



# Surface Mount Automotive Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions

Patented\*

\* Patent #'s:  
4,980,315  
5,166,769  
5,278,095



DO-218AB

### FEATURES

- Patented PAR<sup>®</sup> construction
- Low leakage current
- Low forward voltage drop
- High surge capability
- Meets ISO7637-2 surge spec
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS  
COMPLIANT

### TYPICAL APPLICATIONS

Used in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection application.

PRIMARY CHARACTERISTICS	
V <sub>BR</sub>	27 V
P <sub>PPM</sub> (10 x 1000 μs)	4600 W
P <sub>D</sub>	6.0 W
I <sub>RSM</sub>	90 A
I <sub>FSM</sub>	600 A
T <sub>J</sub> max.	175 °C

### MECHANICAL DATA

**Case:** DO-218AB

Molding compound meets UL 94 V-0 flammability rating

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

HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Heatsink is anode

MAXIMUM RATINGS (T <sub>C</sub> = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with 10/1000 μs waveform	P <sub>PPM</sub>	4600	W
Power dissipation on infinite heatsink at T <sub>C</sub> = 25 °C (Fig. 1)	P <sub>D</sub>	6	
Non-repetitive peak reverse surge current for 10 μs/10 ms exponentially decaying waveform	I <sub>RSM</sub>	90	A
Maximum working stand-off voltage	V <sub>WM</sub>	22	V
Peak forward surge current 8.3 ms single half sine-wave	I <sub>FSM</sub>	600	A
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to + 175	°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Reverse zener voltage	at 10 mA	$V_Z$	24		30	V
Zener voltage temperature coefficient	at $I_Z = 10\text{ mA}$	$V_{ZTC}$			36	mV/ $^\circ\text{C}$
Clamping voltage for 10 $\mu\text{s}$ /10 ms exponentially decaying waveform	at $I_{PP} = 65\text{ A}$	$V_C$			40	V
Instantaneous forward voltage <sup>(1)</sup>	at 6.0 A at 100 A	$V_F$		0.94	0.99	V
Reverse leakage current	at rated $V_{WM}$ $T_J = 25\text{ }^\circ\text{C}$ $T_J = 175\text{ }^\circ\text{C}$	$I_R$			0.5 20	$\mu\text{A}$

**Note:**

(1) Measured on a 300  $\mu\text{s}$  square pulse width

<b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.95	$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE	BASE QUANTITY	DELIVERY MODE
SM6A27HE3/2D	2.550	2D	750	13" diameter paper tape and reel, anode towards the sprocket hole

**RATINGS AND CHARACTERISTICS CURVES**

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

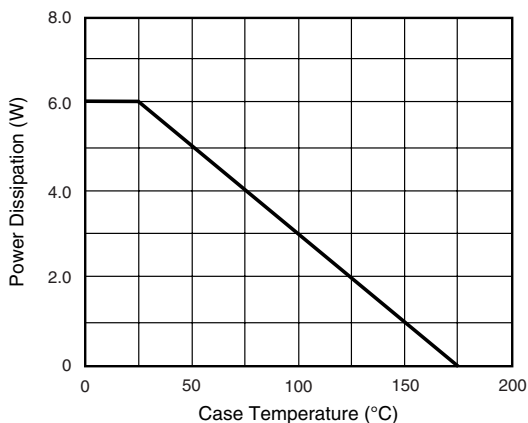


Figure 1. Power Derating Curve

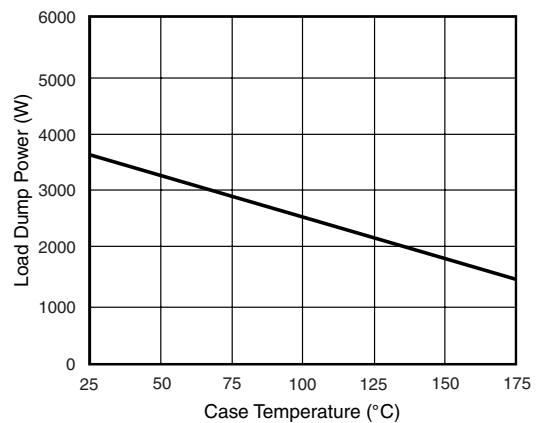


Figure 2. Load Dump Power Characteristics (10 ms Exponential Waveform)

