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## Features

- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- High Conductance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: SOD123
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208 Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe)
- Polarity: Cathode Band
- Marking Information: See Page 2
- Type Code: BAV19W: A8 or T2 or T3  
BAV20W: T2 or T3  
BAV21W: T3
- Ordering Information: See Page 2
- Weight: 0.01 grams (approximate)

SOD123



TOP VIEW

## Ordering Information (Note 6)

| Part Number | Case    | Packaging          |
|-------------|---------|--------------------|
| BAV19W-7-F  | SOD-123 | 3000/Tape and Reel |
| BAV20W-7-F  | SOD123  | 3000/Tape and Reel |
| BAV20WQ-7-F | SOD123  | 3000/Tape and Reel |
| BAV21W-7-F  | SOD123  | 3000/Tape and Reel |
| BAV21WQ-7-F | SOD123  | 3000/Tape and 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.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



XX = Product Type Marking Code (See Page 1)  
 YM = Date Code Marking  
 Y = Year (ex: A = 2013)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year | 1998 | 1999 | 2000 | ... | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------|------|------|------|-----|------|------|------|------|------|------|------|------|------|------|------|
| Code | J    | K    | L    | ... | V    | W    | X    | Y    | Z    | A    | B    | C    | D    | E    | F    |

| 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.)

| Characteristic                            | Symbol              | BAV19W | BAV20W | BAV21W | Unit |
|---|---------------------|--------|--------|--------|------|
| Non-Repetitive Peak Reverse Voltage       | V <sub>RM</sub>     | 120    | 200    | 250    | V    |
| Peak Repetitive Reverse Voltage           | V <sub>RRM</sub>    |        |        |        |      |
| Working Peak Reverse Voltage              | V <sub>RWM</sub>    | 100    | 150    | 200    | V    |
| DC Blocking Voltage                       | V <sub>R</sub>      |        |        |        |      |
| RMS Reverse Voltage                       | V <sub>R(RMS)</sub> | 71     | 106    | 141    | V    |
| Forward Continuous Current                | I <sub>FM</sub>     |        | 400    |        | mA   |
| Average Rectified Output Current          | I <sub>O</sub>      |        | 200    |        | mA   |
| Non-Repetitive Peak Forward Surge Current | I <sub>FSM</sub>    |        | 2.5    |        | A    |
|   |                     |        | 0.5    |        |      |
| Repetitive Peak Forward Surge Current     | I <sub>FRM</sub>    |        | 625    |        | mA   |

**Thermal Characteristics**

| Characteristic                                      | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation (Note 6)                          | P <sub>D</sub>                    | 250         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 6) | R <sub>θJA</sub>                  | 500         | °C/W |
| Operating and Storage Temperature Range             | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

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

| Characteristic   | Symbol             | Min               | Max         | Unit     | Test Condition  |
|--|--------------------|-------------------|-------------|----------|---|
| Reverse Breakdown Voltage (Note 5)                           | V <sub>(BR)R</sub> | 120<br>200<br>250 | —           | V        | I <sub>R</sub> = 100μA  |
| Forward Voltage  | V <sub>FM</sub>    | —                 | 1.0<br>1.25 | V        | I <sub>F</sub> = 100mA<br>I <sub>F</sub> = 200mA  |
| Peak Reverse Current<br>@ Rated DC Blocking Voltage (Note 5) | I <sub>RM</sub>    | —                 | 100<br>15   | nA<br>μA | T <sub>J</sub> = +25°C<br>T <sub>J</sub> = +100°C   |
| Total Capacitance  | C <sub>T</sub>     | —                 | 5.0         | pF       | V <sub>R</sub> = 0, f = 1.0MHz  |
| Reverse Recovery Time  | t <sub>rr</sub>    | —                 | 50          | ns       | I <sub>F</sub> = I <sub>R</sub> = 30mA,<br>I <sub>rr</sub> = 0.1 x I <sub>R</sub> , R <sub>L</sub> = 100W |

Notes: 5. Short duration pulse test used to minimize self-heating effect.  
6. Part mounted on FR-4 PC board with minimum recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>

