

1.0A HIGH VOLTAGE 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
- High Temperature Soldering: +260°C/10 Second at Terminal
- **Lead Free Finish/RoHS Compliant (Note 1)**
- **Green Molding Compound (No Halogen and Antimony) (Note 2)**

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 
- Polarity: Cathode Band or Cathode Notch
- Weight: SMA 0.064 grams (Approximate)
SMB 0.093 grams (Approximate)

SMA / SMB



Top View



Bottom View

Ordering Information (Note 3)

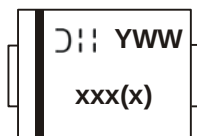
Part Number	Compliance	Case	Packaging
B1x-13-F	AEC-Q101	SMA	5,000/Tape & Reel
B1xQ-13-F	Automotive	SMA	5,000/Tape & Reel
B1xB-13-F	AEC-Q101	SMB	3,000/Tape & Reel
B1xBQ-13-F	Automotive	SMB	3,000/Tape & Reel

*x = Device type, e.g. B180-13-F (SMA package); B1100B-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. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information

SMA / SMB



XXX = Product Type Marking Code, ex: B170 (SMA package)
 XXXX = Product Type Marking Code, ex: B190B (SMB package)
 = Manufacturers' Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 5 for 2015)
 WW = Week Code 01 to 52

Maximum Ratings (@ $T_A = +25^\circ\text{C}$ unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
 For capacitance load, derate current by 20%.

Characteristic	Symbol	B170/B	B180/B	B190/B	B1100/B	Unit
Peak Repetitive Reverse Voltage	V_{RRM}					
Working Peak Reverse Voltage	V_{RWM}	70	80	90	100	V
DC Blocking Voltage	V_R					
RMS Reverse Voltage	$V_{R(RMS)}$	49	56	63	70	V
Average Rectified Output Current @ $T_T = +125^\circ\text{C}$	I_O	1.0				A
Non-Repetitive Peak Forward Surge Current 8.3ms	I_{FSM}	30				A
Single Half Sine-Wave Superimposed on Rated Load						
Repetitive Peak Reverse Current	I_{RRM}	1.0				A

Thermal Characteristics

Characteristic	Symbol	B170/B	B180/B	B190/B	B1100/B	Unit
Typical Thermal Resistance Junction to Terminal (Note 4)	$R_{\theta JT}$	25				$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150				$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	-	-	0.79 0.69	V	$I_F = 1.0\text{A}, T_A = +25^\circ\text{C}$ $I_F = 1.0\text{A}, T_A = +100^\circ\text{C}$
Leakage Current (Note 5)	I_R	-	-	0.5 5.0	mA	@ Rated $V_R, T_A = +25^\circ\text{C}$ @ Rated $V_R, T_A = +100^\circ\text{C}$
Total Capacitance	C_T	-	-	80	pF	$V_R = 4\text{V}, f = 1\text{MHz}$

Notes: 4. Valid provided that terminals are kept at ambient temperature.
 5. Short duration pulse test used to minimize self-heating effect.

