

**1.0A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER**  
**POWERDI®123**

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### Features

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- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Patented Interlocking Clip Design for High Surge Current Capacity
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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### Mechanical Data

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- Case: POWERDI®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 ③
- Weight: 0.01 grams (approximate)

Top View

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### Ordering Information (Note 2)

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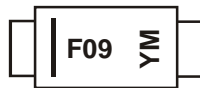
Part Number	Case	Packaging
DFLS1100-7	POWERDI®123	3000/Tape & Reel

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes  
 2. For packaging details, go to our website at <http://www.diodes.com>.

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### Marking Information

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F09 = 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

**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	$V_{RRM}$	100	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_R$		
RMS Reverse Voltage	$V_{R(RMS)}$	71	V
Forward current rms ( $T_C = 160^\circ\text{C}$ , $D = 0.5$ )	$I_{F(RMS)}$	2	A
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
Repetitive peak reverse current $t_p = 2\mu\text{s}$ , $f = 1\text{ kHz}$ square	$I_{RRM}$	1.0	A
Repetitive Peak Avalanche Power $t_p = 1\mu\text{s}$ , $T_J = 25^\circ\text{C}$	$P_{ARM}$	1500	W
Non-repetitive peak reverse current $t_p = 100\mu\text{s}$ square	$I_{RSM}$	1.0	A
Critical rate of rise of reverse voltage (rated $V_R$ , $T_J = 25^\circ\text{C}$ )	$dV/dt$	10000	V/ $\mu\text{s}$

