

## ➤ 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	$I_{hold}$	$I_{trip}$	$V_{max}$	$I_{max}$	$P_d$ typ	Time to trip		$R_{min}$	$R_{1max}$
	(A)	(A)	(V <sub>dc</sub> )	(A)	(W)	(A)	(Sec)	(Ω)	(Ω)
BSMD1206-005-30V	0.05	0.15	30	40	0.6	0.25	1.50	3.600	50.00
BSMD1206-005-60V	0.05	0.15	60	40	0.6	0.25	1.50	3.600	50.00
BSMD1206-005-72V	0.05	0.15	72	40	0.6	0.25	1.50	3.600	50.00
BSMD1206-010-30V	0.10	0.25	30	40	0.6	0.50	1.00	1.600	15.00
BSMD1206-010-60V	0.10	0.25	60	40	0.6	0.50	1.00	1.600	15.00
BSMD1206-010-72V	0.10	0.25	72	40	0.6	0.50	1.00	1.600	15.00
BSMD1206-012-60V	0.12	0.29	60	40	0.6	0.50	1.00	1.600	13.00
BSMD1206-016-33V	0.16	0.37	33	40	0.6	1.00	0.30	1.000	6.000
BSMD1206-016-48V	0.16	0.37	48	40	0.6	1.00	0.30	1.000	6.000
BSMD1206-016-60V	0.16	0.37	60	40	0.6	1.00	0.30	1.000	6.000
BSMD1206-020-24V	0.20	0.46	24	40	0.6	8.00	0.10	0.350	2.700
BSMD1206-020-30V	0.20	0.46	30	40	0.6	8.00	0.10	0.350	2.700
BSMD1206-020-33V	0.20	0.46	33	40	0.6	8.00	0.10	0.350	2.700
BSMD1206-025-16V	0.25	0.50	16	40	0.6	8.00	0.10	0.350	2.500
BSMD1206-025-24V	0.25	0.50	24	40	0.6	8.00	0.10	0.350	2.500
BSMD1206-025-30V	0.25	0.50	30	40	0.6	8.00	0.10	0.350	2.500
BSMD1206-025-33V	0.25	0.50	33	40	0.6	8.00	0.10	0.350	2.500
BSMD1206-025-48V	0.25	0.50	48	40	0.6	8.00	0.10	0.350	2.500
BSMD1206-035-6V	0.35	0.75	6	40	0.6	8.00	0.10	0.250	1.500
BSMD1206-035-16V	0.35	0.75	16	40	0.6	8.00	0.10	0.250	1.500

