

## 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
- 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.

#### 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, 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.              | 125 °C                      |
| Package                 | DO-204AL (DO-41)            |
| Diode variation         | Single die                  |

| 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 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    |
| Maximum operation junction temperature   | $T_J$       | - 65 to + 125 |       |        |       | °C   |
| Maximum storage temperature  | $T_{STG}$   | - 65 to + 150 |       |        |       | °C   |

| ELECTRICAL CHARACTERISTICS ( $T_A = 25$ °C unless otherwise noted) |   |  |          |       |       |        |       |         |
|--|---|--|----------|-------|-------|--------|-------|---------|
| PARAMETER  | TEST CONDITIONS                                 |  | SYMBOL   | BA157 | BA158 | BA159D | BA159 | 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    |       | ns      |
| Typical junction capacitance                                       | 4.0 V, 1 MHz                                    |  | $C_J$    | 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)

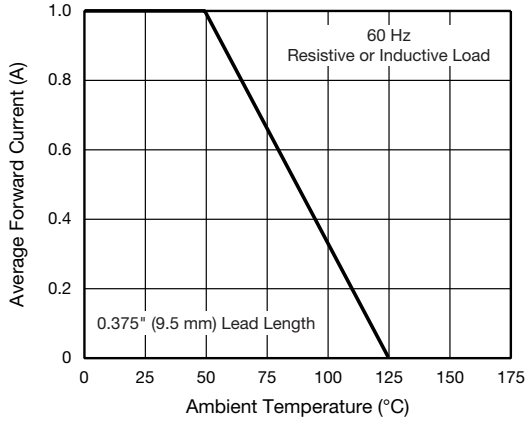


Fig. 1 - Forward Current Derating Curve

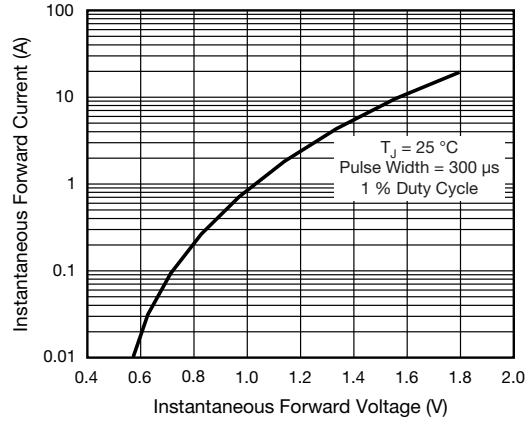


Fig. 3 - Typical Instantaneous Forward Characteristics

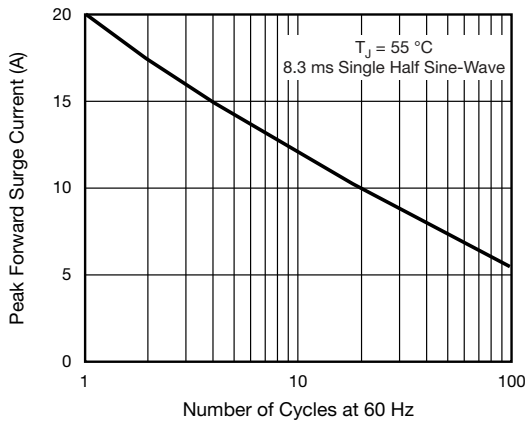


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

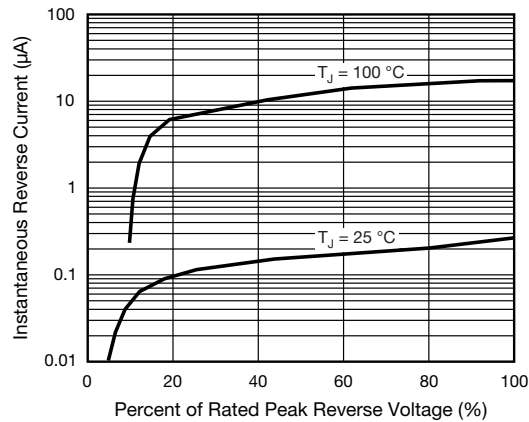


Fig. 4 - Typical Reverse Characteristics



Fig. 5 - Typical Junction Capacitance

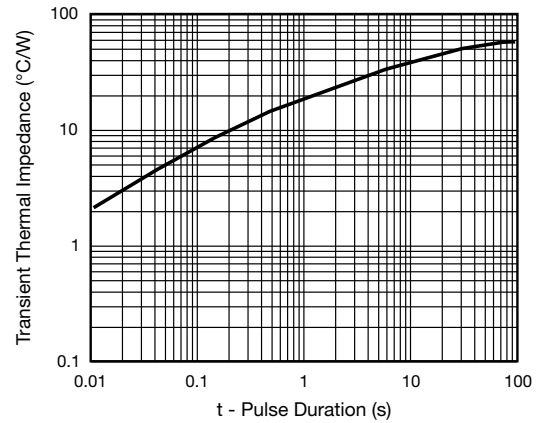


Fig. 6 - Typical Transient Thermal Impedance

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

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





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