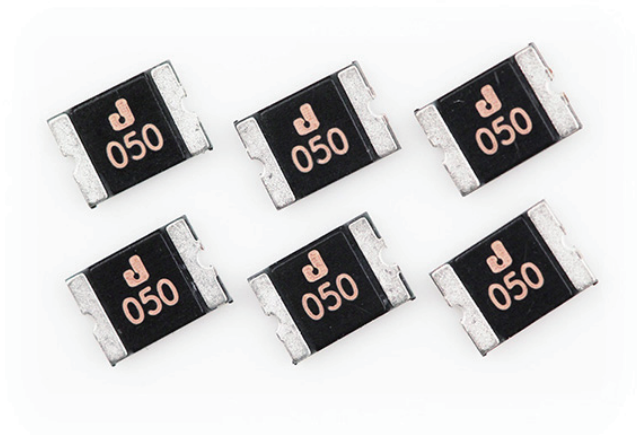


为您的产品保驾护航

PRODUCT DATASHEET

PTC Devices • Surface Mount

ASMD2512 Series Surface Mount PTC Devices



Agency Approvals

Regulation	Standard
 RoHS	2002/95/EC
 Halogen Free	EN14582

Description

The ASMD2512 series provides surface mount resettable overcurrent protection.

This series offer complete portfolio in terms of holding current and working voltage, and is suitable for wide range of applications.

Features

- RoHS compliant and lead-free
- Low profile
- Halogen-free
- Fast response to fault current
- Compact design saves board space
- Compatible with high temperature solders

Applications

- USB port protection - USB 2.0, 3.0&OTG
- HDMI 1.4 Source protection
- Game console port protection
- PDAs / digital cameras
- Game console port protection
- General electronics

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)
ASMD2512-050-60V	60	50	0.50	1.00	1.5	2.50	5.00	0.20	1.10
ASMD2512-050-72V	72	50	0.50	1.00	1.5	2.50	5.00	0.20	1.10
ASMD2512-075-48V	48	50	0.75	1.50	1.8	8.0	0.50	0.10	0.90
ASMD2512-075-60V	60	50	0.75	1.50	1.8	8.0	0.50	0.10	0.90
ASMD2512-100-48V	48	50	1.00	2.00	1.8	8.0	0.50	0.09	0.40
ASMD2512-100-60V	60	50	1.00	2.00	1.8	8.0	0.50	0.09	0.40
ASMD2512-150-33V	33	50	1.50	3.00	1.8	8.0	1.00	0.028	0.20
ASMD2512-200-24V	24	50	2.00	4.00	2.0	8.0	3.00	0.02	0.12
ASMD2512-200-33V	33	50	2.00	4.00	2.0	8.0	3.00	0.02	0.12
ASMD2512-200-36V	36	50	2.00	4.00	2.0	8.0	3.00	0.02	0.12
ASMD2512-260-24V	24	50	2.60	5.20	2.0	13.0	1.30	0.014	0.085
ASMD2512-300-24V	24	50	3.00	6.00	2.0	15.0	1.40	0.006	0.060
ASMD2512-350-24V	24	50	3.50	7.00	2.0	17.5	1.50	0.005	0.050
ASMD2512-400-24V	24	50	4.00	8.00	2.0	20.0	1.00	0.004	0.045

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.

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}).

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.

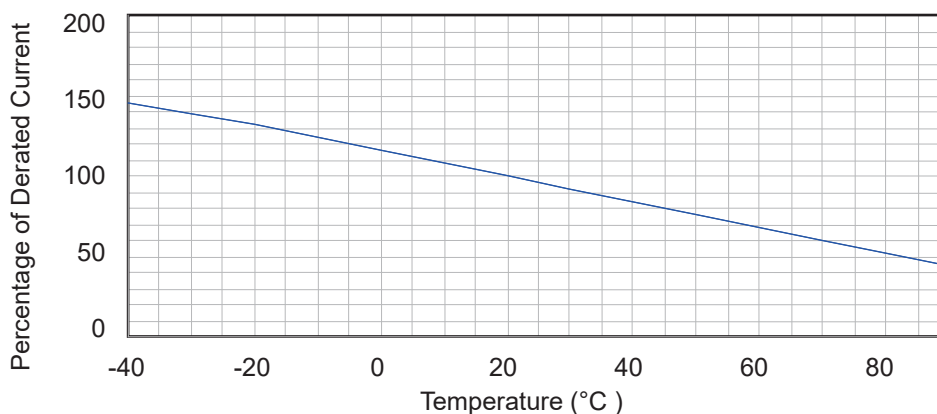
R_{1max} = Maximum device resistance is measured one hour post reflow.

