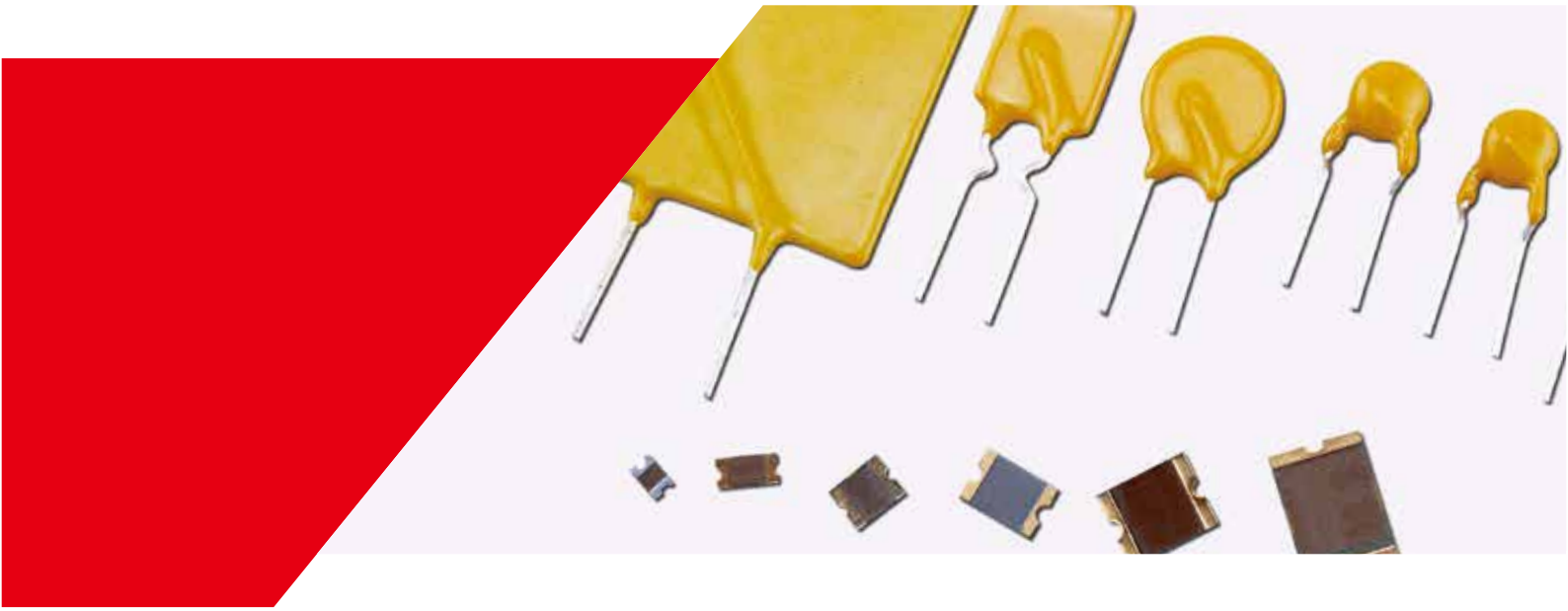
RUILON
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Positive Thermal Coefficent

SMD2920 Series

361° Circuit Protection System

Specifications are subject to change without notice.

Please refer to http://www.ruilon.com.cn for current information.

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Positive Thermal Coefficent - SMD2920 Series

Description

The 2920 series provides surface mount resettable overcurrent protection with holding current from 0.3A to 5.0A. This series is suitable for applications with higher holding currant and higher working voltage up to 60V.



