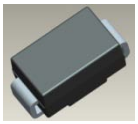
1.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

Features

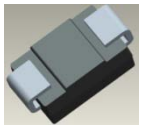
- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- Surge Overload Rating to 30A Peak
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Application
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3 & 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SMA/SMB
- 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 (e3)
- Polarity: Cathode Band or Cathode Notch
- Weight: SMA 0.064 grams (approximate)
  SMB 0.093 grams (approximate)



Top View



Bottom View

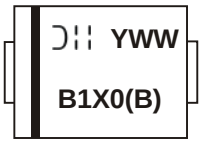
Ordering Information (Note 5)

Part Number	Qualification	Case	Packaging
B1XX-13-F	Commercial	SMA	5000/Tape & Reel
B140Q-13-F	Automotive	SMA	5000/Tape & Reel
B150Q-13-F	Automotive	SMA	5000/Tape & Reel
B1XXB-13-F	Commercial	SMB	3000/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) 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



B1X0 = Product type marking code, ex: B120 (SMA package)
B1X0B = Product type marking code, ex: B160B (SMB package)
= Manufacturers' code marking
YWW = Date code marking
Y = Last digit of year (ex: 2 for 2002)
WW = Week code (01 to 53)

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	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 6)	$R_{\theta JT}$	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 7)		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: 6. Thermal Resistance: Junction to terminal, unit mounted on PC board with 5.0 mm^2 (0.013 mm thick) copper pads as heat sink.
7. Short duration pulse test used to minimize self-heating effect.

