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)	R1max (Ω)
JSMD0402-004	12	40	0.04	0.16	0.5	0.25	1.50	3.00	30.0
JSMD0402-005	9.0	40	0.05	0.20	0.5	0.25	1.50	1.50	20.0
JSMD0402-0075	9.0	40	0.075	0.20	0.5	0.25	1.50	1.20	10.0
JSMD0402-009	6.0	40	0.09	0.18	0.5	0.50	1.00	0.15	4.00
JSMD0402-010	6.0	40	0.10	0.30	0.5	0.50	1.00	0.15	2.80
JSMD0402-018	6.0	40	0.18	0.48	0.5	1.00	1.00	0.12	2.60
JSMD0402-020	6.0	40	0.20	0.50	0.5	1.00	1.00	0.10	1.80
JSMD0402-050	6.0	50	0.50	1.00	0.5	8.00	1.00	0.04	0.40

V max = Maximum operating voltage device can withstand without damage at rated current (Imax).

I max = Maximum fault current device can withstand without damage at rated voltage (Vmax).

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.

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

Ri min/max = Minimum/Maximum device resistance prior to tripping at25°C.

R1max = 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

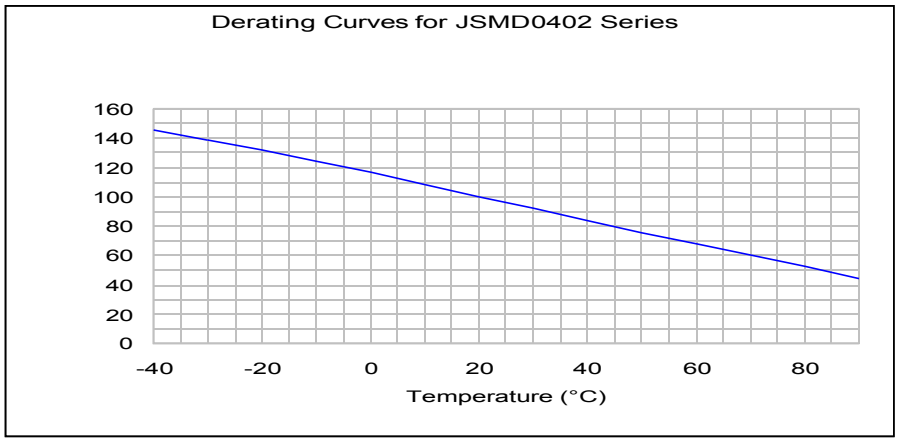
Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hrs.	±5% typical
Humidity aging	+85°C, 85% R.H. , 168 hours	±5% typical
Thermal shock	+85°C to -40°C, 20 times	±33% typical
Resistance to solvent	MIL-STD-202,Method 215	No change
Vibration	MIL-STD-202,Method 201	No change
Ambient operating conditions : - 40 °C to +85 °C		
Maximum surface temperature of the device in the tripped state is 125 °C		

Thermal Derading Chart

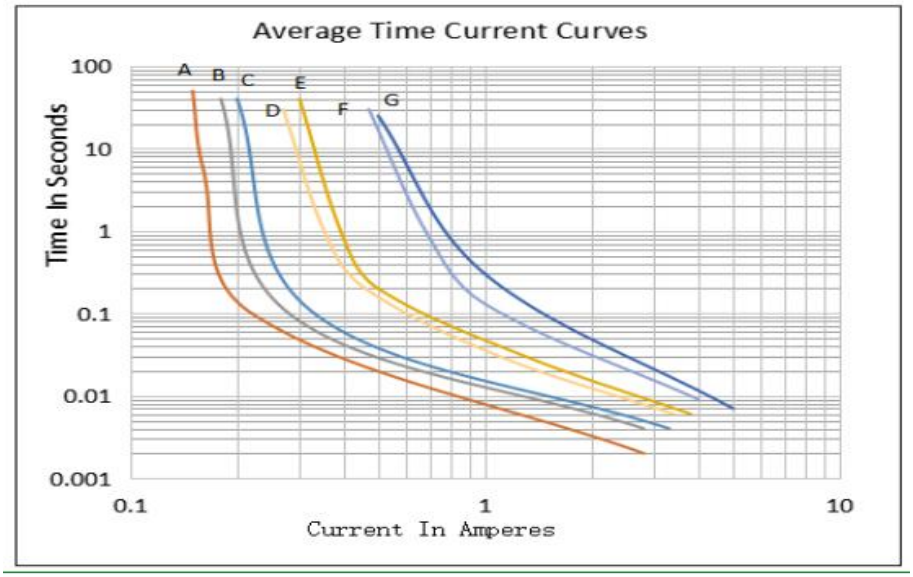
Recommended Hold Current(A) at Ambient Temperature(°C)

