

**1.0A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER**
**Product Summary (@ +25°C)**

B170/B

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (mA)
70	1.0	0.79	0.5

B180/B

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (mA)
80	1.0	0.79	0.5

B190/B

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (mA)
90	1.0	0.79	0.5

B1100/B

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (mA)
100	1.0	0.79	0.5

**Applications**

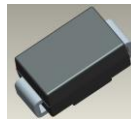
- Polarity Protection Diode
- Re-Circulating Diode
- Blocking Diode
- DC-DC
- AC-DC

**Features and Benefits**

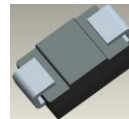
- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- Surge Overload Rating to 125A Peak
- For Use in Low Voltage Drop, High Frequency Inverters, Free Wheeling, and Polarity Protection Application
- High Temperature Soldering: +260°C/10 Second at Terminal
- **Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([B170BQ](#) [B180BQ](#) [B190BQ](#) [B1100BQ](#))**

**Mechanical Data**

- Case: SMB and SMA
- Case Material: Molded Plastic. "Green" Molding Compound. 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
- Weight: 0.093 grams (Approximate)

**SMA / SMB**


Top View



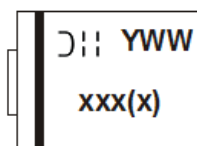
Bottom View

**Ordering Information (Note 4)**

Part Number	Compliance	Case	Packaging
B1x0-13-F	AEC-Q101	SMA	5,000/Tape & Reel
B1x0B-13-F	AEC-Q101	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](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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>

**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<sub>A</sub> = +25°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 <sub>RRM</sub>	70	80	90	100	V
Working Peak Reverse Voltage	V <sub>RWM</sub>					
DC Blocking Voltage	V <sub>R</sub>					
RMS Reverse Voltage	V <sub>R(RMS)</sub>	49	56	63	70	V
Average Rectified Output Current @ T <sub>T</sub> = +125°C	I <sub>O</sub>	1.0				A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	30				A
Repetitive Peak Reverse Current	I <sub>RRM</sub>	1.0				A

### Thermal Characteristics

Characteristic	Symbol	B170/B	B180/B	B190/B	B1100/B	Unit
Typical Thermal Resistance Junction to Terminal (Note 5)	R <sub>θJT</sub>	25				°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	V <sub>F</sub>	—	—	0.79 0.69	V	I <sub>F</sub> = 1.0A, T <sub>A</sub> = +25°C I <sub>F</sub> = 1.0A, T <sub>A</sub> = +100°C
Leakage Current (Note 6)	I <sub>R</sub>	—	—	0.5 5.0	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>	—	—	80	pF	V <sub>R</sub> = 4V, f = 1MHz

