

## Product Summary

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (μA)
60	3	0.62	100

## Description

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

## Applications

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

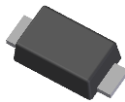
## Features and Benefits

- Ultra-Low Forward Voltage Drop
- Low Reverse Leakage Current
- Patented Super Barrier Rectifier SBR<sup>®</sup> 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)**
- **The SBR3U60P1Q 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/>

## 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 Lead-Frame. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.018 grams (Approximate)

PowerDI123



Top View



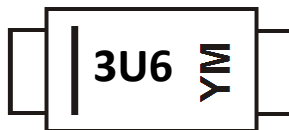
Device Symbol

## Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBR3U60P1Q-7	PowerDI123	3,000	Tape & Reel
SBR3U60P1Q-13	PowerDI123	10,000	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



3U6 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: L = 2024)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2015	-	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	C	-	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<sub>A</sub> = +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	V <sub>RRM</sub>	60	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>RM</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	42	V
Average Rectified Output Current	I <sub>O</sub>	3.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms	I <sub>FSM</sub>	80	A
Single Half Sine-Wave Superimposed on Rated Load			
Repetitive Peak Avalanche Energy (1μs, +25°C)	P <sub>ARM</sub>	2,100	W

**Thermal Characteristics** (Note 8)

Characteristic	Symbol	Value	Unit
Thermal Resistance Junction to Soldering (Note 6)	R <sub>θJS</sub>	5	°C/W
Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	125	
Operating and Storage Temperature Range (Note 8)	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

**Electrical Characteristics** (@ T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V <sub>F</sub>	—	—	0.62	V	I <sub>F</sub> = 3.0A, T <sub>J</sub> = +25°C
Forward Voltage Drop	V <sub>F</sub>	—	—	0.61	V	I <sub>F</sub> = 3.0A, T <sub>J</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	—	100	μA	V <sub>R</sub> = 60V, T <sub>J</sub> = +25°C
Leakage Current (Note 7)	I <sub>R</sub>	—	—	12	mA	V <sub>R</sub> = 60V, T <sub>J</sub> = +125°C
Junction Capacitance	C <sub>J</sub>	—	110	—	pF	V <sub>R</sub> = 4V, T <sub>J</sub> = +25°C
Reverse Recovery Time	t <sub>RR</sub>	—	11	—	ns	I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1A, I <sub>RR</sub> = 0.25A

- Notes:
- FR-4 PCB, 2 oz. copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
  - Theoretical R<sub>θJS</sub> calculated from the top center of the die straight down to the PCB cathode tab solder junction.
  - Short duration pulse test used to minimize self-heating effect.
  - The heat generated must be less than thermal conductivity from junction-to-ambient: dP<sub>D</sub>/DT<sub>J</sub> < 1/ R<sub>θJA</sub>.