Model	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
JSMD0402-004	0.056	0.05	0.045	0.04	0.034	0.026	0.02	0.016	0.013
JSMD0402-005	0.073	0.065	0.058	0.050	0.044	0.04	0.037	0.033	0.028
JSMD0402-0075	0.11	0.105	0.090	0.075	0.07	0.065	0.06	0.045	0.035
JSMD0402-009	0.13	0.115	0.010	0.09	0.075	0.07	0.06	0.05	0.04
JSMD0402-010	0.14	0.13	0.11	0.10	0.09	0.08	0.07	0.06	0.05
JSMD0402-018	0.32	0.28	0.20	0.18	0.16	0.14	0.13	0.12	0.10
JSMD0402-020	0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13	0.09
JSMD0402-050	0.65	0.60	0.55	0.50	0.40	0.35	0.30	0.25	0.17

Thermal Derating Curve

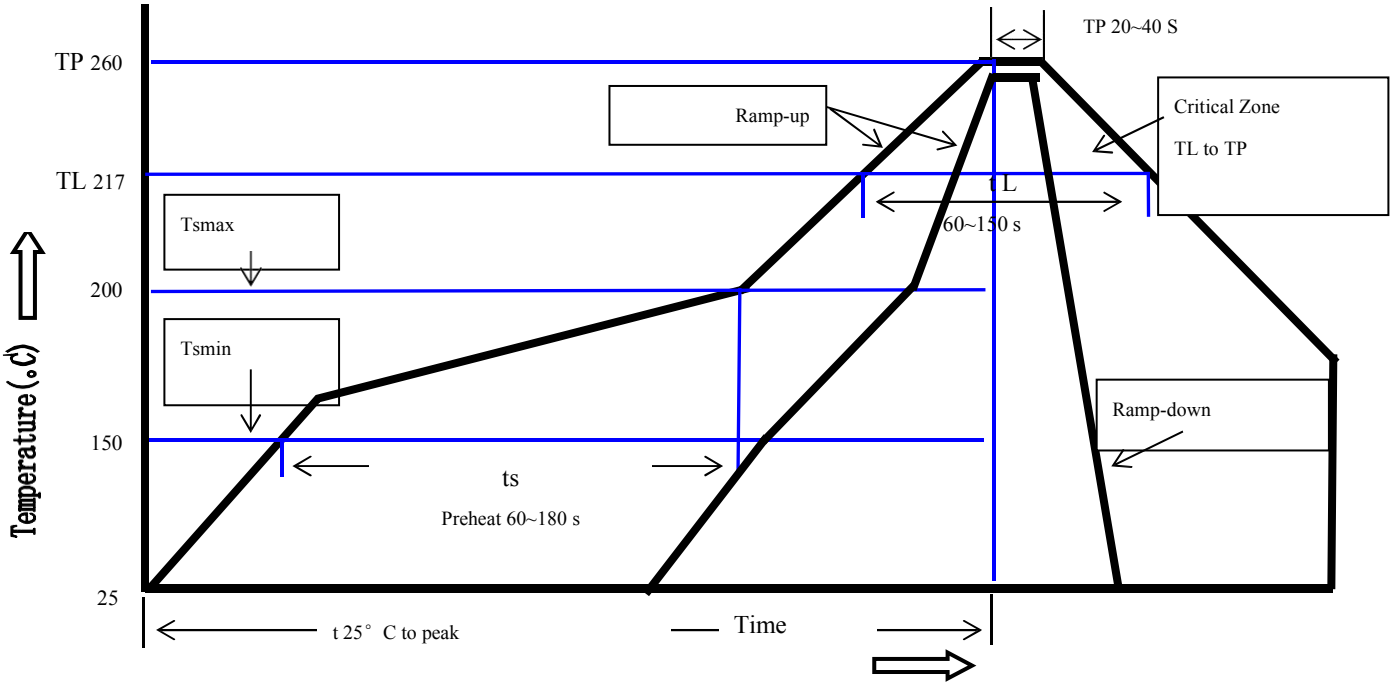


Average Time-Current Curve



A:0402-004
B:0402-005
C:0402-0075
D:0402-009
E:0402-010
F:0402-018
G:0402-020

Soldering Parameters



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate(Ts max to T p)	3℃/second mac.
Preheat -Temperature Min(Ts min) -Temperature Max(Ts max) -Time(Ts min to Ts max)	 150℃ 200℃ 60~180 seconds
