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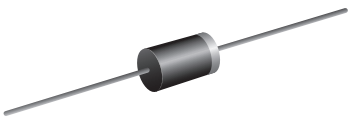


# BA157GP, BA158GP, BA159DGP, BA159GP

Vishay General Semiconductor

## 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 µA
- 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

RoHS COMPLIANT

### 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
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

| 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 µA |
| $V_F$ | 1.3 V |
| $T_J$ max. | 175 °C |
| Package | DO-204AL (DO-41) |
| Diode variation | Single die |

**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 | | | | µA |
| 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 |



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| THERMAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| PARAMETER | SYMBOL | BA157GP | BA158GP | BA159DGP | BA159GP | UNIT |
| Typical thermal resistance | $R_{\theta JA}$ (1) | 55 | | | | °C/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 |
| BA158GPHE3/54 (1) | 0.336 | 54 | 5500 | 13" Diameter paper tape and reel |
| BA158GPHE3/73 (1) | 0.336 | 73 | 3000 | Ammo pack packaging |

**Note**

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES ($T_A$ = 25 °C unless otherwise noted)

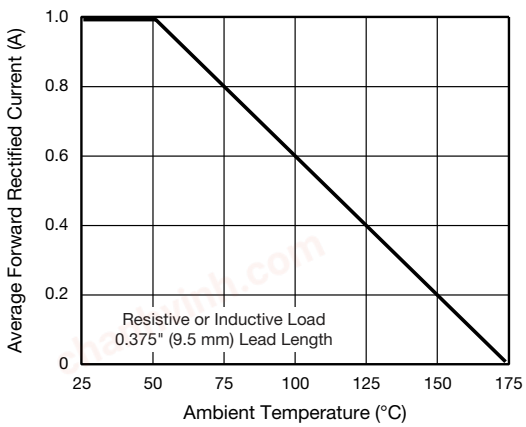



Fig. 1 - Forward Current Derating Curve

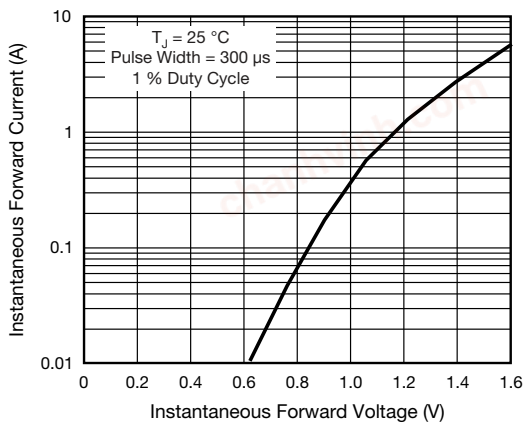



Fig. 3 - Typical Instantaneous Forward Characteristics

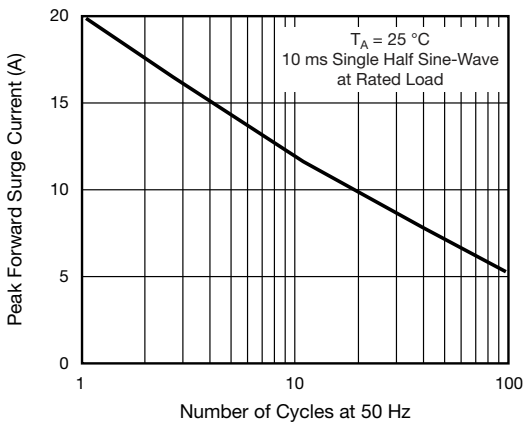



Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

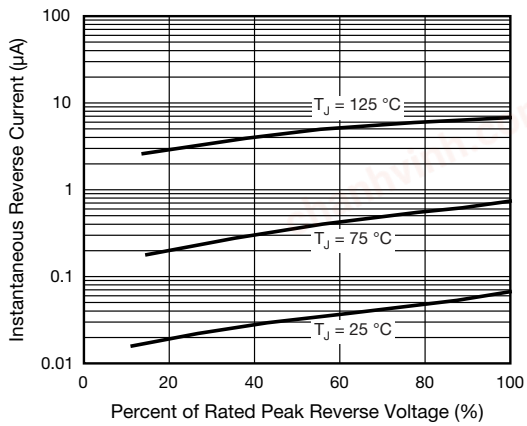



Fig. 4 - Typical Reverse Characteristics



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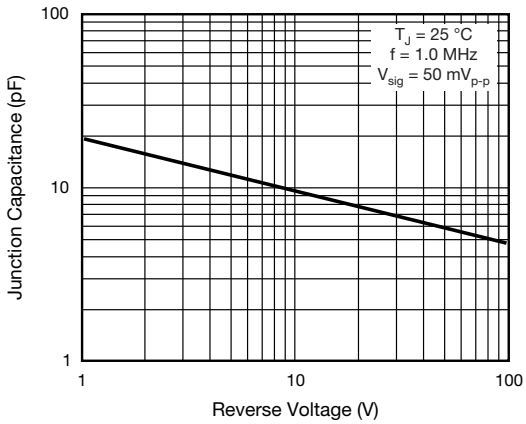



Fig. 5 - Typical Junction Capacitance

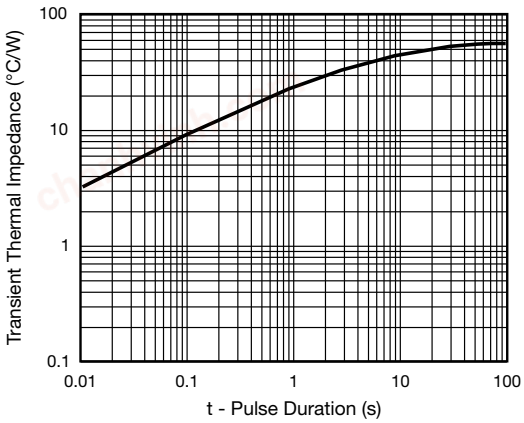
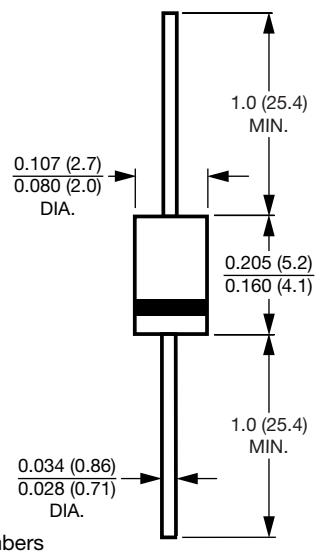



Fig. 6 - Typical Transient Thermal Impedance

## **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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