

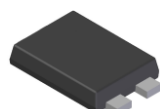
## Product Summary (@ T<sub>A</sub> = +25°C)

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V) @ +25°C	I <sub>R</sub> Max (mA) @ +25°C
60	3	0.60	0.06

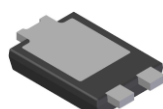
## Description & Applications

Packaged in the compact thermally efficient PowerDI<sup>®</sup>5, SBR3U60P5Q provides low V<sub>F</sub> and low reverse leakage at high temperatures. It is ideal for use in the following applications:

- Bridge Diodes
- Freewheeling Diodes
- Blocking Diodes
- Reverse Protection Diodes

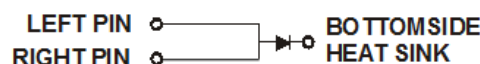


Top View



Bottom View

PowerDI5



**Note:** Pins Left & Right must be electrically connected at the printed circuit board.

## Features and Benefits

- Very Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented SBR<sup>®</sup> technology provides superior avalanche capability than Schottky diodes, ensuring more rugged and reliable end applications
- **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: PowerDI5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Weight: 0.093 grams (Approximate)

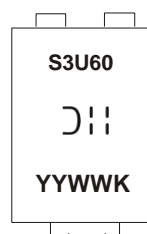
## Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
SBR3U60P5Q-13	Automotive	PowerDI5	5,000/Tape & Reel
SBR3U60P5Q-13D (Note 6)	Automotive	PowerDI5	5,000/Tape & Reel
SBR3U60P5Q-7 (Note 6)	Automotive	PowerDI5	1,500/Tape & Reel
SBR3U60P5Q-7D (Note 6)	Automotive	PowerDI5	1,500/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](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/product\\_compliance\\_definitions.html](http://www.diodes.com/product_compliance_definitions.html).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.
  6. PowerDI5 available in 5K quantity on 13-inch reel & 12mm tape, part number suffix "13D"; 1.5K quantity on 7-inch reel, part number suffix "7". Diodes also provides 12mm tape with 7-inch reel, part number suffix "7D".

## Marking Information

PowerDI5



311 = Manufacturers' Marking  
 S3U60 = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 16 = 2016)  
 WW = Week Code (01 to 53)  
 K = Factory Designator

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

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub>	60	V
Average Rectified Output Current	I <sub>O</sub>	3	A
Non-Repetitive Avalanche Energy (T <sub>J</sub> = +25°C, I <sub>AS</sub> = 2A, L = 50mH)	E <sub>AS</sub>	120	mJ
Non-Repetitive Peak Forward Surge Current 8.3ms	I <sub>FSM</sub>	80	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance (Note 7)	R <sub>θJA</sub>	95	°C/W
Typical Thermal Resistance (Note 8)	R <sub>θJA</sub>	35	°C/W
Typical Thermal Resistance (Note 7)	R <sub>θJC</sub>	15	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175	°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>	—	0.43	—	V	I <sub>F</sub> = 1.5A, T <sub>J</sub> = +25°C
		—	0.53	0.60		I <sub>F</sub> = 3.0A, T <sub>J</sub> = +25°C
		—	0.40	—		I <sub>F</sub> = 1.5A, T <sub>J</sub> = +125°C
		—	0.52	—		I <sub>F</sub> = 3.0A, T <sub>J</sub> = +125°C
Leakage Current (Note 9)	I <sub>R</sub>	—	0.009	0.06	mA	V <sub>R</sub> = 60V, T <sub>J</sub> = +25°C
		—	2.7	15		V <sub>R</sub> = 60V, T <sub>J</sub> = +125°C
Total Capacitance	C <sub>T</sub>	—	110	—	pF	V <sub>R</sub> = 4V, T <sub>J</sub> = +25°C, f = 1MHz

Notes: 7. Device mounted on FR-4 PCB, 2oz. copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.  
 8. Device mounted on 2 inch x 2 inch Al board.  
 9. Short duration pulse test used to minimize self-heating effect.

