

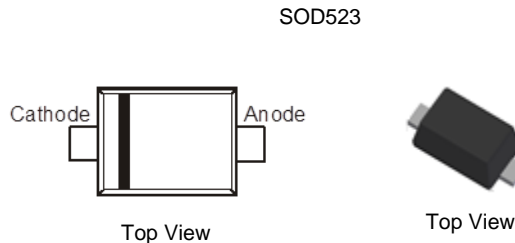
Product Summary

| V_{RRM} (V) | I_O (A) | V_F Max (V) | I_R Max (mA) |
|---------------|-----------|---------------|----------------|
| 20 | 1 | 0.52 | 0.2 |

Description and Applications

Packaged in the compact SOD523 package, the SBR1A20T5 provides very low V_F and excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode or blocking diode in:

- DC/DC Converters
- AC/DC Adaptors



Features and Benefits

- Patented SBR[®] Technology Provides Superior Avalanche Capability Versus Schottky Diodes, Ensuring More Rugged and Reliable End Applications
- Reduced Ultra-Low Forward Voltage Drop (V_F); Better Efficiency and Cooler Operation
- Reduced High Temperature Reverse Leakage; Increased Reliability Against Thermal Runaway Failure in High Temperature Operation
- Low Profile Package – Ideal for Thin Applications
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

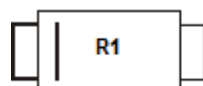
- Case: SOD523
- Case Material: Molded Plastic, “Green” Molding compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish - Matte Tin Annealed over Alloy 42 Leadframe Solderable per MIL-STD-202, Method 208 **(e3)**
- Polarity: See Below
- Weight: 0.001 grams (Approximate)

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|-------------|--------|------------------|
| SBR1A20T5-7 | SOD523 | 3000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 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



R1 = Product Type Marking Code

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 | 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 | I _O | 1 | A |
| 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 _{θJA} | 270 | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 6) | R _{θJA} | 165 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------------|-----------------|-----|--------------|-----------|------|---|
| Forward Voltage Drop (Note 7) | V _F | — | 0.29 0.45 | — 0.52 | V | I _F = 100mA, T _J = +25°C I _F = 1A, T _J = +25°C |
| Leakage Current (Note 7) | I _R | — | 0.02 2.5 | 0.20 — | mA | V _R = 20V, T _J = +25°C V _R = 20V, T _J = +125°C |
| Reverse Recovery Time | t _{RR} | — | 15 | — | ns | I _F = 10mA, I _{RRM} = 0.1I _R , T _A = +25°C |
| Typical Capacitance | C _T | — | 19 | — | pF | V _R = 20V, f = 1MHz |

- Notes:
5. Device mounted on MRP FR-4 substrate PC board, 2oz.
 6. Device mounted on FR-4 substrate PC board with 1inch square copper pad, 2oz.
 7. Short duration pulse test used to minimize self-heating effect.

