

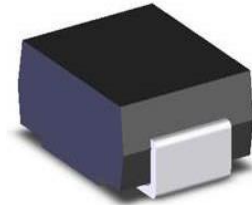
3.0SMBJ Series Datasheet

Description

The 3.0SMBJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events. For surface mounted applications in order to optimize board space.

Features

- Halogen free and RoHS compliant
- Low profile package
- Built-in strain relief Design
- Low inductance
- Excellent clamping capability
- 3000W peak pulse power capability at 10/1000 μ s waveform, repetition rate (duty cycle): 0.01%
- Fast response time: typically less than 1.0ps from 0V to V_B min
- Typical IR less than 1 μ A above 22V devices
- Peak 260 $^{\circ}$ C high temperature Reflow Soldering withstanding
- Meet MSL level1, per J-STD-020
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- Unit Weight: 0.12g/PCS



Applications

TVS components 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 Characteristics

Ratings at 25 $^{\circ}$ C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000 μ s waveform (Note1, Note2, Fig.1)	P_{PPM}	Minimum 3000	Watts
Peak pulse current of at 10/1000 μ s waveform (Note 1, Fig.3)	I_{PPM}	See Table	Amps
Steady state power dissipation at $T_A=50^{\circ}$ C (Fig.5)	$P_{M(AV)}$	5.0	Watts
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only	V_F	5.0	V
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6)	I_{FSM}	100	Amps
Operating junction and Storage Temperature Ranges.	T_J, T_{STG}	-55 to +150	$^{\circ}$ C
Typical thermal resistance junction to lead	$R_{\theta JL}$	20	$^{\circ}$ C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	100	$^{\circ}$ C/W

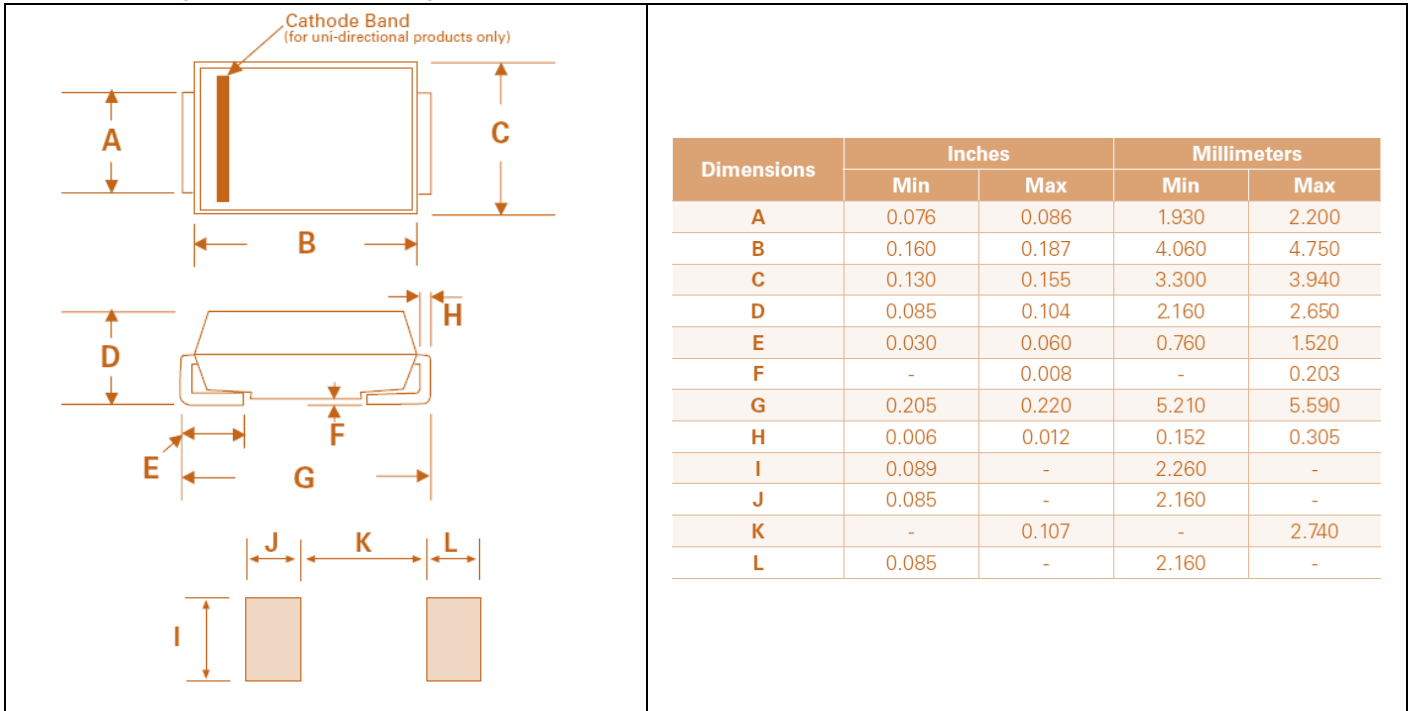
Notes: 1. Non-repetitive current pulse, per Fig.3 and Derating above $T_A=25^{\circ}$ C per Fig.2.

