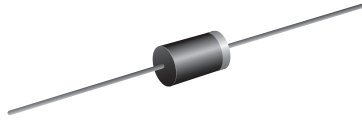


## PAR<sup>®</sup> Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



MPG06

| PRIMARY CHARACTERISTICS |                  |
|-------------------------|------------------|
| $V_{BR}$                | 10 V to 43 V     |
| $V_{WM}$                | 8.55 V to 36.8 V |
| $P_{PPM}$               | 400 W            |
| $P_D$                   | 1.0 W            |
| $I_{FSM}$               | 40 A             |
| $T_J$ max.              | 185 °C           |
| Polarity                | Uni-directional  |
| Package                 | MPG06            |

### FEATURES

- Available in uni-directional polarity only
- 400 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

### APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive, and telecommunication.

### MECHANICAL DATA

**Case:** MPG06, molded epoxy over passivated junction  
Molding compound meets UL 94 V-0 flammability rating  
Base P/NHE3\_X - RoHS-compliant, 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 ( $T_A = 25$ °C unless otherwise noted)                              |                |                |      |
|--|----------------|----------------|------|
| PARAMETER  | SYMBOL         | VALUE          | UNIT |
| Peak pulse power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup> (fig. 1) | $P_{PPM}$      | 400            | W    |
| Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)(2)</sup> (fig. 3)        | $I_{PPM}$      | See next table | A    |
| Power dissipation on infinite heatsink at $T_L = 75$ °C (fig. 5)                     | $P_D$          | 1.0            | W    |
| Peak forward surge current 8.3 ms single half sine-wave <sup>(2)</sup>               | $I_{FSM}$      | 40             | A    |
| Maximum instantaneous forward voltage at 25 A <sup>(2)</sup>                         | $V_F$          | 3.5            | V    |
| Operating junction and storage temperature range                                     | $T_J, T_{STG}$ | -65 to +185    | °C   |

#### Notes

<sup>(1)</sup> Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25$  °C per fig. 2

<sup>(2)</sup> Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |  |      |                         |                                |   |   |   |   |   |
|--|--|------|-------------------------|--------------------------------|---|---|---|---|---|
| DEVICE TYPE  | BREAKDOWN VOLTAGE $V_{BR}$ AT $I_T$ <sup>(1)</sup> (V) |      | TEST CURRENT $I_T$ (mA) | STAND-OFF VOLTAGE $V_{WM}$ (V) | MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $I_D$ ( $\mu\text{A}$ ) | REVERSE LEAKAGE AT $V_{WM}$ $T_J = 150\text{ }^\circ\text{C}$ ( $\mu\text{A}$ ) | MAXIMUM PEAK PULSE CURRENT $I_{PPM}$ <sup>(2)</sup> (A) | MAXIMUM CLAMPING VOLTAGE AT $I_{PPM}$ $V_C$ (V) | MAXIMUM TEMPERATURE COEFFICIENT OF $V_{BR}$ ( $\%/^\circ\text{C}$ ) |
|  | MIN.   | MAX. |                         |                                |   |   |   |   |   |
| TMPG06-10A   | 9.50   | 10.5 | 1.0                     | 8.55                           | 5.0   | 20.0  | 27.6  | 14.5  | 0.073   |
| TMPG06-11A   | 10.5   | 11.6 | 1.0                     | 9.40                           | 2.0   | 10.0  | 25.6  | 15.6  | 0.075   |
| TMPG06-12A   | 11.4   | 12.6 | 1.0                     | 10.2                           | 1.0   | 5.0   | 24.0  | 16.7  | 0.078   |
| TMPG06-13A   | 12.4   | 13.7 | 1.0                     | 11.1                           | 1.0   | 5.0   | 22.0  | 18.2  | 0.081   |
| TMPG06-15A   | 14.3   | 15.8 | 1.0                     | 12.8                           | 1.0   | 5.0   | 18.9  | 21.2  | 0.084   |
| TMPG06-16A   | 15.2   | 16.8 | 1.0                     | 13.6                           | 1.0   | 5.0   | 17.8  | 22.5  | 0.086   |
| TMPG06-18A   | 17.1   | 18.9 | 1.0                     | 15.3                           | 1.0   | 5.0   | 15.9  | 25.5  | 0.088   |
| TMPG06-20A   | 19.0   | 21.0 | 1.0                     | 17.0                           | 1.0   | 5.0   | 14.4  | 27.7  | 0.090   |
| TMPG06-22A   | 20.9   | 23.1 | 1.0                     | 18.8                           | 1.0   | 5.0   | 13.1  | 30.6  | 0.092   |
| TMPG06-24A   | 22.8   | 25.2 | 1.0                     | 20.5                           | 1.0   | 5.0   | 12.0  | 33.2  | 0.094   |
| TMPG06-27A   | 25.7   | 28.4 | 1.0                     | 23.1                           | 1.0   | 5.0   | 10.7  | 37.5  | 0.096   |
| TMPG06-30A   | 28.5   | 31.5 | 1.0                     | 25.6                           | 1.0   | 5.0   | 9.7   | 41.4  | 0.097   |
| TMPG06-33A   | 31.4   | 34.7 | 1.0                     | 28.2                           | 1.0   | 5.0   | 8.8   | 45.7  | 0.098   |
| TMPG06-36A   | 34.2   | 37.8 | 1.0                     | 30.8                           | 1.0   | 5.0   | 8.0   | 49.9  | 0.099   |
| TMPG06-39A   | 37.1   | 41.0 | 1.0                     | 33.3                           | 1.0   | 5.0   | 7.4   | 53.9  | 0.100   |
| TMPG06-43A   | 40.9   | 45.2 | 1.0                     | 36.8                           | 1.0   | 5.0   | 6.7   | 59.3  | 0.101   |

