

**Product Summary (@ T<sub>A</sub> = +25°C)**

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F(MAX)</sub> (V)	I <sub>R(MAX)</sub> (μA)
600	1	1.7	5

**Description**

The SF1JWF-7 is a rectifier packaged in the SOD123F package and is suited as a boost diode in power factor correction circuitry. For use in secondary rectification and freewheeling for super-fast switching speed AC-AC and DC-DC converters in high-temperature conditions for consumer applications.

**Applications**

- Flat Panel Display
- Switching Power Supplies/Chargers
- LED Lighting
- Freewheeling Diode

**Features and Benefits**

- Soft, Super-Fast Switching Capability for High Efficiency
- Low Leakage Current
- Glass Passivated for High Reliability
- Small Form Factor Package
- High Reverse Breakdown Voltage V<sub>RRM</sub>
- Low Forward Voltage, Low Power Loss
- **Lead-Free Finish & RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

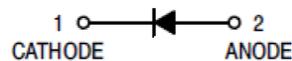
**Mechanical Data**

- 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
- Polarity: Cathode Band
- Weight: 0.016 grams (Approximate)

SOD123F



Top View



Schematic View

**Ordering Information (Note 4)**

Part Number	Compliance	Case	Packaging
SF1JWF-7	Commercial	SOD123F	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 <http://www.diodes.com/products/packages.html>.

**Marking Information**

SOD123F



E6 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: E = 2017)  
 M = Month (ex: 9 = September)

## Date Code Key

Year	2017	2018	2019	2020	2021	2022	2023	2024
Code	E	F	G	H	I	J	K	L

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 capacitance load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	600	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>R</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	420	V
Average Rectified Output Current @T <sub>A</sub> = +25°C	I <sub>O</sub>	1	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	30	A

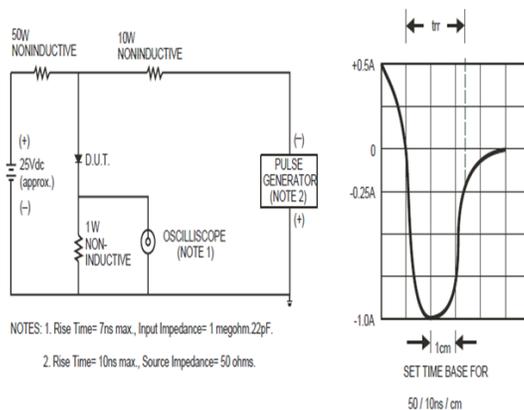
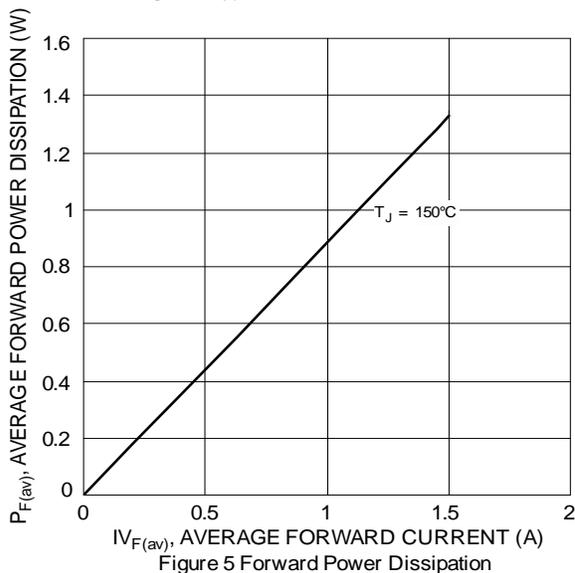
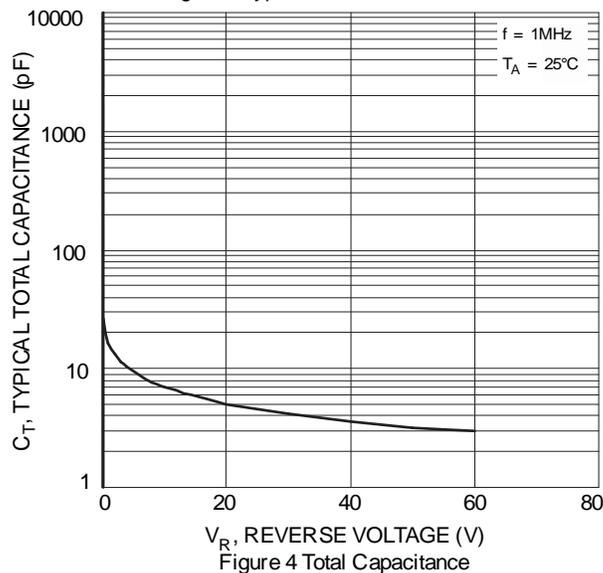
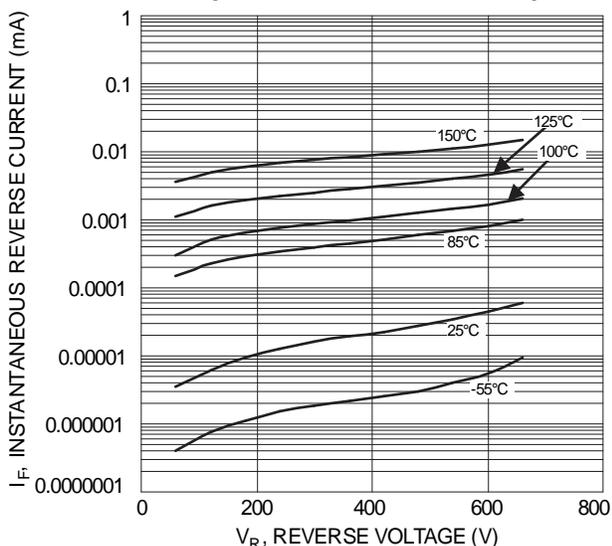
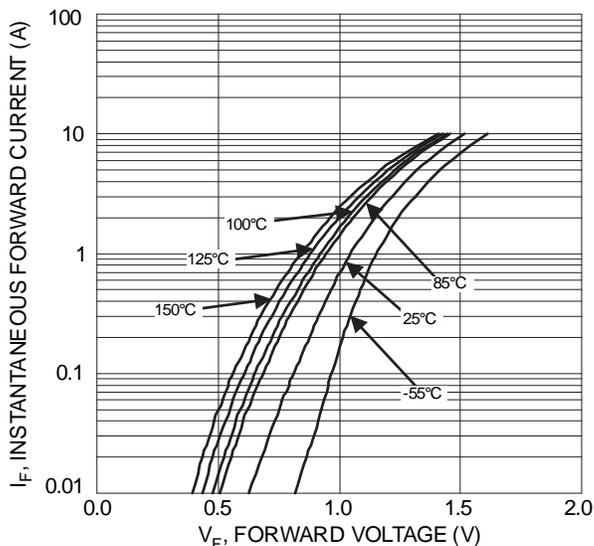
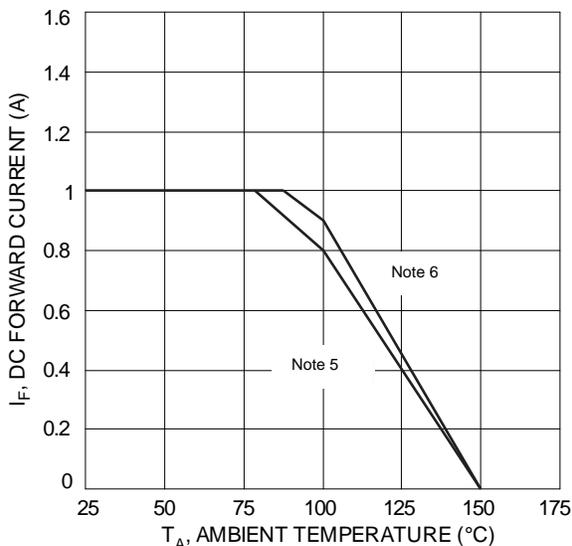
**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case	R <sub>θJC</sub>	58	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	95	°C/W
Power Dissipation (Note 6)	P <sub>D</sub>	1.7	W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 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 7)	V <sub>(BR)R</sub>	600	—	—	V	I <sub>R</sub> = 10μA
Forward Voltage	V <sub>F</sub>	—	1.4	1.7	V	I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C I <sub>F</sub> = 1A, T <sub>J</sub> = +125°C
Reverse Leakage Current (Note 7)	I <sub>R</sub>	—	0.3	5	μA	V <sub>R</sub> = 600V, T <sub>J</sub> = +25°C
		—	0.2	—	mA	V <sub>R</sub> = 600V, T <sub>J</sub> = +125°C
Reverse Recovery Time	t <sub>RR</sub>	—	30	35	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>	—	7	—	pF	V <sub>R</sub> = 4.0V <sub>DC</sub> , f = 1MHz

