SBR1U150SA

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 (SBR®)
- 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)**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.**
  https://www.diodes.com/quality/product-definitions/
- **An automotive-compliant part is available under separate datasheet (SBR1U150SAQ)**

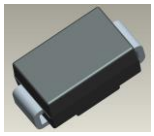
Applications

- Polarity protection diodes
- Re-circulating diodes
- Blocking diodes
- DC-DC
- AC-DC

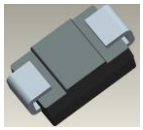
Mechanical Data

- Package: SMA
- Package 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



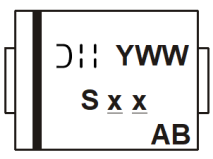
Bottom View

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBR1U150SA-13	SMA	5,000	Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ 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 https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



S V B = Product Type Marking Code
= Manufacturer's Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 4 for 2024)
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 capacitive 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 Fig. 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)	$R_{\theta JS}$	3	°C/W
Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	119	
Thermal Resistance Junction to Ambient (Note 7)	$R_{\theta JA}$	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 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	mA	V_R = 150V, T_J = +125°C
Total Capacitance	C_J	—	85	—	pF	V_R = 4V, f = 1MHz
Reverse-Recovery Time	t_{RR}	—	9	—	ns	I_F = 0.5A, I_R = 1A I_{RR} = 0.25A (RG1)

