NEW PRODUCT

Lead-free Green

SBRT2U45LP

2A TrenchSBR
TRENCH SUPER BARRIER RECTIFIER

Product Summary

V_{RRM} (V)	I_O (A)	$V_{F(MAX)}$ (V) @ +25°C	$I_{R(MAX)}$ (mA) @ +25°C
45	2	0.55	0.1

Features and Benefits

- Patented TrenchSBR Technology Provides Superior Avalanche Capability Versus Schottky Diodes, Ensuring More Rugged and Reliable End Applications
- Reduced Ultra-low Forward Voltage Drop (V_F); Better Efficiency and Cooler Operation
- Reduced High Temperature Reverse Leakage; Increased Reliability Against Thermal Runaway Failure in High Temperature Operation
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Description and Applications

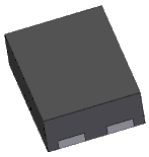
The SBRT2U45LP provides very low V_F and excellent reverse leakage stability at high temperatures. It is ideal for use as bypass diode and rectifier, freewheel diode or blocking diode in applications such as:

- Solar Panels
- Blocking Diode
- Bypass Diode
- Boost Diode
- Recirculating Diode

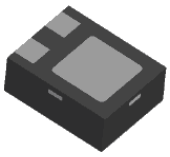
Mechanical Data

- 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
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Below
- Weight: 2.35 mg (Approximate)

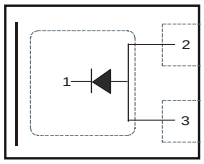
X1-DFN1411-3



Top View



Bottom View



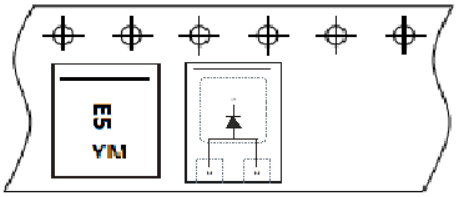
Top View
Internal Schematic

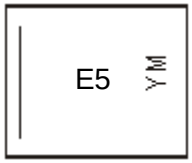
Ordering Information (Note 4)

Part Number	Case	Packaging
SBRT2U45LP-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.

Marking Information





E5 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: C = 2015)
M = Month (ex: 6 = June)
Bar = Cathode

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

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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}	45	V
Average Rectified Output Current	I_O	2	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	25	A

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Typical Thermal Resistance Junction to Case (Note 5)		$R_{\theta JC}$	25	°C/W
Typical Thermal Resistance Junction to Ambient (Note 5)		$R_{\theta JA}$	100	°C/W
Operating Temperature Range	$V_R \le 80\% V_{RRM}$	T_J	-55 to +150	°C
	$V_R \le 50\% V_{RRM}$		≤ +175	
	DC Forward Mode (Note 7)		≤ +200	
Storage Temperature Range		T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop (Note 6)	V_F	—	—	0.55	V	I_F = 2A, T_J = +25°C
Leakage Current (Note 6)	I_R	— —	— 2	100 —	μA mA	V_R = 45V, T_J = +25°C V_R = 45V, T_J = +125°C

Notes: 5. Device mounted on FR-4 PCB pad layout 1inch 2oz copper.
6. Short duration pulse test used to minimize self-heating effect.
7. Maximum junction temperature guaranteed for 2 hours.

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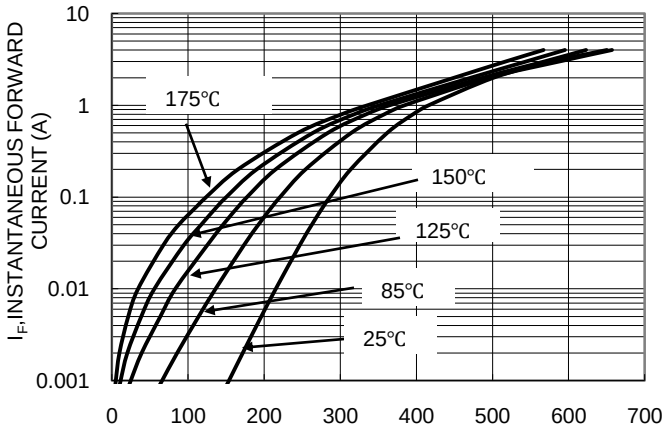