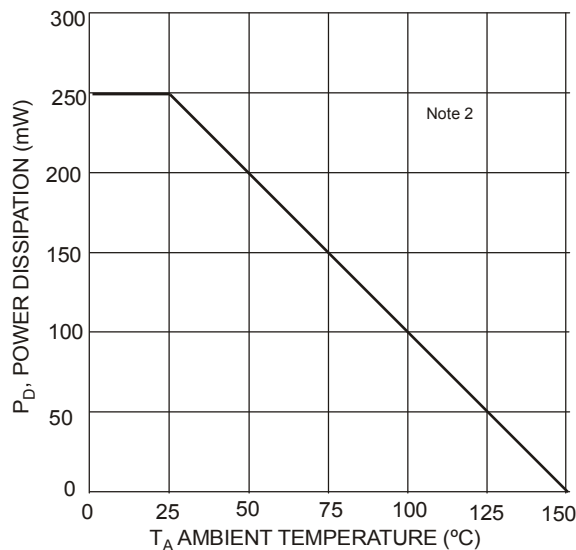


Fig. 1 Power Derating Curve

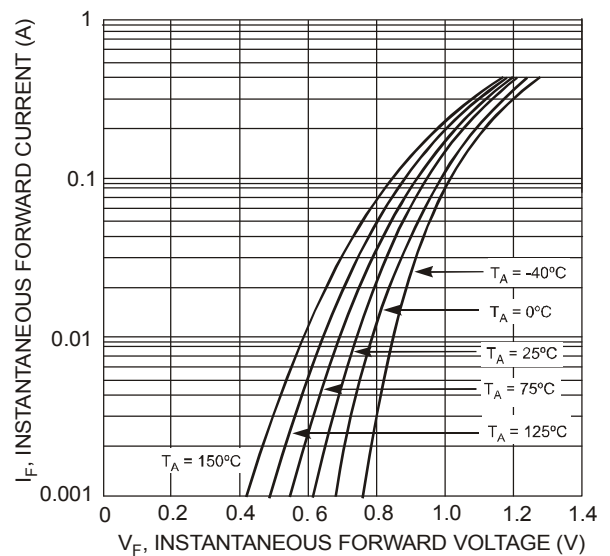


Fig. 2 Typical Forward Characteristics

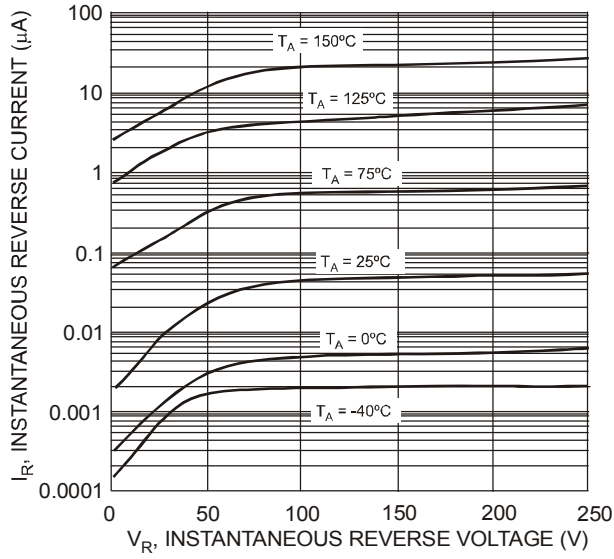


Fig. 3 Typical Reverse Characteristics

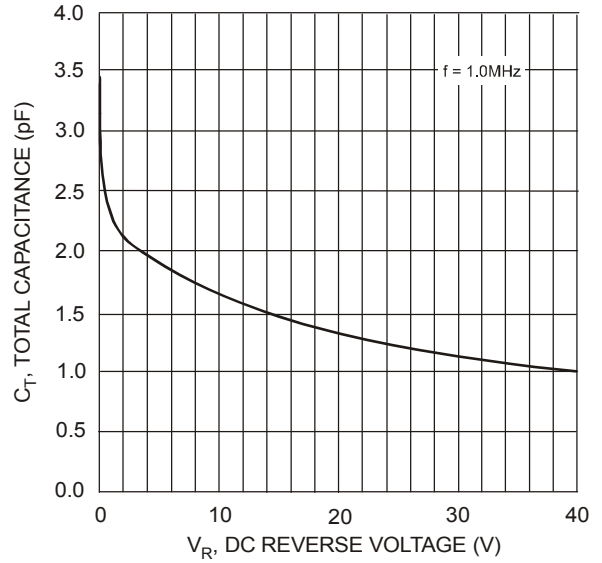
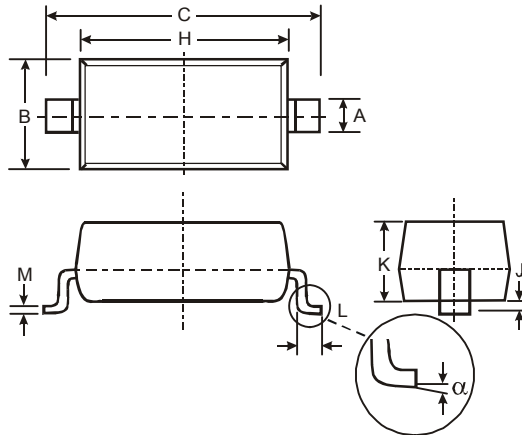


Fig. 4 Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

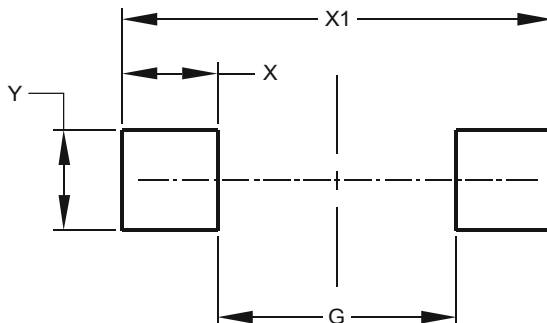
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| 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 |
| $\alpha$             | 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) |
|------------|---------------|
| G          | 2.250         |
| X          | 0.900         |
| X1         | 4.050         |
| Y          | 0.950         |

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