

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



LINKS TO ADDITIONAL RESOURCES



| 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 configurations | 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-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 2 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 μ s pulse width, 1 % duty cycle

(2) 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 | | | | | °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 |

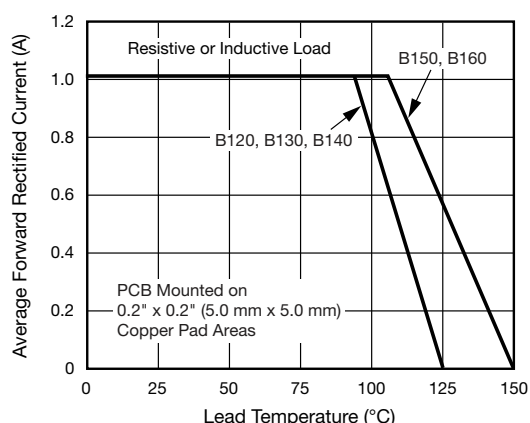
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

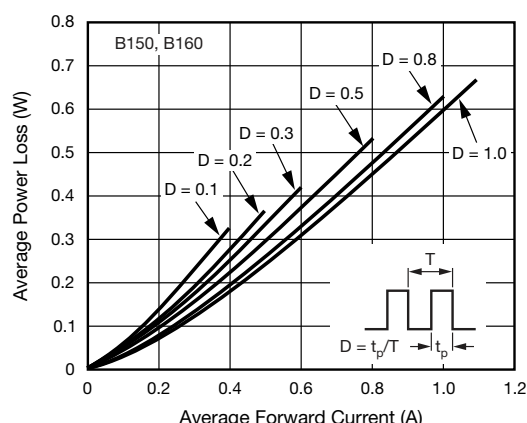


Fig. 3 - Forward Power Loss Characteristics

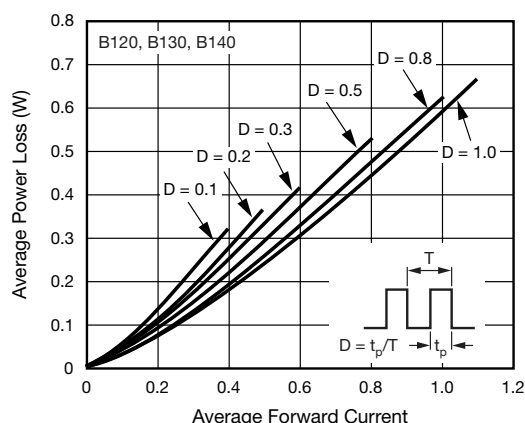


