

## Glass Passivated Junction Fast Switching Rectifier



### FEATURES

- Superelectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- Fast switching for high efficiency
- Low leakage current, typical  $I_R$  less than  $0.2 \mu A$
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Solder dip  $275^\circ C$  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

### 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-201AD, 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

|             |                |
|-------------|----------------|
| $I_{F(AV)}$ | 3.0 A          |
| $V_{RRM}$   | 50 V to 1000 V |
| $I_{FSM}$   | 125 A          |
| $V_F$       | 1.3 V          |
| $I_R$       | $5.0 \mu A$    |
| $T_J$ max.  | $175^\circ C$  |

### MAXIMUM RATINGS ( $T_A = 25^\circ C$ unless otherwise noted)

| PARAMETER                                                                                                     | SYMBOL         | RGP30A        | RGP30B | RGP30D | RGP30G | RGP30J | RGP30K | RGP30M | 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<br>0.375" (9.5 mm) lead length at $T_A = 55^\circ C$                | $I_{F(AV)}$    | 3.0           |        |        |        |        |        |        | A          |
| Peak forward surge current 8.3 ms single<br>half sine-wave superimposed on rated load                         | $I_{FSM}$      | 125           |        |        |        |        |        |        | A          |
| Maximum full load reverse current,<br>full cycle average 0.375" (9.5 mm)<br>lead length at $T_A = 55^\circ C$ | $I_{R(AV)}$    | 100           |        |        |        |        |        |        | $\mu A$    |
| Operating junction and<br>storage temperature range                                                           | $T_J, T_{STG}$ | - 65 to + 175 |        |        |        |        |        |        | $^\circ C$ |

# RGP30A thru RGP30M

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                                                          |                         |                 |        |        |        |        |        |        |        |      |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|-----------------|--------|--------|--------|--------|--------|--------|--------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                          |                         | SYMBOL          | RGP30A | RGP30B | RGP30D | RGP30G | RGP30J | RGP30K | RGP30M | UNIT |
| Maximum instantaneous forward voltage                                      | 3.0 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> = 125 °C |                 | 100    |        |        |        |        |        |        |      |
| 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>  | 60     |        |        |        |        |        |        | pF   |

| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                       |  |        |        |        |        |        |        |        |                      |
|--------------------------------------------------------------------------------------|-----------------------|--|--------|--------|--------|--------|--------|--------|--------|----------------------|
| PARAMETER                                                                            | SYMBOL                |  | RGP30A | RGP30B | RGP30D | RGP30G | RGP30J | RGP30K | RGP30M | UNIT                 |
| Typical thermal resistance                                                           | $R_{\theta JA}^{(1)}$ |  | 20     |        |        |        |        |        |        | $^{\circ}\text{C/W}$ |

## Note

(1) Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length, P.C.B. mounted

| ORDERING INFORMATION (Example) |                 |                        |               |                                  |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
| RGP30J-E3/54                   | 1.28            | 54                     | 1400          | 13" diameter paper tape and reel |
| RGP30J-E3/73                   | 1.28            | 73                     | 1000          | Ammo pack packaging              |
| RGP30JHE3/54 <sup>(1)</sup>    | 1.28            | 54                     | 1400          | 13" diameter paper tape and reel |
| RGP30JHE3/73 <sup>(1)</sup>    | 1.28            | 73                     | 1000          | Ammo pack packaging              |

