

### Description

The SMBJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.



### Features

- ◆ 600W peak pulsepower capability at 10 x 1000 $\mu$ s waveform, repetition rate (duty cycle): 0.01%
- ◆ Glass Passivated chip junction
- ◆ For surface mounted applications to optimize board space
- ◆ Low profile package
- ◆ Built-in strain relief
- ◆ Low incremental surge resistance
- ◆ Excellent clamping capability
- ◆ Plastic package has UL flammability classification 94V-0
- ◆ Fast response time: typically less than 1.0ps from 0 Volts to BV min
- ◆ Typical IR less than 1uA above 12V
- ◆ High temperature soldering: 260°C/40 seconds at terminals
- ◆ IEC-61000-4-2 ESD 15KV(Air),8KV(Contact)
- ◆ ESD protection of data lines in accordance with IEC 61000-4-2(IEC801-2)
- ◆ EFT protection of data lines in accordance with IEC61000-4-4(IEC801-4)

## Applications

TVS devices are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

## Maximum Ratings and Electrical Characteristics

(TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25°C by 10x1000µs waveform (Fig.2)(Note 1) (Note 2)	P <sub>PPM</sub>	600	W
Power Dissipation on infinite heat sink at TA=50°C	P <sub>D</sub>	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional only(Note 3)	I <sub>FSM</sub>	100	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional only	V <sub>F</sub>	3.5V/5.0	V
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C
Typical Thermal Resistance Junction to Lead	R <sub>θJL</sub>	20	°C/W
Typical Thermal Resistance Junction to Ambient	R <sub>θJA</sub>	100	°C/W

### Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25°C per Fig. 2.
2. Mounted on copper pad area of 0.31x0.31" (8.0 x 8.0mm) to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

## Electrical Characteristics

PART NUMBER		REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE VBR(V)MAX. @IT		TEST CURRENT	REVERSE LEAKAGE @VRWM	PEAK PULSE CURRENT	MAXIMUM CLAMPING VOLTAGE @Ipp
BI-POLAR	UNI-POLAR	VRWM (V)	VBR MIN(V)	VBR MAX(V)	IT (mA)	IR (μA)	Ipp (A)	Vc (v)
SMBJ6.8CA	SMBJ6.8A	5.0	6.40	7.15	10	300	65.3	9.2

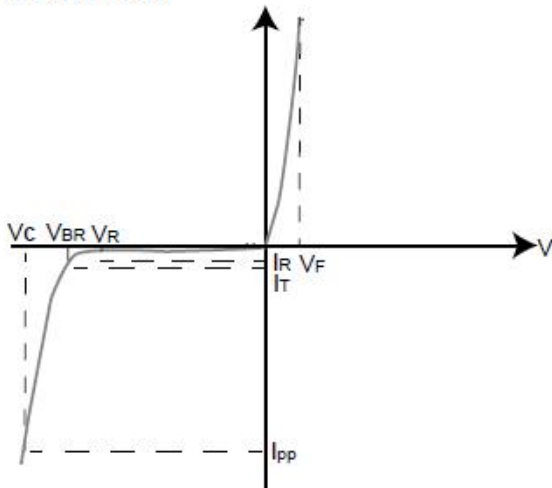
Notes:

For bidirectional type having VRWM of 20 volts and less, the IR limit is double.

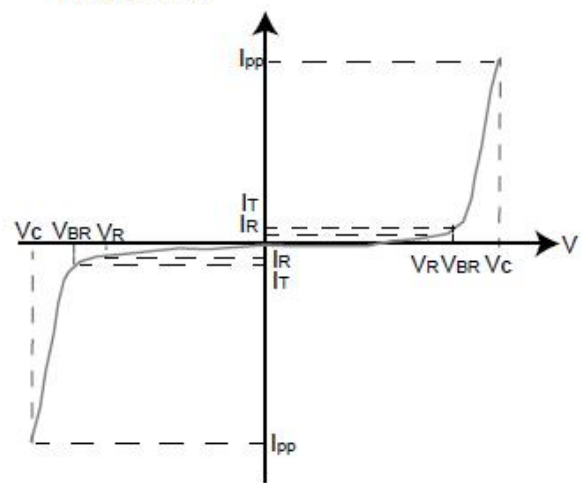
For parts without A (VBR is ± 10% and VC is 5% higher than A parts

