOA (SCSOA) is an indication of ability to withstand surge currents in operation.

Avalanche Rated – the ruggedness of the IGBT in the avalanche region. An avalanche rated devices is far more rugged than altertive devices during operation and is an indication of reliability.

IGBT technology

IGBT Characteristic	Non-Punch Through (NPT)	XPT Planar	XPT GenX3		XPT Trench		BiMOSFET (RC IGBT)			High voltage IGBT		
Discrete Part No. Prefix	**IXD..**	**IXA..**	**IXY..**		**IXX..**		**IXB..**			**IXG..**		
Discrete Part No. Suffix	NONE	NONE	B3	C3	B4	C4	NONE	A (1700V)	C	NONE	A	C
$V_{CE(SAT)}$	MEDIUM	MEDIUM	MED.	HIGH	LOW	MED.	LOW	MED.	HIGH	LOW	MED.	HIGH
Switching Speed	MEDIUM	MEDIUM	MED.	HIGH	MED.	HIGH	LOW	MED.	MED.	LOW	MED.	MED.
Temperature Coefficient	POSITIVE	POSITIVE	POSITIVE		POSITIVE		POSITIVE			POSITIVE		
Safe Operating Area	SCSOA RBSOA FBSOA	SCSOA RBSOA FBSOA	SCSOA RBSOA FBSOA		SCSOA RBSOA		SCSOA RBSOA			SCSOA RBSOA FBSOA		
Avalanche Rated	YES	YES	YES		NO		NO			YES		
Voltage Range	600-1700V	600-1200V	650 / 650 / 900 /1200V		650V		1600-3000V			1600-4500V		



Insulated Gate Bipolar Transistors (IGBT)

IGBT product families

Xtreme Light Punch Through (XPT™) Planar IGBTs
are an extremely rugged technology platform of IGBTs, which are ideal for critical applications that require low conduction and low switching losses with a 10 µs short circuit withstand capability. Either discrete or co-packaged with ultrafast soft recovery Sonic diodes. IXYS XPT IGBTs have lower saturation voltage $V_{CE(sat)}$ and low total switching energy (E_{on} + E_{off}). A large portfolio of module packed Planar XPTs are available for applications such as UPS, Motor Drive and solar inverters.

Xtreme Light Punch Through (X2PT™) Planar IGBTs
are the second generation of XPT IGBTs. Features are 10 µs short circuit capability, 175°C max junction temperature, further reduced $V_{CE(sat)}$ and lower turn-off losses (E_{off}) resulting in a competitive performance to latest trench devices at reduced R_{th}. Thus they are idealy suited for Motor Drive inverters.

Xtreme Light Punch Through (XPT™) Trench IGBTs
are the latest development from IXYS starting at 650 V. This range features not only a low $V_{CE(sat)}$ but extremely low switching losses making the platform attractive for fast switching applications whilest retaining good SOA rating and a positive temperature coefficient. Either discrete or co-packaged with ultrafast soft recovery Sonic diodes. IXYS XPT IGBTs have industry leading efficiency at medium to high switching frequency.

1600 V & 1700 V Low Sat IGBTs
These rugged High Voltage NPT devices are designed for capacitor discharge applications. featuring a low saturation voltage, high power density & high peak current capability. These High Voltage NPT IGBTs eble the elimition of more costly, lower performance solutions such as thyristors or series connected MOSFETs or IGBTs typically used at voltages above 1200 V. Offered as co-packs, they provide a more complete solution for power conversion applications.

1600 V & 1700 V High Speed IGBTs
This family of 1600/1700 V IGBTs are rugged NPT devices targeted for high voltage applications, requiring 10 µs short circuit withstand capability. They are particularly suitable for high voltage switching applications. IXYS offers its fast switching “A” version 1700 V NPT IGBTs in co-pack and phase-leg configurations for PWM applications with switching frequencies upwards of 50 kHz.

Very High Voltage (2500 V - 4000 V) IGBTs
IXYS’ offers a unique portfolio of discrete 2500 V, 3000 V and 4000 V VHV IGBTs with collector current ratings spanning from 2 A to 75 A (T_C = 110˚C). The voltage and current ratings of these devices, coupled with simplified MOS gate-control, allow the system designer to greatly reduce the complexity of many high voltage switching designs. These IGBTs eble the use of a single device in systems whose circuits previously used multiple, cascaded, lower-voltage switches.

B-series (BiMOSFET) IGBTs
IXYS BiMOSFETs are devices which have combined strengths of MOSFETs and IGBTs. BIMOSFETs feature a monolithic intrinsic diode which can reduce die count in many applications.

Ignition IGBTs and Relevant Peripheral Components

Littelfuse offers a broad portfolio of high performance Ignition IGBTs for gasoline-powered passenger vehicles and motorcycles. In addition, Littelfuse has extensive experience with protection devices which ensures we can cover your needs for reliable automotive quality grade designs.

Littelfuse Ignition IGBTs manage and control the current across the coil for a precise spark generation. They contain an integrated clamp structure and gate ESD protection in the silicon. Ignition IGBTs provide an exceptionally low saturation voltage while conducting the current.

More than 28 million new cars are powered by Littelfuse Ignition IGBTs every year around the world. Also, Littelfuse Ignition IGBTs are the preferred solution for high performance premium motorcycles.

Ignition IGBTs

Part Number	BV_{CES} @ I_C V	I_{Cmax} A	$V_{CE(sat)}$ V	E_{AS} mJ	Fig. No.	Package style (Outline drawings on pages O-60...O-62)
NGD8205ANT4G	350	20	1.30	250	L004	
NGD18N40ACLBT4G	400	18	1.80	400		L004 **TO-252AA**
NGD8201ANT4G	400	20	1.30	250		
NGD8201BNT4G	400	20	1.50	435		
NGD15N41ACLT4G	410	15	1.90	250		
NGD8209NT4G	410	12	1.80	274		
NGD18N45CLBT4G	450	18	2.07	360		
NGB8207ABNT4G	365	20	1.75	500	L011b	
NGB8206ANTF4G	350	20	1.30	250		
NGB8207BNT4G	365	20	1.50	500		L011b **TO-263AB**
NGB8204ANT4G	400	18	1.80	400		
NGB8202ANT4G	400	20	1.30	250		
NGB18N40ACLBT4G	400	18	1.80	400		
NGB15N41ACLT4G	410	15	1.90	250		
NGB8245NT4G	450	20	1.10	158		

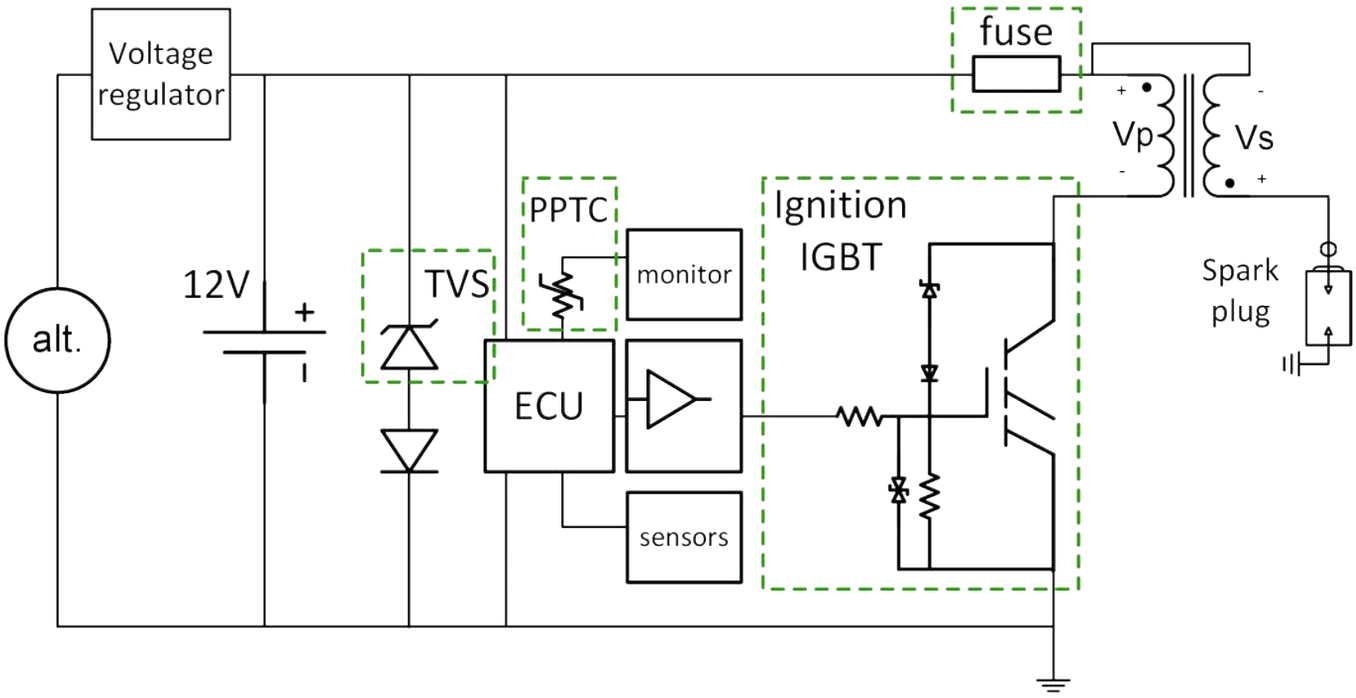
TVS Diodes for Ignition Applications

Part Number	V_R Range min. V	V_R Range max. V	P_{PP} 10x1000µs V	P_{PP} 10x15ms mJ	Fig. No.	Package style (Outline drawings on pages O-60...O-62)
TPSMB	5.8	468	600	2200 load dump	L003a	L003a/b DO-214AA/AB
TPSMB-VR	6.5	150	600			
TPSMC	10.2	77.8	1500		L003b	
TPSMD	10.0	85	3000			
SLD8S	12.0	57	7000		L007	L007 SMTO-263

Resettable PTCs for Ignition Applications

Part Number	Current @ 0°C HOLD A	Current @ 0°C TRIP A	Current @ 25°C HOLD A	Current @ 25°C TRIP A	Current @ 60°C HOLD A	Current @ 60°C TRIP A	Time to Trip max. s	Resistance @ 25°C min. Ω	Resistance @ 25°C max. Ω	Tripped State Power Dissipation max. W	Fig. No.	Package style (Outline drawings on pages O-60...O-62)
nanoASMDC016F-2	0.18	0.7	0.16	0.45	0.012	0.028	0.3	1.1	5	0.5	L008	L008 1206

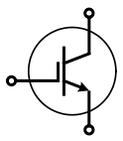
Ignition IGBTs and Relevant Peripheral Components

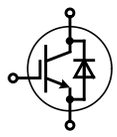


Fuses for Ignition Applications

Part Number	Current A	Voltage max. V	Resistance Ω	Melting I^2t A^2s	Voltage Drop at Rated Current V	Dissipation at Rated Current W	Fig. No.	Package style Outline drawings on pages O-36...O-59
440A	5	32	12	4.761	0.0654	0.327	L008	L008 1206
	7		7.53	8.464	0.0696	0.487		
	8		6.34	12.95	0.0655	0.524		

Discrete XPT™


IXX...
IXY...


IXX...D1/H1
IXY...D1/H1

600 V XPT™ Planar IGBTs

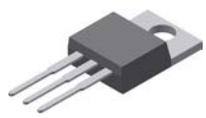
XPT = Xtreme light Punch Through, short-circuit rated IGBTs

Part Number	V_{CES} V	I_{C25} T_C = 25°C A	I_{C110} T_C = 110°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ. T_J = 150°C ns	E_{off} typ. T_J = 150°C mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} max. Diode K/W	P_C W	Fig. No.
B3 Class (5-30 kHz switching)												
IXXQ 30N60B3M	600	33	19	1.85	180	0.70	1.660				90	X017c
IXXH 30N60B3		60	30	1.85	180	0.70	0.550				270	X014a
IXXH 30N60B3D1		60	30	1.85	180	0.70	0.550	•	30	0.9	270	X014a
IXXA 50N60B3		120	50	1.80	190	1.20	0.250				600	X011b
IXXH 50N60B3		120	50	1.80	190	1.20	0.250				600	X014a
IXXH 50N60B3D1		120	50	1.80	190	1.20	0.250	•	30	0.9	600	X014a
IXXP 50N60B3		120	50	1.80	190	1.20	0.250				600	X005a
IXXR 100N60B3H1		145	68	1.80	200	2.80	0.310	•	-	0.62	400	X016a
IXXH 75N60B3		160	75	1.85	170	2.20	0.200				750	X014a
IXXH 75N60B3D1		160	75	1.85	170	2.20	0.200	•	30	0.90	750	X014a
IXXN 100N60B3H1		170	-	1.80	200	2.80	0.250	•	50	0.42	500	X027a
IXXK 100N60B3H1		200	-	1.80	200	2.80	0.180	•	65	0.30	695	X020a
IXXN 200N60B3H1		200	98	1.70	215	3.45	0.160	•	30	0.70	780	X027a
IXXX 100N60B3H1		200	-	1.80	200	2.80	0.180	•	65	0.30	695	X015a
IXXH 100N60B3		220	100	1.80	200	2.80	0.180				830	X014a
IXXN 200N60B3		280	160	1.70	215	3.45	0.160				940	X027a
IXXK 200N60B3		380	200	1.70	215	3.45	0.092				1630	X020a
IXXX 200N60B3		380	200	1.70	215	3.45	0.092				1630	X015a
IXXK 300N60B3		550	300	1.60	200	3.70	0.065				2300	X020a
IXXX 300N60B3		550	300	1.60	200	3.70	0.065				2300	X015a
C3 Class (20-60 kHz switching)												
IXXH 30N60C3	600	60	30	2.20	32	0.40	0.550				270	X014a
IXXH 30N60C3D1		60	30	2.20	78	0.40	0.550	•	30	0.90	270	X014a
IXXH 50N60C3		100	50	2.30	90	0.48	0.250				600	X014a
IXXH 50N60C3D1		100	50	2.30	90	0.48	0.250	•	30	0.90	600	X014a
IXXH 75N60C3		150	75	2.30	80	1.07	0.200				750	X014a
IXXH 75N60C3D1		150	75	2.30	80	1.07	0.200	•	30	0.90	750	X014a
IXXK 100N60C3H1		170	-	2.20	115	1.40	0.180	•	65	0.30	695	X020a
IXXX 100N60C3H1		170	-	2.20	115	1.40	0.180	•	65	0.30	695	X015a
IXXH 100N60C3		190	100	2.20	115	1.40	0.180				830	X014a
IXXN 200N60C3H1		200	98	2.10	90	2.10	0.160	•	30	0.70	780	X027a
IXXK 200N60C3		340	200	2.10	90	2.10	0.092				1630	X020a
IXXX 200N60C3		340	200	2.10	90	2.10	0.092				1630	X015a
IXXK 300N60C3		510	300	2.00	90	2.35	0.065				2300	X020a
IXXX 300N60C3		510	300	2.00	90	2.35	0.065				2300	X015a
IXXA 30N65C3HV	650	52	30	2.20	78	0.40	0.650				230	X011c

Package style

Outline drawings on pages O-36...O-59

X005a **TO-220AB**

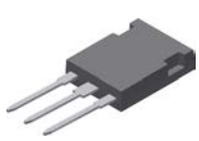


X011b **TO-263AB**

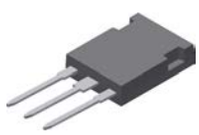
X011c **TO-263ABHV**

X014a **TO-247AD**

X015a **PLUS247**



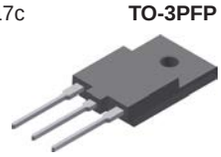
X016a **ISOPLUS247™**

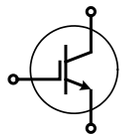


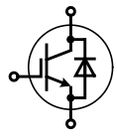
X027a **SOT-227B miniBLOC**

X020a **TO-264**

X017c **TO-3PFP**




IXX...
IXY...

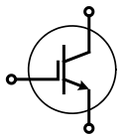

IXX...D1/H1
IXY...D1/H1

650V XPT™ Planar IGBTs

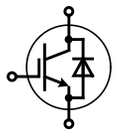
XPT = Xtreme light Punch Through, short-circuit rated IGBTs

Part Number ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C110} T_C = 110°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ. T_J = 150°C ns	E_{off} typ. T_J = 150°C mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} max. Diode K/W	P_C W	Fig. No.	Package style Outline drawings on pages O-36...O-59
A3 Class (up to 5kHz switching)													X005a **TO-220AB**
IXYN 100N65A3	650	170	110	1.8	160	2.40	0.25				600	X027a	
B3 Class (10-30 kHz switching)													
IXYP 10N65B3D1	650	32	19	1.95	116	0.36	0.94	•	9	2.30	160	X005a	
IXYA 20N65B3		58	20	2.10	147	0.76	0.65				230	X011c	
IXYH 20N65B3		58	20	2.10	147	0.76	0.65				230	X014a	X007a **TO-220ABFP**
IXYP 20N65B3		58	20	2.10	147	0.76	0.65				230	X005a	
IXYP 20N65B3D1		58	20	2.10	147	0.76	0.65	•	23	1.85	230	X005a	
IXYQ 30N65B3D1		70	30	2.10	93	1.00	0.55	•	50	0.60	270	X017a	
IXYH 30N65B3D1		70	30	2.10	93	1.00	0.55	•	50	0.60	270	X014a	
IXYH 40N65B3		86	40	2.00	174	1.15	0.50				300	X014a	X011b **TO-263AB**
IXYQ 40N65B3D1		86	40	2.00	174	1.15	0.50	•	50	0.60	300	X017a	
IXYH 40N65B3D1		86	40	2.00	174	1.15	0.50	•	50	0.60	300	X014a	
IXYN 100N65B3D1		185	100	1.85	160	2.16	0.25	•	67	0.40	600	X027a	
IXYH 100N65B3		225	100	1.85	160	2.16	0.18				830	X014a	
IXYK 100N65B3D1		225	100	1.85	160	2.16	0.18	•	67	0.36	830	X020a	X011c **TO-263ABHV**
IXYX 100N65B3D1		225	100	1.85	160	2.16	0.18	•	67	0.36	830	X015a	
IXYN 120N65B3D1		250	120	1.90	196	2.20	0.18	•	86	0.38	830	X027a	
IXYH 120N65B3		340	120	1.90	196	2.20	0.11					X014a	
IXYK 200N65B3		410	200	1.70	230	5.60	0.096					X020a	
IXYX 200N65B3		410	200	1.70	230	5.60	0.096					X015a	X014a **TO-247AD**
C3 Class (20-60 kHz switching)													
IXYP 10N65C3D1M	650	15	7	2.60	38	0.15	2.83	•	13	4.00	53	X007a	
IXYP 20N65C3D1M		18	9	2.50	36	0.40	3.00	•	13	4.00	50	X007a	
IXYP 15N65C3D1M		18	9	2.50	42	0.24	2.63	•	13	4.00	57	X007a	
IXYP 10N65C3		30	10	2.50	38	0.15	0.94				160	X005a	
IXYP 10N65C3D1		30	10	2.50	38	0.15	0.94	•	23	1.85	160	X005a	X015a **PLUS247**
➢ **IXYA 15N65C3D1**		38	15	2.50	42	0.24	0.75	•	23	1.85	200	X011b	
IXYP 15N65C3		38	15	2.50	42	0.24	0.75				200	X005a	
IXYP 15N65C3D1		38	15	2.50	42	0.24	0.75	•	23	1.85	200	X005a	
IXYA 20N65C3		50	20	2.50	36	0.40	0.65				230	X011b	
➢ **IXYA 20N65C3D1**		50	20	2.50	36	0.40	0.65	•	18	1.85	200	X011b	
IXYH 20N65C3		50	20	2.50	36	0.40	0.65				230	X014a	X017a **TO-3P**
IXYP 20N65C3D1		50	20	2.50	36	0.40	0.65	•	18	1.85	200	X005a	
IXYH 30N65C3H1		60	30	2.70	30	0.41	0.55	•	29	0.80	270	X014a	
IXYH 30N65C3		60	30	2.70	30	0.41	0.55				270	X014a	
IXYT 30N65C3H1HV		60	30	2.70	30	0.41	0.55	•	29	0.80	270	X019a	
IXYP 30N65C3		60	30	2.70	30	0.41	0.55				270	X005a	X019a **TO-268AAHV**
IXYQ 40N65C3D1		80	40	2.35	30	0.53	0.50	•	50	0.60	300	X017a	
IXYH 40N65C3		80	40	2.35	30	0.53	0.50				300	X014a	
IXYH 40N65C3H1		80	40	2.35	80	0.46	0.50	•	40	0.60	300	X014a	
IXYH 40N65C3D1		80	40	2.35	30	0.53	0.50	•	50	0.60	300	X014a	
IXYH 50N65C3H1		130	50	2.10	42	0.56	0.25	•	40	0.60	600	X014a	
IXYP 50N65C3		132	50	2.10	32	0.70	0.25				600	X005a	X020a **TO-264**
IXYH 50N65C3D1		132	50	2.10	32	0.70	0.25	•	50	0.60	600	X014a	
IXYH 50N65C3		132	50	2.10	32	0.70	0.25				600	X014a	
IXYA 50N65C3		132	50	2.10	32	0.70	0.25				600	X011b	
IXYN 75N65C3D1		150	75	2.30	64	1.30	0.25	•	60	0.52	600	X027a	
IXYN 100N65C3H1		160	90	2.30	66	1.15	0.25	•	50	0.42	600	X027a	
IXYH 75N65C3H1		170	75	2.30	58	1.30	0.20	•	62	0.45	750	X014a	X027a **SOT-227B miniBLOC**
IXYH 75N65C3		175	75	2.30	64	1.30	0.20				750	X014a	
IXYH 75N65C3D1		175	75	2.30	64	1.30	0.20	•	62	0.45	750	X014a	
IXYN 120N65C3D1		190	100	2.80	60	0.70	0.18	•	72	0.38	830	X027a	
IXYX 100N65C3D1		200	100	2.30	66	1.15	0.18	•	67	0.36	830	X015a	
IXYH 100N65C3		200	100	2.30	66	1.15	0.18				830	X014a	
IXYK 100N65C3D1		200	100	2.30	66	1.15	0.18	•	67	0.36	830	X020a	
IXYH 120N65C3		260	120	2.80	60	0.70	0.11					X014a	

Discrete XPT™



IXX...
IXY...

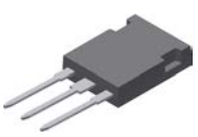


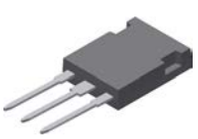
IXX...D1/H1
IXY...D1/H1

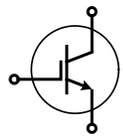
650 V XPT™ Trench IGBTs

XPT = Xtreme light Punch Through, short-circuit rated IGBTs

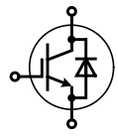
Part Number ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C110} T_C = 110°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ. T_J = 150°C ns	E_{off} typ. T_J = 150°C mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} max. Diode K/W	P_C W	Fig. No.	Package style Outline drawings on pages O-36...O-59
A4 Class (5-20 kHz switching)													
➢ **IXXN 200N65A4**	650	440	200	1.80	190	8	0.12				1250	X027a	
B4 Class (10-30 kHz switching)													X007a **TO-220ABFP**
➢ **IXXP 12N65B4**	650	38	12	1.95	110	0.38	0.94				160	X007a	
➢ **IXXP 12N65B4D1**		38	12	1.95	110	0.38	0.94	•	11	2.30	160	X007a	
IXXH 30N65B4		70	30	2.00	60	1.07	0.65				230	X014a	
IXXH 30N65B4D1		70	30	2.00	60	1.07	0.65	•	40	0.75	230	X014a	
IXXH 40N65B4		115	40	2.00	116	1.30	0.33				455	X014a	X014a **TO-247AD**
➢ **IXXH 40N65B4D1**		115	40	2.00	116	1.30	0.33	•	50	0.60	455	X014a	
IXXH 60N65B4		120	60	2.20	88	1.80	0.33				536	X014a	
IXXH 60N65B4H1		120	60	2.20	88	1.80	0.33	•	47	0.60	536	X014a	
IXXH 40N65B4H1		123	40	2.00	73	1.40	0.33	•	40	0.60	455	X014a	
IXXR 110N65B4H1		150	70	2.20	105	1.40	0.33	•	48	0.70	455	X016a	
IXXH 80N65B4		160	80	2.10	94	2.70	0.24				625	X014a	X015a **PLUS247**
IXXH 80N65B4H1		160	80	2.10	102	3.10	0.24	•	62	0.45	625	X014a	
IXXH 80N65B4D1		180	80	2.10	94	2.70	0.24	•	65	0.47	625	X014a	
IXXN 110N65B4H1		215	110	2.10	105	1.40	0.20	•	70	0.42	750	X027a	
➢ **IXXN 110N65B4H1**		230	110	2.10	110	2.16	0.20	•	70	0.42	750	X027a	
IXXH 110N65B4		250	110	2.10	110	2.16	0.17				880	X014a	
IXXK 110N65B4H1		250	110	2.10	110	2.16	0.17	•	78	0.38	880	X020a	X016a **ISOPLUS247™**
IXXX 110N65B4H1		250	110	2.10	110	2.16	0.17	•	78	0.38	880	X015a	
IXXK 160N65B4		310	160	1.80	160	2.36	0.16				940	X020a	
IXXX 160N65B4		310	160	1.80	160	2.36	0.16				940	X015a	
IXXH 140N65B4		340	140	1.90	100	3.90	0.125				1200	X014a	
IXXX 140N65B4H1		350	140	1.90	100	3.90	0.125	•	72	0.24	1200	X015a	
IXXK 200N65B4		480	200	1.70	120	5.00	0.092				1630	X020a	X020a **TO-264**
IXXX 200N65B4		480	200	1.70	120	2.54	0.092				1630	X015a	
➢ **IXXN 340N65B4**		520	340 (90°C)	1.70	110	2.54	0.10				1500	X027a	
C4 Class (20-60 kHz switching)													
IXXH 30N65C4D1	650	62	30	2.50	34	0.44	0.65	•	30	0.75	230	X014a	
➢ **IXXH 40N65C4D1**		110	40	2.30	36	0.64	0.33	•	55	0.60	455	X014a	
IXXH 60N65C4		125	60	2.40	54	1.50	0.33				536	X014a	X027a **SOT-227B miniBLOC**
IXXN 110N65C4H1		210	110	2.35	40	0.90	0.20	•	70	0.42	750	X027a	
IXXH 110N65C4		235	110	2.35	40	0.90	0.17				880	X014a	
IXXK 160N65C4		290	160	2.10	57	1.30	0.16				940	X020a	
IXXX 160N65C4		290	160	2.10	57	1.30	0.16				940	X015a	
IXXH 140N65C4		320	160	2.30	63	2.50	0.125				1200	X014a	







IXX...
IXY...

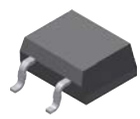


IXX...D1/H1
IXY...D1/H1

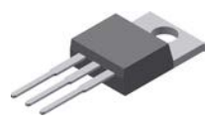
900 V XPT™ IGBT

Part Number	V_{CES} V	I_{C25} T_C = 25°C A	I_{C110} T_C = 110°C (90°C) A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ. T_J = 125°C (150°C) ns	E_{off} typ. T_J = 125°C (150°C) mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} max. Diode K/W	P_C W	Fig. No.	Package style (Outline drawings on pages O-36...O-59)
900V GenX3™ XPT™ IGBTs													
IXYA 8N90C3D1	900	20	8	2.5	163	0.22	1.20	•	12	2.50	125	X011b	
IXYP 8N90C3		20	8	2.5	163	0.22	1.20				125	X007a	
IXYP 8N90C3D1		20	8	2.5	163	0.22	1.20	•	12	2.50	125	X007a	
IXYY 8N90C3		20	8	2.5	163	0.22	1.20				125	X004	
IXYH 24N90C3		44	24	2.7	130	0.55	0.62				240	X014a	
IXYH 24N90C3D1		44	-24	2.7	130	0.55	0.62	•	15	1.60	200	X014a	
IXYH 40N90C3D1		90	40	2.5	150	1.20	0.25	•	25	0.90	500	X014a	
IXYH 40N90C3		105	40	2.5	150	1.20	0.25				600	X014a	
IXYN 80N90C3H1		115	-70	2.7	-98	-2.50	0.25	•	42	0.42	500	X027a	
IXYH 60N90C3		140	60	2.7	-165	-2.15	0.20				750	X014a	
IXYH 80N90C3		165	80	2.7	-98	-2.50	0.18				830	X014a	
IXYT 80N90C3		165	80	2.7	-98	-2.50	0.18				830	X019	
IXYK 140N90C3		310	140	2.7	-125	-5.00	0.092				1630	X020a	
IXYX 140N90C3		310	140	2.7	-125	-5.00	0.092				1630	X015a	
B3 Class (5-30 kHz switching)													
IXYH 40N120B3D1	1200	86	40	2.9	206	2.05	0.26	•	25	0.90	480	X014a	
IXYH 40N120B3		96	40	2.9	206	2.05	0.26				577	X014a	
IXYN 100N120B3H1		165	76	2.6	° 260	10.1 °	0.18	•	42	0.42	690	X027a	
IXYK 100N120B3		225	100	2.6	° 260	10.1 °	0.13				1150	X020a	
IXYX 100N120B3		225	100	2.6	° 260	10.1 °	0.13				1150	X015a	
IXYK 120N120B3		320	120	2.2	° 406	27.9 °	0.10				1500	X020a	
IXYX 120N120B3		320	120	2.2	° 407	27.9 °	0.10				1500	X015a	
C3 Class (20-50 kHz switching)													
IXYH 20N120C3D1	1200	36	17	3.4	° 105	0.7 °	0.54	•	23	0.90	230	X014a	
IXYT 20N120C3D1HV		36	17	3.4	° 105	0.7 °	0.54	•	23	0.90	230	X019a	
IXYA 20N120C3HV		40	20	3.4	° 105	0.7 °	0.54				278	X011c	
IXYH 20N120C3		40	20	3.4	° 105	0.7 °	0.54				278	X014a	
IXYP 20N120C3		40	20	3.4	° 105	0.7 °	0.54				278	X005a	
IXYR 50N120C3D1		56	* 32	4.0	° 60	1.4 °	0.43	•	25	0.90	290	X016a	
IXYH 30N120C3D1		66	30	4.0	88	0.9	0.30	•	25	0.90	416	X014a	
IXYH 30N120C3		75	30	3.3	° 140	1.6 °	0.30				500	X014a	
IXYP 30N120C3		75	30	3.3	° 140	1.6 °	0.30				500	X005a	
IXYH 40N120C3D1		80	* 40	3.5	° 143	2.1 °	0.26	•	25	0.90	480	X014a	
IXYH 40N120C3		90	40	3.5	° 143	2.1 °	0.26				577	X014a	
IXYH 50N120C3D1		90	**50	4.0	° 60	1.4 °	0.20	•	25	0.90	625	X014a	
IXYH 50N120C3		100	50	3.5	60	1.4	0.20				750	X014a	
IXYR 100N120C3		104	58	3.5	125	3.55	0.31				484	X016a	
IXYN 82N120C3H1		105	46	3.2	95	3.7	0.25	•	42	0.42	500	X027a	
IXYN 82N120C3		120	66	3.2	95	3.7	0.25				600	X027a	
IXYN 100N120C3H1		134	62	3.5	125	3.55	0.18	•	42	0.42	690	X027a	
IXYN1 00N120C3		152	86	3.5	125	3.55	0.18				830	X027a	
IXYB 82N120C3H1		164	82	3.2	95	3.7	0.12	•	42	0.35	1040	X021a	
IXYK 100N120C3		188	100	3.5	125	3.55	0.13					X020a	
IXYX 100N120C3		188	100	3.5	125	3.55	0.13					X015a	
IXYH 82N120C3		200	82	3.2	95	3.7	0.12					X014a	
IXYK 120N120C3		240	120	3.2	° 120	7.2 °	0.10				1500	X020a	
IXYX 120N120C3		240	120	3.2	° 120	7.2 °	0.10				1500	X015a	
IXYN 120N120C3		240	120	3.2	° 120	7.2 °	0.125				1200	X027a	

X004 **TO-252AA**



X005a **TO-220AB**



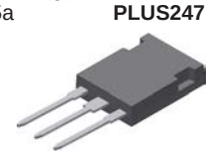
X007a **TO-220ABFP**

X011b **TO-263AB**

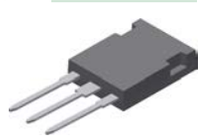
X011c **TO-263ABHV**

X014a **TO-247AD**

X015a **PLUS247**



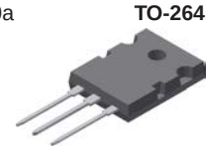
X016a **ISOPLUS247™**



X019 **TO-268AA**

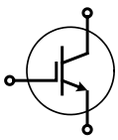
X019a **TO-268AAHV**

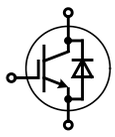
X020a **TO-264**



* T_C = 90°C ** T_C = 100°C ° T_J = 150°C

Discrete XPT™


IXY ...


IXY...D1/H1

XPT™ Planar IGBT XPT = Xtreme light Punch Through

Part Number ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C110} T_C = 110°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ. T_J = 150°C ns	E_{off} typ. T_J = 150°C mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} max. Diode K/W	P_C W	Fig. No.
1700V XPT™ Planar IGBTs												
IXYH 10N170C	1700	36	10	4.1	94	0.90	0.53				280	X014a
IXYH 10N170CV1		36	10	4.1	94	0.90	0.53	•	22	0.70	280	X014a
➢ **IXYF 30N170CV1**		36	20	4.0	134	3.50	0.65	•	20	0.86	230	X024c
IXYH 16N170C		40	16	3.8	140	1.95	0.48				310	X014a
IXYH 16N170CV1		40	16	3.8	140	1.95	0.48	•	22	0.70	310	X014a
IXYH 24N170C		58	24	4.0	140	2.66	0.30				500	X014a
➢ **IXYH 24N170CV1**		58	24	4.0	140	2.66	0.30	•	28	0.55	500	X014a
IXYN 30N170CV1		80	30	4.0	134	3.50	0.22	•	33	0.43	680	X027a
➢ **IXYL 50N170CV1**		90	46	3.7	160	8.20	0.26	•	26	0.83	580	X022e
IXYH 30N170C		100	30	4.0	134	3.50	0.16				937	X014a
➢ **IXYK 30N170CV1**		100	30	4.0	134	3.50	0.16	•	38	0.36	937	X020a
IXYX 30N170CV1		100	30	4.0	134	3.50	0.16	•	38	0.36	937	X015a
IXYN 50N170CV1		120	50	3.7	160	8.20	0.17	•	42	0.42	880	X027a
IXYX 50N170C		178	50	3.7	160	8.20	0.10				1500	X015c
2500V XPT™ Planar IGBTs												
➢ **IXYF 16N250CV1**	2500	26	14	4	236	4.40	0.83	•	9	1.50	180	X024c
➢ **IXYA 12N250CHV**		28	12	4.5	138	1.95	0.48				310	X011c
➢ **IXYH 12N250CHV**		28	12	4.5	138	1.95	0.48				310	X014c
IXYH 12N250CV1HV		28	12	4.5	138	1.95	0.48	•	14	0.80	310	X014c
➢ **IXYT 12N250CV1HV**		28	12	4.5	138	1.95	0.48	•	14	0.80	310	X019a
➢ **IXYA 8N250CHV**		29	8	4.0	128	1.20	0.53				280	X011c
➢ **IXYH 8N250CHV**		29	8	4.0	128	1.20	0.53				280	X014c
IXYH 8N250CV1HV		29	8	4.0	128	1.20	0.53	•	14	0.80	280	X014c
IXYH 16N250CV1HV		38	16	4.0	236	4.40	0.30	•	14	0.80	500	X014c
IXYL 40N250CV1		80	40	4.0	250	11.5	0.26	•	23	0.83	577	X022e
IXYH 25N250CHV		95	25	4.0	350	10.5	0.16				937	X014c
IXYT 25N250CHV		95	25	4.0	350	10.5	0.16				937	X019a
IXYX 25N250CV1		95	25	4.0	350	10.5	0.16	•	30	0.32	937	X015a
IXYX 25N250CV1HV		95	25	4.0	350	10.5	0.16	•	30	0.32	937	X015c
IXYX 40N250CHV		154	40	4.0	250	11.5	0.10				1500	X015c

X011c **TO-263ABHV**

X014a **TO-247AD**

X014c **TO-247HV**

Outline drawings on pages O-36...O-59

X015a **PLUS247**

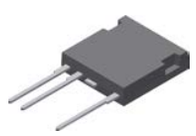
X015c **PLUS247 HV**

X019a **TO-268AAHV**

X020a **TO-264**

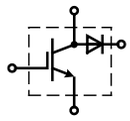
X027a **SOT-227B miniBLOC**

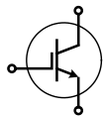
X024c **ISOPLUS i4-PAC™**

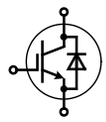


X022e **ISOPLUS264™**

Discrete XPT™ / X2PT™ / NPT IGBT


IXA...R...


IXA...I... IXD...


IXA...IF... IXD...D1

XPT IGBT

XPT = Xtreme light Punch Through

Type ➢ New ○ Not for new design ✧ under development	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C100} IGBT T_C = 100°C A	V_{CEsat} typ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	Diode	I_{F100} Diode T_C = 100°C A	Fig. No.	Package style Outline drawings on pages O-36...O-59
1200 V XPT IGBT										X004 **TO-252AA**
IXA 4IF1200UC	1200	9	5	1.8	0.25	2.70	•	6	X004	
✧ **IXA 4IF1200PZ**		9	5	1.8	0.25	2.70	•	6	X011c	
IXA 4IF1200TC		9	5	1.8	0.25	2.70	•	6	X019	
IXA 12IF1200HB		20	13	1.8	1.10	1.50	•	14	X014a	X005a **TO-220AB**
IXA 12IF1200PB		20	13	1.8	1.10	1.50	•	14	X005a	
IXA 12IF1200TC		20	13	1.8	1.10	1.50	•	14	X019	
IXA 17IF1200HJ		28	18	1.8	1.70	1.26	•	19	X016a	
✧ **IXA 20IF1200HR**		33	19	1.8	1.70	0.95	•	22	X016c	X011c **TO-263ABHV**
IXA 20IF1200HB		38	22	1.8	1.70	0.76	•	24	X014a	
IXA 20I1200PB		38	22	1.8	1.70	0.76		-	X005a	
IXA 20I1200PZ		38	22	1.8	1.70	0.76		-	X011c	
IXA 27IF1200HJ		43	24	1.8	3.00	0.84	•	25	X016a	X014a **TO-247AD**
✧ **IXA 30IF1200HR**		48	27	1.8	3.00	0.70	•	30	X016c	
IXA 33IF1200HB		58	34	1.8	3.00	0.50	•	33	X014a	
IXA 37IF1200HJ		58	33	1.8	4.10	0.64	•	25	X016a	
✧ **IXA 40IF1200HR**		63	36	1.8	4.10	0.64	•	30	X016c	
IXA 45IF1200HB		78	45	1.8	4.10	0.38	•	33	X014a	X016a **ISOPLUS247™**
IXA 55I1200HJ		84	54	1.8	5.50	0.43		-	X016a	
IXA 60IF1200NA		88	56	1.8	5.50	0.43	•	51	X027a	
IXA 70I1200NA		100	65	1.8	5.50	0.35		-	X027a	
IXA 70R1200NA [1]		100	65	1.8	5.50	0.35	•	55	X027a	
1200 V Fast Trench IGBT										X016c **ISO247™**
ITF 38IF1200HJ	1200	52	38 (80°C)	2.05	2.4 (150°C)	0.68	•	(80°C) 35	X016a	
➢ **ITF 48IF1200HR**		72	56 (80°C)	2.05	2.4 (150°C)	0.38	•	(80°C) 50	X016c	
1200 V X2PT IGBT										X019 **TO-268AA**
➢ **IXG 70IF1200NA**	1200	130	86	1.8	5.3 (150°C)	0.38	•	71	X027a	
✧ **IXG 100IF1200NA**		110	94	2.0	8.0 (150°C)	0.30	•	68	X027a	
➢ **IXG 100IF1200HF**		140 [2]	104	1.8	5.3 (150°C)	0.20	•	80	X015a	X020a **TO-264**
✧ **IXG 100IF1200KB**		140 [2]	104	1.8	5.3 (150°C)	0.20	•	80	X020a	
✧ **IXG 150IF1200KF**		210 [2]	146	2.0	8.0 (150°C)	0.15	•	95	X021a	

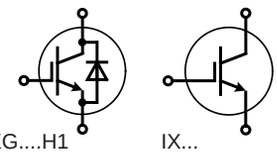
[1] boost configuration [2] limited by bonds

NPT IGBT

NPT = Non Punch Through

600 V NPT IGBT										X021a **PLUS264**
○ **IXDP 20N60BD1**	600	32	20 (90°C)	2.2	0.4	0.90	•	(90°C) 15	X005a	
○ **IXDH 35N60BD1**		60	35 (90°C)	2.1	0.8	0.50	•	(90°C) 25	X014a	
1200 V NPT IGBT										X027a **SOT-227B miniBLOC**
○ **IXDH 20N120**	1200	38	25 (90°C)	2.4	2.4	0.63		-	X014a	
○ **IXDH 20N120D1**		38	25 (90°C)	2.4	2.4	0.63	•	(90°C) 19	X014a	
○ **IXDH 30N120D1**		60	38 (90°C)	2.4	3.4	0.42	•	(90°C) 35	X014a	
○ **IXDR 30N120D1**		50	30 (90°C)	2.4	3.4	0.60	•	(90°C) 27	X016a	
IXDN 55N120D1		100	62 (90°C)	2.3	6.2	0.28	•	(90°C) 60	X027a	
IXDN 75N120		150	95 (90°C)	2.2	10.5	0.19		-	X027a	

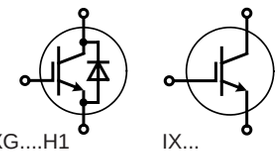
G-Series PT IGBTs



600 and 1200 V IGBTs

Part Number	V_{CES} V	I_{C25} T_C = 25°C A	I_{C110} T_C = 110°C A	$V_{CE(sat)}$ max. T_J = 25°C V	t_{fi} typ. T_J = 25°C ns	E_{off} typ. T_J = 125°C mJ	R_{thJC} max. K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} max. Diode K/W	PC W	Fig. No.	Package style Outline drawings on pages O-36...O-59
A3 Class (up to 5kHz switching)													
IXGH 36N60A3D4	600	75	36	1.40	325	5.3	0.56	•	-	2.50	220	X014a	X005a **TO-220AB**
IXGH 48N60A3D1		75	48	1.35	224	5.6	0.42	•	-	0.90	300	X014a	
IXGH 72N60A3		75	72	1.35	250	6.5	0.23	-	-	-	540	X014a	
IXGK 72N60A3H1		75	72	1.35	250	6.5	0.23	•	-	0.30	540	X020a	
IXGR 72N60A3H1		75	72	1.35	250	6.5	0.62	•	-	0.80	200	X016a	
IXGT 72N60A3		75	72	1.35	250	6.5	0.23	-	-	-	540	X019	X011b **TO-263AB**
IXGX 72N60A3H1		75	72	1.35	250	6.5	0.23	•	-	0.30	540	X015a	
IXGH 56N60A3		150	56	1.35	315	6.75	0.375	-	-	-	330	X014a	
IXGN 72N60A3		160	68	1.35	250	6.5	0.35	-	-	-	360	X027a	
IXGK 120N60A3		200	120	1.35	260	10.4	0.16	-	-	-	780	X020a	
IXGN 120N60A3		200	120	1.35	260	10.4	0.21	-	-	-	595	X027a	X014a **TO-247AD**
IXGN 120N60A3D1		200	120	1.35	260	10.4	0.21	•	-	0.85	595	X027a	
IXGX 120N60A3		200	120	1.35	260	10.4	0.16	-	-	-	780	X015a	
IXGK 320N60A3		320	210	1.25	740	na	0.125	-	-	-	1000	X020a	
IXGN 320N60A3		320	170	1.25	740	na	0.17	-	-	-	735	X027a	
IXGX 320N60A3		320	210	1.25	740	na	0.125	-	-	-	1000	X015a	
IXGN 400N60A3		400	190	1.25	270	na	0.15	-	-	-	830	X027a	X015a **PLUS247**
IXGA 36N60A3		na	36	1.40	325	5.3	0.56	-	-	-	220	X011b	
IXGA 48N60A3		na	48	1.35	224	5.6	0.42	-	-	-	300	X011b	
IXGH 36N60A3		na	36	1.40	325	5.3	0.56	-	-	-	220	X014a	
IXGH 48N60A3		na	48	1.35	2.24	5.6	0.42	-	-	-	300	X014a	
IXGH 64N60A3		na	64	1.35	222	6.0	0.27	-	-	-	460	X014a	
IXGP 36N60A3		na	36	1.40	325	5.3	0.56	-	-	-	220	X005a	X016a **ISOPLUS247™**
IXGP 48N60A3		na	48	1.35	224	5.6	0.42	-	-	-	300	X005a	
IXGR 64N60A3		na	47	1.35	222	6.03	0.62	-	-	-	200	X016a	
IXGR 72N60A3		na	52	1.35	250	6.5	0.62	-	-	-	200	X016a	
IXGT 64N60A3		na	64	1.35	222	6.0	0.27	-	-	-	460	X019	
IXGH 32N100A3	1000	75	32	2.20	540	13.0	0.42	-	-	-	300	X014a	X019 **TO-268AA**
IXGT 32N100A3		75	32	2.20	540	13.0	0.42	-	-	-	300	X019	
IXGA 12N120A3	1200	22	na	3.00	1035	na	1.25	-	-	-	100	X011b	
IXGH 12N120A3		22	na	3.00	1035	na	1.25	-	-	-	100	X014a	
IXGP 12N120A3		22	na	3.00	1035	na	1.25	-	-	-	100	X005a	
IXGA 20N120A3		40	20	2.50	715	10.1	0.69	-	-	-	180	X011b	X020a **TO-264**
IXGH 20N120A3		40	20	2.50	715	10.1	0.69	-	-	-	180	X014a	
IXGP 20N120A3		40	20	2.50	715	10.1	0.69	-	-	-	180	X005a	
IXGR 55N120A3H1		70	30	2.35	282	29.0	0.62	•	-	0.42	200	X016a	
IXGH 32N120A3		75	na	2.35	1240	na	0.42	-	-	-	300	X014a	
IXGT 32N120A3		75	32	2.35	1240	na	0.42	-	-	-	300	X019	X027a **SOT-227B miniBLOC**
IXGK 55N120A3H1		125	55	2.30	282	29.0	0.27	•	-	0.42	460	X020a	
IXGX 55N120A3H1		125	55	2.30	282	29.0	0.27	•	-	0.42	460	X015a	
IXGK 120N120A3		240	120	2.20	325	58.0	0.15	-	-	-	830	X020a	
IXGX 120N120A3		240	120	2.20	325	58.0	0.15	-	-	-	830	X015a	
IXGK 82N120A3		260	82	2.05	780	22.5	0.10	-	-	-	1250	X020a	
IXGX 82N120A3		260	82	2.05	780	22.5	0.10	-	-	-	1250	X015a	

High Voltage NPT IGBTs



1700 V Low On-State Voltage NPT IGBTs

Part Type ➢ New	V_{CES} V	I_C T_C = 25°C A	I_C T_C = 90°C (110°C) A	$V_{CE(sat)}$ T_C = 25°C V	E_{off} typ T_J = 125°C mJ	R_{thJC} K/W	Diode	Fig. No.
IXGH 6N170	1700	12	6	4.0	2.0	1.65		X014a
IXGT 6N170		12	6	4.0	2.0	1.65		X019
IXGH 10N170		20	10	4.0		1.10		X014a
IXGT 10N170		20	10	4.0		1.10		X019
IXGH 16N170		32	16	3.5	11.2	0.65		X014a
IXGT 16N170		32	16	3.5	11.2	0.65		X019
IXGF 32N170		44	-19	3.5	13.5	0.62		X024c
IXGH 24N170		50	24	3.3	12.0	0.50		X014a
IXGT 24N170		50	24	3.3	12.0	0.50		X019
IXGH 32N170		75	32	3.3	14.0	0.35		X014a
IXGT 32N170		75	32	3.3	14.0	0.35		X019
IXGN 100N170		160	95	3.0		0.17		X027a
IXGX 100N170		170	100	3.0		0.15		X015a
IXGK 100N170		170	100	3.0		0.15		X020a
➢ **IXGN 200N170**		280	160	2.6	44.0	0.10		X027a

1700 V NPT IGBTs

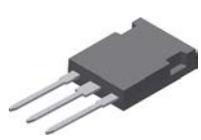
Part Type	V_{CES} V	I_C T_C = 25°C A	I_C T_C = 90°C (110°C) A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ T_J = 25°C ns	E_{off} typ T_J = 125°C mJ	R_{thJC} K/W	Fig. No.
IXGR 6N170A	1700	5.5	-2.5	7	32	0.25	2.5	X016a
IXGH 6N170A		6	3	7	32	0.26	1.65	X014a
IXGT 6N170A		6	3	7	32	0.26	1.65	X019
IXGH 10N170A		10	5	6	35	0.60	0.89	X014a
IXGT 10N170A		10	5	6	35	0.60	0.89	X019
IXGH 16N170A		16	11	5	70	2.00	0.65	X014a
IXGT 16N170A		16	11	5	70	2.00	0.65	X019
IXGH 24N170A		24	16	6	40	1.47	0.50	X014a
IXGT 24N170A		24	16	6	40	1.47	0.50	X019
IXGH 32N170A		32	21	5	50	2.40	0.35	X014a
IXGT 32N170A		32	21	5	50	2.40	0.35	X019

Package style

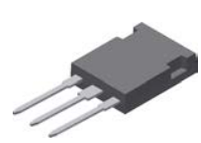
Outline drawings on pages O-36...O-59

X014a **TO-247AD**

X015a **PLUS247**

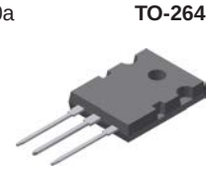


X016a **ISOPLUS247™**

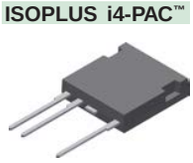


X019 **TO-268AA**

X020a **TO-264**

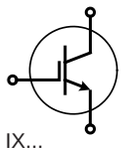


X024c **ISOPLUS i4-PAC™**



X027a **SOT-227B miniBLOC**

Very High Voltage NPT IGBTs


IX...

2.5 kV - 4.5 kV NPT IGBT

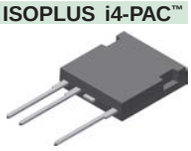
Part Type ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C110} T_C = 110°C (90°C) A	$V_{CE(sat)}$ max. T_C = 25°C V	t_{fi} typ T_J = 25°C ns	E_{off} typ T_J = 125°C mJ	R_{thJC} IGBT K/W	P_C W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXGF 20N250	2500	23	(14)	V	930	na	1.25	100	X024c	X011c **TO-263ABHV**
IXGA 20N250HV		30	12	3.1	930	na	0.83	150	X011c	
IXGF 25N250		30	15	2.9	200	na	1.10	114	X024c	
IXLF 19N250A		32	19	3.9	250	30	0.50	250	X024c	
IXGH 25N250		60	25	2.9	200	na	0.50	250	X014a	
IXGT 25N250		60	25	2.9	200	na	0.50	250	X019	
IXGT 25N250HV		60	25	2.9	200	na	0.50	250	X019a	X014a **TO-247AD**
IXGL 75N250		110	(65)	2.9	455	na	0.29	430	X022e	
IXGK 75N250		170	75	2.7	455	na	0.16	780	X020a	
IXGX 75N250		170	75	2.7	455	na	0.16	780	X015a	
IXGH 10N300	3000	18	(10)	3.5	530	na	1.25	100	X014a	
IXGF 20N300		22	(14)	3.2	210	na	1.25	100	X024c	X014c **TO-247HV**
IXGF 25N300		27	(16)	3	500	na	1.10	114	X024c	
IXGF 36N300		36	18	2.7	540	na	0.78	160	X024c	
➢ **IXG 65I3300KN**	3300	85	48 (100°C)	2.8	900	52	0.34	368	X022e	
IXEL 40N400	4000	90	40	3.5	425	205	0.26	380	X022e	
➢ **IXG 50I4500KN**	4500	74	42 (100°C)	3.2	1350	73	0.34	368	X022e	
IXYF 30N450		23	17	3.9	1220	na	0.54	230	X024c	
IXYT 30N450HV		60	30	3.9	1220	na	0.29	430	X019a	
IXYF 40N450		60	32	3.9	1120	na	0.43	290	X024c	X015a **PLUS247**
IXYH 30N450HV		60	30	3.9	1220	na	0.29	430	X014c	
IXYL 60N450		90	38	3.3	1360	na	0.30	417	X022e	
IXYX 40N450HV		95	40	3.9	1120	na	0.19	660	X015c	

X019a **TO-268AAHV**

X019 **TO-268AA**

X015c **PLUS247HV**

X024c **ISOPLUS i4-PAC™**



X022e **ISOPLUS264™**

X020a **TO-264**

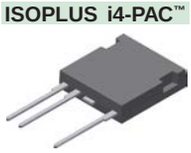
BiMOSFETs (Monolithic Bipolar MOS Transistors)

Reverse Conducting IGBTs (BiMOSFETs™) 1.6 kV - 2.5 kV

Type ○ Not for new design	V_{CES} V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C (110°C) A	$V_{CE(sat)}$ typ (max) T_C = 25°C (110°C) V	Q_G typ nC	t_f (t_{fi}) typ T_C = 125°C ns	R_{thJC} max. K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXBH 5N160G	1600	5.7	3.5	4.90	26	(70)	1.85	X014a	X005a **TO-220AB**
○ **IXBP 5N160G**		5.7	3.5	4.90	26	(70)	1.85	X005a	
○ **IXBF 9N160G**		7.0	4.0	4.90	34	(70)	1.75	X024c	
IXBH 9N160G		9.0	5.0	4.90	34	(70)	1.25	X014a	
IXBH 40N160		33	20	6.20	130	(40)	0.35	X014a	
IXBH 6N170	1700	12	6.0	2.84	17	600	1.65	X014a	X011c **TO-263ABHV**
IXBT 6N170		12	6.0	2.84	17	600	1.65	X019	
IXBA 16N170AHV		16	10	-6.00	65	-150	0.83	X011c	
IXBH 16N170A		16	10	-6.00	65	-150	0.83	X014a	
IXBT 16N170A		16	10	-6.00	65	-150	0.83	X019	X014a **TO-247AD**
IXBT 16N170AHV		16	10	-6.00	65	-150	0.83	X019a	
IXBH 10N170		20	10	3.40	30	-150	0.89	X014a	
IXBT 10N170		20	10	3.40	30	-150	0.89	X019	
IXBN 42N170A		38	21	5.20	188	-82	0.40	X027a	
IXBH 16N170		40	16	-3.30	72	705	0.50	X014a	X015a **PLUS247**
IXBT 16N170		40	16	-3.30	72	705	0.50	X019	
IXBH 42N170A		42	21	5.20	188	-82	0.35	X014a	
IXBT 42N170A		42	21	5.20	188	-82	0.35	X019	
IXBR 42N170		57	32	-2.90	188	740	0.62	X016a	
IXBH 24N170		60	24	-2.50	140	960	0.50	X014a	X016a **ISOPLUS247™**
IXBT 24N170		60	24	-2.50	140	960	0.50	X019	
IXBH 42N170		80	42	-2.80	188	740	0.35	X014a	
IXBT 42N170		80	42	-2.80	188	740	0.35	X019	
IXBX 75N170A		110	65	4.95	358	-175	0.12	X015a	
IXBN 75N170		145	75	2.60	350	580	0.20	X027a	
IXBK 75N170		200	-75	2.60	350	580	0.12	X020a	X019 **TO-268AA**
IXBX 75N170		200	-75	2.60	350	580	0.12	X015a	
IXCH 36N250	2500	73	-36	2.60	177	900	0.21	X014a	
IXCK 36N250		73	-36	2.60	177	900	0.21	X020a	
IXBL 64N250		116	-46	2.50	400	175	0.25	X022e	
IXBK 64N250		156	-64	2.50	400	175	0.17	X020a	
IXBX 64N250		156	-64	2.50	400	175	0.17	X015a	X019a **TO-268AAHV**

X027a **SOT-227B miniBLOC**

X024c **ISOPLUS i4-PAC™**



X022e **ISOPLUS264™**

X020a **TO-264**

BiMOSFETs (Monolithic Bipolar MOS Transistors)

Reverse Conducting IGBTs (BiMOSFETs™) 3 kV - 3.6 kV

Type ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C (110°C) A	$V_{CE(sat)}$ typ (max) T_C = 25°C (110°C) V	Q_G typ nC	t_f (t_{fi}) typ T_C = 125°C ns	R_{thJC} max. K/W	Fig. No. Outline drawings on pages O-36...O-59
IXBF 14N300	3000	28	14	2.2	62	1730	1.04	X024c
IXBH 10N300		30	(10)	2.8	45	1030	0.69	X014a
IXBA 10N300HV		34	(10)	2.2	46	2010	0.69	X011c
IXBH 10N300HV		34	(10)	2.2	46	2010	0.69	X014c
IXBF 22N300		38	22	2.2	110	1650	0.83	X024c
IXBA 14N300HV		38	(14)	2.2	62	1730	0.62	X011c
IXBH 14N300HV		38	(14)	2.2	62	1730	0.62	X014c
IXBF 32N300		40	22	2.8	142	630	0.78	X024c
IXBF 28N300		50	28	2.3	110	3280	0.58	X024c
IXBF 42N300		60	(24)	2.5	200	490	0.52	X024c
IXBT 22N300HV		60	(22)	2.2	110	1650	0.43	X019a
IXBH 22N300HV		60	(22)	2.2	110	1650	0.43	X014c
IXBX 28N300HV		62	(28)	2.3	110	3280	0.36	X015c
IXBH 32N300		80	(32)	2.8	142	630	0.31	X014a
IXBH 32N300HV		80	(32)	2.8	142	630	0.31	X014c
IXBT 32N300HV		80	(32)	2.8	142	630	0.31	X019a
IXBF 55N300		86	(34)	2.7	335	260	0.35	X024c
IXBH 42N300HV		104	(42)	2.5	200	490	0.25	X014c
IXBT 42N300HV		104	(42)	2.5	200	490	0.25	X019a
IXBK 55N300		130	(55)	2.7	335	260	0.20	X020a
IXBX 55N300		130	(55)	3.2	335	260	0.20	X015a
➢ **IXBF 16N360**	3600	26	16	3.0	65	115	1.00	X024c
IXBF 20N360		45	(18)	2.9	110	1100	0.54	X024c
➢ **IXBH 16N360HV**		48	(16)	3.0	65	115	0.46	X014c
➢ **IXBT 16N360HV**		48	(16)	3.0	65	115	0.46	X019a
IXBH 20N360HV		70	(20)	2.9	110	1100	0.29	X014c
IXBT 20N360HV		70	(20)	2.9	110	1100	0.29	X019a
IXBF 50N360		70	(28)	2.4	210	1670	0.43	X024c
IXBL 60N360		92	(36)	2.8	450	1025	0.30	X022e
IXBX 50N360HV		125	(50)	2.4	210	1670	0.19	X015c

X011c **TO-263ABHV**

X014a **TO-247AD**

X014c **TO-247HV**

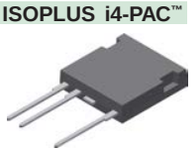
X015a **PLUS247**

X020a **TO-264**

X019a **TO-268AAHV**

X015c **PLUS247HV**

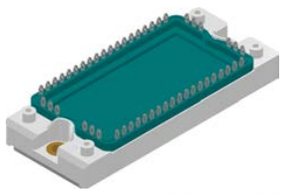
X024c **ISOPLUS i4-PAC™**



X022e **ISOPLUS264™**

IGBT Modules – CBI Configuration

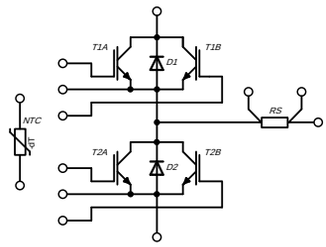
Phase Leg IGBT Module



X112a E2-Pack PFP

Outline drawings on pages O-30...O-55

See data sheet for pin arrangement

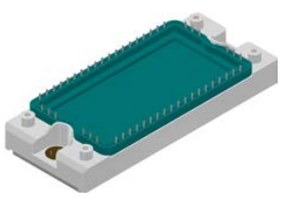


Type ➢ New	V_{CES} V	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C V	E_{on} IGBT T_J = 150°C mJ	E_{off} IGBT T_J = 150°C mJ	R_{thJC} IGBT K/W	I_{F80} Diode T_C = 80°C A	R_{thJC} Diode K/W
1200 V X2PT IGBT with shunt								
➢ **MIXG 360PF1200PSTED** [1]	1200	420 [3]	1.7	32	32	0.08	340	0.13
➢ **MIXG 360PF1200PSTED-PC** [1] [2]		420 [3]	1.7	32	32	0.08	340	0.13

[1] Press fit pin version [2] phase change material (PCM)

[3] Rating correlates to parallel operation of T1A@T1B (resp. T2A@T2B)

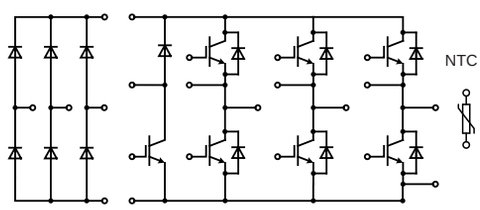
CBI 2 IGBT Modules



X112 E2-Pack

Outline drawings on pages O-30...O-55

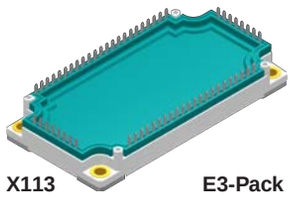
See data sheet for pin arrangement



Type	Rectifier 3~			Inverter 3~					Brake chopper		
	V_{RRM}	I_{DAVM} T_C = 80°C	R_{thJC} typ.	V_{CES}	I_C T_C = 25°C	I_C T_C = 80°C	$V_{CE(sat)}$ typ.	R_{thJC} typ.	V_{CES}	I_C T_C = 80°C	R_{thJC} typ.
○ **Not for new design**	V	A	K/W	V	A	A	V	K/W	V	A	K/W
600 V NPT IGBT											
MUBW 20-06A7	1600	24	1.3	600	35	25	1.9	1.00	600	18	1.4
○ **MUBW 30-06A7**		24	1.3		50	35	1.9	0.70		18	1.3
MUBW 50-06A7		29	1.1		75	50	1.9	0.50		25	1.0
600 V XPT IGBT											
MIXA 50WB600TED	1200	119	1.2	600	64	43	1.6	0.80	600	20	1.26
1200 V NPT IGBT											
MUBW 15-12A7	1600	24	1.3	600	35	25	2.0	0.70	600	15	1.2
MUBW 25-12A7		24	1.3		50	35	2.2	0.55		15	1.2
MUBW 35-12A7		29	1.1		50	35	2.5	0.55		25	0.7
1200 V XPT IGBT											
MIXA 10WB1200TED	1600	105	1.1	1200	17	12	1.8	2.00	1200	12	2.0
MIXA 20WB1200TED		105	1.1		28	20	1.8	1.26		12	2.0
MIXA 30WB1200TED		105	1.1		43	30	1.8	0.84		12	2.0
MIXA 40WB1200TED		105	1.1		50	40	1.8	0.64		20	1.26

IGBT Modules – CBI Configuration

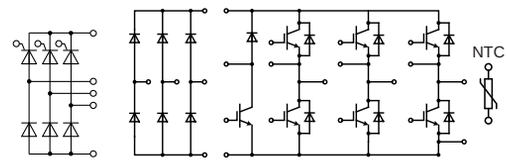
CBI 3
IGBT Modules



X113 E3-Pack

Outline drawings on pages O-36...O-59

See data sheet for pin arrangement



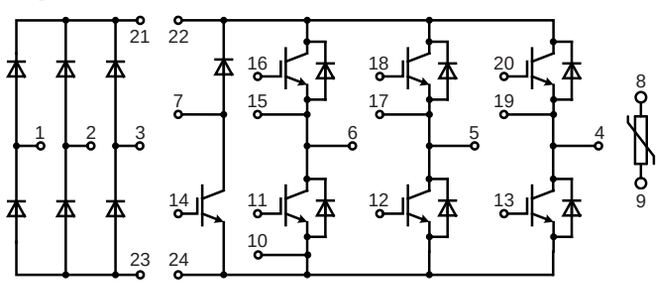
MIXA...WH... MIXA...WB.... MUBW...

Type	Rectifier 3~			Inverter 3~					Brake chopper			Layout
	V_{RRM}	I_{DAVM}	R_{thJC}	V_{CES}	I_C	I_C	$V_{CE(sat)}$	R_{thJC}	V_{CES}	I_C	R_{thJC}	
○ Not for new design		T_H = 80°C	typ.		T_C = 25°C	T_C = 80°C	typ.	typ.		T_C = 80°C	typ.	
✧ under development	V	A	K/W	V	A	A	V	K/W	V	A	K/W	
600 V NPT IGBT												
MUBW 75-06A8	1600	46	0.94	600	100	65	2.0	0.39	600	35	0.75	A
1200 V NPT IGBT												
MUBW 50-12A8	1600	46	0.94	1200	85	60	2.2	0.35	1200	35	0.55	A
1200 V Trench IGBT												
MUBW 75-12T8	1600	50	0.94	1200	105	75	1.7	0.35	1200	35	0.55	A
1200 V XPT IGBT												
MIXA 60WB1200TEH	1600	190	0.65	1200	85	60	1.8	0.43	1200	40	0.64	A
MIXA 60WH1200TEH [1]		135	0.65		85	60	1.8	0.43		40	0.64	C
MIXA 80WB1200TEH		265	0.50		120	84	1.8	0.32		40	0.64	A
MIXA 81WB1200TEH		290	0.45		120	84	1.8	0.32		60	0.43	B
1200 V X2PT IGBT												
✧ **MIXG 70WB1200TEH** [2]	1600	190	0.65	1200	105	79	1.7	0.42	1200	40	0.64	B
1700 V Trench IGBT												
○ **MUBW 50-17T8**	2200	120	1.10	1700	74	53	2.0	0.43	1700	34	0.62	A
MUBW 75-17T8		140	0.95		113	80	2.0	0.48		34	0.62	A

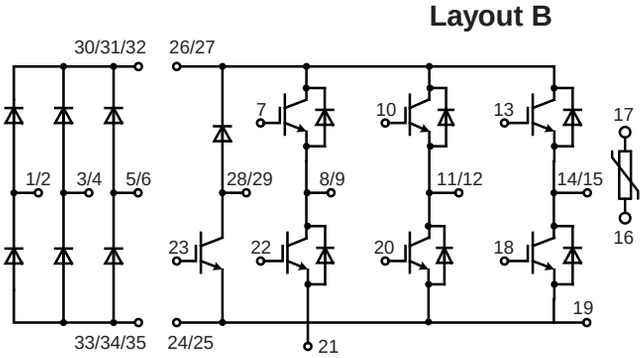
[1] Input rectifier half-controlled

[2] Options: press fit pin version and phase change material; please contact IXYS sales office for availability

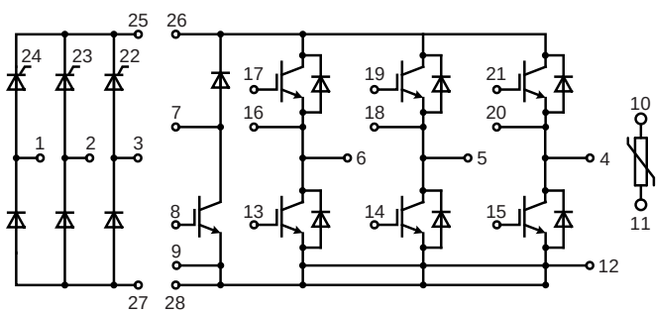
Layout A



Layout B

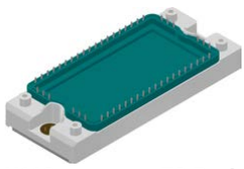


Layout C



IGBT Modules – Six-Pack configuration

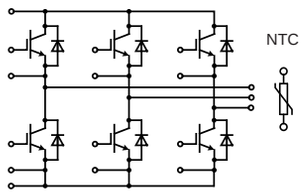
Six-Pack IGBT Modules



X112 E2-Pack

Outline drawings on pages O-30...O-55

See data sheet for pin arrangement

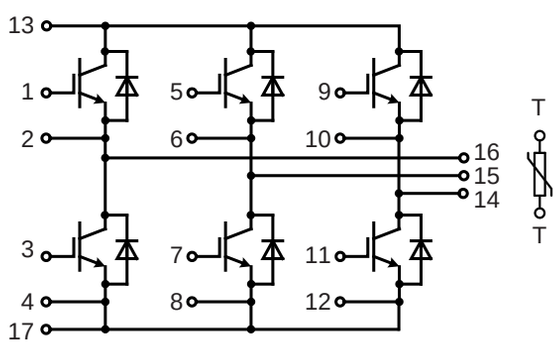


Type ✧ under development ○ Not for new design ➢ New	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	I_{F25} Diode T_C = 25°C A	I_{F80} Diode T_C = 80°C A	NTC	Layout
600 V NPT IGBT										
MWI 30-06A7T	600	45	30	1.9	1.0	0.88	36	24	•	A
MWI 50-06A7		75	50	1.9	1.7	0.55	72	45		A
○ **MWI 50-06A7T**		75	50	1.9	1.7	0.55	72	45	•	A
○ **MWI 75-06A7T**		90	60	2.1	2.5	0.44	140	85	•	A
600 V XPT IGBT										
✧ **MIXA 50W650TED**	600	70	52	1.86	1.7 (150°C)	0.8	59	37	•	B
1200 V NPT IGBT										
○ **MWI 15-12A7**	1200	30	20	1.0	1.8	0.88	25	17		A
○ **MWI 25-12A7**		50	35	2.2	2.8	0.55	50	33		A
1200 V Trench IGBT										
○ **MWI 50-12T7T**	1200	75	50	1.7	6.5	0.49	110	70	•	B
○ **MWI 75-12T7T**		105	75	1.7	9.5	0.35	150	100	•	B
1200 V XPT IGBT										
MIXA 30W1200TED [1]	1200	43	30	1.8	3.0	0.84	44	29	•	B
MIXA 40W1200TED [1]		60	40	1.8	4.1	0.64	44	29	•	B
MIXA 60W1200TED [1]		85	60	1.8	5.5	0.43	88	59	•	B
MIXA 80W1200TED [1]		120	84	1.8	8.3	0.32	135	90	•	B
1200 V X2PT IGBT										
➢ **MIXG 70W1200TED** [1]	1200	105	79	1.7	5.3 (150°C)	0.42	88	59	•	B

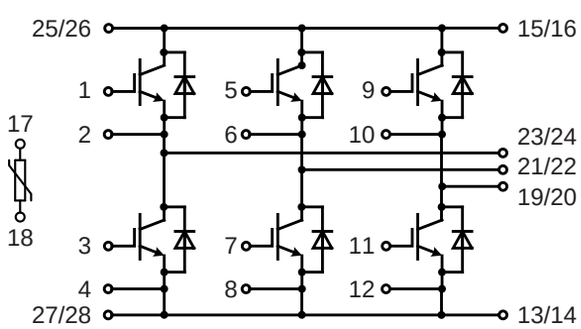
[1] Options: press fit pin version and phase change material; please contact IXYS sales office for availability

(NTC option on some types)

Layout A

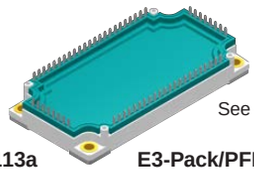


Layout B



IGBT Modules – Six-Pack configuration

Six-Pack IGBT Modules



X113/X113a E3-Pack/PFP

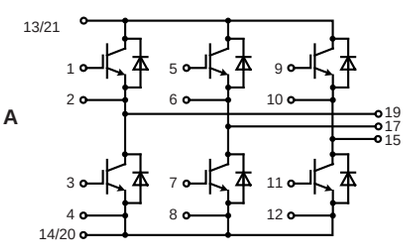
See data sheet for pin arrangement

Package style
Outline drawings
on pages O-36...O-59

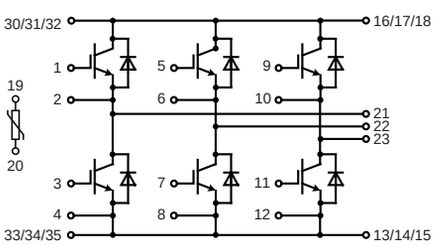
Type ✧ under development ○ Not for new design ➢ New	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	I_{F25} Diode T_C = 25°C A	I_{F80} Diode T_C = 80°C A	NTC	Layout
600 V NPT IGBT										
○ **MWI 100-06A8**	600	130	88	2.0	2.9	0.30	140	88		A
○ **MWI 150-06A8**		170	115	2.0	4.6	0.24	210	130		A
○ **MWI 200-06A8**		225	155	2.0	6.3	0.18	260	165		A
650 V XPT TRENCH IGBT										
✧ **MIXD 200W650TEH**	650	280	200	1.5	10 (150°C)	0.22	232	171	•	B
1200 V NPT IGBT										
○ **MWI 100-12A8**		160	110	2.2	14.6	0.19	200	130		A
1200 V SPT+ IGBT										
MIEB 100W1200DPFTEH	1200	183	128	1.8	9.7	0.20	135	90	•	B
MIEB 101W1200EH		183	128	1.8	9.7	0.20	135	90		A
MIEB 101W1200DPFEH		183	128	1.8	9.7	0.20	135	90		A
1200 V XPT IGBT										
MIXA 80W1200TEH [1]	1200	120	84	1.8	8.3	0.32	135	90	•	B
MIXA 100W1200TEH [1]		155	108	1.8	11.0	0.25	135	90	•	B
MIXA 150W1200TEH [1]		220	150	1.8	16.0	0.18	190	130	•	B
1200 V X2PT										
➢ **MIXG 120W1200DPFTEH** [1]	1200	185	140	1.7	8.2 (150°C)	0.30	199	127	•	B
➢ **MIXG 120W1200TEH** [1]		185	140	1.7	8.2 (150°C)	0.30	180	135	•	B
✧ **MIXG 120W1200PTEH** [2]		185	140	1.7	8.2 (150°C)	0.30	180	135	•	B
➢ **MIXG 180W1200TEH** [1]		260	195	1.7	14.7 (150°C)	0.18	230	170	•	B
✧ **MIXG 180W1200PTEH** [2]		260	195	1.7	14.7 (150°C)	0.18	230	170	•	B
✧ **MIXG 180W1200PTEH-PC** [2] [3]		260	195	1.7	14.7 (150°C)	0.18	230	170	•	B
➢ **MIXG 240W1200TEH** [1]		312	233	1.7	20.5 (150°C)	0.16	200	144	•	B
✧ **MIXG 240W1200PTEH** [2]		312	233	1.7	20.5 (150°C)	0.16	200	144	•	B
✧ **MIXG 240W1200PTEH-PC** [2] [3]		312	233	1.7	20.5 (150°C)	0.16	200	144	•	B
1200 V X2PT with Shunt Resistor										
✧ **MIXG 120W1200STEH** [1]	1200	185	140	1.7	8.2 (150°C)	0.24	180	135	•	C
✧ **MIXG 180W1200STEH** [1]		260	195	1.7	14.7 (150°C)	0.18	230	170	•	C
➢ **MIXG 240W1200ZTEH** [1]		312	233	1.7	20.5 (150°C)	0.16	189	136	•	C
➢ **MIXG 240W1200PZTEH** [2]		312	233	1.7	20.5 (150°C)	0.16	189	136	•	C
➢ **MIXG 240W1200PZTEH-PC** [2] [3]		312	233	1.7	20.5 (150°C)	0.16	189	136	•	C

[1] Options: press fit pin version and / or phase change material; please contact IXYS sales office for availability
[2] press fit pin version [3] phase change material (PCM)

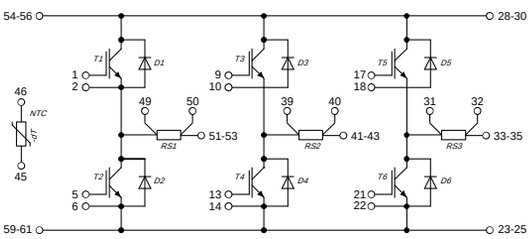
Layout A



Layout B



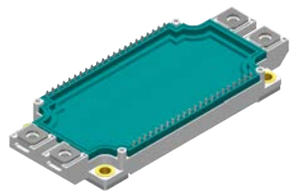
Layout C



IGBT XPT™ Modules in SimBus F package

- space savings
- reduced protection circuits
- package designed for wave soldering
- press fit pin version available

See data sheet for pin arrangement



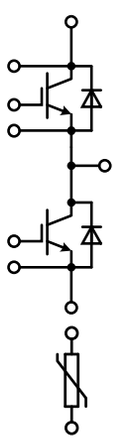
X143 **Simbus F**

Package style
Outline drawings
on pages O-36...O-59

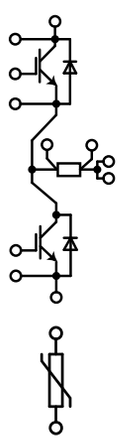
Type ➢ New ✧ under development	V_{CES} V	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C V	E_{on} IGBT T_J = 125°C mJ	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	I_{F80} Diode T_C = 80°C A	R_{thJC} Diode K/W
XPT Trench IGBT Phase-Leg								
✧ **MIXD 600PF650TSF**	650	490	1.65	6	23	0.085	340	0.095
XPT IGBT Phase-Leg								
MIXA 225PF1200TSF	1200	250	1.80	20	27	0.115	185	0.145
MIXA 300PF1200TSF		325	1.80	20	42	0.085	185	0.145
MIXA 450PF1200TSF		450	1.80	22	68	0.060	265	0.095
X2PT IGBT Phase-Leg								
➢ **MIXG 330PF1200TSF**	1200	395	1.70	32 (150°C)	25 (150°C)	0.085	380	0.100
➢ **MIXG 490PF1200TSF**		579	1.70	48 (150°C)	48 (150°C)	0.059	465	0.095
✧ **MIXG 660PF1200TSF**		780	1.70	60 (150°C)	61 (150°C)	0.045	580	0.075
➢ **MIXG 300PF1700TSF**	1700	315	2.10	60	69	0.078	205	0.180
➢ **MIXG 450PF1700TSF**		435	2.10	110	108	0.061	330	0.110
X2PT IGBT Phase-Leg with Shunt								
✧ **MIXG 330PF1200STSF**	1200	395	1.70	32 (150°C)	25 (150°C)	0.085	380	0.100
✧ **MIXG 490PF1200STSF**		579	1.70	48 (150°C)	48 (150°C)	0.059	465	0.095
✧ **MIXG 660PF1200STSF**		780	1.70	60 (150°C)	61 (150°C)	0.045	580	0.075
XPT IGBT Brake / Boost								
➢ **MIXA 225RF1200TSF**	1200	250	1.80	20	27	0.115	185	0.145
✧ **MIXG 450RF1700TSF**	1700	435	2.10	110	108	0.061	330	0.110

Options: press fit pin version and phase change material; please contact IXYS sales office for availability

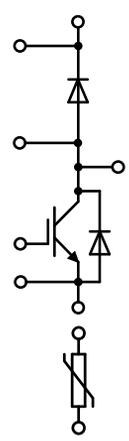
...PF...
phase-leg



...PF...
phase-leg & shunt



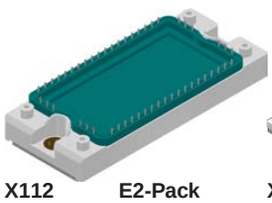
...RF...
brake / boost



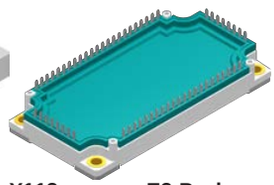
IGBT Full Bridge and Brake / Buck Modules

Outline drawings on pages O-36...O-59

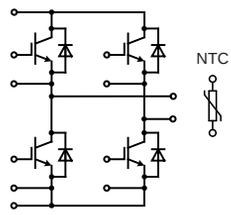
See data sheet for pin arrangement



X112 E2-Pack



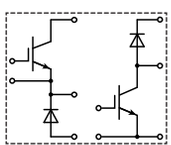
X113 E3-Pack



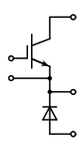
Full Bridge IGBT Modules

Type ○ Not for new design	Technology	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	I_{F80} Diode T_C = 80°C A	NTC	Fig. No.
○ **MKI 75-06A7T**	NPT	600	90	60	2.5	6.3	85	•	X112
○ **MKI 50-12F7**	Fast NPT	1200	65	45	3.2	2.5	70		X112
MKI 100-12F8			65	45	3.2	2.5	70		X113
MIXA 61H1200ED	XPT	1200	85	60	1.8	5.5	59		X112
MIXA 81H1200EH			120	84	1.8	8.3	90		X113

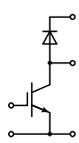
Brake / Buck / Boost Chopper IGBT Modules



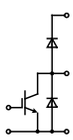
MIXA...HU...



MIXA...Q...



MIXA...R...



...RF...

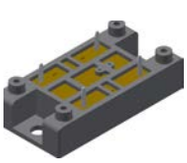
Type ➢ New	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)}$ typ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	I_{F25} Diode T_C = 25°C A	I_{F80} Diode T_C = 80°C A	Fig. No.
X2PT IGBT Brake									
➢ **MIXG 240RF1200TED** [1]	1200	335	250	1.7	23 (150°C)	0.12	265	195	X112
➢ **MIXG 240RF1200PTED-PC** [2] [3]		335	250	1.7	23 (150°C)	0.12	265	195	X112a
➢ **MIXG 360RF1200TED** [1]		532	400	1.7	30 (150°C)	0.08	390	285	
➢ **MIXG 360RF1200PTED-PC** [2] [3]		532	400	1.7	30 (150°C)	0.08	390	285	
Trench IGBT Brake									
➢ **MITA 300RF1700PTED** [2]	1700	450	310	1.7	34	0.09	390	285	X112a
➢ **MITA 300RF1700PTED-PC** [2] [3]		450	310	1.7	34	0.09	390	285	
XPT IGBT Brake / Boost Chopper									
MIXA 80R1200VA	1200	120	84	1.9	8.3	0.32	135	90	X103
MIXA 150R1200VA		220	150	1.8	16	0.18	190	130	
XPT IGBT Buck Chopper									
MIXA 150Q1200VA	1200	220	150	1.8	16	0.18	190	130	X103
XPT IGBT Buck / Boost switched reluctance Chopper									
MIXA 60HU1200VA	1200	85	60	1.8	5.5	0.43	88	59	X103

[1] Options: press fit pin version and / or phase change material; please contact IXYS sales office for availability

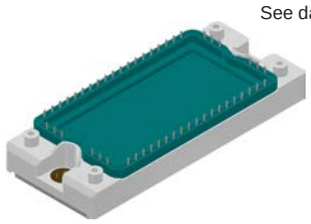
[2] press fit pin version [3] phase change material (PCM)

See data sheet for pin arrangements

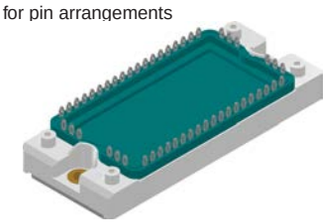
Outline drawings on pages O-36...O-59



X103 V1-Pack



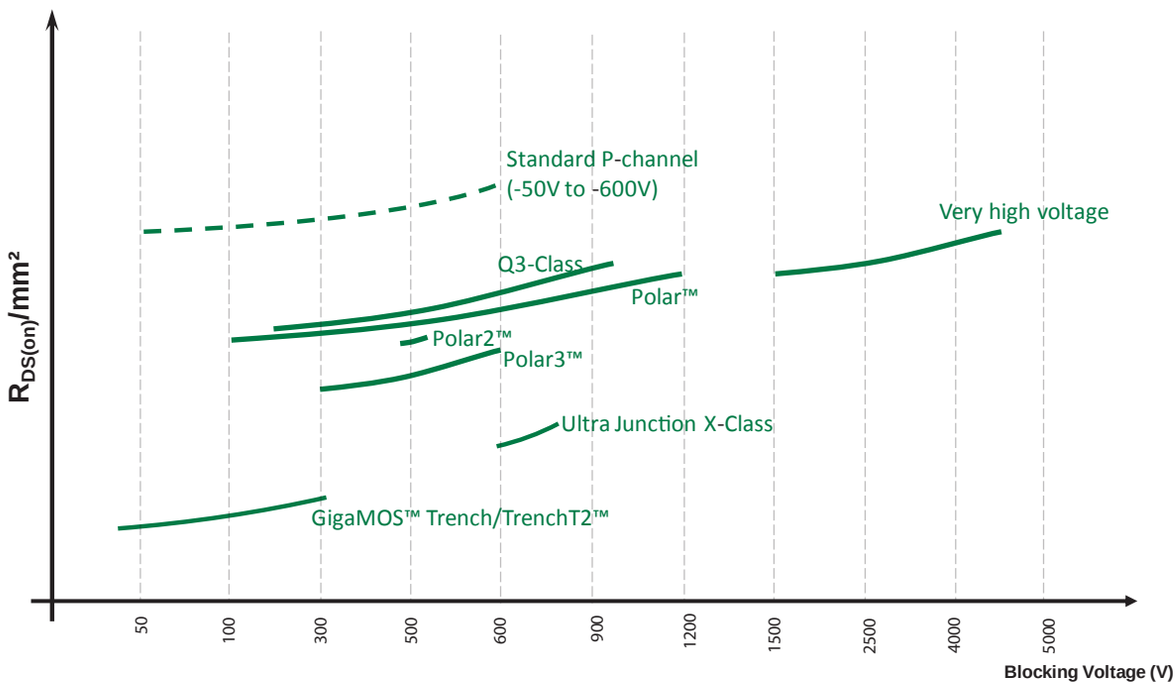
X112 E2-Pack



X112a E2-Pack PFP

Power MOSFETs and MOSFET Modules

The Metal Oxide Semiconductor Field Effect Transistor (MOSFET) is a transistor that is used for high frequency switching control of power electronic systems. IXYS offer various MOSFET technology based on the customer requirement for voltage, switching frequency. A table giving a diagrammatic representation of our basic MOSFET offerings is given below.



Trench and Trench2 Power MOSFETs

IXYS Trench Power MOSFETs are ideally suited for low-voltage, high-current applications. These MOSFETs feature an exceptionally low $R_{DS(on)}$, thus guaranteeing low power dissipation. Trench HiPerFET™ versions feature all of the advantages presented by IXYS' Trench Standard Power MOSFETs with an added benefit of a fast intrinsic rectifier which provides low reverse recovery charge (Q_{rr}) and excellent commutating dV/dt ratings for enhanced power switching capabilities and device ruggedness.

Polar™ Power MOSFETs

Polar™ MOSFETs (IXT..) feature a proprietary cell design and process that has resulted in a MOSFET with a 30% reduction in $R_{DS(on)}$ per unit area along with a decrease in gate charge. IXYS has also reduced the wafer thickness, which substantially reduces the thermal resistance. The combination of lower $R_{DS(on)}$, lower gate charge Q_g and higher power dissipation capability has resulted in a new class of MOSFETs, which will increase the cost effectiveness in switch mode power supply (SMPS) applications.
IXYS' Polar™ HiPerFETs™ (IXF..) combine the strengths of the Polar Standard product family with a faster body diode, whose reverse recovery time (trr) is reduced to make them suitable for phase-shift bridges. motor control and uninterruptible power supply applications (UPS). This family of HiPerFETs™ provide lowest $R_{DS(on)}$, low R_{thJC}, low Q_g, and enhanced DV/DT capability.

PolarP2™ Power MOSFETs

PolarP2™ devices are an optimized range of the standard Polar platform for 500V device rating.

PolarP3™ HiPerFET™ Power MOSFETs

The PolarP3™ HiPerFET™ product family is the latest addition to IXYS' benchmark high-performance Polar-Series product line for our product portfolio between 500V and 600V. Its high Figure of Merit (FOM) being the multiplication of Q_g and in $R_{DS(on)}$ provide an excellent alternative to weaker super junction technologies. All IXYS Polar MOSFETs are tested 100% for avalanche energy providing the industries standard for reliability and ruggedness.

X-Class Power MOSFETs

These devices are developed using a charge compensation principle and proprietary process technology, resulting in Power MOSFETs with significantly reduced resistance $R_{DS(on)}$ and gate charge Q_g. They also exhibit a superior dv/dt performance. Designed for such applications as switched-mode and resonant-mode power supplies, DC-DC converters, PFC circuits, AC and DC motor drives, and robotic and servo control, these MOSFETs enable higher efficiency, along with high power density and cooler system performance. The X2-Class Power MOSFETs, devices with fast body diodes and avalanche ratings, are also available.

Q3-Class HiPerFET™ MOSFETs

Q3-Class HiPerFET™ MOSFETs (Identified by the suffix letter Q3) is the direct result of a revolutionary new chip design, which decreases the MOSFETs total gate charge (Q_g) and the Miller capacitance (C_{rss}), while maintaining the ruggedness and fast switching intrinsic diode of the company's current HiPerFET™ product line. The result is a MOSFET with dramatically improved switching efficiencies and thus enabling higher frequency operation and smaller power supplies.

Extended FBSOA Linear Power MOSFETs

IXYS' Extended FBSOA Linear Power MOSFETs are a class of rugged Power MOSFETs tailored specifically for applications that require Power MOSFETs to operate in their current saturation region. These new devices feature low static drain to source on-resistances and provide unparalleled performance and reliability in controlled current output applications. Typical applications that stand to benefit from this new class of extended FBSOA power MOSFETs include circuit breakers, current sources, programmable loads, power controllers, power regulators, motor control, power amplifiers and soft start applications. In the linear mode, a power MOSFET is subjected to high thermo-electrical stress caused by the simultaneous occurrence of high drain voltage and current resulting in high power dissipation. IXYS has optimized the internal structure of these MOSFETs achieving an extended "forward bias safe operating area" (FBSOA) capability to overcome the limitations posed by conventional power MOSFETs operating in current saturation region. These extended FBSOA Power MOSFETs are not intended for high speed switching applications.

Depletion-Mode MOSFET

Depletion-Mode Power MOSFETs operate in a 'normally-on' mode, not requiring energy or gate voltage for turn on. Unlike the regular enhancement type MOSFETs these Depletion-Mode MOSFETs require a negative gate bias to turn off. Consequently they remain on at or above zero gate bias voltage but otherwise have similar MOSFET characteristics. The "normally-on" operational mode of these devices combined with an enhanced linear operating capability allows for an ideal device selection in current sources, current regulators, solid-state relays, level shifting, active loads, start-up circuits and active power filters. Since these devices require no energy or gate voltage for turn-on, high energy efficiency can be achieved through device implementation in zero power "normally on" load switch applications. With the high degree of current regulation, these devices can also act as active inductors with high dynamic impedance in power filter applications to limit voltage and current noise and spikes. Furthermore these devices can provide active circuit protection to limit the surge of current during short-circuit or overload conditions.

PolarP™ P-Channel Power MOSFETs

IXYS' Polar technology platform employed in our PolarP™ P-Channel MOSFETs utilizes a proprietary cell design that improves overall device efficiency and performance. This technology platform reduces on-state resistance by as much as 30% and gate charge by 40% compared to legacy counterparts. With such low onstate resistances, these devices offer low conduction and switching losses while a low input capacitance. The combination of low $R_{DS(on)}$ and gate charge allow for improved energy efficiency. These P-Channel MOSFETs are dynamic dV/dt and avalanche rated making them extremely rugged in demanding operating environments and can easily be paralleled due to an on-state resistance with a positive temperature coefficient. They are ideal for 'high side' switching where a simple drive circuit referenced to ground can be used, circumventing additional 'high side' driver circuitry commonly involved when using an N-Channel MOSFET. This will help designers to reduce component count and improve reliability. Furthermore it allows for the design of a complementary power output stage. with a corresponding IXYS N-Channel MOSFET. for a power half bridge stage with a simple drive circuit.

TrenchP™ P-Channel Power MOSFETs

This family of P-Channel devices benefit from technological advances derived from IXYS' robust Trench cell design commonly implemented in their wide portfolio of industry recognized power devices. They feature an ultra low $R_{DS(on)}$. minimizing conduction losses and promoting improved operating and thermal efficiencies. These TrenchP™ P-Channel MOSFETs are suitable for 'high side' switching where a simple drive circuit referenced to ground can be employed, circumventing additional 'high side' driver circuitry commonly involved when using an N-Channel MOSFET. This enables designers to reduce component count, thereby improving drive circuit simplicity and cost structure. Furthermore it allows for the design of a complementary power output stage, with a corresponding IXYS N-Channel MOSFET, for a power half bridge stage with a simple drive circuit. Common applications that will greatly benefit from these devices include high side switching, high current regulators, DC Choppers, CMOS high power amplifiers, push-pull amplifiers and power solid state relays.

Very High Voltage Power MOSFETs

IXYS' VHV N-Channel Power MOSFETs are specifically designed to address demanding, fast-switching applications requiring blocking capabilities of 2.5kV to 4.5kV. These VHV Power MOSFETs are also ideally suited for parallel operation due to the positive temperature coefficient of their on-state resistance. Parallel operation with these devices provides a more cost-effective solution than employing series-connected, lower-voltage MOSFETs. The reduction or replacement of multiple series-connected devices and the associated gate drive circuitry commonly involved, simplifies design, improves reliability and reduces over-all system cost. These VHV MOSFETs represent an optimal solution in applications such as laser and x-ray generation systems, high-voltage power supplies, pulse circuits, high voltage automated test equipment and capacitor discharge circuits. 4.5kV device offerings feature high isolation capability with superior thermal performance.

Trench Power MOSFETs

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. ns	Q_g typ. ns	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXTP 44N10T	100	44	0.0300	1567	27.4	60	1.15	130	X005a	X004 **TO-252AA**
IXTY 44N10T		44	0.0300	1567	27.4	60	1.15	130	X004	
IXTP 60N10T		60	0.0180	2650	49	59	0.85	176	X005a	
IXTA 60N10T		60	0.0180	2650	49	59	0.85	176	X011b	
IXTQ 60N10T		60	0.0180	2650	49	59	0.85	176	X017a	
IXTP 80N10T		80	0.0140	3040	60	100	0.65	230	X005a	X005a **TO-220AB**
IXTF 200N10T		90	0.0070	9400	152	76	0.96	156	X024d	
IXTL 2x180N10T		100	0.0074	6900	151	60	1.00	150	X022c	
IXTP 130N10T		130	0.0091	5080	104	67	0.42	360	X005a	
IXTH 130N10T		130	0.0091	5080	104	67	0.42	360	X014a	
IXTA 130N10T		130	0.0091	5080	104	67	0.42	360	X011b	X011b **TO-263AB**
IXTQ 130N10T		130	0.0091	5080	104	67	0.42	360	X017a	
IXTP 180N10T		180	0.0064	6900	151	72	0.31	480	X005a	
IXTH 180N10T		180	0.0064	6900	151	100	0.31	480	X014a	
IXTA 180N10T		180	0.0064	6900	151	72	0.31	480	X011b	X014a **TO-247AD**
IXTQ 180N10T		180	0.0064	6900	151	100	0.31	480	X017a	
IXTN 200N10T		200	0.0055	9400	152	76	0.30	550	X027a	
IXTH 200N10T		200	0.0055	9400	152	76	0.27	550	X014a	
IXTQ 200N10T		200	0.0055	9400	152	76	0.27	550	X017a	
IXTP 48N20T	200	48	0.0500	3090	60	130	0.50	250	X005a	X017a **TO-3P**
IXTA 48N20T		48	0.0500	3090	60	130	0.50	250	X011b	
IXTQ 48N20T		48	0.0500	3090	60	130	0.50	250	X017a	
IXTP 60N20T		60	0.0400	4530	73	118	0.30	500	X005a	
IXTA 60N20T		60	0.0400	4530	73	118	0.30	500	X011b	
IXTQ 60N20T		60	0.0400	4530	73	118	0.30	500	X017a	
IXTP 86N20T		86	0.0290	4500	90	140	0.31	480	X005a	X022c **ISOPLUS264™**
IXTA 86N20T		86	0.0290	4500	90	140	0.31	480	X011b	
IXTQ 86N20T		86	0.0290	4500	90	140	0.31	480	X017a	
IXTH 130N20T		130	0.0160	8800	150	150	0.18	830	X014a	
IXTP 50N25T	250	50	0.0600	4000	78	166	0.31	400	X005a	
IXTH 50N25T		50	0.0600	4000	78	166	0.31	400	X014a	X024d **ISOPLUS i4-PAC™**
IXTA 50N25T		50	0.0600	4000	78	166	0.31	400	X011b	
IXTQ 50N25T		50	0.0600	4000	78	166	0.31	400	X017a	
IXTP 76N25T		76	0.0390	4920	92	148	0.27	460	X005a	
IXTH 76N25T		76	0.0390	4920	92	148	0.27	460	X014a	
IXTA 76N25T		76	0.0390	4920	92	148	0.27	460	X011b	X027a **SOT-227B miniBLOC**
IXTQ 76N25T		76	0.0390	4920	92	148	0.27	460	X017a	
IXTH 86N25T		86	0.0370	5330	105	156	0.23	540	X014a	
IXTQ 86N25T		86	0.0370	5330	105	156	0.23	540	X017a	
IXTH 96N25T		96	0.0290	6100	114	158	0.20	625	X014a	
IXTQ 96N25T		96	0.0290	6100	114	158	0.20	625	X017a	
IXTH 110N25T		110	0.0240	9400	157	170	0.18	694	X014a	

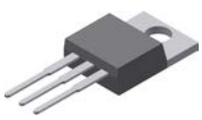
Trench HiPerFETs™ with Fast Intrinsic Diode

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_C = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} max. (typ.) ns	R_{thJC} K/W	P_D W	Fig. No.
IXFA 130N10T	100	130	0.0091	5080	104	67	0.42	360	X011b
IXFP 130N10T		130	0.0091	5080	104	67	0.42	360	X005a
IXFH 230N10T		230	0.0047	15300	250	-82	0.23	650	X014a
IXFX 360N10T		360	0.0029	33000	525	130	0.12	1250	X015a
IXFN 360N10T		360	0.0026	33000	525	130	0.18	830	X027a
IXFK 360N10T		360	0.0029	33000	525	130	0.12	1250	X020a
IXFX 420N10T		420	0.0026	47000	670	140	0.09	1670	X015a
IXFN 420N10T		420	0.0023	47000	670	140	0.14	1070	X027a
IXFK 420N10T		420	0.0026	47000	670	140	0.09	1670	X020a
IXFA 102N15T	150	102	0.0180	5220	87	120	0.33	455	X011b
IXFH 102N15T		102	0.0180	5220	87	120	0.33	455	X014a
IXFP 102N15T		102	0.0180	5220	87	120	0.33	455	X005a
IXFH 160N15T		160	0.0096	8800	160	90	0.18	830	X014a
IXFH 150N20T	200	150	0.0150	11700	177	-100	0.14	890	X014a
IXFT 150N20T		150	0.0150	11700	177	-100	0.14	890	X019
IXFR 230N20T		156	0.0080	28000	378	200	0.25	600	X016a
IXFX 170N20T		170	0.0110	19600	265	200	0.13	1150	X015a
IXFK 170N20T		170	0.0110	19600	265	200	0.13	1150	X020a
IXFN 230N20T		220	0.0075	28000	378	200	0.138	1090	X027a
IXFX 230N20T		230	0.0075	28000	378	200	0.09	1670	X015a
IXFK 230N20T		230	0.0075	28000	378	200	0.90	1670	X020a
IXFZ 140N25T	250	100	0.0170	19000	255	200	0.28	445	D5
IXFH 110N25T		110	0.0240	9400	157	170	0.18	694	X014a
IXFH 120N25T		120	0.0230	11300	180	-108	0.14	890	X014a
IXFT 120N25T		120	0.0230	11300	180	-108	0.14	890	X019
IXFN 140N25T		120	0.0170	19000	255	200	0.18	690	X027a
IXFX 140N25T		140	0.0170	19000	255	200	0.13	960	X015a
IXFK 140N25T		140	0.0170	19000	255	200	0.13	960	X020a
IXFN 180N25T		168	0.0129	23800	364	200	0.138	900	X027a
IXFX 180N25T		180	0.0129	23800	364	200	0.09	1390	X015a
IXFK 180N25T		180	0.0129	23800	364	200	0.09	1390	X020a
IXFH 46N30T	300	46	0.0800	4770	86	150	0.27	460	X014a
IXFT 46N30T		46	0.0800	4770	86	150	0.27	460	X019
IXFH 86N30T		86	0.0430	11300	180	150	0.15	830	X014a
IXFT 86N30T		86	0.0430	11300	180	150	0.15	830	X019
IXFH 94N30T		94	0.0360	11400	190	-155	0.14	890	X014a
IXFT 94N30T		94	0.0360	11400	190	-155	0.14	890	X019
IXFX 120N30T		120	0.0240	20000	265	200	0.13	960	X015a
IXFK 120N30T		120	0.0240	20000	265	200	0.13	960	X020a
IXFN 160N30T		130	0.0190	28000	335	200	0.138	900	X027a
IXFX 160N30T		160	0.0190	28000	335	200	0.09	1390	X015a
IXFK 160N30T		160	0.0190	28000	335	200	0.09	1390	X020a

Package style
Outline drawings on pages O-36...O-59

D5 **DE 475**

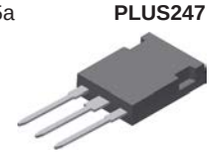
X005a **TO-220AB**



X011b **TO-263AB**

X014a **TO-247AD**

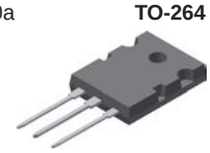
X015a **PLUS247**



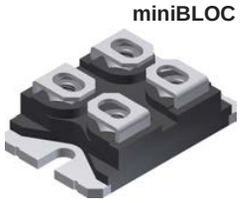
X016a **ISOPLUS247™**

X019 **TO-268AA**

X020a **TO-264**



X027a **SOT-227B miniBLOC**



TrenchT2™ Power MOSFETs

Part Type	V_{DSS}	$I_{D(cont)}$ Chip T_C = 25°C	$R_{DS(on)}$ T_C = 25°C	C_{iss} typ.	Q_g typ.	t_{rr} typ.	R_{thJC}	P_D	Fig. No.	Package style Outline drawings on pages O-36...O-59
	V	A	Ω	pF	nC	ns	K/W	W		
IXTP 100N04T2	40	100	0.0070	2690	25.5	34	1.00	150	X005a	D5 **DE 475**
IXTA 100N04T2		100	0.0070	2690	25.5	34	1.00	150	X011b	
IXTP 120N04T2		120	0.0061	3240	58	35	0.75	200	X005a	
IXTA 120N04T2		120	0.0061	3240	58	35	0.75	200	X011b	
IXTP 160N04T2		160	0.0050	4640	79	40	0.60	250	X005a	
IXTA 160N04T2		160	0.0050	4640	79	40	0.60	250	X011b	X004 **TO-252AA**
IXTP 220N04T2		220	0.0035	6820	112	45	0.42	360	X005a	
IXTA 220N04T2		220	0.0035	6820	112	45	0.42	360	X011b	
IXTP 300N04T2		300	0.0025	10700	145	53	0.31	480	X005a	
IXTH 300N04T2		300	0.0025	10700	145	53	0.31	480	X014a	
IXTA 300N04T2		300	0.0025	10700	145	53	0.31	480	X011b	
IXTH 420N04T2		420	0.0020	19700	315	74	0.16	935	X014a	X005a **TO-220AB**
IXTH 500N04T2		500	0.0016	25000	405	84	0.15	1000	X014a	
IXTT 500N04T2		500	0.0016	25000	405	84	0.15	1000	X019	
IXTX 600N04T2		600	0.0015	40000	590	100	0.12	1250	X015a	
IXTN 600N04T2		600	0.00105	40000	590	100	0.16	940	X027a	
IXTK 600N04T2		600	0.0015	40000	590	100	0.12	1250	X020a	
IXTA 90N055T2	55	90	0.0084	2770	42	37	1.00	150	X011b	X011b **TO-263AB**
IXTP 90N055T2		90	0.0084	2770	42	37	1.00	150	X005a	
IXTY 90N055T2		90	0.0084	2770	42	37	1.00	150	X004	
IXTP 110N055T2		110	0.0066	3060	57	38	0.82	180	X005a	
IXTA 110N055T2		110	0.0066	3060	57	38	0.82	180	X011b	
IXTP 140N055T2		140	0.0054	4760	82	40	0.60	250	X005a	X014a **TO-247AD**
IXTA 140N055T2		140	0.0054	4760	82	40	0.60	250	X011b	
IXTP 200N055T2		200	0.0042	6970	109	49	0.42	360	X005a	
IXTA 200N055T2		200	0.0042	6970	109	49	0.42	360	X011b	
IXTP 260N055T2		260	0.0033	10800	140	60	0.31	480	X005a	
IXTH 260N055T2		260	0.0033	10800	140	60	0.31	480	X014a	
IXTA 260N055T2		260	0.0033	10800	140	60	0.31	480	X011b	X015a **PLUS247**
IXTH 360N055T2		360	0.0024	20000	330	78	0.16	935	X014a	
IXTT 360N055T2		360	0.0024	20000	330	78	0.16	935	X019	
IXTH 440N055T2		440	0.0018	25000	405	76	0.15	1000	X014a	
IXTT 440N055T2		440	0.0018	25000	405	76	0.15	1000	X019	
IXTX 550N055T2		550	0.0016	40000	595	100	0.12	1250	X015a	
IXTN 550N055T2		550	0.0013	40000	595	100	0.16	940	X027a	X019 **TO-268AA**
IXTK 550N055T2		550	0.0016	40000	595	100	0.12	1250	X020a	
IXTZ 550N055T2		550	0.0010	40000	595	100	0.25	600	D5	
IXTP 130N065T2	65	130	0.0066	4800	79	41	0.60	250	X005a	
IXTA 130N065T2		130	0.0066	4800	79	41	0.60	250	X011b	
IXTP 70N075T2	75	70	0.0120	2580	46	48	1.00	150	X005a	X020a **TO-264**
IXTA 70N075T2		70	0.0120	2580	46	48	1.00	150	X011b	
IXTP 90N075T2		90	0.0100	3290	54	50	0.82	180	X005a	
IXTA 90N075T2		90	0.0100	3290	54	50	0.82	180	X011b	
IXTP 120N075T2		120	0.0077	4740	78	50	0.60	250	X005a	
IXTA 120N075T2		120	0.0077	4740	78	50	0.60	250	X011b	X027a **SOT-227B miniBLOC**
IXTP 170N075T2		170	0.0054	6860	109	63	0.42	360	X005a	
IXTA 170N075T2		170	0.0054	6860	109	63	0.42	360	X011b	
IXTP 230N075T2		230	0.0042	10.5	178	66	0.31	480	X005a	
IXTA 230N075T2		230	0.0042	10.5	178	66	0.31	480	X011b	
IXTP 80N12T2	120	80	0.0170	4740	80	90	0.46	325	X005a	
IXTA 80N12T2		80	0.0170	4740	80	90	0.46	325	X011b	

TrenchT2™ Power MOSFETs

TrenchT2™ in SMPD Package

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_C = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-36...O-59
MMIX 1T600N04T2	40	600	0.0013	40000	590	100	0.18	830	X031a	X031a **SMPD-X**
MMIX 1T550N055T2	55	550	0.0013	40000	595	100	0.18	830		
MMIX 1F520N075T2	75	500	0.0016	41000	545	150	0.18	830		

TrenchT2™ HiPerFETs™

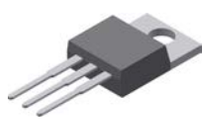
IXFP 230N075T2	75	230	0.0042	10500	178	59	0.31	480	X007a	D5 **DE 475**
IXFH 230N075T2		230	0.0042	10500	178	59	0.31	480	X014a	
IXFA 230N075T2		230	0.0042	10500	178	59	0.31	480	X011b	
IXFH 340N075T2		340	0.0032	19000	300	75	0.16	935	X014a	
IXFT 340N075T2		340	0.0032	19000	300	75	0.16	935	X019	X007a **TO-220FPAB**
IXFH 400N075T2		400	0.0023	24000	420	77	0.15	1000	X014a	
IXFT 400N075T2		400	0.0023	24000	420	77	0.15	1000	X019	
IXFZ 520N075T2		420	0.0016	41000	545	n/a	0.25	600	D5	X011b **TO-263AB**
IXFN 520N075T2		480	0.0019	41000	545	n/a	0.16	940	X027a	
IXFX 520N075T2		520	0.0022	41000	545	n/a	0.12	1250	X015a	
IXFK 520N075T2		520	0.0022	41000	545	n/a	0.12	1250	X020a	
IXFP 130N10T2	100	130	0.0091	6600	130	n/a	0.42	360	X007a	
IXFA 130N10T2		130	0.0091	6600	130	n/a	0.42	360	X011b	X014a **TO-247AD**
IXFP 180N10T2		180	0.0060	10500	185	66	0.31	480	X007a	
IXFA 180N10T2		180	0.0060	10500	185	66	0.31	480	X011b	
IXFH 320N10T2		320	0.0035	25000	430	98	0.15	1000	X014a	
IXFT 320N10T2		320	0.0035	26000	430	98	0.15	1000	X019	
IXFP 76N15T2	150	76	0.0200	5800	97	69	0.43	350	X007a	X015a **PLUS247**
IXFA 76N15T2		76	0.0200	5800	97	69	0.43	350	X011b	
IXFP 110N15T2		110	0.0130	8600	150	85	0.31	480	X007a	
IXFH 110N15T2		110	0.0130	8600	150	85	0.31	480	X014a	
IXFA 110N15T2		110	0.0130	8600	150	85	0.31	480	X011b	X019 **TO-268AA**
IXFH 160N15T2		160	0.0090	15000	253	n/a	0.17	880	X014a	
IXFX 240N15T2		240	0.0052	32000	460	n/a	0.12	1250	X015a	
IXFN 240N15T2		240	0.0052	32000	460	n/a	0.18	830	X027a	
IXFK 240N15T2		240	0.0052	32000	460	n/a	0.12	1250	X020a	X020a **TO-264**
IXFN 360N15T2		310	0.0040	47500	715	n/a	0.14	1070	X027a	
IXFX 360N15T2		360	0.0040	47500	715	n/a	0.09	1670	X015a	
IXFK 360N15T2		360	0.0040	47500	715	n/a	0.09	1670	X020a	
IXFX 220N17T2	170	220	0.0063	31000	500	n/a	0.12	1250	X015a	
IXFK 220N17T2		220	0.0063	31000	500	n/a	0.12	1250	X020a	X027a **SOT-227B miniBLOC**
IXFN 320N17T2		260	0.0052	45000	640	n/a	0.14	1070	X027a	
IXFX 320N17T2		320	0.0052	45000	640	n/a	0.09	1670	X015a	
IXFK 320N17T2		320	0.0052	45000	640	n/a	0.09	1670	X020a	
IXFH 150N17T2	175	150	0.0120	14600	233	n/a	0.17	880	X014a	
IXFT 150N17T2		150	0.0120	14600	233	n/a	0.17	880	X019	

TrenchT3 / T4™ HiPerFET™ Power MOSFETs

TrenchT3™ HiPerFETs™

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_C = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXFA 220N06T3	60	220	0.0040	8500	136	38	0.340	440	X011b	
IXFH 220N06T3		220	0.0040	8500	136	38	0.340	440	X014a	
IXFP 220N06T3		220	0.0040	8500	136	38	0.340	440	X005a	
IXFA 270N06T3		270	0.0031	12600	200	47	0.310	480	X011b	
IXFH 270N06T3		270	0.0031	12600	200	47	0.310	480	X014a	
IXFP 270N06T3		270	0.0031	12600	200	47	0.310	480	X005a	

X005a **TO-220AB**



TrenchT4™ Power MOSFETs

➢ New / Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_C = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
IXTA 380N036T4-7	36	380	0.0010	13400	260	54	0.310	480	X012c
IXTA 230N04T4	40	230	0.0029	7400	140	32	0.440	340	X011b
IXTP 230N04T4		230	0.0029	7400	140	32	0.440	340	X005a
➢ **IXTP 230N04T4M**		230	0.0029	7400	140	32	3.750	40	X007a
IXTP 270N04T4		270	0.0024	9140	182	48	0.400	375	X005a
IXTA 270N04T4-7		270	0.0022	9140	182	48	0.400	375	X012b
IXTH 270N04T4		270	0.0024	9140	182	48	0.400	375	X014a
IXTA 270N04T4		270	0.0022	9140	182	48	0.400	375	X011b
IXTA 340N04T4		340	0.0017	13000	256	43	0.310	480	X011b
IXTA 340N04T4-7		340	0.0017	13000	256	43	0.310	480	X012b
IXTH 340N04T4		340	0.0019	13000	256	43	0.310	480	X014a
IXTP 340N04T4		340	0.0019	13000	256	43	0.310	480	X005a
IXTT 440N04T4HV		440	0.00125	26000	480	72	0.160	940	X019a
IXTN 660N04T4		660	0.00085	44000	860	60	0.144	1040	X027a

X011b **TO-263AB**

X012c **TO-263AB**

X027a **SOT-227B miniBLOC**

X019a **TO-268HV**

X014a **TO-247AD**

Polar™ Standard MOSFETs

Part Type	V_{DSS}	$I_{D(cont)}$ Chip T_J = 25°C	$R_{DS(on)}$ T_J = 25°C	C_{iss} typ	Q_g typ	t_{rr} typ	R_{thJC}	P_D	Fig. No.	Package style Outline drawings on pages O-36...O-59
	V	A	Ω	pF	nC	ns	K/W	W		
IXTP 75N10P	100	75	0.025	2250	74	120	0.42	360	X005a	
IXTA 75N10P		75	0.025	2250	74	120	0.42	360	X011b	
IXTQ 75N10P		75	0.025	2250	74	120	0.42	360	X017a	
IXTT 110N10P		110	0.015	3550	110	130	0.31	480	X019	X005a **TO-220AB**
IXTQ 110N10P		110	0.015	3550	110	130	0.31	480	X017a	
IXTR 200N10P		120	0.008	7600	235	100	0.50	300	X016a	
IXTT 140N10P		140	0.011	4700	155	120	0.25	600	X019	
IXTQ 140N10P		140	0.011	4700	155	120	0.25	600	X017a	
IXTK 170N10P		170	0.009	6000	198	120	0.21	715	X020a	
IXTT 170N10P		170	0.009	6000	198	120	0.21	715	X019	
IXTQ 170N10P		170	0.009	6000	198	120	0.21	715	X017a	
IXTK 200N10P		200	0.0075	7600	240	100	0.18	800	X020a	X011b **TO-263AB**
IXTP 62N15P	150	62	0.040	2250	70	150	0.42	350	X005a	
IXTA 62N15P		62	0.040	2250	70	150	0.42	350	X011b	
IXTQ 62N15P		62	0.040	2250	70	150	0.42	350	X017a	
IXTT 96N15P		96	0.024	3500	110	150	0.31	480	X019	
IXTQ 96N15P		96	0.024	3500	110	150	0.31	480	X017a	
IXTT 120N15P		120	0.016	4900	150	150	0.25	600	X019	
IXTQ 120N15P		120	0.016	4900	150	150	0.25	600	X017a	
IXTK 150N15P		150	0.013	5800	190	150	0.21	714	X020a	X014a **TO-247AD**
IXTQ 150N15P		150	0.013	5800	190	150	0.21	714	X017a	
IXTK 180N15P		180	0.010	7000	240	150	0.18	800	X020a	
IXTP 50N20P	200	50	0.060	2720	70	150	0.42	360	X005a	
IXTA 50N20P		50	0.060	2720	70	150	0.42	360	X011b	
IXTQ 50N20P		50	0.060	2720	70	150	0.42	360	X017a	
IXTT 74N20P		74	0.034	3300	107	160	0.31	480	X019	
IXTQ 74N20P		74	0.034	3300	107	160	0.31	480	X017a	
IXTH 96N20P		96	0.024	4800	145	160	0.25	600	X014a	X016a **ISOPLUS247™**
IXTT 96N20P		96	0.024	4800	145	160	0.25	600	X019	
IXTQ 96N20P		96	0.024	4800	145	160	0.25	600	X017a	
IXTK 120N20P		120	0.022	6000	152	180	0.21	714	X020a	
IXTQ 120N20P		120	0.022	6000	152	180	0.21	714	X017a	
IXTK 140N20P		140	0.018	7500	240	180	0.18	800	X020a	
IXTP 42N25P	250	42	0.084	2300	70	200	0.42	300	X005a	
IXTA 42N25P		42	0.084	2300	70	200	0.42	300	X011b	
IXTQ 42N25P		42	0.084	2300	70	200	0.42	300	X017a	X017a **TO-3P**
IXTT 64N25P		64	0.049	3450	105	200	0.31	400	X019	
IXTQ 64N25P		64	0.049	3450	105	200	0.31	400	X017a	
IXTK 82N25P		82	0.035	4800	142	200	0.25	500	X020a	
IXTT 82N25P		82	0.035	4800	142	200	0.25	500	X019	
IXTQ 82N25P		82	0.035	4800	142	200	0.25	500	X017a	
IXTK 100N25P		100	0.027	6300	185	200	0.21	600	X020a	
IXTT 100N25P		100	0.027	6300	185	200	0.21	600	X019	
IXTQ 100N25P		100	0.027	6300	185	200	0.21	600	X017a	X019 **TO-268AA**
IXTK 120N25P		120	0.024	8700	185	200	0.18	700	X020a	
IXTP 36N30P	300	36	0.110	2250	70	250	0.42	300	X005a	
IXTA 36N30P		36	0.110	2250	70	250	0.42	300	X011b	
IXTQ 36N30P		36	0.110	2250	70	250	0.42	300	X017a	
IXTT 52N30P		52	0.066	3490	110	250	0.31	400	X019	
IXTQ 52N30P		52	0.066	3490	110	250	0.31	400	X017a	
IXTT 69N30P		69	0.049	4960	156	330	0.25	500	X019	
IXTQ 69N30P		69	0.049	4960	156	330	0.25	500	X017a	X020a **TO-264**
IXTH 88N30P		88	0.040	6300	180	250	0.21	600	X014a	
IXTK 88N30P		88	0.040	6300	180	250	0.21	600	X020a	
IXTT 88N30P		88	0.040	6300	180	250	0.21	600	X019	
IXTQ 88N30P		88	0.040	6300	180	250	0.21	600	X017a	
IXTK 102N30P		102	0.033	7500	224	250	0.18	700	X020a	
IXTK 140N30P		140	0.240	14800	185	250	0.12	1040	X020a	

Polar™ Standard MOSFETs

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ pF	Q_g typ nC	t_{rr} typ ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXTP 12N50P	500	12	0.50	1830	29	300	0.62	200	X005a	
IXTA 12N50P		12	0.50	1830	29	300	0.62	200	X011b	
IXTP 16N50P		16	0.40	2480	43	400	0.42	300	X005a	X004 **TO-252AA**
IXTA 16N50P		16	0.40	2480	43	400	0.42	300	X011b	
IXTQ 16N50P		16	0.40	2480	43	400	0.42	300	X017a	
IXTH 22N50P		22	0.27	2880	50	400	0.35	350	X014a	
IXTQ 22N50P		22	0.27	2880	50	400	0.35	350	X017a	
IXTT 26N50P		26	0.23	3600	65	300	0.31	400	X019	
IXTQ 26N50P		26	0.23	3600	65	300	0.31	400	X017a	
IXTH 30N50P		30	0.20	4150	70	400	0.27	460	X014a	
IXTT 30N50P		30	0.20	4150	70	400	0.27	460	X019	
IXTQ 30N50P		30	0.20	4150	70	400	0.27	460	X017a	X004a **TO-252AA**
IXTH 36N50P		36	0.17	4700	82	400	0.23	540	X014a	
IXTT 36N50P		36	0.17	4700	82	400	0.23	540	X019	
IXTQ 36N50P		36	0.17	4700	82	400	0.23	540	X017a	
IXTQ 44N50P		44	0.14	5440	98	400	0.19	650	X017a	
IXTP 10N60P	600	10	0.74	1720	32	500	0.62	200	X005a	
IXTA 10N60P		10	0.74	1720	32	500	0.62	200	X011b	
IXTP 14N60P		14	0.55	2500	36	500	0.42	300	X005a	
IXTA 14N60P		14	0.55	2500	36	500	0.42	300	X011b	
IXTQ 14N60P		14	0.55	2500	36	500	0.42	300	X017a	X005a **TO-220AB**
IXTQ 18N60P		18	0.42	2500	49	500	0.35	360	X017a	
IXTQ 22N60P		22	0.35	3600	62	500	0.31	400	X017a	
IXTH 26N60P		26	0.27	4150	72	500	0.27	460	X014a	
IXTT 26N60P		26	0.27	4150	72	500	0.27	460	X019	
IXTQ 26N60P		26	0.27	4150	72	500	0.27	460	X017a	
IXTH 30N60P		30	0.24	5050	82	500	0.23	540	X014a	
IXTT 30N60P		30	0.24	5050	82	500	0.23	540	X019	
IXTQ 30N60P		30	0.24	5050	82	500	0.23	540	X017a	X011b **TO-263AB**
IXTP 05N100P	1000	0.5	30	196	8.1	750	2.50	50	X005a	
IXTA 05N100P		0.5	30	196	8.1	750	2.50	50	X011b	
IXTP 08N100P		0.8	20	240	11.3	750	3.00	42	X005a	
IXTY 08N100P		0.8	20	240	11.3	750	3.00	42	X004	
IXTA 08N100P		0.8	20	240	11.3	750	3.00	42	X011b	
IXTP 1N100P		1.0	15	331	15.5	750	2.50	50	X005a	
IXTY 1N100P		1.0	15	331	15.5	750	2.50	50	X004	
IXTA 1N100P		1.0	15	331	15.5	750	2.50	50	X011b	
IXTP 1R4N100P		1.4	11	450	17.8	750	2.00	63	X005a	X014a **TO-247AD**
IXTY 1R4N100P		1.4	11	450	17.8	750	2.00	63	X004	
IXTA 1R4N100P		1.4	11	666	17.8	750	2.00	63	X011b	
IXTP 2N100P		2.0	7.5	655	24.3	800	1.45	86	X005a	
IXTY 2N100P		2.0	7.5	655	24.3	800	1.45	86	X004	
IXTA 2N100P		2.0	7.5	655	24.3	800	1.45	86	X011b	
IXTP 3N100P		3.0	4.8	1100	39	820	1.00	125	X005a	
IXTH 3N100P		3.0	4.8	1100	39	820	1.00	125	X014a	
IXTA 3N100P		3.0	4.8	1100	39	820	1.00	125	X011b	
IXTP 02N120P	1200	0.2	75	104	4.7	1600	3.80	33	X005a	X017a **TO-3P**
IXTY 02N120P		0.2	75	104	4.7	1600	3.80	33	X004	
IXTP 06N120P		0.6	34	236	13.3	900	3.00	42	X005a	
IXTA 06N120P		0.6	34	236	13.3	900	3.00	42	X011b	
IXTP 08N120P		0.8	25	333	14	900	2.50	50	X005a	
IXTA 08N120P		0.8	25	333	14	900	2.50	50	X011b	
IXTP 1N120P		1.0	20	445	17.6	900	2.00	63	X005a	
IXTA 1N120P		1.0	20	445	17.6	900	2.00	63	X011b	
IXTP 1R4N120P		1.4	13	666	24.8	900	1.45	86	X005a	X019 **TO-268AA**
➢ **IXTY 1R4N100P**		1.4	13	666	24.8	900	1.45	86	X004	
➢ **IXTY 1R4N100PHV**		1.4	13	666	24.8	900	1.45	86	X004a	
IXTA 1R4N120P		1.4	13	725	24.8	900	1.45	86	X011b	
IXTP 2R4N120P		2.4	7.5	1207	37	920	1.00	125	X005a	
IXTH 2R4N120P		2.4	7.5	1207	37	920	1.00	125	X014a	
IXTA 2R4N120P		2.4	7.5	1207	37	920	1.00	125	X011b	

Polar™ HiPerFETs™ with Fast Intrinsic Diode

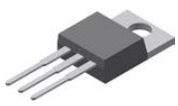
Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ pF	Q_g typ nC	t_{rr} typ ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXFH 110N10P	100	110	0.0150	3550	110	150	0.31	480	X014a	
IXFR 200N10P		120	0.0090	7600	235	150	0.50	300	X016a	
IXFH 140N10P		140	0.0110	4700	155	150	0.25	600	X014a	X014a **TO-247AD**
IXFT 140N10P		140	0.0110	4700	155	150	0.25	600	X019	
IXFH 170N10P		170	0.0090	6000	198	150	0.21	715	X014a	
IXFK 170N10P		170	0.0090	6000	198	150	0.21	715	X020a	
IXFX 200N10P		200	0.0075	7600	235	150	0.18	830	X015a	
IXFN 200N10P		200	0.0075	7600	235	150	0.22	680	X027a	
IXFK 200N10P		200	0.0075	7600	235	150	0.18	830	X020a	
IXFX 250N10P		250	0.0065	16000	205	200	0.12	1250	X015a	X015a **PLUS247**
IXFK 250N10P		250	0.0065	16000	205	200	0.12	1250	X020a	
IXFN 300N10P		295	0.0055	23	279	200	0.14	1070	X027a	
IXFB 300N10P		300	0.0055	23	279	200	0.10	1500	X021a	
IXFH 96N15P	150	96	0.0240	3500	110	200	0.31	480	X014a	
IXFR 180N15P		100	0.0130	7000	240	200	0.50	300	X016a	
IXFH 120N15P		120	0.0160	4900	150	200	0.25	600	X014a	
IXFT 120N15P		120	0.0160	4900	150	200	0.25	600	X019	
IXFN 180N15P		150	0.0110	7000	240	200	0.22	680	X027a	X016a **ISOPLUS247™**
IXFH 150N15P		150	0.0130	5800	190	200	0.21	714	X014a	
IXFK 150N15P		150	0.0130	5800	190	200	0.21	714	X020a	
IXFX 180N15P		180	0.0110	7000	240	200	0.18	830	X015a	
IXFK 180N15P		180	0.0110	7000	240	200	0.18	830	X020a	
IXFX 220N15P		220	0.0090	15.4	162	200	0.12	1250	X015a	
IXFK 220N15P		220	0.0090	15.4	162	200	0.12	1250	X020a	
IXFH 74N20P	200	74	0.0340	3300	107	200	0.31	480	X014a	
IXFR 140N20P		90	0.0220	7500	240	200	0.50	300	X016a	X019 **TO-268AA**
IXFH 96N20P		96	0.0240	4800	145	200	0.25	600	X014a	
IXFT 96N20P		96	0.0240	4800	145	200	0.25	600	X019	
IXFN 140N20P		115	0.0180	7500	240	200	0.22	680	X027a	
IXFH 120N20P		120	0.0220	6000	152	200	0.21	714	X014a	
IXFK 120N20P		120	0.0220	6000	152	200	0.21	714	X020a	
IXFK 140N20P		140	0.0180	7500	240	200	0.18	830	X020a	X020a **TO-264**
IXFX 170N20P		170	0.0140	11.4	185	200	0.12	1250	X015a	
IXFK 170N20P		170	0.0140	11.4	185	200	0.12	1250	X020a	
IXFN 210N20P		188	0.0105	18.6	255	200	0.14	1070	X027a	
IXFB 210N20P		210	0.0105	18.6	255	200	0.10	1500	X021a	
IXFH 100N25P	250	100	0.0270	6300	185	200	0.21	600	X014a	
IXFX 120N25P		120	0.0240	8700	185	200	0.18	700	X015a	
IXFK 120N25P		120	0.0240	8700	185	200	0.18	700	X020a	
IXFH 52N30P	300	52	0.0660	3490	110	200	0.31	400	X014a	X021a **PLUS264**
IXFR 102N30P		60	0.0360	7500	224	200	0.50	250	X016a	
IXFH 69N30P		69	0.0490	4960	156	200	0.25	500	X014a	
IXFT 69N30P		69	0.0490	4960	156	200	0.25	500	X019	
IXFR 140N30P		70	0.0260	14800	185	200	0.35	360	X016a	
IXFN 102N30P		86	0.0330	7500	224	200	0.22	570	X027a	
IXFH 88N30P		88	0.0400	6300	180	200	0.21	600	X014a	
IXFK 88N30P		88	0.0400	6300	180	200	0.21	600	X020a	X027a **SOT-227B miniBLOC**
IXFT 88N30P		88	0.0400	6300	180	200	0.21	600	X019	
IXFK 102N30P		102	0.0330	7500	224	200	0.18	700	X020a	
IXFN 140N30P		110	0.0240	14800	185	200	0.18	700	X027a	
IXFN 170N30P		138	0.0018	20	258	200	0.14	890	X027a	
IXFX 140N30P		140	0.0240	14800	185	200	0.12	1040	X015a	
IXFK 140N30P		140	0.0240	14800	185	200	0.12	1040	X020a	
IXFB 170N30P		170	0.0180	20	258	200	0.10	1250	X021a	

Polar™ HiPerFETs™ with Fast Intrinsic Diode

Part Type	V_{DSS}	$I_{D(cont)}$ Chip T_C = 25°C	$R_{DS(on)}$ T_J = 25°C	C_{iss} typ	Q_g typ	t_{rr} typ	R_{thJC}	P_D	Fig. No.
	V	A	Ω	pF	nC	ns	K/W	W	
IXFP 12N50P	500	12	0.500	1830	29	200	0.62	200	X005a
IXFA 12N50P		12	0.500	1830	29	200	0.62	200	X011b
IXFP 16N50P		16	0.400	2480	43	200	0.42	300	X005a
IXFH 16N50P		16	0.400	2480	43	200	0.42	300	X014a
IXFA 16N50P		16	0.400	2480	43	200	0.42	300	X011b
IXFR 36N50P		19	0.190	5500	93	200	0.75	156	X016a
IXFH 22N50P		22	0.270	2880	50	200	0.35	350	X014a
IXFR 44N50P		24	0.150	5440	98	200	0.60	208	X016a
IXFH 26N50P		26	0.230	3600	60	200	0.31	400	X014a
IXFH 30N50P		30	0.200	4150	70	200	0.27	460	X014a
IXFT 30N50P		30	0.200	4150	70	200	0.27	460	X019
IXFH 36N50P		36	0.170	5500	93	200	0.23	540	X014a
IXFT 36N50P		36	0.170	5500	93	200	0.23	540	X019
IXFR 64N50P		37	0.095	9700	150	200	0.42	300	X016a
IXFH 44N50P		44	0.140	5440	98	200	0.19	650	X014a
IXFK 44N50P		44	0.140	5440	98	200	0.19	650	X020a
IXFT 44N50P		44	0.140	5440	98	200	0.19	650	X019
IXFR 80N50P		45	0.072	12700	197	200	0.35	360	X016a
IXFN 64N50P		50	0.085	9700	150	200	0.20	625	X027a
IXFX 64N50P		64	0.085	9700	150	200	0.15	830	X015a
IXFK 64N50P		64	0.085	9700	150	200	0.15	830	X020a
IXFN 80N50P		66	0.065	12700	195	200	0.18	700	X027a
IXFL 100N50P		68	0.052	20000	240	200	0.20	625	X022a
IXFX 80N50P		80	0.065	12700	197	200	0.12	1040	X015a
IXFK 80N50P		80	0.065	12700	197	200	0.12	1040	X020a
IXFN 100N50P		90	0.049	20000	240	200	0.12	1040	X027a
IXFB 100N50P		100	0.049	20000	240	200	0.10	1250	X021a
IXFP 10N60P	600	10	0.740	1720	32	200	0.62	200	X005a
IXFA 10N60P		10	0.740	1720	32	200	0.62	200	X011b
IXFP 14N60P		14	0.550	2500	36	200	0.42	300	X005a
IXFH 14N60P		14	0.550	2500	36	200	0.42	300	X014a
IXFA 14N60P		14	0.550	2500	36	200	0.42	300	X011b
IXFR 30N60P		15	0.250	3820	85	200	0.75	166	X016a
IXFH 18N60P		18	0.400	2500	50	200	0.35	360	X014a
IXFR 36N60P		20	0.200	5800	102	200	0.60	208	X016a
IXFH 22N60P		22	0.350	3600	58	200	0.31	400	X014a
IXFH 26N60P		26	0.270	4150	72	200	0.27	460	X014a
IXFT 26N60P		26	0.270	4150	72	200	0.27	460	X019
IXFH 30N60P		30	0.240	4000	82	200	0.25	500	X014a
IXFT 30N60P		30	0.240	4000	82	200	0.25	500	X019
IXFR 48N60P		32	0.150	8860	150	200	0.42	300	X016a
IXFR 64N60P		36	0.105	12000	200	200	0.35	360	X016a
IXFH 36N60P		36	0.190	5800	102	200	0.19	650	X014a
IXFK 36N60P		36	0.190	5800	102	200	0.19	650	X020a
IXFT 36N60P		36	0.190	5800	102	200	0.19	650	X019
IXFN 48N60P		40	0.140	8860	150	200	0.20	625	X027a
IXFX 48N60P		48	0.135	8860	150	200	0.15	830	X015a
IXFK 48N60P		48	0.135	8860	150	200	0.15	830	X020a
IXFN 64N60P		50	0.096	12000	200	200	0.18	700	X027a
IXFL 82N60P		55	0.078	23000	240	200	0.20	625	X022a
IXFX 64N60P		64	0.096	12000	200	200	0.12	1040	X015a
IXFK 64N60P		64	0.096	12000	200	200	0.12	1040	X020a
IXFN 82N60P		72	0.075	23000	240	200	0.12	1040	X027a
IXFB 82N60P		82	0.075	23000	240	200	0.10	1250	X021a

Package style
Outline drawings on pages O-36...O-59

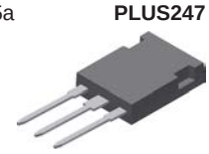
X005a **TO-220AB**



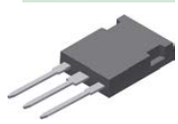
X011b **TO-263AB**

X014a **TO-247AD**

X015a **PLUS247**

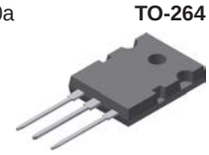


X016a **ISOPLUS247™**



X019 **TO-268AA**

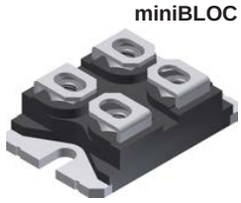
X020a **TO-264**



X021a **PLUS264**

X022a **ISOPLUS264™**

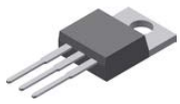
X027a **SOT-227B miniBLOC**



Polar™ HiPerFETs™ with Fast Intrinsic Diode

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ pF	Q_g typ nC	t_{rr} typ ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXFP 7N80P	800	7	1.44	1800	32	250	0.62	200	X005a	
IXFA 7N80P		7	1.44	1800	32	250	0.62	200	X011b	
IXFR 20N80P		10	0.57	4685	86	250	0.8	160	X016a	
IXFP 10N80P		10	1.10	2050	40	250	0.42	300	X005a	
IXFH 10N80P		10	1.10	2050	40	250	0.42	300	X014a	
IXFA 10N80P		10	1.10	2050	40	250	0.42	300	X011b	
IXFQ 10N80P		10	1.10	2050	40	250	0.42	300	X017a	
IXFH 12N80P		12	0.85	2800	51	250	0.35	360	X014a	
IXFR 24N80P		13	0.42	7200	105	250	0.6	208	X016a	
IXFH 14N80P		14	0.72	3900	61	250	0.31	400	X014a	
IXFT 14N80P		14	0.72	3900	61	250	0.31	400	X019	
IXFQ 14N80P		14	0.72	3900	61	250	0.31	400	X017a	
IXFH 16N80P		16	0.60	4000	70	250	0.27	460	X014a	
IXFT 16N80P		16	0.60	4000	70	250	0.27	460	X019	
IXFR 32N80P		20	0.29	8800	150	250	0.42	300	X016a	
IXFH 20N80P		20	0.52	4685	86	250	0.25	500	X014a	
IXFT 20N80P		20	0.52	4685	86	250	0.25	500	X019	
IXFH 24N80P		24	0.40	5800	100	250	0.19	650	X014a	
IXFK 24N80P		24	0.40	7200	105	250	0.19	650	X020a	
IXFT 24N80P		24	0.40	5800	100	250	0.19	650	X019	
IXFR 44N80P		26	0.19	12000	200	250	0.35	360	X016a	
IXFN 32N80P		29	0.27	8820	150	250	0.2	625	X027a	
IXFX 32N80P		32	0.27	8800	150	250	0.15	830	X015a	
IXFK 32N80P		32	0.27	8800	150	250	0.15	830	X020a	
IXFN 44N80P		39	0.19	18000	200	250	0.18	694	X027a	
IXFL 60N80P		40	0.15	18000	250	250	0.2	625	X022a	
IXFX 44N80P		44	0.19	12000	198	250	0.12	1200	X015a	
IXFK 44N80P		44	0.19	12000	198	250	0.12	1200	X020a	
IXFN 60N80P		53	0.14	18000	250	250	0.12	1040	X027a	
IXFB 60N80P		60	0.14	18000	250	250	0.1	1250	X021a	
IXFR 18N90P	900	10.5	0.66	5230	97	300	0.62	200	X016a	
IXFH 12N90P		12	0.90	3080	56	300	0.33	380	X014a	
IXFR 24N90P		13	0.46	7200	130	300	0.54	230	X016a	
IXFH 18N90P		18	0.60	5230	97	300	0.23	540	X014a	
IXFT 18N90P		18	0.60	5230	97	300	0.23	540	X019	
IXFR 40N90P		21	0.23	14000	230	300	0.42	300	X016a	
IXFH 24N90P		24	0.42	7200	130	300	0.19	660	X014a	
IXFT 24N90P		24	0.42	7200	130	300	0.19	660	X019	
IXFK 32N90P		32	0.30	10600	215	300	0.13	960	X020a	
IXFX 32N90P		32	0.30	10600	215	300	0.13	960	X015a	
IXFN 40N90P		33	0.21	14000	230	300	0.18	695	X027a	
IXFX 40N90P		40	0.21	14000	230	300	0.13	960	X015a	
IXFK 40N90P		40	0.21	14000	230	300	0.13	960	X020a	
IXFN 52N90P		43	0.16	19000	308	300	0.14	890	X027a	
IXFB 52N90P		52	0.16	19000	308	300	0.1	1250	X021a	
IXFN 56N90P		56	0.145	23000	375	300	0.125	1000	X027a	

