

Product Summary

V _{RRM} (V)	I _O (A)	V _F Typ (V) @ +25°C	I _R Max (μA) @ +25°C
60	8	0.45	135

Description and Applications

This field plated Super Barrier Rectifier (SBR[®]FP) diode is ideally suited for application requiring ultra-low blocking mode. Leading to lower operating temperatures and increased system reliability. Packaged in the robust industry-standard PowerDI[®]5 package. Applications are:

- Polarity protection diodes
- DC/DC converters
- AC/DC adaptors
- Switching diodes
- Recirculating diodes



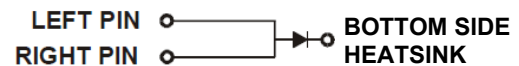
Features and Benefits

- Reduced Ultra-Low Voltage Drop (V_F). Increased Efficiency and Cooler Operation
- Patented Super Barrier Rectifier Technology (SBR), Superior Avalanche Capability (See *Maximum Ratings*)
- Excellent Reverse Leakage (I_R) Stability in High-Temperature Circumstance. Increased Reliability Against Thermal Runaway Failure in High-Temperature Operation
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBRFP8A60P5Q 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)
- Weight: 0.093 grams (Approximate)



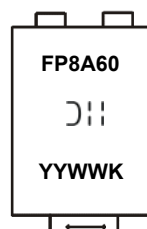
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBRFP8A60P5Q-13	PowerDI5	5,000	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



𐄂𐄂 = Manufacturer's Marking
 FP8A60 = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 25 = 2025)
 WW = Week (01 to 53)
 K = Factory Designator

Maximum Ratings (@T_A = +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 Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} V _{RWM} V _{RM}	60	V
Average Rectified Output Current	I _O	8	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I _{FSM}	150	A
Non-Repetitive Avalanche Energy (T _J = +25°C, I _{AS} = 38.9A, L = 0.1mH)	E _{AS}	108	mJ

Thermal Characteristics (Per Leg)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	R _{θJA}	11.2	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	R _{θJC}	1.6	°C/W
Operating and Storage Temperature Range (Note 6)	T _J , T _{STG}	-55 to +175	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V _F	—	0.39 0.45 0.32 0.40	— 0.55 — —	V	I _F = 4A, T _J = +25°C I _F = 8A, T _J = +25°C I _F = 4A, T _J = +125°C I _F = 8A, T _J = +125°C
Leakage Current (Note 7)	I _R	—	20 6.7	135 —	μA mA	V _R = 60V, T _J = +25°C V _R = 60V, T _J = +125°C
Total Capacitance	C _T	—	234	—	pF	V _R = 60V, T _J = +25°C
Reverse-Recovery Time	t _{RR}	—	47.5	—	ns	I _F = 0.5A, I _R = 1.0A I _{RR} = 0.25A, T _A = +25°C

Notes: 5. 2inch x 2inch Al board + 50mm x 50mm x 23mm Al heatsink.
6. The heat generated must be less than the thermal conductivity from junction to case: $dP_D/dT_J < 1/R_{\theta JC}$ or junction to ambient: $dP_D/dT_J < 1/R_{\theta JA}$.
7. Short duration pulse test used to minimize self-heating effect.