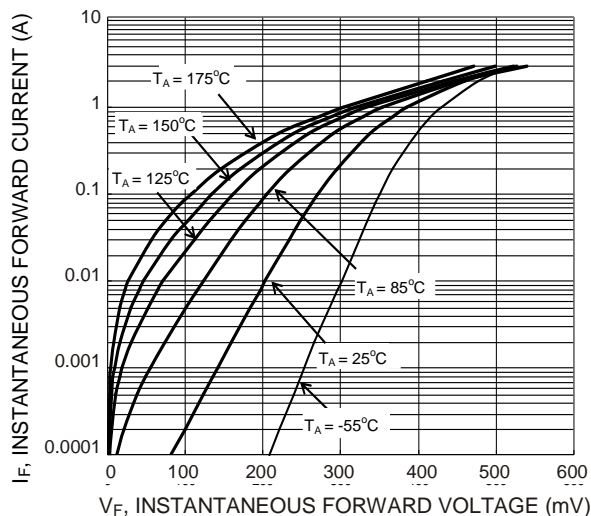


Figure 1 Typical Forward Characteristics

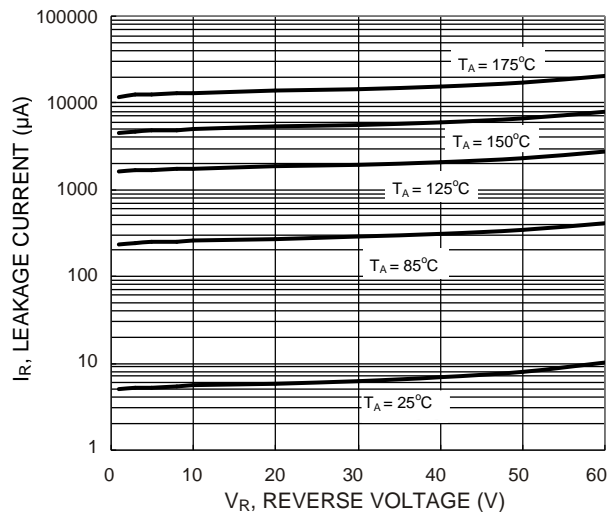


Figure 2 Typical Reverse Characteristics

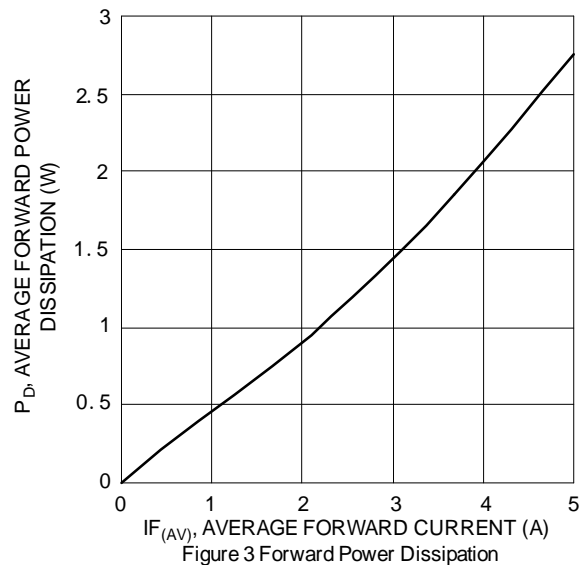


Figure 3 Forward Power Dissipation

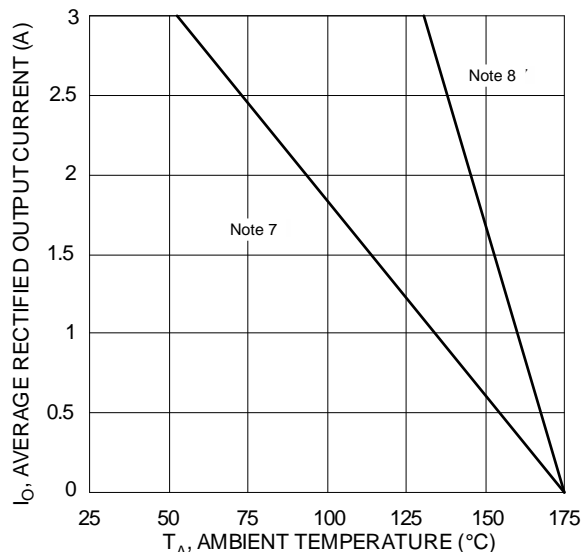


Figure 4 DC Forward Current Derating Curve

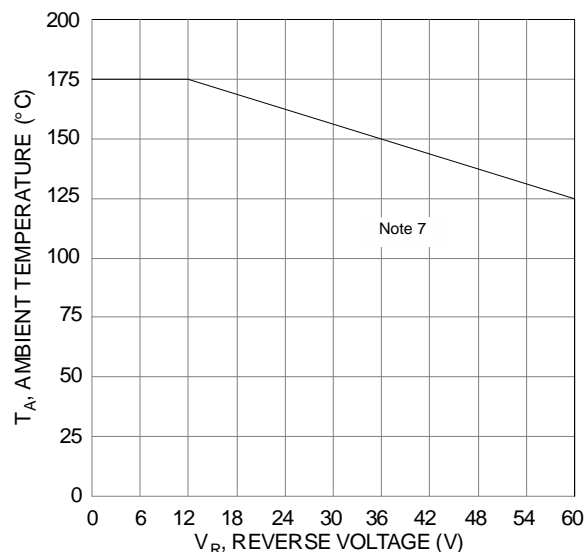


Figure 5 Operating Temperature Derating

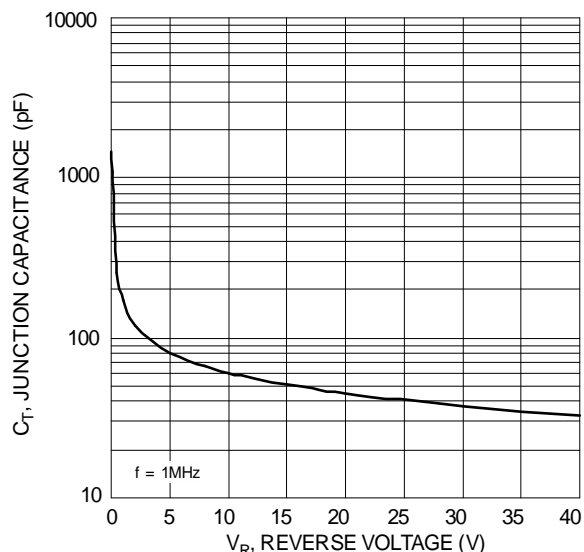


Figure 6 Typical Junction Capacitance

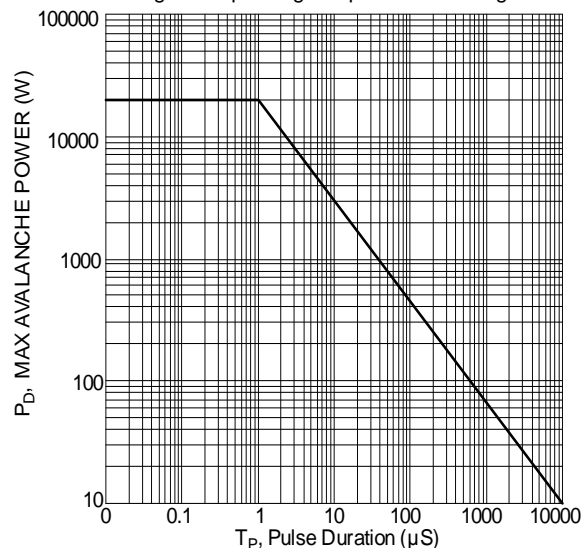
