

## ➤ Features

- Size 0.12\*0.10 inch /3.2\*2.5 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	$I_{hold}$	$I_{trip}$	$V_{max}$	$I_{max}$	$P_d$ typ	Time to trip		$R_{min}$	$R_{1max}$
	(A)	(A)	(V <sub>dc</sub> )	(A)	(W)	(A)	(Sec)	(Ω)	(Ω)
BSMD1210L-150	1.50	3.0	6.0	50	1.2	8.0	0.5	0.005	0.050
BSMD1210L-175	1.75	3.5	6.0	50	1.2	8.0	1.0	0.005	0.045
BSMD1210L-190	1.90	3.8	6.0	50	1.2	8.0	3.0	0.005	0.042
BSMD1210L-200	2.00	4.0	6.0	50	1.2	8.0	3.0	0.004	0.040
BSMD1210L-210	2.10	4.2	6.0	50	1.2	8.0	5.0	0.004	0.035
BSMD1210L-230	2.30	4.6	6.0	50	1.2	8.0	5.0	0.004	0.032
BSMD1210L-250	2.50	5.0	6.0	50	1.2	8.0	5.0	0.003	0.030
BSMD1210L-260	2.60	5.2	6.0	50	1.2	12.0	5.0	0.003	0.028
BSMD1210L-300	3.00	6.0	6.0	50	1.2	12.0	5.0	0.003	0.026
BSMD1210L-350	3.50	7.0	6.0	50	1.2	12.0	5.0	0.002	0.024
BSMD1210L-380	3.80	7.6	6.0	50	1.5	12.0	5.0	0.002	0.020
BSMD1210L-400	4.00	8.0	6.0	50	1.5	16.0	5.0	0.001	0.018
BSMD1210L-450	4.50	9.0	6.0	50	1.5	16.0	5.0	0.001	0.014
BSMD1210L-500	5.00	10.0	6.0	50	1.5	16.0	5.0	0.001	0.012
BSMD1210L-550	5.50	11.0	6.0	50	1.5	20.0	5.0	0.0008	0.010
BSMD1210L-600	6.00	12.0	6.0	50	1.5	20.0	5.0	0.0008	0.009
BSMD1210L-650	6.50	13.0	6.0	50	1.5	20.0	5.0	0.0005	0.008
BSMD1210L-700	7.00	14.0	6.0	50	1.6	20.0	5.0	0.0005	0.008
BSMD1210L-750	7.50	15.0	6.0	50	1.6	20.0	5.0	0.0005	0.007
BSMD1210L-800	8.00	16.0	6.0	50	1.6	20.0	5.0	0.0004	0.007

$I_{hold}$  = 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.

$R_{I_{max}}$  = 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 prolonged 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℃
BSMD1210L-150	2.3	2.0	1.7	1.5	1.3	1.2	1.1	0.9
BSMD1210L-175	2.6	2.3	2.0	1.75	1.5	1.3	1.2	1.1
BSMD1210L-190	2.9	2.5	2.2	1.9	1.6	1.5	1.3	1.2
BSMD1210L-200	3.0	2.7	2.3	2.0	1.7	1.5	1.4	1.2
BSMD1210L-210	3.2	2.8	2.4	2.1	1.8	1.6	1.5	1.3
BSMD1210L-230	3.5	3.1	2.7	2.3	2.0	1.8	1.6	1.4
BSMD1210L-250	3.8	3.3	2.9	2.5	2.2	1.9	1.8	1.5
BSMD1210L-260	3.9	3.5	3.0	2.6	2.2	2.0	1.9	1.6
BSMD1210L-300	4.5	4.0	3.5	3.0	2.6	2.3	2.1	1.8
BSMD1210L-350	5.3	4.7	4.1	3.5	3.0	2.7	2.5	2.1
BSMD1210L-380	5.7	5.1	4.4	3.8	3.3	2.9	2.7	2.3
BSMD1210L-400	6.0	5.3	4.6	4.0	3.4	3.1	2.8	2.4
BSMD1210L-450	6.8	6.0	5.2	4.5	3.9	3.5	3.2	2.7
BSMD1210L-500	7.5	6.7	5.8	5.0	4.3	3.9	3.5	3.1
BSMD1210L-550	8.3	7.3	6.4	5.5	4.7	4.2	3.9	3.4
BSMD1210L-600	9.0	8.0	7.0	6.0	5.2	4.6	4.2	3.7
BSMD1210L-650	9.8	8.6	7.5	6.5	5.6	5.0	4.6	4.0
BSMD1210L-700	11.3	9.8	8.3	7.0	6.4	5.3	4.9	4.5
BSMD1210L-750	12.0	10.4	8.8	7.5	7.2	5.6	5.2	4.8
BSMD1210L-800	12.8	11.1	9.4	8.0	7.5	6.0	5.5	5.1

➤ Soldering Parameters



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate( $T_{s_{max}}$ to $T_p$ )	3°C/second max
<b>Preheat</b>	
-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
<b>Time maintained above:</b>	
-Temperature( $T_L$ )	217°C
-Time( $t_L$ )	60~150 seconds
<b>Peak Temperature(<math>T_p</math>)</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, N<sub>2</sub> environment for lead-free.
- Recommended maximum paste thickness is 0.25mm.
- Devices can be cleaned using standard industry methods and solvents.

