

Product Summary (@ T_A = +25°C)

| V _{RRM} (V) | I _O (A) | V _{F(MAX)} (V) | I _{R(MAX)} (μA) |
|----------------------|--------------------|-------------------------|--------------------------|
| 200, 400, 600 | 1 | 1.1 | 3 |

Description and Applications

This series is packaged in the compact, low profile PowerDI®123 package. Providing low forward voltage drop, this device is ideal for use in general rectification applications such as:

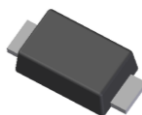
- Power Supply Applications
- DC-DC Converters
- AC-DC Adaptors/Chargers
- Freewheeling Diodes
- Inverters

Features and Benefits

- Glass Passivated Die Construction
- Ideally Suited for Automated Assembly
- Low Forward Voltage Drop
- Low Profile Design, Package Height Less than 1.1mm
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- Patented Interlocking Clip Design for High Surge Capacity, US Patent #7,095,113

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
- Terminals: Matte Tin Finish Annealed over Copper Leadframe (Lead-Free Plating). Solderable per MIL-STD-202, Method 208 Ⓔ3
- Terminal Connections: Cathode Band
- Weight: 0.01 grams (Approximate)

PowerDI123


Top View

Ordering Information (Note 4)

| Part Number | Qualification | Marking Code | Case | Packaging |
|-------------|---------------|--------------|------------|-------------------|
| DFLR1200-7 | Commercial | F12 | PowerDI123 | 3,000/Tape & Reel |
| DFLR1400-7 | Commercial | F14 | PowerDI123 | 3,000/Tape & Reel |
| DFLR1600-7 | Commercial | F18 | PowerDI123 | 3,000/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information


Fxx = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: C = 2015)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2011 | ... | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|------|------|-----|------|------|------|------|------|------|------|
| Code | Y | ... | C | D | E | F | G | H | I |

| 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 |

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
 For capacitive load, derate current by 20%.

| Characteristic | Symbol | DFLR1200 | DFLR1400 | DFLR1600 | Units |
|---|---------------------|----------|----------|----------|-------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 200 | 400 | 600 | V |
| Working Peak Reverse Voltage | V _{RWM} | | | | |
| DC Blocking Voltage | V _R | | | | |
| RMS Reverse Voltage | V _{R(RMS)} | 140 | 280 | 420 | V |
| Average Rectified Output Current (See Figure 4) | I _O | 1.0 | | | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 25 | | | A |

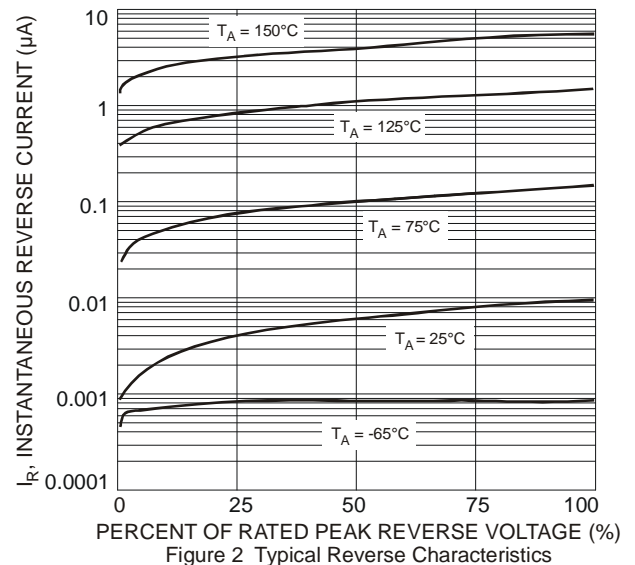
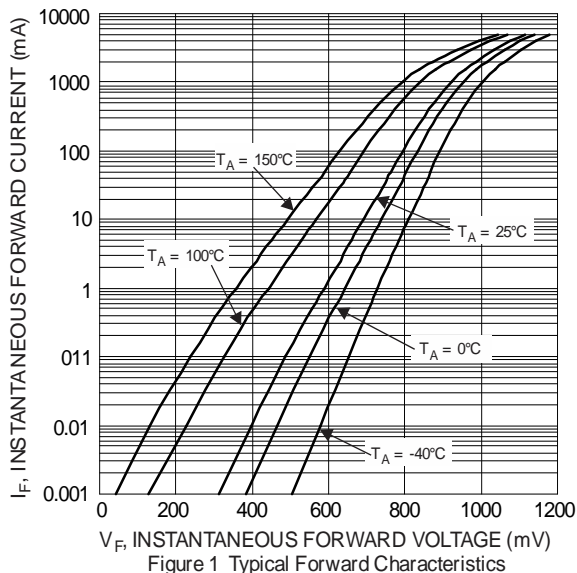
Thermal Characteristics

| Characteristic | Symbol | Typ | Max | Unit |
|--|-----------------------------------|-----|-------------|------|
| Thermal Resistance, Junction to Ambient Air (Note 5) | R _{θJA} | 134 | — | °C/W |
| Thermal Resistance, Junction to Soldering Point (Note 6) | R _{θJS} | — | 6 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | — | -65 to +150 | °C |

Electrical Characteristic (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | DFLR1200 | DFLR1400 | DFLR1600 | Unit |
|---|--------------------|------------|----------|----------|------|
| Minimum Reverse Breakdown Voltage (Note 7) @I _R =10μA | V _{(BR)R} | 200 | 400 | 600 | V |
| Maximum Forward Voltage Drop @ I _F = 1.0A | V _F | 1.1 | | | V |
| Peak Reverse Leakage Current @ T _A = +25°C at Rated DC Blocking Voltage @ T _A = +125°C | I _R | 3.0 100 | | | μA |
| Typical Total Capacitance (f = 1MHz, V _R = 4.0VDC) | C _T | 10 | | | pF |

Notes: 5. Theoretical R_{θJS} calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
 6. Device mounted on 1in x 1in, FR-4 PCB; 2 oz Cu pad layout as shown on Diodes Incorporated's suggested pad layout document AP02001.pdf.
 7. Short duration pulse test used to minimize self-heating effect.