## Note

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

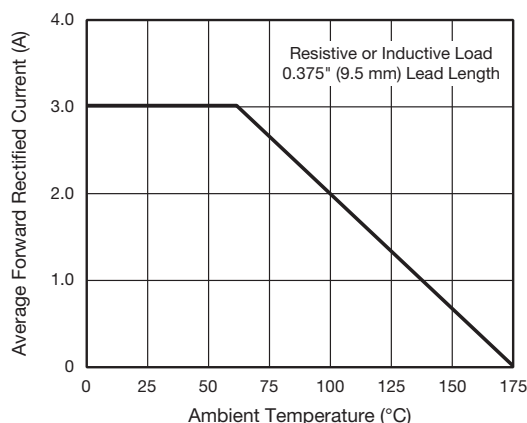


Fig. 1 - Forward Current Derating Curve

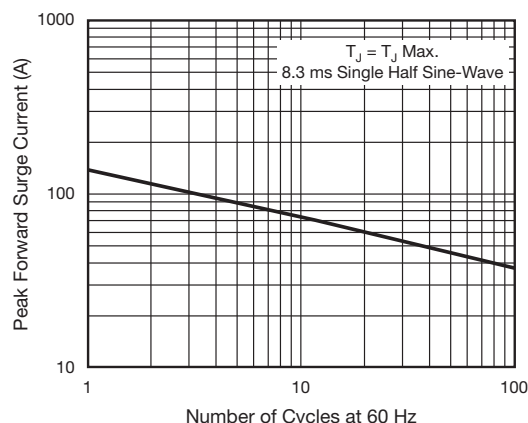


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

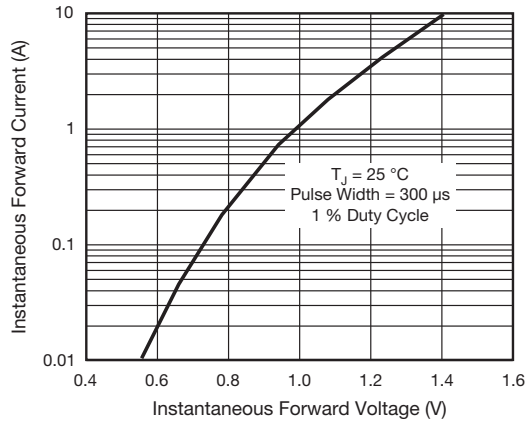


Fig. 3 - Typical Instantaneous Forward Characteristics

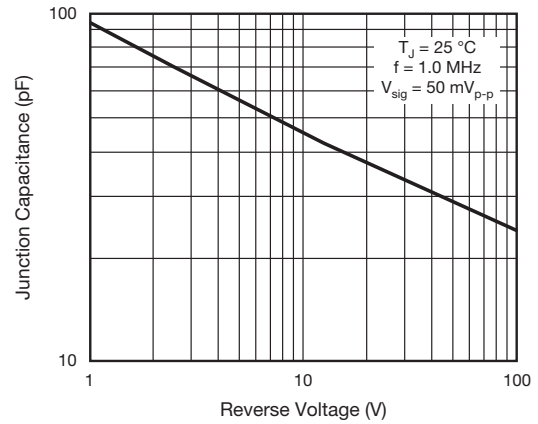


Fig. 5 - Typical Junction Capacitance

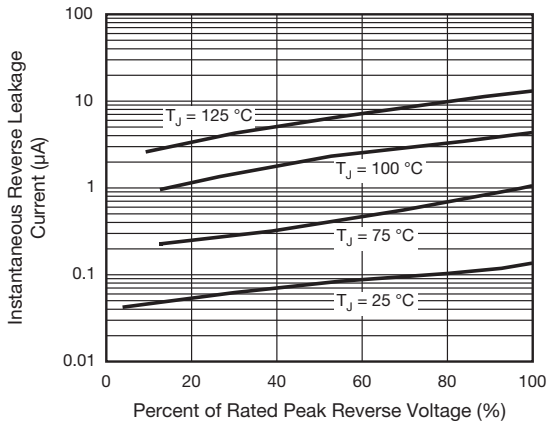
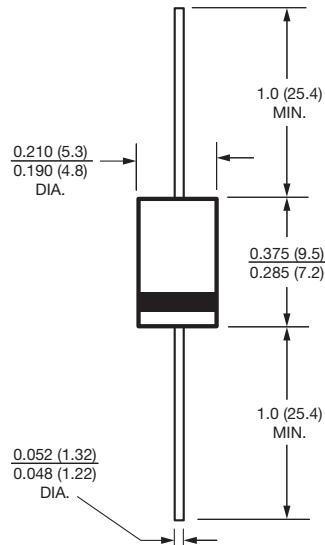


Fig. 4 - Typical Reverse Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters) DO-201AD





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