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

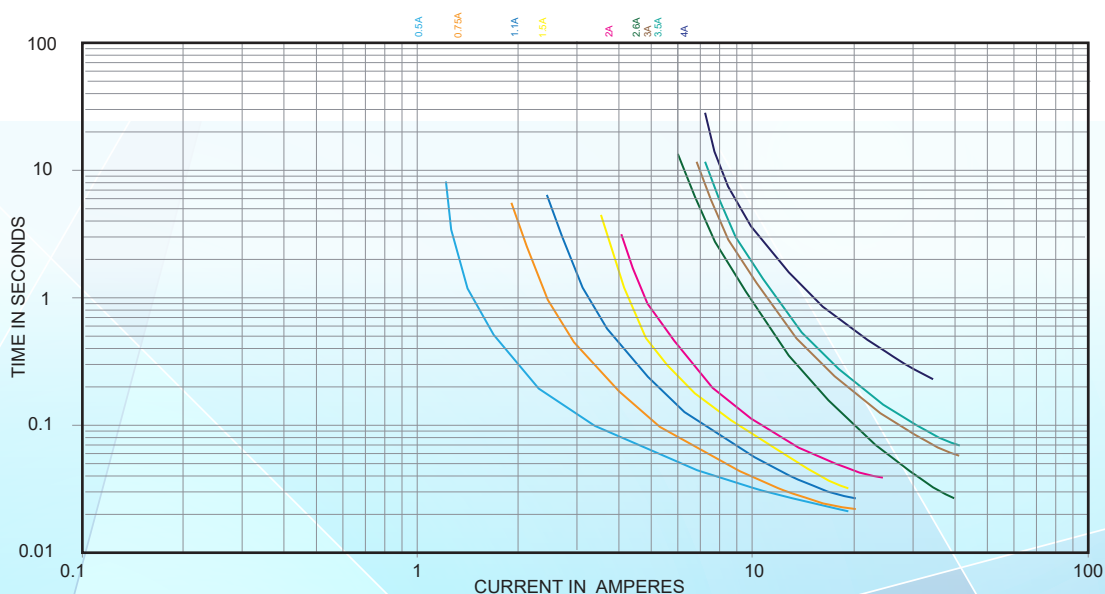
Environmental Specifications

Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hrs.	±5% typical
Humidity aging	+85°C, 85% R.H. , 1000 hours	±5% typical
Thermal shock	+85°C to -40°C, 20 times	±30% typical
Resistance to solvent	MIL-STD-202,Method 215	No change
Vibration	MIL-STD-883,Method 2007	No change
Ambient operating conditions : - 40 °C to +85 °C		
Maximum surface temperature of the device in the tripped state is 125 °C		
Storage Conditions: +40 °C Max. 70% RH Max. Packed in original packaging		

Thermal Derating Curve



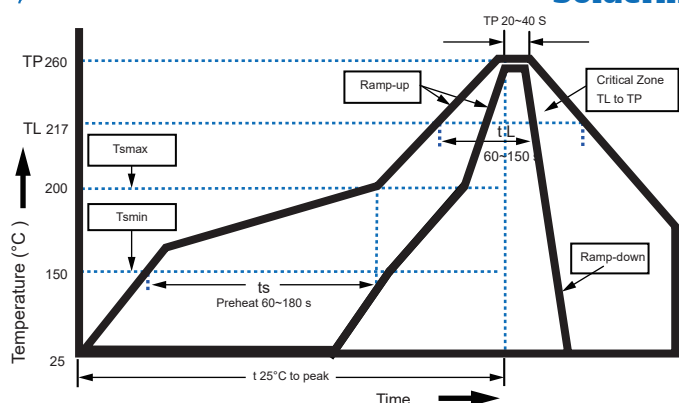
Average Time-Current Curve



Thermal Derating Chart

Model	Maximum ambient operating temperature (T_{mac}) vs. hold current (I_{hold})								
	- 40°C	- 20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
ASMD2512-050	0.59	0.57	0.55	0.50	0.45	0.43	0.35	0.30	0.23
ASMD2512-075	1.10	0.99	0.87	0.75	0.63	0.57	0.49	0.45	0.35
ASMD2512-100	1.52	1.40	1.21	1.00	0.86	0.75	0.69	0.54	0.50
ASMD2512-150	2.10	1.96	1.77	1.50	1.23	1.09	0.95	0.82	0.61
ASMD2512-200	2.88	2.61	2.25	2.00	1.80	1.66	1.45	1.09	0.80
ASMD2512-260	3.90	3.42	2.96	2.60	2.33	2.07	1.94	1.35	1.00
ASMD2512-300	4.15	3.76	3.46	3.00	2.55	2.28	2.01	1.61	1.33
ASMD2512-350	4.84	4.39	4.04	3.50	2.98	2.66	2.35	1.88	1.55
ASMD2512-400	5.80	5.20	4.60	4.00	3.35	3.12	2.75	2.45	2.10

Soldering Parameters



- 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.

