

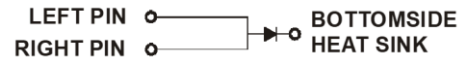
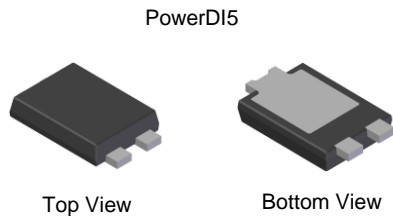
Product Summary (@ T_A = +25°C)

V _{RRM} (V)	I _O (A)	V _F Max (V)	I _R Max (mA)
45	10	0.51	0.6

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, Freewheeling, and Polarity Protection Applications
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DIODES PDS1045Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

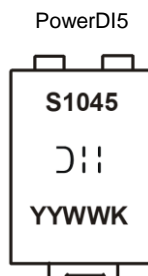


Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
PDS1045Q-13	PowerDI5	5,000	Tape & Reel
PDS1045Q-13D	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


S1045 = Product Type Marking Code
 DII = Manufacturer's Code Marking
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 23 for 2023)
 WW = Week Code (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	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	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	Value	Unit
Thermal Resistance Junction to Ambient Air (Note 5) T _A = +25°C	R _{θJA}	85	°C/W
Thermal Resistance Junction to Ambient Air (Note 6) T _A = +25°C	R _{θJA}	18	°C/W
Operating Junction Temperature Range (Note 7)	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	V _{(BR)R}	45	—	—	V	I _R = 600μA
Forward Voltage	V _F	—	0.40	0.45	V	I _F = 5A, T _S = +25°C
		—	0.45	0.51		I _F = 10A, T _S = +25°C
		—	0.29	0.35		I _F = 5A, T _S = +125°C
		—	0.37	0.43		I _F = 10A, T _S = +125°C
Reverse Leakage Current (Note 8)	I _R	—	0.03	0.3	mA	T _S = +25°C, V _R = 35V
		—	10	25		T _S = +100°C, V _R = 35V
		—	0.1	0.6		T _S = +25°C, V _R = 45V
		—	65	150		T _S = +125°C, V _R = 45V

- Notes:
5. 1 x MRP FR-4 PC board, 2oz.
 6. 2inch x 2inch Al board.
 7. 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: $dP_D/dT_J < 1/R_{\theta JA}$.
 8. Short duration pulse test used to minimize self-heating effect.

