

1.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

Product Summary (@ T_A = +25°C)

| V _{RRM} (V) | I _O (A) | V _{F(MAX)} (mV) | I _{R(MAX)} (μA) |
|----------------------|--------------------|--------------------------|--------------------------|
| 40 | 1.0 | 450 | 50 |

Description and Applications

The device is a single rectifier offering low V_F and excellent high temperature stability. This device is ideal for use in general rectification applications:

- For Use in Low Voltage, High Frequency Inverters
- Free Wheeling
- Polarity Protection Application

Features and Benefits

- High Surge Capability
- Low Power Loss, High Efficiency
- High Current Capability and Low Forward Voltage Drop
- Guard Ring Die Construction for Transient Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SOD123
- Plastic Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity: Cathode Band
- Leads: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating) Solderable per MIL-STD-202, Method 208 **(e3)**
- Weight: 0.01 grams (Approximate)



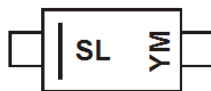
Top View

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|--------------|--------|------------------|
| 1N5819HW-7-F | SOD123 | 3000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 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



SL = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: F = 2018)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|------|------|------|------|------|------|------|------|
| Code | E | F | G | H | I | J | K |

| 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 Working Peak Reverse Voltage DC Blocking Voltage | V _{RRM} V _{RWM} V _R | 40 | V |
| Average Rectified Output Current | I _O | 1.0 | A |
| Repetitive Peak Forward Current t _p ≤ 1ms, δ ≤ 0.5 | I _{FRM} | 1.5 | 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 |
|---|-----------------------------------|-------------|------|
| Power Dissipation (Note 5) | P _D | 450 | mW |
| Typical Thermal Resistance Junction to Ambient (Note 5) | R _{θJA} | 222 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +125 | °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} | 40 | — | — | V | I _R = 1.0mA |
| Forward Voltage | V _F | — | — | 0.320 0.450 0.750 | V | I _F = 0.1A I _F = 1.0A I _F = 3.0A |
| Reverse Leakage Current (Note 6) | I _R | — | — | 1.0 10 50 2 15 75 3 | mA mA μA mA μA μA mA | V _R = 40V, T _A = +25°C V _R = 40V, T _A = +100°C V _R = 4V, T _A = +25°C V _R = 4V, T _A = +100°C V _R = 6V, T _A = +25°C V _R = 6V, T _A = +100°C |
| Total Capacitance | C _T | — | 50 | 60 | pF | V _R = 4V, f = 1.0MHz |

- Notes: 5. Device mounted on FR-4 PC Board, 2"x2", 2 oz. copper, single sided, cathode pad dimensions 0.75"x1.0", anode pad dimensions 0.25"x1.0".
6. Short duration pulse test used to minimize self-heating effect.

