

Surface Mount Automotive Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions

Patented*

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



DO-218AB

FEATURES

- Patented PAR[®] construction
- Low leakage current
- Low forward voltage drop
- High surge capability
- Meets ISO7637-2 surge spec
- Meets MSL level 1, per J-STD-020C, LF max peak of 245 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



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

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: Heatsink is anode

| PRIMARY CHARACTERISTICS | |
|-------------------------------|--------|
| V_{BR} | 27 V |
| P_{PPM} (10 x 1000 μ 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 μ 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 μ 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 ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|--|-----------|------|------|-------------|----------------------|
| PARAMETER | TEST CONDITIONS | SYMBOL | MIN | TYP | MAX | UNIT |
| Reverse zener voltage | at 10 mA | V_Z | 24.0 | | 30.0 | V |
| Zener voltage temperature coefficient | at $I_Z = 10\text{ mA}$ | V_{ZTC} | | | 36 | mV/ $^\circ\text{C}$ |
| Clamping voltage for 10 μs /10 ms exponentially decaying waveform | at $I_{PP} = 55\text{ A}$ | V_C | | | 40.0 | V |
| Instantaneous forward voltage ⁽¹⁾ | at 6.0 A at 100 A | V_F | | 0.95 | 1.0 | V |
| Reverse leakage current | at rated V_{WM} $T_J = 25\text{ }^\circ\text{C}$ $T_J = 175\text{ }^\circ\text{C}$ | I_R | | | 0.2 10.0 | μA |

Note:

 (1) Measured on a 300 μs square pulse width

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

| ORDERING INFORMATION (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

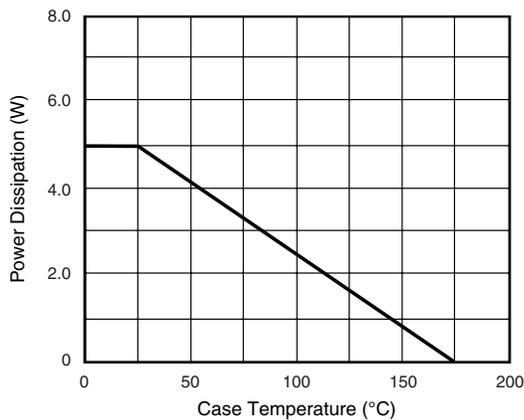
 ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Figure 1. Power Derating Curve

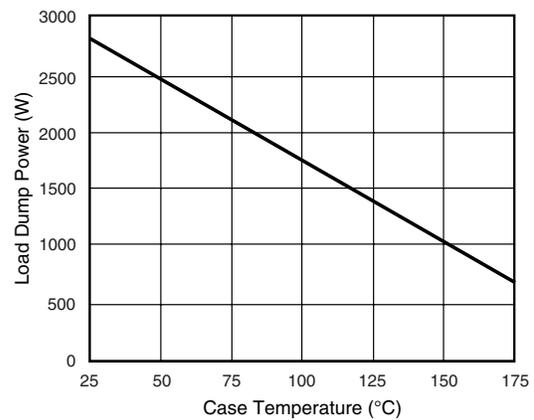


Figure 2. Load Dump Power Characteristics (10 ms Exponential Waveform)

