

## Glass Passivated Junction Rectifier



### FEATURES

- Superrectifier structure for high reliability application
- Cavity-free glass-passivated junction
- Low forward voltage drop
- Low leakage current,  $I_R$  less than 0.1  $\mu\text{A}$
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC


**RoHS**  
COMPLIANT

### PRIMARY CHARACTERISTICS

|             |                   |
|-------------|-------------------|
| $I_{F(AV)}$ | 1.5 A             |
| $V_{RRM}$   | 50 V to 1000 V    |
| $I_{FSM}$   | 50 A              |
| $I_R$       | 5.0 $\mu\text{A}$ |
| $V_F$       | 1.1 V             |
| $T_J$ max.  | 175 °C            |

### TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes for both consumer and automotive applications.

### MECHANICAL DATA

**Case:** DO-204AC, molded epoxy over glass body  
Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS compliant, commercial grade  
Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes cathode end

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

| PARAMETER   | SYMBOL         | GP15A         | GP15B | GP15D | GP15G | GP15J | GP15K | GP15M | UNIT          |
|---|----------------|---------------|-------|-------|-------|-------|-------|-------|---------------|
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 50            | 100   | 200   | 400   | 600   | 800   | 1000  | V             |
| Maximum RMS voltage   | $V_{RMS}$      | 35            | 70    | 140   | 280   | 420   | 560   | 700   | V             |
| Maximum DC blocking voltage   | $V_{DC}$       | 50            | 100   | 200   | 400   | 600   | 800   | 1000  | V             |
| Maximum average forward rectified current 0.375" (9.5 mm) lead length at $T_A = 55\text{ °C}$             | $I_{F(AV)}$    | 1.5           |       |       |       |       |       |       | A             |
| Peak forward surge current 8.3 ms single half-sine wave superimposed on rated load                        | $I_{FSM}$      | 50            |       |       |       |       |       |       | A             |
| Maximum full load reverse current, full cycle average 0.375" (9.5 mm) lead length at $T_A = 55\text{ °C}$ | $I_{R(AV)}$    | 100           |       |       |       |       |       |       | $\mu\text{A}$ |
| Operating junction and storage temperature range  | $T_J, T_{STG}$ | - 65 to + 175 |       |       |       |       |       |       | °C            |

# GP15A thru GP15M

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |  |                         |                 |       |       |       |       |       |       |       |      |
|--|--|-------------------------|-----------------|-------|-------|-------|-------|-------|-------|-------|------|
| PARAMETER  | TEST CONDITIONS  |                         | SYMBOL          | GP15A | GP15B | GP15D | GP15G | GP15J | GP15K | GP15M | UNIT |
| Maximum instantaneous forward voltage                                      | 1.5 A  |                         | V <sub>F</sub>  |       |       |       | 1.1   |       |       |       | V    |
| Maximum reverse current at rated DC blocking voltage                       |  | T <sub>A</sub> = 25 °C  | I <sub>R</sub>  |       |       |       | 5.0   |       |       |       | μA   |
|  |  | T <sub>A</sub> = 150 °C |                 |       |       |       | 200   |       |       |       |      |
| Typical reverse recovery time  | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 V, I <sub>rr</sub> = 0.25 A |                         | t <sub>rr</sub> |       |       |       | 3.5   |       |       |       | μs   |
| Typical junction capacitance   | 4.0 V, 1 MHz   |                         | C <sub>J</sub>  |       |       |       | 15    |       |       |       | pF   |

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                 |       |       |       |       |       |       |       |      |      |
|---|---------------------------------|-------|-------|-------|-------|-------|-------|-------|------|------|
| PARAMETER   | SYMBOL                          | GP15A | GP15B | GP15D | GP15G | GP15J | GP15K | GP15M | UNIT |      |
| Typical thermal resistance  | R <sub>θJA</sub> <sup>(1)</sup> |       |       |       |       |       | 45    |       |      | °C/W |
|   | R <sub>θJL</sub> <sup>(1)</sup> |       |       |       |       |       | 20    |       |      |      |

**Note**

<sup>(1)</sup> Thermal resistance from junction to ambient and from junction to lead at 0.375" (9.5 mm) lead length, PCB mounted

| ORDERING INFORMATION (Example) |                 |                        |               |                                  |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
| GP15J-E3/54                    | 0.425           | 54                     | 4000          | 13" diameter paper tape and reel |
| GP15J-E3/73                    | 0.425           | 73                     | 2000          | Ammo pack packaging              |
| GP15JHE3/54 <sup>(1)</sup>     | 0.425           | 54                     | 4000          | 13" diameter paper tape and reel |
| GP15JHE3/73 <sup>(1)</sup>     | 0.425           | 73                     | 2000          | Ammo pack packaging              |

**Note**

<sup>(1)</sup> AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub> = 25 °C unless otherwise noted)

