SBR1U150SAQ

1.0A SBR
SURFACE MOUNT SUPER BARRIER RECTIFIER

Product Summary

V_{RRM} (V)	I_O (A)	V_F Max (V) T_A = +25°C	I_R Max (mA) T_A = +25°C
150	1.0	0.7	0.1

Features and Benefits

- Ultra Low Forward Voltage Drop
- Excellent High Temperature Capability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- +150ºC Operating Junction Temperature
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

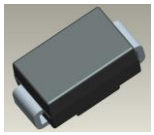
Applications

- Polarity Protection Diode
- Re-Circulating Diode
- Blocking Diode
- DC-DC
- AC-DC

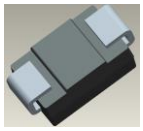
Mechanical Data

- Case: SMA
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 (e3)
- Polarity: Cathode Band or Cathode Notch
- Weight: 0.064 grams (Approximate)

SMA



Top View



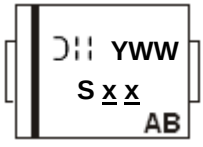
Bottom View

Ordering Information (Note 5)

Part Number	Case	Packaging
SBR1U150SAQ-13	SMA	5000/Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



S D B, S V B = Product Type Marking Code
= Manufacturers' Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 7 for 2007)
WW = Week Code (01 to 53)
AB = Foundry and Assembly Code

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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}	150	V
RMS Reverse Voltage	$V_{R(RMS)}$	106	V
Average Rectified Output Current (See Figure 1)	I_O	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	42	A
Repetitive Peak Avalanche Power (1μS, +25°C)	P_{ARM}	6,000	W

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance Junction to Soldering (Note 6)	$R_{\theta JS}$	3	°C/W
Thermal Resistance Junction to Ambient (Note 7)	$R_{\theta JA}$	119	
Thermal Resistance Junction to Ambient (Note 8)	$R_{\theta JA}$	88	
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
Reverse Breakdown Voltage (Note 9)	$V_{(BR)R}$	150	-	-	V	I_R = 100μA
Forward Voltage Drop	V_F	-	-	0.70	V	I_F = 1.0A, T_J = +25ºC
		-	-	0.56		I_F = 1.0A, T_J = +125ºC
Leakage Current (Note 9)	I_R	-	-	0.1	mA	V_R = 150V, T_J = +25ºC
		-	-	10	mA	V_R = 150V, T_J = +125ºC

Notes:
6. Theoretical $R_{\theta JS}$ calculated from the top center of the die straight down to the PCB cathode tab solder junction.
7. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com/_files/datasheets/ap02001.pdf. T_A = +25ºC.
8. Polymide PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com/_files/datasheets/ap02001.pdf.
9. Short duration pulse test used to minimize self-heating effect.

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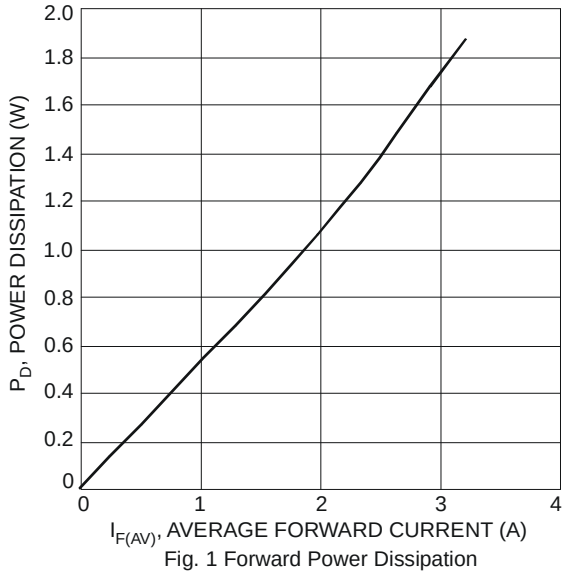

