

## Product Summary

B120/B, B130/B, B140/B

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V) T <sub>A</sub> = +25°C	I <sub>R</sub> Max (mA) T <sub>A</sub> = +25°C
20/30/40	1.0	0.5	0.5

B150/B, B160/B

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V) T <sub>A</sub> = +25°C	I <sub>R</sub> Max (mA) T <sub>A</sub> = +25°C
50/60	1.0	0.7	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:

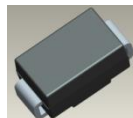
- Polarity protection diodes
- Re-circulating diodes
- Switching diodes

## Features and Benefits

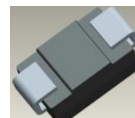
- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- Surge Overload Rating to 30A Peak
- For Use in Low-Voltage, High-Frequency Inverters, Free Wheeling, and Polarity Protection Application
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact_us) or your local Diodes representative.**  
<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: SMA/SMB
- 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: SMA 0.064 grams (Approximate)  
SMB 0.093 grams (Approximate)



Top View



Bottom View

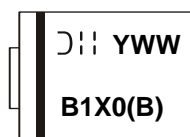
## Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
B1XX-13-F	SMA	5,000	Tape & Reel
B1XXB-13-F	SMB	3,000	Tape & Reel

\*XX = Device Type, e.g., B120-13-F (SMA Package); B120B-13-F (SMB 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



B1X0 = Product Type Marking Code, e.g., B120 (SMA Package)  
B1X0B = Product Type Marking Code, e.g., B160B (SMB Package)  
311 = Manufacturers' Code Marking  
YWW = Date Code Marking  
Y = Last Digit of Year (ex: 3 for 2023)  
WW = Week Code (01 to 53)

## 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	B120/B	B130/B	B140/B	B150/B	B160/B	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>						
Working Peak Reverse Voltage	V <sub>RWM</sub>	20	30	40	50	60	V
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> = +130°C	I <sub>O</sub>	1.0					A
Non-Repetitive Peak Forward Surge Current 8.3ms	I <sub>FSM</sub>	30					A
Single Half Sine Wave Superimposed on Rated Load							

## Thermal Characteristics

Characteristic	Symbol	B120/B	B130/B	B140/B	B150/B	B160/B	Unit
Typical Thermal Resistance Junction to Terminal (Note 5)	R <sub>θJT</sub>	20					°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 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 B120/B, B130/B, B140/B B150/B, B160/B	V <sub>F</sub>	—	—	0.5 0.7	V	I <sub>F</sub> = 1.0A I <sub>F</sub> = 1.0A
Leakage Current (Note 6)	I <sub>R</sub>	—	—	0.5 10	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>	—	110	—	pF	V <sub>R</sub> = 4V, f = 1MHz

Notes: 5. Thermal Resistance: Junction to terminal, unit mounted on PC board with 5.0mm<sup>2</sup> (0.013mm thick) copper pads as heat sink.  
 6. Short duration pulse test used to minimize self-heating effect.

