

1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER

Product Summary (@ T_A = +25°C)

V _{RRM} (V)	I _o (A)	V _F Max (V)	I _R Max (μA)
1,000	1	1.3	10

Description and Applications

The DIODES™ RS1MSWF is a rectifier packaged in the SOD123F package. Providing fast recovery time for high efficiency, this device is ideal for use in general rectification applications such as:

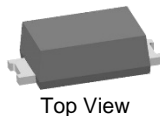
- Switching mode power supply applications
- DC-DC converter applications
- AC-DC adaptors/chargers
- Mobile devices
- LED lightings

Features and Benefits

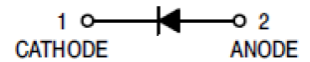
- Glass Passivated Die Construction
- Fast Recovery Time for High Efficiency
- Small Form Factor, Low Profile
- Ideally Suited for Automated Assembly
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.**
<https://www.diodes.com/quality/product-definitions/>
- **An Automotive-Compliant Part is Available Under Separate Datasheet (RS1MSWFQ)**

Mechanical Data

- Package: SOD123F
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 Ⓜ
- Polarity: Cathode Band
- Weight: 0.0016 grams (Approximate)



SOD123F (Type B)



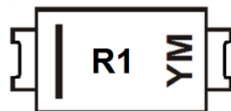
Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
RS1MSWF-7	SOD123F (Type B)	3,000	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

SOD123F (Type B)



R1 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex.: J = 2022)
 M = Month (ex: 9 = September)

Date Code Key

Year	2015	...	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	C	...	J	K	L	M	N	O	P	R	S	T

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}	1,000	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _{RM}		
RMS Reverse Voltage	V _{R(RMS)}	700	V
Average Rectified Output Current @ T _T = +75°C	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	Value	Unit
Typical Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	13	°C/W
Thermal Resistance Junction to Ambient (Note 5)	R _{θJA}	82	°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 Condition
Reverse Breakdown Voltage (Note 6)	V _{(BR)R}	1,000	—	—	V	I _R = 5μA
Forward Voltage Drop	V _F	—	1.1 0.95	1.3 —	V	I _F = 1A, T _J = +25°C I _F = 1A, T _J = +125°C
Leakage Current (Note 6)	I _R	—	0.2 5	10 200	μA	V _R = 1,000V, T _J = +25°C V _R = 1,000V, T _J = +125°C
Reverse Recovery Time	t _{rr}	—	240	500	ns	I _F = 0.5A, I _R = 1.0A, I _{rr} = 0.25A
Total Capacitance	C _T	—	3	—	pF	V _R = 4.0V _{DC} , f = 1MHz

Notes: 5. Device mounted on FR4 PCB with 1x recommended pad layout, 1-inch 2oz, please see <http://www.diodes.com/package-outlines.html> for the latest version.
6. Short duration pulse test used to minimize self-heating effect.

