

## Product Summary

B220AQ/Q-B240AQ/Q

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V) T <sub>A</sub> = +25°C	I <sub>R</sub> Max (mA) T <sub>A</sub> = +25°C
20/30/40	2.0	0.5	0.5

B250AQ/Q,B260AQ/Q

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V) T <sub>A</sub> = +25°C	I <sub>R</sub> Max (mA) T <sub>A</sub> = +25°C
50/60	2.0	0.7	0.5

## Description and Applications

This Schottky Barrier Rectifier is designed to meet the general requirements of commercial applications. It is ideally suited for use as:

- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode
- Blocking Diode
- Freewheel Diode

## Features and Benefits

- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- Surge Overload Rating to 50A Peak
- For Use in Low-Voltage, High-Frequency Inverters
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

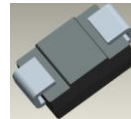
## Mechanical Data

- Case: SMA/SMB
- Case Material: Molded Plastic. 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 ③
- Polarity: Cathode Band or Cathode Notch
- Weight: SMA 0.064 grams (Approximate)  
SMB 0.093 grams (Approximate)

SMA/SMB



Top View



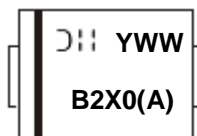
Bottom View

## Ordering Information (Note 5)

Part Number	Qualification	Case	Packaging
B2X0AQ-13-F	Automotive	SMA	5,000/Tape & Reel
B2X0Q-13-F	Automotive	SMB	3,000/Tape & Reel

- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
  5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



B2X0A = Product Type Marking Code, ex: B220A (SMA Package)  
 B2X0 = Product Type Marking Code, ex: B230 (SMB Package)  
 YWW = 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	B220AQ/Q	B230AQ/Q	B240AQ/Q	B250AQ/Q	B260AQ/Q	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	20	30	40	50	60	V
RMS Reverse Voltage	V <sub>R(RMS)</sub>	14	21	28	35	42	V
Average Rectified Output Current	I <sub>O</sub>	2.0					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 Lead	SMA	25	°C/W
	SMB	20	
Typical Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	80	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

Note: 6. Device mounted on FR-4 substrate, 0.4"\*0.5", 2oz.

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	B220AQ/Q, B230AQ/Q, B240AQ/Q B250AQ/Q, B260AQ/Q	V <sub>F</sub>	—	—	0.50 0.70	V I <sub>F</sub> = 2.0A, T <sub>A</sub> = +25°C
Leakage Current (Note 7)	I <sub>R</sub>	—	—	0.5 20	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>	—	—	200	pF	V <sub>R</sub> = 40V, f = 1MHz

Note: 7. Short duration pulse test used to minimize self-heating effect.

