

## Positive Temperature Coefficient (PTC) Datasheet

### Features

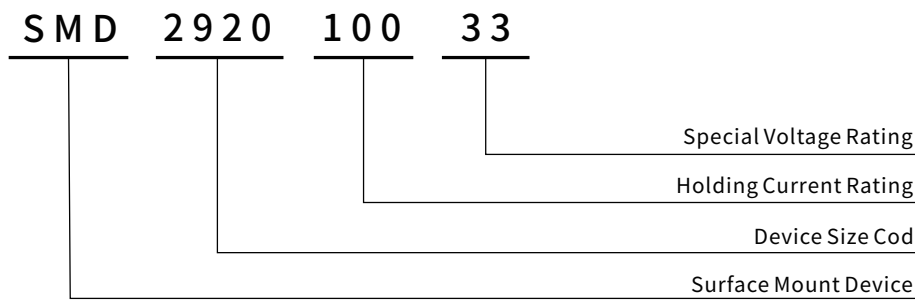
- I Hold: 0.3~7.0A
- Fast responding to fault current
- Size 2920 / 7.5\*5.4mm
- Low resistance
- Low profile
- RoHS compliant & Lead-Free & Halogen Free

I Hold  
0.3A to 7.0A

### Applications

- USB hubs, ports and peripherals
- Computer, Mobile phones, Multimedia
- General electronics
- Disk drives
- Game machines, Portable electronics, Battery
- Plug and play protection for motherboards and peripherals

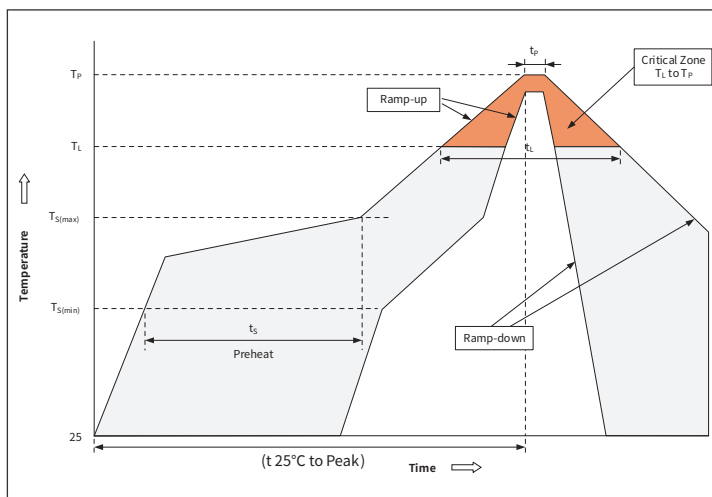
### Part Number Code



SMD2920



### Recommended Soldering Conditions



Profile Feature		Pb-Free Assembly
Pre-heat	Temperature Min ( $T_{S(min)}$ )	+150°C
	Temperature Max ( $T_{S(max)}$ )	+200°C
	Time (Min to Max) ( $t_s$ )	60-180 secs.
Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak)		3°C /sec. Max
$T_{S(max)}$ to $T_L$ - Ramp-up Rate		3°C /sec. Max
Reflow	Temperature( $T_L$ )(Liquid us)	+217°C
	Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_P$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		20-40secs
Ramp-down Rate		6°C /sec. Max
Time 25°C to Peak Temp ( $T_P$ )		8 min. Max
Do not exceed		+260°C

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.

