

Product Summary

V_R (V)	I_F (A)	$V_F\ MAX$ (V) @ +25°C	$I_R\ MAX$ (mA) @ +25°C
100	5.0	0.71	0.0035

Description and Applications

This Schottky Barrier Rectifier has been designed to meet the stringent requirements of Automotive Applications. It is ideally suited to use as:

- Polarity Protection Diode
- Re-circulating Diode
- Switching Diode

POWERDI5



Top View



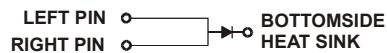
Bottom View

Features and Benefits

- Guard Ring Die Construction for Transient Protection
- High Maximum Junction Temperature
- Very Low Leakage Current
- Highly Stable Oxide Passivated Junction
- Low Forward Voltage Drop
- 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 (See Note 4)

Mechanical Data

- Case: POWERDI5
- 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 208^③
- Polarity: See Diagram
- Weight: 0.096 grams (approximate)



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

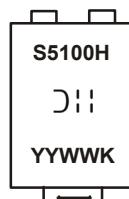
Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
PDS5100H-13	AEC-Q101	POWERDI5	5000/Tape & Reel
PDS5100HQ-13	Automotive	POWERDI5	5000/Tape & Reel
PDS5100HQ-13D (Note 6)	Automotive	POWERDI5	5000/Tape & Reel

Notes:

1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html 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. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.
6. Suffix -13D is designated for 12mm tape width.

Marking Information



S5100H = Product type marking code
DII = Manufacturers' code marking
YYWW = Date code marking
YY = Last two digits of year (ex: 14 for 2014)
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}		
Working Peak Reverse Voltage	V_{RWM}	100	V
DC Blocking Voltage	V_R		
RMS Reverse Voltage	$V_{R(\text{RMS})}$	71	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}	250	A

Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Typical Power Dissipation (Note 9)	P_D	2.5	—	W
Thermal Resistance Junction to Case (Note 11)	$R_{\theta JC}$	—	5	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Soldering Point	$R_{\theta JS}$	—	2.0	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient Air (Note 7) $T_A = +25^\circ\text{C}$	$R_{\theta JA}$	85	—	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient Air (Note 8) $T_A = +25^\circ\text{C}$	$R_{\theta JA}$	70	—	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient Air (Note 9) $T_A = +25^\circ\text{C}$	$R_{\theta JA}$	45	—	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +175		$^\circ\text{C}$

 Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 10)	$V_{(BR)R}$	100	—	—	V	$I_R = 3.5\mu\text{A}$
Forward Voltage	V_F	—	0.67	0.71	V	$I_F = 5\text{A}, T_S = +25^\circ\text{C}$
		—	0.55	0.58		$I_F = 5\text{A}, T_S = +125^\circ\text{C}$
		—	0.75	0.80		$I_F = 10\text{A}, T_S = +25^\circ\text{C}$
		—	0.62	0.66		$I_F = 10\text{A}, T_S = +125^\circ\text{C}$
Reverse Leakage Current (Note 10)	I_R	—	0.3	3.5	μA	$T_S = +25^\circ\text{C}, V_R = 100\text{V}$
		—	0.5	4.5	mA	$T_S = +125^\circ\text{C}, V_R = 100\text{V}$

Notes:

7. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
8. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
9. Polyimide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.
10. Short duration pulse test used to minimize self-heating effect.
11. Device mounted on Polyimide 10cm x 10cm copper PC board,

