1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER
PowerDI123

Product Summary (@T_A = +25°C)

V_{RRM} (V)	I_O (A)	V_F Max (V)	I_R Max (µA)	Trr Max(ns)
800	1	1.35	10	500

Description

Packaged in the compact and thermally efficient PowerDI®123 package, the DIODES™ RS1KP1M provides fast recovery time for high efficiency.

Applications

It is ideally suited to use in:

- AC-DC adaptors/chargers
- DC-DC converters
- Power supplies

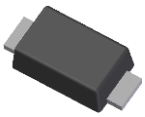
Features and Benefits

- Ideally Suited for Automated Assembly
- Fast Recovery Time for High Efficiency
- Glass Passivated Die Construction
- **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 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/**

Mechanical Data

- Package: PowerDI123
- Package 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 e3
- Weight: 0.01 grams (Approximate)

PowerDI123



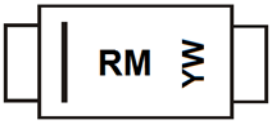
Top View

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
RS1KP1M-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



RM = Product Type Marking Code
YW = Date Code Marking
Y = Year (ex: K = 2023)
W = Week (ex: a = week 27; z represents week 52 and 53)

Date Code Key

Year	2019	……	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	G	……	K	L	M	N	O	P	R	S	T	U

Week	1-26	27-52	53
Code	A-Z	a-z	z

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	800	V
Average Rectified Output Current (see Figure 5)	I_O	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	25	A

Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\Theta JA}$	134	—	°C/W
Thermal Resistance, Junction to Case (Note 5)	$R_{\Theta JC}$	24	—	°C/W
Thermal Resistance, Junction to Soldering Point (Note 6)	$R_{\Theta JS}$	—	6	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	—	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	800	—	—	V	I_R = 10μA
Forward Voltage Drop	V_F	—	—	1.35	V	I_F = 1.0A, T_J = +25°C
Reverse Leakage Current (Note 7)	I_R	— —	— —	10 50	μA	V_R = 800V, T_J = +25°C V_R = 800V, T_J = +100°C
Total Capacitance	C_T	—	6	—	pF	V_R = 4.0V_{DC}, f = 1MHz
Reverse Recovery Time	t_{RR}	—	—	500	ns	I_F = 0.5A, I_R = 1A, I_{RR} = 0.25A

Notes:
5. Device mounted on 1" × 1", FR-4 PCB; 2oz. Cu pad layout as shown on Diodes Incorporated's suggested pad layout document at http://www.diodes.com/package-outlines.html, T_A = +25°C.
6. Theoretical $R_{\Theta JS}$ calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
7. Short duration test pulse used to minimize self-heating effect.

