

## 2.0A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER POWERDI®

### Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Patented Interlocking Clip Design for High Surge Current Capacity
- **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: POWERDI123
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 ③
- Weight: 0.01 grams (approximate)

POWERDI123



Top View

### Ordering Information (Note 4)

| Part Number | Case       | Packaging        |
|-------------|------------|------------------|
| DFLS2100-7  | POWERDI123 | 3000/Tape & Reel |
| DFLS2100Q-7 | POWERDI123 | 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> 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>.

### Marking Information



F09A = Product Type Marking Code  
YM = Date Code Marking  
Y = Year (ex: V = 2008)  
M = Month (ex: 9 = September)

#### Date Code Key

| Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | V    | W    | X    | Y    | Z    | A    | B    | C    | D    | E    | F    |

| 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<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                                                                     | V <sub>RRM</sub>    | 100   | V    |
| Working Peak Reverse Voltage                                                                        | V <sub>RWM</sub>    |       |      |
| DC Blocking Voltage                                                                                 | V <sub>R</sub>      |       |      |
| RMS Reverse Voltage                                                                                 | V <sub>R(RMS)</sub> | 71    | V    |
| Average Forward Current                                                                             | I <sub>F(AV)</sub>  | 2.0   | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>    | 40    | A    |

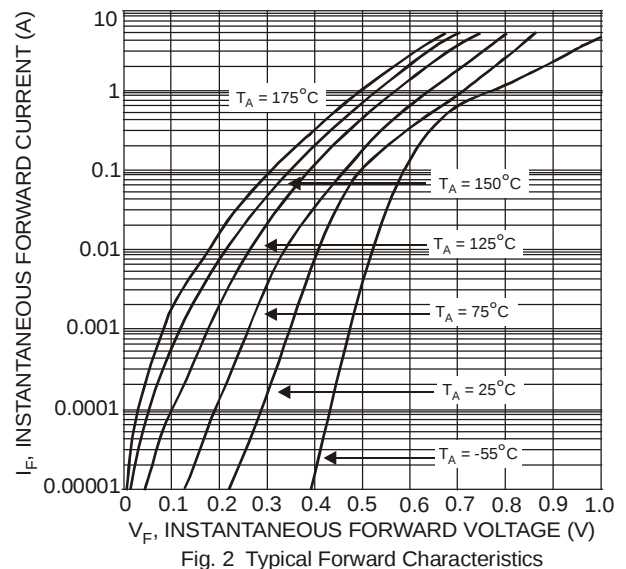
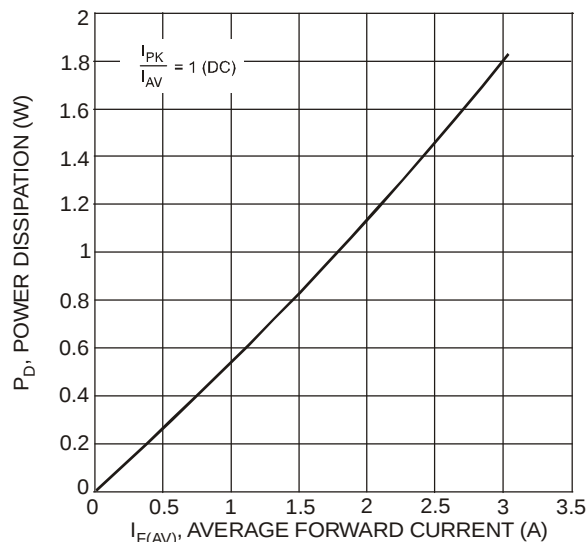
## Thermal Characteristics

| Characteristic                                                           | Symbol                            | Typ         | Max | Unit |
|--------------------------------------------------------------------------|-----------------------------------|-------------|-----|------|
| Thermal Resistance Junction to Soldering (Note 5)                        | R <sub>θJS</sub>                  | —           | 7   | °C/W |
| Thermal Resistance Junction to Ambient (Note 6) (T <sub>A</sub> = +25°C) | R <sub>θJA</sub>                  | 125         | —   | °C/W |
| Operating and Storage Temperature Range                                  | T <sub>J</sub> , T <sub>STG</sub> | -55 to +175 |     | °C   |

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

| Characteristic                     | Symbol             | Min | Typ | Max          | Unit | Test Condition                                 |
|------------------------------------|--------------------|-----|-----|--------------|------|------------------------------------------------|
| Reverse Breakdown Voltage (Note 7) | V <sub>(BR)R</sub> | 100 | —   | —            | V    | I <sub>R</sub> = 1μA                           |
| Forward Voltage                    | V <sub>F</sub>     | —   | —   | 0.77<br>0.86 | V    | I <sub>F</sub> = 1.0A<br>I <sub>F</sub> = 2.0A |
| Leakage Current (Note 7)           | I <sub>R</sub>     | —   | —   | 1            | μA   | V <sub>R</sub> = 100V, T <sub>A</sub> = +25°C  |
| Total Capacitance                  | C <sub>T</sub>     | —   | 36  | —            | pF   | V <sub>R</sub> = 5VDC, f = 1MHz                |

Notes: 5. Theoretical R<sub>θJS</sub> calculated from the top center of the die straight down to the PCB/cathode tab solder junction.  
 6. Part mounted on FR-4 board with 2 oz., minimum recommended copper pad layout, which can be found on our website at <http://www.diodes.com>.  
 7. Short duration pulse test used to minimize self-heating effect.



