

1.0A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER

Product Summary (@ +25°C)

| Device | V _{RRM} (V) | I _O (A) | V _F Max (V) | I _R Max (mA) |
|------------|----------------------|--------------------|------------------------|-------------------------|
| B170AE/BE | 70 | 1.0 | 0.79 | 0.2 |
| B180AE/BE | 80 | 1.0 | 0.79 | 0.2 |
| B190AE/BE | 90 | 1.0 | 0.79 | 0.2 |
| B1100AE/BE | 100 | 1.0 | 0.79 | 0.2 |

Applications

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

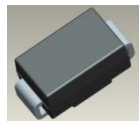
Features and Benefits

- 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
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

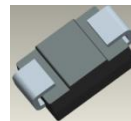
Mechanical Data

- Case: SMA , 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 **Ⓔ3**
- Polarity: Cathode Band
- Weight: SMA-0.063 grams (Approximate)
SMB-0.093 grams (Approximate)

SMA / SMB



Top View



Bottom View

Ordering Information (Note 4)

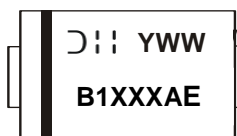
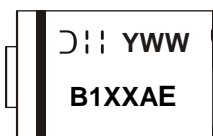
| Part Number | Case | Packaging |
|-------------|------|-------------------|
| B1XXAE-13 | SMA | 5,000/Tape & Reel |
| B1XXXAE-13 | SMA | 5,000/Tape & Reel |
| B1XXBE-13 | SMB | 3,000/Tape & Reel |
| B1XXXBE-13 | SMB | 3,000/Tape & Reel |

*x = Device type, e.g. B180AE-13 (SMA package); B1100BE-13 (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

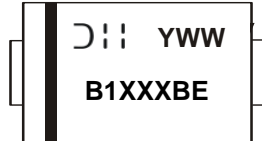
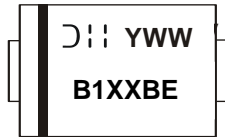
SMA



B1XXAE or B1XXXAE = Product Type Marking Code, ex: B170AE (SMA Package)
 ⌋⌋⌋ = Manufacturers' Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 8 for 2018)
 WW = Week Code (01 to 53)

Marking Information (Cont.)

SMB



B1XXBE or B1XXXBE = Product Type Marking Code, ex: B170BE (SMB Package)
 ⌋|| = Manufacturers' Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 8 for 2018)
 WW = Week Code (01 to 53)

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 | B170AE B170BE | B180AE B180BE | B190AE B190BE | B1100AE B1100BE | Unit |
|-----------------------------------------------------------------------------------------------------|------------------|------------------|------------------|------------------|--------------------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 70 | 80 | 90 | 100 | V |
| Working Peak Reverse Voltage | V _{RWM} | | | | | |
| DC Blocking Voltage | V _R | | | | | |
| Average Rectified Output Current | 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 |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Ambient (Note 5) | SMA | 110 | °C/W |
| | SMB | 75 | |
| Typical Thermal Resistance Junction to Case (Note 5) | SMA | 55 | °C/W |
| | SMB | 40 | |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 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 | — | 0.75 | 0.79 | V | I _F = 1.0A, T _A = +25°C |
| | | — | 0.61 | — | | I _F = 1.0A, T _A = +125°C |
| Leakage Current (Note 6) | I _R | — | — | 0.2 | mA | @ Rated V _R , T _A = +25°C |
| | | — | — | 5.0 | | @ Rated V _R , T _A = +125°C |
| Typical Capacitance | C _T | — | 27 | — | pF | V _R = 4V, f = 1MHz |

Notes: 5. Device mounted on FR-4 substrate, 0.4" x 0.5", 2oz, single-sided, PC boards with 0.2" x 0.25" copper pad.
 6. Short duration pulse test used to minimize self-heating effect.

