

## Features

- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- High Reverse Breakdown Voltage
- 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
- Type Code: BAV19W: A8 or T2 or T3  
BAV20W: T2 or T3  
BAV21W: T3
- Weight: 0.01 grams (Approximate)

SOD123

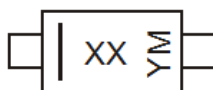


## Ordering Information (Note 5)

| Part Number          | Compliance | Case   | Packaging           |
|----------------------|------------|--------|---------------------|
| BAV19W-7-F           | Commercial | SOD123 | 3,000/Tape and Reel |
| BAV20W-7-F           | Commercial | SOD123 | 3,000/Tape and Reel |
| BAV20WQ-7-F (Note 4) | Automotive | SOD123 | 3,000/Tape and Reel |
| BAV21W-7-F           | Commercial | SOD123 | 3,000/Tape and Reel |
| BAV21WQ-7-F (Note 4) | Automotive | SOD123 | 3,000/Tape and Reel |

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  - See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  - Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are thermally the same, except where specified. For more information, please refer to <https://www.diodes.com/quality/product-compliance-definitions/>.
  - 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: F = 2018)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year  | 1998 | 1999 | 2000 | ... | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------|------|------|------|-----|------|------|------|------|------|------|------|------|------|------|------|
| Code  | J    | K    | L    | ... | Z    | A    | B    | C    | D    | E    | F    | G    | H    | J    | K    |
| 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>    | 100        | 150    | 200    | V    |
| Working Peak Reverse Voltage                                      | V <sub>RWM</sub>    |            |        |        |      |
| DC Blocking Voltage                                               | V <sub>R</sub>      |            |        |        |      |
| RMS Reverse Voltage                                               | V <sub>R(RMS)</sub> | 71         | 106    | 141    | V    |
| Forward Continuous Current (Note 6)                               | I <sub>FM</sub>     | 400        |        |        | mA   |
| Average Rectified Output Current (Note 6)                         | I <sub>O</sub>      | 200        |        |        | mA   |
| Non-Repetitive Peak Forward Surge Current @t = 1.0ms<br>@t = 1.0s | I <sub>FSM</sub>    | 2.5<br>0.5 |        |        | A    |
| Repetitive Peak Forward Surge Current                             | I <sub>FRM</sub>    | 625        |        |        | mA   |

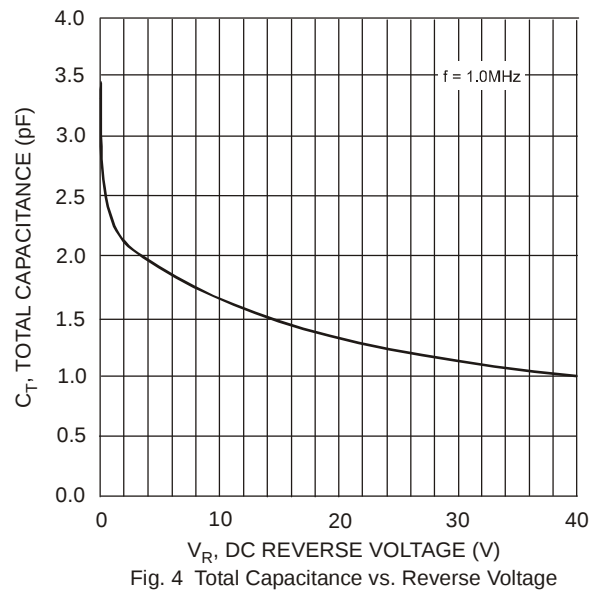
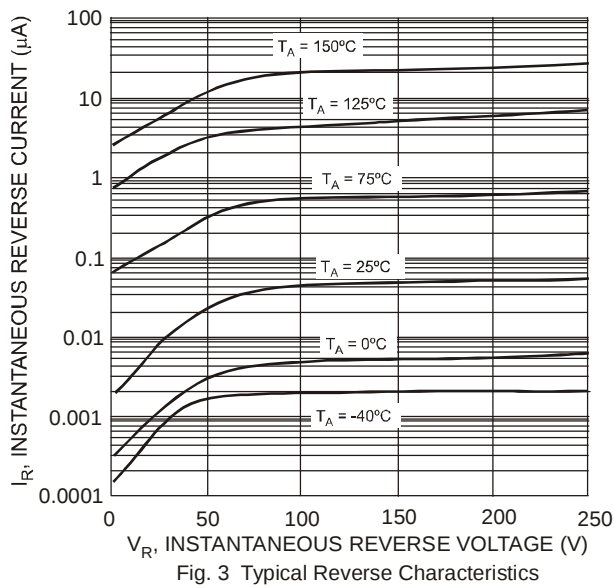
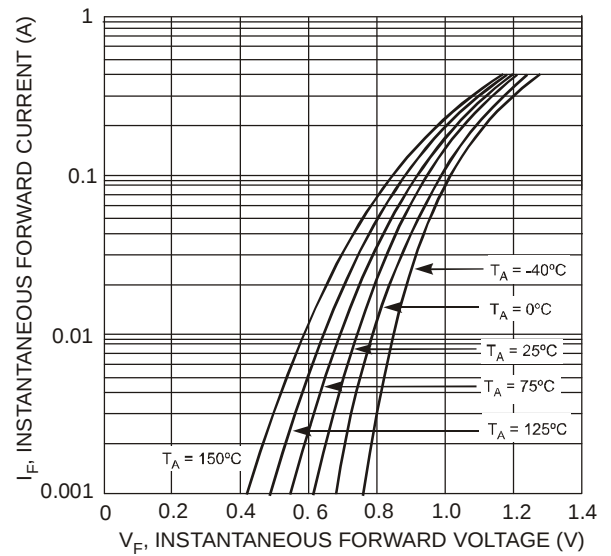
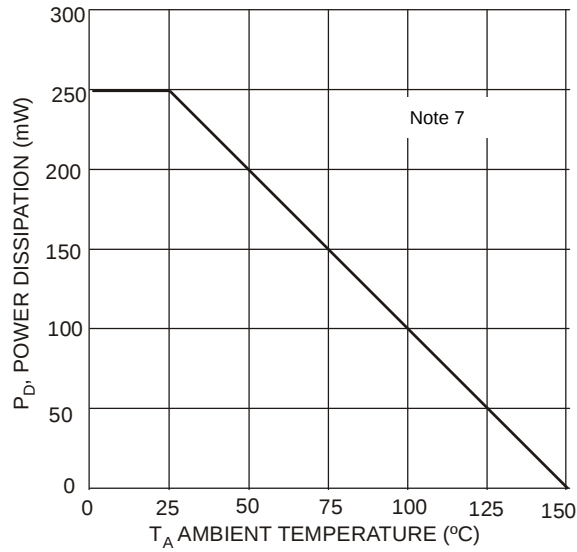
**Thermal Characteristics**

