

**1.0A SURFACE MOUNT GLASS PASSIVATED 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) |
|----------------------|--------------------|------------------------|-------------------------|
| 1,000                | 1                  | 1.1                    | 10                      |

**Features and Benefits**

- Glass Passivated Die Construction
- Ideally Suited for Automated Assembly
- Small Form Factor, Low Profile
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP capable (Note 4)**

**Description and Applications**

The S1MSWFQ is a rectifier packaged in the SOD123F package. Providing high reverse breakdown voltage and high current capability for standard rectification, this device is ideal for use in applications such as:

- Reverse Protection
- Blocking

**Mechanical Data**

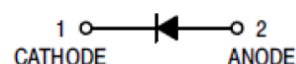
- Case: SOD123F
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 Ⓔ
- Polarity: Cathode Band
- Weight: 0.0016 grams (Approximate)

**SOD123F**


Top View



Bottom View

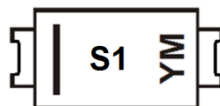


Schematic View

**Ordering Information (Note 5)**

| Part Number | Compliance | Case    | Packaging         |
|-------------|------------|---------|-------------------|
| S1MSWFQ-7   | Automotive | 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**


S1 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex.: C = 2015)  
 M = Month (ex: 9 = September)

**Date Code Key**

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|------|------|------|------|------|------|------|------|
| Code | C    | D    | E    | F    | G    | H    | I    | J    |

| 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<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>    | 25    | A    |

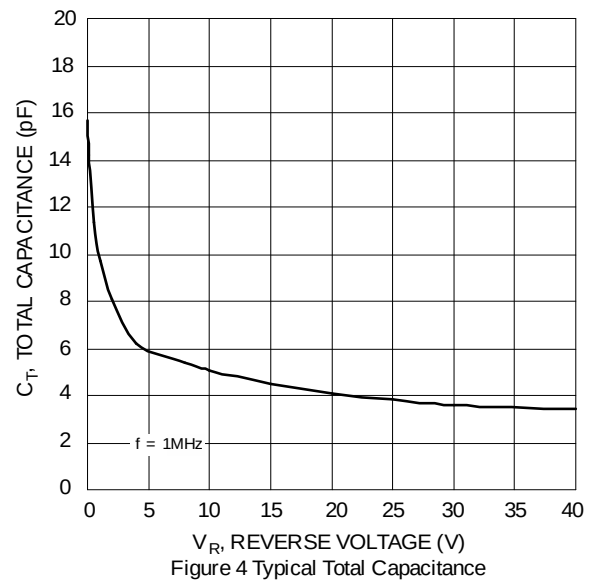
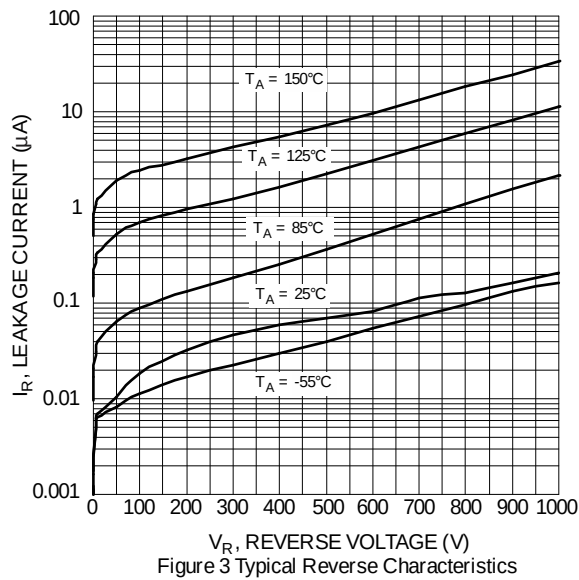
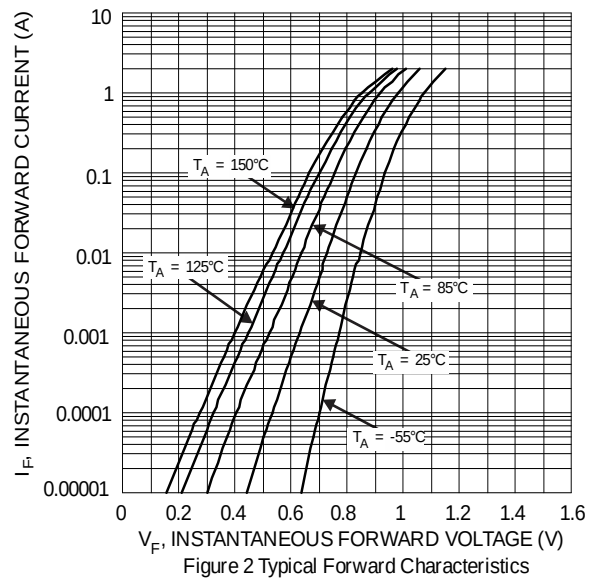
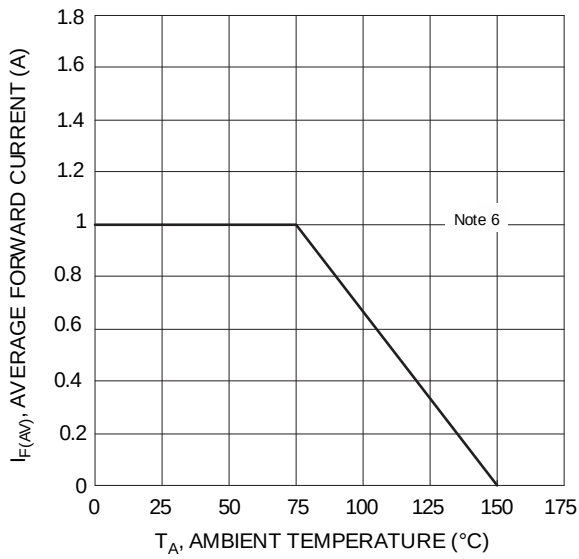
## Thermal Characteristics

