

Product Summary

B520CQ/B530CQ/B540CQ

| V _{RRM} (V) | I _O (A) | V _F Max (V) | I _R Max (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 20/30/40 | 5.0 | 0.55 | 0.5 |

B550CQ/B560CQ

| V _{RRM} (V) | I _O (A) | V _F Max (V) | I _R Max (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 50/60 | 5.0 | 0.70 | 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 a:

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

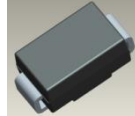
Features and Benefits

- 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 (Notes 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

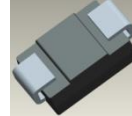
Mechanical Data

- Case: SMC
- 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: 0.21 grams (Approximate)

SMC



Top View



Bottom View

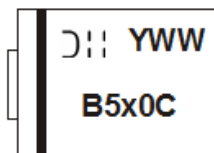
Ordering Information (Note 5)

| Part Number | Compliance | Case | Packaging |
|-------------|------------|------|-------------------|
| B5X0CQ-13-F | Automotive | SMC | 3,000/Tape & Reel |

* xx = Device type, e.g. B520C-13-F (SMC 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



B5x0C = Product Type Marking Code, ex: B540C (SMC package)
 JII = Manufacturers' Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 4 for 2014)
 WW = Week Code (01 to 53)
 x = 2,3,4,5 or 6 - i.e., x = 4 for B540C

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 | B520C | B530C | B540C | B550C | B560C | Unit |
|--|--|-------|-------|-------|-------|-------|------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V _{RRM} V _{RWM} V _R | 20 | 30 | 40 | 50 | 60 | V |
| RMS Reverse Voltage | V _{R(RMS)} | 14 | 21 | 28 | 35 | 42 | V |
| Average Rectified Output Current | I _O | 5.0 | | | | | 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 |
|--|------------------|-------------|------|
| Thermal Resistance, Junction to Terminal | R _{θJT} | 10 | °C/W |
| Thermal Resistance, Junction to Ambient (Note 6) | R _{θJA} | 50 | °C/W |
| Operating Temperature Range | T _J | -55 to +150 | °C |
| Storage Temperature Range | 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 | — | 0.475 0.575 | 0.55 0.70 | V | I _F = 5.0A, T _A = +25°C |
| Leakage Current (Note 7) | I _R | — | — | 0.5 20 | mA | @ Rated V _R , T _A = +25°C @ Rated V _R , T _A = +100°C |
| Total Capacitance | C _T | — | — | 300 | pF | V _R = 4V, f = 1MHz |

Notes: 6. Thermal Resistance: Junction to ambient, unit mounted on PC board with 8.0 mm² (0.033 mm thick) copper pads as heat sink.
7. Short duration pulse test used to minimize self-heating effect.

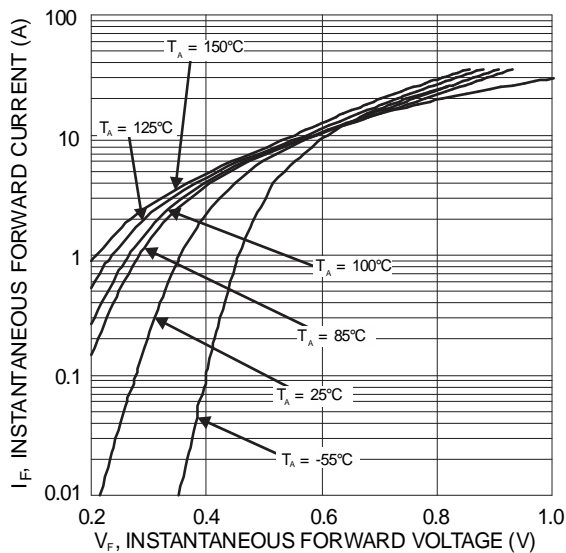


Figure 1 Typical Forward Characteristics (B520C - B540C)

