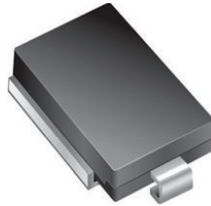


# Surface Mount PAR<sup>®</sup> Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



**DO-218AB**

| PRIMARY CHARACTERISTICS       |                 |
|-------------------------------|-----------------|
| $V_{BR}$                      | 27 V            |
| $P_{PPM}$ (10 x 1000 $\mu$ s) | 6600 W          |
| $P_D$                         | 8 W             |
| $V_{WM}$                      | 22 V            |
| $I_{RSM}$                     | 130 A           |
| $I_{FSM}$                     | 700 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 ( $T_C = 25$ °C unless otherwise noted)  |                |             |      |
|--|----------------|-------------|------|
| PARAMETER  | SYMBOL         | VALUE       | UNIT |
| Peak pulse power dissipation with 10/1000 $\mu$ s waveform                                     | $P_{PPM}$      | 6600        | W    |
| Power dissipation on infinite heatsink at $T_C = 25$ °C (fig. 1)                               | $P_D$          | 8.0         | W    |
| Non-repetitive peak reverse surge current for 10 $\mu$ s/10 ms exponentially decaying waveform | $I_{RSM}$      | 130         | A    |
| Maximum working stand-off voltage  | $V_{WM}$       | 22.0        | V    |
| Peak forward surge current 8.3 ms single half sine-wave  | $I_{FSM}$      | 700         | 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<br>$V_{BR}$ AT $I_T$<br>(V) |      | TEST CURRENT<br>$I_T$<br>(mA) | STAND-OFF VOLTAGE<br>$V_{WM}$<br>(V) |
|  | MIN.  | MAX. |                               |                                      |
| SM8A27   | 24  | 30   | 10                            | 22                                   |



| ADDITIONAL CHARACTERISTICS (T <sub>C</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> = 75 A | V <sub>C</sub>     | -                      | -    | 40.0 | V     |
| Instantaneous forward voltage  | I <sub>F</sub> = 6.0 A | V <sub>F</sub> (1) | -                      | -    | 0.98 | V     |
|  | I <sub>F</sub> = 100 A |                    | -                      | 0.93 | -    |       |
| Reverse leakage current  | Rated V <sub>WM</sub>  | I <sub>R</sub>     | -                      | -    | 1.0  | μA    |
|  |                        |                    | T <sub>J</sub> = 25 °C | -    | -    |       |
|  |                        |                    | -                      | -    |      |       |

**Note**

(1) Measured on a 300 μs square pulse width

| THERMAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted) |                  |       |      |
|---|------------------|-------|------|
| PARAMETER   | SYMBOL           | VALUE | UNIT |
| Typical thermal resistance, junction to case                            | R <sub>θJC</sub> | 0.90  | °C/W |

| ORDERING INFORMATION (Example) |                 |                        |               |   |
|--------------------------------|-----------------|------------------------|---------------|---|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE   |
| SM8A27HE3/2D (1)               | 2.605           | 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)**

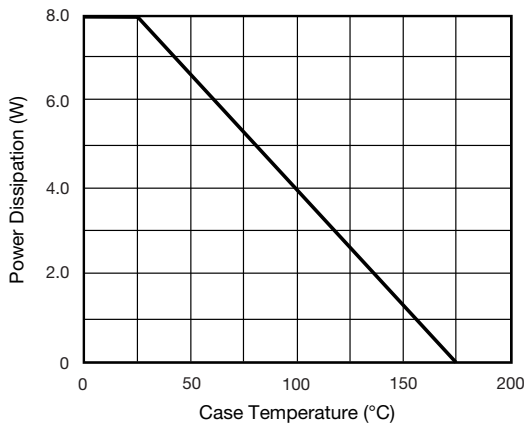


Fig. 1 - Power Derating Curve

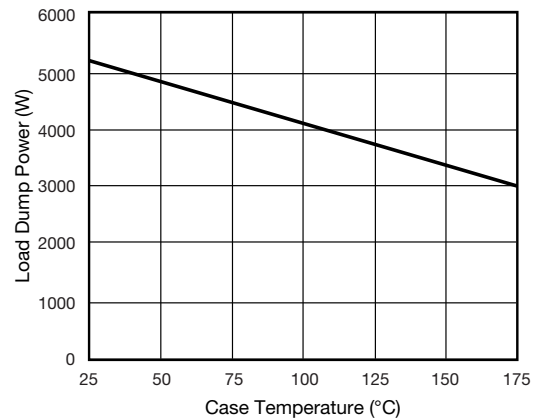


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)

