

## Surface Mount TRANSZORB® Transient Voltage Suppressors



DO-214AA (SMBJ)

### FEATURES

- Uni-directional polarity only
- Peak pulse power: 600 W (10/1000  $\mu$ s)
- Excellent clamping capability
- Very fast response time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### 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 specifically for protecting 3.3 V supplied sensitive equipment against transient overvoltages.

### MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

M3 suffix meets JESD 201 class 1A whisker test

**Polarity:** Color band denotes cathode end

### PRIMARY CHARACTERISTICS

$V_{WM}$	3.3 V
$P_{PPM}$	600 W
$I_{FSM}$	60 A
$T_J$ max.	175 °C

### MAXIMUM RATINGS ( $T_A = 25$ °C, unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation	$P_{PPM}$ (1)(2)	600	W
Peak pulse current with a 10/1000 $\mu$ s waveform (fig. 1)	$I_{PP}$	50	A
Peak pulse current with a 8/20 $\mu$ s waveform (fig. 1)	$I_{PPM}$	200	A
Non-repetitive peak forward surge current 8.3 ms single half sine-wave	$I_{FSM}$ (2)	60	A
Power dissipation on infinite heatsink, $T_L = 75$ °C	$P_D$	5	W
Operating junction and storage temperature range	$T_J, T_{STG}$	- 65 to + 175	°C

**Notes**

(1) Non-repetitive current pulse, per fig. 1

(2) Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal

### ELECTRICAL CHARACTERISTICS ( $T_A = 25$ °C unless otherwise noted)

DEVICE TYPE	DEVICE MARKING CODE	BREAKDOWN VOLTAGE $V_{BR}$ AT $I_T$ MIN.		MAXIMUM REVERSE LEAKAGE CURRENT $I_R$ AT $V_{WM}$ MAX.		MAXIMUM CLAMPING VOLTAGE $V_c$ AT $I_{PP}$ 10/1000 $\mu$ s		MAXIMUM CLAMPING VOLTAGE $V_c$ AT $I_{PPM}$ 8/20 $\mu$ s		TYPICAL TEMP. COEFFICIENT OF $V_{BR}$	TYPICAL JUNCTION CAPACITANCE $C_J$ AT 0 V 1 MHz
		V	mA	$\mu$ A	V	V	A	(10 <sup>-4</sup> /°C)	pF		
SMBJ3V3	KC	4.1	1.0	200	3.3	7.3	50	10.3	200	- 5.3	5200

**SMBJ3V3**

Vishay General Semiconductor

**THERMAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to lead	$R_{\theta JL}$ <sup>(1)</sup>	20	$^\circ\text{C}/\text{W}$
Typical thermal resistance, junction to ambient	$R_{\theta JA}$ <sup>(2)</sup>	100	$^\circ\text{C}/\text{W}$

**Note**

(1) Thermal resistance from junction to lead - mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal

(2) Thermal resistance from junction to ambient - mounted on the recommended PCB pad layout

**ORDERING INFORMATION** (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMBJ3V3-M3/52	0.096	52	750	7" diameter plastic tape and reel
SMBJ3V3-M3/5B	0.096	5B	3200	13" diameter plastic tape and reel

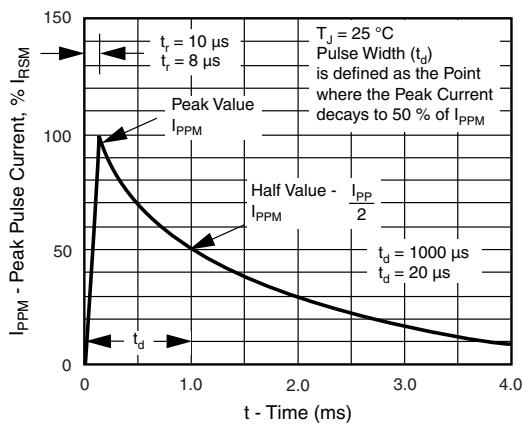
**RATINGS AND CHARACTERISTICS CURVES** $(T_A = 25^\circ\text{C}$  unless otherwise noted)

