

## Product Summary

$V_{RRM}$ (V)	$I_F$ (A)	$V_F$ MAX (V) @ +25°C	$I_R$ MAX (mA) @ +25°C
40	2.0	0.50	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
- High Current Capability and Low Forward Voltage Drop
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

## Mechanical Data

- Case: PowerDI<sup>®</sup>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<sup>③</sup>
- Weight: 0.01 grams (Approximate)



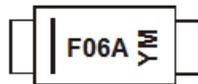
Top View

## Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
DFLS240LQ-7	Automotive	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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
  5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



F06A = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: F = 2018)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022
Code	B	C	D	E	F	G	H	I	J

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>R</sub>	40	V
RMS Reverse Voltage	V <sub>R(RMS)</sub>	28	V
Average Forward Current	I <sub>F(AV)</sub>	2.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	50	A
Electrostatic Discharge	HBM	4000	V
Electrostatic Discharge	MM	400	V
Electrostatic Discharge	CDM	1	kV

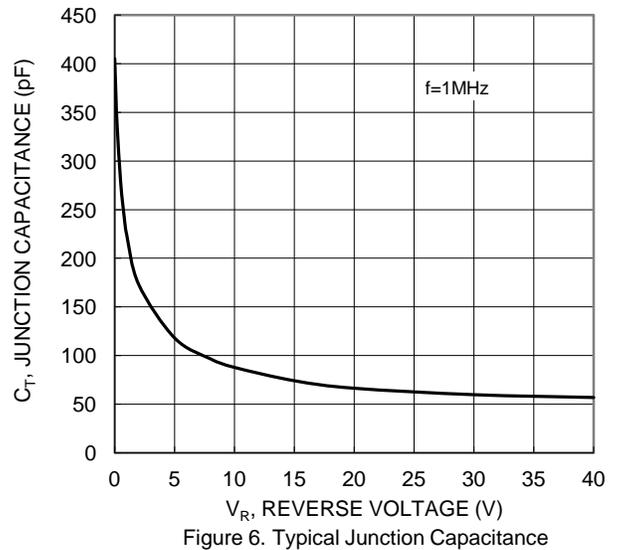
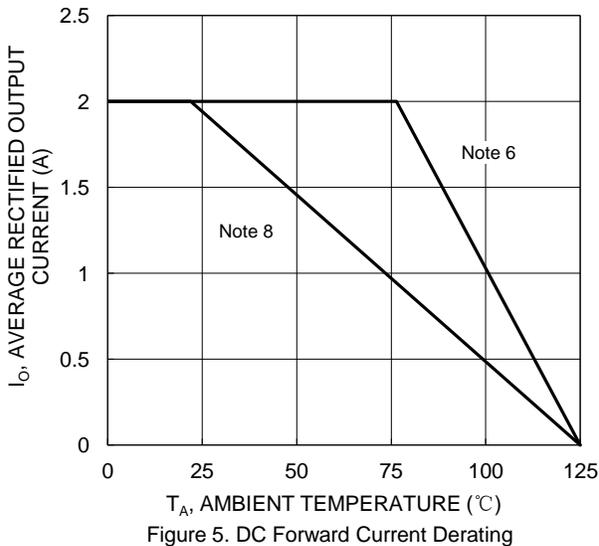
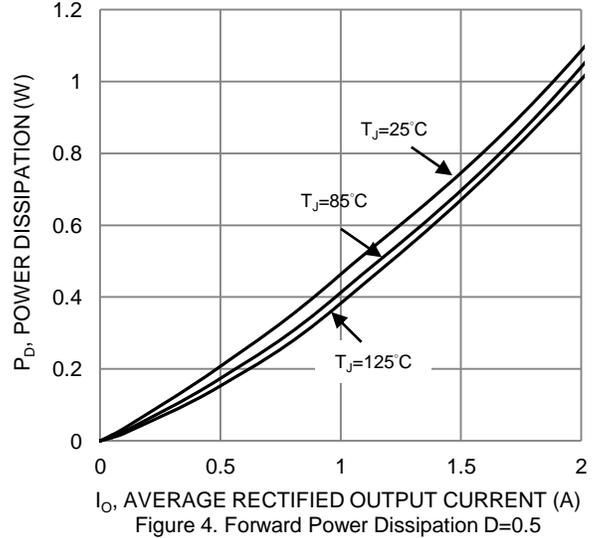
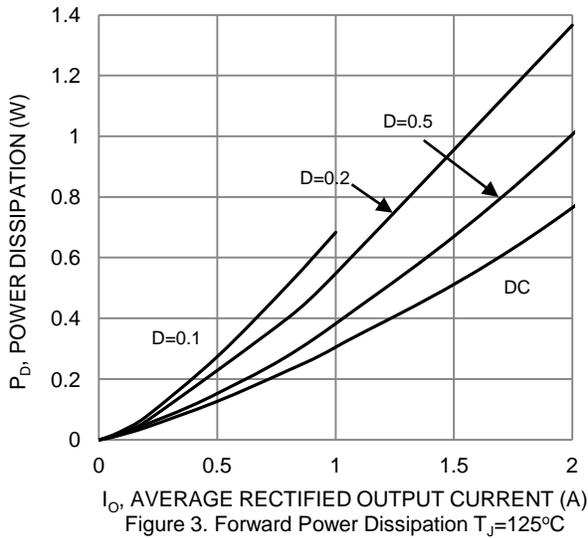
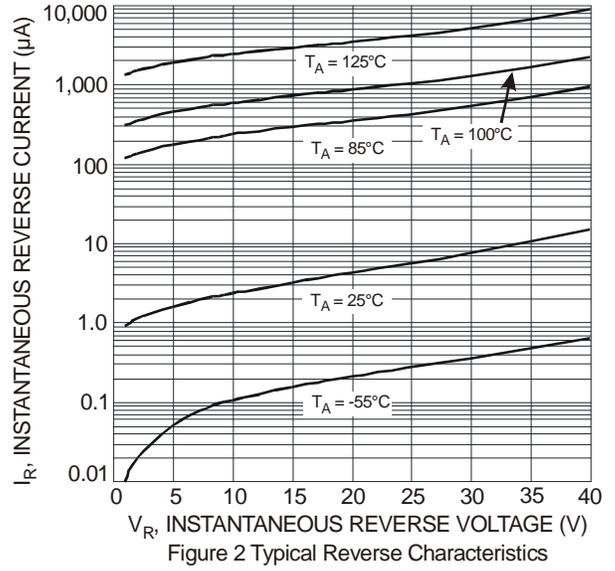
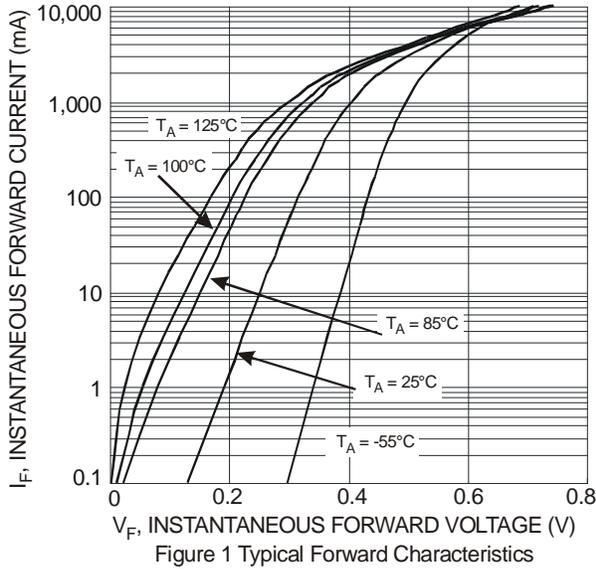
**Thermal Characteristics**

