5.0A SURFACE-MOUNT SCHOTTKY BARRIER RECTIFIER

Product Summary

B520C/B530C/B540C

V_{RRM} (V)	I_O (A)	$V_{F\ Max}$ (V)	$I_{R\ Max}$ (mA)
20/30/40	5.0	0.55	0.5

B550C/B560C

V_{RRM} (V)	I_O (A)	$V_{F\ Max}$ (V)	$I_{R\ Max}$ (mA)
50/60	5.0	0.70	0.5

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 a separate datasheet (B520CQ-B560CQ).**

Description and Applications

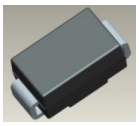
This Schottky barrier rectifier is designed to meet the general requirements of commercial applications. It is ideally suited for use as:

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

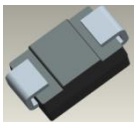
Mechanical Data

- 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 e3
- Polarity: Cathode Band or Cathode Notch
- Weight: 0.21 grams (Approximate)

SMC



Top View



Bottom View

Ordering Information (Note 4)

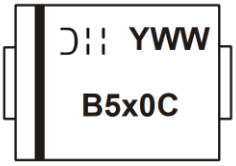
Orderable Part Number*	Package	Packing	
		Qty.	Carrier
B5xxC-13-F	SMC	3,000	Tape & Reel
B530C-13-F-N	SMC	3,000	Tape & Reel
B540C-13-F-N	SMC	3,000	Tape & Reel

* 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/.

* If products manufactured in a specific region are required, select part numbers with the -N, -V, or -W suffix. These suffixes identify the wafer fabrication and assembly/test locations as defined in our Supply Resiliency information.

Marking Information



B5x0C = Product Type Marking Code, ex: B540C (SMC Package)
= 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
A bar or underline around the date code or product type marking code denotes assembly site if marked.

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Maximum Ratings (@T_A = +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 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	$R_{\theta JT}$	10	°C/W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	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	B520C, B530C, B540C B550C, B560C	V_F	— —	0.475 0.575	0.55 0.70	V	I_F = 5.0A, T_A = +25°C
Leakage Current (Note 6)		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: 5. Thermal Resistance: Junction to ambient, unit mounted on PC board with 8.0 mm^2 (0.033mm thick) copper pads as heatsink.
6. Short duration pulse test used to minimize self-heating effect.

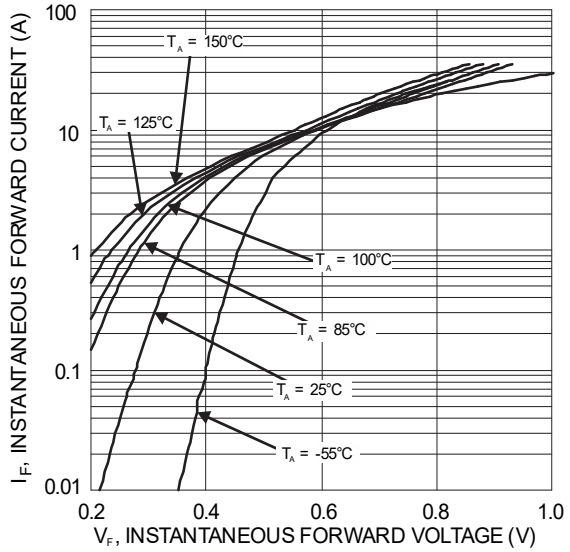


Figure 1 Typical Forward Characteristics (B520C - B540C)

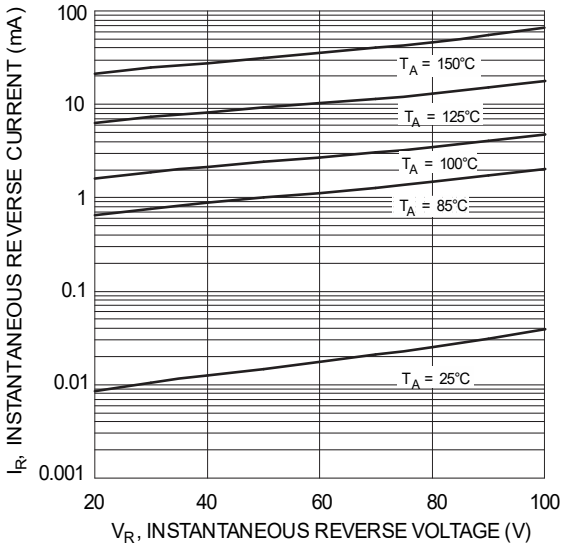


Figure 2 Typical Reverse Characteristics (B520C - B540C)

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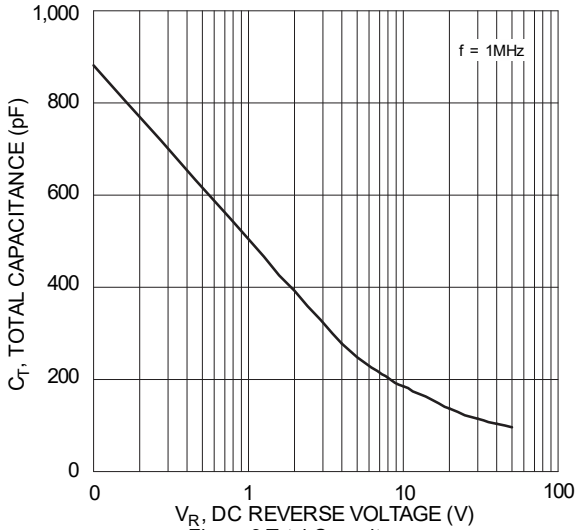


Figure 3 Total Capacitance vs. Reverse Voltage (B520C - B540C)

