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 e3
- Weight: 0.01 grams (approximate)

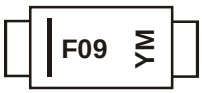
Top View

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 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_A = +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 Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	100	V
RMS Reverse Voltage	$V_{R(RMS)}$	71	V
Forward current rms (T_C = +160°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 tp = 2µs, f = I kHz square	I_{RRM}	1.0	A
Repetitive Peak Avalanche Power tp = 1µs, T_J = +25°C	P_{ARM}	1500	W
Non-repetitive peak reverse current tp = 100µs square	I_{RSM}	1.0	A
Critical rate of rise of reverse voltage (rated V_R, T_J = +25°C)	dV/dt	10000	V/µs

Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering (Note 5)	$R_{\theta JS}$	—	7	°C/W
Thermal Resistance Junction to Ambient (Note 6) T_A = +25°C	$R_{\theta JA}$	125	—	
Thermal Resistance Junction to Case (Note 6) T_A = +25°C	$R_{\theta JC}$	21	—	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +175		°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	100	—	—	V	I_R = 1µA
Forward Voltage	V_F	—	—	0.77	V	I_F = 1.0A, T_A = +25°C
		—	0.58	0.62		I_F = 1.0A, T_A = +125°C
		—	—	0.86		I_F = 2.0A, T_A = +25°C
		—	0.65	0.7		I_F = 2.0A, T_A = +125°C
Leakage Current (Note 7)	I_R	—	—	1	µA	V_R = 100V, T_A = +25°C
		—	0.2	0.5	mA	V_R = 100V, T_A = +125°C
Total Capacitance	C_T	—	36	—	pF	V_R = 5V_{DC}, f = 1MHz

Notes:
5. Theoretical $R_{\theta JS}$ calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
6. 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.
7. Short duration pulse test used to minimize self-heating effect.

