SMBJ3V3

Vishay General Semiconductor

Surface Mount TRANSZORB® Transient Voltage Supressors

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
- 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 APPLCIATIONS

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 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 MIN.		MAXIMUM REVERSE LEAKAGE CURRENT I_R AT V_{WM} MAX.		MAXIMUM CLAMPING VOLTAGE V_C AT I_{PP} 10/1000 µs		MAXIMUM CLAMPING VOLTAGE V_C AT I_{PPM} 8/20 µs		TYPICAL TEMP. COEFFICIENT OF V_{BR}	TYPICAL JUNCTION CAPACITANCE C_J AT 0 V 1 MHz
		V	mA	µA	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

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THERMAL CHARACTERISTICS (T_A = 25 °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

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 °C unless otherwise noted)

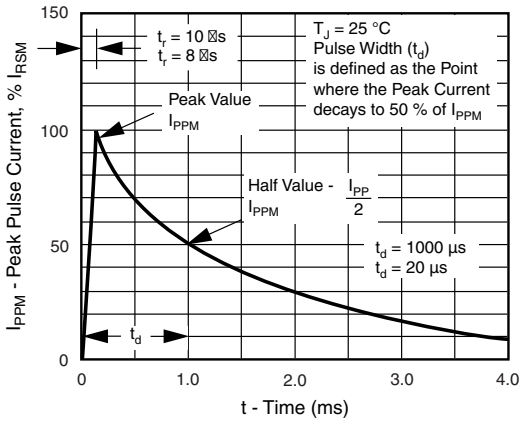

Fig. 1 - Pulse Waveform

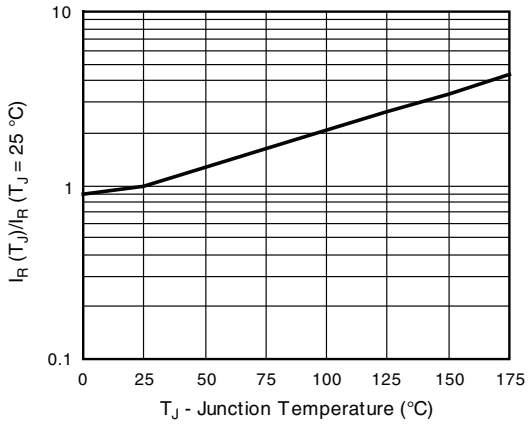

Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

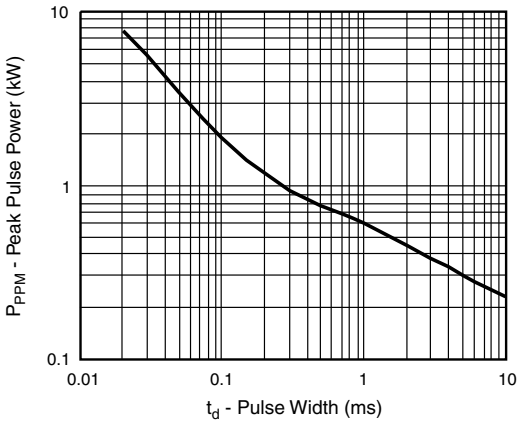

Fig. 2 - Peak Pulse Power Rating Curve

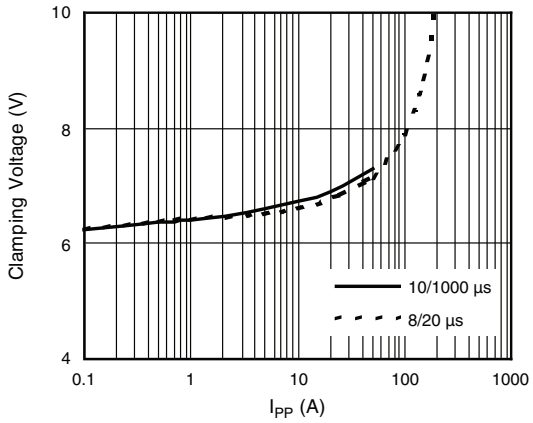

Fig. 4 - Clamping Voltage vs. Peak Pulse Current (T_J initial = 25 °C)

