

1.0A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER
Product Summary (@ +25°C)

B170/B

| V _{RRM} (V) | I _O (A) | V _F Max (V) | I _R Max (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 70 | 1.0 | 0.79 | 0.5 |

B180/B

| V _{RRM} (V) | I _O (A) | V _F Max (V) | I _R Max (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 80 | 1.0 | 0.79 | 0.5 |

B190/B

| V _{RRM} (V) | I _O (A) | V _F Max (V) | I _R Max (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 90 | 1.0 | 0.79 | 0.5 |

B1100/B

| V _{RRM} (V) | I _O (A) | V _F Max (V) | I _R Max (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 100 | 1.0 | 0.79 | 0.5 |

Applications

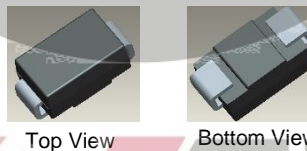
- Polarity Protection Diode
- Re-Circulating Diode
- Blocking Diode
- DC-DC
- AC-DC

Features and Benefits

- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- For Use in Low Voltage Drop, High Frequency Inverters, Free Wheeling, and Polarity Protection Application
- High Temperature Soldering: +260°C/10 Second at Terminal
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>**
- **The Automotive-Compliant Parts Are Available Under Separate Datasheets ([B170Q](#) [B180Q](#) [B190Q](#) [B1100Q](#) And [B170BQ](#) [B180BQ](#) [B190BQ](#) [B1100BQ](#))**

Mechanical Data

- Case: SMA and SMB
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: Cathode Band
- Weight: 0.093 grams (Approximate)

SMA / SMB


Top View

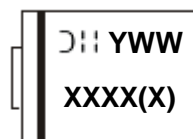
Bottom View

Ordering Information (Note 4)

| Part Number | Compliance | Case | Packaging |
|-------------|------------|------|-------------------|
| B1x0-13-F | AEC-Q101 | SMA | 5,000/Tape & Reel |
| B1x0B-13-F | AEC-Q101 | SMB | 3,000/Tape & Reel |

*x = Device type, e.g. B180-13-F (SMA package); B1100B-13-F (SMB package).

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information
SMA / SMB


- XXXX = Product Type Marking Code, ex: B170 (SMA Package)
- XXXXX = Product Type Marking Code, ex: B190B (SMB Package)
- ⌋;⌋ = Manufacturers' Code Marking
- YWW = Date Code Marking
- Y = Last Two Digits of Year (ex: 20 for 2020)
- WW = Week Code (ex: 01 to 52)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| Characteristic | Symbol | B170/B | B180/B | B190/B | B1100/B | Unit |
|---|---------------------|--------|--------|--------|---------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 70 | 80 | 90 | 100 | V |
| Working Peak Reverse Voltage | V _{RWM} | | | | | |
| DC Blocking Voltage | V _R | | | | | |
| RMS Reverse Voltage | V _{R(RMS)} | 49 | 56 | 63 | 70 | V |
| Average Rectified Output Current @ T _T = +125°C | I _O | 1.0 | | | | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 30 | | | | A |
| Repetitive Peak Reverse Current | I _{RRM} | 1.0 | | | | A |

