

## Product Summary (@T<sub>A</sub> = +25°C)

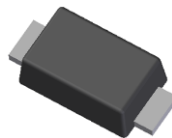
V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (μA)
40	2	0.50	100

## Description and Application

For use in low-voltage, high-frequency inverters, freewheeling, DC-DC converters, and polarity applications.

- SMPS
- DC/DC converters
- AC/DC adaptors
- Freewheeling diodes
- Reverse polarity protections
- Blocking diodes

PowerDI123




Top View

## Features and Benefits

- Low Leakage Current
- Soft, Fast Switching Capability
- +150°C Operating Junction Temperature
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com/contact-us) or your local Diodes representative.  
<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: PowerDI<sup>®</sup>123
- Package Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 
- Polarity: Cathode Band
- Weight: 0.01 grams (Approximate)



Device Symbol

## Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DFLS240LX-7	PowerDI123	3,000	Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information

PowerDI123



DQ4 = Product Type Marking Code  
YM = Date Code Marking  
Y = Year (ex: K = 2023)  
M = Month (ex: 5 = May)

### Date Code Key

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	K	L	M	N	P	R	S	T	U	V	W	X

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 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>RWM</sub> V <sub>RM</sub>	40	V
Average Rectified Output Current	I <sub>O</sub>	2	A
Non-Repetitive Peak Forward Surge Current 1ms Single Half Sine Wave Superimposed on Rated Load	I <sub>FSM</sub>	35	A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	55	°C/W
Thermal Resistance Junction to Case (Note 5)	R <sub>θJC</sub>	20	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

Note: 5. Device mounted on 1inch<sup>2</sup> copper pad, 2oz. The heat generated must be less than the thermal conductivity from junction to case:  $dP_D / dT_J < 1 / R_{\theta JC}$  or junction to ambient:  $dP_D / dT_J < 1 / R_{\theta JA}$ .

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

Characteristic	Symbol	Typ	Max	Unit	Test Condition
Forward Voltage Drop (Note 6)	V <sub>F</sub>	— — —	0.45 0.50 0.65	V	I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C I <sub>F</sub> = 2A, T <sub>J</sub> = +25°C I <sub>F</sub> = 3A, T <sub>J</sub> = +25°C
Leakage Current (Note 6)	I <sub>R</sub>	— — — —	0.05 5 0.1 10	mA	V <sub>R</sub> = 20V, T <sub>J</sub> = +25°C V <sub>R</sub> = 20V, T <sub>J</sub> = +85°C V <sub>R</sub> = 40V, T <sub>J</sub> = +25°C V <sub>R</sub> = 40V, T <sub>J</sub> = +85°C
Total Capacitance	C <sub>T</sub>	250	—	pF	V <sub>R</sub> = 4V, f = 1MHz

Note: 6. Short duration pulse test used to minimize self-heating effect.

