

## Surface Mount Automotive Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions

Patented\*


**DO-218AB**

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

**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**

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, 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

PRIMARY CHARACTERISTICS	
$V_{BR}$	27 V
$P_{PPM}$ (10 x 1000 $\mu$ s)	3600 W
$P_D$	5.0 W
$I_{RSM}$	70 A
$I_{FSM}$	500 A
$T_J$ max.	175 °C

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	
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

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Reverse zener voltage	10 mA	$V_Z$	24.0		30.0	V
Zener voltage temperature coefficient	$I_Z = 10\text{ mA}$	$V_{ZTC}$			36	mV/ $^\circ\text{C}$
Clamping voltage for 10 $\mu\text{s}$ /10 ms exponentially decaying waveform	$I_{PP} = 55\text{ A}$	$V_C$			40.0	V
Instantaneous forward voltage <sup>(1)</sup>			6.0 A 100 A	0.95	1.0	V
Reverse leakage current	rated $V_{WM}$		$T_J = 25\text{ }^\circ\text{C}$ $T_J = 175\text{ }^\circ\text{C}$		0.2 10.0	$\mu\text{A}$

**Note:**

(1) Measured on a 300  $\mu\text{s}$  square 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	$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SM5A27HE3/2D	2.505	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)

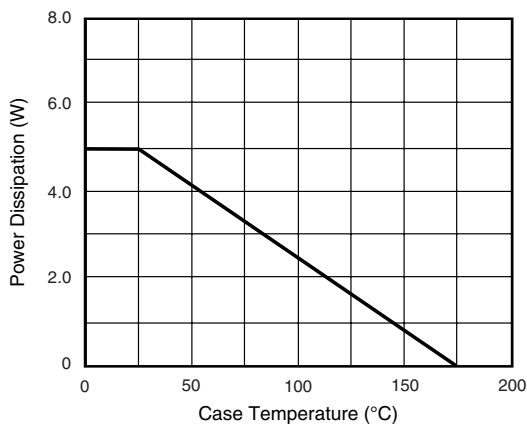


Figure 1. Power Derating Curve

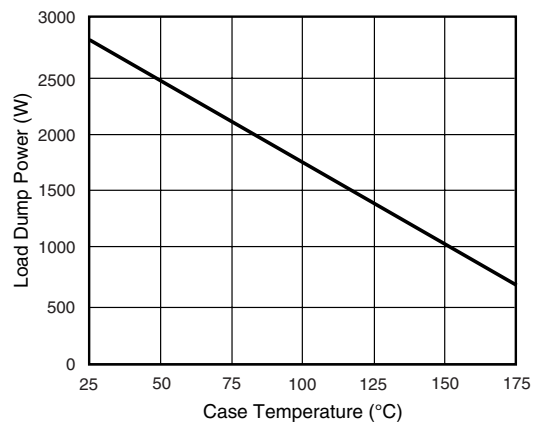


Figure 2. Load Dump Power Characteristics (10 ms Exponential Waveform)

