

**3.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER**
**Product Summary**

B320Q/B330Q/B340Q

| V <sub>RRM</sub> (V) | I <sub>O</sub> (A) | V <sub>F max</sub> (V) | I <sub>R max</sub> (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 20/30/40             | 3.0                | 0.5                    | 0.5                     |

B350Q/B360Q

| V <sub>RRM</sub> (V) | I <sub>O</sub> (A) | V <sub>F max</sub> (V) | I <sub>R max</sub> (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 50/60                | 3.0                | 0.7                    | 0.5                     |

**Description and Applications**

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

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

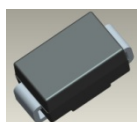
**Features and Benefits**

- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

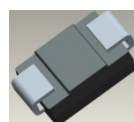
**Mechanical Data**

- 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 208 (3)
- Polarity: Cathode Band
- Weight: 0.21 grams (Approximate)

SMC



Top View

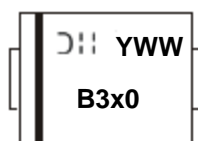


Bottom View

**Ordering Information (Note 5)**

| Part Number | Compliance | Case | Packaging        |
|-------------|------------|------|------------------|
| B320Q-13-F  | Automotive | SMC  | 3000/Tape & Reel |
| B330Q-13-F  | Automotive | SMC  | 3000/Tape & Reel |
| B340Q-13-F  | Automotive | SMC  | 3000/Tape & Reel |
| B350Q-13-F  | Automotive | SMC  | 3000/Tape & Reel |
| B360Q-13-F  | Automotive | SMC  | 3000/Tape & Reel |

- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information (Note 6)**


B3x0 = Product Type Marking Code, ex: B340  
 YWW = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 15 for 2015)  
 WW = Week Code (01 to 53)

Note: 6. 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    | B320Q | B330Q | B340Q | B350Q | B360Q | Unit |   |
|--|-----------|-------|-------|-------|-------|-------|------|---|
| Peak Repetitive Reverse Voltage  | $V_{RRM}$ |       |       |       |       |       |      |   |
| Working Peak Reverse Voltage   | $V_{RWM}$ | 20    | 30    | 40    | 50    | 60    | V    |   |
| 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 7) | $R_{\theta JA}$ | 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    | $I_F = 3.0\text{A}, T_A = +25^\circ\text{C}$                                      |
| Leakage Current (Note 8) | $I_R$  | —   | —   | 0.5<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: 7. Thermal Resistance: Junction to terminal, unit mounted on glass epoxy substrate with 2 x 3mm copper pad.  
8. Short duration pulse test used to minimize self-heating effect.

