

## Features

- 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**

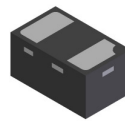
## Mechanical Data

- Case: X1-DFN1006-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Dot
- Terminals: Finish - NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 ④
- Weight: 0.001 grams (Approximate)

X1-DFN1006-2



Top View



Bottom View

## Ordering Information (Note 4)

Part Number	Case	Packaging
SBR05U20LP-7	X1-DFN1006-2	3,000/Tape & Reel
SBR05U20LP-7B	X1-DFN1006-2	10,000/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> 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>.

## Marking Information

SBR05U20LP-7



Top View  
Dot Denotes  
Cathode Side

SBR05U20LP-7B



Top View  
Bar Denotes  
Cathode Side

52 = Product Type Marking Code

**OR**



Top View  
Bar Denotes  
Cathode Side

### 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	$I_{FSM}$	5	A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	134	$^\circ\text{C}/\text{W}$
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	$V_F$	-	0.34	0.38	V	$I_F = 0.1\text{A}, T_J = +25^\circ\text{C}$
		-	0.25	0.28		$I_F = 0.1\text{A}, T_J = +150^\circ\text{C}$
		-	0.39	0.43		$I_F = 0.2\text{A}, T_J = +25^\circ\text{C}$
		-	0.31	0.34		$I_F = 0.2\text{A}, T_J = +150^\circ\text{C}$
		-	0.47	0.50		$I_F = 0.5\text{A}, T_J = +25^\circ\text{C}$
		-	0.43	0.46		$I_F = 0.5\text{A}, T_J = +150^\circ\text{C}$
Leakage Current (Note 6)	$I_R$	-	6	50	$\mu\text{A}$	$V_R = 20\text{V}, T_J = +25^\circ\text{C}$
		-	1.5	5	mA	$V_R = 20\text{V}, T_J = +150^\circ\text{C}$

Notes: 5. Device mounted on FR-4 substrate, 2" x 2" 2oz. Copper, single sided PCB board.  
6. Short duration pulse test used to minimize self-heating effect.

