

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	5

Description and Applications

The RS1MWF is a rectifier packaged in the small form factor, low profile SOD123F (standard). Providing fast recovery time for high efficiency, low reverse leakage current and high surge current capability, this device is ideal for use in general rectification applications such as:

- Switching mode power supplies
- DC-DC converters
- AC-DC adaptors/chargers
- Mobile devices

Features and Benefits

- Glass Passivated Die Construction
- Small Form Factor, Low Profile
- Fast Recovery Time for High Efficiency
- Surge Overload Rating to 30A Peak
- Low Reverse Leakage Current
- High Reverse Breakdown Voltage
- **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: 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 Ⓔ3
- Polarity: Cathode Band
- Weight: 0.018 grams (Approximate)

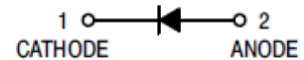
SOD123F (Standard)



Top View



Bottom View



Schematic View

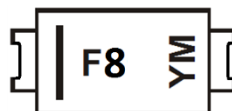
Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
RS1MWF-7	SOD123F (Standard)	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 (Standard)



F8 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: N = 2026)
M = Month (ex: D = December)

Date Code Key

Year	2014	-	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Code	B	-	N	P	R	S	T	U	V	W	X	Y
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 = +88°C)	I _O	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I _{FSM}	30	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	10	°C/W
Typical Thermal Resistance Junction to Ambient (Note 5)	R _{θJA}	65	°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	—	1.0	1.3	V	I _F = 1A, T _J = +25°C
			0.9	1.2		I _F = 1A, T _J = +125°C
			1.1	—		I _F = 2A, T _J = +25°C
			1.0	—		I _F = 2A, T _J = +125°C
Leakage Current (Note 6)	I _R	—	0.2	5.0	μA	V _R = 1,000V, T _J = +25°C
			24	200		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	—	8	—	pF	V _R = 4.0V _{DC} , f = 1MHz

Notes: 5. Device mounted on FR-4 substrate, 1.0" x 1.0", 2oz, single-sided, PC boards with 0.2" x 0.25" copper pad.
6. Short duration pulse test used to minimize self-heating effect.