Characteristic	Symbol	Typ	Max	Unit
Power Dissipation (Note 6)	P <sub>D</sub>	—	1.67	W
Power Dissipation (Note 7)	P <sub>D</sub>	—	556	mW
Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	60	—	°C/W
Thermal Resistance Junction to Ambient (Note 7)	R <sub>θJA</sub>	180	—	°C/W
Thermal Resistance Junction to Ambient (Note 8)	R <sub>θJA</sub>	135	—	°C/W
Thermal Resistance Junction to Lead (Cathode) (Note 9)	R <sub>θJL</sub>	—	6	°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 10)	V <sub>(BR)R</sub>	40	—	—	V	I <sub>R</sub> = 500μA, T <sub>A</sub> = +25°C
Forward Voltage	V <sub>F</sub>	—	0.4 0.45 0.50	0.45 0.50 0.65	V	I <sub>F</sub> = 1.0A, T <sub>A</sub> = +25°C I <sub>F</sub> = 2.0A, T <sub>A</sub> = +25°C I <sub>F</sub> = 3.0A, T <sub>A</sub> = +25°C
Leakage Current (Note 10)	I <sub>R</sub>	—	—	0.1 10 0.05 5	mA	V <sub>R</sub> = 40V, T <sub>A</sub> = +25°C V <sub>R</sub> = 40V, T <sub>A</sub> = +85°C V <sub>R</sub> = 20V, T <sub>A</sub> = +25°C V <sub>R</sub> = 20V, T <sub>A</sub> = +85°C
Total Capacitance	C <sub>T</sub>	—	90	—	pF	V <sub>R</sub> = 10V, f = 1.0MHz
Switching Speed t <sub>RR</sub>	t <sub>RR</sub>	—	12	—	ns	I <sub>F</sub> =0.5A, I <sub>R</sub> =1A, I <sub>RR</sub> =0.25A (RG1)