Profile Feature

Pb-Free Assembly

Average Ramp-Up Rate 3°C/second max.
(T_s max to T_p)

Preheat

- Temperature Min(T_s min)	150°C
- Temperature Max(T_s max)	200°C
- Time(T_s min to T_s max)	60~180 seconds

Time maintained above:

- Temperature(T_L)	217°C
- Time(t_L)	60~150 seconds

Peak Temperature(T_p) 260°C

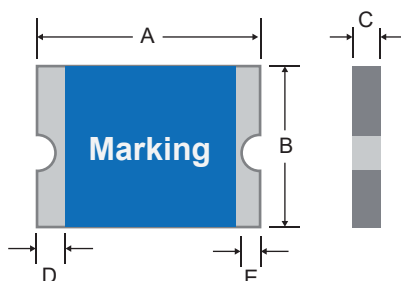
Ramp-Down Rate 6°C/second max.

Time 25°C to Peak Temperature 8 minutes max

Storage And Handling:

Storage conditions 0°C~ 35°C, 30% ~60% R.H.

Devices may not meet specified performance if storage conditions are exceeded.

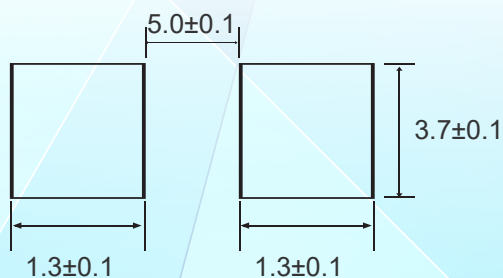
Physical Dimensions(mm.)


Model	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
ASMD2512-050-60V	6.10	6.85	3.10	3.30	0.6	1.20	0.3	0.15
ASMD2512-050-72V	6.10	6.85	3.10	3.30	0.6	1.20	0.3	0.15
ASMD2512-075-48V	6.10	6.85	3.10	3.30	0.6	1.20	0.3	0.15
ASMD2512-075-60V	6.10	6.85	3.10	3.30	0.6	1.20	0.3	0.15
ASMD2512-100-48V	6.10	6.85	3.10	3.30	0.8	1.40	0.3	0.15
ASMD2512-100-60V	6.10	6.85	3.10	3.30	0.8	1.40	0.3	0.15
ASMD2512-150-33V	6.10	6.85	3.10	3.30	0.8	1.40	0.3	0.15
ASMD2512-200-24V	6.10	6.85	3.10	3.30	0.8	1.40	0.3	0.15
ASMD2512-200-33V	6.10	6.85	3.10	3.30	0.8	1.40	0.3	0.15
ASMD2512-200-36V	6.10	6.85	3.10	3.30	0.8	1.40	0.3	0.15
ASMD2512-260-24V	6.10	6.85	3.10	3.30	0.8	1.40	0.3	0.15
ASMD2512-300-24V	6.10	6.85	3.10	3.30	0.8	1.40	0.3	0.15
ASMD2512-350-24V	6.10	6.85	3.10	3.30	0.8	1.40	0.3	0.15
ASMD2512-400-24V	6.10	6.85	3.10	3.30	0.80	1.40	0.3	0.15

