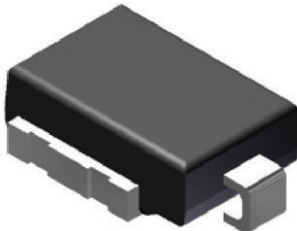




Surface Mount PAR[®] Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



DO-218 Compatible

Anode  Cathode

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

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-218AC

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

| PRIMARY CHARACTERISTICS | |
|--------------------------------------|-------------------------------|
| V_{WM} | 22 V |
| V_{BR} | 27 V |
| P_{PPM} (10 x 1000 μs) | 4600 W |
| P_D | 6 W |
| I_{RSM} | 90 A |
| I_{FSM} | 600 A |
| T_J max. | $175\text{ }^{\circ}\text{C}$ |
| Polarity | Unidirectional |
| Package | DO-218AC |

| 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} | 4600 | W |
| Power dissipation on infinite heatsink at $T_C = 25\text{ }^{\circ}\text{C}$ (fig. 1) | P_D | 6.0 | W |
| Non-repetitive peak reverse surge current for 10 μs /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 | $^{\circ}\text{C}$ |

| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) | | | |
|---|---|------|--------------------------------------|
| DEVICE TYPE | BREAKDOWN VOLTAGE V_{BR} AT I_T (V) | | STAND-OFF VOLTAGE V_{WM} (V) |
| | MIN. | MAX. | |
| SM6A27T | 24 | 30 | 22 |



| ADDITIONAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) | | | | | | |
|--|------------------------|-------------|-------------------------------------|------|------|------------------------|
| PARAMETER | TEST CONDITIONS | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Zener voltage temperature coefficient | $I_Z = 10\text{ mA}$ | V_{ZTC} | - | - | 36 | mV/ $^{\circ}\text{C}$ |
| Clamping voltage for 10 μs /10 ms exponentially decaying waveform | $I_{PP} = 65\text{ A}$ | V_C | - | - | 40.0 | V |
| Instantaneous forward voltage | $I_F = 6.0\text{ A}$ | $V_F^{(1)}$ | - | - | 0.99 | V |
| | $I_F = 100\text{ A}$ | | - | 0.94 | - | |
| Reverse leakage current | Rated V_{WM} | I_R | $T_J = 25\text{ }^{\circ}\text{C}$ | - | 0.5 | μA |
| | | | $T_J = 175\text{ }^{\circ}\text{C}$ | - | 20.0 | |

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

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|---|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SM6A27THE3/I (1) | 2.550 | I | 750 | 13" diameter plastic tape and reel, anode towards the sprocket hole |

Note

(1) AEC-Q101 qualified

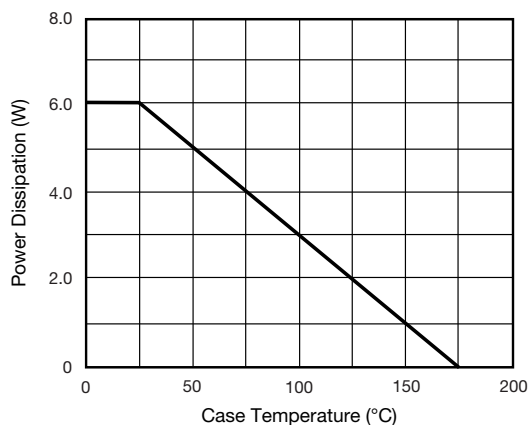
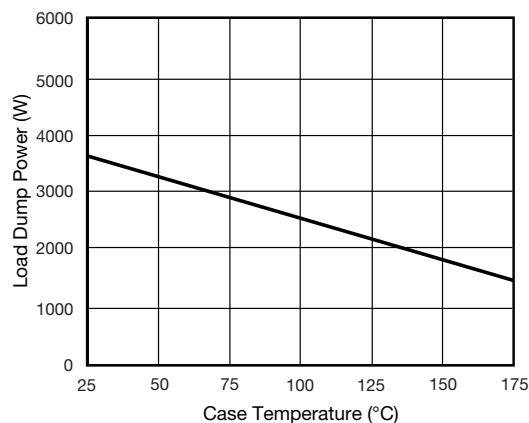
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Power Derating Curve

