

Product Summary

V_{RRM} (V)	I_O (A)	V_F Max (V)	I_R Max (μ A)
60	3	0.62	100

Description

The SBR3U60P1Q is a single rectifier in the PowerDI[®]123 package, offering excellent high-temperature stability and low forward voltage.

Applications

- Bridge Diodes
- Flyback Diodes
- Blocking Diodes
- Reverse Protection Diodes

Features and Benefits

- Ultra Low Forward Voltage Drop
- Low Reverse Leakage Current
- Patented Super Barrier Rectifier SBR[®] Technology
- Patented Interlocking Clip Design for High Surge Current Capacity
- Soft, Fast Switching Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

- Case: PowerDI123
- Case 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 ⁽⁶³⁾
- Weight: 0.018 grams (Approximate)

PowerDI123



Top View



Device Symbol

Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
SBR3U60P1Q-7	Automotive	PowerDI123	3,000/Tape & Reel
SBR3U60P1Q-13	Automotive	PowerDI123	10,000/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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



3U6 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: C = 2015)
 M = Month (ex: 9 = September)

Date Code Key

Year	2015	2016	2017	2018	2019	2020	2021
Code	C	D	E	F	G	H	I

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 capacitance load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V _{RRM}	60	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _{RM}		
RMS Reverse Voltage	V _{R(RMS)}	42	V
Average Rectified Output Current	I _O	3.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	80	A
Repetitive Peak Avalanche Energy (1μs, +25°C)	P _{ARM}	2,100	W

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance Junction to Soldering (Note 7)	R _{θJS}	5	°C/W
Thermal Resistance Junction to Ambient (Note 6)	R _{θJA}	175	
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
Forward Voltage Drop	V _F	—	—	0.62	V	I _F = 3.0A, T _J = +25°C
Forward Voltage Drop	V _F	—	—	0.61	V	I _F = 3.0A, T _J = +125°C
Leakage Current (Note 8)	I _R	—	—	100	μA	V _R = 60V, T _J = +25°C
Leakage Current (Note 8)	I _R	—	—	12	mA	V _R = 60V, T _J = +125°C

- Notes:
6. FR-4 PCB, 2 oz. copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
 7. Theoretical R_{θJS} calculated from the top center of the die straight down to the PCB cathode tab solder junction
 8. Short duration pulse test used to minimize self-heating effect.