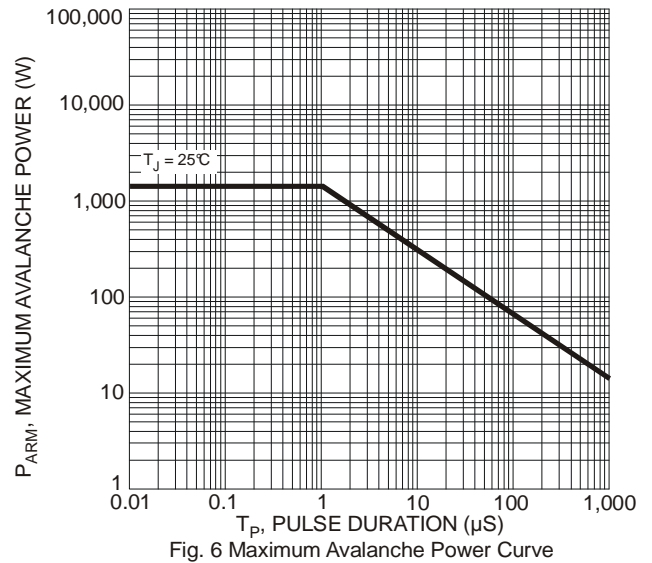
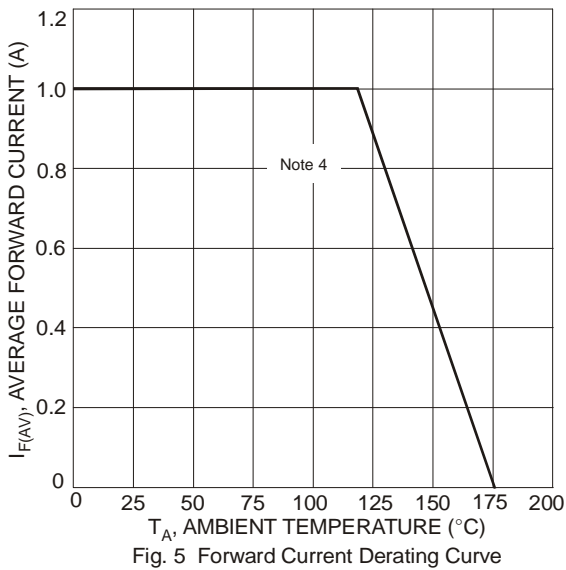
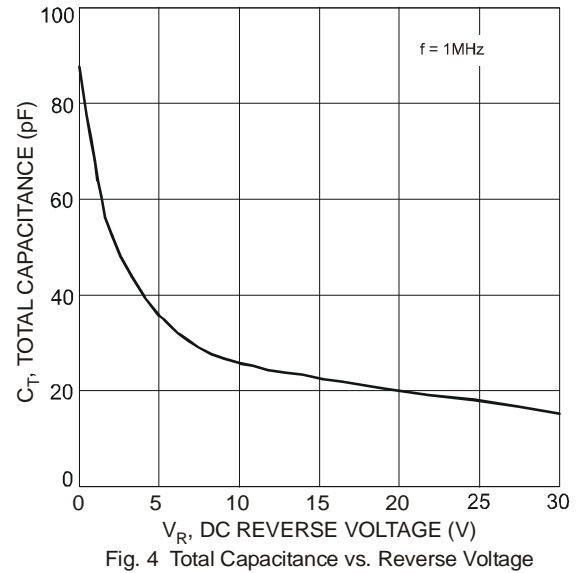
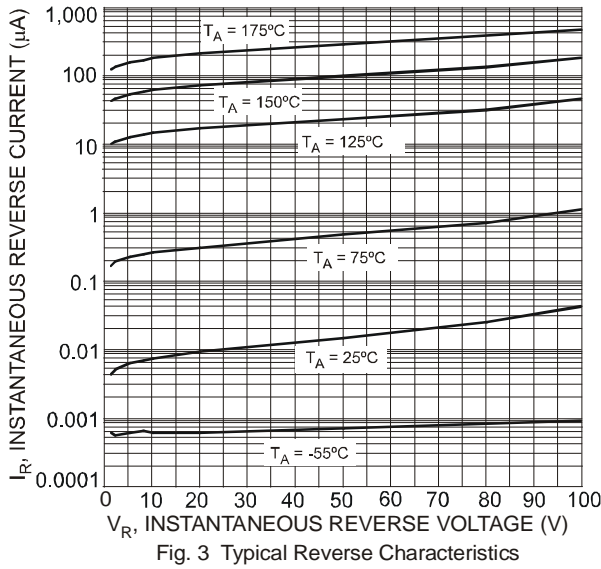
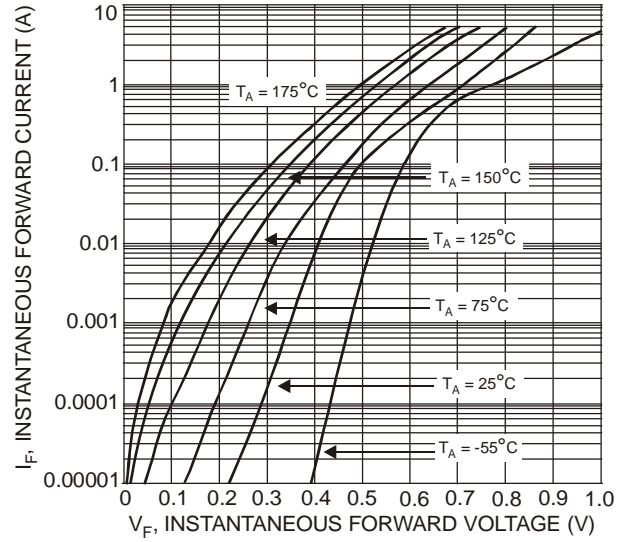
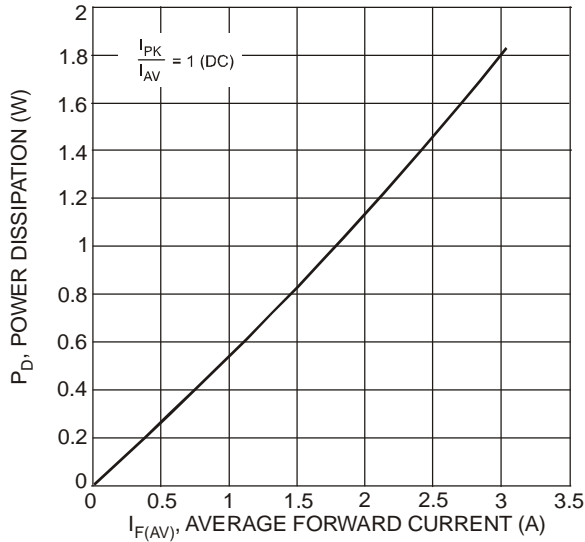
**Thermal Characteristics**

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering (Note 3)	$R_{\theta JS}$	—	7	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient (Note 4) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	125	—	
Thermal Resistance Junction to Case (Note 4) $T_A = 25^\circ\text{C}$	$R_{\theta JC}$	21	—	
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +175		$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 5)	$V_{(BR)R}$	100	—	—	V	$I_R = 1\mu\text{A}$
Forward Voltage	$V_F$	—	—	0.77	V	$I_F = 1.0\text{A}$ , $T_A = 25^\circ\text{C}$
		—	0.58	0.62		$I_F = 1.0\text{A}$ , $T_A = 125^\circ\text{C}$
		—	—	0.86		$I_F = 2.0\text{A}$ , $T_A = 25^\circ\text{C}$
		—	0.65	0.7		$I_F = 2.0\text{A}$ , $T_A = 125^\circ\text{C}$
Leakage Current (Note 5)	$I_R$	—	—	1	$\mu\text{A}$	$V_R = 100\text{V}$ , $T_A = 25^\circ\text{C}$
		—	0.2	0.5	$\text{mA}$	$V_R = 100\text{V}$ , $T_A = 125^\circ\text{C}$
Total Capacitance	$C_T$	—	36	—	$\text{pF}$	$V_R = 5\text{V}_{DC}$ , $f = 1\text{MHz}$

- Notes:
- Theoretical  $R_{\theta JS}$  calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
  - Part mounted on FR-4 board with 2 oz., minimum recommended copper pad layout, which can be found on our website at <http://www.diodes.com>.
  - Short duration pulse test used to minimize self-heating effect.



