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PRODUCT DATASHEET

Surface Mount PTC Devices

ASMD0603SL Series Surface Mount PTC Devices

Description

The ASMD0603SL series provides miniature surface mount resettable overcurrent protection with holding current from 0.35mA to 3.0A.

This world's smallest PTC is suitable for ultra portable applications where space is at a premium and the device current is low.

Features

- RoHS compliant
- Halogen-free
- Faster tripping
- 0603 Dimension
- Surface mountable
- Solid state
- Operating Current: 0.35A~3.0A, @25℃
- Maximum Voltage: 6V~12V
- Operating Temperature: -40℃ ~ 85℃
- Certification: ROHS,UL

Agency Approvals

Agency	File Number
	Pending

Applications

- Mobile phones and PDAs
- USB peripherals
- Portable MP3 and media player
- IC VCC protection
- Mobile Internet Device (MID)

Regulation	Standard
	2002/95/EC
	EN14582

Electrical Characteristics

Model	V _{max} (V)	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)
ASMD0603SL035	6	50	0.35	0.7	0.5	8.0	0.1	0.150	1.000
ASMD0603SL035-12V	12	50	0.35	0.7	0.5	8.0	0.1	0.150	1.000
ASMD0603SL050	6	50	0.50	1.0	0.5	8.0	0.6	0.070	0.400
ASMD0603SL050-12V	12	50	0.50	1.0	0.5	8.0	0.6	0.070	0.400
ASMD0603SL075	6	50	0.75	1.5	0.5	8.0	1.0	0.055	0.250
ASMD0603SL075-12V	12	50	0.75	1.5	0.5	8.0	1.0	0.055	0.250
ASMD0603SL100	6	50	1.00	2.0	0.5	8.0	2.0	0.045	0.120
ASMD0603SL100-12V	12	50	1.00	2.0	0.5	8.0	2.0	0.045	0.120
ASMD0603SL125	6	50	1.25	2.5	0.5	8.0	3.0	0.035	0.100
ASMD0603SL125-12V	12	50	1.25	2.5	0.5	8.0	3.0	0.035	0.100
ASMD0603SL150	6	50	1.50	3.0	0.5	8.0	4.0	0.025	0.080
ASMD0603SL150-12V	12	50	1.50	3.0	0.5	8.0	4.0	0.025	0.080
ASMD0603SL175	6	50	1.75	3.5	0.5	8.0	5.0	0.015	0.070
ASMD0603SL175-12V	12	50	1.75	3.5	0.5	8.0	5.0	0.015	0.070
ASMD0603SL200	6	50	2.00	4.0	0.5	8.0	5.0	0.012	0.060
ASMD0603SL200-12V	12	50	2.00	4.0	0.5	8.0	5.0	0.012	0.060
ASMD0603SL250	6	50	2.50	5.0	0.5	8.0	5.0	0.010	0.055
ASMD0603SL250 -12V	12	50	2.50	5.0	0.5	8.0	5.0	0.010	0.055
ASMD0603SL260	6	50	2.60	5.2	0.5	8.0	5.0	0.008	0.050
ASMD0603SL260-12V	12	50	2.60	5.2	0.5	8.0	5.0	0.008	0.050
ASMD0603SL300	6	50	3.00	6.0	0.5	8.0	5.0	0.008	0.040
ASMD0603SL300-12V	12	50	3.00	6.0	0.5	8.0	5.0	0.008	0.040

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.

Test Procedures and Requirements

Test	Conditions	Accept/Reject Criteria
Initial Resistance	In still air at 25±2°C	$R_{min} \leq R \leq R_{1max}$
Time to Trip	Specified current, V_{max} , 25±2°C	$T \leq \text{Maximum Time to Trip}$
Holding Current	30min, at I_H , @25±2°C	No trip
Trip Endurance	V_{max} , 1 hour	No arcing or burning

