SBR1U200P1Q

1A SBR
SUPER BARRIER RECTIFIER
PowerDI123

Product Summary

V_{RRM} (V)	I_O (A)	V_F Max (V)	I_R Max (µA)
200	1	0.82	50

Features and Benefits

- Ultra-Low Forward Voltage Drop
- Low Reverse Leakage Current
- Superior Reverse Avalanche Capability
- Excellent High-Temperature Stability
- Patented Interlocking Clip Design for High Surge Current Capacity
- Patented Super Barrier Rectifier (SBR®) Technology
- Soft, Fast Switching Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBR1U200P1Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

Description & Applications

The SBR1U200P1Q is a single rectifier in the PowerDI®123 package, offering excellent high-temperature stability and low-forward voltage.

- Bridge diodes
- Flyback diodes
- Blocking diodes
- Reverse protection diodes

Mechanical Data

- Package: PowerDI123
- Package Material: Molded Plastic,
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity Indicator: Cathode Band
- Terminals: Matte Tin Finish Annealed over Copper Leadframe.
  Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.018 grams (Approximate)

Top View

Device Symbol

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBR1U200P1Q-7	PowerDI123	3,000	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

SDC = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: L = 2024)
M = Month (ex: 9 = September)

Date Code Key

Year	2016	-	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	D	-	L	M	N	P	R	S	T	U	V	W

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

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}	200	V
Average Rectified Output Current (See Figure 1)	I_O	1.0	A
Non-Repetitive Pulse Avalanche Energy at L = 10mH and Pulse Time = 82µs	E_{AS}	20	mJ
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I_{FSM}	40	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	140	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +175	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage	V_F	—	0.75 0.60	0.82 0.68	V	I_F = 1.0A, T_J = +25°C I_F = 1.0A, T_J = +125°C
Reverse Current (Note 6)	I_R	—	—	1.0	mA	V_R = 150V, T_J = +125°C
		—	—	50	µA	V_R = 200V, T_J = +25°C
		—	—	1.5	mA	V_R = 200V, T_J = +125°C
Junction Capacitance	C_J	—	37	—	pF	V_R = 4V, T_J = +25°C
Reverse-Recovery Time	t_{RR}	—	—	25	ns	I_F = 0.5A, I_R = 1A, I_{RR} = 0.25A

Notes: 5. FR-4 PCB, 2 oz. copper, minimum recommended pad layout per http://www.diodes.com/package-outlines.html.
6. Short duration pulse test used to minimize self-heating effect.

