

## Positive Thermal Coefficient Diodes

### SMD2920P030~300 Series

The SMD2920 Series PTC provides surface mount overcurrent protection for applications where space is at a premium and resettable protection is desired.

#### Features

- RoHS compliant, lead-free and halogen-free
- Fast response to fault currents
- Compact design saves board space
- Low resistance
- Low-profile
- Compatible with high temperature solders

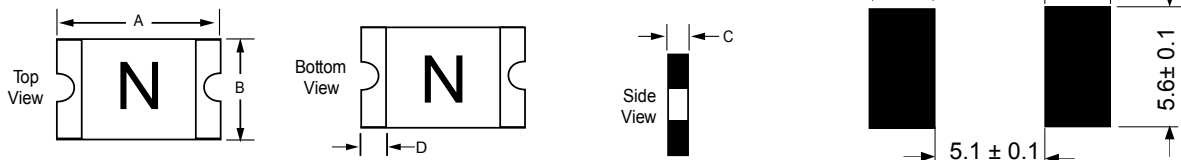
#### Applications

- USB peripherals
- Disk drives
- CD-ROMs
- Plug and play protection for motherboards and peripherals
- Mobile phones - battery and port protection
- Disk drives
- PDAs / digital cameras
- Game console port protection



#### Dimension

MARKING CODE VARIES  
 WITH AMPERAGE RATING  
 (See Electrical Characteristic Table)  
 SHOWN IS 1.0AMP RATING



| Type Number      | A    |      | B    |      | C    |      | D    |
|------------------|------|------|------|------|------|------|------|
|                  | Min. | Max. | Min. | Max. | Min. | Max. | Min. |
| SMD2920P030TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.60 | 1.15 | 0.30 |
| SMD2920P050TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.60 | 1.15 | 0.30 |
| SMD2920P075TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.60 | 1.15 | 0.30 |
| SMD2920P075TF/60 | 6.73 | 7.98 | 4.80 | 5.44 | 0.60 | 1.15 | 0.30 |
| SMD2920P100TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.40 | 1.00 | 0.30 |
| SMD2920P125TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.40 | 0.90 | 0.30 |
| SMD2920P150TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.40 | 0.90 | 0.30 |
| SMD2920P185TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.30 |
| SMD2920P200TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.30 |
| SMD2920P200TF/24 | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.30 |
| SMD2920P250TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.30 |
| SMD2920P260TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.30 |
| SMD2920P300TF    | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.30 |
| SMD2920P300TF/15 | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.30 |

## Electrical Characteristics

| Type Number      | I <sub>hold</sub> | I <sub>trip</sub> | V <sub>max</sub>  | I <sub>max</sub> | P <sub>d</sub> max. | Maximum Time To Trip |             | Resistance           |                       |
|------------------|-------------------|-------------------|-------------------|------------------|---------------------|----------------------|-------------|----------------------|-----------------------|
|                  | (A)               | (A)               | V <sub>(dc)</sub> | (A)              | (W)                 | Current (A)          | Time (Sec.) | R <sub>min</sub> (Ω) | R <sub>1max</sub> (Ω) |
| SMD2920P030TF    | 0.30              | 0.60              | 60                | 100              | 1.5                 | 1.50                 | 3.00        | 0.600                | 4.800                 |
| SMD2920P050TF    | 0.50              | 1.00              | 60                | 100              | 1.5                 | 2.50                 | 4.00        | 0.180                | 1.400                 |
| SMD2920P075TF    | 0.75              | 1.50              | 33                | 100              | 1.5                 | 8.00                 | 0.30        | 0.100                | 1.000                 |
| SMD2920P075TF/60 | 0.75              | 1.50              | 60                | 100              | 1.5                 | 8.00                 | 0.30        | 0.065                | 1.000                 |
| SMD2920P100TF    | 1.10              | 2.20              | 33                | 100              | 1.5                 | 8.00                 | 0.50        | 0.065                | 0.410                 |
| SMD2920P125TF    | 1.25              | 2.50              | 33                | 100              | 1.5                 | 8.00                 | 2.00        | 0.050                | 0.250                 |
| SMD2920P150TF    | 1.50              | 3.00              | 33                | 100              | 1.5                 | 8.00                 | 2.00        | 0.035                | 0.230                 |
| SMD2920P185TF    | 1.85              | 3.70              | 33                | 100              | 1.5                 | 8.00                 | 2.50        | 0.030                | 0.150                 |
| SMD2920P200TF    | 2.00              | 4.00              | 16                | 100              | 1.5                 | 8.00                 | 4.50        | 0.020                | 0.120                 |
| SMD2920P200TF/24 | 2.00              | 4.00              | 24                | 100              | 1.5                 | 8.00                 | 4.50        | 0.020                | 0.120                 |
| SMD2920P250TF    | 2.50              | 5.00              | 16                | 100              | 1.5                 | 8.00                 | 16.00       | 0.020                | 0.085                 |
| SMD2920P260TF    | 2.60              | 5.20              | 6                 | 100              | 1.5                 | 8.00                 | 10.00       | 0.014                | 0.075                 |
| SMD2920P300TF    | 3.00              | 6.00              | 6                 | 40               | 1.5                 | 8.00                 | 20.00       | 0.012                | 0.048                 |
| SMD2920P300TF/15 | 3.00              | 6.00              | 16                | 100              | 1.5                 | 8.00                 | 20.00       | 0.012                | 0.048                 |