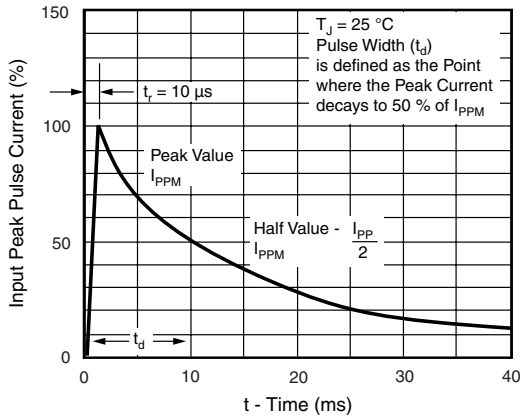


Figure 3. Pulse Waveform

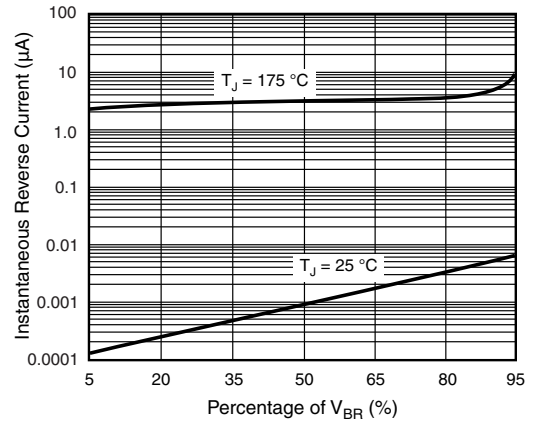


Figure 6. Typical Reverse Characteristics

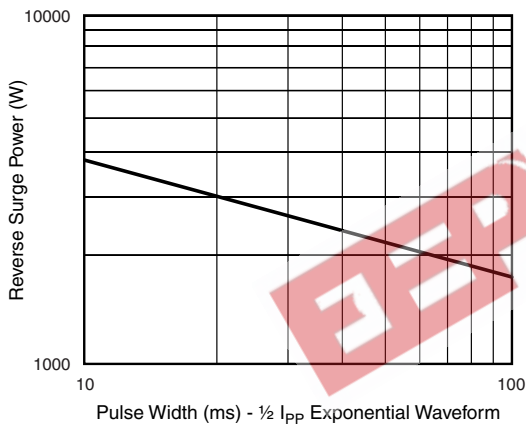


Figure 4. Reverse Power Capability

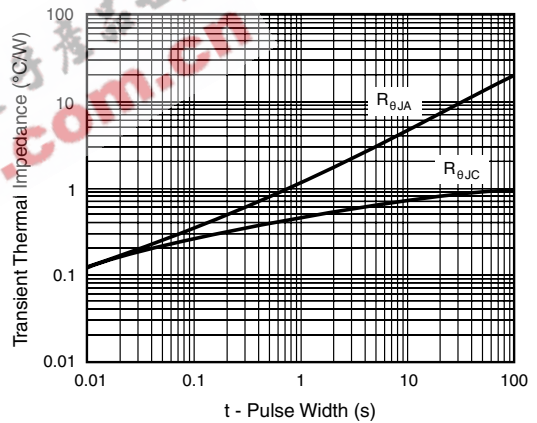


Figure 7. Typical Transient Thermal Impedance

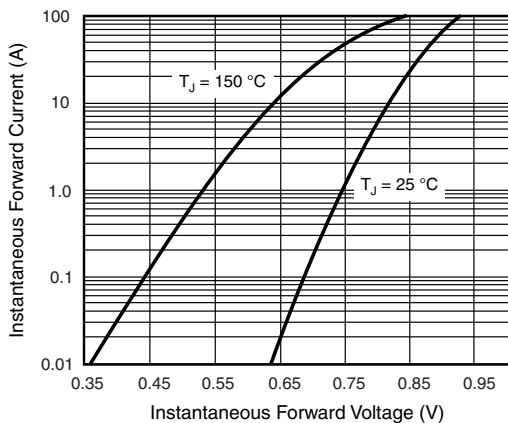


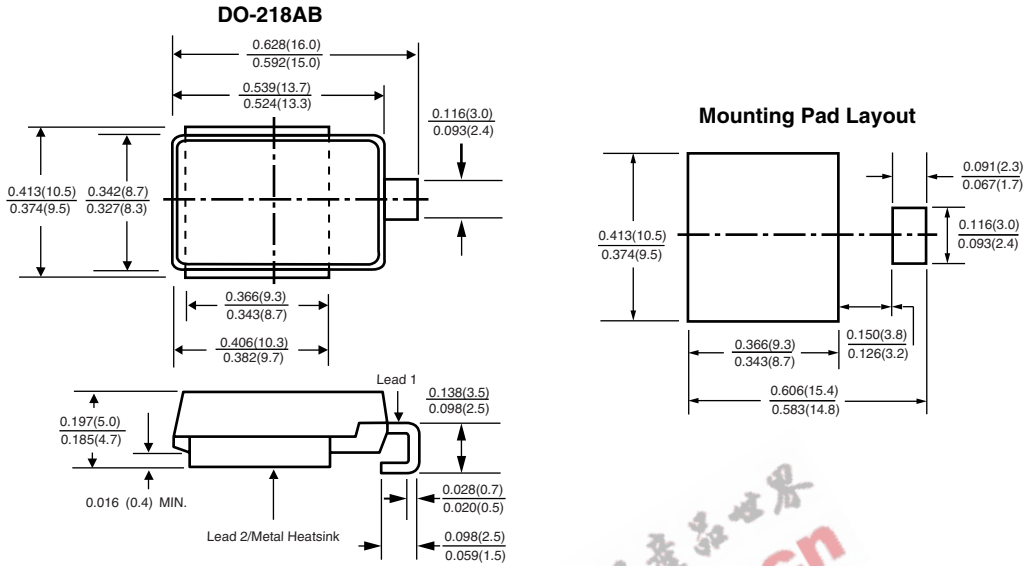
Figure 5. Typical Instantaneous Forward Characteristics

# SM6A27

Vishay General Semiconductor



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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