



**THE DATASHEET OF  
B540C-13-F**



## Product Summary

B520C/B530C/B540C

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	5.0	0.55	0.5

B550C/B560C

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F Max</sub> (V)	I <sub>R Max</sub> (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:

- Polarity protection diodes
- Re-circulating diodes
- Switching diodes

## 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 Applications
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3)**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.**  
<https://www.diodes.com/quality/product-definitions/>
- **An automotive-compliant part is available under separate datasheet (B520CQ-B560CQ)**

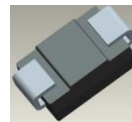
## Mechanical Data

- Package: SMC
- Package 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 Ⓔ3
- Polarity: Cathode Band or Cathode Notch
- Weight: 0.21 grams (Approximate)

SMC



Top View



Bottom View

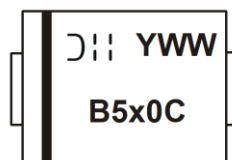
## Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
B5xxC-13-F	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) & 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



B5x0C = Product Type Marking Code, ex: B540C (SMC Package)

DII = Manufacturer's Code Marking

YWW = Date Code Marking

Y = Last Digit of Year (ex: 3 for 2023)

WW = Week Code (01 to 53)

x = 2, 3, 4, 5 or 6, e.g., 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 capacitive 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	I <sub>O</sub>	5.0					A
Non-Repetitive Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load	I <sub>FSM</sub>	100					A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Terminal	R <sub>θJT</sub>	10	°C/W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	50	°C/W
Operating Temperature Range	T <sub>J</sub>	-55 to +150	°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	V <sub>F</sub>	—	0.475	0.55	V	I <sub>F</sub> = 5.0A, T <sub>A</sub> = +25°C
		—	0.575	0.70		
Leakage Current (Note 6)	I <sub>R</sub>	—	—	0.5	mA	@ Rated V <sub>R</sub> , T <sub>A</sub> = +25°C @ 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: 5. Thermal Resistance: Junction to ambient, unit mounted on PC board with 8.0 mm<sup>2</sup> (0.033mm thick) copper pads as heatsink.  
6. Short duration pulse test used to minimize self-heating effect.

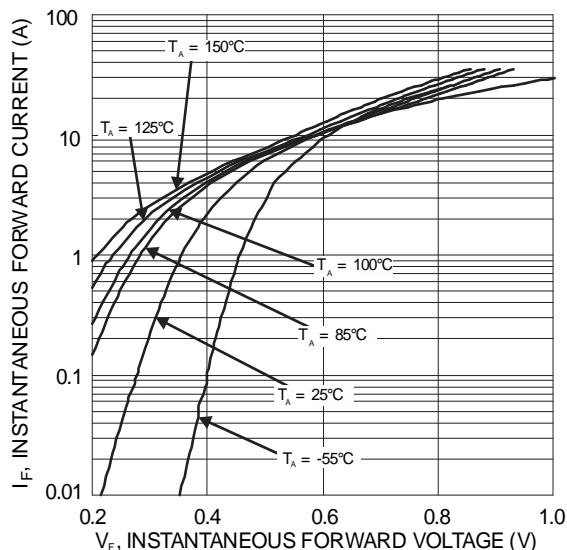


Figure 1 Typical Forward Characteristics (B520C - B540C)

