

### 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 123
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 **(E3)**
- Marking & Type Code Information: See Last Page
- Weight: 0.01 grams (approx.)
- Ordering Information: See Last Page



TOP VIEW



BOTTOM VIEW

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

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

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RW</sub> V <sub>R</sub>	20	V
RMS Reverse Voltage	V <sub>R(RMS)</sub>	14	V
Average Forward Current	I <sub>F(AV)</sub>	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	50	A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1) @ T <sub>A</sub> = 25°C	P <sub>D</sub>	1.67	W
Power Dissipation (Note 2) @ T <sub>A</sub> = 25°C	P <sub>D</sub>	556	mW
Thermal Resistance Junction to Ambient (Note 1)	R <sub>JA</sub>	60	°C/W
Thermal Resistance Junction to Ambient (Note 2)	R <sub>JA</sub>	180	°C/W
Thermal Resistance Junction to Soldering (Note 3)	R <sub>JS</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

- 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<sub>JS</sub> calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
  4. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see *EU Directive Annex Notes 5 and 7*.

**Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 5)	$V_{(BR)R}$	20			V	$I_R = 1.0\text{mA}$
Forward Voltage	$V_F$		0.20 0.30 0.32	0.36	V	$I_F = 0.1\text{A}$ $I_F = 0.7\text{A}$ $I_F = 1.0\text{A}$
Leakage Current (Note 5)	$I_R$		0.26	1.0	mA	$V_R = 5\text{V}, T_A = 25^\circ\text{C}$ $V_R = 20\text{V}, T_A = 25^\circ\text{C}$
Total Capacitance	$C_T$		75		pF	$V_R = 10\text{V}, f = 1.0\text{MHz}$

Notes: 5. Short duration pulse test to minimize self-heating effect.

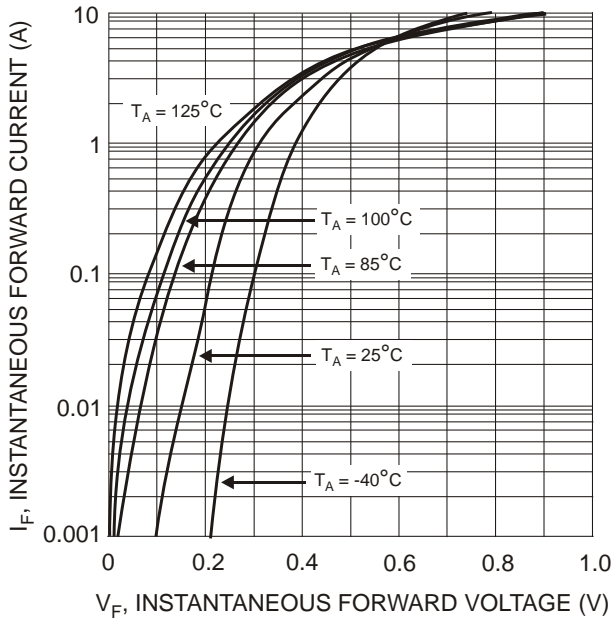


Fig. 1, Typical Forward Characteristics

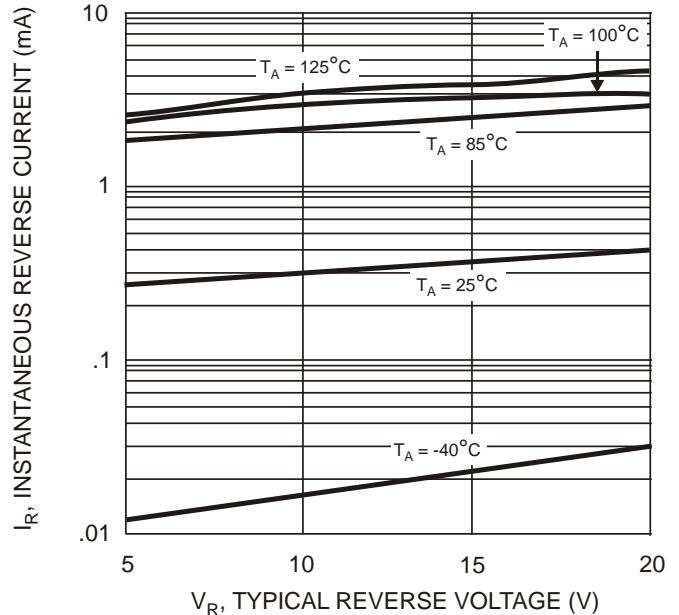


Fig. 2, Typical Reverse Characteristics

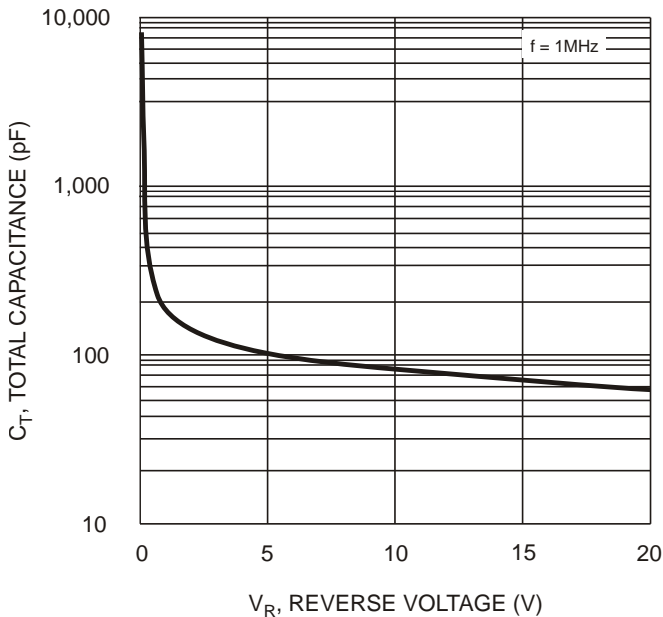


Fig. 3, Typical Total Capacitance

**Ordering Information** (Note 6)

Device	Packaging	Shipping
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**



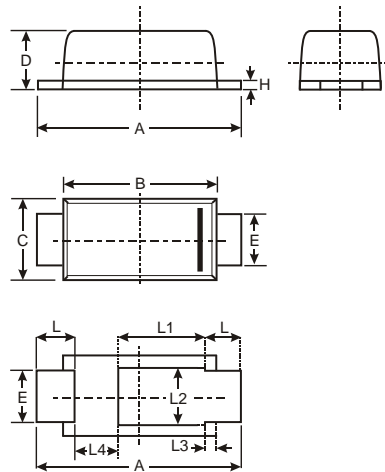
F02 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: P = 2003)  
 M = Month (ex: 9 = September)

Date Code Key

Year	2003	2004	2005	2006	2007	2008	2009
Code	P	R	S	T	U	V	W

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**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	0.45	0.85	0.65
L1	—	—	1.35
L2	—	—	1.10
L3	—	—	0.20
L4	0.90	1.30	1.05
All Dimensions in mm			

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