

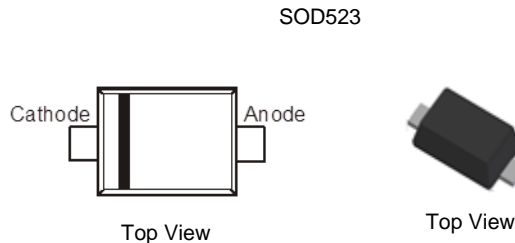
## Product Summary

$V_{RRM}$ (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<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**

## Mechanical Data

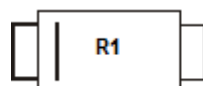
- Case: SOD523
- Case Material: Molded Plastic, “Green” Molding compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish - Matte Tin Annealed over Alloy 42 Leadframe Solderable per MIL-STD-202, Method 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](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<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	V <sub>RRM</sub>	20	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>RM</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	14	V
Average Rectified Output Current	I <sub>O</sub>	1	A
Non-Repetitive Peak Forward Surge Current 8.3ms 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>	270	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	165	°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 7)	V <sub>F</sub>	—	0.29 0.45	— 0.52	V	I <sub>F</sub> = 100mA, T <sub>J</sub> = +25°C I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C
Leakage Current (Note 7)	I <sub>R</sub>	—	0.02 2.5	0.20 —	mA	V <sub>R</sub> = 20V, T <sub>J</sub> = +25°C V <sub>R</sub> = 20V, T <sub>J</sub> = +125°C
Reverse Recovery Time	t <sub>RR</sub>	—	15	—	ns	I <sub>F</sub> = 10mA, I <sub>RRM</sub> = 0.1I <sub>R</sub> , T <sub>A</sub> = +25°C
Typical Capacitance	C <sub>T</sub>	—	19	—	pF	V <sub>R</sub> = 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.