Termination Pad Characteristics

Terminal pad materials: Tin-plated Nickel-Copper

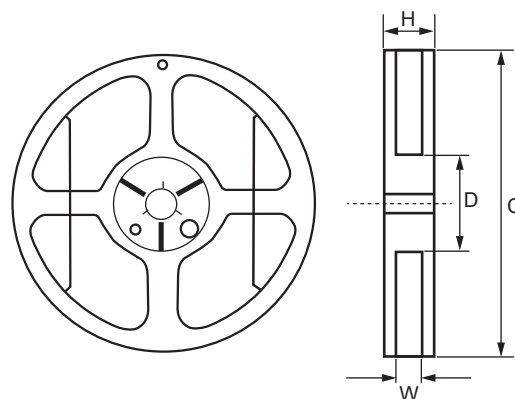
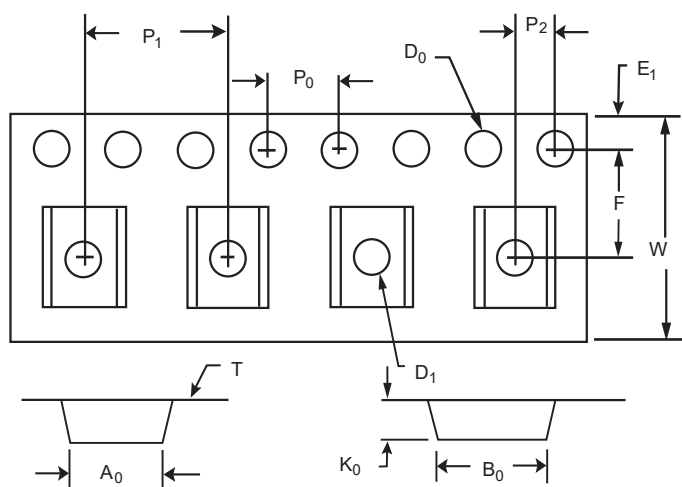
Terminal pad solder ability: Meets EIA specification RS186-9E and ANSI/J-STD-002 Category 3.

Recommended Pad Layout and Packaging Quantity


Part Number	Quantity
ASMD2512 Series	1,000 pcs/reel
ASMD2512-050	1,500 pcs/reel
ASMD2512-075	
ASMD2512-150	
Tape & reel packaging per EIA481-1	

Tape And Reel Specifications (mm)

Governing Specifications	EIA 481-1
W	16.0 ± 0.60
F	7.50 ± 0.1
E1	1.75 ± 0.10
D0	1.55 ± 0.05
D1	1.5 Min
P0	4.00 ± 0.10
P1	8.00 ± 0.10
P2	2.00 ± 0.05
A0	3.50 ± 0.10
B0	6.70 ± 0.10
T	0.3 ± 0.1
K0	$1.3/1.65 \pm 0.10$
Leader	390 mm
Trailer	160 mm


REEL DIMENSIONS: EIA-481-1(mm)

C	$\phi 178 \pm 3.0$
D	$\phi 60.2 \pm 0.5$
W	17.0 ± 0.2
H	19.5 ± 1.0

Part Number System
ASMD 2512 - □□□ - □□

Special Voltage Rating(Optional)

Holding Current Rating

Size 2512 inch

Surface Mount Device

Application Notice

1. Operation of these PPTC devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire;

PPTC 器件在超过规定的最大值额定值运行可能会导致器件损坏以及导致电弧和/或火灾。

2. These PPTC devices are intended to protect against the effects of temporary over-current or over-temperature conditions and shall not be taken for use as switch.

PPTC 的作用是防止临时的过流或过温造成的不良影响，不能当作开关使用。

3. Exposure to lubricants, silicon-based oils, solvents, gels, electrolytes, acids, and other related or similar materials may adversely affect the performance of PPTC devices.

PPTC 接触润滑剂、硅基油、溶剂、凝胶、电解质、酸和其他相关或类似材料可能会对 PPTC 器件的性能有不利影响。

4. Circuits with inductance may generate a voltage above the rated voltage of the PPTC device and should be thoroughly evaluated within the user's application during the PPTC selection and qualification process.

带有电感的电路可能产生高于 PPTC 额定电压的电压，因此客户在选型和认定过程中应进行彻底的评估。

5. Please do not smash, clamp, pull, dent or twist by tool during assembling process, as they may result in the PPTC damage.

在装配过程中，避免有砸、挤、拉、扭等方式外力作用于 PPTC 本体上，因为它们可能导致 PPTC 损坏。

6. Hand-soldering of PPTC devices on boards is generally not recommended. Users shall define and verify this process if needed.

不推荐使用手工焊接的方式焊接 PPTC。如果需要，用户需要定义和验证此过程。

7. Recommended storage conditions should be followed at all times, The MSL classification of PPTC is grade 2a.

必须始终遵守推荐的保存条件要求，PPTC 的 MSL 等级为 2 a 级。

8. The above parameters are concluded from one time of reflow soldering processing the PPTC. 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.

规格书所规定的电阻以及电气特性，均是基于在指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。

9. When mounting or using PPTC, 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.

PPTC 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、清洁剂、溶剂等，需要对注塑料胶料等材料的应用参数（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。

10. In charging terminal application, PP type material is recommended to use as inner membrane and TPE and PVC type material is inhibited. 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。