

## 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)
  - For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com/quality/contact-us) or your local Diodes representative.
- <https://www.diodes.com/quality/product-definitions/>

## 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 (63)
- Polarity: Cathode Band
- Weight: SMA-0.063 grams (Approximate)  
SMB-0.093 grams (Approximate)

SMA / SMB

Top View

Bottom View

## Ordering Information (Note 4)

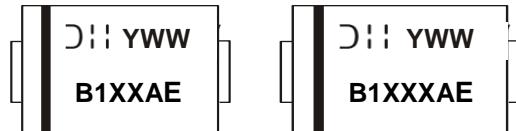
Part Number	Case	Packaging
B1XXAE-13	SMA	5,000/Tape & Reel
B1XXXAE-13	SMA	5,000/Tape & Reel
B1XXBE-13	SMB	3,000/Tape & Reel
B1XXXBE-13	SMB	3,000/Tape & Reel

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

- Notes:
- EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  - 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.
  - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  - 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)  
DII = Manufacturers' Code Marking  
YWW = Date Code Marking  
Y = Last Digit of Year (ex: 9 for 2019)  
WW = Week Code (01 to 53)

## Marking Information (continued)

### 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: 9 for 2019)  
 WW = Week Code (01 to 53)

## Maximum Ratings (@ $T_A = +25^\circ\text{C}$ 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	$V_{RRM}$					
Working Peak Reverse Voltage	$V_{RWM}$	70	80	90	100	V
DC Blocking Voltage	$V_R$					
Average Rectified Output Current	$I_O$		1.0			A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$		30			A

