# 1A SBR®
# SUPER BARRIER RECTIFIER

## Product Summary

| $V_{RRM}$ (V) | $I_O$ (A) | $V_{F(MAX)}$ (V)@ +25°C | $I_{R(MAX)}$ (mA) +25°C |
|---|---|---|---|
| 40 | 1 | 0.51 | 0.5 |

## Features and Benefits

- Low forward voltage ($V_F$) minimizes conduction losses and improving efficiency
- Reduced high temperature reverse leakage; Increased reliability against thermal runaway failure in high temperature operation
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Description and Applications

The 1N5819HW1 is a single rectifier packaged in SOD123F. Offering low $V_F$ and excellent high temperature stability this device is ideal for use in general rectification applications as a:

- Boost Diode
- Blocking Diode

## 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 e3
- Polarity: Cathode Band
- Weight: 0.0016 grams (Approximate)

SOD123F

Top View

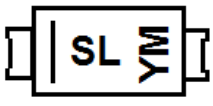
Bottom View

## Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---|---|---|
| 1N5819HW1-7-F | SOD123F | 3000/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. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

## Marking Information




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

Date Code Key

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|
| Code | A | B | C | D | E | F | G | H |

| 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 |

*SBR is a registered trademark of Diodes Incorporated.*

## 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<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_{RM}$ | 40 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 28 | V |
| Average Rectified Output Current | $I_O$ | 1 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 30 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Typical Thermal Resistance, Junction to Ambient (Note 5) | $R_{\theta JA}$ | 135 | °C/W |
| Typical Thermal Resistance, Junction to Case (Note 5) | $R_{\theta JC}$ | 20 | °C/W |
| Typical Thermal Resistance, Junction to Ambient (Note 6) | $R_{\theta JA}$ | 75 | °C/W |
| Typical Thermal Resistance, Junction to Case (Note 6) | $R_{\theta JC}$ | 12 | °C/W |
| Operating Junction Temperature Range | $T_J$ | -55 to +125 | °C |
| Storage Temperature Range | $T_{STG}$ | -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) | $V_{(BR)R}$ | 40 | — | — | V | $I_R$ = 1.0mA |
| Forward Voltage Drop | $V_F$ | —<br>—<br>—<br>—<br>— | —<br>0.44<br>0.36<br>0.64<br>0.63 | 0.35<br>0.51<br>—<br>0.75<br>— | V | $I_F$ = 0.1A, $T_J$ = +25°C<br>$I_F$ = 1A, $T_J$ = +25°C<br>$I_F$ = 1A, $T_J$ = +125°C<br>$I_F$ = 3A, $T_J$ = +25°C<br>$I_F$ = 3A, $T_J$ = +125°C |
| Leakage Current (Note 7) | $I_R$ | —<br>—<br>—<br>— | 0.008<br>0.010<br>0.050<br>— | —<br>0.075<br>0.5<br>50 | mA | $V_R$ = 4V, $T_J$ = +25°C<br>$V_R$ = 6V, $T_J$ = +25°C<br>$V_R$ = 40V, $T_J$ = +25°C<br>$V_R$ = 40V, $T_J$ = +125°C |
| Reverse Recovery Time | $t_{RR}$ | — | 15 | — | ns | $I_F$ = 10mA, $I_{RRM}$ = 0.1$I_R$, $T_A$ = +25°C |
| Total Capacitance | $C_T$ | — | 30 | — | pF | $V_R$ = 10V, f = 1MHz |

Notes: 5. Device mounted on 1 x MRP FR-4 PC board, 2oz.
6. Device mounted on 1inch sq. copper pad, 2oz.
7. Short duration pulse test used to minimize self-heating effect.

