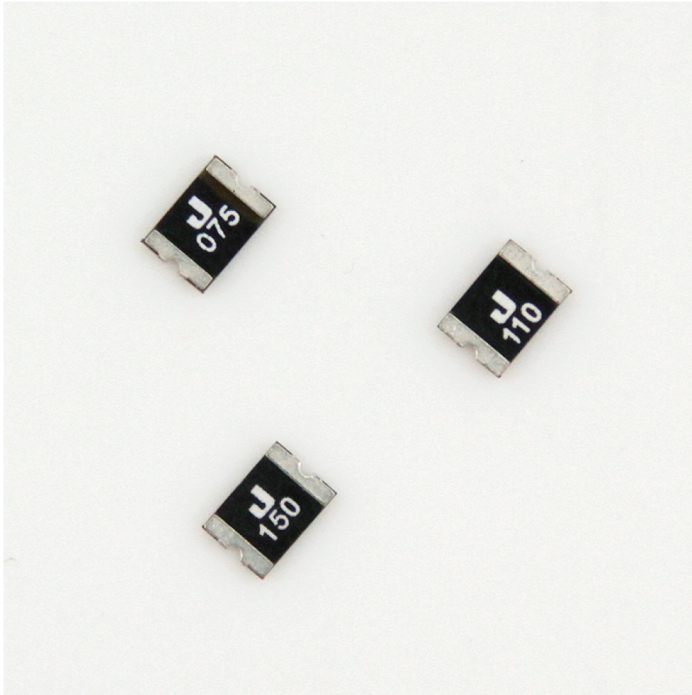


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PRODUCT DATASHEET

Surface Mount PTC Devices

ASMD1812SL Series Surface Mount PTC Devices



Description

The ASMD1812SL series provides surface mount resettable overcurrent protection with holding current from 1.9A to 9.0A.

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

Features

- RoHS compliant
- Halogen-free
- Faster tripping
- 1812 Dimension
- Surface mountable
- Solid state
- Operating Current: 1.9A~9.0A, @25℃
- Maximum Voltage: 6V/12V
- Operating Temperature: -40℃ ~ 85℃
- Certification: ROHS,UL

Agency Approvals

Agency	File Number
	Pending

Regulation	Standard
	2002/95/EC
	EN14582

Applications

- USB hubs, ports and peripherals
- Motherboard USB & IEEE 1394 protection
- Set-top-box and HDMI
- Optical disk drives
- Game console port protection
- General electronics

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)
ASMD1812SL190	6.00	50.0	1.9	3.8	1.5	8.0	5.0	0.003	0.025
ASMD1812SL190-12V	12.0	50.0	1.9	3.8	1.5	8.0	5.0	0.003	0.025
ASMD1812SL260	6.00	50.0	2.6	5.2	1.5	8.0	5.0	0.003	0.024
ASMD1812SL260-12V	12.0	50.0	2.6	5.2	1.5	8.0	5.0	0.003	0.024
ASMD1812SL300	6.00	50.0	3.0	6.0	1.5	15.0	2.0	0.003	0.022
ASMD1812SL300-12V	12.0	50.0	3.0	6.0	1.5	15.0	2.0	0.003	0.022
ASMD1812SL350	6.00	50.0	3.5	7.0	1.5	17.5	2.0	0.003	0.020
ASMD1812SL350-12V	12.0	50.0	3.5	7.0	1.5	17.5	2.0	0.003	0.020
ASMD1812SL400	6.00	50.0	4.0	8.0	1.8	20.0	2.0	0.003	0.018
ASMD1812SL400-12V	12.0	50.0	4.0	8.0	1.8	20.0	2.0	0.003	0.018
ASMD1812SL450	6.00	50.0	4.5	9.0	1.8	22.5	2.0	0.003	0.016
ASMD1812SL450-12V	12.0	50.0	4.5	9.0	1.8	22.5	2.0	0.003	0.016
ASMD1812SL500	6.00	50.0	5.0	10.0	1.8	25.0	2.0	0.003	0.014
ASMD1812SL500-12V	12.0	50.0	5.0	10.0	1.8	25.0	2.0	0.003	0.014
ASMD1812SL550	6.00	50.0	5.5	11.0	1.8	27.5	2.0	0.002	0.012
ASMD1812SL550-12V	12.0	50.0	5.5	11.0	1.8	27.5	2.0	0.002	0.012
ASMD1812SL600	6.00	50.0	6.0	12.0	1.8	30.0	2.0	0.002	0.010
ASMD1812SL600-12V	12.0	50.0	6.0	12.0	1.8	30.0	2.0	0.002	0.010
ASMD1812SL650	6.00	50.0	6.5	13.0	1.8	32.5	2.0	0.002	0.008
ASMD1812SL650-12V	12.0	50.0	6.5	13.0	1.8	32.5	2.0	0.002	0.008
ASMD1812SL700	6.00	50.0	7.0	14.0	2.0	35.0	2.0	0.001	0.007
ASMD1812SL700-12V	12.0	50.0	7.0	14.0	2.0	35.0	2.0	0.001	0.007
ASMD1812SL750	6.00	50.0	7.5	15.0	2.0	37.5	2.0	0.001	0.006
ASMD1812SL750-12V	12.0	50.0	7.5	15.0	2.0	37.5	2.0	0.001	0.006
ASMD1812SL800	6.00	50.0	8.0	16.0	2.0	40.0	2.0	0.0008	0.005
ASMD1812SL800-12V	12.0	50.0	8.0	16.0	2.0	40.0	2.0	0.0008	0.005
ASMD1812SL850	6.00	50.0	8.5	17.0	2.2	42.5	2.0	0.0008	0.004
ASMD1812SL850-12V	12.0	50.0	8.5	17.0	2.2	42.5	2.0	0.0008	0.004
ASMD1812SL900	6.00	50.0	9.0	18.0	2.2	45.0	2.0	0.0005	0.003
ASMD1812SL900-12V	12.0	50.0	9.0	18.0	2.2	45.0	2.0	0.0005	0.003