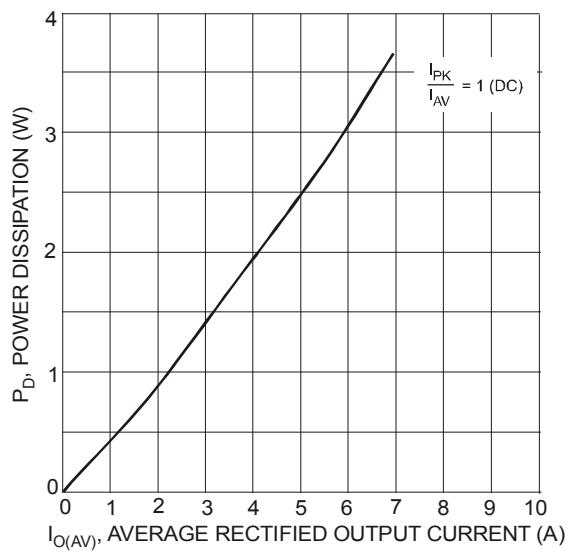


Fig. 1 Forward Power Dissipation

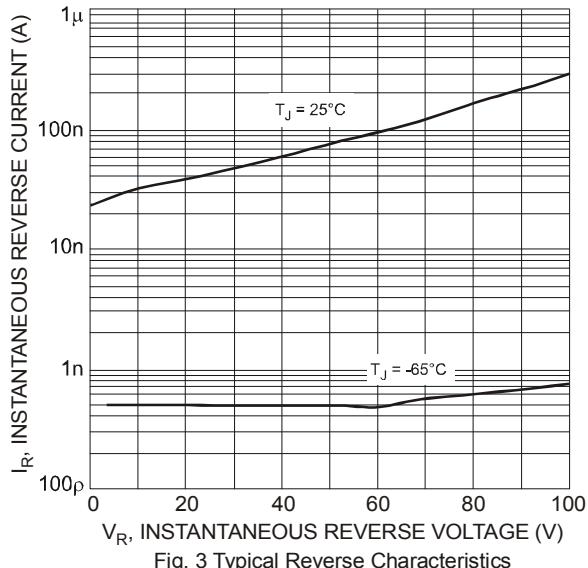


Fig. 3 Typical Reverse Characteristics

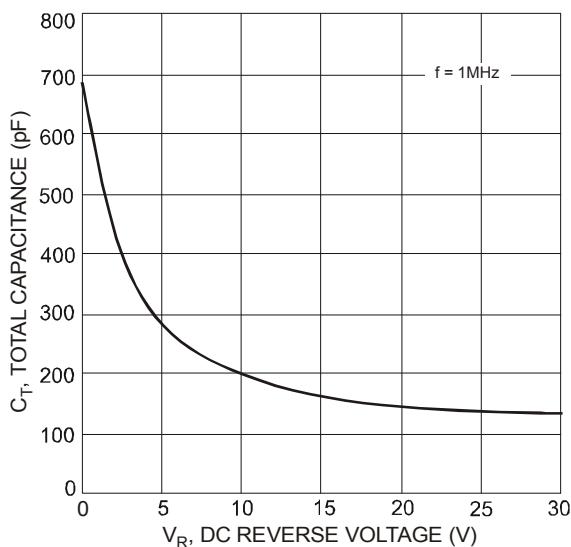


Fig. 5 Total Capacitance vs. Reverse Voltage

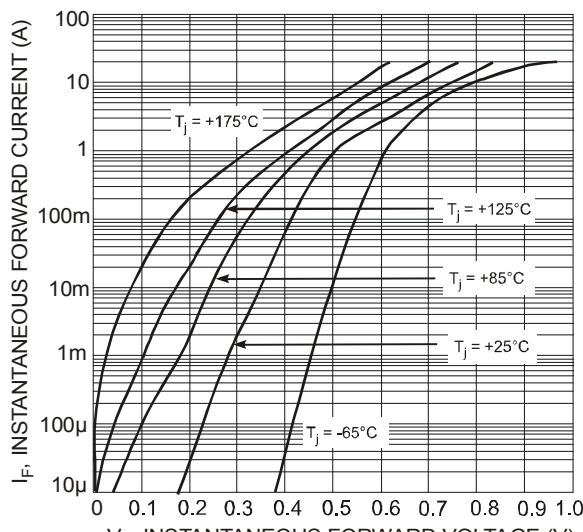


Fig. 2 Typical Forward Characteristics

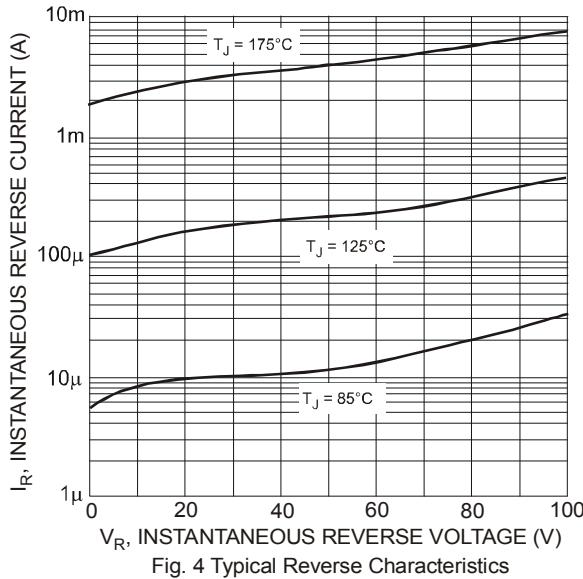


Fig. 4 Typical Reverse Characteristics

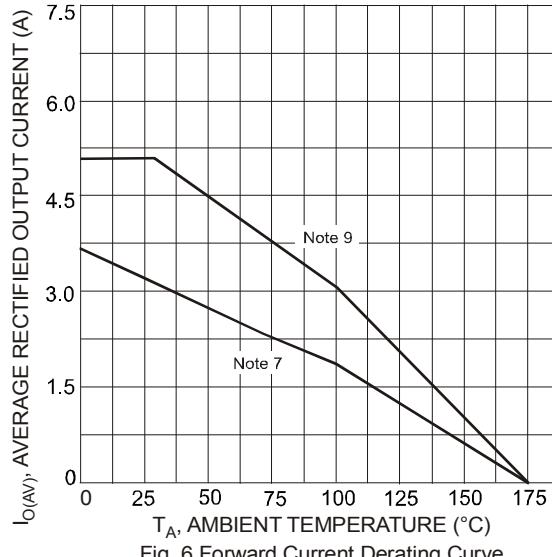


Fig. 6 Forward Current Derating Curve

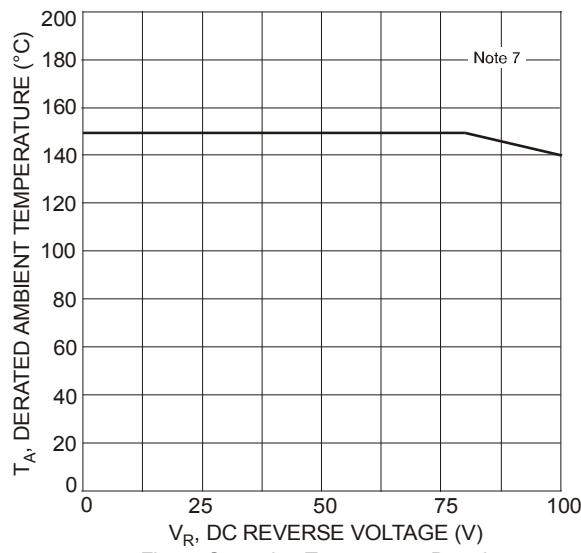