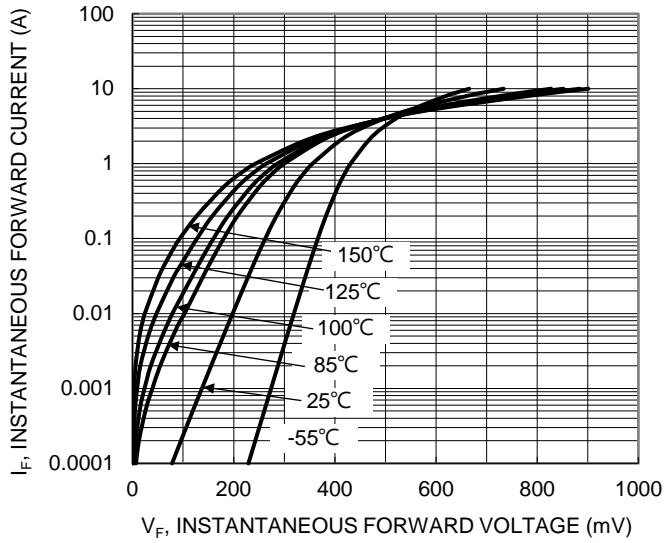


Figure 1. Typical Forward Characteristics

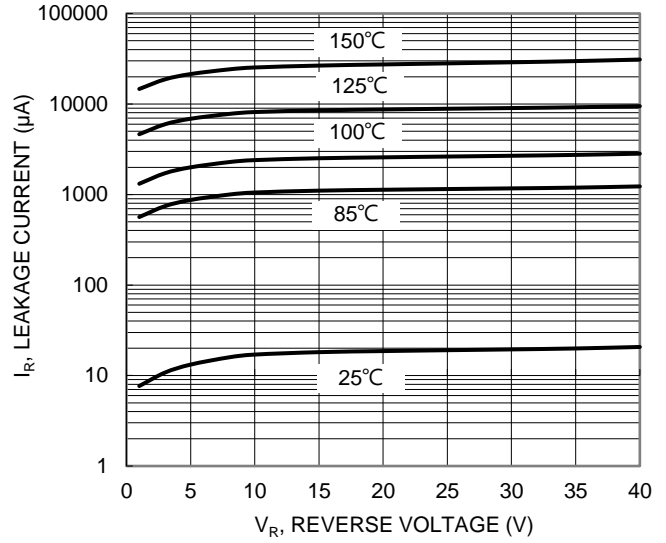


Figure 2. Typical Reverse Characteristics

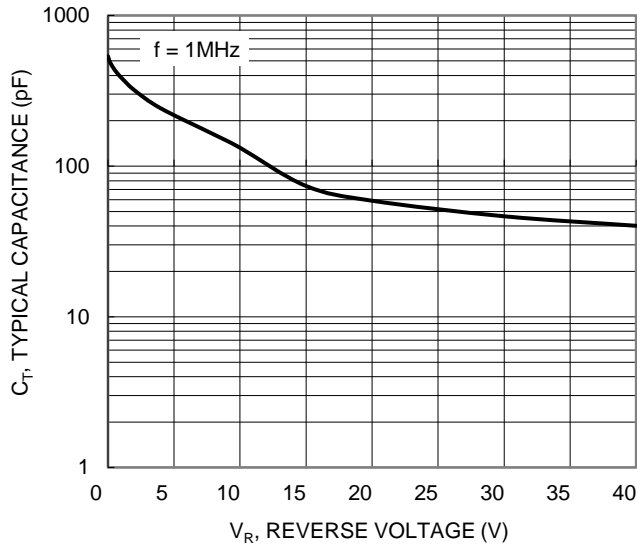


Figure 3. Typical Capacitance vs. Reverse Voltage

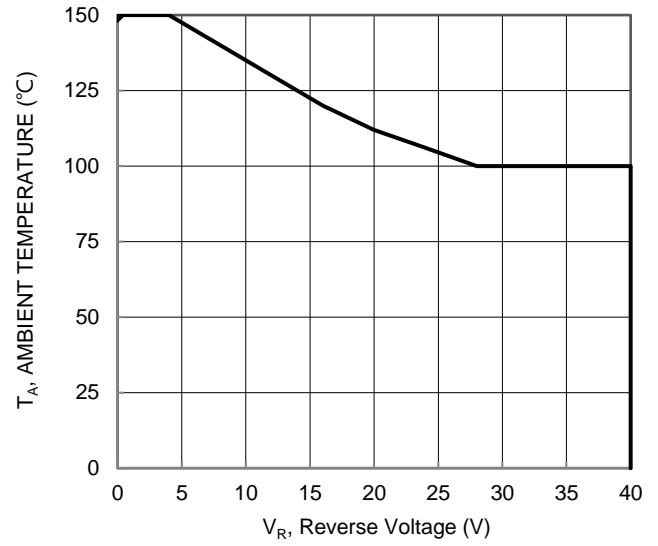
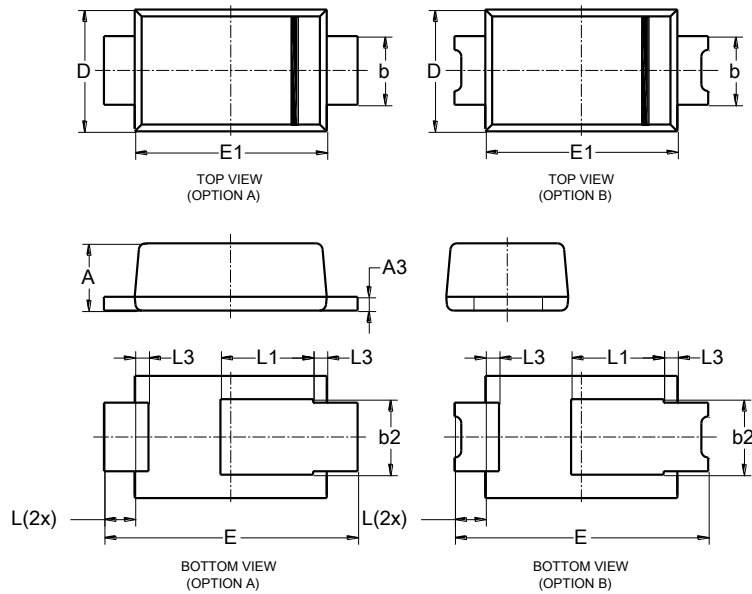


Figure 4. Operating Temperature Derating

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### PowerDI123

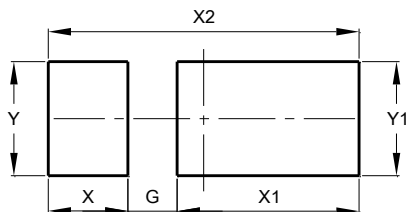


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### PowerDI123



Dimensions	Value (in mm)
G	0.65
X	1.05
X1	2.40
X2	4.10
Y	1.50
Y1	1.50

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