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°C	$R_{imin} \leq R \leq R_{1max}$
Time to Trip	Specified current, V_{max} , 25°C	$T \leq$ Maximum Time to Trip
Holding Current	30min, at I_H , @25°C	No trip
Trip Endurance	V_{max} , I_{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

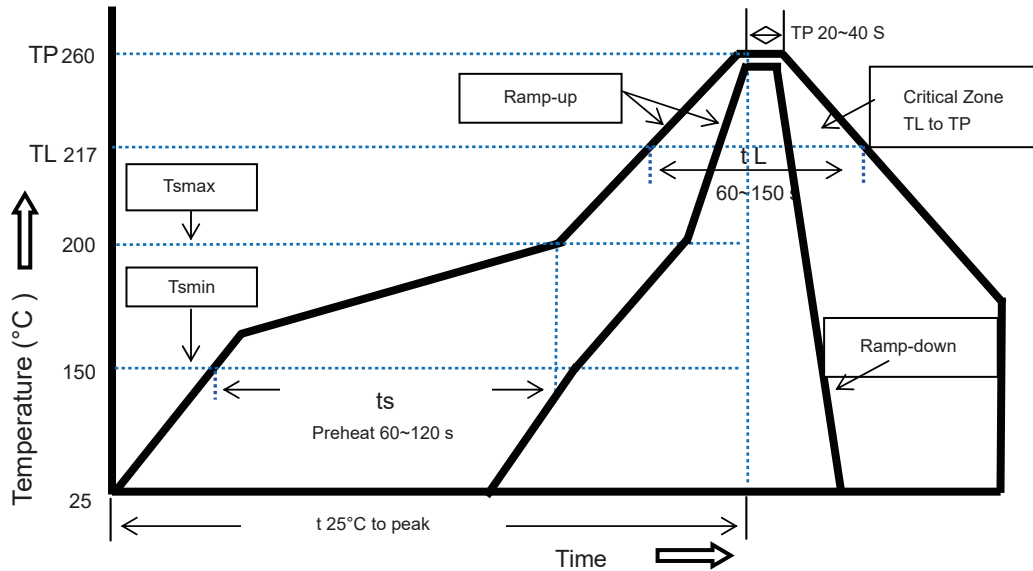
Environmental Specifications

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
ASMD1812SL190	2.76	2.47	2.22	1.90	1.63	1.46	1.31	1.18	0.95
ASMD1812SL190-12V	2.76	2.47	2.22	1.90	1.63	1.46	1.31	1.18	0.95
ASMD1812SL260	3.78	3.38	3.04	2.60	2.23	2.00	1.79	1.61	1.30
ASMD1812SL260-12V	3.78	3.38	3.04	2.60	2.23	2.00	1.79	1.61	1.30
ASMD1812SL300	4.35	3.90	3.51	3.00	2.58	2.31	2.07	1.86	1.50
ASMD1812SL300-12V	4.35	3.90	3.51	3.00	2.58	2.31	2.07	1.86	1.50
ASMD1812SL350	5.08	4.55	4.10	3.50	3.01	2.70	2.42	2.17	1.75
ASMD1812SL350-12V	5.08	4.55	4.10	3.50	3.01	2.70	2.42	2.17	1.75
ASMD1812SL400	5.80	5.20	4.68	4.00	3.44	3.08	2.76	2.48	2.00
ASMD1812SL400-12V	5.80	5.20	4.68	4.00	3.44	3.08	2.76	2.48	2.00
ASMD1812SL450	6.54	5.85	5.26	4.50	3.86	3.46	3.10	2.79	2.25
ASMD1812SL450-12V	6.54	5.85	5.26	4.50	3.86	3.46	3.10	2.79	2.25
ASMD1812SL500	7.26	6.50	5.84	5.00	4.29	3.84	3.45	3.11	2.50
ASMD1812SL500-12V	7.26	6.50	5.84	5.00	4.29	3.84	3.45	3.11	2.50
ASMD1812SL550	7.99	7.15	6.43	5.50	4.72	4.23	3.79	3.42	2.75
ASMD1812SL550-12V	7.99	7.15	6.43	5.50	4.72	4.23	3.79	3.42	2.75