Features

- I(hold): 0.3~5.0A
- Very high voltage surge capabilities
- Available in lead-free version
- Fast response to fault current
- RoHS compliant, Lead- Free and Halogen-Free
- Low resistance
- Compact design saves board space
- Compatible with high temperature solders

Applications

- USB peripherals
- Disk drives
- CD-ROMs
- General electronics
- Disk drives
- Set-top-box and HDMI
- Mobile Internet Device (MID)
- PDAs / digital cameras
- Game console port protection
- Plug and play protection for motherboards and peripherals
- Mobile phones - battery and port protection

Product Name

S	M	D	X	X	X	X	P	X	X	X	T	F	/	-	-

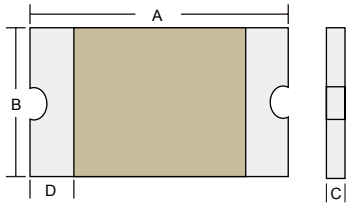
- S M D: Surface Mount Device
- X X: Device size code
- P: Polytronics Symbol
- X X X: Current Rating
- T: Thin Version (Optional)
- F: Lead-free
- / - -: Special Voltage Rating (Optional)

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Positive Thermal Coefficent - SMD2920 Series

Lead style code

Dimensions (mm)



Type Number	I_{hold}	I_{trip}	Maximum Time To Trip		V_{max}	I_{max}	$P_{d\ typ}$	R_{min}	R_{1max}	Package	Package Dimensions (mm)						
											A		B		C		D
	A	A	Current A	Time (Sec.)	V_{DC}	A	W	Ω	Ω		min	max	min	max	min	max	min
SMD2920P030TF	0.3	0.6	1.5	3	60	10	1.5	0.6	4.8	2920	6.73	7.98	4.8	5.44	0.6	1.3	0.3
SMD2920P050TF	0.5	1	2.5	4	60	10	1.5	0.18	1.4	2920	6.73	7.98	4.8	5.44	0.6	1.3	0.3
SMD2920P075TF	0.75	1.5	8	0.3	33	40	1.5	0.1	1	2920	6.73	7.98	4.8	5.44	0.6	1.3	0.3
SMD2920P075TF/60	0.75	1.5	8	0.3	60	40	1.5	0.3	0.95	2920	6.73	7.98	4.8	5.44	0.6	1.5	0.3
SMD2920P100TF	1	2.2	8	0.5	33	40	1.5	0.065	0.41	2920	6.73	7.98	4.8	5.44	0.4	1	0.3
SMD2920P125TF	1.25	2.5	8	2	33	40	1.5	0.05	0.25	2920	6.73	7.98	4.8	5.44	0.4	1	0.3
SMD2920P150TF	1.5	3	8	2	33	40	1.5	0.035	0.23	2920	6.73	7.98	4.8	5.44	0.4	1	0.3
SMD2920P185TF	1.85	3.7	8	2.5	33	40	1.5	0.03	0.15	2920	6.73	7.98	4.8	5.44	0.6	1.3	0.3
SMD2920P200TF	2	4	8	4.5	16	40	1.5	0.02	0.12	2920	6.73	7.98	4.8	5.44	0.4	1.1	0.3
SMD2920P200TF/24	2	4	8	4.5	24	40	1.5	0.020	0.12	2920	6.73	7.98	4.8	5.44	0.4	1.1	0.3
SMD2920P200TF/33	2	4	8	4.5	33	40	1.5	0.020	0.12	2920	6.73	7.98	4.8	5.44	0.6	1.3	0.3
SMD2920P250TF	2.5	5	8	16	16	40	1.5	0.02	0.085	2920	6.73	7.98	4.8	5.44	0.4	1.1	0.3
SMD2920P250TF/24	2.5	5	8	16	24	40	1.5	0.02	0.085	2920	6.73	7.98	4.8	5.44	0.4	1.1	0.3
SMD2920P250TF/33	2.5	5	8	16	33	40	1.5	0.02	0.085	2920	6.73	7.98	4.8	5.44	0.4	1.1	0.3
SMD2920P260TF	2.6	5.2	8	10	6	40	1.5	0.014	0.075	2920	6.73	7.98	4.8	5.44	0.4	1.1	0.3
SMD2920P260TF/24	2.6	5.2	8	10	24	40	1.5	0.014	0.075	2920	6.73	7.98	4.8	5.44	0.4	1.1	0.3
SMD2920P260TF/33	2.6	5.2	8	10	33	40	1.5	0.014	0.075	2920	6.73	7.98	4.8	5.44	0.4	1.1	0.3
SMD2920P300TF	3	6	8	20	6	40	1.5	0.012	0.048	2920	6.73	7.98	4.8	5.44	0.6	1.3	0.3
SMD2920P300TF/16	3	6	8	20	16	40	1.5	0.012	0.048	2920	6.73	7.98	4.8	5.44	0.6	1.3	0.3
SMD2920P400TF	4	8	20	4.0	6	40	1.5	0.008	0.040	2920	6.73	7.98	4.8	5.44	0.6	1.3	0.3
SMD2920P400TF/12	4	8	20	4.0	12	40	1.5	0.008	0.040	2920	6.73	7.98	4.8	5.44	0.6	1.3	0.3
SMD2920P500TF	5	10	25	5.0	6	40	1.5	0.005	0.031	2920	6.73	7.98	4.8	5.44	0.6	1.3	0.3

