

Surface Mount TRANSZORB[®] Transient Voltage Suppressors


DO-214AC (SMA)

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

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

- Glass passivated chip junction
- Available in uni-directional 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
- 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 and commercial grade
 Base P/NHE3 - RoHS-compliant and AEC-Q101 qualified
 Base P/NHE3_X - 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 suffix meets JESD 201 class 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end



MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ 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		$^\circ\text{C}$

Notes

- (1) Non-repetitive current pulse, per fig. 3 and derated above 25 $^\circ\text{C}$ 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 $T_L = 75\text{ }^\circ\text{C}$
 (4) Peak pulse power waveform is 10/1000 μs

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ 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 ($T_A = 25\text{ }^\circ\text{C}$ 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		$\text{mV}/^\circ\text{C}$
Typical capacitance ⁽¹⁾	0 V	C_J	90		pF
	200 V		7.5		

Note

- (1) Measured at 1 MHz

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	SMAJ530	SMAJ550	UNIT
Typical thermal resistance, junction to lead	$R_{\theta JL}$	30		$^\circ\text{C}/\text{W}$
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-E3/61	0.064	61	1800	7" diameter plastic tape and reel
SMAJ530-E3/5A	0.064	5A	7500	13" diameter plastic tape and reel
SMAJ530HE3/61 ⁽¹⁾	0.064	61	1800	7" diameter plastic tape and reel
SMAJ530HE3/5A ⁽¹⁾	0.064	5A	7500	13" diameter plastic tape and reel
SMAJ530HE3_A/H ⁽¹⁾	0.064	H	1800	7" diameter plastic tape and reel
SMAJ530HE3_A/I ⁽¹⁾	0.064	I	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)

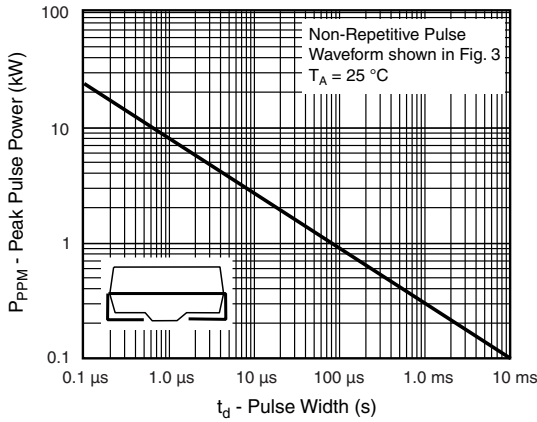


Fig. 1 - Peak Pulse Power Rating Curve

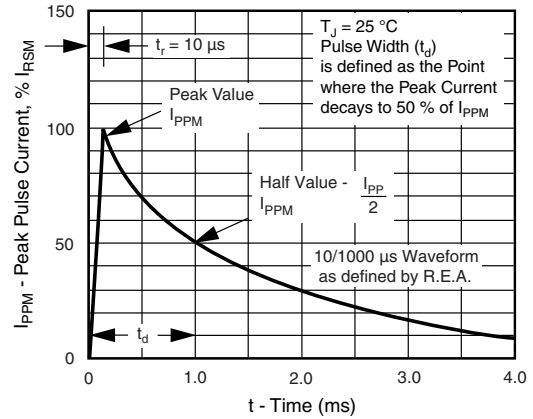


Fig. 3 - Pulse Waveform

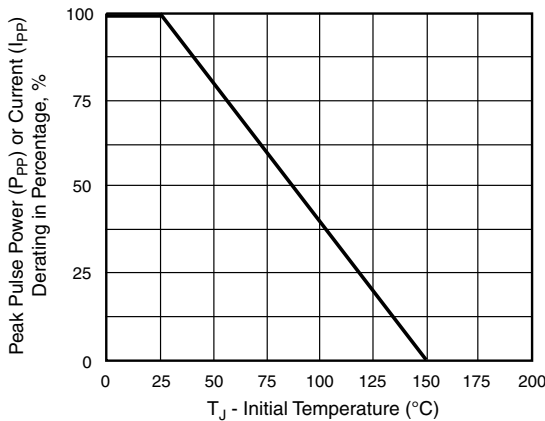
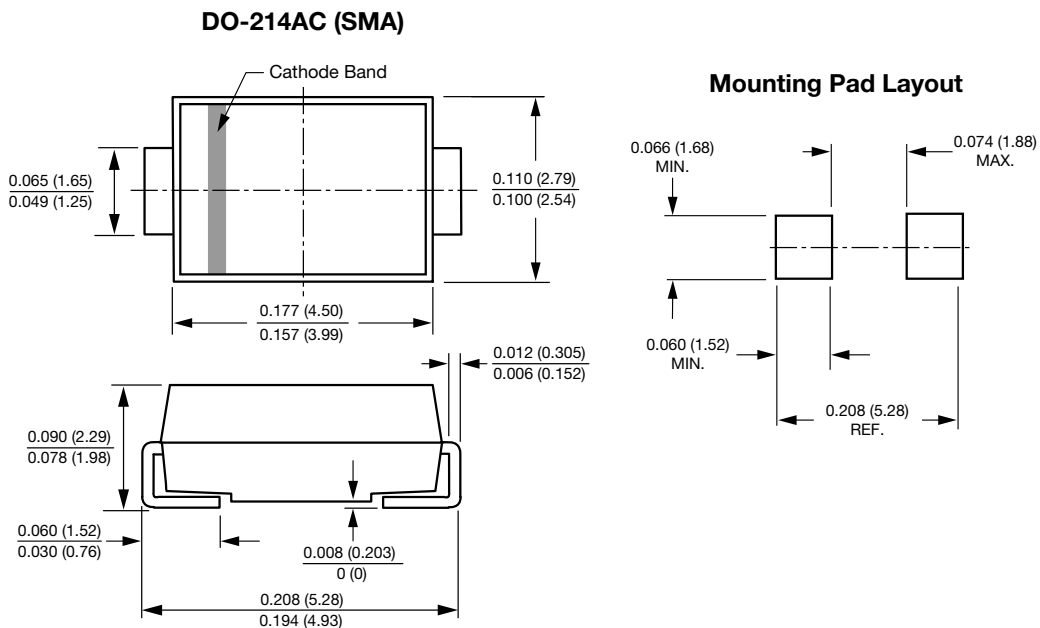


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.