



**Features**

- Surface Mount Devices
- Lead free device
- Size 5.0\*4.5mm/0.20\*0.18 inch
- Surface Mount packaging for automated assembly

**Applications**

- Almost anywhere there is a low voltage power supply, up to 60V and a load to be protected, including:
- Computer mother board, Modem.
  - Telecommunication equipments.

# SMD2018 Series

Alpha-Top (Sea & Land Alliance)

## Performance Specification

| Model           | V <sub>max</sub><br>(Vdc) | I <sub>max</sub><br>(A) | I <sub>hold</sub><br>@25°C<br>(A) | I <sub>trip</sub><br>@25°C<br>(A) | P <sub>d</sub><br>Typ.<br>(W) | Maximum Time To Trip |               | Resistance                |                           | Agency Approval |     |
|-----------------|---------------------------|-------------------------|-----------------------------------|-----------------------------------|-------------------------------|----------------------|---------------|---------------------------|---------------------------|-----------------|-----|
|                 |                           |                         |                                   |                                   |                               | Current<br>(A)       | Time<br>(Sec) | R <sub>i min</sub><br>(Ω) | R <sub>1 max</sub><br>(Ω) | UL              | TUV |
| SMD2018-030     | 60                        | 100                     | 0.30                              | 0.60                              | 0.9                           | 1.5                  | 3.00          | 0.500                     | 2.300                     |                 |     |
| SMD2018-050     | 60                        | 100                     | 0.55                              | 1.20                              | 1.0                           | 2.5                  | 3.00          | 0.200                     | 1.000                     |                 |     |
| SMD2018-100     | 15                        | 100                     | 1.10                              | 2.20                              | 1.1                           | 8.0                  | 0.40          | 0.060                     | 0.360                     |                 |     |
| SMD2018-100-24V | 24                        | 100                     | 1.10                              | 2.20                              | 1.1                           | 8.0                  | 0.40          | 0.060                     | 0.360                     |                 |     |
| SMD2018-100-33V | 33                        | 100                     | 1.10                              | 2.20                              | 1.1                           | 8.0                  | 0.40          | 0.060                     | 0.360                     |                 |     |
| SMD2018-150     | 15                        | 100                     | 1.50                              | 3.00                              | 1.1                           | 8.0                  | 0.80          | 0.050                     | 0.170                     |                 |     |
| SMD2018-200     | 10                        | 100                     | 2.00                              | 4.00                              | 1.1                           | 8.0                  | 2.40          | 0.030                     | 0.100                     |                 |     |

**I<sub>hold</sub>** = Hold Current. Maximum current device will not trip in 25°C still air.  
**I<sub>trip</sub>** = Trip Current. Minimum current at which the device will always trip in 25°C still air.  
**V<sub>max</sub>** = Maximum operating 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 dissipation when device is in the tripped state in 25°C still air environment at rated voltage.  
**R<sub>imin/max</sub>** = Minimum/Maximum device resistance prior to tripping at 25°C.  
**R<sub>1max</sub>** = 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                  |
|--|-----------------------------|
| Passive aging  | +85°C, 1000 hrs.            |
| Humidity aging   | +85°C, 85% R.H. , 168 hours |
| Thermal shock  | +85°C to -40°C, 20 times    |
| Resistance to solvent  | MIL-STD-202, Method 215     |
| Vibration  | MIL-STD-202, Method 201     |
| Ambient operating conditions : - 40 °C to +85 °C                         |                             |
| Maximum surface temperature of the device in the tripped state is 125 °C |                             |

Agency Approvals :

UL pending

Regulation/Standard:



2011/65/EU



EN14582

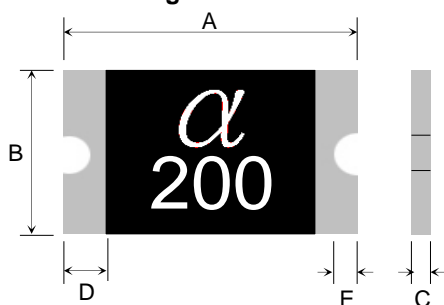
## I<sub>hold</sub> Versus Temperature

| Model       | Maximum ambient operating temperature (T <sub>mao</sub> ) vs. hold current (I <sub>hold</sub> ) |       |      |      |      |      |      |      |      |
|-------------|---|-------|------|------|------|------|------|------|------|
|             | -40°C   | -20°C | 0°C  | 25°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| 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 |

