

## Product Summary

| <b>V<sub>R</sub>(V)</b> | <b>I<sub>F</sub> (A)</b> | <b>V<sub>F MAX</sub> (V)<br/>@ +25°C</b> | <b>I<sub>R MAX</sub> (mA)<br/>@ +25°C</b> |
|-------------------------|--------------------------|--|---|
| 30                      | 2.0                      | 0.60                                     | 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

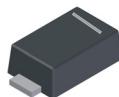
## Features and Benefits

- Ultra-Small Surface Mount Package
- Guard Ring Die Construction for Transient Protection
- High Surge 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)

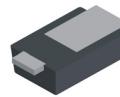
## Mechanical Data

- Case: PowerDI®323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity: Cathode Band
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.006 grams (approximate)

POWERDI323



Top View



Bottom View

## Ordering Information (Note 5)

| Part Number | Compliance | Case        | Packaging        |
|-------------|------------|-------------|------------------|
| PD3S230HQ-7 | Automotive | PowerDI®323 | 3000/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>.

## Marking Information



22 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: B = 2014)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year  | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code  | B    | C    | D    | E    | F    | G    | H    | I    | J    | K    | L    | M    | N    |
| Month | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |      |
| Code  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | O    | N    | D    |      |

## 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                     | $V_{RWM}$        | 30    | V    |
| DC Blocking Voltage                              | $V_R$            |       |      |
| Average Forward Current                          | $I_F(\text{AV})$ | 2.0   | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms  | $I_{FSM}$        | 30    | A    |
| Single Half Sine-Wave Superimposed on Rated Load |                  |       |      |

## Thermal Characteristics

| Characteristic                                      | Symbol          | Typ         | Max | Unit |
|---|-----------------|-------------|-----|------|
| Thermal Resistance Junction to Soldering Point      | $R_{\theta JS}$ | —           | 6   | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 6) | $R_{\theta JA}$ | 177         | —   | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 7) | $R_{\theta JA}$ | 128         | —   | °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 8) | $V_{(BR)R}$ | 30  | —         | —            | V             | $I_R = 100\mu\text{A}$  |
| Forward Voltage                    | $V_F$       | —   | 0.50      | 0.60<br>0.55 | V             | $I_F = 2.0\text{A}, T_A = +25^\circ\text{C}$<br>$I_F = 2.0\text{A}, T_A = +125^\circ\text{C}$ |
| Leakage Current (Note 8)           | $I_R$       | —   | 0.7<br>10 | 100          | $\mu\text{A}$ | $V_R = 5\text{V}, T_A = +25^\circ\text{C}$<br>$V_R = 30\text{V}, T_A = +25^\circ\text{C}$     |
| Total Capacitance                  | $C_T$       | —   | 40        | —            | pF            | $V_R = 10\text{V}, f = 1.0\text{MHz}$   |

Notes: 6. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.  
 7. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.  
 8. Short duration pulse test used to minimize self-heating effect.

