

Surface Mount TRANSZORB® Transient Voltage Suppressors


DO-214AC (SMA)

PRIMARY CHARACTERISTICS	
V_{BR} uni-directional	6.40 V to 231 V
V_{BR} bi-directional	6.40 V to 231 V
V_{WM}	5.0 V to 188 V
P_{PPM}	400 W, 300 W
I_{FSM}	40 A
T_J max.	150 °C
Polarity	Uni-directional, bi-directional
Package	DO-214AC (SMA)

DEVICES FOR BI-DIRECTION APPLICATIONS

For bi-directional use CA suffix (e.g. SMAJ10CA).

Electrical characteristics apply in both directions.

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in uni-directional and bi-directional
- 400 W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle): 0.01 % (300 W above 78 V)
- 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
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

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, automotive, and telecommunication.

MECHANICAL DATA

Case: DO-214AC (SMA)

Molding compound meets UL 94 V-0 flammability rating

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

Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test

Polarity: For uni-directional types the band denotes cathode end, no marking on bi-directional 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}	400	W
Peak pulse current with a waveform ⁽¹⁾	I_{PPM}	See next table	A
Peak forward surge current 8.3 ms single half sine-wave uni-directional only ⁽²⁾	I_{FSM}	40	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. Rating is 300 W above 78 V

⁽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 10 columns: DEVICE TYPE, DEVICE MARKING CODE (UNI, BI), BREAKDOWN VOLTAGE (MIN., MAX.), TEST CURRENT I_T (mA), STAND-OFF VOLTAGE V_WM (V), MAXIMUM REVERSE LEAKAGE AT V_WM I_D (µA), MAXIMUM PULSE SURGE CURRENT I_PPM (A), MAXIMUM CLAMPING VOLTAGE AT I_PPM V_C (V). Rows list various diode types from SMAJ5.0A to SMAJ188A.

Notes

- (1) Pulse test: t_p ≤ 50 ms
(2) Surge current waveform per fig. 3 and derate per fig. 2
(3) For bi-directional types having V_WM of 10 V and less, the I_D limit is doubled
(4) All terms and symbols are consistent with ANSI/IEEE C62.35
(5) For the bi-directional SMAJ5.0CA, the maximum V_BR is 7.25 V
(6) V_F = 3.5 V at I_F = 25 A (uni-directional only)

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

PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to ambient ⁽¹⁾	$R_{\theta JA}$	120	$^\circ\text{C/W}$
Typical thermal resistance, junction to lead	$R_{\theta JL}$	30	$^\circ\text{C/W}$

Note

(1) Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMAJ5.0A-E3/61	0.064	61	1800	7" diameter plastic tape and reel
SMAJ5.0A-E3/5A	0.064	5A	7500	13" diameter plastic tape and reel
SMAJ5.0AHE3/61 ⁽¹⁾	0.064	61	1800	7" diameter plastic tape and reel
SMAJ5.0AHE3/5A ⁽¹⁾	0.064	5A	7500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

