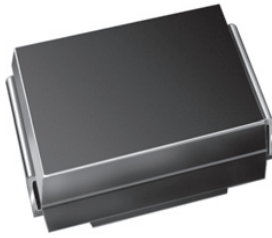
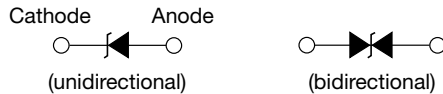


Surface-Mount TRANSZORB® Transient Voltage Suppressors


SMB (DO-214AA)


LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
V_{BR} (bidirectional)	6.4 V to 231 V
V_{BR} (unidirectional)	6.4 V to 231 V
V_{WM}	5.0 V to 188 V
P_{PPM}	600 W
I_{FSM} (unidirectional only)	100 A
T_J max.	150 °C
Polarity	Unidirectional, bidirectional
Package	SMB (DO-214AA)

DEVICES FOR BIDIRECTION APPLICATIONS

For bidirectional devices use CA suffix (e.g. SMBJ10CA).
Electrical characteristics apply in both directions.

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 for consumer, computer, industrial, and telecommunication.

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in unidirectional and bidirectional
- 600 W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- 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



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: for unidirectional types the band denotes cathode end, no marking on bidirectional types

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 μ s waveform ⁽¹⁾⁽²⁾ (fig. 1)	P_{PPM}	600	W
Peak pulse current with a 10/1000 μ s waveform ⁽¹⁾	I_{PPM}	See next table	A
Peak forward surge current 8.3 ms single half sine-wave unidirectional only ⁽²⁾	I_{FSM}	100	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Notes

⁽¹⁾ Non-repetitive current pulse, per fig. 3 and derated above $T_A = 25$ °C per fig. 2

⁽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)

Table with columns: DEVICE TYPE MODIFIED "J" BEND LEAD, DEVICE MARKING CODE (UNI, BI), BREAKDOWN VOLTAGE VBR AT IT (MIN., MAX.), TEST CURRENT IT (mA), STAND-OFF VOLTAGE VWM (V), MAXIMUM REVERSE LEAKAGE AT VWM ID (µA), MAXIMUM PEAK PULSE SURGE CURRENT IPPM (A), MAXIMUM CLAMPING VOLTAGE AT IPPM VC (V). Rows list various device types from (+)SMBJ5.0A to SMBJ188A.

Notes

- (1) Pulse test: tp ≤ 50 ms
(2) Surge current waveform per fig. 3 and derate per fig. 2
(3) For bidirectional types having VWM of 10 V and less, the ID limit is doubled
(4) All terms and symbols are consistent with ANSI/IEEE C62.35
(5) For the bidirectional SMBJ5.0CA, the maximum VBR is 7.25 V
(6) VF = 3.5 V max. at IF = 50 A (unidirectional only)
(*) Underwriters laboratory recognition for the classification of protectors (QVGQ2) under the UL standard for safety 497B and file number E136766 for both uni-directional and bi-directional devices



THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to ambient ⁽¹⁾	$R_{\theta JA}$	100	°C/W
Typical thermal resistance, junction to lead	$R_{\theta JL}$	20	

Note

⁽¹⁾ Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMBJ5.0A-E3/52	0.096	52	750	7" diameter plastic tape and reel
SMBJ5.0A-M3/52				
SMBJ5.0A-E3/5B	0.096	5B	3200	13" diameter plastic tape and reel
SMBJ5.0A-M3/5B				
SMBJ5.0AHE3_A/H ⁽¹⁾	0.096	H	750	7" diameter plastic tape and reel
SMBJ5.0AHM3_A/H ⁽¹⁾				
SMBJ5.0AHE3_A/I ⁽¹⁾	0.096	I	3200	13" diameter plastic tape and reel
SMBJ5.0AHM3_A/I ⁽¹⁾				