ASMD1812SL600	8.72	7.80	7.01	6.00	5.15	4.61	4.14	3.73	3.00
ASMD1812SL600-12V	8.72	7.80	7.01	6.00	5.15	4.61	4.14	3.73	3.00
ASMD1812SL650	9.44	8.45	7.59	6.50	5.58	4.99	4.48	4.04	3.25
ASMD1812SL650-12V	9.44	8.45	7.59	6.50	5.58	4.99	4.48	4.04	3.25
ASMD1812SL700	10.17	9.10	8.18	7.00	6.01	5.38	4.83	4.35	3.50
ASMD1812SL700-12V	10.17	9.10	8.18	7.00	6.01	5.38	4.83	4.35	3.50
ASMD1812SL750	10.89	9.75	8.76	7.50	6.44	5.76	5.18	4.66	3.75
ASMD1812SL750-12V	10.89	9.75	8.76	7.50	6.44	5.76	5.18	4.66	3.75
ASMD1812SL800	11.62	10.40	9.34	8.00	6.87	6.15	5.52	4.97	4.00
ASMD1812SL800-12V	11.62	10.40	9.34	8.00	6.87	6.15	5.52	4.97	4.00
ASMD1812SL850	12.34	11.05	9.93	8.50	7.30	6.53	5.87	5.28	4.25
ASMD1812SL850-12V	12.34	11.05	9.93	8.50	7.30	6.53	5.87	5.28	4.25
ASMD1812SL900	13.07	11.70	10.51	9.00	7.73	6.92	6.21	5.59	4.50
ASMD1812SL900-12V	13.07	11.70	10.51	9.00	7.73	6.92	6.21	5.59	4.50

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)	60~120 seconds
Time maintained above:	
-Temperature(TL)	217 °C
-Time(tL)	60~150 seconds
Peak/Classification Temperature(Tp)	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.

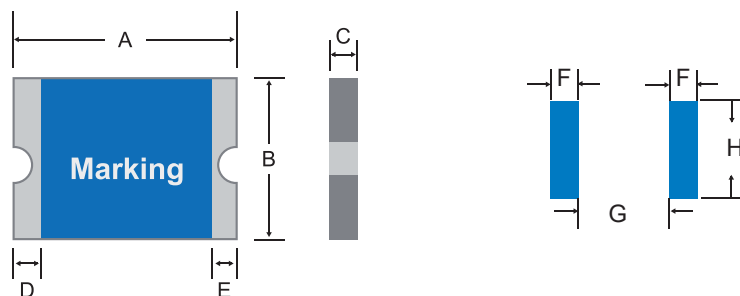
- Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free.
- Devices are not designed to be wave soldered to the bottom side of the board.
- Recommended maximum paste thickness is 0.25mm (0.010inch).
- Devices can be cleaned using standard industry methods and solvents.

