

# Glass Passivated Junction Fast Switching Plastic Rectifier

**SUPERECTIFIER®**

**DO-204AL (DO-41)**

## FEATURES

- Superectifier 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
- 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

## TYPICAL APPLICATIONS

High voltage rectification of G2 grid CRT and TV, snubber circuit of camera flash, snubber circuit of automotive ignition module.

## 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

|                 |                  |
|-----------------|------------------|
| $I_{F(AV)}$     | 0.5 A            |
| $V_{RRM}$       | 1200 V to 2000 V |
| $I_{FSM}$       | 20 A             |
| $t_{rr}$        | 300 ns           |
| $I_R$           | 5.0 $\mu A$      |
| $T_J$ max.      | 175 °C           |
| Package         | DO-204AL (DO-41) |
| Diode variation | Single die       |

## MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

| PARAMETER                                                                                 | SYMBOL         | RGP02-12E     | RGP02-14E | RGP02-15E | RGP02-16E | RGP02-17E | RGP02-18E | RGP02-20E | UNIT |
|-------------------------------------------------------------------------------------------|----------------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|------|
| Maximum repetitive peak reverse voltage                                                   | $V_{RRM}$      | 1200          | 1400      | 1500      | 1600      | 1700      | 1800      | 2000      | V    |
| Maximum RMS voltage                                                                       | $V_{RMS}$      | 840           | 980       | 1050      | 1120      | 1190      | 1260      | 1400      | V    |
| Maximum DC blocking voltage                                                               | $V_{DC}$       | 1200          | 1400      | 1500      | 1600      | 1700      | 1800      | 2000      | V    |
| Maximum average forward rectified current<br>0.375" (9.5 mm) lead length at $T_A = 55$ °C | $I_{F(AV)}$    | 0.5           |           |           |           |           |           |           | A    |
| Peak forward surge current<br>8.3 ms single half sine-wave superimposed on rated          | $I_{FSM}$      | 20            |           |           |           |           |           |           | A    |
| Operating junction and storage temperature range                                          | $T_J, T_{STG}$ | - 65 to + 175 |           |           |           |           |           |           | °C   |

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

| PARAMETER                                               | TEST CONDITIONS                                                          |                         | SYMBOL          | RGP02-12E | RGP02-14E | RGP02-15E | RGP02-16E | RGP02-17E | RGP02-18E | RGP02-20E | UNIT |
|---------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------|
| Maximum instantaneous forward voltage                   | 0.1 A                                                                    |                         | V <sub>F</sub>  | 1.8       |           |           |           |           |           |           | 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 |                 | 50        |           |           |           |           |           |           |      |
| 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> | 300       |           |           |           |           |           |           | ns   |

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

| PARAMETER                  | SYMBOL                | RGP02-12E | RGP02-14E | RGP02-15E | RGP02-16E | RGP02-17E | RGP02-18E | RGP02-20E | UNIT |
|----------------------------|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------|
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 65        |           |           |           |           |           |           | °C/W |
|                            | $R_{\theta JL}^{(1)}$ | 30        |           |           |           |           |           |           |      |

**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                    |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|
| RGP02-12E-E3/54                | 0.24            | 54                     | 5500          | 13" diameter paper tape and reel |
| RGP02-12E-E3/73                | 0.24            | 73                     | 3000          | Ammo pack packaging              |
| RGP02-12EHE3/54 <sup>(1)</sup> | 0.24            | 54                     | 5500          | 13" diameter paper tape and reel |
| RGP02-12EHE3/73 <sup>(1)</sup> | 0.24            | 73                     | 3000          | Ammo pack packaging              |

**Note**

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

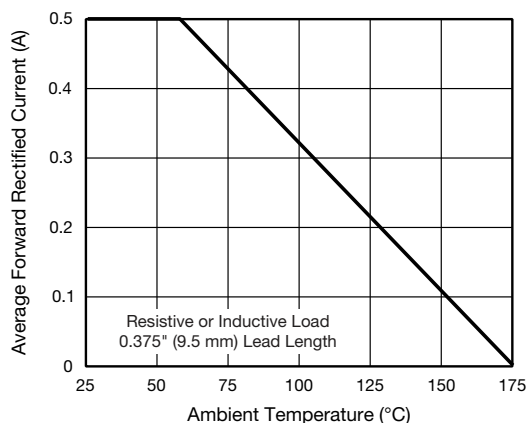
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

