

Surface Mount PAR[®] Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



DO-218AB



FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- $T_J = 175\text{ }^\circ\text{C}$ 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 $245\text{ }^\circ\text{C}$
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

| PRIMARY CHARACTERISTICS | |
|--------------------------------------|-----------------------------|
| V_{BR} | 27 V |
| P_{PPM} (10 x 1000 μs) | 6600 W |
| P_D | 8 W |
| V_{WM} | 22 V |
| I_{RSM} | 130 A |
| I_{FSM} | 700 A |
| T_J max. | $175\text{ }^\circ\text{C}$ |
| Polarity | Unidirectional |
| Package | DO-218AB |

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 ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | |
|---|----------------|-------------|------------------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Peak pulse power dissipation with 10/1000 μs waveform | P_{PPM} | 6600 | W |
| Power dissipation on infinite heatsink at $T_C = 25\text{ }^\circ\text{C}$ (fig. 1) | P_D | 8.0 | W |
| Non-repetitive peak reverse surge current for 10 μs /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 | $^\circ\text{C}$ |

| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ 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. | | |
| SM8A27 | 24 | 30 | 10 | 22 |



| ADDITIONAL CHARACTERISTICS (T _C = 25 °C unless otherwise noted) | | | | | | |
|--|------------------------|--------------------|------------------------|------|------|-------|
| PARAMETER | TEST CONDITIONS | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Zener voltage temperature coefficient | I _Z = 10 mA | V _{ZTC} | - | - | 36 | mV/°C |
| Clamping voltage for 10 μs/10 ms exponentially decaying waveform | I _{PP} = 75 A | V _C | - | - | 40.0 | V |
| Instantaneous forward voltage | I _F = 6.0 A | V _F (1) | - | - | 0.98 | V |
| | I _F = 100 A | | - | 0.93 | - | |
| Reverse leakage current | Rated V _{WM} | I _R | - | - | 1.0 | μA |
| | | | T _J = 25 °C | - | - | |
| | | | - | - | | |
| | | | - | - | | |

Note

(1) Measured on a 300 μs square pulse width

| THERMAL CHARACTERISTICS (T _C = 25 °C unless otherwise noted) | | | |
|---|------------------|-------|------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Typical thermal resistance, junction to case | R _{θJC} | 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_A = 25 °C unless otherwise noted)

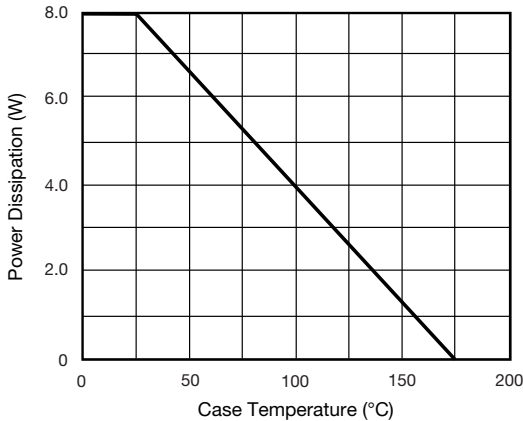


Fig. 1 - Power Derating Curve

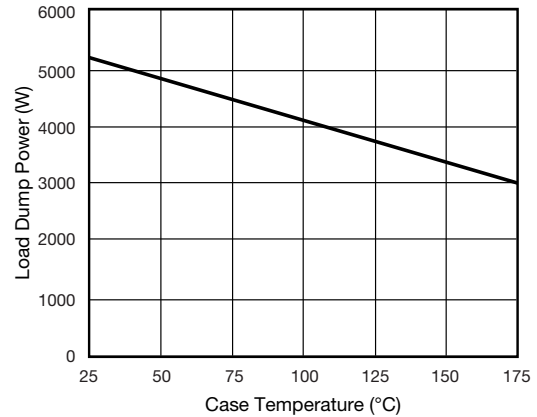


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)

