



**THE DATASHEET OF
SBR1U150SA-13**



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
- +150°C 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**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([SBR1U150SAQ](#))**

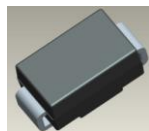
Applications

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

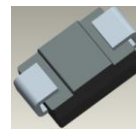
Mechanical Data

- 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
- Polarity: Cathode Band or Cathode Notch
- Weight: 0.064 grams (Approximate)

SMA



Top View



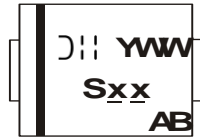
Bottom View

Ordering Information (Note 4)

Part Number	Case	Packaging
SBR1U150SA-13	SMA	5,000/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. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



S D B, S V B = Product Type Marking Code
 D I I = 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

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	V _{RRM}	150	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _{RM}		
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 5)	R _{θJS}	3	°C/W
Thermal Resistance Junction to Ambient (Note 6)	R _{θJA}	119	
Thermal Resistance Junction to Ambient (Note 7)	R _{θJA}	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 8)	V _{(BR)R}	150	-	-	V	I _R = 100μA
Forward Voltage Drop	V _F	-	-	0.70	V	I _F = 1.0A, T _J = +25°C
		-	-	0.56		I _F = 1.0A, T _J = +125°C
Leakage Current (Note 8)	I _R	-	-	0.1	mA	V _R = 150V, T _J = +25°C
		-	-	10		V _R = 150V, T _J = +125°C

- Notes:
- Theoretical R_{θJS} calculated from the top center of the die straight down to the PCB cathode tab solder junction.
 - FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>. T_A = +25°C.
 - Polymide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
 - Short duration pulse test used to minimize self-heating effect.

