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PRODUCT DATASHEET

Surface Mount PTC Devices

ASMD0402SL Series Surface Mount PTC Devices

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Description

The ASMD0402SL Series PTC provides surface mount overcurrent protection for applications where space is at a premium and resettable protection is desired.

Features

- RoHS compliant ,lead-free and Halogen-free
- Fast response to fault current
- Compact design saves board space
- Low resistance
- Low profile
- Compatible with high temperature solders
- ASMD0402SL size- the smallest PPTC in the market compatible with high temperature solders

Applications

- USB peripherals
- Disk drives
- CD-ROMs
- Plug and play protection for motherboards and peripherals
- PDAs / digital cameras
- Game console port protection
- Tablet and Notebook PCs
- E-readers

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)
ASMD0402SL010-6V	6	40	0.10	0.30	0.5	0.5	1.0	0.15	3.50
ASMD0402SL020-6V	6	40	0.20	0.50	0.5	1.0	1.0	0.10	1.25
ASMD0402SL035-6V	6	50	0.35	0.70	0.5	8.0	0.1	0.05	0.70
ASMD0402SL050-6V	6	50	0.50	1.00	0.5	8.0	0.1	0.04	0.40

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 (Imax).
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.

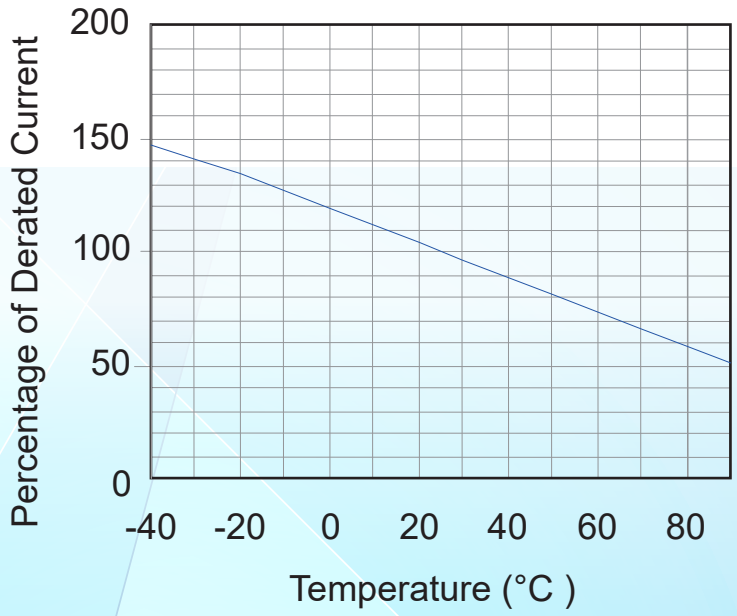
Environmental Specifications

Test	Conditions
Operating/Storage Temperature	-40°C to +85°C
Maximum Device Surface Temperature in Tripped State	125°C
Solvent Resistance	MIL-STD-202,Method 215 No change
Vibration	MIL–STD–883, Method 2007,Condition A No change
Moisture Sensitivity Level	Level 1, J–STD–020

Thermal Derading Chart

Model	Maximum ambient operating temperature (T_{mao}) vs. hold current (I_{hold})								
	- 40°C	- 20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
ASMD0402SL010	0.15	0.13	0.12	0.10	0.09	0.07	0.06	0.05	0.01
ASMD0402SL020	0.29	0.27	0.24	0.20	0.17	0.14	0.11	0.10	0.03
ASMD0402SL035	0.51	0.47	0.41	0.35	0.30	0.25	0.20	0.18	0.07
ASMD0402SL050	0.74	0.67	0.59	0.50	0.43	0.36	0.29	0.26	0.10

