



**THE DATASHEET OF
B320Q-13-F**



3.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER
Product Summary

B320Q/B330Q/B340Q

| V _{RRM} (V) | I _O (A) | V _{F max} (V) | I _{R max} (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 20/30/40 | 3.0 | 0.5 | 0.5 |

B350Q/B360Q

| V _{RRM} (V) | I _O (A) | V _{F max} (V) | I _{R max} (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

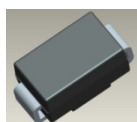
Features and Benefits

- 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)**

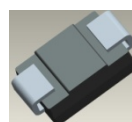
Mechanical Data

- 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)

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Top View

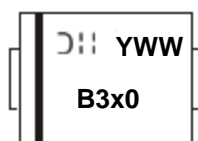


Bottom View

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 | $^\circ\text{C}/\text{W}$ |
| Typical Thermal Resistance, Junction to Ambient (Note 7) | $R_{\theta JA}$ | 90 | $^\circ\text{C}/\text{W}$ |
| 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 0.70 | V | $I_F = 3.0\text{A}, T_A = +25^\circ\text{C}$ |
| Leakage Current (Note 8) | I_R | — | — | 0.5 20 | mA | @ Rated $V_R, T_A = +25^\circ\text{C}$ @ 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.

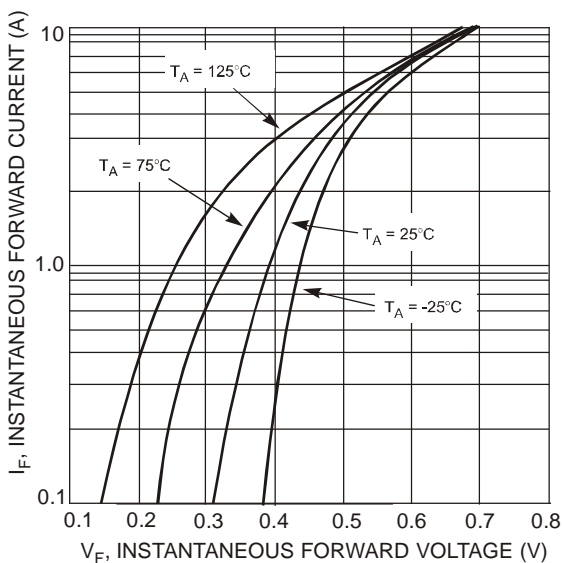


