## 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

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 °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/µs |
| 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 °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 °C | $I_R$ (2) | 0.2 | | | | | mA |
| | | $T_A$ = 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 ($T_A$ = 25 °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-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 °C unless otherwise noted)

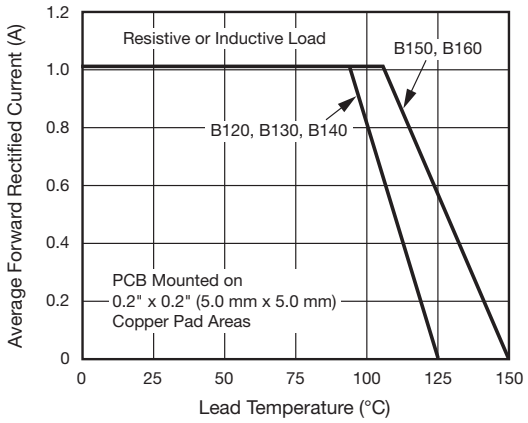



Fig. 1 - Maximum Forward Current Derating Curve

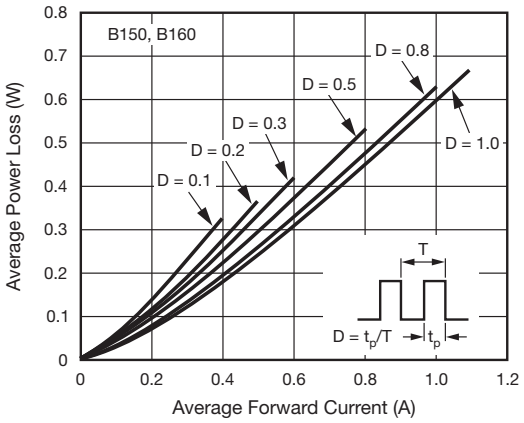



Fig. 3 - Forward Power Loss Characteristics

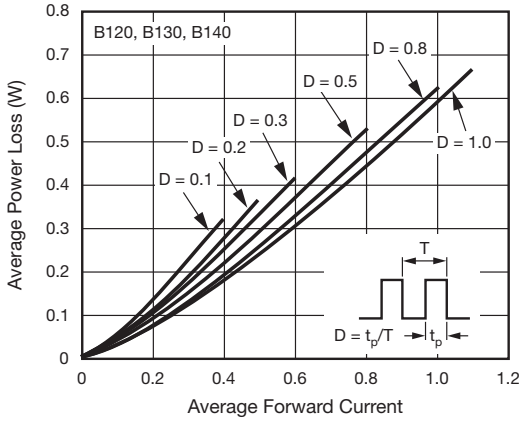



