

# 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(MAX)</sub> (V) | I <sub>R(MAX)</sub> (μA) |
|----------------------|--------------------|-------------------------|--------------------------|
| 1,000                | 1                  | 1.3                     | 5                        |

## Description and Applications

The RS1MWF is a rectifier packaged in the small form factor, low profile SOD123F package. 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:

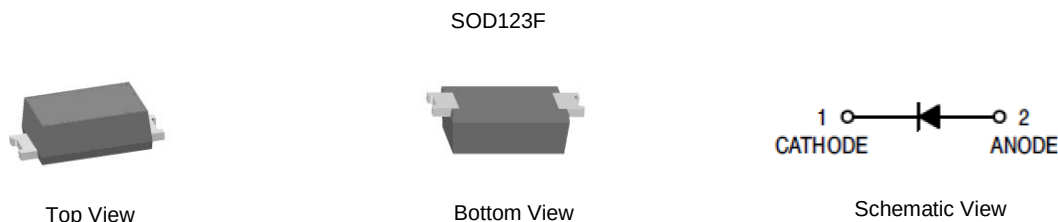
- Switching Mode Power Supplies
- DC-DC Converters
- AC-DC Adaptors/Chargers
- Mobile Devices

## 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)**

## 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: 0.0016 grams (Approximate)

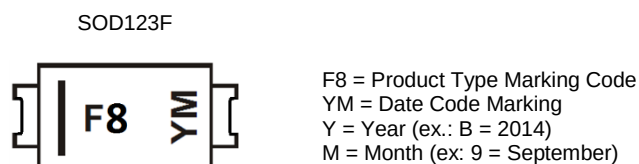


## Ordering Information (Note 4)

| Part Number | Compliance | Case    | Packaging         |
|-------------|------------|---------|-------------------|
| RS1MWF-7    | Commercial | SOD123F | 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](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



### 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<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<br>Working Peak Reverse Voltage<br>DC Blocking Voltage              | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>RM</sub> | 1,000 | V    |
| RMS Reverse Voltage                                                                                 | V <sub>R(RMS)</sub>                                     | 700   | V    |
| Average Rectified Output Current @ T <sub>T</sub> = +88°C                                           | I <sub>O</sub>                                          | 1.0   | A    |
| Non-Repetitive Peak Forward Surge Current<br>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 (Note 5)   | R <sub>θJC</sub>                  | 10          | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 65          | °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>     | —     | 1.0<br>0.9<br>1.1<br>1.0 | 1.3<br>1.2<br>—<br>— | V    | I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C<br>I <sub>F</sub> = 1A, T <sub>J</sub> = +125°C<br>I <sub>F</sub> = 2A, T <sub>J</sub> = +25°C<br>I <sub>F</sub> = 2A, T <sub>J</sub> = +125°C |
| Leakage Current (Note 6)           | I <sub>R</sub>     | —     | 0.2<br>24                | 5.0<br>200           | μA   | V <sub>R</sub> = 1,000V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 1,000V, T <sub>J</sub> = +125°C                                                                                        |
| Reverse Recovery Time              | t <sub>rr</sub>    | —     | 240                      | 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>     | —     | 8                        | —                    | pF   | V <sub>R</sub> = 4.0V <sub>DC</sub> , 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.

