

## Product Summary

B220AE/B230AE/B240AE/B245AE  
B220BE/B230BE/B240BE/B245BE

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F(MAX)</sub> (V) @ +25°C	I <sub>R(MAX)</sub> (mA) @ +25°C
20	2	0.5	0.1
30	2	0.5	0.1
40	2	0.5	0.2
45	2	0.5	0.2

## Features and Benefits

- Reduced Low Forward Voltage Drop (V<sub>F</sub>); Better Efficiency and Cooler Operation
- Reduced High-Temperature Reverse Leakage; Increased Reliability against Thermal Runaway Failure in High Temperature Operation.
- **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](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Description and Applications

The Schottky rectifier providing low V<sub>F</sub> and excellent reverse leakage stability at high temperatures, this device is ideal for use in general rectification applications such as:

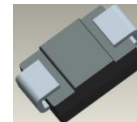
- Boost Diode
- Blocking Diode
- Recirculating Diode

## 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: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208@3
- Polarity: Cathode Band
- Weight: SMA-0.063 grams (Approximate)  
SMB-0.093 grams (Approximate)



Top View



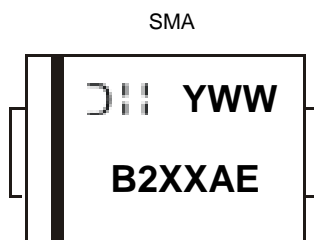
Bottom View

## Ordering Information (Notes 4, 5)

Part Number	Case	Packaging	Status	Replacement
B220AE-13	SMA	5,000/Tape & Reel	NRND	<a href="#">B220A-13-F</a>
B220BE-13	SMB	3,000/Tape & Reel	NRND	<a href="#">B220-13-F</a>
B230AE-13	SMA	5,000/Tape & Reel	NRND	<a href="#">B230A-13-F</a>
B230BE-13	SMB	3,000/Tape & Reel	NRND	<a href="#">B230-13-F</a>
B240AE-13	SMA	5,000/Tape & Reel	Active	—
B240BE-13	SMB	3,000/Tape & Reel	NRND	<a href="#">B240-13-F</a>
B245AE-13	SMA	5,000/Tape & Reel	NRND	<a href="#">B250A-13-F</a>
B245BE-13	SMB	3,000/Tape & Reel	NRND	<a href="#">B250-13-F</a>

- 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/>.
  5. NRND: Not recommended for new design.

## Marking Information



B2XXAE = Product Type Marking Code, ex: B220AE  
 ☺ = Manufacturers' Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 0 for 2020)  
 WW = Week Code (01 to 53)

## Marking Information (continued)

SMB



B2XXBE = Product Type Marking Code, ex: B220BE

☐ = Manufacturers' Marking

YWW = Date Code Marking

Y = Last Digit of Year (ex: 0 for 2020)

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	B220AE B220BE	B230AE B230BE	B240AE B240BE	B245AE B245BE	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	20	30	40	45	V
Working Peak Reverse Voltage	V <sub>RWM</sub>					
DC Blocking Voltage	V <sub>RM</sub>					
Average Rectified Output Current	I <sub>O</sub>	2				A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	50				A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	SMA	95	°C/W
	SMB	90	
Typical Thermal Resistance Junction to Case (Note 6)	SMA	45	°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>	—	0.46	0.50	V	I <sub>F</sub> = 2A, T <sub>J</sub> = +25°C
		—	0.41	—		I <sub>F</sub> = 2A, T <sub>J</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	—	0.1	mA	V <sub>R</sub> = 20V, T <sub>J</sub> = +25°C
		—	—	0.1		V <sub>R</sub> = 30V, T <sub>J</sub> = +25°C
		—	—	0.2		V <sub>R</sub> = 40V, T <sub>J</sub> = +25°C
		—	—	0.2		V <sub>R</sub> = 45V, T <sub>J</sub> = +25°C
		—	15	—		V <sub>R</sub> = 45V, T <sub>J</sub> = +125°C
Typical Capacitance	C <sub>T</sub>	—	93	—	pF	V <sub>R</sub> = 4.0V, f = 1MHz