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

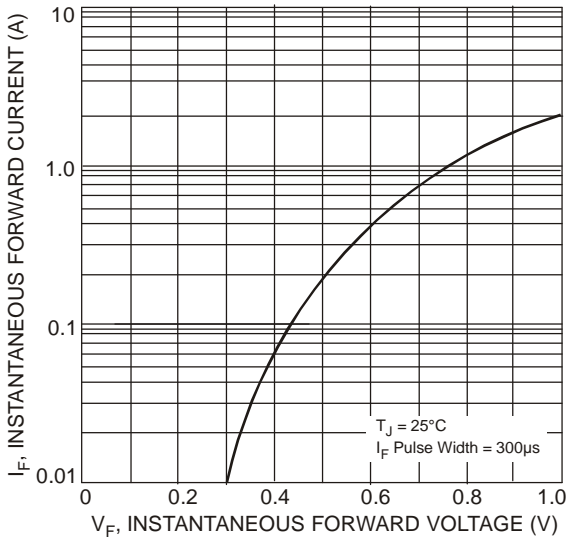


Fig. 1 Typical Forward Characteristics

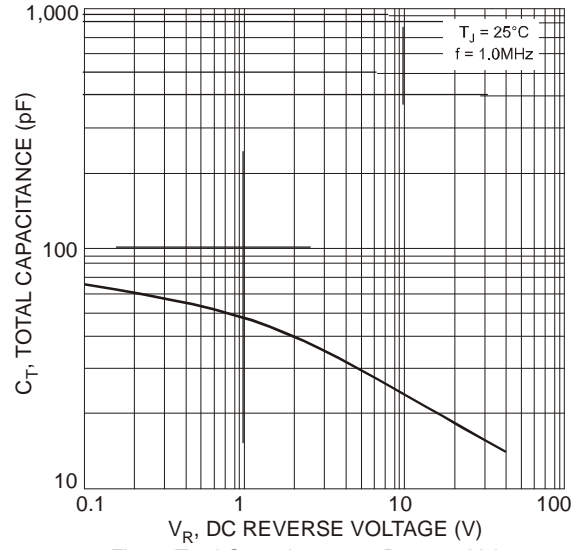


Fig. 2 Total Capacitance vs. Reverse Voltage

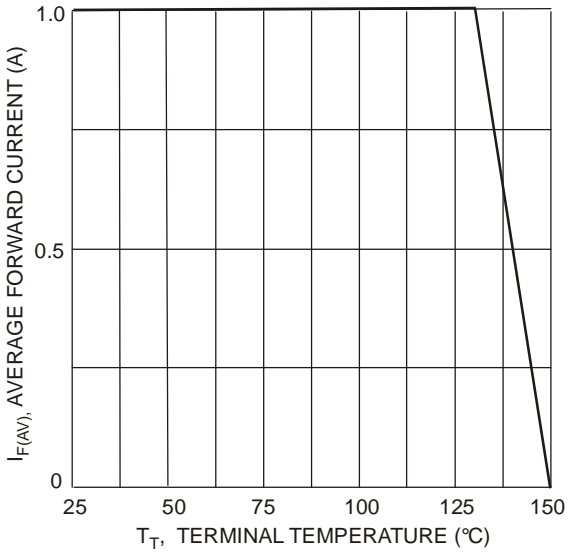


Fig. 3 Forward Current Derating Curve

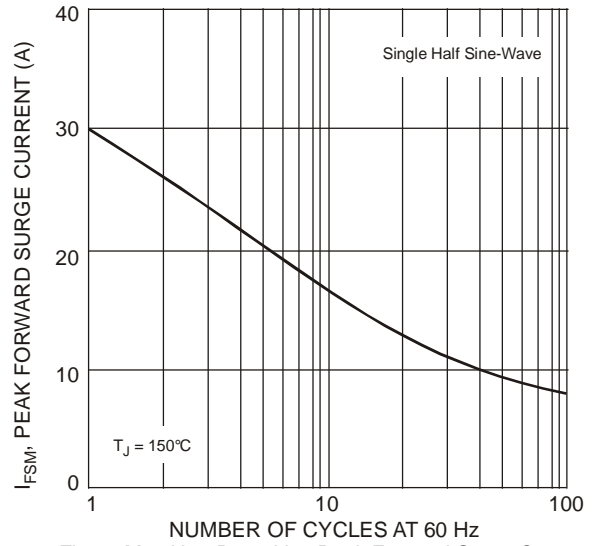
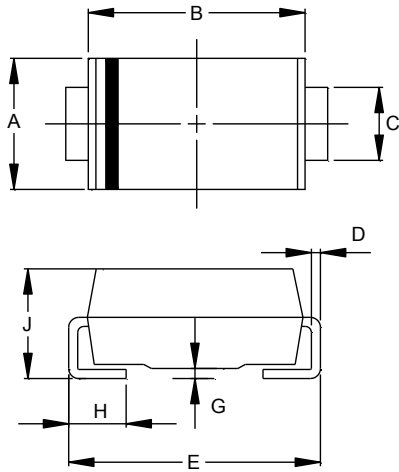


Fig. 4 Max Non-Repetitive Peak Forward Surge Current

**Package Outline Dimensions**

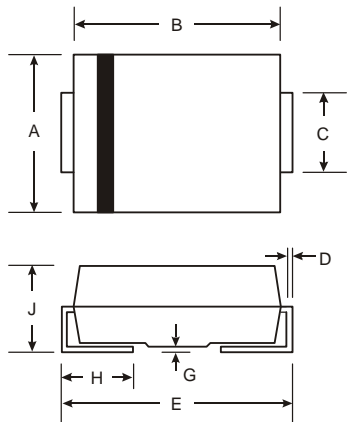
Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**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**

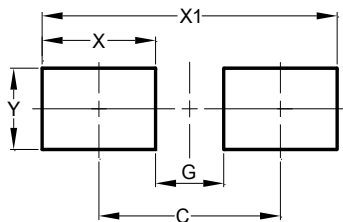


SMB		
Dim	Min	Max
A	3.30	3.94
B	4.06	4.57
C	1.96	2.21
D	0.15	0.31
E	5.00	5.59
G	0.05	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

**Suggested Pad Layout**

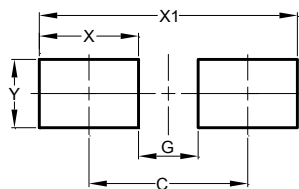
Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**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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