

Product Summary

V_R (V)	I_F (A)	V_F Max (V) @ +25°C	I_R Max (mA) @ +25°C
40	1.0	0.45	0.1

Description and Applications

This Schottky Barrier Rectifier is designed to meet the stringent requirements of automotive applications. It is ideally suited to use as:

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

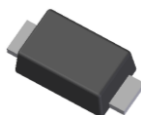
Features and Benefits

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Patented Interlocking Clip Design for High Surge Current Capacity
- High Current Capability and Low Forward Voltage Drop
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

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 
- Weight: 0.096 grams (Approximate)

PowerDI123



Top View

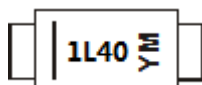
Ordering Information (Note 4)

Part Number	Case	Packaging
SDM1L40P1-7	PowerDI123	3,000/Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) 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



1L40 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: E = 2017)
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	V _{RRM}	40	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _R		
Average Forward Current @ T _T = +120°C	I _{F(AV)}	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms	I _{FSM}	60	A
Single Half Sine-Wave Superimposed on Rated Load			

Thermal Characteristics

Characteristic	Symbol	Typ	Unit
Thermal Resistance Junction to Ambient (Note 5)	R _{θJA}	60	°C/W
Thermal Resistance Junction to Case (Note 5)	R _{θJC}	5	°C/W
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
Forward Voltage	V _F	—	0.40 0.30	0.45 —	V	I _F = 1.0A, T _J = +25°C I _F = 1.0A, T _J = +125°C
Leakage Current (Note 6)	I _R	—	— 11 — 6.0	0.1 — 0.05 —	mA	V _R = 40V, T _J = +25°C V _R = 40V, T _J = +125°C V _R = 20V, T _J = +25°C V _R = 20V, T _J = +125°C
Typical Capacitance	C _T	—	63	—	pF	V _R = 10V, f = 1.0MHz

Notes: 5. Device mounted on 1inch sq. copper pad, 2oz.
6. Short duration pulse test to minimize self-heating effect.