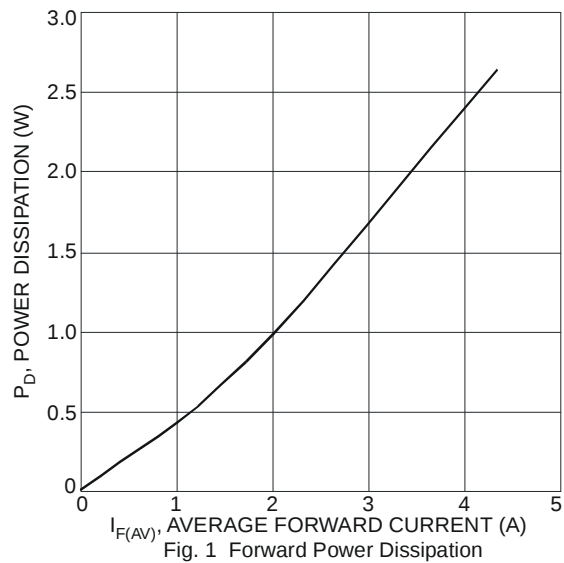


Fig. 1 Forward Power Dissipation

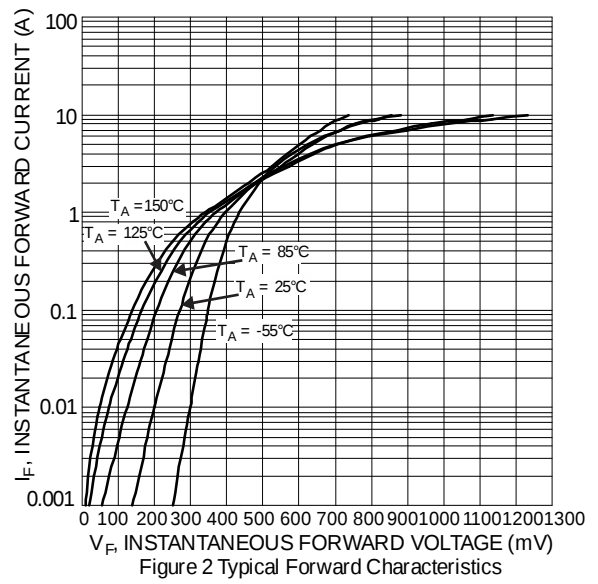


Figure 2 Typical Forward Characteristics

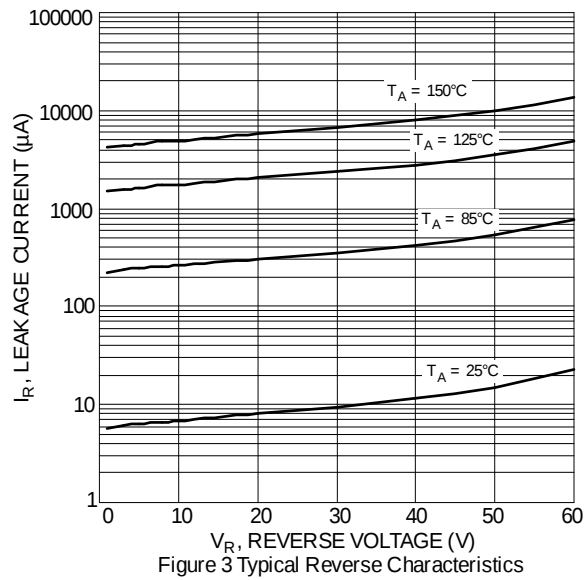


Figure 3 Typical Reverse Characteristics

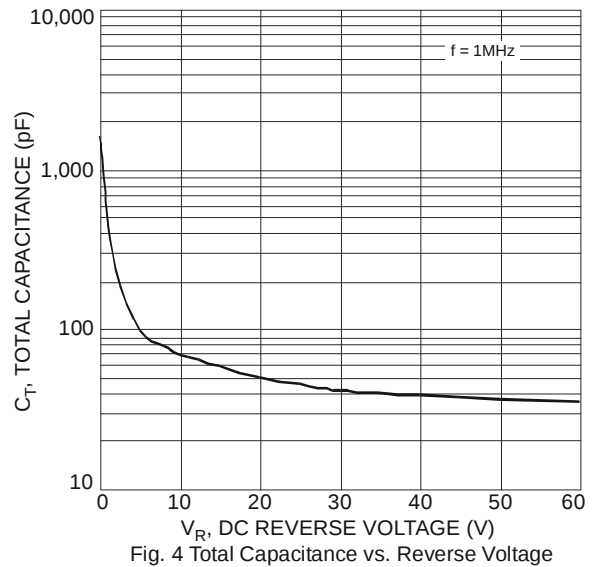


Fig. 4 Total Capacitance vs. Reverse Voltage

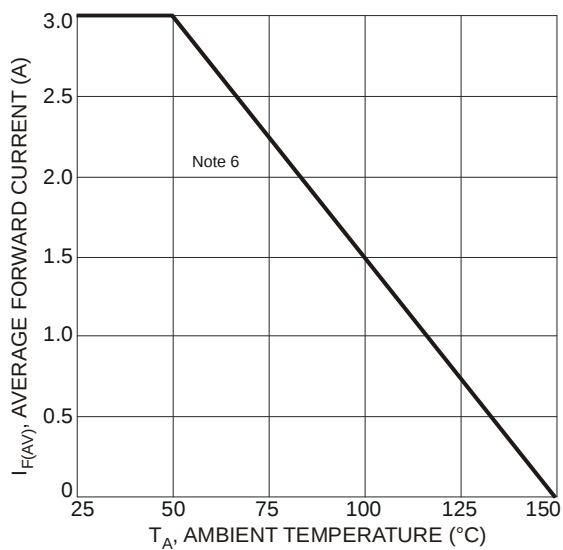


Fig. 5 Forward Current Derating Curve

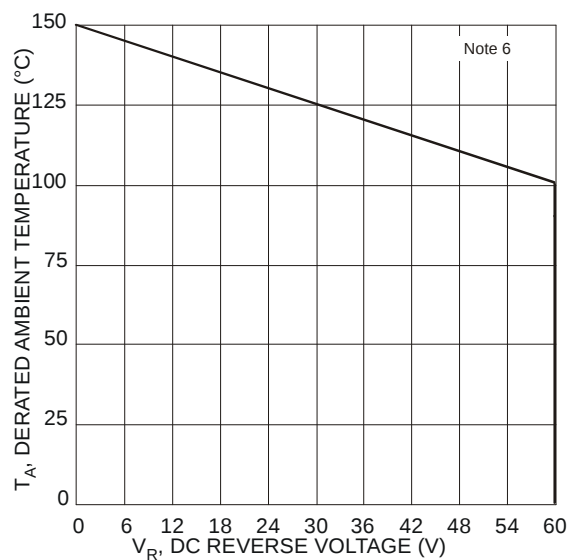