Ihold = Hold current: maximum current device will pass without tripping in 25ºC still air.
Itrip = Trip current: minimum current at which the device will trip in 25 ºC still air.
Vmax = Maximum voltage device can withstand without damage at rated current (I max)
Imax = Maximum fault current device can withstand without damage at rated voltage (Vmax)
Pd typ = Typical power dissipated from device when in the tripped state at 25 ºC still air.
Rmin = Minimum resistance of device in initial (un-soldered) state.
R1max = Maximum resistance of device at 25 ºC measured one hour after tripping or reflow soldering of 260 ºC for 20 sec.

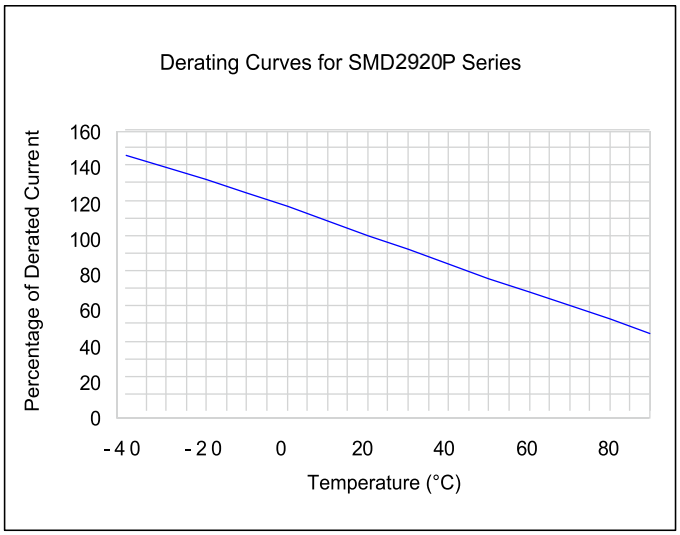
Positive Thermal Coefficent - SMD2920 Series

Thermal Derating Chart Recommended Hold Current (A) at Ambient Temperature (°C)