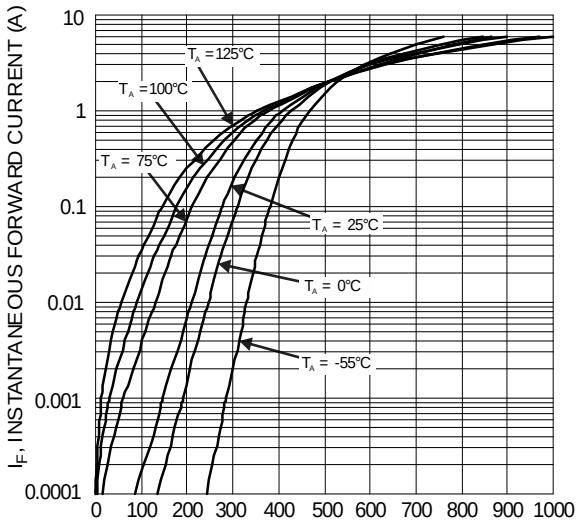


Figure 1 Typical Forward Characteristics

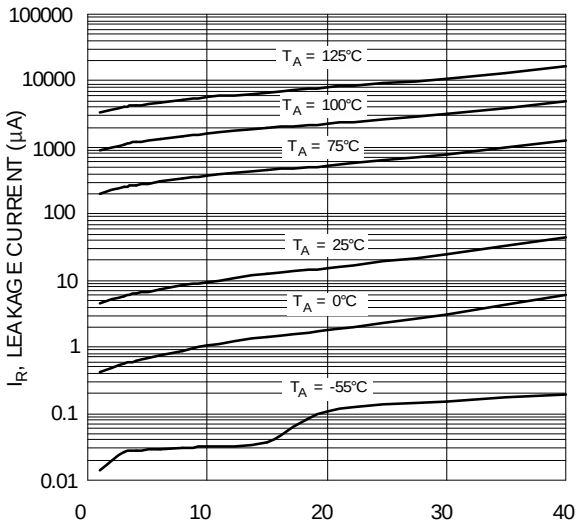


Figure 2 Typical Reverse Characteristics

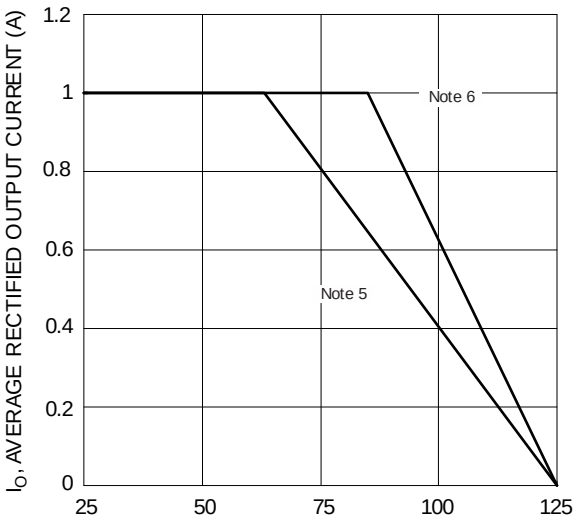


Figure 3 DC Forward Current Derating Curve

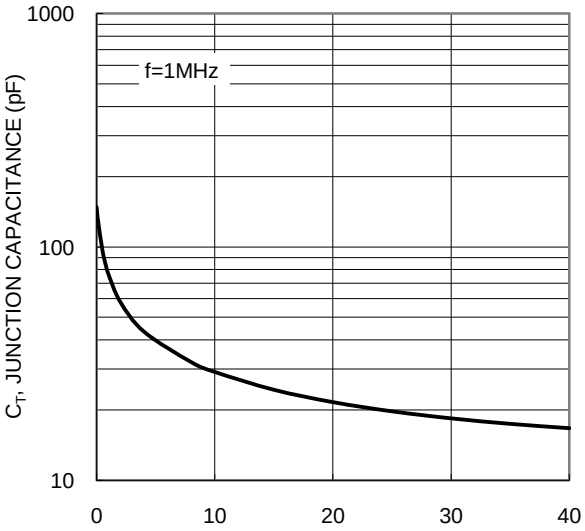
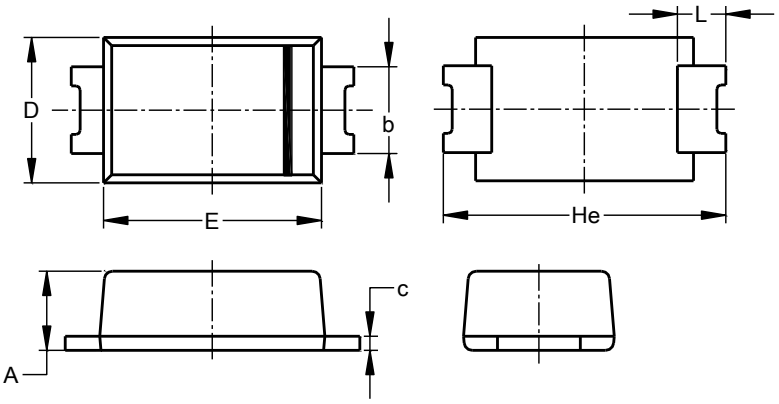


Figure 4. Typical Junction Capacitance

## Package Outline Dimensions

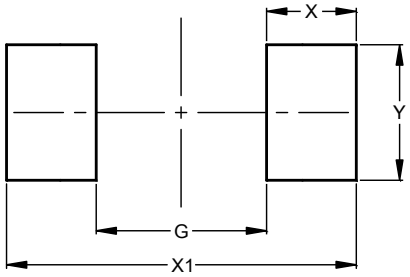
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.




| 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.




| Dimensions | Value (in mm) |
|---|---|
| **G** | 1.90 |
| **X** | 1.00 |
| **X1** | 3.90 |
| **Y** | 1.50 |

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