



PDS3100Q

# 3A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER POWERDI®5

### **Product Summary**

V <sub>R</sub> (V)	I <sub>F</sub> (A)	V <sub>F MAX</sub> (V) @ +25°C	I <sub>R MAX</sub> (mA) @ +25°C
100	3.0	0.76	0.1

## **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

## **Features**

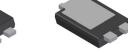
- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Low Reverse Leakage Current
- Low Forward Voltage Drop
- High Forward Surge Current Capability
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Capable (Note 4)

### **Mechanical Data**

- Case: 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: 0.093 grams (approximate)

### POWERDI®5





RIGHT PIN O BOTTOMSIDE HEAT SINK

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

## Top View

**Ordering Information** (Note 4)

Part Number	Compliance	Case	Packaging
PDS3100Q-13	Automotive	POWERDI5	5000/Tape & Reel
PDS3100Q-7	Automotive	POWERDI5	1500/Tape & Reel

Notes:

1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.

**Bottom View** 

- 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.

## Marking Information





## Maximum Ratings (@T<sub>A</sub> = +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 <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	100	٧
RMS Reverse Voltage	V <sub>R(RMS)</sub>	70	V
Average Rectified Output Current (see also Figure 5)	I <sub>O</sub>	3	А
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load	I <sub>FSM</sub>	90	А

## **Thermal Characteristics**

Characteristic	Symbol	Тур	Max	Unit
Thermal Resistance Junction to Soldering Point	$R_{ heta JS}$	_	6.0	°C/W
Thermal Resistance Junction to Ambient Air (Note 6) T <sub>A</sub> = +25°C	$R_{ heta JA}$	95	_	°C/W
Thermal Resistance Junction to Ambient Air (Note 7) T <sub>A</sub> = +25°C	$R_{ heta JA}$	70	_	°C/W
Thermal Resistance Junction to Ambient Air (Note 8) T <sub>A</sub> = +25°C	$R_{ heta JA}$	50	_	°C/W
Operating Temperature Range	TJ	-65 to +150		°C
Storage Temperature Range	T <sub>STG</sub>	-65 to -	+175	°C

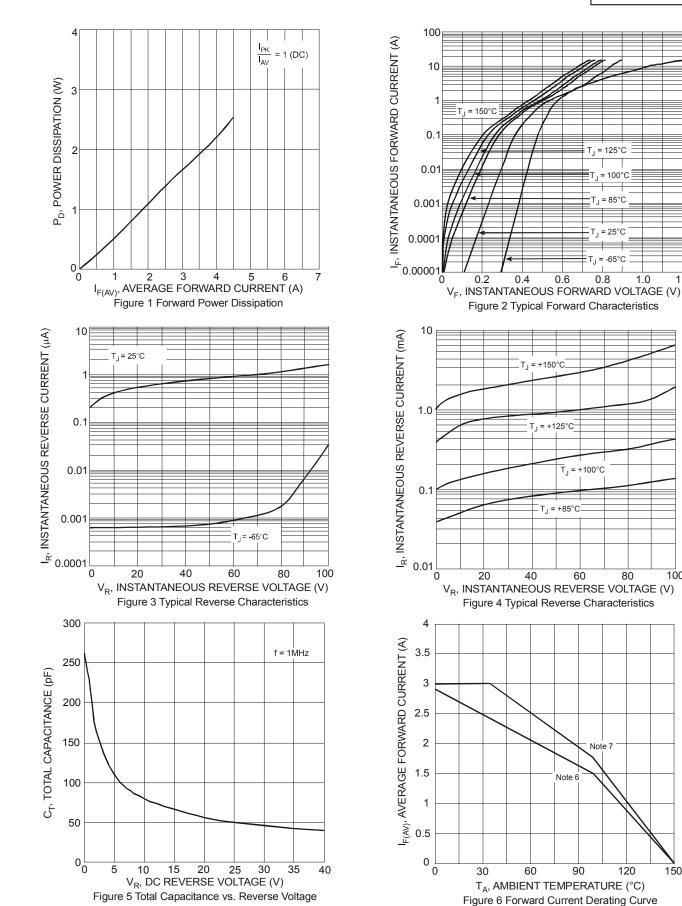
## **Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 9)	V <sub>(BR)R</sub>	100	_	_	<b>V</b>	$I_R = 0.2mA$
	V <sub>F</sub>		0.71	0.76	V	$I_F = 3A, T_J = +25^{\circ}C$
			0.61	0.65		I <sub>F</sub> = 3A, T <sub>J</sub> = +100°C
Forward Voltage			0.57	0.61		I <sub>F</sub> = 3A, T <sub>J</sub> = +125°C
Forward Voltage		_	0.78	0.84		I <sub>F</sub> = 6A, T <sub>J</sub> = +25°C
		_	0.68	0.75		I <sub>F</sub> = 6A, T <sub>J</sub> = +100°C
		_	0.64	0.68		I <sub>F</sub> = 6A, T <sub>J</sub> = +125°C
		_	2	100	μΑ	$T_J = +25^{\circ}C, V_R = 100V$
Reverse Current (Note 9)	$I_R$		0.4	5	mA	$T_J = +100^{\circ}C, V_R = 100V$
			2	20	mA	T <sub>J</sub> = +125°C, V <sub>R</sub> = 100V

Notes:

- 6. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com.
  7. Polymide PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com.
  8. Polymide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.
  9. Short duration pulse test used to minimize self-heating effect.

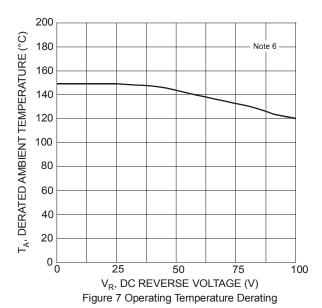




150

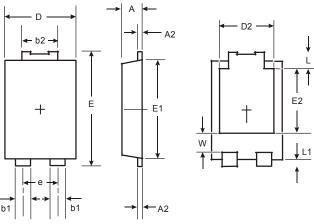
100





## **Package Outline Dimensions**

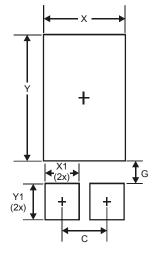
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



POWERDI5				
Dim	Min	Max		
Α	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	Тур		
Е	6.40	6.60		
е	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)		
С	1.840		
G	0.852		
Х	3.360		
X1	1.390		
Y	4.860		
Y1	1.400		



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