

## ➤ Features

- Size 0.06\*0.03 inch /1.5\*0.8 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		$R_i$	$R_{1max}$
	(A)	(A)	(V)	(A)	(W)	(A)	(Sec)	( $\Omega$ )	( $\Omega$ )
BSMD0603L-050	0.50	1.0	6.0	50	1.0	5.0	0.5	0.020	0.150
BSMD0603L-110	1.10	2.2	6.0	50	1.0	8.0	0.5	0.008	0.075
BSMD0603L-150	1.50	3.0	6.0	50	1.0	8.0	0.5	0.005	0.055
BSMD0603L-200	2.00	4.0	6.0	50	1.0	8.0	5.0	0.004	0.045
BSMD0603L-250	2.50	5.0	6.0	50	1.0	8.0	5.0	0.003	0.035
BSMD0603L-300	3.00	6.0	6.0	50	1.2	12.0	5.0	0.002	0.030
BSMD0603L-350	3.50	7.0	6.0	50	1.2	12.0	5.0	0.002	0.025
BSMD0603L-400	4.00	8.0	6.0	50	1.2	12.0	5.0	0.001	0.018
BSMD0603L-450	4.50	9.0	6.0	50	1.5	12.0	5.0	0.001	0.014
BSMD0603L-500	5.00	10.0	6.0	50	1.5	16.0	5.0	0.001	0.012
BSMD0603L-550	5.50	11.0	6.0	50	1.5	16.0	5.0	0.0008	0.011
BSMD0603L-600	6.00	12.0	6.0	50	1.5	16.0	5.0	0.0005	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.

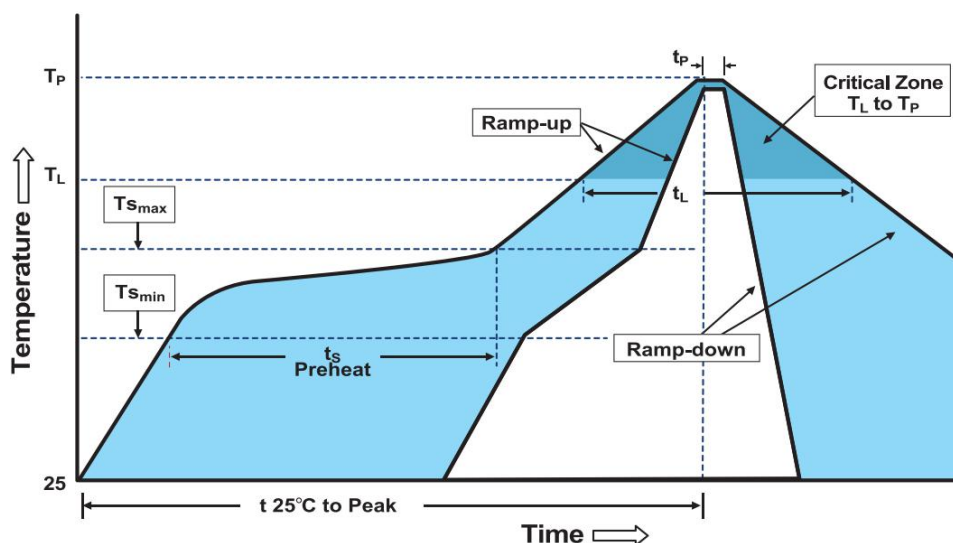
**➤ WARNING**

- 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°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C
BSMD0603L-050	1.0	0.8	0.6	0.5	0.45	0.4	0.3	0.2
BSMD0603L-110	1.7	1.4	1.2	1.0	0.9	0.8	0.7	0.6
BSMD0603L-150	2.3	2.0	1.7	1.5	1.4	1.1	1.0	0.9
BSMD0603L-200	3.0	2.6	2.2	2.0	1.8	1.4	1.3	1.2
BSMD0603L-250	3.9	3.4	2.9	2.6	2.3	1.8	1.7	1.6
BSMD0603L-300	4.5	3.9	3.3	3.0	2.7	2.1	2.0	1.8
BSMD0603L-350	5.3	4.6	3.9	3.5	3.2	2.5	2.3	2.1
BSMD0603L-400	6.0	5.2	4.4	4.0	3.6	2.8	2.6	2.4
BSMD0603L-450	6.8	5.9	5.0	4.5	4.1	3.2	2.9	2.7
BSMD0603L-500	7.5	6.5	5.5	5.0	4.5	3.5	3.3	3.0
BSMD0603L-550	8.3	7.2	6.1	5.5	5.0	3.9	3.6	3.3
BSMD0603L-600	9.0	7.8	6.6	6.0	5.4	4.2	3.9	3.6

➤ **Soldering Parameters**



<b>Profile Feature</b>	Pb-Free Assembly
<b>Average Ramp-Up Rate(T<sub>smax</sub> to T<sub>p</sub>)</b>	3°C/second max
<b>Preheat</b>	
-Temperature Min(T <sub>smin</sub> )	150°C
-Temperature Max(T <sub>smax</sub> )	200°C
-Time(T <sub>smin</sub> to T <sub>smax</sub> )	60~180 seconds
<b>Time maintained above:</b>	
-Temperature(T <sub>L</sub> )	217°C
-Time(t <sub>L</sub> )	60~150 seconds
<b>Peak Temperature(T<sub>p</sub>)</b>	260°C
<b>Ramp-Down Rate</b>	6°C/second max
<b>Time 25°C to Peak Temperature</b>	8 minutes max
<b>Storage Condition</b>	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.

