

## Product Summary

Device	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
B320BE/ B320CE	20	3	0.5	0.10
B330BE/ B330CE	30	3	0.5	0.15
B340BE/ B340CE	40	3	0.5	0.20
B345BE/ B345CE	45	3	0.5	0.30

## 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

## 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](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Mechanical Data

- Case: SMB, SMC
- 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
- Polarity: Cathode Band
- Weight: SMB- 0.093 grams (Approximate)  
SMC- 0.21 grams (Approximate)

SMB, SMC



Top View



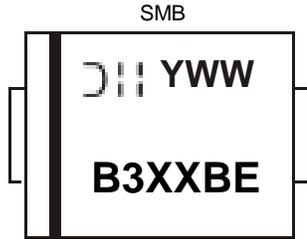
Bottom View

## Ordering Information (Notes 4 and 5)

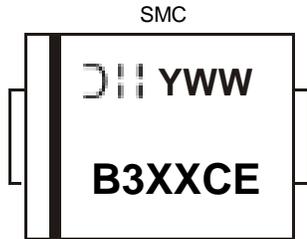
Part Number	Case	Packaging	Status	Replacement
B320BE-13	SMB	3,000/Tape & Reel	NRND	<a href="#">B320B-13-F</a>
B320CE-13	SMC	3,000/Tape & Reel	NRND	<a href="#">B320-13-F</a>
B330BE-13	SMB	3,000/Tape & Reel	NRND	<a href="#">B330B-13-F</a>
B330CE-13	SMC	3,000/Tape & Reel	NRND	<a href="#">B330-13-F</a>
B340BE-13	SMB	3,000/Tape & Reel	NRND	<a href="#">B340B-13-F</a>
B340CE-13	SMC	3,000/Tape & Reel	Active	—
B345BE-13	SMB	3,000/Tape & Reel	NRND	<a href="#">B350B-13-F</a>
B345CE-13	SMC	3,000/Tape & Reel	NRND	<a href="#">B350-13-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



B3XXBE = Product Type Marking Code, ex: B320BE  
 DII = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 0 for 2020)  
 WW = Week Code (01 to 53)



B3XXCE = Product Type Marking Code, ex: B320CE  
 DII = Manufacturers' Code 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	B320BE B320CE	B330BE B330CE	B340BE B340CE	B345BE B345CE	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>	3				A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	80				A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6) SMB SMC	R <sub>θJA</sub>	90 70	°C/W
Typical Thermal Resistance Junction to Case (Note 6) SMB SMC	R <sub>θJC</sub>	50 30	°C/W
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 0.41	0.50 —	V	I <sub>F</sub> = 3A, T <sub>A</sub> = +25°C I <sub>F</sub> = 3A, T <sub>A</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	— — — 30	0.10 0.15 0.20 0.30 —	mA	V <sub>R</sub> = 20V, T <sub>A</sub> = +25°C V <sub>R</sub> = 30V, T <sub>A</sub> = +25°C V <sub>R</sub> = 40V, T <sub>A</sub> = +25°C V <sub>R</sub> = 45V, T <sub>A</sub> = +25°C V <sub>R</sub> = 45V, T <sub>A</sub> = +125°C
Typical Capacitance	C <sub>T</sub>	—	140	—	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.