Fig. 1 Typical Forward Characteristics – B320Q thru B340Q

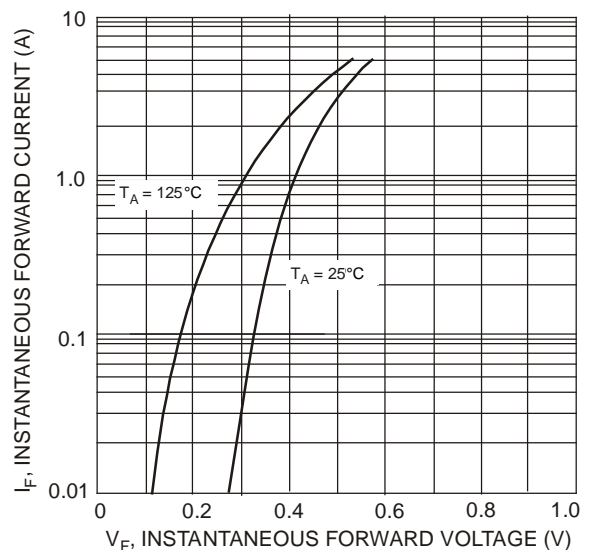


Fig. 2 Typical Forward Characteristics – B350Q thru B360Q

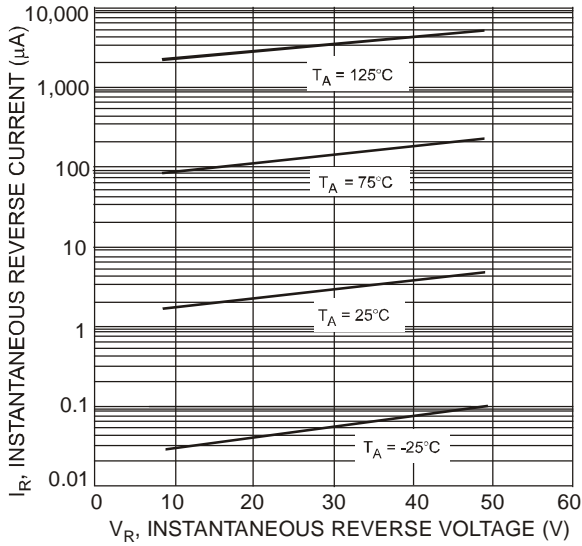


Fig. 3 Typical Reverse Characteristics – B320Q thru B340Q

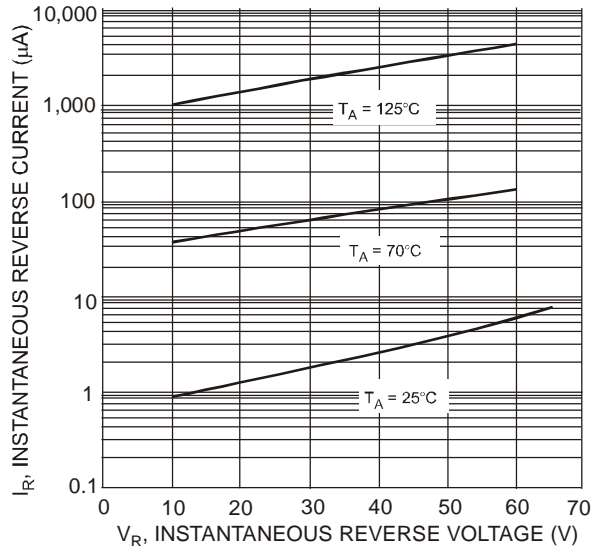


Fig. 4 Typical Reverse Characteristics – B350Q thru B360Q

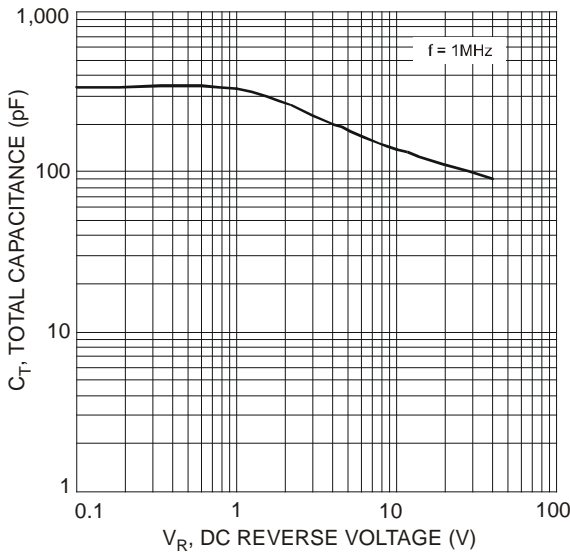


Fig. 5 Total Capacitance vs. Reverse Voltage

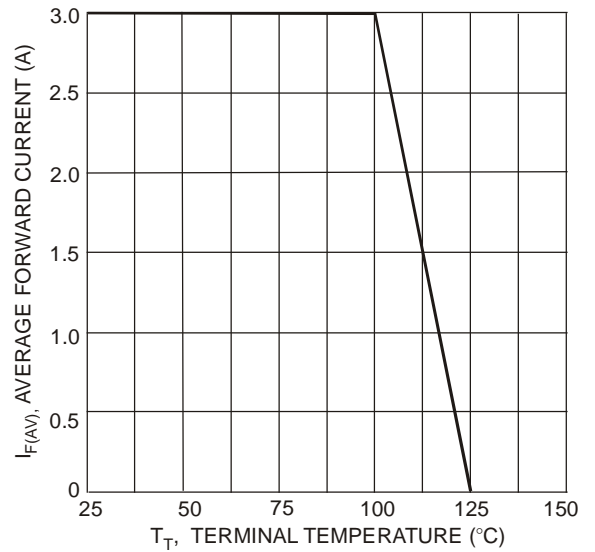


Fig. 6 Forward Current Derating Curve

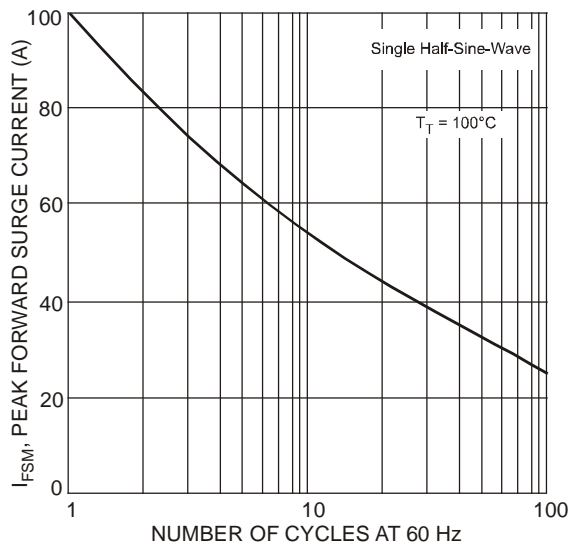
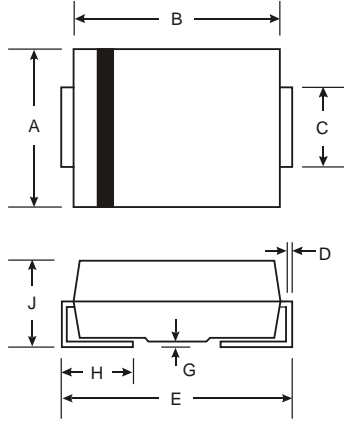


Fig. 7 Max Non-Repetitive Peak Forward Surge Current

Package Outline Dimensions

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

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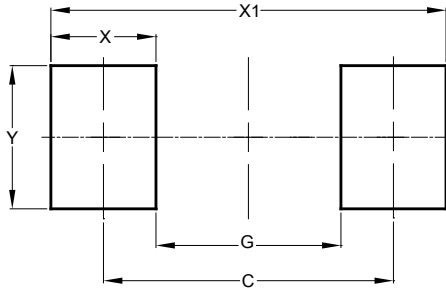


| SMC | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 5.59 | 6.22 |
| B | 6.60 | 7.11 |
| C | 2.75 | 3.18 |
| D | 0.15 | 0.31 |
| E | 7.75 | 8.13 |
| G | 0.10 | 0.20 |
| H | 0.76 | 1.52 |
| J | 2.00 | 2.50 |
| All Dimensions in mm | | |

Suggested Pad Layout

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

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

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