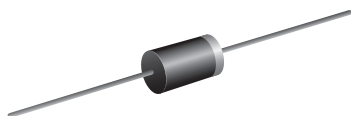


# Glass Passivated Junction Fast Switching Plastic Rectifier

**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
- 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 fast switching rectification of power supply, inverters, converters and freewheeling diodes for consumer 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

**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 |                                                 |
|-------------------------|-------------------------------------------------|
| $I_{F(AV)}$             | 1.0 A                                           |
| $V_{RRM}$               | 50 V, 100 V, 200 V, 400 V, 600 V, 800 V, 1000 V |
| $I_{FSM}$               | 30 A                                            |
| $t_{rr}$                | 150 ns, 250 ns, 500 ns                          |
| $I_R$                   | 5.0 $\mu$ A                                     |
| $V_F$                   | 1.3 V                                           |
| $T_J$ max.              | 175 °C                                          |
| Package                 | DO-204AL (DO-41)                                |
| Diode variation         | Single die                                      |

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                                         |                |             |        |        |        |        |        |        |         |
|-------------------------------------------------------------------------------------------------|----------------|-------------|--------|--------|--------|--------|--------|--------|---------|
| PARAMETER                                                                                       | SYMBOL         | RGP10A      | RGP10B | RGP10D | RGP10G | RGP10J | RGP10K | RGP10M | 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 $T_A = 55$ °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 $T_A = 55$ °C | $I_{R(AV)}$    | 100         |        |        |        |        |        |        | $\mu$ A |
| Operating junction and storage temperature range                                                | $T_J, T_{STG}$ | -65 to +175 |        |        |        |        |        |        | °C      |



| 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

| <b>ORDERING INFORMATION</b> (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              |

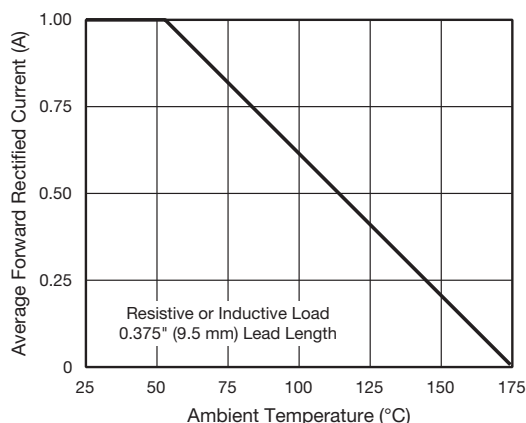
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

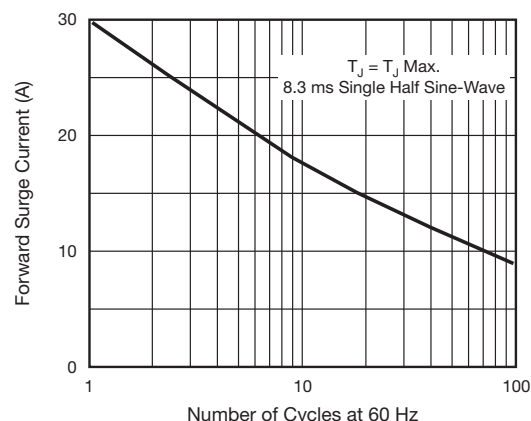


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

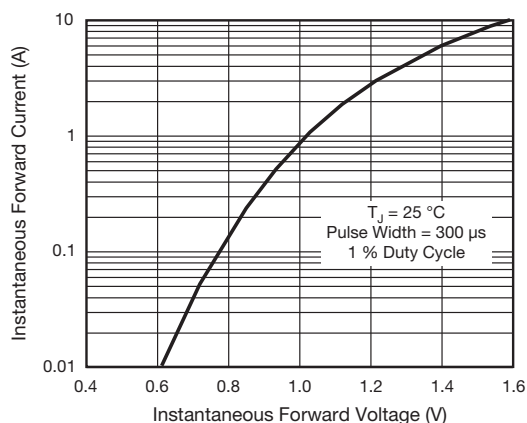


Fig. 3 - Typical Instantaneous Forward Characteristics

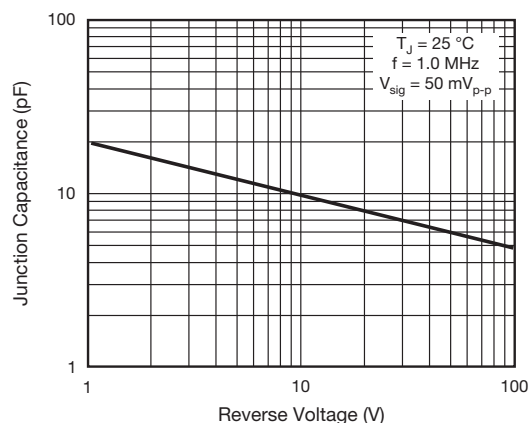


Fig. 5 - Typical Junction Capacitance

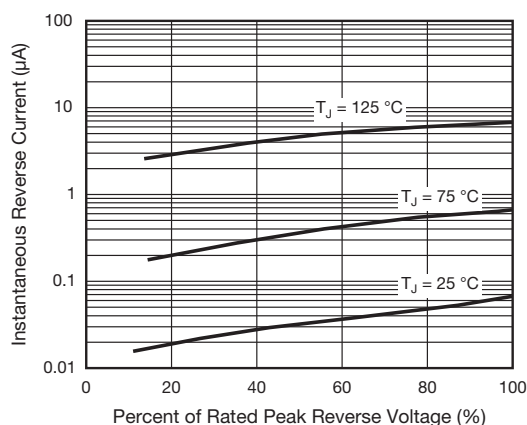


Fig. 4 - Typical Reverse Characteristics

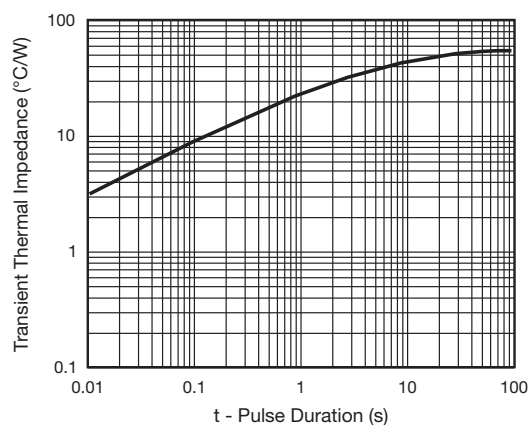
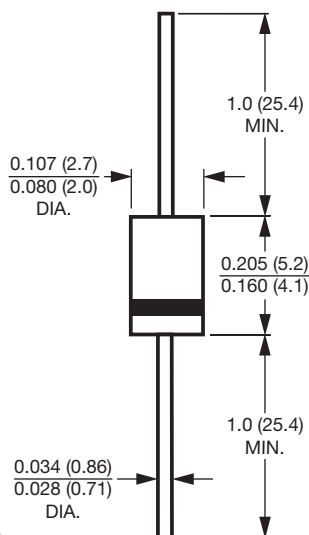


Fig. 6 - Typical Transient Thermal Impedance

## 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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