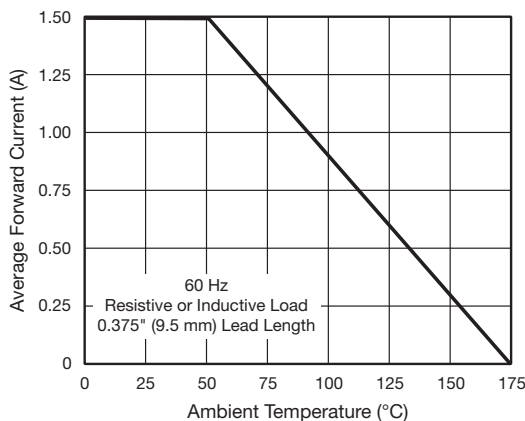


Fig. 1 - Forward Current Derating Curve

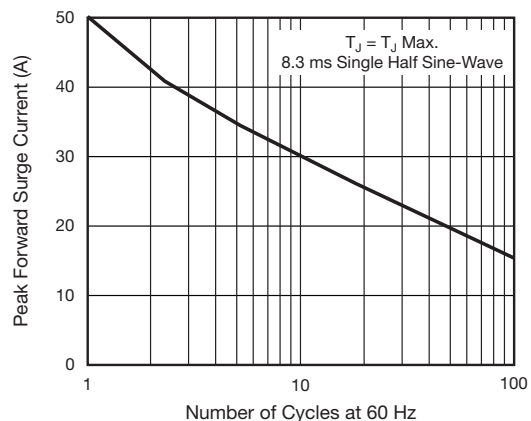


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

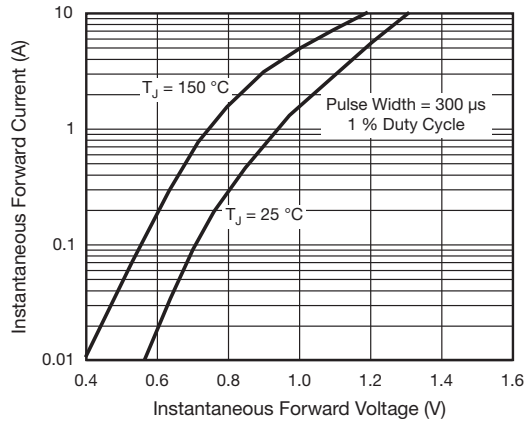


Fig. 3 - Typical Instantaneous Forward Characteristics

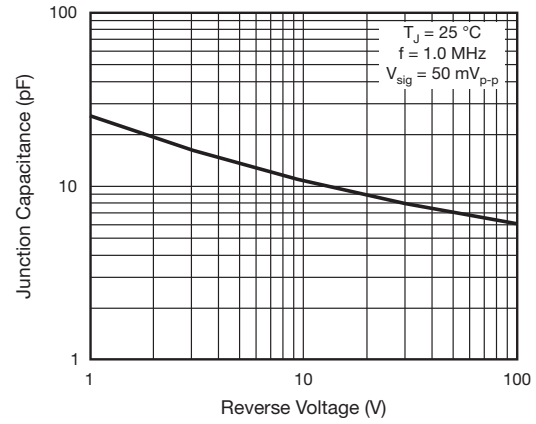


Fig. 5 - Typical Junction Capacitance

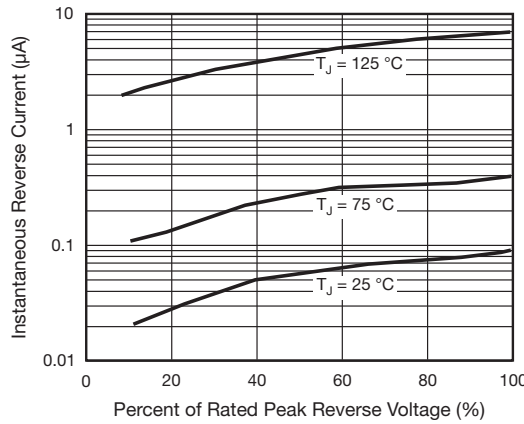


Fig. 4 - Typical Reverse Characteristics

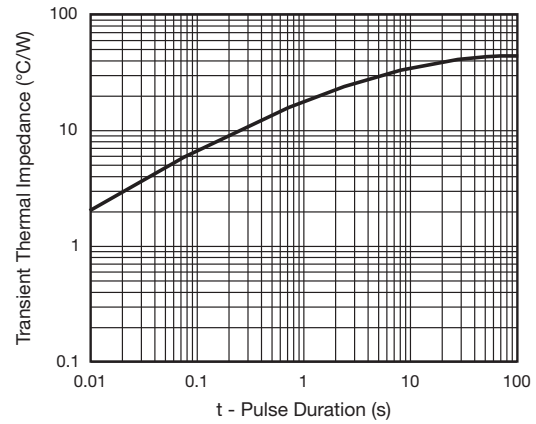
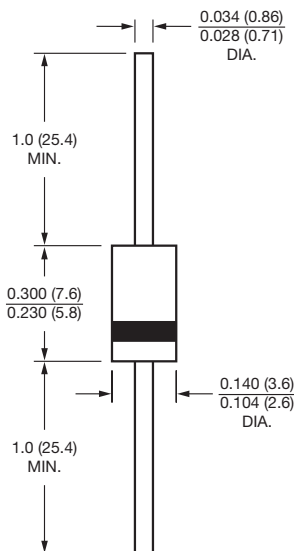


Fig. 6 - Typical Transient Thermal Impedance

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### DO-204AC (DO-15)





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