

为您的产品保驾护航

PRODUCT DATASHEET

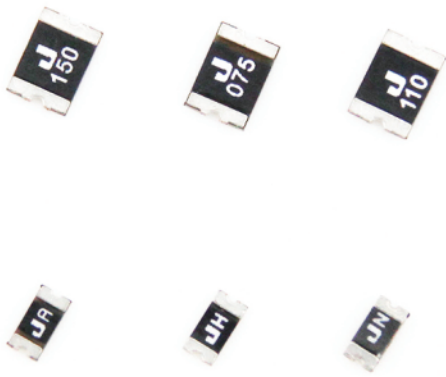
Surface Mount PTC Devices

## ASMD2018 Series Surface Mount PTC Devices

## Description

The ASMD2018 series provides surface mount resettable overcurrent protection with holding current from 0.3A to 3.5A.

This series is suitable for applications with higher holding current and higher working voltage up to 60V.





## Features

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

## Applications

- Industrial control
- Security systems
- PDAs / digital cameras
- Game console port protection
- Power over Ethernet (POE)
- IEEE 1394 port protection
- HDMI 1.4 Source protection
- Powered USB for POS and IPC
- Low voltage telecom equipment
- USB port protection - USB 2.0, 3.0&OTG
- PC motherboards-plug and play protection
- Automotive electronics control module protection

## Agency Approvals

Regulation	Standard
	2002/95/EC
	EN14582

**Performance Specification**

Model	V <sub>max</sub> (V dc)	I <sub>max</sub> (A)	I <sub>hold</sub> @25°C (A)	I <sub>trip</sub> @25°C (A)	P <sub>d</sub> Typ. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	R <sub>i min</sub> (Ω)	R <sub>1max</sub> (Ω)
ASMD2018-030	60	40	0.30	0.6	1.4	1.5	3.0	0.50	2.30
ASMD2018-050	60	40	0.50	1.0	1.4	2.5	5.0	0.20	1.00
ASMD2018-075	60	40	0.75	1.5	1.4	8.0	0.5	0.11	0.63
ASMD2018-100	15	40	1.00	2.0	1.4	8.0	0.5	0.06	0.36
ASMD2018-100-33V	33	40	1.00	2.0	1.4	8.0	0.5	0.06	0.36
ASMD2018-150	15	40	1.50	3.0	1.4	8.0	1.0	0.05	0.17
ASMD2018-150-33V	33	40	1.50	3.0	1.4	8.0	1.0	0.05	0.17
ASMD2018-200	12	40	2.00	4.0	1.4	8.0	3.0	0.03	0.10
ASMD2018-200-16V	16	40	2.00	4.0	1.4	8.0	3.0	0.03	0.10
ASMD2018-200-24V	24	40	2.00	4.0	1.4	8.0	3.0	0.03	0.10
ASMD2018-260	24	40	2.60	5.2	1.6	8.0	5.0	0.02	0.075
ASMD2018-300	16	40	3.00	6.0	1.6	8.0	10.0	0.015	0.050
ASMD2018-350	12	40	3.50	7.0	1.6	8.0	10.0	0.010	0.040

I<sub>hold</sub> = Hold Current. Maximum current device will not trip in 25°C still air.

I<sub>trip</sub> = Trip Current. Minimum current at which the device will always trip in 25°C still air.

V<sub>max</sub> = Maximum operating voltage device can withstand without damage at rated current (I<sub>max</sub>).

I<sub>max</sub> = Maximum fault current device can withstand without damage at rated voltage (V<sub>max</sub>).

P<sub>d</sub> = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

R<sub>i min/max</sub> = Minimum/Maximum device resistance prior to tripping at 25°C.

