





### 0.5A TRENCH SBR TRENCH SUPER BARRIER RECTIFIER

### Product Summary (@ T<sub>A</sub> = +25°C)

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (mA)
20	0.5	0.39	0.05

### **Features and Benefits**

- Ultra-Low Forward Voltage Drop
- Superior Reverse Avalanche Capability
- Patented SBR<sup>®</sup> (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

### **Description and Applications**

Packaged in the compact X2-DFN1006-2, the Trench SBR, the SBRT05U20LPS provides ultra-low forward voltage drop (V<sub>F</sub>) 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

### **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 Dot
- Terminals: Finish NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 @4
- Weight: 0.001 grams (Approximate)

#### X2-DFN1006-2



**Bottom View** 

### **Ordering Information** (Note 4)

Part Number	Case	Packaging
SBRT05U20LPS-7	X2-DFN1006-2	3000/Tape & Reel
SBRT05U20LPS-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) compliant.
- See 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**

X2-DFN1006-2



 $\underline{V}2$  = Product Type Marking Code



# **Maximum Ratings** ( $@T_A = +25^{\circ}C$ , 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 Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>RM</sub>	20	٧
RMS Reverse Voltage	V <sub>R(RMS)</sub>	14	V
Average Rectified Output Current (See Figure 4)	Io	500	mA
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	10	А

## **Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	236	°C/W
Operating and Storage Temperature Range	$T_J$ , $T_{STG}$	-65 to +150	°C

# **Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

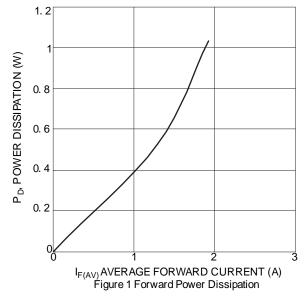
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Forward Voltage Drop	V <sub>F</sub>	111	0.28 0.30 0.35	0.32 0.34 0.39	V	I <sub>F</sub> = 0.1A, T <sub>J</sub> = +25°C I <sub>F</sub> = 0.2A, T <sub>J</sub> = +25°C I <sub>F</sub> = 0.5A, T <sub>J</sub> = +25°C
Leakage Current (Note 6)	I <sub>R</sub>	_	11 2.5	50 10		$V_R = 20V, T_J = +25^{\circ}C$ $V_R = 20V, T_J = +125^{\circ}C$
Total Capacitance	C <sub>T</sub>	1	14	_	pF	f = 1MHz, V <sub>R</sub> = 20V

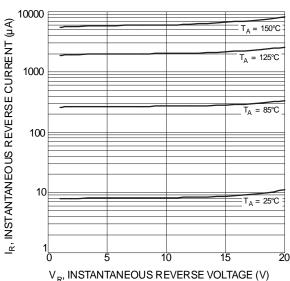
Notes:

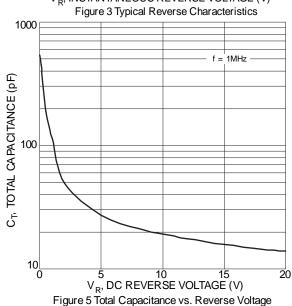
<sup>5.</sup> Device mounted on 1\*MRP FR-4 PC board, 2oz.

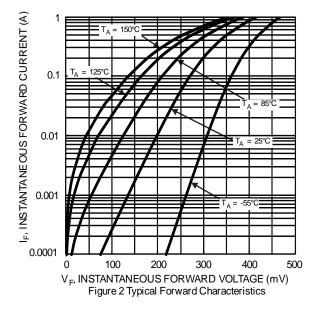
<sup>6.</sup> Short duration pulse test used to minimize self-heating effect.

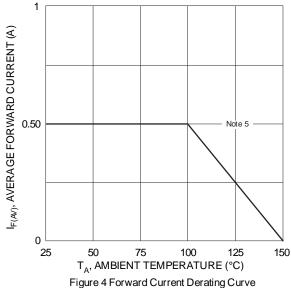










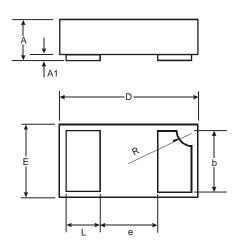




## **Package Outline Dimensions**

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

#### X2-DFN1006-2

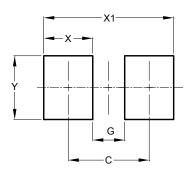


X2-DFN1006-2					
Dim	Min	Max	Тур		
Α	0.34	0.4	0.37		
A1	0	0.05	0.03		
b	0.45	0.55	0.50		
D	0.95	1.075	1.00		
Е	0.55	0.675	0.60		
e	-	1	0.40		
L	0.20	0.30	0.25		
R	0.05	0.15	0.10		
All Dimensions in mm					

# Suggested Pad Layout

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

### X2-DFN1006-2



Dimensions	Value (in mm)	
С	0.70	
G	0.30	
Х	0.40	
X1	1.10	
Y	0.70	



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### Офис по работе с юридическими лицами:

105318, г. Москва, ул. Щербаковская д. 3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru moschip.ru\_6 moschip.ru 4 moschip.ru 9