Surface-Mount TRANSZORB® Transient Voltage Suppressors



SMA (DO-214AC)

Cathode ○—▶|—○ Anode

LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS	
V_{BR} (unidirectional)	530 V to 550 V
V_{WM}	477 V, 495 V
P_{PPM}	300 W
P_D	2.5 W
I_{FSM} (unidirectional only)	40 A
T_J max.	150 °C
Polarity	Unidirectional
Package	SMA (DO-214AC)

APPLICATION NOTES

- Respect thermal resistance (PCB layout) - as the temperature coefficient also contributes to the clamping voltage
- Select minimum breakdown voltage, so you get acceptable power dissipation and PCB tie point temperature
- Devices with higher breakdown voltage will have a shorter conduction time and will dissipate less power
- Clamping voltage is influenced by internal resistance - design approximation is 7 V per 100 mA slope
- Keep temperature of TVS lower than TOPSwitch® as a recommendation
- Maximum current is determined by the maximum T_J and can be higher than 300 mA
- Contact supplier for different clamping voltage/ current arrangements
- Minimum breakdown voltage can be customized for other applications. Contact supplier
- TOPSwitch is a registered trademark of Power Integrations, Inc.

FEATURES

AUTOMOTIVE GRADE Available

RoHS COMPLIANT HALOGEN FREE Available

- Glass passivated chip junction
- Available in unidirectional polarity only
- 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/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 for consumer, computer, industrial, automotive, and telecommunication.

MECHANICAL DATA

Case: SMA (DO-214AC)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and industrial grade
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
M3 and HM3 suffix meet JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

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MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)				
PARAMETER	**SYMBOL**	**SMAJ530**	**SMAJ550**	**UNIT**
Device marking code		HD	SB	
Peak pulse power dissipation (1)(2)(4) (fig. 1)	P_{PPM}	300		W
Power dissipation on infinite heatsink (3)	P_D	2.5		W
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 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
(3) Lead temperature at T_L = 75 °C
(4) Peak pulse power waveform is 10/1000 µs

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
DEVICE TYPE	**BREAKDOWN VOLTAGE V_{BR} AT I_T (V)**	**TEST CURRENT I_T (µA)**	**STAND-OFF VOLTAGE V_{WM} (V)**
	MIN.		
SMAJ530	530	100	477
SMAJ550	550	100	495

ADDITIONAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)					
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**SMAJ530**	**SMAJ550**	**UNIT**
Max. clamping voltage	400 mA, 10/1000 µs waveform	V_C	760		V
Maximum DC reverse leakage current	V_{WM}	I_D	1.0		µA
Typical temperature coefficient	of V_{BR}		650		mV/°C
Typical capacitance (1)	0 V	C_J	90		pF
	200 V		7.5		

Note

(1) Measured at 1 MHz

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER	**SYMBOL**	**SMAJ530**	**SMAJ550**	**UNIT**
Typical thermal resistance, junction to lead	$R_{\theta JL}$	30		°C/ W
Typical thermal resistance, junction to ambient (1)	$R_{\theta JA}$	120		

Note

(1) Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
SMAJ530-M3/61	0.064	61	1800	7" diameter plastic tape and reel
SMAJ530-M3/5A	0.064	5A	7500	13" diameter plastic tape and reel
SMAJ530HM3_B/H (1)	0.064	H	1800	7" diameter plastic tape and reel
SMAJ530HM3_B/I (1)	0.064	I	7500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