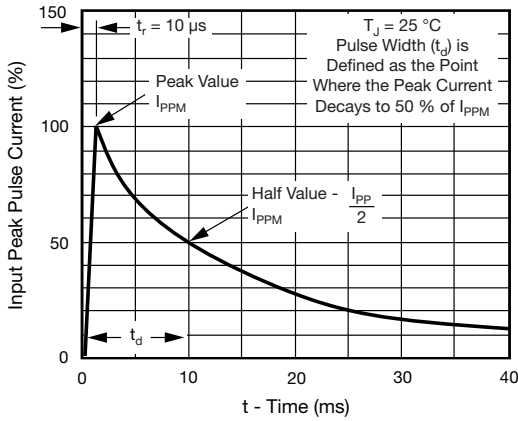


Fig. 3 - Pulse Waveform

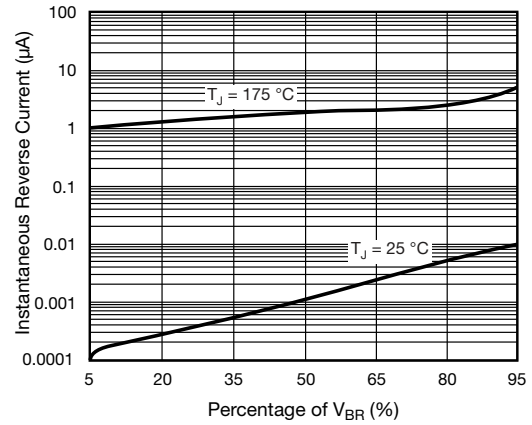


Fig. 6 - Typical Reverse Characteristics

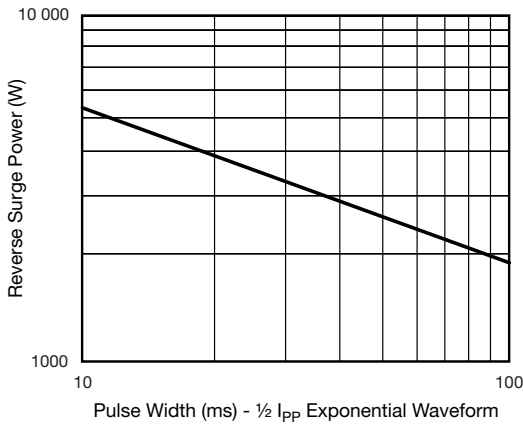


Fig. 4 - Reverse Power Capability

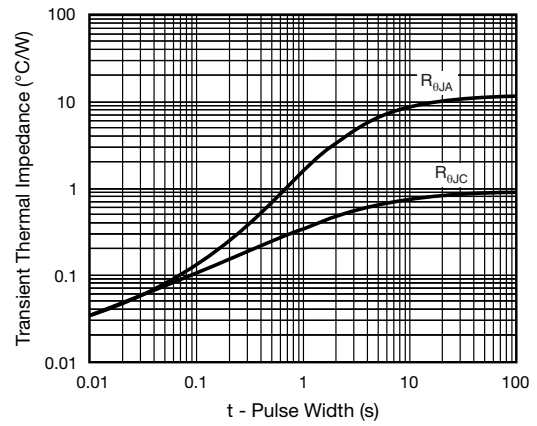


Fig. 7 - Typical Transient Thermal Impedance

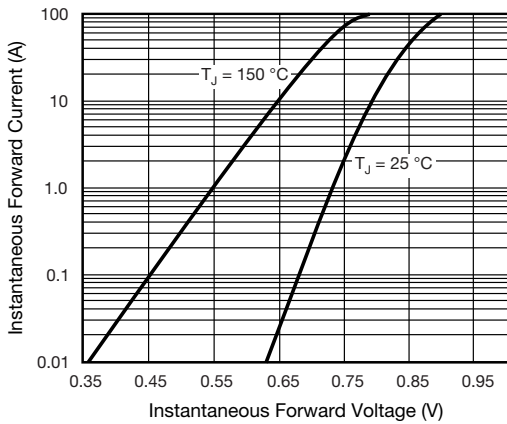
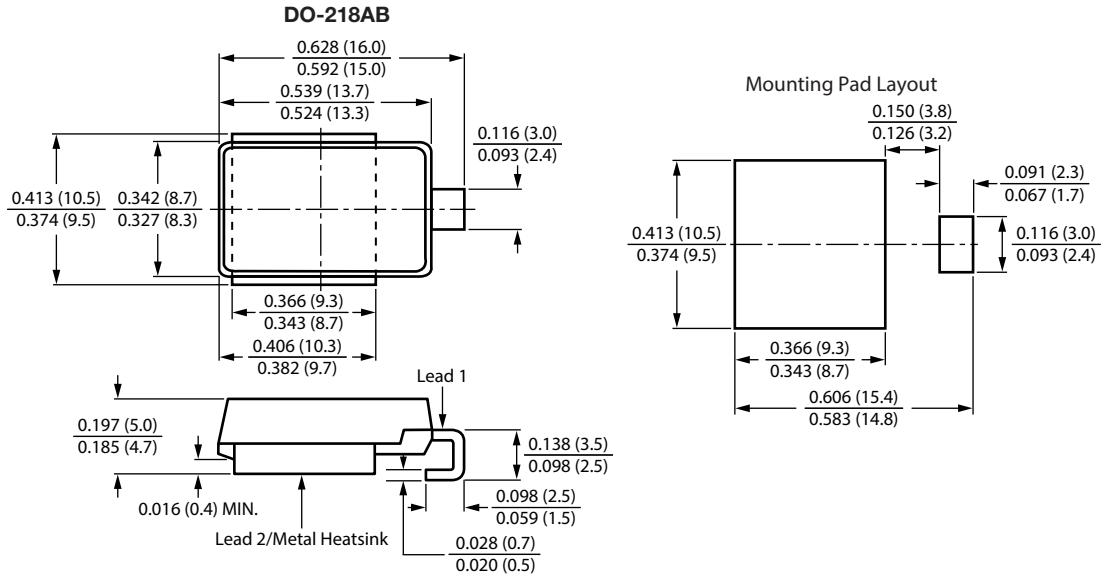


Fig. 5 - Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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