

## Product Summary

B320/B330/B340

| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ max (V) | $I_R$ max (mA) |
|---------------|-----------|---------------|----------------|
| 20/30/40      | 3.0       | 0.5           | 0.1            |

B350/B360

| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ max (V) | $I_R$ max (mA) |
|---------------|-----------|---------------|----------------|
| 50/60         | 3.0       | 0.7           | 0.1            |

## Description and Applications

This Schottky Barrier Rectifier has been designed to meet the general requirements of commercial applications. It is ideally suited for use as:

- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode

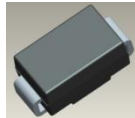
## Features and Benefits

- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- Surge Overload Rating to 125A 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 (Note 3)**

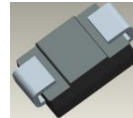
## Mechanical Data

- Case: SMC
- 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 208③
- Polarity: Cathode Band
- Weight: 0.21 grams (Approximate)

SMC



Top View



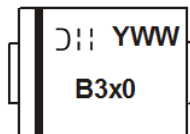
Bottom View

## Ordering Information (Notes 4 & 5)

| Part Number | Compliance | Case | Packaging         |
|-------------|------------|------|-------------------|
| B3x0-13-F   | Commercial | SMC  | 3,000/Tape & Reel |

- 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. 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 (Note 5)



B3x0 = Product Type Marking Code, ex: B320  
 JII = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 15 for 2015)  
 WW = Week Code (01 to 53)

- Note: 5. Device has a cathode band (as shown above) and may also have a cathode notch.

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

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

| Characteristic   | Symbol    | B320 | B330 | B340 | B350 | B360 | Unit |
|--|-----------|------|------|------|------|------|------|
| Peak Repetitive Reverse Voltage  | $V_{RRM}$ | 20   | 30   | 40   | 50   | 60   | V    |
| Working Peak Reverse Voltage   | $V_{RWM}$ |      |      |      |      |      |      |
| DC Blocking Voltage  | $V_R$     |      |      |      |      |      |      |
| Average Rectified Output Current   | $I_O$     | 3.0  |      |      |      |      | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms single half sine-wave superimposed on rated load | $I_{FSM}$ | 100  |      |      |      |      | A    |

**Thermal Characteristics**

| Characteristic   | Symbol          | Value       | Unit               |
|--|-----------------|-------------|--------------------|
| Typical Thermal Resistance, Junction to Terminal         | $R_{\theta JT}$ | 20          | $^\circ\text{C/W}$ |
| Typical Thermal Resistance, Junction to Ambient (Note 6) | $R_{\theta JA}$ | 90          | $^\circ\text{C/W}$ |
| Operating Temperature Range                              | $T_J$           | -55 to +150 | $^\circ\text{C}$   |
| Storage Temperature Range                                | $T_{STG}$       | -55 to +150 | $^\circ\text{C}$   |

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

| Characteristic           | Symbol | Min | Typ | Max          | Unit | Test Condition  |
|--------------------------|--------|-----|-----|--------------|------|---|
| Forward Voltage Drop     | $V_F$  | —   | —   | 0.50<br>0.70 | V    | B320, B330, B340<br>B350, B360<br>$I_F = 3.0\text{A}, T_A = +25^\circ\text{C}$    |
| Leakage Current (Note 7) | $I_R$  | —   | —   | 0.1<br>20    | mA   | @ Rated $V_R, T_A = +25^\circ\text{C}$<br>@ Rated $V_R, T_A = +100^\circ\text{C}$ |
| Total Capacitance        | $C_T$  | —   | —   | 200          | pF   | $V_R = 4\text{V}, f = 1\text{MHz}$  |

Notes: 6. Thermal Resistance: Junction to terminal, unit mounted on glass epoxy substrate with 2 x 3mm copper pad.  
7. Short duration pulse test used to minimize self-heating effect.