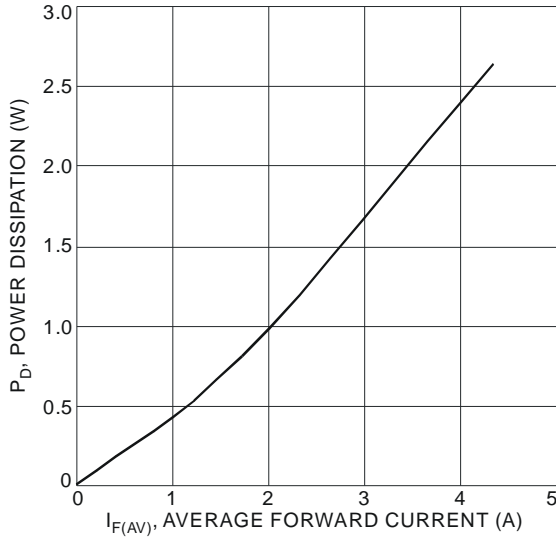


Figure 1 Forward Power Dissipation

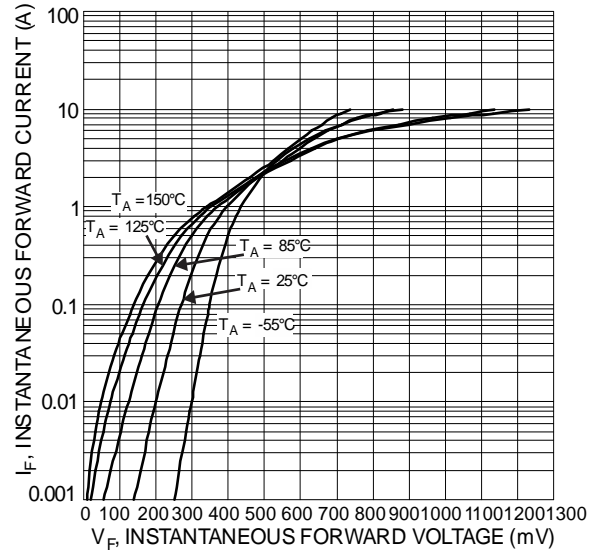


Figure 2 Typical Forward Characteristics

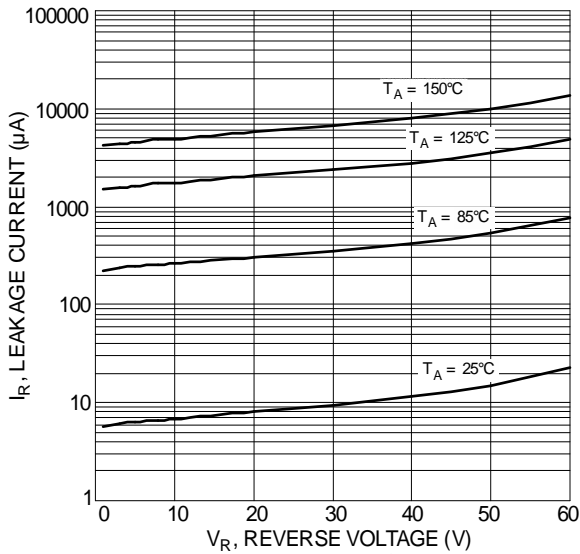


Figure 3 Typical Reverse Characteristics

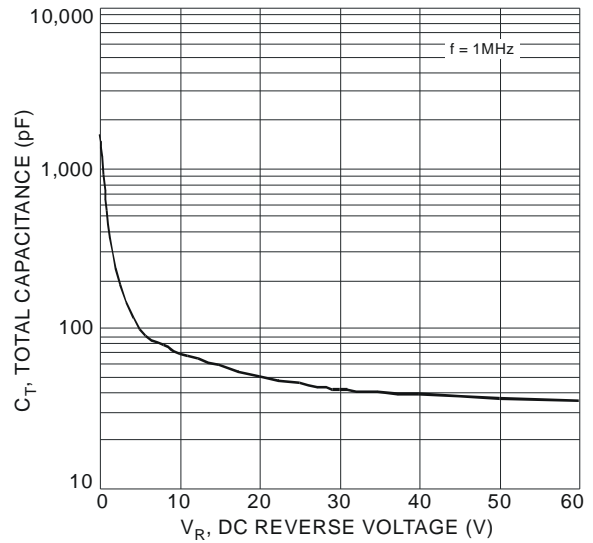


Figure 4 Total Capacitance vs. Reverse Voltage

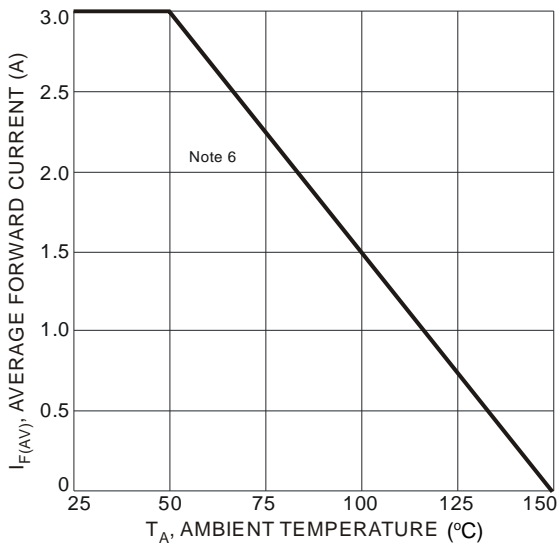


Figure 5 Forward Current Derating Curve

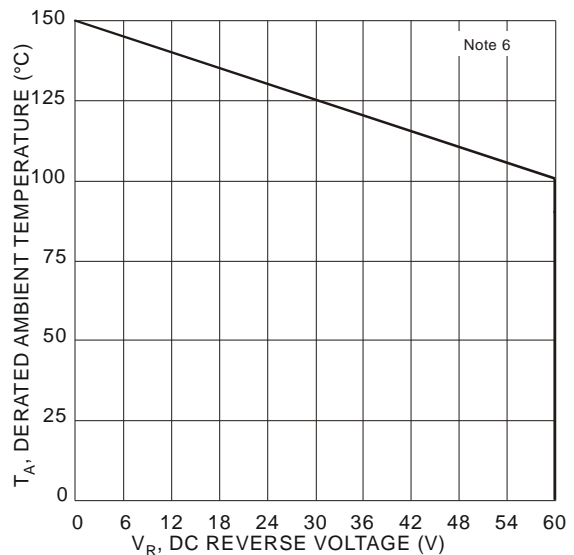