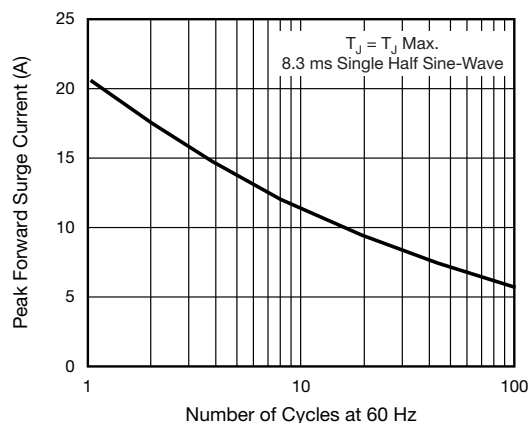


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

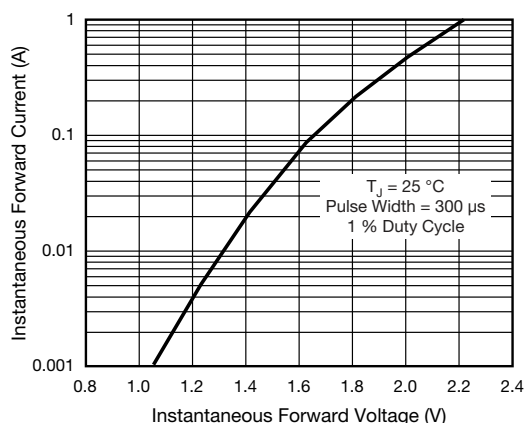


Fig. 3 - Typical Instantaneous Forward Characteristics

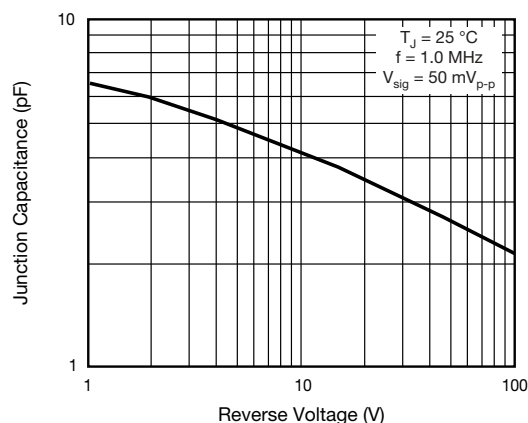


Fig. 5 - Typical Junction Capacitance

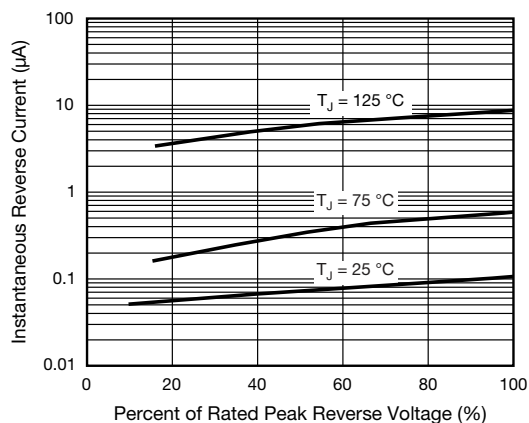
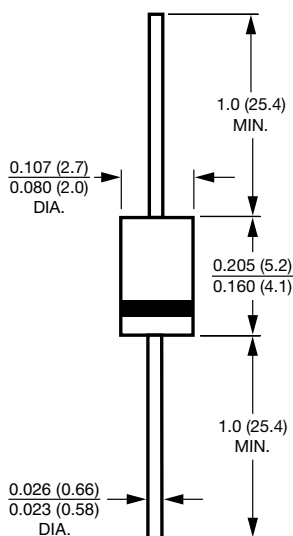


Fig. 4 - Typical Reverse Characteristics

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

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





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