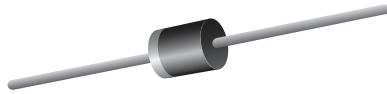


PAR[®] Transient Voltage Suppressors

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



| PRIMARY CHARACTERISTICS | |
|--------------------------------------|-----------------------------|
| V_{WM} | 24 V |
| V_{BR} | 26.7 V to 32.6 V |
| P_{PPM} (10 x 1000 μs) | 6000 W |
| P_{PPM} (10 $\mu\text{s}/50$ ms) | 2000 W |
| P_D | 6.5 W |
| I_{RSM} | 90 A |
| I_{FSM} | 400 A |
| T_J max. | $185\text{ }^\circ\text{C}$ |
| Polarity | Unidirectional |
| Package | P600 |

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lightning, 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_X - RoHS-compliant and AEC-Q101 qualified ("X" denotes revision code e.g. A, B,)

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

| 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⁾ | P_{PPM} | 6000 | W |
| | with 10 $\mu\text{s}/50$ ms waveform ⁽²⁾ | | 2000 | |
| 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 $\mu\text{s}/50$ 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) | | | | |
|---------------------------------------------------------------------------------------|-----------------------------------------------|------|-------------------------------|--------------------------------------|
| DEVICE TYPE | BREAKDOWN VOLTAGE V_{BR} AT I_T (V) | | TEST CURRENT I_T (mA) | STAND-OFF VOLTAGE V_{WM} (V) |
| | MIN. | MAX. | | |
| 6KA24 | 26.7 | 32.6 | 100 | 24 |



| ADDITIONAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | |
|----------------------------------------------------------------------------|---------------------------------------|------------------------------|-----------------|-------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | LIMIT | UNIT |
| Maximum DC reverse leakage current | V _{WM} = 24 V | T _A = 25 °C | I _D | 1.0 | μA |
| | | T _A = 150 °C | | 50 | |
| Reverse breakdown voltage | 100 mA | T _A = 150 °C min. | V _{BR} | 29.7 | V |
| | | T _A = 150 °C max. | | 36.7 | |
| Maximum clamping voltage | I _{PP} = 90 A ⁽¹⁾ | T _A = 25 °C | V _C | 40 | V |
| | | T _A = 150 °C | | 45 | |
| 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_B/C ⁽¹⁾ | 2.710 | C | 800 | 13" diameter paper tape and reel |

Note

- (1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

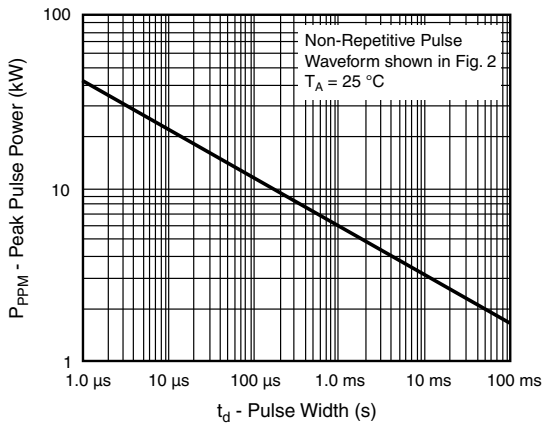


Fig. 1 - Peak Pulse Power Rating Curve

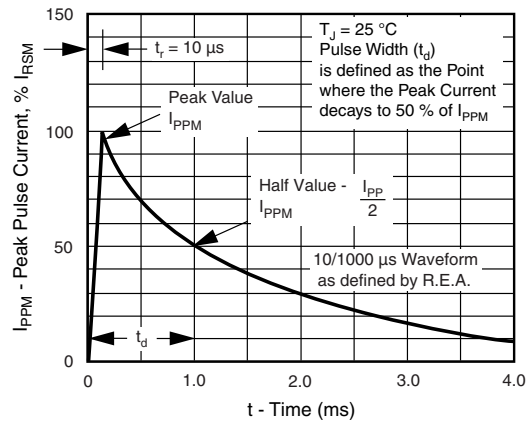


Fig. 2 - 10/1000 μs Pulse Waveform

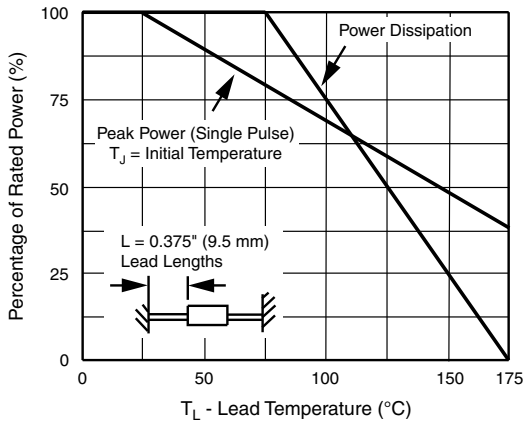


Fig. 3 - Pulse Derating Curve

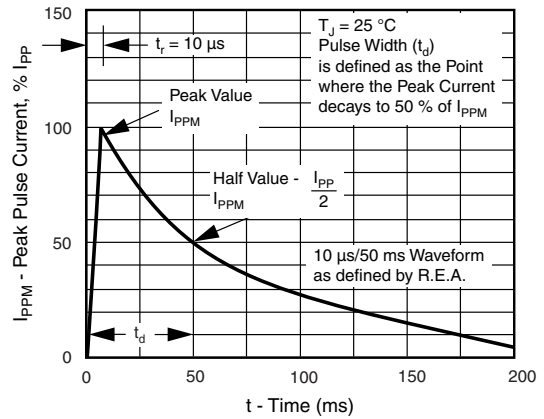


Fig. 5 - 10 μ s/50 ms Pulse Waveform

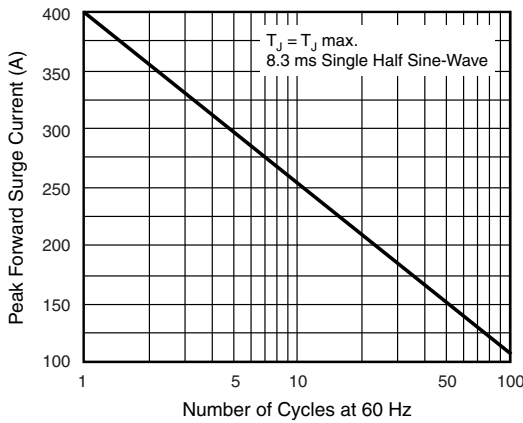
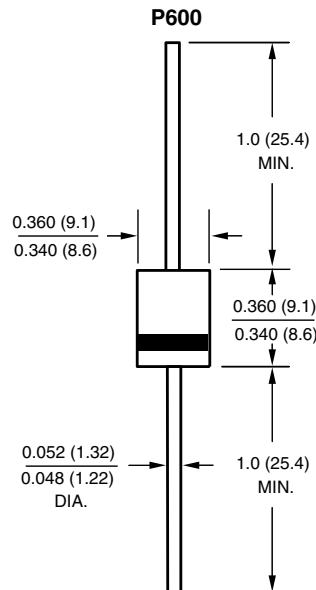


Fig. 4 - Maximum Non-Repetitive Peak Forward Surge Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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