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

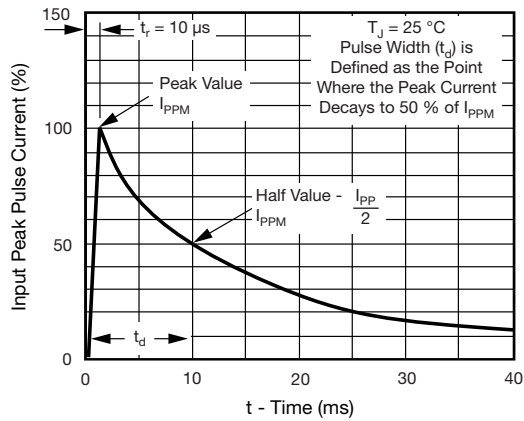


Fig. 3 - Pulse Waveform

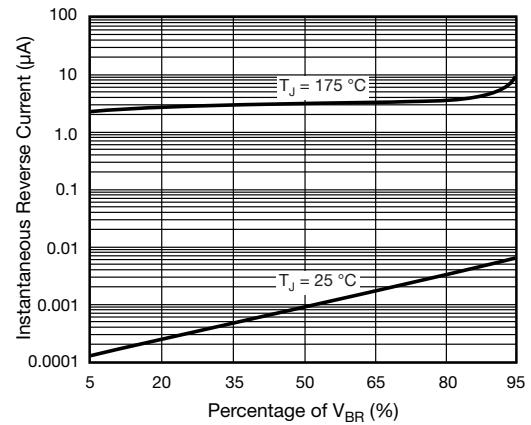


Fig. 6 - Typical Reverse Characteristics

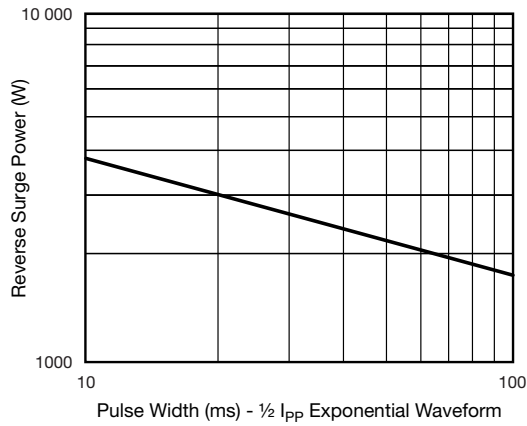


Fig. 4 - Reverse Power Capability

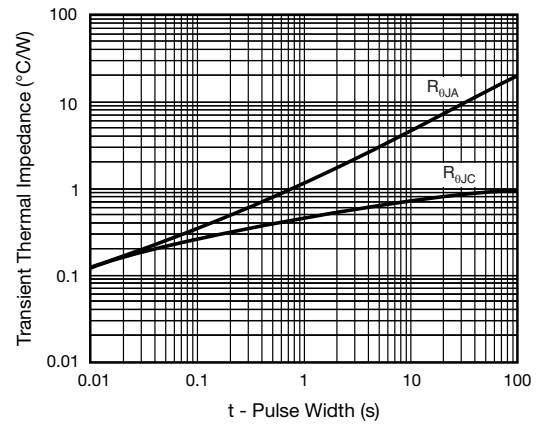


Fig. 7 - Typical Transient Thermal Impedance

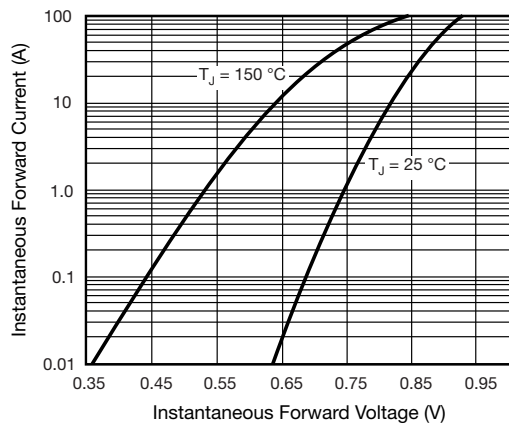
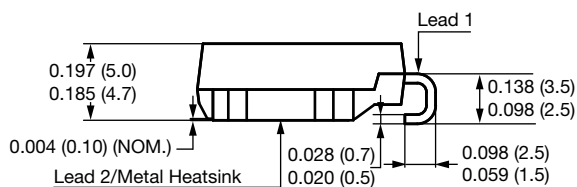
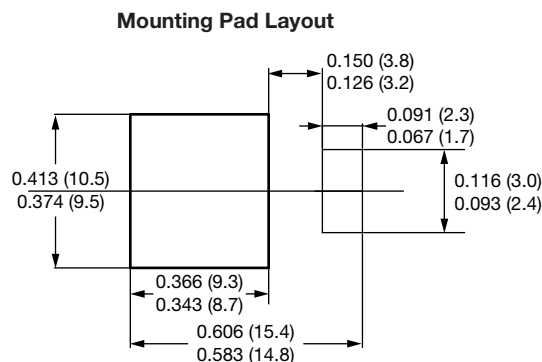
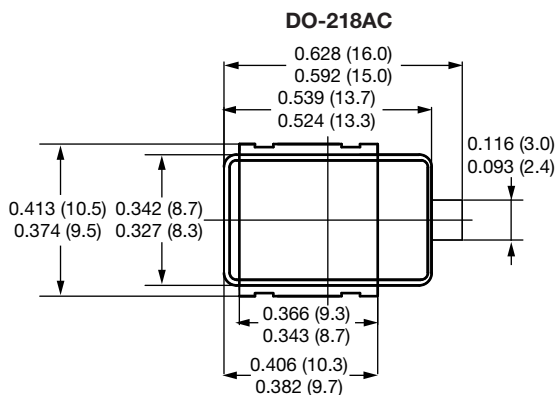


Fig. 5 - Typical Instantaneous Forward Characteristics



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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