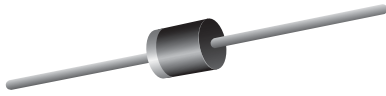


PAR[®] Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



P600

FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- $T_J = 185\text{ }^\circ\text{C}$ capability suitable for high reliability and automotive requirement
- Excellent clamping capability
- Low leakage current
- High surge capability
- Solder dip $275\text{ }^\circ\text{C}$ max. 10 s, per JESD 22-B106
- 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: P600, molded epoxy over passivated junction
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: Color band denotes cathode end

| PRIMARY CHARACTERISTICS | |
|--------------------------------------|----------------------|
| V_{WM} | 24 V |
| V_{BR} | 26.7 V to 36.2 V |
| P_{PPM} (10 x 1000 μs) | 6000 W |
| P_{PPM} (10 μs /50 ms) | 2000 W |
| P_D | 6.5 W |
| I_{RSM} | 90 A |
| I_{FSM} | 400 A |
| T_J max. | 185 $^\circ\text{C}$ |
| Polarity | Uni-directional |
| Package | P600 |

| MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | |
|--|----------------|---------------|------------------|
| PARAMETER | SYMBOL | LIMIT | UNIT |
| Peak pulse power dissipation with 10/1000 μs waveform ⁽¹⁾ with 10 μs /50 ms waveform ⁽²⁾ | P_{PPM} | 6000 2000 | W |
| Power dissipation on infinite heatsink at $T_L = 75\text{ }^\circ\text{C}$ (fig. 3) | P_D | 6.5 | W |
| Maximum working stand-off voltage | V_{WM} | 24 | V |
| Peak forward surge current 8.3 ms single half sine-wave ⁽³⁾ | I_{FSM} | 400 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | - 65 to + 185 | $^\circ\text{C}$ |

Notes

- (1) Non-repetitive current pulse, per fig. 2, with a 10/1000 μs waveform
- (2) Non-repetitive current pulse, per fig. 5, with a 10 μs /50 ms waveform
- (3) Measured on 8.3 ms half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minute maximum

| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|--|------------------------------|--|----------|------------------------------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | LIMIT | UNIT |
| Maximum DC reverse leakage current | $V_{WM} = 24\text{ V}$, | $T_A = 25\text{ }^\circ\text{C}$ $T_A = 150\text{ }^\circ\text{C}$ | I_D | 1.0 50 | μA |
| Reverse breakdown voltage | 100 mA, | $T_A = 25\text{ }^\circ\text{C min.}$ $T_A = 25\text{ }^\circ\text{C max.}$ $T_A = 150\text{ }^\circ\text{C min.}$ $T_A = 150\text{ }^\circ\text{C max.}$ | V_{BR} | 26.7 32.6 29.7 36.7 | V |
| Maximum clamping voltage | $I_{PP} = 90\text{ A}^{(1)}$ | $T_A = 25\text{ }^\circ\text{C}$ $T_A = 150\text{ }^\circ\text{C}$ | V_C | 40 45 | V |
| Maximum instantaneous forward voltage | 100 A ⁽²⁾ | | V_F | 1.8 | V |

Notes

- (1) Measured on 80 μs square pulse width
 (2) Measured on 300 μs square pulse width

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| 6KA24HE3/54 ⁽¹⁾ | 2.710 | 54 | 800 | 13" diameter paper tape and reel |

