

## ➤ Features

- Size 0.12\*0.06 inch /3.2\*1.6 mm
- RoHS compliant, lead-free and halogen-free
- Fast response to fault current
- Low resistance
- Low-profile
- Compatible with high temperature solders

## ➤ Applications

- Computer, Mobile phones, Multimedia
- Automotive, Industrial controls, Telephony and broadband
- Game machines, Portable electronics, Battery

## ➤ Electrical Characteristics (25°C)

| Part Number   | $I_{hold}$ | $I_{trip}$ | $V_{max}$ | $I_{max}$ | $P_d$ | Time to trip |       | $R_{min}$    | $R_{1max}$   |
|---------------|------------|------------|-----------|-----------|-------|--------------|-------|--------------|--------------|
|               | (A)        | (A)        | (V)       | (A)       | (W)   | (A)          | (Sec) | ( $\Omega$ ) | ( $\Omega$ ) |
| BSMD1206L-110 | 1.10       | 2.2        | 6.0       | 50        | 1.2   | 8.0          | 0.5   | 0.008        | 0.065        |
| BSMD1206L-125 | 1.25       | 2.5        | 6.0       | 50        | 1.2   | 8.0          | 1.0   | 0.007        | 0.060        |
| BSMD1206L-150 | 1.50       | 3.0        | 6.0       | 50        | 1.2   | 8.0          | 5.0   | 0.006        | 0.055        |
| BSMD1206L-175 | 1.75       | 3.5        | 6.0       | 50        | 1.2   | 8.0          | 5.0   | 0.005        | 0.050        |
| BSMD1206L-200 | 2.00       | 4.0        | 6.0       | 50        | 1.2   | 8.0          | 5.0   | 0.004        | 0.045        |
| BSMD1206L-230 | 2.30       | 4.6        | 6.0       | 50        | 1.2   | 8.0          | 5.0   | 0.004        | 0.040        |
| BSMD1206L-260 | 2.60       | 5.2        | 6.0       | 50        | 1.2   | 12.0         | 5.0   | 0.003        | 0.035        |
| BSMD1206L-300 | 3.00       | 6.0        | 6.0       | 50        | 1.2   | 12.0         | 5.0   | 0.003        | 0.030        |
| BSMD1206L-350 | 3.50       | 7.0        | 6.0       | 50        | 1.2   | 12.0         | 5.0   | 0.002        | 0.025        |
| BSMD1206L-380 | 3.80       | 7.6        | 6.0       | 50        | 1.2   | 12.0         | 5.0   | 0.002        | 0.020        |
| BSMD1206L-400 | 4.00       | 8.0        | 6.0       | 50        | 1.5   | 16.0         | 5.0   | 0.001        | 0.018        |
| BSMD1206L-450 | 4.50       | 9.0        | 6.0       | 50        | 1.5   | 16.0         | 5.0   | 0.001        | 0.015        |
| BSMD1206L-500 | 5.00       | 10.0       | 6.0       | 50        | 1.5   | 16.0         | 5.0   | 0.001        | 0.012        |
| BSMD1206L-550 | 5.50       | 11.0       | 6.0       | 50        | 1.5   | 16.0         | 5.0   | 0.001        | 0.011        |
| BSMD1206L-600 | 6.00       | 12.0       | 6.0       | 50        | 1.5   | 20.0         | 5.0   | 0.0008       | 0.010        |

$I_{hold}$  = 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.

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

$R_{1max}$  = 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.