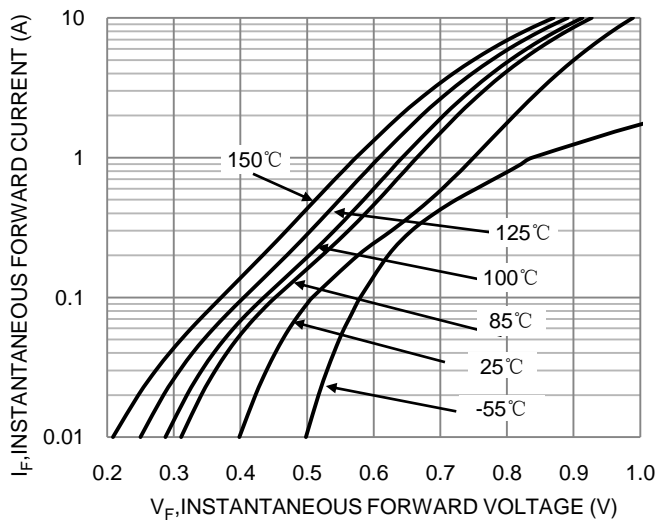


Figure 1. Typical Forward Characteristics

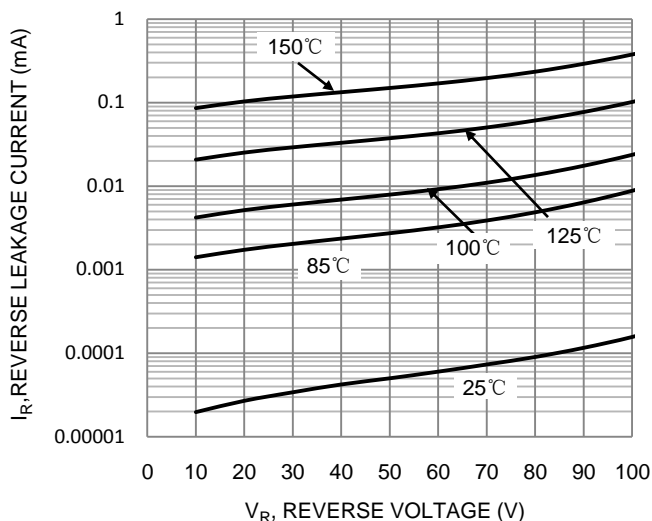


Figure 2. Typical Reverse Characteristics

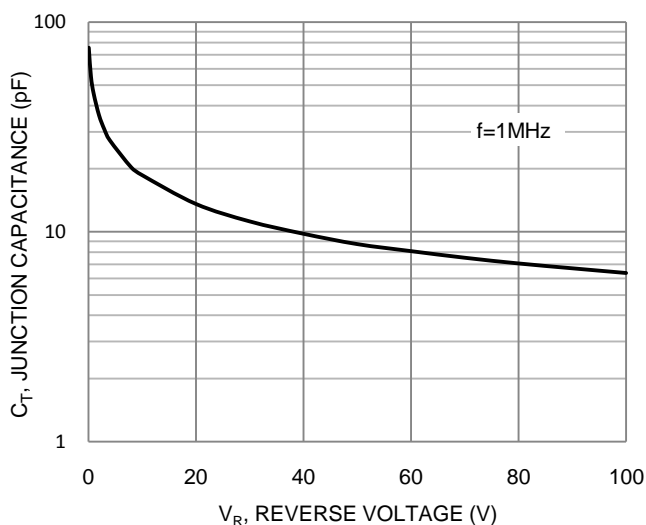


Figure 3. Typical Junction Capacitance

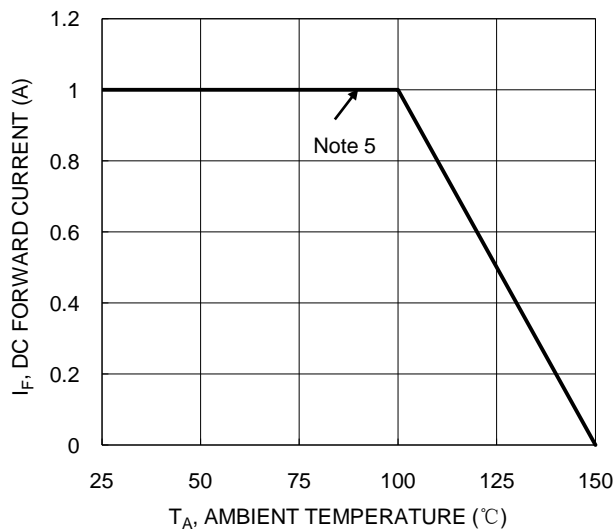
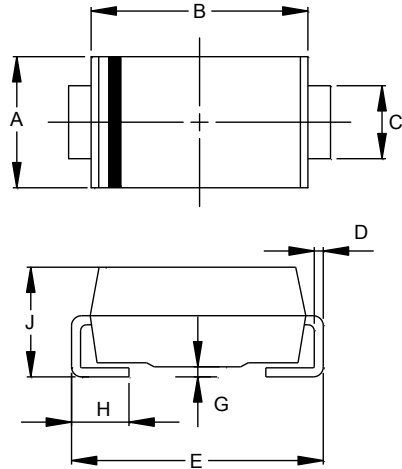


Figure 4. DC Forward Current Derating

Package Outline Dimensions

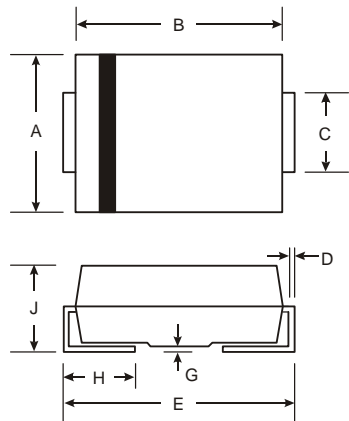
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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

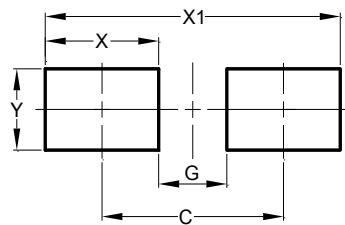


| SMB | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 3.30 | 3.94 |
| B | 4.06 | 4.57 |
| C | 1.96 | 2.21 |
| D | 0.15 | 0.31 |
| E | 5.00 | 5.59 |
| G | 0.05 | 0.20 |
| H | 0.76 | 1.52 |
| J | 2.00 | 2.50 |
| All Dimensions in mm | | |

Suggested Pad Layout

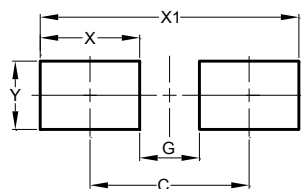
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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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