

## Product Summary

| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ Max (V) @ +25°C | $I_R$ Max (mA) +25°C |
|---------------|-----------|-----------------------|----------------------|
| 60            | 2         | 0.51                  | 0.15                 |

## Description and Applications

The SBR2U60S1F is a single rectifier packaged in SOD123F. Offering low  $V_F$ , low power loss and high efficiency, this device is ideal for use in general rectification applications as a:

- Boost Diode
- Blocking Diode

## Features and Benefits

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Patented Interlocking Clip Design for High Surge Current Capacity
- Patented Super Barrier Rectifier SBR<sup>®</sup> Technology
- **Qualified to AEC-Q101 Standards for High Reliability**
- **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
- Polarity: Cathode Band
- Weight: 0.015 grams (Approximate)

SOD123F



Top View

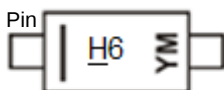
## Ordering Information (Note 4)

| Part Number  | Case    | Packaging         |
|--------------|---------|-------------------|
| SBR2U60S1F-7 | SOD123F | 3,000/Tape & Reel |

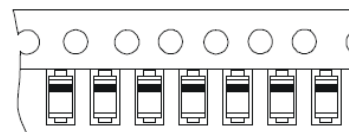
- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "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

Cathode Pin



H6 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: D = 2016)  
 M = Month (ex: 9 = September)  
 Bar Denotes Cathode Pin



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<br>Working Peak Reverse Voltage<br>DC Blocking Voltage              | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>RM</sub> | 60    | V    |
| Average Rectified Output Current                                                                    | I <sub>O</sub>                                          | 2     | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>                                        | 35    | A    |

**Thermal Characteristics**

| Characteristic                                          | Symbol                            | Value       | Unit |
|---------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Case (Note 5)    | R <sub>θJC</sub>                  | 30          | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 88          | °C/W |
| Operating and Storage Temperature Range                 | T <sub>J</sub> , T <sub>STG</sub> | -55 to +175 | °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> | 60  | —                    | —                 | V              | I <sub>R</sub> = 1.0mA                                                                                                                        |
| Forward Voltage Drop               | V <sub>F</sub>     | —   | 0.37<br>0.44<br>0.42 | 0.46<br>0.51<br>— | V              | I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C<br>I <sub>F</sub> = 2A, T <sub>J</sub> = +25°C<br>I <sub>F</sub> = 2A, T <sub>J</sub> = +125°C    |
| Leakage Current (Note 6)           | I <sub>R</sub>     | —   | 20<br>50<br>6.5      | —<br>150<br>—     | μA<br>μA<br>mA | V <sub>R</sub> = 10V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 60V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 60V, T <sub>J</sub> = +125°C |
| Total Capacitance                  | C <sub>T</sub>     | —   | 75                   | —                 | pF             | V <sub>R</sub> = 10V, f = 1MHz                                                                                                                |

Notes: 5. Device mounted on FR-4 substrate, 1.0"×1.0", 2oz, single-sided, PC boards with 0.2"×0.25" copper pad.  
6. Short duration pulse test used to minimize self-heating effect.

