

1.0A SURFACE MOUNT GLASS PASSIVATED RECTIFIER
Product Summary (@ T_A = +25°C)

| V _{RRM} (V) | I _o (A) | V _{F(MAX)} (V) | I _{R(MAX)} (μA) |
|----------------------|--------------------|-------------------------|--------------------------|
| 1000 | 1 | 1.1 | 5 |

Features and Benefits

- Glass Passivated Die Construction
- Small Form Factor, Low Profile
- Surge Overload Rating to 30A Peak
- Low Reverse Leakage Current
- High Reverse Breakage Voltage
- **Lead-Free Finish & RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Description and Applications

The S1MWF is a rectifier packaged in the small form factor, low profile SOD123F (Type B) package. Providing high reverse breakage voltage, low reverse leakage current, and high surge current capability for standard rectification, 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
- LED Lighting

Mechanical Data

- Case: SOD123F (Type B)
- 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)

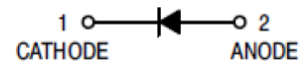
SOD123F (Type B)



Top View



Bottom View



Schematic View

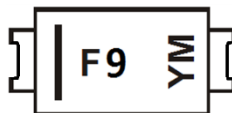
Ordering Information (Note 4)

| Part Number | Compliance | Case | Packaging |
|-------------|------------|------------------|-------------------|
| S1MWF-7 | Commercial | SOD123F (Type B) | 3,000/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html 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 (Type B)



F9 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: D = 2016)
 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 = +100°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} | 8 | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 5) | R _{θJA} | 56 | °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 | — | 0.95 0.85 1.0 0.9 | 1.1 1.0 — — | V | I _F = 1A, T _J = +25°C I _F = 1A, T _J = +125°C I _F = 2A, T _J = +25°C I _F = 2A, T _J = +125°C |
| Leakage Current (Note 6) | I _R | — | 0.15 6 | 5.0 100 | μA | V _R = 1,000V, T _J = +25°C V _R = 1,000V, T _J = +125°C |
| Reverse Recovery Time | t _{RR} | — | 1.5 | 3.0 | μs | I _F = 0.5A, I _R = 1.0A, I _{RR} = 0.25A |
| Total Capacitance | C _T | — | 7 | — | 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.