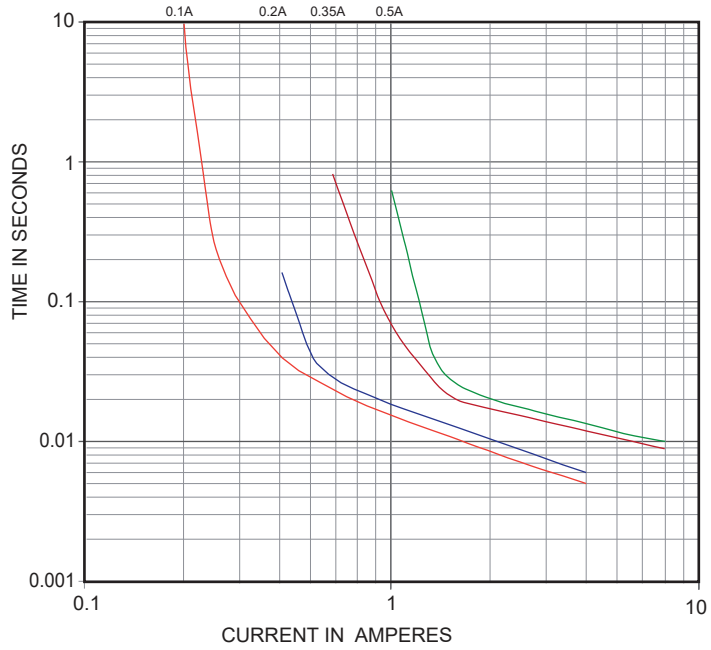
Thermal Derating Curve



Note:
Typical Temperature rerating curve, refer to table for derating data

Average Time-Current Curve

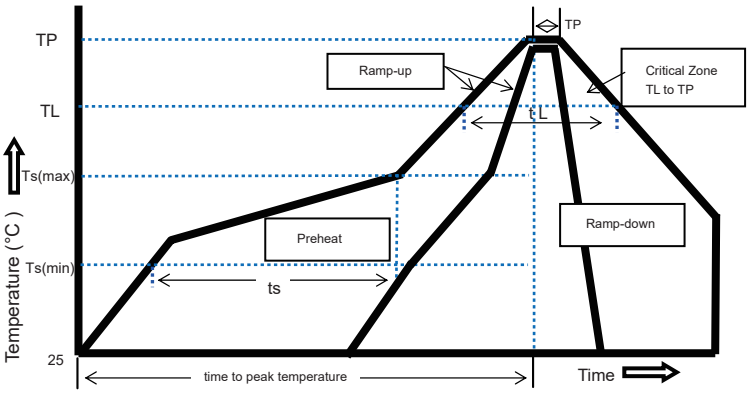
The average time current curves and Temperature Rerating curve performance is affected by a number or variables, and these curves provided as guidance only. Customer must verify the performance in their application.



Physical Specifications

Terminal Material	Lead Solderability
Solder-Plated Copper (Solder Material: Matte Tin (Sn))	Solder-Plated Copper (Solder Material: Matte Tin (Sn))

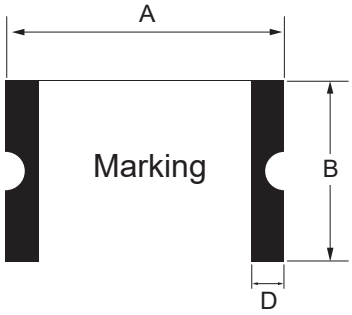
Soldering Parameters



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (Ts max to T p)	3℃/second mac.
Preheat	
-Temperature Min(Ts min)	150℃
-Temperature Max(Ts max)	200℃
-Time(Ts min to Ts max)	60~180 seconds
Time maintained above:	
-Temperature(TL)	217℃
-Time(tL)	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

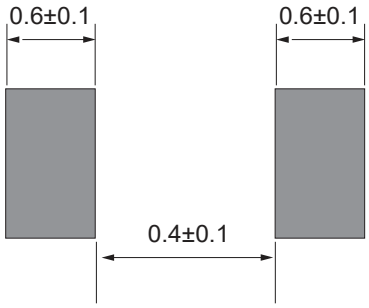
-- All temperature refer to topside of the package, measured on the package body surface
-- If reflow temperature exceeds the recommended profile, devices may not meet the performance requirements
-- Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead
-- Recommended maximum paste thickness is 0.25mm (0.010inch)
-- Devices can be cleaned using standard industry methods

Physical Dimensions(mm.)