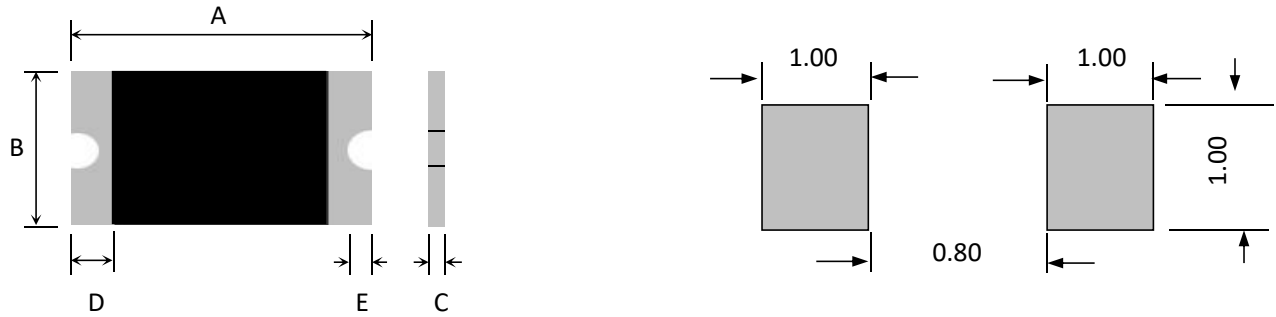
**Note 1: All temperature refer to topside of the package, measured on the package body surface.**

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

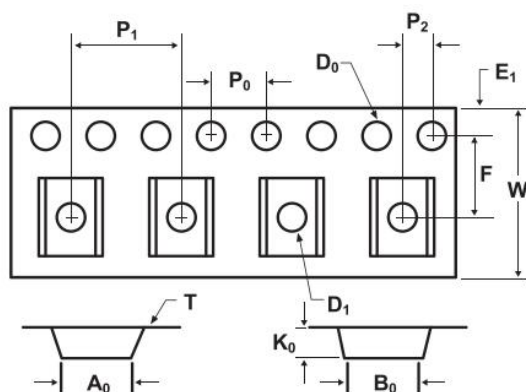
➤ **Environmental Specifications**

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
<b>Ambient operating conditions : - 40 °C to +85 °C</b>		
<b>Maximum surface temperature of the device in the tripped state is 125 °C</b>		

➤ **Physical Dimensions & Recommended Pad Layout (mm)**

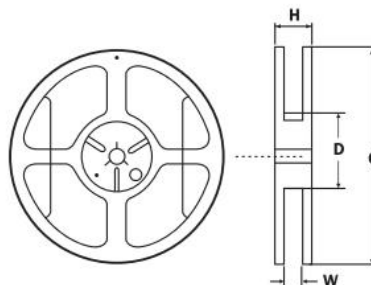


Part Number	Quantity	A		B		C		D	E
		Min	Max	Min	Max	Min	Max	Min	Min
BSMD0603L-050	4000	--	1.90	--	1.00	--	0.8	0.20	0.10
BSMD0603L-110	4000	--	1.90	--	1.00	--	0.8	0.20	0.10
BSMD0603L-150	4000	--	1.90	--	1.00	--	0.8	0.20	0.10
BSMD0603L-200	4000	--	1.90	--	1.00	--	1.0	0.20	0.10
BSMD0603L-250	4000	--	1.90	--	1.00	--	1.0	0.20	0.10
BSMD0603L-300	4000	--	1.90	--	1.00	--	1.2	0.20	0.10
BSMD0603L-350	3000	--	1.90	--	1.00	--	1.3	0.20	0.10
BSMD0603L-400	3000	--	1.90	--	1.00	--	1.3	0.20	0.10
BSMD0603L-450	3000	--	1.90	--	1.00	--	1.4	0.20	0.10
BSMD0603L-500	3000	--	1.90	--	1.00	--	1.4	0.20	0.10
BSMD0603L-550	3000	--	1.90	--	1.00	--	1.4	0.20	0.10
BSMD0603L-600	3000	--	1.90	--	1.00	--	1.4	0.20	0.10

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


Governing Specifications	BSMD0603L-050~ BSMD0603L-150	BSMD0603L-200~ BSMD0603L-300	BSMD0603L-350~ BSMD0603L-600
<b>W</b>	8.0 ± 0.3	8.0 ± 0.3	8.0 ± 0.3
<b>F</b>	3.5 ± 0.05	3.5 ± 0.05	3.5 ± 0.05
<b>E1</b>	1.75 ± 0.1	1.75 ± 0.1	1.75 ± 0.1
<b>D0</b>	1.55 ± 0.05	1.55 ± 0.05	1.55 ± 0.05
<b>D1</b>	1.0 ± 0.1	1.0 ± 0.1	1.0 ± 0.1
<b>P0</b>	4.0 ± 0.1	4.0 ± 0.1	4.0 ± 0.1
<b>P1</b>	4.0 ± 0.1	4.0 ± 0.1	4.0 ± 0.1
<b>P2</b>	2.0 ± 0.05	2.0 ± 0.05	2.0 ± 0.05
<b>A0</b>	1.10 ± 0.1	1.10 ± 0.1	1.10 ± 0.1
<b>B0</b>	1.95 ± 0.1	1.95 ± 0.1	1.95 ± 0.1
<b>T</b>	0.2 ± 0.1	0.2 ± 0.1	0.2 ± 0.1
<b>K0</b>	0.74 ± 0.1	1.04 ± 0.1	1.35 ± 0.1
<b>Leader</b> min	390	390	390
<b>Trailer</b> min	160	160	160

Reel Dimensions	
<b>C</b>	φ178 ± 1.0
<b>D</b>	φ60.2 ± 0.5
<b>H</b>	11.0 ± 0.5
<b>W</b>	9.0 ± 1.5


**➤ Contact information**
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