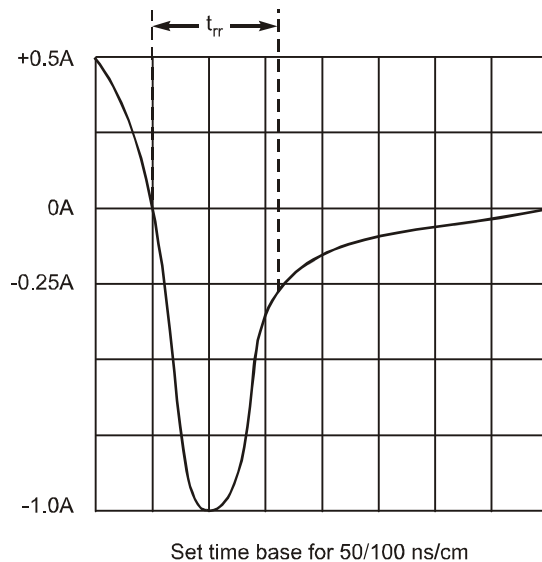
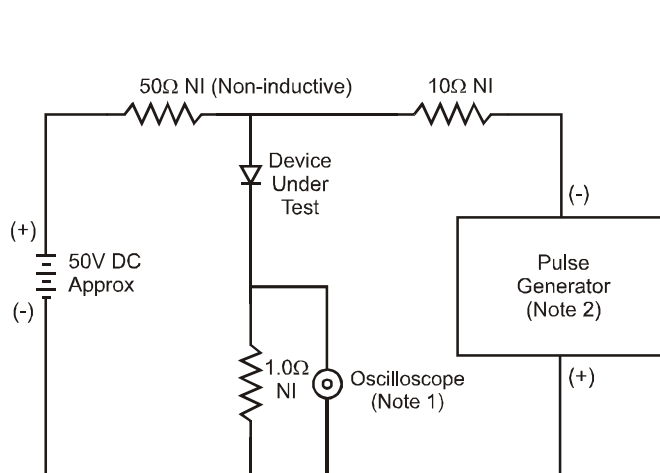
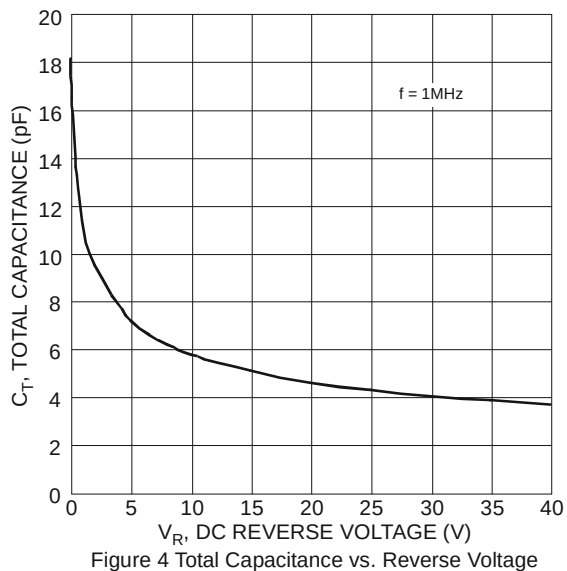
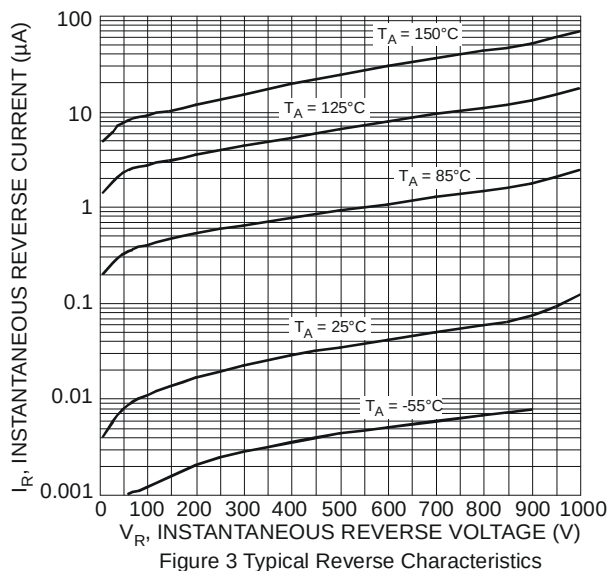
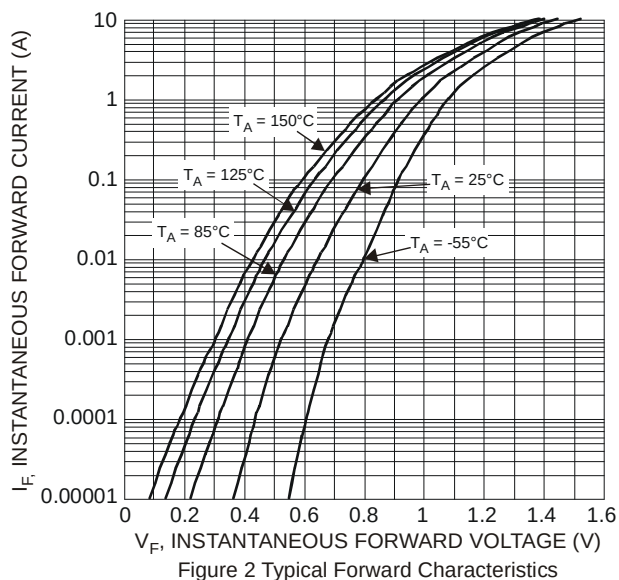
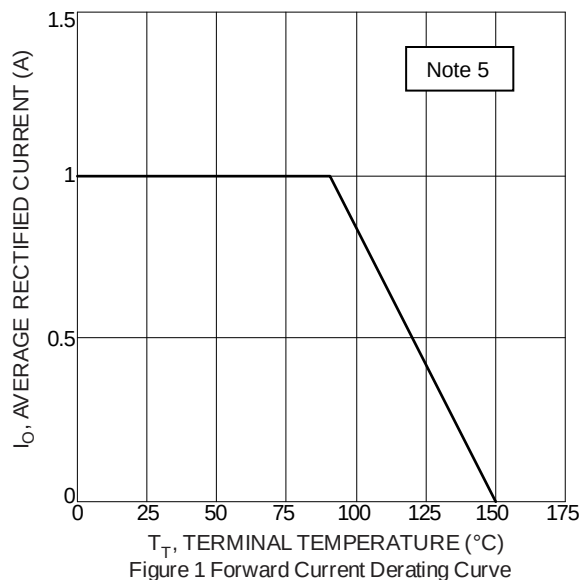
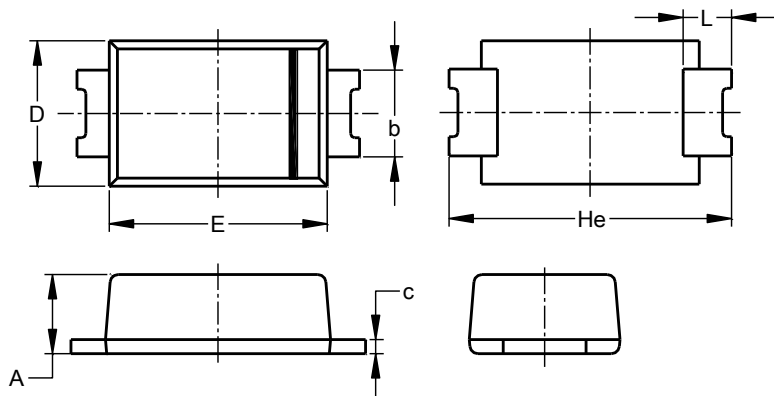


Figure 5 Reverse Recovery Time Characteristic and Test Circuit

## Package Outline Dimensions

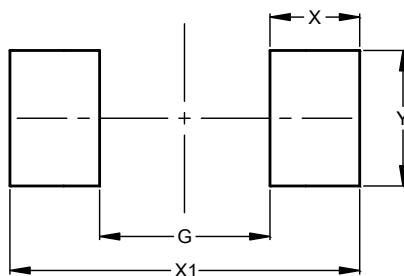
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| 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 AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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

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