

FUSES

What are fuses? They are protectors that prevent electronic and electrical equipment from overload current damage. Current flows to circuit via fuse until over the specifications of fuse. At that time, the fuse "Blows" and stops the current.

FUSE TYPE

There are four basic types of fuses:

- (1) Slow Blow/Time lag fuses
- (2) Dual element slow blow fuses
- (3) Fast acting fuses
- (4) Very fast acting fuses

Slow-blow fuses are ideal for circuits with a transient surge or power-on inrush. These circuits include: motors, transformers, incandescent lamps and capacitive loads.

Fast-acting fuses respond quickly and are used in circuits without transient inrush currents.

Very fast-acting fuses often have silver links. Because the fuses need to have ability to limit the current, these fuses are usually used to protect semiconductor circuits.

FUSE SELECTION GUIDE

The fuse must carry the normal load current of the circuit without nuisance openings. However, when an over current occurs the fuse must interrupt the over current, limit the energy let-through, and withstand the voltage across the fuse during acting. To properly select a fuse the followings must be considered:

- (1) Normal operating current (The current rating of a fuse is typically derated 25% for operation at 25% to avoid nuisance blowing. For example, a fuse with 10A current rating is not usually recommended for operation at more than 7.5A in a 25% derating.)
 - (2) Overload current and melting time of the fuse.
 - (3) Application voltage (AC or DC voltage).
 - (4) Inrush currents, surge currents, pulses, start-up currents characteristics.
 - (5) Ambient temperature.
 - (6) Applicable standards agency required, such as UL, CSA, TUV, VDE, PSE and IEC....
 - (7) Mounting type/form factor, etc.
- Considerations: Reduce installed cost, ease of removal,

Electrical Characteristic

The capacity of fuses for carrying current are tested at 25°C and will be affected by ambient temperature changed. The fuse operated in higher the ambient temperature; the life of the fuse will be reduced.

Conversely, operating at a lower temperature will extend the life of fuse.

保险丝

何谓保险丝？它们是防止电子及电器设备受到过载电流伤害的保护者。当电流经由保险丝流入电路直到超过保险丝的规格时，保险丝会熔断且停止电流运作。

保险丝的类型

保险丝有以下四种基本型式：

- (1) 慢速熔断型/时间延迟型保险丝；
- (2) 双重合金慢速熔断型保险丝；
- (3) 快速反应型保险丝；
- (4) 特快速反应保险丝

慢速熔断型保险丝非常适合于含有瞬间电流突波或开机突波流入的电路。这些电路包含：马达、变压器、白炽灯及可适用负载的装置。

快速反应型保险丝反应快速且使用于没有瞬间电流突波的电路。

特快速反应型保险丝通常都有银做连接。由于保险丝的限流能力，这些保险丝时常被用来保护半导体电路。

保险丝选型指南

保险丝在电路中必须能承载正常的负载电流而不会有不正常的开路。然而，当过高的电流产生时，保险丝必须中断那些过高的电流，限制能量通过，并且保险丝能承受端电压产生的电弧。为了正确地选择保险丝，以下内容必须考虑：

- (1) 正常的工作电流（保险丝的额定电流通常降低25%为工作电流，以避免在这25%会有不希望发生的熔断。例如：一个额定电流为10A的保险丝通常不推荐在降低25%后还超过7.5A的工作电流。）
 - (2) 保险丝的过载电流及熔断时间。
 - (3) 应用电压（交流或直流电压）。
 - (4) 突波电流、浪涌电流、脉冲、启动电流的特性。
 - (5) 环境温度。
 - (6) 合适的标准机构需求，例如：UL、CSA、TUV、VDE、PSE及IEC...
- 动机：减少安装花费，方便移除，架设类型/外型因素，等等...

环境温度

保险丝在25°C下做电流承载测试，且会受到环境温度变化的影响。较高的环境温度会使得保险丝在运作时显得更热，且会降低保险丝的使用寿命。相反地，使用于较低温度的环境可延长使用寿命。

NORMAL CURRENT CONDITION

UL type fuse:

Max.current de-rating of fuse(I_n)=

R.M.S current/(temp.factor) x UL margin(0.75 fixed)

IEC type fuses:

Max.current de-rating of fuse(I_n)=

= measured rms current/(temp.factor x IEC margin(0.9 fixed))

正常电流的状态

符合UL规范类型的保险丝：

保险丝最大的降额电流 (I_n) =

测量的电流值/ (温度因素xUL规范的系数 (固定为0.75))

符合IEC规范类型的保险丝：

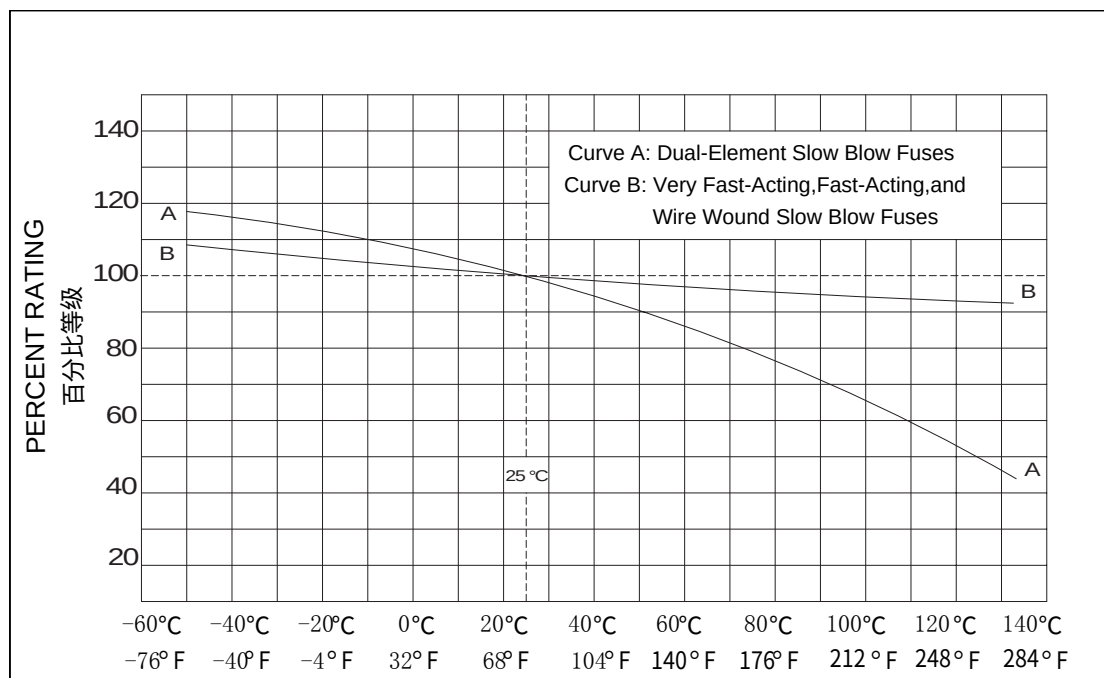
保险丝最大的降额电流 (I_n) =

测量的电流值/ (温度因素xUL规范的系数 (固定为0.9))

CHART SHOWING EFFECT OF AMBIENT TEMPERATURE

ON CURRENT-CARRYING CAPACITY

正常电流负载量情况下环境温度的影响



BREAKING CAPACITY

A fuse will be safely interrupt in the maximum current and the maximum rated voltage(include less than maximum rated) then the appearance of fuse will not be changed.

VOLTAGE RATING

For general circuit protetion,the voltage rating of the circuit needs to be equal or less than the voltage rating of the fuse. Using exceed the voltage rating of the fuse in circuit will reduce ability of the fuse for clearing overload current safely.For example, fuse 250V voltage rating can be used in less than 250V circuits.

分断能力

保险丝在最大的额定电压 (包括小于/等于此电压) 下的最大电流仍安全地熔断。而保险丝外观无改变。

额定电压

对于一般的电路保护来说, 电路的额定电压应该等于或小于保险丝的额定电压。使用超过保险丝的额定电压会降低保险丝在超载时的安全能力。例如：额定电压为250V的保险丝可以被使用在小于250V的电路中。

AMPERE SQUARE SECONDS, I^2t

I^2t is the measure of heat energy developed within a circuit during the fuse's clearing.It can be expressed as "melting I^2t ", "arcing I^2t " or the sum of them as " Clearing I^2t ". "I" stands for effective let-through current(RMS),which is squared, and "t" means melting time(seconds).

安培平方秒, I^2t

这是保险丝在电路内熔断时计算热能的公式。它可以表示为“熔化的 I^2t ”、“电弧的 I^2t ”，或者总称他们为“清除电流 I^2t ”。“I”代表有效的电流 (RMS)，其为平方值，“t”代表形成开路的时间，单位为秒。

■ CALCULATING PULSE I^2t

The energy contained in a current pulse depends on the Pulse's waveform's shape, peak current and duration. Determining the energy contained in a particular waveform can be very difficult. Table 1 presents a variety of waveforms and the corresponding formulas which determine I^2t value. Current pulses in most applications can be approximated by one of the waveforms in Table 1. If a complex waveform is not shown exactly, then it may be possible to break the complex waveform into a combination of the simpler waveforms shown. The complex waveform's I^2t is then estimated as the sum of the I^2t values of these other waveforms. The best way to explain how this is done is through an example.

■ 计算突波 I^2t

包含在电流脉冲里的能量取决于脉冲波形、峰值电流及持续时间。测定特殊波形的能量可能非常困难。表格1介绍多样化的波形及决定 I^2t 值得相应公式。表格1的波形近似于大多数应用中的电流脉冲。如果复杂的波形正好没被显示，而以更简单的组合波形诠释破坏的复杂波形是可能被显示的。复杂波形的 I^2t 估计为其他波形 I^2t 的总和。最好的方式是透过一个例子来解释怎么做。

Table 1 Waveform I^2t Formulas

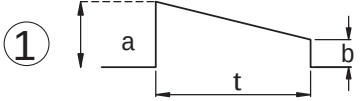
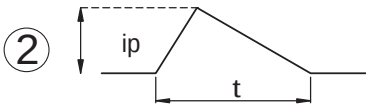
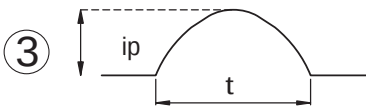
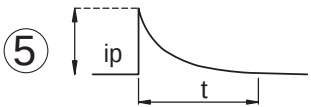
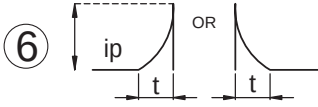
波形 Pulse Waveforms	焦耳积分值 Formulas
① 	$I^2t = \frac{1}{3} (I_a^2 + I_a I_b + I_b^2) t$
② 	$I^2t = \frac{1}{3} I_p^2 t$
③ 	$I^2t = \frac{1}{2} I_p^2 t$
④ 	$I^2t = I_p^2 t$
⑤ 	$I^2t = \frac{1}{2} I_p^2 t$
⑥ 	$I^2t = \frac{1}{5} I_p^2 t$

Table 1 Waveform I^2t Formulas

■ Pulse Cycle Withstand Capability

100,000 Pulses	Pulse $I^2t=22\%$	Of Nominal Melting I^2t
10,000 Pulses	Pulse $I^2t=29\%$	Of Nominal Melting I^2t
1,000 Pulses	Pulse $I^2t=38\%$	Of Nominal Melting I^2t
100 Pulses	Pulse $I^2t=48\%$	Of Nominal Melting I^2t

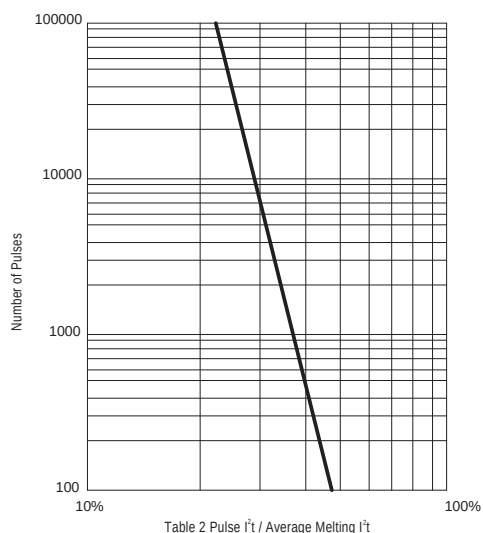
■ 脉冲循环抵抗能力

量测脉冲 I^2t 的值为保险丝熔断 I^2t 数值的22%时，该保险丝可承受高达100,000次的脉冲突波。

量测脉冲 I^2t 的值为保险丝熔断 I^2t 数值的29%时，该保险丝可承受高达10,000次的脉冲突波。

量测脉冲 I^2t 的值为保险丝熔断 I^2t 数值的38%时，该保险丝可承受高达1,000次的脉冲突波。

量测脉冲 I^2t 的值为保险丝熔断 I^2t 数值的48%时，该保险丝可承受高达100次的脉冲突波。



Note: Adequate time(10 seconds) must exist between pulse events to allow heat from the previous event to dissipate.

Example:

Select one fuse Type: MET(page 24) is capable of withstanding 100,000 pulses cycle.
The normal operating current is 2A at an ambient temperature of 25°C and waveform shown in Figure 1.
10A/div

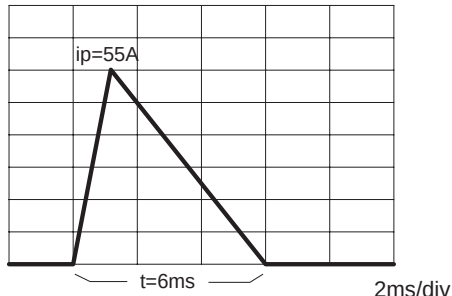


Figure 1

Answer:

Step1. Refer to table 1 and select suitable pulse waveforms and formulas to calculate I^2t .

$$\begin{aligned} I^2t &= 1/3 (ip)^2t \\ &= 1/3 \times (55)^2 \times 6 \div 1000 \\ &= 6.05A^2Sec \end{aligned}$$

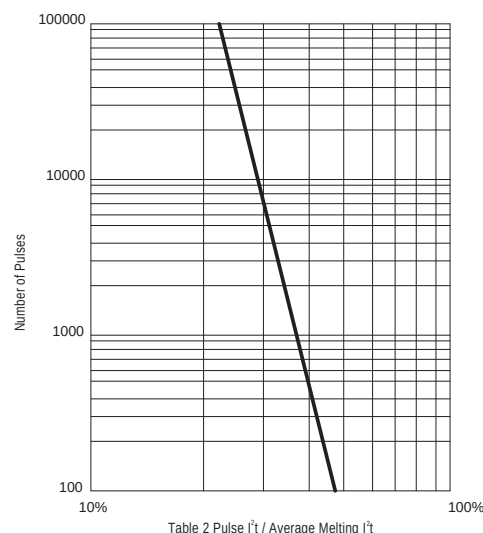
This value is referred to as the "Pulse I^2t "

Step2. Refer to table 2 decide Nominal Melting I^2t . 100,000 Pulses "Pulse I^2t "=22% Of Nominal Melting I^2t

So:

$$\begin{aligned} \text{Normal Melting } I^2t &= \text{Pulse } I^2t \div 0.22 \\ &= 6.05 \div 0.22 \\ &= 27.5 A^2Sec \end{aligned}$$

Step 3. Examine the I^2t rating data for the Time lag radial lead micro fuse. The part number MET, 2 ampere design is rated at 31A²Sec, which is the minimum fuse rating that will accommodate the 27.5 A²Sec calculated in Step2.



注释：从消散先前事件提供的热到脉冲事件之间须存在足够的时间（10秒）。

例题：

选择保险丝的类型：SET拥有可以抵抗100,000次的脉冲循环。正常工作电流为3.5A在环境温度为25°C且其波形如下图1所示。

10A/div

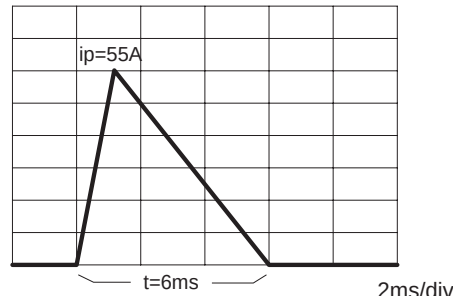


图1

解答：

步骤1. 参考表格1并选择合适的脉冲波形及相对应的公式来计算 I^2t

$$\begin{aligned} I^2t &= 1/3 (ip)^2t \\ &= 1/3 \times (55)^2 \times 6 \div 1000 \\ &= 6.05A^2Sec \end{aligned}$$

此数值被称为“脉冲 I^2t ”

步骤2. 参考表格2决定保险丝的熔断 I^2t 。量测脉冲 I^2t 的值为名目上熔断 I^2t 数值的22%时，该保险丝可承受高达100,000次的脉冲突波。所以：

$$\begin{aligned} \text{保险丝的 } I^2t &= \text{Pulse } I^2t \div 0.22 \\ &= 6.05 \div 0.22 \\ &= 27.5 A^2Sec \end{aligned}$$

步骤3. 检查微型保险丝时间延迟型的 I^2t 等级数据。SET部分，3.5安培设计在29.4A²Sec 等级，可容纳步骤2所计算出的27.5A²Sec 为保险丝的最小等级。

■ VICFUSE

circuit protection design combines miniature Fuses,Fuse Bases and Fuse-Carriers.We provide to you good combinations according to your different demands.For example,a fuse clip or holder is suitable for fuse without lead wire connect with pcb,it's easy for user change and fix it.

The Fuse-Holder must be thinking about the maximum energy dissipation (temperature raise) of the application and must check especially in installment about the temperature raise in the maximum ambient temperature.

Please ask for further detailed information for choice and application of our Fuse-Links.

■ RETURN OF GOODS

Return of unused merchandise is permitted within 30 days after shipment only,with freight and duty paid.A returning fee equal to 15% of the original sales price (minimum of US \$100)will be charged for this service,consult with sales department for authorization prior to returning merchandise for credit or replacement.An authorization number must be appeared on all packages returned or they will not be accepted.

■ VICFUSE

Components are guaranteed from defects in material and workmanship for a reasonable period of time after delivery. Our liability shall be limited to replacement to defective material only. Either seller or manufacturer shall be liable for any injury,loss or damage,direct or consequential,arising out of the use of or the inability to use the products. Before using,user shall determine the suitability of the product for his intended use,user assumes all risk and liability whatsoever in connection therewith.

■ VICFUSE

reserves the right to change specifications on any and all items shown in this catalog.

■ 服务

最新型保险丝及保险丝配件结合电路保护设计。我们会依据您不同的需求提供最有利的组合。例如：一个保险丝夹或保险丝座适用于管状保险丝无引脚型式与PCB板连接，方便使用者更新与替换。

保险丝座的选择必须考虑到最大能量散热（本体温升）的应用及架设时必须特别检查，关于在最大的环境温度下保险丝座的温升条件。

想了解更详细的保险丝连接选用资讯及应用请咨询我们。

■ 退货

未使用过的商品仅在出货后30天内接受退回并需付清运费及关税。退货服务费用相当于原售价的15%（最低金额为100美元），在退回商品更换或扣帐前请先与业务部门咨询并取得同意。授权码必须注明在要被退回的包裹上，否则交不予接受。

■ 交付

零件在交付后合理的时间内对于材料及制成品上的瑕疵有免费的保固。我们的责任仅限于瑕疵材料的更换。卖方或制造商将对任何的损失或损坏、直接或间接的、对不能使用的那些产品负责。在使用之前，使用者要确定产品的合适性有无符合该预期的使用，此外使用者须承担任何有关的所有风险及责任。

■ 免责

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FUSE SELECTION 01-05

INDEX 06

PRODUCT	TYPE	CHARACTERISTICS	A	V	
ELECTRONIC FUSE	F	SGS/SGP	10mA~10A	250V	08-09
	T	SDL/SDP	10mA~10A	250V	10-11
	F	SCF/SCF-A	100mA~8A	350V	12-13
	T	SCD/SCD-A	100mA~8A	350V	14-15
	T	UDE/UDE-A	500mA~25A	500V	16-17
	F	UFE/UFE-A	63mA~10A	250V	18-19
	T	USL/USL-A	63mA~400mA	250V	20-21
	T	UTE/UTE-A	500mA~16A	250V	22-23
	F	UBM/UBM-A	63mA~16A	250V	24-25
	T	UDA/UDA-A	500mA~25A	250V	26-27
	F	GFE/GME/GFP/GMP	10mA~20A	250V	28-29
	T	GSL/GST	10mA~20A	250V	30-31
	T	GTE/GTP	500mA~10A	250V	32-33
	F	GBM/GBP	10mA~20A	250V	34-35
	T	GDA/GPA	10mA~20A	250V	36-37
	T	UDL/UDL-A	500mA~10A	250V	38-39
	F	AFE/AGE/AFP/AGP	10mA~30A	250V	40-41
	T	ADL/ADP	10mA~30A	250V	42-43
	T	ATE/ATP	500mA~10A	250V	44-45
	F	ABE/ABP	10mA~40A	250V	46-47
	T	ADA/APA	100mA~30A	250V	48-49
	F	JME/JMP	10mA~20A	250V	50-51
	T	JSO/JSP	10mA~30A	250V	52-53
	T	JDL/JDP/JTE/JTP	1A~30A	250V	54-55
SPECIAL FUSE	T	SMP	50mA~8A	350V	56-57
	FF	ABB/ABB-A	1A~30A	500V	58-59
	T	AXT	1A~50A	250V/125V/60V	60
	FF	GBF/GBF-A	1A~20A	250V	61

VICFUSE(CQ)	BUSSMANN	LITTELFUSE	bel
SGS	C520	225	2JQ
SGP	C518	224	3JQ
SDL	C519	229	2JS
SDP	C515	230	MJS
GDA	-----	-----	-----
GPA	-----	-----	-----
UDE	-----	477	-----
UFE	S500	217	5SF
UFE-A	S500-V	227	5SFP
USL	S504	218	5ST
USL-A	S504-V	228	5STP
UTE	S506	218	5ST
UTE-A	S506-V	228	5STP
UBM	S501	216	5HF
UBM-A	S501-V	226	5HFP
UDA	S505	215	5HT
UDA-A	S505-V	221	5HTP
GFE/GME	GMA	235	5MF
GFP/GMP	GMA-V	236	5MFP
GBM	-----	-----	-----
GBP	-----	-----	-----
GSL	GMD	239	5TT
GST	GMD-V	238	5TTP
GTE	GMC	-----	5MT
GTP	GMC-V	-----	5MTP
AFE/AGE	AGC	312	3AG
AFP/AGP	AGC-V	318	3AP
ADL	MDL	313	3SB
ADP	MDL-V	315	3SBP
ATE	-----	-----	-----
ATP	-----	-----	-----
ABE	ABC	314	3AB
ABP	ABC-V	324	3ABP
ADA	MDA	326	GSA
APA	MDA-V	325	GSAP
JME	-----	231	-----
JMP	-----	-----	-----
JSO	-----	-----	-----
JSP	-----	-----	-----

Type SGS/SGP

4.5ØX14.5mm **RoHS** **Pb**

Fast Acting Glass Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
SGS/SGP .010	10mA	250V or less	*	*
SGS/SGP .020	20mA		*	*
SGS/SGP .030	30mA		*	*
SGS/SGP .032	32mA		*	*
SGS/SGP .040	40mA		*	*
SGS/SGP .050	50mA		*	*
SGS/SGP .060	60mA		*	*
SGS/SGP .063	63mA		*	*
SGS/SGP .070	70mA		*	*
SGS/SGP .080	80mA		*	*
SGS/SGP .100	100mA		6.8770	0.00150
SGS/SGP .125	125mA		6.5000	0.00234
SGS/SGP .150	150mA		3.4520	0.00337
SGS/SGP .160	160mA		3.1550	0.00384
SGS/SGP .175	175mA		3.0000	0.00459
SGS/SGP .200	200mA		2.5250	0.00600
SGS/SGP .250	250mA		1.8431	0.00937
SGS/SGP .300	300mA		1.8300	0.01350
SGS/SGP .350	350mA		1.0610	0.02450
SGS/SGP .400	400mA		0.3900	0.03200
SGS/SGP .500	500mA		0.3277	0.05000
SGS/SGP .600	600mA		0.2750	0.07200
SGS/SGP .700	700mA		0.2000	0.09800
SGS/SGP .750	750mA		0.1725	0.11250
SGS/SGP .800	800mA		0.1700	0.16000
SGS/SGP 001	1A		0.1263	0.25000
SGS/SGP 1.25	1.25A		0.0935	0.39000
SGS/SGP 1.50	1.5A		0.0756	0.56250
SGS/SGP 1.75	1.75A		0.0652	0.76500
SGS/SGP 002	2A		0.0517	1.20000
SGS/SGP 2.50	2.5A		0.0351	1.87500
SGS/SGP 003	3A		0.0326	2.70000
SGS/SGP 3.15	3.15A		0.0315	2.97600
SGS/SGP 3.50	3.5A		0.0311	3.67800
SGS/SGP 004	4A		0.0227	6.40000
SGS/SGP 4.50	4.5A		0.0211	8.10000
SGS/SGP 005	5A		0.0185	10.0000
SGS/SGP 006	6A		0.0158	14.4000
SGS/SGP 6.30	6.3A		0.0140	16.9000
SGS/SGP 007	7A		0.0125	24.5000
SGS/SGP 7.50	7.5A		0.0110	28.1250
SGS/SGP 008	8A		0.0100	32.0000
SGS/SGP 010	10A		0.0082	50.0000

SGS

SGP



Approval

SGS

UL Listed 10mA~3.5A
CSA Certified 10mA~3.5A
PSE 1A~3.5A

SGP (With Pig-Tail)

UL Listed 10mA~3.5A
CSA Certified 10mA~3.5A
PSE 1A~3.5A

Electrical Characteristic

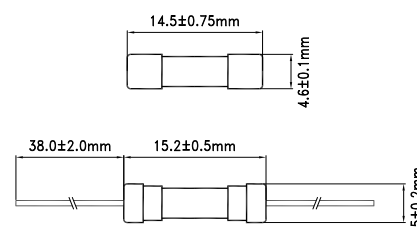
Rated Current	1 In	1.35In	2 In
	MIN	MAX	MAX
10mA~10A	4 hr	1 hr	5 sec

Environmental Temperature at 25°C

Interrupting Rating

10mA ~3.5A: 10,000 amperes at 125V AC
10mA ~1A: 35 amperes at 250V AC
1.1A~3.5A: 100 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps
Lead Wire:
Diameter Ø0.63 mm 7A and less.
Diameter Ø1.0 mm for rating above 8A.