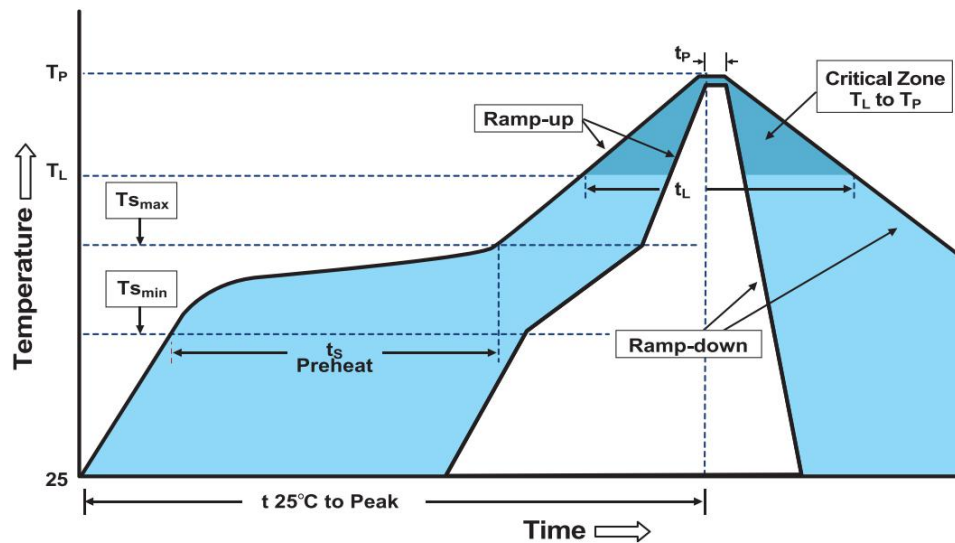
**➤ WARNING**

- 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 performance 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.

**➤ Thermal Derating Chart**

| Part Number   | Ambient operating temperature hold current( $I_{hold}$ ) |      |     |      |     |     |     |     |
|---------------|--|------|-----|------|-----|-----|-----|-----|
|               | -40℃   | -20℃ | 0℃  | 25℃  | 40℃ | 50℃ | 60℃ | 70℃ |
| BSMD1206L-110 | 1.5  | 1.3  | 1.2 | 1.1  | 0.9 | 0.8 | 0.7 | 0.6 |
| BSMD1206L-125 | 1.7  | 1.5  | 1.4 | 1.25 | 1.1 | 1.0 | 0.9 | 0.7 |
| BSMD1206L-150 | 2.0  | 1.8  | 1.6 | 1.5  | 1.2 | 1.1 | 1.0 | 0.9 |
| BSMD1206L-175 | 2.3  | 2.0  | 1.9 | 1.75 | 1.4 | 1.3 | 1.2 | 1.0 |
| BSMD1206L-200 | 2.7  | 2.3  | 2.2 | 2.0  | 1.6 | 1.5 | 1.4 | 1.1 |
| BSMD1206L-230 | 3.1  | 2.7  | 2.5 | 2.3  | 1.9 | 1.7 | 1.6 | 1.3 |
| BSMD1206L-260 | 3.5  | 3.0  | 2.8 | 2.6  | 2.1 | 1.9 | 1.8 | 1.5 |
| BSMD1206L-300 | 4.0  | 3.5  | 3.2 | 3.0  | 2.5 | 2.2 | 2.0 | 1.7 |
| BSMD1206L-350 | 4.7  | 4.1  | 3.8 | 3.5  | 2.9 | 2.6 | 2.4 | 2.0 |
| BSMD1206L-380 | 5.1  | 4.4  | 4.1 | 3.8  | 3.1 | 2.8 | 2.6 | 2.2 |
| BSMD1206L-400 | 5.4  | 4.7  | 4.3 | 4.0  | 3.3 | 3.0 | 2.7 | 2.3 |
| BSMD1206L-450 | 6.0  | 5.3  | 4.9 | 4.5  | 3.7 | 3.3 | 3.1 | 2.6 |
| BSMD1206L-500 | 7.5  | 6.5  | 5.5 | 5.0  | 4.5 | 3.5 | 3.3 | 3.0 |
| BSMD1206L-550 | 8.3  | 7.2  | 6.1 | 5.5  | 5.0 | 3.9 | 3.6 | 3.3 |
| BSMD1206L-600 | 9.0  | 7.8  | 6.6 | 6.0  | 5.4 | 4.2 | 3.9 | 3.6 |

