

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 4)**
- **"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-020D
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.01 grams (approximate)



Top View

Maximum Ratings @T_A = 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 _{RRM} | 20 | V |
| Working Peak Reverse Voltage | V _{RWM} | | |
| DC Blocking Voltage | V _R | | |
| RMS Reverse Voltage | V _{R(RMS)} | 14 | V |
| Average Forward Current | I _{F(AV)} | 1.0 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms single half sine-wave superimposed on rated load | I _{FSM} | 50 | A |

Thermal Characteristics

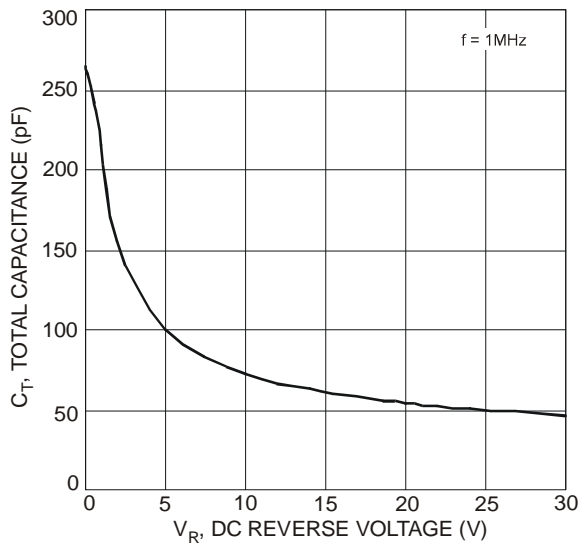
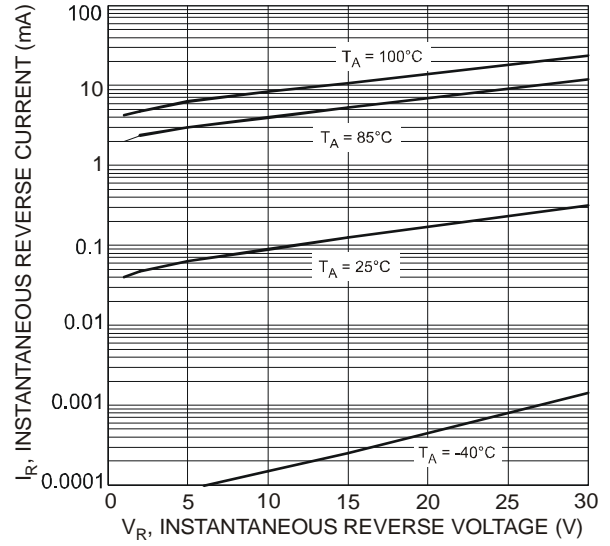
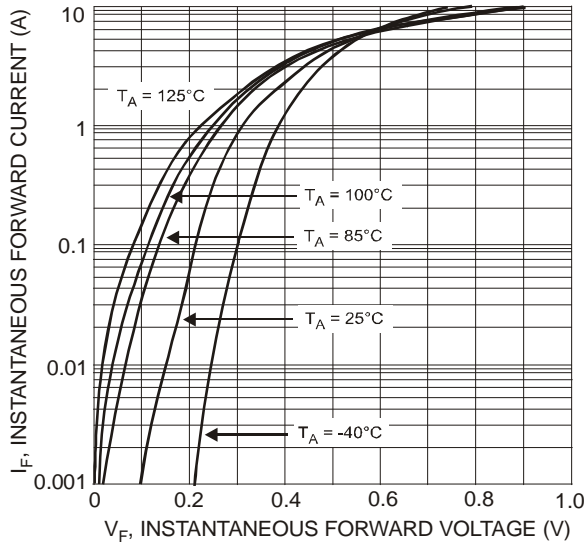
| Characteristic | Symbol | Value | Unit |
|---|------------------|-------------|------|
| Power Dissipation (Note 1) | P _D | 1.67 | W |
| Power Dissipation (Note 2) | P _D | 556 | mW |
| Thermal Resistance Junction to Ambient (Note 1) | R _{θJA} | 60 | °C/W |
| Thermal Resistance Junction to Ambient (Note 2) | R _{θJA} | 180 | °C/W |
| Thermal Resistance Junction to Soldering (Note 3) | R _{θJS} | 10 | °C/W |
| Operating Temperature Range | T _J | -55 to +125 | °C |
| Storage Temperature Range | T _{STG} | -55 to +150 | °C |

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|------------------------------------|--------------------|-----|------|------|------|---|
| Reverse Breakdown Voltage (Note 5) | V _{(BR)R} | 20 | — | — | V | I _R = 1.0mA |
| Forward Voltage | V _F | — | 0.20 | — | V | I _F = 0.1A |
| | | — | 0.30 | — | | I _F = 0.7A |
| | | — | 0.32 | 0.36 | | I _F = 1.0A |
| Leakage Current (Note 5) | I _R | — | 0.26 | — | mA | V _R = 5V, T _A = 25°C |
| | | — | — | 1.0 | | V _R = 20V, T _A = 25°C |
| Total Capacitance | C _T | — | 75 | — | 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. T_A = 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_A = 25°C.
 3. Theoretical R_{θJS} 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, see *EU Directive 2002/95/EC Annex Notes*.
 5. Short duration pulse test used to minimize self-heating effect.

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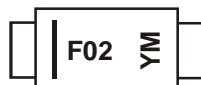


Ordering Information (Note 6)

| Part Number | Case | Packaging |
|-------------|-------------|------------------|
| DFLS120L-7 | PowerDI®123 | 3000/Tape & Reel |

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

Marking Information



F02 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: T = 2006)
 M = Month (ex: 9 = September)

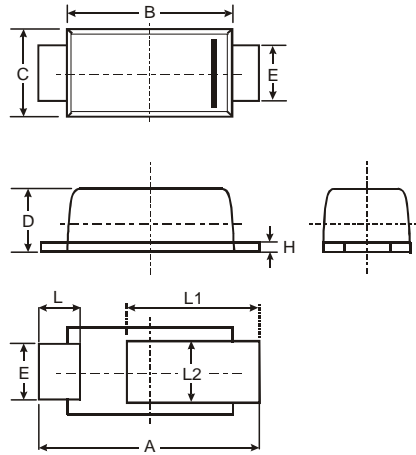
Date Code Key

| 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 |

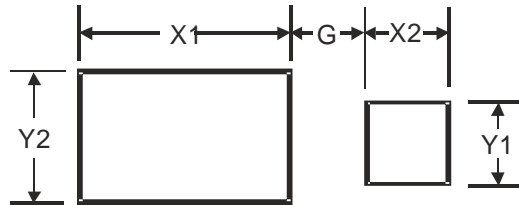
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Package Outline Dimensions



| 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 | 0.55 | 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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