Part Number	$I_{hold}$	$I_{trip}$	$V_{max}$	$I_{max}$	$P_d$ typ	Time to trip		$R_{min}$	$R1_{max}$
	(A)	(A)	(V <sub>dc</sub> )	(A)	(W)	(A)	(Sec)	(Ω)	(Ω)
BSMD1206-035-24V	0.35	0.75	24	40	0.6	8.00	0.10	0.250	1.500
BSMD1206-035-30V	0.35	0.75	30	40	0.6	8.00	0.10	0.250	1.500
BSMD1206-035-33V	0.35	0.75	33	40	0.6	8.00	0.10	0.250	1.500
BSMD1206-050-6V	0.50	1.00	6	100	0.6	8.00	0.10	0.150	0.700
BSMD1206-050-13.2V	0.50	1.00	13.2	100	0.6	8.00	0.10	0.150	0.700
BSMD1206-050-16V	0.50	1.00	16	100	0.6	8.00	0.10	0.150	0.700
BSMD1206-050-24V	0.50	1.00	24	40	0.6	8.00	0.10	0.150	0.850
BSMD1206-050-30V	0.50	1.00	30	40	0.8	8.00	0.10	0.150	0.850
BSMD1206-050-33V	0.50	1.00	33	40	0.8	8.00	0.10	0.150	0.850
BSMD1206-075-6V	0.75	1.50	6	100	0.6	8.00	0.20	0.090	0.500
BSMD1206-075-13.2V	0.75	1.50	13.2	100	0.6	8.00	0.20	0.090	0.500
BSMD1206-075-16V	0.75	1.50	16	100	0.6	8.00	0.20	0.090	0.500
BSMD1206-075-24V	0.75	1.50	24	40	0.8	8.00	0.20	0.090	0.500
BSMD1206-075-30V	0.75	1.50	30	40	0.8	8.00	0.20	0.090	0.500
BSMD1206-100-6V	1.00	1.80	6	100	0.8	8.00	0.30	0.050	0.270
BSMD1206-100-13.2V	1.00	1.80	13.2	100	0.8	8.00	0.30	0.050	0.270
BSMD1206-100-16V	1.00	1.80	16	100	0.8	8.00	0.30	0.050	0.270
BSMD1206-100-24V	1.00	1.80	24	40	1.0	8.00	0.30	0.050	0.300
BSMD1206-100-30V	1.00	1.80	30	40	1.0	8.00	0.30	0.050	0.300
BSMD1206-110-6V	1.10	2.20	6	100	0.8	8.00	0.30	0.040	0.250
BSMD1206-110-13.2V	1.10	2.20	13.2	100	0.8	8.00	0.30	0.040	0.250
BSMD1206-110-16V	1.10	2.20	16	100	0.8	8.00	0.30	0.040	0.250
BSMD1206-110-24V	1.10	2.20	24	40	1.0	8.00	0.30	0.040	0.270
BSMD1206-110-30V	1.10	2.20	30	40	1.0	8.00	0.30	0.040	0.270
BSMD1206-150-6V	1.50	3.00	6	100	0.8	8.00	0.30	0.025	0.130
BSMD1206-150-8V	1.50	3.00	8	100	0.8	8.00	0.30	0.025	0.130
BSMD1206-150-12V	1.50	3.00	12	40	0.8	8.00	0.30	0.025	0.130
BSMD1206-150-13.2V	1.50	3.00	13.2	40	1.0	8.00	0.30	0.025	0.130
BSMD1206-150-16V	1.50	3.00	16	40	1.0	8.00	0.30	0.025	0.130
BSMD1206-200-6V	2.00	3.50	6	100	1.0	8.00	1.50	0.015	0.080
BSMD1206-200-12V	2.00	3.50	12	100	1.0	8.00	1.50	0.015	0.080
BSMD1206-200-13.2V	2.00	3.50	13.2	100	1.0	8.00	1.50	0.015	0.080
BSMD1206-200-16V	2.00	3.50	16	40	1.0	8.00	1.50	0.015	0.080
BSMD1206-260-6V	2.60	5.20	6	100	1.0	8.00	2.00	0.010	0.060
BSMD1206-260-12V	2.60	5.20	12	40	1.0	8.00	2.00	0.010	0.060
BSMD1206-300-6V	3.00	6.00	6	100	1.0	8.00	4.00	0.010	0.050
BSMD1206-300-8V	3.00	6.00	8	40	1.2	8.00	4.00	0.010	0.050
BSMD1206-300-12V	3.00	6.00	12	40	1.2	8.00	4.00	0.010	0.050

## ➤ Vocabulary

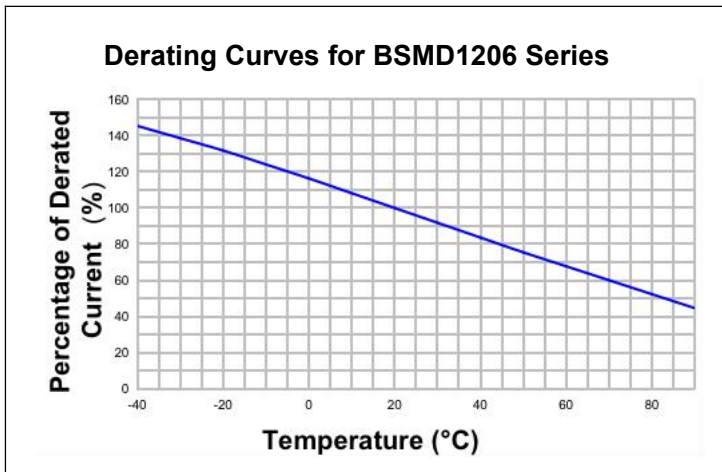
- I<sub>hold</sub>** = Hold current: maximum current device will pass without tripping in 25°C still air.
- I<sub>trip</sub>** = Trip current: minimum current at which the device will trip in 25°C still air.
- V<sub>max</sub>** = Maximum voltage device can withstand without damage at rated current (**I<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 typ.</sub>** = Typical power dissipated from device when in the tripped state at 25°C still air.
- R<sub>min</sub>** = Minimum resistance of device in initial (un-soldered) state.
- R<sub>1max</sub>** = 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.**