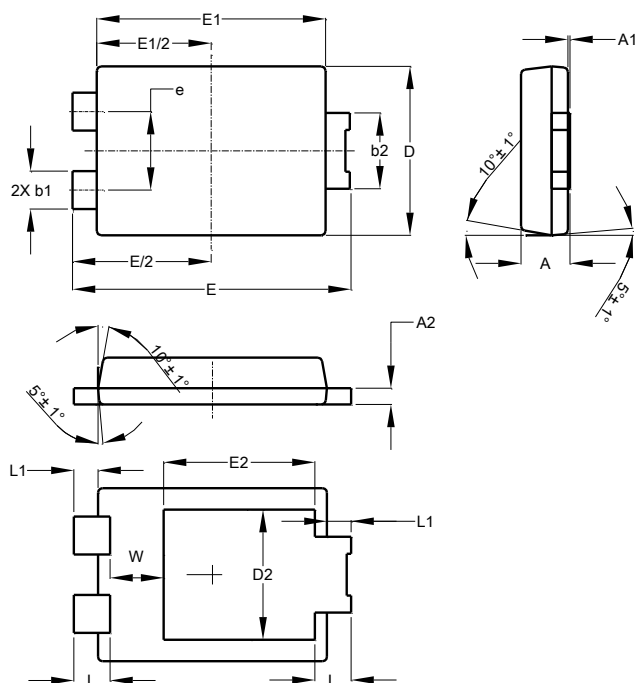


Figure 4 Max Avalanche Power

## Package Outline Dimensions

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

### PowerDI5

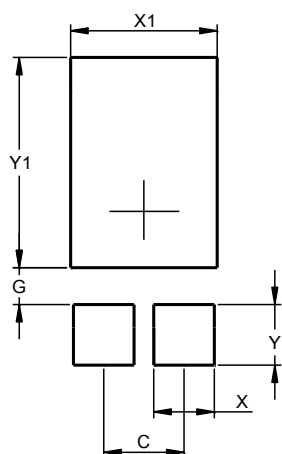


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.504
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

## Suggested Pad Layout

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

### PowerDI5



Dimensions	Value (in mm)
C	1.840
G	0.852
X	1.390
X1	3.360
Y	1.400
Y1	4.860

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