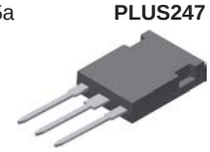
X005a **TO-220AB**



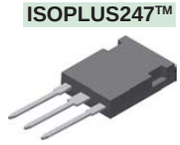
X011b **TO-263AB**

X014a **TO-247AD**

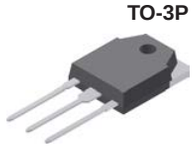
X015a **PLUS247**



X016a **ISOPLUS247™**

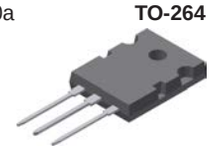


X017a **TO-3P**



X019 **TO-268AA**

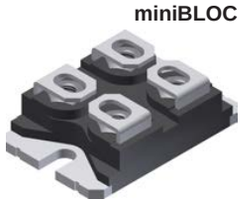
X020a **TO-264**



X021a **PLUS264**

X022a **ISOPLUS264™**

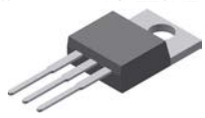
X027a **SOT-227B miniBLOC**



Polar™ HiPerFETs™ with Fast Intrinsic Diode

Part Type	V_{DSS}	$I_{D(cont)}$ Chip T_C = 25°C	$R_{DS(on)}$ T_J = 25°C	C_{iss} typ	Q_g typ	t_{rr} typ	R_{thJC}	P_D	Fig. No.	Package style Outline drawings on pages O-36...O-59
	V	A	Ω	pF	nC	ns	K/W	W		
IXFP 4N100P	1000	4	3.30	1456	26	300	0.83	150	X005a	
IXFA 4N100P		4	3.30	1456	26	300	0.83	150	X011b	
IXFP 5N100P		5	2.80	1830	33.4	200	0.5	250	X005a	
IXFH 5N100P		5	2.80	1830	33.4	200	0.5	250	X014a	
IXFA 5N100P		5	2.80	1830	33.4	200	0.5	250	X011b	
IXFA 7N100P		7	1.90	2590	47	300	0.42	300	X011b	
IXFH 7N100P		7	1.90	2590	47	300	0.42	300	X014a	
IXFP 7N100P		7	1.90	2590	47	300	0.42	300	X005a	
IXFH 10N100P		10	1.40	3030	56	300	0.33	380	X014a	
IXFR 20N100P		11	0.64	7300	126	300	0.54	230	X016a	
IXFH 12N100P		12	1.05	4080	80	300	0.27	463	X014a	
IXFR 26N100P		15	0.43	11900	197	300	0.43	290	X016a	
IXFH 15N100P		15	0.76	5140	97	300	0.23	543	X014a	
IXFR 32N100P		18	0.34	14200	225	300	0.39	320	X016a	
IXFH 20N100P		20	0.57	7300	126	300	0.19	660	X014a	
IXFT 20N100P		20	0.57	7300	126	300	0.19	660	X019	
IXFL 44N100P		22	0.24	19000	305	300	0.35	357	X022e	
IXFN 26N100P		23	0.39	11900	197	300	0.21	595	X027a	
IXFX 26N100P		26	0.39	11900	197	300	0.16	780	X015a	
IXFK 26N100P		26	0.39	11900	197	300	0.16	780	X020a	
IXFN 32N100P		27	0.32	14200	225	300	0.18	690	X027a	
IXFL 38N100P		29	0.23	24000	350	300	0.24	520	X022e	
IXFX 32N100P		32	0.32	14200	225	300	0.13	960	X015a	
IXFK 32N100P		32	0.32	14200	225	300	0.13	960	X020a	
IXFN 44N100P		37	0.22	19000	305	300	0.14	890	X027a	
IXFN 38N100P		38	0.21	24000	350	300	0.125	1000	X027a	
IXFB 44N100P		44	0.22	19000	305	300	0.1	1250	X021a	
IXFL 40N110P	1100	21	0.28	19000	310	300	0.35	357	X022e	
IXFL 36N110P		26	0.26	23000	350	300	0.24	520	X022e	
IXFN 40N110P		34	0.26	19000	310	300	0.14	890	X027a	
IXFB 40N110P		40	0.26	19000	310	300	0.1	1250	X021a	
IXFP 6N120P	1200	6	2.40	2830	92	300	0.5	250	X005a	
IXFH 6N120P		6	2.40	2830	92	300	0.5	250	X014a	
IXFA 6N120P		6	2.40	2830	92	300	0.5	250	X011b	
IXFR 16N120P		9	1.04	6900	120	300	0.54	230	X016a	
IXFH 12N120P		12	1.35	5400	103	300	0.23	543	X014a	
IXFR 20N120P		13	0.63	12900	193	300	0.43	290	X016a	
IXFR 26N120P		15	0.50	14000	225	300	0.39	320	X016a	
IXFH 16N120P		16	0.95	6900	120	300	0.19	660	X014a	
IXFT 16N120P		16	0.95	6900	120	300	0.19	660	X019	
IXFL 30N120P		18	0.38	19000	310	300	0.35	357	X022e	
IXFX 20N120P		20	0.57	11100	193	300	0.16	780	X015a	
IXFN 20N120P		20	0.57	11100	193	300	0.21	595	X027a	
IXFK 20N120P		20	0.57	11100	193	300	0.16	780	X020a	
IXFN 26N120P		23	0.46	14000	225	300	0.18	695	X027a	
IXFL 32N120P		24	0.34	21000	360	300	0.24	520	X022e	
IXFX 26N120P		26	0.46	14000	225	300	0.13	960	X015a	
IXFK 26N120P		26	0.46	14000	225	300	0.13	960	X020a	
IXFB 30N120P		30	0.35	22500	310	300	0.1	1250	X021a	
IXFN 30N120P		30	0.35	19000	310	300	0.14	890	X027a	
IXFN 32N120P		32	0.31	21000	360	300	0.125	1000	X027a	

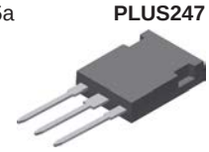
X005a **TO-220AB**



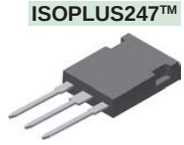
X011b **TO-263AB**

X014a **TO-247AD**

X015a **PLUS247**

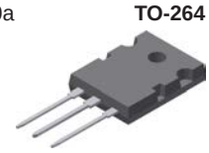


X016a **ISOPLUS247™**

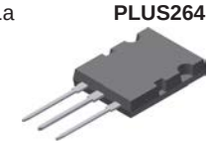


X019 **TO-268AA**

X020a **TO-264**

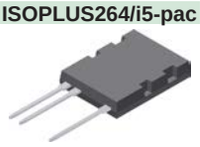


X021a **PLUS264**

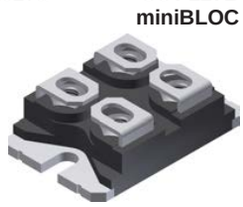


X022a **ISOPLUS264™**

X022e **ISOPLUS264/i5-pac**



X027a **SOT-227B miniBLOC**



PolarP2™ Power MOSFETs

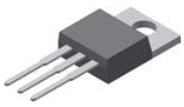
Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
PolarP2™ Standard Power MOSFETs									
IXTH 450P2	500	16	0.330	2530	43	400	0.420	300	X014a
IXTP 450P2		16	0.330	2530	43	400	0.420	300	X005a
IXTQ 450P2		16	0.330	2530	43	400	0.420	300	X017a
IXTA 460P2		24	0.270	2890	48	400	0.260	480	X011b
IXTH 460P2		24	0.270	2890	48	400	0.260	480	X014a
IXTP 460P2		24	0.270	2890	48	400	0.260	480	X005a
IXTQ 460P2		24	0.270	2890	48	400	0.260	480	X017a
IXTQ 470P2		42	0.145	5400	88	400	0.150	830	X017a
IXTQ 480P2		52	0.120	6800	108	400	0.130	960	X017a
PolarP2™ HiPerFETs™ with Fast Intrinsic Diode									
IXFQ 24N50P2	500	24	0.27	2890	48	200	0.260	480	X017a
IXFH 42N50P2		42	0.145	5300	92	250	0.150	830	X014a
IXFT 42N50P2		42	0.145	5300	92	250	0.150	830	X019
IXFH 52N50P2		52	0.120	6800	113	250	0.130	960	X014a
IXFT 52N50P2		52	0.120	6800	113	250	0.130	960	X019
IXFN 94N50P2		68	0.055	13700	220	250	0.160	780	X027a
IXFK 94N50P2		94	0.055	14200	228	250	0.096	1300	X020a
IXFX 94N50P2		94	0.055	14200	228	250	0.096	1300	X015a
IXFB 120N50P2		120	0.043	19000	300	300	0.066	1890	X021a

PolarP3™ HiPerFETs™

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} max. (typ.) ns	R_{thJC} K/W	P_D W	Fig. No.
IXFP 36N30P3	300	36	0.1100	2040	30	-125	0.36	347	X005a
IXFA 36N30P3		36	0.1100	2040	30	-125	0.36	347	X011b
IXFH 94N30P3		94	0.0360	5510	102	250	0.12	1040	X014a
IXFQ 94N30P3		94	0.0360	5510	102	250	0.12	1040	X017a
IXFT 94N30P3		94	0.0360	5510	102	250	0.12	1040	X019
IXFL 210N30P3		108	0.0160	16200	268	250	0.24	520	X022a
IXFK 120N30P3		120	0.0270	8630	150	250	0.11	1130	X020a
IXFX 120N30P3		120	0.0270	8630	150	250	0.11	1130	X015a
IXFK 150N30P3		150	0.0190	12100	197	250	0.096	1300	X020a
IXFX 150N30P3		150	0.0190	12100	197	250	0.096	1300	X015a
IXFN 210N30P3		192	0.0145	16200	268	250	0.083	1500	X027a
IXFB 210N30P3		210	0.0145	16200	268	250	0.066	1890	X021a
IXFJ 26N50P3	500	14	0.2650	2220	42	250	0.69	180	X016c
IXFA 16N50P3		16	0.3600	1515	29	250	0.38	330	X011b
IXFH 16N50P3		16	0.3600	1515	29	250	0.38	330	X014a
IXFP 16N50P3		16	0.3600	1515	29	250	0.38	330	X005a
IXFA 20N50P3		20	0.3000	1800	36	250	0.36	380	X011b
IXFH 20N50P3		20	0.3000	1800	36	250	0.36	380	X014a
IXFP 20N50P3		20	0.3000	1800	36	250	0.36	380	X005a

Package style
Outline drawings on pages O-36...O-59

X005a **TO-220AB**



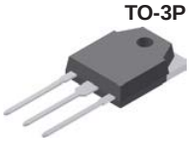
X011b **TO-263AB**

X014a **TO-247AD**

X015a **PLUS247**

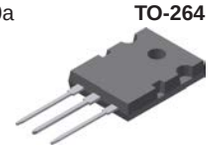
X016c **ISO247™**

X017a **TO-3P**



X019 **TO-268AA**

X020a **TO-264**



X021a **PLUS264**

X022a **ISOPLUS264™**

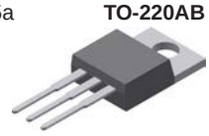
X027a **SOT-227B miniBLOC**

PolarP3™ HiPerFETs™

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
IXFQ 20N50P3	500	20	0.300	1800	36	250	0.360	380	X017a
IXFA 26N50P3		26	0.230	2220	42	250	0.250	500	X011b
IXFH 26N50P3		26	0.230	2220	42	250	0.250	500	X014a
IXFP 26N50P3		26	0.230	2220	42	250	0.250	500	X005a
IXFQ 26N50P3		26	0.230	2220	42	250	0.250	500	X017a
IXFH 34N50P3		34	0.170	3260	60	250	0.180	695	X014a
IXFQ 34N50P3		34	0.170	3260	60	250	0.180	695	X017a
IXFH 60N50P3		60	0.100	6250	96	250	0.120	1040	X014a
IXFQ 60N50P3		60	0.100	6250	96	250	0.120	1040	X017a
IXFT 60N50P3		60	0.100	6250	96	250	0.120	1040	X019
IXFL 132N50P3		63	0.043	18600	250	250	0.240	520	X022a
IXFK 78N50P3		78	0.068	9900	147	250	0.110	1130	X020a
IXFX 78N50P3		78	0.068	9900	147	250	0.110	1130	X015a
IXFK 98N50P3		98	0.050	13100	197	250	0.096	1300	X020a
IXFX 98N50P3		98	0.050	13100	197	250	0.096	1300	X015a
IXFN 132N50P3		112	0.039	18600	250	250	0.083	1500	X027a
IXFB 132N50P3		132	0.039	18600	250	250	0.066	1890	X021a
IXFA 14N60P3	600	14	0.540	1480	25	250	0.380	327	X011b
IXFH 14N60P3		14	0.540	1480	25	250	0.380	327	X014a
IXFP 14N60P3		14	0.540	1480	25	250	0.380	327	X005a
IXFA 16N60P3		16	0.440	1830	36	250	0.360	347	X011b
IXFH 16N60P3		16	0.440	1830	36	250	0.360	347	X014a
IXFP 16N60P3		16	0.440	1830	36	250	0.360	347	X005a
IXFA 22N60P3		22	0.360	2600	38	250	0.250	500	X011b
IXFH 22N60P3		22	0.360	2600	38	250	0.250	500	X014a
IXFP 22N60P3		22	0.360	2600	38	250	0.250	500	X005a
IXFQ 22N60P3		22	0.360	2600	38	250	0.250	500	X017a
IXFH 28N60P3		28	0.260	3560	50	250	0.180	695	X014a
IXFQ 28N60P3		28	0.260	3560	50	250	0.180	695	X017a
IXFH 42N60P3		42	0.185	5150	78	250	0.150	830	X014a
IXFR 80N60P3		48	0.076	13100	190	250	0.230	540	X016a
IXFH 50N60P3		50	0.145	6300	94	250	0.120	1040	X014a
IXFQ 50N60P3		50	0.145	6300	94	250	0.120	1040	X017a
IXFT 50N60P3		50	0.145	6300	94	250	0.120	1040	X019
IXFK 64N60P3		64	0.095	9900	145	250	0.110	1130	X020a
IXFX 64N60P3		64	0.095	9900	145	250	0.110	1130	X015a
IXFN 80N60P3		66	0.077	13100	190	250	0.130	960	X027a
IXFK 80N60P3		80	0.070	13100	190	250	0.096	1300	X020a
IXFX 80N60P3		80	0.070	13100	190	250	0.096	1300	X015a
IXFN 110N60P3		90	0.056	18000	245	250	0.083	1500	X027a
IXFB 110N60P3		110	0.056	18000	245	250	0.066	1890	X021a

Package style
Outline drawings on pages O-36...O-59

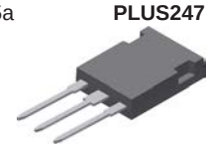
X005a **TO-220AB**



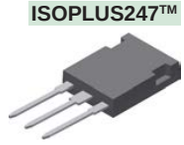
X011b **TO-263AB**

X014a **TO-247AD**

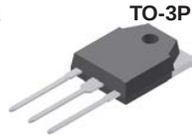
X015a **PLUS247**



X016a **ISOPLUS247™**

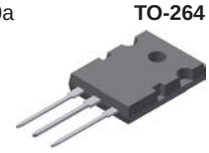


X017a **TO-3P**

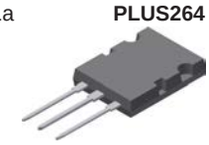


X019 **TO-268AA**

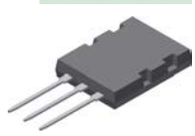
X020a **TO-264**



X021a **PLUS264**

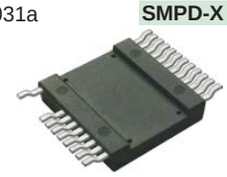


X022a **ISOPLUS264™**



X027a **SOT-227B** miniBLOC

X031a **SMPD-X**



PolarP3™ Power MOSFET

with Current & Temperature Sensing in SMPD Package

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
MMIX 1T132N50P3	500	63	0.043	18600	267	600	0.24	520	X031a

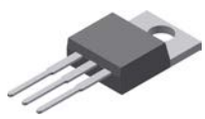
X2 and X3-Class Ultra Junction Power MOSFETs

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
200V X3-Class HiPerFET™ Power MOSFETs with Fast Body Diodes									
➢ **IXFA 36N20X3**	200	36	0.0450	1425	21	75	0.73	170	X011b
➢ **IXFP 36N20X3**		36	0.0450	1425	21	75	0.73	170	X005a
➢ **IXFP 36N20X3M**		36	0.0450	1425	21	75	3.50	36	X007a
➢ **IXFY 36N20X3**		36	0.0450	1425	21	75	0.73	170	X004
➢ **IXFA 50N20X3**		50	0.0300	2100	33	70	0.52	240	X011b
➢ **IXFP 50N20X3**		50	0.0300	2100	33	70	0.52	240	X005a
➢ **IXFP 50N20X3M**		50	0.0300	2100	33	70	3.70	34	X007a
➢ **IXFA 72N20X3**		72	0.0200	3780	55	95	0.39	320	X011b
➢ **IXFP 72N20X3**		72	0.0200	3780	55	95	0.39	320	X005a
➢ **IXFP 72N20X3M**		72	0.0200	3780	55	95	3.50	36	X007a
➢ **IXFQ 72N20X3**		72	0.0200	3780	55	95	0.39	320	X017a
➢ **IXFA 90N20X3**		90	0.0128	5420	78	95	0.32	390	X011b
➢ **IXFH 90N20X3**		90	0.0128	5420	78	95	0.32	390	X014a
➢ **IXFP 90N20X3**		90	0.0128	5420	78	95	0.32	390	X005a
➢ **IXFP 90N20X3M**		90	0.0128	5420	78	95	3.50	36	X007a
➢ **IXFQ 90N20X3**		90	0.0128	5420	78	95	0.32	390	X017a
➢ **IXFH 140N20X3**		140	0.0096	7660	127	105	0.26	480	X014a
➢ **IXFQ 140N20X3**		140	0.0096	7660	127	105	0.26	480	X017a
➢ **IXFT 140N20X3HV**		140	0.0096	7660	127	105	0.26	480	X019a
➢ **IXFN 220N20X3**		160	0.0062	13600	204	128	0.32	390	X027a
➢ **IXFH 180N20X3**		180	0.0075	10300	154	120	0.17	735	X014a
➢ **IXFT 180N20X3HV**		180	0.0075	10300	154	120	0.17	735	X019a
➢ **IXFH 220N20X3**		220	0.0062	13600	204	128	0.14	890	X014a
➢ **IXFK 220N20X3**		220	0.0062	13600	204	128	0.14	890	X020a
➢ **IXFT 220N20X3HV**		220	0.0062	13600	204	128	0.14	890	X019a
➢ **IXFK 300N20X3**		300	0.0040	23800	375	172	0.10	1250	X020a
➢ **IXFN 300N20X3**		300	0.0035	23800	375	172	0.18	695	X027a
➢ **IXFX 300N20X3**		300	0.0040	23800	375	172	0.10	1250	X015a
250V X3-Class HiPerFET™ Power MOSFETs with Fast Body Diodes									
➢ **IXFA 30N25X3**	250	30	0.0600	1450	21	82	0.73	170	X011b
➢ **IXFP 30N25X3**		30	0.0600	1450	21	82	0.73	170	X005a
➢ **IXFP 30N25X3M**		30	0.0600	1450	21	82	3.50	36	X007a
➢ **IXFY 30N25X3**		30	0.0600	1450	21	82	0.73	170	X004
➢ **IXFA 44N25X3**		44	0.0400	2200	33	87	0.52	240	X011b
IXFJ 80N25X3		44	0.0180	5430	83	120	1.20	104	X016c
➢ **IXFP 44N25X3**		44	0.0400	2200	33	87	0.52	240	X005a
➢ **IXFP 44N25X3M**		44	0.0400	2220	33	87	3.70	34	X007a
➢ **IXFA 60N25X3**		60	0.0230	3610	50	95	0.39	320	X011b
➢ **IXFP 60N25X3**		60	0.0230	3610	50	95	0.39	320	X005a
➢ **IXFP 60N25X3M**		60	0.0230	3610	50	95	3.50	36	X007a
➢ **IXFQ 60N25X3**		60	0.0230	3610	50	95	0.39	320	X017a
IXFA 80N25X3		80	0.0160	5430	83	120	0.32	390	X011b
IXFH 80N25X3		80	0.0160	5430	83	120	0.32	390	X014a
IXFP 80N25X3		80	0.0160	5430	83	120	0.32	390	X005a
➢ **IXFQ 80N25X3**		80	0.0160	5430	83	120	0.32	390	X017a
➢ **IXFH 120N25X3**		120	0.0120	7870	122	140	0.26	480	X014a
➢ **IXFQ 120N25X3**		120	0.0120	7870	122	140	0.26	480	X017a
➢ **IXFT 120N25X3HV**		120	0.0120	7870	122	140	0.26	480	X019a
➢ **IXFH 150N25X3**		150	0.0090	10400	154	140	0.17	735	X014a
➢ **IXFT 150N25X3HV**		150	0.0090	10400	154	140	0.17	735	X019a
➢ **IXFH 170N25X3**		170	0.0074	13500	190	140	0.14	890	X014a
➢ **IXFK 170N25X3**		170	0.0074	13500	190	140	0.14	890	X020a
➢ **IXFN 170N25X3**		170	0.0074	13500	190	135	0.32	390	X027a
➢ **IXFT 170N25X3HV**		170	0.0074	13500	190	140	0.14	890	X019a
➢ **IXFK 240N25X3**		240	0.0050	23800	345	177	0.10	1250	X020a
➢ **IXFN 240N25X3**		240	0.0045	23800	345	165	0.18	695	X027a
➢ **IXFX 240N25X3**		240	0.0050	23800	345	177	0.1	1250	X015a

Package style
Outline drawings on pages O-36...O-59

X004 **TO-252AA**

X005a **TO-220AB**



X007a **TO-220FPAB**

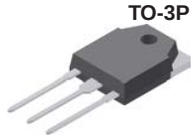
X011b **TO-263AB**

X014a **TO-247AD**

X015a **PLUS247**

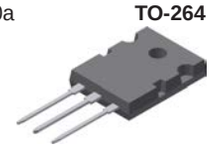
X016c **ISO247™**

X017a **TO-3P**



X019a **TO-268AAHV**

X020a **TO-264**



X027a **SOT-227B miniBLOC**

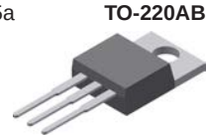
X2 and X3-Class Ultra Junction Power MOSFETs

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
300V X3-Class HiPerFET™ Power MOSFETs with Fast Body Diodes									
➢ **IXFA 26N30X3**	300	26	0.0660	1465	22	105	0.73	170	X011b
➢ **IXFP 26N30X3**		26	0.0660	1465	22	105	0.73	170	X005a
➢ **IXFY 26N30X3**		26	0.0660	1465	22	105	0.73	170	X004
➢ **IXFA 38N30X3**		38	0.0500	2240	35	90	0.52	240	X011b
➢ **IXFP 38N30X3**		38	0.0500	2240	35	90	0.52	240	X005a
➢ **IXFP 38N30X3M**		38	0.0500	2440	35	90	3.70	34	X007a
➢ **IXFA 56N30X3**		56	0.0270	3750	56	115	0.39	320	X011b
➢ **IXFH 56N30X3**		56	0.0270	3750	56	115	0.39	320	X014a
➢ **IXFP 56N30X3**		56	0.0270	3750	56	115	0.39	320	X005a
➢ **IXFP 56N30X3M**		56	0.0270	3750	56	115	3.50	36	X007a
➢ **IXFA 72N30X3**		72	0.0190	5400	82	100	0.32	390	X011b
➢ **IXFH 72N30X3**		72	0.0190	5400	82	100	0.32	390	X014a
➢ **IXFP 72N30X3**		72	0.0190	5400	82	100	0.32	390	X005a
➢ **IXFP 72N30X3M**		72	0.0190	5400	82	100	3.50	36	X007a
➢ **IXFQ 72N30X3**		72	0.0190	5400	82	100	0.32	390	X017a
➢ **IXFH 100N30X3**		100	0.0135	7660	122	130	0.26	48	X014a
➢ **IXFT 100N30X3HV**		100	0.0135	7660	122	130	0.26	480	X019a
➢ **IXFH 120N30X3**		120	0.0110	10500	170	145	0.17	735	X014a
➢ **IXFT 120N30X3HV**		120	0.0110	10500	170	145	0.17	735	X019a
➢ **IXFH 150N30X3**		150	0.0083	13100	254	167	0.14	890	X014a
➢ **IXFK 150N30X3**		150	0.0083	13100	254	167	0.14	890	X020a
➢ **IXFT 150N30X3HV**		150	0.0083	13100	254	167	0.14	890	X019a
➢ **IXFK 210N30X3**		210	0.0055	24200	375	190	0.10	1250	X020a
➢ **IXFN 210N30X3**		210	0.0046	24200	375	190	0.18	695	X027a
➢ **IXFX 210N30X3**		210	0.0055	24200	375	190	0.10	1250	X015a
650V X2-Class Power MOSFETs									
IXTP 2N65X2	650	2	2.300	180	4.3	137	2.27	55	X005a
IXTY 2N65X2		2	2.300	180	4.3	137	2.27	55	X004
IXTA 4N65X2		4	0.850	455	8.3	160	1.56	80	X011b
IXTP 4N65X2		4	0.850	455	8.3	160	1.56	80	X005a
IXTY 4N65X2		4	0.850	455	8.3	160	1.56	80	X004
IXTA 8N65X2		8	0.500	800	12	200	0.83	150	X011b
IXTP 8N65X2		8	0.500	800	12	200	0.83	150	X005a
IXTP 8N65X2M		8	0.550	800	12	200	3.90	32	X007a
IXTY 8N65X2		8	0.500	800	12	200	0.83	150	X004
IXTA 12N65X2		12	0.300	1100	17.7	270	0.69	180	X011b
IXTH 12N65X2		12	0.300	1100	17.7	270	0.69	180	X014a
IXTP 12N65X2		12	0.300	1100	17.7	270	0.69	180	X005a
IXTP 12N65X2M		12	0.300	1100	17.7	270	3.10	40	X007a
➢ **IXTA 20N65X2**		20	0.185	1450	27	350	0.43	290	X011b
➢ **IXTH 20N65X2**		20	0.185	1450	27	350	0.43	290	X014a
➢ **IXTP 20N65X2**		20	0.185	1450	27	350	0.43	290	X005a
➢ **IXTP 20N65X2M**		20	0.185	1450	27	350	3.50	36	X007a
IXTA 24N65X2		24	0.145	2060	36	390	0.32	390	X011b
IXTH 24N65X2		24	0.145	2060	36	390	0.32	390	X014a
IXTP 24N65X2		24	0.145	2060	36	390	0.32	390	X005a
IXTP 24N65X2M		24	0.145	2060	36	390	3.37	37	X007a
IXTA 34N65X2		34	0.096	3000	54	390	0.23	540	X011b
IXTH 34N65X2		34	0.096	3000	54	390	0.23	540	X014a
IXTP 34N65X2		34	0.096	3000	54	390	0.23	540	X005a
IXTT 34N65X2HV		34	0.096	3000	54	390	0.23	540	X019a
IXTH 48N65X2		48	0.065	4300	76	400	0.19	660	X014a
IXTR 102N65X2		54	0.033	10900	152	450	0.38	330	X016a
IXTH 62N65X2		62	0.050	5800	100	445	0.16	780	X014a
IXTN 102N65X2		76	0.030	10900	152	450	0.21	595	X027a
IXTH 80N65X2		80	0.038	7800	137	465	0.14	890	X014a
IXTK 102N65X2		102	0.030	10900	152	450	0.12	1040	X020a
IXTX 102N65X2		102	0.030	10900	152	450	0.12	1040	X015a
IXTK 120N65X2		120	0.023	13600	230	505	0.10	1250	X020a
IXTX 120N65X2		120	0.023	13600	230	505	0.10	1250	X015a

Package style
Outline drawings on pages O-36...O-59

X004 **TO-252AA**

X005a **TO-220AB**



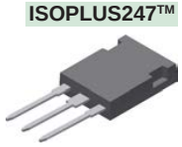
X007a **TO-220FPAB**

X011b **TO-263AB**

X014a **TO-247AD**

X015a **PLUS247**

X016a **ISOPLUS247™**



X019a **TO-268AAHV**

X020a **TO-264**

X027a **SOT-227B miniBLOC**

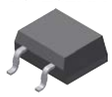
X2 and X3-Class Ultra Junction Power MOSFETs

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
650V X2-Class HiPerFET™ Power MOSFETs with Fast Body Diodes									
IXFA 8N65X2	650	8	0.450	790	11	105	0.830	150	X011b
IXFP 8N65X2		8	0.450	790	11	105	0.830	150	X005a
IXFY 8N65X2		8	0.450	790	11	105	0.830	150	X005a
IXFA 12N65X2		12	0.310	1134	18.5	155	0.690	180	X011b
IXFH 12N65X2		12	0.310	1134	18.5	155	0.690	180	X014a
IXFP 12N65X2		12	0.310	1134	18.5	155	0.690	180	X005a
IXFP 12N65X2M		5.6	0.310	1134	18.5	155	3.100	40	X007a
➢ **IXFA 18N65X2**		18	0.200	1520	29	135	0.430	290	X011b
➢ **IXFH 18N65X2**		18	0.200	1520	29	135	0.430	290	X014a
➢ **IXFP 18N65X2**		18	0.200	1520	29	135	0.430	290	X005a
➢ **IXFP 18N65X2M**		18	0.200	1520	29	135	3.500	36	X007a
IXFA 22N65X2		22	0.145	2190	37	145	0.320	390	X011b
IXFH 22N65X2		22	0.145	2190	37	145	0.320	390	X014a
IXFP 22N65X2		22	0.145	2190	37	145	0.320	390	X005a
IXFP 22N65X2M		22	0.145	2190	37	145	3.370	37	X007a
IXFA 34N65X2		34	0.100	3230	56	164	0.230	540	X011b
IXFH 34N65X2		34	0.100	3230	56	164	0.230	540	X014a
IXFP 34N65X2		34	0.100	3230	56	164	0.230	540	X005a
IXFP 34N65X2M		34	0.100	3230	56	164	3.100	40	X007a
IXFH 42N65X2A		42	0.072	4600	80	170	0.190	660	X014a
IXFH 46N65X2		46	0.069	4570	98	180	0.190	660	X014a
IXFH 60N65X2		60	0.052	6300	108	180	0.160	780	X014a
IXFH 60N65X2-4		60	0.052	6300	108	180	0.160	780	X014d
IXFT 60N65X2HV		60	0.052	6300	108	180	0.160	780	X019a
➢ **IXFN 100N65X2**		78	0.030	10800	183	200	0.210	595	X027a
IXFH 80N65X2		80	0.038	8300	140	200	0.140	890	X014a
IXFH 80N65X2-4		80	0.038	8300	140	200	0.140	890	X014d
IXFK 80N65X2		80	0.038	8300	140	200	0.140	890	X020a
IXFT 80N65X2HV		80	0.038	8300	140	200	0.140	890	X019a
IXFK 100N65X2		100	0.030	10800	183	200	0.120	1040	X020a
IXFX 100N65X2		100	0.030	10800	183	200	0.120	1040	X015a
IXFN 120N65X2		108	0.024	14000	240	220	0.140	890	X027a
IXFK 120N65X2		120	0.024	14000	240	220	0.100	1250	X020a
IXFX 120N65X2		120	0.024	14000	240	220	0.100	1250	X015a
IXFN 150N65X2		145	0.017	21000	355	260	0.120	1040	X027a
IXFB 150N65X2		150	0.017	21000	355	260	0.080	1560	X021a
IXFN 170N65X2		170	0.013	27000	434	270	0.107	1170	X027a
700V X2-Class Power MOSFETs									
➢ **IXTA 4N70X2**	700	4	0.850	386	11.8	186	1.560	80	X011b
➢ **IXTP 4N70X2**		4	0.850	386	11.8	186	1.560	80	X005a
➢ **IXTP 4N70X2M**		4	0.850	386	11.8	186	4.160	30	X007a
➢ **IXTU 4N70X2**		4	0.850	386	11.8	186	1.560	80	X003
➢ **IXTY 4N70X2**		4	0.850	386	11.8	186	1.560	80	X004
IXTA 8N70X2		8	0.500	800	12	200	0.830	150	X011b
IXTP 8N70X2		8	0.500	800	12	200	0.830	150	X005a
IXTP 8N70X2M		8	0.550	800	12	200	3.900	32	X007a
IXTU 8N70X2		8	0.500	800	12	200	0.830	150	X003
IXTY 8N70X2		8	0.500	800	12	200	0.830	150	X004
➢ **IXTA 12N70X2**		12	0.300	960	19	270	0.690	180	X011b
➢ **IXTH 12N70X2**		12	0.300	960	19	270	0.690	180	X014a
➢ **IXTP 12N70X2**		12	0.300	960	19	270	0.690	180	X005a
➢ **IXTP 12N70X2M**		12	0.300	960	19	270	3.100	40	X007a

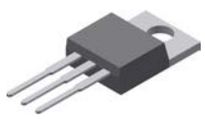
Package style
Outline drawings on pages O-36...O-59

X003 **TO-251AA**

X004 **TO-252AA**



X005a **TO-220AB**



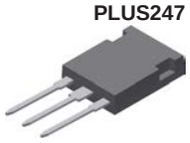
X007a **TO-220FPAB**

X011b **TO-263AB**

X014a **TO-247AD**

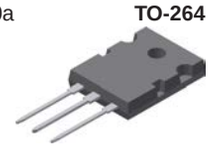
X014d **TO-247AD**

X015a **PLUS247**



X019a **TO-268AAHV**

X020a **TO-264**



X021a **PLUS264**

X027a **SOT-227B miniBLOC**

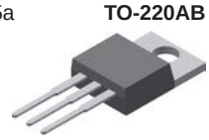
X2 and X3-Class Ultra Junction Power MOSFETs

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
850V X-Class HiPerFET™ Power MOSFETs with Fast Body Diodes									
IXFA 4N85X	850	3.5	2.500	247	7	170	0.830	150	X011b
IXFP 4N85X		3.5	2.500	247	7	170	0.830	150	X005a
➢ **IXFP 4N85XM**		3.5	2.500	247	7	170	3.570	35	X007a
IXFY 4N85X		3.5	2.500	247	7	170	0.830	150	X004
➢ **IXFA 8N85XHV**		8	0.850	654	17	125	0.630	200	X011c
➢ **IXFP 8N85X**		8	0.850	654	17	125	0.630	200	X005a
➢ **IXFP 8N85XM**		8	0.850	654	17	125	3.780	33	X007a
➢ **IXFQ 8N85X**		8	0.850	654	17	125	0.630	200	X017a
IXFJ 20N85X		9.5	0.360	1660	63	190	1.130	110	X016c
IXFA 14N85XHV		14	0.550	1043	30	116	0.270	460	X011c
IXFH 14N85X		14	0.550	1043	30	116	0.270	460	X014a
IXFP 14N85X		14	0.550	1043	30	116	0.270	460	X005a
IXFA 20N85XHV		20	0.330	1660	63	190	0.230	540	X011c
IXFH 20N85X		20	0.330	1660	63	190	0.230	540	X014a
IXFP 20N85X		20	0.330	1660	63	190	0.230	540	X005a
IXFH 30N85X		30	0.230	2460	68	160	0.180	695	X014a
IXFT 30N85XHV		30	0.230	2460	68	160	0.180	695	X019a
IXFH 40N85X		40	0.145	3700	98	200	0.145	860	X014a
IXFT 40N85XHV		40	0.145	3700	98	200	0.145	860	X019a
IXFH 50N85X		50	0.105	4480	152	218	0.140	890	X014a
IXFK 50N85X		50	0.105	4480	152	218	0.140	890	X020a
IXFT 50N85XHV		50	0.105	4480	152	218	0.140	890	X019a
IXFN 66N85X		65	0.065	8900	230	250	0.150	830	X027a
IXFK 66N85X		66	0.065	8900	230	250	0.100	1250	X020a
IXFX 66N85X		66	0.065	8900	230	250	0.100	1250	X015a
IXFB 90N85X		90	0.041	13300	340	250	0.070	1785	X021a
IXFN 90N85X		90	0.041	13300	340	250	0.104	1200	X027a
IXFN 110N85X		110	0.033	17000	425	205	0.107	1170	X027a

Package style
Outline drawings on pages O-36...O-59

X004 **TO-252AA**

X005a **TO-220AB**



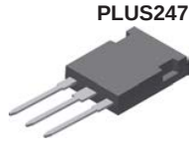
X007a **TO-220FPAB**

X011b **TO-263AB**

X011c **TO-263ABHV**

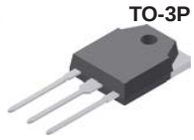
X014a **TO-247AD**

X015a **PLUS247**



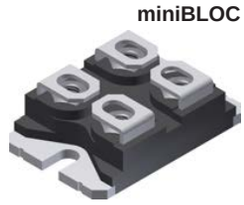
X019a **TO-268AAHV**

X017a **TO-3P**

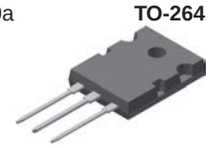


X016c **ISO247™**

X027a **SOT-227B miniBLOC**



X020a **TO-264**



X021a **PLUS264**

Q3-Class HiPerFET™ Power MOSFETs

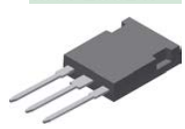
Part Type	V_{DSS}	$I_{D(cont)}$ Chip T_C = 25°C	$R_{DS(on)}$ T_J = 25°C	C_{iss} typ.	Q_g typ.	t_{rr} max. (typ.)	R_{thJC}	P_D	Fig. No.
	V	A	Ω	pF	nC	ns	K/W	W	
IXFH 70N20Q3	200	70	0.040	3150	67	250	0.18	690	X014a
IXFT 70N20Q3		70	0.040	3150	67	250	0.18	690	X019
IXFH 50N30Q3	300	50	0.080	3160	65	250	0.18	690	X014a
IXFT 50N30Q3		50	0.080	3160	65	250	0.18	690	X019
IXFT 70N30Q3		70	0.054	4735	98	250	0.15	830	X019
IXFH 70N30Q3		70	0.054	4735	98	250	0.15	830	X014a
IXFR 44N50Q3	500	25	0.154	4800	93	250	0.41	300	X016a
IXFT 30N50Q3		30	0.200	3200	62	250	0.18	690	X019
IXFH 30N50Q3		30	0.200	3200	62	250	0.18	690	X014a
IXFH 44N50Q3		44	0.140	4800	93	250	0.15	830	X014a
IXFT 44N50Q3		44	0.140	4800	93	250	0.15	830	X019
IXFR 64N50Q3		45	0.094	6950	145	250	0.25	500	X016a
IXFR 80N50Q3		50	0.072	10000	200	250	0.22	570	X016a
IXFN 80N50Q3		63	0.065	10000	200	250	0.16	780	X027a
IXFK 64N50Q3		64	0.085	6950	145	250	0.125	1000	X020a
IXFX 64N50Q3		64	0.085	6950	145	250	0.125	1000	X015a
IXFX 80N50Q3		80	0.065	10000	200	250	0.10	1250	X015a
IXFK 80N50Q3		80	0.065	10000	200	250	0.10	1250	X020a
IXFN 100N50Q3		82	0.049	13800	255	250	0.13	960	X027a
IXFB 100N50Q3		100	0.049	13800	255	250	0.08	1560	X021a
IXFR 48N60Q3	600	32	0.154	7020	140	300	0.25	500	X016a
IXFR 64N60Q3		42	0.104	9930	190	300	0.22	568	X016a
IXFK 48N60Q3		48	0.140	7020	140	300	0.125	1000	X020a
IXFX 48N60Q3		48	0.140	7020	140	300	0.125	1000	X015a
IXFK 64N60Q3		64	0.095	9930	190	300	0.10	1250	X020a
IXFX 64N60Q3		64	0.095	9930	190	300	0.10	1250	X015a
IXFN 82N60Q3		66	0.075	13500	275	300	0.13	960	X027a
IXFB 82N60Q3		82	0.075	13500	275	300	0.08	1560	X021a
IXFR 32N80Q3	800	24	0.300	6940	140	300	0.25	500	X016a
IXFK 32N80Q3		32	0.270	6940	140	300	0.125	1000	X020a
IXFX 32N80Q3		32	0.270	6940	140	300	0.125	1000	X015a
IXFN 44N80Q3		37	0.190	10950	185	300	0.16	780	X027a
IXFX 44N80Q3		44	0.190	10950	185	300	0.10	1250	X015a
IXFK 44N80Q3		44	0.190	10950	185	300	0.10	1250	X020a
IXFN 62N80Q3		49	0.140	13600	270	300	0.13	960	X027a
IXFB 62N80Q3		62	0.140	13600	270	300	0.08	1560	X021a
IXFR 15N100Q3	1000	10	1.200	3250	64	250	0.31	400	X016a
IXFT 15N100Q3		15	1.050	3250	64	250	0.18	690	X019
IXFH 15N100Q3		15	1.050	3250	64	250	0.18	690	X014a
IXFH 18N100Q3		18	0.660	4890	90	300	0.15	830	X014a
IXFT 18N100Q3		18	0.660	4890	90	300	0.15	830	X019
IXFR 24N100Q3		18	0.490	7200	140	300	0.25	500	X016a
IXFR 32N100Q3		23	0.350	10900	195	300	0.22	570	X016a
IXFK 24N100Q3		24	0.440	7200	140	300	0.125	1000	X020a
IXFX 24N100Q3		24	0.440	7200	140	300	0.125	1000	X015a
IXFN 32N100Q3		28	0.320	10900	195	300	0.16	780	X027a
IXFK 32N100Q3		32	0.320	10900	195	250	0.10	1250	X020a
IXFX 32N100Q3		32	0.320	10900	195	250	0.10	1250	X015a
IXFN 44N100Q3		38	0.220	13600	264	300	0.13	960	X027a
IXFB 44N100Q3		44	0.220	13600	264	300	0.08	1560	X021a
IXFN 40N110Q3	1100	35	0.260	14000	300	-434	0.13	960	X027a
IXFB 40N110Q3		40	0.260	14000	300	-434	0.08	1560	X021a

Package style
Outline drawings
on pages O-36...O-59

X014a **TO-247AD**

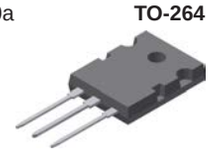
X015a **PLUS247**

X016a **ISOPLUS247™**



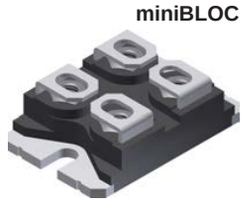
X019 **TO-268AA**

X020a **TO-264**



X021a **PLUS264**

X027a **SOT-227B miniBLOC**

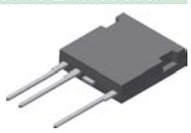


Very High Voltage Power MOSFETs (2 - 4.7 kV)

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXTH 1N200P3	2000	1	40	646	23.5	2300	1.00	125	X014a	
IXTH 1N200P3HV		1	40	646	23.5	2300	1.00	125	X014c	X011c **TO-263ABHV**
IXTA 1N200P3HV		1	40	646	23.5	2300	1.00	125	X011c	
IXTH 3N200P3HV		3	8	1860	70	420	0.24	520	X014c	
IXTT 3N200P3HV		3	8	1860	70	420	0.24	520	X019a	
➢ **IXTF 6N200P3**		4	4.2	3700	143	520	0.58	215	X024c	
IXTX 6N200P3HV		6	4	3700	143	520	0.13	960	X015c	
IXTH 06N220P3HV	2200	0.6	80	290	10.4	1100	1.20	104	X014c	X014a **TO-247AD**
IXTH 1R8N220P3HV		1.8	21.5	965	31	1300	0.64	194	X014c	
IXTA 02N250HV	2500	0.2	450	116	7.4	1500	1.50	83	X011c	
IXTH 02N250		0.2	450	116	7.4	1500	1.50	83	X014a	
IXTH 05N250P3HV		0.5	110	303	10.5	1200	1.20	104	X014c	
➢ **IXTF 1N250**		1	40	1660	41	2500	1.13	110	X024c	
IXTH 1R4N250P3		1.4	28	960	33	1800	0.64	195	X014a	
IXTH 1N250		1.5	40	1660	41	2500	0.50	250	X014a	X014c **TO-247HV**
IXTT 1N250HV		1.5	40	1660	41	2500	0.50	250	X019a	
IXTN 5N250		5	8.8	8560	200	1200	0.18	700	X027a	
IXTK 5N250		5	8.8	8560	200	1200	0.13	960	X020a	
IXTX 5N250		5	8.8	8560	200	1200	0.13	960	X015a	
IXTH 04N300P3HV	3000	0.4	190	283	13	1100	1.20	104	X014c	
IXTT 1N300P3HV		1	50	895	30.6	1800	0.64	195	X019a	X015a **PLUS247**
IXTH 1N300P3HV		1	50	895	30.6	1800	0.64	195	X014c	
➢ **IXTF 2N300P3**		1.6	21	1890	73	400	0.77	160	X024c	
➢ **IXTH 2N300P3HV**		2	21	1890	73	400	0.24	520	X014c	
➢ **IXTT 2N300P3HV**		2	21	1890	73	400	0.24	520	X019a	
IXTX 4N300P3HV		4	12.5	3680	139	420	0.13	960	X015c	
IXTH 02N450HV	4500	0.2	625	246	10.6	1600	1.10	113	X014c	
IXTF 02N450		0.2	625	246	10.6	1600	1.60	78	X024c	X015c **PLUS247HV**
IXTT 02N450HV		0.2	625	246	10.6	1600	1.10	113	X019a	
IXTF 1N450		0.9	80	1700	46	1750	0.77	165	X024c	
IXTT 1N450HV		1	80	1700	46	1750	0.24	520	X019a	
IXTH 1N450HV		1	80	1700	46	1750	0.24	520	X014c	
➢ **IXTF 1R4N450**		1.4	40	3300	88	660	0.65	190	X024c	
➢ **IXTX 1R4N450HV**		1.4	40	3300	88	660	0.13	960	X015c	X019a **TO-268AAHV**
IXTL 2N450		2	20	6860	180	1750	0.56	220	X022e	
➢ **IXTL 2N470**	4700	2	20	6860	180	1750	0.56	220	X022e	

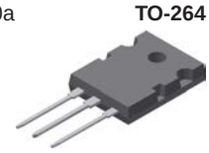
X027a **SOT-227B miniBLOC**

X024c **ISOPLUS i4-PAC™**



X022e **ISOPLUS264/i5-Pak**

X020a **TO-264**



Legacy (Standard) Power MOSFETs

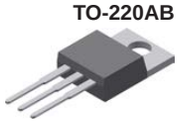
Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
IXTU 01N100	1000	0.10	80	60	8	1500	3	25	X003
IXTY 01N100		0.10	80	60	8	1500	3	25	X004
IXTP 05N100		0.75	17	260	7.8	710	3.1	40	X005a
IXTU 05N100		0.75	17	260	7.8	710	3.1	40	X003
IXTY 05N100		0.75	17	260	7.8	710	3.1	40	X004
IXTA 05N100		0.75	17	260	7.8	710	3.1	40	X011b
IXTA 05N100HV		0.75	17	260	7.8	710	3.1	40	X011c
IXTP 1N100		1.50	11	480	23	710	2.3	54	X005a
IXTA 1N100		1.50	11	480	23	710	2.3	54	X011b
IXTP 2N100		2.00	7	825	18	800	1.25	100	X005a
IXTA 2N100		2.00	7	825	18	800	1.25	100	X011b
IXTX 24N100		24.0	0.4	8700	267	850	0.22	568	X015a
IXTP 3N120	1200	3.00	4.5	1050	39	700	0.62	200	X005a
IXTH 3N120		3.00	4.5	1050	39	700	0.8	100	X014a
IXTA 3N120		3.00	4.5	1050	39	700	0.62	200	X011b
IXTA 3N120HV		3.00	4.5	1050	39	700	0.62	200	X011c
IXTH 6N120		6.00	2.4	1950	56	850	0.42	300	X014a
IXTT 6N120		6.00	2.4	1950	56	850	0.42	300	X019
IXTA 3N150HV	1500	3.00	7.3	1375	38.6	900	0.5	110	X011c
IXTH 3N150		3.00	7.3	1375	38.6	900	0.5	250	X014a
➢ **IXTJ 3N150**		2.50	8	1375	38.6	900	1.13	250	X016c
IXTA 4N150HV		4.00	6	1576	44.5	900	0.45	280	X011c
IXTH 4N150		4.00	6	1576	44.5	900	0.45	280	X014a
➢ **IXTJ 4N150**		2.50	6	1576	44.5	900	1.13	110	X016c
IXTT 4N150HV		4.00	6	1576	44.5	900	0.45	280	X019a
IXTH 6N150		6.00	3.5	2230	67	1500	0.23	540	X014a
➢ **IXTJ 6N150**		3.00	3.85	2230	67	1500	1	125	X016c
IXTT 6N150		6.00	3.5	2230	67	1500	0.23	540	X014a
IXTT 12N150HV		12.0	2	3720	106	1200	0.14	890	X019a

Package style
Outline drawings
on pages O-36...O-59

X003 **TO-251AA**

X004 **TO-252AA**

X005a **TO-220AB**



X011b **TO-263AB**

X015a **PLUS247**

X014a **TO-247AD**

X011c **TO-263ABHV**

X019a **TO-268AAHV**

X019 **TO-268AA**

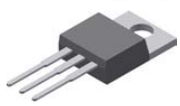
X016c **ISO247™**

Linear L2™ Power MOSFETs with Extended FBSOAs

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
IXTP 80N075L2	75	80	0.024	3600	103	160	0.35	357	X005a
IXTA 80N075L2		80	0.024	3600	103	160	0.35	357	X011b
IXTH 80N075L2		80	0.024	3600	103	160	0.35	357	X014a
➢ **IXTH 140N075L2**		140	0.011	9300	275	200	0.23	540	X014a
➢ **IXTT 140N075L2HV**		140	0.011	9300	275	200	0.23	540	X019a
➢ **IXTN 240N075L2**		225	0.007	19000	546	206	0.17	735	X027a
➢ **IXTK 240N075L2**		240	0.007	19000	546	206	0.13	960	X020a
➢ **IXTX 240N075L2**		240	0.007	19000	546	206	0.13	960	X015a
IXTA 64N10L2	100	64	0.032	3620	100	180	0.35	357	X011b
IXTH 64N10L2		64	0.032	3620	100	180	0.35	357	X014a
IXTP 64N10L2		64	0.032	3620	100	180	0.35	357	X005a
IXTH 75N10L2		75	0.021	8100	215	180	0.31	400	X014a
IXTT 75N10L2		75	0.021	8100	215	180	0.31	400	X019
IXTH 110N10L2		110	0.018	10500	260	230	0.21	600	X014a
IXTT 110N10L2		110	0.018	10500	260	230	0.21	600	X019
IXTN 200N10L2		178	0.011	23000	540	245	0.15	830	X027a
IXTX 200N10L2		200	0.011	23000	540	245	0.12	1040	X015a
IXTK 200N10L2		200	0.011	23000	540	245	0.12	1040	X020a
IXTH 60N20L2	200	60	0.045	10500	255	330	0.23	540	X014a
IXTT 60N20L2		60	0.045	10500	255	330	0.23	540	X019
IXTQ 60N20L2		60	0.045	10500	255	330	0.23	540	X017a
IXTN 110N20L2		100	0.024	23000	500	420	0.17	735	X027a
IXTX 110N20L2		110	0.024	23000	500	420	0.13	960	X015a
IXTK 110N20L2		110	0.024	23000	500	420	0.13	960	X020a
➢ **IXTH 58N25L2**	250	58	0.064	9200	330	400	0.23	540	X014a
IXTX 90N25L2		90	0.033	23000	640	266	0.13	960	X015a
IXTN 90N25L2		90	0.033	23000	640	266	0.17	735	X027a
IXTK 90N25L2		90	0.033	23000	640	266	0.13	960	X020a
➢ **IXTH 38N30L2**	300	38	0.100	7200	260	420	0.31	400	X014a
➢ **IXTT 38N30L2**		38	0.100	7200	260	420	0.31	400	X019
➢ **IXTH 50N30L2**		50	0.072	9300	330	430	0.23	540	X014a
➢ **IXTK 80N30L2**		80	0.038	19100	660	485	0.13	960	X020a
➢ **IXTN 80N30L2**		80	0.038	19100	660	485	0.17	735	X027a
➢ **IXTX 80N30L2**		80	0.038	19100	660	485	0.13	960	X015a
IXTA 15N50L2	500	15	0.480	4080	123	570	0.42	300	X011b
IXTP 15N50L2		15	0.480	4080	123	570	0.42	300	X005a
IXTH 15N50L2		15	0.480	4080	123	570	0.42	300	X014a
IXTH 30N50L2		30	0.200	8100	240	500	0.31	400	X014a
IXTT 30N50L2		30	0.200	8100	240	500	0.31	400	X019
IXTQ 30N50L2		30	0.200	8100	240	500	0.31	400	X017a
IXTH 40N50L2		40	0.170	10400	320	500	0.23	540	X014a
IXTT 40N50L2		40	0.170	10400	320	500	0.23	540	X019
IXTQ 40N50L2		40	0.170	10400	320	500	0.23	540	X017a
IXTN 60N50L2		53	0.100	24000	610	980	0.17	735	X027a
IXTX 60N50L2		60	0.100	24000	610	980	0.13	960	X015a
IXTK 60N50L2		60	0.100	24000	610	980	0.13	960	X020a
IXTH 30N60L2	600	30	0.240	10700	335	710	0.23	540	X014a
IXTT 30N60L2		30	0.240	10700	335	710	0.23	540	X019
IXTQ 30N60L2		30	0.240	10700	335	710	0.23	540	X017a

Package style
Outline drawings on pages O-36...O-59

X005a **TO-220AB**

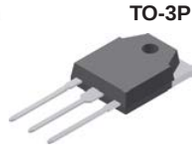


X011b **TO-263AB**

X014a **TO-247AD**

X015a **PLUS247**

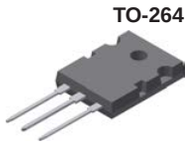
X017a **TO-3P**



X019 **TO-268AA**

X019a **TO-268AAHV**

X020a **TO-264**



X027a **SOT-227B miniBLOC**

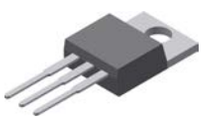
Depletion-Mode MOSFETs

„Normally On“

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	$V_{GS(off)}$ max. V	C_{iss} typ. pF	C_{rss} typ. pF	Q_g typ. nC	P_D W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXTH 16N10D2	100	16	0.064	-4.0	5700	940	225	695	X014a	
IXTT 16N10D2		16	0.064	-4.0	5700	940	225	695	X019	
IXTH 16N20D2	200	16	0.073	-4.0	5500	607	208	695	X014a	
IXTT 16N20D2		16	0.073	-4.0	5500	607	208	695	X019	
IXTP 08N50D2	500	0.8	4.6	-4.0	312	11	12.7	60	X005a	
IXTY 08N50D2		0.8	4.6	-4.0	312	11	12.7	60	X004	
IXTA 08N50D2		0.8	4.6	-4.0	312	11	12.7	60	X011b	
IXTP 1R6N50D2		1.6	2.3	-4.0	645	16.5	23.7	100	X005a	
IXTY 1R6N50D2		1.6	2.3	-4.0	645	16.5	23.7	100	X004	
IXTA 1R6N50D2		1.6	2.3	-4.0	645	16.5	23.7	100	X011b	
IXTP 3N50D2		3.0	1.5	-4.0	1070	24	40	125	X005a	
IXTA 3N50D2		3.0	1.5	-4.0	1070	24	40	125	X011b	
IXTP 6N50D2		6.0	0.5	-4.0	2800	64	96	300	X005a	
IXTH 6N50D2		6.0	0.5	-4.0	2800	64	96	300	X014a	
IXTA 6N50D2		6.0	0.5	-4.0	2800	64	96	300	X011b	
IXTH 16N50D2		16	0.24	-4.0	5250	130	199	695	X014a	
IXTT 16N50D2		16	0.24	-4.0	5250	130	199	695	X019	
IXTP 08N100D2	1000	0.8	21	-4.0	325	6.5	14.6	60	X005a	
IXTY 08N100D2		0.8	21	-4.0	325	6.5	14.6	60	X004	
IXTA 08N100D2		0.8	21	-4.0	325	6.5	14.6	60	X011b	
IXTA 08N100D2HV		0.8	21	-4.0	325	6.5	14.6	60	X011c	
IXTP 1R6N100D2		1.6	10	-4.5	645	11	27	100	X005a	
IXTY 1R6N100D2		1.6	10	-4.5	645	11	27	100	X004	
IXTA 1R6N100D2		1.6	10	-4.5	645	11	27	100	X011b	
IXTP 3N100D2		3.0	5.5	-4.5	1020	17	37.5	125	X005a	
IXTA 3N100D2		3.0	5.5	-4.5	1020	17	37.5	125	X011b	
IXTA 3N100D2HV		3.0	6.0	-4.5	1020	17	37.5	125	X011c	
IXTP 6N100D2		6.0	2.2	-4.5	2650	41	95	300	X005a	
IXTH 6N100D2		6.0	2.2	-4.5	2650	41	95	300	X014a	
IXTA 6N100D2		6.0	2.2	-4.5	2650	41	95	300	X011b	
IXTT 10N100D2		10	1.5	-4.5	5320	70	200	695	X019	
IXTH 10N100D2		10	1.5	-4.5	5320	70	200	695	X014a	
IXTT 2N170D2	1700	2.0	6.5	-4.0	3650	80	110	568	X019	
IXTH 2N170D2		2.0	6.5	-4.0	3650	80	110	568	X014a	

X004 **TO-252AA**

X005a **TO-220AB**



X011b **TO-263AB**

X011c **TO-263ABHV**

X019 **TO-268AA**

X014a **TO-247AD**

PolarP™ P-Channel Power MOSFETs

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXTX 32P60P	-600	-32	0.350	11100	196	480	0.14	890	X015a	
IXTN 32P60P		-32	0.350	11100	196	480	0.14	890	X027a	X005a **TO-220AB**
IXTK 32P60P		-32	0.350	11100	196	480	0.14	890	X020a	
IXTR 32P60P		-18	0.385	11100	196	480	0.40	310	X016a	
IXTH 16P60P		-16	0.720	5120	92	440	0.27	460	X005a	
IXTT 16P60P		-16	0.720	5120	92	440	0.27	460	X019	
IXTR 16P60P		-10	0.790	5120	92	440	0.66	190	X016a	X011b **TO-263AB**
IXTX 40P50P	-500	-40	0.230	11.5	205	477	0.14	890	X015a	
IXTN 40P50P		-40	0.230	11500	205	477	0.14	890	X027a	
IXTK 40P50P		-40	0.230	11500	205	477	0.14	890	X020a	
IXTR 40P50P		-22	0.260	11500	205	477	0.40	312	X016a	X014a **TO-247AD**
IXTH 20P50P		-20	0.450	5120	103	406	0.27	460	X014a	
IXTT 20P50P		-20	0.450	5120	103	406	0.27	460	X019	
IXTR 20P50P		-13	0.490	5120	103	406	0.66	190	X016a	
IXTP 10P50P		-10	1.000	2670	50	414	0.50	300	X005a	
IXTH 10P50P		-10	1.000	2670	50	414	0.50	300	X005a	X015a **PLUS247**
IXTA 10P50P		-10	1.000	2670	50	414	0.50	300	X011b	
IXTQ 10P50P		-10	1.000	2670	50	414	0.50	300	X017a	
IXTX 90P20P	-200	-90	0.044	12000	205	315	0.14	890	X015a	
IXTN 90P20P		-90	0.044	12000	205	315	0.14	890	X027a	
IXTK 90P20P		-90	0.044	12000	205	315	0.14	890	X020a	
IXTR 90P20P		-53	0.048	12000	205	315	0.40	312	X016a	X016a **ISOPLUS247™**
IXTH 48P20P		-48	0.085	5400	103	260	0.27	462	X014a	
IXTT 48P20P		-48	0.085	5400	103	260	0.27	462	X019	
IXTR 48P20P		-30	0.093	5400	103	260	0.66	190	X016a	
IXTP 26P20P		-26	0.170	2740	56	240	0.42	300	X005a	X017a **TO-3P**
IXTH 26P20P		-26	0.170	2740	56	240	0.42	300	X014a	
IXTA 26P20P		-26	0.170	2740	56	240	0.42	300	X011b	
IXTQ 26P20P		-26	0.170	2740	56	240	0.42	300	X017a	
IXTP 36P15P	-150	-36	0.110	3100	55	228	0.42	300	X005a	
IXTH 36P15P		-36	0.110	3100	55	228	0.42	300	X014a	X019 **TO-268AA**
IXTA 36P15P		-36	0.110	3100	55	228	0.42	300	X011b	
IXTQ 36P15P		-36	0.110	3100	55	228	0.42	300	X017a	
IXTR 36P15P		-22	0.120	2950	55	150	1.00	150	X016a	
IXTX 170P10P	-100	-170	0.012	12600	240	176	0.14	890	X015a	X020a **TO-264**
IXTN 170P10P		-170	0.012	12600	240	176	0.14	890	X027a	
IXTK 170P10P		-170	0.012	12600	240	176	0.14	890	X020a	
IXTR 170P10P		-108	0.013	12600	240	176	0.40	312	X016a	
IXTH 90P10P		-90	0.025	5800	120	144	0.27	462	X014a	
IXTT 90P10P		-90	0.025	5800	120	144	0.27	462	X019	X027a **SOT-227B miniBLOC**
IXTR 90P10P		-57	0.027	5800	120	144	0.66	190	X016a	
IXTP 52P10P		-52	0.050	2845	60	120	0.42	300	X005a	
IXTH 52P10P		-52	0.050	2845	60	120	0.42	300	X014a	
IXTA 52P10P		-52	0.050	2845	60	120	0.42	300	X011b	
IXTQ 52P10P		-52	0.050	2845	60	120	0.42	300	X017a	

TrenchP™ P-Channel MOSFETs

Part Type	V_{DSS} V	$I_{D(cont)}$ Chip T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. (max) ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-36...O-59
IXTK 120P20T	-200	-120	0.030	73000	740	-300	0.12	1040	X020a	X004 **TO-252AA**
IXTX 120P20T		-120	0.030	73000	740	-301	0.12	1040	X015a	
IXTN 120P20T		-106	0.030	73000	740	-302	0.15	830	X027a	
IXTR 120P20T		-90	0.032	73000	740	-303	0.21	595	X016a	
IXTH 68P20T		-68	0.055	33400	380	245	0.22	568	X014a	
IXTT 68P20T		-68	0.055	33400	380	245	0.22	568	X019	X005a **TO-220AB**
IXTR 68P20T		-44	0.064	33400	380	245	0.46	270	X016a	
IXTA 32P20T		-32	0.130	14500	185	190	0.42	300	X011b	
IXTP 32P20T		-32	0.130	14500	185	190	0.42	300	X005a	
IXTH 32P20T		-32	0.130	14500	185	190	0.42	300	X014a	
IXTQ 32P20T		-32	0.130	14500	185	190	0.42	300	X017a	
IXTP 44P15T	-150	-44	0.065	13400	175	140	0.42	298	X005a	X011b **TO-263AB**
IXTH 44P15T		-44	0.065	13400	175	140	0.42	298	X014a	
IXTA 44P15T		-44	0.065	13400	175	140	0.42	298	X011b	
IXTQ 44P15T		-44	0.065	13400	175	140	0.42	298	X017a	
IXTP 15P15T		-15	0.240	3650	48	116	0.83	150	X005a	
IXTY 15P15T		-15	0.240	3650	48	116	0.83	150	X004	X014a **TO-247AD**
IXTA 15P15T		-15	0.240	3650	48	116	0.83	150	X011b	
IXTP 10P15T		-10	0.350	2210	36	120	1.50	83	X005a	
IXTY 10P15T		-10	0.350	2210	36	120	1.50	83	X004	
IXTA 10P15T		-10	0.350	2210	36	120	1.50	83	X011b	
IXTK 210P10T	-100	-210	0.0075	69500	740	-200	0.12	1040	X020a	X015a **PLUS247**
IXTN 210P10T		-210	0.0075	69500	740	-201	0.15	830	X027a	
IXTX 210P10T		-210	0.0075	69500	740	-202	0.12	1040	X015a	
IXTR 210P10T		-195	0.008	69500	740	-203	0.32	390	X016a	
IXTH 140P10T		-140	0.012	31400	400	130	0.22	568	X014a	
IXTT 140P10T		-140	0.012	31400	400	130	0.22	568	X019	X016a **ISOPLUS247™**
IXTR 140P10T		-90	0.013	31400	400	130	0.46	270	X016a	
IXTP 76P10T		-76	0.025	13700	197	70	0.42	298	X005a	
IXTH 76P10T		-76	0.025	13700	197	70	0.42	298	X014a	
IXTA 76P10T		-76	0.025	13700	197	70	0.42	298	X011b	
IXTP 26P10T		-26	0.090	3820	52	70	0.83	150	X005a	
IXTY 26P10T		-26	0.090	3820	52	70	0.83	150	X004	X017a **TO-3P**
IXTA 26P10T		-26	0.090	3820	52	70	0.83	150	X011b	
IXTP 18P10T		-18	0.120	2100	39	62	1.50	83	X005a	
IXTY 18P10T		-18	0.120	2100	39	62	1.50	83	X004	
IXTA 18P10T		-18	0.120	2100	39	62	1.50	83	X011b	
IXTP 96P085T	-85	-96	0.013	13100	180	55	0.42	298	X005a	X019 **TO-268AA**
IXTH 96P085T		-96	0.013	13100	180	55	0.42	298	X014a	
IXTA 96P085T		-96	0.013	13100	180	55	0.42	298	X011b	
IXTP 24P085T		-24	0.065	2090	41	40	1.50	83	X005a	
IXTA 24P085T		-24	0.065	2090	41	40	1.50	83	X011b	
IXTP 120P065T	-65	-120	0.010	13200	185	53	0.42	298	X005a	X020a **TO-264**
IXTH 120P065T		-120	0.010	13200	185	53	0.42	298	X014a	
IXTA 120P065T		-120	0.010	13200	185	53	0.42	298	X011b	
IXTP 28P065T		-28	0.045	2030	46	31	1.50	83	X005a	
IXTA 28P065T		-28	0.045	2030	46	31	1.50	83	X011b	
IXTP 140P05T	-50	-140	0.009	13500	200	53	0.42	298	X005a	X027a **SOT-227B miniBLOC**
IXTH 140P05T		-140	0.009	13500	200	53	0.42	298	X014a	
IXTA 140P05T		-140	0.009	13500	200	53	0.42	298	X011b	
IXTP 48P05T		-48	0.030	3660	53	30	0.83	150	X005a	
IXTY 48P05T		-48	0.030	3660	53	30	0.83	150	X004	
IXTA 48P05T		-48	0.030	3660	53	30	0.83	150	X011b	
IXTP 32P05T		-32	0.039	1975	46	26	1.50	83	X005a	
IXTY 32P05T		-32	0.039	1975	46	26	1.50	83	X004	
IXTA 32P05T		-32	0.039	1975	46	26	1.50	83	X011b	

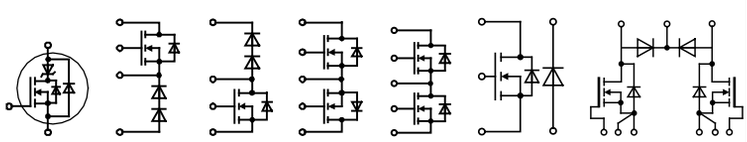
Superjunction Power MOSFET

Powered by Infineon CoolMOS™ superjunction bare die

K Series

Part Type ○ Not for new design	V_{DSS} V	I_{D25} T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	Q_g typ. nC	R_{thJC} K/W	V_{ISOL} RMS V	Fig. No.
C3 Series							
IXKC 20N60C	600	14	0.190	80	1.00	2500	X010a
IXKR 40N60C		38	0.070	250	0.45	2500	X016a
○ **IXKN 40N60C**		40	0.070	250	0.43	2500	X027a
IXKN 75N60C		75	0.036	500	0.22	2500	X027a
IXKK 85N60C		85	0.036	540	0.18	-	X020a
○ **IXKC 13N80C**	800	13	0.290	85	0.96	2500	X010a
○ **IXKC 25N80C**		20	0.150	180	0.90	2500	X010a
IXKR 25N80C		25	0.150	170	0.50	2500	X016a
○ **IXKN 45N80C**		44	0.074	335	0.33	2500	X027a
C5 Series							
○ **IXKH 20N60C5**	600	20	0.200	32	0.60	-	X014a
○ **IXKC 23N60C5**		23	0.100	60	0.85	2500	X010a
IXKP 24N60C5		24	0.165	40	0.50	-	X005a
IXKH 35N60C5		35	0.100	60	0.35	-	X014a
○ **IXKR 47N60C5**		47	0.045	150	0.45	2500	X016a
IXKH 70N60C5		70	0.045	150	0.20	-	X014a
IXKT 70N60C5		66	0.045	150	0.23	-	X019
CFD Series with fast Body Diode							
○ **MKH 24I650HR**	650	25	0.8	170	0.65	3000	X016c

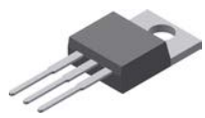
Configurations in i4-PAC™



Part Type ➢ New	V_{DSS}	I_{D25} T_C = 25°C	$R_{DS(on)\ max.}$ T_J = 25°C	Q_g typ.	R_{thJC}	Config.	Fig. No.
IXKF 40N60SCD1	600	38	0.070	250	0.45	single	X024c
FMD 15-06KC5		15	0.165	40	1.10	boost	X024a
FMD 40-06KC		38	0.070	250	0.45		
○ **FMD 47-06KC5**		47	0.045	150	0.45		
○ **FDM 47-06KC5**	600	47	0.045	150	0.45	buck	
Configuration in ISOPLUS264™ Package							
LKK 47-06C5	600	2 x 47	0.045	150	0.45	dual	X022c
Configuration in SMPD Package							
MKE 38RK600DFELB	600	50	0.045	150	0.40	buck/boost	X030a
MKG 40RK600LB		54	0.041	290	0.40		
➢ **MKH 17RP650DCGLB**	650	22	0.110	118	0.90		
MKE 38P600LB	600	50	0.040	150	0.40	phase leg	

Package style
Outline drawings
on pages O-36...O-59

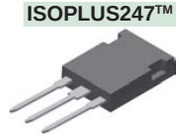
X005a **TO-220AB**



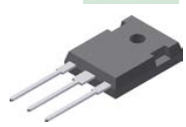
X010a **ISOPLUS220™**

X014a **TO-247AD**

X016a **ISOPLUS247™**

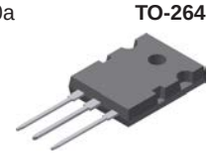


X016c **ISO247™**



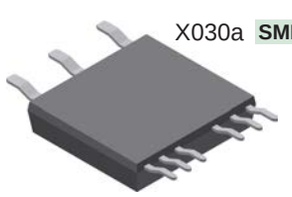
X019 **TO-268AA**

X020a **TO-264**



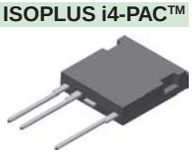
X022c **ISOPLUS264**

X030a **SMPD -B**

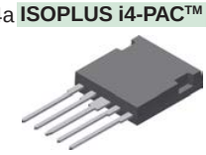


X027a **SOT-227B miniBLOC**

X024c **ISOPLUS i4-PAC™**



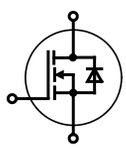
X024a **ISOPLUS i4-PAC™**



SiliconCarbide Power MOSFETs and Diodes

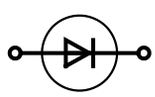
Littelfuse SiC MOSFETs offer a rewarding alternative to traditional Si based power transistor devices. The MOSFET device structure enables lower per-cycle switching losses and improved light load efficiency when compared to similarly rated IGBTs. Inherent material properties allow the SiC MOSFET to outclass its Si MOSFET counterparts in terms of blocking voltage, specific on resistance, and junction capacitances.

Littelfuse SiC Schottky Diodes have negligible reverse recovery current, high surge capability, and a maximum operating junction temperature of 175°C. These diodes are ideal for applications where improvements in efficiency, reliability, and thermal management are desired.



SiC MOSFETs

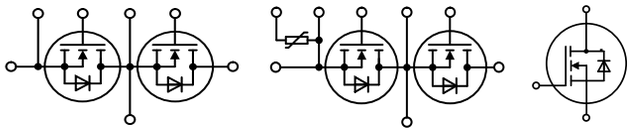
Part Type ➢ New	V_{DSS} V	I_D T_C = 25°C A	I_D T_C = 100°C A	$R_{DS(on)}$ T_J = 25°C mΩ (typ)	C_{iss} typ pF	Q_g typ nC	R_{thJC} K/W	Fig. No.	Package style Outline drawings on pages O-60...O-62
➢ **LSIC1MO120E0080**	1200	39	25	80	1825	95.0	0.7	L014a	L014a **TO-247 AD**
➢ **LSIC1MO120E0120**		27	18	120	1125	80.0	0.9		
➢ **LSIC1MO120E0160**		22	14	160	870	57.0	1.0		
➢ **LSIC1MO170E1000**	1700	5	3.5	750	200	15.7	2.3		



SiC Diodes

Type ➢ New	V_{RRM} V	I_F DC $@T_C$ A	°C	I_F DC @ 25°C A	V_F V	Q_C nC	R_{thJC} K/W	Fig. No.	Package style Outline drawings on pages O-60...O-62
➢ **LSIC2SD065A04**	650	4	150	13.0	1.5	12	2.65	L005b	
➢ **LSIC2SD065A06**		6	150	18.0	1.5	18	2.00		L005b **TO-220 AC**
➢ **LSIC2SD065A08**		8	150	22.0	1.5	24	1.75		
➢ **LSIC2SD065A10**		10	150	25.0	1.5	30	1.50		
➢ **LSIC2SD065A16**		16	150	36.0	1.5	48	1.20		
➢ **LSIC2SD065A20**		20	150	40.0	1.5	60	1.10		
➢ **LSIC2SD120A05**	1200	5	158	17.5	1.5	30	1.50		L004a **TO-252**
➢ **LSIC2SD120A08**		8	154	24.5	1.5	47	1.20		
➢ **LSIC2SD120A10**		10	151	28.0	1.5	57	1.10		
➢ **LSIC2SD120A15**		15	150	44.0	1.5	92	0.70		
➢ **LSIC2SD120A20**		20	150	54.5	1.5	115	0.60		
➢ **LSIC2SD120C05**		5	159	18.1	1.5	30	1.50	L004a	L012b **TO-263 (7)**
➢ **LSIC2SD120C08**		8	154	24.5	1.5	47	1.20		
➢ **LSIC2SD120C10**		10	156	33.0	1.5	57	0.85		
➢ **LSIC2SD120D10**		10	151	28.0	1.5	57	1.10	L012b	
➢ **LSIC2SD120D15**		15	150	44.0	1.5	92	0.70		
➢ **LSIC2SD120D20**		20	150	54.5	1.5	115	0.60		
➢ **LSIC2SD120E10CC**		5/10	158	17.5/35.0	1.5	30	0.75/1.50	L014a	L014a **TO-247 AD**
➢ **LSIC2SD120E15CC**		8/16	154	24.5/49.0	1.5	47	0.60/1.20		
➢ **LSIC2SD120E20CC**		10/20	151	28.0/56.0	1.5	57	0.55/1.10		
➢ **LSIC2SD120E30CC**		15/30	152	43.8/87.6	1.5	92	0.35/0.70		
➢ **LSIC2SD120E40CC**		20/40	150	54.5/109	1.5	115	0.30/0.60		

SiliconCarbide Power MOSFETs

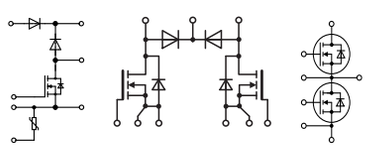


Part Type ✧ under development ➢ New	V_{DSS} V	I_{D25} T_C = 25°C A	I_{D80} T_C = 80°C A	$R_{DS(on)}$ T_C = 25°C mΩ (typ)	C_{iss} typ pF	Q_g typ nC	R_{thJC} K/W	Fig. No.
➢ **IXFN 130N90SK** [1]	900	136	109	10	4500	68	0.42	X027a
➢ **IXFN 27N120SK** [1]	1200	27	21.5	80	950	62	1.10	
IXFN 50N120SiC		47	35	40	1900	100	0.55	
IXFN 50N120SK [1]		48	38	40	1895	115	0.60	
✧ **MCB 40I1200TZ**		60	45	40	1895	115	0.40	X019a
IXFN 70N120SK [1]		68	55	25	2790	160	0.45	X027a
MCB 60I1200TZ		90	70	25	2790	160	0.27	X019a
✧ **IXFN 45N170SK** [1]	1700	47	35	45	3670	188	0.40	X027a
✧ **MCB 45I1700TZ**		58	45	45	3670	188	0.25	
➢ **IXFN 90N170SK** [1]		90	67	23	7340	376	0.22	
Phase Leg								
➢ **MCB 20P1200LB**	1200	22	17.5	80	950	62	1.60	X030a
✧ **MCB 25P1200TLB** *		32	25.5	80	950	62	0.75	
➢ **MCB 30P1200LB**		37	29.5	40	1895	115	1.00	
✧ **MCB 45P1200TLB** *		55	44	40	1895	115	0.45	
➢ **MCB 40P1200LB**		58	43	25	2790	160	0.60	
✧ **MCB 60P1200TLB** *		77	62	25	2790	161	0.35	
✧ **MCB 35P1700TLB** *	1700	47	35	45	3670	188	0.40	

[1] Kelvin source gate connection; * NTC added

X016c **ISO247™**

X019a **TO-268AAHV**

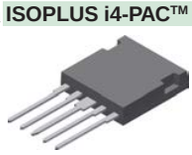


Boost Circuits

Type ✧ under development ➢ New	Circuit and Technology	V_{DSS} max V	I_{D80} T_C = 80°C A	$R_{DS(on)}$ typ Ω	I_{F80} Boost Diode A	Fig. No.
➢ **MKH 17RP650DCGLB**	Dual Boost Superjunction [1] + SiC	650	2 x 16	0.11 (max)	2 x 16	X030a
✧ **MCB 25R1200LB**	Boost SiC Mosfet + SiC Diode	1200	25.5	0.08	14	
✧ **MCB 25RP1200LB**	Dual Boost SiC Mosfet + SiC Diode		2 x 25.5	0.08	2 x 14	
✧ **MCB 30RL1200TLB**	Boost + Bypass + NTC SiC Mosfet + SiC Diode		29.5	0.04	34	
✧ **MCB 45R1200LB**	Boost iC Mosfet + SiC Diode		44	0.04	28	
✧ **MCB 35R1700LB**	Boost SiC Mosfet + SiC Diode	1700	35	0.045	22	

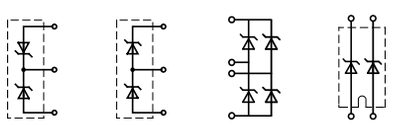
[1] Powered by Infineon CoolMOS™ superjunction bare die C6

X024a **ISOPLUS i4-PAC™**



SiliconCarbide Schottky Diodes

No reverse recovery

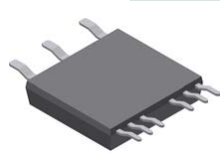


DCG...C... DCG...P..... DCG..B / FBS DCG..X....

Type ✧ Under development ➢ New	V_{RRM} V	I_{F80} per diode A	I_{FAV} d = 0.5 A	@ T_C °C	V_F typ., T_{VJ} = 175°C V	@ I_F A	R_{thJC} K/W	Fig. No.
Dual								
➢ **DCG 160X650NA**	650	105	2x 80	80	1.35	50	0.47	X027a
✧ **DCG 40X1200LB**	1200	19.5	2x 14.5	80	2.20	20	1.90	X030a
DCG 45X1200NA		30	2x 22	80	2.20	20	1.10	X027a
DCG 85X1200NA		59	2x 43	80	2.20	40	0.57	
DCG 100X1200NA		66	2x 49	80	2.25	50	0.51	
DCG 130X1200NA		88	2x 64	80	2.30	60	0.39	
Common Cathode								
➢ **DCG 20C1200HR**	1200	13	2x 10	80	2.20	10	3.0	X016c
✧ **DCG 35C1200HR**		23	2x 17	80	2.20	20	1.8	
Phase Leg								
➢ **DCG 10P1200HR**	2x 1200	13	10	80	2.20	10	3.0	X016c
✧ **DCG 17P1200HR**		23	17	80	2.20	20	1.8	
Full Bridge								
➢ **DCG 20B650LB**	650	16	10.5	80	2.0	10	2.1	X030a
FBS 10-12SC	1200	6.0	4.5	80	2.6	5	7.0	X024a
✧ **DCG 20B1200LB**		12.5	9.2	80	2.0	20	3.3	X030a

X027a **SOT-227B miniBLOC**

X030a **SMPD-B**

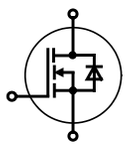


MOSFET Modules

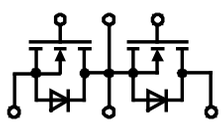
HiPerFET™ and Polar MOSFET Technology

- low R_{DSon}
- fast body diode
- rugged

Suffix „F“ = HiPerFET™ Technology with Fast Intrinsic Diode



Part Type ○ Not for new design	V_{DSS} V	I_{D25} T_C = 25°C A	I_{D80} T_C = 80°C A	R_{DSon} typ. T_J = 25°C mΩ	t_r ns	t_f ns	R_{thJC} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
Single Switch Modules									
○ **VMO 550-01F**	100	590	contact factory					X128d	X128d **Y3**
○ **VMO 650-01F**		690						X128d	
○ **VMO 1200-01F**		1245	930	1.35	200	500	0.039	X130d	
○ **VMO 580-02F**	200	580	contact factory					X130d	



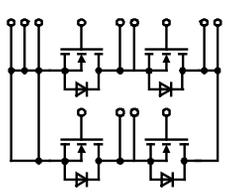
Part Type ➢ New	V_{DSS} V	I_{D25} T_C = 25°C A	I_{D80} T_C = 80°C A	R_{DSon} typ. T_J = 25°C mΩ	t_r ns	t_f ns	R_{thJC} K/W	Fig. No.
MOSFET Modules – Phase Leg Configuration								
VMM 90-09F	900	85	65	65	180	140	0.08	X130e
➢ **MMPA 60P1000TLA**	1000	108	80	58			0.06	

X130d **Y3**

X130e **Y3**

Superjunction Full Bridge MOSFET Module

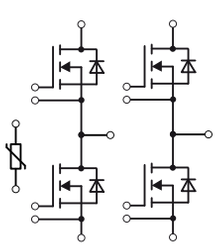
Powered by Infineon CoolMOS™ superjunction bare die



Part Type ○ Not for new design	V_{DSS} V	I_{D25} T_C = 25°C A	I_{D80} T_C = 90°C A	R_{DSon} typ. T_J = 25°C mΩ	t_r ns	t_f ns	R_{thJC} K/W	Fig. No.
○ **VKM 40-06P1**	600	38	25	70	10	95	0.45	X102

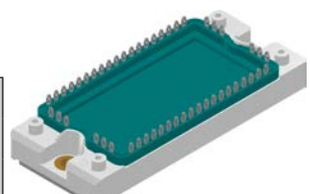
X102 **ECO-PAC2**

X2-Class HiPerFET™ Full Bridge MOSFET Module



Part Type ✧ under development	V_{DSS} V	I_{D25} T_C = 25°C A	I_{D80} T_C = 80°C A	R_{DSon} max T_J = 25°C mΩ	t_r ns	t_f ns	R_{thJC} K/W	Fig. No.
✧ **MMXB 95HX650PTED**	650	130	96	20			0.17	X112a

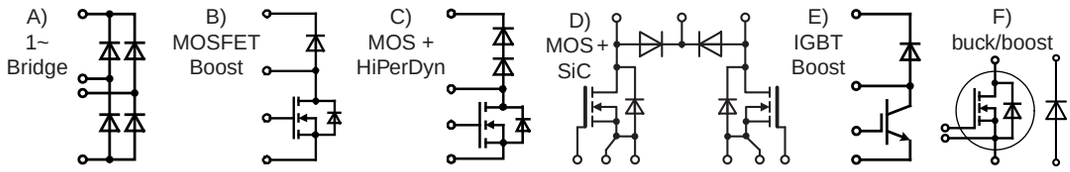
X112a **E2-Pack PFP**



Rectifier Bridges for Power Factor Correction

Power Stage for Boost Converters (Power Factor Correction)

1-phase PFC



Type ○ Not for new design ➢ New		Circuit and Technology	V_{DSS} max V	I_D T_C = 25°C A	$R_{DS(on)}$ max Ω	V_{RRM} Boost Diode V	V_{RRM} Rectifier V	Fig. No.	Package style Outline drawings on pages O-36...O-59
MOSFET									X024a **ISOPLUS i4-PAC**
FMD 21-05QC	C	HiPerFET™	500	21	0.220	600	-	X024a	
FMD 15-06KC5	C	Superjunction CP [1]	600	15	0.165		-		
FMD 40-06KC	C	Superjunction C3 [1]		38	0.070		-		
○ **FMD 47-06KC5**	C	Superjunction CP [1]		47	0.045		-		
MKE 38RK600DFELB	B	Superjunction CP [1]		50	0.045		-	X030a	
○ **MKG 40RK600LB**	F	Superjunction C6 [1]		52	0.037		-		
➢ **MKH 17RP650DCGLB**	2xD	Superjunction C6 [1] + SiC		22	0.110		-		
VUM 24-05N	A+B	HiPerFET™	500	35	0.120	600	800	X105b	
○ **VUM 33-05N**				47	0.120		1200		X030a **SMPD-B**
VUM 33-06PH	A+B	Polar	600	50	0.120	600	1600		

Type		Circuit and Technology	V_{CES} max V	I_C T_C = 25°C A	V_{CEsat} @ I_C V	A	V_{RRM} Rectifier V	Fig. No.
IGBT								
FID 60-06D	E	NPT	600	65	1.6	30	600	-	X024a

Type		Circuit and Technology	V_{RRM} V	I_{DAV} A	@ T_C °C	Fig. No.
Rectifier						
FBO 16-12N [2]	A	Standard	1200	22	90	X024a
FBO 40-12N [2]				40	90	
DLA 100B800LB [3] [4]	A	low V_F	800	124	135	X030a
DLA 100B1200LB [3]	A	low V_F	1200	124	135	

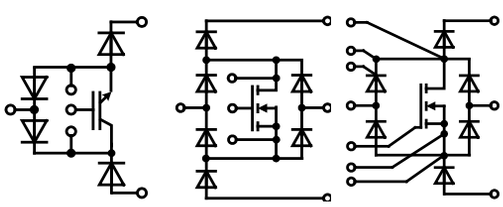
X103 **V1-A-Pack**

[1] Powered by Infineon CoolMOS™ superjunction bare die
[2] Recommended in combination with FMD and FID
[3] Recommended in combination with MKE and MKG
[4] AEC-Q-101

3-phase PFC

X104 **V2-Pack**

"Vienna Rectifier" circuit
- wide input voltage range
- sinusoidal mains input currents in phase with mains
- boost converter operation:
  - input: 3~ AC mains without neutral conductor
  - output: stabilized DC link with center point
- one module used per phase



Type	PN / kW 3 ~ 400V. T_C = 80°C	Configuration	Fig. No.
VUM 25-05E ①	10	Vienna rectifier current	X103
VUM 85-05A ①	30	Vienna rectifier current	X104
VUI 30-12N1 ①	15	IGBT stage for buck @ boost PWM converter	X103

① contact factory

X105b **V1-B-Pack**

Diodes for High Switching Frequencies

Fast Recovery Epitaxial Diodes (HiPerFRED, FRED) and FRD (SONIC)

Power switches (IGBT, MOSFET, BJT, GTO) for applications in electronics are only as good as their associated free-wheeling diodes. At increasing switching frequencies, the proper functioning and efficiency of the power switch, aside from conduction losses, is determined by the turn-off behavior of the diode (characterized by Q_{rr}, I_{RM} and t_{rr} - Fig. 1). With optimized ultra-fast switching diodes, the development engineer has various possibilities: either higher pulse rate or higher current load or smaller heatsink or more conservative operation due to „cooler“ chips.

The reverse current characteristic following the peak reverse current I_{RM} is another very important property. The slope of the decaying reverse current di_{rr}/dt results from design parameters (technology and diffusion of the diode chips). In a circuit this current slope, in conjunction with parasitic inductances (e.g. connecting leads), causes over-voltage spikes and high frequency interference voltages. The higher the d_{irr}/dt („hard recovery“ or „snap-off“ behavior) the higher is the resulting additional stress for both the diode and the paralleled switch. A slow decay of the reverse current („soft recovery“ behavior), is the most desirable characteristic, and this is designed into all diodes. The wide range of available blocking voltages makes it possible to apply these diodes as output rectifiers in switch-mode power supplies (SMPS) as well as protective and free-wheeling diodes for power switches in inverters.

Diodes for General Purpose Applications

Rectifier Diodes

Diodes of the DS-series (anode on stud) and of the DSI-series (cathode on stud) are mainly used for rectifying 50 or 60 Hz mains currents. Discrete diodes in plastic and metal housings and also different diode bridges are available for standard line voltages (from 110 V to 690 V AC).

Avalanche Diodes

Avalanche diodes or surge-voltage-proof rectifier diodes of the series DSA (anode on stud) and DSAI (cathode on stud) differ from standard diodes of the series DS and DSI in the following manner: the operation in avalanche breakdown above the normal reverse blocking voltage (V_{RRM}) can be tolerated as long as the power is within the specified maximum permissible non-repetitive reverse surge dissipation P_{RSM} at the specified pulse width. In order to have technologically good control of the avalanche breakdown, it is important to ensure homogeneous doping of the middle zone of the silicon chip and suitable junction termination and passivation at the edges where PN-junctions are exposed to the surface (high field strength at the edge). Because of this ruggedness against periodically occurring short-term voltage surges in the blocking direction, the user frequently can do without protective overvoltage net-works. In addition, if avalanche diodes are put in series for high voltage applications, the sharp avalanche breakdown of the blocking characteristic ensures static and dynamic voltage distribution uniformly across each device. Thus, in general, none of the series diodes will be overstressed by reverse voltages which are substantially above the avalanche voltage. All high voltage rectifier modules manufactured in quantity are assembled with avalanche diodes.

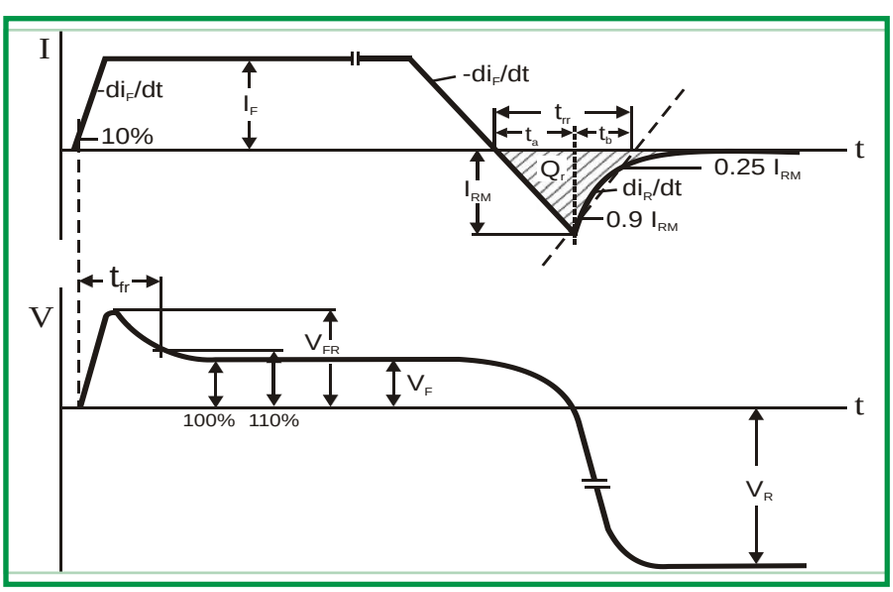
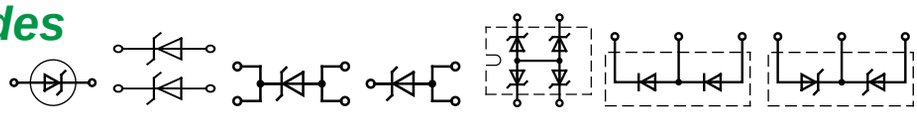


Fig. 1: Current and voltage during turn-on and turn-off switching of fast diodes

Schottky Gen² Diodes

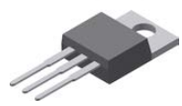
I_{FAV} = 10 - 300 A



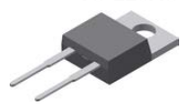
Type	V_{RRM}	I_{FAV}	@ T_C	V_F	@ I_F	T_{VJM}	R_{thJC}	Fig. No.	Package style Outline drawings on pages O-36...O-59
		d = 0.5		T_{VJ} = 125°C					
	V	A	°C	V	A	°C	K/W		
DSB 20I15PA	15	20	130	0.39	20	150	1.75	X005b	
DSB 40C15PB		2x 20	130	0.39	20	150	1.75	X005a	
DSB 15IM30UC	30	15	125	0.44	15	150	2.00	X004	
DSB 30C30PB		2x 15	130	0.44	15	150	1.75	X005a	
DSB 60C30PB		2x 30	130	0.49	30	150	0.85	X005a	
DSB 60C30HB		2x 30	125	0.47	30	150	0.95	X014a	
DSB 10I45PM	45	10	115	0.52	10	150	4.50	X007b	
DSA 20C45PB		2x 10	155	0.62	10	175	2.40	X005a	
DSA 15I45PA		15	155	0.63	15	175	1.75	X005b	
DSA 15IM45UC		15	150	0.63	15	175	2.00	X004	
DSA 15IM45IB		15	155	0.63	15	175	1.75	X008a	
DSB 15IM45IB		15	125	0.55	15	150	1.75	X008a	
DSA 30C45PB		2x 15	155	0.63	15	175	1.75	X005a	
DSA 30C45PC		2x 15	155	0.63	15	175	1.75	X011b	
DSB 30C45PB		2x 15	125	0.55	15	150	1.75	X005a	
DSA 30C45HB		2x 15	155	0.62	15	175	1.75	X014a	
DSB 30C45HB		2x 15	125	0.54	15	150	1.75	X014a	
DSA 60C45PB		2x 30	150	0.67	30	175	0.85	X005a	
DSB 60C45PB		2x 30	125	0.6	30	150	0.85	X005a	
DSA 60C45HB		2x 30	150	0.66	30	175	0.95	X014a	
DSB 60C45HB		2x 30	125	0.58	30	150	0.95	X014a	
DSA 80C45HB		2x 40	150	0.69	40	175	0.70	X014a	
DSB 80C45HB		2x 40	120	0.59	40	150	0.70	X014a	
DSA 300I45NA		300	95	0.70	300	150	0.20	X027a	
DSB 10P60PN	2x 60	10	110	0.62	10	150	4.50	X007a	
DSA 20C60PN	60	2x 10	140	0.70	10	175	4.50	X007a	
DSB 20C60PN		2x 10	110	0.62	10	150	4.50	X007a	
DSA 30C60PB		2x 15	150	0.72	15	175	1.75	X005a	
DSB 30C60PB		2x 15	125	0.64	15	150	1.75	X005a	
DSA 60C60PB		2x 30	150	0.77	30	175	0.85	X005a	
DSB 60C60PB		2x 30	125	0.69	30	150	0.85	X005a	
DSA 60C60HB		2x 30	150	0.75	30	175	0.95	X014a	
DSB 60C60HB		2x 30	125	0.67	30	150	0.95	X014a	
DSA 10I100PM	100	10	135	0.71	10	175	4.50	X007b	
DSA 10IM100UC		10	150	0.71	10	175	3.00	X004	
DSA 20C100PB		2x 10	155	0.71	10	175	2.40	X005a	
DSA 20C100PN		2x 10	135	0.71	10	175	4.50	X007a	
DSA 30C100PB		2x 15	150	0.73	15	175	1.75	X005a	
DSA 30C100PN		2x 15	120	0.73	15	175	4.25	X007a	
DSA 30C100HB		2x 15	150	0.72	15	175	1.75	X014a	
DSA 30C100QB		2x 15	150	0.72	15	175	1.75	X017a	
DSA 50C100HB		2x 25	155	0.72	25	175	0.95	X014a	
DSA 50C100QB		2x 25	155	0.72	25	175	0.95	X017a	
DSA 30I100PA		30	150	0.78	30	175	0.85	X005b	
DSA 60C100PB		2x 30	150	0.78	30	175	0.85	X005a	
DSA 70C100HB		2x 35	150	0.74	35	175	0.70	X014a	
DSA 80C100PB		2x 40	150	0.80	40	175	0.60	X005a	
DSA 320A100NB ①		4x 80	85	0.77	80	150	0.80	X027b	
DSA 300I100NA		300	90	0.79	300	150	0.20	X027a	

X004 **TO-252AA**

X005a **TO-220AB**



X005b **TO-220AC**



X007a **TO-220ABFP**

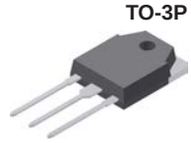
X007b **TO-220ACFP**

X008a **TO-262AA (I²-PAK)**

X011b **TO-263AB**

X014a **TO-247AD**

X017a **TO-3P**



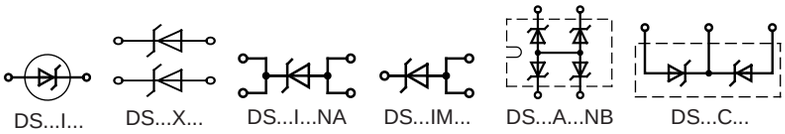
X027a/b **SOT-227B miniBLOC**

① Non isolated base plate

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Schottky Gen² Diodes

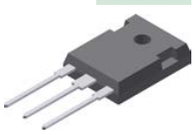
I_{FAV} = 5 - 300 A



Type ➢ New	V_{RRM} V	I_{FAV} @ T_C d = 0.5 A	°C	V_F @ I_F T_{VJ} = 125°C V	A	T_{VJM} °C	R_{thJC} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
DSA 10C150PB	150	2x 5	155	0.71	5	175	4.80	X005a	
DSA 10C150UC		2x 5	155	0.71	5	175	4.80	X004	X004 **TO-252AA**
DSA 20C150PB		2x 10	155	0.73	10	175	2.40	X005a	
DSA 20C150PN		2x 10	135	0.73	10	175	4.50	X007a	
DSA 15IM150UC		15	155	0.75	15	175	2.00	X004	
DSA 30C150PB		2x 15	150	0.75	15	175	1.75	X005a	
➢ **DSA 30C150PC**		2x 15	150	0.75	15	175	1.75	X011b	X005a **TO-220AB**
DSA 30C150HB		2x 15	150	0.74	15	175	1.75	X014a	
DSA 50C150HB		2x 25	155	0.74	25	175	0.95	X014a	
DSA 30I150PA		30	150	0.80	30	175	0.85	X005b	
DSA 60C150PB		2x 30	150	0.80	30	175	0.85	X005a	
DSA 70C150HB		2x 35	150	0.77	35	175	0.70	X014a	X005b **TO-220AC**
DSA 120C150QB		2x 60	150	0.80	60	175	0.40	X017a	
DSA 120X150LB		2x 60	150	0.80	60	175	0.80	X030a	
DSA 600A150NB ①		4x 150	115	0.93	150	150	0.30	X027b	
DSA 240X150NA		2x 120	95	0.85	120	150	0.40	X027a	
DSA 20C200PB	200	2x 10	155	0.75	10	175	2.40	X005a	X007a **TO-220ABFP**
DSA 15IM200UC		15	145	0.78	15	175	2.00	X004	
DSA 30C200IB		2x 15	150	0.78	15	175	1.75	X008a	
DSA 30C200PB		2x 15	150	0.78	15	175	1.75	X005a	
➢ **DSA 30C200PC**		2x 15	150	0.78	15	175	1.75	X011b	
DSA 70C200HB		2x 35	150	0.79	35	175	0.70	X014a	X008a **TO-262AA (I^2-PAK)**
DSA 90C200HB		2x 45	145	0.86	45	175	0.55	X014a	
DSA 90C200HR		2x 45	140	0.79	45	175	0.70	X016c	
DSA 120X200LB		2x 60	150	0.87	60	175	0.80	X030a	
DSA 240X200LB		2x 120	150	0.87	120	175	0.40	X030a	
DSA 240X200NA		2x 120	90	0.87	120	150	0.40	X027a	
DSA 300I200NA		300	80	0.88	300	150	0.20	X027a	

① Non isolated base plate

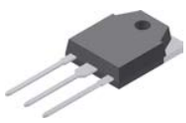
X016c **ISO247™**



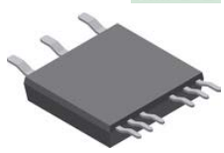
X014a **TO-247AD**

X011b **TO-263AB**

X017a **TO-3P**



X030a **SMPD-B**

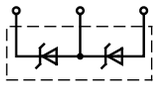


X027a/b **SOT-227B miniBLOC**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Schottky Diodes

I_{FAV} = 6 - 2x 200 A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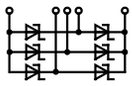
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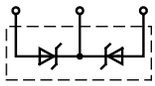
DSS...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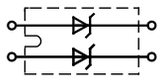
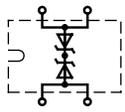

DSS 2x...


DSS 2x...

Type	V_{RRM}	I_{FAV} @ T_C d = 0.5		V_F @ I_F T_{VJ} = 125°C		T_{VJM}	R_{thJC}	Fig. No.	Package style Outline drawings on pages O-36...O-59
	V	A	°C	V	A	°C	K/W		
DSS 40-0008D	8	40	130	0.28	40	150	0.8	X014a	
DSSK 80-0008D		2x 40	130	0.28	40	150	0.8	X014a	
DSS 2x200-0008D ①		2x 200	90	0.28	100	150	0.4	X027b	
DSS 20-0015B	15	20	135	0.33	20	150	1.4	X005b	
DSSK 40-0015B		2x 20	135	0.32	20	150	1.4	X014a	
DSSK 70-0015B		2x 35	130	0.35	35	150	1.1	X014a	
DSS 6-0025BS	25	6	140	0,30	6	150	3.0	X004	
DSS 25-0025B		25	125	0.45	25	150	1.4	X005b	
DSSK 18-0025BS		2x 10	140	0.37	10	150	1.7	X011b	
DSSK 38-0025B		2x 20	130	0.40	20	150	1.4	X005a	
DSSK 38-0025BS		2x 20	130	0.40	20	150	1.4	X011b	
DSSK 48-0025B		2x 25	130	0.35	20	150	1.2	X005a	
DSSK 50-0025B		2x 25	125	0.43	25	150	1.4	X014a	
DSSK 80-0025B		2x 40	130	0.39	40	150	0.8	X014a	
DSSK 48-003B	30	2x 25	130	0.35	20	150	1.2	X005a	
DSSK 48-003BS		2x 25	130	0.35	20	150	1.2	X011b	
DSSK 70-003B		2x 35	125	0.39	35	150	1.1	X014a	
DSSK 80-003B		2x 40	130	0.39	40	150	0.8	X014a	
DSS 6-0045AS	45	6	165	0.50	6	175	3.0	X004	
DSS 10-0045B		10	135	0.46	10	150	1.7	X005b	
DSS 16-0045A		16	160	0.56	16	175	1.4	X005b	
DSS 16-0045AS		16	160	0.56	16	175	1.4	X011b	
DSS 25-0045A		25	155	0.56	25	175	1.1	X005b	
DSS 60-0045B		60	105	0.57	60	150	0.8	X014b	
DSSK 20-0045B		2x 10	135	0.46	10	150	1.7	X005a	
DSSK 28-0045BS		2x 15	135	0.43	15	150	1.4	X011b	
DSSK 60-0045A		2x 30	150	0.58	30	175	1.1	X014a	
DSSK 60-0045B		2x 30	125	0.45	30	150	1.1	X014a	
DSSK 80-0045B		2x 40	125	0.46	40	150	0.8	X014a	
DSS 2x61-0045A		2x 60	110	0.65	60	150	0.8	X027a	
DSS 2x81-0045B		2x 80	85	0.63	80	150	0.8	X027a	
DSS 2x121-0045B		2x 120	100	0.59	120	150	0.4	X027a	
DSS 2x160-0045A ①		2x 160	90	0.72	160	150	0.4	X027b	
FUS 45-0045B		45	90	0.54	15	150	3.1	X024a	
DSS 10-006A	60	10	160	0.65	10	175	1.7	X005b	
DSSK 28-006BS		2x 15	135	0.52	15	150	1.4	X011b	
DSSK 40-006B		2x 20	135	0.46	20	150	1.1	X014a	
DSSK 80-006B		2x 40	120	0.51	40	150	0.8	X014a	
DSSK 80-006BR		2x 40	120	0.51	40	150	0.8	X016a	
DSSK 40-008B	80	2x 20	130	0.52	20	150	1.1	X014a	
DSSS 35-008AR	2x 80	35	150	0.68	35	175	0.8	X016a	
DSSK 70-008A		2x 35	150	0.64	35	175	0.8	X014a	
DSSK 70-008AR		2x 35	150	0.64	35	175	0.8	X016a	
DSS 2x111-008A		2x 110	105	0.72	100	150	0.4	X027a	
DSS 10-01A	100	10	160	0.66	10	175	1.7	X005b	
DSS 10-01AS		10	160	0.66	10	175	1.7	X011b	
DSS 16-01A		16	155	0.65	16	175	1.4	X005b	
DSS 16-01AS		16	155	0.65	16	175	1.4	X011b	
DSS 20-01AC		20	140	0.80	20	175	1.7	X010b	
DSSS 30-01AR	2x 100	30	155	0.63	30	175	0.8	X016a	
DSSK 16-01A		2x 8	165	0.63	8	175	1.7	X005a	
DSSK 16-01AS		2x 8	165	0.63	8	175	1.7	X011b	
DSSK 28-01AS		2x 15	160	0.64	15	175	1.4	X011b	
DSSK 30-01A		2x 15	160	0.63	15	175	1.4	X014a	
DSSK 50-01A		2x 25	155	0.64	25	175	1.1	X014a	
DSS 2x41-01A		2x 40	110	0.70	40	150	1.1	X027a	
DSS 2x61-01A		2x 60	105	0.74	60	150	0.8	X027a	
DSS 2x160-01A ①		2x 160	80	0.81	160	150	0.4	X027b	

① Non isolated base plate

X004 **TO-252AA**

X005a **TO-220AB**

X005b **TO-220AC**

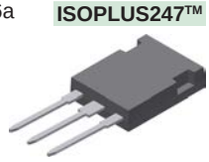
X010b **ISOPLUS220™**

X011b **TO-263AB**

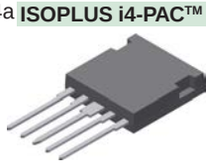
X014a **TO-247AD**

X014b **TO-247AD**

X016a **ISOPLUS247™**



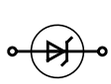
X024a **ISOPLUS i4-PAC™**

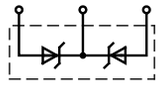


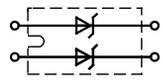
X027a/b **SOT-227B/UI miniBLOC**

Schottky Diodes

I_{FAV} = 6 - 2x 100 A


DSS...

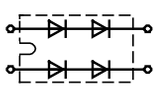

DSSK...

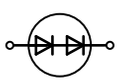

DSS 2x...

Type	V_{RRM}	I_{FAV}	@ T_C	V_F	@ I_F	T_{VJM}	R_{thJC}	Fig. No.
		d = 0.5		T_{VJ} = 125°C				
	V	A	°C	V	A	°C	K/W	
DSS 6-015AS	150	6	160	0.62	6	175	3.0	X004
DSSK 20-015A		2x 10	165	0.61	10	175	1.4	X005a
DSSK 50-015A		2x 25	150	0.68	25	175	1.1	X014a
DSSK 60-015A		2x 30	155	0.66	30	175	0.8	X014a
DSSK 60-015AR		2x 30	155	0.66	30	175	0.8	X016a
DSS 2x101-015A		2x 100	110	0.77	100	150	0.4	X027a
DSSK 10-018A	180	2x 5	165	0.60	5	175	1.7	X005a
DSSK 30-018A		2x 15	150	0.74	15	175	1.7	X014a
DSSK 60-02A	200	2x 30	155	0.70	30	175	0.8	X014a
DSSK 60-02AR		2x 30	155	0.70	30	175	0.8	X016a
DSS 2x101-02A		2x 100	105	0.84	100	150	0.4	X027a

HiPerDyn™FRED

Series connected diodes for high switching frequencies; packages isolated (2500 V_{RMS})


DSEP 2x...-....C

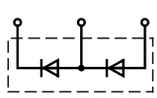

DPH...IS...
DSEP/DSS...-...C

Type	V_{RRM}	I_{FAV}	@ T_C	V_F	@ T_{VJ}	t_{rr} typ.	I_{RM} typ.	@ -di/dt	T_{VJM}	R_{thJC}	Fig. No.
		d = 0.5		I_F = I_{FAV}		T_{VJ} = 25°C					
➢ **New**	V	A	°C	V	°C	ns	A	A/µs	°C	K/W	
DSS 17-06CR *	600	17	95	2.71	125	45	2.0	100	175	1.40	X016b
DPH 30IS600HI		30	140	1.89	150	35	3.0	200	175	0.55	
DSEP 15-12CR	1200	15	135	2.67	150	15	10.0	600	175	1.00	X016b
DSEP 30-12CR		30	120	3.18	150	15	5.5	600	175	0.60	
DSEP 2x25-12C	1200	2x 25	90	2.95	150	15	5.5	600	150	0.60	X027a
DPJ 50XS1800NA	1800	2x 25	90	4.33	150	15	4.0	600	150	0.40	

* series connected Schottky Diodes

Dual Ultrafast Diodes

Series connected diodes for high switching frequencies with middle connection; packages isolated (2500 V_{RMS})


DHH/DSEE
DPF/G... P...

Type	V_{RRM}	I_{FAV}	@ T_C	V_F	@ T_{VJ}	t_{rr} typ.	I_{RM} typ.	@ -di/dt	T_{VJM}	R_{thJC}	Fig. No.
		d = 0.5		I_F = I_{FAV}		T_{VJ} = 25°C					
➢ **New**	V	A	°C	V	°C	ns	A	A/µs	°C	K/W	
DPG 30P300PJ	2x 300	30	135	0.99	150	35	3.0	200	175	1.05	X010a
DPG 10P400PJ	2x 400	10	145	1.03	150	45	4.0	200	175	2.50	X010a
➢ **DPG 30P400PJ**		30	135	1.05	30	45	4.0	200	175	1.05	X010a
DSEE 15-12CC	2x 600	15	100	1.50	125	35	4.0	100	175	1.60	X010a
DSEE 29-12CC		30	90	1.75	125	30	4.0	100	175	0.90	X010a
DPF 30P600HR		30	130	1.27	150	35	17.0	600	175	0.90	X016c
DSEE 30-12A ①		30	90	1.78	125	30	4.0	100	175	0.90	X014a
DSEE 55-24N1F	2x 1200	60	110	1.56	150	75	35.0	600	175	0.60	X024b
DHH 55-36N1F	2x 1800	60	50	2.06	125	230	60.0	800	150	0.60	X024b

① Non isolated base plate

Package style
Outline drawings
on pages O-36...O-59

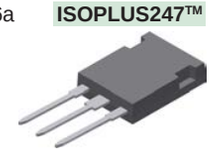
X004 **TO-252AA**

X005a **TO-220AB**

X010a **ISOPLUS220™**

X014a **TO-247AD**

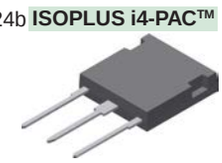
X016a **ISOPLUS247™**



X016b **ISOPLUS247™**

X016c **ISO247™**

X024b **ISOPLUS i4-PAC™**

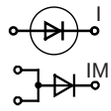


X027a **SOT-227B**
miniBLOC

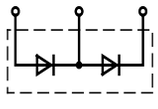
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

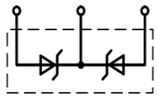
HiPerFRED 2TM Diodes

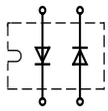
I_{FAV} = 10 - 2x 120 A

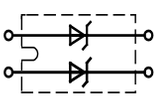


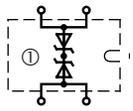
DPF/G/H...I*...


DPG...P...


DPF/G...C...


DPF...XA...


DPF...X...



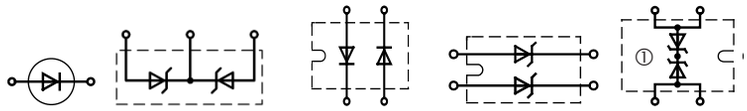
DPF...C...

Type	V_{RRM}	I_{FAV} d = 0.5	@ T_C	I_{FSM} 10 ms 45°C	V_F @ I_F T_{VJ} = 150°C		t_{rr} typ. T_{VJ} = 25°C	I_{RM} typ. T_{VJ} = 25°C	-di/dt	T_{VJM}	R_{thJC}	Fig. No.	Package style Outline drawings on pages O-36...O-59
➢ New	V	A	°C	A	V	A	ns	A	A/µs	°C	K/W		
DPG 10I200PA	200	10	145	140	0.98	10	35	3	200	175	2.30	X005b	X004 TO-252AA
DPG 10I200PM		10	125	140	0.98	10	35	3	200	175	4.40	X007b	
DPG 20C200PB		2x 10	145	140	0.98	10	35	3	200	175	2.30	X005a	
DPG 20C200PN		2x 10	125	140	0.98	10	35	3	200	175	4.40	X007a	X005a TO-220AB
DPG 15I200PA		15	140	240	1.01	15	35	3	200	175	1.70	X005b	
DPG 30C200PB		2x 15	140	240	1.01	15	35	3	200	175	1.70	X005a	
DPG 30C200PC		2x 15	140	240	1.01	15	35	3	130	175	1.70	X011b	
DPG 30C200HB		2x 15	140	240	1.00	15	35	3	200	175	1.70	X014a	X005b TO-220AC
DPF 60C200HB		2x 30	130	400	0.98	30	35	4	200	175	0.95	X014a	
DPF 60C200HJ		2x 30	130	560	0.88	30	35	4	200	175	1.05	X016a	
DPG 60C200HB		2x 30	135	360	1.06	30	35	3	200	175	0.95	X014a	
DPG 60C200QB		2x 30	135	360	1.06	30	35	3	200	175	0.95	X017a	X007a TO-220ABFP
DPF 80C200HB		2x 40	140	560	0.95	40	35	4	200	175	0.70	X014a	
DPF 60I200HA		60	135	650	0.98	60	35	4	200	175	0.55	X014b	
DPF 240X200NA		2x 120	120	1800	0.90	120	35	4	200	175	0.45	X027a	
DPG 10I300PA	300	10	145	140	0.98	10	35	3	200	175	2.30	X005b	X007b TO-220ACFP
DPG 10IM300UC		10	150	140	0.98	10	35	3	200	175	2.30	X004	
DPG 20C300PB		2x 10	145	140	0.98	10	35	3	200	175	2.30	X005a	
DPG 20C300PN		2x 10	125	140	0.98	10	35	3	200	175	4.40	X007a	
DPG 15I300PA		15	140	240	1.01	15	35	3	200	175	1.70	X005b	X010a ISOPLUS220™
DPG 30C300PB		2x 15	140	240	1.01	15	35	3	200	175	1.70	X005a	
DPG 30C300PC		2x 15	140	240	1.01	15	35	3	200	175	1.70	X011b	
DPG 30C300HB		2x 15	140	240	1.00	15	35	3	200	175	1.70	X014a	
DPF 30I300PA		30	145	390	0.98	30	55	6	200	175	0.85	X005b	X011b TO-263AB
DPG 30I300HA		30	135	360	1.06	30	35	3	200	175	0.95	X014b	
DPG 30I300PA		30	140	360	1.08	30	35	3	200	175	0.85	X005b	
DPG 30IM300PC		30	140	360	1.08	30	35	3	200	175	0.85	X011b	
DPG 30P300PJ	2x 300	30	135	450	0.99	30	35	3	200	175	1.05	X010a	X014a TO-247AD
DPF 60C300HB		2x 30	140	400	0.97	30	55	6	200	175	0.95	X014a	
DPG 60C300HB		2x 30	135	360	1.06	30	35	3	200	175	0.95	X014a	
DPG 60C300HJ		2x 30	135	450	0.96	30	35	3	200	175	1.05	X016a	
DPG 60C300PC		2x 30	140	360	1.08	30	35	3	200	175	0.85	X011b	
DPG 60C300QB		2x 30	135	360	1.06	30	35	3	200	175	0.95	X017a	X014b TO-247AD
DPG 80C300HB		2x 40	135	450	1.07	40	35	3	200	175	0.70	X014a	
DPG 60I300HA		60	125	450	1.10	60	35	3.5	200	175	0.55	X014b	
DPG 60IM300PC		60	135	450	1.14	60	35	3.5	200	175	0.45	X011b	
DPG 120C300QB		2x 60	125	450	1.10	60	35	3.5	200	175	0.55	X017a	X016a ISOPLUS247™
DPG 10I400PA	400	10	145	150	1.03	10	45	4	200	175	2.30	X005b	
DPG 10I400PM		10	120	150	1.03	10	45	4	200	175	4.40	X007b	
DPG 10P400PJ	2x 400	10	145	130	1.03	10	45	4	200	175	2.50	X010a	
DPG 20C400PB		2x 10	145	150	1.03	10	45	4	200	175	2.30	X005a	
DPG 20C400PC		2x 10	145	150	1.03	10	45	4	200	175	2.30	X011b	X016b ISOPLUS247™
DPG 20C400PN		2x 10	120	150	1.03	10	45	4	200	175	4.40	X007a	
DPG 15I400PM		15	90	190	1.14	15	45	4	200	175	4.20	X007b	
DPG 30C400PB		2x 15	140	190	1.14	15	45	4	200	175	1.70	X005a	
DPG 30C400HB		2x 15	140	190	1.13	15	45	4	200	175	1.70	X014a	X017a TO-3P
DPG 30I400HA		30	135	360	1.13	30	45	4	200	175	0.95	X014b	
DPG 30IM400PC		30	145	300	1.16	30	45	4	200	175	0.85	X011b	
➢ DPG 30P400PJ	2x 400	10	135	400	1.05	30	45	4	200	175	1.05	X010a	
DPG 60C400HB		2x 30	135	360	1.13	30	45	4	200	175	0.95	X014a	
DPG 60C400QB		2x 30	135	360	1.13	30	45	4	200	175	0.95	X017a	X027a SOT-227B miniBLOC
DPG 80C400HB		2x 40	135	400	1.14	40	45	4	200	175	0.70	X014a	
DPG 60I400HA		60	120	450	1.22	60	45	4	200	175	0.55	X014b	
DPF 60IM400HB		60	130	600	1.09	60	60	6	200	175	0.55	X014a	
DPG 60IM400QB		60	120	450	1.22	60	45	4	200	175	0.55	X017a	
DPF 240X400NA		2x 120	120	1100	0.95	120	60	6	200	175	0.45	X027a	
DPH 30IS600HI	600	30	140	450	1.89	30	35	3	200	175	0.55	X016b	

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

HiPerFRED™ Diodes

I_{FAV} = 8 - 2x 120 A



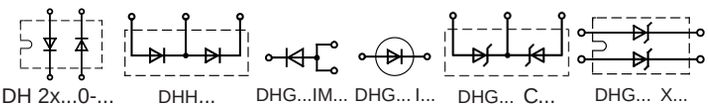
Type	V_{RRM}	I_{FAV}	T_C	I_{FSM}	V_F	@ I_F	t_{rr}	I_{RM}	-di/dt	T_{VJM}	R_{thJC}	Fig. No.	Package style
		d = 0.5		10 ms 45°C	T_{VJ} = 150°C		T_{VJ} = 25°C	typ. T_{VJ} = 100°C	typ.				Outline drawings on pages O-36...O-59
➢ New	V	A	°C	A	V	A	ns	A	A/µs	°C	K/W		
DSEP 40-03AS	300	40	125	340	1.18	40	35	3.5	200	175	0.85	X011b	X004 TO-252AA
DSEP 6-06AS	600	6	150	40	1.34	6	20	3.5	100	175	2.80	X004	
DSEP 6-06BS		6	140	40	1.77	6	15	2.0	100	175	2.80	X004	
DSEP 8-06A		10	145	50	1.42	10	35	3.5	100	175	2.50	X005b	
DSEP 8-06B		10	130	50	1.85	10	30	2.0	100	175	2.50	X005b	X005a TO-220AB
DSEP 15-06A		15	140	110	1.35	15	35	4.0	100	175	1.60	X005b	
DSEP 15-06AS		15	140	110	1.35	15	35	4.0	100	175	1.60	X011b	
DSEP 15-06B		15	130	110	1.59	15	25	2.0	100	175	1.60	X005b	
DSEP 15-06BS		15	130	110	1.59	15	25	2.0	100	175	1.60	X011b	
DSEP 29-06A		30	135	250	1.26	30	35	5.5	100	175	0.90	X005b	X005b TO-220AC
DSEP 29-06AS		30	135	250	1.26	30	35	5.5	100	175	0.90	X011b	
DSEP 29-06B		30	120	250	1.63	30	30	3.0	100	175	0.90	X005b	
DPG 30I600PM		15	95	250	1.63	30	25	4.5	200	175	3.50	X007b	
DSEP 30-06A		30	135	250	1.25	30	35	5.5	100	175	0.90	X014b	X010a ISOPLUS220™
DSEP 30-06B		30	120	250	1.61	30	30	3.0	100	175	0.90	X014b	
DSEP 30-06BR		30	100	250	1.61	30	30	3.0	100	175	1.10	X016b	
DSEP 60-06A		60	110	600	1.39	60	35	5.5	100	175	0.65	X014b	
DSEP 60-06AT		60	110	600	1.39	60	35	5.5	100	175	0.65	X019	
DSEP 75-06AR		75	115	1000	1.38	75	35	6.5	200	175	0.50	X016a	X011b TO-263AB
DSEP 8-12A	1200	10	130	40	1.96	10	40	4.0	100	175	2.50	X005b	
DSEP 12-12A		15	130	90	1.87	15	40	4.5	100	175	1.60	X005b	
DSEP 12-12AZ		15	130	90	1.87	15	40	4.5	100	175	1.60	X011c	
DSEP 12-12B		15	130	90	2.06	15	35	3.0	100	175	1.60	X005b	X011c TO-263ABHV
DSEP 12-12BZ		15	130	90	2.06	15	35	3.0	100	175	1.60	X011c	
DSEP 29-12A		30	120	200	1.81	30	40	8.5	100	175	0.90	X005b	
➢ DSEP 29-12B		30	100	200	2.31	30	35	5.0	100	175	0.90	X005b	
DSEP 30-12A		30	115	200	1.79	30	40	8.5	100	175	0.90	X014b	X014a TO-247AD
➢ DSEP 30-12B		30	100	200	2.30	30	35	5.0	100	175	0.90	X014b	
DSEP 30-12AR		30	100	200	1.79	30	40	8.5	100	175	1.10	X016b	
DSEP 60-12A		60	85	500	1.81	60	40	8.5	100	175	0.65	X014b	
➢ DSEP 60-12B		60	110	500	2.20	60	35	-	100	175	0.45	X014b	
DSEP 60-12AR		60	60	500	1.81	60	40	8.5	100	175	0.80	X016b	X014b TO-247AD
➢ DSEP 60-12AZ		60	115	500	1.81	60	40	8.5	100	175	0.45	X019a	
➢ DSEP 90-12AZ		90	105	800	1.79	90	40	8.5	100	175	0.35	X019a	
DSEC 16-06A	600	2x 10	145	50	1.42	10	35	3.5	100	175	2.50	X005a	
DSEC 16-06AC		2x 8	85	50	1.20	10	35	3.5	100	175	3.00	X010a	
DSEC 29-06AC		2x 15	140	110	1.34	15	35	4.0	100	175	1.60	X010a	X016a ISOPLUS247™
DSEC 30-06A		2x 15	140	110	1.34	15	35	4.0	100	175	1.60	X014a	
DSEC 30-06B		2x 15	130	110	1.58	15	25	2.0	100	175	1.60	X014a	
DSEC 59-06BC		2x 30	105	200	1.56	30	30	4.0	100	175	1.10	X010a	
DSEC 60-06A		2x 30	135	250	1.25	30	35	5.5	100	175	0.90	X014a	
DSEC 60-06B		2x 30	120	250	1.61	30	30	3.0	100	175	0.90	X014a	X019 TO-268AA
DSEC 16-12A	1200	2x 10	130	40	1.96	10	40	4.0	100	175	2.50	X005a	
DSEC 16-12AS		2x 10	130	40	1.96	10	40	4.0	100	175	2.50	X011b	
DSEC 30-12A		2x 15	115	90	1.86	15	40	4.5	100	175	1.60	X014a	
DSEC 60-12A		2x 30	115	200	1.79	30	40	8.5	100	175	0.90	X014a	X019a TO-268AAHV
DSEC 120-12AK		2x 60	85	500	1.81	60	40	7.0	100	175	0.65	X020a	
DSEP 2x31-03A	300	2x 30	110	300	0.90	30	30	4.5	100	150	1.15	X027a	
DSEP 2x61-03A		2x 60	75	600	1.26	60	30	4.0	100	150	0.85	X027a	
DSEP 2x91-03A		2x 90	70	1000	1.10	90	30	4.5	100	150	0.60	X027a	X020a TO-264
DSEP 2x31-06A	600	2x 30	95	250	1.23	30	35	5.5	100	150	1.15	X027a	
DSEP 2x31-06B		2x 30	75	250	1.59	30	30	3.0	100	150	1.15	X027a	
DSEP 2x61-06A		2x 60	65	600	1.48	60	35	5.5	100	150	0.85	X027a	
DSEP 2x91-06A		2x 90	55	1000	1.39	90	35	8.0	100	150	0.60	X027a	
DSEP 2x31-12A	1200	2x 30	70	200	1.77	30	40	8.5	100	150	1.15	X027a	X027a/b SOT-227B/UI miniBLOC
DSEP 2x60-12A		2x 60	80	800	1.52	60	40	8.0	100	150	0.60	X027a	
DSEP 2x61-12A		2x 60	80	800	1.52	60	40	8.0	100	150	0.60	X027a	
➢ DSEP 2x61-12B		2x 60	80	800	2.00	60	35	-	100	150	0.60	X027a	
DSEP 2x101-04A	400	2x 100	45	1000	1.22	125	30	5.5	100	150	0.60	X027a	
DSEC 240-04A ①		2x 120	75	2000	1.00	120	30	5.5	100	150	0.45	X027b	
DSEC 240-06A ①	600	2x 120	75	2000	1.26	120	35	8.0	100	150	0.40	X027b	

① Non isolated base plate

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

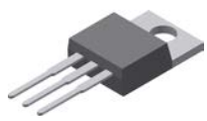
SONIC-FRD™ Diodes

I_{FAV} = 5 - 2x 60 A • ultrasoft and fast recovery
• very low temperature dependence



Type	V_{RRM}	I_{FAV}	@ T_C	I_{FSM}	V_F	@ I_F	t_{rr}	I_{RM}	-di/dt	T_{VJM}	R_{thJC}	Fig. No.	Package style Outline drawings on pages O-36...O-59
		d = 0.5		10 ms 45°C	T_{VJ} = 125°C		typ. T_{VJ} = 25°C						
	V	A	°C	A	V	A	ns	A	A/µs	°C	K/W		
DHG 5I600PA	600	5	105	40	2.17	5	35	2	100	150	3.15	X005b	
DHG 5I600PM		5	85	40	2.17	5		2	100		4.20	X007b	
DHG 10C600PB		2x 5	105	40	2.17	5		2	100		3.15	X005a	
DHG 10I600PA		10	95	80	2.18	10		4	200		1.80	X005b	
DHG 10I600PM		10	25	80	2.18	10		4	200		4.00	X007b	
DHG 20C600PB		2x 10	95	80	2.18	10		4	200		1.80	X005a	
DHG 20C600QB		2x 10	95	80	2.17	10		4	200		1.80	X017a	
DHG 20I600PA		20	100	150	2.21	20		8	400		0.80	X005b	
DHG 20I600HA		20	95	150	2.19	20		8	400		0.90	X014b	
DHG 40C600PB		2x 20	100	150	2.21	20		8	400		0.80	X005a	
DHG 40C600HB		2x 20	95	150	2.19	20		8	400		0.90	X014a	
DHG 50X600NA		2x 25	70	200	2.03	25		12	600		1.20	X027a	
DHG 30I600PA		30	95	200	2.24	30		12	600		0.60	X005b	
DHG 30IM600PC		30	95	200	2.22	30		12	600		0.60	X011b	
DHG 30I600HA		30	85	200	2.21	30		12	600		0.70	X014b	
DHG 60C600HB		2x 30	85	200	2.21	30		12	600		0.70	X014a	
DHG 100X600NA		2x 50	80	430	2.00	50		20	1200		0.60	X027a	
DHG 60I600HA		60	95	430	2.10	60		24	1200		0.30	X014b	
DHG 10I1200PA	1200	10	95	65	2.13	10	75	8	350	150	1.80	X005b	
DHG 10I1200PM		10	30	65	2.13	10		8	350		4.00	X007b	
DHG 20C1200PB		2x 10	95	65	2.13	10		8	350		1.80	X005a	
DHG 20I1200PA		20	105	135	2.16	20		19	750		0.80	X005b	
DHG 20I1200HA		20	95	135	2.14	20		19	750		0.90	X014b	
DHG 40C1200HB		2x 20	95	135	2.14	20		19	750		0.90	X014a	
DHG 50X1200NA		2x 25	70	180	2.00	25		25	1000		1.20	X027a	
DHG 30I1200HA		30	90	180	2.16	30		25	1000		0.70	X014b	
DHG 100X1200NA		2x 50	65	430	2.05	50		50	2500		0.60	X027a	
DHG 60I1200HA		60	95	430	2.22	60		50	2500		0.30	X014b	
DHG 10I1800PA	1800	10	85	65	2.30	10	150	8	200	150	2.15	X005b	
DH 20-18A		20	80	150	2.94	20		16	300		0.90	X014b	
DH 40-18A		40	85	350	2.69	40		33	400		0.45	X014b	
DH 60-14A	1400	60	100	700	2.05	60	150	60	800	150	0.30	X014b	
DH 60-16A	1600											X014b	
DH 60-18A	1800											X014b	
DHH 55-36N1F	2x 1800	60	50	700	2.05	60	150	60	800	150	0.60	X024b	
DH 2x60-18A	1800	2x 60	55	700	2.02	60		60	800		0.60	X027a	
DH 2x61-18A		2x 60	55	700	2.02	60		60	800		0.60	X027a	
DHG 40I4500KO	4500	40	70	600	3.32	50	400	80	800	150	0.49	X022f	

X005a **TO-220AB**



X005b **TO-220AC**

X007b **TO-220ACFP**

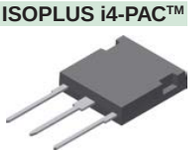
X011b **TO-263AB**

X014a **TO-247AD**

X014b **TO-247AD**

X027a **SOT-227B miniBLOC**

X024b **ISOPLUS i4-PAC™**



X022f **ISOPLUS264**

X017a **TO-3P**

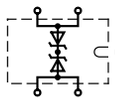
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

FRED Diodes

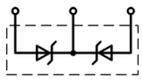
Fast Recovery Epitaxial Diodes

I_{FAV} = 8 - 126 A

DSEI.../DFE...



DSEK...



DSEK...

Type ➢ New	V_{RRM} V	I_{FAV} d = 0.5 A	@ T_C °C	I_{FRMS} A	I_{FSM} 10 ms 45°C A	V_F T_{VJ} = 150°C V	@ I_F A	t_{rr} typ. T_{VJ} = 25°C ns	I_{RM} typ. T_{VJ} = 100°C A	-di/dt A/µs	R_{thJC} K/W	Fig. No. Outline drawings on pages O-36...O-59
DSEI 8-06A	600	8	115	16	100	1.30	8	35	2.5	64	2.50	X005b
DSEI 8-06AS	600	8	115	16	100	1.30	8	35	2.5	64	2.50	X011b
DFE 10I600PM	600	10	100	16	100	1.30	10	35	2.5	64	4.20	X007b
DSEI 12-06A	600	14	100	25	100	1.50	16	35	4.0	100	2.00	X005b
DSEI 12-06AS	600	14	100	25	100	1.50	16	35	4.0	100	2.00	X011b
DSEI 12-10A	1000	12	100	25	75	2.10	12	50	6.5	100	1.60	X005b
DSEI 12-12A	1200	11	100	25	75	2.20	12	50	6.5	100	1.60	X005b
DSEI 12-12AZ	1200	11	100	25	75	2.20	12	50	6.5	100	1.60	X011c
DSEI 20-12A	1200	17	85	70	130	1.87	12	40	7.0	100	1.60	X005b
➢ **DSEI 25-06A**	600	25	110	35	240	1.55	25	35	9.0	200	1.20	X005b
DSEI 19-06AS	600	20	65	25	100	1.50	16	35	4.0	100	2.00	X011b
➢ **DSEI 25-06AS**	600	25	110	35	240	1.55	25	35	9.0	200	1.20	X011b
DSEI 36-06AS	600	37	85	70	300	1.40	37	35	10.0	240	1.00	X011b
DFE 30I600QA	600	30	90	70	300	1.35	30	35	10.0	240	1.00	X017b
DFE 30I600QM	600	30	45	70	300	1.35	30	35	10.0	240	2.50	X017d
➢ **DFE 25I600HA**	600	25	110	70	240	1.52	25	35	9.0	200	1.20	X014b
DSEI 30-06A	600	37	85	70	300	1.40	37	35	10.0	240	1.00	X014b
DSEI 30-10A	1000	30	85	70	200	2.00	36	35	16.0	240	0.90	X014b
DSEI 30-10AR	1000	30	85	70	200	2.00	36	35	16.0	240	0.90	X016b
DSEI 30-12A	1200	26	85	70	200	2.20	30	40	16.0	240	0.90	X014b
DSEK 60-02A	200	2x 34	115	50	325	0.85	30	35	4.0	100	1.00	X014a
DSEK 60-02AR	200	2x 34	115	50	325	0.85	30	35	4.0	100	1.00	X016a
DSEK 60-06A	600	2x 30	85	50	300	1.40	37	35	10.0	240	1.00	X014a
DSEK 60-12A	1200	2x 26	85	50	200	2.20	30	40	16.0	240	0.90	X014a
DSEI 60-02A	200	69	85	98	600	0.88	60	35	8.0	200	0.75	X014b
DSEI 60-06A	600	60	70	100	550	1.50	70	35	19.0	480	0.75	X014b
DSEI 60-10A	1000	60	60	100	500	1.80	60	35	32.0	480	0.66	X014b
DSEI 60-12A	1200	52	60	100	500	2.00	60	40	32.0	480	0.66	X014b
DSEI 120-06A	600	126	70	100	600	1.12	70	35	17.0	200	0.35	X014b
DSEI 120-12A	1200	109	60	100	600	1.55	70	40	25.0	200	0.35	X014b
➢ **DSEI 120-12AZ**	1200	109	60	100	600	1.55	70	40	25.0	200	0.35	X019a

X005b **TO-220AC**

X007b **TO-220ACFP**

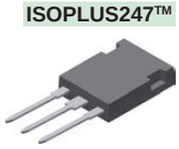
X011b **TO-263AB**

X011c **TO-263ABHV**

X014a **TO-247AD**

X014b **TO-247AD**

X016a **ISOPLUS247™**



X019a **TO-268AAHV**

X017d **TO-3PFP**

X017b **TO-3P**

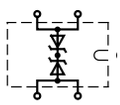
X016b **ISOPLUS247™**

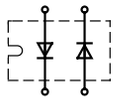
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

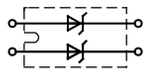
FRED Diodes

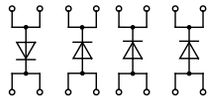
Fast Recovery Epitaxial Diodes

I_{FAV} = 2x 28 A - 2x 165 A


DSEK...


DSEI 2x...0-...

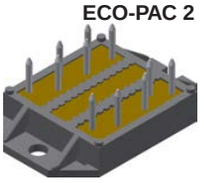

DSEI 2x...1-...


2x...0-... 2x...1-...

Type ➢ New	V_{RRM} V	I_{FAV} d = 0.5 A	@ T_C °C	I_{FRMS} A	I_{FSM} 10 ms 45°C A	V_F T_{VJ} = 150°C V	@ I_F A	t_{rr} typ. T_{VJ} = 25°C ns	I_{RM} typ. T_{VJ} = 100°C A	-di/dt A/µs	R_{thJC} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
➢ **DSEK 300-06A ***	600	2x 150	105	270	2000	1.20	150	77	50.0	600	0.20	X027d	
DSEI 2x30-04C	400	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X027a	
DSEI 2x30-06C	600	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X027a	
DSEI 2x30-10B	1000	2x 30	50	70	200	2.00	30	35	16.0	240	1.25	X027a	
DSEI 2x30-12B	1200	2x 28	50	70	200	2.20	30	40	16.0	240	1.25	X027a	X027a **SOT-227B miniBLOC**
DSEI 2x31-04C	400	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X027a	
DSEI 2x31-06C	600	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X027a	
DSEI 2x31-10B	1000	2x 30	50	70	200	2.00	30	35	16.0	240	1.25	X027a	
DSEI 2x31-12B	1200	2x 28	50	70	200	2.20	30	40	16.0	240	1.25	X027a	
DSEI 2x61-02A	200	2x 71	85	100	950	0.88	60	35	8.0	200	0.80	X027a	
DSEI 2x60-04C	400	2x 60	70	100	550	1.50	60	35	19.0	480	0.70	X027a	
DSEI 2x61-04C	400	2x 60	70	100	550	1.50	60	35	19.0	480	0.70	X027a	
DSEI 2x61-06C	600	2x 60	70	100	550	1.50	60	35	19.0	480	0.70	X027a	
DSEI 2x61-10B	1000	2x 60	50	100	500	1.80	60	35	32.0	480	0.70	X027a	
DSEI 2x61-12B	1200	2x 52	50	100	450	2.15	60	40	32.0	480	0.70	X027a	
DSEI 2x61-06P	600	2x 60	70	100	550	1.50	60	35	19.0	480	0.70	X101	
DSEI 2x61-12P	1200	2x 52	50	100	450	2.15	60	40	32.0	540	0.70	X101	
DSEI 2x121-02A	200	2x 123	70	150	1200	0.95	120	35	12.0	200	0.50	X027a	
DSEI 2x101-06A	600	2x 96	70	150	1200	1.17	100	35	19.0	200	0.50	X027a	
➢ **DFE 240X600NA**	600	2x 120	80	150	1200	1.20	120	35	27.0	600	0.40	X027a	X027d **SOT-227UI miniBLOC**
DSEI 2x101-12A	1200	2x 91	50	130	900	1.61	100	40	24.0	200	0.50	X027a	
DSEI 2x101-06P	600	2x 96	70	150	1200	1.17	100	40	19.0	200	0.50	X102	
DSEI 2x101-12P	1200	2x 91	50	130	900	1.61	100	40	24.0	200	0.50	X102	
DSEI 2x161-02P	200	2x 165	70	270	1200	1.05	200	35	20.0	200	0.29	X102	
DSEI 2x161-06P	600	2x 147	70	270	1200	1.40	200	35	45.0	200	0.29	X102	
DSEI 2x161-12P	1200	2x 128	70	270	1200	1.75	200	40	48.0	200	0.29	X102	

***** non isolated base plate

X102 **ECO-PAC 2**



See data sheet for pin arrangement

X101 **ECO-PAC 1**

See data sheet for pin arrangement

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

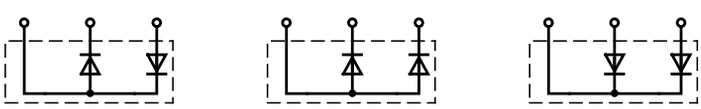
FRED & HiPerFRED™ Modules

I_{FAV} = 75 - 582 A

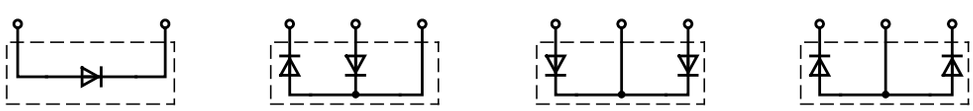
Type	V_{RRM}	I_{FAV}	@ T_C	I_{FRMS}	I_{FSM}	V_F	@ I_F	t_{rr} typ.	I_{RM}	-di/dt	R_{thJC}	P_{tot}	Fig. No.
		d = 0.5			10 ms 45°C	T_{VJ} =125°C		T_{VJ} = 25°C	T_{VJ} = 100°C				
	V	A	°C	A	A	V	A	ns	A	A/µs	K/W	W	
FRED													
MEO 550-02DA	200	582	75	822	4800	1.08	520	150	15	200	0.071	1750	X126d
MEO 500-06DA	600	514	75	726	4800	1.41	520	250	132	800	0.071	1750	
MEO 450-12DA	1200	453	75	640	4800	1.76	520	450	165	800	0.071	1750	
MEK 75-12DA	1200	2x 75	75	107	1200	1.85	100	250	33	200	0.450	280	X125e
MEA 75-12DA	1200	2x 75											
MEE 75-12DA	2x 1200	75											
MEK 95-06DA	600	2x 95	75	142	1200	1.36	100	250	21	200	0.450	280	
MEA 95-06DA	600	2x 95											
MEE 95-06DA	2x 600	95											
MEK 250-12DA	1200	2x 260	75	367	2400	1.54	260	450	83	400	0.143	875	X126c
MEA 250-12DA	1200	2x 260											
MEE 250-12DA	2x 1200	260											
MEK 300-06DA	600	2x 304	75	430	2400	1.19	260	250	66	400	0.143	875	
MEA 300-06DA	600	2x 304											
MEE 300-06DA	2x 600	304											
MEK 350-02DA	200	2x 356	75	503	2400	0.92	260	150	15	200	0.143	875	
HiPerFRED™													
MEK 150-04DA	400	2x 150	100	200	1200	1.40*	300	300	11	100	0.350	360	X125e
MEK 600-04DA	400	2x 575	80	800	3000	1.10	400	220	80	900	0.110	1100	X126c
MPK 95-06DA	600	2x 95	110	200	1200	1.40	100	35	5.5	100	0.575	215	X125e

* T_{VJM} = 150°C

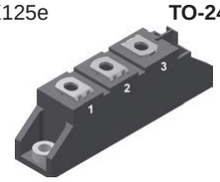
Diode connections for Fig. X125 (TO-240)



Diode connections for Fig. X126 (Y4: 34 mm package)



X125e **TO-240**

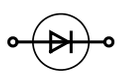


X126c **Y4**

X126d **Y4**

SemiFast Diodes

I_{FAV} = 60 A



DSDI...

