

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 :

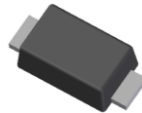
- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode

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[®]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)



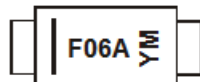
Top View

Ordering Information (Note 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_A = +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 _{RRM} V _{RWM} V _R	40	V
RMS Reverse Voltage	V _{R(RMS)}	28	V
Average Forward Current	I _{F(AV)}	2.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	50	A
Electrostatic Discharge	HBM	4000	V
Electrostatic Discharge	MM	400	V
Electrostatic Discharge	CDM	1	kV

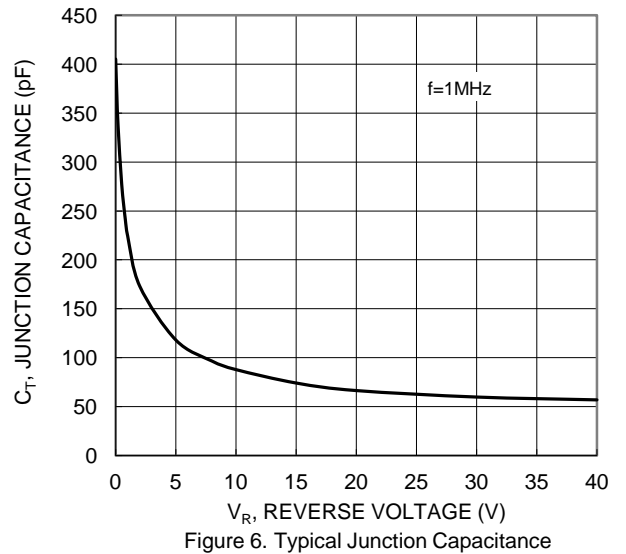
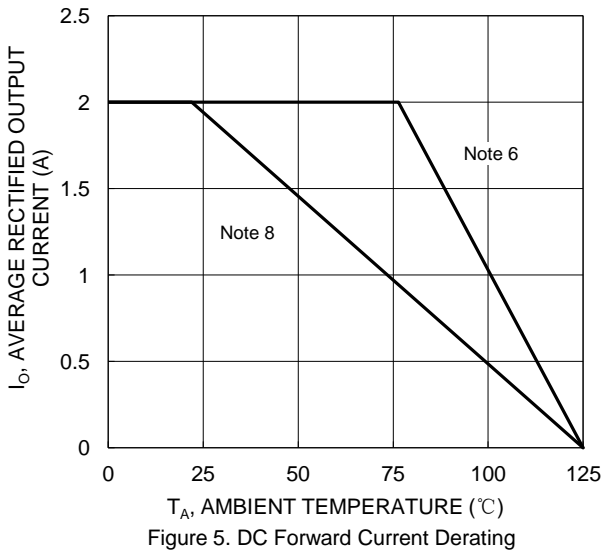
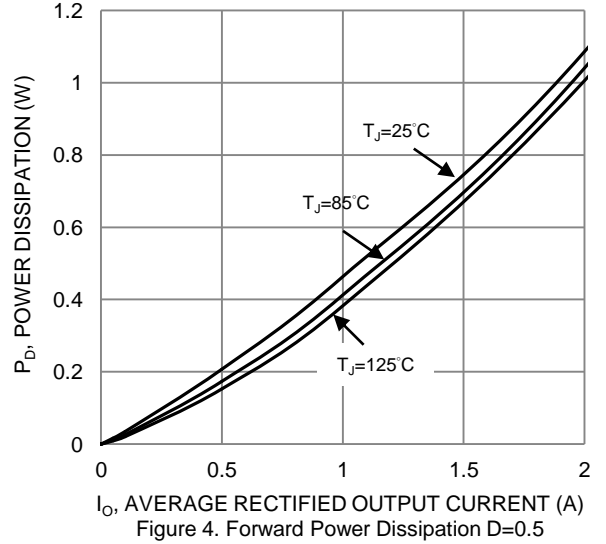
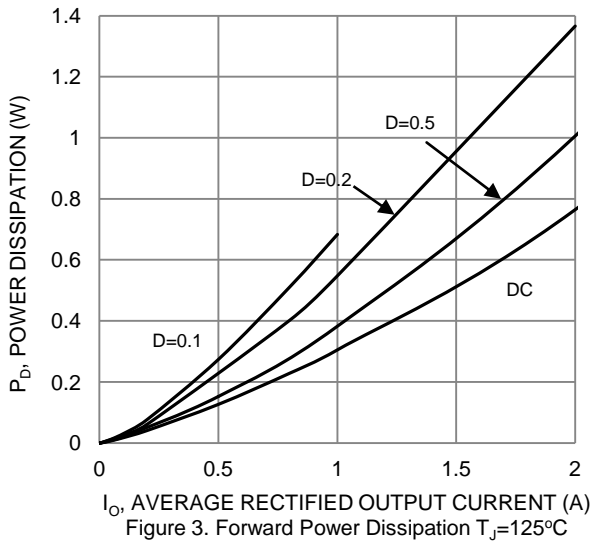
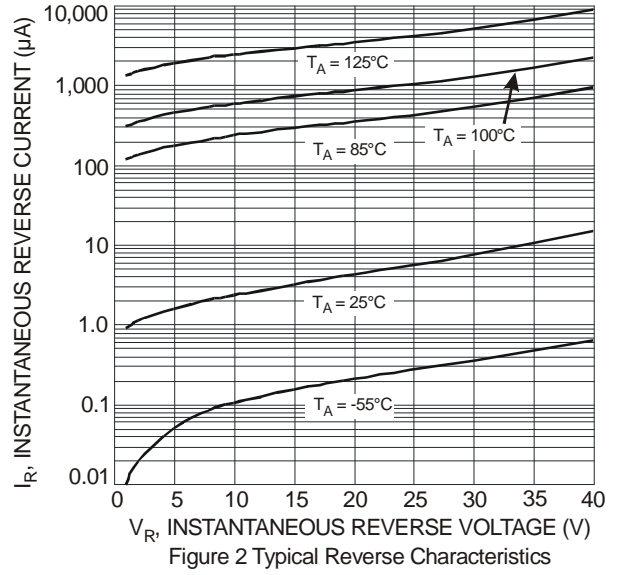
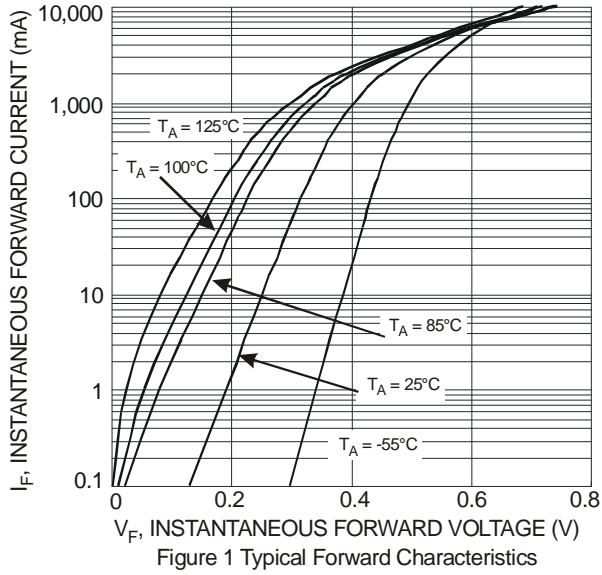
Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Power Dissipation (Note 6)	P _D	—	1.67	W
Power Dissipation (Note 7)	P _D	—	556	mW
Thermal Resistance Junction to Ambient (Note 6)	R _{θJA}	60	—	°C/W
Thermal Resistance Junction to Ambient (Note 7)	R _{θJA}	180	—	°C/W
Thermal Resistance Junction to Ambient (Note 8)	R _{θJA}	135	—	°C/W
Thermal Resistance Junction to Lead (Cathode) (Note 9)	R _{θJL}	—	6	°C/W
Operating Temperature Range	T _J	-55 to +125		°C
Storage Temperature Range	T _{STG}	-55 to +150		°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 10)	V _{(BR)R}	40	—	—	V	I _R = 500μA, T _A = +25°C
Forward Voltage	V _F	—	0.4 0.45 0.50	0.45 0.50 0.65	V	I _F = 1.0A, T _A = +25°C I _F = 2.0A, T _A = +25°C I _F = 3.0A, T _A = +25°C
Leakage Current (Note 10)	I _R	—	—	0.1 10 0.05 5	mA	V _R = 40V, T _A = +25°C V _R = 40V, T _A = +85°C V _R = 20V, T _A = +25°C V _R = 20V, T _A = +85°C
Total Capacitance	C _T	—	90	—	pF	V _R = 10V, f = 1.0MHz
Switching Speed t _{RR}	t _{RR}	—	12	—	ns	I _F =0.5A, I _R =1A, I _{RR} =0.25A (RG1)

