

## Surface Mount TRANSZORB® Transient Voltage Suppressors


**DO-214AA (SMB J-Bend)**
**FEATURES**

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in uni-directional and bi-directional
- 600 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

PRIMARY CHARACTERISTICS	
$V_{BR}$ (bi-directional)	6.4 V to 231 V
$V_{BR}$ (uni-directional)	6.4 V to 231 V
$V_{WM}$	5.0 V to 188 V
$P_{PPM}$	600 W
$I_{FSM}$ (uni-directional only)	100 A
$T_J$ max.	150 °C
Polarity	Uni-directional, bi-directional
Package	DO-214AA (SMBJ)

**TYPICAL APPLICATIONS**

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, and telecommunication.

**MECHANICAL DATA**

**Case:** DO-214AA (SMBJ)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade  
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** For uni-directional types the band denotes cathode end, no marking on bi-directional types

**DEVICES FOR BI-DIRECTION APPLICATIONS**

For bi-directional devices use CA suffix (e.g. SMBJ10CA).

Electrical characteristics apply in both directions.

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)(2)</sup> (fig. 1)	$P_{PPM}$	600	W
Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>	$I_{PPM}$	See next table	A
Peak forward surge current 8.3 ms single half sine-wave uni-directional only <sup>(2)</sup>	$I_{FSM}$	100	A
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150	°C

**Notes**

<sup>(1)</sup> Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25\text{ °C}$  per fig. 2.

<sup>(2)</sup> Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal



ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C unless otherwise noted)

Table with columns: DEVICE TYPE MODIFIED "J" BEND LEAD, DEVICE MARKING CODE (UNI, BI), BREAKDOWN VOLTAGE VBR AT IT (1) (MIN., MAX.), TEST CURRENT IT (mA), STAND-OFF VOLTAGE VWM (V), MAXIMUM REVERSE LEAKAGE AT VWM ID (3) (A), MAXIMUM PEAK PULSE SURGE CURRENT IPPM (A) (2), MAXIMUM CLAMPING VOLTAGE AT IPPM VC (V)

Notes

- (1) Pulse test: tp ≤ 50 ms
(2) Surge current waveform per fig. 3 and derate per fig. 2
(3) For bi-directional types having VWM of 10 V and less, the ID limit is doubled
(4) All terms and symbols are consistent with ANSI/IEEE C62.35
(5) For the bi-directional SMBJ5.0CA, the maximum VBR is 7.25 V
(6) VF = 3.5 V max. at IF = 50 A (uni-directional only)
(+\*) Underwriters laboratory recognition for the classification of protectors (QVGQ2) under the UL standard for safety 497B and file number E136766 for both uni-directional and bi-directional devices

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to ambient <sup>(1)</sup>	$R_{\theta JA}$	100	°C/W
Typical thermal resistance, junction to lead	$R_{\theta JL}$	20	

**Note**

(1) Mounted on minimum recommended pad layout

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMBJ5.0A-E3/52	0.096	52	750	7" diameter plastic tape and reel
SMBJ5.0A-E3/5B	0.096	5B	3200	13" diameter plastic tape and reel
SMBJ5.0AHE3/52 <sup>(1)</sup>	0.096	52	750	7" diameter plastic tape and reel
SMBJ5.0AHE3/5B <sup>(1)</sup>	0.096	5B	3200	13" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

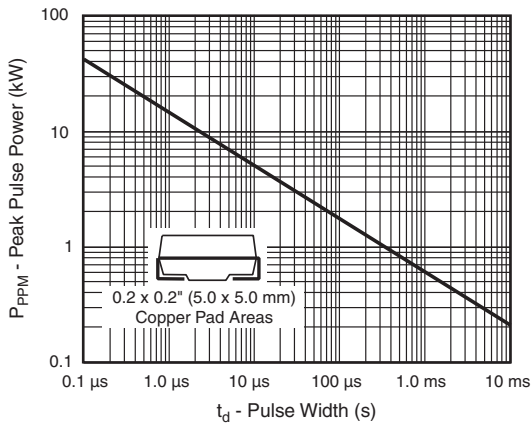


Fig. 1 - Peak Pulse Power Rating Curve

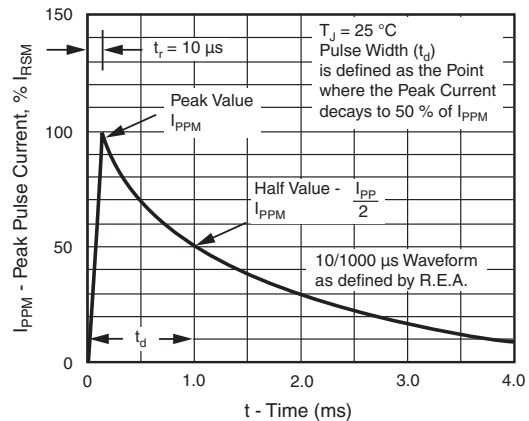


Fig. 3 - Pulse Waveform

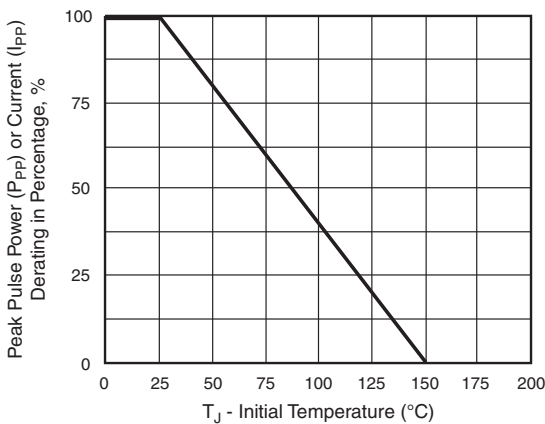


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

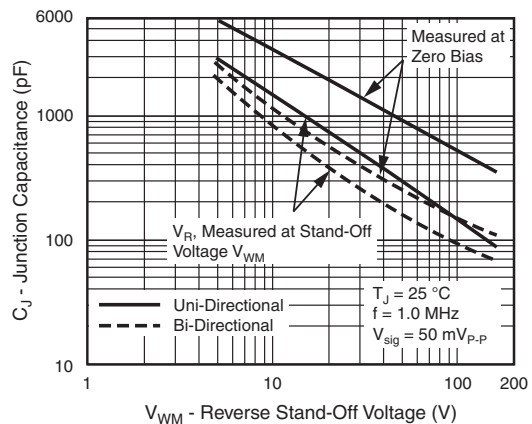


Fig. 4 - Typical Junction Capacitance



Fig. 5 - Typical Transient Thermal Impedance



Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**DO-214AA (SMB-J-Bend)**



**Mounting Pad Layout**





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