# THE DATASHEET OF

# PDS340-13

**PDS340**

**3A SCHOTTKY BARRIER RECTIFIER**
**POWERDI®5**

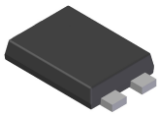
## Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Low Forward Voltage Drop
- Low Reverse Leakage Current
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- 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**

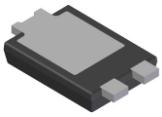
## Mechanical Data

- 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: 0.093 grams (Approximate)

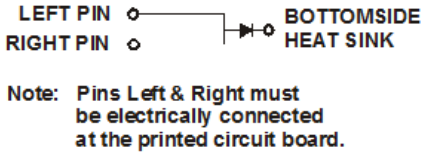
POWERDI®5



Top View



Bottom View



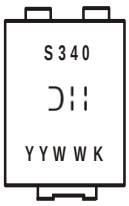

## Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---|---|---|
| PDS340-13 | 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 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 http://www.diodes.com/products/packages.html.

## Marking Information

POWERDI®5




S340 = Product Type Marking Code
⊐¦¦ = Manufacturers' Code Marking
YYWW = Date Code Marking
YY = Last Digit of Year (ex: 15 for 2015)
WW = Week Code (01 - 53)
K = Factory Designator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## Maximum Ratings (@$T_A$ = +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<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 40 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 28 | V |
| Average Rectified Output Current (See also Figure 5) | $I_O$ | 3 | A |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 90 | A |

## Thermal Characteristics

| Characteristic | Symbol | Typ | Max | Unit |
|---|---|---|---|---|
| Thermal Resistance Junction to Soldering Point | $R_{\theta JS}$ | — | 6.0 | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 5) $T_A$ = +25°C | $R_{\theta JA}$ | 95 | — | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 6) $T_A$ = +25°C | $R_{\theta JA}$ | 60 | — | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 7) $T_A$ = +25°C | $R_{\theta JA}$ | 50 | — | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -65 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) | $V_{(BR)R}$ | 40 | — | — | V | $I_R$ = 0.5mA |
| Forward Voltage | $V_F$ | — | 0.45 | 0.49 | V | $I_F$ = 3A, $T_J$ = +25°C |
| | | — | 0.38 | 0.42 | | $I_F$ = 3A, $T_J$ = +125°C |
| | | — | 0.53 | 0.61 | | $I_F$ = 6A, $T_J$ = +25°C |
| | | — | 0.50 | 0.57 | | $I_F$ = 6A, $T_J$ = +125°C |
| Reverse Current (Note 8) | $I_R$ | — | 15 | 500 | μA | $T_J$ = +25°C, $V_R$ = 40V |
| | | — | 3 | 20 | mA | $T_J$ = +100°C, $V_R$ = 40V |
| | | — | 10 | 25 | mA | $T_J$ = +125°C, $V_R$ = 40V |

Notes:
5. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com.
6. Polyimide PCB, 2oz. Copper, minimum recommended pad layout per http://www.diodes.com.
7. Polyimide PCB, 2oz. Copper. Cathode pad dimensions 6.5mm x 5.0mm. Anode pad dimensions 1.8mm x 1.1mm.
8. Short duration pulse test used to minimize self-heating effect.

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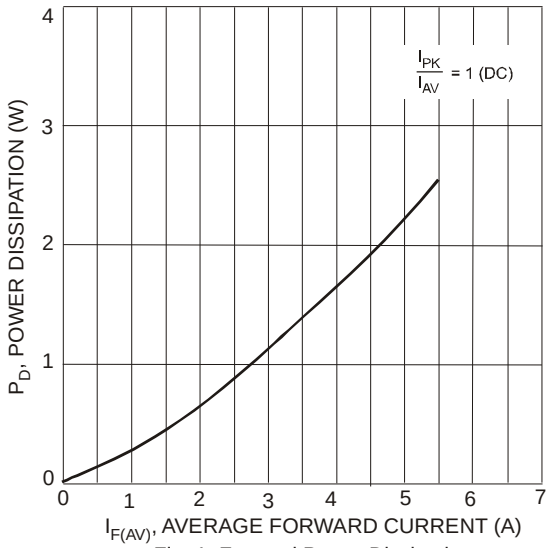