2. Each terminal is surface Mounted on the 5.0mm \times 5.0mm (0.03mm thick) copper pads.

3. 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.

4. $V_F < 5.0V$ for stacked-die parts.

Dimensions (SMB/DO-214AA)



Electrical Characteristics (TA=25°C)

Part Number		Device Code		Reverse Stand-Off Voltage	Breakdown Voltage @I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _R
Uni	Bi	UNI	BI	V _R (V)	Min(V)	Max(V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
3.0SMBJ12A	3.0SMBJ12CA	3LE	3BE	12.0	13.30	14.70	1	19.9	150.8	600
3.0SMBJ33A	3.0SMBJ33CA	3MM	3CM	33.0	36.70	40.60	1	53.3	56.3	1

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

Figure 1. Peak Pulse Power Rating Curve

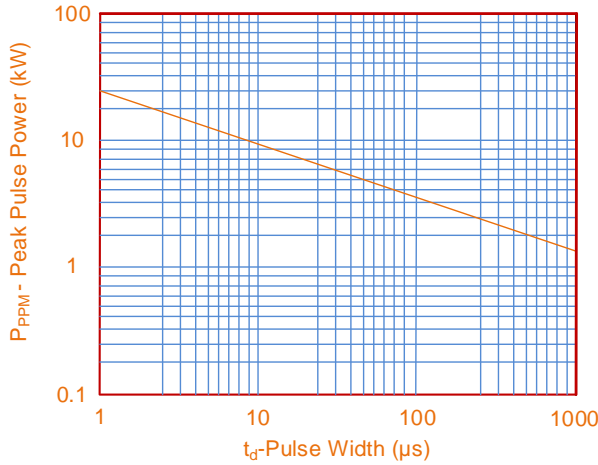


Figure 2. Pulse Derating Curve

