

## Glass Passivated Junction Plastic Rectifier

**SUPERECTIFIER®**

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

### FEATURES

- Superectifier structure for high reliability application
- Cavity-free glass-passivated junction
- Low forward voltage drop
- Low leakage current
- 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

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

### 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

#### Note

- For part numbers with "E" suffix, they are "-E3" commercial grade only

### PRIMARY CHARACTERISTICS

|                  |                     |
|------------------|---------------------|
| $I_{F(AV)}$      | 1.0 A               |
| $V_{RRM}$        | 50 V to 1600 V      |
| $I_{FSM}$        | 30 A, 25 A          |
| $I_R$            | 5.0 $\mu$ A         |
| $V_F$            | 1.1 V, 1.2 V, 1.3 V |
| $T_J$ max.       | 175 °C              |
| Package          | DO-204AL (DO-41)    |
| Diode variations | Single die          |

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

| PARAMETER                                                                                                       | SYMBOL                            | A                   | B | D | G | J | K | M | N | Q             | T | V | W | Y | UNIT |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------|---|---|---|---|---|---|---|---------------|---|---|---|---|------|
| Maximum repetitive peak reverse voltage                                                                         | V <sub>RRM</sub>                  | 50 to 1600 (fig. 5) |   |   |   |   |   |   |   |               |   |   |   |   | V    |
| Maximum average forward rectified current<br>0.375" (9.5 mm) lead length (fig. 1)                               | I <sub>F(AV)</sub>                | 1.0                 |   |   |   |   |   |   |   |               |   |   |   |   | A    |
| Peak forward surge current 8.3 ms single half<br>sine-wave superimposed on rated load                           | I <sub>FSM</sub>                  | 30                  |   |   |   |   |   |   |   | 25            |   |   |   |   | A    |
| Maximum full load reverse current, full cycle<br>average, 0.375" (9.5 mm) lead length at T <sub>A</sub> = 75 °C | I <sub>R(AV)</sub>                | 30                  |   |   |   |   |   |   |   |               |   |   |   |   | μA   |
| Operating junction and storage temperature range                                                                | T <sub>J</sub> , T <sub>STG</sub> | - 65 to + 175       |   |   |   |   |   |   |   | - 65 to + 150 |   |   |   |   | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                                                          |                         |                 |     |   |   |   |   |     |   |   |   |     |   |   |   |      |    |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|-----------------|-----|---|---|---|---|-----|---|---|---|-----|---|---|---|------|----|
| PARAMETER                                                                  | TEST CONDITIONS                                                          |                         | SYMBOL          | A   | B | D | G | J | K   | M | N | Q | T   | V | W | Y | UNIT |    |
| Maximum instantaneous forward voltage                                      | 1.0 A                                                                    |                         | V <sub>F</sub>  | 1.1 |   |   |   |   | 1.2 |   |   |   | 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 |                 | 50  |   |   |   |   |     |   |   |   |     |   |   |   |      |    |
| Typical 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> | 3.0 |   |   |   |   |     |   |   |   |     |   |   |   | μs   |    |
| Typical junction capacitance                                               | 4.0 V, 1 MHz                                                             |                         | C <sub>J</sub>  | 8.0 |   |   |   |   | 7.0 |   |   |   | 5.0 |   |   |   | pF   |    |

| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                       |  |    |   |   |   |   |   |   |   |   |   |   |   |   |                      |
|--------------------------------------------------------------------------------------|-----------------------|--|----|---|---|---|---|---|---|---|---|---|---|---|---|----------------------|
| PARAMETER                                                                            | SYMBOL                |  | A  | B | D | G | J | K | M | N | Q | T | V | W | Y | UNIT                 |
| Typical thermal resistance                                                           | $R_{\theta JA}^{(1)}$ |  | 55 |   |   |   |   |   |   |   |   |   |   |   |   | $^{\circ}\text{C/W}$ |

**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                    |
| GP10J-E3/54                    | 0.335           | 54                     | 5500          | 13" diameter paper tape and reel |
| GP10J-E3/73                    | 0.335           | 73                     | 3000          | Ammo pack packaging              |
| GP10JHE3/54 <sup>(1)</sup>     | 0.335           | 54                     | 5500          | 13" diameter paper tape and reel |
| GP10JHE3/73 <sup>(1)</sup>     | 0.335           | 73                     | 3000          | Ammo pack packaging              |

**Note**

(1) AEC-Q101 qualified

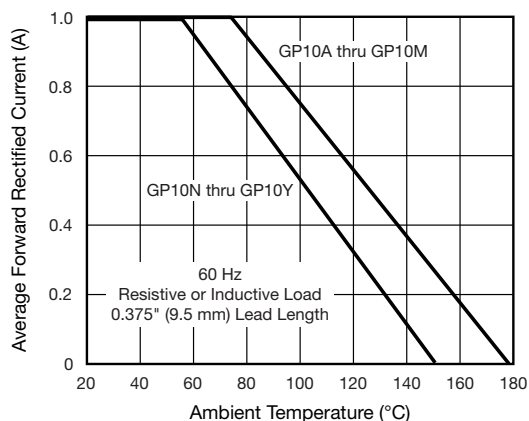
**RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)**

