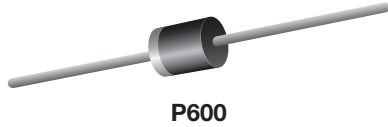




# General Purpose Plastic Rectifier



## FEATURES

- Low forward voltage drop
- Low leakage current
- High forward current capability
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS COMPLIANT

## TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes application.

## MECHANICAL DATA

**Case:** P600, void-free molded epoxy body  
Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** Color band denotes cathode end

| PRIMARY CHARACTERISTICS |   |
|-------------------------|---|
| $I_{F(AV)}$             | 6.0 A   |
| $V_{RRM}$               | 50 V, 100 V, 200 V, 400 V, 600 V, 800 V, 1000 V |
| $I_{FSM}$               | 400 A   |
| $V_F$                   | 0.9 V, 1.0 V                                    |
| $I_R$                   | 5.0 $\mu$ A                                     |
| $T_J$ max.              | 150 °C  |
| Package                 | P600  |
| Diode variations        | Single die                                      |

| MAXIMUM RATINGS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)         |                |  |       |       |       |       |       |       |      |   |
|--|----------------|--|-------|-------|-------|-------|-------|-------|------|---|
| PARAMETER  | SYMBOL         | P600A  | P600B | P600D | P600G | P600J | P600K | P600M | UNIT |   |
| Max. repetitive peak reverse voltage   | $V_{RRM}$      | 50   | 100   | 200   | 400   | 600   | 800   | 1000  | V    |   |
| Max. RMS voltage   | $V_{RMS}$      | 35   | 70    | 140   | 280   | 420   | 560   | 700   | V    |   |
| Max. DC blocking voltage   | $V_{DC}$       | 50   | 100   | 200   | 400   | 600   | 800   | 1000  | V    |   |
| Max. average forward rectified current at  | $I_{F(AV)}$    | $T_A = 60\text{ }^\circ\text{C}$ , 0.375" (9.5 mm) lead length (fig. 1)  |       |       |       |       |       | 6.0   |      | A |
|  |                | $T_L = 60\text{ }^\circ\text{C}$ , 0.125" (3.18 mm) lead length (fig. 2) |       |       |       |       |       | 22    |      |   |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 400  |       |       |       |       |       | A     |      |   |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | - 50 to + 150  |       |       |       |       |       | °C    |      |   |

| ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |   |          |       |       |       |       |       |       |         |      |   |
|---|---|----------|-------|-------|-------|-------|-------|-------|---------|------|---|
| PARAMETER   | TEST CONDITIONS   | SYMBOL   | P600A | P600B | P600D | P600G | P600J | P600K | P600M   | UNIT |   |
| Max. instantaneous forward voltage  | 6.0 A   | $V_F$    | 0.90  |       |       |       |       |       | 1.0     |      | V |
|   | 100 A   |          | 1.30  |       |       |       |       |       | 1.4     |      |   |
| Max. DC reverse current at rated DC blocking voltage                                  | $T_A = 25\text{ }^\circ\text{C}$<br>$T_A = 100\text{ }^\circ\text{C}$     | $I_R$    | 5.0   |       |       |       |       |       | $\mu$ A |      |   |
|   |   |          | 1.0   |       |       |       |       |       | mA      |      |   |
| Typical reverse recovery time   | $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ ,<br>$t_{rr} = 0.25\text{ A}$ | $t_{rr}$ | 2.5   |       |       |       |       |       | $\mu$ s |      |   |
| Typical junction capacitance  | 4.0 V, 1 MHz  | $C_J$    | 150   |       |       |       |       |       | pF      |      |   |



| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                       |       |       |       |       |       |       |       |                    |
|--|-----------------------|-------|-------|-------|-------|-------|-------|-------|--------------------|
| PARAMETER  | SYMBOL                | P600A | P600B | P600D | P600G | P600J | P600K | P600M | UNIT               |
| Typical thermal resistance   | $R_{\theta JA}^{(1)}$ | 20    |       |       |       |       |       |       | $^\circ\text{C/W}$ |
|  | $R_{\theta JL}^{(1)}$ | 4.0   |       |       |       |       |       |       |                    |

**Note**

(1) Thermal resistance from junction to ambient and from junction to lead at 0.375" (9.5 mm) lead length, PCB mounted with 1.1" x 1.1" (30 mm x 30 mm) copper pads

| ORDERING INFORMATION (Example) |                 |                        |               |                                  |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
| P600J-E3/54                    | 2.1             | 54                     | 800           | 13" diameter paper tape and reel |
| P600J-E3/73                    | 2.1             | 73                     | 300           | Ammo pack packaging              |