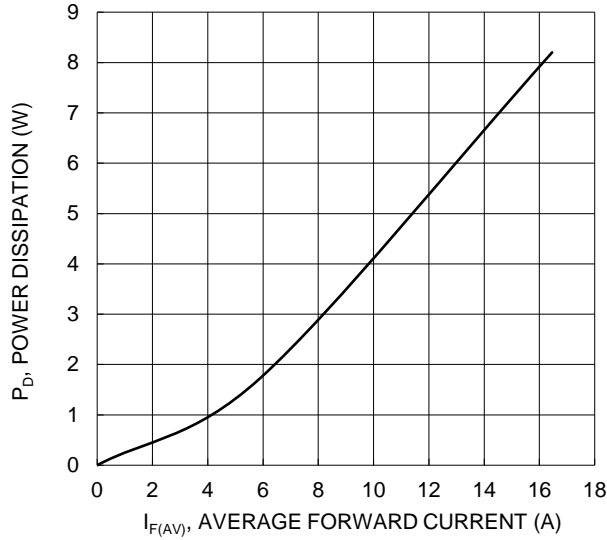


Fig. 1 Forward Power Dissipation

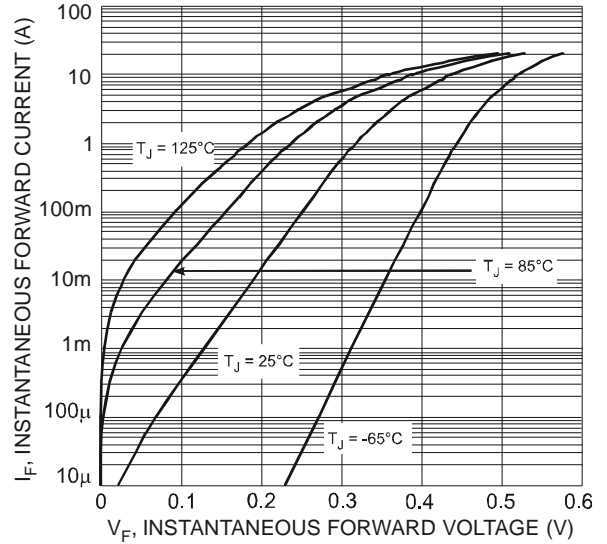


Fig. 2 Typical Forward Characteristics

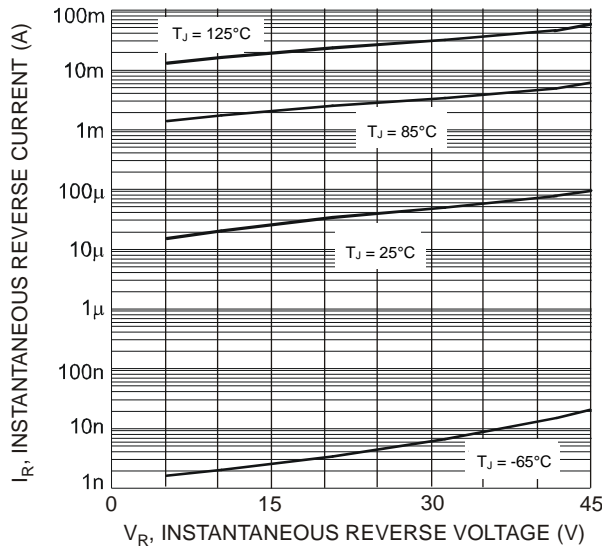


Fig. 3 Typical Reverse Characteristics

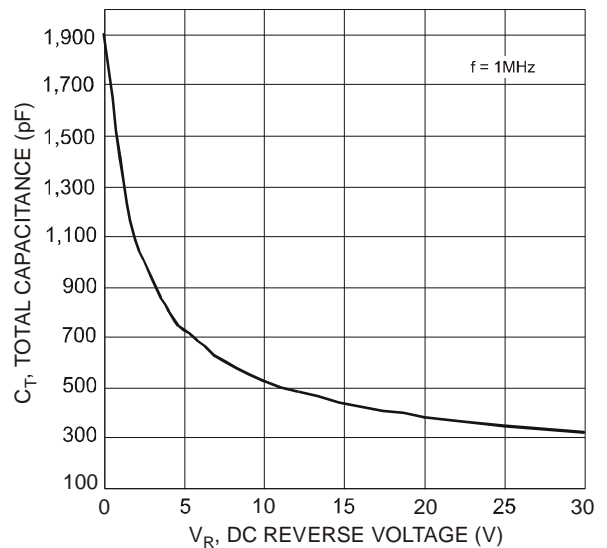


Fig. 4 Total Capacitance vs. Reverse Voltage

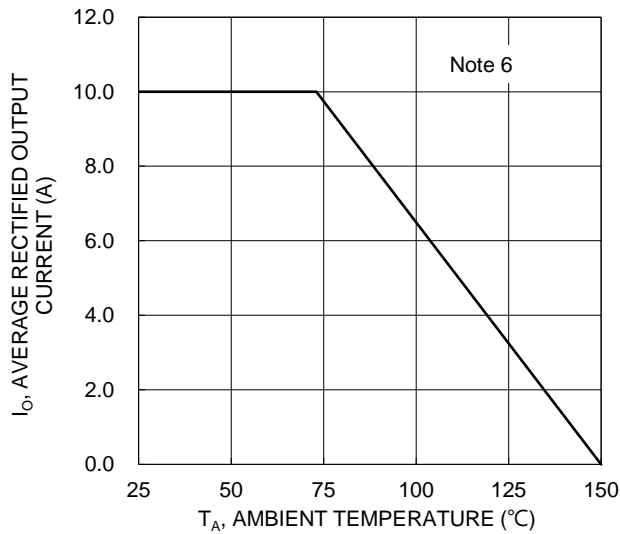
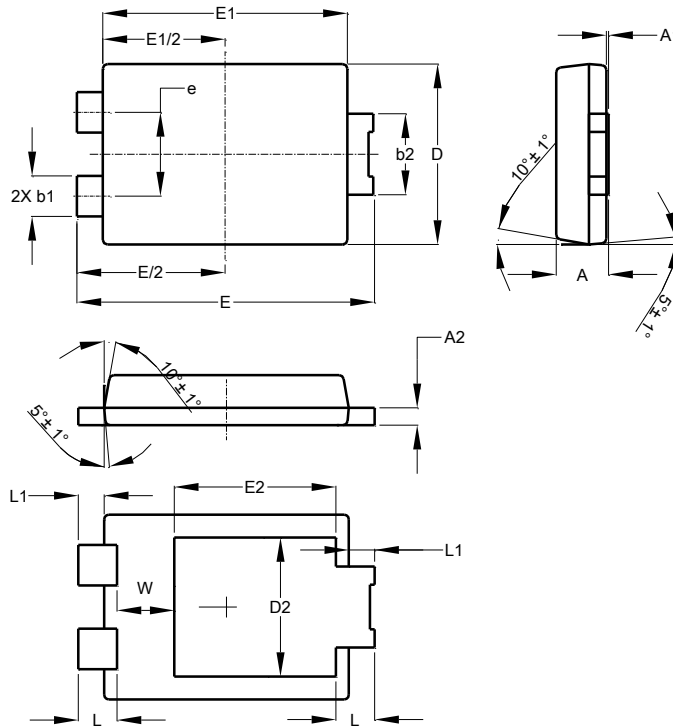


Fig. 5 DC Forward Current Derating

Package Outline Dimensions

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

PowerDI5

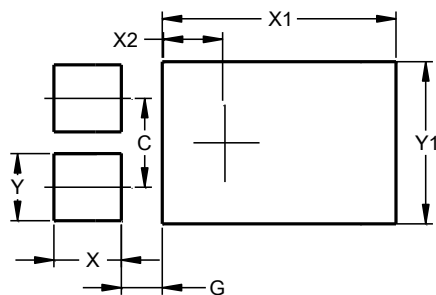


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

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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