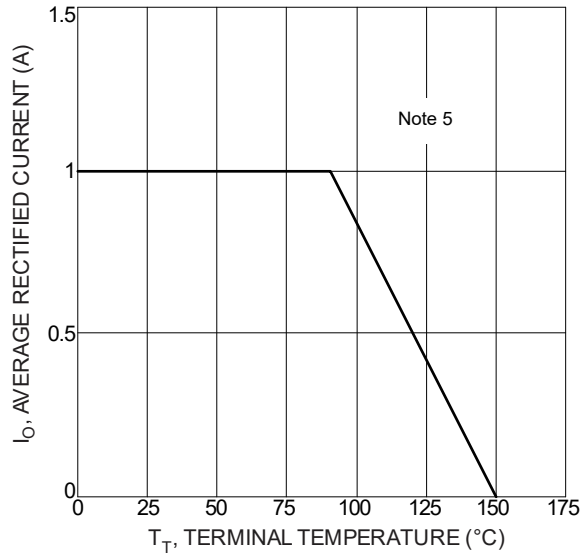


Figure 1 Forward Current Derating Curve

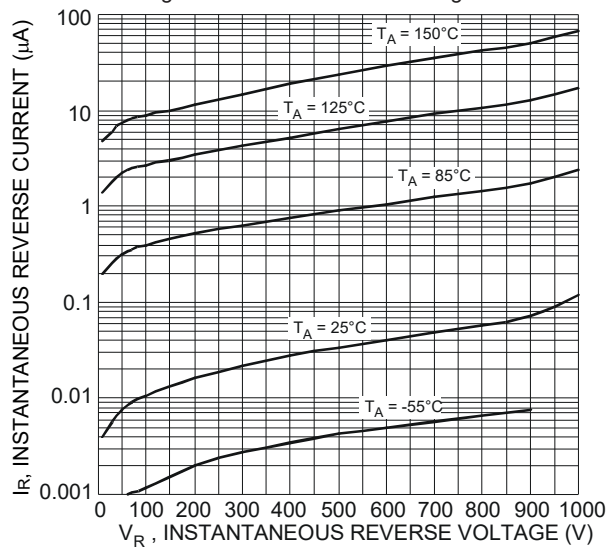


Figure 3 Typical Reverse Characteristics

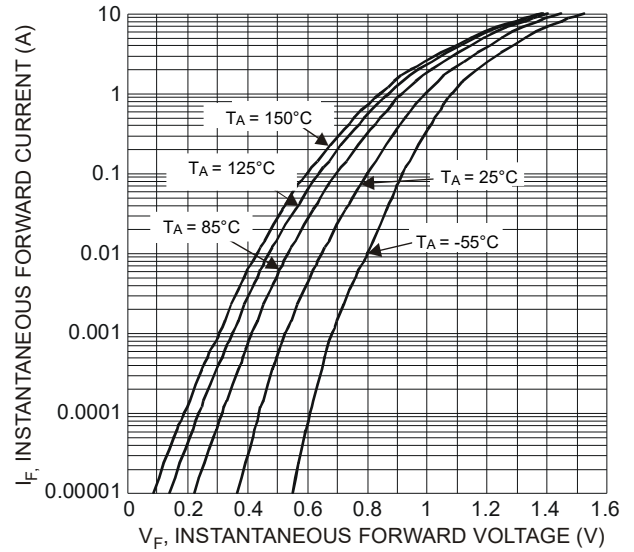


Figure 2 Typical Forward Characteristics

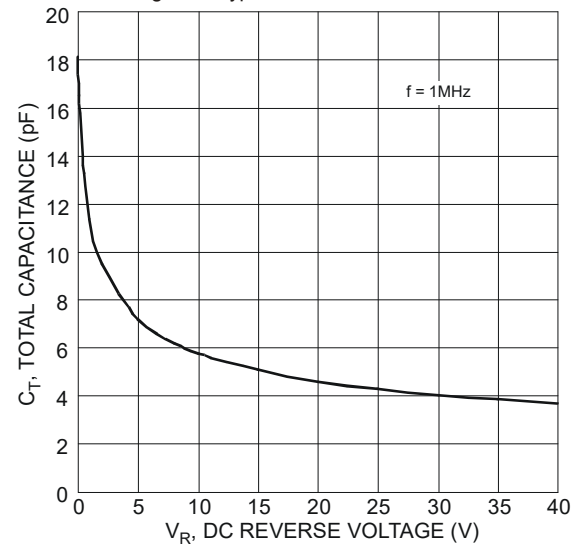
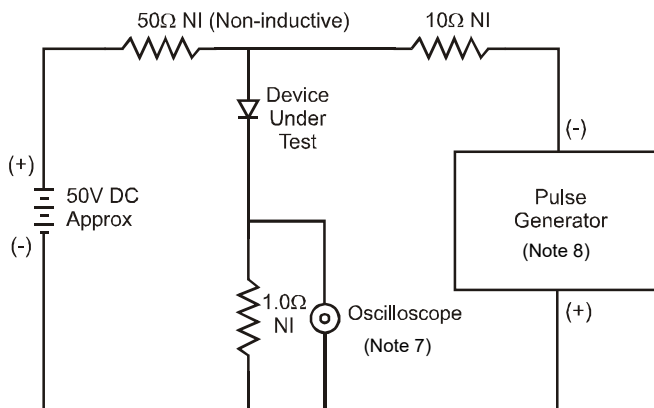
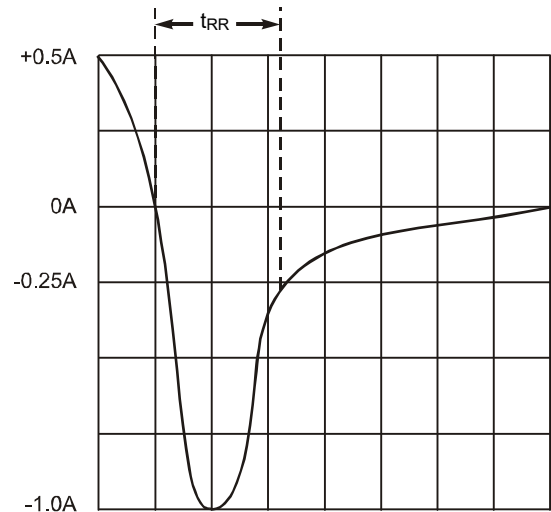


Figure 4 Total Capacitance vs. Reverse Voltage



Notes: 7. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
8. Rise Time = 10ns max. Input Impedance = 50MΩ.



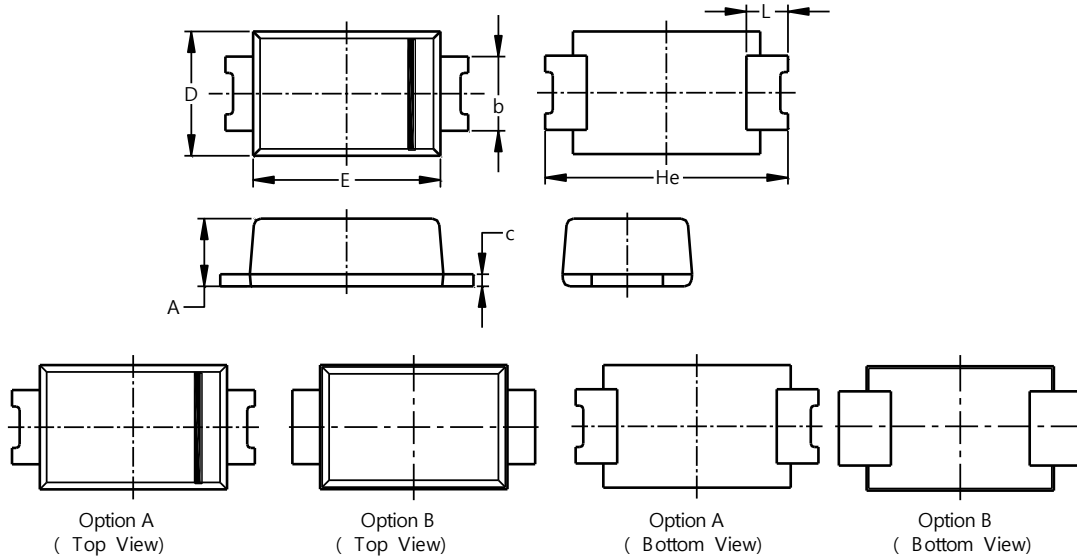
Set Time Base for 50/100 ns/cm

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 (Standard)

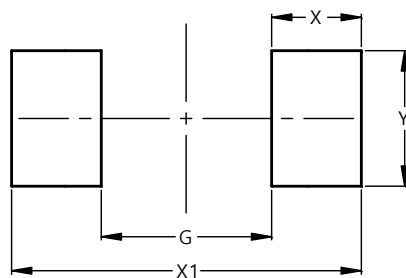


SOD123F (Standard)			
Dim	Min	Max	Typ
A	0.81	1.15	-
b	0.80	1.35	-
c	0.05	0.30	-
D	1.70	1.90	1.80
E	2.60	2.80	2.70
He	3.30	3.70	3.50
L	0.35	0.85	-
All Dimensions in mm			

Suggested Pad Layout

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

SOD123F (Standard)



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

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