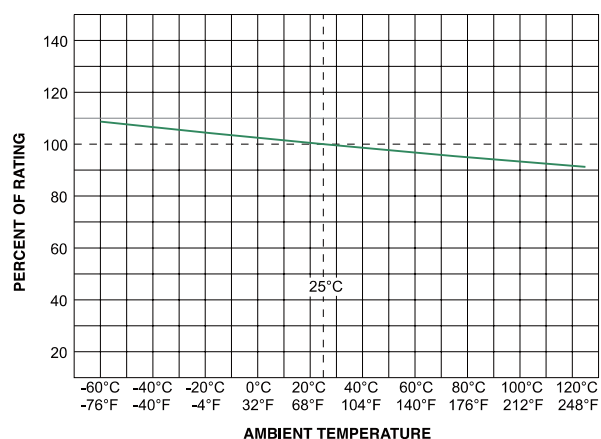
Packaging

- In Bulk:
SGS - 2,000 pcs ; SGP - 500 pcs per box
- On Axial Tape & Reel
1,000 pcs per reel.
- Tape & Reel specification:
per EIA-296-E & IEC 286-1
@ 10mm Pitch and 56.5mm inside Tape Spacing.

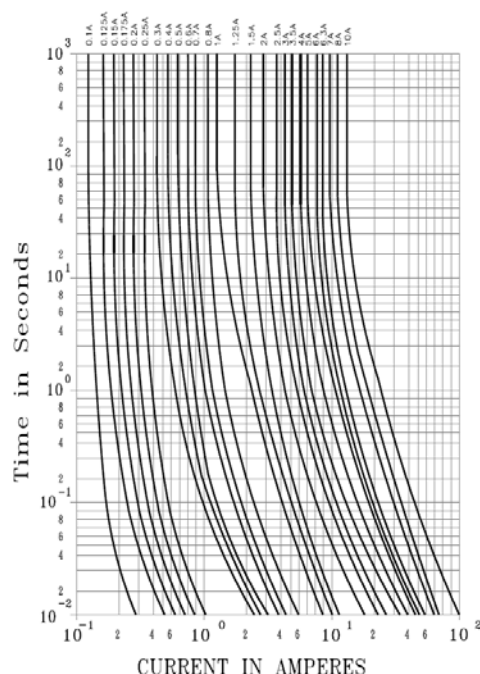
Environmental Specification

Operating Temperature -55°C to +125°C

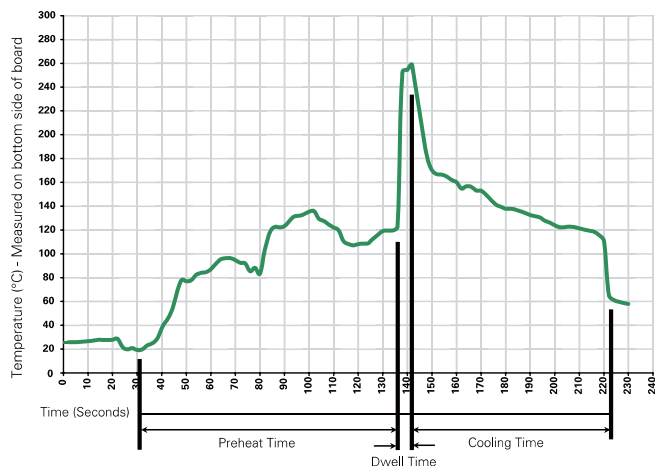
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

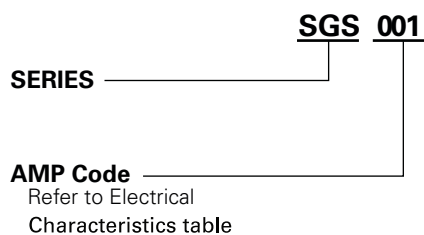
Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5° C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type SDL/SDP

4.5ØX14.5mm **RoHS** **Pb**

Time-Lag Glass Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
SDL/SDP .010	10mA	250V or less	*	*
SDL/SDP .020	20mA		*	*
SDL/SDP .030	30mA		*	*
SDL/SDP .032	32mA		*	*
SDL/SDP .040	40mA		*	*
SDL/SDP .050	50mA		*	*
SDL/SDP .060	60mA		*	*
SDL/SDP .063	63mA		*	*
SDL/SDP .070	70mA		*	*
SDL/SDP .080	80mA		*	*
SDL/SDP .100	100mA		7.0000	0.0200
SDL/SDP .125	125mA		6.2050	0.0312
SDL/SDP .150	150mA		5.1000	0.0450
SDL/SDP .160	160mA		4.2160	0.0512
SDL/SDP .200	200mA		2.5680	0.0800
SDL/SDP .250	250mA		1.6159	0.1250
SDL/SDP .300	300mA		1.6000	0.2250
SDL/SDP .350	350mA		0.9818	0.3062
SDL/SDP .400	400mA		0.9030	0.4000
SDL/SDP .500	500mA		0.5000	0.6250
SDL/SDP .600	600mA		0.4900	1.0800
SDL/SDP .700	700mA		0.4100	1.4700
SDL/SDP .800	800mA		0.2849	2.2400
SDL/SDP 001	1A		0.1918	5.0000
SDL/SDP 1.25	1.25A		0.1341	7.8120
SDL/SDP 1.50	1.5A		0.1037	11.250
SDL/SDP 1.75	1.75A		0.0950	15.312
SDL/SDP 002	2A		0.0767	20.000
SDL/SDP 2.50	2.5A		0.0615	37.500
SDL/SDP 003	3A		0.0426	54.000
SDL/SDP 3.15	3.15A		0.0403	69.458
SDL/SDP 3.50	3.5A		0.0379	98.000
SDL/SDP 004	4A		0.0271	160.00
SDL/SDP 005	5A		0.0242	300.00
SDL/SDP 006	6A		0.0175	432.00
SDL/SDP 007	7A		0.0142	588.00
SDL/SDP 008	8A		0.0113	768.00
SDL/SDP 010	10A		0.0086	1200.0

SDL

SDP



Approval

SDL

UL Listed 10mA~8A

CSA Certified 10mA~8A

PSE 1A~5A

SDP (With Pig-Tail)

UL Listed 10mA ~3.5A

UL Recognized 3.75A~8A

CSA Certified 10mA~3.5A

PSE 1A~5A

Electrical Characteristic

Rated Current	1 In	1.35In	2 In	
	MIN	MAX	MIN	MAX
10mA~10A	4 hr	1 hr	3 sec	120 sec

Interrupting Rating

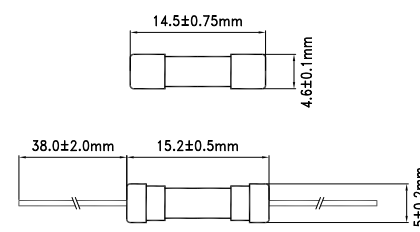
10mA ~8A: 10,000 amperes at 125V AC

10mA~1A: 35 amperes at 250V AC

1.1A~3.5A: 100 amperes at 250V AC

3.75A~8A: 200 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Glass Body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.63 mm 7A and less.

Diameter Ø1.0 mm for rating above 8A.

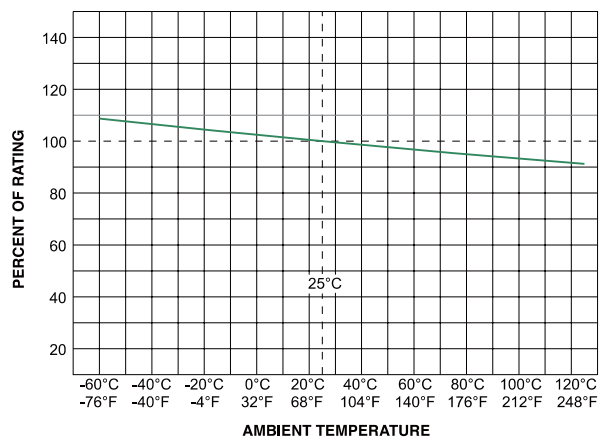
Packaging

- In Bulk:
SDL - 2,000 pcs; SDP - 500 pcs per box
- On Axial Tape & Reel
1,000 pcs per reel.
- Tape & Reel specification:
per EIA-296-E & IEC 286-1
@ 10mm Pitch and 56.5mm inside Tape Spacing.

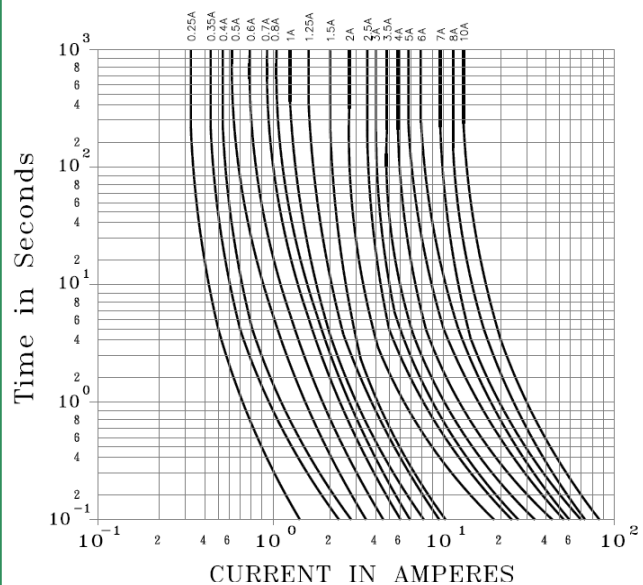
Environmental Specification

Operating Temperature -55°C to +125°C

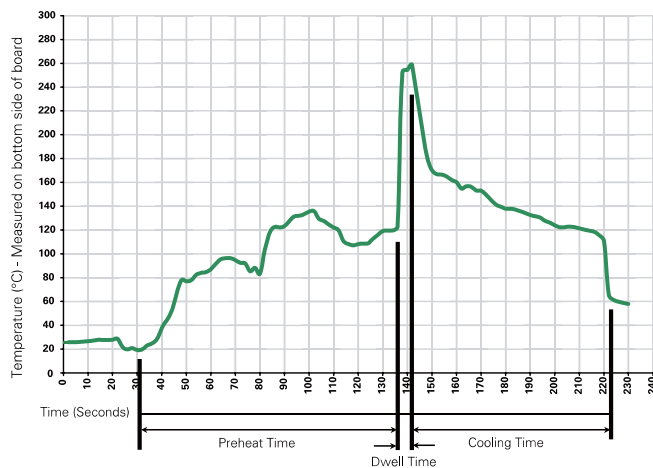
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	
	260° C Maximum
Solder Dwell Time:	
	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5° C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System

SDL 001

SERIES _____

AMP Code _____
Refer to Electrical
Characteristics table

Type SCF/SCF-A

4.5ØX14.5mm **RoHS** **Pb**

Fast Acting Ceramic Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
SCF/SCF-A .100	100mA	350V or less	6.6000	0.00150
SCF/SCF-A .125	125mA		5.2050	0.00234
SCF/SCF-A .150	150mA		3.4520	0.00337
SCF/SCF-A .160	160mA		3.1550	0.00384
SCF/SCF-A .175	175mA		3.0000	0.00459
SCF/SCF-A .200	200mA		2.5250	0.00600
SCF/SCF-A .250	250mA		3.2985	0.00937
SCF/SCF-A .300	300mA		2.5729	0.01350
SCF/SCF-A .350	350mA		1.8473	0.02450
SCF/SCF-A .400	400mA		1.1217	0.03200
SCF/SCF-A .500	500mA		0.3961	0.05000
SCF/SCF-A .600	600mA		0.3663	0.07200
SCF/SCF-A .700	700mA		0.3366	0.09800
SCF/SCF-A .750	750mA		0.3068	0.11250
SCF/SCF-A .800	800mA		0.2771	0.16000
SCF/SCF-A 001	1A		0.2474	0.25000
SCF/SCF-A 1.25	1.25A		0.2063	0.39000
SCF/SCF-A 1.50	1.5A		0.1652	0.56250
SCF/SCF-A 1.75	1.75A		0.1241	0.76500
SCF/SCF-A 002	2A		0.0831	1.20000
SCF/SCF-A 2.50	2.5A		0.0667	1.87500
SCF/SCF-A 003	3A		0.0523	2.70000
SCF/SCF-A 3.15	3.15A		0.0467	2.97600
SCF/SCF-A 3.50	3.5A		0.0412	3.67500
SCF/SCF-A 004	4A		0.0357	6.40000
SCF/SCF-A 4.50	4.5A		0.0304	8.10000
SCF/SCF-A 005	5A		0.0252	10.0000
SCF/SCF-A 006	6A		0.0212	14.4000
SCF/SCF-A 6.30	6.3A		0.0173	16.9000
SCF/SCF-A 007	7A		0.0160	24.5000
SCF/SCF-A 7.50	7.5A		0.0147	28.1250
SCF/SCF-A 008	8A		0.0134	32.0000



Approval

SCF/SCF-A

Certified products for U.S. and Canada 100mA~8A

Electrical Characteristic

Rated Current	1 In	1.35In	2 In
	MIN	MAX	MAX
100mA~8A	4 hr	1 hr	5 sec

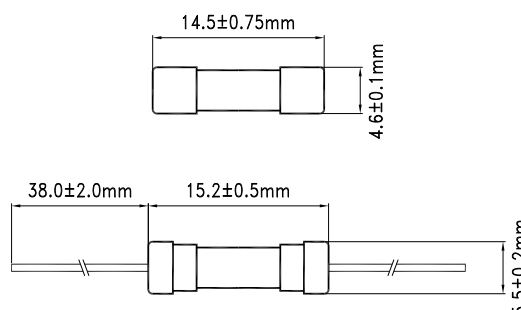
Interrupting Rating

100mA~8A: 10,000 amperes at 125V AC

100mA~8A: 200 amperes at 250V AC

100mA~8A: 100 amperes at 350V AC

Mechanical Dimension



Physical Specification

Material

Ceramic Body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.63 mm 7A and less.

Diameter Ø1.0 mm for rating above 8A.

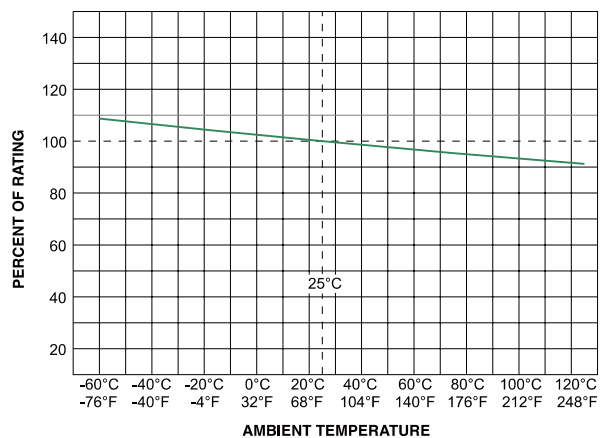
Packaging

- In Bulk:
SCF – 2,000 pcs ; SCF-A – 500 pcs per box
- On Axial Tape & Reel
1,000 pcs per reel.
- Tape & Reel specification:
per EIA-296-E & IEC 286-1
@ 10mm Pitch and 56.5mm inside Tape Spacing.

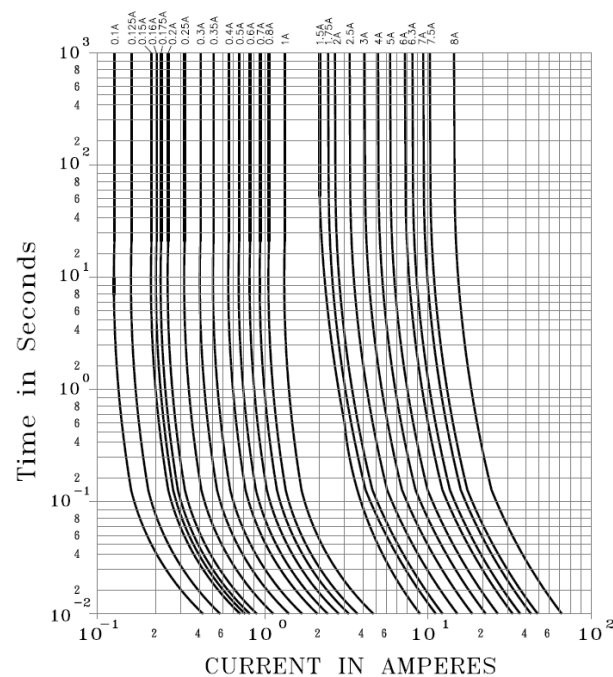
Environmental Specification

Operating Temperature -55°C to +125°C

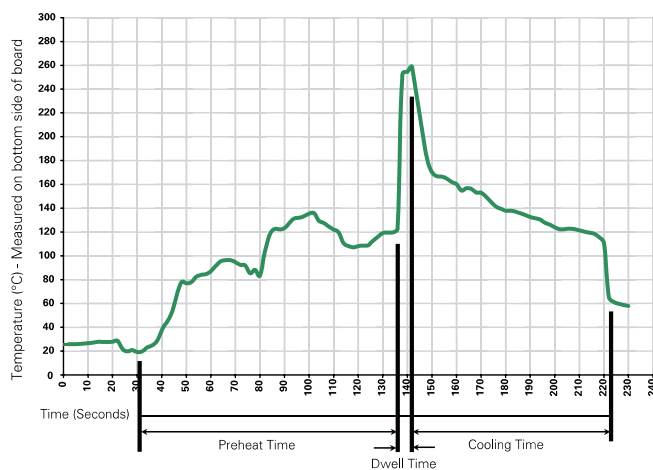
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	
	260° C Maximum
Solder Dwell Time:	
	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5° C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System

SERIES ——— **SCF 001**

AMP Code ———
Refer to Electrical
Characteristics table

Type SCD/SCD-A

4.5ØX14.5mm **RoHS** **Pb**

Time-Lag Ceramic Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
SCD/SCD-A .100	100mA	350V or less	12.134	0.0100
SCD/SCD-A .125	125mA		11.325	0.0150
SCD/SCD-A .150	150mA		10.547	0.0225
SCD/SCD-A .160	160mA		9.6830	0.0256
SCD/SCD-A .200	200mA		8.7200	0.0400
SCD/SCD-A .250	250mA		6.2970	0.0625
SCD/SCD-A .300	300mA		4.9000	0.0900
SCD/SCD-A .350	350mA		3.3490	0.1230
SCD/SCD-A .400	400mA		2.2600	0.1600
SCD/SCD-A .500	500mA		1.5400	0.2500
SCD/SCD-A .600	600mA		1.2600	0.3600
SCD/SCD-A .700	700mA		1.0000	0.4900
SCD/SCD-A .800	800mA		0.7250	0.6400
SCD/SCD-A 001	1A		0.1975	1.0000
SCD/SCD-A 1.25	1.25A		0.1727	1.5625
SCD/SCD-A 1.50	1.5A		0.1480	2.2500
SCD/SCD-A 1.75	1.75A		0.1233	3.0625
SCD/SCD-A 002	2A		0.0986	4.0000
SCD/SCD-A 2.50	2.5A		0.0704	6.2500
SCD/SCD-A 003	3A		0.0511	9.0000
SCD/SCD-A 3.15	3.15A		0.0454	9.9225
SCD/SCD-A 3.50	3.5A		0.0362	12.250
SCD/SCD-A 004	4A		0.0337	16.000
SCD/SCD-A 005	5A		0.0261	25.000
SCD/SCD-A 006	6A		0.0201	36.000
SCD/SCD-A 007	7A		0.0173	49.000
SCD/SCD-A 008	8A		0.0119	64.000



Approval

SCD/SCD-A

Certified products for U.S. and Canada 100mA~8A

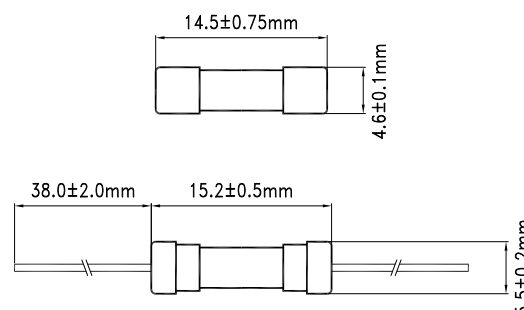
Electrical Characteristic

Rated Current	1 In	1.35 In	2 In	
	MIN	MAX	MIN	MAX
100mA~8A	4 hr	1 hr	2 sec	120 sec

Interrupting Rating

100mA~8A: 10,000 amperes at 125V AC
 100mA~8A: 200 amperes at 250V AC
 100mA~8A: 100 amperes at 350V AC

Mechanical Dimension



Physical Specification

Material

Ceramic Body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.63 mm 7A and less.

Diameter Ø1.0 mm for rating above 8A.

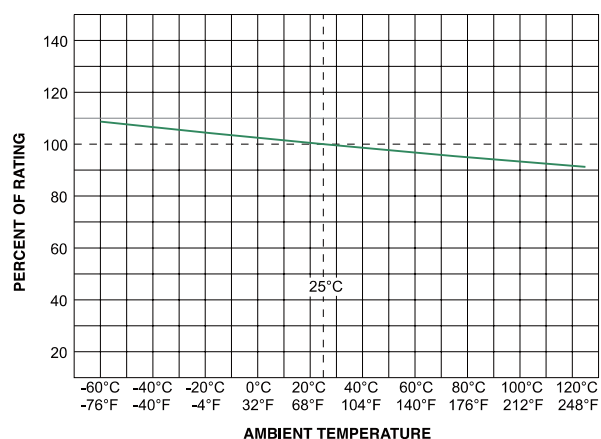
Packaging

- In Bulk:
SCD- 2,000 pcs ; SCD-A - 500 pcs per box
- On Axial Tape & Reel
1,000 pcs per reel.
- Tape & Reel specification:
per EIA-296-E & IEC 286-1
@ 10mm Pitch and 56.5mm inside Tape Spacing.

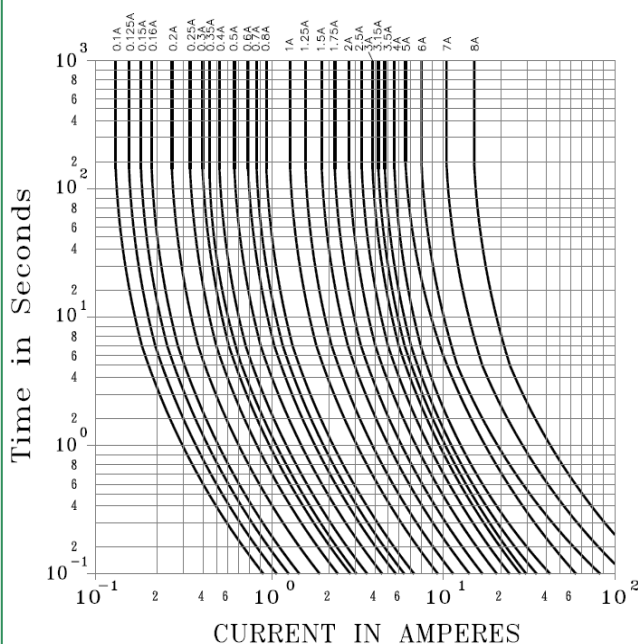
Environmental Specification

Operating Temperature -55°C to +125°C

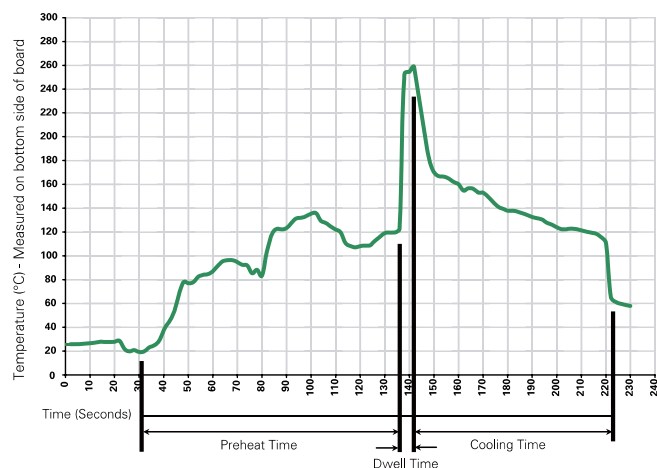
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	
	260° C Maximum
Solder Dwell Time:	
	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System

SCD 001

SERIES ———

AMP Code ———
Refer to Electrical
Characteristics table

Type UDE/UDE-A

5ØX20mm



Time-Lag Ceramic Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Voltage Drop (mv)MAX	Nominal Melting I ² t A ² Sec
UDE/UDE-A .500	500mA	500V or less	0.1795	850	0.9350
UDE/UDE-A .630	630mA		0.1369	650	1.5082
UDE/UDE-A .800	800mA		0.1029	500	2.3680
UDE/UDE-A 001	1A		0.0710	350	4.5000
UDE/UDE-A 1.25	1.25A		0.0551	300	5.6250
UDE/UDE-A 1.60	1.6A		0.0690	200	7.6800
UDE/UDE-A 002	2A		0.0521	190	10.996
UDE/UDE-A 2.50	2.5A		0.0411	180	21.828
UDE/UDE-A 3.15	3.15A		0.0294	140	47.221
UDE/UDE-A 004	4A		0.0193	100	83.200
UDE/UDE-A 005	5A		0.0137	100	89.000
UDE/UDE-A 6.30	6.3A		0.0113	100	125.00
UDE/UDE-A 008	8A		0.0058	100	224.30
UDE/UDE-A 010	10A		0.0050	100	405.10
UDE/UDE-A 012	12A		0.0049	100	558.57
UDE/UDE-A 016	16A		0.0033	100	1186.0
UDE/UDE-A 020	20A		0.0024	100	1600.0
UDE/UDE-A 025	25A		0.0016	100	2500.0

Approval

UDE/UDE-A

TUV

500mA~25A

Recognized Component for Canada and U.S.

