

Product Summary (@ T_A = +25°C)

V _{RRM} (V)	I _O (mA)	V _F Max (V)	I _R Max (μA)
20	500	0.5	50

Features and Benefits

- Ultra-Low Forward Voltage Drop
 - Superior Reverse Avalanche Capability
 - Patented Super Barrier Rectifier Technology (SBR[®])
 - Soft, Fast Switching Capability
 - +150°C Operating Junction Temperature
 - **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
 - **Halogen and Antimony Free. "Green" Device (Note 3)**
 - **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative.**
- <https://www.diodes.com/quality/product-definitions/>

Applications

- SMPS
- DC-DC converters
- Freewheeling diodes
- Reverse polarity protections

Mechanical Data

- Package: X2-DFN1006-2
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 **(e4)**
- Weight: 0.001 grams (Approximate)

X2-DFN1006-2



Bottom View

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
SBR05U20LPS-7	X2-DFN1006-2	3,000	Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

SBR05U20LPS-7	<p>Bar Denotes Cathode Side</p>	$\underline{5} \underline{2}$ & $\underline{5} \underline{2}$ = 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 (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}	6	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance (Note 5)	R _{θJA}	224	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	V _{(BR)R}	20	—	—	V	I _R = 50μA
Forward Voltage Drop	V _F	—	0.34	0.38	V	I _F = 0.1A, T _J = +25°C
			0.25	0.28		I _F = 0.1A, T _J = +150°C
			0.38	0.42		I _F = 0.2A, T _J = +25°C
			0.31	0.34		I _F = 0.2A, T _J = +150°C
			0.47	0.50		I _F = 0.5A, T _J = +25°C
			0.42	0.45		I _F = 0.5A, T _J = +150°C
Leakage Current (Note 6)	I _R	—	6	50	μA	V _R = 20V, T _J = +25°C
			1.5	5	mA	V _R = 20V, T _J = +150°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.