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



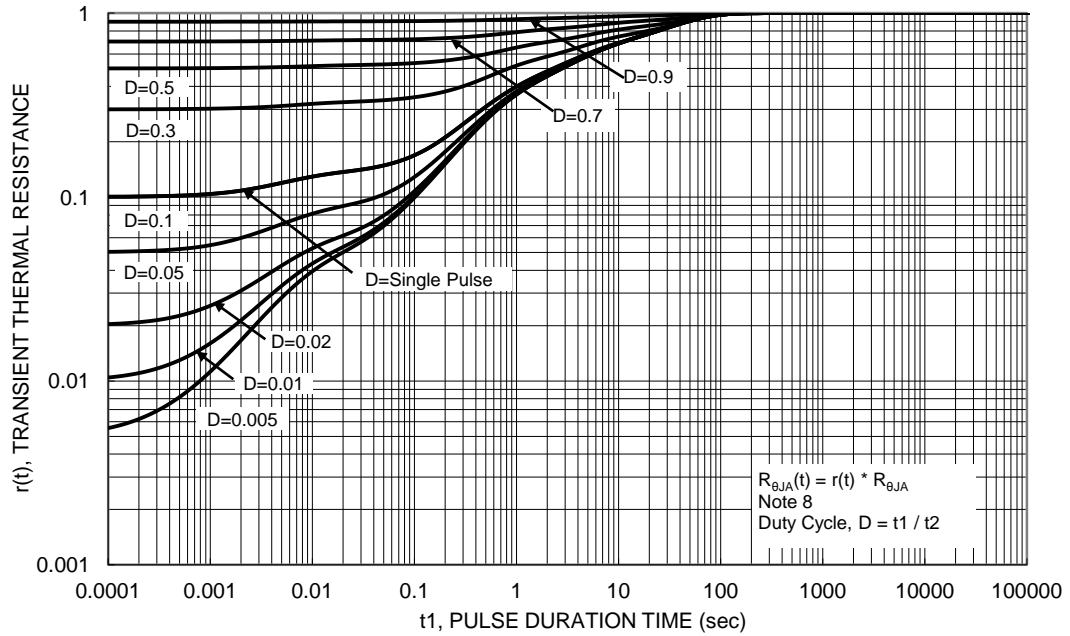
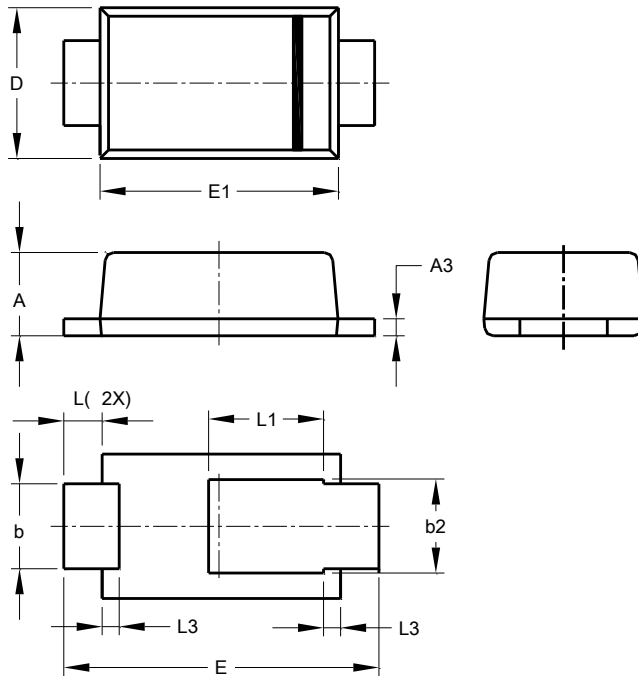


Figure 7. Transient Thermal Resistance

Package Outline Dimensions

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

PowerDI123

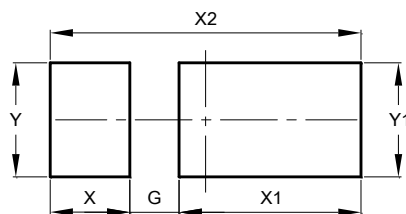


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

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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