Figure 1.Typical Forward Characteristics

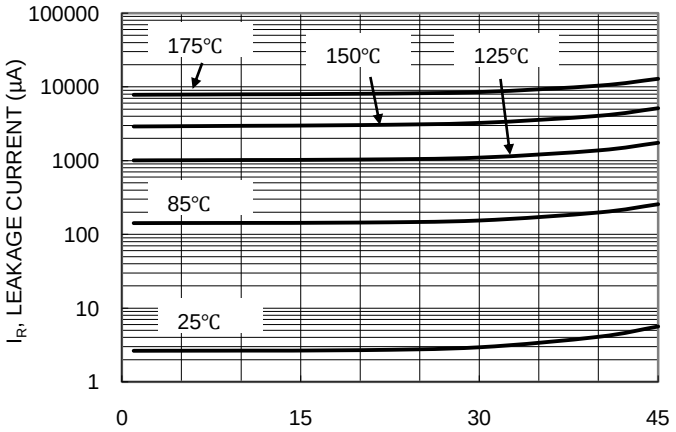

Figure 2.Typical Reverse Characteristics

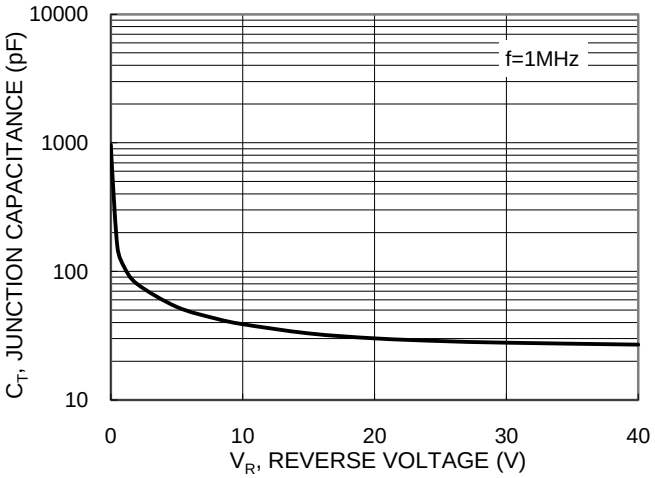

Figure 3. Typical Junction Capacitance

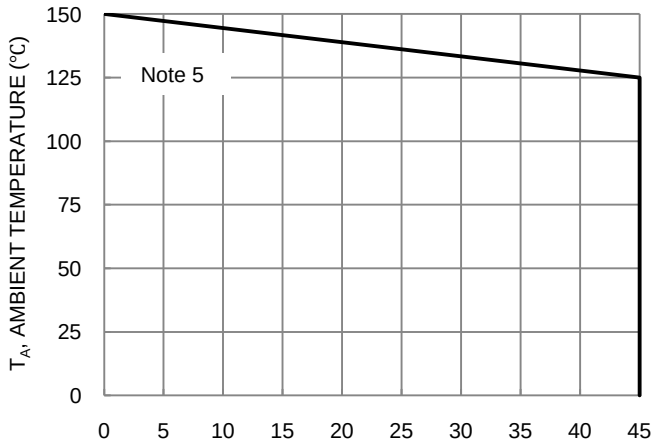

Figure 4. Operating Temperature Derating

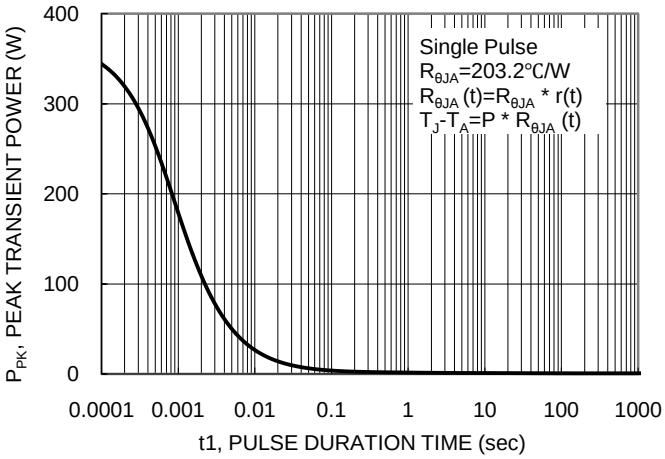

Figure 5. Single Pulse Maximum Power Dissipation

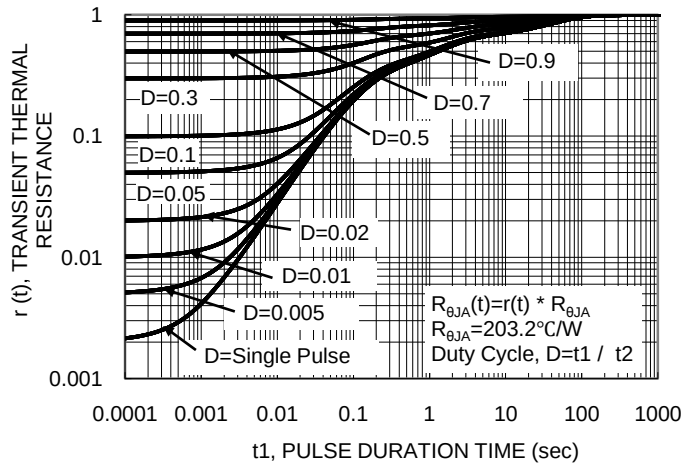

Figure 6. Transient Thermal Resistance

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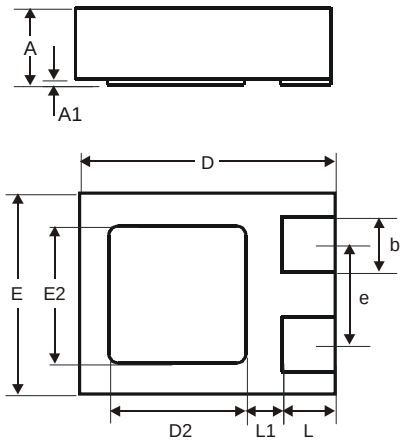
Package Outline Dimensions

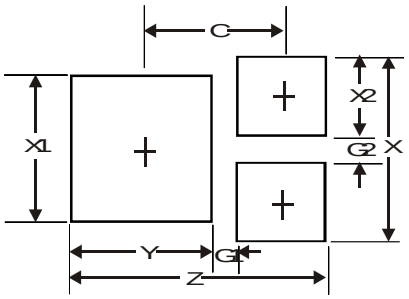
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



X1-DFN1411-3			
Dim	**Min**	**Max**	**Typ**
A	0.47	0.53	0.50
A1	0.00	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

NEW PRODUCT

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