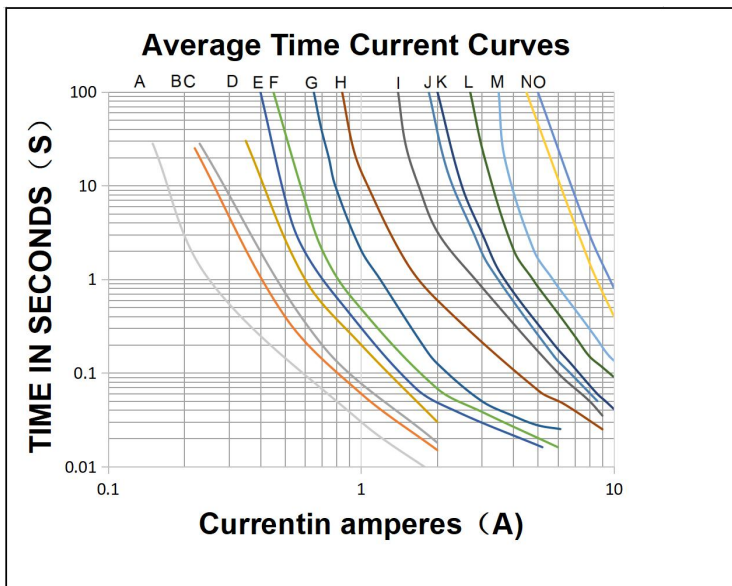
## ➤ Warning

- 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 Curve**



➤ **Average Time-Current Curve**



- A=BSMD1206-005
- B=BSMD1206-010
- C=BSMD1206-012
- D=BSMD1206-016
- E=BSMD1206-020
- F=BSMD1206-025
- G=BSMD1206-035
- H=BSMD1206-050
- I=BSMD1206-075
- J=BSMD1206-100
- K=BSMD1206-110
- L=BSMD1206-150
- M=BSMD1206-200
- N=BSMD1206-260
- O=BSMD1206-300

## ➤ 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	85°C
BSMD1206-005	0.074	0.066	0.056	0.050	0.042	0.037	0.035	0.030	0.027
BSMD1206-010	0.148	0.132	0.116	0.100	0.085	0.075	0.070	0.060	0.055
BSMD1206-012	0.18	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.06
BSMD1206-016	0.24	0.21	0.18	0.16	0.14	0.13	0.12	0.11	0.10
BSMD1206-020	0.30	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.11
BSMD1206-025	0.37	0.33	0.29	0.25	0.22	0.20	0.17	0.15	0.12
BSMD1206-035	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
BSMD1206-050	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
BSMD1206-075	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
BSMD1206-100	1.45	1.31	1.15	1.00	0.84	0.77	0.69	0.61	0.48
BSMD1206-110	1.60	1.45	1.30	1.10	0.95	0.80	0.72	0.66	0.55
BSMD1206-150	2.18	1.94	1.72	1.50	1.28	1.17	1.06	0.96	0.77
BSMD1206-200	2.88	2.63	2.34	2.00	1.74	1.58	1.42	1.17	0.93
BSMD1206-260	3.43	3.22	2.93	2.60	2.23	2.03	1.87	1.57	1.35
BSMD1206-300	4.05	3.66	3.36	3.00	2.50	2.28	2.00	1.62	1.38

## ➤ Environmental Specifications

Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hours	±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		