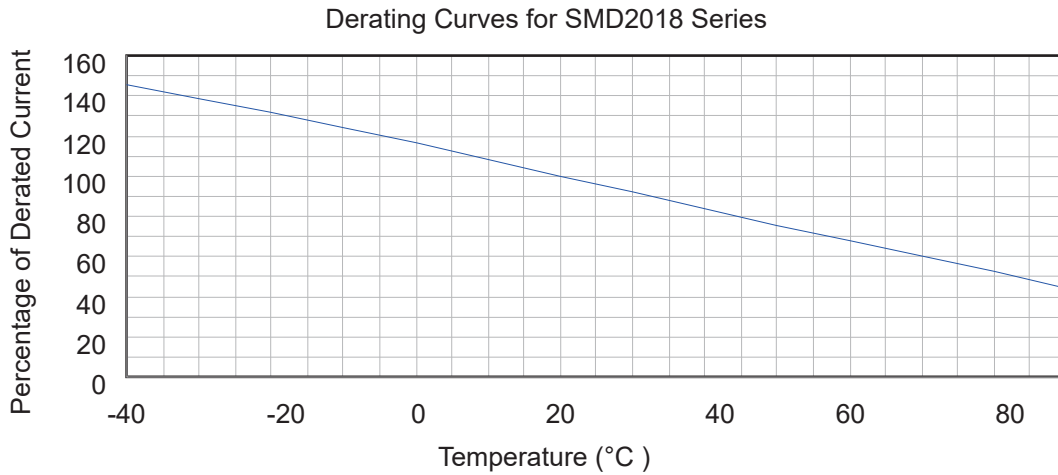
R<sub>1max</sub> = Maximum device resistance is measured one hour post reflow.

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

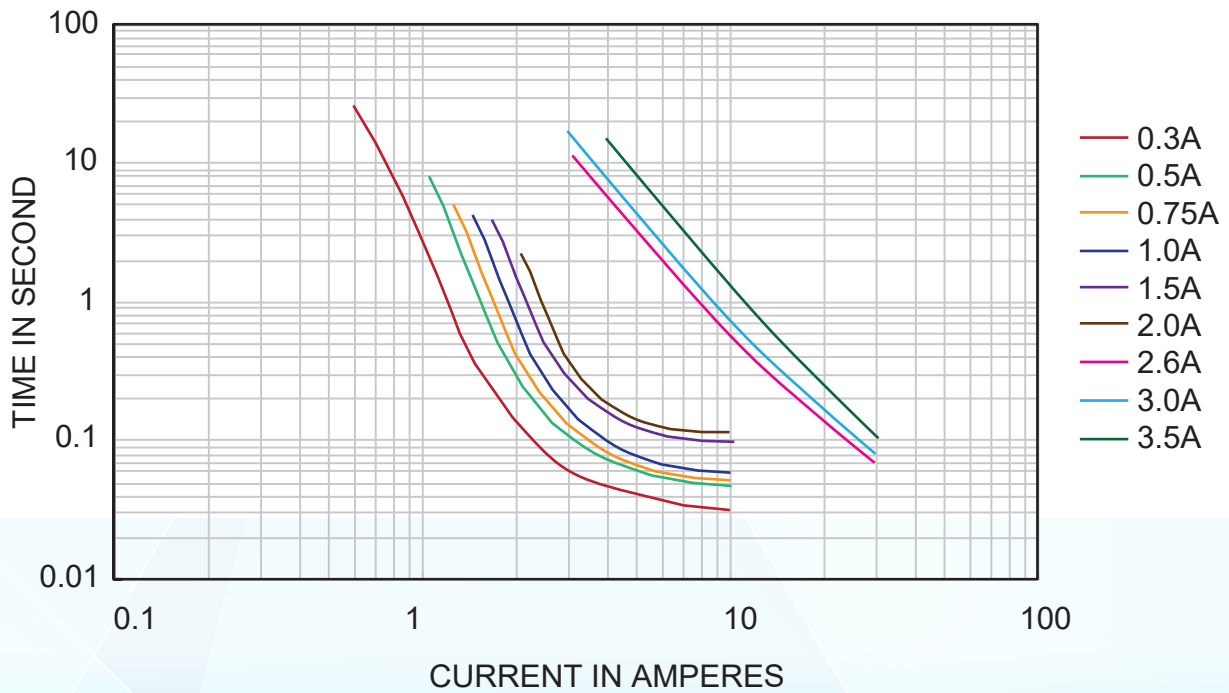
**Environmental Specifications**

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
Solvent Resistance	MIL-STD-202, Method 215	No change
Vibration	MIL-STD-202, Method 201	No change
Moisture Sensivity Level	Level 1, J-STD-020	
Storage Conditions	+40 °C Max. 70% RH Max. Packed in original packaging.	
Operating Temperature : - 40 °C to +85 °C		
Maximum Device Surface Temperature in Tripped State:125 °C		

