

## Surface Mount Schottky Barrier Rectifier


**DO-214AC (SMA)**

### FEATURES

- Low profile package
- Ideal for automated placement
- Guardring for overvoltage protection
- Low power losses, high efficiency
- Low forward voltage drop
- High surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

| PRIMARY CHARACTERISTICS |                              |
|-------------------------|------------------------------|
| $I_{F(AV)}$             | 1.0 A                        |
| $V_{RRM}$               | 20 V, 30 V, 40 V, 50 V, 60 V |
| $I_{FSM}$               | 30 A                         |
| $V_F$                   | 0.52 V, 0.75 V               |
| $T_J$ max.              | 125 °C, 150 °C               |
| Package                 | DO-214AC                     |
| Diode variations        | Single                       |

### TYPICAL APPLICATIONS

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

#### Note

- These devices are not AEC-Q101 qualified

### MECHANICAL DATA

**Case:** DO-214AC (SMA)

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

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                     |             |               |      |      |               |      |            |
|--|-------------|---------------|------|------|---------------|------|------------|
| PARAMETER  | SYMBOL      | B120          | B130 | B140 | B150          | B160 | UNIT       |
| Device marking code  |             | B12           | B13  | B14  | B15           | B16  |            |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$   | 20            | 30   | 40   | 50            | 60   | V          |
| Maximum average forward rectified current (fig. 1)                                 | $I_{F(AV)}$ | 1.0           |      |      |               |      | A          |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$   | 30            |      |      |               |      | 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               | B120 | B130 | B140 | B150 | B160 | UNIT |
| Maximum instantaneous forward voltage                                     | 1.0 A                 | $V_F$ <sup>(1)</sup> | 0.52 |      |      | 0.75 |      | V    |
| Maximum reverse current at rated $V_R$                                    | $T_A = 25\text{ °C}$  | $I_R$ <sup>(2)</sup> | 0.2  |      |      |      |      | mA   |
|   | $T_A = 100\text{ °C}$ |                      | 6.0  |      | 5.0  |      |      |      |

#### 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              | B120 | B130 | B140 | B150 | B160 | UNIT               |
| Typical thermal resistance   | $R_{\theta JA}$ (1) | 95   |      |      |      |      | $^\circ\text{C/W}$ |
|  | $R_{\theta JL}$ (1) | 30   |      |      |      |      |                    |

**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                      |
| B140-E3/61T                    | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| B140-E3/5AT                    | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |

