



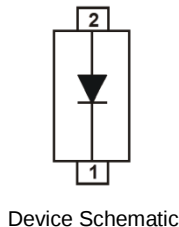
# THE DATASHEET OF BAV20WS-7

## 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)**
- For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: SOD323
- Package 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)



## Ordering Information (Note 4)

| Orderable Part Number | Package | Packing  |             |
|-----------------------|---------|----------|-------------|
|                       |         | Quantity | Carrier     |
| BAV19WS-7-F           | SOD323  | 3,000    | Tape & Reel |
| BAV20WS-7-F           | SOD323  | 3,000    | Tape & Reel |
| BAV21WS-7-F           | SOD323  | 3,000    | Tape & Reel |
| BAV21WS-13-F          | SOD323  | 10,000   | Tape & Reel |
| BAV21WSQ-7-F          | SOD323  | 3,000    | Tape & 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.
  - For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



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

**Maximum Ratings** (@  $T_A = +25^{\circ}\text{C}$ , unless otherwise specified.)

| Characteristic                                                                        | Symbol             | BAV19WS | BAV20WS | BAV21WS | Unit |
|---------------------------------------------------------------------------------------|--------------------|---------|---------|---------|------|
| Repetitive Peak Reverse Voltage                                                       | $V_{RRM}$          | 120     | 200     | 250     | V    |
| Working Peak Reverse Voltage<br>DC Blocking Voltage                                   | $V_{RWM}$<br>$V_R$ | 100     | 150     | 200     | V    |
| RMS Reverse Voltage                                                                   | $V_{R(RMS)}$       | 71      | 106     | 141     | V    |
| Forward Continuous Current (Note 5)                                                   | $I_{FM}$           | 250     |         |         | mA   |
| Average Rectified Output Current (Note 5)                                             | $I_O$              | 200     |         |         | mA   |
| Non-Repetitive Peak Forward Surge Current<br>@ t = 1.0μs<br>@ t = 100μs<br>@ t = 10ms | $I_{FSM}$          | 9.0     |         |         | A    |
|                                                                                       |                    | 3.0     |         |         |      |
|                                                                                       |                    | 1.7     |         |         |      |
| Repetitive Peak Forward Surge Current                                                 | $I_{FRM}$          | 625     |         |         | mA   |

**Thermal Characteristics**

| Characteristic                                      | Symbol          | Value       | Unit                 |
|-----------------------------------------------------|-----------------|-------------|----------------------|
| Power Dissipation                                   | $P_D$           | 200         | mW                   |
| Thermal Resistance Junction to Ambient Air (Note 5) | $R_{\theta JA}$ | 625         | $^{\circ}\text{C/W}$ |
| Operating and Storage Temperature Range             | $T_J, T_{STG}$  | -55 to +150 | $^{\circ}\text{C}$   |

**Electrical Characteristics** (@  $T_A = +25^{\circ}\text{C}$ , unless otherwise specified.)

| Characteristic                                                      | Symbol      | Min               | Max         | Unit                | Test Condition                                                            |
|---------------------------------------------------------------------|-------------|-------------------|-------------|---------------------|---------------------------------------------------------------------------|
| Reverse Breakdown Voltage (Note 6)<br>BAV19WS<br>BAV20WS<br>BAV21WS | $V_{(BR)R}$ | 120<br>200<br>250 | —           | V                   | $I_R = 100\mu\text{A}$                                                    |
| Forward Voltage                                                     | $V_F$       | —                 | 1.0<br>1.25 | V                   | $I_F = 100\text{mA}$<br>$I_F = 200\text{mA}$                              |
| Peak Reverse Current<br>@ Rated DC Blocking Voltage (Note 6)        | $I_R$       | —                 | 100<br>15   | nA<br>$\mu\text{A}$ | $T_J = +25^{\circ}\text{C}$<br>$T_J = +100^{\circ}\text{C}$               |
| Total Capacitance                                                   | $C_T$       | —                 | 5.0         | pF                  | $V_R = 0, f = 1.0\text{MHz}$                                              |
| Reverse Recovery Time                                               | $t_{RR}$    | —                 | 50          | ns                  | $I_F = I_R = 30\text{mA}$ ,<br>$I_{RR} = 0.1 \times I_R, R_L = 100\Omega$ |

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.  
6. Short duration pulse test used to minimize self-heating effect.