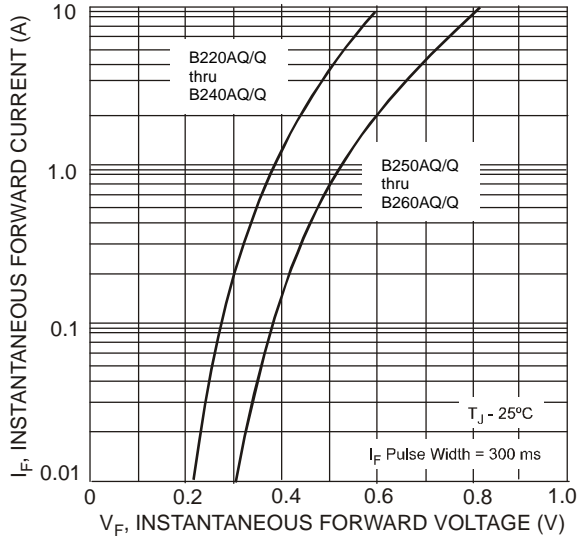


Fig. 1 Typical Forward Characteristics

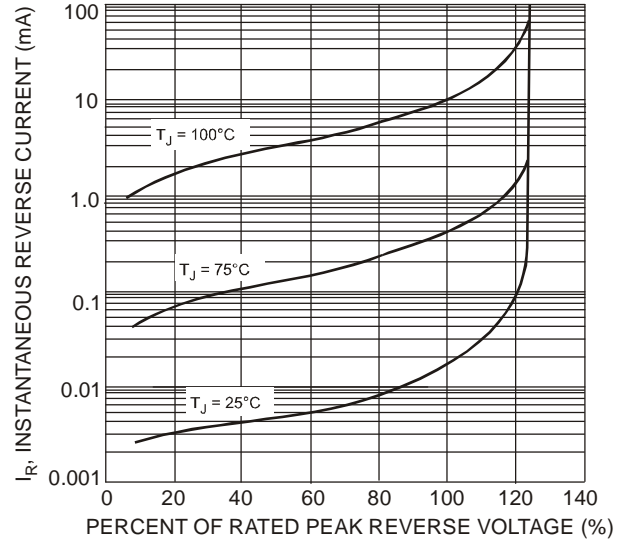


Fig. 2 Typical Reverse Characteristics

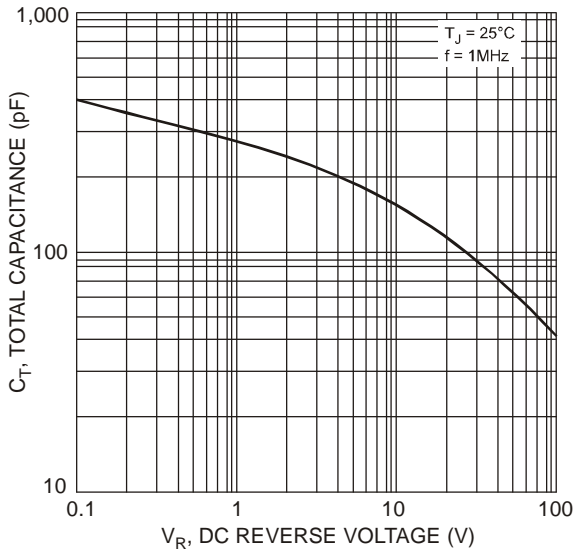


Fig. 3 Total Capacitance vs. Reverse Voltage

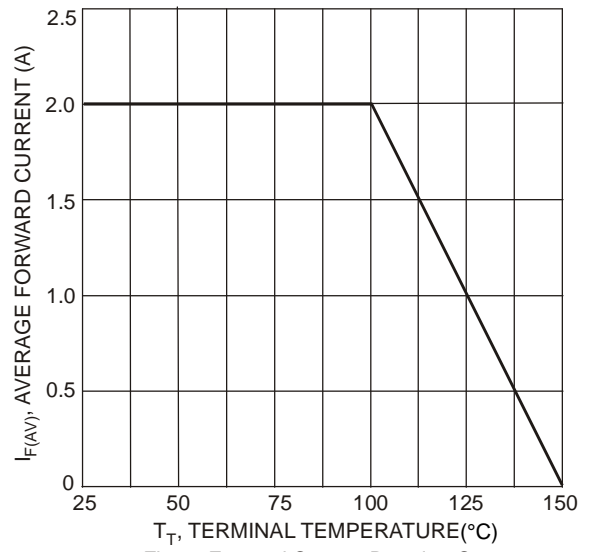


Fig. 4 Forward Current Derating Curve

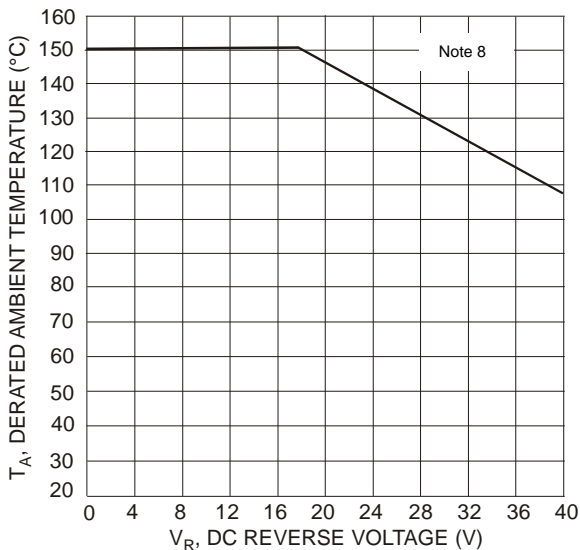


Fig. 5 Operating Temperature Derating (B240AQ/Q)

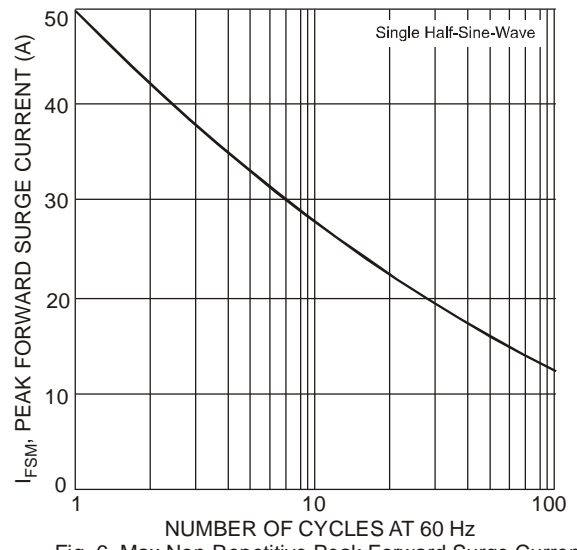


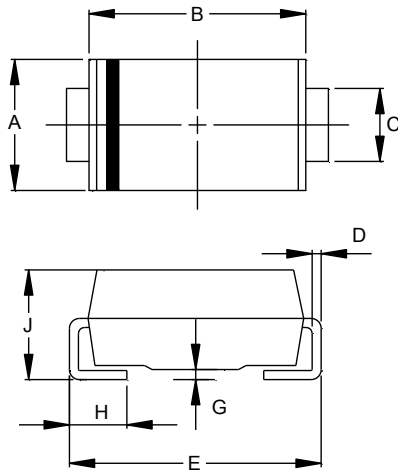
Fig. 6 Max Non-Repetitive Peak Forward Surge Current

Note: 8. Device mounted on FR-4 PC board with minimum recommended pad layout pattern as per <http://www.diodes.com/package-outlines.html>.

