

# 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) | 4600 W |
| $P_D$                         | 6 W    |
| $I_{RSM}$                     | 90 A   |
| $I_{FSM}$                     | 600 A  |
| $T_J$ max.                    | 175 °C |

## 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
- Compliant to RoHS Directive 2002/95/EC and in accordance to 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, 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                                     | $P_{PPM}$      | 4600          | W    |
| Power dissipation on infinite heatsink at $T_C = 25$ °C (fig. 1)                               | $P_D$          | 6.0           | W    |
| Non-repetitive peak reverse surge current for 10 $\mu$ 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 | °C   |

| 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>  | T <sub>J</sub> = 25 °C  | I <sub>R</sub>                | -    | -    | 0.5  | μA    |
|                                                                            |                        | T <sub>J</sub> = 175 °C |                               | -    | -    | 20.0 |       |

**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                                                | $R_{\theta JC}$ | 0.95  | $^{\circ}\text{C/W}$ |

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

**Note**

(1) AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

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

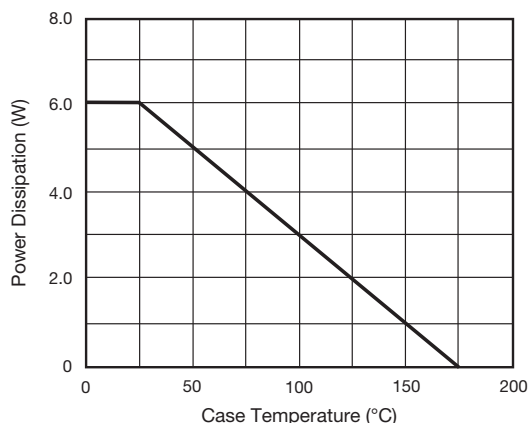


Fig. 1 - Power Derating Curve

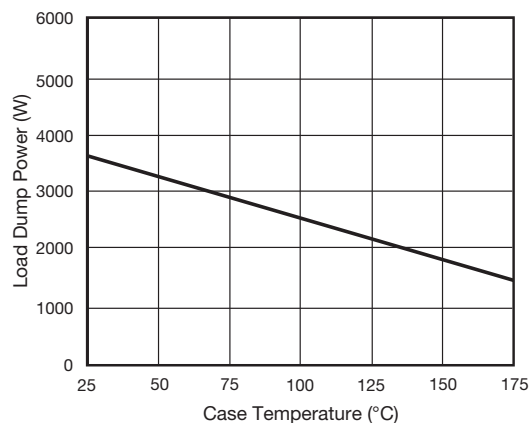
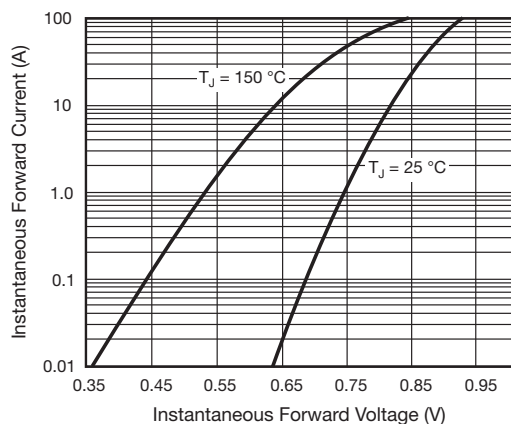
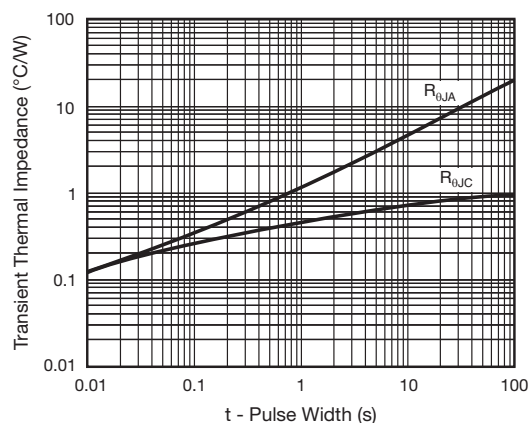
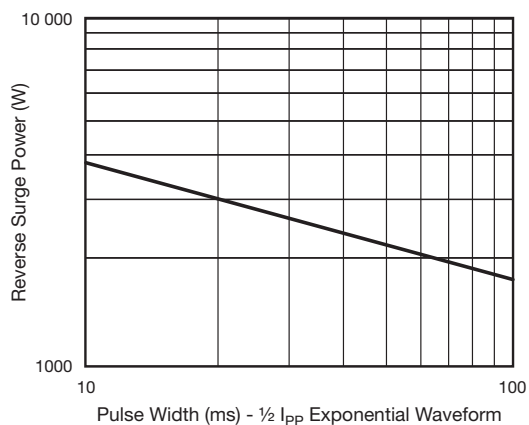
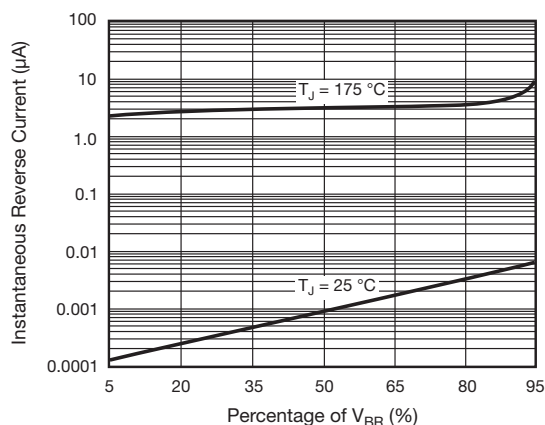
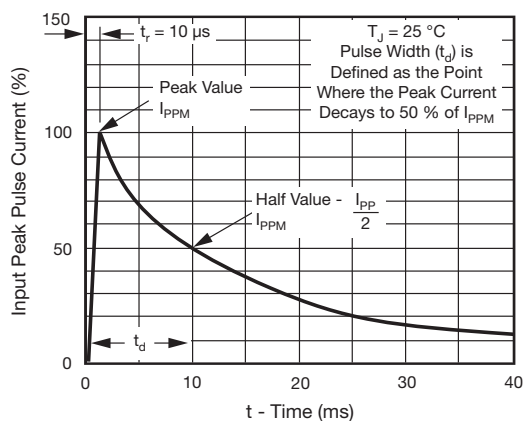
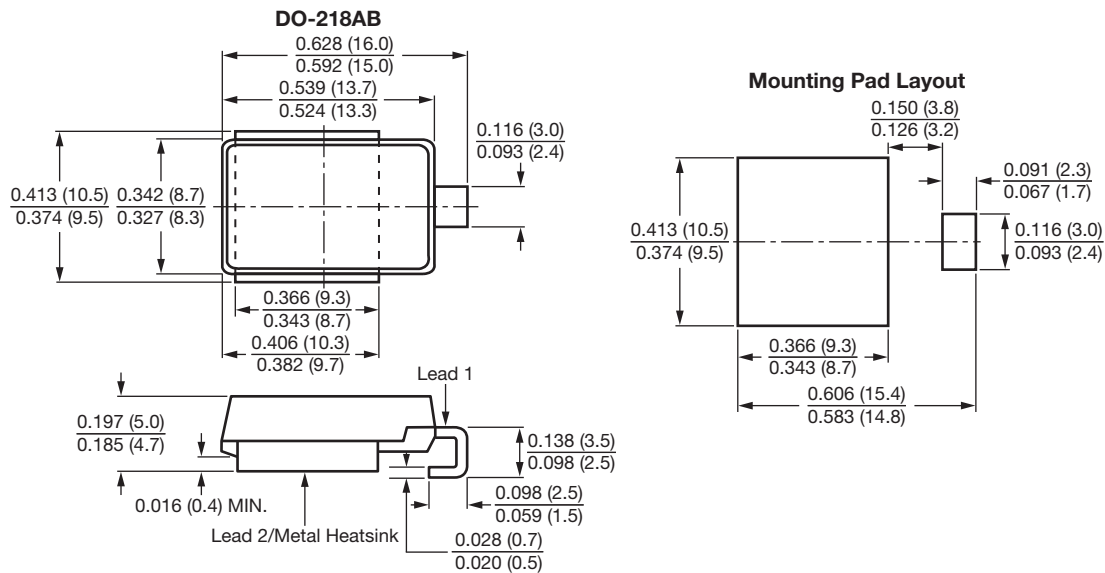


Fig. 2 - Load Dump Power Characteristics  
(10 ms Exponential Waveform)



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




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