


**2.0A SURFACE MOUNT 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
- High Current Capability and Low Forward Voltage Drop
- **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-02
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin Annealed Over Copper Leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: 0.01 grams (approximate)



Top View

**Ordering Information** (Note 2)

| Part Number | Case        | Packaging        |
|-------------|-------------|------------------|
| DFLS230L-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**


F03A = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: T = 2006)  
 M = Month (ex: 9 = September)

## Date Code Key

| Year | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|------|
| Code | R    | S    | T    | U    | V    | W    | X    | Y    | Z    |

| 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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**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  | $V_{RRM}$    | 30    | V    |
| Working Peak Reverse Voltage   | $V_{RWM}$    |       |      |
| DC Blocking Voltage  | $V_R$        |       |      |
| RMS Reverse Voltage  | $V_{R(RMS)}$ | 21    | V    |
| Average Forward Current @ $T_T = 121^\circ\text{C}$  | $I_{F(AV)}$  | 2.0   | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$    | 33    | A    |

**Thermal Characteristics**

| Characteristic                                    | Symbol          | Value       | Unit               |
|---|-----------------|-------------|--------------------|
| Power Dissipation (Note 3)                        | $P_D$           | 1.67        | W                  |
| Power Dissipation (Note 4)                        | $P_D$           | 556         | mW                 |
| Thermal Resistance Junction to Ambient (Note 3)   | $R_{\theta JA}$ | 60          | $^\circ\text{C/W}$ |
| Thermal Resistance Junction to Ambient (Note 4)   | $R_{\theta JA}$ | 180         | $^\circ\text{C/W}$ |
| Thermal Resistance Junction to Soldering (Note 5) | $R_{\theta JS}$ | 10          | $^\circ\text{C/W}$ |
| Operating Temperature Range                       | $T_J$           | -40 to +125 | $^\circ\text{C}$   |
| Storage Temperature Range                         | $T_{STG}$       | -40 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 6) | $V_{(BR)R}$ | 30  | —              | —          | V    | $I_R = 1.0\text{mA}$  |
| Forward Voltage                    | $V_F$       | —   | 0.310<br>0.375 | —<br>0.420 | V    | $I_F = 1.0\text{A}$<br>$I_F = 2.0\text{A}$  |
| Leakage Current (Note 6)           | $I_R$       | —   | 0.260          | —          | mA   | $V_R = 5\text{V}, T_A = 25^\circ\text{C}$<br>$V_R = 30\text{V}, T_A = 25^\circ\text{C}$ |
| Total Capacitance                  | $C_T$       | —   | 76             | —          | pF   | $V_R = 10\text{V}, f = 1.0\text{MHz}$   |

- Notes:
- Part mounted on 2"x2" GETEK board with 1"x1" copper pad, 25% anode, 75% cathode.  $T_A = 25^\circ\text{C}$ .
  - Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com>.
  - Theoretical  $R_{\theta JS}$  calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
  - Short duration pulse test used to minimize self-heating effect.