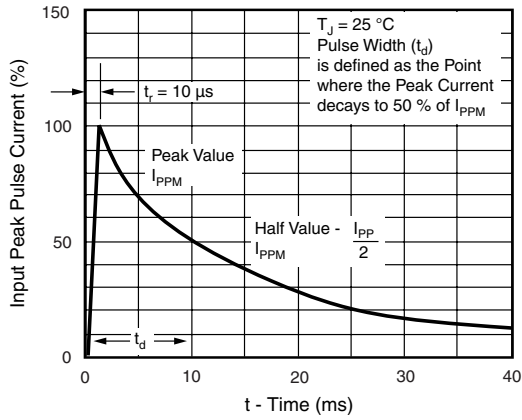


Figure 3. Pulse Waveform

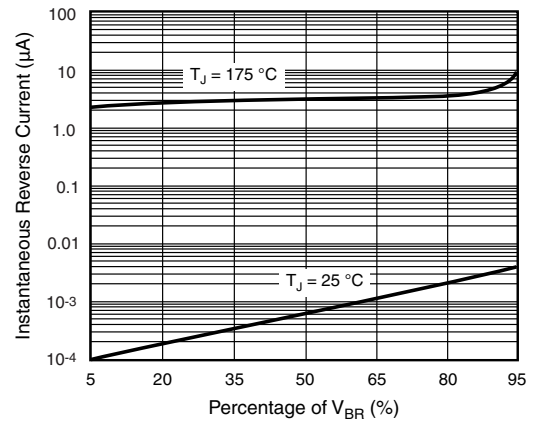


Figure 6. Typical Reverse Characteristics

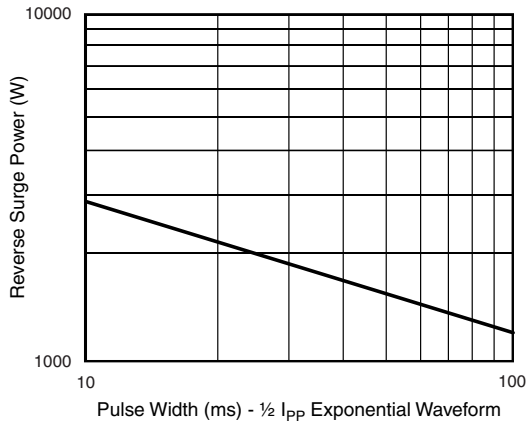


Figure 4. Reverse Power Capability

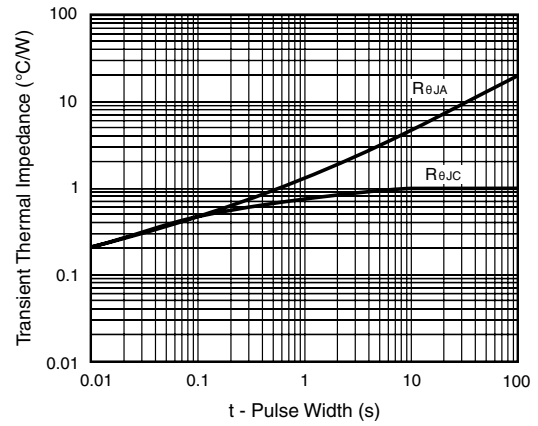


Figure 7. Typical Transient Thermal Impedance

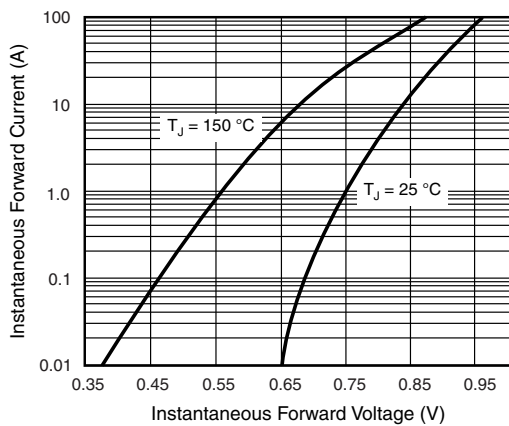
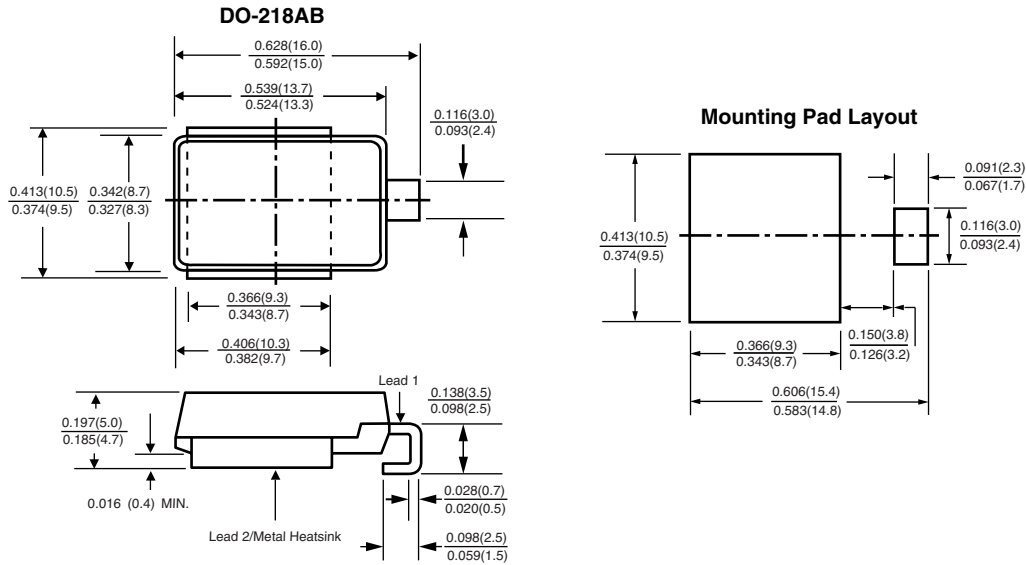


Figure 5. Typical Instantaneous Forward Characteristics

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





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