

APPROVAL SHEET

MODEL NO.: SMD0402R005SF

CUSTOMER:

CUSTOMER'S APPROVAL:

AUTHORIZED SIGNATURE/STAMP

DATE

MANUFACTURER:

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Submitted by:

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Date:

Performance Specification

Model	V _{max} (V dc)	I _{max} (A)	I _{hold} @25°C (A)	I _{trip} @25°C (A)	P _d Typ. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	R _{i min} (Ω)	R _{1max} (Ω)
SMD0402R005SF	9.0	40	0.05	0.20	0.5	0.25	1.50	1.50	20.0

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

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

I_{hold} = Hold Current. Maximum current device will not trip in 25°C still air.

I_{trip} = Trip Current. Minimum current at which the device will always trip in 25°C still air.

P_d = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

R_{i min/max} = Minimum/Maximum device resistance prior to tripping at 25°C.

R_{1max} = Maximum device resistance is measured one hour post reflow.

CAUTION : Operation beyond the specified ratings may result in damage and possible arcing and flame.

Environmental Specifications

Test	條件	
Passive aging	+85°C, 1000 hrs.	
Thermal shock	+85°C to -40°C,	
Resistance to solvent	MIL-STD-202,Method 215	电阻不變化
Vibration	MIL-STD-202,Method 201	电阻不變化
操作條件環境: - 40 ° C~+85 ° C		
在跳閘狀態下產品的表面最高溫度為125° C		

Agency Approval and Environmental Compliance

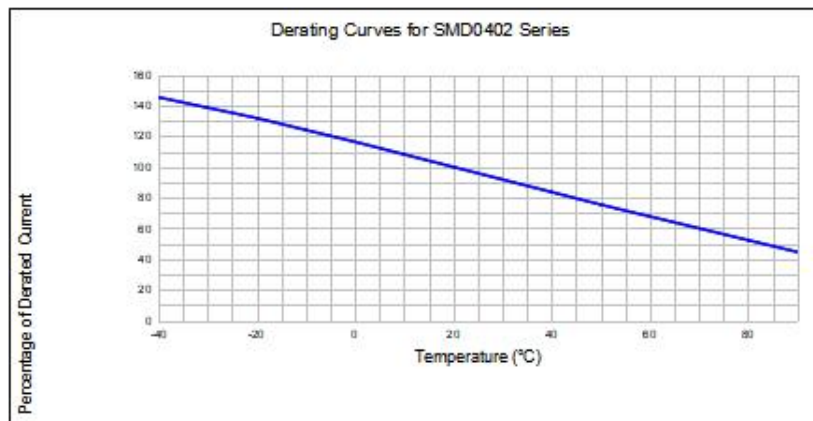
Agency	File Number	Regulation	Standard
UL	pending		2011/65/EU
TUV	pending		EN14582

Thermal Derating Chart

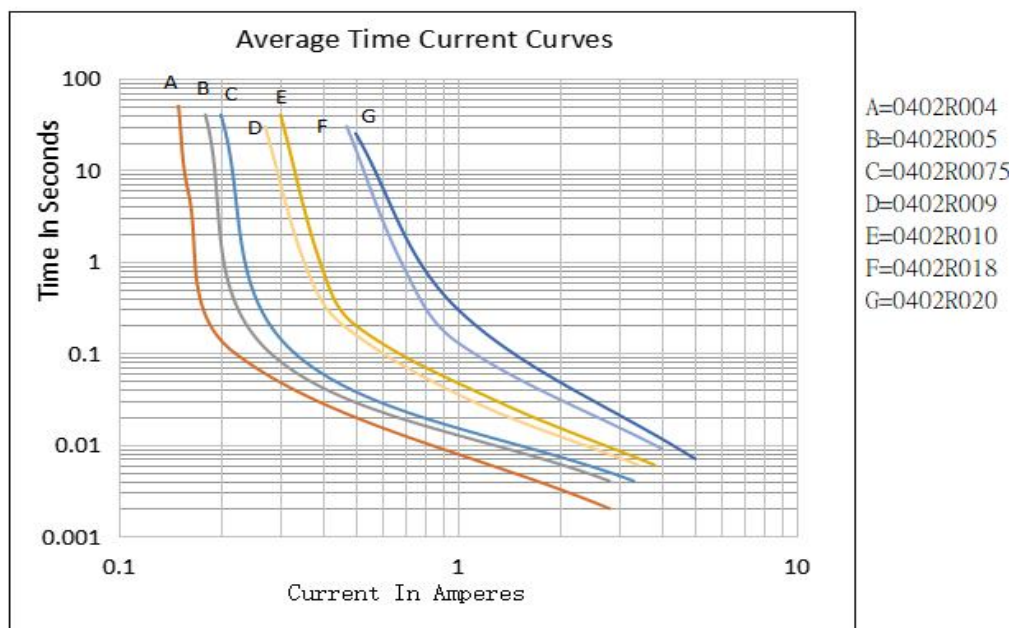
Recommended Hold Current(A) at Ambient Temperature(°C)

