

## Product Summary

$V_R$ (V)	$I_F$ (A)	$V_F$ MAX (V) @1A (+25°C)	$I_R$ MAX (mA) @40V (+25°C)
40	1	0.55	0.1

## Description and Applications

This Schottky barrier rectifier has been designed to meet the stringent requirements of automotive applications. It is ideally suited to use as:

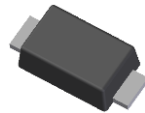
- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode

## Features and Benefits

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- High Surge Capability and Low Forward Voltage Drop
- Patented Interlocking Clip Design for High Surge Current Capacity
- **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-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.** <https://www.diodes.com/quality/product-definitions/>
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([DFLS140LQ](#))**

## Mechanical Data

- Case: PowerDI®123
- Surface Mount Package
- Max Soldering Temperature +260°C for 30 secs as per JEDEC J-STD-020
- Case Material – Molded Plastic, UL Flammability Rating 94V-0
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.01 grams (Approximately)



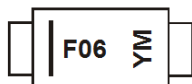
Top View

## Ordering Information (Note 4)

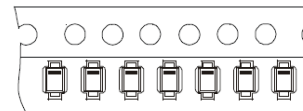
Part Number	Case	Packaging
DFLS140L-7	PowerDI123	3000/Tape & Reel

- 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



F06 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: H = 2020)  
 M = Month (ex: 9 = September)



### Date Code Key

Year	2004	...	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Code	R	...	H	I	J	K	L	M	N	O	P	R

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

PowerDI is a registered trademark of Diodes Incorporated.

DFLS140L

Document number: DS30490 Rev. 7 - 2

## 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>R</sub>	40	V
RMS Reverse Voltage	V <sub>R(RMS)</sub>	28	V
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

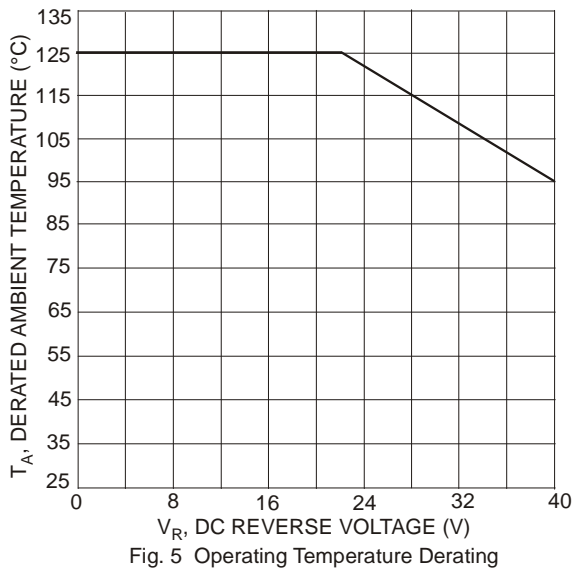
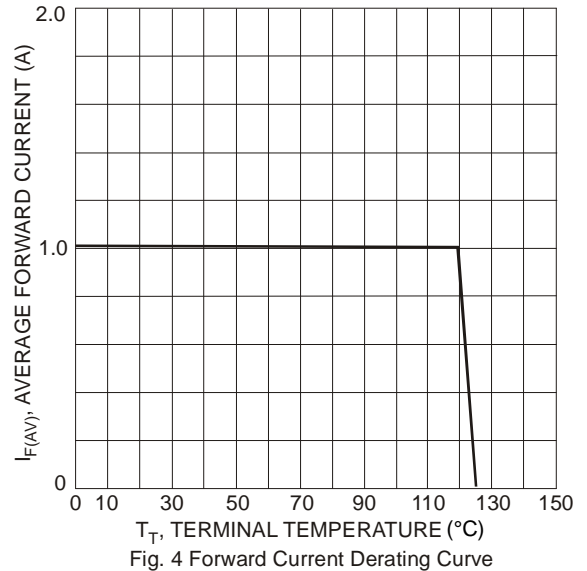
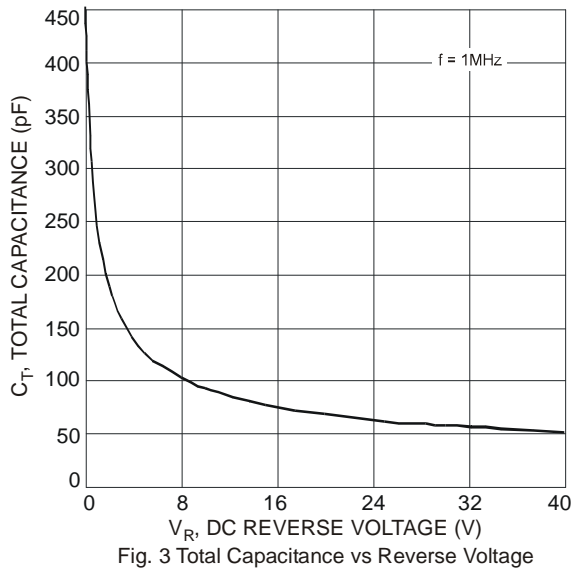
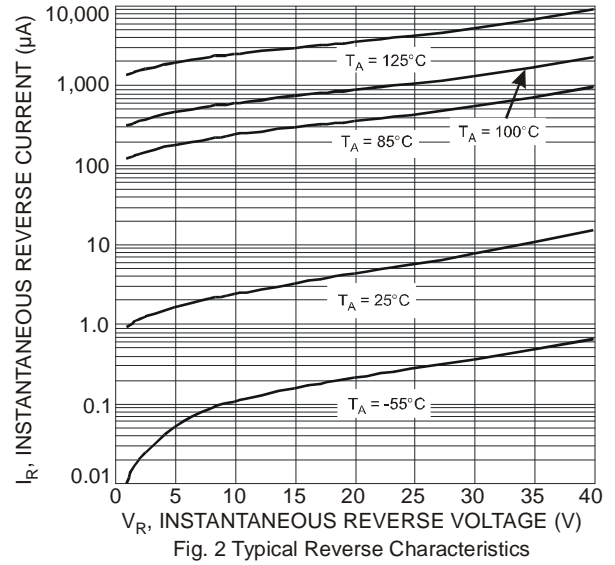
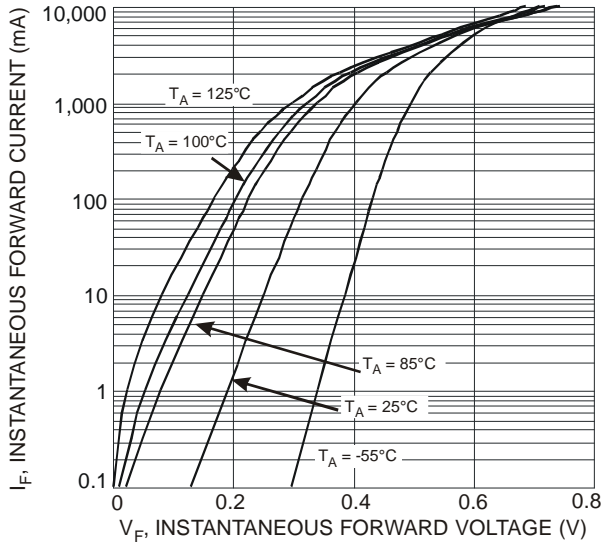
## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	550	mW
Power Dissipation (Note 6)	P <sub>D</sub>	820	mW
Thermal Resistance Junction to Soldering Point (Note 7)	R <sub>θJS</sub>	10	°C/W
Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	180	°C/W
Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	120	°C/W
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	V <sub>(BR)R</sub>	40	—	—	V	I <sub>R</sub> = 500μA
Forward Voltage	V <sub>F</sub>	—	—	0.36	V	I <sub>F</sub> = 0.1A, T <sub>J</sub> = +25°C
		—	—	0.30		I <sub>F</sub> = 0.1A, T <sub>J</sub> = +85°C
		—	—	0.55		I <sub>F</sub> = 1.0A, T <sub>J</sub> = +25°C
		—	—	0.515		I <sub>F</sub> = 1.0A, T <sub>J</sub> = +85°C
		—	—	0.85		I <sub>F</sub> = 3.0A, T <sub>J</sub> = +25°C
		—	—	0.88		I <sub>F</sub> = 3.0A, T <sub>J</sub> = +85°C
Leakage Current (Note 8)	I <sub>R</sub>	—	—	0.1	mA	V <sub>R</sub> = 40V, T <sub>J</sub> = +25°C
		—	—	10		V <sub>R</sub> = 40V, T <sub>J</sub> = +85°C
		—	—	0.05		V <sub>R</sub> = 20V, T <sub>J</sub> = +25°C
		—	—	5		V <sub>R</sub> = 20V, T <sub>J</sub> = +85°C
Total Capacitance	C <sub>T</sub>	—	90	—	pF	V <sub>R</sub> = 10V, f = 1.0MHz