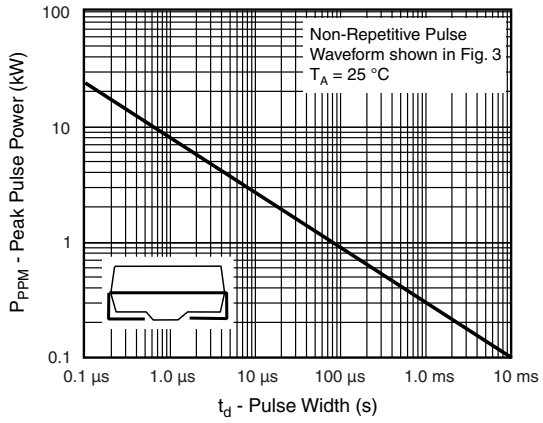


Fig. 1 - Peak Pulse Power Rating Curve

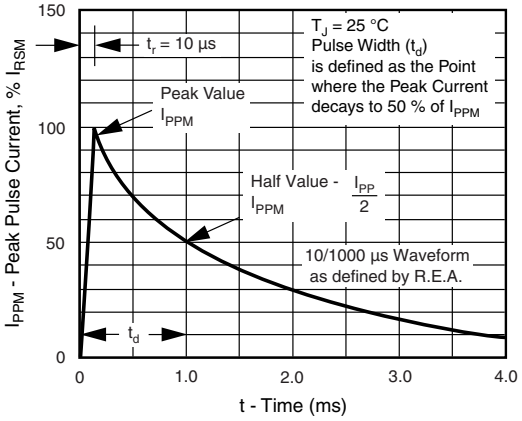


Fig. 3 - Pulse Waveform

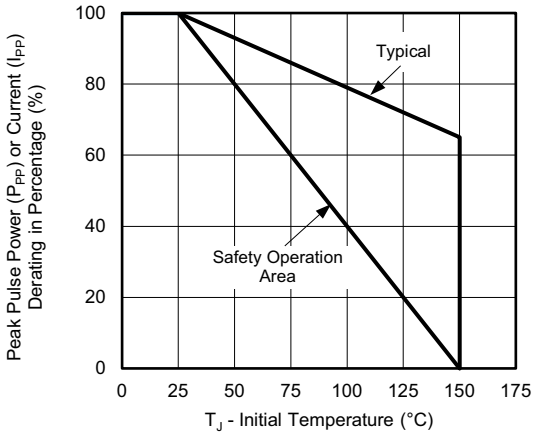


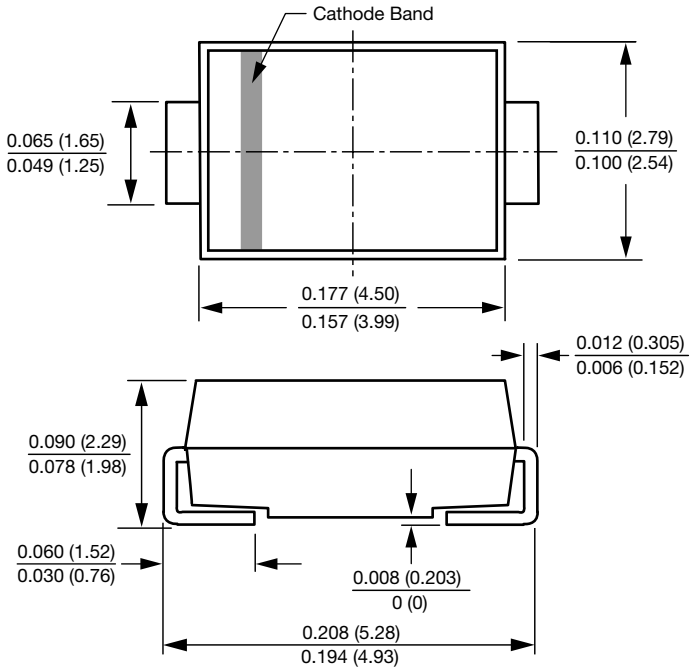
Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

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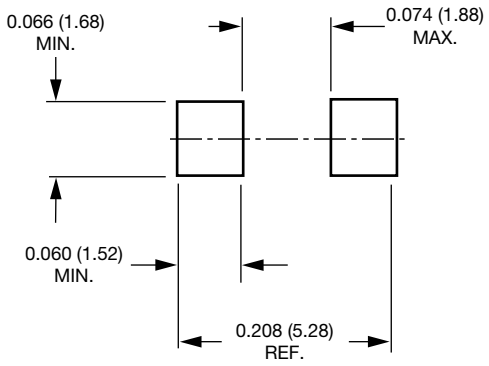
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout



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