

## Product Summary

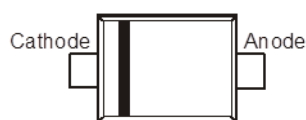
| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ max (V) | $I_R$ max (mA) |
|---------------|-----------|---------------|----------------|
| 30            | 1         | 0.57          | 0.2            |

## Description and Applications

Packaged in the compact SOD523 package, the SBR1A30T5 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

SOD523



Top View



Top View

## Features and Benefits

- Patented SBR<sup>®</sup> 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**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([SBR1A30T5Q](#))**

## Mechanical Data

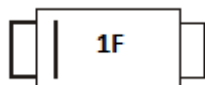
- Case: SOD523
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish - Matte Tin Annealed over Alloy 42 Leadframe Solderable per MIL-STD-202, Method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

## Ordering Information (Note 4)

| Part Number | Case   | Packaging        |
|-------------|--------|------------------|
| SBR1A30T5-7 | 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](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



1F = Product Type Marking Code

## Maximum Ratings (@T<sub>A</sub> = +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 <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>RM</sub> | 30    | V    |
| Average Rectified Output Current                                                                    | I <sub>O</sub>                                          | 1     | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>                                        | 10    | A    |

## Thermal Characteristics

| Characteristic                                          | Symbol                            | Value       | Unit |
|---------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 160         | °C/W |
| Operating and Storage Temperature Range                 | T <sub>J</sub> , T <sub>STG</sub> | -55 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 (Note 6) | V <sub>F</sub>  | —   | 0.30<br>0.50 | —<br>0.57 | V    | I <sub>F</sub> = 100mA, T <sub>J</sub> = +25°C<br>I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C |
| Leakage Current (Note 6)      | I <sub>R</sub>  | —   | 0.01<br>1.5  | 0.2<br>—  | mA   | V <sub>R</sub> = 30V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 30V, T <sub>J</sub> = +125°C |
| Reverse Recovery Time         | t <sub>RR</sub> | —   | 15           | —         | ns   | I <sub>F</sub> = 10mA, I <sub>RR</sub> = 0.1*I <sub>R</sub> ,<br>T <sub>A</sub> = +25°C       |
| Typical Capacitance           | C <sub>T</sub>  | —   | 95           | —         | pF   | V <sub>R</sub> = 1.0V, f = 1MHz                                                               |