- Notes:
- Device mounted on FR-4 substrate, 0.4" x 0.5", 2oz, single-sided, PCBs with 0.2" x 0.25" copper pad.
  - Device mounted on FR-4 substrate, 25.4mm x 25.4mm, 2oz, single-sided, PCBs with 2.1mm x 2.1mm copper pad.
  - Short duration pulse test used to minimize self-heating effect.



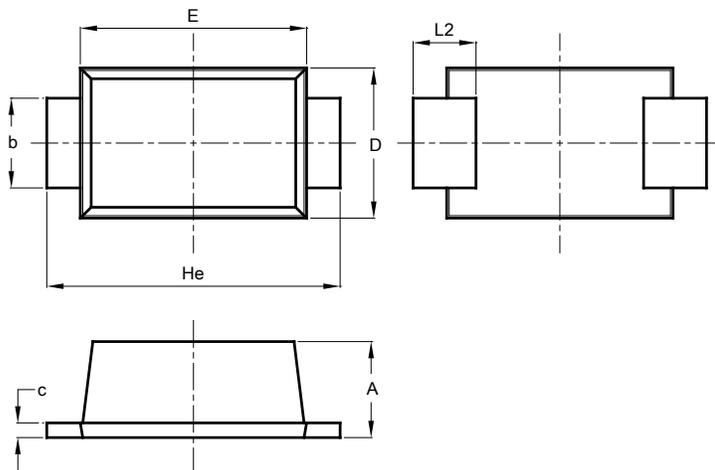
NOTES: 1. Rise Time= 7ns max., Input Impedance= 1 megohm, 22pF.  
2. Rise Time= 10ns max., Source Impedance= 50 ohms.

Fig 6. Reverse Recovery Time Characteristic and Test Circuit

## Package Outline Dimensions

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

SOD123F



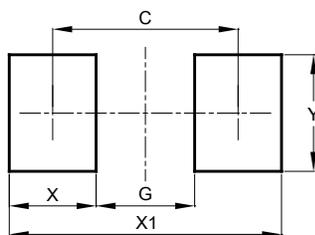
SOD123F			
Dim	Min	Max	Typ
A	0.81	1.15	—
b	0.80	1.05	—
c	0.05	0.30	—
D	1.70	1.90	1.80
E	2.60	2.80	2.70
He	3.30	3.70	3.50
L2	0.35	0.85	—
All Dimensions in mm			

NEW PRODUCT

## Suggested Pad Layout

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

SOD123F



Dimensions	Value (in mm)
C	2.86
G	1.52
X	1.34
X1	4.20
Y	1.80

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