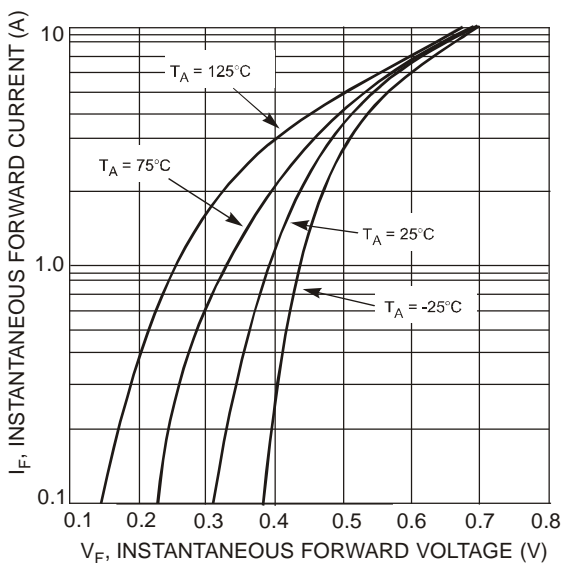


Fig. 1 Typical Forward Characteristics – B320Q thru B340Q

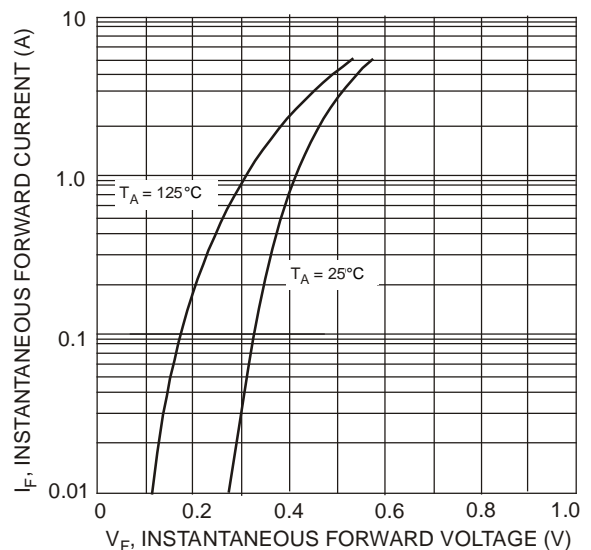


Fig. 2 Typical Forward Characteristics – B350Q thru B360Q

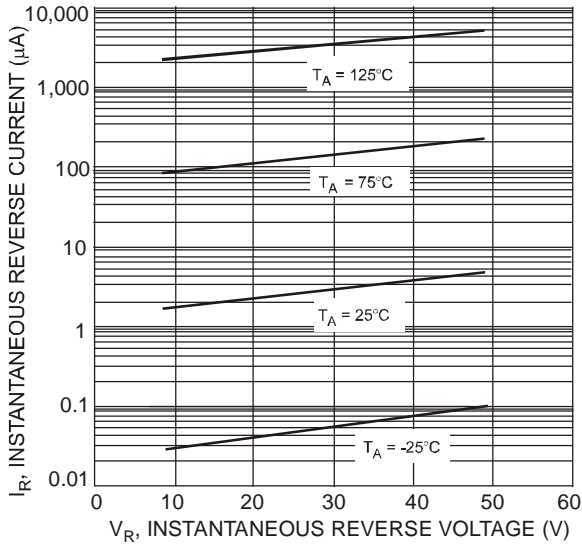


Fig. 3 Typical Reverse Characteristics – B320Q thru B340Q

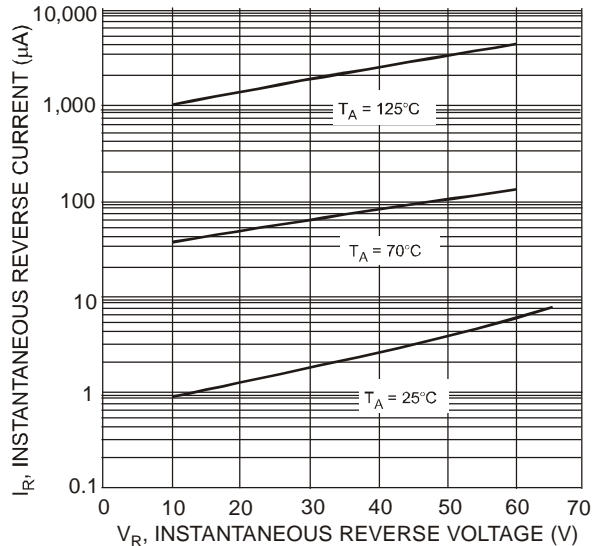


Fig. 4 Typical Reverse Characteristics – B350Q thru B360Q

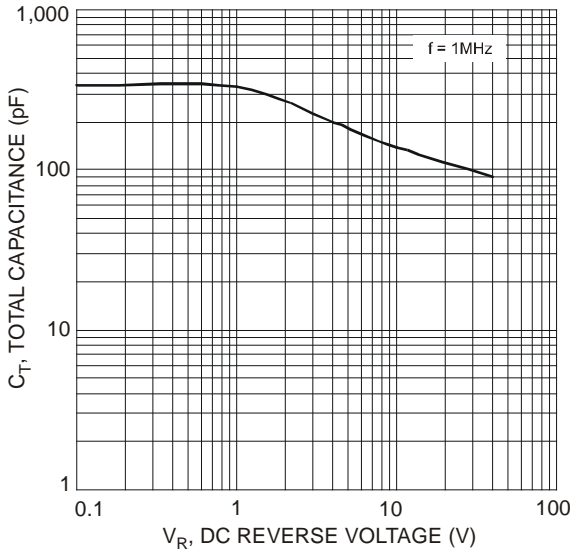


Fig. 5 Total Capacitance vs. Reverse Voltage

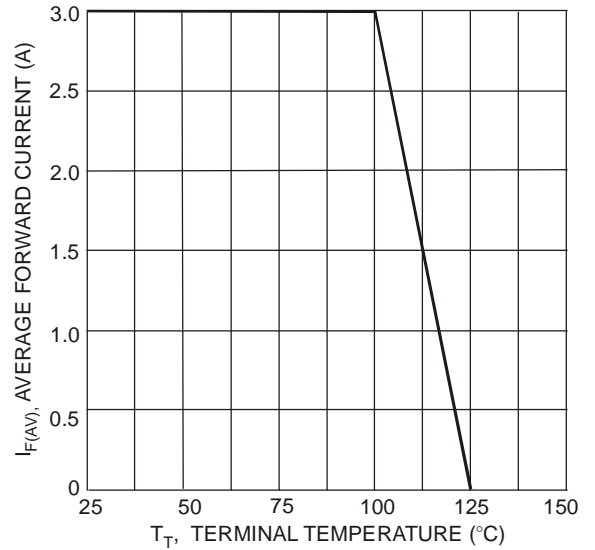


Fig. 6 Forward Current Derating Curve

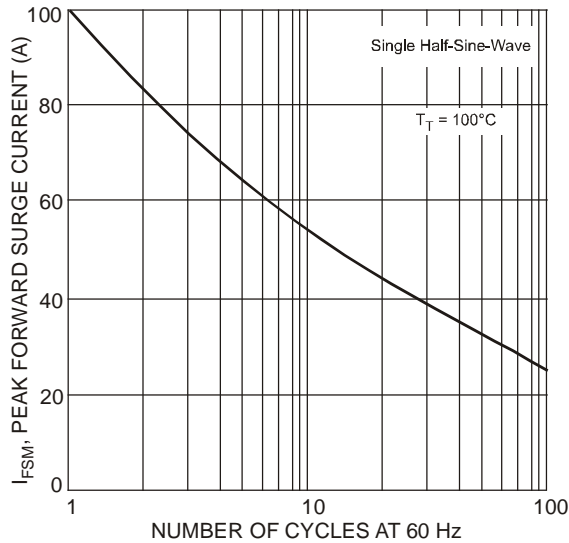
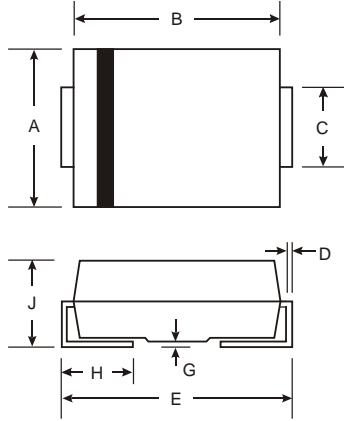


Fig. 7 Max Non-Repetitive Peak Forward Surge Current

**Package Outline Dimensions**

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

**SMC**

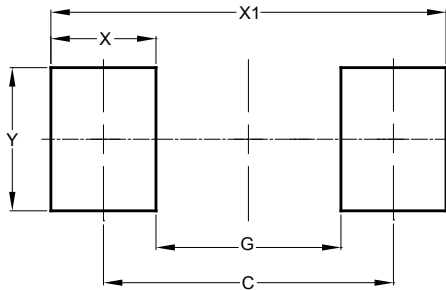


| SMC                  |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 5.59 | 6.22 |
| B                    | 6.60 | 7.11 |
| C                    | 2.75 | 3.18 |
| D                    | 0.15 | 0.31 |
| E                    | 7.75 | 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 <http://www.diodes.com/package-outlines.html> for the latest version.

**SMC**



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

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