

SMD2920 Series Surface Mount PTC Devices

Description

The 2920 series provides miniature surface mount resettable overcurrent protection with holding current from 0.3A to 7.0A. This series is suitable for ultra portable applications where space is at a premium and the device current is low.

Features:

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

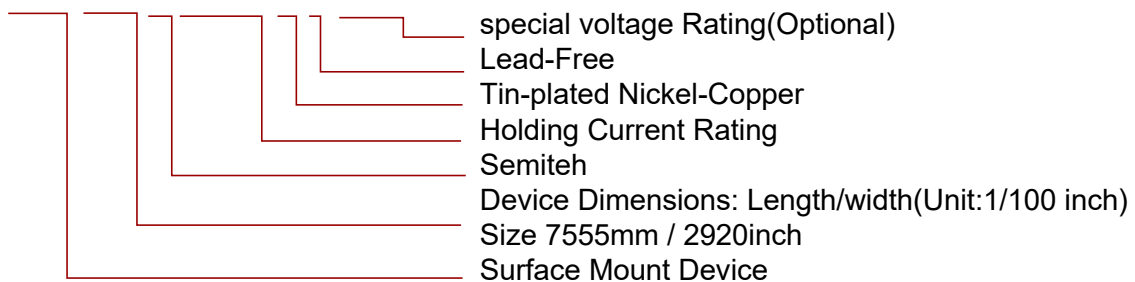
Applications:

- Mobile phones and PDAs
- Portable MP3 and media player
- Mobile Internet Device (MID)
- USB peripherals
- IC VCC protection

Circuit Diagram & Pin Configuration:



SMD 2920 R □□□ S F □□V



Performance Specification



Model	V _{max} (V dc)	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)
SMD2920R030SF	60	10	0.30	0.60	1.5	1.5	3.0	0.600	4.800
SMD2920R050SF	60	10	0.50	1.00	1.5	2.5	4.0	0.180	1.400
SMD2920R075SF	33	40	0.75	1.50	1.5	8.0	0.3	0.100	1.000
SMD2920R075SF60V	60	40	0.75	1.50	1.5	8.0	0.3	0.100	1.000
SMD2920R100SF	33	40	1.10	2.20	1.5	8.0	0.5	0.065	0.410
SMD2920R100SF60V	60	40	1.10	2.20	1.5	8.0	0.5	0.065	0.410
SMD2920R125SF	33	40	1.25	2.50	1.5	8.0	2.0	0.050	0.250
SMD2920R150SF	33	40	1.50	3.00	1.5	8.0	2.0	0.035	0.230
SMD2920R185SF	33	40	1.85	3.70	1.5	8.0	2.5	0.030	0.150
SMD2920R200SF	16	40	2.00	4.00	1.5	8.0	4.5	0.020	0.120
SMD2920R200SF24V	24	40	2.00	4.00	1.5	8.0	4.5	0.020	0.120
SMD2920R200SF33V	33	40	2.00	4.00	1.5	8.0	4.5	0.020	0.120
SMD2920R250SF	16	40	2.50	5.00	1.5	8.0	16.0	0.020	0.085
SMD2920R250SF24V	24	40	2.50	5.00	1.5	8.0	16.0	0.020	0.085
SMD2920R260SF	6	40	2.60	5.20	1.5	8.0	10.0	0.014	0.075
SMD2920R260SF16V	16	40	2.60	5.20	1.5	8.0	10.0	0.014	0.075
SMD2920R300SF	6	40	3.00	6.00	1.5	8.0	20.0	0.012	0.048
SMD2920R300SF16v	16	40	3.00	6.00	1.5	8.0	20.0	0.012	0.048
SMD2920R400SF	6	40	4.00	8.00	1.5	20.0	4.0	0.008	0.040
SMD2920R400SF16V	16	40	4.00	8.00	1.5	20.0	4.0	0.008	0.040
SMD2920R500SF	6	40	5.00	10.00	1.5	25.0	5.0	0.005	0.031
SMD2920R500SF12V	12	40	5.00	10.00	1.5	25.0	5.0	0.005	0.031
SMD2920R500SF16V	16	40	5.00	10.00	1.5	25.0	5.0	0.005	0.031
SMD2920R600SF	6	40	6.00	12.00	1.5	25.0	6.0	0.004	0.020
SMD2920R600SF12v	12	40	6.00	12.00	1.5	25.0	6.0	0.004	0.020
SMD2920R700SF	6	40	7.00	14.00	1.5	25.0	6.0	0.0025	0.010
SMD2920R700SF12v	12	40	7.00	14.00	1.5	25.0	6.0	0.0025	0.010

- 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}).
- 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.
- 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.