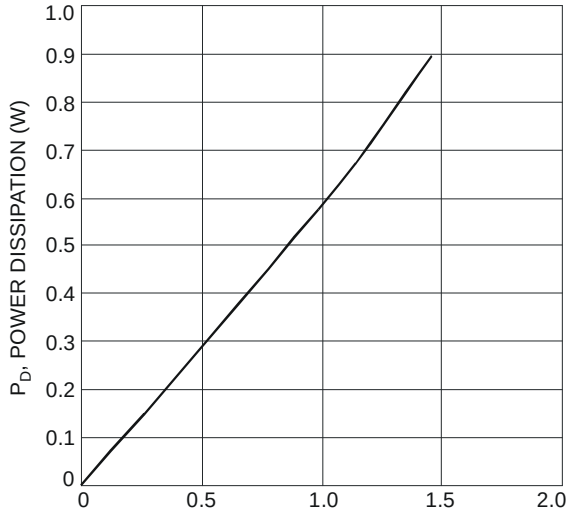


Fig. 1 Forward Power Dissipation

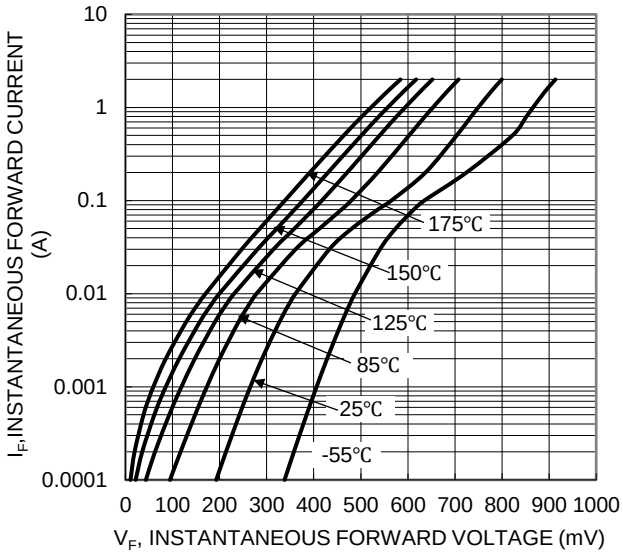


Fig. 2 Typical Forward Characteristics

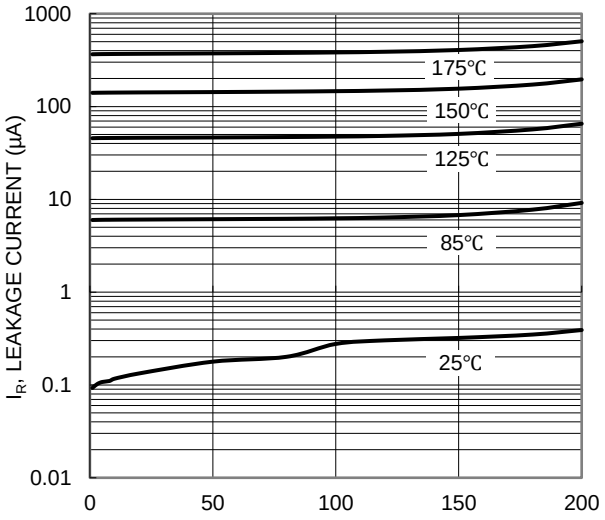


Fig. 3 Typical Reverse Characteristics

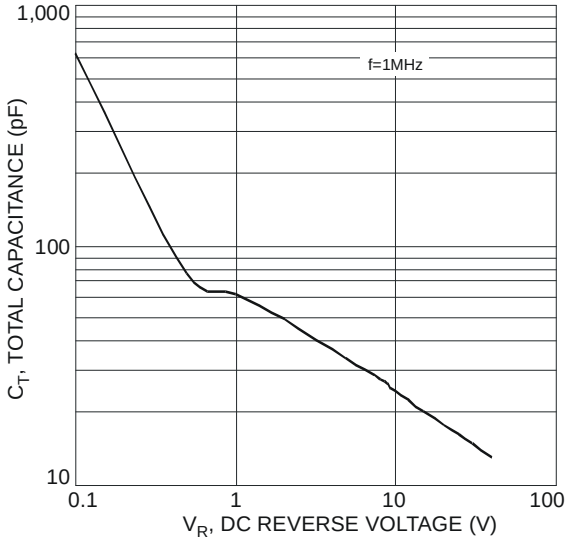


Fig. 4 Total Capacitance vs. Reverse Voltage

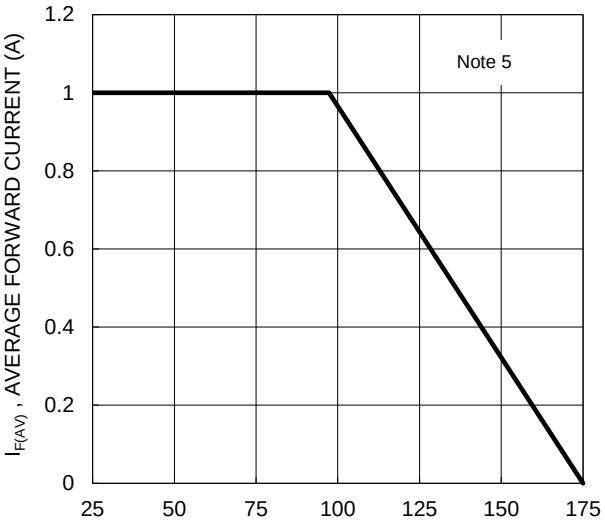


Fig 5. Forward Current Derating Curve

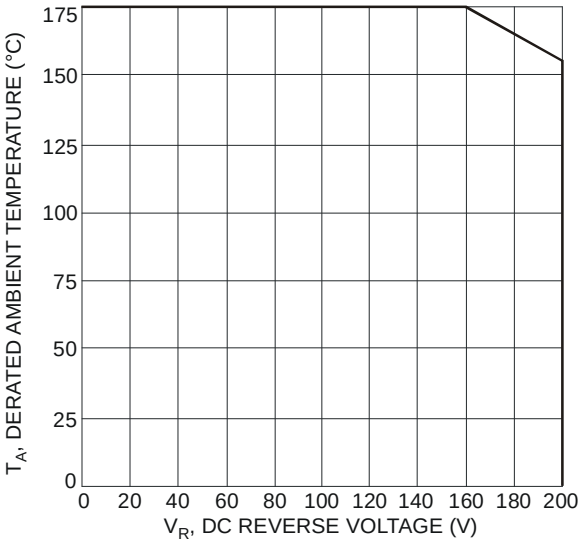
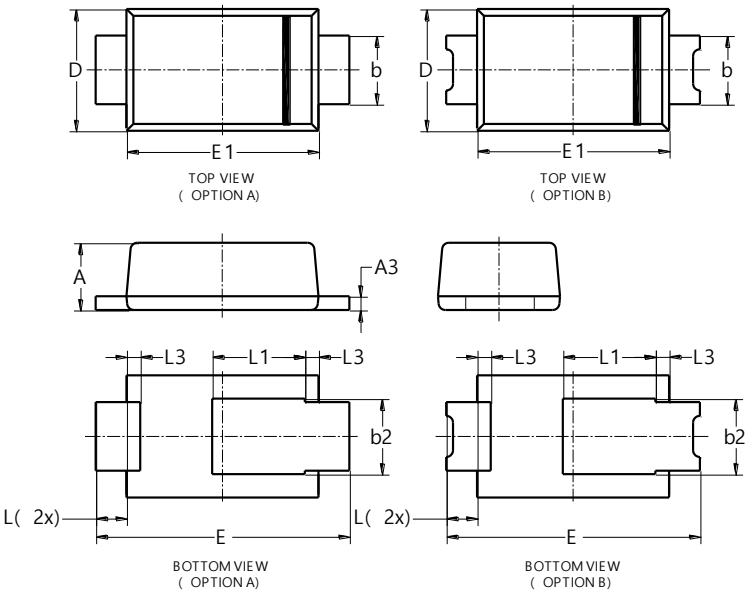


Fig. 6 Operating Temperature Derating

Package Outline Dimensions

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

PowerDI123

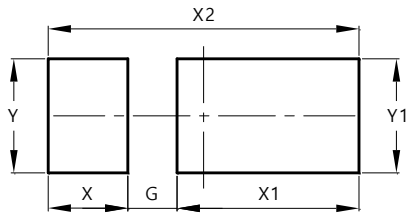


PowerDI123			
Dim	**Min**	**Max**	**Typ**
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

Suggested Pad Layout

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

PowerDI123



Dimensions	Value (in mm)
G	0.65
X	1.05
X1	2.40
X2	4.10
Y	1.50
Y1	1.50

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