

### 2.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

### **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 (Note 3)
- 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@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 4)

| Part Number | Qualification | Case | Packaging        |
|-------------|---------------|------|------------------|
| B2xxA-13-F  | Standard      | SMA  | 5000/Tape & Reel |
| B2xx-13-F   | Standard      | SMB  | 3000/Tape & Reel |
| B250Q-13    | Automotive    | SMB  | 3000/Tape & Reel |
| B240AQ-13-F | Automotive    | SMA  | 5000/Tape & Reel |
| B240Q-13-F  | Automotive    | SMB  | 3000/Tape & Reel |

<sup>\*</sup> 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/quality/lead\_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green"
- 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 http"//www.diodes.com/products/packages.html.

# **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<br>Working Peak Reverse Voltage<br>DC Blocking Voltage               | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>R</sub> | 20     | 30     | 40     | 50     | 60     | >    |
| RMS Reverse Voltage  | V <sub>R(RMS)</sub>                                    | 14     | 21     | 28     | 35     | 42     | V    |
| Average Rectified Output Current @ T <sub>L</sub> = +100°C   | Io   |        |        | 2.0    |        |        | Α    |
| Non-Repetitive Peak Forward Surge Current, 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load |  | 50     |        |        |        |        | А    |

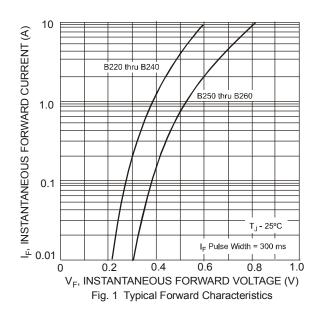
## **Thermal Characteristics**

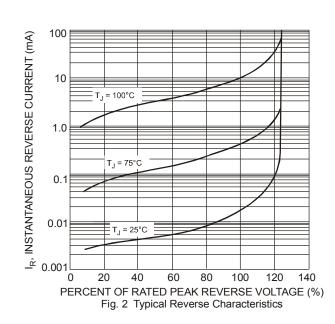
| Characteristic                               |            | Symbol                           | Value       | Unit |  |
|--|------------|----------------------------------|-------------|------|--|
| Typical Thermal Resistance, Junction to Lead | SMA<br>SMB | $R_{	heta JL}$                   | 25<br>20    | °C/W |  |
| 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.)

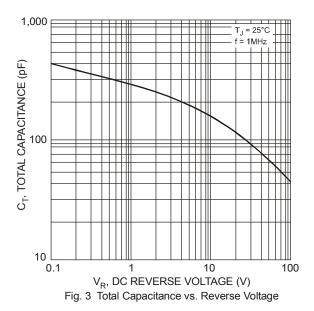
| Characteristic           |  | Symbol         | Min | Тур | Max          | Unit | Test Condition  |
|--------------------------|--|----------------|-----|-----|--------------|------|---|
| Forward Voltage Drop     | B220/A, B230/A, B240/A<br>B250/A, B260/A | \/-            | _   |     | 0.50<br>0.70 | >    | I <sub>F</sub> = 2.0A, T <sub>A</sub> = +25°C   |
| Leakage Current (Note 5) |  | I <sub>R</sub> | _   |     | 0.5<br>20    |      | @ Rated V <sub>R</sub> , T <sub>A</sub> = +25°C<br>@ 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   |

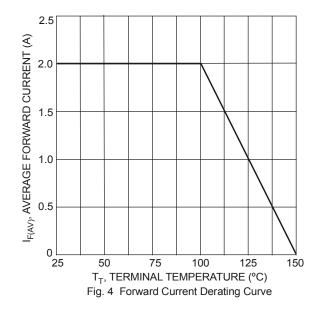
Note: 5. Short duration pulse test used to minimize self-heating effect.

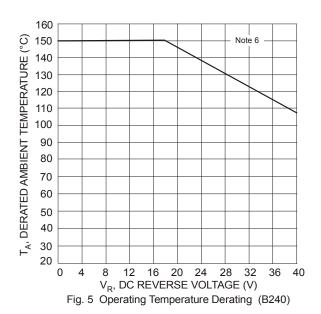


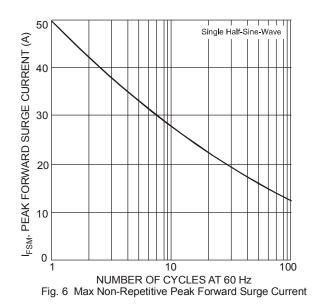










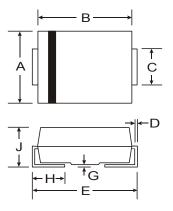


 ${\it 6. Device mounted on FR-4 PC board with minimum recommended pad layout pattern as per http://www.diodes.com.}\\$ 



# **Package Outline Dimensions**

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

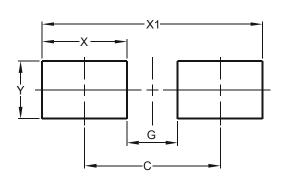


| SMA                  |      |      |  |
|----------------------|------|------|--|
| Dim                  | Min  | Max  |  |
| Α                    | 2.29 | 2.92 |  |
| В                    | 4.00 | 4.60 |  |
| С                    | 1.27 | 1.63 |  |
| D                    | 0.15 | 0.31 |  |
| Е                    | 4.80 | 5.59 |  |
| G                    | 0.05 | 0.20 |  |
| Н                    | 0.76 | 1.52 |  |
| J                    | 2.01 | 2.30 |  |
| All Dimensions in mm |      |      |  |

| SMB                  |      |      |  |  |
|----------------------|------|------|--|--|
| Dim                  | Min  | Max  |  |  |
| Α                    | 3.30 | 3.94 |  |  |
| В                    | 4.06 | 4.57 |  |  |
| С                    | 1.96 | 2.21 |  |  |
| D                    | 0.15 | 0.31 |  |  |
| E                    | 5.00 | 5.59 |  |  |
| G                    | 0.05 | 0.20 |  |  |
| Н                    | 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) |  |
| С          | 4.00          |  |
| G          | 1.50          |  |
| Х          | 2.50          |  |
| X1         | 6.50          |  |
| Υ          | 1.70          |  |

| SMB        |               |  |  |
|------------|---------------|--|--|
| Dimensions | Value (in mm) |  |  |
| С          | 4.30          |  |  |
| G          | 1.80          |  |  |
| X          | 2.50          |  |  |
| X1         | 6.80          |  |  |
| Y          | 2.30          |  |  |



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