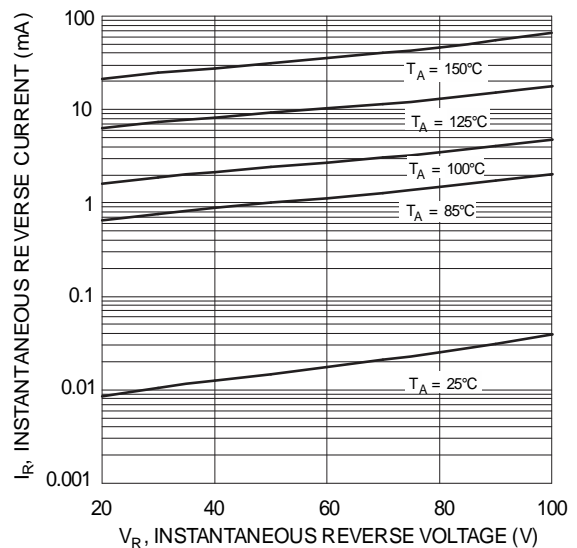
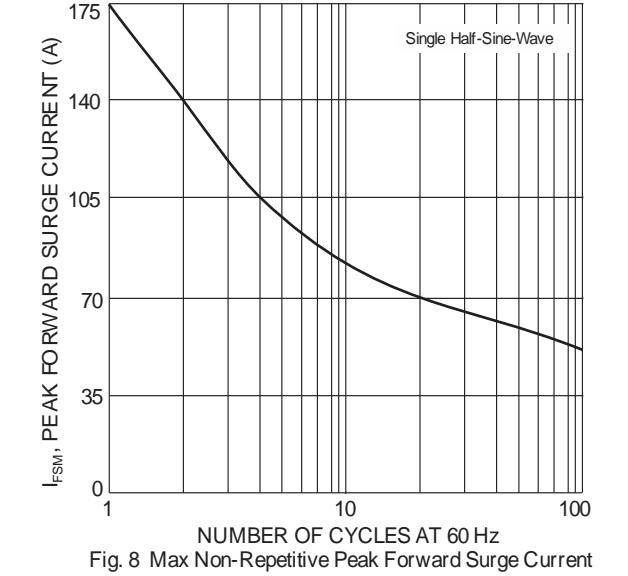
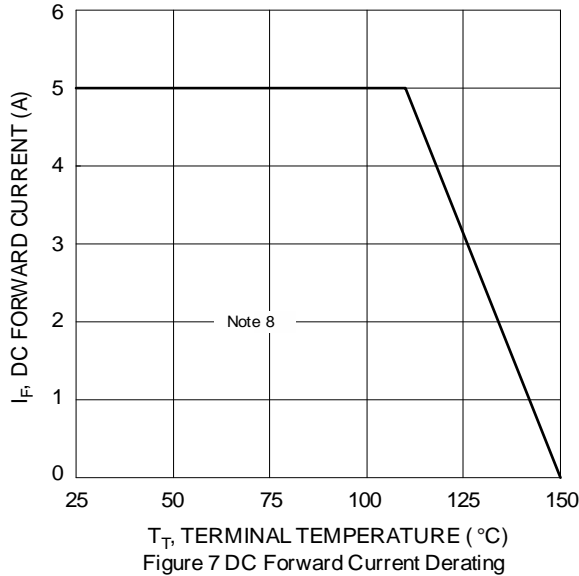
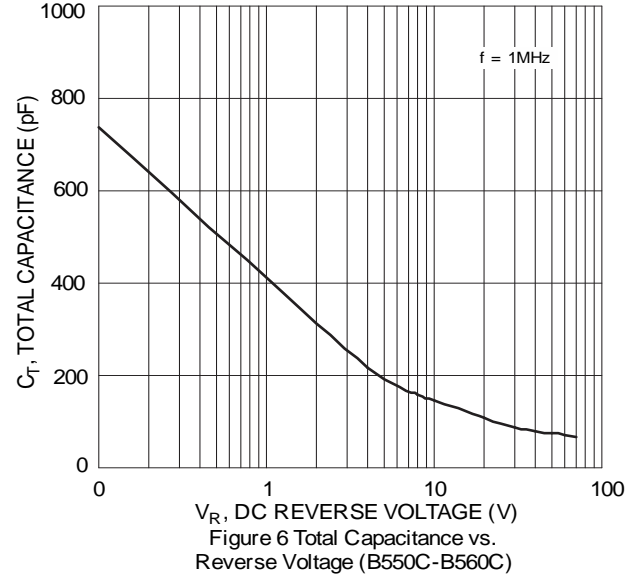
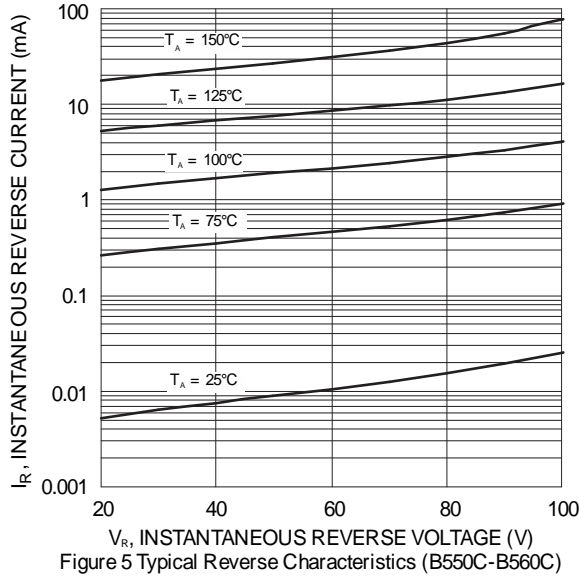
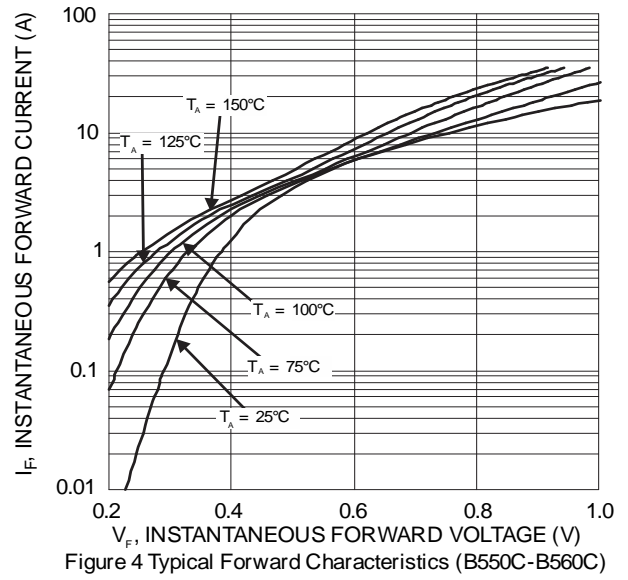
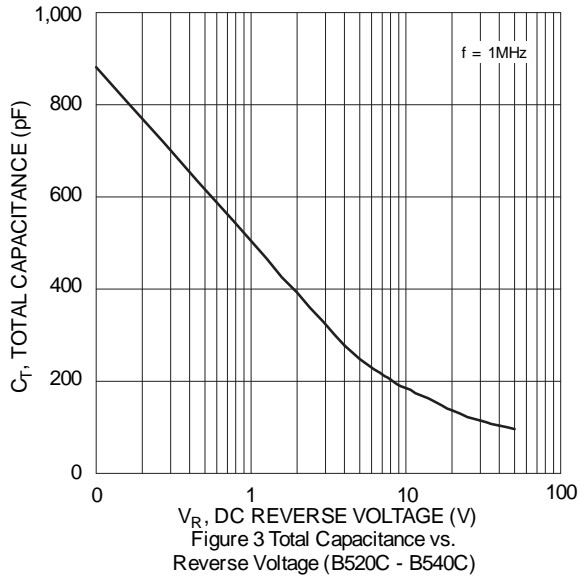