| Characteristic                                        | Symbol                            | Value       | Unit |
|-------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance, Junction to Case (Note 6) | R <sub>θJC</sub>                  | 13          | °C/W |
| Thermal Resistance Junction to Ambient (Note 6)       | R <sub>θJA</sub>                  | 78          | °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 7) | V <sub>(BR)R</sub> | 1,000 | —            | —         | V    | I <sub>R</sub> = 5μA                                                                                |
| Forward Voltage Drop               | V <sub>F</sub>     | —     | 0.98<br>0.88 | 1.1<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         |
| Leakage Current (Note 7)           | I <sub>R</sub>     | —     | 0.2<br>11    | 10<br>100 | 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>    | —     | 1.0          | —         | μs   | I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A, I <sub>RR</sub> = 0.25A                               |
| Total Capacitance                  | C <sub>T</sub>     | —     | 6            | —         | pF   | V <sub>R</sub> = 4.0V <sub>DC</sub> , f = 1MHz                                                      |

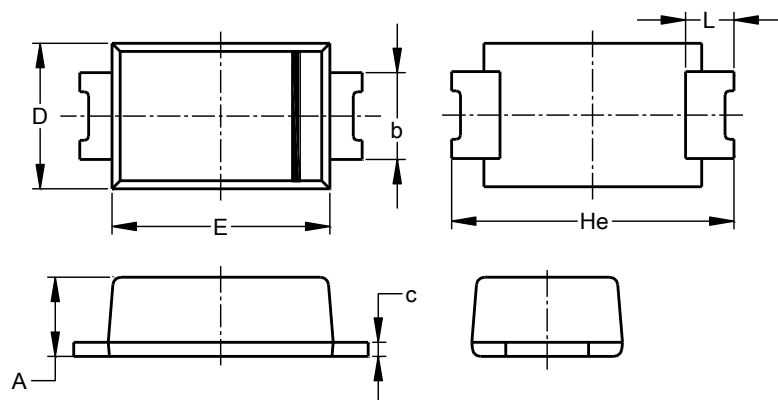
Notes: 6. Device mounted on FR4 PC board, 1 inch x 1 inch, 2oz. copper traces with 1x recommended pad layout, please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.  
7. Short duration pulse test used to minimize self-heating effect.



## Package Outline Dimensions

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

**SOD123F (Type B)**

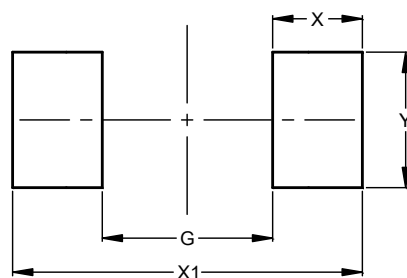


| SOD123F (Type B)     |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.81 | 1.15 | —    |
| b                    | 0.80 | 1.35 | —    |
| c                    | 0.05 | 0.30 | —    |
| D                    | 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 AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> 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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