



**THE DATASHEET OF
SBR8U60P5Q-13D**



Product Summary

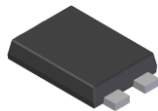
V_{RRM} (V)	I_o (A)	V_F Max (V) @+25°C	I_R Max (mA) @ +25°C
60	8	0.53	0.33

Description and Applications

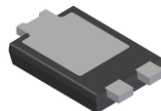
This Super Barrier Rectifier (SBR) diode has been designed to meet the stringent requirements of automotive applications. It is ideally suited for use as a:

- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode

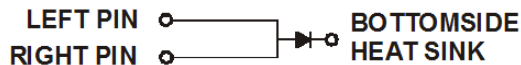
PowerDI5



Top View



Bottom View



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

Features and Benefits

- 100% Avalanche Tested.
- Patented SBR[®] technology provides a superior avalanche capability than Schottky diodes ensuring more rugged and reliable end applications.
- Reduced ultra-low forward voltage drop (V_F); better efficiency and cooler operation.
- Reduced high temperature reverse leakage; increased reliability against thermal runaway failure at high temperature.
- **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

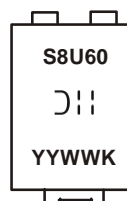
- Case: PowerDI[®]5
- Case Material: Molded Plastic, "Green" Molding compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208[Ⓜ]
- Polarity: See Below
- Weight: 0.099 grams (Approximate)

Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
SBR8U60P5Q-13	Automotive	PowerDI5	5000/Tape & Reel
SBR8U60P5Q-13D (Note 6)	Automotive	PowerDI5	5000/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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
 5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
 6. "D" suffix designates for the 12mm Tape and Reel option.

Marking Information



S8U60 = Product Type Marking Code
 Ⓜ = Manufacturers' Code Marking
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 19 for 2019)
 WW = Week Code (01 to 53)
 K = Factory Designator

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, 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_{RRM}	60	V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage	V_{RM}		
Average Rectified Output Current @ $T_C = +140^\circ\text{C}$	I_O	8	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	280	A
Repetitive Peak Avalanche Power (1 μs , +25 $^\circ\text{C}$)	P_{ARM}	6000	W
Non-Repetitive Avalanche Energy ($T_J = +25^\circ\text{C}$, $I_{AS} = 12\text{A}$, $L = 10\text{mH}$)	E_{AS}	620	mJ

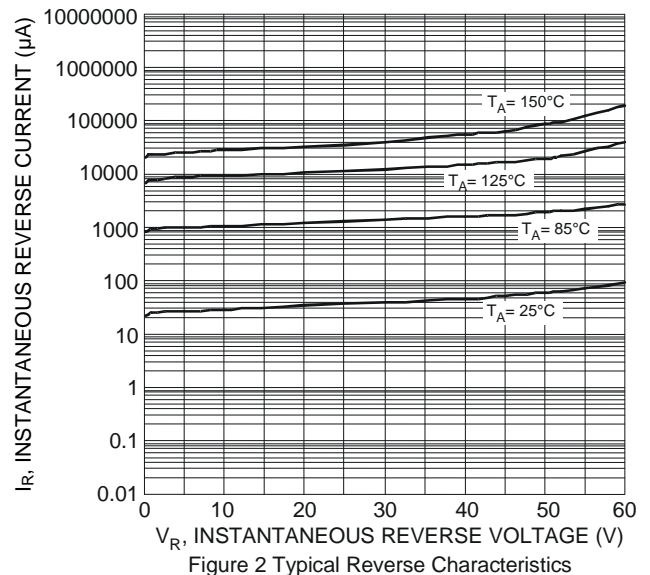
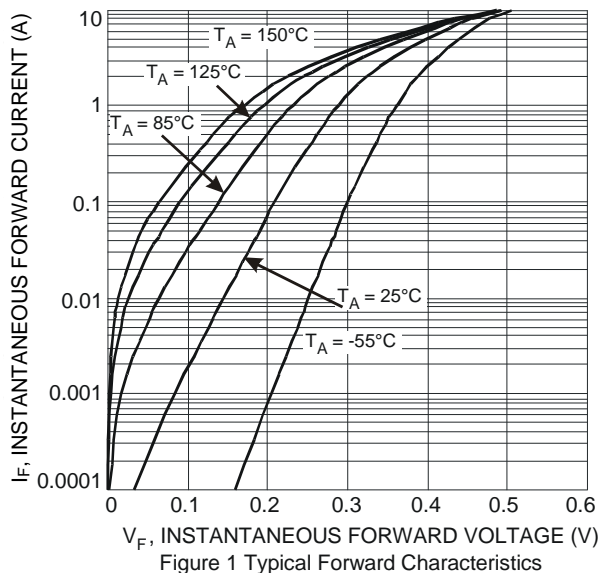
Thermal Characteristics