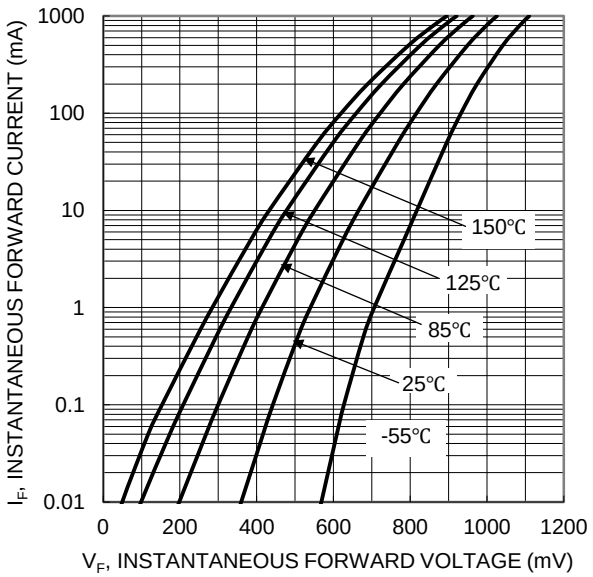


Figure 1 Typical Forward Characteristics

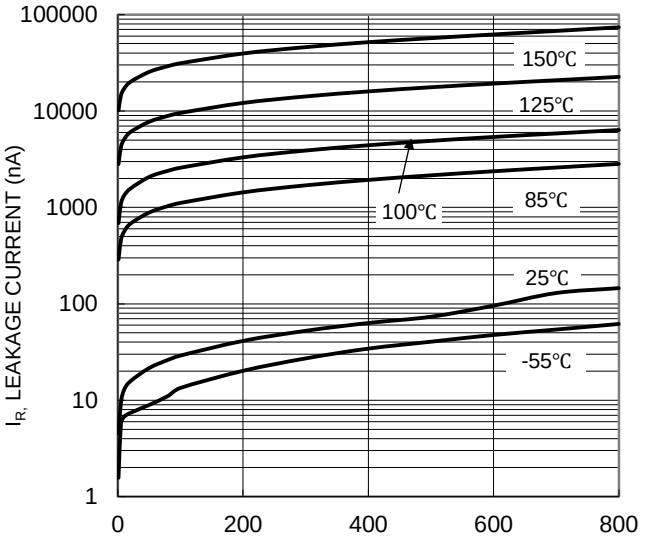


Figure 2 Typical Reverse Characteristics

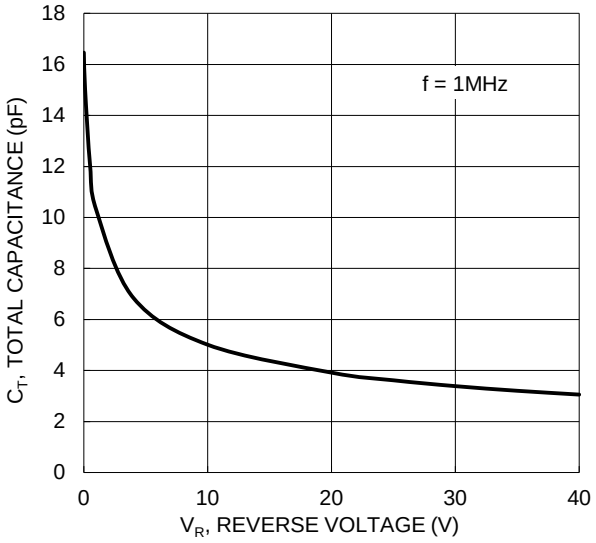


Figure 3 Typical Total Capacitance

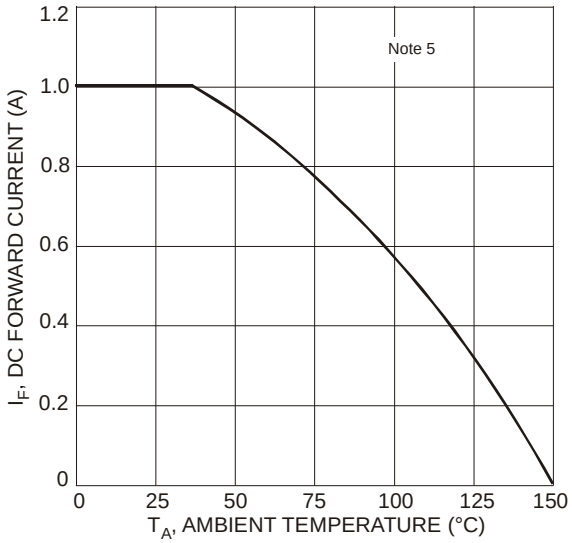


Figure 4 DC Forward Current Derating

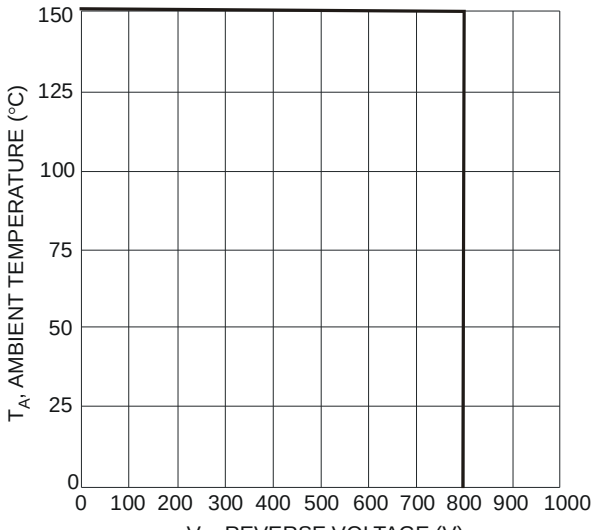


Figure 5 Operating Derating Temperature

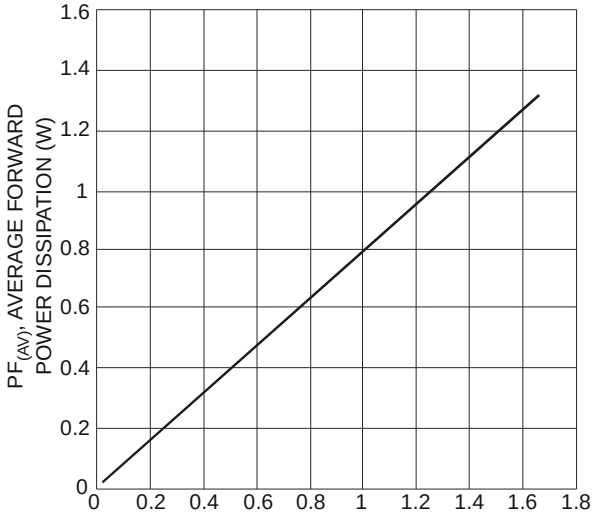
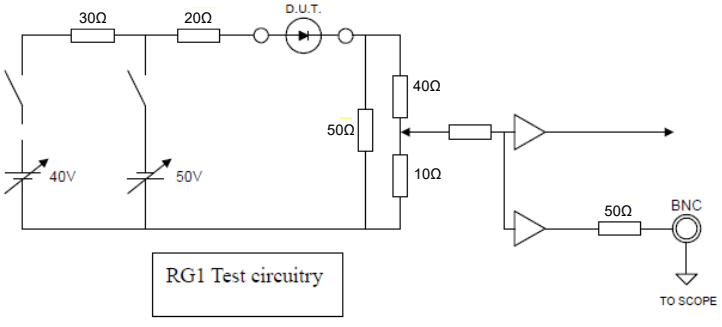


