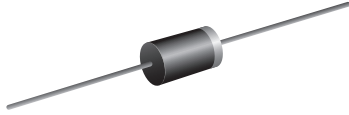


## Glass Passivated Junction Fast Switching Plastic Rectifier

**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 0.1  $\mu\text{A}$
- 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

| PRIMARY CHARACTERISTICS |                             |
|-------------------------|-----------------------------|
| $I_{F(AV)}$             | 1.0 A                       |
| $V_{RRM}$               | 400 V, 600 V, 800 V, 1000 V |
| $I_{FSM}$               | 20 A                        |
| $t_{rr}$                | 150 ns, 250 ns, 500 ns      |
| $I_R$                   | 5.0 $\mu\text{A}$           |
| $V_F$                   | 1.3 V                       |
| $T_J$ max.              | 175 °C                      |
| Package                 | DO-204AL (DO-41)            |
| Diode variation         | Single die                  |

**TYPICAL APPLICATIONS**

For general purpose of medium frequency rectification.

**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

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                                |                |             |         |          |         |      |
|---|----------------|-------------|---------|----------|---------|------|
| PARAMETER   | SYMBOL         | BA157GP     | BA158GP | BA159DGP | BA159GP | UNIT |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 400         | 600     | 800      | 1000    | V    |
| Maximum RMS voltage   | $V_{RMS}$      | 280         | 420     | 560      | 700     | V    |
| Maximum DC blocking voltage   | $V_{DC}$       | 400         | 600     | 800      | 1000    | V    |
| Maximum average forward rectified current 0.375" (9.5 mm) lead length at $T_A = 55\text{ °C}$ | $I_{F(AV)}$    | 1.0         |         |          |         | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load             | $I_{FSM}$      | 20          |         |          |         | A    |
| Operating junction and storage temperature range  | $T_J, T_{STG}$ | -65 to +175 |         |          |         | °C   |

| ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ °C}$ unless otherwise noted) |  |          |         |         |          |         |               |
|---|--|----------|---------|---------|----------|---------|---------------|
| PARAMETER   | TEST CONDITIONS  | SYMBOL   | BA157GP | BA158GP | BA159DGP | BA159GP | UNIT          |
| Maximum instantaneous forward voltage                                     | 1.0 A  | $V_F$    | 1.3     |         |          |         | V             |
| Maximum DC reverse current at rated DC blocking voltage                   | $T_A = 25\text{ °C}$   | $I_R$    | 5.0     |         |          |         | $\mu\text{A}$ |
| Maximum reverse recovery time   | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$ | $t_{rr}$ | 150     | 250     | 500      | 500     | ns            |
| Typical junction capacitance  | 4.0 V, 1 MHz   | $C_J$    | 15      |         |          |         | pF            |



| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                                |         |         |          |         |                    |
|---|--------------------------------|---------|---------|----------|---------|--------------------|
| PARAMETER   | SYMBOL                         | BA157GP | BA158GP | BA159DGP | BA159GP | UNIT               |
| Typical thermal resistance  | $R_{\theta JA}$ <sup>(1)</sup> | 55      |         |          |         | $^\circ\text{C/W}$ |

**Note**

(1) 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                    |
| BA158GP-E3/54                         | 0.336           | 54                     | 5500          | 13" Diameter paper tape and reel |
| BA158GP-E3/73                         | 0.336           | 73                     | 3000          | Ammo pack packaging              |