I<sub>hold</sub> = Hold current: maximum current device will pass without tripping in 20°C still air.

I<sub>trip</sub> = Trip current: minimum current at which the device will trip in 20°C still air.

V<sub>max</sub> = Maximum 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>)

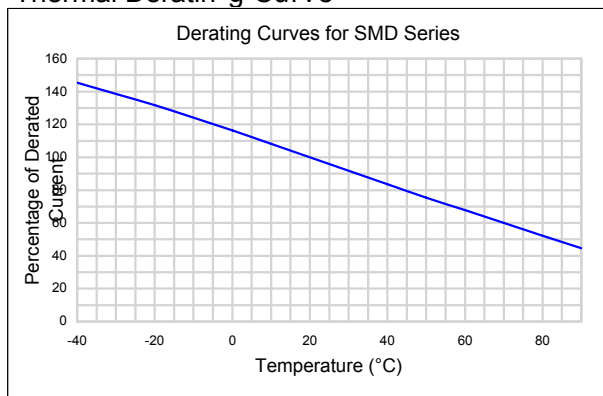
P<sub>d</sub> = Power dissipated from device when in the tripped state at 20°C still air.

R<sub>min</sub> = Minimum resistance of device in initial (un-soldered) state.

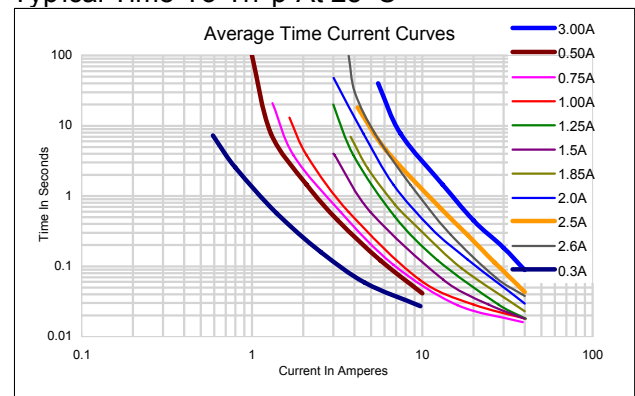
## Thermal Derating Chart-IH(A)

| Type number      | -40°C | -20°C | 0°C  | 23°C | 40°C | 50°C | 60°C | 70°C | 85°C |
|------------------|-------|-------|------|------|------|------|------|------|------|
| 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 | 1.10 | 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 |
| SMD2920P250TF    | 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 |
| SMD2920P300TF    | 4.53  | 4.02  | 3.51 | 3.00 | 2.52 | 2.26 | 1.99 | 1.75 | 1.34 |
| SMD2920P300TF/15 | 4.53  | 4.02  | 3.51 | 3.00 | 2.52 | 2.26 | 1.99 | 1.75 | 1.34 |