## ➤ Soldering Parameters



| Profile Feature                                | Pb-Free Assembly    |
|--|---------------------|
| Average Ramp-Up Rate( $T_{s_{max}}$ to $T_p$ ) | 3°C/second max      |
| Preheat  |                     |
| -Temperature Min( $T_{s_{min}}$ )              | 150°C               |
| -Temperature Max( $T_{s_{max}}$ )              | 200°C               |
| -Time( $T_{s_{min}}$ to $T_{s_{max}}$ )        | 60~180 seconds      |
| Time maintained above:                         |                     |
| -Temperature( $T_L$ )                          | 217°C               |
| -Time( $t_L$ )                                 | 60~150 seconds      |
| Peak Temperature( $T_p$ )                      | 260°C               |
| Ramp-Down Rate                                 | 6°C/second max      |
| Time 25°C to Peak Temperature                  | 8 minutes max       |
| Storage Condition                              | 0°C~30°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.

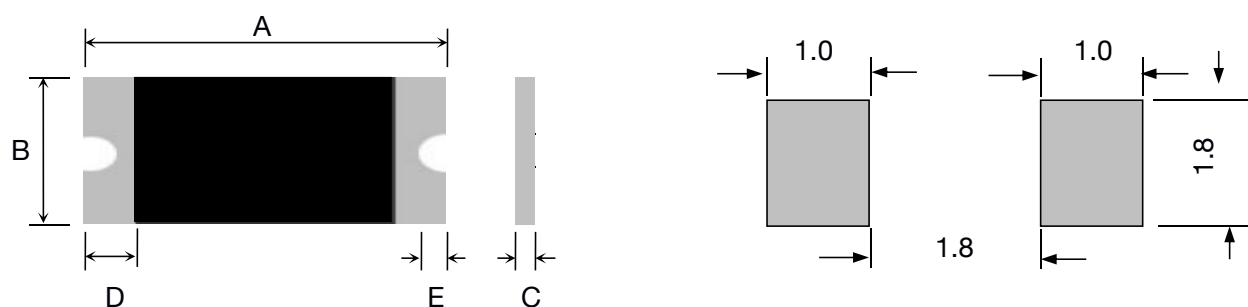
**Note 1: All temperature refer to topside of the package, measured on the package body surface.**

**Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.**

## ➤ Environmental Specifications

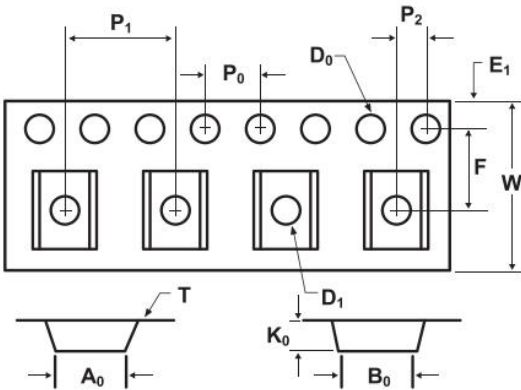
| Test   | Conditions                  | Resistance change |
|--|-----------------------------|-------------------|
| Passive aging  | +85°C, 1000 hrs.            | ±5% typical       |
| Humidity aging   | +85°C, 85% R.H. , 168 hours | ±5% typical       |
| Thermal shock  | +85°C to -40°C, 20 times    | ±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 |                             |                   |