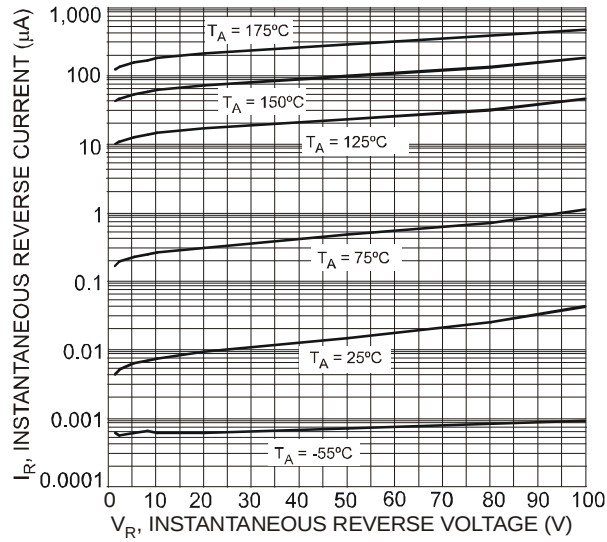


Fig. 3 Typical Reverse Characteristics

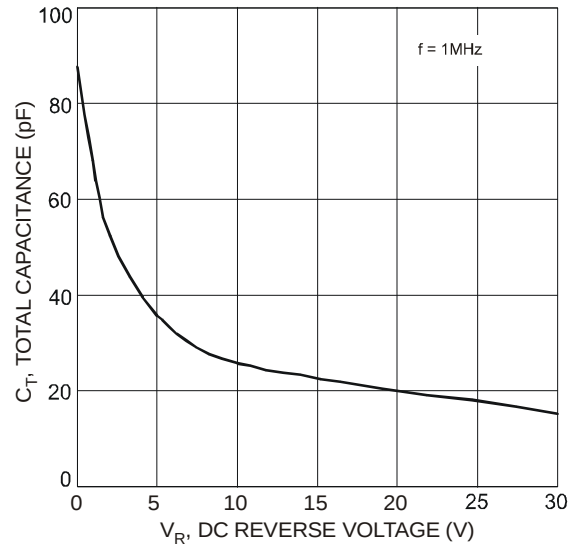


Fig. 4 Total Capacitance vs. Reverse Voltage

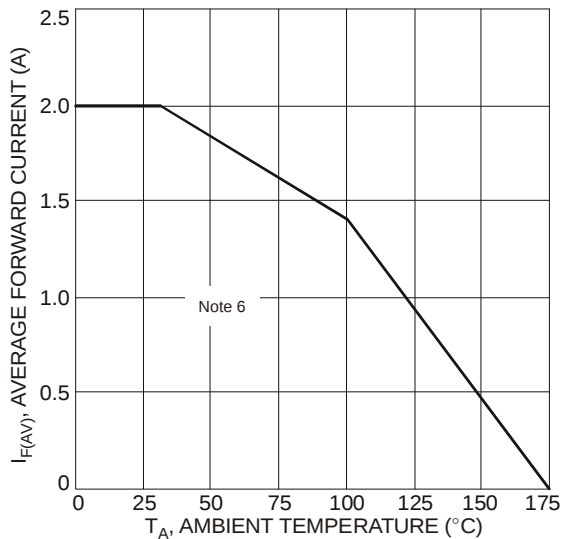
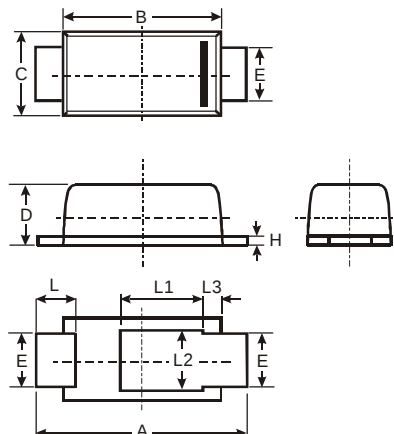


Fig. 5 Forward Current Derating Curve

## Package Outline Dimensions

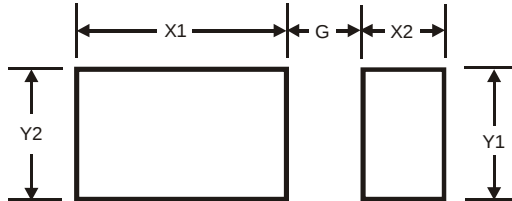
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| POWERDI123           |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 3.50 | 3.90 | 3.70 |
| B                    | 2.60 | 3.00 | 2.80 |
| C                    | 1.63 | 1.93 | 1.78 |
| D                    | 0.93 | 1.00 | 0.98 |
| E                    | 0.85 | 1.25 | 1.00 |
| H                    | 0.15 | 0.25 | 0.20 |
| L                    | 0.40 | 0.50 | 0.45 |
| L1                   | -    | -    | 1.35 |
| L2                   | -    | -    | 1.10 |
| L3                   | -    | -    | 0.20 |
| 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          | 1.0           |
| X1         | 2.2           |
| X2         | 0.9           |
| Y1         | 1.4           |
| Y2         | 1.4           |

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