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**SM6A27**

Vishay General Semiconductor

## Surface Mount PAR<sup>®</sup> Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



DO-218AB

### FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- $T_J = 175\text{ }^\circ\text{C}$  capability suitable for high reliability and automotive requirement
- Low leakage current
- Low forward voltage drop
- High surge capability
- Meets ISO7637-2 surge specification
- Meets MSL level 1, per J-STD-020, LF maximum peak of  $245\text{ }^\circ\text{C}$
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS  
COMPLIANT

PRIMARY CHARACTERISTICS	
$V_{BR}$	27 V
$P_{PPM}$ (10 x 1000 $\mu\text{s}$ )	4600 W
$P_D$	6 W
$I_{RSM}$	90 A
$I_{FSM}$	600 A
$T_J$ max.	$175\text{ }^\circ\text{C}$

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** DO-218AB

Molding compound meets UL 94 V-0 flammability rating  
 Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

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

HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Heatsink is anode

MAXIMUM RATINGS ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with 10/1000 $\mu\text{s}$ waveform	$P_{PPM}$	4600	W
Power dissipation on infinite heatsink at $T_C = 25\text{ }^\circ\text{C}$ (fig. 1)	$P_D$	6.0	W
Non-repetitive peak reverse surge current for 10 $\mu\text{s}$ /10 ms exponentially decaying waveform	$I_{RSM}$	90	A
Maximum working stand-off voltage	$V_{WM}$	22.0	V
Peak forward surge current 8.3 ms single half sine-wave	$I_{FSM}$	600	A
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 175	$^\circ\text{C}$



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ELECTRICAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT	
Reverse Zener voltage	I <sub>Z</sub> = 10 mA	V <sub>Z</sub>	24.0	-	30.0	V	
Zener voltage temperature coefficient	I <sub>Z</sub> = 10 mA	V <sub>ZTC</sub>	-	-	36	mV/°C	
Clamping voltage for 10 μs/10 ms exponentially decaying waveform	I <sub>PP</sub> = 65 A	V <sub>C</sub>	-	-	40.0	V	
Instantaneous forward voltage	I <sub>F</sub> = 6.0 A	V <sub>F</sub> <sup>(1)</sup>	-	-	0.99	V	
	I <sub>F</sub> = 100 A		-	0.94	-		
Reverse leakage current	Rated V <sub>WM</sub>	I <sub>R</sub>	T <sub>J</sub> = 25 °C	-	-	0.5	μA
			T <sub>J</sub> = 175 °C	-	-	20.0	

**Note**

(1) Measured on a 300 μs square pulse width

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to case	R <sub>θJC</sub>	0.95	°C/W

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SM6A27HE3/2D <sup>(1)</sup>	2.550	2D	750	13" diameter plastic tape and reel, anode towards the sprocket hole

**Note**

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub> = 25 °C unless otherwise noted)

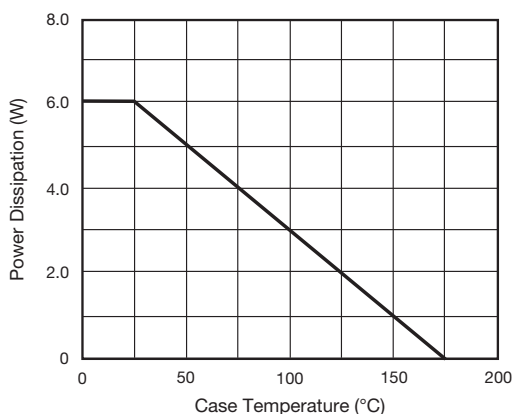


Fig. 1 - Power Derating Curve

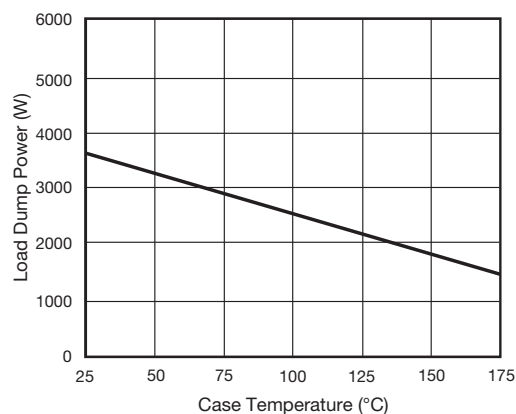


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)



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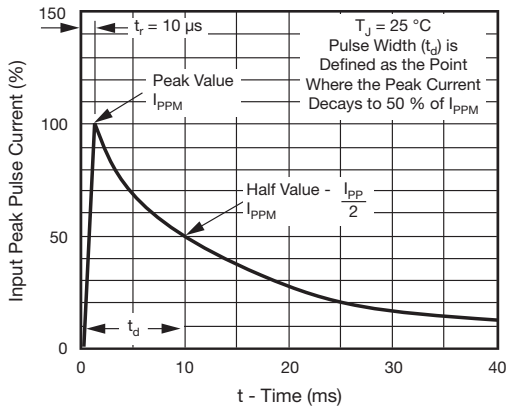


