

## Surface-Mount Schottky Barrier Rectifier



SMA (DO-214AC)

Cathode  Anode

### 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  
HALOGEN  
**FREE**

### LINKS TO ADDITIONAL RESOURCES



[3D Models](#)

### 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               | SMA (DO-214AC)               |
| Circuit configuration | 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:** SMA (DO-214AC)

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

### MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

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|------------------------------------------------------------------------------------|--------------------|-------------|------|------|-------------|------|------|
| PARAMETER                                                                          | SYMBOL             | B120        | B130 | B140 | B150        | B160 | UNIT |
| Device marking code                                                                |                    | B12         | B13  | B14  | B15         | B16  |      |
| Maximum repetitive peak reverse voltage                                            | V <sub>RRM</sub>   | 20          | 30   | 40   | 50          | 60   | V    |
| Maximum average forward rectified current (fig. 1)                                 | I <sub>F(AV)</sub> | 1.0         |      |      |             |      | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>   | 30          |      |      |             |      | A    |
| Voltage rate of change (rated V <sub>R</sub> )                                     | dV/dt              | 10 000      |      |      |             |      | V/μs |
| Operating junction temperature range                                               | T <sub>J</sub>     | -65 to +125 |      |      | -65 to +150 |      | °C   |
| Storage temperature range                                                          | T <sub>STG</sub>   | -65 to +150 |      |      |             |      | °C   |

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

| PARAMETER                              | TEST CONDITIONS |                                     | SYMBOL      | B120 | B130 | B140 | B150 | B160 | UNIT |
|----------------------------------------|-----------------|-------------------------------------|-------------|------|------|------|------|------|------|
| Maximum instantaneous forward voltage  | 1.0 A           |                                     | $V_F^{(1)}$ | 0.52 |      |      | 0.75 |      | V    |
| Maximum reverse current at rated $V_R$ |                 | $T_A = 25\text{ }^{\circ}\text{C}$  | $I_R^{(2)}$ | 0.2  |      |      |      |      | mA   |
|                                        |                 | $T_A = 100\text{ }^{\circ}\text{C}$ |             | 6.0  |      |      | 5.0  |      |      |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ **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   |      |      |      |      | °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-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 |

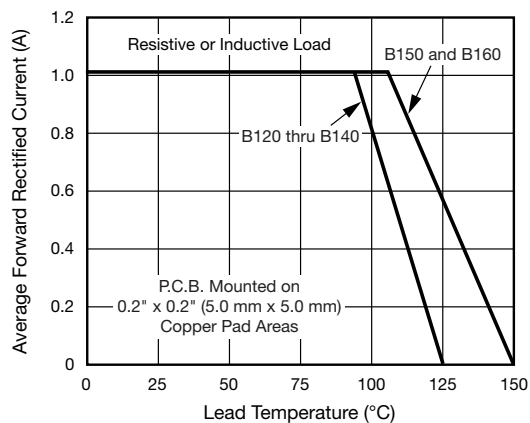
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