500mA~25A

UDE

UDE-A



Electrical Characteristic

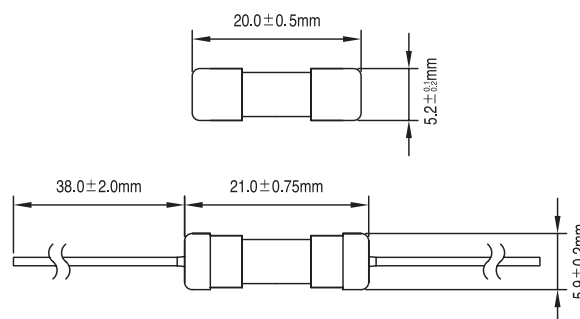
Rated Current	1.5In		2.1In		2.75 In		4 In		10 In	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
500mA	60	30	250	80	50	5	5	150		
~800mA	min	min	ms	sec	ms	sec	ms	ms		
1A~3.15A	60	30	750	80	95	5	10	150		
	min	min	ms	sec	ms	sec	ms	ms		
4A~6.3A	60	30	750	80	150	5	10	150		
	min	min	ms	sec	ms	sec	ms	ms		
8A~25A	30	30	750	80	150	5	10	150		
	min	min	ms	sec	ms	sec	ms	ms		

Environmental Temperature at 25°C

Interrupting Rating

500mA~25A : 100 amperes at 500V AC
 500mA~3.15A : 1500 amperes at 500V DC
 4A~12A : 500 amperes at 500V DC
 12.1A~25A : 400 amperes at 500V DC

Mechanical Dimension



Physical Specification

Material

Ceramic body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8mm 12A and less.

Diameter Ø1.0mm for rating above 16A

Packaging

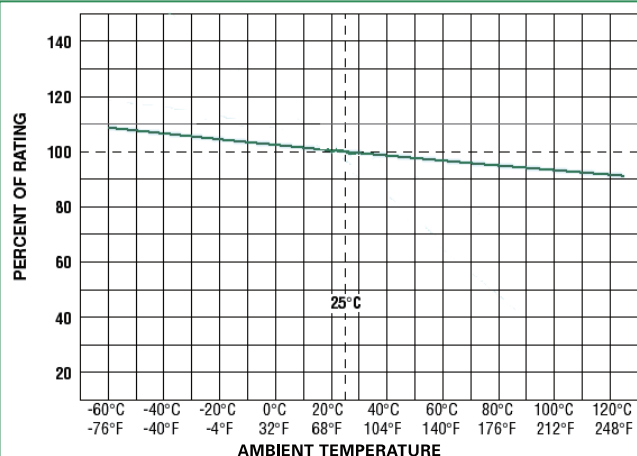
In Bulk:

UDE - 1,000 pcs ; UDE-A - 500 pcs per box

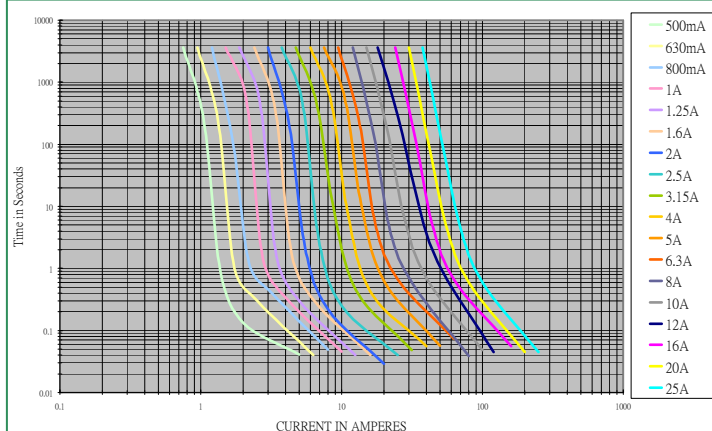
Environmental Specification

Operating Temperature -55°C to +125°C

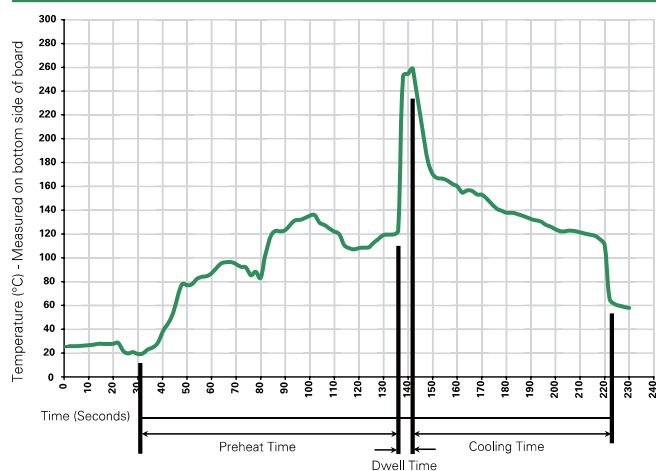
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

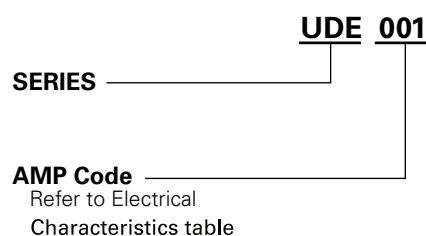
Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type UFE/UFE-A

5ØX20mm

RoHS



Quick Acting Low Breaking Capacity



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Voltage Drop (mv)MAX	Nominal Melting I ² t A ² Sec
UFE/UFE-A .063	63mA	250V or less	10.331	5000	0.000794
UFE/UFE-A .080	80mA		7.6860	4000	0.001280
UFE/UFE-A .100	100mA		4.5675	3500	0.001800
UFE/UFE-A .125	125mA		3.2205	2000	0.002810
UFE/UFE-A .160	160mA		2.6655	2000	0.005370
UFE/UFE-A .200	200mA		1.8220	1700	0.016000
UFE/UFE-A .250	250mA		1.3237	1400	0.025000
UFE/UFE-A .315	315mA		0.4159	1300	0.039600
UFE/UFE-A .400	400mA		0.2954	1200	0.125000
UFE/UFE-A .500	500mA		0.2482	1000	0.198000
UFE/UFE-A .630	630mA		0.1932	650	0.768000
UFE/UFE-A .800	800mA		0.1265	240	0.800000
UFE/UFE-A 001	1A		0.0909	200	1.300000
UFE/UFE-A 1.25	1.25A		0.0692	200	1.875000
UFE/UFE-A 1.60	1.6A		0.0502	190	3.325000
UFE/UFE-A 002	2A		0.0373	170	5.600000
UFE/UFE-A 2.50	2.5A		0.0302	170	8.750000
UFE/UFE-A 3.15	3.15A		0.0224	150	14.88000
UFE/UFE-A 004	4A		0.0177	130	24.00000
UFE/UFE-A 005	5A		0.0149	130	40.00000
UFE/UFE-A 6.30	6.3A		0.0103	130	67.47000
UFE/UFE-A 008	8A		0.0077	130	140.8000
UFE/UFE-A 010	10A		0.0058	130	300.0000

Approval

UFE

SEMKO	63mA~10A
VDE	63mA~10A
BSI	63mA~6.3A
UL Recognized	63mA~10A
CSA Acceptance	63mA~10A
PSE	1A~10A
KTL	63mA~6.3A
CCC	63mA~6.3A
CQC	8A /10A

UFE-A

SEMKO	63mA~10A
VDE	63mA~10A
UL Recognized	63mA~10A
CSA Acceptance	63mA~10A
PSE	1A~10A
KTL	63mA~6.3A
CQC	8A /10A

UFE

UFE-A



Electrical Characteristic

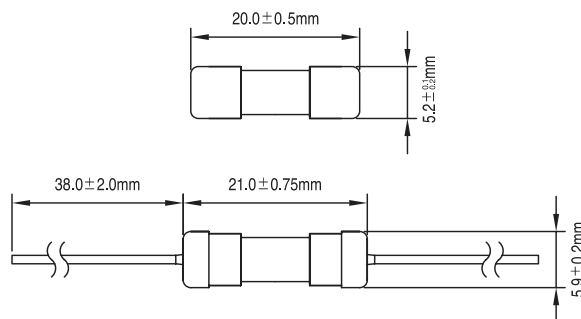
IEC-60127 STANDARD SHEET 2)

Rated Current	1.5In		2.1In		2.75 In		4 In		10 In	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
63mA~100mA	60 min	30 min	10 ms	500 ms	3 ms	100 ms	20 ms			
125mA~6.3A	60 min	30 min	50 ms	2 sec	10 ms	300 ms	20 ms			
8A~10A	30 min	30 min	50 ms	2 sec	10 ms	400 ms	40 ms			

Interrupting Rating

35 amperes or 10 In rated current; whichever is greater.
At 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps

Lead Wire:

Tin-lead plated Copper, Diameter Ø0.8mm.

Packaging

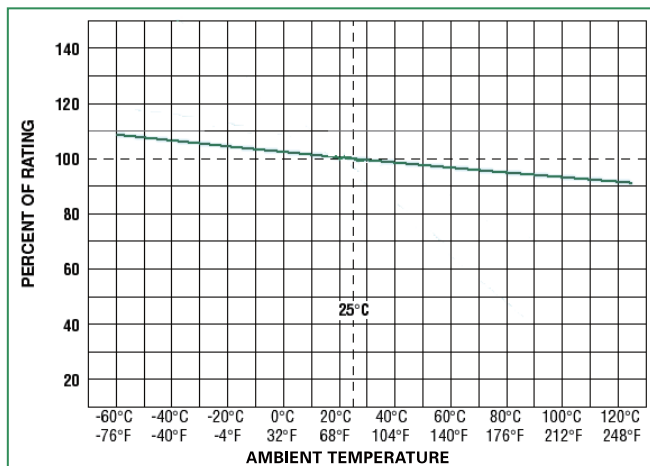
In Bulk:

UFE - 1,000 pcs ; UFE-A – 500 pcs per box

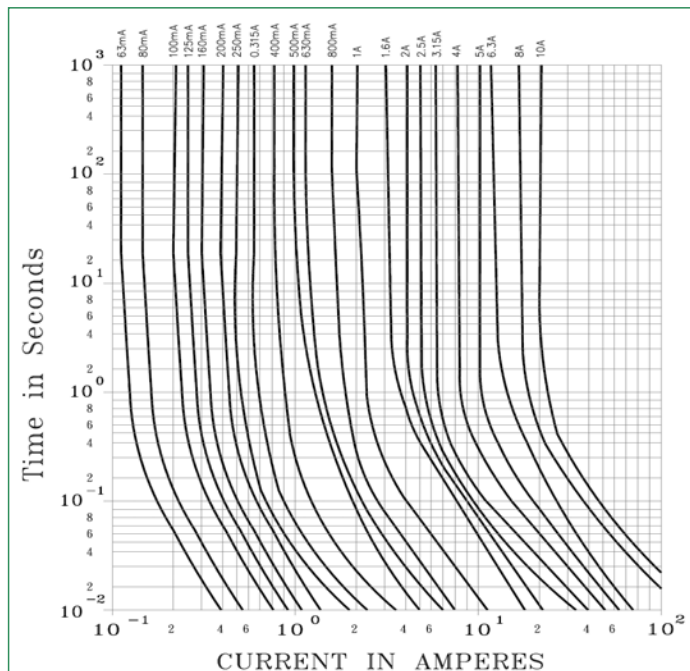
Environmental Specification

Operating Temperature -55°C to +125°C

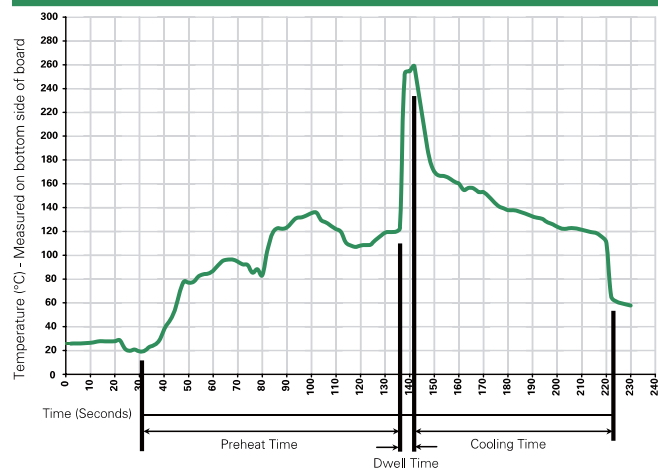
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

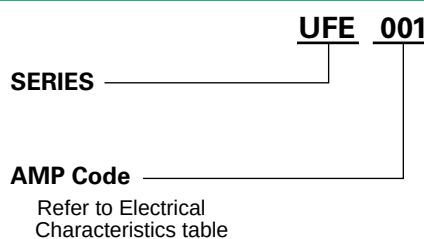
Wave Parameter	Lead-Free Recommendation
Preheat:	
(Depends on Flux Activation Temperature)	(Typical Industry Recommendation)
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type USL/USL-A

5ØX20mm

RoHS



Time-Lag Low Breaking Capacity



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Voltage Drop (mv)MAX	Nominal Melting I ² t A ² Sec
USL/USL-A .063	63mA	250V or less	12.960	3000	0.0108
USL/USL-A .080	80mA		8.8800	3000	0.0244
USL/USL-A .100	100mA		6.8600	2500	0.0520
USL/USL-A .125	125mA		3.4100	2000	0.0910
USL/USL-A .160	160mA		2.8600	1900	0.1000
USL/USL-A .200	200mA		1.9900	1500	0.2424
USL/USL-A .250	250mA		1.1900	1300	0.5450
USL/USL-A .315	315mA		0.8212	1100	1.1330
USL/USL-A .400	400mA		0.5019	1000	1.5380

Approval

USL

SEMKO	63mA~400mA
VDE	63mA~400mA
BSI	63mA~400mA
UL Recognized	63mA~400mA
CSA Acceptance	63mA~400mA
CCC	63mA~400mA
KTL	63mA~400mA

USL-A

SEMKO	63mA~400mA
VDE	63mA~400mA
UL Recognized	63mA~400mA
CSA Acceptance	63mA~400mA
KTL	63mA~400mA

USL

USL-A



Electrical Characteristic

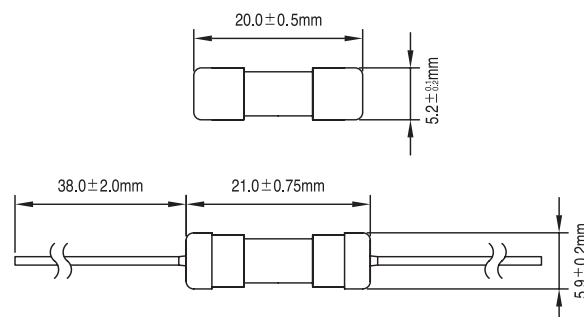
(IEC-60127-2 STANDARD SHEET3)

Rated Current	1.5In		2.1In		2.75In		4In		10In	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
63mA~100mA	60 min	2 min	200 ms	10 sec	40 ms	3 sec	10 ms	300 ms		
125mA~400mA	60 min	2 min	600 ms	10 sec	150 ms	3 sec	20 ms	300 ms		

Interrupting Rating

35 amperes or 10 In rated current; whichever is greater.
At 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps
Lead Wire:
Diameter Ø0.8mm 12A and less.
Diameter Ø1.0mm for rating above 12.1A

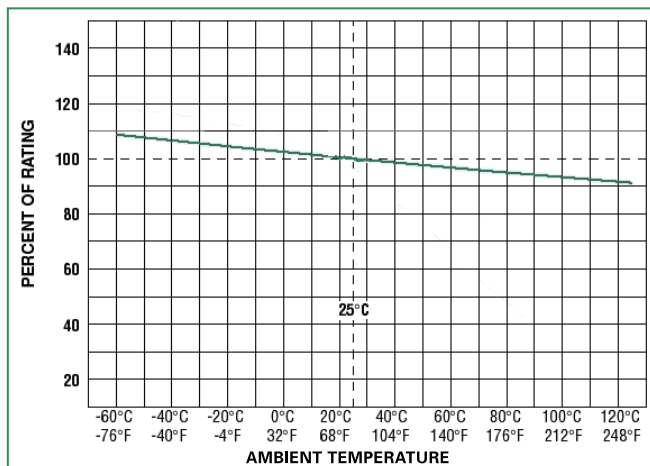
Packaging

In Bulk:
USL - 1,000 pcs ; USL-A - 500 pcs per box

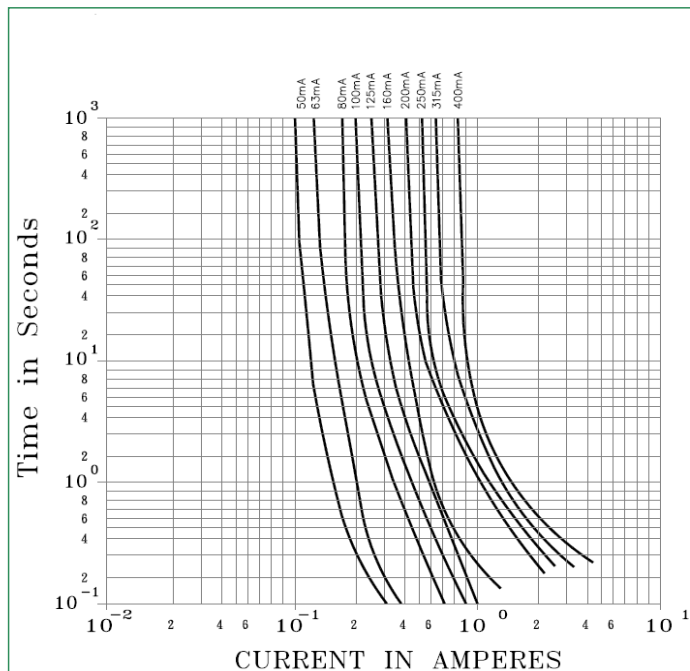
Environmental Specification

Operating Temperature -55°C to +125°C

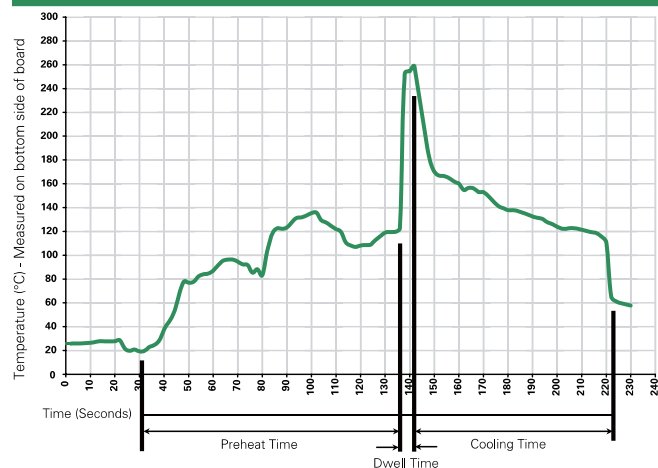
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

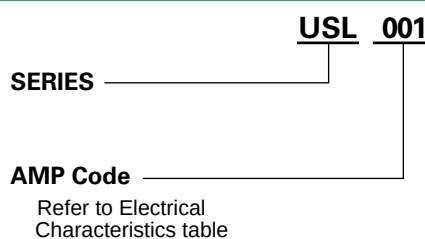
Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5° C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type UTE/UTE-A

5ØX20mm

RoHS



Time-Lag Low Breaking Capacity



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Voltage Drop (mv)MAX	Nominal Melting I ² t A ² Sec
UTE/UTE-A .500	500mA	250V or less	0.1989	900	0.5250
UTE/UTE-A .630	630mA		0.1403	300	1.1510
UTE/UTE-A .800	800mA		0.1089	250	2.2400
UTE/UTE-A 001	1A		0.0776	150	2.4000
UTE/UTE-A 1.25	1.25A		0.0566	150	7.5000
UTE/UTE-A 1.60	1.6A		0.0438	150	6.1440
UTE/UTE-A 002	2A		0.0349	150	8.8000
UTE/UTE-A 2.50	2.5A		0.0241	120	15.000
UTE/UTE-A 3.15	3.15A		0.0187	100	29.760
UTE/UTE-A 004	4A		0.0145	100	56.000
UTE/UTE-A 005	5A		0.0107	100	70.000
UTE/UTE-A 6.30	6.3A		0.0083	100	198.40
UTE/UTE-A 008	8A		0.0059	100	345.60
UTE/UTE-A 010	10A		0.0043	100	650.00
UTE/UTE-A 011	11A		0.0040	100	740.00
UTE/UTE-A 12.5	12.5A		0.0032	100	882.00
UTE/UTE-A 015	15A		0.0027	100	1125.0
UTE/UTE-A 016	16A		0.0026	100	1517.1

Approval

UTE

SEMCO	500mA ~10A
VDE	500mA ~10A
BSI	500mA ~6.3A
UL Recognized	500mA ~10A
CSA Acceptance	500mA ~10A
PSE	1A~15A
KTL	500mA~6.3A
CCC	500mA~6.3A
CQC	8A / 10A
TUV	11A~15A
Recognized Component for Canada and U.S.	11A~16A

UTE-A

SEMCO	500mA~10A
VDE	500mA ~10A
UL Recognized	500mA ~10A
CSA Acceptance	500mA ~10A
PSE	1A~15A
KTL	500mA~6.3A
CQC	8A / 10A
TUV	11A~15A
Recognized Component for Canada and U.S.	11A~16A

UTE

UTE-A



Electrical Characteristic

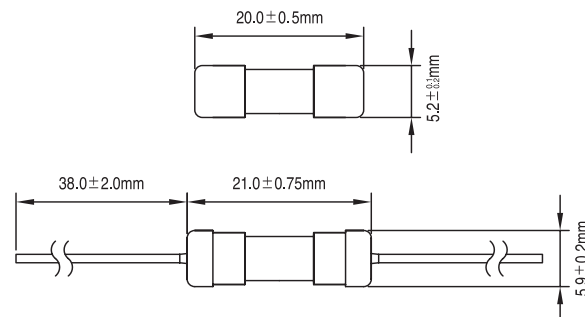
(IEC-60127-2 STANDARD SHEET3)

Rated Current	1.5In		2.1In		2.75In		4In		10In	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
500mA~6.3A	60 min	2 min	600 ms	10 sec	150 ms	3 sec	20 ms	300 ms		
8A~16A	30 min	2 min	600 ms	10 sec	150 ms	3 sec	20 ms	300 ms		

Interrupting Rating

35 amperes or 10 In rated current; whichever is greater.
At 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8mm 12A and less.

Diameter Ø1.0mm for rating above 12.1A

Packaging

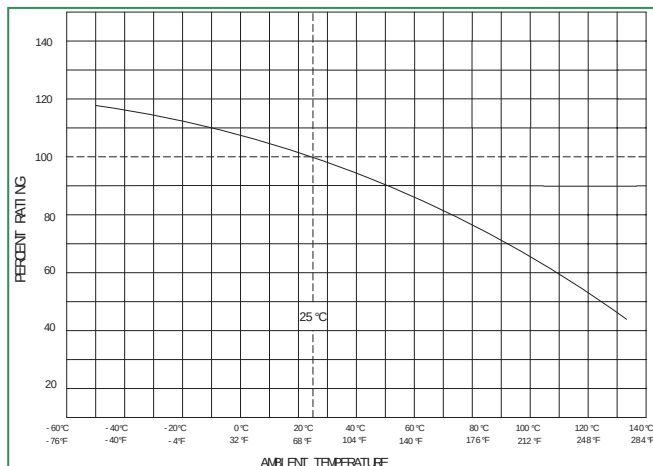
In Bulk:

UTE - 1,000 pcs ; UTE-A - 500 pcs per box

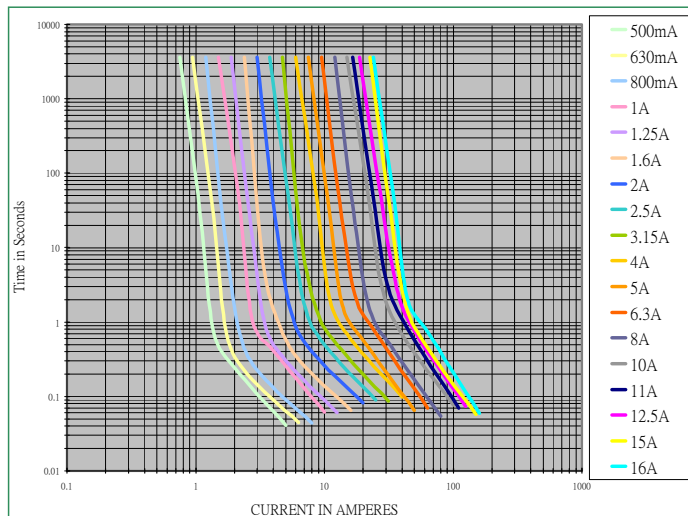
Environmental Specification

Operating Temperature -55°C to +125°C

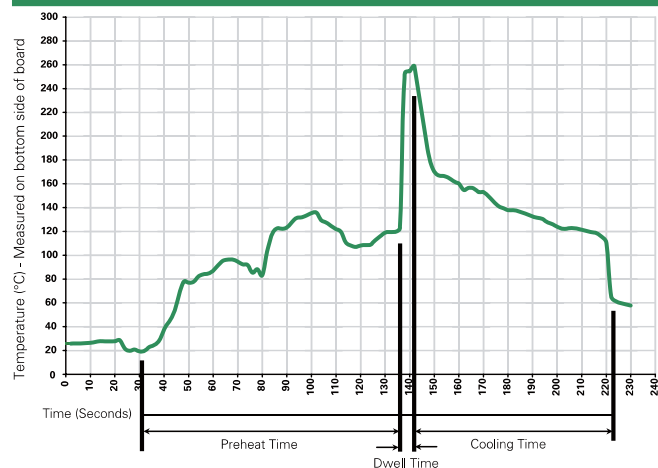
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

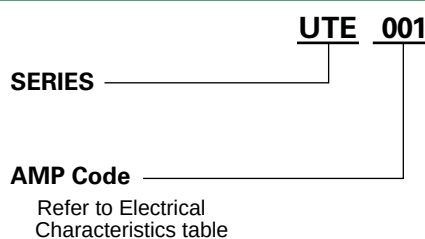
Wave Parameter	Lead-Free Recommendation
Preheat:	
(Depends on Flux Activation Temperature)	(Typical Industry Recommendation)
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type UBM/UBM-A