- Notes:
- Part mounted on 50.8mm X 50.8mm GETEK board with 25.4mm X 25.4mm copper pad, 25% anode, 75% cathode.
  - Part mounted on FR-4 board with 1.8mm X 2.5mm cathode and 1.8mm X 1.2mm anode, 1 oz. copper pads.
  - Part mounted on FR-4 PC board, 2oz. minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
  - Theoretical R<sub>θJL</sub> calculated from the top center of the die straight down to the PCB cathode tab solder junction.
  - Short duration pulse test used to minimize self-heating effect.



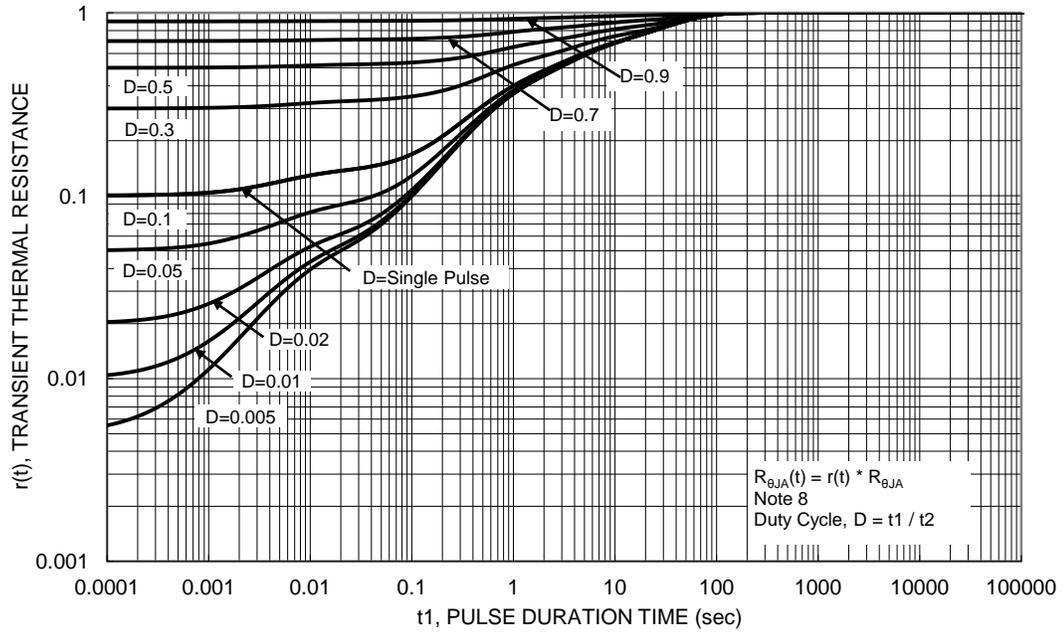
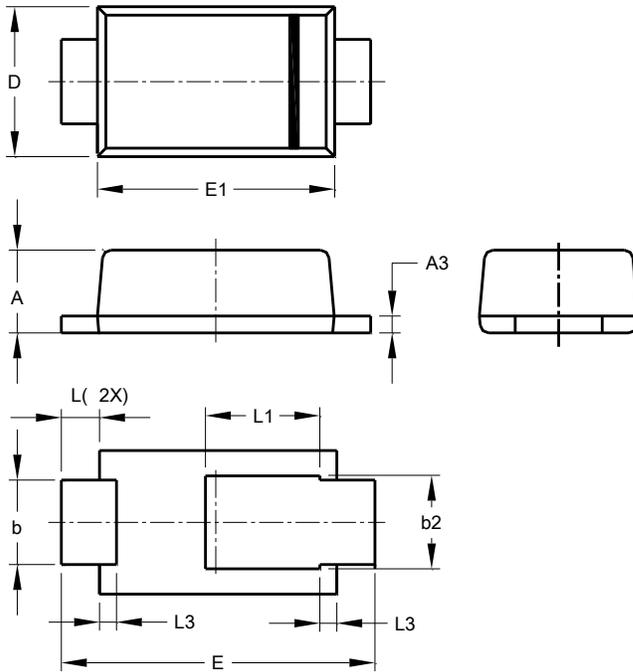


Figure 7. Transient Thermal Resistance

**Package Outline Dimensions**

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

**PowerDI123**

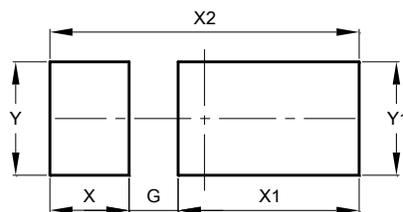


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

**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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