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

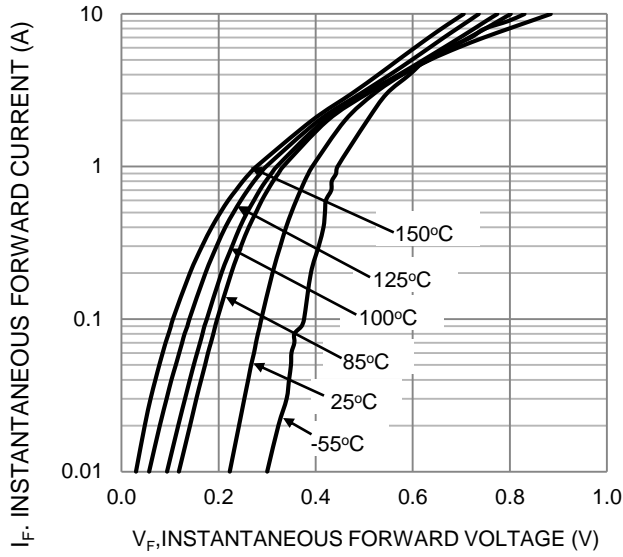


Figure 1. Typical Forward Characteristics

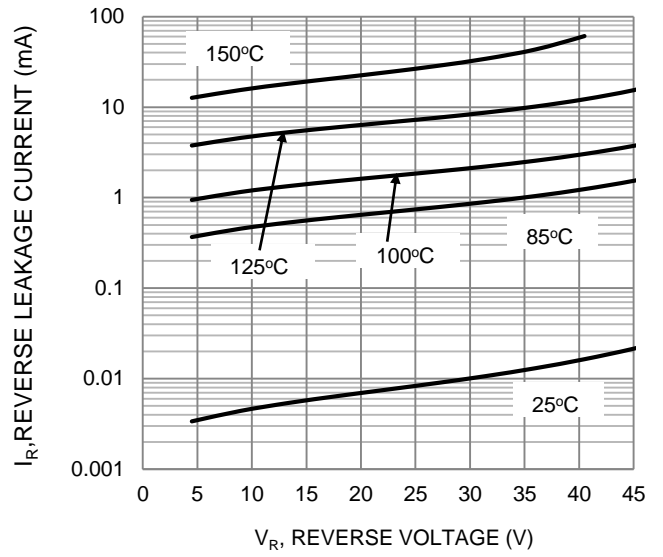


Figure 2. Typical Reverse Characteristics

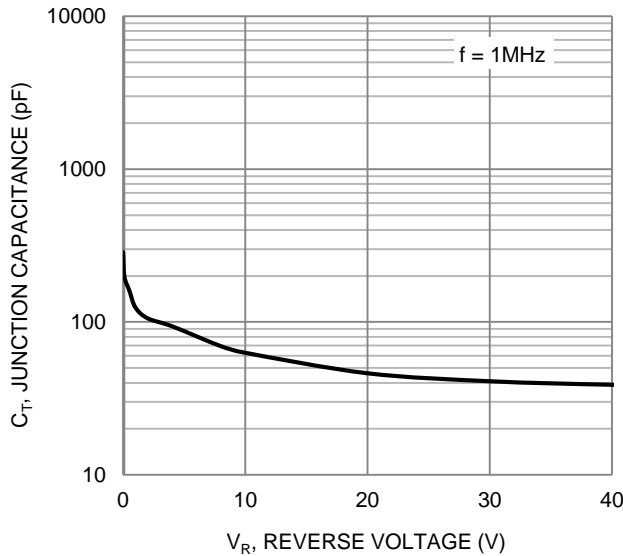


Figure 3. Typical Junction Capacitance

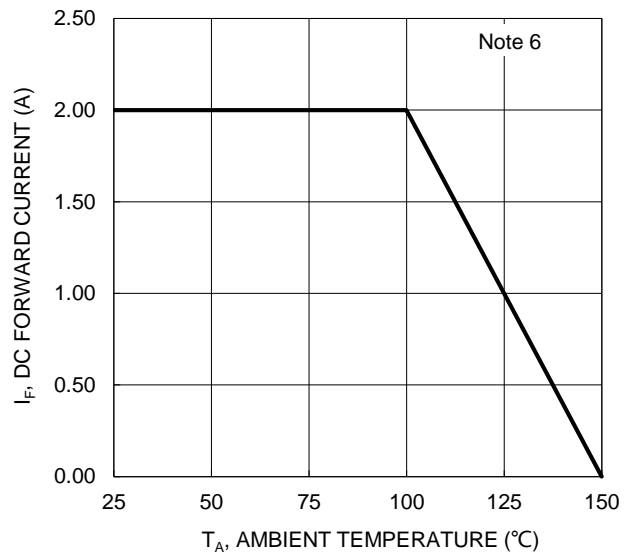
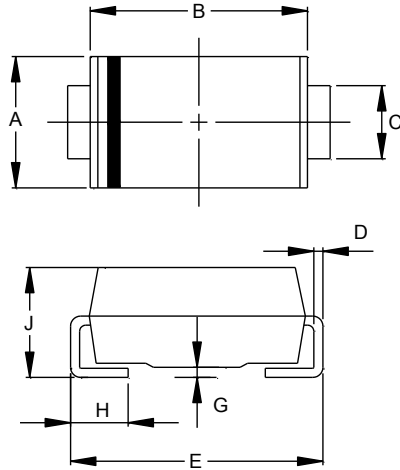


Figure 4. DC Forward Current Derating

## Package Outline Dimensions

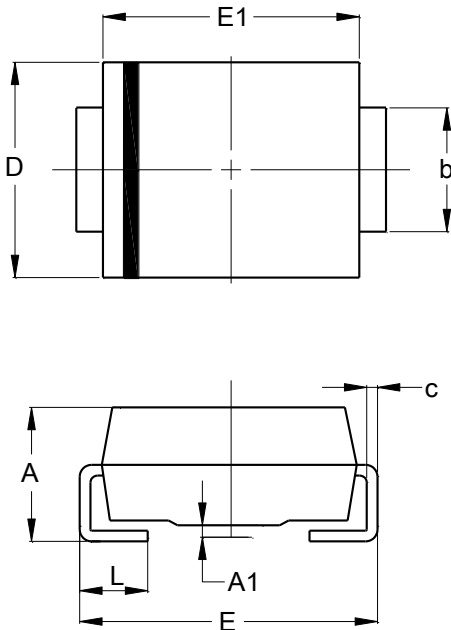
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### (1) Package Type: 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		