5ØX20mm

RoHS



Quick Acting High Breaking Capacity



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Voltage Drop (mv)MAX	Nominal Melting I ² t A ² Sec
UBM/UBM-A .063	63mA	250V*1 or less	10.390	8800	0.00079
UBM/UBM-A .080	80mA		7.7820	7600	0.00128
UBM/UBM-A .100	100mA		6.3375	7000	0.00200
UBM/UBM-A .125	125mA		3.3280	5000	0.00770
UBM/UBM-A .160	160mA		2.7060	4300	0.01272
UBM/UBM-A .200	200mA		2.0270	3500	0.01988
UBM/UBM-A .250	250mA		1.4370	2800	0.03106
UBM/UBM-A .315	315mA		0.9381	2500	0.08905
UBM/UBM-A .400	400mA		0.3740	2000	0.14400
UBM/UBM-A .500	500mA		0.2500	1800	0.21257
UBM/UBM-A .630	630mA		0.1624	1500	0.36512
UBM/UBM-A .800	800mA		0.1132	1200	0.58481
UBM/UBM-A 001	1A		0.0910	1000	0.91982
UBM/UBM-A 1.25	1.25A		0.1462	800	1.07974
UBM/UBM-A 1.60	1.6A		0.0916	600	1.32649
UBM/UBM-A 002	2A		0.0727	500	1.84136
UBM/UBM-A 2.50	2.5A		0.0509	400	4.33125
UBM/UBM-A 3.15	3.15A		0.0370	350	9.59994
UBM/UBM-A 004	4A		0.0283	300	15.5200
UBM/UBM-A 005	5A		0.0208	250	38.3333
UBM/UBM-A 6.30	6.3A		0.0150	200	73.4265
UBM/UBM-A 008	8A		0.0094	200	108.800
UBM/UBM-A 010	10A		0.0075	200	170.000
UBM/UBM-A 012	12A		0.0062	200	221.000
UBM/UBM-A 12.5	12.5A		0.0043	200	234.000
UBM/UBM-A 015	15A		0.0041	200	341.000
UBM/UBM-A 016	16A		0.0040	200	384.000

*1: 277V optional

Approval(250V AC)

UBM

SEMKO	63mA~6.3A
VDE	63mA~10A
TUV	12.5A/16A
BSI	63mA~6.3A
UL Recognized	63mA~10A
CSA Acceptance	63mA~10A
PSE	1A~5A
CCC	63mA~6.3A
KTL	63mA~6.3A
CQC	8A/10A
Recognized Component for Canada and U.S.	10.1A~16A

UBM-A

SEMKO	63mA~6.3A
VDE	63mA~10A
TUV	12.5A/16A
UL Recognized	63mA~10A
CSA Acceptance	63mA~10A
PSE	1A~5A
KTL	63mA~6.3A
CQC	1A~10A
Recognized Component for Canada and U.S.	10.1A~16A

UBM

UBM-A



Approval(277V AC)

UBM-A

Recognized Component for Canada and U.S.
500mA~16A
TUV 500mA~16A

Electrical Characteristic

(IEC-60127-2 STANDARD SHEET1)

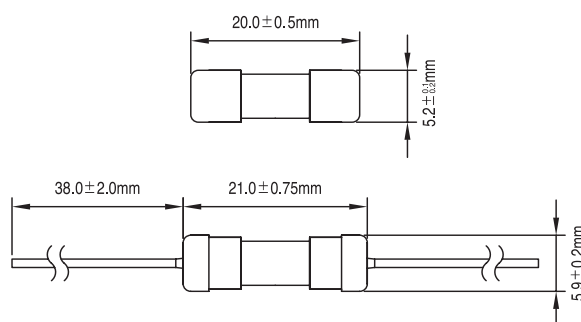
Rated Current	1.5In MIN	2.1In MAX	2.75 In MIN	MAX	4 In MIN	MAX	10 In MAX
63mA~4A	60 min	30 min	10 ms	2 sec	3 ms	300 ms	20 ms
5A~6.3A	60 min	30 min	10 ms	3 sec	3 ms	300 ms	20 ms
8A~16A	30 min	30 min	40 ms	20 sec	10 ms	1 sec	30 ms

Interrupting Rating

63mA~16A: 1500 amperes at 250V AC.

500mA~16A : 1500 amperes at 277V AC(optional)

Mechanical Dimension



Physical Specification

Material

Ceramic body / Nickel Plated Brass Caps
Lead Wire:
Diameter Ø0.8mm 12A and less.
Diameter Ø1.0mm for rating above 12.5A.

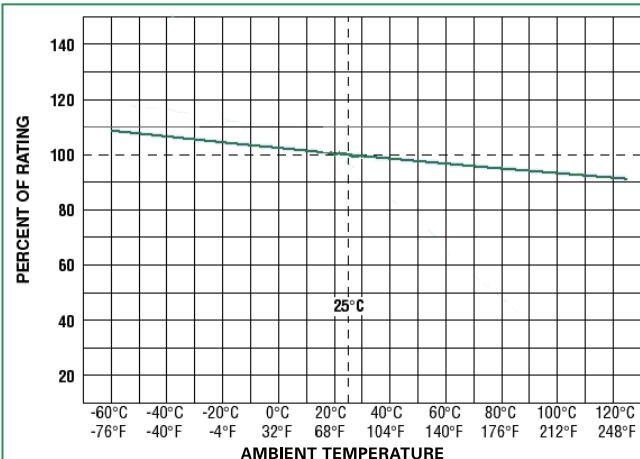
Packaging

In Bulk:
UBM-1,000 pcs ; UBM-A-500 pcs per box

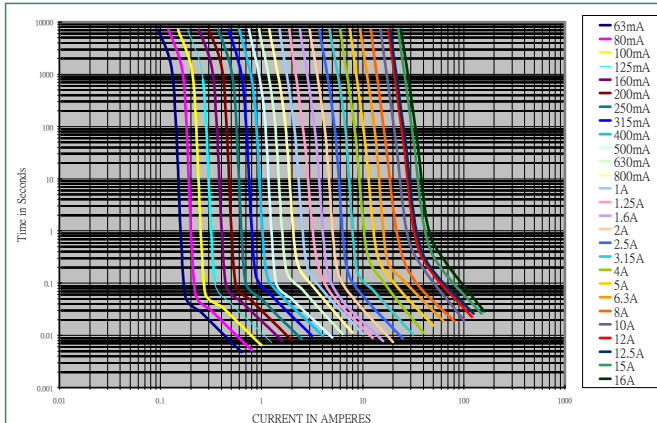
Environmental Specification

Operating Temperature -55°C to +125°C

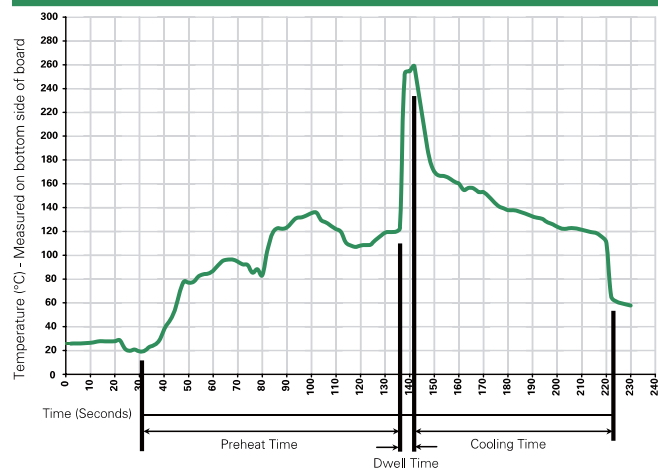
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

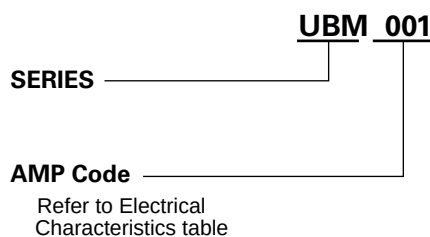
Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type UDA/UDA-A

5ØX20mm

RoHS



Time-Lag High Breaking Capacity



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Voltage Drop (mv)MAX	Nominal Melting I ² t A ² Sec
UDA/UDA-A .500	500mA	250V or less	0.2276	850	1.0120
UDA/UDA-A .630	630mA		0.1392	650	1.9400
UDA/UDA-A .800	800mA		0.1180	500	3.0201
UDA/UDA-A 001	1A		0.0730	350	6.5570
UDA/UDA-A 1.25	1.25A		0.0630	300	7.8125
UDA/UDA-A 1.60	1.6A		0.0600	200	8.9600
UDA/UDA-A 002	2A		0.0499	190	11.880
UDA/UDA-A 2.50	2.5A		0.0384	180	25.375
UDA/UDA-A 3.15	3.15A		0.0290	140	44.000
UDA/UDA-A 004	4A		0.0186	100	102.92
UDA/UDA-A 005	5A		0.0135	100	184.80
UDA/UDA-A 6.30	6.3A		0.0105	100	275.52
UDA/UDA-A 008	8A		0.0063	100	296.51
UDA/UDA-A 010	10A		0.0050	100	452.70
UDA/UDA-A 012	12A		0.0034	100	1025.0
UDA/UDA-A 015	15A		0.0027	100	1305.0
UDA/UDA-A 016	16A		0.0025	100	1536.0
UDA/UDA-A 020	20A		0.0023	100	2600.0
UDA/UDA-A 025	25A		0.0018	100	3375.0

Approval

UDA

SEMKO	800mA~12A/25A
VDE	800mA~12A
BSI	1A~6.3A
UL Recognized	500mA~10A
CSA Acceptance	800mA~10A
PSE	1A~15A
KTL	1A~10A
CCC	1A~6.3A
CQC	8A / 10A
TUV	15A~20A
Recognized Component for Canada and U.S.	10.1A~25A

UDA-A

SEMKO	800mA~12A
VDE	800mA~12A
UL Recognized	500mA~10A
CSA Acceptance	800mA~10A
PSE	1A~15A
KTL	1A~10A
CCC	1A~6.3A
CQC	8A / 10A
TUV	15A~25A
Recognized Component for Canada and U.S.	10.1A~25A

UDA

UDA-A



Electrical Characteristic

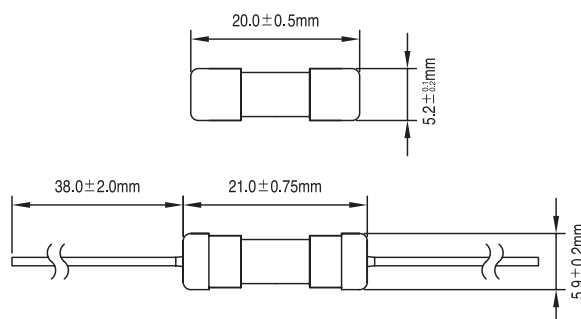
Rated Current	1.5In		2.1In		2.75 In		4 In		10 In	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
500mA	60	30	250	80	50	5	5	150		
~800mA	min	min	ms	sec	ms	sec	ms	ms		
1A~3.15A	60	30	750	80	95	5	10	150		
	min	min	ms	sec	ms	sec	ms	ms		
4A~6.3A	60	30	750	80	150	5	10	150		
	min	min	ms	sec	ms	sec	ms	ms		
8A~25A	30	30	750	80	150	5	10	150		
	min	min	ms	sec	ms	sec	ms	ms		

Environmental Temperature at 25°C

Interrupting Rating

500mA~12A :	1500 amperes at 250V AC
15A~16A :	500 amperes at 250V AC
20A :	400 amperes at 250V AC
25A :	300 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Ceramic body / Nickel Plated Brass Caps
Lead Wire:
Diameter Ø0.8mm 12A and less.
Diameter Ø1.0mm for rating above 15A.

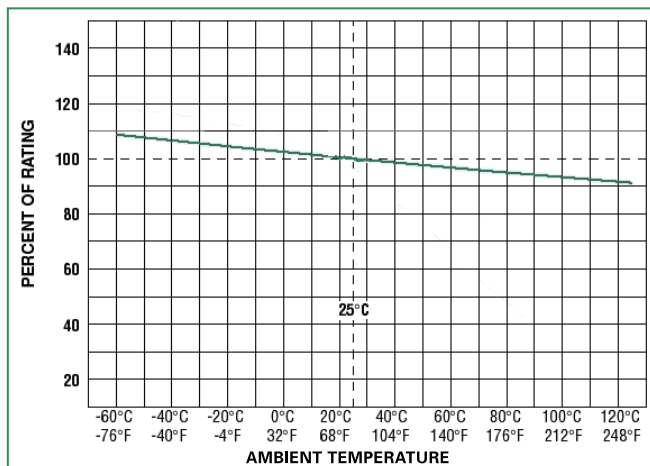
Packaging

In Bulk:
UDA - 1,000 pcs ; UDA-A - 500 pcs per box

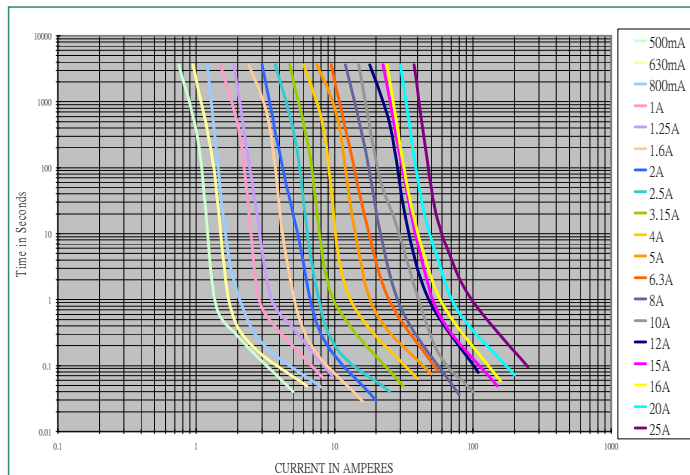
Environmental Specification

Operating Temperature -55°C to +125°C

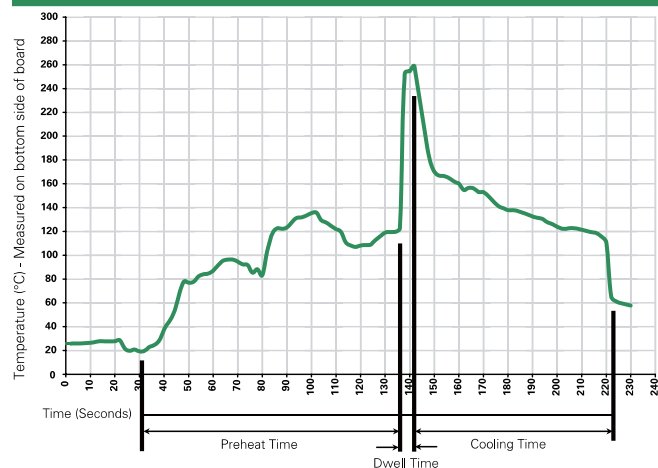
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

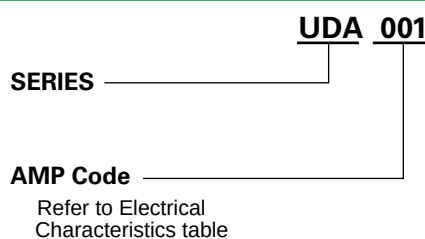
Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type GFE/GME/GFP/GMP

5ØX20mm

RoHS



Fast Acting Glass Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
GME/GMP.010	10mA	250V or less	*	*
GME/GMP.020	20mA		*	*
GME/GMP.030	30mA		*	*
GME/GMP.032	32mA		*	*
GME/GMP.040	40mA		*	*
GME/GMP.050	50mA		*	*
GME/GMP.063	63mA		*	*
GME/GMP.070	70mA		*	*
GME/GMP.080	80mA		*	*
GME/GMP.100	100mA		10.1825	0.0018
GME/GMP.125	125mA		6.4005	0.0035
GME/GMP.150	150mA		5.0500	0.0048
GFE/GFP .200	200mA		3.4985	0.0085
GFE/GFP .250	250mA		2.3610	0.0142
GFE/GFP .300	300mA		1.8068	0.0197
GFE/GFP .315	315mA		1.4967	0.0218
GFE/GFP .350	350mA		1.4466	0.0375
GFE/GFP .400	400mA		1.1033	0.0561
GFE/GFP .500	500mA		0.4195	0.0930
GFE/GFP .600	600mA		0.3329	0.1300
GFE/GFP .630	630mA		0.2814	0.1510
GFE/GFP .700	700mA		0.2370	0.2050
GFE/GFP .750	750mA		0.2134	0.2850
GFE/GFP .800	800mA		0.1825	0.3000
GFE/GFP 001	1A		0.1437	1.0000
GFE/GFP 1.25	1.25A		0.1029	1.3450
GFE/GFP 1.50	1.5A		0.0885	1.6500
GFE/GFP 1.60	1.6A		0.0752	2.2750
GFE/GFP 1.75	1.75A		0.0639	3.2450
GFE/GFP 002	2A		0.0589	5.4000
GFE/GFP 2.50	2.5A		0.0420	8.1300
GFE/GFP 003	3A		0.0360	12.100
GFE/GFP 3.15	3.15A		0.0320	13.400
GFE/GFP 3.20	3.2A		0.0315	13.850
GFE/GFP 3.50	3.5A		0.0274	16.530
GFE/GFP 004	4A		0.0244	25.600
GFE/GFP 4.50	4.5A		0.0215	33.950
GFE/GFP 005	5A		0.0203	42.500
GFE/GFP 006	6A		0.0156	57.600
GFE/GFP 6.30	6.3A		0.0152	63.500
GFE/GFP 007	7A		0.0150	68.600
GFE/GFP 7.50	7.5A		0.0127	72.350
GFE/GFP 008	8A		0.0117	115.20
GFE/GFP 009	9A		0.0093	205.40
GFE/GFP 010	10A		0.0089	310.00
GFE/GFP 012	12A		0.0077	460.00
GFE/GFP 013	13A		0.0062	542.00
GFE/GFP 015	15A		0.0051	720.00
GFE/GFP 016	16A		0.0046	975.00
GFE/GFP 018	18A		0.0038	1500.0
GFE/GFP 020	20A		0.0035	2100.0

GFE/GME

GFP/GMP



Approval

GFE

UL Listed 10mA~10A
CSA Certified 10mA~10A
PSE 1A~5A(125V/250V)
6A~10A(250V)

GME

UL Listed 10mA~8A
CSA Certified 10mA~8A
PSE 1A~5A(125V/250V)
6A~10A(250V)

GFP(With Pig-Tail)

UL Listed 10mA~10A
CSA Certified 10mA~10A
PSE 1A~10A(125V/250V)

GMP (With Pig-Tail)

UL Listed 10mA~8A
CSA Certified 10mA~8A
PSE 1A~10A(125V/250V)

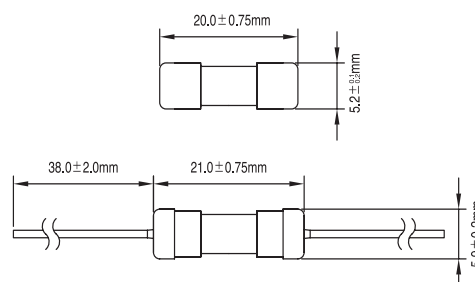
Electrical Characteristic

Rated Current	1 In	1.35In	2 In
	MIN	MAX	MAX
10mA~20A	4 hr	1 hr	5 sec

Interrupting Rating

10mA~10A: 10,000 amperes at 125V AC
10mA~1A: 35 amperes at 250V AC
1.1A~3.5A: 100 amperes at 250V AC
3.6A~10A: 200 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps
Lead Wire:
Diameter Ø0.8 mm 14A and less.
Diameter Ø1.0 mm for rating above 15A to 19A.
Diameter Ø1.2 mm for rating above 20A.

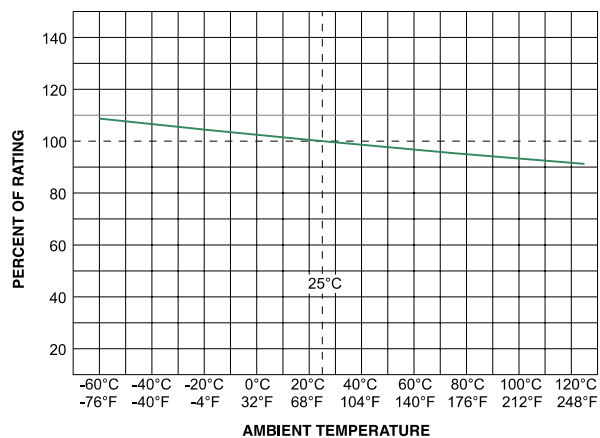
Packaging

- In Bulk:
GFE/GME – 1,000 pcs ; GFP/GMP – 500 pcs per box
- On Axial Tape & Reel
1,000 pcs per reel.
- Tape & Reel specification:
per EIA-296-E & IEC 286-1
@ 10mm Pitch and 56.5mm inside Tape Spacing.

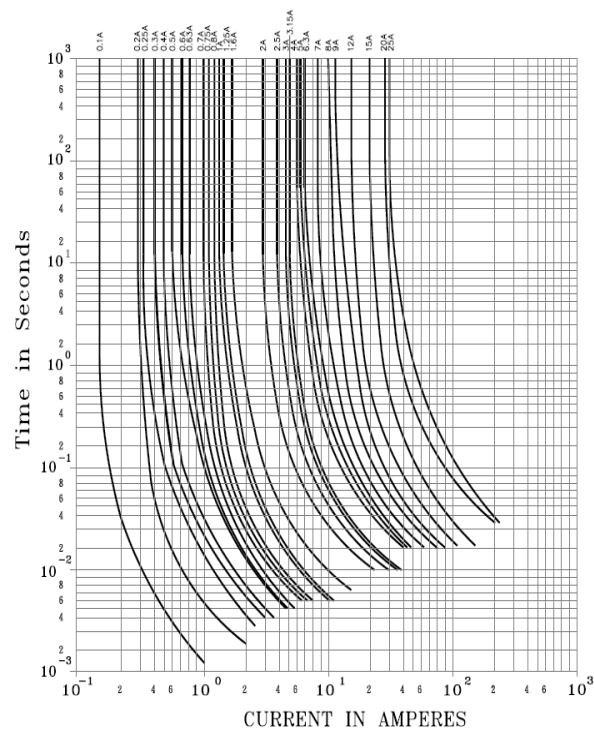
Environmental Specification

Operating Temperature -55°C to +125°C

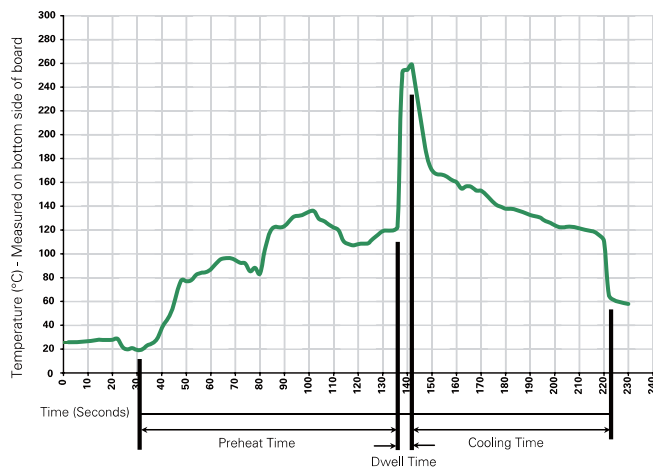
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	
	260° C Maximum
Solder Dwell Time:	
	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System

GFE 001

SERIES _____

AMP Code _____
Refer to Electrical
Characteristics table

Type GSL/GST

5ØX20mm

RoHS



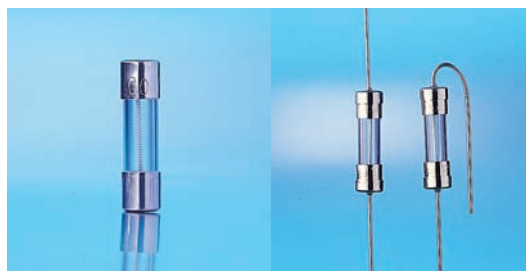
Time-Lag Glass Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
GSL/GST .010	10mA	250V or less	*	*
GSL/GST .020	20mA		*	*
GSL/GST .030	30mA		*	*
GSL/GST .032	32mA		606.55	0.0430
GSL/GST .040	40mA		44.855	0.0193
GSL/GST .050	50mA		38.850	0.0282
GSL/GST .063	63mA		23.690	0.0301
GSL/GST .070	70mA		19.037	0.0317
GSL/GST .080	80mA		14.385	0.0332
GSL/GST .100	100mA		10.606	0.0400
GSL/GST .125	125mA		7.7265	0.0703
GSL/GST .150	150mA		5.6425	0.0832
GSL/GST .160	160mA		5.3455	0.0896
GSL/GST .175	175mA		4.1300	0.0367
GSL/GST .200	200mA		3.1045	0.1400
GSL/GST .250	250mA		2.1965	0.2180
GSL/GST .300	300mA		1.1759	0.2700
GSL/GST .350	350mA		1.1470	0.7350
GSL/GST .400	400mA		0.8876	0.9600
GSL/GST .500	500mA		0.6769	1.3750
GSL/GST .600	600mA		0.5363	2.5200
GSL/GST .630	630mA		0.3925	2.7780
GSL/GST .700	700mA		0.3370	3.4300
GSL/GST .750	750mA		0.3377	3.7530
GSL/GST .800	800mA		0.3100	4.4800
GSL/GST 001	1A		0.2100	7.0000
GSL/GST 1.25	1.25A		0.1470	12.500
GSL/GST 1.50	1.5A		0.1167	18.000
GSL/GST 1.60	1.6A		0.1058	20.480
GSL/GST 002	2A		0.0719	40.000
GSL/GST 2.50	2.5A		0.0636	62.500
GSL/GST 003	3A		0.0459	81.000
GSL/GST 3.15	3.15A		0.0452	99.225
GSL/GST 3.50	3.5A		0.0375	122.50
GSL/GST 004	4A		0.0331	152.00
GSL/GST 005	5A		0.0215	212.50
GSL/GST 006	6A		0.0163	396.00
GSL/GST 6.30	6.3A		0.0155	436.59
GSL/GST 007	7A		0.0130	588.00
GSL/GST 7.50	7.5A		0.0122	720.00
GSL/GST 008	8A		0.0112	865.00
GSL/GST 010	10A		0.0091	1027.0
GSL/GST 012	12A		0.0066	1296.0
GSL/GST 015	15A		0.0050	2025.0
GSL/GST 020	20A		0.0029	3600.0

GSL

GST



Approval

GSL

UL Listed 10mA~8A
CSA Certified 10mA~8A
PSE 1A~5A(125V); 1A~8A(250V)

GST (With Pig-Tail)

UL Listed 10mA~8A
CSA Certified 10mA~8A
PSE 1A~8A

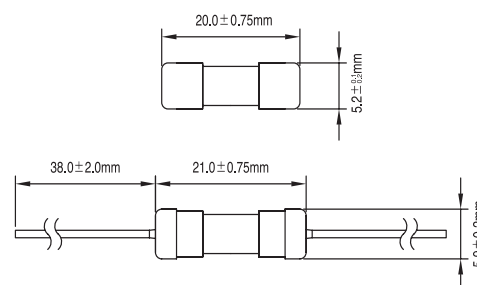
Electrical Characteristic

Rated Current	1 In	1.35In	2 In	
	MIN	MAX	MIN	MAX
10mA~20A	4 hr	1 hr	3 sec	120 sec

Interrupting Rating

10mA~8A: 10,000 amperes at 125V AC
10mA~1A: 35 amperes at 250V AC
1.1A~3.5A: 100 amperes at 250V AC
3.6A~8A: 200 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8 mm 14A and less.