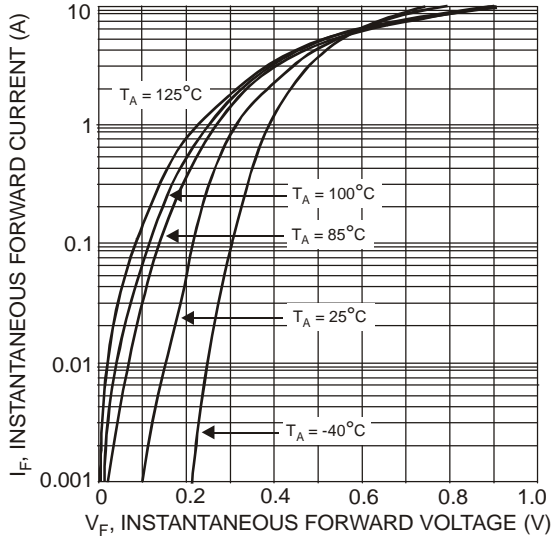


Fig. 1 Typical Forward Characteristics

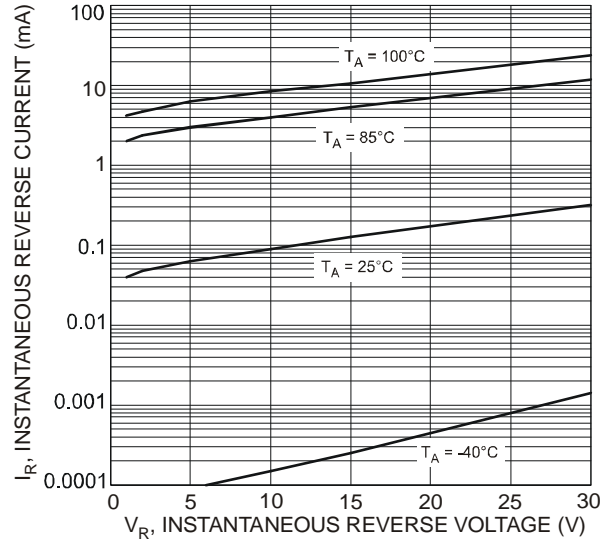


Fig. 2 Typical Reverse Characteristics

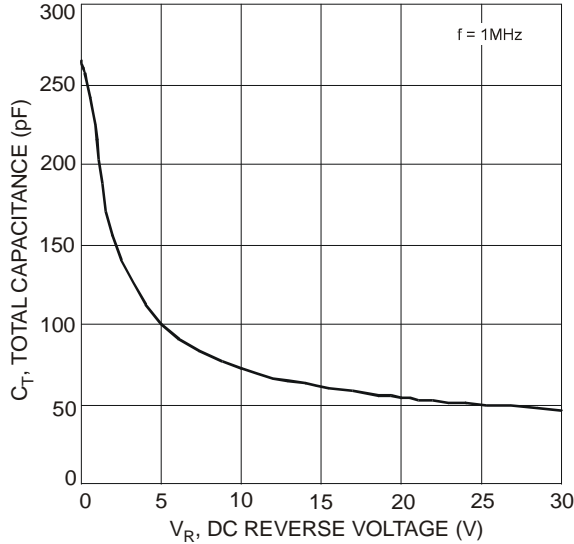


Fig. 3 Total Capacitance vs. Reverse Voltage

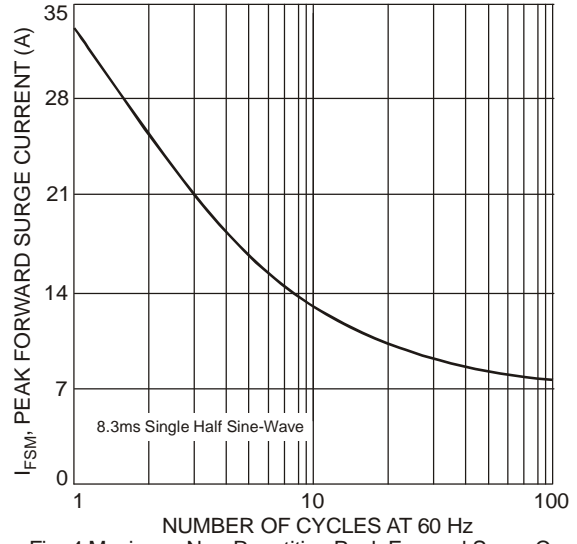
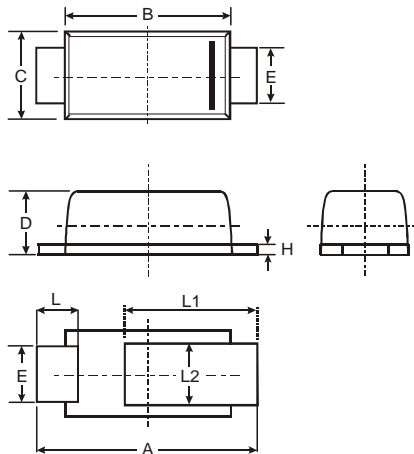


Fig. 4 Maximum Non-Repetitive Peak Forward Surge Current

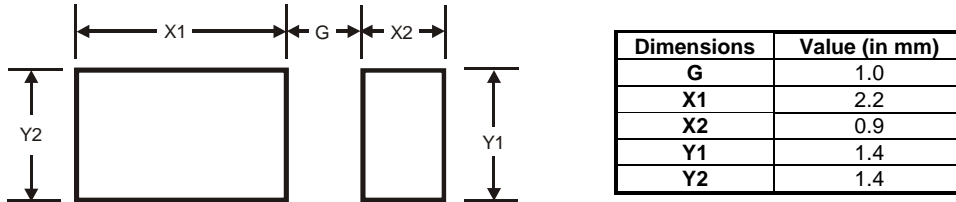
**Package Outline Dimensions**



| PowerDI <sup>®</sup> 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                        | 0.55 | 0.75 | 0.65 |
| L1                       | 1.80 | 2.20 | 2.00 |
| L2                       | 0.95 | 1.25 | 1.10 |
| All Dimensions in mm     |      |      |      |

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**Suggested Pad Layout**



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