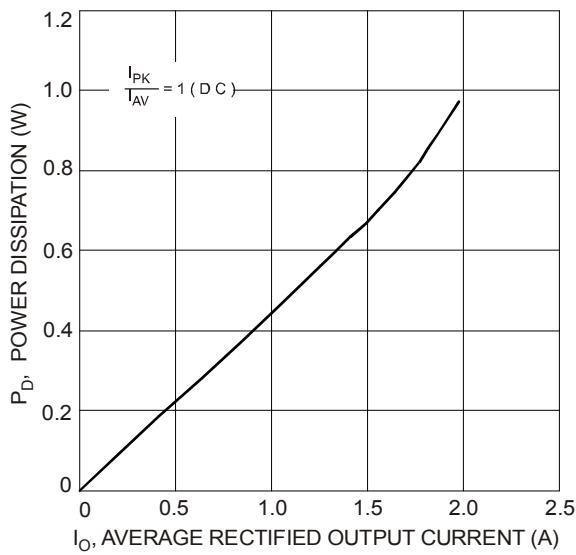


Fig. 1 Forward Power Dissipation

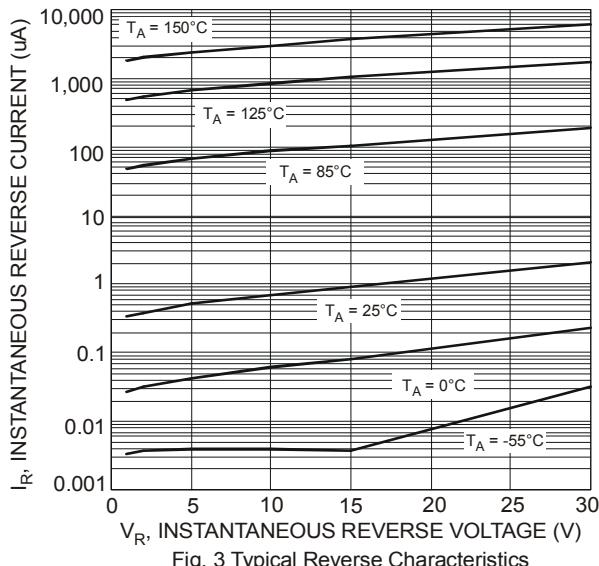


Fig. 3 Typical Reverse Characteristics

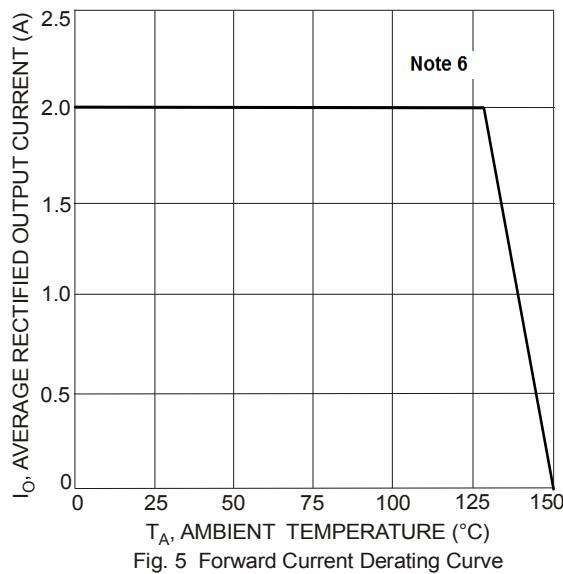


Fig. 5 Forward Current Derating Curve

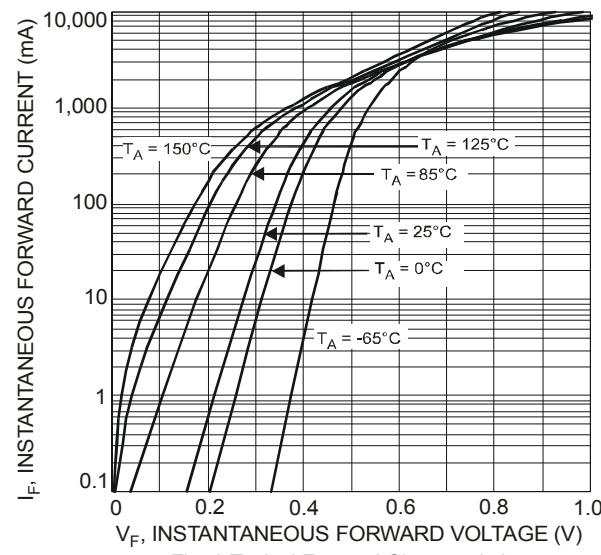


Fig. 2 Typical Forward Characteristics

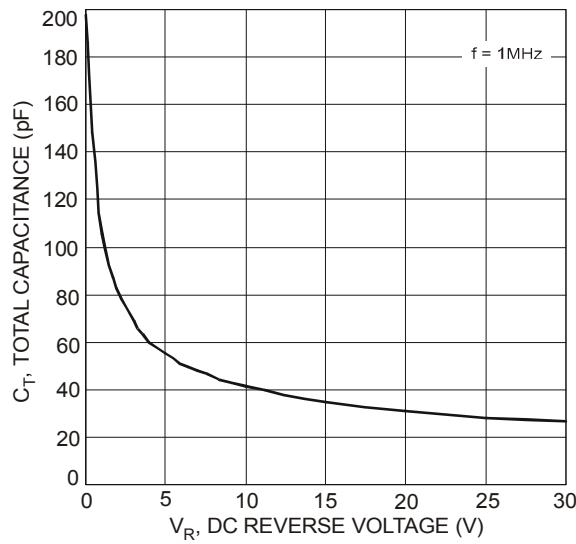


Fig. 4 Total Capacitance vs. Reverse Voltage

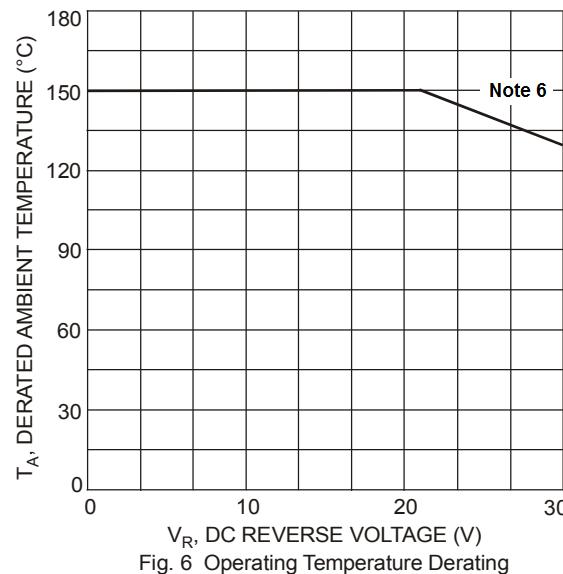
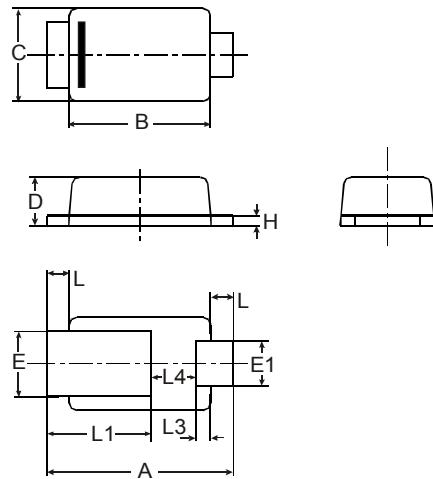


Fig. 6 Operating Temperature Derating

## Package Outline Dimensions

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

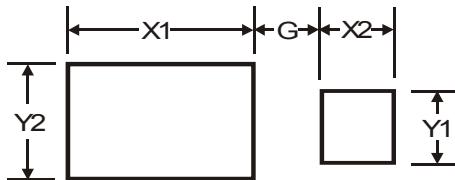


| PowerDI®323 |      |      |      |
|-------------|------|------|------|
| Dim         | Min  | Max  | Typ  |
| A           | 2.40 | 2.60 | 2.50 |
| B           | 1.85 | 1.95 | 1.90 |
| C           | 1.20 | 1.30 | 1.25 |
| D           | 0.60 | 0.70 | 0.65 |
| E           | 0.78 | 0.98 | 0.88 |
| E1          | 0.50 | 0.70 | 0.60 |
| H           | 0.08 | 0.18 | 0.13 |
| L           | 0.20 | 0.40 | 0.30 |
| L1          | —    | —    | 1.40 |
| L3          | —    | —    | 0.20 |
| L4          | 0.40 | 0.80 | 0.60 |

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) |
|------------|---------------|
| G          | 0.5           |
| X1         | 2.0           |
| X2         | 0.8           |
| Y1         | 0.8           |
| Y2         | 1.1           |

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