1.0A SURFACE-MOUNT SCHOTTKY BARRIER RECTIFIER

Product Summary

B120/B, B130/B, B140/B

V_{RRM} (V)	I_O (A)	V_F Max (V) T_A = +25°C	I_R Max (mA) T_A = +25°C
20/30/40	1.0	0.5	0.5

B150/B, B160/B

V_{RRM} (V)	I_O (A)	V_F Max (V) T_A = +25°C	I_R Max (mA) T_A = +25°C
50/60	1.0	0.7	0.5

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 or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

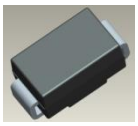
Description and Applications

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

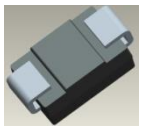
- Polarity protection diodes
- Re-circulating diodes
- Switching diodes

Mechanical Data

- Package: 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)

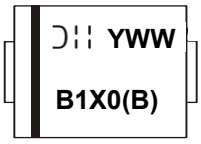
Part Number*	Package	Packing	
		Qty.	Carrier
B1XX-13-F	SMA	5,000	Tape & Reel
B120-13-F-N	SMA	5,000	Tape & Reel
B140-13-F-N	SMA	5,000	Tape & Reel
B160-13-F-N	SMA	5,000	Tape & Reel
B1XXB-13-F	SMB	3,000	Tape & Reel
B120B-13-F-N	SMB	3,000	Tape & Reel
B140B-13-F-N	SMB	3,000	Tape & Reel

*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/.

* 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



B1X0 = Product Type Marking Code, e.g., B120 (SMA Package)
B1X0B = Product Type Marking Code, e.g., B160B (SMB Package)
= Manufacturers' Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 3 for 2023)
WW = Week Code (01 to 53)
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	B120/B	B130/B	B140/B	B150/B	B160/B	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 = +130°C	I_O	1.0					A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I_{FSM}	30					A

Thermal Characteristics

Characteristic	Symbol	B120/B	B130/B	B140/B	B150/B	B160/B	Unit
Typical Thermal Resistance Junction to Terminal (Note 5)	$R_{\theta JT}$	20					°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150					°C

Electrical Characteristics (@T_A = +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_F	— —	— —	0.5 0.7	V	I_F = 1.0A I_F = 1.0A
Leakage Current (Note 6)		I_R	— —	— —	0.5 10	mA	@ Rated V_R, T_A = +25°C @ Rated V_R, T_A = +100°C
Total Capacitance		C_T	—	110	—	pF	V_R = 4V, f = 1MHz

