PDS1045

10A SCHOTTKY BARRIER RECTIFIER

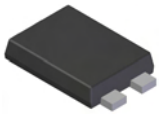
PowerDI®5

Features

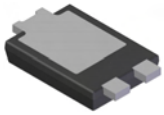
- Guard Ring Die Construction for Transient Protection
- Very Low Forward Voltage Drop
- High Forward Surge Current Capability
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

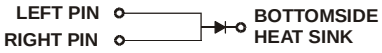
- Case: PowerDI®5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed Over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Diagram
- Weight: 0.096 grams (approximate)



Top View



Bottom View



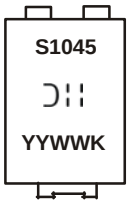
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 2)

Part Number	Case	Packaging
PDS1045-13	PowerDI®5	5000/Tape & Reel

Notes: 1. EU Directive **2002/95/EC** (RoHS). All applicable RoHS exemptions applied, see *EU Directive **2002/95/EC** Annex Notes.*
2. For packaging details, go to our website at http://www.diodes.com.

Marking Information



S1045 = Product type marking code
= Manufacturers' code marking
YYWW = Date code marking
YY = Last two digits of year (ex: 05 for 2005)
WW = Week code (01 - 53)
K = Factory designator

PowerDI is a registered trademark of Diodes Incorporated.

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	45	V
RMS Reverse Voltage	$V_{R(RMS)}$	32	V
Average Rectified Output Current (see also Figure 4)	I_O	10	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	275	A

Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering Point	$R_{\theta JS}$	—	0.8	°C/W
Thermal Resistance Junction to Ambient Air (Note 3) T_A = 25°C	$R_{\theta JA}$	85	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 4) T_A = 25°C	$R_{\theta JA}$	65	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 5) T_A = 25°C	$R_{\theta JA}$	50	—	°C/W
Operating Junction Temperature Range $V_R \le 80\%\ V_{RRM}$ $V_R \le 50\%\ V_{RRM}$	T_J	-65 to +125 -65 to +150		°C
Storage Temperature Range	T_{STG}	-65 to +150		°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	45	—	—	V	I_R = 600μA
Forward Voltage	V_F	— — — —	0.40 0.45 0.29 0.37	0.45 0.51 0.35 0.43	V	I_F = 5A, T_S = 25°C I_F = 10A, T_S = 25°C I_F = 5A, T_S = 125°C I_F = 10A, T_S = 125°C
Reverse Leakage Current (Note 6)	I_R	— — — —	0.03 10 0.1 65	0.3 25 0.6 150	mA	T_S = 25°C, V_R = 35V T_S = 100°C, V_R = 35V T_S = 25°C, V_R = 45V T_S = 125°C, V_R = 45V

Notes:
3. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com.
4. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com.
5. Polyimide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.
6. Short duration pulse test used to minimize self-heating effect.
7. Polyimide PCB, 2 oz. Copper. Cathode pad dimensions 16.0mm x 12.4mm. Anode pad dimensions 4.7mm x 2.7mm.
8. Devices mounted such that $R_{\theta JA}$ @ 19°C/W.

