Product Summary

V_{RRM} (V)	I_O (A)	V_F max (V) @ +25°C	I_R max (µA) @ +25°C
60	5	0.60	150

Features

- Guard Ring Die Construction for Transient Protection
- High Surge Current Capability
- Low Leakage Current
- Low Power Loss, High Efficiency
- For Use in High-Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- High Forward Surge Current Capability
- **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)**

Description and Applications

Designed to meet the stringent requirements of automotive applications, the device is ideally suited to use as:

- Polarity Protection Diode
- Recirculating Diode
- Switching Diode

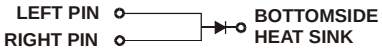
Mechanical Data

- Case: Power®DI5
- Case 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
- Polarity: See Diagram
- Weight: 0.093 grams (Approximate)

PowerDI5

Top View

Bottom View



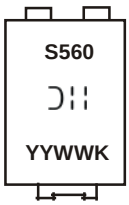
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
PDS560Q-13	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/.

Marking Information



S560 = Product Type Marking Code
= Manufacturers' Code Marking
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 18 for 2018)
WW = Week Code (01 – 53)
K = Factory Designator

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

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitance 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_R	60	V
RMS Reverse Voltage	$V_{R(RMS)}$	42	V
Average Rectified Output Current	I_O	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	150	A
Electrostatic Discharge	HBM	4000	V
Electrostatic Discharge	MM	400	V
Electrostatic Discharge	CDM	1	kV

Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Lead (Cathode)	$R_{\theta JS}$	2.0	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 5) T_A = +25°C	$R_{\theta JA}$	95	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 6) T_A = +25°C	$R_{\theta JA}$	70	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 7) T_A = +25°C	$R_{\theta JA}$	50	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 8) T_A = +25°C	$R_{\theta JA}$	25	—	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150		°C

Notes:
5. FR-4 PCB, 2oz. Copper, minimum recommended pad layout per http://www.diodes.com.
6. Polymide PCB, 2oz. Copper, minimum recommended pad layout per http://www.diodes.com.
7. Polymide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm × 7.2mm. Anode pad dimensions 2.7mm × 1.6mm.
8. 2inch × 2inch Al board.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 9)	$V_{(BR)R}$	60	—	—	V	I_R = 0.2mA
Forward Voltage	V_F	— — — —	0.61 0.54 0.71 —	0.67 0.60 0.77 0.68	V	I_F = 5A, T_S = +25°C I_F = 5A, T_S = +125°C I_F = 8A, T_S = +25°C I_F = 8A, T_S = +125°C
Reverse Leakage Current (Note 9)	I_R	— — —	4 — 2	150 15 30	µA mA mA	T_S = +25°C, V_R = 60V T_S = +100°C, V_R = 60V T_S = +125°C, V_R = 60V
Switching Speed t_{RR}	t_{RR}	—	12	—	ns	I_F=0.5A, I_R=1A, I_{RR}=0.25A (RG1)

Note: 9. Short duration pulse test used to minimize self-heating effect.

