

## 1.0A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER

### Features

- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- Surge Overload Rating to 30A Peak
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Application
- High Temperature Soldering: +260°C/10 Second at Terminal
- **Lead Free Finish/RoHS Compliant (Note 1)**
- **Green Molding Compound (No Halogen and Antimony) (Note 2)**

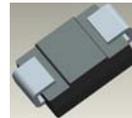
### Mechanical Data

- Case: SMA / SMB
- Case Material: Molded Plastic. 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
- Polarity: Cathode Band or Cathode Notch
- Weight: SMA 0.064 grams (Approximate)  
SMB 0.093 grams (Approximate)

SMA / SMB



Top View



Bottom View

### Ordering Information (Note 3)

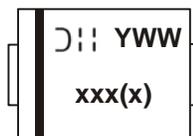
| Part Number | Compliance | Case | Packaging         |
|-------------|------------|------|-------------------|
| B1x-13-F    | AEC-Q101   | SMA  | 5,000/Tape & Reel |
| B1xQ-13-F   | Automotive | SMA  | 5,000/Tape & Reel |
| B1xB-13-F   | AEC-Q101   | SMB  | 3,000/Tape & Reel |
| B1xBQ-13-F  | Automotive | 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) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. For packaging details, go to our website at <http://www.diodes.com>.

### Marking Information

SMA / SMB



XXX = Product Type Marking Code, ex: B170 (SMA package)  
 XXXX = Product Type Marking Code, ex: B190B (SMB package)  
 = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 5 for 2015)  
 WW = Week Code 01 to 52

**Maximum Ratings** (@T<sub>A</sub> = +25°C unless otherwise specified.)

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

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

**Thermal Characteristics**

| Characteristic   | Symbol                            | B170/B      | B180/B | B190/B | B1100/B | Unit |
|--|-----------------------------------|-------------|--------|--------|---------|------|
| Typical Thermal Resistance Junction to Terminal (Note 4) | R <sub>θJT</sub>                  | 25          |        |        |         | °C/W |
| Operating and Storage Temperature Range                  | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 |        |        |         | °C   |

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic           | Symbol         | Min | Typ | Max          | Unit | Test Condition  |
|--------------------------|----------------|-----|-----|--------------|------|---|
| Forward Voltage Drop     | V <sub>F</sub> | -   | -   | 0.79<br>0.69 | V    | I <sub>F</sub> = 1.0A, T <sub>A</sub> = +25°C<br>I <sub>F</sub> = 1.0A, T <sub>A</sub> = +100°C     |
| Leakage Current (Note 5) | I <sub>R</sub> | -   | -   | 0.5<br>5.0   | mA   | @ Rated V <sub>R</sub> , T <sub>A</sub> = +25°C<br>@ Rated V <sub>R</sub> , T <sub>A</sub> = +100°C |
| Total Capacitance        | C <sub>T</sub> | -   | -   | 80           | pF   | V <sub>R</sub> = 4V, f = 1MHz   |

Notes: 4. Valid provided that terminals are kept at ambient temperature.  
5. Short duration pulse test used to minimize self-heating effect.