## I-V Curve Characteristics

Uni-directional



Bi-directional



## Ratings and Characteristic Curves (TA=25°C unless otherwise noted)

Figure 1 - Peak Pulse Power Rating Curve

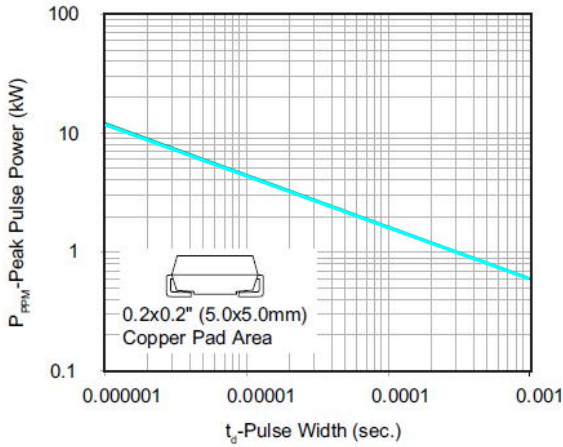


Figure 2 - Pulse Derating Curve

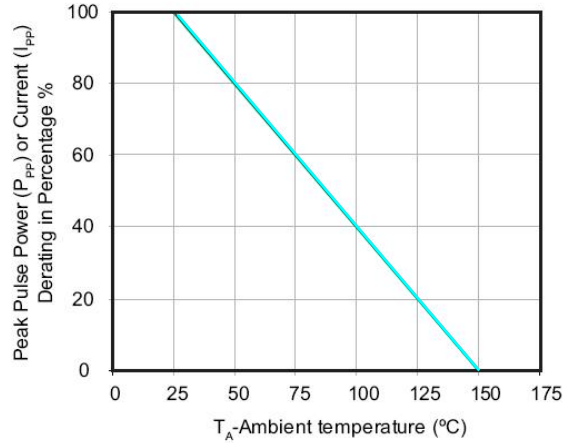


Figure 3 - Pulse Waveform

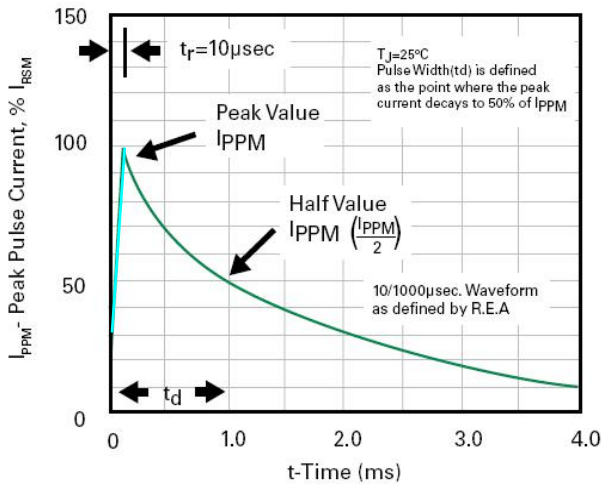


Figure 4 - Typical Junction Capacitance

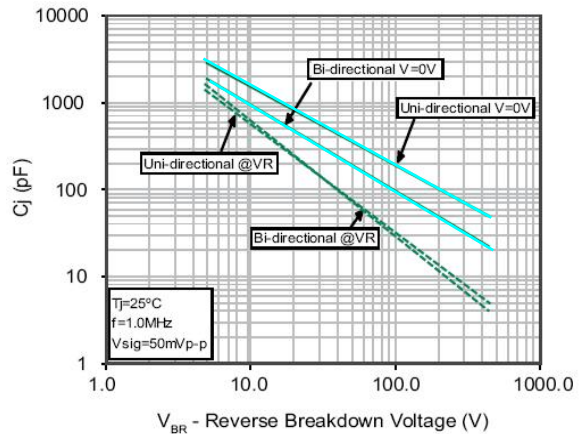


Figure 5 - Steady State Power Dissipation Derating Curve

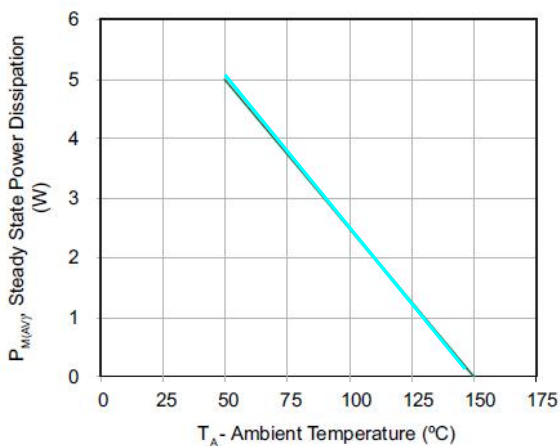
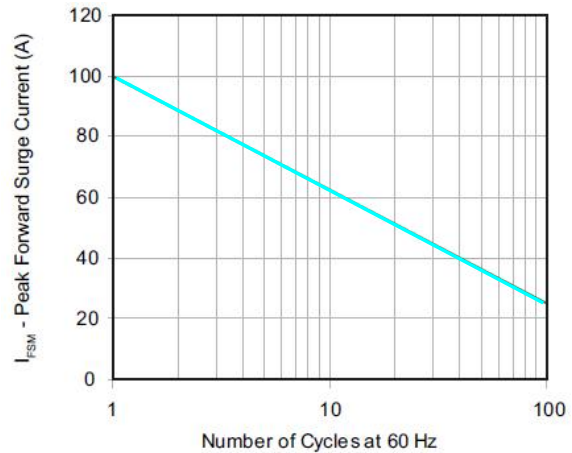


Figure 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



## Part Numbering System

**SMBJ**    **XXX**    **C**    **A**  
 (1)            (2)            (3)            (4)

(1)SERIES.

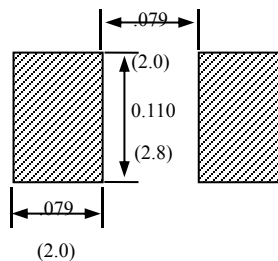
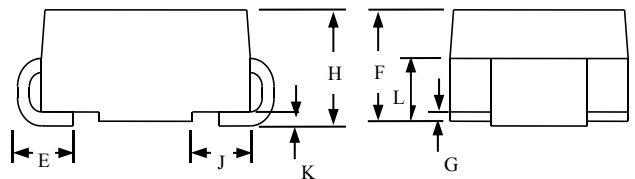
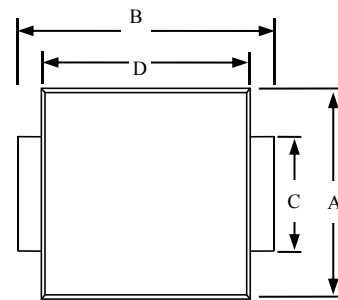
(2)VR VOLTAGE.

(3)BI-DIRECTIONAL AND UNI-DIRECTIONAL.