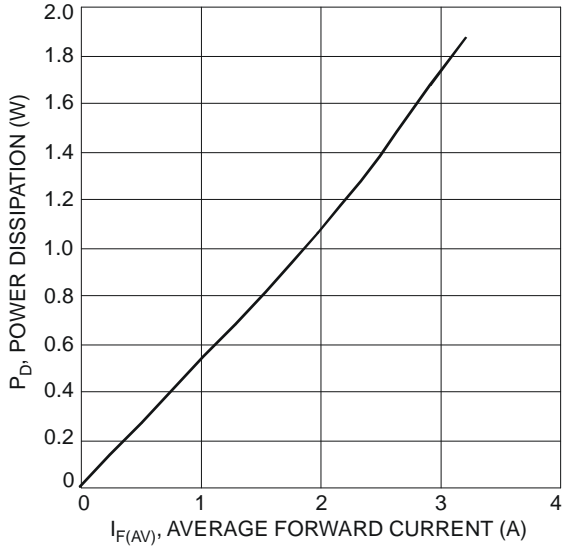


Fig. 1 Forward Power Dissipation

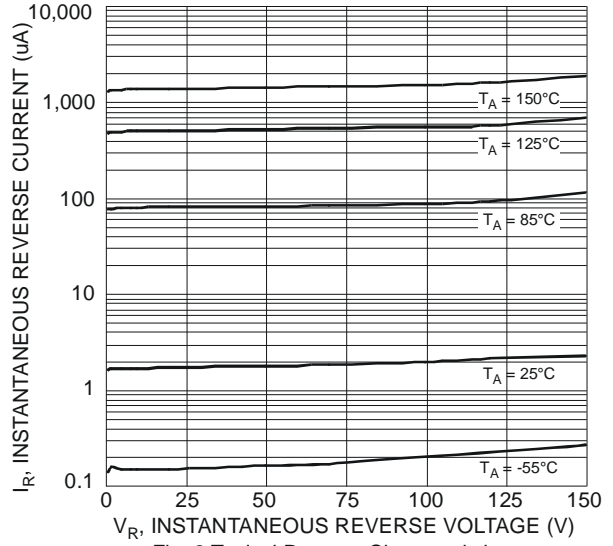


Fig. 2 Typical Reverse Characteristics

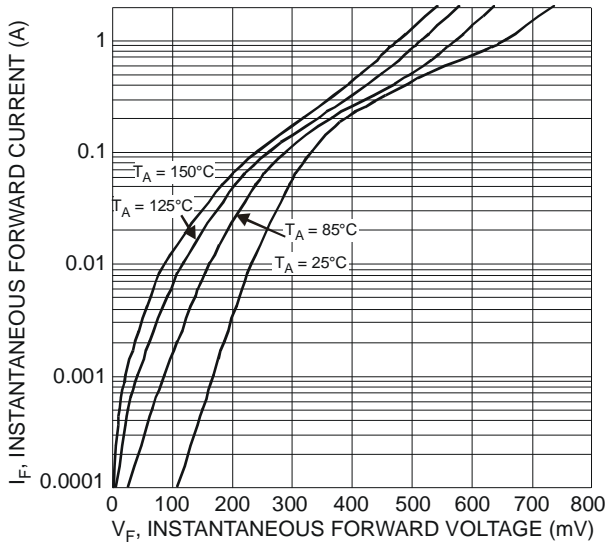


Fig. 3 Typical Forward Characteristics

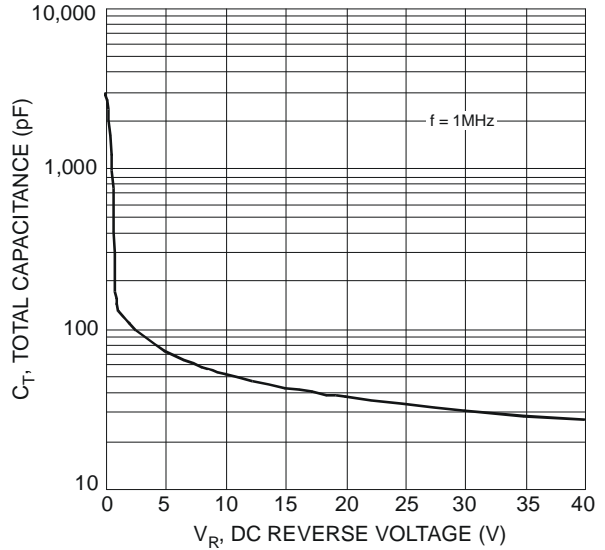


Fig. 4 Total Capacitance vs. Reverse Voltage

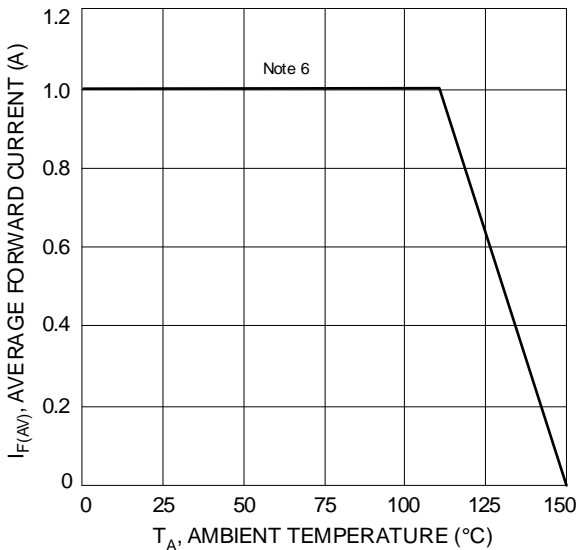


Fig. 5 DC Forward Current Derating Curve

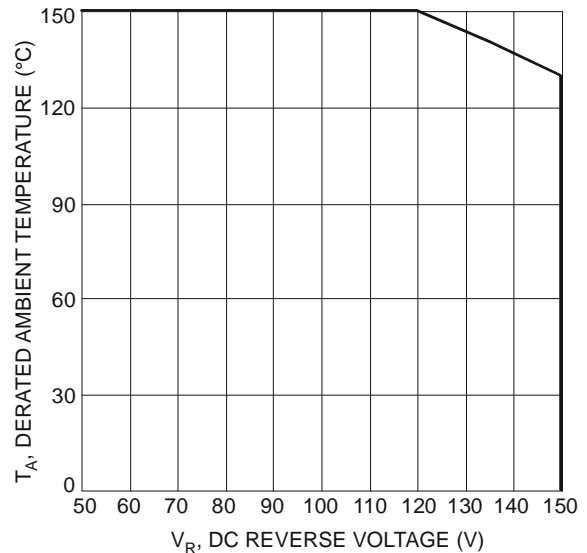


Fig. 6 Operating Temperature Derating

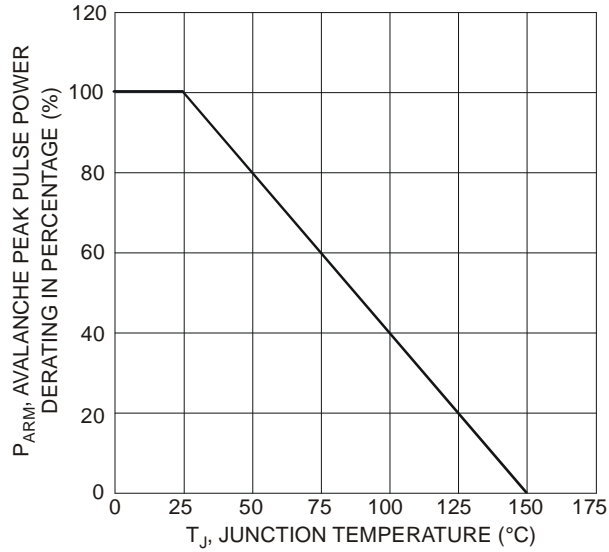