# SMD2920 SERIES

Surface Mount PTC Device

## ● Electrical Characteristics (Ta=25°C Unless otherwise specified)

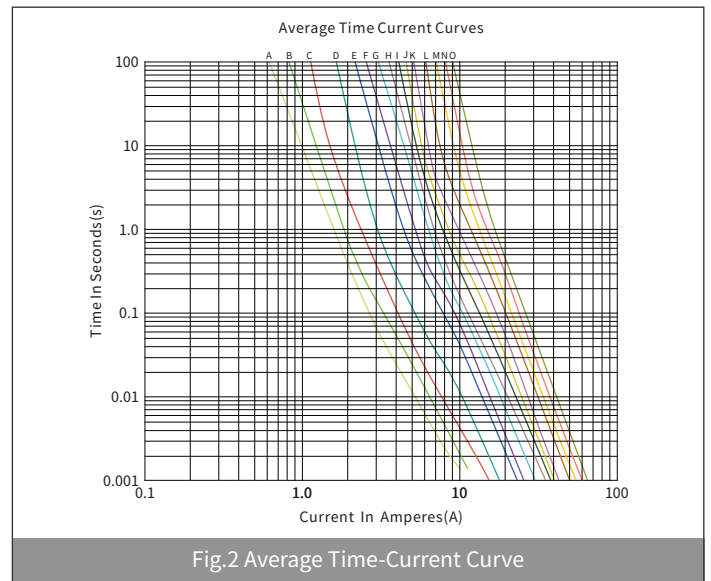
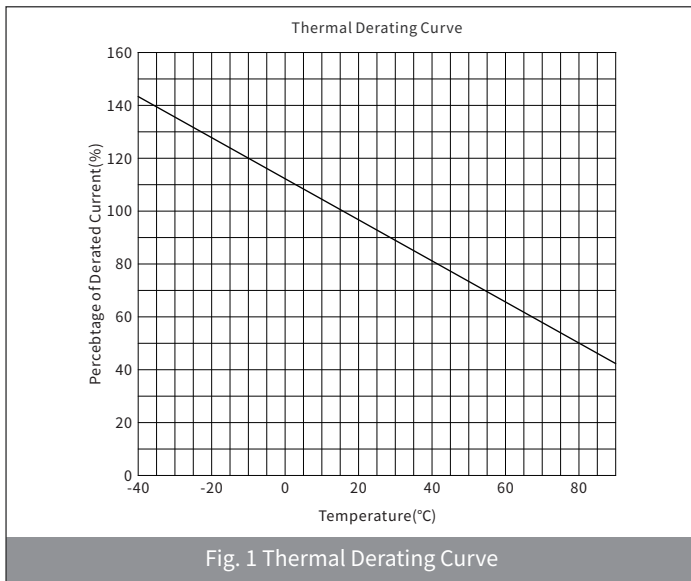
Part Number	Marking	$I_{hold}$	$I_{trip}$	$V_{max}$	$I_{max}$	$P_{d\ typ}$	Max. Time-to-trip		$R_{i\ min}$	$R_{1\ max}$
		(A)	(A)	(V)	(A)	(W)	(A)	(Sec)	( $\Omega$ )	( $\Omega$ )
SMD2920-030-60	R+O 03	0.30	0.60	60	40	1.5	1.5	3.0	0.600	4.800
SMD2920-050-60	R+O 05	0.50	1.00	60	40	1.5	2.5	4.0	0.180	1.400
SMD2920-075-33	R+O 07	0.75	1.50	33	40	1.5	8.0	0.3	0.100	1.000
SMD2920-075-60	R+O 07	0.75	1.50	60	40	1.5	8.0	0.3	0.100	1.000
SMD2920-100-33	R+O 10	1.10	2.20	33	40	1.5	8.0	0.5	0.065	0.410
SMD2920-100-60	R+O 10	1.10	2.20	60	40	1.5	8.0	0.5	0.065	0.410
SMD2920-100-72	R+O 10	1.10	2.20	72	40	1.5	8.0	0.5	0.065	0.410
SMD2920-125-33	R+O 12	1.25	2.50	33	40	1.5	8.0	2.0	0.050	0.250
SMD2920-150-33	R+O 15	1.50	3.00	33	40	1.5	8.0	2.0	0.035	0.230
SMD2920-150-48	R+O 15	1.5	3.00	48	15	2.0	8.0	2.0	0.035	0.230
SMD2920-185-33	R+O 18	1.85	3.70	33	40	1.5	8.0	2.5	0.030	0.150
SMD2920-200-16	R+O 20	2.00	4.00	16	40	1.8	8.0	4.5	0.020	0.120
SMD2920-200-24	R+O 20	2.00	4.00	24	40	1.8	8.0	4.5	0.020	0.120
SMD2920-200-33	R+O 20	2.00	4.00	33	40	1.8	8.0	4.5	0.020	0.120
SMD2920-200-36	R+O 20	2.00	4.00	36	40	2.0	8.0	4.5	0.020	0.120
SMD2920-200-48	R+O 20	2.00	4.00	48	40	2.0	8.0	4.5	0.020	0.120
SMD2920-250-16	R+O 25	2.50	5.00	16	40	1.8	8.0	10.0	0.020	0.085
SMD2920-250-24	R+O 25	2.50	5.00	24	40	1.8	8.0	10.0	0.020	0.085
SMD2920-260-6	R+O 26	2.60	5.20	6	40	1.8	8.0	10.0	0.014	0.075
SMD2920-260-16	R+O 26	2.60	5.20	16	40	1.8	8.0	10.0	0.014	0.075
SMD2920-260-24	R+O 26	2.60	5.20	24	40	1.8	8.0	10.0	0.014	0.075
SMD2920-300-6	R+O 30	3.00	6.00	6	40	1.8	8.0	20.0	0.012	0.048
SMD2920-300-16	R+O 30	3.00	6.00	16	40	1.8	8.0	20.0	0.012	0.048
SMD2920-300-24	R+O 30	3.00	6.00	24	40	1.8	8.0	20.0	0.012	0.048
SMD2920-300-30	R+O 30	3.00	6.00	30	40	1.8	8.0	20.0	0.012	0.048
SMD2920-300-33	R+O 30	3.00	6.00	33	40	1.8	8.0	20.0	0.012	0.048
SMD2920-330-24	R+O 33	3.30	6.60	24	40	1.8	8.0	20.0	0.015	0.055
SMD2920-330-33	R+O 33	3.30	6.60	33	40	1.8	8.0	20.0	0.015	0.055
SMD2920-400-6	R+O 40	4.00	8.00	6	40	2.5	20.0	4.0	0.006	0.040
SMD2920-400-16	R+O 40	4.00	8.00	16	40	2.5	20.0	4.0	0.006	0.040
SMD2920-400-24	R+O 40	4.00	8.00	24	40	2.5	20.0	4.0	0.006	0.040
SMD2920-400-30	R+O 40	4.00	8.00	30	40	2.5	20.0	4.0	0.006	0.040
SMD2920-500-6	R+O 50	5.00	10.00	6	40	2.5	25.0	5.0	0.004	0.031
SMD2920-500-12	R+O 50	5.00	10.00	12	40	2.5	25.0	5.0	0.004	0.031
SMD2920-500-16	R+O 50	5.00	10.00	16	40	2.5	25.0	5.0	0.004	0.031
SMD2920-500-24	R+O 50	5.00	10.00	24	40	2.5	25.0	5.0	0.004	0.031
SMD2920-600-6	R+O 60	6.00	12.00	6	40	2.5	25.0	6.0	0.004	0.020
SMD2920-600-12	R+O 60	6.00	12.00	12	40	2.5	25.0	6.0	0.004	0.020
SMD2920-600-16	R+O 60	6.00	12.00	16	40	2.5	25.0	6.0	0.004	0.020
SMD2920-700-6	R+O 70	7.00	14.00	6	40	2.5	25.0	6.0	0.003	0.010
SMD2920-700-12	R+O 70	7.00	14.00	12	40	2.5	25.0	6.0	0.003	0.010

