

Product Summary (@ T_A = +25°C)

V _{RRM} (V)	I _O (A)	V _F Max (V) @ +25°C	I _R Max (mA) @ +25°C
60	3	0.60	0.06

Description & Applications

Packaged in the compact thermally efficient PowerDI[®]5, the SBR3U60P5Q provides low V_F 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

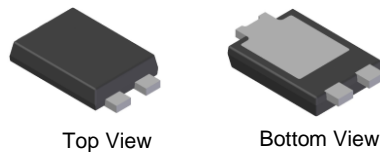
Features and Benefits

- Very Low-Forward Voltage Drop
- Excellent High-Temperature Stability
- Patented SBR[®] 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)**
- **The SBR3U60P5Q 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

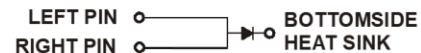
- Package: PowerDI5
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Terminal Connections: See Diagram Below
- Weight: 0.093 grams (Approximate)

PowerDI5



Top View

Bottom View



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

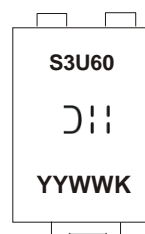
Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBR3U60P5Q-13	PowerDI5	5,000	Tape & Reel
SBR3U60P5Q-13D (Note 5)	PowerDI5	5,000	Tape & Reel
SBR3U60P5Q-7 (Note 5)	PowerDI5	1,500	Tape & Reel
SBR3U60P5Q-7D (Note 5)	PowerDI5	1,500	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/>.
 5. 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 Incorporated 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: 25 = 2025)
 WW = Week Code (01 to 53)
 K = Factory Designator

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

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

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance (Note 6)	R _{θJA}	95	°C/W
Typical Thermal Resistance (Note 7)	R _{θJA}	35	°C/W
Typical Thermal Resistance (Note 6)	R _{θJC}	15	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +175	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V _F	—	0.43 0.53 0.40 0.52	— 0.60 — —	V	I _F = 1.5A, T _J = +25°C I _F = 3.0A, T _J = +25°C I _F = 1.5A, T _J = +125°C I _F = 3.0A, T _J = +125°C
Leakage Current (Note 8)	I _R	—	0.009 2.7	0.06 15	mA	V _R = 60V, T _J = +25°C V _R = 60V, T _J = +125°C
Total Capacitance	C _T	—	110	—	pF	V _R = 4V, T _J = +25°C, f = 1MHz
Switching Speed t _{RR}	t _{RR}	—	13	—	ns	I _F = 0.5A, I _R = 1A, I _{RR} = 0.25A (RG1)

Notes: 6. Device mounted on FR-4 PCB, 2oz. copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
 7. Device mounted on 2 inch x 2 inch Al board.
 8. Short duration pulse test used to minimize self-heating effect.