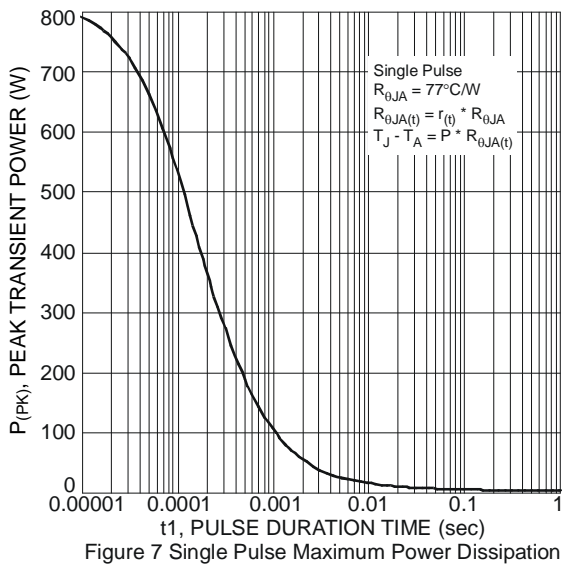
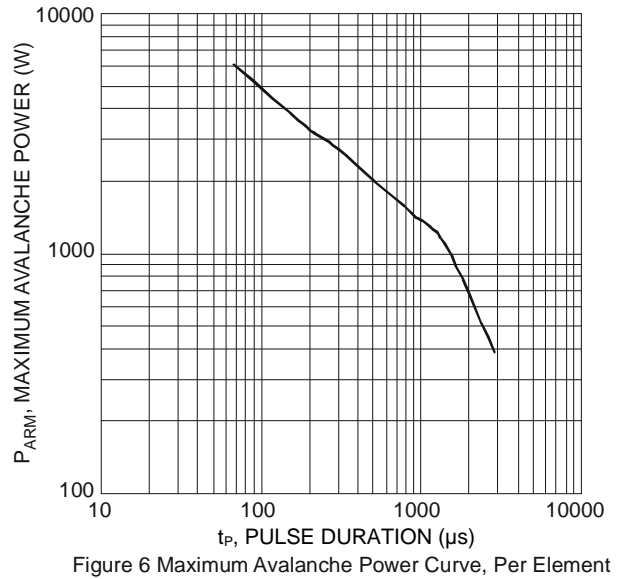
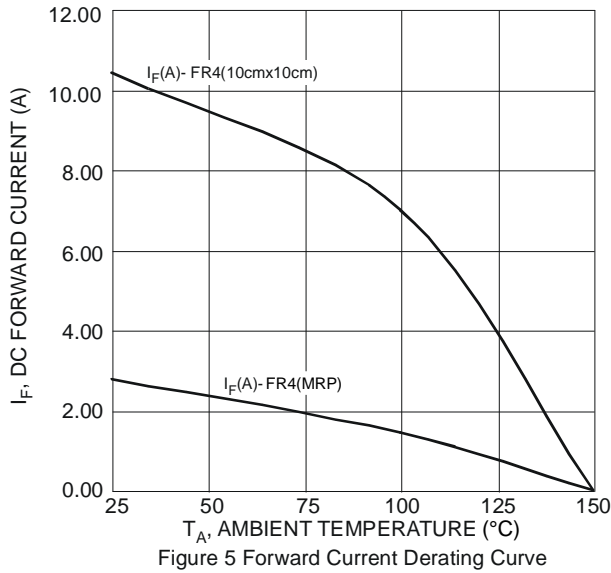
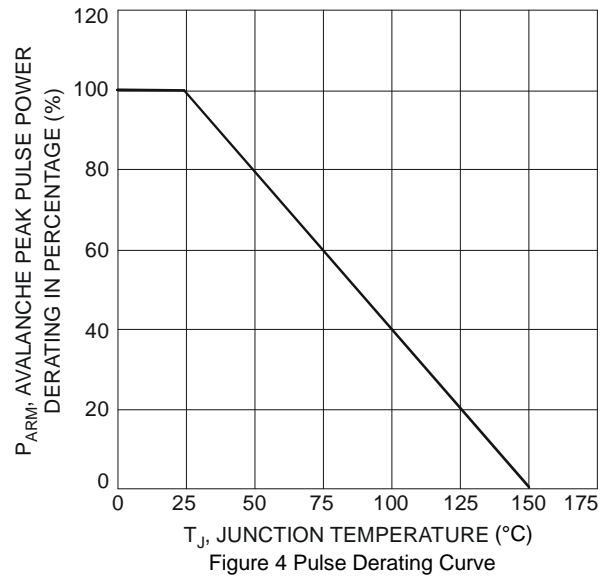
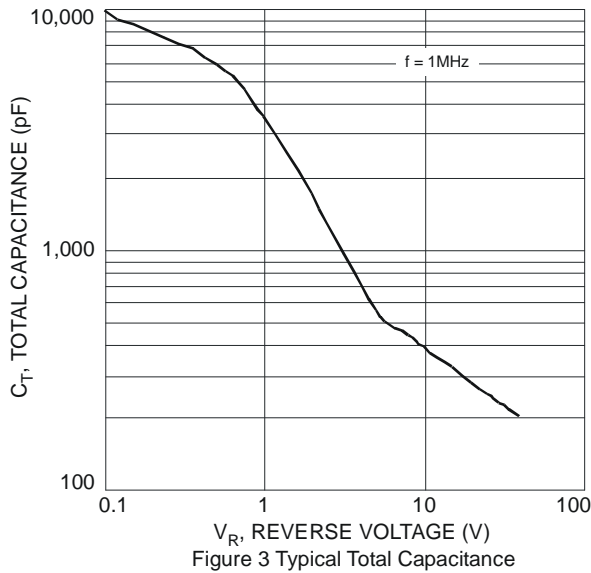
Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance			
Thermal Resistance Junction to Soldering (Note 7)	$R_{\theta JS}$	3	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient (Note 8)	$R_{\theta JA}$	60	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

