

**1.0A HIGH VOLTAGE 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
- **Lead Free Finish, RoHS Compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **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-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)



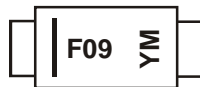
Top View

**Ordering Information** (Note 4)

Part Number	Compliance	Case	Packaging
DFLS1100-7	Commercial	POWERDI®123	3000/Tape & Reel
DFLS1100Q-7	Automotive	POWERDI®123	3000/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](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**



F09 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: T = 2013)  
 M = Month (ex: 9 = September)

Date Code Key

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021
Code	A	B	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<sub>A</sub> = +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 <sub>R(RM)</sub>	100	V
Working Peak Reverse Voltage	V <sub>R(WM)</sub>		
DC Blocking Voltage	V <sub>R</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	71	V
Forward current rms (T <sub>C</sub> = +160°C, D = 0.5)	I <sub>F(RMS)</sub>	2	A
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
Repetitive peak reverse current tp = 2μs, f = 1 kHz square	I <sub>R(RM)</sub>	1.0	A
Repetitive Peak Avalanche Power tp = 1μs, T <sub>J</sub> = +25°C	P <sub>ARM</sub>	1500	W
Non-repetitive peak reverse current tp = 100μs square	I <sub>RSM</sub>	1.0	A
Critical rate of rise of reverse voltage (rated V <sub>R</sub> , T <sub>J</sub> = +25°C)	dV/dt	10000	V/μs

