

Surface Mount TRANSZORB® Transient Voltage Suppressors


DO-214AA (SMBJ)

FEATURES

- Uni-directional polarity only
- Peak pulse power: 600 W (10/1000 μ s)
- Excellent clamping capability
- Very fast response time
- 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


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 and commercial grade
Base P/NHE3 - RoHS-compliant and 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: Color band denotes cathode end

PRIMARY CHARACTERISTICS	
V_{BR} (uni-directional)	4.1 V
V_{WM}	3.3 V
P_{PPM}	600 W
P_D	5 W
I_{FSM} (uni-directional only)	60 A
T_J max.	175 °C
Polarity	Uni-directional
Package	DO-214AA (SMBJ)

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation ⁽¹⁾⁽²⁾	P_{PPM}	600	W
Peak pulse current with a 10/1000 μ s waveform (fig. 1)	I_{PP}	50	A
Peak pulse current with a 8/20 μ s waveform (fig. 1)	I_{PPM}	200	A
Peak forward surge current 8.3 ms single half sine-wave ⁽²⁾	I_{FSM}	60	A
Power dissipation on infinite heatsink, $T_A = 75$ °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		STAND-OFF VOLTAGE V_{WM}	MAXIMUM CLAMPING VOLTAGE V_C AT I_{PP} 10/1000 μ s		MAXIMUM CLAMPING VOLTAGE V_C AT I_{PPM} 8/20 μ s		TYPICAL TEMPERATURE COEFFICIENT OF V_{BR}	TYPICAL JUNCTION CAPACITANCE C_J AT 0 V 1 MHz	
		MIN.									
		V	mA		μ A	V	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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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

Notes

(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-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 ⁽¹⁾	0.096	52	750	7" diameter plastic tape and reel
SMBJ3V3HE3/5B ⁽¹⁾	0.096	5B	3200	13" diameter plastic tape and reel

Note

⁽¹⁾ AEC-Q101 qualified

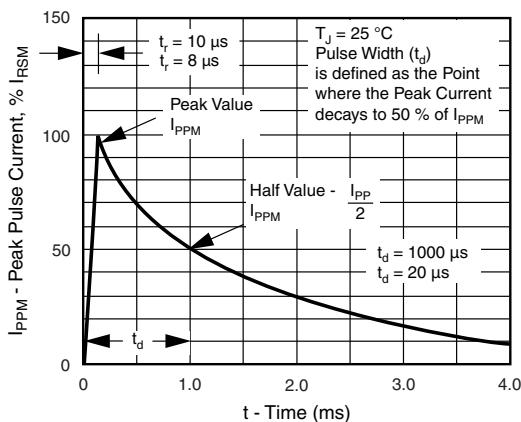
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Pulse Wave Form

