

FUSES

What are fuses? They are protectors that prevent electronic and electrical equipment from overload current damage. Current flew 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 capacitate loads.

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

Very fast-acting fuses often have silver linked. 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 volage(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....
- Considerations: Reduce installed cost,ease of removal,
- (7)mounting type/form factor,etc.

Electrical Characteristic

The capacity of fuses for carrying current are tested at 25 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 wil 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℃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.factorx 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：

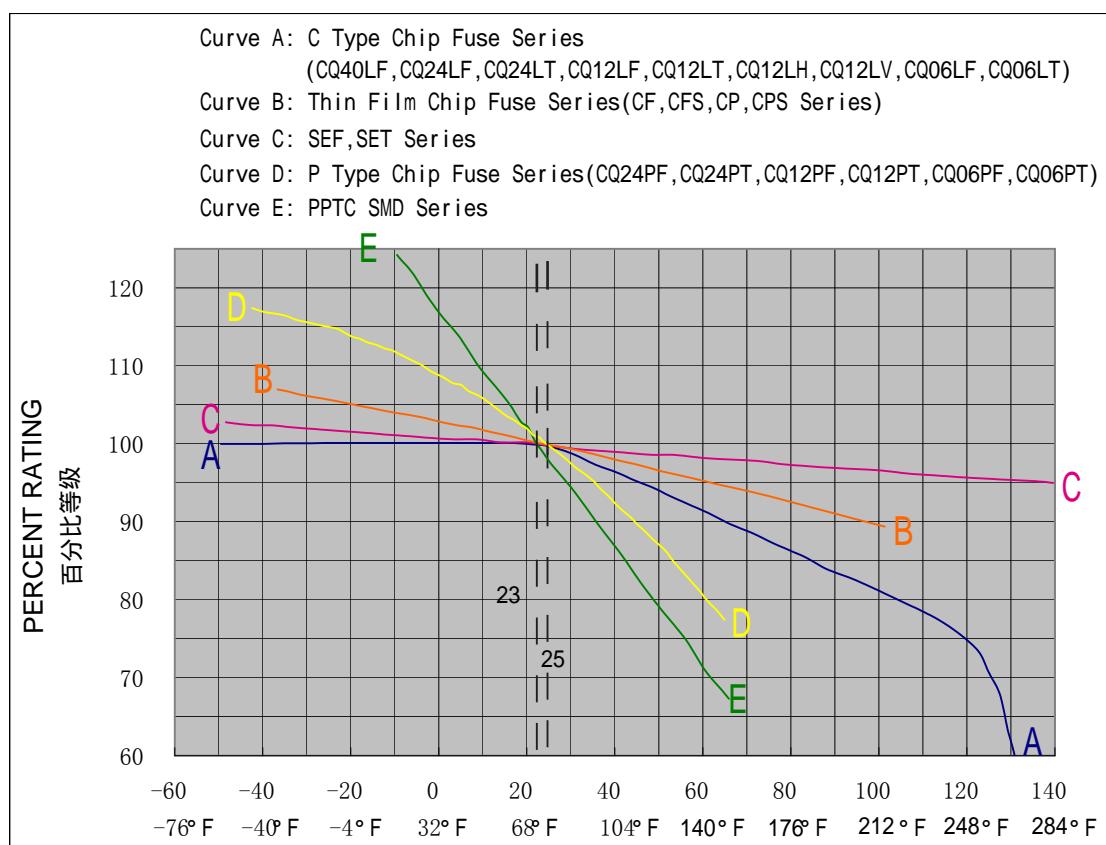
保险丝最大的降额电流 (I_n) =

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 protection, 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.

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).

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。

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.

Table 1 Waveform I^2t Formulas

Pulse Waveforms	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	$I^2t = \frac{1}{5}i_p^2 t$

Pulse Cycle Withstand Capability

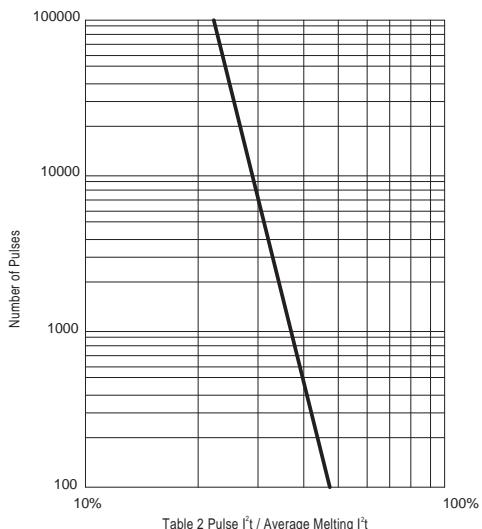
- 100,000 Pulses Pulse $I^2t=22\%$ Of Nominal Melting I^2t
- 10,000 Pulses Pulse $I^2t=29\%$ Of Nominal Melting I^2t
- 1,000 Pulses Pulse $I^2t=38\%$ Of Nominal Melting I^2t
- 100 Pulses Pulse $I^2t=48\%$ Of Nominal Melting I^2t

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。

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

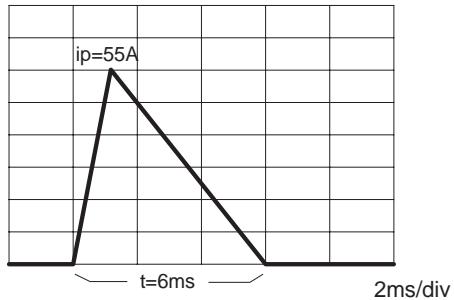


Figure 1

Answer:

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

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

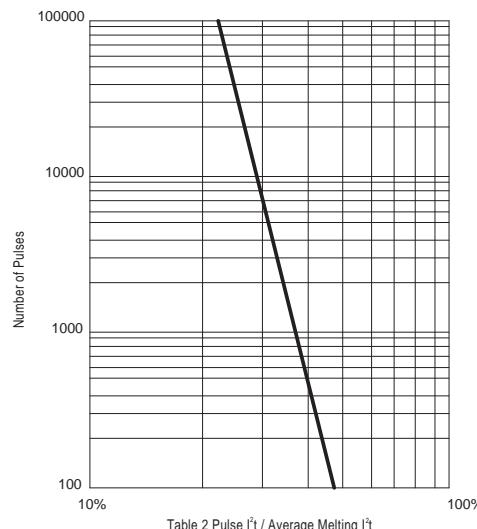
This value is referred to as the "Pulse I^2t "

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

So:

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

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 $31 A^2 Sec$, which is the minimum fuse rating that will accommodate the $27.5 A^2 Sec$ 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°且其波形如下图1所示。

10A/div

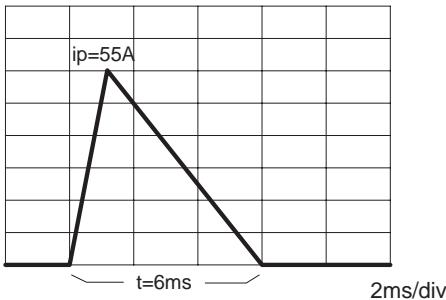


图1

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

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

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：

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

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 $29.4 A^2 Sec$ 等级，可容纳步骤2所计算出的 $27.5 A^2 Sec$ 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 merchan dise 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,rising 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，否则不予接受。

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<u>FUSE SELECTION</u>				01-05
<u>INDEX</u>				06-07
<u>PRODUCT</u>	<u>TYPE</u>	<u>CHARACTERISTICS</u>	<u>A</u>	<u>V</u>
<u>SURFACE MOUNT FUSE</u>	F	SEF	62mA-25A	125V,86V
	T	SET	200mA-7A	125V
<u>C TYPE CHIP FUSE</u>	F	CQ40LF	500mA-40A	600V
	T	CQ40LT	500mA-40A	600V
	F	CQ24LF	1A-20A	350V
	T	CQ24LT	1A-20A	350V
	FF	CQ12LV	1A-20A	125V,24V
	T	CQ12LH	1A-20A	125V,24V
	F	CQ12LF	1A-20A	125V,24V
	T	CQ12LT	1A-20A	125V,24V
	F	CQ06LF	1A-8A	63V
	T	CQ06LT	1A-8A	63V
<u>P TYPE CHIP FUSE</u>	F	CQ24PF	500mA-12A	350V
	T	CQ24PT	500mA-12A	350V
	F	CQ12PF	500mA-7A	63V
	T	CQ12PT	500mA-7A	63V
	F	CQ06PF	500mA-5A	63V
	T	CQ06PT	500mA-5A	63V
<u>THIN FILM CHIP FUSE</u>	H	CF12	500mA-7A	63V,32V
	H	CF06	400mA-5A	50V,32V
	H	CF04	315mA-4A	32V
	F	CFS12	500mA-7A	63V,32V
	F	CFS06	400mA-6A	50V,32V
	F	CFS04	500mA-4A	32V
	F	CP12	500mA-7A	63V,32V
	F	CP06	500mA-5A	50V,32V
	F	CP04	500mA-4A	32V
	T	CPS12	500mA-7A	63V,32V
	T	CPS06	500mA-6A	50V,32V
<u>PPTC RESETABLE FUSE</u>		PPTC SMD 2920	0.3A-3A	6V-60V
		PPTC SMD 1812	0.1A-3A	6V-60V
		PPTC SMD 1210	0.05A-2A	6V-60V
		PPTC SMD 1206	0.05A-2A	6V-60V
		PPTC SMD 0805	0.1A-1A	6V-15V
		PPTC SMD 0603	0.01A-0.2A	9V-60V
		PPTC LO RHO SMD 1812	1.4A-3.7A	6V
		PPTC LO RHO SMD 1210	1.75A-3.80A	6V
		PPTC LO RHO SMD 1206	0.5A-2A	6V
		PPTC LO RHO SMD 0805	0.75A-1.75A	6V
		PPTC LO RHO SMD 0603	0.25A-0.75A	6V-9V

VICFUSE(CQ)	BUSSMANN	LITTELFUSE	bel	AEM	Raychem/Tyo	Bourns
SEF	6125FA	451/453	SSQ	AF2 2410	-----	-----
SET	6125TD	452/454	SST	-----	-----	-----
CQ40LF	-----	-----	-----	-----	-----	-----
CQ40LT	-----	456	-----	-----	-----	-----
CQ24LF	-----	-----	-----	-----	-----	-----
CQ24LT	-----	-----	-----	-----	-----	-----
CQ12LV	-----	-----	-----	-----	-----	-----
CQ12LH	-----	-----	-----	-----	-----	-----
CQ12LF	3216FF	466/437/433/429	C1Q	F1206FA	-----	-----
CQ12LT	3216TD	469/430/468	C1S	F1206SB	-----	-----
CQ06LF	0603FA	467/438/434/431	C2Q	F0603FA	-----	-----
CQ06LT	-----	-----	-----	F0603SB	-----	-----
CQ24PF	-----	-----	-----	-----	-----	-----
CQ24PT	-----	-----	-----	-----	-----	-----
CQ12PF	-----	-----	-----	-----	-----	-----
CQ12PT	-----	-----	-----	-----	-----	-----
CQ06PF	-----	-----	-----	-----	-----	-----
CQ06PT	-----	-----	-----	-----	-----	-----
CF12	-----	-----	-----	-----	-----	-----
CF06	-----	-----	-----	-----	-----	-----
CF04	-----	-----	-----	-----	-----	-----
CFS12	-----	-----	-----	-----	-----	-----
CFS06	-----	-----	-----	-----	-----	-----
CFS04	-----	-----	-----	-----	-----	-----
CP12	-----	-----	-----	-----	-----	-----
CP06	-----	-----	-----	-----	-----	-----
CP04	-----	-----	-----	-----	-----	-----
CP04	-----	-----	-----	-----	-----	-----
CPS12	-----	-----	-----	-----	-----	-----
CPS06	-----	-----	-----	-----	-----	-----
PPTC SMD 2920	-----	-----	-----	-----	-----	-----
PPTC SMD 1812	-----	-----	-----	-----	-----	-----
PPTC SMD 1210	-----	-----	-----	-----	-----	-----
PPTC SMD 1206	-----	-----	-----	-----	-----	-----
PPTC SMD 0805	-----	-----	-----	-----	-----	-----
PPTC SMD 0603	-----	-----	-----	-----	-----	-----
PPTC LO RHO SMD 1812	-----	1812L	-----	-----	miniSMD	MF-MSMD(F)
PPTC LO RHO SMD 1210	-----	1210L	-----	-----	microSMD	MF-USMD(F)
PPTC LO RHO SMD 1206	-----	1206L	-----	-----	nanoSMD	MF-NSMD(F)
PPTC LO RHO SMD 0805	-----	-----	-----	-----	-----	-----
PPTC LO RHO SMD 0603	-----	-----	-----	-----	-----	-----

Type SEF

RoHS

Fast Acting Square Ceramic Surface Mount Fuse



Feature

- a. Small volume.
- b. Excellent inrush current withstanding capability.
- c. Excellent withstand capacity for thermal and mechanic shock.
- d. High reliability and stable solderability, 2 terminal caps can choice plating gold or silver.
- e. Our SEF & SET series products,because the materials used in these fuses include high melting temperature type solder and this solder contains more than 85% lead (Pb),so these products can conform to the exempts of the requirements of RoHS Directive(2002/95/EC).

Cartridge Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
SEF .062	62mA (1/16A)	125V	11.275	0.000961
SEF .080	80 mA		9.9550	0.001000
SEF .100	100 mA		9.5130	0.001500
SEF .125	125 mA		5.8395	0.003120
SEF .200	200 mA		2.0195	0.008000
SEF .250	250 mA		1.1050	0.009380
SEF .300	300 mA		0.8554	0.018000
SEF .375	375 mA		0.7819	0.021100
SEF .400	400 mA		0.5200	0.032000
SEF .500	500 mA		0.4895	0.037500
SEF .700	700 mA		0.2814	0.120500
SEF .750	750 mA		0.2425	0.153100
SEF 001	1 A		0.1407	0.385000
SEF 1.50	1.5 A		0.1130	0.725000
SEF 002	2 A		0.0594	0.894000
SEF 2.50	2.5 A		0.0384	1.182000
SEF 003	3 A		0.0333	1.475000
SEF 3.15	3.15A		0.0296	1.655000
SEF 3.50	3.5 A		0.0268	2.055000
SEF 004	4 A		0.0209	3.882000
SEF 005	5 A		0.0179	5.480000
SEF 006	6 A		0.0117	8.520000
SEF 007	7 A		0.0104	9.931000
SEF 008	8 A		0.0095	18.82000
SEF 010	10 A		0.0067	22.50000
SEF 012	12A	86V	0.0042	43.20000
SEF 015	15A		0.0025	112.5000
SEF 020	20A		—	—
SEF 025	25A		—	—

Approval

PSE
Certified products for U.S. and Canada
Recognized Component for Canada and U.S.
CSA Listed

1A~15A
62mA~5A
6A~25A
62mA~10A

Electrical Characteristic

Rated current	1 In	2 In
	MIN	MAX
62mA~10A	4hr	5 sec
12A~15A	4hr	60 sec

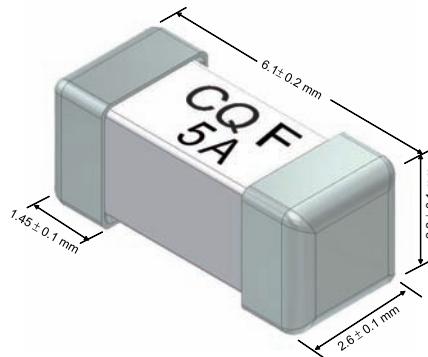
Environmental Temperature at 25°C



Interrupting Rating

62mA~8A:	50 amperes at 125V AC/DC
	300 amperes at 32V DC
10A:	35 amperes at 125V AC
	50 amperes at 125V AC/DC
	300 amperes at 32V DC
12A~25A:	50 amperes at 65V AC/DC
	300 amperes at 24V DC
	200 amperes at 86V AC/DC

Mechanical Dimension



Physical Specification

Material

Body: Ceramic
Terminations: Silver Plated Brass Caps
-G:Gold plated brass caps

Packaging

1,000 Fuses in 7 inches dia. reel, or 5,000 fuses in 13 inches dia. reel,
12mm wide tape, per EIA Standard 481

Environmental Specification

Operating Temperature

-55°C to +125°C

Vibration

MIL-STD-202G, Method 201 (10-55 Hz,
0.06 inch, total excursion)

Salt Spray

MIL-STD-202G, Method 101, Test Condition B
(48Hrs)

Insulation Resistance

MIL-STD-202G, Method 302, Test Condition A

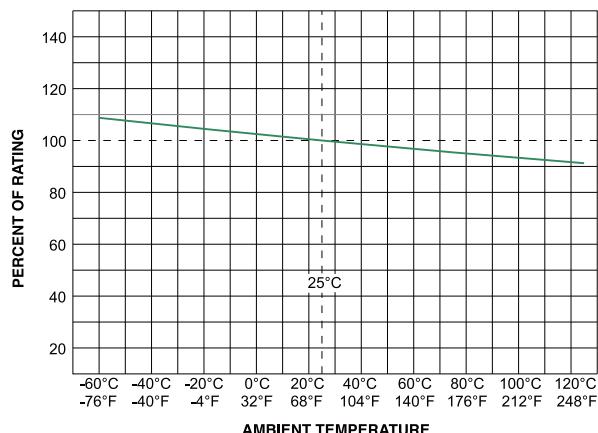
Resistance to Solder Heat

MIL-STD-202G, Method 210, Test Condition B
(10sec, at 260°C)

Thermal Shock

MIL-STD-202G, Method 107, Test Condition B
(-65°C to +125°C)

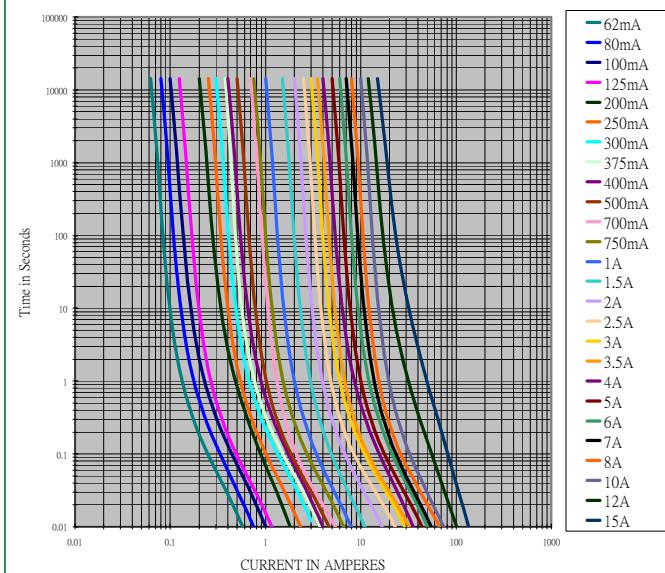
Temperature Rerating Curve



Note:

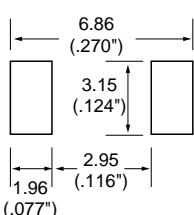
- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Average Time Current Curves

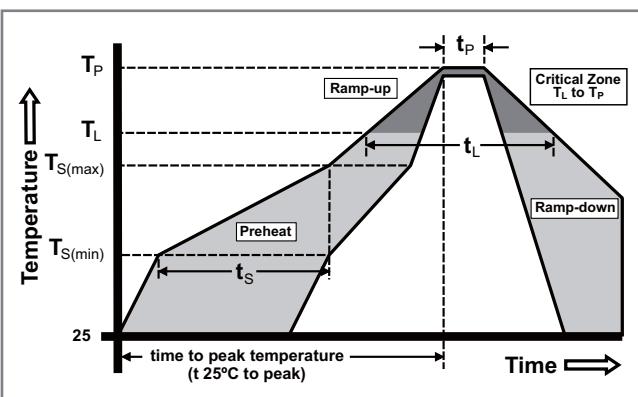


Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 120 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		5°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 90 seconds
Peak Temperature (T_p)		250 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C
Wave Soldering Parameters		260°C Peak Temperature, 10 seconds max.



Recommended pad layout



Part Numbering System

SEF 001

SERIES _____

AMP Code _____

Refer to Electrical
Characteristics table

Type SET

RoHS

Slow Blow Square Ceramic Surface Mount Fuse



Feature

- a. Small volume.
- b. Excellent inrush current withstanding capability.
- c. Excellent withstand capacity for thermal and mechanic shock.
- d. High reliability and stable solderability, 2 terminal caps can choice plating gold or silver.
- e. Our SEF & SET series products,because the materials used in these fuses include high melting temperature type solder and this solder contains more than 85% lead (Pb),so these products can conform to the exempts of the requirements of RoHS Directive(2002/95/EC).

Cartridge Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ^t t A ² Sec
SET .200	200 mA	125V	1.5751	0.0600
SET .250	250 mA		1.2585	0.0680
SET .300	300 mA		1.2512	0.0900
SET .350	350 mA		0.9366	0.1000
SET .375	375 mA		0.5232	0.2109
SET .400	400 mA		0.5150	0.2400
SET .450	450 mA		0.5009	0.3037
SET .500	500 mA		0.3291	0.3750
SET .700	700 mA		0.2648	0.4900
SET .750	750 mA		0.1600	0.6260
SET 001	1 A		0.1090	1.9090
SET 1.50	1.5 A		0.0511	3.8350
SET 002	2 A		0.0550	8.5600
SET 2.50	2.5 A		0.0287	16.550
SET 003	3 A		0.0228	22.540
SET 3.15	3.15 A		0.0224	23.000
SET 3.50	3.5 A		0.0190	29.400
SET 004	4 A		0.0140	35.820
SET 005	5 A		0.0130	54.800
SET 006	6 A		0.0090	64.800
SET 007	7 A		0.0074	89.830

Approval

PSE 1A~7A
UL Recognized 200mA~7A
CSA Listed 200mA~7A

Electrical Characteristic

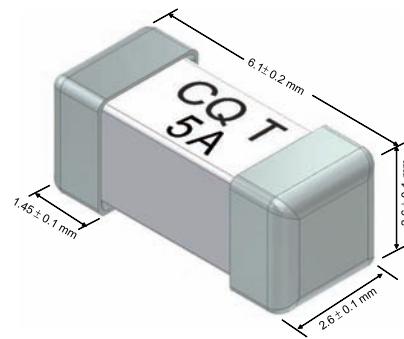
Rated current	1 In		2 In		3 In		8 In	
	MIN	MIN	MAX	MIN	MAX	MIN	MAX	
200mA~7A	4hr	1 sec	60 sec	0.2 sec	3 sec	0.02 sec	0.1 sec	

Environmental Temperature at 25°C

Interrupting Rating

50 amperes at 125V AC/DC
300 amperes at 32V DC

Mechanical Dimension



Physical Specification

Material

Body: Ceramic
Terminations: Silver Plated Brass Caps
-G:Gold plated brass caps

Packaging

1,000 Fuses in 7 inches dia. reel, or 5,000 fuses in 13inches dia. reel,
12mm wide tape, per EIA Standard 481

Environmental Specification

Operating Temperature

-55°C to +125°C

Vibration

MIL-STD-202G, Method 201 (10-55 Hz,
0.06 inch, total excursion)

Salt Spray

MIL-STD-202G, Method 101, Test Condition B
(48Hrs)

Insulation Resistance

MIL-STD-202G, Method 302, Test Condition A

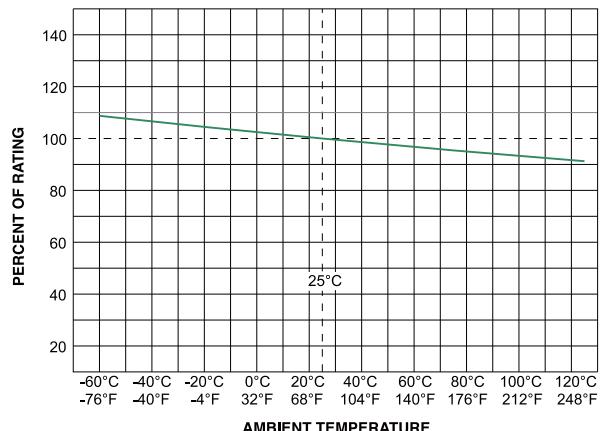
Resistance to Solder Heat

MIL-STD-202G, Method 210, Test Condition B
(10sec, at 260°C)

Thermal Shock

MIL-STD-202G, Method 107, Test Condition B
(-65°C to +125°C)

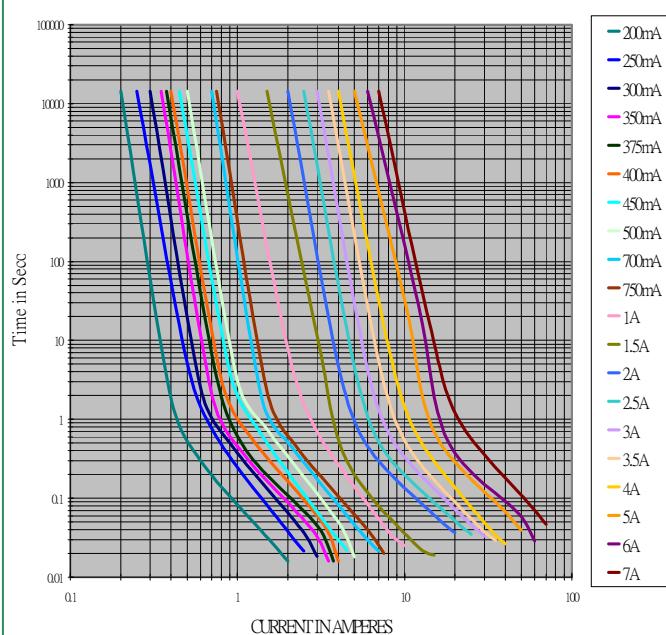
Temperature Rerating Curve



Note:

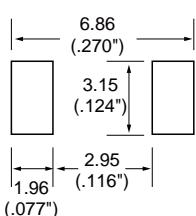
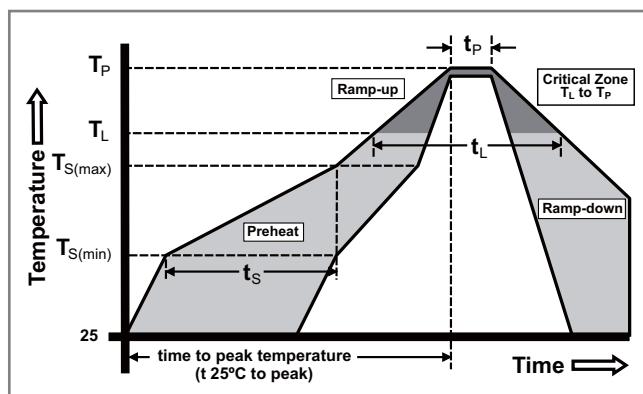
1. Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Average Time Current Curves



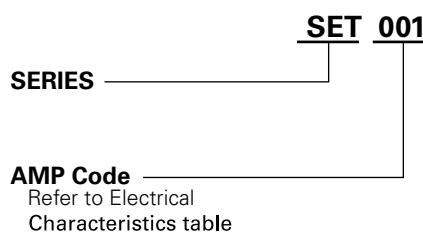
Soldering Parameters

Reflow Condition		Pb – Free assembly	
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C	
	- Temperature Max ($T_{s(max)}$)	200°C	
	- Time (Min to Max) (t_s)	60 – 120 secs	
Average ramp up rate (Liquidus Temp (T_L) to peak)		5°C/second max.	
Reflow	$T_{S(max)}$ to T_L - Ramp-up Rate	5°C/second max.	
	- Temperature (T_L) (Liquidus)	217°C	
- Temperature (t_L)	60 – 90 seconds		
Peak Temperature (T_p)		250 ^{+0/-5} °C	
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds	
Ramp-down Rate		5°C/second max.	
Time 25°C to peak Temperature (T_p)		8 minutes max.	
Do not exceed		260°C	
Wave Soldering Parameters		260°C Peak Temperature, 3 seconds max.	



Recommended pad layout

Part Numbering System



Type CQ40LF RoHS



10.1mmx 3.1mm (4012)
Fast-Acting Fuse Series



Feature

- a. High voltage and high current rating
- b. High inrush and high breaking capacity
- c. Fast arcing extinguished
- d. Lead free & Halogen free material
- e. Good explosion proof
- f. Precise fusing time and cut-off completed
- g. Suitable for rated current of 1A ~30A

Cartridge Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ^t A ² Sec
CQ40LF.500	500 mA	600V AC 350V DC	0.3510	2.300
CQ40LF1.25	1.25A		0.0750	17.000
CQ40LF002	2A		0.0560	37.000
CQ40LF020	20A		0.0050	30.000
CQ40LF030	30A		0.0025	96.000
CQ40LF040	40A		0.0019	600.000

Approval

UL Recognized 1A~30A

Electrical Characteristic

Rated current	1 In	2 In
	MIN	MAX
1A~30A	4 hr	5 sec

Environmental Temperature at 25 °C

Interrupting Rating

1A~30A : 150 amperes at 350V DC
150 amperes at 600V AC

Soldering Method

*Reflow Soldering : 260°C, 30Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Tape & Reel Quantity

1000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G,Method 107,Condition B
(-65°C to +125°C)

Vibration

MIL-STD-202G,Method 204,Test Condition C

Moisture Resistance

MIL-STD-202G,Method 106,10 day cycle

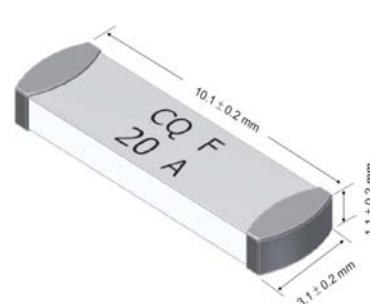
Solderability

IPC-J-STD-002C

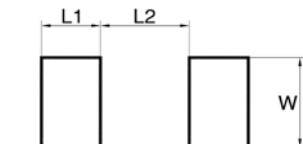
Material

Construction Body Material: Ceramic
Termination Material: Silver(Ag),Nickel(Ni),Tin(Sn)
Fuse Element: Silver(Ag)

Dimension



Recommended Land Pattern



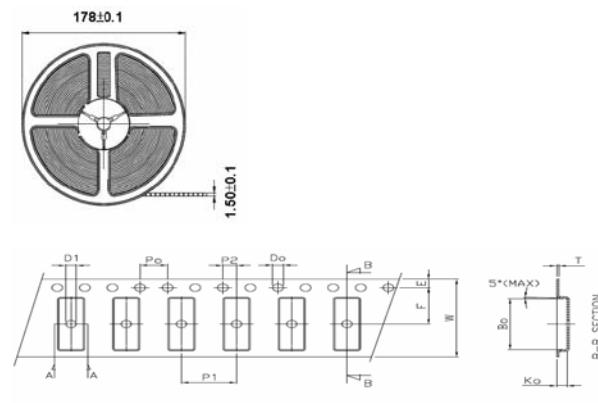
Reflow Solder

Tape and Reel Specification

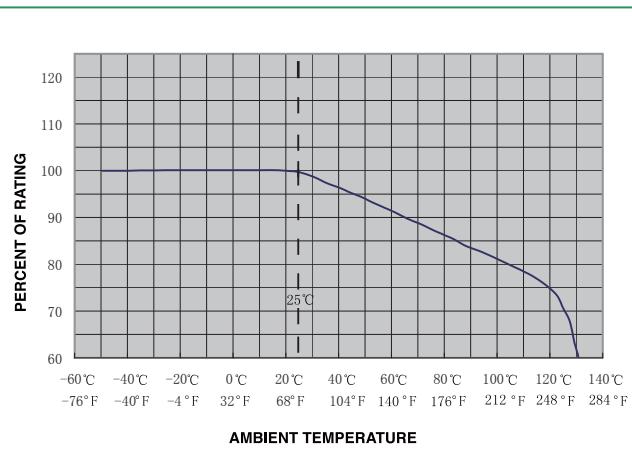
Unit : mm

Item	W	P	E	F	P2	D	D1
Criterion	16.00	8.00	1.75	7.50	2.00	1.50	1.50
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10	±0.10

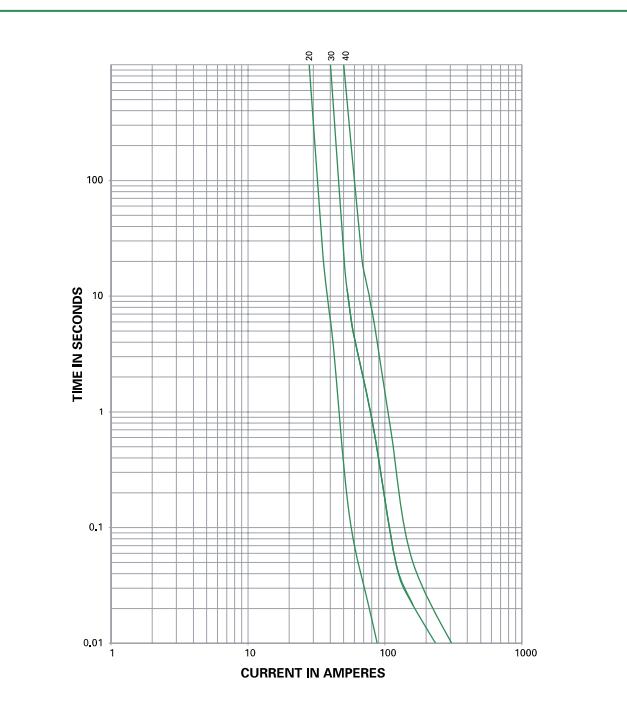
Item	P0	10P0	A0	B0	K0	t
Criterion	4.00	40.00	3.52	10.58	1.50	0.30
Tolerance	±0.10	±0.20	±0.10	±0.10	±0.10	±0.05



Temperature Rerating Curve



Average Time Current Curves

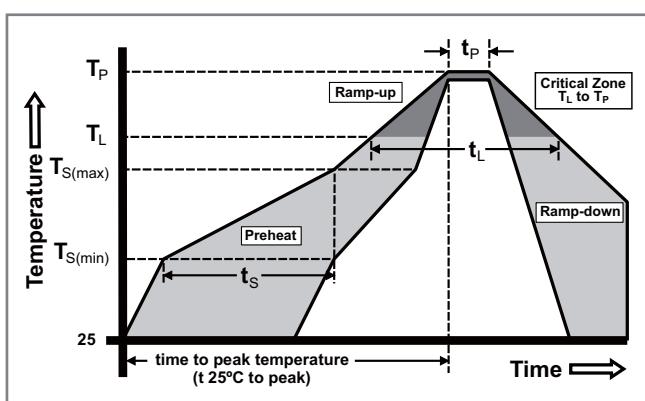


Note:

- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 120 secs
Average ramp up rate (Liquidus Temp (T_L) to peak	5°C/second max.	
$T_{s(max)}$ to T_L - Ramp-up Rate	5°C/second max.	
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 90 seconds
Peak Temperature (T_p)	250 ^{+0/-5} °C	
Time within 5°C of actual peak Temperature (t_p)	20 – 40 seconds	
Ramp-down Rate	5°C/second max.	
Time 25°C to peak Temperature (T_p)	8 minutes max.	
Do not exceed	260°C	
Wave Soldering Parameters	260°C Peak Temperature, 10 seconds max.	



Part Numbering System

CQ40LF 001

SERIES _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CQ40LT

10.1mmx 3.1mm (4012)
Slow Blow Fuse Series



Feature

- a. High voltage and high current rating
- b. High inrush and high breaking capacity
- c. Fast arcing extinguished
- d. Lead free & Halogen free material
- e. Good explosion proof
- f. Precise fusing time and cut-off completed
- g. Suitable for rated current of 0.5A ~40A

Cartridge Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ^t A ² Sec
CQ40LT001	1A	600V AC 350V DC	0.8500	0.5800
CQ40LT002	2A		0.4000	1.1100
CQ40LT020	20A		0.0060	32.630
CQ40LT030	30A		0.0030	136.89
CQ40LT040	40A		0.0014	547.10

Approval

UL Recognized 0.5A~40A

Electrical Characteristic

Rated current	1 In		2 In		3 In		8 In	
	MIN	MIN	MAX	MAX	MAX	MAX	MAX	MAX
0.5mA~40A	4hr	1 sec	60 sec	3 sec	0.1 sec			

Environmental Temperature at 25 °C

Interrupting Rating

0.5A~30A: 150 amperes at 350V DC

150 amperes at 600V AC

600 amperes at 60V DC

40A: 600 amperes at 60V DC

Soldering Method

*Reflow Soldering : 260°C, 30Sec. max.

*Wave Soldering : 260°C, 10Sec. max.

*Hand Soldering : 350°C, 3Sec. max.

Tape & Reel Quantity

1000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G,Method 107,Condition B

(-65°C to +125°C)

Vibration

MIL-STD-202G,Method 204,Test Condition C

Moisture Resistance

MIL-STD-202G,Method 106,10 day cycle

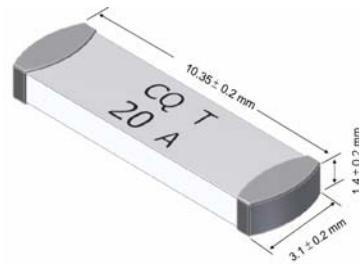
Solderability

IPC-J-STD-002C

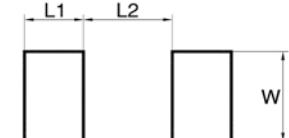
Material

Construction Body Material: Ceramic
Termination Material: Silver(Ag),Nickel(Ni),Tin(Sn)
Fuse Element: Silver(Ag)

Dimension



Recommended Land Pattern



Unit : mm
1A~30A 3.25 6.1 3.43

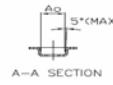
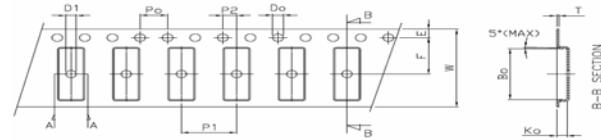
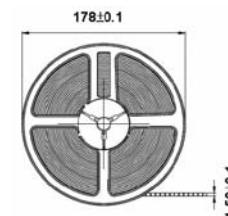
Reflow Solder

Tape and Reel Specification

Unit : mm

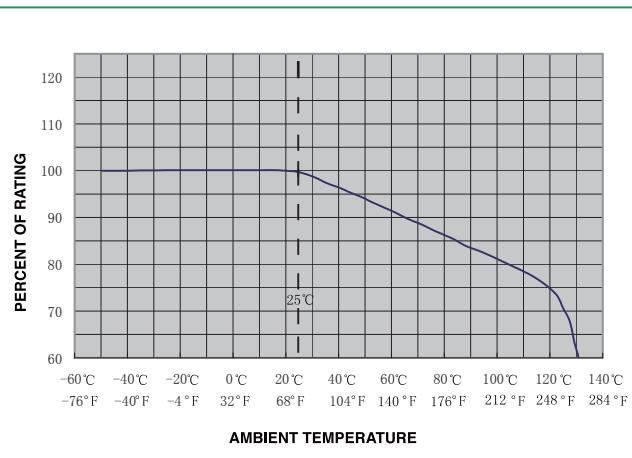
Item	W	P	E	F	P2	D	D1
Criterion	16.00	8.00	1.75	7.50	2.00	1.50	1.50
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10	±0.10

Item	P0	10P0	A0	B0	K0	t
Criterion	4.00	40.00	3.52	10.58	1.50	0.30
Tolerance	±0.10	±0.20	±0.10	±0.10	±0.10	±0.05

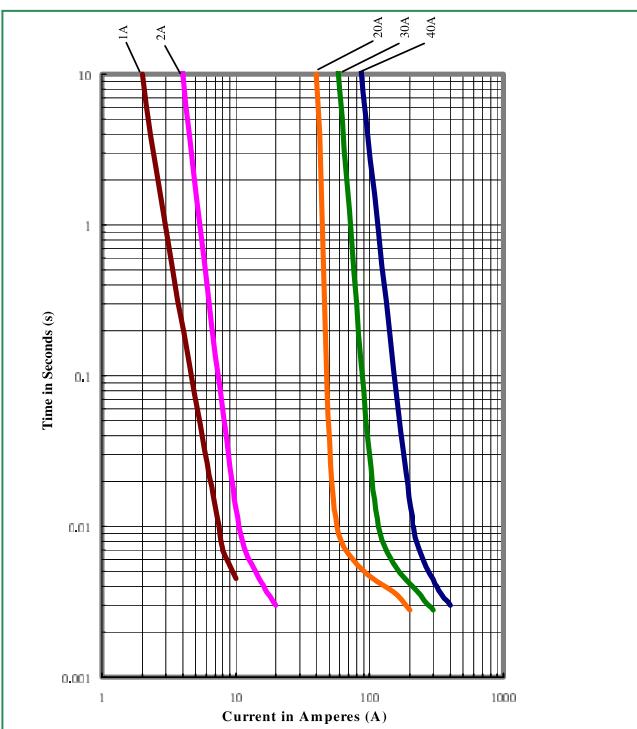


A-A SECTION

Temperature Rerating Curve



Average Time Current Curves

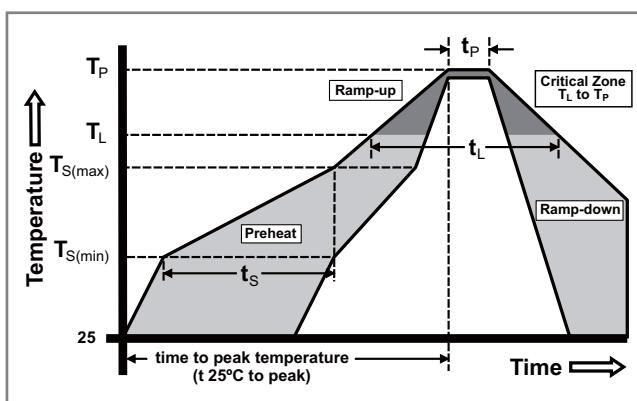


Note:

- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 120 secs
Average ramp up rate (Liquidus Temp (T_L) to peak	5°C/second max.	
$T_{s(max)}$ to T_L - Ramp-up Rate	5°C/second max.	
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 90 seconds
Peak Temperature (T_p)	250 ^{+0/-5} °C	
Time within 5°C of actual peak Temperature (t_p)	20 – 40 seconds	
Ramp-down Rate	5°C/second max.	
Time 25°C to peak Temperature (T_p)	8 minutes max.	
Do not exceed	260°C	
Wave Soldering Parameters	260°C Peak Temperature, 10 seconds max.	



