

## 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 5)**
- **"Green" Molding Compound (No Br, Sb)**

## Mechanical Data

- Case: PowerDI®123
- Plastic Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin Annealed Over Copper leadframe. Solderable per MIL-STD-202, Method 208 
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.01 grams (approximate)



Top View

## 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>    | 20    | V    |
| Working Peak Reverse Voltage  | V <sub>RWM</sub>    |       |      |
| DC Blocking Voltage   | V <sub>R</sub>      |       |      |
| RMS Reverse Voltage   | V <sub>R(RMS)</sub> | 14    | 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           | Value       | Unit |
|---|------------------|-------------|------|
| Power Dissipation (Note 1)                        | P <sub>D</sub>   | 1.67        | W    |
| Power Dissipation (Note 2)                        | P <sub>D</sub>   | 556         | mW   |
| Thermal Resistance Junction to Ambient (Note 1)   | R <sub>θJA</sub> | 60          | °C/W |
| Thermal Resistance Junction to Ambient (Note 2)   | R <sub>θJA</sub> | 180         | °C/W |
| Thermal Resistance Junction to Soldering (Note 3) | R <sub>θJS</sub> | 10          | °C/W |
| Operating Temperature Range                       | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range                         | T <sub>STG</sub> | -55 to +150 | °C   |

## Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                     | Symbol             | Min | Typ           | Max          | Unit | Test Condition  |
|------------------------------------|--------------------|-----|---------------|--------------|------|---|
| Reverse Breakdown Voltage (Note 4) | V <sub>(BR)R</sub> | 20  | —             | —            | V    | I <sub>R</sub> = 1.0mA  |
| Forward Voltage                    | V <sub>F</sub>     | —   | 0.32<br>0.375 | 0.36<br>0.42 | V    | I <sub>F</sub> = 1.0A<br>I <sub>F</sub> = 2.0A  |
| Leakage Current (Note 4)           | I <sub>R</sub>     | —   | 0.26          | —<br>1.0     | mA   | V <sub>R</sub> = 5V, T <sub>A</sub> = 25°C<br>V <sub>R</sub> = 20V, T <sub>A</sub> = 25°C |
| Total Capacitance                  | C <sub>T</sub>     | —   | 75            | —            | pF   | V <sub>R</sub> = 10V, f = 1.0MHz  |

- Notes:
1. Part mounted on 50.8mm X 50.8mm GETEK board with 25.4mm X 25.4mm copper pad, 25% anode, 75% cathode. T<sub>A</sub> = 25°C.
  2. Part mounted on FR-4 board with 1.8mm X 2.5mm cathode and 1.8mm X 1.2mm anode, 1 oz. copper pads. T<sub>A</sub> = 25°C.
  3. Theoretical R<sub>θJS</sub> calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
  4. Short duration pulse test used to minimize self-heating effect.
  5. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see *EU Directive 2002/95/EC Annex Notes*.

