Surface-Mount TRANSZORB® Transient Voltage Suppressors



SMB (DO-214AA)

Cathode ○—|◀|—○ Anode

LINKS TO ADDITIONAL RESOURCES

3D Models

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

AUTOMOTIVE GRADE Available

RoHS COMPLIANT HALOGEN FREE Available

- Unidirectional 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
- 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 µs waveform (fig. 1)	I_{PP}	50	A
Peak pulse current with a 8/20 µs 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

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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.									
		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

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to lead (1)	$R_{\theta JL}$	20	°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 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

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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

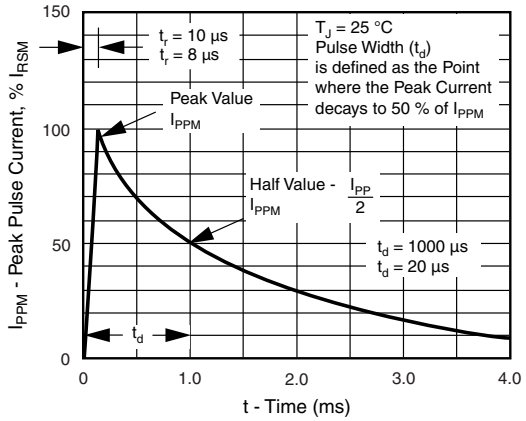


Fig. 1 - Pulse Wave Form

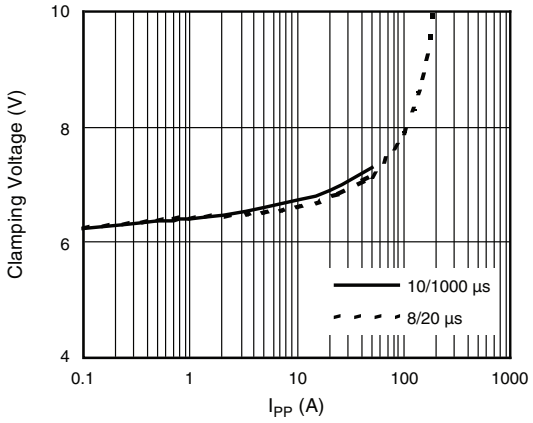


Fig. 4 - Clamping Voltage vs. Peak Pulse Current (T_J initial = 25 °C)

