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PRODUCT DATASHEET

Surface Mount PTC Devices

## ASMD2920 Series Surface Mount PTC Devices



### Description



The ASMD2920 series provides surface mount resettable overcurrent protection with holding current from 0.3A to 3.0A.

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
- Fast response to fault current
- High voltage
- Compatible with high temperature solders

### Agency Approvals

Agency	File Number
	pending
	pending

### Applications

- Power over Ethernet(POE)
- IEEE 1394 port protection
- Powered USB for POS and IPC
- Low voltage telecom equipment
- Automotive electronics control module protection
- Industrial control
- Security systems

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)
ASMD2920-030	60	100	0.30	0.60	1.5	1.5	3.0	0.600	4.800
ASMD2920-050	60	100	0.50	1.00	1.5	2.5	4.0	0.180	1.400
ASMD2920-075	33	100	0.75	1.50	1.5	8.0	0.3	0.100	1.000
ASMD2920-100	33	100	1.10	2.20	1.5	8.0	0.5	0.065	0.410
ASMD2920-125	33	100	1.25	2.50	1.5	8.0	2.0	0.050	0.250
ASMD2920-150	33	100	1.50	3.00	1.5	8.0	2.0	0.035	0.230
ASMD2920-185	33	100	1.85	3.70	1.5	8.0	2.5	0.030	0.150
ASMD2920-200	24	100	2.00	4.00	1.5	8.0	4.5	0.020	0.120
ASMD2920-250	16	100	2.50	5.00	1.5	8.0	16.0	0.020	0.085
ASMD2920-260	6	100	2.60	5.20	1.5	8.0	10.0	0.014	0.075
ASMD2920-300	6	40	3.00	6.00	1.5	8.0	20.0	0.012	0.048
ASMD2920-300-16V	16	100	3.00	6.00	1.5	8.0	20.0	0.012	0.048
ASMD2920-400	16	40	4.00	8.00	1.5	20.0	4.0	0.008	0.040
ASMD2920-500	6	40	5.00	10.00	1.5	25.0	5.0	0.005	0.031
ASMD2920-500-12V	12	40	5.00	10.00	1.5	25.0	5.0	0.005	0.031
ASMD2920-500-16V	16	40	5.00	10.00	1.5	25.0	5.0	0.005	0.031
ASMD2920-600	12	40	6.00	12.00	1.5	25.0	6.0	0.004	0.020
ASMD2920-700	12	40	7.00	14.00	1.5	25.0	6.0	0.0025	0.010

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.

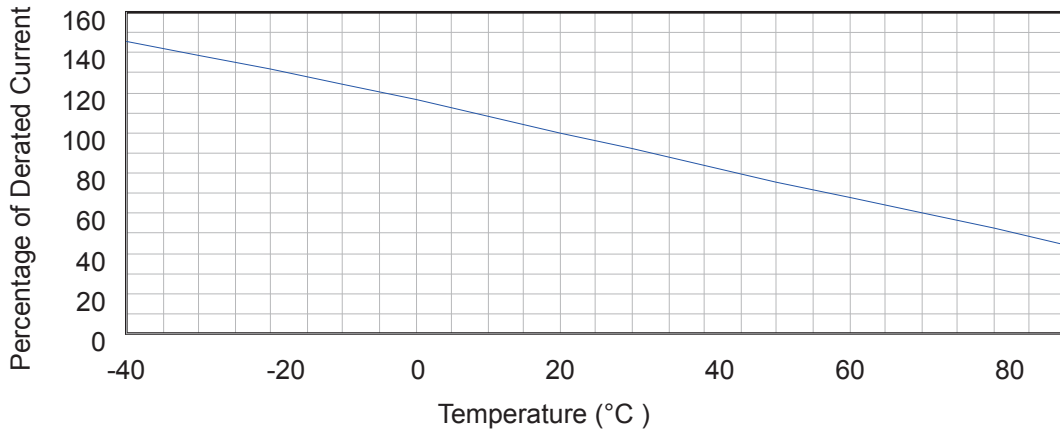
CAUTION : Operation beyond the specified ratings may result in damage and possible arcing and flame.