Part Numbering System

CQ40LT 001

SERIES _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CQ24LF RoHS

6.1mmx 2.6mm (2410)
Fast-Acting Fuse Series



Feature

- a. High voltage and high current rating
- b. High inrush and high breaking capacity
- c. Fast arcing extinguished
- d. Lead free & Halogen free material
- e. Good explosion proof
- f. Precise fusing time and cut-off completed
- g. Suitable for rated current of 1A ~20A

Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I t A Sec
CQ24LF 001	1 A	350V	1.100	0.500
CQ24LF 1.50	1.5A		0.500	1.130
CQ24LF 002	2 A		0.203	1.200
CQ24LF 2.50	2.5 A		0.155	1.500
CQ24LF 003	3 A		0.045	1.890
CQ24LF 3.15	3.15A		0.039	2.280
CQ24LF 3.50	3.5 A		0.036	2.573
CQ24LF 004	4 A		0.028	3.360
CQ24LF 005	5A		0.021	6.000
CQ24LF 006	6A		0.016	7.920
CQ24LF 6.30	6.3A		0.015	9.128
CQ24LF 007	7A		0.014	12.25
CQ24LF 008	8A		0.013	16.00
CQ24LF 010	10A		0.011	25.00
CQ24LF 012	12A		0.009	36.00
CQ24LF 015	15A		0.006	67.50
CQ24LF 020	20A		0.005	132.0

Approval

UL Recognized 1A~20A

Electrical Characteristic

Rated current	1 In	2 In
	MIN	MAX
1A~20A	4 hr	5 sec

Environmental Temperature at 25°C

Interrupting Rating

1A~20A : 100 amperes at 350V AC
100 amperes at 125V AC
100 amperes at 125V DC
300 amperes at 32V DC

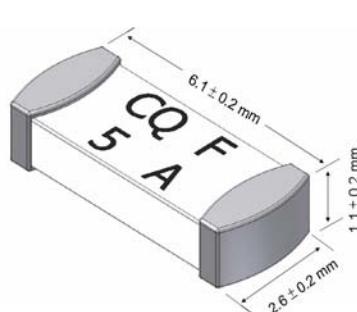
Soldering Method

*Reflow Soldering : 260°C, 30Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Silver(Ag), Nickel(Ni), Tin(Sn)
Fuse Element: Silver(Ag)

Dimension



Recommended Land Pattern

L1	L2	W
1A~20A	1.96	2.95

Unit : mm

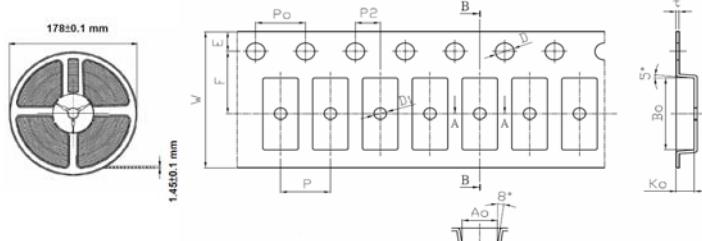
Reflow Solder

Tape and Reel Specification

Unit : mm

Item	W	P	E	F	P2	D	D1
Criterion	12.00	4.00	1.75	5.50	2.00	1.50	1.00
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10	±0.10

Item	P0	10P0	A0	B0	K0	t
Criterion	4.00	40.00	2.85	6.30	1.45	0.24
Tolerance	±0.10	±0.20	±0.10	±0.10	±0.10	±0.05



Tape & Reel Quantity

2500 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B

(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

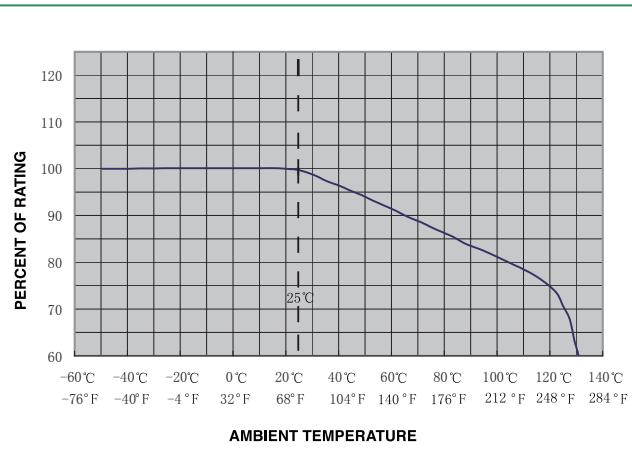
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

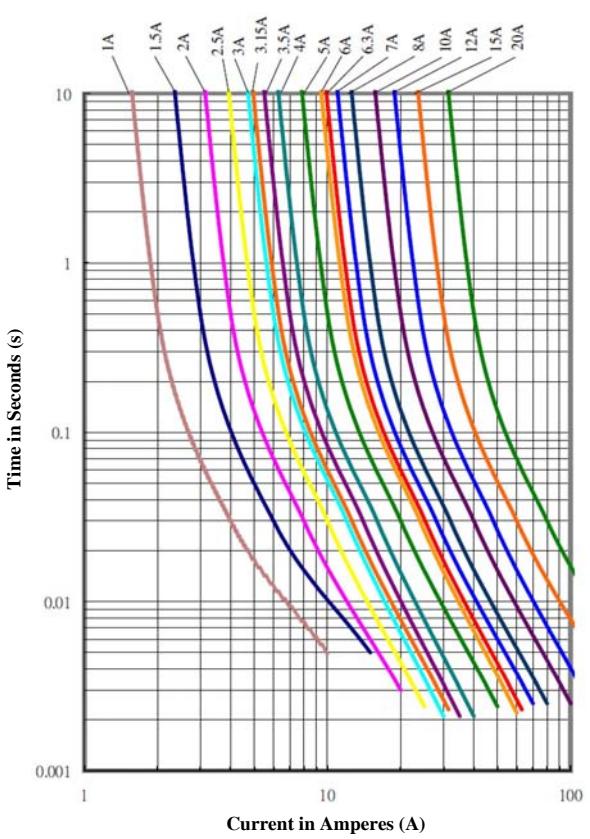
Solderability

IPC-J-STD-002C

Temperature Rerating Curve



Average Time Current Curves



Note:

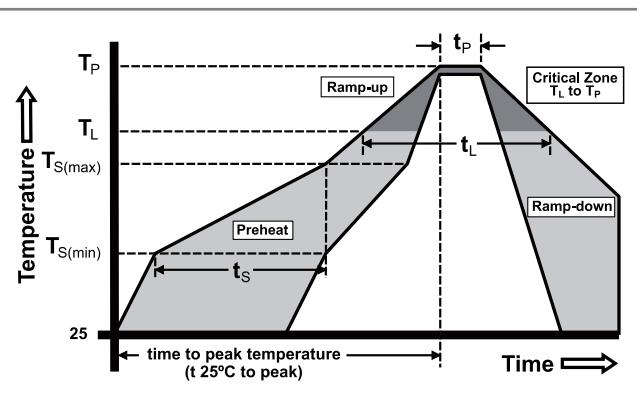
- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		10 – 30 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering

260°C, 10 seconds max.



Part Numbering System

CO24LF 001

Series _____

AMP Code _____

Refer to Electrical
Characteristics table

Type CQ24LT RoHS

6.1mmx 2.6mm (2410)
Slow Blow Fuse Series



Feature

- a. High voltage and high current rating
- b. High inrush and high breaking capacity
- c. Fast arcing extinguished
- d. Lead free & Halogen free material
- e. Good explosion proof
- f. Precise fusing time and cut-off completed
- g. Suitable for rated current of 1A ~20A

Catalog Number	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I t A Sec
CQ24LT 001	1 A		1.100	0.700
CQ24LT 1.50	1.5A		0.500	1.570
CQ24LT 002	2 A		0.203	1.800
CQ24LT 2.50	2.5 A		0.155	2.430
CQ24LT 003	3 A		0.045	3.240
CQ24LT 3.15	3.15A		0.039	3.770
CQ24LT 3.50	3.5 A		0.036	4.410
CQ24LT 004	4A		0.028	5.760
CQ24LT 005	5A		0.021	9.750
CQ24LT 006	6A		0.016	13.32
CQ24LT 6.30	6.3A		0.015	15.08
CQ24LT 007	7A		0.014	19.60
CQ24LT 008	8A		0.013	25.60
CQ24LT 010	10A		0.011	40.00
CQ24LT 012	12A		0.009	57.60
CQ24LT 015	15A		0.006	101.2
CQ24LT 020	20A		0.005	192.0

Approval

UL Recognized 1A~20A

Electrical Characteristic

Rated current	1 In	2 In		3 In	8 In
	MIN	MIN	MAX	MAX	MAX
1A~20A	4hr	1 sec	60 sec	3 sec	0.1 sec

Environmental Temperature at 25°C

Interrupting Rating

1A~20A : 100 amperes at 350V AC
100 amperes at 125V AC
100 amperes at 125V DC
300 amperes at 32V DC

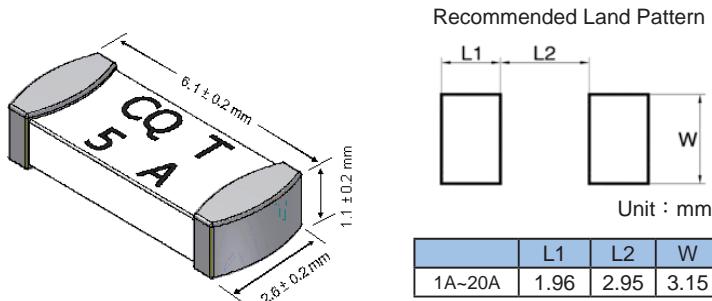
Soldering Method

- *Reflow Soldering : 260°C, 30Sec. max.
- *Wave Soldering : 260°C, 10Sec. max.
- *Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Silver(Ag), Nickel(Ni), Tin(Sn)
Fuse Element: Silver(Ag)

Dimension

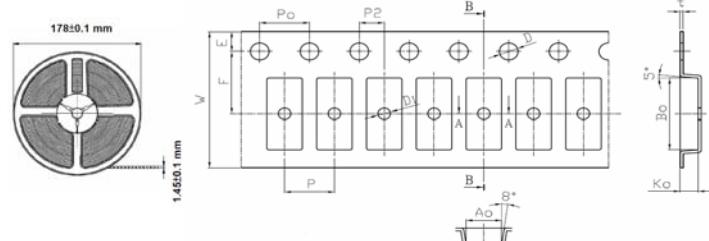


Reflow Solder

Tape and Reel Specification

Item	W	P	E	F	P2	D	D1
Criterion	12.00	4.00	1.75	5.50	2.00	1.50	1.00
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10	±0.10

Item	P0	10P0	A0	B0	K0	t
Criterion	4.00	40.00	2.85	6.30	1.45	0.24
Tolerance	±0.10	±0.20	±0.10	±0.10	±0.10	±0.05



Tape & Reel Quantity

2500 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B

(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

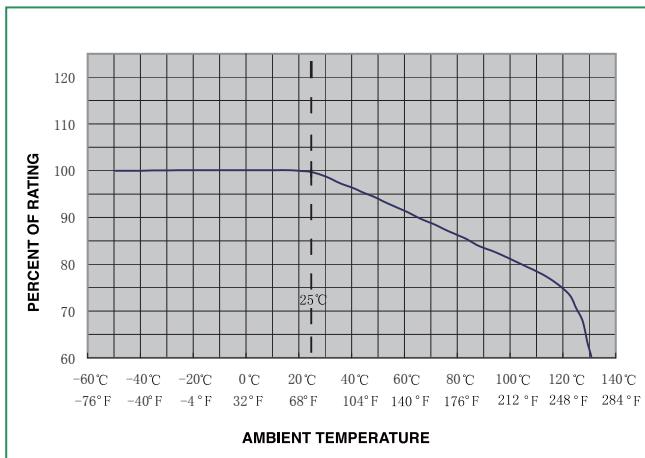
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

Solderability

IPC-J-STD-002C

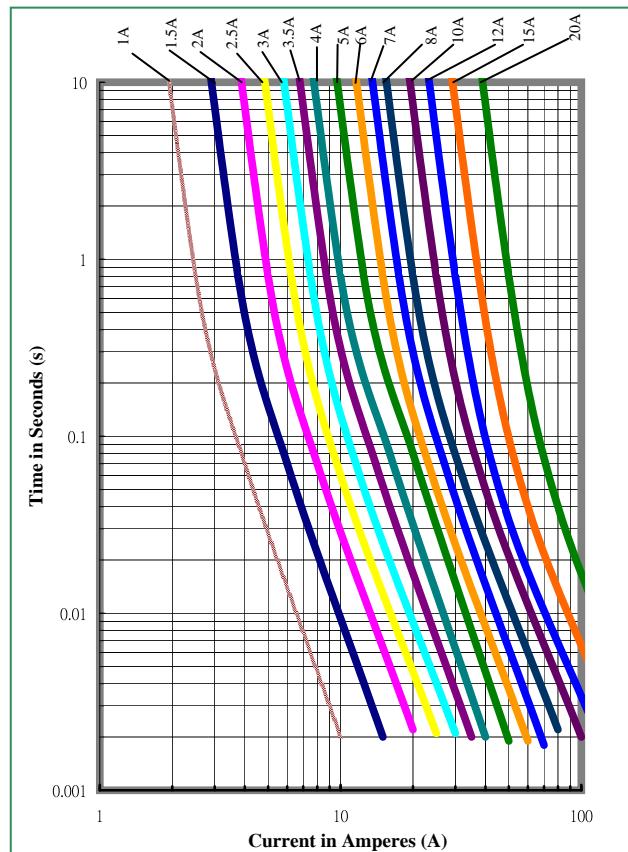
Temperature Rerating Curve



Note:

- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Average Time Current Curves

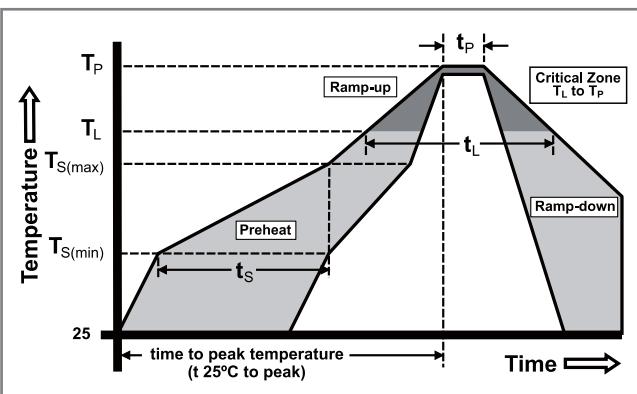


Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		10 – 30 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering

260°C, 10 seconds max.



Part Numbering System

CO24LT 001

SERIES _____

AMP Code _____

Refer to Electrical
Characteristics table

Type CQ12LV RoHS

3.1mmx 1.6mm (1206)
Very Fast-Acting Fuse Series



Feature

- a. High voltage and high current rating
- b. High inrush and high breaking capacity
- c. Fast arcing extinguished
- d. Lead free & Halogen free material
- e. Good explosion proof
- f. Precise fusing time and cut-off completed
- g. Suitable for rated current of 1A ~20A

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ12LV 001	H	1A	125V	0.262	0.170
CQ12LV 1.50	K	1.5A		0.112	0.250
CQ12LV 002	N	2A		0.065	0.300
CQ12LV 2.50	O	2.5A		0.030	0.470
CQ12LV 003	P	3A		0.026	0.720
CQ12LV 3.50	R	3.5A		0.0205	0.920
CQ12LV 004	S	4A		0.0155	1.120
CQ12LV 005	T	5A		0.0105	1.880
CQ12LV 006	U	6A		0.0088	3.060
CQ12LV 007	V	7A		0.0078	4.410
CQ12LV 008	W	8A		0.007	5.760
CQ12LV 010	10	10A	24V	0.0055	11.500
CQ12LV 012	12	12A		0.0048	22.320
CQ12LV 015	15	15A		0.0038	33.750
CQ12LV 020	20	20A		0.0026	60.000

Approval

UL Recognized 1A~20A

Electrical Characteristic

Rated current	1 In	2.5 In	4 In
	MIN	MAX	MAX
1A~20A	4 hr	5 sec	0.05 sec

Environmental Temperature at 25°C

Interrupting Rating

1A~8A : 50 amperes at 125V AC
50 amperes at 125V DC
100 amperes at 63V DC
150 amperes at 32V AC
10A~20A : 150 amperes at 24V DC

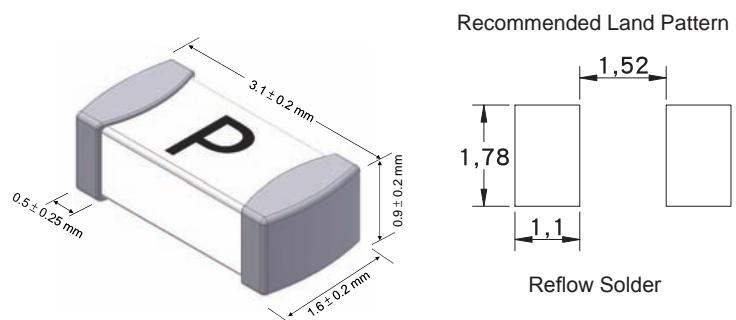
Soldering Method

*Reflow Soldering : 260°C, 30Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Silver(Ag), Nickel(Ni), Tin(Sn)
Fuse Element: Silver(Ag)

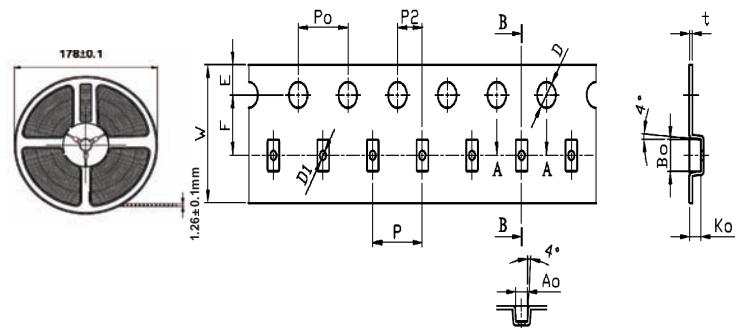
Dimension



Tape and Reel Specification

Unit : mm						
Item	W	P	E	F	P2	D
Criterion	8.00	4.00	1.75	3.50	2.00	1.55
Tolerance	±0.30	±0.10	±0.10	±0.05	±0.05	±0.10

Item	P0	10P0	A0	B0	K0	t
Criterion	4.00	40.00	1.95	3.65	0.87	0.20-
Tolerance	±0.10	±0.20	±0.10	±0.10	±0.10	±0.10



Tape & Reel Quantity 4000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B

(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

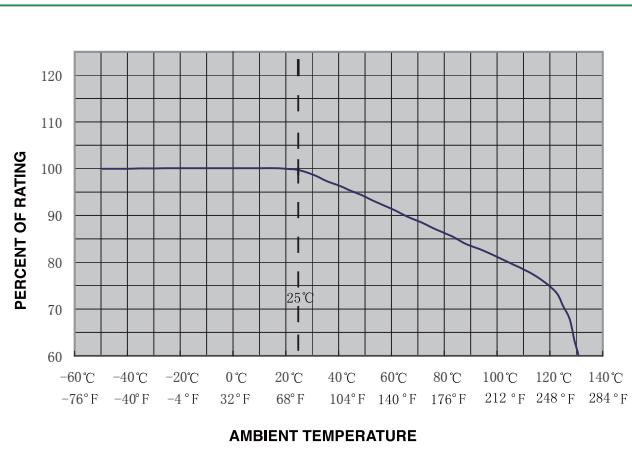
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

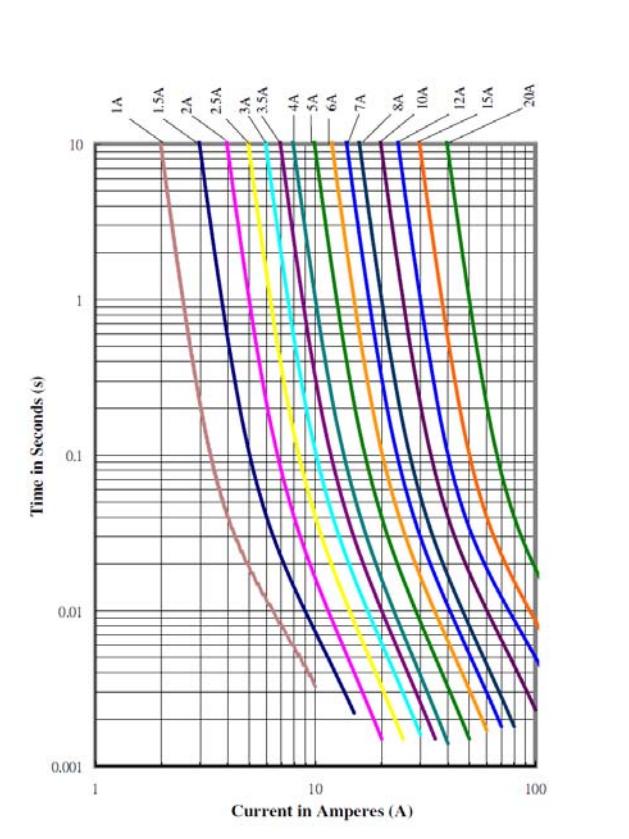
Solderability

Reference IEC 68-2-58

Temperature Rerating Curve



Average Time Current Curves



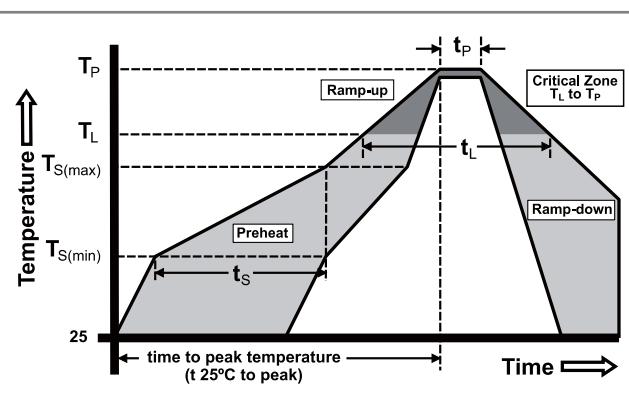
Note:

- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		10 – 30 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering	260°C, 10 seconds max.
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Part Numbering System

CQ12LV 001

Series _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CQ12LH RoHS

3.1mmx 1.6mm (1206)
Slow Blow Fuse Series



Feature

- a. High voltage and high current rating
- b. High inrush and high breaking capacity
- c. Fast arcing extinguished
- d. Lead free & Halogen free material
- e. Good explosion proof
- f. Precise fusing time and cut-off completed
- g. Suitable for rated current of 1A ~20A

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ12LH 001	H	1A	125V	0.259	0.250
CQ12LH 1.50	K	1.5A		0.123	0.280
CQ12LH 002	N	2A		0.061	0.360
CQ12LH 2.50	O	2.5A		0.029	0.560
CQ12LH 003	P	3A		0.025	0.810
CQ12LH 3.50	R	3.5A		0.019	1.100
CQ12LH 004	S	4A		0.014	1.280
CQ12LH 005	T	5A		0.010	2.120
CQ12LH 006	U	6A		0.0083	3.600
CQ12LH 007	V	7A		0.0072	4.900
CQ12LH 008	W	8A		0.0065	6.400
CQ12LH 010	10	10A	24V	0.005	12.500
CQ12LH 012	12	12A		0.0045	25.900
CQ12LH 015	15	15A		0.0029	45.000
CQ12LH 020	20	20A		0.0023	80.000

Approval

UL Recognized 1A~20A

Electrical Characteristic

Rated current	1 In		2 In		3 In		8 In	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
1A~20A	4hr	1 sec	120 sec	3 sec	0.05 sec			

Environmental Temperature at 25°C

Interrupting Rating

- 1A~8A : 50 amperes at 125V AC
50 amperes at 125V DC
100 amperes at 63V DC
150 amperes at 32V AC
- 10A~20A : 150 amperes at 24V DC

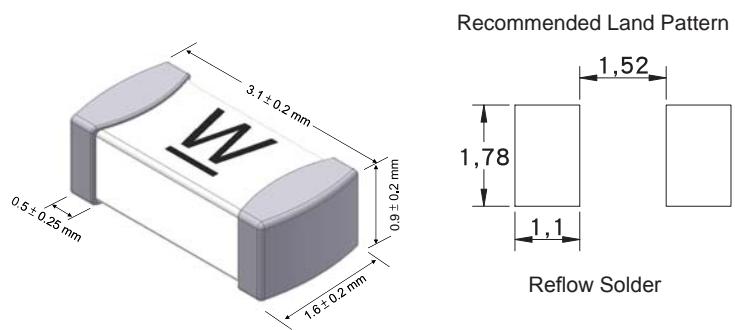
Soldering Method

- *Reflow Soldering : 260°C, 30Sec. max.
- *Wave Soldering : 260°C, 10Sec. max.
- *Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Silver(Ag), Nickel(Ni), Tin(Sn)
Fuse Element: Silver(Ag)

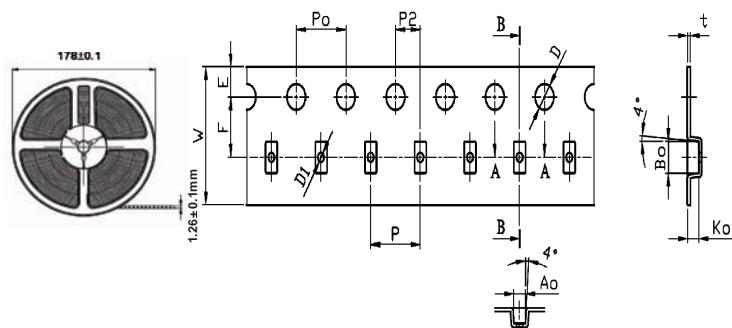
Dimension



Tape and Reel Specification

Unit : mm						
Item	W	P	E	F	P2	D
Criterion	8.00	4.00	1.75	3.50	2.00	1.55
Tolerance	±0.30	±0.10	±0.10	±0.05	±0.05	±0.10

Item	P0	10P0	A0	B0	K0	t
Criterion	4.00	40.00	1.95	3.65	0.87	0.20-
Tolerance	±0.10	±0.20	±0.10	±0.10	±0.10	±0.10



Tape & Reel Quantity 4000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B

(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

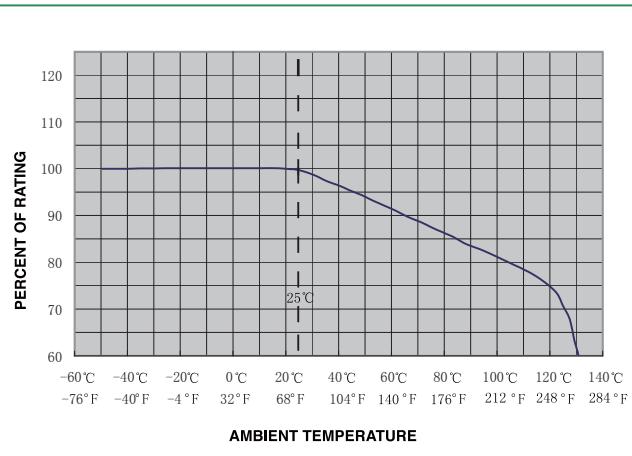
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

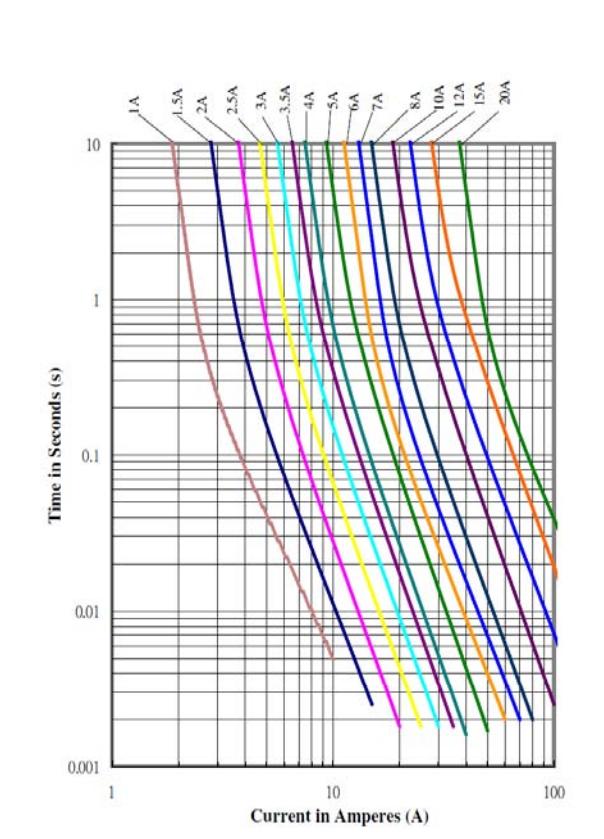
Solderability

Reference IEC 68-2-58

Temperature Rerating Curve



Average Time Current Curves



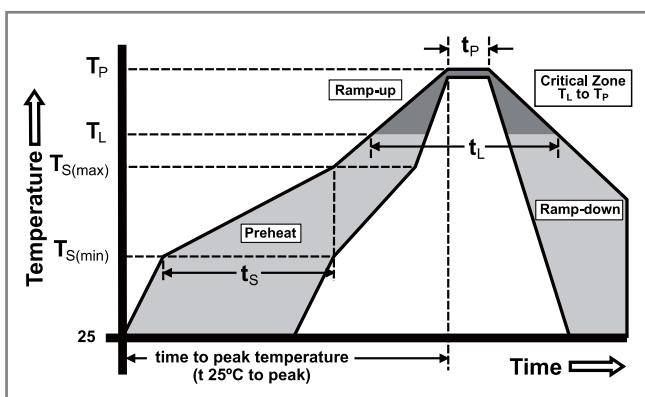
Note:

- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		10 – 30 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering	260°C, 10 seconds max.
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Part Numbering System

CQ12LH 001

SERIES _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CQ12LF RoHS

3.1mmx 1.6mm (1206)
Fast-Acting Fuse Series



Feature

- a. High voltage and high current rating
- b. High inrush and high breaking capacity
- c. Fast arcing extinguished
- d. Lead free & Halogen free material
- e. Good explosion proof
- f. Precise fusing time and cut-off completed
- g. Suitable for rated current of 1A ~20A

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ12LF 001	H	1A	125V	0.614	0.053
CQ12LF 1.50	K	1.5A		0.364	0.113
CQ12LF 002	N	2A		0.095	0.200
CQ12LF 2.50	O	2.5A		0.069	0.350
CQ12LF 003	P	3A		0.034	0.685
CQ12LF 3.50	R	3.5A		0.027	0.735
CQ12LF 004	S	4A		0.023	1.125
CQ12LF 005	T	5A		0.017	1.627
CQ12LF 006	U	6A		0.013	2.340
CQ12LF 007	V	7A		0.011	2.725
CQ12LF 008	W	8A		0.009	3.520
CQ12LF 010	10	10A	24V	0.008	6.325
CQ12LF 012	12	12A		0.007	7.920
CQ12LF 015	15	15A		0.0055	12.375
CQ12LF 020	20	20A		0.003	24.000

Approval

UL Recognized 1A~20A

Electrical Characteristic

Rated current	1 In	2.5 In	4 In
	MIN	MAX	MAX
1A~20A	4 hr	5 sec	0.05 sec

Environmental Temperature at 25°C

Interrupting Rating

1A~8A : 50 amperes at 125V AC
50 amperes at 125V DC
100 amperes at 63V DC
150 amperes at 32V AC
10A~20A : 150 amperes at 24V DC

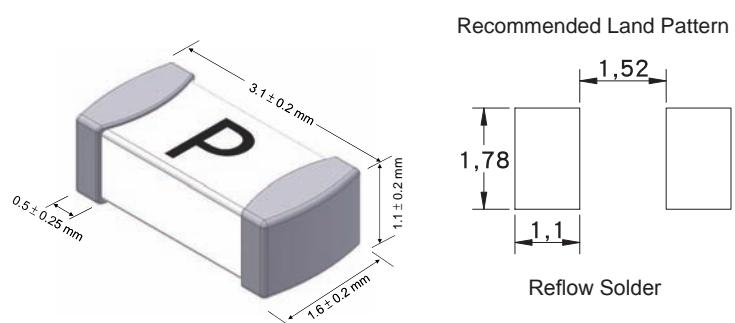
Soldering Method

*Reflow Soldering : 260°C, 30Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Silver(Ag), Nickel(Ni), Tin(Sn)
Fuse Element: Silver(Ag)

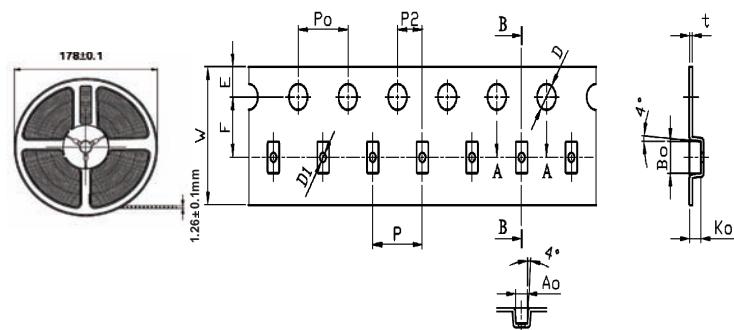
Dimension



Tape and Reel Specification

Unit : mm						
Item	W	P	E	F	P2	D
Criterion	8.00	4.00	1.75	3.50	2.00	1.50
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10

Item	P0	10P0	A0	B0	K0	t
Criterion	4.00	40.00	1.81	3.42	1.26	1.22-
Tolerance	±0.10	±0.10	±0.10	±0.10	±0.10	±0.05



Tape & Reel Quantity 3000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B

(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

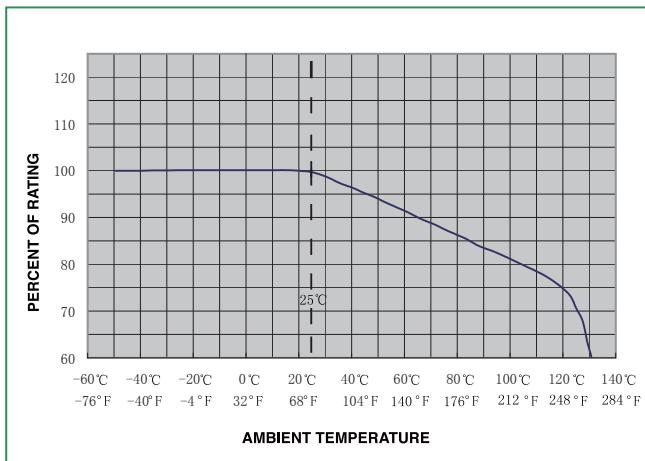
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

Solderability

IPC-J-STD-002C

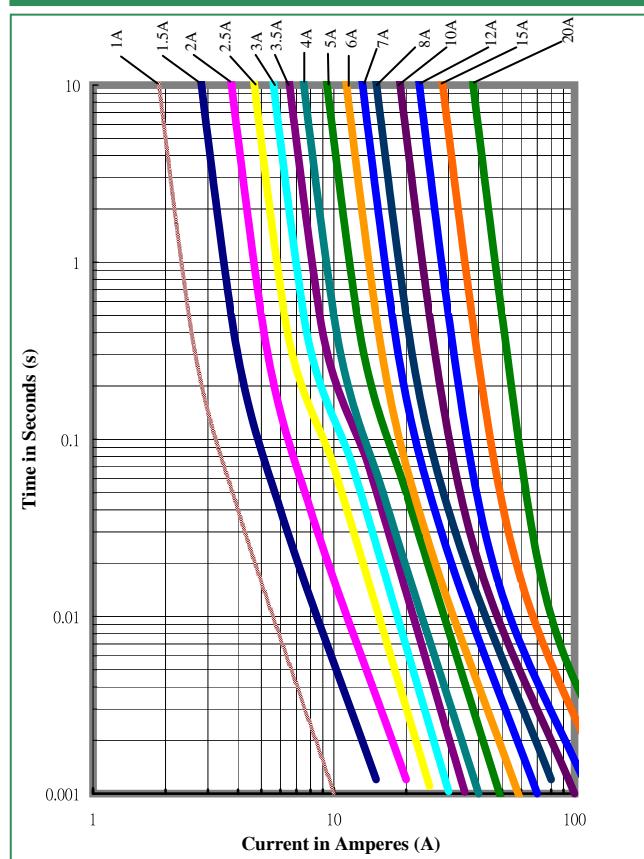
Temperature Rerating Curve



Note:

- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Average Time Current Curves

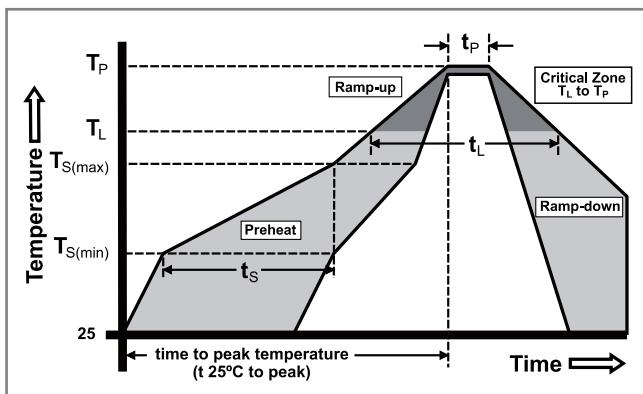


Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		10 – 30 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering

260°C, 10 seconds max.



Part Numbering System

CQ12LF 001

Series _____

AMP Code _____

Refer to Electrical
Characteristics table

Type CQ12LT RoHS

3.1mmx 1.6mm (1206)
Slow Blow Fuse Series



Feature

- a. High voltage and high current rating
- b. High inrush and high breaking capacity
- c. Fast arcing extinguished
- d. Lead free & Halogen free material
- e. Good explosion proof
- f. Precise fusing time and cut-off completed
- g. Suitable for rated current of 1A~20A

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ12LT 001	H	1A	125V	0.400	0.115
CQ12LT 1.50	K	1.5A		0.135	0.225
CQ12LT 002	N	2A		0.075	0.615
CQ12LT 2.50	O	2.5A		0.052	0.850
CQ12LT 003	P	3A		0.028	1.150
CQ12LT 3.50	R	3.5A		0.025	1.635
CQ12LT 004	S	4A		0.020	2.300
CQ12LT 005	T	5A		0.014	5.100
CQ12LT 006	U	6A		0.010	6.350
CQ12LT 007	V	7A		0.009	7.515
CQ12LT 008	W	8A		0.0077	10.200
CQ12LT 010	10	10A	24V	0.006	12.150
CQ12LT 012	12	12A		0.005	14.680
CQ12LT 015	15	15A		0.003	25.250
CQ12LT 020	20	20A		0.0025	45.000

Approval

UL Recognized 1A~20A

Electrical Characteristic

Rated current	1 In		2 In		3 In		8 In	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
1A~20A	4hr	1 sec	120 sec	3 sec	0.05 sec			

Environmental Temperature at 25°C

Interrupting Rating

1A~8A : 50 amperes at 125V AC
50 amperes at 125V DC
100 amperes at 63V DC
150 amperes at 32V AC
10A~20A : 150 amperes at 24V DC

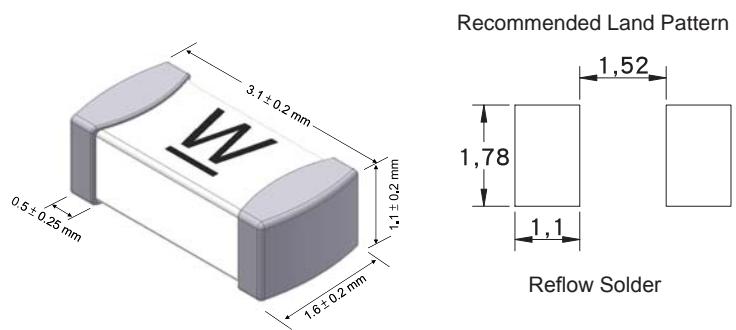
Soldering Method

*Reflow Soldering : 260°C, 30Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Silver(Ag), Nickel(Ni), Tin(Sn)
Fuse Element: Silver(Ag)

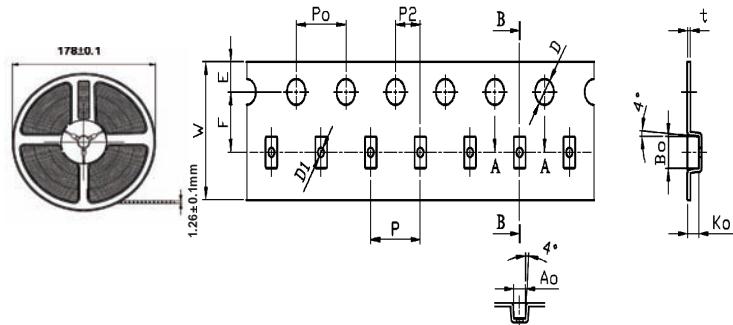
Dimension



Tape and Reel Specification

Unit : mm						
Item	W	P	E	F	P2	D
Criterion	8.00	4.00	1.75	3.50	2.00	1.50
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10

Item	P0	10P0	A0	B0	K0	t
Criterion	4.00	40.00	1.81	3.42	1.26	1.22-
Tolerance	±0.10	±0.10	±0.10	±0.10	±0.10	±0.05



Tape & Reel Quantity 3000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B

(-65°C to +125°C)

Vibration

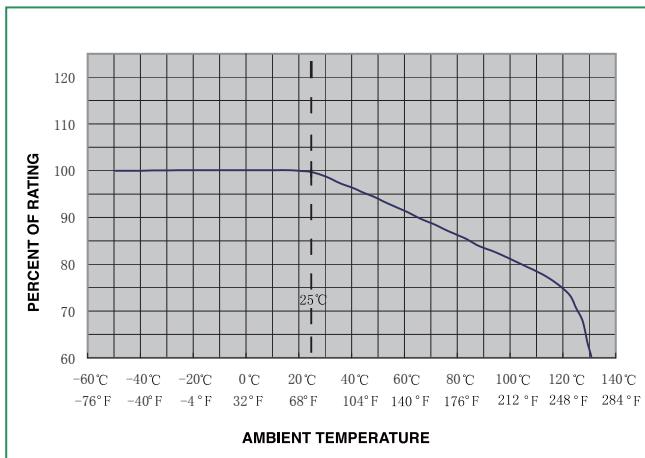
MIL-STD-202G, Method 204, Test Condition C

Moisture Resistance

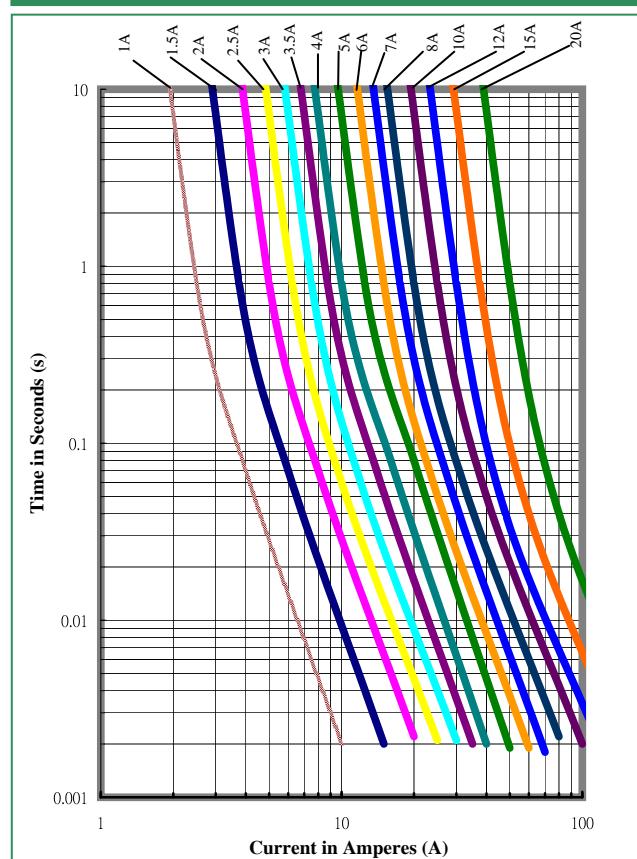
MIL-STD-202G, Method 106, 10 day cycle

Solderability

Temperature Rerating Curve



Average Time Current Curves



Note:

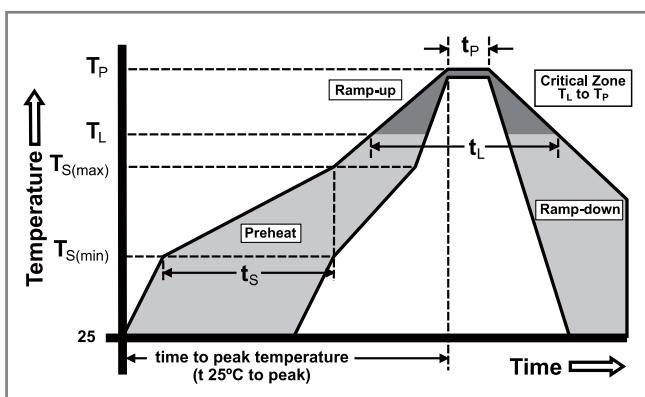
- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		10 – 30 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering

260°C, 10 seconds max.



