

Product Summary

| V_R (V) | I_F (A) | $V_{F\ MAX}$ (V) @ +25°C | $I_{R\ MAX}$ (mA) @ +25°C |
|-----------|-----------|-----------------------------|------------------------------|
| 60 | 1.0 | 0.64 | 0.05 |

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

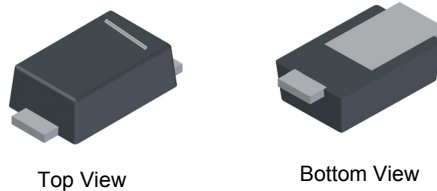
Features and Benefits

- Guard Ring Die Construction for Transient Protection
- High Surge Capability
- Ultra-Small Surface Mount Package
- **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: POWERDI323
- 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 [Ⓔ]
- Weight: 0.006 grams (approximate)

POWERDI323

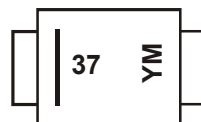


Ordering Information (Note 5)

| Part Number | Compliance | Case | Packaging |
|-------------|------------|------------|------------------|
| PD3S160Q-7 | Automotive | POWERDI323 | 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 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



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

Date Code Key

| Year | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | B | C | D | E | F | G | H | I | J | K | L | M |
| 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 Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 60 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 42 | V |
| Average Forward Current (See also figure 4) | $I_{F(AV)}$ | 1.0 | A |
| Repetitive Peak Forward Current $t_p \leq 1\text{ms}$; $\delta \leq 0.25$ | I_{FRM} | 8 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms single half sine-wave superimposed on rated load | I_{FSM} | 22 | A |

Thermal Characteristics

| Characteristic | Symbol | Typ | Max | Unit |
|-----------------------------------------------------|-----------------|-------------|-----|--------------------|
| Thermal Resistance Junction to Soldering Point | $R_{\theta JS}$ | — | 6 | $^\circ\text{C/W}$ |
| Thermal Resistance Junction to Ambient Air (Note 6) | $R_{\theta JA}$ | 173 | — | $^\circ\text{C/W}$ |
| Thermal Resistance Junction to Ambient Air (Note 7) | $R_{\theta JA}$ | 125 | — | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | | $^\circ\text{C}$ |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---------------------------------------|-------------|-----|-------------------|----------------------|---------------|-------------------------------------------------------------------------------------------|
| Reverse Breakdown Voltage (Note 8) | $V_{(BR)R}$ | 60 | — | — | V | $I_R = 100\mu\text{A}$ |
| Forward Voltage | V_F | — | 0.40 0.55 — | 0.45 0.58 0.64 | V | $I_F = 0.1\text{A}$ $I_F = 0.7\text{A}$ $I_F = 1.0\text{A}$ |
| Leakage Current (Note 8) | I_R | — | 0.3 3 | 5 50 | μA | $V_R = 5\text{V}, T_A = +25^\circ\text{C}$ $V_R = 60\text{V}, T_A = +25^\circ\text{C}$ |
| Total Capacitance (See also figure 3) | C_T | — | 38 | — | 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>. $T_A = +25^\circ\text{C}$.
7. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>. $T_A = +25^\circ\text{C}$.
8. Short duration pulse test used to minimize self-heating effect.