**Thermal Derating Curve**



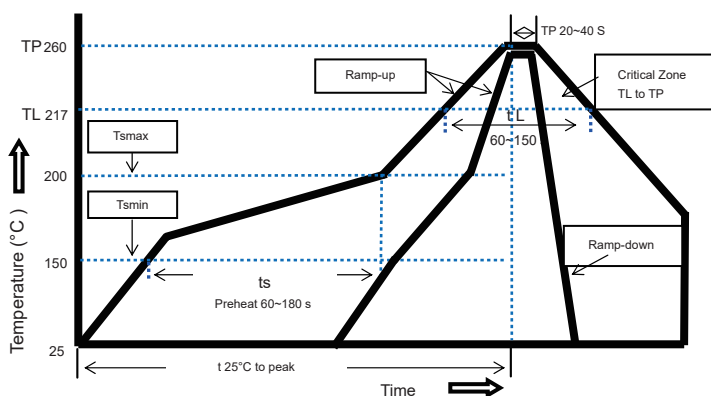
**Average Time-Current Curve**



## Thermal Derating Chart

Model	Maximum ambient operating temperature ( $T_{\text{mao}}$ ) vs. hold current ( $I_{\text{hold}}$ )								
	- 40°C	- 20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
ASMD2018-030	0.45	0.40	0.35	0.30	0.25	0.23	0.20	0.18	0.14
ASMD2018-050	0.93	0.80	0.65	0.50	0.42	0.38	0.33	0.30	0.23
ASMD2018-075	1.05	0.95	0.85	0.75	0.60	0.55	0.45	0.40	0.30
ASMD2018-100	1.66	1.47	1.29	1.00	0.91	0.83	0.73	0.64	0.50
ASMD2018-150	2.26	2.00	1.76	1.50	1.24	1.13	1.00	0.87	0.68
ASMD2018-200	2.80	2.50	2.19	2.00	1.84	1.74	1.50	1.34	1.14
ASMD2018-260	3.82	3.46	3.06	2.60	2.24	2.03	1.82	1.60	1.26
ASMD2018-300	4.40	3.96	3.52	3.00	2.65	2.43	2.20	1.96	1.59
ASMD2018-350	5.13	4.62	4.11	3.50	3.09	2.84	2.57	2.29	1.86

## 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

Average Ramp-Up Rate  
 ( $T_s$  max to  $T_p$ )

### Pb-Free Assembly

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) 60~180 seconds

### Time maintained above:

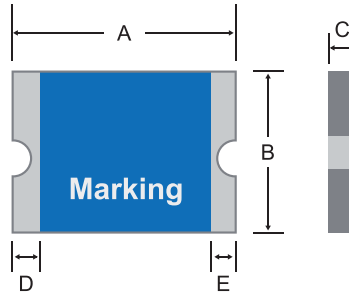
-Temperature( $T_L$ ) 217 °C  
 -Time( $t_L$ ) 60~150 seconds

Peak Temperature( $T_p$ ) 260 °C

Ramp-Down Rate 6 °C/second max.

