# 3.0A SURFACE-MOUNT SCHOTTKY BARRIER RECTIFIER

## Product Summary (@ $T_A$ = +25°C)

| $V_{RRM}$ (V) | $I_O$ (A) | $V_{F(MAX)}$ (V) | $I_{R(MAX)}$ (µA) |
|---|---|---|---|
| 100 | 3 | 0.79 | 100 |

## Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Low-Forward Voltage Drop
- Surge Overload Rating to 100A Peak
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling and Polarity Protection Application
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The B3100BQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**
  **https://www.diodes.com/quality/product-definitions/**

## Description and Applications

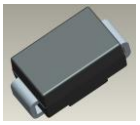
These Schottky Barrier Rectifiers (SBR®) have been designed to meet the general requirements of commercial applications. They are ideally suited for use as:

- Polarity protection diodes
- Re-circulating diodes
- Switching diodes

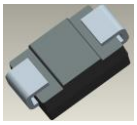
## Mechanical Data

- Package: SMB
- Package 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 e3
- Polarity: Cathode Band
- Weight: 0.093 grams (Approximate)

SMB



Top View



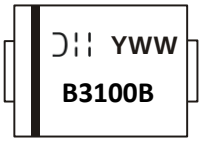
Bottom View

## Ordering Information (Note 4)

| Orderable Part Number | Package | Packing | |
|---|---|---|---|
| | | Qty. | Carrier |
| B3100BQ-13 | SMB | 3000 | 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. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

## Marking Information




B3100B = Product Type Marking Code
= Manufacturer's Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 4 for 2024)
WW = Week Code (01 to 53)

## Maximum Ratings (@$T_A$ = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 100 | V |
| Average Rectified Output Current | $I_O$ | 3.0 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine Wave Superimposed on Rated Load | $I_{FSM}$ | 80 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Typical Thermal Resistance, Junction to Case (Note 5) | $R_{\theta JC}$ | 25 | °C/W |
| Operating and Storage Temperature Range (Note 6) | $T_J$ | -55 to +150 | °C |

## Electrical Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Forward Voltage Drop | $V_F$ | —<br>— | 0.72<br>0.58 | 0.79<br>0.67 | V | $I_F$ = 3.0A, $T_A$ = +25°C<br>$I_F$ = 3.0A, $T_A$ = +125°C |
| Leakage Current (Note 7) | $I_R$ | —<br>— | 2<br>1 | 100<br>10 | µA<br>mA | $V_R$ = 100V, $T_A$ = +25°C<br>$V_R$ = 100V, $T_A$ = +125°C |

Notes: 5. Device mounted on FR-4 substrate, 0.4"*0.5", 2oz, single-sided, PC boards with 0.2"*0.25" copper pad.
6. The heat generated must be less than the thermal conductivity from junction to case: $dP_D/dT_J < 1/R_{\theta JC}$ or junction to ambient: $dP_D/dT_J < 1/R_{\theta JA}$.
7. Short duration pulse test used to minimize self-heating effect.