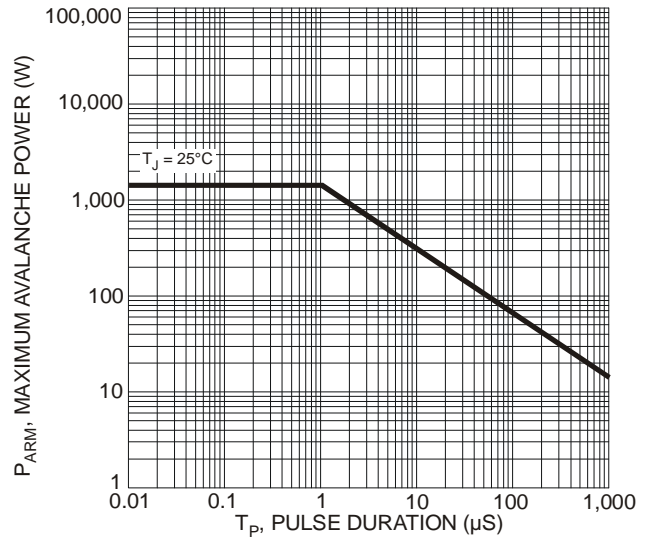
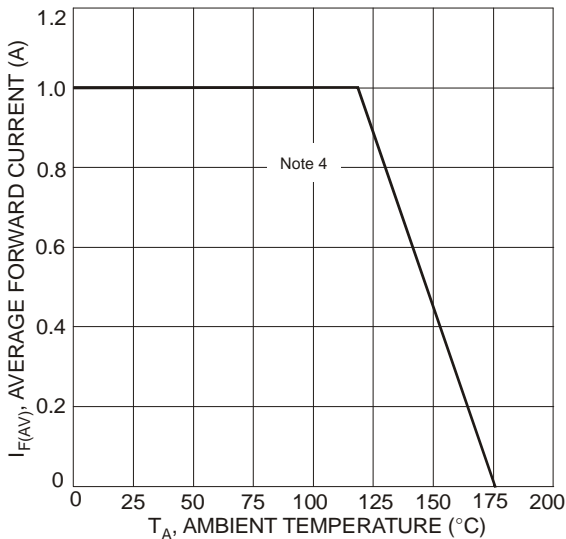
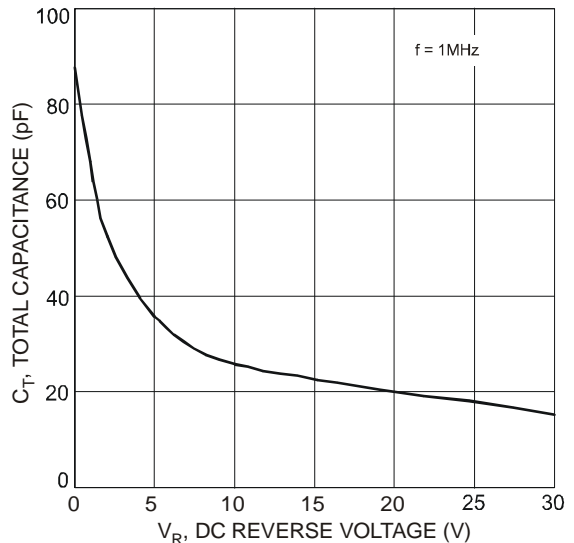
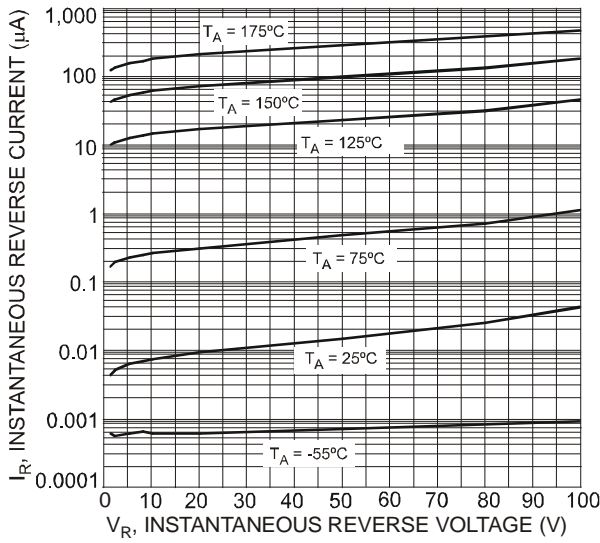
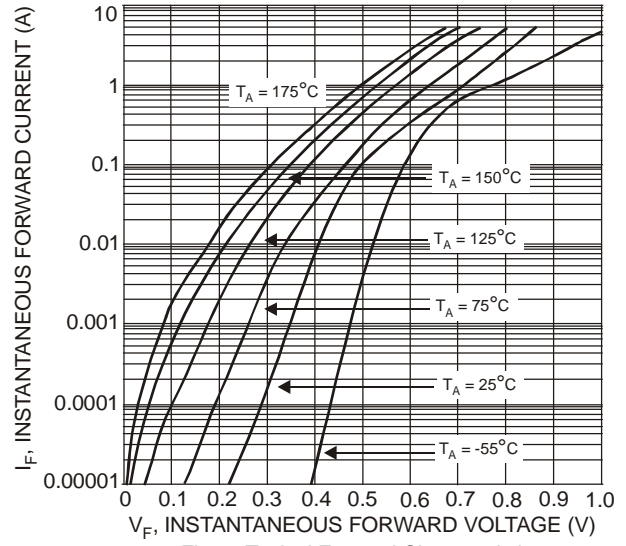
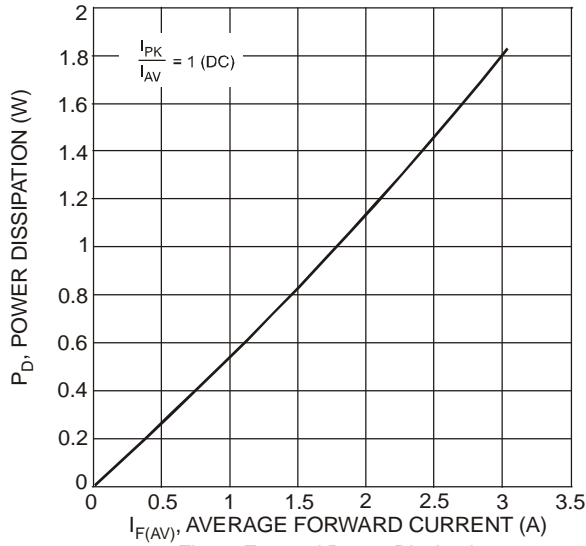
**Thermal Characteristics**

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering (Note 5)	R <sub>θJS</sub>	—	7	°C/W
Thermal Resistance Junction to Ambient (Note 6) T <sub>A</sub> = +25°C	R <sub>θJA</sub>	125	—	
Thermal Resistance Junction to Case (Note 6) T <sub>A</sub> = +25°C	R <sub>θJC</sub>	21	—	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175		°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	V <sub>(BR)R</sub>	100	—	—	V	I <sub>R</sub> = 1μA
Forward Voltage	V <sub>F</sub>	—	—	0.77	V	I <sub>F</sub> = 1.0A, T <sub>A</sub> = +25°C
		—	0.58	0.62		I <sub>F</sub> = 1.0A, T <sub>A</sub> = +125°C
		—	—	0.86		I <sub>F</sub> = 2.0A, T <sub>A</sub> = +25°C
		—	0.65	0.7		I <sub>F</sub> = 2.0A, T <sub>A</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	—	1	μA	V <sub>R</sub> = 100V, T <sub>A</sub> = +25°C
		—	0.2	0.5	mA	V <sub>R</sub> = 100V, T <sub>A</sub> = +125°C
Total Capacitance	C <sub>T</sub>	—	36	—	pF	V <sub>R</sub> = 5V <sub>DC</sub> , f = 1MHz

- Notes:
- Theoretical R<sub>θJS</sub> 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.