## ● Vocabulary

- $I_{hold}$  = Hold current: maximum current device will pass without tripping in 25°C still air.
- $I_{trip}$  = Trip current: minimum current at which the device will trip in 25°C still air.
- $V_{max}$  = Maximum voltage device can withstand without damage at rated current ( $I_{max}$ ).
- $I_{max}$  = Maximum fault current device can withstand without damage at rated voltage ( $V_{max}$ ).
- $P_{d\,typ.}$  = Typical power dissipated from device when in the tripped state at 25°C still air.
- $R_{i\,min}$  = Minimum resistance of device in initial (un-soldered) state.
- $R_{1\,max}$  = Maximum resistance of device at 25°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

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

## ● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



Note: Fig.2 Average Time-Current Curve

A: SMD2920-030 B: SMD2920-050 C: SMD2920-075 D: SMD2920-100 E: SMD2920-125  
 F: SMD2920-150 G: SMD2920-185 H: SMD2920-200 I: SMD2920-250 J: SMD2920-260  
 K: SMD2920-300 L: SMD2920-400 M: SMD2920-500 N: SMD2920-600 O: SMD2920-700

## ● Thermal Derating Chart

Part Number	Ambient operating temperature hold current( $I_{hold}$ )								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
SMD2920-030	0.45	0.40	0.35	0.30	0.25	0.23	0.20	0.17	0.14
SMD2920-050	0.76	0.67	0.59	0.50	0.42	0.38	0.33	0.29	0.23
SMD2920-075	1.13	1.01	0.88	0.75	0.62	0.56	0.50	0.44	0.34
SMD2920-100	1.66	1.47	1.29	1.10	0.91	0.83	0.73	0.64	0.50
SMD2920-125	1.89	1.68	1.46	1.25	1.04	0.94	0.83	0.73	0.56
SMD2920-150	2.27	2.01	1.76	1.50	1.25	1.13	1.00	0.87	0.74
SMD2920-185	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
SMD2920-200	3.02	2.68	2.34	2.00	1.66	1.50	1.32	1.16	0.90
SMD2920-250	3.64	3.25	2.91	2.50	2.08	1.88	1.65	1.45	1.13
SMD2920-260	3.78	3.35	2.93	2.60	2.26	2.08	1.95	1.74	1.18
SMD2920-300	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.79	1.34
SMD2920-330	4.60	4.20	3.75	3.30	2.95	2.75	2.50	2.25	1.70
SMD2920-400	6.04	5.36	4.68	4.00	3.36	3.01	2.65	2.33	1.79
SMD2920-500	7.55	6.70	5.85	5.00	4.20	3.77	3.32	2.92	2.23
SMD2920-600	8.60	7.70	6.80	6.00	4.95	4.60	4.06	3.65	3.15
SMD2920-700	10.03	8.98	7.93	7.00	5.77	5.36	4.73	4.26	3.68

