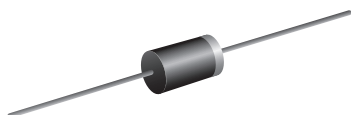


## Fast Switching Plastic Rectifier



DO-204AL (DO-41)

### FEATURES

- Fast switching for high efficiency
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in fast switching rectification of power supply, inverters, converters and freewheeling diodes for consumer and telecommunication.

#### Note

- These devices are not AEC-Q101 qualified.

### MECHANICAL DATA

**Case:** DO-204AL, molded epoxy 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                  |
| $V_{RRM}$   | 400 V to 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.  | 125 °C                 |

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

| PARAMETER                                                                                 | SYMBOL      | BA157         | BA158 | BA159D | BA159 | 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<br>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<br>sine-wave superimposed on rated load      | $I_{FSM}$   | 20            |       |        |       | A    |
| Maximum operation junction temperature                                                    | $T_J$       | - 65 to + 125 |       |        |       | °C   |
| Maximum storage temperature                                                               | $T_{STG}$   | - 65 to + 150 |       |        |       | °C   |

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

| PARAMETER                                               | TEST CONDITIONS                                                          |                        | SYMBOL          | BA157 | BA158 | BA159D | BA159 | 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   |
| 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>  | 12    |       |        |       | pF   |

**ORDERING INFORMATION** (Example)

| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
|---------------|-----------------|------------------------|---------------|----------------------------------|
| BA158-E3/54   | 0.33            | 54                     | 5500          | 13" diameter paper tape and reel |
| BA158-E3/73   | 0.33            | 73                     | 3000          | Ammo pack packaging              |

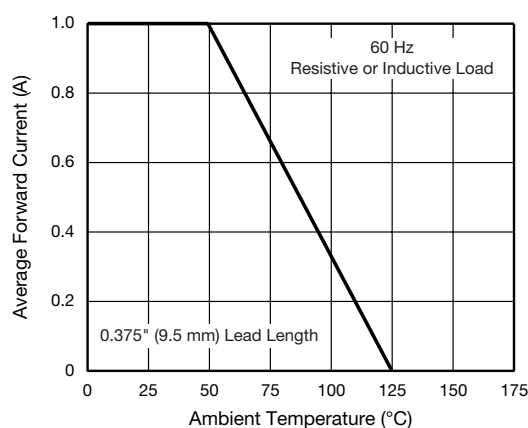
**RATINGS AND CHARACTERISTICS CURVES**( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

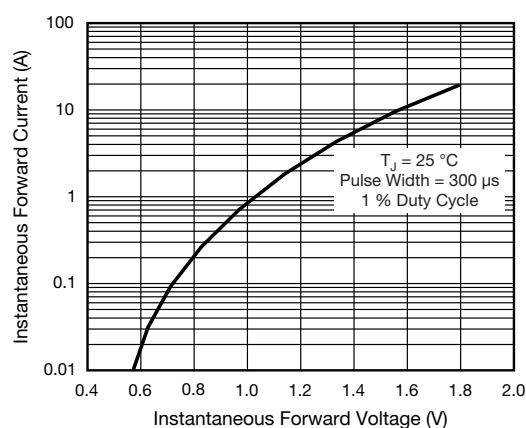


Fig. 3 - Typical Instantaneous Forward Characteristics

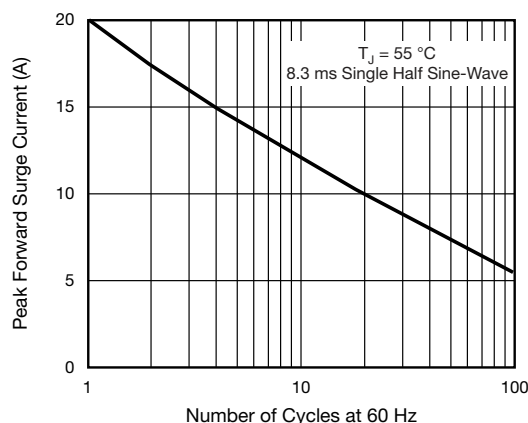


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

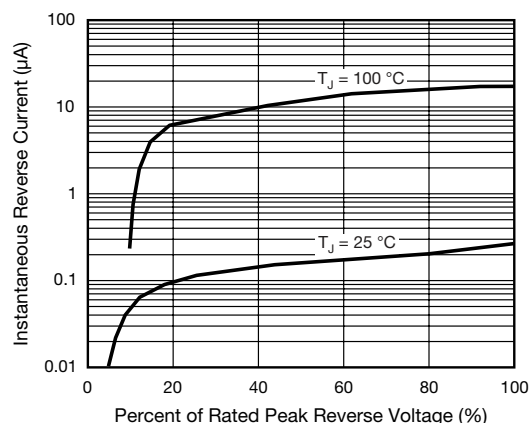


Fig. 4 - Typical Reverse Characteristics

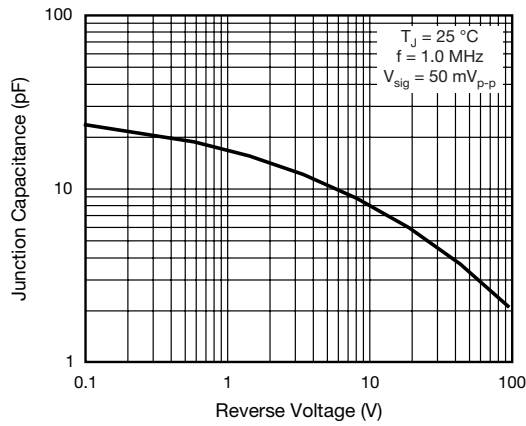


Fig. 5 - Typical Junction Capacitance

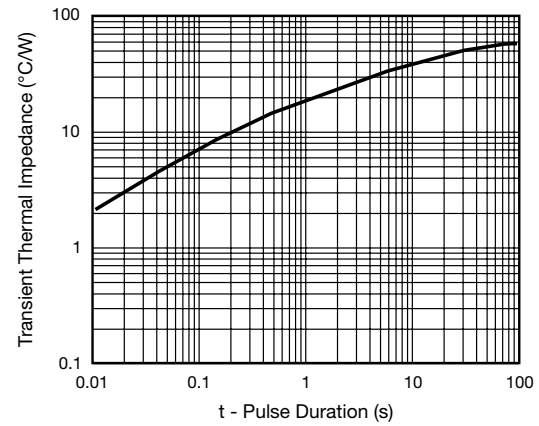
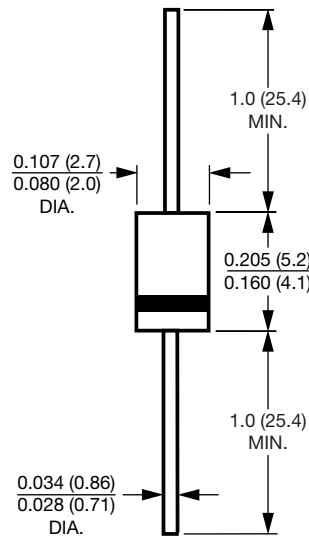


Fig. 6 - Typical Transient Thermal Impedance

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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





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