

# 2.0A LOW VF SCHOTTKY BARRIER RECTIFIER

PowerDI®123

#### **Features**

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- High Surge Capability
- High Current Capability and Low Forward Voltage Drop
- Lead Free Finish, RoHS Compliant (Note 4)
- "Green" Molding Compound (No Br, Sb)
- Qualified to AEC-Q101 Standards for High Reliability

## **Mechanical Data**

- Case: PowerDI<sup>®</sup>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 63
- 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<br>Working Peak Reverse Voltage<br>DC Blocking Voltage              | V <sub>RRM</sub><br>V <sub>R</sub> WM | 40    | V    |
| RMS Reverse Voltage   | V <sub>R(RMS)</sub>                   | 28    | V    |
| Average Forward Current   | I <sub>F(AV)</sub>                    | 2.0   | Α    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>                      | 50    | А    |

## **Thermal Characteristics**

| Characteristic                                    | Symbol           | Тур         | Max  | Unit |
|---|------------------|-------------|------|------|
| Power Dissipation (Note 1)                        | PD               | _           | 1.67 | W    |
| Power Dissipation (Note 2)                        | PD               | _           | 556  | mW   |
| Thermal Resistance Junction to Ambient (Note 1)   | $R_{\theta JA}$  | 60          | _    | °C/W |
| Thermal Resistance Junction to Ambient (Note 2)   | $R_{\theta JA}$  | 180         | _    | °C/W |
| Thermal Resistance Junction to Soldering (Note 3) | $R_{\theta JS}$  | _           | 5    | °C/W |
| Operating Temperature Range (See figure 4)        | TJ               | -55 to +125 |      | °C   |
| Storage Temperature Range                         | T <sub>STG</sub> | -55 to +150 |      | °C   |

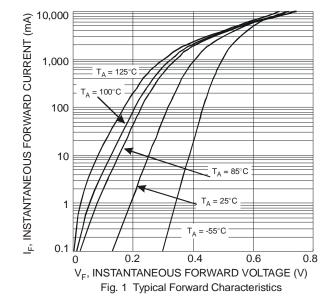
## **Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

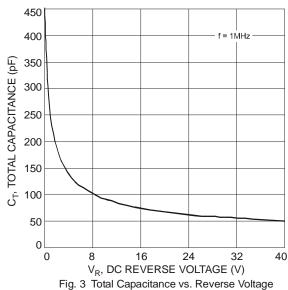
| Characteristic                     | Symbol         | Min | Тур  | Max  | Unit | Test Condition                                |
|------------------------------------|----------------|-----|------|------|------|---|
| Reverse Breakdown Voltage (Note 5) | $V_{(BR)R}$    | 40  | _    | _    | V    | $I_R = 500 \mu A$                             |
|                                    |                | _   | 0.4  | 0.45 |      | I <sub>F</sub> = 1.0A                         |
| Forward Voltage                    | VF             | _   | 0.45 | 0.50 | V    | I <sub>F</sub> = 2.0A                         |
|                                    |                | _   | 0.50 | 0.65 |      | $I_F = 3.0A$                                  |
|                                    |                | _   |      | 0.1  | mA   | V <sub>R</sub> = 40V                          |
| Leakage Current (Note 5)           | 1-             | _   | _    | 10   |      | $V_R = 40V, T_J = 85^{\circ}C$<br>$V_R = 20V$ |
| Leakage Current (Note 5)           | I <sub>R</sub> | _   | _    | 0.05 |      | $V_R = 20V$                                   |
|                                    |                | _   | _    | 5    |      | $V_R = 20V, T_J = 85^{\circ}C$                |
| Total Capacitance                  | Ст             | _   | 90   | _    | pF   | $V_R = 10V, f = 1.0MHz$                       |

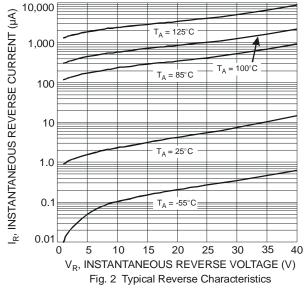
Notes

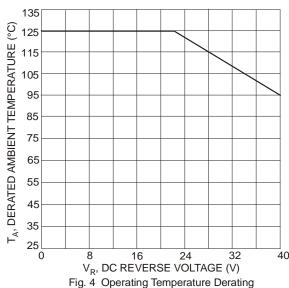
- 1. Part mounted on 50.8mm X 50.8mm GETEK board with 25.4mm X 25.4mm copper pad, 25% anode, 75% cathode.
- 2. Part mounted on FR-4 board with 1.8mm X 2.5mm cathode and 1.8mm X 1.2mm anode, 1 oz. copper pads.
- 3. Theoretical  $R_{\text{NJS}}$  calculated from the top center of the die straight down to the PCB cathode tab solder junction.
- 4. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at http://www.diodes.com/products/lead\_free.html.
- 5. Short duration pulse test used to minimize self-heating effect.











# Ordering Information (Note 6)

| Part Number | Case                     | Packaging        |
|-------------|--------------------------|------------------|
| DFLS240L-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



F06A = Product Type Marking Code YM = Date Code Marking Y = Year (ex: T = 2006)

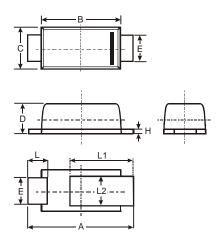
M = Month (ex: 9 = September)

Date Code Key

| Year  | 2004 | 20  | 005 | 2006 | 2007 | 20  | 800 | 2009 | 2010 | 20  | )11 | 2012 |
|-------|------|-----|-----|------|------|-----|-----|------|------|-----|-----|------|
| Code  | R    |     | S   | T    | U    |     | V   | W    | Х    | ,   | 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    | 0   | N   | D    |

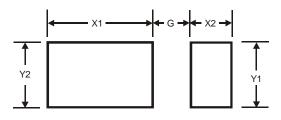


# **Package Outline Dimensions**



| PowerDI®123          |      |      |      |  |  |
|----------------------|------|------|------|--|--|
| Dim                  | Min  | Max  | Тур  |  |  |
| Α                    | 3.50 | 3.90 | 3.70 |  |  |
| В                    | 2.60 | 3.00 | 2.80 |  |  |
| С                    | 1.63 | 1.93 | 1.78 |  |  |
| D                    | 0.93 | 1.00 | 0.98 |  |  |
| Е                    | 0.85 | 1.25 | 1.00 |  |  |
| Н                    | 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           |



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