Part Numbering System

CQ12LT 001

SERIES _____

AMP Code _____

Refer to Electrical
Characteristics table

Type CQ06LF RoHS

1.6mmx 0.8mm (0603)
Fast-Acting Fuse Series



Feature

- a. High voltage and high current rating
- b. High inrush and high breaking capacity
- c. Fast arcing extinguished
- d. Lead free & Halogen free material
- e. Good explosion proof
- f. Precise fusing time and cut-off completed
- g. Suitable for rated current of 1A ~8A

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ06LF 001	H	1A	63V	0.345	0.055
CQ06LF 1.50	K	1.5A		0.160	0.115
CQ06LF 002	N	2A		0.066	0.160
CQ06LF 2.50	O	2.5A		0.039	0.350
CQ06LF 003	P	3A		0.027	0.655
CQ06LF 3.50	R	3.5A		0.021	0.731
CQ06LF 004	S	4A		0.018	0.965
CQ06LF 005	T	5A		0.013	1.860
CQ06LF 006	U	6A		0.010	2.340
CQ06LF 007	V	7A		0.008	2.680
CQ06LF 008	W	8A		0.006	3.350

Approval

UL Recognized 1A~8A

Electrical Characteristic

Rated current	1 In	2 In	3 In	10 In
	MIN	MAX	MAX	MAX
1A~8A	4hr	5 sec	0.5 sec	0.02 sec

Environmental Temperature at 25°C

Interrupting Rating

35 amperes at 63V DC
60 amperes at 32V DC

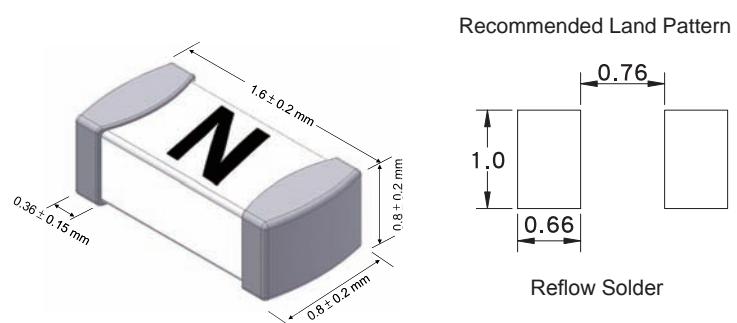
Soldering Method

*Reflow Soldering : 260°C, 30Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Silver(Ag), Nickel(Ni), Tin(Sn)
Fuse Element: Silver(Ag)

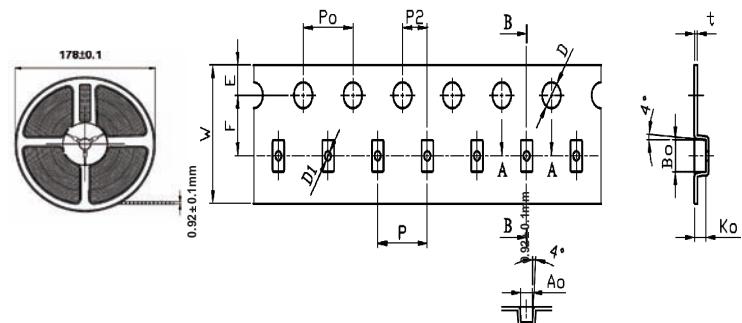
Dimension



Tape and Reel Specification

Unit : mm							
Item	P	10P0	E	F	P2	D	D1
Criterion	8.00	4.00	1.75	3.50	2.00	1.50	0.05
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10	±0.10

Item	P0	10P0	A0	B0	K0	T
Criterion	4.00	40.00	0.94	1.82	0.92	0.2
Tolerance	±0.10	±0.20	±0.10	±0.10	±0.10	±0.05



Tape & Reel Quantity 4000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G,Method 107,Condition B
(-65°C to +125°C)

Vibration

MIL-STD-202G,Method 204, Test Condition C

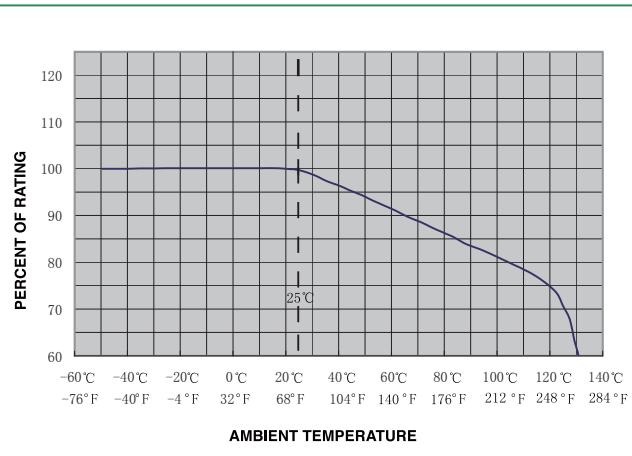
Moisture Resistance

MIL-STD-202G,Method 106,10 day cycle

Solderability

IPC-J-STD-002C

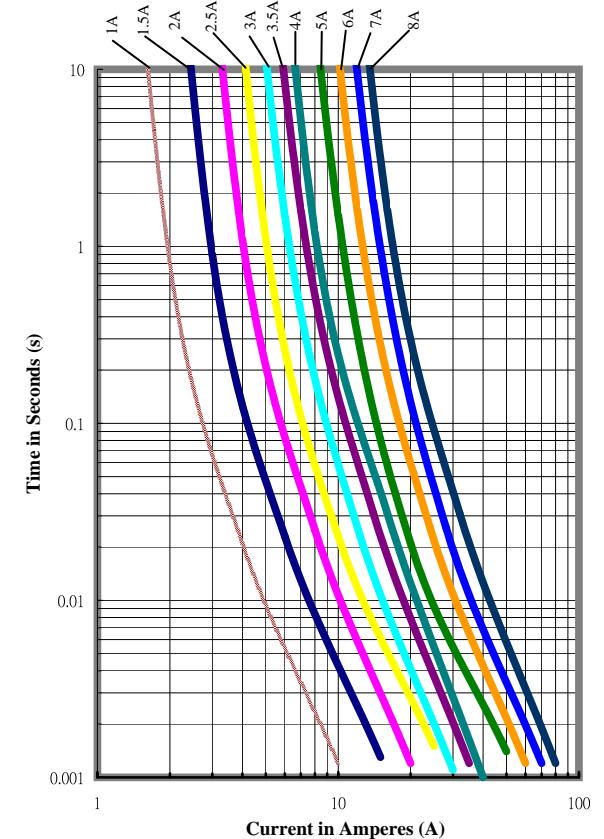
Temperature Rerating Curve



Note:

- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Average Time Current Curves

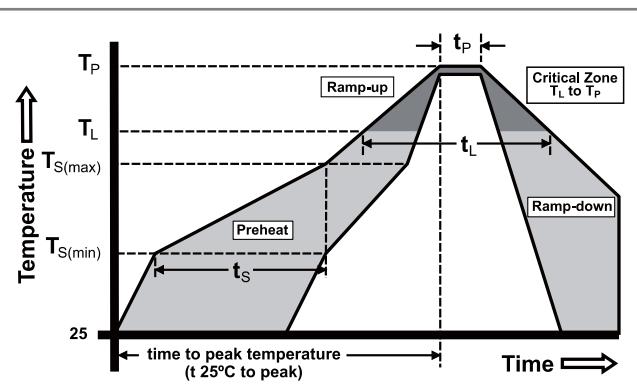


Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		10 – 30 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering

260°C, 10 seconds max.



Part Numbering System

CQ06LF 001

SERIES _____

AMP Code _____

Refer to Electrical
Characteristics table

Type CQ06LT RoHS

1.6mmx 0.8mm (0603)
Slow Blow Fuse Series



Feature

- a. High voltage and high current rating
- b. High inrush and high breaking capacity
- c. Fast arcing extinguished
- d. Lead free & Halogen free material
- e. Good explosion proof
- f. Precise fusing time and cut-off completed
- g. Suitable for rated current of 1A ~8A

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ06LT 001	H	1A	63V	0.224	0.010
CQ06LT 1.50	K	1.5A		0.100	0.018
CQ06LT 002	N	2A		0.060	0.350
CQ06LT 2.50	O	2.5A		0.027	0.690
CQ06LT 003	P	3A		0.022	0.850
CQ06LT 3.50	R	3.5A		0.017	1.225
CQ06LT 004	S	4A		0.014	2.150
CQ06LT 005	T	5A		0.010	2.950
CQ06LT 006	U	6A		0.007	4.325
CQ06LT 007	V	7A		0.006	5.820
CQ06LT 008	W	8A		0.005	7.670

Approval

UL Recognized 1A~8A

Electrical Characteristic

Rated current	1 In		2 In		3 In		10 In	
	MIN	MIN	MAX	MAX	MAX	P0	A0	B0
1A~8A	4hr	1 sec	120 sec	3 sec	0.05 sec			

Environmental Temperature at 25°C

Interrupting Rating

35 amperes at 63V DC
60 amperes at 32V DC

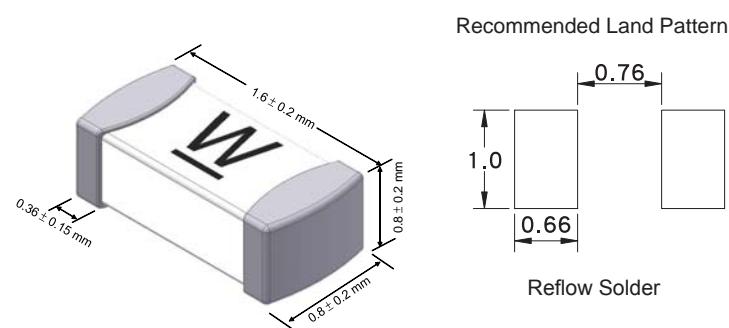
Soldering Method

*Reflow Soldering : 260°C, 30Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Silver(Ag), Nickel(Ni), Tin(Sn)
Fuse Element: Silver(Ag)

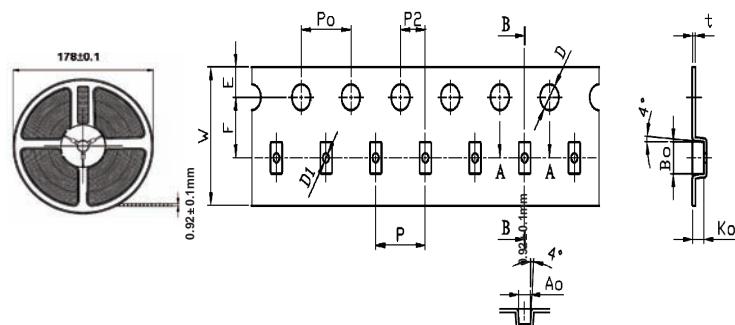
Dimension



Tape and Reel Specification

Item	W	P	E	F	P2	D	D1
Criterion	8.00	4.00	1.75	3.50	2.00	1.50	0.05
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10	±0.10

Item	P0	10P0	A0	B0	K0	T
Criterion	4.00	40.00	0.94	1.82	0.92	0.2
Tolerance	±0.10	±0.20	±0.10	±0.10	±0.10	±0.05



Tape & Reel Quantity 4000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B
(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

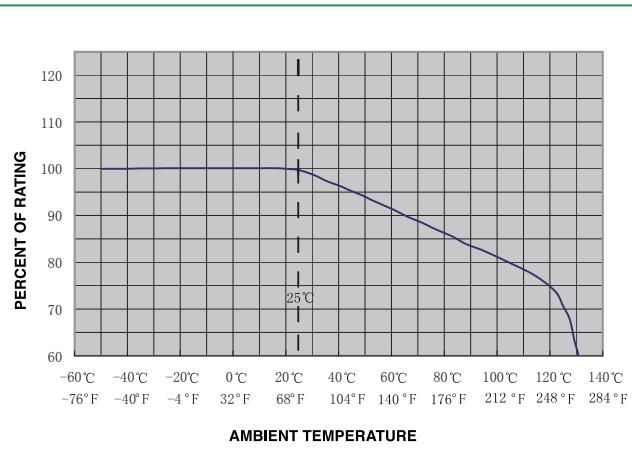
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

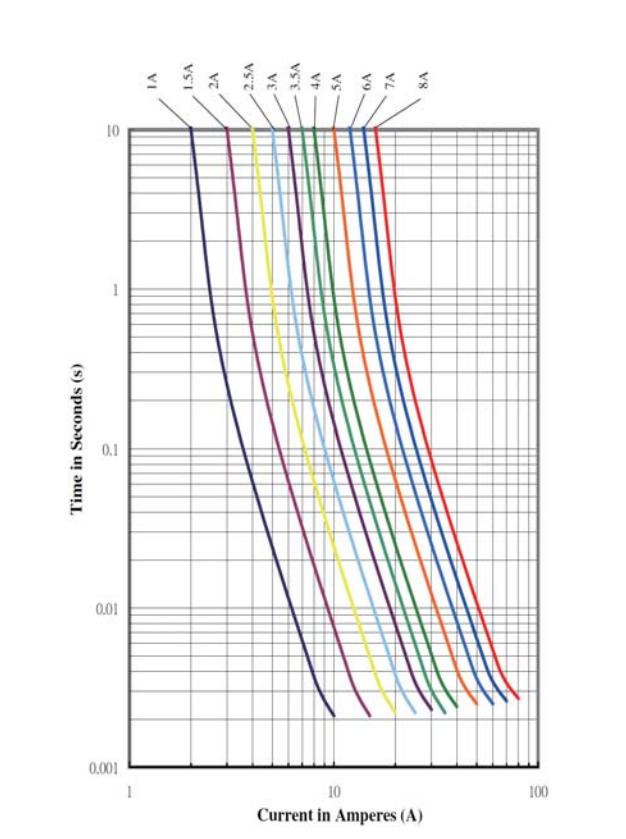
Solderability

IPC-J-STD-002C

Temperature Rerating Curve



Average Time Current Curves



Note:

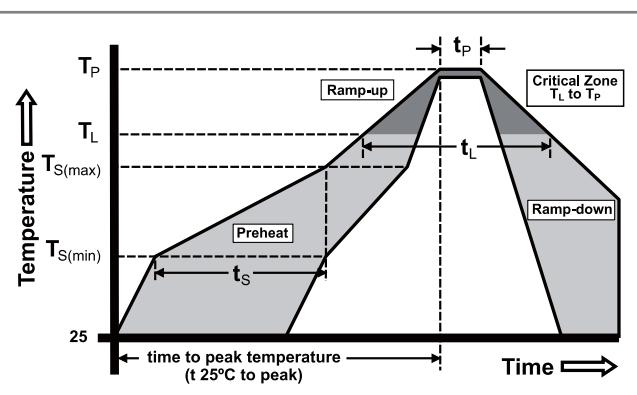
- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		10 – 30 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering

260°C, 10 seconds max.



Part Numbering System

CQ06LT 001

SERIES _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CQ24PF Pb

6.1mmx 2.6mm (2410)
Fast-Acting Fuse Series



Feature

- a. Chip Fuse structure design with PCB body and copper & tin alloy element
- b. Use optical lithography & etching skill to make refinement element
- c. Complete on element with the terminal electrode plating Tin material to prevent element oxidation.
- d. Product meet 100% ROHS, lead free, HF & REACH requirement.
- e. Offer range of current ratings from 0.5A-12A & voltage up to 350VAC and 350VDC.

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ24PF.500	0.5A	500mA	350V	1.050	0.150
CQ24PF.750	0.75A	750mA		0.525	0.280
CQ24PF 001	1A	1A		0.100	0.400
CQ24PF 1.50	1.5 A	1.5 A		0.042	0.560
CQ24PF 002	2 A	2 A		0.029	1.080
CQ24PF 2.50	2.5A	2.5A		0.023	1.500
CQ24PF 003	3 A	3 A		0.017	1.800
CQ24PF 004	4A	4A		0.012	3.200
CQ24PF 005	5A	5A		0.010	5.250
CQ24PF 006	6A	6A		0.008	7.200
CQ24PF 007	7A	7A		0.007	7.350
CQ24PF 008	8A	8A		0.006	9.600
CQ24PF 010	10A	10A		0.005	20.00
CQ24PF 012	12A	12A		0.004	28.80

Approval

UL Recognized 0.5A~12A

Electrical Characteristic

Rated current	1 In	2 In
	MIN	MAX
0.5A~12A	4 hr	5 sec

Environmental Temperature at 25°C

Interrupting Rating

100 amperes at 350V AC
100 amperes at 350V DC

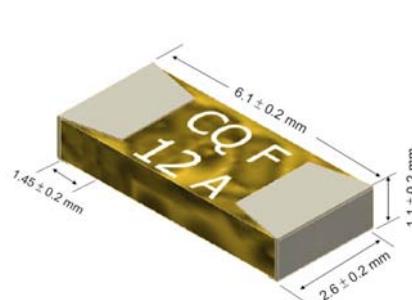
Soldering Method

- *Reflow Soldering : 260°C, 30Sec. max.
- *Wave Soldering : 260°C, 10Sec. max.
- *Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: FR4 Board
Termination Material: Copper(Cu), Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)

Dimension



Recommended Land Pattern

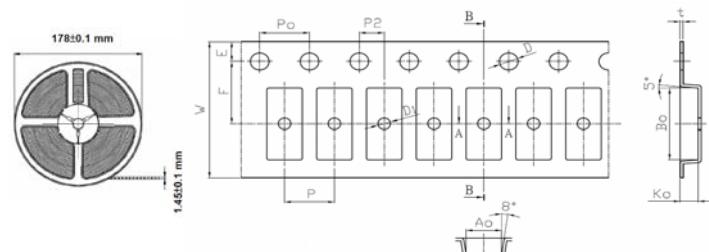
	L1	L2	W
1A-20A	1.96	2.95	3.15

Unit : mm

Tape and Reel Specification

Item	W	P	E	F	P2	D	D1
Criterion	12.00	4.00	1.75	5.50	2.00	1.50	1.00
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10	±0.10

Unit : mm



Tape & Reel Quantity

2500 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B

(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

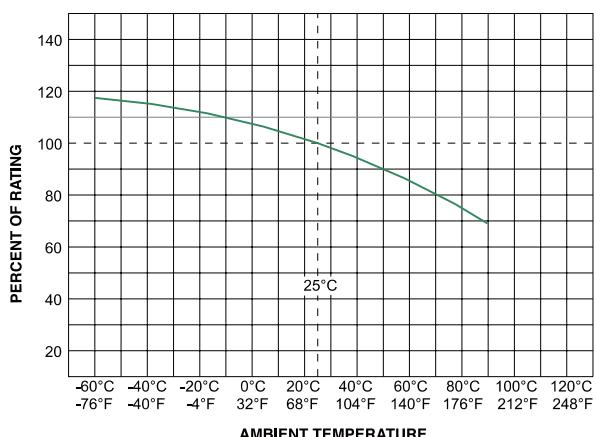
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

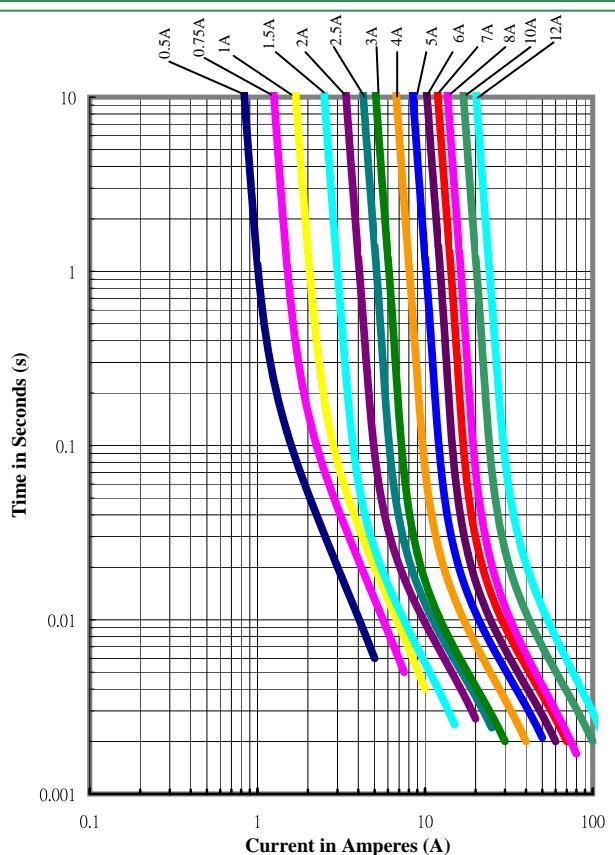
Solderability

IPC-J-STD-002C

Temperature Rerating Curve



Average Time Current Curves



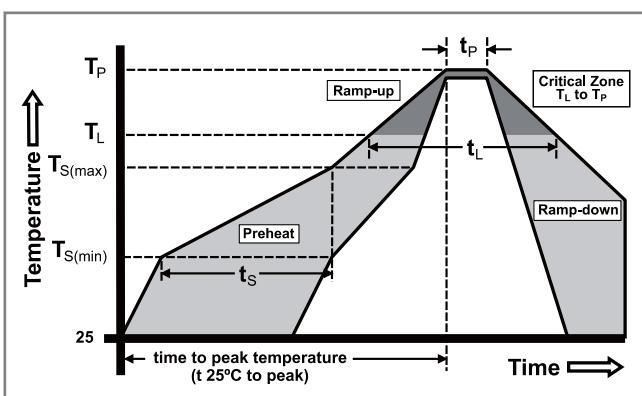
Note:

- Rerating depicted in this curve is in addition to the standard rerating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{S(min)}$)	150°C
	-Temperature Max ($T_{S(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		5°C/second max.
Reflow	$T_{S(max)}$ to T_L - Ramp-up Rate	
	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		250 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering	260°C, 10 seconds max.
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Part Numbering System

CQ24PF 001

Series _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CQ24PT

6.1mmx 2.6mm (2410)
High Inrush Fuse Series



Feature

- a. Chip Fuse structure design with PCB body and copper & tin alloy element
- b. Use optical lithography & etching skill to make refinement element
- c. Complete on element with the terminal electrode plating Tin material to prevent element oxidation.
- d. Product meet 100% ROHS, lead free, HF & REACH requirement.
- e. Offer range of current ratings from 0.5A-12A & voltage up to 350VAC and 350VDC.

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ24PT.500	0.5A	500mA	350V	0.850	0.160
CQ24PT.750	0.75A	750mA		0.400	0.310
CQ24PT 001	1A	1A		0.067	0.450
CQ24PT 1.50	1.5 A	1.5 A		0.037	0.670
CQ24PT 002	2 A	2 A		0.023	1.280
CQ24PT 2.50	2.5A	2.5A		0.018	1.810
CQ24PT 003	3 A	3 A		0.015	2.250
CQ24PT 004	4A	4A		0.011	4.000
CQ24PT 005	5A	5A		0.009	6.500
CQ24PT 006	6A	6A		0.007	9.000
CQ24PT 007	7A	7A		0.006	12.25
CQ24PT 008	8A	8A		0.005	14.72
CQ24PT 010	10A	10A		0.004	25.00
CQ24PT 012	12A	12A		0.003	36.00

Approval

UL Recognized 0.5A~12A

Electrical Characteristic

Rated current	1 In	2 In		2.5 In	3 In	8 In
	MIN	MIN	MAX	MAX	MAX	MAX
0.5A~12A	4 hr	2 sec	60 sec	5 sec	3 sec	0.05 sec

Environmental Temperature at 25°C

Interrupting Rating

100 amperes at 350V AC
100 amperes at 350V DC

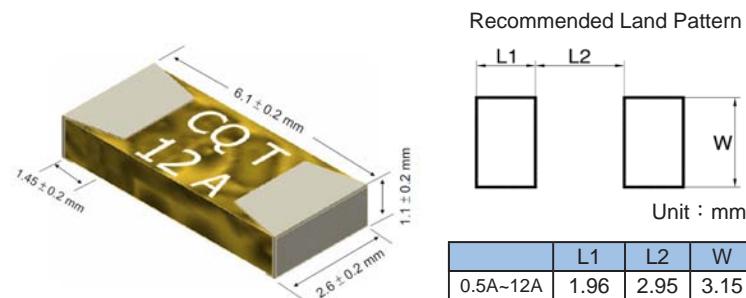
Soldering Method

- *Reflow Soldering : 260°C, 30Sec. max.
- *Wave Soldering : 260°C, 10Sec. max.
- *Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: FR4 Board
Termination Material: Copper(Cu), Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)

Dimension

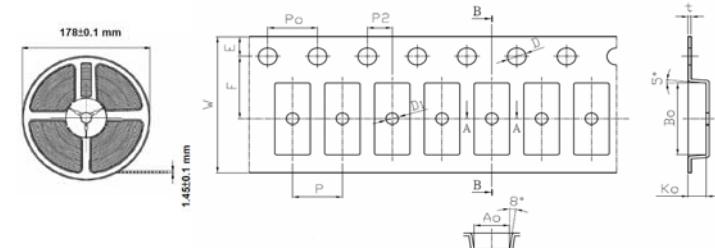


Tape and Reel Specification

Reflow Solder

Unit : mm

Item	W	P	E	F	P2	D	D1
Criterion	12.00	4.00	1.75	5.50	2.00	1.50	1.00
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10	±0.10



Tape & Reel Quantity

2500 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B
(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

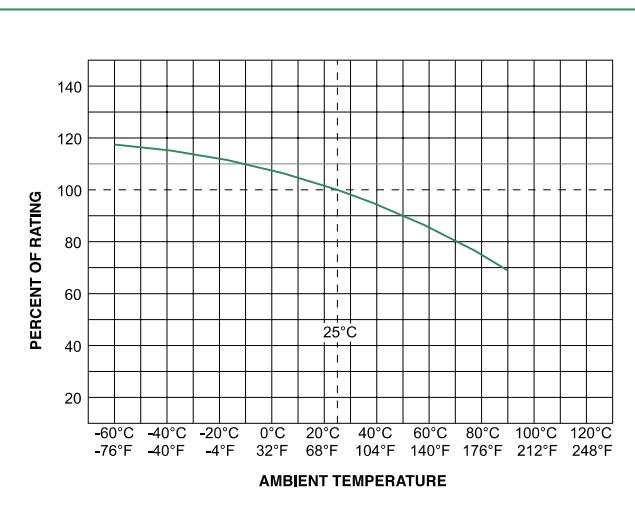
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

Solderability

IPC-J-STD-002C

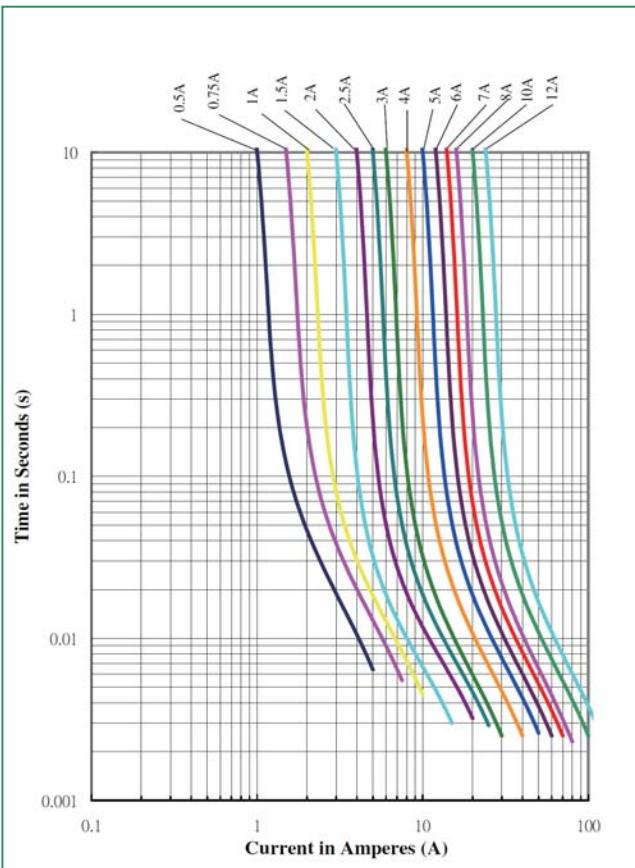
Temperature Rerating Curve



Note:

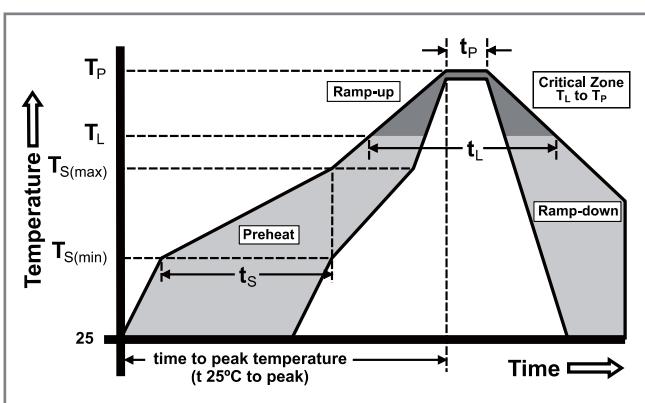
- Rerating depicted in this curve is in addition to the standard rerating of 25% for continuous operation.

Average Time Current Curves



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		5°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		250 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C
Wave Soldering		260°C, 10 seconds max.



Part Numbering System

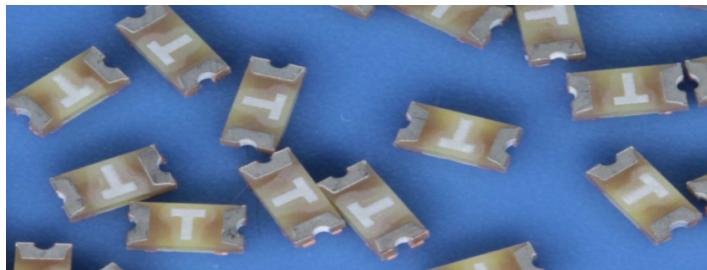
CQ24PT 001

SERIES _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CQ12PF

3.1mmx 1.6mm (1206)
Fast-Acting Fuse Series



Feature

- a. Chip Fuse structure design with PCB body and copper & tin alloy element
- b. Use optical lithography & etching skill to make refinement element
- c. Complete on element with the terminal electrode plating Tin material to prevent element oxidation.
- d. Product meet 100% ROHS, lead free, HF & REACH requirement.
- e. Offer range of current ratings from 0.5A-7A & voltage up to 63VDC and 63VAC.

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ12PF.500	F	500mA	63V	0.120	0.033
CQ12PF.750	G	750mA		0.077	0.070
CQ12PF 001	H	1A		0.056	0.120
CQ12PF 1.50	K	1.5 A		0.034	0.260
CQ12PF 002	N	2 A		0.025	0.440
CQ12PF 2.50	O	2.5A		0.018	0.560
CQ12PF 003	P	3 A		0.014	0.990
CQ12PF 004	S	4A		0.011	1.440
CQ12PF 005	T	5A		0.008	1.750
CQ12PF 006	U	6A		0.007	2.340
CQ12PF 007	V	7A		0.006	3.430

Approval

UL Recognized 0.5A~7A

Electrical Characteristic

Rated current	1 In	2 In	3 In
	MIN	MAX	MAX
0.5A~7A	4 hr	5 sec	0.2 sec

Environmental Temperature at 25°C

Interrupting Rating

100 amperes at 63V AC
100 amperes at 63V DC

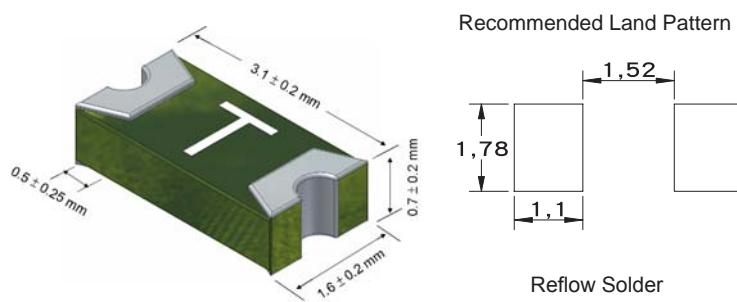
Soldering Method

- *Reflow Soldering : 260°C, 30Sec. max.
- *Wave Soldering : 260°C, 10Sec. max.
- *Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: FR4 Board
Termination Material: Copper(Cu), Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)

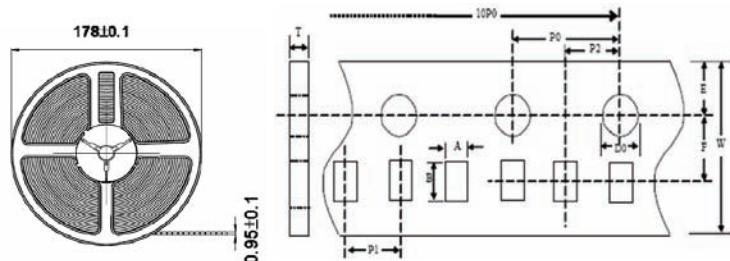
Dimension



Tape and Reel Specification

Unit : mm

Item	A	B	W	E	F	P ₀	P ₁	P ₂	D ₀	T	10P _s
Criterion	2.000 -0.050 -0.050	3.500 0.050 -0.050	8.000 0.100 -0.100	1.750 0.050 -0.050	3.500 0.050 -0.050	4.000 0.100 -0.100	4.000 0.100 -0.100	2.000 0.050 -0.050	1.550 0.050 -0.050	0.950 0.050 -0.050	40.000 0.100 -0.100
Max	2.050	3.550	8.100	1.800	3.550	4.100	4.100	2.050	1.600	1.000	40.100
Min	1.950	3.450	7.900	1.700	3.450	3.900	3.900	1.950	1.500	0.900	39.900



Tape & Reel Quantity 4000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B
(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

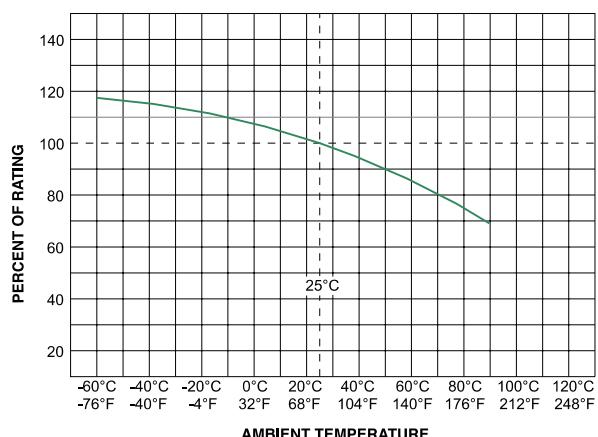
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

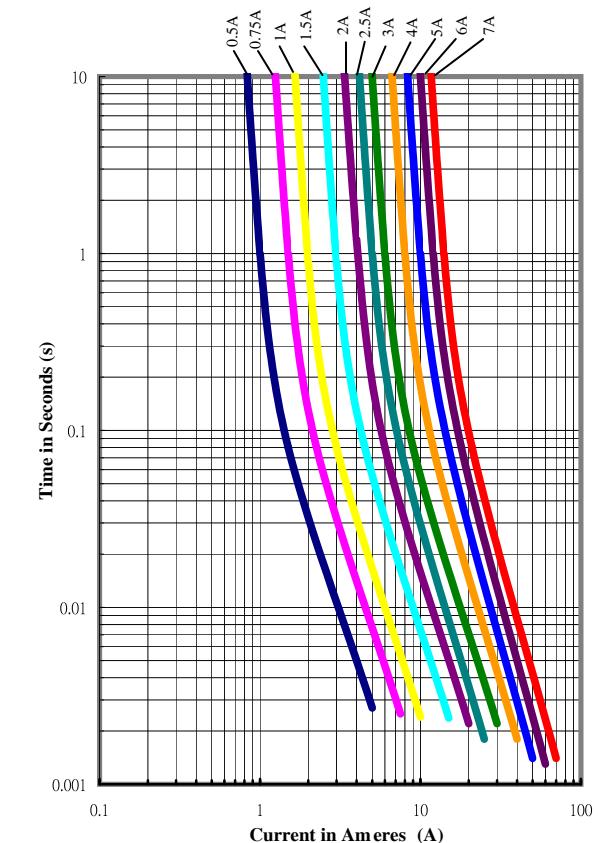
Solderability

IPC-J-STD-002C

Temperature Rerating Curve



Average Time Current Curves



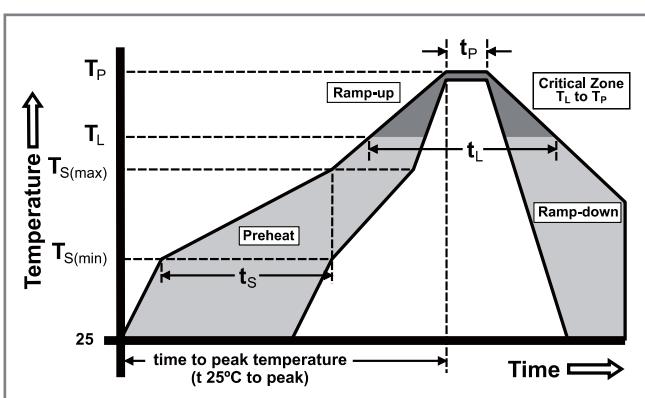
Note:

- Rerating depicted in this curve is in addition to the standard rerating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		5°C/second max.
Reflow	$T_{s(max)}$ to T_L - Ramp-up Rate	
	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		250 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering	260°C, 10 seconds max.
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Part Numbering System

CQ12PF 001

SERIES _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CQ12PT RoHS Pb

3.1mmx 1.6mm (1206)
Slow Blow Fuse Series



Feature

- a. Chip Fuse structure design with PCB body and copper & tin alloy element
- b. Use optical lithography & etching skill to make refinement element
- c. Complete on element with the terminal electrode plating Tin material to prevent element oxidation.
- d. Product meet 100% ROHS, lead free, HF & REACH requirement.
- e. Offer range of current ratings from 0.5A-7A & voltage up to 63VDC and 63VAC.

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I^2t A ² Sec
CQ12PT.500	F	500mA	63V	0.115	0.036
CQ12PT.750	G	750mA		0.075	0.076
CQ12PT 001	H	1A		0.053	0.135
CQ12PT 1.50	K	1.5 A		0.031	0.289
CQ12PT 002	N	2 A		0.023	0.484
CQ12PT 2.50	O	2.5A		0.016	0.855
CQ12PT 003	P	3 A		0.013	1.252
CQ12PT 004	S	4A		0.009	1.680
CQ12PT 005	T	5A		0.007	2.125
CQ12PT 006	U	6A		0.006	2.557
CQ12PT 007	V	7A		0.004	6.623

Approval

UL Recognized 0.5A~7A

Electrical Characteristic

Rated current	1 In		2 In		3 In		8 In	
	MIN	MAX	MIN	MAX	MAX	MAX	MIN	MAX
0.5A~7A	4 hr	2 sec	120 sec	3 sec	0.05 sec			

Environmental Temperature at 25°C

Interrupting Rating

100 amperes at 63V AC
100 amperes at 63V DC

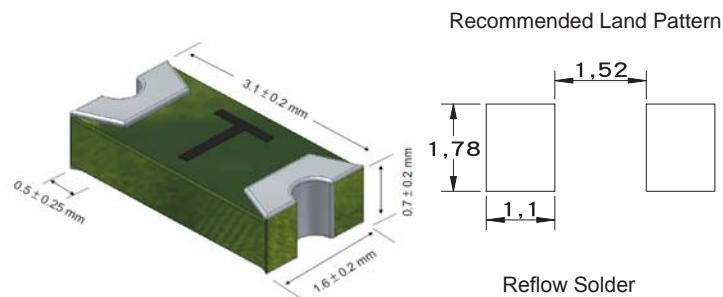
Soldering Method

- *Reflow Soldering : 260°C, 30Sec. max.
- *Wave Soldering : 260°C, 10Sec. max.
- *Hand Soldering : 350°C, 3Sec. max.

