

Surface Mount Resettable PTCs

SMD2018 Series

Description

The SMD2018 Series PTC provides surface mount over-current protection for applications where space is at a premium and reset table protection is desired.

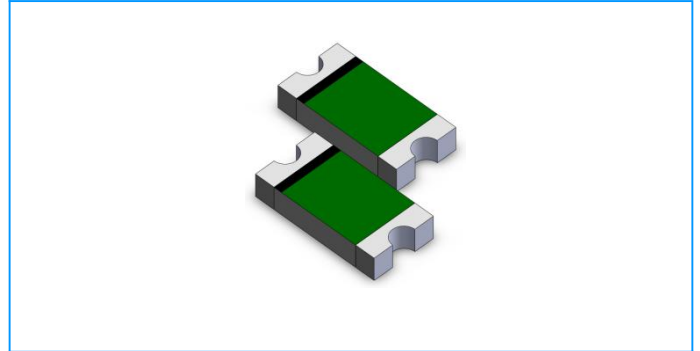
Features

- ◆ RoHS compliant, Lead-Free and Halogen-Free
- ◆ Fast time-to-trip
- ◆ Compact design saves board space
- ◆ Agency recognition: UL
- ◆ Low-profile

Applicable

Almost anywhere there is a low voltage power supply, up to 30V and a load to be protected, including:

- ◆ Computer mother board, Modem, USB hub
- ◆ PDAs & Charger, Analog & digital line card
- ◆ Digital cameras, Disk drivers, CD-ROMs
- ◆ Power ports
- ◆ General electronics



Electrical Parameters

| Part Number | I _{hold} (A) | I _{trip} (A) | V _{max} (Vdc) | I _{max} (A) | P _{dtyp.} (W) | Maximum Time To Trip | | Resistance | |
|-------------|-----------------------|-----------------------|------------------------|----------------------|------------------------|----------------------|-------------|----------------------|----------------------|
| | | | | | | Current (A) | Time (Sec.) | R _{min} (Ω) | R _{max} (Ω) |
| SMD2018-030 | 0.30 | 0.60 | 60 | 100 | 0.90 | 1.50 | 3.00 | 0.500 | 2.300 |
| SMD2018-050 | 0.55 | 1.20 | 60 | 100 | 1.00 | 2.50 | 3.00 | 0.200 | 1.000 |
| SMD2018-100 | 1.10 | 2.20 | 15 | 100 | 1.10 | 8.00 | 0.40 | 0.060 | 0.360 |
| SMD2018-150 | 1.50 | 3.00 | 15 | 100 | 1.10 | 8.00 | 0.80 | 0.050 | 0.170 |
| SMD2018-200 | 2.00 | 4.00 | 10 | 100 | 1.10 | 8.00 | 2.40 | 0.030 | 0.100 |

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_{dtyp.} = Power dissipated from device when in the tripped state at 25°C still air.

R_{min} = Minimum resistance of device in initial (un-soldered) state.

R_{max} = Maximum resistance of device in initial (un-soldered) state.

R_{1max} = Maximum resistance of device at 25°C measured one hour after tripping.

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

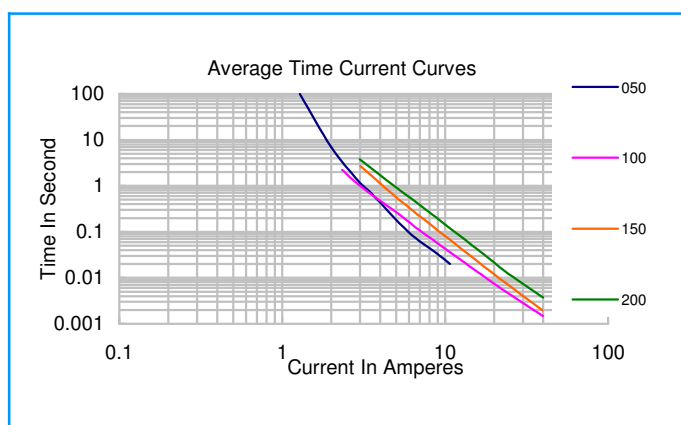
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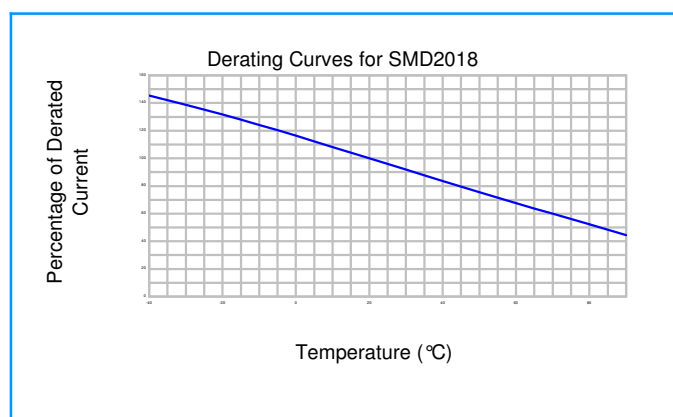
Temperature Derating Chart – I_{hold} (A)

