

## Product Summary

$V_R(V)$	$I_F(A)$	$V_F\ MAX(V)$ @ +25°C	$I_R\ MAX(mA)$ @ +25°C
100	5.0	0.79	0.2

## Description and Applications

This Schottky Barrier Rectifier is designed to meet the stringent requirements of automotive applications. It is ideally suited to use as:

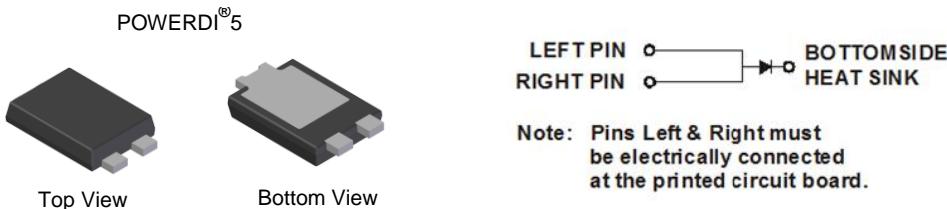
- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode

## Features and Benefits

- Guard Ring Die Construction for Transient Protection
- High Surge Current Capability
- Low Leakage Current
- 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 (Note 4)

## 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 @3
- Polarity: See Diagram
- Weight: 0.093 grams (Approximate)



## Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
PDS5100Q-13D	Automotive	POWERDI®5	5,000/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](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/](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. "D" suffix designate for the 12mm Tape and Reel option.

## Marking Information



S5100 = Product type Marking Code  
 D11 = Manufacturers' Code Marking  
 YYWW = Date Code Marking  
 YY = Last Digit of Year (ex: 15 for 2015)  
 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	$V_{R(RMS)}$	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	$I_{FSM}$	120	A

## Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering Point	$R_{\theta JS}$	—	2.6	°C/W
Thermal Resistance Junction to Ambient Air (Note 7) $T_A = +25^\circ\text{C}$	$R_{\theta JA}$	90	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 8) $T_A = +25^\circ\text{C}$	$R_{\theta JA}$	70	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 9) $T_A = +25^\circ\text{C}$	$R_{\theta JA}$	50	—	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150		°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	$I_R = 200\mu\text{A}$
Forward Voltage	$V_F$	—	0.74	0.79	V	$I_F = 5\text{A}, T_S = +25^\circ\text{C}$
		—	0.64	0.68		$I_F = 5\text{A}, T_S = +100^\circ\text{C}$
		—	0.60	0.64		$I_F = 5\text{A}, T_S = +125^\circ\text{C}$
		—	0.81	0.89		$I_F = 10\text{A}, T_S = +25^\circ\text{C}$
		—	0.68	0.73		$I_F = 10\text{A}, T_S = +125^\circ\text{C}$
Reverse Leakage Current (Note 10)	$I_R$	—	0.002	0.2	mA	$T_S = +25^\circ\text{C}, V_R = 100\text{V}$
		—	0.5	5		$T_S = +100^\circ\text{C}, V_R = 100\text{V}$
		—	2	20		$T_S = +125^\circ\text{C}, V_R = 100\text{V}$

Notes:

7. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
8. Polymide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
9. Polymide 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.