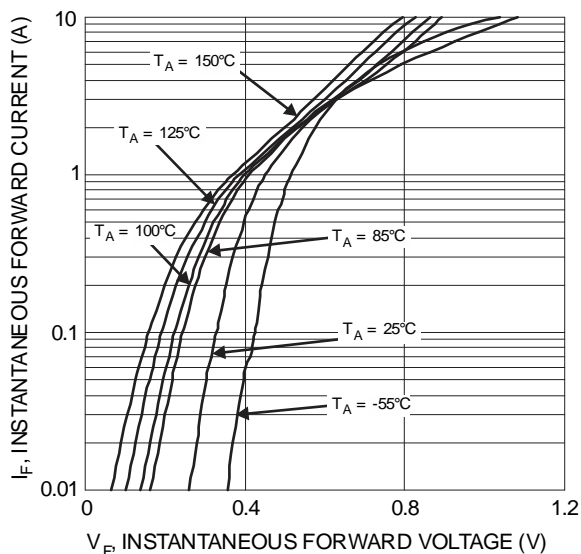


Figure 1. Typical Forward Characteristics

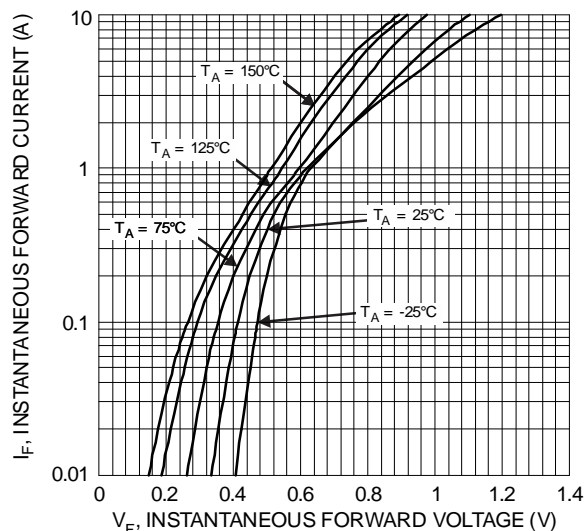


Figure 2. Typical Forward Characteristics  
 B150/B through B160/B

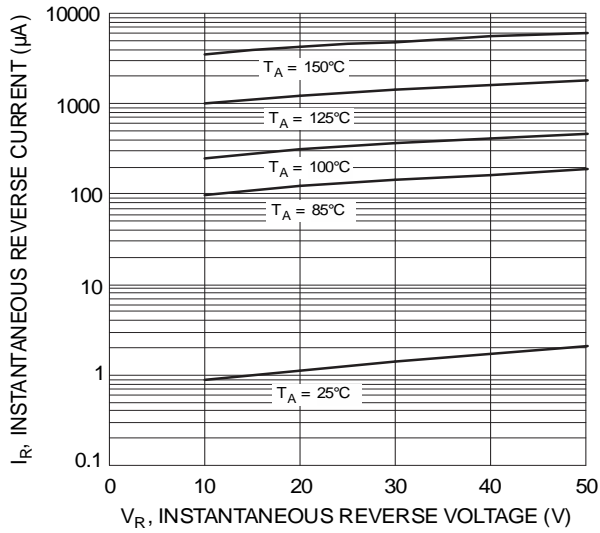


Figure 3. Typical Reverse Characteristics  
B120/B through B140/B

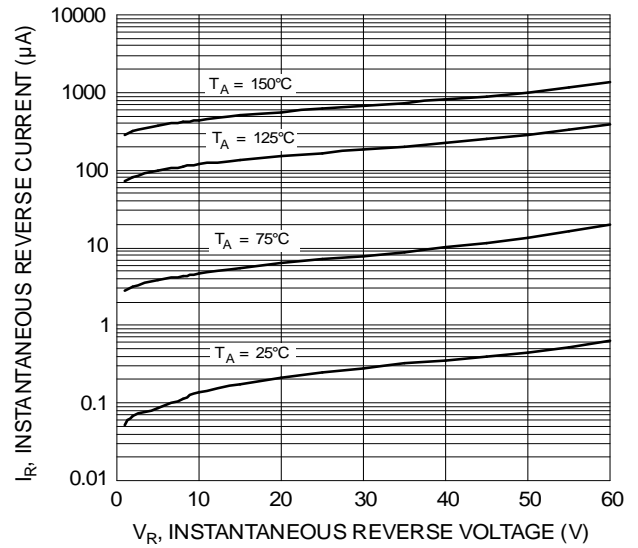


Figure 4. Typical Reverse Characteristics  
B150/B through B160/B

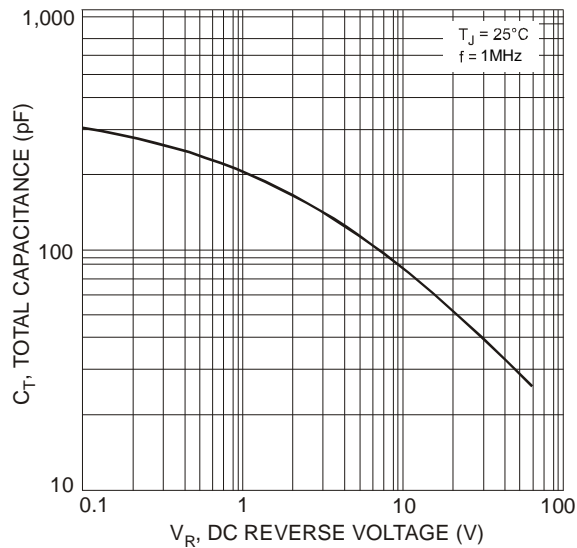


Figure 5. Total Capacitance vs. Reverse Voltage

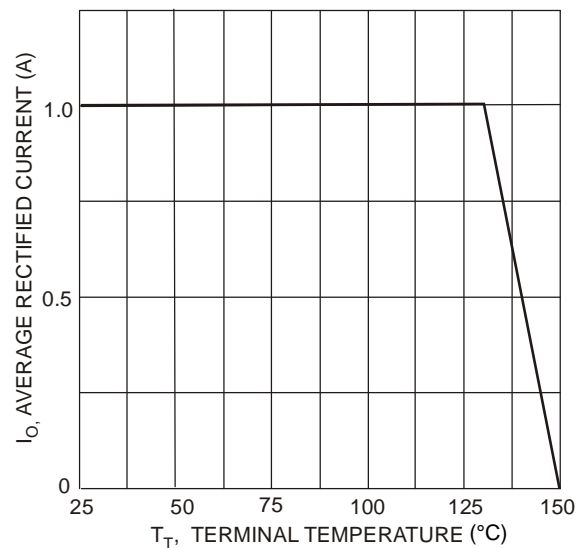


Figure 6. Forward Current Derating Curve

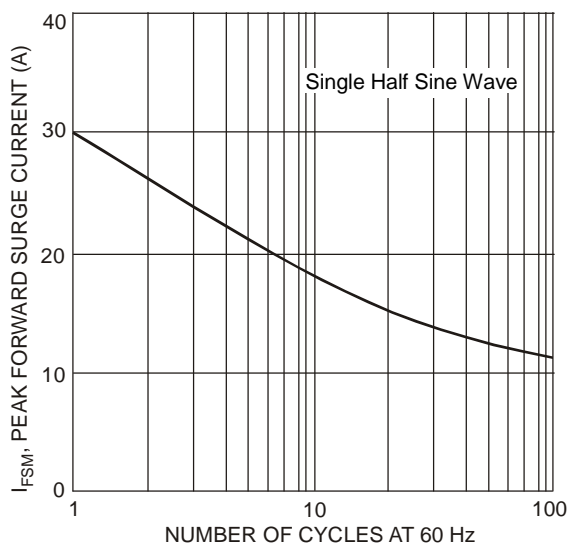
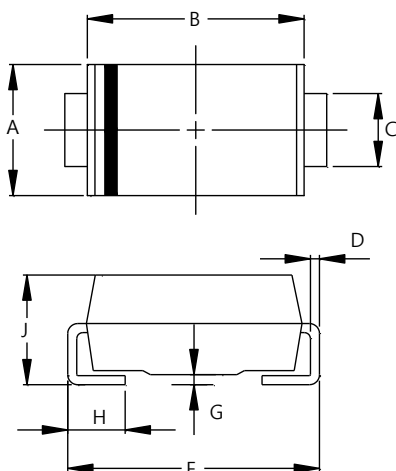


Figure 7. Max Non-Repetitive Peak Forward Surge Current