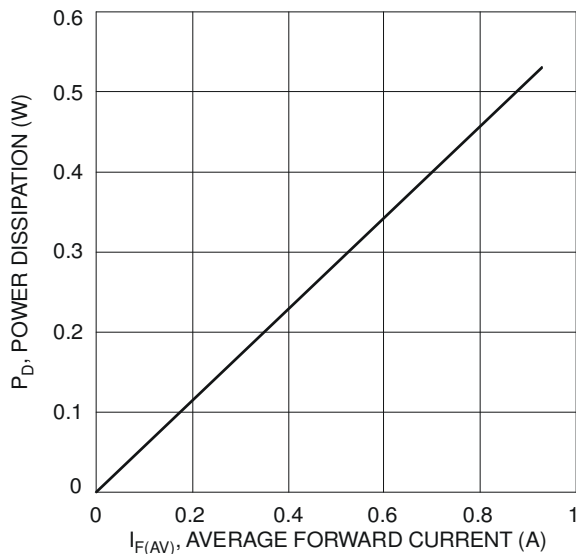


Fig. 1 Forward Power Dissipation

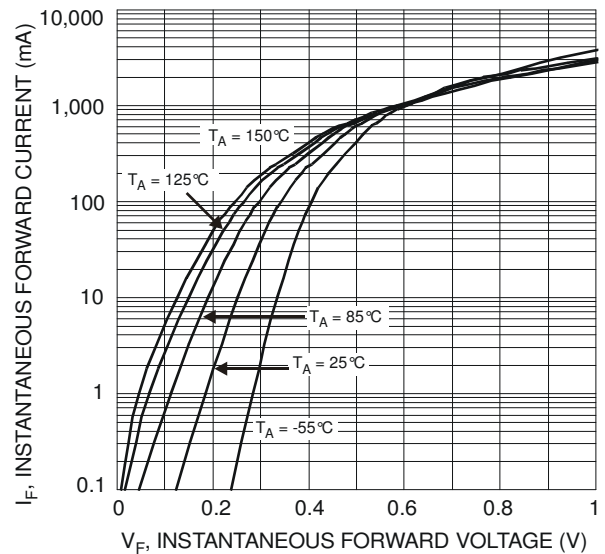


Fig. 2 Typical Forward Characteristics

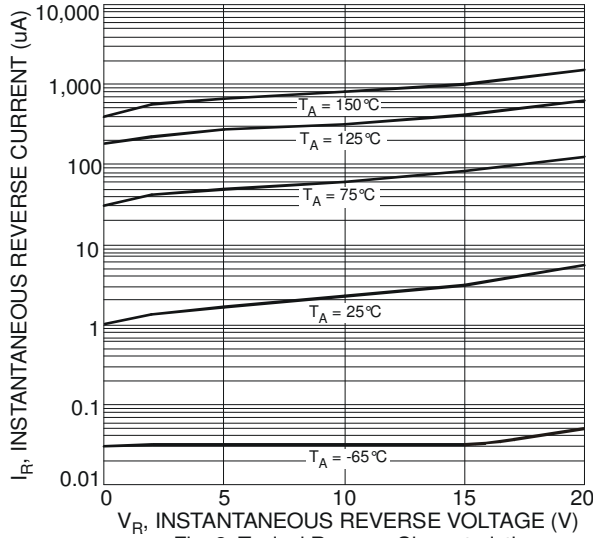


Fig. 3 Typical Reverse Characteristics

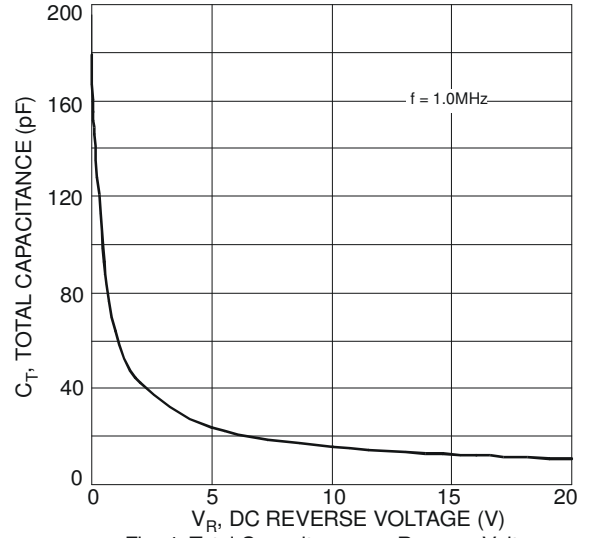


Fig. 4 Total Capacitance vs. Reverse Voltage

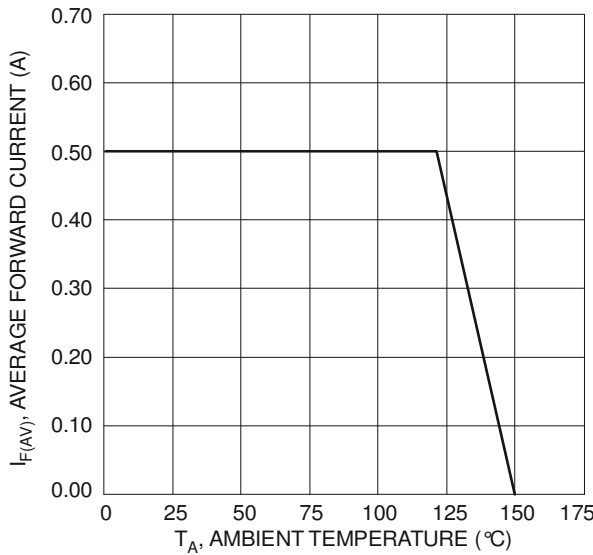


Fig. 5 Forward Current Derating Curve

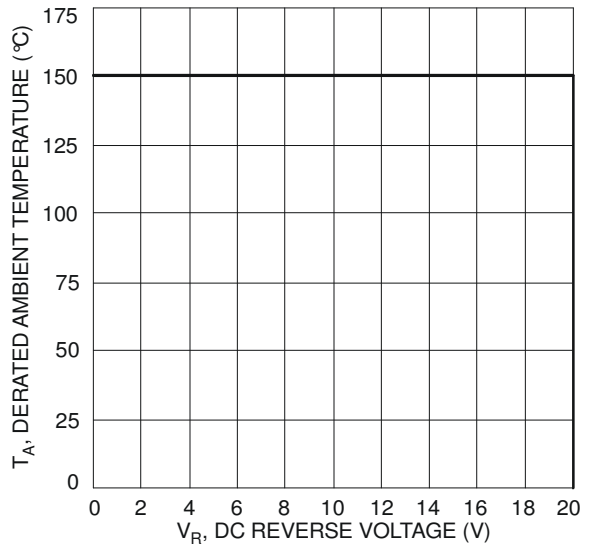
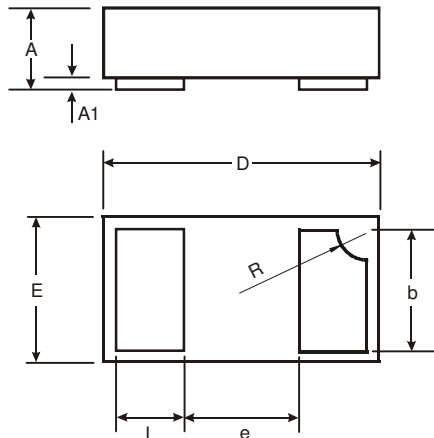


Fig. 6 Operating Temperature Derating

**Package Outline Dimensions**

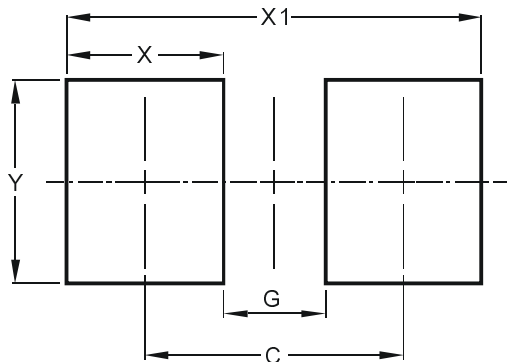
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



X1-DFN1006-2			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0	0.05	0.03
b	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	-	-	0.40
L	0.20	0.30	0.25
R	0.05	0.15	0.10
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)
<b>C</b>	0.70
<b>G</b>	0.30
<b>X</b>	0.40
<b>X1</b>	1.10
<b>Y</b>	0.70

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