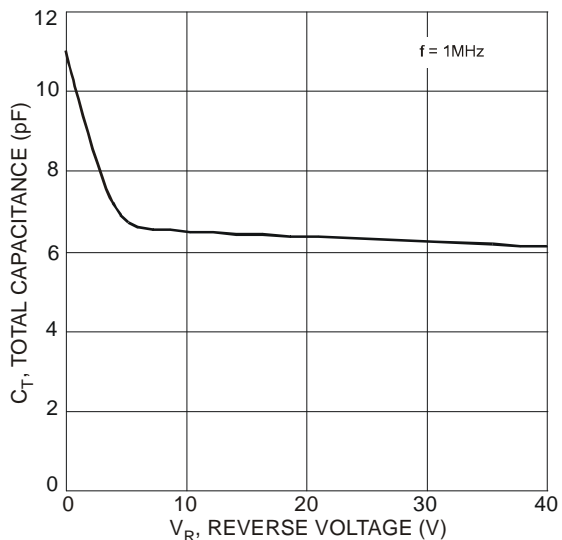


Figure 3 Typical Total Capacitance

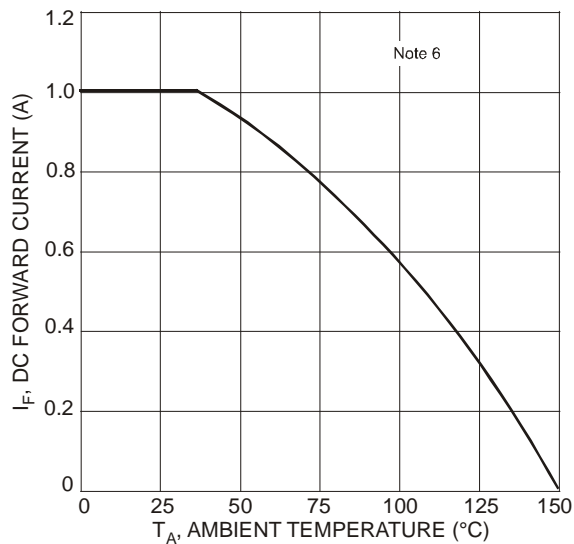
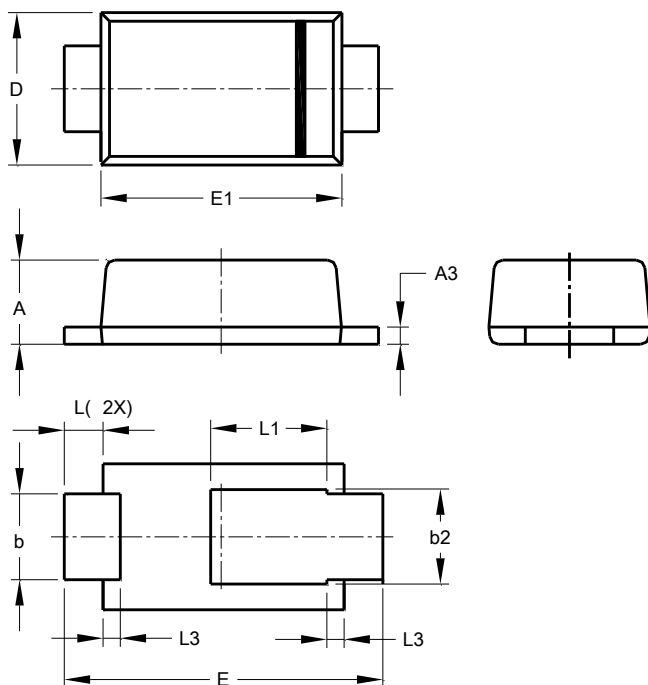


Figure 4 DC Forward Current Derating

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

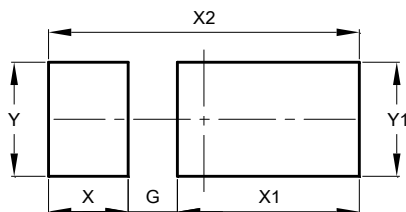


| POWERDI [®] 123 | | | |
|--------------------------|-------|-------|------|
| Dim | Min | Max | Typ |
| A | 0.93 | 1.00 | 0.98 |
| A3 | 0.15 | 0.25 | 0.20 |
| b | 0.85 | 1.25 | 1.00 |
| b2 | 1.025 | 1.125 | 1.10 |
| D | 1.63 | 1.93 | 1.78 |
| E | 3.50 | 3.90 | 3.70 |
| E1 | 2.60 | 3.00 | 2.80 |
| L | 0.40 | 0.50 | 0.45 |
| L1 | 1.25 | 1.40 | 1.35 |
| L3 | 0.125 | 0.275 | 0.20 |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

POWERDI®123



| Dimensions | Value (in mm) |
|------------|------------------|
| G | 0.65 |
| X | 1.05 |
| X1 | 2.40 |
| X2 | 4.10 |
| Y | 1.50 |
| Y1 | 1.50 |

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