Model	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
SMD0402R005SF	0.073	0.065	0.058	0.05	0.044	0.04	0.037	0.033	0.028

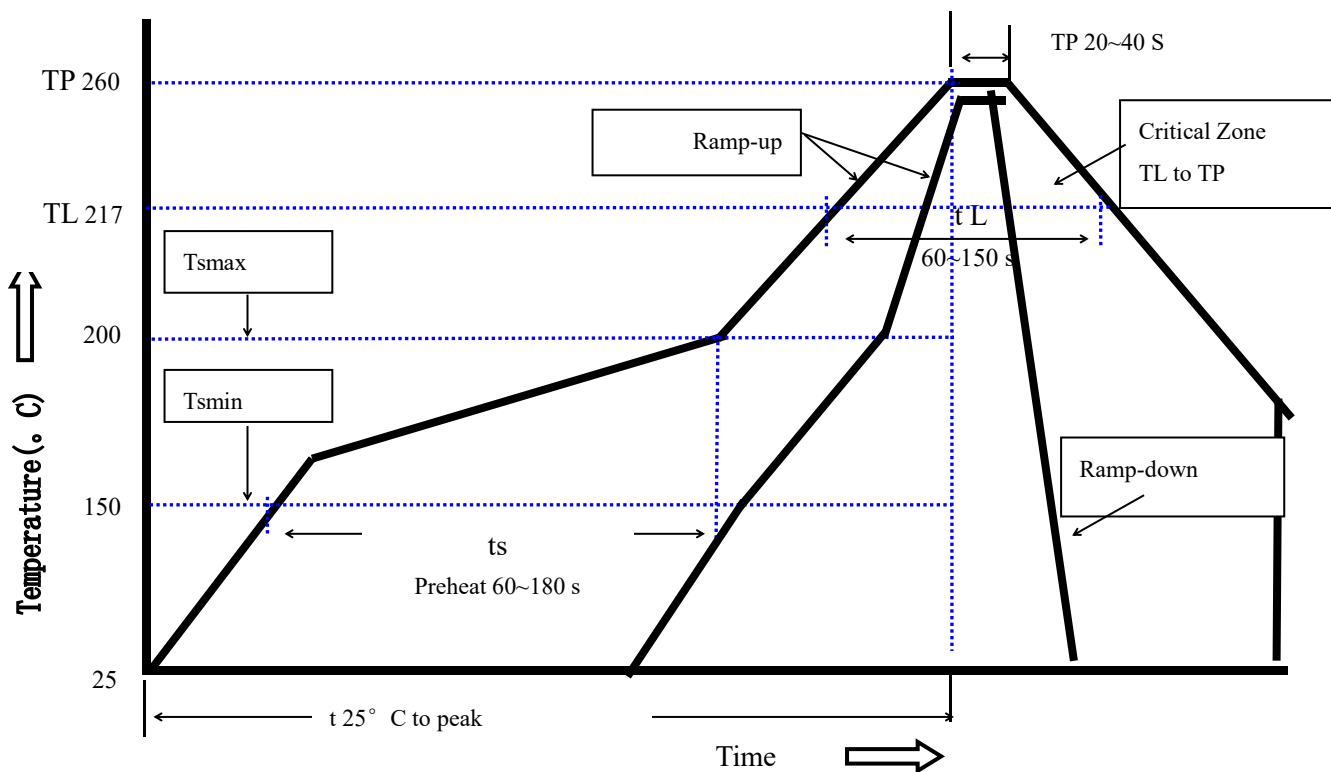
Thermal Derating Curve



Average Time-Current Curve



Soldering Parameters



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate(Ts max to T p)	3°C/second max.
Preheat	
-Temperature Min(Ts min)	150°C
-Temperature Max(Ts max)	200°C
-Time(Ts min to Ts max)	60~180 seconds
Time maintained above:	
-Temperature(TL)	217°C
-Time(tL)	60~150 seconds
Peak Temperature(Tp)	260°C
Ramp-Down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max
Storage Condition	遮光密封

Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free

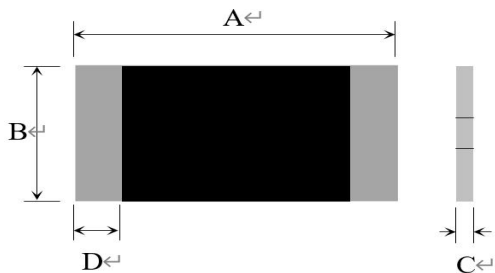
Recommended maximum paste thickness is 0.25mm

Devices can be cleaned using standard industry methods and solvents.

Note 1: All temperature refer to topside of the package, measured on the package body surface.

Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements

Physical Dimensions(mm.)



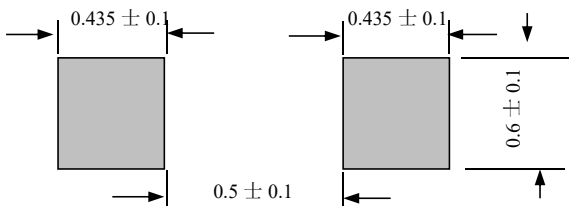
型號	A		B		C		D
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
SMD0402R005SF	0.85	1.15	0.35	0.65	0.4	0.8	0.10

Termination Pad Characteristics

Terminal pad materials: Tin-plated Nickel-Copper

Terminal pad solder ability: Meets EIA specification RS186-9E and ANSI/J-STD-002 Category 3.

Recommended Pad Layout (mm.)



注：在此印锡面积条件下，推荐钢网厚度为 $\geq 0.12\text{MM}$ (钢网厚度不够要增大刷锡面积)

Packaging Quantity

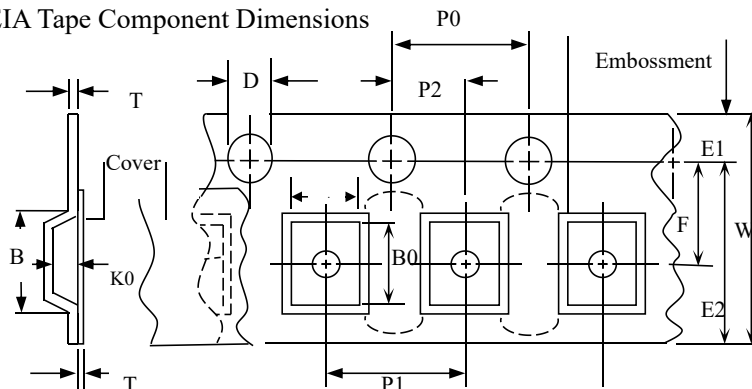
Part Number	Quantity
SMD0402HF Series	10,000 pcs/reel

Tape & reel packaging per EIA481-1

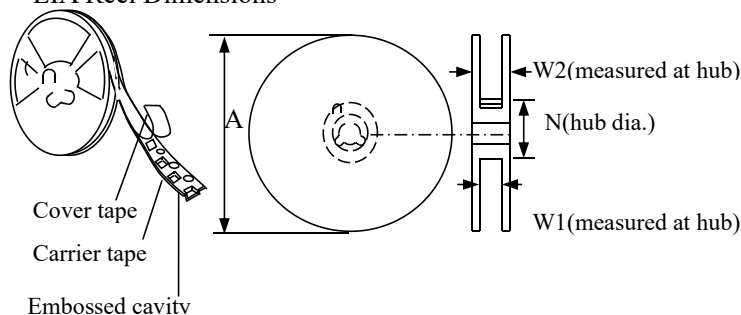
Tape And Reel Specifications (mm)

Governing Specifications	EIA 481-1
W	8.0 ± 0.2
P ₀	4.0 ± 0.10
P ₁	4.0 ± 0.10
P ₂	2.0 ± 0.05
A ₀	0.65 ± 0.10
B ₀	1.15 ± 0.10
D ₀	1.55 ± 0.05
F	3.5 ± 0.05
E ₁	1.75 ± 0.10
E ₂ min.	6.25
T	0.20
T ₁ max.	0.1
K ₀	$0.60/0.75 \pm 0.1$
Leader min.	390
Trailer min.	160
卷軸規格	
A max.	178
N min.	60
W ₁	9.0 ± 0.5
W ₂	12.0 ± 0.05
W	8.0 ± 0.2

EIA Tape Component Dimensions



EIA Reel Dimensions



Storage And Handling

- Storage conditions: 遮光密封
- Devices may not meet specified performance if storage conditions are exceeded.