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

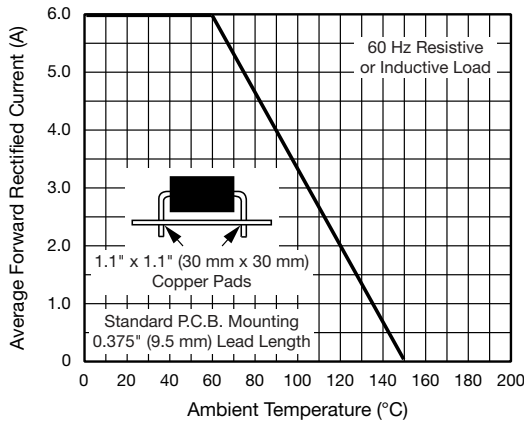


Fig. 1 - Max. Forward Current Derating Curve

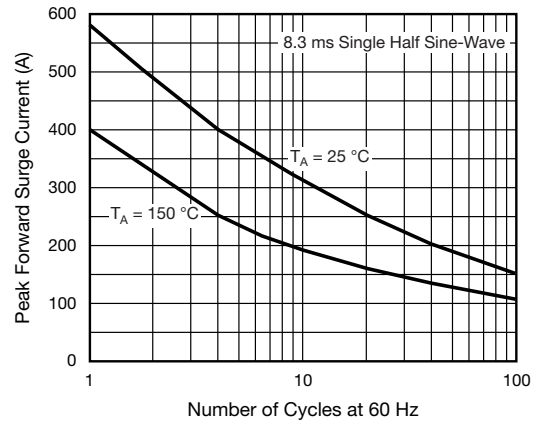


Fig. 3 - Typical Instantaneous Forward Characteristics

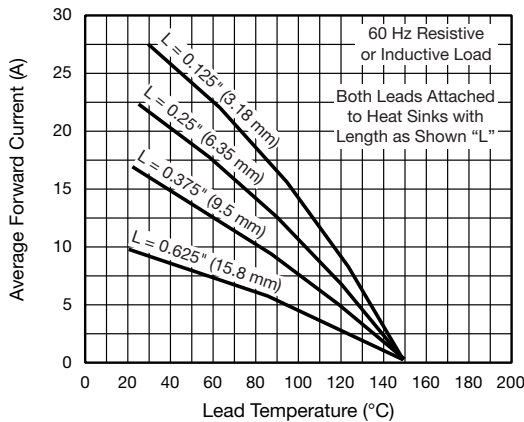


Fig. 2 - Max. Non-repetitive Forward Surge Current

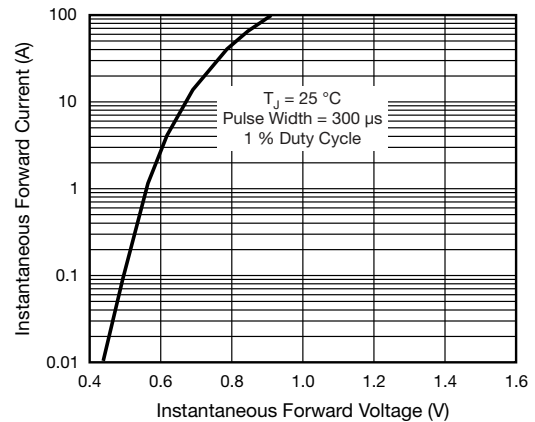


Fig. 4 - Typical Instantaneous Forward Characteristics

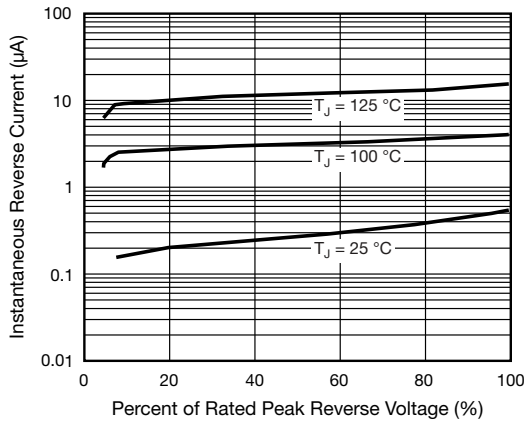


Fig. 5 - Typical Reverse Characteristics

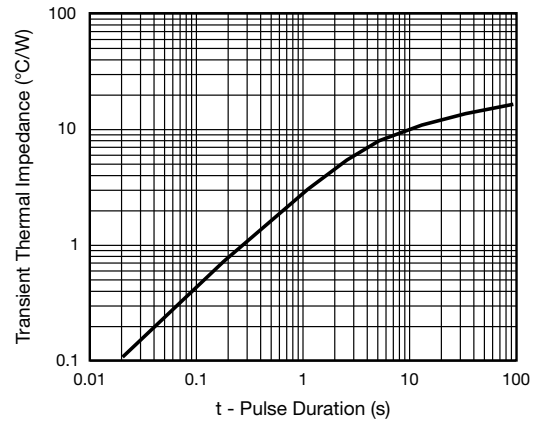
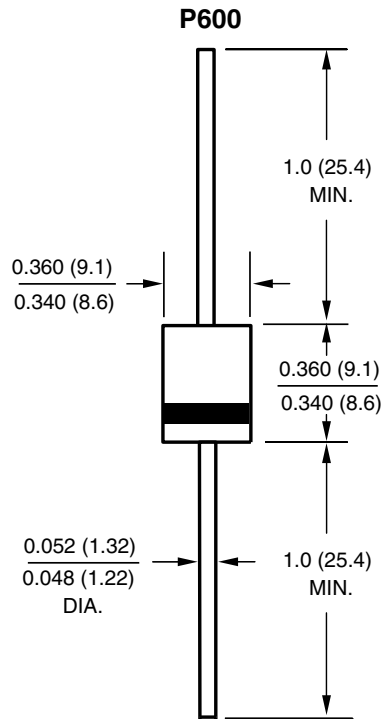


Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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