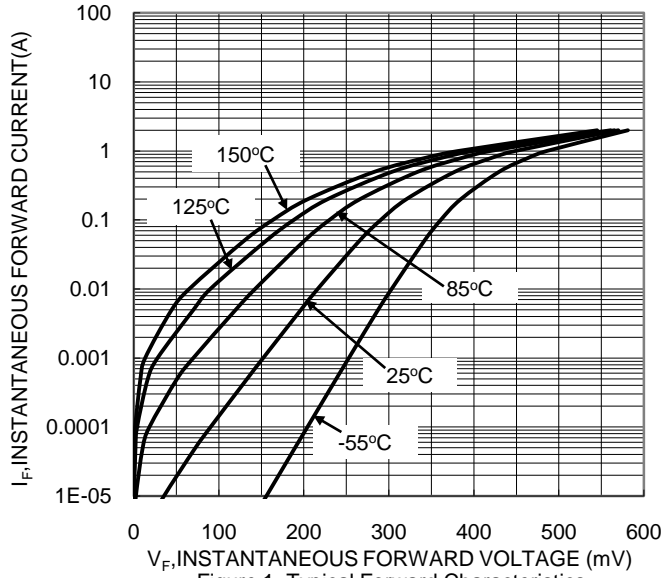


Figure 1. Typical Forward Characteristics

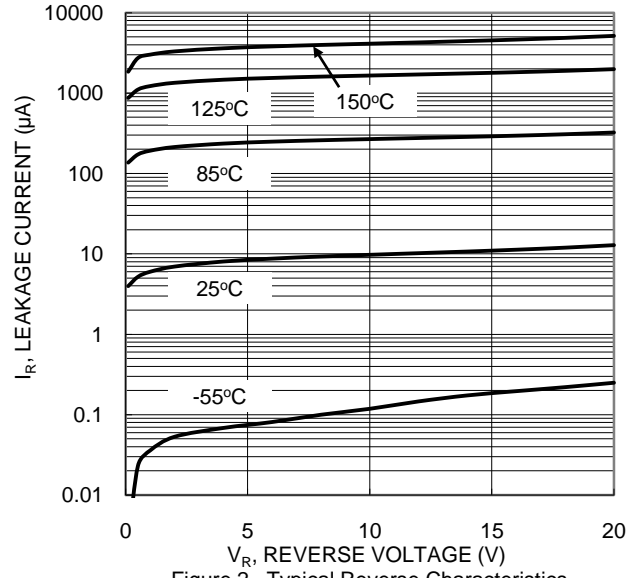


Figure 2. Typical Reverse Characteristics

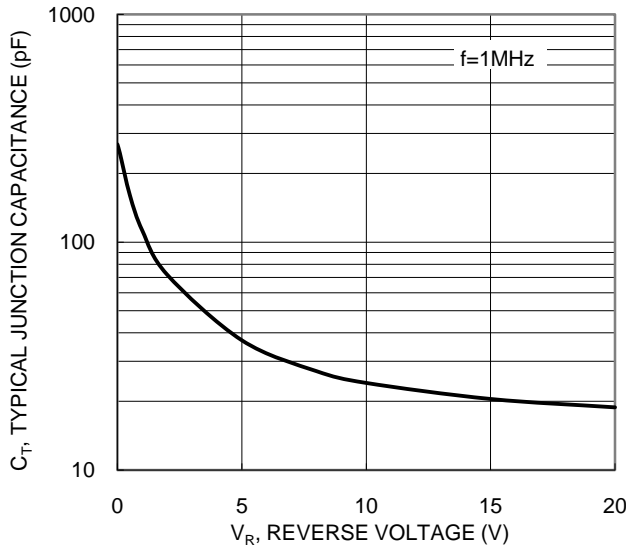


Figure 3. Typical Junction Capacitance

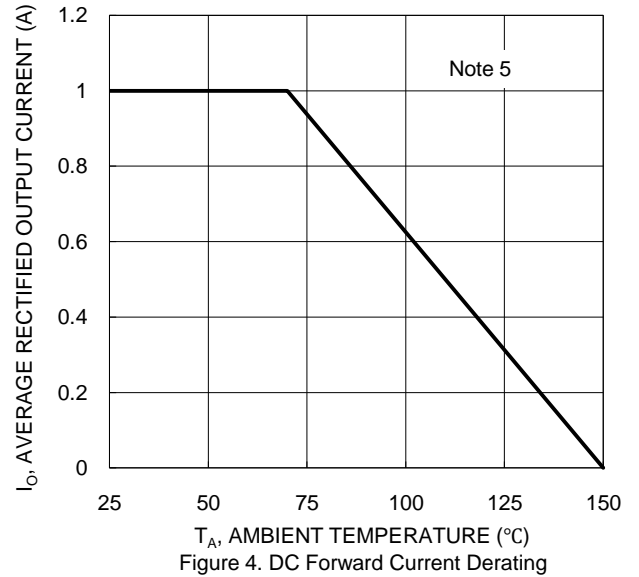


Figure 4. DC Forward Current Derating

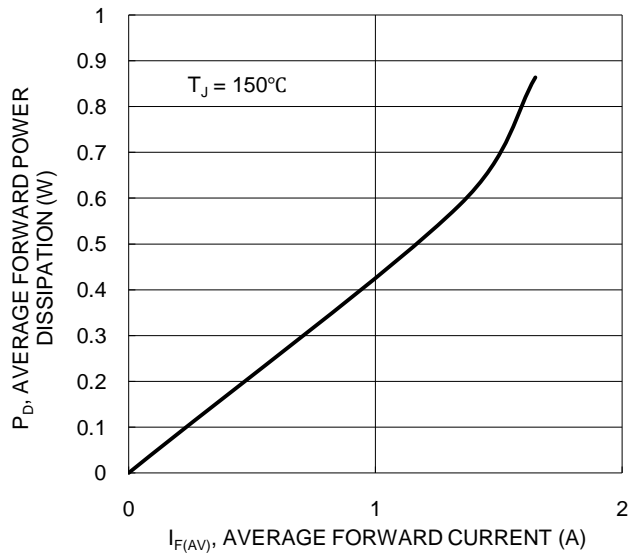
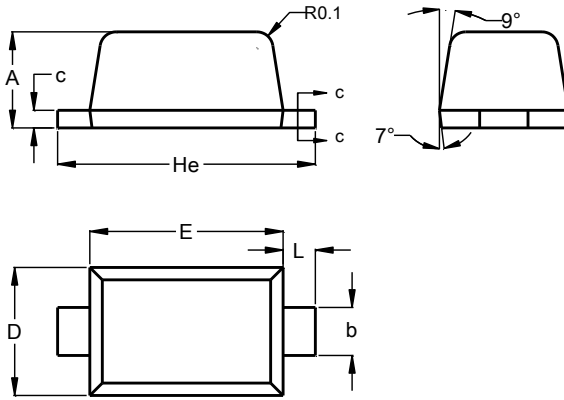


Figure 5. Forward Power Dissipation

**Package Outline Dimensions**

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

**SOD523**



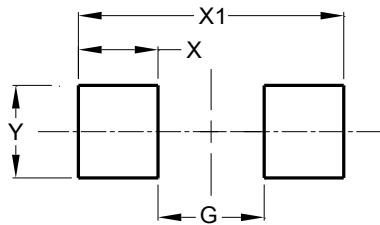
SOD523		
Dim	Min	Max
A	0.55	0.65
b	0.26	0.34
c	0.11	0.17
D	0.75	0.85
E	1.15	1.25
He	1.55	1.65
L	0.10	0.30
All Dimensions in mm		

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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