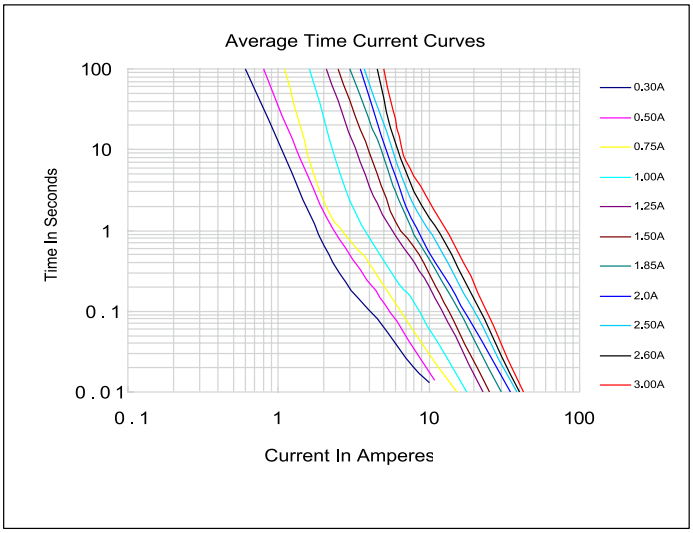
Type number	-40℃	-20℃	0℃	25℃	40℃	50℃	60℃	70℃	85℃
SMD2920P030TF	0.45	0.40	0.35	0.30	0.25	0.23	0.20	0.17	0.14
SMD2920P050TF	0.76	0.67	0.59	0.50	0.42	0.38	0.33	0.29	0.23
SMD2920P075TF	1.13	1.01	0.88	0.75	0.62	0.56	0.50	0.44	0.34
SMD2920P075TF/60	1.13	1.01	0.88	0.75	0.62	0.56	0.50	0.44	0.34
SMD2920P100TF	1.66	1.47	1.29	1.00	0.91	0.83	0.73	0.64	0.50
SMD2920P125TF	1.89	1.68	1.46	1.25	1.04	0.94	0.83	0.73	0.56
SMD2920P150TF	2.27	2.01	1.76	1.50	1.25	1.13	1.00	0.87	0.74
SMD2920P185TF	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
SMD2920P200TF	3.02	2.68	2.34	2.00	1.66	1.50	1.32	1.16	0.90
SMD2920P200TF/24	3.02	2.68	2.34	2.00	1.66	1.50	1.32	1.16	0.90
SMD2920P200TF/33	3.02	2.68	2.34	2.00	1.66	1.50	1.32	1.16	0.90
SMD2920P250TF	3.78	3.35	2.93	2.50	2.08	1.88	1.65	1.45	1.13
SMD2920P250TF/24	3.78	3.35	2.93	2.50	2.08	1.88	1.65	1.45	1.13
SMD2920P250TF/33	3.78	3.35	2.93	2.50	2.08	1.88	1.65	1.45	1.13
SMD2920P260TF	3.64	3.25	2.91	2.60	2.26	2.08	1.95	1.74	1.13
SMD2920P260TF/24	3.64	3.25	2.91	2.60	2.26	2.08	1.95	1.74	1.13
SMD2920P260TF/33	3.64	3.25	2.91	2.60	2.26	2.08	1.95	1.74	1.13
SMD2920P300TF	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.75	1.34
SMD2920P300TF/16	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.75	1.34
SMD2920P400TF	6.04	5.36	4.68	4.00	3.36	3.01	2.65	2.33	1.79
SMD2920P400TF/12	6.04	5.36	4.68	4.00	3.36	3.01	2.65	2.33	1.79
SMD2920P500TF	7.55	6.70	5.85	5.00	4.20	3.77	3.32	2.92	2.23

Positive Thermal Coefficent - SMD2920 Series

Thermal Derating Curve



Average Time-Current Curve

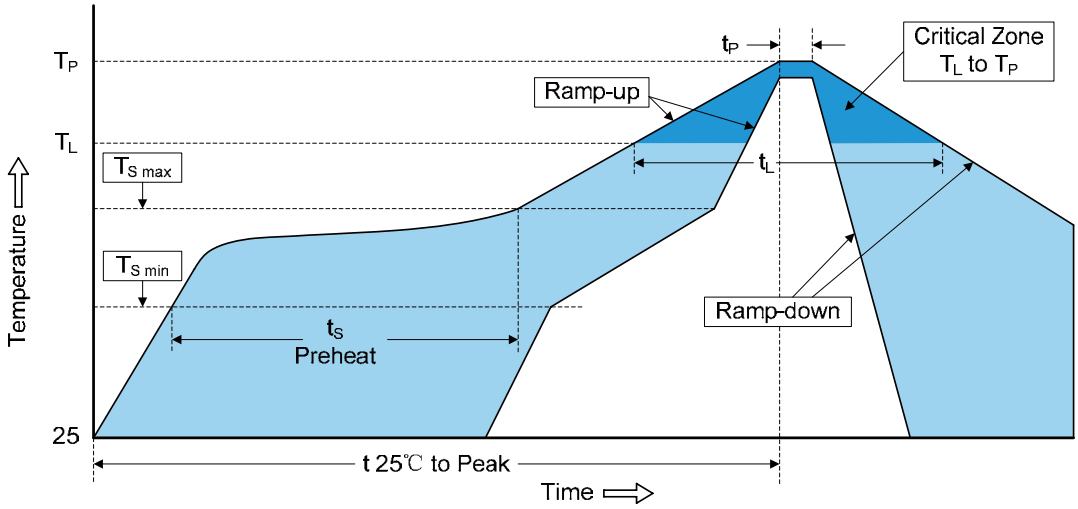


Environmental Specifications

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
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		