## ➤ Physical Dimensions &amp; Recommended Pad Layout (mm)



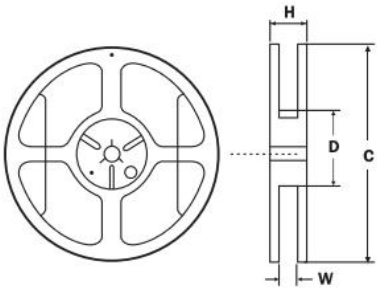
| Part Number   | Quantity | A   |      | B   |      | C   |     | D    | E    |
|---------------|----------|-----|------|-----|------|-----|-----|------|------|
|               |          | Min | Max  | Min | Max  | Min | Max | Min  | Min  |
| BSMD1206L-110 | 4000     | --  | 3.50 | --  | 1.85 | --  | 0.8 | 0.25 | 0.10 |
| BSMD1206L-125 | 4000     | --  | 3.50 | --  | 1.85 | --  | 0.8 | 0.25 | 0.10 |
| BSMD1206L-150 | 4000     | --  | 3.50 | --  | 1.85 | --  | 0.8 | 0.25 | 0.10 |
| BSMD1206L-175 | 4000     | --  | 3.50 | --  | 1.85 | --  | 0.8 | 0.25 | 0.10 |
| BSMD1206L-200 | 4000     | --  | 3.50 | --  | 1.85 | --  | 0.8 | 0.25 | 0.10 |
| BSMD1206L-230 | 4000     | --  | 3.50 | --  | 1.85 | --  | 1.0 | 0.25 | 0.10 |
| BSMD1206L-260 | 4000     | --  | 3.50 | --  | 1.85 | --  | 1.0 | 0.25 | 0.10 |
| BSMD1206L-300 | 4000     | --  | 3.50 | --  | 1.85 | --  | 1.0 | 0.25 | 0.10 |
| BSMD1206L-350 | 4000     | --  | 3.50 | --  | 1.85 | --  | 1.0 | 0.25 | 0.10 |
| BSMD1206L-380 | 4000     | --  | 3.50 | --  | 1.85 | --  | 1.0 | 0.25 | 0.10 |
| BSMD1206L-400 | 4000     | --  | 3.50 | --  | 1.85 | --  | 1.0 | 0.25 | 0.10 |
| BSMD1206L-450 | 4000     | --  | 3.50 | --  | 1.85 | --  | 1.0 | 0.25 | 0.10 |
| BSMD1206L-500 | 3000     | --  | 3.50 | --  | 1.85 | --  | 1.2 | 0.25 | 0.10 |
| BSMD1206L-550 | 3000     | --  | 3.50 | --  | 1.85 | --  | 1.2 | 0.25 | 0.10 |
| BSMD1206L-600 | 3000     | --  | 3.50 | --  | 1.85 | --  | 1.2 | 0.25 | 0.10 |

➤ **Tape And Reel Specifications (mm)**



| Governing Specifications | BSMD1206L-110~<br>BSMD1206L-260 | BSMD1206L-300~<br>BSMD1206L-450 | BSMD1206L-500~<br>BSMD1206L-1000 |
|--------------------------|---------------------------------|---------------------------------|----------------------------------|
| W                        | 8.0 ± 0.3                       | 8.0 ± 0.3                       | 8.0 ± 0.3                        |
| F                        | 3.5 ± 0.05                      | 3.5 ± 0.05                      | 3.5 ± 0.05                       |
| E1                       | 1.75 ± 0.1                      | 1.75 ± 0.1                      | 1.75 ± 0.1                       |
| D0                       | 1.55 ± 0.05                     | 1.55 ± 0.05                     | 1.55 ± 0.05                      |
| D1                       | 1.0 ± 0.1                       | 1.0 ± 0.1                       | 1.0 ± 0.1                        |
| P0                       | 4.0 ± 0.1                       | 4.0 ± 0.1                       | 4.0 ± 0.1                        |
| P1                       | 4.0 ± 0.1                       | 4.0 ± 0.1                       | 4.0 ± 0.1                        |
| P2                       | 2.0 ± 0.05                      | 2.0 ± 0.05                      | 2.0 ± 0.05                       |
| A0                       | 1.95 ± 0.1                      | 1.95 ± 0.1                      | 1.95 ± 0.1                       |
| B0                       | 3.65 ± 0.1                      | 3.65 ± 0.1                      | 3.65 ± 0.1                       |
| T                        | 0.2 ± 0.1                       | 0.2 ± 0.1                       | 0.2 ± 0.1                        |
| K0                       | 0.74 ± 0.1                      | 1.04 ± 0.1                      | 1.35 ± 0.1                       |
| Leader <sub>min</sub>    | 390                             | 390                             | 390                              |
| Trailer <sub>min</sub>   | 160                             | 160                             | 160                              |

| Reel Dimensions |             |
|-----------------|-------------|
| C               | φ178 ± 1.0  |
| D               | φ60.2 ± 0.5 |
| H               | 11.0 ± 0.5  |
| W               | 9.0 ± 1.5   |



➤ **Contact information**

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