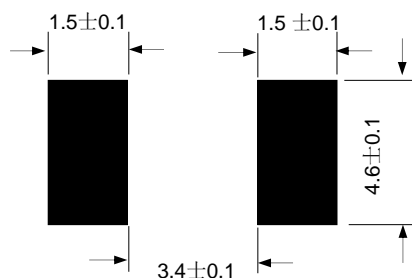
### Construction And Dimension (Unit:mm)

| Model           | A    |      | B    |      | C    |      | D    |      | E    |      |
|-----------------|------|------|------|------|------|------|------|------|------|------|
|                 | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| SMD2018-030     | 4.72 | 5.44 | 4.22 | 4.93 | 0.60 | 1.10 | 0.30 | 0.30 | 0.30 | 0.30 |
| SMD2018-050     | 4.72 | 5.44 | 4.22 | 4.93 | 0.70 | 1.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| SMD2018-100     | 4.72 | 5.44 | 4.22 | 4.93 | 0.45 | 0.80 | 0.30 | 0.30 | 0.30 | 0.30 |
| SMD2018-100-24V | 4.72 | 5.44 | 4.22 | 4.93 | 0.60 | 1.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| SMD2018-100-33V | 4.72 | 5.44 | 4.22 | 4.93 | 0.60 | 1.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| SMD2018-150     | 4.72 | 5.44 | 4.22 | 4.93 | 0.45 | 0.80 | 0.30 | 0.30 | 0.30 | 0.30 |
| SMD2018-200     | 4.72 | 5.44 | 4.22 | 4.93 | 0.40 | 0.80 | 0.30 | 0.30 | 0.30 | 0.30 |

### Dimensions & Marking



### Recommended Pad Layout (mm)



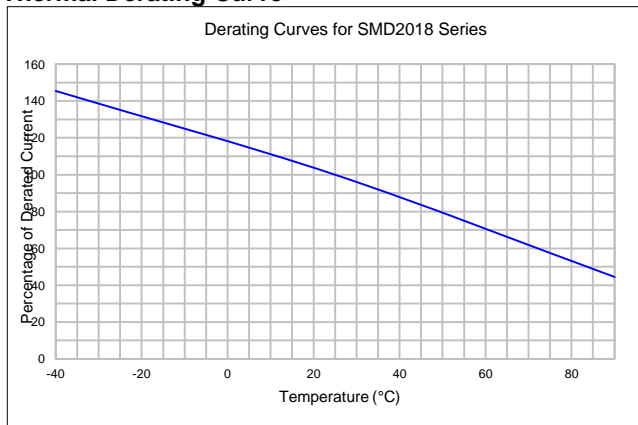
### Termination Pad Characteristics

Terminal pad materials : Gold-Plated Nickel-Copper or Tin-plated Nickel-Copper  
 Terminal pad solderability : Meets EIA specification RS186-9E and ANSI/J-STD-002 Category 3.

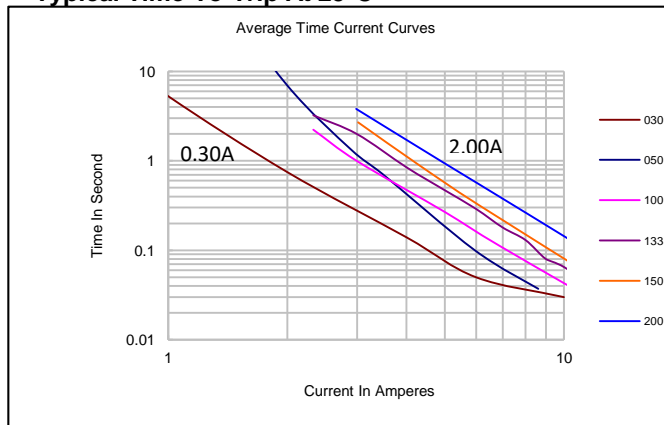
### Rework

Use standard industry practices, the removal device must be replaced with a fresh one.