Positive Thermal Coefficent - SMD2920 Series

Soldering Parameters



Profile Feature	Pb-Free Assembly
Average ramp-up rate ($T_{S\,max}$ to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\,min}$) -Temperature Max ($T_{S\,max}$) -Time (min to max) ($T_{S\,min}$ to $T_{S\,max}$)	 150℃ 200℃ 60-180 seconds
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.
Storage Condition	0℃~35℃, ≤70%RH

- Recommended reflow methods: IR, vapor phase oven, hot air oven, N_2 environment for lead-free
- Recommended maximum paste thickness is 0.25mm (0.010 inch)
- Device can be cleaned using standard industry methods and solvents.

Note 1: All temperature refer to topside ofthe package, measured on the package body surface.

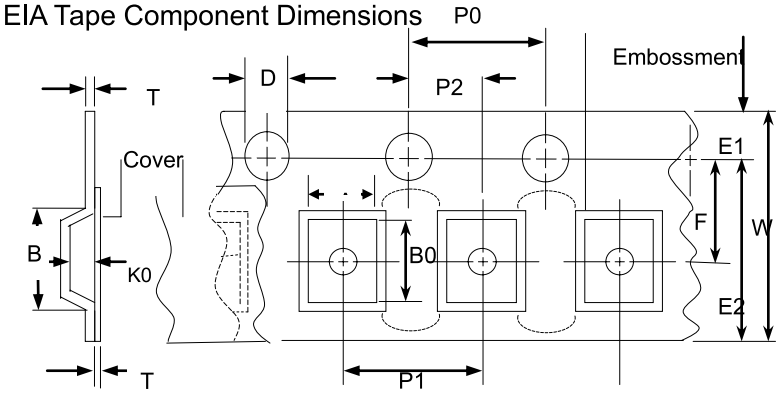
Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

Positive Thermal Coefficent - SMD2920 Series

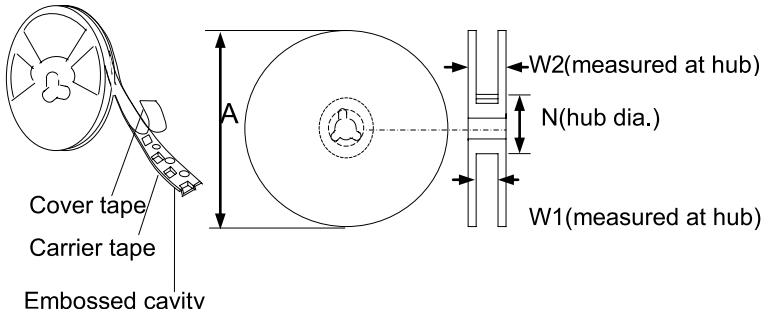
Tape and Reel Specificatons

Governing Specifications	EIA 481-1
W	16.0 ± 0.3
P0	4.0 ± 0.10
P1	8.0 ± 0.10
P2	2.0 ± 0.05
A0	5.70 ± 0.10
B0	8.00 ± 0.10
B1max.	12.10
D0	1.50 + 0.1, -0
F	7.5 ± 0.05
E1	1.75 ± 0.10
E2min.	14.25
T	0.6
T1max.	0.1
K0	0.8± 0.1
Leader min.	390
Trailer min.	160
Reel Dimensions	
A max.	178
N min.	60
W1	16.4± 0.5
W2	22.4 ± 0.5

EIA Tape Component Dimensions



EIA Reel Dimensions



Packaging

Part Numberr	Halogen Free	Packaging Option	Quantity	Quantity & Packaging Codes
SMD2920PxxxTF	Yes	Tape and Reel	1500	YR

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