

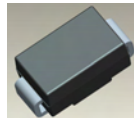
### Features

- 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, Free Wheeling, and Polarity Protection Application
- High Temperature Soldering: 260°C/10 Second at Terminal
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3 & 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

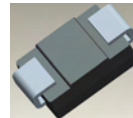
### Mechanical Data

- 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
- Polarity: Cathode Band or Cathode Notch
- Weight: SMA 0.064 grams (Approximate)  
SMB 0.093 grams (Approximate)

SMA/SMB



Top View



Bottom View

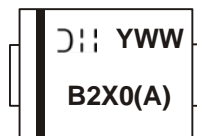
### Ordering Information (Note 5)

Part Number	Qualification	Case	Packaging
B2xxA-13-F	Commercial	SMA	5000/Tape & Reel
B2xx-13-F	Commercial	SMB	3000/Tape & Reel
B250Q-13	Automotive	SMB	3000/Tape & Reel
B240AQ-13-F	Automotive	SMA	5000/Tape & Reel

\* x = Device type, e.g. B260A-13-F (SMA package); B240-13-F (SMB package).

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  2. See <http://www.diodes.com> 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. Product manufactured with Date Code 0924 (week 24, 2009) and newer are built with Green Molding Compound.
  5. For packaging details, go to our website at <http://www.diodes.com>.

### Marking Information



B2X0A = Product type marking code, ex: B220A (SMA package)  
 B2X0 = Product type marking code, ex: B230 (SMB package)  
 = Manufacturers' code marking  
 YWW = Date code marking  
 Y = Last digit of year (ex: 2 for 2002)  
 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 capacitance load, derate current by 20%.

Characteristic	Symbol	B220/A	B230/A	B240/A	B250/A	B260/A	Unit	
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>							
Working Peak Reverse Voltage	V <sub>RWM</sub>	20	30	40	50	60	V	
DC Blocking Voltage	V <sub>R</sub>							
RMS Reverse Voltage	V <sub>R(RMS)</sub>	14	21	28	35	42	V	
Average Rectified Output Current @ T <sub>L</sub> = +100°C	I <sub>O</sub>	2.0						A
Non-Repetitive Peak Forward Surge Current, 8.3ms		50						A
Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>							A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Lead	SMA	25	°C/W
	SMB	20	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 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>	-	-	0.50 0.70	V	I <sub>F</sub> = 2.0A, T <sub>A</sub> = +25°C
Leakage Current (Note 6)	I <sub>R</sub>	-	-	0.5	mA	@ Rated V <sub>R</sub> , T <sub>A</sub> = +25°C
		-	-	20		@ Rated V <sub>R</sub> , T <sub>A</sub> = +100°C
Total Capacitance	C <sub>T</sub>	-	-	200	pF	V <sub>R</sub> = 4V, f = 1MHz

Notes: 6. Short duration pulse test used to minimize self-heating effect.