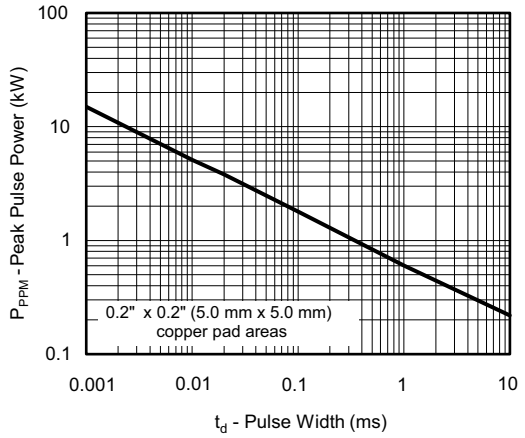


Fig. 2 - Peak Pulse Power Rating Curve

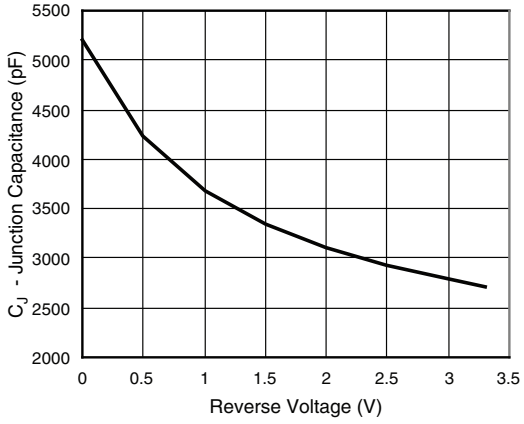


Fig. 5 - Typical Junction Capacitance

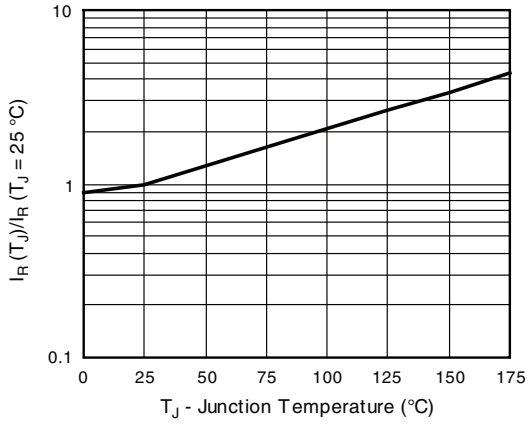


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

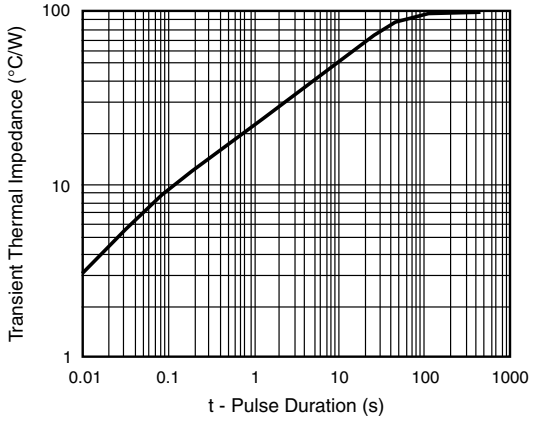


Fig. 6 - Typical Transient Thermal Impedance

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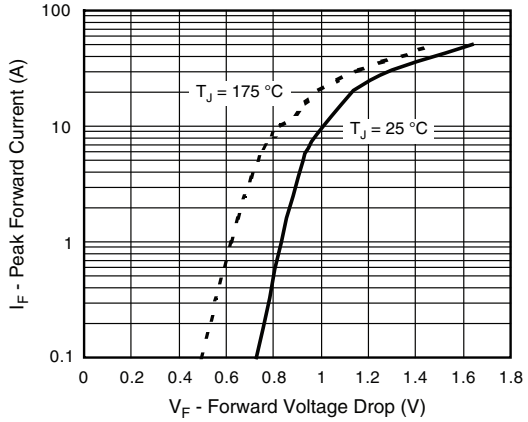
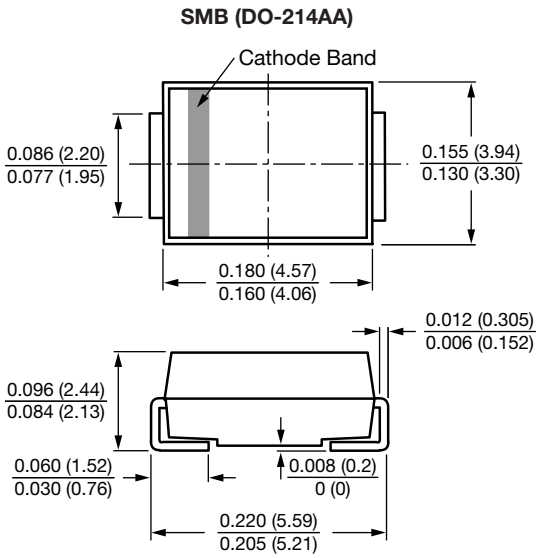
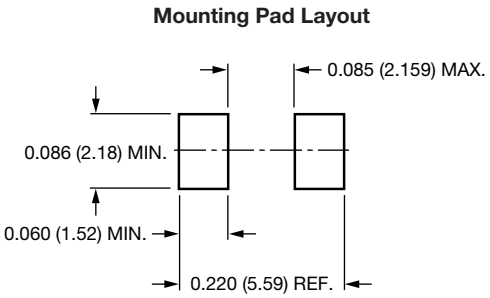


Fig. 7 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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