

Product Summary

B120AE/B130AE/B140AE
B120BE/B130BE/B140BE

| V _{RRM} (V) | I _o (A) | V _{F(MAX)} (V) @ +25°C | I _{R(MAX)} (mA) @ +25°C |
|----------------------|--------------------|------------------------------------|-------------------------------------|
| 20 | 1 | 0.5 | 0.1 |
| 30 | 1 | 0.5 | 0.1 |
| 40 | 1 | 0.5 | 0.2 |

Description and Applications

The Schottky rectifier providing low V_F and excellent reverse leakage stability at high temperatures, this device is ideal for use in general rectification applications such as:

- Boost Diode
- Blocking Diode
- Recirculating Diode

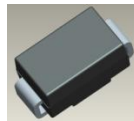
Features and Benefits

- Reduced Low Forward Voltage Drop (V_F); Better Efficiency and Cooler Operation
- Reduced High-temperature Reverse Leakage; Increased Reliability against Thermal Runaway Failure in High Temperature Operation
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

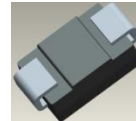
Mechanical Data

- 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: Finish - Matte Tin Annealed over Copper Leadframe. 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)

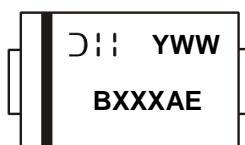
| Part Number | Case | Packaging |
|-------------|------|-------------------|
| B1XXAE-13 | SMA | 5,000/Tape & Reel |
| B1XXBE-13 | SMB | 3,000/Tape & Reel |

*X = Device type, e.g. B120AE-13 (SMA package); B120BE-13 (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 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 <http://www.diodes.com/products/packages.html>.

Marking Information

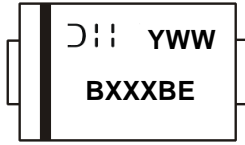
SMA



BXXXAE = Product Type Marking Code, ex: B120AE (SMA Package)
 ☺☺☺ = Manufacturers' Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 7 for 2017)
 WW = Week Code (01 to 53)

Marking Information (Cont.)

SMB



BXXXBE = Product Type Marking Code, ex: B120BE (SMB Package)
 ⏏ = Manufacturers' Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 7 for 2017)
 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 | B120AE B120BE | B130AE B130BE | B140AE B140BE | Unit |
|---|------------------|------------------|------------------|------------------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 20 | 30 | 40 | V |
| Working Peak Reverse Voltage | V _{RWM} | | | | |
| DC Blocking Voltage | V _{RM} | | | | |
| Average Rectified Output Current | I _O | 1 | | | 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) | R _{θJA} | 95 | °C/W |
| | SMA SMB | 90 | |
| Typical Thermal Resistance Junction to Case (Note 5) | R _{θJC} | 45 | °C/W |
| | SMA 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 | — | 0.45 | 0.50 | V | I _F = 1A, T _J = +25°C I _F = 1A, T _J = +125°C | | |
| Leakage Current (Note 6) | I _R | — | B120AE/B120BE | — | 0.1 | mA | V _R = 20V, T _J = +25°C | |
| | | | B130AE/B130BE | — | 0.1 | | V _R = 30V, T _J = +25°C | |
| | | | B140AE/B140BE | — | — | | 0.2 | V _R = 40V, T _J = +25°C |
| | | | | — | 6.1 | | — | V _R = 40V, T _J = +125°C |
| Typical Capacitance | C _T | — | 50 | — | pF | V _R = 4.0V, 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.