## Package Outline Dimensions

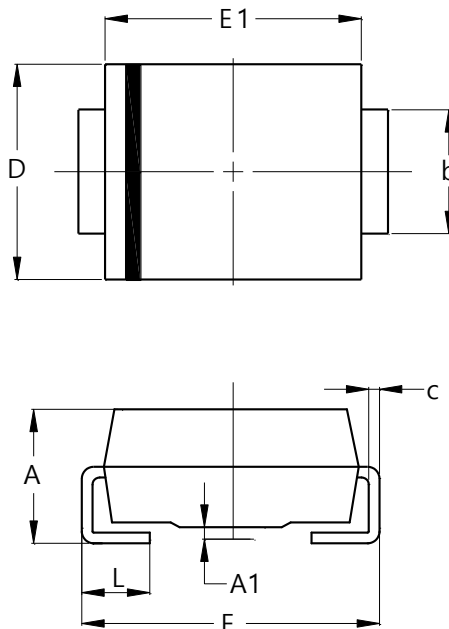
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SMA



SMA		
Dim	Min	Max
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

### SMB

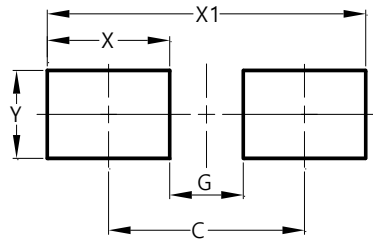


SMB		
Dim	Min	Max
A	2.00	2.50
A1	0.05	0.20
b	1.96	2.21
c	0.15	0.31
D	3.30	3.94
E	5.00	5.59
E1	4.06	4.57
L	0.76	1.52
All Dimensions in mm		

## Suggested Pad Layout

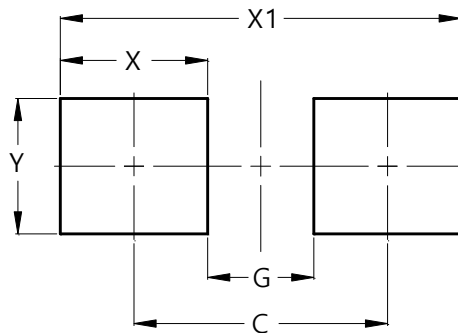
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SMA



Dimensions	Value (in mm)
<b>C</b>	4.00
<b>G</b>	1.50
<b>X</b>	2.50
<b>X1</b>	6.50
<b>Y</b>	1.70

### SMB



Dimensions	Value (in mm)
<b>C</b>	4.30
<b>G</b>	1.80
<b>X</b>	2.50
<b>X1</b>	6.80
<b>Y</b>	2.30

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