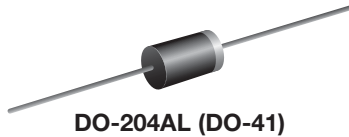


## Schottky Barrier Plastic Rectifier



### FEATURES

- Guardring for overvoltage protection
- Very small conduction losses
- Extremely fast switching
- Low forward voltage drop
- 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 [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** DO-204AL (DO-41)

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

| PRIMARY CHARACTERISTICS |                              |
|-------------------------|------------------------------|
| $I_{F(AV)}$             | 2.0 A                        |
| $V_{RRM}$               | 20 V, 30 V, 40 V, 50 V, 60 V |
| $I_{FSM}$               | 50 A                         |
| $V_F$                   | 0.55 V, 0.70 V               |
| $T_J$ max.              | 125 °C, 150 °C               |
| Package                 | DO-204AL                     |
| Diode variations        | Single                       |

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                     |             |               |        |        |               |        |            |
|--|-------------|---------------|--------|--------|---------------|--------|------------|
| PARAMETER  | SYMBOL      | SB220S        | SB230S | SB240S | SB250S        | SB260S | UNIT       |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$   | 20            | 30     | 40     | 50            | 60     | V          |
| Maximum average forward rectified current at 0.375" (9.5 mm) lead length (fig. 1)  | $I_{F(AV)}$ | 2.0           |        |        |               |        | A          |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$   | 50            |        |        |               |        | A          |
| Voltage rate of change (rated $V_R$ )  | $dV/dt$     | 10 000        |        |        |               |        | V/ $\mu$ s |
| Operating junction temperature range   | $T_J$       | - 65 to + 125 |        |        | - 65 to + 150 |        | °C         |
| Storage temperature range  | $T_{STG}$   | - 65 to + 150 |        |        |               |        | °C         |

| ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ °C}$ unless otherwise noted) |                       |                      |        |        |        |        |        |      |
|---|-----------------------|----------------------|--------|--------|--------|--------|--------|------|
| PARAMETER   | TEST CONDITIONS       | SYMBOL               | SB220S | SB230S | SB240S | SB250S | SB260S | UNIT |
| Maximum instantaneous forward voltage                                     | 2.0 A                 | $V_F$ <sup>(1)</sup> | 0.55   |        |        | 0.70   |        | V    |
| Maximum reverse current at rated $V_R$                                    | $T_J = 25\text{ °C}$  | $I_R$ <sup>(2)</sup> | 0.50   |        |        |        |        | mA   |
|   | $T_J = 125\text{ °C}$ |                      | 25     |        | 15     |        |        |      |

#### Notes

<sup>(1)</sup> Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  40 ms



| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                       |        |        |        |        |        |                    |
|--|-----------------------|--------|--------|--------|--------|--------|--------------------|
| PARAMETER  | SYMBOL                | SB220S | SB230S | SB240S | SB250S | SB260S | UNIT               |
| Typical thermal resistance   | $R_{\theta JA}^{(1)}$ | 75     |        |        |        |        | $^\circ\text{C/W}$ |
|  | $R_{\theta JL}^{(1)}$ | 25     |        |        |        |        |                    |

**Note**

(1) Thermal resistance from junction to lead P.C.B. mounted 0.375" (9.5 mm) lead length

| ORDERING INFORMATION (Example) |                 |                        |               |                                  |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
| SB240S-E3/54                   | 0.346           | 54                     | 5500          | 13" diameter paper tape and reel |
| SB240S-E3/73                   | 0.346           | 73                     | 3000          | Ammo pack packaging              |