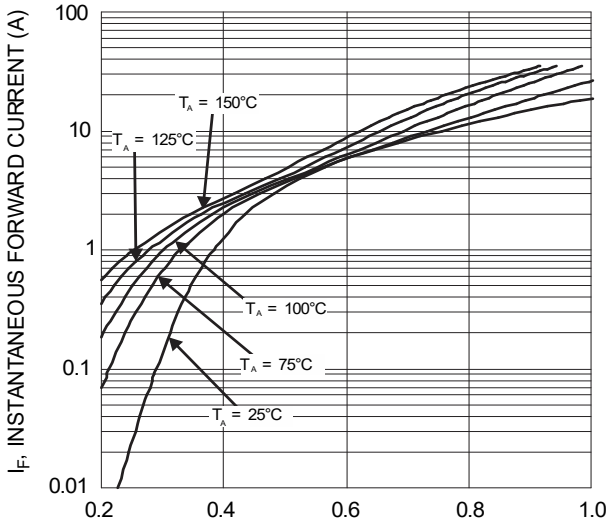


Figure 4 Typical Forward Characteristics (B550C-B560C)

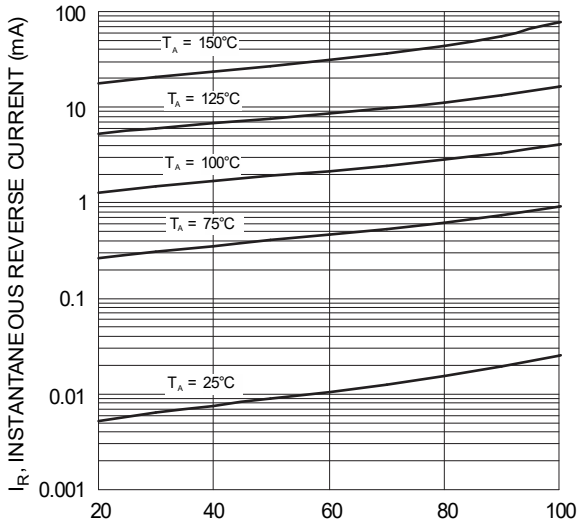


Figure 5 Typical Reverse Characteristics (B550C-B560C)

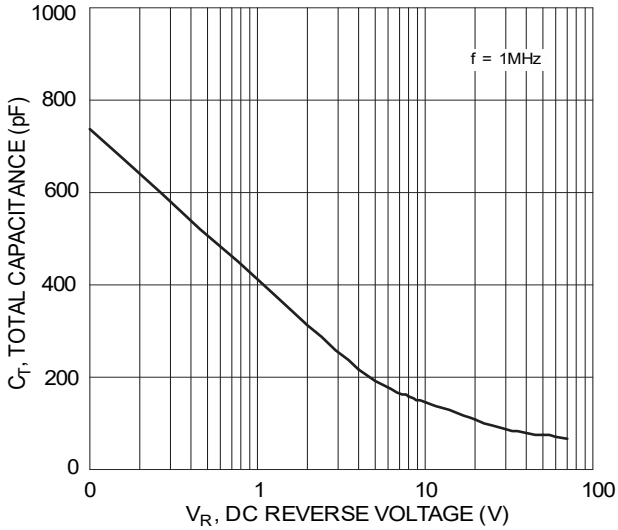


Figure 6 Total Capacitance vs. Reverse Voltage (B550C-B560C)

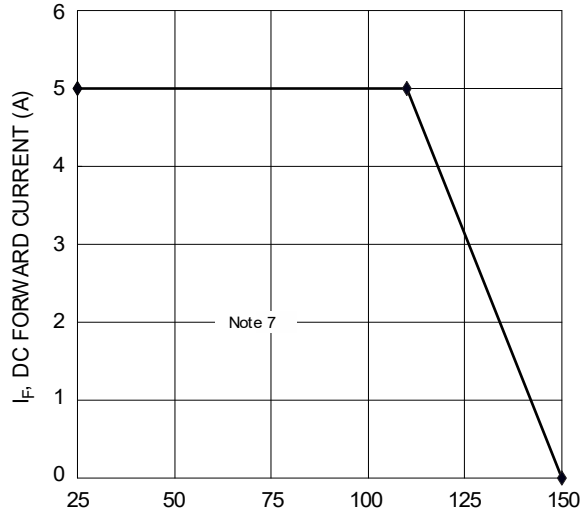


Figure 7 DC Forward Current Derating

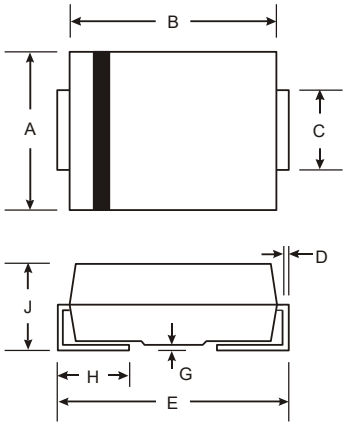
Note: 7. Device mounted on FR-4 substrate, 1" x 1", 2oz, single-sided PC boards with 0.56" x 0.73" copper pad.

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Package Outline Dimensions

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

SMC

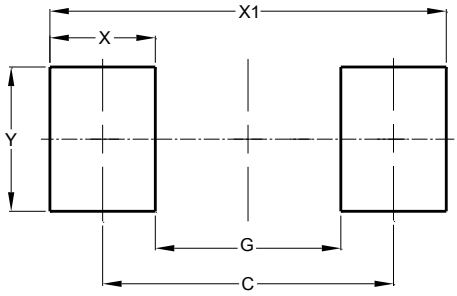


SMC		
Dim	**Min**	**Max**
A	5.59	6.22
B	6.60	7.11
C	2.75	3.18
D	0.15	0.31
E	7.75	8.13
G	0.10	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

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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