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

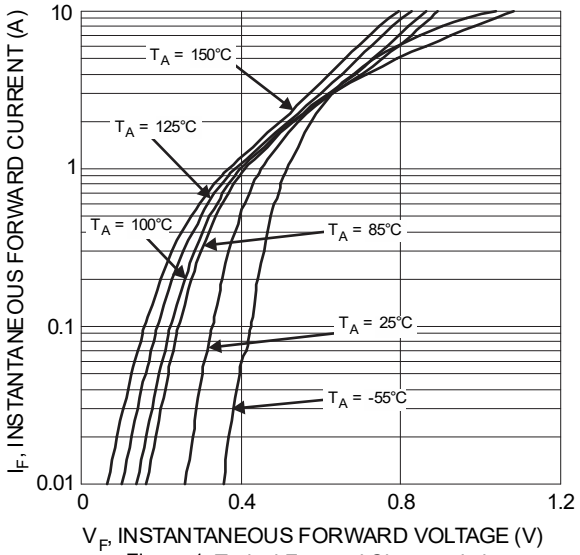


Figure 1. Typical Forward Characteristics

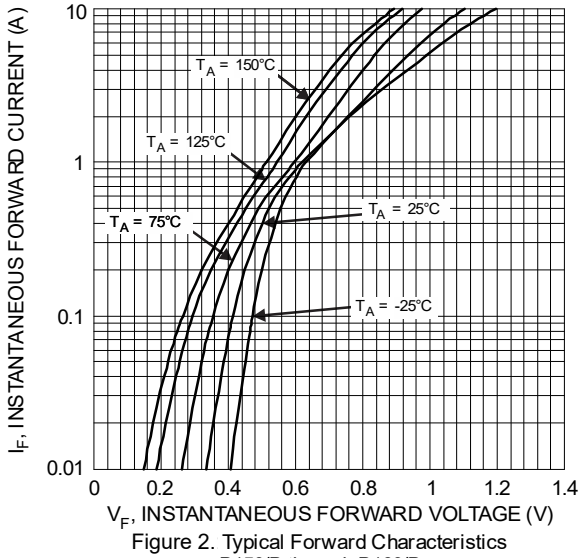


Figure 2. Typical Forward Characteristics
B150/B through B160/B

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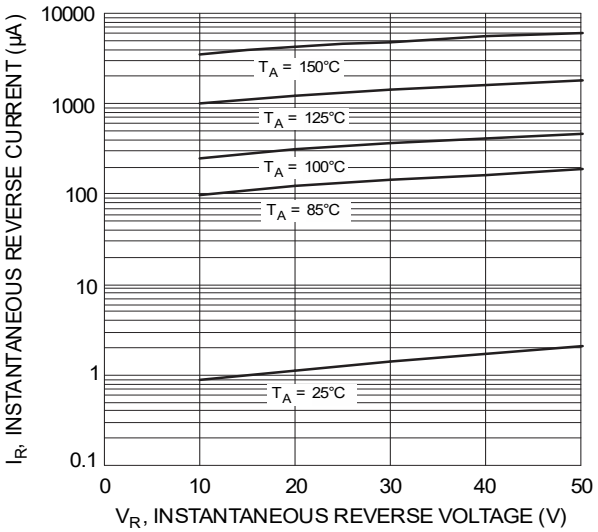


