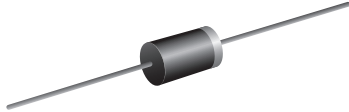




## Glass Passivated Junction Fast Switching Plastic Rectifier

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  $\mu A$
- 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 $\mu A$                 |
| $V_F$           | 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 ( $T_A = 25$  °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 $T_A = 55$ °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 ( $T_A = 25$  °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 | $T_A = 25$ °C                                   | $I_R$    | 5.0     |         |          |         | $\mu A$ |
| Maximum reverse recovery time                           | $I_F = 0.5$ A, $I_R = 1.0$ A, $I_{rr} = 0.25$ A | $t_{rr}$ | 150     | 250     | 500      | 500     | ns      |
| Typical junction capacitance                            | 4.0 V, 1 MHz                                    | $C_J$    | 15      |         |          |         | pF      |



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

| PARAMETER                  | SYMBOL                | BA157GP | BA158GP | BA159DGP | BA159GP | UNIT                        |
|----------------------------|-----------------------|---------|---------|----------|---------|-----------------------------|
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 55      |         |          |         | $^{\circ}\text{C}/\text{W}$ |

### Note

(1) Thermal resistance from junction to ambient 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                    |
|---------------|-----------------|------------------------|---------------|----------------------------------|
| 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)

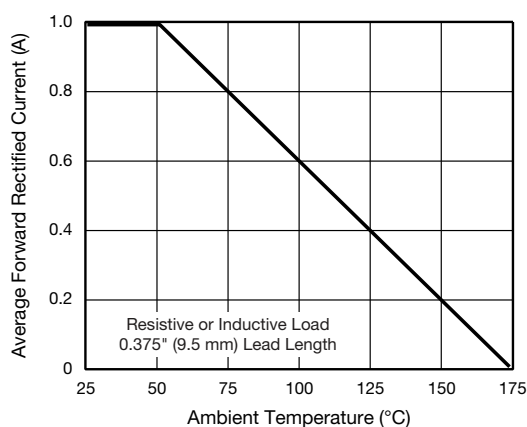


Fig. 1 - Forward Current Derating Curve

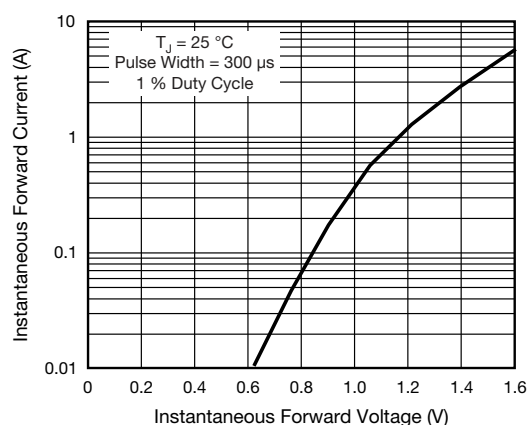


Fig. 3 - Typical Instantaneous Forward Characteristics

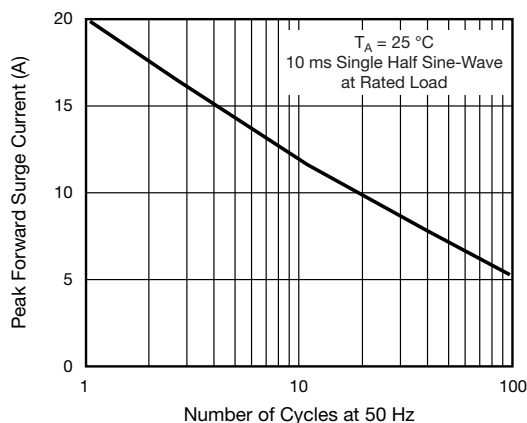


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

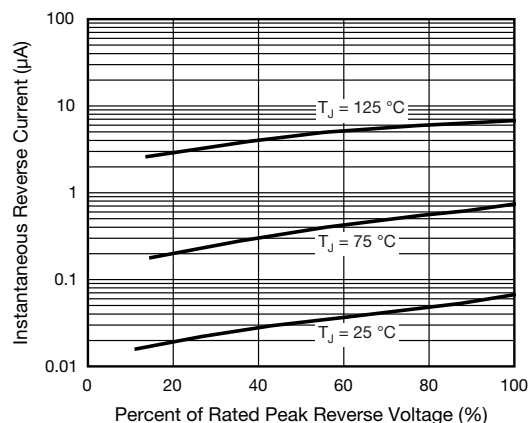


Fig. 4 - Typical Reverse Characteristics

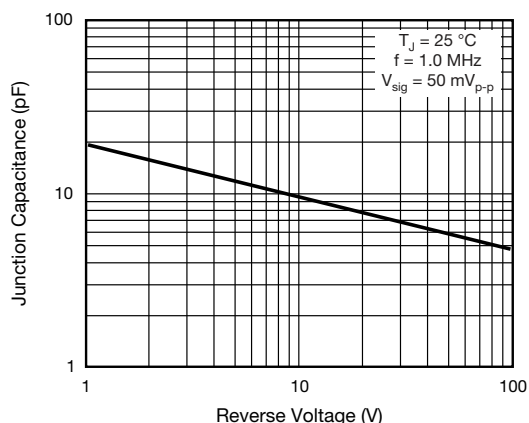


Fig. 5 - Typical Junction Capacitance

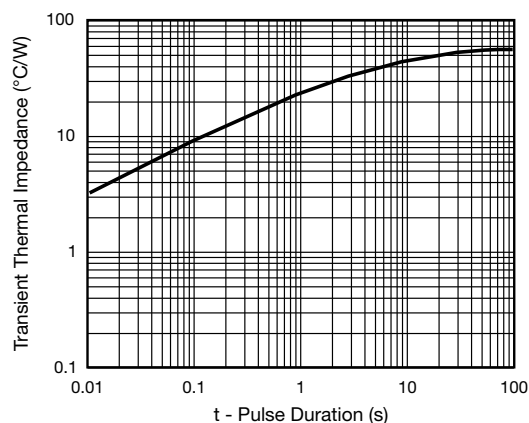
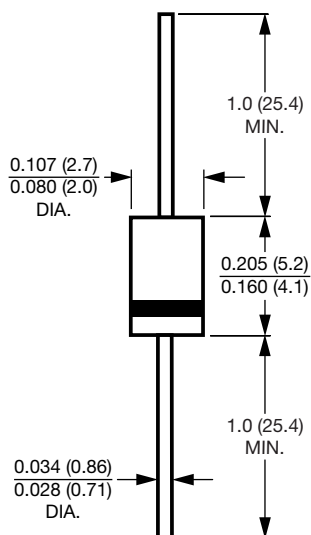


Fig. 6 - Typical Transient Thermal Impedance

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

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

**Note**

- Lead diameter is  $\frac{0.026}{0.023}$  (0.66 / 0.58) for suffix "E" part numbers



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