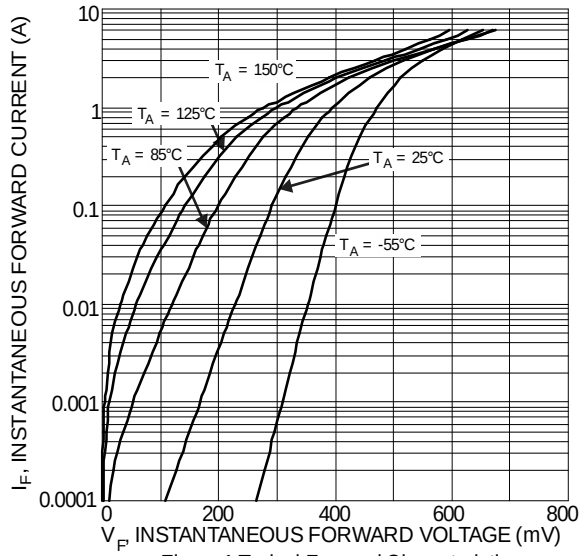


Figure 1 Typical Forward Characteristics

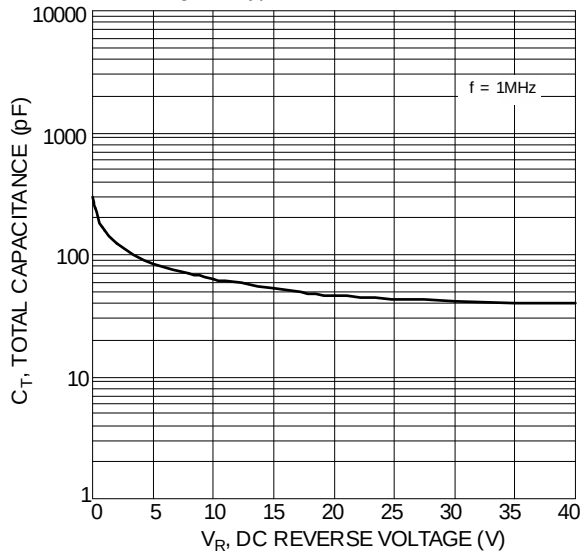


Figure 3 Total Capacitance vs. Reverse Voltage

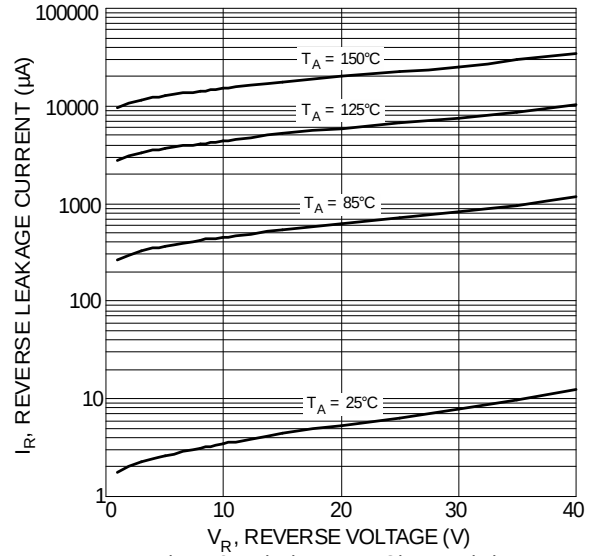


Figure 2 Typical Reverse Characteristics

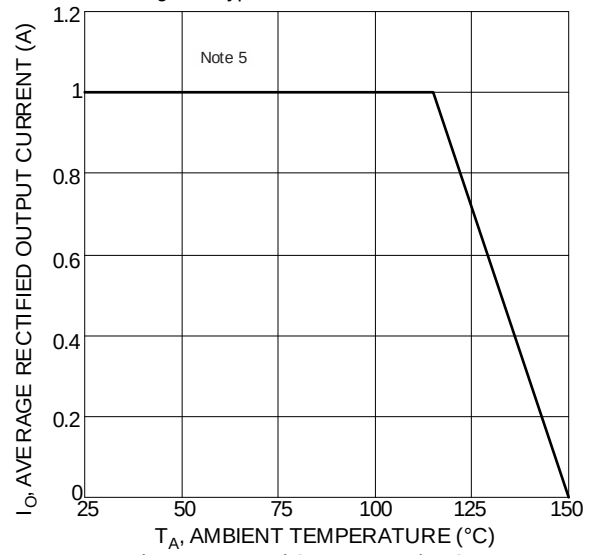
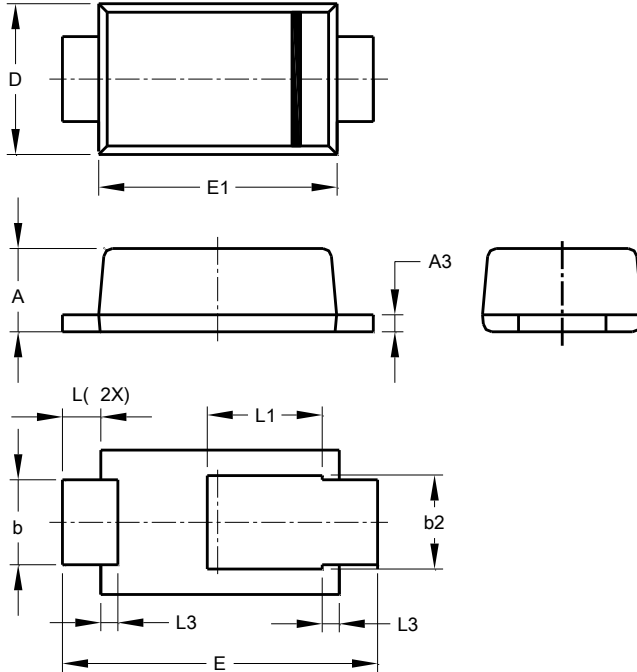


Figure 4 Forward Current Derating Curve

Package Outline Dimensions

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

PowerDI123

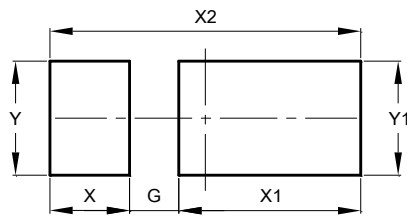


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

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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