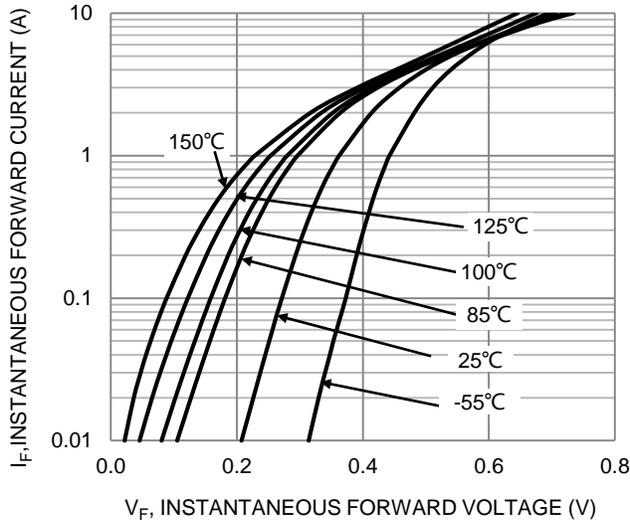


Figure 1. Typical Forward Characteristics

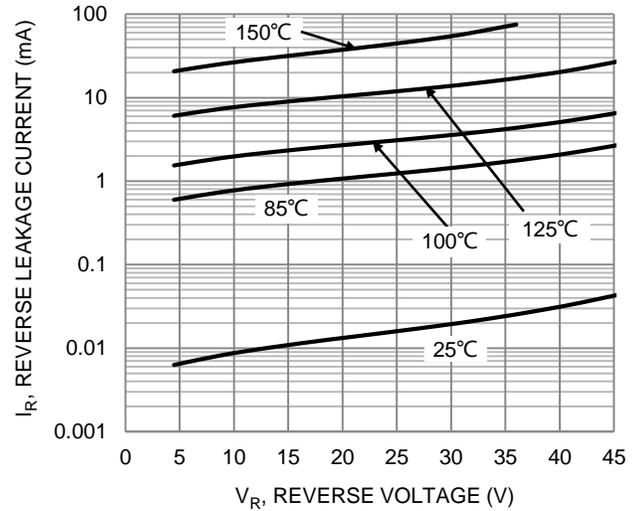


Figure 2. Typical Reverse Characteristics

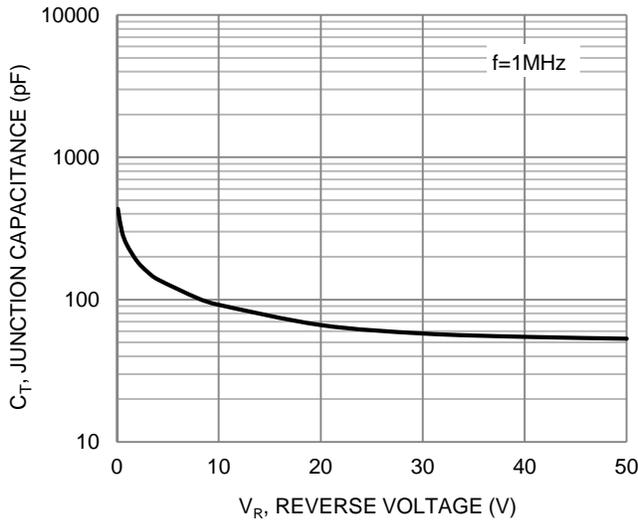


Figure 3. Typical Junction Capacitance

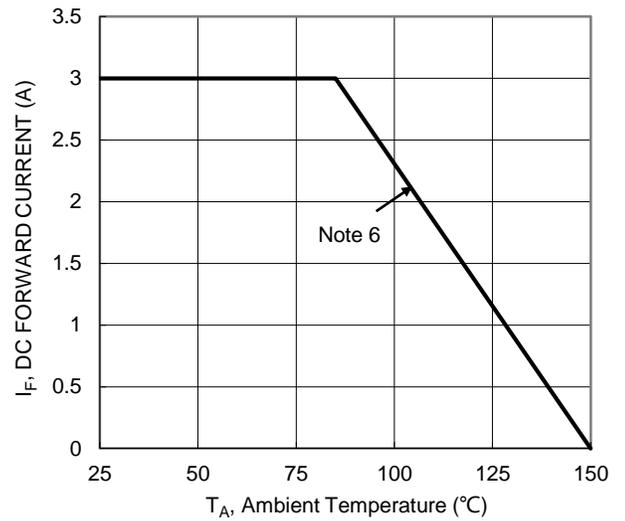
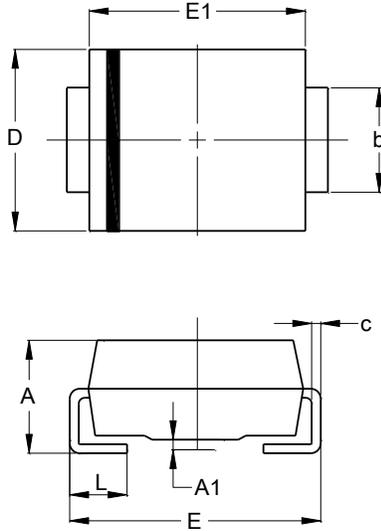


Figure 4. DC Forward Current Derating

**Package Outline Dimensions**

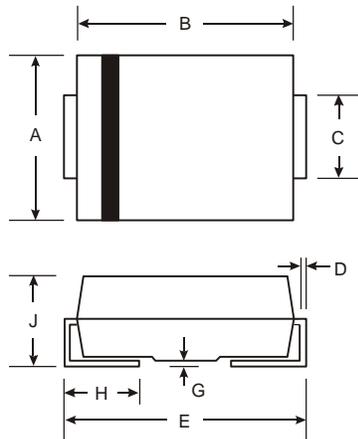
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**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		

**SMC**

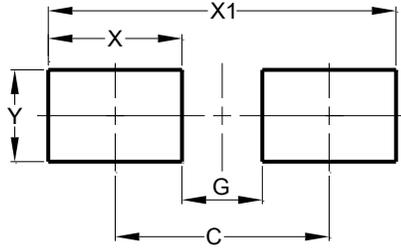


SMC		
Dim	Min	Max
A	5.59	6.22
B	6.60	7.11
C	2.75	3.18
D	0.15	0.31
E	7.75	8.13
G	0.10	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

**Suggested Pad Layout**

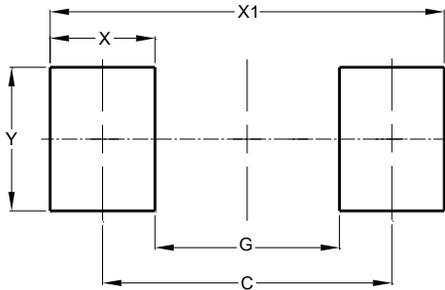
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**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

**SMC**



Dimensions	Value (in mm)
<b>C</b>	6.90
<b>G</b>	4.40
<b>X</b>	2.50
<b>X1</b>	9.40
<b>Y</b>	3.30

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