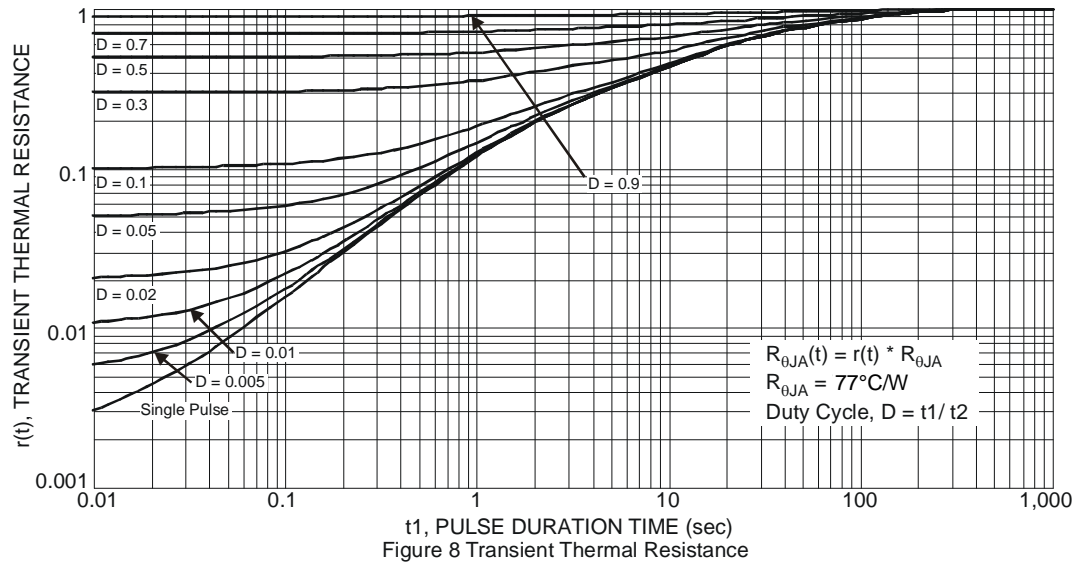
Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	—	0.30	0.35	V	$I_F = 1.0\text{A}, T_J = +25^\circ\text{C}$
		—	0.46	0.53		$I_F = 8\text{A}, T_J = +25^\circ\text{C}$
		—	0.43	—		$I_F = 8\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 9)	I_R	—	0.1	0.33	mA	$V_R = 60\text{V}, T_J = +25^\circ\text{C}$
		—	40	—		$V_R = 60\text{V}, T_J = +125^\circ\text{C}$