**Package Outline Dimensions**

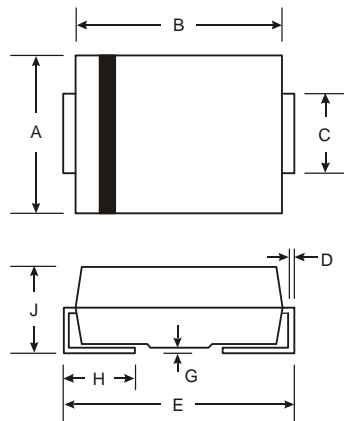
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**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**

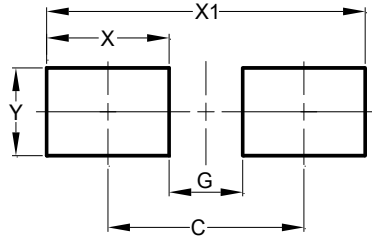


SMB		
Dim	Min	Max
A	3.30	3.94
B	4.06	4.57
C	1.96	2.21
D	0.15	0.31
E	5.00	5.59
G	0.05	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

**Suggested Pad Layout**

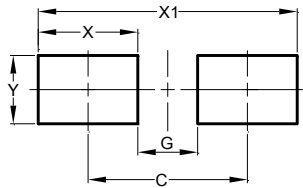
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**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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