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

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)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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

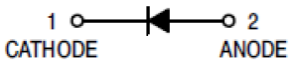
Mechanical Data

- Case: SOD123F
- Case 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 e3
- Polarity: Cathode Band
- Weight: 0.018 grams (Approximate)

SOD123F (Standard)

Top View

Bottom View



Schematic View

Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
RS1MWF-7	Commercial	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.: G = 2019)
M = Month (ex: 9 = September)

Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020	2021
Code	B	C	D	E	F	G	H	I

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)	$R_{\theta JC}$	10	°C/W
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	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.

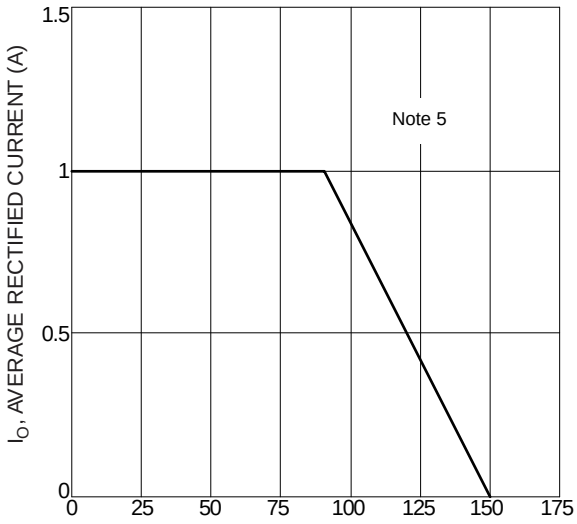


Figure 1 Forward Current Derating Curve

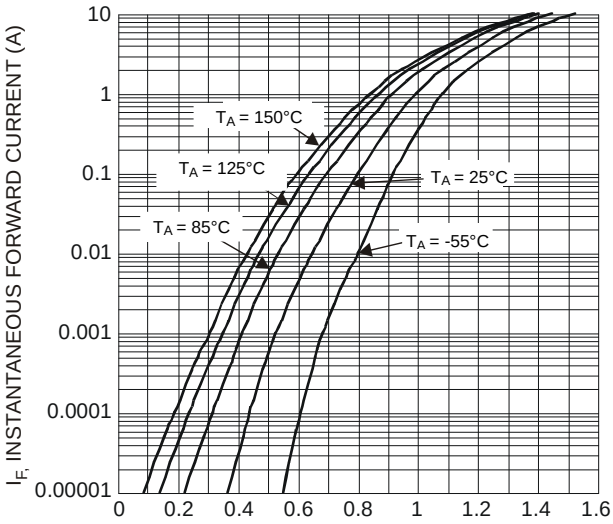


Figure 2 Typical Forward Characteristics

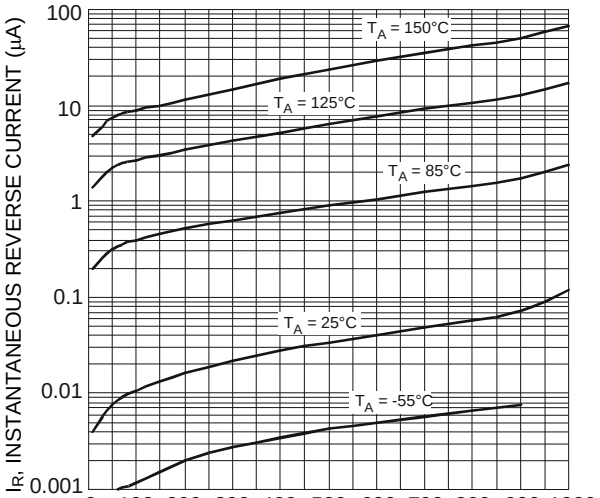


Figure 3 Typical Reverse Characteristics

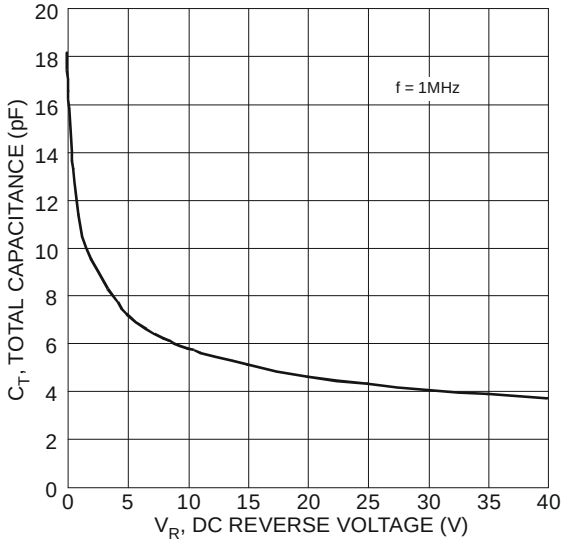
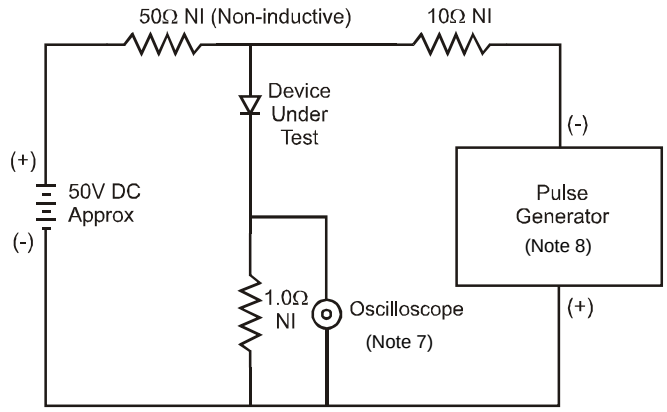
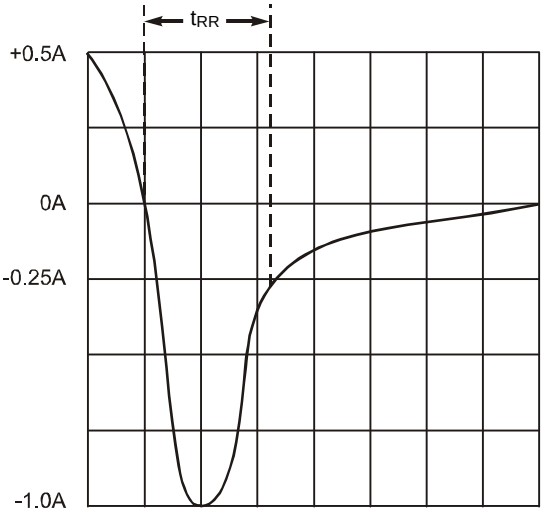


Figure 4 Total Capacitance vs. Reverse Voltage



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



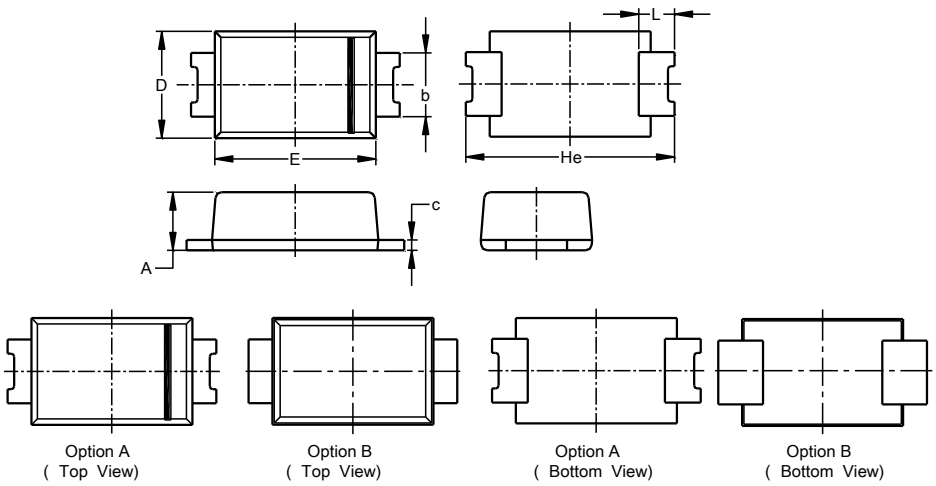
Set Time Base for 50/100ns/cm

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

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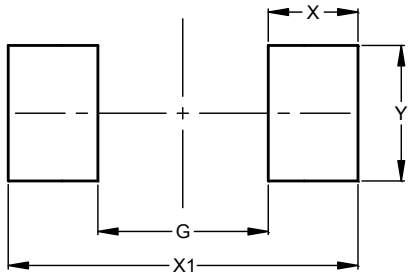
SOD123F (Standard)



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

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