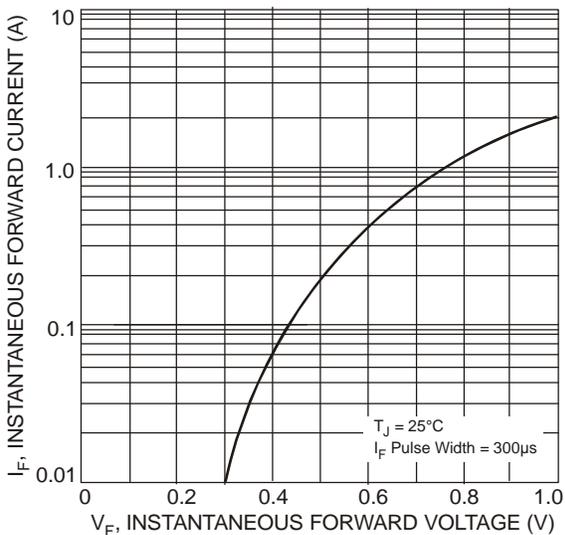


Fig. 1 Typical Forward Characteristics

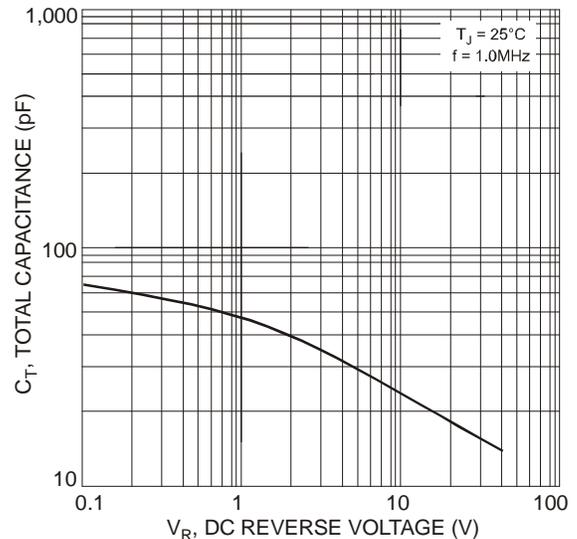


Fig. 2 Total Capacitance vs. Reverse Voltage

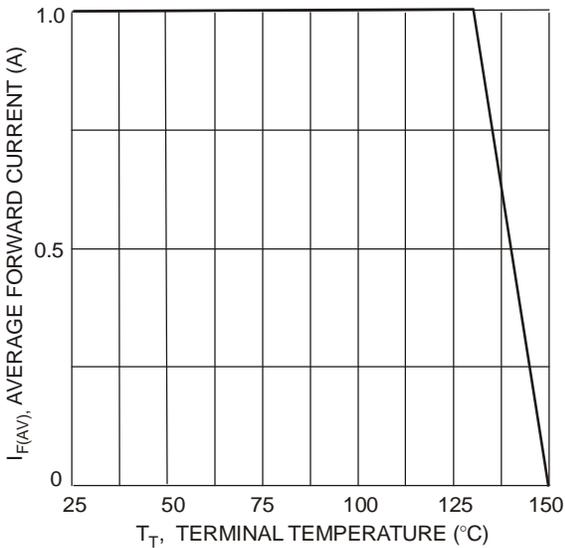


Fig. 3 Forward Current Derating Curve

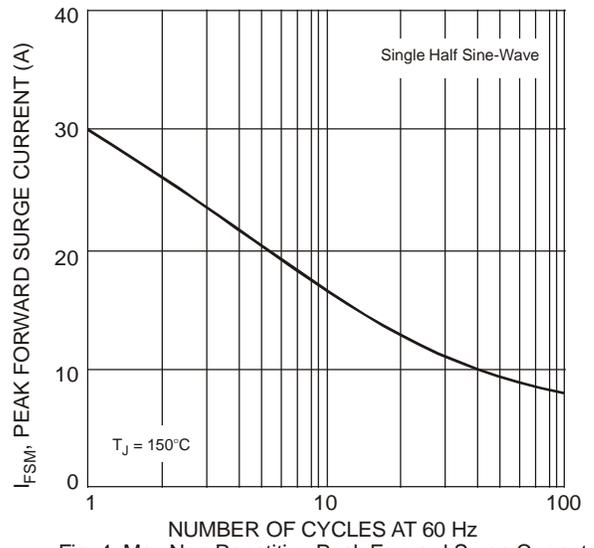
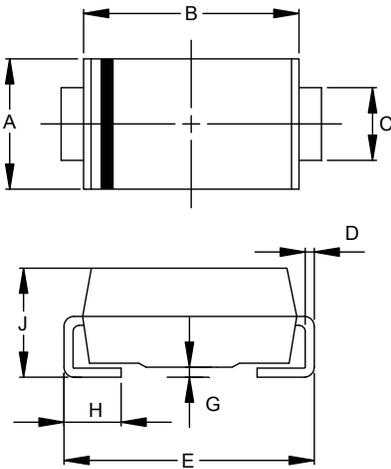


Fig. 4 Max Non-Repetitive Peak Forward Surge Current

## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

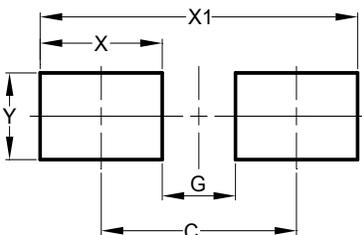


| SMA                  |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 2.29 | 2.92 |
| B                    | 4.00 | 4.60 |
| C                    | 1.27 | 1.63 |
| D                    | 0.15 | 0.31 |
| E                    | 4.80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

| SMB                  |      |      |
|----------------------|------|------|
| 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 AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> 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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