## Environmental Specifications

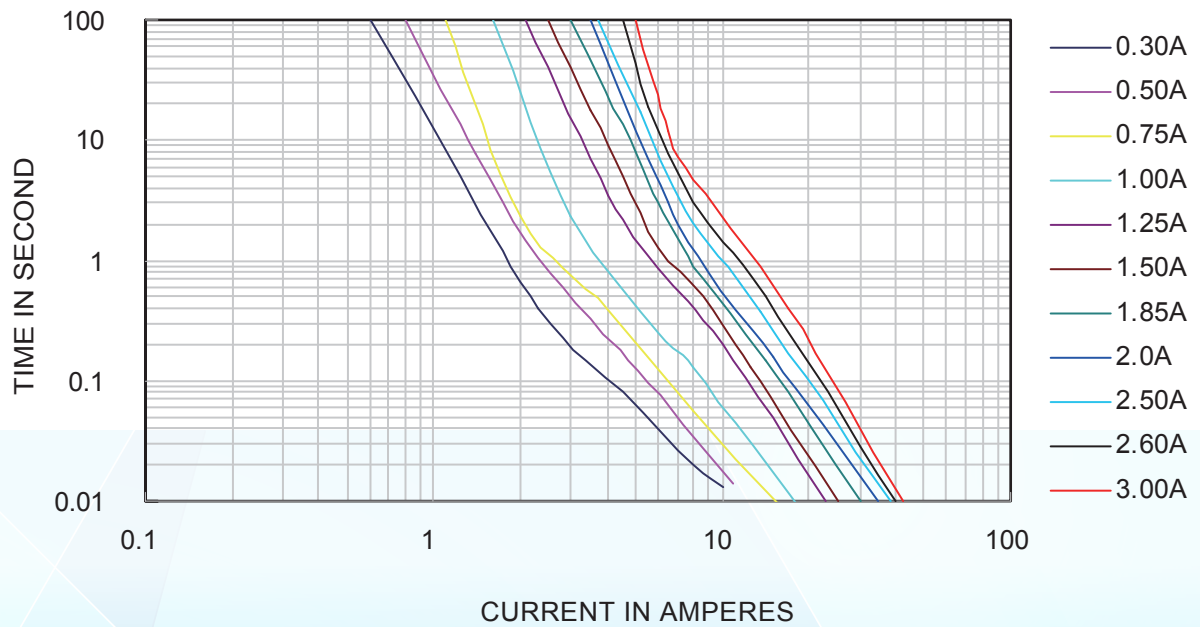
Conditions	Resistance change
Passive aging	+85°C, 1000 hrs. ±5% typical
Humidity aging	+85°C, 85% R.H. , 168 hours ±5% typical
Thermal shock	+85°C to -40°C, 20 times ±33% typical
Resistance to solvent	MIL-STD-202,Method 215 No change
Vibration	MIL-STD-202,Method 201 No change
Ambient operating conditions : - 40 °C to +85 °C	
Maximum surface temperature of the device in the tripped state is 125 °C	

### Thermal Derating Curve

Derating Curves for ASMD2920 Series



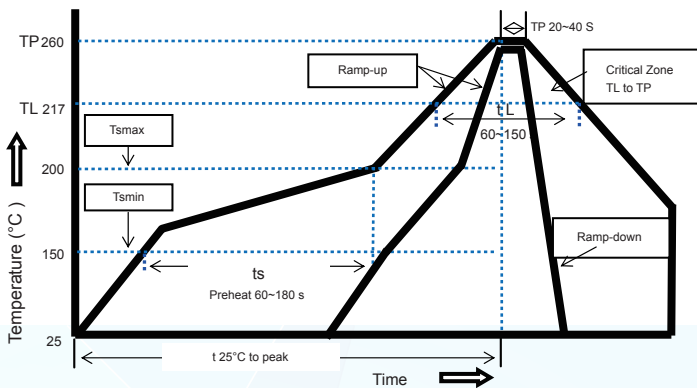
### Average Time-Current Curve



## 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
ASMD2920-030	0.45	0.40	0.35	0.30	0.25	0.23	0.20	0.17	0.14
ASMD2920-050	0.76	0.67	0.59	0.50	0.42	0.38	0.33	0.29	0.23
ASMD2920-075	1.13	1.01	0.88	0.75	0.62	0.56	0.50	0.44	0.34
ASMD2920-100	1.66	1.47	1.29	1.10	0.91	0.83	0.73	0.64	0.50
ASMD2920-125	1.89	1.68	1.46	1.25	1.04	0.94	0.83	0.73	0.56
ASMD2920-150	2.27	2.01	1.76	1.50	1.25	1.13	1.00	0.87	0.74
ASMD2920-185	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
ASMD2920-200	3.02	2.68	2.34	2.00	1.66	1.50	1.32	1.16	0.90
ASMD2920-250	3.78	3.35	2.93	2.50	2.08	1.88	1.65	1.45	1.13
ASMD2920-260	3.64	3.25	2.91	2.60	2.26	2.08	1.95	1.74	1.13
ASMD2920-300	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.75	1.34
ASMD2920-400	6.04	5.36	4.68	4.00	3.36	3.01	2.65	2.33	1.79
ASMD2920-500	7.55	6.70	5.85	5.00	4.20	3.77	3.32	2.92	2.23
ASMD2920-600	8.60	7.70	6.80	6.00	4.95	4.60	4.06	3.65	3.15