Figure 6 Operating Temperature Derating

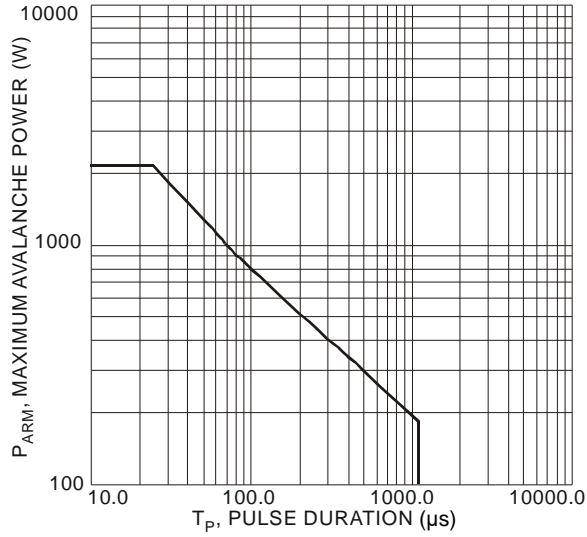
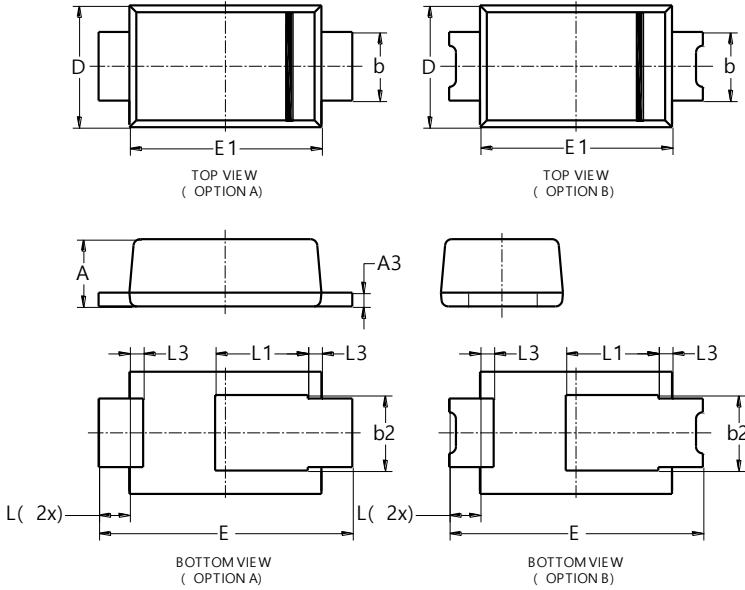


Figure 7 Maximum Avalanche Power Curve, Per Element

**Package Outline Dimensions**

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

**PowerDI123**

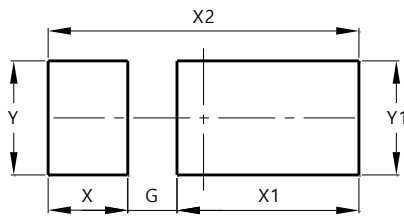


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

**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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