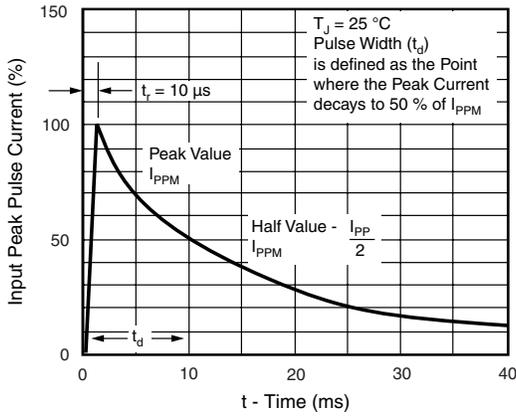


Figure 3. Pulse Waveform

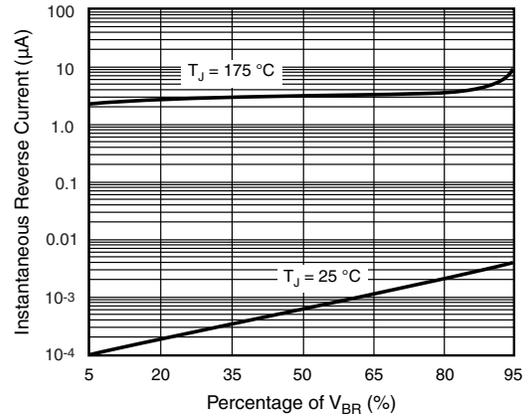


Figure 6. Typical Reverse Characteristics

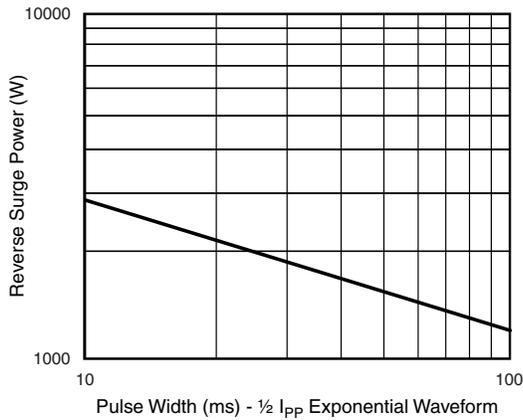


Figure 4. Reverse Power Capability

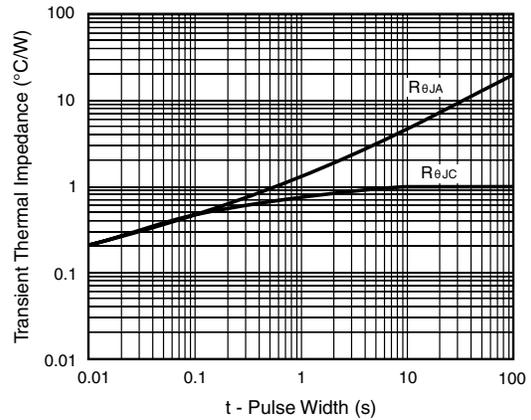


Figure 7. Typical Transient Thermal Impedance

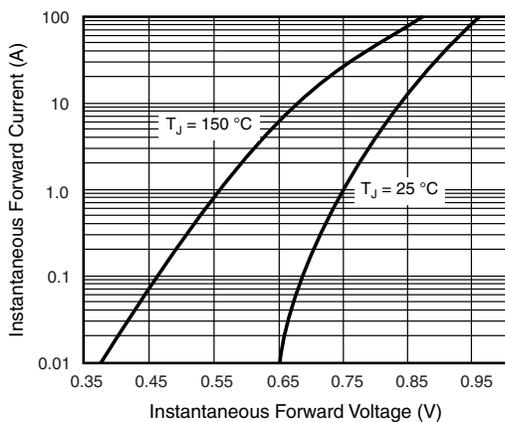
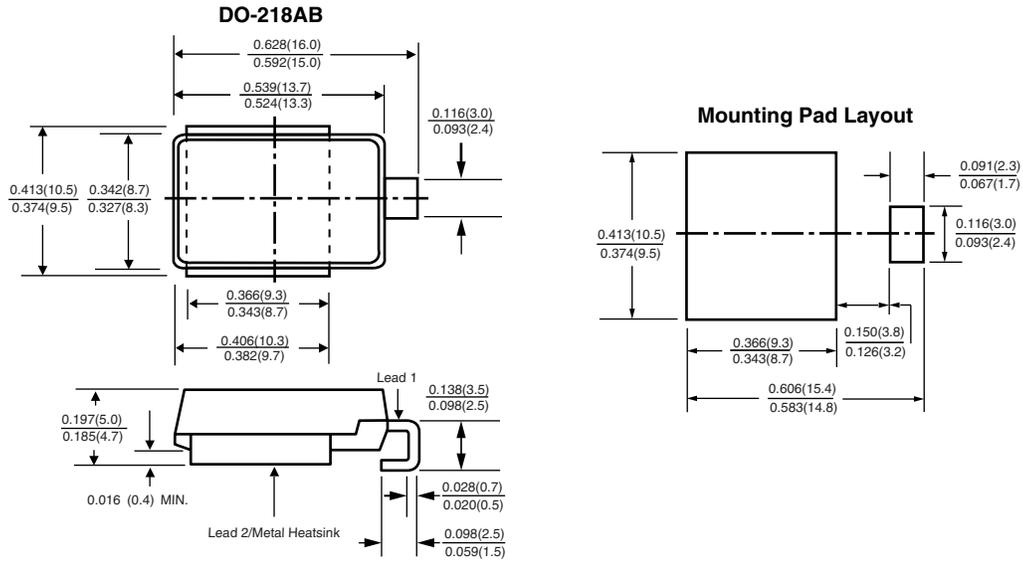


Figure 5. Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)




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