

## 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                   |

## 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

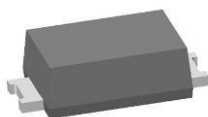
## Features and Benefits

- 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)**

## 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



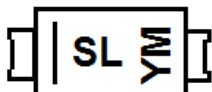
Bottom View

## 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](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   |

## Maximum Ratings (@T<sub>A</sub> = +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                                                                     | V <sub>RRM</sub>    | 40    | V    |
| Working Peak Reverse Voltage                                                                        | V <sub>RWM</sub>    |       |      |
| DC Blocking Voltage                                                                                 | V <sub>RM</sub>     |       |      |
| RMS Reverse Voltage                                                                                 | V <sub>R(RMS)</sub> | 28    | V    |
| Average Rectified Output Current                                                                    | I <sub>O</sub>      | 1     | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>    | 30    | A    |

## Thermal Characteristics

| Characteristic                                           | Symbol           | Value       | Unit |
|----------------------------------------------------------|------------------|-------------|------|
| Typical Thermal Resistance, Junction to Ambient (Note 5) | R <sub>θJA</sub> | 135         | °C/W |
| Typical Thermal Resistance, Junction to Case (Note 5)    | R <sub>θJC</sub> | 20          | °C/W |
| Typical Thermal Resistance, Junction to Ambient (Note 6) | R <sub>θJA</sub> | 75          | °C/W |
| Typical Thermal Resistance, Junction to Case (Note 6)    | R <sub>θJC</sub> | 12          | °C/W |
| Operating Junction Temperature Range                     | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range                                | T <sub>STG</sub> | -55 to +150 | °C   |

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                     | Symbol             | Min | Typ   | Max   | Unit | Test Condition                                                                          |
|------------------------------------|--------------------|-----|-------|-------|------|-----------------------------------------------------------------------------------------|
| Reverse Breakdown Voltage (Note 6) | V <sub>(BR)R</sub> | 40  | —     | —     | V    | I <sub>R</sub> = 1.0mA                                                                  |
| Forward Voltage Drop               | V <sub>F</sub>     | —   | —     | 0.35  | V    | I <sub>F</sub> = 0.1A, T <sub>J</sub> = +25°C                                           |
|                                    |                    | —   | 0.44  | 0.51  |      | I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C                                             |
|                                    |                    | —   | 0.36  | —     |      | I <sub>F</sub> = 1A, T <sub>J</sub> = +125°C                                            |
|                                    |                    | —   | 0.64  | 0.75  |      | I <sub>F</sub> = 3A, T <sub>J</sub> = +25°C                                             |
|                                    |                    | —   | 0.63  | —     |      | I <sub>F</sub> = 3A, T <sub>J</sub> = +125°C                                            |
| Leakage Current (Note 7)           | I <sub>R</sub>     | —   | 0.008 | —     | mA   | V <sub>R</sub> = 4V, T <sub>J</sub> = +25°C                                             |
|                                    |                    | —   | 0.010 | 0.075 |      | V <sub>R</sub> = 6V, T <sub>J</sub> = +25°C                                             |
|                                    |                    | —   | 0.050 | 0.5   |      | V <sub>R</sub> = 40V, T <sub>J</sub> = +25°C                                            |
|                                    |                    | —   | —     | 50    |      | V <sub>R</sub> = 40V, T <sub>J</sub> = +125°C                                           |
| Reverse Recovery Time              | t <sub>RR</sub>    | —   | 15    | —     | ns   | I <sub>F</sub> = 10mA, I <sub>RRM</sub> = 0.1I <sub>R</sub> ,<br>T <sub>A</sub> = +25°C |
| Total Capacitance                  | C <sub>T</sub>     | —   | 30    | —     | pF   | V <sub>R</sub> = 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.