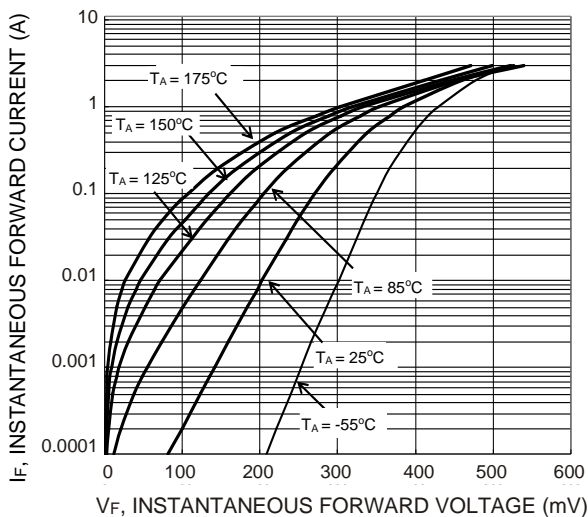


Figure 1 Typical Forward Characteristics

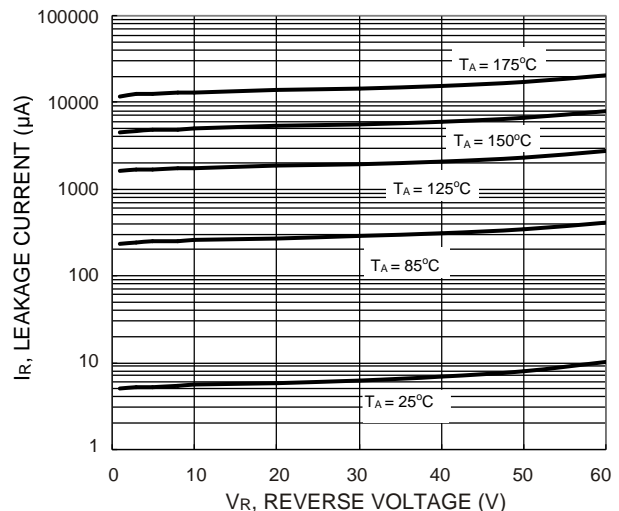


Figure 2 Typical Reverse Characteristics

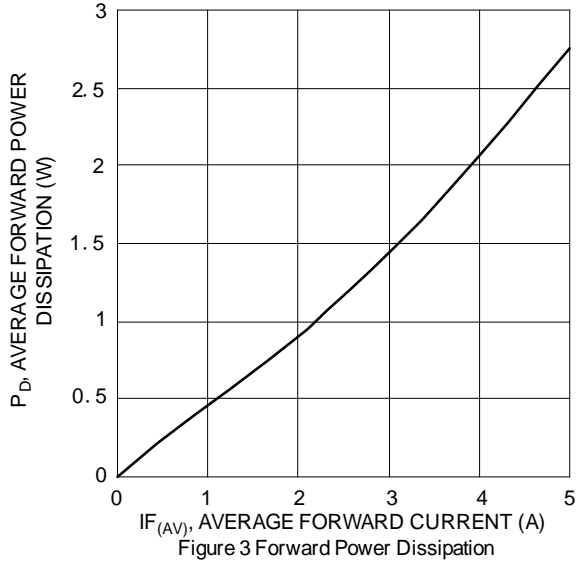


Figure 3 Forward Power Dissipation

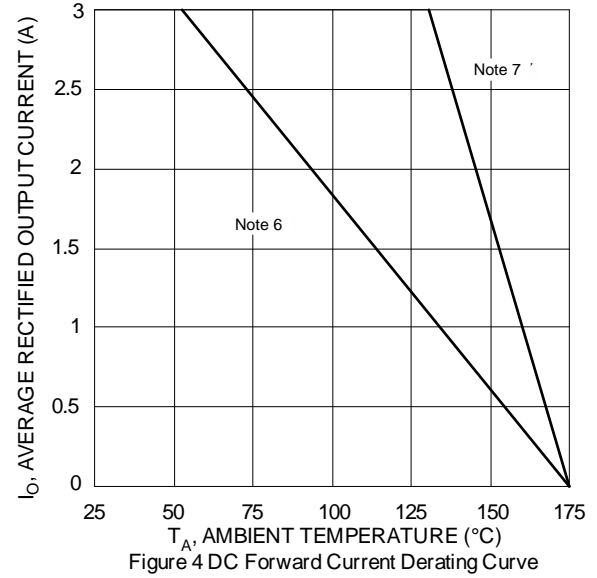


Figure 4 DC Forward Current Derating Curve

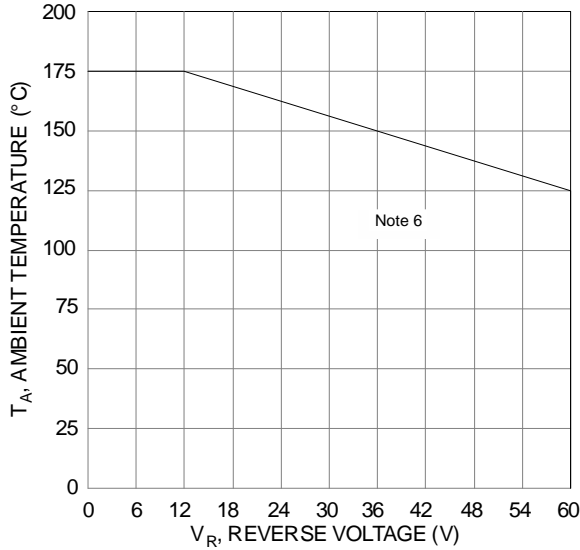


Figure 5 Operating Temperature Derating

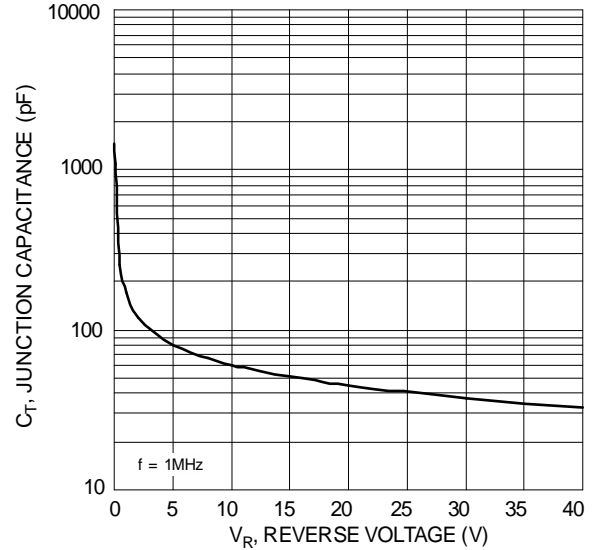