**RATINGS AND CHARACTERISTICS CURVES**

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

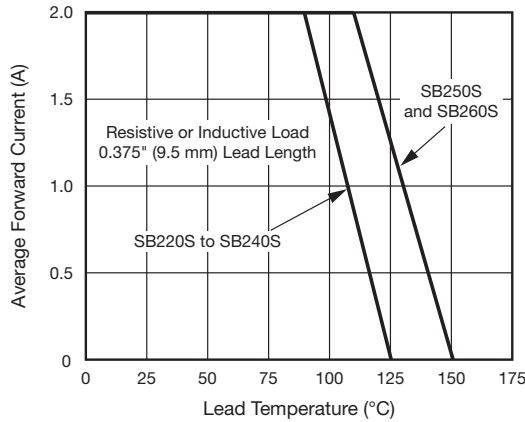


Fig. 1 - Forward Current Derating Curve

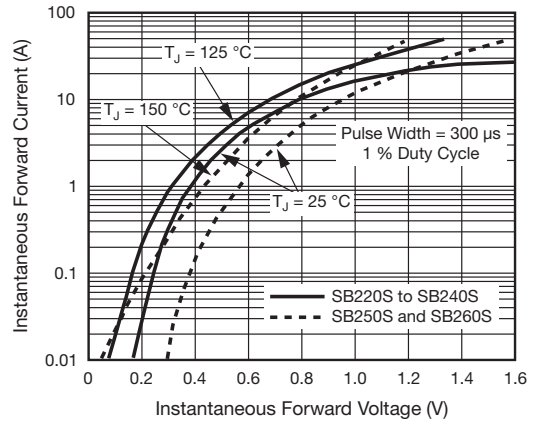


Fig. 3 - Typical Instantaneous Forward Characteristics

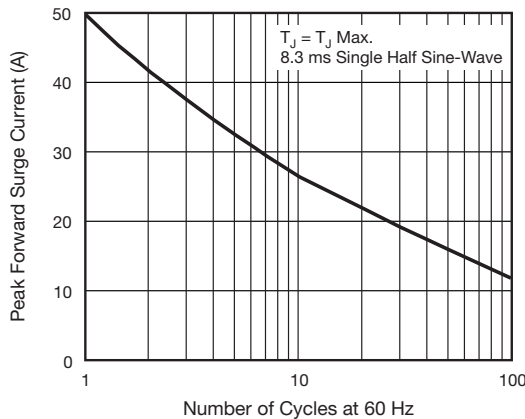


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

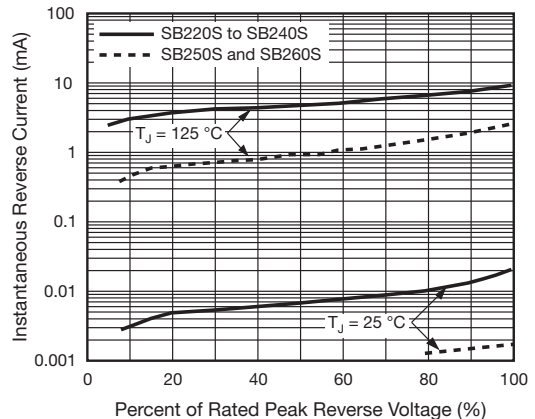


Fig. 4 - Typical Reverse Characteristics

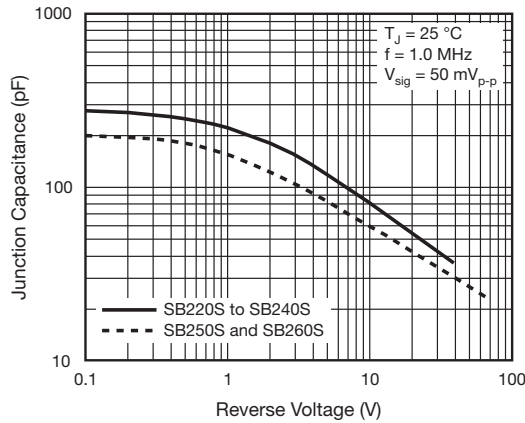
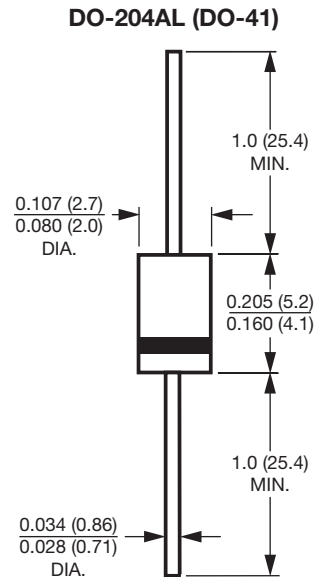


Fig. 5 - Typical Junction Capacitance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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