

## Surface Mount Schottky Barrier Rectifier


**DO-214AC (SMA)**

**RoHS**  
 COMPLIANT  
 HALOGEN  
**FREE**

### 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)

### 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-M3 - RoHS-compliant, commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes the cathode end

| 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 (SMA)               |
| Diode variation         | Single die                   |

| 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 <sub>A</sub> = 25 °C unless otherwise noted) |                         |                               |      |      |      |      |      |      |
|--|-------------------------|-------------------------------|------|------|------|------|------|------|
| PARAMETER  | TEST CONDITIONS         | SYMBOL                        | B120 | B130 | B140 | B150 | B160 | UNIT |
| Maximum instantaneous forward voltage                                      | 1.0 A                   | V <sub>F</sub> <sup>(1)</sup> | 0.52 |      |      | 0.75 |      | V    |
| Maximum reverse current at rated V <sub>R</sub>                            | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 0.2  |      |      |      |      | mA   |
|  | T <sub>A</sub> = 100 °C |                               | 6.0  |      | 5.0  |      |      |      |

**Notes**

- (1) Pulse test: 300 μs 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                          | B120 | B130 | B140 | B150 | B160 | UNIT |      |
| Typical thermal resistance  | R <sub>θJA</sub> <sup>(1)</sup> | 95   |      |      |      |      |      | °C/W |
|   | R <sub>θJL</sub> <sup>(1)</sup> | 30   |      |      |      |      |      |      |

**Note**

- (1) P.C.B. 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-M3/61T                    | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| B140-M3/5AT                    | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |