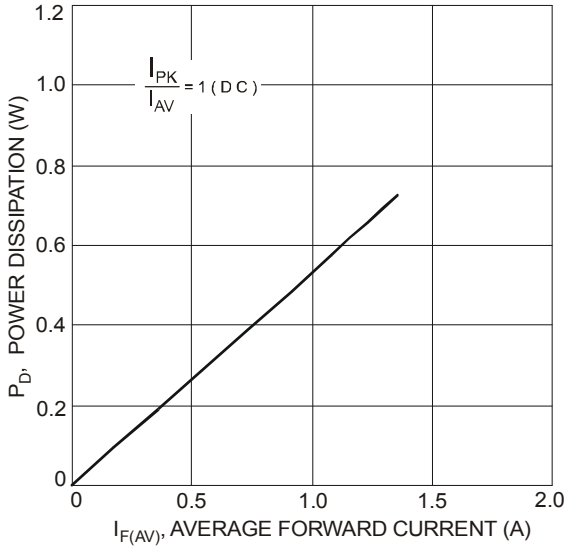


Figure 1 Forward Power Dissipation

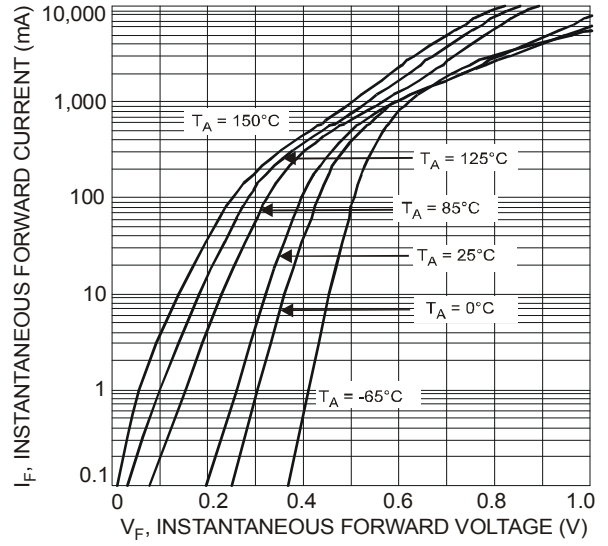


Figure 2 Typical Forward Characteristics

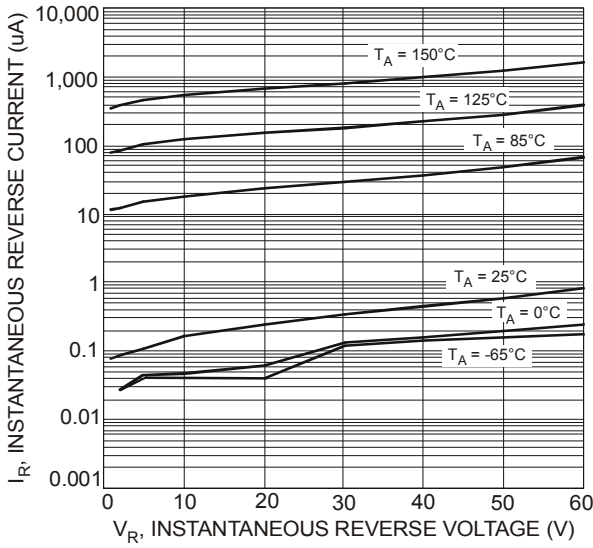


Figure 3 Typical Reverse Characteristics

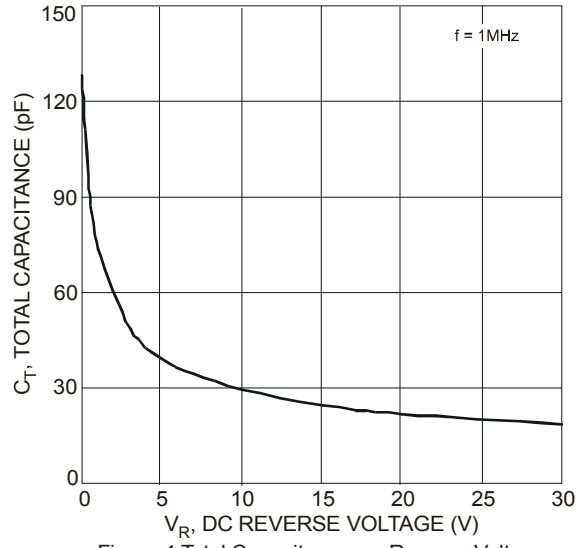


Figure 4 Total Capacitance vs. Reverse Voltage

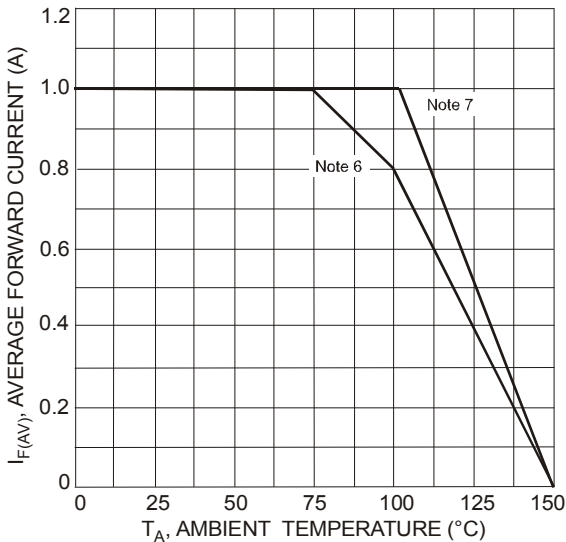


Figure 5 Forward Current Derating Curve

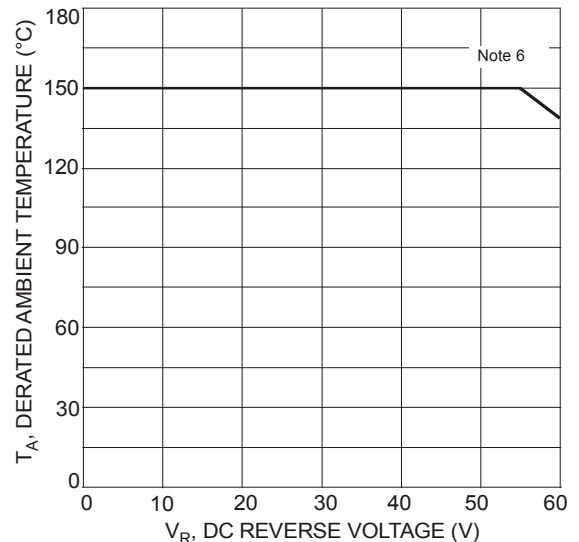
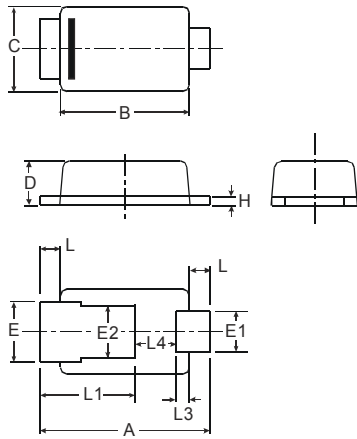


Figure 6 Operating Temperature Derating

Package Outline Dimensions

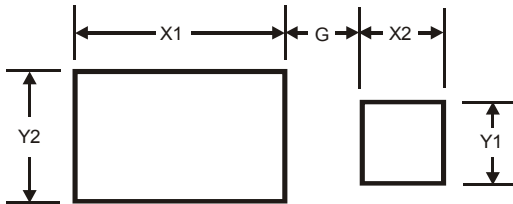
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| POWERDI323 | | | |
|----------------------|------|------|------|
| 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 |
| E2 | 0.60 | 1.00 | 0.80 |
| 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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