Note

- (1) AEC-Q101 qualified

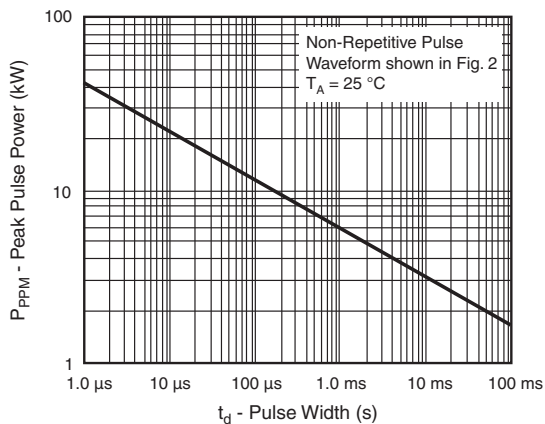
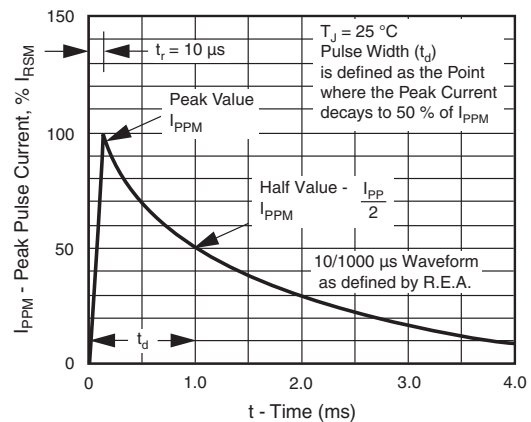
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Peak Pulse Power Rating Curve


 Fig. 2 - 10/1000 μs Pulse Waveform

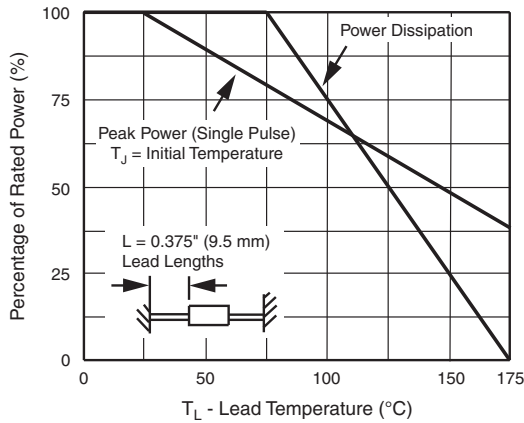


Fig. 3 - Pulse Derating Curve

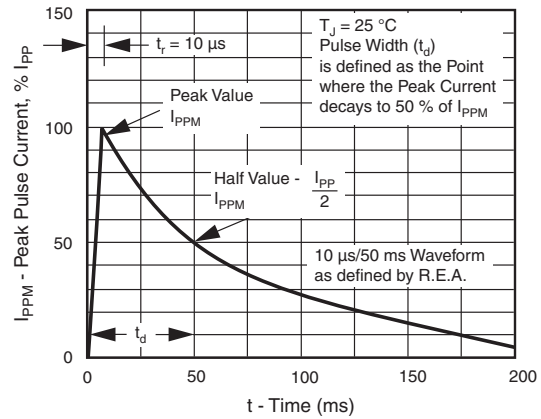


Fig. 5 - 10 μ s/50 ms Pulse Waveform

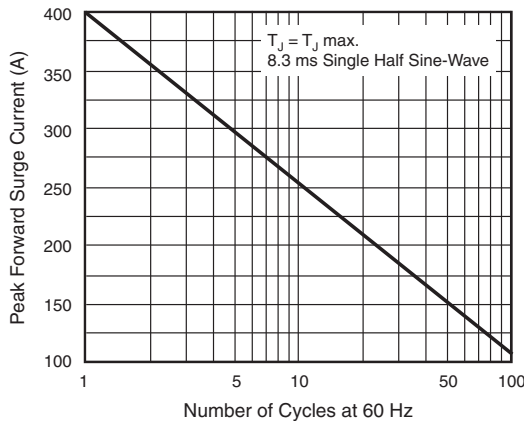
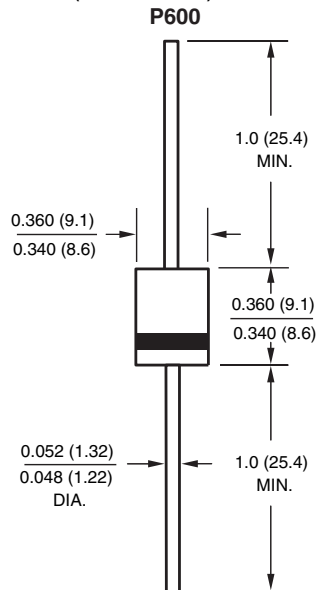


Fig. 4 - Maximum Non-Repetitive Peak Forward Surge Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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