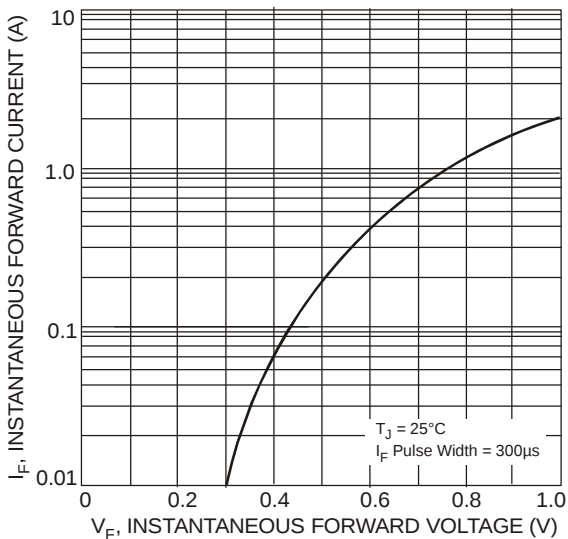


Fig. 1 Typical Forward Characteristics

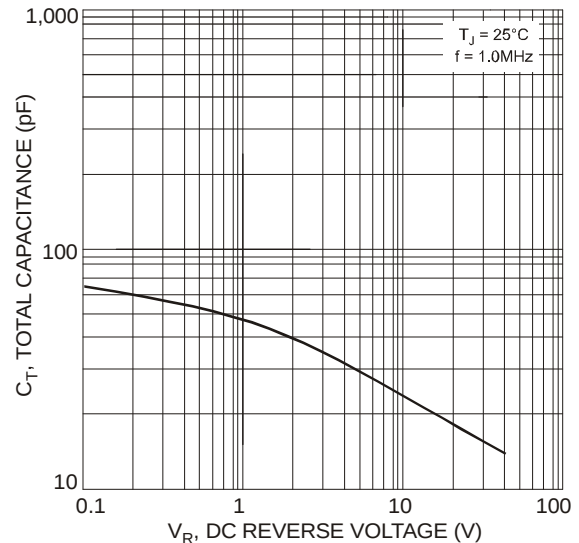


Fig. 2 Total Capacitance vs. Reverse Voltage

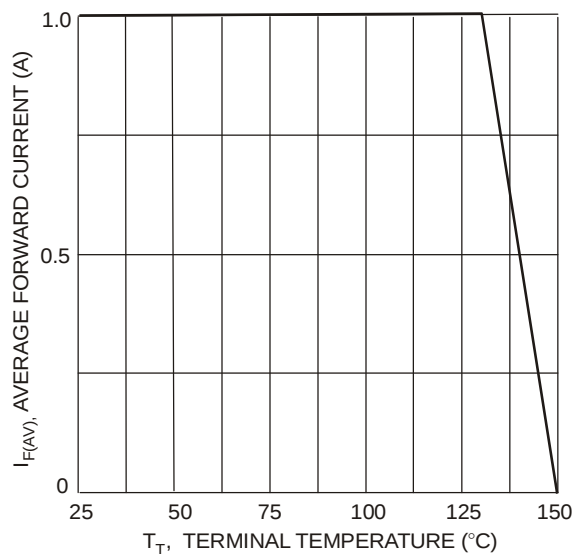


Fig. 3 Forward Current Derating Curve

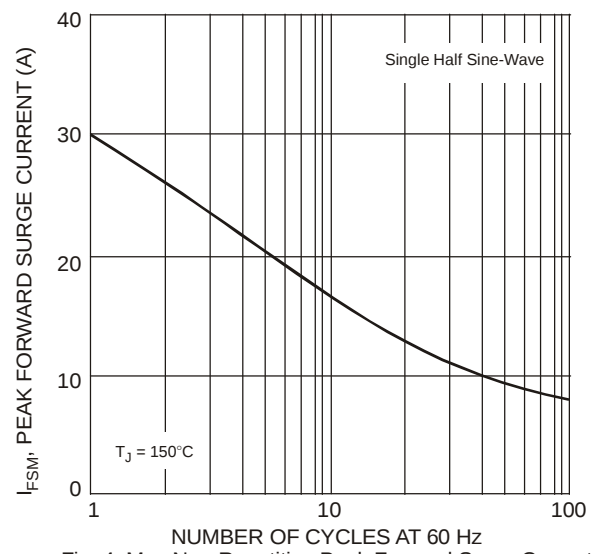
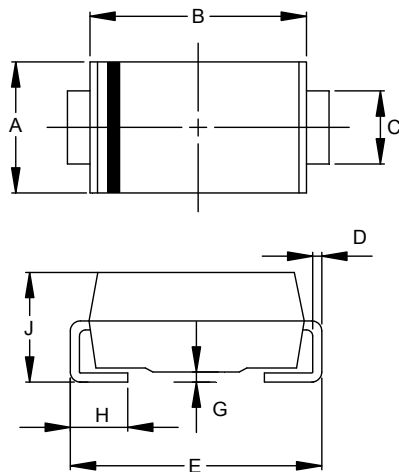


Fig. 4 Max Non-Repetitive Peak Forward Surge Current

Package Outline Dimensions

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

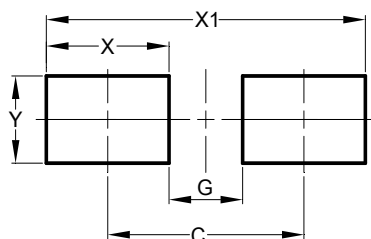


SMA		
Dim	Min	Max
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

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.



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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