Note

⁽¹⁾ AEC-Q101 qualified

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

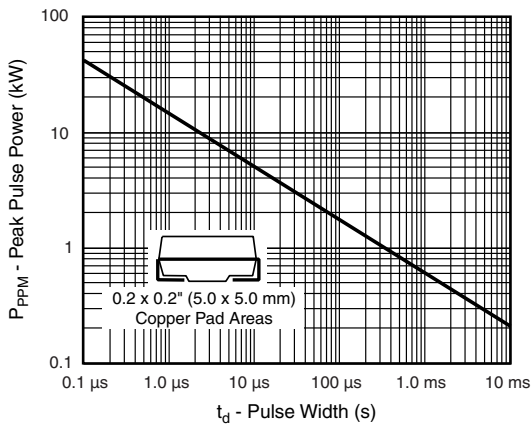


Fig. 1 - Peak Pulse Power Rating Curve

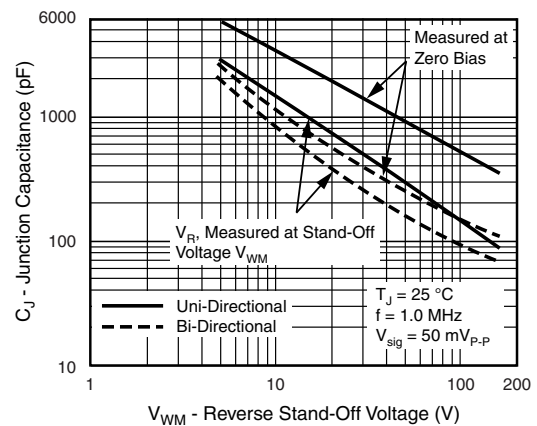


Fig. 4 - Typical Junction Capacitance

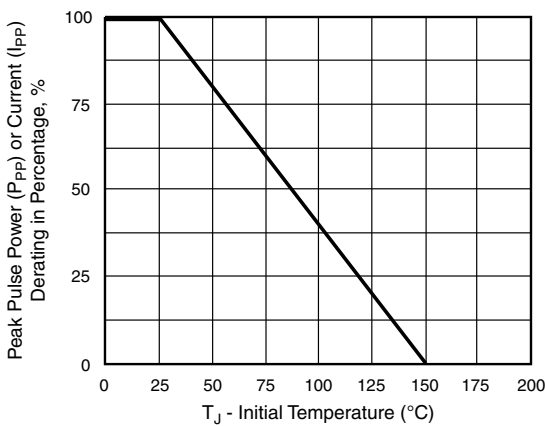


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

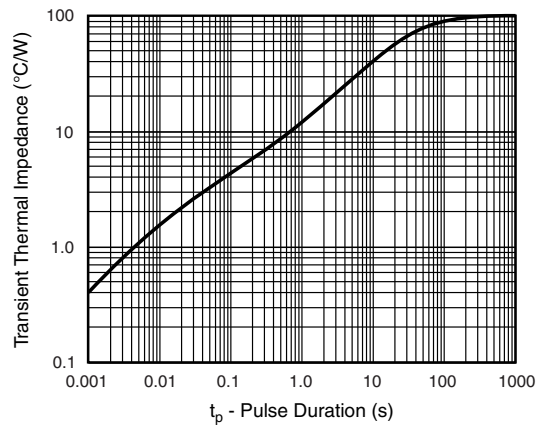


Fig. 5 - Typical Transient Thermal Impedance

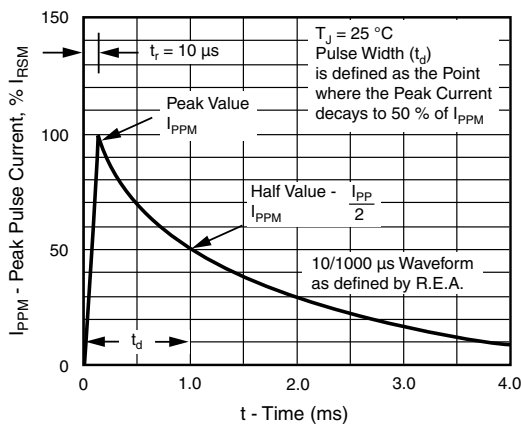


Fig. 3 - Pulse Waveform

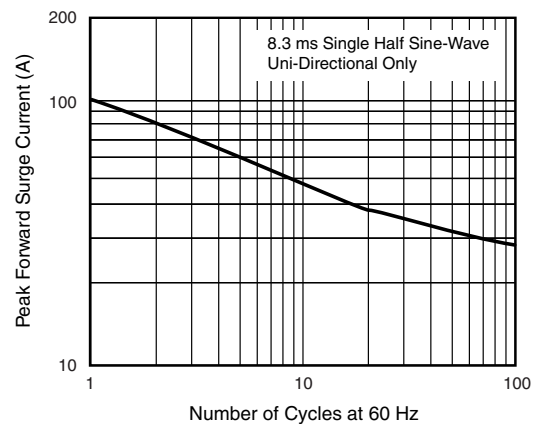
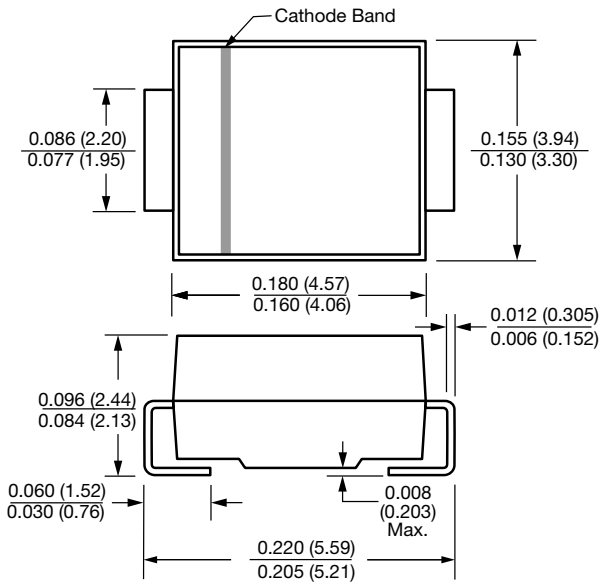


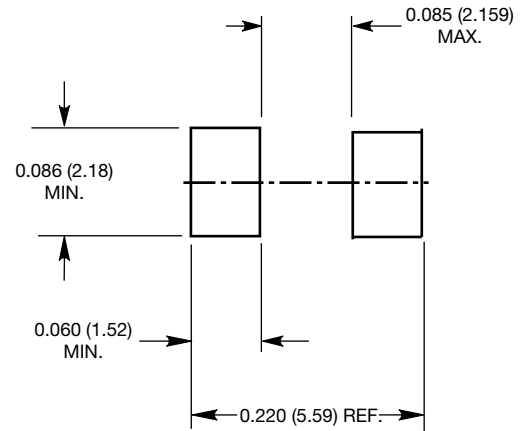
Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout





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