Fig. 3 - Pulse Waveform

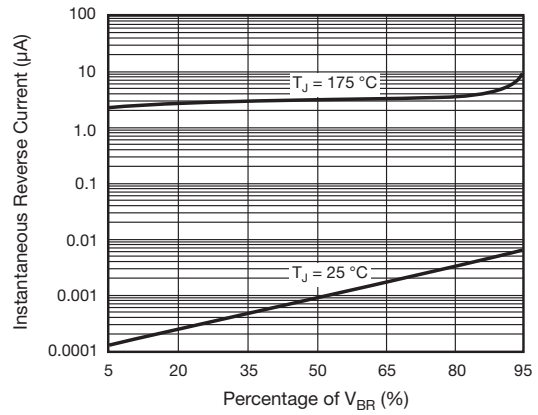


Fig. 6 - Typical Reverse Characteristics

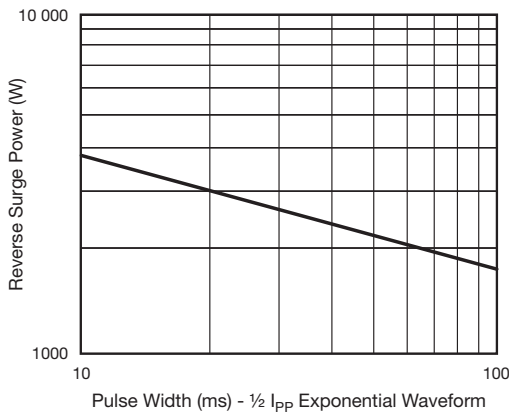


Fig. 4 - Reverse Power Capability

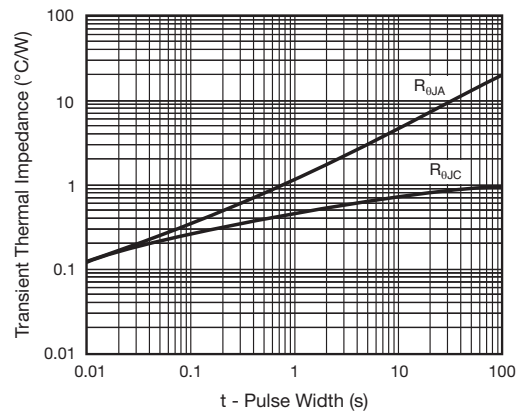


Fig. 7 - Typical Transient Thermal Impedance

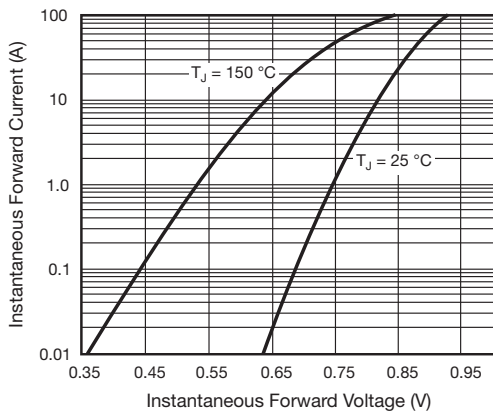


Fig. 5 - Typical Instantaneous Forward Characteristics

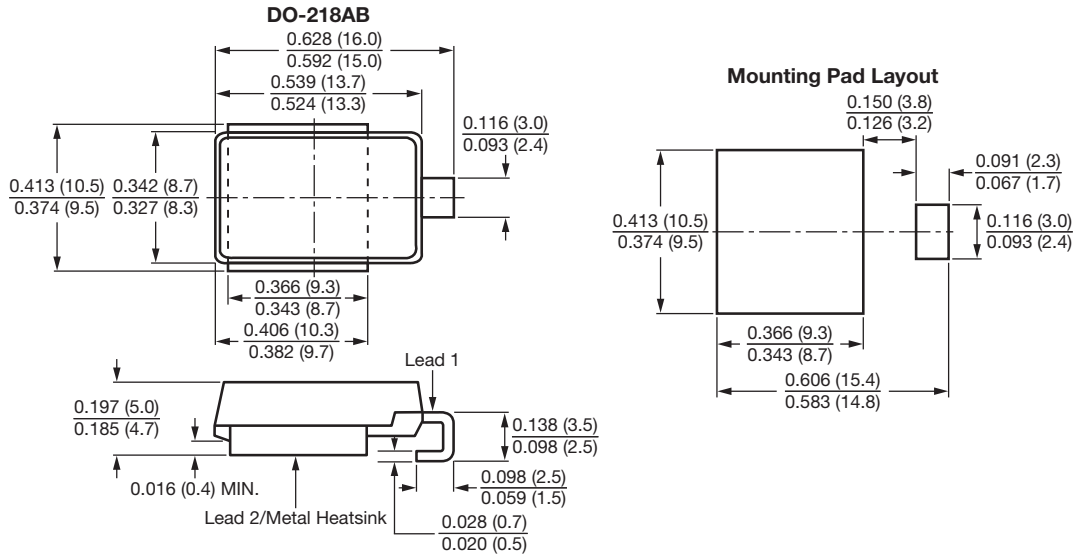


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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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