SBR2U10LP

2A SBR®

SURFACE MOUNT SUPER BARRIER RECTIFIER

Product Summary (@T_A = +25°C)

V_{RRM} (V)	I_O (A)	$V_{F(MAX)}$(V)	$I_{R(MAX)}$ (mA)
10	2	0.46	2

Features and Benefits

- Small Form factor Package with a PCB Footprint of just 1.54mm^2 - 40% Smaller Than SOT666
- Lower Reverse Leakage Ensuring Greater Stability at Higher Temperatures
- Low Forward Voltage (V_F) 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_F) 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:

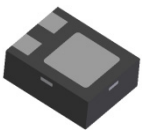
- Solar Panels
- Portable Electronics

Mechanical Data

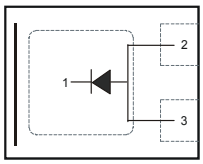
- Case: X1-DFN1411-3
- Case Material: Molded Plastic, "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Bar (See Note 5)
- Terminals: Finish – NiPdAu over Copper Lead Frame.
- Solderable per MIL-STD-202, Method 208 e4
- Weight: 2.35mg (approximate)

X1-DFN1411-3

Top View



Bottom View



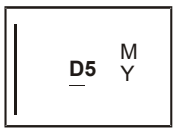
Top View
Internal Schematic

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 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_A = +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 Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{RM}	10	V
Average Rectified Output Current (See Figure 1)	I_O	2	A
Non-Repetitive Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	21	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance Junction to Case (Note 6)	$R_{\theta JC}$	55	°C/W
Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	210	
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 (Note 7)	V_F	—	0.40	0.46	V	I_F = 2.0A, T_J = +25°C
Leakage Current (Note 8)	I_R	—	0.5	2	mA	V_R = 10V, T_J = +25°C
		—	25	100	mA	V_R = 10V, T_J = +125°C
Reverse Recovery Time	t_{rr}	—	43	60	ns	I_F =10mA, I_{rr} = 0.1*I_{RM}, R_L= 100Ω
Junction Capacitance	C_j	—	102	—	pF	V_R = 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.