Thermal Characteristics

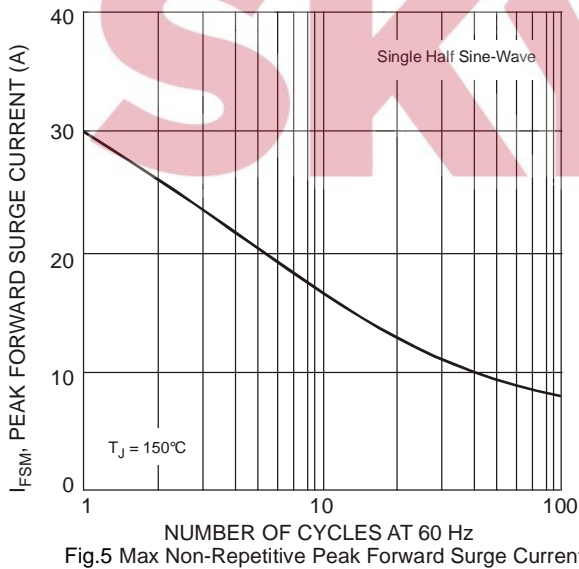
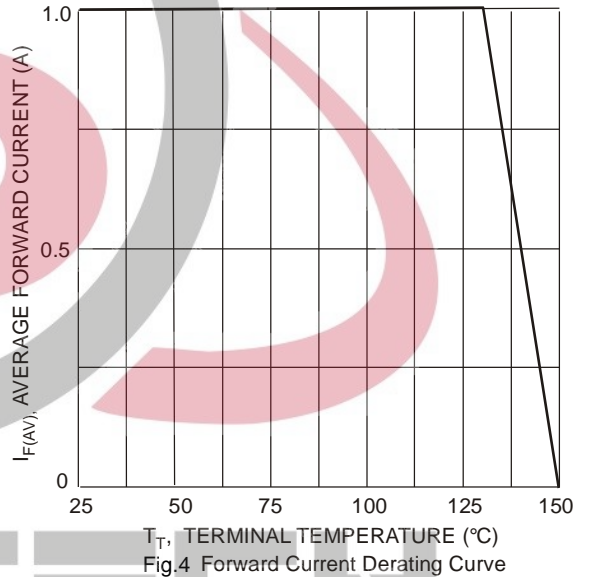
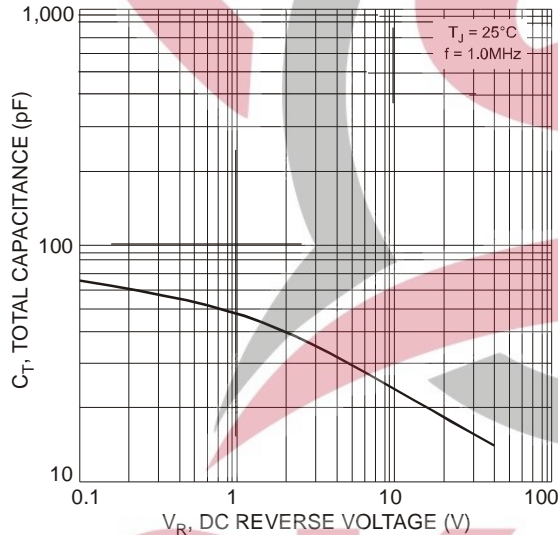
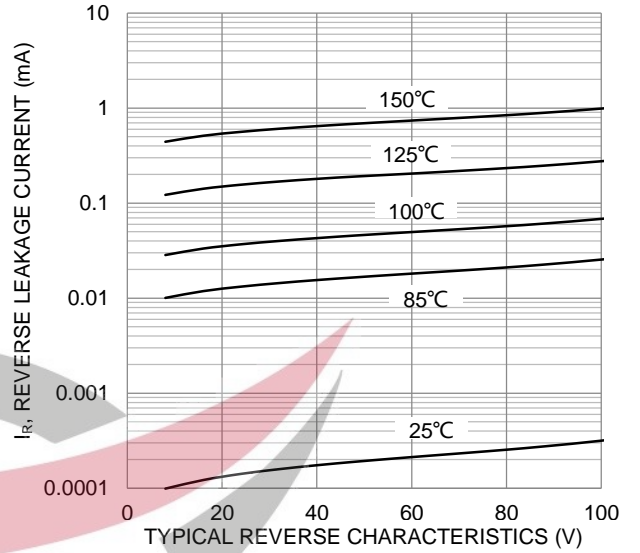
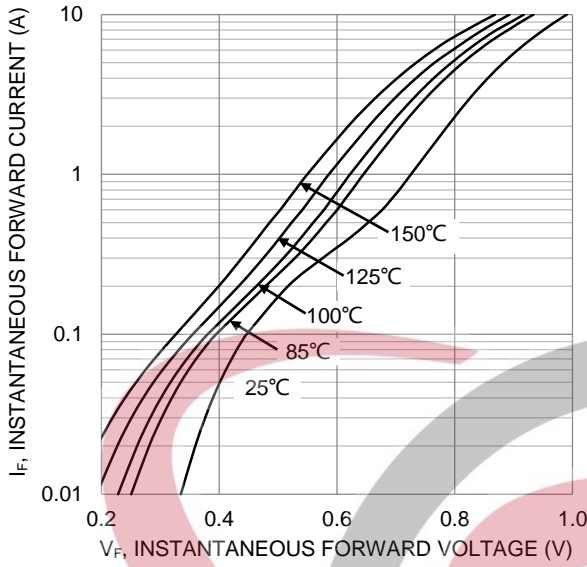
| Characteristic | Symbol | B170/B | B180/B | B190/B | B1100/B | Unit |
|--|-----------------------------------|-------------|--------|--------|---------|------|
| Typical Thermal Resistance Junction to Terminal (Note 5) | R _{θJT} | 25 | | | | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | | | | °C |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------|----------------|-----|-----|--------------|------|---|
| Forward Voltage Drop | V _F | — | — | 0.79 0.69 | V | I _F = 1.0A, T _A = +25°C I _F = 1.0A, T _A = +100°C |
| Leakage Current (Note 6) | I _R | — | — | 0.5 5.0 | mA | @ Rated V _R , T _A = +25°C @ Rated V _R , T _A = +100°C |
| Total Capacitance | C _T | — | — | 80 | pF | V _R = 4V, f = 1MHz |