Figure 3. Typical Reverse Characteristics
B120/B through B140/B

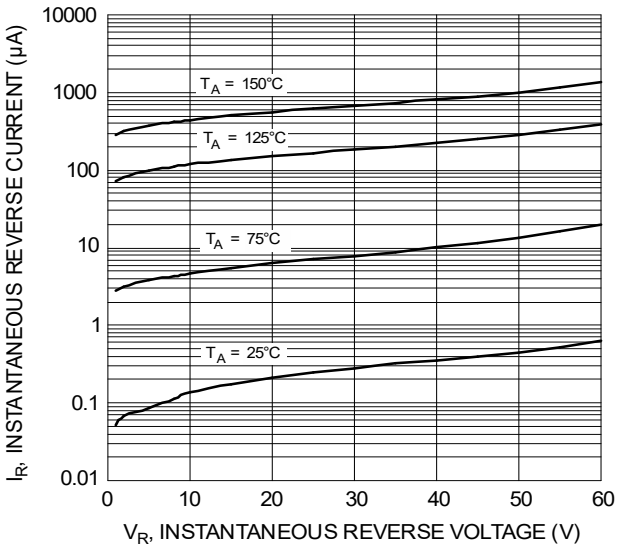


Figure 4. Typical Reverse Characteristics
B150/B through B160/B

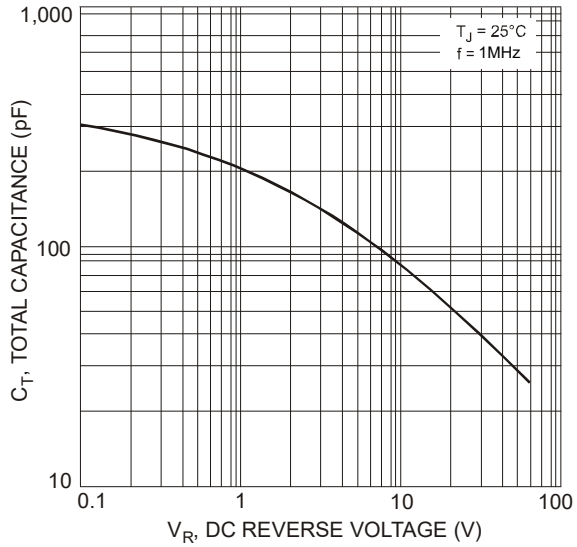


Figure 5. Total Capacitance vs. Reverse Voltage

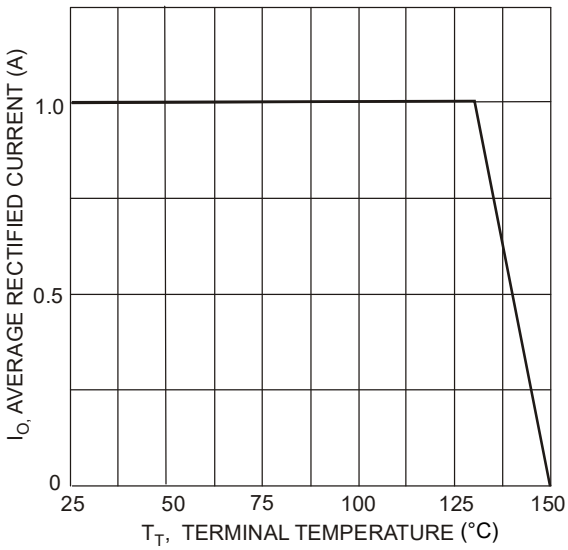


Figure 6. Forward Current Derating Curve

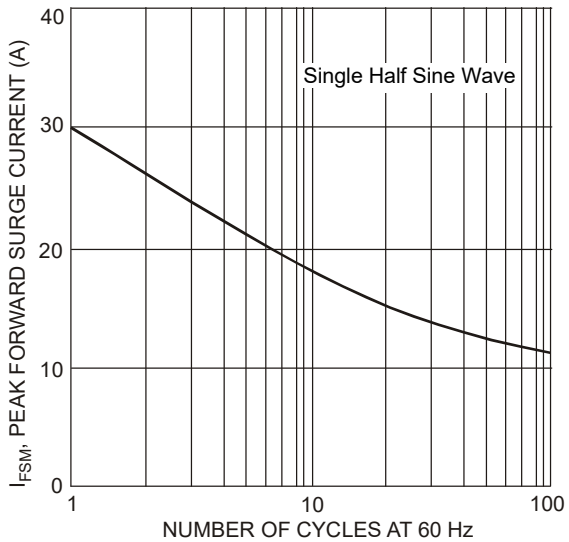


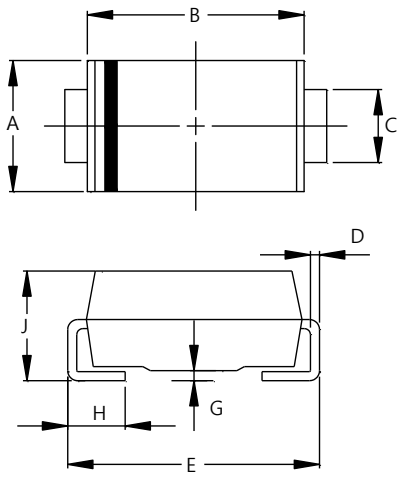
Figure 7. Max Non-Repetitive Peak Forward Surge Current

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Package Outline Dimensions

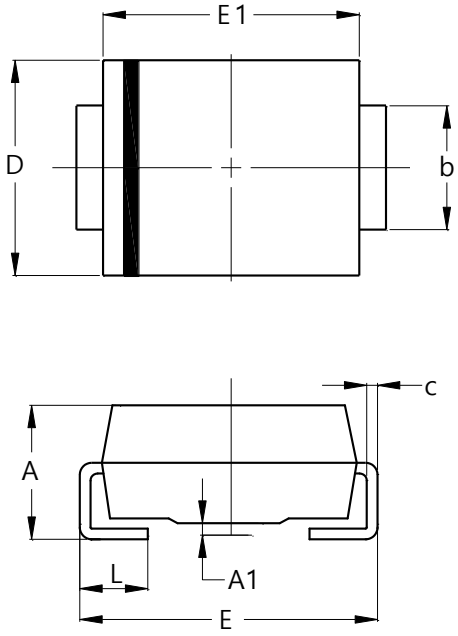
Please see http://www.diodes.com/package-outlines.html for the latest version.

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



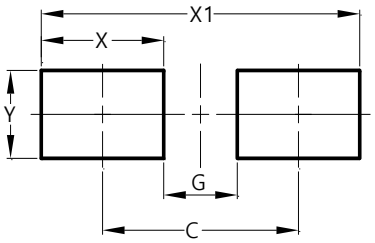
SMB		
Dim	**Min**	**Max**
A	2.00	2.50
A1	0.05	0.20
b	1.96	2.21
c	0.15	0.31
D	3.30	3.94
E	5.00	5.59
E1	4.06	4.57
L	0.76	1.52
All Dimensions in mm		

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Suggested Pad Layout

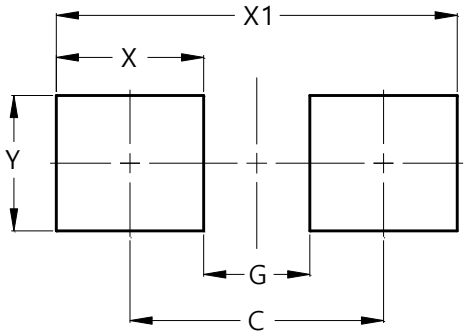
Please see http://www.diodes.com/package-outlines.html for the latest version.

SMA



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

SMB



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

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