

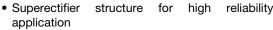
# Vishay General Semiconductor

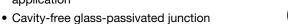
### **Glass Passivated Junction Rectifier**



| PRIMARY CHARACTERISTICS |                |  |  |  |  |  |  |
|-------------------------|----------------|--|--|--|--|--|--|
| I <sub>F(AV)</sub>      | 1.5 A          |  |  |  |  |  |  |
| V <sub>RRM</sub>        | 50 V to 1000 V |  |  |  |  |  |  |
| I <sub>FSM</sub>        | 50 A           |  |  |  |  |  |  |
| I <sub>R</sub>          | 5.0 μA         |  |  |  |  |  |  |
| V <sub>F</sub>          | 1.4 V          |  |  |  |  |  |  |
| T <sub>J</sub> max.     | 175 °C         |  |  |  |  |  |  |

#### **FEATURES**





· Low forward voltage drop

• Low leakage current, typical I<sub>R</sub> less than 0.1 μA

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

#### **TYPICAL APPLICATIONS**

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes application

#### **MECHANICAL DATA**

Case: DO-204AC, 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

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted) <sup>(1)</sup>                        |                                   |              |               |              |              |              |              |              |              |              |      |
|---|-----------------------------------|--------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------|
| PARAMETER   | SYMBOL                            | 1N53<br>91GP | 1N53<br>92GP  | 1N53<br>93GP | 1N53<br>94GP | 1N53<br>95GP | 1N53<br>96GP | 1N53<br>97GP | 1N53<br>98GP | 1N53<br>99GP | UNIT |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$                         | 50           | 100           | 200          | 300          | 400          | 500          | 600          | 800          | 1000         | V    |
| Maximum RMS voltage   | V <sub>RMS</sub>                  | 35           | 70            | 140          | 210          | 280          | 350          | 420          | 560          | 700          | V    |
| Maximum DC blocking voltage   | $V_{DC}$                          | 50           | 100           | 200          | 300          | 400          | 500          | 600          | 800          | 1000         | V    |
| Maximum average forward rectified current 0.375" (9.5 mm) lead length at T <sub>L</sub> = 70 °C       | I <sub>F(AV)</sub>                | 1.5          |               |              |              |              |              |              | А            |              |      |
| Peak forward surge current<br>8.3 ms single half sine-wave<br>super-imposed on rated load             | I <sub>FSM</sub>                  | 50           |               |              |              |              |              | А            |              |              |      |
| Maximum full load reverse current, full cycle average $0.375$ " (9.5 mm) lead length at $T_A = 70$ °C | I <sub>R(AV)</sub>                | 300          |               |              |              |              |              |              | μА           |              |      |
| Operating junction and storage temperature range  | T <sub>J</sub> , T <sub>STG</sub> |              | - 65 to + 175 |              |              |              |              |              | °C           |              |      |

#### Note

(1) JEDEC registered values

# Vishay General Semiconductor



| <b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted) |                            |                                   |                               |              |              |              |              |              |              |              |              |              |      |
|---|----------------------------|-----------------------------------|-------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------|
| PARAMETER   | TEST (                     | CONDITIONS                        | SYMBOL                        | 1N53<br>91GP | 1N53<br>92GP | 1N53<br>93GP | 1N53<br>94GP | 1N53<br>95GP | 1N53<br>96GP | 1N53<br>97GP | 1N53<br>98GP | 1N53<br>99GP | UNIT |
| Maximum<br>instantaneous<br>forward voltage                                       | 1.5 A                      | T <sub>A</sub> = 70 °C            | V <sub>F</sub> <sup>(1)</sup> | 1.4          |              |              |              |              | ٧            |              |              |              |      |
| Maximum DC reverse current at rated DC  |                            | T <sub>A</sub> = 25 °C            | I <sub>R</sub> <sup>(1)</sup> | 5.0          |              |              |              |              |              |              |              |              |      |
| blocking voltage  |                            | T <sub>A</sub> = 150 °C           | IR (''                        | 300          |              |              |              |              |              | μA           |              |              |      |
| Typical reverse recovery time   | $I_F = 0.5$ $I_{rr} = 0.2$ | A, I <sub>R</sub> = 1.0 A,<br>5 A | t <sub>rr</sub>               | 2.0          |              |              |              |              | 2.0          |              |              |              | μs   |
| Typical junction capacitance  | 4.0 V, 1                   | MHz                               | CJ                            | 15           |              |              |              |              | pF           |              |              |              |      |

