PDS1045

10A SCHOTTKY BARRIER RECTIFIER

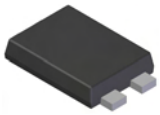
PowerDI®5

Features

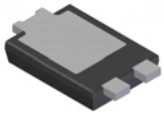
- Guard Ring Die Construction for Transient Protection
- Very Low Forward Voltage Drop
- High Forward Surge Current Capability
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound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

Mechanical Data

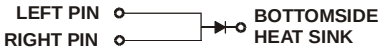
- Case: PowerDI®5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed Over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Diagram
- Weight: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



Top View



Bottom View



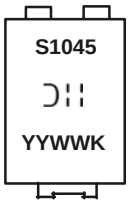
Note: Pins Left & Right must be electrically connected at the printed circuit board.

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

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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.

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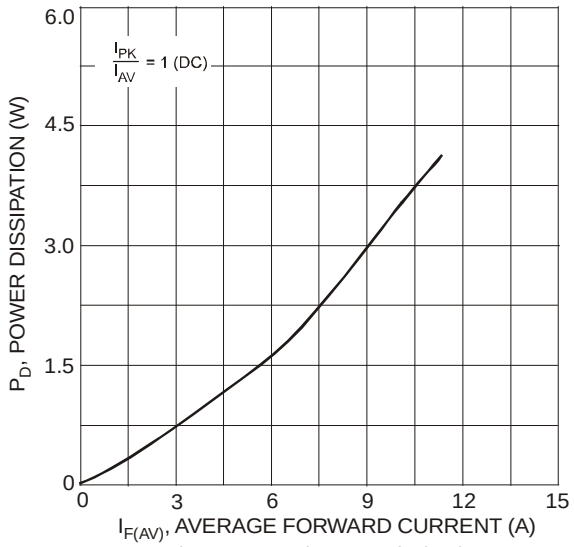


