

# 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
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC


**RoHS**  
COMPLIANT

**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-E3 - RoHS compliant, commercial grade

Base P/NHE3 - RoHS compliant, high reliability/automotive grade (AEC Q101 qualified)

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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 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 <sup>(1)(2)</sup>	$P_{PPM}$	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 waveform (Fig. 1)	$I_{PPM}$	200	A
Non repetitive peak forward surge current 8.3 ms single half sine-wave <sup>(2)</sup>	$I_{FSM}$	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 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 $I_T$		MAXIMUM REVERSE LEAKAGE CURRENT $I_R$ AT $V_{WM}$		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
		MIN.		MAX.							
		V	mA	$\mu$ A	V	V	A	V	A	( $10^{-4}$ °C)	pF
SMBJ3V3	KC	4.1	1.0	200	3.3	7.3	50	10.3	200	- 5.3	5200

THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to lead <sup>(1)</sup>	$R_{\theta JL}$	20	$^\circ\text{C/W}$
Typical thermal resistance, junction to ambient <sup>(2)</sup>	$R_{\theta JA}$	100	

**Notes:**

- (1) Thermal resistance from junction to lead - mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal
- (2) Thermal resistance from junction to ambient - mounted on the recommended P.C.B. pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMBJ3V3-E3/52	0.096	52	750	7" diameter plastic tape and reel
SMBJ3V3-E3/5B	0.096	5B	3200	13" diameter plastic tape and reel
SMBJ3V3HE3/52 <sup>(1)</sup>	0.096	52	750	7" diameter plastic tape and reel
SMBJ3V3HE3/5B <sup>(1)</sup>	0.096	5B	3200	13" diameter plastic tape and reel

**Note:**

- (1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

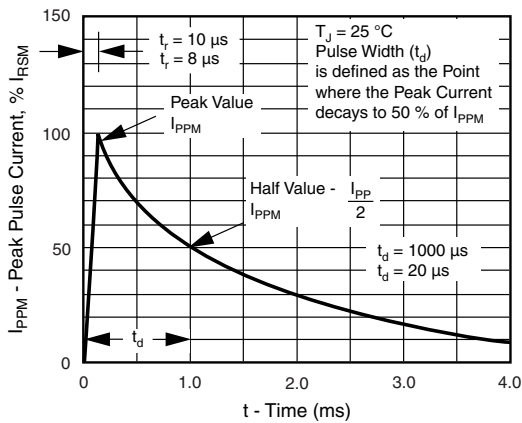


Figure 1. Pulse Waveform

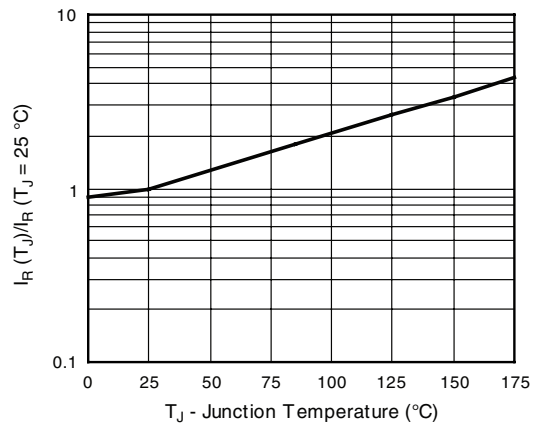


Figure 3. Relative Variation of Leakage Current vs. Junction Temperature

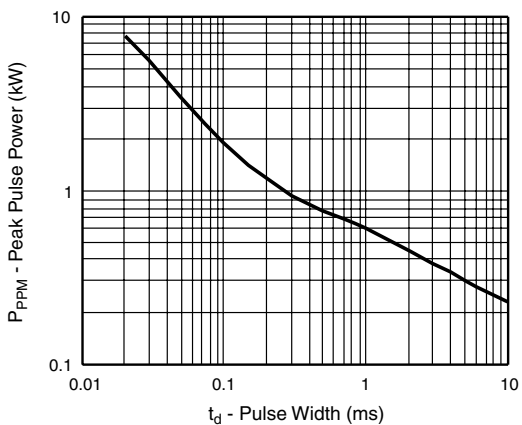


Figure 2. Peak Pulse Power Rating Curve

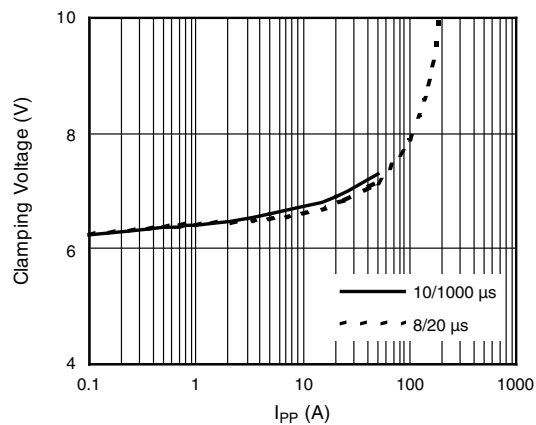


Figure 4. Clamping Voltage vs. Peak Pulse Current ( $T_J$  initial =  $25\text{ }^\circ\text{C}$ )