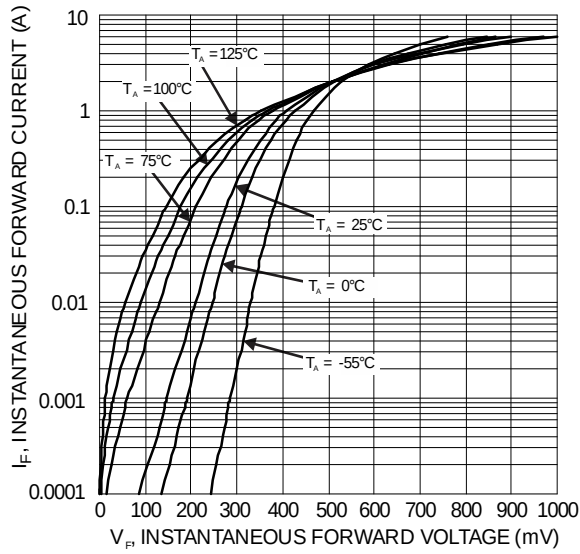


Figure 1 Typical Forward Characteristics

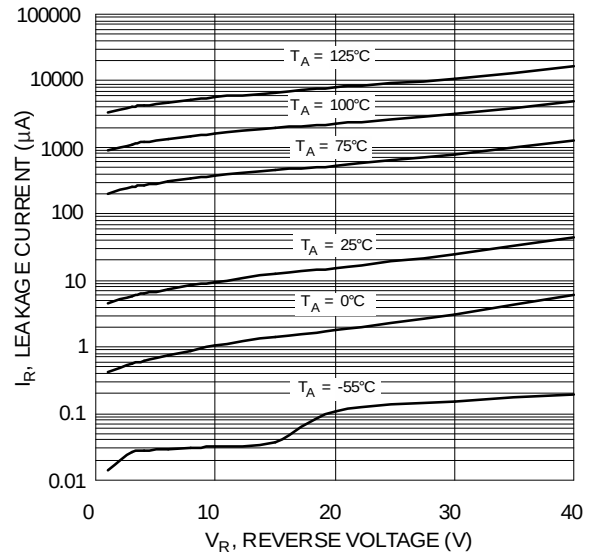


Figure 2 Typical Reverse Characteristics

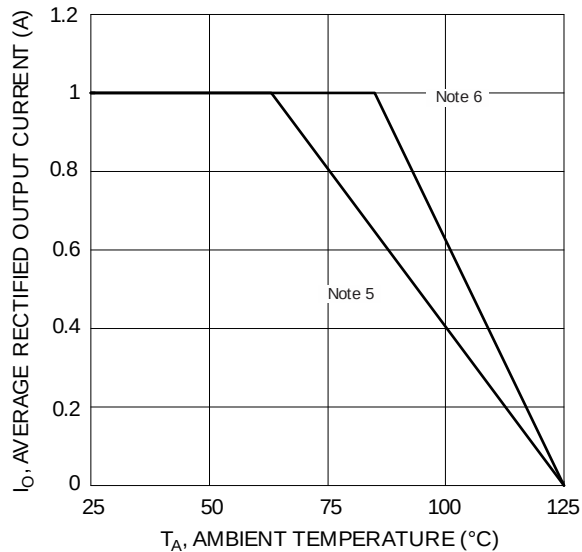


Figure 3 DC Forward Current Derating Curve

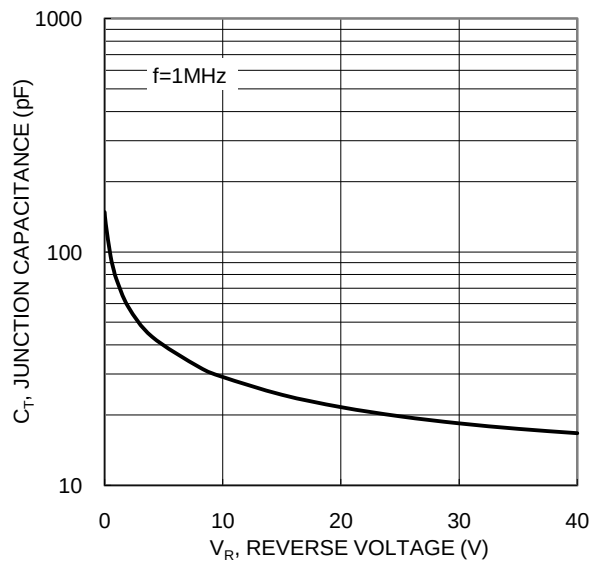
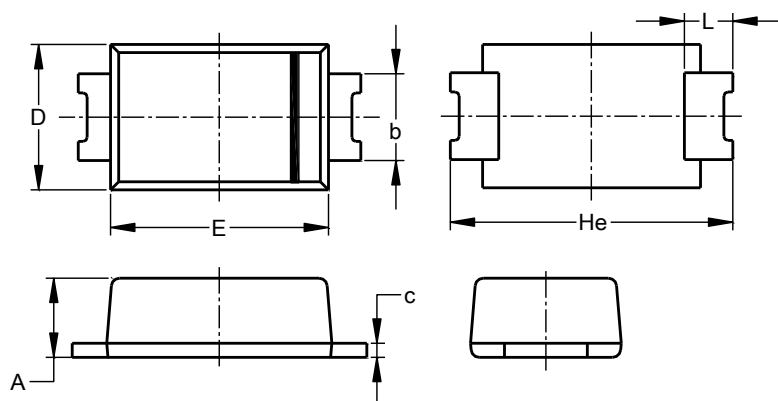


Figure 4. Typical Junction Capacitance

## Package Outline Dimensions

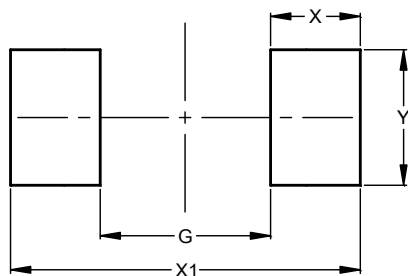
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| 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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