

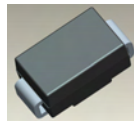
1.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

Features

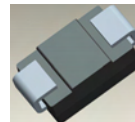
- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- Surge Overload Rating to 30A Peak
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Application
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3 & 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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)



Top View



Bottom View

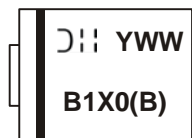
Ordering Information (Note 5)

| Part Number | Case | Packaging |
|-------------|------|------------------|
| B1XX-13-F | SMA | 5000/Tape & Reel |
| B150Q-13-F | SMA | 5000/Tape & Reel |
| B1XXB-13-F | SMB | 3000/Tape & Reel |

*xx = Device Type, e.g. B120-13-F (SMA Package); B120B-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> 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. Product manufactured with Date Code 0924 (week 24, 2009) and newer are built with Green Molding Compound.
 5. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



B1X0 = Product type marking code, ex: B120 (SMA package)
 B1X0B = Product type marking code, ex: B160B (SMB package)
 ⌋⌋ = Manufacturers' code marking
 YWW = Date code marking
 Y = Last digit of year (ex: 2 for 2002)
 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 capacitance load, derate current by 20%.

| Characteristic | Symbol | B120/B | B130/B | B140/B | B150/B | B160/B | Unit |
|--|---------------------|--------|--------|--------|--------|--------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | | | | | | |
| Working Peak Reverse Voltage | V _{RWM} | 20 | 30 | 40 | 50 | 60 | V |
| DC Blocking Voltage | V _R | | | | | | |
| RMS Reverse Voltage | V _{R(RMS)} | 14 | 21 | 28 | 35 | 42 | V |
| Average Rectified Output Current @ T _T = +130°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 |

Thermal Characteristics

| Characteristic | Symbol | B120/B | B130/B | B140/B | B150/B | B160/B | Unit |
|--|-----------------------------------|--------|--------|--------|-------------|--------|------|
| Typical Thermal Resistance Junction to Terminal (Note 6) | R _{θJT} | | | | 20 | | °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 B120/B, B130/B, B140/B B150/B, B160/B | V _F | - | - | 0.5 0.7 | V | I _F = 1.0A I _F = 1.0A |
| Leakage Current (Note 7) | I _R | - | - | 0.5 10 | mA | @ Rated V _R , T _A = +25°C @ Rated V _R , T _A = +100°C |
| Total Capacitance | C _T | - | - | 110 | pF | V _R = 4V, f = 1MHz |

Notes: 6. Thermal Resistance: Junction to terminal, unit mounted on PC board with 5.0 mm² (0.013 mm thick) copper pads as heat sink.
7. Short duration pulse test used to minimize self-heating effect.