Diameter Ø1.0 mm for rating above 15A to 19A.

Diameter Ø1.2 mm for rating above 20A.

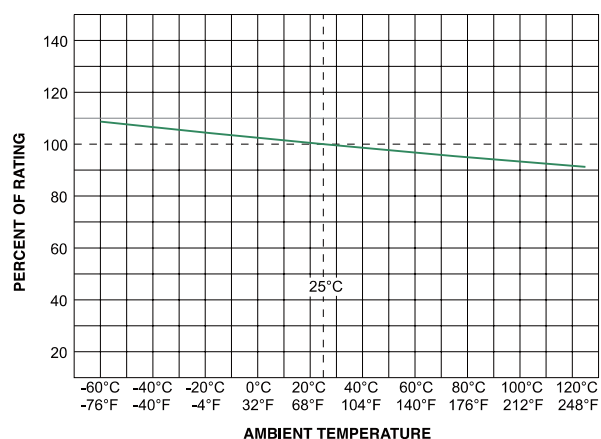
Packaging

- In Bulk:
GSL - 1,000 pcs ; GST - 500 pcs per box
- On Axial Tape & Reel
1,000 pcs per reel.
- Tape & Reel specification:
per EIA-296-E & IEC 286-1
@ 10mm Pitch and 56.5mm inside Tape Spacing.

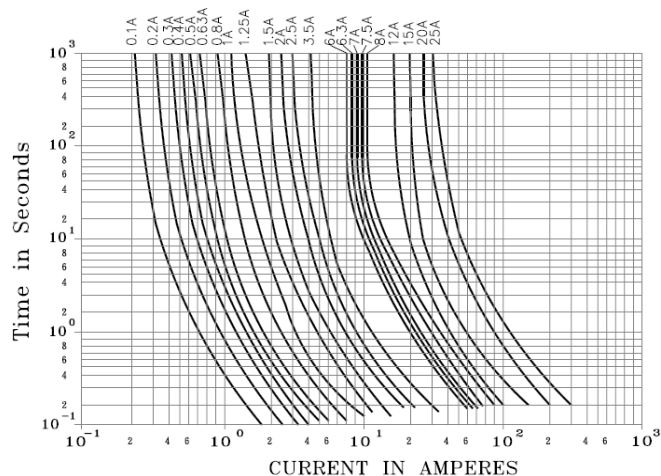
Environmental Specification

Operating Temperature -55°C to +125°C

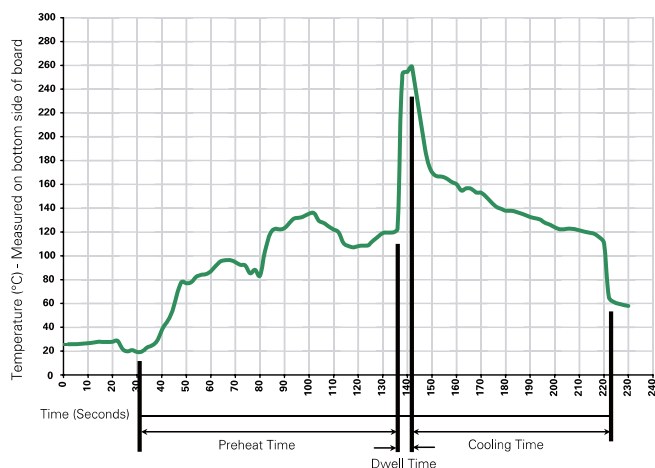
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System

SERIES ——— **GSL 001**

AMP Code ———
Refer to Electrical
Characteristics table

Type GTE/GTP

5ØX20mm

RoHS



Time-Lag Glass Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
GTE/GTP .500	500mA	250V or less	0.4938	0.10000
GTE/GTP .600	600mA		0.4321	0.14400
GTE/GTP .630	630mA		0.4016	0.19840
GTE/GTP .700	700mA		0.2871	0.49000
GTE/GTP .750	750mA		0.2560	0.56250
GTE/GTP .800	800mA		0.2376	0.64000
GTE/GTP 001	1A		0.1632	1.50000
GTE/GTP 1.25	1.25A		0.1198	3.12500
GTE/GTP 1.50	1.5A		0.0949	4.50000
GTE/GTP 1.60	1.6A		0.0885	5.12000
GTE/GTP 002	2A		0.0628	8.00000
GTE/GTP 2.25	2.25A		0.0502	12.6560
GTE/GTP 2.50	2.5A		0.0460	15.6250
GTE/GTP 003	3A		0.0364	27.0000
GTE/GTP 3.15	3.15A		0.0343	34.7280
GTE/GTP 3.20	3.2A		0.0321	35.8400
GTE/GTP 3.50	3.5A		0.0319	49.0000
GTE/GTP 004	4A		0.0249	64.0000
GTE/GTP 4.50	4.5A		0.0224	66.8000
GTE/GTP 005	5A		0.0209	75.0000
GTE/GTP 006	6A		0.0148	82.8000
GTE/GTP 6.30	6.3A		0.0103	99.2000
GTE/GTP 007	7A		0.0086	122.500
GTE/GTP 7.50	7.5A		0.0080	140.625
GTE/GTP 008	8A		0.0079	160.000
GTE/GTP 010	10A		0.0060	400.000

Approval

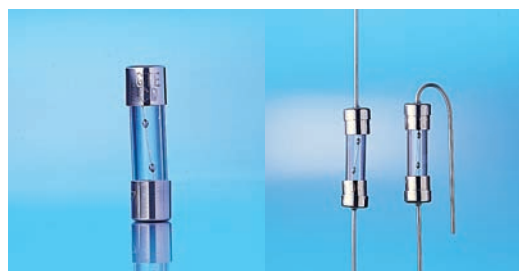
GTE

UL Listed	500mA~10A
CSA Certified	500mA~3.5A
CSA Acceptance	3.6A~10A
KTL	500mA~10A
PSE	1A~10A(250V)
	1A~5A(125V)

GTP (With Pig-Tail)

UL Listed	500mA~10A
CSA Certified	500mA~3.5A
CSA Acceptance	3.6A~10A
KTL	500mA~10A
PSE	1A~10A(125V/250V)

GTE GTP



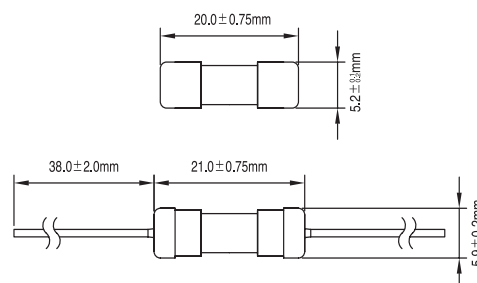
Electrical Characteristic

Rated Current	1 In	1.35In	2 In	
	MIN	MAX	MIN	MAX
500mA~10A	4 hr	1 hr	2 sec	120 sec

Interrupting Rating

500mA~10A:	10,000 amperes at 125V AC
500mA~1A:	35 amperes at 250V AC
1.1A~3.5A:	100 amperes at 250V AC
3.6A~10A:	200 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8 mm 14A and less.

Diameter Ø1.0 mm for rating above 15A to 19A.

Diameter Ø1.2 mm for rating above 20A.

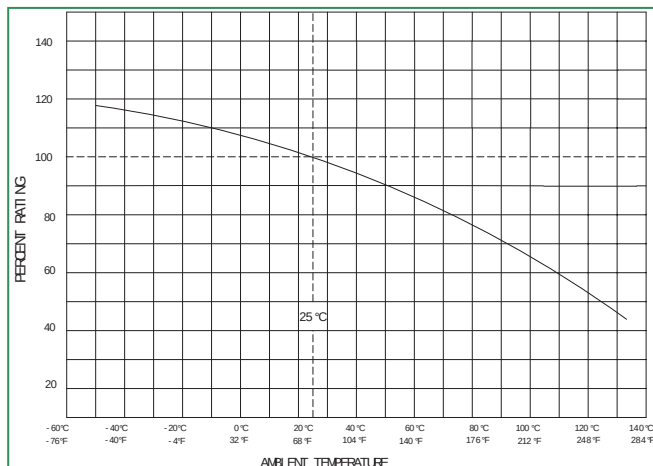
Packaging

- In Bulk:
GTE - 1,000 pcs ; GTP - 500 pcs per box
- On Axial Tape & Reel
1,000 pcs per reel.
- Tape & Reel specification:
per EIA-296-E & IEC 286-1
@ 10mm Pitch and 56.5mm inside Tape Spacing.

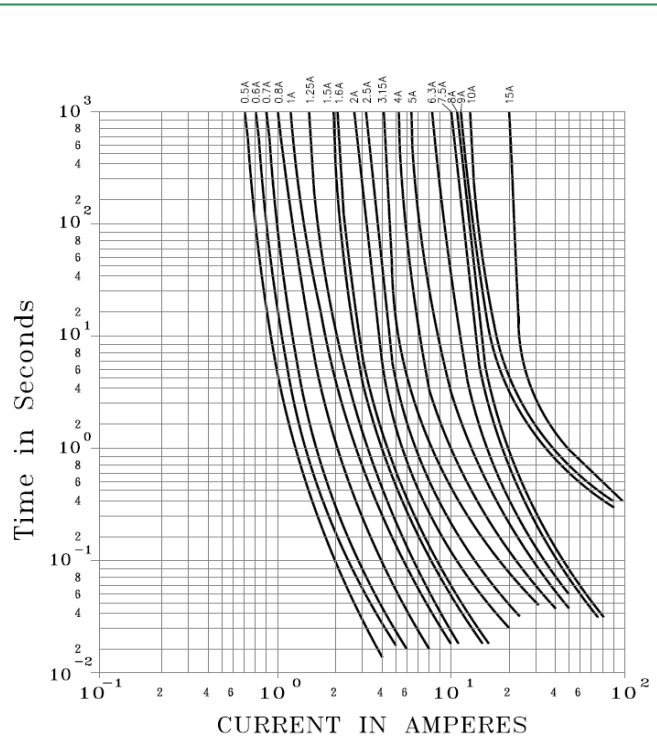
Environmental Specification

Operating Temperature -55°C to +125°C

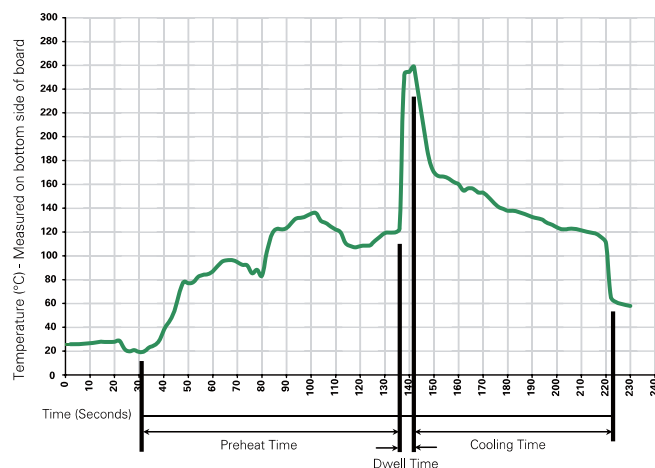
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

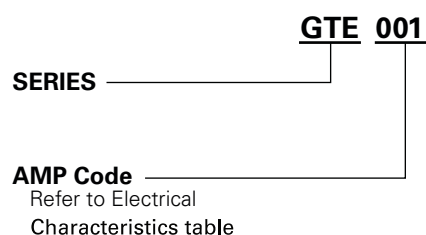
Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5° C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type GBM/GBP

5ØX20mm

RoHS



Fast Acting Ceramic Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
GBM/GBP .010	10mA	250V or less	*	*
GBM/GBP .020	20mA		*	*
GBM/GBP .030	30mA		*	*
GBM/GBP .032	32mA		*	*
GBM/GBP .040	40mA		*	*
GBM/GBP .050	50mA		*	*
GBM/GBP .063	63mA		*	*
GBM/GBP .070	70mA		*	*
GBM/GBP .080	80mA		*	*
GBM/GBP .100	100mA		11.202	0.0018
GBM/GBP .125	125mA		6.8790	0.0035
GBM/GBP .150	150mA		6.4810	0.0048
GBM/GBP .200	200mA		4.7155	0.0085
GBM/GBP .250	250mA		2.4730	0.0142
GBM/GBP .300	300mA		2.1170	0.0197
GBM/GBP .315	315mA		1.9120	0.0218
GBM/GBP .350	350mA		0.7350	0.0375
GBM/GBP .400	400mA		0.6030	0.0561
GBM/GBP .500	500mA		0.4585	0.0930
GBM/GBP .600	600mA		0.2930	0.1300
GBM/GBP .630	630mA		0.2900	0.1510
GBM/GBP .700	700mA		0.2370	0.2050
GBM/GBP .750	750mA		0.2144	0.2850
GBM/GBP .800	800mA		0.2100	0.3000
GBM/GBP 001	1A		0.1636	0.4000
GBM/GBP 1.50	1.5A		0.0795	1.1250
GBM/GBP 002	2A		0.0500	2.0000
GBM/GBP 2.50	2.5A		0.0490	6.2500
GBM/GBP 003	3A		0.0463	9.0000
GBM/GBP 3.15	3.15A		0.0461	9.9220
GBM/GBP 3.50	3.5A		0.0329	12.250
GBM/GBP 004	4A		0.0274	16.000
GBM/GBP 005	5A		0.0209	25.000
GBM/GBP 006	6A		0.0136	54.000
GBM/GBP 6.30	6.3A		0.0128	63.375
GBM/GBP 007	7A		0.0116	73.500
GBM/GBP 008	8A		0.0110	128.00
GBM/GBP 010	10A		0.0077	250.00
GBM/GBP 012	12A		0.0057	360.00
GBM/GBP 015	15A		0.0046	675.00
GBM/GBP 020	20A		0.0035	1200.0

GBM

GBP



Approval

GBM

UL Listed	10mA~15A
CSA Certified	10mA~12A
CSA Acceptance	12.1A~15A
PSE	5.1A~15A

GBP (With Pig-Tail)

UL Listed	10mA~15A
CSA Certified	10mA~12A
CSA Acceptance	12.1A~15A
PSE	5.1A~15A

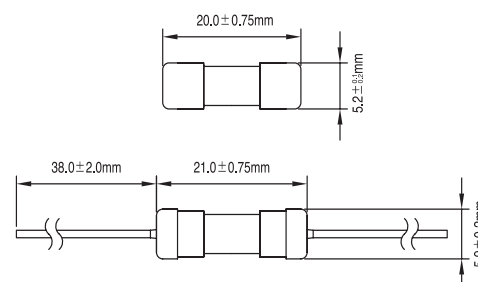
Electrical Characteristic

Rated Current	1 In MIN	1.35In MAX	2 In MAX
10mA~20A	4 hr	1 hr	30 sec

Interrupting Rating

10mA~15A:	10,000 amperes at 125V AC
10mA~1A:	35 amperes at 250V AC
1.25A~3.5A:	100 amperes at 250V AC
3.75A~10A:	200 amperes at 250V AC
10.1A~15A:	750 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Ceramic body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8 mm 14A and less.

Diameter Ø1.0 mm for rating above 15A to 19A.

Diameter Ø1.2 mm for rating above 20A.

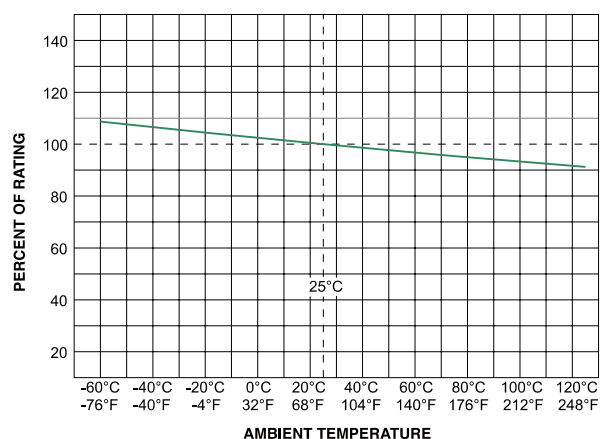
Packaging

- In Bulk:
GBM-1,000 pcs ; GBP-500 pcs per box
- On Axial Tape & Reel
1,000 pcs per reel.
- Tape & Reel specification:
per EIA-296-E & IEC 286-1
@ 10mm Pitch and 56.5mm inside Tape Spacing.

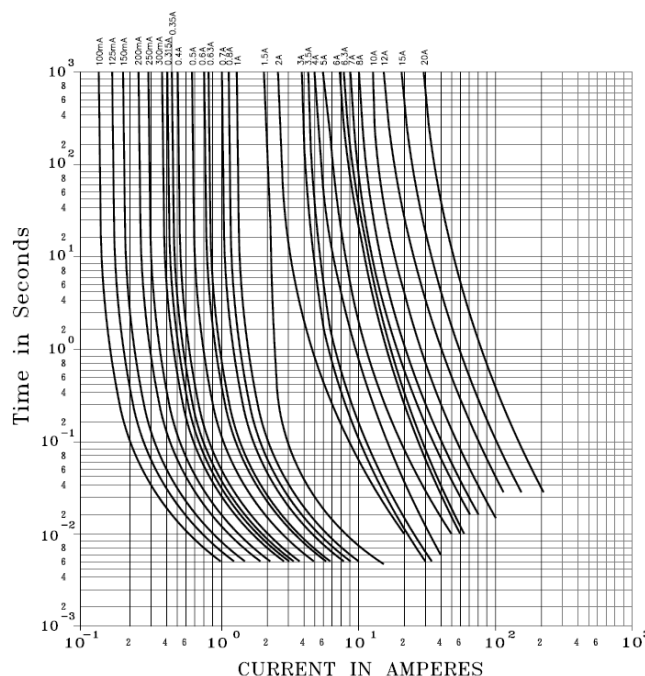
Environmental Specification

Operating Temperature -55°C to +125°C

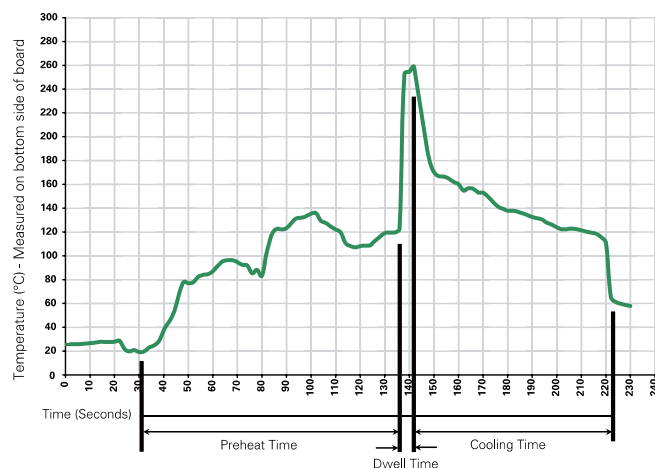
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System

GBM 001

SERIES _____

AMP Code _____
Refer to Electrical
Characteristics table

Type GDA/GPA

5ØX20mm

RoHS



Time-Lag Ceramic Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
GDA/GPA .010	10mA	250V or less	*	*
GDA/GPA .020	20mA		*	*
GDA/GPA .030	30mA		*	*
GDA/GPA .032	32mA		*	*
GDA/GPA .040	40mA		*	*
GDA/GPA .050	50mA		*	*
GDA/GPA .063	63mA		*	*
GDA/GPA .070	70mA		*	*
GDA/GPA .080	80mA		*	*
GDA/GPA .100	100mA		16.865	0.0400
GDA/GPA .125	125mA		7.8250	0.0703
GDA/GPA .150	150mA		5.6875	0.0832
GDA/GPA .160	160mA		4.5000	0.0896
GDA/GPA .175	175mA		3.9200	0.0367
GDA/GPA .200	200mA		3.5400	0.1400
GDA/GPA .250	250mA		2.0475	0.2180
GDA/GPA .300	300mA		1.8920	0.2700
GDA/GPA .350	350mA		1.2320	0.2900
GDA/GPA .400	400mA		0.9350	0.3200
GDA/GPA .500	500mA		0.6430	0.3800
GDA/GPA .600	600mA		0.4620	0.4300
GDA/GPA .700	700mA		0.3200	0.5400
GDA/GPA .800	800mA		0.2267	0.6400
GDA/GPA 001	1A		0.1969	1.0000
GDA/GPA 1.25	1.25A		0.1284	1.5625
GDA/GPA 1.50	1.5A		0.0899	2.2500
GDA/GPA 1.60	1.6A		0.0830	2.5600
GDA/GPA 002	2A		0.0760	6.0000
GDA/GPA 2.50	2.5A		0.0750	9.3750
GDA/GPA 003	3A		0.0633	13.500
GDA/GPA 3.15	3.15A		0.0602	14.884
GDA/GPA 004	4A		0.0390	32.000
GDA/GPA 005	5A		0.0344	50.000
GDA/GPA 006	6A		0.0245	90.000
GDA/GPA 6.30	6.3A		0.0220	99.225
GDA/GPA 007	7A		0.0119	122.50
GDA/GPA 008	8A		0.0102	160.00
GDA/GPA 010	10A		0.0075	250.00
GDA/GPA 012	12A		0.0062	432.00
GDA/GPA 015	15A		0.0048	684.00
GDA/GPA 020	20A		0.0027	1560.0

Approval

GDA

UL Listed 10mA~15A
 CSA Certified 0.1A~12A
 CSA Acceptance 12.1A~15A
 PSE 5.1A~15A(250V)
 KTL 1.5A~20A

GPA (With Pig-Tail)

UL Listed 10mA~15A
 CSA Certified 0.1A~12A
 CSA Acceptance 12.1A~15A
 PSE 5.1A~15A(250V)
 KTL 1.5A~20A

GDA

GPA



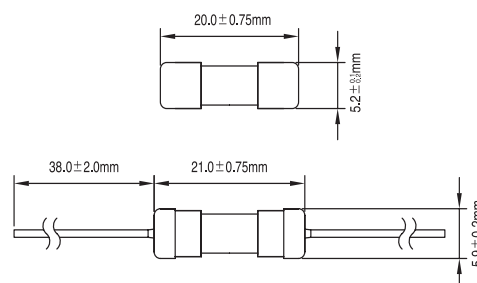
Electrical Characteristic

Rated Current	1 In	1.35In	2 In	
	MIN	MAX	MIN	MAX
10mA~20A	4 hr	1 hr	2 sec	120 sec

Interrupting Rating

10mA~15A: 10,000 amperes at 125V AC
 10mA~1A: 35 amperes at 250V AC
 1.1A~3.5A: 100 amperes at 250V AC
 3.6A~10A: 200 amperes at 250V AC
 10.1A~15A: 750 amperes at 250V AC
 15.1A~20A: 200 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Ceramic body / Nickel Plated Brass Caps
 Lead Wire:
 Diameter Ø0.8 mm 14A and less.
 Diameter Ø1.0 mm for rating above 15A to 19A.
 Diameter Ø1.2 mm for rating above 20A.

Packaging

- In Bulk:
GDA -1,000 pcs ; GPA -500 pcs per box
- On Axial Tape & Reel
1,000 pcs per reel.
- Tape & Reel specification:
per EIA-296-E & IEC 286-1
@ 10mm Pitch and 56.5mm inside Tape Spacing.

Environmental Specification

Operating Temperature -55°C to +125°C

Type UDL/UDL-A

5ØX20mm

RoHS



Time-Lag (surge-proof) Enhanced Breaking Capacity

Glass Tube Fuse with Pig-Tail Series



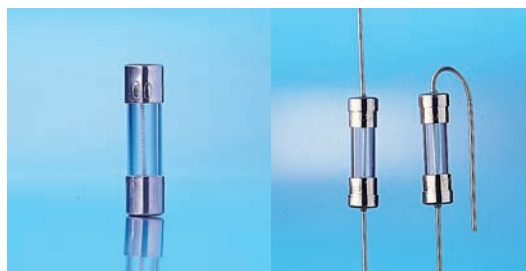
Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Voltage Drop (mv)MAX	Nominal Melting I ² t A ² Sec
UDL/UDL-A .500	500mA	250V or less	0.314	900	5.2500
UDL/UDL-A .630	630mA		0.210	300	8.3500
UDL/UDL-A .800	800mA		0.145	250	13.260
UDL/UDL-A 001	1A		0.105	150	21.510
UDL/UDL-A 1.25	1.25A		0.081	150	32.810
UDL/UDL-A 1.60	1.6A		0.059	150	53.720
UDL/UDL-A 002	2A		0.041	150	84.350
UDL/UDL-A 2.50	2.5A		0.033	120	132.50
UDL/UDL-A 3.15	3.15A		0.022	100	209.40
UDL/UDL-A 004	4A		0.016	100	335.50
UDL/UDL-A 005	5A		0.013	100	528.00
UDL/UDL-A 6.30	6.3A		0.010	100	830.20
UDL/UDL-A 008	8A		0.007	100	1267.0
UDL/UDL-A 010	10A		0.005	100	1690.0

Approval

VDE	500mA~10A
Recognized Component for Canada and U.S.	500mA~6.3A
CQC	500mA~10A

UDL

UDL-A



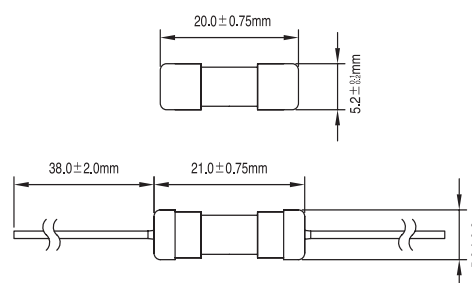
Electrical Characteristic

Rated Current	1.5 In MIN	2.1In MAX	2.75 In MIN	4 In MAX	10 In MIN	10 In MAX
500mA	60	2	600	10	150	3
~6.3A	min	min	ms	sec	ms	ms
8A~10A	30	2	600	10	150	3
	min	min	ms	sec	ms	ms

Interrupting Rating

150 amperes at 250V AC.