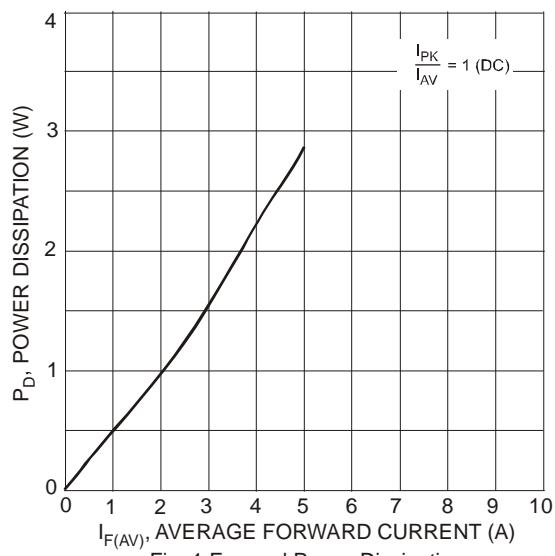


Fig. 1 Forward Power Dissipation

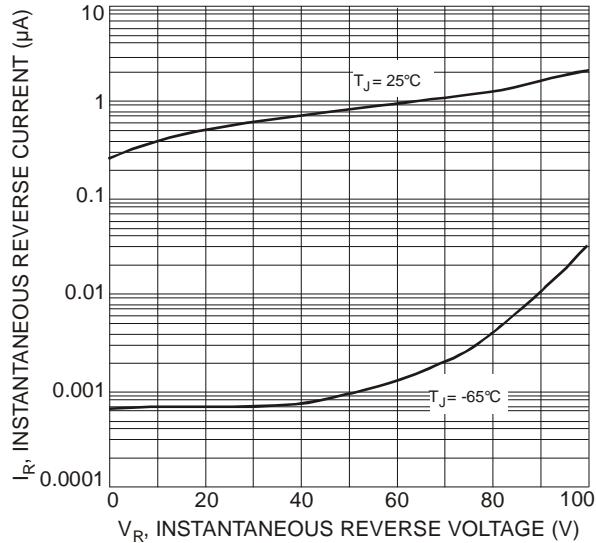


Fig. 3 Typical Reverse Characteristics

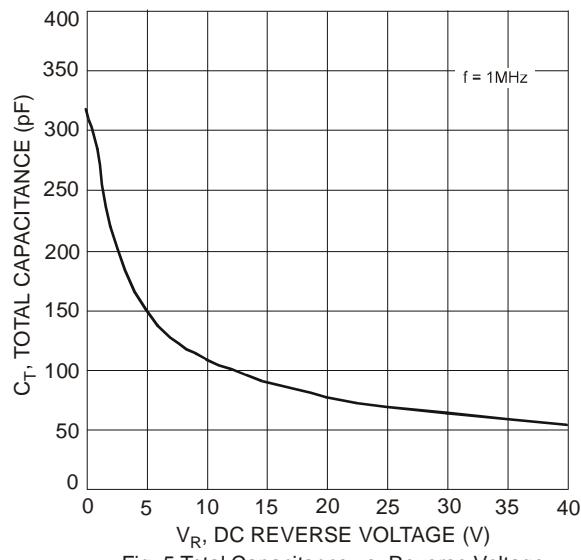


Fig. 5 Total Capacitance vs. Reverse Voltage

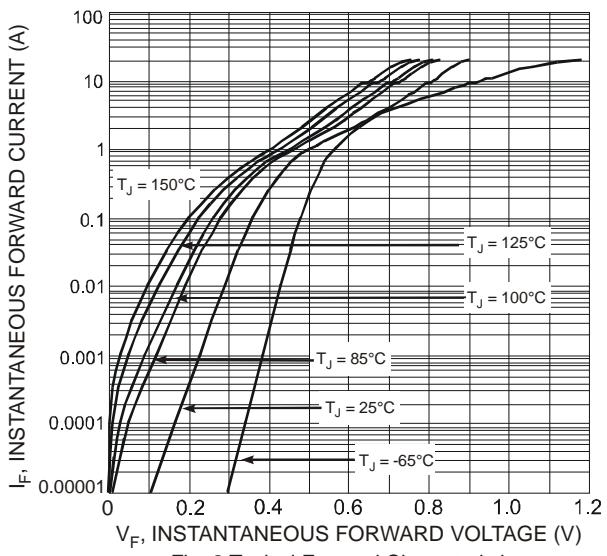


Fig. 2 Typical Forward Characteristics

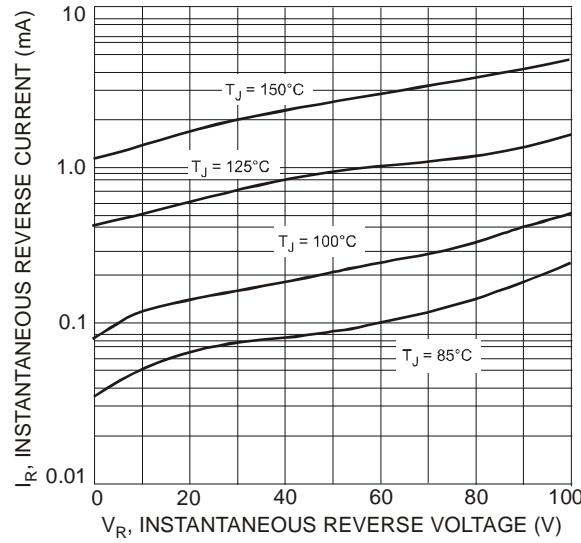


Fig. 4 Typical Reverse Characteristics

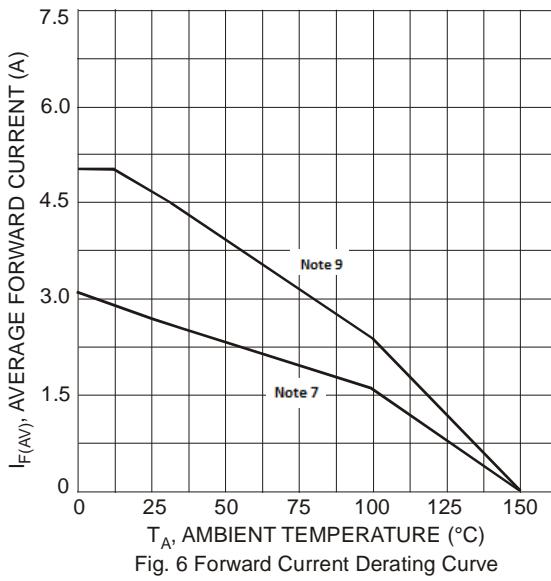


Fig. 6 Forward Current Derating Curve

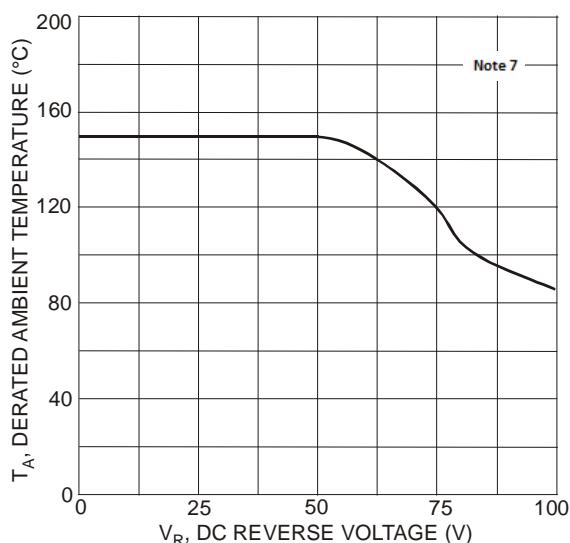
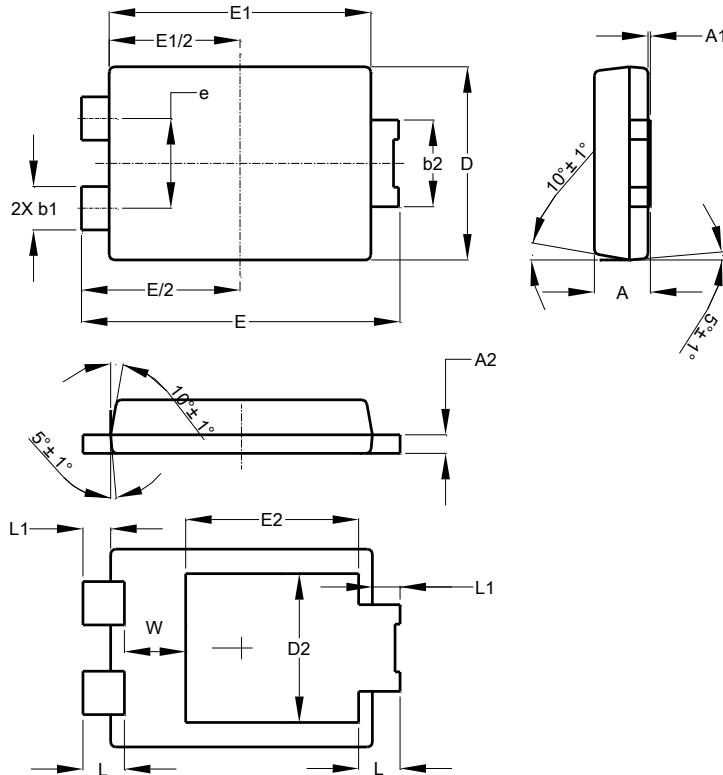


Fig. 7 Operating Temperature Derating

## Package Outline Dimensions

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

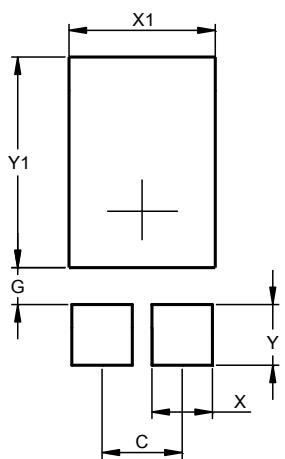


POWERDI® 5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	-
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	-	-	3.054
E	6.40	6.60	6.504
e	-	-	1.84
E1	5.30	5.45	5.37
E2	-	-	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255

All Dimensions in mm

## Suggested Pad Layout

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



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

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