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		

Agency Approval and Environmental Compliance

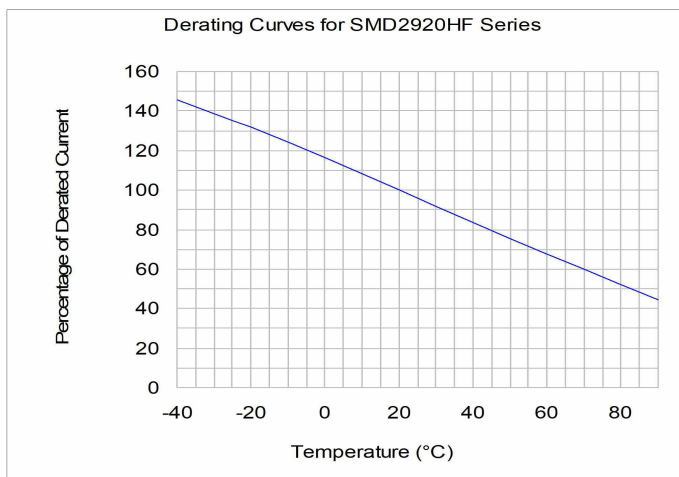
Agency	File Number	Regulation	Standard
UL	E486890		2011/65/EU
TUV	pending		EN14582

Thermal Derating Chart

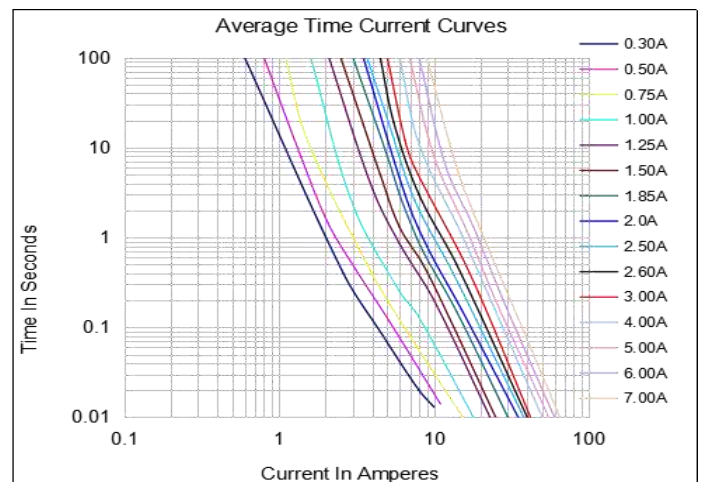
Recommended Hold Current(A) at Ambient Temperature(°C)

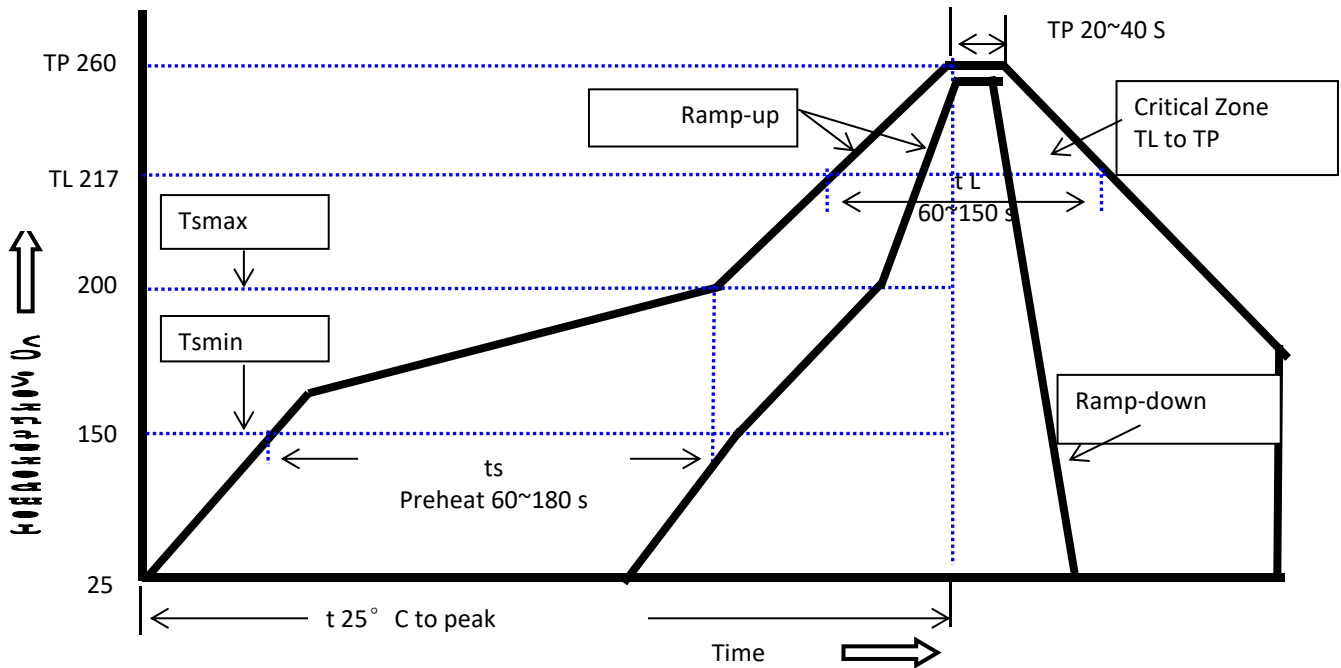
Model	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
SMD2920R030SF	0.45	0.40	0.35	0.30	0.25	0.23	0.20	0.17	0.14
SMD2920R050SF	0.76	0.67	0.59	0.50	0.42	0.38	0.33	0.29	0.23
SMD2920R075SF	1.13	1.01	0.88	0.75	0.62	0.56	0.50	0.44	0.34
SMD2920R100SF	1.66	1.47	1.29	1.10	0.91	0.83	0.73	0.64	0.50
SMD2920R125SF	1.89	1.68	1.46	1.25	1.04	0.94	0.83	0.73	0.56
SMD2920R150SF	2.27	2.01	1.76	1.50	1.25	1.13	1.00	0.87	0.74
SMD2920R185SF	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
SMD2920R200SF	3.02	2.68	2.34	2.00	1.66	1.50	1.32	1.16	0.90
SMD2920R250SF	3.78	3.35	2.93	2.50	2.08	1.88	1.65	1.45	1.13
SMD2920R260SF	3.64	3.25	2.91	2.60	2.26	2.08	1.95	1.74	1.13
SMD2920R300SF	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.75	1.34
SMD2920R400SF	6.04	5.36	4.68	4.00	3.36	3.01	2.65	2.33	1.79
SMD2920R500SF	7.55	6.70	5.85	5.00	4.20	3.77	3.32	2.92	2.23
SMD2920R600SF	8.60	7.70	6.80	6.00	4.95	4.60	4.06	3.65	3.15
SMD2920R700SF	10.03	8.98	7.93	7.00	5.77	5.36	4.73	4.26	3.68

