

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 |

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)**

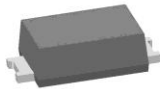
Description and Applications

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

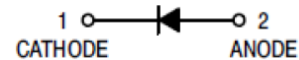
- Case: SOD123F
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 Ⓜ
- Polarity: Cathode Band
- Weight: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

SOD123F


Top View



Bottom View

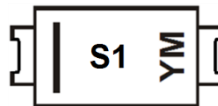


Schematic View

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 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/.
 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_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 6) | R _{θJC} | 13 | °C/W |
| Thermal Resistance Junction to Ambient (Note 6) | 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 7) | 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 7) | I _R | — | 0.2 11 | 10 100 | μA | V _R = 1,000V, T _J = +25°C V _R = 1,000V, T _J = +125°C |
| Reverse Recovery Time | t _{RR} | — | 1.0 | — | μs | I _F = 0.5A, I _R = 1.0A, I _{RR} = 0.25A |
| Total Capacitance | C _T | — | 6 | — | pF | V _R = 4.0V _{DC} , 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.

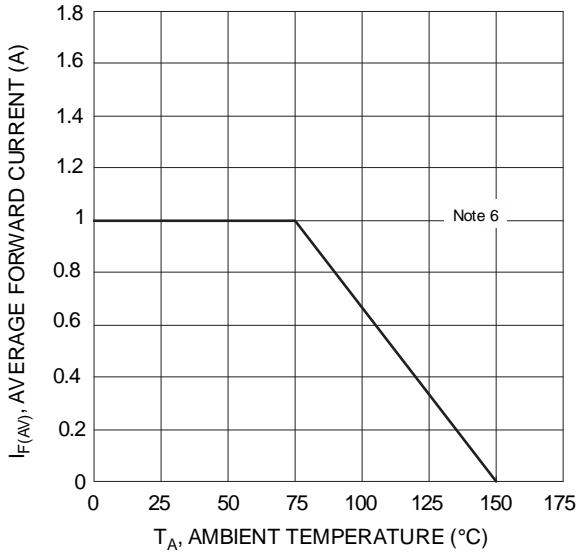


Figure 1 DC Forward Current Derating Curve

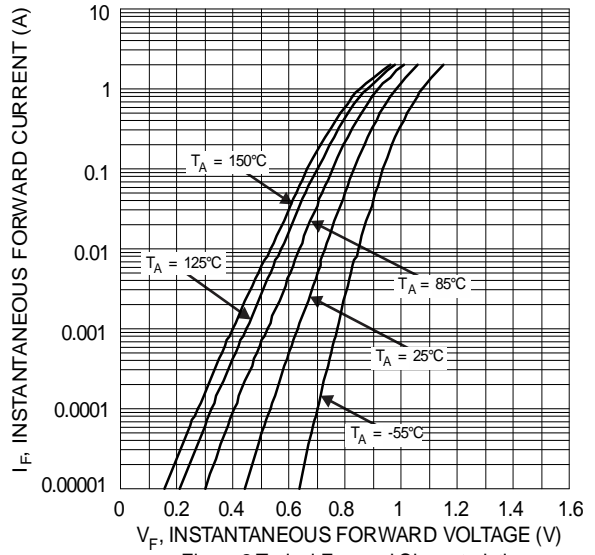


Figure 2 Typical Forward Characteristics

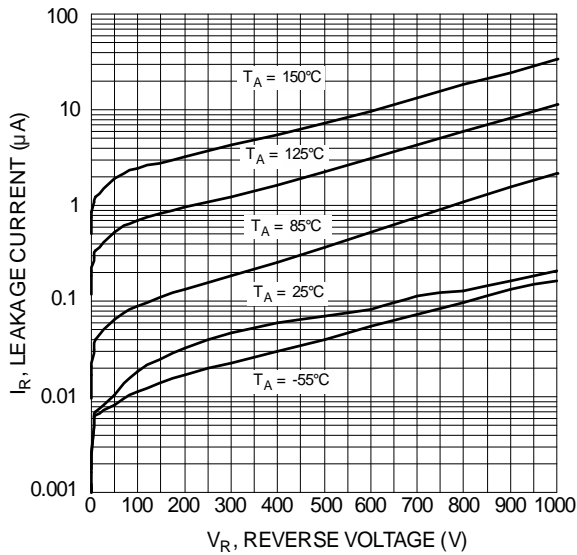


Figure 3 Typical Reverse Characteristics

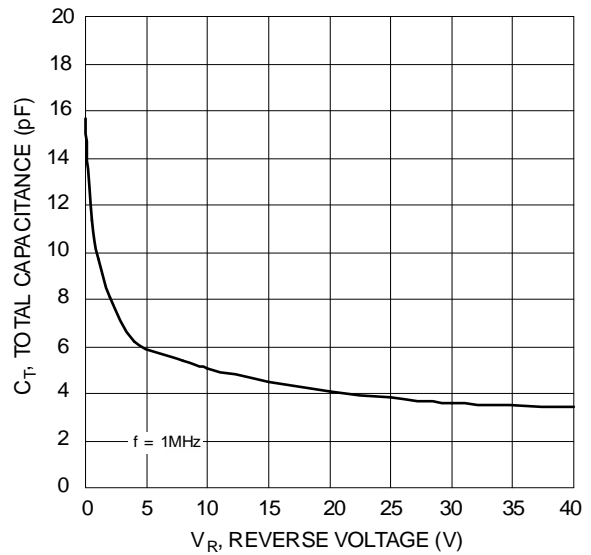
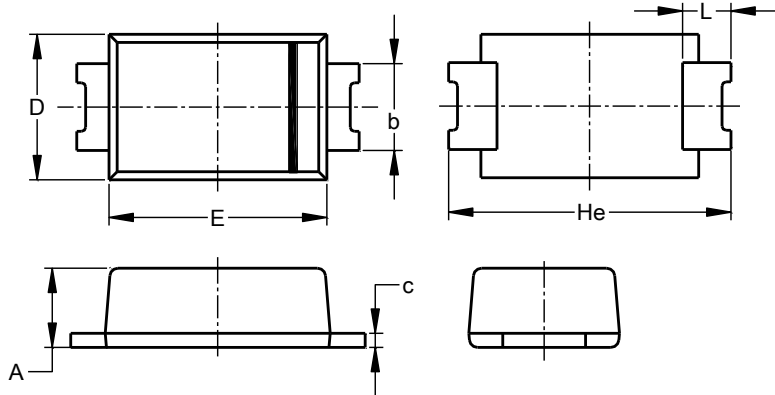


Figure 4 Typical Total Capacitance

Package Outline Dimensions

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

SOD123F (Type B)

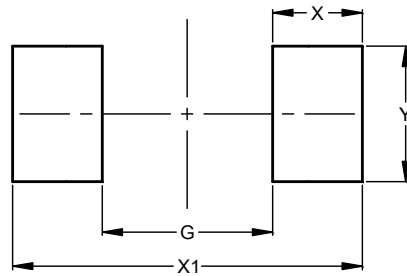


| SOD123F (Type B) | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.81 | 1.15 | — |
| b | 0.80 | 1.35 | — |
| c | 0.05 | 0.30 | — |
| D | 1.70 | 1.90 | 1.80 |
| E | 2.60 | 2.80 | 2.70 |
| He | 3.30 | 3.70 | 3.50 |
| L | 0.35 | 0.85 | — |
| All Dimensions in mm |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

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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