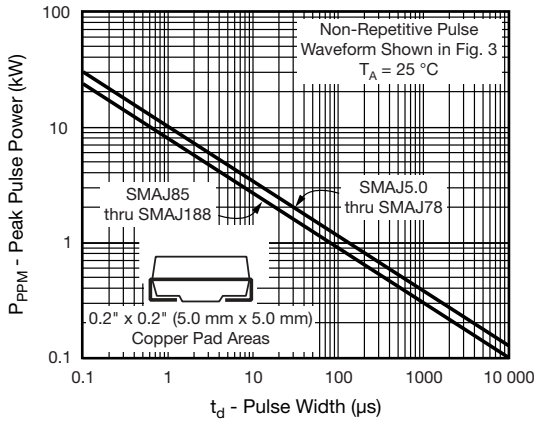


Fig. 1 - Peak Pulse Power Rating Curve

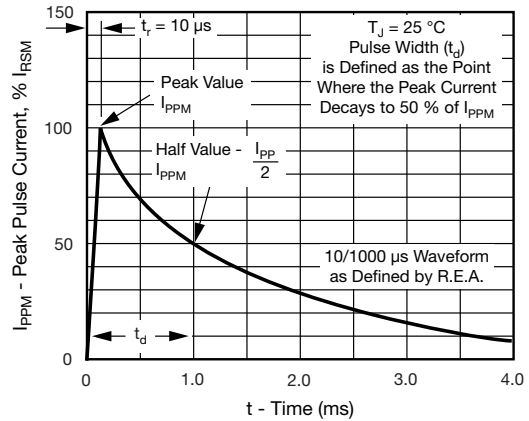


Fig. 3 - Pulse Waveform

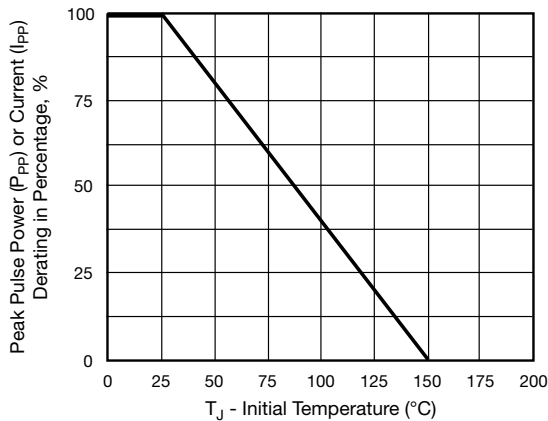


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

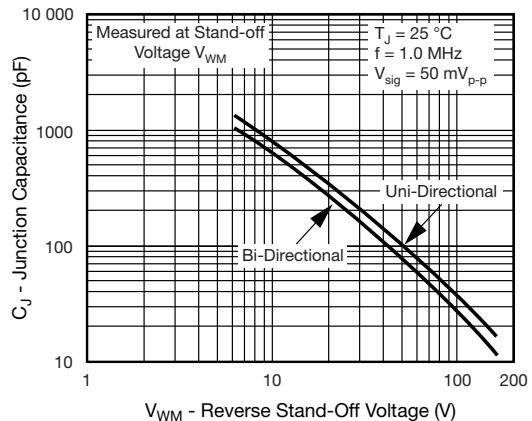


Fig. 4 - Typical Junction Capacitance

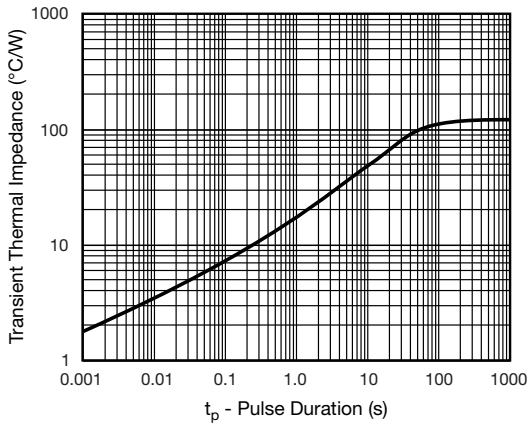


Fig. 5 - Typical Transient Thermal Impedance

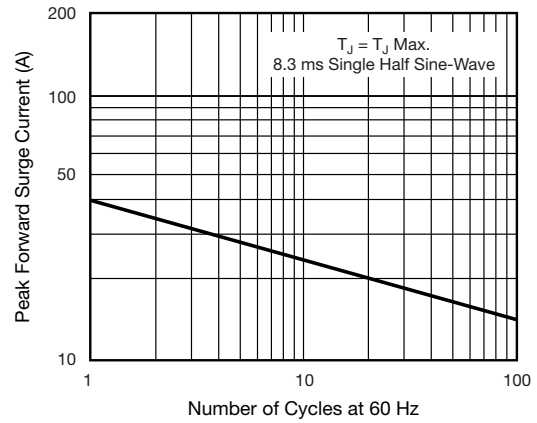
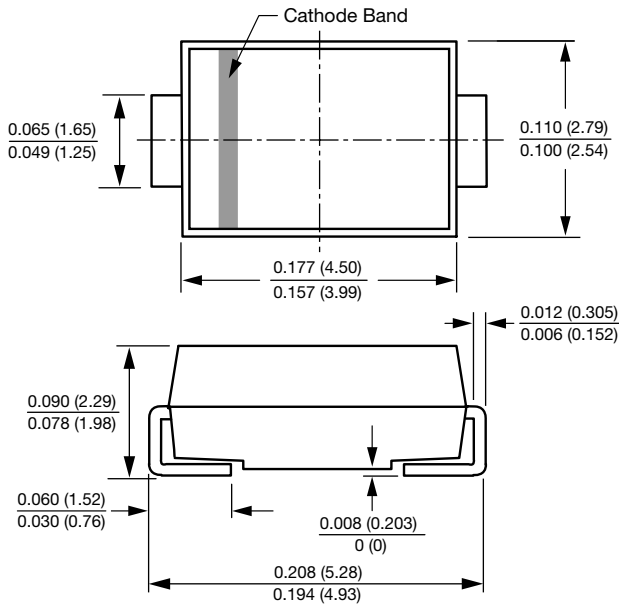


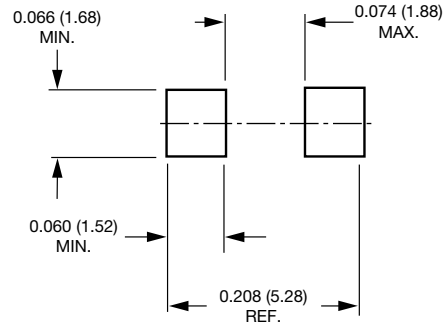
Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





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