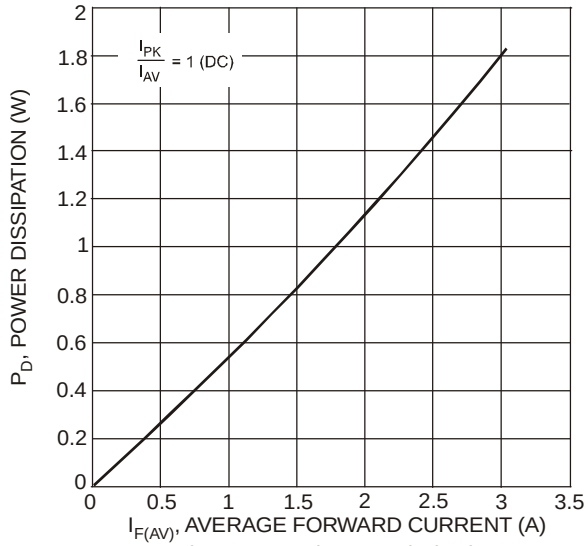


Fig. 1 Forward Power Dissipation

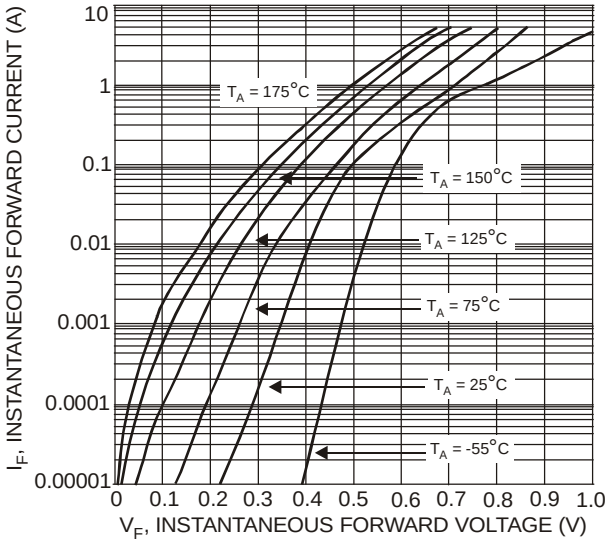


Fig. 2 Typical Forward Characteristics

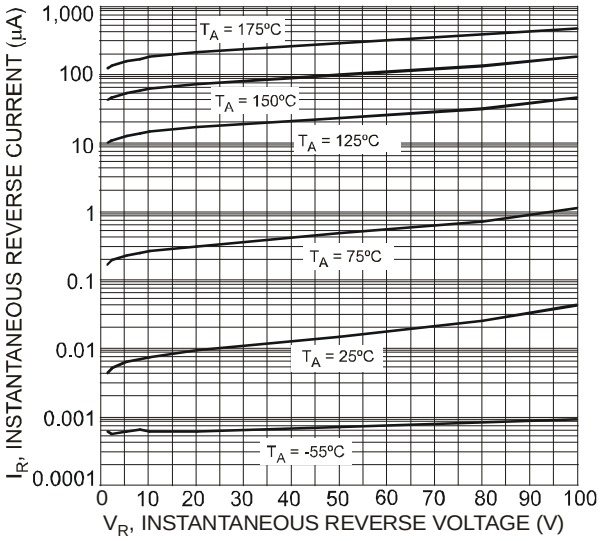


Fig. 3 Typical Reverse Characteristics

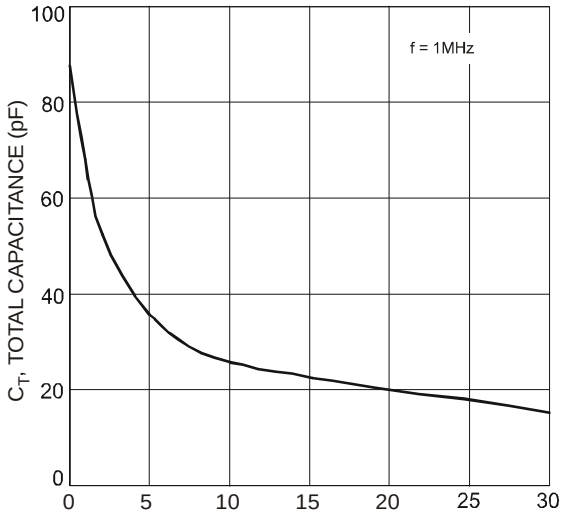


Fig. 4 Total Capacitance vs. Reverse Voltage

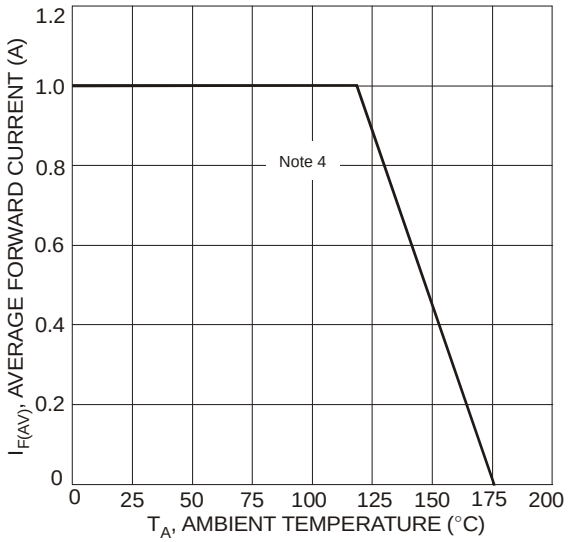


Fig. 5 Forward Current Derating Curve

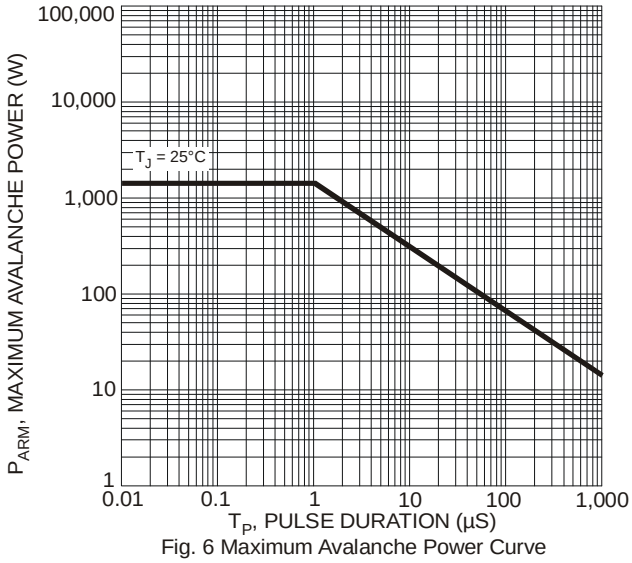


Fig. 6 Maximum Avalanche Power Curve

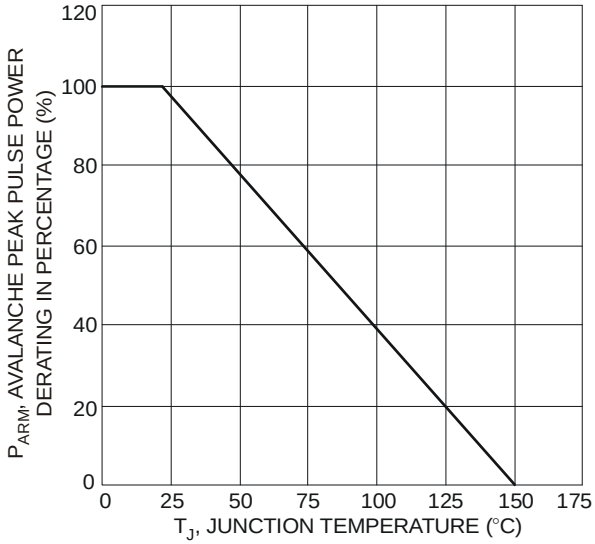


Fig. 7 Pulse Derating Curve

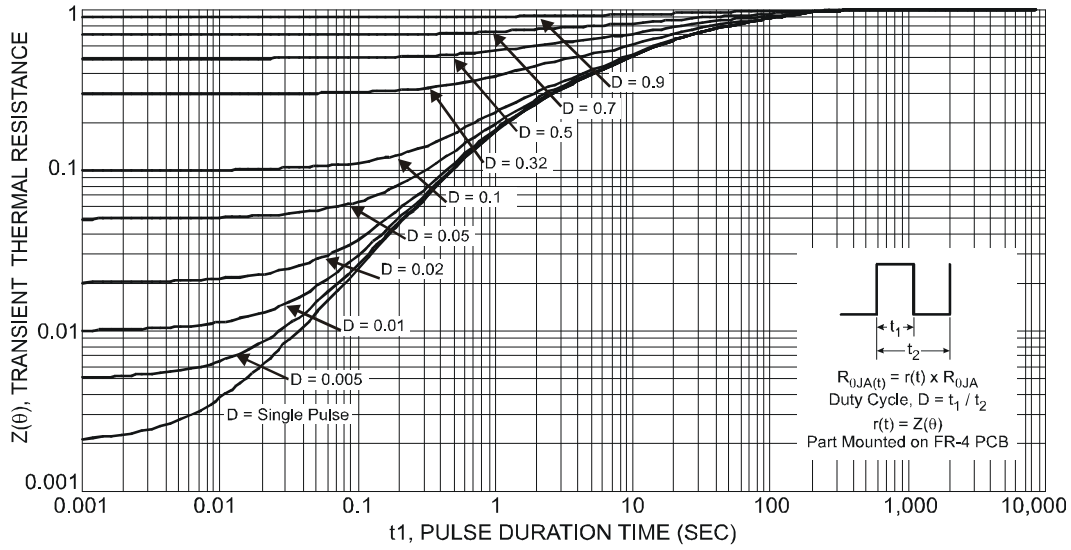
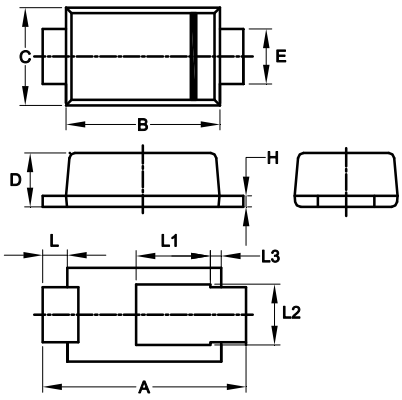


Fig. 8 Transient Thermal Resistance

Package Outline Dimensions

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



POWERDI®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			

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A	3.50	3.90	3.70
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H	0.15	0.25	0.20
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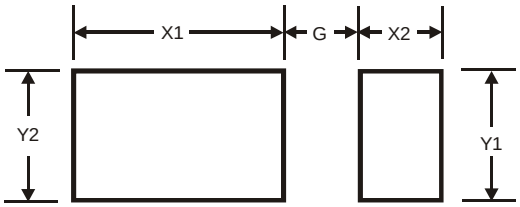
L1	1.25	1.40	1.35
L2	1.025	1.125	1.10
L3	0.125	0.275	0.20
All Dimensions in mm			

Suggested Pad Layout

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



Dimensions	Value (in mm)
G	1.0
X1	2.2
X2	0.9
Y1	1.4
Y2	1.4