

**1.0A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER**

**Product Summary (@ +25°C)**

Device	V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (mA)
B170AE/BE	70	1.0	0.79	0.2
B180AE/BE	80	1.0	0.79	0.2
B190AE/BE	90	1.0	0.79	0.2
B1100AE/BE	100	1.0	0.79	0.2

**Applications**

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

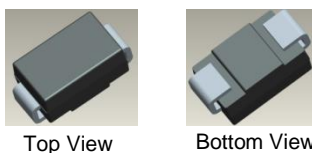
**Features and Benefits**

- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- For Use in Low Voltage Drop, High Frequency Inverters, Free Wheeling, and Polarity Protection Application
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

**Mechanical Data**

- Case: SMA , SMB
- 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: SMA-0.063 grams (Approximate)  
SMB-0.093 grams (Approximate)

**SMA / SMB**



**Ordering Information (Note 4)**

Part Number	Case	Packaging
B1XXAE-13	SMA	5,000/Tape & Reel
B1XXXAE-13	SMA	5,000/Tape & Reel
B1XXBE-13	SMB	3,000/Tape & Reel
B1XXXBE-13	SMB	3,000/Tape & Reel

\*x = Device type, e.g. B180AE-13 (SMA package); B1100BE-13 (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**

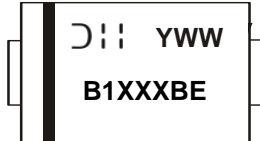
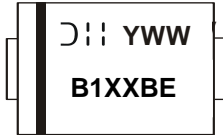
**SMA**



B1XXAE or B1XXXAE = Product Type Marking Code, ex: B170AE (SMA Package)  
 ⌋⌋⌋ = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 8 for 2018)  
 WW = Week Code (01 to 53)

## Marking Information (Cont.)

### SMB



B1XXBE or B1XXXBE = Product Type Marking Code, ex: B170BE (SMB Package)  
 DII = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 8 for 2018)  
 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	B170AE B170BE	B180AE B180BE	B190AE B190BE	B1100AE B1100BE	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>					
Average Rectified Output Current	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

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	SMA	110	°C/W
	SMB	75	
Typical Thermal Resistance Junction to Case (Note 5)	SMA	55	°C/W
	SMB	40	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 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>	—	0.75	0.79	V	I <sub>F</sub> = 1.0A, T <sub>A</sub> = +25°C
		—	0.61	—		I <sub>F</sub> = 1.0A, T <sub>A</sub> = +125°C
Leakage Current (Note 6)	I <sub>R</sub>	—	—	0.2	mA	@ Rated V <sub>R</sub> , T <sub>A</sub> = +25°C
		—	—	5.0		@ Rated V <sub>R</sub> , T <sub>A</sub> = +125°C
Typical Capacitance	C <sub>T</sub>	—	27	—	pF	V <sub>R</sub> = 4V, f = 1MHz

Notes: 5. Device mounted on FR-4 substrate, 0.4" x 0.5", 2oz, single-sided, PC boards with 0.2" x 0.25" copper pad.  
 6. Short duration pulse test used to minimize self-heating effect.