Figure 2 Typical Reverse Characteristics (B520C - B540C)

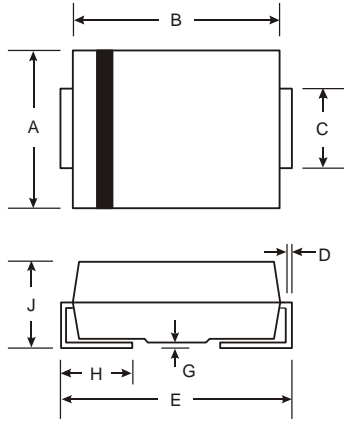


Note: 8. Device mounted on FR-4 substrate, 1" x 1", 2oz, single-sided, PC boards with 0.56" x 0.73" copper pad.

Package Outline Dimensions

Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf for the latest version.

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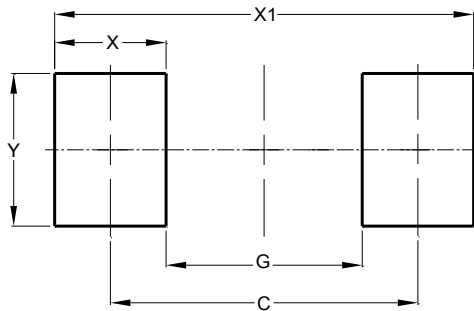


| SMC | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 5.59 | 6.22 |
| B | 6.60 | 7.11 |
| C | 2.75 | 3.18 |
| D | 0.15 | 0.31 |
| E | 7.75 | 8.13 |
| G | 0.10 | 0.20 |
| H | 0.76 | 1.52 |
| J | 2.00 | 2.50 |
| All Dimensions in mm | | |

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf 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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