

Vishay General Semiconductor

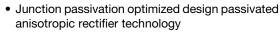
Surface Mount PAR® Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



PRIMARY CHARACTERISTICS				
V_{BR}	27 V			
P _{PPM} (10 x 1000 μs)	3600 W			
P_{D}	5 W			
V_{WM}	22 V			
I _{RSM}	70 A			
I _{FSM}	500 A			
T_J max.	175 °C			
Polarity	Uni-directional			
Package	DO-218AB			

FEATURES





• T_{.1} = 175 °C capability suitable for high reliability and automotive requirement

RoHS

· 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 °C
- AEC-Q101 qualified
- 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, 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 _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	VALUE	UNIT	
Peak pulse power dissipation with 10/1000 µs waveform	P _{PPM}	3600	W	
Power dissipation on infinite heatsink at T _C = 25 °C (fig. 1)	P_{D}	5.0	W	
Non-repetitive peak reverse surge current for 10 µs/10 ms exponentially decaying waveform	I _{RSM}	70	А	
Maximum working stand-off voltage	V _{WM}	22.0	V	
Peak forward surge current 8.3 ms single half sine-wave	I _{FSM}	500	Α	
Operating junction and storage temperature range	T _J , T _{STG}	- 55 to + 175	°C	



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNIT
Reverse Zener voltage	I _Z = .	10 mA	Vz	24.0	-	30.0	V
Zener voltage temperature coefficient	I _Z = 10 mA		V _{ZTC}	=	-	36	mV/°C
Clamping voltage for 10 µs/10 ms exponentially decaying waveform	I _{PP} = 55 A		V _C	-	-	40.0	V
Instantaneous forward voltage	I _F = 6.0 A		V _F ⁽¹⁾		-	1.0	V
	I _F = 100 A			-	0.95	-	
Reverse leakage current	Rated V _{MM}	$T_J = 25 ^{\circ}C$	I_	i	-	0.2	
		T _J = 175 °C	I _R	-	-	10.0	μΑ

Note

⁽¹⁾ Measured on a 300 µs square pulse width

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	VALUE	UNIT		
Typical thermal resistance, junction to case		1.0	°C/W		

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
SM5A27HE3/2D ⁽¹⁾	2.505	2D	750	13" diameter plastic tape and reel, anode towards the sprocket hole		

Note

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

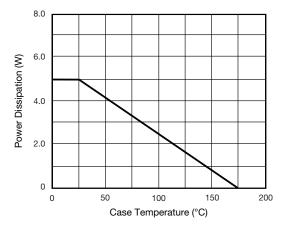


Fig. 1 - Power Derating Curve

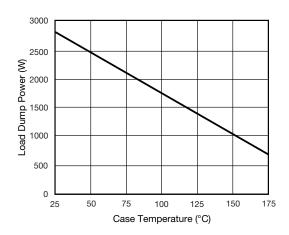


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)

⁽¹⁾ AEC-Q101 qualified



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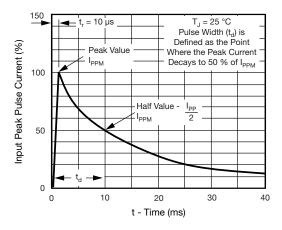


Fig. 3 - Pulse Waveform

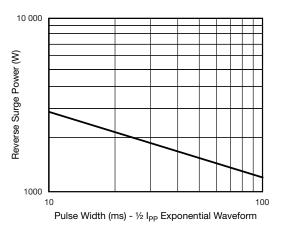


Fig. 4 - Reverse Power Capability

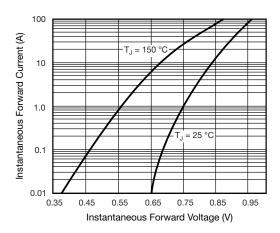


Fig. 5 - Typical Instantaneous Forward Characteristics

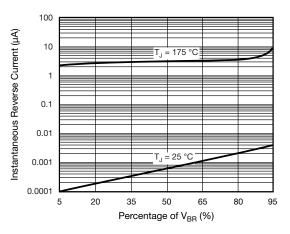


Fig. 6 - Typical Reverse Characteristics

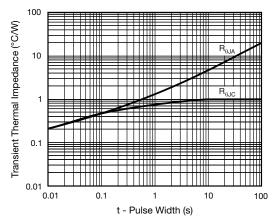
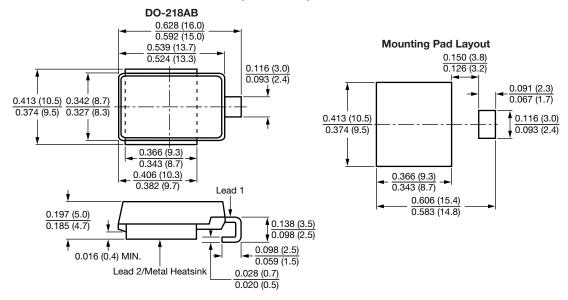


Fig. 7 - Typical Transient Thermal Impedance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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