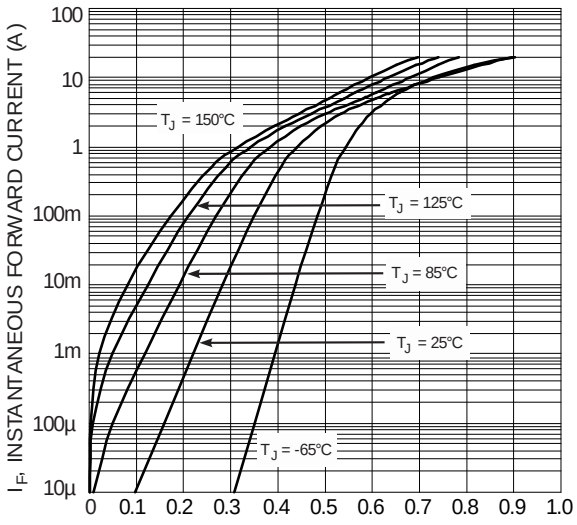


Fig. 1 Typical Forward Characteristics

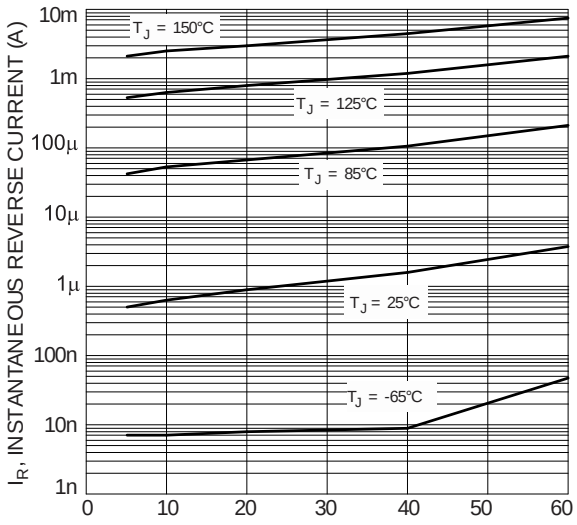


Fig. 2 Typical Reverse Characteristics

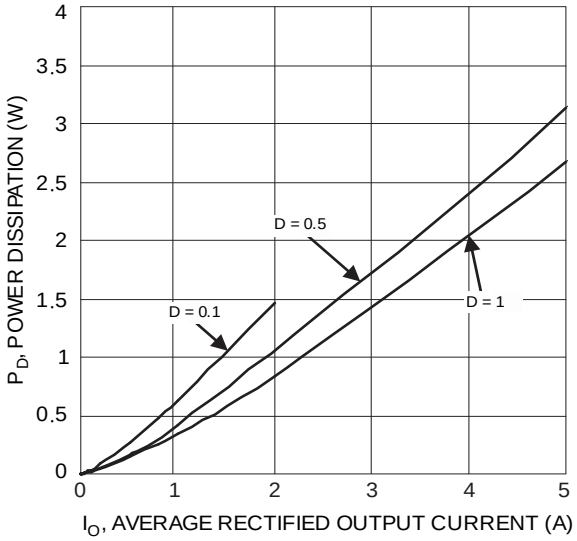


Figure 3 Forward Power Dissipation, T_J = 125°C

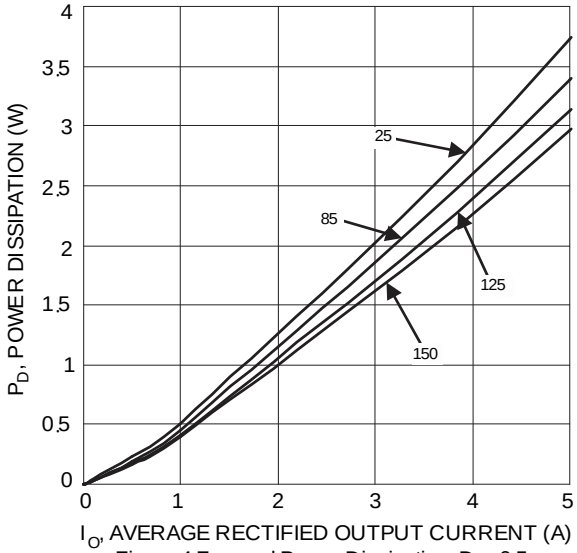


Figure 4 Forward Power Dissipation, D = 0.5

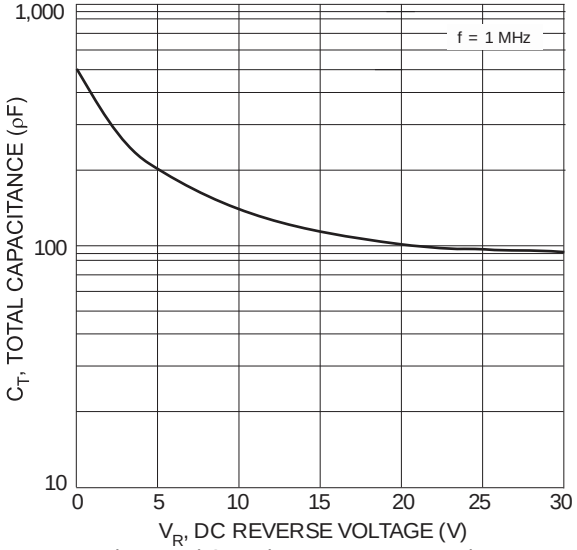


Fig. 5 Total Capacitance vs. Reverse Voltage

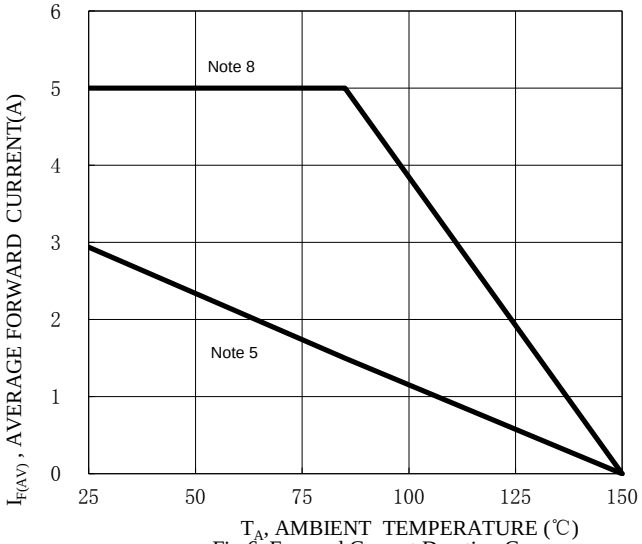


Fig 6. Forward Current Derating Curve

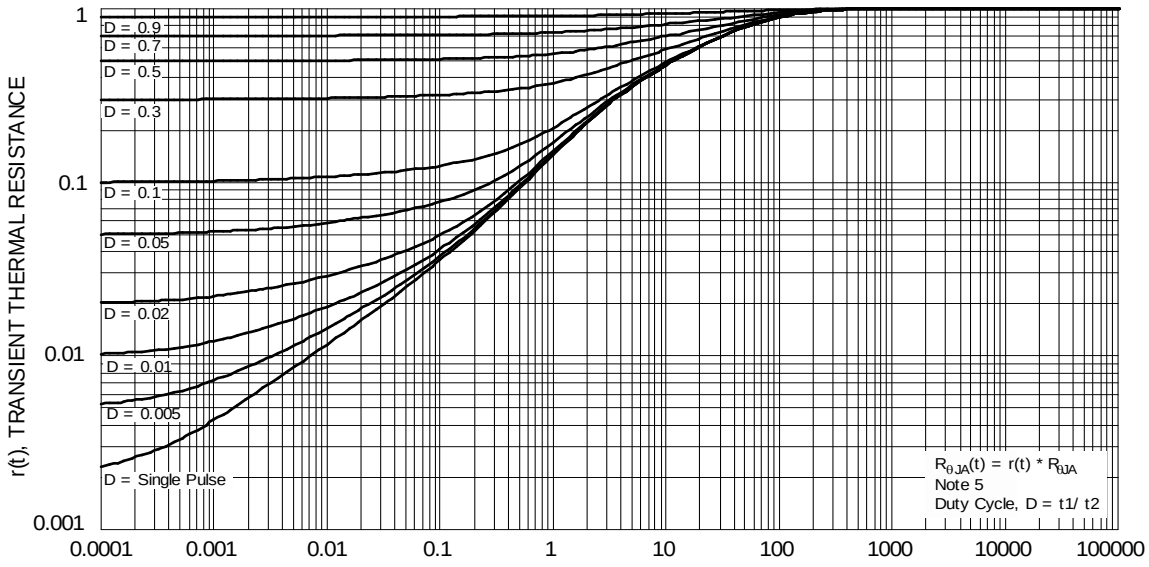
