

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

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F(MAX)</sub> (V)	I <sub>R(MAX)</sub> (mA)
10	2	0.46	2

**Features and Benefits**

- Small Form factor Package with a PCB Footprint of just 1.54mm<sup>2</sup> - 40% Smaller Than SOT666
- Lower Reverse Leakage Ensuring Greater Stability at Higher Temperatures
- Low Forward Voltage (V<sub>F</sub>) Minimises Conduction Losses and Improving Efficiency
- **Totally Lead-Free; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

**Description and Applications**

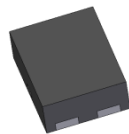
Packaged in the compact X1-DFN1411-3 package, the SBR2U10LP provides ultra-low forward voltage drop (V<sub>F</sub>) and provides excellent low reverse leakage stability at high temperatures. It is ideal for use as a bypass, freewheeling or polarity protection diode in applications such as:

- Solar Panels
- Portable Electronics

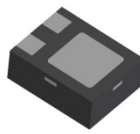
**Mechanical Data**

- Case: X1-DFN1411-3
- 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 (See Note 5)
- Terminals: Finish – NiPdAu over Copper Lead Frame.
- Solderable per MIL-STD-202, Method 208<sup>(e4)</sup>
- Weight: 2.35mg (approximate)

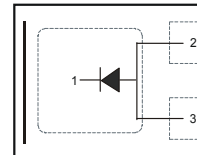
X1-DFN1411-3



Top View



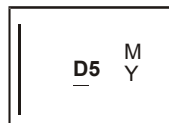
Bottom View


 Top View  
Internal Schematic

**Ordering Information (Note 4)**

Part Number	Case	Packaging
SBR2U10LP-7	X1-DFN1411-3	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>.
  5. It is recommended that Pins 2 and 3 be electrically connected at the printed circuit board.

**Marking Information**


D5 = Product Type Marking Code  
 Y = Year (ex: B = 2014)  
 M = Month (ex: 9 = September)

**Date Code Key**

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022
Code	B	C	D	E	F	G	H	I	J

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**Maximum Ratings** (@T<sub>A</sub> = +25°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 <sub>RRM</sub>	10	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>RM</sub>		
Average Rectified Output Current (See Figure 1)	I <sub>O</sub>	2	A
Non-Repetitive Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	21	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Thermal Resistance Junction to Case (Note 6)	R <sub>θJC</sub>	55	°C/W
Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	210	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 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>	—	0.40	0.46	V	I <sub>F</sub> = 2.0A, T <sub>J</sub> = +25°C
Leakage Current (Note 8)	I <sub>R</sub>	—	0.5	2	mA	V <sub>R</sub> = 10V, T <sub>J</sub> = +25°C
		—	25	100	mA	V <sub>R</sub> = 10V, T <sub>J</sub> = +125°C
Reverse Recovery Time	t <sub>rr</sub>	—	43	60	ns	I <sub>F</sub> = 10mA, I <sub>rr</sub> = 0.1*I <sub>RM</sub> , R <sub>L</sub> = 100Ω
Junction Capacitance	C <sub>j</sub>	—	102	—	pF	V <sub>R</sub> = 5V, f = 1.0MHz

- Notes: 6. Device mounted on FR-4 substrate, 1\*\*1", 2oz, single-sided, PC boards with 0.1\*\*0.15" copper pad.  
7. It is recommended to electrically connect both Anode pins together during operation to achieve optimal performance.  
8. Short duration pulse test used to minimize self-heating effect.