Fig. 1 Forward Power Dissipation

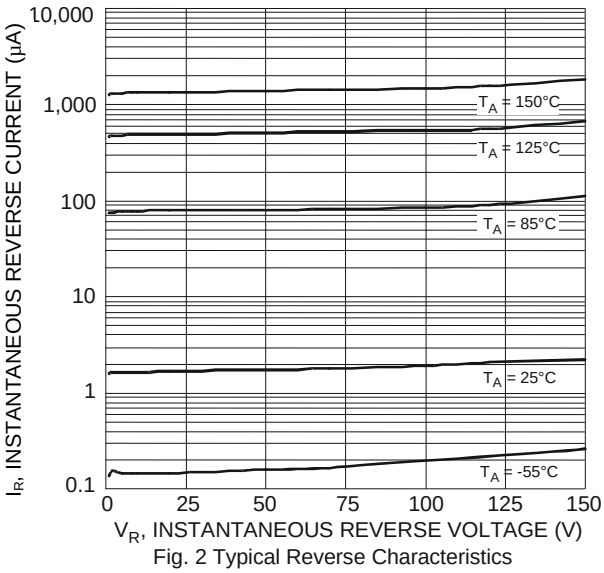

Fig. 2 Typical Reverse Characteristics

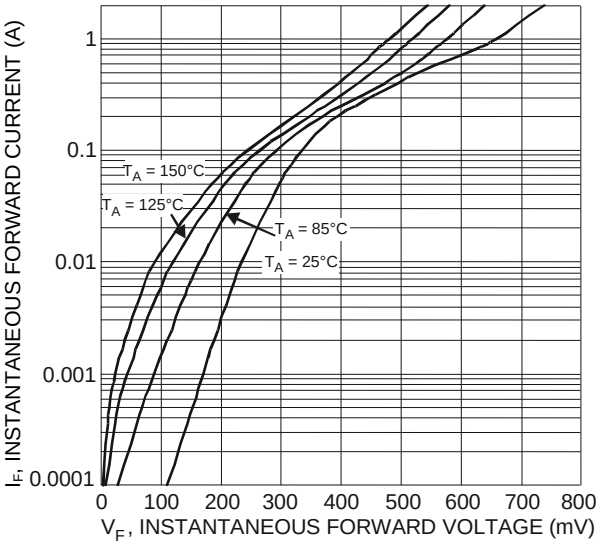

Fig. 3 Typical Forward Characteristics

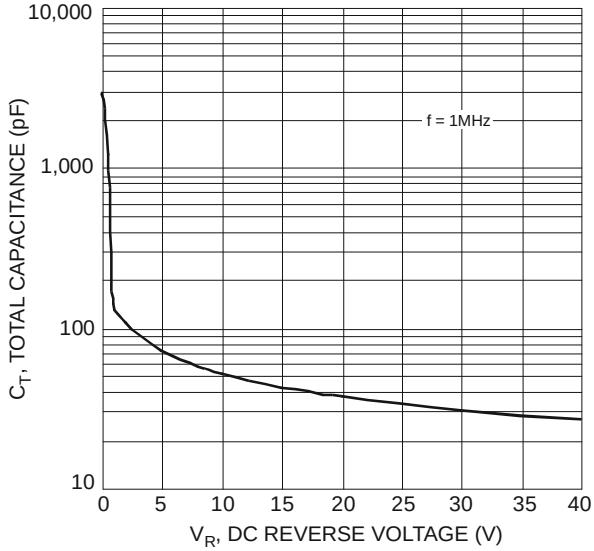

Fig. 4 Total Capacitance vs. Reverse Voltage

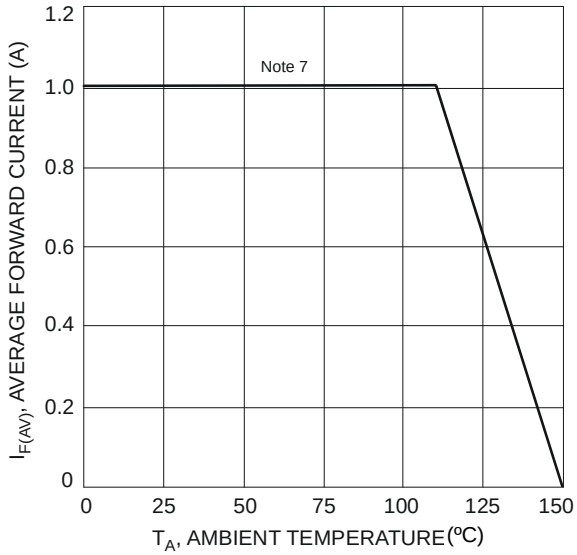

Fig. 5 DC Forward Current Derating Curve

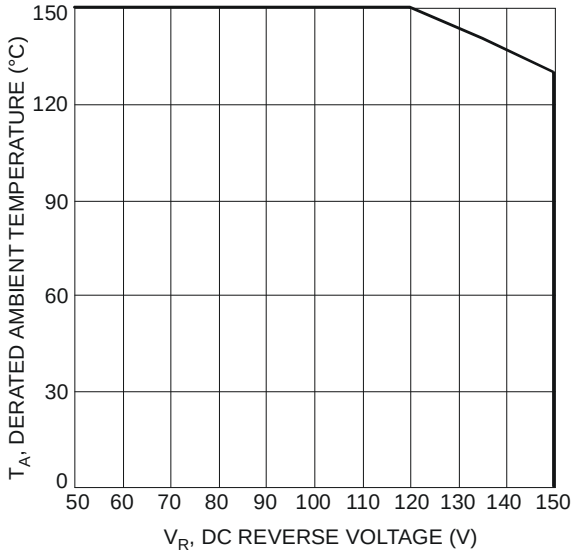

Fig. 6 Operating Temperature Derating

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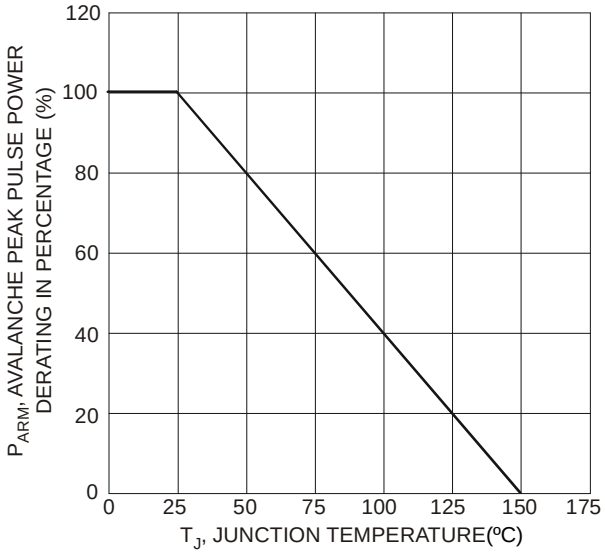