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

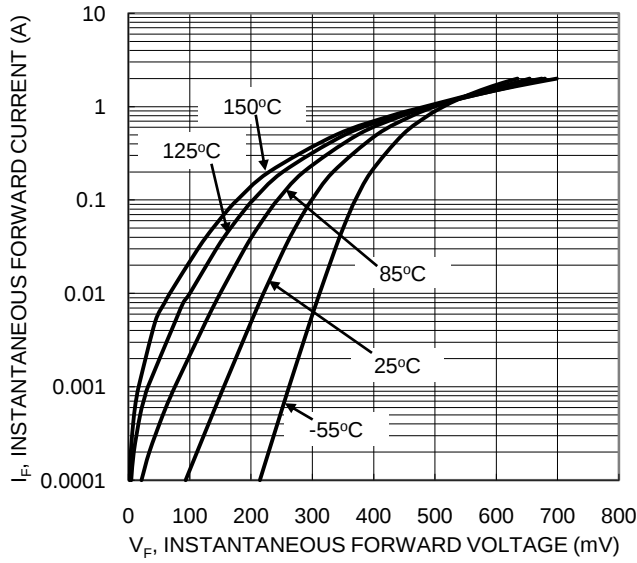


Figure 1. Typical Forward Characteristics

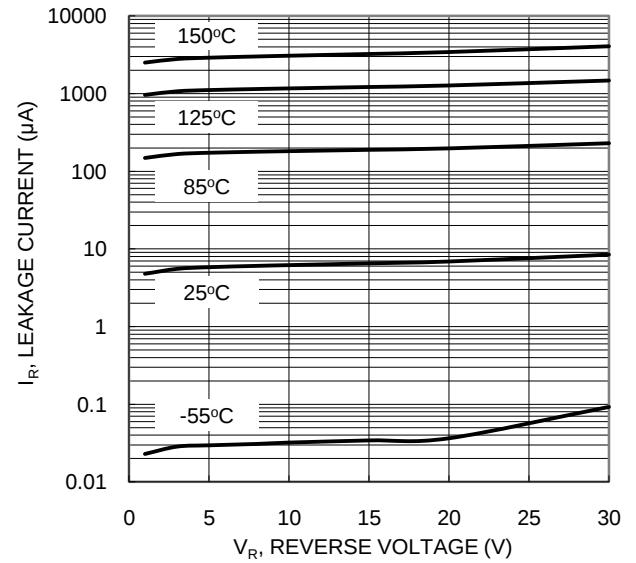


Figure 2. Typical Reverse Characteristics

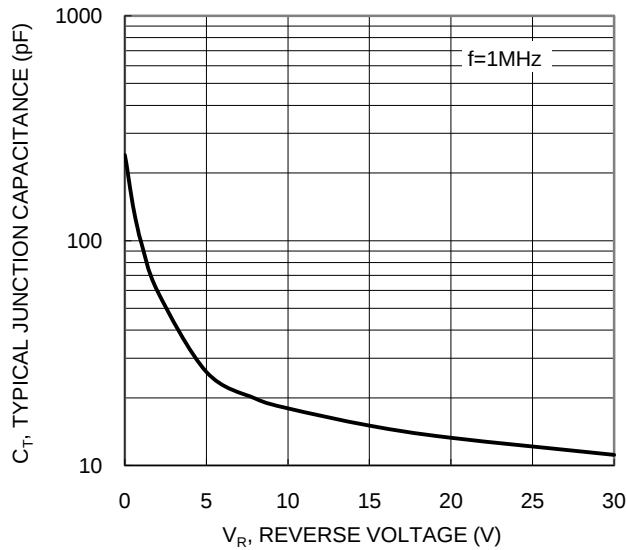


Figure 3. Typical Junction Capacitance

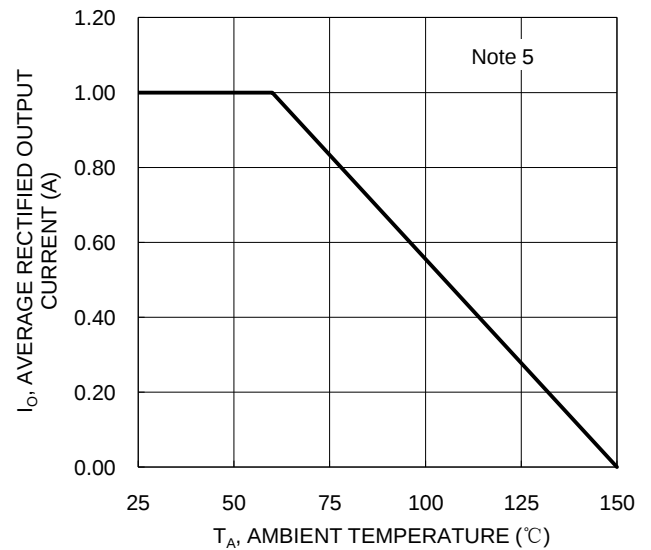


Figure 4. DC Forward Current Derating

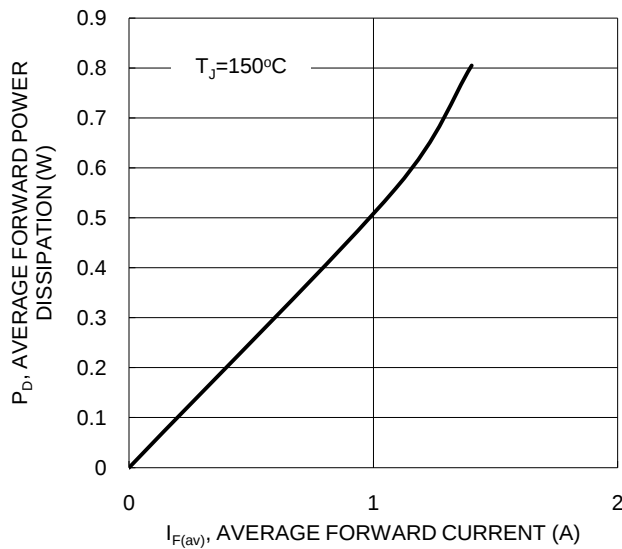
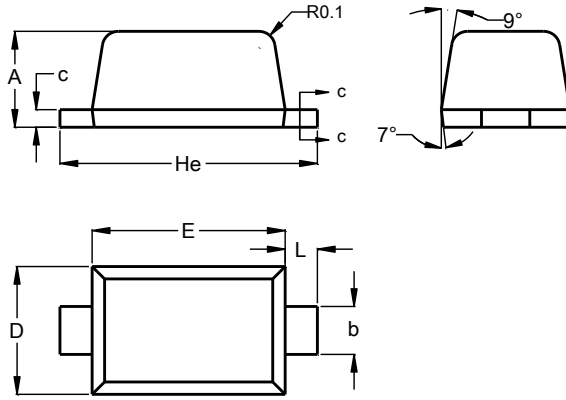


Figure 5. Forward Power Dissipation

## Package Outline Dimensions

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

### SOD523

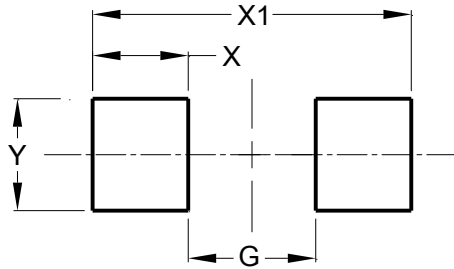


| SOD523               |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 0.55 | 0.65 |
| b                    | 0.26 | 0.34 |
| c                    | 0.11 | 0.17 |
| D                    | 0.75 | 0.85 |
| E                    | 1.15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

## 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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