#### Note

<sup>(1)</sup> JEDEC registered values

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                      |  |  |  |  |              |      |  |  |
|---|----------------------|--|--|--|--|--------------|------|--|--|
| PARAMETER   | SYMBOL               | (MBOLL TO LOCAL TO THE TOTAL THE TOTAL TO TH |  |  |  | 1N53<br>99GP | UNIT |  |  |
| Typical thermal resistance  | R <sub>0JA</sub> (1) | 45 °C/W  |  |  |  | °C/W         |      |  |  |

<sup>(1)</sup> Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length, P.C.B. mounted

| ORDERING INFORMATION (Example) |                 |                        |               |                                  |  |  |  |  |  |  |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|--|--|--|--|--|--|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |  |  |  |  |  |  |
| 1N5397GP-E3/54                 | 0.425           | 54                     | 4000          | 13" diameter paper tape and reel |  |  |  |  |  |  |
| 1N5397GP-E3/73                 | 0.425           | 73                     | 2000          | Ammo pack packaging              |  |  |  |  |  |  |
| 1N5397GPHE3/54 (1)             | 0.425           | 54                     | 4000          | 13" diameter paper tape and reel |  |  |  |  |  |  |
| 1N5397GPHE3/73 <sup>(1)</sup>  | 0.425           | 73                     | 2000          | Ammo pack packaging              |  |  |  |  |  |  |

#### Note

#### **RATINGS AND CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25 °C unless otherwise noted)

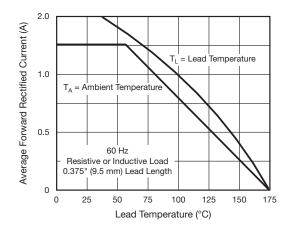


Fig. 1 - Forward Current Derating Curve

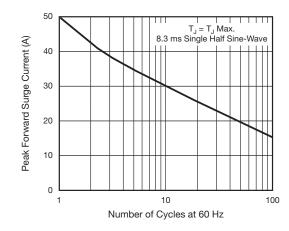


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

<sup>(1)</sup> AEC-Q101 qualified



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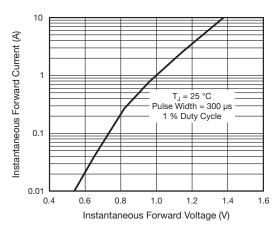


Fig. 3 - Typical Instantaneous Forward Characteristics

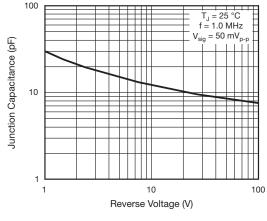


Fig. 5 - Typical Junction Capacitance

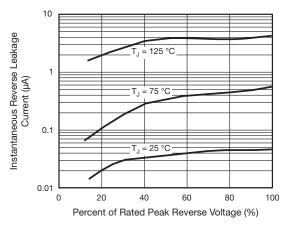


Fig. 4 - Typical Reverse Characteristics

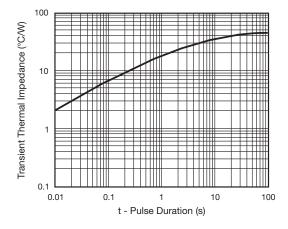
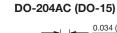
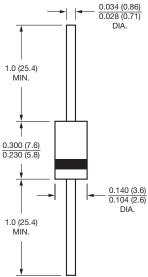


Fig. 6 - Typical Transient Thermal Impedance

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







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