Fig. 1 Forward Power Dissipation

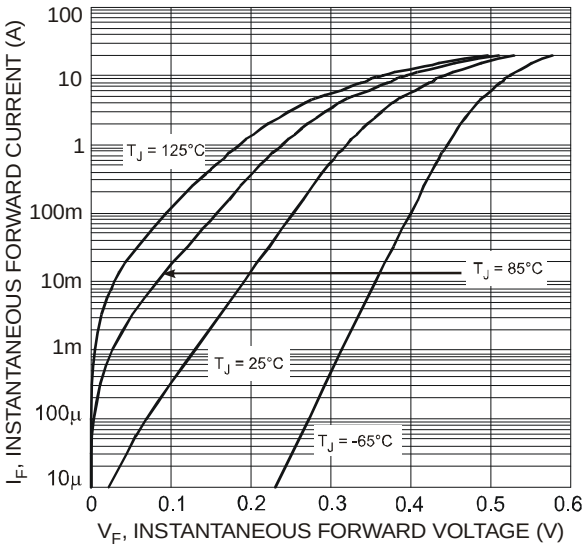


Fig. 2 Typical Forward Characteristics

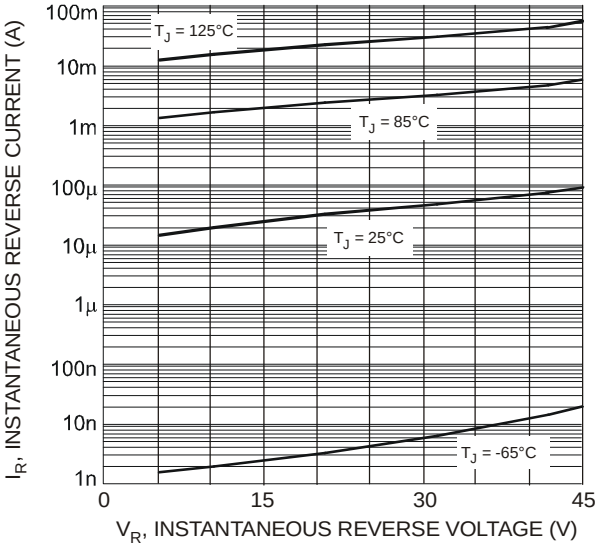


Fig. 3 Typical Reverse Characteristics

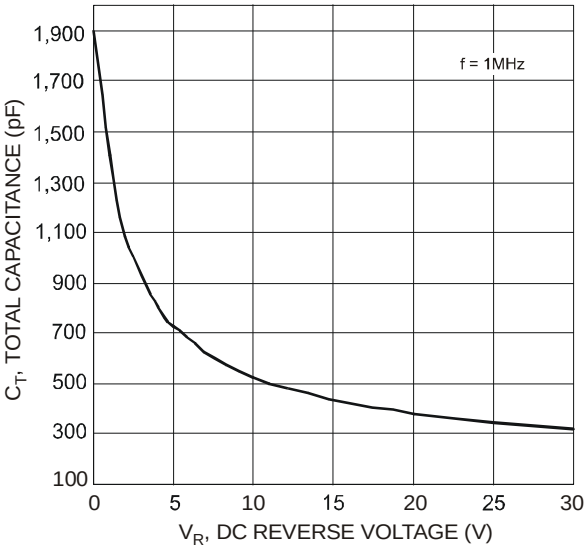


Fig. 4 Total Capacitance vs. Reverse Voltage

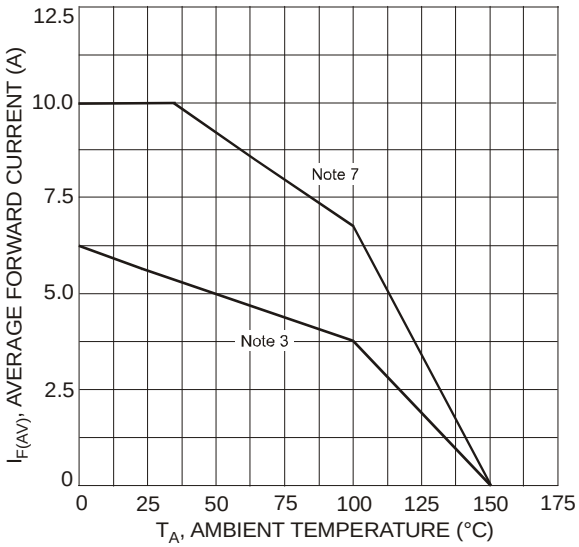


Fig. 5 Forward Current Derating Curve

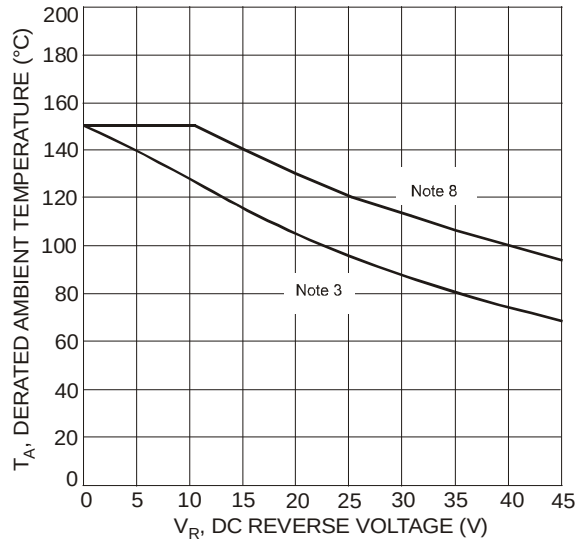
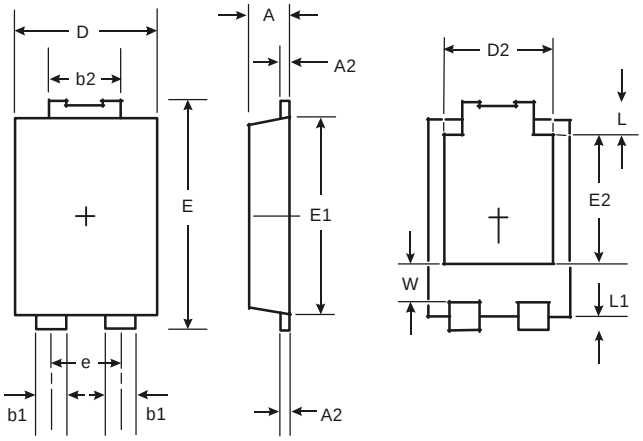


Fig. 6 Operating Temperature Derating

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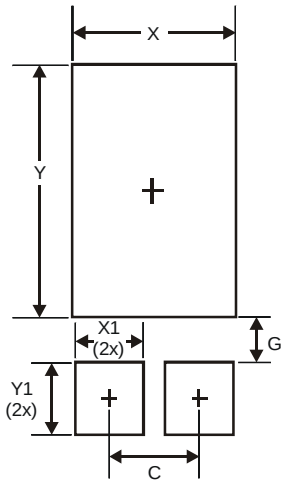
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Package Outline Dimensions



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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