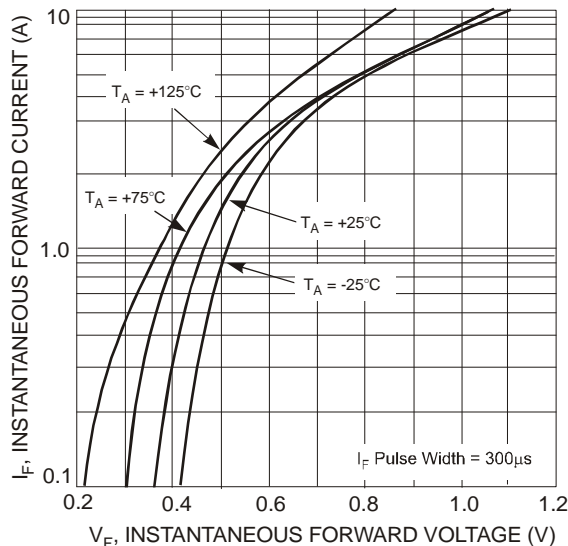


Fig. 1 Typical Forward Characteristics - B120/B thru B140/B

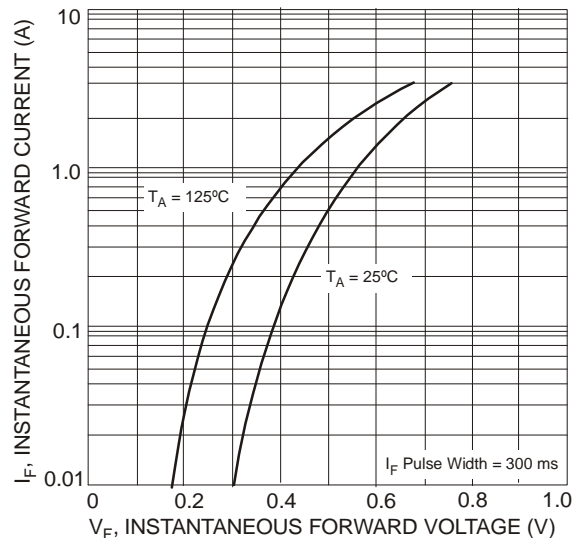


Fig. 2 Typical Forward Characteristics - B150/B thru B160/B

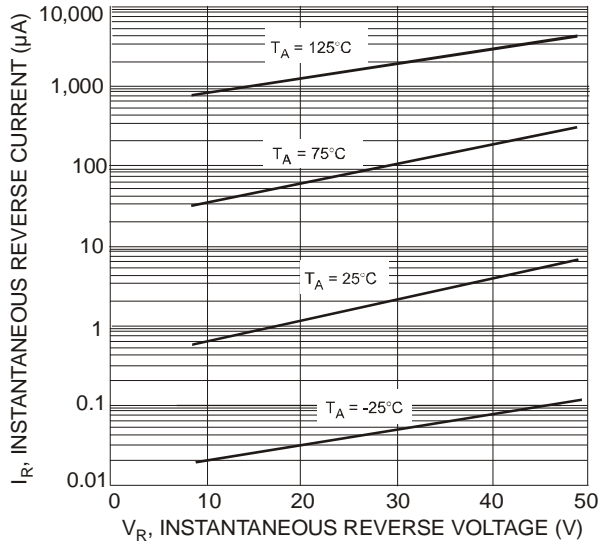


Fig. 3 Typical Reverse Characteristics, B120/B thru B140/B

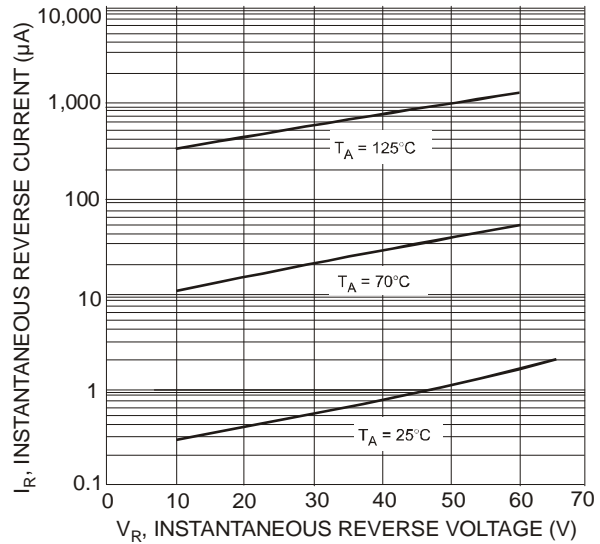


Fig. 4 Typical Reverse Characteristics, B150/B thru B160/B

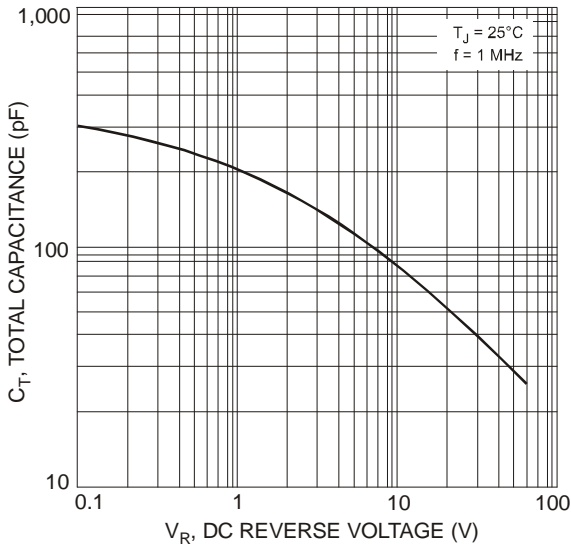


Fig. 5 Total Capacitance vs. Reverse Voltage

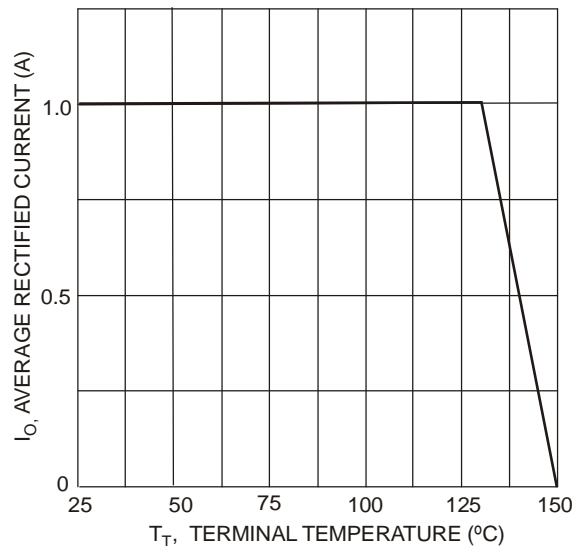


Fig. 6 Forward Current Derating Curve

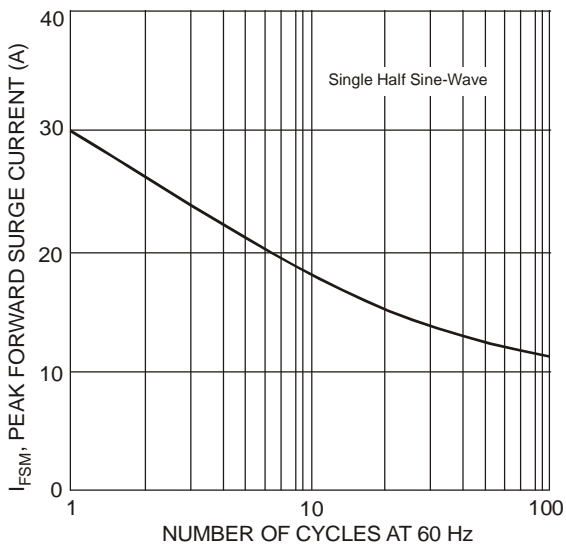
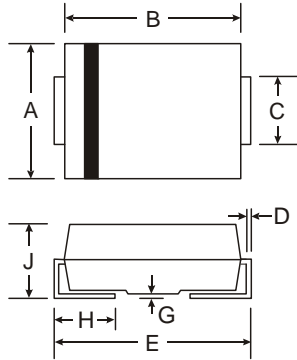


Fig. 7 Max Non-Repetitive Peak Forward Surge Current