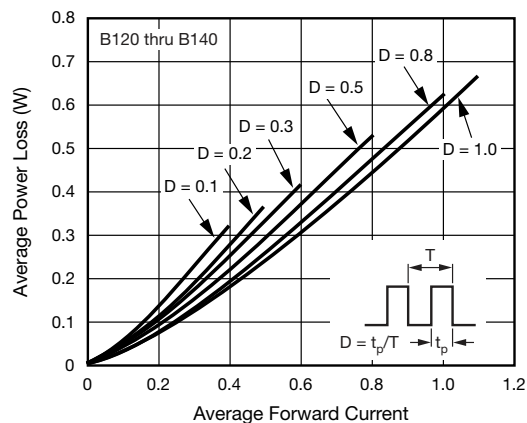


Fig. 2 - Forward Power Loss Characteristics

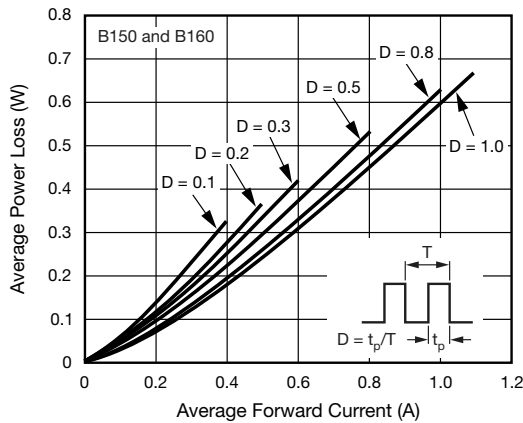


Fig. 3 - Forward Power Loss Characteristics

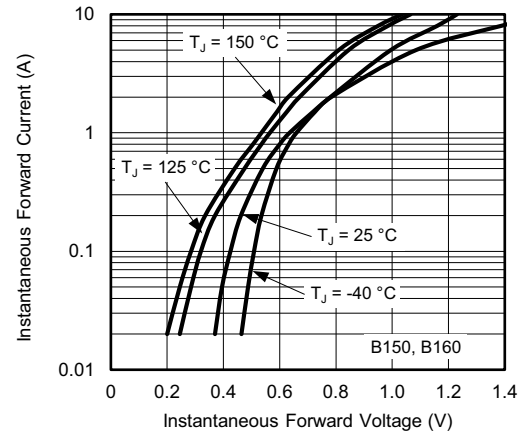


Fig. 6 - Typical Instantaneous Forward Characteristics

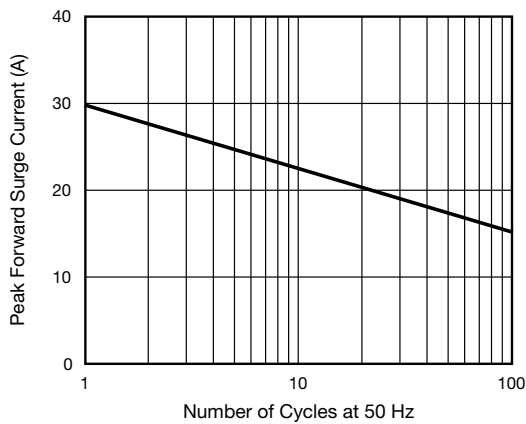


Fig. 4 - Typical Instantaneous Forward Characteristics

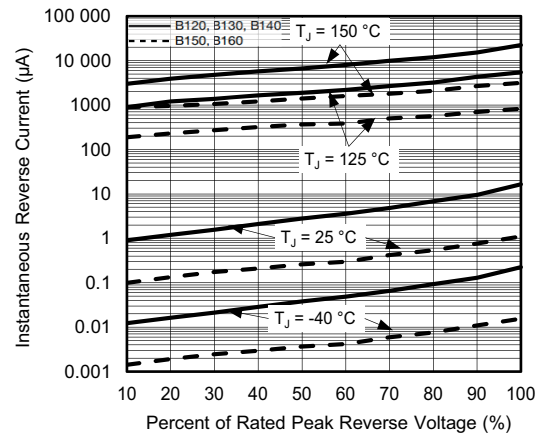


