

**1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER**
**Product Summary** (@T<sub>A</sub> = +25°C)

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (µA)	t <sub>rr</sub> Max (ns)
1,000	1	1.3	10	500

**Description and Applications**

The DIODES™ RS1MSWFMQ is a rectifier packaged in the SOD123F (Type B) package. Providing fast recovery time for high efficiency, this device is ideal for applications such as:

- Reverse protections
- Switching
- Blocking

**Features and Benefits**

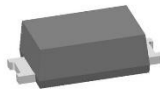
- Glass Passivated Die Construction
- Fast Recovery Time for High Efficiency
- Small Form Factor, Low Profile
- Ideally Suited for Automated Assembly
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The RS1MSWFMQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

<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)

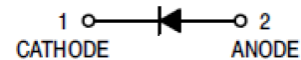
SOD123F (Type B)



Top View



Bottom View



Schematic View

**Ordering Information** (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
RS1MSWFMQ-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)



R7 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: J = 2022)  
 M = Month (ex: 8 = August)

## Date Code Key

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	J	K	L	M	N	O	P	R	S	T	U	V

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<sub>A</sub> = +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 <sub>RRM</sub>	1,000	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>RM</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	700	V
Average Rectified Output Current @T <sub>A</sub> = +75°C	I <sub>O</sub>	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	25	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Case (Note 5)	R <sub>θJC</sub>	13	°C/W
Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	82	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	V <sub>(BR)R</sub>	1,000	—	—	V	I <sub>R</sub> = 5μA
Forward Voltage Drop	V <sub>F</sub>	—	1.1 0.98	1.3	V	I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C I <sub>F</sub> = 1A, T <sub>J</sub> = +125°C
Leakage Current (Note 6)	I <sub>R</sub>	—	0.3 19	10 200	μA	V <sub>R</sub> = 1,000V, T <sub>J</sub> = +25°C V <sub>R</sub> = 1,000V, T <sub>J</sub> = +125°C
Reverse Recovery Time	t <sub>rr</sub>	—	148	500	ns	I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A, I <sub>rr</sub> = 0.25A
Total Capacitance	C <sub>T</sub>	—	4.7	—	pF	V <sub>R</sub> = 4.0V <sub>DC</sub> , f = 1MHz

Notes: 5. Device mounted on FR4 PCB with 1x recommended pad layout, 1inch 2oz, as shown on Diodes Incorporated's website at <http://www.diodes.com/package-outlines.html>.  
6. Short duration pulse test used to minimize self-heating effect.