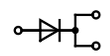
Type	V_{RRM}	I_{FAV}	@ T_C	I_{FRMS}	I_{FSM}	V_F	@ I_F	t_{rr} typ.	I_{RM}	-di/dt	R_{thJC}	Fig. No.
		d = 0.5			10 ms 45°C	T_{VJ} = 125°C		T_{VJ} = 25°C	T_{VJ} = 100°C			
	V	A	°C	A	A	V	A	ns	A	A/µs	K/W	
DSDI 60-14A	1400	63	60	100	500	4.1	70	300	60	500	0.4	X014b
DSDI 60-16A	1600											
DSDI 60-18A	1800											

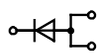
X014b **TO-247AD**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

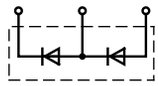
Rectifier Diodes

I_{FAV} = 2 - 30 A,
Standard & Avalanche Rectifier


DAA...EM...


DLA...IM...
DMA...IM...

DS/DSA/DSI
DMA...I...
DLA...I...


DSP
DMA...P...
DLA...P...

Type ➢ New	V_{RRM} V	I_{FAV} A	@ T_C °C	P_{RSM} kW	I_{FRMS} A	I_{FSM} 10 ms 45°C A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
DSA 1-12D	1200	2.3	T_{amb} 45	1.6	7	110	0.80	67.0	150	R_{thJA} 80		X201	
DSA 1-16D	1600											X201	X004 **TO-252AA**
DSA 1-18D	1800											X201	
DLA 5P800UC	2x 800	5	140	-	20	40	0.74	44.0	175	5.50	0.50	X004	
DSP 8-08S	2x 800	8	160	-	25	100	0.79	33.0	175	1.50	0.25	X011b	
DSP 8-12S	2x 1200											X011b	
DSP 8-08A	2x 800											X005a	
DSP 8-12A	2x 1200											X005a	
DSP 8-08AS	2x 800											X011a	X004a **TO-252AA**
DSP 8-12AS	2x 1200											X011a	
DSP 8-12AC	2x 1200	11	100	-	17	100	0.80	41.0	150	1.80	0.60	X010a	
DLA 10IM800UC	800	10	100	-	20	80	0.80	22.0	175	3.15	0.50	X004	
DLA 20IM800PC		20	100	-	35	200	0.80	19.0	175	1.80	0.25	X011b	
➢ **DMA 10IM1200UZ**	1200	10	150	-	20	120	0.82	37.0	175	1.50	0.50	X004a	
➢ **DMA 10IM1600UZ**	1600											X004a	
DMA 10I1600PA	1600											X005b	X005a **TO-220AB**
DMA 10IM1600PZ	1600										0.25	X011c	
DMA 10P1600PZ	2x 1600											X011c	
DMA 10P1800PZ	2x 1800											X011c	
DAA 10EM1800PZ	1800	10	150	1.6	25	150	0.81	32.0	175	1.50	0.25	X011c	
DAA 10P1800PZ	2x 1800	10	150	1.6	25	150	0.82	37.0	175	1.50	0.25	X011c	
➢ **DMA 10P1200HR**	2x 1200	10	145	-	25	120	0.81	34.0	175	2.00	0.25	X016c	X005b **TO-220AC**
➢ **DMA 10P1600HR**	2x 1600											X016c	
DSP 25-12A	2x 1200	25	135	-	70	300	0.81	13.8	175	0.90	0.25	X014a	
DSP 25-16A	2x 1600											X014a	
DSP 25-12AT	2x 1200										0.15	X019	
DSP 25-16AT	2x 1600											X019	
DSP 25-16AR	2x 1600	25	110	-	70	300	0.81	13.8	175	1.50	0.25	X016a	
DSI 30-08A	800	30	130	-	35	300	0.82	14.9	175	0.90	0.50	X005b	X010a **ISOPLUS220™**
DSI 30-12A	1200											X005b	
DSI 30-16A	1600											X005b	
DSI 30-08AS	800										0.25	X011b	
DSI 30-12AS	1200											X011b	
DSI 30-16AS	1600											X011b	
DSI 30-08AC	800	30	95	-	35	200	0.80	15.0	150	1.10	0.60	X010b	

X011b **TO-263AB**

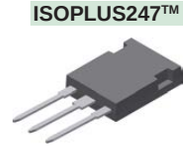
X011a **TO-263AA**

X010b **ISOPLUS220™**

X011c **TO-263ABHV**

X014a **TO-247AD**

X016a **ISOPLUS247™**



X201

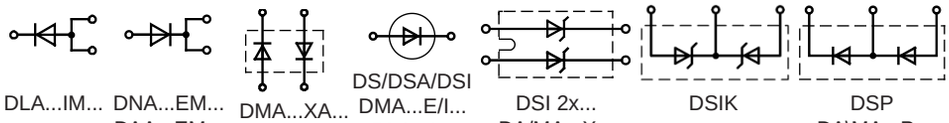
X019 **TO-268AA**

X016c **ISO247™**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Rectifier Diodes

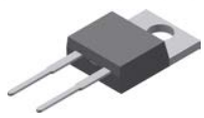
I_{FAV} = 30 - 2x 100 A,
Standard & Avalanche Rectifier



DLA...IM... DNA...EM... DAA...EM... DMA...XA... DAA...XA... DS/DSA/DSI DMA...E/I... DLA...I... DSI 2x... DA/MA...X... DSIK DSP DA\MA...P...

Type ➢ New	V_{RRM} V	I_{FAV} A	@ T_C °C	P_{RSM} kW	I_{FRMS} A	I_{FSM} 10 ms 45°C A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
DMA 30IM1600PZ	1600	30	140	-	35	300	0.82	14.1	175	0.70	0.25	X011c	
DMA 30E1800HA	1800	30	140	-	70	370	0.88	12.1	175	0.70	0.25	X014b	
DMA 30P1200HB	2x 1200	30	130	-	70	370	0.81	12.7	175	0.80	0.25	X014a	
DMA 30P1600HB	2x 1600											X014a	
DMA 30P1600HR	2x 1600	30	105	-	50	300	0.82	13.5	175	1.30	0.25	X016c	
DNA 30ER2200IY	2200	30	140	-	35	370	0.88	12.9	175	0.70	0.50	X008b	
DNA 30E2200PA												X005b	
DNA 30E2200PZ											0.25	X011c	
DNA 30EM2200PZ												X011c	
DNA 30E2200FE	2200	30	100	-	70	370	0.88	12.2	175	1.35	0.20	X024e	
DLA 40IM800PC	800	40	130	-	35	300	0.81	8.0	175	0.80	0.25	X011b	
DSI 45-08A	800	45	130	-	70	480	0.81	9.1	175	0.55	0.25	X014b	
DSI 45-12A	1200											X014b	
DSI 45-16A	1600											X014b	
DSP 45-12A	2x 1200	45	130	-	70	480	0.81	9.1	175	0.55	0.25	X014a	
DSP 45-12AZ											0.15	X019a	
DSP 45-16A	2x 1600										0.25	X014a	
DSP 45-16AZ											0.15	X019a	
DSP 45-18A	2x 1800										0.25	X014a	
DSI 45-16AR	1600	45	100	-	70	480	0.81	9.1	175	0.90	0.25	X016b	
DSIK 45-16AR	1600	2x 45										X016a	
DSP 45-16AR	2x 1600	45										X016a	
➢ **DMA 50I800HA**	800	50	130	-	70	500	0.81	8.6	175	0.45	0.25	X014b	
➢ **DMA 50I1200HA**	1200											X014b	
➢ **DMA 50I1600HA**	1600											X014b	
DMA 50P1200HR	2x 1200	50	105	-	70	500	0.82	9.0	175	0.70	0.25	X016c	
DMA 50P1200HB	2x 1200	50	130	-	70	500	0.81	8.6	175	0.45	0.25	X014a	
DMA 50P1600HB	2x 1600											X014a	
DLA 60I1200HA	1200	60	150	-	70	850	0.77	4.2	175	0.30	0.25	X014b	
DSI 2x55-12A	1200	2x 60	95	-	120	800	0.83	6.2	150	0.60	0.10	X027a	
DSI 2x55-16A	1600											X027a	
➢ **DNA 120E2200KO**	2200	120	125	-	70	2000	0.75	3.8	175	0.25	0.15	X022f	
DMA 150E1600NA	1600	150	90	-	150	3000	0.83	2.0	150	0.25	0.10	X027a	
DMA 200X1600NA	1600	2x100	100	-	150	1500	0.80	4.0	150	0.30	0.10	X027a	
DMA 200XA1600NA												X027a	
DAA 200X1800NA	1800			20								X027a	
DAA 200XA1800NA												X027a	

X005b **TO-220AC**



X008b **TO-262AA (I^2-PAK)**

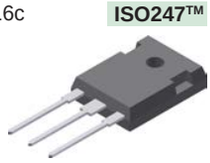
X011b **TO-263AB**

X011c **TO-263ABHV**

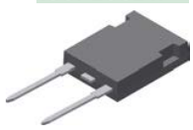
X014a **TO-247AD**

X014b **TO-247AD**

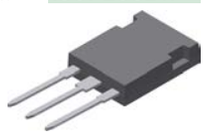
X016c **ISO247™**



X016b **ISOPLUS247™**

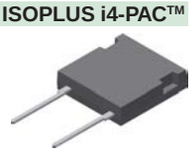


X016a **ISOPLUS247™**



X027a **SOT-227B miniBLOC**

X024e **ISOPLUS i4-PAC™**



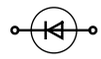
X022f **ISOPLUS264™**

X019a **TO-268AAHV**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Rectifier Diodes

I_{FAV} = 3 - 110 A, Standard Diodes (DS..), Avalanche Diodes (DSA..)


DSI/DSAI..

DS/DSA..

Type	V_{RRM} V	I_{FAV} A	@ T_C °C	P_{RSM} kW	I_{FRMS} A	I_{FSM} 10 ms 45°C A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Symbol	Fig. No.	Package style Outline drawings on pages O-36...O-59
DS 2-12A	1200	3.6	T_{amb} 45	-	7	120	0.85	43.0	180	R_{thJA} 30			X200	X200 **Metal-can**
DSA 2-12A	1200			2.5										
DSA 2-16A	1600													
DSA 2-18A	1800													
DSA 9-12F	1200	11	100	4.5	18	250	0.85	15.0	180	2.00	1.00		X204	
DSA 9-16F	1600													X204 **DO-203AA (DO-4)** M5
DSA 9-18F	1800													
DS 17-12A	1200	25	125	-	40	370	0.85	8.0	180	1.50	0.60		X205	
DSA 17-12A	1200	25	125	7	40	370	0.85	8.0	180	1.50	0.60			
DSA 17-16A	1600													
DSA 17-18A	1800													
DSI 17-12A	1200	25	125	-	40	370	0.85	8.0	180	1.50	0.60		X205	X205 **DO-203AA (DO-4)** 10-32 UNF
DSAI 17-12A	1200	25	100	7	40	370	0.85	8.0	180	1.50	0.60			
DSAI 17-16A	1600													
DSAI 17-18A	1800													
DS 35-12A	1200	49	100	-	80	650	0.85	4.5	180	1.05	0.20		X206a	
DSA 35-12A	1200	49	100	11	80	650	0.85	4.5	180	1.05	0.20			
DSA 35-16A	1600													X206a **DO-203AB (DO-5)**
DSA 35-18A	1800													
DSI 35-12A	1200	49	100	-	80	650	0.85	4.5	180	1.05	0.20		X206a	
DSAI 35-12A	1200	49	100	11	80	650	0.85	4.5	180	1.05	0.20			
DSAI 35-16A	1600													
DSAI 35-18A	1800													
DS 75-12B	1200	110	100	-	160	1400	0.75	2.0	180	0.50	0.40		X207	
DSA 75-12B	1200	110	100	20	160	1400	0.75	2.0	180	0.50	0.40			X207 **DO-203AB (DO-5)**
DSA 75-16B	1600													
DSA 75-18B	1800													
DSI 75-12B	1200	110	100	-	160	1400	0.75	2.0	180	0.50	0.40		X207	
DSAI 75-12B	1200	110	100	20	160	1400	0.75	2.0	180	0.50	0.40			
DSAI 75-16B	1600													
DSAI 75-18B	1800													

Phase Control Thyristors

I_{TAV} = 25 - 63 A

Type	V_{RRM} V_{DRM} V	I_{TAV} T_C = 85°C A	$I_{T(RMS)}$ A	I_{TSM} 45°C 10 ms A	$(dv/dt)_{cr}$ V/µs	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.
CS 23-08io2	800	25	50	450	1000	1.00	10.0	125	1.00	0.60	X209
CS 23-12io2	1200										
CS 23-16io2	1600										
CS 35-08io4	800	63	120	1200	1000	0.85	3.5	125	0.40	0.20	X210
CS 35-12io4	1200										
CS 35-14io4	1400										

X209 **TO-208AC (TO-48)**

X210 **TO-208AC (TO-65)**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Phase Control Thyristors

Thyristors are very rugged devices. Compared to all other controlled semiconductor components, they feature the highest current capacity per chip area especially at high voltage. They are mainly used as control devices in 50 and 60 Hz AC mains equipment.
Principal applications are static converter circuits for speed control of DC-drives, or switching and control functions for temperature, lighting, soft-start, etc. in single-phase and three-phase AC switch configurations. Phase control thyristors are designed for optimal forward conduction and reverse blocking characteristics, due to only moderate requirements for turn-on and turn-off parameters.

Phase Control Thyristors

I_{TAV} = 5 - 30 A

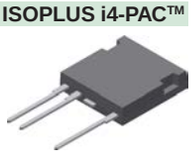
CLB...

CS.../CL/MA...E/I...

Type	V_{RRM} V_{DRM}	I_{TAV}	@ T_C	$I_{T(RMS)}$	I_{TSM} 45°C 10 ms	$(dv/dt)_{cr}$	V_{T0}	r_T	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style Outline drawings on pages O-36...O-59
	V	A	°C	A	A	V/µs	V	mΩ	°C	K/W	K/W		
CLA 5E1200UC	1200	5	135	8	70	500	0.89	85.0	150	1.50	0.50	X004	X004 **TO-252AA**
CLA 5E1200PZ											0.25	X011c	
CLA 15E1200NPB	1200	15	120	33	170	500	0.89	30.0	150	0.95	0.50	X005a	
CLA 15E1200NPZ											0.25	X011c	
CLA 16E800PN	800	10	90	16	180	500	0.81	24.0	150	4.00	0.50	X007a	
CLA 16E1200PN	1200											X007a	
CS 19-08ho1	800	20	110	31	160	500	0.86	22.0	125	0.70	0.50	X005a	X005a **TO-220AB**
CS 19-12ho1	1200											X005a	
CS 19-08ho1S	800											X011b	
CS 19-12ho1S	1200											X011b	
CMA 20E1600PB	1600	20	115	31	180	500	0.92	28.0	150	0.70	0.50	X005a	
CMA 20E1600PZ											0.25	X011c	
CS 20-12io1	1200	20	130	31	260	1000	0.87	17.3	150	0.60	0.25	X014a	
CS 20-14io1	1400											X014a	
CS 20-16io1	1600											X014a	X007a **TO-220ABFP**
CS 20-22moF1	2200	18	85	28	200	2500	0.97	17.0	125	0.92	0.15	X024c	
CS 20-25mo1F	2500											X024c	
CS 20-25moT1	2500	18	85	28	200	2500	0.97	17.0	125	0.80	0.15	X019	
CS 22-08io1M	800	16	90	25	300	500	0.86	13.2	150	2.50	0.50	X007a	
CS 22-12io1M	1200											X007a	
CLA 30E1200PB	1200	30	115	47	300	500	0.86	13.2	150	0.50	0.50	X005a	
CLA 30E1200PC											0.25	X011b	X011b **TO-263AB**
CLA 30E1200NPZ												X011c	
CLB 30I1200PZ *												X011c	
CLA 30E1200HB	1200	30	120	47	300	500	0.86	12.5	150	0.50	0.25	X014a	
CLB 30I1200HB *												X014a	
CMA 30E1600PB	1600	30	115	47	260	500	0.92	18.0	150	0.75	0.50	X005a	
CMA 30E1600PZ	1600	30	115	47	260	500	0.92	18.0	150	0.75	0.25	X011c	X011c **TO-263ABHV**
CMA 30E1600PN	1600	30	40	47	260	500	0.92	18.0	150	2.50	0.50	X007a	
CS 30-12io1	1200	30	120	47	400	1000	0.87	14.2	150	0.50	0.25	X014a	
CS 30-14io1	1400											X014a	
CS 30-16io1	1600											X014a	

***** Anode gated

X024c **ISOPLUS i4-PAC™**



X019 **TO-268AA**

X014a **TO-247AD**

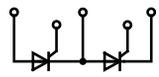
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Phase Control Thyristors

I_{TAV} = 30 - 100 A

CLB...

CS.../CL/MA...E/I...


CLA/CMA...P...

Type ➢ New	V_{RRM} V_{DRM} V	I_{TAV} A	@ T_C °C	$I_{T(RMS)}$ A	I_{TSM} 45°C 10 ms A	$(dv/dt)_{cr}$ V/µs	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.
CMA 30P1600FC	2x 1600	30	90	47	400	1000	0.87	14.2	150	1.00	0.25	X024a
CLA 40E1200NPZ	1200	40	125	63	520	500	0.85	9.9	150	0.40	0.25	X011c
CLA 40E1200HR	1200	40	95	63	650	1000	0.85	7.9	150	0.80	0.25	X016c
CLB 40I1200PZ	1200	40	125	63	520	500	0.85	9.9	150	0.40	0.25	X011c
CLA 40P1200FC	2x 1200	40	95	63	650	1000	0.86	7.9	150	0.80	0.20	X024a
CMA 40E1600HR	1600	40	90	63	550	1000	0.81	9.8	150	0.80	0.25	X016c
CS 45-08io1	800	45	110	71	520	1000	0.88	11.0	150	0.40	0.25	X014a
CS 45-12io1	1200											X014a
CS 45-16io1	1600											X014a
CS 45-16io1R	1600	45	80	71	520	1000	0.88	11.0	150	0.80	0.25	X016a
CLA 50E1200HB	1200	50	125	79	650	1000	0.88	7.7	150	0.25	0.25	X014a
CLA 50E1200TC											0.15	X019
CMA 50E1600HB	1600	50	110	79	550	1000	0.83	9.6	150	0.40	0.25	X014a
CMA 50E1600QB												X017a
CMA 50E1600TZ											0.15	X019a
CMA 50P1600FC	2x 1600	50	90	79	720	1000	0.88	6.7	150	0.70	0.20	X024a
CS 60-12io1	1200	60	110	75	1400	1000	0.82	5.3	140	0.32	0.15	X015a
CS 60-14io1	1400											X015a
CS 60-16io1	1600											X015a
CLA 80E1200HF	1200	80	115	126	900	1000	0.88	6.3	150	0.20	0.25	X015a
CMA 80E1600HB	1600	80	115	126	720	1000	0.90	6.4				X014a
CLA 100E1200HB	1200	100	105	160	1100	1000	0.82	5.2	150	0.20	0.15	X014a
CLA 100E1200KB												X020a

Fast Phase Control Thyristors

CLE 20E1200PC	1200	20	115	31	160	500	0.92	24.0	150	0.70	0.25	X011b
CME 30E1600PZ	1600	30	105	47	280	500	0.96	25.0	150	0.50	0.25	X011c
CLF 20E1200PB	1200	20	110	31	150	500	0.96	26.0	150	0.70	0.50	X005a
CLE 30E1200PB	1200	30	115	47	270	500	0.92	14.0	150	0.50	0.50	X005a
CLE 40E1200HB	1200	40	130	63	600	1000	0.97	9.0	150	0.25	0.25	X014a
➢ **CLE 90UH1200TLB**	1200	90	90	-	350	500	0.92	13.0	150	0.90	0.40	X030a

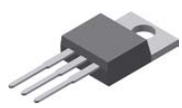
Triode - Reverse Conducting Thyristor

Type ➢ New	V_{RRM} V	V_{vRMS} V	I_{TAV} A	@ T_C °C	I_{TSM} 10 ms 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.
CLA 20EF1200PB	1200	400	20	115	120	0.90	25	150	0.65	0.50	X005a
➢ **CLA 20EF1200PZ**											X011c

Package style

Outline drawings on pages O-36...O-59

X005a **TO-220AB**

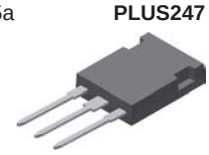


X011b **TO-263AB**

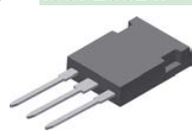
X011c **TO-263ABHV**

X014a **TO-247AD**

X015a **PLUS247**

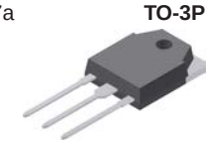


X016a **ISOPLUS247™**

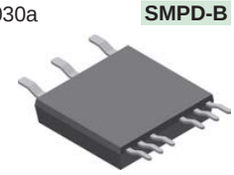


X016c **ISO247™**

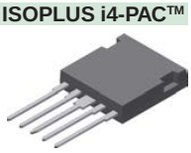
X017a **TO-3P**



X030a **SMPD-B**



X024a **ISOPLUS i4-PAC™**



X020a **TO-264**

X019a **TO-268AAHV**

X019 **TO-268AA**

Thyristors, SCRs

(SCR = Silicon Controlled Rectifier)

Littelfuse SCR products are half-wave, Silicon-Controlled Rectifiers that represent the state of the art in design and performance. Because of its unidirectional switching capability, the SCR is used in circuits where high surge currents or latching action is required. It may also be used for half-wave-type circuits where gate-controlled rectification action is required. Applications include crowbars in power supplies, camera flash units, smoke alarms, motor controls, battery chargers, and engine ignition.

Type ➢ New	V_{DRM} V_{RRM} V	I_{TAV} A	$I_{T(RMS)}$ A	@ T_C °C	I_{TSM} 20 ms A	I_{GT} QI-QII-QIII (-QIV) A	T_J °C	Fig. No.
➢ **S6X8ECS2RP**	600	0.51	0.8	55	8	0.03	125	L006
S8X8TS1RP	800	0.51	0.8	60	8	0.005	125	L001
S8X8ES2RP	800	0.51	0.8	55	8	0.05	125	L006
S8X8TSRP	800	0.51	0.8	60	8	0.2	125	L001
S601ERP	600	0.64	1	90	25	10	125	L006
➢ **S602ECSRP**	600	0.95	1.5	65	14	0.1	125	L006
S602TSRP	600	0.95	1.5	95	12.5	0.2	125	L001
➢ **SJ6004DS2RP**	600	2.5	4	130	25	0.2	150	L004
S6004DS2RP	600	2.5	4	95	25	0.2	125	L004
➢ **SJ6008DS2RP**	600	5.1	8	120	83	0.2	150	L004
➢ **SJ6008DRP**	600	5.1	8	125	83	15	150	L004
S8008DRP	800	5.1	8	110	83	15	125	L004
➢ **SJ6012DRP**	600	7.6	12	125	100	20	150	L004
➢ **SJ6012NRP**	600	7.6	12	135	100	20	150	L011b
S8015LTP	800	9.5	15	90	188	30	125	L005c
➢ **SJ6016RTP**	600	10	16	135	188	30	150	L005a
SK016RTP	1000	10	16	110	188	30	125	L005a
➢ **SJ6025L2TP**	600	16	25	100	300	10	150	L005c
➢ **SJ6025R2TP**	600	16	25	125	300	10	150	L005a
➢ **SJ6025LTP**	600	16	25	100	300	35	150	L005c
➢ **SJ6025RTP**	600	16	25	125	300	35	150	L005a
S8025LTP	800	16	25	75	300	35	125	L005c
S8025RTP	800	16	25	100	300	35	125	L005a
SK025NRP	1000	16	25	100	300	35	125	L011b
➢ **SJ6040N2RP**	600	25	40	120	430	15	150	L011b
➢ **SJ6040LTP**	600	25	40	55	430	40	150	L005c
➢ **SJ6040RTP**	600	25	40	120	430	40	150	L005a
S8040RTP	800	25	40	100	430	40	125	L005a
S8055RTP	800	35	55	90	550	40	125	L005a
S8065JTP	800	41	65	75	800	50	125	L002a
SK065KTP	1000	41	65	75	800	50	125	L002

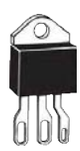
Package style

Outline drawings on pages O-60...O-62

L001 **SOT-223**

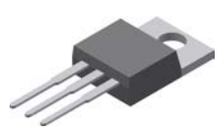
L002 **TO-218AC**

L002a **TO-218X**



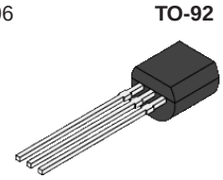
L004 **TO-252AA**

L005a **TO-220AB**

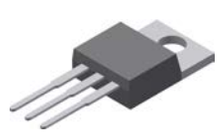


L011b **TO-263AB**

L006 **TO-92**



L005c **TO-220AB** (ISO)



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

One of the essential advantages of power semiconductor modules compared to discrete designs is the electrical isolation between the baseplate of the module and the parts subject to voltage (3.6 - 4.8 kV_{RMS} tested). This makes possible the mount-down of any number of the same or different modules on a common heatsink. It is feasible to use standard housings with appropriate accessories for designing compact power converter operating from AC mains up to 690 V.

Plastic Housing with DCB Substrate

IXYS has succeeded in simplifying the conventional multilayer module con-struction by the DCB (Direct Copper Bonding) technique.

Other features are:

- top-side electrical terminals with captured nuts;
- series-connected diode/diode, thyristor/ diode and thyristor/thyristor modules;
- easy assembly.

All thyristor modules with DCB ceramic base contacts are available in volume with two standardized twin plugs (2.8 mm x 0.8 mm) for gate and auxiliary cathode control terminals (version 1). Modules in TO-240 housing of the version 8 are delivered with gate plugs only (without auxiliary cathode terminal; mounting srews available on request). The module housing is designed for adequate clearance and creepage distance resulting in recognition by Underwriters Laboratories, Inc., USA for all types.

New Generation Silicon Chips

All chips are designed by applying separation diffusion processes such that the zones responsible for the surface field strength are located at the upper chip side. This results in the capability of soldering the entire chip area onto the DCB ceramic substrate without a molybdenum strain buffer, which in turn leads to good stability of the chips as well as to large area heat dissipation if a load is applied. All zones at the edges which are decisive for the blocking stability are coated with passivation glasses the coefficient of expansion of which match that of silicon. Silicon chips increasingly use planar technology with guard rings and channel stoppers to reduce electrical surface fields. This chip design supercedes the design of thyristor chips which were fabricated with passivation moats so that modules of the new series designed with the updated state-of-the-art utilize planar passivated chips processed by separation diffusion techniques. The contact areas of the chips possess physical vapor deposited metal layers. For the user the improved properties are:

- Excellent long-term stability of blocking currents and blocking voltages,
- increased life time of the internal soldered connections,
- high power cycling capability ($\geq$ 50 000).

The thyristor/diode chips have been optimized with regard to their turn-off parameters: decreasing the carrier lifetime results in reduced stored charges QS, which in turn significantly reduces requirements for RC-snubbers for over-voltage protection. Cost reduction and improved efficiency are the benefits of these characteristics. By re-developing the silicon chips, improvements of the firing characteristics were achieved by specifying a higher „gate current not to fire“ IGD resulting in substantially less suscepibility to misfiring. This leads to greater safety of operation and higher reliability of the equipment.

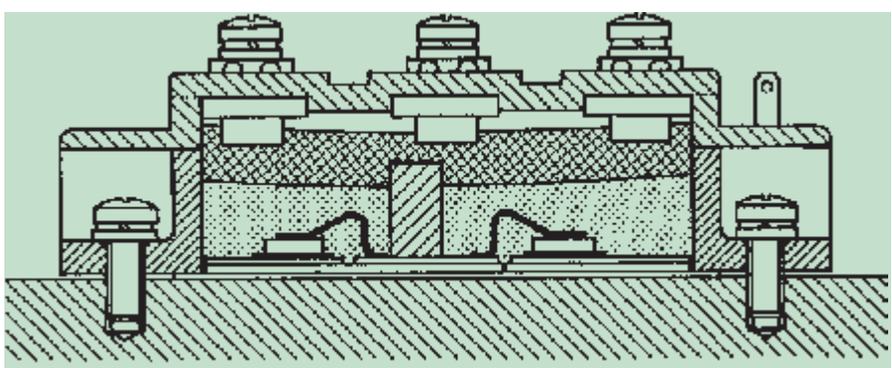
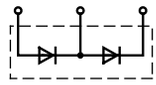


Fig. 1: Principal cross section of an IXYS module with DCB technology

Diode Modules, Dual

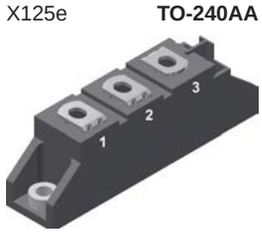
I_{FAV} = 25 - 99 A



MDD...
MDM/NA...P...

Type	V_{RRM} V	I_{FAV} A	T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
MDMA 25P1200TG	1200	25	100	320	0.85	11.10	150	1.10	0.20	X125e	
MDMA 25P1600TG	1600										
MDMA 25P1800TG	1800										
MDNA 25P2200TG	2200										
MDD 26-08N1B	800	36	100	650	0.80	6.10	150	1.00	0.20		
MDD 26-12N1B	1200										
MDD 26-14N1B	1400										
MDD 26-16N1B	1600										
MDD 26-18N1B	1800										
MDMA 35P1200TG	1200	35	100	500	0.83	7.30	150	0.90	0.20		
MDMA 35P1600TG	1600										
MDMA 35P1800TG	1800										
MDNA 35P2200TG	2200										
MDD 44-08N1B	800	59	100	1150	0.80	4.30	150	0.59	0.20		
MDD 44-12N1B	1200										
MDD 44-14N1B	1400										
MDD 44-16N1B	1600										
MDD 44-18N1B	1800										
MDMA 50P1200TG	1200	50	100	850	0.85	5.70	150	0.65	0.20		
MDMA 50P1600TG	1600										
MDMA 50P1800TG	1800										
MDNA 50P2200TG	2200										
MDD 56-08N1B	800	71	100	1400	0.80	3.00	150	0.51	0.20		
MDD 56-12N1B	1200										
MDD 56-14N1B	1400										
MDD 56-16N1B	1600										
MDD 56-18N1B	1800										
MDMA 65P1200TG	1200	65	100	1100	0.81	4.30	150	0.50	0.20		
MDMA 65P1600TG	1600										
MDMA 65P1800TG	1800										
MDNA 65P2200TG	2200										
MDD 72-08N1B	800	99	100	1700	0.80	2.30	150	0.35	0.20		
MDD 72-12N1B	1200										
MDD 72-14N1B	1400										
MDD 72-16N1B	1600										
MDD 72-18N1B	1800										
MDMA 85P1200TG	1200	85	100	1500	0.79	3.50	150	0.35	0.20		
MDMA 85P1600TG	1600										
MDMA 85P1800TG	1800										
MDNA 85P2200TG	2200										

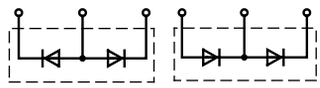
X125e **TO-240AA**



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Diode Modules, Dual

I_{FAV} = 110 - 240 A

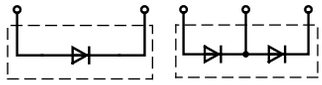


Type ➢ New	V_{RRM} V	I_{FAV} A	T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
MDD 95-08N1B	800	120	100	2800	0.75	1.95	150	0.260	0.20	X125e	
MDD 95-12N1B	1200										
MDD 95-14N1B	1400										X125e **TO-240AA**
MDD 95-16N1B	1600										
MDD 95-18N1B	1800										
MDD 95-20N1B	2000										
MDD 95-22N1B	2200										
MDA 95-22N1B	2200										
MDMA 110P1200TG	1200	110	100	2000	0.82	2.80	150	0.300	0.20		
MDMA 110P1600TG	1600										
MDMA 110P1800TG	1800										X126c **Y4**
MDNA 110P2200TG	2200										
MDMA 140P1200TG	1200	140	100	2800	0.78	2.20	150	0.230	0.20		
MDMA 140P1600TG	1600										
MDMA 140P1800TG	1800										
MDNA 140P2200TG	2200										
MDD 142-08N1	800	165	100	4700	0.80	1.30	150	0.210	0.10	X126c	
MDD 142-12N1	1200										
MDD 142-14N1	1400										
MDD 142-16N1	1600										X131c **Y1**
MDD 142-18N1	1800										
➢ **MDMA 180P1600YD**	1600	180	100	4400	0.77	1.40	150	0.200	0.11		
➢ **MDNA 180P2200YD**	2200										
MDD 172-08N1	800	190	100	6600	0.80	0.80	150	0.210	0.10		
MDD 172-12N1	1200										
MDD 172-14N1	1400										
MDD 172-16N1	1600										
MDD 172-18N1	1800										
➢ **MDMA 210P1600YD**	1600	210	100	6600	0.67	1.20	150	0.170	0.09		X141c **SimBus A**
➢ **MDNA 210P2200YD**											
MDD 200-14N1	1400	224	100	10500	0.80	0.60	150	0.130	0.10		
MDD 200-16N1	1600										
MDD 200-18N1	1800										
MDD 200-22N1	2200										
MDD 175-28N1	2800	240	100	8500	0.74	1.27	150	0.140	0.04	X131c	
MDD 175-34N1	3400										
MDMA 200P1600SA	1600	200	110	6000	0.76	1.40	150	0.150	0.08	X141c	

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Diode Modules, Single and Dual

I_{FAV} = 270 - 700 A



MDO... MDD... MDM/NA...P...

Type ➢ New	V_{RRM} V	I_{FAV} A	T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
MDD 255-12N1	1200	270	100	9500	0.80	0.60	150	0.140	0.04	X131c	X126c **Y4**
MDD 255-14N1	1400										
MDD 255-16N1	1600										
MDD 255-18N1	1800										
MDD 255-20N1	2000										
MDD 255-22N1	2200										
➢ **MDMA 280P1600YD**	1600	280	100	10500	0.74	1.00	150	0.130	0.06	X126c	
➢ **MDNA 280P2200YD**	2200										
➢ **MDMA 300P1600PTSF**	1600	300	100	8000	0.78	1.30	150	0.100	0.05	X143a	X129c **Y2**
➢ **MDNA 300P2200PTSF**	2200										
MDD 310-08N1	800	305	100	11500	0.75	0.63	150	0.129	0.04	X129c	
MDD 310-12N1	1200										
MDD 310-14N1	1400										
MDD 310-16N1	1600										
MDD 310-18N1	1800										X131c **Y1**
MDD 310-20N1	2000										
MDD 310-22N1	2200										
MDD 312-12N1	1200	310	100	10500	0.80	0.60	150	0.120	0.04	X131c	
MDD 312-14N1	1400										
MDD 312-16N1	1600										
MDD 312-18N1	1800										
MDD 312-20N1	2000										X132b **Y1**
MDD 312-22N1	2200										
MDMA 380P1600KC	1600	380	100	11000	0.75	0.53	150	0.110	0.04		
MDMA 380P1800KC	1800										
MDNA 380P2200KC	2200										
➢ **MDMA 425P1600PTSF**	1600	425	100	10000	0.77	1.01	150	0.070	0.04	X143a	
➢ **MDNA 425P2200PTSF**	2200										
MDO 500-12N1	1200	560	85	15000	0.80	0.38	140	0.072	0.02	X132b	X142c **ComPack**
MDO 500-14N1	1400										
MDO 500-16N1	1600										
MDO 500-18N1	1800										
MDO 500-20N1	2000										
MDO 500-22N1	2200										
MDO 600-16N1	1600	608	85	15000	0.76	0.32	140	0.072	0.02		
➢ **MDMA 600P1600PTSF**	1600	600	100	15000	0.78	0.67	150	0.050	0.03	X143a	X143a **SimBus F PFP**
➢ **MDNA 600P2200PTSF**	2200										
MDMA 700P1600CC	1600	700	100	20000	0.78	0.35	150	0.055	0.02	X142c	
MDMA 700P1800CC	1800										
MDNA 700P2200CC	2200										

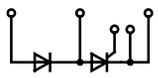
For more single and dual diode modules with higher current, please see pages 158 - 160

See data sheet for pin arrangement

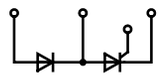
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor / Diode Modules

I_{TAV} = 25 - 80 A

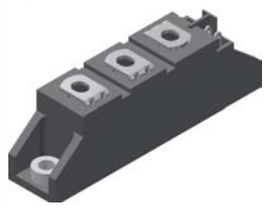


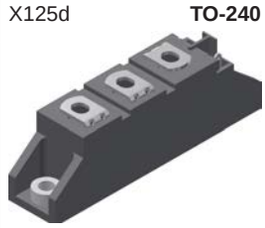
MCD...io1
MCM/NA..PD..



MCD...io8/...io6
CLA/CMA..PD..

Type	V_{RRM} V_{DRM} V	I_{TAV} A	T_C °C	$I_{T(RMS)}$ A	I_{TSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
MCMA 25PD1200TB	1200	25	82	40	400	0.87	13.0	140	1.20	0.20	X125b	
MCMA 25PD1600TB	1600											
MCD 26-08io1B	800	27	85	50	520	0.85	11.0	125	0.88	0.20		
MCD 26-12io1B	1200											X125b **TO-240AA**
MCD 26-14io1B	1400											
MCD 26-16io1B	1600											
MCD 26-08io8B	800	27	85	50	520	0.85	11.0	125	0.88	0.20	X125d	
MCD 26-12io8B	1200											
MCD 26-14io8B	1400											
MCD 26-16io8B	1600											
MCMA 35PD1200TB	1200	35	85	55	520	0.87	9.8	140	0.90	0.20	X125b	
MCMA 35PD1600TB	1600											
MCD 40-12io6	1200	40	85	63	500	0.87	10.5	150	0.70	0.10	X027a	
MCD 40-16io6	1600											
MCD 44-08io1B	800	49	85	77	1150	0.85	5.3	125	0.53	0.20	X125b	
MCD 44-12io1B	1200											
MCD 44-14io1B	1400											
MCD 44-16io1B	1200											
MCD 44-18io1B	1600											X125d **TO-240**
MCD 44-08io8B	800	49	85	77	1150	0.85	5.3	125	0.53	0.20	X125d	
MCD 44-12io8B	1200											
MCD 44-14io8B	1400											
MCD 44-16io8B	1600											
MCD 44-18io8B	1800											
MCNA 40PD2200TB	2200	40	85	63	500	0.84	11.4	140	0.70	0.20	X125b	
MCMA 50PD1200TB	1200	50	85	79	800	0.89	5.3	140	0.70	0.20		
MCMA 50PD1600TB	1600											
CLA 60PD1200NA	1200	60	100	94	1100	0.79	4.8	150	0.55	0.10	X027a	
MCD 56-08io1B	800	60	85	100	1500	0.85	3.7	125	0.45	0.20	X125b	
MCD 56-12io1B	1200											
MCD 56-14io1B	1400											
MCD 56-16io1B	1600											
MCD 56-18io1B	1800											X027a **SOT-227B miniBLOC**
MCD 56-08io8B	800	60	85	100	1500	0.85	3.7	125	0.45	0.20	X125d	
MCD 56-12io8B	1200											
MCD 56-14io8B	1400											
MCD 56-16io8B	1600											
MCD 56-18io8B	1800											
MCNA 55PD2200TB	2200	55	85	86	800	0.90	9.0	150	0.50	0.20	X125b	
MCMA 65PD1200TB	1200	65	85	105	1150	0.85	4.8	140	0.50	0.20		
MCMA 65PD1600TB	1600											
MCMA 65PD1800TB	1800											
CMA 80PD1600NA	1600	80	80	126	1070	0.86	5.5	150	0.45	0.10	X027a	

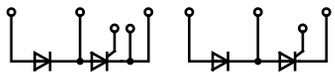




Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor / Diode Modules

I_{TAV} = 75 - 165 A



MCD...io1
MCM/NA..PD..

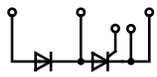
MCD...io8
CLA..PD..

Type ➢ New	V_{RRM} V_{DRM} V	I_{TAV} A	T_C °C	$I_{T(RMS)}$ A	I_{TSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
MCD 72-08io1B	800	85	85	180	1700	0.85	3.20	125	0.30	0.20	X125b	
MCD 72-12io1B	1200											
MCD 72-14io1B	1400											
MCD 72-16io1B	1600											X125b **TO-240AA**
MCD 72-18io1B	1800											
MCD 72-08io8B	800	85	85	180	1700	0.85	3.20	125	0.30	0.20	X125d	
MCD 72-12io8B	1200											
MCD 72-14io8B	1400											
MCD 72-16io8B	1600											
MCD 72-18io8B	1800											
MCNA 75PD2200TB	2200	75	85	118	1050	0.90	6.50	140	0.38	0.20	X125b	
MCMA 85PD1200TB	1200	85	85	135	1500	0.85	3.90	140	0.38	0.20		
MCMA 85PD1600TB	1600											
MCMA 85PD1800TB	1800											X125d **TO-240**
CLA 100PD1200NA	1200	100	85	150	1500	0.83	3.70	150	0.35	0.10	X027a	
MCD 94-20io1B	2000	104	85	180	1700	0.85	3.20	125	0.22	0.20	X125b	
MCD 94-22io1B	2200											
MCD 95-08io1B	800	116	85	180	2250	0.85	2.40	125	0.22	0.20		
MCD 95-12io1B	1200											
MCD 95-14io1B	1400											
MCD 95-16io1B	1600											
MCD 95-18io1B	1800											
MCD 95-08io8B	800	116	85	180	2250	0.85	2.40	125	0.22	0.20	X125d	
MCD 95-12io8B	1200											X126b **Y4**
MCD 95-14io8B	1400											
MCD 95-16io8B	1600											
MCD 95-18io8B	1800											
MCNA 95PD2200TB	2200	95	85	149	1400	0.90	5.00	140	0.30	0.20	X125b	
MCMA 110PD1200TB	1200	110	85	170	1900	0.85	3.30	140	0.30	0.20		
MCMA 110PD1600TB	1600											
MCMA 110PD1800TB	1800											
MCNA 120PD2200TB	2200	120	85	190	1700	0.90	3.70	140	0.22	0.20		
MCMA 140PD1200TB	1200	140	85	200	2400	0.85	2.80	140	0.22	0.20		
MCMA 140PD1600TB	1600											
MCMA 140PD1800TB	1800											X027a **SOT-227B miniBLOC**
MCD 132-08io1	800	130	85	300	4750	0.80	1.50	125	0.23	0.10	X126b	
MCD 132-12io1	1200											
MCD 132-14io1	1400											
MCD 132-16io1	1600											
MCD 132-18io1	1800											
➢ **MCNA 150PD2200YB**	2200	150	85	235	4300	0.86	2.10	140	0.21	0.11		
MCD 161-20io1	2000	165	85	300	6000	0.80	1.60	125	0.155	0.07		
MCD 161-22io1	2200											

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor / Diode Modules

I_{TAV} = 180 - 700 A



MCD...io1
MCM/NA..PD..

Type ➢ New	V_{RRM} V_{DRM} V	I_{TAV} A	T_C °C	$I_{T(RMS)}$ A	I_{TSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.
MCD 162-08io1	800	181	85	300	6000	0.88	1.15	125	0.155	0.07	X126b
MCD 162-12io1	1200										
MCD 162-14io1	1400										
MCD 162-16io1	1600										
MCD 162-18io1	1800										
➢ **MCNA 180PD2200YB**	2200	180	85	280	5400	0.85	1.80	140	0.170	0.09	
MCMA 200PD1600SA	1600	200	85	314	6000	0.81	1.60	140	0.150	0.08	X141b
MCD 200-14io1	1400	216	85	340	8000	0.80	1.40	125	0.130	0.05	X126b
MCD 200-16io1	1600										
MCD 200-18io1	1800										
➢ **MCNA 220PD2200YB**	2200	220	85	345	7200	0.84	1.50	140	0.130	0.07	
MCD 224-20io1	2000	240	85	400	8000	0.80	0.76	130	0.139	0.04	X131b
MCD 224-22io1	2200										
MCD 225-12io1	1200	221	85	400	8000	0.80	0.76	130	0.157	0.04	
MCD 225-14io1	1400										
MCD 225-16io1	1600										
MCD 225-18io1	1800										
➢ **MCNA 250PD2200PTSF**	2200	250	85	400	5900	0.76	2.20	150	0.100	0.05	X143a
MCD 255-12io1	1200	250	85	450	9000	0.80	0.68	130	0.140	0.04	X131b
MCD 255-14io1	1400										
MCD 255-16io1	1600										
MCD 255-18io1	1800										
MCMA 260PD1600YB	1600	260	85	408	8300	0.81	1.23	140	0.130	0.08	X126b
MCMA 260PD1800YB	1800										
MCMA 265PD1600KB	1600	260	85	408	8500	0.80	0.75	140	0.160	0.04	X131b
MCMA 265PD1800KB	1800										
➢ **MCMA 280PD1600PTSF**	1600	280	85	440	7000	0.83	1.57	150	0.100	0.05	X143a
MCD 310-08io1	800	320	85	500	9200	0.80	0.82	140	0.112	0.04	X129b
MCD 310-12io1	1200										
MCD 310-14io1	1400										
MCD 310-16io1	1600										
MCD 310-18io1	1800										
MCD 310-20io1	2000	320	85	500	8000	0.80	0.82	140	0.112	0.04	
MCD 310-22io1	2200										
MCD 312-12io1	1200	320	85	520	9200	0.80	0.68	140	0.120	0.04	X131b
MCD 312-14io1	1400										
MCD 312-16io1	1600										
MCD 312-18io1	1800										
➢ **MCNA 360PD2200PTSF**	2200	360	85	570	8400	0.74	1.57	150	0.070	0.04	X143a
➢ **MCMA 400PD1600PTSF**	1600	400	85	630	10000	0.82	1.14	150	0.070	0.04	
➢ **MCNA 500PD2200PTSF**	2200	500	85	790	11000	0.75	1.11	150	0.050	0.03	
➢ **MCMA 550PD1600PTSF**	1600	550	85	864	13000	0.82	0.80	150	0.050	0.03	
MCNA 650PD2200CB	2200	650	85	1020	16000	0.75	0.63	140	0.045	0.02	X142b
MCMA 700PD1600CB	1600	700	85	1100	19000	0.82	0.40	140	0.050	0.02	
MCMA 700PD1800CB	1800										

Package style

Outline drawings on pages O-36...O-59

X126b **Y4**

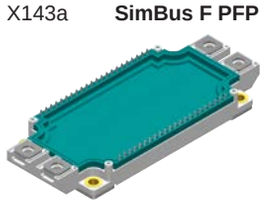
X129b **Y2**

X131b **Y1**

X141b **SimBus A**

X142b **ComPack**

X143a **SimBus F PFP**



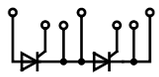
See data sheet for pin arrangement

For more thyristor / diode modules with higher current, please see pages 156, 157 and 160

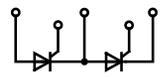
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor Modules, Dual

I_{TAV} = 18 - 60 A



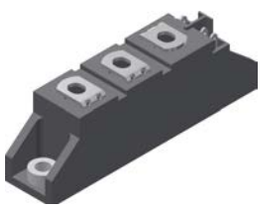
MCC...io1B
MCM/NA..P.



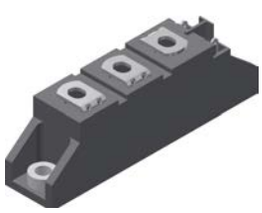
MCC...io8B

Type	V_{RRM} V_{DRM} V	I_{TAV} A	T_C °C	$I_{T(RMS)}$ A	I_{TSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
MCC 19-08io1B	800	18	85	40	400	0.85	18.0	125	1.30	0.2	X125a	
MCC 19-12io1B	1200											
MCC 19-14io1B	1400											
MCC 19-16io1B	1600											
MCC 19-08io8B	800	18	85	40	400	0.85	18.0	125	1.30	0.2	X125c	
MCC 19-12io8B	1200											
MCC 19-14io8B	1400											
MCC 19-16io8B	1600											
MCC 21-08io8B	800	21	85	33	320	0.85	15.0	125	1.10	0.2		
MCC 21-12io8B	1200											
MCC 21-14io8B	1400											
MCC 21-16io8B	1600											
MCMA 25P1200TA	1200	25	85	40	400	0.87	13.0	140	1.20	0.2	X125a	
MCMA 25P1600TA	1600											
MCC 26-08io1B	800	27	85	50	520	0.85	11.0	125	0.88	0.2		
MCC 26-12io1B	1200											
MCC 26-14io1B	1400											
MCC 26-16io1B	1600											
MCC 26-08io8B	800	27	85	50	520	0.85	11.0	125	0.88	0.2	X125c	
MCC 26-12io8B	1200											
MCC 26-14io8B	1400											
MCC 26-16io8B	1600											
MCMA 35P1200TA	1200	35	85	55	520	0.87	9.8	140	0.90	0.2	X125a	
MCMA 35P1600TA	1600											
MCC 44-08io1B	800	49	85	77	1150	0.85	5.3	125	0.53	0.2		
MCC 44-12io1B	1200											
MCC 44-14io1B	1400											
MCC 44-16io1B	1600											
MCC 44-18io1B	1800											
MCC 44-08io8B	800	49	85	77	1150	0.85	5.3	125	0.53	0.2	X125c	
MCC 44-12io8B	1200											
MCC 44-14io8B	1400											
MCC 44-16io8B	1600											
MCC 44-18io8B	1800											
MCNA 40P2200TA	2200	40	85	63	500	0.84	11.4	140	0.70	0.2	X125a	
MCMA 50P1200TA	1200	50	85	79	800	0.89	5.3	140	0.70	0.2		
MCMA 50P1600TA	1600											
MCC 56-08io1B	800	60	85	100	1500	0.85	3.7	125	0.45	0.2		
MCC 56-12io1B	1200											
MCC 56-14io1B	1400											
MCC 56-16io1B	1600											
MCC 56-18io1B	1800											
MCC 56-08io8B	800	60	85	100	1500	0.85	3.7	125	0.45	0.2	X125c	
MCC 56-12io8B	1200											
MCC 56-14io8B	1400											
MCC 56-16io8B	1600											
MCC 56-18io8B	1800											

X125a **TO-240AA**



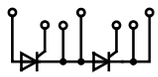
X125c **TO-240**



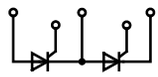
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor Modules, Dual

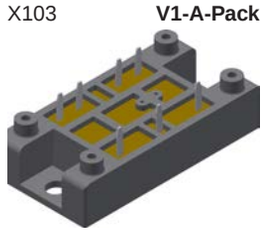
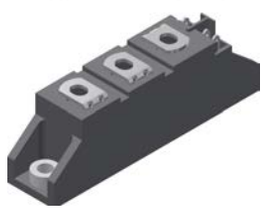
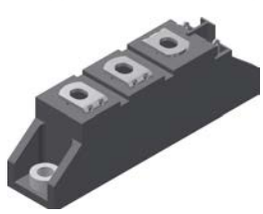
I_{TAV} = 55 - 140 A



MCC...io1B
MCM/NA..P..



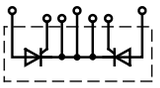
MCC...io8B

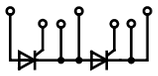
Type	V_{RRM} V_{DRM} V	I_{TAV} A	T_C °C	$I_{T(RMS)}$ A	I_{TSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
MCNA 55P2200TA	2200	55	85	86	800	0.90	9.00	140	0.50	0.20	X125a	
MCMA 65P1200TA	1200	65	85	105	1150	0.85	4.80	140	0.50	0.20		
MCMA 65P1600TA	1600											
MCMA 65P1800TA	1800											X103 **V1-A-Pack**
MCC 72-08io1B	800	85	85	180	1700	0.85	3.20	125	0.30	0.20		
MCC 72-12io1B	1200											
MCC 72-14io1B	1400											
MCC 72-16io1B	1600											
MCC 72-18io1B	1800											
MCC 72-08io8B	800	85	85	180	1700	0.85	3.20	125	0.30	0.20	X125c	
MCC 72-12io8B	1200											
MCC 72-14io8B	1400											
MCC 72-16io8B	1600											
MCC 72-18io8B	1800											
MCNA 75P2200TA	2200	75	85	118	1050	0.90	6.50	140	0.38	0.20	X125a	X125a **TO-240AA**
MCMA 85P1200TA	1200	85	85	135	1500	0.85	3.90	140	0.38	0.20		
MCMA 85P1600TA	1600											
MCMA 85P1800TA	1800											
MCC 94-20io1B	2000	104	85	180	1700	0.85	3.20	125	0.22	0.20		
MCC 94-22io1B	2200											
MCC 94-24io1B	2400											
MCC 95-08io1B	800	116	85	180	2250	0.83	2.40	125	0.22	0.20		
MCC 95-12io1B	1200											
MCC 95-14io1B	1400											
MCC 95-16io1B	1600											
MCC 95-18io1B	1800											X125c **TO-240**
MCC 95-08io8B	800	116	85	180	2250	0.85	2.40	125	0.22	0.20	X125c	
MCC 95-12io8B	1200											
MCC 95-14io8B	1400											
MCC 95-16io8B	1600											
MCC 95-18io8B	1800											
MCNA 95P2200TA	2200	95	85	149	1400	0.90	5.00	140	0.30	0.20	X125a	
MCMA 110P1200TA	1200	110	85	170	1900	0.85	3.30	140	0.30	0.20		
MCMA 110P1600TA	1600											
MCMA 110P1800TA	1800											
MCMA 110P1600VA	1600										X103	
MCNA 120P2200TA	2200	120	85	190	1700	0.90	3.70	140	0.22	0.20	X125a	
MCMA 140P1200TA	1200	140	85	220	2400	0.85	2.80	140	0.22	0.20		X126a **Y4**
MCMA 140P1400TA	1400											
MCMA 140P1600TA	1600											
MCMA 140P1800TA	1800											
MCC 132-08io1	800	130	85	300	4750	0.80	1.50	125	0.23	0.10	X126a	
MCC 132-12io1	1200											
MCC 132-14io1	1400											
MCC 132-16io1	1600											
MCC 132-18io1	1800											

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor Modules, Dual

I_{TAV} = 150 - 700 A


MCK...


MCC...io1B
MCM/NA..P..

Type ➢ New	V_{RRM} V_{DRM} V	I_{TAV} A	T_C °C	$I_{T(RMS)}$ A	I_{TSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.
➢ **MCNA 150P2200YA**	2200	150	85	235	4300	0.86	2.10	140	0.210	0.11	X126a
MCC 161-20io1	2000	165	85	300	6000	0.80	1.60	125	0.155	0.07	
MCC 161-22io1	2200										
MCC 162-08io1	800	181	85	300	6000	0.88	1.15	125	0.155	0.07	
MCC 162-12io1	1200										
MCC 162-14io1	1400										
MCC 162-16io1	1600										
MCC 162-18io1	1800										
➢ **MCNA 180P2200YA**	2200	180	85	280	5400	0.85	1.80	140	0.170	0.09	
MCMA 200P1600SA	1600	200	90	314	6000	0.81	1.60	140	0.150	0.08	X141a
MCC 200-14io1	1400	216	85	340	8000	0.80	1.40	125	0.130	0.05	X126a
MCC 200-16io1	1600										
MCC 200-18io1	1800										
MCK 200-18io1	1800	216	85	340	8000	0.80	1.40	125	0.130	0.05	
➢ **MCNA 220P2200YA**	2200	220	85	345	7200	0.84	1.50	140	0.130	0.07	
MCC 224-20io1	2000	240	85	400	8000	0.80	0.76	130	0.139	0.04	X131a
MCC 224-22io1	2200										
MCC 224-24io1	2400										
MCC 225-12io1	1200	221	85	400	8000	0.80	0.76	130	0.157	0.04	
MCC 225-14io1	1400										
MCC 225-16io1	1600										
MCC 225-18io1	1800										
➢ **MCNA 250P2200PTSF**	2200	250	85	400	5900	0.76	2.20	150	0.100	0.05	X143a
MCC 255-12io1	1200	250	85	450	9000	0.80	0.68	130	0.140	0.04	X131a
MCC 255-14io1	1400										
MCC 255-16io1	1600										
MCC 255-18io1	1800										
MCMA 260P1600YA	1600	260	85	408	8300	0.81	1.23	140	0.130	0.08	X126a
MCMA 260P1800YA	1800										
MCMA 265P1600KA	1600	260	85	408	8500	0.80	0.75	140	0.160	0.04	X131a
MCMA 265P1800KA	1800										
➢ **MCMA 280P1600PTSF**	1600	280	85	440	7000	0.83	1.57	150	0.100	0.05	X143a
MCC 310-08io1	800	320	85	500	9200	0.80	0.82	140	0.112	0.04	X129a
MCC 310-12io1	1200										
MCC 310-14io1	1400										
MCC 310-16io1	1600										
MCC 310-18io1	1800										
MCC 312-12io1	1200	320	85	520	9200	0.80	0.68	140	0.120	0.04	X131a
MCC 312-14io1	1400										
MCC 312-16io1	1600										
MCC 312-18io1	1800										
➢ **MCNA 360P2200PTSF**	2200	360	85	570	8400	0.74	1.57	150	0.070	0.04	X143a
➢ **MCMA 400P1600PTSF**	1600	400	85	630	10000	0.82	1.14	150	0.070	0.04	
➢ **MCNA 500P2200PTSF**	2200	500	85	790	11000	0.75	1.11	150	0.050	0.03	
➢ **MCMA 550P1600PTSF**	1600	550	85	860	13000	0.82	0.80	150	0.050	0.03	
MCNA 650P2200CA	2200	650	85	1020	16000	0.75	0.63	140	0.045	0.02	X142a
MCMA 700P1600CA	1600	700	85	1100	19000	0.82	0.40	140	0.050	0.02	
MCMA 700P1800CA	1800										
MCMA 700P1600NCA	1600	700	85	1200	19000	0.82	0.40	140	0.05	0.02	
MCMA 700P1800NCA	1800										

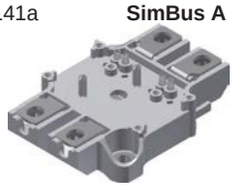
Package style
Outline drawings on pages O-36...O-59

X126a **Y4**

X129a **Y2**

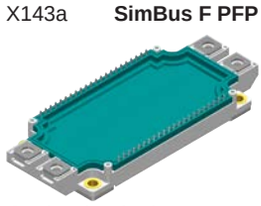
X131a **Y1**

X141a **SimBus A**



X142a **ComPack**

X143a **SimBus F PFP**



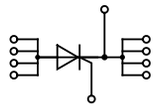
See data sheet for pin arrangement

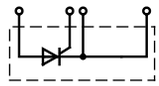
For more dual thyristor modules with higher current, please see pages 154 and 160

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor Modules, Single

I_{TAV} = 32 - 600 A


VCO...


MCO

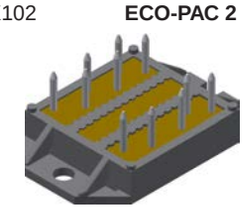
Type	V_{RRM} V_{DRM} V	I_{TAV} A	T_C °C	$I_{T(RMS)}$ A	I_{TSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
MCO 25-12io1	1200	32	80	50	370	0.86	13.90	150	1.100	0.30	X027a	
MCO 25-16io1	1600											
MCO 50-12io1	1200	57	80	90	740	0.88	6.00	150	0.720	0.20		
MCO 50-16io1	1600											
MCO 75-12io1	1200	80	80	125	1070	0.85	5.50	150	0.450	0.10		
MCO 75-16io1	1600											
MCO 100-12io1	1200	101	80	160	1400	0.85	4.50	150	0.350	0.10		
MCO 100-16io1	1600											
MCO 150-12io1	1200	158	80	250	2000	0.84	3.50	150	0.200	0.10		
MCO 150-16io1	1600											
MCO 450-20io1	2000	464	85	750	15000	0.77	0.42	130	0.072	0.02	X132a	
MCO 450-22io1	2200											
MCO 500-12io1	1200	560	85	880	17000	0.80	0.38	140	0.072	0.02		
MCO 500-14io1	1400											
MCO 500-16io1	1600											
MCO 500-18io1	1800											
MCO 600-16io1	1600	600	85	940	15000	0.81	0.40	140	0.065	0.02		
MCO 600-18io1	1800											
MCO 600-20io1	2000											
MCO 600-22io1	2200											
VCO 132-12io7	1200	130	85	200	3600	0.80	1.65	150	0.250	0.10	X102	
VCO 132-16io7	1600											
VCO 180-12io7	1200	180	90	280	4500	0.75	1.23	150	0.170	0.06		
VCO 180-16io7	1600											

For more single thyristor modules with higher current, please see page 155.

X027a **SOT-227B miniBLOC**

X132a **Y1**

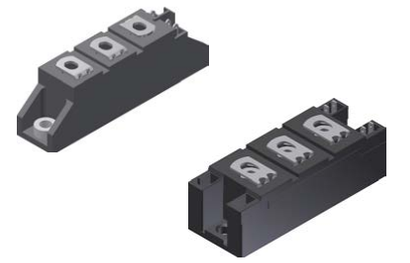
X102 **ECO-PAC 2**



See data sheet for pin arrangement

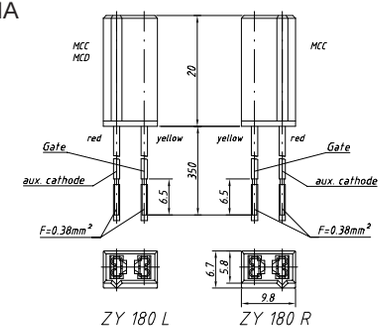
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Optional Accessories for Thyristor / Diode Modules



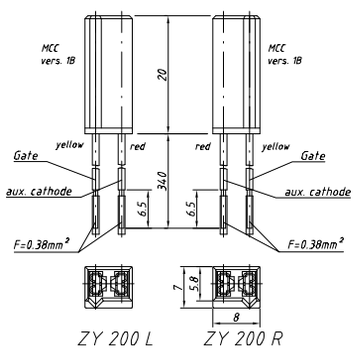
For module types MCC/MCD/MCO/MCMA/MCNA 132, 161 up to 700 (for MCD/MCO only L-type):
Keyed Gate Cathode twin plugs
with wire length = 350 / 480 mm
gate = white, cathode = red

Type **ZY 180 L** (L = Left for pin pair 4/5)
Type **ZY 180 R** (R = Right for pin pair 6/7)

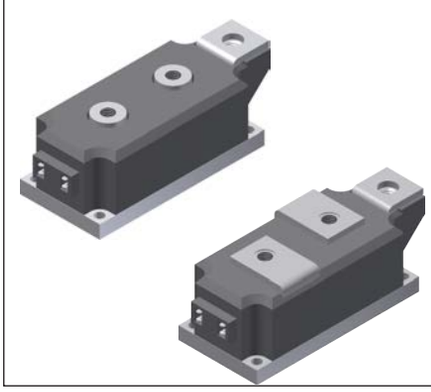


For module-type TO-240 package MCC/MCD/ MCMA/MCNA 19 up to120 and 140 (version 1):
Keyed Gate Cathode twin plugs with wire length = 340 / 460 mm;
gate = white, cathode = red

Type **ZY 200 L** (L = Left for pin pair 4/5)
Type **ZY 200 R** (R = Right for pin pair 6/7)

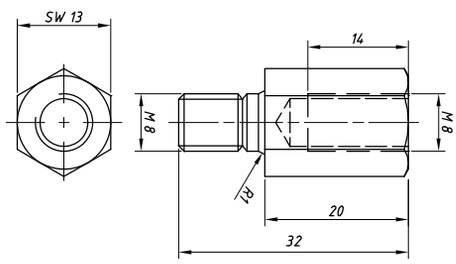


For ZY 180 and ZY 200: UL 758 Style 3751



For module types MCC/MCD/MDD 310
Threaded spacer for higher Anode / Cathode construction:

Type **ZY 250** (material brass)



Design Information

For Thyristors, Diodes, Thyristor / Diode Modules and Rectifier Bridges

Surge current

The 60 Hz value of I_{TSM} is 10% higher than the 50 Hz value
The I_{TSM} value at T_{VJM} is 10% to 15% lower than the 45°C value

Limiting I^2t

50 Hz: I^2t [A^2s] = I_{TSM} [A] • I_{TSM} [A] • 0.005 [s]; use rated I_{TSM} value (10 ms)
60 Hz: I^2t [A^2s] = I_{TSM} [A] • I_{TSM} [A] • 0.0042 [s]; use 60-Hz-value of I_{TSM}

Forward current

The average current ratings in tables are mostly specified for temperature conditions of: T_A = 45°C, T_C = 85°C or T_C = 100°C.
For other temperature conditions the current ratings can be calculated using the following formulas applicable up to 400 Hz.

$$I_{TAV} = \frac{-V_{T0} + \sqrt{V^2_{T0} + 4 \cdot k^2 \cdot r_T \cdot P}}{2 \cdot k^2 \cdot r_T} \quad \text{where} \quad P = \frac{T_{VJM} - T_C}{R_{thJC}} \quad \text{or} \quad P = \frac{T_{VJM} - T_A}{R_{thJA}}$$

I_{TAV} [A], P [W]; V_{T0} [V]; r_T [Ω], T_{VJM} [°C], T_C [°C], T_A [°C], R_{thJC} [K/W], R_{thJA} [K/W]

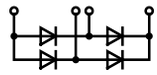
k^2 = 1 for DC current
k^2 = 2.5 for sinusoidal half wave current
k^2 = 3 for 120° rectangular current
k^2 = 6 for 60° rectangular current

The average forward current is limited by the RMS current value $I_{T(RMS)}$.
When the **calculated** value I_{TAV} is higher than $I_{T(RMS)}$ / k, replace it by $I_{TAV} = I_{T(RMS)}$ / k.

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Rectifier Bridges with Fast Diodes

1-phase, B2U

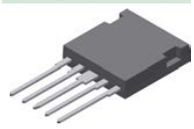


✧ under development	Type	V_{RRM} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.
	VBE 17-06NO7	600	27	85	50	1.18	22.0	150	2.50	0.30	X101
	VBE 17-12NO7	1200	19	85	40	1.32	30.0	150	2.50	0.30	
	VBE 20-20NO1	2000	20	65	75	3.30	93.0	150	1.70	0.30	X103
	VBE 26-06NO7	600	44	85	110	1.13	13.0	150	1.60	0.30	X101
	VBE 26-12NO7	1200	32	85	90	1.32	30.0	150	1.60	0.30	
	VBE 55-06NO7	600	68	100	250	0.98	8.0	150	0.90	0.30	
	VBE 55-12NO7	1200	59	85	200	1.31	15.0	150	0.90	0.30	
	VBE 60-06A	600	60	100	250	0.98	8.2	150	1.15	0.10	X027a
	VBE 60-12A	1200	60	70	200	1.31	14.0	150	1.15	0.10	
	DHG 40B1200LB	1200	34	80	150	1.35	42.0	175	1.50	0.50	X030a
	DHG 50B1200LB	1200	45	80	200	1.45	26.0	175	1.10	0.40	
	DPG 60B600LB	600	60	100	250	0.85	17.0	175	1.10	0.40	
	FBE 22-06N1	600	22	115	50	1.04	24.0	175	3.00	0.20	X024a
	VBE 100-06NO7	600	100	85	600	1.09	4.3	150	0.80	0.20	X102
	VBE 100-12NO7	1200	100	70	500	1.07	8.2	150	0.80	0.20	
	DCG 20B650LB *	650	21	80	250	0.74	118.0	175	2.10	0.70	X030a
✧	**DCG 20B1200LB ***	1200	18	80	60	0.68	133.0	175	3.30	0.85	
	FBS 10-12SC *	1200	9	80	100	-	-	175	7.00	3.50	X024a

***** SiC-Diodes

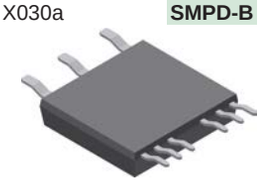
Package style
Outline drawings on pages O-36...O-59

X024a **ISOPLUS i4-PAC™**



X027a **SOT-227B miniBLOC**

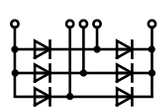
X030a **SMPD-B**



X101 **ECO-PAC 1**

See data sheet for pin arrangement

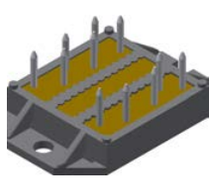
3-phase, B6U



FUS 45-0045B	45	45	130	150	0.30	14.8	150	3.00	0.20	X024a
DHG 60U1200LB	1200	60	80	200	1.35	2.90	150	1.20	0.40	X030a
VUE 50-12NO1	1200	50	85	200	1.65	18.2	150	1.20	0.30	X103
VUE 30-20NO1	2000	30	65	75	3.30	93.0	150	1.70	0.30	
VUE 22-06NO7	600	34	85	50	1.18	22.0	150	2.50	0.30	X101
VUE 22-12NO7	1200	24	85	40	1.39	55.0	150	2.50	0.30	
VUE 35-06NO7	600	56	85	110	1.13	13.0	150	1.60	0.30	
VUE 35-12NO7	1200	40	85	90	1.32	30.0	150	1.60	0.30	
VUE 75-06NO7	600	86	100	250	0.98	8.0	150	0.90	0.30	
VUE 75-12NO7	1200	74	85	200	1.31	15.0	150	0.90	0.30	
FUE 30-12N1	1200	30	120	90	0.97	48.0	175	2.30	0.20	X024a
VUE 130-06NO7	600	130	85	600	1.09	4.3	150	0.80	0.20	X102
VUE 130-12NO7	1200	130	70	500	1.07	8.2	150	0.80	0.20	

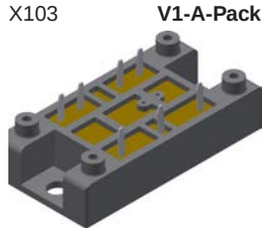
See data sheet for pin arrangement

X102 **ECO-PAC 2**



See data sheet for pin arrangement

X103 **V1-A-Pack**



See data sheet for pin arrangement

Rectifier Bridges incorporating Fast Diodes

Power switching semiconductors are used in inverter systems with DC-Link. Due to high switching frequencies, harmonics and line distortion may be generated. It is important that the new designs reduce these influences and fulfill the EMI filtering requirements according to EMI/EMC VDE 0871 and other.

The noise level can be reduced by up to **10dB** when the input rectifier is equipped with semi-fast diodes and is therefore optimised for turn off; resulting in a lower peak recovery current compared to non-optimised and normal rectifier diodes.

The noise level can be further reduced approximetely by another **5dB** when using rectifier bridges equipped with Fast Recovery Epitaxial Diodes (FRED) like module types VBE (single phase bridge) or VUE (three phase bridge). However these are more expensive but may be necessary in some applications to fulfill the VDE or other standards.

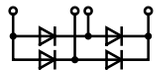
This behaviour has a direct influence on the design of the EMI filter networks with its capacitors and inductors of which the size and costs can be reduced.

More detailed information is available in the IXYS application note D98005E „Input Rectifiers with Semi-fast Diodes for DC Link“ on www.ixys.com.

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

1~ Rectifier Bridges

1~ Rectifier Bridges with Avalanche Diodes, B2U

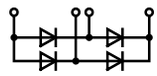


Type ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	P_{RSM} kW	Fig. No.	Package style Outline drawings on pages O-36...O-59
VBO 13-12AO2	1200	400	18	85	220	0.85	17.0	150	5.60	6.00	2.5	X115	X024a **ISOPLUS i4-PAC™**
VBO 13-16AO2	1600	500											
VBO 20-12AO2	1200	400	31	85	300	0.85	14.0	150	3.00	3.40	3.4		
VBO 20-16AO2	1600	500											
VBO 25-12AO2	1200	400	38	85	370	0.85	8.0	150	2.80	3.20	3.4		
VBO 25-16AO2	1600	500											
1~ Rectifier Bridges with Standard Diodes, B2U													X025a **GBFP**
VBO 13-08NO2	800	250	18	85	220	0.85	17.0	150	5.60	6.00	-	X115	
VBO 13-12NO2	1200	400											
VBO 13-16NO2	1600	500											
FBO 16-12N	1200	400	20	130	150	0.81	32.0	175	3.00	3.20	-	X024a	X027a **SOT-227B miniBLOC**
VBO 20-08NO2	800	250	31	85	300	0.85	14.0	150	3.00	3.40	-	X115	
VBO 20-12NO2	1200	400											
VBO 20-16NO2	1600	500											
VBO 21-08NO7	800	250	20	115	120	0.84	28.8	150	2.50	2.90	-	X101	
VBO 21-12NO7	1200	400											
VBO 22-08NO8	800	250	14	85	380	0.77	14.2	150	8.00	9.00	-	X116b	
VBO 22-12NO8	1200	400											
VBO 22-16NO8	1600	500											
VBO 22-18NO8	1800	575											X101 **ECO-PAC 1**
GBO 25-12NO1	1200	400	25	105	370	0.74	16.3	175	4.30	4.80	-	X025a	
GBO 25-16NO1	1600	500											
VBO 25-08NO2	800	250	38	85	370	0.85	8.0	150	2.80	3.20	-	X115	
VBO 25-12NO2	1200	400											
VBO 25-16NO2	1600	500											See data sheet for pin arrangement
VBO 30-08NO7	800	250	25	85	400	0.80	12.9	150	4.70	4.80	-	X119b	
VBO 30-12NO7	1200	400											X115 FO-A
VBO 30-16NO7	1600	500											
VBO 30-18NO7	1800	575											
VBO 36-08NO8	800	250	18	85	550	0.76	9.1	150	7.00	8.00	-	X116b	
VBO 36-12NO8	1200	400											
VBO 36-16NO8	1600	500											X116b FO-B
VBO 36-18NO8	1800	575											
FBO 40-12N	1200	400	40	130	300	0.79	14.0	175	1.50	1.70	-	X024a	
VBO 40-08NO6	800	250	40	115	320	0.81	12.1	150	1.30	1.40	-	X027a	
VBO 40-12NO6	1200	400											
VBO 40-16NO6	1600	500											X119b **PWS-A**
VBO 50-08NO7	800	250	45	85	750	0.76	6.9	150	2.70	3.10	-	X120b	
VBO 50-12NO7	1200	400											
VBO 50-16NO7	1600	500											
VBO 50-18NO7	1800	575											
VBO 52-08NO7	800	250	60	115	550	0.78	8.1	150	1.10	1.50	-	X122b	
VBO 52-12NO7	1200	400											
VBO 52-16NO7	1600	500											X120b **PWS-B**
VBO 52-18NO7	1800	575											
VBO 54-08NO7	800	250	55	105	300	0.82	12.2	150	1.10	1.50	-	X101	
VBO 54-12NO7	1200	400											
VBO 54-16NO7	1600	500											
VBO 68-08NO7	800	250	70	105	550	0.81	7.8	150	0.90	1.30	-	X101	
VBO 68-12NO7	1200	400											X122b **PWS-D**
VBO 68-16NO7	1600	500											
VBO 72-08NO7	800	250	70	110	750	0.78	6.0	150	0.90	1.30	-	X122b	
VBO 72-12NO7	1200	400											
VBO 72-16NO7	1600	500											
VBO 72-18NO7	1800	575											

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

1~ Rectifier Bridges

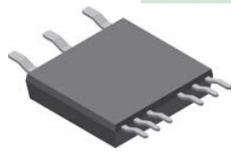
1~ Rectifier Bridges with Standard Diodes, B2U



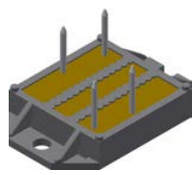
Type ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.
VBO 78-08NO7	800	250	80	115	750	0.81	5.9	150	0.70	1.00	X102
VBO 78-12NO7	1200	400									
VBO 78-16NO7	1600	500									
VBO 88-08NO7	800	250	90	115	1000	0.80	4.6	150	0.60	0.90	
VBO 88-12NO7	1200	400									
VBO 88-16NO7	1600	500									
DLA 100B800LB	800	400	124	80	400	0.75	4.2	175	1.00	1.45	X030a
DLA 100B1200LB	1200										
➢ **DMA 120B800LB**	800	250	130	90	500	0.88	6.4	175	0.80	1.30	
VBO 105-08NO7	800	250	100	100	1500	0.78	4.8	150	0.80	1.10	X121b
VBO 105-12NO7	1200	400									
VBO 105-16NO7	1600	500									
VBO 125-08NO7	800	250	125	105	1800	0.76	3.6	150	0.60	0.90	
VBO 125-12NO7	1200	400									
VBO 125-16NO7	1600	500									
VBO 130-08NO7	800	250	130	110	1800	0.77	3.4	150	0.50	0.70	X123e
VBO 130-12NO7	1200	400									
VBO 130-16NO7	1600	500									
VBO 130-18NO7	1800	575									
VBO 160-08NO7	800	250	160	110	2800	0.74	2.4	150	0.40	0.55	
VBO 160-12NO7	1200	400									
VBO 160-16NO7	1600	500									
VBO 160-18NO7	1800	575									

Package style — Outline drawings on pages O-36...O-59

X030a **SMPD-B**

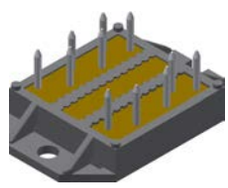


X101 **ECO-PAC 1**

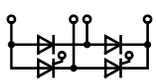


See data sheet for pin arrangement

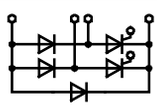
X102 **ECO-PAC 2**



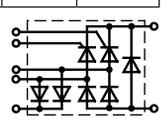
See data sheet for pin arrangement



VGO



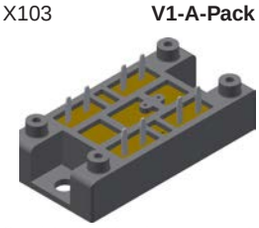
VHF



VHFD

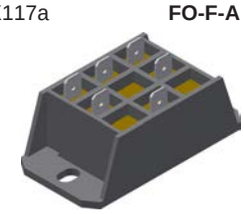
Type	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_H °C	I_{TSM} 10 ms, 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.
1~ Half Controlled Rectifier Bridges with free wheeling diode, B2HKF											
VHF 15-08io5	800	250	15	85	190	1.00	40.0	125	2.40	3.00	X117a
VHF 15-12io5	1200	400									
VHF 15-14io5	1400	440									
VHF 15-16io5	1600	500									
VHF 25-08io7	800	250	32	T_C = 85°C	200	0.85	27.0	125	1.30	1.80	X101
VHF 25-12io7	1200	400									
VHF 28-08io5	800	250	28	85	300	0.90	15.0	125	1.40	2.00	X117a
VHF 28-12io5	1200	400									
VHF 28-14io5	1400	440									
VHF 28-16io5	1600	500									
VHF 36-08io5	800	250	36	85	320	0.85	13.0	125	1.15	1.55	
VHF 36-12io5	1200	400									
VHF 36-14io5	1400	440									
VHF 36-16io5	1600	500									
VHFD 16-08io1	800	250	16	85	150	1.00	40.0	125	2.40	3.00	X103
VHFD 16-12io1	1200	400									
VHFD 16-16io1	1600	500									
VHFD 29-08io1	800	250	28	85	300	0.90	15.0	125	1.40	2.00	
VHFD 29-12io1	1200	400									
VHFD 29-16io1	1600	500									
VHFD 37-08io1	800	250	36	85	320	0.85	13.0	125	1.20	1.55	
VHFD 37-12io1	1200	400									
VHFD 37-16io1	1600	500									
1~ Half Controlled Rectifier Bridge, B2HZ											
VGO 36-16io7	1600	500	36	85	320	0.85	13.0	125	1.40	2.00	X101

X103 **V1-A-Pack**

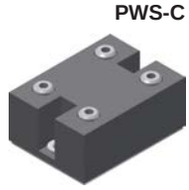


See data sheet for pin arrangement

X117a **FO-F-A**



X121b **PWS-C**

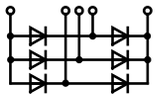


X123e **PWS-E**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges

3~ Rectifier Bridges with Standard Diodes, B6U

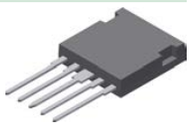


Type	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.
FUO 22-12N	1200	400	30	120	150	0.81	31.0	175	3.00	3.20	X024a
FUO 22-16N	1600	500									
VUO 25-08NO8	800	250	20	85	380	0.77	14.2	150	8.00	9.00	X116a
VUO 25-12NO8	1200	400									
VUO 25-14NO8	1400	440									
VUO 25-16NO8	1600	500									
VUO 25-18NO8	1800	575									
VUO 28-08NO7	800	250	30	105	120	0.84	28.8	150	2.50	2.90	X101
VUO 28-12NO7	1200	400									
VUO 36-08NO8	800	250	27	85	550	0.76	9.1	150	7.00	8.00	X116a
VUO 36-12NO8	1200	400									
VUO 36-14NO8	1400	440									
VUO 36-16NO8	1600	500									
VUO 36-18NO8	1800	575									
VUO 34-08NO1	800	250	45	110	300	0.81	14.9	150	1.70	2.10	X103
VUO 34-12NO1	1200	400									
VUO 34-14NO1	1400	440									
VUO 34-16NO1	1600	500									
VUO 34-18NO1	1800	575									
VUO 30-08NO3	800	250	45	110	300	0.80	12.9	150	2.00	2.40	X117b
VUO 30-12NO3	1200	400									
VUO 30-14NO3	1400	440									
VUO 30-16NO3	1600	500									
VUO 30-18NO3	1800	575									
VUO 35-08NO7	800	250	35	85	400	0.80	12.9	150	4.20	4.80	X119a
VUO 35-12NO7	1200	400									
VUO 35-14NO7	1400	440									
VUO 35-16NO7	1600	500									
VUO 35-18NO7	1800	575									
GUO 40-08NO1	800	250	40	90	370	0.74	16.3	175	4.30	4.80	X025b
GUO 40-12NO1	1200	400									
GUO 40-16NO1	1600	500									
DMA 40U1800GU	1800	575									
DNA 40U2200GU	2200	690									
FUO 50-16N	1600	500	50	120	270	0.78	17.0	175	2.10	2.30	X024a
VUO 52-08NO1	800	250	60	110	350	0.83	11.5	150	1.30	1.60	X103
VUO 52-12NO1	1200	400									
VUO 52-14NO1	1400	440									
VUO 52-16NO1	1600	500									
VUO 52-18NO1	1800	500									
VUO 52-20NO1	2000	575									
VUO 52-22NO1	2200	690									
VUO 50-08NO3	800	250	60	110	500	0.78	8.5	150	1.50	1.90	X117b
VUO 50-12NO3	1200	400									
VUO 50-14NO3	1400	440									
VUO 50-16NO3	1600	500									
VUO 50-18NO3	1800	575									
VUO 55-12NO7	1200	400	60	85	750	0.76	6.9	150	2.70	3.10	X120a
VUO 55-14NO7	1400	440									
VUO 55-16NO7	1600	500									
VUO 55-18NO7	1800	575									

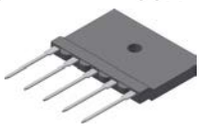
Package style

Outline drawings on pages O-36...O-59

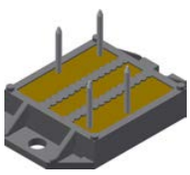
X024a **ISOPLUS i4-PAC™**



X025b **GUFP**

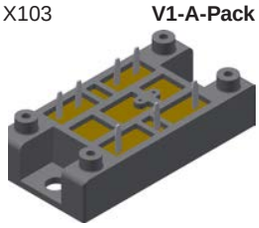


X101 **ECO-PAC 1**



See data sheet for pin arrangement

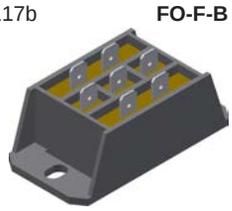
X103 **V1-A-Pack**



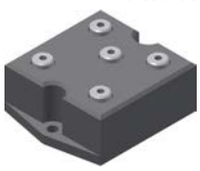
See data sheet for pin arrangement

X116a **FO-B**

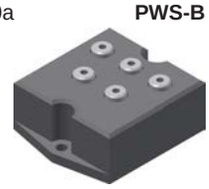
X117b **FO-F-B**



X119a **PWS-A**



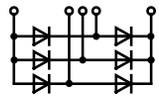
X120a **PWS-B**



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges

3~ Rectifier Bridges with Standard Diodes, B6U



Type ○ Not for new design	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
VUO 60-12NO3	800	250	75	110	700	0.77	6.5	150	1.20	1.60	X117b	X030a **SMPD-B**
VUO 60-14NO3	1400	440										
VUO 60-16NO3	1600	500										
VUO 60-18NO3	1800	575										
VUO 62-08NO7	800	250	60	120	550	0.78	8.1	150	1.10	1.50	X122a	X101 **ECO-PAC 1**
VUO 62-12NO7	1200	400										
VUO 62-14NO7	1400	440										
VUO 62-16NO7	1600	500										
VUO 62-18NO7	1800	575										See data sheet for pin arrangement
VUO 64-16NO7	1600	500	60	120	550	0.78	8.1	150	1.10	1.50	X122c	X102 **ECO-PAC 2**
VUO 68-08NO7	800	250	70	105	300	0.82	12.2	150	1.10	1.50	X101	
VUO 68-12NO7	1200	400										
VUO 68-14NO7	1400	440										
VUO 68-16NO7	1600	500										See data sheet for pin arrangement
○ **VUO 70-16NO7**	1600	500	70	100	550	0.80	8.0	150	1.45	1.90	X118d	X103 **V1-A-Pack**
VUO 80-08NO1	800	250	80	110	600	0.81	7.8	150	1.10	1.40	X103	
VUO 80-12NO1	1200	400										
VUO 80-14NO1	1400	440										
VUO 80-16NO1	1600	500										X117b **FO-F-B**
VUO 80-18NO1	1800	575										
VUO 82-08NO7	800	250	90	115	750	0.78	6.0	150	0.90	1.30	X122a	
VUO 82-12NO7	1200	400										
VUO 82-14NO7	1400	440										
VUO 82-16NO7	1600	500										X118d **FO-T-A**
VUO 82-18NO7	1800	575										
VUO 84-16NO7	1600	500	90	115	750	0.78	6.0	150	0.90	1.30	X122c	
VUO 86-08NO7	600	125	90	105	550	0.81	7.8	150	0.90	1.30	X101	
VUO 86-12NO7	1200	400										
VUO 86-14NO7	1400	440										X121a **PWS-C**
VUO 86-16NO7	1600	500										
DMA 90U1800LB	1800	575	90	110	350	0.81	12.7	175	1.10	1.50	X030a	
DNA 90U2200LB	2200	690										X122a **PWS-D**
VUO 98-08NO7	800	250	105	115	750	0.81	5.9	150	0.70	1.00	X102	
VUO 98-12NO7	1200	400										
VUO 98-14NO7	1400	440										
VUO 98-16NO7	1600	500										X122c **PWS-D Flat**
VUO 105-12NO7	1200	400	120	105	1500	0.78	4.8	150	0.80	1.10	X121a	
VUO 105-14NO7	1400	440										
VUO 105-16NO7	1600	500										
VUO 105-18NO7	1800	575										X123c **PWS-E**
VUO 110-08NO7	800	250	125	110	1200	0.79	4.5	150	0.70	1.00	X123c	
VUO 110-12NO7	1200	400										
VUO 110-14NO7	1400	440										
VUO 110-16NO7	1600	500										
VUO 110-18NO7	1800	575										

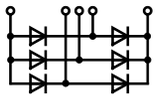
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges

3~ Rectifier Bridges with Standard Diodes, B6U

DM/NA...YA...

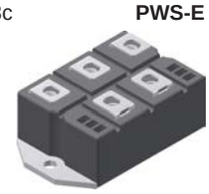
DM/NA...YC...


VUO.. DM/NA..U..
MDM/NA..U..

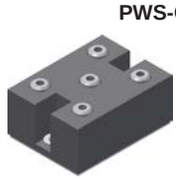
Type ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
VUO 120-12NO2T	1200	400	180	90	1100	0.81	4.4	150	0.60	0.80	X104	X027a **SOT-227B miniBLOC**
VUO 120-16NO2T	1600	500										
VUO 121-16NO1	1600	500	120	105	700	0.80	7.6	150	0.65	0.75	X112	
VUO 122-08NO7	800	250	125	115	1000	0.80	4.6	150	0.60	0.90	X102	
VUO 122-12NO7	1200	400										
VUO 122-14NO7	1400	440										
VUO 122-16NO7	1600	500										
VUO 125-12NO7	1200	400	150	110	1800	0.76	3.6	150	0.60	0.90	X121a	
VUO 125-14NO7	1400	440										
VUO 125-16NO7	1600	500										X102 **ECO-PAC 2**
VUO 125-18NO7	1800	575										
DNA 90YA2200NA	2200	690	90	85	370	0.86	11.4	150	1.20	1.30	X027a	
DNA 90YC2200NA												
DMA 150YA1600NA	1600	500	150	95	700	0.82	6.3	150	0.60	0.70		
DMA 150YC1600NA												See data sheet for pin arrangement
➢ **DMA 200YA1600NA**			200	100	1000	0.86	4.4	150	0.45	0.55		
➢ **DMA 200YC1600NA**												
➢ **DMA 240YA1600NA**			240	100	1300	0.86	4.0	150	0.35	0.45		X104 **V2-Pack**
➢ **DMA 240YC1600NA**												
VUO 160-08NO7	800	250	175	110	1800	0.77	3.4	150	0.50	0.70	X123c	
VUO 160-12NO7	1200	400										
VUO 160-14NO7	1400	440										
VUO 160-16NO7	1600	500										See data sheet for pin arrangement
VUO 160-18NO7	1800	575										
VUO 162-16NO7	1600	500	175	110	1800	0.77	3.4	150	0.50	0.70	X123h	X112 **E2-Pack**
VUO 190-08NO7	800	250	240	110	2800	0.74	2.4	150	0.40	0.55	X123c	
VUO 190-12NO7	1200	400										
VUO 190-14NO7	1400	440										
VUO 190-16NO7	1600	500										
VUO 190-18NO7	1800	575										
VUO 192-16NO7	1600	500	240	110	2800	0.74	2.4	150	0.40	0.55	X123h	
➢ **MDNA 240U2200ED**	2200	690	240	90	1500	0.79	5.1	150	0.35	0.45	X112	X113a **E3-Pack PFP**
➢ **MDMA 450U1600PTEH**	1600	450	500	85	2400	0.82	2.7	150	0.20	0.10	X113a	
➢ **MDMA 660U1600PTEH**	1600	500	660	85	5000	0.77	1.8	150	0.15	0.075		
➢ **MDNA 660U2200PTEH**	2200	690										
➢ **MDMA 900U1600PTEH**	1600	500	900	85	8000	0.76	1.4	150	0.10	0.05		

X123h **PWS-E Flat**

X123c **PWS-E**

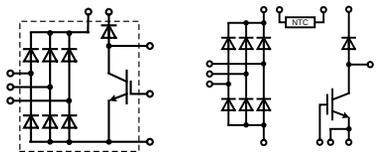


X121a **PWS-C**



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

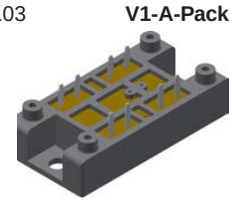
3~ Rectifier Bridges



3~ Rectifier Bridges
with IGBT and Fast Diode for Brake Unit

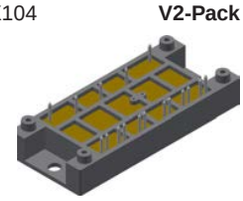
Type	Rectifier			IGBT		Fast Diode			Fig. No.	Package style Outline drawings on pages O-36...O-59
	V_{RRM} V	I_{dAV} A	@ T_C °C	V_{CES} V	I_{C80} A	V_{RRM} V	$I_{F(AV)}$ A	t_{rr} ns		
VUB 72-12NOXT	1200	75	110	1200	40	1200	21	130	X103	
VUB 72-16NOXT	1600									
VUI 72-16NOXT	1600	75	110	1200	40	-	-	-		
VUB 116-16NOXT	1600	120	105	1200	84	1200	32	150	X112	
VUB 120-16NOX	1600	180	90	1200	140	1200	32	300	X104	
VUB 120-16NOXT										
VUB 135-22NO1	2200	150	105	1700	80	1700	33	tbd	X112	
VUB 145-16NOXT	1600	150	105	1200	140	1200	32	300		
VUB 160-16NOX	1600	180	90	1200	175	1200	32	150	X104	
VUB 160-16NOXT										
MDMA 210UB1600PTED	1600	210	85	1200	84	1200	59	350	X112a	
MDNA 210UB2200PTED	2200	210	85	1700	100	1700	54	550		
MDMA 240UB1600ED	1600	240	85	1200	140	1200	59	350	X112	
MDMA 280UB1600PTED	1600	280	85	1200	140	1200	59	350	X112a	
MDNA 280UB2200PTED	2200	280	85	1700	100	1700	54	550		
MDMA 360UB1600PTED	1600	360	85	1200	175	1200	90	350		
MDNA 360UB2200PTED	2200	360	85	1700	145	1700	83	550		
MDMA 450UB1600PTED	1600	450	85	1200	175	1200	90	350		

X103 **V1-A-Pack**



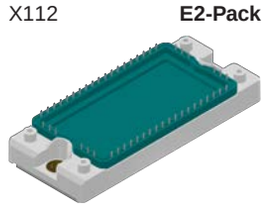
See data sheet for pin arrangement

X104 **V2-Pack**

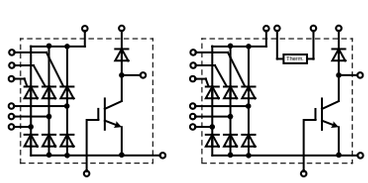


See data sheet for pin arrangement

X112 **E2-Pack**



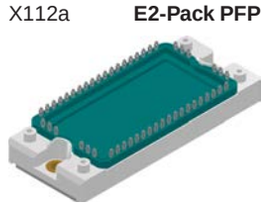
3~ Half Controlled Rectifier Bridges



with IGBT and Fast Diode for Brake Unit

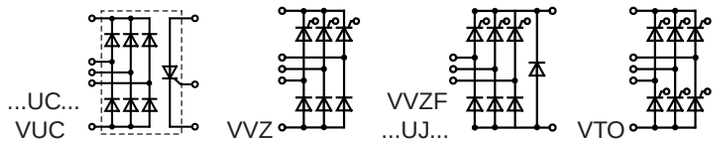
Type ➢ New	Rectifier			IGBT		Fast Diode			Fig. No.
	V_{RRM} V	I_{dAV} A	@ T_C °C	V_{CES} V	I_{C80} A	V_{RRM} V	$I_{F(AV)}$ A	t_{rr} ns	
VVZB 120-16ioX	1600	180	85	1200	140	1200	32	300	X104
MCNA 120UI2200TED	2200	117	80	1700	80	1700	50	550	X112
➢ **MCNA 120UI2200PED**	2200	120	80	1700	80	1700	50	550	X112a
VVZB 135-16ioXT	1600	150	85	1200	84	1200	32	150	X112
VVZB 170-16ioXT	1600	180	85	1200	140	1200	32	300	X112
MCMA 240UI1600ED	1600	240	80	1200	140	1200	59	350	X112
MCMA 240UI1600PED									X112a
MCMA 245UI1600ED	1600	240	80	1200	175	1200	90	350	X112

X112a **E2-Pack PFP**



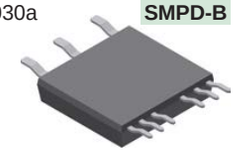
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges

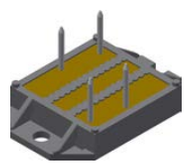


Type	V_{RRM} V	V_{vRMS} V	I_{dAVM} A	@ T_H °C	$I_{FSM/TSM}$ 10 ms, 45°C A		V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.
3~ Rectifier Bridges with Standard or Fast Diodes (t_{rr} = 1.5 ms) & Integrated Softstart Thyristor												
VUC 36-12go2	1200	400	34	85	Dio.	300	1.20	16.0	125	1.40	2.00	X105a
					Thy.	400	0.85	10.0	125	0.90	1.10	
VUC 36-16go2	1600	500	34	85	Dio.	300	1.20	16.0	125	1.40	2.00	
					Thy.	400	0.85	10.0	125	0.90	1.10	
MDMA 60UC1600VC	1600	500	60	110	Dio.	350	0.83	11.5	150	1.30	1.60	X105c
					Thy.	800	0.89	5.3	140	0.70	0.90	

X030a **SMPD-B**



X101 **ECO-PAC 1**



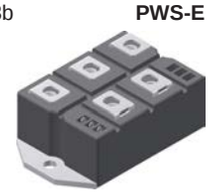
See data sheet for pin arrangement

Type ➢ New ○ Not for new design	V_{RRM} V	V_{vRMS} V	I_{dAVM} A	@ T_H °C	$I_{FSM/TSM}$ 10 ms, 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.
3~ Half Controlled Rectifier Bridges, B6HK											
VVZ 39-08ho7	800	250	39	85	200	0.85	27.0	125	1.30	1.80	X101
VVZ 39-12ho7	1200	400									
VVZ 40-12io1	1200	400	34	100	320	0.85	15.0	125	1.00	1.60	X105a
VVZ 40-16io1	1600	500									
➢ **CLE 90UH1200TLB**	1200	400	90	90	350	0.92	13.0	150	0.90	1.30	X030a
VVZ 110-12io7	1200	400	110	85	1150	0.85	6.0	125	0.65	0.80	X123b
VVZ 175-12io7	1200	400	167	85	1500	0.85	3.5	125	0.46	0.55	
VVZ 175-16io7	1600	500									
➢ **MCMA 450UH1600TEH**	1600	500	450	90	2400	0.84	3.1	150	0.17	0.25	X113
3~ Half Controlled Rectifier Bridges with free wheeling diode, B6HKF											
MCMA 120UJ1800ED	1800	575	117	80	500	0.89	13.6	150	0.65	0.75	X112
○ **VVZF 70-16io7**	1600	500	70	85	550	0.85	11.0	125	0.90	1.10	X118c
3~ Full Controlled Rectifier Bridges, B6C											
VTO 39-08ho7	800	250	39	85	200	0.85	27.0	125	1.30	1.80	X101
VTO 39-12ho7	1200	400									

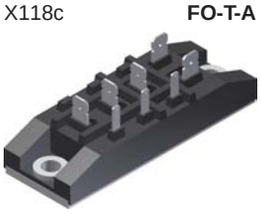
X105a **V1-B-Pack**

X105c **V1-B-Pack**

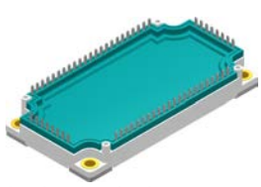
X123b **PWS-E**



X118c **FO-T-A**

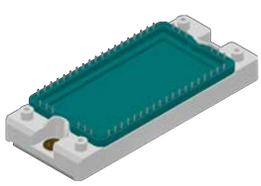


X113 **E3-Pack**



See data sheet for pin arrangement

X112 **E2-Pack**

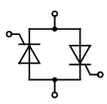


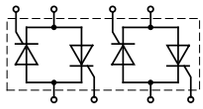
See data sheet for pin arrangement

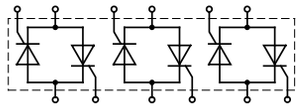
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

AC Controller 1~ / 2~ / 3~

I_{RMS} = 35 - 230 A


MMO/CLA..MB..

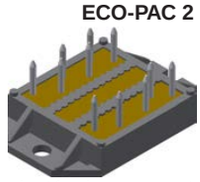

VW 2x..


VWO

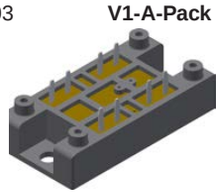
	Type ➢ New	V_{RRM} V	V_{vRMS} V	I_{RMS} A	@ T_C °C	I_{TSM} 10 ms 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
1~	**MMO 62-12io6**	1200	400	66	95	400	0.87	13.6	150	0.90	1.10	X027a	X027a **SOT-227B miniBLOC**
	MMO 62-16io6	1600	500										
	MMO 74-12io6	1200	400	88	95	600	0.87	10.5	150	0.70	0.80		
	MMO 74-16io6	1600	500										
	MMO 90-12io6	1200	400	110	95	800	0.88	6.0	150	0.60	0.70		
	MMO 90-14io6	1400	440										
	MMO 90-16io6	1600	500										
	CLA 110MB1200NA	1200	400	110	110	1100	0.78	4.9	150	0.55	0.65		
	MMO 110-12io7	1200	400	112	85	1000	0.85	5.6	150	0.80	0.92	X101	X101 **ECO-PAC 1**
	MMO 110-14io7	1400	440										
	MMO 140-12io7	1200	400	130	85	1150	0.85	5.2	150	0.70	0.82		
	MMO 140-16io7	1600	500										
	MMO 175-12io7	1200	400	175	85	1500	0.85	3.7	150	0.50	0.62		
	MMO 175-16io7	1600	500										
	MMO 230-12io7	1200	400	230	85	2250	0.80	2.4	125	0.26	0.46	X102	
	MMO 230-16io7	1600	500										
2~	**VW 2x60-12io1**	1200	400	2x 60	85	520	0.85	11.0	125	0.92	1.22	X103	
	VW 2x60-14io1	1400	440										
	VW 2x60-16io1	1600	500										
3~	**VWO 35-08ho7**	800	250	3x 35	85	200	0.85	27.0	125	1.30	1.80	X101	
	VWO 35-12ho7	1200	400										

See data sheet for pin arrangement

X102 **ECO-PAC 2**


See data sheet for pin arrangement

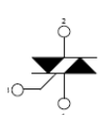
X103 **V1-A-Pack**



TRIAC 1~

I_{RMS} = 30 - 650 A

...MT...



	CLA 30MT1200NPB	1200	400	33	120	170	0.89	30.5	150	0.95	1.45	X005a
	CLA 30MT1200NPZ										1.20	X011c
	CLA 40MT1200NPB	1200	400	44	110	180	0.89	27.9	150	0.80	1.30	X005a
	CLA 40MT1200NPZ										1.05	X011c
➢	**CLA 40MT1200NHB**											X014a
	CLA 40MT1200NHR				95					1.30	1.55	X016c
	CLA 60MT1200NHB	1200	400	66	120	380	0.86	12.5	150	0.55	0.80	X014a
	CLA 60MT1200NTZ										0.70	X019a
	CLA 60MT1200NHR				100					0.90	1.15	X016c
	CMA 60MT1600NHB	1600	500	66	115	260	0.90	16.6	150	0.55	0.80	X014a
	CMA 60MT1600NHR				90					0.90	1.15	X016c
	CLA 80MT1200NHB	1200	400	88	120	480	0.85	9.2	150	0.40	0.65	X014a
	CLA 80MT1200NHR				100					0.65	0.90	X016c
	CMA 80MT1600NHB	1600	400	88	115	400	0.90	12.0	150	0.40	0.65	X014a
	CMA 80MT1600NHR		500		95					0.65	0.90	X016c
	MCMA 650MT1400NKD	1400	440	650	85	9600	0.81	0.68	140	0.12	0.04	X132a
	MCMA 650MT1800NKD	1800	575									X132a

X132a **Y1-2-Cu**

X019a **TO-268AAHV**

X005a **TO-220AB**

X011c **TO-263ABHV**

X014a **TO-247AD**

X016c **ISO247™**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

TRIACs

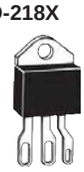
Triacs are useful in full-wave AC applications to control AC power either through full-cycle switching or phase control of current to the load element. These Triacs are rated to block voltage in the OFF condition from 400 V minimum with selected products capable of 1000 V operation. Typical applications include motor speed controls, heater controls, and incandescent light controls.

Type ➢ New	V_{DRM} V	$I_{T(RMS)}$ A	@ T_C °C	I_{TSM} 20 ms A	I_{GT} QI-QII-QIII (-QIV) A	T_J °C	Fig. No.	Package style Outline drawings on pages O-60...O-62
LX807MTRP	600	0.8	90	8	5-5-5-7	125	L001	
L0103NERP	800	1	50	10	3-3-3-5	125	L006	
L0107NTRP			90	10	5-5-5-7	125	L001	
L0109NERP			50	10	10-10-10-10	125	L006	
L6004D5RP	600	4	95	33	5-5-5-5	110	L004	
Q6004D3RP			110	46	10-10-10-25	125	L004	
Q8004D4RP	800		110	46	25-25-25-50	125	L004	
L6006D6RP	600	6	80	50	5-5-5-10	110	L004	
Q8006RH4TP	800		100	80	35-35-35	125	L005a	
L6008D6RP	600	8	85	65	5-5-5-10	110	L004	
Q8008LH4TP	800		90	83	35-35-35	125	L005c	
Q6012LH1LEDTP	600	12	90	110	10-10-10	125	L005c	
Q8012RH5TP	800		105	110	50-50-50	125	L005a	
Q8015LTP	800	15	80	167	50-50-50-100	125	L005c	
➢ **QJ6016NH2RP**	600	16	130	167	10-10-10	150	L011b	
➢ **QJ6016RH3TP**			130	167	20-20-20	150	L005a	
➢ **QJ6016LH4TP**			115	167	35-35-35	150	L005c	
➢ **QJ6016NH6RP**			130	167	80-80-80	150	L011b	
Q8016NH4RP	800		90	167	35-35-35	125	L011b	
Q8016LH6TP			80	167	80-80-80	125	L005c	
➢ **QJ6025NH5RP**	600	25	120	208	50-50-50	150	L011b	
➢ **QJ6025RH5TP**			120	208	50-50-50	150	L005a	
➢ **QJ6025LH5TP**			90	208	50-50-50	150	L005c	
➢ **QJ6025KH6TP**			110	208	80-80-80	150	L005c	
Q8025L6TP	800		65	208	80-80-80	125	L005c	
Q8025K6TP			85	208	80-80-80	125	L005c	
Q8025NH5RP			95	208	50-50-50	125	L011b	
Q6035NH5RP	600	35	90	290	50-50-50	125	L011b	
➢ **Q8040K4TP**	800	40	75	335	50-50-50-100	125	L002	
Q8040K5TP			75	335	50-50-50	125	L002	
QK040J7TP	1000		75	335	100-100-100	125	L002a	

L001 **SOT-223**

L002 **TO-218AC**

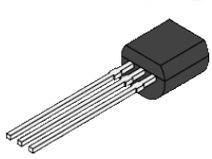
L002a **TO-218X**



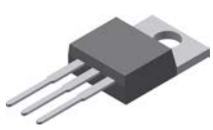
L004 **TO-252AA**

L011b **TO-263AB**

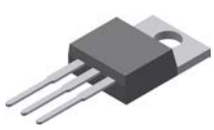
L006 **TO-92**



L005c **TO-220AB** (ISO)

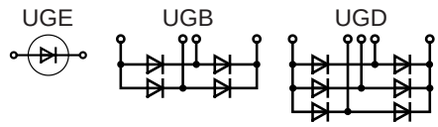


L005a **TO-220AB**



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

1~ / 3~ High Voltage Rectifier Modules

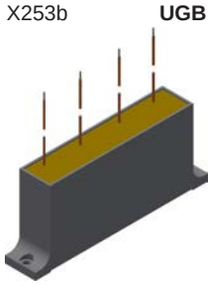


Type	V_{RRM} V	I_{dAV} ① / ② A	I_{FSM} 10 ms, 45°C A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJA1} ① K/W	R_{thJA2} ② K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
UGE 0421AY4	3200	23 / 7.4	300	1.70	16	150	1.9	7.1	X251	
UGE 0221AY4	4800	10 / 3.8	180	2.55	90	150	1.7	8.0		
UGE 1112AY4	8000	4.2 / 2.0	120	4.25	215	150	4.2	10.0		
UGE 3126AY4	24000	2.0 / 0.8	70	12.00	1800	150	2.7	8.7		
UGB 3132AD	4800	1.3	60	-	-	150	-	-	X252	
UGB 6124AG	10500	1.0	50	-	-	150	-	-	X253b	
UGD 6123AG	7200	1.8	50	-	-	150	-	-	X253a	
UGD 8124AG	10500	1.2	50	-	-	150	-	-		

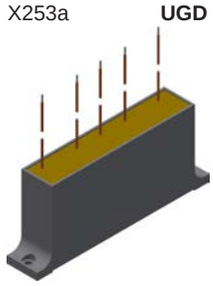
Data according to IEC 60747-2/6

① for oil-cooling with cooling plate, T_A = 35°C
② for natural air cooling without cooling plate, T_A = 45°C

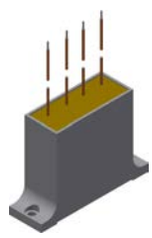
X253b **UGB**



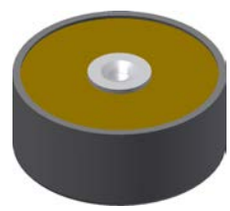
X253a **UGD**



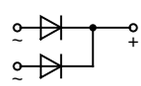
X252 **UGB**



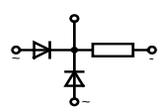
X251 **UGE**



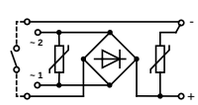
Braking Rectifier Assemblies



VGF 0136 AH



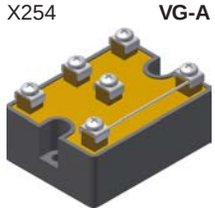
VGF 0136 AB



VGB 0124 AY7

Type	V_{vRMS} typ. V	V_{dAV} typ. V	I_{dAVM} typ. A	I_{dAVM} max. A	V_{RRM} max. V	I_{FSM} max. A	I^2t max. A^2s	Fig. No.	Package style Outline drawings on pages O-36...O-59
VGB 0124AY7a	380	340	1.0	1.0	1400	60	28	X254	
VGF 0136AB	1000	440	1.2	1.5	2800	80	40	X255	

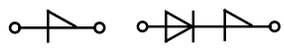
X254 **VG-A**



X255 **VG-B**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Break-Over Diodes

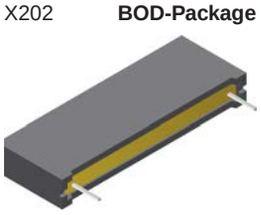


Version R Version RD

Type	V_{BO} T_{VJ} = 25 °C $K_T = 2 \cdot 10^{-3}\ K^{-1}$	I_{BO}	I_H T_{VJ} = 25 °C	V_H	I_D T_{VJ} = 125 °C $V_D = 0.8 \cdot V_{BO}$	I_{AVM} ① T_{amb} = 50 °C	I_{SM}	dv/dt	R_{thJA}	Fig. No.	Package style Outline drawings on pages O-36...O-59
	V	mA	mA	V	µA	A	A	V/µs	K/W		
IXBOD 1-06	600 ±50	< 15	30	4-8	20	0.90	200	>1000	60	X201	
IXBOD 1-07	700										
IXBOD 1-08	800										
IXBOD 1-09	900										
IXBOD 1-10	1000										
IXBOD 1-12R	1200 ±50	< 15	30	4-8	100	0.90	200	>1500	20	X202	
IXBOD 1-12RD											
IXBOD 1-13R	1300										
IXBOD 1-13RD											
IXBOD 1-14R	1400										
IXBOD 1-14RD											
IXBOD 1-15R	1500										
IXBOD 1-15RD											
IXBOD 1-16R	1600										
IXBOD 1-16RD											
IXBOD 1-17R	1700										
IXBOD 1-17RD											
IXBOD 1-18R	1800										
IXBOD 1-18RD											
IXBOD 1-19R	1900										
IXBOD 1-19RD											
IXBOD 1-20R	2000										
IXBOD 1-20RD											
IXBOD 1-21R	2100 ±50	< 15	30	4-8	100	0.90	200	>2500	20		
IXBOD 1-21RD											
IXBOD 1-22R	2200										
IXBOD 1-22RD											
IXBOD 1-23R	2300										
IXBOD 1-23RD											
IXBOD 1-24R	2400										
IXBOD 1-24RD											
IXBOD 1-25R	2500										
IXBOD 1-25RD											
IXBOD 1-26R	2600 ±100										
IXBOD 1-26RD											
IXBOD 1-28R	2800										
IXBOD 1-28RD											
IXBOD 1-30R	3000										
IXBOD 1-30RD											
IXBOD 1-32R	3200										
IXBOD 1-32RD											
IXBOD 1-34R	3400 ±100	< 15	30	4-8	100	0.90	200	>3500	20		
IXBOD 1-36R	3600										
IXBOD 1-38R	3800										
IXBOD 1-40R	4000										
IXBOD 1-42R	4200										

X201 **FP-Case** (oil proof)

X202 **BOD-Package**



① Leads soldered on PCB board, T_{stg} and T_{VJ} = -40 ... +125°C

Break-Over-Diodes Sets

We deliver also:
- Special selection of more than 2 pcs IXBOD1-... for every break down voltage of VBO > 2000 V
- Example

type designation IXBOD Set SA05/00
VBO = 4700 V ±100 V
(we deliver 5 pcs single selected IXBOD1-... in one plastic bag)
Customers use these products on PCB connected in series with parallel resistor R = 10 MΩ across each IXBOD

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

IXBOD 2 - Fast Break-Over Diodes

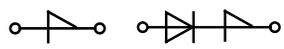
Advantages compared with IXBOD 1**:**

- Temperature coefficient K_T reduced by a factor of 3
  - tighter definition of the break-over voltage V_{BO}
    -- $V_{BO}(T_{VJ}) = V_{BO}$, 25°C $[1 + K_T (T_{VJ} - 25°C)]$
  - more precise and controllable design due to smaller tolerances
- Significant reduction of the switching-on time down to a few nanoseconds

Applications:

- Protection circuits for thyristors in high valuable designs
  - high DC current power transmissions for long distances like offshore windmills or hydroelectric dams
- High Intensity Discharge Lighting (HID)

Fast Break-Over Diodes

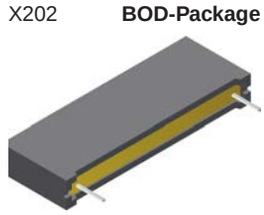


Version R Version RD

Type	V_{BO} T_{VJ} = 25 °C $K_T = 0.7 \cdot 10^{-3}$ K^{-1}	I_{BO}	I_H T_{VJ} = 25 °C	V_H	I_D T_{VJ} = 125 °C $V_D = 0.8 \cdot V_{BO}$	I_{AVM} ① T_{amb} = 50 °C	I_{SM}	dv/dt	R_{thJA}	Fig. No.	Package style Outline drawings on pages O-36...O-59
	V	mA	mA	V	µA	A	A	V/µs	K/W		
IXBOD 2-01	100	15	20	4-8	200	0.90	250	>1000	60	X201	
IXBOD 2-02	200 ±10%										
IXBOD 2-03	300 $\cdot V_{BO}$										
IXBOD 2-04	400										
IXBOD 2-05	500 ±50										
IXBOD 2-06	600										
IXBOD 2-07	700										
IXBOD 2-08	800										
IXBOD 2-09	900										
IXBOD 2-10	1000										
IXBOD 2-11	1100										
IXBOD 2-12	1200										
IXBOD 2-13	1300										
IXBOD 2-14	1400										
IXBOD 2-15R	1500 ±50	15	20	4-8	200	0.90	250	>1500	20	X202	
IXBOD 2-15RD											
IXBOD 2-16R	1600										
IXBOD 2-16RD											
IXBOD 2-17R	1700										
IXBOD 2-17RD											
IXBOD 2-18R	1800										
IXBOD 2-18RD											
IXBOD 2-19R	1900										
IXBOD 2-19RD											
IXBOD 2-20R	2000										
IXBOD 2-20RD											
IXBOD 2-21R	2100										
IXBOD 2-21RD											
IXBOD 2-22R	2200										
IXBOD 2-22RD											
IXBOD 2-23R	2300										
IXBOD 2-23RD											
IXBOD 2-24R	2400										
IXBOD 2-24RD											
IXBOD 2-25R	2500										
IXBOD 2-25RD											
IXBOD 2-26R	2600										
IXBOD 2-26RD											
IXBOD 2-27R	2700										
IXBOD 2-27RD											
IXBOD 2-28R	2800										
IXBOD 2-28RD											

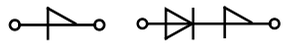
X201 **FP-Case** (oil proof)

X202 **BOD-Package**



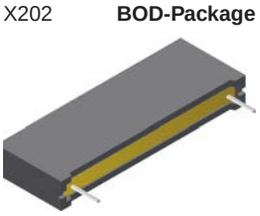
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Fast Break-Over Diodes



Version R Version RD

Type	V_{BO}	I_{BO}	I_H	V_H	I_D	I_{AVM} ①	I_{SM}	dv/dt	R_{thJA}	Fig. No.	Package style
	T_{VJ} = 25 °C $K_T = 0.7 \cdot 10^{-3}\ K^{-1}$		T_{VJ} = 25 °C		T_{VJ} = 125 °C $V_D = 0.8 \cdot V_{BO}$	T_{amb} = 50 °C					Outline drawings on pages O-36...O-59
➢ New	V	mA	mA	V	µA	A	A	V/µs	K/W		
IXBOD 2-29R	2900 ±50	15	20	4-8	200	0.90	250	>2500	20	X202	
IXBOD 2-29RD											
IXBOD 2-30R	3000										
IXBOD 2-30RD											
IXBOD 2-31R	3100										
IXBOD 2-31RD											
IXBOD 2-32R	3200										
IXBOD 2-32RD											
IXBOD 2-33R	3300										
IXBOD 2-33RD											
IXBOD 2-34R	3400										
IXBOD 2-34RD											
IXBOD 2-35R	3500										
IXBOD 2-35RD											
IXBOD 2-36R	3600										
IXBOD 2-36RD											X202 **BOD-Package**
IXBOD 2-37R	3700										
IXBOD 2-37RD											
IXBOD 2-38R	3800										
IXBOD 2-38RD											
IXBOD 2-39R	3900										
IXBOD 2-39RD											
IXBOD 2-40R	4000										
IXBOD 2-40RD											
IXBOD 2-41R	4100										
IXBOD 2-41RD											
IXBOD 2-42R	4200										
IXBOD 2-42RD											
IXBOD 2-43R	4300 ±50	15	20	4-8	200	0.90	250	>3500	20		
IXBOD 2-44R	4400										
IXBOD 2-45R	4500										
IXBOD 2-46R	4600										
IXBOD 2-47R	4700										
IXBOD 2-48R	4800										
IXBOD 2-49R	4900										
IXBOD 2-50R	5000										
IXBOD 2-51R	5100										
IXBOD 2-52R	5200										
IXBOD 2-53R	5300										
IXBOD 2-54R	5400										
IXBOD 2-55R	5500										
IXBOD 2-56R	5600										



① Leads soldered on PCB board, T_{stg} and T_{VJ} = -40 ... +125°C

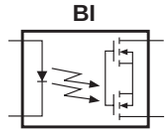
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Power Relays

For a complete listing of IXYS Integrated Circuits Division's Solid-State Relay products, please visit: *www.ixysic.com*

1-Form-A Power Relays: Single-Pole, Bidirectional

BI

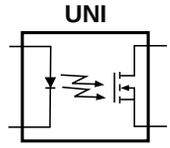


Part No.	Relay Type	Blocking Voltage	Load Current			On Resistance	Input Control Current	Switching Speeds	Isolation Voltage	Off-State Leakage	Package Type
			Free Air	5°C/W Heat Sink	T_C = 25°C			t_{on} / t_{off}			
		V_P	A_{rms}	A_{rms}	A_{rms}	Ω	mA	ms	V_{rms}	µA	
CPC1906Y	BI	60	2.00	-	-	0.30	10	10 / 5	2500	1	36
CPC1907B	BI	60	6.00	-	-	0.06	5	5 / 1	5000	1	66
CPC1908J	BI	60	3.50	8.50	15	0.30	10	20 / 5	2500	1	29
CPC1909J	BI	60	6.50	15	15	0.10	10	25 / 10	2500	1	37
CPC1916Y	BI	100	2.50	-	-	0.34	10	5 / 3	2500	1	36
CPC1918J	BI	100	5.25	13	15	0.10	10	25 / 10	2500	1	37
CPC1926Y	BI	250	0.70	-	-	1.40	10	10 / 10	2500	1	36
CPC1927J	BI	250	2.70	6.70	15	0.20	10	25 / 10	2500	1	37
CPC1967J	BI	400	1.35	3.35	13.15	0.85	10	20 / 5	2500	1	29
CPC1968J	BI	500	2.00	5	15	0.35	10	20 / 5	2500	1	37
CPC1973Y	BI	400	0.35	-	-	5	10	5 / 3	2500	1	36
CPC1977J	BI	600	1.25	3.10	12.25	1	10	20 / 5	2500	1	29
CPC1978J	BI	800	0.75	1.85	7.25	2.30	10	20 / 5	2500	1	29
CPC1979J	BI	600	1.40	3.50	14.50	0.75	10	25 / 5	2500	1	37
CPC1981Y	BI	1000	0.18	-	-	18	10	10 / 5	2500	1	36
CPC1983B	BI	600	0.50	-	-	6	5	5 / 2	5000	1	66
CPC1983Y	BI	600	0.50	-	-	6	5	5 / 2	2500	1	36
CPC1983YE	BI	600	0.50	-	-	6	5	5 / 2	4000	1	36
CPC1986J	BI	1000	0.65	1.60	6.50	3	10	20 / 5	2500	1	29
CPC1988J	BI	1000	0.90	2.25	9.40	2.50	10	20 / 5	2500	1	37

Dual 1-Form-A Power Relay: Bidirectional

CPC2907B	BI	60	2	-	-	0.15	5	2.5/0.25	4000	1	66

UNI



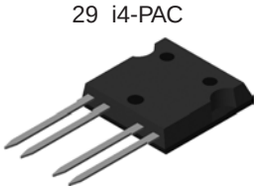
1-Form-A Power Relays: Single-Pole, Unidirectional

CPC1706Y	UNI	60	4	-	-	0.09	5	5 / 2	2500	1	36
CPC1708J	UNI	60	4	11.85	24	0.08	10	20 / 5	2500	1	29
CPC1709J	UNI	60	9	22.8	32	0.05	10	20 / 5	2500	1	37
CPC1718J	UNI	100	6.75	17.5	32	0.075	10	20 / 5	2500	1	37
CPC1726Y	UNI	250	1	-	-	0.75	10	5 / 2	2500	1	36
CPC1727J	UNI	250	3.4	8.6	20	0.09	10	20 / 5	2500	1	37
CPC1777J	UNI	600	1.5	4.6	15	0.5	10	20 / 5	2500	1	29
CPC1779J	UNI	600	1.65	4.12	15	0.4	10	20 / 5	2500	1	37
CPC1786J	UNI	1000	0.65	1.75	6.9	2	10	20 / 5	2500	1	29
CPC1788J	UNI	1000	1	2.45	10.3	1.25	10	20 / 5	2500	1	37

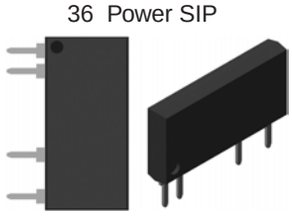
1-Form-B Power Relay: Single-Pole, Unidirectional

CPC1705Y	UNI	60	3.25	-	-	0.09	5	2 / 12	2500	1	36

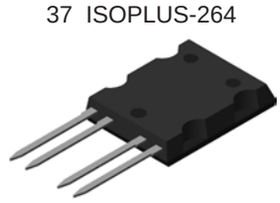
29 i4-PAC



36 Power SIP



37 ISOPLUS-264



66 Power SOIC

Optically Isolated AC Power Switches

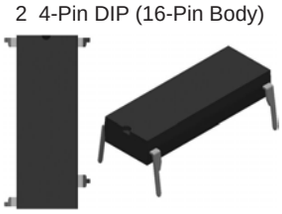
The OptoMOS line of power products uses dual power-SCR outputs to produce an alternative to optocoupler and Triac circuits. These AC Power Switches provide a blocking voltage of up to 800V_P . In addition, tightly controlled zero-cross circuitry ensures switching of AC loads while minimizing the generation of transients. The input and output circuits are optically coupled to provide 3750V_{rms} of isolation and noise immunity between control and load circuits. Long life and environmental integrity make these power switches ideal for controlling a variety of AC circuits in industrial environments where electromagnetic interference would disrupt the operation of electromechanical relays.

Optically Isolated AC Power Switches: $I_{LOAD} \leq 1A$

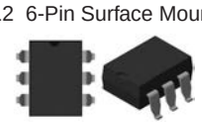
Part No.	Blocking Voltage V_P	Load Current A_{rms}	Input Control Current mA	Operating Frequency Range Hz	Isolation Voltage V_{rms}	Fig. No.
CPC1943	400	0.50	5	20 - 500	3750	15, 16
CPC1945G	400	1	5	20 - 400	3750	2
CPC1945Y	400	1	5	20 - 400	3750	23
CPC1961 Dual	600	0.25 [1)]	5	20 - 500	3750	20, 22
CPC1963	600	0.50	5	20 - 500	3750	15, 16
CPC1965G	600	1	5	20 - 400	3750	2
CPC1965Y	600	1	5	20 - 400	3750	23
CPC1972	800	0.25	5	20 - 500	3750	12, 14
PD1201	400	1	5	20 - 500	3750	2
PD2401	500	1	5	20 - 500	3750	2
PD2601	600	1	5	20 - 500	3750	2
PM1204	400	0.50	5	20 - 500	3750	15, 16
PM1205	500	0.50	5	20 - 500	3750	15, 16
PM1206	600	0.50	5	20 - 500	3750	15, 16
PS1201	400	1	5	20 - 500	3750	23
PS2401	500	1	5	20 - 500	3750	23
PS2601	600	1	5	20 - 500	3750	23

[1)] Maximum continuous load current of a single pole or the sum of the load currents with both poles operating simultaneously

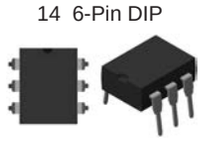
2 4-Pin DIP (16-Pin Body)



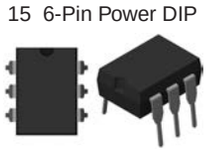
12 6-Pin Surface Mount



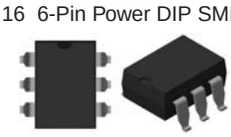
14 6-Pin DIP



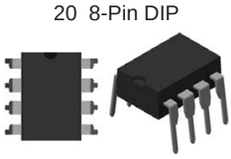
15 6-Pin Power DIP



16 6-Pin Power DIP SMD

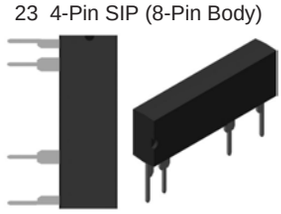


20 8-Pin DIP



22 8-Pin Surface Mount

23 4-Pin SIP (8-Pin Body)

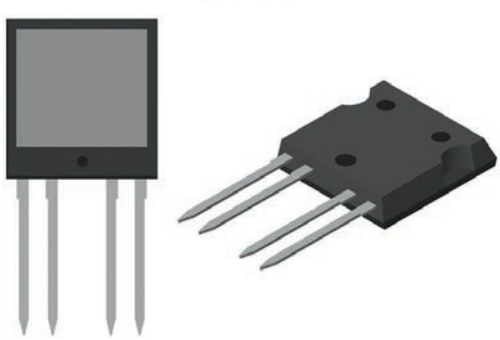


Optically Isolated AC Power Switches: I_{LOAD} >1A

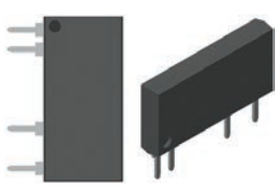
Part Number	Blocking Voltage	Load Current			Input Control Current	Operating Frequency-Range	Isolation Voltage	Fig. No.
		No Heat Sink	with 5°C/W Heat Sink	T_C = 25°C				
➢ New	V_P	A_{rms}	A_{rms}	A_{rms}	mA	Hz	V_{rms}	
CPC1964B	800	1.5	-	-	5	20 - 500	5000	66
CPC1964BX6 ①	600	1.5	-	-	5	20 - 500	5000	66
CPC1966	600	3	-	-	5	20 - 500	3750	36
CPC1966B	800	3	-	-	5	20 - 500	5000	66
➢ **CPC1966BX8** ①	800	3	-	-	5	20 - 500	3750	66
CPC1966YX6 ①	600	3	-	-	5	20 - 500	3750	36
➢ **CPC1966YX8** ①	800	3	-	-	5	20 - 500	3750	36
CPC1976	600	2	-	-	5	20 - 500	3750	36
CPC1976YX6 ①	600	2	-	-	5	20 - 500	3750	36
CPC1998J	800	5	20	50	5	20 - 500	2500	29
CPC40055ST	800	5	20	40	5	20 - 500	2500	64

① **Rapid turn-on (non-zero-cross)**
Rapid turn-on devices turn on when the control input goes true regardless of the load voltage phase, and turn off when the load current crosses zero.

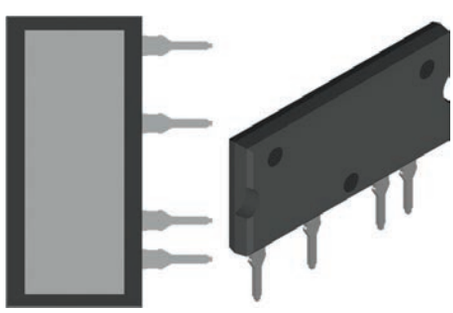
29 i4-PAC



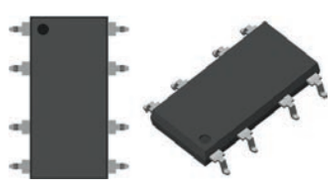
36 Power SIP



64 Super SIP



66 Power SOIC



IGBT & MOSFET Gate Drivers

These ultra-fast, high current MOSFET and IGBT gate drivers are optimized for high efficiency performance in motor drive and power conversion applications. With output current ratings of 1.5A to 30A, they are designed to switch the largest MOSFETs and IGBTs with minimum switching times and at frequencies up to 10MHz. Depending on the output current rating, these gate drivers are offered in DFN (56), SOIC (54), Power SOIC (53), DIP (20), TO-220 (57), and TO-263 (58) packages. “F” versions include one inverting driver and one non-inverting driver, “I” versions are inverters, “N” versions are non-inverters, and “D” versions are non-inverters that include an enable function.

Part No. ➢ New	Output Type	I_{PEAK} T_C = 25°C A_P	Output Resistance Ω	Logic Config.	Enable Function	Under-voltage Lockout V	Fig. No.
IX4426	DUAL	1.5	8.0	I	-	-	54, 56
IX4427	DUAL	1.5	8.0	N	-	-	54, 56
IX4428	DUAL	1.5	8.0	F	-	-	54, 56
IXD_602	DUAL	2	4.0	F, I, N	-	-	20, 53, 54, 56
IX4423	DUAL	3	4.0	I	-	-	54
IX4424	DUAL	3	4.0	N	-	-	54
IX4424G	DUAL	3	4.0	N	-	-	20
IX4425	DUAL	3	4.0	F	-	-	54
IXD_604	DUAL	4	2.5	F, I, N, D	•	-	20, 53, 54, 56
➢ **IX4340**	DUAL	5	1.5	D	•	$V_{CC} \leq 3.8$	53, 54, 92
IXD_609	SINGLE	9	1.0	I, N, D	•	-	20, 53, 54, 56, 57, 58
IXD_614	SINGLE	14	0.8	I, N, D	•	-	20, 53, 57, 58
IXD_630	SINGLE	30	0.4	I, N, D	•	$V_{CC} \leq 12.5$	57, 58
IXD_630M	SINGLE	30	0.4	I, N, D	•	$V_{CC} \leq 9$	57, 58

AEC-Q100 Qualified Low-Side Gate Drivers

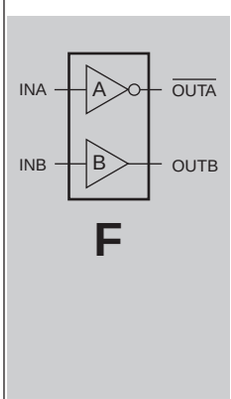
Part No.	Output Type	I_{PEAK} T_C = 25°C A_P	Output Resistance Ω	Logic Config.	Enable Function	Fig. No.
IXD_604SI	DUAL	4	2.5	F, I, N, D	•	53
IXD_604SIA	DUAL	4	2.5	F, I, N, D	•	54
IXD_609SI	SINGLE	9	1.0	I, N, D	•	53
IXD_614SI	SINGLE	14	0.8	I, N, D	•	53

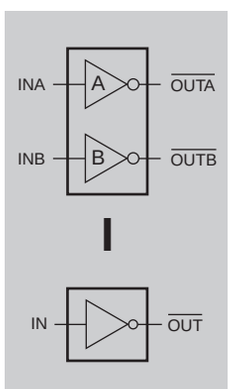
Features:

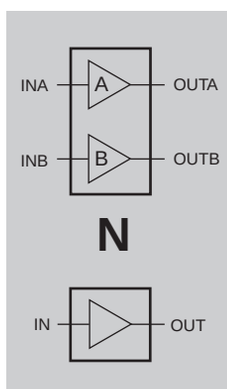
- 1.5A to 30A Peak Source / Sink Drive Current
- Wide Operating Voltage Range
- -40°C to +125°C Extended Operating Temperature Range
- Logic Input Withstands Negative Swing of up to -5V
- Matched Rise and Fall Times
- Low Propagation Delay Time
- Low 10mA Supply Current
- Low Output Impedance

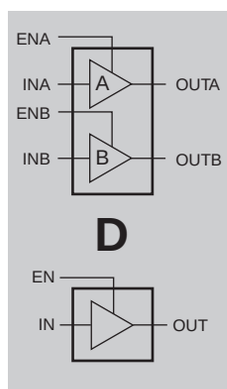
Applications:

- Efficient Power MOSFET and IGBT Switching
- Switch Mode Power Supplies
- Motor Controls
- DC to DC Converters
- Class-D Switching Amplifiers
- Pulse Transformer Driver

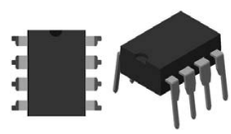




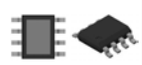




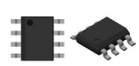
20 8-Pin DIP
Package Code: PI



53 8-Pin Power SOIC
Package Code: SI
with exposed metal back

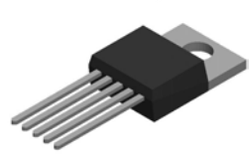


54 8-Pin SOIC
Package Code: SIA

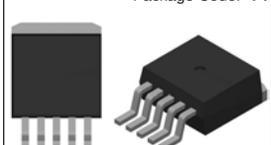


56 8-Pin DFN
Package Code: D2

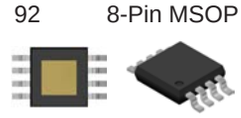
57 5-Pin TO-220
Package Code: CI



58 5-Pin TO-263
Package Code: YI



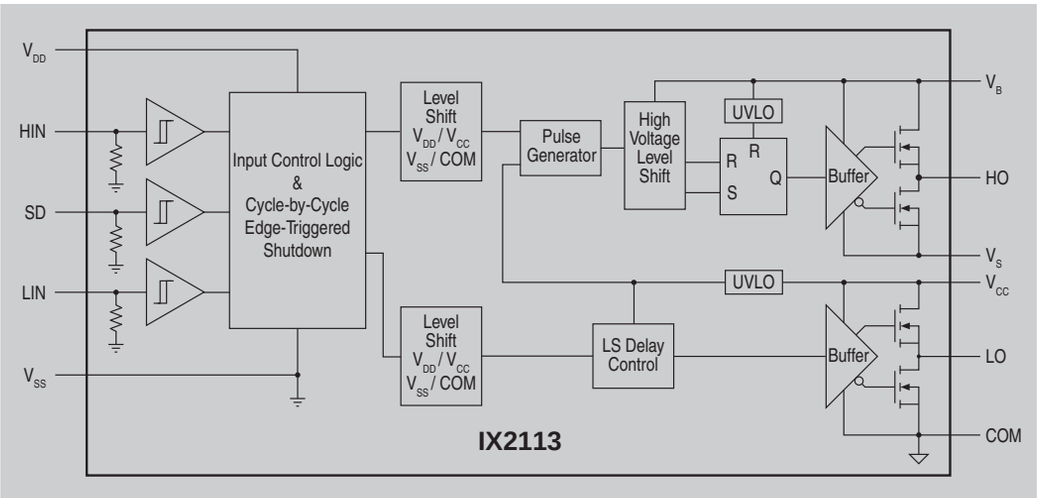
92 8-Pin MSOP



IGBT & MOSFET Gate Drivers

600V High-Side & Low-Side Gate Driver: IX2113

The IX2113 is a high voltage integrated circuit that can drive high speed MOSFETs and IGBTs that operate at up to +600V. The IX2113 is configured with independent high-side and low-side referenced output channels, both of which can source and sink 2A. The floating high-side channel can drive an N-channel power MOSFET or IGBT 600V from the common reference. Available in 16-pin SOIC and 14-pin DIP packages.

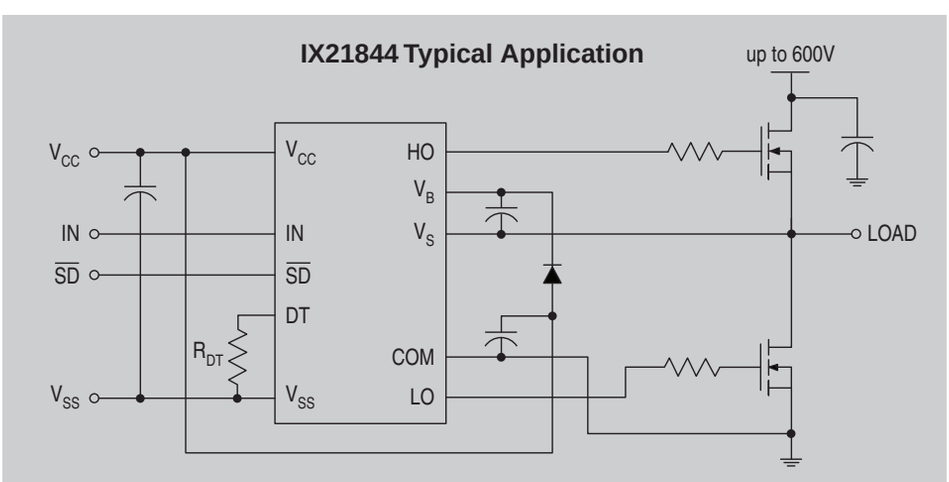


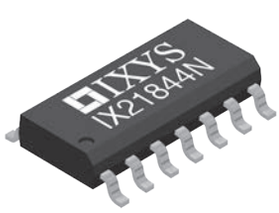
Features:

- Floating Channel for Bootstrap Operation up to 600V with an absolute maximum Rating of 700V
- Outputs Capable of Sourcing and Sinking 2A
- Gate Drive Supply Range from 10V to 20V
- Enhanced Robustness due to SOI Process
- Tolerant to Negative Voltage Transients: dV/dt Immune
- 3.3V Logic Compatible
- Undervoltage Lockout for both High-Side and Low-Side Outputs
- Matched Propagation Delays

High Voltage Half-Bridge Gate Driver: IX21844

The IX21844 is a high voltage IC that can drive high speed MOSFETs and IGBTs that operate at up to +600V. The IX21844 is configured with dependent high-side and low side referenced output channels that can source 1.4A and sink 1.8A. The floating high-side channel can drive an N-channel power MOSFET or IGBT 600V from the common reference. A programmable dead-time can be set between 400ns and 5µs to ensure that both the high-side and low-side power MOSFET or IGBT are not enabled at the same time.





