# BAV16W/1N4148W

**SURFACE MOUNT FAST SWITCHING DIODE**

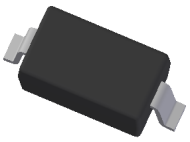
## Features

- Fast Switching Speed
- Low Forward Voltage: Maximum of 0.715V at 1mA
- Fast Reverse Recovery: Maximum of 4ns
- Low Capacitance: Maximum of 2pF
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- **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: SOD123
- 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 Alloy 42 Leadframe. (Lead-Free Plating). Solderable per MIL-STD-202, Method 208 e3
- Polarity: Cathode Band
- Weight: 0.01 grams (Approximate)

SOD123



Top View

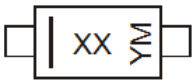
## Ordering Information (Note 4 & 5)

| Part Number | Compliance | Case | Packaging |
|---|---|---|---|
| BAV16W-7-F | Standard | SOD123 | 3,000/Tape & Reel |
| 1N4148W-7-F | Standard | SOD123 | 3,000/Tape & Reel |
| 1N4148WQ-7-F | Automotive | SOD123 | 3,000/Tape & Reel |
| 1N4148W-13-F | Standard | SOD123 | 10,000/Tape & Reel |
| 1N4148WQ-13-F | Automotive | SOD123 | 10,000/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 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-Q10x 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/.
5. For packaging details, go to our website at http://www.diodes.com/package-outlines.html.

## Marking Information

SOD123




xx = Product Type Marking Code (T4)
YM = Date Code Marking
Y or $\overline{Y}$ = Year (ex: E = 2017)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2001 | 2002 | 2003 | ….. | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | M | N | P | ….. | Z | 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 |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## Maximum Ratings (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 100 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 71 | V |
| Forward Continuous Current | $I_{FM}$ | 300 | mA |
| Non-Repetitive Peak Forward Surge Current @ t = 1.0µs<br>@ t = 1.0s | $I_{FSM}$ | 2.0<br>1.0 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation (Note 6) | $P_D$ | 400 | mW |
| Thermal Resistance Junction to Ambient Air (Note 6) | $R_{\theta JA}$ | 315 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -65 to +150 | °C |

## Electrical Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Max | Unit | Test Condition |
|---|---|---|---|---|---|
| Reverse Breakdown Voltage (Note 7) | $V_{(BR)R}$ | 100 | — | V | $I_R$ = 1.0µA |
| Forward Voltage | $V_{FM}$ | — | 0.715<br>0.855<br>1.0<br>1.25 | V | $I_F$ = 1.0mA<br>$I_F$ = 10mA<br>$I_F$ = 50mA<br>$I_F$ = 150mA |
| Peak Reverse Current (Note 7) | $I_{RM}$ | — | 1.0<br>50<br>30<br>25 | µA<br>µA<br>µA<br>nA | $V_R$ = 75V<br>$V_R$ = 75V, $T_J$ = +150°C<br>$V_R$ = 25V, $T_J$ = +150°C<br>$V_R$ = 20V |
| Total Capacitance | $C_T$ | — | 2.0 | pF | $V_R$ = 0, f = 1.0MHz |
| Reverse Recovery Time | $t_{rr}$ | — | 4.0 | ns | $I_F$ = $I_R$ = 10mA,<br>$I_{rr}$ = 0.1 x $I_R$, $R_L$ = 100Ω |

Notes: 6. Part mounted on FR-4 PC board, double-sided, with 3oz copper plating and with anode and cathode terminal pad dimensions of 2" x 2".
7. Short duration pulse test used to minimize self-heating effect.