Time 25 °C to Peak Temperature 8 minutes max

Storage Condition 0 °C~35 °C, ≤70%RH

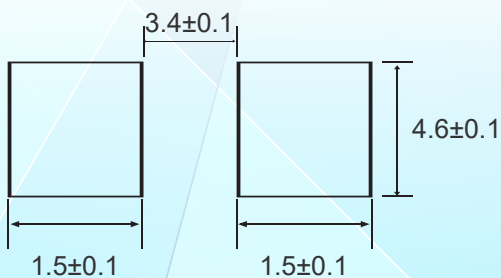
**Physical Dimensions(mm.)**


Model	A		B		C		D		E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
ASMD2018-030	5.05	5.45	4.05	4.45	0.65	1.15	0.30	1.50	0.25
ASMD2018-050	5.05	5.45	4.05	4.45	0.65	1.15	0.30	1.50	0.25
ASMD2018-075	5.05	5.45	4.05	4.45	0.35	0.85	0.30	1.50	0.25
ASMD2018-100	5.05	5.45	4.05	4.45	0.35	0.85	0.30	1.50	0.25
ASMD2018-100-33V	5.05	5.45	4.05	4.45	0.35	0.85	0.30	1.50	0.25
ASMD2018-150	5.05	5.45	4.05	4.45	0.35	0.85	0.30	1.50	0.25
ASMD2018-150-33V	5.05	5.45	4.05	4.45	0.65	1.15	0.30	1.50	0.25
ASMD2018-200	5.05	5.45	4.05	4.45	0.35	0.85	0.30	1.50	0.25
ASMD2018-200-16V	5.05	5.45	4.05	4.45	0.35	0.85	0.30	1.50	0.25
ASMD2018-200-24V	5.05	5.45	4.05	4.45	0.65	1.15	0.30	1.50	0.25
ASMD2018-260	5.05	5.45	4.05	4.45	0.85	1.35	0.30	1.50	0.25
ASMD2018-300	5.05	5.45	4.05	4.45	0.65	1.15	0.30	1.50	0.25
ASMD2018-350	5.05	5.45	4.05	4.45	0.65	1.15	0.30	1.50	0.25

**Termination Pad Characteristics**

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

Lead Solderability: Meets EIA specification RS186-9E, ANSI/J-STD-002 Category 3.

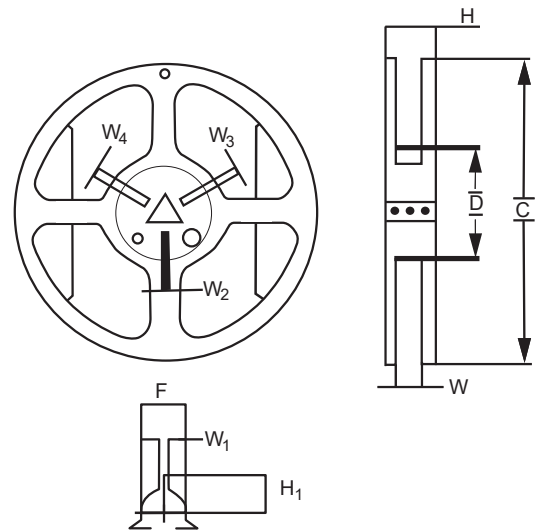
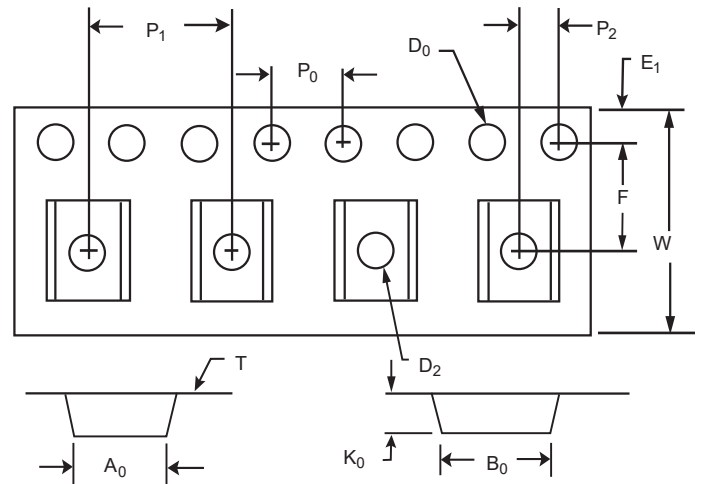
**Packaging Quantity and Marking**