Material

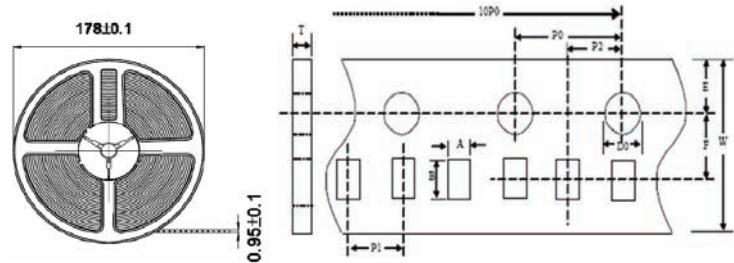
Construction Body Material: FR4 Board
Termination Material: Copper(Cu), Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)

Dimension



Tape and Reel Specification

Unit : mm											
Item	A	B	W	E	F	P ₀	P ₁	P ₂	D ₀	T	10P _s
Criterion	2.000 0.050 -0.050	3.500 0.050 -0.050	8.000 0.100 -0.100	1.750 0.050 -0.050	3.500 0.050 -0.050	4.000 0.100 -0.100	4.000 0.100 -0.100	2.000 0.050 -0.050	1.550 0.050 -0.050	0.950 0.050 -0.050	40.000 0.100 -0.100
Max	2.050	3.550	8.100	1.800	3.550	4.100	4.100	2.050	1.600	1.000	40.100
Min	1.950	3.450	7.900	1.700	3.450	3.900	3.900	1.950	1.500	0.900	39.900



Tape & Reel Quantity

4000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G,Method 107,Condition B
(-65°C to +125°C)

Vibration

MIL-STD-202G,Method 204,Test Condition C

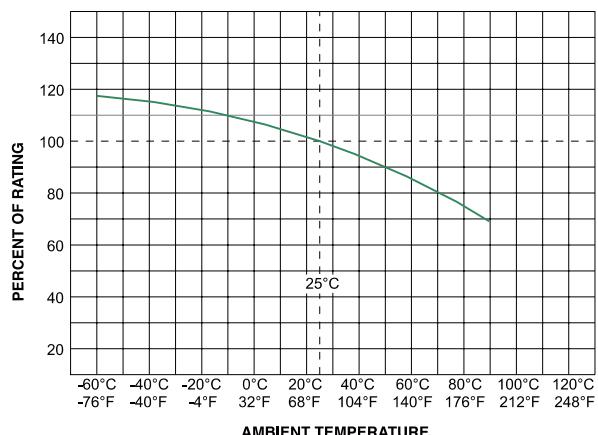
Moisture Resistance

MIL-STD-202G,Method 106,10 day cycle

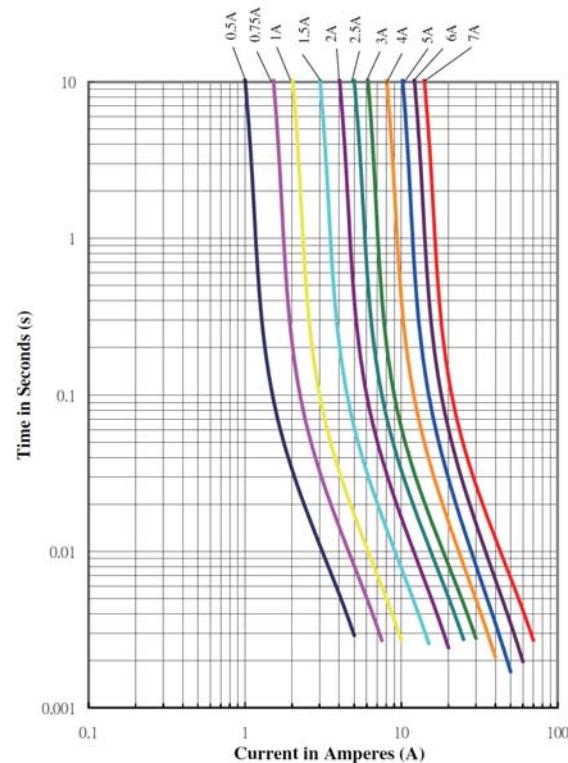
Solderability

IPC-J-STD-002C

Temperature Rerating Curve



Average Time Current Curves



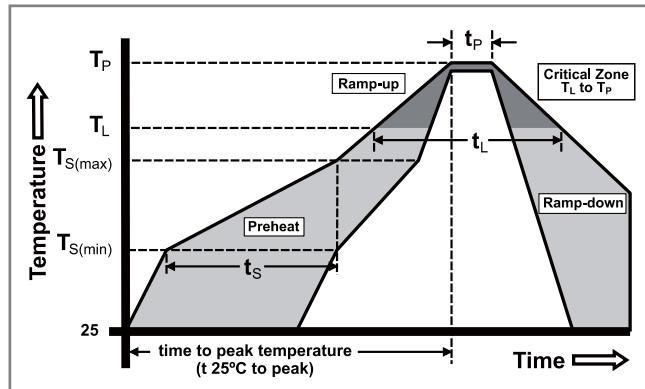
Note:

- Rerating depicted in this curve is in addition to the standard rerating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{S(min)}$)	150°C
	-Temperature Max ($T_{S(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		5°C/second max.
$T_{S(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		250 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering	260°C, 10 seconds max.
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Part Numbering System

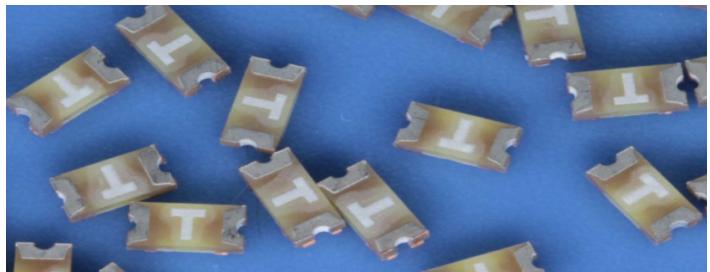
CQ12PT 001

Series _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CQ06PF

1.55mmx 0.8mm (0603)
Fast-Acting Fuse Series



Feature

- a. Chip Fuse structure design with PCB body and copper & tin alloy element
- b. Use optical lithography & etching skill to make refinement element
- c. Complete on element with the terminal electrode plating Tin material to prevent element oxidation.
- d. Product meet 100% ROHS, lead free, HF & REACH requirement.
- e. Offer range of current ratings from 0.5A-5A & voltage up to 63VDC and 63VAC.

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ06PF.500	F	500mA	63V	0.145	0.030
CQ06PF.750	G	750mA		0.095	0.068
CQ06PF 001	H	1A		0.069	0.130
CQ06PF 1.50	K	1.5 A		0.042	0.260
CQ06PF 002	N	2 A		0.019	0.300
CQ06PF 2.50	O	2.5A		0.016	0.375
CQ06PF 003	P	3 A		0.013	0.540
CQ06PF 004	S	4A		0.010	1.040
CQ06PF 005	T	5A		0.008	1.625

Approval

UL Recognized 0.5A~5A

Electrical Characteristic

Rated current	1 In	2 In	3 In
	MIN	MAX	MAX
0.5A~5A	4hr	5 sec	0.2 sec

Environmental Temperature at 25°C

Interrupting Rating

100 amperes at 63V AC
100 amperes at 63V DC

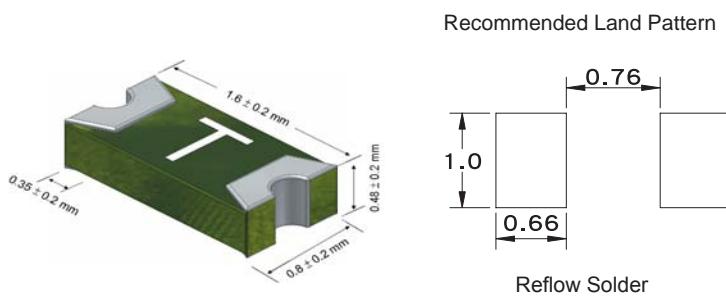
Soldering Method

- *Reflow Soldering : 260°C, 30Sec. max.
- *Wave Soldering : 260°C, 10Sec. max.
- *Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: FR4 Board
Termination Material: Copper(Cu), Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)

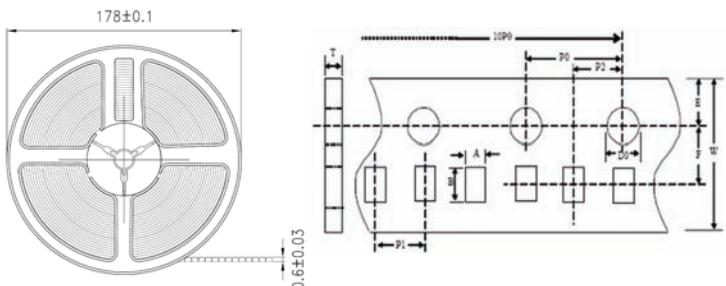
Dimension



Tape and Reel Specification

Unit : mm

Item	A	B	W	E	F	P ₀	P ₁	P ₂	D ₀	T	10P ₀	
Criterion	1.080 -0.020 -0.030	1.880 0.020 -0.030	8.000 0.100 -0.100	1.750 0.050 -0.050	3.500 0.050 -0.050	4.000 0.050 -0.050	4.000 0.050 -0.050	2.000 0.050 -0.050	2.000 0.050 -0.050	1.550 0.050 -0.050	0.600 0.030 -0.030	40.000 0.100 -0.100
Max	1.100	1.900	8.100	1.800	3.550	4.050	4.050	2.050	1.600	0.630	40.100	
Min	1.050	1.850	7.900	1.700	3.450	3.950	3.950	1.950	1.500	0.570	39.900	



Tape & Reel Quantity 5000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B
(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

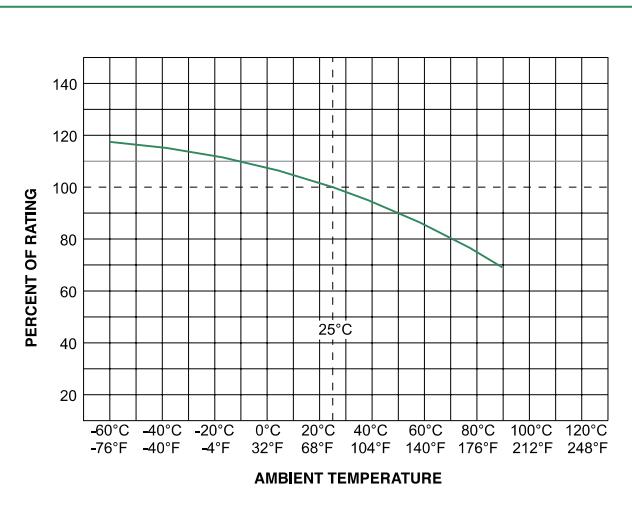
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

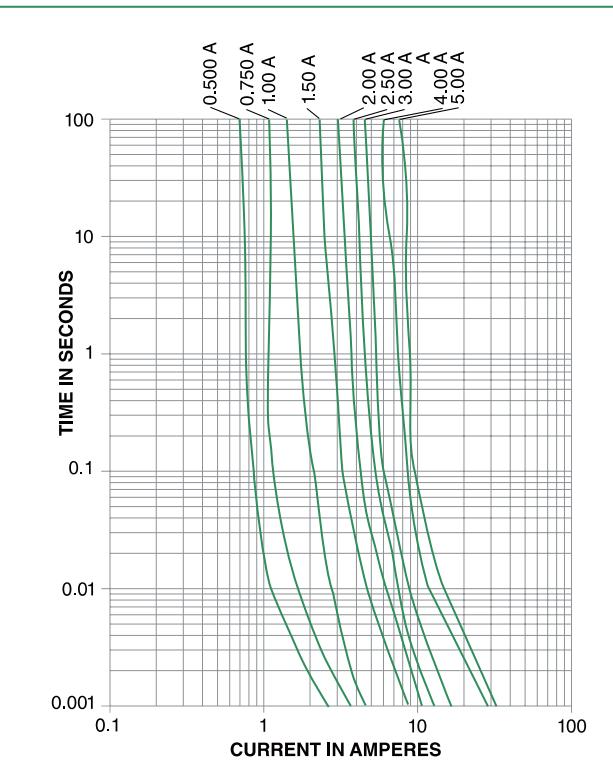
Solderability

IPC-J-STD-002C

Temperature Rerating Curve



Average Time Current Curves



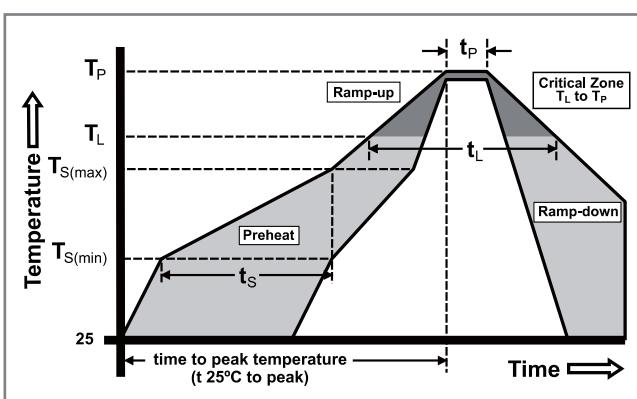
Note:

- Rerating depicted in this curve is in addition to the standard rerating of 25% for continuous operation.

Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		5°C/second max.
Reflow	$T_{s(max)}$ to T_L - Ramp-up Rate	5°C/second max.
	-Temperature (T_L) (Liquidus)	217°C
Reflow	-Temperature (t_L)	60 – 150 seconds
	Peak Temperature (T_p)	250 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering	260°C, 10 seconds max.
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Part Numbering System

CQ06PF 001

Series _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CQ06PT RoHS Pb

1.55mmx 0.8mm (0603)
Slow Blow Fuse Series



Feature

- a. Chip Fuse structure design with PCB body and copper & tin alloy element
- b. Use optical lithography & etching skill to make refinement element
- c. Complete on element with the terminal electrode plating Tin material to prevent element oxidation.
- d. Product meet 100% ROHS, lead free, HF & REACH requirement.
- e. Offer range of current ratings from 0.5A-5A & voltage up to 63VDC and 63VAC.

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CQ06PT.500	F	500mA	63V	0.132	0.034
CQ06PT.750	G	750mA		0.084	0.076
CQ06PT 001	H	1A		0.062	0.157
CQ06PT 1.50	K	1.5 A		0.040	0.293
CQ06PT 002	N	2 A		0.018	0.438
CQ06PT 2.50	O	2.5A		0.013	0.755
CQ06PT 003	P	3 A		0.011	0.765
CQ06PT 004	S	4A		0.008	1.520
CQ06PT 005	T	5A		0.005	2.375

Approval

UL Recognized 0.5A~5A

Electrical Characteristic

Rated current	1 In	2 In		3 In	8 In
	MIN	MIN	MAX	MAX	MAX
0.5A~5A	4 hr	2 sec	120 sec	3 sec	0.05 sec

Environmental Temperature at 25°C

Interrupting Rating

100 amperes at 63V AC
100 amperes at 63V DC

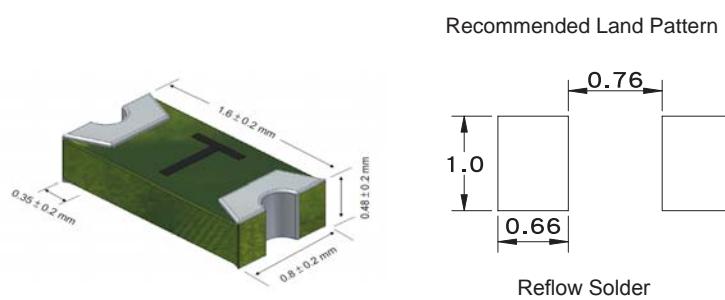
Soldering Method

- *Reflow Soldering : 260°C, 30Sec. max.
- *Wave Soldering : 260°C, 10Sec. max.
- *Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: FR4 Board
Termination Material: Copper(Cu), Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)

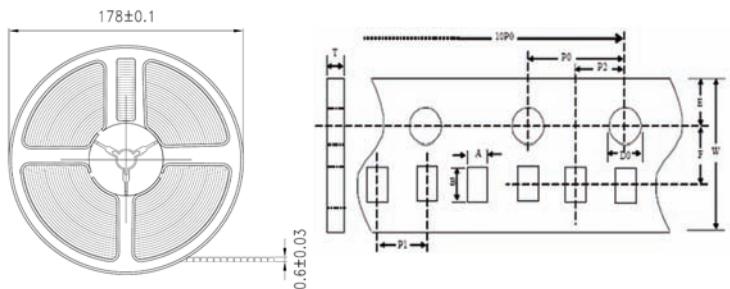
Dimension



Tape and Reel Specification

Unit : mm

Item	A	B	W	E	F	P ₀	P ₁	P ₂	D ₀	T	10P ₀	
Criterion	1.080 -0.020 -0.030	1.880 0.020 -0.030	8.000 0.100 -0.100	1.750 0.050 -0.050	3.500 0.050 -0.050	4.000 0.050 -0.050	4.000 0.050 -0.050	2.000 0.050 -0.050	2.000 0.050 -0.050	1.550 0.050 -0.050	0.600 0.030 -0.030	40.000 0.100 -0.100
Max	1.100	1.900	8.100	1.800	3.550	4.050	4.050	2.050	1.600	0.630	40.100	
Min	1.050	1.850	7.900	1.700	3.450	3.950	3.950	1.950	1.500	0.570	39.900	



Tape & Reel Quantity 5000 pcs/reel

Environmental Specification

Operating Temperature

-55°C to +125°C

Thermal Shock

MIL-STD-202G, Method 107, Condition B
(-65°C to +125°C)

Vibration

MIL-STD-202G, Method 204, Test Condition C

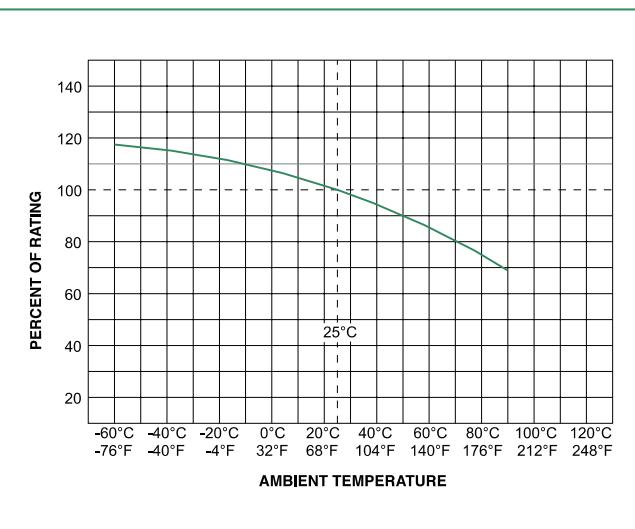
Moisture Resistance

MIL-STD-202G, Method 106, 10 day cycle

Solderability

IPC-J-STD-002C

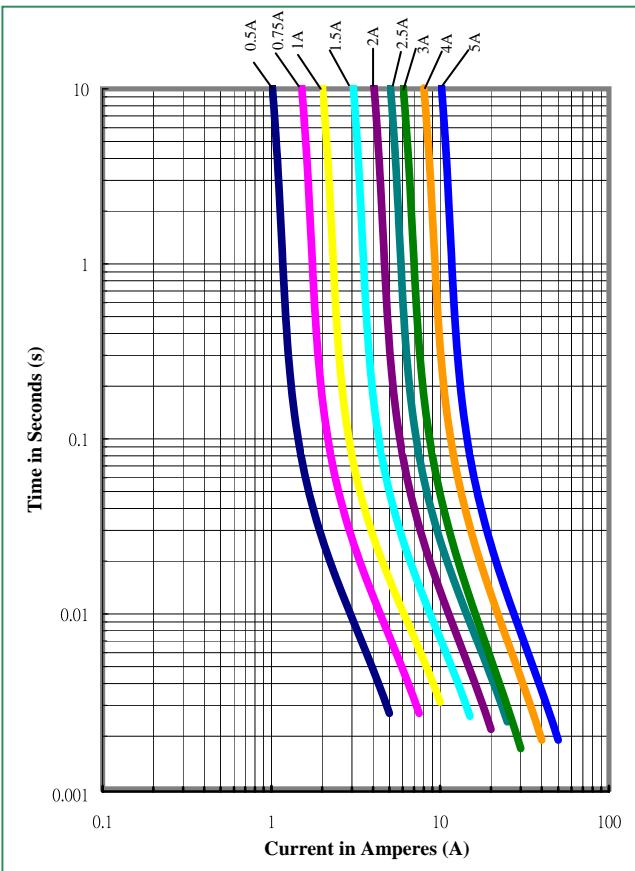
Temperature Rerating Curve



Note:

- Rerating depicted in this curve is in addition to the standard rerating of 25% for continuous operation.

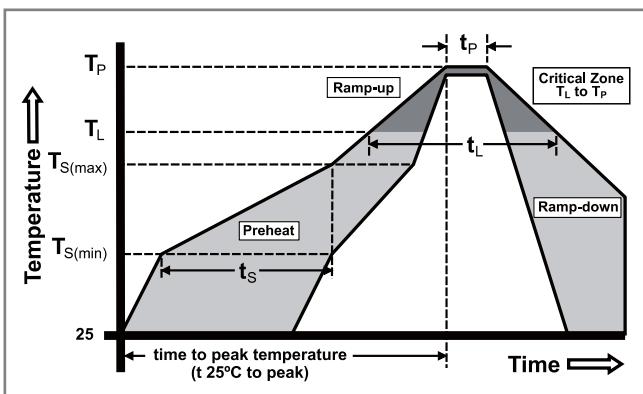
Average Time Current Curves



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		5°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		250 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

Wave Soldering	260°C, 10 seconds max.
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Part Numbering System

CQ06PT 001

SERIES _____

AMP Code _____
Refer to Electrical
Characteristics table

Type CF12 RoHS

3.1mmx1.55mm (1206)
High-surge Enhanced Fuse Series



Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CF12V6TR50	F	0.50A	63V DC	0.590	0.0110
CF12V6TR80	K	0.80A		0.225	0.0310
CF12V6T1R0	L	1.00A		0.130	0.0340
CF12V6T1R25	M	1.25A		0.088	0.0620
CF12V6T1R50	P	1.50A		0.065	0.1440
CF12V6T2R0	S	2.00A		0.038	0.1810
CF12V3T2R50	T	2.50A	32V DC	0.032	0.3510
CF12V3T3R00	3	3.00A		0.023	0.5010
CF12V3T4R0	W	4.00A		0.015	0.9540
CF12V3T5R0	Y	5.00A		0.011	0.9660
CF12V3T7R0	Z	7.00A		0.007	3.2500

Approval

UL Recognized 0.5A~7A

Electrical Characteristic

Rated current	1 In	2 In	3 In
	MIN	MAX	MAX
0.5A~7A	4hr	60sec	1 sec

Environmental Temperature at 25°C

Interrupting Rating

0.5A~2A : 50 amperes at 63V DC
2.5A~7A : 50 amperes at 32V DC

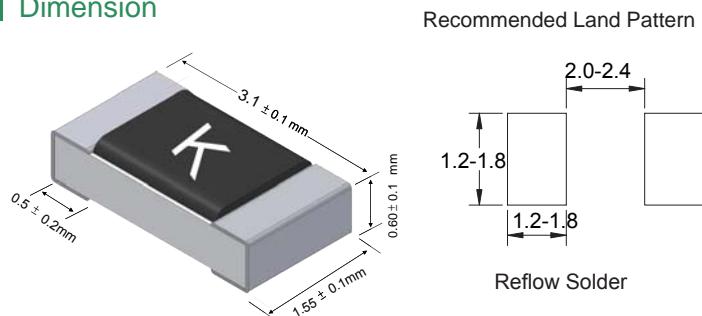
Soldering Method

*Reflow Soldering : 260°C, 10Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

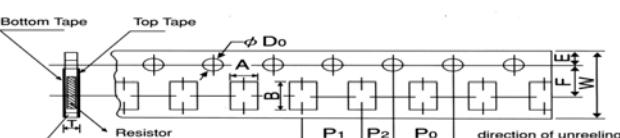
Material

Construction Body Material: Ceramic
Termination Material: Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)
Cover coat: Epoxy

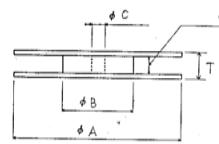
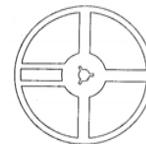
Dimension



Tape and Reel Specification

Unit : mm											
Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T	
Criterion	2.0 ± 0.15	3.6 ± 0.2	8.0 ± 0.2	3.5 ± 0.05	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	4.0 ± 0.1	+0.1 1.5 -0	0.84 ± 0.1	
Bottom Tape 											
Item	A	B	C	W	T	Unit : mm					
Criterion	178 ± 2.0	60.0 ± 1.0	13.0 ± 1.0	9.0 ± 1.0	11.4 ± 2.0	Tape & Reel Quantity					

5000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △ R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs
No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZdirection/2hrs
No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

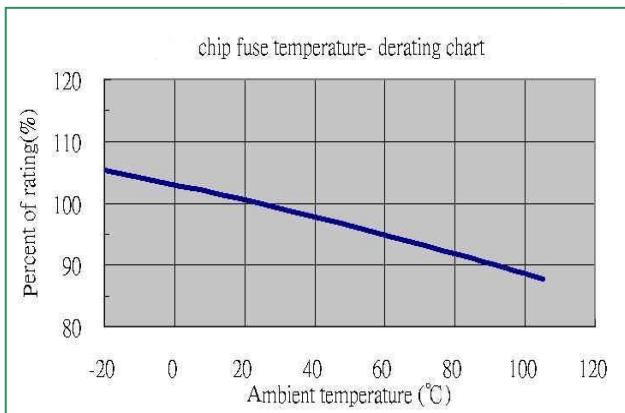
Solder ability

245±5°C; 2±0.5 Sec
95% coverage minimum

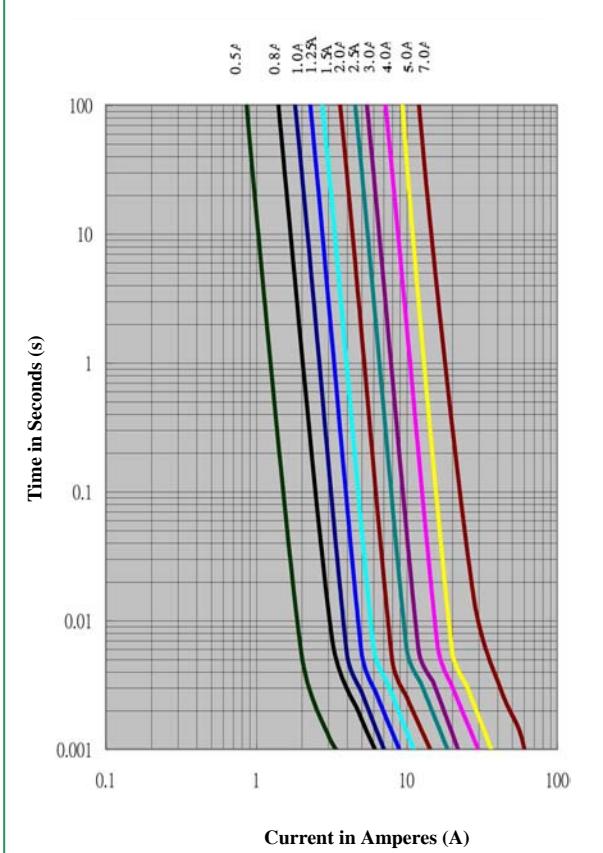
Terminal strength

10N; 10Sec
No mechanical damages

Temperature Rerating Curve

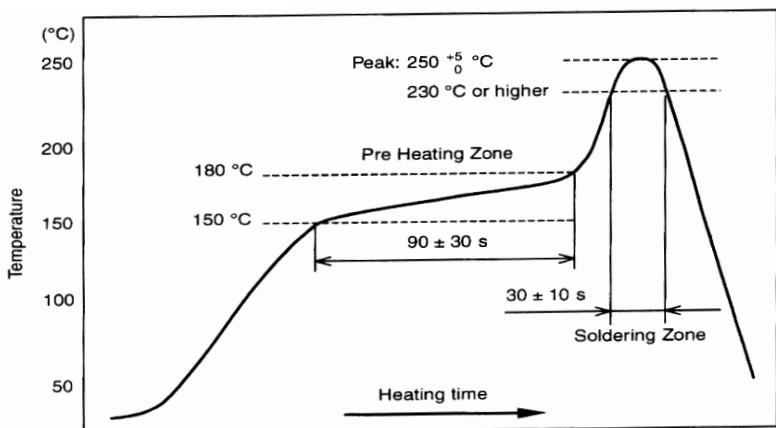


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $+5^{\circ}\text{C}$, 5 sec
 -0°C
 Pre – heat Zone : 150 to 180 $^{\circ}\text{C}$, 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System



CF:High-surge
Enhanced
CFS: Fast acting
CP:Fast acting
CPS: Time-Lag



04:1.0x0.52mm
06:1.6x0.80mm
12:3.1x1.55mm



VA:125V
V6:63V
V5:50V
V3:32V



T:Paper Tape
1206/0603:5K
0402:10K



R50:0.50A
1R0:1.00A
1R50:1.50A
2R0:2.00A
2R50:2.50A
3R0:3.00A
5R0:5.00A
15R0:15.0A

Type CF06 RoHS



1.6mmx 0.80mm (0603)
High-surge Enhanced Fuse Series



Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CF06V5TR40	E	0.40A	50V DC	0.496	0.0040
CF06V5TR50	F	0.50A		0.250	0.0050
CF06V3TR63	I	0.63A		0.173	0.0070
CF06V3TR80	K	0.80A		0.115	0.0140
CF06V3T1R0	L	1.00A		0.088	0.0160
CF06V3T1R25	M	1.25A		0.063	0.0270
CF06V3T1R50	P	1.50A		0.045	0.0370
CF06V3T1R60	N	1.60A		0.042	0.0410
CF06V3T2R0	S	2.00A		0.033	0.0440
CF06V3T2R50	T	2.50A		0.024	0.0550
CF06V3T3R00	3	3.00A		0.021	0.0820
CF06V3T3R15	U	3.15A		0.019	0.0890
CF06V3T4R0	W	4.00A		0.015	0.2390
CF06V3T5R0	Y	5.00A		0.012	0.4330

Approval

UL Recognized 0.4A~5A

Electrical Characteristic

Rated current	1 In	2 In	3 In
	MIN	MAX	MAX
0.4A~5A	4hr	60sec	1 sec

Environmental Temperature at 25°C

Interrupting Rating

0.4A~0.5A : 50 amperes at 50V DC
0.63A~5A : 50 amperes at 32V DC

Soldering Method

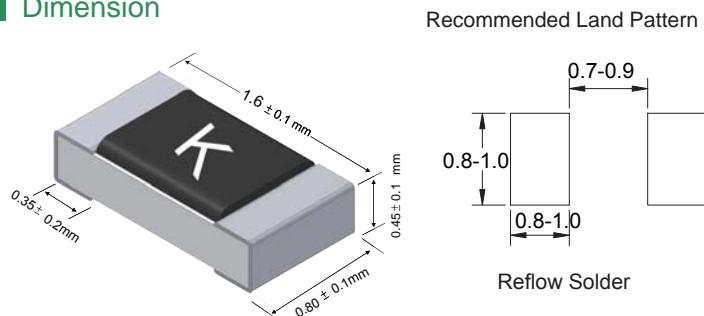
*Reflow Soldering : 260°C, 10Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material:Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)
Cover coat: Epoxy



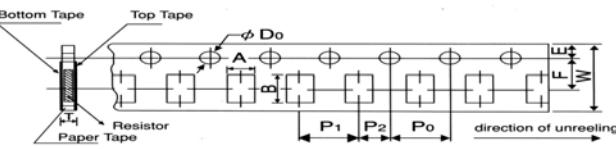
Dimension



Tape and Reel Specification

Unit : mm

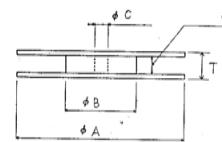
Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Criterion	1.1 ± 0.1	1.9 ± 0.1	8.0 ± 0.2	3.5 ± 0.05	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	4.0 ± 0.1	+0.1 1.5 -0	0.64 ± 0.1



Item	A	B	C	W	T
Criterion	178 ± 2.0	60.0 ± 1.0	13.0 ± 1.0	9.0 ± 1.0	11.4 ± 2.0

Tape & Reel Quantity

5000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △ R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs

No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZdirection/2hrs

No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

Solder ability

245±5°C; 2±0.5 Sec

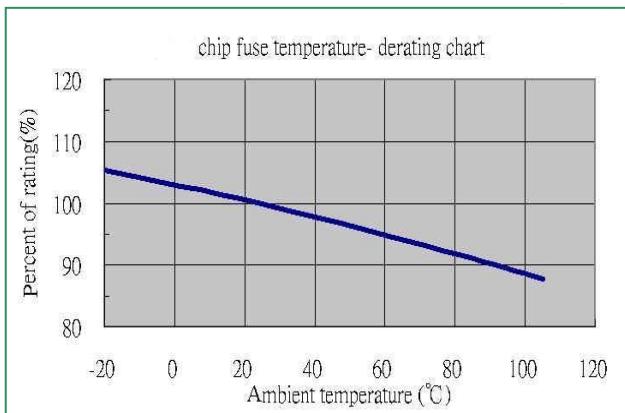
95% coverage minimum

Terminal strength

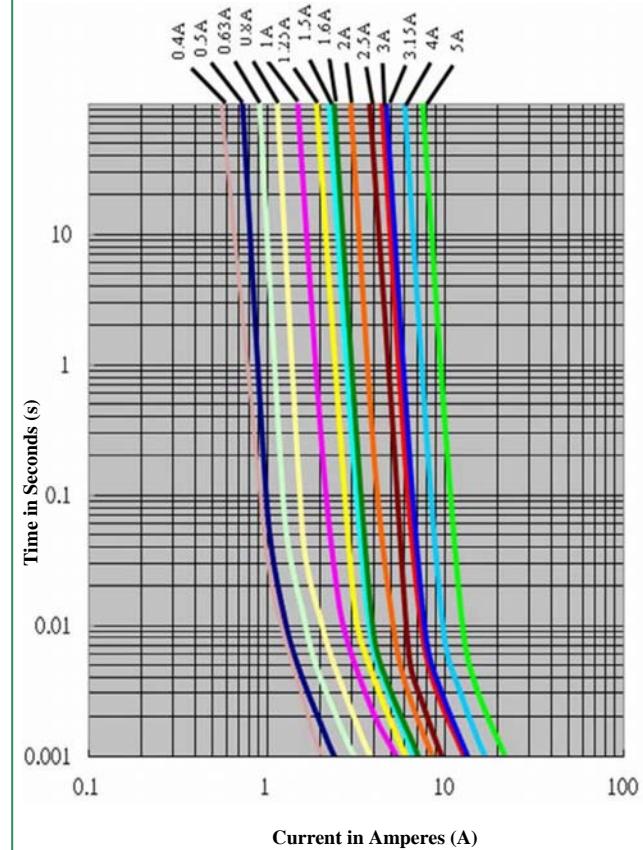
10N;10Sec

No mechanical damages

Temperature Rerating Curve

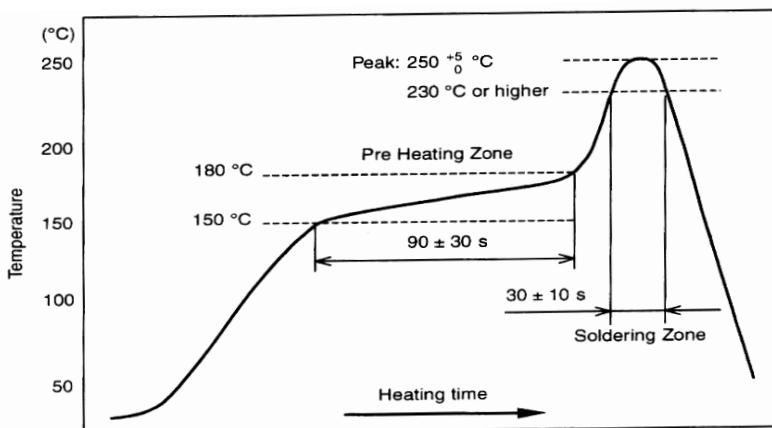


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $+5^{\circ}\text{C}$, 5 sec
 -0
 Pre – heat Zone : 150 to 180 °C, 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System

CF

CF:High-surge
Enhanced
CFS: Fast acting
CP:Fast acting
CPS: Time-Lag

04

04:1.0x0.52mm
06:1.6x0.80mm
12:3.1x1.55mm

V3

VA:125V
V6:63V
V5:50V
V3:32V

T

T:Paper Tape
1206/0603:5K
0402:10K

1R0

R50:0.50A
1R0:1.00A
1R50:1.50A
2R0:2.00A
2R50:2.50A
3R0:3.00A
5R0:5.00A
15R0:15.0A

Type CF04 RoHS



1.0mmx 0.52mm (0402)
High-surge Enhanced Fuse Series



Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CF04V3TR315	D	0.315A	32V DC	0.690	0.0020
CF04V3TR50	F	0.50A		0.320	0.0032
CF04V3TR75	V	0.75A		0.140	0.0040
CF04V3TR80	K	0.80A		0.120	0.0053
CF04V3T1R0	L	1.00A		0.090	0.0072
CF04V3T1R25	M	1.25A		0.067	0.0134
CF04V3T1R50	P	1.50A		0.051	0.0136
CF04V3T1R60	N	1.60A		0.046	0.0167
CF04V3T2R0	S	2.00A		0.033	0.0198
CF04V3T2R50	T	2.50A		0.025	0.0376
CF04V3T3R00	3	3.00A		0.020	0.0543
CF04V3T3R15	U	3.15A		0.019	0.0530
CF04V3T4R0	W	4.00A		0.016	0.0900

Approval

UL Recognized 0.315A~4A

Electrical Characteristic

Rated current	1 In	2 In	3 In
	MIN	MAX	MAX
0.315A~4A	4hr	60sec	1 sec

Environmental Temperature at 25°C

Interrupting Rating

0.315A~4A : 35 amperes at 32V DC

Soldering Method

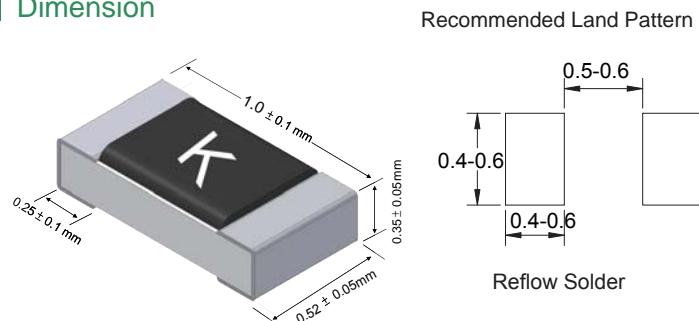
*Reflow Soldering : 260°C, 10Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material:Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)
Cover coat: Epoxy



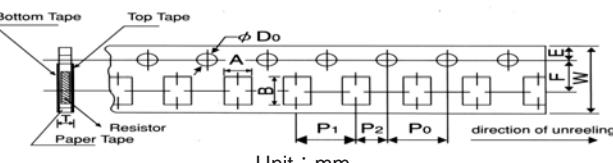
Dimension



Tape and Reel Specification

Unit : mm

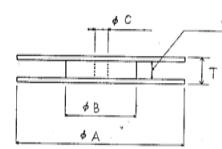
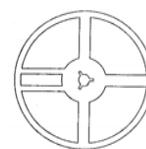
Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Criterion	0.7 ±0.05	1.2 ±0.05	8.0 ±0.2	3.5 ±0.05	1.75 ±0.1	2.0 ±0.1	2.0 ±0.05	4.0 ±0.1	+0.1 1.5 -0	0.45 ±0.1



Item	A	B	C	W	T
Criterion	178 ±2.0	60.0 ±1.0	13.0 ±1.0	9.0 ±1.0	11.4 ±2.0

Tape & Reel Quantity

10000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △ R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs
No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZdirection/2hrs
No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

Solder ability

245±5°C; 2±0.5 Sec

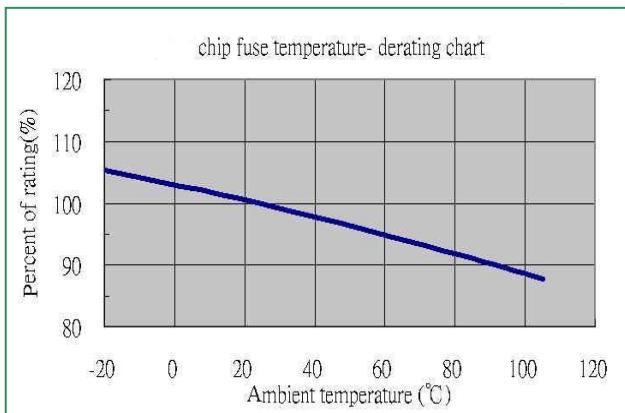
95% coverage minimum

Terminal strength

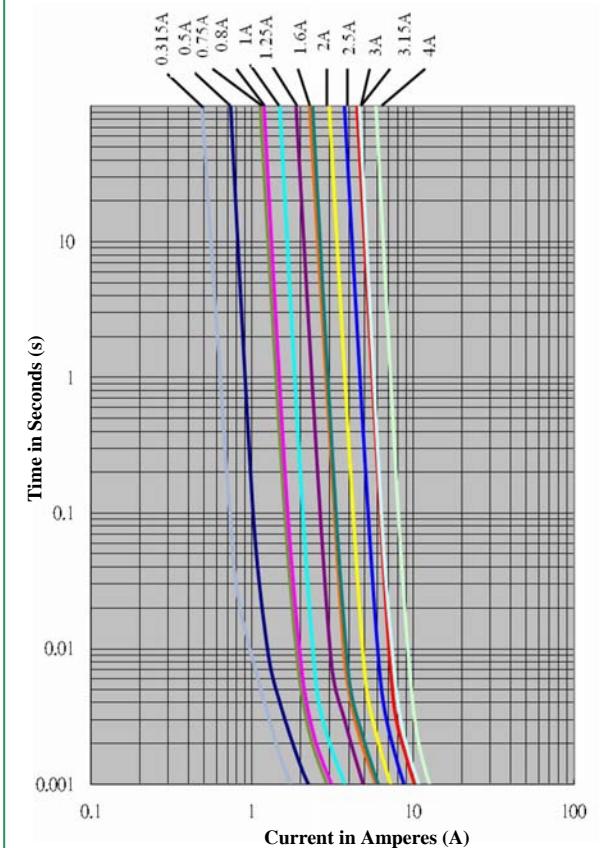
10N;10Sec

No mechanical damages

Temperature Rerating Curve

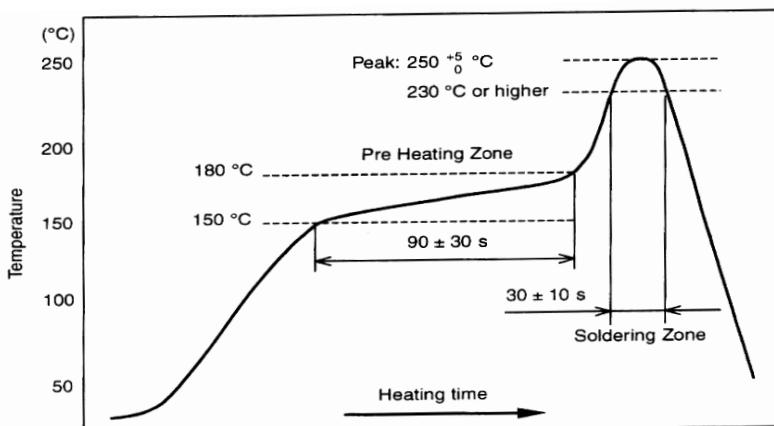


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $+5^{\circ}\text{C}$, 5 sec
 -0°C
 Pre – heat Zone : 150 to 180 °C, 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System



CF:High-surge
Enhanced
CFS: Fast acting
CP:Fast acting
CPS: Time-Lag



04:1.0x0.52mm
06:1.6x0.80mm
12:3.1x1.55mm



VA:125V
V6:63V
V5:50V
V3:32V



T:Paper Tape
1206/0603:5K
0402:10K



R50:0.50A
1R0:1.00A
1R50:1.50A
2R0:2.00A
2R50:2.50A
3R0:3.00A
5R0:5.00A
15R0:15.0A

Type CFS12 RoHS



3.1mmx 1.55mm (1206)
Fast Acting Fuse Series



Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CFS12V6TR50	F	0.50A	63V DC	0.385	0.0300
CFS12V6TR80	K	0.80A		0.165	0.0680
CFS12V6T1R0	L	1.00A		0.108	0.0980
CFS12V6T1R25	M	1.25A		0.076	0.1550
CFS12V6T1R50	P	1.50A		0.051	0.2360
CFS12V6T2R0	S	2.00A		0.032	0.3390
CFS12V3T2R50	T	2.50A	32V DC	0.026	0.6050
CFS12V3T3R00	3	3.00A		0.020	0.9330
CFS12V3T4R0	W	4.00A		0.014	1.5370
CFS12V3T5R0	Y	5.00A		0.010	2.5330
CFS12V3T7R0	Z	7.00A		0.006	5.6840

Approval

UL Recognized 0.5A~7A

Electrical Characteristic

Rated current	1 In	2.5 In	3 In
	MIN	MAX	MAX
0.5A~7A	4hr	5sec	0.2 sec

Environmental Temperature at 25°C

Interrupting Rating

0.5A~2A : 50 amperes at 63V DC
2.5A~7A : 50 amperes at 32V DC

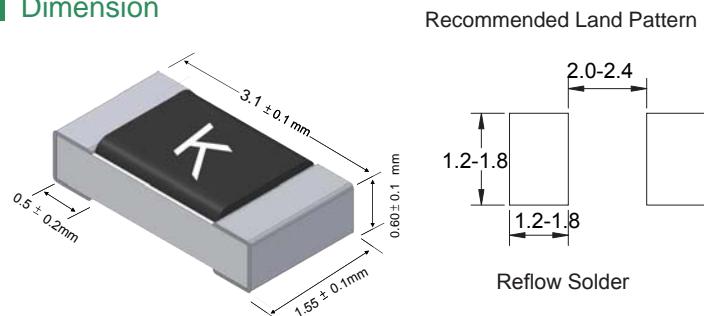
Soldering Method

*Reflow Soldering : 260°C, 10Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)
Cover coat: Epoxy

