

Surface Mount TRANSZORB® Transient Voltage Suppressors



DO-214AC (SMA)

PRIMARY CHARACTERISTICS	
V_{BR}	530 V, 550 V
P_{PPM}	300 W
P_D	2.5 W
I_{FSM}	40 A
T_J max.	150 °C

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, high reliability/automotive grade (AEC Q101 qualified)

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	SMAJ530	SMAJ550	UNIT
Device marking code		HD	SB	
Power dissipation on infinite heatsink ⁽³⁾	P_D	2.5		W
Peak pulse power dissipation ⁽¹⁾⁽²⁾⁽⁴⁾ (Fig. 1)	P_{PPM}	300		W
Stand-off voltage	V_{WM}	477	495	V
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 5.0 mm² copper pads to each terminal

(3) Lead temperature at $T_L = 75\text{ °C}$

(4) Peak pulse power waveform is 10/1000 μ s

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
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC


RoHS
COMPLIANT

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.

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	SMAJ530	SMAJ550	UNIT
Minimum breakdown voltage	100 μA	V_{BR}	530	550	V
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/ $^\circ\text{C}$
Typical capacitance ⁽¹⁾	0 V	C_J	90		pF
	200 V	C_J	7.5		pF

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		$^\circ\text{C/W}$
Typical thermal resistance, junction to ambient ⁽¹⁾	$R_{\theta JA}$	120		$^\circ\text{C/W}$

Note:

(1) Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
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

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

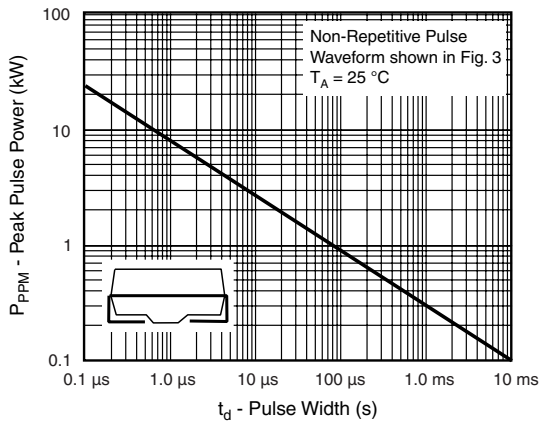


Figure 1. Peak Pulse Power Rating Curve

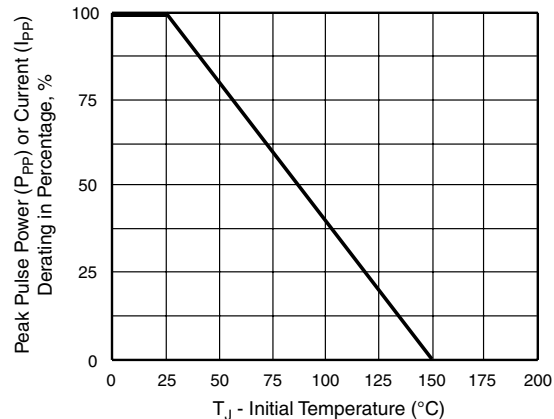


Figure 2. Pulse Power or Current vs. Initial Junction Temperature

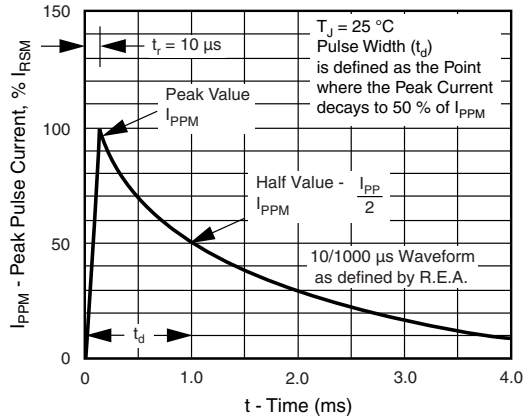
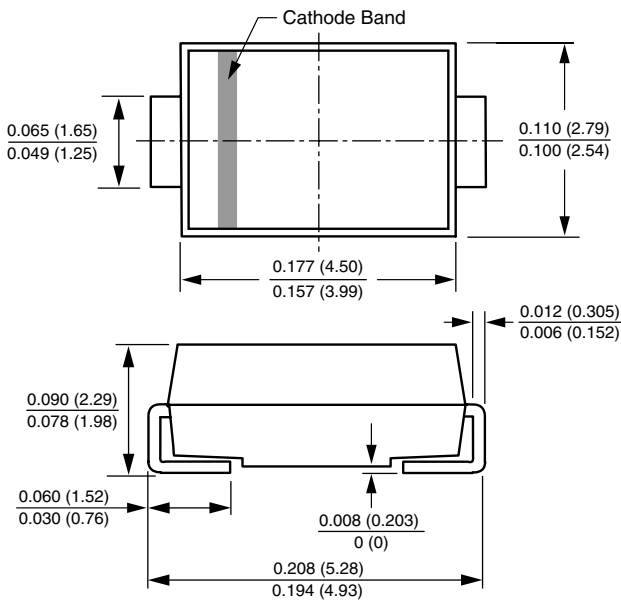


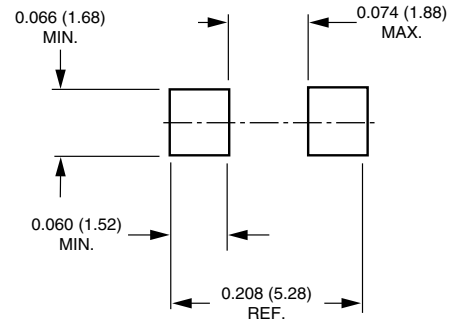
Figure 3. Pulse Waveform

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





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