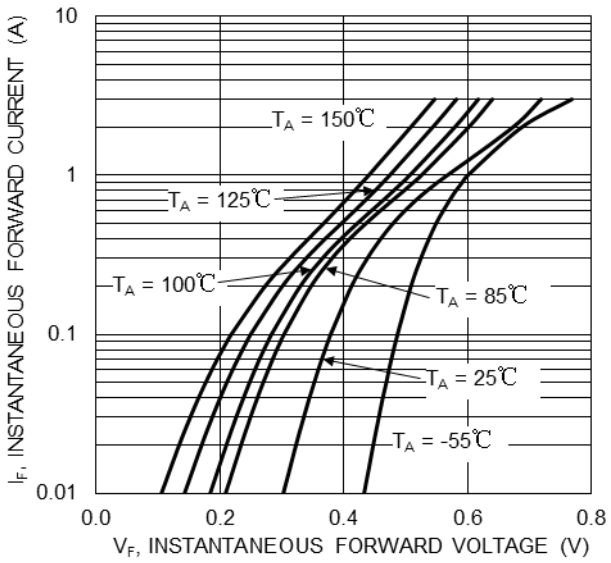



Figure 1. Typical Forward Characteristics

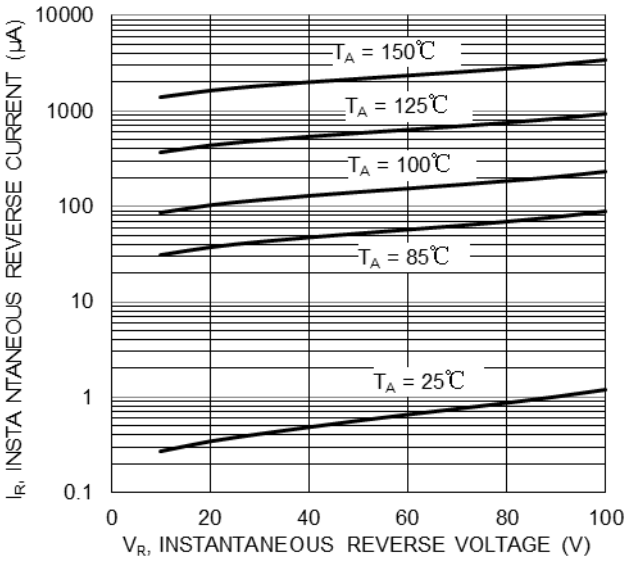



Figure 2. Typical Reverse Characteristics

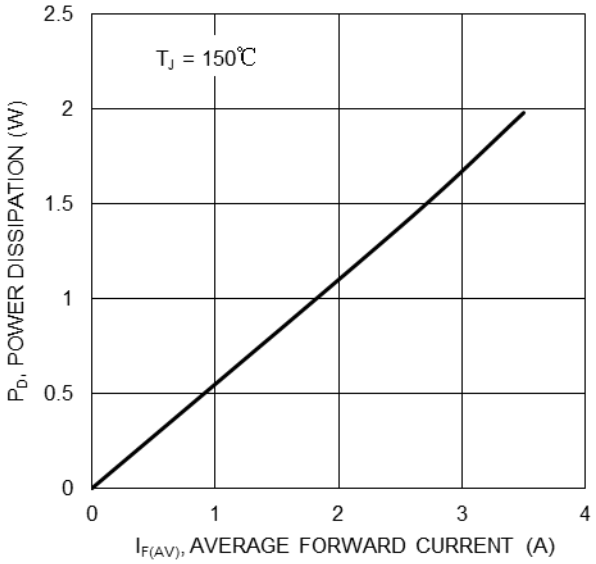



Figure 3. Forward Power Dissipation

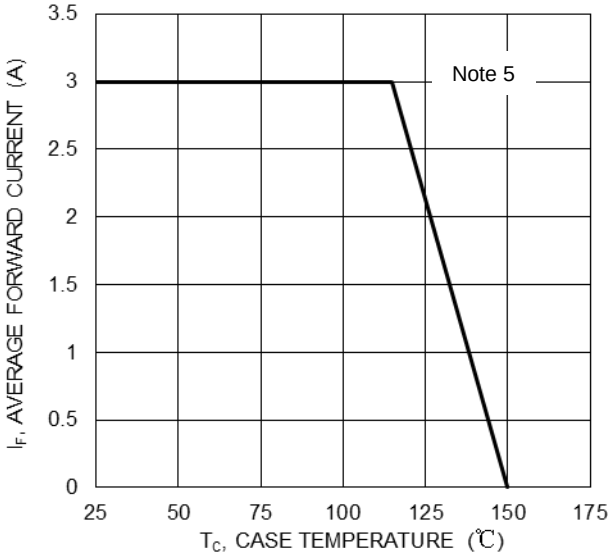



Figure 4. DC Forward Current Derating

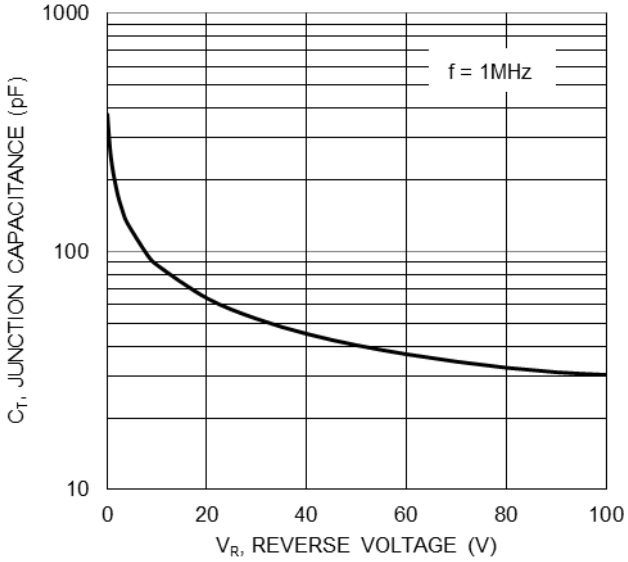



Figure 5. Typical Junction Capacitance

## Package Outline Dimensions

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

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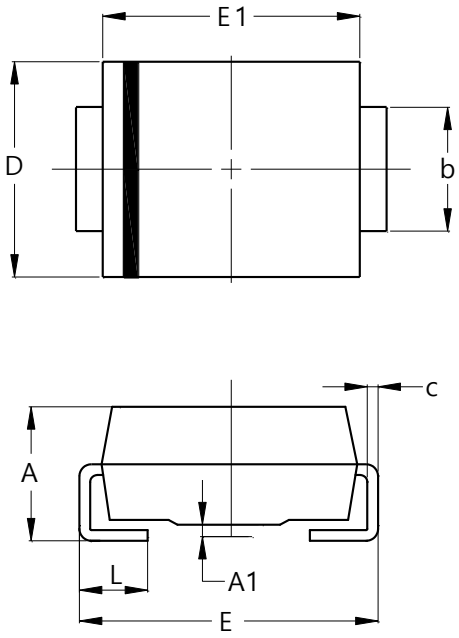
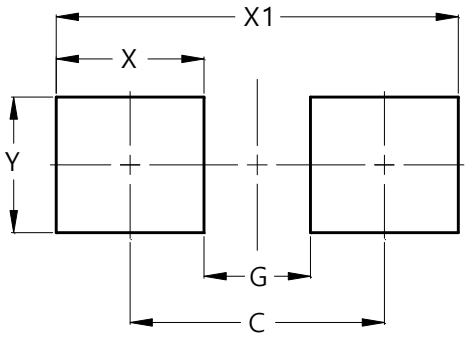



| SMB | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 2.00 | 2.50 |
| **A1** | 0.05 | 0.20 |
| **b** | 1.96 | 2.21 |
| **c** | 0.15 | 0.31 |
| **D** | 3.30 | 3.94 |
| **E** | 5.00 | 5.59 |
| **E1** | 4.06 | 4.57 |
| **L** | 0.76 | 1.52 |
| **All Dimensions in mm** | | |

## Suggested Pad Layout

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

**SMB**




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

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