

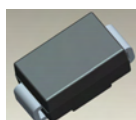
**5.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER**
**Features**

- 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 & 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

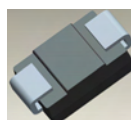
**Mechanical Data**

- 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



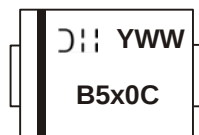
Bottom View

**Ordering Information** (Note 5)

| Part Number | Case | Packaging        |
|-------------|------|------------------|
| B5xxC-13-F  | SMC  | 3000/Tape & Reel |
| B540CQ-13-F | SMC  | 3000/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> 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**


B5x0C = Product type marking code, ex: B540C (SMC package)

 = Manufacturers' code marking

YWW = Date code marking

Y = Last digit of year (ex: 2 for 2002)

WW = Week code (01 to 53)

x = 2,3,4,5 or 6 - i.e., x = 4 for B540C

## Maximum Ratings (@T<sub>A</sub> = +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                           | V <sub>RRM</sub>    | 20    | 30    | 40    | 50    | 60    | V    |
| Working Peak Reverse Voltage                              | V <sub>RWM</sub>    |       |       |       |       |       |      |
| DC Blocking Voltage                                       | V <sub>R</sub>      |       |       |       |       |       |      |
| RMS Reverse Voltage                                       | V <sub>R(RMS)</sub> | 14    | 21    | 28    | 35    | 42    | V    |
| Average Rectified Output Current @ T <sub>T</sub> = +90°C | I <sub>O</sub>      | 5.0   |       |       |       |       | A    |
| Non-Repetitive Peak Forward Surge Current, 8.3 ms         | I <sub>FSM</sub>    | 100   |       |       |       |       | A    |
| Single Half-Sine-Wave Superimposed on Rated Load          |                     |       |       |       |       |       |      |

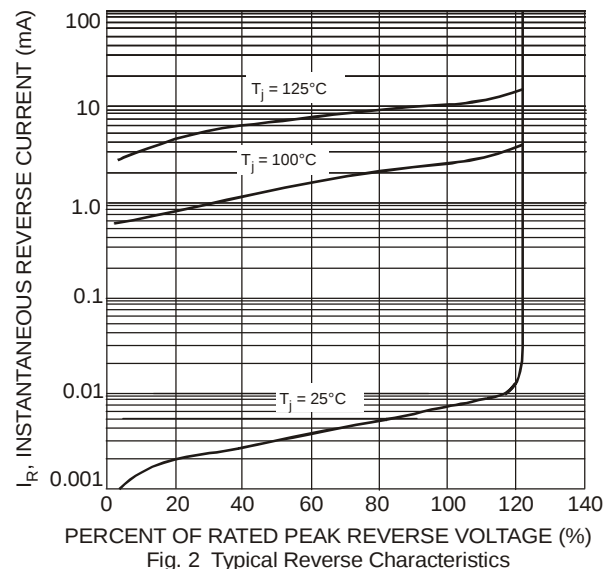
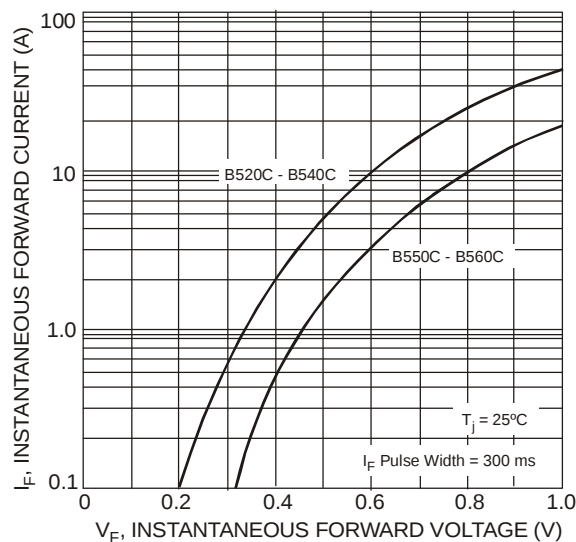
## Thermal Characteristics

