

## 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**
- **PPAP Capable (Note 4)**

## Mechanical Data

- Case: SOD323
- Case Material: Molded Plastic, "Green" Molding Compound.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band, See Page 2
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe.  
Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.004 grams (Approximate)

SOD323



Top View



Device Schematic

## Ordering Information (Note 5)

| Part Number  | Qualification | Case   | Packaging          |
|--------------|---------------|--------|--------------------|
| BAV19WS-7-F  | AEC-Q101      | SOD323 | 3,000/Tape & Reel  |
| BAV20WS-7-F  | AEC-Q101      | SOD323 | 3,000/Tape & Reel  |
| BAV21WS-7-F  | AEC-Q101      | SOD323 | 3,000/Tape & Reel  |
| BAV21WS-13-F | AEC-Q101      | SOD323 | 10,000/Tape & Reel |
| BAV21WSQ-7-F | Automotive    | SOD323 | 3,000/Tape & 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



XX = Product Type Marking Code  
 BAV19WS Marking: T2 or T3  
 BAV20WS Marking: T2 or T3  
 BAV21WS Marking: T3

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

| Characteristic                            | Symbol              | BAV19WS | BAV20WS | BAV21WS | Unit |
|---|---------------------|---------|---------|---------|------|
| Repetitive Peak Reverse Voltage           | V <sub>RRM</sub>    | 120     | 200     | 250     | V    |
| 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 (Note 6)       | I <sub>FM</sub>     | 250     |         |         | mA   |
| Average Rectified Output Current (Note 6) | I <sub>O</sub>      | 200     |         |         | mA   |
| Non-Repetitive Peak Forward Surge Current | I <sub>FSM</sub>    | 9.0     |         |         | A    |
| @t = 1.0μs                                |                     | 3.0     |         |         |      |
| @t = 100μs                                |                     | 1.7     |         |         |      |
| @t = 10ms                                 |                     |         |         |         |      |
| Repetitive Peak Forward Surge Current     | I <sub>FRM</sub>    | 625     |         |         | mA   |

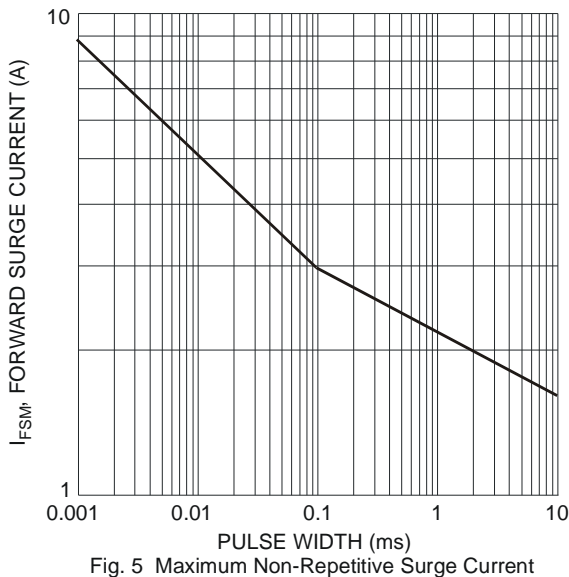
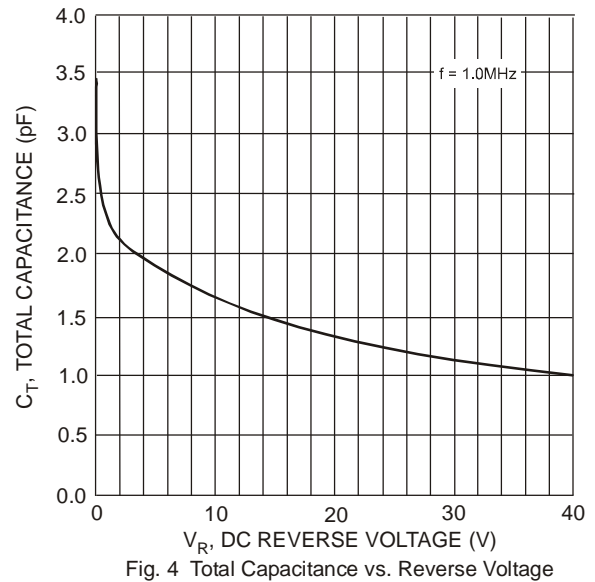
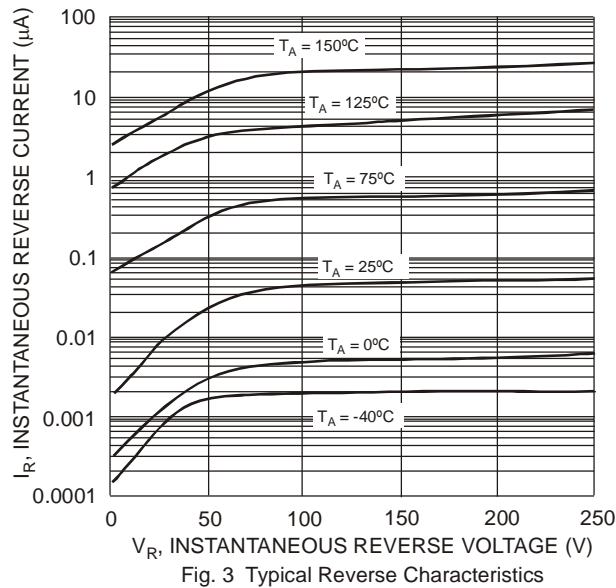
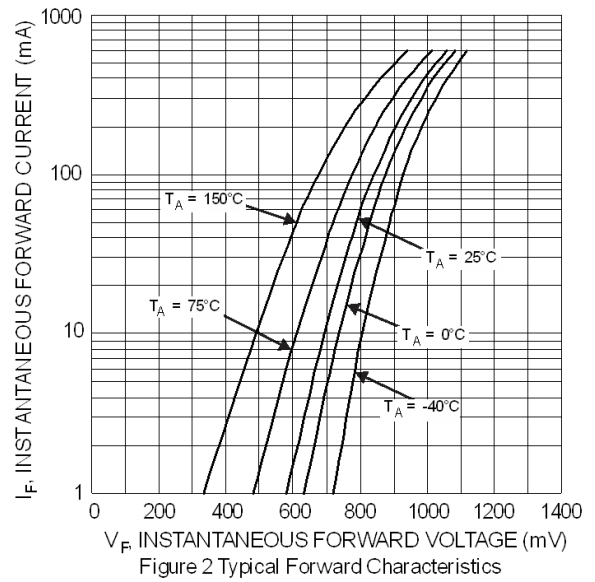
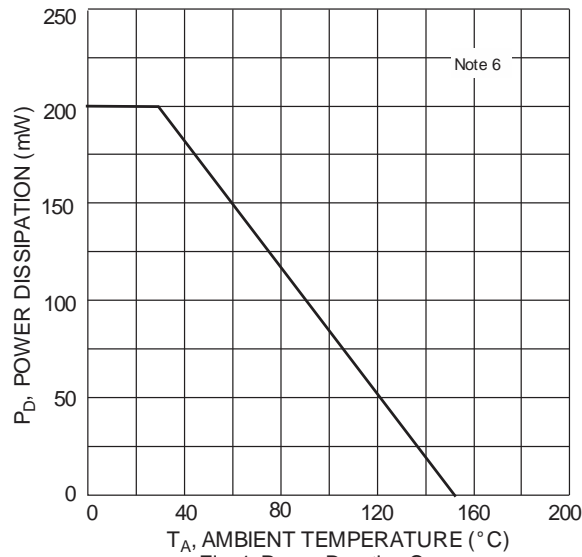
**Thermal Characteristics**