Figure 6 Typical Junction Capacitance

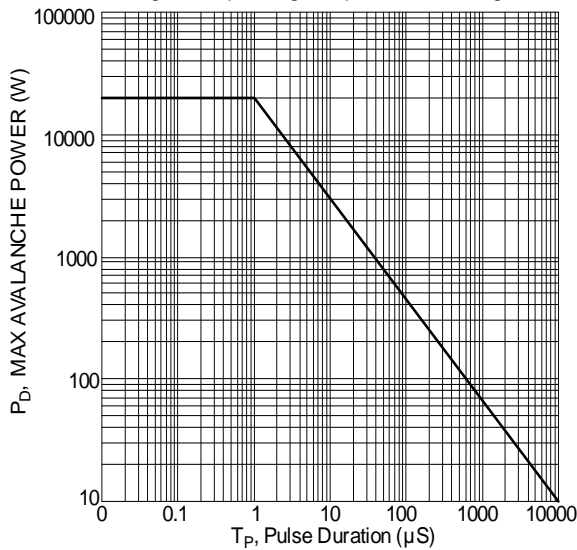
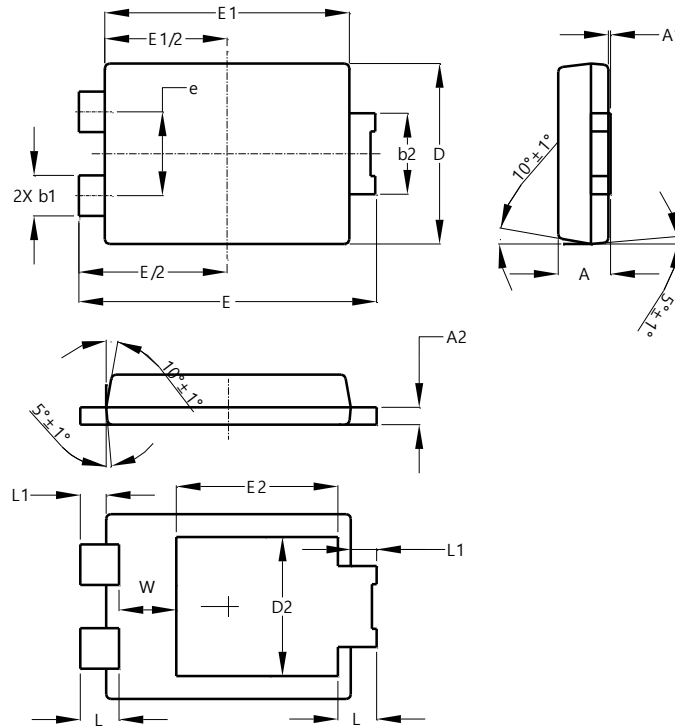


Figure 7 Max Avalanche Power

Package Outline Dimensions

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

PowerDI5

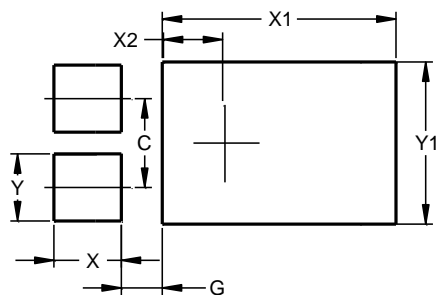


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

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	1.400
X1	4.860
X2	1.310
Y	1.390
Y1	3.360

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