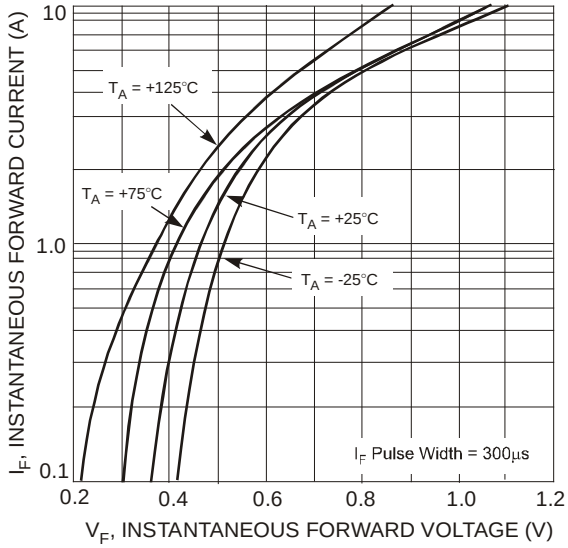


Fig. 1 Typical Forward Characteristics - B120/B thru B140/B

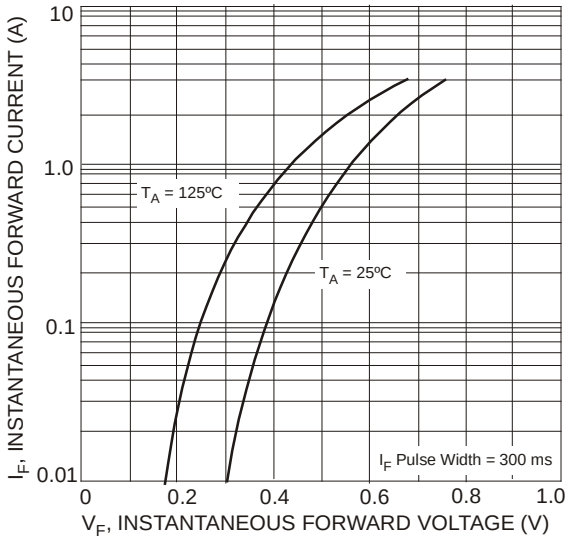


Fig. 2 Typical Forward Characteristics - B150/B thru B160/B

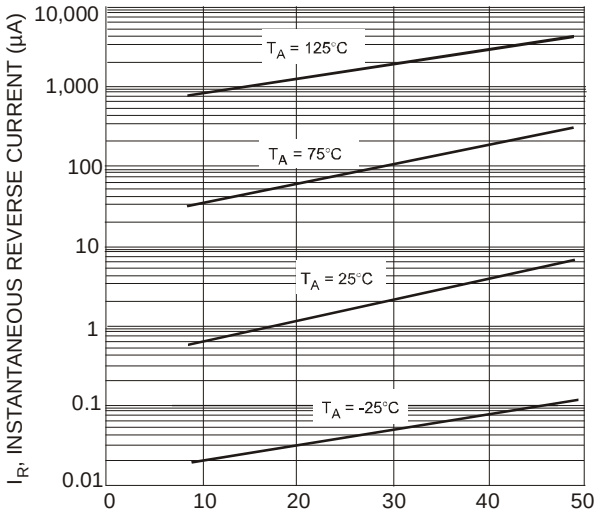


Fig. 3 Typical Reverse Characteristics, B120/B thru B140/B

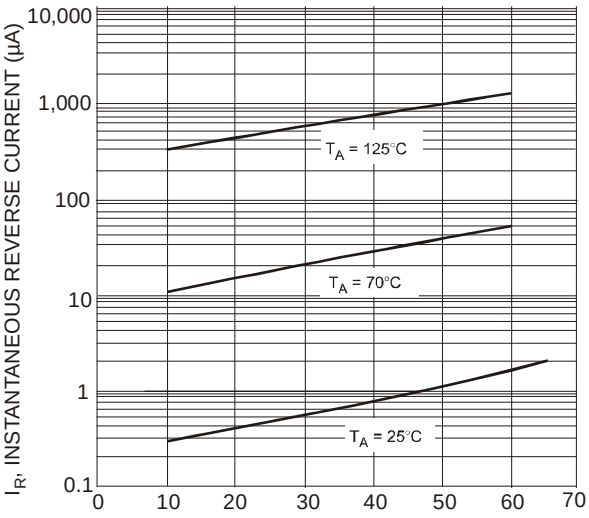


Fig. 4 Typical Reverse Characteristics, B150/B thru B160/B

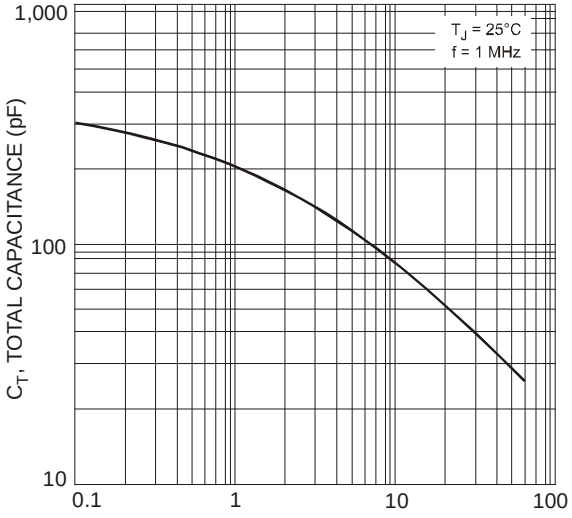


Fig. 5 Total Capacitance vs. Reverse Voltage

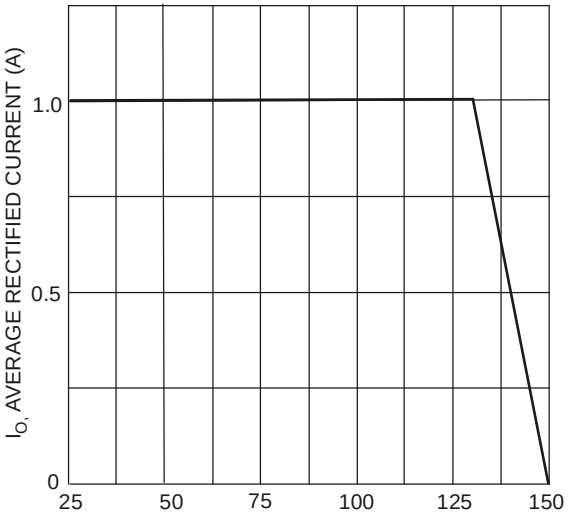


Fig. 6 Forward Current Derating Curve

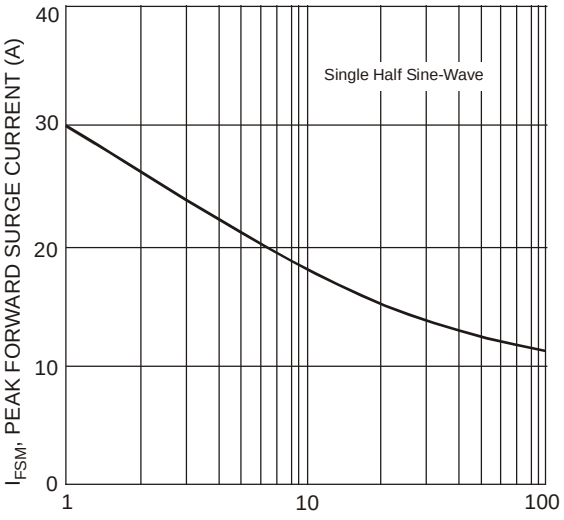
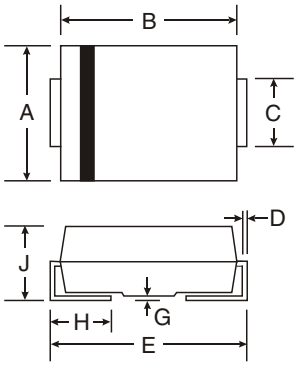


Fig. 7 Max Non-Repetitive Peak Forward Surge Current

Package Outline Dimensions

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

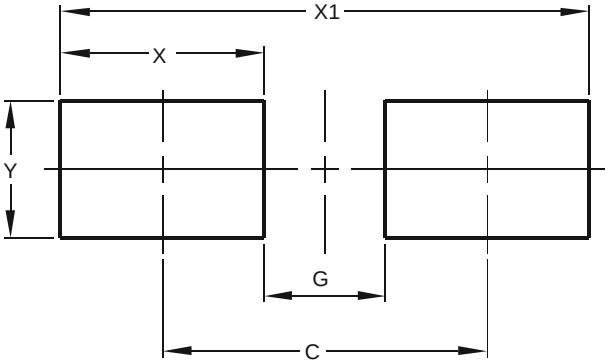


SMA		
Dim	Min	Max
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	2.01	2.30
All Dimensions in mm		

SMB		
Dim	Min	Max
A	3.30	3.94
B	4.06	4.57
C	1.96	2.21
D	0.15	0.31
E	5.00	5.59
G	0.05	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	SMA (in mm)	SMB (in mm)
C	4.00	4.30
G	1.50	1.80
X	2.50	2.50
X1	6.50	6.80
Y	1.70	2.30

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