

## Glass Passivated Junction Fast Switching Rectifier



### FEATURES

- Superectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- Fast switching for high efficiency
- Low leakage current
- 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
- Halogen-free according to IEC 61249-2-21 definition



RoHS  
COMPLIANT

### TYPICAL APPLICATIONS

For use in fast switching rectification of power supply, inverters, converters and freewheeling diodes for consumer, automotive, and telecommunication.

### MECHANICAL DATA

**Case:** DO-204AL, 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

| PRIMARY CHARACTERISTICS |                        |
|-------------------------|------------------------|
| $I_{F(AV)}$             | 1.0 A                  |
| $V_{RRM}$               | 50 V to 1000 V         |
| $I_{FSM}$               | 30 A                   |
| $t_{tr}$                | 150 ns, 250 ns, 500 ns |
| $I_R$                   | 5.0 $\mu$ A            |
| $V_F$                   | 1.3 V                  |
| $T_J$ max.              | 175 °C                 |

| MAXIMUM RATINGS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)   |                |               |         |         |         |         |         |         |                  |
|--|----------------|---------------|---------|---------|---------|---------|---------|---------|------------------|
| PARAMETER  | SYMBOL         | RG P10A       | RG P10B | RG P10D | RG P10G | RG P10J | RG P10K | RG P10M | 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 $T_A = 55\text{ }^\circ\text{C}$          | $I_{F(AV)}$    | 1.0           |         |         |         |         |         |         | A                |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load                                 | $I_{FSM}$      | 30            |         |         |         |         |         |         | A                |
| Maximum full load reverse current, full cycle average 0.375" (9.5 mm) lead length $T_A = 55\text{ }^\circ\text{C}$ | $I_{R(AV)}$    | 100           |         |         |         |         |         |         | $\mu$ A          |
| Operating junction and storage temperature range   | $T_J, T_{STG}$ | - 65 to + 175 |         |         |         |         |         |         | $^\circ\text{C}$ |

# RGP10A thru RGP10M

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |  |                 |        |        |        |        |        |        |        |      |    |
|--|--|-----------------|--------|--------|--------|--------|--------|--------|--------|------|----|
| PARAMETER  | TEST CONDITIONS  | SYMBOL          | RGP10A | RGP10B | RGP10D | RGP10G | RGP10J | RGP10K | RGP10M | UNIT |    |
| Maximum instantaneous forward voltage                                      | 1.0 A  | V <sub>F</sub>  | 1.3    |        |        |        |        |        |        |      | V  |
| Maximum DC 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    |        |        |        |        |        |        |      |    |
| Maximum reverse recovery time  | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A | t <sub>rr</sub> |        | 150    |        |        | 250    |        | 500    | ns   |    |
| 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                          | RGP10A | RGP10B | RGP10D | RGP10G | RGP10J | RGP10K | RGP10M | UNIT |      |
| Typical thermal resistance  | R <sub>θJA</sub> <sup>(1)</sup> | 55     |        |        |        |        |        |        |      | °C/W |

**Note**

<sup>(1)</sup> Thermal resistance from junction to ambient 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                    |
| RGP10J-E3/54                   | 0.336           | 54                     | 5500          | 13" diameter paper tape and reel |
| RGP10J-E3/73                   | 0.336           | 73                     | 3000          | Ammo pack packaging              |
| RGP10JHE3/54 <sup>(1)</sup>    | 0.336           | 54                     | 5500          | 13" diameter paper tape and reel |
| RGP10JHE3/73 <sup>(1)</sup>    | 0.336           | 73                     | 3000          | Ammo pack packaging              |

**Note**

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

## RATINGS AND CHARACTERISTICS CURVES

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

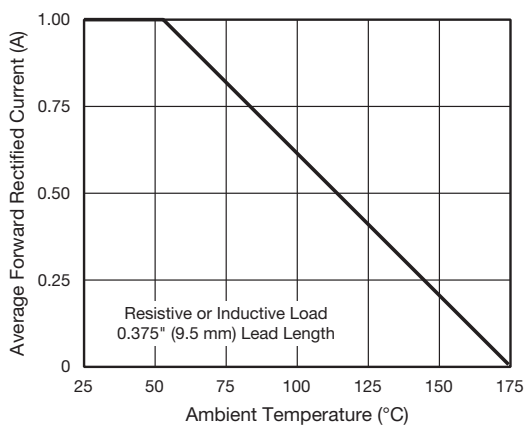


Fig. 1 - Forward Current Derating Curve

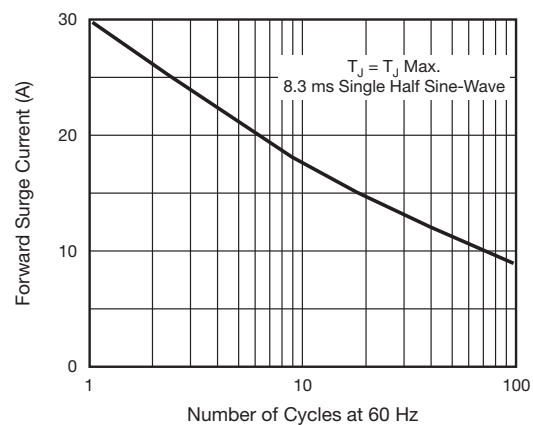


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current



Fig. 3 - Typical Instantaneous Forward Characteristics



Fig. 5 - Typical Junction Capacitance



Fig. 4 - Typical Reverse Characteristics



Fig. 6 - Typical Transient Thermal Impedance

## PACKAGING OUTLINE DIMENSIONS in inches (millimeters)

### DO-204AL (DO-41)



**Note**

- Lead diameter is  $\frac{0.026 (0.66)}{0.023 (0.58)}$  for suffix "E" part numbers



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Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)