Time maintained above: -Temperature(TL) -Time(tL)	 217℃ 60~150 seconds
Peak Temperature(Tp)	260℃
Ramp-Down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max
Storage Condition	0℃~35℃,≤70%RH

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

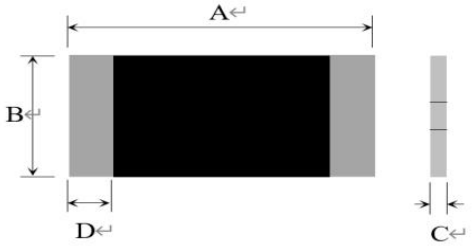
Recommended maximum paste thickness is 0.25mm

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.)



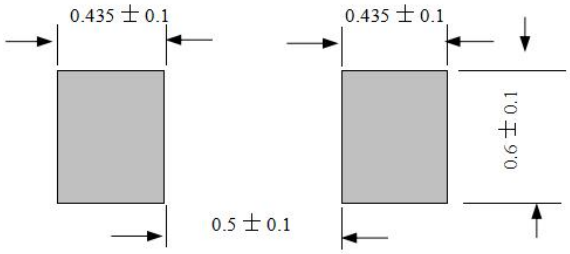
Model	A		B		C		D
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
JSMD0402-004	0.85	1.15	0.35	0.65	0.40	0.80	0.10
JSMD0402-005	0.85	1.15	0.35	0.65	0.40	0.80	0.10
JSMD0402-0075	0.85	1.15	0.35	0.65	0.40	1.00	0.10
JSMD0402-009	0.85	1.15	0.35	0.65	0.40	1.00	0.10
JSMD0402-010	0.85	1.15	0.35	0.65	0.40	1.00	0.10
JSMD0402-018	0.85	1.15	0.35	0.65	0.40	1.00	0.10
JSMD0402-020	0.85	1.15	0.35	0.65	0.40	1.00	0.10
JSMD0402-050	0.85	1.15	0.35	0.65	0.30	1.00	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.

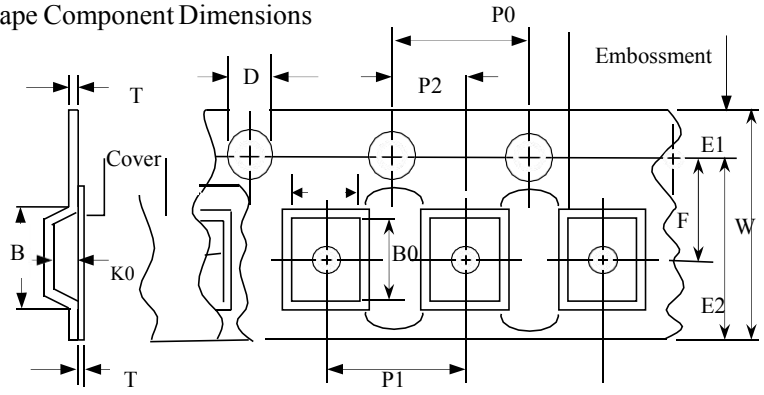
Recommended Pad Layout (mm.)