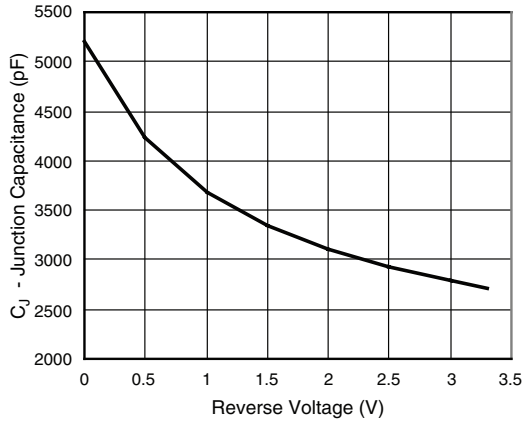


Figure 5. Typical Junction Capacitance

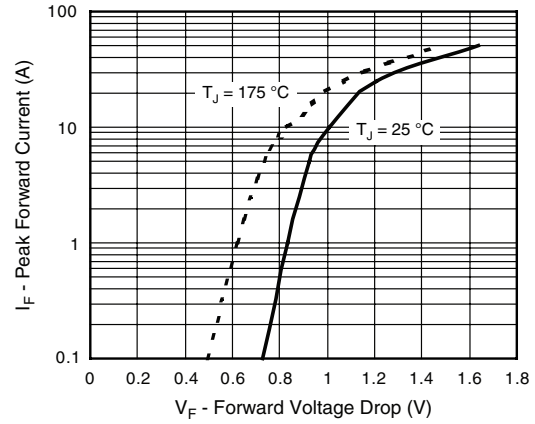


Figure 7. Typical Peak Forward Voltage Drop vs. Peak Forward Current

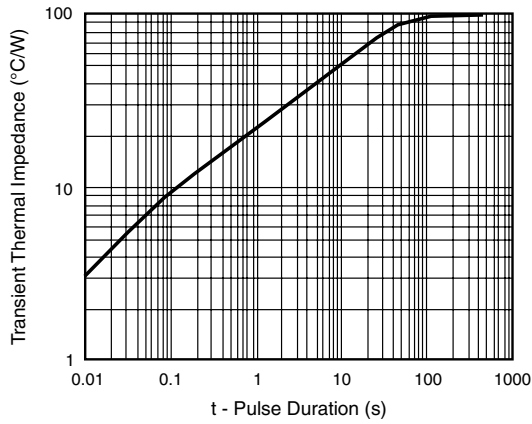
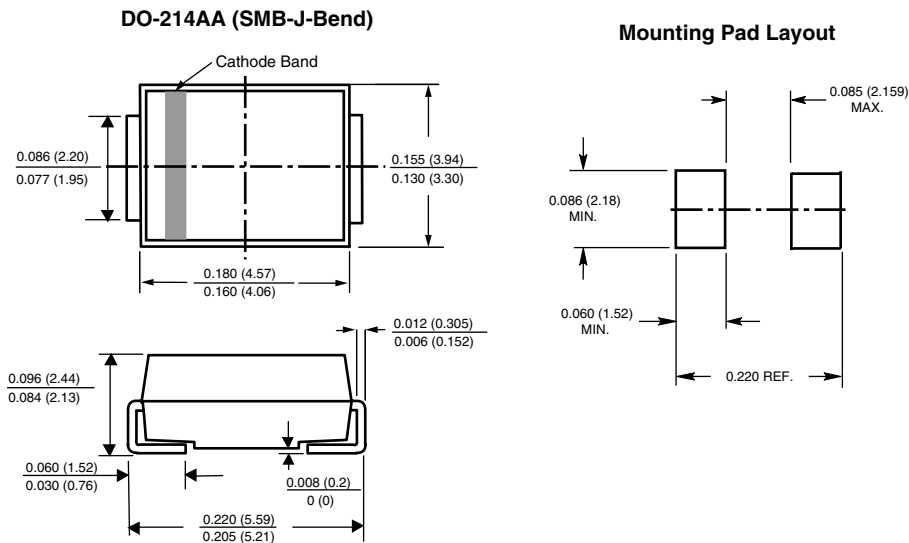


Figure 6. Typical Transient Thermal Impedance

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





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