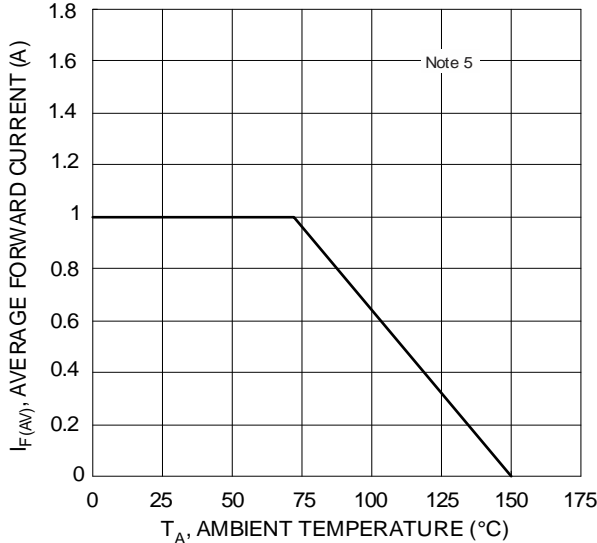


Figure 1 Forward Current Derating Curve

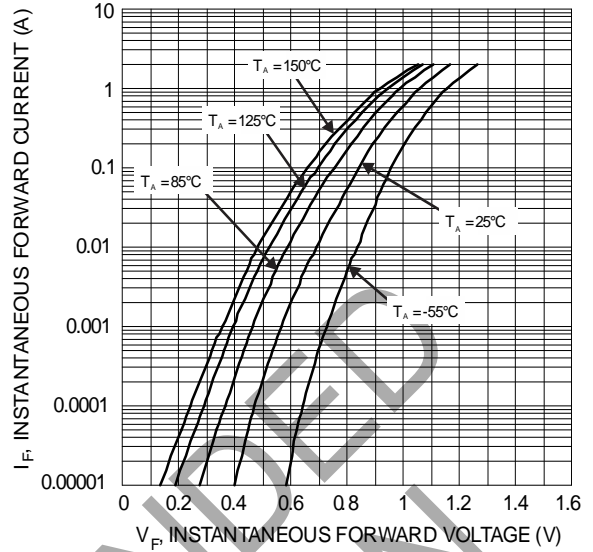


Figure 2 Typical Forward Characteristics

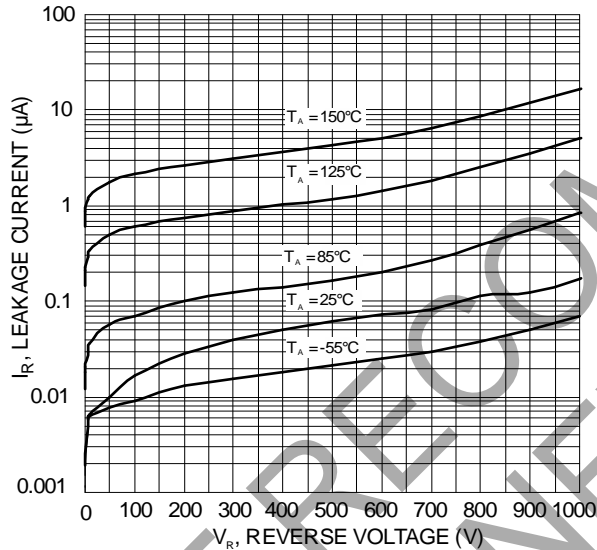


Figure 3 Typical Reverse Characteristics

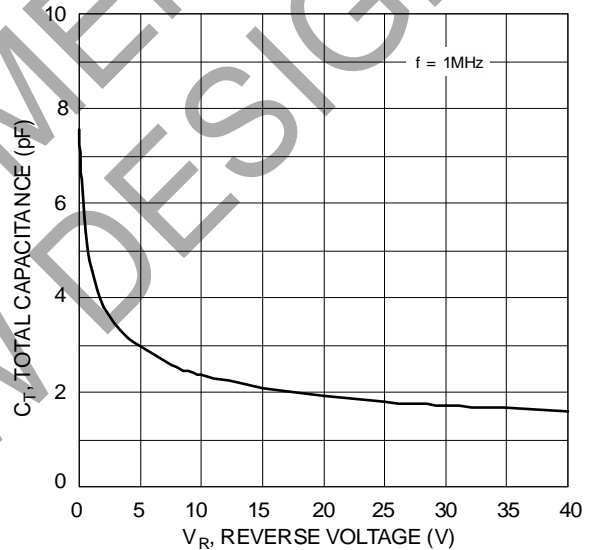
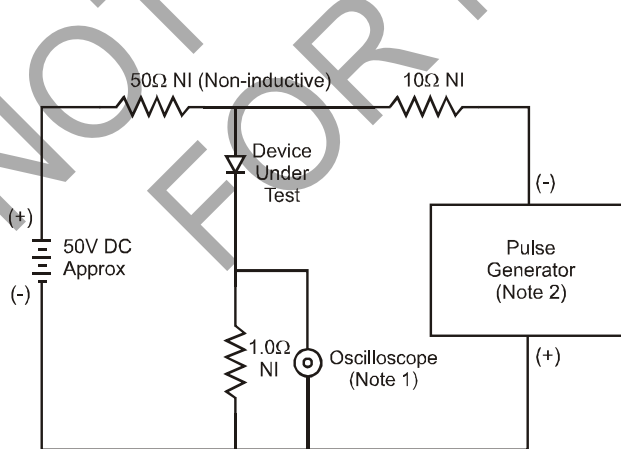
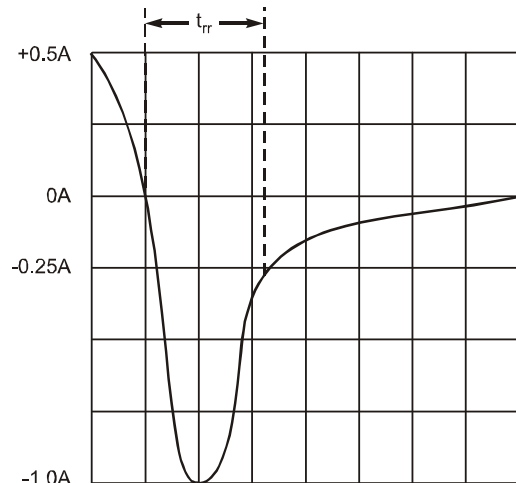


Figure 4 Total Capacitance



- Notes:
1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
 2. Rise Time = 10ns max. Input Impedance = 50Ω.



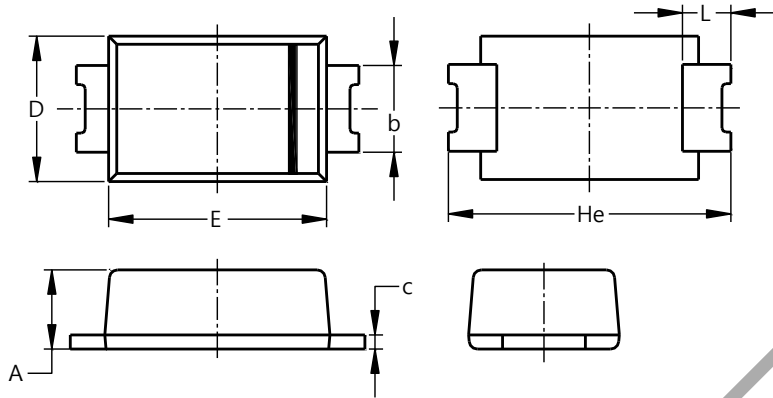
Set time base for 50/100 ns/cm

Figure 5 Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

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

SOD123F (Type B)

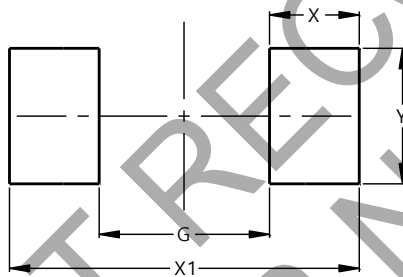


SOD123F (Type B)			
Dim	Min	Max	Typ
A	0.81	1.15	—
b	0.80	1.35	—
c	0.05	0.30	—
D	1.70	1.90	1.80
E	2.60	2.80	2.70
He	3.30	3.70	3.50
L	0.35	0.85	—
All Dimensions in mm			

Suggested Pad Layout

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

SOD123F (Type B)



Dimensions	Value (in mm)
G	1.90
X	1.00
X1	3.90
Y	1.50

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