Fig. 1 - Pulse Waveform

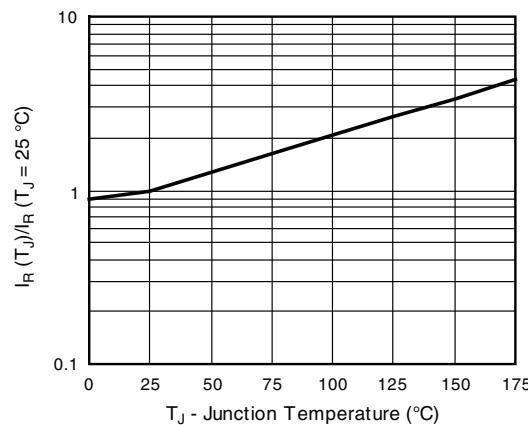


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

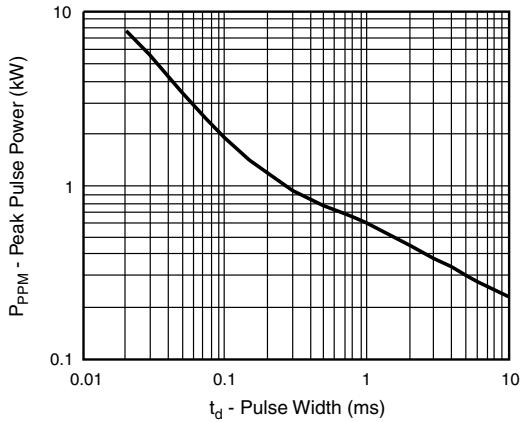
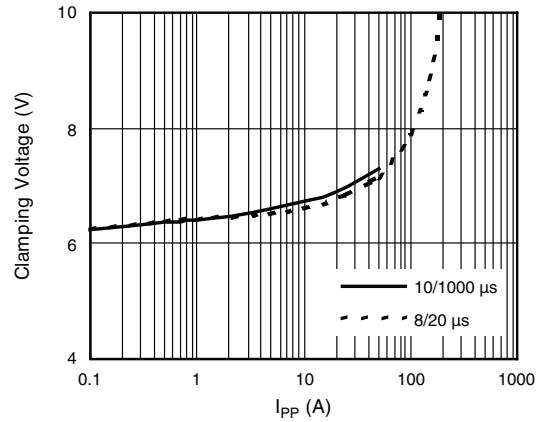


Fig. 2 - Peak Pulse Power Rating Curve

Fig. 4 - Clamping Voltage vs. Peak Pulse Current  
( $T_J$  initial = 25 °C)

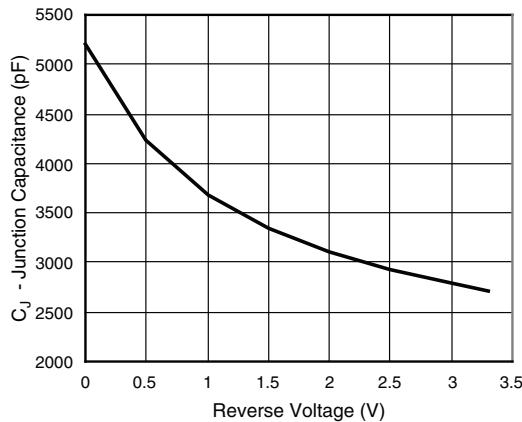


Fig. 5 - Typical Junction Capacitance

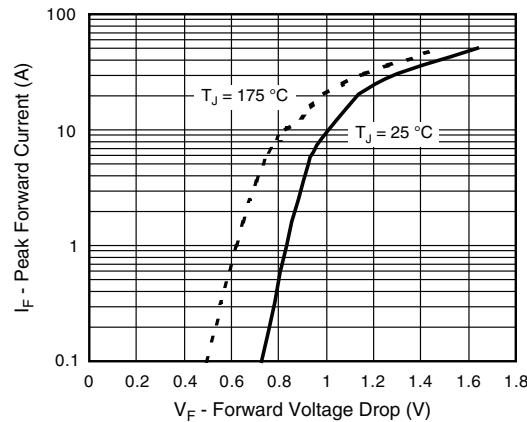


Fig. 7 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

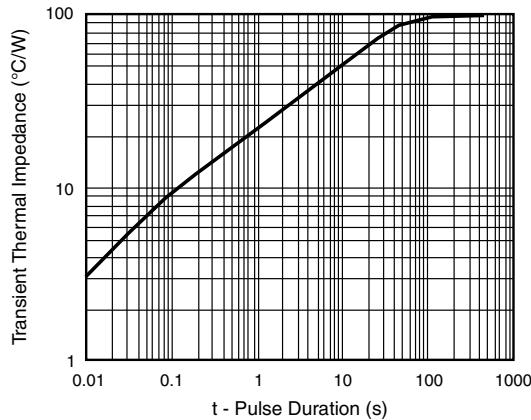
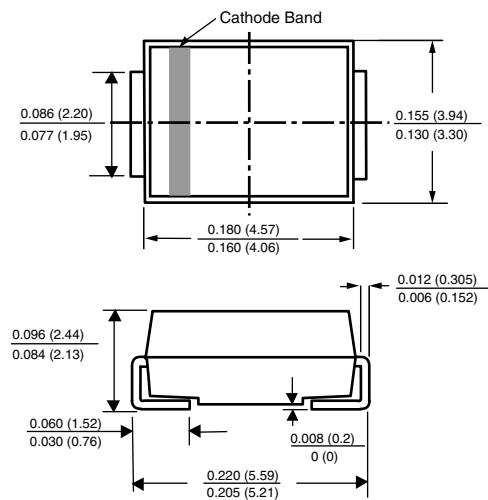


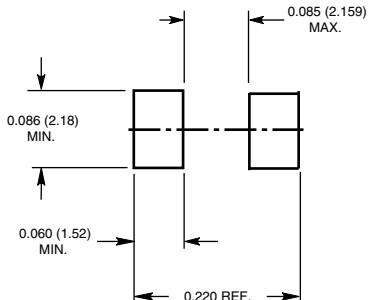
Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB-J-Bend)



Mounting Pad Layout



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