Fig. 2 - Forward Power Loss Characteristics

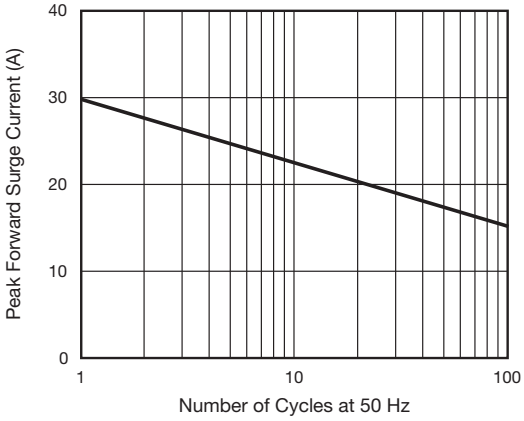



Fig. 4 - Typical Instantaneous Forward Characteristics

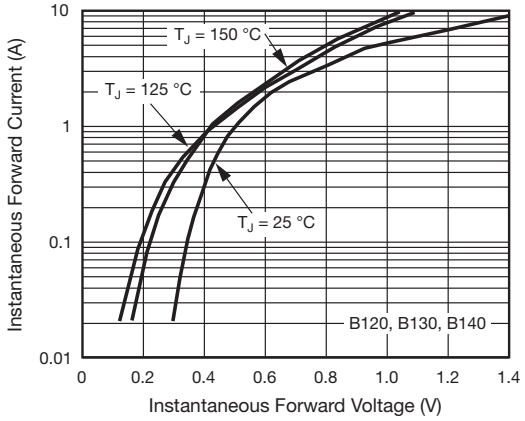



Fig. 5 - Typical Instantaneous Forward Characteristics

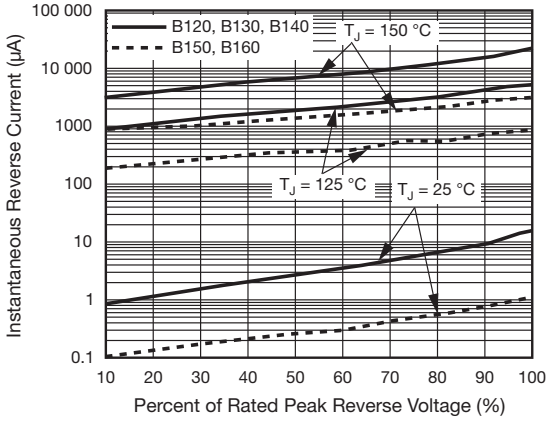



Fig. 7 - Typical Reverse Leakage Characteristics

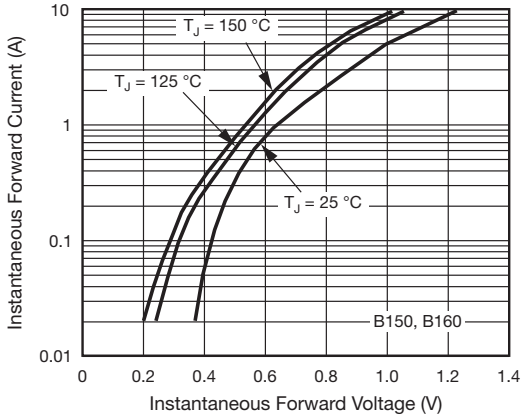



Fig. 6 - Typical Instantaneous Forward Characteristics

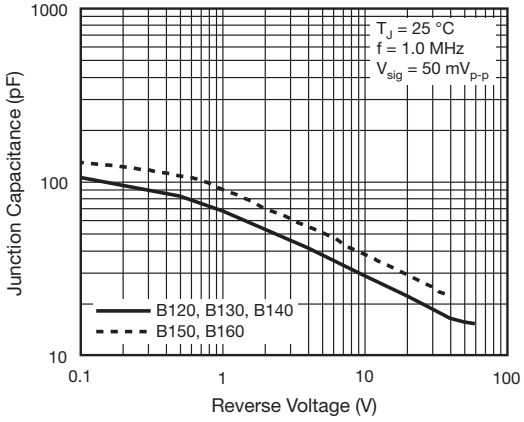
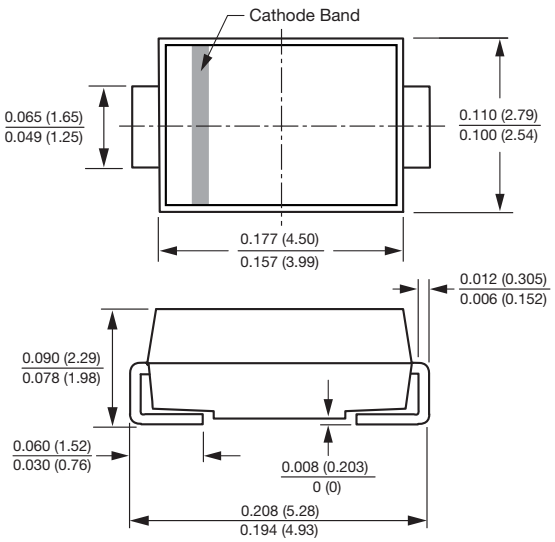


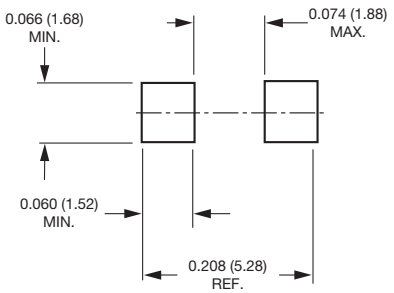

Fig. 8 - Typical Junction Capacitance

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

### DO-214AC (SMA)




### Mounting Pad Layout



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