Features:

- Floating Channel for Bootstrap Operation to +600V with an Absolute Maximum Rating of +700V
- Programmable Dead Time
- Outputs Can Source 1.4A and Sink 1.8A
- Gate Drive Supply Range from 10V to 20V
- Tolerant to Negative Voltage Transients: dV/dt Immune
- 3.3V and 5V Logic Compatible
- Undervoltage Lockout for both High-side and Low-Side Outputs
- Matched Propagation Delays

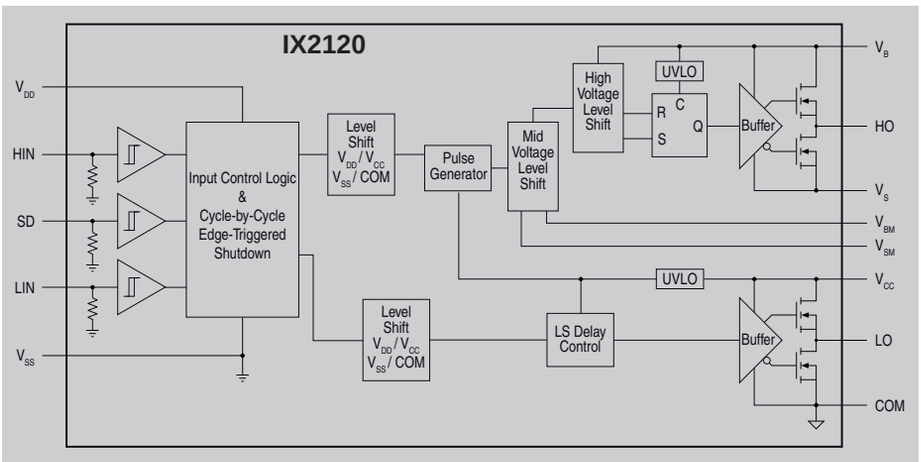
Applications:

- Switch Mode Power Supplies
- Motor Driver Inverters
- DC/DC Converters
- Uninterruptable Power Supplies (UPS)

IGBT & MOSFET Gate Drivers

1200V High and Low Side Gate Driver: IX2120

The IX2120 is a high voltage integrated circuit that can drive high speed MOSFETs and IGBTs that operate at up to +1200V. The IX2120 is configured with independent high-side and low-side referenced output channels, both of which can source and sink 2A. The floating high-side channel can drive an N-channel power MOSFET or IGBT 1200V from the common reference.
Available in 28-pin SOIC package.



Features:

- Floating Channel for Bootstrap Operation to +1200V
- Outputs Capable of Sourcing and Sinking 2A
- Gate Drive Supply Range from 15V to 20V
- Enhanced Robustness due to SOI Process
- Tolerant to Negative Voltage Transients: dV/dt Immune
- 3.3V Logic Compatible
- Undervoltage Lockout for High-Side & Low-Side Outputs

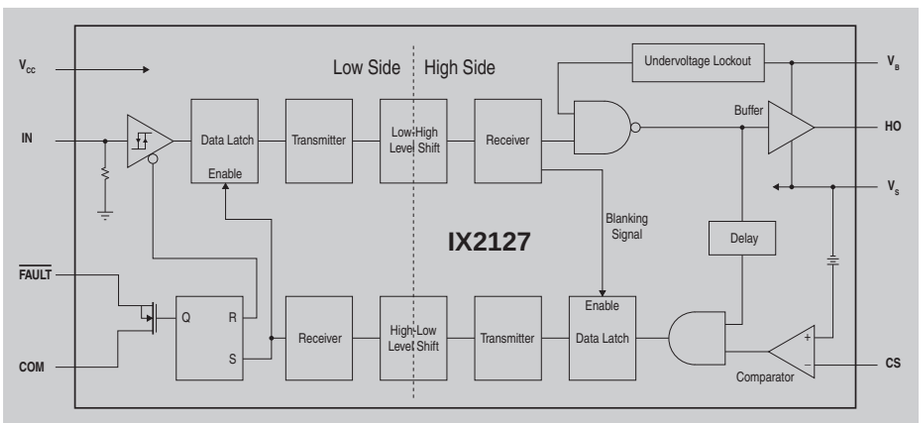
Applications:

- Switch Mode Power Supplies
- Industrial Inverters
- Motor Drivers

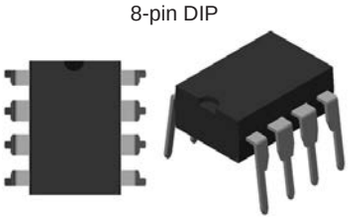
600V High-Side Gate Driver: IX2127

The IX2127 is a high voltage, high-speed power MOSFET and IGBT driver. The device's high voltage level-shift technique enables it to operate at up to 600V. Proprietary common-mode design techniques provide stable operation in high dV/dt noise environments.

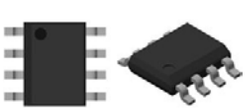
The IX2127 detects an over-current condition in the driven MOSFET or IGBT device, and shuts down drive to that device. An open-drain output, $\overline{\text{FAULT}}$, indicates that an over-current shutdown has occurred. The gate driver output typically can source 250mA and sink 500mA, which is suitable for fluorescent lamp ballast, motor control, SMPS, and other converter drive topologies. Available in 8-pin DIP and 8-pin SOIC packages.



8-pin DIP



8-pin SOIC



Features:

- Floating Channel Designed for Bootstrap Operation up to 600V
- Tolerant to Negative Transient Voltages; dV/dt Immune
- Undervoltage Lockout
- 3.3V, 5V, and 12V Input Logic Compatible
- Open-Drain $\overline{\text{FAULT}}$ Output Pin indicates Over-Current Shutdown
- Output in Phase with the Input

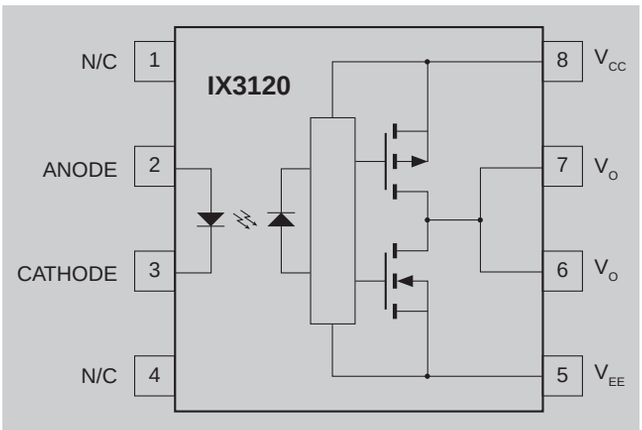
Applications:

- High Speed Gate Driver
- Motor Drive Inverter

IGBT & MOSFET Gate Drivers

2.5A Output Current Optically Coupled Gate Driver: IX3120

The IX3120 Gate Driver includes an input infrared LED that is optically coupled to a power output stage. The power output stage is capable of sourcing or sinking 2.5A of peak current, which is ideal for driving IGBTs and MOSFETs in the mid-power range. The gate driver optocoupler with its low input LED current, high output peak current, and high noise immunity (25kV/µs) is ideally suited for use in motor control and inverter applications. The IX3120 is available in 8-pin DIP and 8-pin surface mount packages.



Features:

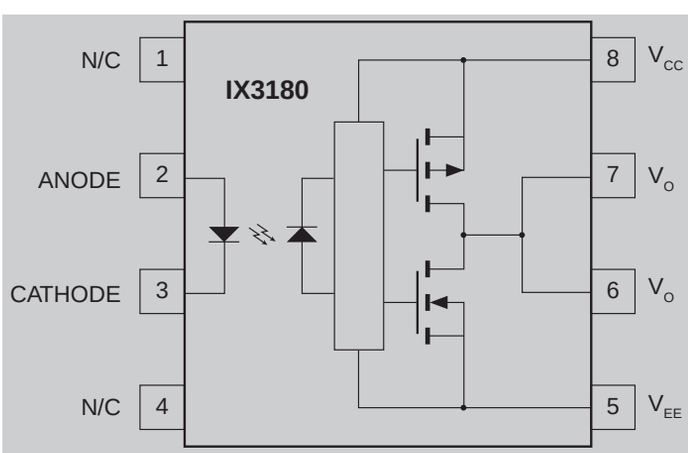
- 2.5A Maximum Peak Output Current
- 25kV/µs Minimum Common Mode Rejection (CMR) at 1500V_{CM}
- Wide Operating Voltage Range: 15V to 30V
- Undervoltage Lockout with Hysteresis
- 3750V_{rms} Input to Output Isolation
- Wide Temperature Range: -40°C to +100°C

Applications:

- Isolated IGBT / MOSFET Gate Drive
- Switch Mode Power Supplies
- Industrial Inverters
- Motor Drivers

2.5A Output Current High Speed Gate Driver Optocoupler: IX3180

The IX3180 is a high speed MOSFET gate drive optocoupler. It consists of an input infrared LED that is optically coupled to an integrated power gate driver that is capable of sourcing and sinking 2.5A of peak current. The IX3180 is ideally suited for high frequency driving of power MOSFETs used in high performance, DC/DC converters, motor control inverter applications, and high performance switching power supplies.
The IX3180 is available in an 8-pin DIP package and an 8-pin surface mount package.



Features:

- 2.5A Maximum Peak Output Current
- 200ns Maximum Propagation Delay Over Temperature Range
- 20ns Typical Pulse Width Distortion
- 10kV/µs Minimum Common Mode Rejection (CMR) at 1500V_{CM}
- Wide Operating Voltage Range: 10V to 20V
- Undervoltage Lockout with Hysteresis
- 3750V_{rms} Input to Output Isolation
- Wide Temperature Range: -40°C to +100°C

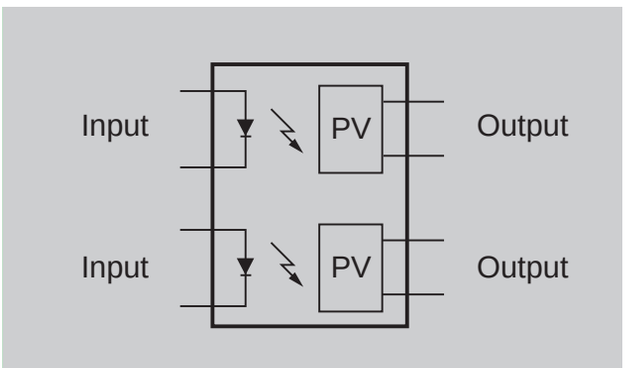
Applications:

- Isolated Power MOSFET Gate Drive
- Switch Mode Power Supplies
- Industrial Inverters
- Motor Drivers

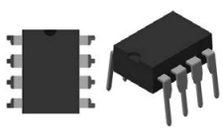
IGBT & MOSFET Gate Drivers

Optically Isolated Photovoltaic Gate Drivers

These Dual Optically Isolated Photodiode Arrays, which can produce an open-circuit voltage of up to 12V, are well suited for use in discrete solid state relay designs. The FDA215 and the FDA217 are available in 8-pin DIP and 8-pin surface-mount packages.



8-Pin DIP



8-Pin Surface Mount

Features:

- Isolated 5.5V to 12V Photovoltaic Output
- Floating Outputs for Parallel or Series Configuration

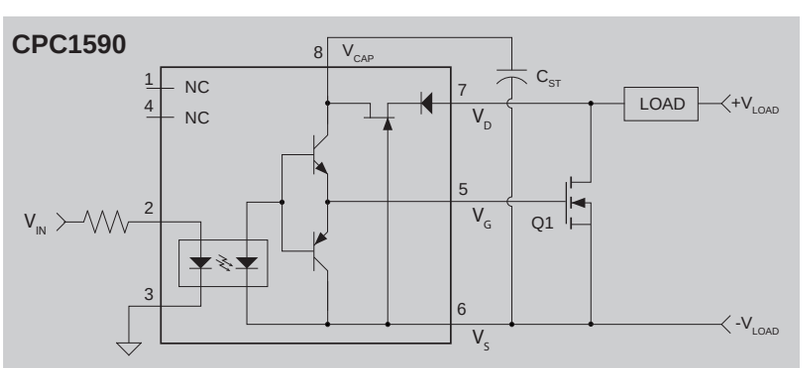
Applications:

- MOSFET Driver
- Isolated Floating Power Source

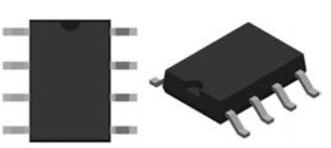
Part No.	Input Control Current mA	Nominal Open-Circuit Voltage V_{OC} V	Nominal Short-Circuit Current I_{SC} µA	Switching Speeds t_{on} / t_{off} ms	Isolation Voltage V_{rms}	Package Type
FDA215	5	5.5	2.5	5 / 5	3750	8-Pin DIP, 8-Pin Surface Mount
FDA217	5	11.75	4.5	2 / 0.5	3750	8-Pin DIP, 8-Pin Surface Mount

Optically Isolated Load-Biased Gate Drivers

The CPC1580 and CPC1590 are high speed, optically isolated Gate Driver ICs. On-chip circuitry charges an external capacitor from the load voltage which eliminates the need for an external IC power supply. These Gate Drivers are ideal for low duty cycle switching applications. Both devices are provided in an 8-pin flatpack package.



8-Pin Flatpack



Features:

- No External IC Power Supply
- Low Drive Power Requirements (TTL/CMOS Compatible)
- Load Voltages up to 200V
- Fast Switching Speed - On: 40µs / Off: 400µs

Applications:

- Instrumentation
- Multiplexers
- I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- Medical Equipment (Patient / Equipment Isolation)
- Security
- Aerospace
- Industrial Controls

Part Number	Input Control Current (mA)	Gate Voltage @I_F = 5mA (V_P)	Blocking Voltage (V_P)	Regulated Capacitor Voltage $V_{CAP(max)}$ (V)	Switching Speeds t_{on} / t_{off} (µs)	Isolation Voltage (V_{rms})
CPC1580	2.5	7.5 - 12	65	V_{DS} - 0.2	40 / 400	3750
CPC1590	2.5	7.5 - 12	200	16	40 / 400	3750

For data sheets and package outlines go to **www.ixysic.com/Products/ProdList.htm**

Linear Optocouplers

OptoMOS Linear Optocouplers feature an infrared LED optically coupled to a pair of photodiodes. The input photodiode is used to generate a feedback signal that provides a servomechanism to the LED drive current thus compensating for the LED's nonlinear characteristics. The output photodiode provides an isolated output signal that is linear with respect to the servo LED current.

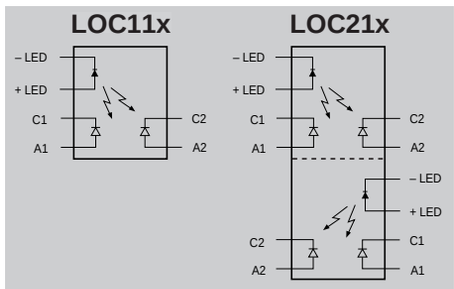
Features:

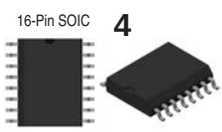
- Couples Analog & Digital Signals
- 3750V_{rms} Input / Output Isolation
- Bandwidth >200kHz in Photoconductive Mode
- Bandwidth 40kHz in Photovoltaic Mode
- High Gain Stability
- Low Input / Output Capacitance
- Low Power Consumption
- 0.01% Servo Linearity
- THD 87dB Typical

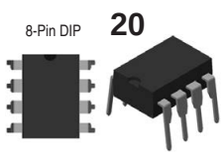
Applications:

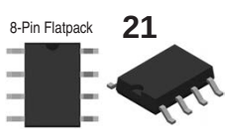
- Power Supply Feedback Voltage / Current
- Medical Sensor Interfacing
- Isolation of Process Control Transducers
- Isolated 4-20mA Converters

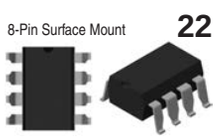
Part Number	Servo Gain $K1 = I_1/I_F$ Min / Max	Forward Gain $K2 = I_2/I_F$ Min / Max	Transfer Gain $K3 = K_2/K_1$ Min / Max	Input Control Current (mA)	Isolation Voltage (V_{rms})	Package Type
LOC110	0.004 / 0.03	0.004 / 0.03	0.668 / 1.179	2 - 10	3750	20, 21, 22
LOC111	0.008 / 0.03	0.006 / 0.03	0.733 / 1.072	2 - 10	3750	20, 21, 22
LOC112	0.004 / 0.03	0.004 / 0.03	0.733 / 1.072	2 - 10	3750	20, 21, 22
LOC117	0.008 / 0.03	0.006 / 0.03	0.887 / 1.072	2 - 10	3750	20, 21, 22
LOC210	0.004 / 0.03	0.004 / 0.03	0.773 / 1.072	2 - 10	3750	4
LOC211	0.008 / 0.03	0.006 / 0.03	0.773 / 1.072	2 - 10	3750	4











Two Fundamental Operating Configurations:

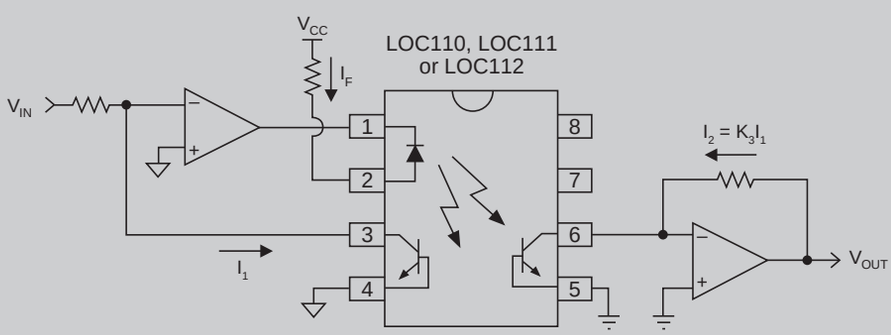
Photoconductive Mode:

- **Wide Bandwidth (>200kHz)**
- **8-bit Linearity**

Photovoltaic Mode:

- **14-bit Linearity**
- **40kHz Bandwidth**

Isolation Amplifier (Photovoltaic Mode)

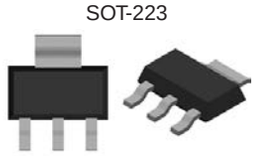


N-Channel Depletion Mode FETs

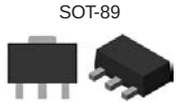
Our N-channel depletion mode Field Effect Transistors (FETs) utilize a proprietary third generation vertical DMOS process. The third generation process realizes world class, high voltage MOSFET performance in an economical silicon gate process. The vertical DMOS process yields a robust device for low-power applications with high input impedance. These highly reliable FET devices have been used extensively in our solid state relays for industrial and telecommunications applications. These normally on MOSFETs are well suited for low cost, pre-regulator applications that are tolerant of high voltage drop and power dissipation between the power source and the output regulator stage.

Part Number	$V_{(BR)DSX}$ (V)	$R_{DS(on)}$ Max (Ω)	$V_{GS(off)}$ Min (V)	$V_{GS(off)}$ Max (V)	I_{DSS} @ V_{GS} = 0V Min (mA)	Package Type
CPC3701	60	1	-1.4	-3.1	600	SOT-89
CPC3703	250	4	-1.6	-3.9	360	SOT-89
CPC3708	350	14	-2	-3.6	130	SOT-89 / SOT-223
CPC3710	250	10	-1.6	-3.9	220	SOT-89
CPC3714	350	14	-1.6	-3.9	240	SOT-89
CPC3720	350	22	-1.6	-3.9	130	SOT-89
CPC3730	350	35	-1.6	-3.9	140	SOT-89
CPC3902	250	2.5	-1.4	-3.1	400	SOT-89 / SOT-223
CPC3909	400	6	-1.4	-3.1	300	SOT-89 / SOT-223
CPC3960	600	44	-1.4	-3.1	100	SOT-223
CPC3980	800	45	-1.4	-3.1	100	SOT-223
CPC3982	800	380	-1.4	-3.1	20	SOT-23

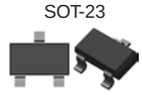
SOT-223



SOT-89

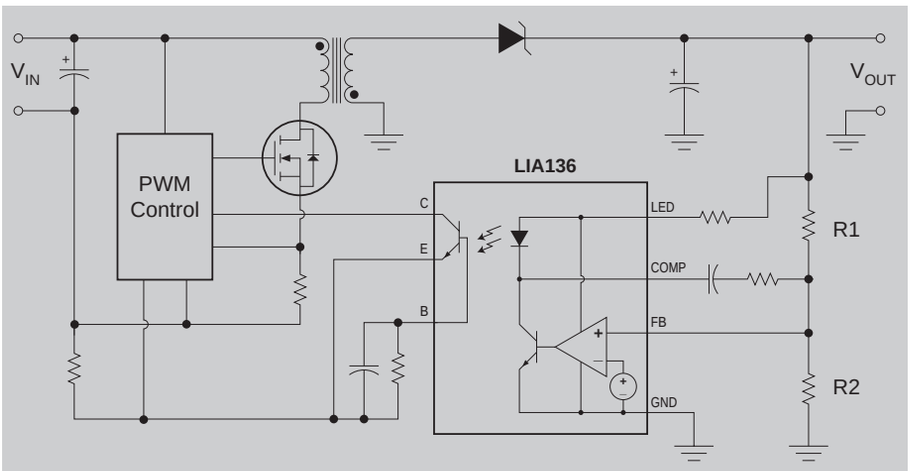


SOT-23

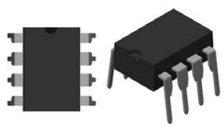


Optically Isolated Error Amplifiers

Optical Feedback for Ultra-Low-Voltage Power Supplies



8-Pin DIP



8-Pin Surface Mount

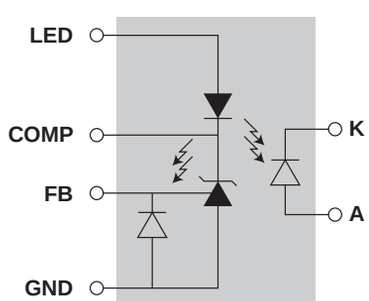
Features:

- Low voltage operation:
  1.6V: LIA135 & LIA136
  2.7V: LIA120 & LIA130
- Optocoupler, precision reference, and error amplifier in a single package
- LIA120: 70dB linearity typical

Applications:

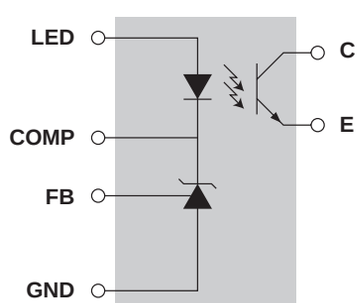
- SMPS feedback loops
- Power supply feedback

Part No. ➢ New	Reference (V)	V_{REF} Tolerance 25°C (%)	V_{REF} Tolerance -40°C to +85°C (%)	V_{REF} Tolerance -40°C to +110°C (%)	Isolation (V_{rms})	Package Type
➢ **LIA120**	1.240	1	2.5	-	3750	8-pin surface mount
➢ **LIA130**	1.240	1	1.5	-	3750	8-pin DIP, 8-pin surface mount
➢ **LIA135**	1.299	0.5	1	-	3750	8-pin DIP, 8-pin surface mount
➢ **LIA136**	1.299	0.5	-	1.5	3750	8-pin DIP, 8-pin surface mount

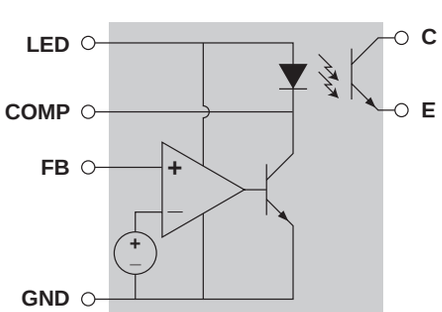


LIA120

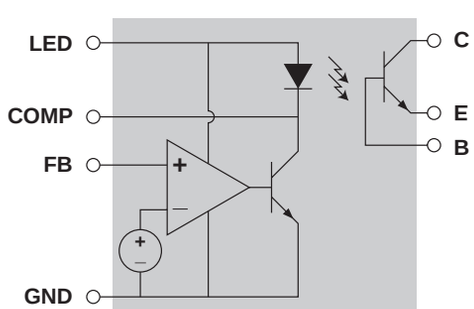
A = Anode
B = Base
C = Collector
COMP = Compensation
E = Emitter
FB = Feedback
GND = Ground
K = Cathode
LED = LED Anode



LIA130



LIA135



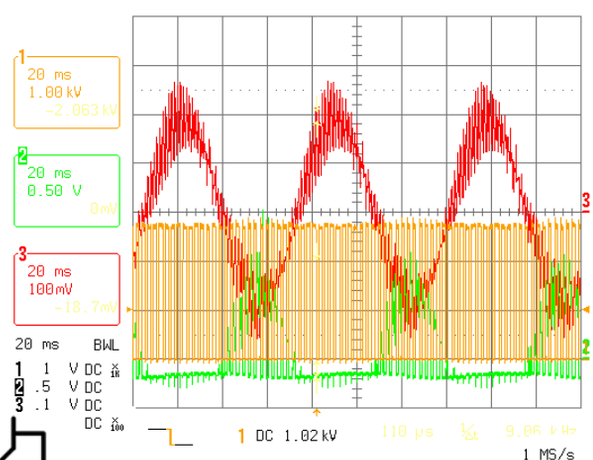
LIA136

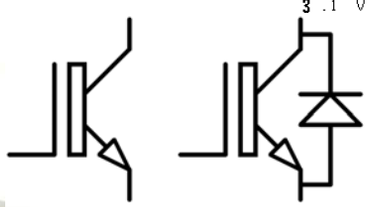
For data sheets and package outlines go to **www.ixysic.com/Products/ProdList.htm**

Product Application Notes and Technical Information

Available from www.ixysuk.com

- Use of a rectifier diode above T_{JMAX} with a short term overload
- Leakage current against temperature and applied voltage
- Setting disc spring type clamps
- Replacement of devices in assembly type XA3370ZX12WRs
- Possible failure modes in press-pack devices
- Recommended clamps for capsule semiconductors
- Guidance for soldering leads to thyristors, GTO thyristors and IGBT's
- Device mounting instruction
- Stocking & handling requirements for press-pack and module devices
- Recommended maximum force for module gate terminals
- Press releases
- Quality documents
- IXYS UK product nomenclatures
- An IGBT in DC Breaker application





Rectifier Diodes

Our comprehensive range of rectifier diodes offers class leading performance and reliability. Devices are available with blocking voltages from 200V up to 7.2kV. Optimised to offer low conduction losses, these devices are ideally suited to line frequency applications up to 400Hz including input rectifiers for variable speed drives, traction converters, trackside substations, welding and DC power supplies. Featuring high temperature alloyed die construction, these devices offer low thermal impedance with high overload capacity and are designed to survive even the most arduous applications.

The latest additions to the IXYS UK Rectifier Diode family are the new 38mm and 50mm dia die Wespack Rectifier Diodes and the new 96mm large area rectifier diodes. These new designs are constructed using low temperature sintering technology and have an improved package design for maximum power to package ratio, as well as better thermal and electromechanical performance. The Wespack parts are available in current ratings up to 4295A and voltage ratings up to 3000V. The 96mm parts are available in current ratings up to 12100A and voltage ratings up to 6000V

Also now available is a new 1263A rated M24 stud based assembly with voltage grades up to 2500V.

Stud Types

Part No.	V_{RRM}	I_{FAV}	I_{FSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJC}		Fig. No.	Package style
		T_C = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@T_{JM}			d.c. 180° sine	120° Rect.		Outlines on pages O-01...O-35
➢ New	V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
W0428RE250	2500	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W39	
W0428RE280	2800	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W39	
W0428RE320	3200	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W39	
W0428RF250	2500	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W24	
W0428RF280	2800	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W24	
W0428RF320	3200	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W24	
W0428SE250	2500	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W39	
W0428SE280	2800	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W39	
W0428SE320	3200	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W39	
W0428SF250	2500	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W24	
W0428SF280	2800	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W24	
W0428SF320	3200	428	5500	151 x 10^3	0.926	0.739	150	0.1300	0.1530	W24	
W0503RC160	1600	503	5500	151 x 10^3	0.990	0.740	180	0.1300	0.1530	W24	
W0503RC200	2000	503	5500	151 x 10^3	0.990	0.740	180	0.1300	0.1530	W24	
W0503RC240	2400	503	5500	151 x 10^3	0.990	0.740	180	0.1300	0.1530	W24	
W0503SC160	1600	503	5500	151 x 10^3	0.990	0.740	180	0.1300	0.1530	W24	
W0503SC200	2000	503	5500	151 x 10^3	0.990	0.740	180	0.1300	0.1530	W24	
W0503SC240	2400	503	5500	151 x 10^3	0.990	0.740	180	0.1300	0.1530	W24	
W0735RA120	1200	735	9000	405 x 10^3	0.790	0.342	190	0.1300	0.1530	W23	
W0735RA150	1500	735	9000	405 x 10^3	0.790	0.342	190	0.1300	0.1530	W23	
W0735SA120	1200	735	9000	405 x 10^3	0.790	0.342	190	0.1300	0.1530	W23	
W0735SA150	1500	735	9000	405 x 10^3	0.790	0.342	190	0.1300	0.1530	W23	
➢ **W1263YC200KER**	2000	675	11000	605 x 10^3	0.870	0.330	175	0.1249	0.1359	W114	
➢ **W1263YC250KER**	2500	675	11000	605 x 10^3	0.870	0.330	175	0.1249	0.1359	W114	
➢ **W1263YC200KES**	2000	675	11000	605 x 10^3	0.870	0.330	175	0.1249	0.1359	W114	
➢ **W1263YC250KES**	2500	675	11000	605 x 10^3	0.870	0.330	175	0.1249	0.1359	W114	

W23 Weight 250 g

W24 Weight 250 g

W114 Weight 650 g

W39 Weight 250 g

Standard base clamp kits *for rectifier diodes & phase control thyristors*

These Single side cooled square base mounting clamps are suitable for 34 mm to 50 mm pole face devices with clamping force in the range from 1130 Kgf to 2140 Kgf. Suitable for devices with blocking voltages from 400 volts up to 6 KV.

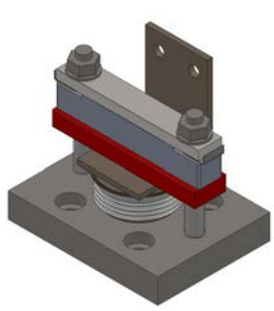
Part No.	Poleface reference	Outline
❶ **XK1500CB034M**	34-38	WC64
XK1130SB076M	34-38	WC65
XK2140SB076M	47-50	WC66

Standard part replacements to the obsolete flat-base power silicon diodes types KBN/R, KCN/R & KDN/R.
For other voltages and thyristor options please consult factory

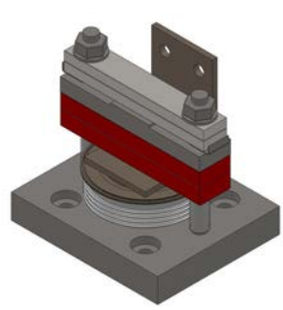
Part No.	Old square base part no.	Base polarity	V_{RRM} V	I_{FAV} T_C = 100°C A	I_{FSM} kA	I^2t A^2s	V_T V	r_T mΩ	R_{th} K/W	Temp °C	Outlines see pages O-01...O-35
❶ **W1185LC450KBR**	SW45KBR515	Anode	4500	435	10.2	520×10^3	1.000	0.575	0.085	160	WC64
❶ **W1185LC450KBN**	SW45KBN515	Cathode	4500	380	10.2	520×10^3	1.000	0.575	0.101	160	WC64
❶ **W1411LC360KBR**	SW36KBR595	Anode	3600	505	12.2	744×10^3	0.900	0.388	0.085	160	WC64
❶ **W1411LC360KBN**	SW36KBN595	Cathode	3600	445	12.2	744×10^3	0.900	0.388	0.101	160	WC64
❶ **W1524LC300KBR**	SW30KBR636	Anode	3000	540	13.4	898×10^3	0.870	0.323	0.085	160	WC64
❶ **W1524LC300KBN**	SW30KBN636	Cathode	3000	470	13.4	898×10^3	0.870	0.323	0.101	160	WC64
❶ **W1748LC220KBR**	SW22KBR805	Anode	2200	660	13.5	911×10^3	0.870	0.280	0.085	175	WC64
❶ **W1748LC220KBN**	SW22KBN805	Cathode	2200	582	13.5	911×10^3	0.870	0.280	0.101	175	WC64
❶ **W2058LC120KBR**	SW12KBR935	Anode	1200	760	16.1	1.30×10^6	0.790	0.192	0.085	175	WC64
❶ **W2058LC120KBN**	SW12KBN935	Cathode	1200	665	16.1	1.30×10^6	0.790	0.192	0.101	175	WC64
W1185LC450KCR	SW38KBR515	Anode	4500	455	10.2	520×10^3	1.000	0.575	0.080	160	WC65
W1185LC450KCN	SW45KBN515	Cathode	4500	395	10.2	520×10^3	1.000	0.575	0.097	160	WC65
W1411LC360KCR	SW36KBR595	Anode	3600	530	13.2	756×10^3	0.900	0.388	0.080	160	WC65
W1411LC360KCN	SW36KBN595	Cathode	3600	460	12.3	759×10^3	0.900	0.388	0.097	160	WC65
W1524LC300KCR	SW30KBR635	Anode	3000	565	13.4	898×10^3	0.870	0.323	0.080	160	WC65
W1524LC300KCN	SW30KBN636	Cathode	3000	490	13.4	898×10^3	0.870	0.323	0.097	160	WC65
W1748LC220KCR	SW22KBR805	Anode	2200	690	13.5	911×10^3	0.870	0.280	0.080	175	WC65
W1748LC220KCN	SW22KBN805	Cathode	2200	600	13.5	911×10^3	0.870	0.280	0.097	175	WC65
W2058LC120KCR	SW12KBR935	Anode	1200	800	16.1	1.30×10^6	0.790	0.192	0.080	175	WC65
W2058LC120KCN	SW12KBN935	Cathode	1200	690	16.1	1.30×10^6	0.790	0.192	0.097	175	WC65
W3082MC450KDR	SB45KDR680	Anode	4500	1115	26.6	3.54×10^6	0.923	0.192	0.037	160	WC66
W3082MC450KDN	SB45KDN680	Cathode	4500	1030	26.6	3.54×10^6	0.923	0.192	0.041	160	WC66
W3708MC350KDR	SB35KDR820	Anode	3500	1240	33.7	5.68×10^6	0.958	0.112	0.037	160	WC66
W3708MC350KDN	SB35KDN820	Cathode	3500	1145	33.7	5.68×10^6	0.958	0.112	0.041	160	WC66
W3842MC280KDR	SB25KDR950	Anode	2800	1325	33.5	5.61×10^6	0.831	0.118	0.037	160	WC66
W3842MC280KDN	SB25KDN950	Cathode	2800	1225	33.5	5.61×10^6	0.831	0.118	0.041	160	WC66
W5636MC150KDR	SB15KDR14C	Anode	1500	2035	43.9	9.64×10^6	0.698	0.059	0.037	175	WC66
W5636MC150KDN	SB15KDN14C	Cathode	1500	1875	43.9	9.64×10^6	0.698	0.059	0.041	175	WC66

❶ = assembly supplied either as kit of parts or sub-assembly with selected diode or thyristor

WC64



WC65



WC66

Rectifier Diodes

Capsule Types

Part No.	V_{RRM}	I_{FAV}	I_{FSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.	Package style
		T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@T_{JM}			180° Sine	120° Rect.		Outlines on pages O-01...O-35
➢ New	V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
W0507YH420	4200	505	7600	289 x 10^3	0.970	0.880	160	0.1000	0.1170	W3	
W0507YH450	4500	505	7600	289 x 10^3	0.970	0.880	160	0.1000	0.1170	W3	
W0642WC160	1600	680	5500	151 x 10^3	1.070	0.676	190	0.0900	0.0980	W1	
W0642WC200	2000	680	5500	151 x 10^3	1.070	0.676	190	0.0900	0.0980	W1	
W0642WC240	2400	680	5500	151 x 10^3	1.070	0.676	190	0.0900	0.0980	W1	
W0790LG650	6500	790	6000	180 x 10^3	0.919	1.249	150	0.0394	0.0445	W120	
W0790LG720	7200	790	6000	180 x 10^3	0.919	1.249	150	0.0394	0.0445	W120	
W0880LC650	6500	880	6000	180 x 10^3	0.919	1.249	150	0.0330	0.0400	W4	
W0880LC720	7200	880	6000	180 x 10^3	0.919	1.249	150	0.0330	0.0400	W4	
W0925LG500	5000	925	7200	259 x 10^3	1.000	0.702	150	0.0394	0.0445	W120	
W0925LG560	5600	925	7200	259 x 10^3	1.000	0.702	150	0.0394	0.0445	W120	
W0925LG600	6000	925	7200	259 x 10^3	1.000	0.702	150	0.0394	0.0445	W120	
W0944WC120	1200	944	9000	405 x 10^3	0.790	0.342	190	0.0900	0.0980	W1	
W0944WC150	1500	944	9000	405 x 10^3	0.790	0.342	190	0.0900	0.0980	W1	
W1032LC500	5000	1032	7200	259 x 10^3	1.000	0.702	150	0.0330	0.0400	W4	
W1032LC560	5600	1032	7200	259 x 10^3	1.000	0.702	150	0.0330	0.0400	W4	
W1032LC600	6000	1032	7200	259 x 10^3	1.000	0.702	150	0.0330	0.0400	W4	
W1060LG420	4200	1060	9200	423 x 10^3	1.000	0.575	160	0.0394	0.0445	W120	
W1060LG450	4500	1060	9200	423 x 10^3	1.000	0.575	160	0.0394	0.0445	W120	
W1074YC200	2000	1074	10800	583 x 10^3	0.920	0.390	160	0.0500	0.0610	W2	
W1074YC260	2600	1074	10800	583 x 10^3	0.920	0.390	160	0.0500	0.0610	W2	
W1074YC320	3200	1074	10800	583 x 10^3	0.920	0.390	160	0.0500	0.0610	W2	
W1074YH200	2000	1074	10800	583 x 10^3	0.920	0.390	160	0.0500	0.0610	W3	
W1074YH260	2600	1074	10800	583 x 10^3	0.920	0.390	160	0.0500	0.0610	W3	
W1074YH320	3200	1074	10800	583 x 10^3	0.920	0.390	160	0.0500	0.0610	W3	
W1185LC420	4200	1185	9200	423 x 10^3	1.000	0.575	160	0.0330	0.0393	W4	
W1185LC450	4500	1185	9200	423 x 10^3	1.000	0.575	160	0.0330	0.0393	W4	
W1260LG320	3200	1260	10600	562 x 10^3	0.900	0.388	160	0.0394	0.0445	W120	
W1260LG360	3600	1260	10600	562 x 10^3	0.900	0.388	160	0.0394	0.0445	W120	
W1263YC180	1800	1263	11700	684 x 10^3	0.870	0.330	175	0.0500	0.0610	W2	
W1263YC220	2200	1263	11700	684 x 10^3	0.870	0.330	175	0.0500	0.0610	W2	
W1263YC250	2500	1263	11700	684 x 10^3	0.870	0.330	175	0.0500	0.0610	W2	
W1263YH160	1600	1263	11700	684 x 10^3	0.870	0.330	175	0.0500	0.0610	W3	
W1263YH200	2000	1263	11700	684 x 10^3	0.870	0.330	175	0.0500	0.0610	W3	
W1263YH250	2500	1263	11700	684 x 10^3	0.870	0.330	175	0.0500	0.0610	W3	
W1360LG240	2400	1360	12700	800 x 10^3	0.870	0.323	160	0.0394	0.0445	W4	
W1360LG300	3000	1360	12700	800 x 10^3	0.870	0.323	160	0.0394	0.0445	W4	
W1411LC320	3200	1411	10600	562 x 10^3	0.900	0.388	160	0.0330	0.0393	W4	
W1411LC360	3600	1411	10600	562 x 10^3	0.900	0.388	160	0.0330	0.0393	W4	
W1520NC500	5000	1478	12000	720 x 10^3	0.904	0.552	150	0.0220	0.0255	W5	
W1520NC600	6000	1478	12000	720 x 10^3	0.904	0.552	150	0.0220	0.0255	W5	
W1524LC240	2400	1524	12700	800 x 10^3	0.870	0.323	160	0.0330	0.0393	W4	
W1524LC300	3000	1524	12700	800 x 10^3	0.870	0.323	160	0.0330	0.0393	W4	
➢ **W1730JK240**	2400	1730	12700	800 x 10^3	0.870	0.323	160	0.0270	0.0314	W113	
➢ **W1730JK280**	2800	1730	12700	800 x 103	0.870	0.323	160	0.0270	0.0314	W113	

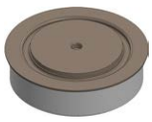
W1 Weight 70 g

W2 Weight 80 g

W3 Weight 140 g

W4 Weight 340 g

W5 Weight 510 g



W113 Weight 200 g

Rectifier Diodes

Capsule Types

Part No.	V_{RRM}	I_{FAV}	I_{FSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.	Package style
		T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@T_{JM}			180° Sine	120° Rect.		Outlines on pages O-01...O-35
➢ New	V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
W1748LC180	1800	1748	15400	1.18×10^6	0.870	0.280	175	0.0330	0.0393	W4	
W1748LC220	2200	1748	15400	1.18×10^6	0.870	0.280	175	0.0330	0.0393	W4	
W1748LC250	2500	1748	15400	1.18×10^6	0.870	0.280	175	0.0330	0.0393	W4	
W1856NC460	4600	1856	16000	1.28×10^6	0.975	0.348	160	0.0220	0.0255	W5	
W1856NC480	4800	1856	16000	1.28×10^6	0.975	0.348	160	0.0220	0.0255	W5	
W1975MC650	6500	1975	18000	1.62×10^6	0.950	0.510	150	0.0140	0.0158	W54	
W1975MC680	6800	1975	18000	1.62×10^6	0.950	0.510	150	0.0140	0.0158	W54	
W1975MC720	7200	1975	18000	1.62×10^6	0.950	0.510	150	0.0140	0.0158	W54	
➢ **W1980JK180**	1800	1980	15400	1.18×10^6	0.870	0.280	175	0.0270	0.0314	W113	
➢ **W1980JK220**	2200	1980	15400	1.18×10^6	0.870	0.280	175	0.0270	0.0314	W113	
W2054NC420	4200	2054	19000	1.81×10^6	0.800	0.300	160	0.0220	0.0274	W5	
W2054NC450	4500	2054	19000	1.81×10^6	0.800	0.300	160	0.0220	0.0274	W5	
W2058LC100	1000	2058	19500	1.90×10^6	0.790	0.192	175	0.0330	0.0393	W4	
W2058LC120	1200	2058	19500	1.90×10^6	0.790	0.192	175	0.0330	0.0393	W4	
W2058LC140	1400	2058	19500	1.90×10^6	0.790	0.192	175	0.0330	0.0393	W4	
W2115MC520	5200	2122	19000	1.81×10^6	1.074	0.405	150	0.0140	0.0158	W54	
W2115MC560	5600	2122	19000	1.81×10^6	1.074	0.405	150	0.0140	0.0158	W54	
W2115MC600	6000	2122	19000	1.81×10^6	1.074	0.405	150	0.0140	0.0158	W54	
W2134NC360	3600	2134	20000	2.00×10^6	0.865	0.260	160	0.0220	0.0255	W5	
W2134NC400	4000	2134	20000	2.00×10^6	0.865	0.260	160	0.0220	0.0255	W5	
➢ **W2340JK120**	1200	2340	19500	1.90×10^6	0.790	0.192	175	0.0270	0.0314	W113	
➢ **W2340JK150**	1500	2340	19500	1.90×10^6	0.790	0.192	175	0.0270	0.0314	W113	
W2624NC240	2400	2624	28000	3.92×10^6	0.780	0.160	160	0.0220	0.0255	W5	
W2624NC280	2800	2624	28000	3.92×10^6	0.780	0.160	160	0.0220	0.0255	W5	
➢ **W2624ND240**	2400	2624	28000	3.92×10^6	0.780	0.160	160	0.0220	0.0255	W37	
➢ **W2624ND280**	2800	2624	28000	3.92×10^6	0.780	0.160	160	0.0220	0.0255	W37	
W2820VC420	4200	2820	26200	3.43×10^6	1.300	0.147	160	0.0160	0.0190	W6	
W2820VC450	4500	2820	26200	3.43×10^6	1.300	0.147	160	0.0160	0.0190	W6	
W2820VF420	4200	2820	26200	3.43×10^6	1.300	0.147	160	0.0160	0.0190	W43	
W2820VF450	4500	2820	26200	3.43×10^6	1.300	0.147	160	0.0160	0.0190	W43	
W2830HE520	5200	2830	32000	5.12×10^6	0.910	0.260	150	0.0123	0.0133	W123	
W2830HE560	5600	2830	32000	5.12×10^6	0.910	0.260	150	0.0123	0.0133	W123	
W2830HE600	6000	2830	32000	5.12×10^6	0.910	0.260	150	0.0123	0.0133	W123	
➢ **W2840QA200**	2000	2840	20000	2.00×10^6	0.940	0.139	180	0.0230	0.0255	W117	
➢ **W2840QA220**	2200	2840	20000	2.00×10^6	0.940	0.139	180	0.0230	0.0255	W117	
W2899MC460	4600	2899	25400	3.23×10^6	0.996	0.222	160	0.0140	0.0158	W54	
W2899MC480	4800	2899	25400	3.23×10^6	0.996	0.222	160	0.0140	0.0158	W54	
W3082MC420	4200	3120	26000	3.38×10^6	0.923	0.192	160	0.0140	0.0160	W54	
W3082MC450	4500	3120	26000	3.38×10^6	0.923	0.192	160	0.0140	0.0160	W54	
W3090HA520	5200	3110	32000	5.12×10^6	0.910	0.260	150	0.0105	0.0116	W121	
W3090HA560	5600	3110	32000	5.12×10^6	0.910	0.260	150	0.0105	0.0116	W121	
W3090HA600	6000	3110	32000	5.12×10^6	0.910	0.260	150	0.0105	0.0116	W121	
W3128VC360	3600	3128	30000	4.50×10^6	0.875	0.158	160	0.0160	0.0190	W6	
W3128VC400	4000	3128	30000	4.50×10^6	0.875	0.158	160	0.0160	0.0190	W6	
W3128VF360	3600	3128	30000	4.50×10^6	0.875	0.158	160	0.0160	0.0190	W43	
W3128VF400	4000	3128	30000	4.50×10^6	0.875	0.158	160	0.0160	0.0190	W43	

W4 Weight 340 g

W5 Weight 510 g

W6 Weight 1000 g

W37 Weight 510 g

W43 Weight 800 g

W54 Weight 530 g

W113 Weight 200 g

W117 Weight 330 g

Rectifier Diodes

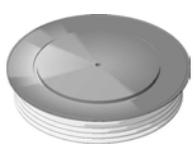
Capsule Types

Part No. ✞ Avalanche rated diode ○ Not for new design ➢ New	V_{RRM} V	I_{FAV} T_K = 55°C A	I_{FSM} 10 ms ½ sine V_R - ≤ 60% V_{RRM} A	I^2t A^2s	V_{T0} @T_{JM} V	r_T mΩ	T_{JM} °C	R_{thJK} 180° Sine K/W	 120° Rect. K/W	Fig. No.	Package style Outlines on pages O-01...O-35
✞ **W3270NC20A**	2000	3239	27600	3.81 x 10^6	0.818	0.108	175	0.0220	0.0255	W5	
✞ **W3270NC22A**	2200	3239	27600	3.81 x 10^6	0.818	0.108	175	0.0220	0.0255	W5	
W3270NC180	2000	3270	28000	3.92 x 10^6	0.826	0.104	175	0.0220	0.0255	W5	
W3270NC220	2200	3270	28000	3.92 x 10^6	0.826	0.104	175	0.0220	0.0255	W5	
W3305QK240	2400	3305	18500	1.71 x 10^6	0.910	0.150	175	0.0170	0.0207	WD2	
W3305QK280	2800	3305	18500	1.71 x 10^6	0.910	0.150	175	0.0170	0.0207	WD2	
➢ **W3409NK240**	2400	3409	28000	3.92 x 10^6	0.780	0.160	160	0.0145	0.01710	WD8	
➢ **W3409NK280**	2800	3409	28000	3.92 x 10^6	0.780	0.160	160	0.0145	0.01710	WD8	
W3455QK200	2000	3455	20000	2.00 x 10^6	0.940	0.139	180	0.0170	0.0207	WD2	
W3455QK220	2200	3455	20000	2.00 x 10^6	0.940	0.139	180	0.0170	0.0207	WD2	
W3477MC360	3600	3470	28200	3.98 x 10^6	0.908	0.146	160	0.0140	0.0158	W54	
W3477MC400	4000	3470	28200	3.98 x 10^6	0.908	0.146	160	0.0140	0.0158	W54	
W3630TJ650	6500	3630	35000	6.125 x 10^6	0.916	0.262	150	0.0080	0.0085	W89	
W3630TJ720	7200	3630	35000	6.125 x 10^6	0.916	0.262	150	0.0080	0.0085	W89	
W3630TE650	6500	3630	35000	6.125 x 10^6	0.916	0.262	150	0.0080	0.0085	W94	
W3630TE720	7200	3630	35000	6.125 x 10^6	0.916	0.262	150	0.0080	0.0085	W94	
W3697VC220	2200	3697	40000	8.00 x 10^6	0.860	0.100	160	0.0160	0.0190	W6	
W3697VC280	2800	3697	40000	8.00 x 10^6	0.860	0.100	160	0.0160	0.0190	W6	
W3697VF220	2200	3697	40000	8.00 x 10^6	0.860	0.100	160	0.0160	0.0190	W43	
W3697VF280	2800	3697	40000	8.00 x 10^6	0.860	0.100	160	0.0160	0.0190	W43	
W3708MC320	3200	3753	30000	4.50 x 10^6	0.958	0.112	160	0.0140	0.0158	W54	
W3708MC350	3500	3753	30000	4.50 x 10^6	0.958	0.112	160	0.0140	0.0158	W54	
○ **W3743ZC400**	4000	3750	35000	6.13 x 10^6	0.976	0.170	160	0.0110	0.0132	W7	
○ **W3743ZC450**	4500	3750	35000	6.13 x 10^6	0.976	0.170	160	0.0110	0.0132	W7	
○ **W3743ZC500**	5000	3750	35000	6.13 x 10^6	0.976	0.170	160	0.0110	0.0132	W7	
○ **W3743ZD400**	4000	3750	35000	6.13 x 10^6	0.976	0.170	160	0.0110	0.0132	W42	
○ **W3743ZD450**	4500	3750	35000	6.13 x 10^6	0.976	0.170	160	0.0110	0.0132	W42	
○ **W3743ZD500**	5000	3750	35000	6.13 x 10^6	0.976	0.170	160	0.0110	0.0132	W42	
W3841VC300	3000	3841	39800	7.92 x 10^6	0.860	0.115	175	0.0160	0.0190	W6	
W3841VC340	3400	3841	39800	7.92 x 10^6	0.860	0.115	175	0.0160	0.0190	W6	
W3841VF300	3000	3841	39800	7.92 x 10^6	0.860	0.115	175	0.0160	0.0190	W43	
W3841VF340	3400	3841	39800	7.92 x 10^6	0.860	0.115	175	0.0160	0.0190	W43	
W3842MC240	2400	3842	35100	6.16 x 10^6	0.831	0.118	160	0.0140	0.0158	W54	
W3842MC280	2800	3842	35100	6.16 x 10^6	0.831	0.118	160	0.0140	0.0158	W54	
➢ **W3842MC28A** ✞	2800	3842	35100	6.16 x 10^6	0.831	0.118	160	0.0140	0.0158	W54	
W3864QK120	1200	3864	22200	2.46 x 10^6	0.861	0.109	180	0.0170	0.0210	WD2	
W3864QK150	1500	3864	22200	2.46 x 10^6	0.861	0.109	180	0.0170	0.0210	WD2	
W3864QK180	1800	3864	22200	2.46 x 10^6	0.861	0.109	180	0.0170	0.0210	WD2	
W4096ZC420	4200	4096	41700	8.70 x 10^6	0.730	0.158	160	0.0110	0.0132	W7	
W4096ZC450	4500	4096	41700	8.70 x 10^6	0.730	0.158	160	0.0110	0.0132	W7	
W4096ZD420	3400	4096	41700	8.70 x 10^6	0.730	0.158	160	0.0110	0.0132	W42	
W4096ZD450	4500	4096	41700	8.70 x 10^6	0.730	0.158	160	0.0110	0.0132	W42	
W4205TJ520	5200	4205	45000	10.1 x 10^6	0.850	0.190	150	0.0080	0.0085	W89	
W4205TJ560	5600	4205	45000	10.1 x 10^6	0.850	0.190	150	0.0080	0.0085	W89	
W4205TJ600	6000	4205	45000	10.1 x 10^6	0.850	0.190	150	0.0080	0.0085	W89	
W4205TE520	5200	4205	45000	10.1 x 10^6	0.850	0.190	150	0.0080	0.0085	W94	
W4205TE560	5600	4205	45000	10.1 x 10^6	0.850	0.190	150	0.0080	0.0085	W94	
W4205TE600	6000	4205	45000	10.1 x 10^6	0.850	0.190	150	0.0080	0.0085	W94	

W5 Weight 510 g

W6 Weight 1 kg

W7 Weight 1.7 kg



W42 Weight 1.2 kg

W43 Weight 800 g

W54 Weight 530 g

W89 Weight 1.3 kg

W94 Weight 1.6 kg

WD8 Weight 250 g

Rectifier Diodes

Capsule Types

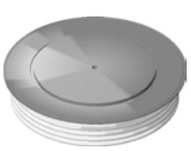
Part No. ○ Not for new design ➢ New	V_{RRM} V	I_{FAV} T_K = 55°C A	I_{FSM} 10 ms ½ sine V_R - ≤ 60% V_{RRM} A	I^2t A²s	V_{T0} @T_{JM} V	r_T mΩ	T_{JM} °C	R_{thJK} 180° Sine K/W	R_{thJK} 120° Rect. K/W	Fig. No.	Package style Outlines on pages O-01...O-35
➢ **W4295NK200**	2000	4295	28000	3.92 x 10^6	0.826	0.104	175	0.0145	0.0171	WD8	
➢ **W4295NK220**	2200	4295	28000	3.92 x 10^6	0.826	0.104	175	0.0145	0.0171	WD8	
W4534NC030	300	4534	40000	8.00 x 10^6	0.765	0.052	190	0.0220	0.0255	W5	
W4534NC060	600	4534	40000	8.00 x 10^6	0.765	0.052	190	0.0220	0.0255	W5	
W4693QK050	500	4693	31500	4.98 x 10^6	0.904	0.057	180	0.0170	0.0207	WD2	
W4693QK080	800	4693	31500	4.98 x 10^6	0.904	0.057	180	0.0170	0.0207	WD2	WD2 Weight 200 g
W4693QR050	500	4693	31500	4.98 x 10^6	0.904	0.057	180	0.0170	0.0207	WD7	
W4693QR080	800	4693	31500	4.98 x 10^6	0.904	0.057	180	0.0170	0.0207	WD7	
W4713HL300	3000	4713	56000	15.70 x 10^6	0.807	0.090	160	0.0120	0.0132	WD5	
W4713HL350	3500	4713	56000	15.70 x 10^6	0.807	0.090	160	0.0120	0.0132	WD5	
W4713HM300	3000	4713	56000	15.70 x 10^6	0.807	0.090	160	0.0120	0.0132	WD6	
W4713HM350	3500	4713	56000	15.70 x 10^6	0.807	0.090	160	0.0120	0.0132	WD6	WD3 Weight 270 g
W4767MC180	1800	4755	38000	7.22 x 10^6	0.827	0.083	175	0.0140	0.0158	W54	
W4767MC220	2200	4755	38000	7.22 x 10^6	0.827	0.083	175	0.0140	0.0158	W54	
W5092ZC320	3200	5092	58000	16.8 x 10^6	0.874	0.079	160	0.0110	0.0132	W7	
W5092ZC350	3500	5092	58000	16.8 x 10^6	0.874	0.079	160	0.0110	0.0132	W7	
W5092ZD320	3200	5092	58000	16.8 x 10^6	0.874	0.079	160	0.0110	0.0132	W42	
W5092ZD350	3500	5092	58000	16.8 x 10^6	0.874	0.079	160	0.0110	0.0132	W42	
W5130MK240	2400	5130	42000	8.82 x 10^6	0.910	0.070	175	0.0130	0.0149	WD3	WD5 Weight 1.2 kg
W5130MK280	2800	5130	42000	8.82 x 10^6	0.910	0.070	175	0.0130	0.0149	WD3	
W5139TJ380	3800	5139	55000	15.10 x 10^6	0.826	0.136	160	0.0080	0.0085	W89	
W5139TJ480	4800	5139	55000	15.10 x 10^6	0.826	0.136	160	0.0080	0.0085	W89	
W5139TE380	3800	5139	55000	15.10 x 10^6	0.826	0.136	160	0.0080	0.0085	W94	
W5139TE480	4800	5139	55000	15.10 x 10^6	0.826	0.136	160	0.0080	0.0085	W94	
W5282ZC240	2400	5282	60000	18.00 x 10^6	0.970	0.064	160	0.0110	0.0132	W7	
W5282ZC300	3000	5282	60000	18.00 x 10^6	0.970	0.064	160	0.0110	0.0132	W7	WD6 Weight 1.5 kg
W5282ZD240	2400	5282	60000	18.00 x 10^6	0.970	0.064	160	0.0110	0.0132	W42	
W5282ZD300	3000	5282	60000	18.00 x 10^6	0.970	0.064	160	0.0110	0.0132	W42	
W5334MK200	2000	5334	46800	10.95 x 10^6	0.892	0.069	180	0.0130	0.0149	WD3	
W5334MK220	2200	5334	46800	10.95 x 10^6	0.892	0.069	180	0.0130	0.0149	WD3	
W5636MC120	1200	5636	46000	10.58 x 10^6	0.698	0.059	175	0.0140	0.0160	W54	
W5636MC150	1500	5636	46000	10.58 x 10^6	0.698	0.059	175	0.0140	0.0160	W54	WD7 Weight 200 g
W5696VC100	1000	5696	53000	14.00 x 10^6	0.650	0.059	190	0.0160	0.0190	W6	
W5696VC140	1400	5696	53000	14.00 x 10^6	0.650	0.059	190	0.0160	0.0190	W6	
W5696VF100	1000	5696	53000	14.00 x 10^6	0.650	0.059	190	0.0160	0.0190	W43	
W5696VF140	1400	5696	53000	14.00 x 10^6	0.650	0.059	190	0.0160	0.0190	W43	
W5715ED520	5200	5715	60600	18.36 x 10^6	0.863	0.135	150	0.0060	0.0063	W112	
W5715ED560	5600	5715	60600	18.36 x 10^6	0.863	0.135	150	0.0060	0.0063	W112	WD8 Weight 250 g
W5715ED600	6000	5715	66000	18.36 x 10^6	0.863	0.135	150	0.0060	0.0063	W112	
○ **W5838ZC180**	1800	5838	64000	20.50 x 10^6	0.800	0.074	175	0.0110	0.0132	W7	
○ **W5838ZC220**	2200	5838	64000	20.50 x 10^6	0.800	0.074	175	0.0110	0.0132	W7	
○ **W5838ZD180**	1800	5838	64000	20.50 x 10^6	0.800	0.074	175	0.0110	0.0132	W42	
○ **W5838ZD220**	2200	5838	64000	20.50 x 10^6	0.800	0.074	175	0.0110	0.0132	W42	
W5984TJ360	3600	5984	62000	19.20 x 10^6	0.758	0.097	160	0.0080	0.0085	W89	W112 Weight 2.1 kg
W5984TJ400	4000	5984	62000	19.20 x 10^6	0.758	0.097	160	0.0080	0.0085	W89	

Rectifier Diodes

Capsule Types

Part No.	V_{RRM}	I_{FAV}	I_{FSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.	Package style
		T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@T_{JM}			180° Sine	120° Rect.		Outlines on pages O-01...O-35
○ Not for new design	V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
W5984TE360	3600	5984	62000	19.20 x 10^6	0.758	0.097	160	0.0080	0.0085	W94	
W5984TE400	4000	5984	62000	19.20 x 10^6	0.758	0.097	160	0.0080	0.0085	W94	
W6262ZC200	2000	6262	67000	22.40 x 10^6	0.730	0.064	175	0.0110	0.0132	W7	
W6262ZC240	2400	6262	67000	22.40 x 10^6	0.730	0.064	175	0.0110	0.0132	W7	
W6262ZD200	2000	6262	67000	22.40 x 10^6	0.730	0.064	175	0.0110	0.0132	W42	
W6262ZD240	2400	6262	67000	22.40 x 10^6	0.730	0.064	175	0.0110	0.0132	W42	
W6360EC520	5200	6360	60600	18.36 x 10^6	0.863	0.135	150	0.0050	0.0054	W111	
W6360EC560	5600	6360	60600	18.36 x 10^6	0.863	0.135	150	0.0050	0.0054	W111	
W6360EC600	6000	6360	66000	18.36 x 10^6	0.863	0.135	150	0.0050	0.0054	W111	
W7032DB020	200	8690	49500	12.30 x 10^6	0.700	0.029	170	0.0100	0.0136	W49	
W7032DB040	400	8690	49500	12.30 x 10^6	0.700	0.029	170	0.0100	0.0136	W49	
W7045MC030	300	7045	54000	14.60 x 10^6	0.793	0.033	190	0.0140	0.0158	W54	
W7045MC060	600	7045	54000	14.60 x 10^6	0.793	0.033	190	0.0140	0.0158	W54	
○ **W8405ZC100**	1000	8405	72000	25.90 x 10^6	0.670	0.038	190	0.0110	0.0132	W7	
○ **W8405ZC140**	1400	8405	72000	25.90 x 10^6	0.670	0.038	190	0.0110	0.0132	W7	
○ **W8405ZD100**	1000	8405	72000	25.90 x 10^6	0.670	0.038	190	0.0110	0.0132	W42	
○ **W8405ZD140**	1400	8405	72000	25.90 x 10^6	0.670	0.038	190	0.0110	0.0132	W42	
W8570TJ180	1800	8570	70200	24.60 x 10^6	0.690	0.050	175	0.0080	0.0085	W89	
W8570TJ220	2200	8570	70200	24.60 x 10^6	0.690	0.050	175	0.0080	0.0085	W89	
W8570TE180	1800	8570	70200	24.60 x 10^6	0.690	0.050	175	0.0080	0.0085	W94	
W8570TE220	2200	8570	70200	24.60 x 10^6	0.690	0.050	175	0.0080	0.0085	W94	
W9830TJ120	1200	9830	72000	25.90 x 10^6	0.670	0.043	190	0.0080	0.0085	W89	
W9830TJ150	1500	9830	72000	25.90 x 10^6	0.670	0.043	190	0.0080	0.0085	W89	
W9830TE120	1200	9830	72000	25.90 x 10^6	0.670	0.043	190	0.0080	0.0085	W94	
W9830TE150	1500	9830	72000	25.90 x 10^6	0.670	0.043	190	0.0080	0.0085	W94	
W106CEC240	2400	10650	92000	42.32 x 10^6	0.734	0.047	160	0.0050	0.0054	W111	
W106CEC280	2800	10650	92000	42.32 x 10^6	0.734	0.047	160	0.0050	0.0054	W111	
W121CEC180	1800	12100	94500	44.65 x 10^6	0.726	0.042	175	0.0050	0.0054	W111	
W121CEC220	2200	12100	94500	44.65 x 10^6	0.726	0.042	175	0.0050	0.0054	W111	

W7 Weight 17 kg



W42 Weight 1.2 kg

W49 Weight 120 g

W54 Weight 530 g

W111 Weight 1.6 kg

W94 Weight 1.6 kg

W89 Weight 1.3 kg

Fast Recovery Diodes

Fast Recovery Diodes are an essential complement to any switching device and are more often than not the limiting factor in the design and performance of modern power converters. To address the needs of our customers, we have developed an unparalleled range of Fast Recovery Diodes. These diodes are available with blocking voltages up to 6.5 kV making them suitable for operation with DC link voltages up to 3.3 kV and average current ratings to 4 kA depending upon type. The devices utilise both alloyed and floating silicon technologies to deliver robust devices that you can rely on in demanding applications. This range has been sub-classified as follows to aid appropriate device selection; Fast Recovery, Soft Recovery, Extra Fast Recovery Diodes and HP Sonic-FRDs.

Standard Fast Recovery Capsule Types

These parts are particularly suitable for use as anti-parallel diodes in Gate Turn-Off thyristors and Fast Thyristor inverters, diodes for choppers.

Part No.	V_{RRM}	I_{FAV}	I_{FSM}	I^2t	Typ. Reverse Recovery T_J = 150°C				V_{T0}	r_T	T_{JM}	R_{thJK} d.c.	Fig. No.	Package style
		T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		t_{rr}	Q_{rr}	@I_{FM}	@ -di_F/dt	@T_{JM} = 150°C			180° sine		Outlines on pages O-01...O-35
➢ New	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W		
M0588LC400	4000	588	3955	78.2 x 10^3	3.50	450	1000	60	2.320	1.770	150	0.0330	W4	
M0588LC450	4500	588	3955	78.2 x 10^3	3.50	450	1000	60	2.320	1.770	150	0.0330	W4	
M0790YC200	2000	790	9000	405 x 10^3	4.00	425	1000	60	1.272	0.584	150	0.0500	W2	
M0790YC250	2500	790	9000	405 x 10^3	4.00	425	1000	60	1.272	0.584	150	0.0500	W2	
M0790YH200	2000	790	9000	405 x 10^3	4.00	425	1000	60	1.272	0.584	150	0.0500	W3	
M0790YH250	2500	790	9000	405 x 10^3	4.00	425	1000	60	1.272	0.584	150	0.0500	W3	
M0914LC200	2000	914	8500	361 x 10^3	3.20	300	1000	60	1.768	0.653	150	0.0320	W4	
M0914LC250	2500	914	8500	361 x 10^3	3.20	300	1000	60	1.768	0.653	150	0.0320	W4	
M1010NC400	4000	1010	9600	461 x 10^3	3.20	1450	1000	200	1.700	1.030	150	0.0220	W5	
M1010NC450	4500	1010	9600	461 x 10^3	3.20	1450	1000	200	1.700	1.030	150	0.0220	W5	
M1010ND400	4000	1010	9600	461 x 10^3	3.20	1450	1000	200	1.700	1.030	150	0.0220	W37	
M1010ND450	4500	1010	9600	461 x 10^3	3.20	1450	1000	200	1.700	1.030	150	0.0220	W37	
M1163NC400	4000	1163	10800	583 x 10^3	6.40	1200	1000	60	1.500	0.770	150	0.0220	W5	
M1163NC450	4500	1163	10800	583 x 10^3	6.40	1200	1000	60	1.500	0.770	150	0.0220	W5	
M1163ND400	4000	1163	10800	583 x 10^3	6.40	1200	1000	60	1.500	0.770	150	0.0220	W37	
M1163ND450	4500	1163	10800	583 x 10^3	6.40	1200	1000	60	1.500	0.770	150	0.0220	W37	
M1502NC200	2000	1502	17000	1.45 x 10^6	3.50	350	1000	60	1.240	0.440	150	0.0220	W5	
M1502NC250	2500	1502	17000	1.45 x 10^6	3.50	350	1000	60	1.240	0.440	150	0.0220	W5	
M1502ND200	2000	1502	17000	1.45 x 10^6	3.50	350	1000	60	1.240	0.440	150	0.0220	W37	
M1502ND250	2500	1502	17000	1.45 x 10^6	3.50	350	1000	60	1.240	0.440	150	0.0220	W37	
M1583VC400	4000	1583	24800	3.08 x 10^6	5.00	2000	1000	200	1.693	0.525	150	0.0160	W6	
M1583VC450	4500	1583	24800	3.08 x 10^6	5.00	2000	1000	200	1.693	0.525	150	0.0160	W6	
M1583VF400	4000	1583	24800	3.08 x 10^6	5.00	2000	1000	200	1.693	0.525	150	0.0160	W43	
M1583VF450	4500	1583	24800	3.08 x 10^6	5.00	2000	1000	200	1.693	0.525	150	0.0160	W43	
M1609NC200	2000	1609	17500	1.53 x 10^6	3.20	800	1000	200	1.310	0.345	150	0.0220	W5	
M1609NC260	2600	1609	17500	1.53 x 10^6	3.20	800	1000	200	1.310	0.345	150	0.0220	W5	
M1609ND200	2000	1609	17500	1.53 x 10^6	3.20	800	1000	200	1.310	0.345	150	0.0220	W37	
M1609ND260	2600	1609	17500	1.53 x 10^6	3.20	800	1000	200	1.310	0.345	150	0.0220	W37	
M2273VC300	3000	2273	28000	3.92 x 10^6	8.50	2500	1000	60	1.239	0.244	150	0.0160	W6	
M2273VC360	3600	2273	28000	3.92 x 10^6	8.50	2500	1000	60	1.239	0.244	150	0.0160	W6	
M2273VF300	3000	2273	28000	3.92 x 10^6	8.50	2500	1000	60	1.239	0.244	150	0.0160	W43	
M2273VF360	3600	2273	28000	3.92 x 10^6	8.50	2500	1000	60	1.239	0.244	150	0.0160	W43	
M2408NC020	200	2408	24000	2.88 x 10^6	1.90	250	1000	200	1.065	0.122	150	0.0220	W5	
M2408NC060	600	2408	24000	2.88 x 10^6	1.90	250	1000	200	1.065	0.122	150	0.0220	W5	
M2408ND020	200	2408	24000	2.88 x 10^6	1.90	250	1000	200	1.065	0.122	150	0.0220	W37	
M2408ND060	600	2408	24000	2.88 x 10^6	1.90	250	1000	200	1.065	0.122	150	0.0220	W37	
➢ **M2505MC200**	2000	2505	27000	3.65 x 10^6	7.60	1950	2000	60	0.991	0.162	125	0.0140	W54	
➢ **M2505MC220**	2200	2505	27000	3.65 x 10^6	7.60	1950	2000	60	0.991	0.162	125	0.0140	W54	
M2639ZC420	4200	2639	27520	3.79 x 10^6	8.50	2300	1000	60	1.380	0.290	150	0.0110	W7	
M2639ZC450	4500	2639	27520	3.79 x 10^6	8.50	2300	1000	60	1.380	0.290	150	0.0110	W7	
M2639ZD420	4200	2639	27520	3.79 x 10^6	8.50	2300	1000	60	1.380	0.290	150	0.0110	W42	
M2639ZD450	4500	2639	27520	3.79 x 10^6	8.50	2300	1000	60	1.380	0.290	150	0.0110	W42	
M2698ZC250	2500	2698	27800	3.86 x 10^6	6.20	1200	1000	60	1.000	0.330	150	0.0110	W7	
M2698ZC350	3500	2698	27800	3.86 x 10^6	6.20	1200	1000	60	1.000	0.330	150	0.0110	W7	
M2698ZD250	2500	2698	27800	3.86 x 10^6	6.20	1200	1000	60	1.000	0.330	150	0.0110	W42	
M2698ZD350	3500	2698	27800	3.86 x 10^6	6.20	1200	1000	60	1.000	0.330	150	0.0110	W42	
M2837VC180	1800	2837	31800	5.10 x 10^6	7.00	2100	1000	60	0.900	0.170	150	0.0160	W6	
M2837VC250	2500	2837	31800	5.10 x 10^6	7.00	2100	1000	60	0.900	0.170	150	0.0160	W6	
M2837VF180	1800	2837	31800	5.10 x 10^6	7.00	2100	1000	60	0.900	0.170	150	0.0160	W43	
M2837VF250	2500	2837	31800	5.10 x 10^6	7.00	2100	1000	60	0.900	0.170	150	0.0160	W43	
M3770ZC250	2400	3770	44000	9.68 x 10^6	7.00	2000	1000	60	1.190	0.118	150	0.0110	W7	
M3770ZC300	3000	3770	44000	9.68 x 10^6	7.00	2000	1000	60	1.190	0.118	150	0.0110	W7	
M3770ZD250	2400	3770	44000	9.68 x 10^6	7.00	2000	1000	60	1.190	0.118	150	0.0110	W42	
M3770ZD300	3000	3770	44000	9.68 x 10^6	7.00	2000	1000	60	1.190	0.118	150	0.0110	W42	

W2 Weight 80 g

W3 Weight 140 g

W4 Weight 340 g

W5 Weight 510 g

W6 Weight 1 kg

W37 Weight 510 g

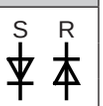
W43 Weight 800 g

Soft Recovery Diodes

Our soft recovery diodes are available with a range of reverse recovery characteristics tailored to meet the requirements of both freewheeling and snubber applications.These devices are available with blocking voltages up to 6kV and average currents up to 2413A. 24mm to 75mm diameter silicon slices. These parts are particularly suitable where soft recovery is required, such as RCD snubbers, voltage clamping and snubberless applications.

Stud Types

Part No.	V_{RRM}	I_{FAV}	I_{FSM}	I^2t	Typ. Reverse Recovery				V_{T0}	r_T	T_{JM}	R_{thJC} d.c.	Fig. No.	Package style
		T_C = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		t_{rr} @ T_{JM}	Q_{rr} @ T_{JM}	@ I_{FM}	@ -di_F/dt	@T_{JM}	@T_{JM}		180° sine		Outlines on pages O-01...O-35
	V	A	A	A^2s	µs	µC	A	A/µs	V	mW	°C	K/W		
M0130RL200	2000	130	2240	25.0 x 103	2.60	430	1000	150	1.290	1.540	125	0.3000	W20	
M0130RL250	2500	130	2240	25.0 x 103	2.60	430	1000	150	1.290	1.540	125	0.3000	W20	
M0130SL200	2000	130	2240	25.0 x 103	2.60	430	1000	150	1.290	1.540	125	0.3000	W20	
M0130SL250	2500	130	2240	25.0 x 103	2.60	430	1000	150	1.290	1.540	125	0.3000	W20	
M0130RM200	2000	130	2240	25.0 x 103	2.60	430	1000	150	1.290	1.540	125	0.3000	W21	
M0130RM250	2500	130	2240	25.0 x 103	2.60	430	1000	150	1.290	1.540	125	0.3000	W21	
M0130SM200	2000	130	2240	25.0 x 103	2.60	430	1000	150	1.290	1.540	125	0.3000	W21	
M0130SM250	2500	130	2240	25.0 x 103	2.60	430	1000	150	1.290	1.540	125	0.3000	W21	
M0139RL120	1200	139	2450	30.0 x 103	1.00	125	1000	100	1.240	1.280	125	0.3000	W20	
M0139RL180	1800	139	2450	30.0 x 103	1.00	125	1000	100	1.240	1.280	125	0.3000	W20	
M0139SL120	1200	139	2450	30.0 x 103	1.00	125	1000	100	1.240	1.280	125	0.3000	W20	
M0139SL180	1800	139	2450	30.0 x 103	1.00	125	1000	100	1.240	1.280	125	0.3000	W20	
M0139RM120	1200	139	2450	30.0 x 103	1.00	125	1000	100	1.240	1.280	125	0.3000	W21	
M0139RM180	1800	139	2450	30.0 x 103	1.00	125	1000	100	1.240	1.280	125	0.3000	W21	
M0139SM120	1200	139	2450	30.0 x 103	1.00	125	1000	100	1.240	1.280	125	0.3000	W21	
M0139SM180	1800	139	2450	30.0 x 103	1.00	125	1000	100	1.240	1.280	125	0.3000	W21	
M0268RC200	2000	268	4250	90.3 x 103	2.80	300	1000	150	1.210	1.200	125	0.1300	W24	
M0268RC250	2500	268	4250	90.3 x 103	2.80	300	1000	150	1.210	1.200	125	0.1300	W24	
M0268SC200	2000	268	4250	90.3 x 103	2.80	300	1000	150	1.210	1.200	125	0.1300	W24	
M0268SC250	2500	268	4250	90.3 x 103	2.80	300	1000	150	1.210	1.200	125	0.1300	W24	
M0268RJ200	2000	268	4250	90.3 x 103	2.80	300	1000	150	1.210	1.200	125	0.1300	W22	
M0268RJ250	2500	268	4250	90.3 x 103	2.80	300	1000	150	1.210	1.200	125	0.1300	W22	
M0268SJ200	2000	268	4250	90.3 x 103	2.80	300	1000	150	1.210	1.200	125	0.1300	W22	
M0268SJ250	2500	268	4250	90.3 x 103	2.80	300	1000	150	1.210	1.200	125	0.1300	W22	
M0280RC200	2000	280	4500	100 x 103	2.80	610	1000	150	1.280	0.920	125	0.1300	W24	
M0280RC250	2500	280	4500	100 x 103	2.80	610	1000	150	1.280	0.920	125	0.1300	W24	
M0280SC200	2000	280	4500	100 x 103	2.80	610	1000	150	1.280	0.920	125	0.1300	W24	
M0280SC250	2500	280	4500	100 x 103	2.80	610	1000	150	1.280	0.920	125	0.1300	W24	
M0280RJ200	2000	280	4500	100 x 103	2.80	610	1000	150	1.280	0.920	125	0.1300	W22	
M0280RJ250	2500	280	4500	100 x 103	2.80	610	1000	150	1.280	0.920	125	0.1300	W22	
M0280SJ200	2000	280	4500	100 x 103	2.80	610	1000	150	1.280	0.920	125	0.1300	W22	
M0280SJ250	2500	280	4500	100 x 103	2.80	610	1000	150	1.280	0.920	125	0.1300	W22	
M0334RC120	1200	334	4500	101 x 103	3.50	160	550	40	1.000	0.740	125	0.1300	W24	
M0334RC200	2000	334	4500	101 x 103	3.50	160	550	40	1.000	0.740	125	0.1300	W24	
M0334SC120	1200	334	4500	101 x 103	3.50	160	550	40	1.000	0.740	125	0.1300	W24	
M0334SC200	2000	334	4500	101 x 103	3.50	160	550	40	1.000	0.740	125	0.1300	W24	
M0334RJ120	1200	334	4500	101 x 103	3.50	160	550	40	1.000	0.740	125	0.1300	W22	
M0334RJ200	2000	334	4500	101 x 103	3.50	160	550	40	1.000	0.740	125	0.1300	W22	
M0334SJ120	1200	334	4500	101 x 103	3.50	160	550	40	1.000	0.740	125	0.1300	W22	
M0334SJ200	2000	334	4500	101 x 103	3.50	160	550	40	1.000	0.740	125	0.1300	W22	
M0336RA120	1200	336	4500	101 x 103	3.00	140	550	40	1.020	0.700	125	0.1300	W23	
M0336RA140	1400	336	4500	101 x 103	3.00	140	550	40	1.020	0.700	125	0.1300	W23	
M0336SA120	1200	336	4500	101 x 103	3.00	140	550	40	1.020	0.700	125	0.1300	W23	
M0336SA140	1400	336	4500	101 x 103	3.00	140	550	40	1.020	0.700	125	0.1300	W23	



W20 Weight 85 g

W21 Weight 85 g

W22 Weight 200 g

W23 Weight 250 g

W24 Weight 250 g

Soft Recovery Diodes

Capsule Types

Part No.	V_{RRM}	I_{FAV} T_K = 55°C	I_{FSM} 10 ms ½ sine V_R - ≤ 60% V_{RRM}	I^2t	Typ. Reverse Recovery T_{JM} t_{rr}	Q_{rr}	@I_{FM}	@ -di_F/dt	V_{T0} @T_{JM}	r_T @T_{JM}	T_{JM}	R_{thJK} d.c. 180° sine	Fig. No.	Package style Outlines on pages O-01...O-35
	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W		
M0225YH360	3600	225	2000	20 x 10^3	3.00	220	550	40	1.900	4.160	150	0.1000	W3	
M0225YH450	4500	225	2000	20 x 10^3	3.00	220	550	40	1.900	4.160	150	0.1000	W3	
M0310YH300	3000	310	4590	105 x 10^3	2.80	275	1000	100	1.490	2.060	150	0.1000	W3	
M0310YH350	3500	310	4590	105 x 10^3	2.80	275	1000	100	1.490	2.060	150	0.1000	W3	
M0347WC200	2000	347	4250	90.3 x 10^3	2.80	210	550	40	1.210	1.200	125	0.0900	W1	
M0347WC250	2500	347	4250	90.3 x 10^3	2.80	210	550	40	1.210	1.200	125	0.0900	W1	W1 Weight 70 g
M0358WC120	1200	358	2450	30 x 10^3	1.40	125	1000	100	1.460	0.800	125	0.0900	W1	
M0358WC180	1800	358	2450	30 x 10^3	1.40	125	1000	100	1.460	0.800	125	0.0900	W1	
M0367WC220	2200	367	4500	101 x 10^3	3.30	300	550	40	1.280	0.920	125	0.0900	W1	
M0367WC280	2800	367	4500	101 x 10^3	3.30	300	550	40	1.280	0.920	125	0.0900	W1	
M0371YH350	3500	371	4900	120 x 10^3	3.20	1260	1000	200	1.050	1.650	150	0.1000	W3	
M0371YH450	4500	371	4900	120 x 10^3	3.20	1260	1000	200	1.050	1.650	150	0.1000	W3	
M0433WC120	1200	433	4500	101 x 10^3	3.50	270	550	40	1.000	0.740	125	0.0900	W1	
M0433WC160	1600	433	4500	101 x 10^3	3.50	270	550	40	1.000	0.740	125	0.0900	W1	W2 Weight 80 g
M0433WC200	2000	433	4500	101 x 10^3	3.50	270	550	40	1.000	0.740	125	0.0900	W1	
M0437WC080	800	437	4500	101 x 10^3	3.00	75	550	40	1.020	0.700	125	0.0900	W1	
M0437WC140	1400	437	4500	101 x 10^3	3.00	75	550	40	1.020	0.700	125	0.0900	W1	
M0659LC400	4000	659	7620	290 x 10^3	4.20	800	1000	60	1.710	0.925	125	0.0330	W4	
M0659LC450	4500	659	7620	290 x 10^3	4.20	800	1000	60	1.710	0.925	125	0.0330	W4	
M0710LC560	5600	710	8400	353 x 10^3	4.00	2100	1000	200	1.450	0.875	125	0.0330	W4	
M0710LC600	6000	710	8400	353 x 10^3	4.00	2100	1000	200	1.450	0.875	125	0.0330	W4	
M0736LC400	4000	736	9000	405 x 10^3	5.20	1250	1000	60	1.606	0.700	125	0.0330	W4	
M0736LC450	4500	736	9000	405 x 10^3	5.20	1250	1000	60	1.606	0.700	125	0.0330	W4	W3 Weight 140 g
M0759YC120	1200	759	9500	450 x 10^3	2.00	80	550	50	1.130	0.380	125	0.0500	W2	
M0759YC160	1600	759	9500	450 x 10^3	2.00	80	550	50	1.130	0.380	125	0.0500	W2	
M0759YH120	1200	759	9500	450 x 10^3	2.00	80	550	50	1.130	0.380	125	0.0500	W3	
M0759YH160	1600	759	9500	450 x 10^3	2.00	80	550	50	1.130	0.380	125	0.0500	W3	
M0859LC140	1400	859	10000	500 x 10^3	3.00	280	800	50	1.170	0.320	125	0.0440	W4	
M0859LC160	1600	859	10000	500 x 10^3	3.00	280	800	50	1.170	0.320	125	0.0440	W4	
M0863LC260	2600	863	10000	500 x 10^3	4.80	950	1000	60	1.308	0.538	125	0.0330	W4	
M0863LC300	3000	863	10000	500 x 10^3	4.80	950	1000	60	1.308	0.538	125	0.0330	W4	
M0863LC360	3600	863	10000	500 x 10^3	4.80	950	1000	60	1.308	0.538	125	0.0330	W4	W4 Weight 340 g
M0872LC140	1400	872	10000	500 x 10^3	4.00	700	1000	60	1.090	0.340	125	0.0440	W4	
M0872LC180	1800	872	10000	500 x 10^3	4.00	700	1000	60	1.090	0.340	125	0.0440	W4	
M0872LC210	2100	872	10000	500 x 10^3	4.00	700	1000	60	1.090	0.340	125	0.0440	W4	
M0955LC200	2000	955	11700	684 x 10^3	3.40	500	1000	60	1.440	0.330	125	0.0330	W4	
M0955LC250	2500	955	11700	684 x 10^3	3.40	500	1000	60	1.440	0.330	125	0.0330	W4	
M0955JK200	2000	1105	11700	684 x 10^3	3.40	500	1000	60	1.440	0.330	125	0.0270	W113	
M0955JK250	2500	1105	11700	684 x 10^3	3.40	500	1000	60	1.440	0.330	125	0.0270	W113	W113 Weight 200 g
M1022LC120	1200	1022	14000	980 x 10^3	3.00	375	1000	60	1.240	0.330	125	0.0330	W4	
M1022LC160	1600	1022	14000	980 x 10^3	3.00	375	1000	60	1.240	0.330	125	0.0330	W4	
M1022LC200	2000	1022	14000	980 x 10^3	3.00	375	1000	60	1.240	0.330	125	0.0330	W4	

Capsule Types

Part No.	V_{RRM}	I_{FAV} T_K = 55°C	I_{FSM} 10 ms ½ sine V_R - ≤ 60% V_{RRM}	I^2t	Typ. Reverse Recovery T_{JM} t_{rr}	Q_{rr}	@I_{FM}	@ -di_F/dt	V_{T0} @T_{JM}	r_T @T_{JM}	T_{JM}	R_{thJK} d.c. 180° sine	Fig. No.	Package style Outlines on pages O-01...O-35
	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W		
M1080LC100	1000	1080	13500	910 x 10^3	1.90	85	1000	60	1.125	0.314	125	0.0330	W4	
M1080LC120	1200	1080	13500	910 x 10^3	1.90	85	1000	60	1.125	0.314	125	0.0330	W4	
M1102NC500	5000	1102	13000	845 x 10^3	5.50	3300	1000	200	1.360	0.557	125	0.0220	W5	
M1102NC600	6000	1102	13000	845 x 10^3	5.50	3300	1000	200	1.360	0.557	125	0.0220	W5	
M1102ND500	5000	1102	13000	845 x 10^3	5.50	3300	1000	200	1.360	0.557	125	0.0220	W37	
M1102ND600	6000	1102	13000	845 x 10^3	5.50	3300	1000	200	1.360	0.557	125	0.0220	W37	
M1104NC400	4000	1104	13000	845 x 10^3	6.00	2100	1000	60	1.370	0.553	125	0.0220	W5	
M1104NC450	4500	1104	13000	845 x 10^3	6.00	2100	1000	60	1.370	0.553	125	0.0220	W5	
M1104ND400	4000	1104	13000	845 x 10^3	6.00	2100	1000	60	1.370	0.553	125	0.0220	W37	
M1104ND450	4500	1104	13000	845 x 10^3	6.00	2100	1000	60	1.370	0.553	125	0.0220	W37	
M1242NC260	2600	1242	16400	1.34 x 10^6	6.00	1500	1000	60	1.270	0.420	125	0.0220	W5	
M1242NC360	3600	1242	16400	1.34 x 10^6	6.00	1500	1000	60	1.270	0.420	125	0.0220	W5	
M1242ND260	2600	1242	16400	1.34 x 10^6	6.00	1500	1000	60	1.270	0.420	125	0.0220	W37	
M1242ND360	3600	1242	16400	1.34 x 10^6	6.00	1500	1000	60	1.270	0.420	125	0.0220	W37	
M1494NC160	1600	1494	19600	1.92 x 10^6	3.90	815	1000	60	1.150	0.265	125	0.0220	W5	
M1494NC250	2500	1494	19600	1.92 x 10^6	3.90	815	1000	60	1.150	0.265	125	0.0220	W5	
M1494ND160	1600	1494	19600	1.92 x 10^6	3.90	815	1000	60	1.150	0.265	125	0.0220	W37	
M1494ND250	2500	1494	19600	1.92 x 10^6	3.90	815	1000	60	1.150	0.265	125	0.0220	W37	
M1494NK160	1600	1975	19600	1.92 x 10^6	3.90	815	1000	60	1.150	0.265	125	0.0145	WD8	
M1494NK250	2500	1975	19600	1.92 x 10^6	3.90	815	1000	60	1.150	0.265	125	0.0145	WD8	
M1565VC400	4000	1565	19700	1.94 x 10^6	5.00	4000	1000	200	1.090	0.360	125	0.0180	W6	
M1565VC450	4500	1565	19700	1.94 x 10^6	5.00	4000	1000	200	1.090	0.360	125	0.0180	W6	
M1565VF400	4000	1565	19700	1.94 x 10^6	5.00	4000	1000	200	1.090	0.360	125	0.0180	W43	
M1565VF450	4500	1565	19700	1.94 x 10^6	5.00	4000	1000	200	1.090	0.360	125	0.0180	W43	
M1858NC120	1200	1858	25000	3.25 x 10^6	2.50	120	1000	60	1.127	0.127	125	0.0220	W5	
M1858ND120	1200	1858	25000	3.25 x 10^6	2.50	120	1000	60	1.127	0.127	125	0.0220	W37	
M2322ZC300	3000	2322	23000	2.64 x 10^6	6.50	3200	1000	150	1.670	0.186	125	0.0110	W7	
M2322ZC400	4000	2322	23000	2.64 x 10^6	6.50	3200	1000	150	1.670	0.186	125	0.0110	W7	
M2322ZD300	3000	2322	23000	2.64 x 10^6	6.50	3200	1000	150	1.670	0.186	125	0.0110	W42	
M2322ZD400	4000	2322	23000	2.64 x 10^6	6.50	3200	1000	150	1.670	0.186	125	0.0110	W42	
M2413VC200	2000	2413	32000	5.12 x 10^6	5.00	2500	1000	200	1.090	0.121	125	0.0160	W6	
M2413VC250	2500	2413	32000	5.12 x 10^6	5.00	2500	1000	200	1.090	0.121	125	0.0160	W6	
M2413VF200	2000	2413	32000	5.12 x 10^6	5.00	2500	1000	200	1.090	0.121	125	0.0160	W43	
M2413VF250	2500	2413	32000	5.12 x 10^6	5.00	2500	1000	200	1.090	0.121	125	0.0160	W43	
M3560TJ400	4000	3560	36000	6.48 x 10^6	7.00	4100	1000	150	1.253	0.137	125	0.0080	W89	
M3560TJ450	4500	3560	36000	6.48 x 10^6	7.00	4100	1000	150	1.253	0.137	125	0.0080	W89	
M4305TJ240	2400	4305	49000	12.0 x 10^6	5.00	2500	1000	150	1.104	0.087	125	0.0080	W89	
M4305TJ280	2800	4305	49000	12.0 x 10^6	5.00	2500	1000	150	1.104	0.087	125	0.0080	W89	

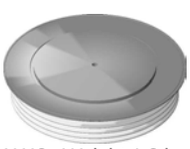
W4 Weight 340 g

W5 Weight 510 g

W6 Weight 1 kg

W7 Weight 1.7 kg

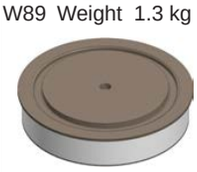
W37 Weight 510 g



W42 Weight 1.2 kg

W43 Weight 800 g

W89 Weight 1.3 kg



WD8 Weight 250 g

Extra Fast Recovery Diodes

These products are designed to offer the lowest practical values of reverse recovery current whilst offering wide safe operating area and high di/dt capability required by modern switching components.

Capsule Types

Part No.	V_{RRM}	I_{FAV}	I_{FSM}	I^2t	Typ. Reverse Recovery T_{JM}					V_{T0}	r_T	T_{JM}	R_{thJK} d.c.	Fig. No.
		T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		I_{rm}	t_{rr}	Q_{rr}	@I_{FM}	@ -di_F/dt	@T_{JM}			180° sine	
	V	A	A	A^2s	A	µs	µC	A	A/µs	V	mΩ	°C	K/W	
F0240YC250	2500	240	3100	48.1 x 10^3	40	2.00	100	550	40	2.271	2.853	150	0.1000	W2
F0240YC300	3000	240	3100	48.1 x 10^3	40	2.00	100	550	40	2.271	2.853	150	0.1000	W2
F0240YH250	2500	240	3100	48.1 x 10^3	40	2.00	100	550	40	2.271	2.853	150	0.1000	W3
F0240YH300	3000	240	3100	48.1 x 10^3	40	2.00	100	550	40	2.271	2.853	150	0.1000	W3
F0300WC140	1400	240	2700	36.5 x 10^3	530	3.00	70	550	40	1.760	2.210	125	0.0950	W1
F0300WC180	1800	240	2700	36.5 x 10^3	530	3.00	70	550	40	1.760	2.210	125	0.0950	W1
F0800LC140	1400	775	7630	291 x 10^3	380	1.10	200	1000	200	1.494	0.692	125	0.0320	W4
F0800LC180	1800	775	7630	291 x 10^3	380	1.10	200	1000	200	1.494	0.692	125	0.0320	W4
F0900VC450	4500	816	10450	546 x 10^3	120	3.80	230	1000	60	2.024	1.274	115	0.0160	W6
F0900VC520	5200	816	10450	546 x 10^3	120	3.80	230	1000	60	2.024	1.274	115	0.0160	W6
F0900VF450	4500	816	10450	546 x 10^3	120	3.80	230	1000	60	2.024	1.274	115	0.0160	W43
F0900VF520	5200	816	10450	546 x 10^3	120	3.80	230	1000	60	2.024	1.274	115	0.0160	W43
F1000LC080	800	826	8500	361 x 10^3	320	1.60	250	1000	800	1.530	0.547	125	0.0320	W4
F1000LC120	1200	826	8500	361 x 10^3	320	1.60	250	1000	800	1.530	0.547	125	0.0320	W4
F1300NC45P	4500	1346	20800	2.16 x 10^6	470	4.30	2150	1000	200	1.569	0.318	140	0.0240	W5
F1300NC50P	5000	1346	20800	2.16 x 10^6	470	4.30	2150	1000	200	1.569	0.318	140	0.0240	W5
F1300NC55P	5500	1346	20800	2.16 x 10^6	470	4.30	2150	1000	200	1.569	0.318	140	0.0240	W5
F1300NH45P	4500	1346	20800	2.16 x 10^6	470	4.30	2150	1000	200	1.569	0.318	140	0.0240	W47
F1300NH50P	5000	1346	20800	2.16 x 10^6	470	4.30	2150	1000	200	1.569	0.318	140	0.0240	W47
F1300NH55P	5500	1346	20800	2.16 x 10^6	470	4.30	2150	1000	200	1.569	0.318	140	0.0240	W47
F1400NC140	1400	1093	17250	1.49 x 10^6	800	1.50	1000	1400	1000	1.618	0.388	125	0.0240	W5
F1400NC180	1800	1093	17250	1.49 x 10^6	800	1.50	1000	1400	1000	1.618	0.388	125	0.0240	W5
F1400ND140	1400	1093	17250	1.49 x 10^6	800	1.50	1000	1400	1000	1.618	0.388	125	0.0240	W37
F1400ND180	1800	1093	17250	1.49 x 10^6	800	1.50	1000	1400	1000	1.618	0.388	125	0.0240	W37
F1500NC200	2000	1054	13750	950 x 10^3	1065	1.50	1500	1500	2000	1.372	0.535	125	0.0240	W5
F1500NC250	2500	1054	13750	950 x 10^3	1065	1.50	1500	1500	2000	1.372	0.535	125	0.0240	W5
F1600NC080	800	1326	20000	2.0 x 10^6	480	2.30	700	1600	800	1.320	0.268	125	0.0240	W5
F1600NC120	1200	1326	20000	2.0 x 10^6	480	2.30	700	1600	800	1.320	0.268	125	0.0240	W5

Outlines on pages O-01...O-35

W1 Weight 70 g

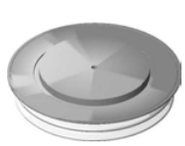
W2 Weight 80 g

W3 Weight 140 g

W4 Weight 340 g

W5 Weight 510 g

W6 Weight 1 kg


W43 Weight 800 g

W47 Weight 250 g

High Power Sonic FRD's

IXYS UK brings you a world-leading class of ultra fast and ultra soft recovery diode available from 2.5kV to 6.5kV in current ratings from 170A to 4000A. These diodes incorporate a unique manufacturing process and lifetime control to offer a class leading trade-off between conduction and switching losses. The wide safe operating area (SOA) makes them ideal as freewheeling diodes for snubberless IGBT and IGCT applications or any application which requires a fast, low loss diode. For example, traction, medium voltage drives, induction heating and pulsed power applications.

Capsule Types

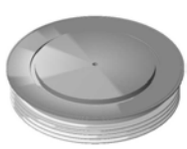
Part No.	V_{RRM}	I_{FAV}	I_{FSM}	I^2t	Typ. Reverse Recovery T_{JM}					V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
○ Not for new design		T_K = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$		I_{rm}	t_{rr}	Q_{rr}	@ I_{FM}	@ $-di_F/dt$	@T_{JM}			180° Sine	
➢ New	V	A	A	A^2s	A	µs	µC	A	A/µs	V	mΩ	°C	K/W	
➢ **E0170YH45E**	4500	202	2091	21.9 x 10^3	175	0.75	270	170	400	2.270	6.960	140	0.0730	W3
E0280YH25C	2500	350	2330	27.1 x 10^3	380	1.30	500	280	1000	1.410	2.600	150	0.0730	W3
E0330MF65F	6500	277	2790	38.9 x 10^3	400	1.20	550	330	1000	1.890	5.800	125	0.0425	W99
➢ **E0460QC45E**	4500	550	5800	168 x 10^3	450	1.00	900	500	150	2.160	3.050	140	0.0280	W68
➢ **E0660NC45E**	4500	755	8100	328 x 10^3	635	1.18	1025	660	1500	2.242	1.815	140	0.0200	W5
➢ **E0660NH45E**	4500	755	8100	328 x 10^3	635	1.18	1025	660	1500	2.242	1.815	140	0.0200	W47
E0770HF65F	6500	632	6418	206 x 10^3	900	1.20	1200	770	2000	1.890	2.538	125	0.0189	W100
E0800QC25C	2500	960	10700	575 x 10^3	720	1.60	1420	800	1500	1.410	0.839	150	0.0290	W68
E1000TF65F	6500	915	10400	537 x 10^3	650	1.80	1700	1000	1700	2.291	1.185	125	0.0154	W97
E1200NC25C	2500	1338	13300	884 x 10^3	650	4.00	2000	1200	1500	1.305	0.678	150	0.0200	W5
E1200NH25C	2500	1338	13300	884 x 10^3	650	4.00	2000	1200	1500	1.305	0.678	150	0.0200	W47
➢ **E1250HC45E**	4500	1470	22900	2.62 x 10^6	1000	1.20	1850	1250	2000	2.143	0.923	140	0.0105	W122
E1375EF65F	6500	1125	12180	742 x 10^3	1600	1.10	2100	1375	3500	1.890	1.423	125	0.0106	W101
E1500NC36P	3600	1280	17050	1.45 x 10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.0190	W5
E1500NC42P	4200	1280	17050	1.45 x 10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.0190	W5
E1500NC48P	4800	1280	17050	1.45 x 10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.0190	W5
E1500NH36P	3600	1280	17050	1.45 x 10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.0190	W47
E1500NH42P	4200	1280	17050	1.45 x 10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.0190	W47
E1500NH48P	4800	1280	17050	1.45 x 10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.0190	W47
➢ **E1800TC45E**	4500	2209	34100	5.81 x 10^6	1645	1.35	3200	1800	3000	2.067	0.605	140	0.0080	W28
E2060FF65F	6500	1690	20090	2.02 x 10^6	2050	1.10	2800	2060	4500	1.890	0.951	125	0.0071	W105
○ **E2250VF25C**	2500	2426	25200	3.17 x 10^6	1650	1.90	3700	2250	2500	1.510	0.250	150	0.0130	W43
➢ **E2400EC45E**	4500	2655	39500	7.80 x 10^6	1816	1.30	3540	2400	3000	2.150	0.580	140	0.0060	W111
➢ **E3000EC45E**	4500	3005	42400	8.98 x 10^6	2630	1.40	5500	3000	5000	2.240	0.550	140	0.0050	W111
E4000TC25C	2500	4080	50000	12.5 x 10^6	2480	2.50	6700	4000	3500	1.406	0.149	150	0.0080	W28

***** Please consult factory for details

Outlines on pages O-01...O-35

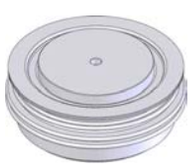
W3 Weight 140 g

W5 Weight 510 g

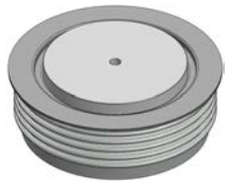

W28 Weight 1.23 kg

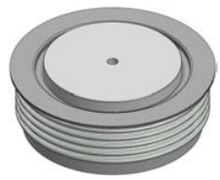
W43 Weight 800 g

W47 Weight 250 g

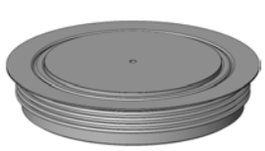

W68 Weight 300 g

W97 Weight 1 kg


W99 Weight 500 g


W100 Weight 600 g

W101 Weight 1.5 kg


W105 Weight 2.3 kg

W111 Weight 1.6 kg

Phase Control Thyristors

IXYS UK provides one of the most comprehensive ranges of standard phase control thyristors in the industry. Devices with voltage ranges from 400V to 6500V are available, making them suitable for applications with line voltages from 230V to over 1000V (higher voltage applications are now served by our range of Medium Voltage Thyristors). IXYS UK Westcode Ltd. is a leading supplier of phase control products into demanding markets such as industrial DC drives, controlled rectifiers, marine/rail propulsion systems, wind power converters, electrochemical power supplies and soft starters. These devices are optimised to give low conduction losses and are primarily intended for applications with line frequencies up to 400Hz.

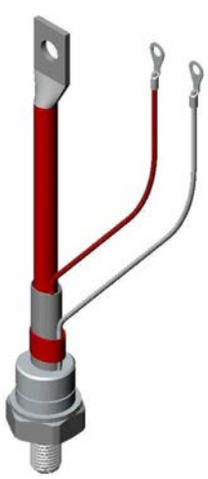
The Wespack outline (WPxx) is an innovative concept in phase control thyristors for applications requiring devices rated to 2200V. It gives the maximum power rating for weight and volume without compromising on quality and reliability. It also gives the maximum current rating and lowest thermal resistance for the package size.

The newest additions to IXYS UK's phase control thyristor range are the 96mm diameter die capsules. These devices are constructed using low temperature sintering technology offering better thermal and electromechanical capability and are available with current ratings up to 6405A and voltage ratings up to 4500V.

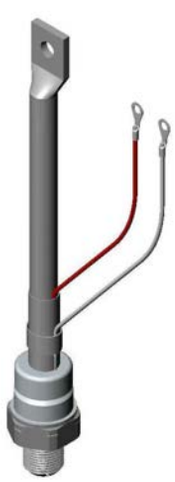
Stud Types

Part No.	V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJC}		Fig. No.
		T_C = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@T_{JM}			d.c. 180° sine	120° Rect.	
	V	A	A	A^2s	V	mΩ	°C	K/W	K/W	
N0180SH120	1200	180	2450	30.0 x 10^3	0.900	1.790	125	0.2300	0.2800	W17
N0180SH160	1600	180	2450	30.0 x 10^3	0.900	1.790	125	0.2300	0.2800	W17
N0335SC120	1200	335	4650	108 x 10^3	0.920	0.990	125	0.1200	0.1400	W18
N0335SC160	1600	335	4650	108 x 10^3	0.920	0.990	125	0.1200	0.1400	W18
N0416SC040	400	416	6000	180 x 10^3	0.850	0.535	125	0.1200	0.1400	W18
N0416SC080	800	416	6000	180 x 10^3	0.850	0.535	125	0.1200	0.1400	W18

Outlines on pages
O-01...O-35



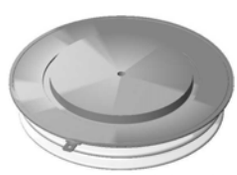
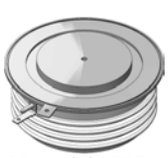
W17 Weight 130 g



W18 Weight 280 g

Phase Control Thyristors

Capsule Types

○ Not for new design	Part No.	V_{DRM} V_{RRM}	I_{TAV} T_K = 55°C	I_{TSM} 10 ms ½ sine V_R - ≤ 60% V_{RRM}	I^2t	V_{T0} @T_{JM}	r_T @T_{JM}	T_{JM}	R_{thJK} 180° Sine	R_{thJK} 120° Rect.	Fig. No.	Package style Outlines on pages O-01...O-35
		V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
	N0465WN140	1400	465	4500	101 x 10^3	0.900	0.850	125	0.0800	0.09120	W90	
	N0465WN160	1600	465	4500	101 x 10^3	0.900	0.850	125	0.0800	0.09120	W90	
	N0530YN220	2200	530	6300	198 x 10^3	1.100	1.250	125	0.0480	0.04940	W91	
	N0530YN250	2500	530	6300	198 x 10^3	1.100	1.250	125	0.0480	0.04940	W91	
	N0616LC400	4000	616	5250	138 x 10^3	1.220	1.530	125	0.0320	0.03930	W10	
	N0616LC450	4500	616	5250	138 x 10^3	1.220	1.530	125	0.0320	0.03930	W10	
	N0634LC380	3800	634	7000	245 x 10^3	1.100	1.500	125	0.0320	0.03930	W10	
	N0634LC420	4200	634	7000	245 x 10^3	1.100	1.500	125	0.0320	0.03930	W10	W10 Weight 340 g
	N0646LC300	3000	646	5700	162 x 10^3	1.210	1.360	125	0.0320	0.03930	W10	
	N0646LC360	3600	646	5700	162 x 10^3	1.210	1.360	125	0.0320	0.03930	W10	
	N0795YN140	1400	795	9450	444 x 10^3	0.950	0.450	125	0.0480	0.04940	W91	
	N0795YN180	1800	795	9450	444 x 10^3	0.950	0.450	125	0.0480	0.04940	W91	
	N0882NC400	4000	882	7700	296 x 10^3	1.300	0.920	125	0.0240	0.02730	W11	
	N0882NC450	4500	882	7700	296 x 10^3	1.300	0.920	125	0.0240	0.02730	W11	W12 Weight 1 kg
	N0910LC200	2000	910	9200	423 x 10^3	1.040	0.606	125	0.0320	0.03930	W10	
	N0910LC260	2600	910	9200	423 x 10^3	1.040	0.606	125	0.0320	0.03930	W10	
	N1010NC300	3000	1010	12100	732 x 10^3	1.170	0.687	125	0.0240	0.02730	W11	
	N1010NC380	3800	1010	12100	732 x 10^3	1.170	0.687	125	0.0240	0.02730	W11	
	N1075LN180	1800	1240	15750	1.24 x 10^6	0.850	0.320	130	0.0330	0.03710	W92	
	N1132NC300	3000	1132	14300	1.02 x 10^6	1.150	0.510	125	0.0240	0.02710	W11	
	N1132NC360	3600	1132	14300	1.02 x 10^6	1.150	0.510	125	0.0240	0.02710	W11	W62 Weight 1 kg
	N1140LN140	1400	1315	17500	1.53 x 10^6	0.820	0.280	130	0.0330	0.03710	W92	
	N1159NC380	3800	1159	14500	1.05 x 10^6	1.100	0.574	125	0.0220	0.02550	W11	
	N1159NC420	4200	1159	14500	1.05 x 10^6	1.100	0.574	125	0.0220	0.02550	W11	
	N1174JK200	2000	1174	13200	870 x 10^3	1.000	0.416	125	0.0270	0.03140	WP1	
	N1174JK220	2200	1174	13200	870 x 10^3	1.000	0.416	125	0.0270	0.03140	WP1	
	N1263JK160	1600	1263	15000	1.13 x 10^6	1.015	0.332	125	0.0270	0.03140	WP1	W90 Weight 90 g
	N1263JK180	1800	1263	15000	1.13 x 10^6	1.015	0.332	125	0.0270	0.03140	WP1	
○	**N1351VC400**	4000	1351	17500	1.53 x 10^6	1.200	0.553	125	0.0170	0.02060	W12	
○	**N1351VC450**	4500	1351	17500	1.53 x 10^6	1.200	0.553	125	0.0170	0.02060	W12	
○	**N1351VF400**	4000	1351	17500	1.53 x 10^6	1.200	0.553	125	0.0170	0.02060	W62	
○	**N1351VF450**	4500	1351	17500	1.53 x 10^6	1.200	0.553	125	0.0170	0.02060	W62	W91 Weight 110 g
	N1366JK080	800	1366	15900	1.26 x 10^6	0.985	0.270	125	0.0270	0.03140	WP1	
	N1366JK120	1200	1366	15900	1.26 x 10^6	0.985	0.270	125	0.0270	0.03140	WP1	
	N1366JK140	1400	1366	15900	1.26 x 10^6	0.985	0.270	125	0.0270	0.03140	WP1	
	N1449QL200	2000	1410	17300	1.50 x 10^6	1.060	0.317	125	0.0230	0.02720	WP6	
	N1449QL220	2200	1410	17300	1.50 x 10^6	1.060	0.317	125	0.0230	0.02720	WP6	
	N1467NC200	2000	1467	21500	2.31 x 10^6	1.000	0.272	125	0.0240	0.02710	W11	
	N1467NC260	2600	1467	21500	2.31 x 10^6	1.000	0.272	125	0.0240	0.02710	W11	W92 Weight 280 g
	N1547NC160	1600	1547	23300	2.71 x 10^6	0.920	0.252	125	0.0240	0.02710	W11	
	N1547NC220	2000	1547	23300	2.71 x 10^6	0.920	0.252	125	0.0240	0.02710	W11	
	N1581QL160	1600	1535	19100	1.82 x 10^6	1.022	0.253	125	0.0230	0.02700	WP6	
	N1581QL180	1800	1535	19100	1.82 x 10^6	1.022	0.253	125	0.0230	0.02700	WP6	WP1 Weight 180 g
	N1651QK200	2000	1651	17300	1.50 x 10^6	1.060	0.317	125	0.0180	0.02170	WP2	
	N1651QK220	2200	1651	17300	1.50 x 10^6	1.060	0.317	125	0.0180	0.02170	WP2	
○	**N1661VC300**	3000	1661	23000	2.65 x 10^6	1.040	0.350	125	0.0170	0.02060	W12	
○	**N1661VC360**	3600	1661	23000	2.65 x 10^6	1.040	0.350	125	0.0170	0.02060	W12	
○	**N1661VF300**	3000	1661	23000	2.65 x 10^6	1.040	0.350	125	0.0170	0.02060	W62	
○	**N1661VF360**	3600	1661	23000	2.65 x 10^6	1.040	0.350	125	0.0170	0.02060	W62	WP2 Weight 200 g
	N1718NC120	1200	1718	27200	3.70 x 10^6	0.979	0.169	125	0.0240	0.02710	W11	
	N1718NC180	1800	1718	27200	3.70 x 10^6	0.979	0.169	125	0.0240	0.02710	W11	
	N1718NC200	2000	1718	27200	3.70 x 10^6	0.979	0.169	125	0.0240	0.02710	W11	
	N1725MC320	3200	1725	20000	2.00 x 10^6	1.022	0.396	125	0.0150	0.01650	W70	
	N1725MC360	3600	1725	20000	2.00 x 10^6	1.022	0.396	125	0.0150	0.01650	W70	WP6 Weight 330 g

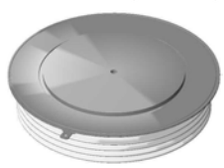
Phase Control Thyristors

Capsule Types

Part No.	V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.	Package style
		T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@T_{JM}			180° Sine	120° Rect.		Outlines on pages O-01...O-35
	V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
N1802NC120	1200	1802	29600	4.38 x 10^6	0.855	0.171	125	0.0240	0.02710	W11	
N1802NC160	1600	1802	29600	4.38 x 10^6	0.855	0.171	125	0.0240	0.02710	W11	
N1806QK160	1600	1806	19100	1.82 x 10^6	1.022	0.253	125	0.0180	0.02170	WP2	
N1806QK180	1800	1806	19100	1.82 x 10^6	1.022	0.253	125	0.0180	0.02170	WP2	
N1817QL080	800	1760	22000	2.42 x 10^6	0.955	0.177	125	0.0230	0.02720	WP6	
N1817QL120	1200	1760	22000	2.42 x 10^6	0.955	0.177	125	0.0230	0.02720	WP6	
N1817QL140	1400	1760	22000	2.42 x 10^6	0.955	0.177	125	0.0230	0.02720	WP6	
N2015ML200	2000	2015	32400	5.25 x 10^6	0.883	0.210	125	0.0180	0.02010	WP5	
N2015ML220	2200	2015	32400	5.25 x 10^6	0.883	0.210	125	0.0180	0.02010	WP5	
N2055MC260	2600	2105	25800	3.33 x 10^6	0.970	0.240	125	0.0150	0.01650	W70	
N2055MC280	2800	2105	25800	3.33 x 10^6	0.970	0.240	125	0.0150	0.01650	W70	
N2055HE400	4000	2055	24000	2.88x 10^6	0.977	0.342	125	0.0125	0.01380	W80	
N2055HE450	4500	2055	24000	2.88x 10^6	0.977	0.342	125	0.0125	0.01380	W80	
N2083QK080	800	2083	22000	2.42 x 10^6	0.955	0.177	125	0.0180	0.02170	WP2	
N2083QK120	1200	2083	22000	2.42 x 10^6	0.955	0.177	125	0.0180	0.02170	WP2	
N2083QK140	1400	2083	22000	2.42 x 10^6	0.955	0.177	125	0.0180	0.02170	WP2	
N2086NC060	600	2086	35000	6.13 x 10^6	0.840	0.108	125	0.0240	0.02710	W11	
N2086NC100	1000	2086	35000	6.13 x 10^6	0.840	0.108	125	0.0240	0.02710	W11	
N2154JK020	200	2154	22700	2.58 x 10^6	0.890	0.107	140	0.0270	0.03140	WP1	
N2154JK040	400	2154	22700	2.58 x 10^6	0.890	0.107	140	0.0270	0.03140	WP1	
N2154JK060	600	2154	22700	2.58 x 10^6	0.890	0.107	140	0.0270	0.03140	WP1	
N2172ZC400	4000	2172	28000	3.92 x 10^6	1.350	0.294	125	0.0110	0.01190	W13	
N2172ZC450	4500	2172	28000	3.92 x 10^6	1.350	0.294	125	0.0110	0.01190	W13	
N2172ZD400	4000	2172	28000	3.92 x 10^6	1.350	0.294	125	0.0110	0.01190	W46	
N2172ZD450	4500	2172	28000	3.92 x 10^6	1.350	0.294	125	0.0110	0.01190	W46	
N2191ML160	1600	2191	34500	5.95 x 10^6	0.940	0.154	125	0.0180	0.02010	WP5	
N2191ML180	1800	2191	34500	5.95 x 10^6	0.940	0.154	125	0.0180	0.02010	WP5	
N2285HA400	4000	2285	24000	2.88x 10^6	0.977	0.342	125	0.0105	0.01180	W79	
N2285HA450	4500	2285	24000	2.88x 10^6	0.977	0.342	125	0.0105	0.01180	W79	
N2367MK200	2000	2367	32400	5.25 x 10^6	0.883	0.210	125	0.0140	0.01570	WP3	
N2367MK220	2200	2367	32400	5.25 x 10^6	0.883	0.210	125	0.0140	0.01570	WP3	
N2385HE320	3200	2385	28400	4.03 x 10^6	0.910	0.243	125	0.0125	0.01380	W80	
N2385HE360	3600	2385	28400	4.03 x 10^6	0.910	0.243	125	0.0125	0.01380	W80	
N2418ZC300	3000	2418	30000	4.50 x 10^6	1.160	0.246	125	0.0110	0.01190	W13	
N2418ZC360	3600	2418	30000	4.50 x 10^6	1.160	0.246	125	0.0110	0.01190	W13	
N2418ZD300	3000	2418	30000	4.50 x 10^6	1.160	0.246	125	0.0110	0.01190	W46	
N2418ZD360	3600	2418	30000	4.50 x 10^6	1.160	0.246	125	0.0110	0.01190	W46	
N2520ML080	800	2520	38200	7.30 x 10^6	0.980	0.090	125	0.0180	0.02010	WP5	
N2520ML120	1200	2520	38200	7.30 x 10^6	0.980	0.090	125	0.0180	0.02010	WP5	
N2520ML140	1400	2520	38200	7.30 x 10^6	0.980	0.090	125	0.0180	0.02010	WP5	
N2543ZC240	2400	2543	32000	5.12 x 10^6	0.780	0.274	125	0.0110	0.01190	W13	
N2543ZC300	3000	2543	32000	5.12 x 10^6	0.780	0.274	125	0.0110	0.01190	W13	
N2543ZD240	2400	2543	32000	5.12 x 10^6	0.780	0.274	125	0.0110	0.01190	W46	
N2543ZD300	3000	2543	32000	5.12 x 10^6	0.780	0.274	125	0.0110	0.01190	W46	
N2593MK160	1600	2593	34500	5.95 x 10^6	0.940	0.154	125	0.0140	0.01570	WP3	
N2593MK180	1800	2593	34500	5.95 x 10^6	0.940	0.154	125	0.0140	0.01570	WP3	
N2600MC160	1600	2600	30000	4.50 x 10^6	0.950	0.130	125	0.0150	0.01650	W70	
N2600MC180	1800	2600	30000	4.50 x 10^6	0.950	0.130	125	0.0150	0.01650	W70	
N2655HA320	3200	2655	28400	4.03 x 10^6	0.910	0.243	125	0.0105	0.01180	W79	
N2655HA360	3600	2655	28400	4.03 x 10^6	0.910	0.243	125	0.0105	0.01180	W79	
N2825TE400	4000	2825	36900	6.81 x 10^6	1.210	0.270	125	0.0080	0.00850	W82	
N2825TE450	4500	2825	36900	6.81 x 10^6	1.210	0.270	125	0.0080	0.00850	W82	
N2825TJ400	4000	2825	36900	6.81 x 10^6	1.210	0.270	125	0.0080	0.00850	W81	
N2825TJ450	4500	2825	36900	6.81 x 10^6	1.210	0.270	125	0.0080	0.00850	W81	

W11 Weight 510 g

W13 Weight 1.7 kg

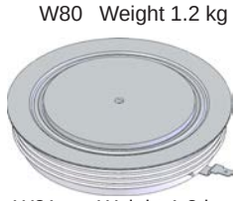


W46 Weight 1.2 kg

W70 Weight 550 g

W79 Weight 890 g

W80 Weight 1.2 kg



W81 Weight 1.2 kg

WP3 Weight 260 g

WP5 Weight 500 g

Phase Control Thyristors

Capsule Types

Part No.	V_{DRM} V_{RRM}	I_{TAV} T_K = 55°C	I_{TSM} 10 ms ½ sine V_R - ≤ 60% V_{RRM}	I^2t	V_{T0} @T_{JM}	r_T @T_{JM}	T_{JM}	R_{thJK} 180° Sine	R_{thJK} 120° Rect.	Fig. No.	Package style Outlines on pages O-01...O-35
➢ New	V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
N2830HE260	2600	2830	36000	6.48 x 10^6	0.930	0.150	125	0.0125	0.01380	W80	
N2830HE280	2800	2830	36000	6.48 x 10^6	0.930	0.150	125	0.0125	0.01380	W80	
N2900QL020	200	2900	28000	3.92 x 10^6	0.850	0.080	150	0.0230	0.02720	WP6	
N2900QL040	400	2900	28000	3.92 x 10^6	0.850	0.080	150	0.0230	0.02720	WP6	
N2900QL060	600	2900	28000	3.92 x 10^6	0.850	0.080	150	0.0230	0.02720	WP6	
N3012ZC200	2000	3012	45100	10.2 x 10^6	0.920	0.160	125	0.0110	0.01190	W13	
N3012ZC260	2600	3012	45100	10.2 x 10^6	0.920	0.160	125	0.0110	0.01190	W13	
N3012ZD200	2000	3012	45100	10.2 x 10^6	0.920	0.160	125	0.0110	0.01190	W46	
N3012ZD260	2600	3012	45100	10.2 x 10^6	0.920	0.160	125	0.0110	0.01190	W46	
N3022MK080	800	3022	38200	7.30 x 10^6	0.981	0.090	125	0.0140	0.01570	WP3	
N3022MK120	1200	3022	38200	7.30 x 10^6	0.981	0.090	125	0.0140	0.01570	WP3	
N3022MK140	1400	3022	38200	7.30 x 10^6	0.981	0.090	125	0.0140	0.01570	WP3	
N3029ZC240	2400	3029	38200	7.30 x 10^6	0.947	0.154	125	0.0110	0.01190	W13	
N3029ZC280	2800	3029	38200	7.30 x 10^6	0.947	0.154	125	0.0110	0.01190	W13	
N3029ZD240	2400	3029	38200	7.30 x 10^6	0.947	0.154	125	0.0110	0.01190	W46	
N3029ZD280	2800	3029	38200	7.30 x 10^6	0.947	0.154	125	0.0110	0.01190	W46	
N3165HA260	2600	3165	36000	6.48 x 10^6	0.930	0.150	125	0.0105	0.01180	W79	
N3165HA280	2800	3165	36000	6.48 x 10^6	0.930	0.150	125	0.0105	0.01180	W79	
N3175HE160	1600	3175	45500	10.40 x 10^6	0.900	0.110	125	0.0125	0.01380	W80	
N3175HE180	1800	3175	45500	10.40 x 10^6	0.900	0.110	125	0.0125	0.01380	W80	
N3229QK020	200	3229	28000	3.92 x 10^6	0.926	0.067	140	0.0180	0.02170	WP2	
N3229QK040	400	3229	28000	3.92 x 10^6	0.926	0.067	140	0.0180	0.02170	WP2	
N3229QK060	600	3229	28000	3.92 x 10^6	0.926	0.067	140	0.0180	0.02170	WP2	
N3533ZC180	1800	3533	50000	12.5 x 10^6	0.970	0.095	125	0.0110	0.01200	W13	
N3533ZC220	2200	3533	50000	12.5 x 10^6	0.970	0.095	125	0.0110	0.01200	W13	
N3533ZD180	1800	3533	50000	12.5 x 10^6	0.970	0.095	125	0.0110	0.01200	W46	
N3533ZD220	2200	3533	50000	12.5 x 10^6	0.970	0.095	125	0.0110	0.01200	W46	
N3565HA160	1600	3565	45500	10.4 x 10^6	0.900	0.110	125	0.0105	0.01180	W79	
N3565HA180	1800	3565	45500	10.4 x 10^6	0.900	0.110	125	0.0105	0.01180	W79	
N3597ML020	200	3597	45400	10.3 x 10^6	0.840	0.053	140	0.0180	0.02010	WP5	
N3597ML040	400	3597	45400	10.3 x 10^6	0.840	0.053	140	0.0180	0.02010	WP5	
N3597ML060	600	3597	45400	10.3 x 10^6	0.840	0.053	140	0.0180	0.02010	WP5	
N3620TE320	3200	3620	45000	10.12 x 10^6	0.911	0.168	125	0.0080	0.00850	W82	
N3620TE360	3600	3620	45000	10.12 x 10^6	0.911	0.168	125	0.0080	0.00850	W82	
N3620TJ320	3200	3620	45000	10.12 x 10^6	0.911	0.168	125	0.0080	0.00850	W81	
N3620TJ360	3600	3620	45000	10.12 x 10^6	0.911	0.168	125	0.0080	0.00850	W81	
N3790TE240	2400	3790	49500	12.3 x 10^6	0.900	0.150	125	0.0080	0.00850	W82	
N3790TE280	2800	3790	49500	12.3 x 10^6	0.900	0.150	125	0.0080	0.00850	W82	
N3790TJ240	2400	3790	49500	12.3 x 10^6	0.900	0.150	125	0.0080	0.00850	W81	
N3790TJ280	2800	3790	49500	12.3 x 10^6	0.900	0.150	125	0.0080	0.00850	W81	
N3880ZD160	1600	3880	59000	17.4 x 10^6	0.986	0.068	125	0.1100	0.11900	W46	
N3880ZD180	1800	3880	59000	17.4 x 10^6	0.986	0.068	125	0.1100	0.11900	W46	
N3904HK200	2000	3904	50900	12.95 x 10^6	0.920	0.111	125	0.0090	0.00990	WP4	
N3904HK220	2200	3904	50900	12.95 x 10^6	0.920	0.111	125	0.0090	0.00990	WP4	
N3930ZC120	1200	3930	54000	14.6 x 10^6	0.841	0.080	125	0.0110	0.01190	W13	
N3930ZC160	1600	3930	54000	14.6 x 10^6	0.841	0.080	125	0.0110	0.01190	W13	
N3930ZD120	1200	3930	54000	14.6 x 10^6	0.841	0.080	125	0.0110	0.01190	W46	
N3930ZD160	1600	3930	54000	14.6 x 10^6	0.841	0.080	125	0.0110	0.01190	W46	
N4085ZC080	800	4085	64000	20.5 x 10^6	0.850	0.070	125	0.0110	0.01190	W13	
N4085ZC120	1200	4085	64000	20.5 x 10^6	0.850	0.070	125	0.0110	0.01190	W13	
N4085ZD080	800	4085	64000	20.5 x 10^6	0.850	0.070	125	0.0110	0.01190	W46	
N4085ZD120	1200	4085	64000	20.5 x 10^6	0.850	0.070	125	0.0110	0.01190	W46	
➢ **N4165EE400**	4000	4165	56000	15.7 x 10^6	0.977	0.177	125	0.0060	0.00639	W108	
➢ **N4165EE450**	4500	4165	56000	15.7 x 10^6	0.977	0.177	125	0.0060	0.00639	W108	

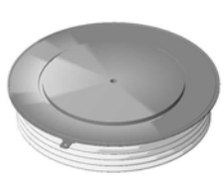
WP2 Weight 200 g

WP4 Weight 550 g

WP5 Weight 500 g

WP6 Weight 330 g

W13 Weight 1.7 kg



W46 Weight 1.2 kg

W79 Weight 890 g

W80 Weight 1.2 kg

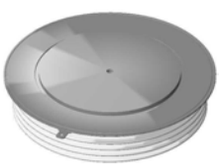
Phase Control Thyristors

Capsule Types

Part No.	V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.	Package style
		T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@T_{JM}			180° Sine	120° Rect.		Outlines on pages O-01...O-35
➢ New	V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
N4316MK020	200	4316	45400	10.3×10^6	0.840	0.053	140	0.0140	0.01570	WP3	
N4316MK040	400	4316	45400	10.3×10^6	0.840	0.053	140	0.0140	0.01570	WP3	
N4316MK060	600	4316	45400	10.3×10^6	0.840	0.053	140	0.0140	0.01570	WP3	
N4340TE180	1800	4340	55000	15.1×10^6	0.886	0.105	125	0.0080	0.00850	W82	
N4340TE220	2200	4340	55000	15.1×10^6	0.886	0.105	125	0.0080	0.00850	W82	
N4340TJ180	1800	4340	55000	15.1×10^6	0.886	0.105	125	0.0080	0.00850	W81	
N4340TJ220	2200	4340	55000	15.1×10^6	0.886	0.105	125	0.0080	0.00850	W81	
N4472HK160	1600	4472	59000	17.40×10^6	0.986	0.068	125	0.0090	0.00990	WP4	
N4472HK180	1800	4472	59000	17.40×10^6	0.986	0.068	125	0.0090	0.00990	WP4	
➢ **N4650EA400**	4000	4650	56000	15.7×10^6	0.977	0.177	125	0.0050	0.00538	W107	
➢ **N4650EA450**	4500	4650	56000	15.7×10^6	0.977	0.177	125	0.0050	0.00538	W107	
➢ **N4845EE320**	3200	4845	65000	21.1×10^6	0.913	0.125	125	0.0060	0.00654	W108	
➢ **N4845EE360**	3600	4845	65000	21.1×10^6	0.913	0.125	125	0.0060	0.00654	W108	
N5320FE400	4000	5320	78000	30.42×10^6	1.060	0.130	125	0.0048	0.00513	W119	
N5320FE450	4500	5320	78000	30.42×10^6	1.060	0.130	125	0.0048	0.00513	W119	
➢ **N5415EA320**	3200	5415	65000	21.1×10^6	0.913	0.125	125	0.0050	0.00538	W107	
➢ **N5415EA360**	3600	5415	65000	21.1×10^6	0.913	0.125	125	0.0050	0.00538	W107	
➢ **N5715EE240**	2400	5715	80000	32.0×10^6	0.840	0.085	125	0.0060	0.00654	W108	
➢ **N5715EE280**	2800	5715	80000	32.0×10^6	0.840	0.085	125	0.0060	0.00654	W108	
N5910FA400	4000	5910	78000	30.42×10^6	1.060	0.130	125	0.0040	0.00439	W118	
N5910FA450	4500	5910	78000	30.42×10^6	1.060	0.130	125	0.0040	0.00439	W118	
N6012ZD020	200	6012	65000	21.13×10^6	0.853	0.029	140	0.0110	0.01190	W46	
N6012ZD040	400	6012	65000	21.13×10^6	0.853	0.029	140	0.0110	0.01190	W46	
N6012ZD060	600	6012	65000	21.13×10^6	0.853	0.029	140	0.0110	0.01190	W46	
➢ **N6405EA240**	2400	6405	80000	32.0×10^6	0.840	0.085	125	0.0050	0.00538	W107	
➢ **N6405EA280**	2800	6405	80000	32.0×10^6	0.840	0.085	125	0.0050	0.00538	W107	
N6974HK020	200	6974	65000	21.13×10^6	0.853	0.029	140	0.0090	0.00990	WP4	
N6974HK040	400	6974	65000	21.13×10^6	0.853	0.029	140	0.0090	0.00990	WP4	
N6974HK060	600	6974	65000	21.13×10^6	0.853	0.029	140	0.0090	0.00990	WP4	
N7585FE240	2400	7585	110000	60.50×10^6	0.780	0.062	125	0.0048	0.00513	W119	
N7585FE280	2800	7585	110000	60.50×10^6	0.780	0.062	125	0.0048	0.00513	W119	
N7905FE180	1800	7905	117000	68.44×10^6	0.770	0.056	125	0.0048	0.00513	W119	
N7905FE220	2200	7905	117000	68.44×10^6	0.770	0.056	125	0.0048	0.00513	W119	
N8440FA240	2400	8440	110000	60.50×10^6	0.780	0.062	125	0.0040	0.00439	W118	
N8440FA280	2800	8440	110000	60.50×10^6	0.780	0.062	125	0.0040	0.00439	W118	
N8800FA180	1800	8800	117000	68.44×10^6	0.770	0.056	125	0.0040	0.00439	W118	
N8800FA220	2200	8800	117000	68.44×10^6	0.770	0.056	125	0.0040	0.00439	W118	

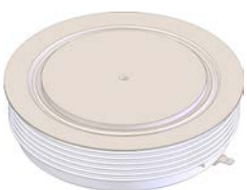
WP3 Weight 260 g

WP4 Weight 550 g



W46 Weight 1.2 kg

W82 Weight 1.65 kg



W108 Weight 2.1 kg

W107 Weight 1.6 kg

W81 Weight 1.2 kg

Medium Voltage Thyristors

Medium voltage applications place additional demands on phase controlled thyristors. To meet these demands we have developed a comprehensive range of thyristors optimised for medium voltage applications and series operation. As voltages increase, so do switching losses and turn-off time to a point where they become significant in line frequency applications. Our patented distributed gate architecture ensures excellent switching performance over a wide range of voltage, current and di/dt. Device lifetime is also engineered to achieve an optimum balance between conduction losses, commutation losses and turn-off time to give maximum power handling from line frequency to 400Hz. This also gives significant benefits when series or parallel connection of devices is required. Medium voltage thyristors are available from 3.2kV up to 6.5kV with silicon diameters from 38mm to 96mm making them particularly suitable for high power converters such as medium voltage DC drives, medium voltage soft starts and utility applications such as HVDC, static VAr compensators, excitation and transfer switches.

We recognise the importance of reliability in these large, capital intensive applications and as a result we subject these parts to extended levels of both routine and type testing to ensure that your investment gives years of trouble free service.

Capsule Types

Part No.	V_{DRM} V_{RRM}	I_{TAV} T_K = 55°C	I_{TSM} 10 ms ½ sine V_R - ≤ 60% V_{RRM}	I^2t	t_q @ 200 V/µs	Typ. Reverse Recovery Charge T_{JM} Q_{rr}	@I_{TM}	@ -di/dt	V_{T0} @T_{JM}	r_T @T_{JM}	T_{JM}	R_{thJK} 180° Sine	120° Rect.	Fig. No.
➢ New	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	K/W	
➢ **K0445LG600**	6000	450	6400	200 ×10^3	700-1000	3100	500	10	1.560	2.270	125	0.0380	0.0400	W56
➢ **K0445LG650**	6500	450	6400	200×10^3	700-1000	3100	500	10	1.560	2.270	125	0.0380	0.0400	W56
➢ **K0500LC600**	6000	500	6400	200 ×10^3	700-1000	3100	500	10	1.560	2.270	125	0.0320	0.0347	W10
➢ **K0500LC650**	6500	500	6400	200×10^3	700-1000	3100	500	10	1.560	2.270	125	0.0320	0.0347	W10
➢ **K0560QE600**	6000	575	7700	296×10^3	1000-1100	4400	700	10	1.460	1.750	125	0.0310	0.0329	W76
➢ **K0560QE650**	6500	575	7700	296×10^3	1000-1100	4400	700	10	1.460	1.750	125	0.0310	0.0329	W76
➢ **K0625QA600**	6000	640	7700	296×10^3	1000-1100	4750	1000	10	1.460	1.750	125	0.0260	0.0281	W75
➢ **K0625QA650**	6500	640	7700	296×10^3	1000-1100	4750	1000	10	1.460	1.750	125	0.0260	0.0281	W75
K0890NC360	3600	890	10900	594 x 10^3	350-550	4000	1000	10	1.516	0.800	125	0.0240	0.0270	W11
K0890NC420	4200	890	10900	594 x 10^3	350-550	4000	1000	10	1.516	0.800	125	0.0240	0.0270	W11
➢ **K0900ME600**	6000	1010	12600	794 x 10^3	850-1150	6200	1000	10	1.610	0.900	125	0.0180	0.0204	W78
➢ **K0900ME650**	6500	1010	12600	794 x 10^3	850-1150	6200	1000	10	1.610	0.900	125	0.0180	0.0204	W78
➢ **K1010MA600**	6000	1130	12600	794 x 10^3	850-1150	6200	1000	10	1.610	0.900	125	0.0150	0.0174	W77
➢ **K1010MA650**	6500	1130	12600	794 x 10^3	850-1150	6200	1000	10	1.610	0.900	125	0.0150	0.0174	W77
K1121NC320	3200	1121	15000	1.13 x 10^6	200-300	2000	1000	10	1.098	0.542	125	0.0240	0.0270	W11
K1121NC360	3600	1121	15000	1.13 x 10^6	200-300	2000	1000	10	1.098	0.542	125	0.0240	0.0270	W11
K1197NC300	3000	1197	10650	567 x 10^3	200-300	2700	1000	10	1.335	0.372	125	0.0240	0.0270	W11
K1197NC320	3200	1197	10650	567 x 10^3	200-300	2700	1000	10	1.335	0.372	125	0.0240	0.0270	W11

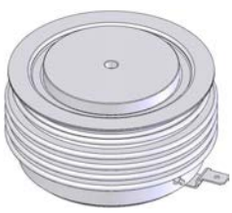
Outlines on pages O-01...O-35

W10 Weight 340 g

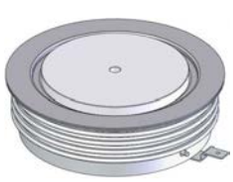
W11 Weight 510 g

W56 Weight 271 g

W75 Weight 330 g



W76 Weight 420 g



W77 Weight 550 g

W78 Weight 730 g

Medium Voltage Thyristors

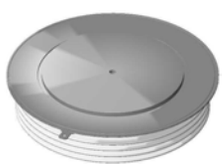
Capsule Types

Part No. ✪ under development ➢ New	V_{DRM} V_{RRM}	I_{TAV} T_K = 55°C	I_{TSM} 10 ms ½ sine V_R - ≤ 60% V_{RRM}	I^2t	t_q @ 200 V/µs	Typ. Reverse Recovery Charge T_{JM} Q_{rr}	@I_{TM}	@ -di/dt	V_{T0} @T_{JM}	r_T @T_{JM}	T_{JM}	R_{thJK} 180° Sine	120° Rect.	Fig. No.
	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	K/W	
✪ **K1210MA480**	4800	1210	15300	1.17 x 10^6	750-1050	3550	1000	10	1.477	0.797	125	0.0150	0.0174	W77
✪ **K1210MA520**	5200	1210	15300	1.17 x 10^6	750-1050	3550	1000	10	1.477	0.797	125	0.0150	0.0174	W77
✪ **K1270MA420**	4200	1270	16700	1.39 x 10^6	650-950	2150	1000	10	1.331	0.741	125	0.0150	0.0174	W77
✪ **K1270MA450**	4500	1270	16700	1.39 x 10^6	650-950	2150	1000	10	1.331	0.741	125	0.0150	0.0174	W77
➢ **K1495HE600**	6000	1495	21800	2.38 x 10^6	1200-1500	9000	1500	10	1.496	0.606	125	0.0125	0.0132	W80
➢ **K1495HE650**	6500	1495	21800	2.38 x 10^6	1200-1500	9000	1500	10	1.496	0.606	125	0.0125	0.0132	W80
➢ **K1670HA600**	6000	1670	21800	2.38 x 10^6	1200-1500	9000	1500	10	1.496	0.606	125	0.0105	0.0113	W79
➢ **K1670HA650**	6500	1670	21800	2.38 x 10^6	1200-1500	9000	1500	10	1.496	0.606	125	0.0105	0.0113	W79
✪ **K1785HA420**	4200	1785	26600	3.53 x 10^6	1050-1350	5150	1500	10	1.373	0.536	125	0.0105	0.0113	W79
✪ **K1785HA450**	4500	1785	26600	3.53 x 10^6	1050-1350	5150	1500	10	1.373	0.536	125	0.0105	0.0113	W79
K1947ZC400	4000	1947	25000	3.13 x 10^6	600-700	8800	1000	10	1.221	0.425	125	0.0110	0.0119	W13
K1947ZC450	4500	1947	25000	3.13 x 10^6	600-700	8800	1000	10	1.221	0.425	125	0.0110	0.0119	W13
K1947ZD400	4000	1947	25000	3.13 x 10^6	600-700	8800	1000	10	1.221	0.425	125	0.0110	0.0119	W46
K1947ZD450	4500	1947	25000	3.13 x 10^6	600-700	8800	1000	10	1.221	0.425	125	0.0110	0.0119	W46
➢ **K2085TE600**	6000	2145	33000	5.45 x 10^6	1450-1800	11000	3000	10	1.260	0.410	125	0.0095	0.0101	W82
➢ **K2085TE650**	6500	2145	33000	5.45 x 10^6	1450-1800	11000	3000	10	1.260	0.410	125	0.0095	0.0101	W82
K2095ZC360	3600	2095	18200	1.66 x 10^6	400-500	4550	2000	10	1.502	0.296	125	0.0110	0.0119	W13
K2095ZC420	4200	2095	18200	1.66 x 10^6	400-500	4550	2000	10	1.502	0.296	125	0.0110	0.0119	W13
K2095ZD360	3600	2095	18200	1.66 x 10^6	400-500	4550	2000	10	1.502	0.296	125	0.0110	0.0119	W46
K2095ZD420	4200	2095	18200	1.66 x 10^6	400-500	4550	2000	10	1.502	0.296	125	0.0110	0.0119	W46
➢ **K2325TJ600**	6000	2380	33000	5.45 x 10^6	1450-1800	11000	3000	10	1.260	0.410	125	0.0080	0.0085	W81
➢ **K2325TJ650**	6500	2380	33000	5.45 x 10^6	1450-1800	11000	3000	10	1.260	0.410	125	0.0080	0.0085	W81
✪ **K3745EA600**	6000	3745	35400	6.26 x 10^6	1500-1800	14000	4000	10	1.481	0.244	125	0.005	0.00538	W107
✪ **K3745EA650**	6500	3745	35400	6.26 x 10^6	1500-1800	14000	4000	10	1.481	0.244	125	0.005	0.00538	W107
✪ **K4005EA480**	4800	4005	43200	9.33 x 10^6	1300-1600	8000	4000	10	1.359	0.216	125	0.005	0.00538	W107
✪ **K4005EA520**	5200	4005	43200	9.33 x 10^6	1300-1600	8000	4000	10	1.359	0.216	125	0.005	0.00538	W107
✪ **K4215EA420**	4200	4215	47000	11.0 x 10^6	1200-1500	4800	4000	10	1.224	0.201	125	0.005	0.00538	W107
✪ **K4215EA450**	4500	4215	47000	11.0 x 10^6	1200-1500	4800	4000	10	1.224	0.201	125	0.005	0.00538	W107

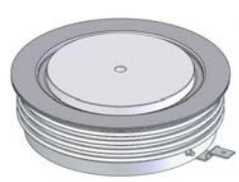
✪ New parts under development, please consult factory for more details.

Outlines on pages O-01...O-35

W13 Weight 1.7 kg



W46 Weight 1.2 kg



W77 Weight 550 g

W80 Weight 1.2 kg

W79 Weight 890 g

W81 Weight 1.2 kg

W82 Weight 1.65 kg

W107 Weight 1.6 kg

Fast Turn Off Thyristors

IXYS UK Westcode Ltd's „P" series of fast switching thyristors have a regenerative gate structure to ensure low switching losses and high di/dt performance. „P" Series devices are suitable for existing inverter, DC chopper drives, UPS and Pulse Power applications. In addition to pressure contact technology these devices offer low reverse recovery charge values, low forward'switching losses and high reliability. These devices are not recommended for new designs.