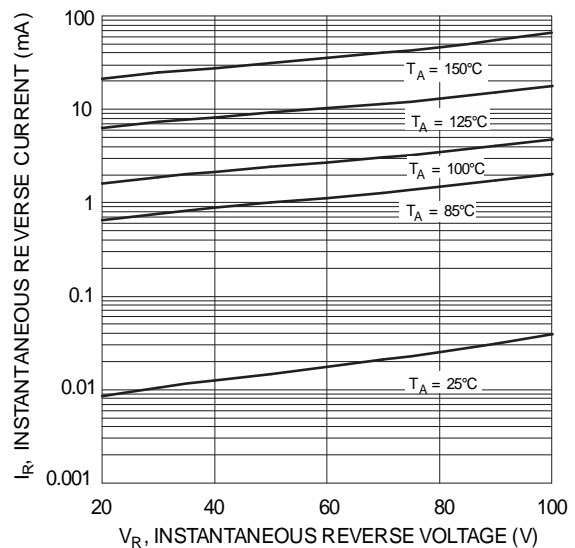
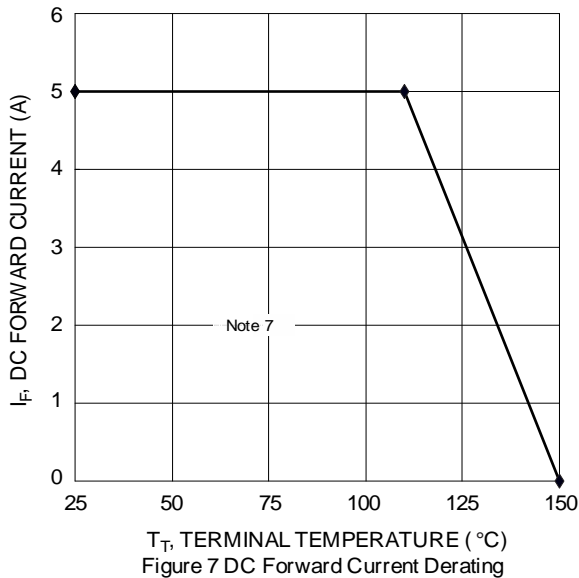
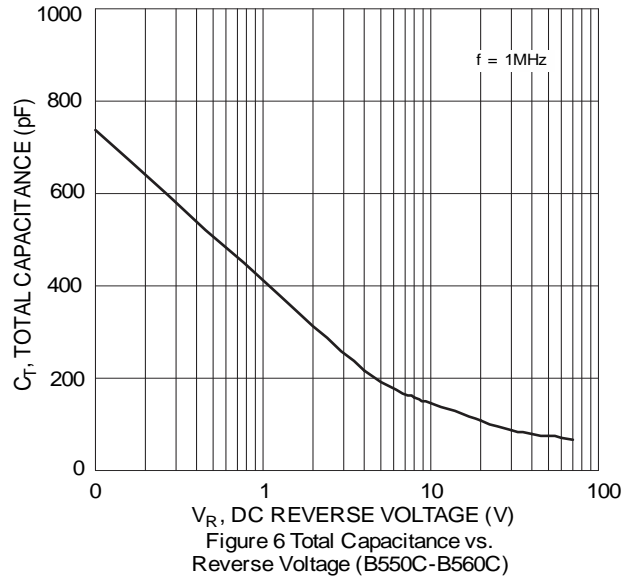
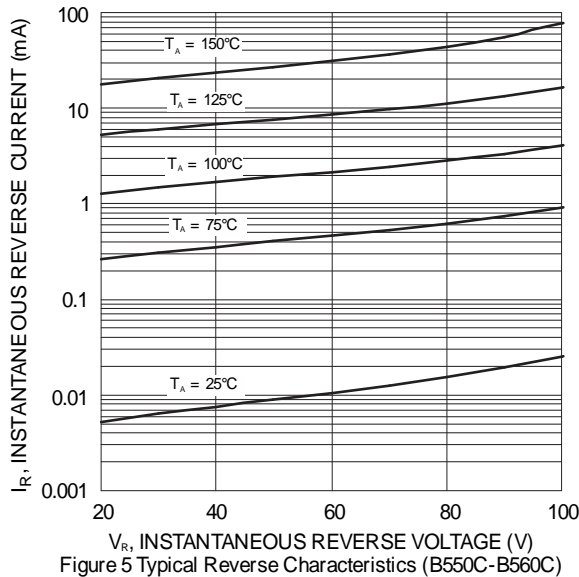
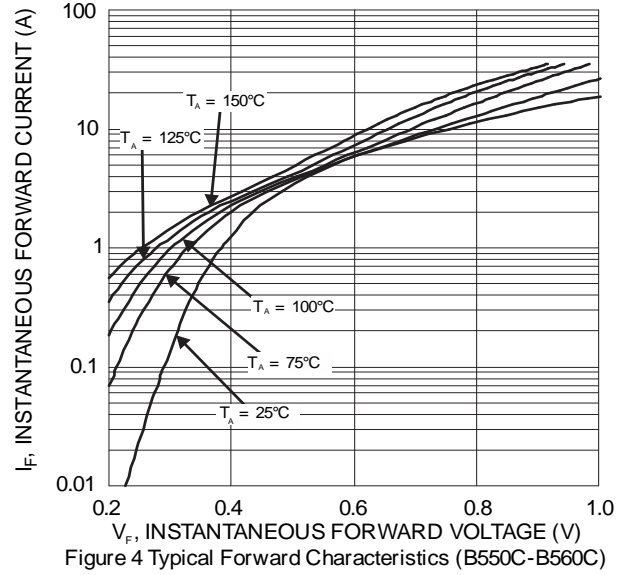
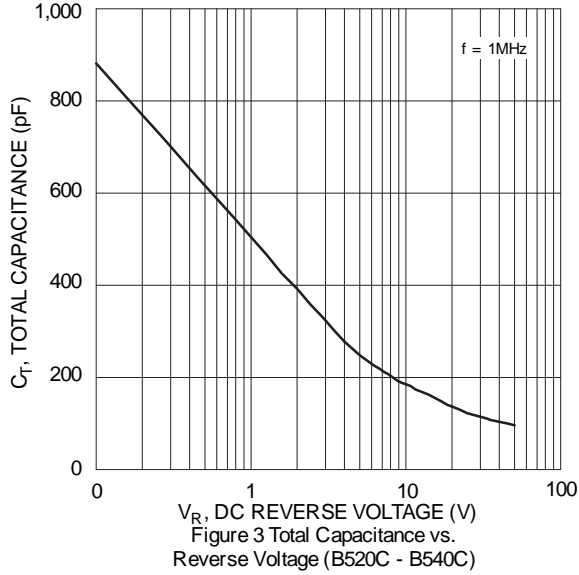