**Notes**

- (1) Pulse test:  $t_p \leq 50\text{ ms}$   
(2) Surge current waveform per fig. 3 and derated per fig. 2  
(3) All terms and symbols are consistent with ANSI/IEEE CA62.35

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                  |
|---------------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED PIN                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
| TMPG06-10AHE3_A/C <sup>(1)</sup>      | 0.218           | C                      | 5500          | 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)

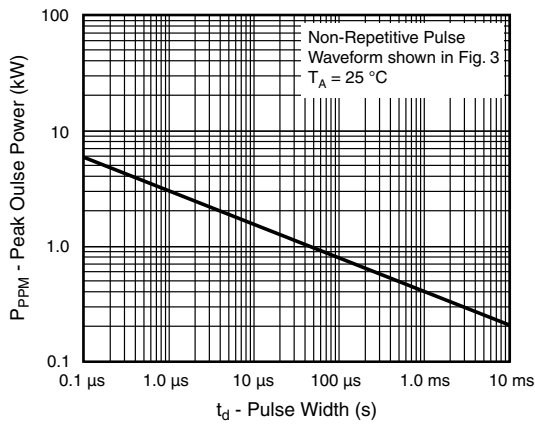


Fig. 1 - Peak Pulse Power Rating Curve

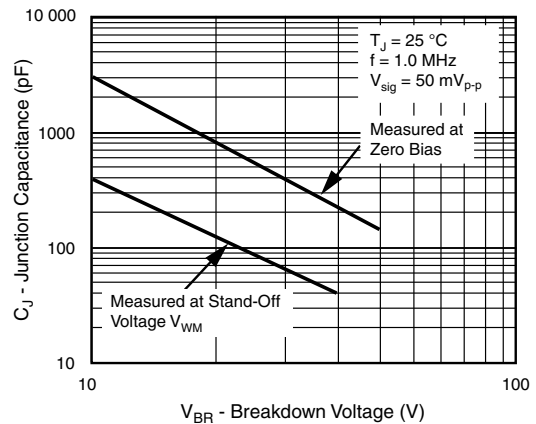


Fig. 4 - Typical Junction Capacitance

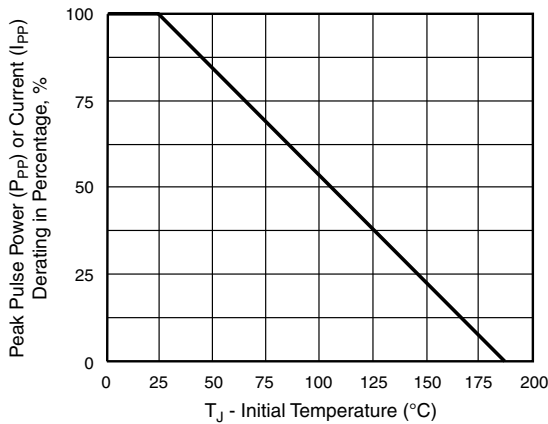


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

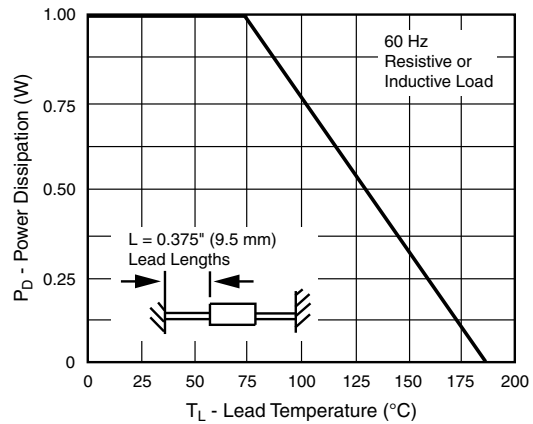


Fig. 5 - Power Derating Curve

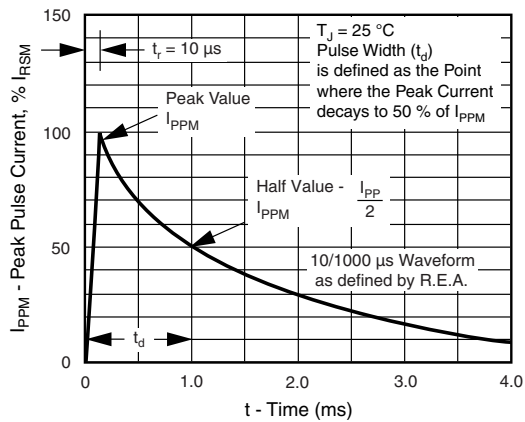


Fig. 3 - Pulse Waveform

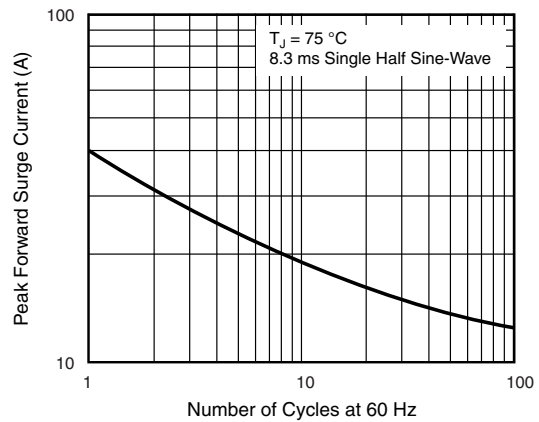
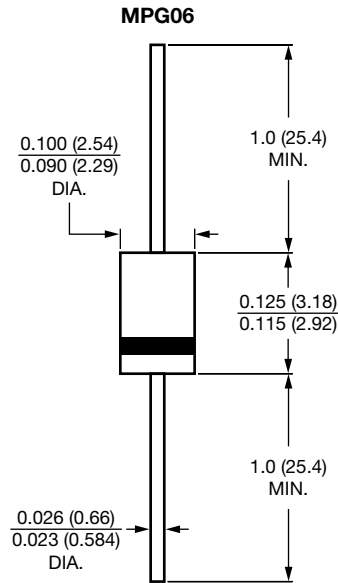


Fig. 6 - Maximum Non-Repetitive Forward Surge Current



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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