

Product Summary (@ T_A = +25°C)

V _{RRM} (V)	I _o (A)	V _F Max (V)	I _R Max (mA)
20	0.5	0.39	0.05

Description and Applications

Packaged in the compact X2-DFN1006-2, the Trench SBR, the SBRT05U20LPSQ provides ultra-low forward voltage drop (V_F) and excellent low reverse leakage stability at high temperatures. It is ideal for use in rectification, freewheeling or polarity protection for applications such as:

- SMPS
- General Switching Applications
- Reverse Polarity Protection
- DC-DC Converters

Features and Benefits

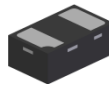
- Ultra-Low Forward Voltage Drop
- Superior Reverse Avalanche Capability
- Patented SBR[®] (Super Barrier Rectifier) Technology
- Soft, Fast Switching Capability
- +150°C Operating Junction Temperature
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBRT05U20LPSQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Case: X2-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 Bar
- Terminals: Finish - NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 **(e4)**
- Weight: 0.001 grams (Approximate)

X2-DFN1006-2



Bottom View

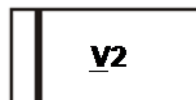
Ordering Information (Note 4)

Part Number	Case	Packaging
SBRT05U20LPSQ-7B	X2-DFN1006-2	10000/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

X2-DFN1006-2



V2 = 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 4)	I _O	500	mA
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	10	A

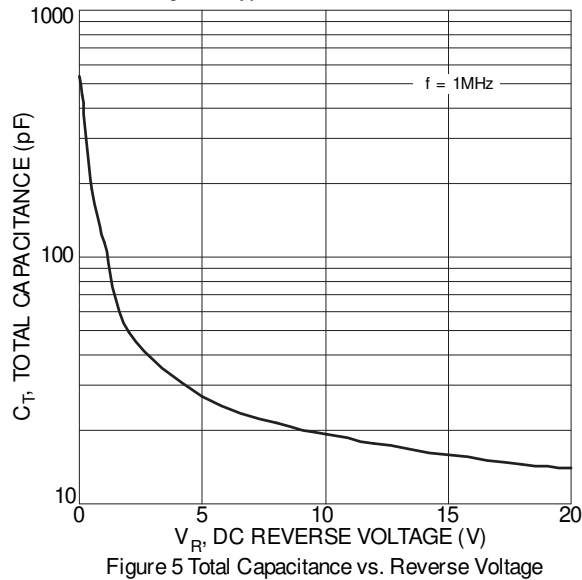
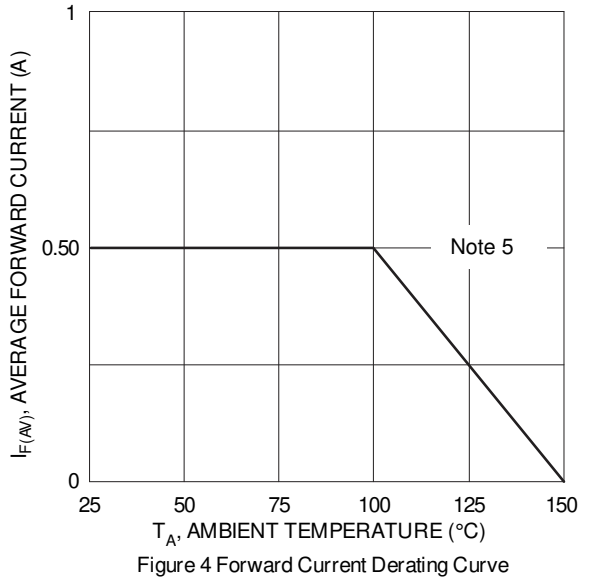
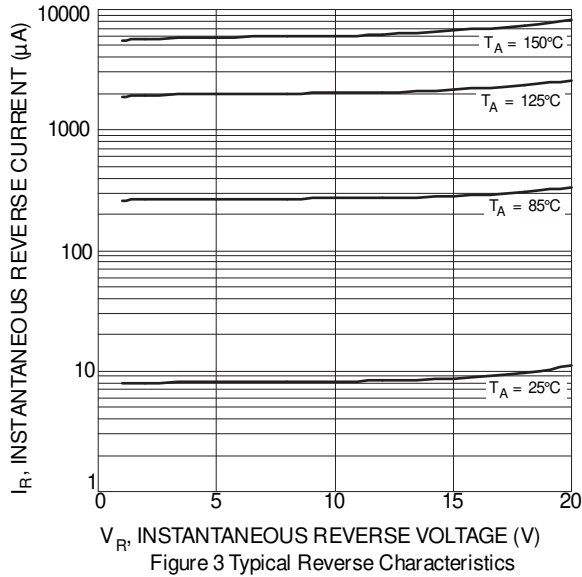
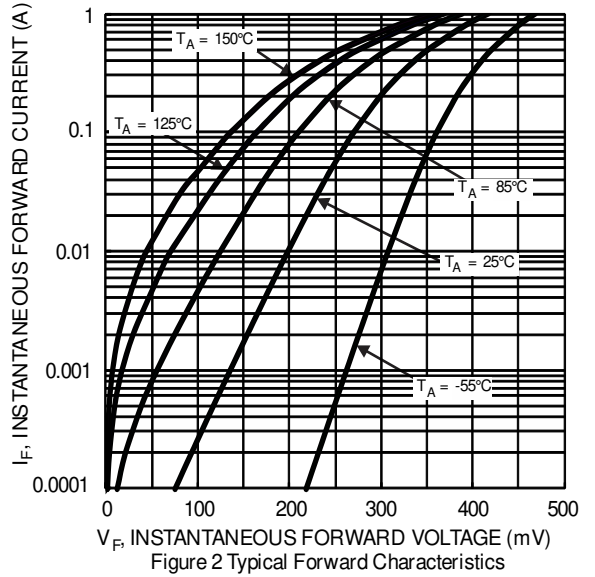
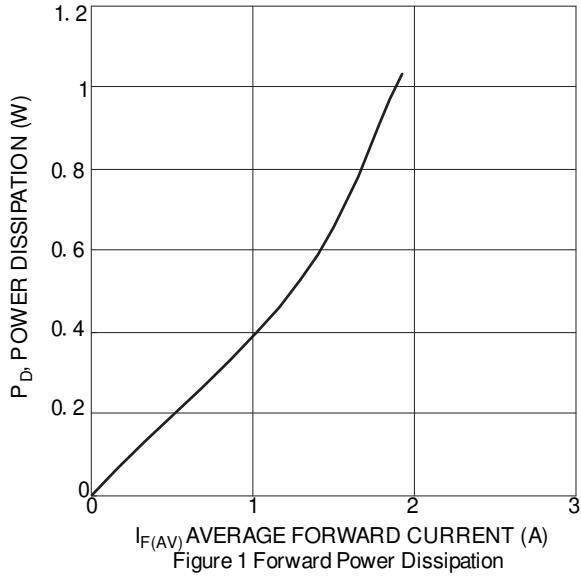
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	R _{θJA}	236	°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
Forward Voltage Drop	V _F	—	0.28	0.32	V	I _F = 0.1A, T _J = +25°C
		—	0.30	0.34		I _F = 0.2A, T _J = +25°C
		—	0.35	0.39		I _F = 0.5A, T _J = +25°C
Leakage Current (Note 6)	I _R	—	11	50	μA	V _R = 20V, T _J = +25°C
			2.5	10		mA
Total Capacitance	C _T	—	14	—	pF	f = 1MHz, V _R = 20V
Reverse Recovery Time	t _{RR}	—	15	—	ns	I _F = I _R = 10mA, I _{R(REC)} = 1mA, R _L = 100Ω
			6	—		I _F = 500mA, di/dt = 600A/μs, V _R = 10V