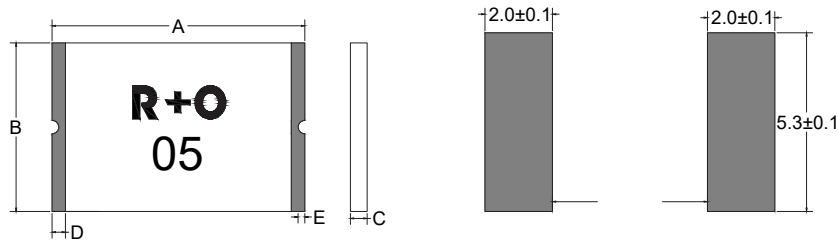
## ● Environmental Specifications

Operating / Storage temperature :	-40°C to +85°C
Passive Aging :	+85°C , 1000 hours
Humidity Aging :	+85°C , 85%R.H. 168 hours
Thermal Shock :	MIL-STD-202, Method 107G ; +85°C /-40°C 20 times
Solvent Resistance :	MIL-STD-202, Method 215 No change
Vibration :	MIL-STD-202,Method 201 No change
Maximum Device Surface Temperature in Tripped State :	125°C
Storage Conditions :	Light-proof, Hermetically Sealed, Moisture-proof

## ● Ordering Information

PACKAGE	SIZE(mm)	Part Numbe	DELIVERY MODE	MPQ(PCS)
SMD2920	7.5*5.5	SMD2920-100-60 SMD2920-100-72	7" REEL	1,000
		Others	7" REEL	1,500

## ● Physical Dimensions & Recommended Pad Layout



Part Number	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
SMD2920-030-60	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920-050-60	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-075-33	6.73	7.98	4.80	5.44	0.50	1.30	0.30	0.25
SMD2920-075-60	6.73	7.98	4.80	5.44	0.60	1.60	0.30	0.25
SMD2920-100-33	6.73	7.98	4.80	5.44	0.40	1.00	0.30	0.25
SMD2920-100-60	6.73	7.98	4.80	5.44	0.80	2.10	0.30	0.25
SMD2920-100-72	6.73	7.98	4.80	5.44	0.80	2.10	0.30	0.25
SMD2920-125-33	6.73	7.98	4.80	5.44	0.40	1.00	0.30	0.25
SMD2920-150-33	6.73	7.98	4.80	5.44	0.50	1.30	0.30	0.25
SMD2920-150-48	6.73	7.98	4.80	5.44	1.00	2.10	0.30	0.25
SMD2920-185-33	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920-200-16	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920-200-24	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920-200-33	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920-200-36	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920-200-48	6.73	7.98	4.80	5.44	1.00	2.10	0.30	0.25
SMD2920-250-16	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920-250-24	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920-260-6	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25

## ● Physical Dimensions & Recommended Pad Layout

Part Number	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
SMD2920-260-16	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920-260-24	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920-300-6	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920-300-16	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920-300-24	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920-300-30	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920-300-33	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920-330-24	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920-330-33	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920-400-6	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-400-16	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-400-24	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-400-30	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-500-6	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-500-12	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-500-16	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-500-24	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-600-6	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-600-12	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-600-16	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-700-6	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920-700-12	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25

## ● Warning

- Users shall independently assess the suitability of these devices for each of their applications.
- Operation of these devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire.
- These devices are intended to protect against the effects of temporary over-current or over-temperature conditions and are not intended to perform as protective devices where such conditions are expected to be repetitive or prolonged in duration.
- Exposure to silicon-based oils, solvents, electrolytes, acids, and similar materials can adversely affect the prolonged of these PPTC devices.
- These devices undergo thermal expansion under fault conditions, and thus shall be provided with adequate space and be protected against mechanical stresses.
- Circuits with inductance may generate a voltage ( $L di/dt$ ) above the rated voltage of the PPTC device.