

Surface Mount TRANSZORB® Transient Voltage Suppressors


DO-214AA (SMBJ)

FEATURES

- Uni-directional polarity only
- Peak pulse power: 600 W (10/1000 µs)
- Excellent clamping capability
- Very fast response time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



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 2 whisker test

Polarity: Color band denotes cathode end

PRIMARY CHARACTERISTICS	
V_{WM}	3.3 V
V_{BR} (uni-directional)	4.1 V
P_{PPM}	600 W
I_{FSM}	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	P_{PPM} ⁽¹⁾⁽²⁾	600	W
Peak pulse current with a 10/1000 µs waveform (fig. 1)	I_{PP}	50	A
Peak pulse current with a 8/20 µs 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		MAXIMUM REVERSE LEAKAGE CURRENT I_R AT V_{WM}	STAND-OFF VOLTAGE V_{WM}	MAXIMUM CLAMPING VOLTAGE V_c AT I_{PP} 10/1000 µs		MAXIMUM CLAMPING VOLTAGE V_c AT I_{PPM} 8/20 µs	TYPICAL TEMPERATURE COEFFICIENT OF V_{BR}	TYPICAL JUNCTION CAPACITANCE C_J AT 0 V 1 MHz	
		MIN.	mA			µA	V	V	A		
		V	mA				V	V	A	10^{-4} °C	
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	$R_{\theta JL}$ ⁽¹⁾	20	°C/W
Typical thermal resistance, junction to ambient	$R_{\theta JA}$ ⁽²⁾	100	°C/W

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-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

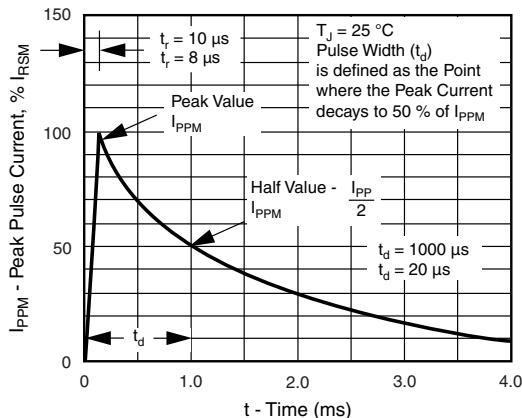
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Pulse Waveform

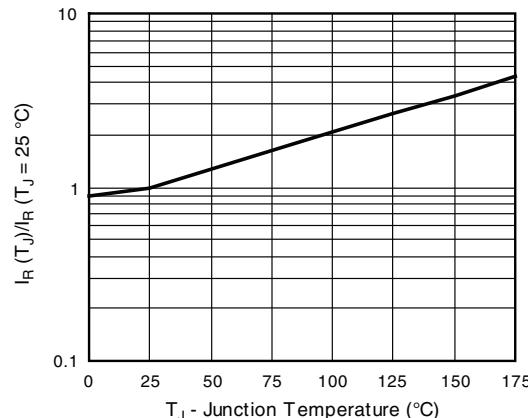


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

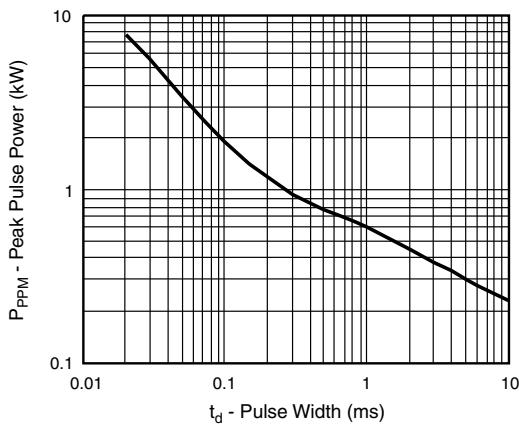


Fig. 2 - Peak Pulse Power Rating Curve

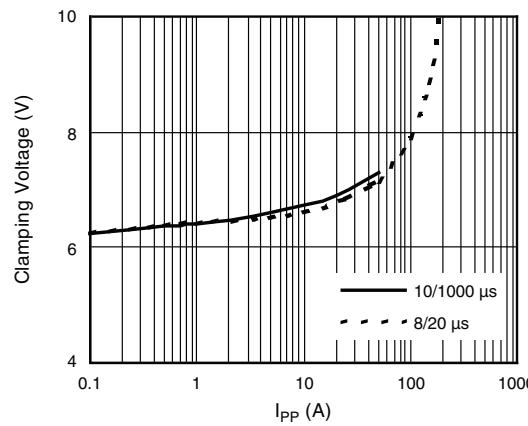


Fig. 4 - Clamping Voltage vs. Peak Pulse Current
(T_J initial = 25 °C)