Mechanical Dimension



Physical Specification

Material

Glass Body / Nickel Plated Brass Caps
Lead Wire: Diameter 0.8mm.

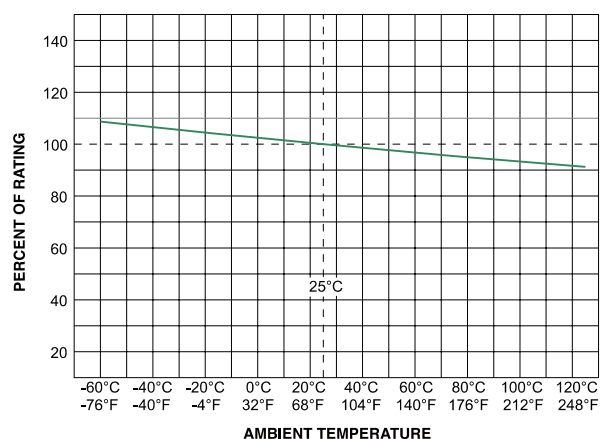
Packaging

- In Bulk:
UDL -1,000 pcs ; UDL-A -500 pcs per box
- On Axial Tape & Reel
1,000 pcs per reel.
- Tape & Reel specification:
per EIA-296-E & IEC 286-1
@ 10mm Pitch and 56.5mm inside Tape Spacing.

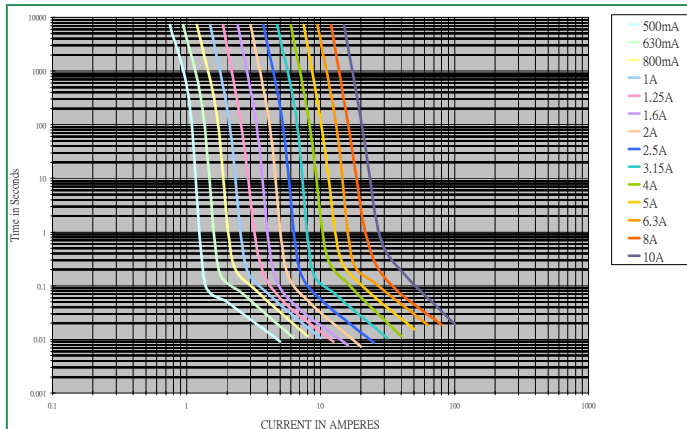
Environmental Specification

Operating Temperature -55°C to +125°C

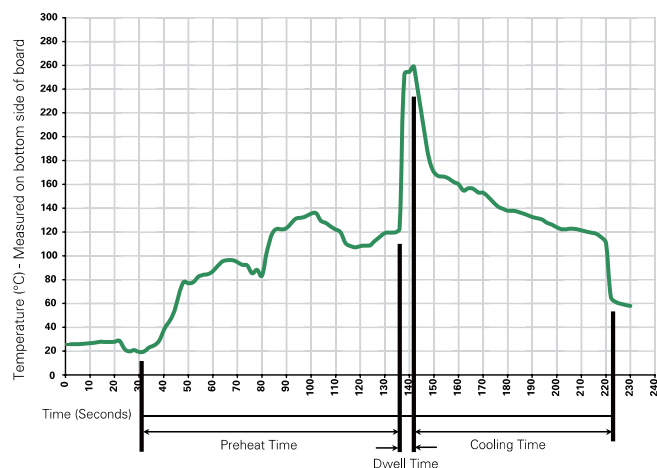
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

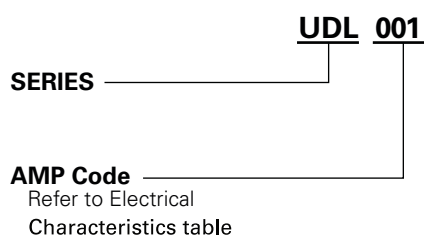
Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type AFE/AGE/AFP/AGP

6.3ØX32mm

RoHS



Fast Acting Glass Tube Fuse Series

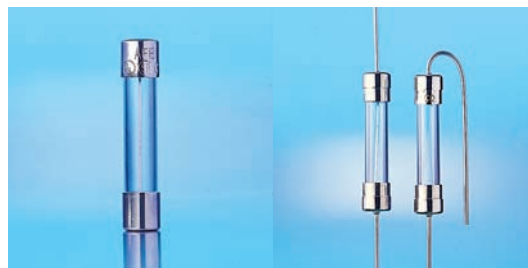


JET

Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
AGE/AGP .010	10mA	250V or less	*	*
AGE/AGP .020	20mA		*	*
AGE/AGP .030	30mA		*	*
AGE/AGP .032	32mA		*	*
AGE/AGP .040	40mA		*	*
AGE/AGP .050	50mA		*	*
AGE/AGP .060	60mA		*	*
AGE/AGP .063	63mA		*	*
AGE/AGP .070	70mA		*	*
AGE/AGP .080	80mA		*	*
AGE/AGP .100	100mA		13.789	0.00200
AGE/AGP .125	125mA		9.9600	0.00312
AGE/AGP .150	150mA		7.9475	0.00450
AGE/AGP .160	160mA		6.7690	0.00512
AGE/AGP .200	200mA		6.6500	0.00800
AGE/AGP .250	250mA		3.3835	0.01250
AGE/AGP .300	300mA		2.8350	0.01800
AGE/AGP .315	315mA		2.3000	0.01984
AGE/AGP .350	350mA		2.0000	0.02450
AGE/AGP .375	375mA		1.6500	0.02812
AGE/AGP .400	400mA		1.4000	0.03200
AFE/AFP .500	500mA		0.5854	0.07500
AFE/AFP .600	600mA		0.4486	0.10800
AFE/AFP .630	630mA		0.4287	0.11900
AFE/AFP .700	700mA		0.3500	0.14700
AFE/AFP .750	750mA		0.3200	0.16870
AFE/AFP .800	800mA		0.2910	0.19200
AFE/AFP 001	1A		0.2040	0.40000
AFE/AFP 1.20	1.2A	32V	0.1430	0.57600
AFE/AFP 1.50	1.5A		0.1085	0.90000
AFE/AFP 1.60	1.6A		0.0978	1.02400
AFE/AFP 002	2A		0.0780	2.00000
AFE/AFP 2.50	2.5A		0.0543	5.00000
AFE/AFP 003	3A		0.0410	9.00000
AFE/AFP 3.15	3.15A		0.0404	14.8830
AFE/AFP 3.20	3.2A		0.0395	15.3600
AFE/AFP 3.50	3.5A		0.0348	24.5000
AFE/AFP 004	4A		0.0316	32.0000
AFE/AFP 4.50	4.5A		0.0252	40.5000
AFE/AFP 005	5A		0.0230	62.5000
AFE/AFP 006	6A		0.0204	90.0000
AFE/AFP 6.30	6.3A		0.0173	105.625
AFE/AFP 007	7A		0.0158	122.500
AFE/AFP 7.50	7.5A		0.0140	140.625
AFE/AFP 008	8A		0.0135	160.000
AFE/AFP 010	10A		0.0114	300.000
AFE/AFP 012	12A		0.0084	432.00
AFE/AFP 013	13A		0.0074	591.00
AFE/AFP 015	15A		0.0064	787.50
AFE/AFP 016	16A		0.0062	1024.0
AFE/AFP 018	18A		0.0052	1296.0
AFE/AFP 020	20A		0.0051	2000.0
AFE/AFP 025	25A		0.0036	3750.0
AFE/AFP 030	30A		0.0028	5400.0

AFE/AGE

AFP/AGP



Approval

AFE/AGE

UL Listed	10mA~10A
UL Recognized	12A~30A
CSA Certified	10mA~30A
PSE	1A~10A(250V) ; 1A~5A(125V/32V)

AFP/AGP (With Pig-Tail)

UL Listed	10mA~10A
UL Recognized	12A~30A
CSA Certified	10mA~10A
PSE	1A~10A

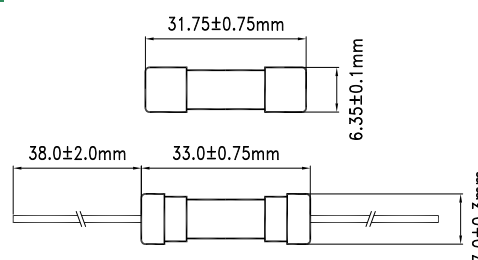
Electrical Characteristic

Rated Current	1 In MIN	1.35In MAX	2 In MAX
10mA~30A	4 hr	1 hr	5 sec
Above 30A	4 hr	1 hr	120 sec

Interrupting Rating

10mA~10A:	10,000 amperes at 125V AC
10mA~1A:	35 amperes at 250V AC
1.2A~3.5A:	100 amperes at 250V AC
10mA~10A:	200 amperes at 250V AC
12A~30A:	300 amperes at 32V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps
Lead Wire:
Diameter Ø0.8 mm 12A and less.
Diameter Ø1.0 mm for rating above 13A to 19A.
Diameter Ø1.2 mm for rating above 20A.

Packaging

In Bulk:
AFE/AGE-500 pcs ; AFP/AGP-250 pcs per box.

Environmental Specification

Operating Temperature -55°C to +125°C

Type ADL/ADP

6.3ØX32mm



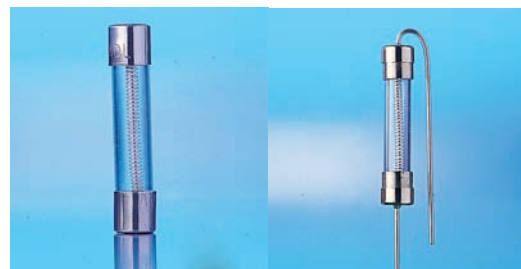
Time-Lag Glass Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
ADL/ADP .010	10mA	250V or less	*	*
ADL/ADP .020	20mA		*	*
ADL/ADP .030	30mA		*	*
ADL/ADP .032	32mA		*	*
ADL/ADP .040	40mA		*	*
ADL/ADP .050	50mA		*	*
ADL/ADP .063	63mA		*	*
ADL/ADP .070	70mA		*	*
ADL/ADP .080	80mA		*	*
ADL/ADP .100	100mA		17.490	0.02000
ADL/ADP .125	125mA		11.834	0.03125
ADL/ADP .150	150mA		11.522	0.05625
ADL/ADP .160	160mA		11.270	0.06400
ADL/ADP .175	175mA		9.2600	0.07656
ADL/ADP .180	180mA		8.1500	0.08790
ADL/ADP .200	200mA		6.5170	0.14000
ADL/ADP .250	250mA		3.5020	0.18750
ADL/ADP .300	300mA		2.9590	0.31500
ADL/ADP .315	315mA		3.1170	0.34720
ADL/ADP .350	350mA		2.9595	0.42870
ADL/ADP .375	375mA		1.9325	0.49210
ADL/ADP .400	400mA		1.6020	0.80000
ADL/ADP .500	500mA		0.8870	1.75000
ADL/ADP .600	600mA		0.7821	2.88000
ADL/ADP .630	630mA		0.7300	3.96900
ADL/ADP .700	700mA		0.6053	4.90000
ADL/ADP .800	800mA		0.5073	5.76000
ADL/ADP 001	1A		0.3504	6.50000
ADL/ADP 1.20	1.2A		0.2627	10.0800
ADL/ADP 1.25	1.25A		0.2241	11.7180
ADL/ADP 1.50	1.5A		0.1928	22.5000
ADL/ADP 1.60	1.6A		0.1710	25.6000
ADL/ADP 1.75	1.75A		0.1401	33.6880
ADL/ADP 1.80	1.8A		0.1272	35.6400
ADL/ADP 002	2A		0.1088	48.0000
ADL/ADP 2.25	2.25A		0.0822	60.7500
ADL/ADP 2.50	2.5A		0.0746	81.2500
ADL/ADP 2.80	2.8A		0.0656	117.600
ADL/ADP 003	3A		0.0648	135.000
ADL/ADP 3.15	3.15A		0.0600	148.830
ADL/ADP 3.20	3.2A		0.0585	153.600
ADL/ADP 3.50	3.5A		0.0525	183.750
ADL/ADP 004	4A		0.0345	240.000
ADL/ADP 005	5A		0.0280	375.000
ADL/ADP 006	6A		0.0220	540.000
ADL/ADP 6.30	6.3A		0.0208	585.930
ADL/ADP 6.50	6.5A		0.0184	760.500
ADL/ADPP 007	7A		0.0167	882.000
ADL/ADP 7.50	7.5A		0.0163	1012.50
ADL/ADP 008	8A		0.0162	1280.00
ADL/ADP 010	10A		0.0113	2500.00
ADL/ADP 012	12A		0.0083	4320.00
ADL/ADP 013	13A		0.0082	5070.00
ADL/ADP 015	15A		0.0064	6750.00
ADL/ADP 016	16A		0.0063	7680.00
ADL/ADP 018	18A		0.0040	9720.00
ADL/ADP 020	20A		0.0039	12000.0
ADL/ADP 025	25A		0.0032	18750.0
ADL/ADP 030	30A		0.0031	27000.0

ADL

ADP



Approval

ADL

UL Listed 200mA~10A
 CSA Certified 200mA~10A
 PSE 1A~10A(250V) ; 1A~5A(125V/32V)
 Recognized Component for Canada and U.S.
 10.1A~30A

ADP (With Pig-Tail)

UL Listed 200mA~8A
 CSA Certified 200mA~8A
 PSE 1A~8A
 Recognized Component for Canada and U.S.
 8.1A~30A

Electrical Characteristic

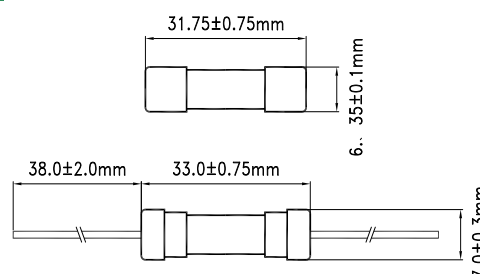
Rated Current	1 In	1.35 In	2 In	
	MIN	MAX	MIN	MAX
10mA~3A	4 hr	1 hr	5 sec	120 sec
3.15A~30A	4 hr	1 hr	12 sec	120 sec
Above 30A	4 hr	1 hr	12 sec	-

Environmental Temperature at 25

Interrupting Rating

20mA~10A: 10,000 amperes at 125V AC
 20mA~1A: 35 amperes at 250V AC
 1.2A~3.5A: 100 amperes at 250V AC
 3.6A~30A: 200 amperes at 250V AC
 8.1A~30A: 1000 amperes at 32V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps
 Lead Wire:
 Diameter Ø0.8 mm 12A and less.
 Diameter Ø1.0 mm for rating above 13A to 19A.
 Diameter Ø1.2 mm for rating above 20A.

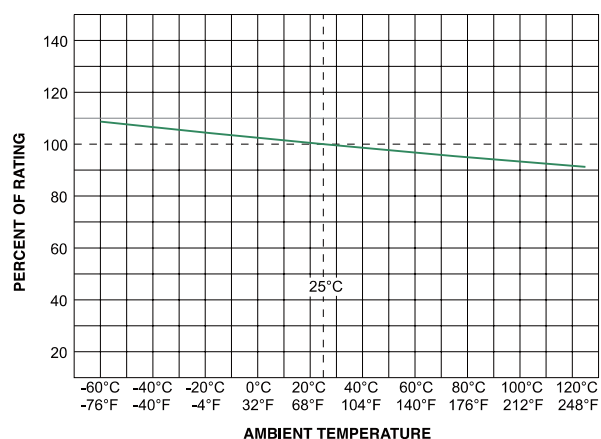
Packaging

In Bulk:
 ADL - 500 pcs ; ADP - 250 pcs per box

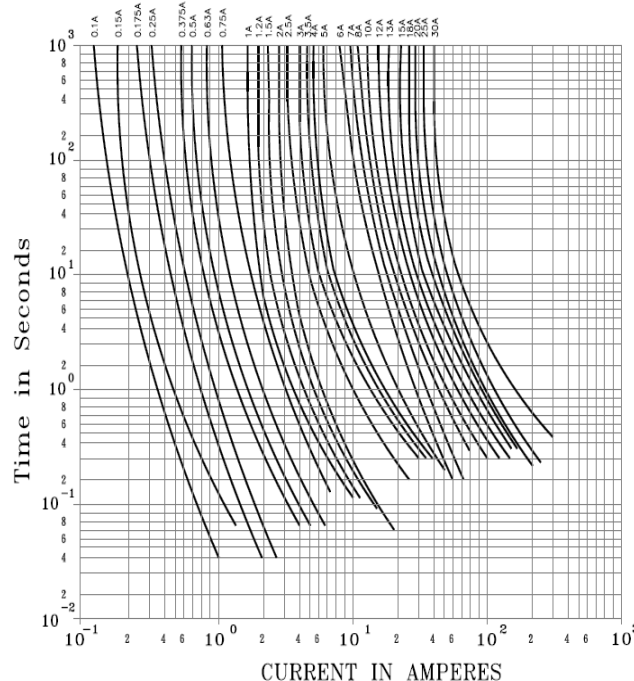
Environmental Specification

Operating Temperature -55°C to +125°C

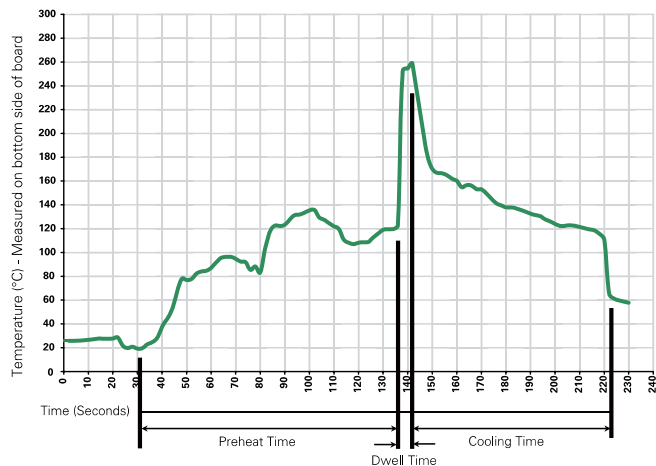
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	(Typical Industry Recommendation)
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System

SERIES ADL 001

AMP Code 001
Refer to Electrical Characteristics table

Type ATE/ATP

6.3ØX32mm

RoHS



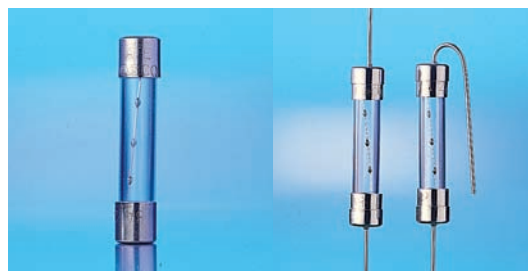
Time-Lag Glass Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
ATE/ATP .500	500mA	250V or less	0.7021	0.1250
ATE/ATP .600	600mA		0.4800	0.1800
ATE/ATP .630	630mA		0.4770	0.2770
ATE/ATP .700	700mA		0.4122	0.3430
ATE/ATP .750	750mA		0.3353	0.3930
ATE/ATP .800	800mA		0.3252	0.6400
ATE/ATP 001	1A		0.2239	1.0000
ATE/ATP 1.20	1.2A		0.1565	2.1600
ATE/ATP 1.25	1.25A		0.1481	2.3430
ATE/ATP 1.50	1.5A		0.1149	5.6250
ATE/ATP 1.60	1.6A		0.1120	7.6800
ATE/ATP 002	2A		0.0647	16.000
ATE/ATP 2.50	2.5A		0.0548	31.250
ATE/ATP 003	3A		0.0483	45.000
ATE/ATP 3.50	3.5A		0.0377	61.250
ATE/ATP 004	4A		0.0307	80.000
ATE/ATP 005	5A		0.0164	100.00
ATE/ATP 006	6A		0.0135	144.00
ATE/ATP 6.30	6.3A		0.0120	198.45
ATE/ATP 007	7A		0.0105	294.00
ATE/ATP 008	8A		0.0097	384.00
ATE/ATP 010	10A		0.0070	700.00

ATE

ATP



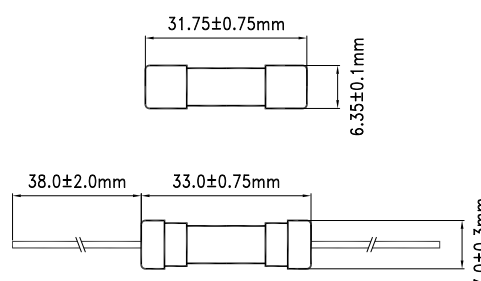
Electrical Characteristic

Rated Current	1 In	1.35 In	2 In	
	MIN	MAX	MIN	MAX
500mA~8A	4 hr	1 hr	2 sec	120 sec

Interrupting Rating

500mA~10A: 10,000 amperes at 125V AC
 500mA~1A: 35 amperes at 250V AC
 1.2A~3.5A: 100 amperes at 250V AC
 3.75A~8A: 200 amperes at 250V AC

Mechanical Dimension



Approval

ATE

UL Listed 500mA~8A
 CSA Certified 500mA~8A
 PSE 1A~8A(250V) ; 1A~5A(125V/32V)

ATP (With Pig-Tail)

UL Listed 500mA~8A
 CSA Certified 500mA~8A
 PSE 1A~8A

Physical Specification

Material

Glass body / Nickel Plated Brass Caps
 Lead Wire:
 Diameter Ø0.8 mm 12A and less.

