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SMBJ3V3

Vishay General Semiconductor

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 RoHS 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
$T_J \text{ max.}$	175 °C

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 waveform (Fig. 1)	I_{PPM}	200	A
Non repetitive peak forward surge current 8.3 ms single half sine-wave ⁽²⁾	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}		MAXIMUM CLAMPING VOLTAGE V_C AT I_{PPM}		TYPICAL TEMP. COEFFICIENT OF V_{BR}	TYPICAL JUNCTION CAPACITANCE C_J AT 0 V
		MIN.		MAX.		10/1000 μ s		8/20 μ s			
		V	mA	μ A	V	V	A	V	A		
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 ⁽¹⁾	$R_{\theta JL}$	20	$^\circ\text{C/W}$
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 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 ⁽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) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

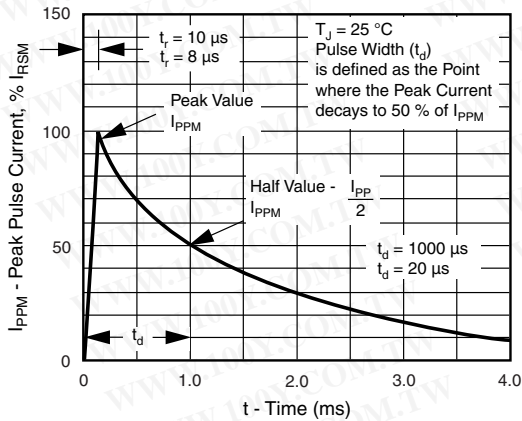


Figure 1. Pulse Waveform

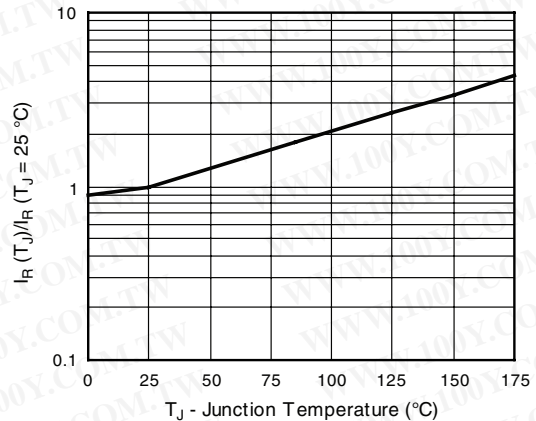


Figure 3. Relative Variation of Leakage Current vs. Junction Temperature

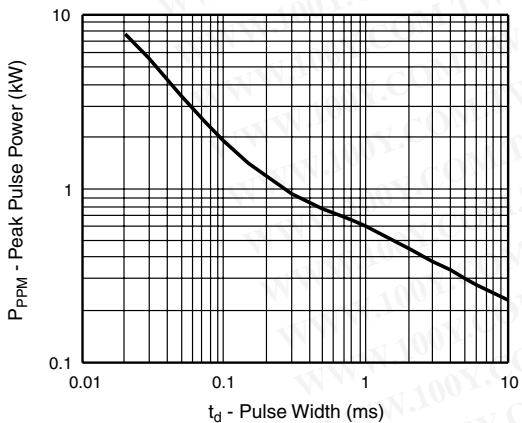


Figure 2. Peak Pulse Power Rating Curve

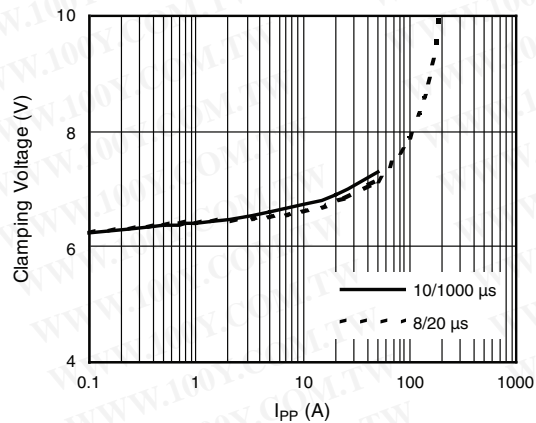


Figure 4. Clamping Voltage vs. Peak Pulse Current (T_J initial = $25\text{ }^\circ\text{C}$)

