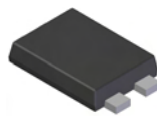


Features

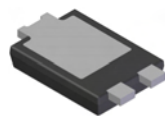
- Guard Ring Die Construction for Transient Protection
- Very Low Forward Voltage Drop
- High Forward Surge Current Capability
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound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

Mechanical Data

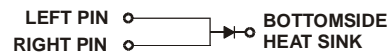
- Case: PowerDI[®]5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed Over Copper Leadframe. Solderable per MIL-STD-202, Method 208 **e3**
- Polarity: See Diagram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



Top View



Bottom View



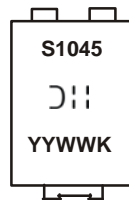
Note: Pins Left & Right must be electrically connected at the printed circuit board.

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

Maximum Ratings @ $T_A = 25^\circ\text{C}$ 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	V_{RRM}	45	V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage	V_R		
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	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 3) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	85	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 4) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	65	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 5) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	50	—	$^\circ\text{C/W}$
Operating Junction Temperature Range $V_R \leq 80\% V_{RRM}$ $V_R \leq 50\% V_{RRM}$	T_J	-65 to +125 -65 to +150		$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 to +150		$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

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

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

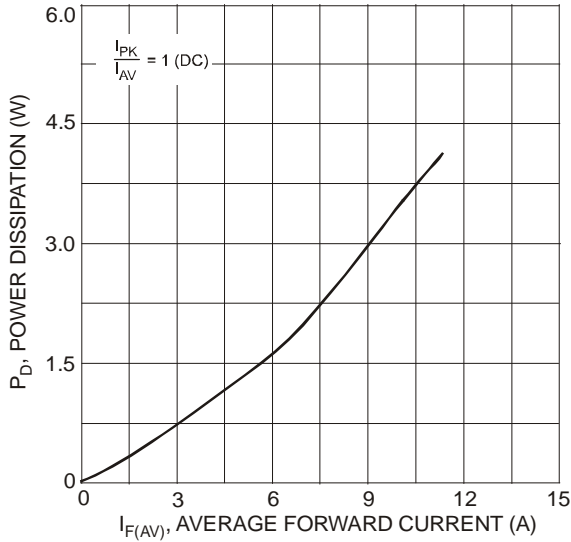


Fig. 1 Forward Power Dissipation

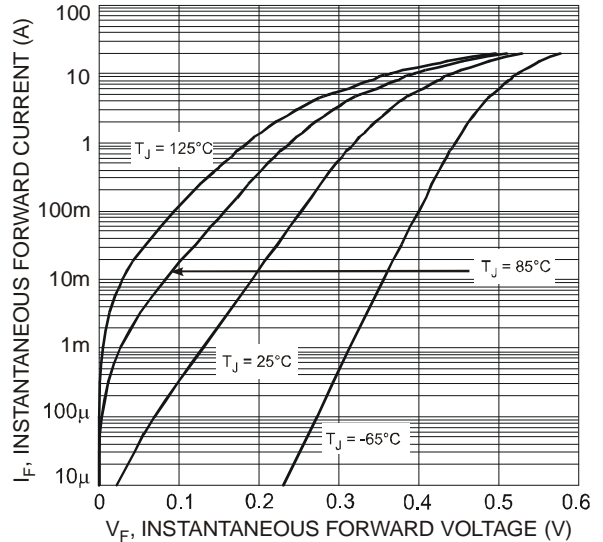


Fig. 2 Typical Forward Characteristics

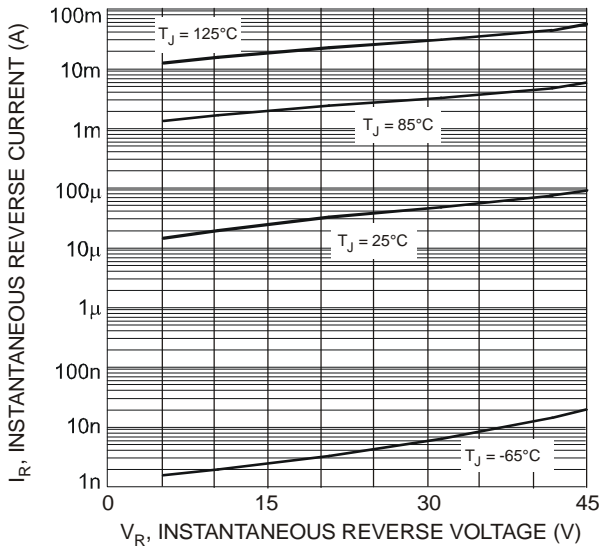


Fig. 3 Typical Reverse Characteristics

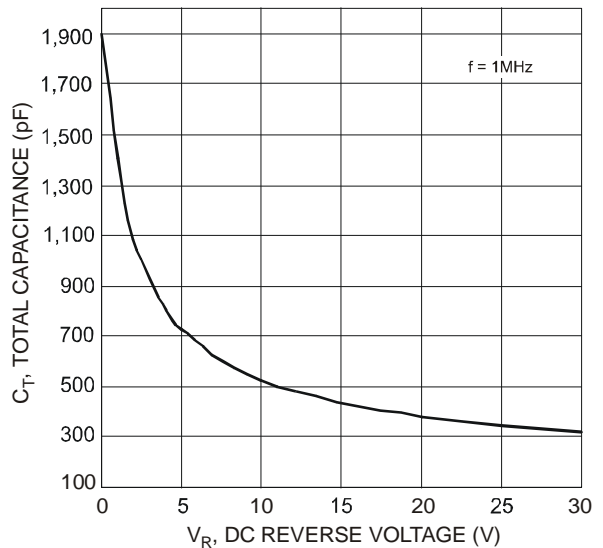


Fig. 4 Total Capacitance vs. Reverse Voltage

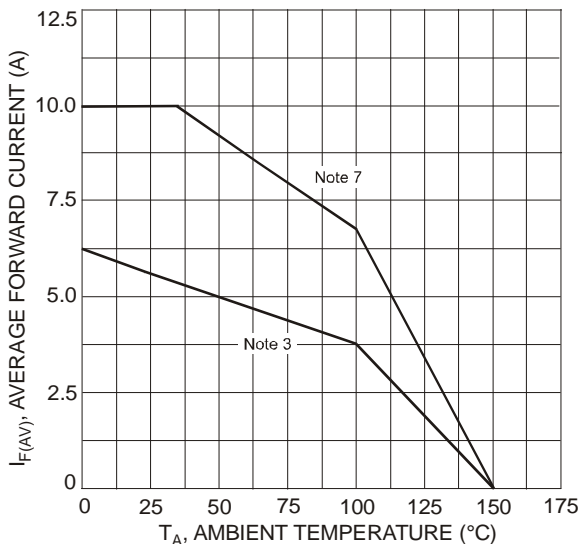


Fig. 5 Forward Current Derating Curve

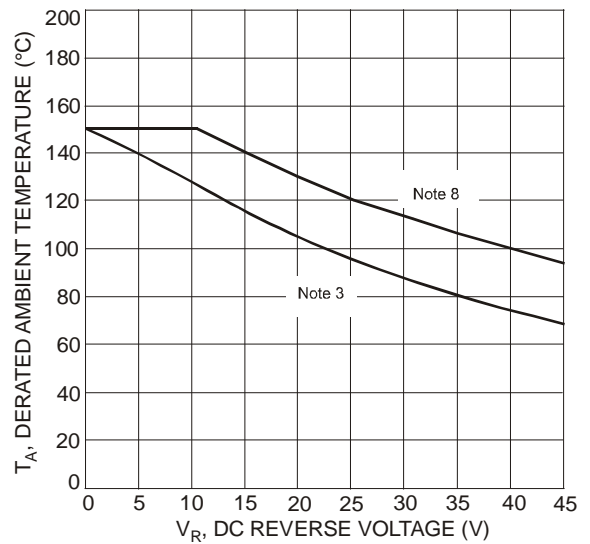
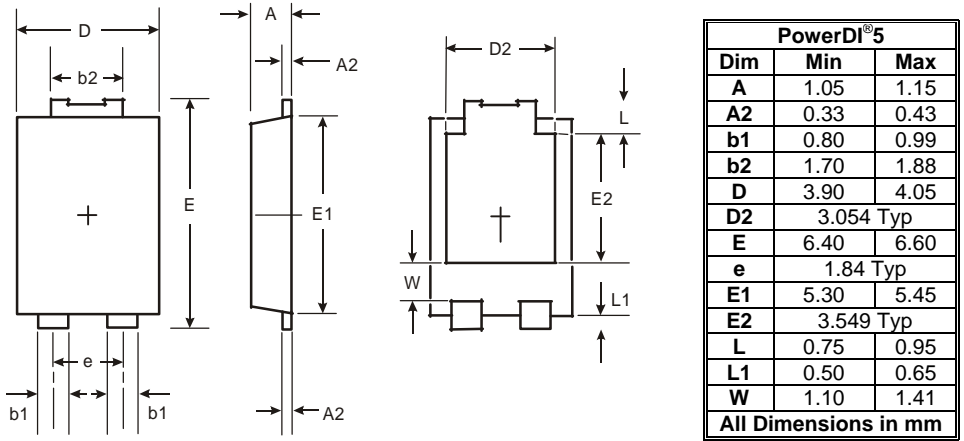
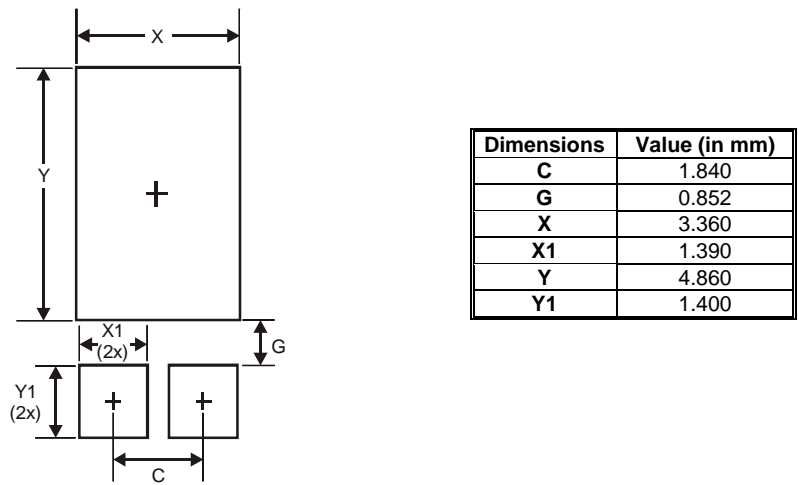


Fig. 6 Operating Temperature Derating

Package Outline Dimensions



Suggested Pad Layout



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