

## Glass Passivated Junction Fast Switching Rectifier



### FEATURES

- Superectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- Fast switching for high efficiency
- Low leakage current
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- 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, automotive and telecommunication.

### 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         |
| $V_{RRM}$   | 50 V to 600 V |
| $I_{FSM}$   | 30 A          |
| $t_{rr}$    | 200 ns        |
| $I_R$       | 5.0 $\mu$ A   |
| $V_F$       | 1.2 V         |
| $T_J$ max.  | 175 °C        |

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

| PARAMETER                                                                                 | SYMBOL         | 1N4933GP      | 1N4934GP | 1N4935GP | 1N4936GP | 1N4937GP | UNIT |
|-------------------------------------------------------------------------------------------|----------------|---------------|----------|----------|----------|----------|------|
| Maximum repetitive peak reverse voltage                                                   | $V_{RRM}$      | 50            | 100      | 200      | 400      | 600      | V    |
| Maximum RMS voltage                                                                       | $V_{RMS}$      | 35            | 70       | 145      | 280      | 420      | V    |
| Maximum DC blocking voltage                                                               | $V_{DC}$       | 50            | 100      | 200      | 400      | 600      | V    |
| Maximum average forward rectified current<br>0.375" (9.5 mm) lead length at $T_A = 75$ °C | $I_{F(AV)}$    | 1.0           |          |          |          |          | A    |
| Peak forward surge current 8.3 ms single half<br>sine-wave superimposed on rated load     | $I_{FSM}$      | 30            |          |          |          |          | A    |
| Operating junction and storage temperature range                                          | $T_J, T_{STG}$ | - 65 to + 175 |          |          |          |          | °C   |

# 1N4933GP thru 1N4937GP

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                               |                         |                 |          |          |          |          |          |      |
|----------------------------------------------------------------------------|-----------------------------------------------|-------------------------|-----------------|----------|----------|----------|----------|----------|------|
| PARAMETER                                                                  | TEST CONDITIONS                               |                         | SYMBOL          | 1N4933GP | 1N4934GP | 1N4935GP | 1N4936GP | 1N4937GP | UNIT |
| Maximum instantaneous forward voltage                                      | 1.0 A                                         |                         | V <sub>F</sub>  | 1.2      |          |          |          |          | V    |
| Maximum DC reverse current at rated DC blocking voltage                    |                                               | T <sub>A</sub> = 25 °C  | I <sub>R</sub>  | 5.0      |          |          |          |          | μA   |
|                                                                            |                                               | T <sub>A</sub> = 125 °C |                 | 100      |          |          |          |          |      |
| Maximum reverse recovery time                                              | I <sub>F</sub> = 1.0 A, V <sub>R</sub> = 30 V |                         | t <sub>rr</sub> | 200      |          |          |          |          | ns   |
| Typical junction capacitance                                               | 4.0 V, 1 MHz                                  |                         | C <sub>J</sub>  | 15       |          |          |          |          | pF   |

| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                       |          |          |          |          |          |                      |  |
|--------------------------------------------------------------------------------------|-----------------------|----------|----------|----------|----------|----------|----------------------|--|
| PARAMETER                                                                            | SYMBOL                | 1N4933GP | 1N4934GP | 1N4935GP | 1N4936GP | 1N4937GP | UNIT                 |  |
| Typical thermal resistance                                                           | $R_{\theta JA}^{(1)}$ | 55       |          |          |          |          | $^{\circ}\text{C/W}$ |  |

## Note

(1) Thermal resistance from junction to ambient and from junction to lead 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                    |
| 1N4933GP-E3/54                 | 0.336           | 54                     | 5500          | 13" diameter paper tape and reel |
| 1N4933GP-E3/73                 | 0.336           | 73                     | 3000          | Ammo pack packaging              |
| 1N4933GPHE3/54 <sup>(1)</sup>  | 0.336           | 54                     | 5500          | 13" diameter paper tape and reel |
| 1N4933GPHE3/73 <sup>(1)</sup>  | 0.336           | 73                     | 3000          | Ammo pack packaging              |