### (2) Package Type: SMB

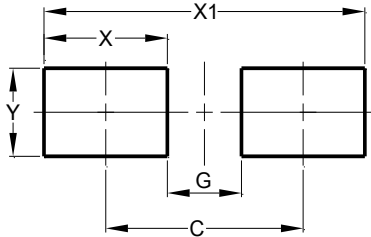


SMB		
Dim	Min	Max
A	2.00	2.50
A1	0.05	0.20
b	1.96	2.21
c	0.15	0.31
D	3.30	3.94
E	5.00	5.59
E1	4.06	4.57
L	0.76	1.52
All Dimensions in mm		

## Suggested Pad Layout

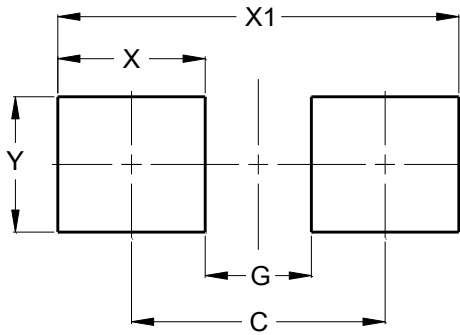
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

(1) Package Type: SMA



Dimensions	Value (in mm)
<b>C</b>	4.00
<b>G</b>	1.50
<b>X</b>	2.50
<b>X1</b>	6.50
<b>Y</b>	1.70

(2) Package Type: SMB



Dimensions	Value (in mm)
<b>C</b>	4.30
<b>G</b>	1.80
<b>X</b>	2.50
<b>X1</b>	6.80
<b>Y</b>	2.30

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