

## ➤ Features

- Size 0.04\*0.02 inch /1.0\*0.5 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)	( $\Omega$ )	( $\Omega$ )
BSMD0402L-010	0.10	0.30	6.0	40	0.5	0.50	1.00	0.150	2.000
BSMD0402L-020	0.20	0.50	6.0	40	0.5	1.00	1.00	0.100	1.250
BSMD0402L-035	0.35	0.70	6.0	40	0.5	8.00	0.10	0.050	0.700
BSMD0402L-050	0.50	1.00	6.0	40	0.5	8.00	0.10	0.040	0.400

$I_{hold}$  = 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.

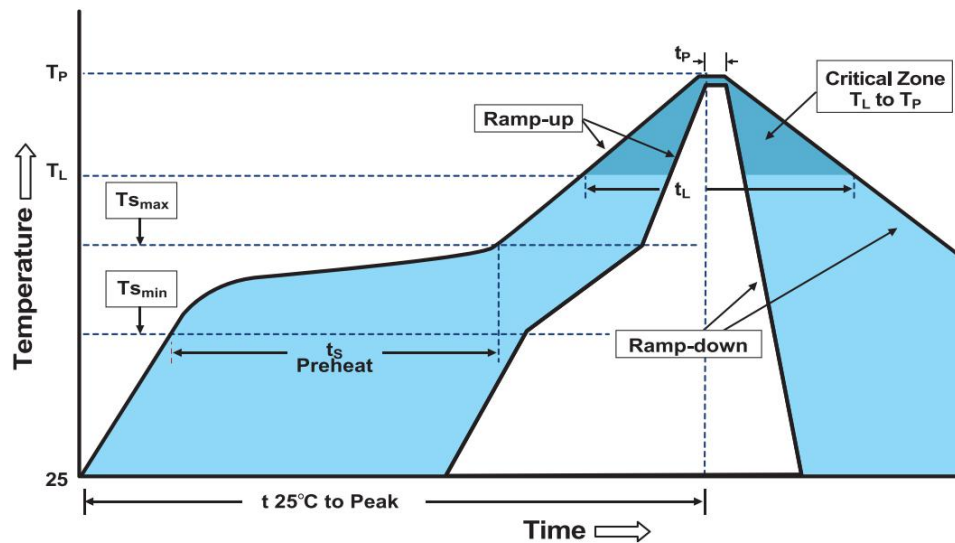
**➤ WARNING**

- 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℃
BSMD0402L-010	0.14	0.13	0.11	0.10	0.09	0.08	0.07	0.06
BSMD0402L-020	0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13
BSMD0402L-035	0.50	0.45	0.40	0.35	0.31	0.28	0.26	0.22
BSMD0402L-050	0.71	0.64	0.57	0.50	0.44	0.40	0.37	0.31

## ➤ 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.

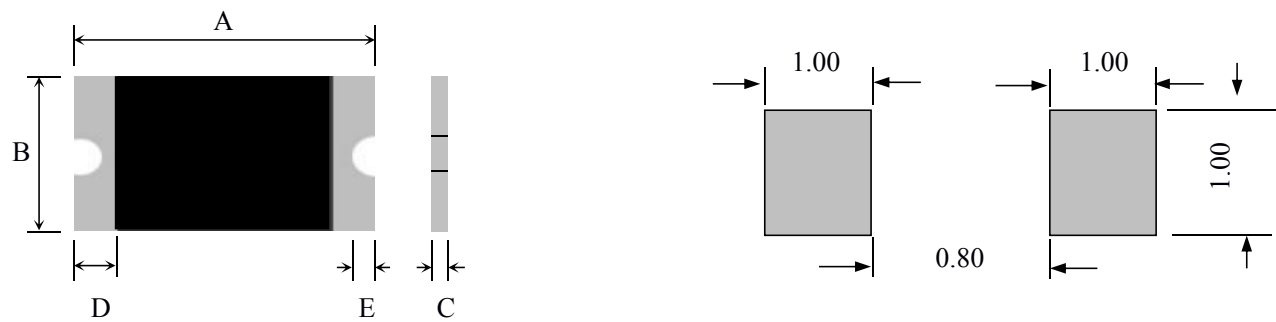
**Note 1:** All temperature refer to topside of the package, measured on the package body surface.

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

## ➤ Environmental Specifications

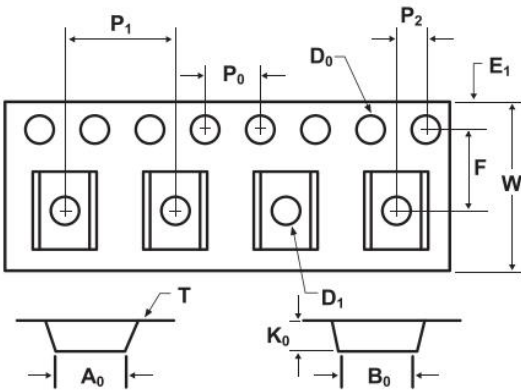
Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hrs.	±5% typical
Humidity aging	+85°C, 85% R.H. , 168 hours	±5% typical
Thermal shock	+85°C to -40°C, 20 times	±33% typical
Resistance to solvent	MIL-STD-202, Method 215	No change
Vibration	MIL-STD-202, Method 201	No change
Ambient operating conditions : - 40 °C to +85 °C		
Maximum surface temperature of the device in the tripped state is 125 °C		

➤ Physical Dimensions & Recommended Pad Layout (mm)



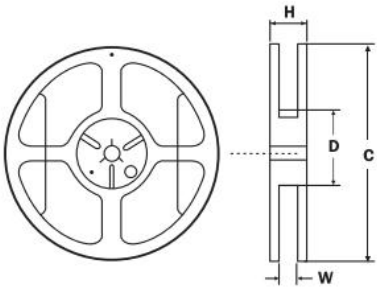
Part Number	Quantity	A		B		C		D	E
		Min	Max	Min	Max	Min	Max	Min	Min
BSMD0402L-010	10000	--	1.15	--	0.65	--	0.60	0.10	0.40
BSMD0402L-020	10000	--	1.15	--	0.65	--	0.60	0.10	0.40
BSMD0402L-035	10000	--	1.15	--	0.65	--	0.60	0.10	0.40
BSMD0402L-050	10000	--	1.15	--	0.65	--	0.60	0.10	0.40

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



Governing Specifications	BSMD0402L-010 ~ BSMD0402L-050
W	$8.0 \pm 0.3$
F	$3.5 \pm 0.05$
E1	$1.75 \pm 0.1$
D0	$1.55 \pm 0.05$
D1	$1.0 \pm 0.1$
P0	$4.0 \pm 0.1$
P1	$4.0 \pm 0.1$
P2	$2.0 \pm 0.05$
A0	$1.10 \pm 0.1$
B0	$1.95 \pm 0.1$
T	$0.2 \pm 0.1$
K0	$0.74 \pm 0.1$
Leader <sub>min</sub>	390
Trailer <sub>min</sub>	160

Reel Dimensions	
C	$\phi 178 \pm 1.0$
D	$\phi 60.2 \pm 0.5$
H	$11.0 \pm 0.5$
W	$9.0 \pm 1.5$



➤ **Contact information**

*SHENZHEN BHFUSE INDUSTRIAL CO., LTD*  
*TEL: 0755-85259917    FAX: 0755-28704432*  
*E-MAIL: sales@bhfuse.com*