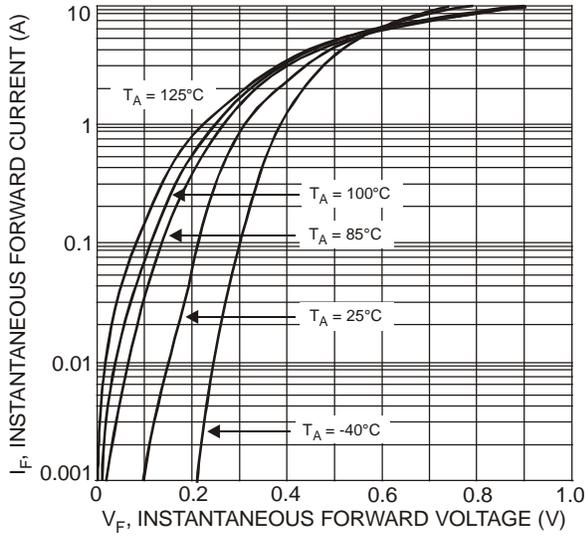


Fig. 1 Typical Forward Characteristics

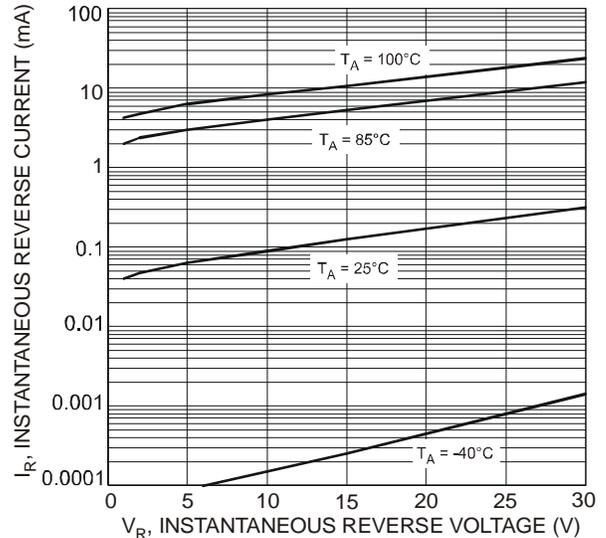


Fig. 2 Typical Reverse Characteristics

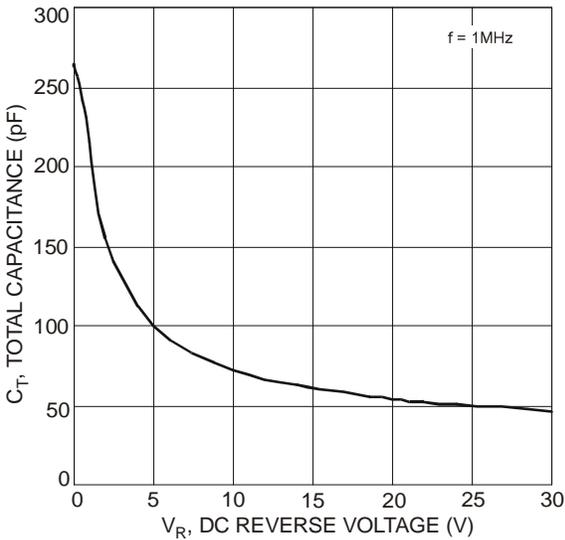


Fig. 3 Total Capacitance vs. Reverse Voltage

**Ordering Information** (Note 6)

| Part Number | Case                     | Packaging        |
|-------------|--------------------------|------------------|
| DFLS220L-7  | PowerDI <sup>®</sup> 123 | 3000/Tape & Reel |

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



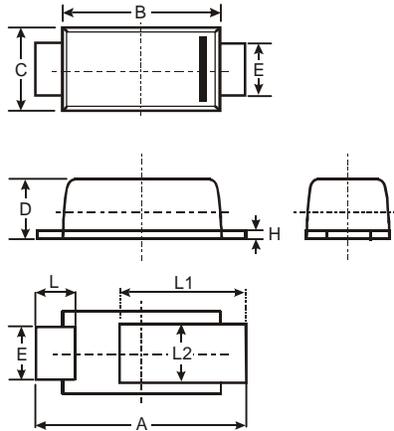
F02A = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: T = 2006)  
 M = Month (ex: 9 = September)

Date Code Key

| Year  | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 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    |

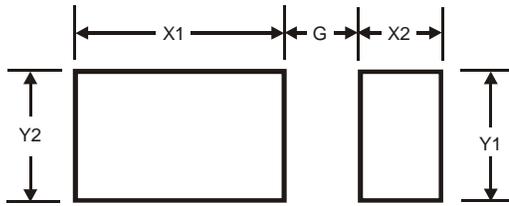
PowerDI is a registered trademark of Diodes Incorporated.

**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     |      |      |      |

**Suggested Pad Layout**



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

**IMPORTANT NOTICE**

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

**LIFE SUPPORT**

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкуренеспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)