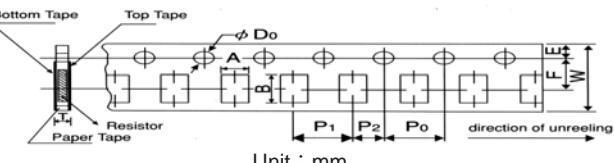
Dimension



Tape and Reel Specification

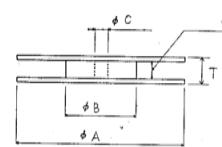
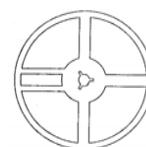
Unit : mm

Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Criterion	2.0 ± 0.15	3.6 ± 0.2	8.0 ± 0.2	3.5 ± 0.05	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	4.0 ± 0.1	+0.1 1.5 -0	0.84 ± 0.1



Tape & Reel Quantity

5000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △ R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs
No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZ direction/2hrs
No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

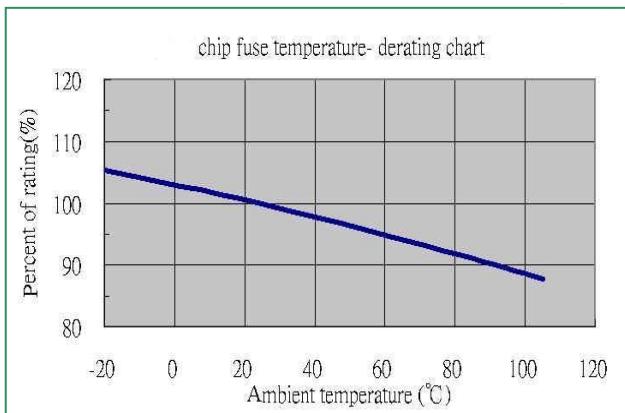
Solder ability

245±5°C; 2±0.5 Sec
95% coverage minimum

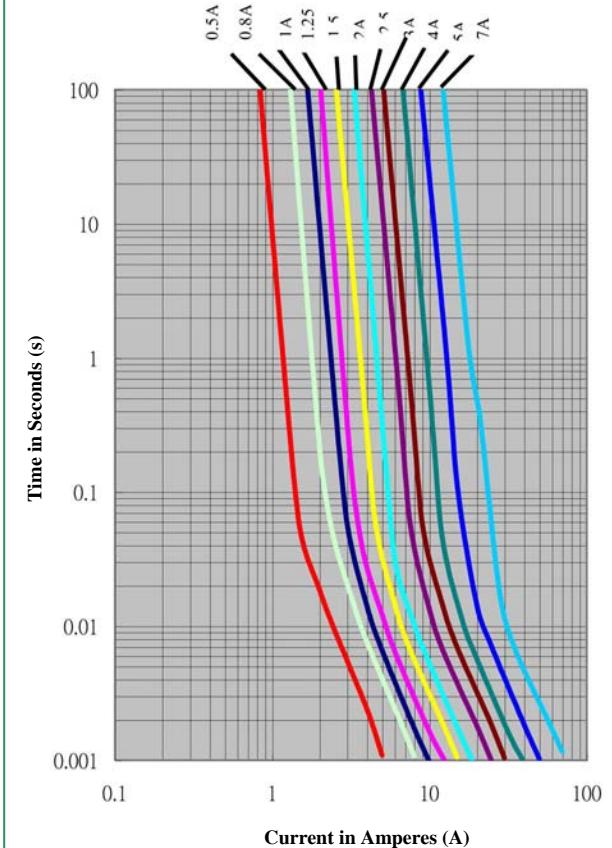
Terminal strength

10N; 10Sec
No mechanical damages

Temperature Rerating Curve

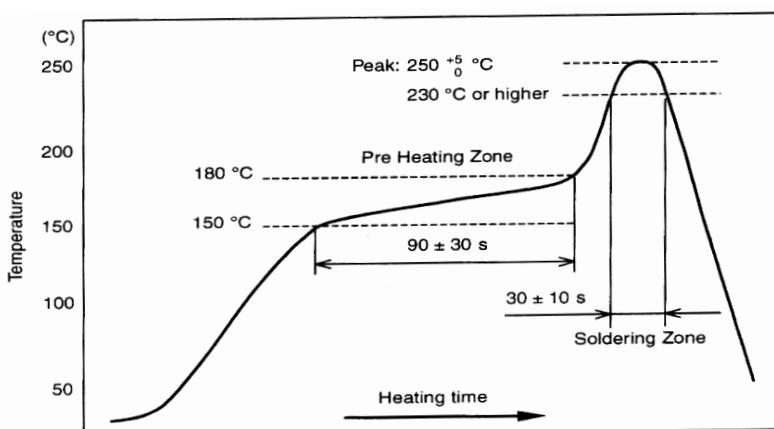


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $+5^{\circ}\text{C}$, 5 sec
 -0
 Pre – heat Zone : 150 to 180 $^{\circ}\text{C}$, 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System

CFS

12

V3

T

1R0

CF:High-surge

04:1.0x0.52mm

VA:125V

T:Paper Tape

R50:0.50A

Enhanced

06:1.6x0.80mm

V6:63V

1R0:1.00A

CFS: Fast acting

12:3.1x1.55mm

V5:50V

1R50:1.50A

CP:Fast acting

V3:32V

2R0:2.00A

CPS: Time-Lag

1206/0603:5K

2R50:2.50A

3R0:3.00A

5R0:5.00A

15R0:15.0A

Type CFS06 RoHS



1.6mmx 0.80mm (0603)
Fast Acting Fuse Series

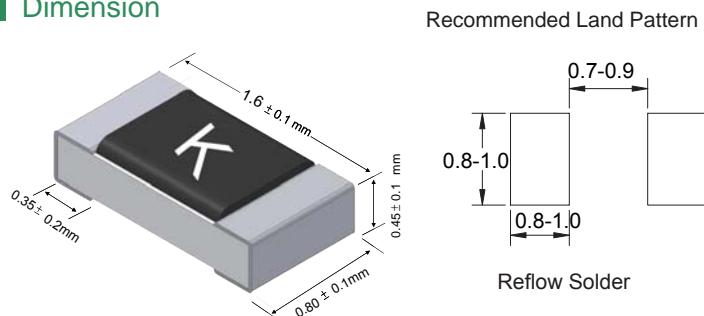


Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics



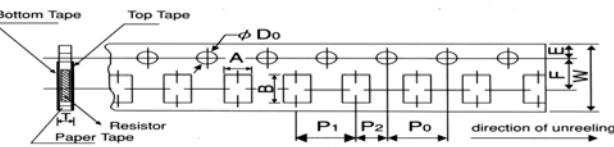
Dimension



Tape and Reel Specification

Unit : mm

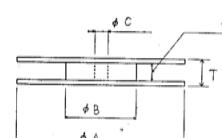
Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Criterion	1.1 ± 0.1	1.9 ± 0.1	8.0 ± 0.2	3.5 ± 0.05	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	4.0 ± 0.1	+0.1 1.5 -0	0.64 ± 0.1



Item	A	B	C	W	T
Criterion	178 ± 2.0	60.0 ± 1.0	13.0 ± 1.0	9.0 ± 1.0	11.4 ± 2.0

Tape & Reel Quantity

5000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs
No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZdirection/2hrs
No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

Solder ability

245±5°C; 2±0.5 Sec

95% coverage minimum

Terminal strength

10N; 10Sec

No mechanical damages

Approval

UL Recognized 0.4A~6A

Electrical Characteristic

Rated current	1 In	2.5 In	3 In
	MIN	MAX	MAX
0.4A~6A	4hr	5sec	0.2 sec

Environmental Temperature at 25°C

Interrupting Rating

0.4A~0.5A : 50 amperes at 50V DC
0.63A~6A : 50 amperes at 32V DC

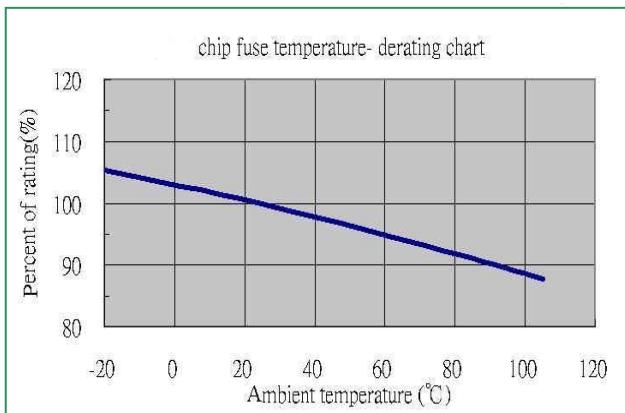
Soldering Method

*Reflow Soldering : 260°C, 10Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

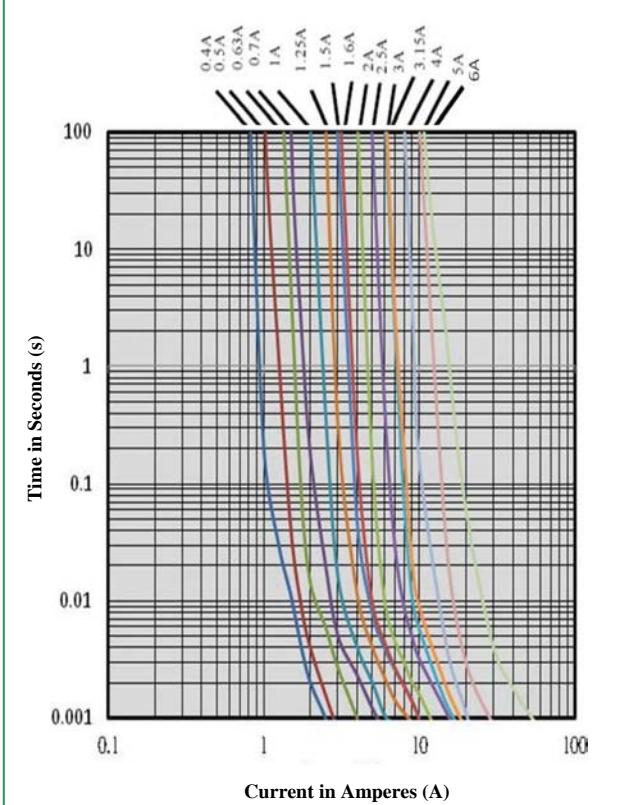
Material

Construction Body Material: Ceramic
Termination Material:Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)
Cover coat: Epoxy

Temperature Rerating Curve

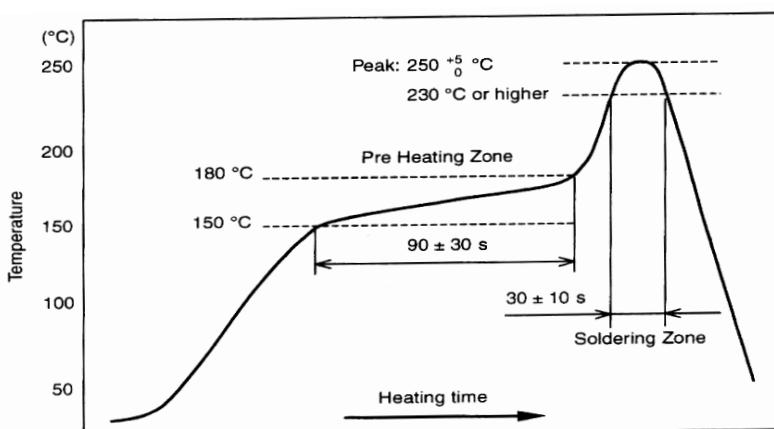


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $+5^{\circ}\text{C}$, 5 sec
 -0
 Pre – heat Zone : 150 to 180 $^{\circ}\text{C}$, 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System

CFS

12

V3

T

1R0

CF:High-surge

04:1.0x0.52mm

VA:125V

T:Paper Tape

R50:0.50A

Enhanced

06:1.6x0.80mm

V6:63V

1206/0603:5K

1R0:1.00A

CFS: Fast acting

12:3.1x1.55mm

V5:50V

0402:10K

1R50:1.50A

CP:Fast acting

V3:32V

2R0:2.00A

CPS: Time-Lag

2R50:2.50A

3R0:3.00A

5R0:5.00A

15R0:15.0A

Type CFS04 RoHS



1.0mmx 0.52mm (0402)
Fast Acting Fuse Series

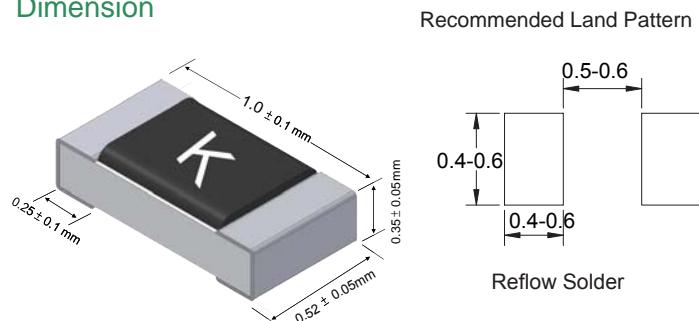


Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics



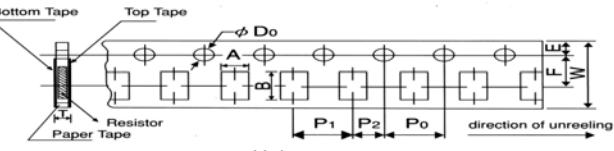
Dimension



Tape and Reel Specification

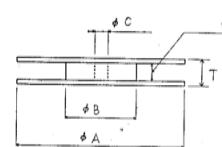
Unit : mm

Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Criterion	0.7 ±0.05	1.2 ±0.05	8.0 ±0.2	3.5 ±0.05	1.75 ±0.1	2.0 ±0.1	2.0 ±0.05	4.0 ±0.1	+0.1 1.5 -0	0.45 ±0.1



Tape & Reel Quantity

10000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs
No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZdirection/2hrs
No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

Solder ability

245±5°C; 2±0.5 Sec
95% coverage minimum

Terminal strength

10N; 10Sec
No mechanical damages

Approval

UL Recognized 0.5A~4A

Electrical Characteristic

Rated current	1 In	2.5 In	3 In
	MIN	MAX	MAX
0.5A~4A	4hr	5sec	0.2 sec

Environmental Temperature at 25°C

Interrupting Rating

0.5A~4A : 35 amperes at 32V DC

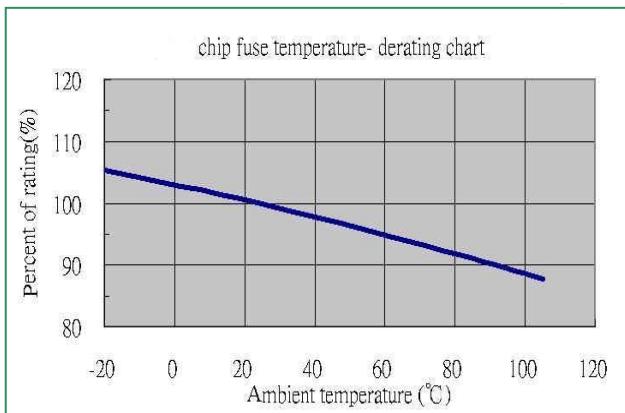
Soldering Method

*Reflow Soldering : 260°C, 10Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

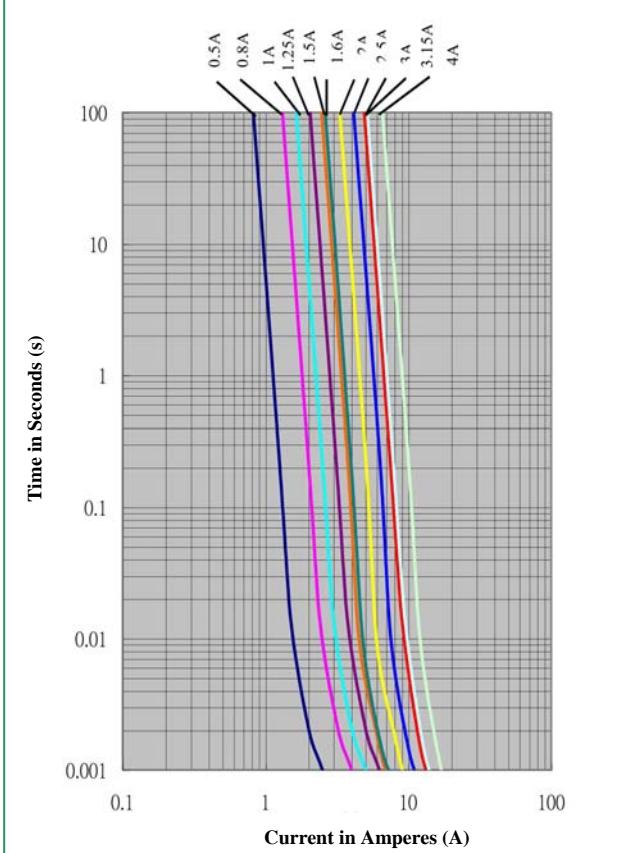
Material

Construction Body Material: Ceramic
Termination Material:Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)
Cover coat: Epoxy

Temperature Rerating Curve

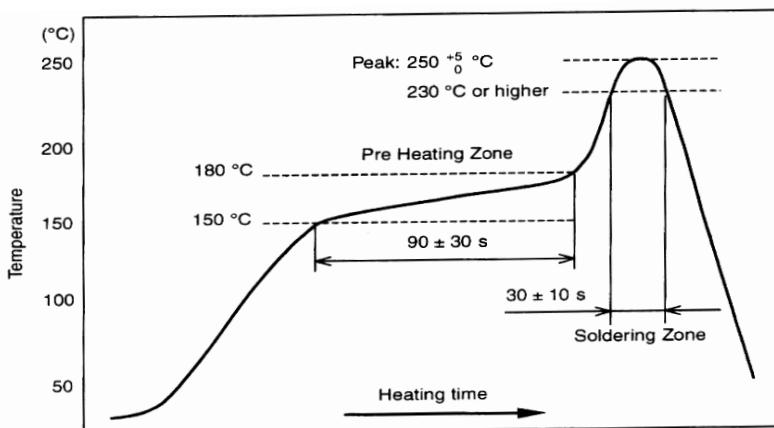


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $+5^{\circ}\text{C}$, 5 sec
 -0
 Pre – heat Zone : 150 to 180 $^{\circ}\text{C}$, 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System

CFS

CF:High-surge
Enhanced
CFS: Fast acting
CP:Fast acting
CPS: Time-Lag

04

04:1.0x0.52mm
06:1.6x0.80mm
12:3.1x1.55mm

V3

VA:125V
V6:63V
V5:50V
V3:32V

T

T:Paper Tape
1206/0603:5K
0402:10K

1R0

R50:0.50A
1R0:1.00A
1R50:1.50A
2R0:2.00A
2R50:2.50A
3R0:3.00A
5R0:5.00A
15R0:15.0A

Type CP12 RoHS

3.1mmx1.55mm (1206)
Fast Acting Fuse Series



Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CP12V6TR50	F	0.50A	63V DC	0.640	0.0150
CP12V6TR80	K	0.80A		0.258	0.0400
CP12V6T1R0	L	1.00A		0.178	0.0620
CP12V6T1R25	M	1.25A		0.122	0.0940
CP12V6T1R50	P	1.50A		0.083	0.1410
CP12V6T2R0	S	2.00A		0.057	0.2850
CP12V3T2R50	T	2.50A	32V DC	0.044	0.4450
CP12V3T3R00	3	3.00A		0.033	0.6390
CP12V3T4R0	W	4.00A		0.022	1.1090
CP12V3T5R0	Y	5.00A		0.017	1.7100
CP12V3T7R0	Z	7.00A		0.011	3.3000

Approval

UL Recognized 0.5A~7A

Electrical Characteristic

Rated current	1 In	2 In	3 In
	MIN	MAX	MAX
0.5A~7A	4hr	60sec	1 sec

Environmental Temperature at 25°C

Interrupting Rating

0.5A~2A : 50 amperes at 63V DC
2.5A~7A : 50 amperes at 32V DC

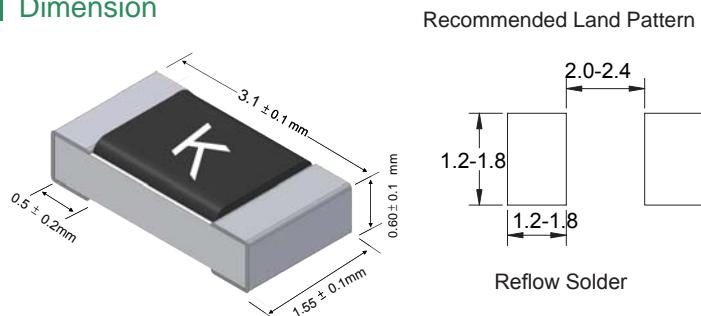
Soldering Method

*Reflow Soldering : 260°C, 10Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)
Cover coat: Epoxy

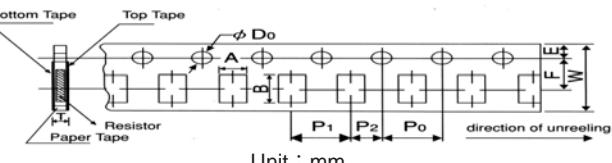
Dimension



Tape and Reel Specification

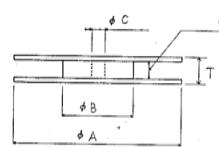
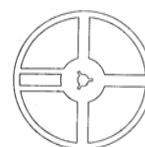
Unit : mm

Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Criterion	2.0 ± 0.15	3.6 ± 0.2	8.0 ± 0.2	3.5 ± 0.05	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	4.0 ± 0.1	+0.1 1.5 -0	0.84 ± 0.1



Tape & Reel Quantity

5000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △ R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs
No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZdirection/2hrs
No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

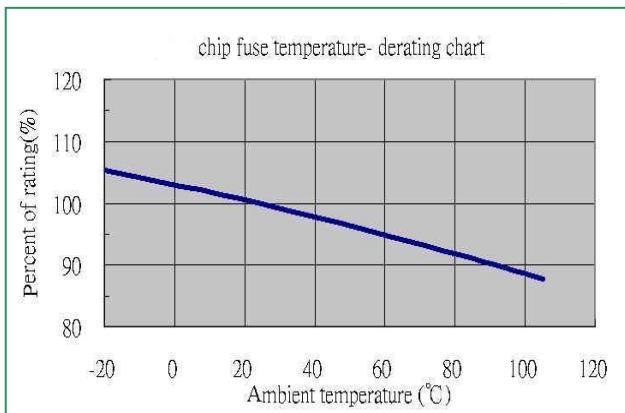
Solder ability

245±5°C; 2±0.5 Sec
95% coverage minimum

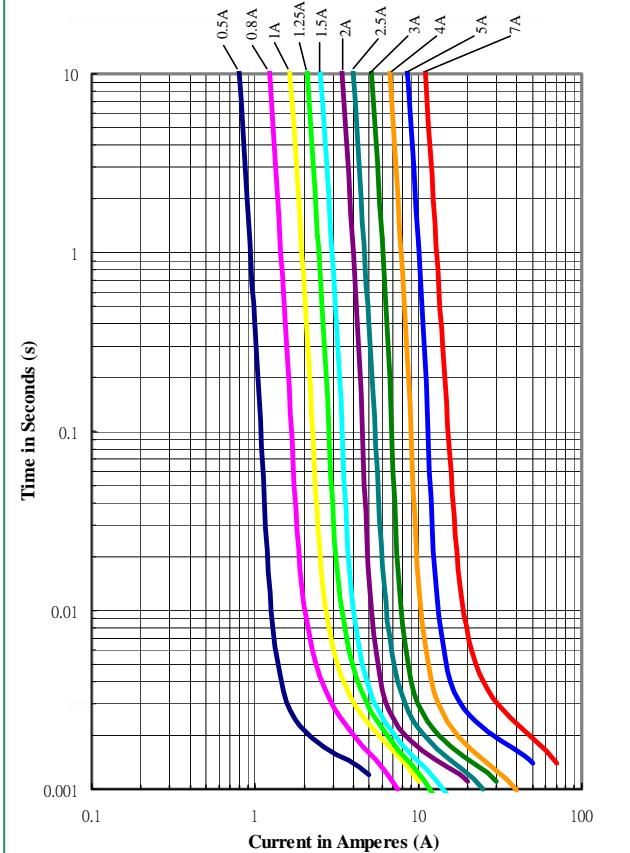
Terminal strength

10N; 10Sec
No mechanical damages

Temperature Rerating Curve

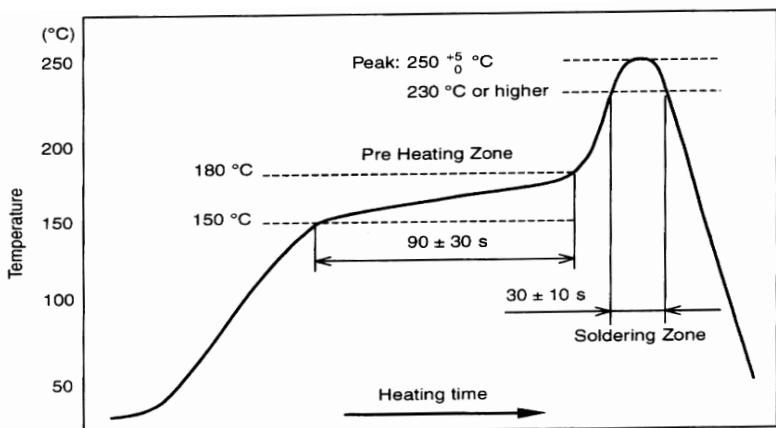


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $^{+5}_{-0}$ °C , 5 sec
 Pre – heat Zone : 150 to 180 °C , 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System



CF:High-surge
Enhanced
CFS: Fast acting
CP:Fast acting
CPS: Time-Lag



04:1.0x0.52mm
06:1.6x0.80mm
12:3.1x1.55mm



VA:125V
V6:63V
V5:50V
V3:32V



T:Paper Tape
1206/0603:5K
0402:10K



R50:0.50A
1R0:1.00A
1R50:1.50A
2R0:2.00A
2R50:2.50A
3R0:3.00A
5R0:5.00A
15R0:15.0A

Type CP06 RoHS



1.6mmx 0.80mm (0603)
Fast Acting Fuse Series



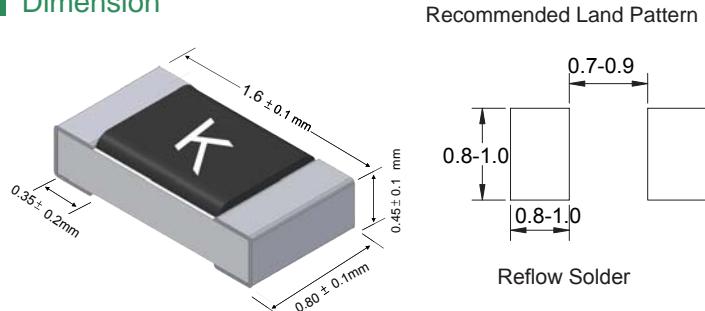
Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CP06V5TR50	F	0.50A	50V DC	0.385	0.0088
CP06V3TR63	I	0.63A		0.218	0.0145
CP06V3TR80	K	0.80A		0.161	0.0178
CP06V3T1R0	L	1.00A		0.125	0.0298
CP06V3T1R25	M	1.25A		0.085	0.0507
CP06V3T1R50	P	1.50A		0.066	0.0745
CP06V3T1R60	N	1.60A		0.063	0.0817
CP06V3T2R0	S	2.00A		0.045	0.1176
CP06V3T2R50	T	2.50A		0.036	0.1807
CP06V3T3R00	Z	3.00A		0.028	0.3517
CP06V3T3R15	U	3.15A		0.027	0.3805
CP06V3T4R0	W	4.00A		0.020	0.5746
CP06V3T5R0	Y	5.00A		0.016	0.7726
CP06V3T1R25					
CP06V3T1R50					
CP06V3T1R60					
CP06V3T2R0					
CP06V3T2R50					
CP06V3T3R00					
CP06V3T3R15					
CP06V3T4R0					
CP06V3T5R0					



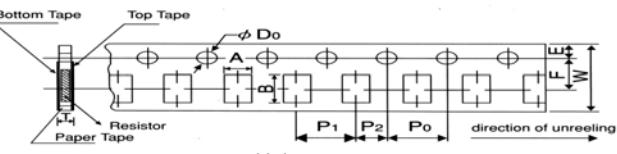
Dimension



Tape and Reel Specification

Unit : mm

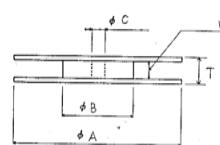
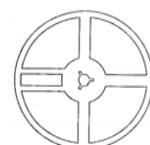
Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Criterion	1.1 ±0.1	1.9 ±0.1	8.0 ±0.2	3.5 ±0.05	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	4.0 ±0.1	+0.1 1.5 -0	0.64 ±0.1



Item	A	B	C	W	T
Criterion	178 ±2.0	60.0 ±1.0	13.0 ±1.0	9.0 ±1.0	11.4 ±2.0

Tape & Reel Quantity

5000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △ R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs
No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZdirection/2hrs
No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

Solder ability

245±5°C; 2±0.5 Sec
95% coverage minimum

Terminal strength

10N; 10Sec
No mechanical damages

Approval

UL Recognized 0.5A~5A

Electrical Characteristic

Rated current	1 In	2 In	3 In
	MIN	MAX	MAX
0.5A~5A	4hr	5sec	0.2 sec

Environmental Temperature at 25°C

Interrupting Rating

0.5A: 50 amperes at 50V DC

0.63A~5A : 50 amperes at 32V DC

Soldering Method

*Reflow Soldering : 260°C, 10Sec. max.

*Wave Soldering : 260°C, 10Sec. max.

*Hand Soldering : 350°C, 3Sec. max.

Material

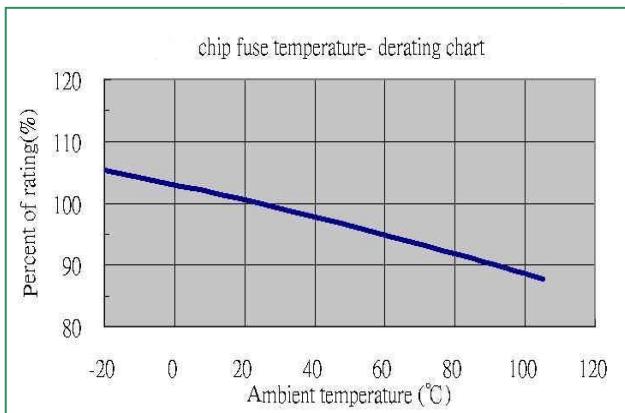
Construction Body Material: Ceramic

Termination Material:Tin(Sn)

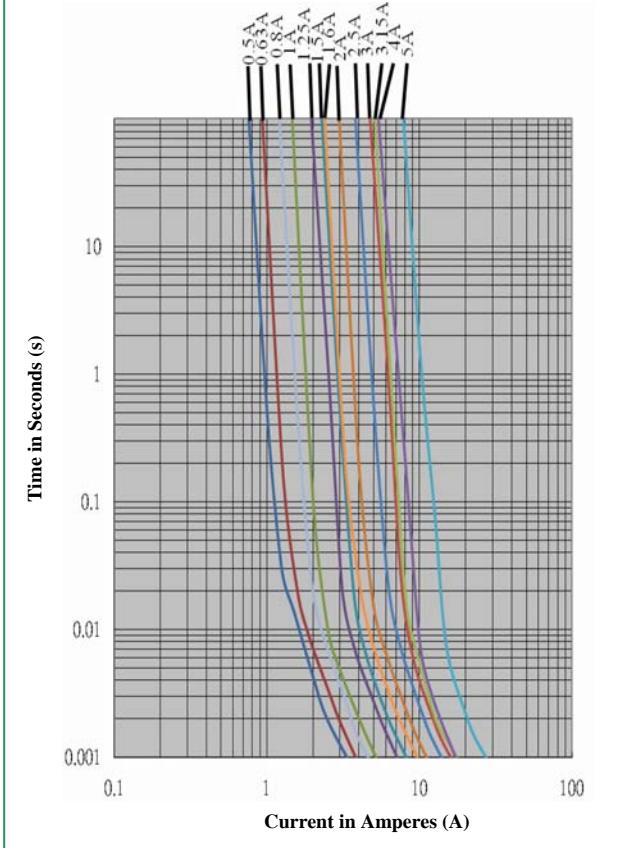
Fuse Element: Copper(Cu), Tin(Sn)

Cover coat: Epoxy

Temperature Rerating Curve

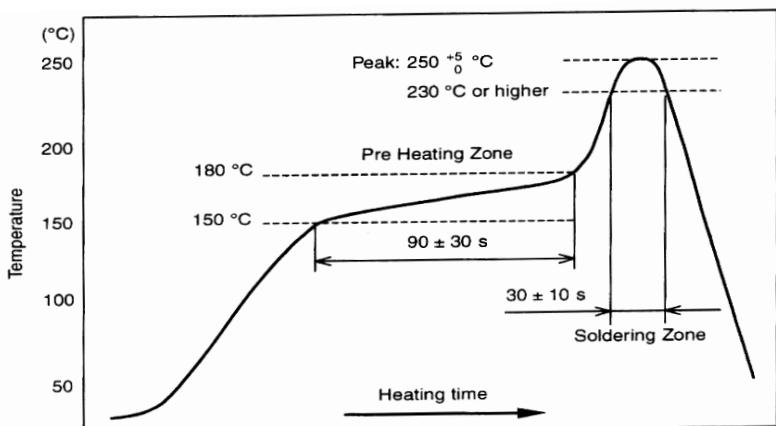


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $+5^{\circ}\text{C}$, 5 sec
 -0°C
 Pre – heat Zone : 150 to 180 °C, 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System

CP

CF:High-surge
Enhanced
CFS: Fast acting
CP:Fast acting
CPS: Time-Lag

04

04:1.0x0.52mm
06:1.6x0.80mm
12:3.1x1.55mm

V3

VA:125V
V6:63V
V5:50V
V3:32V

T

T:Paper Tape
1206/0603:5K
0402:10K

1R0

R50:0.50A
1R0:1.00A
1R50:1.50A
2R0:2.00A
2R50:2.50A
3R0:3.00A
5R0:5.00A
15R0:15.0A

Type CP04 RoHS



1.0mmx 0.52mm (0402)
Fast Acting Fuse Series



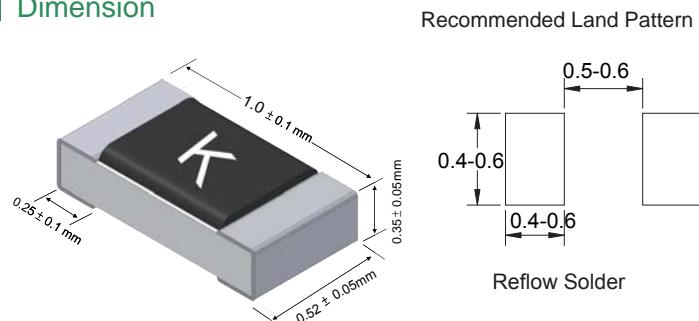
Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CP04V3TR50	F	0.50A	32V DC	0.385	0.0032
CP04V3TR80	K	0.80A		0.161	0.0053
CP04V3T1R0	L	1.00A		0.125	0.0072
CP04V3T1R25	M	1.25A		0.085	0.0134
CP04V3T1R50	P	1.50A		0.066	0.0135
CP04V3T1R60	N	1.60A		0.063	0.0167
CP04V3T2R0	S	2.00A		0.045	0.0198
CP04V3T2R50	T	2.50A		0.036	0.0376
CP04V3T3R00	3	3.00A		0.028	0.0542
CP04V3T3R15	U	3.15A		0.019	0.0630
CP04V3T4R0	W	4.00A		0.016	0.0896



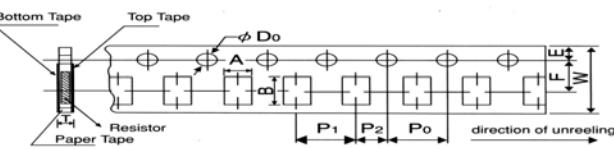
Dimension



Tape and Reel Specification

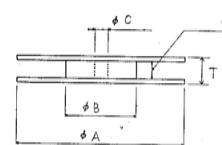
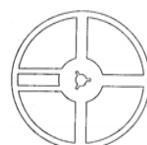
Unit : mm

Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Criterion	0.7 ±0.05	1.2 ±0.05	8.0 ±0.2	3.5 ±0.05	1.75 ±0.1	2.0 ±0.1	2.0 ±0.05	4.0 ±0.1	+0.1 1.5 -0	0.45 ±0.1



Tape & Reel Quantity

10000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △ R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs
No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZdirection/2hrs
No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

Solder ability

245±5°C; 2±0.5 Sec
95% coverage minimum

Terminal strength

10N; 10Sec
No mechanical damages

Approval

UL Recognized 0.5A~4A

Electrical Characteristic

Rated current	1 In	2 In	3 In
	MIN	MAX	MAX
0.5A~4A	4hr	5sec	0.2 sec

Environmental Temperature at 25°C

Interrupting Rating

0.5A~4A : 35 amperes at 32V DC

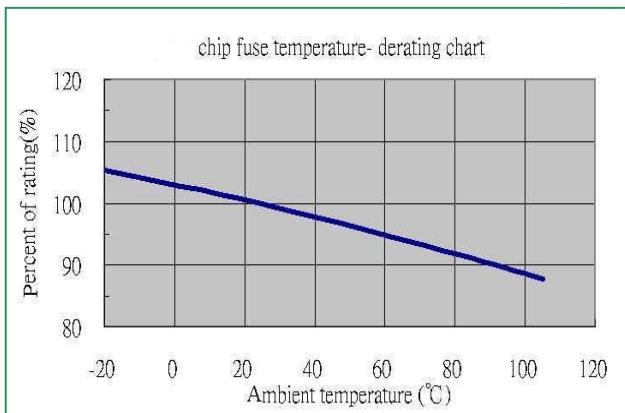
Soldering Method

*Reflow Soldering : 260°C, 10Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

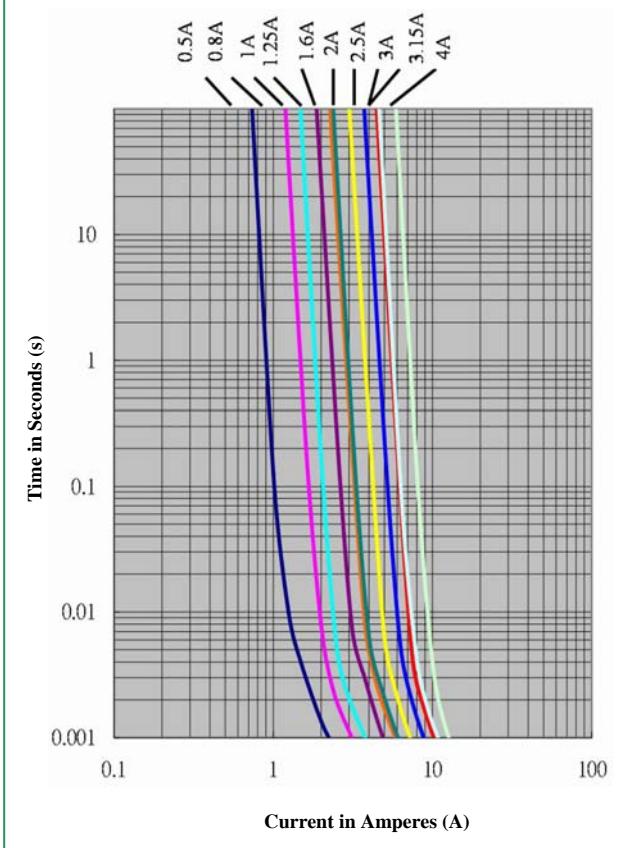
Material

Construction Body Material: Ceramic
Termination Material:Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)
Cover coat: Epoxy

Temperature Rerating Curve

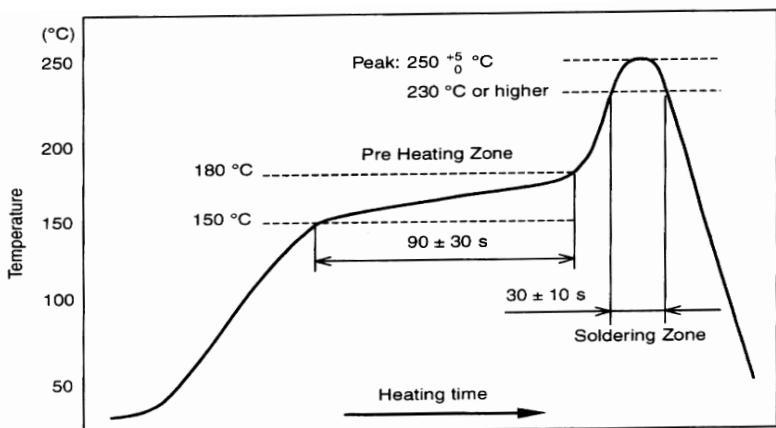


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $+5^{\circ}\text{C}$, 5 sec
 -0°C
 Pre – heat Zone : 150 to 180 $^{\circ}\text{C}$, 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System



CF:High-surge
Enhanced
CFS: Fast acting
CP:Fast acting
CPS: Time-Lag



04:1.0x0.52mm
06:1.6x0.80mm
12:3.1x1.55mm



VA:125V
V6:63V
V5:50V
V3:32V



T:Paper Tape
1206/0603:5K
0402:10K



R50:0.50A
1R0:1.00A
1R50:1.50A
2R0:2.00A
2R50:2.50A
3R0:3.00A
5R0:5.00A
15R0:15.0A

Type CPS12 RoHS



3.1mmx 1.55mm (1206)
Time-Lag Fuse Series



Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CPS12V6TR50	F	0.50A	63V DC	0.528	0.0270
CPS12V6TR80	K	0.80A		0.215	0.0720
CPS12V6T1R0	L	1.00A		0.149	0.1340
CPS12V6T1R25	M	1.25A		0.100	0.2330
CPS12V6T1R50	P	1.50A		0.071	0.3050
CPS12V6T2R0	S	2.00A		0.047	0.5090
CPS12V3T2R50	T	2.50A	32V DC	0.039	0.7770
CPS12V3T3R00	3	3.00A		0.028	1.2850
CPS12V3T4R0	W	4.00A		0.019	2.5360
CPS12V3T5R0	Y	5.00A		0.015	5.5100
CPS12V3T7R0	Z	7.00A		0.010	10.170

Approval

UL Recognized 0.5A~7A

Electrical Characteristic

Rated current	1 In	2 In	3 In
	MIN	MAX	MAX
0.5A~7A	4hr	120sec	0.2 sec

Environmental Temperature at 25°C

Interrupting Rating

0.5A~2A : 50 amperes at 63V DC
2.5A~7A : 50 amperes at 32V DC

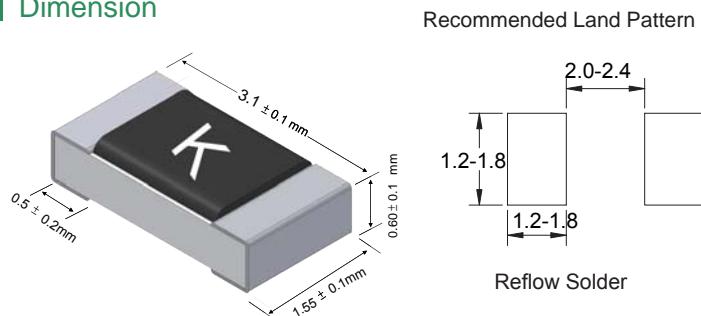
Soldering Method

*Reflow Soldering : 260°C, 10Sec. max.
*Wave Soldering : 260°C, 10Sec. max.
*Hand Soldering : 350°C, 3Sec. max.