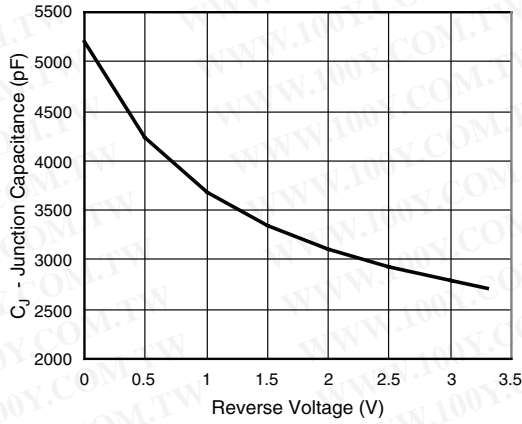


Figure 5. Typical Junction Capacitance

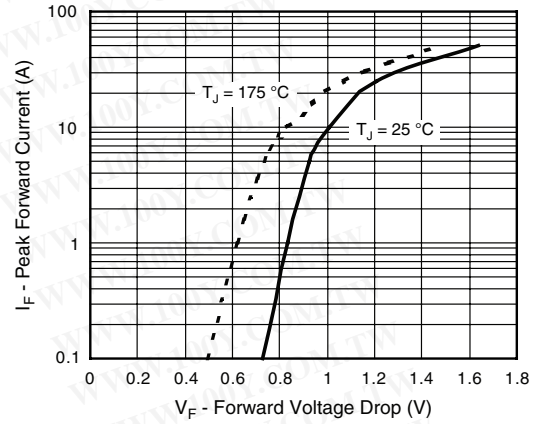


Figure 7. Typical Peak Forward Voltage Drop vs. Peak Forward Current

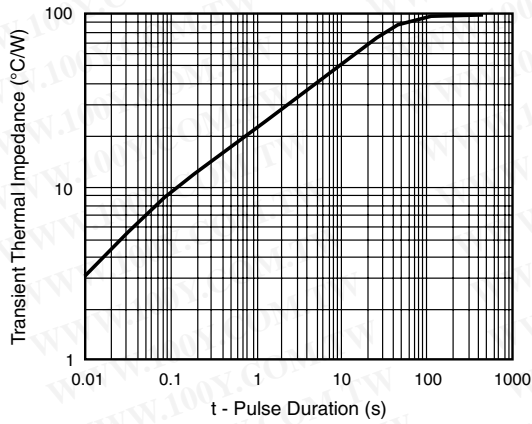
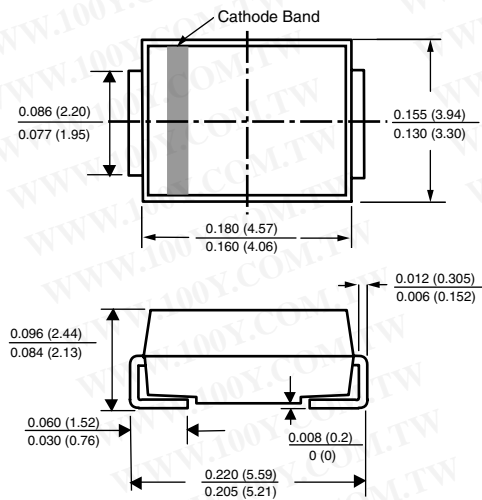


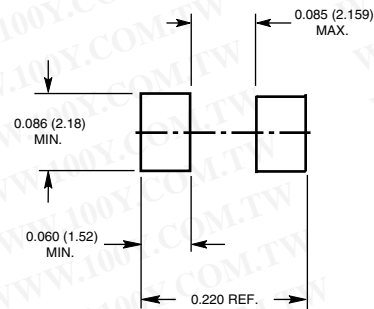
Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB-J-Bend)



Mounting Pad Layout





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Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.