### Thermal Derating Curve



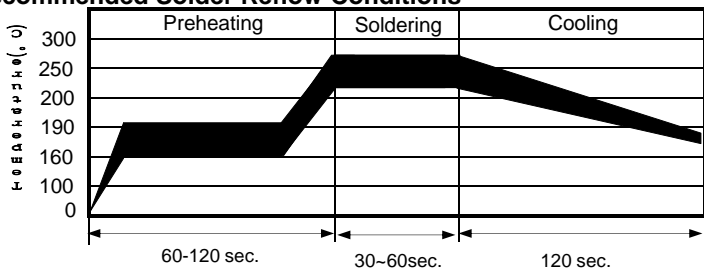
### Typical Time-To-Trip At 25°C



### 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.

**Recommended Solder Reflow Conditions**

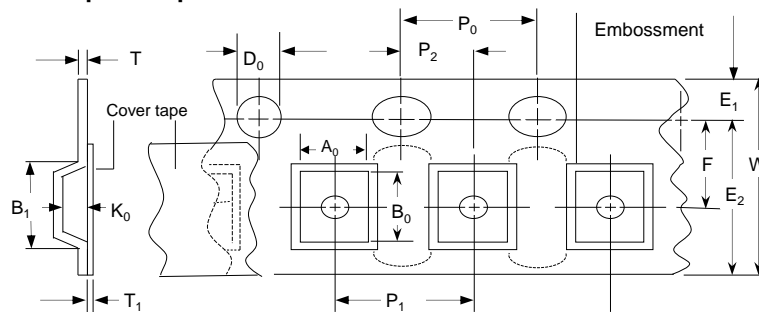


- Recommended reflow methods : IR, vapor phase oven, hot air oven.
- Devices are not designed to be wave soldered to the bottom side of the board.
- Recommended maximum paste thickness is 0.25 mm (0.010 inch).
- Devices can be cleaned using standard method and solvents.
- Note : If reflow temperatures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

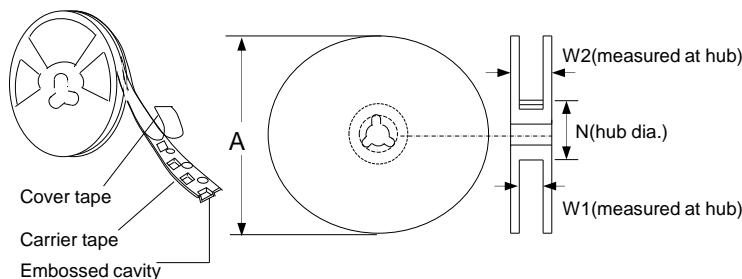
**Tape And Reel Specifications (mm)**

| Governing Specifications | EIA 481-2        |
|--------------------------|------------------|
| W                        | 12.0 ± 0.20      |
| 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>           | 4.40 ± 0.10      |
| B <sub>0</sub>           | 5.50 ± 0.10      |
| B <sub>1</sub> max.      | 8.2              |
| D <sub>0</sub>           | 1.5 + 0.1, -0.0  |
| F                        | 5.5 ± 0.05       |
| E <sub>1</sub>           | 1.75 ± 0.10      |
| E <sub>2</sub> min.      | 10.25            |
| Tmax.                    | 0.6              |
| T <sub>1</sub> max.      | 0.1              |
| K <sub>0</sub>           | 1.36 ± 0.1       |
| Leader min.              | 390              |
| Trailer min.             | 160              |
| <b>Reel Dimensions</b>   |                  |
| A max.                   | 178              |
| N min.                   | 50               |
| W <sub>1</sub>           | 12.4 + 2.0, -0.0 |
| W <sub>2</sub> max.      | 18.4             |

**EIA Tape Component Dimensions**



**EIA Reel Dimensions**



**Storage And Handling**

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

**Order Information**

| SMD2018                    | 050     | Packaging  |
|----------------------------|---------|--|
| Product name               | Hold    | Tape & Reel Quantity<br>030, 050,100-24V, 100-33V : 1,500 pcs/reel<br>100, 150, 200 : 2,500 pcs/reel |
| Size 5045mm/2018 inch      | Current |  |
| SMD : surface mount device | 0.50A   |  |

Devices taped with reference to EIA481 standard.