Physical Characteristics

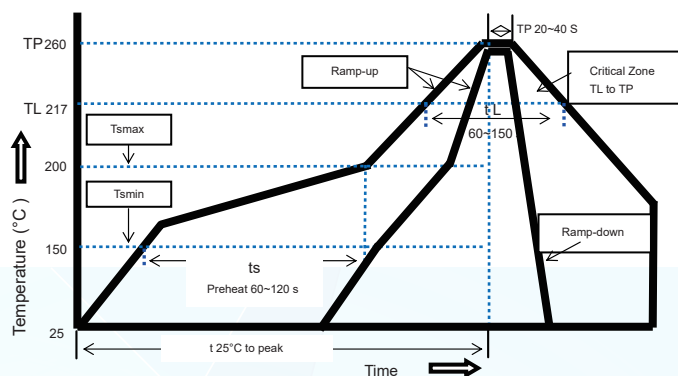
Terminal Materials	Tin-Plated Nickle-copper
Soldering Zone	Meets EIA specification RS 186-9E and ANSI/J-STD-002 Category 3.
Moisture Sensitivity	Level 2a, per IPC/JEDEC J-STD 020C

Environmental Specifications

Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hrs.	±10% typical
Humidity aging	+85°C, 85% R.H. , 100 hours	±5% typical
Thermal shock	MIL-STD-202, Method 107G +85°C to -40°C, 20 times	-30% typical
Resistance to solvent	MIL-STD-202, Method 215	No change
Vibration	MIL-STD-883C, Test Condition A	No change

Thermal Derating 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
ASMD0603SL035	0.46	0.40	0.37	0.35	0.29	0.25	0.24	0.20	0.14
ASMD0603SL050	0.66	0.57	0.53	0.50	0.41	0.36	0.34	0.29	0.20
ASMD0603SL075	0.99	0.86	0.79	0.75	0.62	0.54	0.51	0.43	0.30
ASMD0603SL100	1.31	1.14	1.06	1.00	0.83	0.71	0.69	0.57	0.40
ASMD0603SL125	1.64	1.43	1.32	1.25	1.04	0.89	0.86	0.71	0.50
ASMD0603SL150	1.97	1.71	1.59	1.50	1.24	1.07	1.03	0.86	0.60
ASMD0603SL175	2.30	2.00	1.85	1.75	1.45	1.25	1.20	1.00	0.70
ASMD0603SL200	2.63	2.29	2.11	2.00	1.66	1.43	1.37	1.14	0.80
ASMD0603SL250	3.25	2.81	2.63	2.50	2.01	1.77	1.62	1.35	0.93
ASMD0603SL260	3.42	2.97	2.75	2.60	2.15	1.86	1.78	1.49	1.04
ASMD0603SL300	3.94	3.43	3.17	3.00	2.49	2.14	2.06	1.71	1.20

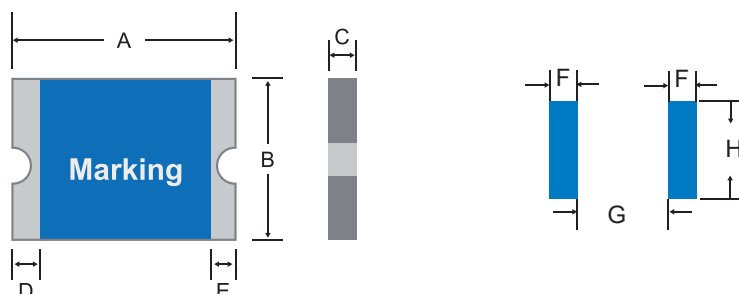
Soldering Parameters


Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T_s max to T_p)	3°C/second max.
Preheat	
-Temperature Min(T_s min)	150°C
-Temperature Max(T_s max)	200°C
-Time(T_s min to T_s max)	60~120 seconds
Time maintained above:	
-Temperature(TL)	217°C
-Time(tL)	60~150 seconds
Peak/Classification Temperature(T_p)	260°C
Time within 5°C of actual peak temperature	
Time (TP)	30 seconds max.
Ramp down rate	3°C/seconds max.
Time 25°C to peak temperature	8 minutes max.

- Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free.
- Devices are not designed to be wave soldered to the bottom side of the board.
- Recommended maximum paste thickness is 0.25mm (0.010inch).
- 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 temperature exceed the recommended profile, devices may not meet the performance requirements.

Physical Dimensions(mm.)