| Characteristic                                      | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation                                   | P <sub>D</sub>                    | 200         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 6) | R <sub>θJA</sub>                  | 625         | °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 7)                           | V <sub>(BR)R</sub> | 120 | —           | V        | I <sub>R</sub> = 100μA  |
| BAV19WS  |                    | 200 |             |          |   |
| BAV20WS  |                    | 250 |             |          |   |
| Forward Voltage  | V <sub>F</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 7) | I <sub>R</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> = 100Ω |

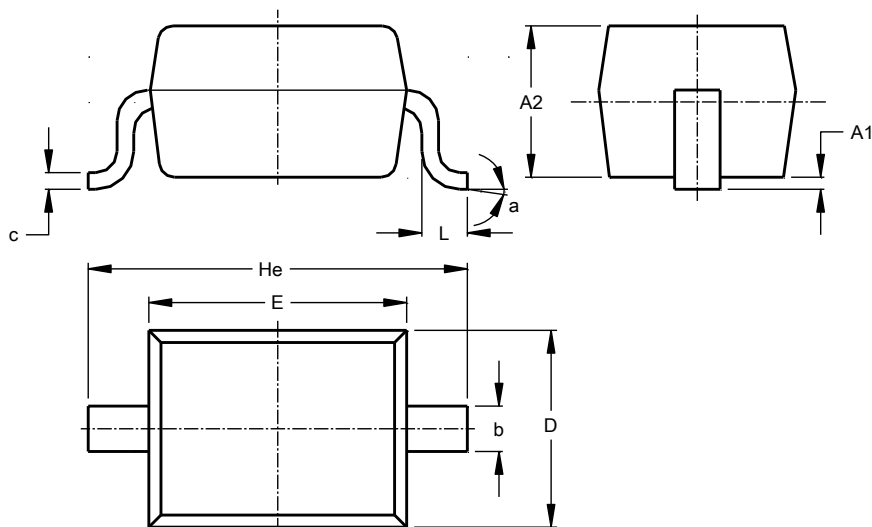
Notes: 6. Part mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.  
7. Short duration pulse test used to minimize self-heating effect.



## Package Outline Dimensions

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

**SOD323**

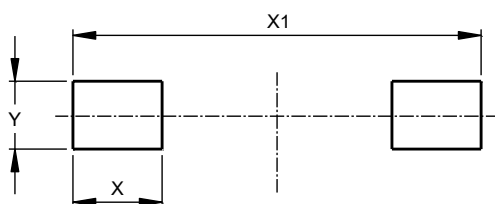


| SOD323               |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A1                   | --   | 0.10 | 0.05 |
| A2                   | 1.00 | 1.10 | 1.05 |
| b                    | 0.25 | 0.35 | 0.30 |
| c                    | 0.10 | 0.15 | 0.11 |
| D                    | 1.20 | 1.40 | 1.30 |
| E                    | 1.60 | 1.80 | 1.70 |
| He                   | 2.30 | 2.70 | 2.50 |
| L                    | 0.20 | 0.40 | 0.30 |
| a                    | 0°   | 8°   | —    |
| All Dimensions in mm |      |      |      |

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

**SOD323**



| Dimensions | Value (in mm) |
|------------|---------------|
| X          | 0.590         |
| X1         | 2.700         |
| Y          | 0.450         |

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