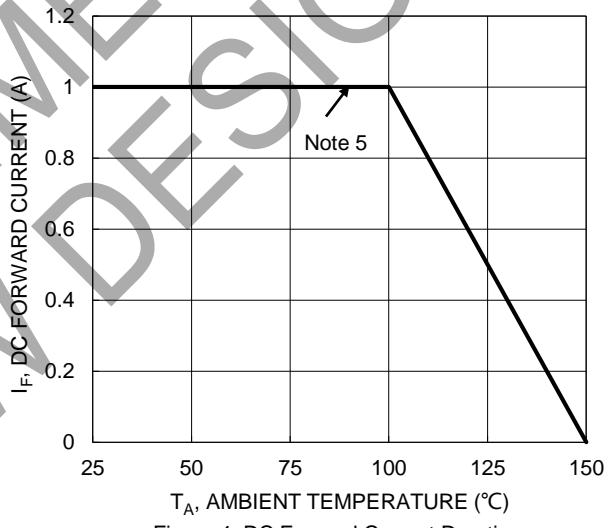
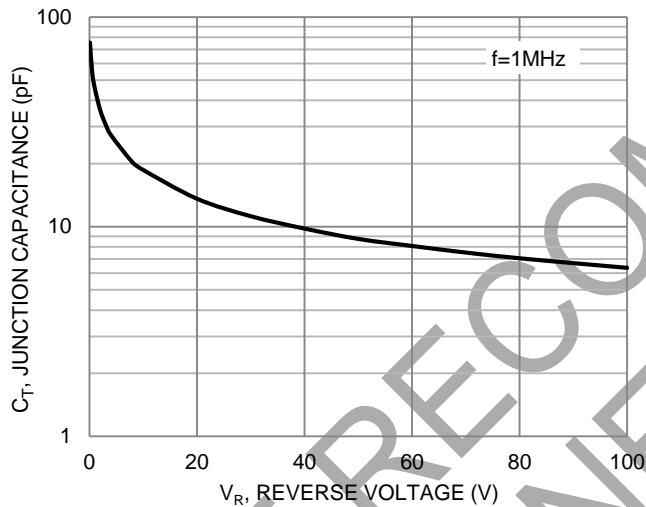
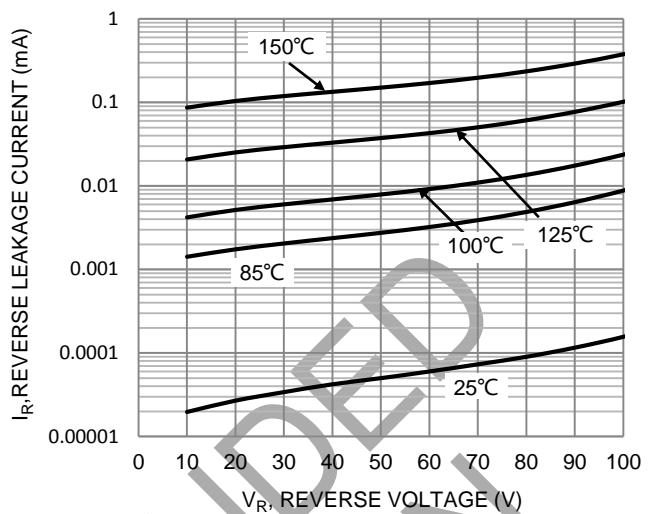
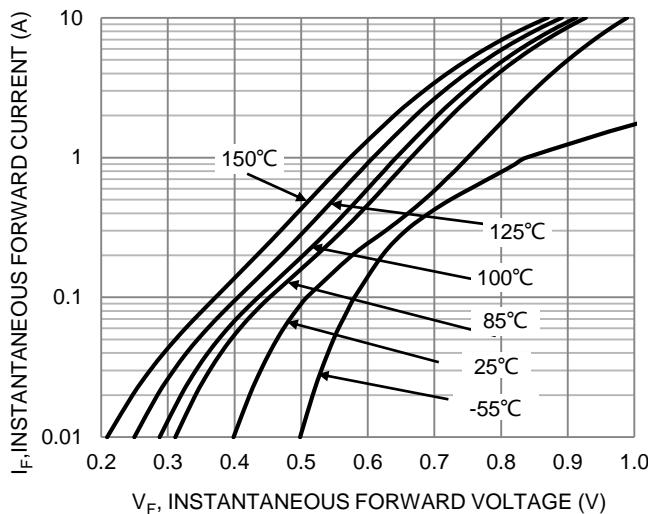
## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	110	$^\circ\text{C}/\text{W}$
SMA		75	
SMB			
Typical Thermal Resistance, Junction to Case (Note 5)	$R_{\theta JC}$	55	$^\circ\text{C}/\text{W}$
SMA		40	
SMB			
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