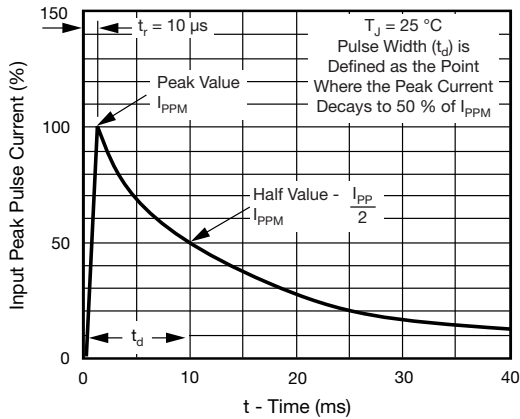


Fig. 3 - Pulse Waveform

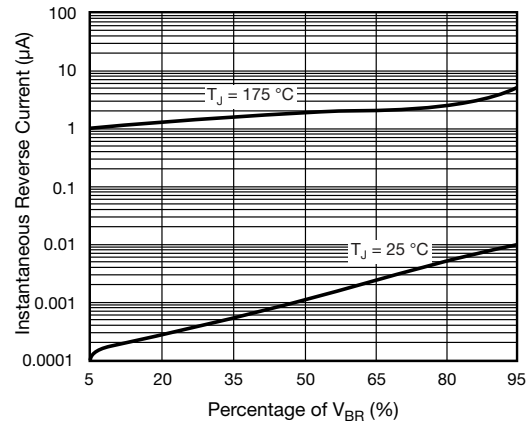


Fig. 6 - Typical Reverse Characteristics

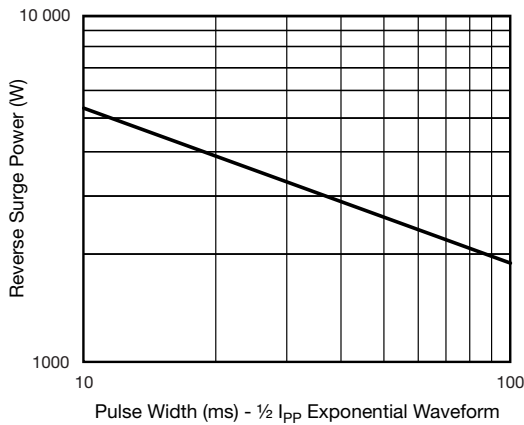


Fig. 4 - Reverse Power Capability

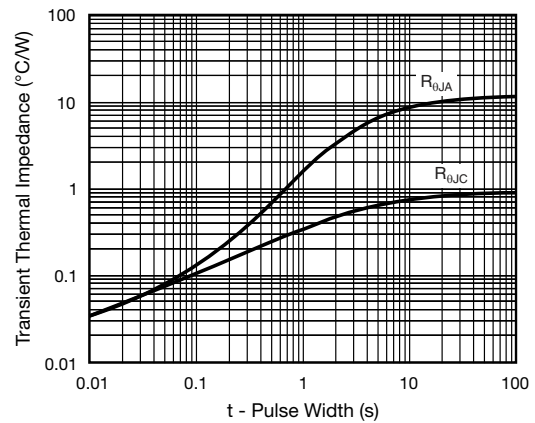


Fig. 7 - Typical Transient Thermal Impedance

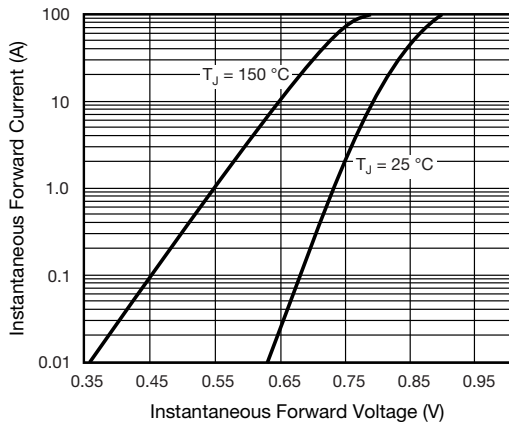
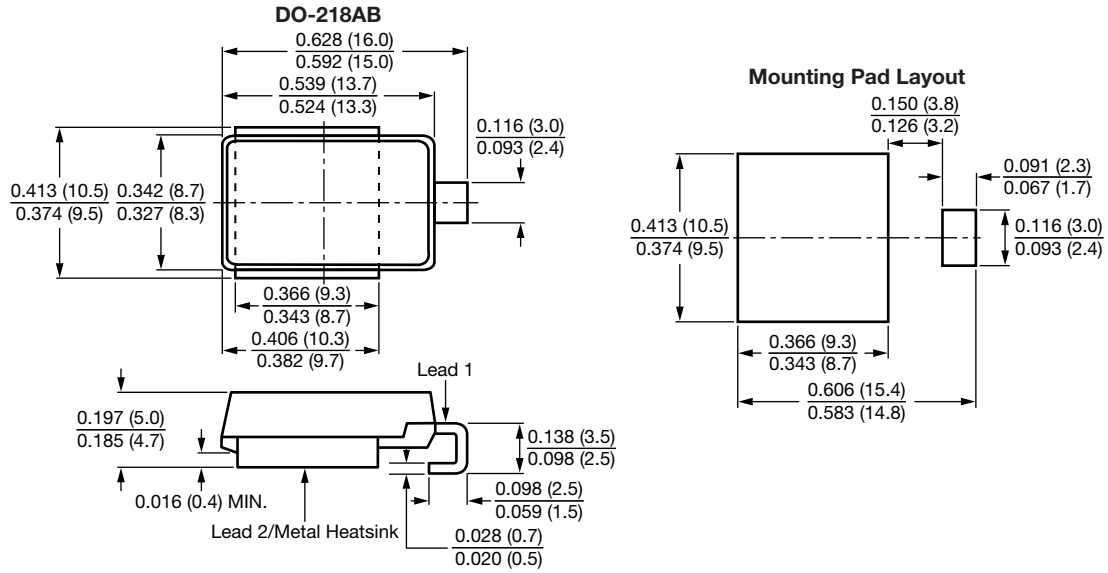


Fig. 5 - Typical Instantaneous Forward Characteristics

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





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