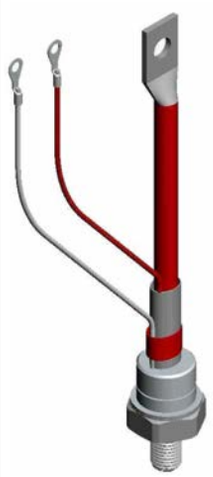
A new addition for 2017-18 is an M24 stud based assembly, with a current rating of 472A, voltage ratings up to 1600V and t_q starting at 25µs.

Stud Types

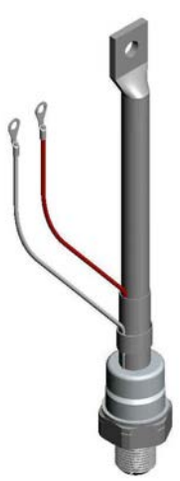
Part No.	V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge			V_{T0}	r_T	R_{thJC}	Fig. No.	Package style
		T_C = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@ 200 V/µs	T_{JM} Q_{rr}	@I_{TM}	@ -di/dt	@T_{JM}		180° sine		Outlines on pages O-01...O-35
	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	K/W		
P0128SH10C	1000	128	1700	19 x 10^3	15	50	100	10	1.600	2.490	0.2300	W17	
P0128SH10D	1000	128	1700	19 x 10^3	20	50	100	10	1.600	2.490	0.2300	W17	
P0128SH10E	1000	128	1700	19 x 10^3	25	50	100	10	1.600	2.490	0.2300	W17	
P0128SH12C	1200	128	1700	19 x 10^3	15	50	100	10	1.600	2.490	0.2300	W17	
P0128SH12D	1200	128	1700	19 x 10^3	20	50	100	10	1.600	2.490	0.2300	W17	
P0128SH12E	1200	128	1700	19 x 10^3	25	50	100	10	1.600	2.490	0.2300	W17	
P0128SJ10C	1000	128	1700	19 x 10^3	15	50	100	10	1.600	2.490	0.2300	W16	
P0128SJ10D	1000	128	1700	19 x 10^3	20	50	100	10	1.600	2.490	0.2300	W16	
P0128SJ10E	1000	128	1700	19 x 10^3	25	50	100	10	1.600	2.490	0.2300	W16	
P0128SJ12C	1200	128	1700	19 x 10^3	15	50	100	10	1.600	2.490	0.2300	W16	
P0128SJ12D	1200	128	1700	19 x 10^3	20	50	100	10	1.600	2.490	0.2300	W16	
P0128SJ12E	1200	128	1700	19 x 10^3	25	50	100	10	1.600	2.490	0.2300	W16	
R0472YC12EKER	1200	240	4000	80 x 10^3	25	155	550	40	1.648	1.125	0.1249	W115	
R0472YC12FKER	1200	240	4000	80 x 10^3	30	155	550	40	1.648	1.125	0.1249	W115	
R0472YC16EKER	1600	240	4000	80 x 10^3	25	155	550	40	1.648	1.125	0.1249	W115	
R0472YC16FKER	1600	240	4000	80 x 10^3	30	155	550	40	1.648	1.125	0.1249	W115	
P0248SC12D	1200	248	2700	36.5 x 10^3	20	45	300	20	1.600	1.230	0.1200	W18	
P0248SC12E	1200	248	2700	36.5 x 10^3	25	45	300	20	1.600	1.230	0.1200	W18	
P0273SC12D	1200	273	3250	52.8 x 10^3	20	80	300	20	1.550	0.870	0.1200	W18	
P0273SC12E	1200	273	3250	52.8 x 10^3	25	80	300	20	1.550	0.870	0.1200	W18	
P0273SC12F	1200	273	3250	52.8 x 10^3	30	80	300	20	1.550	0.870	0.1200	W18	
P0306SC08A	800	306	4700	110 x 10^3	10	50	300	20	1.400	0.670	0.1200	W18	
P0306SC08B	800	306	4700	110 x 10^3	12	50	300	20	1.400	0.670	0.1200	W18	
P0306SC08C	800	306	4700	110 x 10^3	15	50	300	20	1.400	0.670	0.1200	W18	
P0311SC12E	1200	311	3600	64.8 x 10^3	25	55	300	20	1.170	0.920	0.1200	W18	
P0311SC12F	1200	311	3600	64.8 x 10^3	30	55	300	20	1.170	0.920	0.1200	W18	
P0330SC04A	400	330	5000	125 x 10^3	10	55	300	20	1.050	0.880	0.1200	W18	
P0330SC04C	400	330	5000	125 x 10^3	15	55	300	20	1.050	0.880	0.1200	W18	
P0330SC06A	600	330	5000	125 x 10^3	10	55	300	20	1.050	0.880	0.1200	W18	
P0330SC06C	600	330	5000	125 x 10^3	15	55	300	20	1.050	0.880	0.1200	W18	
P0330SC08A	800	330	5000	125 x 10^3	10	55	300	20	1.050	0.880	0.1200	W18	
P0330SC08C	800	330	5000	125 x 10^3	15	55	300	20	1.050	0.880	0.1200	W18	
P0431SC04B	400	431	6500	211 x 10^3	12	190	300	20	0.950	0.377	0.1200	W18	
P0431SC04C	400	431	6500	211 x 10^3	15	190	300	20	0.950	0.377	0.1200	W18	
P0431SC06B	600	431	6500	211 x 10^3	12	190	300	20	0.950	0.377	0.1200	W18	
P0431SC06C	600	431	6500	211 x 10^3	15	190	300	20	0.950	0.377	0.1200	W18	

T_{JM} = 125°C

W16 Weight 100 g



W17 Weight 130 g



W18 Weight 280 g

W115 Weight 650 g

Fast Turn Off Thyristors

Capsule Types

Part No.	V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge			V_{T0}	r_T	R_{thJC}	Fig. No.	Package style
		T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@ 200 V/µs	T_{JM} Q_{rr}	@I_{TM}	@-di/dt	@ T_{JM}		d.c. 180° sine		Outlines on pages O-01...O-35
	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	K/W		
P0295WC12D	1200	295	2700	36.5 x 10^3	20	50	300	20	1.600	1.230	0.0950	W8	
P0295WC12E	1200	295	2700	36.5 x 10^3	25	50	300	20	1.600	1.230	0.0950	W8	
P0327WC08C	800	327	3250	63.9 x 10^3	15	45	300	20	1.550	0.870	0.0950	W8	
P0327WC08D	800	327	3250	63.9 x 10^3	20	45	300	20	1.550	0.870	0.0950	W8	
P0327WC08E	800	327	3250	63.9 x 10^3	25	45	300	20	1.550	0.870	0.0950	W8	
P0327WC08F	800	327	3250	63.9 x 10^3	30	45	300	20	1.550	0.870	0.0950	W8	
P0327WC12C	1200	327	3250	63.9 x 10^3	15	45	300	20	1.550	0.870	0.0950	W8	
P0327WC12D	1200	327	3250	63.9x 10^3	20	45	300	20	1.550	0.870	0.0950	W8	
P0327WC12E	1200	327	3250	63.9 x 10^3	25	45	300	20	1.550	0.870	0.0950	W8	
P0327WC12F	1200	327	3250	63.9 x 10^3	30	45	300	20	1.550	0.870	0.0950	W8	
P0366WC04A	400	366	4700	110 x 10^3	10	25	300	20	1.400	0.670	0.0950	W8	
P0366WC04B	400	366	4700	110 x 10^3	12	25	300	20	1.400	0.670	0.0950	W8	
P0366WC04C	400	366	4700	110 x 10^3	15	25	300	20	1.400	0.670	0.0950	W8	
P0366WC06A	600	366	4700	110 x 10^3	10	25	300	20	1.400	0.670	0.0950	W8	
P0366WC06B	600	366	4700	110 x 10^3	12	25	300	20	1.400	0.670	0.0950	W8	
P0366WC06C	600	366	4700	110 x 10^3	15	25	300	20	1.400	0.670	0.0950	W8	
P0366WC08A	800	366	4700	110 x 10^3	10	25	300	20	1.400	0.670	0.0950	W8	
P0366WC08B	800	366	4700	110 x 10^3	12	25	300	20	1.400	0.670	0.0950	W8	
P0366WC08C	800	366	4700	110 x 10^3	15	25	300	20	1.400	0.670	0.0950	W8	
P0367WC12E	1200	367	3600	64.8 x 10^3	25	50	300	20	1.170	0.920	0.0950	W8	
P0367WC12F	1200	367	3600	64.8 x 10^3	30	50	300	20	1.170	0.920	0.0950	W8	
P0389WC04B	400	389	5000	125 x 10^3	12	30	300	20	1.050	0.880	0.0950	W8	
P0389WC04C	400	389	5000	125 x 10^3	15	30	300	20	1.050	0.880	0.0950	W8	
P0389WC08B	800	389	5000	125 x 10^3	12	30	300	20	1.050	0.880	0.0950	W8	
P0389WC08C	800	389	5000	125 x 10^3	15	30	300	20	1.050	0.880	0.0950	W8	
P0515WC04B	400	515	6500	211 x 10^3	12	180	300	20	0.950	0.377	0.0950	W8	
P0515WC04C	400	515	6500	211 x 10^3	15	180	300	20	0.950	0.377	0.0950	W8	
P0515WC04D	400	515	6500	211 x 10^3	20	180	300	20	0.950	0.377	0.0950	W8	
P0515WC06B	600	515	6500	211 x 10^3	12	180	300	20	0.950	0.377	0.0950	W8	
P0515WC06C	600	515	6500	211 x 10^3	15	180	300	20	0.950	0.377	0.0950	W8	
P0515WC06D	600	515	6500	211 x 10^3	20	180	300	20	0.950	0.377	0.0950	W8	
P0838LC06B	600	1110	12300	750 x 10^3	12	160	800	50	1.200	0.280	0.0320	W10	
P0838LC06C	600	1110	12300	750 x 10^3	15	160	800	50	1.200	0.280	0.0320	W10	
P0848YC04B	400	848	8750	383 x 10^3	12	200	550	40	1.010	0.305	0.0500	W58	
P0848YC04C	400	848	8750	383 x 10^3	15	200	550	40	1.010	0.305	0.0500	W58	
P0848YC06B	600	848	8750	383 x 10^3	12	200	550	40	1.010	0.305	0.0500	W58	
P0848YC06C	600	848	8750	383 x 10^3	15	200	550	40	1.010	0.305	0.0500	W58	
P1007LC08D	800	1007	9500	451 x 10^3	20	400	800	50	1.509	0.265	0.0320	W10	
P1007LC08E	800	1007	9500	451 x 10^3	25	400	800	50	1.509	0.265	0.0320	W10	
P1007LC08F	800	1007	9500	451 x 10^3	30	400	800	50	1.509	0.265	0.0320	W10	
P1007LC12D	1200	1007	9500	451 x 10^3	20	400	800	50	1.509	0.265	0.0320	W10	
P1007LC12E	1200	1007	9500	451 x 10^3	25	400	800	50	1.509	0.265	0.0320	W10	
P1007LC12F	1200	1007	9500	451 x 10^3	30	400	800	50	1.509	0.265	0.0320	W10	

W8 Weight 70 g

W10 Weight 340 g

W58 Weight 90 g

T_{JM} = 125°C

Distributed Gate Thyristors

IXYS UK Westcode Ltd is recognised as the Worldwide leader in distributed gate technology. These devices are available with blocking voltages to 4.5kV and average currents in excess of 5kA, with tq ratings from 10µs. The unique distributed gate design and lifetime control features give these devices both high di/dt capability and fast, low recovery turn-off, while maintaining a low on-state voltage drop. Ideally suited to applications including: induction power supplies, high frequency inverters/converters, UPS and pulse power.

Capsule Types

Part No.	V_{DRM}	V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge @T_{JM}			V_{T0}	r_T	R_{thJK}	Fig. No.	Package style
			T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@ 200 V/µs	Q_{rr}	@I_{TM}	@-di/dt	@T_{JM}		180° Sine		Outlines on pages O-01...O-35
	V	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	K/W		
R0472YC12E	1200	1200	472	4300	92.5 x 10^3	25	155	550	40	1.648	1.125	0.05000	W58	
R0472YC12F	1200	1200	472	4300	92.5 x 10^3	30	155	550	40	1.648	1.125	0.05000	W58	
R0472YC16E	1600	1600	472	4300	92.5 x 10^3	25	155	550	40	1.648	1.125	0.05000	W58	
R0472YC16F	1600	1600	472	4300	92.5 x 10^3	30	155	550	40	1.648	1.125	0.05000	W58	
R0487YC12D	1200	1200	487	4300	92.5 x 10^3	20	90	550	40	1.738	0.943	0.05000	W58	
R0487YC12E	1200	1200	487	4300	92.5 x 10^3	25	90	550	40	1.738	0.943	0.05000	W58	
R0487YC14D	1400	1400	487	4300	92.5 x 10^3	20	90	550	40	1.738	0.943	0.05000	W58	
R0487YC14E	1400	1400	487	4300	92.5 x 10^3	25	90	550	40	1.738	0.943	0.05000	W58	
R0577YC12C	1200	1200	577	6000	180 x 10^3	15	150	550	40	1.510	0.640	0.05000	W58	
R0577YC12D	1200	1200	577	6000	180 x 10^3	20	150	550	40	1.510	0.640	0.05000	W58	
R0577YC12E	1200	1200	577	6000	180 x 10^3	25	150	550	40	1.510	0.640	0.05000	W58	
R0633YC12D	1200	1200	633	6300	200 x 10^3	20	125	550	40	1.250	0.614	0.05000	W58	
R0633YC12E	1200	1200	633	6300	200 x 10^3	25	125	550	40	1.250	0.614	0.05000	W58	
R0633YC12F	1200	1200	633	6300	200 x 10^3	30	125	550	40	1.250	0.614	0.05000	W58	
R0717LC14G	1400	1400	717	7050	248.5 x 10^3	35	425	1000	60	1.752	0.732	0.03200	W10	
R0717LC18G	1800	1800	717	7050	248.5 x 10^3	35	425	1000	60	1.752	0.732	0.03200	W10	
R0736LC20J	2000	2000	736	6800	231 x 10^3	50	640	1000	60	1.842	0.619	0.03200	W10	
R0736LC20K	2000	2000	736	6800	231 x 10^3	60	640	1000	60	1.842	0.619	0.03200	W10	
R0736LC22J	2200	2000	736	6800	231 x 10^3	50	640	1000	60	1.842	0.619	0.03200	W10	
R0736LC22K	2200	2000	736	6800	231 x 10^3	60	640	1000	60	1.842	0.619	0.03200	W10	
R0736LC25J	2500	2000	736	6800	231 x 10^3	50	640	1000	60	1.842	0.619	0.03200	W10	
R0736LC25K	2500	2000	736	6800	231 x 10^3	60	640	1000	60	1.842	0.619	0.03200	W10	
R0809LC10A	1000	1000	809	8000	320 x 10^3	10	120	1000	60	2.100	0.300	0.03200	W10	
R0809LC10B	1000	1000	809	8000	320 x 10^3	12	120	1000	60	2.100	0.300	0.03200	W10	
R0830LC12C	1200	1200	830	8500	361 x 10^3	15	285	1000	60	1.900	0.357	0.03200	W10	
R0830LC12D	1200	1200	830	8500	361 x 10^3	20	285	1000	60	1.900	0.357	0.03200	W10	
R0830LC12E	1200	1200	830	8500	361 x 10^3	25	285	1000	60	1.900	0.357	0.03200	W10	
R0830LC12F	1200	1200	830	8500	361 x 10^3	30	285	1000	60	1.900	0.357	0.03200	W10	
R0830LC14C	1400	1400	830	8500	361 x 10^3	15	285	1000	60	1.900	0.357	0.03200	W10	
R0830LC14D	1400	1400	830	8500	361 x 10^3	20	285	1000	60	1.900	0.357	0.03200	W10	
R0830LC14E	1400	1400	830	8500	361 x 10^3	25	285	1000	60	1.900	0.357	0.03200	W10	
R0830LC14F	1400	1400	830	8500	361 x 10^3	30	285	1000	60	1.900	0.357	0.03200	W10	
R0878LC18K	1800	1800	878	7500	281 x 10^3	60	720	1000	60	1.447	0.480	0.03200	W10	
R0878LC18L	1800	1800	878	7500	281 x 10^3	65	720	1000	60	1.447	0.480	0.03200	W10	
R0878LC18M	1800	1800	878	7500	281 x 10^3	70	720	1000	60	1.447	0.480	0.03200	W10	
R0878LC20K	2000	1800	878	7500	281 x 10^3	60	720	1000	60	1.447	0.480	0.03200	W10	
R0878LC20L	2000	1800	878	7500	281 x 10^3	65	720	1000	60	1.447	0.480	0.03200	W10	
R0878LC20M	2000	1800	878	7500	281 x 10^3	70	720	1000	60	1.447	0.480	0.03200	W10	
R0878LC21K	2100	1800	878	7500	281 x 10^3	60	720	1000	60	1.447	0.480	0.03200	W10	
R0878LC21L	2100	1800	878	7500	281 x 10^3	65	720	1000	60	1.447	0.480	0.03200	W10	
R0878LC21M	2100	1800	878	7500	281 x 10^3	70	720	1000	60	1.447	0.480	0.03200	W10	
R0929LC10A	1000	1000	929	9000	405 x 10^3	10	150	1000	60	1.549	0.350	0.03200	W10	
R0929LC10B	1000	1000	929	9000	405 x 10^3	12	150	1000	60	1.549	0.350	0.03200	W10	
R0929LC10C	1000	1000	929	9000	405 x 10^3	15	150	1000	60	1.549	0.350	0.03200	W10	
R0929LC12A	1200	1200	929	9000	405 x 10^3	10	150	1000	60	1.549	0.350	0.03200	W10	
R0929LC12B	1200	1200	929	9000	405 x 10^3	12	150	1000	60	1.549	0.350	0.03200	W10	
R0929LC12C	1200	1200	929	9000	405 x 10^3	15	150	1000	60	1.549	0.350	0.03200	W10	
R0929LC12D	1200	1200	929	9000	405 x 10^3	20	150	1000	60	1.549	0.350	0.03200	W10	
R0929LC12E	1200	1200	929	9000	405 x 10^3	25	150	1000	60	1.549	0.350	0.03200	W10	
R0964LC10C	1000	1000	964	9400	442 x 10^3	15	170	1000	60	1.530	0.309	0.03200	W10	
R0964LC10D	1000	1000	964	9400	442 x 10^3	20	170	1000	60	1.530	0.309	0.03200	W10	
R0964LC10E	1000	1000	964	9400	442 x 10^3	25	170	1000	60	1.530	0.309	0.03200	W10	
R0964LC12C	1200	1200	964	9400	442 x 10^3	15	170	1000	60	1.530	0.309	0.03200	W10	
R0964LC12D	1200	1200	964	9400	442 x 10^3	20	170	1000	60	1.530	0.309	0.03200	W10	
R0964LC12E	1200	1200	964	9400	442 x 10^3	25	170	1000	60	1.530	0.309	0.03200	W10	

W10 Weight 340 g

W58 Weight 90 g

Distributed Gate Thyristors

Capsule Types

Part No.	V_{DRM}	V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge @T_{JM}			V_{T0}	r_T	R_{thJK}	Fig. No.	Package style
			T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@ 200 V/µs	Q_{rr}	@I_{TM}	@-di/dt	@T_{JM}		180° Sine		Outlines on pages O-01...O-35
➢ New	V	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	K/W		
R0990LC08A	800	800	990	11000	605 x 10^3	10	90	1000	60	1.350	0.350	0.03200	W10	
R0990LC08B	800	800	990	11000	605 x 10^3	12	90	1000	60	1.350	0.350	0.03200	W10	
R0990LC08C	800	800	990	11000	605 x 10^3	15	90	1000	60	1.350	0.350	0.03200	W10	
➢ R1045NC28L	2800	2800	1055	12500	781 x 10^3	60	950	1000	60	1.640	0.430	0.02400	W11	
➢ R1045NC28M	2800	2800	1055	12500	781 x 10^3	70	950	1000	60	1.640	0.430	0.02400	W11	
➢ R1045NC32L	3200	3200	1055	12500	781 x 10^3	60	950	1000	60	1.640	0.430	0.02400	W11	
➢ R1045NC32M	3200	3200	1055	12500	781 x 10^3	70	950	1000	60	1.640	0.430	0.02400	W11	
R1124NC18J	1800	1800	1124	13500	0.91 x 10^6	50	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC18K	1800	1800	1124	13500	0.91 x 10^6	60	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC18L	1800	1800	1124	13500	0.91 x 10^6	65	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC18M	1800	1800	1124	13500	0.91 x 10^6	70	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC20J	2000	1800	1124	13500	0.91 x 10^6	50	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC20K	2000	1800	1124	13500	0.91 x 10^6	60	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC20L	2000	1800	1124	13500	0.91 x 10^6	65	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC20M	2000	1800	1124	13500	0.91 x 10^6	70	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC21J	2100	1800	1124	13500	0.91 x 10^6	50	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC21K	2100	1800	1124	13500	0.91 x 10^6	60	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC21L	2100	1800	1124	13500	0.91 x 10^6	65	640	1000	60	1.540	0.379	0.02400	W11	
R1124NC21M	2100	1800	1124	13500	0.91 x 10^6	70	640	1000	60	1.540	0.379	0.02400	W11	
R1127NC32P	3200	3200	1127	12800	819 x 10^3	120	3500	1000	60	1.500	0.474	0.02200	W11	
R1127NC32R	3200	3200	1127	12800	819 x 10^3	140	3500	1000	60	1.500	0.474	0.02200	W11	
R1127NC32S	3200	3200	1127	12800	819 x 10^3	160	3500	1000	60	1.500	0.474	0.02200	W11	
R1127NC32T	3200	3200	1127	12800	819 x 10^3	200	3500	1000	60	1.500	0.474	0.02200	W11	
R1127NC34R	3400	3400	1127	12800	819 x 10^3	140	3500	1000	60	1.500	0.474	0.02200	W11	
R1127NC34S	3400	3400	1127	12800	819 x 10^3	160	3500	1000	60	1.500	0.474	0.02200	W11	
R1127NC34T	3400	3400	1127	12800	819 x 10^3	200	3500	1000	60	1.500	0.474	0.02200	W11	
R1127NC36R	3600	3600	1127	12800	819 x 10^3	140	3500	1000	60	1.500	0.474	0.02200	W11	
R1127NC36S	3600	3600	1127	12800	819 x 10^3	160	3500	1000	60	1.500	0.474	0.02200	W11	
R1127NC36T	3600	3600	1127	12800	819 x 10^3	200	3500	1000	60	1.500	0.474	0.02200	W11	
R1158NC26N	2600	2600	1158	14500	1.05 x 10^6	100	1600	1000	60	1.600	0.400	0.02200	W11	
R1158NC26P	2600	2600	1158	14500	1.05 x 10^6	120	1600	1000	60	1.600	0.400	0.02200	W11	
R1158NC26T	2600	2600	1158	14500	1.05 x 10^6	200	1600	1000	60	1.600	0.400	0.02200	W11	
R1178NC14E	1400	1400	1178	17000	1.45 x 10^6	25	320	1000	60	1.600	0.300	0.02400	W11	
R1178NC14F	1400	1400	1178	17000	1.45 x 10^6	30	320	1000	60	1.600	0.300	0.02400	W11	
R1178NC14G	1400	1400	1178	17000	1.45 x 10^6	35	320	1000	60	1.600	0.300	0.02400	W11	
R1211NC12C	1200	1200	1211	17600	1.548 x 10^6	15	230	1000	60	1.720	0.230	0.02400	W11	
R1211NC12D	1200	1200	1211	17600	1.548 x 10^6	20	230	1000	60	1.720	0.230	0.02400	W11	
R1211NC12E	1200	1200	1211	17600	1.548 x 10^6	25	230	1000	60	1.720	0.230	0.02400	W11	
R1271NC12B	1200	1200	1271	18000	1.62 x 10^6	12	200	1000	60	1.547	0.237	0.02400	W11	
R1271NC12C	1200	1200	1271	18000	1.62 x 10^6	15	200	1000	60	1.547	0.237	0.02400	W11	
R1271NC12D	1200	1200	1271	18000	1.62 x 10^6	20	200	1000	60	1.547	0.237	0.02400	W11	
R1271NC12E	1200	1200	1271	18000	1.62 x 10^6	25	200	1000	60	1.547	0.237	0.02400	W11	
R1275NC18J	1800	1800	1275	15500	1.20 x 10^6	50	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC18K	1800	1800	1275	15500	1.20 x 10^6	60	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC18L	1800	1800	1275	15500	1.20 x 10^6	65	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC18M	1800	1800	1275	15500	1.20 x 10^6	70	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC20J	2000	1800	1275	15500	1.20 x 10^6	50	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC20K	2000	1800	1275	15500	1.20 x 10^6	60	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC20L	2000	1800	1275	15500	1.20 x 10^6	65	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC20M	2000	1800	1275	15500	1.20 x 10^6	70	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC21J	2100	1800	1275	15500	1.20 x 10^6	50	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC21K	2100	1800	1275	15500	1.20 x 10^6	60	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC21L	2100	1800	1275	15500	1.20 x 10^6	65	940	1000	60	1.207	0.342	0.02400	W11	
R1275NC21M	2100	1800	1275	15500	1.20 x 10^6	70	940	1000	60	1.207	0.342	0.02400	W11	
R1279NC22J	2200	2200	1279	14800	1.10 x 10^6	50	1250	1000	60	1.440	0.330	0.02200	W11	
R1279NC22K	2200	2200	1279	14800	1.10 x 10^6	60	1250	1000	60	1.440	0.330	0.02200	W11	
R1279NC22L	2200	2200	1279	14800	1.10 x 10^6	65	1250	1000	60	1.440	0.330	0.02200	W11	
R1279NC22M	2200	2200	1279	14800	1.10 x 10^6	70	1250	1000	60	1.440	0.330	0.02200	W11	
R1279NC25J	2500	2500	1279	14800	1.10 x 10^6	50	1250	1000	60	1.440	0.330	0.02200	W11	
R1279NC25K	2500	2500	1279	14800	1.10 x 10^6	60	1250	1000	60	1.440	0.330	0.02200	W11	
R1279NC25L	2500	2500	1279	14800	1.10 x 10^6	65	1250	1000	60	1.440	0.330	0.02200	W11	
R1279NC25M	2500	2500	1279	14800	1.10 x 10^6	70	1250	1000	60	1.440	0.330	0.02200	W11	

W10 Weight 340 g

W11 Weight 510 g

Distributed Gate Thyristors

Capsule Types

Part No.	V_{DRM}	V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge @T_{JM}			V_{T0}	r_T	R_{thJK}	Fig. No.	Package style
			T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@ 200 V/µs	Q_{rr}	@I_{TM}	@-di/dt	@T_{JM}		180° Sine		Outlines on pages O-01...O-35
	V	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	K/W		
R1280NC21J	2100	2100	1280	14800	1.10 x 10^6	50	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC21K	2100	2100	1280	14800	1.10 x 10^6	60	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC21L	2100	2100	1280	14800	1.10 x 10^6	65	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC21M	2100	2100	1280	14800	1.10 x 10^6	70	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC22J	2200	2100	1280	14800	1.10 x 10^6	50	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC22K	2200	2100	1280	14800	1.10 x 10^6	60	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC22L	2200	2100	1280	14800	1.10 x 10^6	65	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC22M	2200	2100	1280	14800	1.10 x 10^6	70	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC25J	2500	2100	1280	14800	1.10 x 10^6	50	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC25K	2500	2100	1280	14800	1.10 x 10^6	60	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC25L	2500	2100	1280	14800	1.10 x 10^6	65	1200	1000	60	1.440	0.330	0.02200	W11	
R1280NC25M	2500	2100	1280	14800	1.10 x 10^6	70	1200	1000	60	1.440	0.330	0.02200	W11	
R1331NC10B	1000	1000	1331	18200	1.66 x 10^6	12	200	1000	60	1.450	0.285	0.02200	W11	
R1331NC10C	1000	1000	1331	18200	1.66 x 10^6	15	200	1000	60	1.450	0.285	0.02200	W11	
R1331NC10D	1000	1000	1331	18200	1.66 x 10^6	20	200	1000	60	1.450	0.285	0.02200	W11	
R1331NC12B	1200	1200	1331	18200	1.66 x 10^6	12	200	1000	60	1.450	0.285	0.02200	W11	
R1331NC12C	1200	1200	1331	18200	1.66 x 10^6	15	200	1000	60	1.450	0.285	0.02200	W11	
R1331NC12D	1200	1200	1331	18200	1.66 x 10^6	20	200	1000	60	1.450	0.285	0.02200	W11	
R1446NC12C	1200	1200	1446	19500	1.90 x 10^6	15	300	1000	60	1.304	0.199	0.02400	W11	
R1446NC12D	1200	1200	1446	19500	1.90 x 10^6	20	300	1000	60	1.304	0.199	0.02400	W11	
R1446NC12E	1200	1200	1446	19500	1.90 x 10^6	25	300	1000	60	1.304	0.199	0.02400	W11	
R1446NC12F	1200	1200	1446	19500	1.90 x 10^6	30	300	1000	60	1.304	0.199	0.02400	W11	
R1448NC14H	1400	1400	1448	15500	1.20 x 10^6	40	950	1000	60	1.300	0.250	0.02200	W11	
R1448NC14J	1400	1400	1448	15500	1.20 x 10^6	50	950	1000	60	1.300	0.250	0.02200	W11	
R1448NC18H	1800	1800	1448	15500	1.20 x 10^6	40	950	1000	60	1.300	0.250	0.02200	W11	
R1448NC18J	1800	1800	1448	15500	1.20 x 10^6	50	950	1000	60	1.300	0.250	0.02200	W11	
R1448NC20H	2000	2000	1448	15500	1.20 x 10^6	40	950	1000	60	1.300	0.250	0.02200	W11	
R1448NC20J	2000	2000	1448	15500	1.20 x 10^6	50	950	1000	60	1.300	0.250	0.02200	W11	
R1448NC20K	2000	2000	1448	15500	1.20 x 10^6	60	950	1000	60	1.300	0.250	0.02200	W11	
R1448NC20L	2000	2000	1448	15500	1.20 x 10^6	65	950	1000	60	1.300	0.250	0.02200	W11	
R1448NC20M	2000	2000	1448	15500	1.20 x 10^6	70	950	1000	60	1.300	0.250	0.02200	W11	
R1605MC20F	2000	2000	1605	20700	2.14 x 10^6	30	900	1000	60	2.100	0.200	0.01500	W70	
R1605MC20H	2000	2000	1605	20700	2.14 x 10^6	40	900	1000	60	2.100	0.200	0.01500	W70	
R1605MC22F	2200	2200	1605	20700	2.14 x 10^6	30	900	1000	60	2.100	0.200	0.01500	W70	
R1605MC22H	2200	2200	1605	20700	2.14 x 10^6	40	900	1000	60	2.100	0.200	0.01500	W70	
R1700MC18E	1800	1800	1700	20000	2.0 x 10^6	25	1400	1000	60	1.600	0.250	0.01500	W70	
R1700MC18F	1800	1800	1700	20000	2.0 x 10^6	30	1400	1000	60	1.600	0.250	0.01500	W70	
R1700MC18G	1800	1800	1700	20000	2.0 x 10^6	35	1400	1000	60	1.600	0.250	0.01500	W70	
R1700MC18H	1800	1800	1700	20000	2.0 x 10^6	40	1400	1000	60	1.600	0.250	0.01500	W70	
R1700MC18J	1800	1800	1700	20000	2.0 x 10^6	50	1400	1000	60	1.600	0.250	0.01500	W70	
R1700MC21E	2100	1800	1700	20000	2.0 x 10^6	25	1400	1000	60	1.600	0.250	0.01500	W70	
R1700MC21F	2100	1800	1700	20000	2.0 x 10^6	30	1400	1000	60	1.600	0.250	0.01500	W70	
R1700MC21G	2100	1800	1700	20000	2.0 x 10^6	35	1400	1000	60	1.600	0.250	0.01500	W70	
R1700MC21H	2100	1800	1700	20000	2.0 x 10^6	40	1400	1000	60	1.600	0.250	0.01500	W70	
R1700MC21J	2100	1800	1700	20000	2.0 x 10^6	50	1400	1000	60	1.600	0.250	0.01500	W70	
R1955MC14D	1400	1400	1955	26500	3.51×10^6	20	1000	1000	60	1.460	0.910	0.01500	W70	
R1955MC14E	1400	1400	1955	26500	3.51×10^6	25	1000	1000	60	1.460	0.910	0.01500	W70	
R1955MC14F	1400	1400	1955	26500	3.51×10^6	30	1000	1000	60	1.460	0.910	0.01500	W70	
R1955MC16D	1600	1600	1955	26500	3.51 x 10^6	20	1000	1000	60	1.460	0.910	0.01500	W70	
R1955MC16E	1600	1600	1955	26500	3.51 x 10^6	25	1000	1000	60	1.460	0.910	0.01500	W70	
R1955MC16F	1600	1600	1955	26500	3.51 x 10^6	30	1000	1000	60	1.460	0.910	0.01500	W70	

W11 Weight 510 g

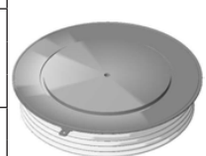
W70 Weight 550 g

Distributed Gate Thyristors

Capsule Types

Part No.	V_{DRM}	V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge @T_{JM}			V_{T0}	r_T	R_{thJK}	Fig. No.	Package style
			T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@ 200 V/µs	Q_{rr}	@I_{TM}	@-di/dt	@T_{JM}		180° Sine		Outlines on pages O-01...O-35
➢ New	V	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	K/W		
R2075MC12A	1200	1200	2075	29000	4.21 x 10^6	10	300	1000	60	1.390	0.167	0.01500	W70	
R2075MC12B	1200	1200	2075	29000	4.21 x 10^6	12	300	1000	60	1.390	0.167	0.01500	W70	
R2075MC12C	1200	1200	2075	29000	4.21 x 10^6	15	300	1000	60	1.390	0.167	0.01500	W70	
➢ R2295HA22F	2200	2200	2295	30000	4.50 x 10^6	30	875	1000	60	1.690	0.190	0.01100	W79	
➢ R2295HA22H	2200	2200	2295	30000	4.50 x 10^6	40	875	1000	60	1.690	0.190	0.01100	W79	
R2475ZC28M	2800	2800	2475	31000	4.81 x 10^6	70	3900	4000	60	1.504	0.174	0.01100	W13	
R2475ZC28N	2800	2800	2475	31000	4.81 x 10^6	100	3900	4000	60	1.504	0.174	0.01100	W13	
R2475ZC28R	2800	2800	2475	31000	4.81 x 10^6	140	3900	4000	60	1.504	0.174	0.01100	W13	
R2475ZD28M	2800	2800	2475	31000	4.81 x 10^6	70	3900	4000	60	1.504	0.174	0.01100	W46	
R2475ZD28N	2800	2800	2475	31000	4.81 x 10^6	100	3900	4000	60	1.504	0.174	0.01100	W46	
R2475ZD28R	2800	2800	2475	31000	4.81 x 10^6	140	3900	4000	60	1.504	0.174	0.01100	W46	
R2619ZC18J	1800	1800	2619	33800	5.71 x 10^6	50	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC18K	1800	1800	2619	33800	5.71 x 10^6	60	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC18L	1800	1800	2619	33800	5.71 x 10^6	65	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC20J	2000	2000	2619	33800	5.71 x 10^6	50	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC20K	2000	2000	2619	33800	5.71 x 10^6	60	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC20L	2000	2000	2619	33800	5.71 x 10^6	65	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC21J	2100	2100	2619	33800	5.71 x 10^6	50	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC21K	2100	2100	2619	33800	5.71 x 10^6	60	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC21L	2100	2100	2619	33800	5.71 x 10^6	65	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC25J	2500	2100	2619	33800	5.71 x 10^6	50	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC25K	2500	2100	2619	33800	5.71 x 10^6	60	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZC25L	2500	2100	2619	33800	5.71 x 10^6	65	1850	4000	60	1.308	0.173	0.01100	W13	
R2619ZD18J	1800	1800	2619	33800	5.71 x 10^6	50	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD18K	1800	1800	2619	33800	5.71 x 10^6	60	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD18L	1800	1800	2619	33800	5.71 x 10^6	65	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD20J	2000	2000	2619	33800	5.71 x 10^6	50	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD20K	2000	2000	2619	33800	5.71 x 10^6	60	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD20L	2000	2000	2619	33800	5.71 x 10^6	65	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD21J	2100	2100	2619	33800	5.71 x 10^6	50	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD21K	2100	2100	2619	33800	5.71 x 10^6	60	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD21L	2100	2100	2619	33800	5.71 x 10^6	65	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD25J	2500	2100	2619	33800	5.71 x 10^6	50	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD25K	2500	2100	2619	33800	5.71 x 10^6	60	1850	4000	60	1.308	0.173	0.01100	W46	
R2619ZD25L	2500	2100	2619	33800	5.71 x 10^6	65	1850	4000	60	1.308	0.173	0.01100	W46	
R2620ZC22J	2200	2200	2620	33800	5.71 x 10^6	50	2100	4000	60	1.500	0.143	0.01100	W13	
R2620ZC22K	2200	2200	2620	33800	5.71 x 10^6	60	2100	4000	60	1.500	0.143	0.01100	W13	
R2620ZC22L	2200	2200	2620	33800	5.71 x 10^6	65	2100	4000	60	1.500	0.143	0.01100	W13	
R2620ZC25J	2500	2500	2620	33800	5.71 x 10^6	50	2100	4000	60	1.500	0.143	0.01100	W13	
R2620ZC25K	2500	2500	2620	33800	5.71 x 10^6	60	2100	4000	60	1.500	0.143	0.01100	W13	
R2620ZC25L	2500	2500	2620	33800	5.71 x 10^6	65	2100	4000	60	1.500	0.143	0.01100	W13	
R2620ZD22J	2200	2200	2620	33800	5.71 x 10^6	50	2100	4000	60	1.500	0.143	0.01100	W46	
R2620ZD22K	2200	2200	2620	33800	5.71 x 10^6	60	2100	4000	60	1.500	0.143	0.01100	W46	
R2620ZD22L	2200	2200	2620	33800	5.71 x 10^6	65	2100	4000	60	1.500	0.143	0.01100	W46	
R2620ZD25J	2500	2500	2620	33800	5.71 x 10^6	50	2100	4000	60	1.500	0.143	0.01100	W46	
R2620ZD25K	2500	2500	2620	33800	5.71 x 10^6	60	2100	4000	60	1.500	0.143	0.01100	W46	
R2620ZD25L	2500	2500	2620	33800	5.71 x 10^6	65	2100	4000	60	1.500	0.143	0.01100	W46	
R2714ZC14H	1400	1400	2714	35600	6.34 x 10^6	40	1400	4000	60	1.250	0.163	0.01100	W13	
R2714ZC14J	1400	1400	2714	35600	6.34 x 10^6	50	1400	4000	60	1.250	0.163	0.01100	W13	
R2714ZC14K	1400	1400	2714	35600	6.34 x 10^6	60	1400	4000	60	1.250	0.163	0.01100	W13	
R2714ZC18H	1800	1800	2714	35600	6.34 x 10^6	40	1400	4000	60	1.250	0.163	0.01100	W13	
R2714ZC18J	1800	1800	2714	35600	6.34 x 10^6	50	1400	4000	60	1.250	0.163	0.01100	W13	
R2714ZC18K	1800	1800	2714	35600	6.34 x 10^6	60	1400	4000	60	1.250	0.163	0.01100	W13	

W13 Weight 1.7 kg



W46 Weight 1.2 kg

W70 Weight 550 g

Distributed Gate Thyristors

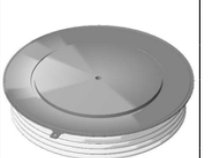
Capsule Types

Part No.	V_{DRM}	V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge @T_{JM}			V_{T0}	r_T	R_{thJK}	Fig. No.	Package style
			T_K = 55°C	10 ms ½ sine V_R - ≤ 60% V_{RRM}		@ 200 V/µs	Q_{rr}	@I_{TM}	@-di/dt	@T_{JM}		180° Sine		Outlines on pages O-01...O-35
➢ New	V	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	K/W		
R2714ZD14H	1400	1400	2714	35600	6.34 x 10^6	40	1400	4000	60	1.250	0.163	0.01100	W46	
R2714ZD14J	1400	1400	2714	35600	6.34 x 10^6	50	1400	4000	60	1.250	0.163	0.01100	W46	
R2714ZD14K	1400	1400	2714	35600	6.34 x 10^6	60	1400	4000	60	1.250	0.163	0.01100	W46	
R2714ZD18H	1800	1800	2714	35600	6.34 x 10^6	40	1400	4000	60	1.250	0.163	0.01100	W46	
R2714ZD18J	1800	1800	2714	35600	6.34 x 10^6	50	1400	4000	60	1.250	0.163	0.01100	W46	
R2714ZD18K	1800	1800	2714	35600	6.34 x 10^6	60	1400	4000	60	1.250	0.163	0.01100	W46	
R3047TC24K *	2400	2400	3047	50000	12.5 x 10^6	60	2100	4000	60	1.580	0.170	0.00800	W14	
R3047TC24M *	2400	2400	3047	50000	12.5 x 10^6	70	2100	4000	60	1.580	0.170	0.00800	W14	
R3047TC24N *	2400	2400	3047	50000	12.5 x 10^6	100	2100	4000	60	1.580	0.170	0.00800	W14	
R3047TC28K *	2800	2800	3047	50000	12.5 x 10^6	60	2100	4000	60	1.580	0.170	0.00800	W14	
R3047TC28M *	2800	2800	3047	50000	12.5 x 10^6	70	2100	4000	60	1.580	0.170	0.00800	W14	
R3047TC28N *	2800	2800	3047	50000	12.5 x 10^6	100	2100	4000	60	1.580	0.170	0.00800	W14	
➢ **R3115TJ24J**	2400	2400	3115	56000	15.68 x 10^6	50	3350	2000	60	1.884	0.120	0.00800	W81	
➢ **R3115TJ24K**	2400	2400	3115	56000	15.68 x 10^6	60	3350	2000	60	1.884	0.120	0.00800	W81	
➢ **R3115TJ28J**	2800	2800	3115	56000	15.68 x 10^6	50	3350	2000	60	1.884	0.120	0.00800	W81	
➢ **R3115TJ28K**	2800	2800	3115	56000	15.68 x 10^6	60	3350	2000	60	1.884	0.120	0.00800	W81	
R3370ZC12C	1200	1200	3370	43900	9.64 x 10^6	15	600	4000	60	1.353	0.064	0.01100	W13	
R3370ZC12D	1200	1200	3370	43900	9.64 x 10^6	20	600	4000	60	1.353	0.064	0.01100	W13	
R3370ZC12E	1200	1200	3370	43900	9.64 x 10^6	25	600	4000	60	1.353	0.064	0.01100	W13	
R3559TC20K *	2000	2000	3559	38900	7.57 x 10^6	60	1750	4000	60	1.173	0.155	0.00800	W14	
R3559TC20M *	2000	2000	3559	38900	7.57 x 10^6	70	1750	4000	60	1.173	0.155	0.00800	W14	
R3559TC20N *	2000	2000	3559	38900	7.57 x 10^6	100	1750	4000	60	1.173	0.155	0.00800	W14	
R3636EC20K *	2000	2000	3636	38900	7.57 x 10^6	60	1750	4000	60	1.173	0.155	0.00750	W55	
R3636EC20M *	2000	2000	3636	38900	7.57 x 10^6	70	1750	4000	60	1.173	0.155	0.00750	W55	
R3636EC20N *	2000	2000	3636	38900	7.57 x 10^6	100	1750	4000	60	1.173	0.155	0.00750	W55	
R3968FC24K *	2400	2400	4001	66000	21.78 x 10^6	60	2600	4000	60	1.453	0.125	0.00650	W15	
R3968FC24M *	2400	2400	4001	66000	21.78 x 10^6	70	2600	4000	60	1.453	0.125	0.00650	W15	
R3968FC24N *	2400	2400	4001	66000	21.78 x 10^6	100	2600	4000	60	1.453	0.125	0.00650	W15	
R3968FC28K *	2800	2800	4001	66000	21.78 x 10^6	60	2600	4000	60	1.453	0.125	0.00650	W15	
R3968FC28M *	2800	2800	4001	66000	21.78 x 10^6	70	2600	4000	60	1.453	0.125	0.00650	W15	
R3968FC28N *	2800	2800	4001	66000	21.78 x 10^6	100	2600	4000	60	1.453	0.125	0.00650	W15	
R5145FA42V	4200	4500	5145	66000	21.78 x 10^6	250	12000	4000	60	1.659	0.107	0.00450	W118	
R5145FA42W	4200	4500	5145	66000	21.78 x 10^6	300	12000	4000	60	1.659	0.107	0.00450	W118	
R5145FA45V	4500	4500	5145	66000	21.78 x 10^6	250	12000	4000	60	1.659	0.107	0.00450	W118	
R5145FA45W	4500	4500	5145	66000	21.78 x 10^6	300	12000	4000	60	1.659	0.107	0.00450	W118	
➢ **R5370EA18J**	1800	1800	5370	70000	24.5 x 10^6	50	3000	1000	60	1.661	0.071	0.00500	W107	
➢ **R5370EA18K**	1800	1800	5370	70000	24.5 x 10^6	60	3000	1000	60	1.661	0.071	0.00500	W107	
➢ **R5370EA22J**	2200	2200	5370	70000	24.5 x 10^6	50	3000	1000	60	1.661	0.071	0.00500	W107	
➢ **R5370EA22K**	2200	2200	5370	70000	24.5 x 10^6	60	3000	1000	60	1.661	0.071	0.00500	W107	

W13 Weight 1.7 kg

W14 Weight 1.3 kg

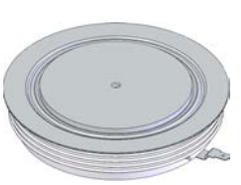
W15 Weight 2.8 kg



W46 Weight 1.2 kg

* Not for new designs - Please consult factory for details

W107 Weight 1.6 kg



W81 Weight 1.2 kg

W55 Weight 1.8 kg

Distributed Gate Thyristors

Asymmetric Thyristors

These devices are available up to a voltage of 2800V. They exhibit very fast turn-on times and are capable of very high values of both critical di/dt and dv/dt. For the device type, they also exhibit high current ratings in excess of 1000A. Asymmetric construction optimizes the forward losses against the turn-off losses and gives the best performance in their voltage class.

Part No.	V_{DRM}	V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_{gd}	typ. t_q	$(di/dt)_{cr}$	$(dv/dt)_{cr}$	V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K = 55°C	10 ms ½ sine		25°c typ.	@ 200 V/µs	@ T_{JM}	@ T_{JM}	@T_{JM}			180° Sine	
	V	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
A0516YC240	2400	10	516	5700	151 x 10^3	0.5	55	2000	3000	1.630	0.850	125	0.050	W58
A0516YC280	2800	10	516	5700	151 x 10^3	0.5	55	2000	3000	1.630	0.850	125	0.050	W58
A1237NC240	2400	30	1237	18000	1.62 x 10^6	0.9	30	2000	3000	1.707	0.212	125	0.024	W11
A1237NC280	2800	30	1237	18000	1.62 x 10^6	0.9	30	2000	3000	1.707	0.212	125	0.024	W11

Outlines on pages O-01...O-35

W11 Weight 510 g

W58 Weight 90 g

Pulse Thyristors

IXYS UK Westcode Ltd are at the forefront of solid state pulsed power technology, offering custom solutions to complex pulsed power problems.
Standard Devices with voltage ratings to 2.5kV, pulsed currents to 150kA peak and di/dt capabilities to over 30kA/µs are available. Please consult factory for other requirements for voltage ratings up to 4.5kV and pulsed current ratings >200kA

Part No.	V_{DRM}	V_{RRM}	V_{DC}	I_{PULSE}	$(di/dt)_{cr}$	V_{T0}	r_T	T_{JM}	R_{thJC}	Fig. No.	Package style
	V_{GK} = 2 V		V_{GK} = 2 V			@T_{JM}			180° Sine		Outlines on pages O-01...O-35
	V	V	V	kA	kA/µs	V	mΩ	°C	K/W		
Y200CKC250	2500	2000	1500	20	5	1.216	2.196	125	0.065	W34	
Y500CNC250	2500	2000	1500	50	11	1.755	1.122	125	0.027	W36	

W34 Weight 120 g

W36 Weight 500 g

Gate Turn Off Thyristors

IXYS UK offers a broad range of high specification devices with voltage ratings to 4.5kV (2.8kV DC link) and controllable current ratings of up to 4kA are available to meet the toughest demands in applications such as traction propulsion and auxiliaries, AC industrial drives, FACT's and active VAr controllers. Offering both symmetrical devices for applications with a reverse blocking requirement e.g. current sourced inverters and asymmetric blocking devices for applications where no reverse blocking requirement exists e.g. voltage sourced inverters.

Gate Turn-off Thyristors are still the component of choice when it comes to very high power converters and we remain totally commited to this technology for the foreseeable future with an active program for continued product improvement.

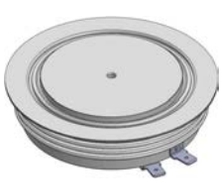
Part No.	V_{DRM} V_{GK} = -2V	V_{RRM}	I_{TGQM} @ C_S		I_{TAV} T_K = 55°C	I_{TSM} 10 ms ½ sine $V_R \leq 10$ V	I^2t	Typ. Switching Times t_{gt}	t_{gq}	V_T I_T = I_{TGQM}	T_{JM}	R_{thJK} 180° Sine	Fig. No.
➢ New	V	V	A	µC	A	kA	kA^2s	µs	µs	V	°C	K/W	
G1000NC450	4500	18	1000	2.0	545	8.00	320×10^3	4.5	14	4.0	125	0.0270	W36
➢ **G1000QC25B**	2500	18	1000	1.0	615	8.00	320×10^3	2.8	13	2.5	125	0.0380	W35
➢ **G1000QC45B**	4500	18	1000	1.0	443	6.50	211×10^3	3.0	13	4.0	125	0.0380	W35
G2000HF250	2500	18	2000	4.0	1030	16.00	1.28×10^6	3.0	25	2.8	125	0.0220	W85
G2000HF450	4500	18	2000	4.0	890	13.70	938×10^3	4.0	25	3.5	125	0.0220	W85
G2500HF250	2500	18	2500	6.0	1085	16.00	1.28×10^6	3.0	25	3.1	125	0.0200	W85
G3000TF250	2500	18	3000	5.0	1690	30.00	4.5×10^6	3.5	26	2.5	125	0.0120	W86
G3000TF450	4500	18	3000	6.0	1381	24.00	2.88×10^6	4.0	22	4.0	125	0.0120	W86
➢ **G4000EF250**	2500	18	4000	6.0	2005	32.00	5.12×10^6	4.5	28	3.0	125	0.0110	W104
➢ **G4000EF450**	4500	18	4000	6.0	1480	26.00	3.38×10^6	4.0	30	4.4	125	0.0110	W104
H0500KC200	2000	2000	500	1.0	280	3.00	45×10^3	2.0	5	3.2	125	0.0650	W34
H0500KC20Y	2000	100	500	1.0	280	3.00	45×10^3	2.0	5	3.2	125	0.0650	W34
H0500KC25D	2500	2000	500	1.0	280	3.00	45×10^3	2.0	5	3.2	125	0.0650	W34
H0500KC25Y	2500	100	500	1.0	280	3.00	45×10^3	2.0	5	3.2	125	0.0650	W34
H0700KC140	1400	1400	700	1.5	360	4.00	80×10^3	3.0	5	2.75	125	0.0630	W34
H0700KC14Y	1400	100	700	1.5	360	4.00	80×10^3	3.0	5	2.75	125	0.0630	W34
H0700KC17D	1700	1400	700	1.5	360	4.00	80×10^3	3.0	5	2.75	125	0.0630	W34
H0700KC17Y	1700	100	700	1.5	360	4.00	80×10^3	3.0	5	2.75	125	0.0630	W34
H1200NC200	2000	2000	1200	3.0	670	10.50	550×10^3	3.0	12	3.3	125	0.0270	W36
H1200NC20Y	2000	100	1200	3.0	670	10.50	550×10^3	3.0	12	3.3	125	0.0270	W36
H1200NC25D	2500	2000	1200	3.0	670	10.50	550×10^3	3.0	12	3.3	125	0.0270	W36
H1200NC25Y	2500	100	1200	3.0	670	10.50	550×10^3	3.0	12	3.3	125	0.0270	W36
S0300SR12Y	1200	100	480	1.0	215	3.50	61.2×10^3	3.5	9	2.4	125	0.1300	W87
S0500YC20Y	2000	100	500	1.0	275	4.00	80×10^3	3.5	10	2.5	125	0.0870	W93
S0500YC25Y	2500	100	500	1.0	275	4.00	80×10^3	3.5	10	2.5	125	0.0870	W93
S0500KC200	2000	2000	500	1.0	330	4.00	80×10^3	3.5	10	2.5	125	0.0650	W34
S0500KC20Y	2000	100	500	1.0	330	4.00	80×10^3	3.5	10	2.5	125	0.0650	W34
S0500KC25D	2500	2000	500	1.0	330	4.00	80×10^3	3.5	10	2.5	125	0.0650	W34
S0500KC25Y	2500	100	500	1.0	330	4.00	80×10^3	3.5	10	2.5	125	0.0650	W34
S0700KC140	1400	1400	700	1.5	430	5.00	125×10^3	3.0	10	2.2	125	0.0630	W34
S0700KC14Y	1400	100	700	1.5	430	5.00	125×10^3	3.0	10	2.2	125	0.0630	W34
S0700KC17D	1700	1400	700	1.5	430	5.00	125×10^3	3.0	10	2.2	125	0.0630	W34
S0700KC17Y	1700	100	700	1.5	430	5.00	125×10^3	3.0	10	2.2	125	0.0630	W34
S1200NC200	2000	2000	1200	3.0	790	13.00	840×10^3	4.5	19	2.7	125	0.0270	W36
S1200NC20Y	2000	100	1200	3.0	790	13.00	840×10^3	4.5	19	2.7	125	0.0270	W36
S1200NC25D	2500	2000	1200	3.0	790	13.00	840×10^3	4.5	19	2.7	125	0.0270	W36
S1200NC25Y	2500	100	1200	3.0	790	13.00	840×10^3	4.5	19	2.7	125	0.0270	W36

Outlines on pages O-01...O-35

W34 Weight 120 g

W35 Weight 300 g

W36 Weight 500 g

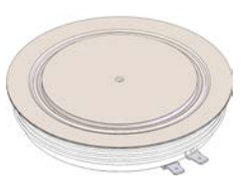


W85 Weight 990 g

W86 Weight 1.24 kg

W87 Weight 250 g

W93 Weight 90 g



W104 Weight 1.5 kg

Insulated Gate Bi-polar Transistors
Capsule Types

As a pioneer of Press-Pack IGBT technology, we are able to offer a range of class leading devices with voltage ratings of 1.7kV (900V DC link), 2.5kV (1.25kV DC link), 4.5kV (2.8kV DC link) and 6.5kV (3.6kV DC link). The construction of these devices is totally free from wire and solder bonds which all but eliminates the problems of mechanical fatigue associated with conventional modules. Internal stray inductance in both the gate connections and emitter connections is vastly reduced when compared to conventional modules leading to improved ruggedness and short circuit behavior, which is further enhanced by direct cooling of the emitter side of the chip.

These devices are based on a state of the art soft punch through (SPT++) process, which yields exceptional values of $V_{CE(sat)}$ and soft switching behavior despite the high voltage ratings. The devices feature a positive temperature coefficient making them suitable for reliable parallel operation. Devices are available with or without integral anti-parallel diode; a range of complimentary High Power Sonic Diodes optimized for use with these IGBTs are available now with a new generation using improved technology in development. Please contact your representative for more information.

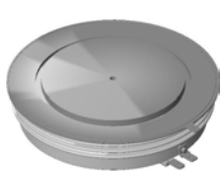
The press-pack IGBTs exhibit exceptional power cycling performance; typically an order of magnitude better than modules, making them highly suited to applications such as metals and traction drive systems where there are repeated cyclic power demands. Press-pack IGBTs have a stable short circuit failure mode which, as well as safety benefits, makes them an ideal choice for medium and high voltage applications where series connection is required. Stable short circuit failure mode allows for the design in of n+ redundancy without additional bypass switches and costly explosion proof enclosures. Typical examples include HVDC, FACTs, Active VAr controllers / compensators and medium voltage drives. In applications above 4MW press-pack IGBTs offer exceptional power density, far exceeding that achievable with comparable modules in multi-level / MMC based converters.

These PPIGBT's are largely backwardly compatible with standard 2.5kV and 4.5kV GTOs in many applications such as AC drives. This makes these parts a simple and economical path to upgrade or refurbish equipment that previously used GTOs, such as locomotives or medium voltage drives. They are suitable for all cooling options including direct liquid immersion. Complementary gate drives, mounting clamps and passive components available.

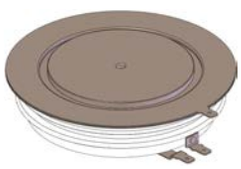
Part No.	V_{CES}	I_C	I_{CM}	$V_{CE(sat)}$	IGBT Switching		V_F	Diode Recovery			T_{JM}	R_{thJK}		Fig. No.
				@ I_C	Typical		$I_F = I_C$	Typical				IGBT	Diode	
					E_{ON}	E_{OFF}		I_{rm}	t_{rr}	Q_r				
➢ New	V	A	A	V	J	J	V	A	µs	µC	°C	K/W	K/W	
➢ **T0600NC17A**	1700	600	1200	3	0.29	0.5	2.25	310	0.7	180	125	0.0541	0.073	W40
➢ **T0840NC17E**	1700	840	1680	3	0.41	0.7	N/A	N/A	N/A	N/A	125	0.0386	N/A	W40
T0960VC17G	1700	960	1920	3	0.47	0.8	2.05	540	0.6	310	125	0.0338	0.0361	W67
➢ **T1440VC17E**	1700	1440	2880	3	0.71	1.2	N/A	N/A	N/A	N/A	125	0.0225	N/A	W67
T0360ND25A	2500	360	720	3.05	0.28	0.66	2.25	320	1.2	300	125	0.0541	0.0730	W40
T0500ND25E	2500	500	1000	3.05	0.65	0.87	N/A	N/A	N/A	N/A	125	0.0386	N/A	W40
T0570VD25G	2500	570	1140	3.05	0.44	1.05	2.07	400	1.3	420	125	0.0338	0.0365	W67
T0850VD25E	2500	850	1700	3.05	1.10	1.60	N/A	N/A	N/A	N/A	125	0.0225	N/A	W67
T1200TD25A	2500	1200	2400	3.15	1.50	2.10	2.50	800	0.97	840	125	0.0169	0.0292	W41
➢ **T1400AD25G**	2500	1400	2800	2.90	1.70	2.50	2.00	1280	0.7	1345	125	0.0129	0.0133	W71
T1500TD25E	2500	1500	3000	3.05	1.97	2.65	N/A	N/A	N/A	N/A	125	0.0129	N/A	W41
T2250AD25E	2500	2250	4500	3.05	3.00	4.20	N/A	N/A	N/A	N/A	125	0.0085	N/A	W71

Outlines on pages O-01...O-35

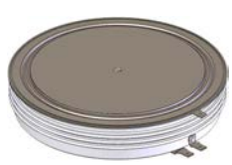
W40 Weight 430 g



W41 Weight 1.2 kg



W67 Weight 650 g



W71 Weight 1.5 kg

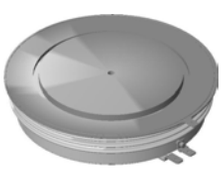
Insulated Gate Bi-polar Transistors
Capsule Types

Part No. ✪ under development ➢ New	V_{CES}	I_C	I_{CM}	$V_{CE(sat)}$ @ I_C	IGBT Switching Typical E_{ON}	IGBT Switching Typical E_{OFF}	V_F $I_F = I_C$	Diode Recovery Typical I_{rm}	Diode Recovery Typical t_{rr}	Diode Recovery Typical Q_r	T_{JM}	R_{thJK} IGBT	R_{thJK} Diode	Fig. No.
	V	A	A	V	J	J	V	A	µs	µC	°C	K/W	K/W	
➢ **T0115QC45G**	4500	115	230	3.50	0.83	0.48	3.45	95	2.5	180	125	0.1080	0.1728	W109
T0240NB45E	4500	240	480	3.60	1.50	1.10	N/A	N/A	N/A	N/A	125	0.0546	N/A	W40
T0340VB45G	4500	340	680	3.50	2.90	1.40	3.45	220	2.3	500	125	0.0364	0.0576	W67
T0510VB45E	4500	510	1020	3.60	4.20	2.10	N/A	N/A	N/A	N/A	125	0.0243	N/A	W67
T0600TB45A	4500	600	1200	3.70	4.60	2.90	3.70	640	1.2	700	125	0.0218	0.0432	W41
T0800TB45E	4500	800	1600	3.50	5.10	1.90	N/A	N/A	N/A	N/A	125	0.0156	N/A	W41
T0800EB45G	4500	800	1600	3.50	5.10	4.90	3.45	800	1.7	1020	125	0.0156	0.0247	W44
T0900EB45A	4500	900	1800	3.60	4.30	3.60	3.90	610	1.6	920	125	0.0140	0.0260	W44
T1200EB45E	4500	1200	2400	3.60	5.70	5.10	N/A	N/A	N/A	N/A	125	0.0080	N/A	W44
T1600GB45G	4500	1600	3200	3.50	12.00	8.70	3.45	1380	1.7	1970	125	0.0078	0.0123	W45
T1800GB45A	4500	1800	3600	3.60	11.00	10.50	3.90	1600	1.6	2000	125	0.0073	0.0144	W45
➢ **T2000BB45G**	4500	2000	4000	3.60	14.00	12.50	3.40	2050	1.60	2450	125	0.0064	0.01	W110
T2400GB45E	4500	2400	4800	3.60	13.00	13.00	N/A	N/A	N/A	N/A	125	0.0052	N/A	W45
T2960BB45E	4500	3000	6000	3.60	16.00	16.00	N/A	N/A	N/A	N/A	125	0.0042	N/A	W110
✪ **T0258HF65G**	6500	258	516	4.80	1.80	1.45	3.85	300	1.2	410	125	0.0328	0.0567	W95
✪ **T0385HF65E**	6500	385	770	4.80	2.70	2.20	N/A	N/A	N/A	N/A	125	0.0219	N/A	W95
✪ **T0600AF65G**	6500	600	1030	4.80	4.20	3.38	3.45	700	1.2	950	125	0.0141	0.0243	W98
✪ **T0900AF65E**	6500	900	1800	4.80	6.30	5.10	N/A	N/A	N/A	N/A	125	0.0094	N/A	W98
✪ **T0900DF65A**	6500	900	1800	4.80	6.30	5.10	3.40	950	1.2	1500	125	0.0094	0.0155	W96
✪ **T1290BF65A**	6500	1290	2580	4.80	9.00	7.30	3.60	1400	1.1	1900	125	0.0066	0.0122	W103
✪ **T1375DF65E**	6500	1375	2750	4.80	9.60	7.70	N/A	N/A	N/A	N/A	125	0.0062	N/A	W96
✪ **T1890BF65E**	6500	1890	3780	4.80	13.20	10.60	N/A	N/A	N/A	N/A	125	0.0045	N/A	W103

✪ New parts in development - Please consult factory for details

Outlines on pages O-01...O-35

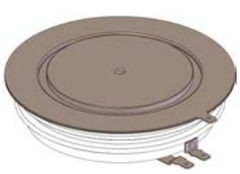
W40 Weight 430 g



W41 Weight 1.2 kg

W44 Weight 1.2 kg

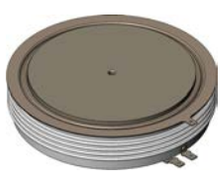
W45 Weight 2 kg



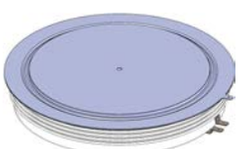
W67 Weight 650 g

W95 Weight 825 g

W96 Weight 1.5 kg

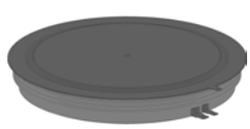


W98 Weight 1.8 kg



W103 Weight 3.2 kg

W109 Weight 360 g



W110 Weight 2.8 kg

Press-Pack IGBT Gate Drive Units

The C044BG400 IGBT Gate Driver is a low power consumption driver with on board VCE desaturation detection for high reliability application. The driver features a fibre-optic communication interface for drive, status and switching feedback signals. A fully supervised DC/DC converter with EMI filtering, low coupling capacitance and high partial discharge level is integrated into the board. The high voltage collector sense and gate interface are implemented on a separate card to allow close coupling to the IGBT. A range of pre-configured boards is available to complement IXYS UK's range of press-pack IGBTs – other applications on request.

Gate Drive Part Number	IGBT Type
C0044BG400SBK	T0115QB45G
C0044BG400SBK	T0160NB45A
C0044BG400SBL	T0240NB45E
C0044BG400SBQ	T0340VB45G
C0044BG400SBA	T0360ND25A
C0044BG400SBB	T0500ND25E
C0044BG400SBE	T0510VB45E
C0044BG400SBF	T0570VD25G
C0044BG400SBM	T0600TB45A
C0044BG400SBG	T0800EB45G
C0044BG400SBN	T0800TB45E
C0044BG400SBH	T0850VD25E
C0044BG400SBP	T0900EB45A
C0044BG400SBR	T1200EB45E
C0044BG400SBC	T1200TD25A
C0044BG400SBD	T1500TD25E
C0044BG400SBJ	T1600GB45G
C0044BG400SBS	T1800GB45A
C0044BG400SBV	T2250AD25E
C0044BG400SBT	T2400GB45E
C0044BG400SBW	T2960BB45E
C0044BG400SBZ	T2000BB45G

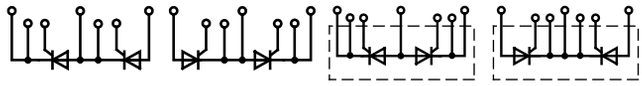
FEATURES

- High reliability topology
- Designed for ultra low power consumption
- Build in DC/DC-converter with soft start
- Integrated input filter for low EMI
- Separate low impedance path for parasitic EMI currents
- PD-Voltage levels available up to 11 kV on request.
- Low impedance from gate to emitter at start-up and power fail
- Monitoring of all secondary supply voltages
- Monitoring of IGBT switching status (VCE-de-sat detection)
- Soft switch-OFF at $V_{CE\text{-}de\text{-}sat}$ fault condition
- Fiber-optic links for switching commands and status control
- Low light protection for input signal
- Short-pulse suppression. configurable
- Balanced propagation delay time
- Gate Current up to 44 A
- Optional gate-speed-up capacitors

APPLICATION

- Large and medium drives
- Renewable generation.
- Utilities scale converters

Dual Thyristor Modules

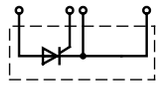


MCR... MCC... MCA... MCK...

IXYS UK Westcode Ltd. has UL Certification for most modules (Underwriters Laboratories Inc). See the UL Listing.

Part No.	V_{RRM} V_{DRM}	I_{TAV}	@ T_C	I_{TRMS}	I_{TSM} 125°C 10 ms	V_{T0}	r_T	T_{VJM}	R_{thJC} per Die	R_{thCH} per Die	Fig. No.
	V	A	°C	A	A	V	mΩ	°C	K/W	K/W	
MCC160-30io3	3000	170	85	385	3650	1.200	2.300	125	0.110	0.0400	W102
MCC160-36io3	3600	170	85	385	3650	1.200	2.300	125	0.110	0.0400	W102
MCC220-28io3	2800	235	85	543	5000	0.900	1.100	125	0.110	0.0400	W102
MCC265-24io3	2400	280	85	655	6900	0.800	0.700	125	0.110	0.0400	W102
MCC320-30io2	3000	327	85	765	5000	1.150	0.800	125	0.062	0.0200	W74
MCC320-36io2	3600	327	85	765	5000	1.150	0.800	125	0.062	0.0200	W74
MCC325-14io3	1400	345	85	785	7650	0.750	0.500	125	0.110	0.0400	W102
MCC325-18io3	1800	345	85	785	7650	0.750	0.500	125	0.110	0.0400	W102
MCC380-28io2	2800	395	85	620	8100	1.000	0.650	125	0.062	0.0200	W74
MCC431-20io2	2000	429	85	1020	10900	1.000	0.410	125	0.062	0.0200	W74
MCC431-22io2	2200	429	85	1020	10900	1.000	0.410	125	0.062	0.0200	W74
MCC431-24io2	2400	429	85	1020	10900	1.000	0.410	125	0.062	0.0200	W74
MCC500-18io1	1800	500	89	1294	16500	0.850	0.270	125	0.062	0.0200	W63
MCC500-22io1	2200	500	80	1071	14000	0.880	0.460	125	0.0620	0.0200	W63
MCK500-18io1	1800	500	89	1294	16500	0.850	0.270	125	0.0620	0.0200	W63
MCK500-22io1	2200	500	80	1071	14000	0.880	0.460	125	0.0620	0.0200	W63
MCA500-12io1	1200	500	89	1294	16500	0.850	0.270	125	0.0620	0.0200	W63
MCA500-16io1	1600	500	80	1071	14000	0.880	0.460	125	0.0620	0.0200	W63
MCC501-12io2	1200	503	85	1195	14500	0.850	0.300	125	0.0620	0.0200	W74
MCC501-14io2	1400	503	85	1195	14500	0.850	0.300	125	0.0620	0.0200	W74
MCC501-16io2	1600	503	85	1195	14500	0.850	0.300	125	0.0620	0.0200	W74
MCC501-18io2	1800	503	85	1195	14500	0.850	0.300	125	0.0620	0.0200	W74
MCC550-12io1	1200	550	85	1318	18000	0.839	0.244	125	0.062	0.0200	W63
MCC550-16io1	1600	550	85	1318	18000	0.839	0.244	125	0.062	0.0200	W63
MCK550-12io1	1200	550	85	1318	18000	0.839	0.244	125	0.062	0.0200	W63
MCK550-16io1	1600	550	85	1318	18000	0.839	0.244	125	0.062	0.0200	W63
MCA550-18io1	1800	550	85	1318	18000	0.839	0.244	125	0.062	0.0200	W63
MCA550-22io1	2200	550	85	1318	18000	0.839	0.244	125	0.062	0.0200	W63
MCC552-12io2	1200	550	85	1300	15800	0.770	0.259	125	0.0620	0.0200	W74
MCC552-14io2	1400	550	85	1300	15800	0.770	0.259	125	0.0620	0.0200	W74
MCC552-16io2	1600	550	85	1300	15800	0.770	0.259	125	0.0620	0.0200	W74
MCC500-30io7	3000	500	85	1181	16200	1.079	0.422	125	0.0500	0.0160	W88
MCC500-36io7	3600	500	85	1181	16200	1.079	0.422	125	0.0500	0.0160	W88
MCR500-30io7	3000	500	85	1181	16200	1.079	0.422	125	0.0500	0.0160	W88
MCR500-36io7	3600	500	85	1181	16200	1.079	0.422	125	0.0500	0.0160	W88
MCC580-28io7	2800	581	85	1372	18900	0.926	0.313	125	0.0500	0.0160	W88
MCR580-28io7	2800	581	85	1372	18900	0.926	0.313	125	0.0500	0.0160	W88
MCC650-24io7	2400	646	85	1542	22100	0.874	0.227	125	0.0500	0.0160	W88
MCR650-24io7	2400	646	85	1542	22100	0.874	0.227	125	0.0500	0.0160	W88
MCC720-14io7	1400	719	85	1633	25200	0.823	0.241	130	0.0500	0.0160	W88
MCC720-18io7	1800	719	85	1633	25200	0.823	0.241	130	0.0500	0.0160	W88
MCR720-14io7	1400	719	85	1633	25200	0.823	0.241	130	0.0500	0.0160	W88
MCR720-18io7	1800	719	85	1633	25200	0.823	0.241	130	0.0500	0.0160	W88

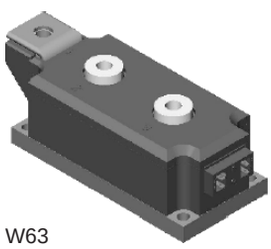
Single Thyristor Modules



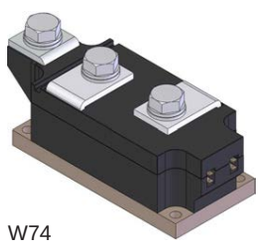
MCO

Part No.	V_{RRM} V_{DRM}	I_{TAV}	@ T_C	I_{TRMS}	I_{TSM} 125°C 10ms	V_{T0}	r_T	T_{VJM}	R_{thJC} per Die	R_{thCH} per Die	Fig. No.
➢ New	V	A	°C	A	A	V	mΩ	°C	K/W	K/W	
MCO560-30io1	3000	560	85	879	18900	1.050	0.470	125	0.0420	0.0100	W73
MCO560-36io1	3600	560	85	879	18900	1.050	0.470	125	0.0420	0.0100	W73
MCO635-28io1	2800	635	85	997	20700	0.950	0.350	125	0.0420	0.0100	W73
MCO741-22io1	2200	765	85	2110	29000	0.850	0.277	125	0.0420	0.0100	W73
MCO801-14io1	1400	830	85	2335	30000	0.800	0.240	130	0.0420	0.0100	W73
MCO801-18io2	1800	830	85	2335	30000	0.800	0.240	130	0.0420	0.0100	W73
➢ **N4340TJ180MBR**	1800	1110	85	3500	55000	0.886	0.105	125	0.0306	0.0035	W116
➢ **N4340TJ220MBR**	2200	1110	85	3500	55000	0.886	0.105	125	0.0306	0.0035	W116

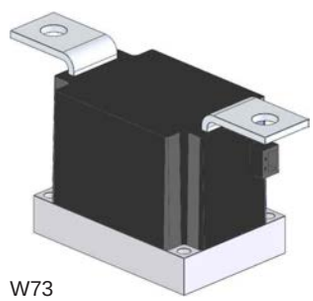
Outlines on pages O-01...O-35



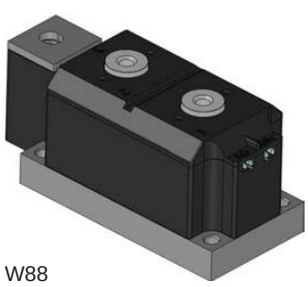
W63



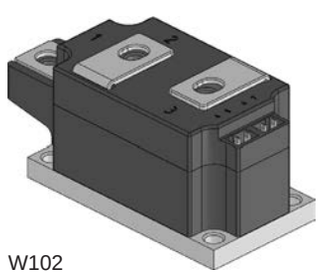
W74



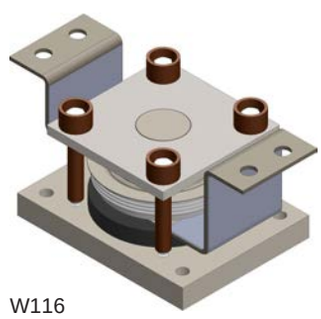
W73



W88

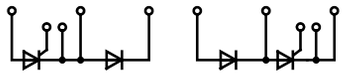


W102



W116

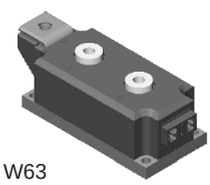
Thyristor / Diode Modules



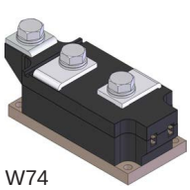
MCD... MDC...

IXYS UK Westcode Ltd. has UL Certification for most modules (Underwriters Laboratories Inc). See the UL Listing.

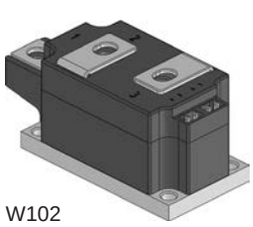
Part No.	V_{RRM} V_{DRM}	I_{TAV}	@ T_C	I_{TRMS}	I_{TSM} 125°C 10 ms	V_{T0}	r_T	T_{VJM}	R_{thJC} per Die	R_{thCH} per Die	Fig. No.	Package style Outline drawings on page O-01...O-35
	V	A	°C	A	A	V	mΩ	°C	K/W	K/W		
MCD160-30io3	3000	170	85	385	3650	1.200	2.300	125	0.110	0.0400	W102	
MCD160-36io3	3600	170	85	385	3650	1.200	2.300	125	0.110	0.0400	W102	
MDC160-30io3	3000	170	85	385	3650	1.200	2.300	125	0.110	0.0400	W102	
MDC160-36io3	3600	170	85	385	3650	1.200	2.300	125	0.110	0.0400	W102	
MCD220-28io3	2800	235	85	543	5000	0.900	1.100	125	0.110	0.0400	W102	
MDC220-28io3	2800	235	85	543	5000	0.900	1.100	125	0.110	0.0400	W102	
MCD265-24io3	2400	280	85	655	6900	0.800	0.700	125	0.110	0.0400	W102	
MDC265-24io3	2400	280	85	655	6900	0.800	0.700	125	0.110	0.0400	W102	
MCD320-30io2	3000	327	85	765	5000	1.150	0.800	125	0.065	0.0200	W74	
MCD320-36io2	3600	327	85	765	5000	1.150	0.800	125	0.065	0.0200	W74	
MDC320-30io2	3000	327	85	765	5000	1.150	0.800	125	0.065	0.0200	W74	
MDC320-36io2	3600	327	85	765	5000	1.150	0.800	125	0.065	0.0200	W74	
MCD325-14io3	1400	345	85	785	7650	0.750	0.500	125	0.110	0.0400	W102	
MCD325-18io3	1800	345	85	785	7650	0.750	0.500	125	0.110	0.0400	W102	
MDC325-14io3	1400	345	85	785	7650	0.750	0.500	125	0.110	0.0400	W102	
MDC325-18io3	1800	345	85	785	7650	0.750	0.500	125	0.110	0.0400	W102	
MCD380-28io2	2800	395	85	620	8100	1.000	0.650	125	0.062	0.0200	W74	
MDC380-28io2	2800	395	85	620	8100	1.000	0.650	125	0.062	0.0200	W74	
MCD431-20io2	2000	429	85	1020	10900	1.000	0.410	125	0.062	0.0200	W74	
MCD431-22io2	2200	429	85	1020	10900	1.000	0.410	125	0.062	0.0200	W74	
MCD431-24io2	2400	429	85	1020	10900	1.000	0.410	125	0.062	0.0200	W74	
MDC431-20io2	2000	429	85	1020	10900	1.000	0.410	125	0.062	0.0200	W74	
MDC431-22io2	2200	429	85	1020	10900	1.000	0.410	125	0.062	0.0200	W74	
MDC431-24io2	2400	429	85	1020	10900	1.000	0.410	125	0.062	0.0200	W74	
MCD500-18io1	1800	500	89	1294	16500	0.820	0.270	125	0.062	0.0200	W63	
MCD500-22io1	2200	500	80	1071	14000	0.880	0.460	125	0.062	0.0200	W63	
MDC500-18io1	1800	500	89	1294	16500	0.820	0.270	125	0.062	0.0200	W63	
MDC500-22io1	2200	500	80	1071	14000	0.880	0.460	125	0.062	0.0200	W63	
MCD501-12io2	1200	503	85	1195	14500	0.850	0.300	125	0.062	0.0200	W74	
MCD501-14io2	1400	503	85	1195	14500	0.850	0.300	125	0.062	0.0200	W74	
MCD501-16io2	1600	503	85	1195	14500	0.850	0.300	125	0.062	0.0200	W74	
MCD501-18io2	1800	503	85	1195	14500	0.850	0.300	125	0.062	0.0200	W74	
MDC501-12io2	1200	503	85	1195	14500	0.850	0.300	125	0.062	0.0200	W74	
MDC501-14io2	1400	503	85	1195	14500	0.850	0.300	125	0.062	0.0200	W74	
MDC501-16io2	1600	503	85	1195	14500	0.850	0.300	125	0.062	0.0200	W74	
MDC501-18io2	1800	503	85	1195	14500	0.850	0.300	125	0.062	0.0200	W74	
MCD550-12io1	1200	550	85	1318	18000	0.839	0.244	125	0.062	0.0200	W63	
MCD550-16io1	1600	550	85	1318	18000	0.839	0.244	125	0.062	0.0200	W63	
MDC550-12io1	1200	550	85	1318	18000	0.839	0.244	125	0.062	0.0200	W63	
MDC550-16io1	1600	550	85	1318	18000	0.839	0.244	125	0.062	0.0200	W63	



W63

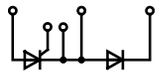


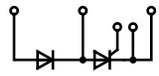
W74



W102

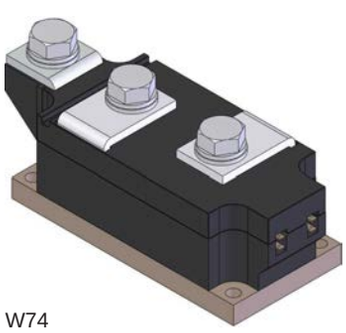
Thyristor / Diode Modules

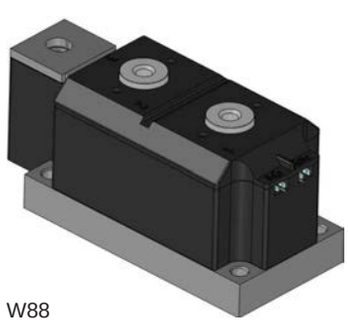

MCD...


MDC...

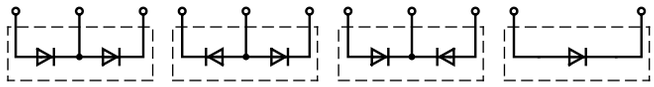
IXYS UK Westcode Ltd. has UL Certification for most modules (Underwriters Laboratories Inc). See the UL Listing.

Part No.	V_{RRM} V_{DRM}	I_{TAV}	@ T_C	I_{TRMS}	I_{TSM} 125°C 10 ms	V_{T0}	r_T	T_{VJM}	R_{thJC} per Die	R_{thCH} per Die	Fig. No.	Package style Outline drawings on page O-01...O-35
	V	A	°C	A	A	V	mΩ	°C	K/W	K/W		
MCD552-12io2	1200	550	85	1300	15800	0.77	0.259	125	0.062	0.0200	W74	
MCD552-14io2	1400	550	85	1300	15800	0.77	0.259	125	0.062	0.0200	W74	
MCD552-16io2	1600	550	85	1300	15800	0.77	0.259	125	0.062	0.0200	W74	
MDC552-12io2	1200	550	85	1300	15800	0.77	0.259	125	0.062	0.0200	W74	
MDC552-14io2	1400	550	85	1300	15800	0.77	0.259	125	0.062	0.0200	W74	
MDC552-16io2	1600	550	85	1300	15800	0.77	0.259	125	0.062	0.0200	W74	
MCD500-30io7	3000	500	85	1181	16200	1.079	0.422	125	0.05	0.0160	W88	
MCD500-36io7	3600	500	85	1181	16200	1.079	0.422	125	0.05	0.0160	W88	
MDC500-30io7	3000	500	85	1181	16200	1.079	0.422	125	0.05	0.0160	W88	
MDC500-36io7	3600	500	85	1181	16200	1.079	0.422	125	0.05	0.0160	W88	
MCD580-28io7	2800	581	85	1372	18900	0.926	0.313	125	0.05	0.0160	W88	
MDC580-28io7	2800	581	85	1372	18900	0.926	0.313	125	0.05	0.0160	W88	
MCD650-24io7	2400	646	85	1542	22100	0.874	0.227	125	0.05	0.0160	W88	
MDC650-24io7	2400	646	85	1542	22100	0.874	0.227	125	0.05	0.0160	W88	
MCD720-14io7	1400	719	85	1633	25200	0.823	0.241	125	0.05	0.0160	W88	
MCD720-18io7	1800	719	85	1633	25200	0.823	0.241	125	0.05	0.0160	W88	
MDC720-14io7	1400	719	85	1633	25200	0.823	0.241	125	0.05	0.0160	W88	
MDC720-18io7	1800	719	85	1633	25200	0.823	0.241	125	0.05	0.0160	W88	


W74


W88

Dual Diode Modules

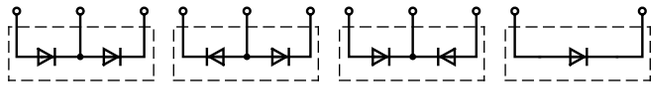


MDD... MDA... MDK... MDO...

IXYS UK Westcode Ltd. has UL Certification for most modules (Underwriters Laboratories Inc). See the UL Listing.

Part No.	V_{RRM}	I_{FAV}	@ T_C	I_{FRMS}	I_{FSM} 150°C 10 ms	V_{T0}	r_T	T_{VJM}	R_{thJC} per Die	R_{thCK} per Die	Fig. No.
	V	A	°C	A	A	V	mΩ	°C	K/W	K/W	
MDD275-30N3	3000	290	85	580	4500	0.900	1.570	150	0.1100	0.0400	W102
MDD275-36N3	3600	290	85	580	4500	0.900	1.570	150	0.1100	0.0400	W102
MDA275-30N3	3000	290	85	580	4500	0.900	1.570	150	0.1100	0.0400	W102
MDA275-36N3	3600	290	85	580	4500	0.900	1.570	150	0.1100	0.0400	W102
MDK275-30N3	3000	290	85	580	4500	0.900	1.570	150	0.1100	0.0400	W102
MDK275-36N3	3600	290	85	580	4500	0.900	1.570	150	0.1100	0.0400	W102
MDD410-24N3	2400	440	85	910	7800	0.850	0.450	150	0.1100	0.0400	W102
MDD410-28N3	2800	440	85	910	7800	0.850	0.450	150	0.1100	0.0400	W102
MDA410-24N3	2400	440	85	910	7800	0.850	0.450	150	0.1100	0.0400	W102
MDA410-28N3	2800	440	85	910	7800	0.850	0.450	150	0.1100	0.0400	W102
MDK410-24N3	2400	440	85	910	7800	0.850	0.450	150	0.1100	0.0400	W102
MDK410-28N3	2800	440	85	910	7800	0.850	0.450	150	0.1100	0.0400	W102
MDD510-14N3	1400	545	85	1135	10900	0.750	0.250	150	0.1100	0.0400	W102
MDD510-18N3	1800	545	85	1135	10900	0.750	0.250	150	0.1100	0.0400	W102
MDA510-14N3	1400	545	85	1135	10900	0.750	0.250	150	0.1100	0.0400	W102
MDA510-18N3	1800	545	85	1135	10900	0.750	0.250	150	0.1100	0.0400	W102
MDK510-14N3	1400	545	85	1135	10900	0.750	0.250	150	0.1100	0.0400	W102
MDK510-18N3	1800	545	85	1135	10900	0.750	0.250	150	0.1100	0.0400	W102
MDD600-14N1	1400	600	111	1818	21800	0.750	0.200	150	0.0620	0.0200	W63
MDD600-18N1	1800	600	111	1818	21800	0.750	0.200	150	0.0620	0.0200	W63
MDD600-22N1	2200	600	111	1818	21800	0.750	0.200	150	0.0620	0.0200	W63
MDA600-14N1	1400	600	111	1818	21800	0.750	0.200	150	0.0620	0.0200	W63
MDA600-18N1	1800	600	111	1818	21800	0.750	0.200	150	0.0620	0.0200	W63
MDA600-22N1	2200	600	111	1818	21800	0.750	0.200	150	0.0620	0.0200	W63
MDK600-14N1	1400	600	111	1818	21800	0.750	0.200	150	0.0620	0.0200	W63
MDK600-18N1	1800	600	111	1818	21800	0.750	0.200	150	0.0620	0.0200	W63
MDK600-22N1	2200	600	111	1818	21800	0.750	0.200	150	0.0620	0.0200	W63
MDD630-30N2	3000	630	85	1275	11700	0.800	0.500	150	0.0620	0.0200	W74
MDD630-36N2	3600	630	85	1275	11700	0.800	0.500	150	0.0620	0.0200	W74
MDA630-30N2	3000	630	85	1275	11700	0.800	0.500	150	0.0620	0.0200	W74
MDA630-36N2	3600	630	85	1275	11700	0.800	0.500	150	0.0620	0.0200	W74
MDK630-30N2	3000	630	85	1275	11700	0.800	0.500	150	0.0620	0.0200	W74
MDK630-36N2	3600	630	85	1275	11700	0.800	0.500	150	0.0620	0.0200	W74
MDD 710-22N2	2200	708	85	1440	12750	0.800	0.350	150	0.0620	0.0200	W74
MDD 710-26N2	2600	708	85	1440	12750	0.800	0.350	150	0.0620	0.0200	W74
MDA 710-22N2	2200	708	85	1440	12750	0.800	0.350	150	0.0620	0.0200	W74
MDA 710-26N2	2600	708	85	1440	12750	0.800	0.350	150	0.0620	0.0200	W74
MDK 710-22N2	2200	708	85	1440	12750	0.800	0.350	150	0.0620	0.0200	W74
MDK 710-26N2	2600	708	85	1440	12750	0.800	0.350	150	0.0620	0.0200	W74
MDD 810-12N2	1200	807	85	1661	17250	0.780	0.230	150	0.0620	0.0200	W74
MDD 810-16N2	1600	807	85	1661	17250	0.780	0.230	150	0.0620	0.0200	W74
MDD 810-18N2	1800	807	85	1661	17250	0.780	0.230	150	0.0620	0.0200	W74
MDA 810-12N2	1200	807	85	1661	17250	0.780	0.230	150	0.0620	0.0200	W74
MDA 810-16N2	1600	807	85	1661	17250	0.780	0.230	150	0.0620	0.0200	W74
MDA 810-18N2	1800	807	85	1661	17250	0.780	0.230	150	0.0620	0.0200	W74

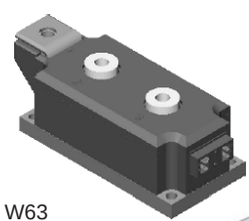
Dual Diode Modules

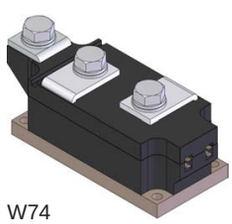


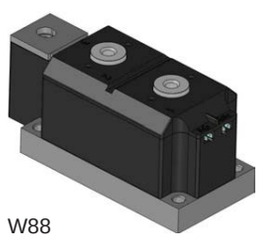
IXYS UK Westcode Ltd. has UL Certification for most modules (Underwriters Laboratories Inc). See the UL Listing.

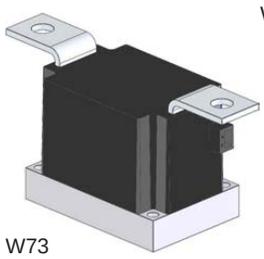
Part No.	V_{RRM}	I_{FAV}	@ T_C	I_{FRMS}	I_{FSM} 150°C 10 ms	V_{T0}	r_T	T_{VJM}	R_{thJC} per Die	R_{thCK} per Die	Fig. No.
	V	A	°C	A	A	V	mΩ	°C	K/W	K/W	
MDK 810-12N2	1200	807	85	1661	17250	0.780	0.230	150	0.0620	0.0200	W74
MDK 810-16N2	1600	807	85	1661	17250	0.780	0.230	150	0.0620	0.0200	W74
MDK 810-18N2	1800	807	85	1661	17250	0.780	0.230	150	0.0620	0.0200	W74
MDD1080-18N7	1800	1080	85	2235	29100	0.782	0.157	150	0.0500	0.0160	W88
MDD1080-24N7	2400	1080	85	2235	29100	0.782	0.157	150	0.0500	0.0160	W88
MDD1080-28N7	2800	1080	85	2235	29100	0.782	0.157	150	0.0500	0.0160	W88
MDA1080-18N7	1800	1080	85	2235	29100	0.782	0.157	150	0.0500	0.0160	W88
MDA1080-24N7	2400	1080	85	2235	29100	0.782	0.157	150	0.0500	0.0160	W88
MDA1080-28N7	2800	1080	85	2235	29100	0.782	0.157	150	0.0500	0.0160	W88
MDK1080-18N7	1800	1080	85	2235	29100	0.782	0.157	150	0.0500	0.0160	W88
MDK1080-24N7	2400	1080	85	2235	29100	0.782	0.157	150	0.0500	0.0160	W88
MDK1080-28N7	2800	1080	85	2235	29100	0.782	0.157	150	0.0500	0.0160	W88

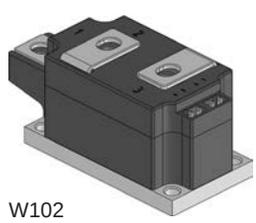
Outlines on pages O-01...O-35


W63


W74


W88


W73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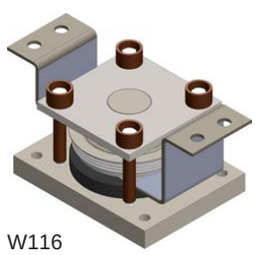

W116

Single Diode Modules

IXYS UK Westcode Ltd. has UL Certification for most modules (Underwriters Laboratories Inc).

Part No. ➢ New *	V_{RRM}	I_{FAV}	@ T_C	I_{FRMS}	I_{FSM} 150°C 10 ms	V_{T0}	r_T	T_{VJM}	R_{thJC} per Die	R_{thCK} per Die	Fig. No.
	V	A	°C	A	A	V	mΩ	°C	K/W	K/W	
MDO1120-24N1	2400	1189	85	1869	32400	0.8	0.17	150	0.042	0.01	W73
MDO1120-28N1	2800	1189	85	1869	32400	0.8	0.17	150	0.042	0.01	W73
MDO1201-14N1	1400	1520	85	3665	36000	0.800	0.100	160	0.0420	0.0100	W73
MDO1201-18N1	1800	1520	85	3665	36000	0.800	0.100	160	0.0420	0.0100	W73
MDO1201-22N1	2200	1520	85	3665	36000	0.800	0.100	160	0.0420	0.0100	W73
➢ **W8570TJ180MBR**	1800	2830	85	6435	70200	0.69	0.050	175	0.0306	0.0035	W116
➢ **W8570TJ220MBR**	2200	2830	85	6435	70200	0.69	0.050	175	0.0306	0.0035	W116
➢ **W9830TJ120MBR**	1200	3345	85	7280	72000	0.67	0.043	190	0.0306	0.0035	W116
➢ **W9830TJ150MBR**	1500	3345	85	7280	72000	0.67	0.043	190	0.0306	0.0035	W116

* Consult factory for details

Water Cooled Dual Diode Modules

IXYS UK's range of water cooled modules feature a direct cooled base, with no extra interface to the die allowing for more efficient cooling giving an enhanced average current rating.

IXYS UK Westcode Ltd has UL Certification for most modules (Underwriters Laboratories Inc).
See the UL Listing.

Part No.	V_{RRM} V	I_{FAV} A	@ T_C °C	I_{FRMS} A	I_{FSM} 150°C 10ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJW} per Die K/W	Fig. No.	Package style Outline drawings on page O-01...O-35
MDD950-14N1W	1400	950	45	1773	21800	0.750	0.200	150	0.0900	W64	
MDD950-18N1W	1800	950	45	1773	21800	0.750	0.200	150	0.0900	W64	
MDD950-22N1W	2200	950	45	1773	21800	0.750	0.200	150	0.0900	W64	
MDA950-14N1W	1400	950	45	1773	21800	0.750	0.200	150	0.0900	W64	
MDA950-18N1W	1800	950	45	1773	21800	0.750	0.200	150	0.0900	W64	
MDA950-22N1W	2200	950	45	1773	21800	0.750	0.200	150	0.0900	W64	
MDK950-14N1W	1400	950	45	1773	21800	0.750	0.200	150	0.0900	W64	
MDK950-18N1W	1800	950	45	1773	21800	0.750	0.200	150	0.0900	W64	
MDK950-22N1W	2200	950	45	1773	21800	0.750	0.200	150	0.0900	W64	

W64

Water Cooled Thyristor/Diode Modules

Part No.	V_{RRM} V_{DRM} V	I_{TAV} A	@ T_C °C	I_{TRMS} A	I_{TSM} 125°C 10ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJW} per Die K/W	Fig. No.
MCD600-22io1W	2200	600	40	1116	16500	0.880	0.460	125	0.0900	W64
MDC600-22io1W	2200	600	40	1116	16500	0.880	0.460	125	0.0900	W64
MCD700-14io1W	1400	700	42	1331	16500	0.850	0.270	125	0.0900	W64
MCD700-18io1W	1800	700	42	1331	16500	0.850	0.270	125	0.0900	W64
MDC700-14io1W	1400	700	42	1331	16500	0.850	0.270	125	0.0900	W64
MDC700-18io1W	1800	700	42	1331	16500	0.850	0.270	125	0.0900	W64

Water Cooled Dual Thyristor Modules

Part No.	V_{RRM} V_{DRM} V	I_{TAV} A	@ T_C °C	I_{TRMS} A	I_{TSM} 125°C 10ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJW} per Die K/W	Fig. No.
MCA600-22io1W	2200	600	40	1116	16500	0.880	0.460	125	0.0900	W64
MCC600-22io1W	2200	600	40	1116	16500	0.880	0.460	125	0.0900	W64
MCK600-22io1W	2200	600	40	1116	16500	0.880	0.460	125	0.0900	W64
MCC700-14io1W	1400	700	42	1331	16500	0.850	0.270	125	0.0900	W64
MCC700-18io1W	1800	700	42	1331	16500	0.850	0.270	125	0.0900	W64
MCA700-14io1W	1400	700	42	1331	16500	0.850	0.270	125	0.0900	W64
MCA700-18io1W	1800	700	42	1331	16500	0.850	0.270	125	0.0900	W64
MCK700-14io1W	1400	700	42	1331	16500	0.850	0.270	125	0.0900	W64
MCK700-18io1W	1800	700	42	1331	16500	0.850	0.270	125	0.0900	W64

Power Semiconductor Assemblies From IXYS UK

Power Semiconductor Assemblies

With over 80 years of experience, our dedicated team of talented design engineers can deliver a wide variety of industry leading solutions ranging from simple standard sub-assemblies to complicated multi-megawatt power systems.

IXYS UK's power electronics assemblies group has been an integral part of our core business since the early 1920's when we began production of the first commercially available solid state rectifiers.

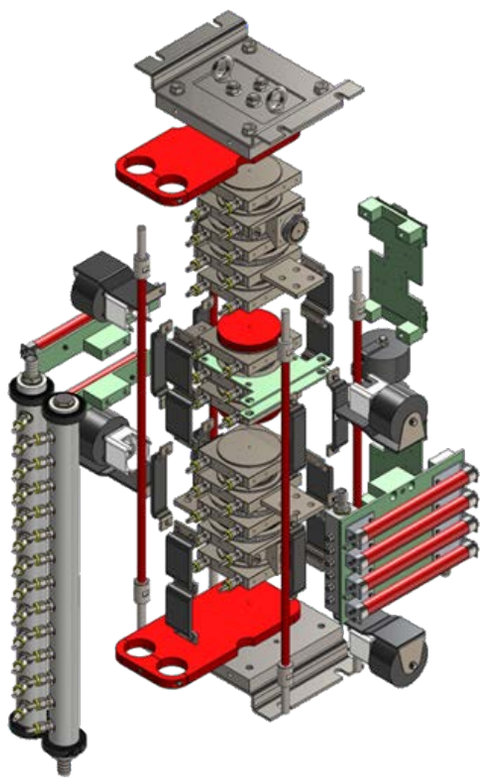
Our dedicated team of highly experienced specialists are on hand to provide our customers with first class support on everything from a simple air-cooled rectifier to a highly integrated custom power converter.

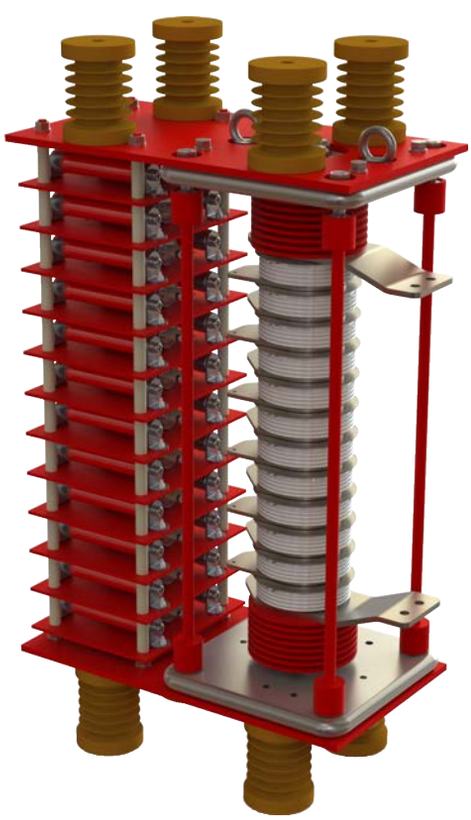
Using the latest 3D modelling and simulation techniques, we can significantly reduce the cycle time from concept to fully developed design, minimising risk and identifying opportunity for optimisation early in the project.

With double digit growth in the preceding 5 years, in 2010 we moved into a new 300m^2 dedicated production facility complemented by a well-equipped power lab. These new facilities, supported by an expanded team of engineers and technicians form the foundations for continued investment and growth in this strategic area of our business.

Standard Assemblies

IXYS UK's standard assemblies also include the new press-pack IGBT 3-level inverters. 3 separate designs are available, a totally independent 3.3kV system, a 6.6kV system and a 10kV system. The 6.6kV and 10kV systems are based on the combination of 2 IGBT stacks and 1 diode stack. Each system benefits from direct water cooling to provide highly effective heat dissipation away from the devices and pre-loaded disc spring clamping to evenly distribute the applied force across the entire surface area of the device.
Also designed into each system is an integrated snubber circuit design and an isolated clamping rod system to limit the occurrence of eddy currents within the unit.





Pulsed Power

As a pioneer in the development of solid state pulsed power components and systems, we are able to deliver anything from discrete components to fully integrated energy transfer switches. With systems successfully delivering voltage ratings of over 50kV and pulsed currents up to 140kA, we have a wealth of experience at your disposal. Our modular design solutions based on either pulse thyristor or press-pack IGBT technology and integrating control and protection functions provide you with a flexible 'black-box' approach to energy transfer problems.

We are involved with pulsed power on a global basis, working with prestigious research organisations such as CERN, Switzerland as well as medium voltage manufacture for emerging commercial applications such as laser supplies, PUV and PEF sterilisation, magnetisation and metal forming.

Power Semiconductor Assemblies From IXYS UK

Traction Applications

With over 40 years of experience, our dedicate team of design engineers can deliver solutions to a whole range of design problems, ranging from simple trackside rectifiers to complex propulsion converters.

IXYS UK power electronic assemblies group pioneered the early development of solid state converters for traction systems in the late 1950's as part of the Westinghouse brake & signal company. Over the years we have gained an enviable reputation within the rail sector as a solution provider.

Using our experience and broad network of contacts within the industry, we are able to offer assistance in tackling issues such as; component obsolescence, improving power equipment reliability, contract maintenance of power modules, refurbishment of power electronics, upgrades to existing systems and, of course, subcontract manufacture for new projects.

Working systematically to the highest international standards, we can give your equipment a new lease of life and help protect your investment in these valuable assets.

Component obsolescence is becoming a significant problem for the rail sector as equipment design life invariably exceeds that of the modern power electronics components. Our highly skilled team of engineers are able to re-engineer older equipment to incorporate the latest technology whilst maintaining compatibility.

As equipment reached half-life, many of the major power components will reach the end of their useful life resulting in a sharp decline in equipment reliability and availability. In these circumstances we can offer a full overhaul and refurbishment program for your power electronics, from engineering analysis, test and measurement through to delivery and validation of refurbished equipment.

For larger projects such as fleet wide refits, we are able to work within a consortium of specialist international companies to ensure you have the right skills on hand to deliver turnkey solutions to your requirements. This may include system analysis, project management, risk assessment and safety case.

Custom assemblies – our design philosophy

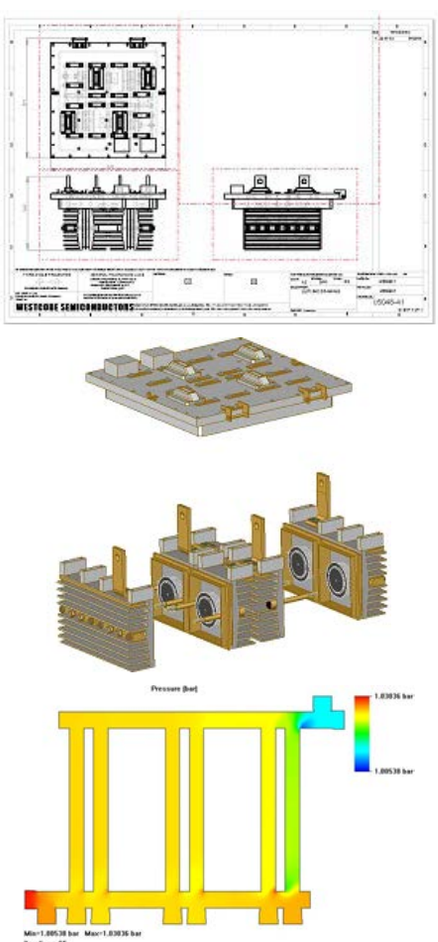
From concept through development and manufacture to after sales support, we believe strongly in working closely with our customer every step of the way – extending our philosophy of teamwork beyond our own organisation.

We understand that good communication and close collaboration help us provide the very best service to our customers.

Using the latest 3D modelling techniques we can visualise concepts and check form, fit and function with virtual prototypes. Also, utilising advanced software packages, IXYS UK can carry out simulation modelling, allowing us to model pressure drops through coolers/manifolds and heat flows through heatsinks.

Whether finding solutions to complex engineering problems or simply manufacturing to your designs, you will find IXYS UK offers outstanding value for money, excellent quality and first class customer service.

By working closely together from the very start of a project we aim to provide the best solutions on time and in budget.



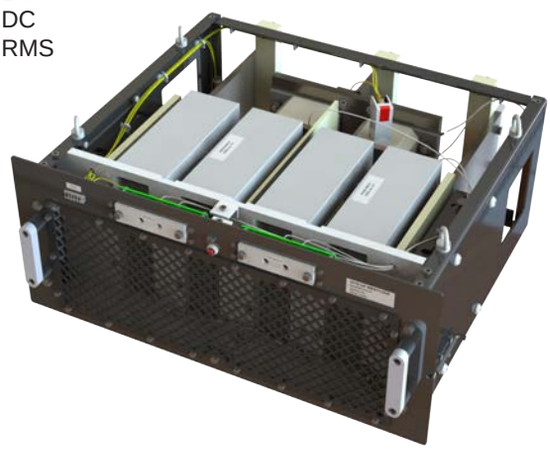
Power Semiconductor Assemblies From IXYS UK

Silicon Assemblies

A wide range of units is available, incorporating international standard outline silicon semiconductors. IXYS UK products have gained a worldwide reputation for quality in military, industrial and domestic applications.

Standard extruded aluminium heatsink profiles are used for mounting discrete semiconductor devices in various configurations, for example:

- Single-phase diode bridges with current ratings from 70 to 5710 Amps DC
- Single-phase half or fully controlled bridges from 35 to 2200 Amps DC
- Three-phase diode bridges with current ratings from 100 to 7190 Amps DC
- Three-phase half or fully controlled bridges from 45 to 3790 Amps DC
- Hexaphase single way diode assemblies from 200 to 14380 Amps DC
- Hexaphase single way thyristor assemblies from 90 to 7580 Amps DC
- AC regulators, single and three-phase from 40 to 2940 Amps RMS



Included in our standard range are solid-state, water-cooled AC regulators for resistance welding, with ratings from 315 to 3020 Amps RMS.

Also available are water cooled, single and three-phase assemblies from 1200 to 6000 Amps RMS.

All the above ranges are suitable for 440VRMS, 50Hz mains operation.

Components

To complement our range of power semiconductors and assemblies IXYS UK can offer a range of supporting components including:

- Heatsinks
- Coolers
- Mounting clamps
- Ultra-rapid semiconductor protection fuses
- Capacitors
  - Snubbers
  - Rectification
  - Specialist DC link
- Gate drive units

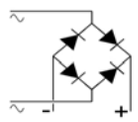
Beyond Semiconductors

Our flexible manufacturing facility is able to readily adapt to our customer's needs. In addition to power semiconductor assembly, we can offer complementary sub-assemblies to our customer's requirements, such as fuse panels and capacitor banks as well as contract manufacture to your designs.

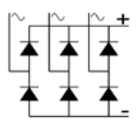
Application and engineering support

Our highly experienced technical team is on hand to provide our customers with first class support for everything from the application of our range of discrete devices to the design and development of complex systems. We can help you from concept through design to manufacture and test, working closely with you every step of the way.

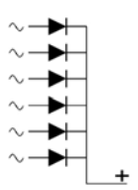
Single phase diode bridges — **Approx. total loss 2x I_{DC} @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s T_a = 25°C	T_a = 35°C	T_a = 45°C	$I_{FSM\ amps}$ $I_{TSM\ amps}$	I^2t A^2s	Dimensions mm Fig.	W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type	
SXB1375B	1375	1303	1230	19500	$1.9x10^6$	1	382	325	405	20	W2058LC (4)	B(2x83.1x180)	
SXB2096B	2096	1987	1874	33000	$5.45x10^6$	1	382	325	405	20	W3270NC (4)	B(2x83.1x180)	
SXB3442B	3442	3277	3109	53000	$13.5x10^6$	2	382	593	405	40	W5696VC (4)	B(2x180)	
SXB4264B	4264	4051	3835	72000	$22.5x10^6$	2	382	593	405	40	W8405ZC (4)	B(2x180)	

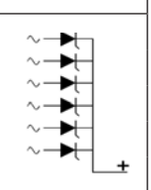
Three phase diode bridges — **Approx. total loss 2.5x I_{DC} @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s T_a = 25°C	T_a = 35°C	T_a = 45°C	$I_{FSM\ amps}$ $I_{TSM\ amps}$	I^2t A^2s	Dimensions mm Fig.	W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type	
SXB1920G	1920	1822	1721	19500	$1.9x10^6$	3	548	325	405	30	W2058LC (6)	B(2x83.1x180)	
SXB2939G	2939	2788	2634	33000	$5.45x10^6$	3	548	325	405	30	W3270NC (6)	B(2x83.1x180)	
SXB4869G	4869	4640	4407	53000	$13.5x10^6$	4	548	593	405	60	W5696VC (6)	B(2x180)	
SXB5993G	5993	5701	5402	72000	$22.5x10^6$	4	548	593	405	60	W8405ZC (6)	B(2x180)	

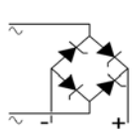
Six phase diode, single way with IPT — **Approx. total loss 1.25x I_{DC} @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s T_a = 25°C	T_a = 35°C	T_a = 45°C	$I_{FSM\ amps}$ $I_{TSM\ amps}$	I^2t A^2s	Dimensions mm Fig.	W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type	
SXB3840HEX	3840	3644	3442	19500	$1.9x10^6$	5	548	325	395	30	W2058LC (6)	B(2x83.1x180)	
SXB5877HEX	5877	5576	5268	33000	$5.45x10^6$	5	548	325	395	30	W3270NC (6)	B(2x83.1x180)	
SXB9737HEX	9737	9281	8813	53000	$13.5x10^6$	6	548	593	395	60	W5696VC (6)	B(2x180)	
SXB11987HEX	11987	11401	10804	72000	$22.5x10^6$	6	548	593	395	60	W8405ZC (6)	B(2x180)	

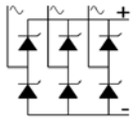
Six phase thyristor, single way with IPT — **Approx. total loss 1.5x I_{DC} @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s T_a = 25°C	T_a = 35°C	T_a = 45°C	$I_{FSM\ amps}$ $I_{TSM\ amps}$	I^2t A^2s	Dimensions mm Fig.	W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type	
SXB3529HEXT	3529	3244	2949	29600	$4.38x10^6$	5	548	325	395	30	N1802LC (6)	B(2x83.1x180)	
SXB4649HEXT	4649	4270	3878	37000	$6.85x10^6$	6	548	593	395	60	N2500VC (6)	B(2x180)	
SXB6240HEXT	6240	5714	5173	64000	$20.5x10^6$	6	548	593	395	60	N4085ZC (6)	B(2x180)	

Single phase fully controlled bridges — **Approx. total loss 2.5x I_{DC} @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s T_a = 25°C	T_a = 35°C	T_a = 45°C	$I_{FSM\ amps}$ $I_{TSM\ amps}$	I^2t A^2s	Dimensions mm Fig.	W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type	
SXB1265FB	1265	1161	1054	29600	$4.38x10^6$	1	382	325	405	20	N1802NC (4)	B(2x83.1x180)	
SXB1645FB	1645	1508	1367	37000	$6.85x10^6$	2	382	593	405	40	N2500VC (4)	B(2x180)	
SXB2167FB	2167	1981	1790	64000	$20.5x10^6$	2	382	593	405	40	N4085ZC (4)	B(2x180)	

Three phase fully controlled bridges — **Approx. total loss 3x I_{DC} @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s T_a = 25°C	T_a = 35°C	T_a = 45°C	$I_{FSM\ amps}$ $I_{TSM\ amps}$	I^2t A^2s	Dimensions mm Fig.	W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type	
SXB1764FG	1764	1622	1475	29600	$4.38x10^6$	3	548	325	405	30	N1802NC (6)	B(2x83.1x180)	
SXB2324FG	2324	2135	1939	37000	$6.85x10^6$	4	548	593	405	60	N2500VC (6)	B(2x180)	
SXB3120FG	3120	2857	2586	64000	$20.5x10^6$	4	548	593	405	60	N4085ZC (6)	B(2x180)	

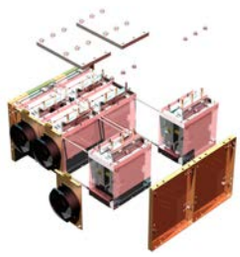
Westack ***- Modular Solutions***

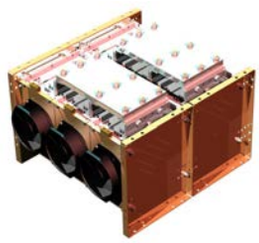
Cooling for each module section is provided by the use of a low noise 115/230 V ac fan which is protected against overloading by an integral thermal cut-out.

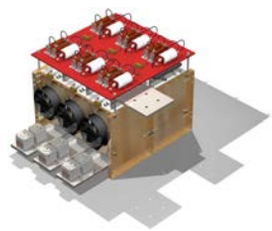
Surge suppression and fusing provides reliable and safe operation. Surge suppression (protecting the devices from voltage transients) and high speed fuses (to protect against short circuit) are available. Contact IXYS UK for details.

All plastic components are UL recognised and meet the requirements of the European Union Directive 2002/95/EC covering the restricted use of certain hazardous substances in electrical and electronic equipment.

ISO 9000 provides the standard against which all our products and services are measured.







Westack - ***Modular Solutions are available in 6 standard configurations. others by request.***

Figure 1
Weight 20 kg

Figure 2
Weight 40 kg

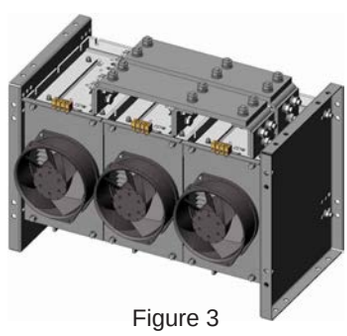


Figure 3
Weight 20 kg

Figure 4
Weight 60 kg

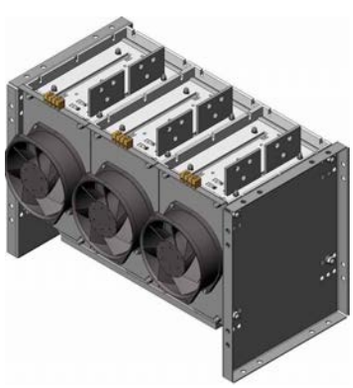


Figure 5
Weight 30 kg

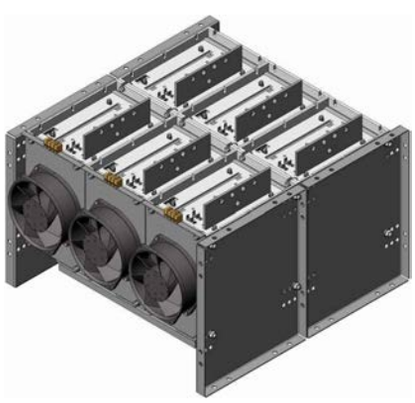


Figure 6
Weight 60 kg

Westack*LITE - Modular Solutions*

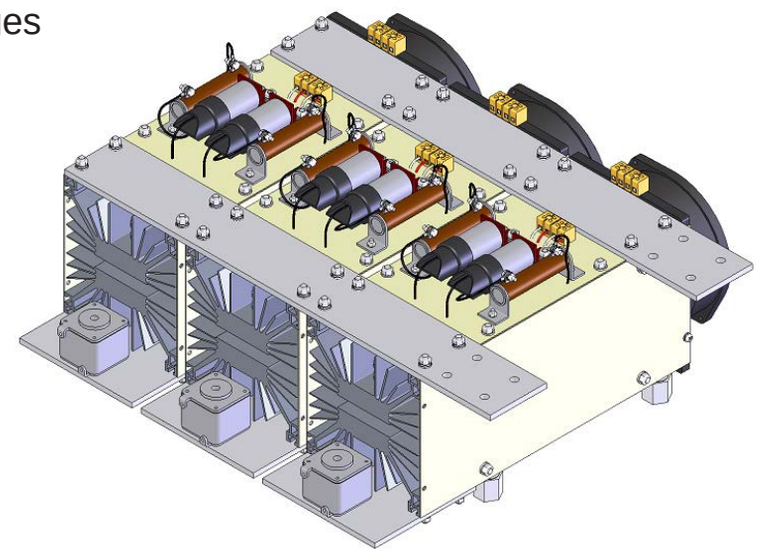
A simple but highly efficient range of stacks incorporating the new WESPACK range of phase control thyristors.

Currently available in 3 standard configurations:

AC voltage regulators

Single-phase bridges

Three-phase bridges



These stacks can easily be modified to meet individual customer requirements.

Fully dimensioned drawings are available upon request from the Chippenham Factory.

Features and Benefits

WESPACK devices provide the maximum power rating for weight and volume without compromising on quality and relaibilty.

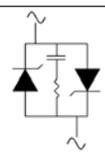
Cooling is provided by means of a low noise dual voltage (230V/115V) ac fan that is protected against overloading by an integral thermal cut-out.

Surge suppression and fusing can be added to protect the devices from voltage transients and short circuits.

ISO 9000 2000 provides the standard against which all our products and services are measured.

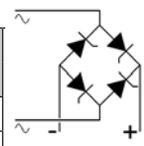
Westack*LITE - Modular Solutions*

AC regulators — **Approx. total loss 1.3·I_{RMS}**



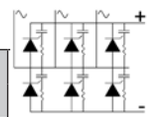
Assembly Part Number	I_{DC} amps Air Forced 5m/s T_a = 25°C	T_a = 35°C	T_a = 45°C	$I_{FSM\ amps}$ $I_{TSM\ amps}$	I^2t A^2s	Dimensions mm Fig.	W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type
SXC1195FR	1195	1098	997	19100	$1.82x10^6$	1	168	415	212	10	N1806QK (2)	(2x150. 1x330)
SXC1464FR	1464	1348	1227	32400	$5.25x10^6$	1	168	415	212	10	N2367MK (2)	(2x150. 1x330)
SXC1788FR	1788	1636	1480	50900	$12.95x10^6$	1	168	415	212	10	N3904HK (2)	(2x150. 1x330)

Single phase fully controlled bridges — **Approx. total loss 2.5·ID_{DC}**

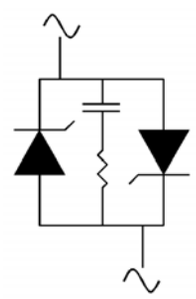


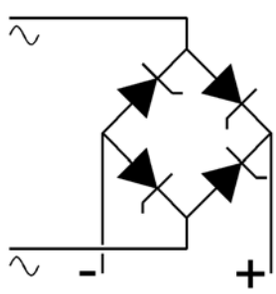
Assembly Part Number	I_{DC} amps Air Forced 2.5m/s T_a = 25°C	T_a = 35°C	T_a = 45°C	$I_{FSM\ amps}$ $I_{TSM\ amps}$	I^2t A^2s	Dimensions mm Fig.	W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type
SXC1076FB	1076	988	897	19100	$1.82x10^6$	2	330	415	212	20	N1806QK (4)	(2x150. 1x330)
SXC1318FB	1318	1213	1104	32400	$5.25x10^6$	2	330	415	212	20	N2367MK (4)	(2x150. 1x330)
SXC1609FB	1609	1473	1332	50900	$12.95x10^6$	2	330	415	212	20	N3904HK (4)	(2x150. 1x330)

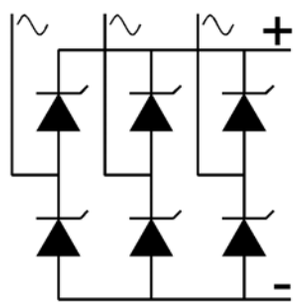
Three phase fully controlled bridges — **Approx. total loss 3·ID_{DC}**

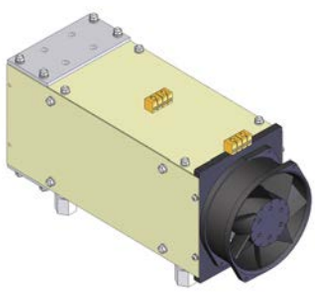


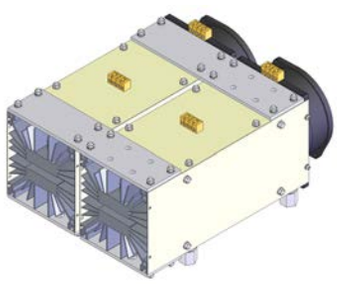
Assembly Part Number	I_{DC} amps Air Forced 2.5m/s T_a = 25°C	T_a = 35°C	T_a = 45°C	$I_{FSM\ amps}$ $I_{TSM\ amps}$	I^2t A^2s	Dimensions mm Fig.	W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type
SXC1517FG	1517	1396	1270	19100	$1.82x10^6$	3	492	415	212	30	N1806QK (6)	(2x150. 1x330)
SXC1871FG	1871	1725	1573	32400	$5.25x10^6$	3	492	415	212	30	N2367MK (6)	(2x150. 1x330)
SXC2319FG	2319	2125	1926	50900	$12.95x10^6$	3	492	415	212	30	N3904HK (6)	(2x150. 1x330)

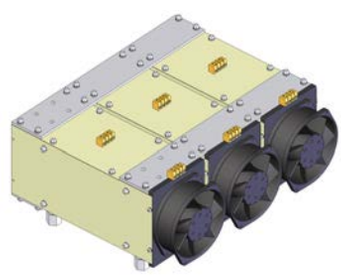












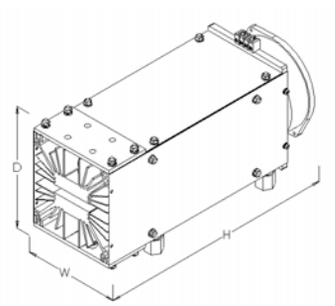


Figure 1
Weight 10 kg

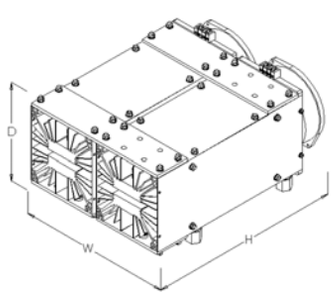


Figure 2
Weight 20 kg

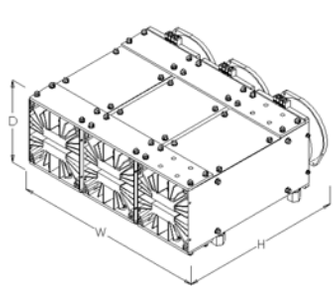


Figure 3
Weight 30 kg

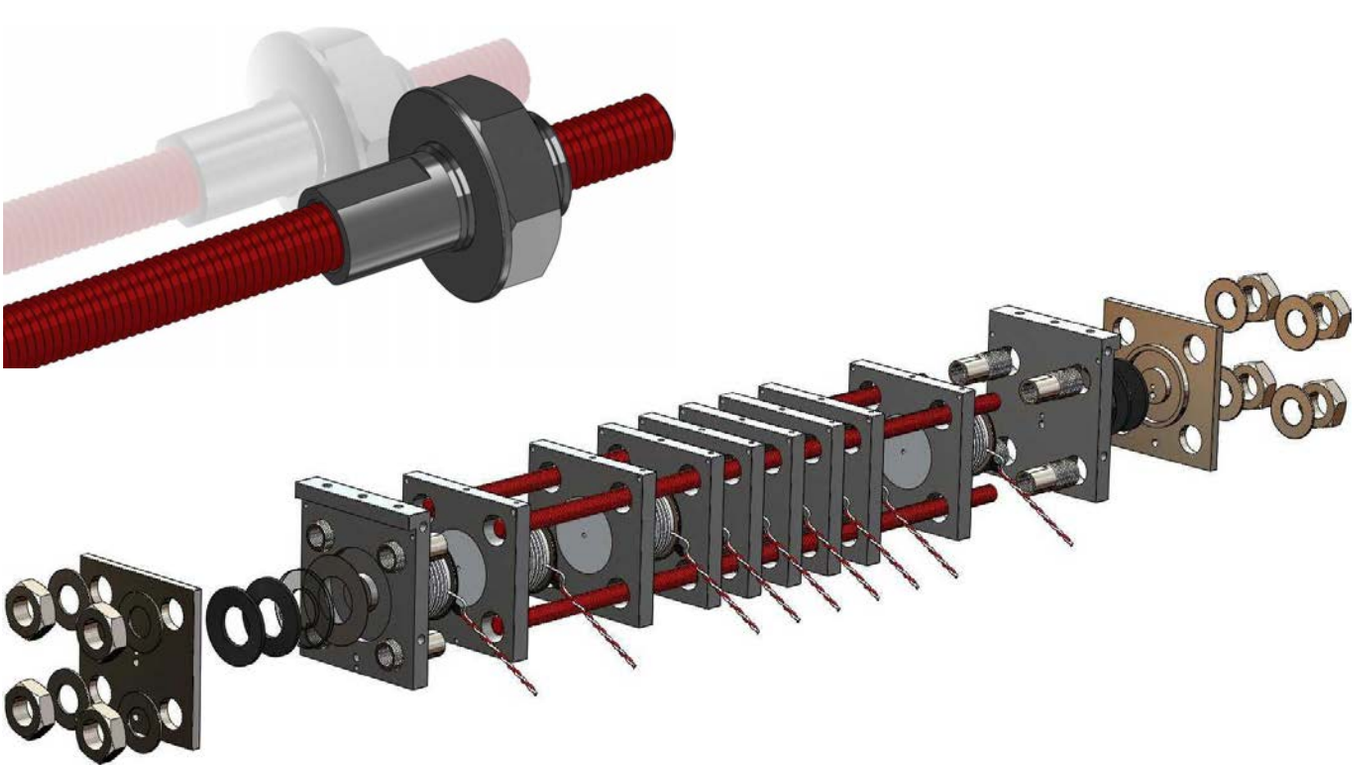
Power Semiconductor Accessories

As part of our continuing commitment to meet our customers' demands, we offer a range of products to support our high power semiconductor devices and our silicon assembly business.

The following pages show a selection of accessories available to our customers, from heatsinks and coolers, to bar or box clamps, to mounting grease!

Part No.	Old Part Number	Accessory
XSGSCX13		Press Pack Semiconductor Mounting Grease, supplied in 1kg tins
XST1000M08P	PTFE1000M8	M8 PTFE tube x 1m length insulation
XST1000M10P	PTFE1000M10	M10 PTFE tube x 1m length insulation
XST1000M12P	PTFE1000M12	M12 PTFE tube x 1m length insulation
XST1000M16P	PTFE1000M16	M16 PTFE tube x 1m length insulation
L0001YC600XXX	n/a	30mm diameter poleface Insulator Capsule
L0001QC600XXX	n/a	38mm diameter poleface Insulator Capsule
L0001NC600XXX	n/a	47mm diameter poleface Insulator Capsule
L0001HC600XXX	n/a	66mm diameter poleface Insulator Capsule
L0001ZF600XXX	n/a	73mm diameter poleface Insulator Capsule
L0001TC600XXX	n/a	75mm diameter poleface Insulator Capsule

Part No.	Old Part Number	Accessory	Type
XSL200D8WRC	U9948	200mm long single Co-Axial cable, Red / White, M5 ring terminal for Ø75 IGBT & below	IGBT
XSL200D8WRCP	U9947	200mm long double Co-Axial cable, Red / White, M5 ring terminal for Ø85 IGBT & above	IGBT
XSL220C2WRT		220mm long twisted pair, Silicone sleeve cable 16/0.2, Red / White, M4 ring terminal	Thyristor
XSL300C2WRP	U9900	300mm long pair, Silicone sleeve cable 16/0.2, Red / White, M4 ring terminal	Thyristor
XSL300C2WS	U9900 (Gate Only)	300mm long gate wire, Silicone sleeve cable 16/0.2, White, M4 ring terminal	Thyristor
XSL350C2WRP	U9723	350mm long pair, Silicone sleeve cable 16/0.2, Red / White, M4 ring terminal	Thyristor
XSL400C2WRP	U9860	400mm long pair, Silicone sleeve cable 16/0.2, Red / White, M4 ring terminal	Thyristor
XSL500C2WRP	U9855	500mm long pair, Silicone sleeve cable 16/0.2, Red / White, M4 ring terminal	Thyristor
XSL600C2WRP	U9775	600mm long pair, Silicone sleeve cable 16/0.2, Red / White, M4 ring terminal	Thyristor
XSL1000C2WRP	U9734/U9801/U9849	1000mm long pair, Silicone sleeve cable 16/0.2, Red / White, M4 ring terminal	Thyristor
XSL1000C2WRT	U9952	1000mm long twisted pair, Silicone sleeve cable 16/0.2, Red / White, M4 ring terminal	Thyristor
XSL1100C2WRT	U9779	1100mm long twisted pair, Silicone sleeve cable 16/0.2, Red / White, M4 ring terminal	Thyristor



We can supply discrete parts. kits of parts or complete assemblies to satisfy your requirements.

Please contact the Chippenham Factory for further information.

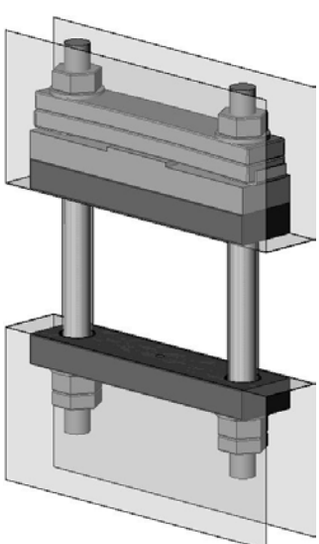
Standard Bar Clamps

Type Part No.	Fixing Centres mm	Rod Size	Capsule Device Outline	Mounting Surface Diameter mm	Nominal Thickness mm	$T_{J\ Max.}$ °C	Outline No.
XK0450DA056M	65	M8	DO-200AA/TO-200AB	19.0	13.8	190	WC2
XK0450DT056M							WC3
XK0450SA056M							WC1
XK0550DA056M	65	M8	GTO	29.5	16.0	190	WC5
XK0550SA056M							WC4
XK0900DA056M *	65	M8	Diode/Thyristor	25.1	14.6	190	WC7
XK0900DT056M *							WC8
XK0900SA056M							WC6
XK0600DA074M	89	M10	Press-Pack IGBTs	47.0	27.0	190	WC10
XK0600SA074M							WC9
XK1000DA074M	89	M10	Press-Pack IGBTs	47.0	27.0	190	WC12
XK1000SA074M							WC11
XK1100DA076M	89	M10	DO-200AB/TO-200AC	34.0	26.2	190	WC13
XK1130DA076M	89	M10	DO-200AB/TO-200AC	34.0	26.2	190	WC15
XK1130DT076M						190	WC16
XK1130SA076M						190	WC14
XK1800DA076M	89	M10	Wespack PCT	38.0	14.0	190	WC18
XK1800DT076M							WC19
XK1800SA076M							WC17
XK2100DA076M	89	M10	GTO	47.0	27.0	190	WC21
XK2100DA076ML						125	
XK2100SA076M						190	WC20
XK2100SA076ML						125	
XK2140DA076M *	89	M10	DO-200/Thyristor	47.0	26.8	190	WC23
XK2140DA076ML *						125	
XK2140DT076M *						190	WC24
XK2140DT076ML *						125	
XK2140SA076M						190	WC22
XK2140SA076ML						125	
XK2700DA076M	89	M10	Wespack PCT	50.0	14.0	190	WC26
XK2700DT076M							WC27
XK2700SA076M							WC25
XK2000DA114M	132	M12	Press-Pack IGBTs	75.0	26.0	190	WC29
XK2000SA114M							WC28
XK2500DA114M	132	M12	Press-Pack IGBTs	75.0	26.0	190	WC31
XK2500SA114M							WC30
XK2500DA116M	132	M12	GTO	63.0	26.0	190	WC33
XK2500DA116ML						125	
XK2500SA116M						190	WC32
XK2500SA116ML						125	
XK3000DA116M *	132	M12	DO-200AD/Thyristor	63.0	33.0	190	WC35
XK3000DA116ML *						125	
XK3000SA116M						190	WC34
XK3000SA116ML						125	
XK3500DA116M	132	M12	GTO	75.0	26.0	190	WC37
XK3500DA116ML						125	
XK3500SA116M						190	WC36
XK3500SA116ML						125	

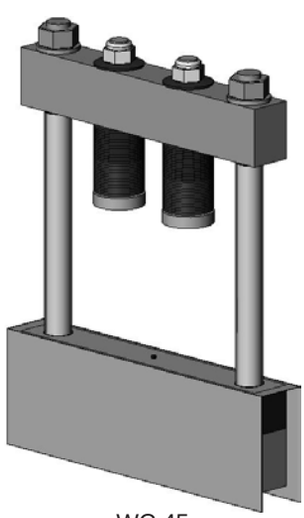
Standard Bar Clamps

Type Part No.	Fixing Centres mm	Rod Size	Capsule Device Outline	Mounting Surface Diameter mm	Nominal Thickness mm	$T_{J\ Max.}$	Outline No.
XK4000DA116M *	132	M12	Diode/Thyristor	73.0	36.8	190	WC39
XK4000DA116ML *						125	
XK4000SA116M						190	WC38
XK4000SA116ML						125	
XK5000DA128M	146	M16	GTO	75.0	26.0	190	WC40
XK5000DA128ML						125	
XK7000DA128M	146	M16	Diode/Thyristor	75.0	26.6	190	WC41
XK7000DA128ML						125	
XK3060DA140ML	154	M12	Press-Pack IGBTs	85.1	26.0	125	WC43
XK3060SA140ML							WC42
XK9000SA160M	180	M16	Thyristor	99.3	35.8	190	WC44
XK9000SA160ML						125	
XK9000DA160M	180	M16	Thyristor	99.3	35.8	190	WC45
XK9000DA160ML						125	
XK6120DA180ML	196	M16	Press-Pack IGBTs	125.0	26.0	125	WC46
XK6120SA180ML							WC47
XK8000DA180ML	196	M16	Press-Pack IGBTs	132.0	26.0	125	WC67
XK8000SA180ML							WC68

***** Not for new design. For new replacement part see page 162



WC 18



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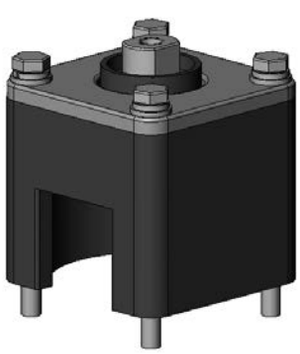

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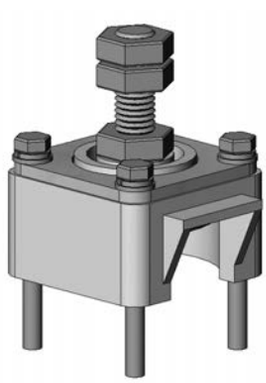


WC 48/49

Bar Clamps - new range!