Package Outline Dimensions

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

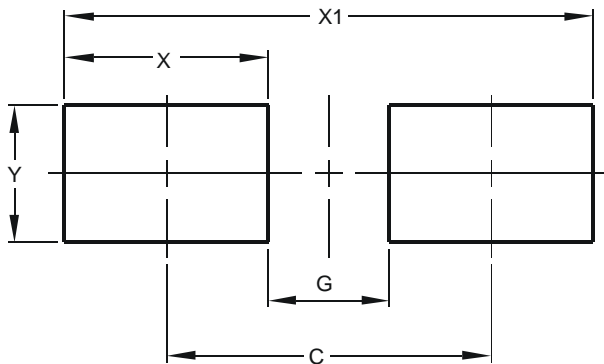


| SMA | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 2.29 | 2.92 |
| B | 4.00 | 4.60 |
| C | 1.27 | 1.63 |
| D | 0.15 | 0.31 |
| E | 4.80 | 5.59 |
| G | 0.05 | 0.20 |
| H | 0.76 | 1.52 |
| J | 2.01 | 2.30 |
| All Dimensions in mm | | |

| 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.



| Dimensions | SMA (in mm) | SMB (in mm) |
|------------|----------------|----------------|
| C | 4.00 | 4.30 |
| G | 1.50 | 1.80 |
| X | 2.50 | 2.50 |
| X1 | 6.50 | 6.80 |
| Y | 1.70 | 2.30 |

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