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## Vishay General Semiconductor

# **High Voltage Schottky Plastic Rectifier**

High Barrier Technology for Improved High Temperature Performance



| PRIMARY CHARACTERISTICS |                  |  |  |  |
|-------------------------|------------------|--|--|--|
| I <sub>F(AV)</sub>      | 1.0 A            |  |  |  |
| $V_{RRM}$               | 90 V, 100 V      |  |  |  |
| I <sub>FSM</sub>        | 50 A             |  |  |  |
| $V_{F}$                 | 0.62 V           |  |  |  |
| I <sub>R</sub>          | 1.0 μΑ           |  |  |  |
| T <sub>J</sub> max.     | 175 °C           |  |  |  |
| Package                 | DO-41 (DO-204AL) |  |  |  |
| Circuit configuration   | Single           |  |  |  |

### **FEATURES**

- High barrier technology for improved high T<sub>J</sub>
- Guardring for overvoltage protection
- Low power losses and high efficiency
- Low forward voltage drop
- Very low leakage current
- very low leakage earrent
- High forward surge capability
- High frequency operation
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

### **TYPICAL APPLICATIONS**

For use in middle voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

### **MECHANICAL DATA**

Case: DO-41 (DO-204AL)

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 the cathode end

| <b>MAXIMUM RATINGS</b> (T <sub>A</sub> = 25 °C unless other PARAMETER              | SYMBOL             | SB1H90 | SB1H100 | UNIT |
|--|--------------------|--------|---------|------|
| Maximum repetitive peak reverse voltage  | V <sub>RRM</sub>   | 90     | 100     | V    |
| Maximum RMS voltage  | $V_{RMS}$          | 63     | 70      | V    |
| Maximum DC blocking voltage  | $V_{DC}$           | 90     | 100     | V    |
| Maximum average forward rectified current  | I <sub>F(AV)</sub> | 1.0    |         | А    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>   | 50     |         | А    |
| Voltage rate of change (rated V <sub>R</sub> )                                     | dV/dt              | 10 000 |         | V/µs |
| Peak repetitive reverse surge current at t <sub>p</sub> = 2.0 µs, 1 kHz            | I <sub>RRM</sub>   | 1.0    |         | Α    |
| Maximum operating junction temperature   | TJ                 | 175    |         | °C   |
| Storage temperature range  | T <sub>STG</sub>   | -55 to | °C      |      |



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| <b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                               |        |         |      |
|---|------------------------|-------------------------|-------------------------------|--------|---------|------|
| PARAMETER   | TEST CONDITIONS        |                         | SYMBOL                        | SB1H90 | SB1H100 | UNIT |
| Maximum instantaneous forward voltage   | I <sub>F</sub> = 1.0 A | T <sub>J</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.77   |         |      |
|   |                        | T <sub>J</sub> = 125 °C |                               | 0.62   |         | V    |
|   | I <sub>F</sub> = 2.0 A | T <sub>J</sub> = 25 °C  |                               | 0.     | 86      | V    |
|   |                        | T <sub>J</sub> = 125 °C |                               | 0.70   |         |      |
| Maximum reverse current at rated V <sub>R</sub>                                   |                        | T <sub>J</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 1      | .0      | μΑ   |
|   |                        | T <sub>J</sub> = 125 °C |                               | 0      | .5      | mA   |

### Notes

(1) Pulse test: 300 ms pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                       |        |         |      |  |
|---|-----------------------|--------|---------|------|--|
| PARAMETER   | SYMBOL                | SB1H90 | SB1H100 | UNIT |  |
| Maximum thermal resistance  | R <sub>0JA</sub> (1)  | 57     |         | °C/W |  |
| Waxiiiuiii tileiiiai lesistailee  | R <sub>0</sub> JL (1) | 15     |         | C/VV |  |

#### Note

 $^{(1)}\,$  PCB mounted with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

| ORDERING INFORMATION (Example) |                 |                        |               |                                  |  |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|--|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |  |
| SB1H100-E3/54                  | 0.34            | 54                     | 5500          | 13" diameter paper tape and reel |  |
| SB1H100-E3/73                  | 0.34            | 73                     | 3000          | Ammo pack packaging              |  |

## RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

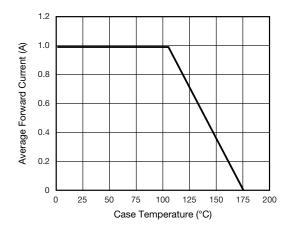


Fig. 1 - Forward Current Derating Curve

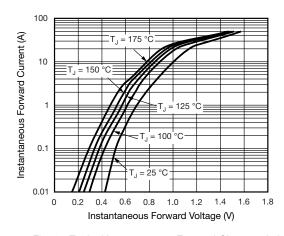


Fig. 2 - Typical Instantaneous Forward Characteristics

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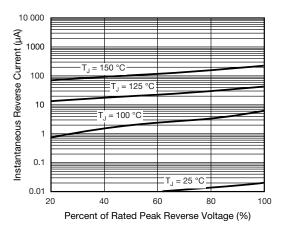


Fig. 3 - Typical Reverse Characteristics

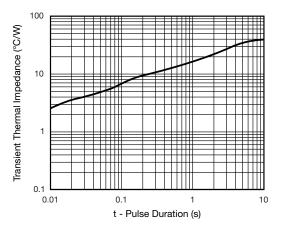


Fig. 5 - Typical Transient Thermal Impedance

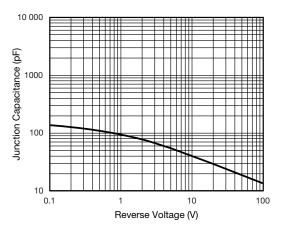
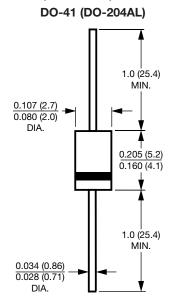


Fig. 4 - Typical Junction Capacitance

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





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