**RATINGS AND CHARACTERISTICS CURVES**

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

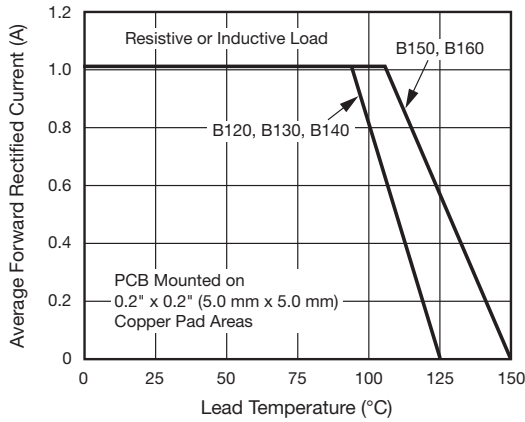


Fig. 1 - Maximum Forward Current Derating Curve

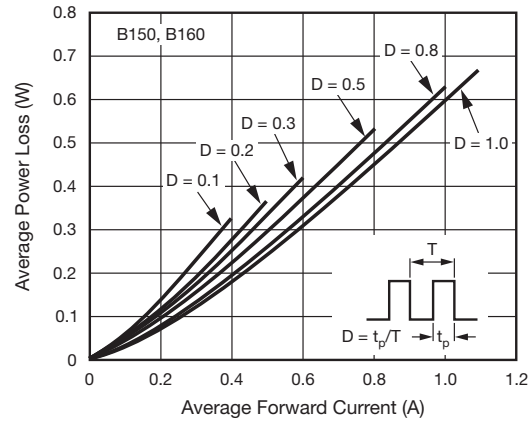


Fig. 3 - Forward Power Loss Characteristics

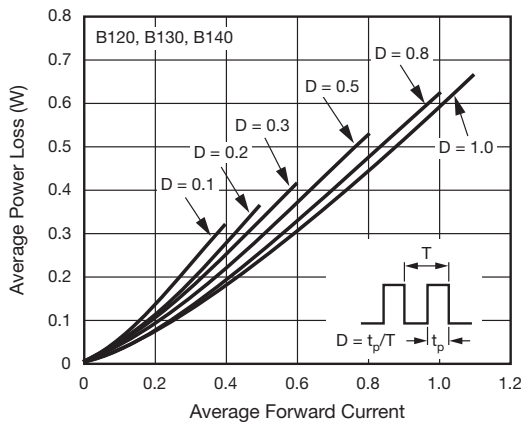


Fig. 2 - Forward Power Loss Characteristics

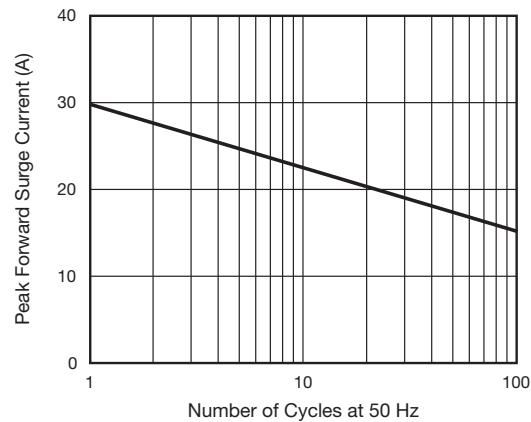


Fig. 4 - Typical Instantaneous Forward Characteristics

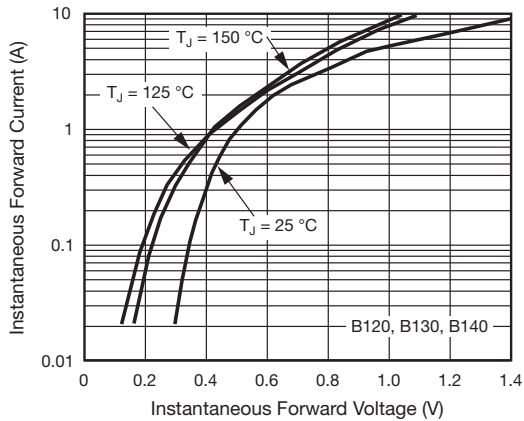


Fig. 5 - Typical Instantaneous Forward Characteristics

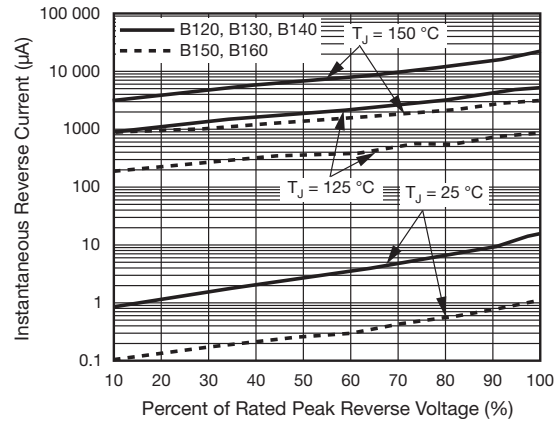


Fig. 7 - Typical Reverse Leakage Characteristics

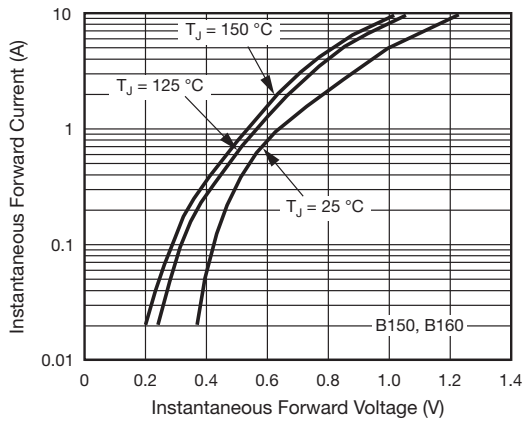


Fig. 6 - Typical Instantaneous Forward Characteristics

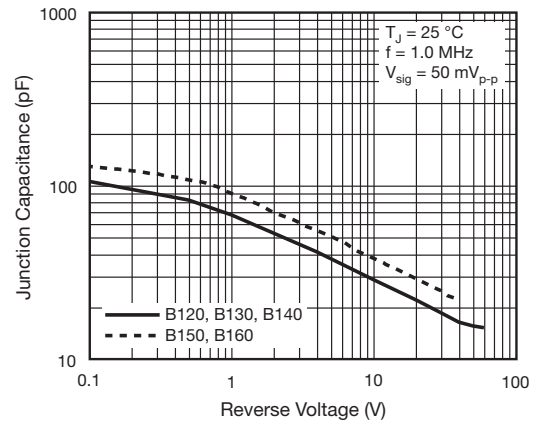
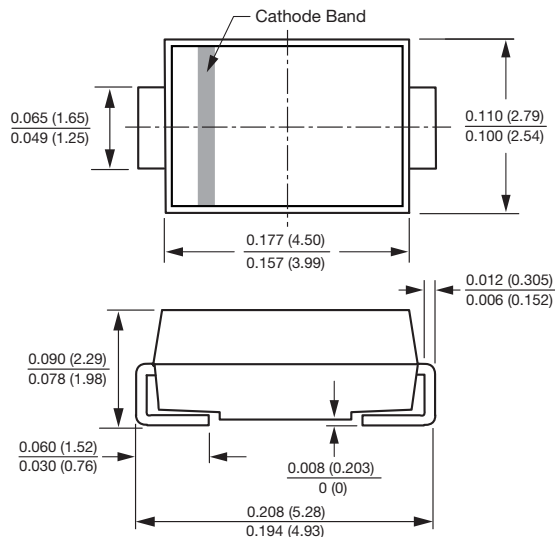


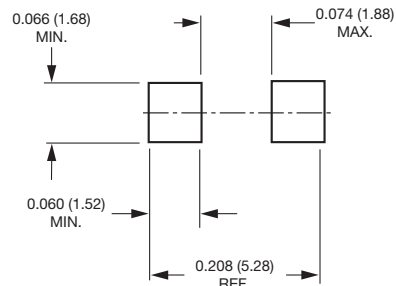
Fig. 8 - Typical Junction Capacitance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-214AC (SMA)



### Mounting Pad Layout





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