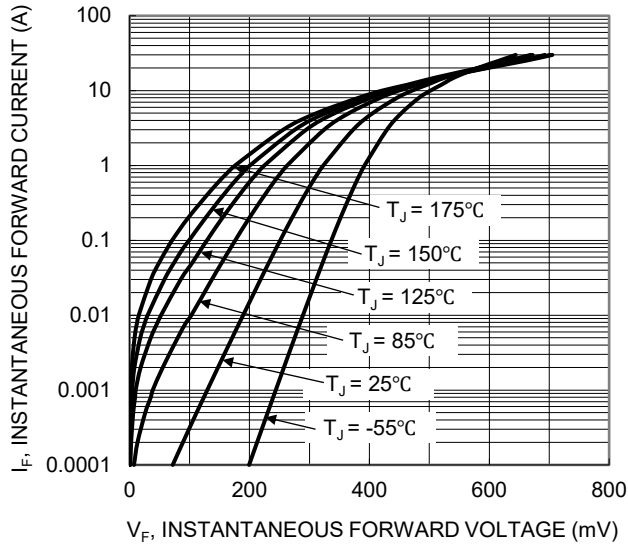


Figure 1. Typical Forward Characteristics

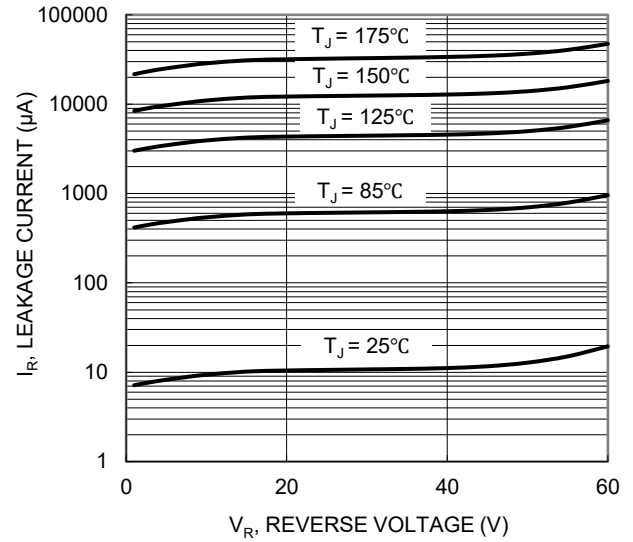


Figure 2. Typical Reverse Characteristics

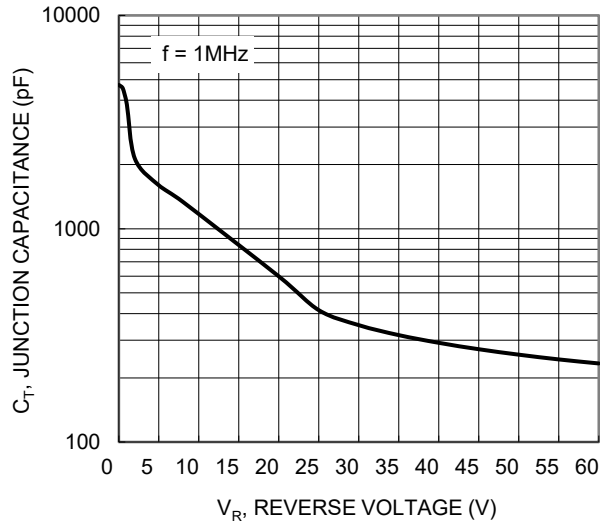


Figure 3. Typical Junction Capacitance

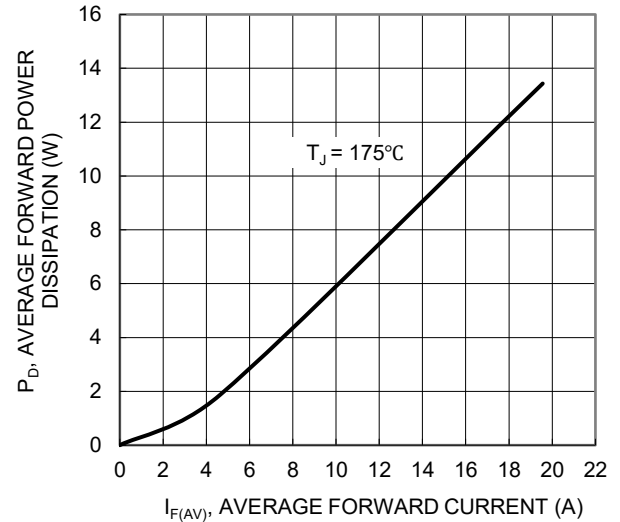


Figure 4. Forward Power Dissipation

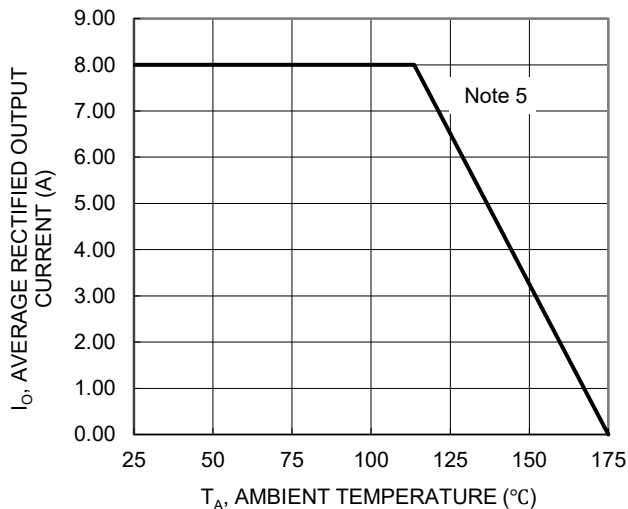


Figure 5. DC Forward Current Derating