## Soldering Parameters

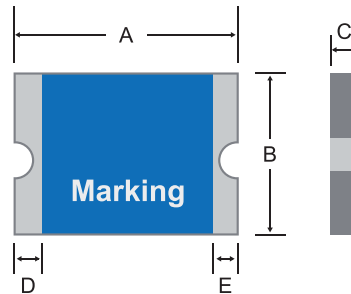


Profile Feature	Pb-Free Assembly
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Average Ramp-Up Rate ( $T_s$ max to $T_p$ )	3°C/second mac.
Preheat	
-Temperature Min( $T_s$ min)	150°C
-Temperature Max( $T_s$ max)	200°C
-Time( $T_s$ min to $T_s$ max)	60~180 seconds
Time maintained above:	
-Temperature(TL)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

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.

## Physical Dimensions(mm.)



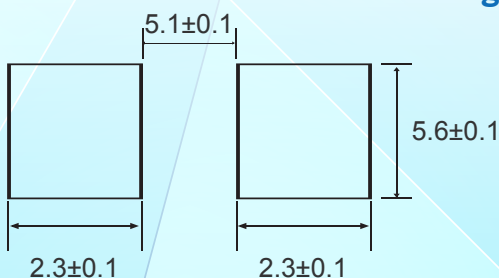
Model	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
ASMD2920-030	6.73	7.98	4.80	5.44	0.60	1.30	0.30	0.25
ASMD2920-050	6.73	7.98	4.80	5.44	0.60	1.30	0.30	0.25
ASMD2920-075	6.73	7.98	4.80	5.44	0.60	1.30	0.30	0.25
ASMD2920-100	6.73	7.98	4.80	5.44	0.40	1.00	0.30	0.25
ASMD2920-125	6.73	7.98	4.80	5.44	0.40	0.90	0.30	0.25
ASMD2920-150	6.73	7.98	4.80	5.44	0.40	0.90	0.30	0.25
ASMD2920-185	6.73	7.98	4.80	5.44	0.30	0.90	0.30	0.25
ASMD2920-200	6.73	7.98	4.80	5.44	0.30	0.90	0.30	0.25
ASMD2920-250	6.73	7.98	4.80	5.44	0.30	0.90	0.30	0.25
ASMD2920-260	6.73	7.98	4.80	5.44	0.30	0.90	0.30	0.25
ASMD2920-300	6.73	7.98	4.80	5.44	0.60	1.30	0.30	0.25
ASMD2920-400	6.73	7.98	4.80	5.44	0.60	1.30	0.30	0.25
ASMD2920-500	6.73	7.98	4.80	5.44	0.60	1.30	0.30	0.25
ASMD2920-500-12V	6.73	7.98	4.80	5.44	0.60	1.30	0.30	0.25
ASMD2920-500-16V	6.73	7.98	4.80	5.44	0.80	1.50	0.30	0.25
ASMD2920-600	6.73	7.98	4.80	5.44	0.80	1.50	0.30	0.25
ASMD2920-700	6.73	7.98	4.80	5.44	0.80	1.50	0.30	0.25

### 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.

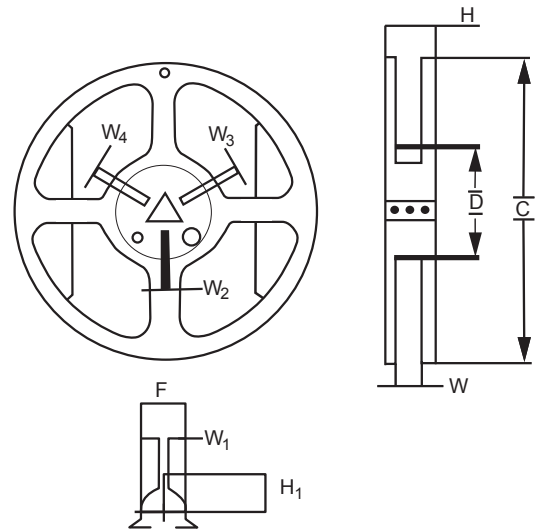
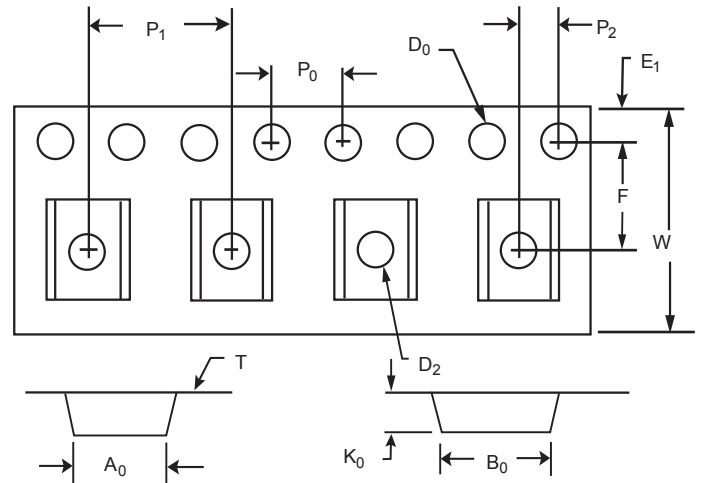
## Packaging Quantity and Marking