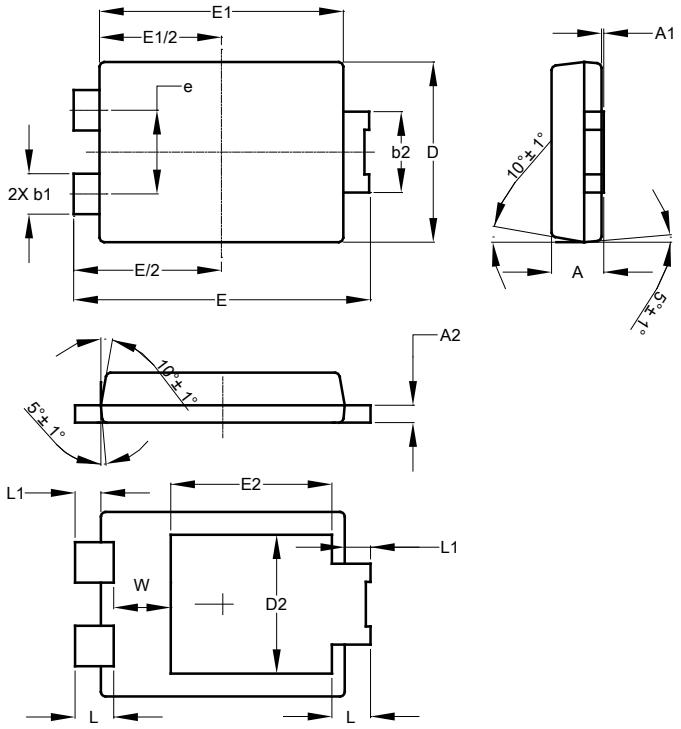


Figure 7 Transient Thermal Resistance

Package Outline Dimensions

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

PowerDI5

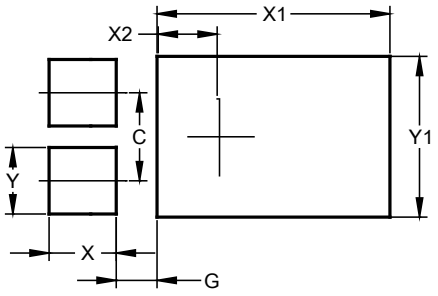


PowerDI5			
Dim	**Min**	**Max**	**Typ**
A	1.05	1.15	1.10
A1	0.00	0.05	—
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	—	—	3.054
E	6.40	6.60	6.51
e	—	—	1.84
E1	5.30	5.45	5.37
E2	—	—	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

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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