## Note

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

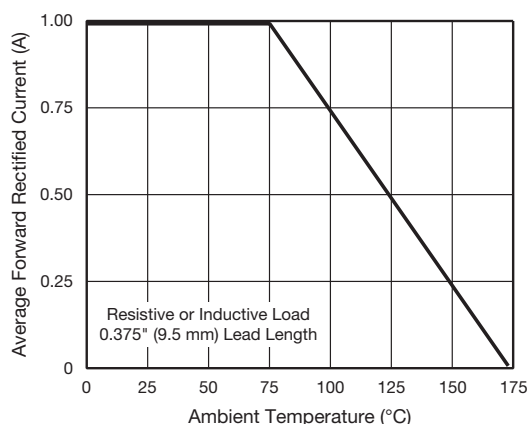


Fig. 1 - Forward Current Derating Curve

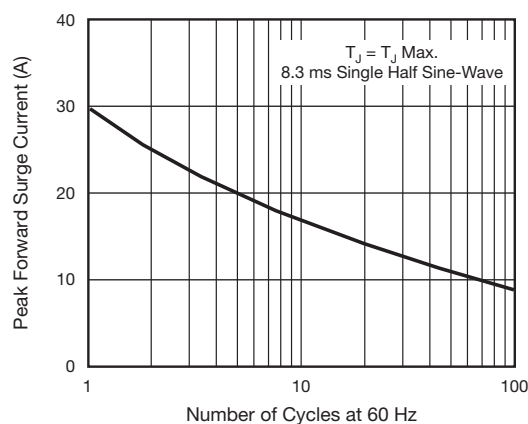


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

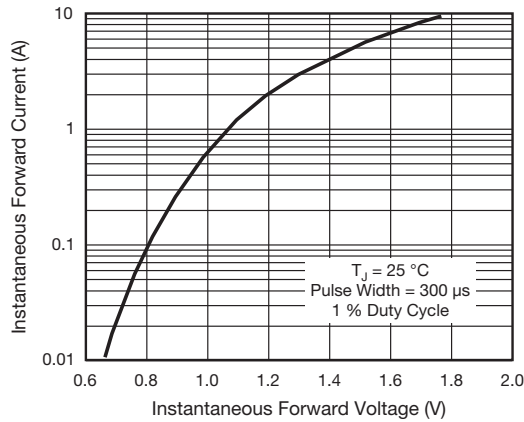


Fig. 3 - Typical Instantaneous Forward Characteristics

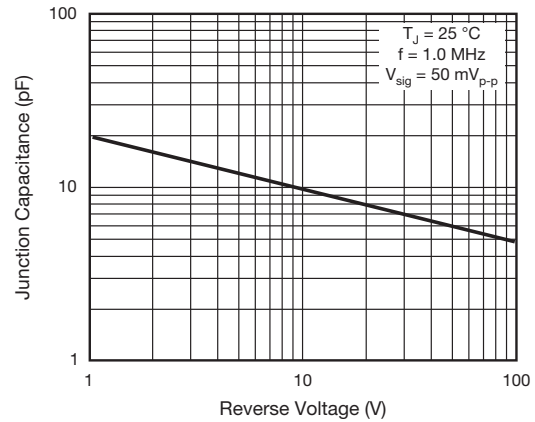


Fig. 5 - Typical Junction Capacitance

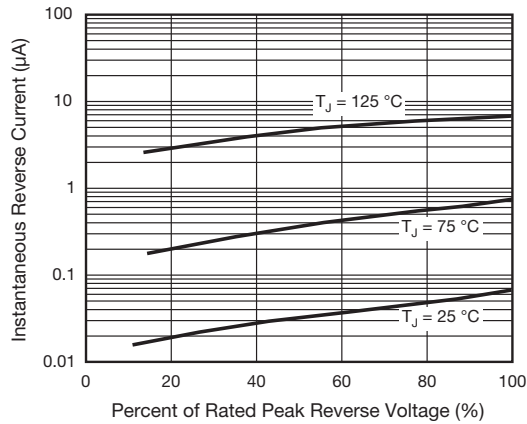


Fig. 4 - Typical Reverse Characteristics

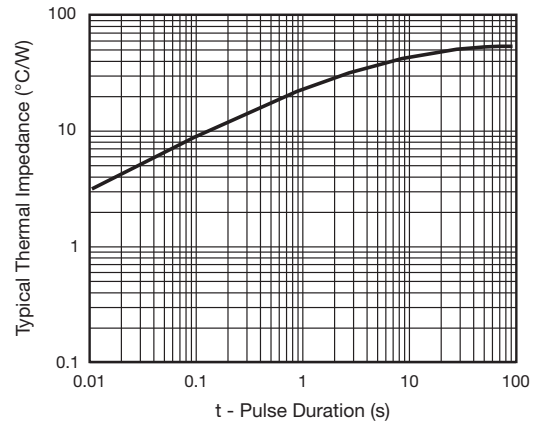
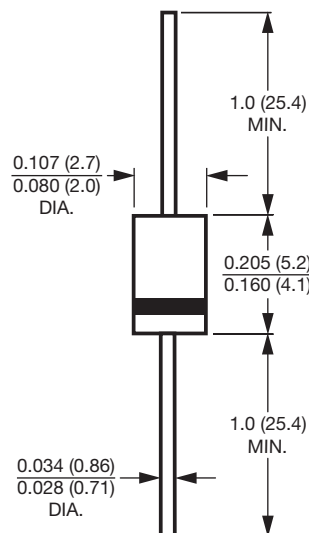


Fig. 6 - Typical Transient Thermal Impedance

### 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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