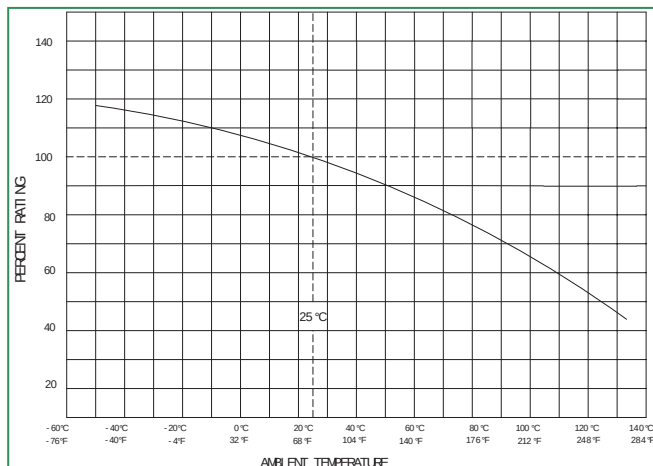
Packaging

In Bulk:
 ATE - 500 pcs ; ATP -250 pcs per box

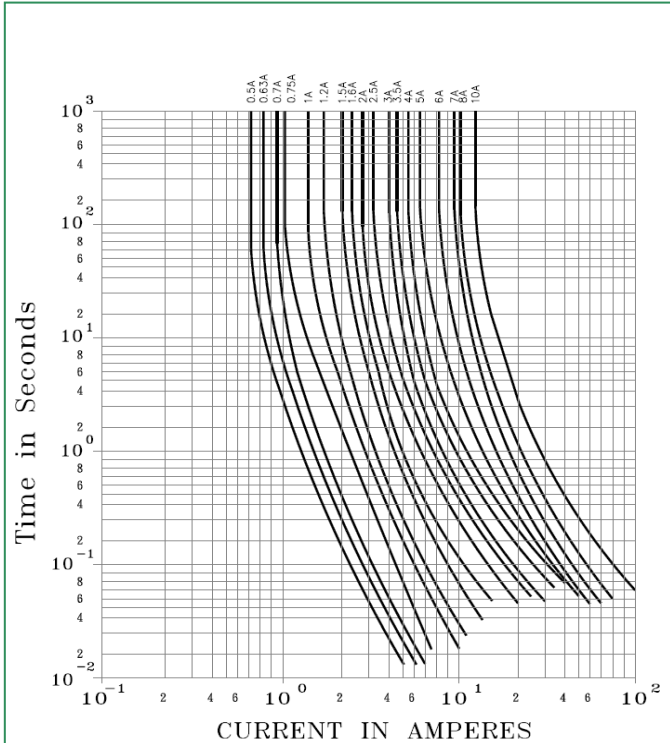
Environmental Specification

Operating Temperature -55°C to +125°C

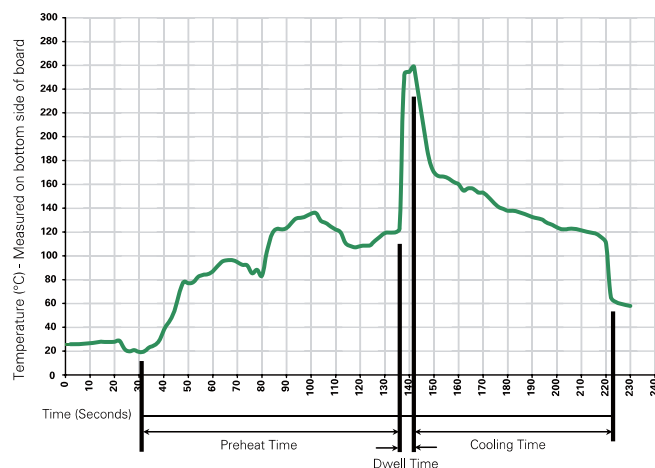
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

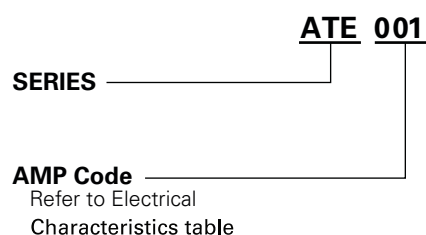
Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	
	260° C Maximum
Solder Dwell Time:	
	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type ABE/ABP

6.3ØX32mm

RoHS



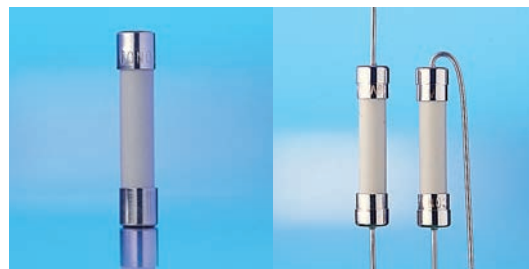
Fast Acting Ceramic Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
ABE/ABP .010	10mA	250V or less	*	*
ABE/ABP .020	20mA		*	*
ABE/ABP .030	30mA		*	*
ABE/ABP .032	32mA		*	*
ABE/ABP .040	40mA		*	*
ABE/ABP .050	50mA		*	*
ABE/ABP .060	60mA		*	*
ABE/ABP .063	63mA		*	*
ABE/ABP .070	70mA		*	*
ABE/ABP .080	80mA		*	*
ABE/ABP .100	100mA		14.600	0.00200
ABE/ABP .125	125mA		10.200	0.00312
ABE/ABP .150	150mA		7.7000	0.00450
ABE/ABP .160	160mA		7.0000	0.00512
ABE/ABP .200	200mA		6.0000	0.00800
ABE/ABP .250	250mA		3.3615	0.01250
ABE/ABP .300	300mA		2.8000	0.01800
ABE/ABP .315	315mA		2.3000	0.01984
ABE/ABP .350	350mA		2.0000	0.02450
ABE/ABP .375	375mA		1.9540	0.02812
ABE/ABP .400	400mA		1.4000	0.03200
ABE/ABP .500	500mA		0.6825	0.07500
ABE/ABP .600	600mA		0.4740	0.10800
ABE/ABP .630	630mA		0.4287	0.11900
ABE/ABP .700	700mA		0.3500	0.14700
ABE/ABP .750	750mA		0.2900	0.16870
ABE/ABP .800	800mA		0.2828	0.16870
ABE/ABP 001	1A		0.1939	1.50000
ABE/ABP 1.25	1.25A		0.1758	2.34300
ABE/ABP 1.50	1.5A		0.1132	4.50000
ABE/ABP 002	2A		0.2001	8.00000
ABE/ABP 2.50	2.5A		0.0785	12.5000
ABE/ABP 003	3A		0.0662	13.5000
ABE/ABP 3.50	3.5A		0.0538	18.3750
ABE/ABP 004	4A		0.0329	24.0000
ABE/ABP 4.50	4.5A		0.0302	30.3750
ABE/ABP 005	5A		0.0286	37.5000
ABE/ABP 006	6A		0.0233	54.0000
ABE/ABP 6.30	6.3A		0.0184	59.5350
ABE/ABP 007	7A		0.0164	98.0000
ABE/ABP 7.50	7.5A		0.0143	112.500
ABE/ABP 008	8A		0.0125	160.000
ABE/ABP 010	10A		0.0105	300.000
ABE/ABP 012	12A		0.0086	532.800
ABE/ABP 013	13A		0.0085	574.600
ABE/ABP 015	15A		0.0061	945.000
ABE/ABP 016	16A		0.0060	1098.00
ABE/ABP 018	18A		0.0055	1360.80
ABE/ABP 020	20A		0.0054	1440.00
ABE/ABP 025	25A		0.0036	3093.00
ABE/ABP 030	30A		0.0026	4617.00
ABE/ABP 040	40A		0.0015	20925.0

ABE

ABP



Approval

ABE

UL Listed 10mA~15A
 UL Recognized 15.1A~30A
 CSA Certified 100mA~15A
 CSA Acceptance 15.1A~25A
 PSE 5.1A~15A(250V)
 Recognized Component for Canada and U.S. 15.1A~40A

ABP (With Pig-Tail)

UL Listed 10mA~15A
 UL Recognized 15.1A~30A
 CSA Certified 100mA~15A
 CSA Acceptance 15.1A~25A
 PSE 5.1A~15A(250V)
 Recognized Component for Canada and U.S. 15.1A~30A

Electrical Characteristic

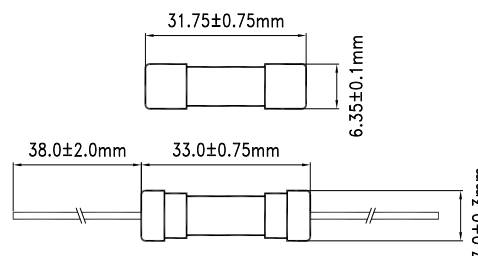
Rated Current	1 In	1.35 In	2 In
	MIN	MAX	MAX
10mA~30A	4 hr	1 hr	30 sec
Above 30A	4 hr	1 hr	120 sec

Environmental Temperature at 25°C

Interrupting Rating

10mA~20A: 10,000 amperes at 125V AC
 10mA~1A: 35 amperes at 250V AC
 1.25A~3.5A: 100 amperes at 250V AC
 3.75A~10A: 200 amperes at 250V AC
 0.01A~10A: 750 amperes at 250V DC
 10.1A~15A: 750 amperes at 250V AC/DC
 15.1A~20A: 750 amperes at 250V AC/DC
 20.1A~30A: 100 amperes at 250V AC
 400 amperes at 125V DC
 1000 amperes at 125V AC
 1000 amperes at 75V DC
 30.1A~40A: 1000 amperes at 250V AC
 400 amperes at 150V DC

Mechanical Dimension



Physical Specification

Material

Ceramic body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8 mm 12A and less.
 Diameter Ø1.0 mm for rating above 13A to 19A.
 Diameter Ø1.2 mm for rating above 20A.

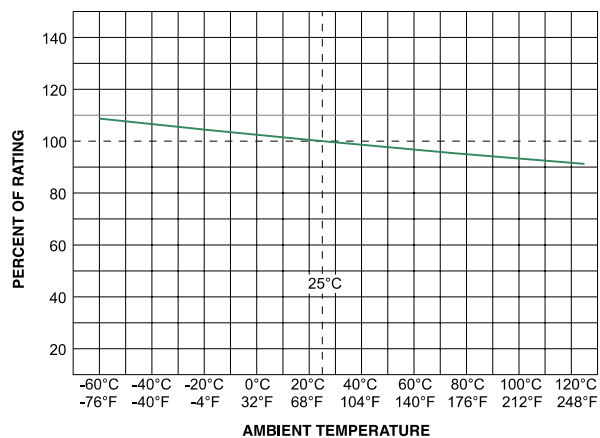
Packaging

In Bulk: ABE-500 pcs ; ABP-250 pcs per box

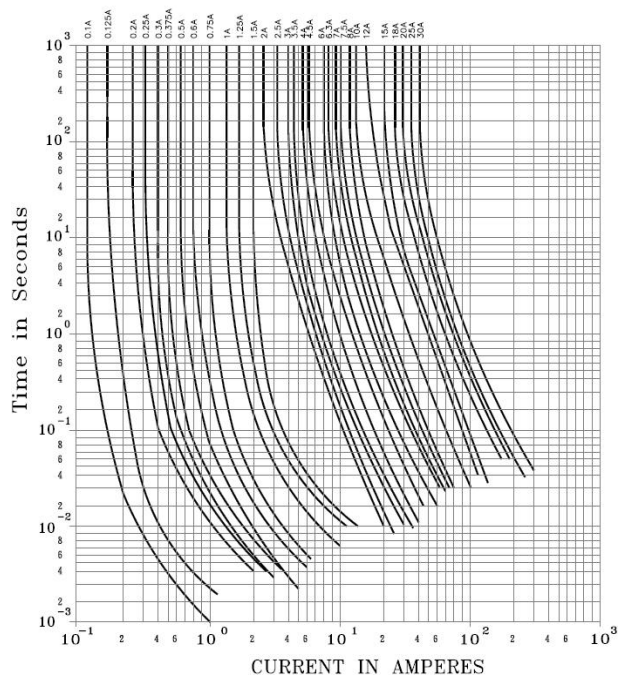
Environmental Specification

Operating Temperature -55°C to +125°C

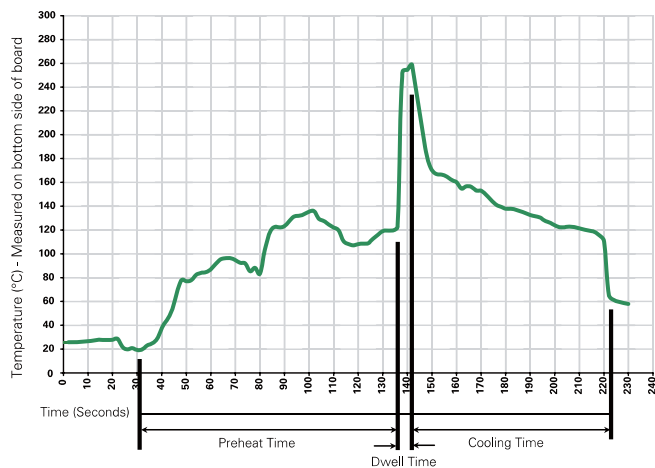
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5° C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System

ABE 001

SERIES ———

AMP Code ———
Refer to Electrical
Characteristics table

Type ADA/APA

6.3ØX32mm

RoHS



Time-Lag Ceramic Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
ADA/APA .100	100mA	250V or less	17.761	0.02000
ADA/APA .125	125mA		10.705	0.03125
ADA/APA .150	150mA		9.5450	0.05625
ADA/APA .160	160mA		8.3850	0.06400
ADA/APA .175	175mA		7.2250	0.07656
ADA/APA .180	180mA		6.0650	0.08790
ADA/APA .200	200mA		4.9050	0.14000
ADA/APA .250	250mA		4.3940	0.18750
ADA/APA .300	300mA		3.8881	0.31500
ADA/APA .315	315mA		3.8821	0.34720
ADA/APA .350	350mA		2.8762	0.42870
ADA/APA .375	375mA		2.2000	0.49210
ADA/APA .400	400mA		1.5237	0.80000
ADA/APA .500	500mA		0.8475	0.12500
ADA/APA .600	600mA		0.5779	0.18000
ADA/APA .700	700mA		0.4208	0.24500
ADA/APA .750	750mA		0.3801	0.45000
ADA/APA .800	800mA		0.3429	0.64000
ADA/APA 001	1A		0.2332	1.50000
ADA/APA 1.25	1.25A		0.1667	2.34300
ADA/APA 1.50	1.5A		0.1201	4.50000
ADA/APA 1.60	1.6A		0.1126	5.12000
ADA/APA 002	2A		0.1992	8.00000
ADA/APA 2.50	2.5A		0.1220	12.5000
ADA/APA 003	3A		0.0889	18.0000
ADA/APA 3.50	3.5A		0.0822	24.5000
ADA/APA 004	4A		0.0591	32.0000
ADA/APA 4.50	4.5A		0.0452	40.5000
ADA/APA 005	5A		0.0413	50.0000
ADA/APA 006	6A		0.0308	90.0000
ADA/APA 6.30	6.3A		0.0287	119.070
ADA/APA 007	7A		0.0157	147.000
ADA/APA 008	8A		0.0133	192.000
ADA/APA 010	10A		0.0098	400.000
ADA/APA 012	12A		0.0080	576.000
ADA/APA 013	13A		0.0076	591.500
ADA/APA 015	15A		0.0059	1012.50
ADA/APA 020	20A		0.0046	1600.00
ADA/APA 025	25A		0.0032	4375.00
ADA/APA 030	30A		0.0026	5130.00

Approval

ADA

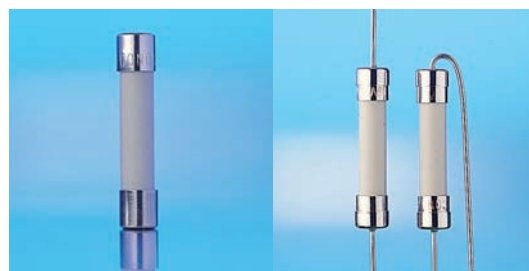
UL Listed 100mA~20A
 CSA Certified 100mA~15A
 CSA Acceptance 15.1A~20A
 PSE 5.1A~15A(250V)
 Recognized Component for Canada and U.S. 20.1A~30A

APA (With Pig-Tail)

UL Listed 100mA~15A
 UL Recognized 15.1A~20A
 CSA Certified 100mA~15A
 CSA Acceptance 15.1A~20A
 PSE 5.1A~15A(250V)
 Recognized Component for Canada and U.S. 20.1A~30A

ADA

APA



Electrical Characteristic

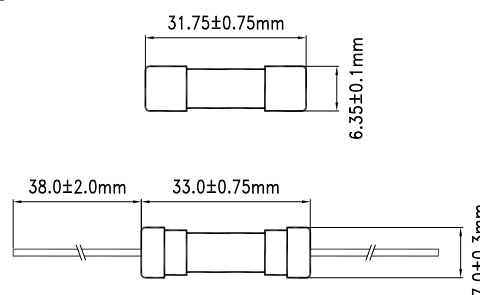
Rated Current	1 In	1.35 In	2 In	
	MIN	MAX	MIN	MAX
100mA~30A	4 hr	1 hr	2 sec	120 sec

Environmental Temperature at 25°C

Interrupting Rating

100mA~30A: 10,000 amperes at 125V AC
 100mA~1A: 35 amperes at 250V AC
 1.1A~3.5A: 100 amperes at 250V AC
 3.6A~10A: 200 amperes at 250V AC
 10.1A~15A: 750 amperes at 250V AC
 0.1A~30A: 300 amperes at 250V DC
 15.1A~20A: 400 amperes at 250V AC
 0.1A~30A: 1500 amperes at 250V AC
 20.1A~30A: 10,000 amperes at 125V DC

Mechanical Dimension



Physical Specification

Material

Ceramic body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8 mm 12A and less.

Diameter Ø1.0 mm for rating above 13A to 19A.

Diameter Ø1.2 mm for rating above 20A.

Packaging

In Bulk:

ADA - 500 pcs ; APA - 250 pcs per box

Environmental Specification

Operating Temperature -55°C to +125°C

Type JME/JMP

5ØX20mm

RoHS

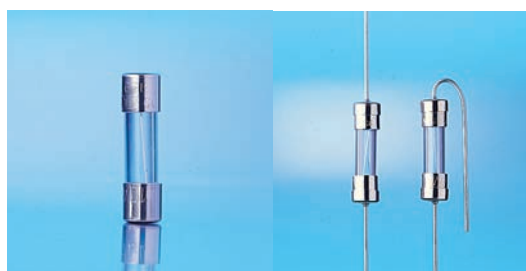


Normal Blow Glass Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
JME/JMP .010	10mA	250V or less	*	*
JME/JMP .020	20mA		*	*
JME/JMP .030	30mA		*	*
JME/JMP .032	32mA		*	*
JME/JMP .040	40mA		*	*
JME/JMP .050	50mA		*	*
JME/JMP .060	60mA		*	*
JME/JMP .063	63mA		*	*
JME/JMP .070	70mA		*	*
JME/JMP .080	80mA		*	*
JME/JMP .100	100mA		6.3070	0.0010
JME/JMP .125	125mA		5.6050	0.0015
JME/JMP .150	150mA		4.7000	0.0022
JME/JMP .160	160mA		4.2000	0.0038
JME/JMP .200	200mA		0.9000	0.0080
JME/JMP .300	300mA		0.7850	0.0180
JME/JMP .400	400mA		0.5008	0.0480
JME/JMP .500	500mA		0.3060	0.1250
JME/JMP .600	600mA		0.2360	0.1800
JME/JMP .700	700mA		0.2112	0.2450
JME/JMP .800	800mA		0.1827	0.5120
JME/JMP 001	1A		0.1153	1.0000
JME/JMP 1.25	1.25A		0.0952	1.5620
JME/JMP 1.50	1.5A		0.0633	2.2500
JME/JMP 1.60	1.6A		0.0590	2.5600
JME/JMP 002	2A		0.0455	4.0000
JME/JMP 2.50	2.5A		0.0332	6.2500
JME/JMP 003	3A		0.0270	10.800
JME/JMP 3.50	3.5A		0.0221	14.700
JME/JMP 004	4A		0.0198	19.200
JME/JMP 005	5A		0.0160	30.000
JME/JMP 006	6A		0.0131	54.000
JME/JMP 007	7A		0.0111	73.500
JME/JMP 008	8A		0.0095	128.00
JME/JMP 010	10A		0.0075	200.00
JME/JMP 012	12A		0.0057	360.00
JME/JMP 013	13A		0.0052	422.50
JME/JMP 015	15A		0.0043	675.00
JME/JMP 020	20A		0.0027	1200.0

JME JMP



Approval

JME
PSE 1A~30A (250V)
1A~15A (125V)

JMP(With Pig-Tail)
PSE 1A~30A(250V)
1A~5A(125V)

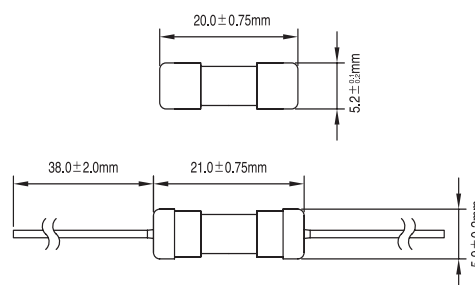
Electrical Characteristic

Rated Current	1.3 In	1.6 In	2 In
	MIN	MAX	MAX
10mA~30A	4 hr	1 hr	5 sec

Interrupting Rating

1A~30A: 500 amperes at 125V AC
100 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8 mm 14A and less.

Diameter Ø1.0 mm for rating above 15A to 19A.

Diameter Ø1.2 mm for rating above 20A.

Packaging

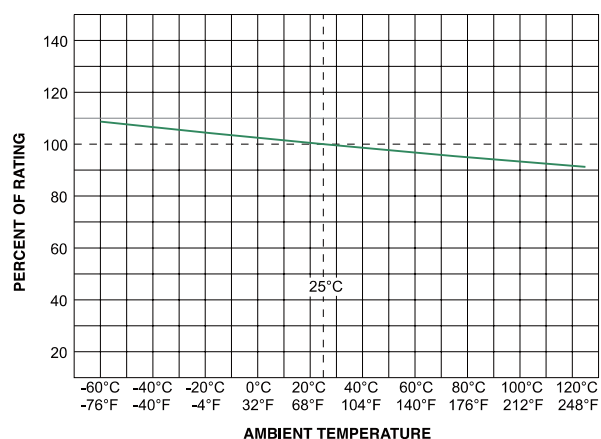
In Bulk:

JME-1,000 pcs ; JMP-500 pcs per box

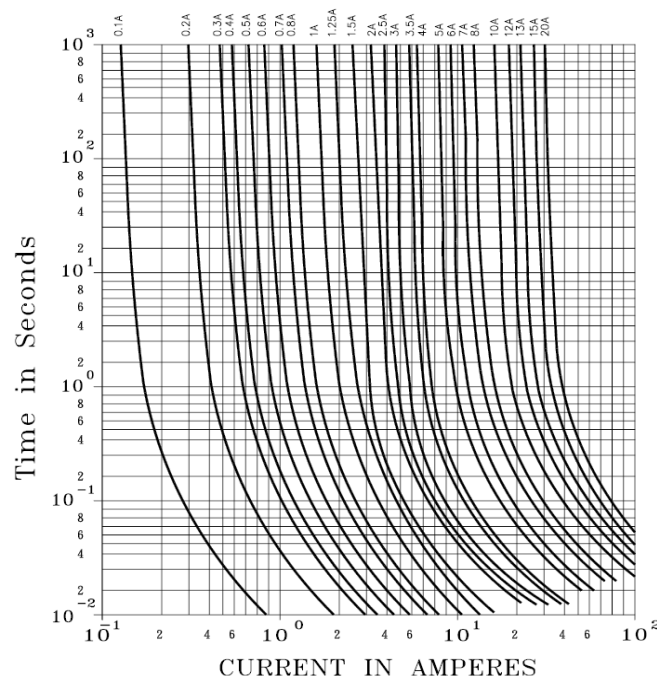
Environmental Specification

Operating Temperature -55°C to +125°C

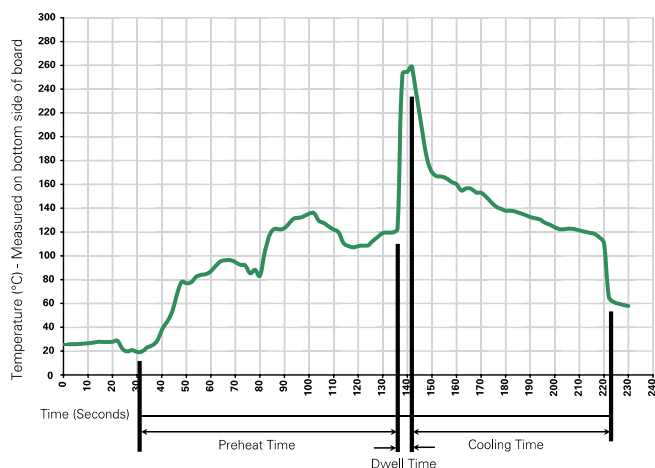
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System

JME 001

SERIES ————

AMP Code ————
Refer to Electrical
Characteristics table

Type JSO/JSP

6.3ØX32mm

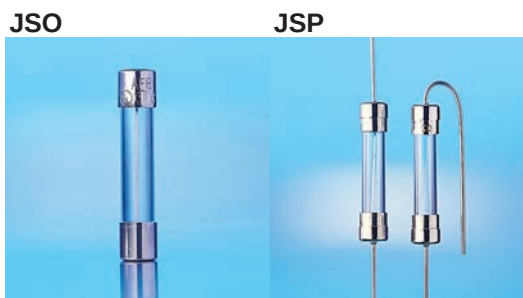
RoHS



Normal Blow Glass Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
JSO/JSP .010	10mA	250V or less	*	*
JSO/JSP .020	20mA		*	*
JSO/JSP .030	30mA		*	*
JSO/JSP .032	32mA		*	*
JSO/JSP .040	40mA		*	*
JSO/JSP .050	50mA		*	*
JSO/JSP .060	60mA		*	*
JSO/JSP .063	63mA		*	*
JSO/JSP .070	70mA		*	*
JSO/JSP .080	80mA		*	*
JSO/JSP .100	100mA		9.7500	0.00100
JSO/JSP .150	150mA		6.0190	0.00220
JSO/JSP .200	200mA		4.0050	0.00400
JSO/JSP .250	250mA		3.0050	0.01250
JSO/JSP .300	300mA		2.9000	0.01800
JSO/JSP .400	400mA		0.5225	0.03200
JSO/JSP .500	500mA		0.4302	0.07500
JSO/JSP .600	600mA		0.3720	0.10800
JSO/JSP .700	700mA		0.2722	0.14700
JSO/JSP .750	750mA		0.2382	0.16875
JSO/JSP .800	800mA		0.2004	0.25600
JSO/JSP 001	1A		0.1498	0.40000
JSO/JSP 1.50	1.5A		0.0823	2.25000
JSO/JSP 002	2A		0.0526	6.00000
JSO/JSP 2.50	2.5A		0.0431	9.37500
JSO/JSP 003	3A		0.0310	13.5000
JSO/JSP 3.15	3.15A		0.0308	14.8830
JSO/JSP 004	4A		0.0225	24.0000
JSO/JSP 005	5A		0.0182	37.5000
JSO/JSP 006	6A		0.0146	72.0000
JSO/JSP 6.30	6.3A		0.0139	119.070
JSO/JSP 007	7A		0.0127	170.500
JSO/JSP 7.25	7.25A		0.0119	210.250
JSO/JSP 7.50	7.5A		0.0109	225.000
JSO/JSP 008	8A		0.0104	256.000
JSO/JSP 010	10A		0.0082	400.000
JSO/JSP 012	12A		0.0070	576.000
JSO/JSP 013	13A		0.0061	676.000
JSO/JSP 015	15A		0.0052	900.000
JSO/JSP 018	18A		0.0040	1296.00
JSO/JSP 020	20A		0.0036	2000.00
JSO/JSP 025	25A		0.0029	3125.00
JSO/JSP 030	30A		0.0023	4500.00



Approval

JSO
PSE 1A~30A (250V)
1A~15A (125V)

JSP (With Pig-Tail)
PSE 1A~30A(250V) ;
1A~5A(125V)

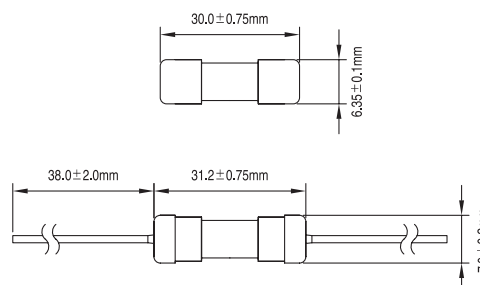
Electrical Characteristic

Rated Current	1.3 In MIN	1.6 In MAX	2 In MAX
10mA~30A	4 hr	1 hr	60 sec

Interrupting Rating

1A~30A: 500 amperes at 125V AC
100 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8 mm 12A and less.

Diameter Ø1.0 mm for rating above 13A to 19A.

Diameter Ø1.2 mm for rating above 20A.

