

1.0A SURFACE MOUNT STANDARD RECOVERY RECTIFIER

Product Summary (@T_A = +25°C)

| V _{RRM} (V) | I _O (A) | V _F Max (V) | I _R Max (μA) |
|----------------------|--------------------|------------------------|-------------------------|
| 1,000 | 1 | 1.1 | 10 |

Description and Applications

The DIODES™ S1MSWFMQ is a rectifier packaged in the SOD123F (Type B) package. Providing high reverse breakdown voltage and high current capability for standard rectification, this device is ideal for use in applications such as:

- Reverse protections
- Blocking

Features and Benefits

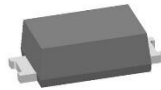
- Glass Passivated Die Construction
- Ideally Suited for Automated Assembly
- Small Form Factor, Low Profile
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The S1MSWFMQ is suitable for automotive applications requiring specific change 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 Ⓢ
- Polarity: Cathode Band
- Weight: 0.0016 grams (Approximate)

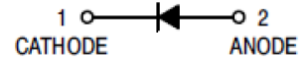
SOD123F (Type B)



Top View



Bottom View



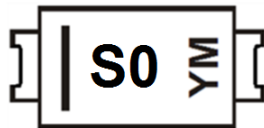
Schematic View

Ordering Information (Note 4)

| Part Number | Package | Packing | |
|-------------|------------------|---------|-------------|
| | | Qty. | Carrier |
| S1MSWFMQ-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



S0 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: J = 2022)
 M = Month (ex: 9 = September)

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_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 _A = +75°C | I _O | 1.0 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 25 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance, Junction to Case (Note 5) | R _{θJC} | 13 | °C/W |
| Thermal Resistance Junction to Ambient (Note 5) | R _{θJA} | 78 | °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 | — | 0.98 0.88 | 1.1 — | V | I _F = 1A, T _J = +25°C I _F = 1A, T _J = +125°C |
| Leakage Current (Note 6) | I _R | — | 0.4 12 | 10 100 | μA | V _R = 1,000V, T _J = +25°C V _R = 1,000V, T _J = +125°C |
| Reverse Recovery Time | t _{rr} | — | 1.2 | — | μs | I _F = 0.5A, I _R = 1.0A, I _{RR} = 0.25A |
| Total Capacitance | C _T | — | 2.8 | — | pF | V _R = 4.0V _{DC} , f = 1MHz |

Notes: 5. Device mounted on FR4 PC board, 1 inch x 1 inch, 2oz. copper traces with 1x recommended pad layout, 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.