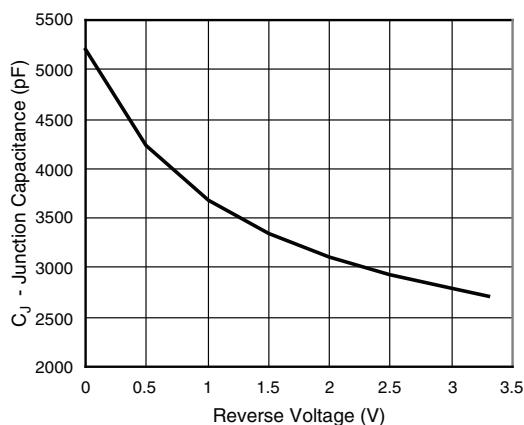


Fig. 5 - Typical Junction Capacitance

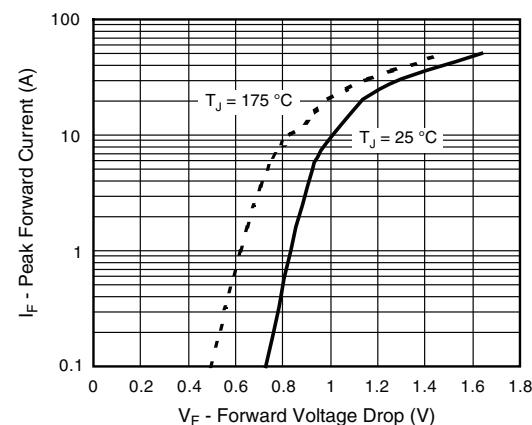


Fig. 7 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

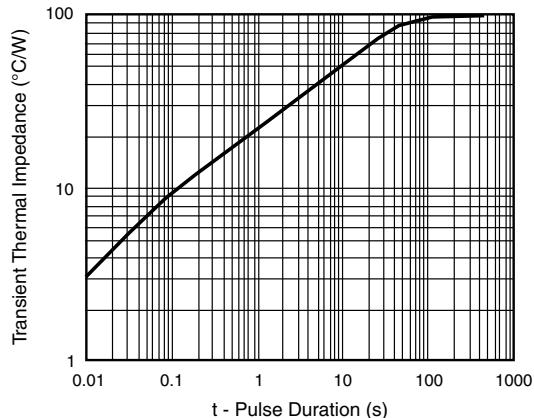
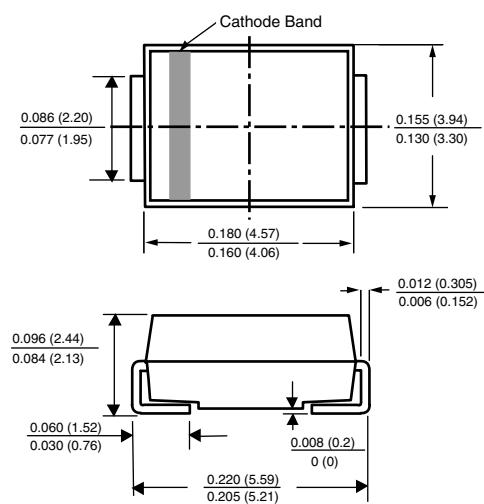


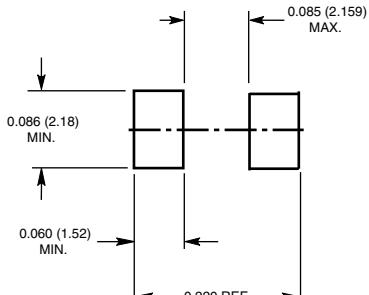
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB-J-Bend)



Mounting Pad Layout



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