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

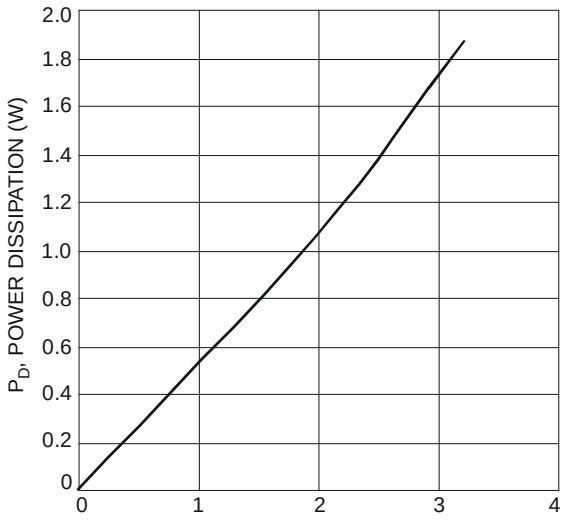


Fig. 1 Forward Power Dissipation

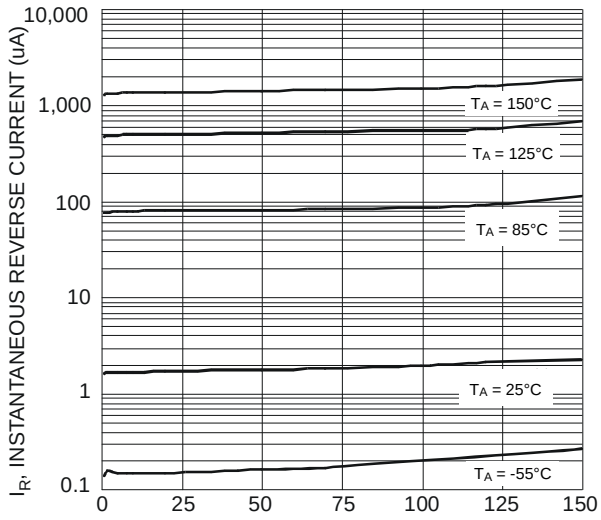


Fig. 2 Typical Reverse Characteristics

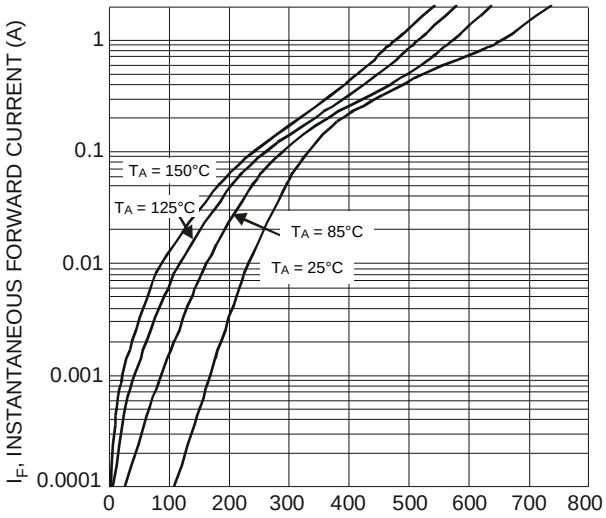


Fig. 3 Typical Forward Characteristics

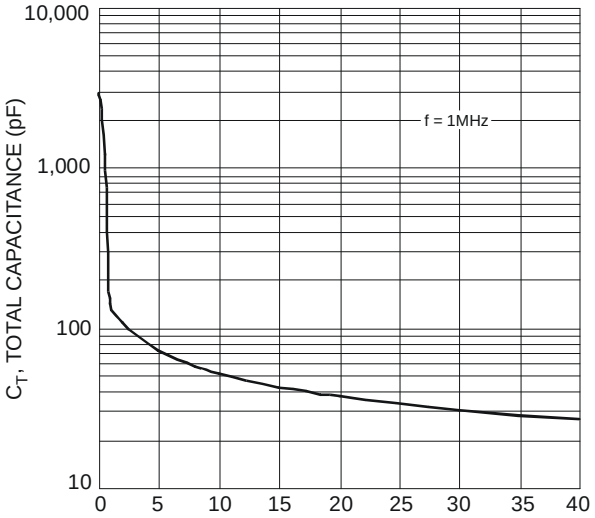


Fig. 4 Total Capacitance vs. Reverse Voltage

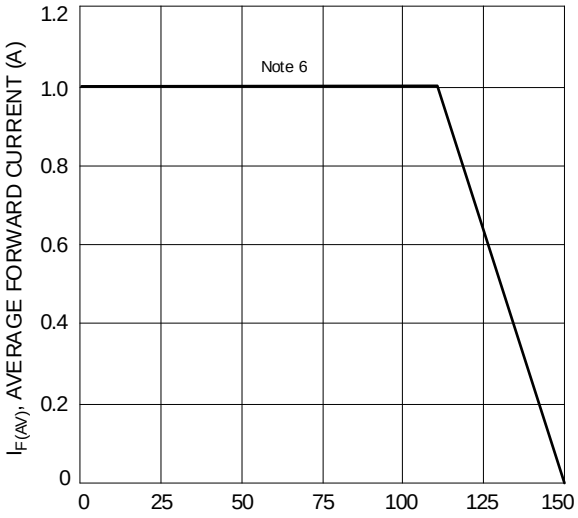


Fig. 5 DC Forward Current Derating Curve

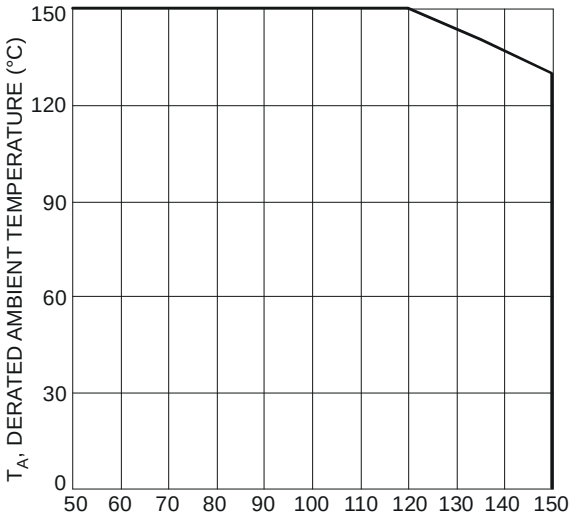


Fig. 6 Operating Temperature Derating

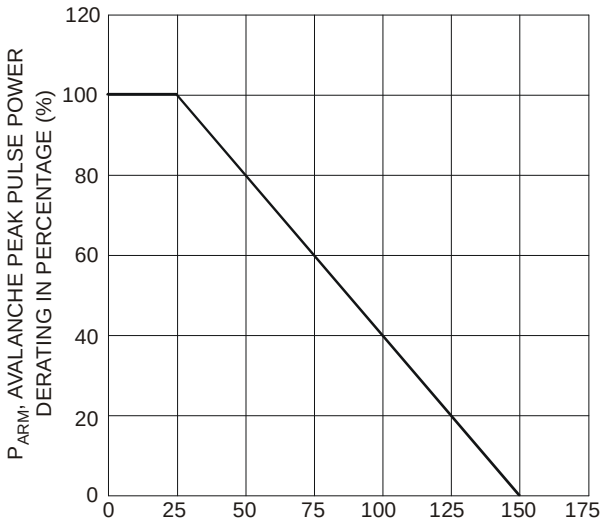


Fig. 7 Pulse Derating Curve

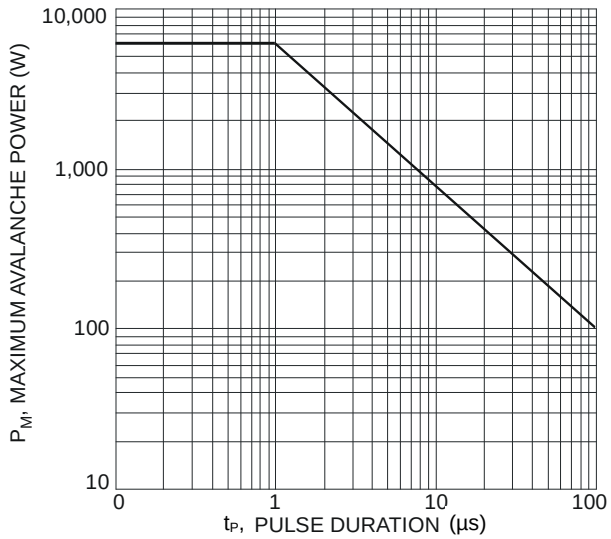
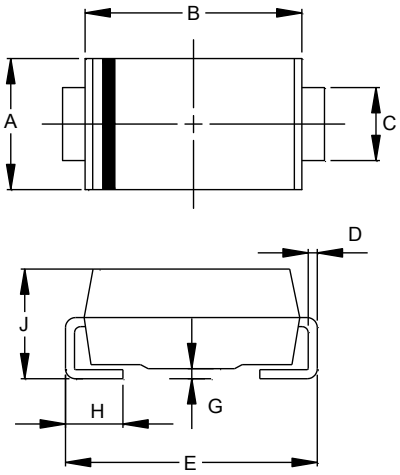


Fig. 8 Maximum Avalanche Power vs. Pulse Duration

Package Outline Dimensions

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

SMA

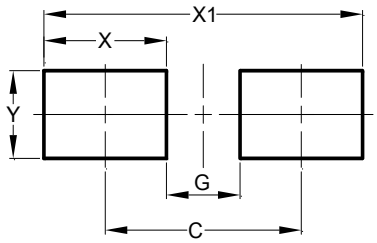


SMA		
Dim	**Min**	**Max**
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

Suggested Pad Layout

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

SMA



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

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