- Notes: 7. Theoretical $R_{\theta JS}$ calculated from the top center of the die straight down to the PCB cathode tab solder junction.
8. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
9. Short duration pulse test used to minimize self-heating effect.



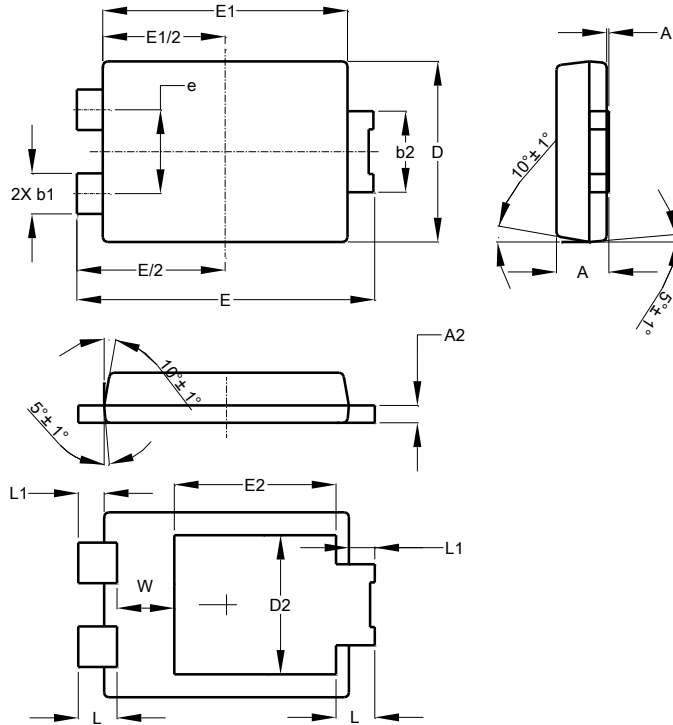




Package Outline Dimensions

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

PowerDI5

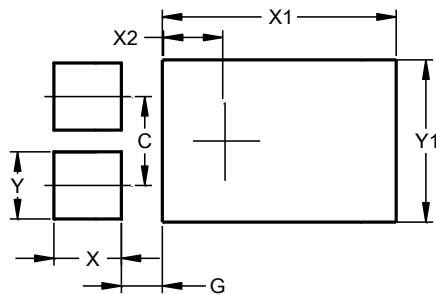


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

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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