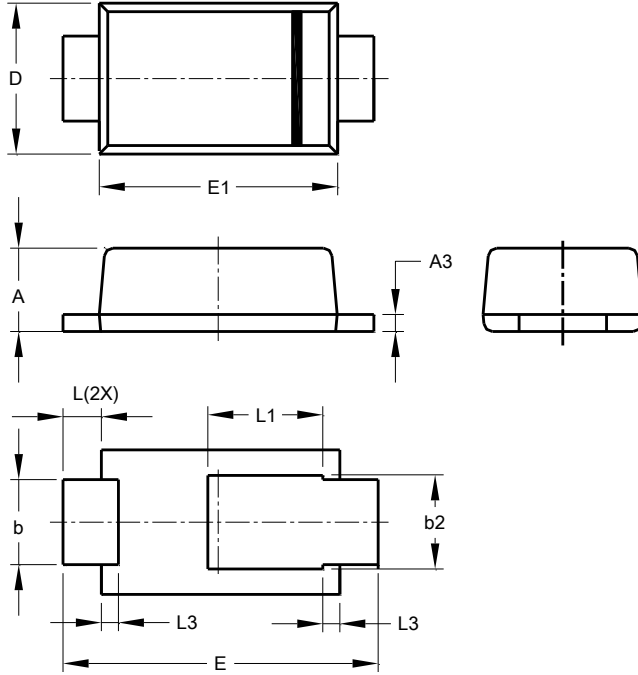
- Notes:
5. 1\*MRP FR-4 PC board, 2oz. copper PCB board.
  6. 1inch sq. copper pad, 2oz. PCB board.
  7. Theoretical R<sub>θJS</sub> calculated from the top center of the die straight down to the PCB cathode tab solder junction.
  8. Short duration pulse test to minimize self-heating effect.



## Package Outline Dimensions

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

### PowerDI123

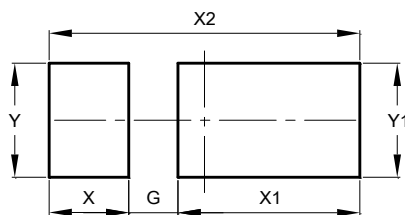


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

## 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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