

Surface-Mount TRANSZORB® Transient Voltage Suppressors


SMB (DO-214AA)

Cathode Anode

LINKS TO ADDITIONAL RESOURCES



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

FEATURES

- Unidirectional 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 available
- Automotive ordering code: base P/NHE3 or base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



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: SMB (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/N-M3 - halogen-free, RoHS-compliant, commercial grade

Base P/NHE3_X - RoHS-compliant and AEC-Q101 qualified

Base P/NHM3_X - halogen-free, RoHS-compliant, and

AEC-Q101 qualified

("_X" denotes revision code e.g. A, B, ...)

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

E3, M3, HE3, and HM3 suffix meets JESD 201 class 2

whisker test

Polarity: color band denotes cathode end

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 ($T_A = 25\text{ }^\circ\text{C}$ 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.				V	A	V	A		
		V	mA								
SMBJ3V3	KC	4.1	1.0	200	3.3	7.3	50	10.3	200	$10^{-4}/^\circ\text{C}$	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	$^\circ\text{C}/\text{W}$
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	0.106	52	750	7" diameter plastic tape and reel
SMBJ3V3-M3/52				
SMBJ3V3-E3/5B	0.106	5B	3200	13" diameter plastic tape and reel
SMBJ3V3-M3/5B				
SMBJ3V3HE3_B/H ⁽¹⁾	0.106	H	750	7" diameter plastic tape and reel
SMBJ3V3HM3_B/H ⁽¹⁾				
SMBJ3V3HE3_B/I ⁽¹⁾	0.106	I	3200	13" diameter plastic tape and reel
SMBJ3V3HM3_B/I ⁽¹⁾				

Note

- (1) AEC-Q101 qualified

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

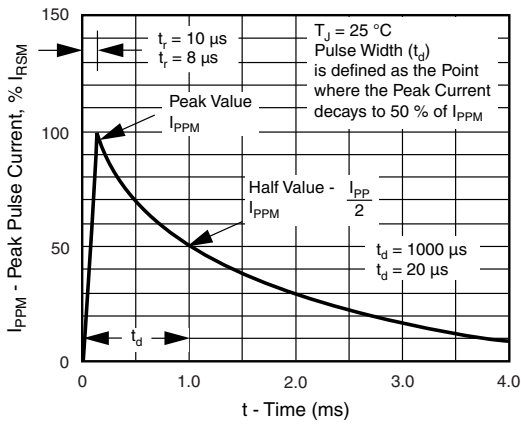


Fig. 1 - Pulse Wave Form

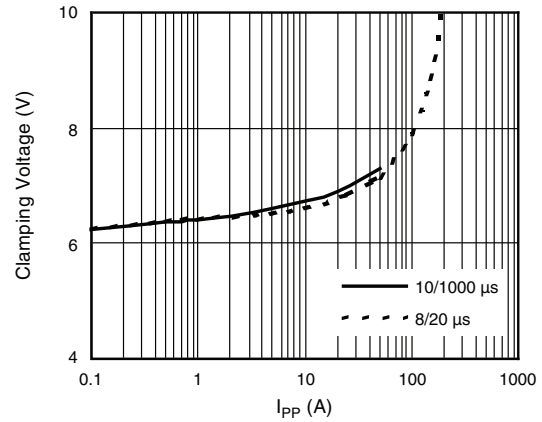


Fig. 4 - Clamping Voltage vs. Peak Pulse Current (T_J initial = $25\text{ }^\circ\text{C}$)

