

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

High Temperature Stability and High Reliability Conditions



**DO-218AB**

## PRIMARY CHARACTERISTICS

$V_{BR}$	27 V
$P_{PPM}$ (10 x 1000 $\mu$ s)	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

- Junction passivation optimized design passivated anisotropic rectifier technology
- $T_J = 175$  °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 °C
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc/99912](http://www.vishay.com/doc/99912)



**RoHS**  
COMPLIANT

## 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 $\mu$ s 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 $\mu$ s/10 ms exponentially decaying waveform	$I_{RSM}$	70	A
Maximum working stand-off voltage	$V_{WM}$	22.0	V
Peak forward surge current 8.3 ms single half sine-wave	$I_{FSM}$	500	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175	°C

## ELECTRICAL CHARACTERISTICS ( $T_A = 25$ °C unless otherwise noted)

DEVICE TYPE	BREAKDOWN VOLTAGE $V_{BR}$ AT $I_T$ (V)		TEST CURRENT $I_T$ (mA)	STAND-OFF VOLTAGE $V_{WM}$ (V)
	MIN.	MAX.		
SM5A27	24	30	10	22

ADDITIONAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNIT
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> = 55 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>	-	-	1.0	V
	I <sub>F</sub> = 100 A			-	0.95	-	
Reverse leakage current	Rated V <sub>WM</sub>	T <sub>J</sub> = 25 °C	I <sub>R</sub>	-	-	0.2	μA
		T <sub>J</sub> = 175 °C		-	-	10.0	

**Note**
<sup>(1)</sup> Measured on a 300  $\mu\text{s}$  pulse width

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to case	$R_{\theta JC}$	1.0	$^{\circ}\text{C}/\text{W}$

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

**Note**
<sup>(1)</sup> AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

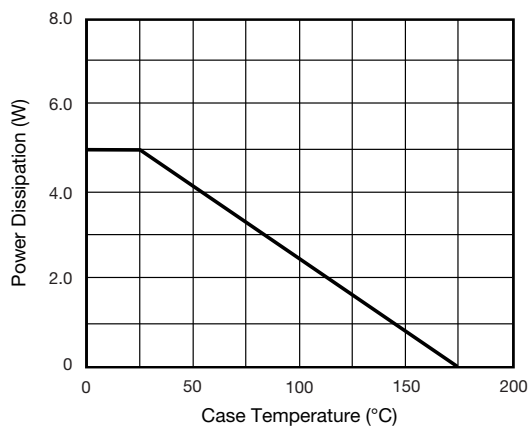
( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Power Derating Curve