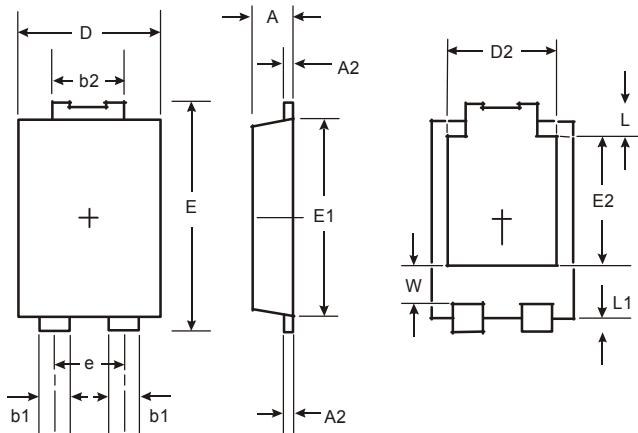


Fig. 7 Operating Temperature Derating

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.

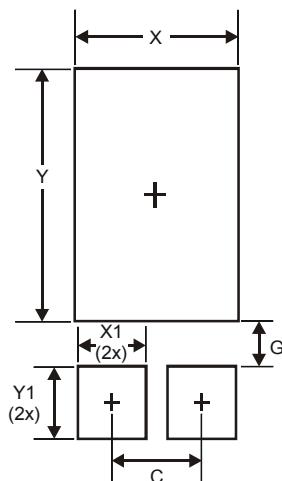


POWERDI5		
Dim	Min	Max
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.054 Typ	
E	6.40	6.60
e	1.84 Typ	
E1	5.30	5.45
E2	3.549 Typ	
L	0.75	0.95
L1	0.50	0.65
W	1.10	1.41

All Dimensions in mm

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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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