Range	Part number	#### = Force kgf	Max cell dia mm	$T_{J\ MAX.}$ °C	xxx = max Z - dim range mm	Outline
XSK042	XSK####DA042Mxxx	0500/0900	42	190	025-076*	WC58
	XSK####DT042Mxxx	0500/0900	42	190	025-076*	WC59
	XSK####DF042Mxxx	0500/0900	42	190	025-076*	WC60
XSK054	XSK####DA054Mxxx	0900	54	190	025-076*	WC58
	XSK####DT054Mxxx	0900	54	190	025-076*	WC59
	XSK####DF054Mxxx	0900	54	190	025-076*	WC60
XSK056	XSK####DA056Mxxx	0500/0900/1500	56	190	038-120*	WC58
	XSK####DT056Mxxx	0500/0900/1500	56	190	038-120*	WC59
	XSK####DF056Mxxx	0500/0900/1500	56	190	038-120*	WC60
XSK065	XSK####DA065Mxxx	0500/0900/1500	65	190	038-120*	WC58
	XSK####DT065Mxxx	0500/0900/1500	65	190	038-120*	WC59
	XSK####DF065Mxxx	0500/0900/1500	65	190	038-120*	WC60
XSK075	XSK####DA075Mxxx	0900/1500/2200	75	190	038-120*	WC58
	XSK####DT075Mxxx	0900/1500/2200	75	190	038-120*	WC59
	XSK####DF075Mxxx	0900/1500/2200	75	190	038-120*	WC60
XSK087	XSK####DA087Mxxx	1500/2200/3000	87	190	038-120*	WC61
	XSK####DT087Mxxx	1500/2200/3000	87	190	038-120*	WC62
	XSK####DF087Mxxx	1500/2200/3000	87	190	038-120*	WC63
XSK103	XSK####DA103Mxxx	2200/3200/4000	103	190	038-120*	WC61
	XSK####DF103Mxxx	2200/3200/4000	103	190	038-120*	WC63
XSK112	XSK####DA112Mxxx	2800/3200/3800/4500	112	190	038-120*	WC61
	XSK####DF112Mxxx	2800/3200/3800/4500	112	190	038-120*	WC63
XSK120	XSK####DA120Mxxx	3800/4500/5000	120	190	050-120*	WC61
	XSK####DF120Mxxx	3800/4500/5000	120	190	050-120*	WC63
XSK126	XSK####DA126Mxxx	3800/4500/5000	126	190	050-120*	WC61
	XSK####DF126Mxxx	3800/4500/5000	126	190	050-120*	WC63

WC 58

WC 59

WC 60

WC 61

WC 62

WC 63

Outline drawings
on O-01...O-35

Range	A	A1	B	C	C1	D	E	F	G	H	Fixing
XSK042	69.85	74.89	54.00	15.88	21.04	42.00	8.64	PCF	PCF	12.70	M6
XSK054	82.55	86.04	65.00	15.88	21.04	54.00	8.62	34.93	PCF	12.70	M6
XSK056	95.25	-	70.00	25.40	-	56.00	12.19	PCF	PCF	9.53	M8
XSK065	104.39	-	79.00	25.40	-	65.00	12.19	PCF	PCF	12.70	M8
XSK075	112.78	-	89.00	25.40	-	75.00	12.19	PCF	PCF	12.70	M8
XSK087	127.00	-	102.00	25.40	-	87.00	12.19	PCF	PCF	19.05	M8
XSK103	144.78	154.11	118.00	25.40	36.00	103.00	PCF	PCF	PCF	19.05	M8
XSK112	165.02	-	132.00	25.40	36.00	112.00	16.56	PCF	PCF	25.40	M10
XSK120	172.72	-	140.00	25.40	36.00	120.00	16.56	PCF	PCF	25.40	M10
XSK126	181.10	-	146.00	25.40	36.00	126.00	16.56	PCF	PCF	25.40	M10

PCF = Dimension is dependent on clamp force and cell height. Please consult factory

All dimensions in mm

Bar Clamps for WESPACK™ *and GTO range*

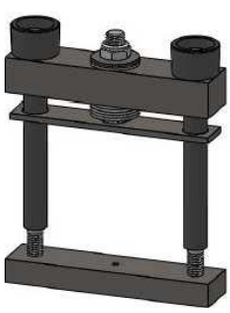
Part No.	Rod Size & Length mm	Insulator Size & Length mm	Fixing centres	Pole Face	Clamp Forces	„Z“ mm	„D“ mm	Fig. No.
XSK1500DA076038	M8 x 90	M8 x 60	89	32	10kN to 20kN	38	27.5	WC51
XSK1500DA076076	M8 x 130	M8 x 95				76	62.5	
XSK1500DA076101	M8 x 160	M8 x 120				101	87.6	
XSK2000DA076038	M8 x 95	M8 x 60	89	38	13kN to 20kN	38	25.9	WC52
XSK2000DA076076	M8 x 130	M8 x 95				76	61.0	
XSK2000DA076101	M8 x 160	M8 x 120				101	85.9	
XSK3000DA076038	M8 x 100	M8 x 65	89	50	25kN to 31kN	38	26.2	WC53
XSK3000DA076076	M8 x 130	M8 x 100				76	56.1	
XSK3000DA076101	M8 x 160	M8 x 125				101	86.1	
XSK3400DA076038	M8 x 100	M8 x 65	89	50	27kN to 34kN	38	24.6	WC54
XSK3400DA076076	M8 x 140	M8 x 105				76	64.5	
XSK3400DA076101	M8 x 160	M8 x 130				101	89.7	
XSK3800DA116M076	M10 x 150	M12 x 100	132	66	32kN to 38kN	76	59.7	WC55
XSK3800DA116M101	M10 x 180	M12 x 125				101	84.6	
XSK4400DA116M076	M10 x 150	M12 x 105	132	68	36kN to 44kN	76	63.0	WC56
XSK4400DA116M101	M10 x 180	M12 x 130				101	87.9	
XSK6000DA116M076	M10 x 150	M12 x 105	132	75	50kN to 60kN	76	59.9	WC57
XSK6000DA116M101	M10 x 180	M12 x 130				101	84.8	

Note: 1 Kgf = 9.8 Newtons

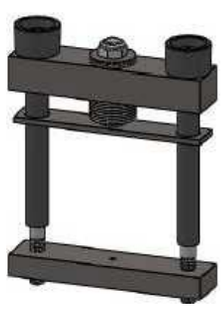
T_{JMAX} = 190°C

Outline drawings are available from pages O-01...O-35

WC51



WC52



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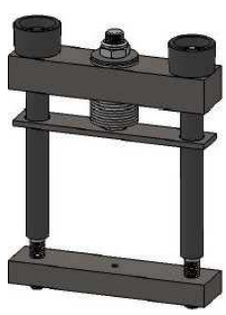
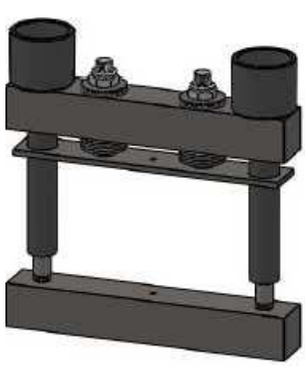
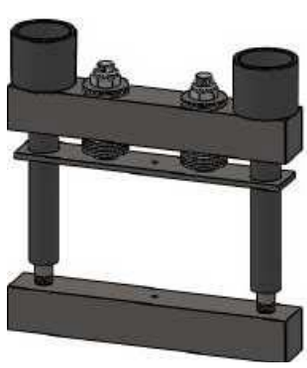


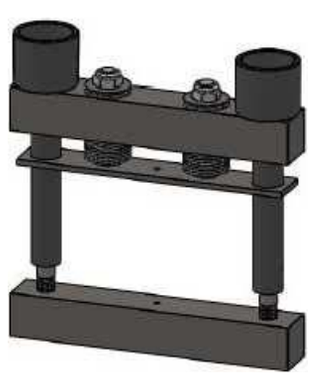
WC54



WC55



WC56



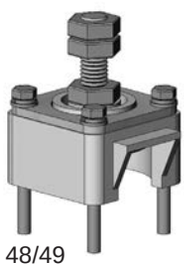
WC57

Box Clamps

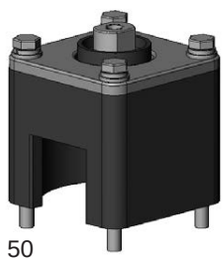
Part No.	Moulded Box Style	Fixing Centres mm	Rod Size	Capsule Device Outline	Capsule Device Mounting Surface Ø mm	Capsule Device Nominal Thickness mm	Outline Ref.
XK0450BA019M **XK0450BB019M**	Injection Compression	50 PCD	M5x50 Bolts	DO-200AA/TO-200AB	19.0	13.8	WC48
XK0450BA025M **XK0450BB025M**	Injection Compression	50 PCD	M5x50 Bolts	DO-200AA/TO-200AB	25.1	14.6	WC49
XK1000BA025M	Injection	50 PCD	M5x50 Bolts	DO-200AA/TO-200AB	25.1	14.0	WC49
XK1500BA034M	Injection	70 PCD	M6x50 Bolts	DO-200AB/TO-200AC	34.0	26.2	WC50

Note: 1 Kgf = 9.8 Newtons

Outline drawings are available from pages O-01...O-35



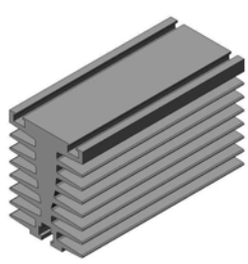
WC 48/49



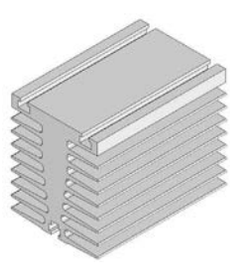
WC 50

Heatsinks

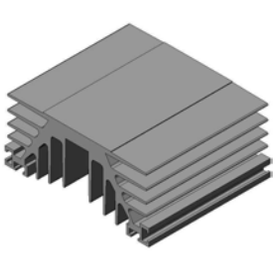
Part No.	Weight Kg/m	Periphery mm	Area mm^2	Fig.
XSFGxxxxAN	8.1	1059	2979	WH1
XSFGAxxxxAN	15.6	1682	5867	WH2
XSFHxxxxAN	12.7	1684	4655	WH3
XSFTxxxxAN	20	2065	7573	WH4
XSFTBxxxxAN	29	2467	10905	WH5
XSFTCxxxxAN	28	2544	10561	WH6
XSFLPxxxxAN	30	6620	11172	WH7
XSF46xxxxAN	20	2822	7411	WH8
XSF30xxxxAN	Dimensions 125mm x 125mm x 4 vanes			WH9



WH1



WH2



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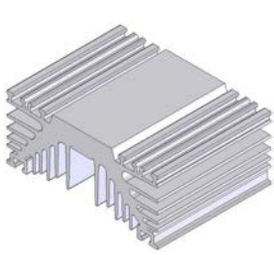

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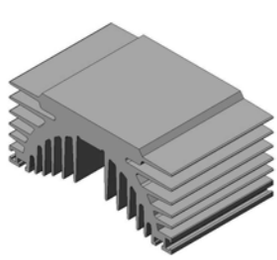
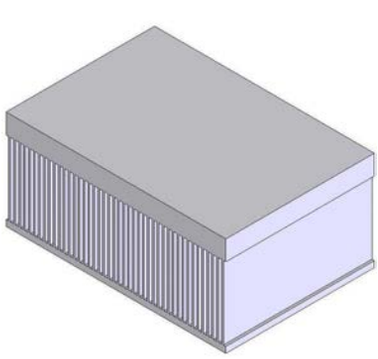
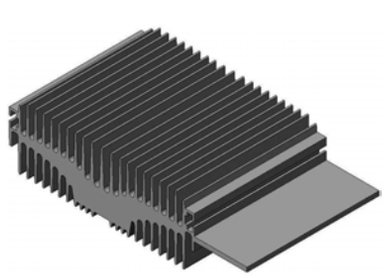


WH5

WH6



WH7



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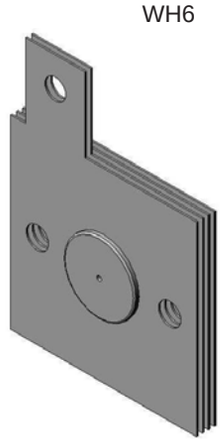


WH9

Coolers

Part No.	Weight Kg	Cooler Thickness mm	Busbar Thickness mm	Description	Fig. No.
XW076NC16A	0.418	16	N/A	47mm WC Cu	WCL2
XW076NC16B		16		47mm WC Cu with Busbar (10mm Hose)	WCL1
XW076NC16BS		16		47mm WC Cu with Busbar + spirol pins fitted (10mm Hose)	WCL1
XW076NC16BT	0.612	16	6.4	47mm WC Cu with Busbar + thermostat hole (10mm Hose)	WCL1
XW076NC16C		16		47mm WC Cu with Busbar (1/2" Hose)	WCL1
XW076NC16CT		16		47mm WC Cu with Busbar + thermostat hole (1/2" Hose)	WCL1
XW076NC16R	0.581	16	6.35	47mm WC Cu reversed with Busbar	WCL12
XW076NC16W	0.400	16	N/A	47mm WC Cu reversed	WCL13
XW116ZC20A	1.300	20	N/A	73mm WC Cu	WCL4
XW116ZC20B	1.750	20	10	73mm WC Cu with Busbar	WCL3
XW116ZC20C	2.120	20	10	73mm WC Cu with alt. Busbar	WCL5
XW116ZC20R	1.672	20	10	73mm WC Cu reversed with Busbar	WCL14
XW116ZC20W	1.119	20	N/A	73mm WC Cu reversed	WCL15
XW127EN15A	0.375	15	N/A	85mm WC Al Nitride	WCL8
XW127EN15B		15		85mm WC Al Nitride without holes	
XW127EC25A	1.650	25	N/A	85mm WC Cu Helix	WCL16
XW127EC25B	2.200	25	8	85mm WC Cu with Busbar Helix	WCL17
XW127EA25A	0.500	25	N/A	85mm WC Al Helix	WCL16
XW127EA25B	0.650	25	8	85mm WC Al with Busbar Helix	WCL17
XW160FC25A	3.620	25	N/A	100mm WC Cu	WCL6
XW160FC25B	4.520	25	10	100mm WC Cu with Busbar	WCL7
XW180GC34A	4.920	34	N/A	125mm WC Cu Helix	WCL11
XW180GC34B	5.950	34	10	125mm WC Cu with Busbar Helix	WCL10
XW180GA34A	1.500	34	N/A	125mm WC Al Helix	WCL11
XW180GA34B	1.800	34	10	125mm WC Al with Busbar Helix	WCL10
XW180GN25A	0.920	25	N/A	125mm WC Al Nitride Helix	WCL18
XW180BA34E	1.550	34	N/A	132mm WC Al Helix	WCL19
XW180BA34F	1.850	34	10	132mm WC Al with Busbar Helix	WCL20
XW270QA25A	2.941	25	n/a	270 x 190mm WC Al Cold Plate	WCL9

WCL2

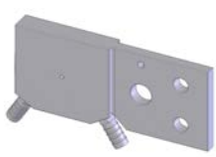
WCL4

WCL8

Outlines on pages O-01...O-35

WCL1

WCL3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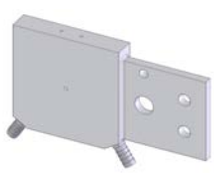
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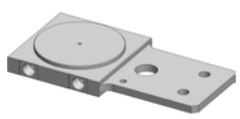
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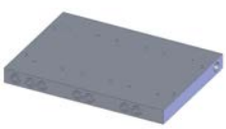
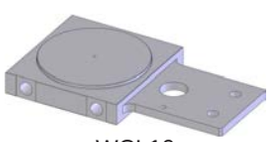
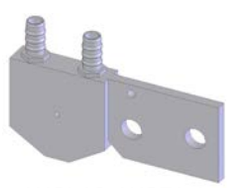

WCL9 -WS65


WCL10

WCL11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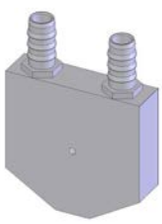
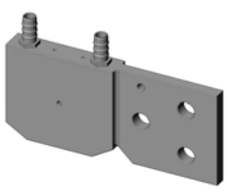

WCL13 -WS71-2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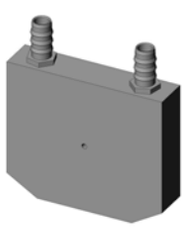
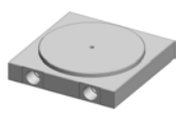

WCL15 -WS72-2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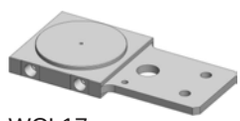

WCL17

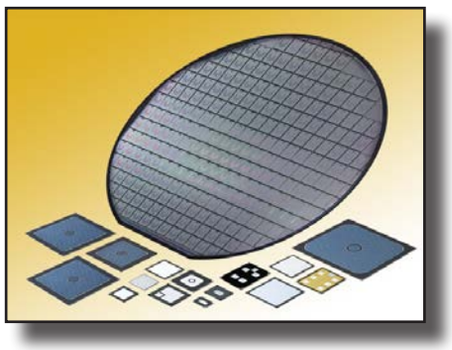
WCL18

Part No.	Cooler Accessories
XSNM12H10S	M12 Cooler Connection, 10mm Hose & Stainless Steel material
XSNM12H12S	M12 Cooler Connection, 12mm Hose & Stainless Steel material
XSNM10H15P	M10 Cooler Connection, 15mm Hose & Plastic Material

Power Semiconductor Chips

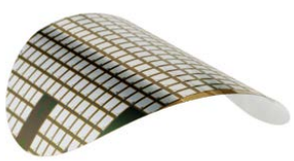
IXYS offers a wide range of power semiconductor dies for a multitude of applications.

Bipolar Chips	V_{RRM} / V_{DRM} V	$I_{F(AV)M}$ / $I_{T(AV)M}$ A	t_{rr} ns
Schottky Diodes	8 - 200	5 - 300	-
HiPerFRED™ (Low Leakage)	200 - 1200	10 - 150	30 - 40
Sonic™ Fast Recovery Diodes	600 - 1800	5 - 150	30 - 60
FRED™ (Low Forward Voltage Drop)	200 - 1200	10 - 150	40 - 60
Semi-Fast Diodes	1200 - 1600	15 - 60	60 - 100
Rectifier Diodes	1200 - 2200	10 - 400	-
Phase Control Thyristors	800 - 2200	5 - 300	-
IGBT Chips	V_{CES} V	I_C A	**Speed**
XPT IGBT	650	6 - 300	medium / fast
XPT IGBT	900	20 - 300	fast
XPT IGBT	1200	3 - 200	medium
XPT IGBT	1700	75 - 200	medium
HV XPT IGBT	3300 / 4500	40 - 60	medium



Mode of Shipment:

- in wafer form, unsawn, electrically tested, rejects are inked
- sawn wafer on foil, electrically tested, rejects are inked
- known good die in tray (Waffle Pack)
- customized die sizes / geometry on request

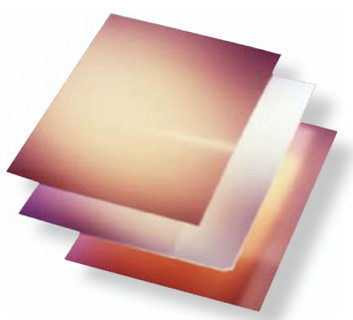


XPT Features:

- thin wafer technology
- low $V_{ce(sat)}$ and E_{off}
- very low gate charge
- rugged, square RBSOA @ 2 x I_{nom}
- short circuit rated (10µs)
- easy to parallel

For chip sales please contact:
chipsales@ixys.de

Direct Copper Bonded Ceramic Substrates



DCB Ceramic Substrates (Al_2O_3)

IXYS manufactures Direct Copper Bonded substrates on aluminum oxide (Al_2O_3) base. DCB ceramic substrates form the basis for new product ideas and electronic developments with a high degree of integration.

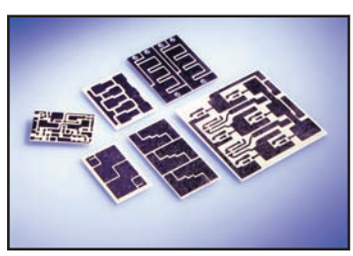
- carriers for semiconductor chips and connection clips
- circuits similar to that on a PC board
- electrical isolator for separating „current paths“ from „heat paths“
- transfer medium for heat dissipation from active parts into heat sink

Standard bonded DCB panel dimensions are:

Unclad aluminum oxide ceramic			
Al_2O_3 content		> 96	%
dimensions		138x210, 138x190.5, 115x165*	mm
usable area	max.	130x200, 130x180, 107x156*	mm
thickness		1.00, 0.63, 0.38, 0.25	mm
arc through voltage		10	kV
thermal conductivity		> 24	W/m · K
Conduction layers - both sides			
copper thickness		0.3 (< 0.3 on request)	mm
conductor width	min.	0.3 + / - 0.2	mm
conductor spacing	min.	0.4 + / - 0.2	mm
spacing conductor/edge of ceramic	min.	0.35 + / - 0.2	mm
surface finishes available		bare copper; nickel plated; nickel + gold plated	
peel-off resistance (90° peel test)		>6	N/mm
DCB ceramic substrate			
application temperature range		-55...+850	°C
resistant to hydrogen	max.	400	°C
thermal expansion coefficient	to typ.	7.4 x 10-6	K^{-1}

DCB parts are available as:

- bonded plate
- bonded and patterned plate
- prelasered, unbroken plate
- individuale substrates
- customer specific substrates on request



* = (for 0.25 mm thk.)

Application Notes Highlights

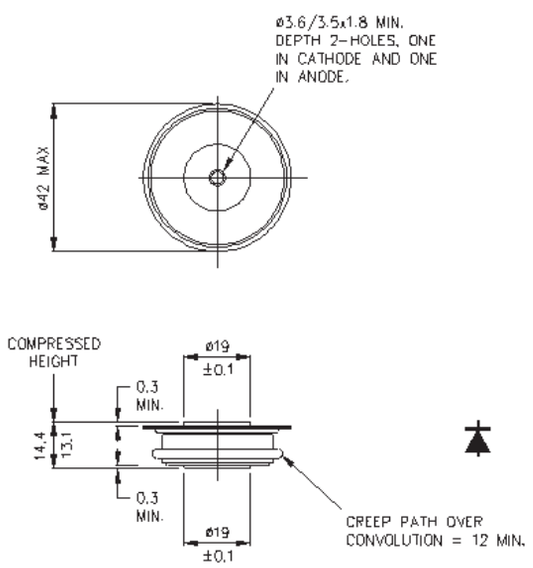
further information and downloads see www.ixys.com

Power Factor Correction	
IXAN0001	3-Phase PFC using Vienna Rectifier Approach and Modular Construction for Improved Overall Performance, Efficiency and Reliability
IXAN0002	Single and Three-Phase Rectifiers with Active Power Factor Correction for Enhanced Mains Power Quality
IXAN0003	Rectifiers with Power Factor Correction
IXAN0004	Design and Experimental Investigation of a Three-Phase, High Power Density, High Efficiency, Unity Power Factor PWM (VIENNA) Rectifier Employing a Novel Integrated Power Semiconductor Module
IXAN0005	Status of the Techniques of Three-Phase Rectifier Systems with Low Effects on the Mains
MOSFETs and IGBTs Drivers	
IXAN0012	MOSFET/IGBT Drivers - Theory and Applications
IXAN0011	Driving Your MOSFETs Wild to Obtain Greater Efficiencies, Power Densities and Lower Overall Cost
BiMOSFETs Applications	
IXAN0013	Capacitor Charge/Discharge Circuits, utilizing High Voltage IGBTs and ZCS Resonant Mode Techniques
IXAN0014	Comparative Performance of BiMOSFETs in Fly-back Converter Circuits
IXAN0015	Use of BiMOSFETs in Modern Radar Transmitters
IXAN0016	IXBH40N160 BiMOSFET Developed for High Voltage and High Frequency Applications
IXAN0017	New 1600V BiMOSFET Transistors Open Up New Applications
Automotive Applications	
IXAN0018	A High Current Dual Inline Packaged Trench MOSFET Three Phase Full Bridge as Contribution to Automotive System Integration
IXAN0019	High Power TrenchMOSFETs Solutions in Automotive Designs
IXAN0020	Power Electronic Supply for Automotive Starter Generator
IXAN0021	New Trench Power MOSFETs in Isolated Packages
Isolation Techniques, Mounting, Soldering and Cooling	
IXAN0071	The SMPD Package and its Mounting Instructions
IXAN0022	Capitalizing on the Advantages of ISOPLUS Products
IXAN0023	General Mounting Instructions
IXAN0025	ISOPLUS-The Revolution in Discrete Isolation Technique
IXAN0026	Combining the Features of Modules and Discretes in a New Power Semiconductor Packages
IXAN0028	The Revolution in Discrete Isolation Technique
IXAN0030	Surface Mount Soldering Recommendations for TO-263 and TO-268 case styles
IXAN0031	New ISOPLU247 Power Package Features 2500V Internal Isolation Revolutionary Approach Improves Thermal Conductance and Reliability
Power Modules	
IXAN0034	Recommended Use of the Integrated NTC Thermistor Temperature Sensor in IXYS Power Modules
IXAN0035	Mounting Instructions for _A7, _E7, _A8 and _E8 Module Series
IXAN0036	Investigations on Electromagnetic Compatibility of Power Semiconductor Modules Integrated in a Module
IXAN0037	Power Cycle Capability of solder contact DCB-Modules
FREDs and Schottky Diodes	
IXAN0042	Is the Lowest Forward Voltage Drop Schottky Diode Always the Best Choice?
IXAN0043	Input Rectifiers with Semifast Diodes for DC link.
IXAN0044	Characteristics and Applications of Fast Recovery Epitaxial Diodes.
IXAN0060	Optimized Ultra Fast Diodes for Switching Applications
Power MOSFETs	
IXAN0057	Series Operation of MOSFET and IGBT Switches
IXAN0061	Power MOSFET Basics
IXAN0062	IXYS Power MOSFET Products
IXAN0063	Application note on Depletion-mode
IXAN0064	IXYS P-Channel MOSFET
IXAN0065	IXYS Power MOSFET Datasheet Parameters Definition
IXAN0068	Linear Power MOSFETS Basic and Application
IXAN0069	Synchronous DC to DC Converter Design
IGBTs	
IXAN0063	IGBTs
IXAN0070	Drive with the IXYS XPT IGBT
IXAN0072	Discrete 600V GenX3 XPT IGBTs

Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

W1 - 100A241



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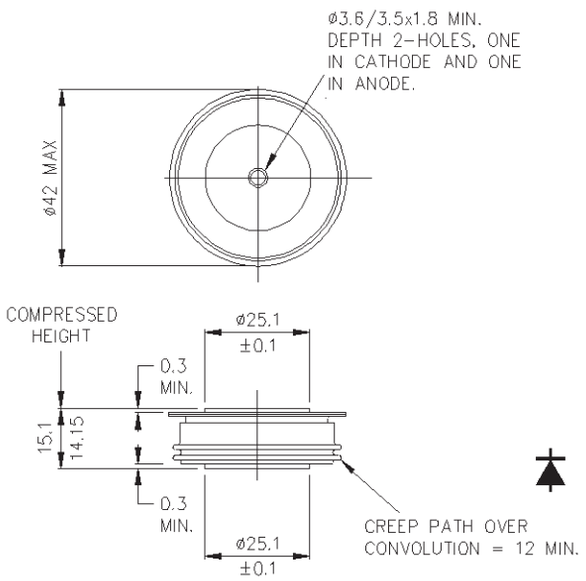
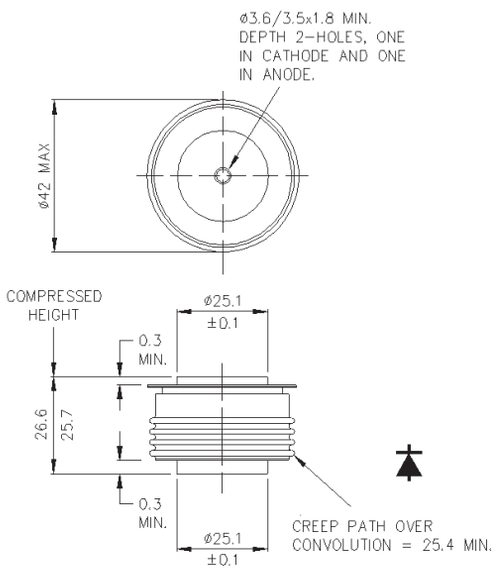
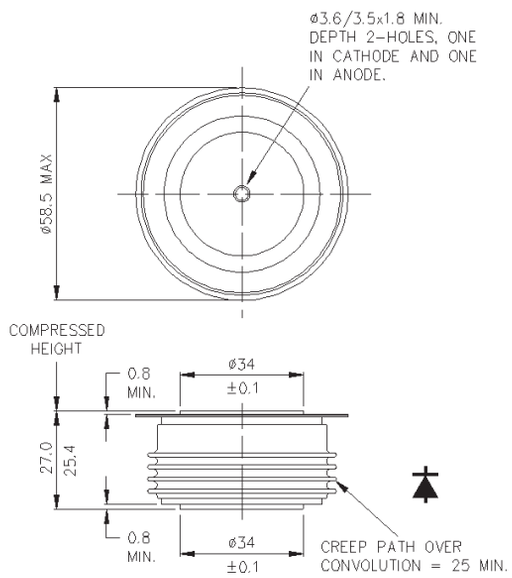


W3 - 100A317



W4 - 100A243



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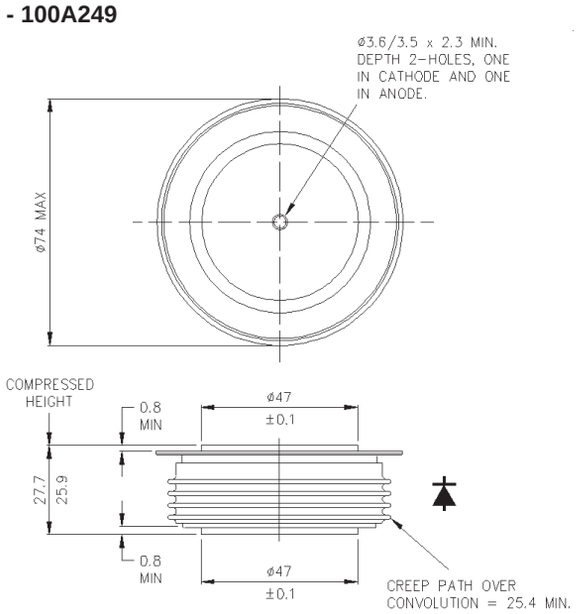
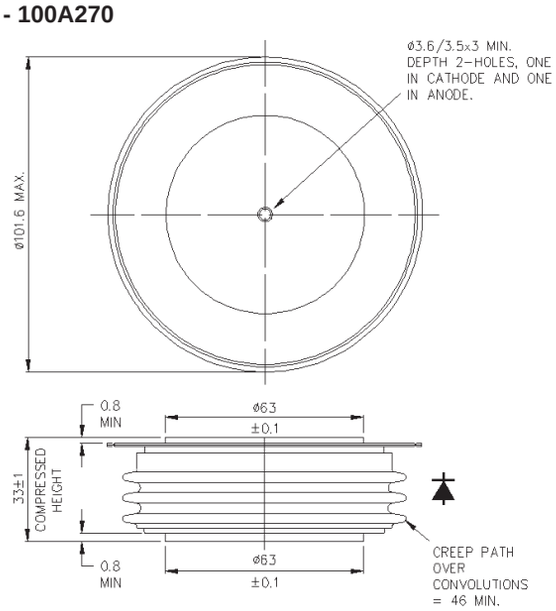


W6 - 100A270



Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

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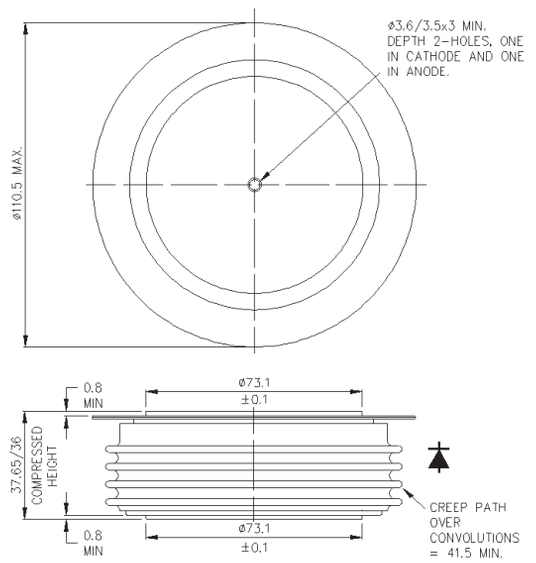
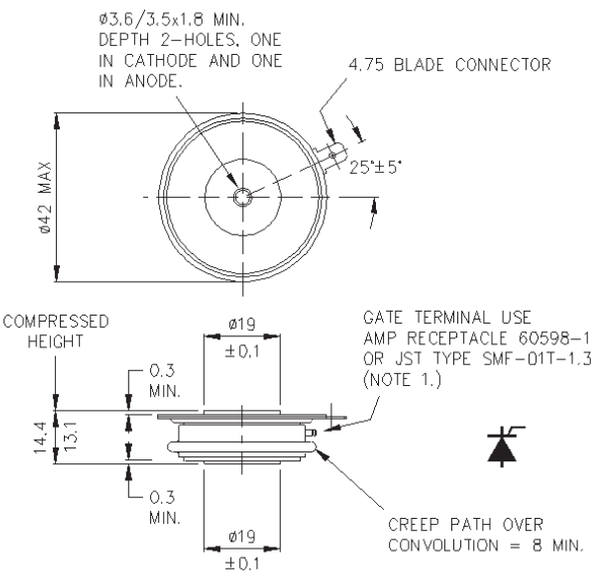


W8 - 101A212



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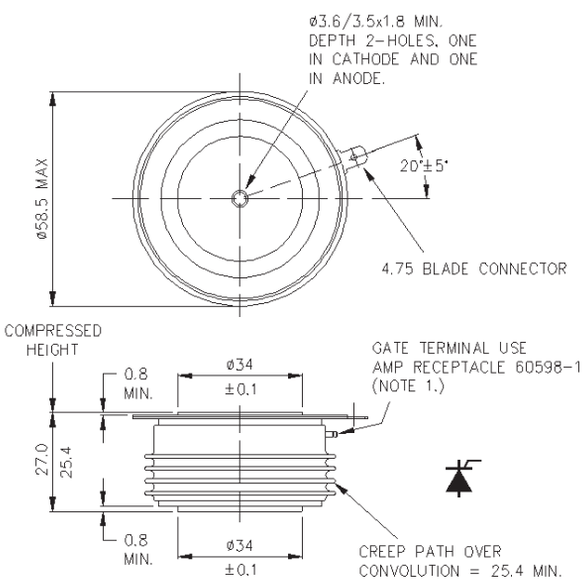
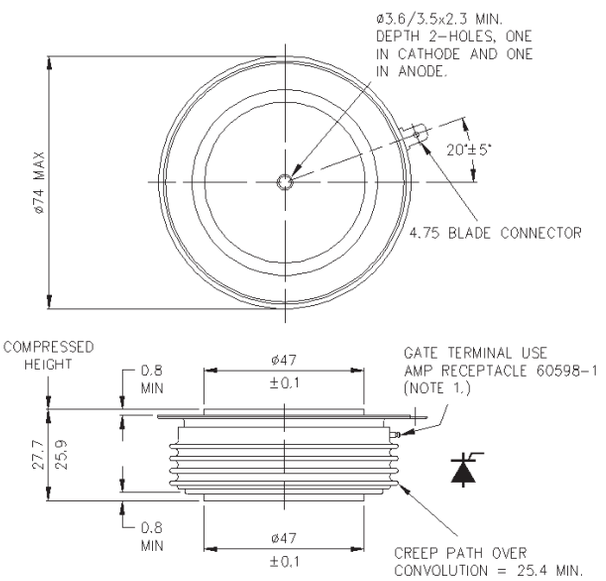


W11 - 101A223



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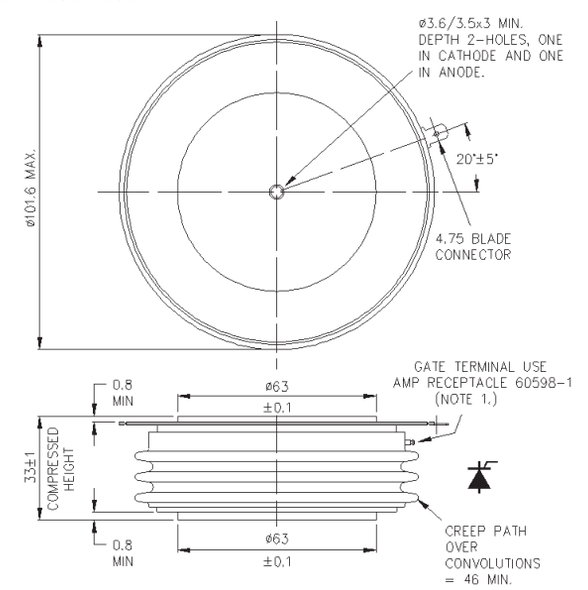
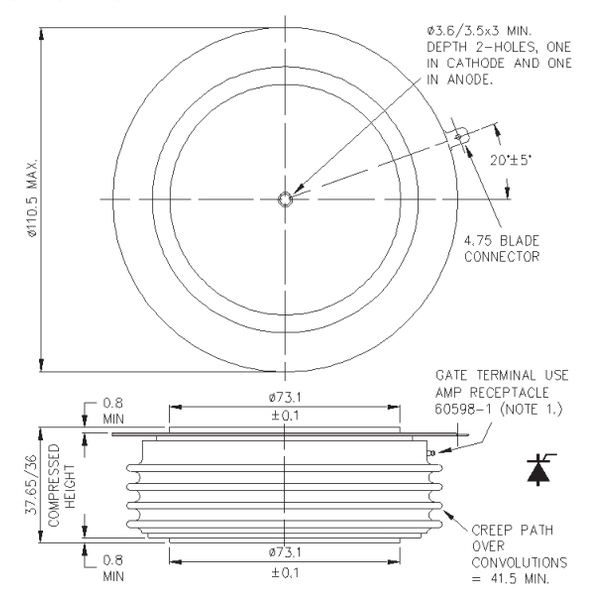


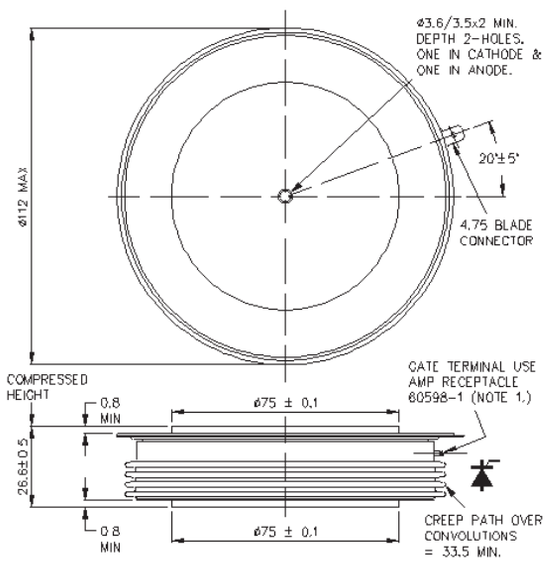
W13 - 101A281



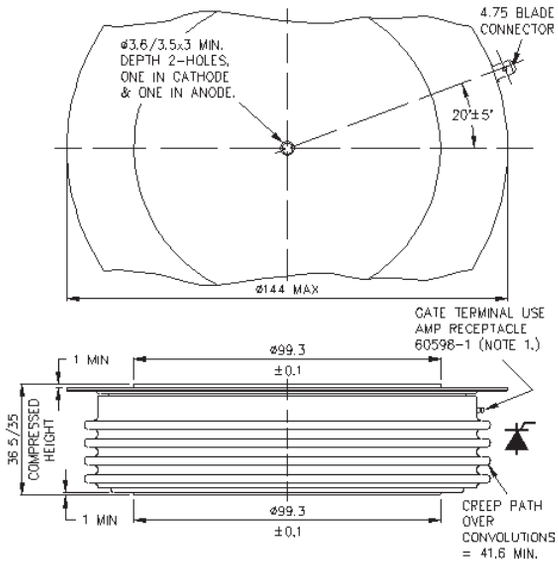
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

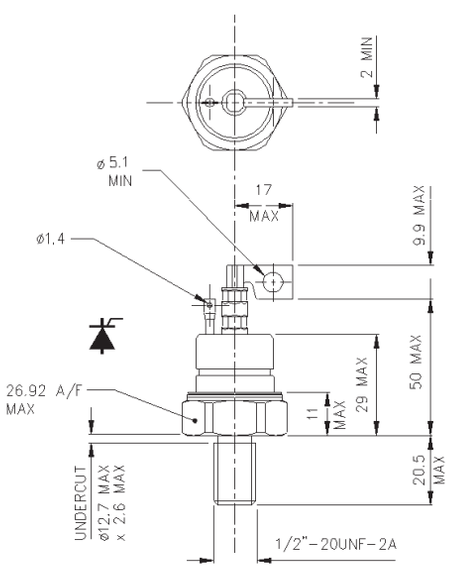
W14 - 101A325



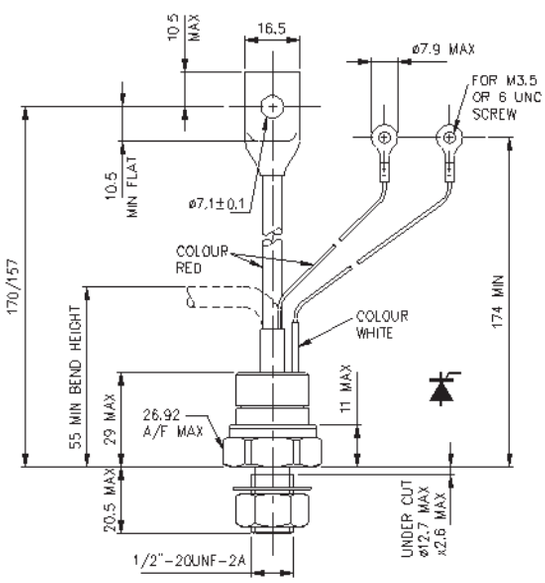
W15 - 101A322



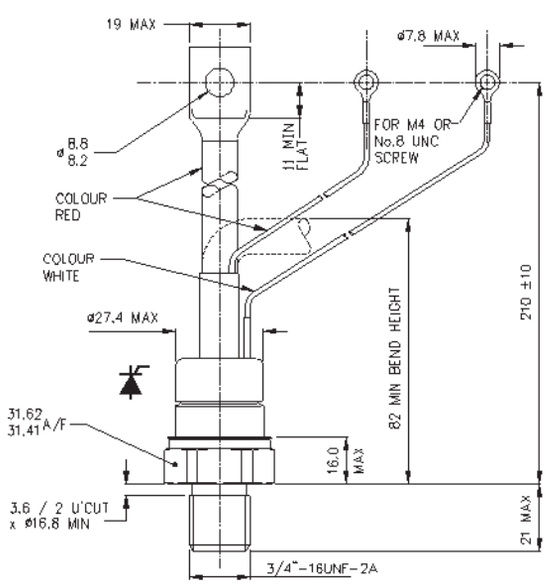
W16 - 101A235



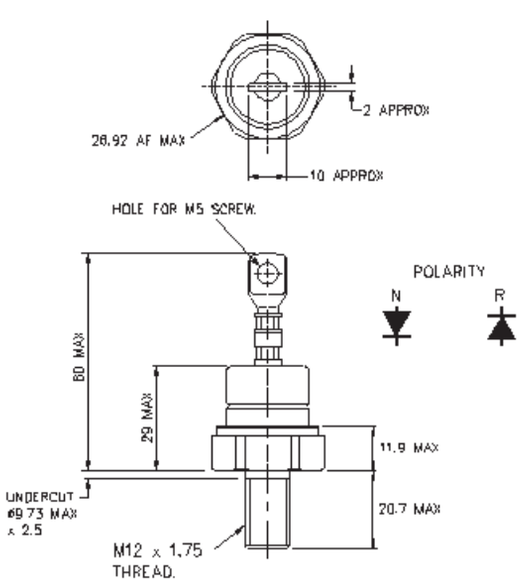
W17 - 101A231



W18 - 101A225



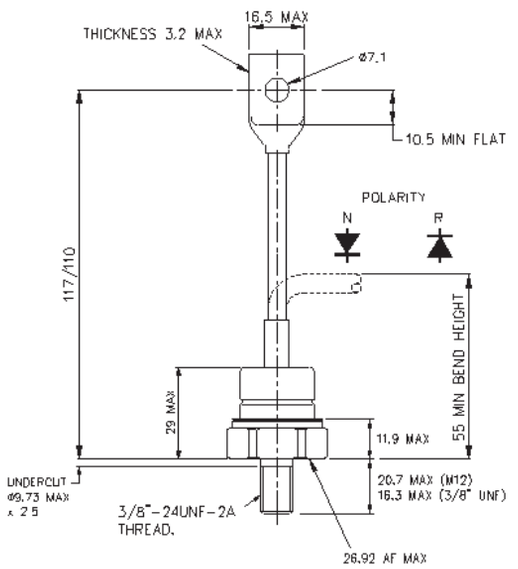
W20 - 100A303



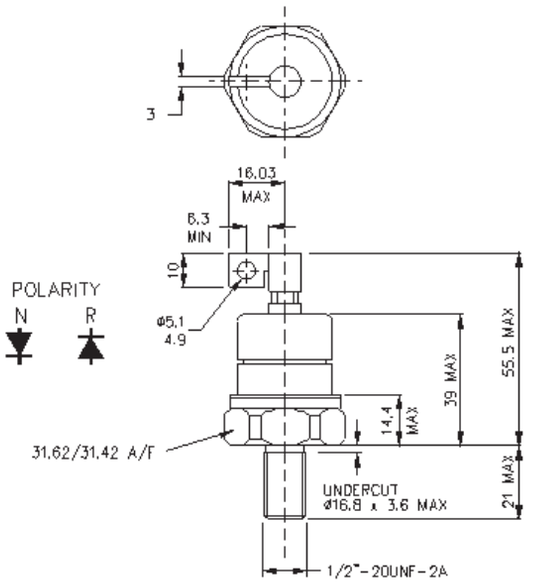
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

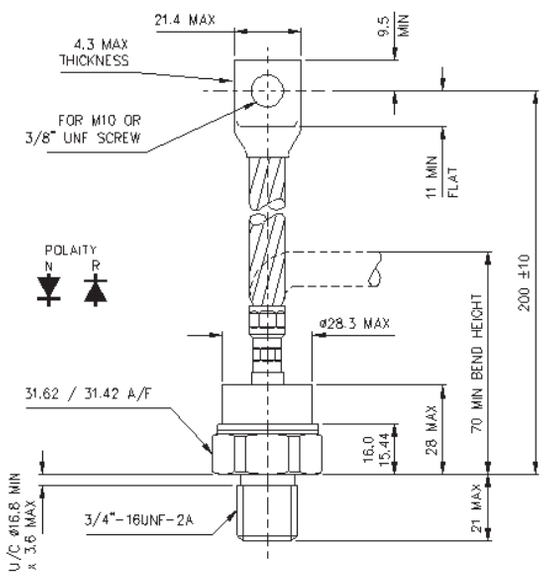
W21 - 100A294



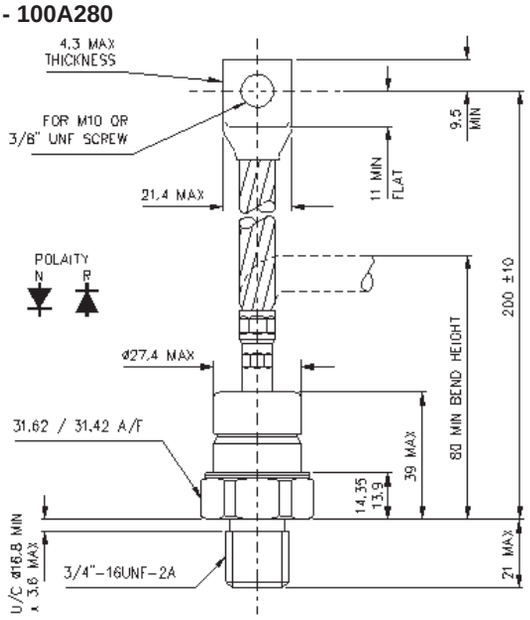
W22 - 100A297



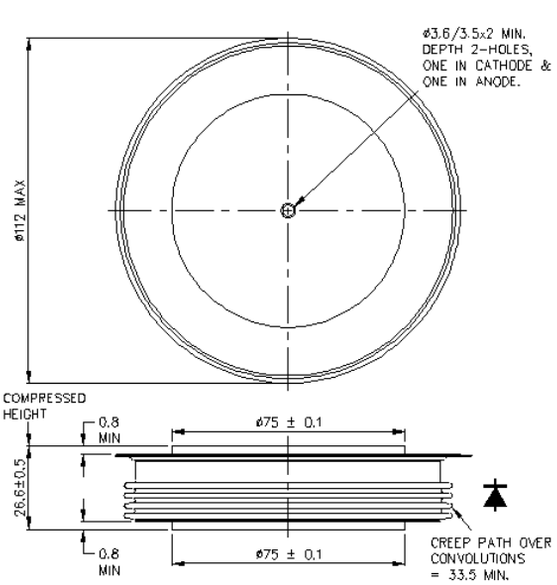
W23 - 100A281



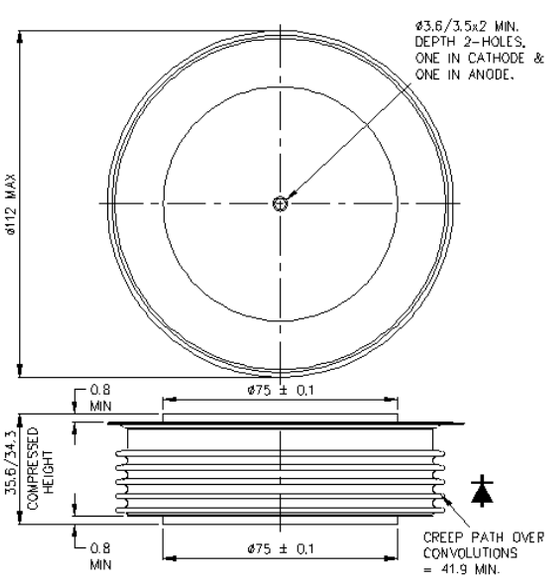
W24 - 100A280



W28 - 100A330

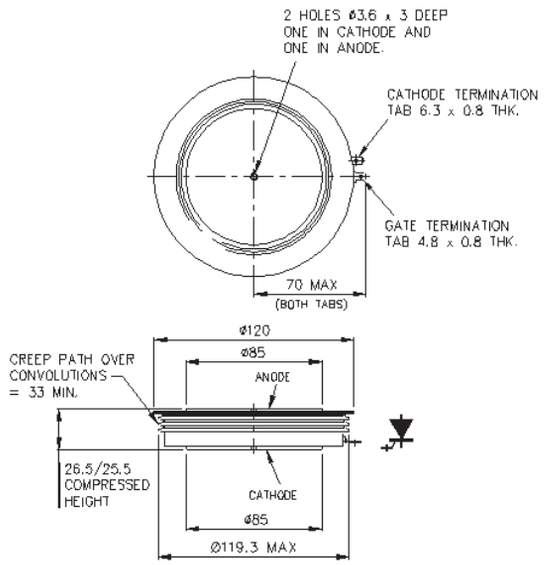


W29 - 100A342

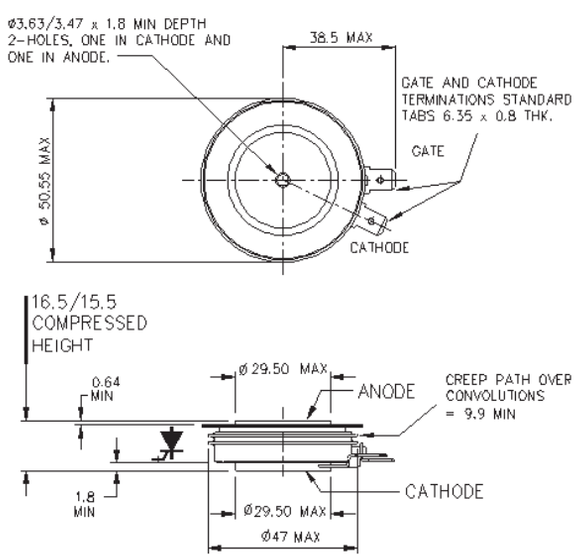


Dimensions in mm and inches (1 mm = 0.0394“)

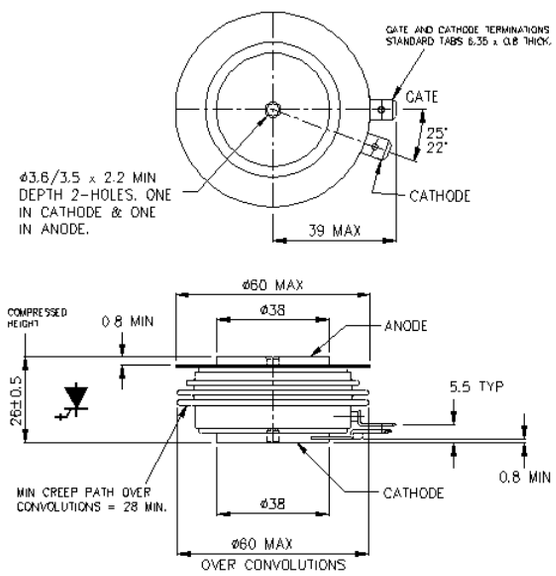
W33 - 101A346



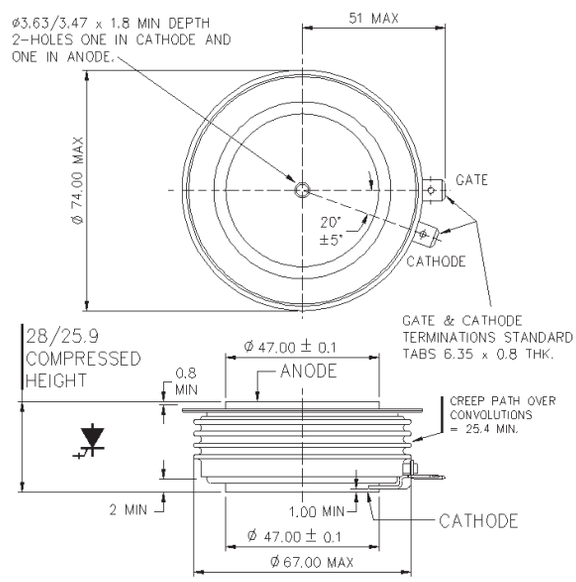
W34 - 101A287



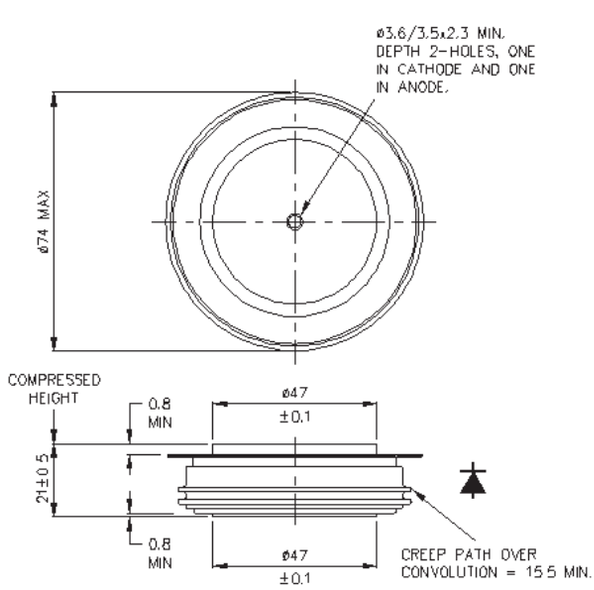
W35 - 101A358



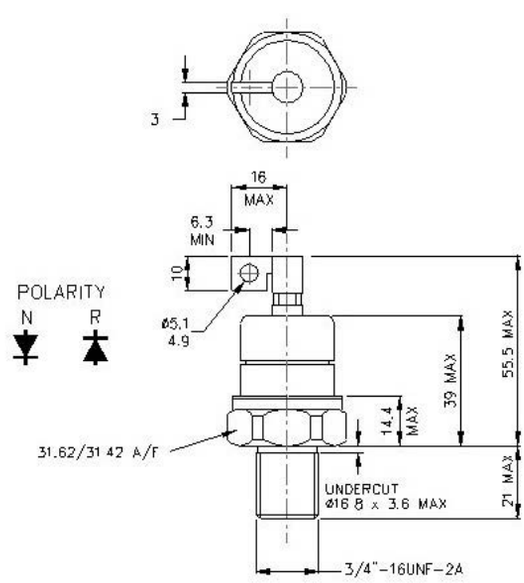
W36 - 101A288



W37 - 100A325



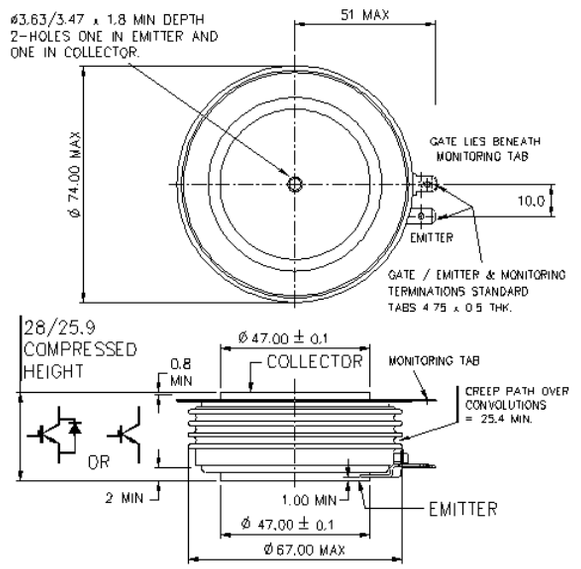
W39 - 100A338



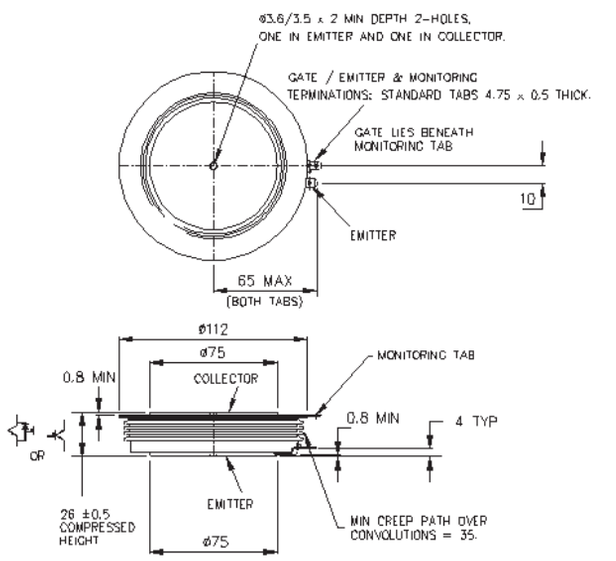
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

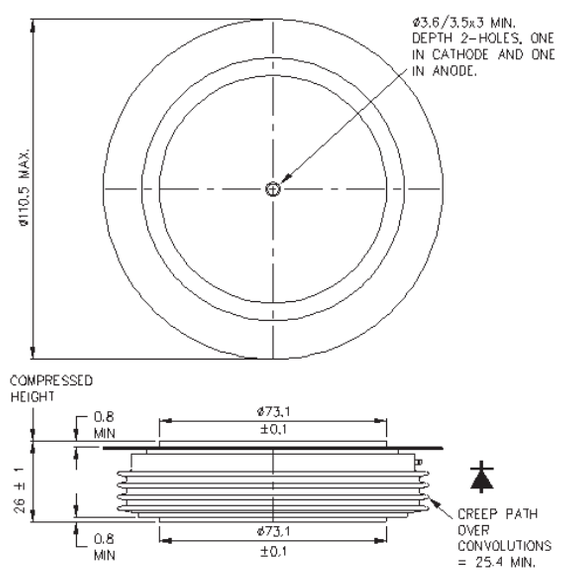
W40 - 171A107



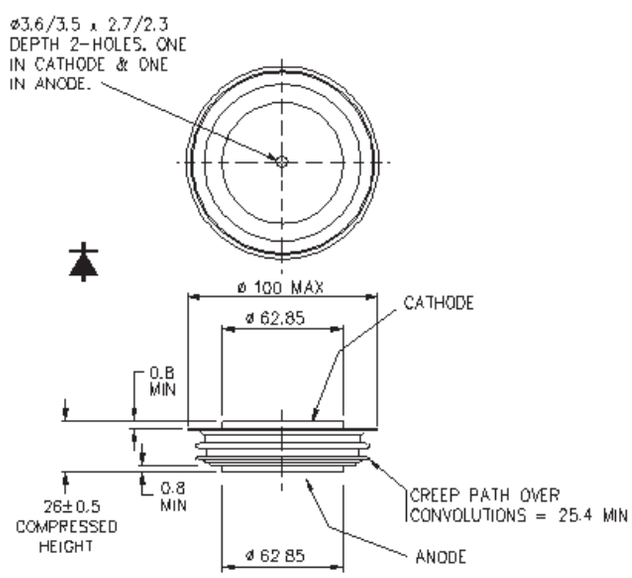
W41 - 171A108



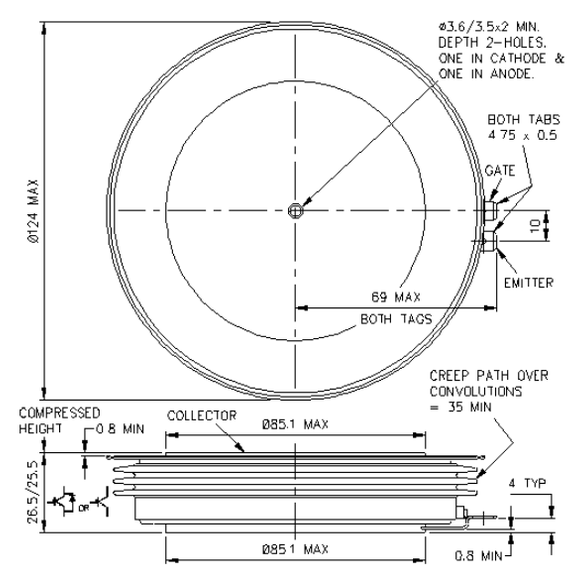
W42- 100A310



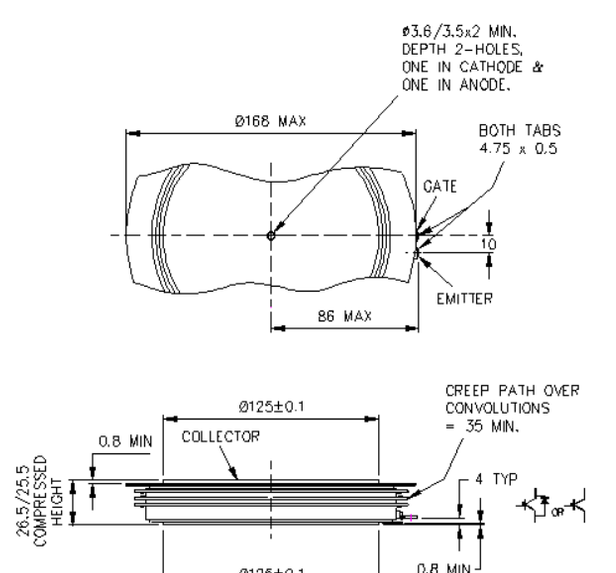
W43 - 100A320



W44 - 101A340

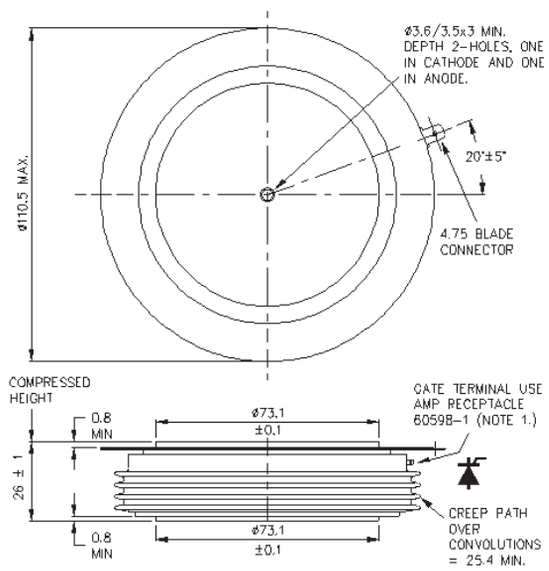


W45 - 101A359

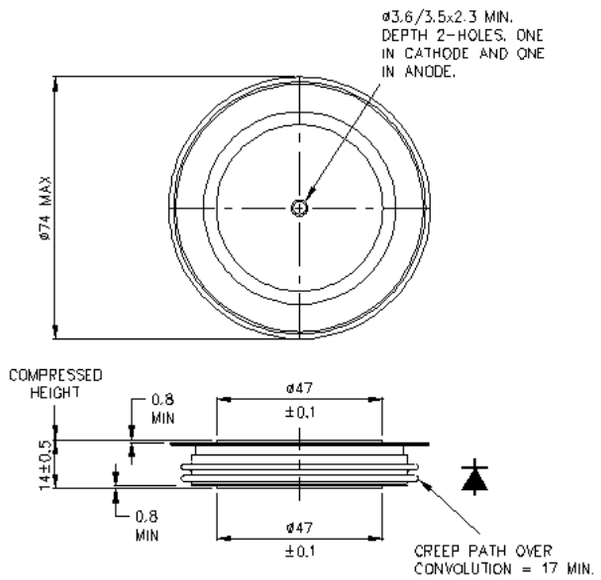


Dimensions in mm and inches (1 mm = 0.0394“)

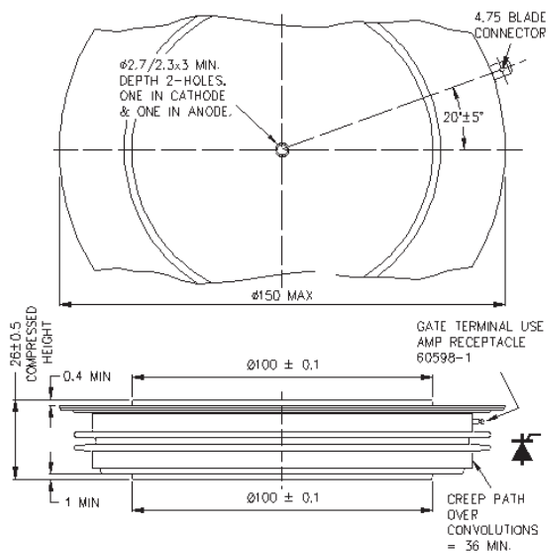
W46 - 101A305



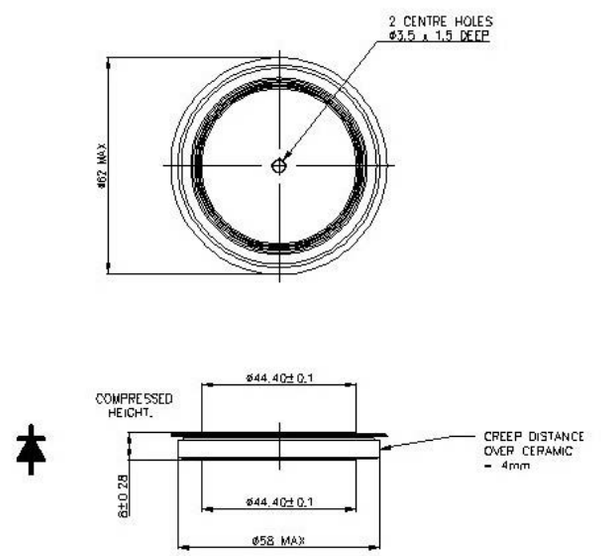
W47 - 100A322



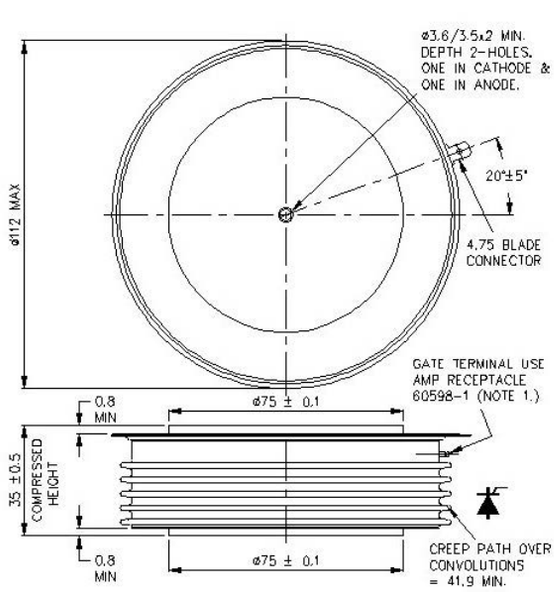
W48 - 101A347



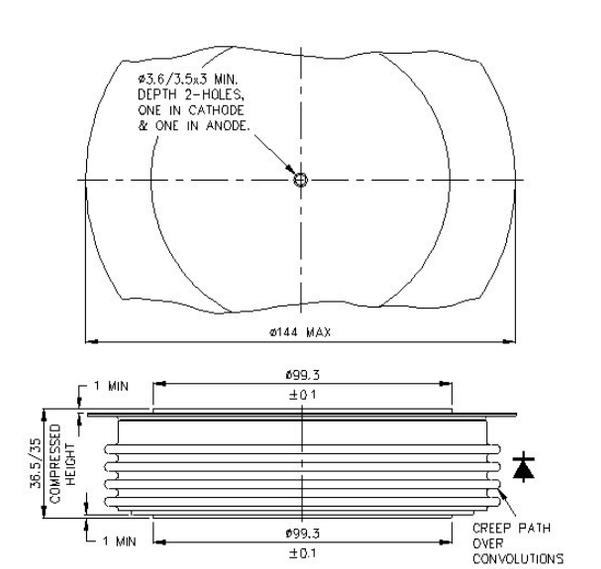
W49 100A354



W51 - 101A334



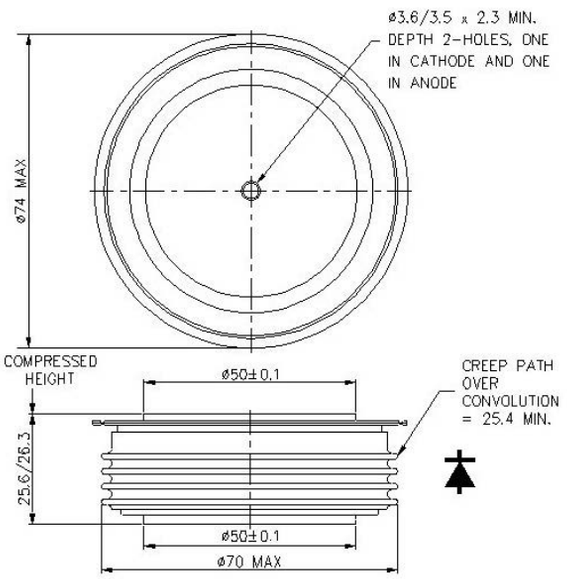
W52 - 100A328



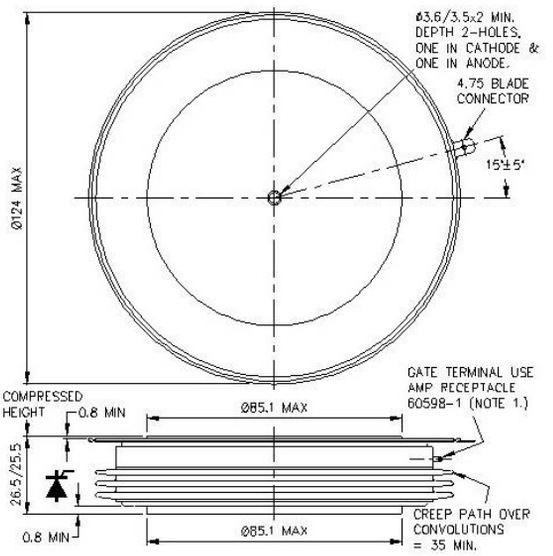
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

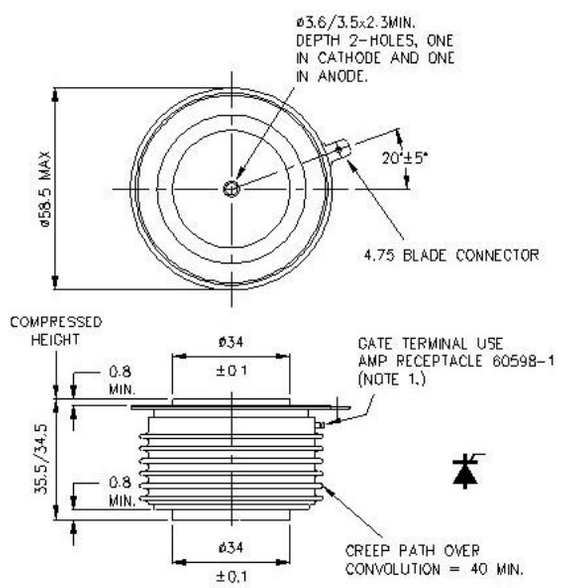
W54 - 100A353



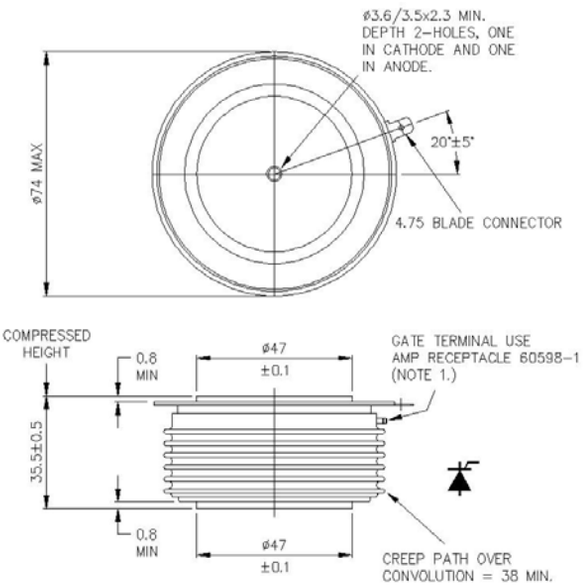
W55 - 101A352



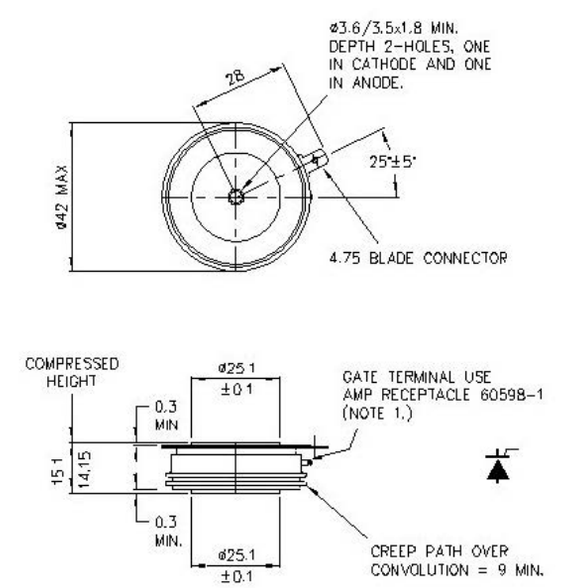
W56 - 101A365



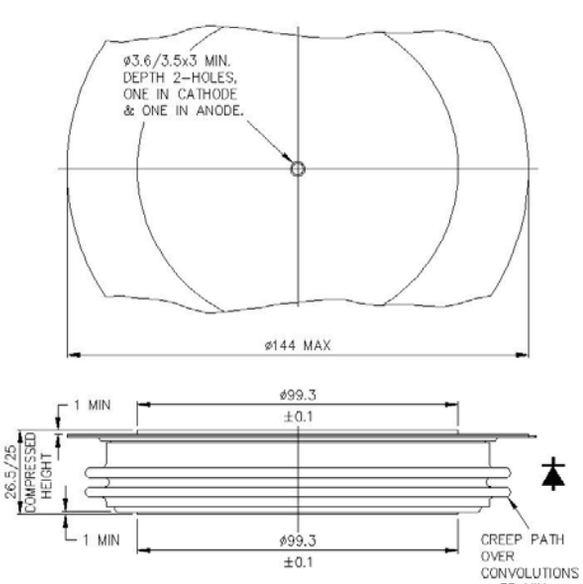
W57 - 101A363



W58 - 101A237

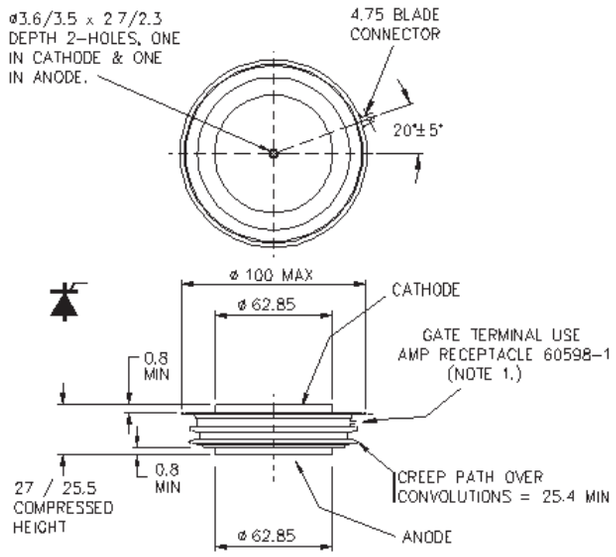


W59 - 100A359

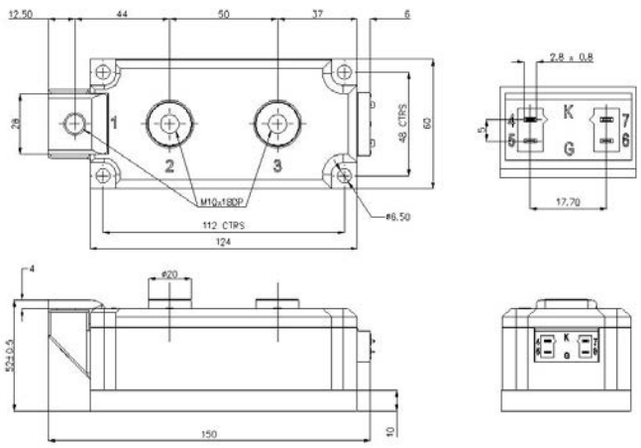


Dimensions in mm and inches (1 mm = 0.0394“)

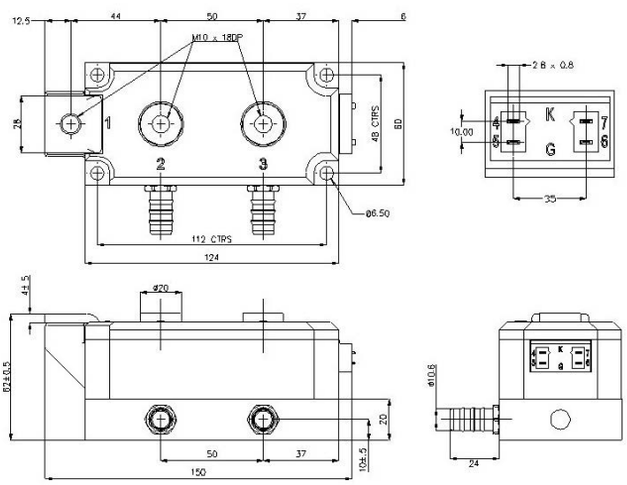
W62 - 101A314



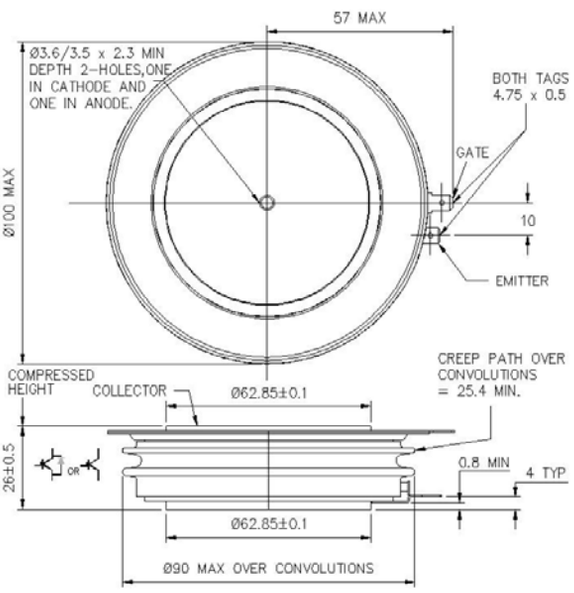
W63 - 150A111



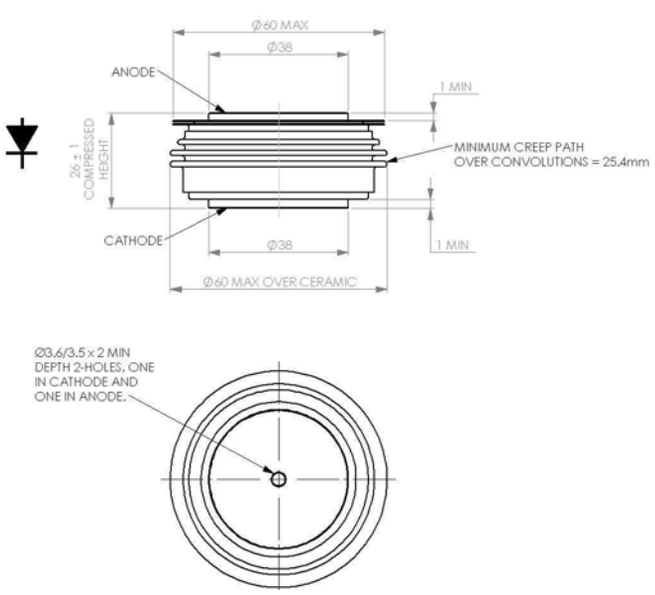
W64 - 150A113



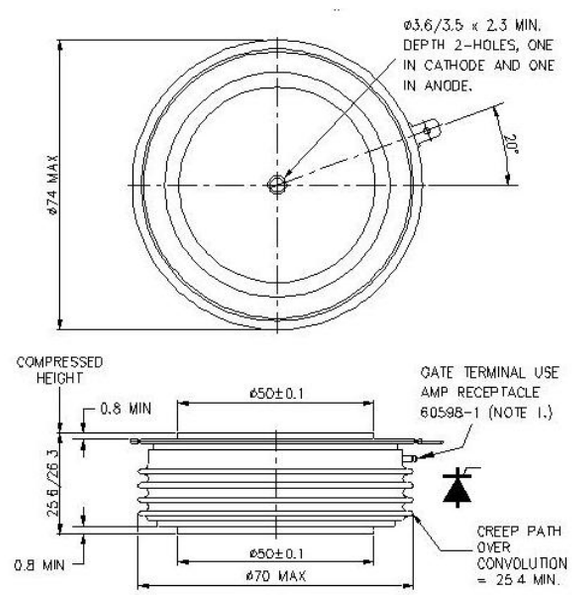
W67 - 101A366



W68 - 100A367



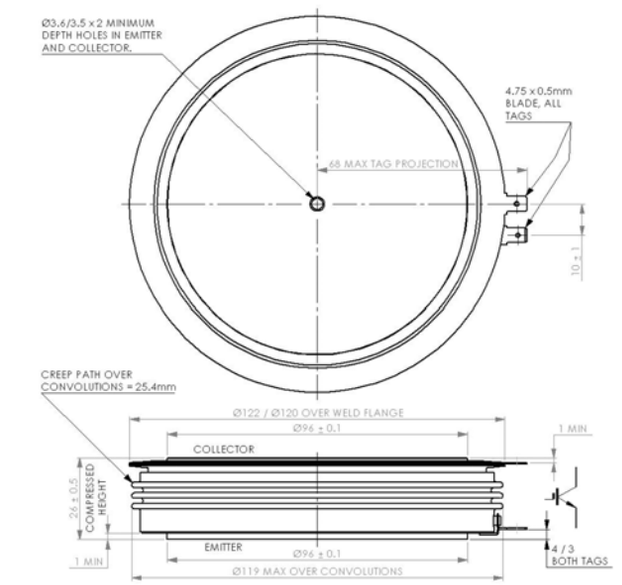
W70 - 101A357



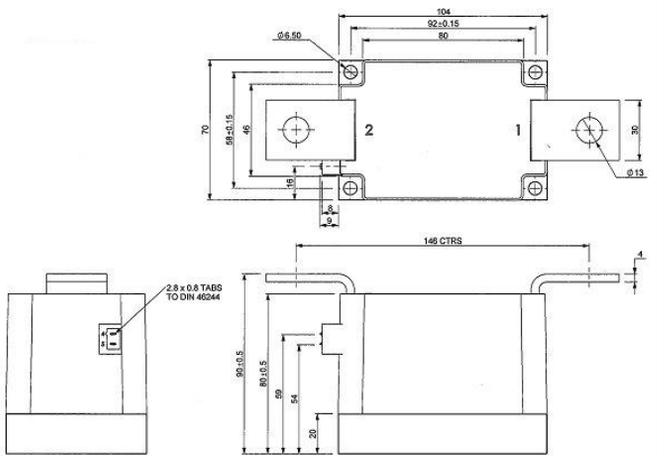
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

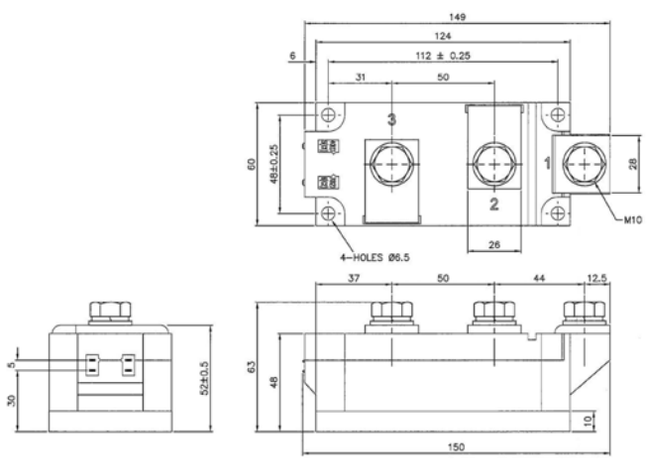
W71 - 101A375



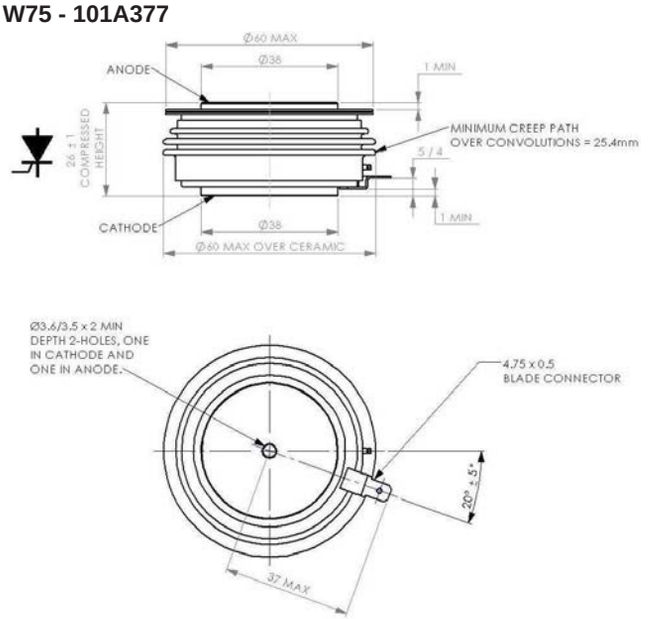
W73 - 150A122



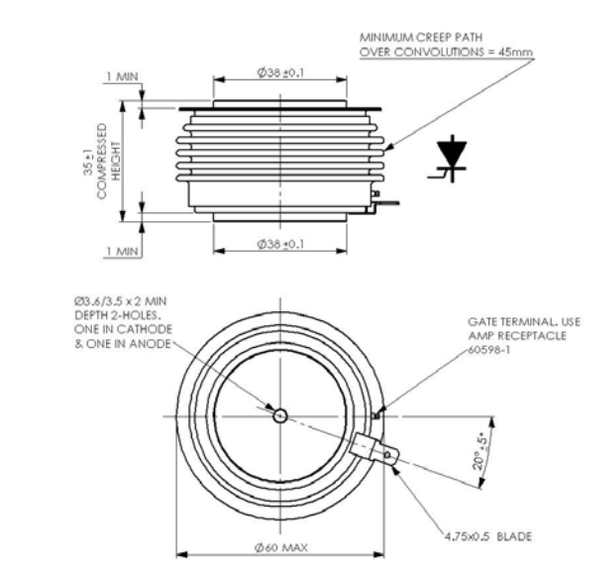
W74 - 150A123



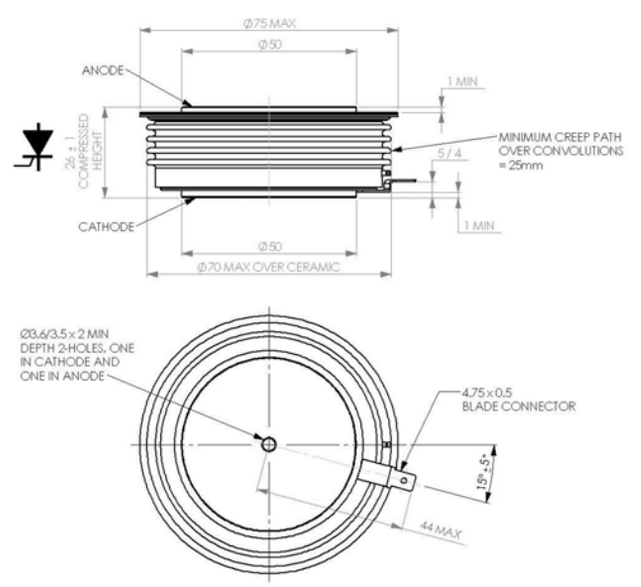
W75 - 101A377



W76 - 101A392



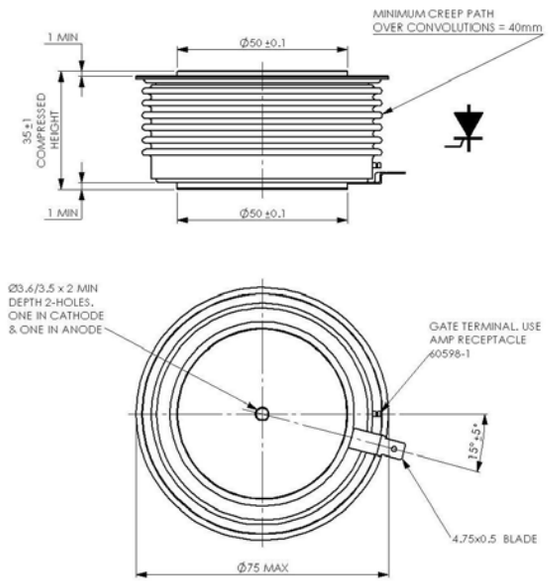
W77 - 101A372



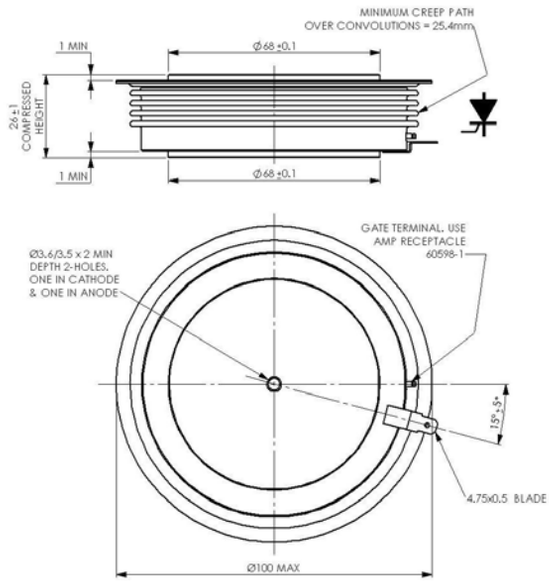
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

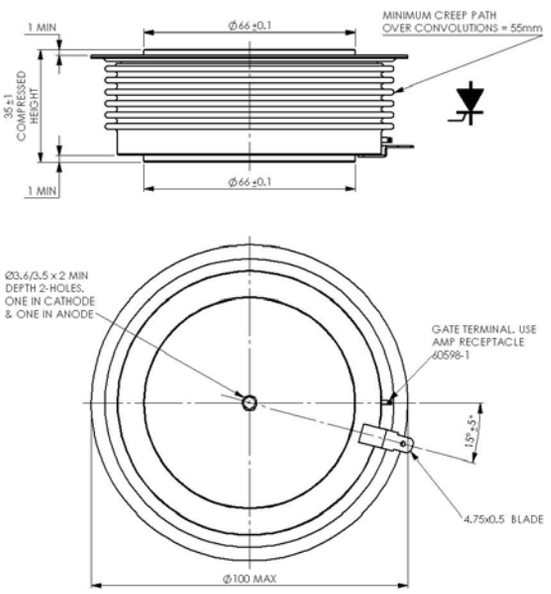
W78 - 101A393



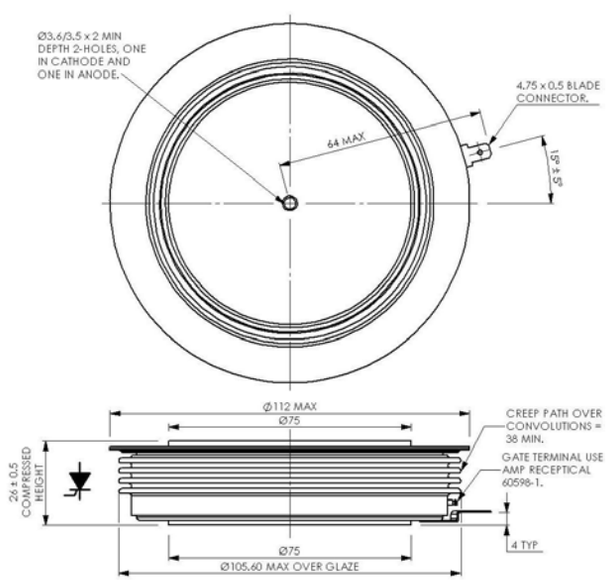
W79 - 101A391



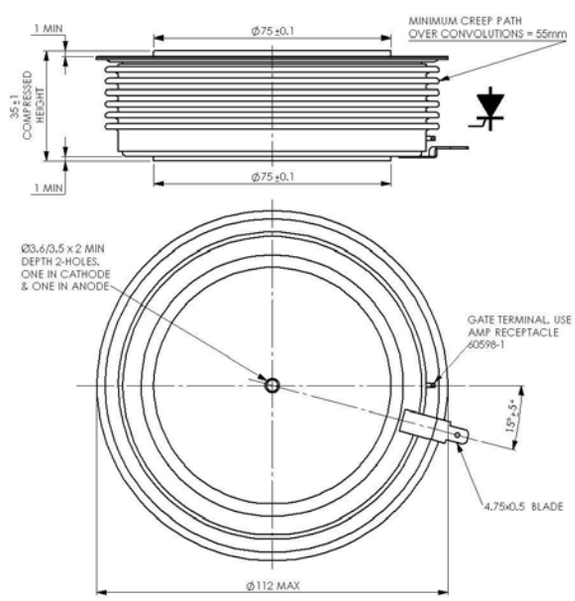
W80 - 101A394



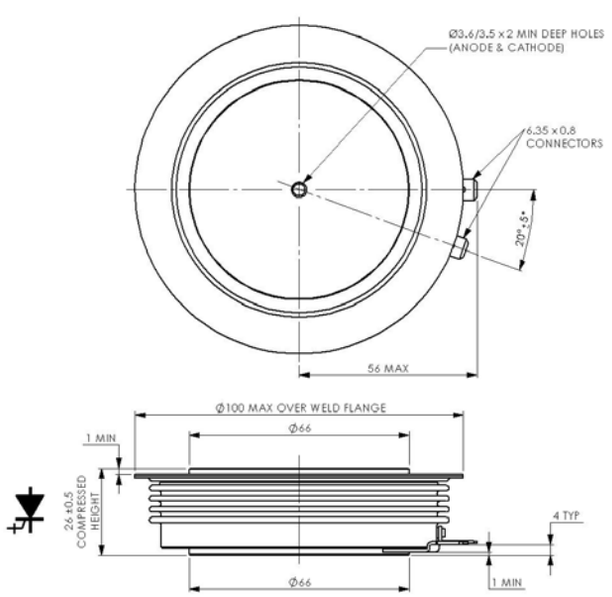
W81 - 101A373



W82 - 101A395



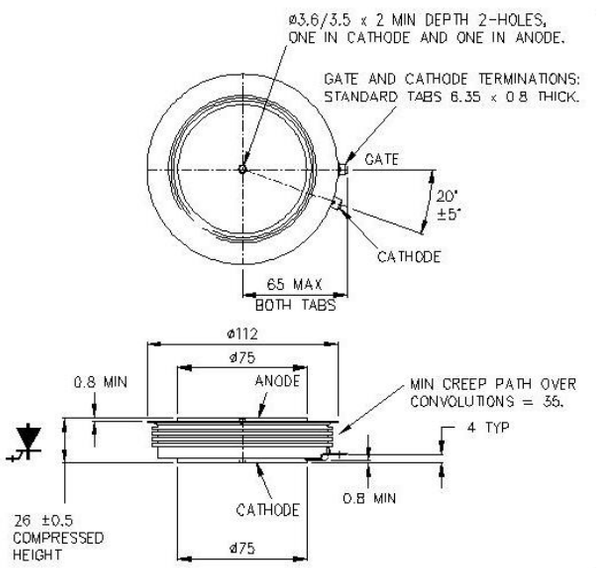
W85 - 101A388



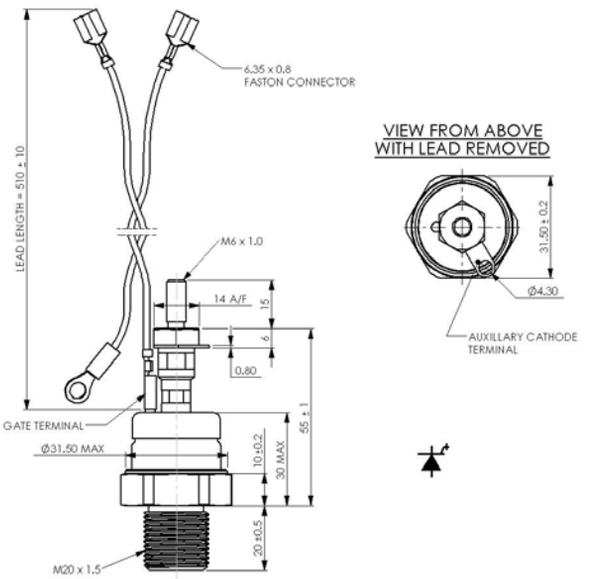
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

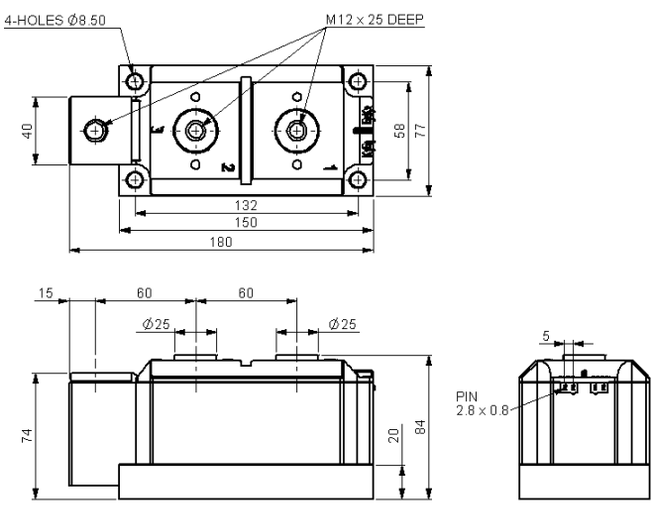
W86 - 101A316



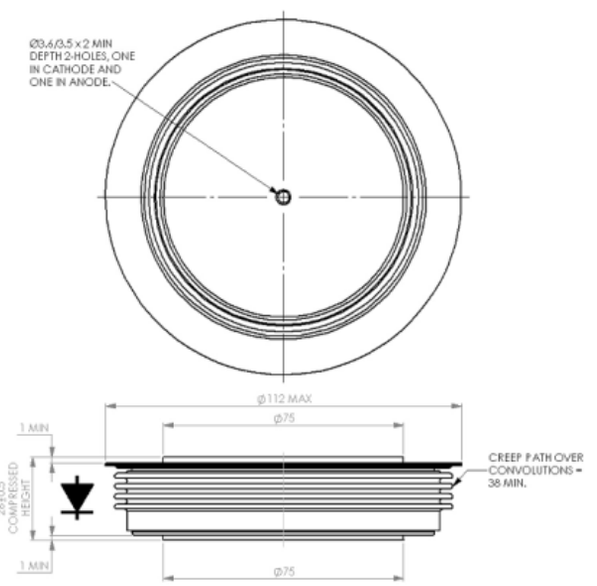
W87 101A376



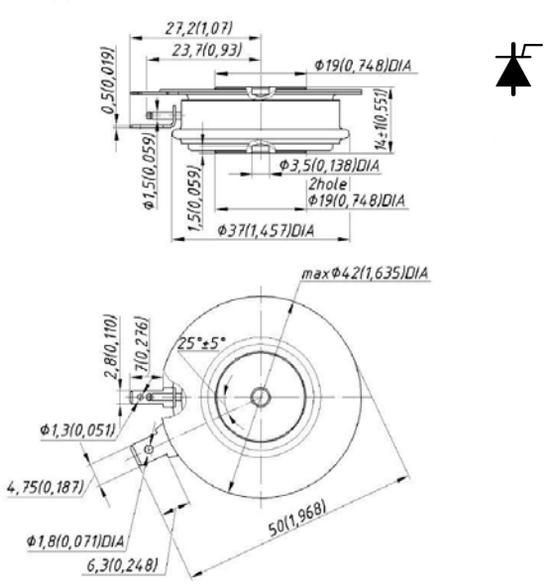
W88 - 150A124



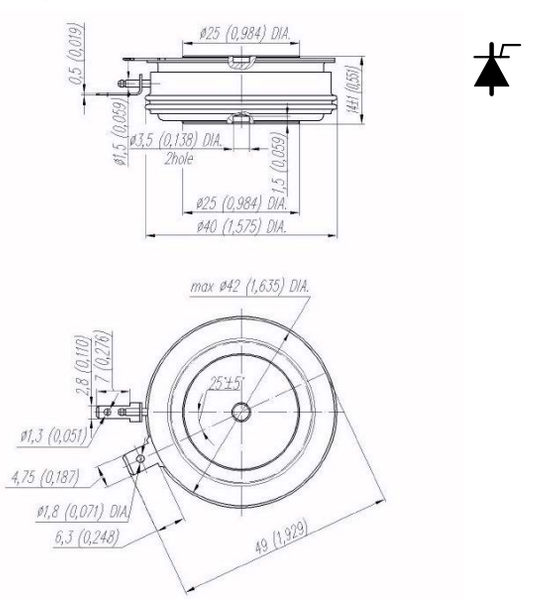
W89 - 100A368



W90 - 101A405

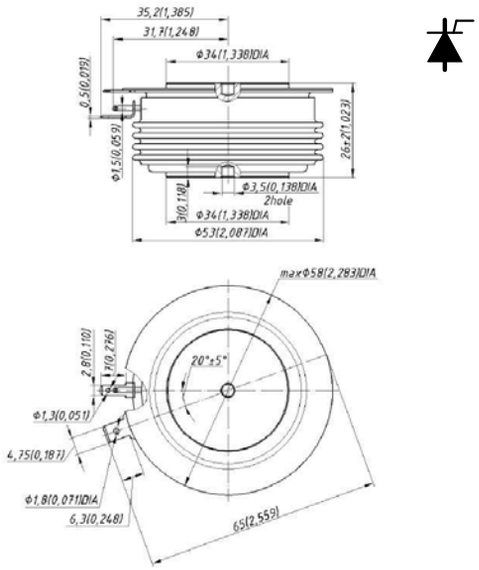


W91 - 101A406

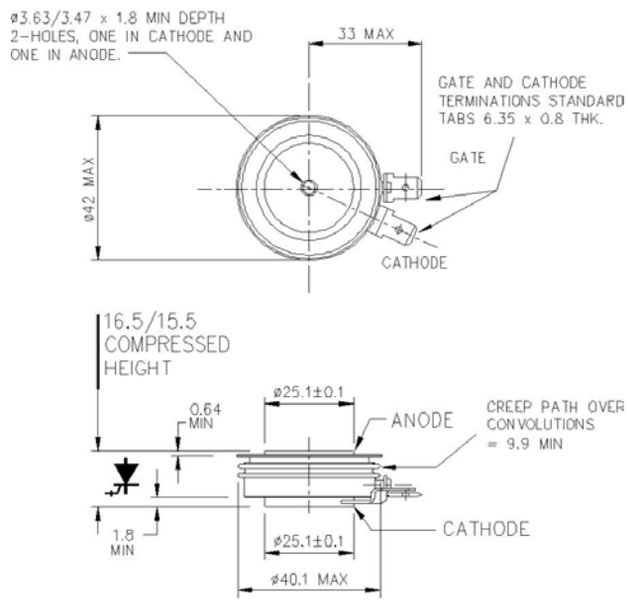


Dimensions in mm and inches (1 mm = 0.0394“)

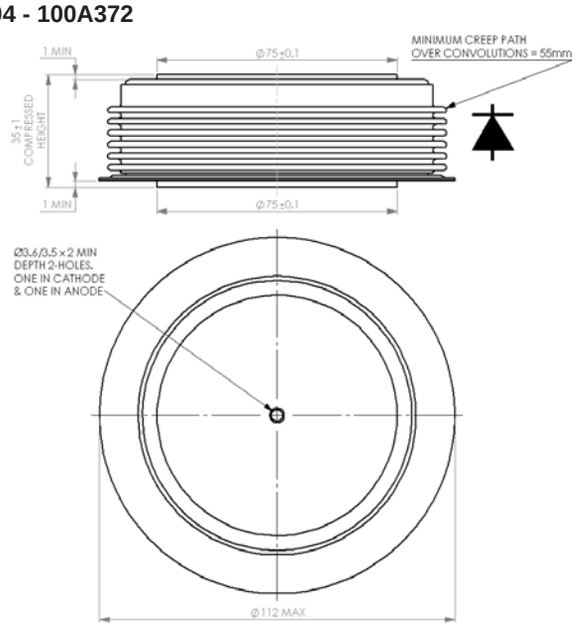
W92 - 101A407



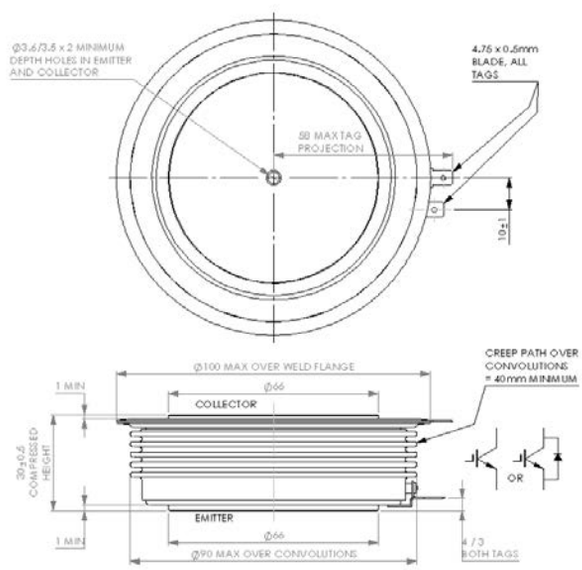
W93 - 101A404



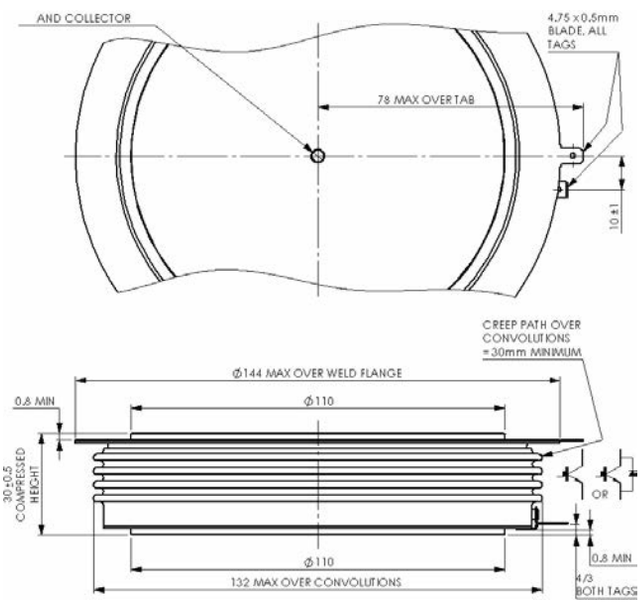
W94 - 100A372



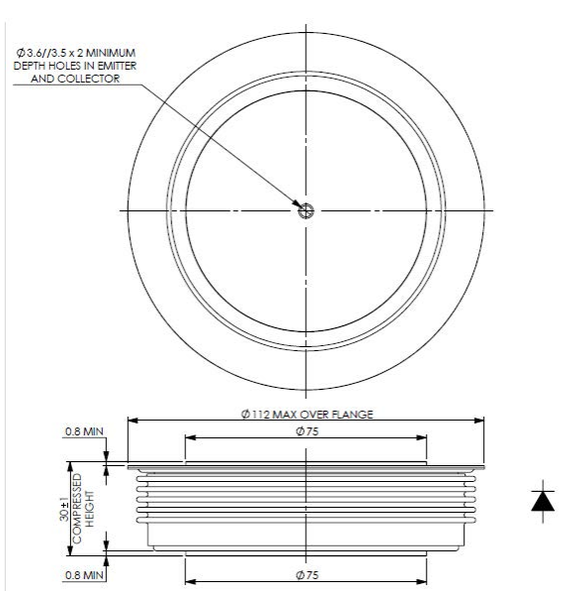
W95 - 101A403



W96 - 101A409



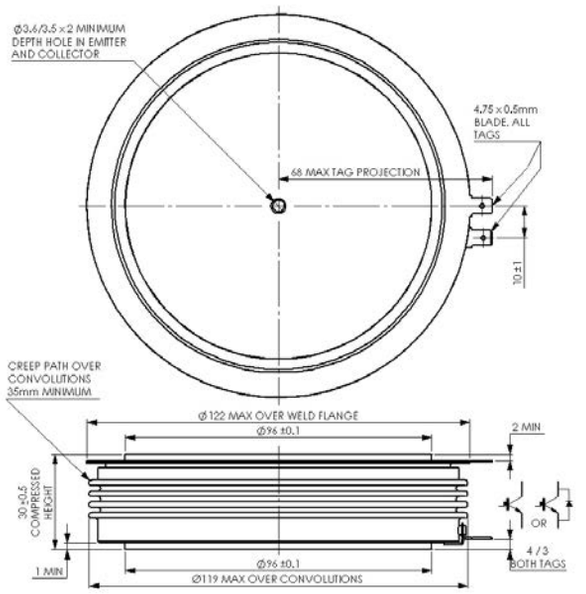
W97 - 100A379



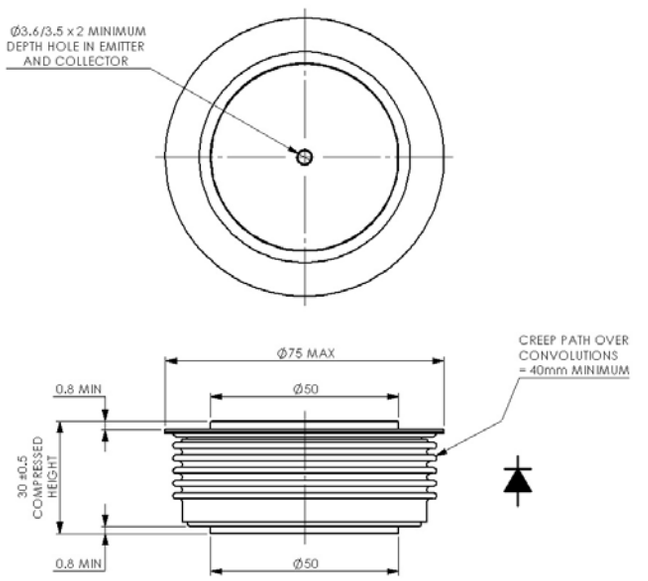
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

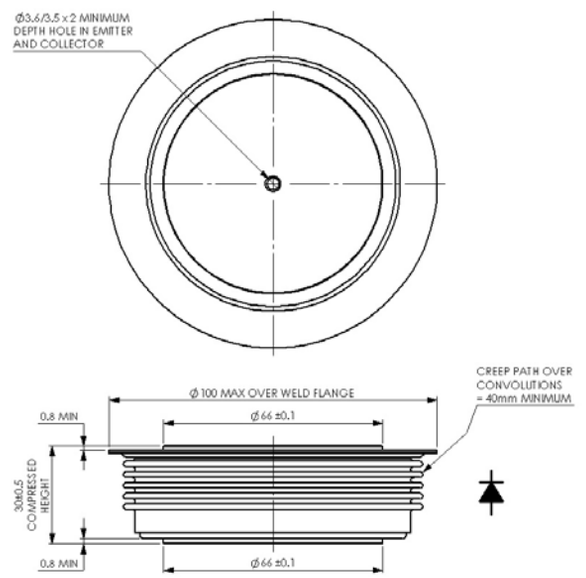
W98 - 101A413



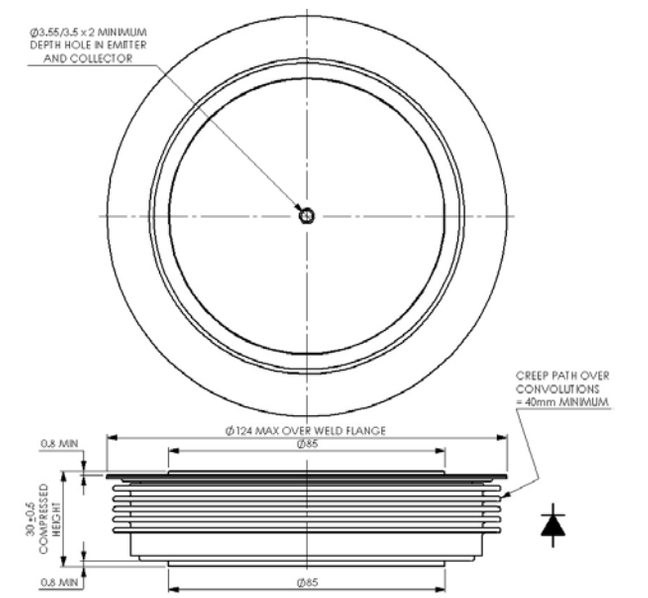
W99 - 100A383



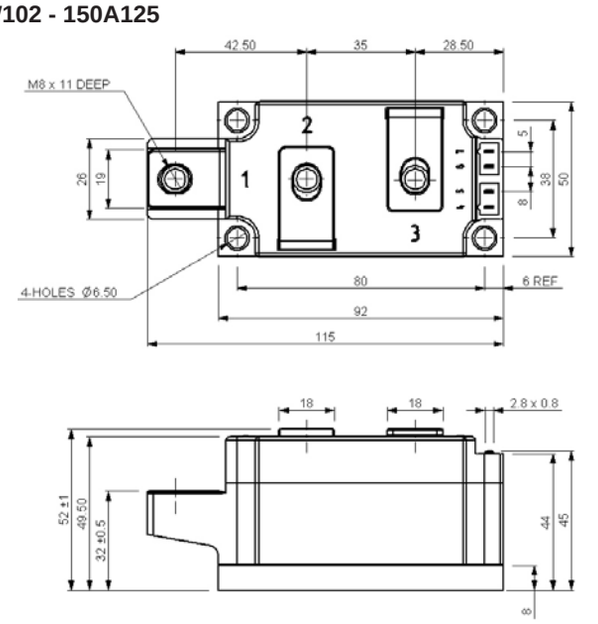
W100 - 100A384



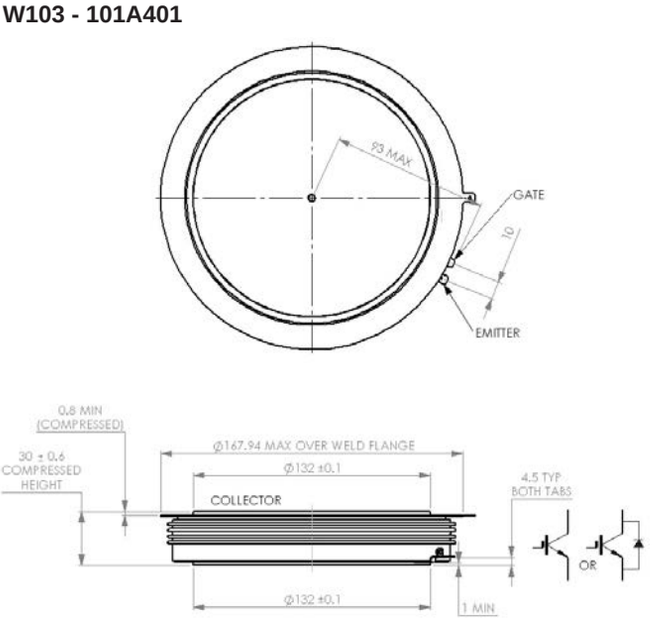
W101 - 100A380



W102 - 150A125



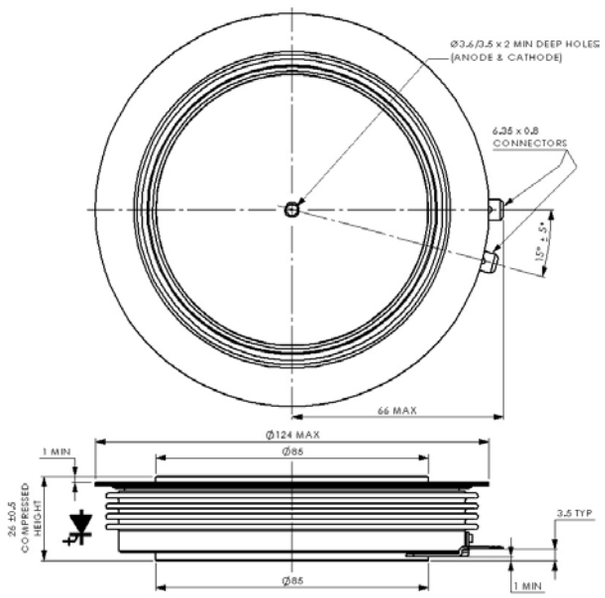
W103 - 101A401



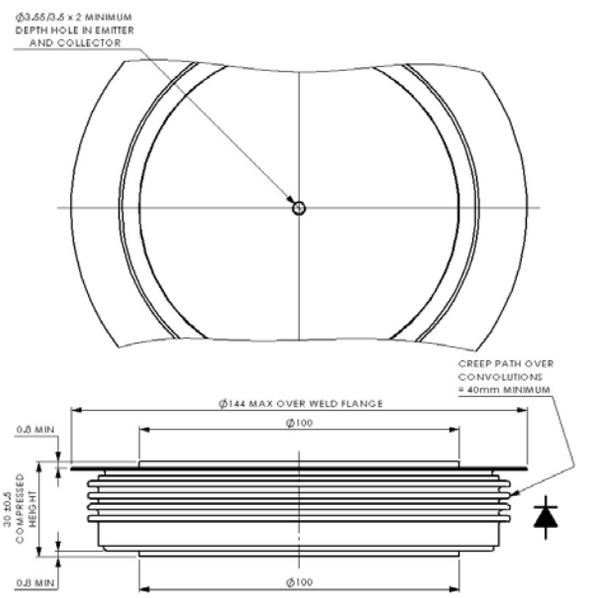
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

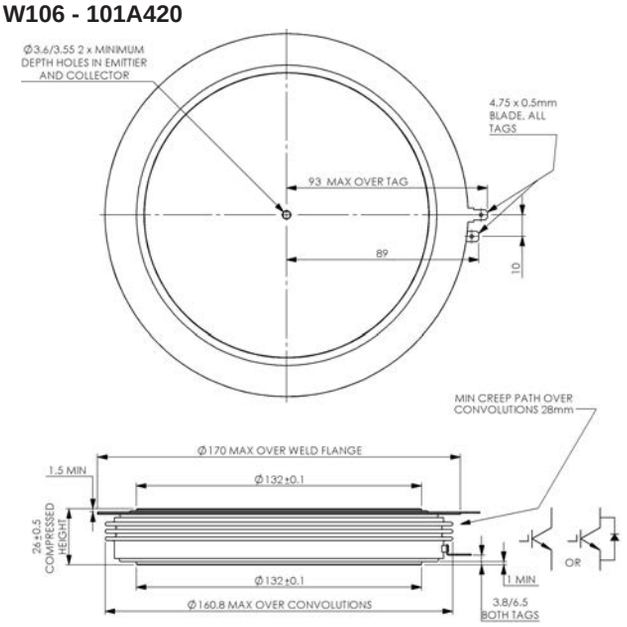
W104 - 101A408



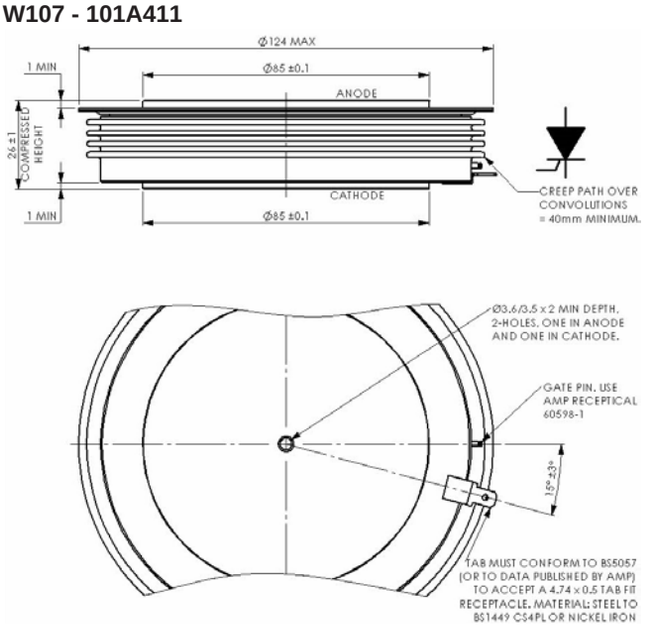
W105 - 100A385



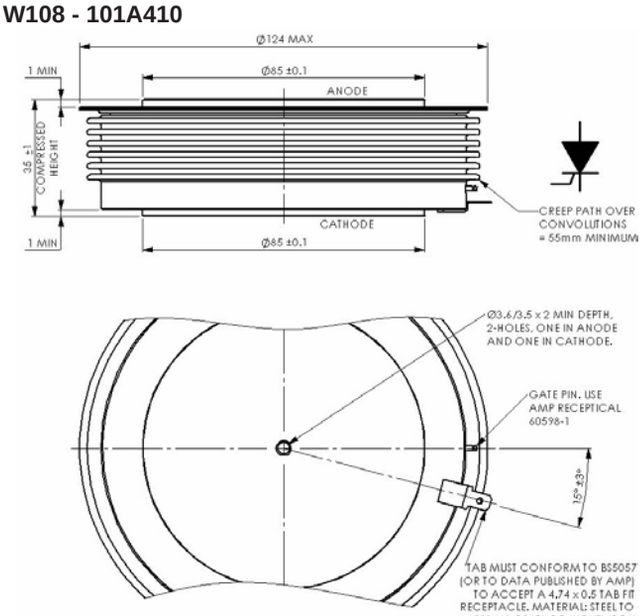
W106 - 101A420



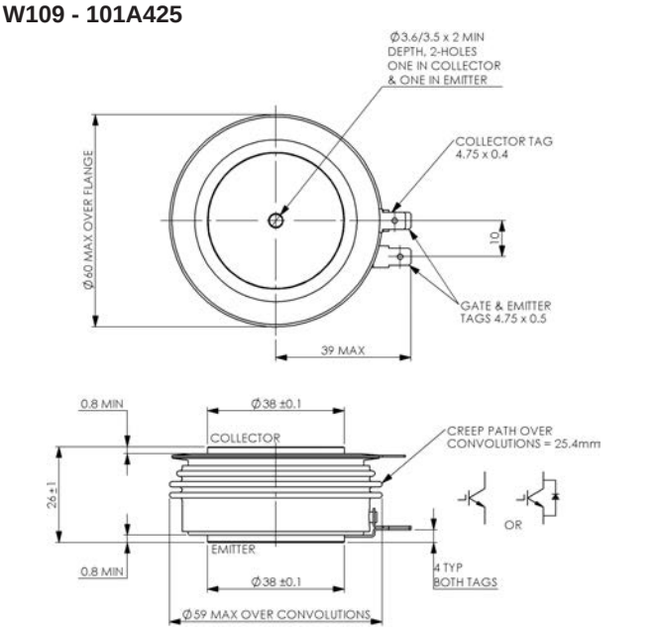
W107 - 101A411



W108 - 101A410



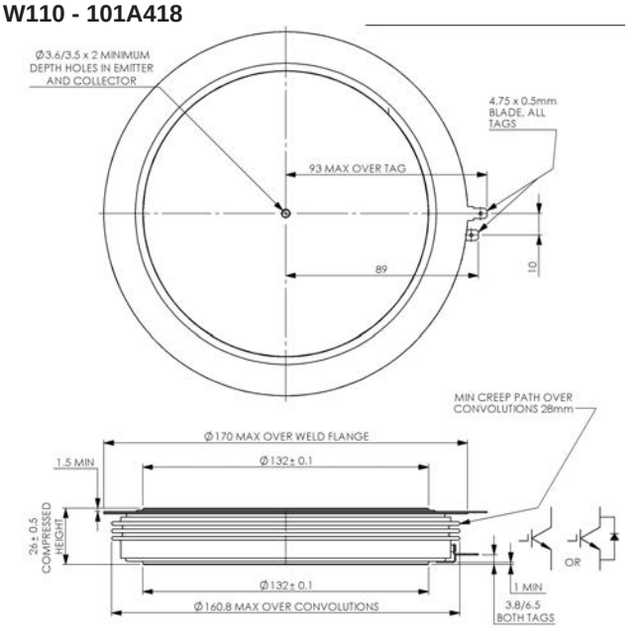
W109 - 101A425



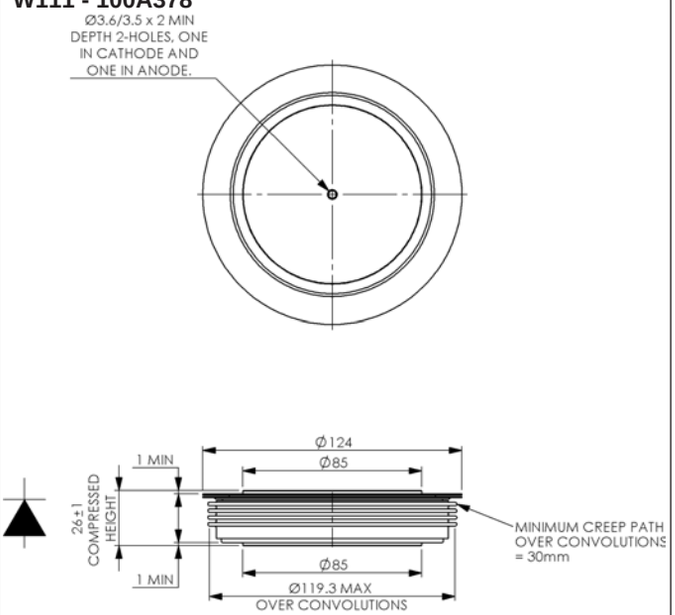
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

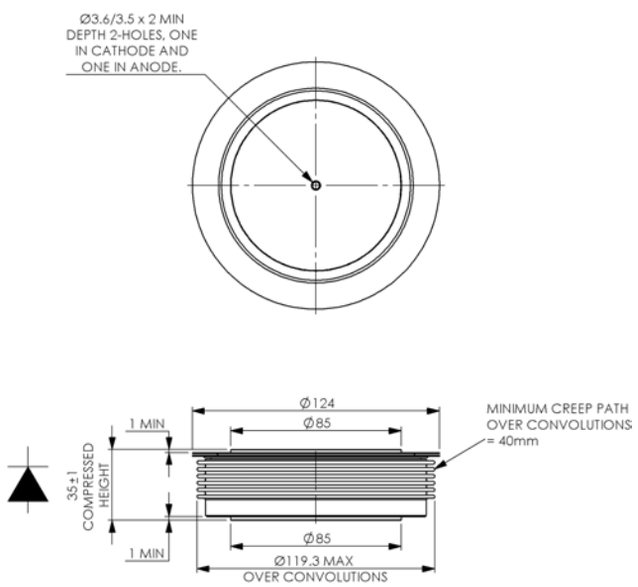
W110 - 101A418



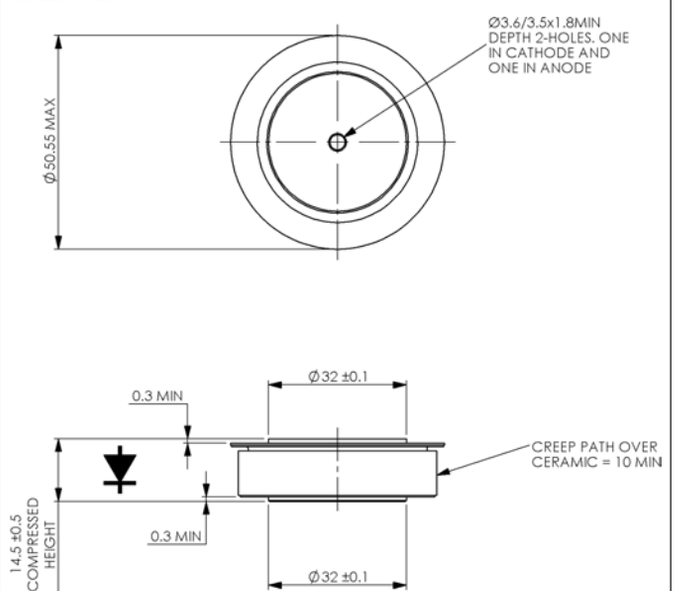
W111 - 100A378



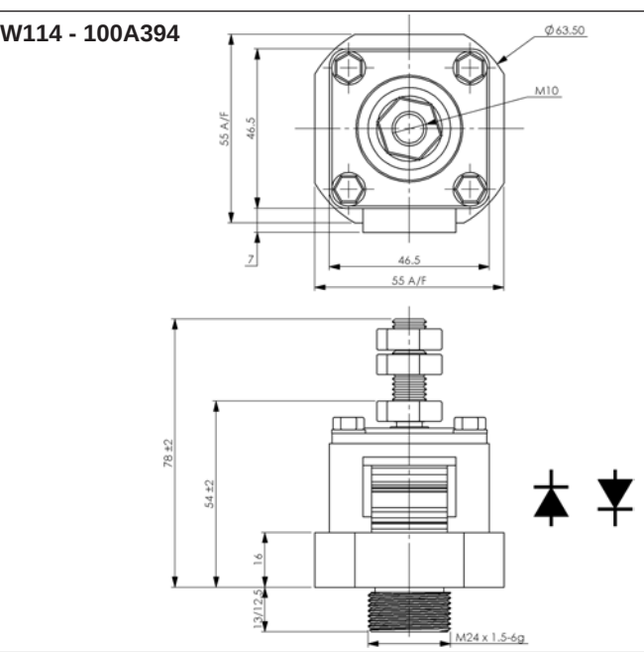
W112 - 100A377



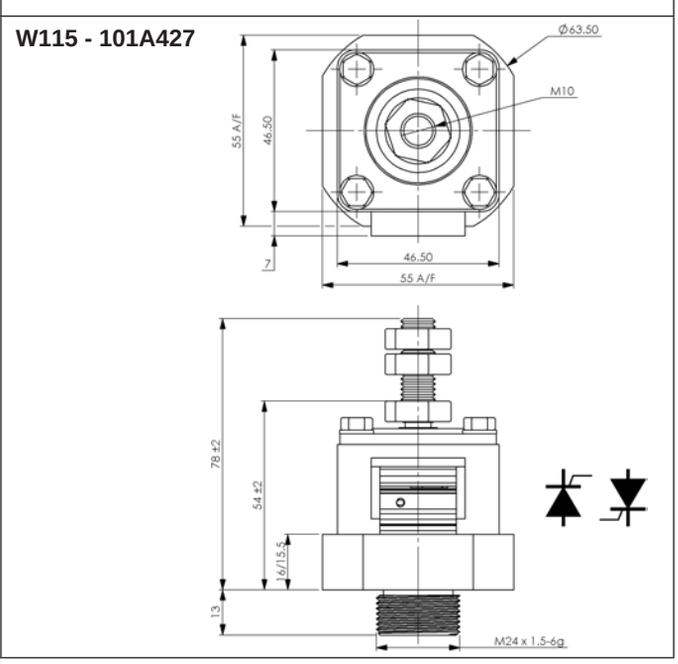
W113 - 100A393



W114 - 100A394



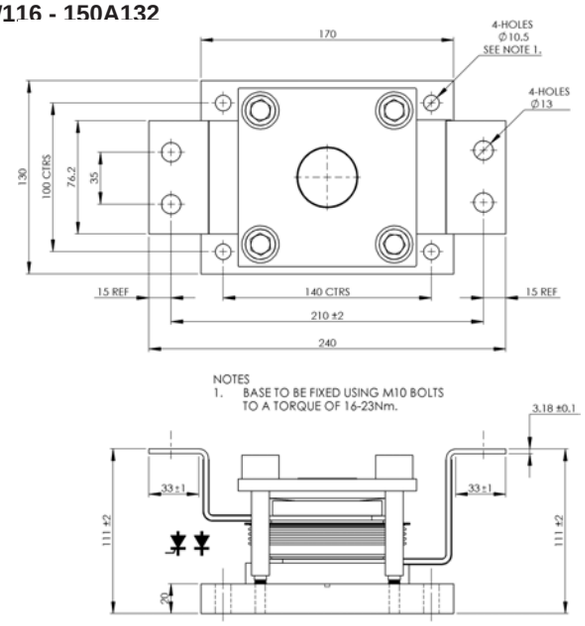
W115 - 101A427



Outline drawings

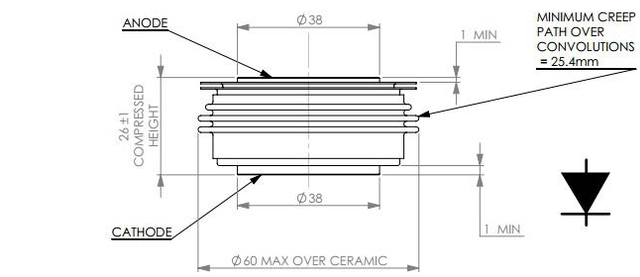
Dimensions in mm and inches (1 mm = 0.0394“)

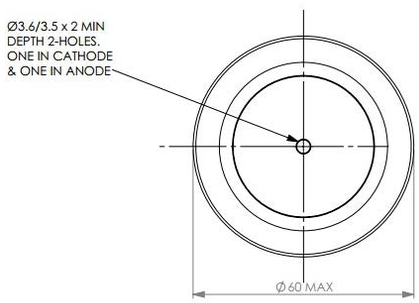
W116 - 150A132



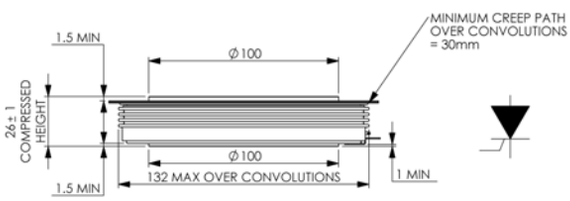
NOTES
1. BASE TO BE FIXED USING M10 BOLTS TO A TORQUE OF 16-23Nm.