Figure 6 Forward Power Dissipation



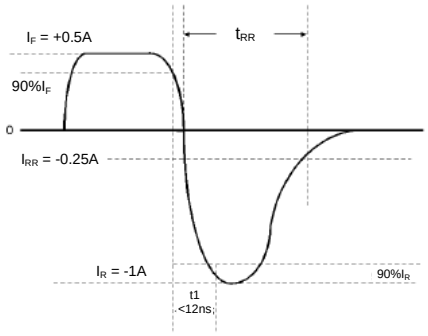
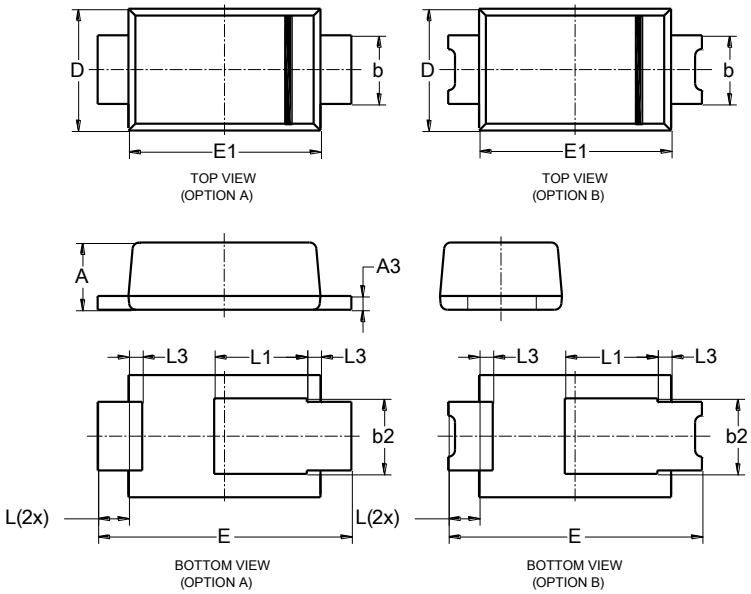


Figure 7 Reverse Recovery Time Characteristics and Test Circuit

Package Outline Dimensions

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

PowerDI123

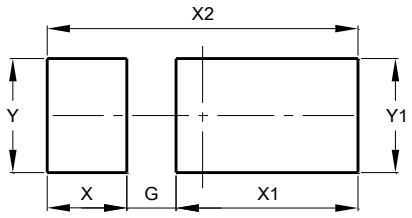


PowerDI123			
Dim	**Min**	**Max**	**Typ**
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

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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