➤ **Soldering Parameters**



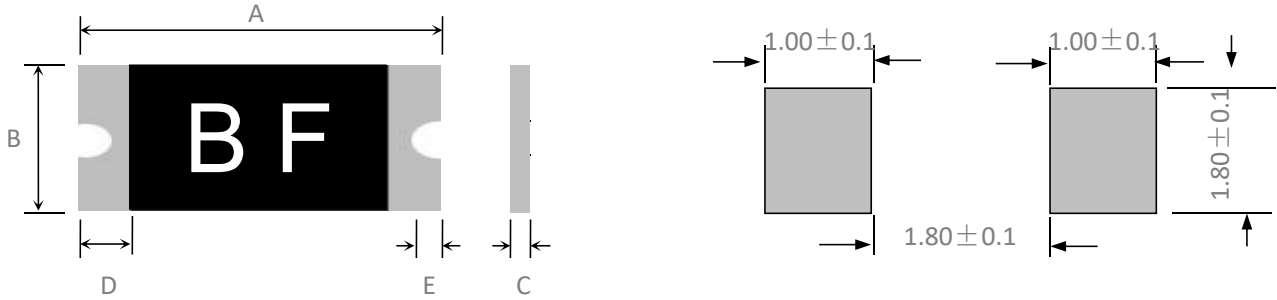
Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate( $T_{s_{max}}$ to $T_p$ )	3°C/second max
Preheat -Temperature Min( $T_{s_{min}}$ ) -Temperature Max( $T_{s_{max}}$ ) -Time( $T_{s_{min}}$ to $T_{s_{max}}$ )	150°C 200°C 60~180 seconds
Time maintained above: -Temperature( $T_L$ ) -Time( $t_L$ )	217°C 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, 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.

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

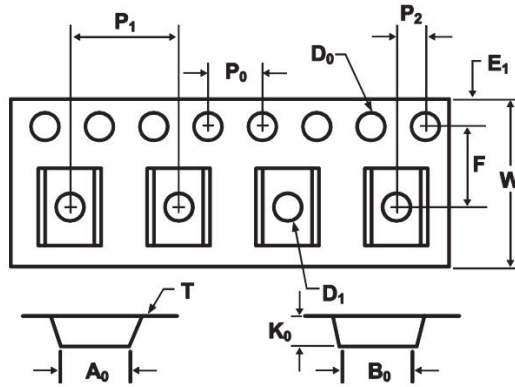


Part Number	Marking	Quantity	A		B		C		D	E
			Min	Max	Min	Max	Min	Max	Min	Min
BSMD1206-005-30V	BZ	3500	3.00	3.60	1.50	1.90	0.60	1.20	0.40	0.20
BSMD1206-005-60V	BZ	3500	3.00	3.60	1.50	1.90	0.60	1.20	0.40	0.20
BSMD1206-005-72V	BZ	3500	3.00	3.60	1.50	1.90	0.60	1.20	0.40	0.20
BSMD1206-010-30V	BN	3500	3.00	3.60	1.50	1.90	0.60	1.20	0.40	0.20
BSMD1206-010-60V	BN	3500	3.00	3.60	1.50	1.90	0.60	1.20	0.40	0.20
BSMD1206-010-72V	BN	3500	3.00	3.60	1.50	1.90	0.60	1.20	0.40	0.20
BSMD1206-012-60V	BN	3500	3.00	3.60	1.50	1.90	0.60	1.20	0.40	0.20
BSMD1206-016-33V	BT	3500	3.00	3.60	1.50	1.90	0.40	1.20	0.40	0.20
BSMD1206-016-48V	BT	3500	3.00	3.60	1.50	1.90	0.40	1.20	0.40	0.20
BSMD1206-016-60V	BT	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-020-24V	BA	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-020-30V	BA	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-020-33V	BA	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-025-16V	BA	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-025-24V	BA	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-025-30V	BA	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-025-33V	BA	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-025-48V	BA	3500	3.00	3.60	1.50	1.90	0.50	1.30	0.40	0.20
BSMD1206-035-6V	BB	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-035-16V	BB	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-035-24V	BB	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-035-30V	BB	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-035-33V	BB	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-050-6V	BF	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-050-13.2V	BF	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-050-16V	BF	3500	3.00	3.60	1.50	1.90	0.40	1.00	0.40	0.20
BSMD1206-050-24V	BF	3500	3.00	3.60	1.50	1.90	0.50	1.20	0.40	0.20
BSMD1206-050-30V	BF	3500	3.00	3.60	1.50	1.90	0.50	1.20	0.40	0.20

