



# 4A TrenchSBR TRENCH SUPER BARRIER RECTIFIER

### **Product Summary**

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F(MAX)</sub> (V) @ +25°C	I <sub>R(MAX)</sub> (mA) @ +25°C	
15	4	0.48	0.1	

### **Description and Applications**

The SBRT4U15LP 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

### **Features and Benefits**

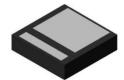
- Patented TrenchSBR technology provides superior avalanche capability versus schottky diodes, ensuring more rugged and reliable end applications.
- Reduced ultra-low forward voltage drop (V<sub>F</sub>); Better efficiency and cooler operation.
- Reduced high temperature reverse leakage and increased 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

#### **Mechanical Data**

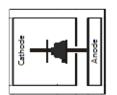
- Case: U-DFN2020-2 (Type B)
- Case Material: Molded Plastic, "Green" Molding Compound;
   UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Annealed over Copper Leadframe;
   Solderable per MIL-STD-202, Method 208 ©3
- Polarity: See Below
- Weight: 6.757 mg (Approximate)



Top View



**Bottom View** 



Top View Internal Schematic

### Ordering Information (Note 4)

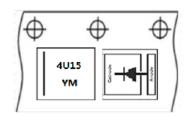
Part Number	Case	Packaging
SBRT4U15LP-7	U-DFN2020-2 (Type B)	3,000/Tape & Reel

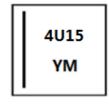
Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.

U-DFN2020-2 (Type B)

- 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





4U15 = Product Type Marking Code YM = Date Code Marking Y = Year (ex: B = 2014) M = Month (ex: 6 = June) Bar = Cathode

#### Date Code Key

Year	2014	20	)15	2016	2017	20	18	2019	2020	20	21	2022
Code	В		С	D	Е		F	G	Н			J
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



#### Maximum Ratings (@TA = +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 <sub>RRM</sub> V <sub>RWM</sub> V <sub>RM</sub>	15	<b>V</b>
Average Rectified Output Current	Io	4	Α
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	35	А

### **Thermal Characteristics**

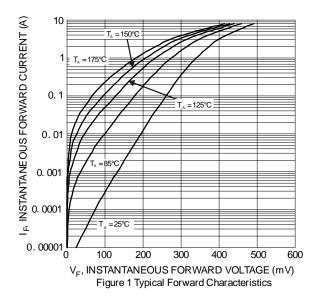
Characteristic		Symbol	Value	Unit
Typical Thermal Resistance Junction to Case (Note 5)			6	°C/W
Typical Thermal Resistance Junction to Ambient (Note 5)			65	°C/W
Operating Temperature Range  DC Forward Mode (Note 7)	$V_R \le 80\% V_{RRM}$ $V_R \le 50\% V_{RRM}$	$T_J$	-55 to +150 ≤+175 ≤+200	°C
Storage Temperature Range			-55 to +150	°C

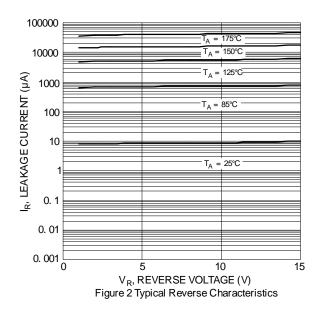
# Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Forward Voltage Drop (Note 6)	V <sub>F</sub>		_	0.47	V	$I_F = 4A, T_J = +25^{\circ}C$
Leakage Current (Note 6)	I <sub>R</sub>		— 6.2	100 —	٠.	$V_R = 15V, T_J = +25$ °C $V_R = 15V, T_J = +125$ °C

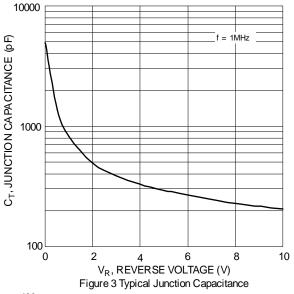
Notes:

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









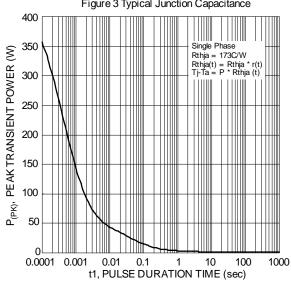
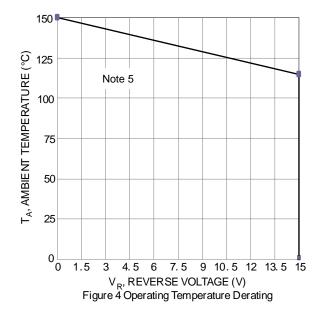


Figure 5 Single Pulse Maximum Power Dissipation



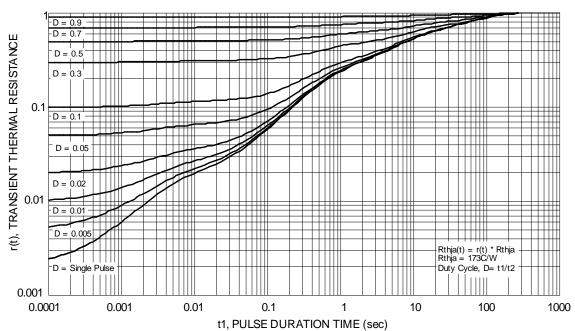


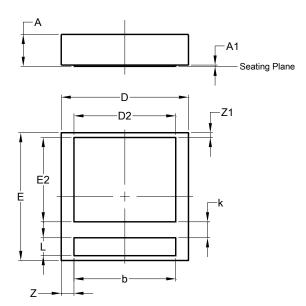
Figure 6 Transient Thermal Resistance

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# **Package Outline Dimensions**

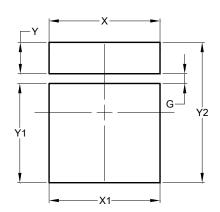
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



U-DFN2020-2 (Type B)							
Dim	Min Max Typ						
Α	0.47	0.53	0.50				
A1	0.00	0.05	0.02				
b	1.55	1.65	1.60				
D	1.95 2.05 2.00						
D2	1.50	1.70	1.60				
Е	1.95	2.00					
E2	1.22	1.42	1.32				
k	0.25 BSC						
L	0.23	0.33	0.28				
Z	0.20 BSC						
<b>Z</b> 1	0.075 BSC						
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)
G	0.150
X	1.700
X1	1.700
Υ	0.480
Y1	1.520
Y2	2.150



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