Lead-free Green

**1N5819HW**

# 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 |

## 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 (Notes 3)**

## Description and Applications

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

## 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 | SOD-123 | 3000/Tape & Reel |

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant
2.. See http://www.diodes.com/quality/lead_free.htmlfor 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/datasheets/ap02007.pdf.

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## Marking Information




SL = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: B = 2014)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| Code | Y | Z | A | B | C | D | E |

| 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 |


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## Maximum Ratings (@$T_A$ = +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 @ $I_R$ = 1.0mA<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 40 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 28 | V |
| Average Rectified Output Current @ $T_L$ = +90°C | $I_O$ | 1.0 | A |
| Repetitive Peak Forward Current<br>$t_p \leq$ 1ms, $\delta \leq$ 0.5 | $I_{FRM}$ | 1.5 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>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) | $R_{\theta JA}$ | 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 3) | $V_{(BR)R}$ | 40 | — | — | V | $I_R$ = 1.0mA |
| Forward Voltage | $V_F$ | —<br>—<br>— | —<br>—<br>— | 0.320<br>0.450<br>0.750 | V | $I_F$ = 0.1A<br>$I_F$ = 1.0A<br>$I_F$ = 3.0A |
| Reverse Leakage Current (Note 6) | $I_R$ | —<br>—<br>—<br>—<br>—<br>— | —<br>—<br>10<br>1<br>15<br>1.5 | 1.0<br>10<br>50<br>2<br>75<br>3 | mA<br>mA<br>µA<br>mA<br>µA<br>mA | $V_R$ = 40V, $T_A$ = +25°C<br>$V_R$ = 40V, $T_A$ = +100°C<br>$V_R$ = 4V, $T_A$ = +25°C<br>$V_R$ = 4V, $T_A$ = +100°C<br>$V_R$ = 6V, $T_A$ = +25°C<br>$V_R$ = 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.


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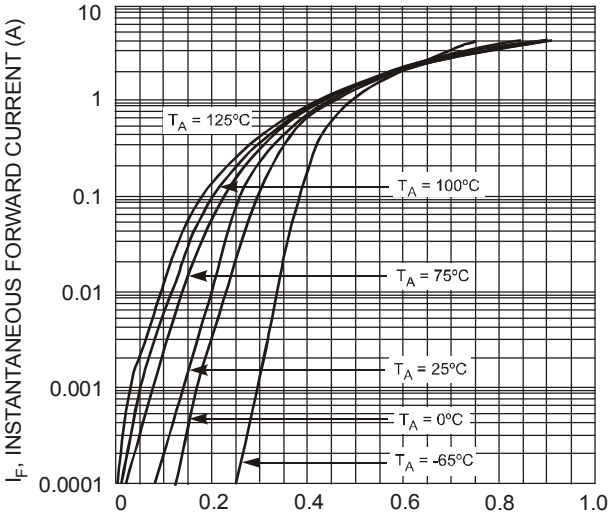