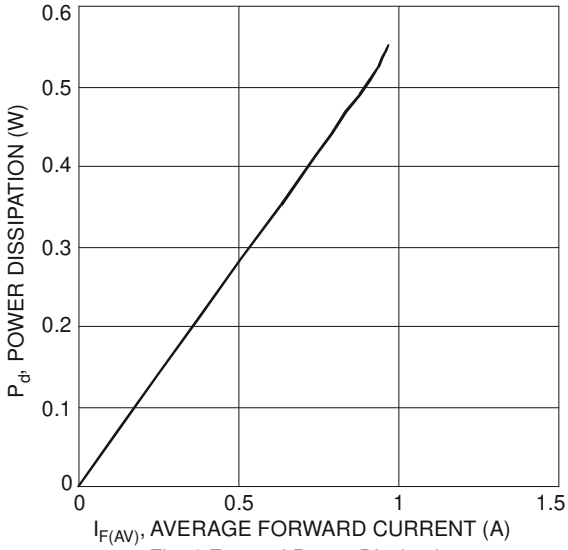


Fig. 1 Forward Power Dissipation

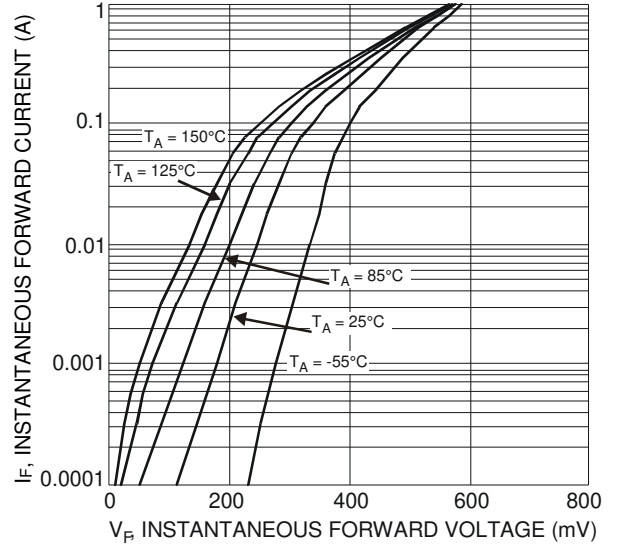


Fig. 2 Typical Forward Characteristics

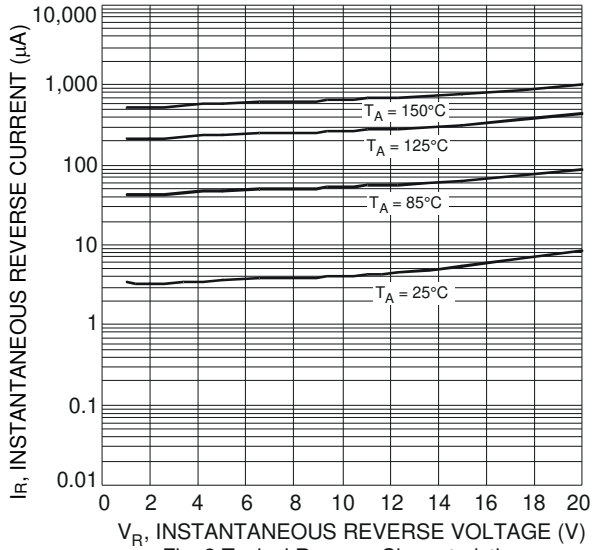


Fig. 3 Typical Reverse Characteristics

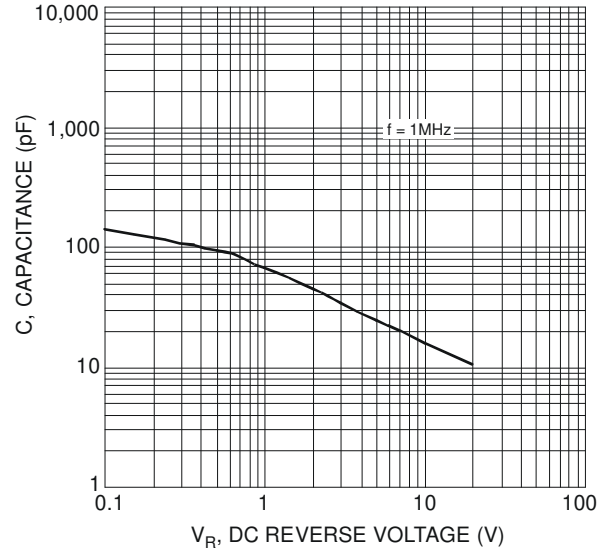


Fig. 4 Total Capacitance vs. Reverse Voltage

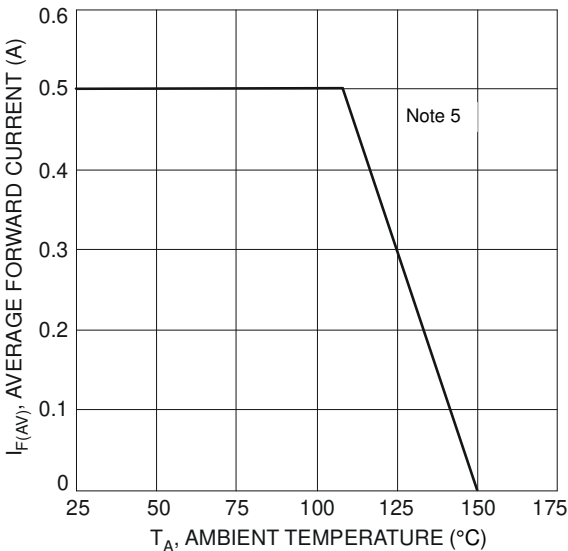


Fig. 5 Forward Current Derating Curve

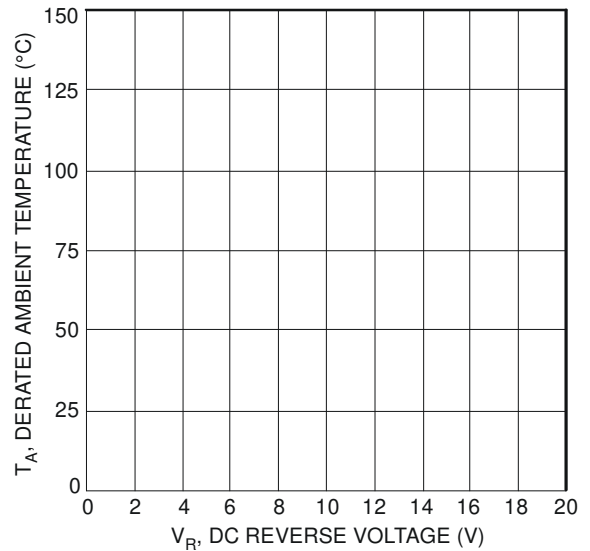
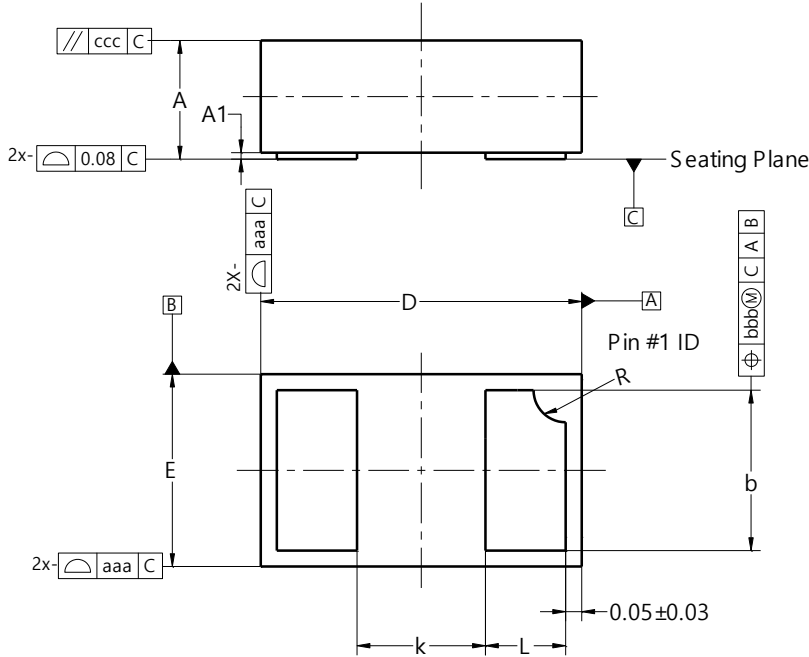


Fig. 6 Operating Temperature Derating

Package Outline Dimensions

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

X2-DFN1006-2

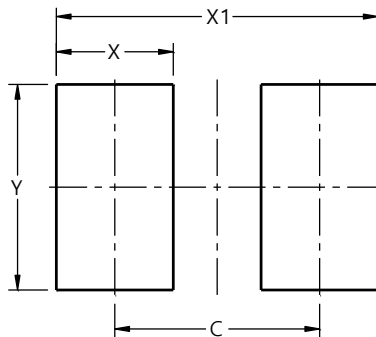


X2-DFN1006-2			
Dim	Min	Max	Typ
A	0.34	0.40	0.37
A1	0.00	0.05	0.03
b	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
k	—	—	0.40
L	0.20	0.30	0.25
R	—	—	0.10
aaa	0.15		
bbb	0.05		
ccc	0.05		
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN1006-2



Dimensions	Value (in mm)
C	0.70
X	0.40
X1	1.10
Y	0.70

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