

# 1.0A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER POWERDI®123

## 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 (Note 1)**
- **"Green" Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: POWERDI®123
- 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)



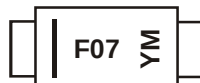
Top View

## Ordering Information (Note 2)

| Part Number | Case        | Packaging        |
|-------------|-------------|------------------|
| DFLS1150-7  | POWERDI®123 | 3000/Tape & Reel |

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.  
2. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



F07 = Product Type Marking Code  
YM = Date Code Marking  
Y = Year (ex: R = 2004)  
M = Month (ex: 9 = September)

### Date Code Key

| Year  | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code  | R    | S    | T    | U    | V    | W    | X    | Y    | Z    | A    | B    | C    |
| 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    |

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DFLS1150

Document number: DS30593 Rev. 7 - 2

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## 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>    | 150   | V    |
| Working Peak Reverse Voltage                                                                        | V <sub>RWM</sub>    |       |      |
| DC Blocking Voltage                                                                                 | V <sub>R</sub>      |       |      |
| RMS Reverse Voltage                                                                                 | V <sub>R(RMS)</sub> | 106   | V    |
| Average Forward Current                                                                             | I <sub>F(AV)</sub>  | 1.0   | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>    | 50    | A    |

## Thermal Characteristics

| Characteristic                                                        | Symbol                            | Typ         | Max | Unit |
|-----------------------------------------------------------------------|-----------------------------------|-------------|-----|------|
| Thermal Resistance Junction to Soldering Point (Note 3)               | R <sub>θJS</sub>                  | —           | 7   | °C/W |
| Thermal Resistance Junction to Ambient (Note 4) 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 5) | V <sub>(BR)R</sub> | 150 | —   | —    | V    | I <sub>R</sub> = 2μA                         |
| Forward Voltage                    | V <sub>F</sub>     | —   | —   | 0.82 | V    | I <sub>F</sub> = 1.0A                        |
| Leakage Current (Note 5)           | I <sub>R</sub>     | —   | —   | 2    | μA   | V <sub>R</sub> = 150V, T <sub>A</sub> = 25°C |
| Total Capacitance                  | C <sub>T</sub>     | —   | 28  | —    | pF   | V <sub>R</sub> = 5V <sub>DC</sub> , f = 1MHz |

Notes: 3. Theoretical R<sub>θJS</sub> calculated from the top center of the die straight down to the PCB/cathode tab solder junction.  
 4. 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>.  
 5. Short duration pulse test used to minimize self-heating effect.

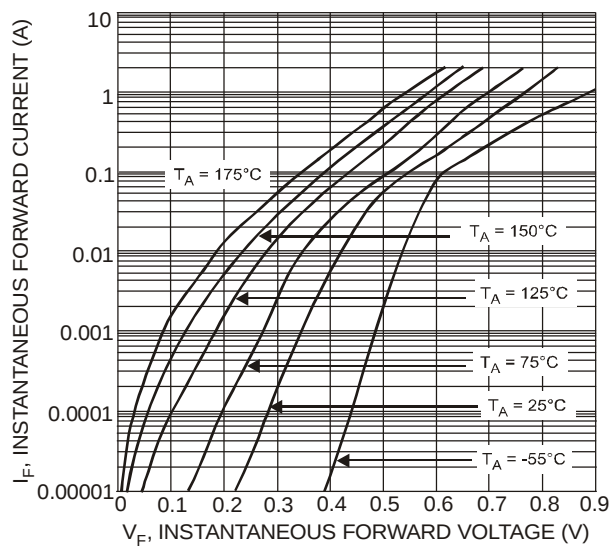


Fig. 1 Typical Forward Characteristics

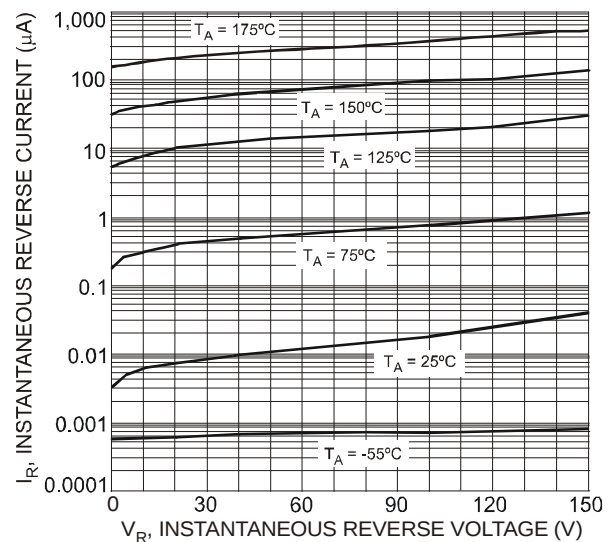


Fig. 2 Typical Reverse Characteristics

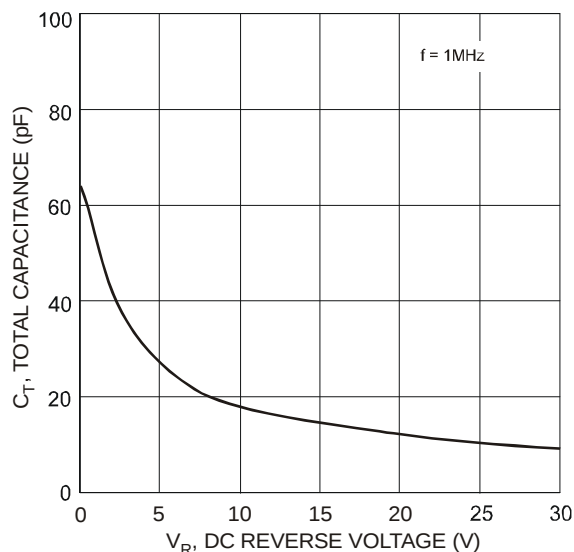
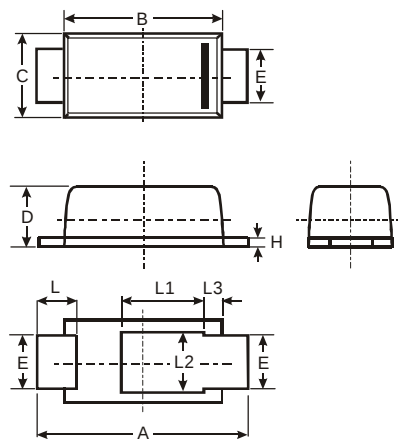


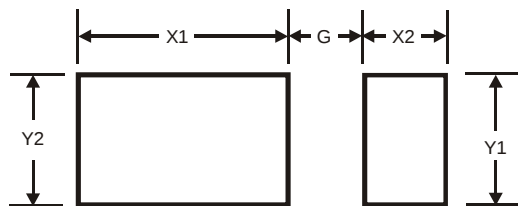
Fig. 3 Total Capacitance vs. Reverse Voltage

### Package Outline Dimensions



| POWERDI® 123         |      |      |      |
|----------------------|------|------|------|
| 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



| Dimensions | Value (in mm) |
|------------|---------------|
| G          | 1.0           |
| X1         | 2.2           |
| X2         | 0.9           |
| Y1         | 1.4           |
| Y2         | 1.4           |

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