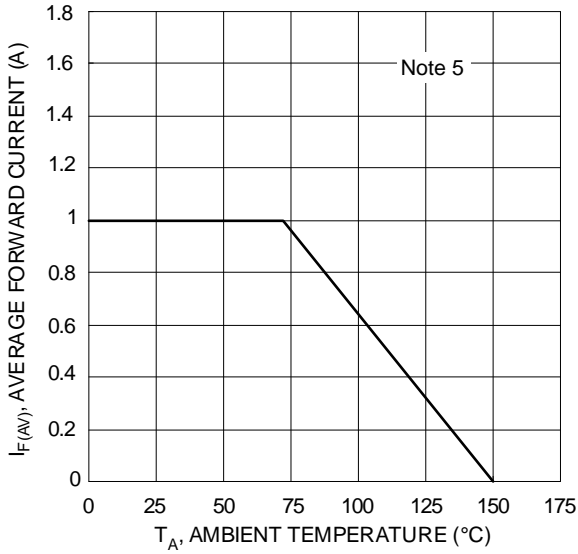


Figure 1. Forward Current Derating Curve

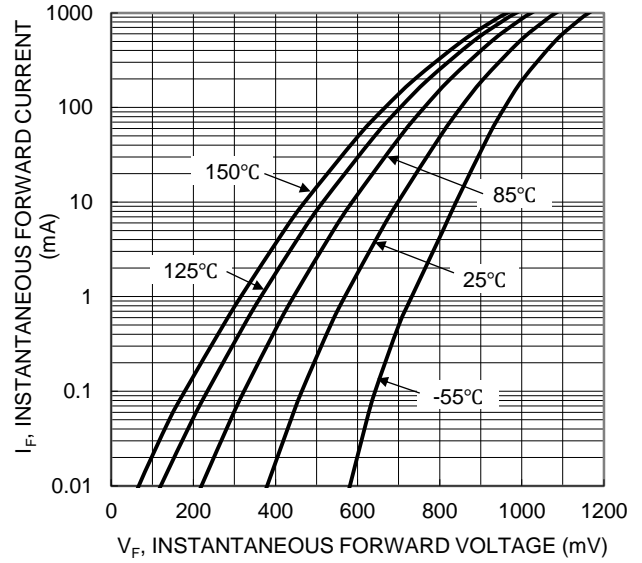


Figure 2. Typical Forward Characteristics

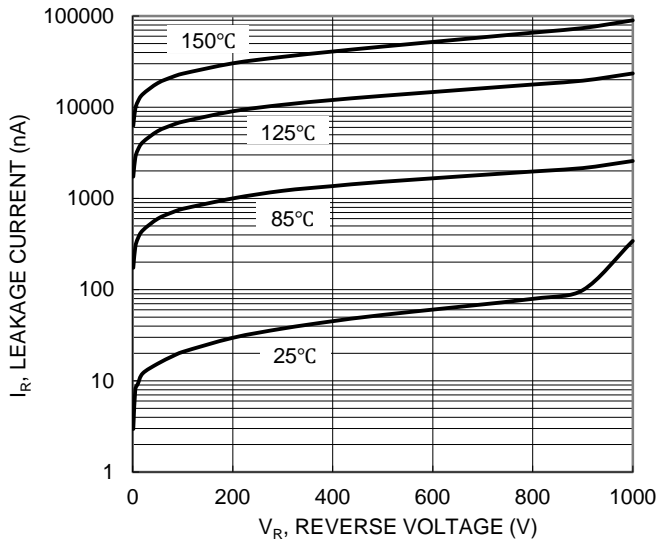


Figure 3. Typical Reverse Characteristics

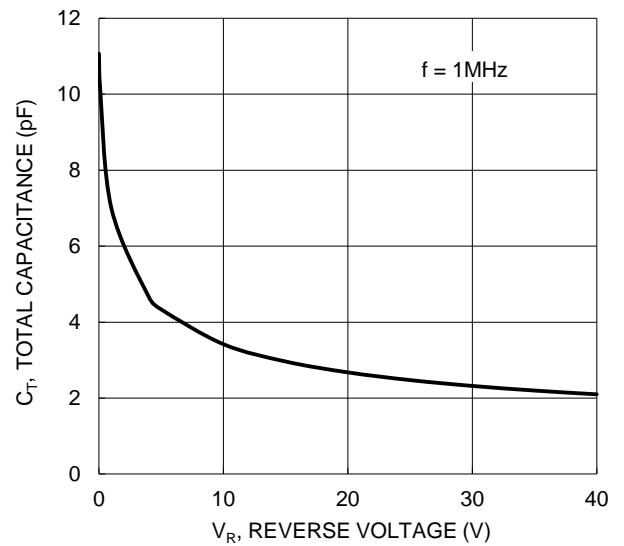
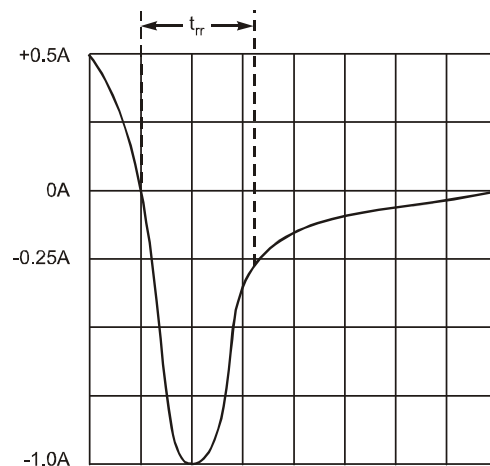
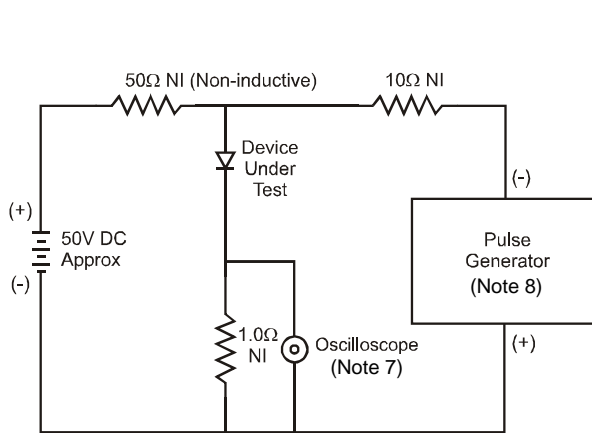


Figure 4. Typical Total Capacitance



Set time base for 50/100 ns/cm

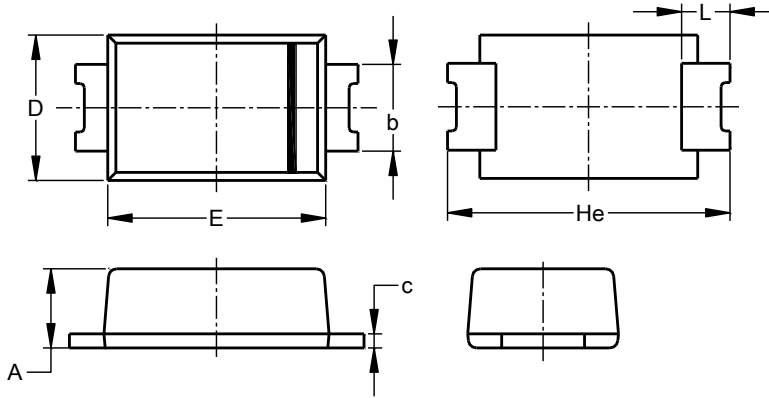
Figure 5. Reverse Recovery Time Characteristic and Test Circuit

Notes: 7. Rise time = 7.0ns max. Input impedance = 1.0MΩ, 22pF.  
8. Rise time = 10ns max. Input impedance = 50Ω.

**Package Outline Dimensions**

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

**SOD123F (Type B)**

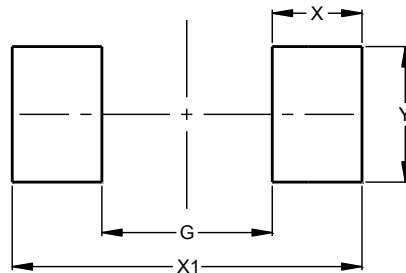


SOD123F (Type B)			
Dim	Min	Max	Typ
A	0.81	1.15	--
b	0.80	1.35	--
c	0.05	0.30	--
D	1.70	1.90	1.80
E	2.60	2.80	2.70
He	3.30	3.70	3.50
L	0.35	0.85	--
All Dimensions in mm			

**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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