Part Number System

SMD 0402 R □□□ S F □□ V

special voltage Rating(Optional)

Lead-Free

Tin-plated Nickel-Copper

Holding Current Rating

Da Rong

Device Dimensions: Length/width(Unit:1/100 inch) Size1608mm / 0603 inch

Surface Mount Device

注意事项

PPTC 使用注意事项:

- PPTC 为热敏元件, 对环境温度比较敏感, 建议在 PPTC 周围不要设计热源元件, 环境温度最高控制在 85℃, 尽量减少外部热源的影响, 否则会影响产品性能导致焊后电阻大于规格。
- 请在规格书规定的参数下(<10%)使用, 超出电压电流规格值, 会导致 PPTC 出现电弧, 阻值升高, 甚至烧片。
- 规格书的电气特性, 均是基于在大容指定测试板经过一次回流焊之后的测试; 如果客户有二次回流焊或者注塑点胶等其他热工序, 会对上述参数有一定程度的衰减, 需要验证其适用性。
- PPTC 设备在故障状态下会发生热膨胀。如果 PPTC 装置安装或放置在 PPTC 装置与周围材料(如覆盖材料、包装材料、封装材料等)之间的空间不足的应用中, 将对热膨胀产生抑制作用。挤压、扭曲、弯曲和其他类型的机械应力也会对 PPTC 设备的性能产生不利影响, 不得使用或施加。
- PPTC 贴片产品是为 SMT 工艺设计的封装形式, 焊接工艺为回流焊; 要求客户遵守我们推荐的焊盘布局和回流焊配置文件。不正确的电路板布局或回流配置可能会对 PPTC 的可焊性性能产生负面影响。焊接工艺可参考大容推荐的回流焊曲线。如果回流焊温度超过推荐的值, PPTC 将有可能受到损伤。使用手工焊及波峰焊接 PPTC 可能会导致产品焊后电阻超出规格。
- 某些注塑料、单组份、双组份固化胶粘剂、硅胶、特种润滑理基脂、侵蚀性溶剂、石蜡污染 PPTC 材料破坏芯片, 需要对注塑料胶料、石蜡等材料牌号以及应用参数(如温度、时间等)进行验证, 以确保产品及工艺的匹配性, 确认不会影响 PPTC 性能之后方可使用。PPTC 在充电线端应用中, 建议使用 PP 类材料做内膜, 禁止使用 TPE 类与 PVC 类等材料做内膜。
- PPTC 贴装或使用过程中, 不建议使用洗板水或其他清洗剂进行清洗。如必须使用, 需要验证各类清洗剂、洗板水以及溶剂的适用性, 确认不会影响 PPTC 性能之后方可使用。已知对 PPTC 有影响的化学药品包括但不限于醚类、苯类、酮类以及脂类等较强溶解性、破坏性的有机化合物, 清洗后将产品放置于敞开的环境中至少 24 小时, 将残留的溶剂进行充分的挥发。
- 装配过程中, 避免用暴力砸、挤、压、拉、扭、刺等方式作用 PPTC 本体, 以免引起 PPTC 性能衰减。
- PPTC 元件是为电路中偶尔出现的过流而设计的, 不建议用在连续且持续过流、重复故障的电路中(此类故障情况可能是由连接器的错误引脚连接引起的), 或过大范围跳闸事件可能发生时, 不得使用。
- 大容 SMD PPTC 产品为遮光密封包装。客户如在库存中发现有包装破损的, 立即将产品隔离处理; 使用时如有余料, 需恢复之前包装状态, 做遮光密封保存, 否则会影响产品性能导致焊后电阻大于规格。
- 产品废弃时, 可按照一般电子废弃物处理, 具体材料组成可参见 MSDS

如果以上注意事项的任何项目未得到遵守, 则免除所有的责任。