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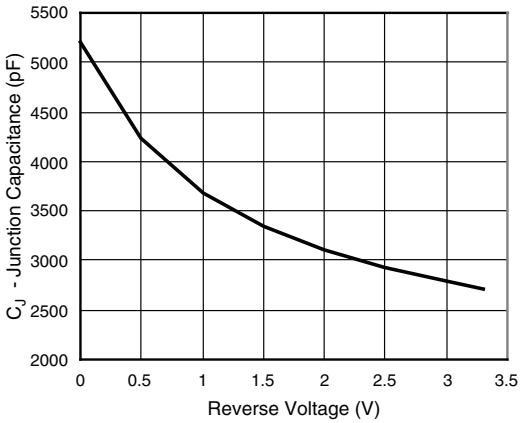


Fig. 5 - Typical Junction Capacitance

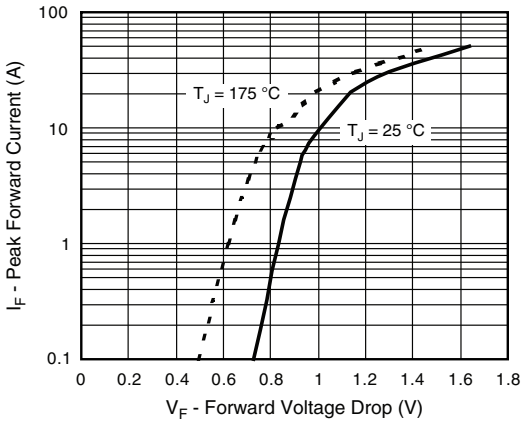


Fig. 7 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

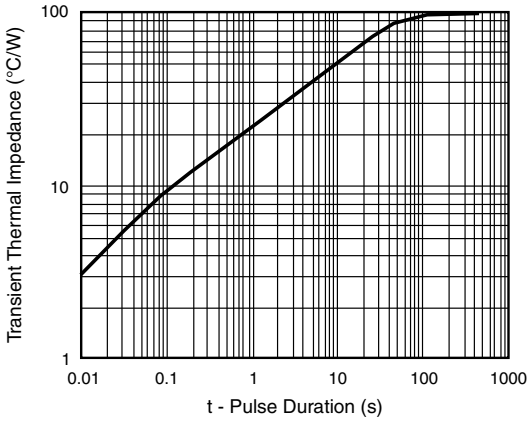
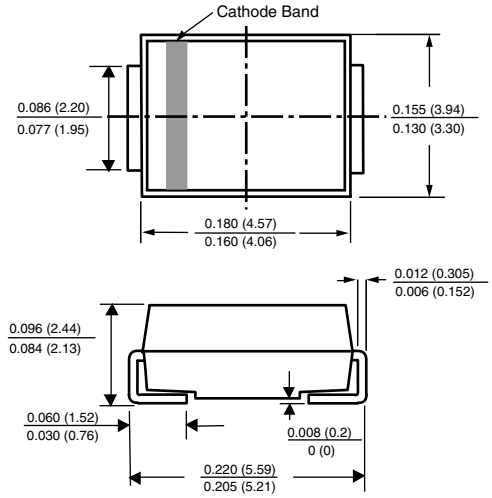


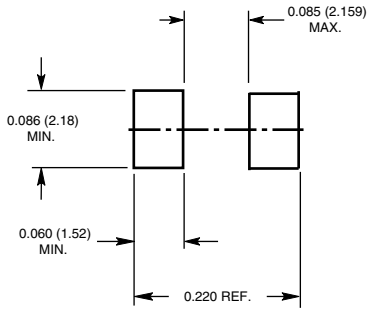
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB-J-Bend)



Mounting Pad Layout



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