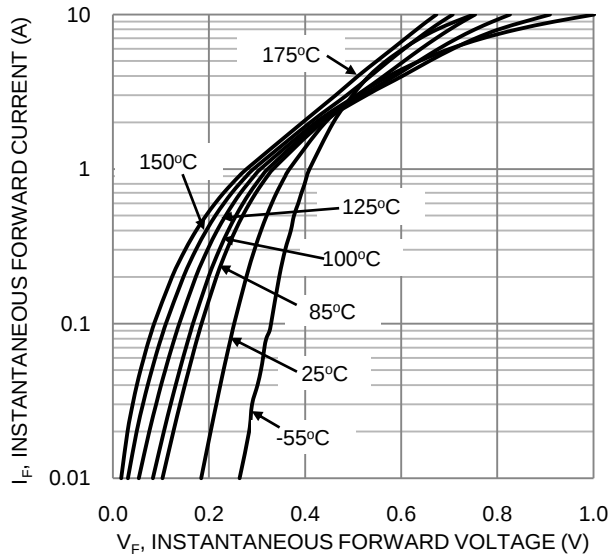


Figure 1. Typical Forward Characteristics

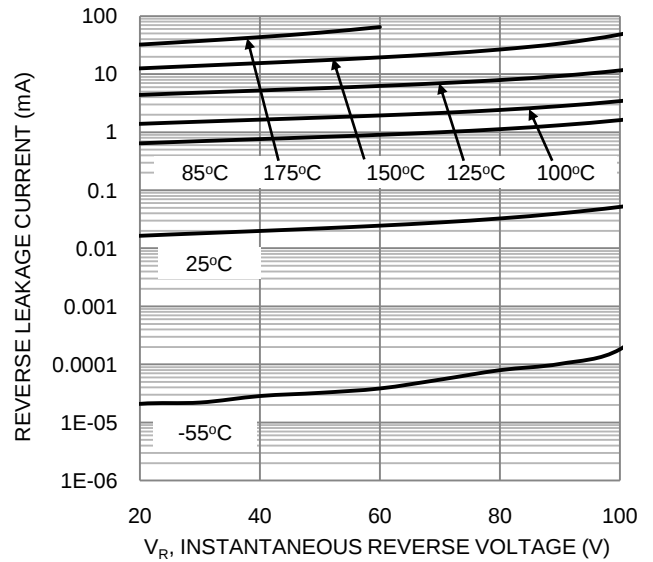


Figure 2. Typical Reverse Characteristics

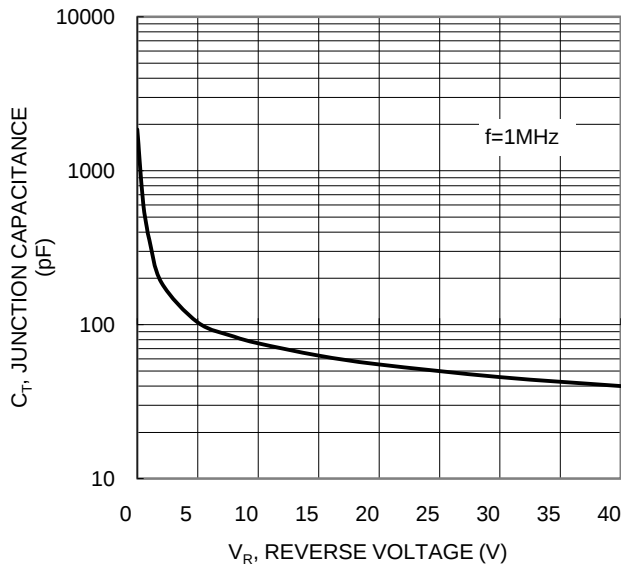


Figure 3. Typical Junction Capacitance

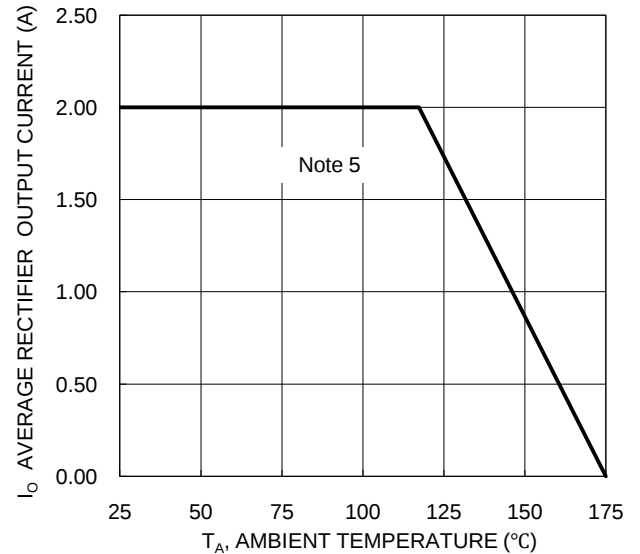


Figure 4. DC Forward Current Derating

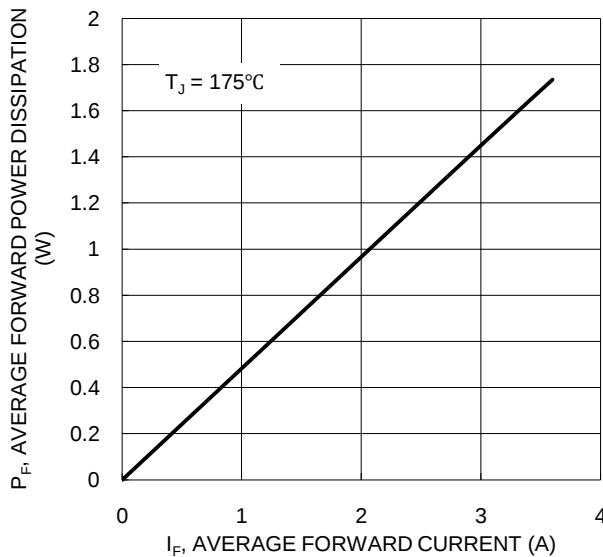
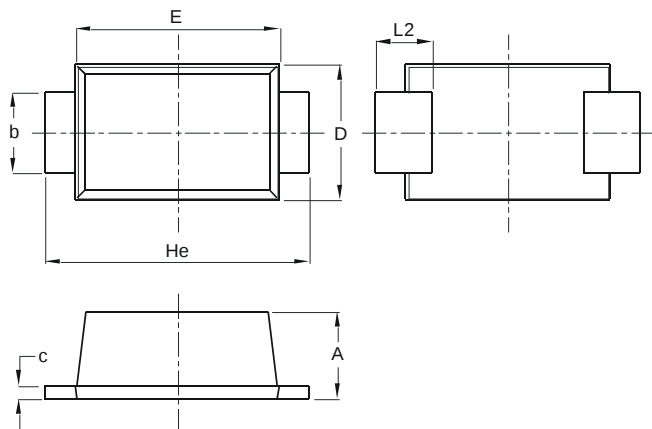


Figure 5. Forward Power Dissipation

## Package Outline Dimensions

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**SOD123F**

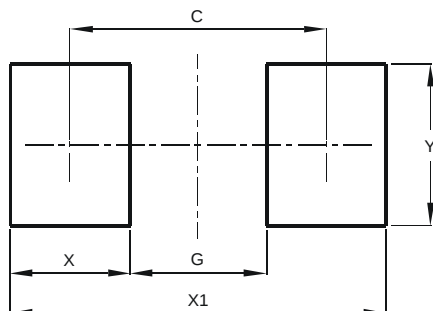


| SOD123F              |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.81 | 1.15 | -    |
| b                    | 0.80 | 1.35 | -    |
| c                    | 0.05 | 0.30 | -    |
| D                    | 1.70 | 1.90 | 1.80 |
| E                    | 2.60 | 2.80 | 2.70 |
| He                   | 3.30 | 3.70 | 3.50 |
| L2                   | 0.35 | 0.85 | -    |
| All Dimensions in mm |      |      |      |

## Suggested Pad Layout

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**SOD123F**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 2.86          |
| G          | 1.52          |
| X          | 1.34          |
| X1         | 4.20          |
| Y          | 1.80          |

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