Fig. 7 Pulse Derating Curve

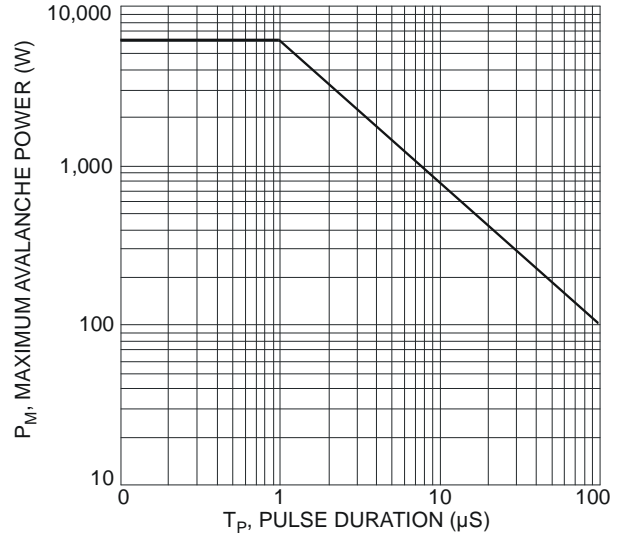
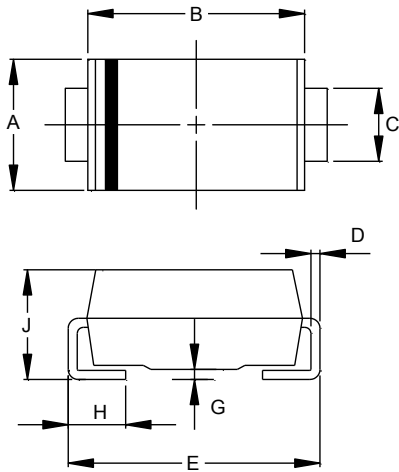


Fig. 8 Maximum Avalanche Power vs. Pulse Duration

Package Outline Dimensions

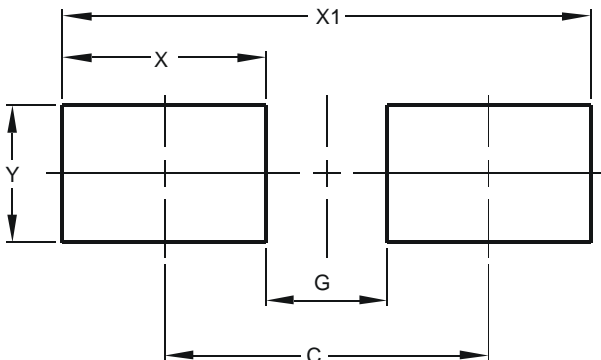
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



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 <http://www.diodes.com/package-outlines.html> for the latest version.



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

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