| Characteristic                                      | Symbol                            | Value       | Unit |
|-----------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 7)                          | P <sub>D</sub>                    | 250         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 7) | 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 8)<br>BAV19W<br>BAV20W<br>BAV21W | 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 8)     | 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 |

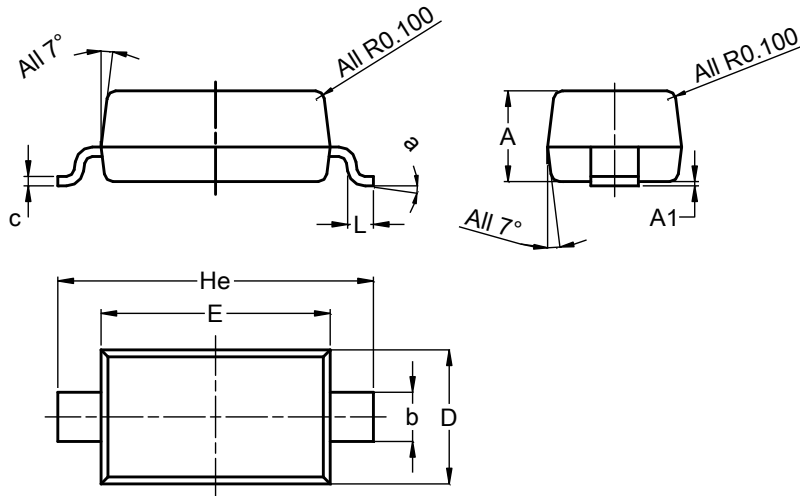
- Notes:
6. I<sub>FM</sub>, I<sub>O</sub> are valid provided that terminals are kept at ambient temperature.
  7. Part mounted on FR-4 PC board with minimum recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
  8. Short duration pulse test used to minimize self-heating effect.



## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SOD123

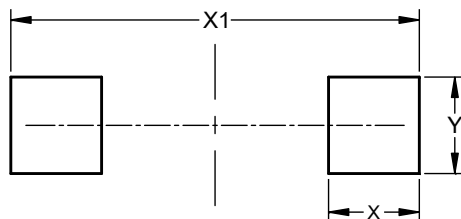


| SOD123               |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 1.00 | 1.35 | 1.05 |
| A1                   | 0.00 | 0.10 | 0.05 |
| b                    | 0.52 | 0.62 | 0.57 |
| c                    | 0.10 | 0.15 | 0.11 |
| D                    | 1.40 | 1.70 | 1.55 |
| E                    | 2.55 | 2.85 | 2.65 |
| He                   | 3.55 | 3.85 | 3.65 |
| L                    | 0.25 | 0.40 | 0.30 |
| a                    | 0°   | 8°   | --   |
| All Dimensions in mm |      |      |      |

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SOD123



| Dimensions | Value (in mm) |
|------------|---------------|
| X          | 0.900         |
| X1         | 4.050         |
| Y          | 0.950         |

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