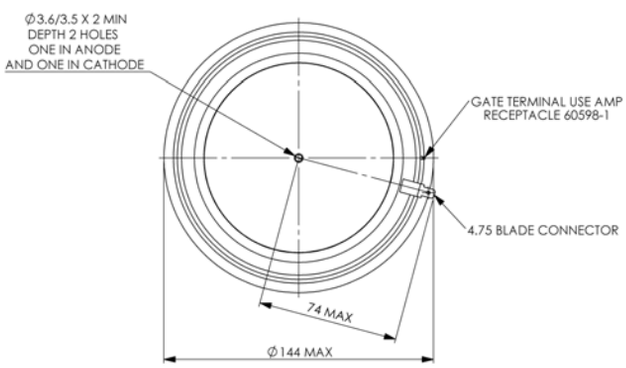
W117 - 100A375



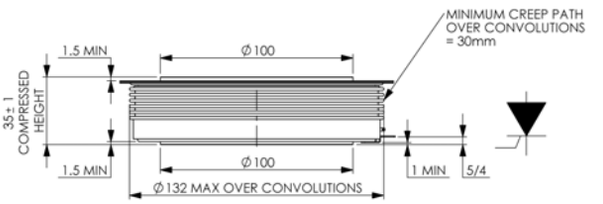


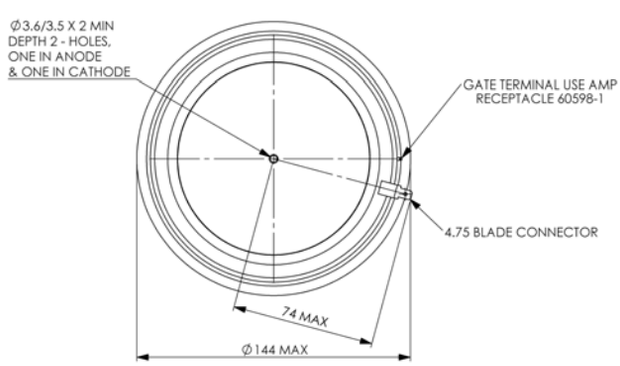
W118 - 101A428



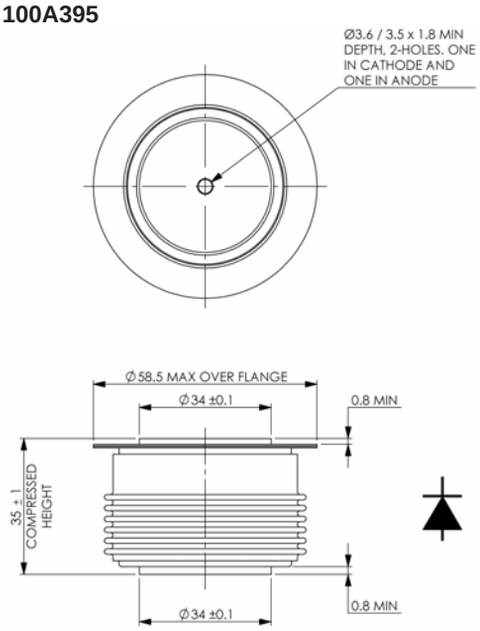


W119 - 101A421

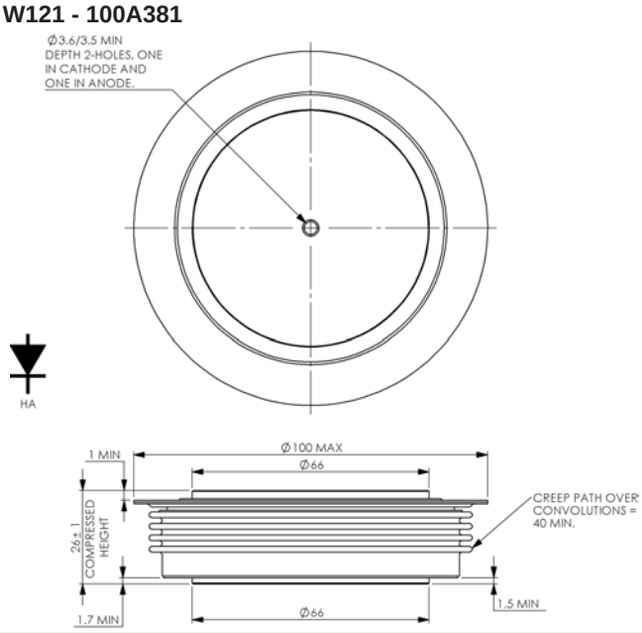




W120 - 100A395



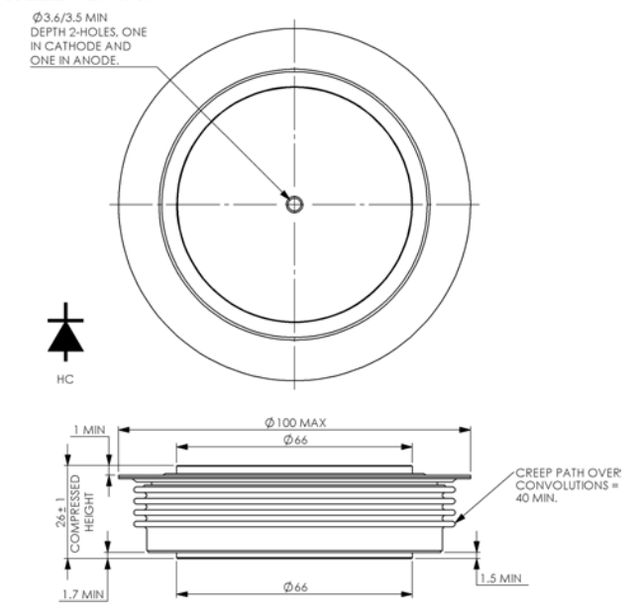
W121 - 100A381



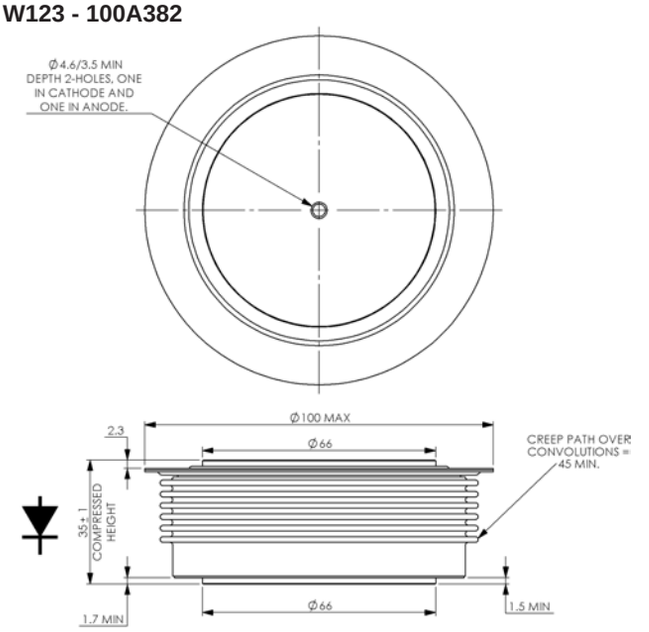
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

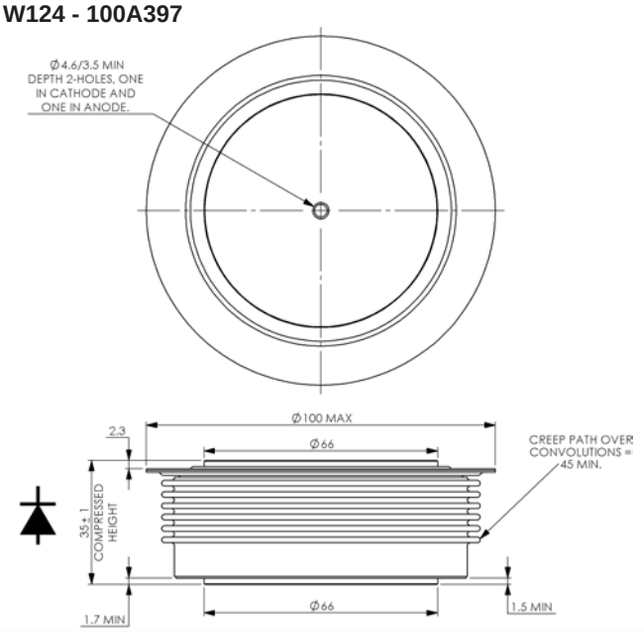
W122 - 100A396



W123 - 100A382

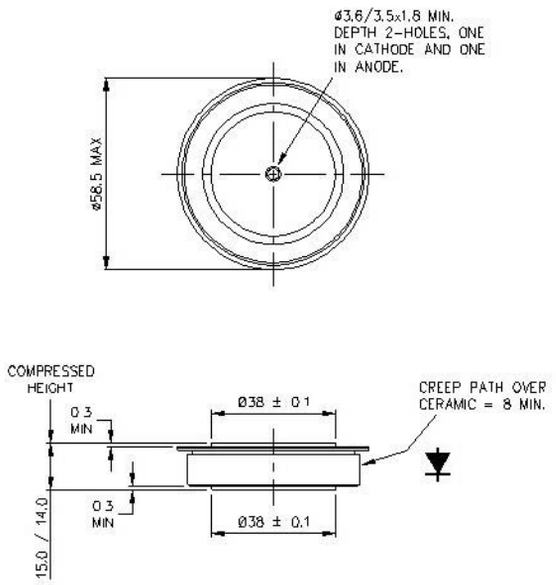


W124 - 100A397

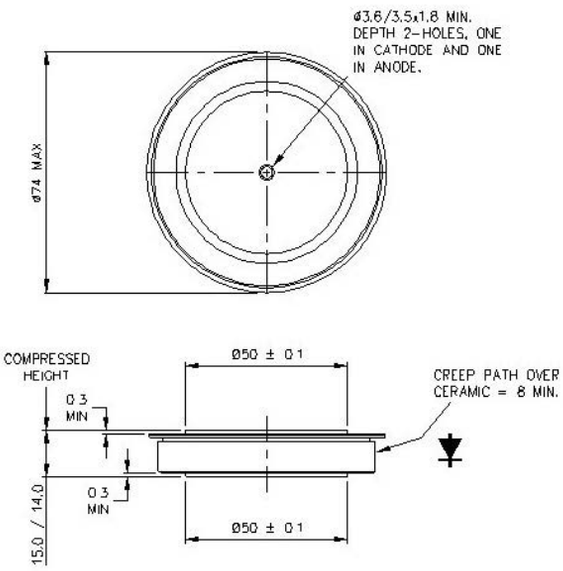


Dimensions in mm and inches (1 mm = 0.0394“)

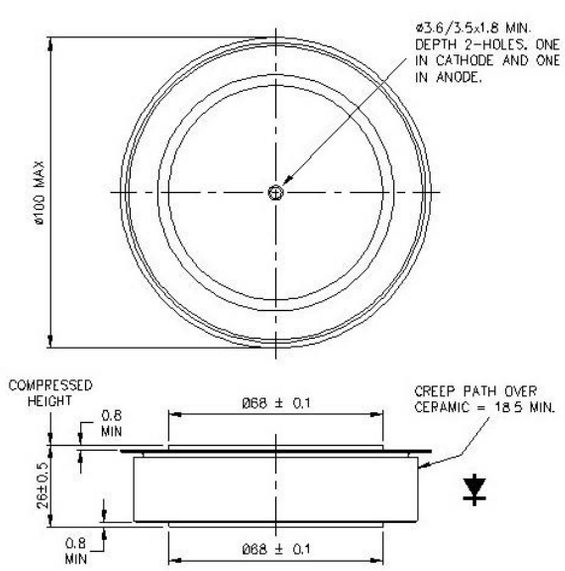
WD2 - 100A325



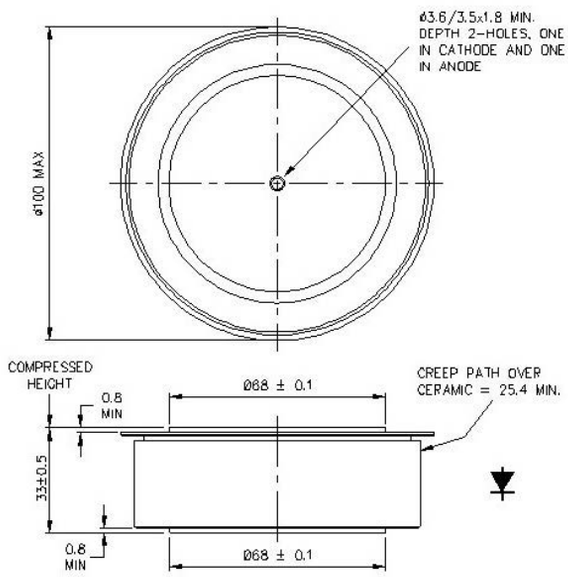
WD3 - 100A356



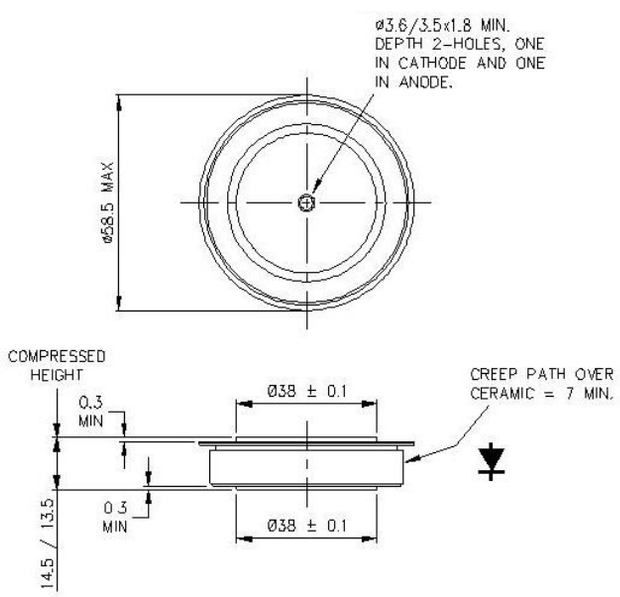
WD5 - 100A361 - 26 mm thick



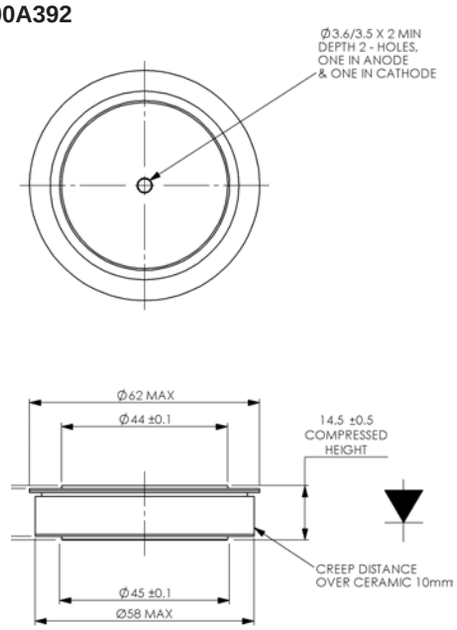
WD6 - 100A360 - 33 mm thick



WD7 - 100A363



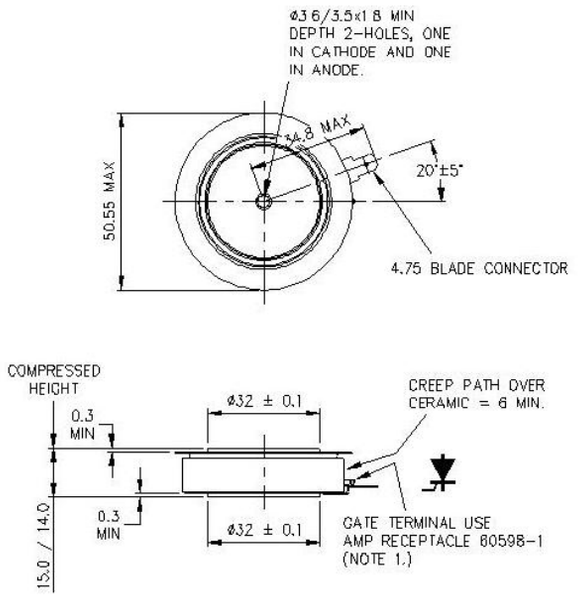
WD8 - 100A392



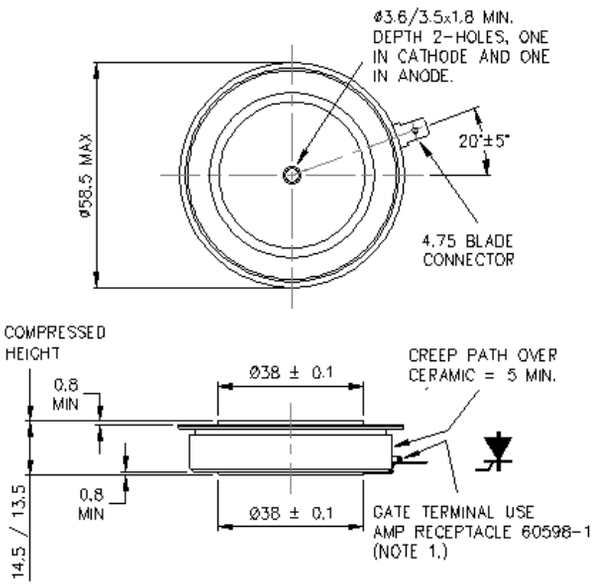
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

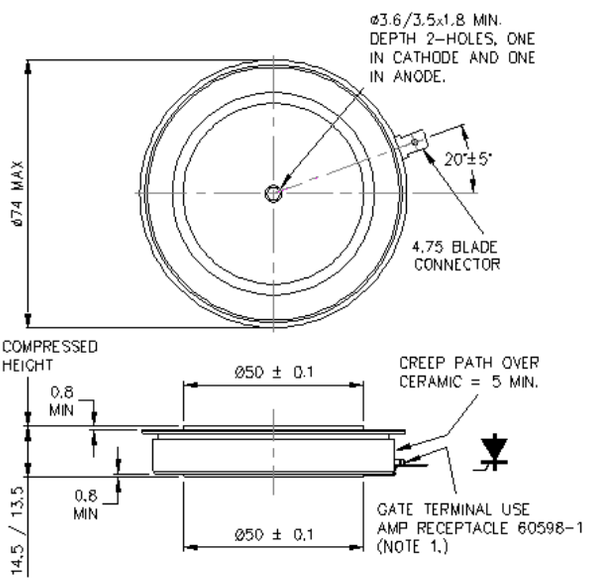
WP1 - 101A361



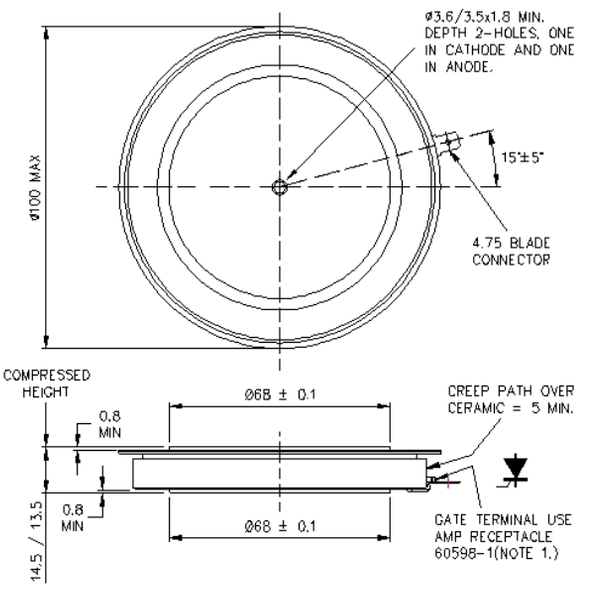
WP2 - 101A354



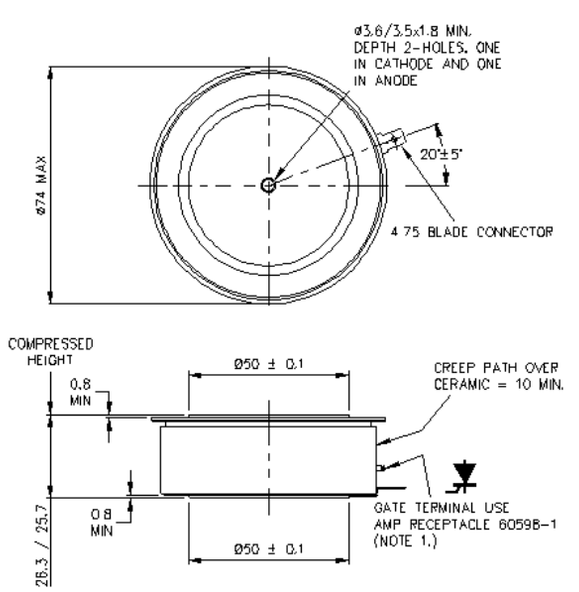
WP3 - 101A353



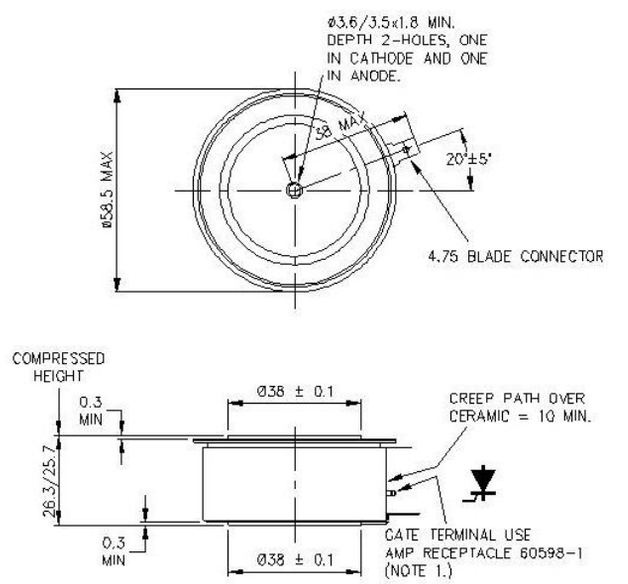
WP4 - 101A355



WP5 - 101A356

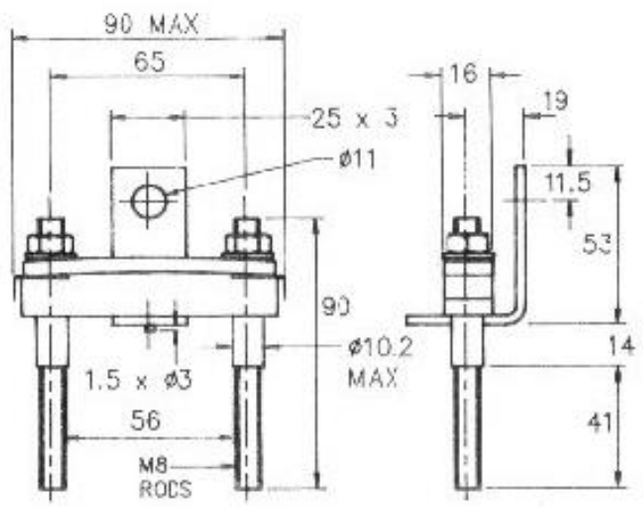


WP6 - 101A389

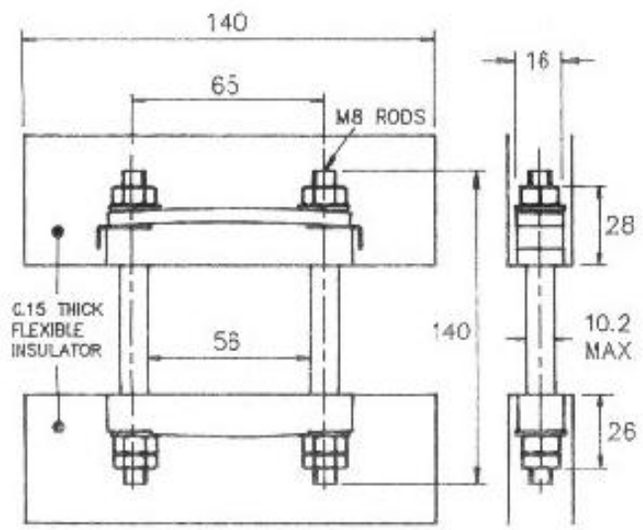


Dimensions in mm and inches (1 mm = 0.0394“)

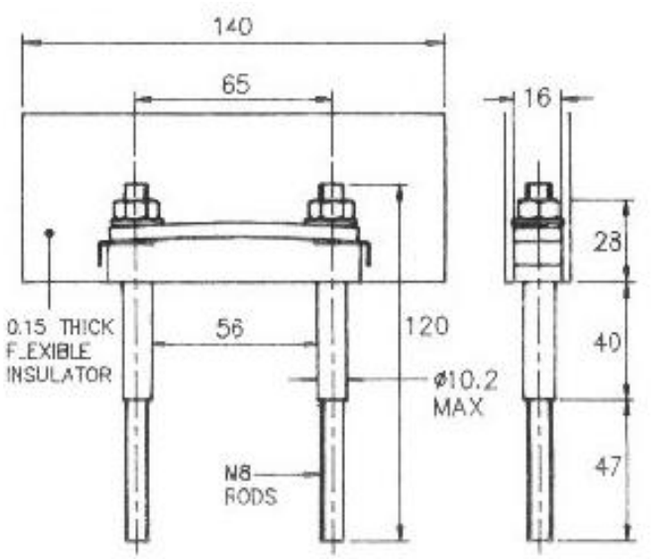
WC1 - XK0450SA056M



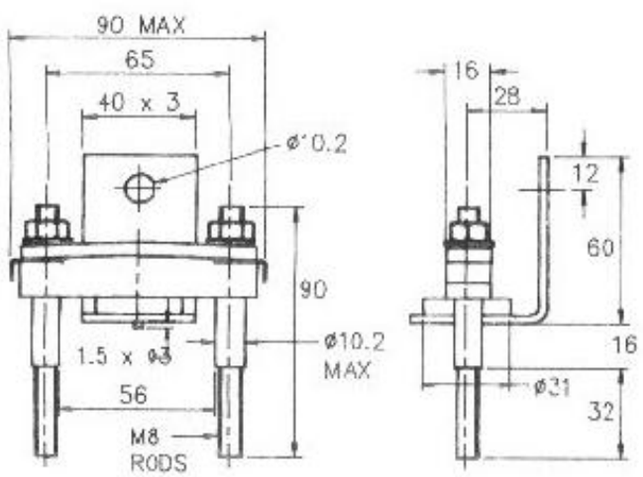
WC2 - XK0450DA056M



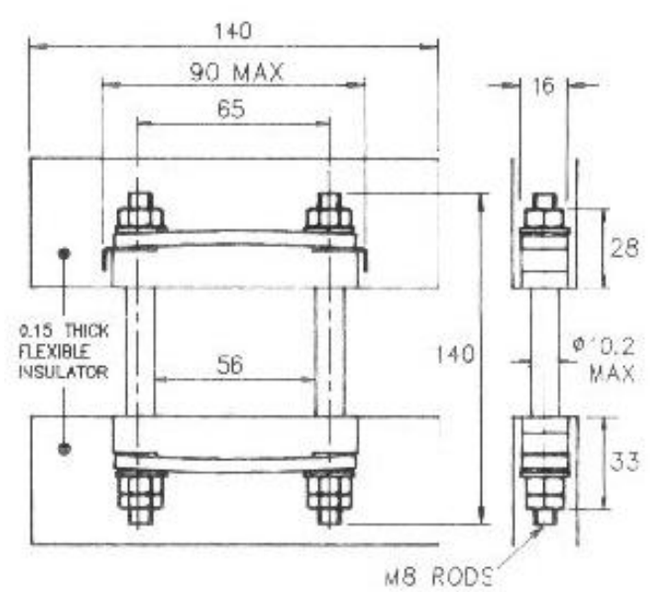
WC3 - XK0450DT056M



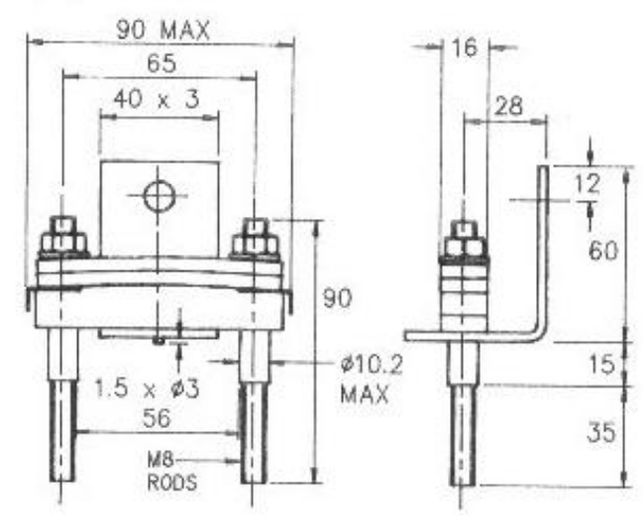
WC4 - XK0550SA056M



WC5 - XK0550DA056M



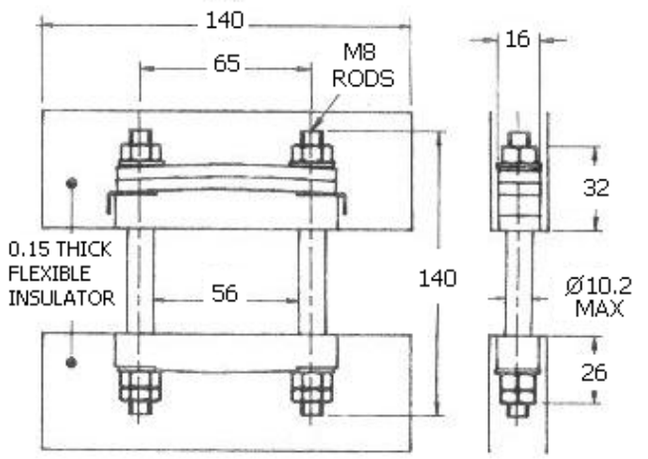
WC6 - XK0900SA056M



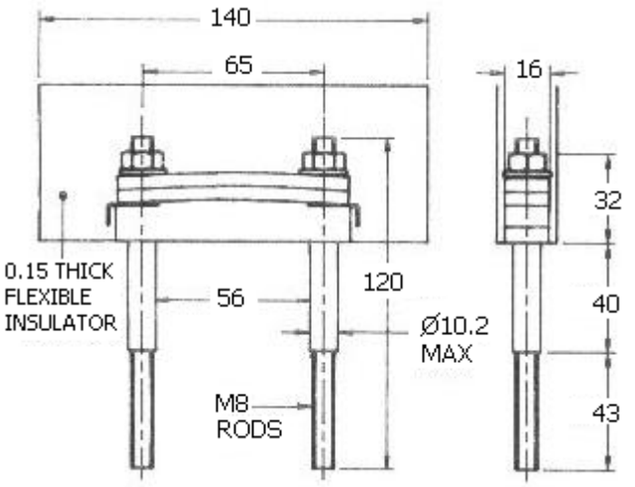
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

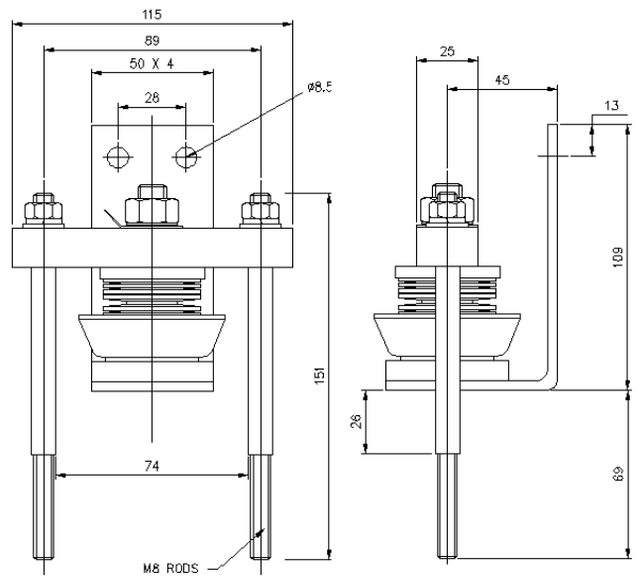
WC7 - XK0900DA056M



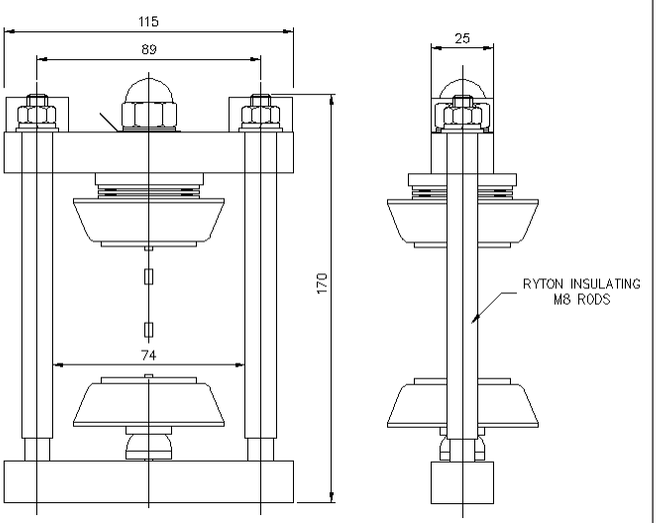
WC8 - XK0900DT056M



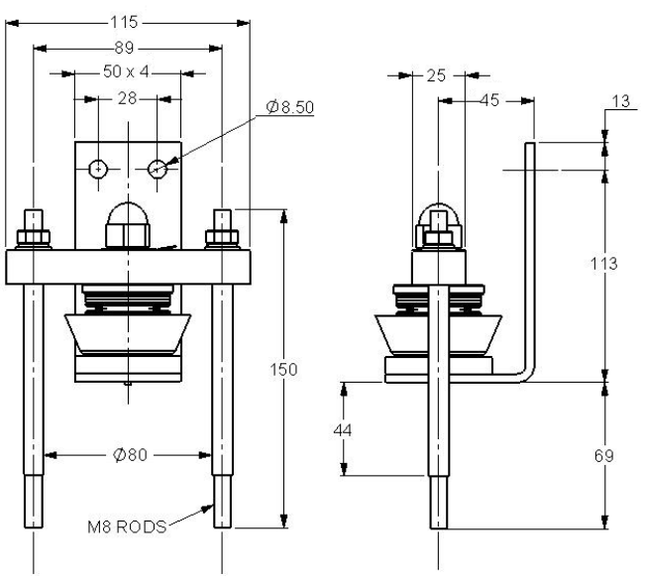
WC9 - XK0600SA074M



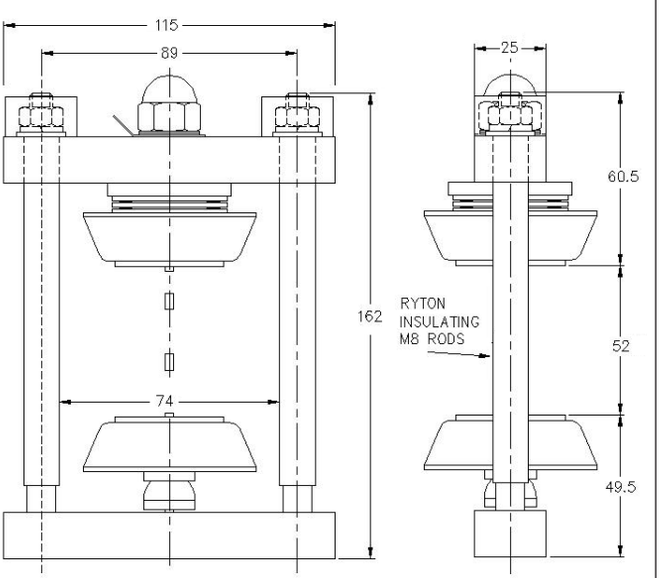
WC10 - XK0600DA074M



WC11 - XK1000SA074M

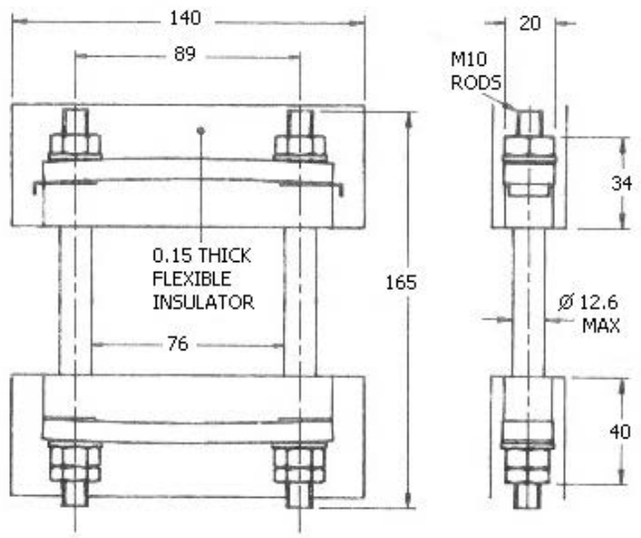


WC12 - XK1000DA074M

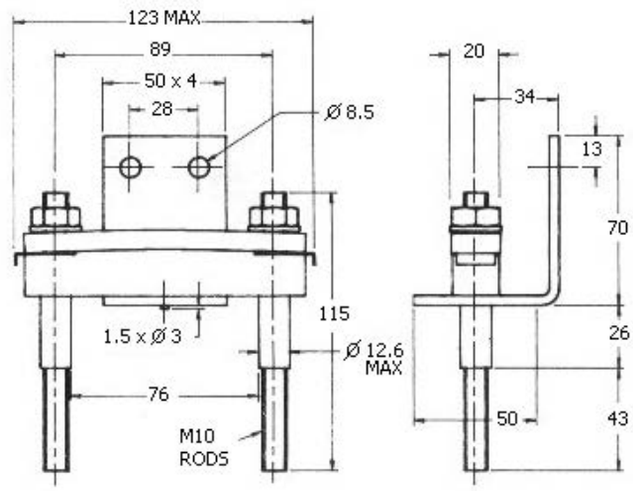


Dimensions in mm and inches (1 mm = 0.0394“)

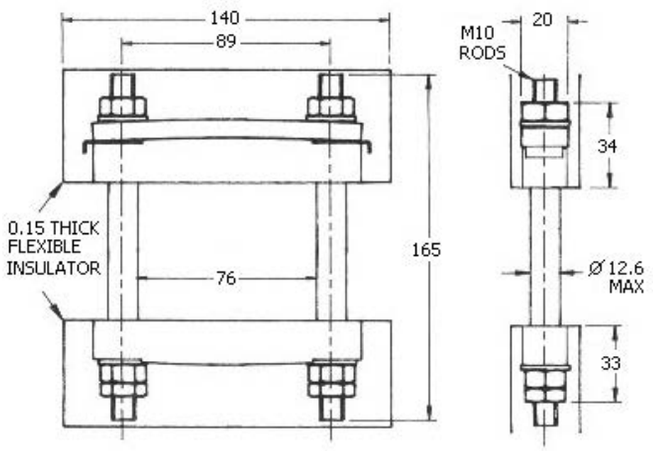
WC13 - XK1100DA076M



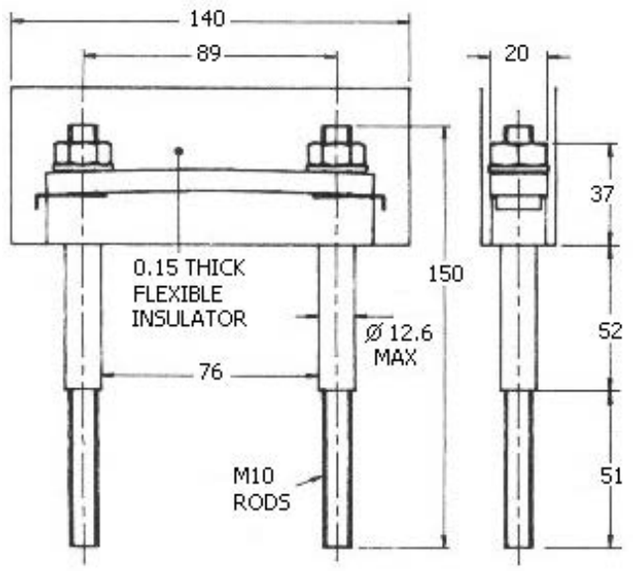
WC14 - XK1130SA076M



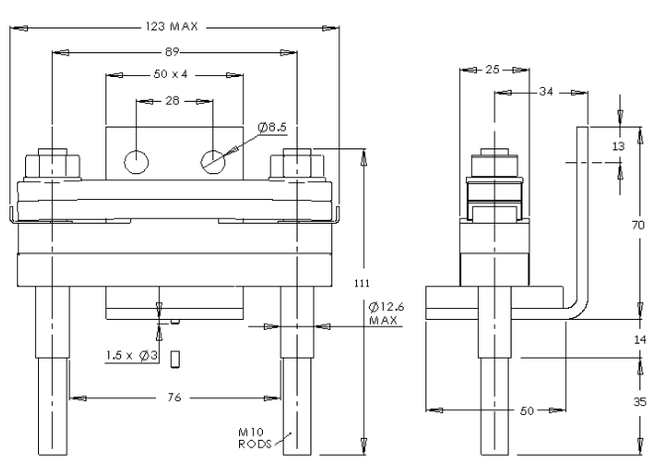
WC15 - XK1130DA076M



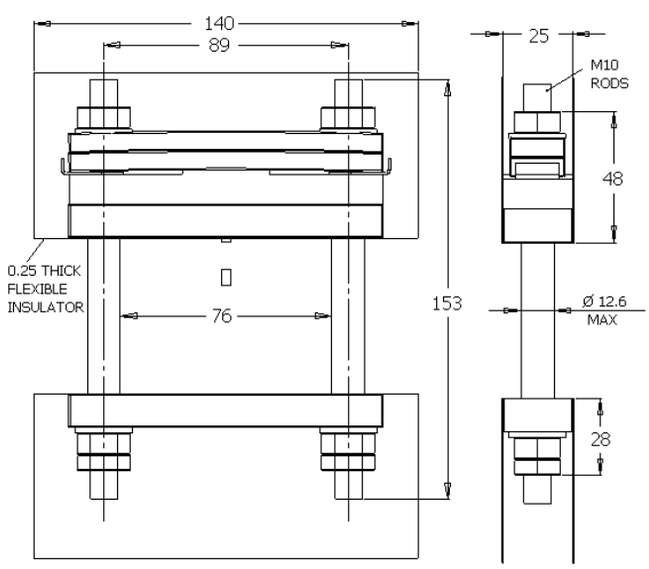
WC16 - XK1130DT076M



WC17 - XK1800SA076M



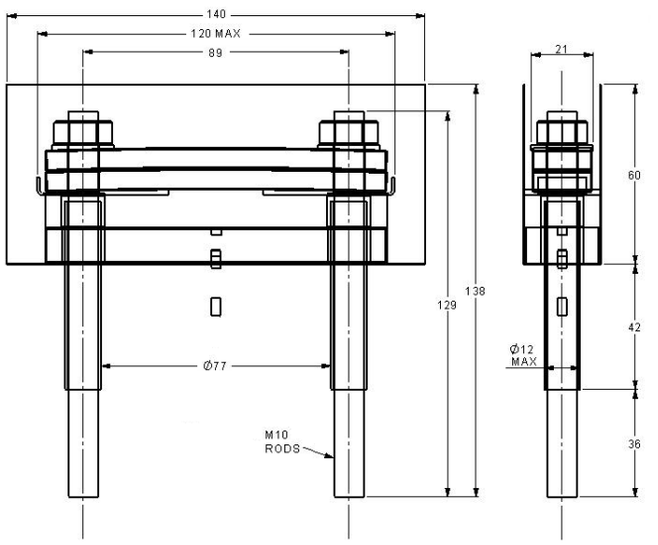
WC18 - XK1800DA076M



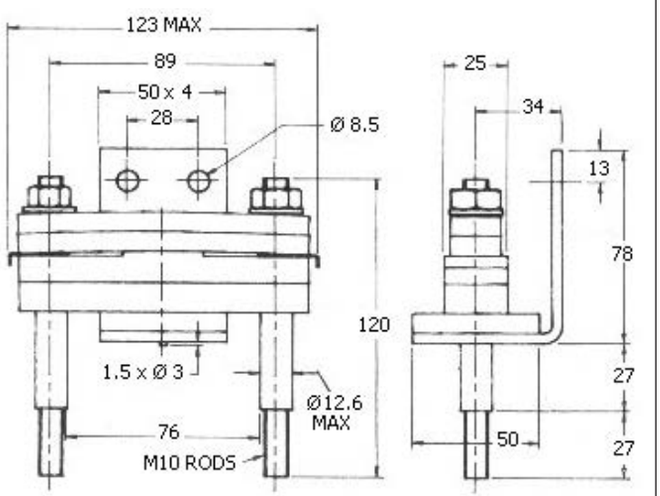
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

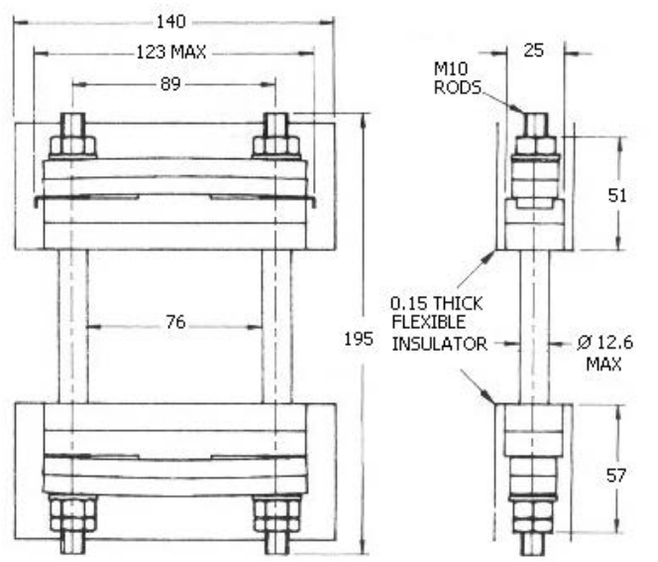
WC19 - XK1800DT076M



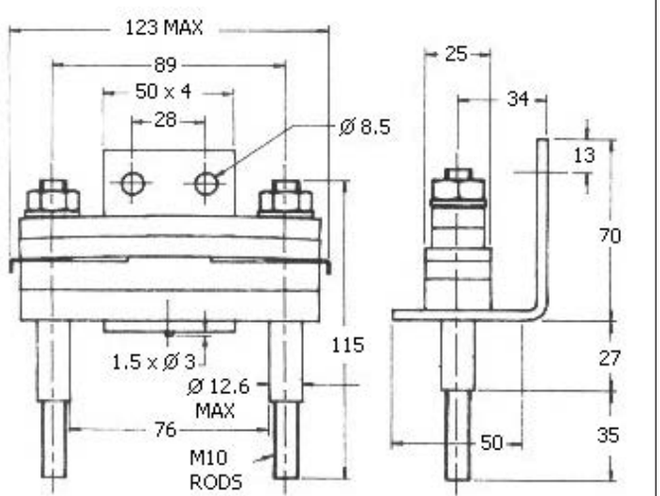
WC20 - XK2100SA076M/ML



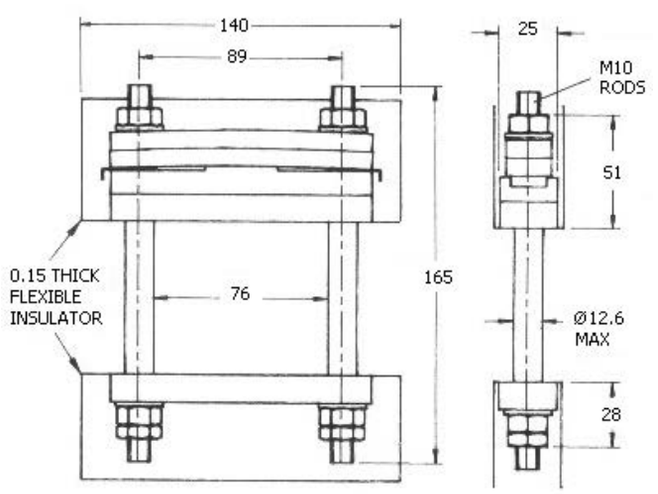
WC21 - XK2100DA076M/ML



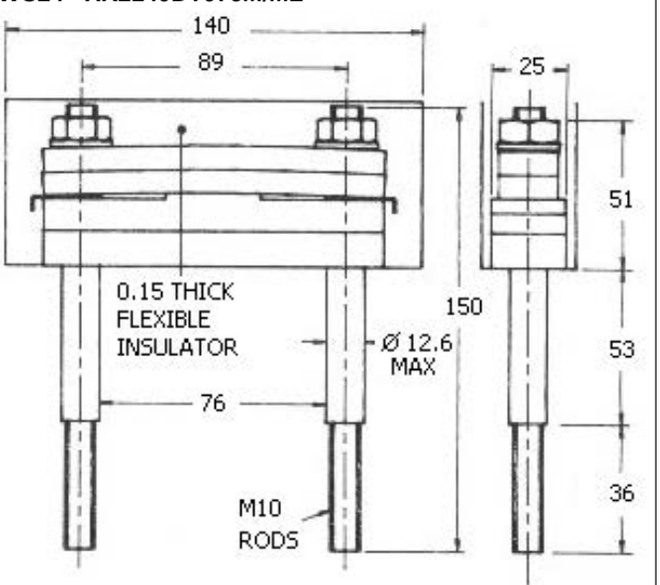
WC22 - XK2140SA076M/ML



WC23 - XK2140DA076M/ML

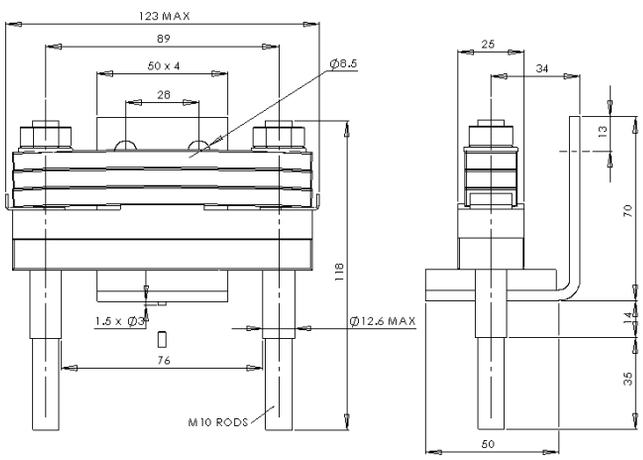


WC24 - XK2140DT076M/ML

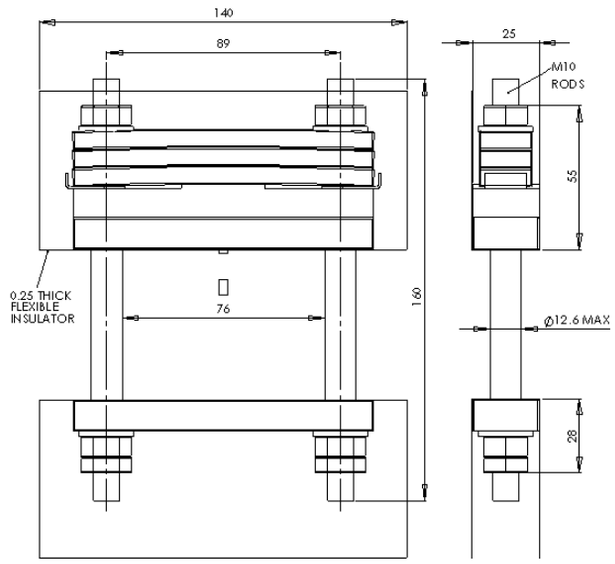


Dimensions in mm and inches (1 mm = 0.0394“)

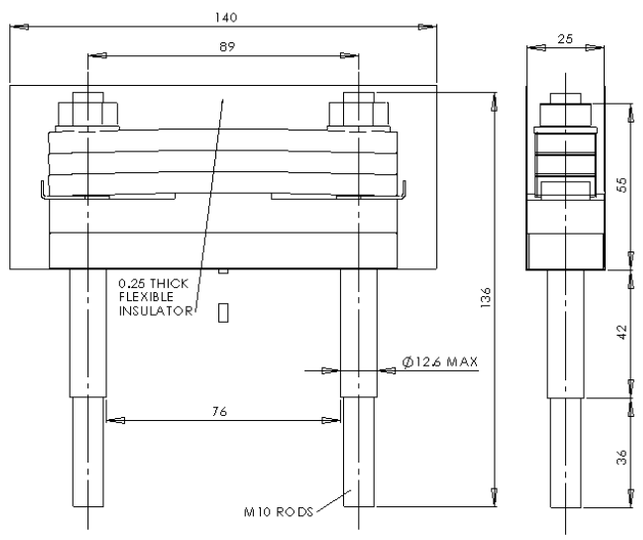
WC25 - XK2700SA076M



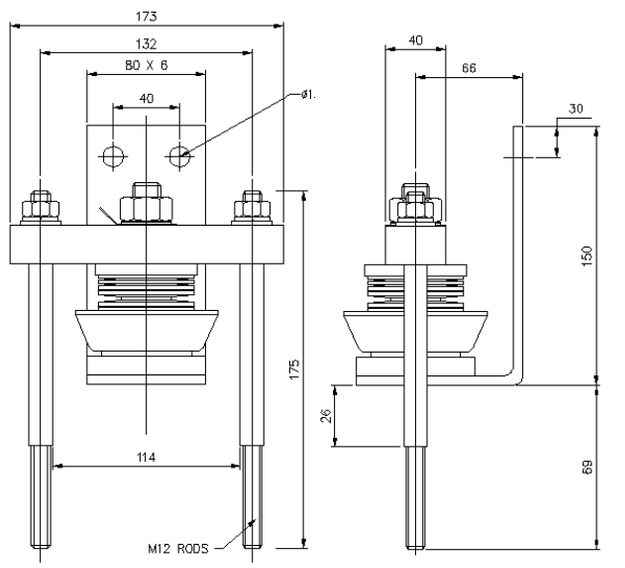
WC26 - XK2700DA076M



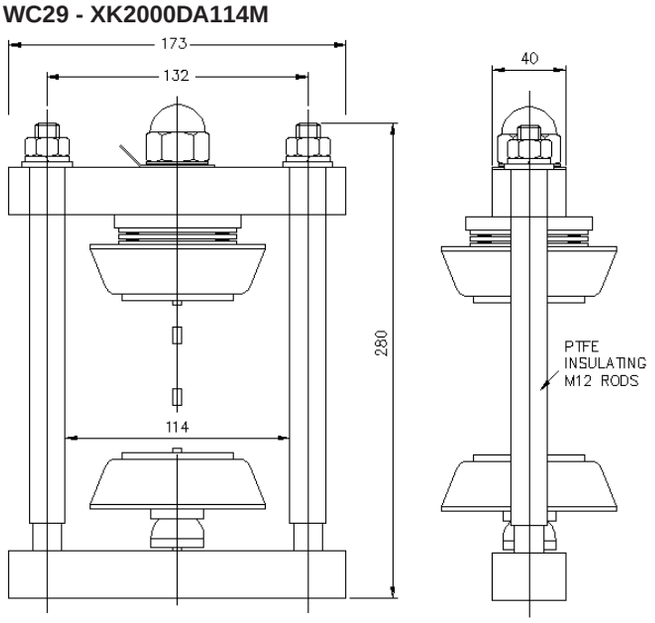
WC27 - XK2700DT076M



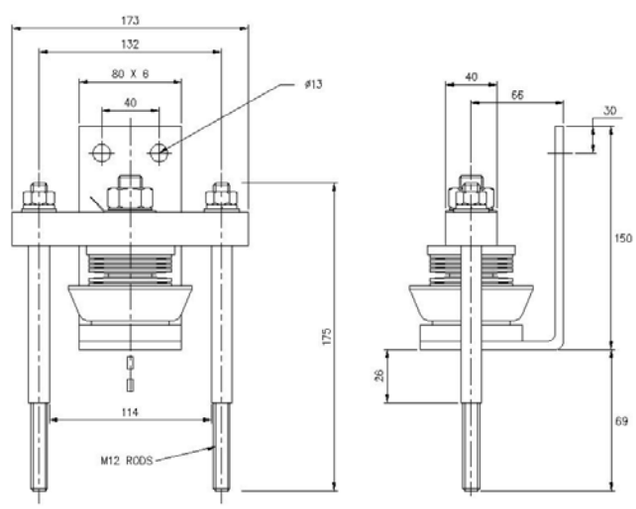
WC28 - XK2000SA114M



WC29 - XK2000DA114M



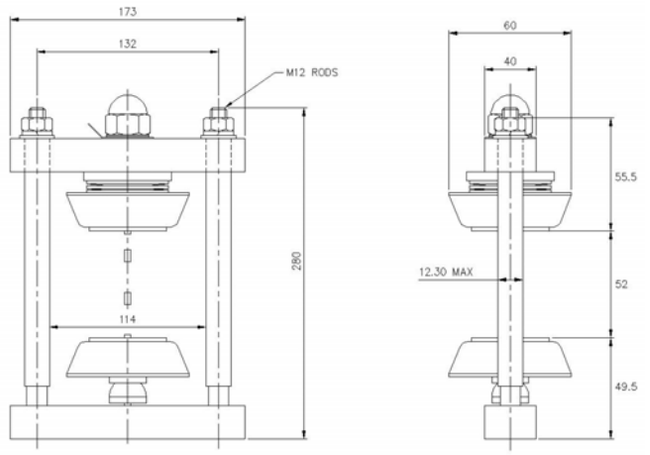
WC30 - XK2500SA114M



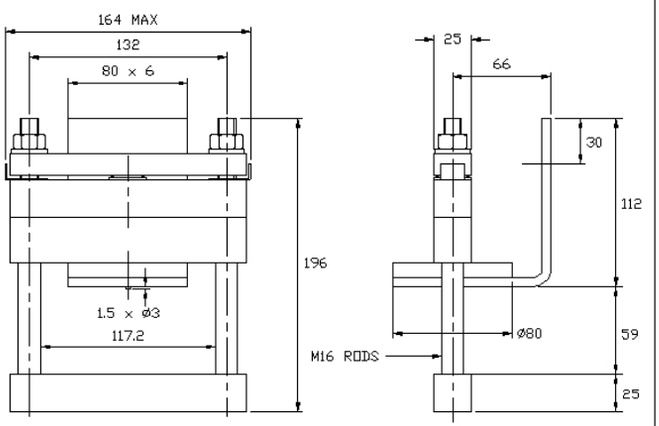
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

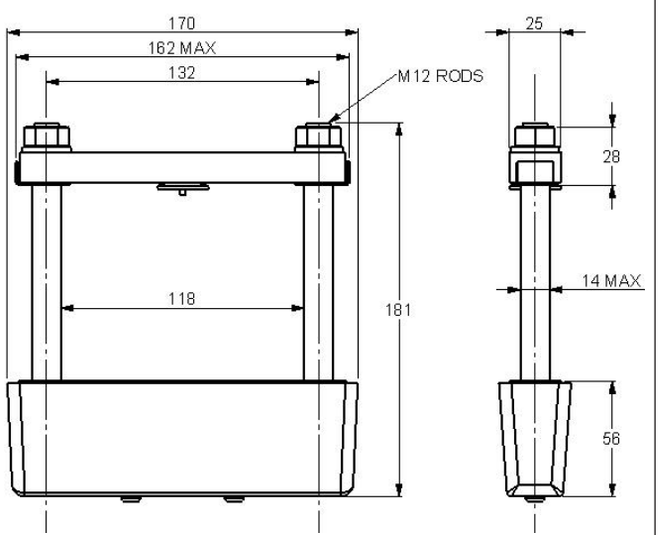
WC31 - XK2500DA114M



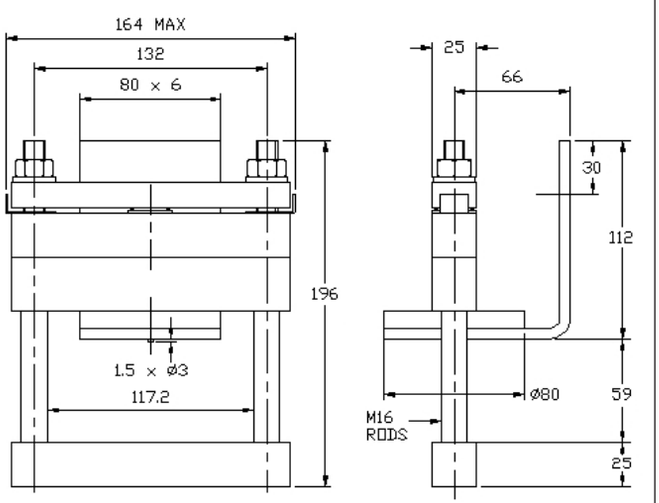
WC32 - XK2500SA116M/ML



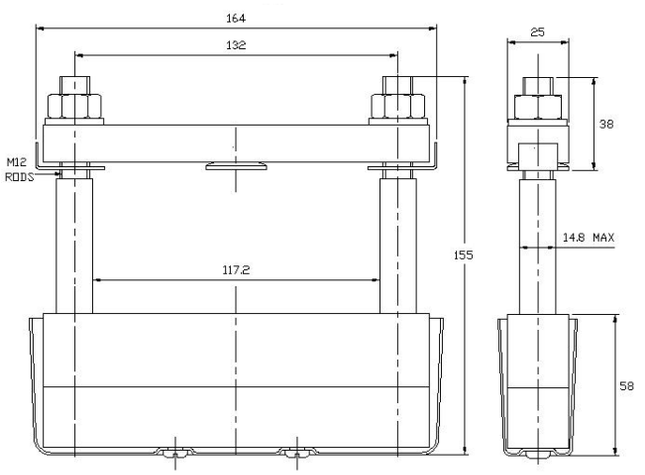
WC33 - XK2500DA116M/ML



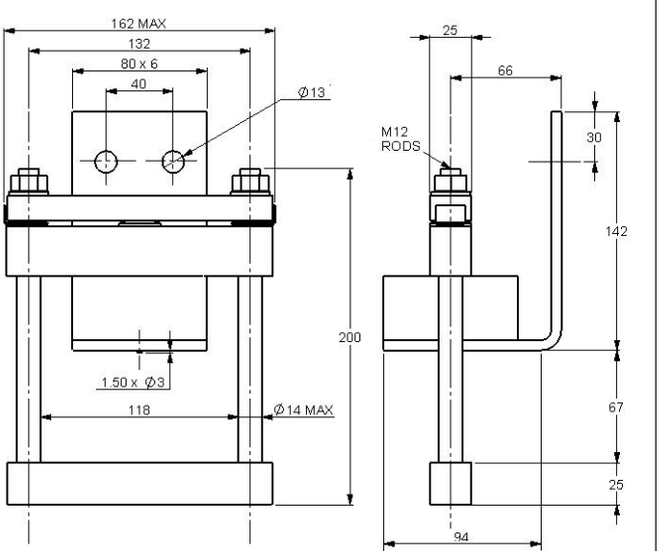
WC34 - XK3000SA116M/ML



WC35 - XK3000DA116M/Mx

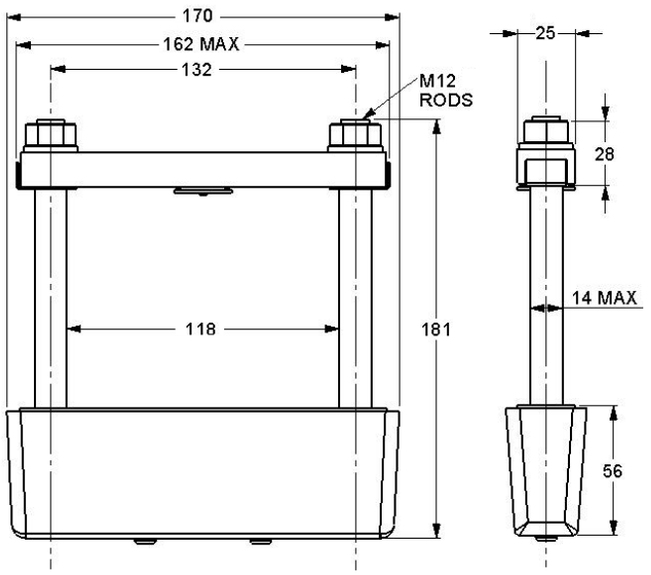


WC36 - XK3500SA116M/ML

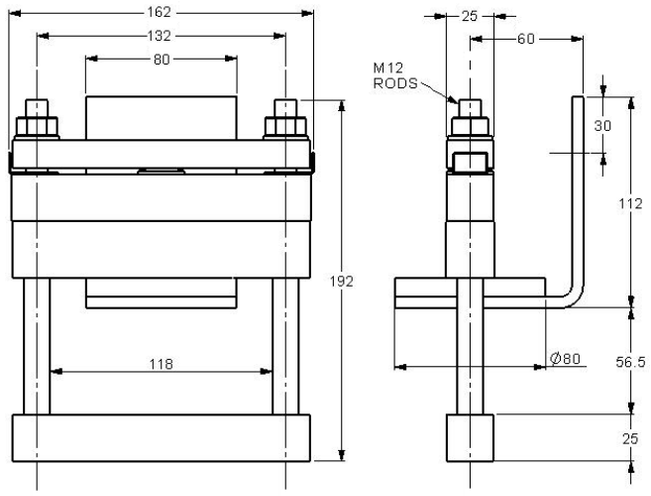


Dimensions in mm and inches (1 mm = 0.0394“)

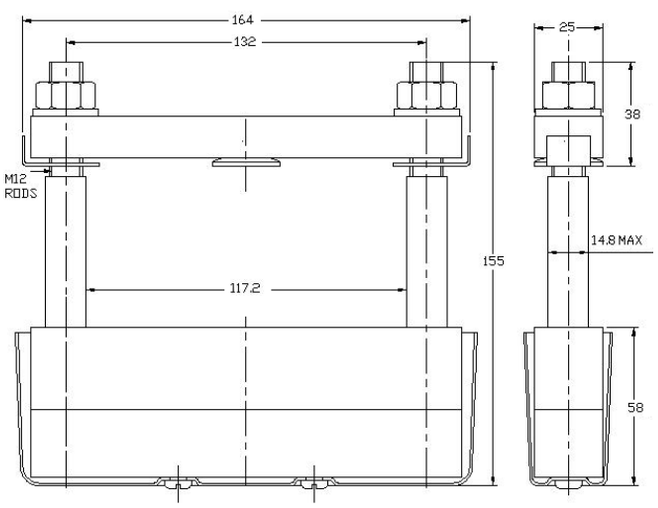
WC37 - XK3500DA116M/ML



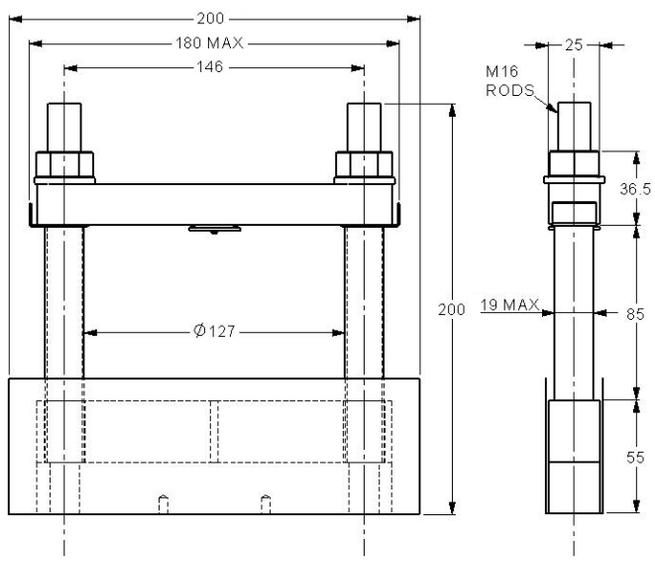
WC38 - XK4000SA116M/ML



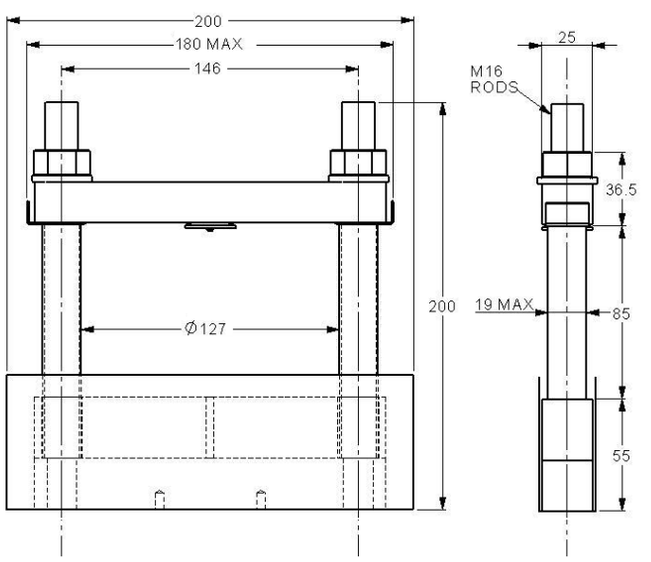
WC39 - XK4000DA116M/ML



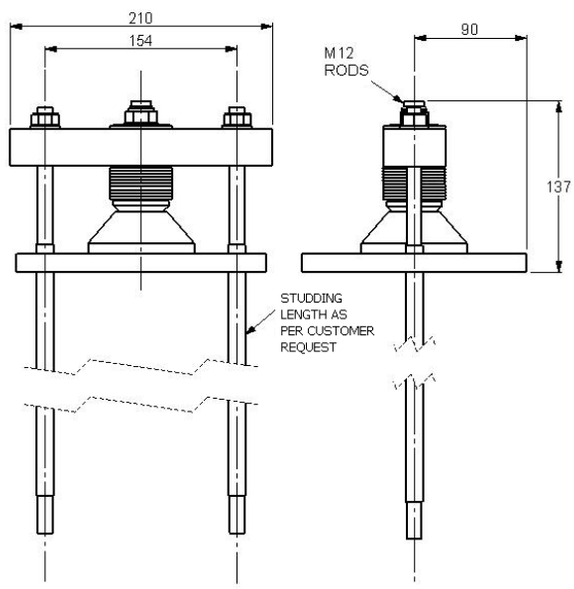
WC40 - XK5000DA128M/ML



WC41 - XK7000DA128M/ML



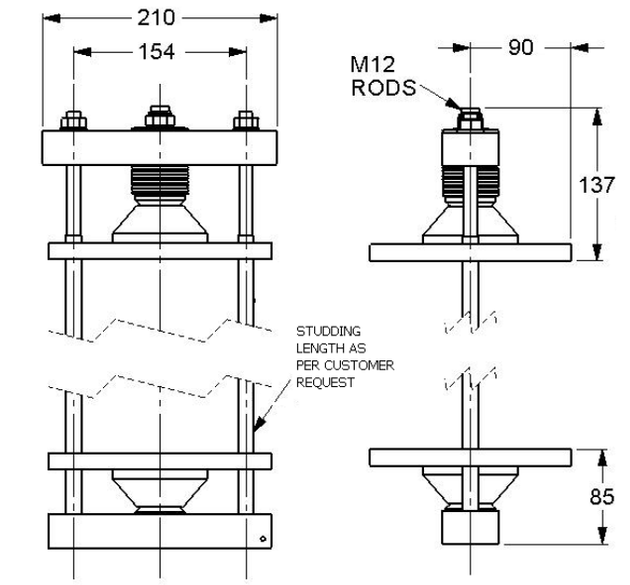
WC42 - XK3060SA140ML



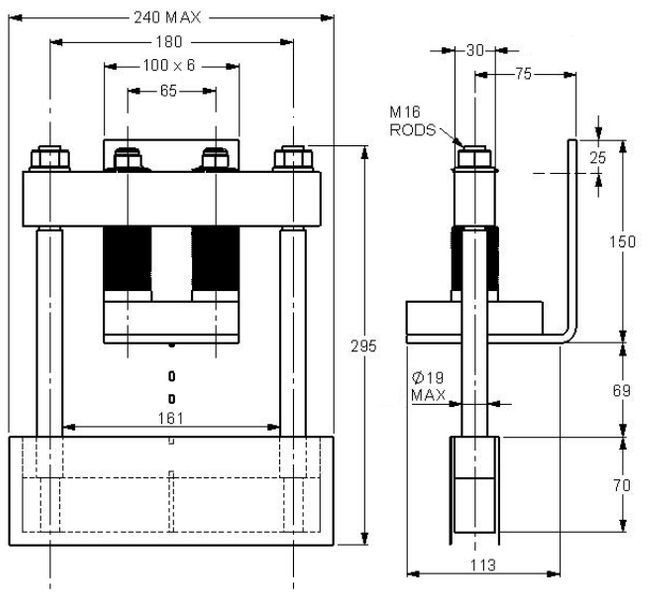
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

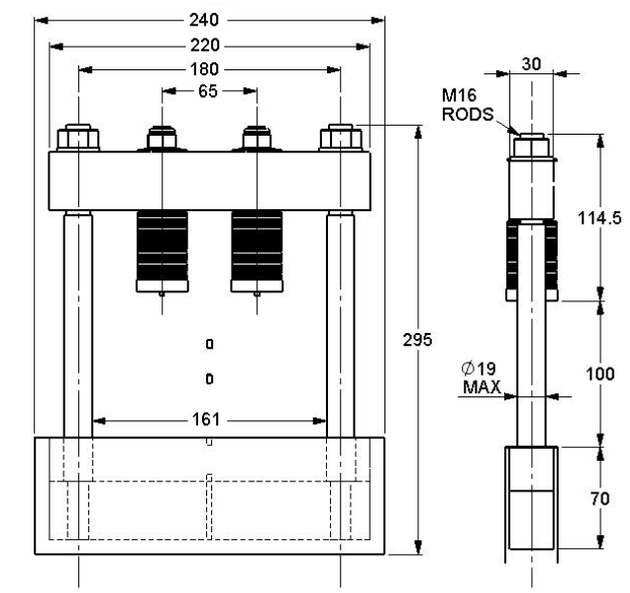
WC43 - XK3060DA140ML



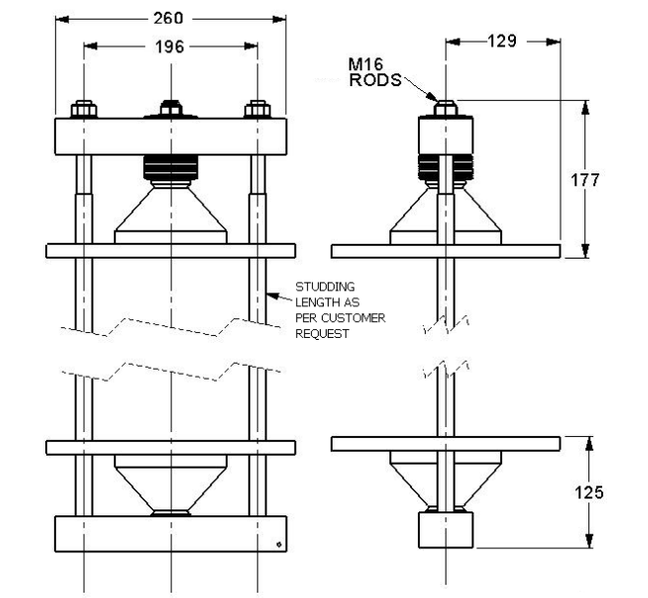
WC44 - XK9000SA160M/ML



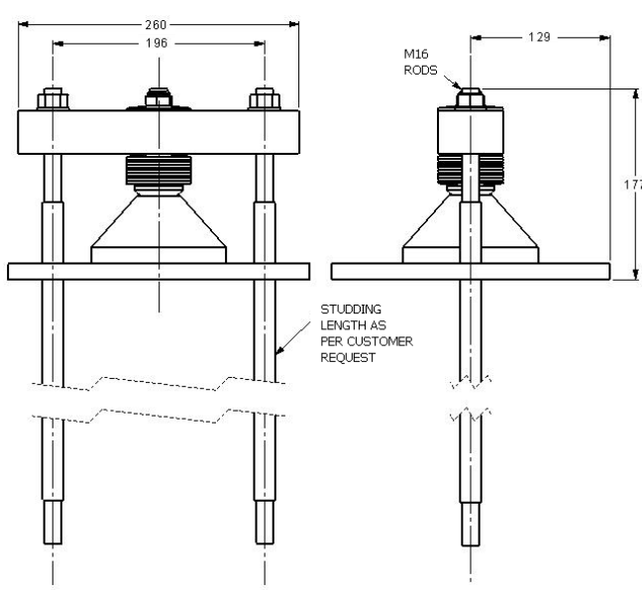
WC45 - XK9000DA160M/ML



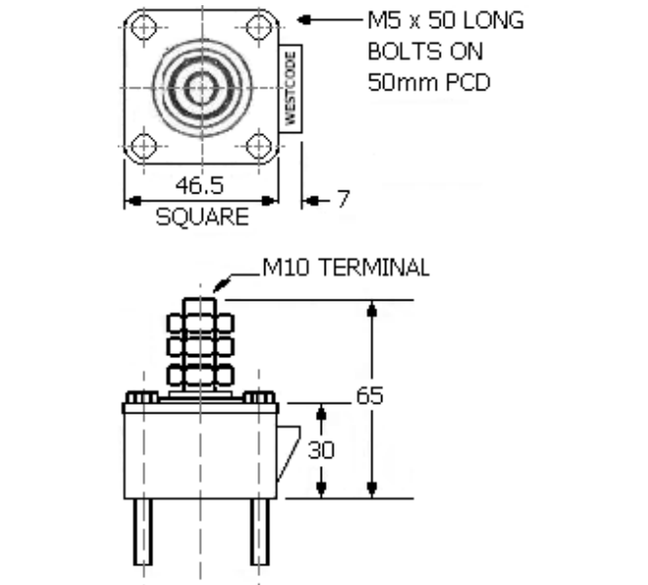
WC46 - XK6120DA180ML



WC47 - XK6120SA180ML



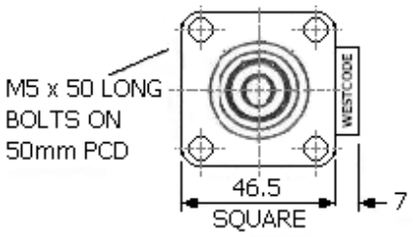
WC48 - XK0450xx019M

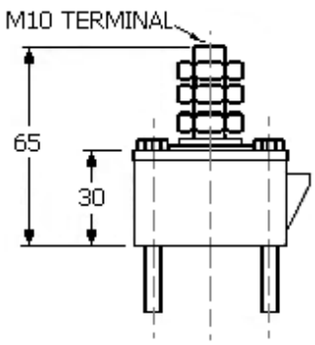


Outline drawings

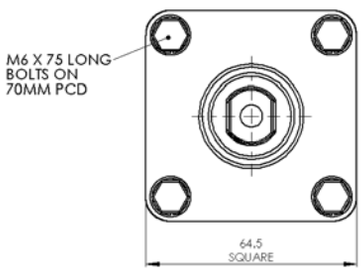
Dimensions in mm and inches (1 mm = 0.0394“)

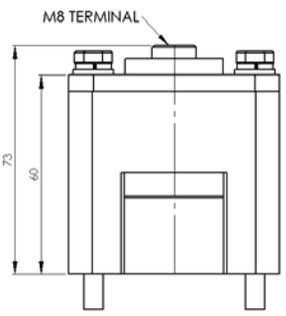
WC49 - XK####xx025M



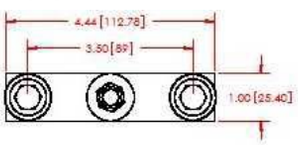


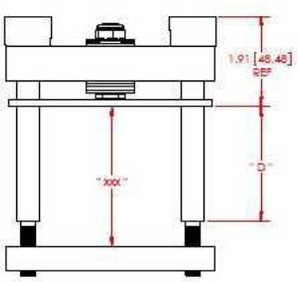
WC50 - XK1500BA034M





WC51 - XSK1500DA076xxx

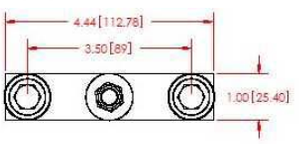


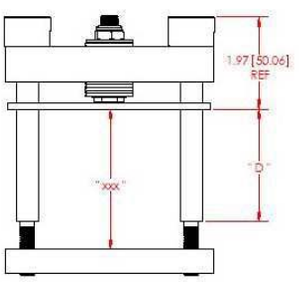


Notes:

1. DIMENSIONS IN INCHES [MILLIMETERS].
2. " Z " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.
3. " D " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.

WC52 - XSK2000DA076xxx

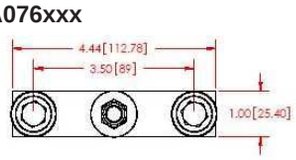


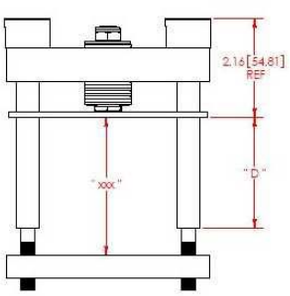


Notes:

1. DIMENSIONS IN INCHES [MILLIMETERS].
2. " Z " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.
3. " D " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.

WC53 - XSK3000DA076xxx

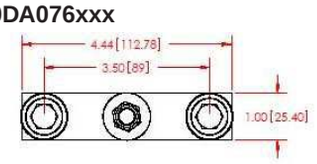


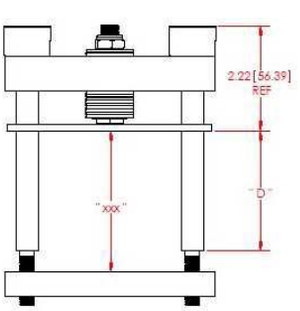


Notes:

1. DIMENSIONS IN INCHES [MILLIMETERS].
2. " Z " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.
3. " D " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.

WC54 - XSK3400DA076xxx





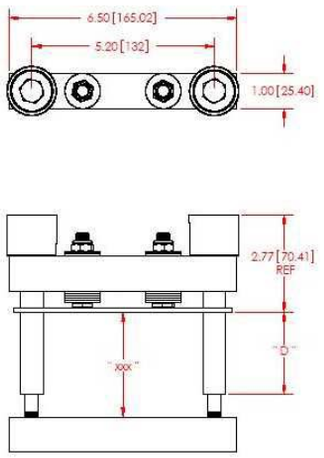
Notes:

1. DIMENSIONS IN INCHES [MILLIMETERS].
2. " Z " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.
3. " D " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.

Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

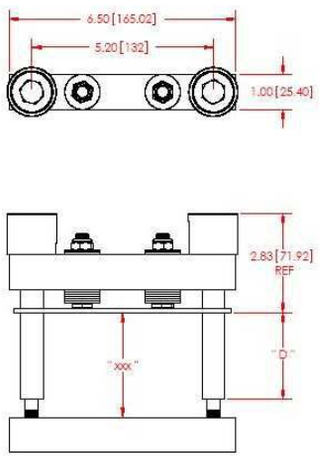
WC55 - SK3800DA116Mxxx



Notes:

1. DIMENSIONS IN INCHES [MILLIMETERS].
2. " Z " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.
3. " D " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.

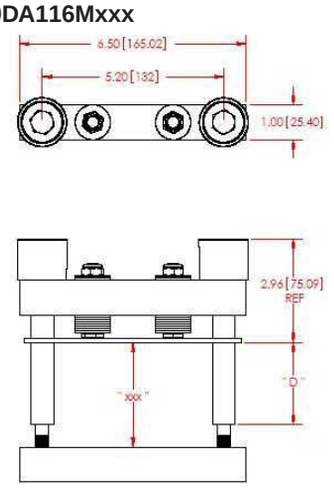
WC56 - XSK4400DA116Mxxx



Notes:

1. DIMENSIONS IN INCHES [MILLIMETERS].
2. " Z " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.
3. " D " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.

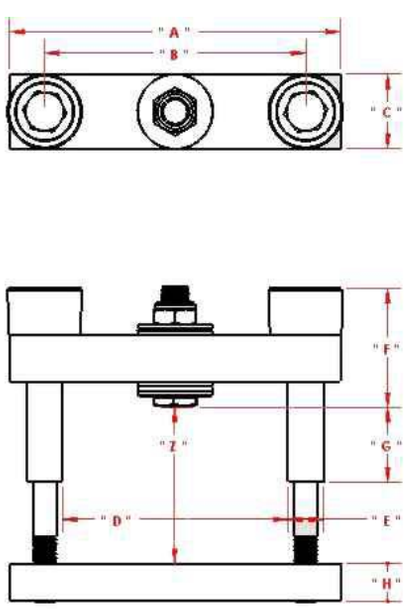
WC57 - XSK6000DA116Mxxx



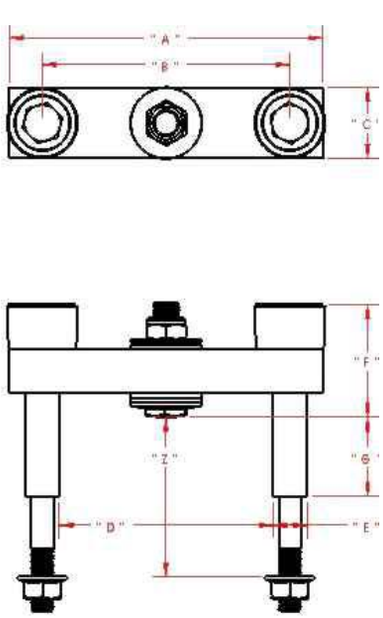
Notes:

1. DIMENSIONS IN INCHES [MILLIMETERS].
2. " Z " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.
3. " D " DIMENSION CAN BE CHANGED AS PER REQUIREMENT.

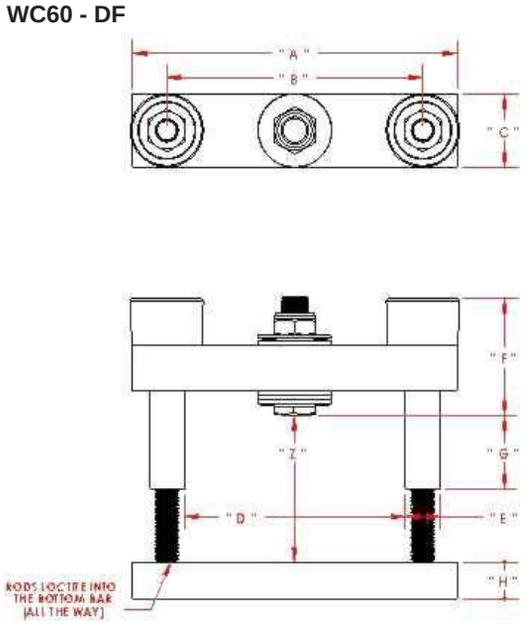
WC58- DA



WC59 - DT

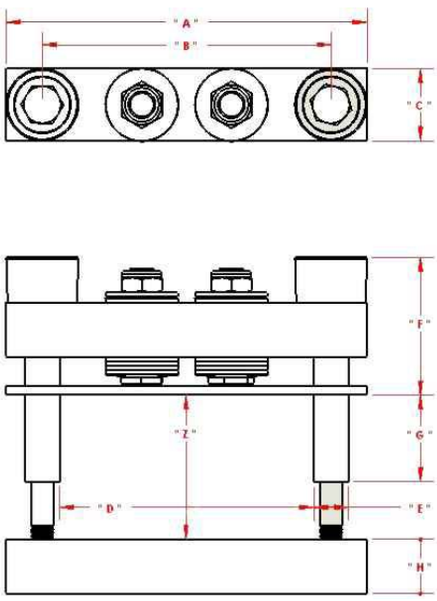


WC60 - DF

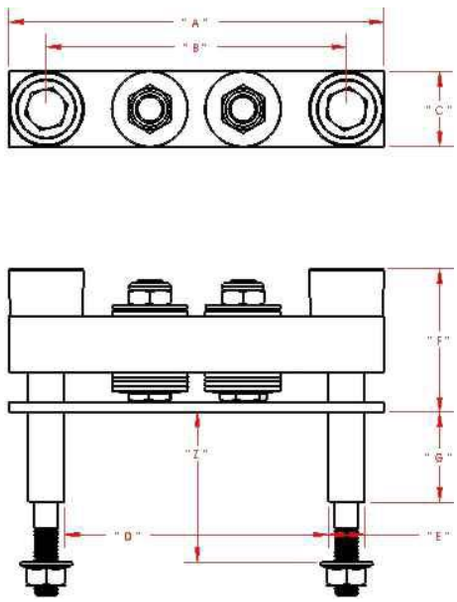


Dimensions in mm and inches (1 mm = 0.0394“)

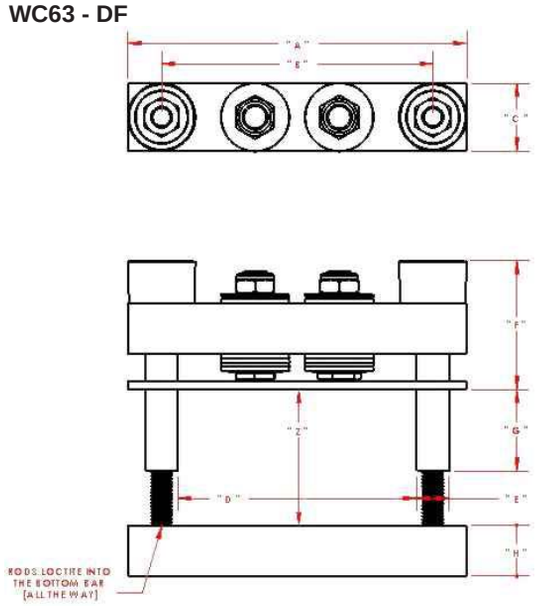
WC61 - DA



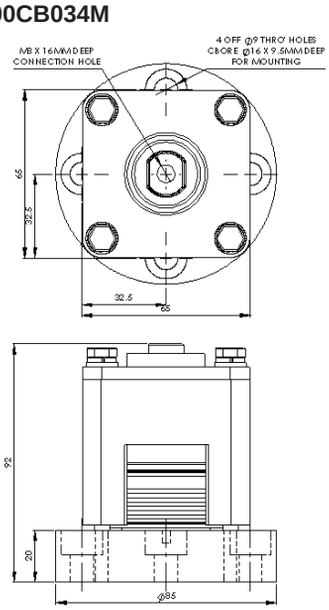
WC62 - DT



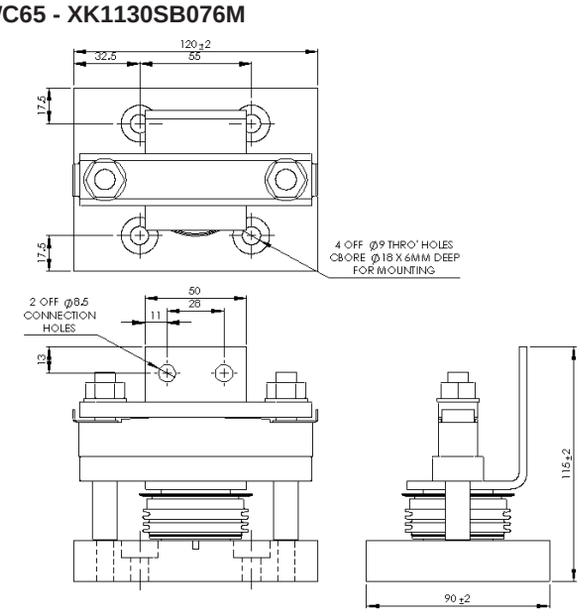
WC63 - DF



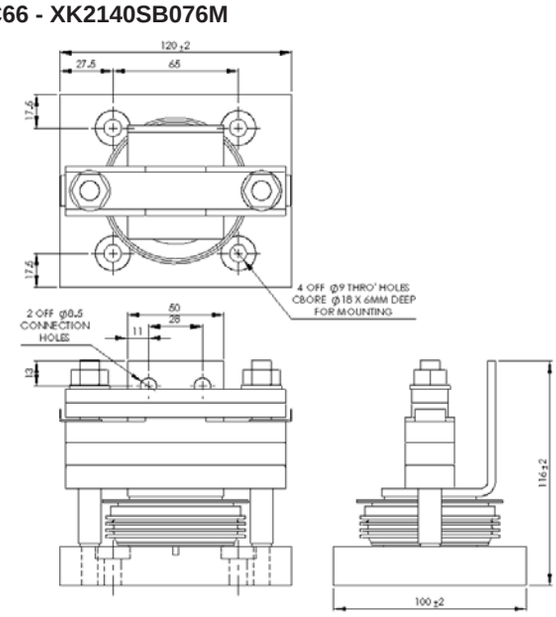
WC64 - XK1500CB034M



WC65 - XK1130SB076M



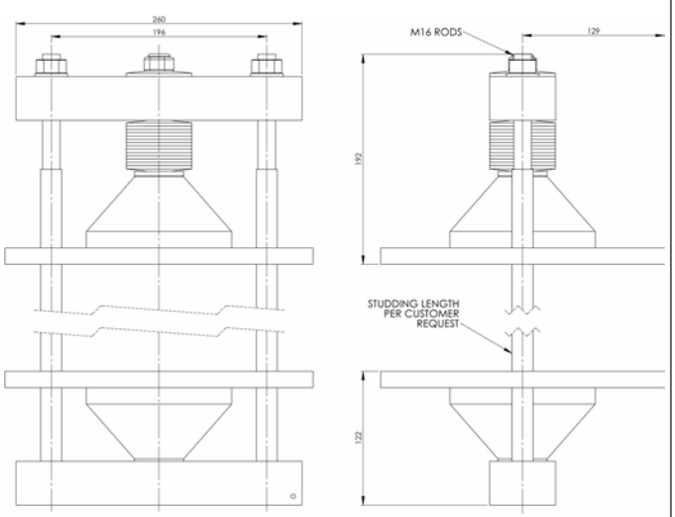
WC66 - XK2140SB076M



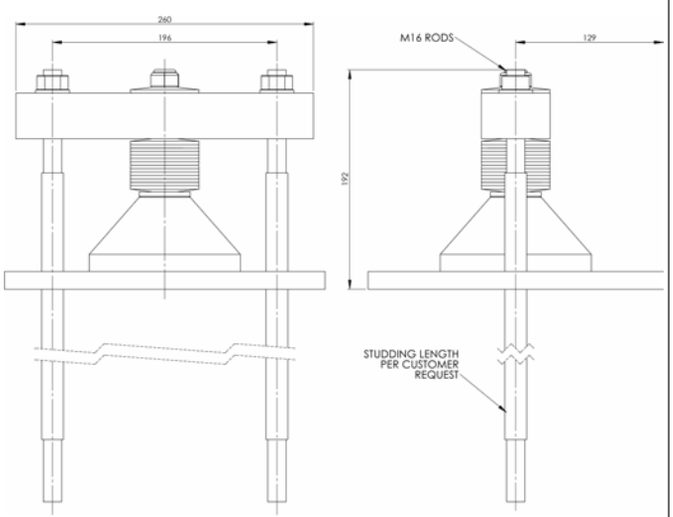
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

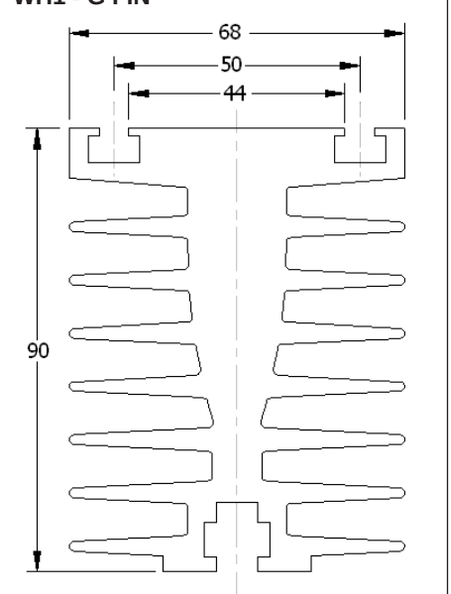
WC67 - XK8000DA180ML



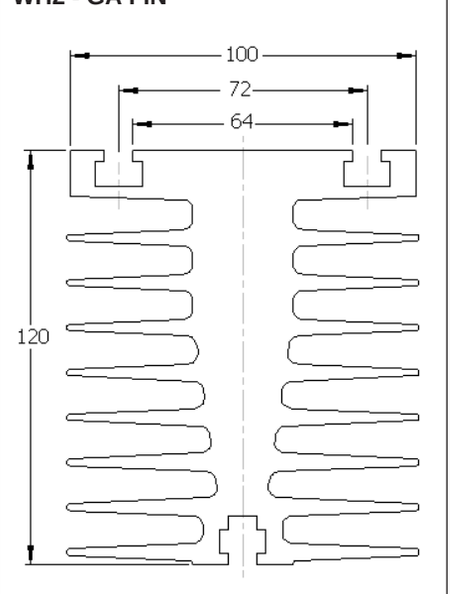
WC68 - XK8000SA180ML



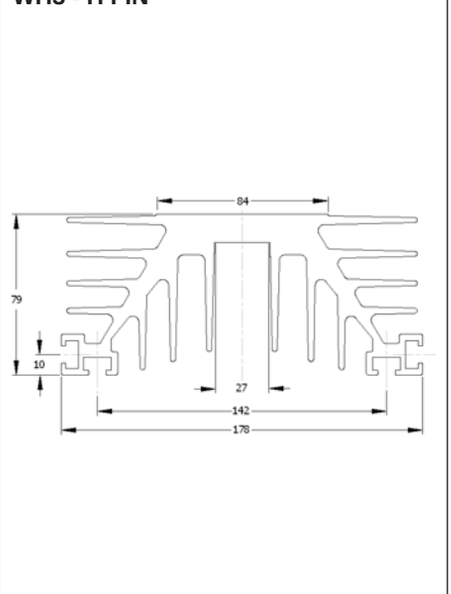
WH1 - G FIN



WH2 - GA FIN

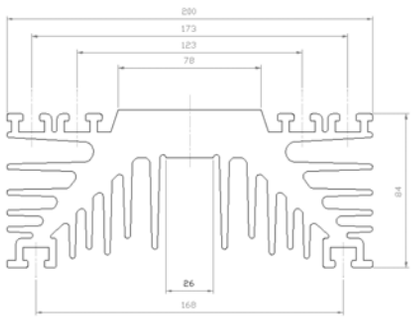


WH3 - H FIN

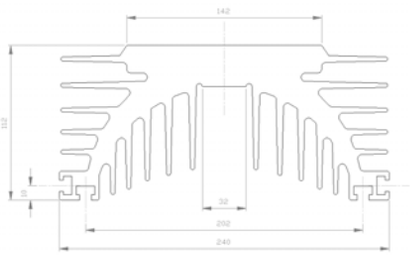


Dimensions in mm and inches (1 mm = 0.0394“)

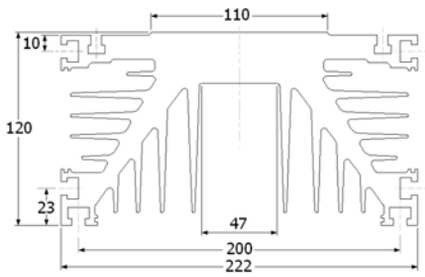
WH4 - T FIN



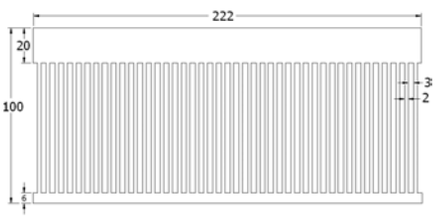
WH5 - TB FIN



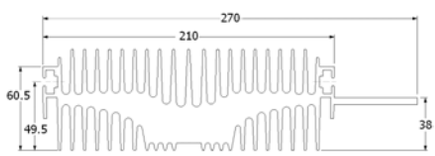
WH6 - TC FIN



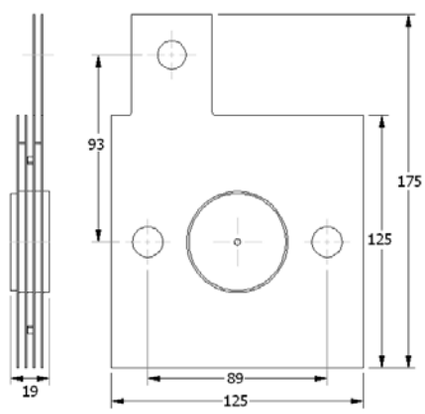
WH7 - LP100



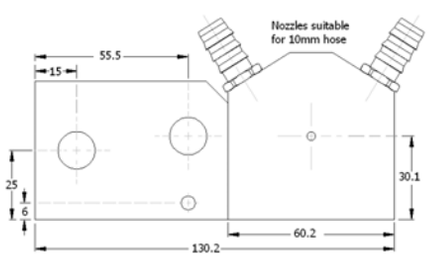
WH8 - WS46



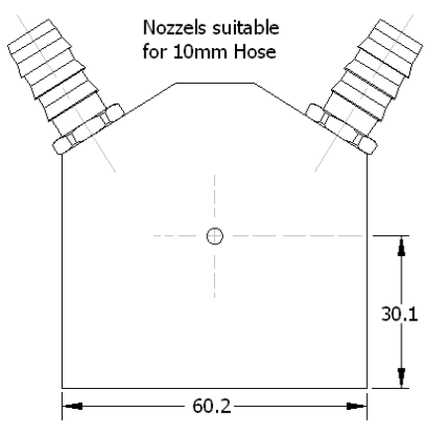
WH9 - WS30 - COPPER



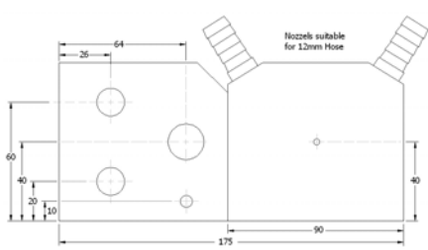
WCL1 - LK COOLER



WCL2 - LKA COOLER



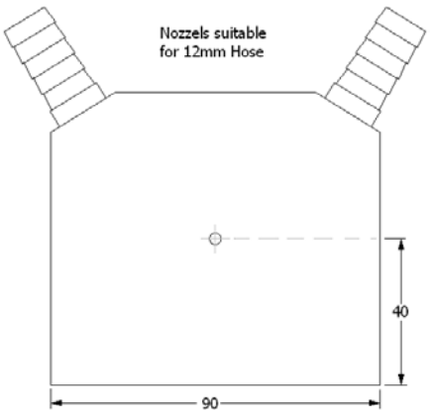
WCL3 - LKB COOLER



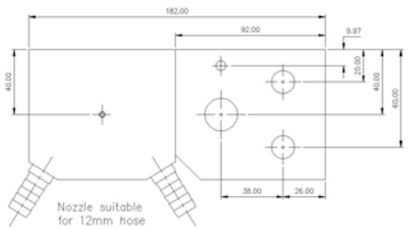
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

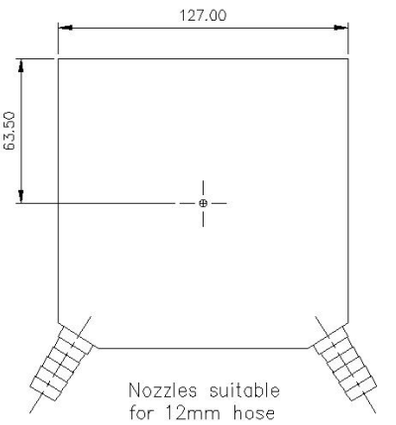
WCL4 - LKC COOLER



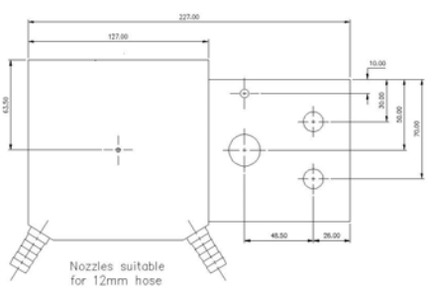
WCL5 - LKD COOLER



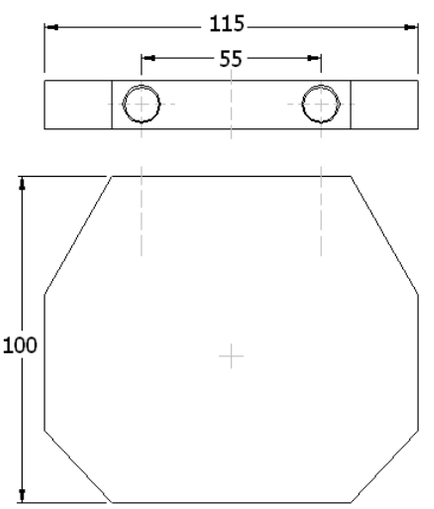
WCL6 - LKE COOLER



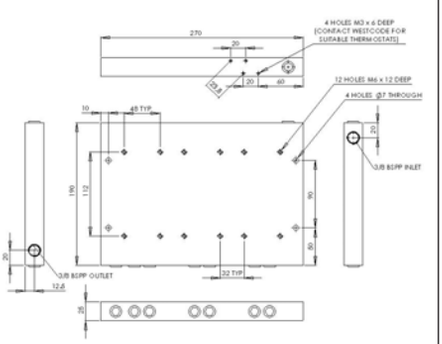
WCL7 - LKF



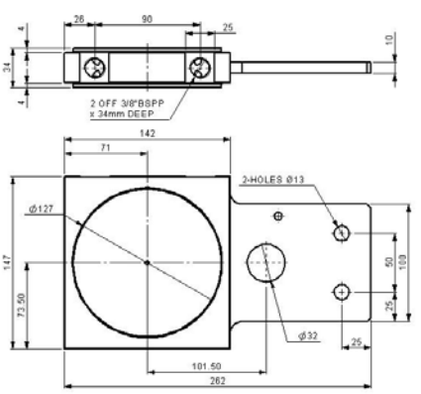
WCL8 - WS27



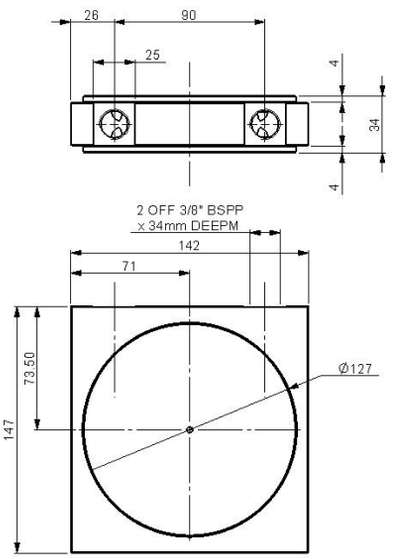
WCL9 - WS65 COOLER



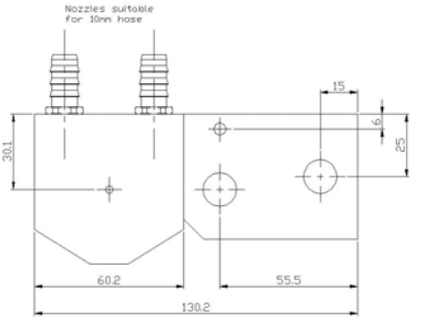
WCL10 - WS69 COOLER



WCL11 - WS70 COOLER



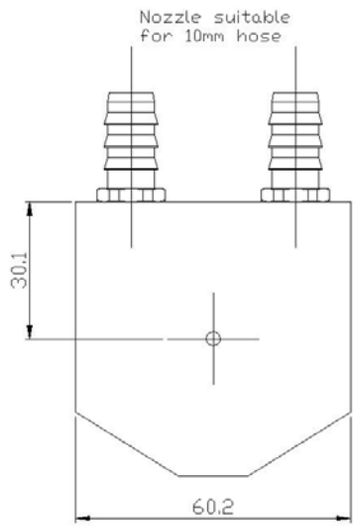
WCL12 - WS71-1 COOLER



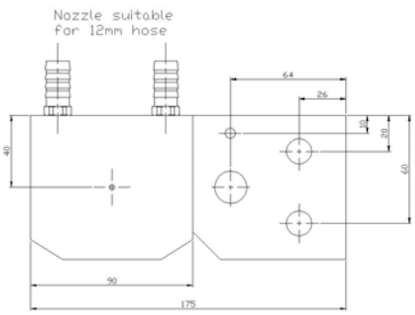
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

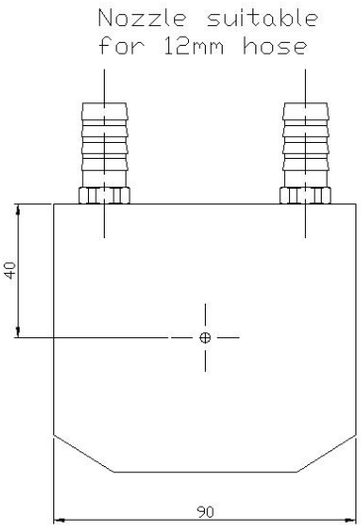
WCL13 - WS71-2 COOLER



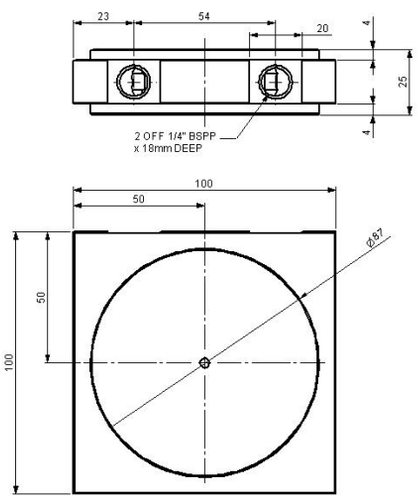
WCL14 - WS72-1 COOLER



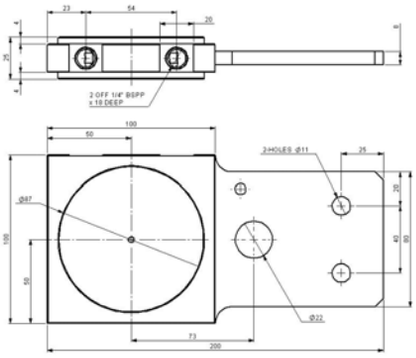
WCL15 - WS72-2 COOLER



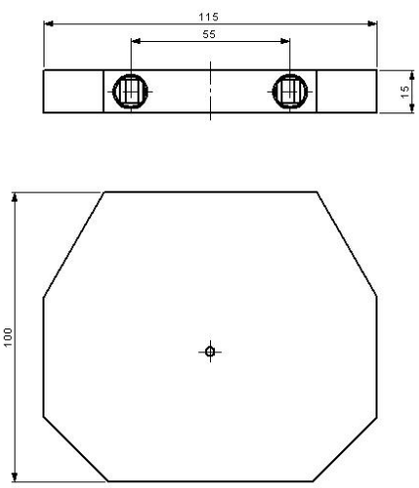
WCL16 - XW127ExxxA



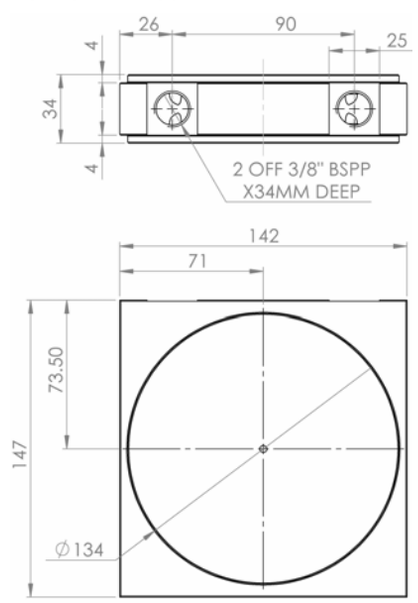
WCL17 - XW127ExxxB



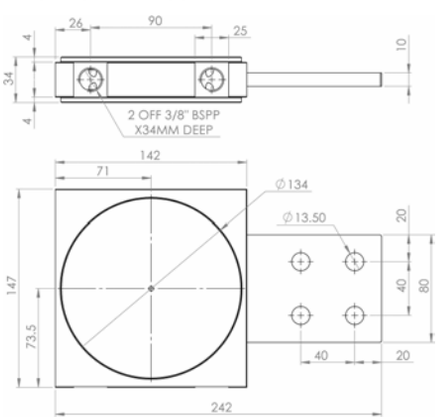
WCL18 - XW180GN25A



WCL19 - XW180BxxxE



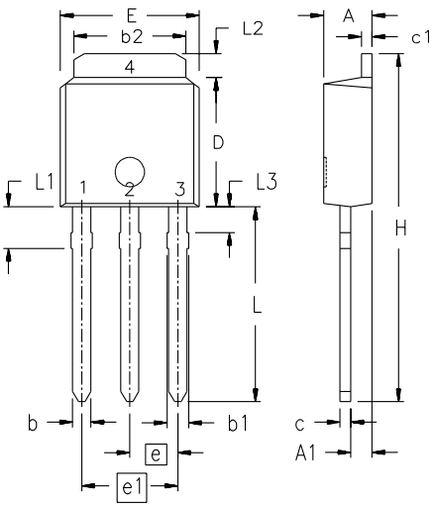
WCL20 - XW180BxxxF



Outline drawings

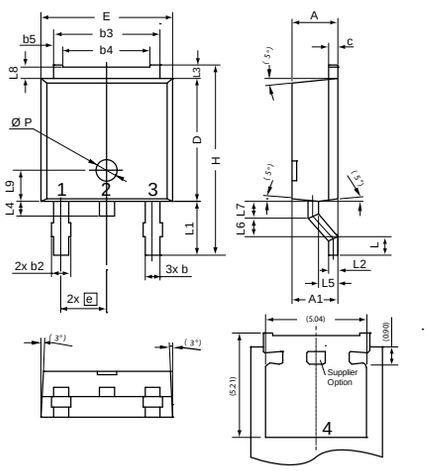
Dimensions in mm and inches (1 mm = 0.0394“)

X003 TO-251 AA — Weight = 0.4 g



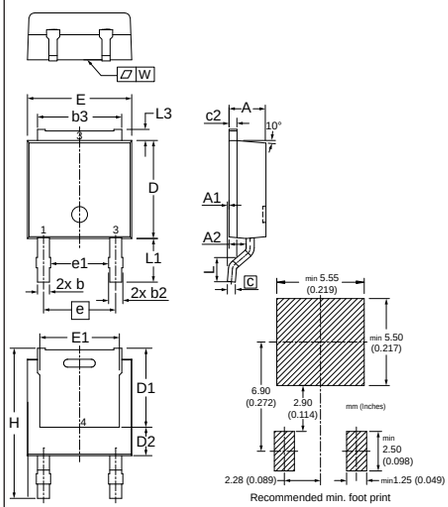
Dim.	Millimeters		Inches	
	min	max	min	max
A	2.19	2.38	0.086	0.094
A1	0.89	1.14	0.035	0.045
b	0.64	0.89	0.025	0.035
b1	0.76	1.14	0.030	0.045
b2	5.21	5.46	0.205	0.215
c	0.46	0.58	0.018	0.023
c1	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
E	6.35	6.73	0.250	0.265
e	2.28 BSC		0.090 BSC	
e1	4.57 BSC		0.180 BSC	
H	17.02	17.78	0.670	0.700
L	8.89	9.65	0.350	0.380
L1	1.91	2.28	0.075	0.090
L2	0.89	1.27	0.035	0.050
L3	1.15	1.52	0.045	0.060

X004 TO-252 AA (D PAK) — Weight = 0.3 g



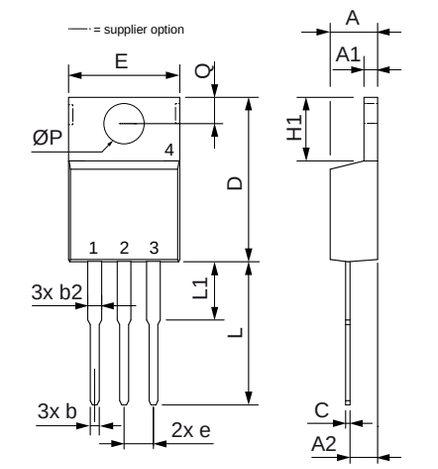
Dim.	Millimeters		Inches	
	min	max	min	max
A	2.20	2.40	0.087	0.094
A1	2.10	2.50	0.083	0.098
b	0.66	0.86	0.026	0.034
b2	-	0.96	-	0.038
b3	5.04	5.64	0.198	0.222
b4	4.34 BSC		0.171 BSC	
b5	0.50 BSC		0.020 BSC	
c	0.40	0.60	0.016	0.024
D	5.90	6.30	0.232	0.248
E	6.40	6.80	0.252	0.268
e	2.10	2.50	0.083	0.098
H	9.20	9.80	0.362	0.386
L	0.55	1.02	0.022	0.040
L1	2.50	2.90	0.098	0.114
L2	0.40	0.60	0.016	0.024
L3	0.50	0.90	0.020	0.035
L4	0.60	1.00	0.024	0.039
L5	0.82	1.22	0.032	0.048
L6	0.79	0.99	0.031	0.039
L7	0.81	1.01	0.032	0.040
L8	0.40	0.80	0.016	0.031
L9	1.50 BSC		0.059 BSC	
Ø P	1.00 BSC		0.039 BSC	

X004a TO-252 AA (D PAK HV) — Weight = 0.3 g



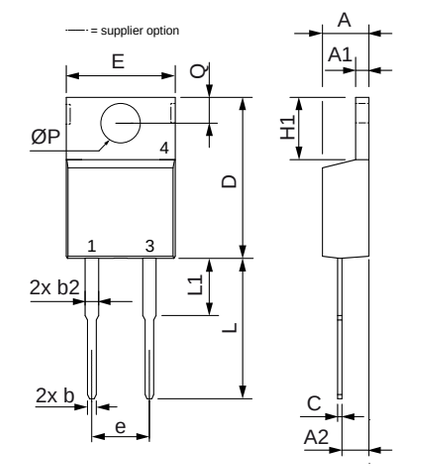
Dim.	Millimeters		Inches	
	min	max	min	max
A	2.18	2.39	0.086	0.094
A1	0.00	0.13	0.000	0.005
A2	0.97	1.17	0.038	0.046
b	0.64	0.89	0.025	0.035
b2	0.76	1.14	0.030	0.045
b3	5.08	5.59	0.200	0.220
c	0.46	0.61	0.018	0.024
c2	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	4.57	5.21	0.180	0.205
D2	2.03		0.080	
E	6.35	6.73	0.250	0.265
E1	4.32	5.21	0.170	0.205
e	4.57		0.180	
e1	3.62		0.143	
H	9.15	10.34	0.360	0.407
L	1.40	1.78	0.055	0.070
L1	2.54	2.92	0.100	0.115
L3	0.64	1.02	0.025	0.040
W	typ. 0.02	0.040	typ. 0.0008	0.000

X005a TO-220 AB — Weight = 2 g



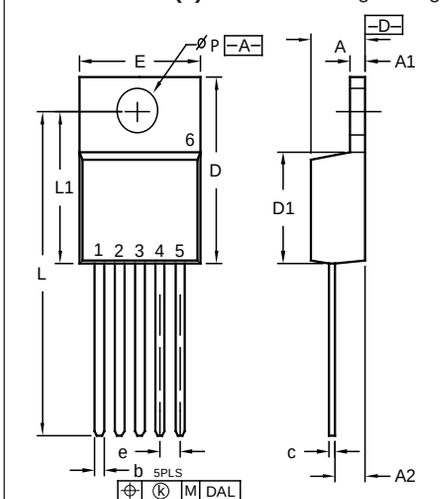
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	2.54 BSC		0.100 BSC	
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
Ø P	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125

X005b TO-220 AC — Weight = 2 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	5.08 BSC		0.200 BSC	
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
Ø P	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125

X006 TO-220 (5) — Weight = 2 g



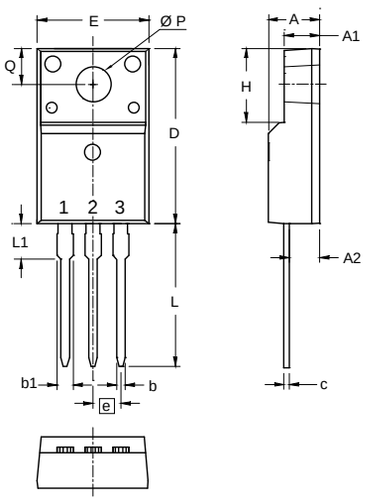
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
c	0.38	0.64	0.015	0.025
D	14.73	15.75	0.580	0.620
D1	8.64	9.40	0.340	0.370
E	9.91	10.54	0.390	0.415
e	1.70 BSC		0.067 BSC	
k	0.00	0.36	0.000	0.014
L	25.27	26.54	0.995	1.045
L1	11.94	12.95	0.470	0.510
Ø P	3.53	3.96	0.139	0.156

Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

X007a TO-220 ABFP

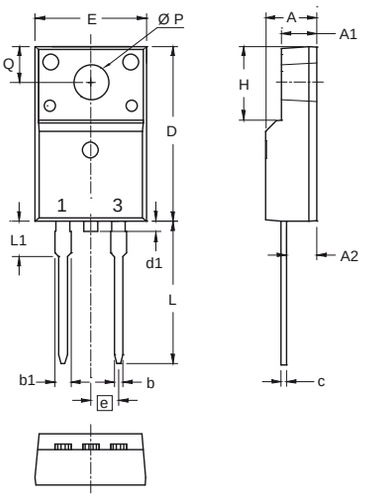
Weight = 2 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.56	2.96	0.101	0.117
b	0.70	0.90	0.028	0.035
b1	1.27	1.47	0.050	0.058
c	0.45	0.60	0.018	0.024
D	15.67	16.07	0.617	0.633
E	9.96	10.36	0.392	0.408
e	2.54 BSC		0.100 BSC	
H	6.48	6.88	0.255	0.271
L	12.68	13.28	0.499	0.523
L1	3.03	3.43	0.119	0.135
Ø P	3.08	3.28	0.121	0.129
Q	3.20	3.40	0.126	0.134

X007b TO-220 ACFP

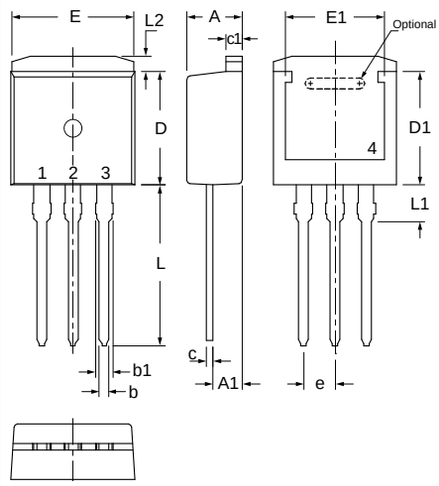
Weight = 2 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.56	2.96	0.101	0.117
b	0.70	0.90	0.028	0.035
b1	1.27	1.47	0.050	0.058
c	0.45	0.60	0.018	0.024
D	15.67	16.07	0.617	0.633
d1	0.00	1.10	0.000	0.043
E	9.96	10.36	0.392	0.408
e	2.54 BSC		0.100 BSC	
H	6.48	6.88	0.255	0.271
L	12.68	13.28	0.499	0.523
L1	3.03	3.43	0.119	0.135
Ø P	3.08	3.28	0.121	0.129
Q	3.20	3.40	0.126	0.134

X008a TO-262 I²PAK

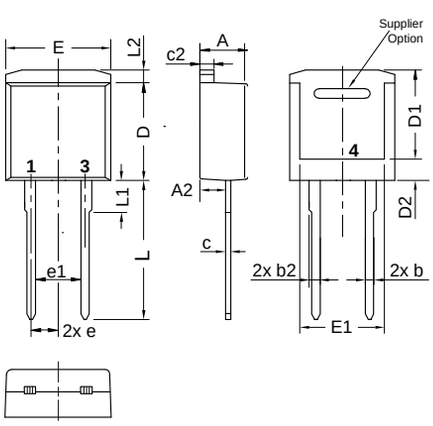
Weight = 1.5 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.30	4.70	0.169	0.185
A1	2.20	2.60	0.087	0.102
b	0.70	0.90	0.028	0.035
b1	1.37	1.57	0.054	0.062
c	0.45	0.60	0.018	0.024
c1	1.25	1.40	0.049	0.055
D	9.00	9.40	0.355	0.370
D1	7.20		0.284	
E	9.70	9.90	0.382	0.390
E1	7.00		0.276	
e	2.54 BSC		0.100 BSC	
L	12.88	13.28	0.507	0.523
L1	3.00	-	0.118	-
L2	1.00	1.40	0.039	0.055

X008b TO-262 I²PAK

Weight = 1.5 g

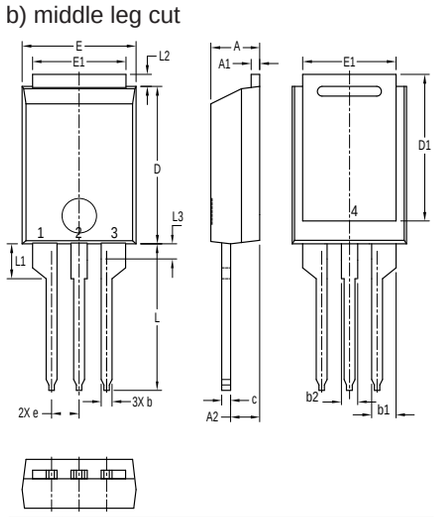


Dim.	Millimeters		Inches	
	min	max	min	max
A	4.06	4.83	0.160	0.190
A2	2.41		0.095	
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
c	0.40	0.74	0.016	0.029
c2	1.14	1.40	0.045	0.055
D	8.38	9.40	0.330	0.370
D1	8.00	8.89	0.315	0.350
D2	2.5		0.098	
E	9.65	10.41	0.380	0.410
E1	6.22	8.50	0.245	0.335
e	2.54 BSC		0.100 BSC	
e1	4.28		0.169	
L	13.00	13.60	0.512	0.535
L1	2.90	3.10	0.114	0.122
L2	1.02	1.68	0.040	0.066

X009a PLUS220™

Weight = 2.5 g

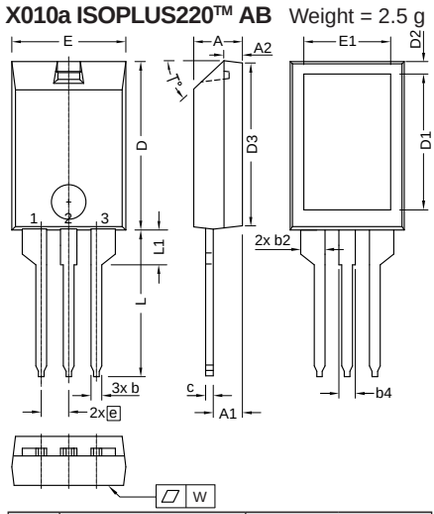
b) middle leg cut



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.30	4.70	0.169	0.185
A1	0.70	0.90	0.028	0.035
A2	2.50	3.00	0.098	0.118
b	0.90	1.20	0.035	0.047
b1	2.03	2.41	0.080	0.095
b2	1.37	1.63	0.054	0.064
c	0.70	0.90	0.028	0.035
D	14.00	15.00	0.551	0.591
D1	13.00	13.70	0.512	0.539
E	10.00	11.00	0.394	0.433
E1	8.40	8.80	0.331	0.346
e	2.54 BSC		0.100 BSC	
L	13.00	14.00	0.512	0.551
L1	3.00	3.50	0.118	0.138
L2	0.90	1.30	0.035	0.051
L3	1.20	1.50	0.047	0.059

X010a ISOPLUS220™ AB

Weight = 2.5 g

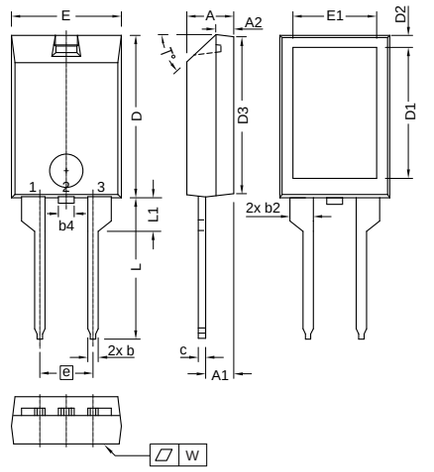


Dim.	Millimeters		Inches	
	min	max	min	max
A	4.00	5.00	0.157	0.197
A1	2.50	3.00	0.098	0.118
A2	1.60	1.80	0.063	0.071
b	0.90	1.30	0.035	0.051
b2	2.35	2.55	0.093	0.100
b4	1.25	1.65	0.049	0.065
c	0.70	1.00	0.028	0.039
D	15.00	16.00	0.591	0.630
D1	12.00	13.00	0.472	0.512
D2	1.10	1.50	0.043	0.059
D3	14.90	15.50	0.587	0.610
E	10.00	11.00	0.394	0.433
E1	7.50	8.50	0.295	0.335
e	2.54 BSC		0.100 BSC	
L	13.00	14.50	0.512	0.571
L1	3.00	3.50	0.118	0.138
T°	42.5	47.5		
W	-	0.10	-	0.004

Outline drawings

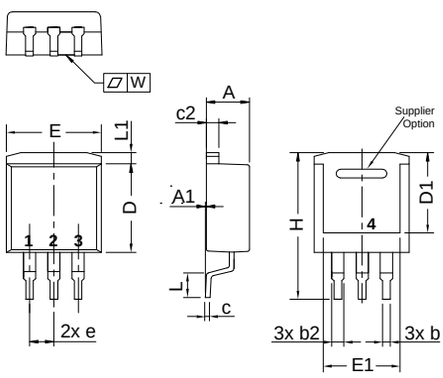
Dimensions in mm and inches (1 mm = 0.0394“)

X010b ISOPLUS220™ AC Weight = 2.5 g



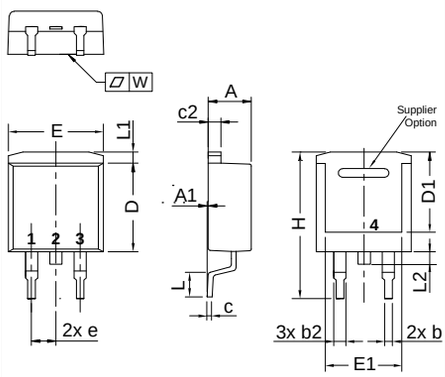
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.00	5.00	0.157	0.197
A1	2.50	3.00	0.098	0.118
A2	1.60	1.80	0.063	0.071
b	0.90	1.30	0.035	0.051
b2	1.25	1.65	0.049	0.065
b4	2.35	2.55	0.093	0.100
c	0.70	1.00	0.028	0.039
D	15.00	16.00	0.591	0.630
D1	12.00	13.00	0.472	0.512
D2	1.10	1.50	0.043	0.059
D3	14.90	15.50	0.587	0.610
E	10.00	11.00	0.394	0.433
E1	7.50	8.50	0.295	0.335
e	5.08 BSC		0.200 BSC	
L	13.00	14.50	0.512	0.571
L1	3.00	3.50	0.118	0.138
T°	42.5	47.5		
W	-	0.10	-	0.004

X011a TO-263 AA (D²PAK) Weight = 1.5 g



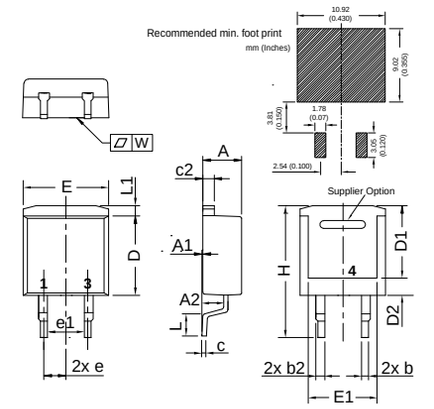
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.06	4.83	0.160	0.190
A1	typ. 0.10		typ. 0.004	
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
c	0.40	0.74	0.016	0.029
c2	1.14	1.40	0.045	0.055
D	8.38	9.40	0.330	0.370
D1	8.00	8.89	0.315	0.350
E	9.65	10.41	0.380	0.410
E1	6.22	8.13	0.245	0.320
e	2,54 BSC		0,100 BSC	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	1.02	1.68	0.040	0.066
W	typ. 0.02	0.040	typ. 0.0008	0.002

X011b TO-263 AB (D²PAK) Weight = 1.5 g



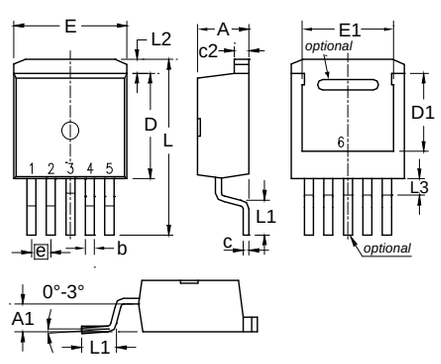
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.06	4.83	0.160	0.190
A1	typ. 0.10		typ. 0.004	
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
c	0.40	0.74	0.016	0.029
c2	1.14	1.40	0.045	0.055
D	8.38	9.40	0.330	0.370
D1	8.00	8.89	0.315	0.350
E	9.65	10.41	0.380	0.410
E1	6.22	8.13	0.245	0.320
e	2,54 BSC		0,100 BSC	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	1.02	1.68	0.040	0.066
W	typ. 0.02	0.040	typ. 0.0008	0.002

X011c TO-263 AB (D²PAK HV) Weight = 1.5 g



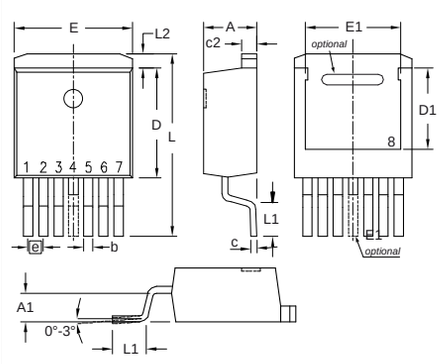
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.06	4.83	0.160	0.190
A1	typ 0.10		typ 0.004	
A2	2.41		0.095	
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
c	0.40	0.74	0.016	0.029
c2	1.14	1.40	0.045	0.055
D	8.38	9.40	0.330	0.370
D1	8.00	8.89	0.315	0.350
D2	2.5		0.098	
E	9.65	10.41	0.380	0.410
E1	6.22	8.50	0.245	0.335
e	2.54 BSC		0.100 BSC	
e1	4.28		0.169	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L2	1.02	1.68	0.040	0.066
W	typ 0.02	0.040	typ 0.0008	0.002

X012a TO-263 (5) Weight = 1.5 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.20	4.80	0.160	0.190
A1	2.10	2.70	0.083	0.106
b	0.60	0.99	0.024	0.039
c	0.40	0.70	0.016	0.028
c2	1.20	1.40	0.047	0.055
D	8.80	9.50	0.346	0.374
D1	6.60	7.20	0.260	0.283
E	9.65	10.30	0.380	0.406
E1	7.50	8.20	0.295	0.323
e	1.70 BSC		0.067 BSC	
L	14.80	15.80	0.583	0.622
L1	2.24	2.84	0.088	0.112
L2	1.00	1.40	0.039	0.067
L3	1.20	1.70	0.047	0.067

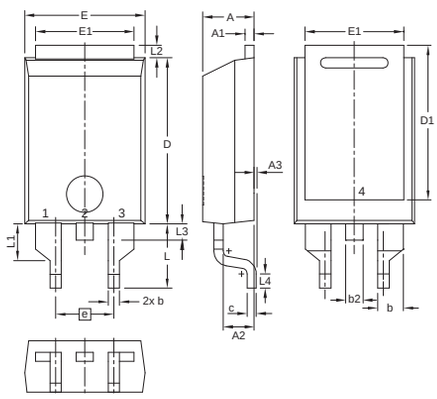
X012b TO-263 (7) Weight = 2.5 g
c) middle leg cut



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.20	4.60	0.165	0.181
A1	2.45	2.75	0.096	0.108
b	0.65	0.90	0.026	0.035
c	0.40	0.60	0.016	0.024
c2	1.14	1.40	0.045	0.055
D	8.38	8.64	0.330	0.340
D1	6.10	6.35	0.240	0.250
E	10.00	10.30	0.394	0.406
E1	7.34	8.00	0.290	0.315
e	1.27 BSC		0.050 BSC	
L	14.73	15.75	0.580	0.620
L1	2.24	2.84	0.088	0.112
L2	1.35	1.55	0.053	0.061

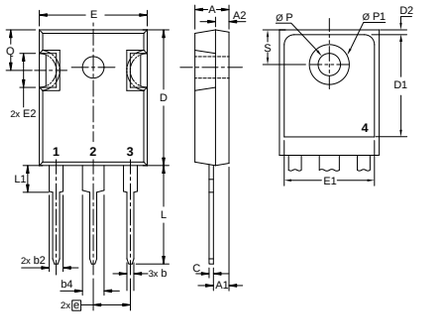
Dimensions in mm and inches (1 mm = 0.0394“)

X013 PLUS220™ (SMD) — Weight = 2 g



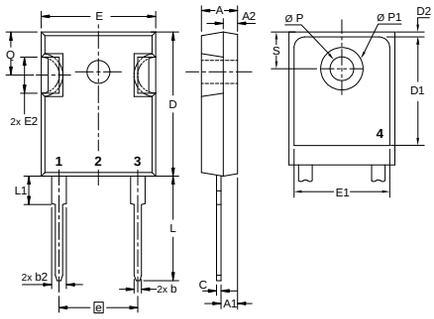
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.30	4.70	0.169	0.185
A1	0.70	0.90	0.028	0.035
A2	2.50	3.00	0.098	0.118
A3	0.00	0.25	0.000	0.010
b	0.90	1.20	0.035	0.047
b1	2.03	2.41	0.080	0.095
b2	1.37	1.63	0.054	0.064
c	0.70	0.90	0.028	0.035
D	14.00	15.00	0.551	0.591
D1	13.00	13.70	0.512	0.539
E	10.00	11.00	0.394	0.433
E1	8.40	8.80	0.331	0.346
e	5.08 BSC		0.200 BSC	
L	5.30	5.80	0.209	0.228
L1	3.00	3.50	0.118	0.138
L2	0.90	1.30	0.035	0.051
L3	1.20	1.50	0.047	0.059
L4	1.00	1.50	0.039	0.059

X014a TO-247 AD — Weight = 6 g



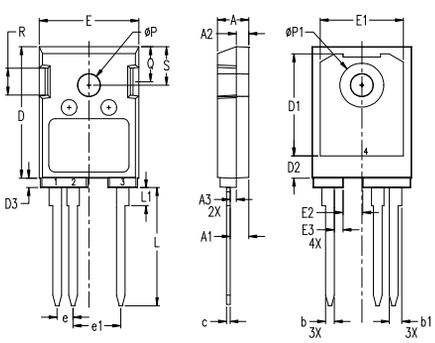
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
b4	2.59	3.43	0.102	0.135
c	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.845
D1	13.07	-	0.515	-
D2	0.51	1.35	0.020	0.053
E	15.48	16.24	0.610	0.640
E1	13.45	-	0.53	-
E2	4.31	5.48	0.170	0.216
e	5.45 BSC		0.215 BSC	
L	19.80	20.30	0.078	0.800
L1	-	4.49	-	0.177
Ø P	3.55	3.65	0.140	0.144
Ø P1	-	7.39	-	0.290
Q	5.38	6.19	0.212	0.244
S	6.14 BSC		0.242 BSC	

X014b TO-247 AD — Weight = 6 g



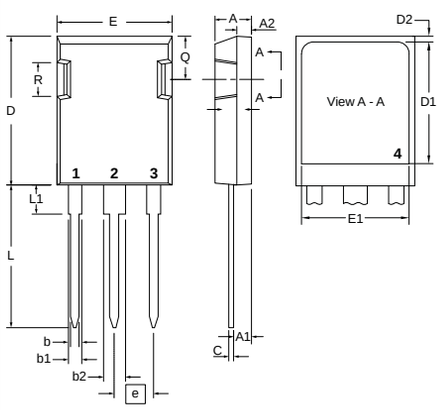
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
b4	2.59	3.43	0.102	0.135
c	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.845
D1	13.07	-	0.515	-
D2	0.51	1.35	0.020	0.053
E	15.48	16.24	0.610	0.640
E1	13.45	-	0.530	-
E2	4.31	5.48	0.170	0.216
e	10.90 BSC		0.430 BSC	
L	19.80	20.30	0.078	0.800
L1	-	4.49	-	0.177
Ø P	3.55	3.65	0.140	0.144
Ø P1	-	7.39	-	0.290
Q	5.38	6.19	0.212	0.244
S	6.14 BSC		0.242 BSC	

X014c TO-247 AD — Weight = 6 g



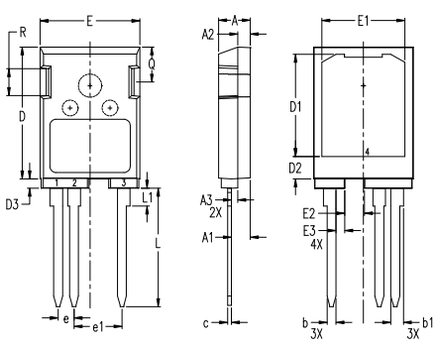
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.90	5.10	0.193	0.201
A1	2.90	3.10	0.114	0.122
A2	1.90	2.10	0.075	0.083
A3	0.90	1.10	0.035	0.043
b	1.35	1.50	0.053	0.059
b1	1.90	2.10	0.075	0.083
c	0.55	0.75	0.022	0.030
D	20.80	21.40	0.819	0.843
D1	16.20	16.40	0.638	0.646
D2	3.40	3.70	0.134	0.146
D3	1.40	1.60	0.055	0.063
E	15.80	16.20	0.622	0.638
E1	13.20	13.40	0.520	0.528
E2	3.00	3.20	0.118	0.126
E3	1.30	1.50	0.051	0.059
e	2.54 BSC		0.100 BSC	
e1	7.62 BSC		0.300 BSC	
L	18.60	19.00	0.732	0.748
L1	2.70	3.00	0.106	0.118
Ø P	3.50	3.60	0.138	0.142
Ø P1	6.90	7.10	0.272	0.280
Q	5.50	5.70	0.216	0.224
R	4.20	4.30	0.165	0.169
S	6.10	6.30	0.240	0.248

X015a PLUS247™ — Weight = 7 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.29	2.54	0.090	0.100
A2	1.91	2.16	0.075	0.085
b	1.14	1.40	0.045	0.055
b1	1.90	2.10	0.075	0.084
b2	2.92	3.12	0.115	0.123
C	0.60	0.80	0.024	0.031
D	20.80	21.34	0.819	0.840
E	15.75	16.13	0.620	0.635
e	5.45 BSC		0.215 BSC	
L	19.80	20.30	0.078	0.800
L1	3.80	4.30	0.150	0.170
Q	5.60	6.20	0.220	0.244
R	4.32	4.83	0.170	0.190

X015c PLUS247™ — Weight = 7 g

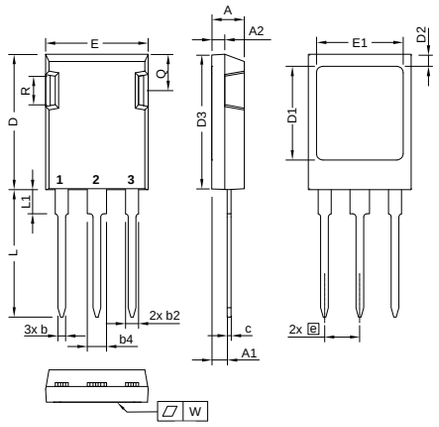


Dim.	Millimeters		Inches	
	min	max	min	max
A	4.90	5.10	0.193	0.201
A1	2.90	3.10	0.114	0.122
A2	1.90	2.10	0.075	0.083
A3	0.90	1.10	0.035	0.043
b	1.35	1.50	0.053	0.059
b1	1.90	2.10	0.075	0.083
c	0.55	0.75	0.022	0.030
D	20.80	21.40	0.819	0.843
D1	16.20	16.40	0.638	0.646
D2	3.40	3.70	0.134	0.146
D3	1.40	1.60	0.055	0.063
E	15.80	16.20	0.622	0.638
E1	13.20	13.40	0.520	0.528
E2	3.00	3.20	0.118	0.126
E3	1.30	1.50	0.051	0.059
e	2.54 BSC		0.100 BSC	
e1	7.62 BSC		0.300 BSC	
L	18.60	19.00	0.732	0.748
L1	2.70	3.00	0.106	0.118
Q	5.50	5.70	0.216	0.224
R	4.20	4.30	0.165	0.169

Outline drawings

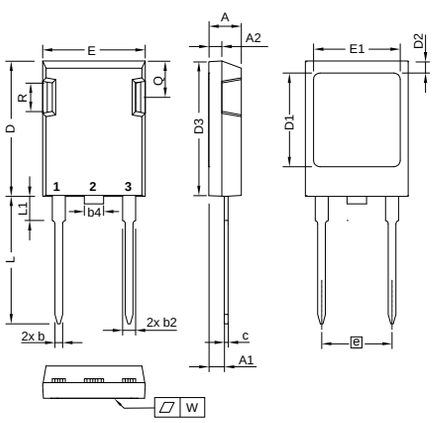
Dimensions in mm and inches (1 mm = 0.0394“)

X016a ISOPLUS247™ Weight = 4.5 g



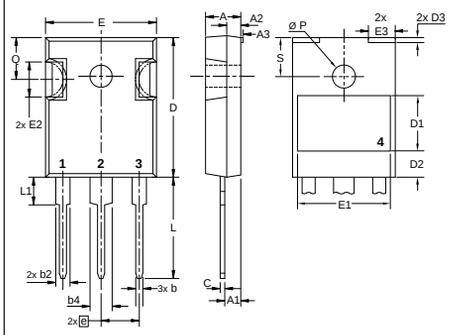
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.29	2.54	0.090	0.100
A2	1.91	2.16	0.075	0.085
b	1.14	1.40	0.045	0.055
b2	1.91	2.20	0.075	0.087
b4	2.92	3.24	0.115	0.128
c	0.61	0.83	0.024	0.033
D	20.80	21.34	0.819	0.840
D1	15.75	16.26	0.620	0.640
D2	1.65	2.15	0.065	0.085
D3	20.30	20.70	0.799	0.815
E	15.75	16.13	0.620	0.635
E1	13.21	13.72	0.520	0.540
e	5.45 BSC		0.215 BSC	
L	19.81	20.60	0.780	0.811
L1	3.81	4.38	0.150	0.172
Q	5.59	6.20	0.220	0.244
R	4.25	5.50	0.167	0.217
W	-	0.10	-	0.004

X016b ISOPLUS247™ Weight = 4.5 g



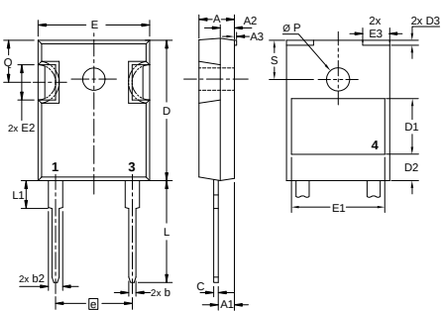
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.29	2.54	0.090	0.100
A2	1.91	2.16	0.075	0.085
b	1.14	1.40	0.045	0.055
b2	1.91	2.20	0.075	0.087
b4	2.92	3.24	0.115	0.128
c	0.61	0.83	0.024	0.033
D	20.80	21.34	0.819	0.840
D1	15.75	16.26	0.620	0.640
D2	1.65	2.15	0.065	0.085
D3	20.30	20.70	0.799	0.815
E	15.75	16.13	0.620	0.635
E1	13.21	13.72	0.520	0.540
e	10.90 BSC		0.430 BSC	
L	19.81	20.60	0.780	0.811
L1	3.81	4.38	0.150	0.172
Q	5.59	6.20	0.220	0.244
R	4.25	5.50	0.167	0.217
W	-	0.10	-	0.004

X016c ISO247™ Weight = 4.5 g



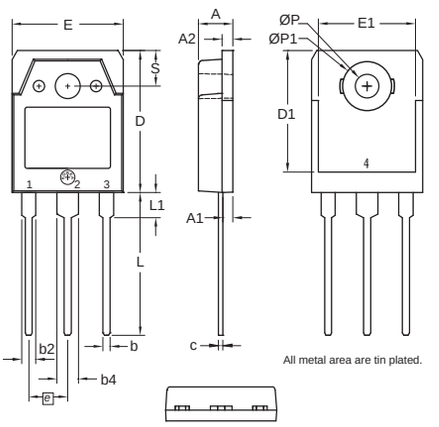
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
A3	typ. 0.05		typ. 0.002	
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
b4	2.59	3.43	0.102	0.135
C	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.844
D1	typ. 8.90		typ. 0.350	
D2	typ. 2.90		typ. 0.114	
D3	typ. 1.00		typ. 0.039	
E	15.49	16.24	0.610	0.639
E1	typ. 13.45		typ. 0.530	
E2	4.31	5.48	0.170	0.216
E3	typ. 4.00		typ. 0.157	
e	5.46 BSC		0.215 BSC	
L	19.80	20.30	0.780	0.799
L1	-	4.49	-	0.177
Ø P	3.55	3.65	0.140	0.144
Q	5.38	6.19	0.212	0.244
S	6.14 BSC		0.242 BSC	

X016d ISO247™ Weight = 4 g



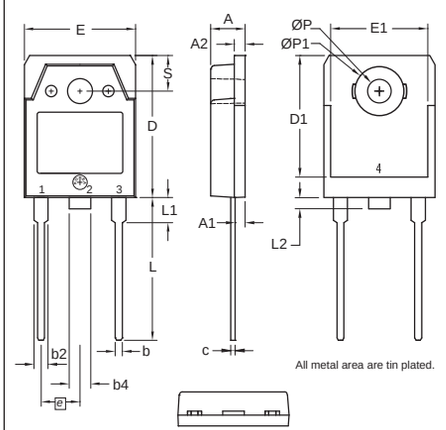
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
A3	typ. 0.05		typ. 0.002	
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
C	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.844
D1	typ. 8.90		typ. 0.350	
D2	typ. 2.90		typ. 0.114	
D3	typ. 1.00		typ. 0.039	
E	15.49	16.24	0.610	0.639
E1	typ. 13.45		typ. 0.530	
E2	4.31	5.48	0.170	0.216
E3	typ. 4.00		typ. 0.157	
e	10.92 BSC		0.430 BSC	
L	19.80	20.30	0.780	0.799
L1	-	4.49	-	0.177
Ø P	3.55	3.65	0.140	0.144
Q	5.38	6.19	0.212	0.244
S	6.14 BSC		0.242 BSC	

X017a TO-3P Weight = 5.5 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.70	4.90	0.185	0.193
A1	1.30	1.50	0.051	0.059
A2	1.45	1.65	0.057	0.065
b	0.90	1.15	0.035	0.045
b2	1.90	2.20	0.075	0.087
b4	2.90	3.20	0.114	0.126
c	0.55	0.80	0.022	0.031
D	19.80	20.10	0.780	0.791
D1	16.90	17.20	0.665	0.677
E	15.50	15.80	0.610	0.622
E1	13.50	13.70	0.531	0.539
e	5.45 BSC		0.215 BSC	
L	19.80	20.20	0.780	0.795
L1	3.40	3.60	0.134	0.142
Ø P	3.20	3.40	0.126	0.134
ØP1	6.90	7.10	0.272	0.280
S	4.90	5.10	0.193	0.201

X017b TO-3P Weight = 5.5 g

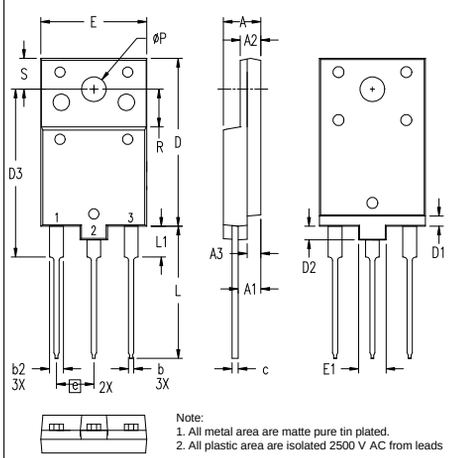


Dim.	Millimeters		Inches	
	min	max	min	max
A	4.70	4.90	0.185	0.193
A1	1.30	1.50	0.051	0.059
A2	1.45	1.65	0.057	0.065
b	0.90	1.15	0.035	0.045
b2	1.90	2.20	0.075	0.087
b4	2.90	3.20	0.114	0.126
c	0.55	0.80	0.022	0.031
D	19.80	20.10	0.780	0.791
D1	16.90	17.20	0.665	0.677
E	15.50	15.80	0.610	0.622
E1	13.50	13.70	0.531	0.539
e	5.45 BSC		0.215 BSC	
L	19.80	20.20	0.780	0.795
L1	3.40	3.60	0.134	0.142
L2	0.00	1.40	0.000	0.055
Ø P	3.20	3.40	0.126	0.134
ØP1	6.90	7.10	0.272	0.280
S	4.90	5.10	0.193	0.201

Dimensions in mm and inches (1 mm = 0.0394“)

X017c TO-3PFP

Weight = 5.5 g

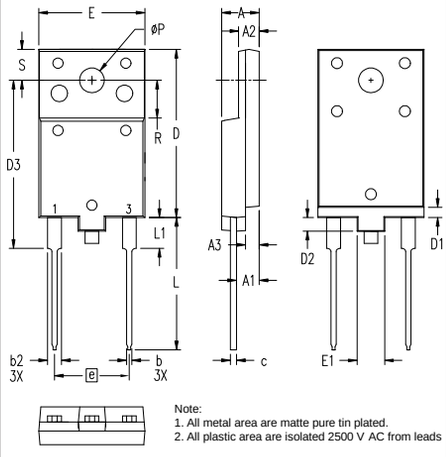


Note:
1. All metal area are matte pure tin plated.
2. All plastic area are isolated 2500 V AC from leads

Dim.	Millimeters		Inches	
	min	max	min	max
A	5.40	5.80	0.213	0.228
A1	3.10	3.50	0.122	0.138
A2	2.90	3.30	0.114	0.130
A3	1.90	2.30	0.075	0.091
b	0.65	0.95	0.026	0.037
b2	1.90	2.30	0.075	0.091
c	0.80	1.10	0.031	0.043
D	24.30	24.70	0.957	0.972
D1	1.30	1.70	0.051	0.067
D2	1.80	2.2	0.071	0.087
E	15.40	15.80	0.606	0.622
E1	3.90	4.30	0.154	0.169
e	5.45 BSC		0.215 BSC	
L	19.00	19.50	0.748	0.768
L1	4.30	4.70	0.169	0.185
Ø P	3.40	3.80	0.134	0.150
R	5.30	5.70	0.209	0.224
S	4.30	4.70	0.169	0.185

X017d TO-3PFP

Weight = 5.4 g

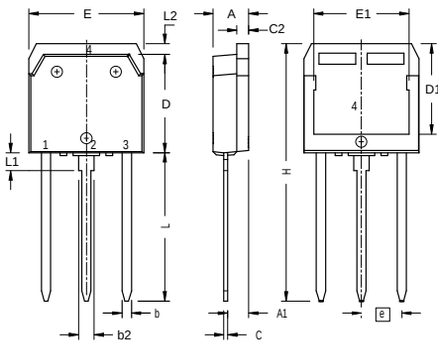


Note:
1. All metal area are matte pure tin plated.
2. All plastic area are isolated 2500 V AC from leads

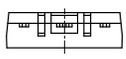
Dim.	Millimeters		Inches	
	min	max	min	max
A	5.40	5.80	0.213	0.228
A1	3.10	3.50	0.122	0.138
A2	2.90	3.30	0.114	0.130
A3	1.90	2.30	0.075	0.091
b	0.65	0.95	0.026	0.037
b2	1.90	2.30	0.075	0.091
c	0.80	1.10	0.031	0.043
D	24.30	24.70	0.957	0.972
D1	1.30	1.70	0.051	0.067
D2	1.80	2.2	0.071	0.087
E	15.40	15.80	0.606	0.622
E1	3.90	4.30	0.154	0.169
e	10.9 BSC		0.430 BSC	
L	19.00	19.50	0.748	0.768
L1	4.30	4.70	0.169	0.185
Ø P	3.40	3.80	0.134	0.150
R	5.30	5.70	0.209	0.224
S	4.30	4.70	0.169	0.185

X018 TO-268 I³PAK

Weight = 4.5 g



NOTE ALL METAL AREA ARE SOLDERED.