Fig. 1 - Forward Current Derating Curve

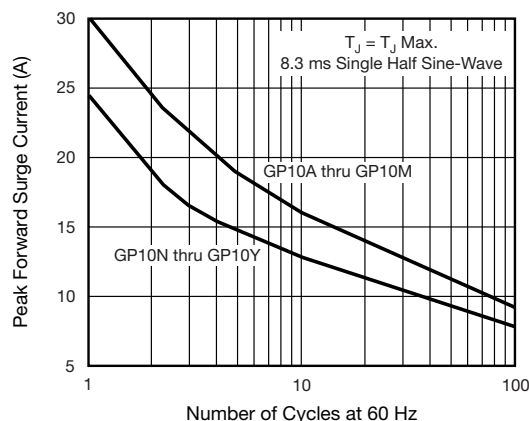


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

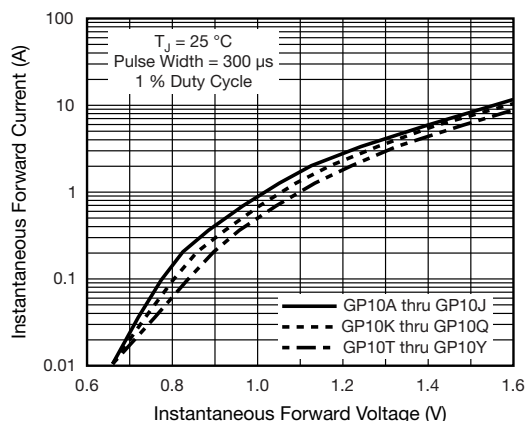


Fig. 3 - Typical Instantaneous Forward Characteristics

|            |        |
|------------|--------|
| GP10A..... | 50 V   |
| GP10B..... | 100 V  |
| GP10D..... | 200 V  |
| GP10G..... | 400 V  |
| GP10J..... | 600 V  |
| GP10K..... | 800 V  |
| GP10M..... | 1000 V |
| GP10N..... | 1100 V |
| GP10Q..... | 1200 V |
| GP10T..... | 1300 V |
| GP10V..... | 1400 V |
| GP10W..... | 1500 V |
| GP10Y..... | 1600 V |

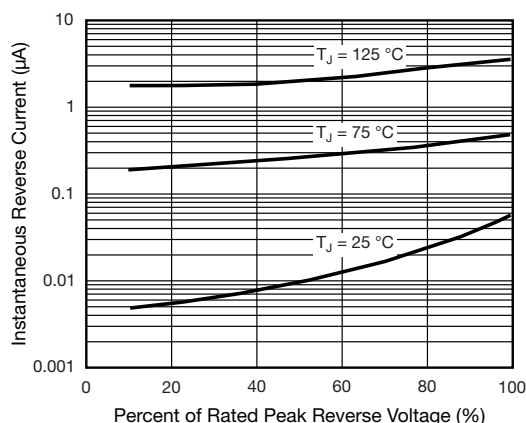
Fig. 5 - Maximum Repetitive Peak Reverse Voltage,  $V_{RRM}$ 


Fig. 4 - Typical Reverse Characteristics

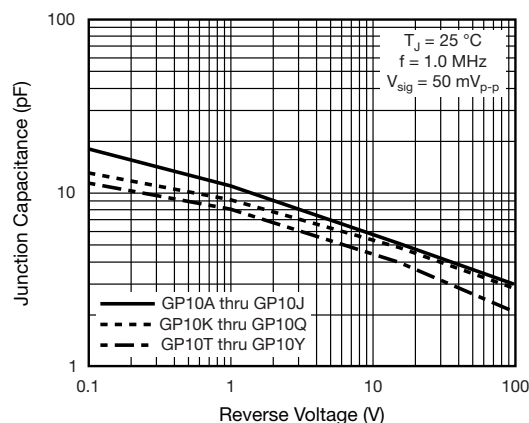
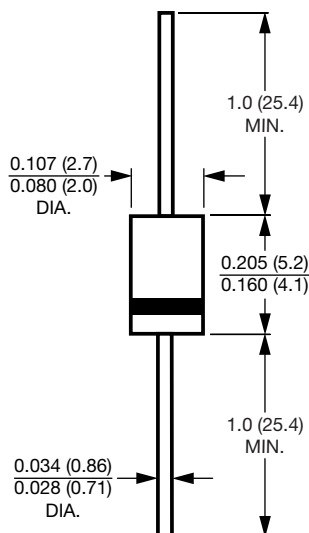


Fig. 6 - Typical Junction Capacitance

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

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



### **Note**

- Lead diameter is 0.026 (0.66) / 0.023 (0.58) for suffix "E" part numbers



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