Part Number	Quantity
ASMD2920 Series	2,000 pcs/reel
Tape & reel packaging per EIA481-1	

**Tape And Reel Specifications (mm)**

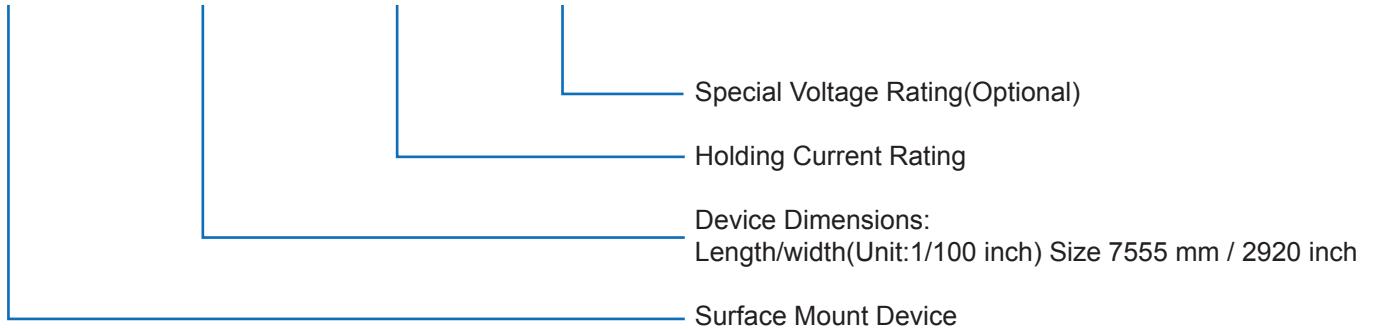
Governing Specifications	EIA 481-1
W	16.00 ± 0.3
P0	4.00 ± 0.10
P1	8.00 ± 0.10
P2	2.00 ± 0.05
A0	5.70 ± 0.10
B0	8.00 ± 0.10
B1max.	12.10
D0	1.50 + 0.1, -0
F	7.50 ± 0.05
E1	1.75 ± 0.10
E2min.	14.25
T	0.60
T1max.	0.10
K0	0.80 ± 0.1
Leader min.	390
Trailer min.	160
Reel Dimensions	
A max.	178
N min.	60
W1	16.40 ± 0.5
W2	22.40


**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 2920** - □□□ - □□



## Cross Reference

Model	Cross Reference		
	Tyco / PolySwitch®	Littelfuse / POLY-FUSE®	Polytronics / EVERFUSE®
ASMD2920-030	SMD030F	2920L030	SMD2920P030TF
ASMD2920-050	SMD050F	2920L050	SMD2920P050TF
ASMD2920-075	SMD075F	2920L075	SMD2920P075TF
ASMD2920-100	SMD100F/33	2920L100	SMD2920P110TF
ASMD2920-125	SMD125F	2920L125	SMD2920P125TF
ASMD2920-150	SMD150F/33(3425)	2920L150	SMD2920P150TF
ASMD2920-185	SMD185F(3425)	2920L185	SMD2920P185TF
ASMD2920-200	SMD200F(3425)	2920L200	SMD2920P200TF
ASMD2920-250	SMD250F(3425)	2920L250	SMD2920P250TF
ASMD2920-260	SMD260F	2920L260	SMD2920P260TF
ASMD2920-300	SMD300F	2920L300	SMD2920P300TF
ASMD2920-300-16	-	2920L300/15	SMD2920P300TF/15
ASMD2920-400	-	-	-
ASMD2920-500	-	-	-
ASMD2920-500-12V	-	-	-
ASMD2920-500-16V	-	-	-
ASMD2920-600	-	-	-
ASMD2920-700	-	-	-

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 “POLY-FUSE” is a registered trademark of Littelfuse, Inc.  
 “EVERFUSE” is a registered trademark of Polytronics Technology Corp.