Fig. 7 Pulse Derating Curve

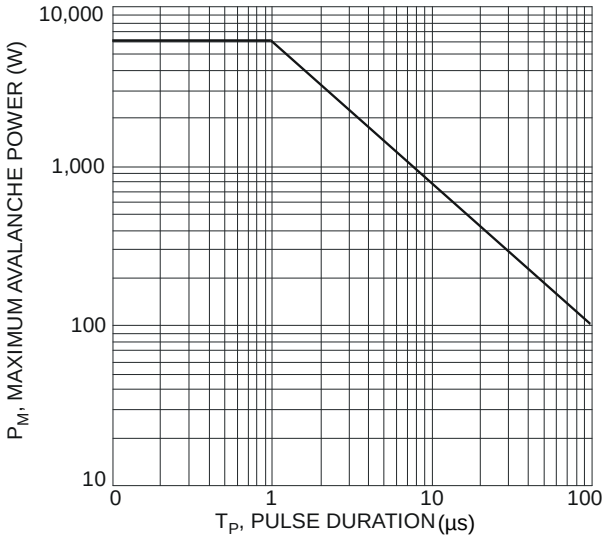
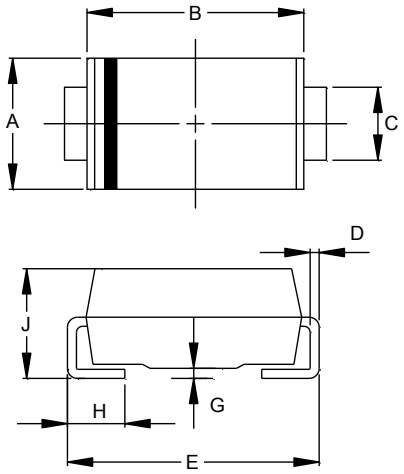


Fig. 8 Maximum Avalanche Power vs. Pulse Duration

Package Outline Dimensions

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

SMA

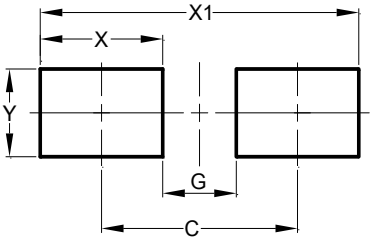


SMA		
Dim	**Min**	**Max**
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

Suggested Pad Layout

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

SMA



Dimensions	Value (in mm)
C	4.00
G	1.50
X	2.50
X1	6.50
Y	1.70

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