Part Number	Marking	Quantity	A		B		C		D	E
			Min	Max	Min	Max	Min	Max	Min	Min
BSMD1206-050-33V	BF	3500	3.00	3.60	1.50	1.90	0.50	1.20	0.40	0.20
BSMD1206-075-6V	BG	3500	3.00	3.60	1.50	1.90	0.50	1.00	0.40	0.20
BSMD1206-075-13.2V	BG	3500	3.00	3.60	1.50	1.90	0.50	1.00	0.40	0.20
BSMD1206-075-16V	BG	3500	3.00	3.60	1.50	1.90	0.50	1.00	0.40	0.20
BSMD1206-075-24V	BG	3500	3.00	3.60	1.50	1.90	0.60	1.60	0.40	0.20
BSMD1206-075-30V	BG	3500	3.00	3.60	1.50	1.90	0.60	1.60	0.40	0.20
BSMD1206-100-6V	BH	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-100-13.2V	BH	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-100-16V	BH	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-100-24V	BH	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-100-30V	BH	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-110-6V	BH	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-110-13.2V	BH	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-110-16V	BH	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-110-24V	BH	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-110-30V	BH	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-150-6V	BI	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-150-8V	BI	3500	3.00	3.60	1.50	1.90	0.50	1.60	0.40	0.20
BSMD1206-150-12V	BI	3500	3.00	3.60	1.50	1.90	0.80	1.60	0.40	0.20
BSMD1206-150-13.2V	BI	3500	3.00	3.60	1.50	1.90	0.80	1.60	0.40	0.20
BSMD1206-150-16V	BI	3500	3.00	3.60	1.50	1.90	0.80	1.60	0.40	0.20
BSMD1206-200-6V	BK	3500	3.00	3.60	1.50	1.90	0.70	1.60	0.40	0.20
BSMD1206-200-12V	BK	3500	3.00	3.60	1.50	1.90	0.70	1.60	0.40	0.20
BSMD1206-200-13.2V	BK	3500	3.00	3.60	1.50	1.90	0.70	1.60	0.40	0.20
BSMD1206-200-16V	BK	3500	3.00	3.60	1.50	1.90	0.70	1.60	0.40	0.20
BSMD1206-260-6V	BP	3500	3.00	3.60	1.50	1.90	1.00	1.60	0.40	0.20
BSMD1206-260-12V	BP	3500	3.00	3.60	1.50	1.90	1.00	1.60	0.40	0.20
BSMD1206-300-6V	BP	3500	3.00	3.60	1.50	1.90	1.00	1.60	0.40	0.20
BSMD1206-300-8V	BP	3500	3.00	3.60	1.50	1.90	1.00	1.60	0.40	0.20
BSMD1206-300-12V	BP	3500	3.00	3.60	1.50	1.90	1.00	1.60	0.40	0.20

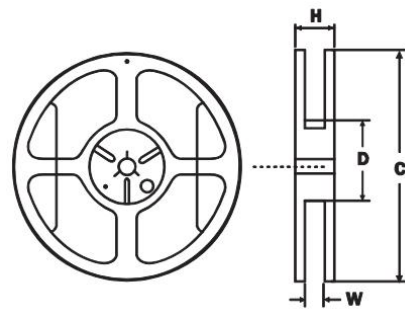


➤ **Tape And Reel Specifications (mm)**



Governing Specifications	BSMD1206-005~ BSMD1206-150	BSMD1206-200~ BSMD1206-300
W	8.0 ± 0.3	8.0 ± 0.3
F	3.5 ± 0.05	3.5 ± 0.05
E1	1.75 ± 0.1	1.75 ± 0.1
D0	1.55 ± 0.05	1.55 ± 0.05
D1	1.0 ± 0.1	1.0 ± 0.1
P0	4.0 ± 0.1	4.0 ± 0.1
P1	4.0 ± 0.1	4.0 ± 0.1
P2	2.0 ± 0.05	2.0 ± 0.05
A0	1.95 ± 0.1	1.95 ± 0.1
B0	3.65 ± 0.1	3.65 ± 0.1
T	0.2 ± 0.1	0.2 ± 0.1
K0	1.04 ± 0.1	1.35 ± 0.1
Leader <sub>min</sub>	390	390
Trailer <sub>min</sub>	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**

SHENZHEN BHFUSE INDUSTRIAL CO., LTD

TEL: 0755-85259917

E-MAIL: sales@bhfuse.com

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