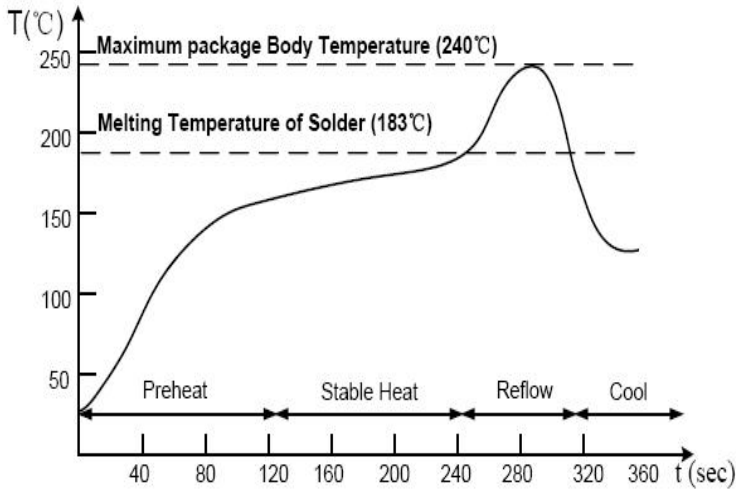
(4)5% VOLTAGE TOLERANCE.

## Product Dimensions

Dimension	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.134	0.155	3.40	3.94
B	0.205	0.22	5.21	5.59
C	0.075	0.083	1.90	2.11
D	0.166	0.185	4.22	4.70
E	0.036	0.056	0.91	1.42
F	0.073	0.087	1.85	2.2
G	0.002	0.008	0.05	0.20
H	0.077	0.094	1.95	2.40
J	0.043	0.053	1.09	1.35
K	0.008	0.014	0.20	0.35
L	0.039	0.049	0.99	1.24




### Solder Reflow Recommendations



- Recommended reflow methods: IR, vapor phase oven, hot air oven, wave solder.
- The device can be exposed to a maximum temperature of 265°C for 10 seconds.
- Devices can be cleaned using standard industry methods and solvents.

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

### Summary of Packing Options

Package Type	Description	Packing Quantity	Industry Standard
DO-214AA(SMB) 	Embossed Carrier Reel Pack	3000PCS	EIA-481-D

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