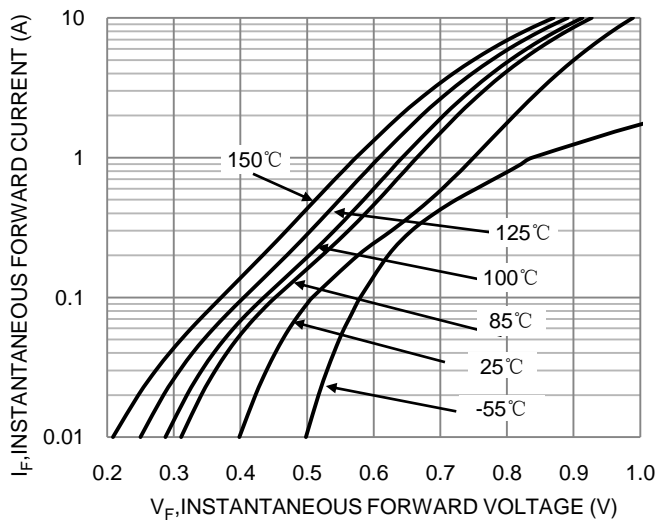


Figure 1. Typical Forward Characteristics

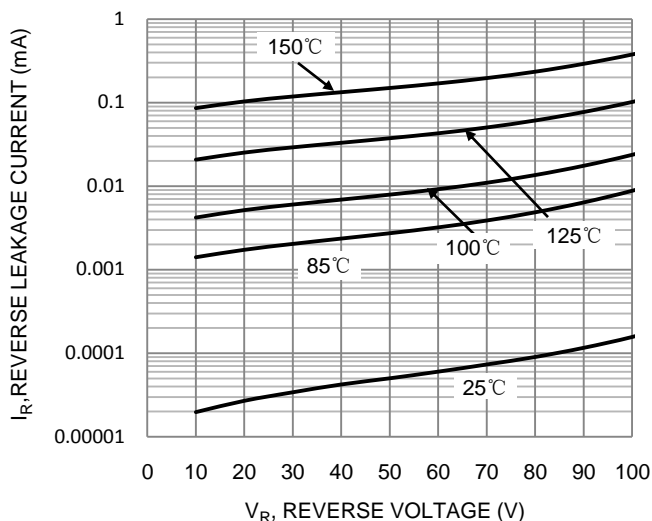


Figure 2. Typical Reverse Characteristics

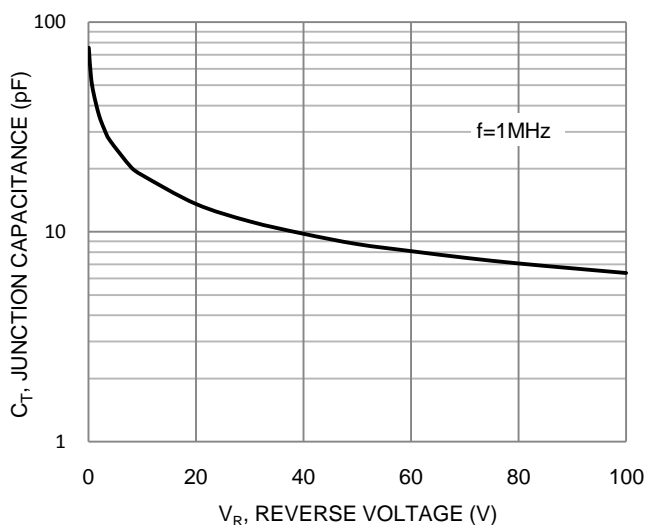


Figure 3. Typical Junction Capacitance

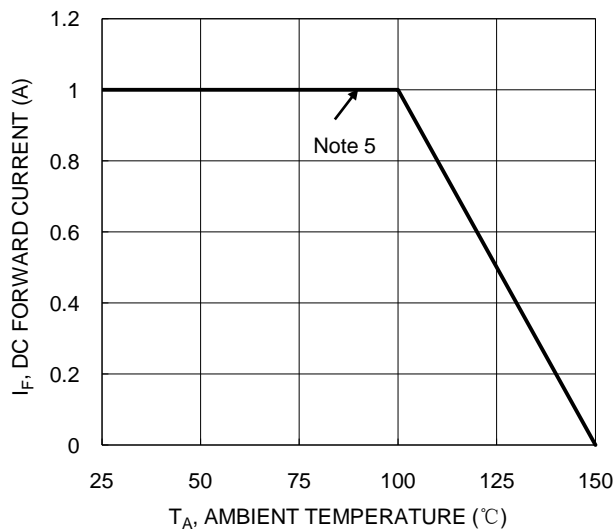
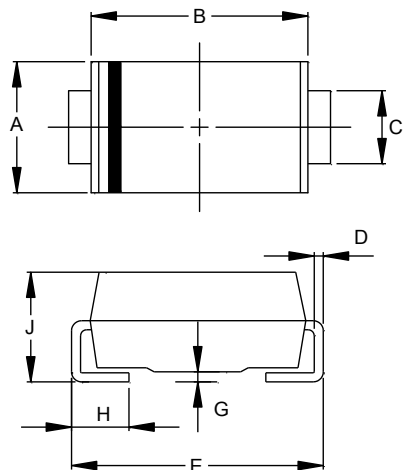


Figure 4. DC Forward Current Derating

## Package Outline Dimensions

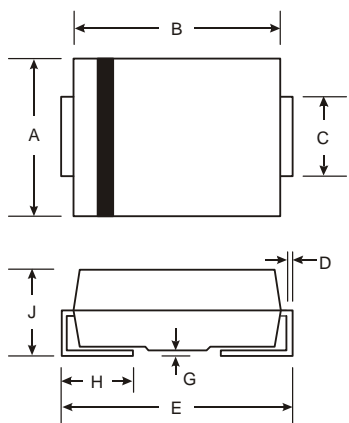
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### 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

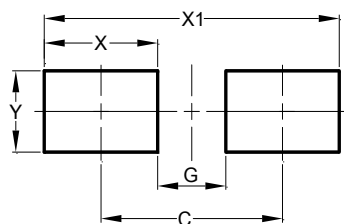


SMB		
Dim	Min	Max
A	3.30	3.94
B	4.06	4.57
C	1.96	2.21
D	0.15	0.31
E	5.00	5.59
G	0.05	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

## Suggested Pad Layout

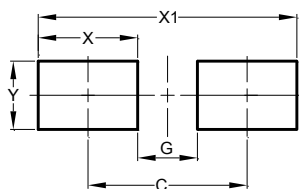
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### 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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