Packaging

In Bulk:

JSO-500 pcs ; JSP-250 pcs per box

Environmental Specification

Operating Temperature -55°C to +125°C

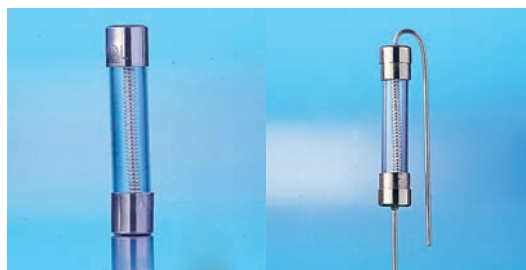
Type JDL/JDP

6.3ØX30mm **RoHS** **Pb**

Slow Blow Glass Tube Fuse Series

JDL

JDP



Approval

JDL

PSE 1A~30A(250V)
1A~15A(125V)

JDP (With Pig-Tail)

PSE 1A~30A(250V)
1A~5A(125V)

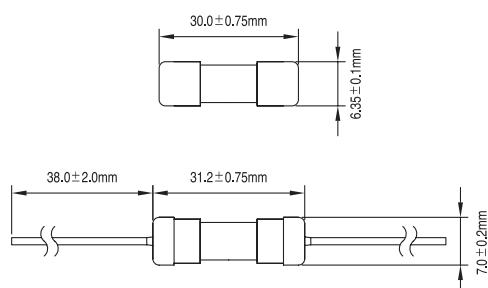
Electrical Characteristic

Rated Current	1.3 In	1.6 In	2 In	
	MIN	MAX	MIN	MAX
10mA~3A	4 hr	1 hr	5 sec	120 sec
3.15A~30A	4 hr	1 hr	12 sec	120 sec

Interrupting Rating

1A~30A: 500 amperes at 125V AC
100 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Brass Caps

Lead Wire:

Diameter Ø0.8 mm 12A and less.

Diameter Ø1.0 mm for rating above 13A to 19A.

Diameter Ø1.6 mm for rating above 20A.

Packaging

In Bulk:

JDL - 500 pcs ; JDP - 250 pcs per box

Type JTE/JTP

6.3ØX30mm **RoHS** **Pb**

Slow Blow Glass Tube Fuse Series

JTE

JTP



Approval

JTE

PSE 1A~30A(250V)
1A~15A(125V)

JTP (With Pig-Tail)

PSE 1A~30A(250V)
1A~5A(125V)

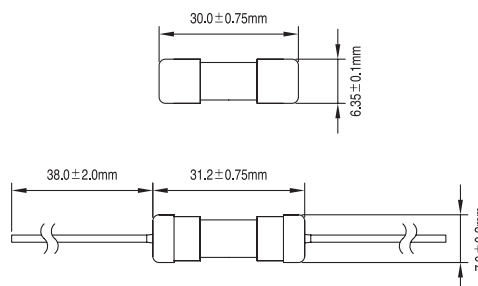
Electrical Characteristic

Rated Current	1.3 In	1.6 In	2 In	
	MIN	MAX	MIN	MAX
10mA~30A	4 hr	1 hr	2 sec	120 sec

Interrupting Rating

1A~30A: 500 amperes at 125V AC
100 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Brass Caps

Lead Wire:

Diameter Ø0.8 mm 12A and less.

Diameter Ø1.0 mm for rating above 13A to 19A.

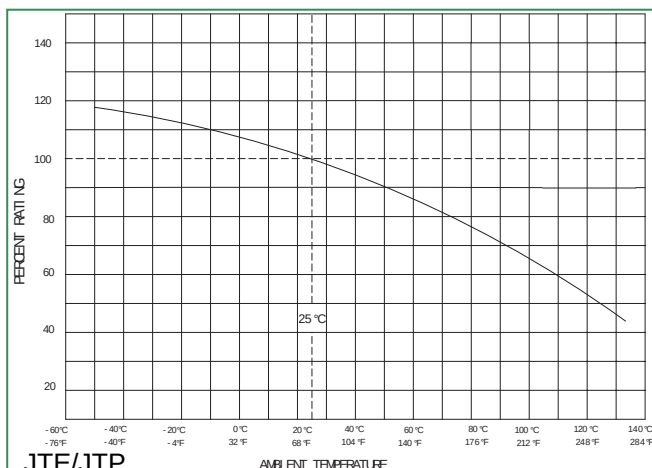
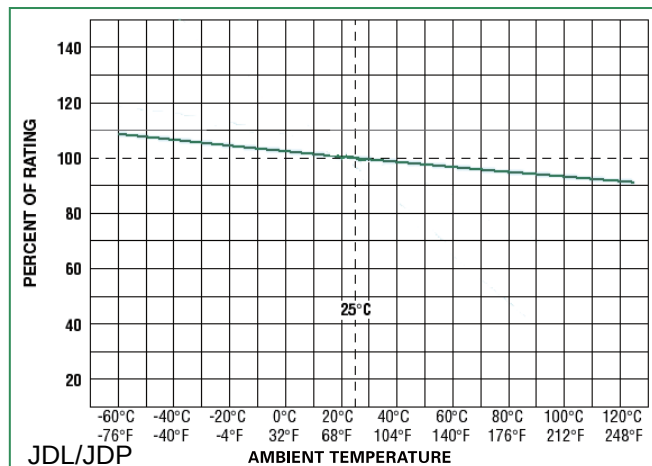
Diameter Ø1.6 mm for rating above 20A.

Packaging

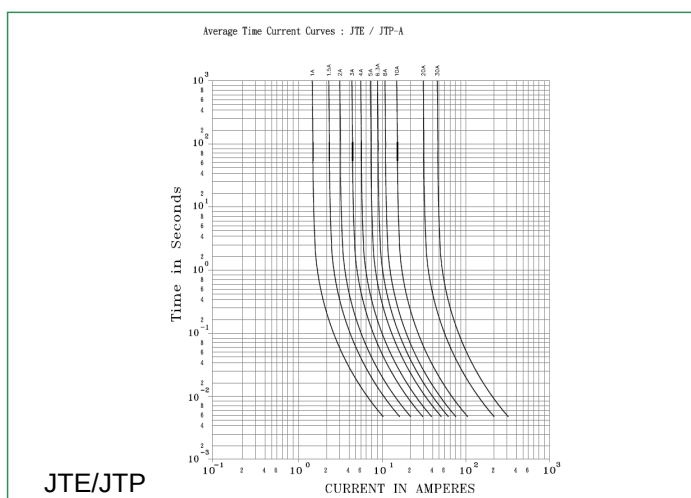
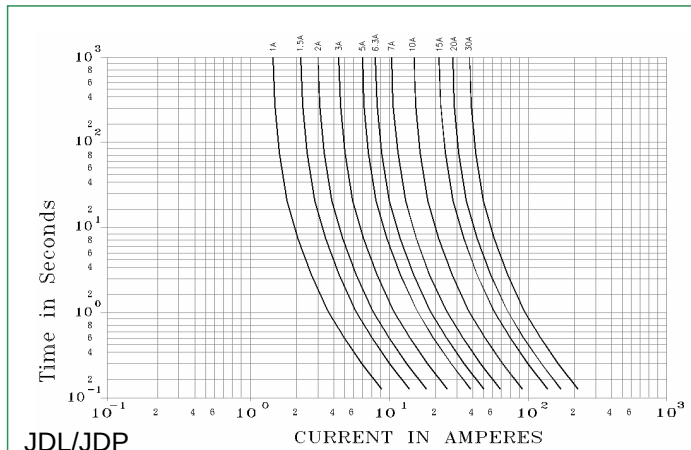
In Bulk:

JTE - 500 pcs ; JTP - 250 pcs per box

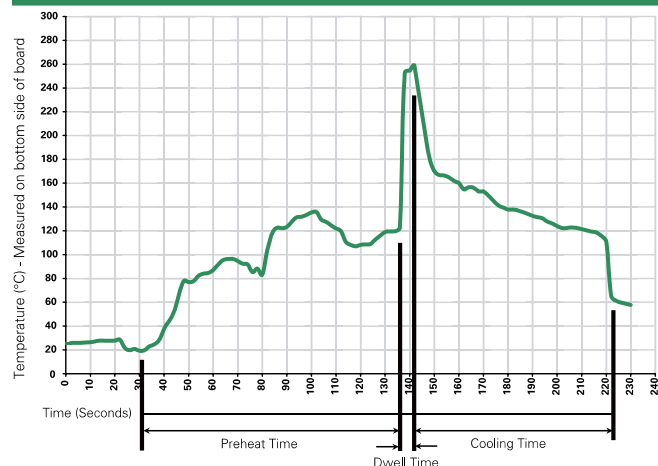
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

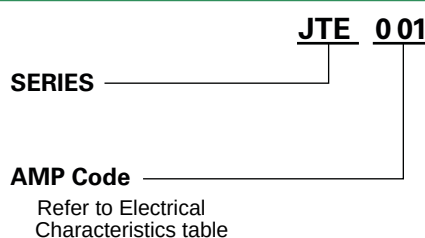
Wave Parameter	Lead-Free Recommendation
Preheat:	
(Depends on Flux Activation Temperature)	(Typical Industry Recommendation)
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type SMP

4.5ØX14.5mm **RoHS** **Pb**

Time-Lag Low Breaking Capacity



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
SMP.050	50mA	350V or less	*	*
SMP.080	80mA		*	*
SMP.090	90mA		*	*
SMP.100	100mA		*	*
SMP.125	125mA		*	*
SMP.150	150mA		*	*
SMP.160	160mA		*	*
SMP.200	200mA		*	*
SMP.250	250mA		2.4100	0.2052
SMP.375	375mA		1.1700	0.5510
SMP.500	500mA		0.6880	1.1020
SMP.600	600mA		0.4770	1.6625
SMP.750	750mA		0.3400	2.8025
SMP.800	800mA		0.3040	3.2775
SMP001	1A		0.2100	5.3580
SMP1.25	1.25A		0.1460	9.3100
SMP1.50	1.5A		0.1077	14.250
SMP002	2A		0.0689	28.500
SMP2.25	2.25A		0.0567	37.050
SMP2.50	2.5A		0.0502	47.500
SMP003	3A		0.0383	73.150
SMP3.50	3.5A		0.0312	104.50
SMP004	4A		0.0258	140.60
SMP005	5A		0.0186	253.65
SMP006	6A		0.0141	361.00
SMP007	7A		0.0116	440.80
SMP008	8A		0.0100	515.63

SMP



Approval

Recognized Component for Canada and U.S. 10mA~8A

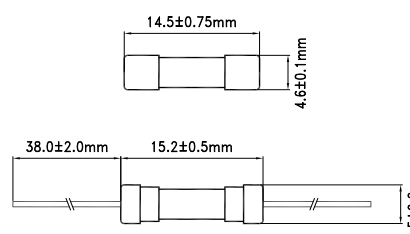
Electrical Characteristic

额定电流	100%	135%	200%	
	MIN	MAX	MIN	MAX
10mA~8A	4Hrs	1hr	3Sec	120Sec

Interrupting Rating

10mA~1A: 10,000 amperes at 125V AC
 1.25A~3.5A: 35 amperes at 350V AC
 100 amperes at 140 V DC
 10,000 amperes 125V AC
 4A~8A: 100 amperes at 350V AC
 100 amperes at 140V DC
 50 amperes at 350V AC

Mechanical Dimension



Physical Specification

Material

Glass body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.6 mm 7A and less.

Diameter Ø1.0 mm for rating above 8A.

Packaging

1. In Bulk:

SMP- 500 pcs per box

2. On Axial Tape & Reel

1,000 pcs per reel.

3. Tape & Reel specification:

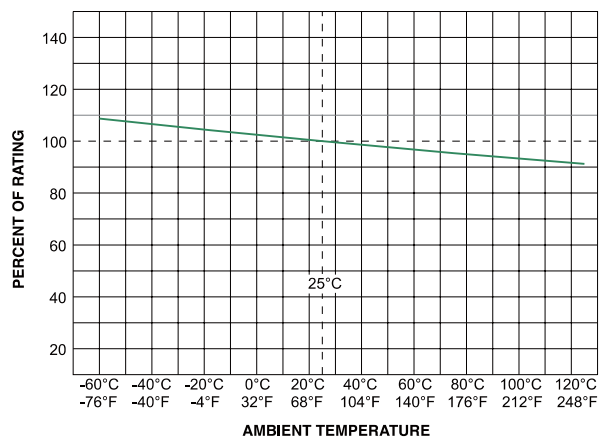
per EIA-296-E & IEC 286-1

@10mm pitch and 56.5mm inside Tape Spacing

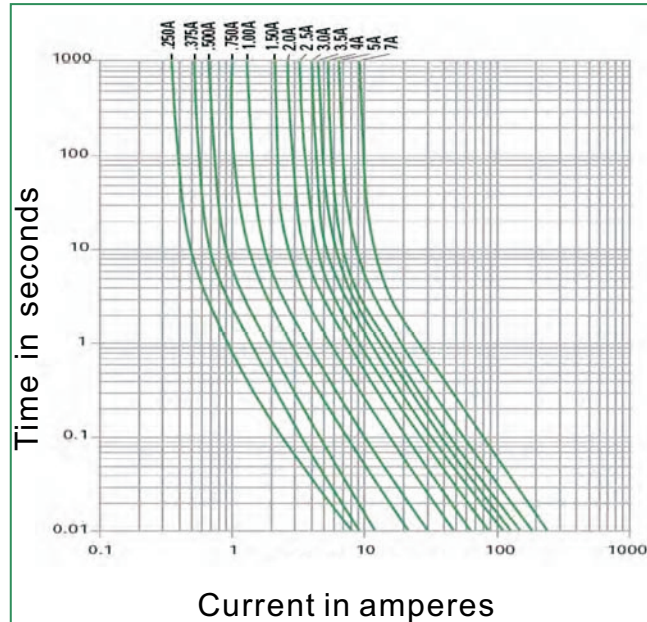
Environmental Specification

Operating Temperature -55°C to +125°C

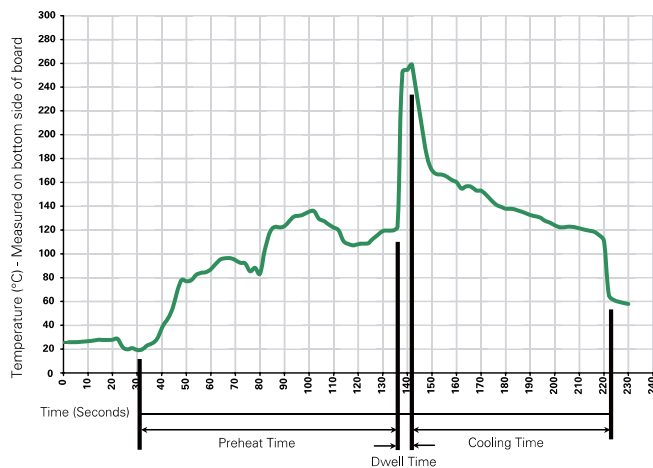
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

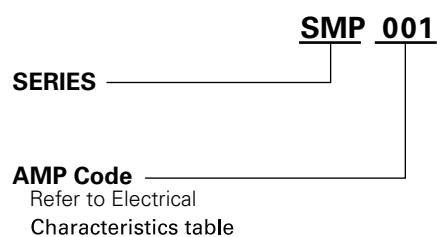
Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	
	260° C Maximum
Solder Dwell Time:	
	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type ABB /ABB-A

6.3ØX32mm

RoHS



Super Fast Acting Ceramic Tube Fuse Series



Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Melting I ² t @ 10In A ² Sec
ABB/ABB-A001	1A	500V AC/DC or less	0.2250	1.50000
ABB/ABB-A1.25	1.25A		0.1758	2.34300
ABB/ABB-A002	2A		0.0803	5.00000
ABB/ABB-A2.50	2.5A		0.0737	12.5000
ABB/ABB-A003	3A		0.0612	13.5000
ABB/ABB-A3.15	3.15A		0.0630	5.10000
ABB/ABB-A004	4A		0.0634	5.12000
ABB/ABB-A005	5A		0.0234	37.5000
ABB/ABB-A006	6A		0.0378	30.2400
ABB/ABB-A007	7A		0.0311	43.6100
ABB/ABB-A008	8A		0.0129	50.0000
ABB/ABB-A009	9A		0.0235	60.7500
ABB/ABB-A010	10A		0.0111	92.8000
ABB/ABB-A012	12A		0.0078	192.800
ABB/ABB-A015	15A		0.0061	52.0000
ABB/ABB-A016	16A		0.0063	51.0000
ABB/ABB-A020	20A		0.0067	100.000
ABB/ABB-A025	25A		0.0041	156.500
ABB/ABB-A030	30A		0.0033	250.000

Approval

ABB

Recognized Component for Canada and U.S. 1A~30A

ABB-A (With Pig-Tail)

Recognized Component for Canada and U.S. 1A~30A

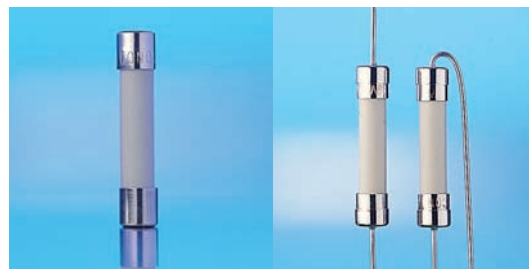
Electrical Characteristic

Rated current	1.5 In	2.5 In
	MAX	MAX
1A~30A	150 sec	6 sec

Environmental Temperature at 25°C

ABB

ABB-A

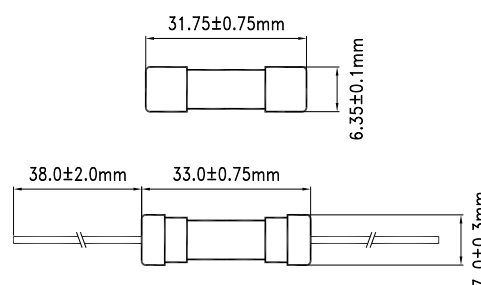


Interrupting Rating

1A~20A: 200 amperes at 500V AC/DC

20.1A~30A: 100 amperes at 500V AC/DC

Mechanical Dimension



Physical Specification

Material

Ceramic body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8 mm 12A and less.

Diameter Ø1.0 mm for rating above 13A to 19A.

Diameter Ø1.2 mm for rating above 20A.

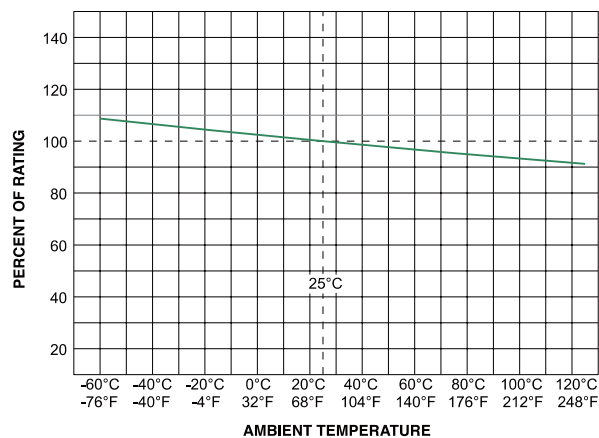
Packaging

In Bulk: ABB-500 pcs ; ABB-A-250 pcs per box

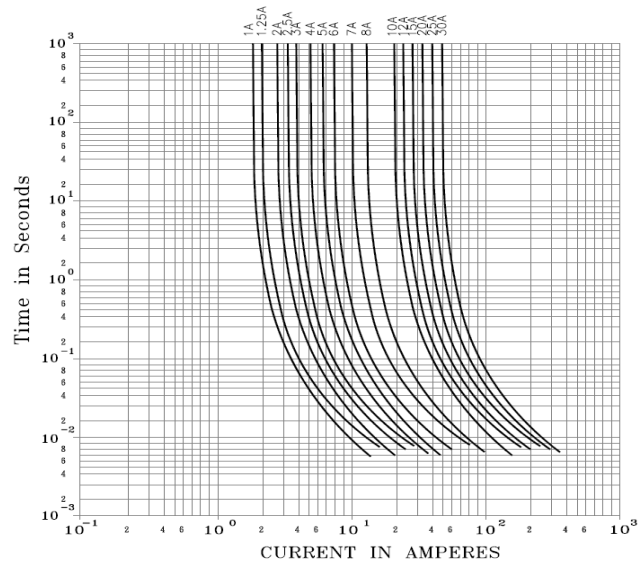
Environmental Specification

Operating Temperature -55°C to +125°C

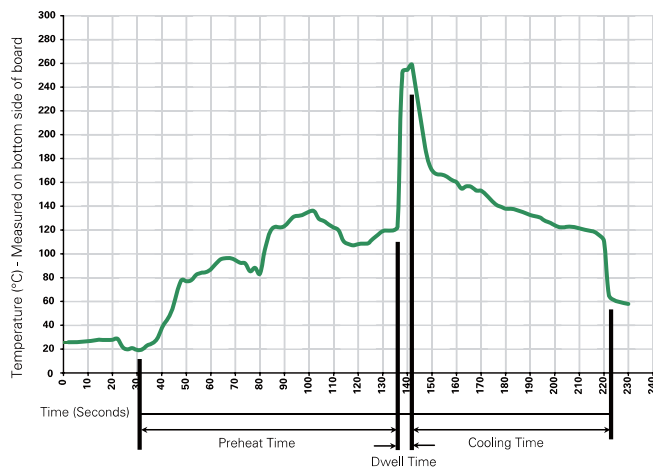
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters



Recommended Process Parameters:

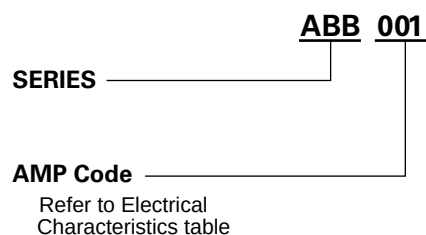
Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260° C Maximum
Solder Dwell Time:	2-5 seconds

Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5° C
Heating Time: 5 seconds max.

Note: These devices are not recommended for IR or Convection Reflow process.

Part Numbering System



Type AXT

6ØX25mm

RoHS



Time-Lag Ceramic Tube Fuse Series

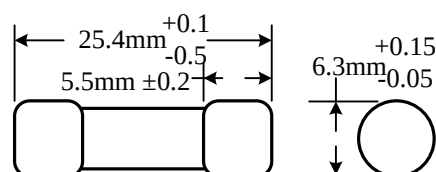


Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Melting I ² t @ 10In A ² Sec	Melting I ² < 8 mSec A ² Sec
AXT 001	1A	60V	0.2202	2	2.10000
AXT 002	2A		0.1902	7	6.65000
AXT 003	3A		0.0922	19	19.9500
AXT 004	4A		0.0502	32	30.4000
AXT 005	5A		0.0202	52	54.5000
AXT 006	6A		0.0163	72	68.5000
AXT 010	10A	125V	0.0120	400	420.000
AXT 012	12A		0.0076	570	541.500
AXT 015	15A	250V AC/DC	0.0056	720	756.000
AXT 020	20A		0.0046	1600	1520.00
AXT 025	25A		0.0032	4300	4085.00
AXT 030	30A		0.0016	5200	4940.00
AXT 035	35A		0.0014	9200	9660.00
AXT 040	40A		0.0013	10000	9700.00
AXT 045	45A		0.0012	11200	11760.0
AXT 050	50A		0.0010	13200	13860.0

Interrupting Rating

1A~30A: 3,000 amperes at 60/125/250V AC/DC
 30.1A~50A: 2,000 amperes at 60/125/250V AC/DC

Mechanical Dimension



Physical Specification

Material

Ceramic body / Nickel, Tin or Silver Plated Copper

Packaging

In Bulk:
 500 pcs per box

Environmental Specification

Operating Temperature -55°C to +125°C

Approval

Recognized Component for Canada and U.S. 1A~50A

Electrical Characteristic

Rated Current	1In	2In
	MIN	MAX
1A-50A	4hr	120sec

Environmental Temperature at 25°C

Type GBF/GBF-A

5ØX20mm

RoHS



Very Fast-Acting Fuse Series

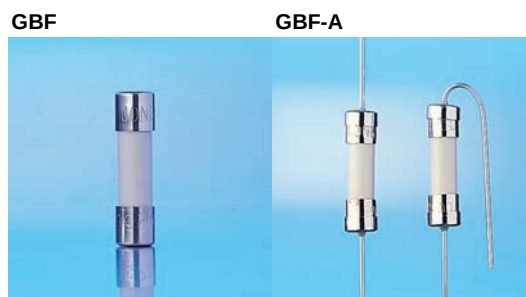


Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
GBF/GBF-A 001	1A	250V or less	0.0960	0.91982
GBF/GBF-A 1.25	1.25A		0.1400	1.07974
GBF/GBF-A 1.60	1.6A		0.1040	1.32649
GBF/GBF-A 002	2A		0.0840	1.84136
GBF/GBF-A 2.50	2.5A		0.0570	4.33125
GBF/GBF-A 3.15	3.15A		0.0390	9.59994
GBF/GBF-A 004	4A		0.0310	15.5200
GBF/GBF-A 005	5A		0.0230	38.3333
GBF/GBF-A 6.30	6.3A		0.0170	73.4265
GBF/GBF-A 008	8A		0.0110	108.800
GBF/GBF-A 010	10A		0.0160	40.000
GBF/GBF-A 12.5	12.5A		0.0057	234.000
GBF/GBF-A 018	18A		0.0045	384.000
GBF/GBF-A 020	20A		0.0050	420.000

Approval

GBF/GBF-A

Recognized Component for Canada and U.S. 1A~20A



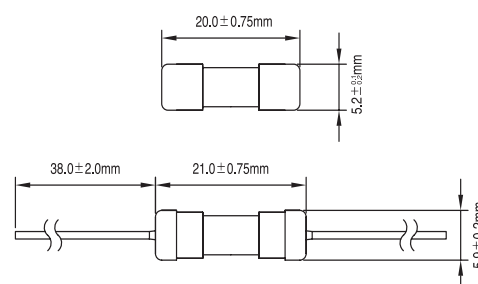
Electrical Characteristic

Rated Current	1 In MIN	1.35 In MAX	1.5 In MAX	2.5 In MAX
1A~16A	4 hr	2 min		0.2 sec
16.1A~20A	4 hr		2 min	1 sec

Interrupting Rating

200 amperes at 250V AC

Mechanical Dimension



Physical Specification

Material

Ceramic body / Nickel Plated Brass Caps

Lead Wire:

Diameter Ø0.8 mm 14A and less.

Diameter Ø1.0 mm for rating above 15A to 19A.

Diameter Ø1.2 mm for rating above 20A.

Packaging

1. In Bulk:

GBF -1,000 pcs ; GBF-A -500 pcs per box

2. On Axial Tape & Reel

1,000 pcs per reel.

3. Tape & Reel specification:

per EIA-296-E & IEC 286-1

@ 10mm Pitch and 56.5mm inside Tape Spacing.

Environmental Specification

Operating Temperature -55°C to +125°C