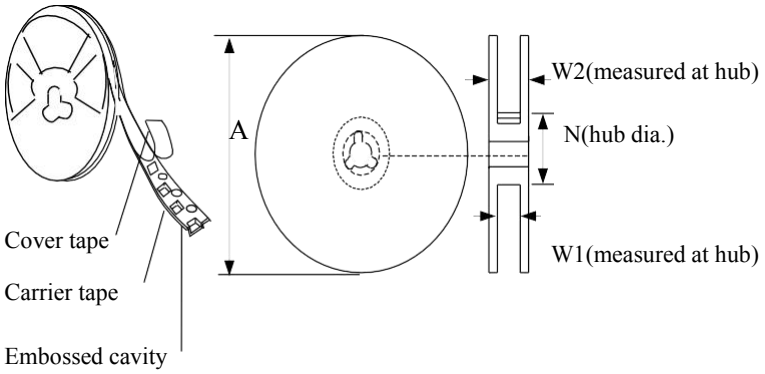
Tape And Reel Specifications (mm)

Governing	
Specifications	**EIA 481-1**
W	8.0 ± 0.2
P0	4.0 ± 0.10
P1	4.0 ± 0.10
P2	2.0 ± 0.05
A0	1.05 ± 0.10
B0	1.85 ± 0.10
D0	1.55 + 0.10
F	3.5 ± 0.05
E1	1.75 ± 0.10
E2min.	6.25
T	0.75
T1max.	0.1
K0	0.74/0.95 ± 0.1
Leader min.	390
Trailer min.	160
Reel Dimensions	
A max.	178
N min.	60
W1	9.0 ± 0.5
W2	12.0 ± 0.05

EIA Tape Component Dimensions



EIA Reel Dimensions

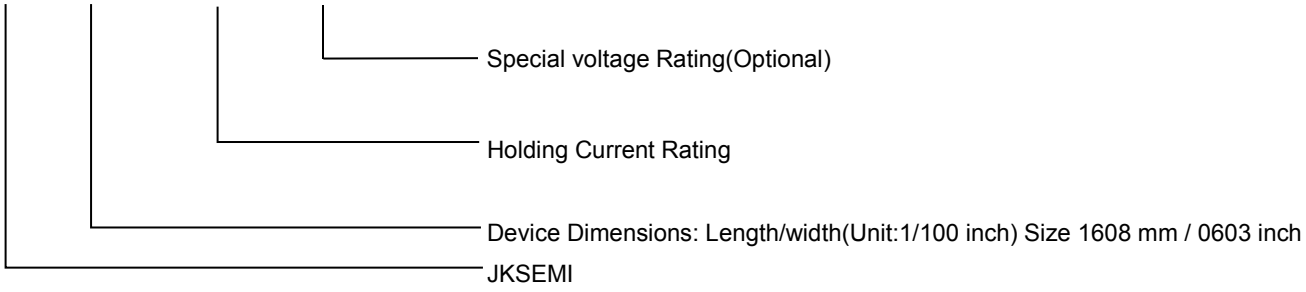


Storage And Handling

- Storage conditions：35°C max, 70% R.H.
- Devices may not meet specified performance if storage conditions are exceeded.

