

**1.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER**  
**PowerDI®123**
**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
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.01 grams (approximate)



Top View

**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  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)	$R_{\theta JA}$	60	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient (Note 2)	$R_{\theta JA}$	180	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Soldering (Note 3)	$R_{\theta JS}$	10	$^\circ\text{C}/\text{W}$
Operating Temperature Range	$T_J$	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$

**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	—	V	$I_F = 0.1\text{A}$
		—	0.30	—		$I_F = 0.7\text{A}$
		—	0.32	0.36		$I_F = 1.0\text{A}$
Leakage Current (Note 5)	$I_R$	—	0.26	—	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:
1. Part mounted on 50.8mm X 50.8mm GETEK board with 25.4mm X 25.4mm copper pad, 25% anode, 75% cathode.  $T_A = 25^\circ\text{C}$ .
  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.  $T_A = 25^\circ\text{C}$ .
  3. Theoretical  $R_{\theta JS}$  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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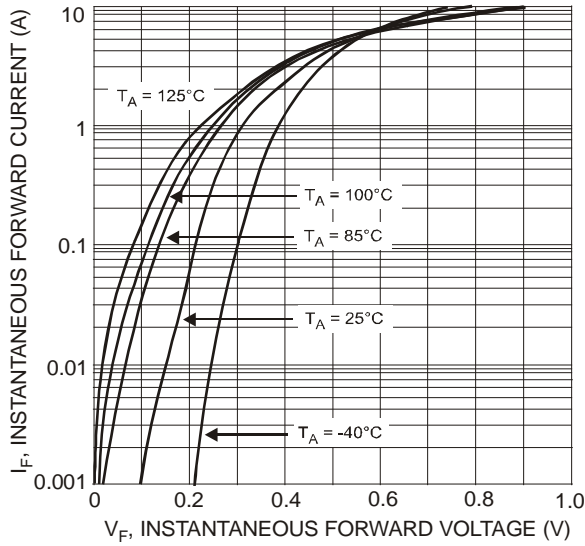


Fig. 1 Typical Forward Characteristics

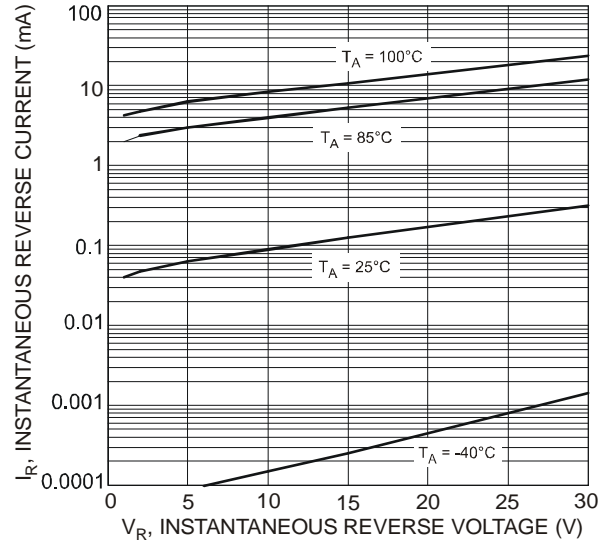


Fig. 2 Typical Reverse Characteristics

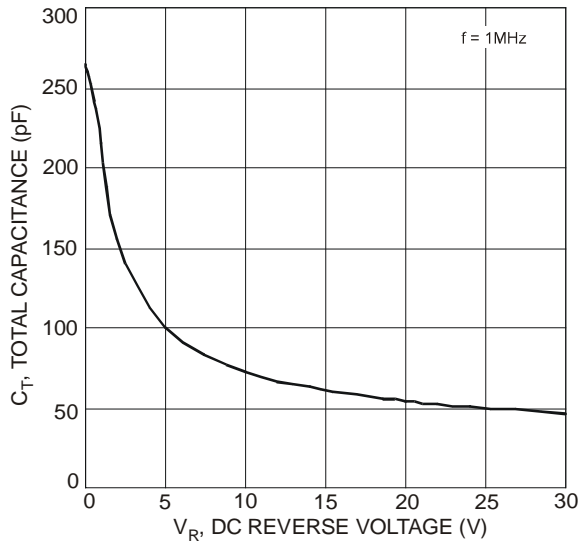


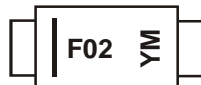
Fig. 3 Total Capacitance vs. Reverse Voltage

**Ordering Information** (Note 6)

Part Number	Case	Packaging
DFLS120L-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**



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

Date Code Key

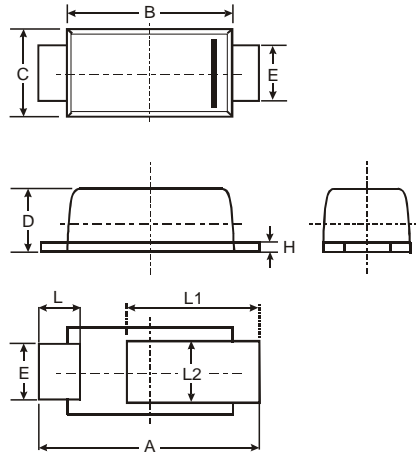
Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	R	S	T	U	V	W	X	Y	Z

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

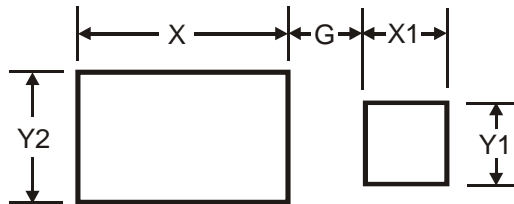
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**Package Outline Dimensions**



PowerDI <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

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