Figure 2 Typical Reverse Characteristics (B520C - B540C)

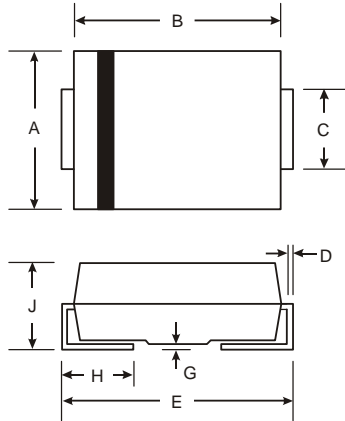


Note: 7. Device mounted on FR-4 substrate, 1" x 1", 2oz, single-sided PC boards with 0.56" x 0.73" copper pad.

**Package Outline Dimensions**

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

**SMC**

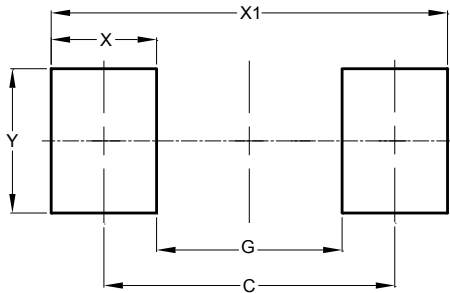


SMC		
Dim	Min	Max
A	5.59	6.22
B	6.60	7.11
C	2.75	3.18
D	0.15	0.31
E	7.75	8.13
G	0.10	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

**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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