

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

Description and Applications


This Schottky Barrier Rectifier has been designed to meet the general requirements of commercial applications. It is ideally suited for use as:

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

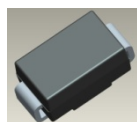
Features and Benefits

- 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 (Notes 3 & 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

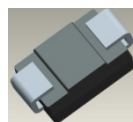
Mechanical Data

- 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



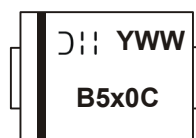
Bottom View

Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
B5xxC-13-F	Standard	SMC	3000/Tape & Reel
B540CQ-13-F	Automotive	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/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. 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/products/packages.html>.

Marking Information


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

311 = 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 @ T _T = +90°C	I _O	5.0					A
Non-Repetitive Peak Forward Surge Current, 8.3 ms 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	—	—	0.55 0.70	V	B520C, B530C, B540C B550C, B560C 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.

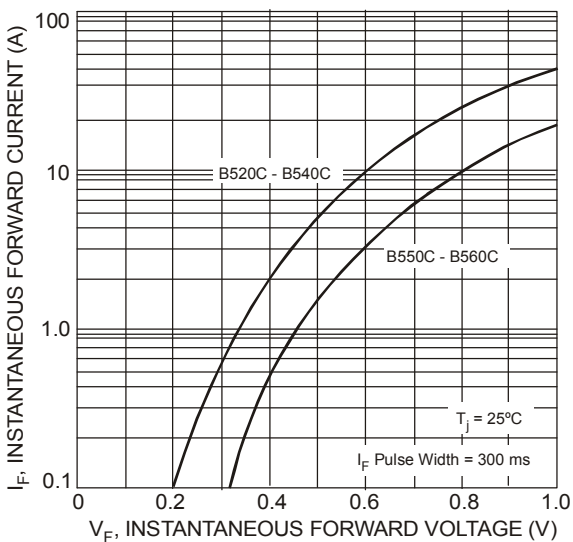


Fig. 1 Typical Forward Characteristics

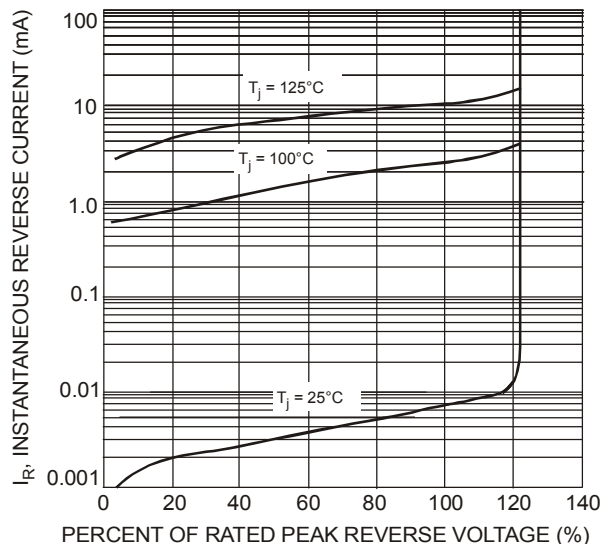


Fig. 2 Typical Reverse Characteristics

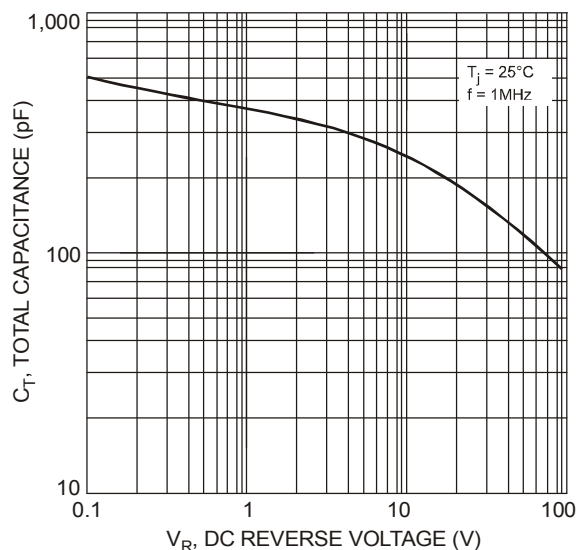


Fig. 3 Total Capacitance vs. Reverse Voltage

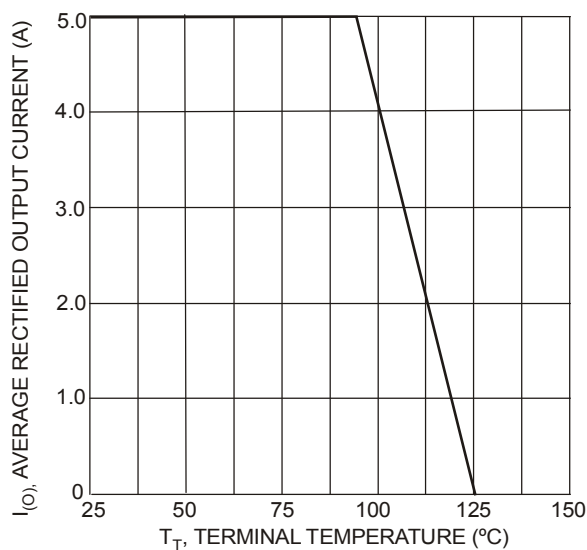


Fig. 4 Forward Current Derating Curve

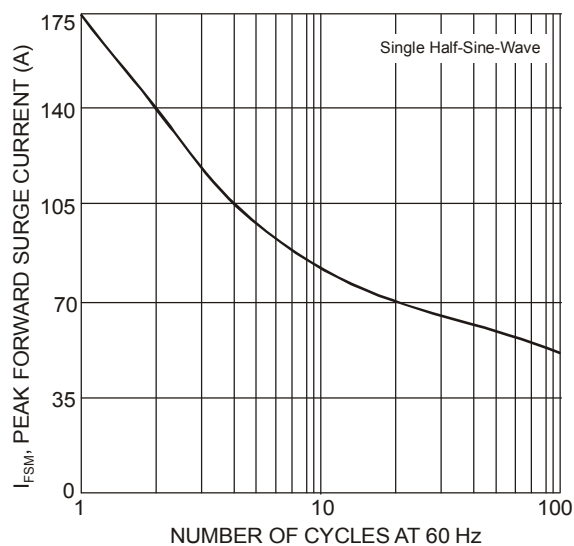
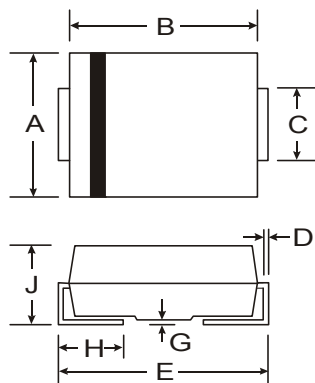


Fig. 5 Max Non-Repetitive Peak Forward Surge Current

Package Outline Dimensions

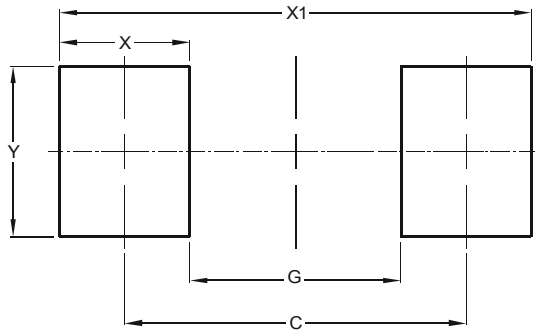
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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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