Model	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
ASMD0603SL035	1.45	1.85	0.65	1.05	0.3	0.7	0.15	0.1
ASMD0603SL050	1.45	1.85	0.65	1.05	0.3	0.7	0.15	0.1
ASMD0603SL075	1.45	1.85	0.65	1.05	0.3	0.7	0.15	0.1
ASMD0603SL100	1.45	1.85	0.65	1.05	0.4	1.0	0.15	0.1
ASMD0603SL125	1.45	1.85	0.65	1.05	0.4	1.0	0.15	0.1
ASMD0603SL150	1.45	1.85	0.65	1.05	0.5	1.2	0.15	0.1
ASMD0603SL175	1.45	1.85	0.65	1.05	0.5	1.2	0.15	0.1
ASMD0603SL200	1.45	1.85	0.65	1.05	0.7	1.4	0.15	0.1
ASMD0603SL250	1.45	1.85	0.65	1.05	0.7	1.4	0.15	0.1
ASMD0603SL260	1.45	1.85	0.65	1.05	0.7	1.4	0.15	0.1
ASMD0603SL300	1.45	1.85	0.65	1.05	0.7	1.4	0.15	0.1

Recommended Solder Pad Layout Dimensions (mm.)

Device	F	G	H
	Normal Value	Normal Value	Normal Value
0603 Series	1.0	0.8	1.0

Packaging Quantity

Model	Quantity
ASMD0603SL035~150	5,000 pcs/reel
ASMD0603SL175~300	4,000 pcs/reel

Tape And Reel Specifications (mm)

Governing Specifications

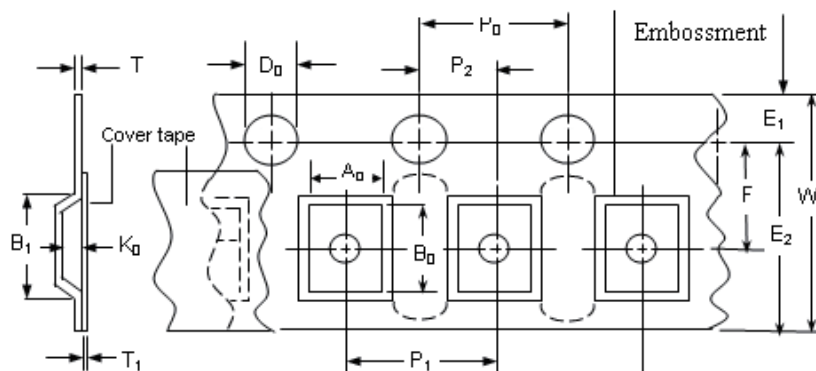
W	8.0 ± 0.1
P0	4.0 ± 0.1
P1	4.0 ± 0.10
P2	2.0 ± 0.05
A0	0.95 ± 0.10
B0	1.85 ± 0.05
D0	1.55 ± 0.05
F	3.5 ± 0.05
E1	1.75 ± 0.10
T	0.20 ± 0.02

Leader min.	390
Trailer min.	160

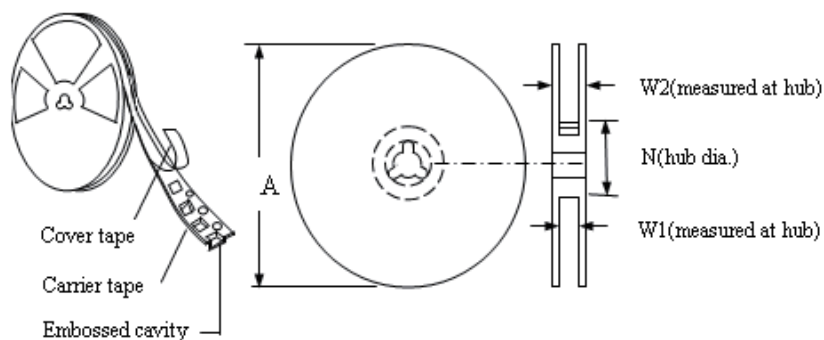
Reel Dimensions

A	178 ± 1
N	59 ± 1
W1	$8.5 \pm 1.0/-0.2$
W2	12.0 ± 1

EIA Tape Component Dimensions



EIA Reel Dimensions



Part Number System

ASMD 0603 SL -

Special Voltage Rating(Optional)

Holding Current Rating

Super Low resistance

Device Dimensions:
Length/width(Unit: 1/100 inch) Size 1608 mm / 0603 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。