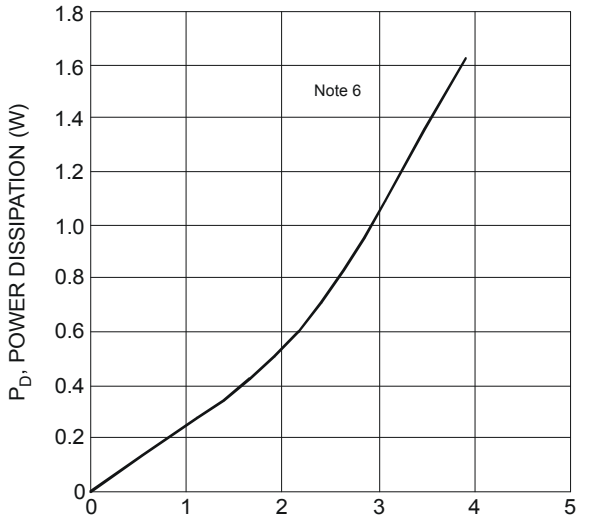


Figure 1 Forward Power Dissipation

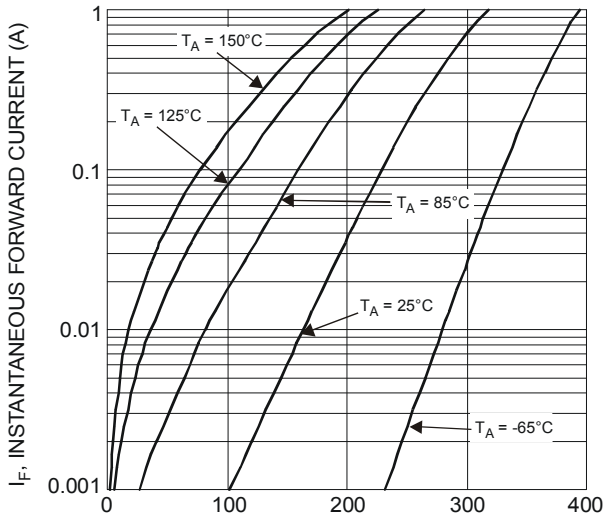


Figure 2 Typical Forward Characteristics

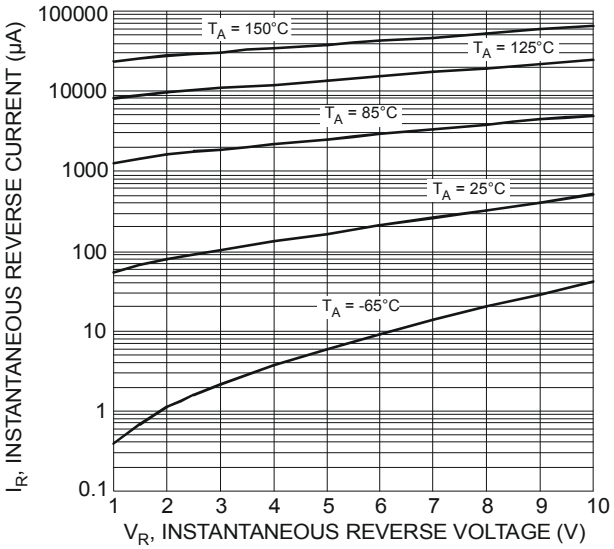


Figure 3 Typical Reverse Characteristics

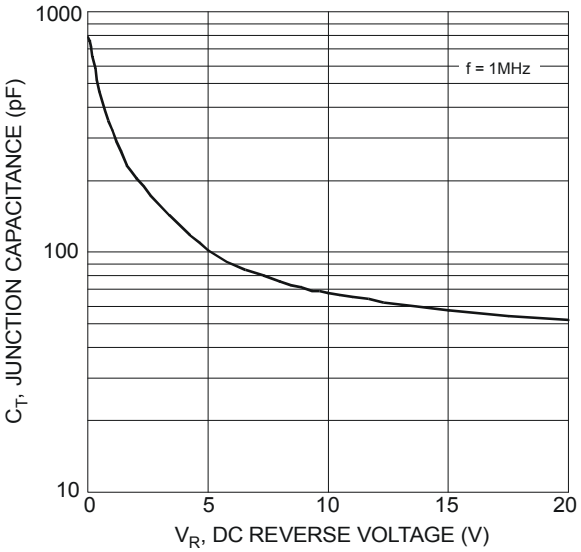


Figure 4 Typical Junction Capacitance

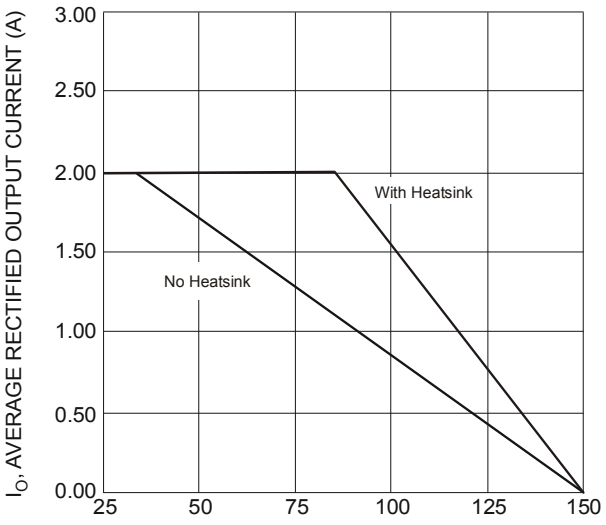


Figure 5 Forward Current Derating Curve

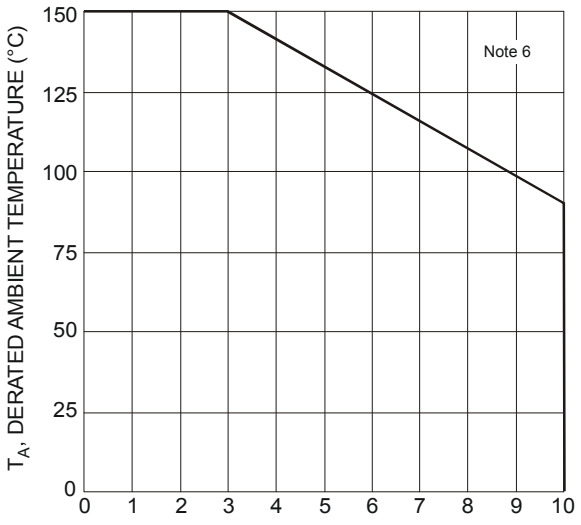
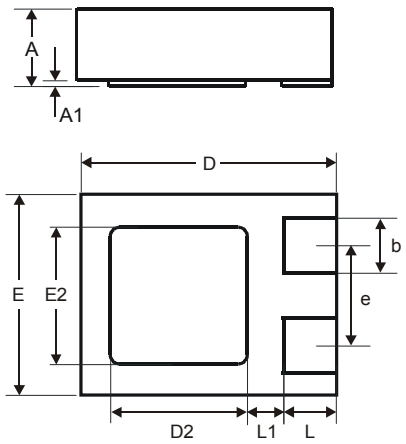


Figure 6 Operating Temperature Derating

Package Outline Dimensions

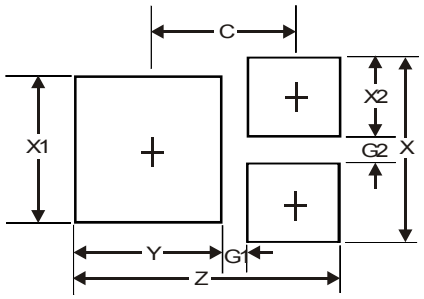
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



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.



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

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