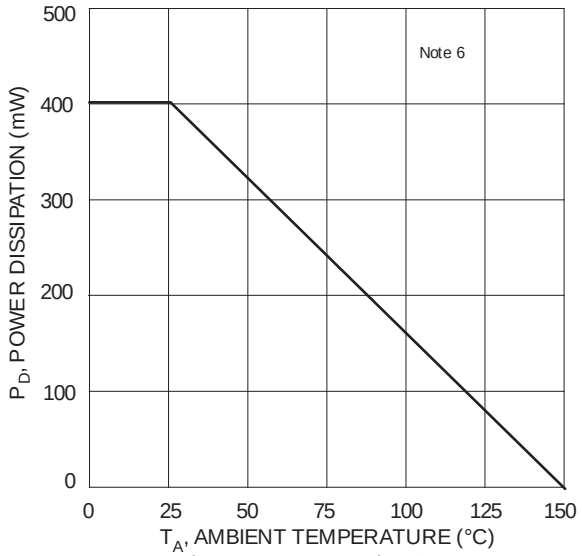

Figure 1 Power Derating Curve

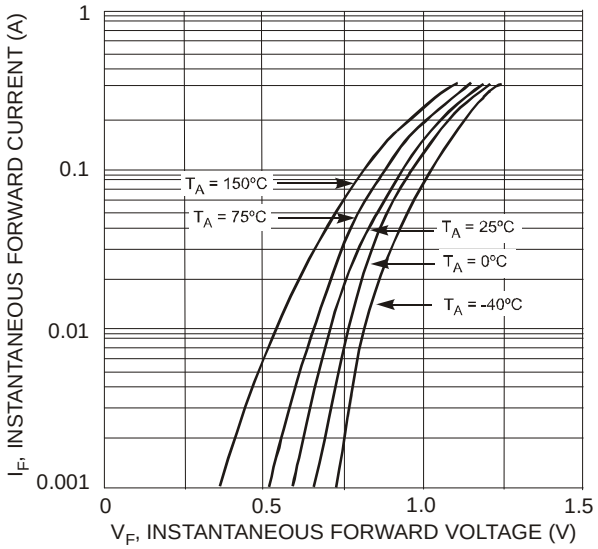

Figure 2 Typical Forward Characteristics


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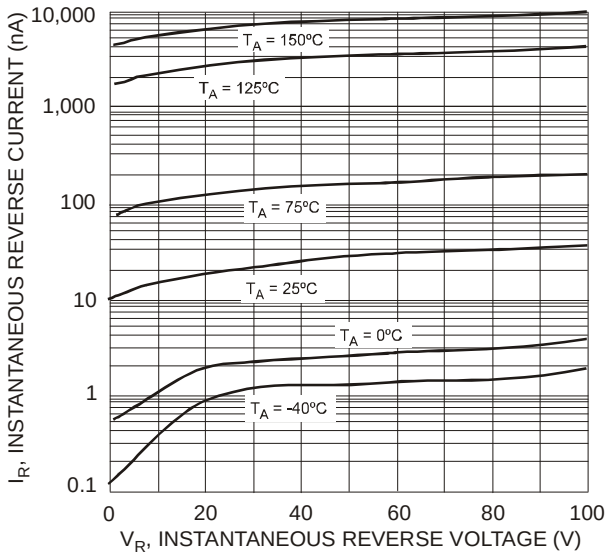



Figure 3 Typical Reverse Characteristics

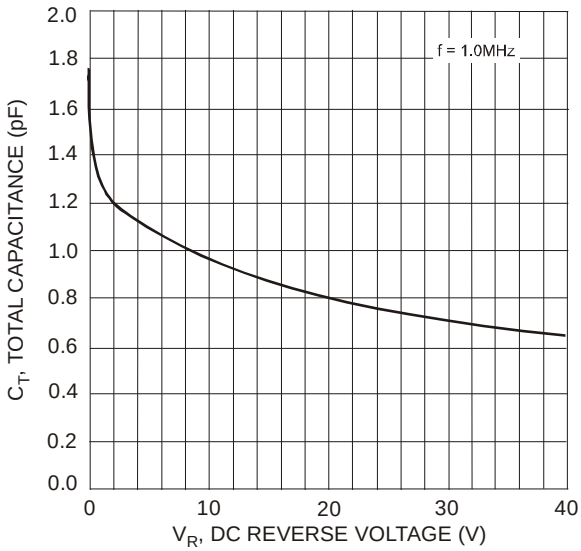
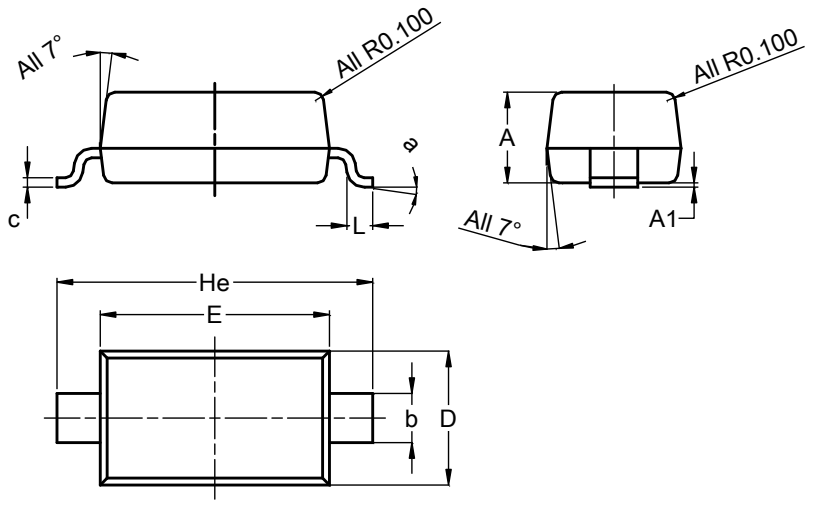



Figure 4 Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

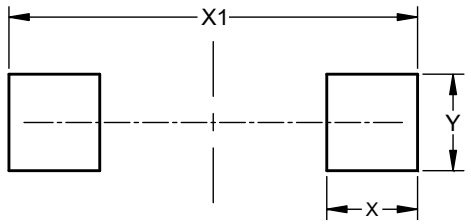
Please see http://www.diodes.com/package-outlines.html for the latest version.




| 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.




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