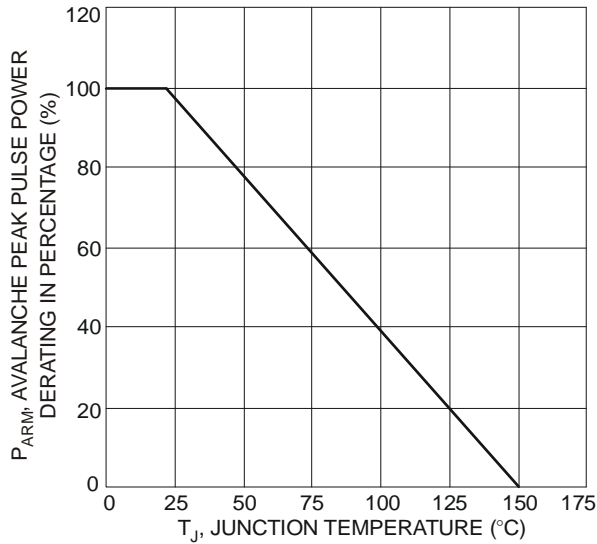


Fig. 7 Pulse Derating Curve

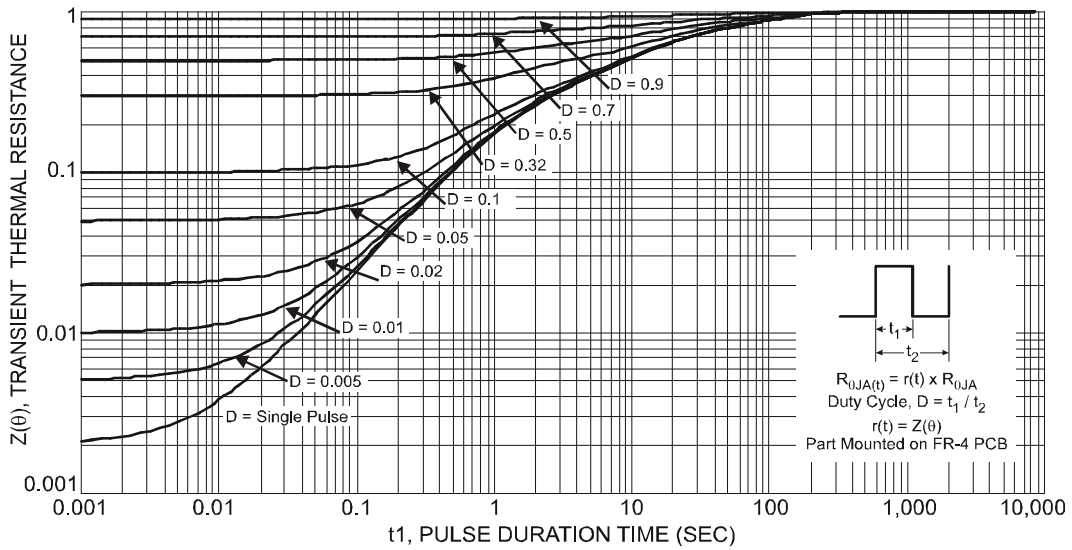
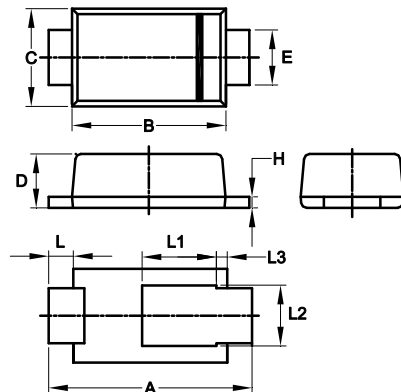


Fig. 8 Transient Thermal Resistance

**Package Outline Dimensions**

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

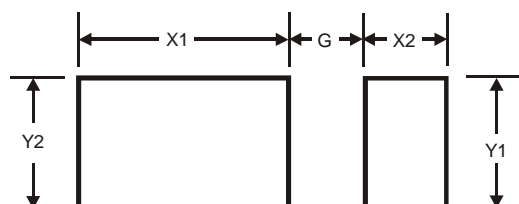


POWERDI <sup>®</sup> 123			
Dim	Min	Max	Typ
A	3.50	3.90	3.70
B	2.60	3.00	2.80
C	1.63	1.93	1.78
D	0.93	1.00	0.98
E	0.85	1.25	1.00
H	0.15	0.25	0.20
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L2	1.025	1.125	1.10
L3	0.125	0.275	0.20
All Dimensions in mm			

POWERDI <sup>®</sup> 123			
Dim	Min	Max	Typ
A	3.50	3.90	3.70
B	2.60	3.00	2.80
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H	0.15	0.25	0.20
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L2	1.025	1.125	1.10
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.



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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