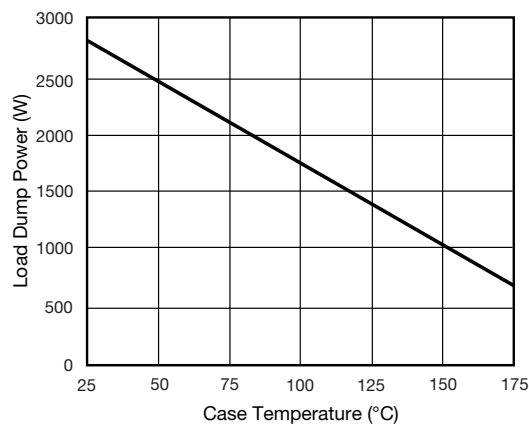
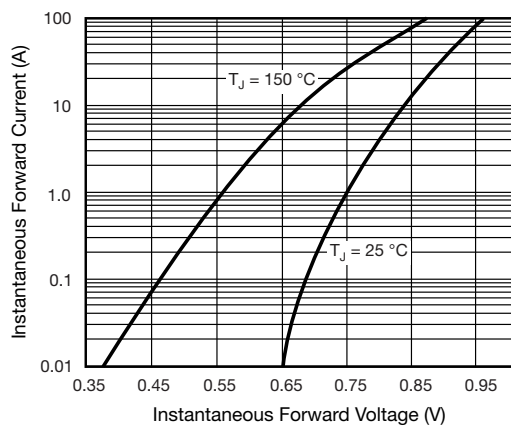
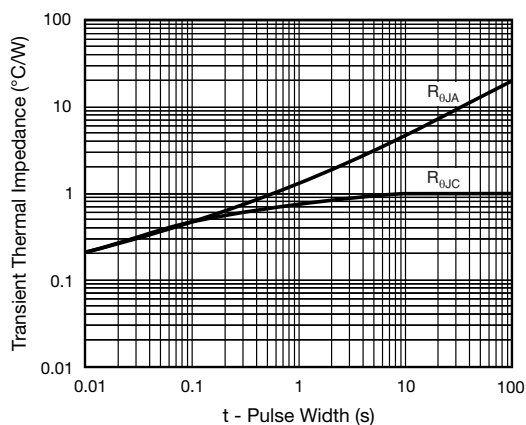
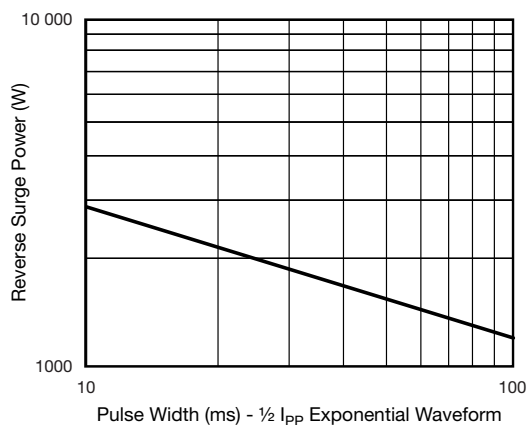
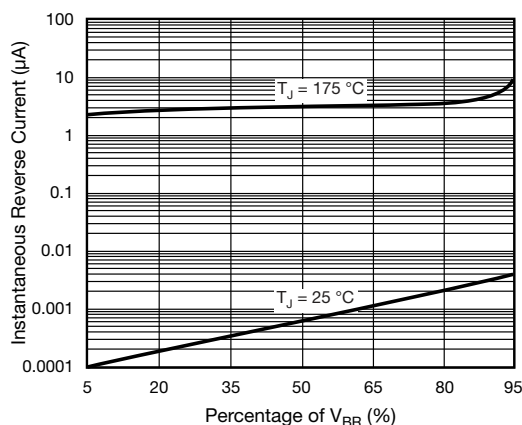
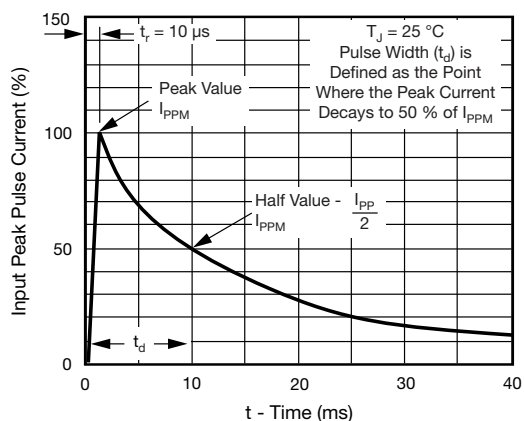
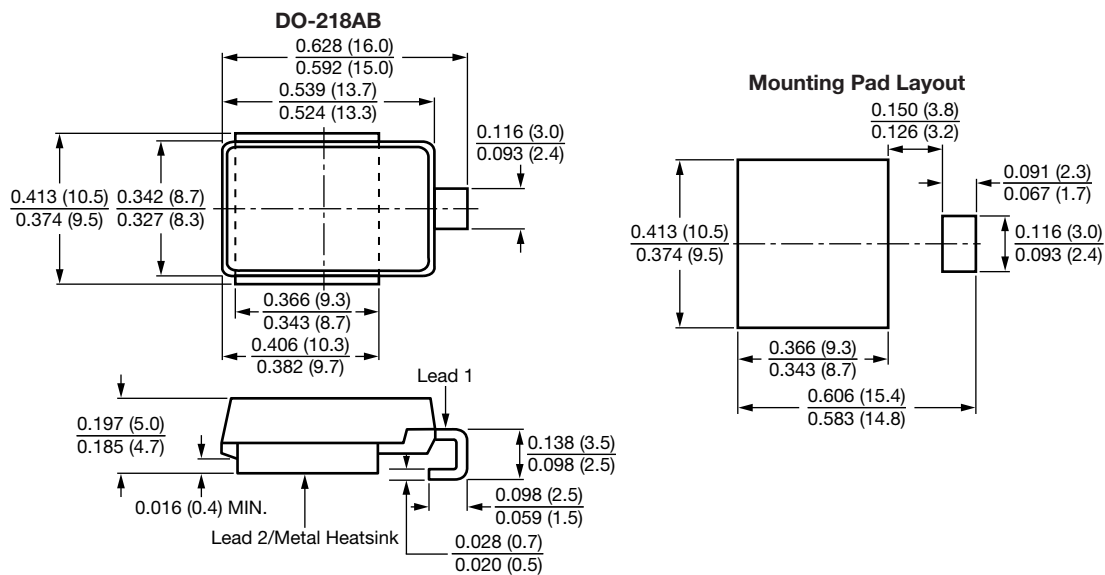


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)





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





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# Mouser Electronics

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