Fig. 7 - Typical Reverse Leakage Characteristics

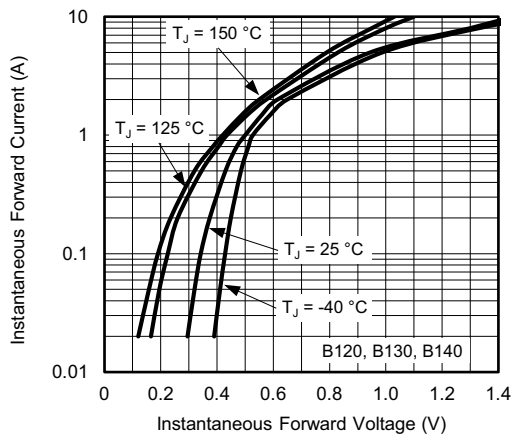


Fig. 5 - Typical Instantaneous Forward Characteristics

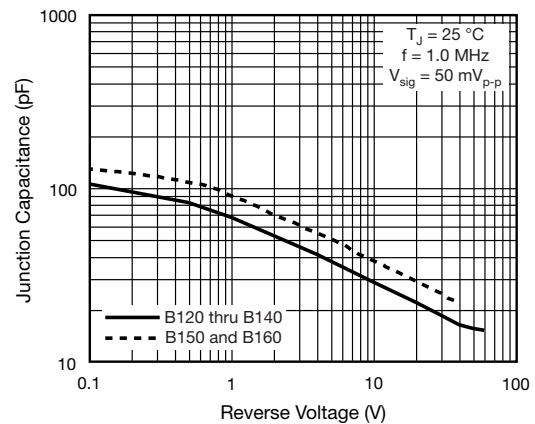
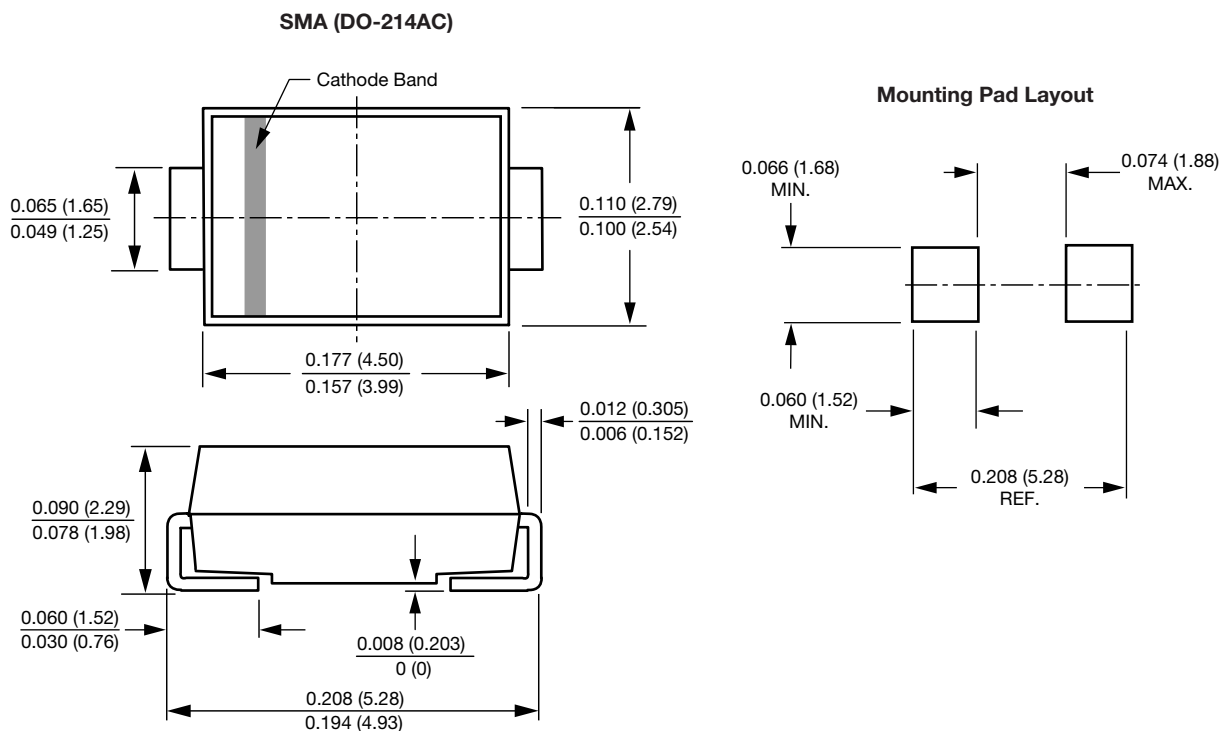


Fig. 8 - Typical Junction Capacitance



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





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