Fig. 1 Typical Forward Characteristics

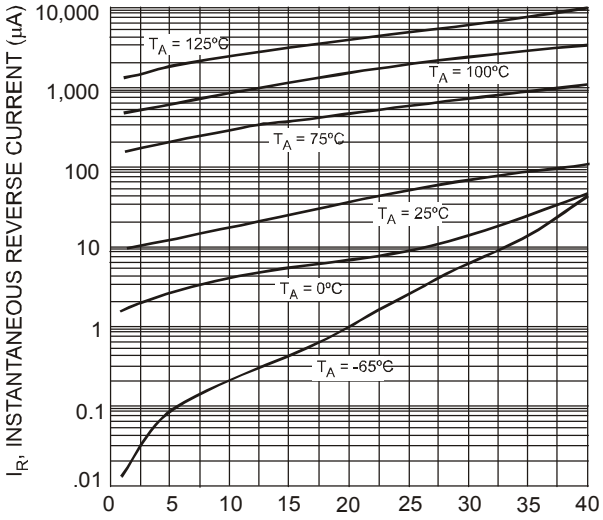



Fig. 2 Typical Reverse Characteristics

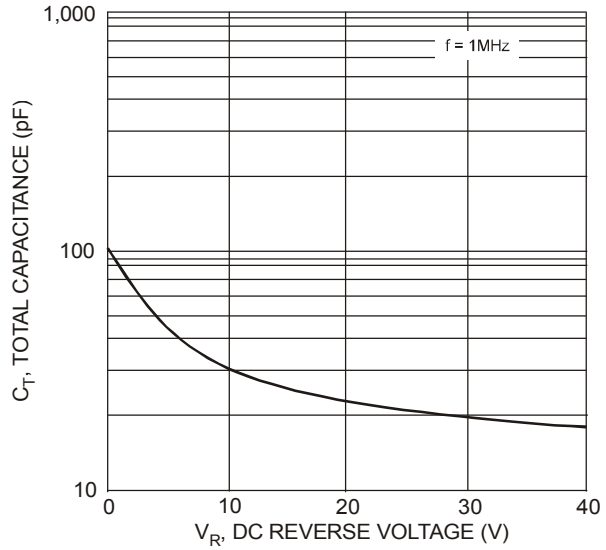



Fig. 3 Total Capacitance vs. Reverse Voltage

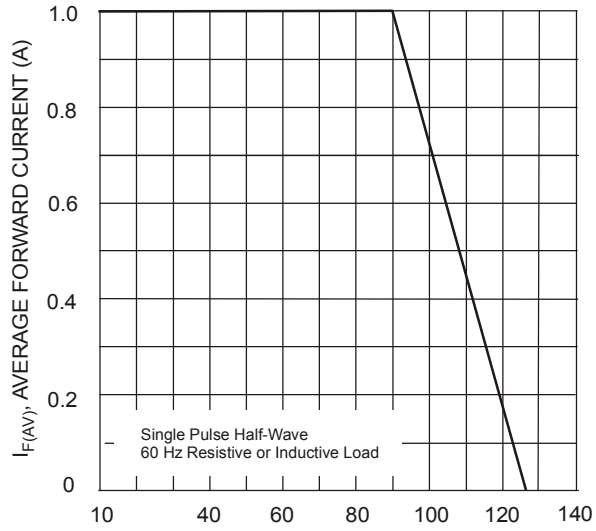



Fig. 4 Forward Current Derating Curve

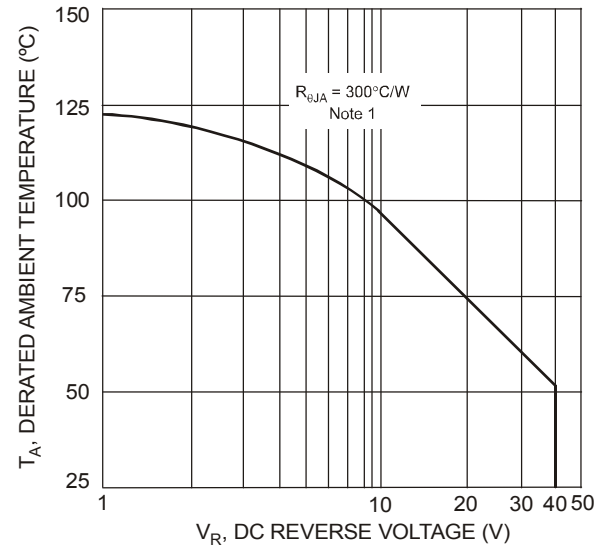



Fig. 5 Operating Temperature Derating

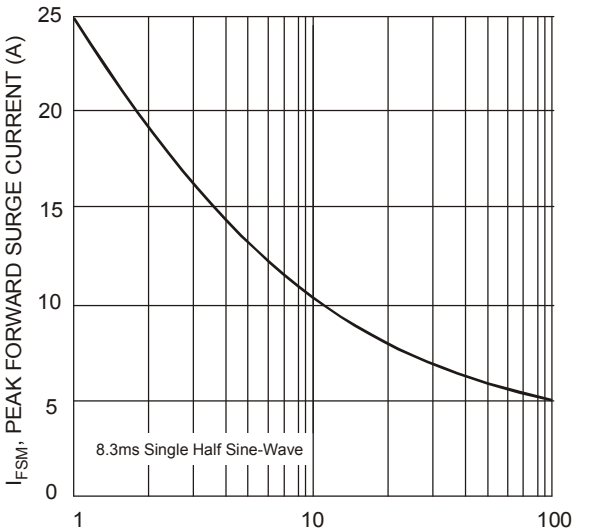
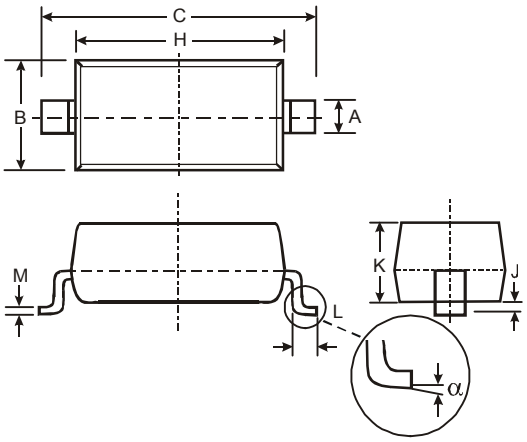



Fig. 6 Maximum Non-Repetitive Peak Forward Surge Current


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## Package Outline Dimensions

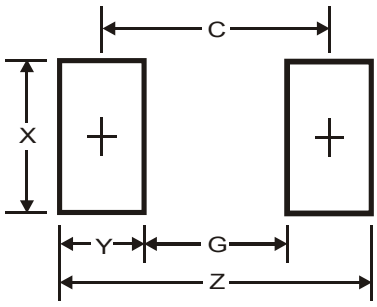
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.




| SOD123 | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 0.55 Typ | |
| **B** | 1.40 | 1.70 |
| **C** | 3.55 | 3.85 |
| **H** | 2.55 | 2.85 |
| **J** | 0.00 | 0.10 |
| **K** | 1.00 | 1.35 |
| **L** | 0.25 | 0.40 |
| **M** | 0.10 | 0.15 |
| **α** | 0 | 8° |
| **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) |
|---|---|
| **Z** | 4.9 |
| **G** | 2.5 |
| **X** | 0.7 |
| **Y** | 1.2 |
| **C** | 3.7 |


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