Notes: 5. Valid provided that terminals are kept at ambient temperature.
6. Short duration pulse test used to minimize self-heating effect.



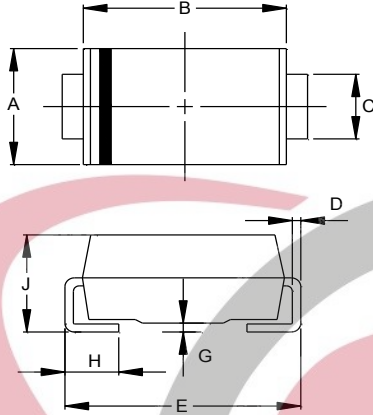


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TELE
ELECTRONIC

Package Outline Dimensions

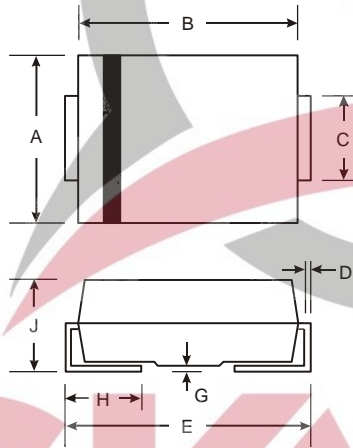
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMA



| SMA | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 2.29 | 2.92 |
| B | 4.00 | 4.60 |
| C | 1.27 | 1.63 |
| D | 0.15 | 0.31 |
| E | 4.80 | 5.59 |
| G | 0.05 | 0.20 |
| H | 0.76 | 1.52 |
| J | 1.96 | 2.40 |
| All Dimensions in mm | | |

SMB



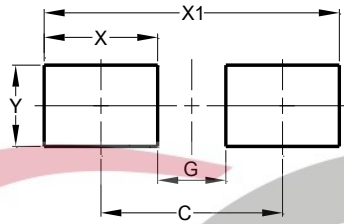
| SMB | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 3.30 | 3.94 |
| B | 4.06 | 4.57 |
| C | 1.96 | 2.21 |
| D | 0.15 | 0.31 |
| E | 5.00 | 5.59 |
| G | 0.05 | 0.20 |
| H | 0.76 | 1.52 |
| J | 2.00 | 2.50 |
| All Dimensions in mm | | |



Suggested Pad Layout

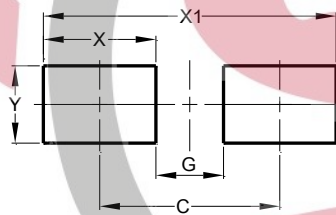
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMA



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 4.00 |
| G | 1.50 |
| X | 2.50 |
| X1 | 6.50 |
| Y | 1.70 |

SMB



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 4.30 |
| G | 1.80 |
| X | 2.50 |
| X1 | 6.80 |
| Y | 2.30 |



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