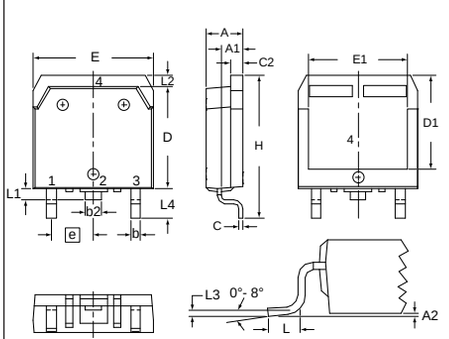


1 - GATE
2 - DRAIN (COLLECTOR)
3 - SOURCE (EMITTER)
4 - DRAIN (COLLECTOR)

Dim.	Millimeters		Inches	
	min	max	min	max
A	4.90	5.10	0.193	0.201
A1	2.70	2.90	0.106	0.114
b	1.15	1.45	0.045	0.057
b2	1.90	2.10	0.075	0.083
C	0.40	0.65	0.016	0.026
C 2	1.45	1.60	0.057	0.063
D	13.80	14.00	0.543	0.551
D1	12.40	12.70	0.488	0.500
E	15.85	16.05	0.624	0.632
E1	13.30	13.60	0.524	0.535
e	5.45 BSC		0.215 BSC	
H	34.67	35.43	1.365	1.395
L	19.81	20.32	0.780	0.800
L1	2.00	2.30	0.079	0.091
L2	1.00	1.15	0.039	0.045

X019 TO-268 AA (D³PAK)

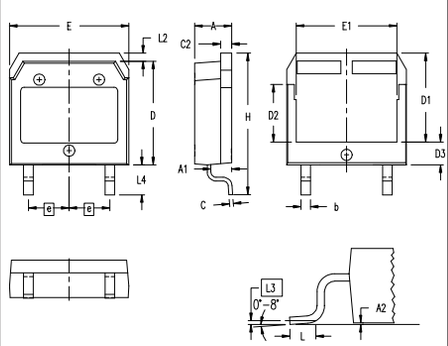
Weight = 4 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.90	5.10	0.193	0.201
A1	2.70	2.90	0.106	0.114
A2	0.02	0.25	0.001	0.100
b	1.15	1.45	0.045	0.057
b2	1.90	2.10	0.075	0.083
C	0.40	0.65	0.016	0.026
C 2	1.45	1.60	0.057	0.063
D	13.80	14.00	0.543	0.551
D1	12.40	12.70	0.488	0.500
E	15.85	16.05	0.624	0.632
E1	13.30	13.60	0.524	0.535
e	5.45 BSC		0.215 BSC	
H	18.70	19.10	0.736	0.752
L	2.40	2.70	0.094	0.106
L1	1.20	1.40	0.047	0.055
L2	1.00	1.15	0.039	0.045
L3	2.54 BSC		0.100 BSC	
L4	3.80	4.10	0.150	0.161

X019a TO-268 AA (D³PAK HV)

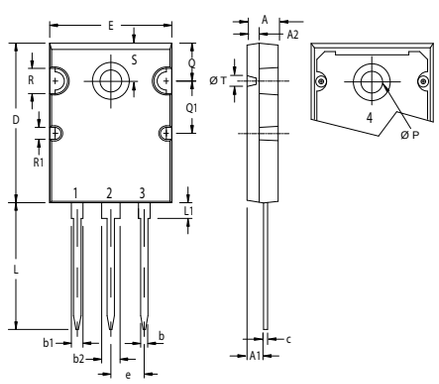
Weight = 4 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.90	5.10	0.193	0.201
A1	2.70	2.90	0.106	0.114
A2	0.02	0.25	0.001	0.100
b	1.15	1.45	0.045	0.057
C	0.40	0.65	0.016	0.026
C 2	1.45	1.60	0.057	0.063
D	13.80	14.00	0.543	0.551
D1	11.80	12.10	0.465	0.476
D2	7.50	7.80	0.295	0.307
D3	2.90	3.20	0.114	0.126
E	15.85	16.05	0.624	0.632
E1	13.30	13.60	0.524	0.535
e	5.45 BSC		0.215 BSC	
H	18.70	19.10	0.736	0.752
L	1.70	2.00	0.067	0.079
L2	1.00	1.15	0.039	0.045
L3	0.25 BSC		0.010 BSC	
L4	3.80	4.10	0.150	0.161

X020a TO-264 AA

Weight = 10 g

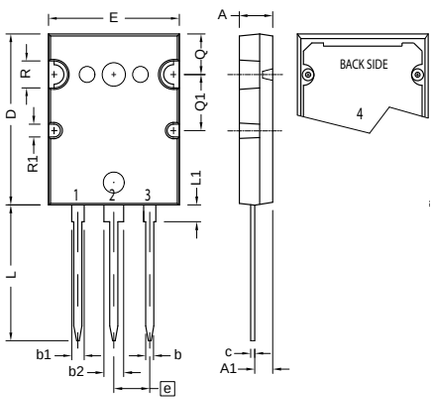


Dim.	Millimeters		Inches	
	min	max	min	max
A	4.82	5.13	0.190	0.202
A1	2.54	2.89	0.100	0.114
A2	2.00	2.10	0.079	0.083
b	1.12	1.42	0.044	0.056
b2	2.90	3.09	0.114	0.122
c	0.53	0.83	0.021	0.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	0.780	0.786
e	5.45 BSC		0.215 BSC	
J	0.00	0.25	0.000	0.010
K	0.00	0.25	0.000	0.010
L	20.32	20.83	0.800	0.820
L1	2.29	2.59	0.090	0.102
P	3.17	2.66	0.125	0.144
Q	6.07	6.27	0.239	0.247
Q1	8.38	8.69	0.330	0.342
R	3.81	4.32	0.150	0.170
R1	1.78	2.29	0.070	0.090
S	6.04	6.30	0.238	0.248
T	1.57	1.83	0.062	0.072

Outline drawings

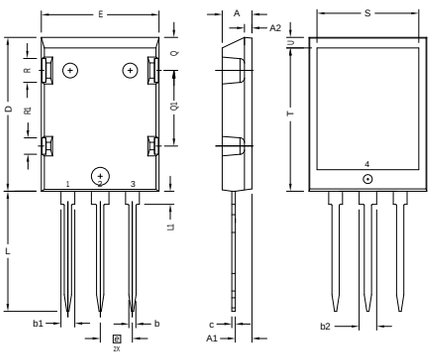
Dimensions in mm and inches (1 mm = 0.0394“)

X021a PLUS264™ Weight = 10 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.70	5.31	0.185	0.209
A1	2.59	3.00	0.102	0.118
b	0.94	1.40	0.037	0.055
b1	2.21	2.59	0.087	0.102
b2	2.79	3.20	0.110	0.126
c	0.43	0.74	0.017	0.029
D	25.58	26.59	1.007	1.047
E	19.30	20.29	0.760	0.799
e	5.45 BSC		0.215 BSC	
L	19.79	21.39	0.779	0.842
L1	2.21	2.59	0.087	0.102
Q	6.10	6.50	0.240	0.256
Q1	8.38	8.79	0.330	0.346
Ø R	3.94	4.75	0.155	0.187
ØR1	2.16	2.36	0.085	0.093

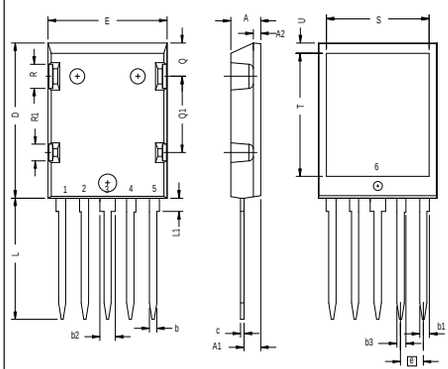
X022a ISOPLUS264™ Weight = 7.5 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	1.40	0.046	0.055
b	1.14	1.40	0.045	0.055
b1	1.60	1.83	0.063	0.072
b2	2.54	2.79	0.100	0.110
b3	1.47	1.73	0.058	0.068
c	0.51	0.74	0.020	0.029
D	25.91	26.42	1.020	1.040
E	19.56	20.29	0.770	0.799
e	3.81 BSC		0.150 BSC	
L	19.81	21.83	0.780	0.820
L1	2.03	2.59	0.080	0.102
Q	5.33	5.97	0.210	0.235
Q1	12.45	13.03	0.490	0.513
R	3.81	4.57	0.150	0.180
R1	2.54	3.30	0.100	0.130
S	16.97	17.53	0.668	0.690
T	20.34	20.85	0.801	0.821
U	1.65	2.03	0.065	0.080

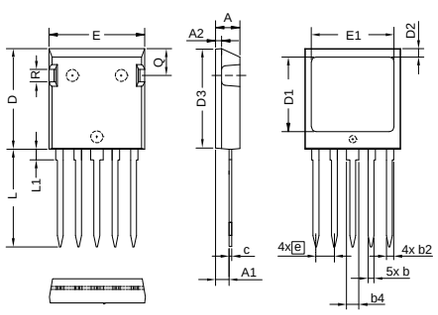
X022 ISOPLUS264™ Weight = 7.5 g

c) 5 pin
d) 3 (sym) w/o pin 2 & 4
e) 3 (HV) w/o pin 3 & 4
f) 2 (HV) w/o pin 2 & 4



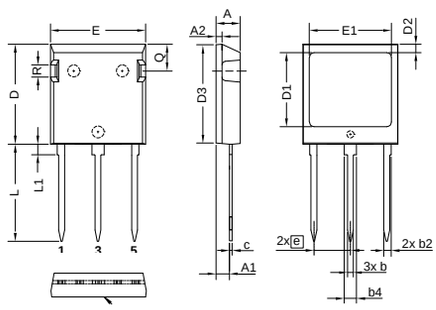
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	1.40	0.046	0.055
b	1.14	1.40	0.045	0.055
b1	1.60	1.83	0.063	0.072
b2	2.54	2.79	0.100	0.110
b3	1.47	1.73	0.058	0.068
c	0.51	0.74	0.020	0.029
D	25.91	26.42	1.020	1.040
E	19.56	20.29	0.770	0.799
e	3.81 BSC		0.150 BSC	
L	19.81	21.83	0.780	0.820
L1	2.03	2.59	0.080	0.102
Q	5.33	5.97	0.210	0.235
Q1	12.45	13.03	0.490	0.513
R	3.81	4.57	0.150	0.180
R1	2.54	3.30	0.100	0.130
S	16.97	17.53	0.668	0.690
T	20.34	20.85	0.801	0.821
U	1.65	2.03	0.065	0.080

X024a ISOPLUS i4-PAC™ Weight = 6 g



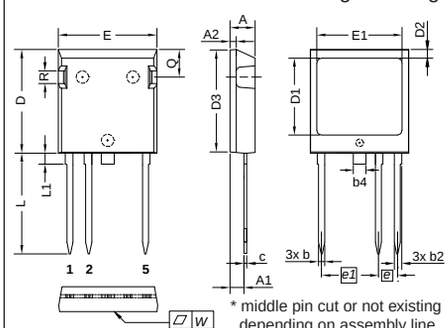
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	2.16	0.046	0.085
b	1.14	1.40	0.045	0.055
b2	1.47	1.73	0.058	0.068
b4	2.54	2.79	0.100	0.110
c	0.51	0.74	0.020	0.029
D	20.80	21.34	0.819	0.840
D1	14.99	15.75	0.590	0.620
D2	1.65	2.03	0.065	0.080
D3	20.30	20.70	0.799	0.815
E	19.56	20.29	0.770	0.799
E1	16.76	17.53	0.660	0.690
e	3.81 BSC		0.150 BSC	
L	19.81	21.34	0.780	0.840
L1	2.11	2.59	0.083	0.102
Q	5.33	6.20	0.210	0.244
R	2.54	4.57	0.100	0.180
W	-	0.10	-	0.004

X024b ISOPLUS i4-PAC™ Weight = 5.5 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	2.16	0.046	0.085
b	1.14	1.40	0.045	0.055
b2	1.47	1.73	0.058	0.068
b4	2.54	2.79	0.100	0.110
c	0.51	0.74	0.020	0.029
D	20.80	21.34	0.819	0.840
D1	14.99	15.75	0.590	0.620
D2	1.65	2.03	0.065	0.080
D3	20.30	20.70	0.799	0.815
E	19.56	20.29	0.770	0.799
E1	16.76	17.53	0.660	0.690
e	7.62 BSC		0.300 BSC	
L	19.81	21.34	0.780	0.840
L1	2.11	2.59	0.083	0.102
Q	5.33	6.20	0.210	0.244
R	2.54	4.57	0.100	0.180
W	-	0.10	-	0.004

X024c ISOPLUS i4-PAC™ Weight = 5.5 g



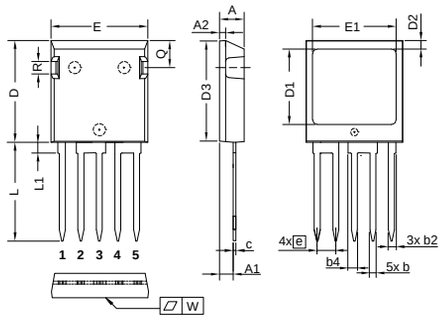
* middle pin cut or not existing depending on assembly line

Dim.	Millimeters		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	2.16	0.046	0.085
b	1.14	1.40	0.045	0.055
b2	1.47	1.73	0.058	0.068
b4*	2.54	2.79	0.100	0.110
c	0.51	0.74	0.020	0.029
D	20.80	21.34	0.819	0.840
D1	14.99	15.75	0.590	0.620
D2	1.65	2.03	0.065	0.080
D3	20.30	20.70	0.799	0.815
E	19.56	20.29	0.770	0.799
E1	16.76	17.53	0.660	0.690
e	3.81 BSC		0.150 BSC	
e1	11.43 BSC		0.450 BSC	
L	19.81	21.34	0.780	0.840
L1	2.11	2.59	0.083	0.102
Q	5.33	6.20	0.210	0.244
R	2.54	4.57	0.100	0.180
W	-	0.10	-	0.004

Outline drawings

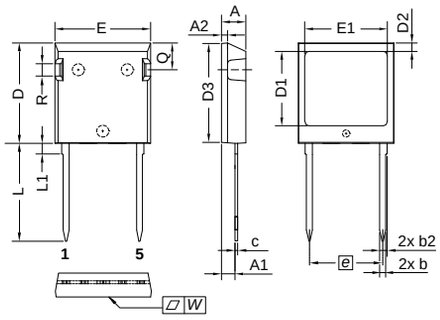
Dimensions in mm and inches (1 mm = 0.0394“)

X024d ISOPLUS i4-PAC™ Weight = 6 g



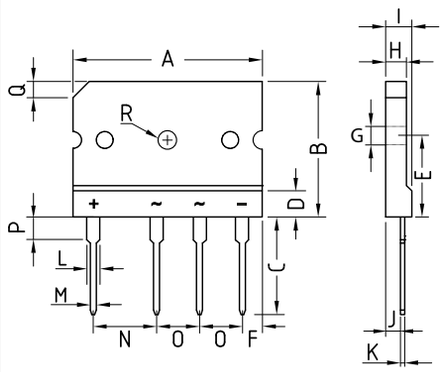
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	2.16	0.046	0.085
b	1.14	1.40	0.045	0.055
b2	1.47	1.73	0.058	0.068
c	0.51	0.74	0.020	0.029
D	20.80	21.34	0.819	0.840
D1	14.99	15.75	0.590	0.620
D2	1.65	2.03	0.065	0.080
D3	20.30	20.70	0.799	0.815
E	19.56	20.29	0.770	0.799
E1	16.76	17.53	0.660	0.690
e	3.81 BSC		0.150 BSC	
L	19.81	21.34	0.780	0.840
L1	2.11	2.59	0.083	0.102
Q	5.33	6.20	0.210	0.244
R	2.54	4.57	0.100	0.180
W	-	0.10	-	0.004

X024e ISOPLUS i4-PAC™ Weight = 6 g



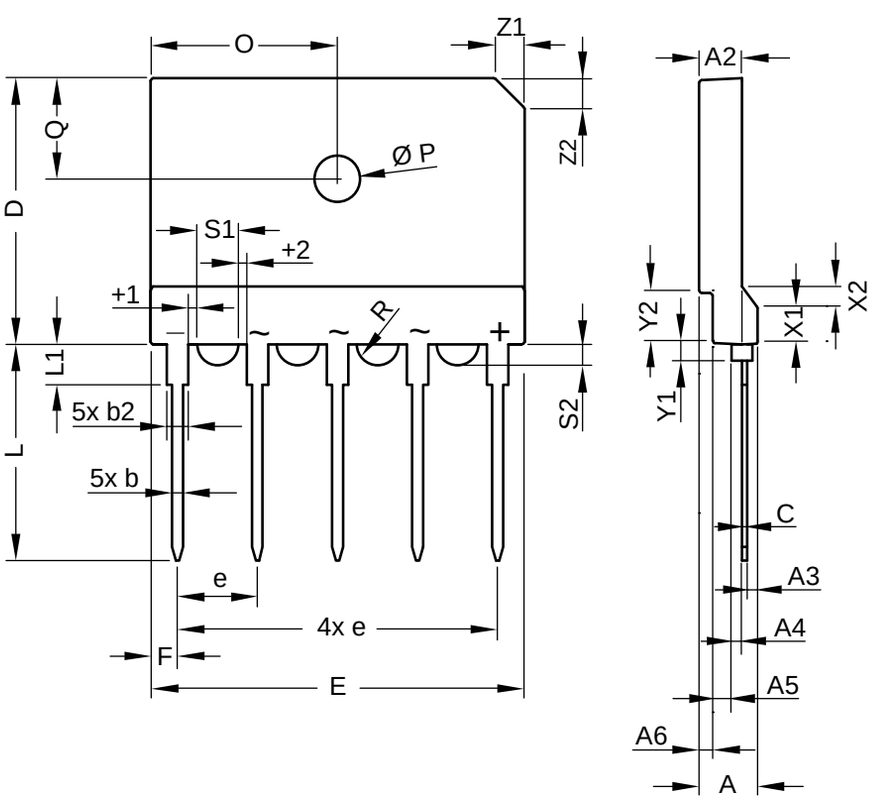
Dim.	Millimeters		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	2.16	0.046	0.085
b	1.14	1.40	0.045	0.055
b2	1.47	1.73	0.058	0.068
c	0.51	0.74	0.020	0.029
D	20.80	21.34	0.819	0.840
D1	14.99	15.75	0.590	0.620
D2	1.65	2.03	0.065	0.080
D3	20.30	20.70	0.799	0.815
E	19.56	20.29	0.770	0.799
E1	16.76	17.53	0.660	0.690
e	15.24 BSC		0.600 BSC	
L	19.81	21.34	0.780	0.840
L1	2.11	2.59	0.083	0.102
Q	5.33	6.20	0.210	0.244
R	2.54	4.57	0.100	0.180
W	-	0.10	-	0.004

X025a GBFP Weight = 7 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	29.70	30.30	1.170	1.194
B	19.70	20.30	0.776	0.800
C	17.00	18.00	0.670	0.709
D	4.70	4.90	0.185	0.193
E	10.80	11.20	0.426	0.441
F	2.30	2.70	0.091	0.106
G	3.10	3.40	0.122	0.134
H	3.40	3.80	0.134	0.150
I	4.40	4.80	0.173	0.189
J	2.50	2.90	0.099	0.114
K	0.60	0.80	0.024	0.032
L	2.00	2.40	0.079	0.095
M	0.90	1.10	0.035	0.043
N	9.80	10.20	0.386	0.402
O	7.30	7.70	0.288	0.303
P	3.80	4.20	0.150	0.165
Q	(3.0) x 45°		(0.118) x 45°	
Ø R	3.1	3.4	0.122	0.134

X025b GUFP Weight = 8.5 g



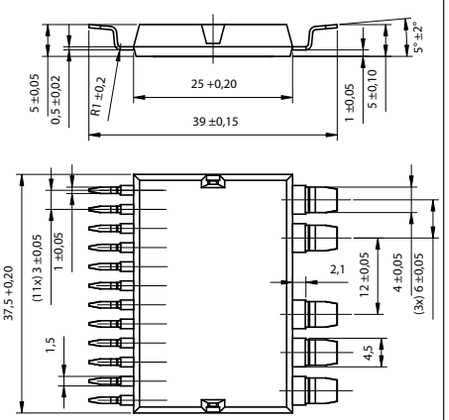
Dim.	Millimeters			Inches		
	min	typ.	max	min	typ.	max
A	5.40	5.50	5.60	0.213	0.217	0.221
A2	3.90	4.00	4.10	0.154	0.158	0.162
A3	0.95	1.00	1.10	0.037	0.039	0.043
A4	0.95	1.00	1.05	0.037	0.039	0.041
A5	1.60	1.70	1.80	0.063	0.067	0.071
A6	1.25	1.30	1.35	0.049	0.051	0.053
b	0.95	1.00	1.05	0.037	0.039	0.041
b2	1.95	2.00	2.05	0.077	0.079	0.081
C	0.45	0.50	0.55	0.018	0.020	0.022
D	24.80	25.00	25.20	0.977	0.985	0.993
E	34.70	35.00	35.30	1.367	1.379	1.391
e	BSC	7.50		BSC	0.296	
F	2.40	2.50	2.60	0.095	0.099	0.102
L	2.30	20.40	2.50	0.091	0.804	0.099
L1	3.70	3.75	3.80	0.146	0.148	0.150
O	17.40	17.50	17.60	0.686	0.690	0.693
Ø P	4.10	4.20	4.30	0.162	0.165	0.169
Q	9.20	9.30	9.40	0.362	0.366	0.370
$^{Ø}/_{2}$ R	-	1.77	-	-	0.070	-
s1	3.45	3.50	3.55	0.136	0.138	0.140
s2	1.45	1.50	1.55	0.057	0.059	0.061
t1	0.95	1.00	1.05	0.037	0.039	0.041
t2	0.95	1.00	1.05	0.037	0.039	0.041
x1	3.20	3.30	3.40	0.126	0.130	0.134
x2	1.90	2.00	2.10	0.075	0.079	0.083
y1	1.60	1.65	1.70	0.063	0.065	0.067
y2	4.65	4.70	4.75	0.183	0.185	0.187
z1	2.80	2.90	3.00	0.110	0.114	0.118

Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

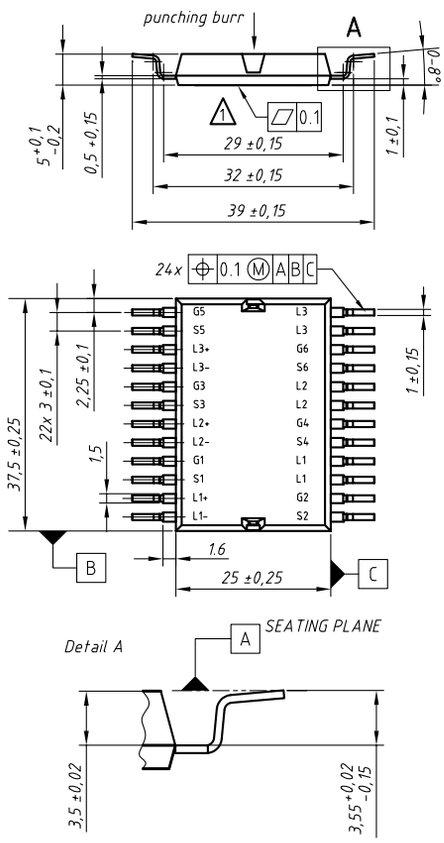
X026c ISOPLUS™-DIL (SMD)

Weight = 13 g

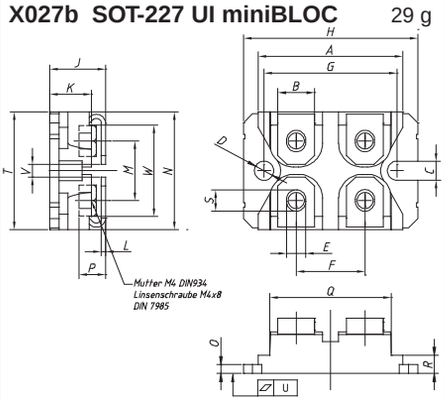


X026d ISOPLUS™-DIL (SMD)

Weight = 13 g



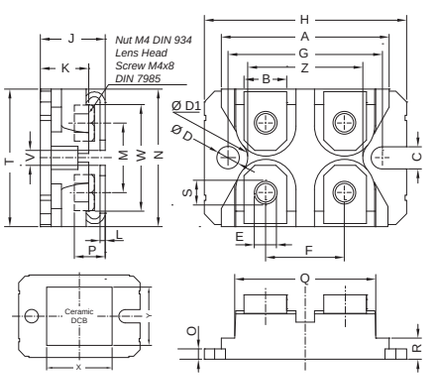
X027a SOT-227 B miniBLOC Weight =
X027b SOT-227 UI miniBLOC 29 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106

X028 ISOPLUS227™

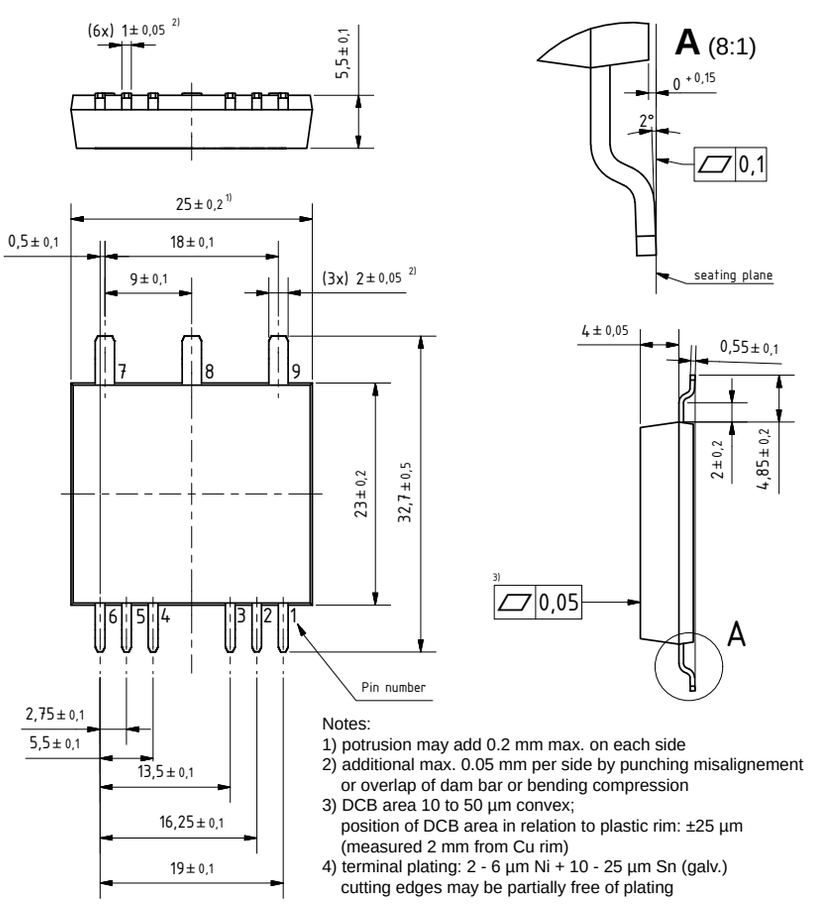
Weight = 19 g



Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	32.26	1.240	1.270
B	7.87	8.38	0.310	0.330
C	3.94	4.19	0.155	0.165
D	3.94	4.19	0.155	0.165
D1	3.81	3.98	0.150	0.157
E	4.06	4.27	0.160	0.168
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.489	1.505
J	11.81	12.22	0.465	0.481
K	9.40	9.65	0.370	0.380
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	2.54	2.64	0.100	0.105
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	4.06	4.32	0.160	0.170
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.03	0.05	-0.001	0.002
V	3.30	4.06	0.130	0.160
W	19.81	21.08	0.780	0.830
X	19.56	20.57	0.770	0.810
Y	17.27	18.29	0.680	0.720
Z	22.48	22.66	0.885	0.892

X030a SMPD-B

Weight = 8.5 g



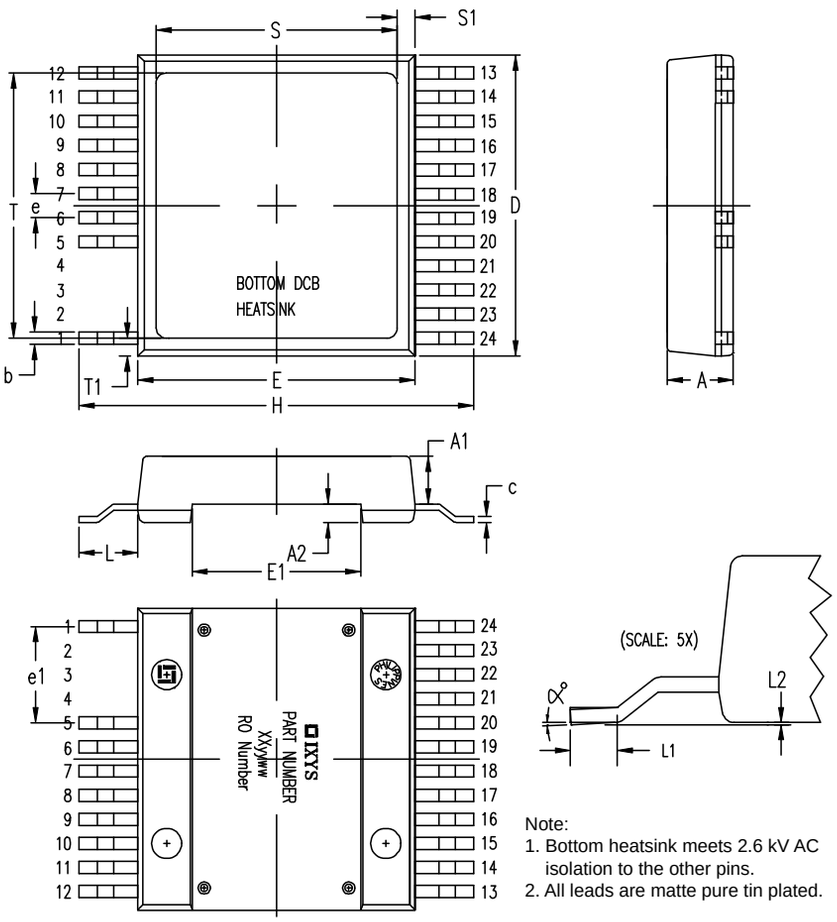
Notes:
1) potrusion may add 0.2 mm max. on each side
2) additional max. 0.05 mm per side by punching misalignement or overlap of dam bar or bending compression
3) DCB area 10 to 50 µm convex; position of DCB area in relation to plastic rim: ±25 µm (measured 2 mm from Cu rim)
4) terminal plating: 2 - 6 µm Ni + 10 - 25 µm Sn (galv.) cutting edges may be partially free of plating

Dimensions in mm and inches (1 mm = 0.0394“)

X031...* SMPD-X

* See data sheet for pin arrangement

Weight = 8.5 g*

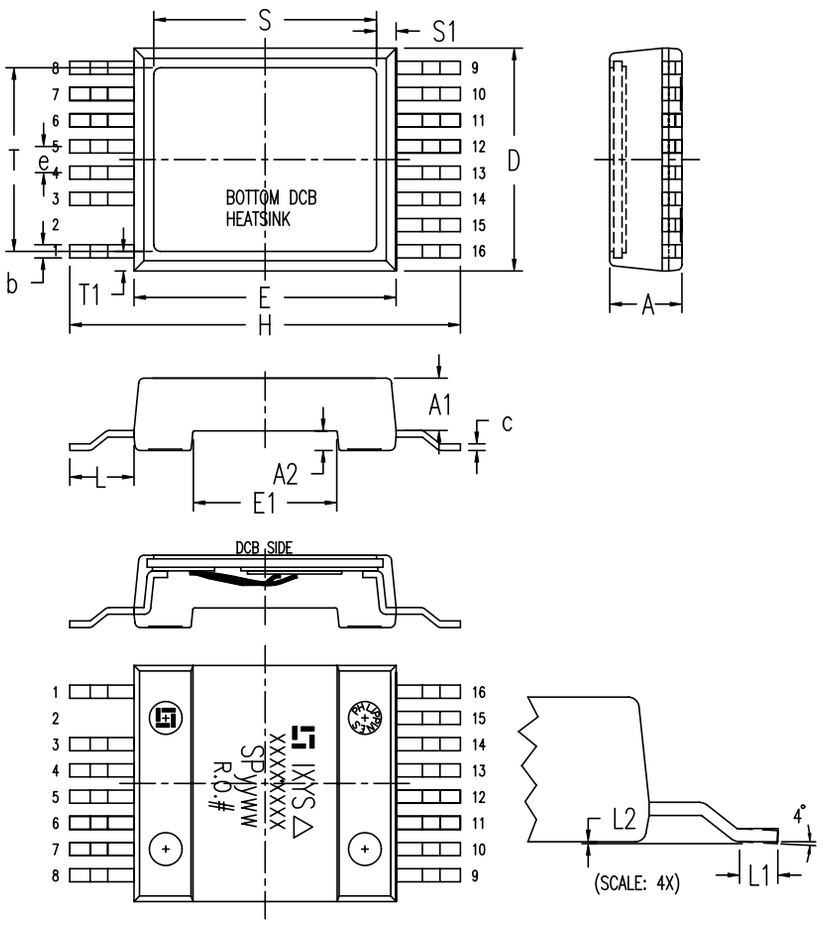


Dim.	Millimeters		Inches	
	min	max	min	max
A	5.30	5.70	0.209	0.224
A1	3.90	4.10	0.154	0.161
A2	1.40	1.60	0.055	0.063
b	0.90	1.15	0.035	0.045
c	0.45	0.65	0.018	0.026
D	24.80	25.25	0.976	0.994
E	22.80	23.25	0.898	0.915
E1	13.80	14.20	0.543	0.559
e	2.00	BSC	0.079	BSC
e1	8.00	BSC	0.315	BSC
H	32.30	33.30	1.272	1.311
L	4.60	5.30	0.181	0.209
L1	1.30	1.70	0.051	0.067
L2	0.00	0.15	0.000	0.006
S	18.85	20.12	0.742	0.792
S1	1.45	2.08	0.057	0.082
T	20.90	22.17	0.823	0.873
T1	1.42	2.03	0.056	0.080
a	4°	-	4°	-

Note:
1. Bottom heatsink meets 2.6 kV AC isolation to the other pins.
2. All leads are matte pure tin plated.

X032... MiniSMPD

* See data sheet for pin arrangement



Dim.	Millimeters		Inches	
	min	max	min	max
A	5.30	5.70	0.209	0.224
A1	3.90	4.10	0.154	0.161
A2	1.40	1.60	0.055	0.063
b	0.90	1.15	0.035	0.045
c	0.45	0.65	0.018	0.026
D	16.80	17.20	0.661	0.677
E	19.80	20.20	0.780	0.795
E1	10.80	11.20	0.425	0.441
e	2.00 BSC		0.079 BSC	
H	29.50	30.10	1.161	1.185
L	4.60	5.30	0.181	0.209
L1	1.30	1.70	0.051	0.067
L2	0.00	0.15	0.000	0.006
S	16.80	17.20	0.661	0.677
S1	1.30	1.70	0.051	0.067
T	13.80	14.20	0.543	0.559
T1	1.30	1.70	0.051	0.067

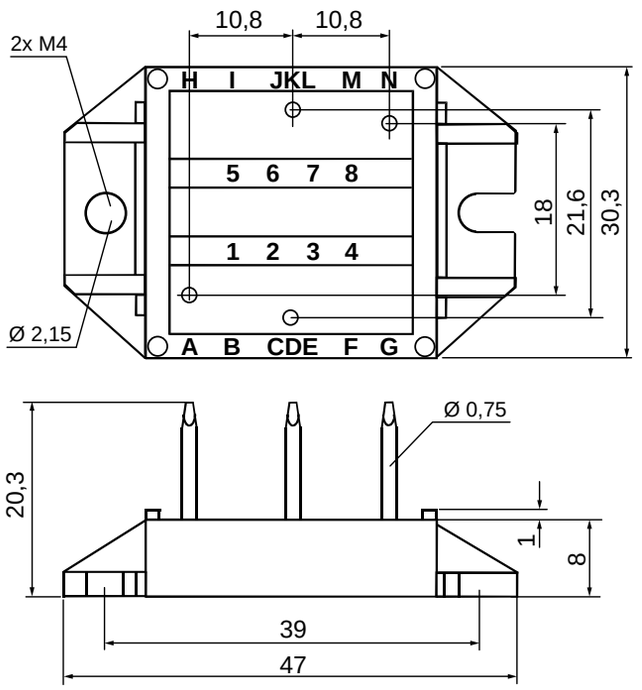
NOTE:
1. All leads are matte pure tin plated.
2. Cu surface of bottom DCB is pre-Ni plated unless otherwise.
3. Cu surface of bottom DCB is electrically isolated 2.500V AC from all other leads.
4. Unless other specified, pin out are as follows:
   Pin #1 - Gate
   Pin #3 - Gate return or source
   Pin #4 through #8 - Source (emitter)
   Pin #9 through #16 - Drain (collector)

Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

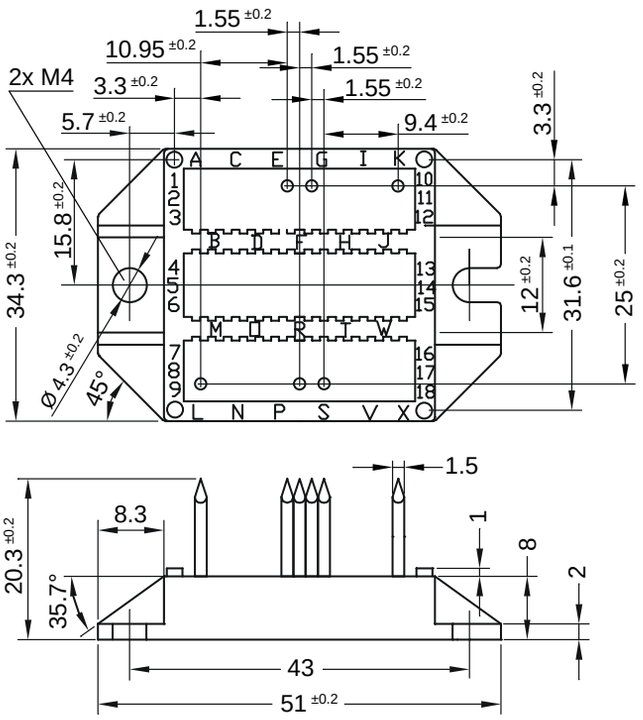
X101 ECO-PAC1 Weight = 19 g

See data sheet for pin arrangement



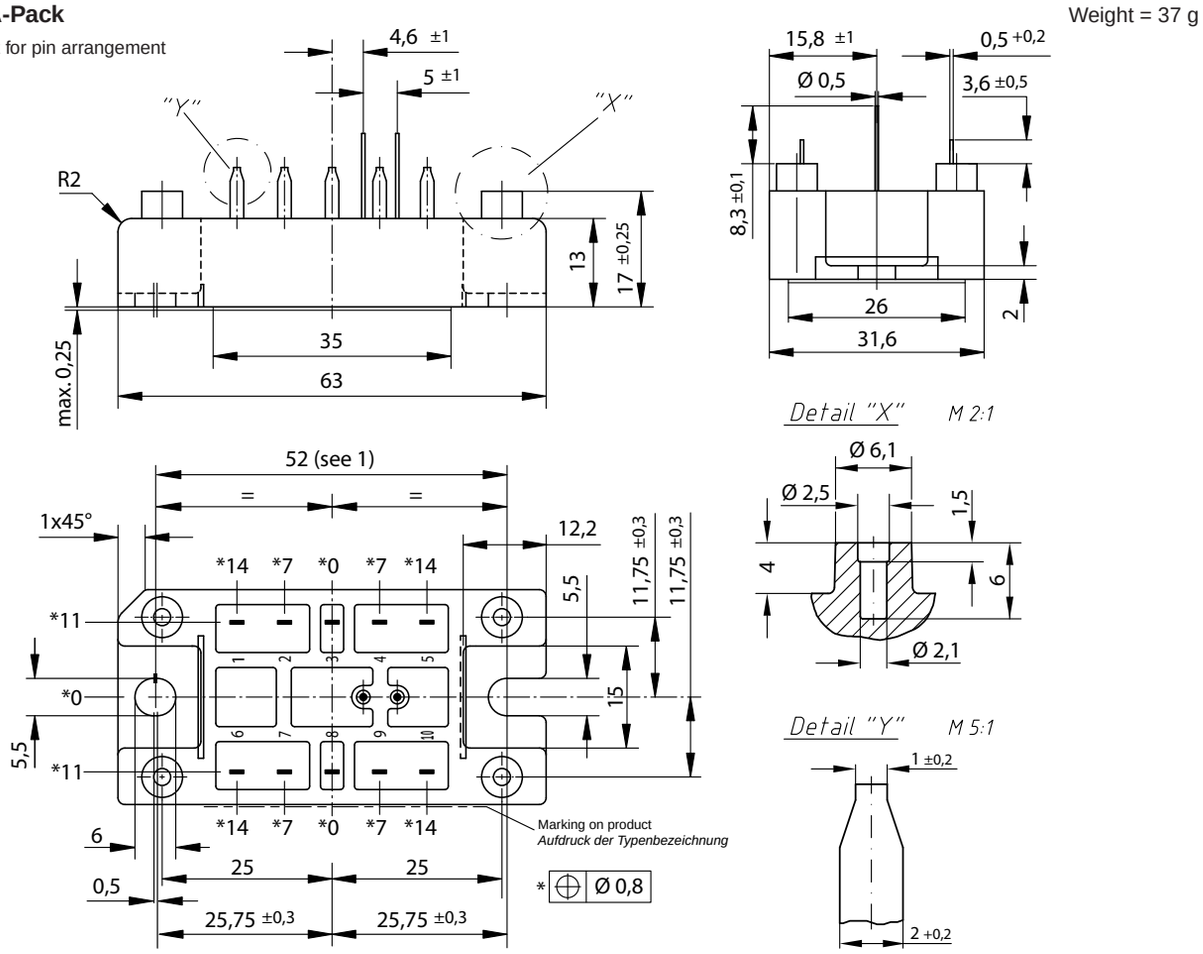
X102 ECO-PAC2 Weight = 23 g

See data sheet for pin arrangement



X103 V1-A-Pack Weight = 37 g

See data sheet for pin arrangement

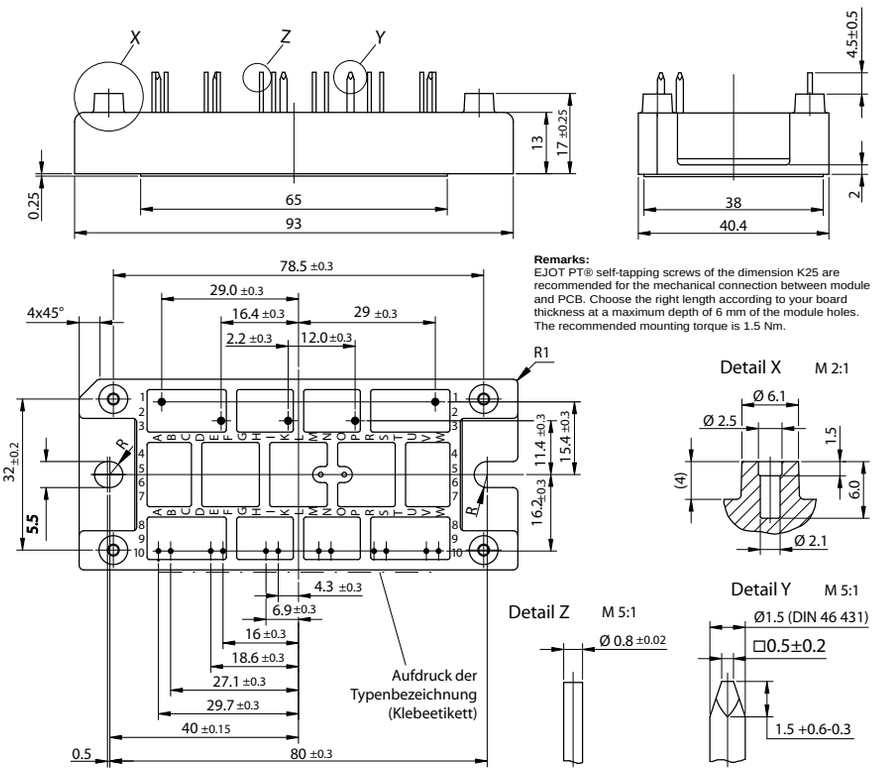


Dimensions in mm and inches (1 mm = 0.0394“)

X104 V2-Pack

Weight = 76 g

See data sheet for pin arrangement

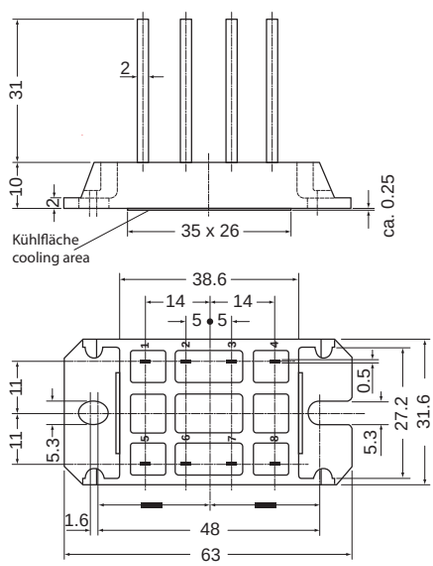


X105 V1-B-Pack

Weight =

a: pin length = 31 mm 30 g

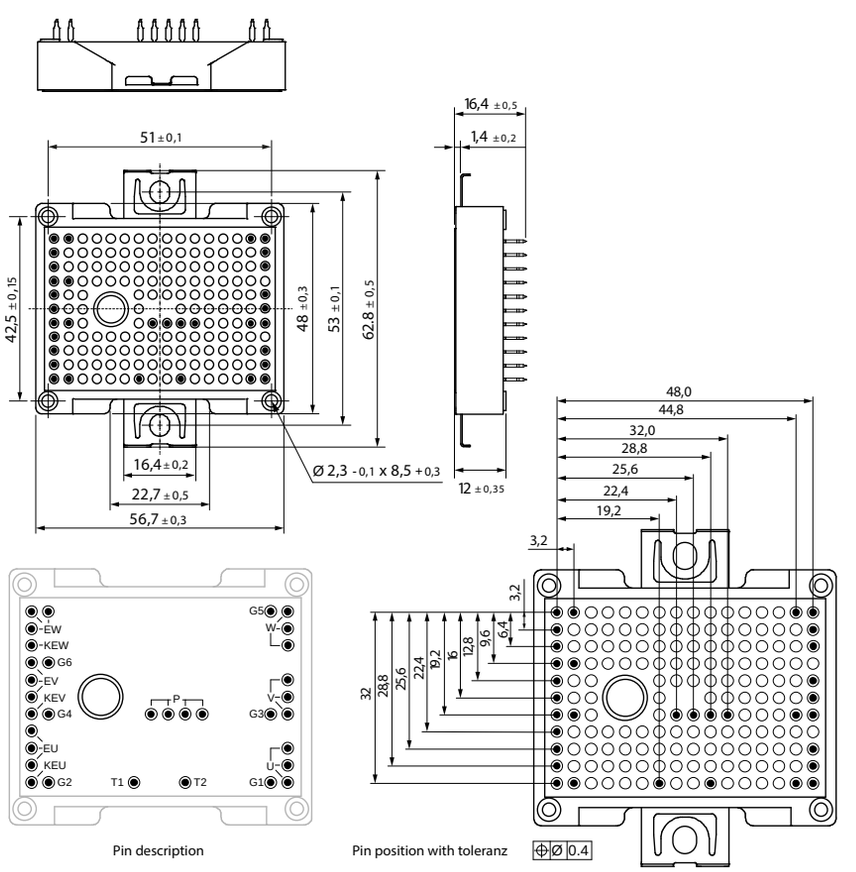
b: pin length = 16 mm 28 g



X109 Mini-Pack2B

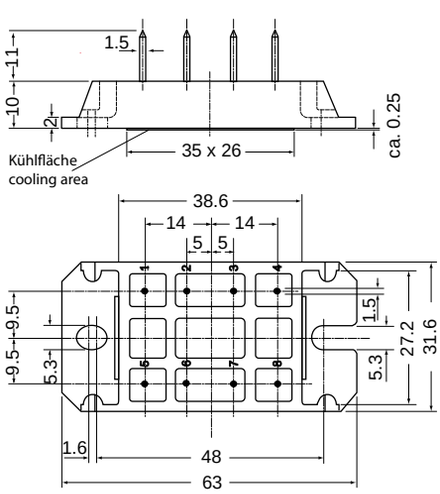
Weight = 42 g

See data sheet for pin arrangement



X105c V1-B-Pack

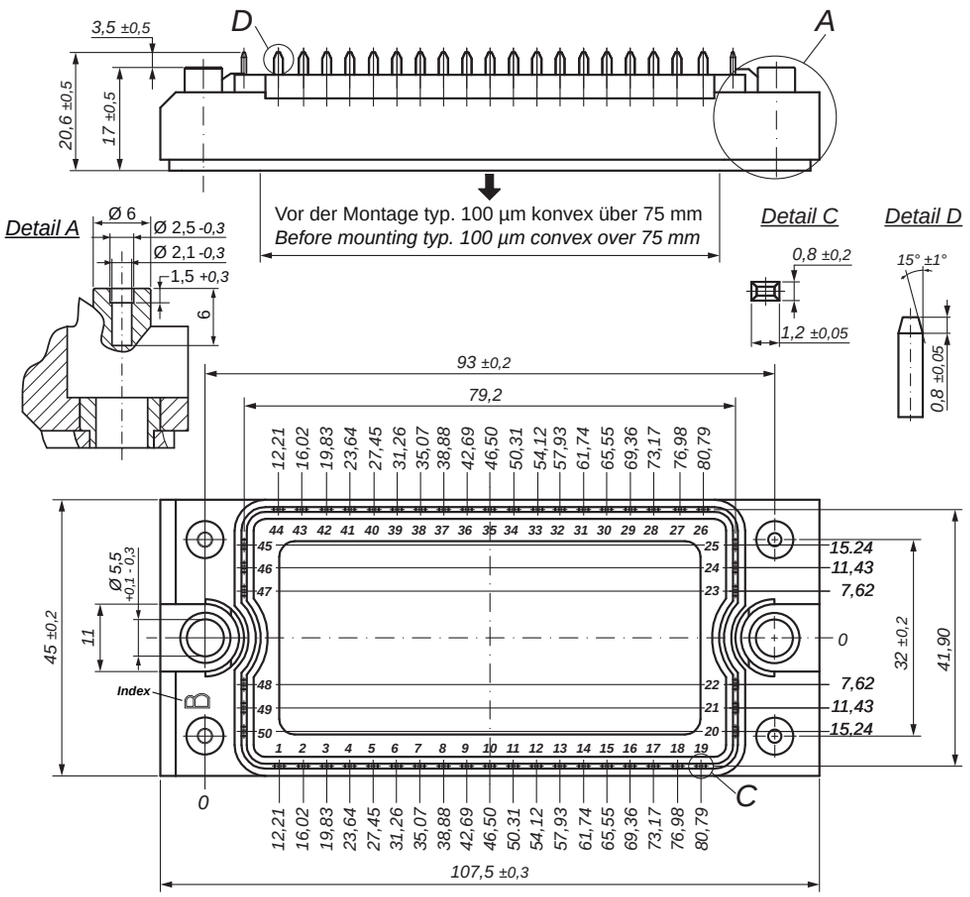
Weight = 25 g



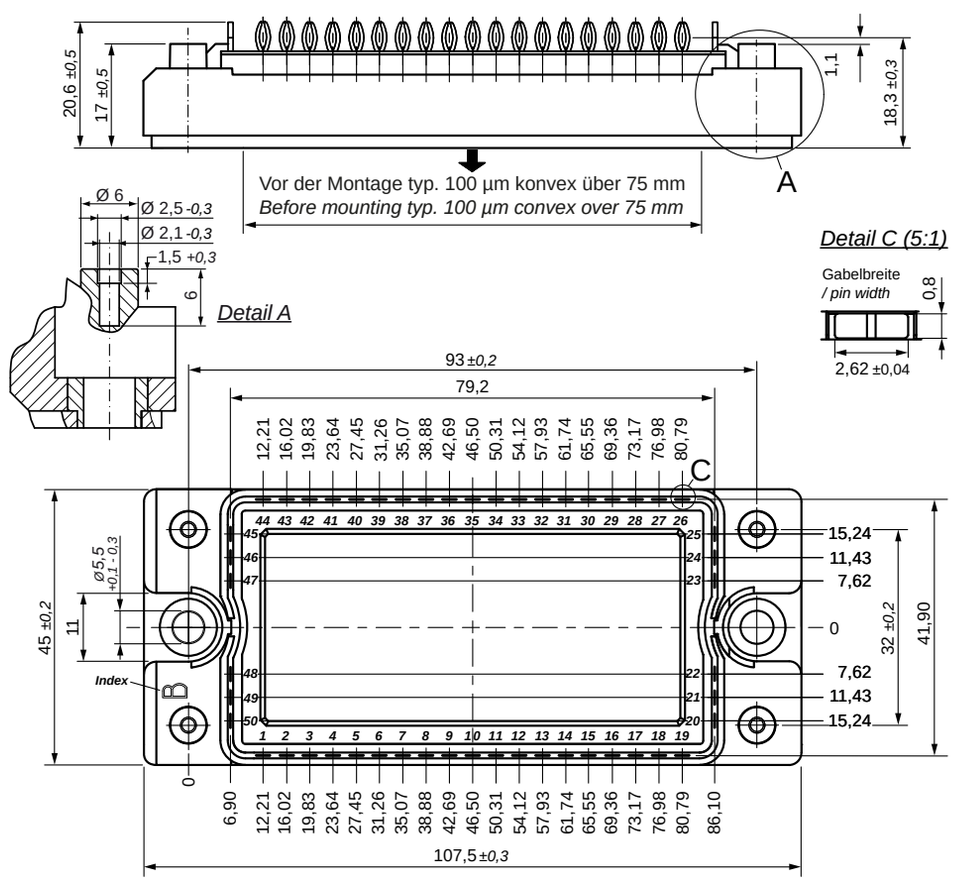
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

X112 E2-Pack — Pin configuration see data sheets — Weight = 176 g

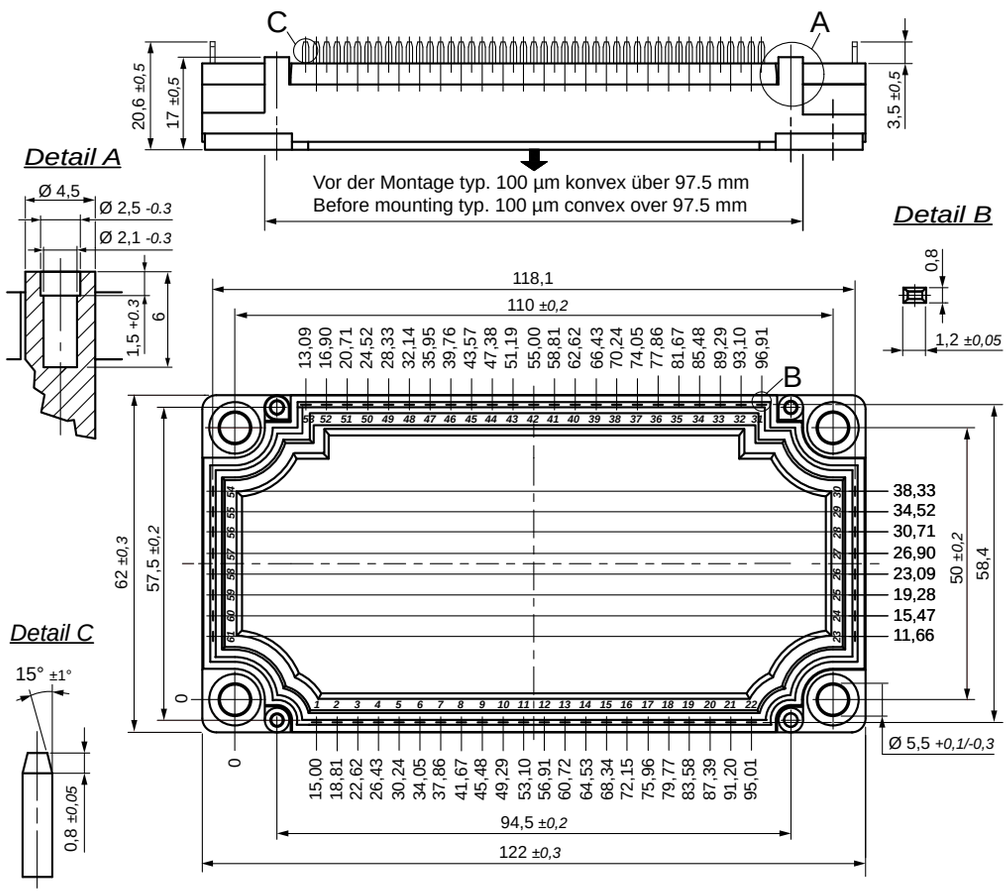


X112a E2-Pack PFP — Pin configuration see data sheets — Weight = 176 g

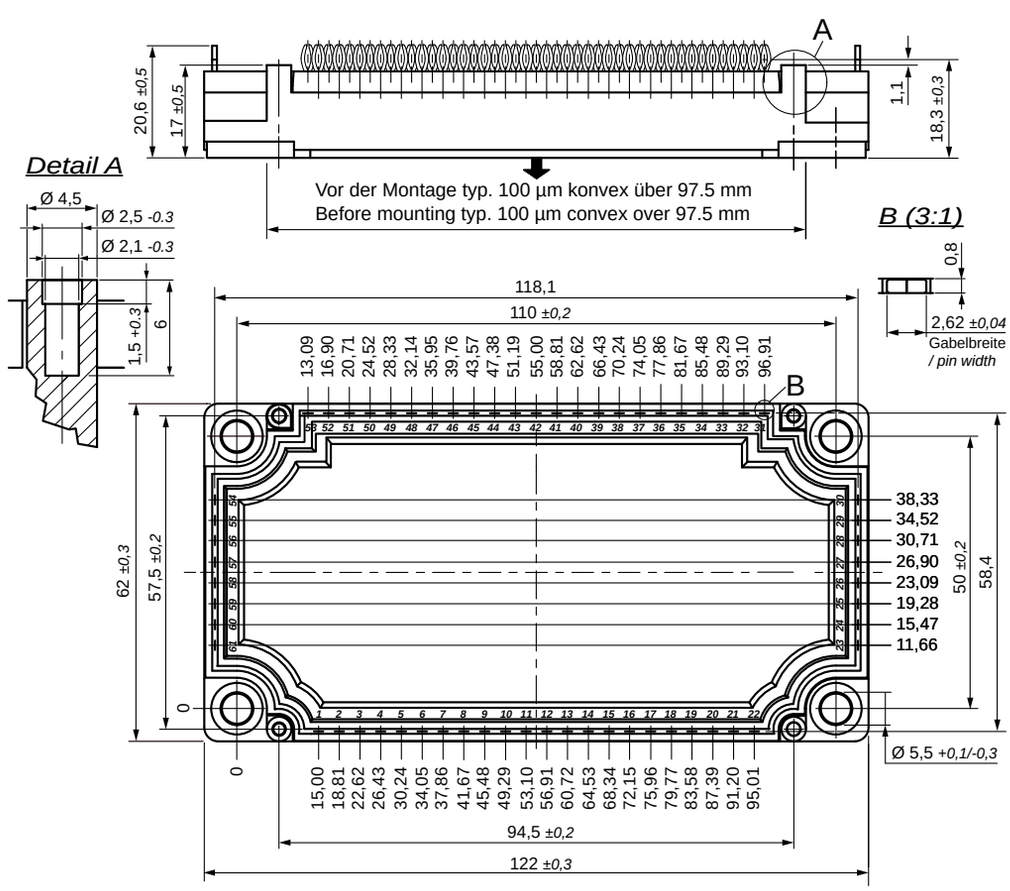


Dimensions in mm and inches (1 mm = 0.0394“)

X113 E3-Pack Pin configuration see data sheets Weight = 270 g



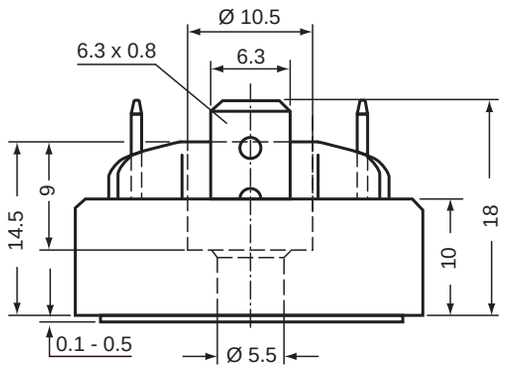
X113a E3-Pack PFP Pin configuration see data sheets Weight = 270 g

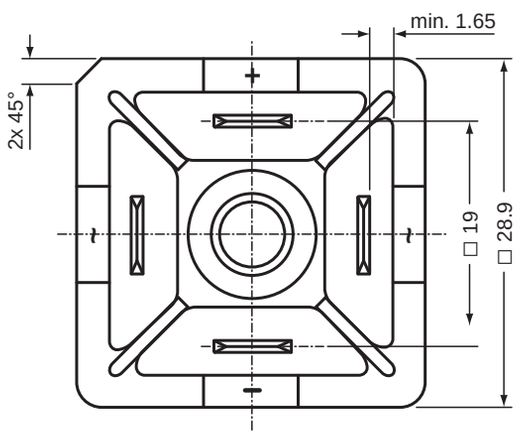


Outline drawings

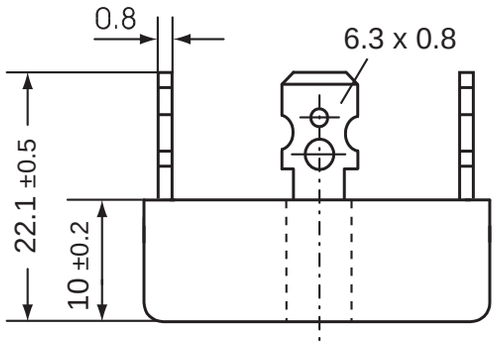
Dimensions in mm and inches (1 mm = 0.0394“)

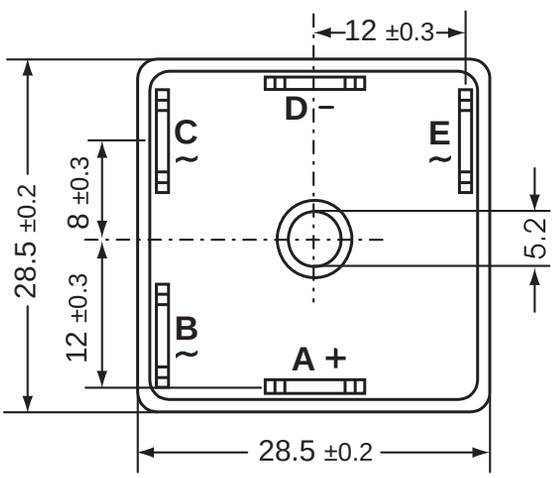
X115 FO-A Weight = 15 g



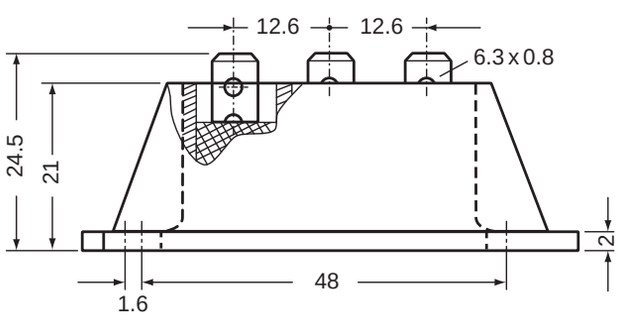


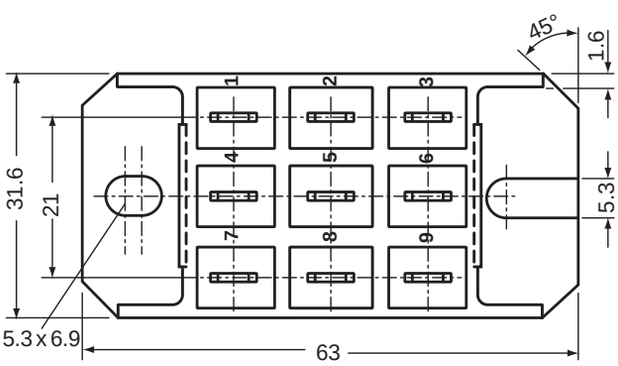
X116 FO-B Weight =
a: VUO 20 g
b: w/o terminal C (VBO) 19 g



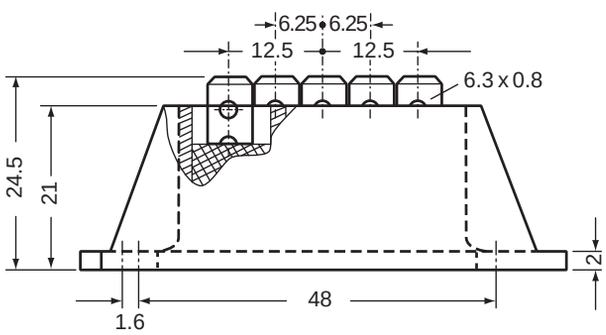


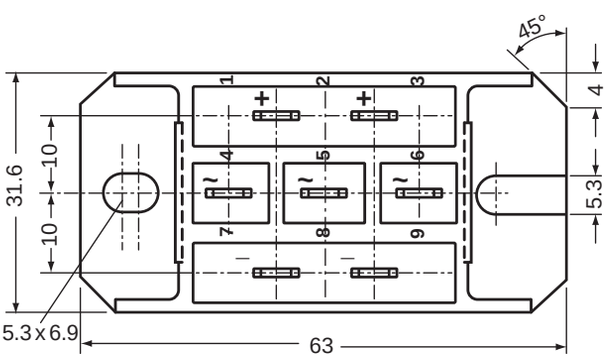
X117a FO-F-A Weight = 45 g





X117b FO-F-B Weight = 45 g



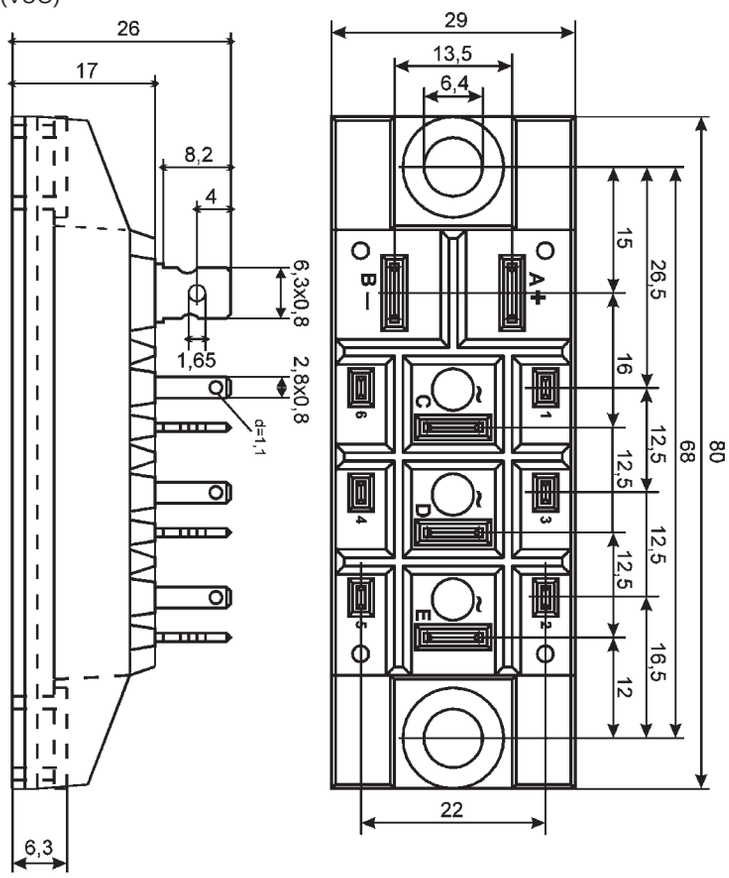


Dimensions in mm and inches (1 mm = 0.0394“)

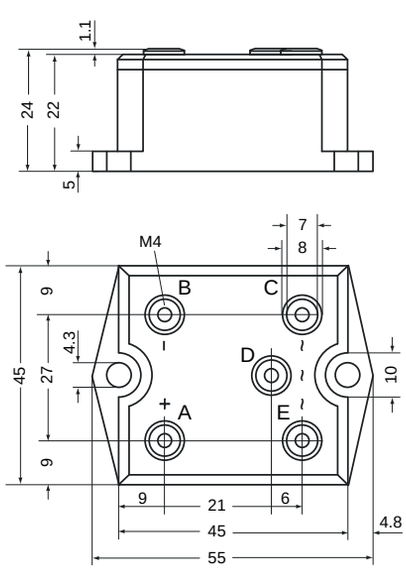
X118 FO-T-A Weight = 104 g

c: w/o terminal 4, 5, & 6 (VVZ & VVZF)
d: w/o terminal 1, 2, 3, 4, 5, & 6 (VUO)

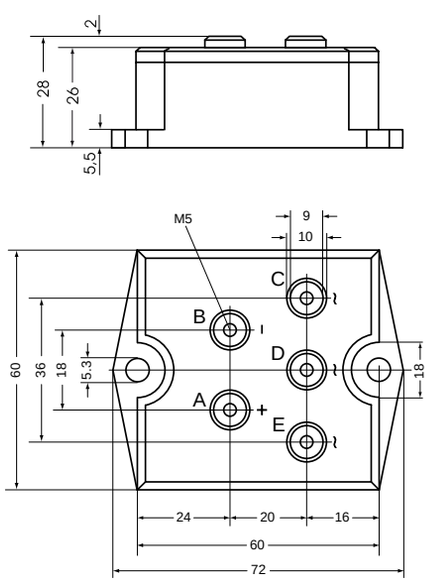
See data sheet for pin arrangement



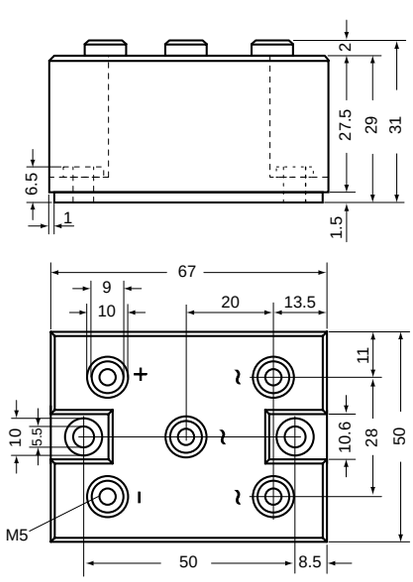
X119 PWS-A Weight =
a: VUO 104 g
b: w/o terminal D (VBO) 100 g



X120 PWS-B Weight =
a: VUO 203 g
b: w/o terminal D (VBO) 193 g



X121 PWS-C Weight =
a: VUO 250 g
b: w/o terminal D (VBO) 237 g

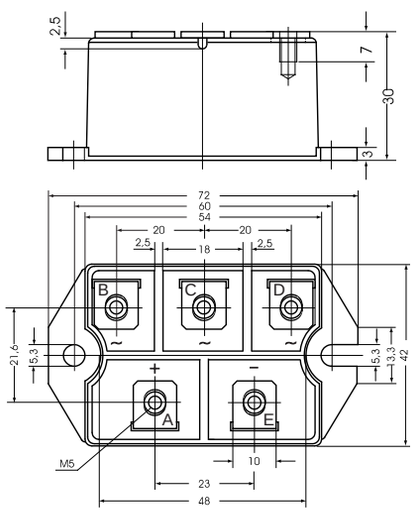


Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

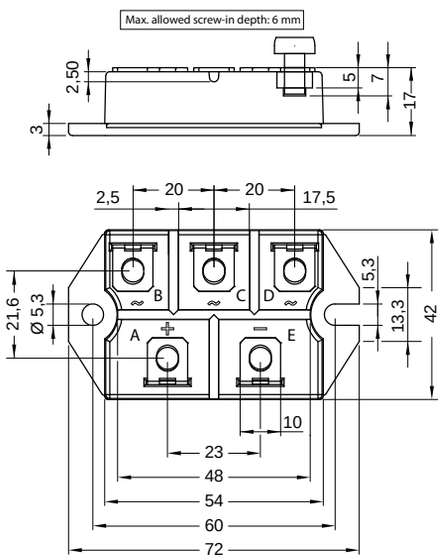
X122 PWS-D Weight =

a: VUO	159 g
b: w/o terminal C (VBO)	153 g



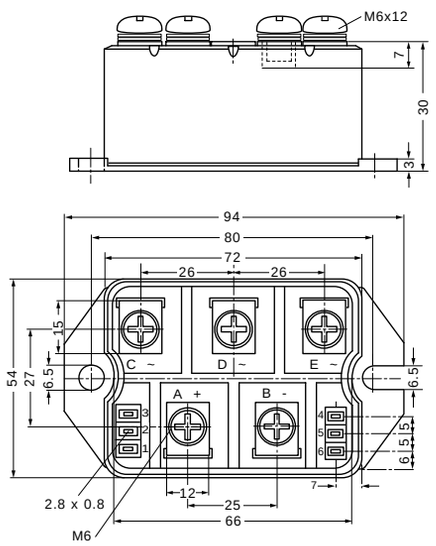
X122 PWS-D Flat Weight =

c: VUO	118 g



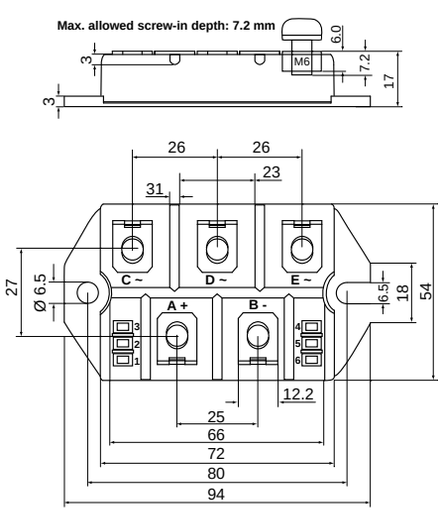
X123 PWS-E Weight =

a: VTO	284 g
b: w/o terminal 4, 5 & 6 (VVZ)	284 g
c: w/o terminal 1, 2, 3, 4, 5 & 6 (VUO)	284 g
d: w/o terminal D, 3, 4, 5 & 6 (VHF)	273 g
e: w/o terminal D, 1, 2, 3, 4, 5 & 6 (VBO)	273 g



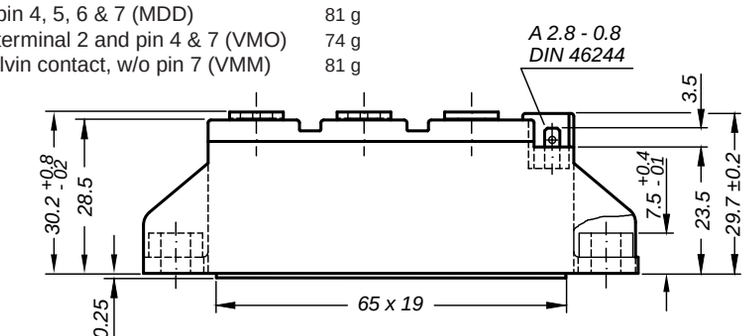
X123 PWS-E Flat Weight = 220 g

h: w/o terminal 1, 2, 3, 4, 5 & 6 (VUO)

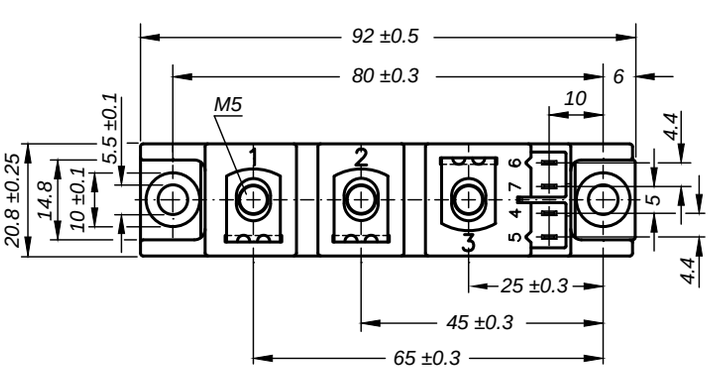


X125 TO-240 AA Weight =

a: + Kelvin contact (MCC)	81 g
b: + Kelvin contact, w/o pin 6 & 7 (MCD)	81 g
c: w/o Kelvin contact 4 & 7 (MCC)	81 g
d: w/o Kelvin contact 4, 7 & pin 6 (MCD)	81 g
e: w/o pin 4, 5, 6 & 7 (MDD)	81 g
f: w/o terminal 2 and pin 4 & 7 (VMO)	74 g
g: + Kelvin contact, w/o pin 7 (VMM)	81 g



General tolerance: DIN ISO 2768 class „c“



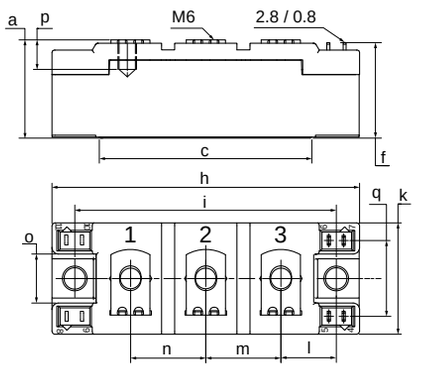
Optional accessories: Keyed gate/cathode twin plugs
Wire length: 350 mm, gate = white, cathode = red; UL 758, style 3751
*Type **ZY 200L** (L = Left for pin pair 4/5) - Type **ZY 200R** (R = Right for pin pair 6/7)*

Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

X126 Y4-M6

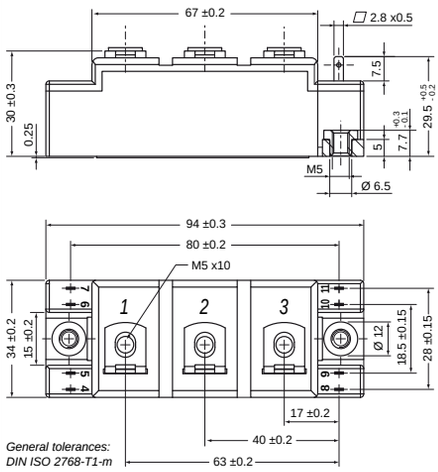
	Weight =
a: + Kelvin cont., w/o pin 8 up to 11 (MCC)	131 g
b: + Kelvin cont., w/o pin 6 up to 11 (MCD)	131 g
c: w/o pin 4 up to 11 (MDD)	126 g
d: w/o terminal 2 & pin 4 up to 11 (MEO)	108 g



Dim.	Millimeters		Inches	
	min	max	min	max
a	30.0	30.6	1.181	1.205
c	64.0	65.0	2.520	2.559
f	28.6	29.2	1.126	1.150
h	93.5	94.5	3.681	3.720
i	79.5	80.5	3.130	3.169
j	4.8	5.2	0.189	0.205
k	33.4	34.0	1.315	1.339
l	16.7	17.3	0.657	0.681
m	22.7	23.3	0.894	0.917
n	22.7	23.3	0.894	0.917
o	14.0	15.0	0.551	0.591
p	typ. 10.5		typ. 0.413	
q	22.8	23.3	0.898	0.917

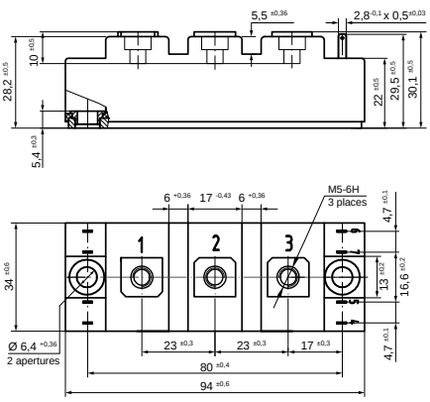
X127 Y4-M5

	Weight =
a: w/o pin 8 up to 11 (MII)	110 g
b: w/o pin 6 up to 11 (MID)	108 g
c: w/o pin 4, 5 & 8 up to 11 (MDI)	108 g



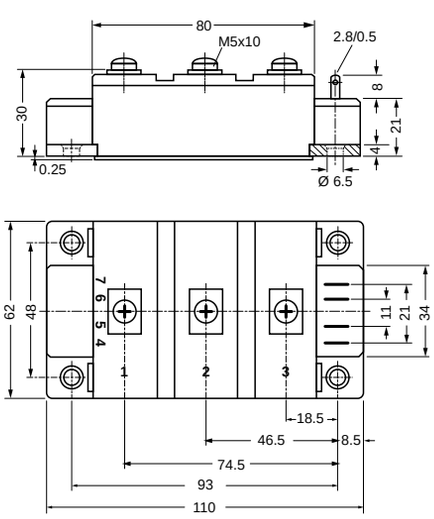
X127 Y4-M5-A

	Weight =
d: w/o pin 8 up to 11 (..PF..)	170 g
e: w/o pin 6 up to 11 (..RF..)	168 g
f: w/o pin 4, 5 & 8 up to 11 (..QF..)	166 g



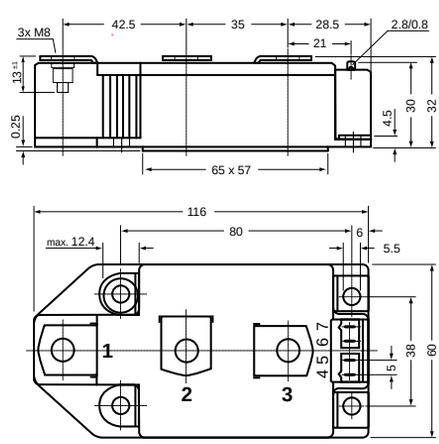
X128 Y3-DCB

	Weight =
a: w/o pin 4 up to 7 (VMM, MII)	222 g
b: w/o pin 4 up to 9 (MID)	220 g
c: w/o pin 4 up to 7, 10 & 11 (MDI)	220 g
d: w/o terminal 3 & pin 6 up to 11 (VMO)	200 g
e/f/g: see data sheet	



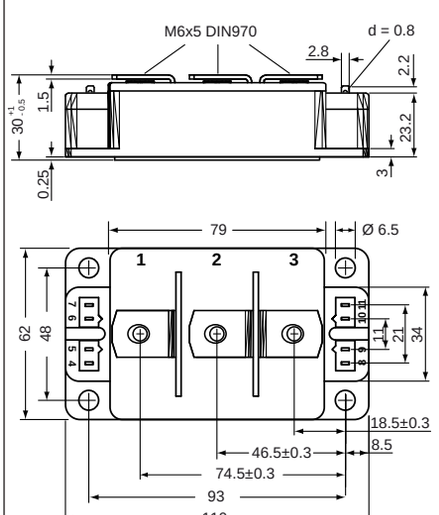
X129 Y2-DCB

	Weight =
a: + Kelvin contact (MCC)	245 g
b: + Kelvin contact, w/o pin 6 & 7 (MCD)	245 g
c: w/o pin 4, 5, 6 & 7 (MDD)	244 g



X130 Y3-Li

	Weight =
a: w/o pin 4-7, low inductance (VMM, MII)	226 g
b: w/o pin 4-9, low inductance (MID)	226 g
c: w/o pin 4-7, 10&11, low inductance (MDI)	226 g
d: w/o terminal 1&pin 6-11, low ind. (VMO)	206 g
e: w/o pin 4&5, low ind. (VMM, MII+NTC)	226 g
f: w/o pin 4, 5, 8 & 9, low ind. (MID+NTC)	226 g

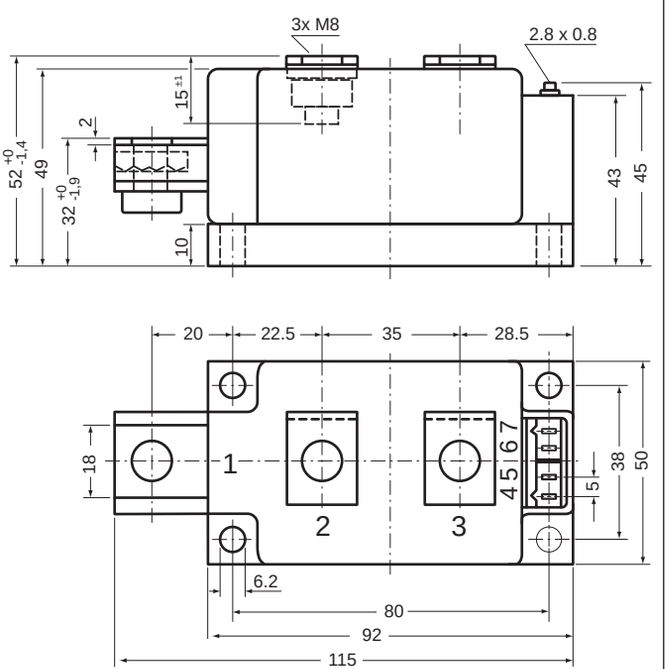


Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

X131 Y1-CU Weight =

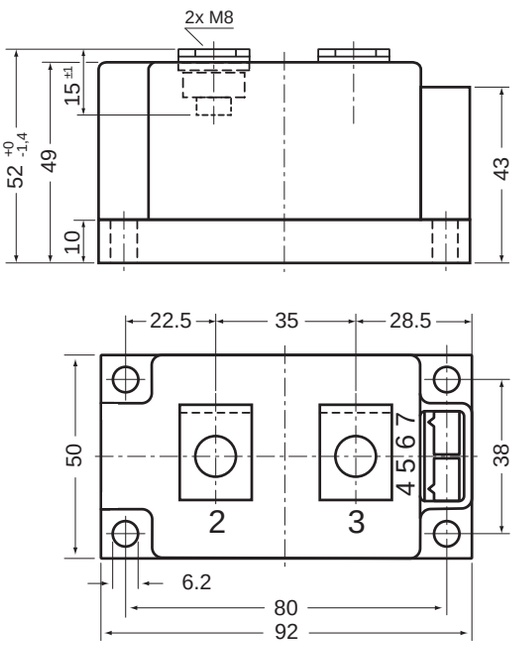
a: + Kelvin contact (MCC) 680 g
b: + Kelvin contact, w/o pin 6&7 (MCD) 680 g
c: w/o pin 4, 5, 6 & 7 (MDD) 680 g



Optional accessories for modules
Keyed gate/cathode twin plugs with wire length = 350 mm, gate = white, cathode = red
Type ZY 180L (L = Left for pin pair 4/5)
Type ZY 180R (R = Right for pin pair 6/7)
} UL 758, style 3751

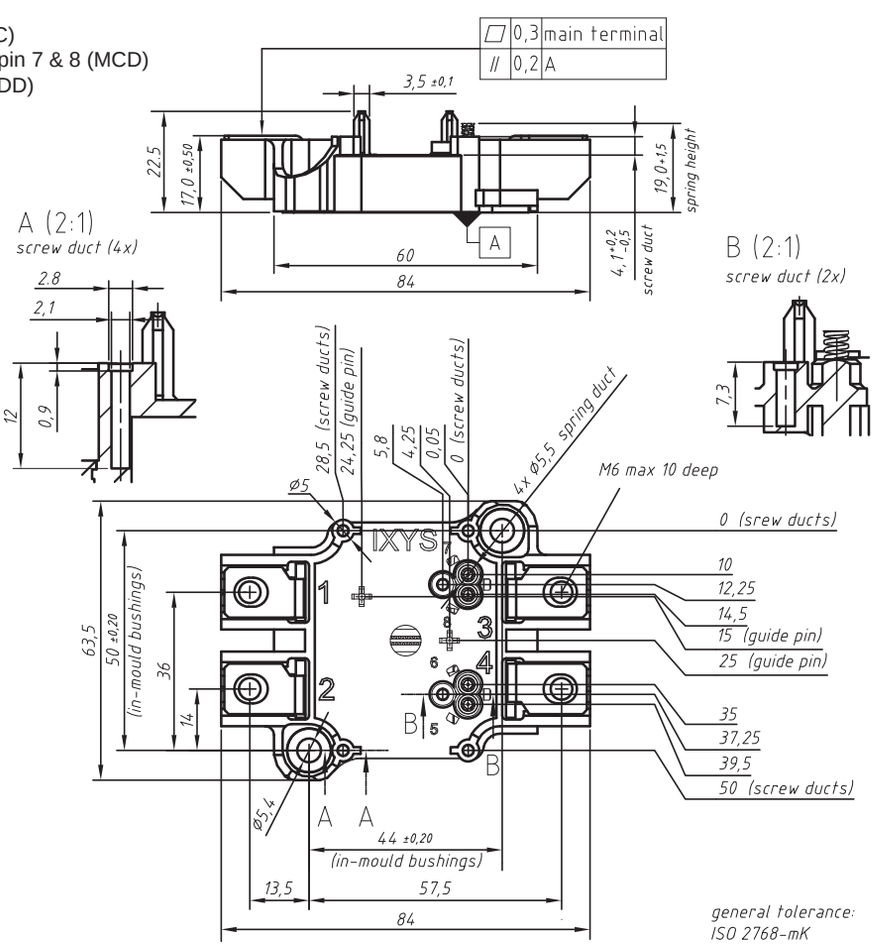
X132 Y1-2-CU Weight = 650 g

a: + Kelvin contact w/o pin 6&7 (MCO)
b: w/o pin 4, 5, 6 & 7 (MDO)



X141 SimBus A Weight = 152 g

a: + Kelvin contact (MCC)
b: + Kelvin contact, w/o pin 7 & 8 (MCD)
c: w/o pin 5, 6, 7 & 8 (MDD)

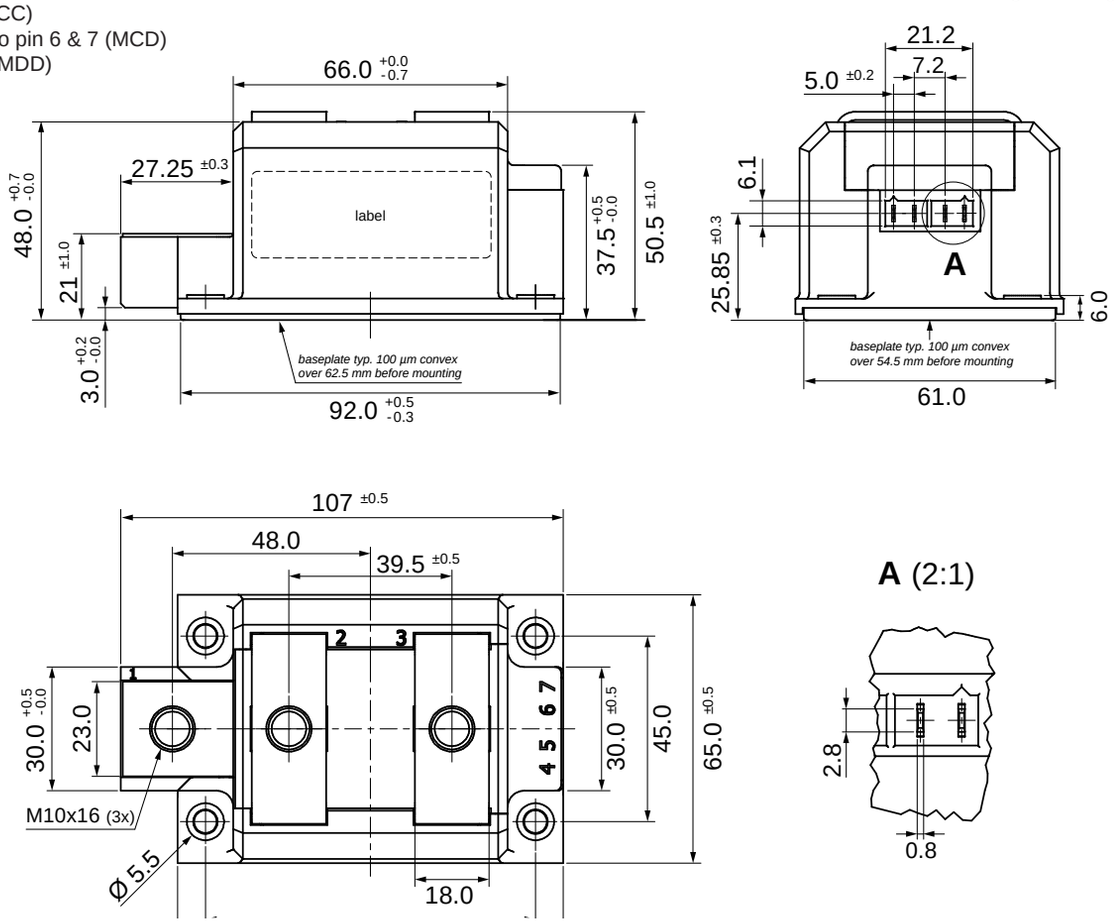


Outline drawings

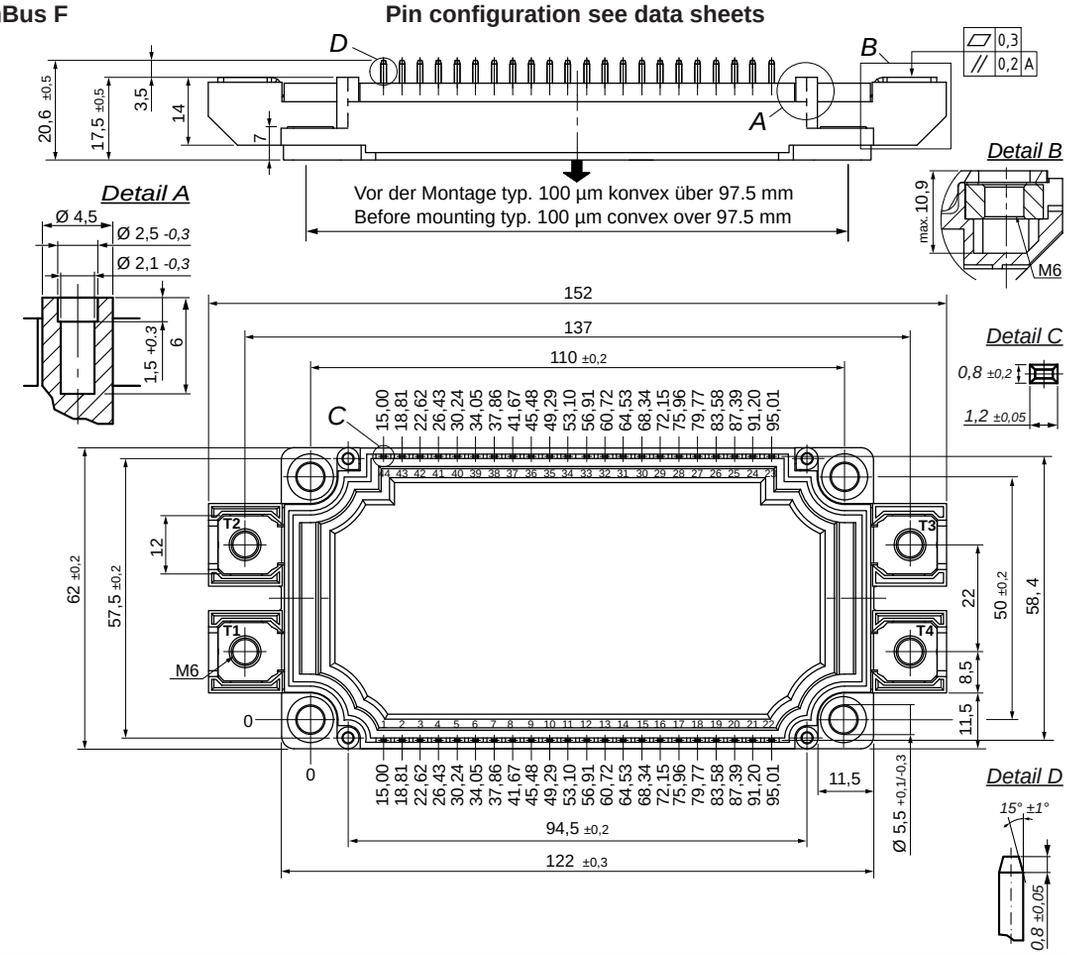
Dimensions in mm and inches (1 mm = 0.0394“)

X142 ComPack Weight = 500 g

a: + Kelvin contact (MCC)
b: + Kelvin contact, w/o pin 6 & 7 (MCD)
c: w/o pin 4, 5, 6 & 7 (MDD)



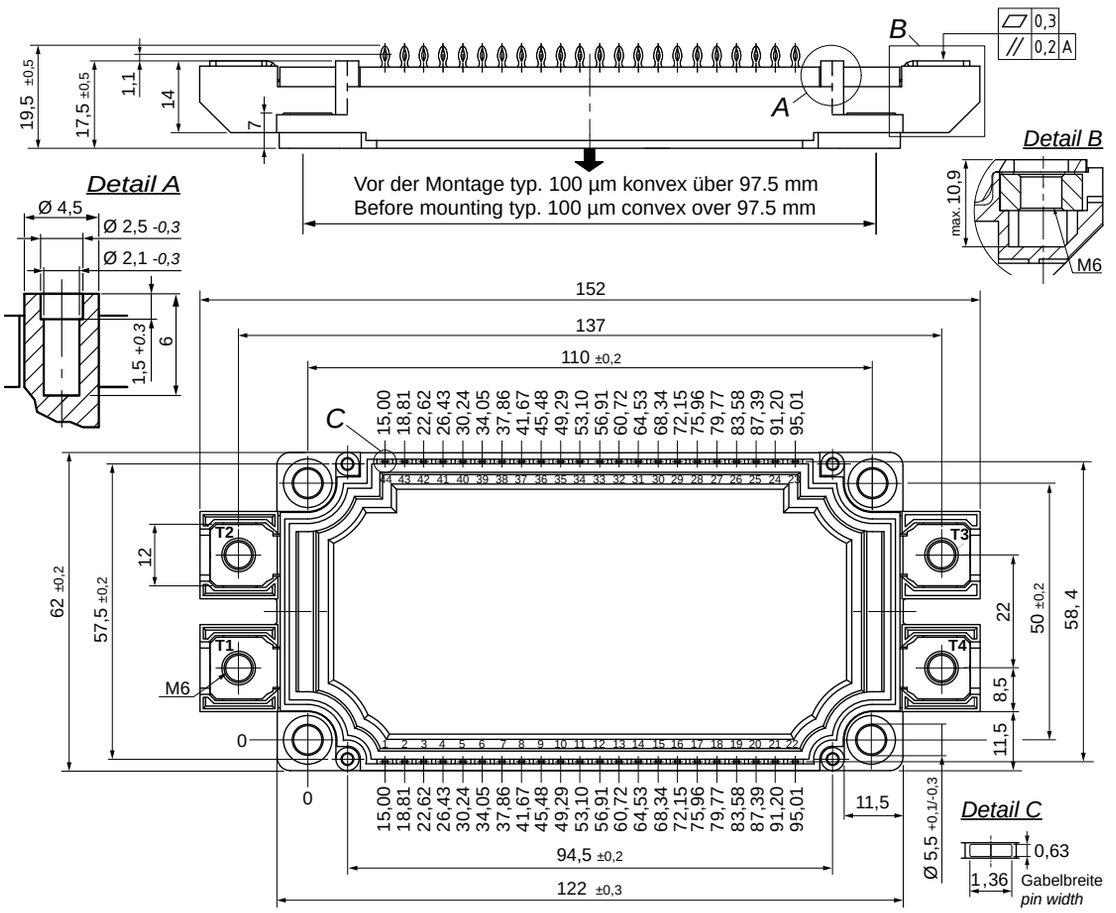
X143 SimBus F **Pin configuration see data sheets** Weight = 150 g



Outline drawings

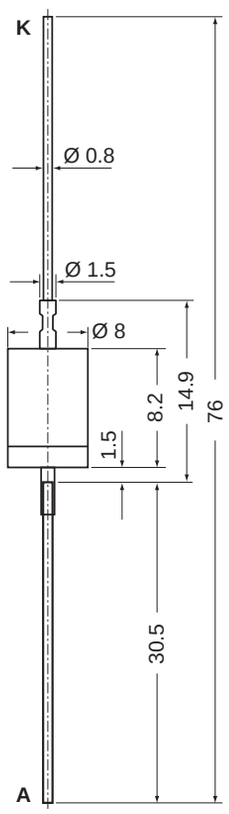
Dimensions in mm and inches (1 mm = 0.0394“)

X143a SimBus F PFP Pin configuration see data sheets Weight = 150 g

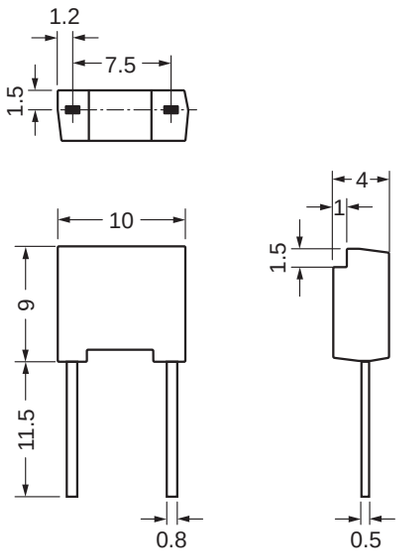


Dimensions in mm and inches (1 mm = 0.0394“)

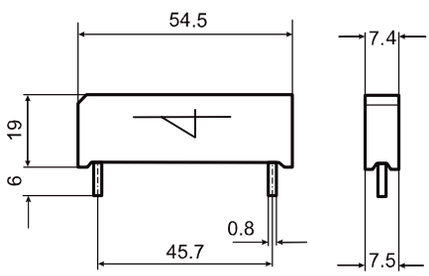
X200 Metal-can Weight = 2.5 g



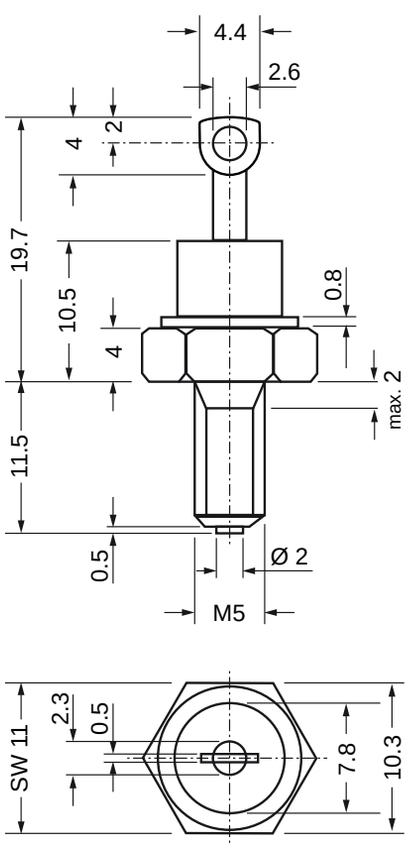
X201 FP-Case (oilproof) Weight = 0.9 g



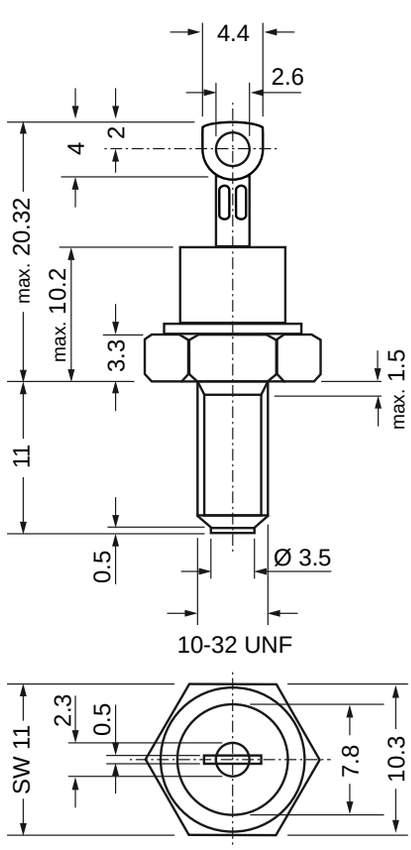
X202 BOD-Package Weight = 9.5 g



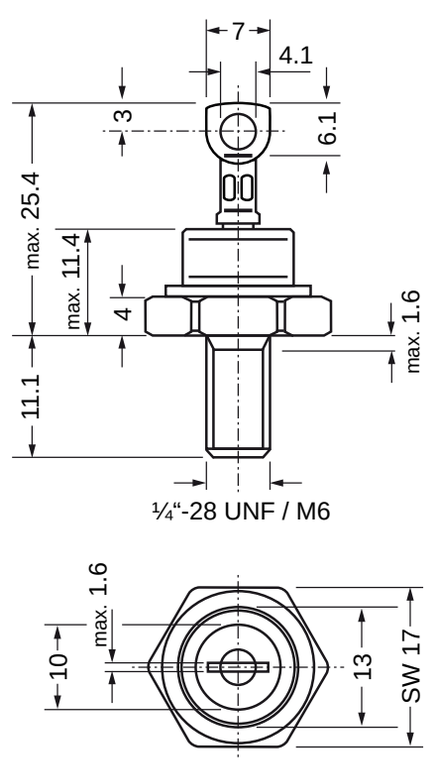
X204 DO-203 AA [M] (DO-4) Weight = 6 g



X205 DO-203 AA [UNF] (DO-4) Weight = 5.5 g



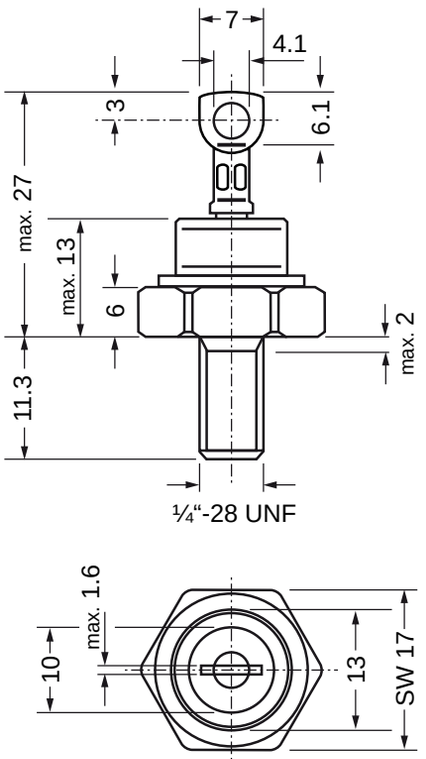
X206a DO-203 AB [UNF] (DO-5)
X206b DO-203 AB [M] (DO-5)
Weight = 14 g



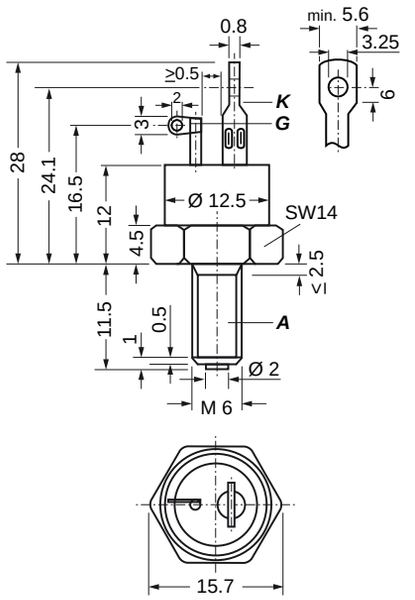
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

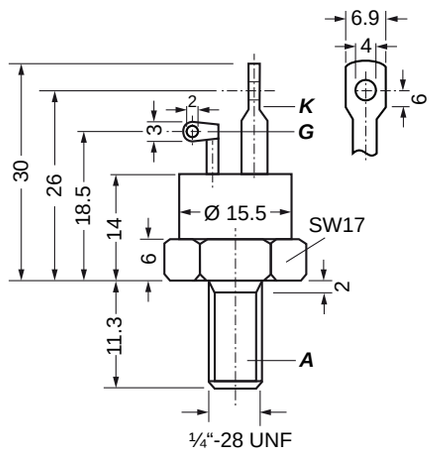
X207 DO-203 AB (DO-5) Weight = 20 g



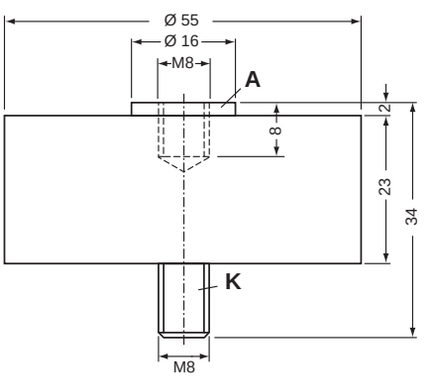
X209 TO-208 AA (TO-48) Weight = 11.6 g



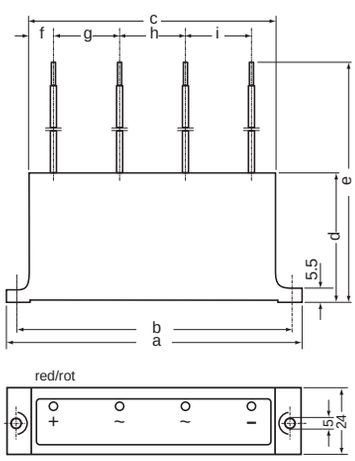
X210 TO-208 AC (TO-65) Weight = 21.7 g



X251 UGE-single Weight = 125 g

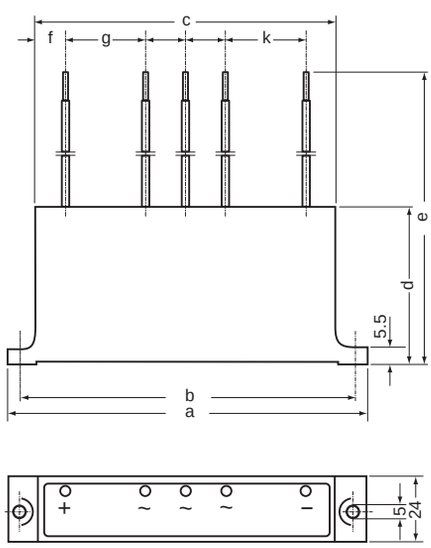


X252 UG Weight = 155 g



X253a UG Weight = 310 g

b: w/o middle terminal



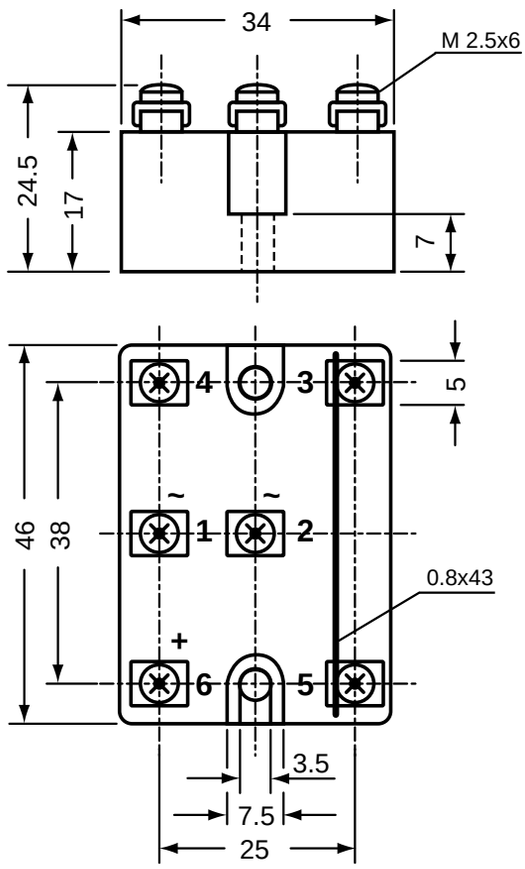
Type	a	b	c	d	e	f	g	h	i	k
UGB 3132 AD	80	70	57	58.5	260	6	15	15	15	
UGB 6124 AG	135	125	112	58.5	260	11	32.5	25	32.5	
UGD 6123 AG	135	125	112	58.5	260	8	30	18	18	30
UGD 8124 AG	135	125	112	58.5	260	8	30	18	18	30

Dimensions in mm

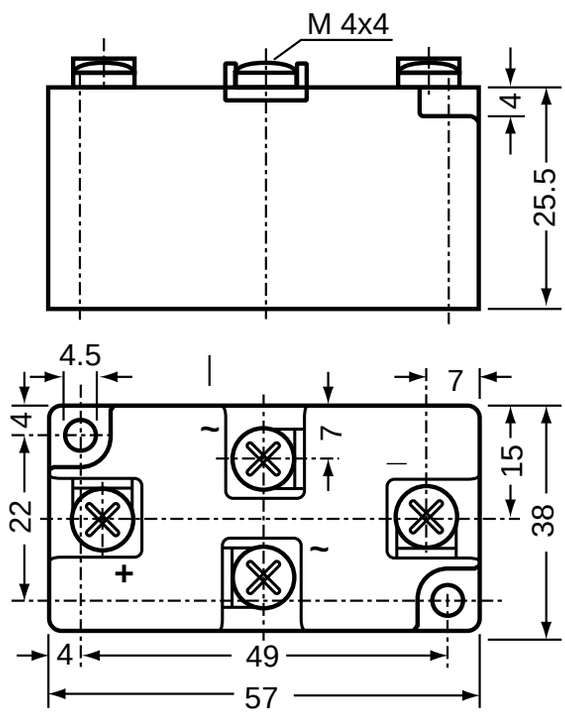
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

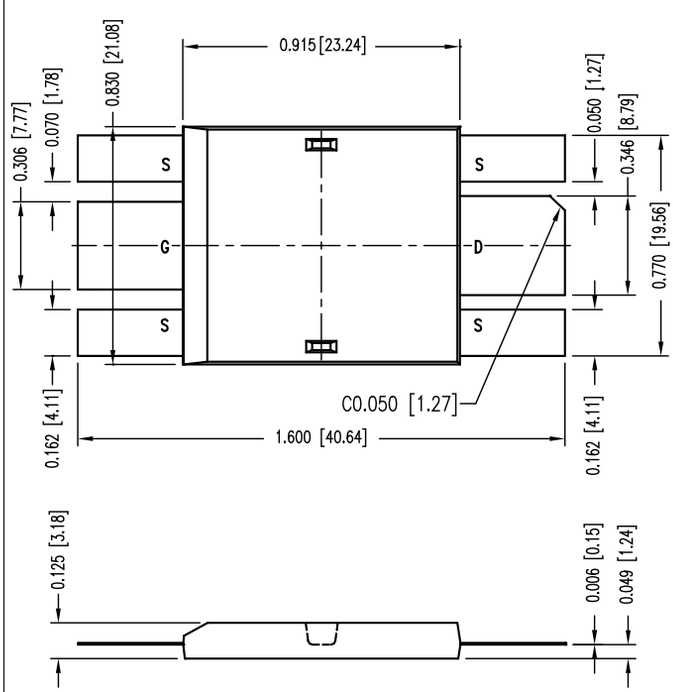
X254 VG-A Weight = 61 g



X255 VG-B Weight = 87 g



D5 DE475

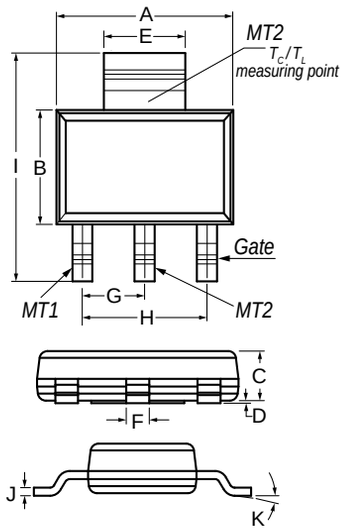


Outline drawings

Littelfuse

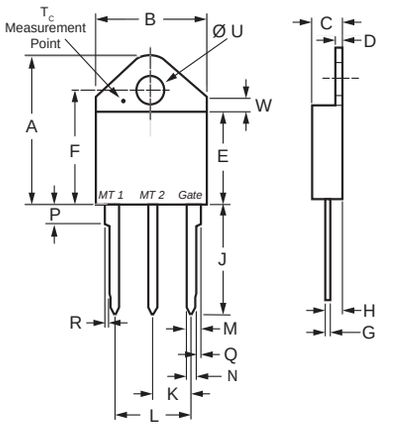
Dimensions in mm and inches (1 mm = 0.0394“)

L001 SOT-223 Weight = 0.11 g



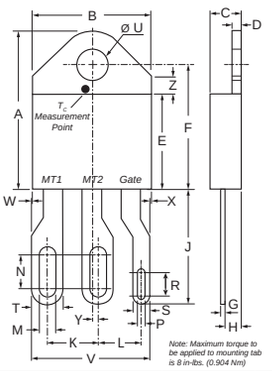
Dim.	Millimeters			Inches		
	min	typ	max	min	typ	max
A	6.30	6.50	6.70	0.248	0.256	0.264
B	3.30	3.50	3.70	0.130	0.138	0.146
C	-	-	1.80	-	-	0.071
D	0.02	-	0.10	0.001	-	0.004
E	2.90	3.00	3.15	0.114	0.118	0.124
F	0.60	0.70	0.85	0.024	0.027	0.034
G	-	2.30	-	-	0.090	-
H	-	4.60	-	-	0.181	-
I	6.70	7.00	7.30	0.264	0.276	0.287
J	0.24	0.26	0.35	0.009	0.010	0.014
K	10° max					

L002 TO-218AC Weight = 5 g



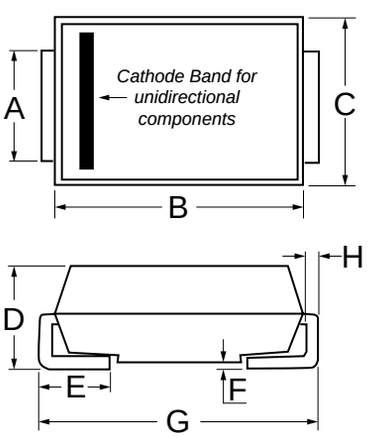
Dim.	Millimeter		Inches	
	min	max	min	max
A	20.57	21.21	0.810	0.835
B	15.49	16.00	0.610	0.630
C	4.52	4.78	0.178	0.188
D	1.40	1.78	0.055	0.070
E	12.37	12.62	0.487	0.497
F	16.13	16.64	0.635	0.655
G	0.56	0.74	0.022	0.029
H	1.91	2.41	0.075	0.095
J	14.61	15.88	0.575	0.625
K	5.36	5.56	0.211	0.219
L	10.72	11.10	0.422	0.437
M	1.47	1.73	0.058	0.068
N	1.14	1.40	0.045	0.055
P	2.41	2.92	0.095	0.115
Q	0.20	0.41	0.008	0.016
R	0.20	0.41	0.008	0.016
U	4.10	4.20	0.164	0.165
W	2.17	2.42	0.085	0.095

L002a TO-218X Weight = 5.2 g



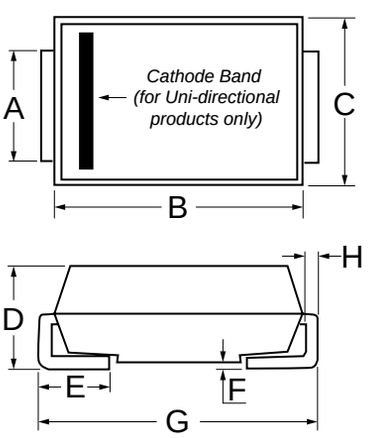
Dim.	Millimeter		Inches	
	min	max	min	max
A	20.57	21.21	0.810	21.210
B	15.49	16.00	0.610	16.000
C	4.52	4.78	0.178	4.780
D	1.40	1.78	0.055	1.780
E	12.37	12.62	0.487	12.620
F	16.13	16.64	0.635	16.640
G	0.56	0.74	0.022	0.740
H	1.91	2.41	0.075	2.410
J	14.61	15.88	0.575	15.880
K	6.50	6.71	0.256	6.710
L	5.58	5.79	0.220	5.790
M	2.03	2.24	0.080	2.240
N	4.29	4.49	0.169	4.490
P	0.86	1.07	0.034	1.070
R	2.87	3.07	0.113	3.070
S	2.18	2.44	0.086	2.440
T	3.96	4.22	0.156	4.220
U	0.41	0.42	0.164	0.420
V	15.31	15.70	0.603	15.700
W	0.00	0.13	0.000	0.130
X	0.07	0.30	0.003	0.300
Y	0.71	0.81	0.028	0.810
Z	2.17	2.42	0.085	2.420

L003a DO-214AA Weight = 0.1 g



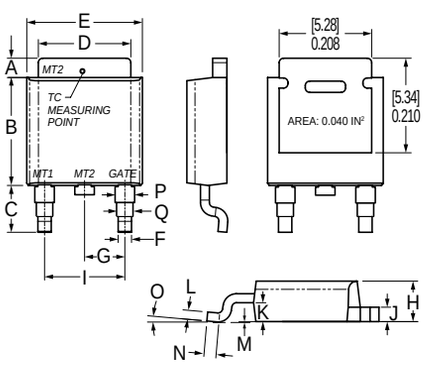
Dim.	Millimeters		Inches	
	min	max	min	max
A	1.950	2.200	0.077	0.086
B	4.060	4.570	0.160	0.180
C	3.300	3.940	0.130	0.155
D	2.130	2.440	0.084	0.096
E	0.760	1.520	0.030	0.060
F	-	0.203	-	0.008
G	5.210	5.590	0.205	0.220
H	0.152	0.305	0.006	0.012

L003b DO-214AB Weight = 0.2 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	2.900	3.200	0.114	0.126
B	6.600	7.110	0.260	0.280
C	5.590	6.220	0.220	0.245
D	2.060	2.620	0.079	0.103
E	0.760	1.520	0.030	0.060
F	-	0.203	-	0.008
G	7.750	8.130	0.305	0.320
H	0.152	0.305	0.006	0.012

L004 TO-252AA Weight = 0.3 g

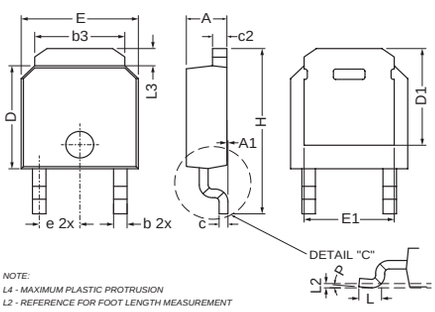


Dim.	Millimeters			Inches		
	min	nom	max	min	nom	max
A	0.94	1.01	1.09	0.037	0.040	0.043
B	5.97	6.16	6.22	0.235	0.243	0.245
C	2.69	2.74	2.87	0.106	0.108	0.113
D	5.21	5.29	5.41	0.205	0.208	0.213
E	6.48	6.65	6.73	0.255	0.262	0.265
F	0.69	0.80	0.84	0.027	0.031	0.033
G	2.21	2.28	2.36	0.087	0.090	0.093
H	2.16	2.33	2.41	0.085	0.092	0.095
I	4.47	4.55	4.67	0.176	0.179	0.184
J	0.46	0.51	0.58	0.018	0.020	0.023
K	0.90	0.95	1.00	0.04	0.04	0.04
L	0.46	0.51	0.58	0.018	0.020	0.023
M	0.00	0.00	0.10	0.000	0.000	0.004
N	0.53	0.67	0.69	0.02	0.03	0.03
O	0°	0°	5°	0°	0°	5°
P	1.06	1.20	1.32	0.042	0.047	0.052
Q	0.86	1.00	1.11	0.034	0.039	0.044

Dimensions in mm and inches (1 mm = 0.0394“)

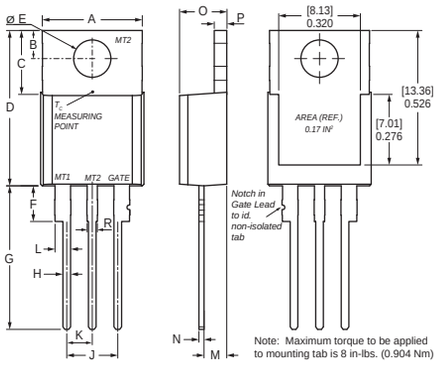
L004a TO-252

Weight = 0.3 g



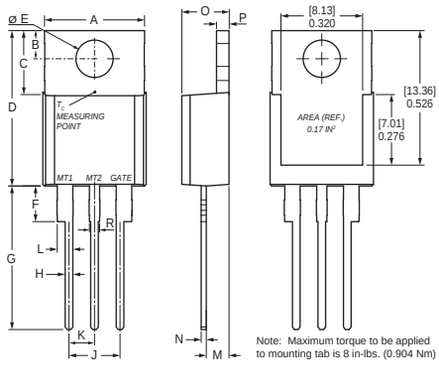
Dim.	Millimeters			Inches		
	min	nom	max	min	nom	max
A	2.16	2.29	2.41	0.085	0.090	0.095
A1	0	0.08	0.13	0	0.003	0.005
b	0.64	0.76	0.89	0.025	0.030	0.035
b3	4.95	5.08	5.46	0.195	0.200	0.215
c	0.46	0.51	0.61	0.018	0.020	0.024
C2	0.46	0.81	0.89	0.018	0.032	0.035
D	5.97	6.10	6.22	0.235	0.240	0.245
D1	5.21	-	-	0.205	-	-
E	6.35	6.60	6.73	0.250	0.260	0.265
E1	4.32	-	-	0.170	-	-
e	2.29 BSC			0.090 BSC		
H	9.40	9.83	10.41	0.370	0.387	0.410
L	1.02	1.14	1.27	0.040	0.045	0.050
L2	0.25 BSC			0.010 BSC		
L3	0.89	-	1.27	0.035	-	0.050
P	0°	-	8°	0°	-	8°

L005a TO-220AB (NON-ISO) Weight = 2 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	9.65	10.67	0.380	0.420
B	2.67	2.92	0.105	0.115
C	5.84	6.35	0.230	0.250
D	14.99	15.75	0.590	0.620
E	3.61	3.73	0.142	0.147
F	2.79	3.30	0.110	0.130
G	13.72	14.61	0.540	0.575
H	0.64	0.89	0.025	0.035
J	4.95	5.21	0.195	0.205
K	2.41	2.67	0.095	0.105
L	1.52	1.91	0.060	0.075
M	2.16	2.41	0.085	0.095
N	0.46	0.61	0.018	0.024
O	4.52	4.78	0.178	0.188
P	1.14	1.52	0.045	0.060
R	0.97	1.22	0.038	0.048

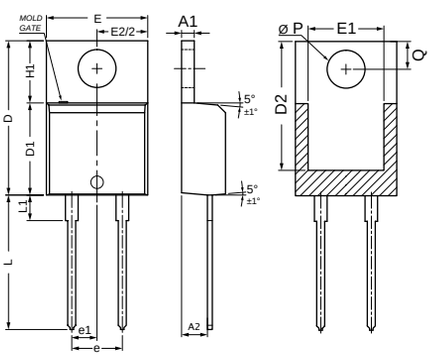
L005c TO-220AB (ISO) Weight = 2 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	9.65	10.67	0.380	0.420
B	2.67	2.92	0.105	0.115
C	5.84	6.35	0.230	0.250
D	14.99	15.75	0.590	0.620
E	3.61	3.73	0.142	0.147
F	2.79	3.30	0.110	0.130
G	13.72	14.61	0.540	0.575
H	0.64	0.89	0.025	0.035
J	4.95	5.21	0.195	0.205
K	2.41	2.67	0.095	0.105
L	1.52	1.91	0.060	0.075
M	2.16	2.41	0.085	0.095
N	0.46	0.61	0.018	0.024
O	4.52	4.78	0.178	0.188
P	1.14	1.52	0.045	0.060
R	0.97	1.22	0.038	0.048

L005b TO-220AC

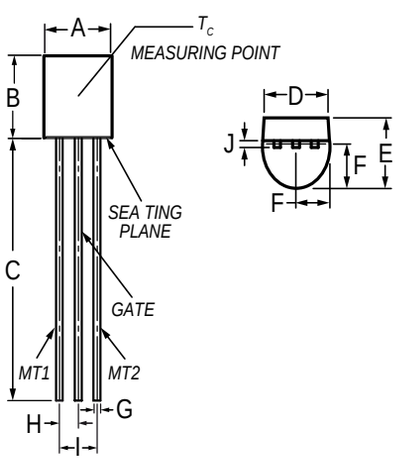
Weight = 2 g



Dim.	Millimeter		
	min	nominal	max
A	4.320	4.450	4.570
A1	1.140	1.270	1.400
A2	2.500	-	2.740
b	0.690	-	0.880
b1	0.680	-	0.870
b2	1.230	-	1.390
b3	1.220	1.270	1.380
c	0.360	-	0.503
c1	0.630	-	0.527
D	14.900	-	15.600
D1	8.615	-	9.017
D2	12.840	-	12.950
E	10.000	10.180	10.360
E1	7.570	7.610	7.680
e1	2.490	2.540	2.590
e	5.030	5.080	5.130
H1	6.295	6.545	6.795
L	13.000	13.500	14.000
L1	2.390	-	3.250
øP	3.710	3.840	3.960
Q	2.650	-	3.050
R	-	-	0.254

L006 TO-92

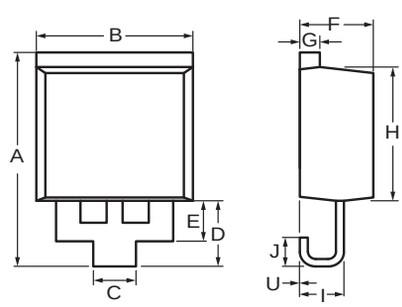
Weight = 0.2 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.450	5.200	0.175	0.205
B	4.320	5.330	0.170	0.210
C	12.70		0.500	
D	3.430		0.135	
E	3.180	4.190	0.125	0.165
F	2.040	2.660	0.080	0.105
G	0.407	0.533	0.016	0.021
H	1.150	1.390	0.045	0.055
I	2.420	2.660	0.095	0.105
J	0.380	0.500	0.015	0.020

L007 SMTO-263

Weight = 2.6 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	14.44	15.24	0.568	0.600
B	9.65	10.67	0.38	0.420
C	2.50	2.90	0.098	0.114
D	4.30	4.80	0.169	0.189
E	2.60	3.00	0.102	0.118
F	4.52	4.78	0.178	0.188
G	1.14	1.52	0.045	0.06
H	9.14	9.40	0.360	0.370
I	2.69	3.09	0.106	0.122
J	1.75	2.25	0.069	0.089
U	0	0.25	0	0.010

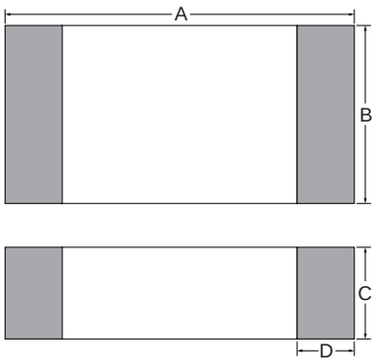
Outline drawings

Littelfuse

Dimensions in mm and inches (1 mm = 0.0394“)

L008 1206 SMD

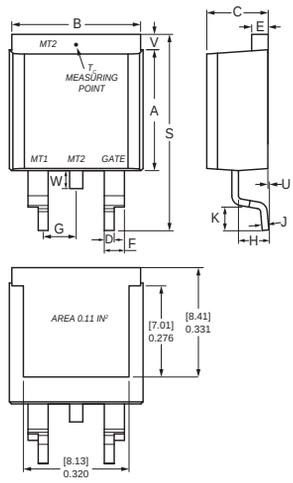
Weight = 0.008 g



Dim.	Millimeters		Inches	
	min	max	min	max
A	3.022	3.378	0.119	0.133
B	1.430	1.730	0.056	0.068
C	0.820	0.850	0.027	0.039
D	0.320	0.720	0.012	0.028

L011b TO-263AB

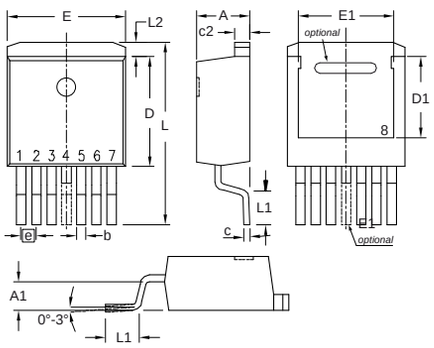
Weight = 1.5 g



Dim.	Millimeter		Inches	
	min	max	min	max
A	9.14	9.40	0.360	0.370
B	9.65	10.67	0.380	0.420
C	4.52	4.78	0.178	0.188
D	0.64	0.89	0.025	0.035
E	1.14	1.52	0.045	0.060
F	1.52	1.91	0.060	0.075
G	2.41	2.67	0.095	0.105
H	2.34	2.59	0.092	0.102
J	0.46	0.61	0.018	0.024
K	2.29	2.79	0.090	0.110
S	14.99	15.88	0.590	0.625
V	0.89	1.14	0.035	0.045
U	0.05	0.25	0.002	0.010
W	1.02	1.78	0.040	0.070

L012b TO-263 (7)

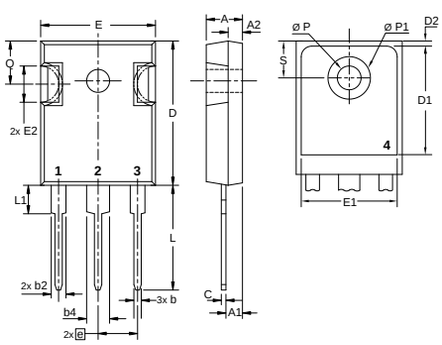
Weight = 2.5 g



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.20	4.60	0.165	0.181
A1	2.45	2.75	0.096	0.108
b	0.65	0.90	0.026	0.035
c	0.40	0.60	0.016	0.024
c2	1.14	1.40	0.045	0.055
D	8.38	8.64	0.330	0.340
D1	6.10	6.35	0.240	0.250
E	10.00	10.30	0.394	0.406
E1	7.34	8.00	0.290	0.315
e	1.27 BSC		0.050 BSC	
L	14.73	15.75	0.580	0.620
L1	2.24	2.84	0.088	0.112
L2	1.35	1.55	0.053	0.061

L014a TO-247AD

Weight = 6 g



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
b4	2.59	3.43	0.102	0.135
c	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.845
D1	13.07	-	0.515	-
D2	0.51	1.35	0.020	0.053
E	15.48	16.24	0.610	0.640
E1	13.45	-	0.53	-
E2	4.31	5.48	0.170	0.216
e	5.45 BSC		0.215 BSC	
L	19.80	20.30	0.078	0.800
L1	-	4.49	-	0.177
Ø P	3.55	3.65	0.140	0.144
Ø P1	-	7.39	-	0.290
Q	5.38	6.19	0.212	0.244
S	6.14 BSC		0.242 BSC	