

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

AUTOMOTIVE
GRADE
Available



RoHS
COMPLIANT
HALOGEN
FREE
Available

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			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 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

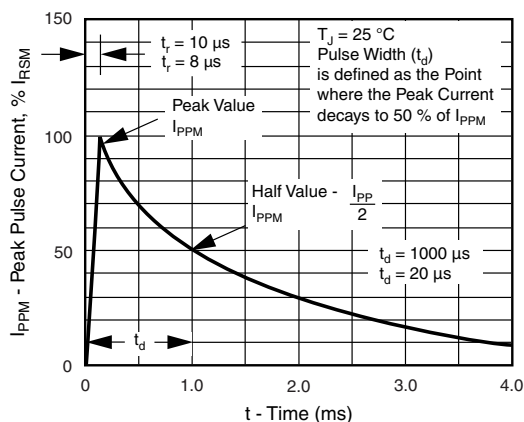
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Pulse Wave Form

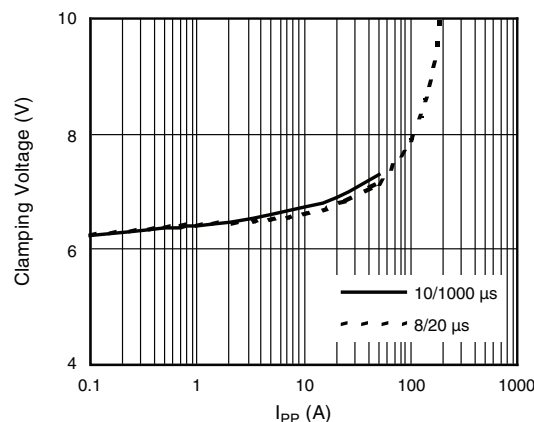
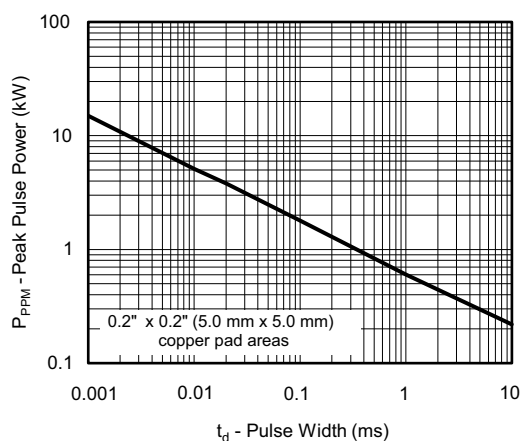

Fig. 4 - Clamping Voltage vs. Peak Pulse Current (T_J initial = $25\text{ }^{\circ}\text{C}$)


Fig. 2 - Peak Pulse Power Rating Curve

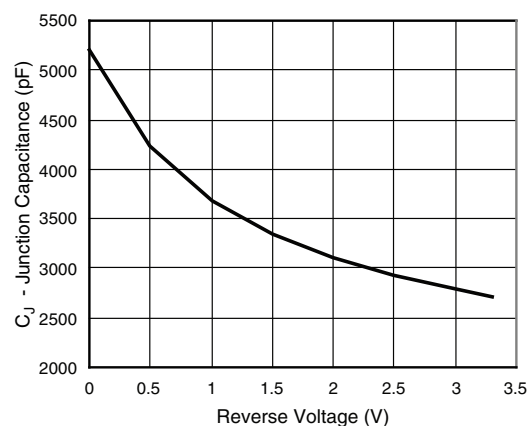


Fig. 5 - Typical Junction Capacitance

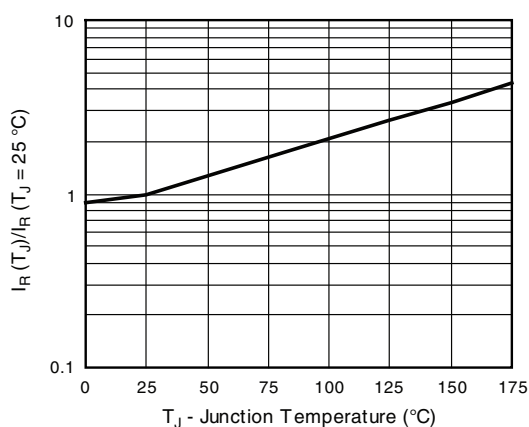


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

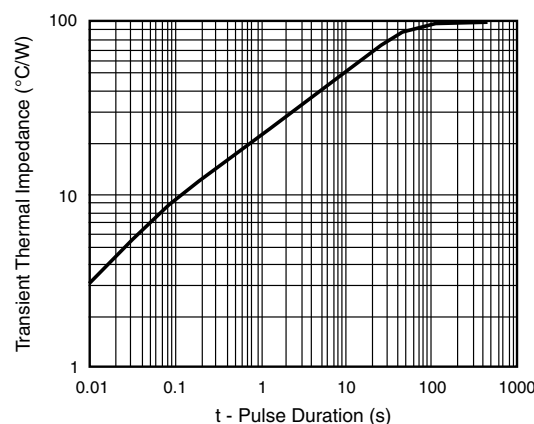


Fig. 6 - Typical Transient Thermal Impedance

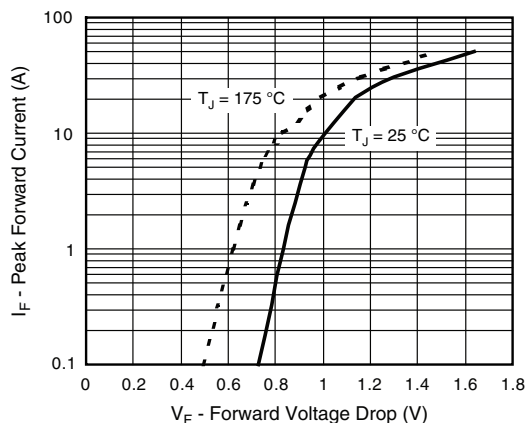
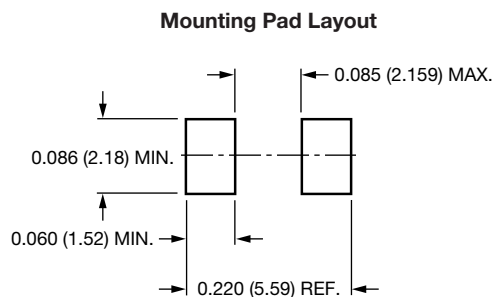
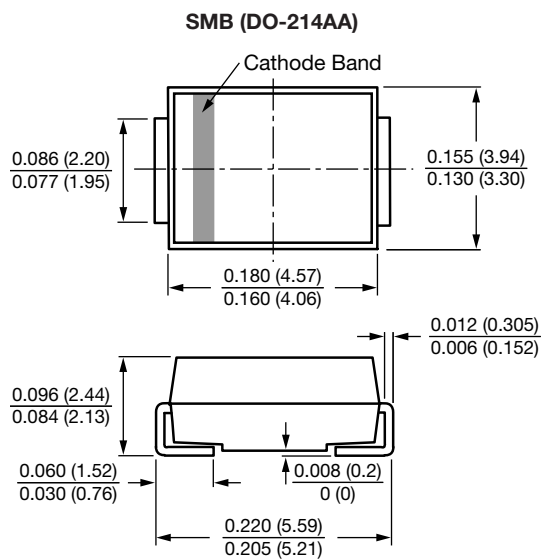


Fig. 7 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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