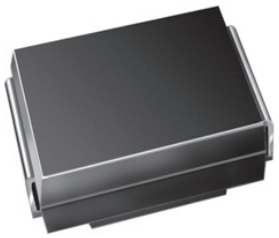
Surface Mount TRANSZORB® Transient Voltage Suppressors



SMB (DO-214AA)

FEATURES

- 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 P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

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

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)

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

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	0.096	52	750	7" diameter plastic tape and reel
SMBJ3V3-M3/52				
SMBJ3V3-E3/5B	0.096	5B	3200	13" diameter plastic tape and reel
SMBJ3V3-M3/5B				
SMBJ3V3HE3_A/H (1)	0.096	H	750	7" diameter plastic tape and reel
SMBJ3V3HM3_A/H (1)				
SMBJ3V3HE3_A/I (1)	0.096	I	3200	13" diameter plastic tape and reel
SMBJ3V3HM3_A/I (1)				

Note

(1) AEC-Q101 qualified

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

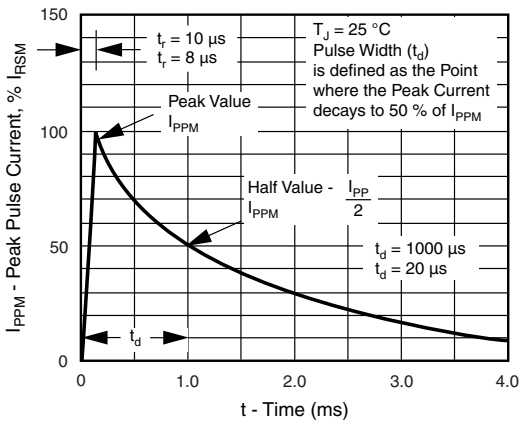


Fig. 1 - Pulse Wave Form

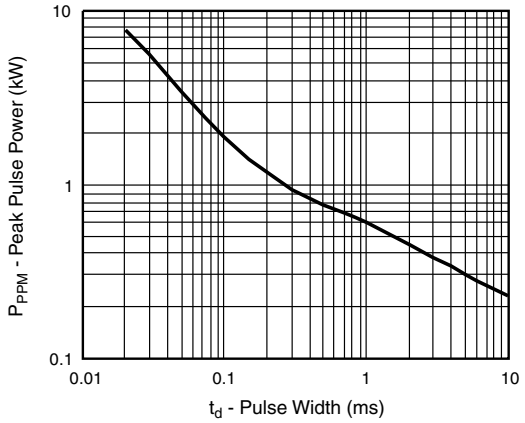


Fig. 2 - Peak Pulse Power Rating Curve

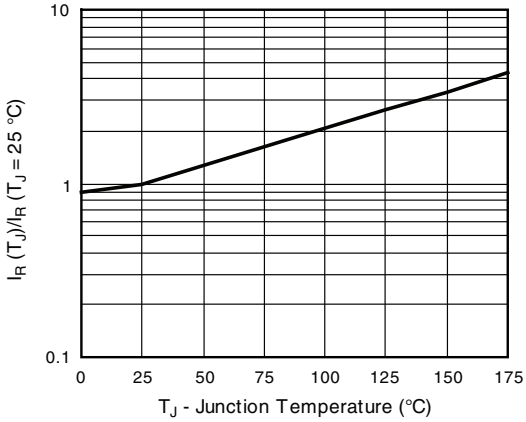


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

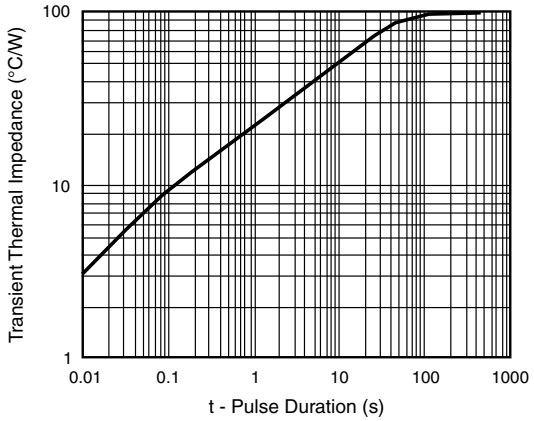


Fig. 6 - Typical Transient Thermal Impedance

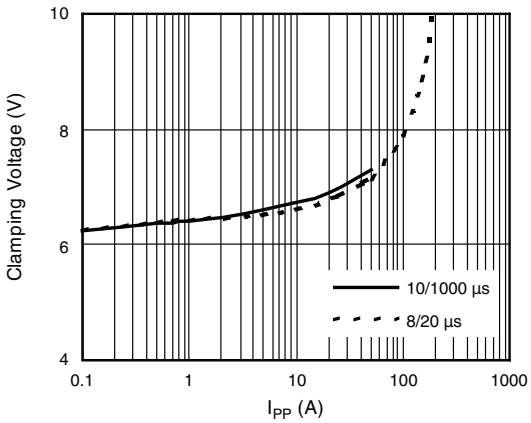


Fig. 4 - Clamping Voltage vs. Peak Pulse Current (T_J initial = 25 °C)

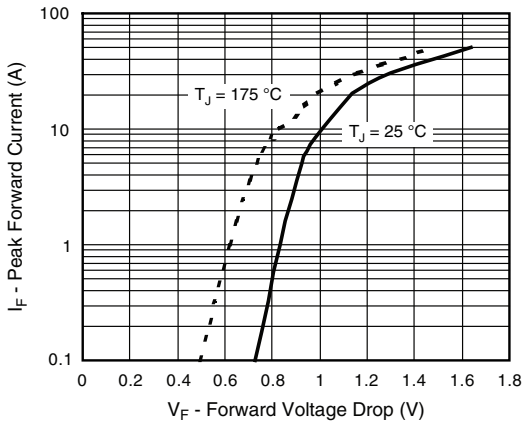


Fig. 7 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

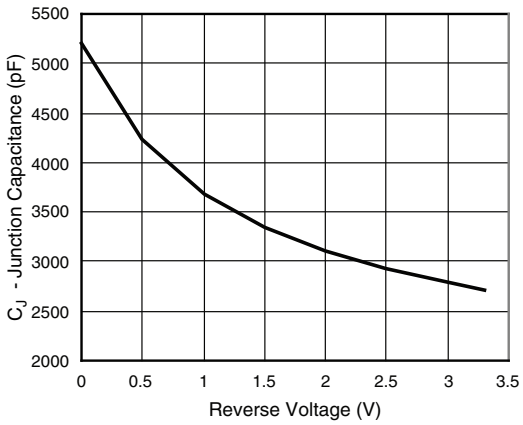
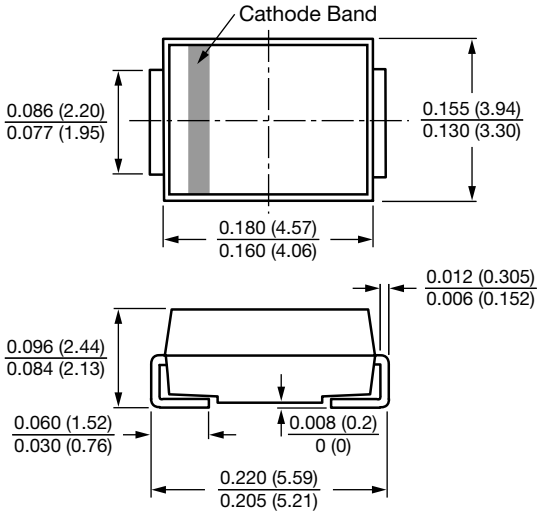


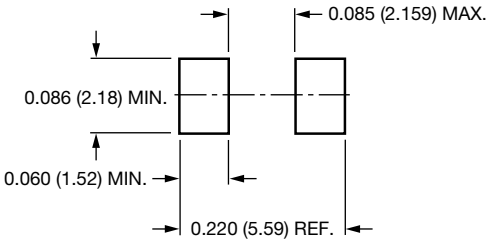
Fig. 5 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout



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