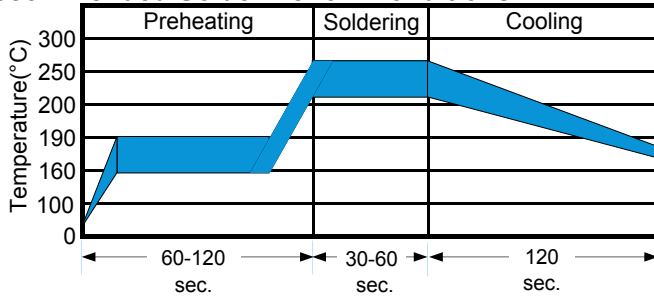
Thermal Derating Curve



Typical Time-To-Trip At 25°C



## Recommended Solder Reflow Conditions

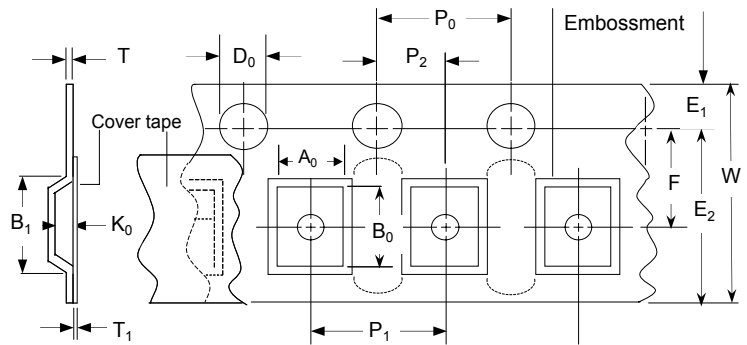


- Recommended reflow methods : IR, vapor phase oven, hot air oven.
  - Devices are not designed to be wave soldered to the bottom side of the board.
  - Recommended maximum paste thickness is 0.25 mm (0.010 inch).
  - Devices can be cleaned using standard method and solvents.
- Note : If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

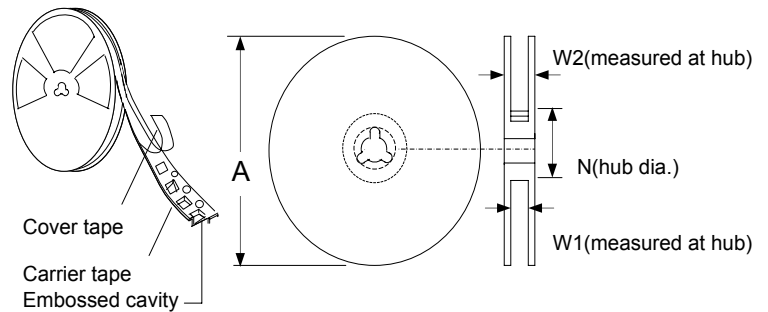
## Tape And Reel Specifications (mm)

| Governing Specifications | EIA 481-2        |
|--------------------------|------------------|
| W                        | 16.0 ± 0.3       |
| P <sub>0</sub>           | 4.0 ± 0.10       |
| P <sub>1</sub>           | 8.0 ± 0.10       |
| P <sub>2</sub>           | 2.0 ± 0.05       |
| A <sub>0</sub>           | 5.70 ± 0.10      |
| B <sub>0</sub>           | 8.00 ± 0.10      |
| B <sub>1max.</sub>       | 12.1             |
| D <sub>0</sub>           | 1.5 + 0.1, -0    |
| F                        | 7.5 ± 0.05       |
| E <sub>1</sub>           | 1.75 ± 0.10      |
| E <sub>2min.</sub>       | 14.25            |
| Tmax.                    | 0.6              |
| T <sub>1max.</sub>       | 0.1              |
| K <sub>0</sub>           | 0.80 ± 0.1       |
| Leader min.              | 390              |
| Trailer min.             | 160              |
| Reel Dimensions          |                  |
| A max.                   | 178              |
| N min.                   | 60               |
| W <sub>1</sub>           | 16.4 + 2.0, -0.0 |
| W <sub>2max.</sub>       | 22.4             |

## EIA Tape Component Dimentions



## EIA Reel Dimentions



## Storage And Handling

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

## Order Information

## Packaging

| SMD2920                    | 050L    | Tape & Reel Quantity |
|----------------------------|---------|----------------------|
| Product name               | Hold    | 2,000 pcs/reel       |
| Size 7555mm/2920 mils      | Current |                      |
| SMD : surface mount device | 0.50A   |                      |

Tape & reel packaging per EIA481-1

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