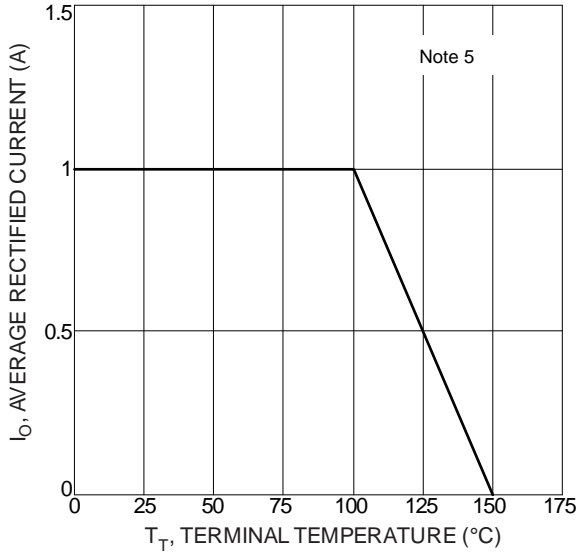


Figure 1 Forward Current Derating Curve

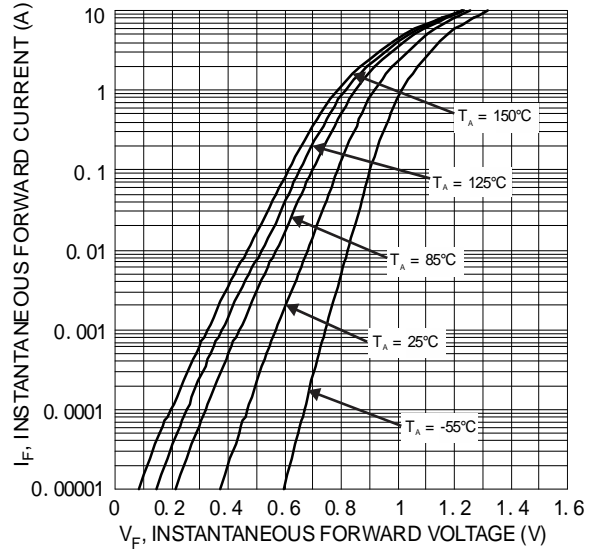


Figure 2 Typical Forward Characteristics

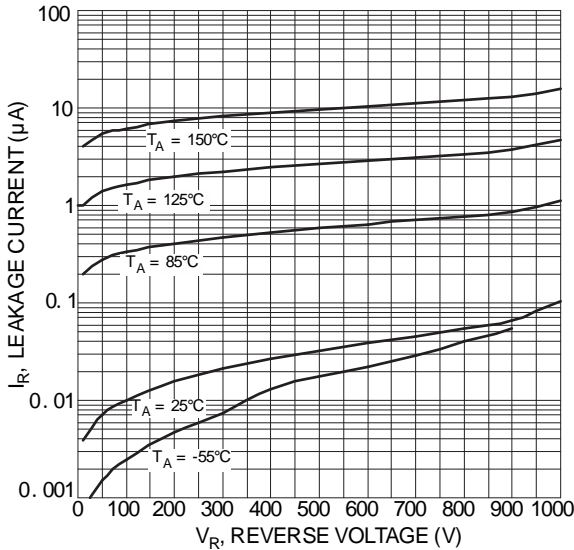


Figure 3 Typical Reverse Characteristics

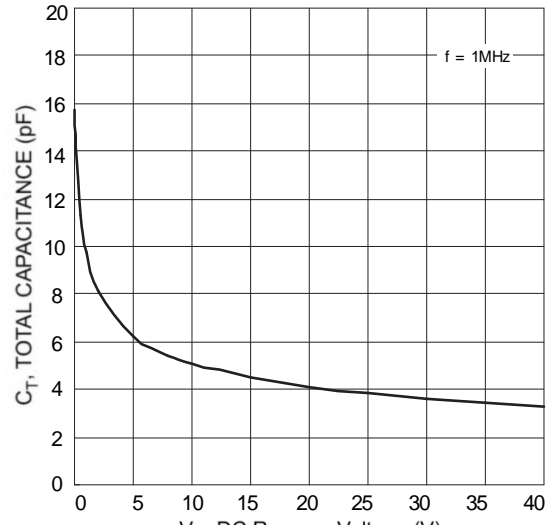
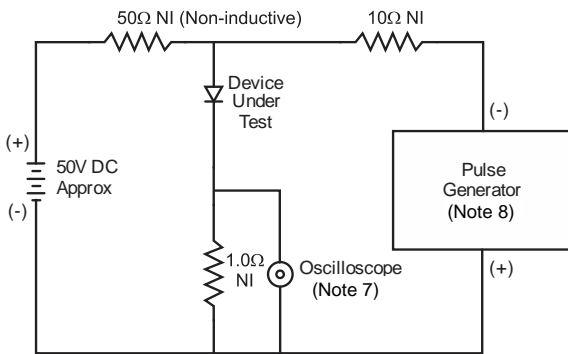
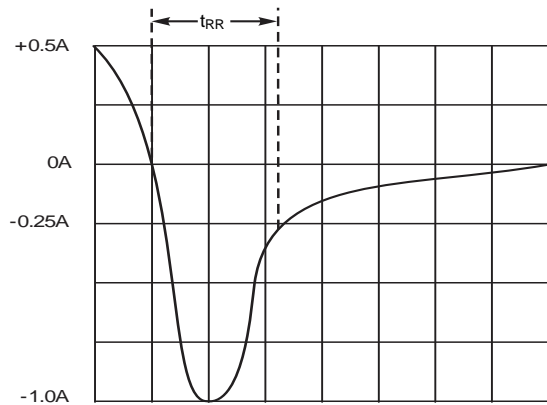


Figure 4 Total Capacitance vs. Reverse Voltage



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

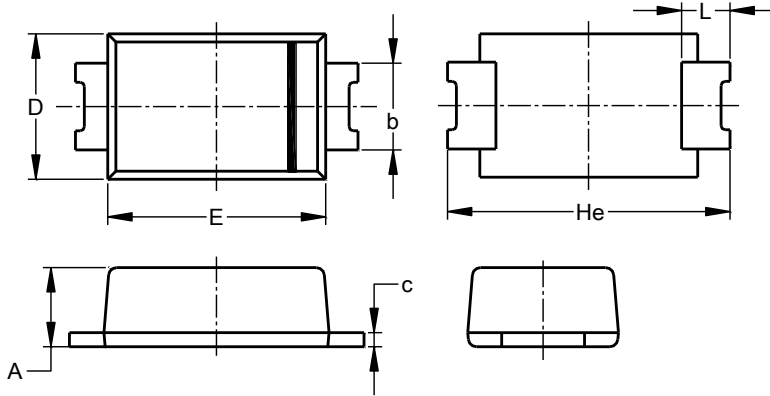


Set time base for 50/100 ns/cm

Figure 5 Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

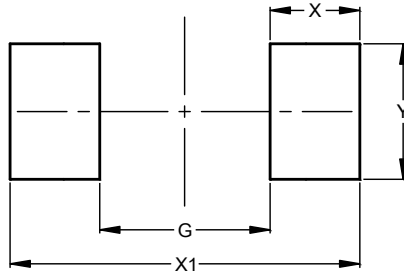
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



| SOD123F (Type B) | | | |
|-----------------------------|------|------|------|
| 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.



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

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