Material

Construction Body Material: Ceramic
Termination Material: Tin(Sn)
Fuse Element: Copper(Cu), Tin(Sn)
Cover coat: Epoxy

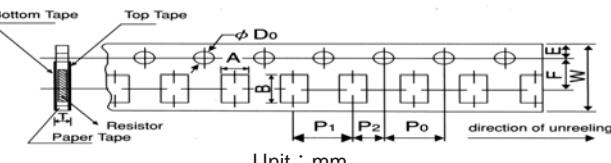
Dimension



Tape and Reel Specification

Unit : mm

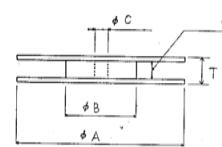
Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Criterion	2.0 ± 0.15	3.6 ± 0.2	8.0 ± 0.2	3.5 ± 0.05	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	4.0 ± 0.1	+0.1 1.5 -0	0.84 ± 0.1



Item	A	B	C	W	T
Criterion	178 ± 2.0	60.0 ± 1.0	13.0 ± 1.0	9.0 ± 1.0	11.4 ± 2.0

Tape & Reel Quantity

5000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △ R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs
No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZdirection/2hrs
No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

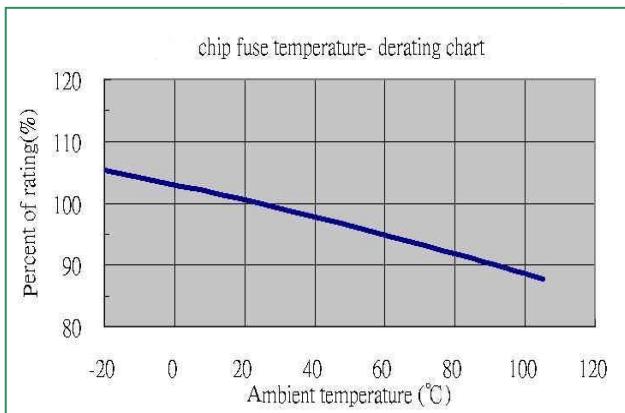
Solder ability

245±5°C; 2±0.5 Sec
95% coverage minimum

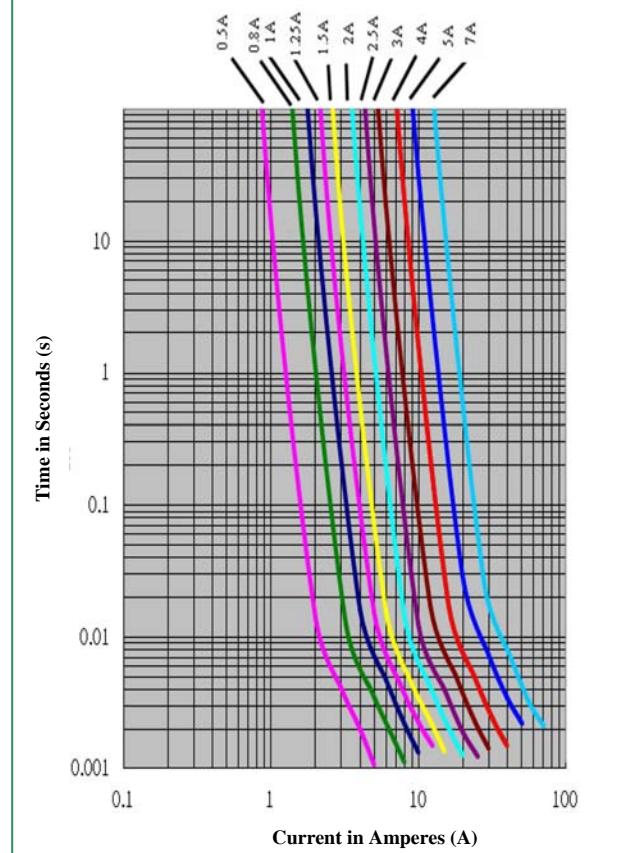
Terminal strength

10N; 10Sec
No mechanical damages

Temperature Rerating Curve

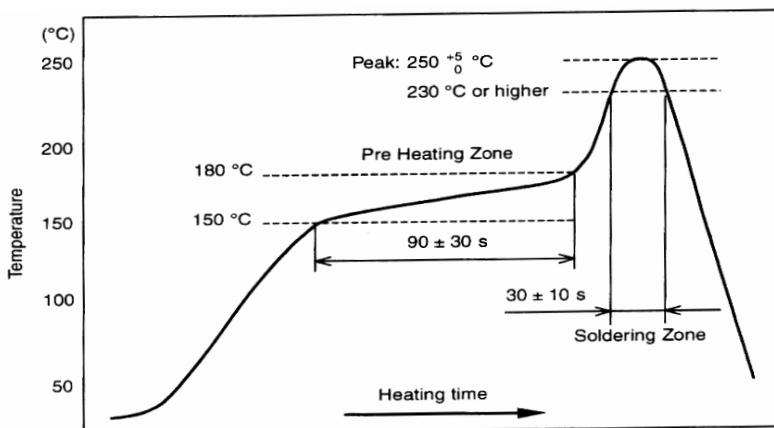


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $+5^{\circ}\text{C}$, 5 sec
 -0°C
 Pre – heat Zone : 150 to 180 $^{\circ}\text{C}$, 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System

CPS

12

V3

T

1R0

CF:High-surge

04:1.0x0.52mm

VA:125V

T:Paper Tape

R50:0.50A

Enhanced

06:1.6x0.80mm

V6:63V

1206/0603:5K

1R0:1.00A

CFS: Fast acting

12:3.1x1.55mm

V5:50V

0402:10K

1R50:1.50A

CP:Fast acting

V3:32V

2R0:2.00A

CPS: Time-Lag

2R50:2.50A

3R0:3.00A

5R0:5.00A

15R0:15.0A

Type CPS06 RoHS



1.6mmx 0.80mm (0603)
Time-Lag Fuse Series



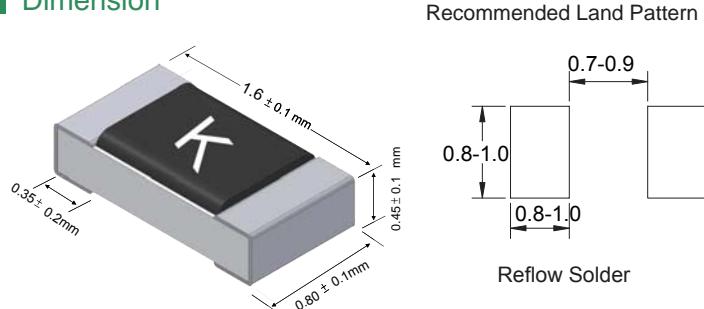
Feature

All high-density boards
100% lead-free RoHS and REACH compliant
Low internal resistance
Operating temperature range: -40°C to +125°C
Small portable devices, mobile phone, PDA etc.
Digital products
Game equipment
LCD/LED monitors & modules (Backlight inverter)
Battery package
Auto Electronics

Catalog Number	Marking	Ampere Rating [In]	Voltage Rating (V)	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
CPS06V5TR50	F	0.50A	50V DC 32V DC	0.264	0.0090
CPS06V3TR63	I	0.63A		0.200	0.0140
CPS06V3TR80	K	0.80A		0.143	0.0230
CPS06V3T1R0	L	1.00A		0.083	0.0360
CPS06V3T1R25	M	1.25A		0.054	0.0560
CPS06V3T1R50	P	1.50A		0.042	0.0810
CPS06V3T1R60	N	1.60A		0.040	0.0920
CPS06V3T2R0	S	2.00A		0.028	0.1450
CPS06V3T2R50	T	2.50A		0.022	0.2290
CPS06V3T3R00	3	3.00A		0.018	0.3320
CPS06V3T3R15	U	3.15A		0.016	0.3650
CPS06V3T4R0	W	4.00A		0.013	0.5740
CPS06V3T5R0	Y	5.00A		0.009	0.9270
CPS06V3T6R0	6	6.00A		0.006	1.8600



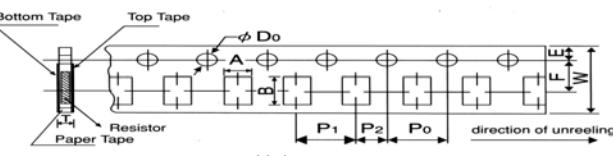
Dimension



Tape and Reel Specification

Unit : mm

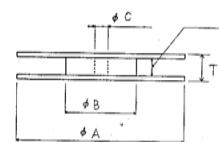
Item	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Criterion	1.1 ±0.1	1.9 ±0.1	8.0 ±0.2	3.5 ±0.05	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	4.0 ±0.1	+0.1 1.5 -0	0.64 ±0.1



Item	A	B	C	W	T
Criterion	178 ±2.0	60.0 ±1.0	13.0 ±1.0	9.0 ±1.0	11.4 ±2.0

Tape & Reel Quantity

5000 pcs/reel



Environmental Specification

Thermal Shock

10cycles of -40°C to +125°C △ R<10%

Humidity

85±3°C; 85±5%RH; 1000Hrs
No mechanical damages

Vibration

With 10-55-10Hz/min; 1.5mm; XYZdirection/2hrs
No mechanical damages

Insulation Resistance

10,000 ohms or more after opening

Resistance to soldering heat

260±5°C; 10±1 Sec

No mechanical damages

Solder ability

245±5°C; 2±0.5 Sec

95% coverage minimum

Terminal strength

10N; 10Sec

No mechanical damages

Approval

UL Recognized 0.5A~6A

Electrical Characteristic

Rated current	1 In	2 In	3 In
	MIN	MAX	MAX
0.5A~6A	4hr	120sec	0.2 sec

Environmental Temperature at 25°C

Interrupting Rating

0.5A : 50 amperes at 50V DC

0.63A~6A : 50 amperes at 32V DC

Soldering Method

*Reflow Soldering : 260°C, 10Sec. max.

*Wave Soldering : 260°C, 10Sec. max.

*Hand Soldering : 350°C, 3Sec. max.

Material

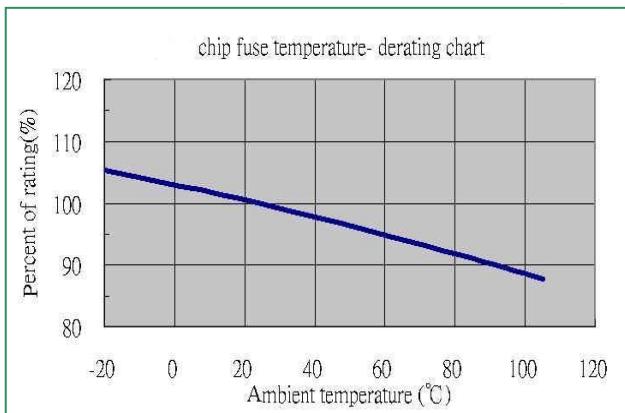
Construction Body Material: Ceramic

Termination Material:Tin(Sn)

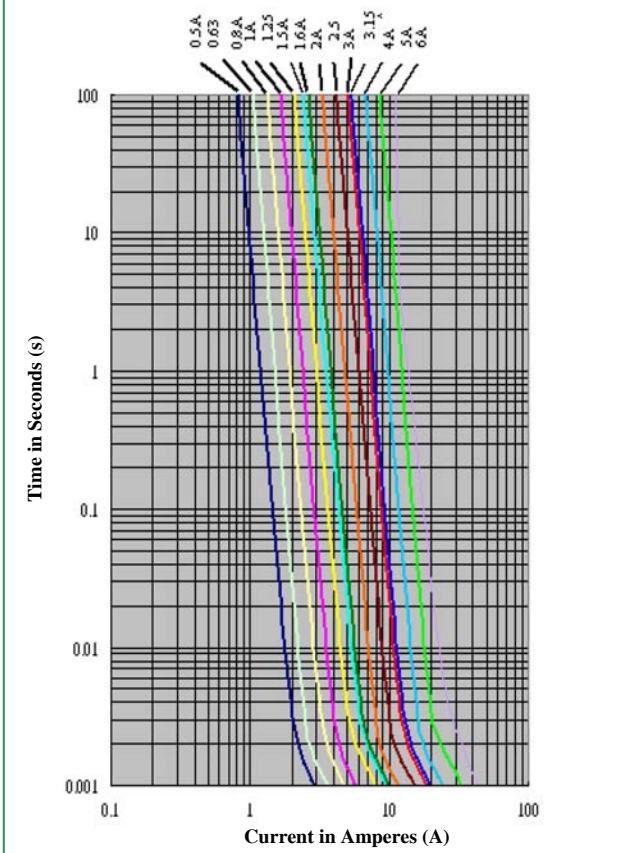
Fuse Element: Copper(Cu), Tin(Sn)

Cover coat: Epoxy

Temperature Rerating Curve

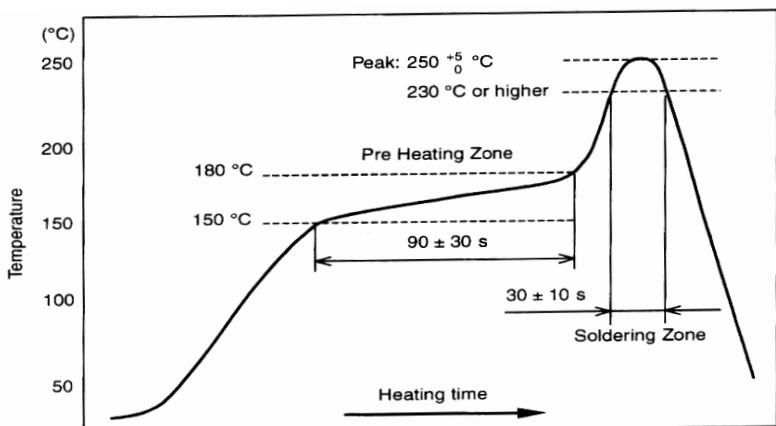


Average Time Current Curves



Soldering Parameters

Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 $+5^{\circ}\text{C}$, 5 sec
 -0°C
 Pre – heat Zone : 150 to 180 $^{\circ}\text{C}$, 90±30 sec
 Soldering Zone : 230°C or higher , 30±10 sec

Part Numbering System

CPS

CF:High-surge
Enhanced
CFS: Fast acting
CP:Fast acting
CPS: Time-Lag

12

04:1.0x0.52mm
06:1.6x0.80mm
12:3.1x1.55mm

V3

VA:125V
V6:63V
V5:50V
V3:32V

T

T:Paper Tape
1206/0603:5K
0402:10K

1R0

R50:0.50A
1R0:1.00A
1R50:1.50A
2R0:2.00A
2R50:2.50A
3R0:3.00A
5R0:5.00A
15R0:15.0A

PPTC SMD2920

RoHS



7.5mmx 5.5mm (2920)
Surface Mountable PTC Resettable Fuse



Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.2920 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- d.Operation Current: 0.30A~3.00A
- e.Maximum Voltage: 6V~60V DC
- f.Temperature Range: -45°C to +85°C



Material

Terminal Pad material: Pure Tin
Soldering Characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

Approval

UL Recognized 0.3A~3A
TUV 0.3A~3A

Tape & Reel Quantity

2000 pcs/reel

Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A	P _d , W	A	Sec	R _{MIN}	R _{1MAX}
SMD030-2920-R	0.30	0.60	60	100	1.5	1.5	3.0	1.000	4.800
SMD050-2920-R	0.50	1.00	60	100	1.5	2.5	4.0	0.300	1.400
SMD075-2920-R	0.75	1.50	33	100	1.5	8.0	0.3	0.180	1.000
SMD075-60-2920-R	0.75	1.50	60	10	1.5	8.0	0.3	0.180	1.000
SMD100-2920-R	1.10	2.20	33	100	1.5	8.0	0.5	0.090	0.410
SMD125-2920-R	1.25	2.50	33	100	1.5	8.0	2.0	0.050	0.250
SMD150-2920-R	1.50	3.00	33	40	1.5	8.0	2.0	0.050	0.230
SMD185-2920-R	1.85	3.70	33	40	1.5	8.0	2.5	0.040	0.150
SMD200-2920-R	2.00	4.00	16	100	1.5	8.0	4.5	0.035	0.120
SMD200-24-2920-R	2.00	4.00	24	40	1.5	8.0	5.0	0.035	0.120
SMD250-2920-R	2.50	5.00	16	100	1.5	8.0	16.0	0.025	0.085
SMD260-2920-R	2.60	5.20	6	100	1.5	8.0	20.0	0.020	0.075
SMD300-2920-R	3.00	5.20	6	100	1.5	8.0	25.0	0.010	0.048
SMD300-15-2920R	3.00	5.20	15	40	1.5	8.0	25.0	0.010	0.048

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I_{MAX})

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V MAX).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

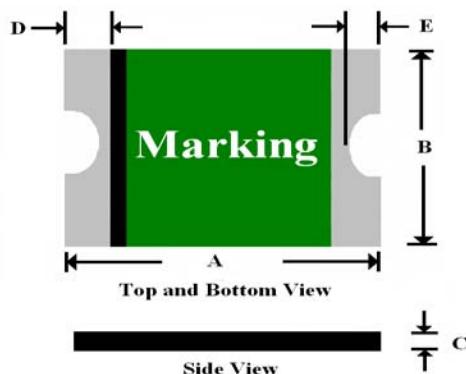
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

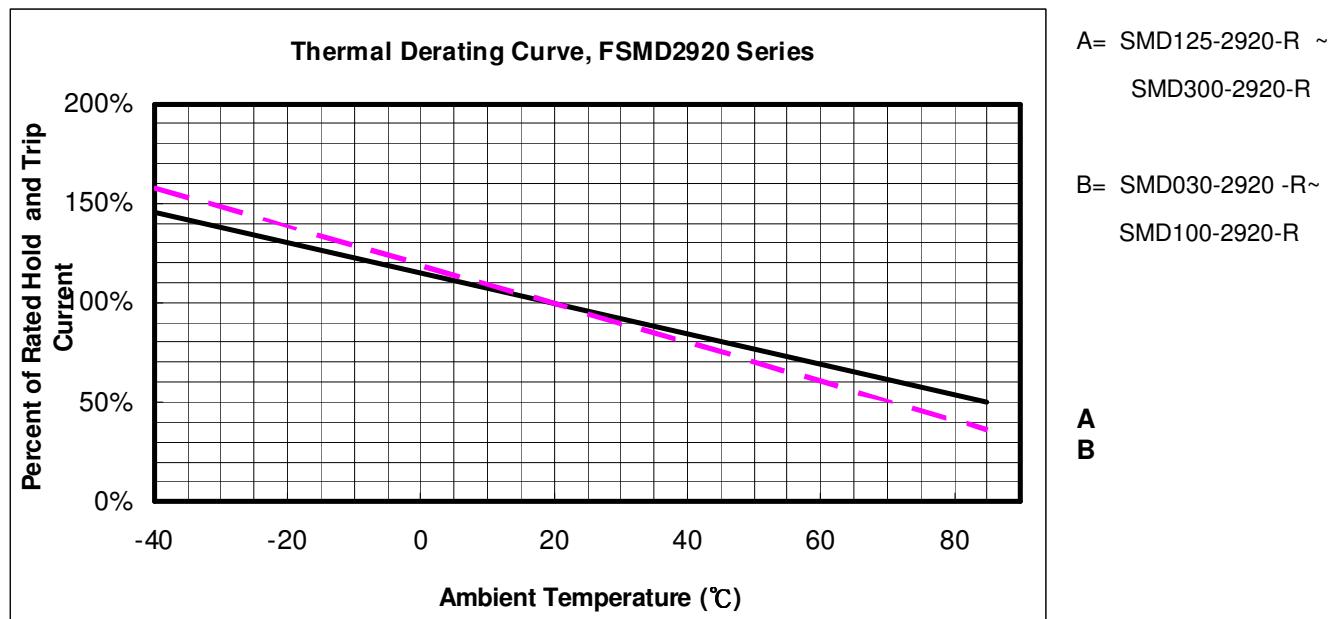
Termination pad materials : Pure Tin

Dimensions



Part Number	A		B		C		D		E	
	Min	Max								
SMD030-2920-R	6.73	7.98	4.80	5.44	0.60	1.15	0.50	1.20	0.50	0.90
SMD050-2920-R	6.73	7.98	4.80	5.44	0.60	1.15	0.50	1.20	0.50	0.90
SMD075-2920-R	6.73	7.98	4.80	5.44	0.40	1.15	0.50	1.20	0.50	0.90
SMD075-60-2920-R	6.73	7.98	4.80	5.44	0.60	1.15	0.50	1.20	0.50	0.90
SMD100-2920-R	6.73	7.98	4.80	5.44	0.40	1.00	0.50	1.20	0.50	0.90
SMD125-2920-R	6.73	7.98	4.80	5.44	0.40	0.90	0.50	1.20	0.50	0.90
SMD150-2920-R	6.73	7.98	4.80	5.44	0.40	0.90	0.50	1.20	0.50	0.90
SMD185-2920-R	6.73	7.98	4.80	5.44	0.30	0.90	0.50	1.20	0.50	0.90
SMD200-2920-R	6.73	7.98	4.80	5.44	0.30	0.90	0.50	1.20	0.50	0.90
SMD200-24-2920-R	6.73	7.98	4.80	5.44	0.20	0.80	0.50	1.20	0.50	0.90
SMD250-2920-R	6.73	7.98	4.80	5.44	0.30	0.90	0.50	1.20	0.50	0.90
SMD260-2920-R	6.73	7.98	4.80	5.44	0.30	0.90	0.50	1.20	0.50	0.90
SMD300-2920-R	6.73	7.98	4.80	5.44	0.40	0.90	0.50	1.20	0.50	0.90
SMD300-15-2920R	6.73	7.98	4.80	5.44	0.65	1.15	0.50	1.20	0.50	0.90

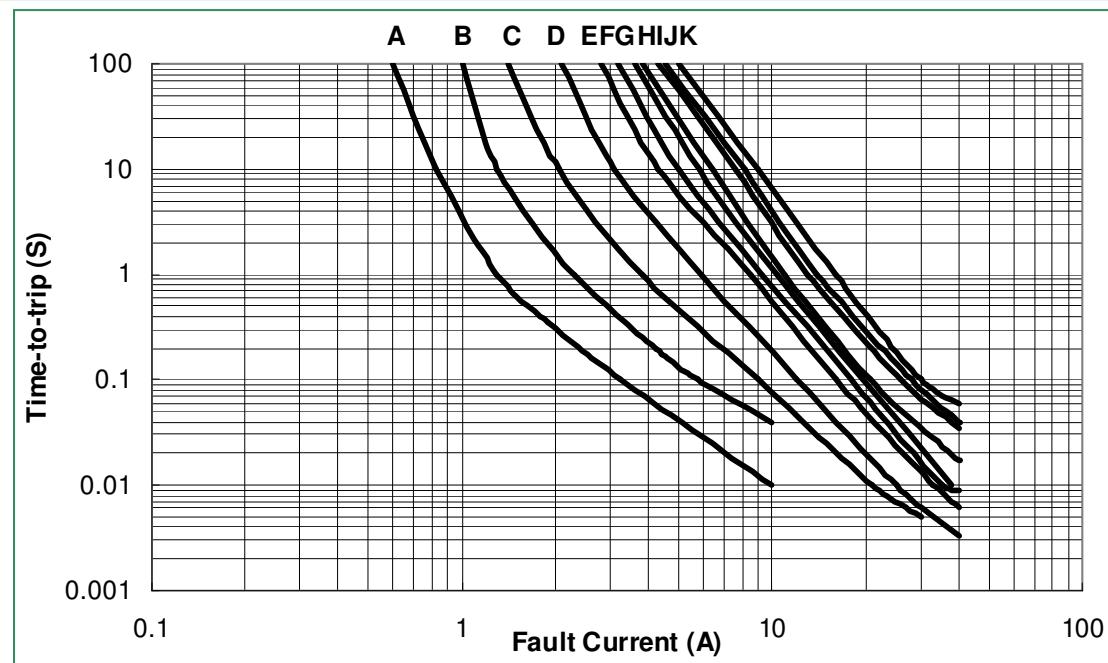
Thermal Derating Curve



NOTE : Specification subject to change without notice.

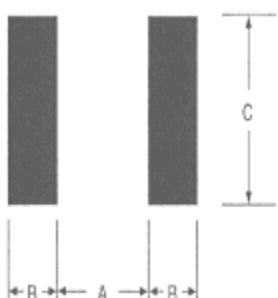
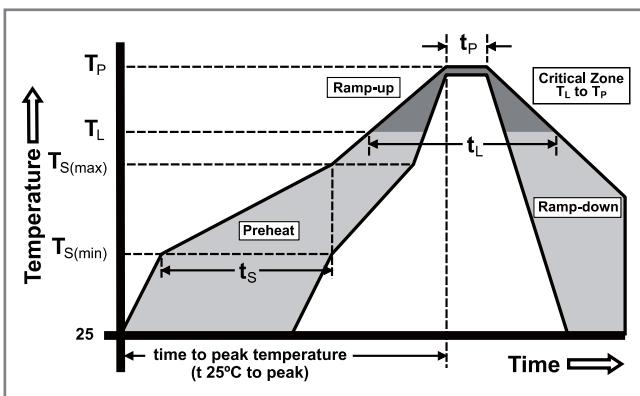
Average Time Current Curves

- A = SMD030-2920-R**
- B = SMD050-2920-R**
- C = SMD075-2920-R/075-60-2920-R**
- D = SMD100-2920-R**
- E = SMD125-2920-R**
- F = SMD150-2920-R**
- G = SMD185-2920-R**
- H = SMD200-2920-R/200-24-2920-R**
- I = SMD250-2920-R**
- J = SMD260-2920-R**
- K = SMD300-2920-R/300-15-2920R**



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3 °C/second max.
Reflow	$T_{s(max)}$ to T_L - Ramp-up Rate	5 °C/second max.
	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
	Peak Temperature (T_p)	260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Unit : mm

	A	B	C
2920	5.10	2.30	5.60

Part Numbering System

SMD 100 — 24 — 2920 — R

AMP Code _____
Refer to Electrical Characteristics table
Voltage Rating _____

PPTC SMD1812



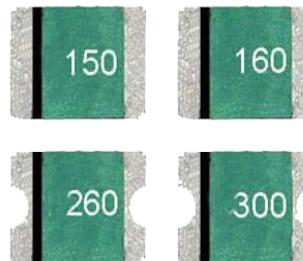
4.5mmx3.2mm (1812)
Surface Mountable PTC Resettable Fuse



Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.1812 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- d.Operation Current: 0.10A~3.00A
- e.Maximum Voltage: 6V~60V DC
- f.Temperature Range: -45°C to +85°C

Electrical Characteristics(23°C)



Material

Terminal Pad material: Pure Tin
Soldering Characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

Approval

UL Recognized 0.2A~3A
TUV 0.75A~3A

 Tape & Reel Quantity 2000 pcs/reel * 1500 pcs/reel

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A		Amp	Sec	R _{MIN}	R _{1MAX}
SMD010-R	0.10	0.30	60	100	0.8	8.0	0.020	1.600	15.00
SMD014-R	0.14	0.30	60	100	0.8	8.0	0.008	1.200	6.500
SMD020-R	0.20	0.40	30	100	0.8	8.0	0.020	0.800	5.000
SMD020-60-R	0.20	0.40	60	40	0.8	8.0	0.020	0.800	5.000
SMD030-R	0.30	0.60	30	40	0.8	8.0	0.100	0.200	1.750
SMD035-R	0.35	0.70	16	40	0.8	8.0	0.100	0.320	1.500
SMD035-30-R	0.35	0.70	30	40	0.8	8.0	0.10	0.320	1.500
SMD050-R	0.50	1.00	16	100	0.8	8.0	0.150	0.150	1.000
SMD050-30-R	0.50	1.00	30	100	0.8	8.0	0.150	0.150	1.000
SMD075-R	0.75	1.50	16	100	0.8	8.0	0.200	0.110	0.450
SMD075-24R*	0.75	1.50	24	40	1.0	8.0	0.200	0.110	0.290
SMD075-33R*	0.75	1.50	33	40	1.0	8.0	0.200	0.110	0.400
SMD110-R	1.10	2.20	8	100	0.8	8.0	0.300	0.040	0.210
SMD110-16-R	1.10	2.20	16	100	0.8	8.0	0.500	0.040	0.180
SMD110-24R*	1.10	2.20	24	100	1.0	8.0	0.500	0.060	0.200
SMD125-R	1.25	2.50	6	100	0.8	8.0	0.400	0.050	0.140
SMD125-16R	1.25	2.50	16	100	0.8	8.0	0.400	0.050	0.140
SMD150-R	1.50	3.00	8	100	0.8	8.0	0.500	0.040	0.110
SMD150-12R	1.50	3.00	12	100	1.0	8.0	0.500	0.040	0.110
SMD150-24R	1.50	3.00	24	100	1.0	8.0	1.500	0.040	0.120
SMD160-R	1.60	3.20	8	100	0.8	8.0	0.500	0.030	0.100
SMD160-12R	1.60	3.20	12	100	1.0	8.0	1.000	0.030	0.100
SMD160-16R	1.60	3.20	16	100	1.0	8.0	1.000	0.030	0.100
SMD200R	2.00	3.50	8	100	1.0	8.0	2.000	0.020	0.070
SMD260R	2.60	5.00	6	100	1.0	8.0	2.500	0.015	0.047
SMD260-13R*	2.60	5.00	13.2	100	1.3	8.0	5.000	0.015	0.050
SMD260-16R*	2.60	5.00	16	100	1.3	8.0	5.000	0.015	0.050
SMD300R*	3.00	5.00	6	100	1.0	8.0	4.000	0.012	0.040

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I_{MAX})

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V MAX).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

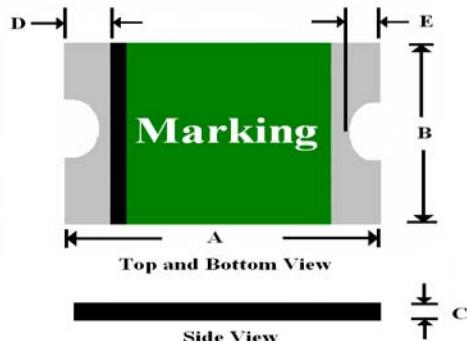
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

Termination pad materials : Pure Tin

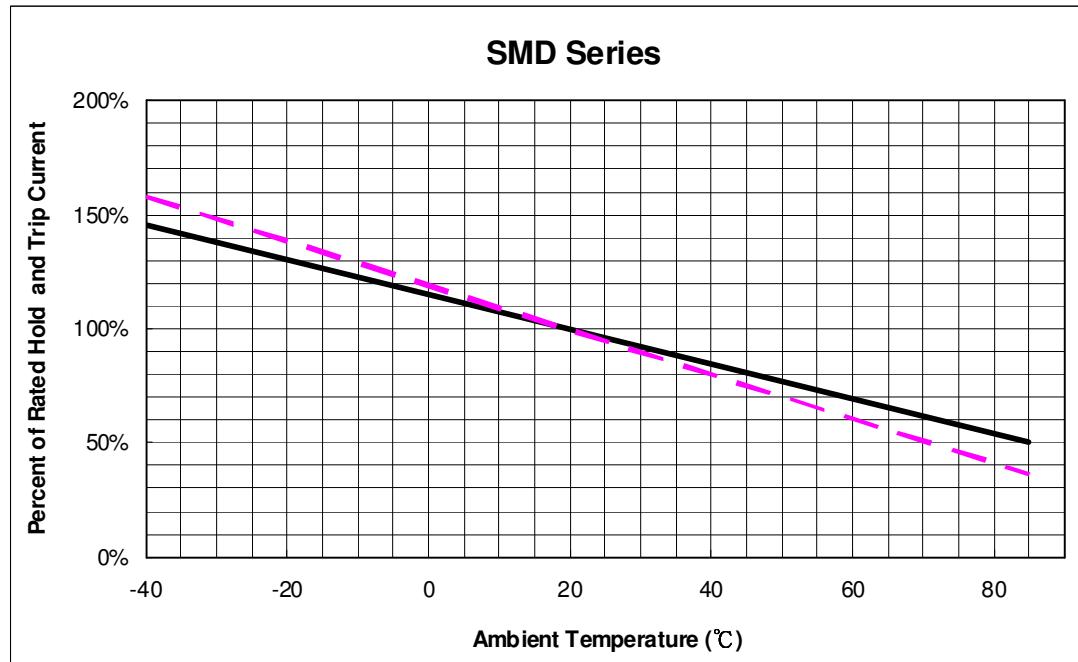
Dimensions



Part Number	A		B		C		D		E	
	Min	Max								
SMD010-R	4.37	4.73	3.07	3.41	0.60	0.90	0.30	0.95	0.25	0.65
SMD014-R	4.37	4.73	3.07	3.41	0.60	0.90	0.30	0.95	0.25	0.65
SMD020-R	4.37	4.73	3.07	3.41	0.60	0.90	0.30	0.95	0.25	0.65
SMD020-60-R	4.37	4.73	3.07	3.41	0.60	0.90	0.30	0.95	0.25	0.65
SMD030-R	4.37	4.73	3.07	3.41	0.40	0.70	0.30	0.95	0.25	0.65
SMD035-R	4.37	4.73	3.07	3.41	0.40	0.70	0.30	0.95	0.25	0.65
SMD035-30-R	4.37	4.73	3.07	3.41	0.40	0.70	0.30	0.95	0.25	0.65
SMD050-R	4.37	4.73	3.07	3.41	0.35	0.65	0.30	0.95	0.25	0.65
SMD050-30-R	4.37	4.73	3.07	3.41	0.45	0.75	0.30	0.95	0.25	0.65
SMD075-R	4.37	4.73	3.07	3.41	0.35	0.65	0.30	0.95	0.25	0.65
SMD075-24R	4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65
SMD075-33R	4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65
SMD110-R	4.37	4.73	3.07	3.41	0.25	0.55	0.30	0.95	0.25	0.65
SMD110-16-R	4.37	4.73	3.07	3.41	0.25	0.90	0.30	0.95	0.25	0.65
SMD110-24R	4.37	4.73	3.07	3.41	0.80	1.30	0.25	0.95	0.25	0.65
SMD125-R	4.37	4.73	3.07	3.41	0.25	0.55	0.30	0.95	0.25	0.65
SMD125-16R	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.95	0.25	0.65
SMD150-R	4.37	4.73	3.07	3.41	0.25	0.55	0.30	0.95	0.25	0.65
SMD150-12R	4.37	4.73	3.07	3.41	0.60	1.10	0.25	0.95	0.25	0.65
SMD150-24R	4.37	4.73	3.07	3.41	0.60	1.55	0.25	0.95	0.25	0.65
SMD160-R	4.37	4.73	3.07	3.41	0.25	0.90	0.30	0.95	0.25	0.65
SMD160-12R	4.37	4.73	3.07	3.41	0.60	1.35	0.25	0.95	0.25	0.65
SMD160-16R	4.37	4.73	3.07	3.41	0.60	1.35	0.25	0.95	0.25	0.65
SMD200R	4.37	4.73	3.07	3.41	0.55	1.20	0.25	0.95	0.25	0.65
SMD260R	4.37	4.73	3.07	3.41	0.55	1.20	0.25	0.95	0.25	0.65
SMD260-13R	4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65
SMD260-16R	4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65
SMD300R	4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65

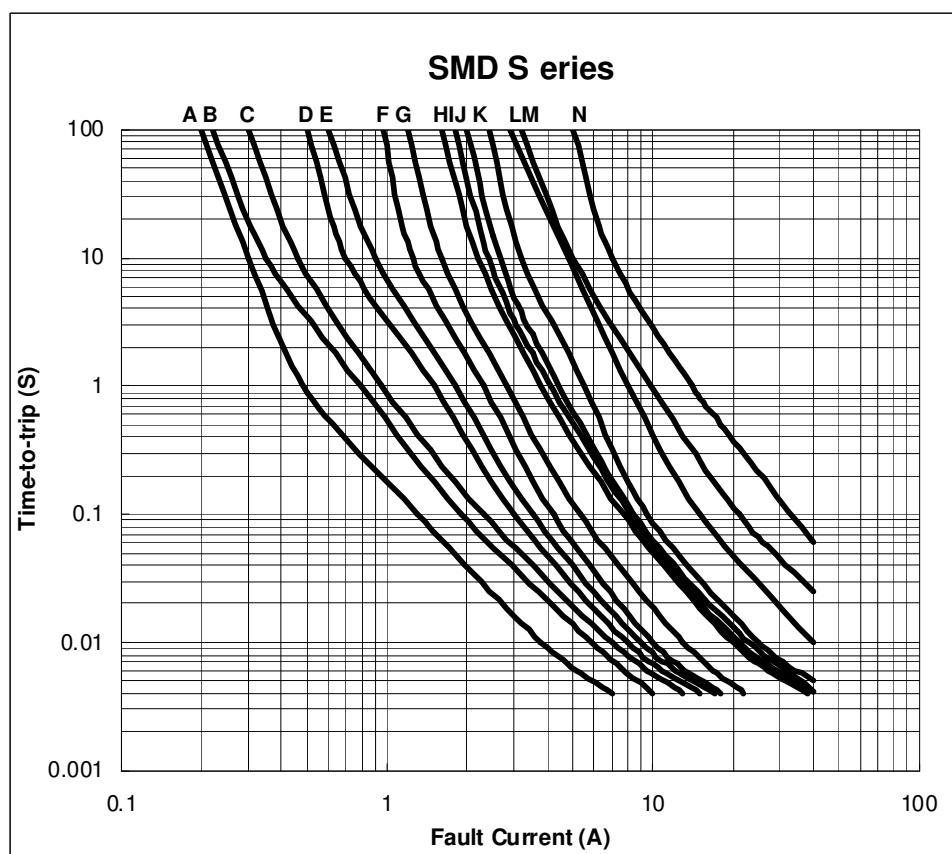
NOTE : Specification subject to change without notice.

Thermal Derating Curve



Average Time Current Curves

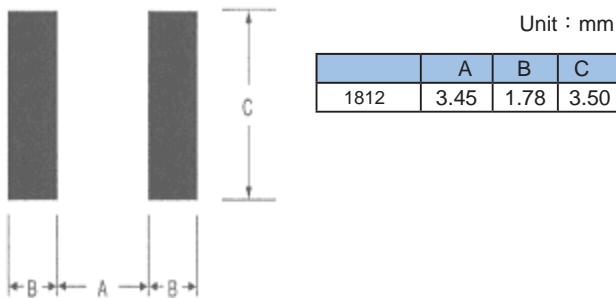
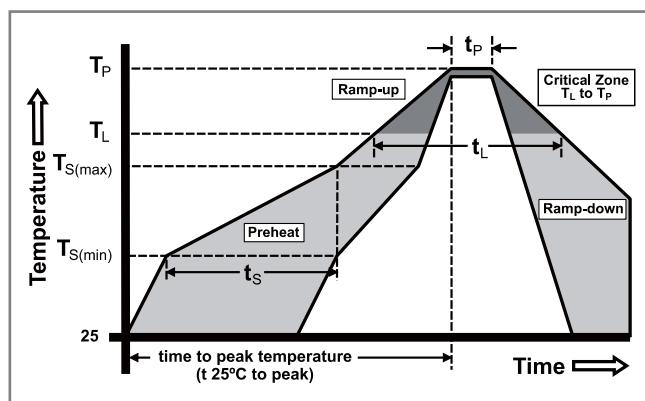
- A =** SMD010-R
- B =** SMD014-R
- C =** SMD020-R / 020-60-R
- D =** SMD030-R
- E =** SMD035-R / 035-30-R
- F =** SMD050-R / 050-30-R
- G =** SMD075-R / 075-24R / 075-33R
- H =** SMD110-R / 110-16-R / 110-24R
- I =** SMD125-R / 125-16R
- J =** SMD150-R / 150-12R / 150-24R
- K =** SMD160-R / 160-12R / 160-16R
- L =** SMD200R
- M =** SMD260R / 260-13R / 260-16R
- N =** SMD300R



NOTE : Specification subject to change without notice.

Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_p)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Part Numbering System

SMD 100 — 24 — R

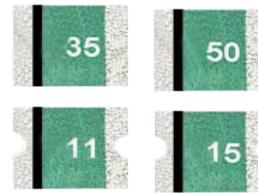
AMP Code _____
Refer to Electrical
Characteristics table

Voltage Rating _____

PPTC SMD1210



3.2mmx 2.5mm (1210)
Surface Mountable PTC Resettable Fuse



Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.1210 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- Lower resistance than standard SMD devices.
- d.Operation Current: 0.05A~2.00A
- e.Maximum Voltage: 6V~60V DC
- f.Temperature Range: -45°C to +85°C

Material

Terminal Pad material: Pure Tin
Soldering Characteristics: Meets EIA specification RS 186-9E,
ANSI/J-std-002 Category 3

Approval

UL Recognized 0.05A~2A
TUV 0.05A~2A

 Tape & Reel Quantity 3000 pcs/reel * 4000 pcs/reel

Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , VDC			A	Sec	R _{MIN}	R _{1MAX}
SMD005-1210-R	0.05	0.15	60	10	0.60	0.25	3.00	3.600	50.000
SMD010-1210-R	0.10	0.25	60	10	0.60	0.50	1.50	1.600	15.000
SMD020-1210-R	0.20	0.40	30	10	0.60	8.00	0.02	0.800	5.000
SMD035-1210-R*	0.35	0.70	16	100	0.60	8.00	0.20	0.320	1.300
SMD050-1210-R *	0.50	1.00	16	100	0.60	8.00	0.10	0.250	0.900
SMD075-1210-R *	0.75	1.50	8	100	0.60	8.00	0.10	0.130	0.400
SMD075-24-1210R	0.75	1.50	24	100	0.60	8.00	0.10	0.130	0.400
SMD110-1210R	1.10	2.20	6	100	0.80	8.00	0.30	0.060	0.210
SMD150-1210R	1.50	3.00	6	100	0.80	8.00	0.50	0.040	0.110
SMD175-1210R	1.75	4.00	6	100	0.80	8.00	0.60	0.020	0.080
SMD200-1210R	2.00	4.00	6	100	0.80	8.00	1.00	0.015	0.070

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I MAX)

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V MAX).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

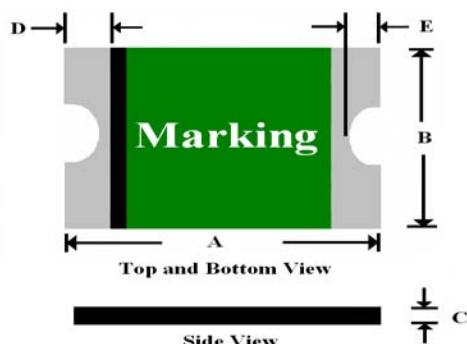
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

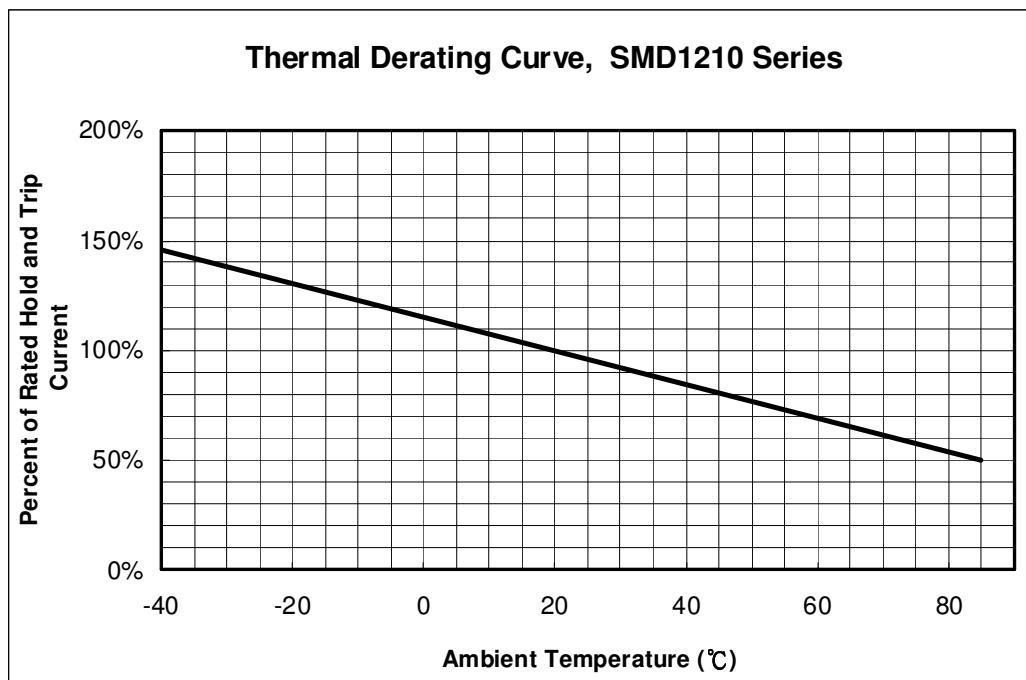
Termination pad materials : Pure Tin

Dimensions



Part Number	A		B		C		D		E	
	Min	Max								
SMD005-1210-R	3.00	3.43	2.35	2.80	0.60	1.15	0.25	0.75	0.10	0.45
SMD010-1210-R	3.00	3.43	2.35	2.80	0.60	1.15	0.25	0.75	0.10	0.45
SMD020-1210-R	3.00	3.43	2.35	2.80	0.40	0.85	0.25	0.75	0.10	0.45
SMD035-1210-R	3.00	3.43	2.35	2.80	0.40	0.80	0.25	0.75	0.10	0.45
SMD050-1210-R	3.00	3.43	2.35	2.80	0.30	0.75	0.25	0.75	0.10	0.45
SMD075-1210-R	3.00	3.43	2.35	2.80	0.30	0.70	0.25	0.75	0.10	0.45
SMD075-24-1210R	3.00	3.43	2.35	2.80	0.90	1.30	0.25	0.75	0.10	0.45
SMD110-1210R	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
SMD150-1210R	3.00	3.43	2.35	2.80	0.50	0.90	0.25	0.75	0.10	0.45
SMD175-1210R	3.00	3.43	2.35	2.80	0.80	1.40	0.25	0.75	0.10	0.45
SMD200-1210R	3.00	3.43	2.35	2.80	0.80	1.40	0.25	0.75	0.10	0.45

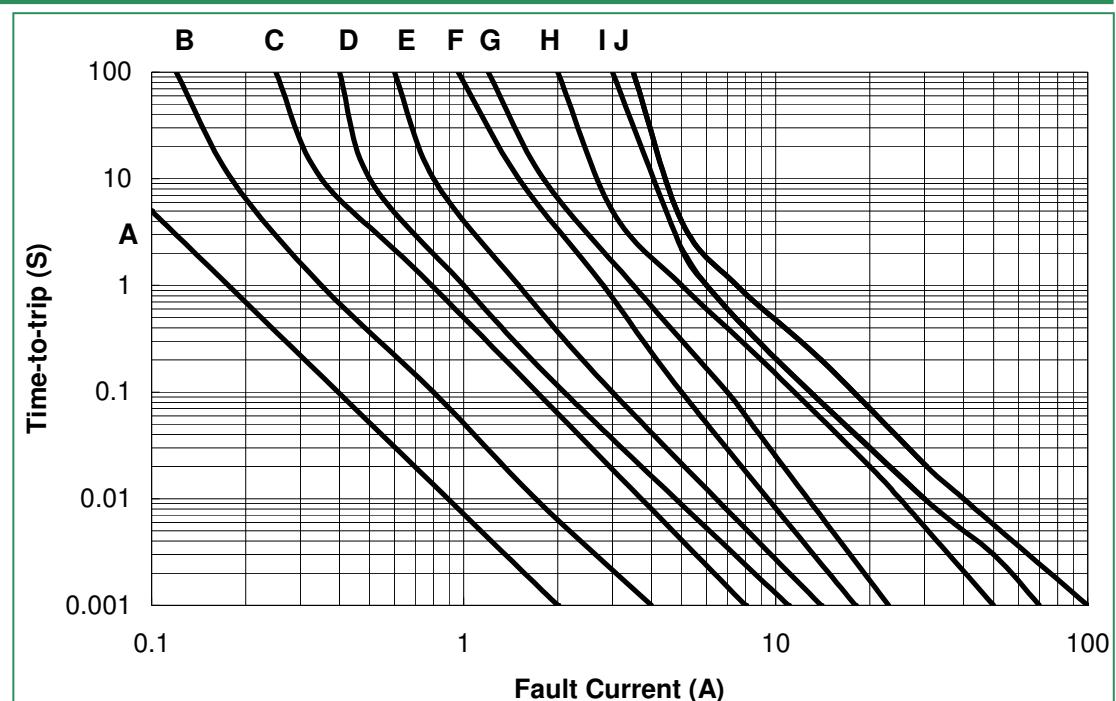
Thermal Derating Curve



NOTE : Specification subject to change without notice.

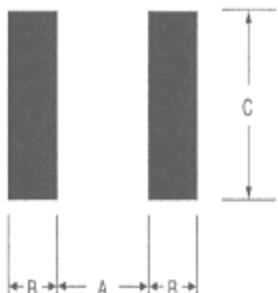
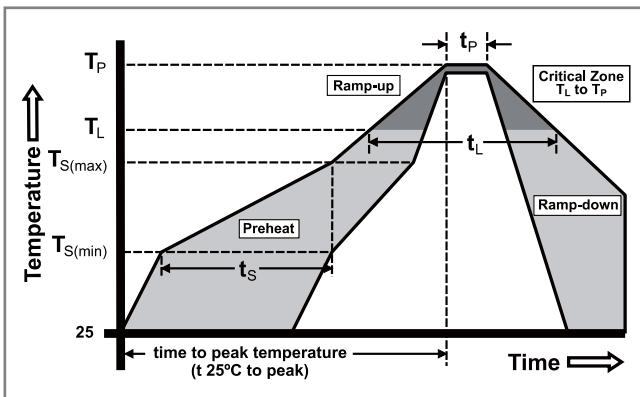
Average Time Current Curves

- A = SMD005-1210 -R
- B = SMD010-1210 -R
- C = SMD020-1210 -R
- D = SMD035-1210 -R
- E = SMD050-1210 -R
- F = SMD075-1210 -R/
075-24-1210R
- G = SMD110-1210R
- H = SMD150-1210R
- I = SMD175-1210R
- J = SMD200-1210R



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Unit : mm

	A	B	C
1210	2.00	1.00	2.80

Part Numbering System

SMD 100 — 24 — 1210 R

AMP Code
Refer to Electrical
Characteristics table

Voltage Rating

PPTC SMD1206



3.2mmx 1.6mm (1206)
Surface Mountable PTC Resettable Fuse



Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.1206 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- Lower resistance than standard SMD devices.
- d.Operation Current: 0.05A~2.00A
- e.Maximum Voltage: 6V~60V DC
- f.Temperature Range: -45°C to +85°C

Material

Terminal Pad material: Pure Tin
Soldering Characteristics: Meets EIA specification RS 186-9E,
ANSI/J-std-002 Category 3

Approval

UL Recognized 0.05A~2A
TUV 0.05A~2A

Tape & Reel Quantity

3000 pcs/reel * 4000 pcs/reel
* * 2000 pcs/reel

Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A	P _d , W	A	Sec	R _{MIN}	R _{1MAX}
SMD005-1206-R	0.05	0.15	60	10	0.4	0.25	1.50	3.600	50.000
SMD010-1206-R	0.10	0.25	60	10	0.4	0.50	1.00	1.600	15.000
SMD012-1206-R	0.12	0.39	48	100	0.6	1.00	0.20	1.400	6.500
SMD016-1206-R	0.16	0.45	48	100	0.6	1.00	0.30	1.100	5.000
SMD020-1206-R	0.20	0.40	30	100	0.4	8.00	0.10	0.600	2.500
SMD025-1206-R	0.25	0.50	16	100	0.6	8.00	0.08	0.550	2.300
SMD025-24-1206-R	0.25	0.50	24	40	0.6	8.0	0.08	0.550	2.300
SMD035-1206-R *	0.35	0.75	16	100	0.4	8.00	0.10	0.300	1.200
SMD035-30-1206R *	0.35	0.75	30	40	0.6	8.00	0.10	0.300	1.200
SMD050-1206-R *	0.50	1.00	8	100	0.4	8.00	0.10	0.150	0.700
SMD050-24-1206R *	0.50	1.00	24	100	0.6	8.00	0.10	0.150	0.750
SMD075-1206R	0.75	1.50	6	100	0.6	8.00	0.20	0.090	0.290
SMD075-16-1206R	0.75	1.50	16	100	0.6	8.00	0.20	0.090	0.290
SMD100-1206R	1.00	1.80	6	100	0.6	8.00	0.30	0.055	0.210
SMD110-1206R	1.10	2.20	6	100	0.8	8.00	0.30	0.040	0.180
SMD150-1206R **	1.50	3.00	6	100	0.8	8.00	1.00	0.040	0.120
SMD200-1206R **	2.00	3.50	6	100	0.8	8.00	1.50	0.018	0.080

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I_{MAX})

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V MAX).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

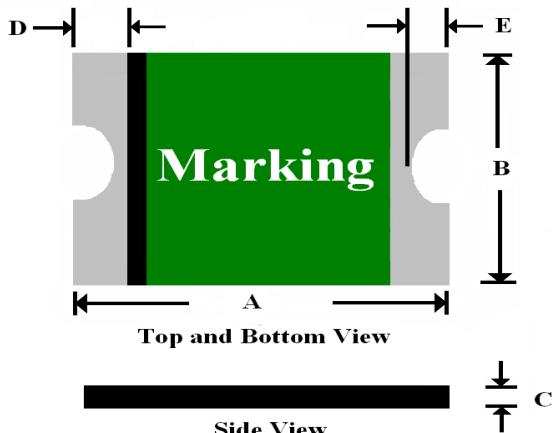
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

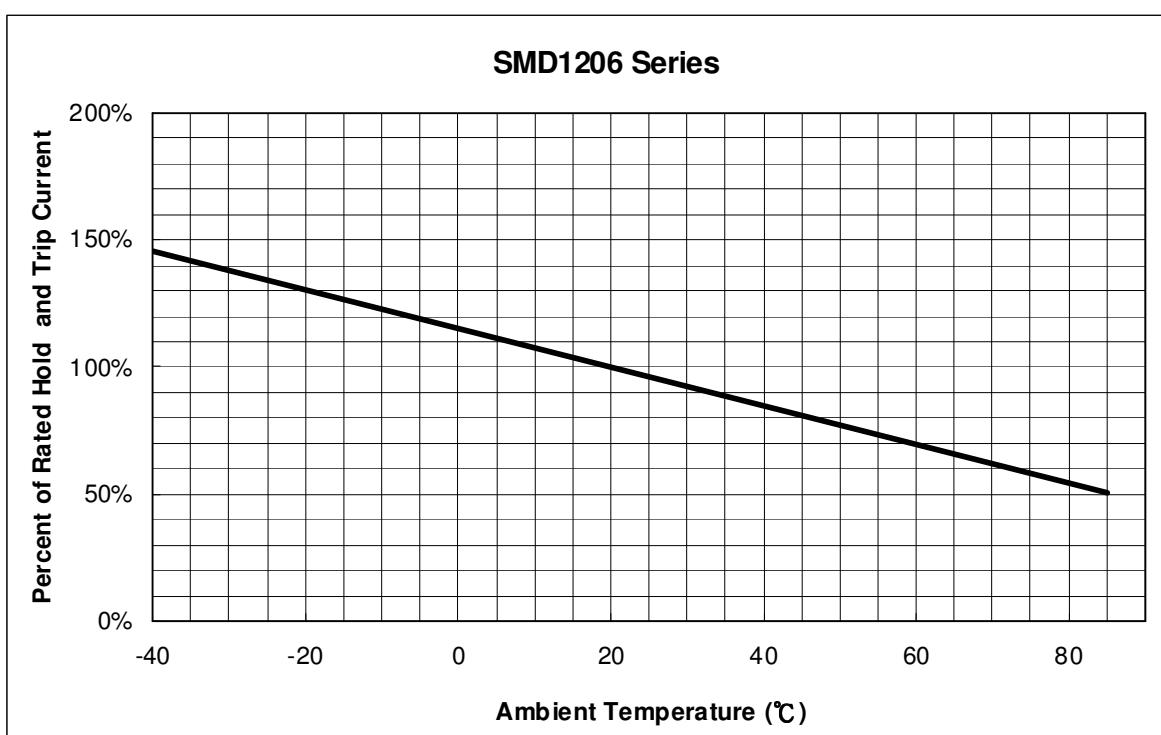
Termination pad materials : Pure Tin

■ Dimensions



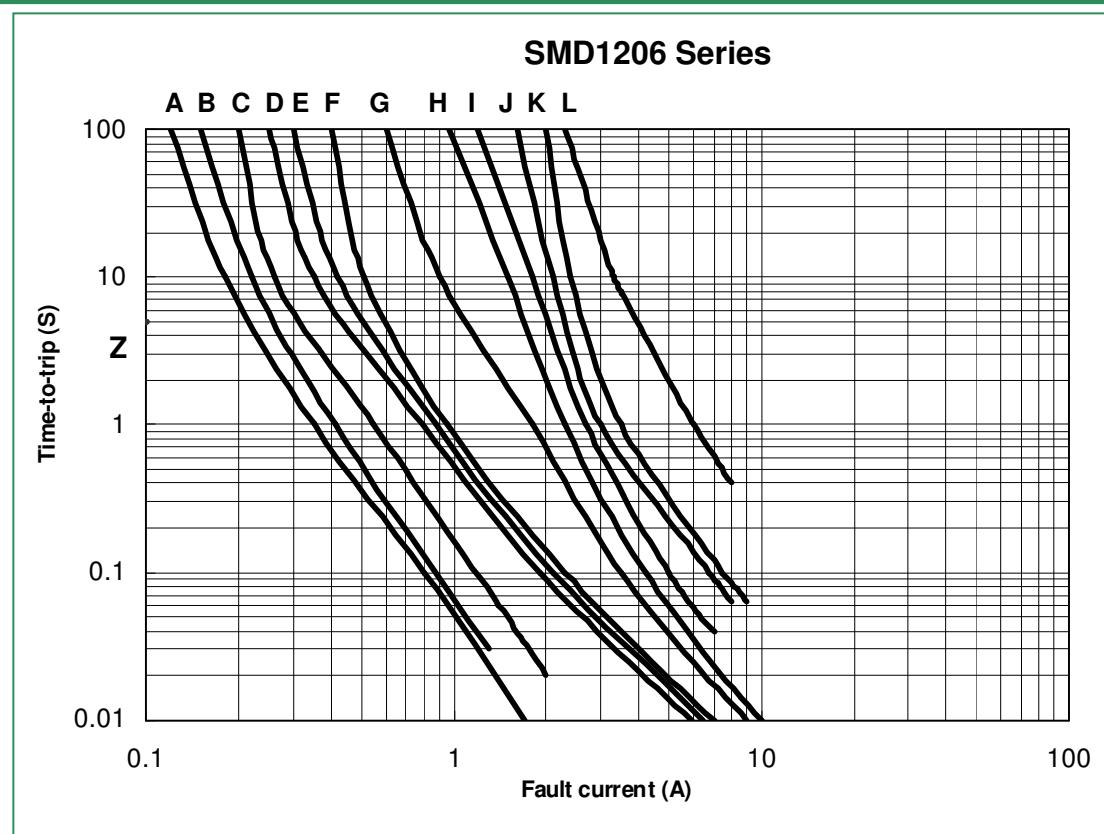
Part Number	A		B		C		D		E	
	Min	Max								
SMD005-1206-R	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
SMD010-1206-R	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
SMD012-1206-R	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
SMD016-1206-R	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
SMD020-1206-R	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
SMD025-1206-R	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
SMD025-24-1206-R	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
SMD035-1206-R	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
SMD035-30-1206R	3.00	3.50	1.50	1.80	0.90	1.30	0.25	0.75	0.10	0.45
SMD050-1206-R	3.00	3.50	1.50	1.80	0.25	0.55	0.10	0.75	0.10	0.45
SMD050-24-1206R	3.00	3.50	1.50	1.80	0.90	1.30	0.25	0.75	0.10	0.45
SMD075-1206R	3.00	3.50	1.50	1.80	0.45	1.25	0.25	0.75	0.10	0.45
SMD075-16-1206R	3.00	3.50	1.50	1.80	0.45	1.25	0.25	0.75	0.10	0.45
SMD100-1206R	3.00	3.50	1.50	1.80	0.45	1.00	0.25	0.75	0.10	0.45
SMD110-1206R	3.00	3.50	1.50	1.80	0.45	1.00	0.25	0.75	0.10	0.45
SMD150-1206R	3.00	3.50	1.50	1.80	0.80	1.40	0.25	0.75	0.10	0.45
SMD200-1206R	3.00	3.50	1.50	1.80	0.85	1.60	0.25	0.75	0.10	0.45

■ Thermal Derating Curve



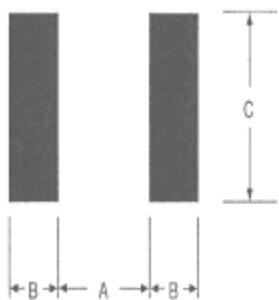
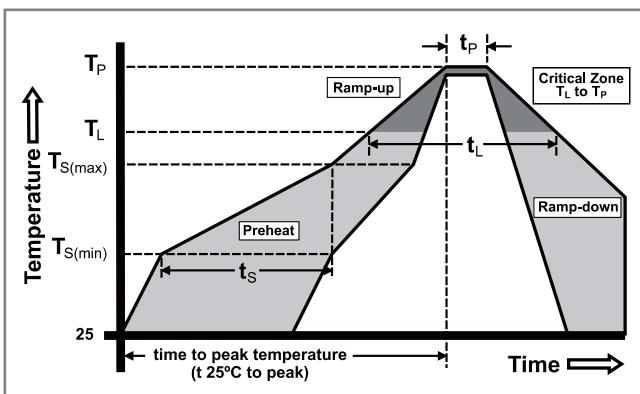
Average Time Current Curves

Z= SMD005 -1206-R
 A= SMD010-1206-R
 B= SMD012-1206-R
 C= SMD016-1206-R
 D= SMD020-1206-R
 E= SMD025-1206-R / 025-24-1206-R
 F= SMD035-1206-R / 035-60-1206R
 G= SMD050-1206-R / 050-24-1206R
 H= SMD075-1206R / 075-16-1206R
 I= SMD100-1206R
 J= SMD110-1206R
 K= SMD150-1206R
 L= SMD200-1206R



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Unit : mm

	A	B	C
1206	2.00	1.00	1.90

Part Numbering System

SMD 100 — 24 — 1206 R

AMP Code

Refer to Electrical

Characteristics table

Voltage Rating

PPTC SMD0805



2.0mmx 1.2mm (0805)
Surface Mountable PTC Resettable Fuse



Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.0805 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- Lower resistance than standard SMD devices.
- d.Operation Current: 0.10A~1.00A
- e.Maximum Voltage: 6V~15V
- f.Temperature Range: -45°C to +85°C

Material

Terminal Pad material: Pure Tin
Soldering Characteristics: Meets EIA specification RS 186-9E,
ANSI/J-std-002 Category 3

Approval

UL Recognized 0.10A~1A
TUV 0.10A~1A

3000 pcs/reel * 4000 pcs/reel

Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
						Current	Time	RMIN	R1MAX
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A	P _d , W	Amp	Sec	Ohms	Ohms
SMD010-0805-R *	0.10	0.30	15	100	0.5	0.50	1.50	0.700	6.000
SMD020-0805-R *	0.20	0.50	9	100	0.5	8.00	0.02	0.400	3.500
SMD035-0805-R *	0.35	0.75	6	100	0.5	8.00	0.10	0.250	1.200
SMD050-0805R	0.50	1.00	6	100	0.5	8.00	0.10	0.150	0.850
SMD050-9-0805R	0.50	1.00	9	100	0.5	8.00	0.10	0.150	0.850
SMD075-0805R	0.75	1.50	6	40	0.6	8.00	0.20	0.090	0.350
SMD100-0805R	1.00	1.95	6	40	0.6	8.00	0.30	0.060	0.210

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I MAX)

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V MAX).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

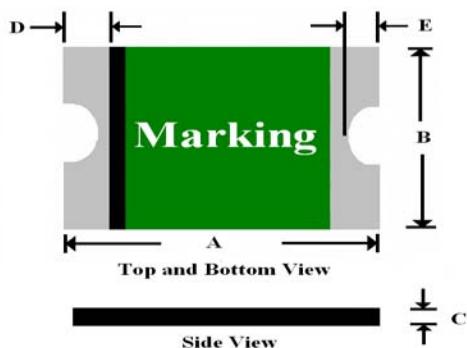
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

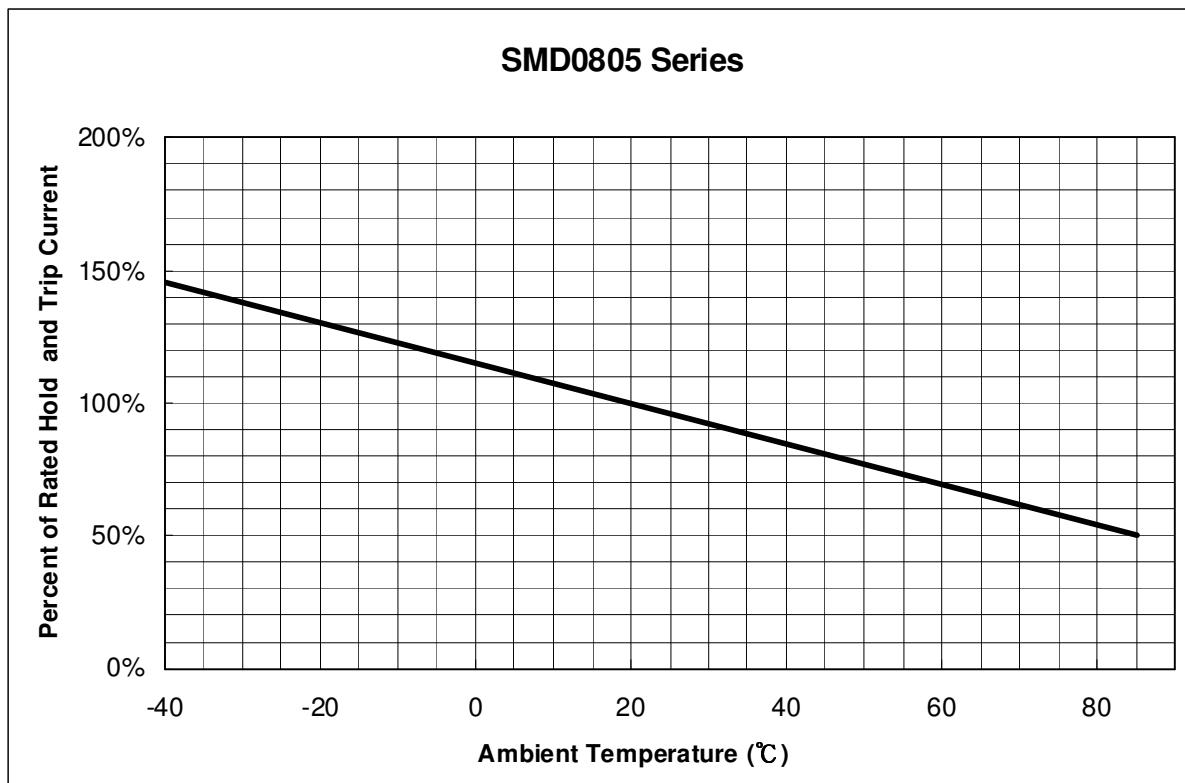
Termination pad materials : Pure Tin

Dimensions



Part Number	A		B		C		D		E	
	Min	Max								
SMD010-0805-R	2.00	2.30	1.20	1.50	0.30	1.00	0.20	0.60	0.10	0.45
SMD020-0805-R	2.00	2.30	1.20	1.50	0.30	1.00	0.20	0.60	0.10	0.45
SMD035-0805-R	2.00	2.30	1.20	1.50	0.25	0.75	0.20	0.60	0.10	0.45
SMD050-0805R	2.00	2.30	1.20	1.50	0.55	1.25	0.20	0.60	0.10	0.45
SMD050-9-0805R	2.00	2.30	1.20	1.50	0.55	1.25	0.20	0.60	0.10	0.45
SMD075-0805R	2.00	2.30	1.20	1.50	0.55	1.25	0.20	0.60	0.10	0.45
SMD100-0805R	2.00	2.30	1.20	1.50	0.75	1.80	0.20	0.60	0.10	0.45

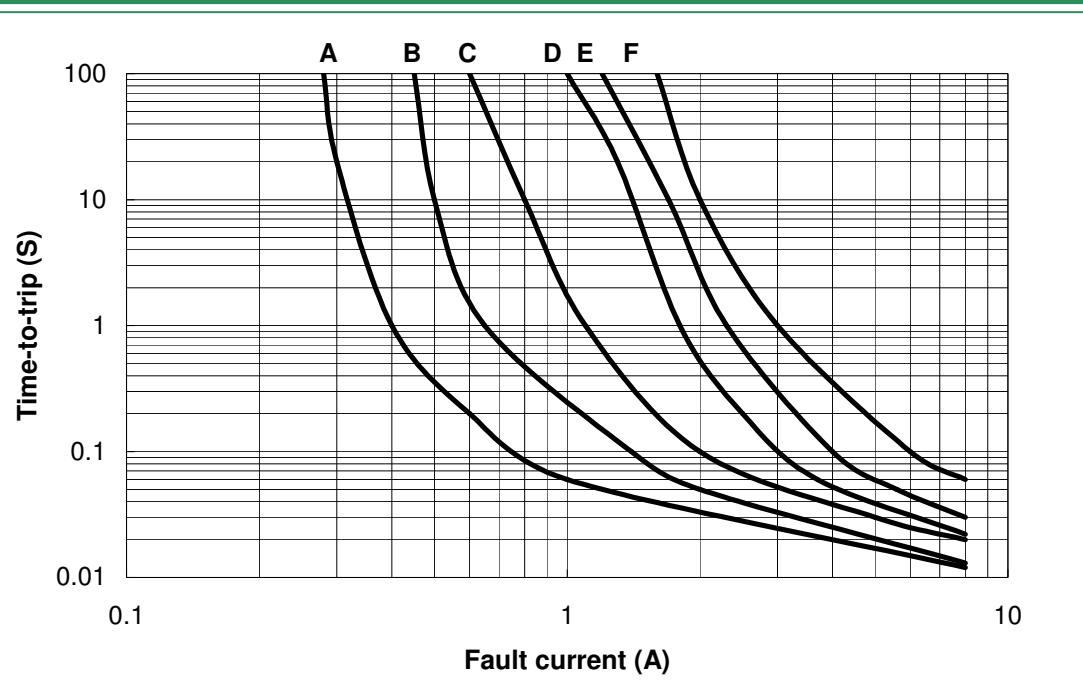
Thermal Derating Curve



NOTE : Specification subject to change without notice.

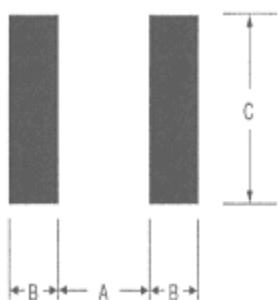
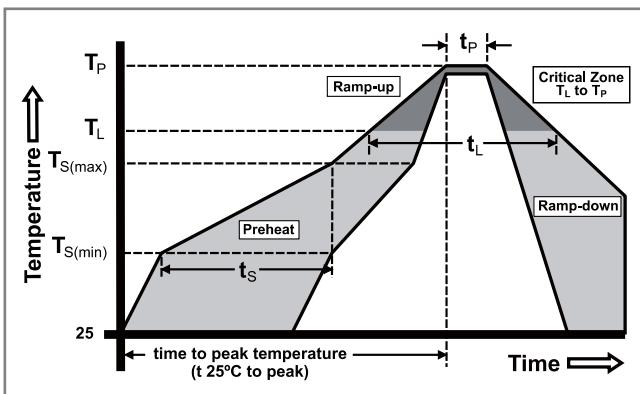
Average Time Current Curves

- A = SMD010-0805-R**
- B = SMD020-0805-R**
- C = SMD035-0805-R**
- D = SMD050-0805R / SMD050-9-0805R**
- E = SMD075-0805R**
- F = SMD100-0805R**



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_p)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Unit : mm

	A	B	C
0805	1.20	1.00	1.50

Part Numbering System

SMD_100 — 24 — 0805 R

AMP Code _____

Refer to Electrical

Characteristics table

Voltage Rating _____

PPTC SMD0603



1.5mmx 0.8mm (0603)
Surface Mountable PTC Resettable Fuse



Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.0603 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- Lower resistance than standard SMD devices.
- d.Operation Current: 0.01A~0.20A
- e.Maximum Voltage: 9V~60V DC
- f.Temperature Range: -45°C to +85°C

Material

Terminal Pad material: Pure Tin
Soldering Characteristics: Meets EIA specification RS 186-9E,
ANSI/J-std-002 Category 3

Approval

UL Recognized 0.05A~0.20A
TUV 0.05A~0.20A

Tape & Reel Quantity 4000 pcs/reel

Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A	P _d , W	A	Sec	R _{MIN}	R _{1MAX}
SMD001-0603-R	0.01	0.03	60	40	0.5	0.20	1.00	15.00	100.00
SMD002-0603-R	0.02	0.06	60	40	0.5	0.20	1.00	12.00	70.00
SMD003-0603-R	0.03	0.09	30	40	0.5	0.20	1.00	6.00	50.00
SMD004-0603-R	0.04	0.12	24	40	0.5	0.20	1.00	4.00	40.00
SMD005-0603-R	0.05	0.15	15	40	0.5	0.50	0.10	3.80	30.00
SMD010-0603-R	0.10	0.25	15	40	0.5	0.70	0.10	0.90	8.00
SMD012-0603-R	0.12	0.30	9	40	0.5	0.80	0.10	1.10	5.80
SMD016-0603-R	0.16	0.40	9	40	0.5	1.00	0.10	1.00	4.20
SMD020-0603-R	0.20	0.45	9	40	0.5	2.00	0.10	0.55	3.50

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I_{MAX})

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V_{MAX}).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

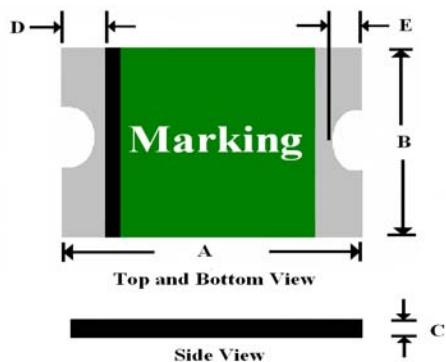
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

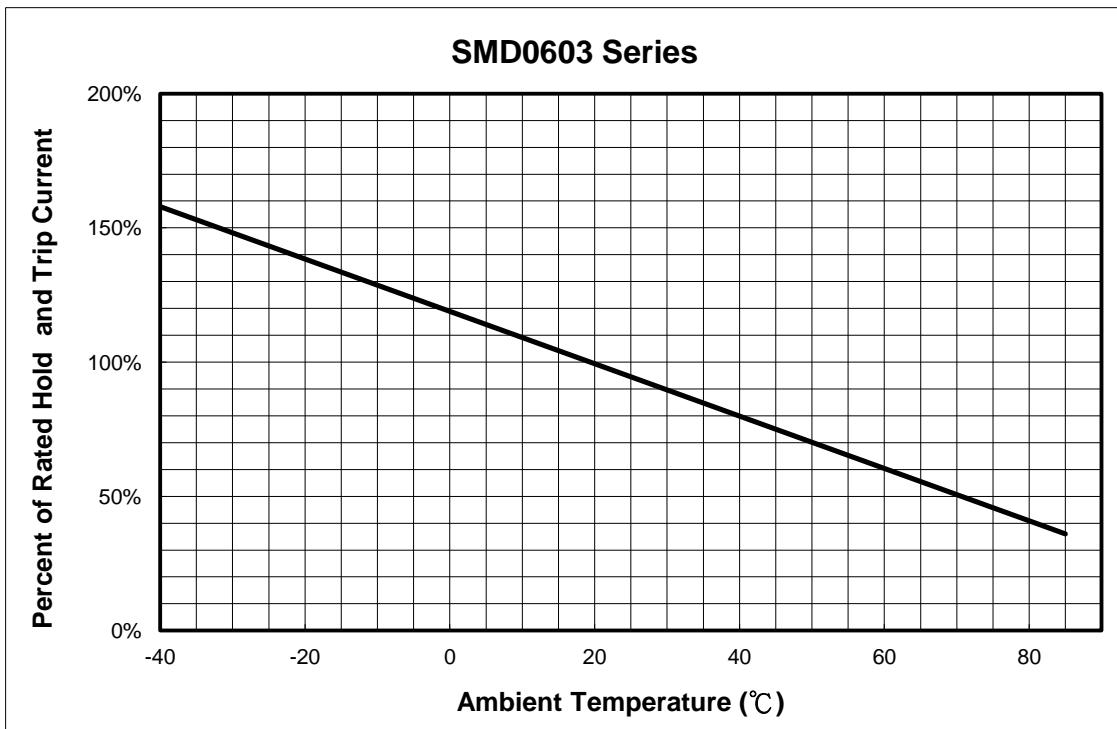
Termination pad materials : Pure Tin

Dimensions



Part Number	A		B		C		D		E	
	Min	Max								
SMD001-0603-R	1.40	1.80	0.45	1.00	0.35	0.85	0.10	0.50	0.08	0.40
SMD002-0603-R	1.40	1.80	0.45	1.00	0.35	0.85	0.10	0.50	0.08	0.40
SMD003-0603-R	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40
SMD004-0603-R	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40
SMD005-0603-R	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40
SMD010-0603-R	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40
SMD012-0603-R	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40
SMD016-0603-R	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40
SMD020-0603-R	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40

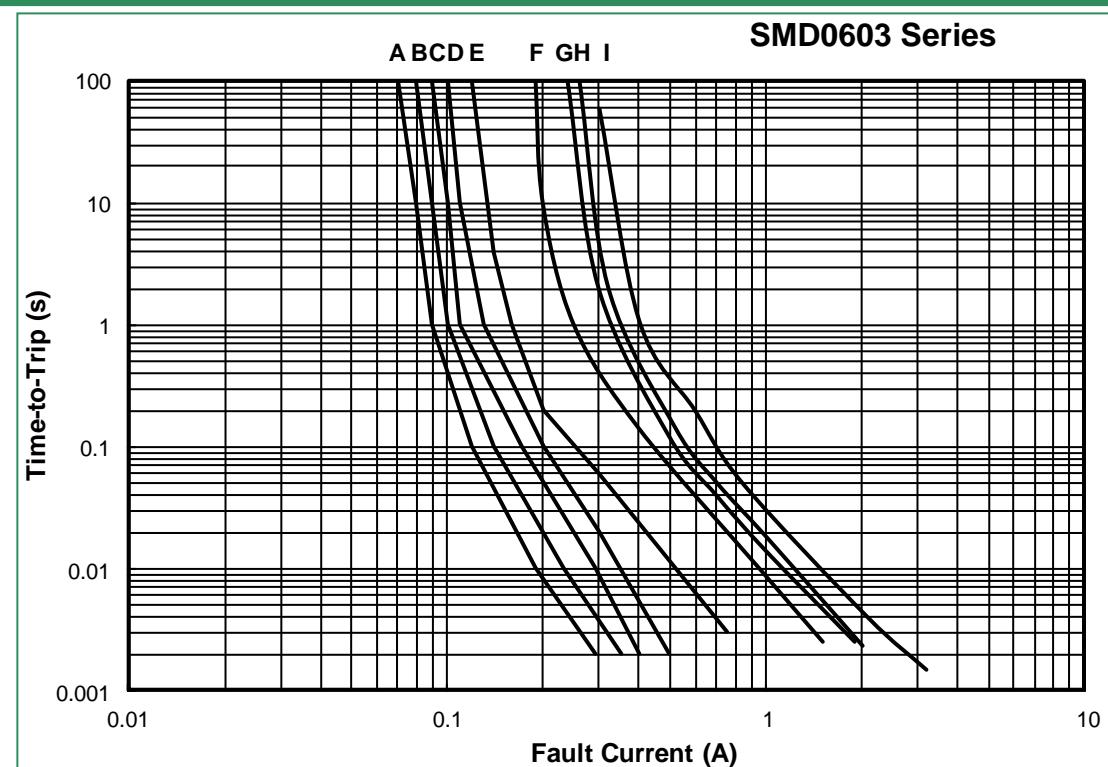
Thermal Derating Curve



NOTE : Specification subject to change without notice.

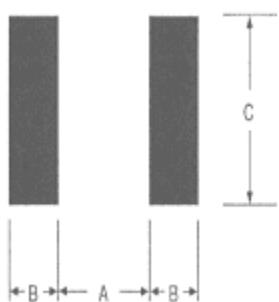
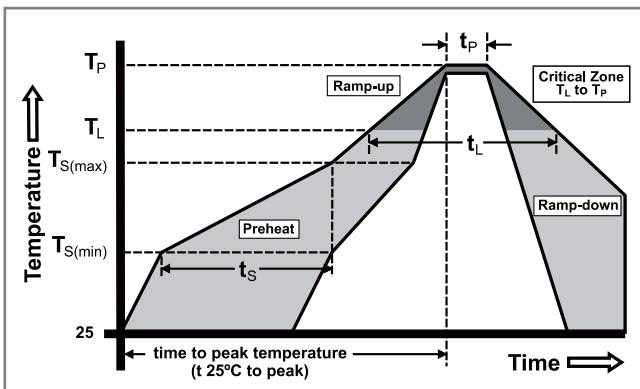
Average Time Current Curves

- A= SMD001-0603-R
- B= SMD002-0603-R
- C= SMD003-0603-R
- D= SMD004-0603-R
- E= SMD005-0603-R
- F= SMD010-0603-R
- G= SMD012- 0603-R
- H= SMD016-0603-R
- I= SMD020-0603-R



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{S(min)}$)	150°C
	-Temperature Max ($T_{S(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3 °C/second max.
$T_{S(max)}$ to T_L - Ramp-up Rate		5 °C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Unit : mm

	A	B	C
0603	0.80	0.60	0.80

Part Numbering System

SMD 100 —0603 R

AMP Code—

Refer to Electrical
Characteristics table

PPTC LO RHO SMD1812

4.5mmx 3.2mm (1812)

Surface Mountable PTC Resettable Fuse



RoHS



14Z

190

27Z

37Z

Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.1812 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- Lower resistance than standard SMD devices.
- d.Operation Current: 1.4A~3.7A
- e.Maximum Voltage: 6V
- f.Temperature Range: -45°C to +85°C

Material

Terminal Pad material: Pure Tin

Soldering Characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

Approval

UL Recognized 1.4A~3.7A

TUV 1.4A~3.7A

Tape & Reel Quantity

2000 pcs/tape

Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , V _{DC}	I _{MAX} , A	P _d , W	A	Sec	R _{MIN}	R _{1MAX}
SMD140RZ	1.40	3.60	6	100	1.0	8.0	3.00	0.010	0.035
SMD190RZ	1.90	4.90	6	100	1.0	8.0	5.00	0.003	0.025
SMD270RZ	2.70	6.20	6	100	1.0	13.5	3.00	0.003	0.023
SMD300RZ	3.00	7.00	6	100	1.0	15.0	2.00	0.003	0.022
SMD370RZ	3.70	9.10	6	100	1.0	18.5	2.00	0.003	0.018

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I MAX)

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V MAX).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

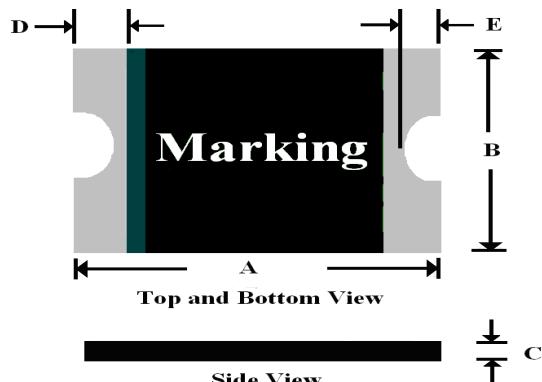
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

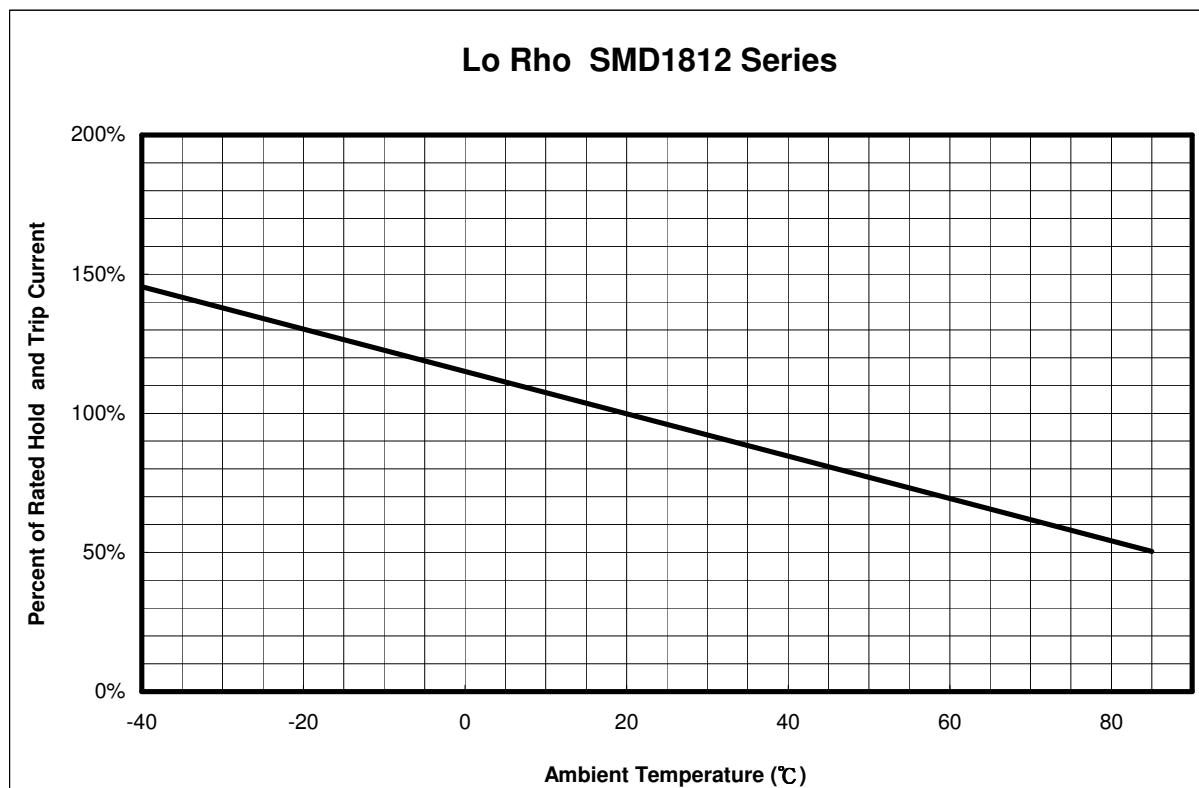
Termination pad materials : Pure Tin

Dimensions



Part Number	A		B		C		D		E	
	Min	Max								
SMD140RZ	4.37	4.73	3.07	3.41	0.30	0.70	0.25	0.95	0.25	0.65
SMD190RZ	4.37	4.73	3.07	3.41	0.30	0.70	0.25	0.95	0.25	0.65
SMD270RZ	4.37	4.73	3.07	3.41	0.40	0.75	0.25	0.95	0.25	0.65
SMD300RZ	4.37	4.73	3.07	3.41	0.40	0.75	0.25	0.95	0.25	0.65
SMD370RZ	4.37	4.73	3.07	3.41	0.40	0.75	0.25	0.95	0.25	0.65

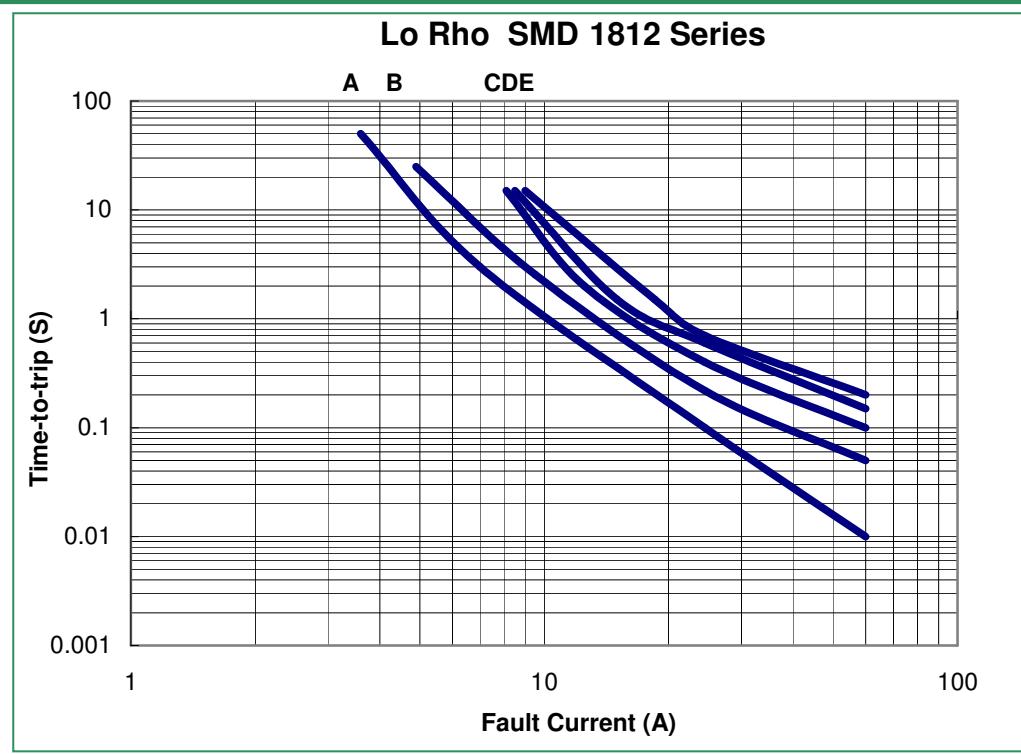
Thermal Derating Curve



NOTE : Specification subject to change without notice.