Fig. 2 - Forward Power Loss Characteristics

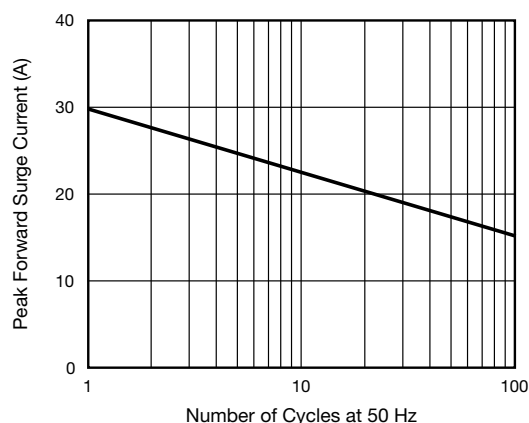


Fig. 4 - Typical Instantaneous Forward Characteristics

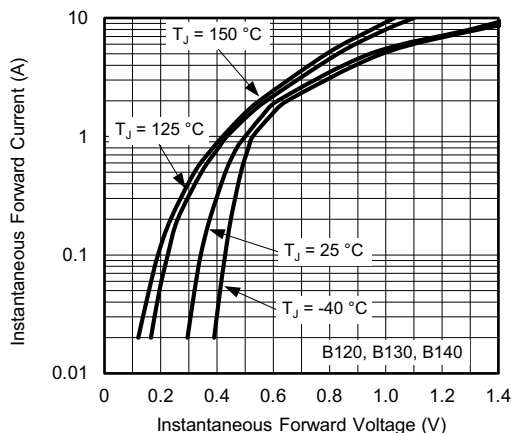


Fig. 5 - Typical Instantaneous Forward Characteristics

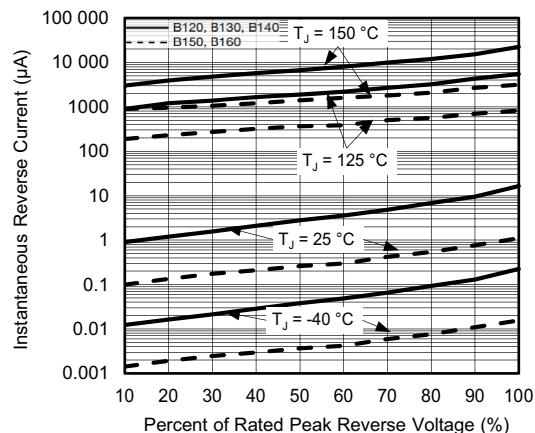


Fig. 7 - Typical Reverse Leakage Characteristics

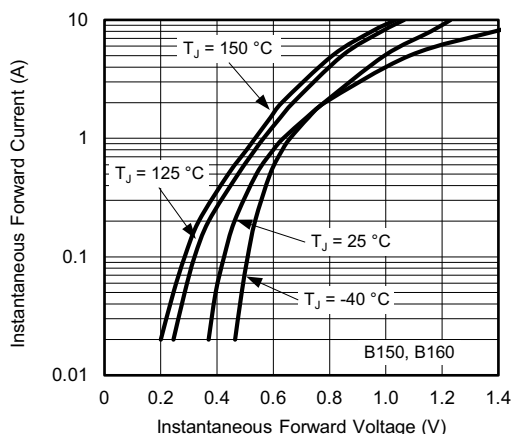


Fig. 6 - Typical Instantaneous Forward Characteristics

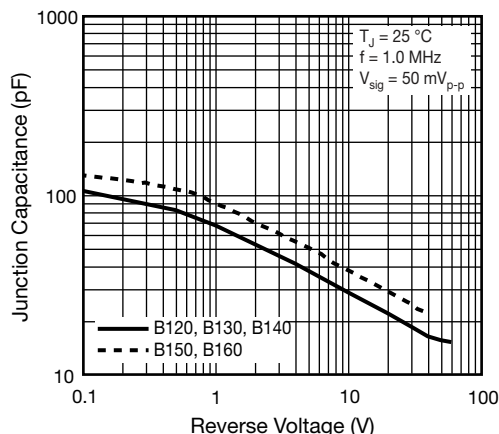
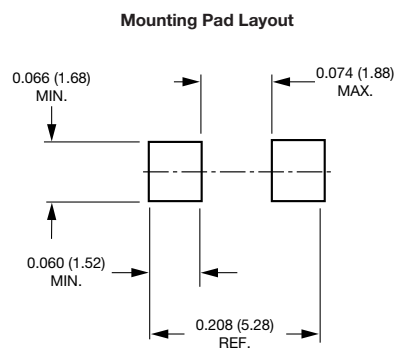
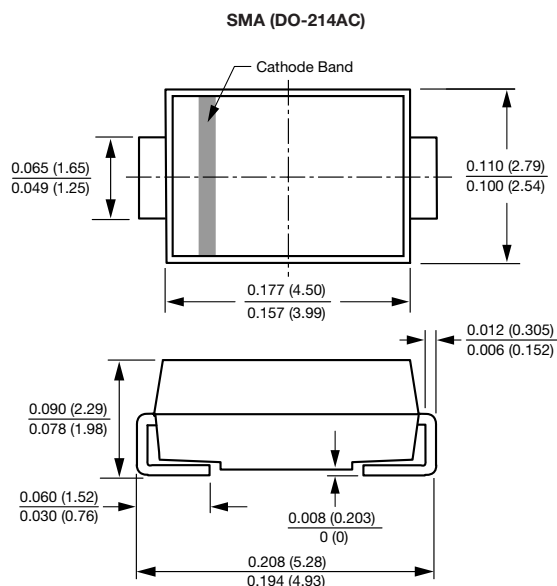


Fig. 8 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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