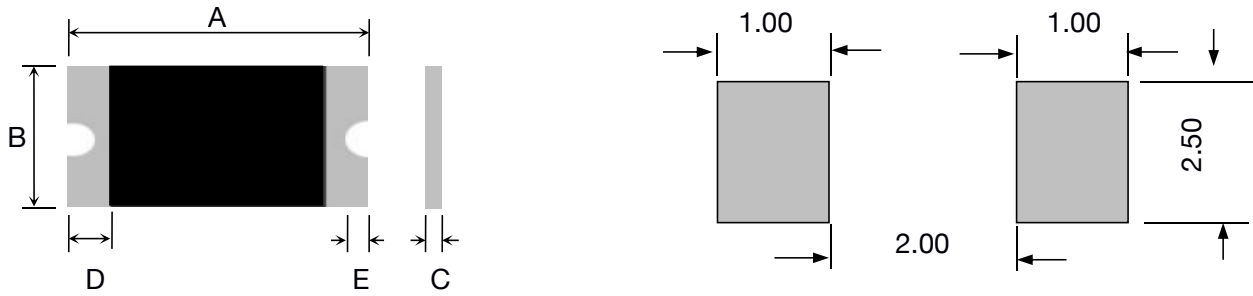
**Note 1: All temperature refer to topside of the package, measured on the package body surface.**

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

➤ Environmental Specifications

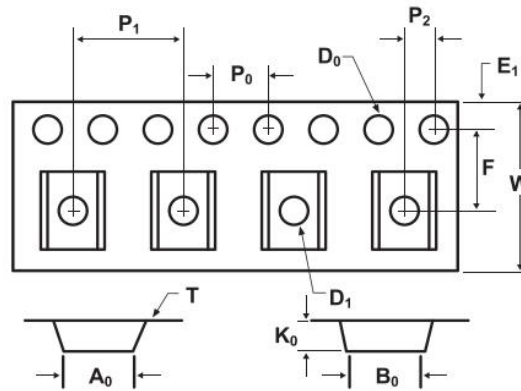
Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hrs.	±5% typical
Humidity aging	+85°C, 85% R.H. , 168 hours	±5% typical
Thermal shock	+85°C to -40°C, 20 times	±33% typical
Resistance to solvent	MIL-STD-202, Method 215	No change
Vibration	MIL-STD-202, Method 201	No change
<b>Ambient operating 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)



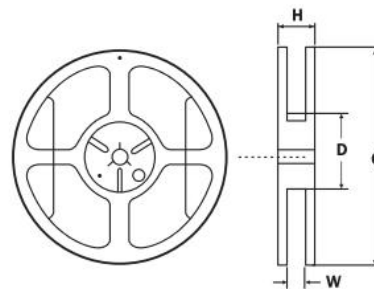
Part Number	Quantity	A		B		C		D	E
		Min	Max	Min	Max	Min	Max	Min	Min
BSMD1210L-150	4000	--	3.50	--	2.85	--	0.8	0.25	0.10
BSMD1210L-175	4000	--	3.50	--	2.85	--	0.8	0.25	0.10
BSMD1210L-190	4000	--	3.50	--	2.85	--	0.8	0.25	0.10
BSMD1210L-200	4000	--	3.50	--	2.85	--	0.8	0.25	0.10
BSMD1210L-210	4000	--	3.50	--	2.85	--	0.8	0.25	0.10
BSMD1210L-230	4000	--	3.50	--	2.85	--	0.8	0.25	0.10
BSMD1210L-250	4000	--	3.50	--	2.85	--	0.8	0.25	0.10
BSMD1210L-260	4000	--	3.50	--	2.85	--	0.8	0.25	0.10
BSMD1210L-300	4000	--	3.50	--	2.85	--	0.8	0.25	0.10
BSMD1210L-350	4000	--	3.50	--	2.85	--	1.0	0.25	0.10
BSMD1210L-380	4000	--	3.50	--	2.85	--	1.0	0.25	0.10
BSMD1210L-400	4000	--	3.50	--	2.85	--	1.0	0.25	0.10
BSMD1210L-450	4000	--	3.50	--	2.85	--	1.0	0.25	0.10
BSMD1210L-500	4000	--	3.50	--	2.85	--	1.0	0.25	0.10
BSMD1210L-550	4000	--	3.50	--	2.85	--	1.0	0.25	0.10
BSMD1210L-600	4000	--	3.50	--	2.85	--	1.1	0.25	0.10
BSMD1210L-650	3000	--	3.50	--	2.85	--	1.2	0.25	0.10
BSMD1210L-700	3000	--	3.50	--	2.85	--	1.2	0.25	0.10
BSMD1210L-750	3000	--	3.50	--	2.85	--	1.2	0.25	0.10
BSMD1210L-800	3000	--	3.50	--	2.85	--	1.2	0.25	0.10

➤ Tape And Reel Specifications (mm)



Governing Specifications	BSMD1210L-150~ BSMD1210L-380	BSMD1210L-400~ BSMD1210L-600	BSMD1210L-650~ BSMD1210L-1200
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	2.9 ± 0.1	2.9 ± 0.1	2.9 ± 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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