Fig. 6 Operating Temperature Derating

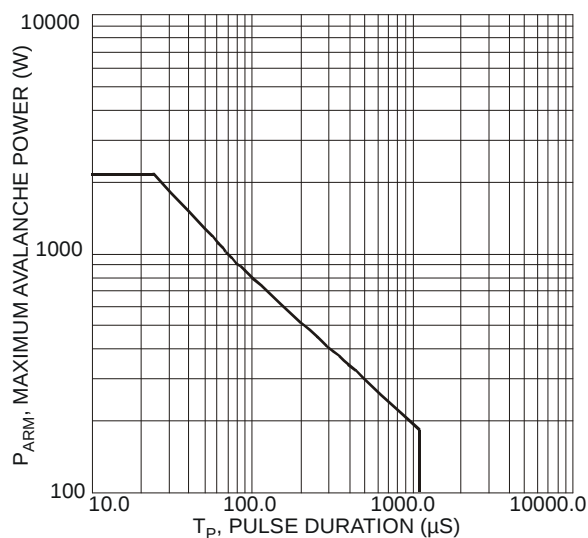
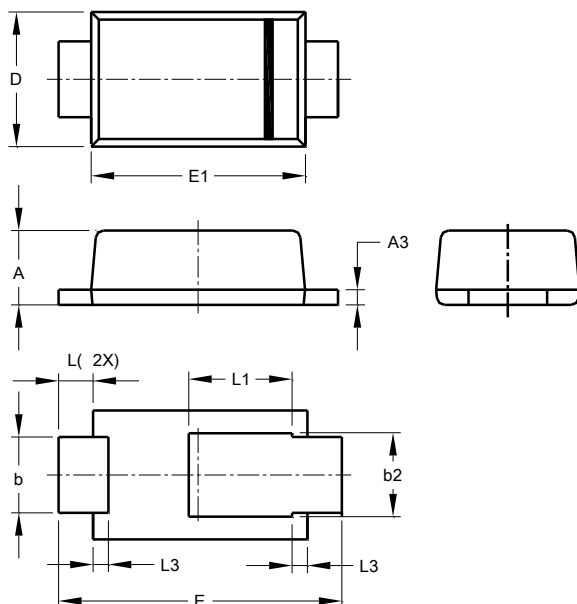


Fig. 7 Maximum Avalanche Power Curve, Per Element

Package Outline Dimensions

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

PowerDI123

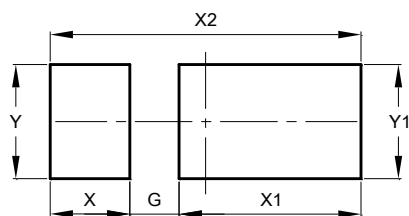


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> 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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