Fig. 1 Forward Power Dissipation

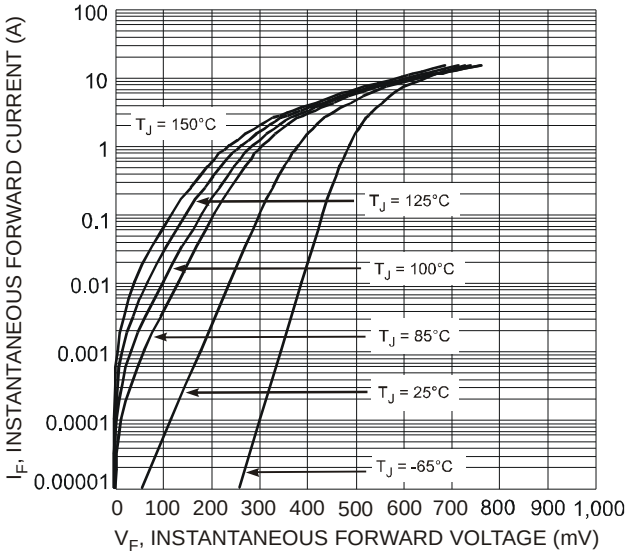


Fig. 2 Typical Forward Characteristics

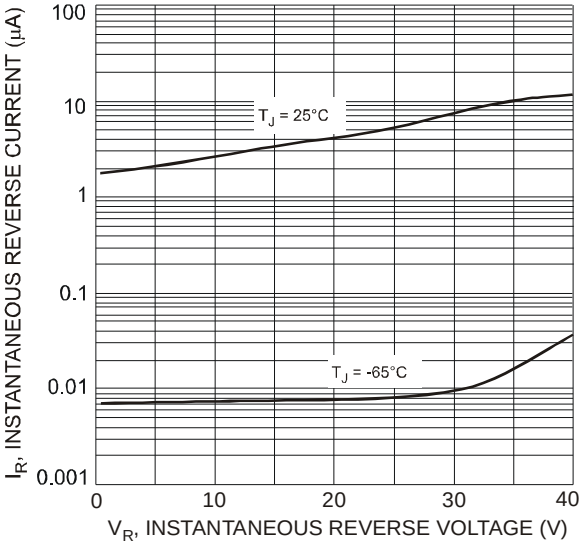


Fig. 3 Typical Reverse Characteristics

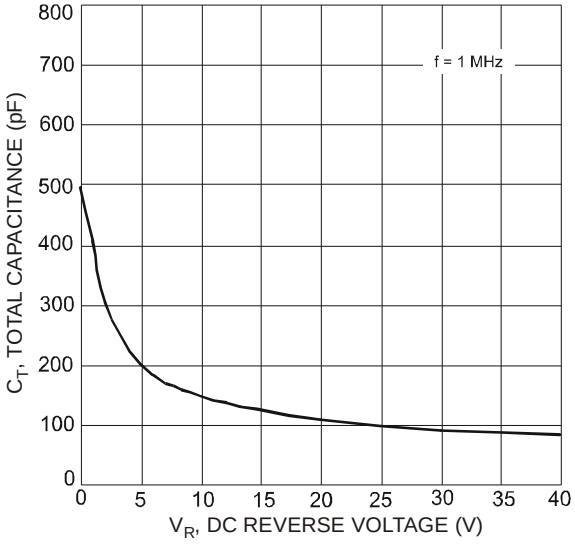


Fig. 4 Total Capacitance vs. Reverse Voltage

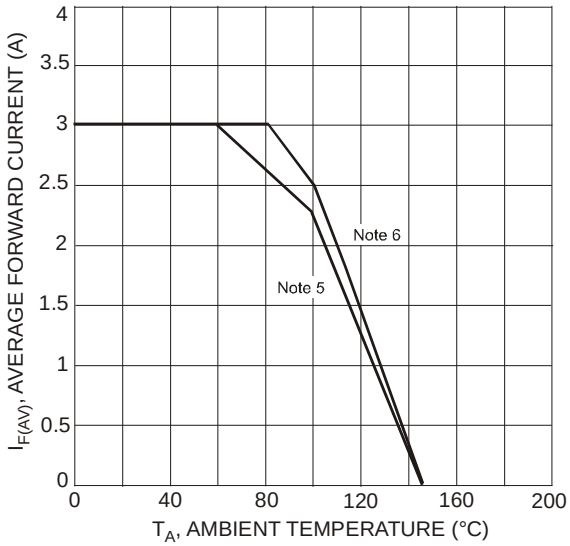


Fig. 5 Forward Current Derating Curve

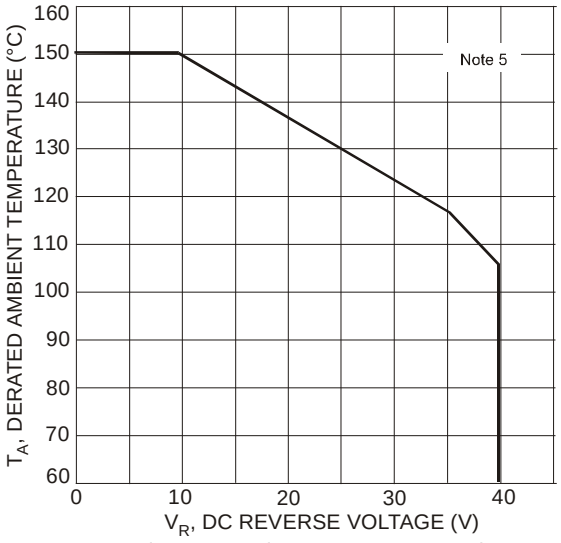