## Electrical Characteristics (@ $T_A = +25^\circ\text{C}$ unless otherwise specified.)

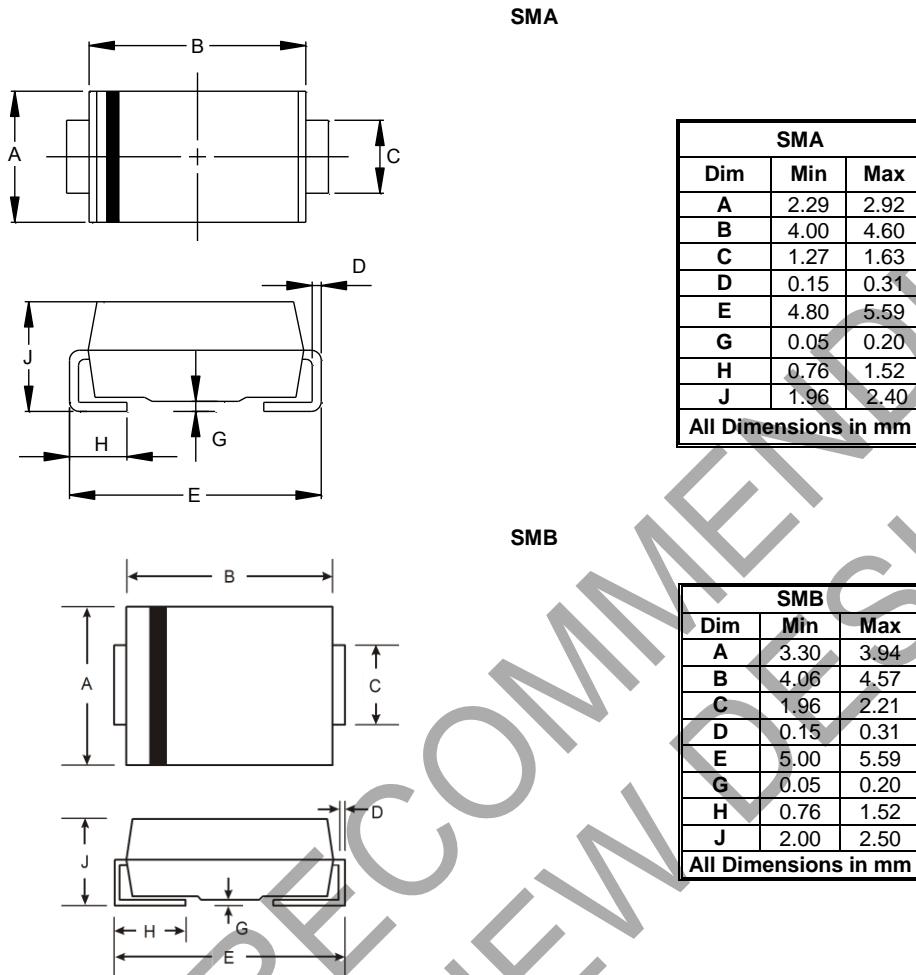
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	0.75 0.61	0.79 —	V	$I_F = 1.0\text{A}, T_A = +25^\circ\text{C}$ $I_F = 1.0\text{A}, T_A = +125^\circ\text{C}$
Leakage Current (Note 6)	$I_R$	—	—	0.2 5.0	mA	@ Rated $V_R$ , $T_A = +25^\circ\text{C}$ @ Rated $V_R$ , $T_A = +125^\circ\text{C}$
Typical Capacitance	$C_T$	—	27	—	pF	$V_R = 4\text{V}$ , $f = 1\text{MHz}$

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.



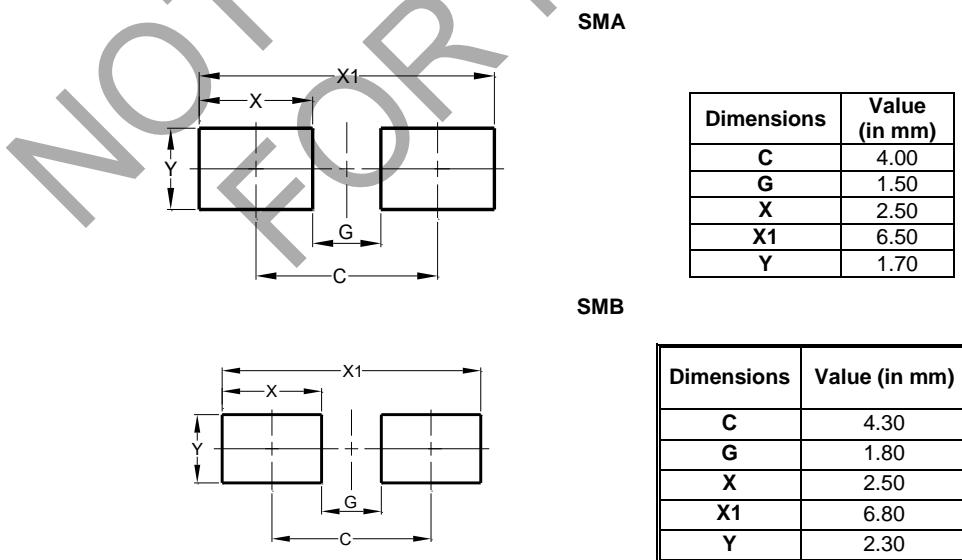
## Package Outline Dimensions

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



## Suggested Pad Layout

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



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