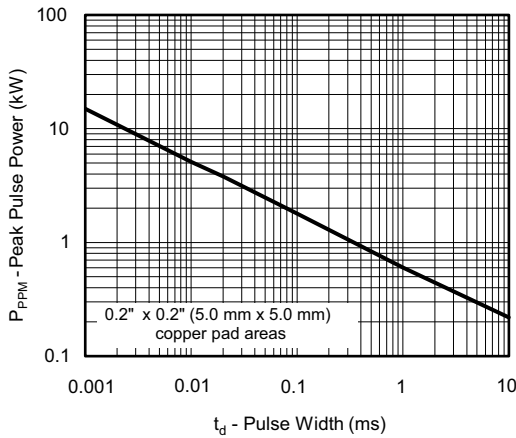


Fig. 2 - Peak Pulse Power Rating Curve

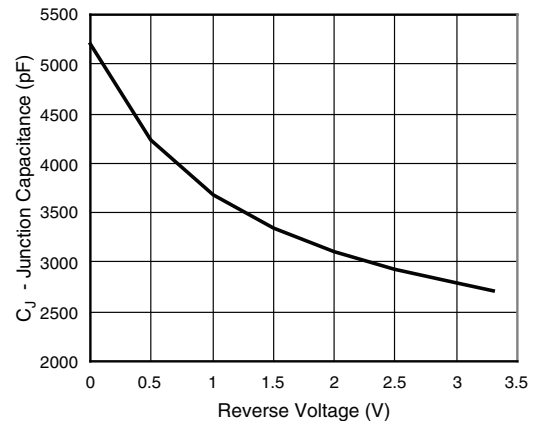


Fig. 5 - Typical Junction Capacitance

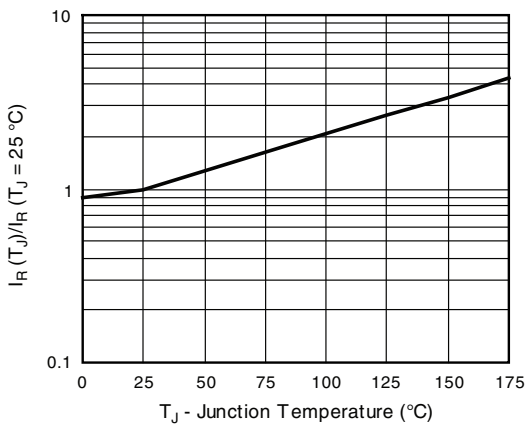


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

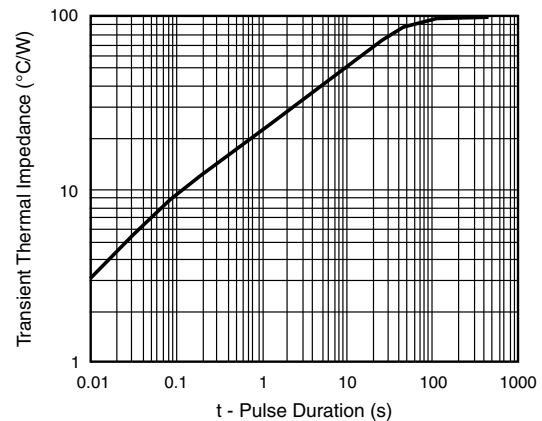


Fig. 6 - Typical Transient Thermal Impedance

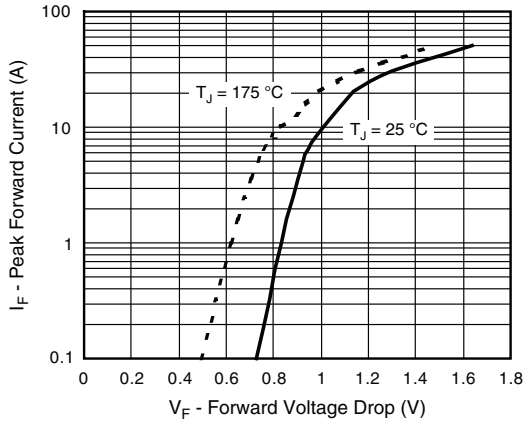
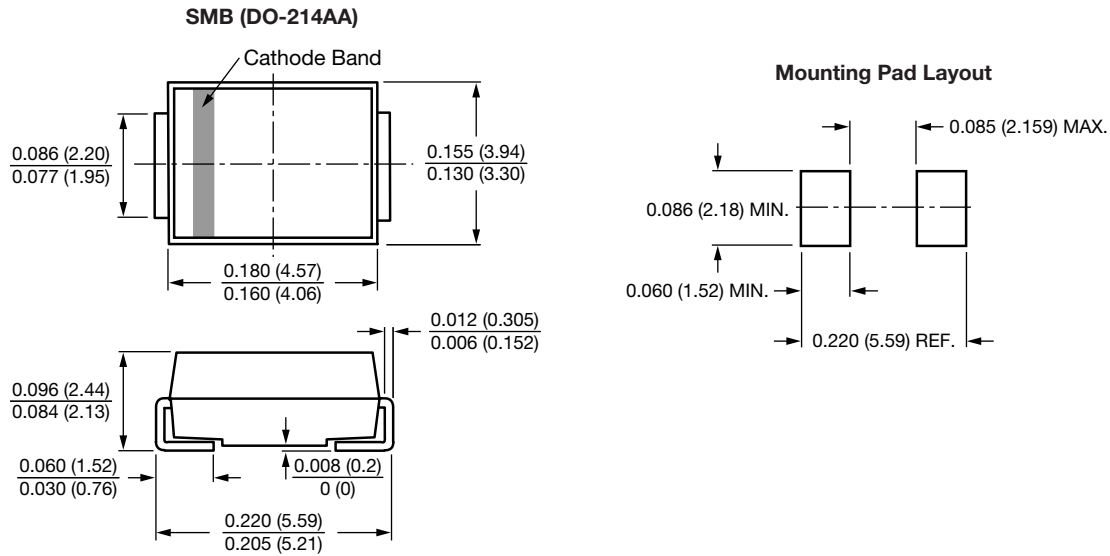


Fig. 7 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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