

Product Summary (@ T_A = +25°C)

| V _{RRM} (V) | I _O (A) | V _{F(MAX)} (V) | I _{R(MAX)} (mA) |
|----------------------|--------------------|-------------------------|--------------------------|
| 20 | 0.5 | 0.4 | 0.07 |

Features and Benefits

- Ultra-Low Forward Voltage Drop
- Superior Reverse Avalanche Capability
- Patented Super-Barrier Rectifier Technology
- Soft, Fast Switching Capability
- +150°C Operating Junction Temperature
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Description and Applications

Packaged in the compact SOD323 package, the TrenchSBR SBRT05U20S3 provides ultra-low forward voltage drop (V_F) and provides excellent low-reverse-leakage stability at high temperatures. It is ideal for use as a rectification, freewheeling or polarity protection diode in applications such as:

- SMPS DC-DC Converters
- Reverse Polarity Protection
- General Switching Applications

Mechanical Data

- Case: SOD323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity: Cathode Band Terminals: Finish - NiPdAu over Copper Leadframe.
- Solderable per MIL-STD-202, Method 208 ^(e4)
- Weight: 0.004 grams (Approximate)

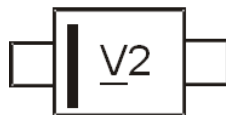
SOD323


Top View

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---------------|--------|-------------------|
| SBRT05U20S3-7 | SOD323 | 3,000/Tape & Reel |

- 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" 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 <http://www.diodes.com/products/packages.html>.

Marking Information
SOD323

 $\underline{V2}$ = Product Type Marking Code

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

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

| Characteristic | Symbol | Value | Unit |
|--|--------------|-------|------|
| Peak Repetitive Reverse Voltage | V_{RRM} | 20 | V |
| Working Peak Reverse Voltage | V_{RWM} | | |
| DC Blocking Voltage | V_{RM} | | |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 14 | V |
| Average Rectified Output Current (See Figure 1) | I_O | 500 | mA |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I_{FSM} | 10 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|---------------------------|
| Typical Thermal Resistance Junction to Ambient (Note 5) | $R_{\theta JA}$ | 365 | $^\circ\text{C}/\text{W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -65 to +150 | $^\circ\text{C}$ |

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|------------------------------------|-------------|-----|------|------|---------------|--|
| Reverse Breakdown Voltage (Note 6) | $V_{(BR)R}$ | 20 | — | — | V | $I_R = 50\mu\text{A}$ |
| Forward Voltage Drop | V_F | — | 0.28 | 0.33 | V | $I_F = 0.1\text{A}, T_J = +25^\circ\text{C}$ |
| | | — | 0.31 | 0.35 | | $I_F = 0.2\text{A}, T_J = +25^\circ\text{C}$ |
| | | — | 0.36 | 0.40 | | $I_F = 0.5\text{A}, T_J = +25^\circ\text{C}$ |
| Leakage Current (Note 6) | I_R | — | 6 | 70 | μA | $V_R = 20\text{V}, T_J = +25^\circ\text{C}$ |
| | | | 2.5 | 30 | mA | $V_R = 20\text{V}, T_J = +150^\circ\text{C}$ |

Notes: 5. Device mounted on 1inch square copper pad, 2oz.
6. Short duration pulse test used to minimize self-heating effect.