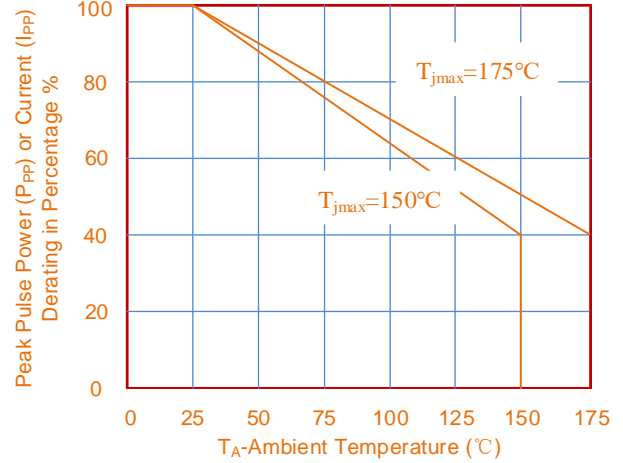


Figure 3. Pulse Waveform

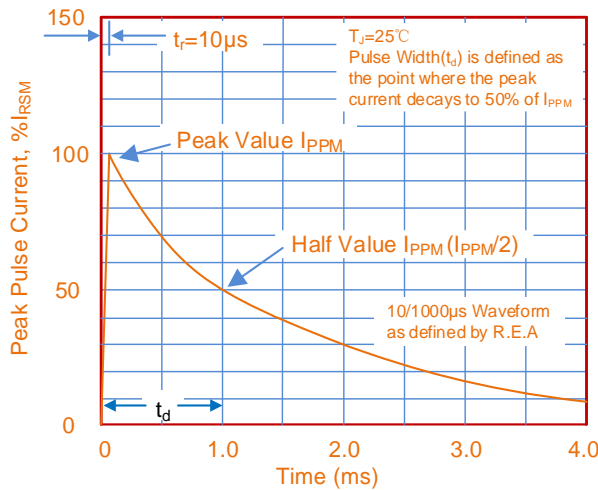


Figure 4. Typical Junction Capacitance

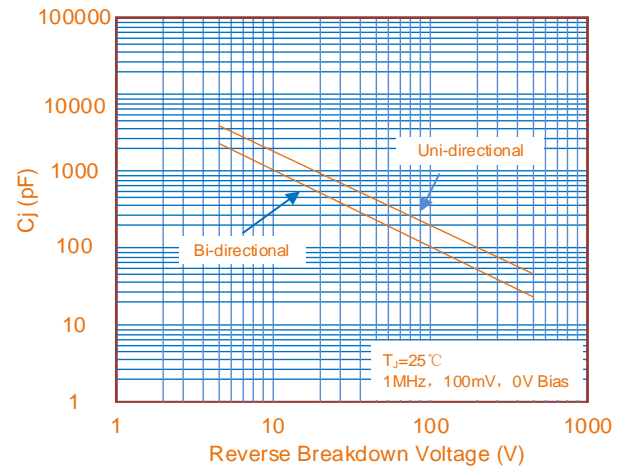


Figure 5. Steady State Power Dissipation Derating Curve

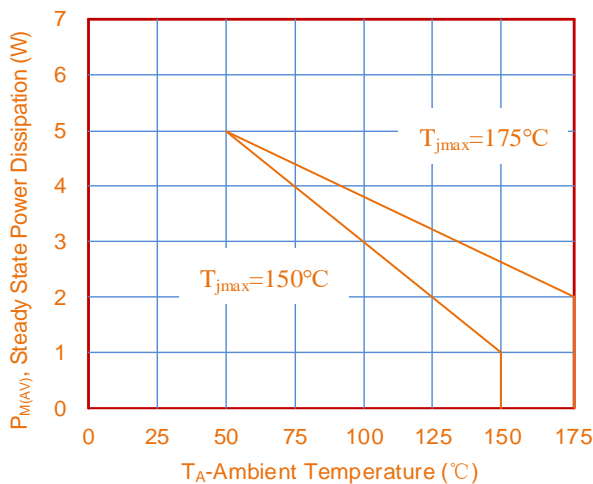
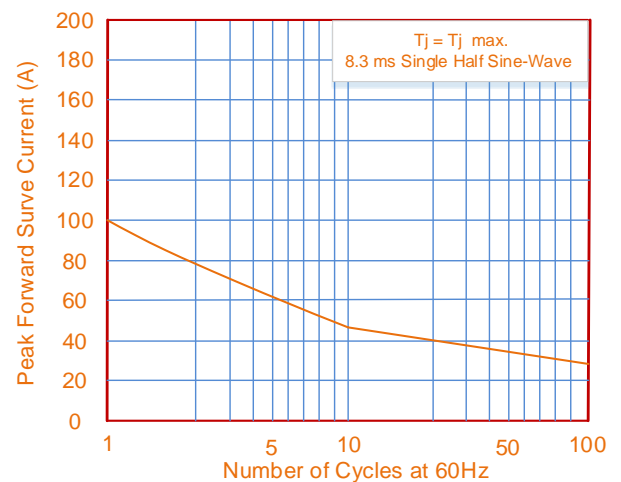


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



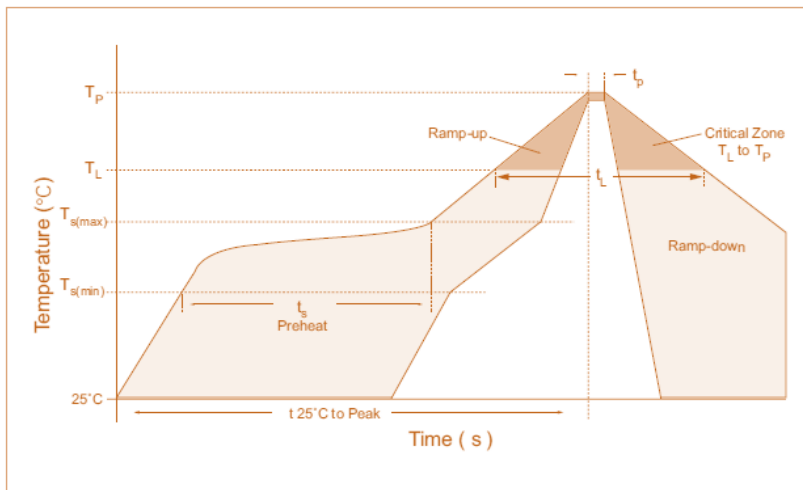
Marking Code



Part Number Code



Soldering Parameters



Reflow Condition		Lead-free Soldering
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak)		3°C/second max
$T_{s(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A)	217°C
	- Time (min to max) (t_s)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed Temperature		260°C

Packaging Specification