Part Number System

J SMD0402-□□□ / □□



Revised Record list

REV	Revised CONTENT	DATE
1.0	新修订规格书	2025-3-21

SMD PTC 使用注意事项 Cautions for SMD PTC Use

1. 请在规格书规定的最大电压和最大电流下使用，超出PTC 最大电压或最大电流规格值的操作，可能会导致PTC 出现电弧， 阻值升高，甚至烧片。
   Operation beyond the maximum voltage or current may result in device damage and possible electrical arcing or flame.
2. 规格书所规定的各温度下的Hold current 均是PTC 经过一次回流焊接得出的常规性能，PTC 能够在不同温度对应的电流 条件下保持1 小时。该电流并不是该型号PTC 能够适用的长期充电或放电电流的条件。
   Hold current at all temperatures specified in the SPEC is the conventional performance of PTC obtained by one time reflow welding. PTC can hold 1 hour under current conditions at a given temperature. This current is not the condition of long-term charging or discharging current for this type of PTC.
3. 规格书所规定的电阻以及电气特性，均是基于在金开盛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。所以需要验证其适用性。
   The above parameters are concluded from one time of reflow soldering processing the PTC. If there is any further heat generated process like injection or dispensing at the customer's premise, the aforementioned parameters will decrease at certain degree. Therefore the verification test to be conducted is necessary .
4. PTC 为热敏元件，对环境温度比较敏感，建议在PTC 周围不要设计热源元件，尽量减少外部热源的影响。
   The PTC is thermal sensitive device. It is recommended not to design any heat source devices around it to reduce the outside heat source impact.
5. PTC 贴片产品是为SMT 工艺设计的封装形式，焊接工艺为回流焊。焊接工艺可参考金开盛推荐的回流焊曲线。如果回流焊 温度超过推荐的值，PTC 将有可能受到损伤。禁止使用手工焊接PTC，禁止对线路板其他元件或端子返工时使用热风枪。 SMD PTC is designed for SMT processing which applies reflow soldering. Please refer to the JKSEMI recommended curve for reference. If the reflow soldering temperature exceeds the recommended value, the PTC might be damaged. Hand welding PTC is prohibited. Heat gun is not allowed to use during the circuit board components or terminals rework .
6. PTC 贴装或应用过程中,所使用到的各类注塑料、单组份、双组份固化胶粘剂、硅胶，需要对注塑料胶料等材料牌号以及 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PTC 性能之后方可使用。
   When mounting or using PTC, all injection molding materials, curing adhesives, UV glue , silica gel and cleaning agents or solvents must be tested in terms of application parameters e.g. temperature, time, and etc to ensure the consistency between the product and the processing before use.
7. PTC 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PTC 性能之后方可使用。已知对PTC 有影响的化学药品包括但不仅限于醚类、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。
   When mounting or using PTC, it is not recommended to use circuit board washer water or other cleaning agent. If cleaning is required, it is necessary to verify the applicability of various cleaning agents, washboard water and solvents, and confirm that they will not affect the PTC performance . The known chemicals that impacts PTC include but not limited to ethers, benzene homolog, ketones, lipids and derivates that is of strong solubleness and ruinous. Please place the product in open environment for at least 24 hours to volatilize solvents residuals.
8. 装配过程中，避免用暴力砸、挤、压、拉、扭、刺等方式作用PTC 本体，以免引起PTC 性能衰减。
   Please do not smash, clamp, pull, dent or twist by tool during assembling process otherwise it might be a cause of the performance degradation.
9. 在产品应用中，PTC 焊接至保护板后，如需注塑或打胶，须在尽量短的时间内完成，如贴装与注塑打胶时间间隔超过1 个月，则需密闭保存，可避免PTC 长时间暴露于空气环境中。
   When PTC is welded to the PCM in product application, if injection or gluing is needed, it should be completed in as short a time as possible. If the time slot between mounting and injection or gluing surpasses 1 month,, please keep in airtight environment to avoid long air exposure.
10. PTC 为自恢复保护元件，但并不能当做开关使用，重复多次的保护会降低PTC 的维持电流。
    PTC is resettable protection device which shall not be taken for use as switch. Multiple times tripping shall lower the PTC hold current.
11. PTC 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。
    In charging terminal application, PP type material is recommended to use as inner membrane and TPE and PVC type material is inhibited.
12. PTC 在加工过程中，如有烙铁焊接工艺，建议焊接位置距离PTC 1.5mm 以上，焊接工具温度低于350℃，焊接铁头与焊点的接触时间不超过3sec。
    In the process of PTC processing, if there is soldering iron welding process, it is suggested that the welding position sh ould be more than 1.5mm away from PTC, the welding tool temperature should be lower than 350℃, and the contact ti me between soldering iron and solder joint should not exceed 3sec.
13. 金开盛低阻SMD PTC 湿敏等级为（**2a级**），为密封包装。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，做密封保存
    JKSEMI low resistance SMD PTC humidity sensitivity （grade 2a）, for sealed packaging. If customers find damaged packaging in stock, they should isolate the product immediately; if there is surplus material, they need to restore the packaging status , and do sealed storage.
14. 金开盛低阻SMD PPTC产品长期无真空包装外露1-4周，通过测试观察内阻是否有变化。如有变化，需在条件温度85℃真空控烤24个小时，通过接测试并观察内阻在规格书范围即可正常使用，如若超出范围，报废处理。
    The Jinkai Sheng low-resistance SMD PPTC products, which have been exposed to the air for 1-4 weeks without vacuum packaging, will be tested to check for any changes in internal resistance. If any changes are detected, the products must undergo a 24-hour vacuum-controlled baking at 85℃. After passing the welding test and confirming that the internal resistance is within the specified range as outlined in the datasheet, they can be used normally. If the resistance exceeds the specified range, the products will be scrapped