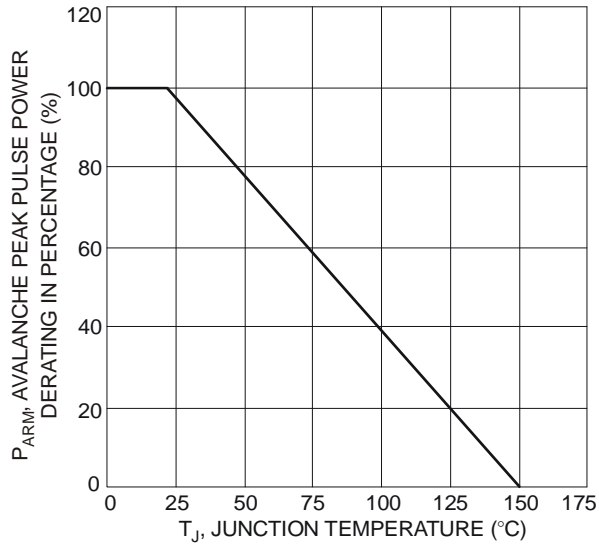


Fig. 7 Pulse Derating Curve

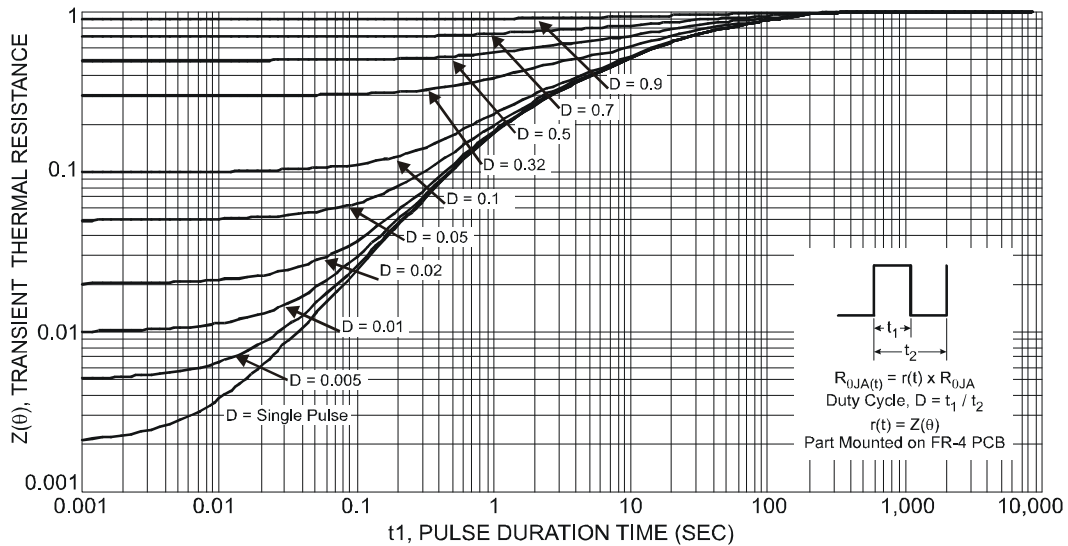
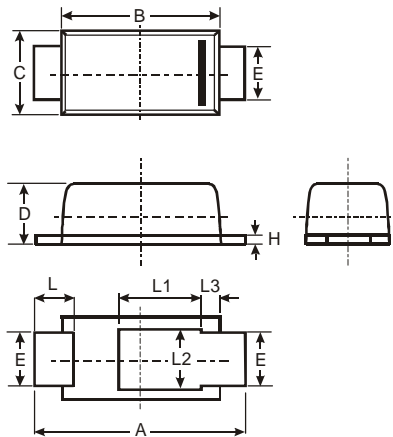


Fig. 8 Transient Thermal Resistance

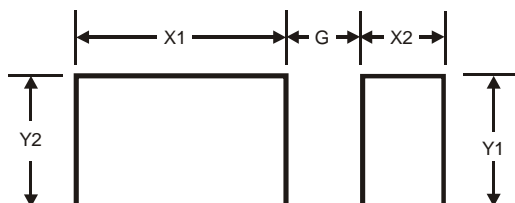
**Package Outline Dimensions**



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	0.40	0.50	0.45
L1	-	-	1.35
L2	-	-	1.10
L3	-	-	0.20
<b>All Dimensions in mm</b>			

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## Suggested Pad Layout



Dimensions	Value (in mm)
<b>G</b>	1.0
<b>X1</b>	2.2
<b>X2</b>	0.9
<b>Y1</b>	1.4
<b>Y2</b>	1.4

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