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

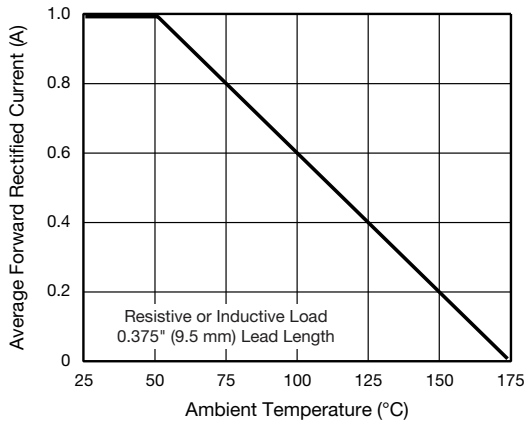


Fig. 1 - Forward Current Derating Curve

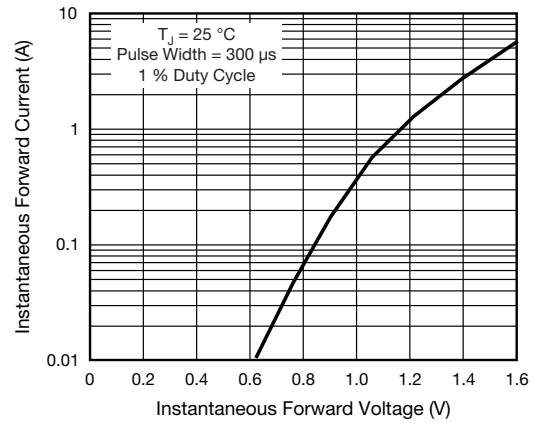


Fig. 3 - Typical Instantaneous Forward Characteristics

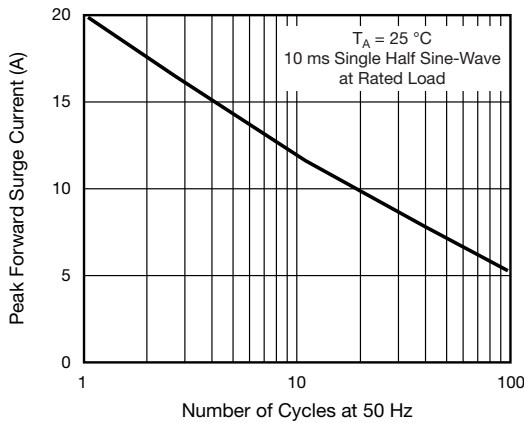


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

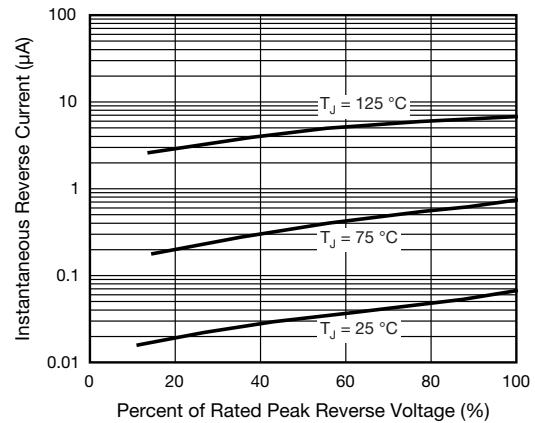


Fig. 4 - Typical Reverse Characteristics

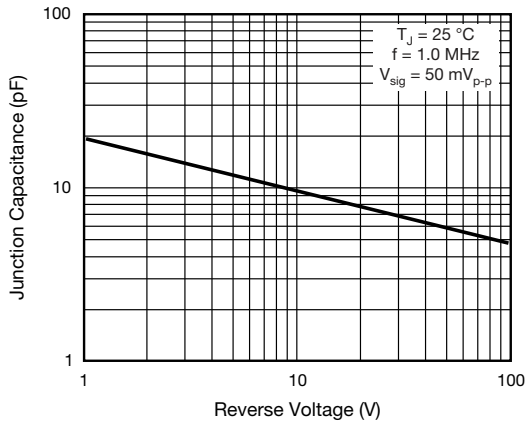


Fig. 5 - Typical Junction Capacitance

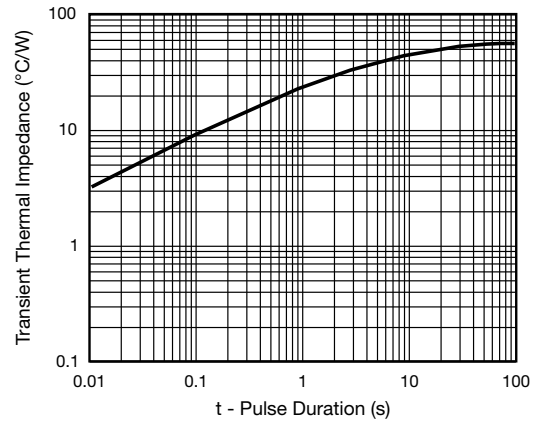
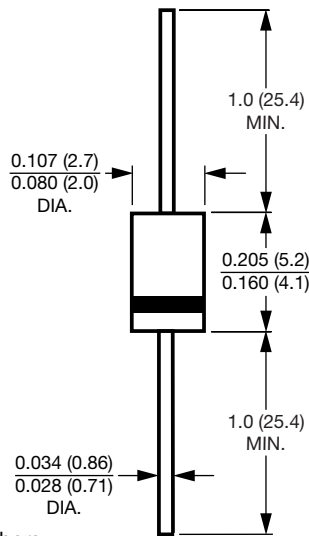


Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE 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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