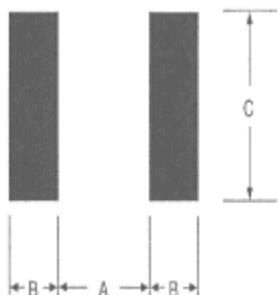
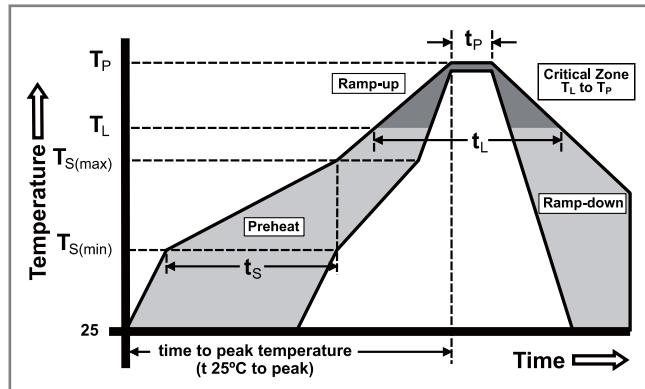
Average Time Current Curves

A = SMD140RZ
B = SMD190RZ
C = SMD270RZ
D = SMD300RZ
E = SMD370RZ



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Unit : mm

	A	B	C
1812	3.45	1.78	3.50

Part Numbering System

SMD 100 — RZ

AMP Code -
Refer to Electrical
Characteristics table

PPTC LO RHO SMD1210

3.2mmx 2.5mm (1210)

Surface Mountable PTC Resettable Fuse

RoHS



Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.1210 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- Lower resistance than standard SMD devices.
- d.Operation Current: 1.75A~3.80A
- e.Maximum Voltage: 6V
- f.Temperature Range: -45°C to +85°C

Material

Terminal Pad material: Pure Tin

Soldering Characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

Approval

UL Recognized 1.75A~2.00A

TUV 1.75A~2.00A

Tape & Reel Quantity

3000 pcs/tape * 4000 pcs/tape

Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , V _{DC}	I _{MAX} , A	P _d , W	A	Sec	R _{MIN}	R _{1MAX}
SMD175-1210RZ*	1.75	3.50	6	100	1.0	8.00	2.50	0.006	0.040
SMD200-1210RZ*	2.00	4.90	6	100	1.0	8.00	3.00	0.005	0.024
SMD300-1210RZ	3.00	6.00	6	100	0.8	15.00	2.00	0.003	0.020
SMD350-1210RZ	3.50	7.00	6	100	1.0	17.50	2.00	0.003	0.018
SMD380-1210RZ	3.80	8.00	6	100	1.0	8.00	5.00	0.002	0.016

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I MAX)

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V MAX).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

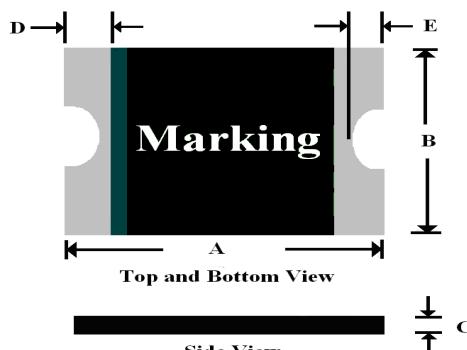
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

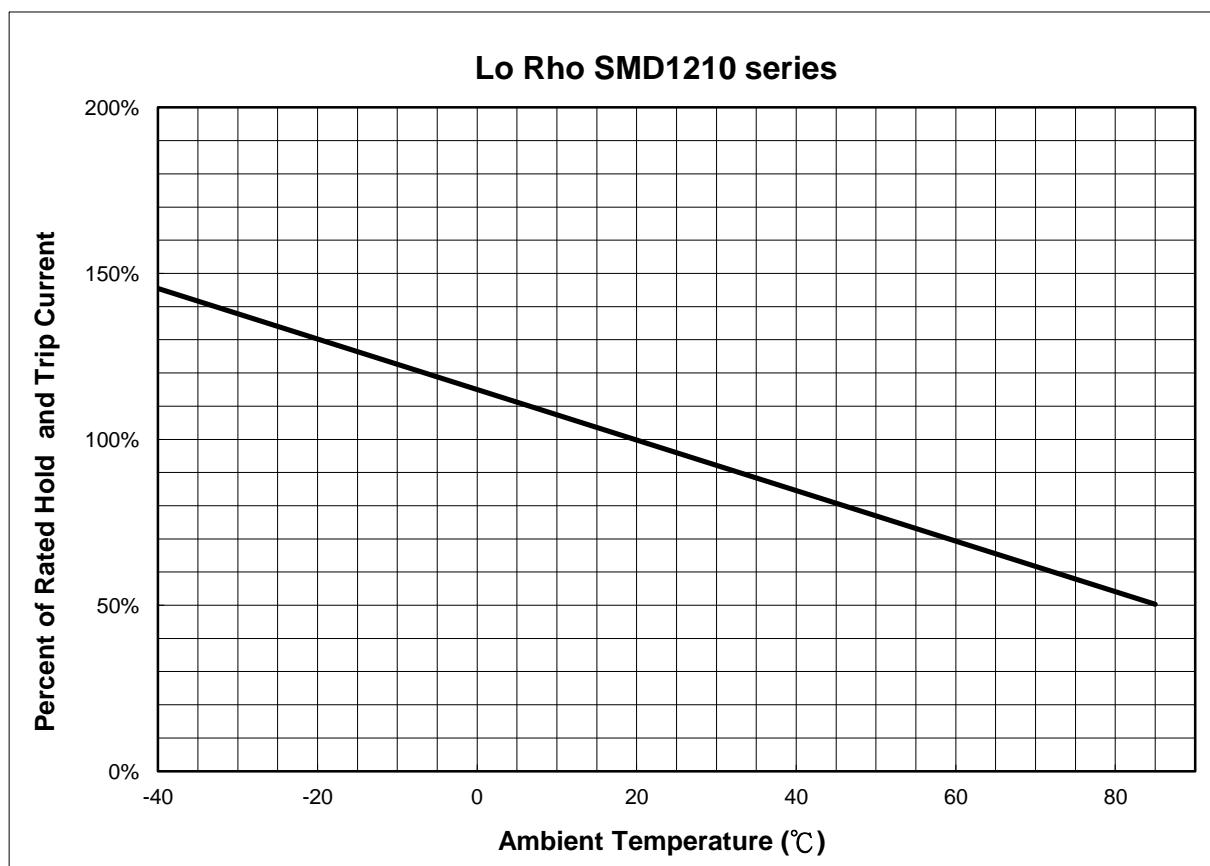
Termination pad materials : Pure Tin

Dimensions



Part Number	A		B		C		D		E	
	Min	Max								
SMD 175-1210RZ	3.00	3.43	2.35	2.80	0.40	0.75	0.25	0.75	0.10	0.45
SMD 200-1210RZ	3.00	3.43	2.35	2.80	0.40	0.75	0.25	0.75	0.10	0.45
SMD 300-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
SMD 350-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
SMD 380-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45

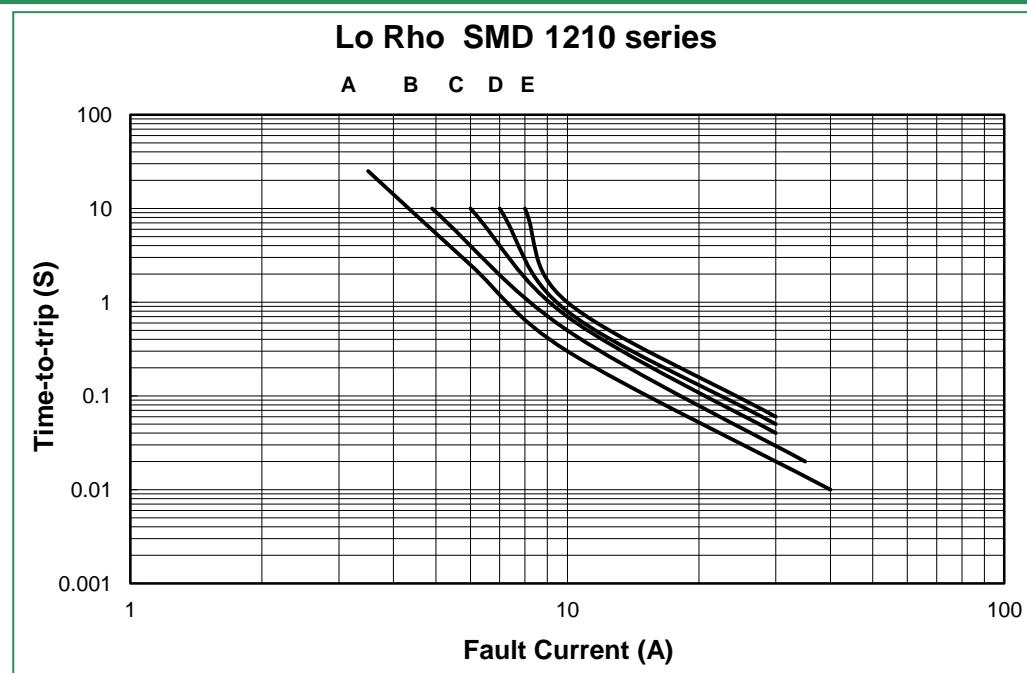
Thermal Derating Curve



NOTE : Specification subject to change without notice.

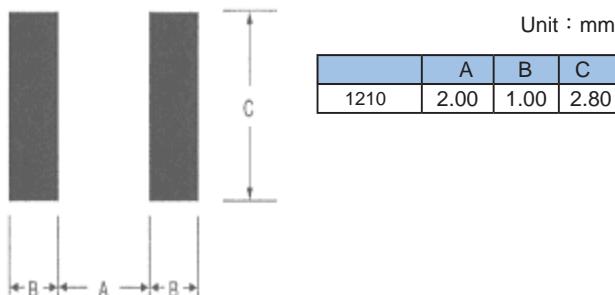
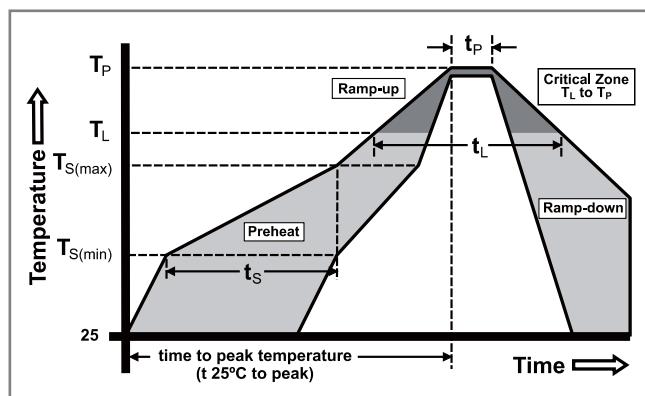
Average Time Current Curves

- A= SMD175-1210RZ
 B= SMD200-1210RZ
 C= SMD300-1210RZ
 D= SMD350-1210RZ
 E= SMD380-1210RZ



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Part Numbering System

SMD _100 — 1210RZ

AMP Code—
 Refer to Electrical
 Characteristics table

PPTC LO RHO SMD1206

3.2mmx 1.6mm (1206)

Surface Mountable PTC Resettable Fuse



RoHS



Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.1206 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- Lower resistance than standard SMD devices.
- d.Operation Current: 0.5A~2.0A
- e.Maximum Voltage: 6V
- f.Temperature Range: -45°C to +85°C

Material

Terminal Pad material: Pure Tin

Soldering Characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

Approval

UL Recognized 0.5A~2.0A

TUV 0.5A~2.0A

Tape & Reel Quantity

4000 pcs/tape

Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , V _D C			A	Sec	R _{MIN}	R _{1MAX}
SMD050-1206RZ	0.50	1.50	6	100	0.8	8.0	0.20	0.025	0.200
SMD075-1206RZ	0.75	1.80	6	100	0.8	8.0	0.30	0.018	0.180
SMD110-1206RZ	1.10	2.20	6	100	0.8	8.0	0.30	0.015	0.100
SMD150-1206RZ	1.50	3.00	6	100	0.8	8.0	0.30	0.010	0.065
SMD200-1206RZ	2.00	4.00	6	100	0.8	8.0	0.50	0.005	0.055

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I MAX)

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V MAX).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

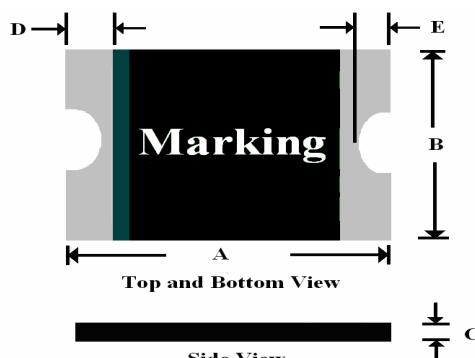
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

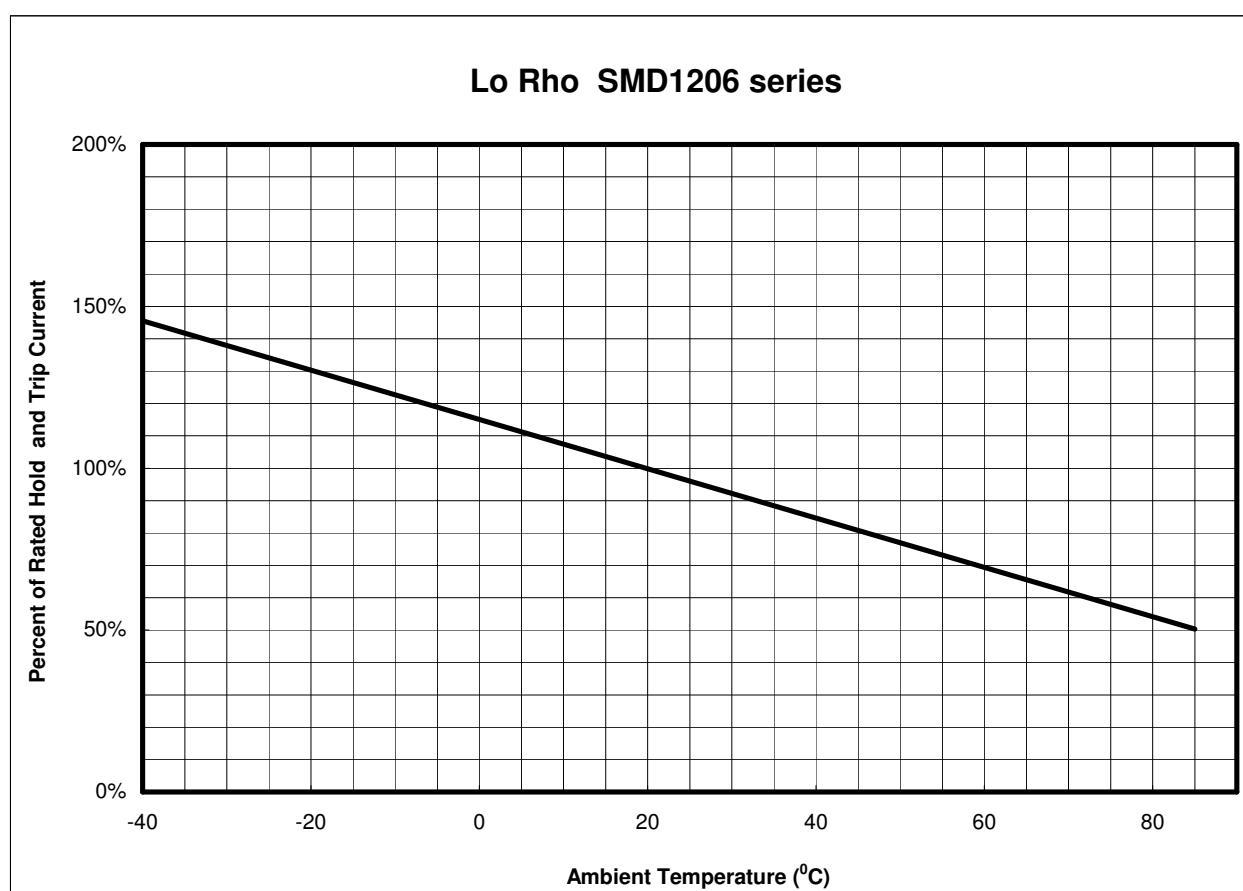
Termination pad materials : Pure Tin

Dimensions



Part Number	A		B		C		D		E	
	Min	Max								
SMD050-1206RZ	3.00	3.50	1.50	1.80	0.40	0.75	0.25	0.75	0.10	0.45
SMD075-1206RZ	3.00	3.50	1.50	1.80	0.40	0.75	0.25	0.75	0.10	0.45
SMD110-1206RZ	3.00	3.50	1.50	1.80	0.40	0.75	0.25	0.75	0.10	0.45
SMD150-1206RZ	3.00	3.50	1.50	1.80	0.40	0.75	0.25	0.75	0.10	0.45
SMD200-1206RZ	3.00	3.50	1.50	1.80	0.40	0.75	0.25	0.75	0.10	0.45

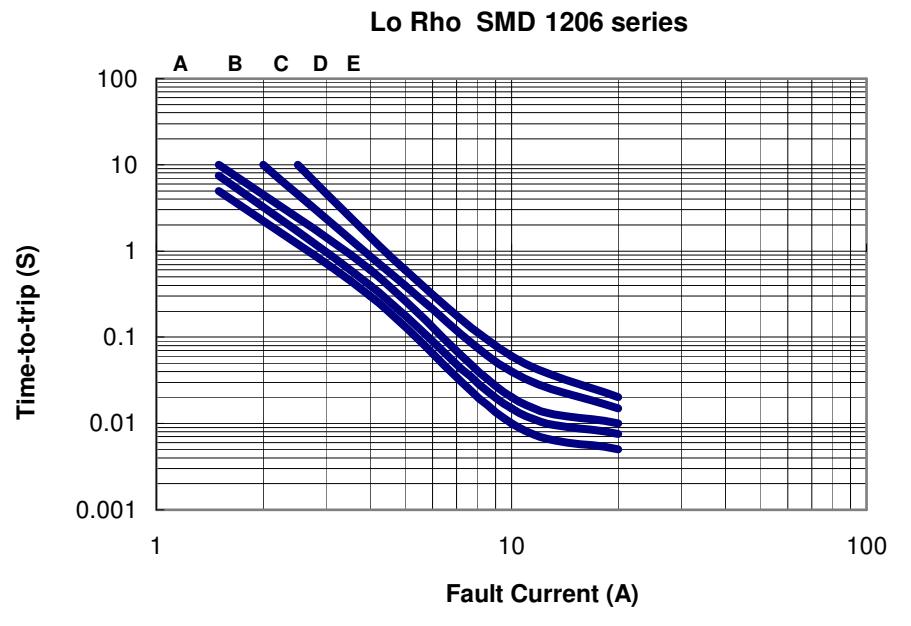
Thermal Derating Curve



NOTE : Specification subject to change without notice.

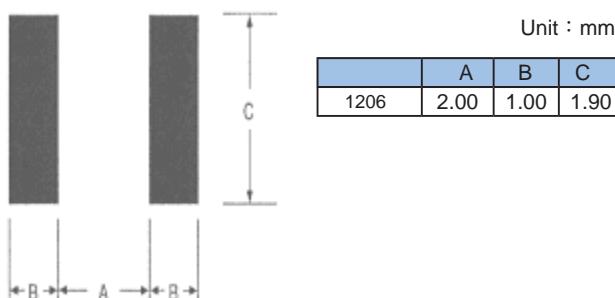
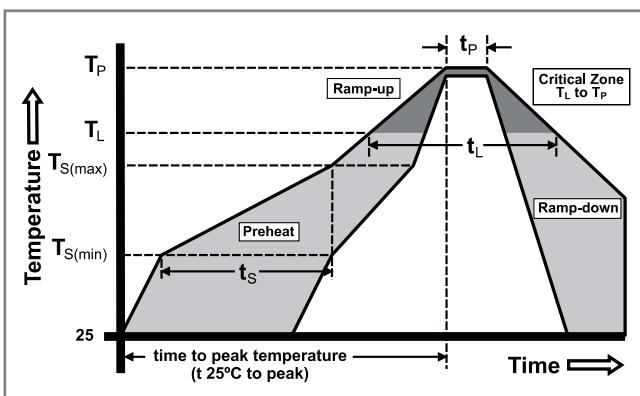
Average Time Current Curves

- A= SMD050-1206RZ**
- B= SMD075-1206RZ**
- C= SMD110-1206RZ**
- D= SMD150-1206RZ**
- E= SMD200-1206RZ**



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Part Numbering System

SMD_100 — 1206RZ

AMP Code—
Refer to Electrical
Characteristics table

PPTC LO RHO SMD0805

2.0mmx 1.2mm (0805)

Surface Mountable PTC Resettable Fuse



RoHS



Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.0805 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- Lower resistance than standard SMD devices.
- d.Operation Current: 0.75A~1.75A
- e.Maximum Voltage: 6V
- f.Temperature Range: -45°C to +85°C

Material

Terminal Pad material: Pure Tin
Soldering Characteristics: Meets EIA specification RS 186-9E,
ANSI/J-std-002 Category 3

Approval

UL Recognized 0.75A~1.25A
TUV 0.75A~1.25A

Tape & Reel Quantity

4000 pcs/tape

Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A	P _d , W	A	Sec	R _{MIN}	R _{1MAX}
SMD075-0805RZ	0.75	1.50	6	100	0.6	8.0	0.20	0.040	0.160
SMD110-0805RZ	1.10	1.80	6	100	0.6	8.0	0.30	0.030	0.130
SMD125-0805RZ	1.25	2.50	6	100	0.6	8.0	0.30	0.025	0.110
SMD150-0805RZ	1.50	3.00	6	100	0.6	8.0	0.30	0.015	0.065
SMD175-0805RZ	1.75	3.50	6	100	0.6	8.0	0.60	0.005	0.055

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I MAX)

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V MAX).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

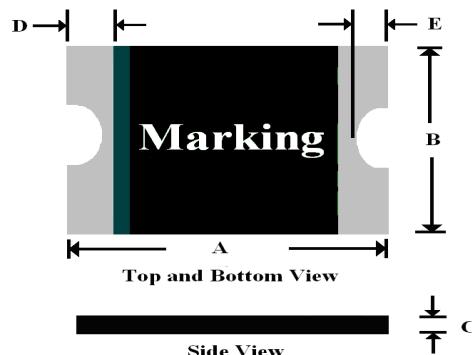
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

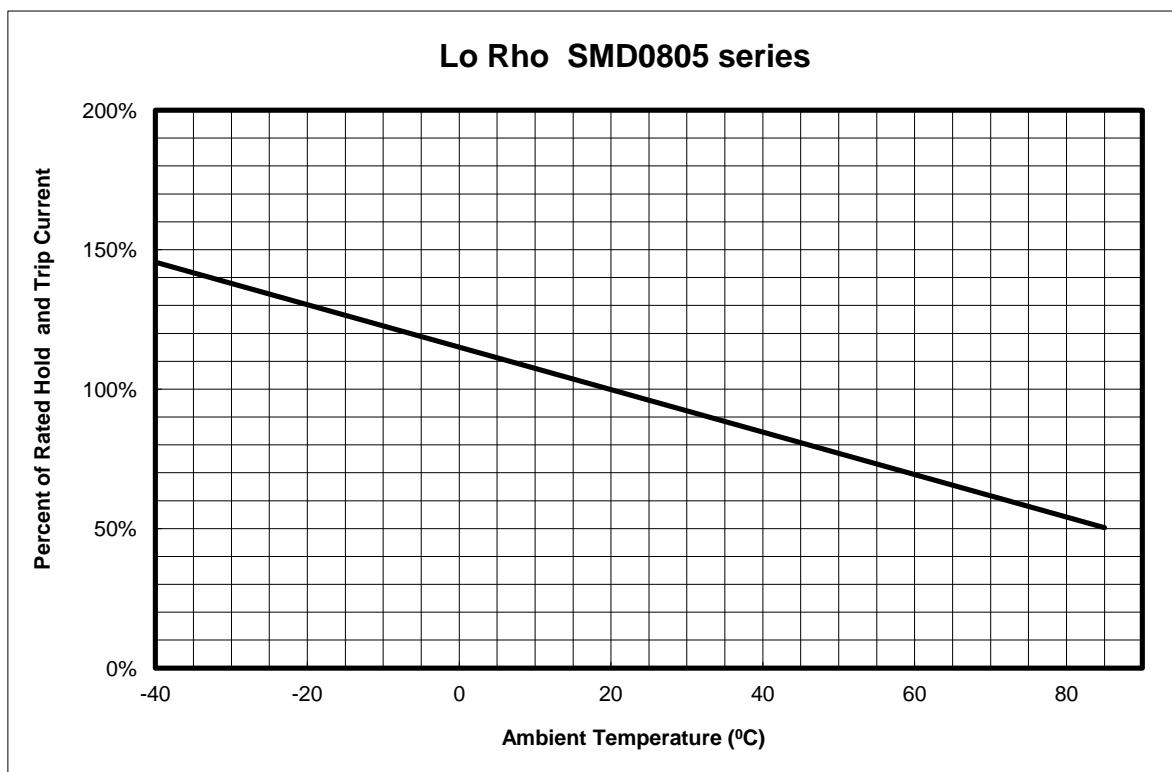
Termination pad materials : Pure Tin

Dimensions



Part Number	A		B		C		D		E	
	Min	Max								
SMD075-0805RZ	2.00	2.20	1.20	1.50	0.40	0.75	0.20	0.60	0.10	0.45
SMD110-0805RZ	2.00	2.20	1.20	1.50	0.40	0.75	0.20	0.60	0.10	0.45
SMD125-0805RZ	2.00	2.20	1.20	1.50	0.40	0.75	0.20	0.60	0.10	0.45
SMD150-0805RZ	2.00	2.20	1.20	1.50	0.40	0.75	0.20	0.60	0.10	0.45
SMD175-0805RZ	2.00	2.20	1.20	1.50	0.40	0.75	0.20	0.60	0.10	0.45

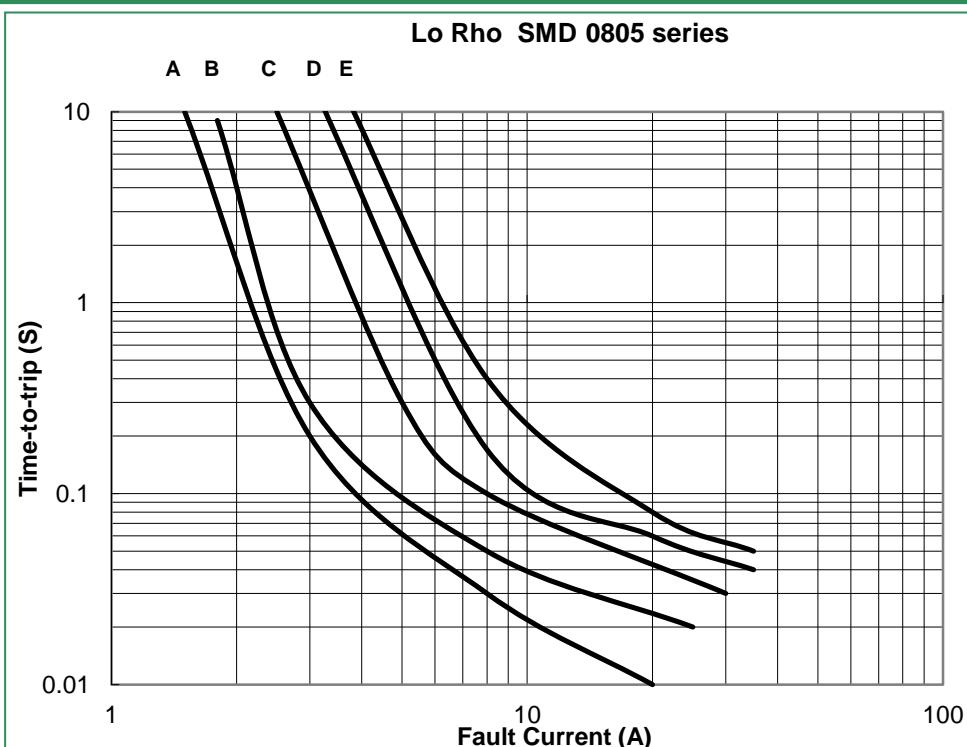
Thermal Derating Curve



NOTE : Specification subject to change without notice.

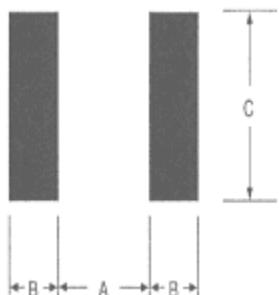
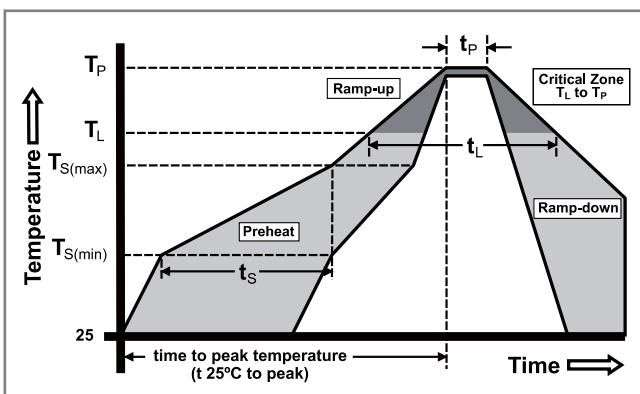
Average Time Current Curves

- A = SMD075-0805RZ
- B = SMD110-0805RZ
- C = SMD125-0805RZ
- D = SMD150-0805RZ
- E = SMD175-0805RZ



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Part Numbering System

SMD 100 — 0805RZ

AMP Code -
Refer to Electrical
Characteristics table

PPTC LO RHO SMD0603

1.5mmx 0.8mm (0603)

Surface Mountable PTC Resettable Fuse

RoHS



■ Feature

- a.RoHS compliant & Halogen Free
- b.All high-density boards
- c.0603 Dimension, Surface mountable, Solid state, Faster time to trip than standard SMD devices.
- Lower resistance than standard SMD devices.
- d.Operation Current: 0.25A~0.75A
- e.Maximum Voltage: 6~9V
- f.Temperature Range: -45°C to +85°C

■ Material

Terminal Pad material: Pure Tin
Soldering Characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

■ Approval

UL Recognized pending
TUV pending

■ Tape & Reel Quantity

4000 pcs/tape

■ Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , V _{DC}	I _{MAX} , A	P _d , W	A	Sec	R _{MIN}	R _{1MAX}
SMD025-0603RZ	0.25	0.55	9	100	0.5	8.0	0.08	0.500	3.000
SMD035-0603RZ	0.35	0.75	6	100	0.5	8.0	0.10	0.200	1.000
SMD050-0603RZ	0.50	1.00	6	100	0.6	8.0	0.10	0.070	0.350
SMD075-0603RZ	0.75	1.50	6	100	0.6	8.0	0.20	0.050	0.250

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at it rated current.(I MAX)

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V MAX).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

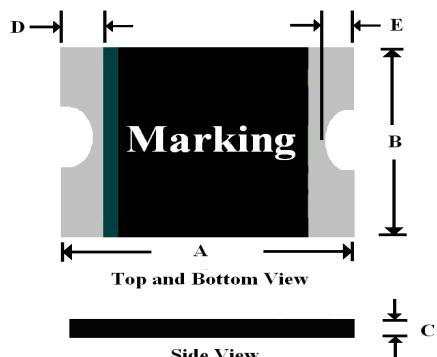
R_{MIN}=Minimum device resistance at 23°C prior to tripping.

R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

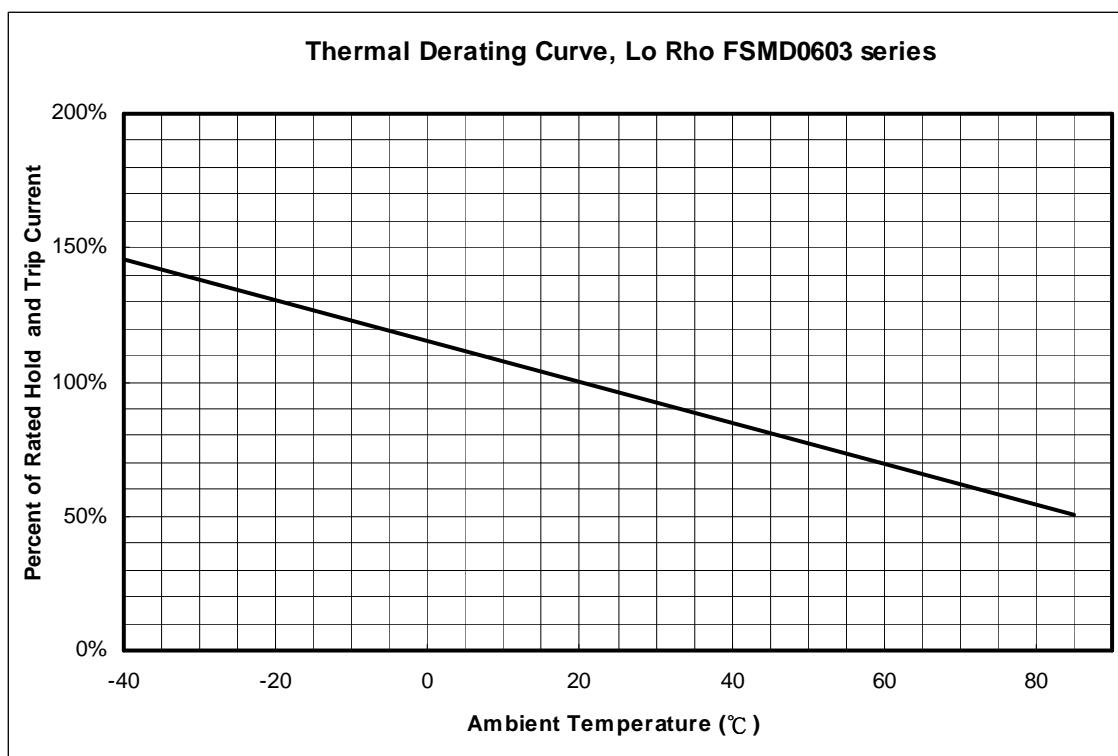
Termination pad materials : Pure Tin

Dimensions



Part Number	A		B		C		D		E	
	Min	Max								
SMD025-0603RZ	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40
SMD035-0603RZ	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40
SMD050-0603RZ	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40
SMD075-0603RZ	1.40	1.80	0.45	1.00	0.35	0.75	0.10	0.50	0.08	0.40

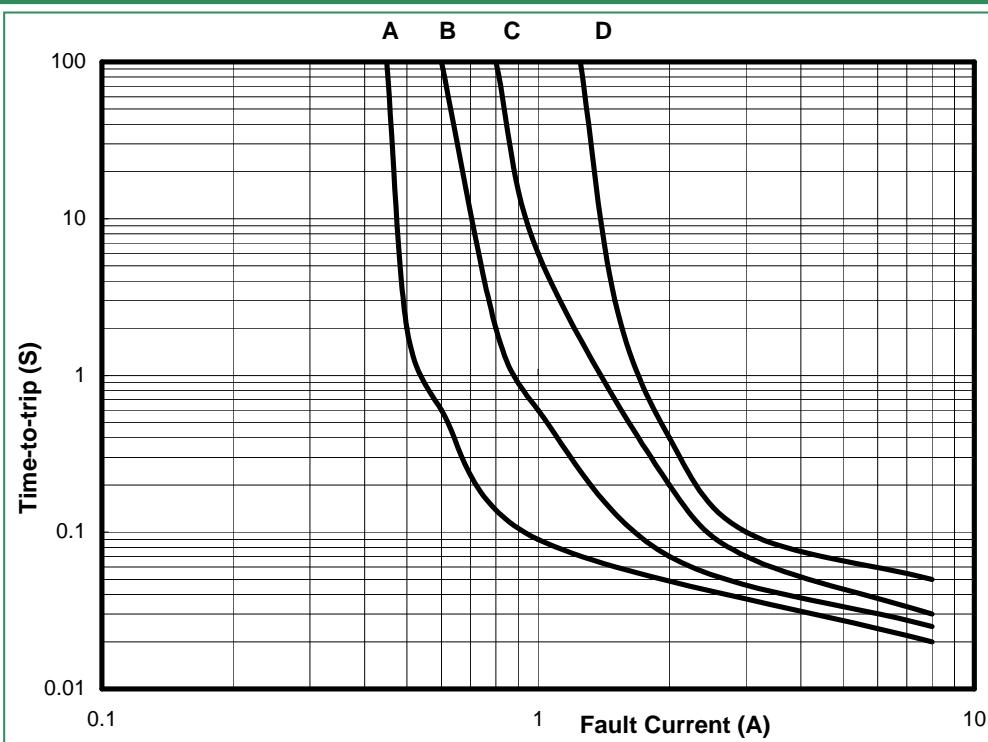
Thermal Derating Curve



NOTE : Specification subject to change without notice.

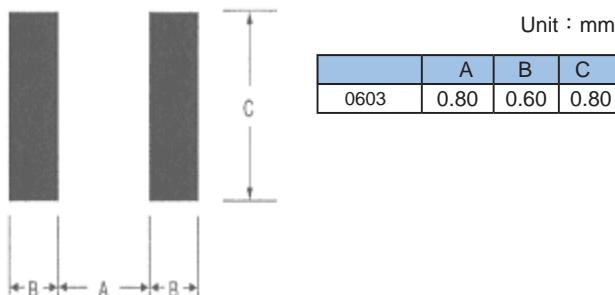
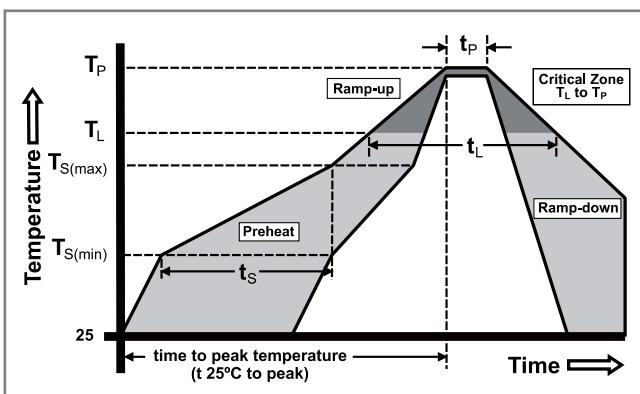
Average Time Current Curves

- A = SMD025-0603RZ**
- B = SMD035-0603RZ**
- C = SMD050-0603RZ**
- D = SMD075-0603RZ**



Soldering Parameters

Reflow Condition		Pb – free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		3°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



Part Numbering System

SMD 100 — 0603RZ

AMP Code -
Refer to Electrical
Characteristics table