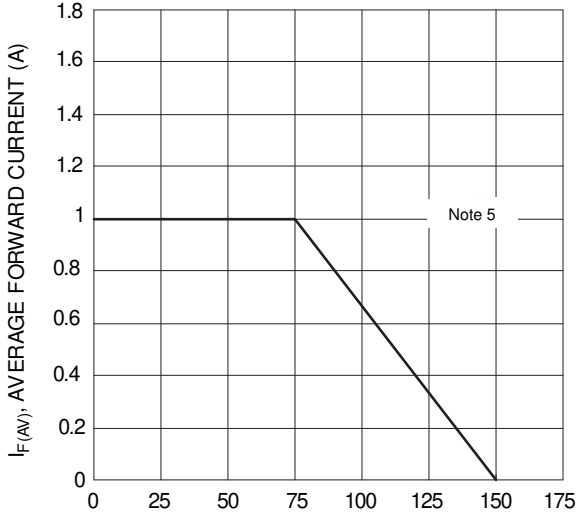


Figure 1 DC Forward Current Derating Curve

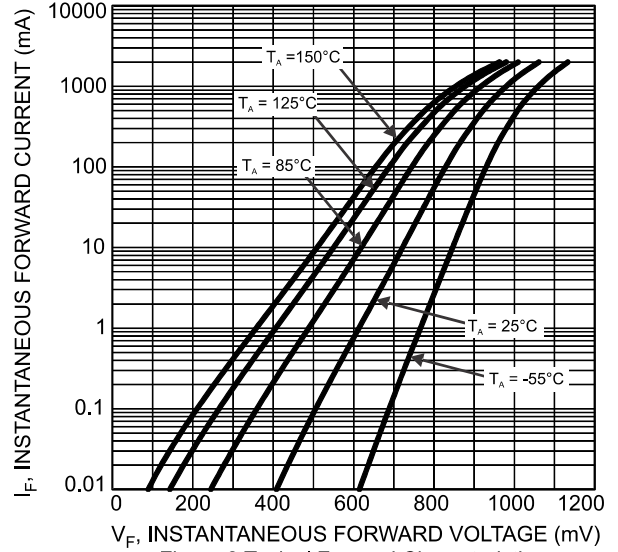


Figure 2 Typical Forward Characteristics

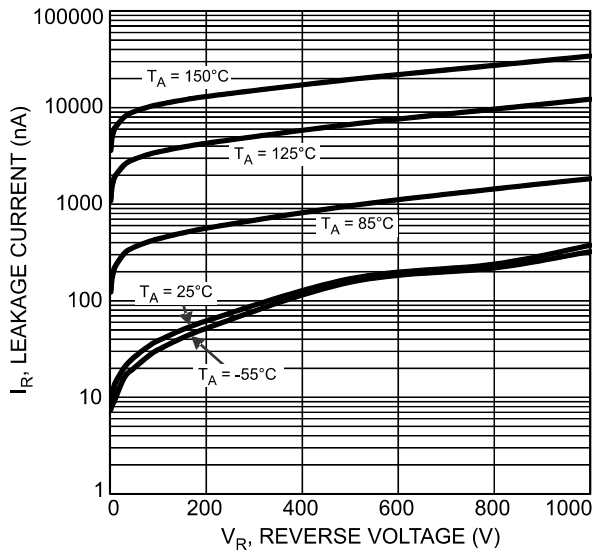


Figure 3 Typical Reverse Characteristics

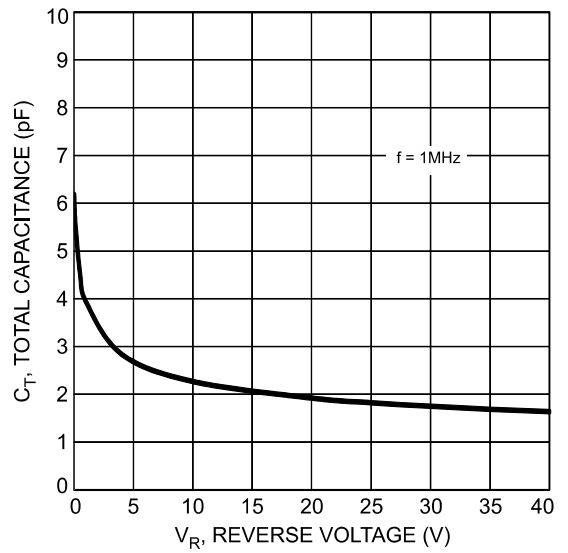
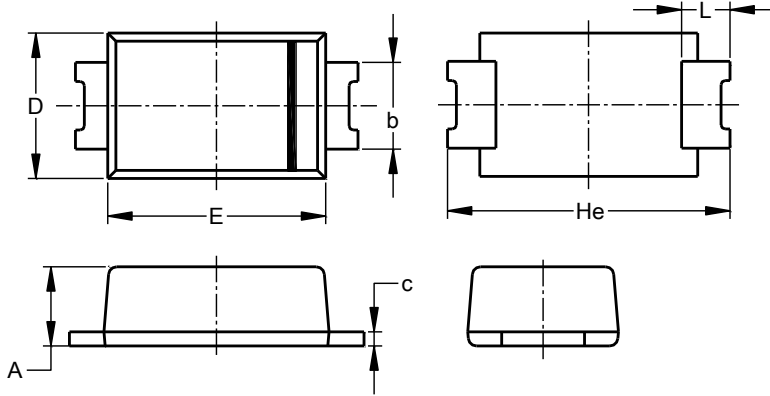


Figure 4 Typical Total Capacitance

Package Outline Dimensions

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

SOD123F (Type B)

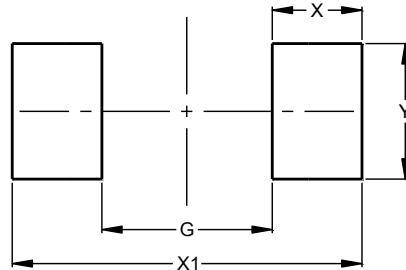


| SOD123F (Type B) | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.81 | 1.15 | -- |
| b | 0.80 | 1.35 | -- |
| c | 0.05 | 0.30 | -- |
| D | 1.70 | 1.90 | 1.80 |
| E | 2.60 | 2.80 | 2.70 |
| He | 3.30 | 3.70 | 3.50 |
| L | 0.35 | 0.85 | -- |
| All Dimensions in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