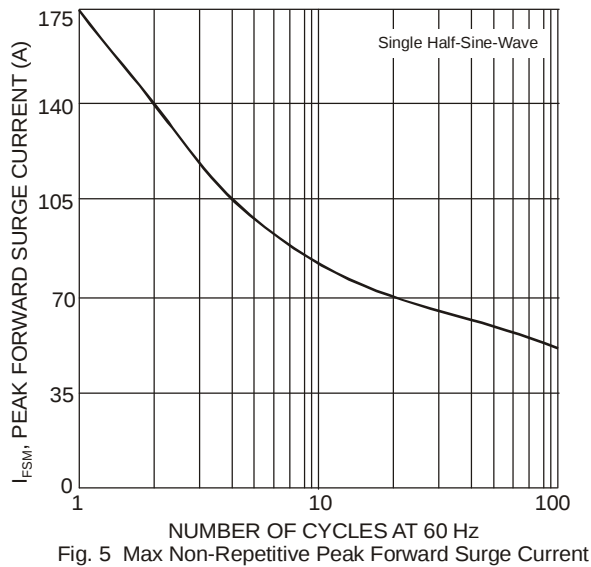
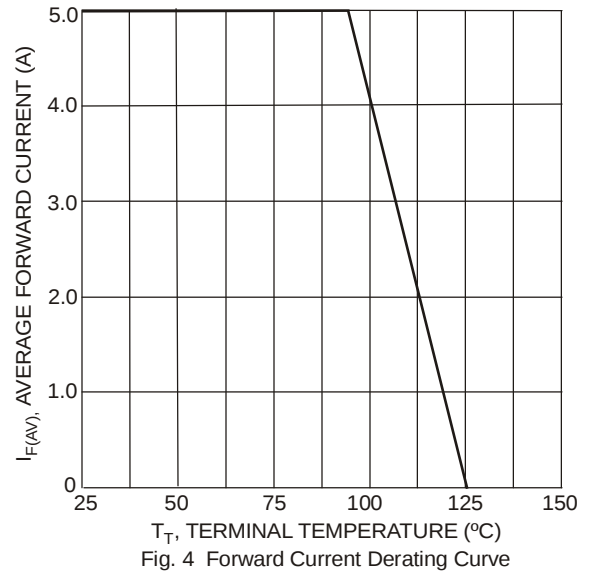
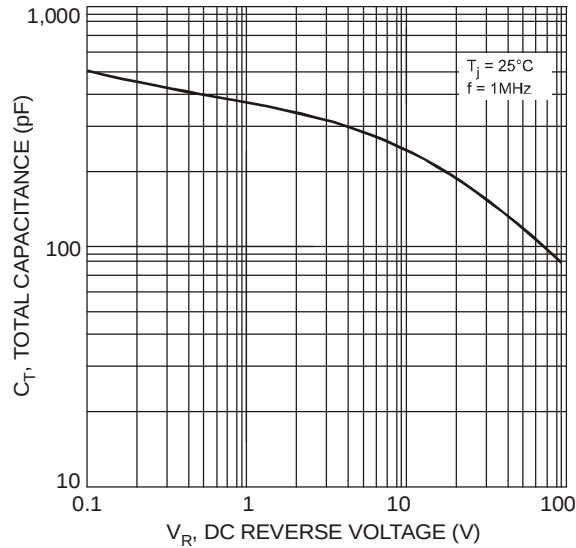
| Characteristic                                   | Symbol           | Value       | Unit |
|--------------------------------------------------|------------------|-------------|------|
| Thermal Resistance, Junction to Terminal         | R <sub>θJT</sub> | 10          | °C/W |
| Thermal Resistance, Junction to Ambient (Note 6) | R <sub>θJA</sub> | 50          | °C/W |
| Operating Temperature Range                      | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range                        | T <sub>STG</sub> | -55 to +150 | °C   |

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                                           | Symbol         | Min | Typ | Max          | Unit | Test Condition                                                                                      |
|----------------------------------------------------------|----------------|-----|-----|--------------|------|-----------------------------------------------------------------------------------------------------|
| Forward Voltage Drop B520C, B530C, B540C<br>B550C, B560C | V <sub>F</sub> | -   | -   | 0.55<br>0.70 | V    | I <sub>F</sub> = 5.0A, T <sub>A</sub> = +25°C                                                       |
| Leakage Current (Note 7)                                 | I <sub>R</sub> | -   | -   | 0.5<br>20    | mA   | @ Rated V <sub>R</sub> , T <sub>A</sub> = +25°C<br>@ Rated V <sub>R</sub> , T <sub>A</sub> = +100°C |
| Total Capacitance                                        | C <sub>T</sub> | -   | -   | 300          | pF   | V <sub>R</sub> = 4V, f = 1MHz                                                                       |

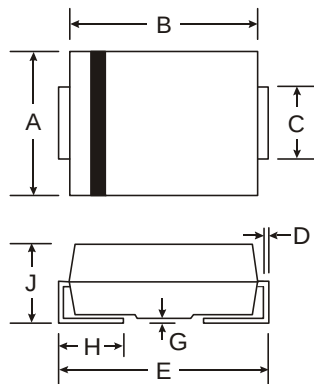
Notes: 6. Thermal Resistance: Junction to ambient, unit mounted on PC board with 8.0 mm<sup>2</sup> (0.033 mm thick) copper pads as heat sink.  
 7. Short duration pulse test used to minimize self-heating effect.





## Package Outline Dimensions

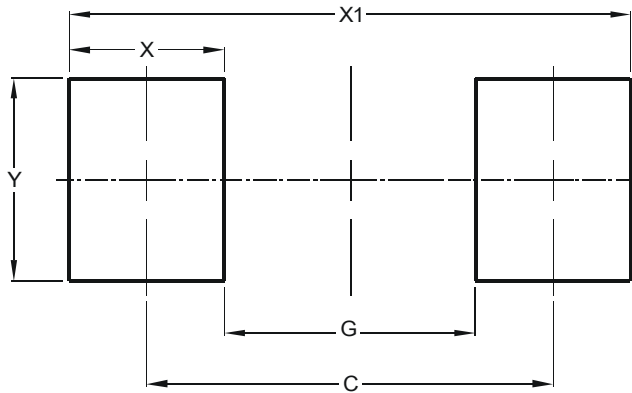
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| 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/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 6.80          |
| G          | 4.40          |
| X          | 2.50          |
| X1         | 9.40          |
| Y          | 3.30          |

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