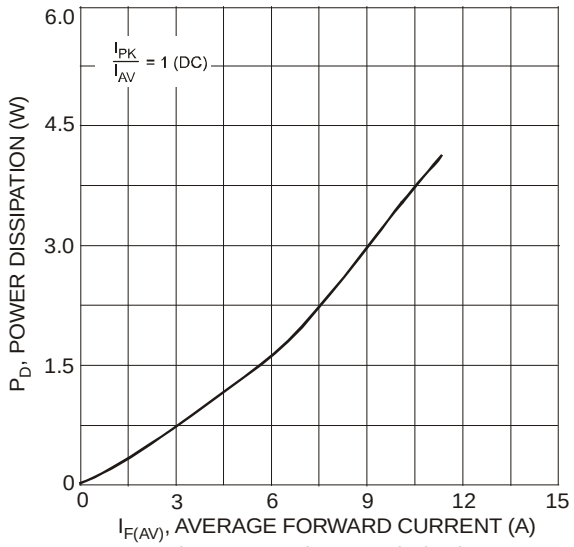


Fig. 1 Forward Power Dissipation

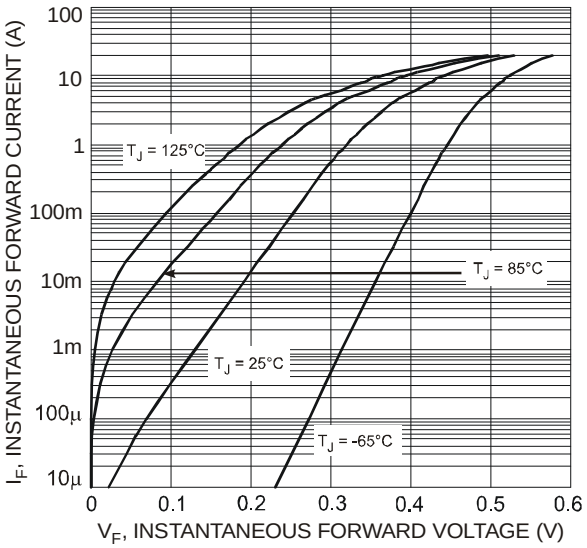


Fig. 2 Typical Forward Characteristics

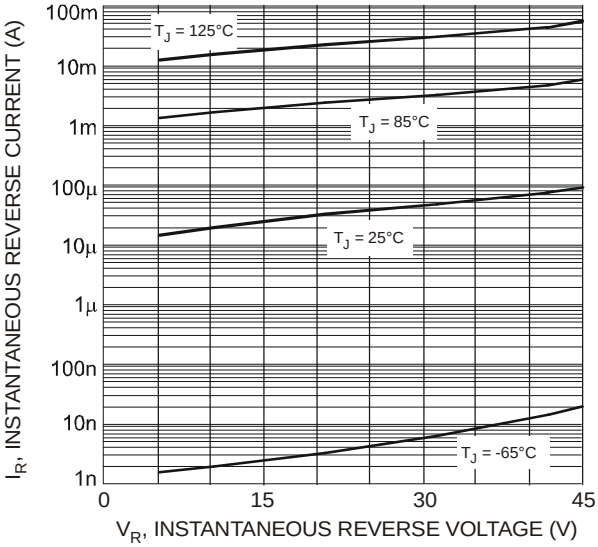


Fig. 3 Typical Reverse Characteristics

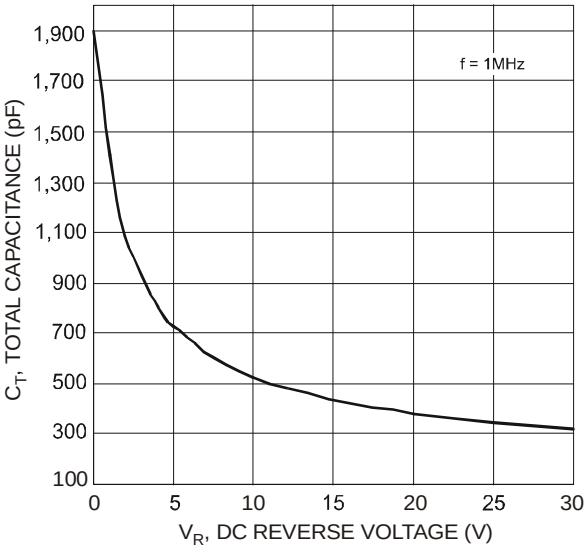


Fig. 4 Total Capacitance vs. Reverse Voltage

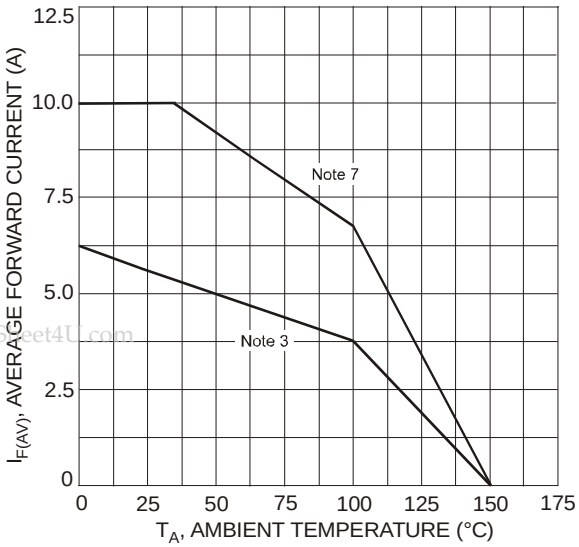


Fig. 5 Forward Current Derating Curve

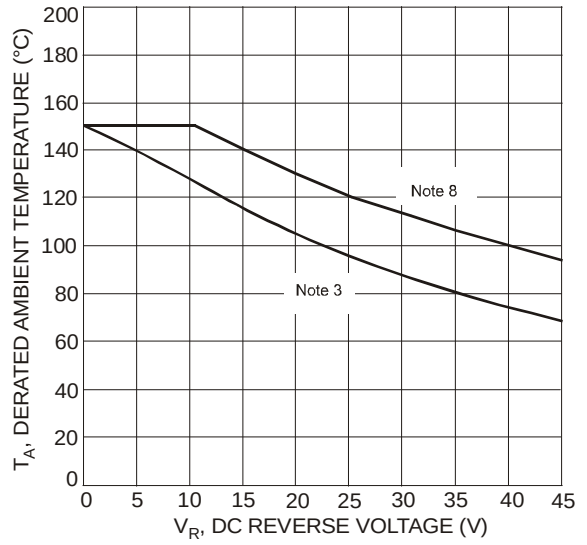
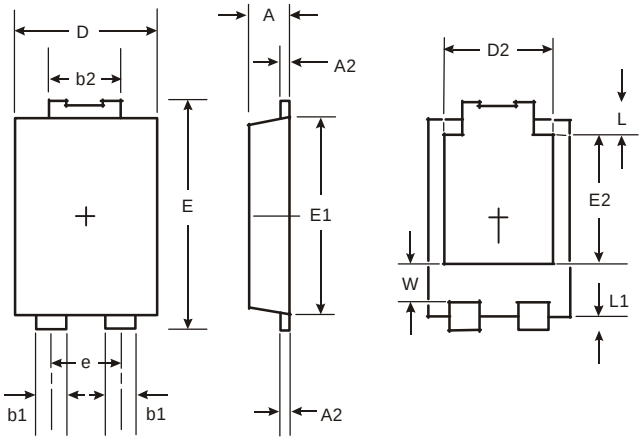


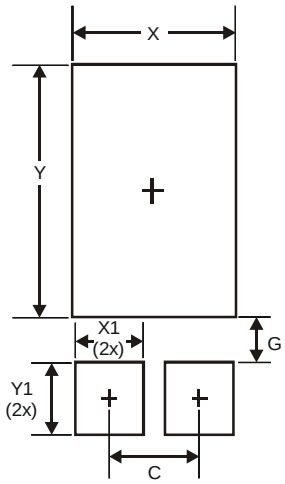
Fig. 6 Operating Temperature Derating

Package Outline Dimensions



PowerDI®5		
Dim	**Min**	**Max**
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.054 Typ	
E	6.40	6.60
e	1.84 Typ	
E1	5.30	5.45
E2	3.549 Typ	
L	0.75	0.95
L1	0.50	0.65
W	1.10	1.41
All Dimensions in mm		

Suggested Pad Layout



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

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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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