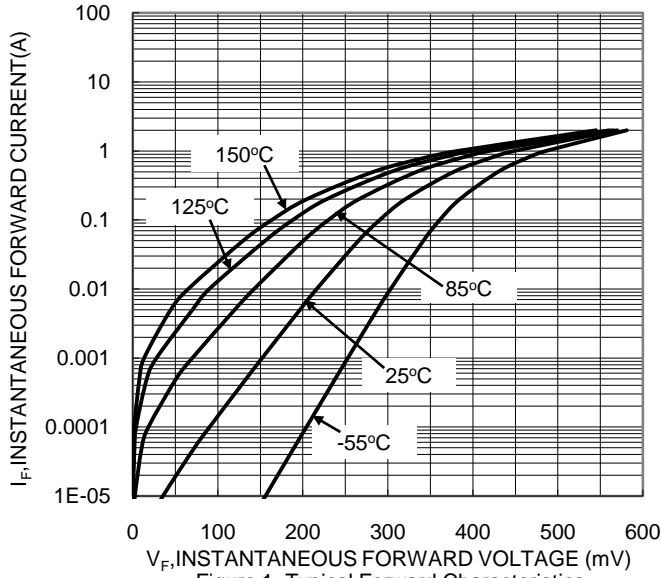


Figure 1. Typical Forward Characteristics

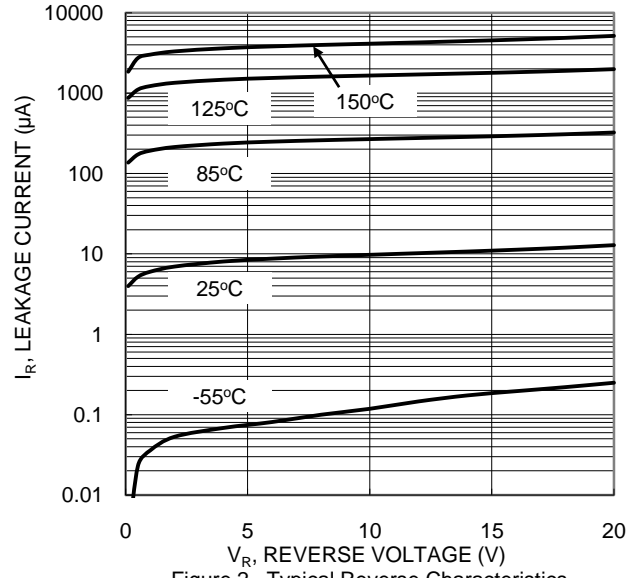


Figure 2. Typical Reverse Characteristics

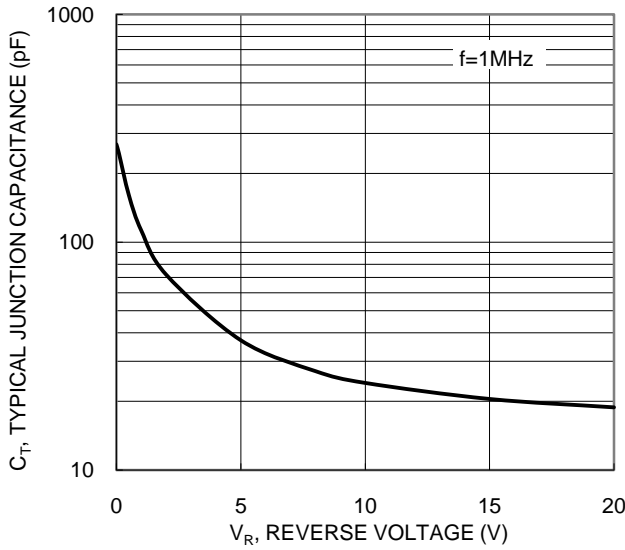


Figure 3. Typical Junction Capacitance

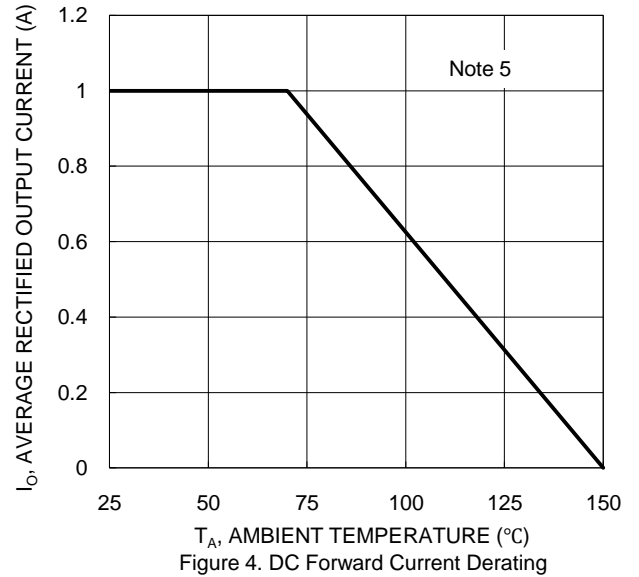


Figure 4. DC Forward Current Derating

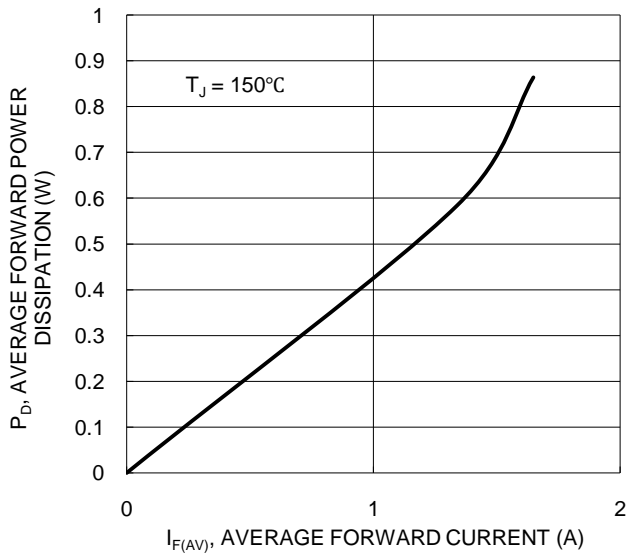
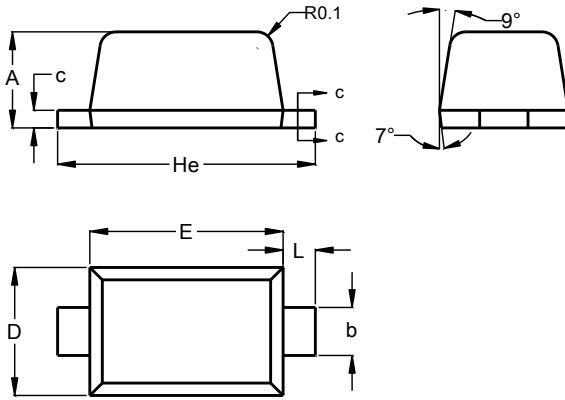


Figure 5. Forward Power Dissipation

Package Outline Dimensions

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

SOD523



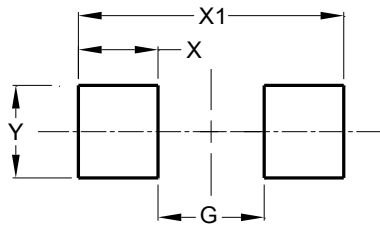
| SOD523 | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 0.55 | 0.65 |
| b | 0.26 | 0.34 |
| c | 0.11 | 0.17 |
| D | 0.75 | 0.85 |
| E | 1.15 | 1.25 |
| He | 1.55 | 1.65 |
| L | 0.10 | 0.30 |
| All Dimensions in mm | | |

NEW PRODUCT

Suggested Pad Layout

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

SOD523



| Dimensions | Value (in mm) |
|------------|---------------|
| G | 0.80 |
| X | 0.60 |
| X1 | 2.00 |
| Y | 0.70 |

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