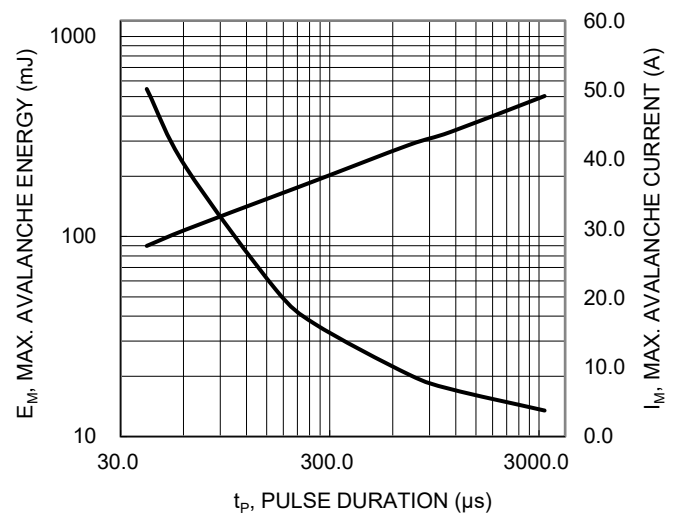
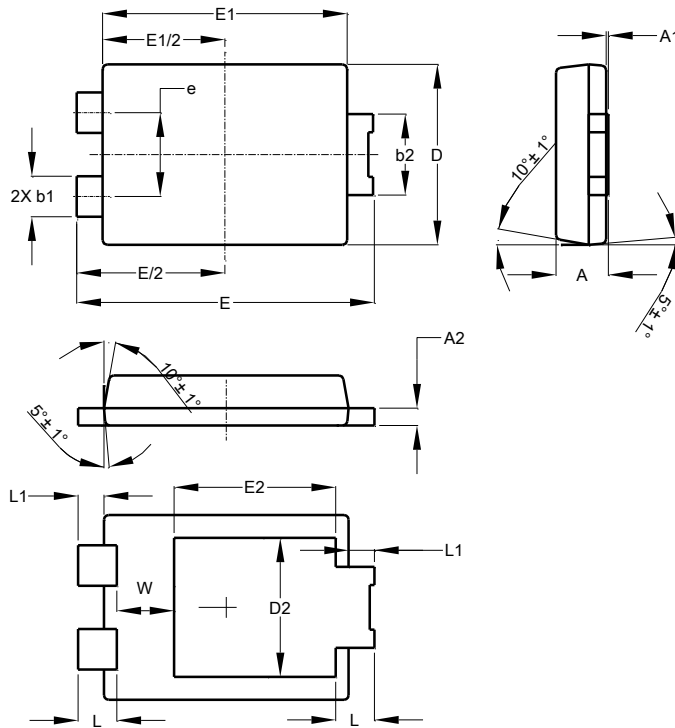


Figure 6. Single Pulse Max. Avalanche Energy and Current

Package Outline Dimensions

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

PowerDI5

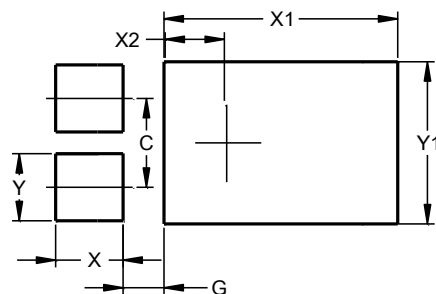


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

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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