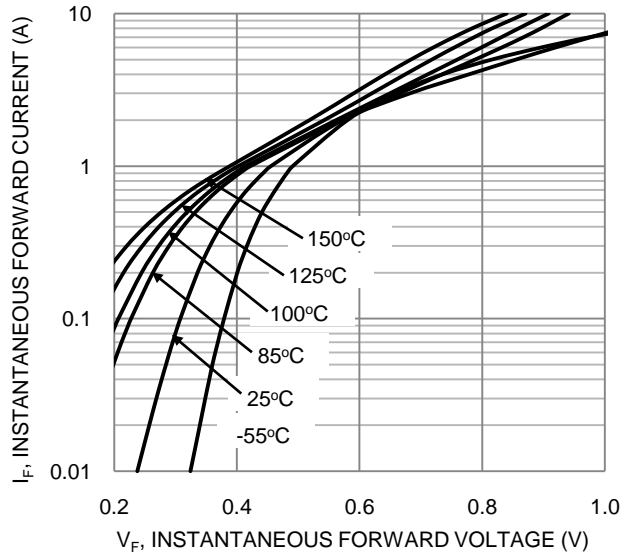


Figure 1. Typical Forward Characteristics

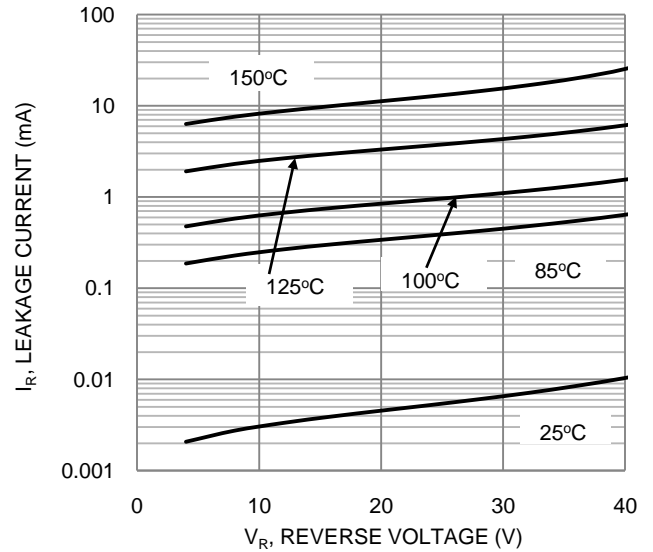


Figure 2. Typical Reverse Characteristics

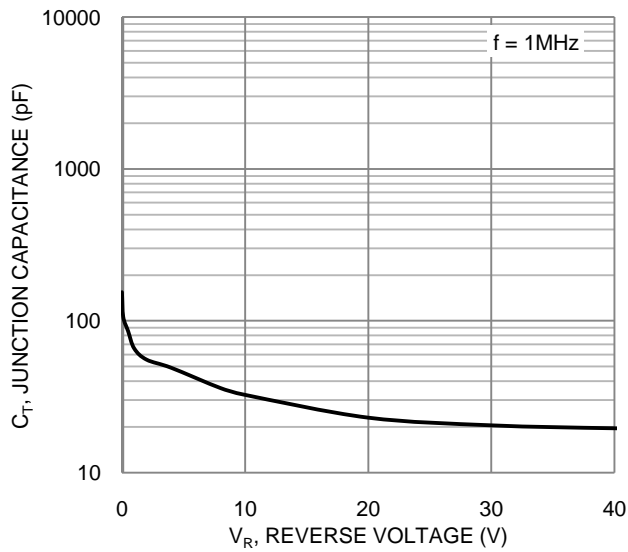


Figure 3. Typical Junction Capacitance

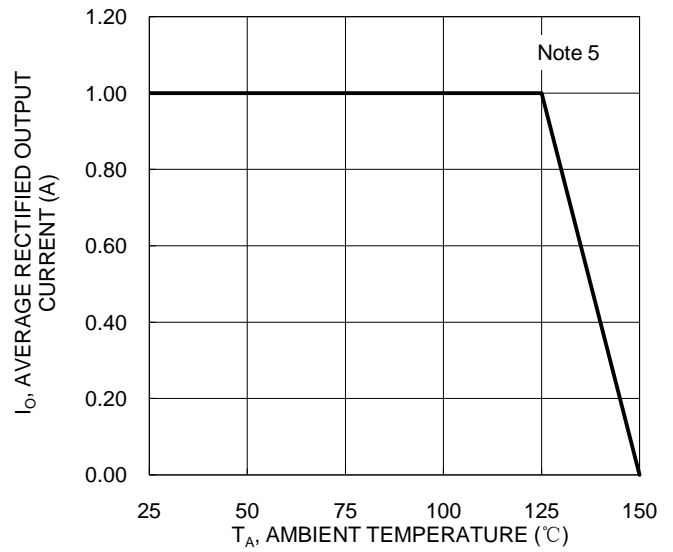
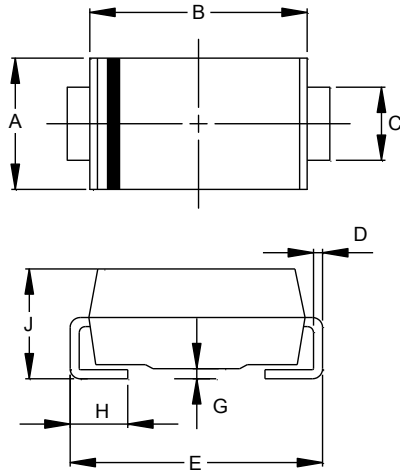


Figure 4. DC Forward Current Derating

Package Outline Dimensions

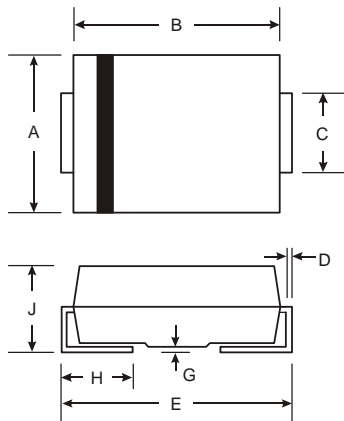
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

(1) Package Type: 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 | | |

(2) Package Type: SMB

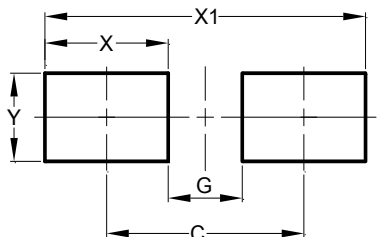


| SMB | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 3.30 | 3.94 |
| B | 4.06 | 4.57 |
| C | 1.96 | 2.21 |
| D | 0.15 | 0.31 |
| E | 5.00 | 5.59 |
| G | 0.05 | 0.20 |
| H | 0.76 | 1.52 |
| J | 2.00 | 2.50 |
| All Dimensions in mm | | |

Suggested Pad Layout

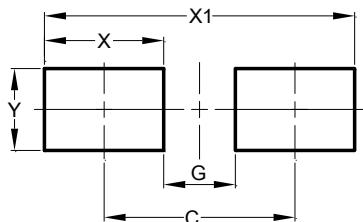
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

(1) Package Type: SMA



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

(2) Package Type: SMB



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

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