Fig. 6 Operating Temperature Derating

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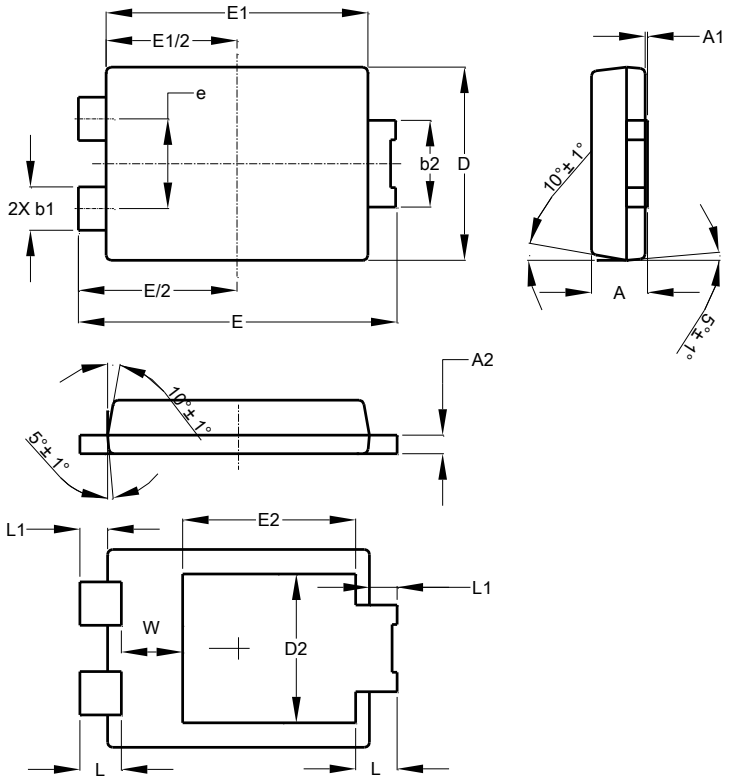
## Package Outline Dimensions

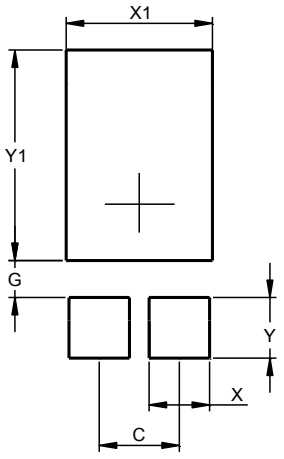
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.




| 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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