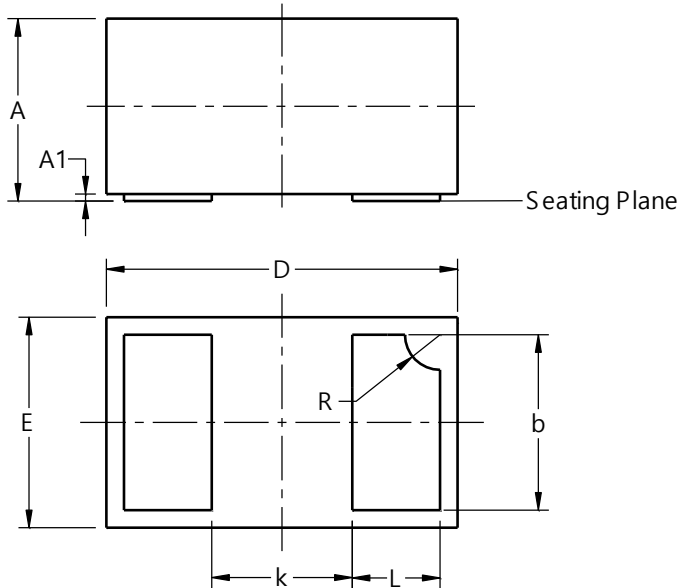
Notes: 5. Device mounted on 1*MRP FR-4 PC board, 2oz.
6. Short duration pulse test used to minimize self-heating effect.



Package Outline Dimensions

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

X2-DFN1006-2

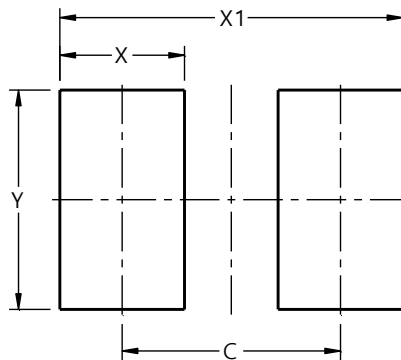


X2-DFN1006-2			
Dim	Min	Max	Typ
A	0.34	0.40	0.37
A1	0.00	0.05	0.03
b	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
k	—	—	0.40
L	0.20	0.30	0.25
R	—	—	0.10
All Dimensions in mm			

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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