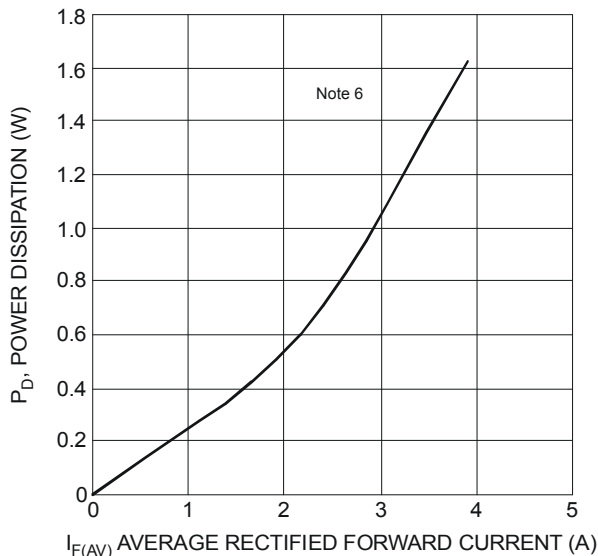


Figure 1 Forward Power Dissipation

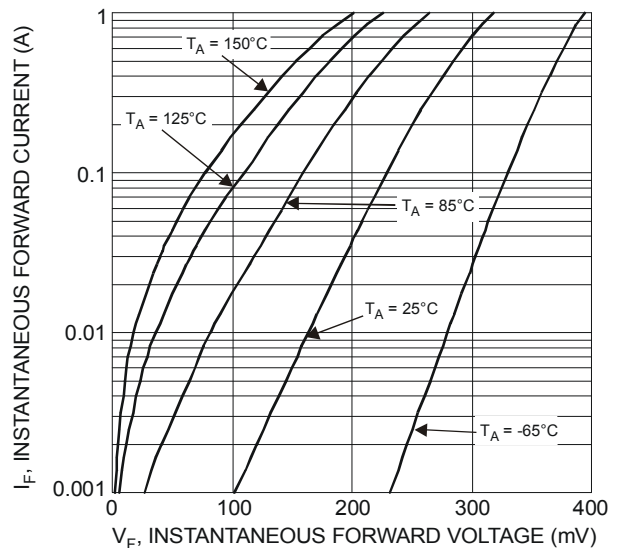


Figure 2 Typical Forward Characteristics

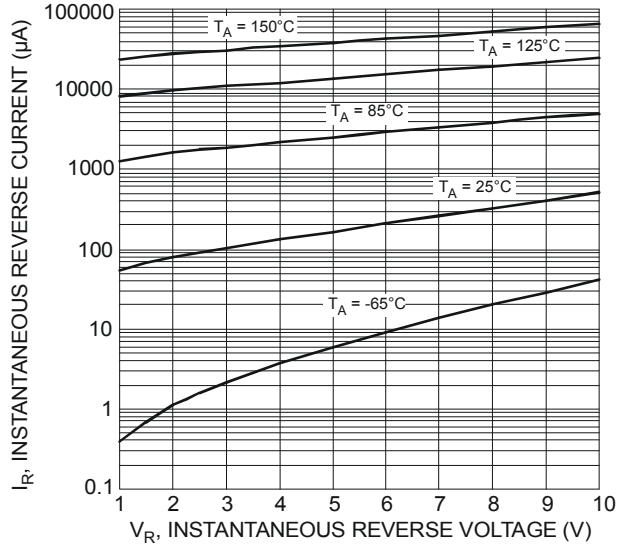


Figure 3 Typical Reverse Characteristics

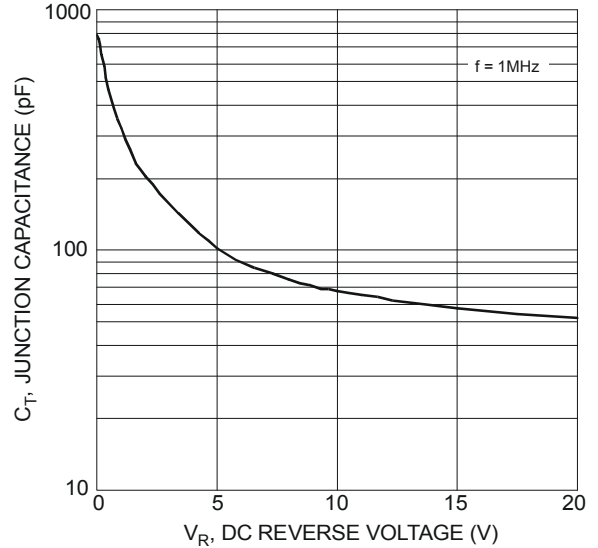


Figure 4 Typical Junction Capacitance

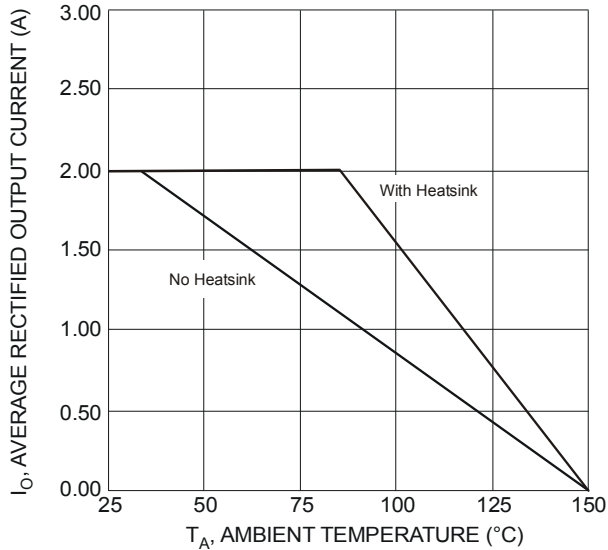


Figure 5 Forward Current Derating Curve

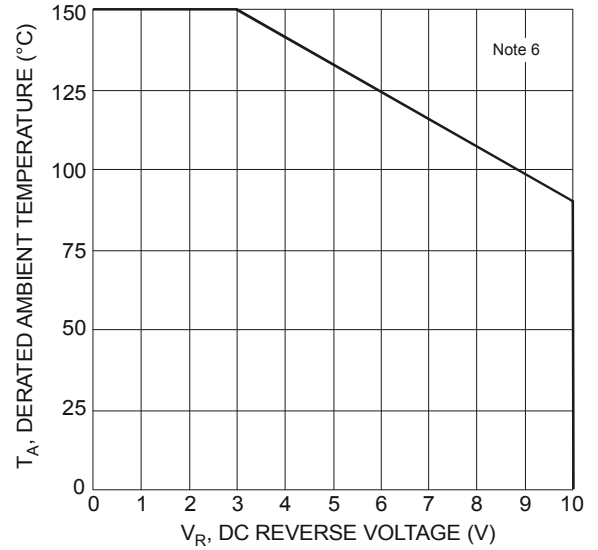
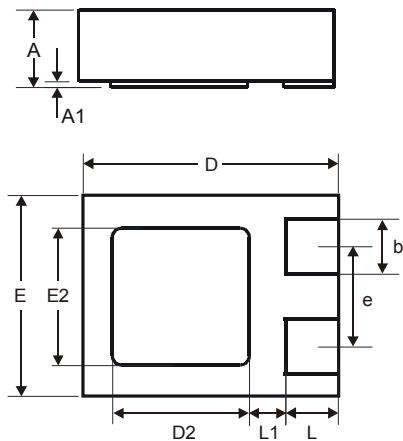


Figure 6 Operating Temperature Derating

**Package Outline Dimensions**

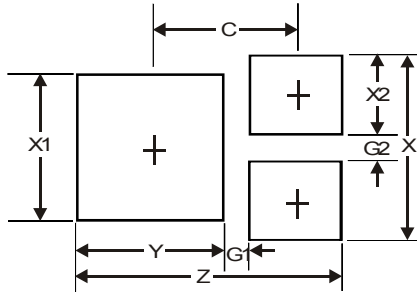
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



X1-DFN1411-3			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0	0.05	0.02
b	0.25	0.35	0.30
D	1.35	1.475	1.40
D2	0.65	0.85	0.75
E	1.05	1.175	1.10
E2	0.65	0.85	0.75
e	—	—	0.55
L	0.225	0.325	0.275
L1	—	—	0.20
All Dimensions in mm			

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



<i>Dimensions</i>	<i>Value (in mm)</i>
<b>Z</b>	1.38
<b>G1</b>	0.15
<b>G2</b>	0.15
<b>X</b>	0.95
<b>X1</b>	0.75
<b>X2</b>	0.40
<b>Y</b>	0.75
<b>C</b>	0.76

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