Thermal Derating Curve



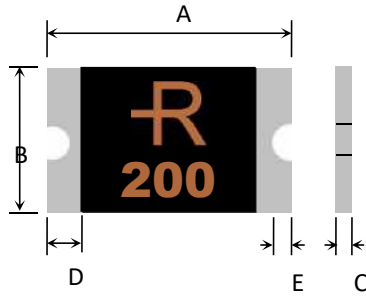
Average Time-Current Curve



Soldering Parameters


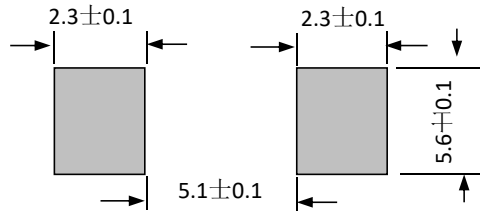
Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate(Ts max to T p)	3°C/second max.
Preheat -Temperature Min(Ts min) -Temperature Max(Ts max) -Time(Ts min to Ts max)	150°C 200°C 60~180 seconds
Time maintained above: -Temperature(TL) -Time(tL)	217°C 60~150 seconds
Peak Temperature(Tp)	260°C
Ramp-Down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max
Storage Condition	0°C~35°C,30%-60%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.
SMD2920R030SF	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920R050SF	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920R075SF	6.73	7.98	4.80	5.44	0.70	1.30	0.30	0.25
SMD2920R075SF60V	6.73	7.98	4.80	5.44	0.70	1.30	0.30	0.25
SMD2920R100SF	6.73	7.98	4.80	5.44	0.40	1.00	0.30	0.25
SMD2920R100SF60V	6.73	7.98	4.80	5.44	1.00	2.10	0.30	0.25
SMD2920R125SF	6.73	7.98	4.80	5.44	0.40	1.00	0.30	0.25
SMD2920R150SF	6.73	7.98	4.80	5.44	0.50	1.30	0.30	0.25
SMD2920R185SF	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920R200SF	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920R200SF24V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920R200SF33V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920R250SF	6.73	7.98	4.80	5.44	0.7	1.40	0.30	0.25
SMD2920R250SF24V	6.73	7.98	4.80	5.44	0.7	1.40	0.30	0.25
SMD2920R260SF	6.73	7.98	4.80	5.44	0.7	1.40	0.30	0.25
SMD2920R260SF16V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920R300SF	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920R300SF16V	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920R400SF	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920R400SF16V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920R500SF	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920R500SF12V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920R500SF16V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920R600SF	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920R600SF12V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920R700SF	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920R700SF12V	6.73	7.98	4.80	5.44	1.00	1.60	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.

Recommended Pad Layout (mm.)

Packaging Quantity

Part Number	Quantity
SMD2920 Series	1500 pcs/reel

Tape & reel packaging per EIA481-1

NOTICE

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