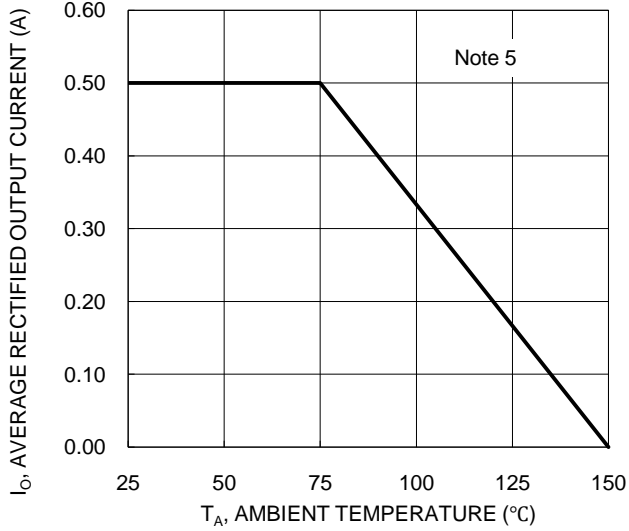


Figure 1. DC Forward Current Derating

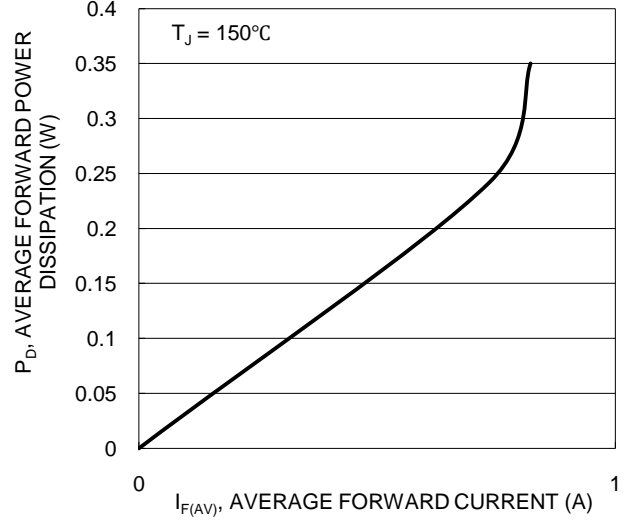


Figure 2. Forward Power Dissipation

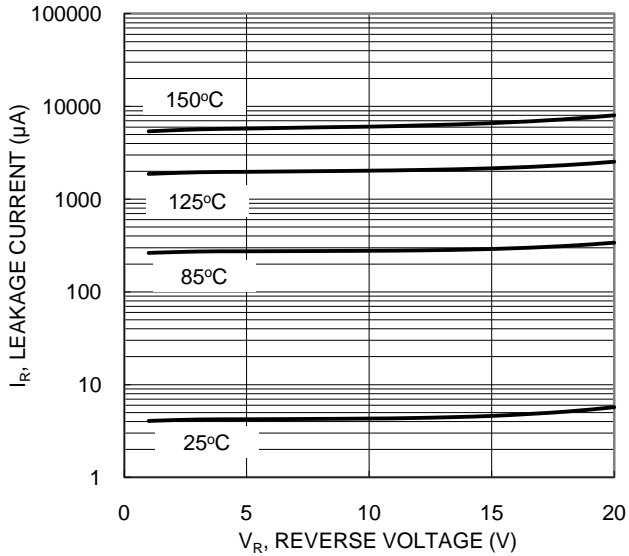


Figure 3. Typical Reverse Characteristics

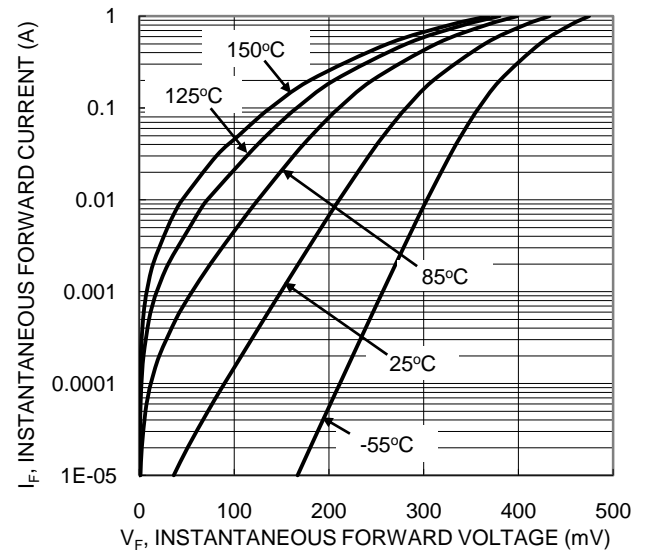


Figure 4. Typical Forward Characteristics

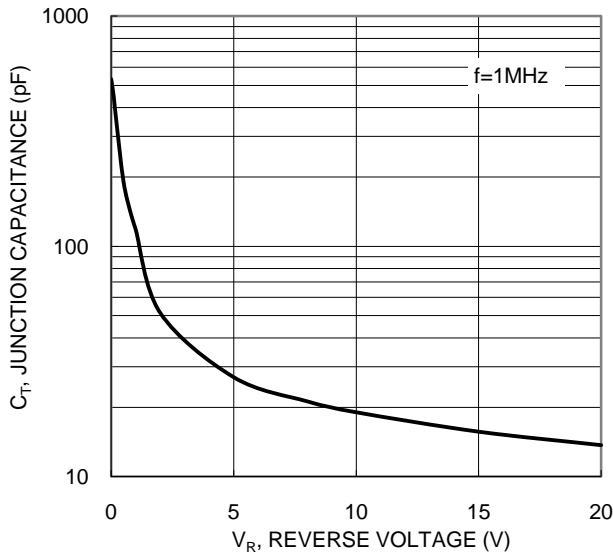
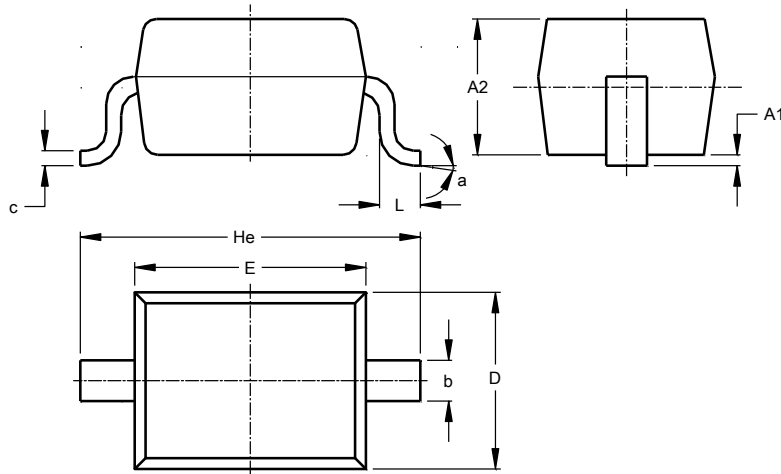


Figure 5. Typical Junction Capacitance

Package Outline Dimensions

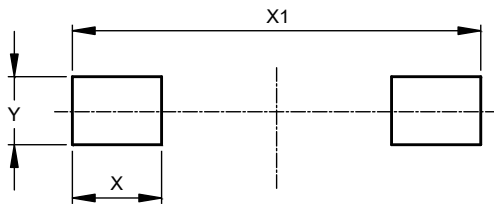
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| SOD323 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A1 | -- | 0.10 | 0.05 |
| A2 | 1.00 | 1.10 | 1.05 |
| b | 0.25 | 0.35 | 0.30 |
| c | 0.10 | 0.15 | 0.11 |
| D | 1.20 | 1.40 | 1.30 |
| E | 1.60 | 1.80 | 1.70 |
| He | 2.30 | 2.70 | 2.50 |
| L | 0.20 | 0.40 | 0.30 |
| a | 0° | 8° | -- |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| X | 0.590 |
| X1 | 2.700 |
| Y | 0.450 |

NEW PRODUCT

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