Top and Bottom View

Side View



Recommended Pad Layout（mm）

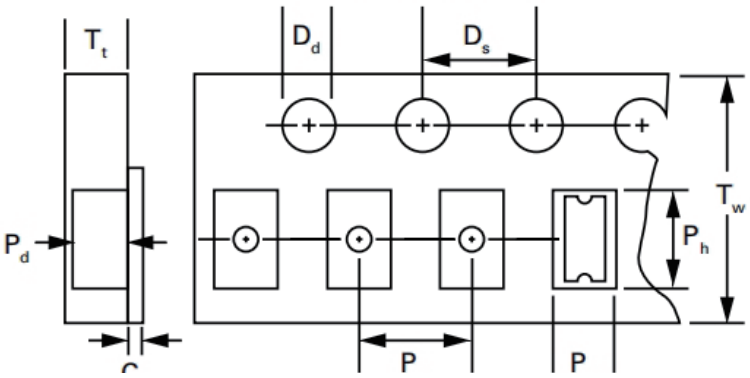
Model	A		B		C		D
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
ASMD0402SL010	0.85	1.25	0.35	0.75	0.20	0.65	0.10
ASMD0402SL020	0.85	1.25	0.35	0.75	0.20	0.65	0.10
ASMD0402SL035	0.85	1.25	0.35	0.75	0.20	0.65	0.10
ASMD0402SL050	0.85	1.25	0.35	0.75	0.20	0.65	0.10

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

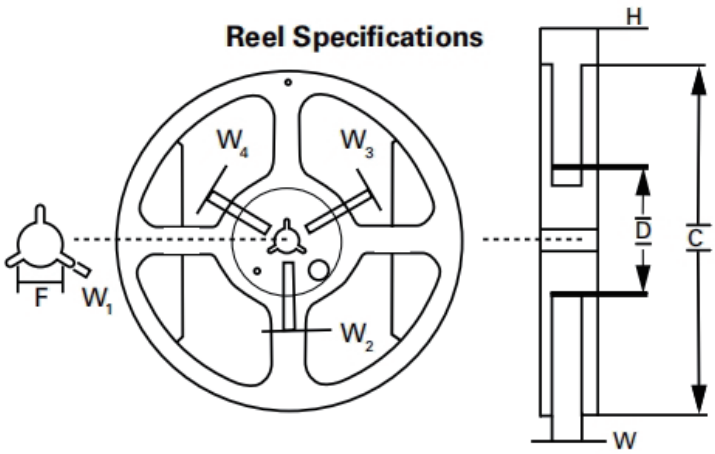
Tape And Reel Specifications (mm)

Tape Specifications	
Ct	0.05 ± 0.01
Dd	1.5 ± 0.1
Ds	4.0 ± 0.1
Pd	0.41 ± 0.1
Ph	1.12 ± 0.1
Ps	2.0 ± 0.1
Pw	0.65 ± 0.03
Tt	0.61 ± 0.1
Tw	8.0 ± 0.1
Reel Dimensions	
H	12.0 ± 0.5
W	9.0 ± 0.5
D	φ60 ± 0.5
F	φ13.0 ± 0.2
C	φ178 ± 1
W1	2.2 ± 0.5
W2	3.0 ± 0.5
W3	4.0 ± 0.5
W4	5.5 +0.5

Tape Specifications



Reel Specifications



Packaging Quantity

Part Number	Packing Option	Quantity
ASMD0402SL	Tape & Reel	10,000 pcs/reel

Part Number System

ASMD 0402 SL □□□ - □□

- Special Voltage Rating(Optional)
- Holding Current Rating
- Super Low resistance
- Device Dimensions: Length/width(Unit:1/100 inch) Size 1005 mm / 0402 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。