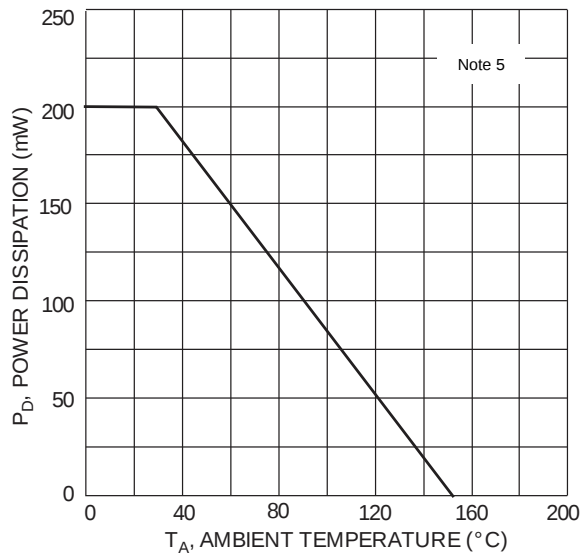


Fig. 1 Power Derating Curve

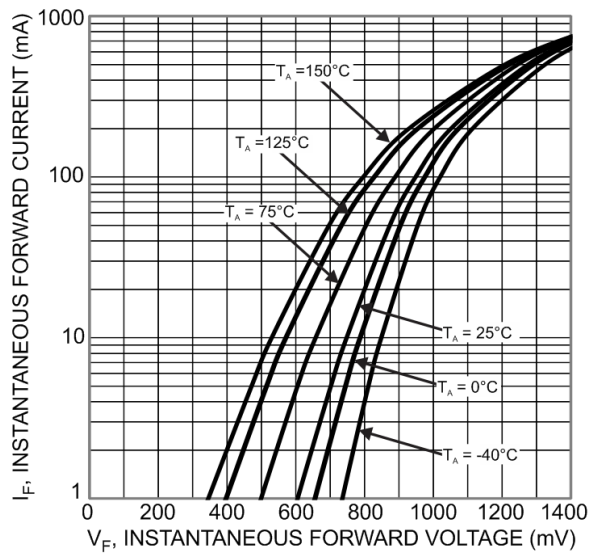


Fig. 2 Typical Forward Characteristics

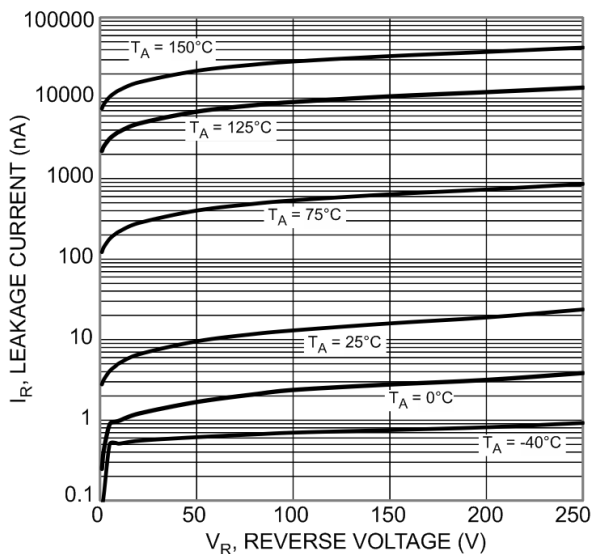


Fig. 3 Typical Reverse Characteristics

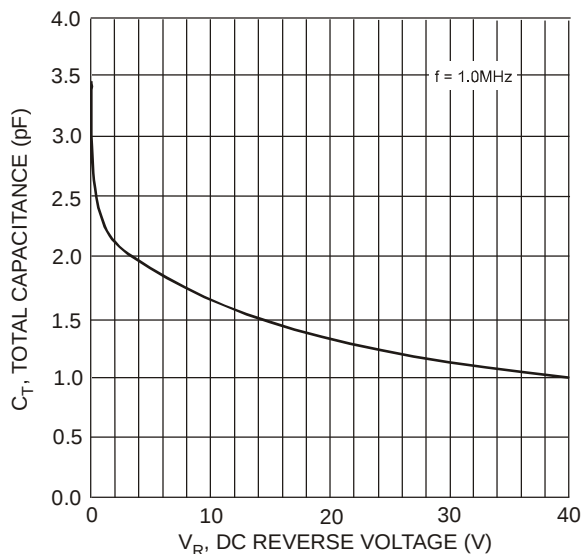


Fig. 4 Total Capacitance vs. Reverse Voltage

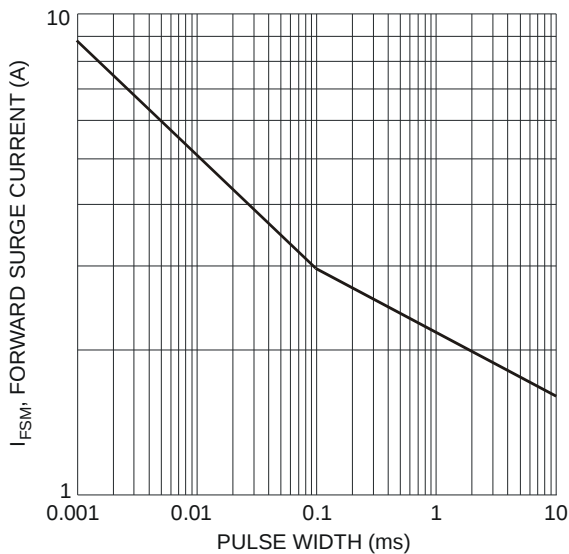
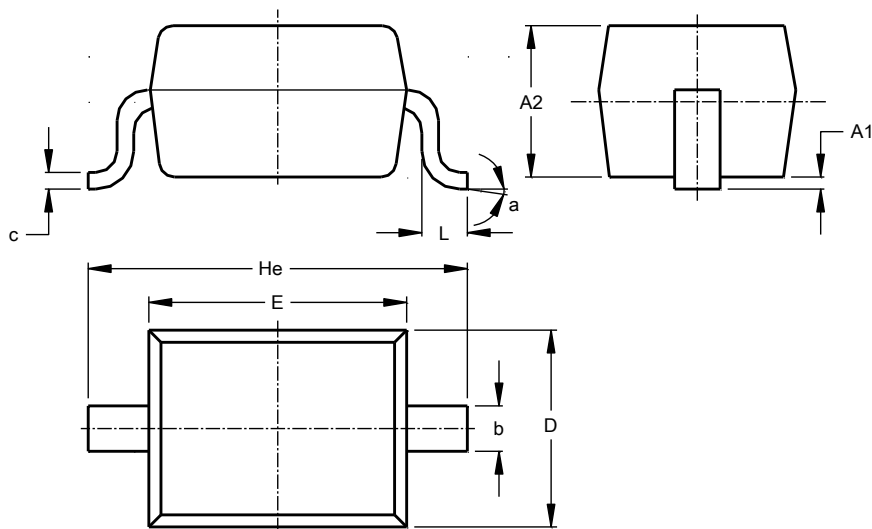


Fig. 5 Maximum Non-Repetitive Surge Current

## Package Outline Dimensions

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

**SOD323**

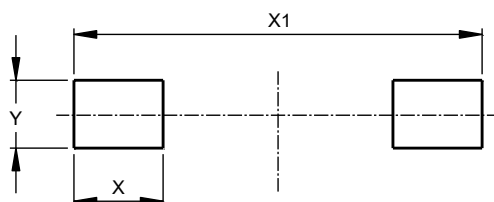


| SOD323               |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A1                   | --   | 0.10 | 0.05 |
| A2                   | 1.00 | 1.10 | 1.05 |
| b                    | 0.25 | 0.35 | 0.30 |
| c                    | 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 <http://www.diodes.com/package-outlines.html> for the latest version.

**SOD323**



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

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