| Part Number | Ambient Operation Temperature | | | | | | | | |
|-------------|-------------------------------|-------|------|------|------|------|------|------|------|
| | -40°C | -20°C | 0°C | 25°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| | Hold Current (A) | | | | | | | | |
| SMD2018-030 | 0.48 | 0.42 | 0.35 | 0.30 | 0.24 | 0.21 | 0.17 | 0.15 | 0.10 |
| SMD2018-050 | 0.87 | 0.77 | 0.67 | 0.55 | 0.46 | 0.41 | 0.36 | 0.31 | 0.23 |
| SMD2018-100 | 1.71 | 1.52 | 1.32 | 1.10 | 0.94 | 0.84 | 0.74 | 0.64 | 0.50 |
| SMD2018-150 | 2.38 | 2.10 | 1.82 | 1.50 | 1.27 | 1.13 | 0.99 | 0.85 | 0.64 |
| SMD2018-200 | 2.95 | 2.65 | 2.35 | 2.00 | 1.74 | 1.59 | 1.44 | 1.29 | 1.06 |

Average Time Current Curves



Temperature Derating Curve



Environmental Specifications

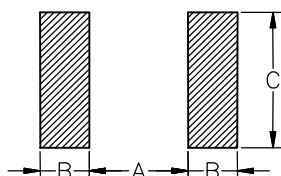
| Test | Conditions | Resistance change |
|--------------------------------------------------------------------------|------------------------------|-------------------|
| Passive aging | +85 °C, 1000 hrs. | ±5% typical |
| Humidity aging | +85 °C, 85% R.H. , 168 hours | ±5% typical |
| Thermal shock | +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 | | |

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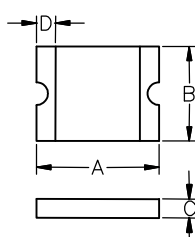
Pad Layouts Unit: mm

The dimension in the table below provide the recommended pad layout for each SMD1812 device



| Device | A | B | C |
|------------|---------|---------|---------|
| | Nominal | Nominal | Nominal |
| 2018Series | 3.4 | 1.5 | 4.6 |

Dimensions Unit: mm



| Part Number | A | | B | | C | | D | |
|-------------|------|------|------|------|------|------|------|------|
| | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| SMD2018-030 | 4.72 | 5.44 | 4.22 | 4.93 | 0.60 | 1.10 | 0.30 | 0.95 |
| SMD2018-050 | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.00 | 0.30 | 0.95 |
| SMD2018-100 | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.00 | 0.30 | 0.95 |
| SMD2018-150 | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.00 | 0.30 | 0.95 |
| SMD2018-200 | 4.37 | 4.73 | 3.07 | 3.41 | 0.40 | 0.90 | 0.30 | 0.95 |

Warning



- Use PPTC beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
- PPTC are intended for protection against occasional over current or over temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
- Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal, and mechanical procedures for electronic components.
- Use PPTC with a large inductance in circuit will generate a circuit voltage ($L di/dt$) above the rated voltage of the PPTC.
- Avoid impact PPTC device its thermal expansion like placed under pressure or installed in limited space.
- Contamination of the PPTC material with certain silicon based oils or some aggressive solvents can adversely impact the performance of the devices. PPTC SMD can be cleaned by standard methods.
- Requests that customers comply with our recommended solder pad layouts and recommended reflow profile. Improper board layouts or reflow profile could negatively impact solderability performance of our devices.