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.
ASMD1812SL190	4.37	4.73	3.07	3.41	0.3	0.7	0.3	0.15
ASMD1812SL190-12V	4.37	4.73	3.07	3.41	0.3	0.7	0.3	0.15
ASMD1812SL260	4.37	4.73	3.07	3.41	0.4	1.0	0.3	0.15
ASMD1812SL260-12V	4.37	4.73	3.07	3.41	0.4	1.0	0.3	0.15
ASMD1812SL300	4.37	4.73	3.07	3.41	0.4	1.0	0.3	0.15
ASMD1812SL300-12V	4.37	4.73	3.07	3.41	0.4	1.0	0.3	0.15
ASMD1812SL350	4.37	4.73	3.07	3.41	0.4	1.2	0.3	0.15
ASMD1812SL350-12V	4.37	4.73	3.07	3.41	0.4	1.2	0.3	0.15
ASMD1812SL400	4.37	4.73	3.07	3.41	0.4	1.2	0.3	0.15
ASMD1812SL400-12V	4.37	4.73	3.07	3.41	0.4	1.2	0.3	0.15
ASMD1812SL450	4.37	4.73	3.07	3.41	0.4	1.4	0.3	0.15
ASMD1812SL450-12V	4.37	4.73	3.07	3.41	0.4	1.4	0.3	0.15
ASMD1812SL500	4.37	4.73	3.07	3.41	0.5	1.4	0.3	0.15
ASMD1812SL500-12V	4.37	4.73	3.07	3.41	0.5	1.4	0.3	0.15
ASMD1812SL550	4.37	4.73	3.07	3.41	0.5	1.4	0.3	0.15
ASMD1812SL550-12V	4.37	4.73	3.07	3.41	0.5	1.4	0.3	0.15
ASMD1812SL600	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL600-12V	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL650	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL650-12V	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL700	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL700-12V	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL750	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL750-12V	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL800	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL800-12V	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL850	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL850-12V	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL900	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15
ASMD1812SL900-12V	4.37	4.73	3.07	3.41	0.6	1.6	0.3	0.15



Recommended Solder Pad Layout Dimensions (mm.)

Device	F	G	H
	Normal Value	Normal Value	Normal Value
1812 Series	1.78	3.45	3.15

Packaging Quantity

Model	Quantity
ASMD1812SL190~550	2,000 pcs/reel
ASMD1812SL600~900	1,500 pcs/reel

Tape And Reel Specifications (mm)

Governing Specifications

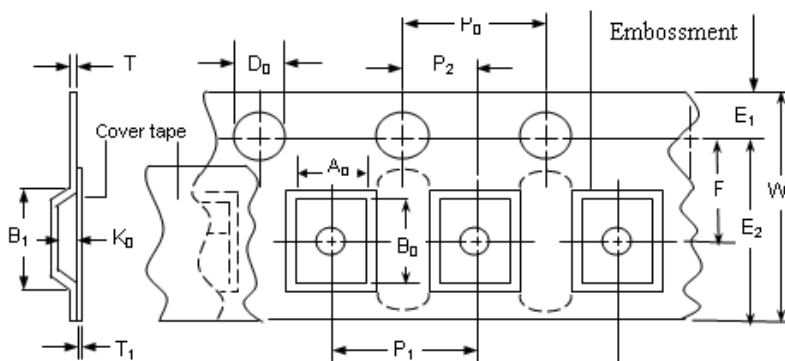
W	12.0 ± 0.1
P0	4.0 ± 0.1
P1	8.0 ± 0.1
P2	2.0 ± 0.1
A0	3.5 ± 0.1
B0	4.9 ± 0.1
D0	$1.5 + 0.1/-0$
F	5.5 ± 0.05
E1	1.75 ± 0.1
T	0.3 ± 0.1

Leader min.	390
Trailer min.	160

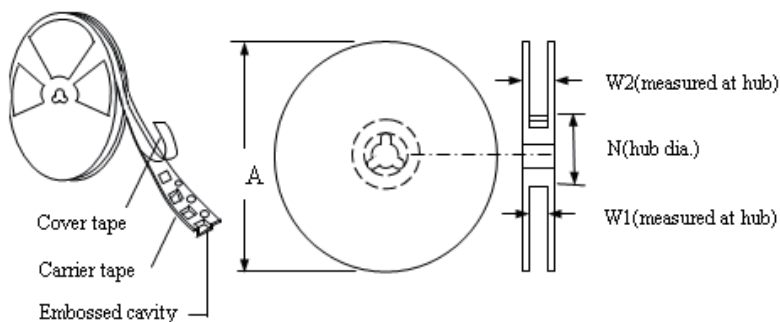
Reel Dimensions

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 1812 SL -

Special Voltage Rating(Optional)

Holding Current Rating

Super Low resistance

Device Dimensions:
Length/width(Unit: 1/100 inch) Size 4632 mm /1812 inch

Surface Mount Device