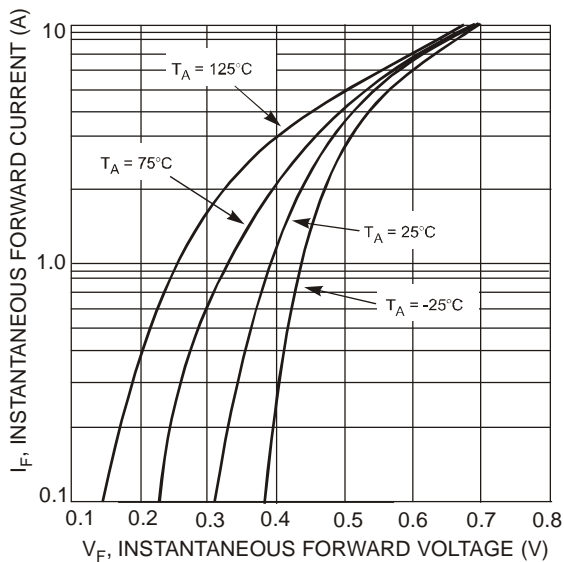


Fig. 1 Typical Forward Characteristics - B320B thru B340B

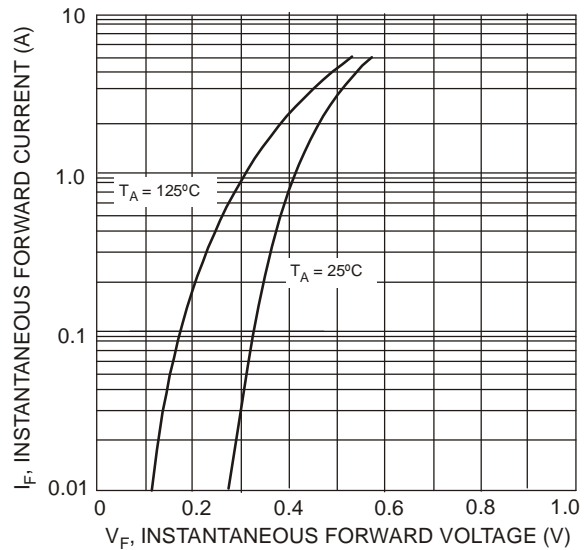


Fig. 2 Typical Forward Characteristics - B350B thru B360B

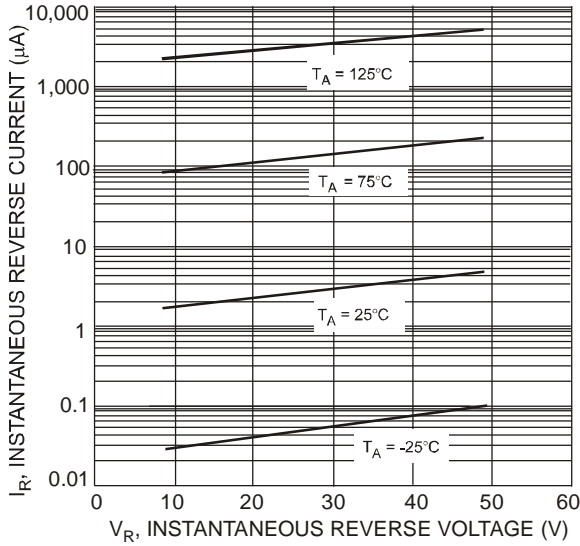


Fig. 3 Typical Reverse Characteristics, B320B thru B340B

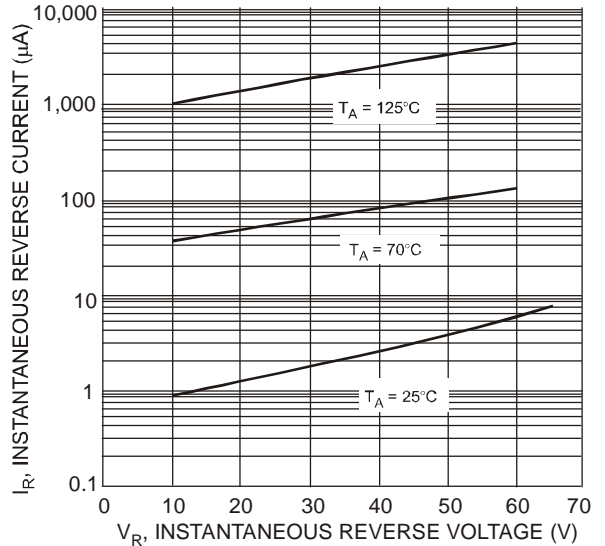


Fig. 4 Typical Reverse Characteristics, B350B thru B360B

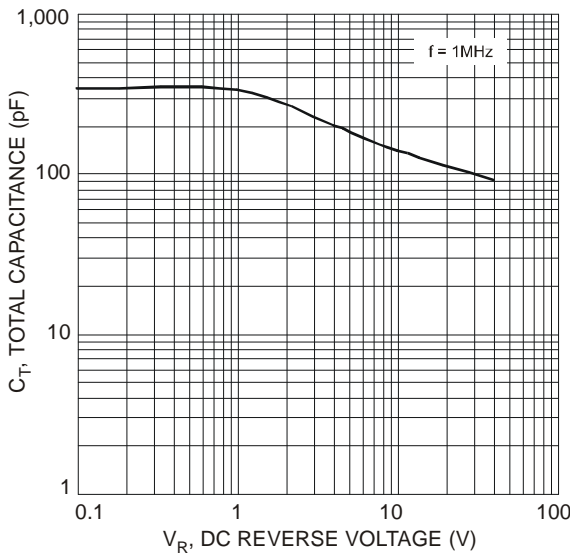


Fig. 5 Total Capacitance vs. Reverse Voltage

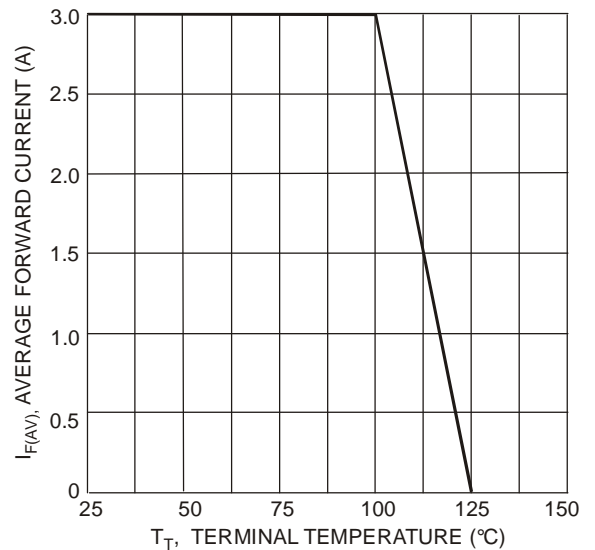


Fig. 6 Forward Current Derating Curve

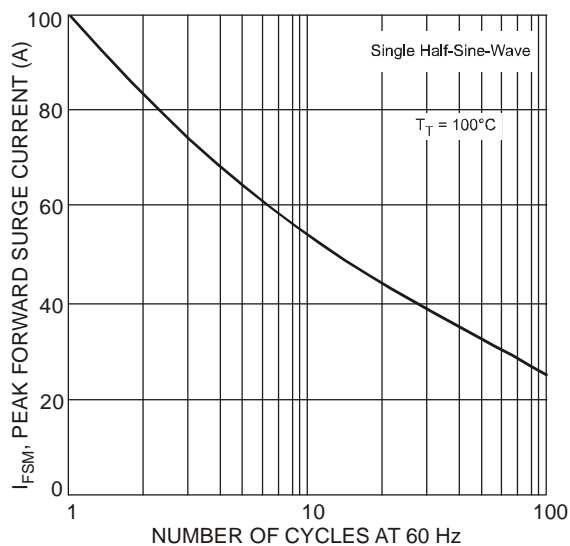
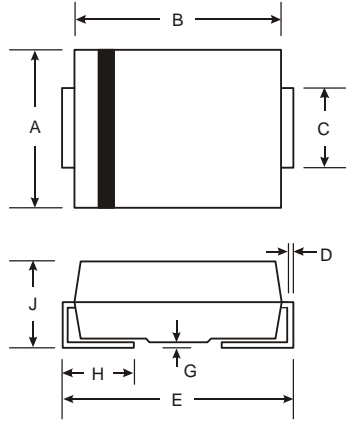


Fig. 7 Max Non-Repetitive Peak Forward Surge Current

**Package Outline Dimensions**

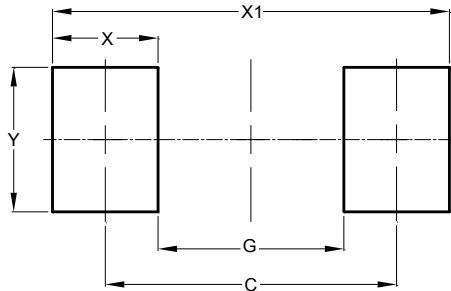
Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.



| SMC                  |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 5.59 | 6.22 |
| B                    | 6.60 | 7.11 |
| C                    | 2.75 | 3.18 |
| D                    | 0.15 | 0.31 |
| E                    | 7.75 | 8.13 |
| G                    | 0.10 | 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/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 6.90          |
| G          | 4.40          |
| X          | 2.50          |
| X1         | 9.40          |
| Y          | 3.30          |

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