



## Glass Passivated Junction Fast Switching 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
- High forward surge capability
- Meets environmental standard MIL-S-19500
- 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](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, 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, 100 V, 200 V, 400 V, 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                           |
| Package         | DO-204AL (DO-41)                 |
| Diode variation | Single die                       |

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   |

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  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

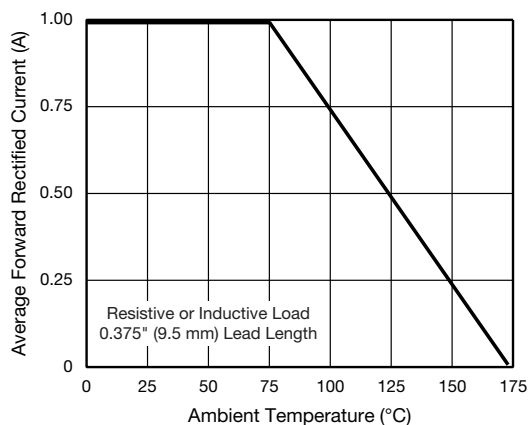
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

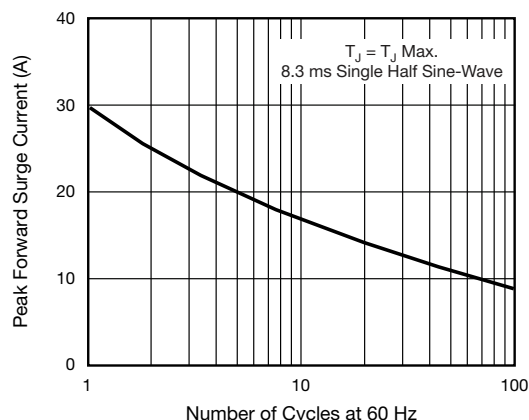


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

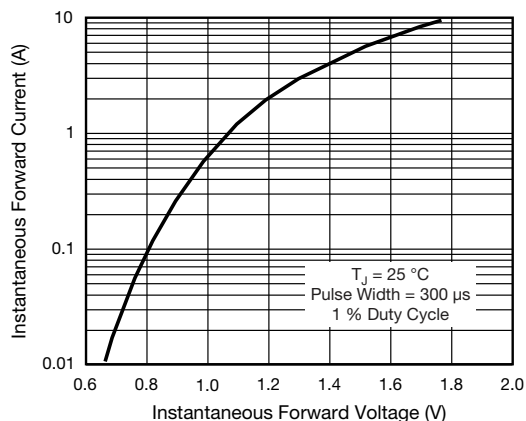


Fig. 3 - Typical Instantaneous Forward Characteristics

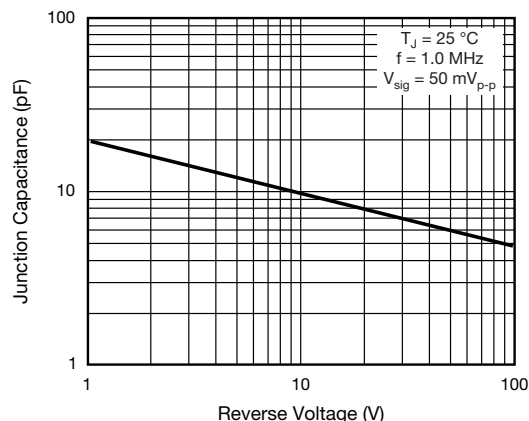


Fig. 5 - Typical Junction Capacitance

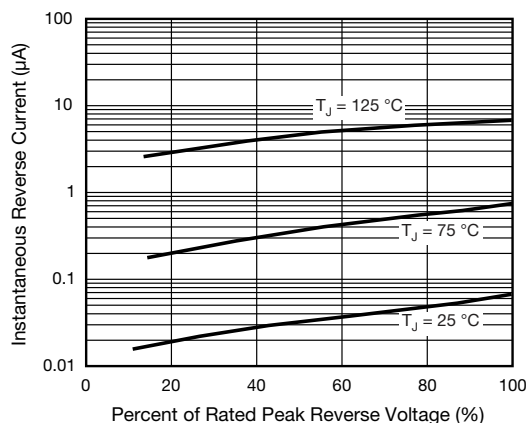


Fig. 4 - Typical Reverse Characteristics

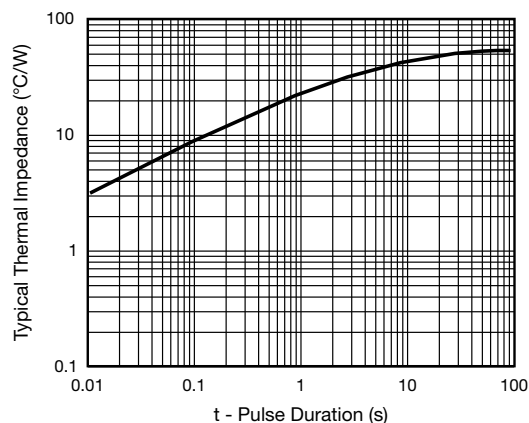
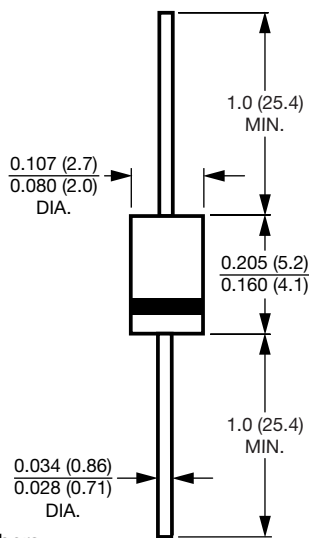


Fig. 6 - Typical Transient Thermal Impedance

## 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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Менеджер отдела продаж ООО

«Трейд Электроникс»

Шишлаков Евгений

8 (495)668-30-28 доб 169

manager28@tradeelectronics.ru

<http://www.tradeelectronics.ru/>