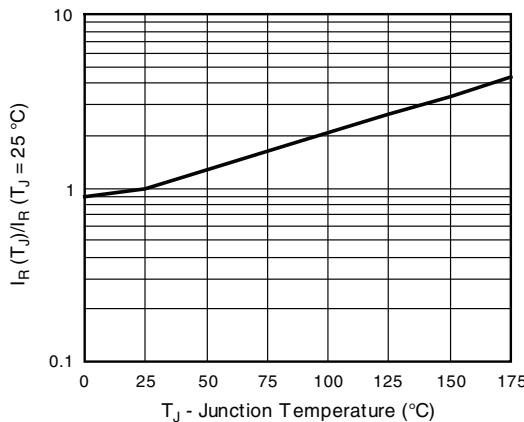


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

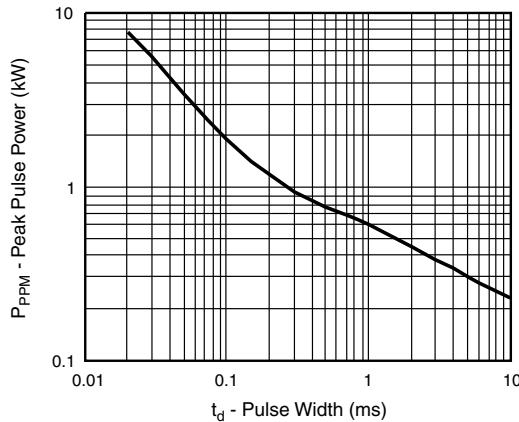


Fig. 2 - Peak Pulse Power Rating Curve

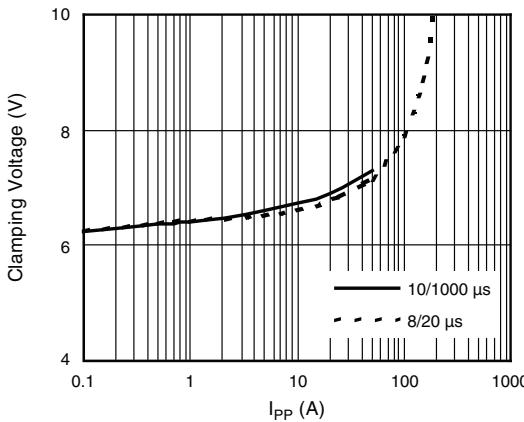


Fig. 4 - Clamping Voltage vs. Peak Pulse Current (T_J initial = 25 °C)

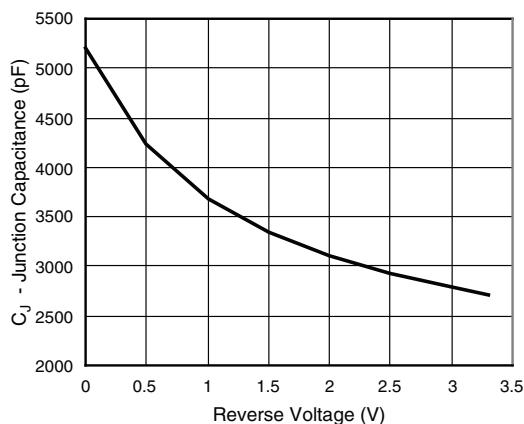


Fig. 5 - Typical Junction Capacitance

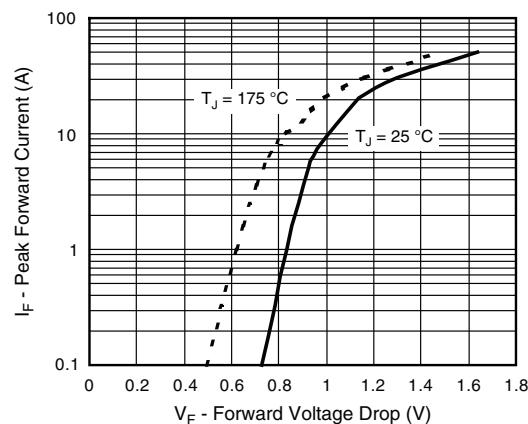


Fig. 7 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

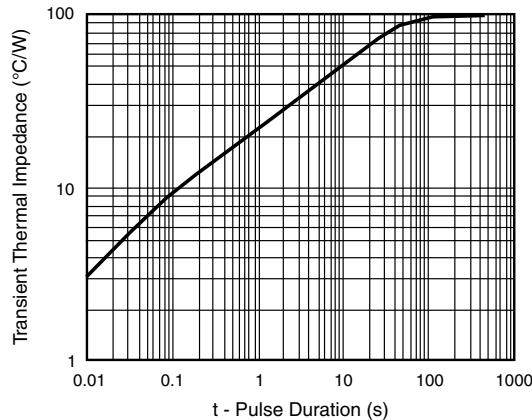
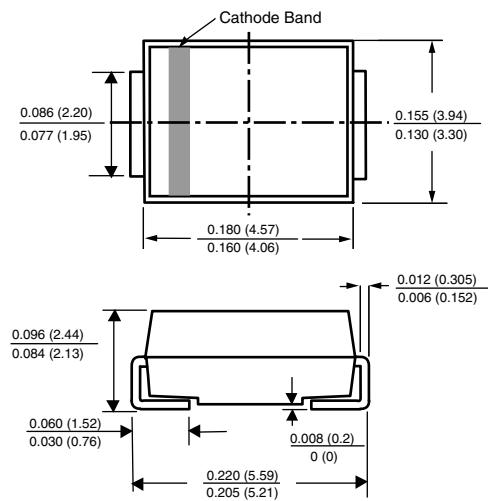


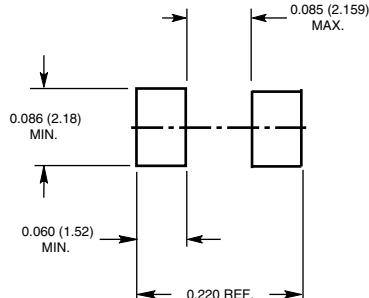
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB-J-Bend)



Mounting Pad Layout



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