Part Number	Quantity
ASMD2018-075/100/100-33V/150/200/200-16V	2500 pcs/reel
The others	1500 pcs/reel

Tape & reel packaging per EIA481-1

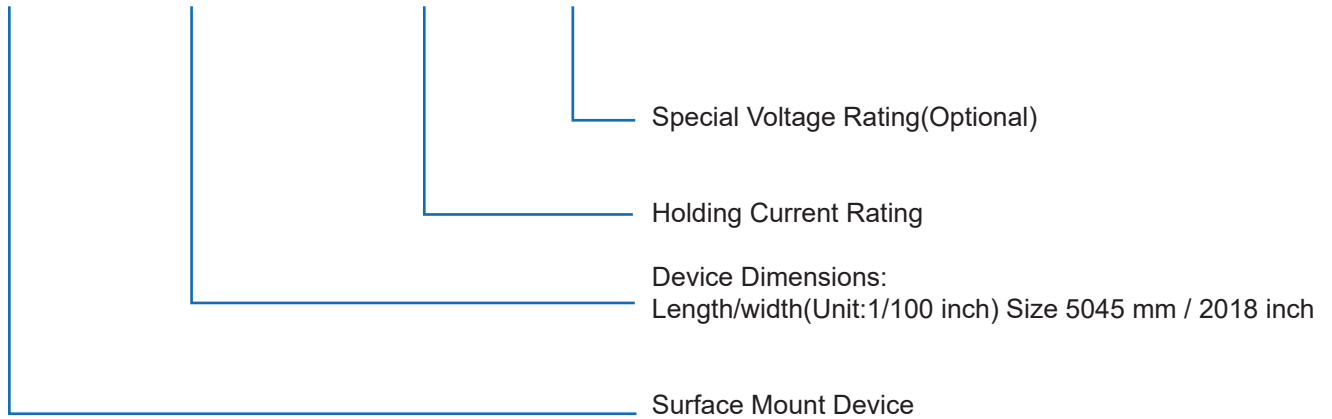
**Tape And Reel Specifications (mm)**

Governing Specifications	EIA 481-1
W	12.0 ± 0.2
P0	4.0 ± 0.10
P1	8.0 ± 0.10
P2	2.0 ± 0.05
A0	4.40 ± 0.10
B0	5.50 ± 0.10
B1max.	8.20
D0	1.50 + 0.1, -0
F	5.5 ± 0.05
E1	1.75 ± 0.10
E2min.	10.25
T	0.6
T1max.	0.1
K0	1.36 ± 0.1
Leader min.	390
Trailer min.	160
Reel Dimensions	
A max.	178
N min.	50
W1	12.4 ± 0.5
W2	18.4 ± 0.5


**Storage And Handling**

- Storage conditions: 40°C max, 70% R.H.
- Devices may not meet specified performance if storage conditions are exceeded. Technology Corp.



**Part Number System**
**ASMD 2018 - □□□ - □□**

**Cross Reference**

Model	Cross Reference		
	Tyco / PolySwitch®	Littelfuse / POLY-FUSE®	Polytronics / EVERFUSE®
ASMD2018-030	SMD030F-2018	2016L030	SMD2016P030TF
ASMD2018-050	SMDC050F/60	2016L050	SMD2016P050TF
ASMD2018-075	-	2016L075/60	-
ASMD2018-100	SMD100F-2018	2016L100	SMD2016P100TF
ASMD2018-100-33V	-	2016L100/33	SMD2016P100TF/33
ASMD2018-150	SMD150F-2018	2016L150	SMD2016P150TF
ASMD2018-150-33V	-	2016L150/33	-
ASMD2018-200	SMD200F-2018	2016L200	SMD2016P200TF
ASMD2018-260	-	2016L260/24	-
ASMD2018-300	-	2016L300/16	-

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“POLY-FUSE” is a registered trademark of Littelfuse, Inc.

“EVERFUSE” is a registered trademark of Polytronics Technology Corp.