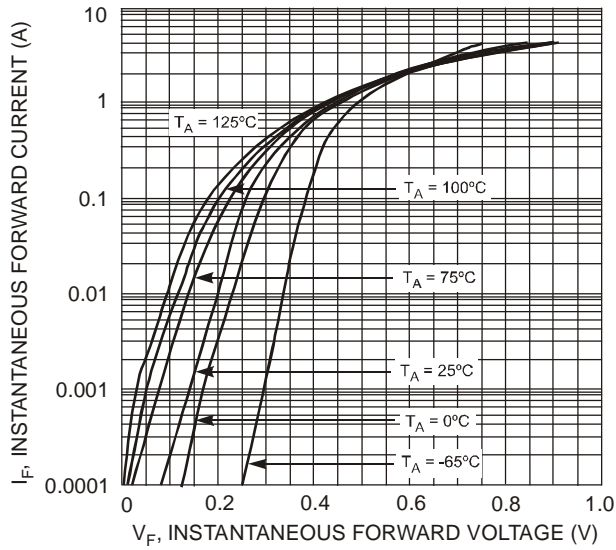


Fig. 1 Typical Forward Characteristics

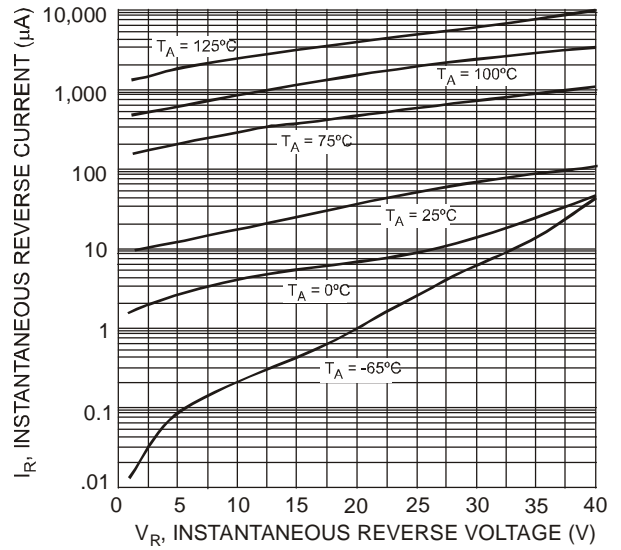


Fig. 2 Typical Reverse Characteristics

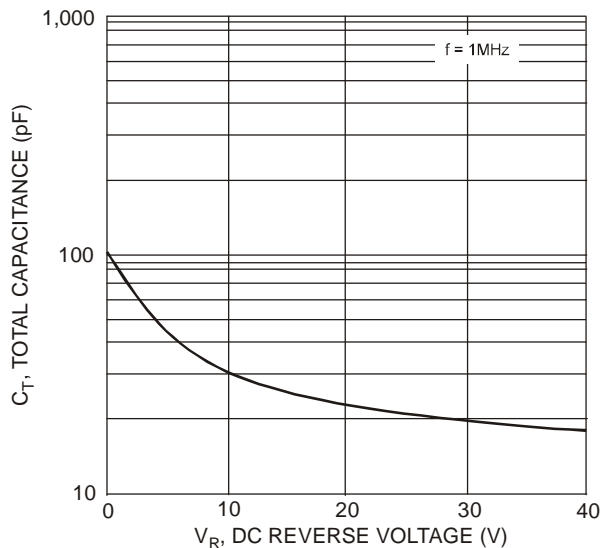


Fig. 3 Total Capacitance vs. Reverse Voltage

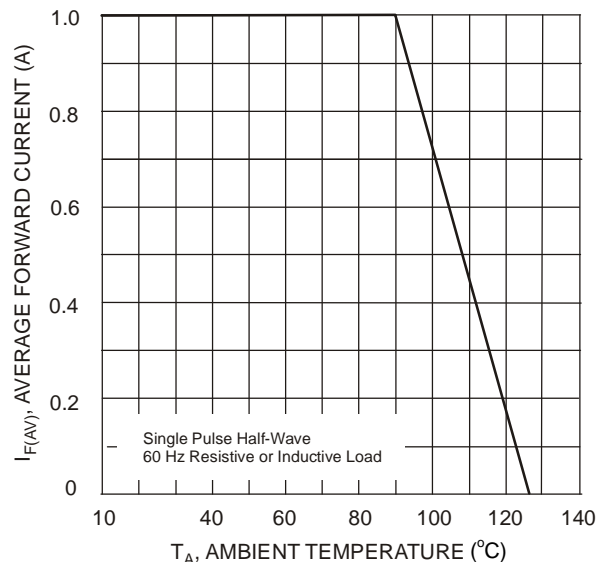


Fig. 4 Forward Current Derating Curve

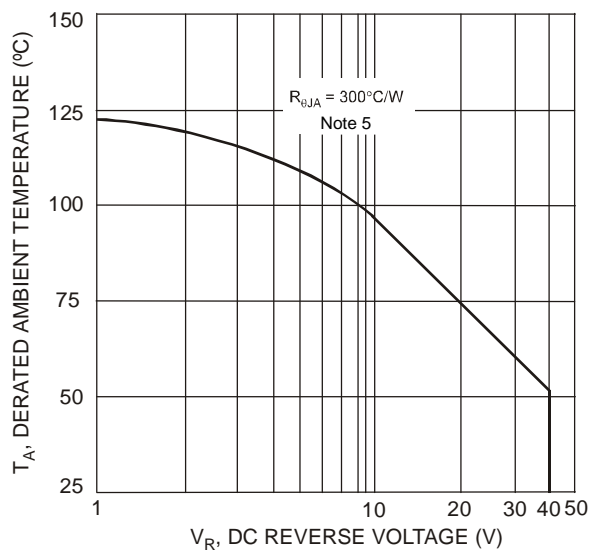


Fig. 5 Operating Temperature Derating

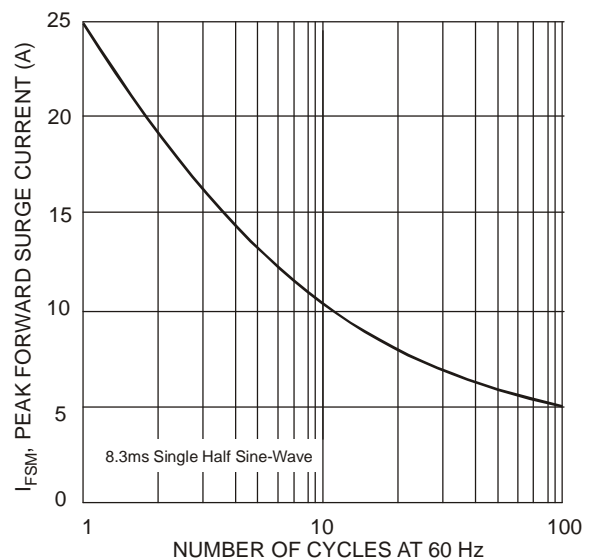
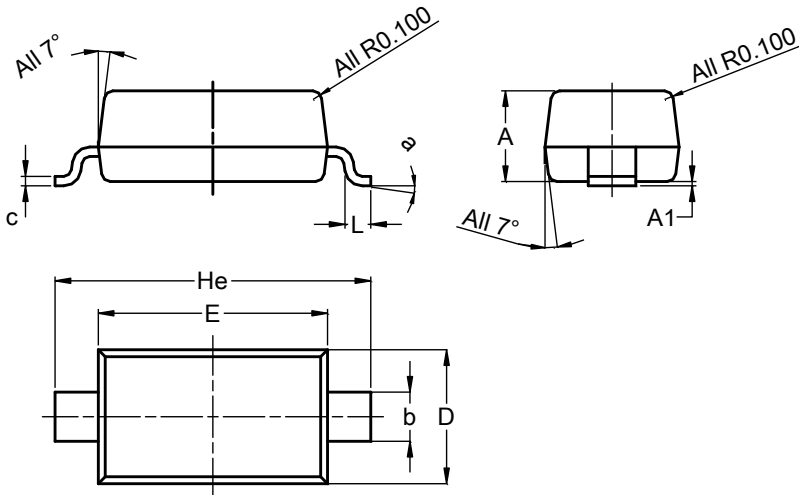


Fig. 6 Maximum Non-Repetitive Peak Forward Surge Current

Package Outline Dimensions

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

SOD123

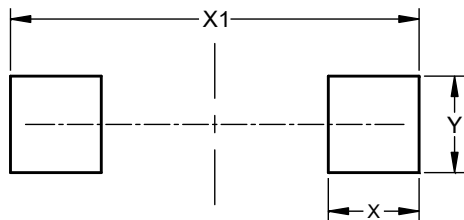


| SOD123 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 1.00 | 1.35 | 1.05 |
| A1 | 0.00 | 0.10 | 0.05 |
| b | 0.52 | 0.62 | 0.57 |
| c | 0.10 | 0.15 | 0.11 |
| D | 1.40 | 1.70 | 1.55 |
| E | 2.55 | 2.85 | 2.65 |
| He | 3.55 | 3.85 | 3.65 |
| L | 0.25 | 0.40 | 0.30 |
| a | 0° | 8° | -- |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

SOD123



| Dimensions | Value (in mm) |
|------------|---------------|
| X | 0.900 |
| X1 | 4.050 |
| Y | 0.950 |

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