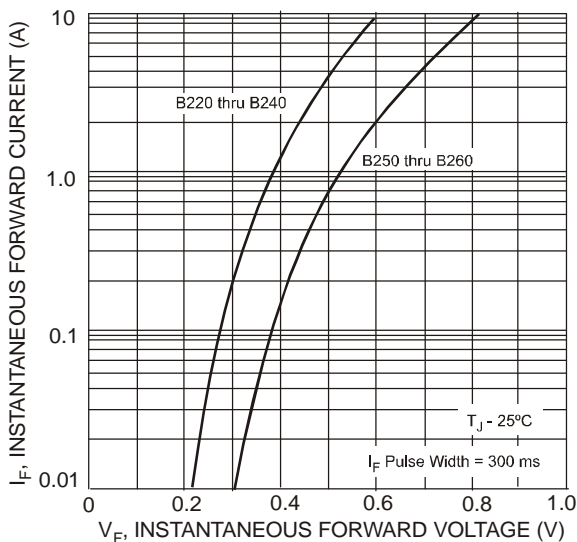


Fig. 1 Typical Forward Characteristics

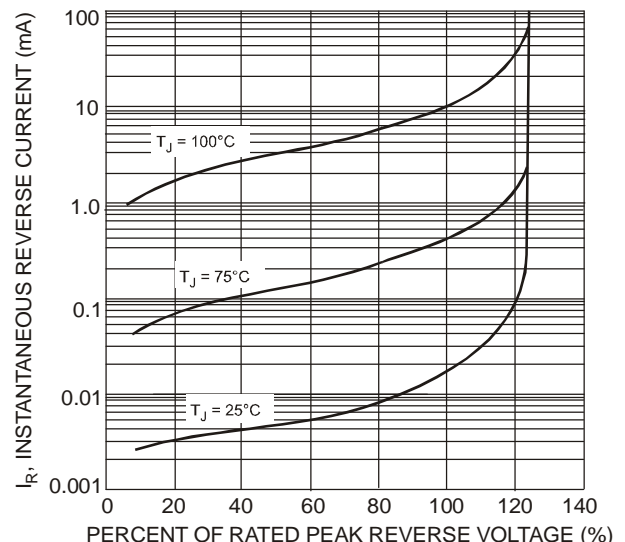


Fig. 2 Typical Reverse Characteristics

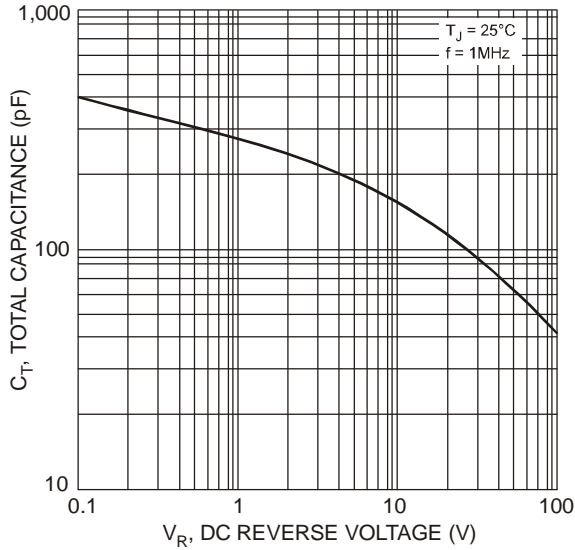


Fig. 3 Total Capacitance vs. Reverse Voltage

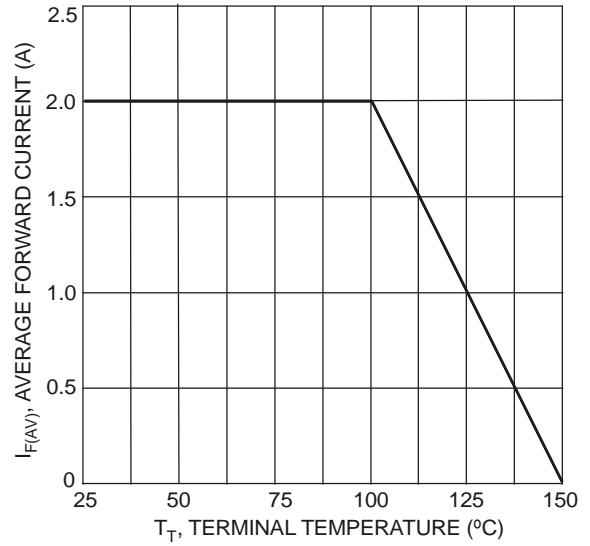


Fig. 4 Forward Current Derating Curve

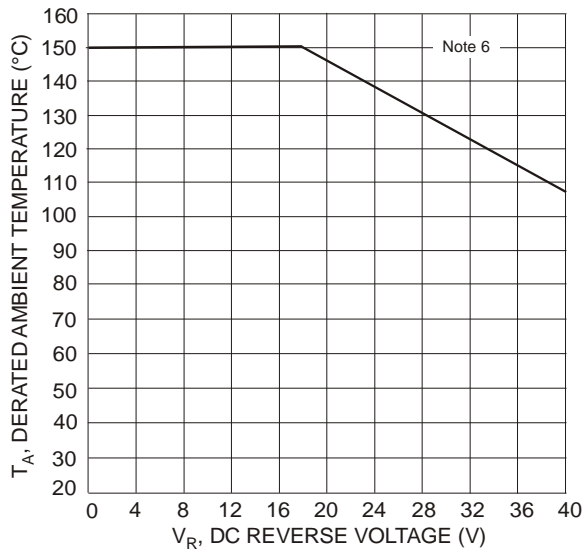


Fig. 5 Operating Temperature Derating (B240)

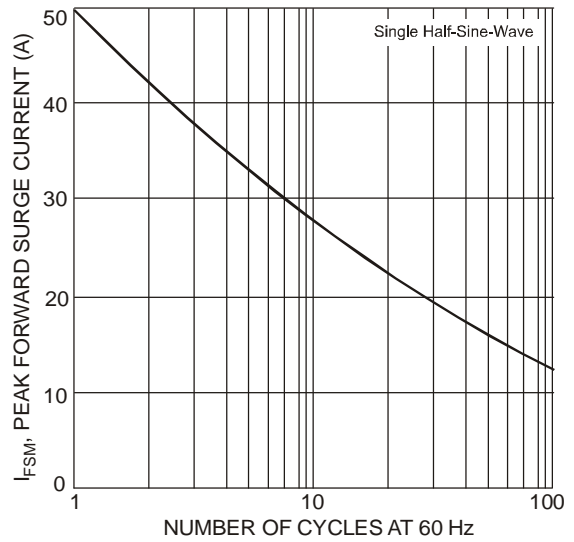
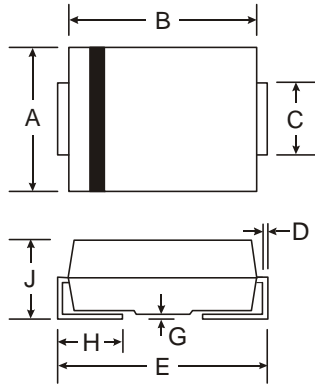


Fig. 6 Max Non-Repetitive Peak Forward Surge Current

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

## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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	2.01	2.30

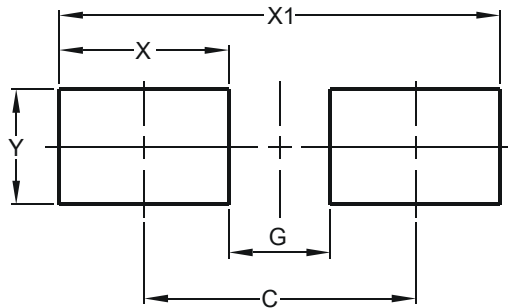
All Dimensions in mm

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 AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> 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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