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

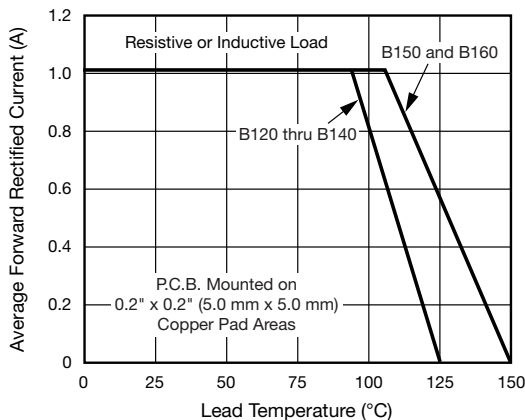


Fig. 1 - Maximum Forward Current Derating Curve

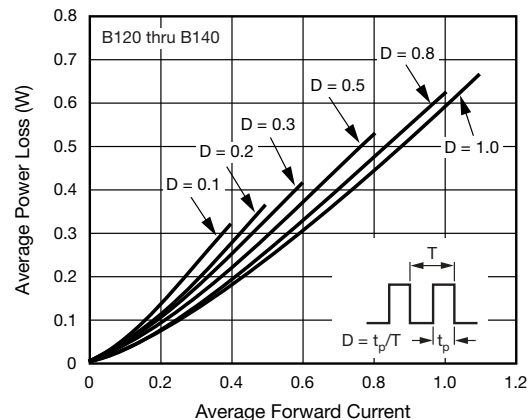


Fig. 2 - Forward Power Loss Characteristics

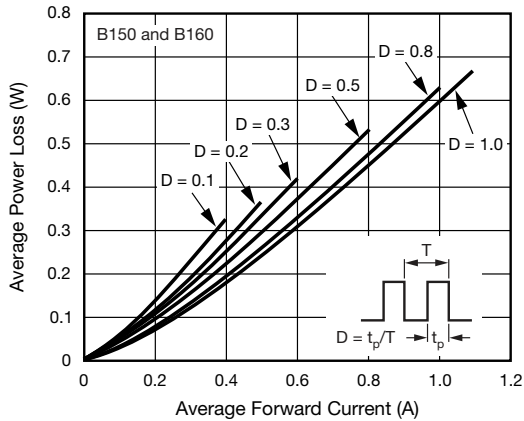


Fig. 3 - Forward Power Loss Characteristics

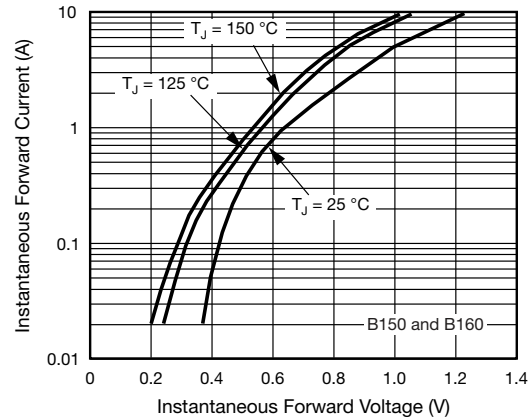


Fig. 6 - Typical Instantaneous Forward Characteristics

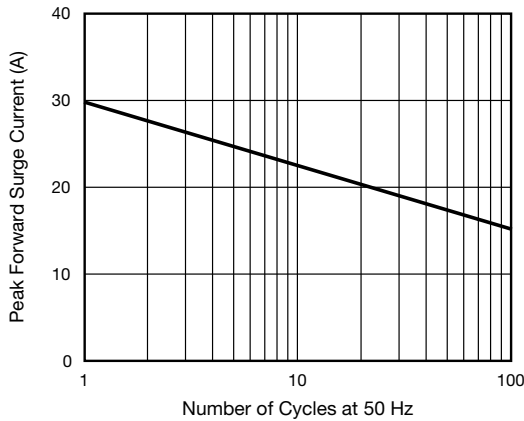


Fig. 4 - Typical Instantaneous Forward Characteristics

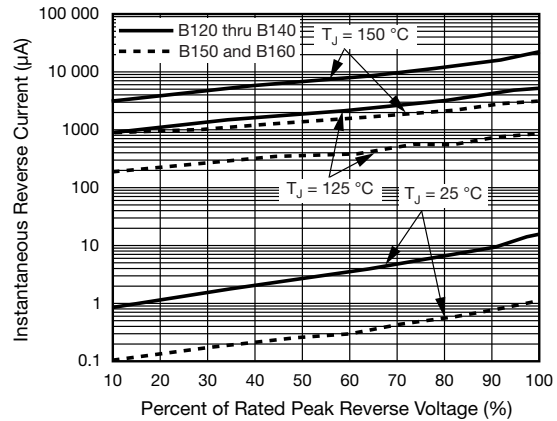


Fig. 7 - Typical Reverse Leakage Characteristics

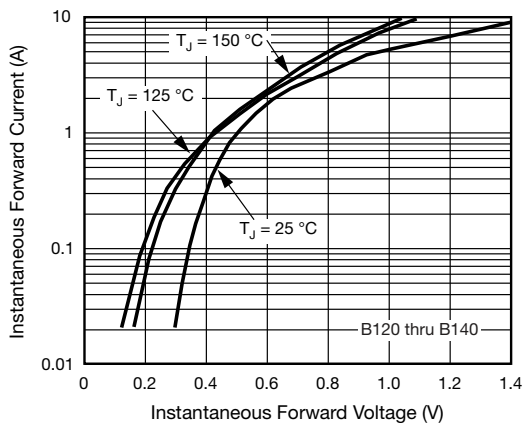


Fig. 5 - Typical Instantaneous Forward Characteristics

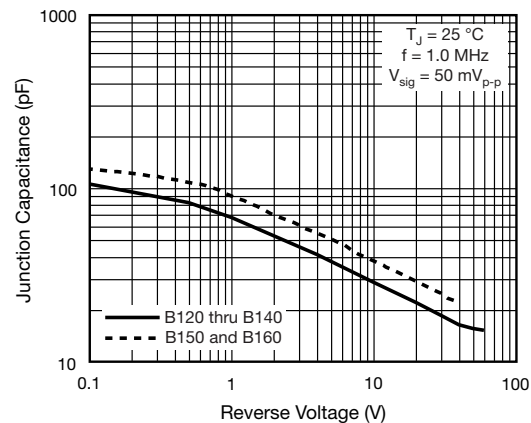
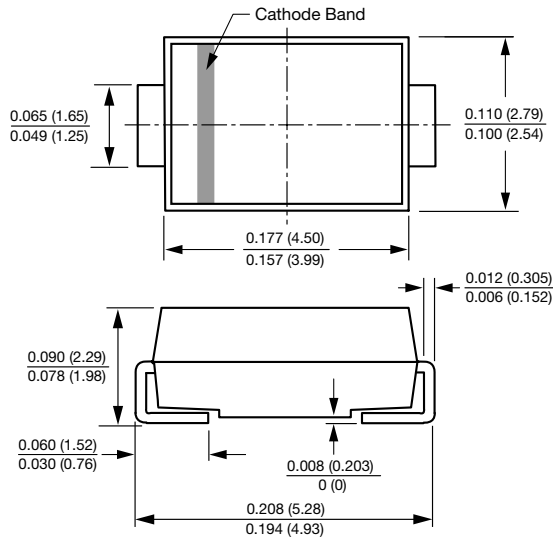


Fig. 8 - Typical Junction Capacitance

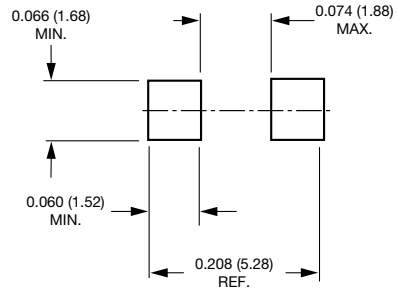


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-214AC (SMA)



### Mounting Pad Layout





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