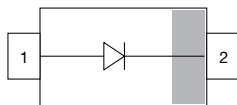




## Small Signal Switching Diodes, High Voltage



## FEATURES

- Silicon epitaxial planar diodes
- For general purpose
- AEC-Q101 qualified available
- Molding compound meets UL 94 V-0 flammability rating
- Moisture sensitivity level (MSL) 1
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3\_A - RoHS-compliant, AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

AUTOMOTIVE  
GRADE  
AvailableRoHS  
COMPLIANT

## LINKS TO ADDITIONAL RESOURCES



## MECHANICAL DATA

Case: SOD-123

Weight: approx. 10.6 mg

Packaging codes / options:

18/10K per 13" reel (8 mm tape), 10K/box

08/3K per 7" reel (8 mm tape), 15K/box

## PARTS TABLE

| PART   | TYPE DIFFERENTIATION | ORDERING CODE   | AEC-Q101 QUALIFIED | TYPE MARKING | CIRCUIT CONFIGURATION | TAPED UNITS PER REEL              | MINIMUM ORDER QUANTITY |
|--------|----------------------|-----------------|--------------------|--------------|-----------------------|-----------------------------------|------------------------|
| BAV19W | $V_R = 100\text{ V}$ | BAV19W-E3-08    | no                 | AS           | Single                | 3 000<br>(8 mm tape on 7" reel)   | 15 000                 |
|        |                      | BAV19W-HE3_A-08 | yes                |              |                       | 10 000<br>(8 mm tape on 13" reel) | 10 000                 |
|        |                      | BAV19W-E3-18    | no                 |              |                       |                                   |                        |
|        |                      | BAV19W-HE3_A-18 | yes                |              |                       |                                   |                        |
| BAV20W | $V_R = 150\text{ V}$ | BAV20W-E3-08    | no                 | AT           | Single                | 3 000<br>(8 mm tape on 7" reel)   | 15 000                 |
|        |                      | BAV20W-HE3_A-08 | yes                |              |                       | 10 000<br>(8 mm tape on 13" reel) | 10 000                 |
|        |                      | BAV20W-E3-18    | no                 |              |                       |                                   |                        |
|        |                      | BAV20W-HE3_A-18 | yes                |              |                       |                                   |                        |
| BAV21W | $V_R = 200\text{ V}$ | BAV21W-E3-08    | no                 | AU           | Single                | 3 000<br>(8 mm tape on 7" reel)   | 15 000                 |
|        |                      | BAV21W-HE3_A-08 | yes                |              |                       | 10 000<br>(8 mm tape on 13" reel) | 10 000                 |
|        |                      | BAV21W-E3-18    | no                 |              |                       |                                   |                        |
|        |                      | BAV21W-HE3_A-18 | yes                |              |                       |                                   |                        |

ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER  | TEST CONDITION  | PART   | SYMBOL      | VALUE | UNIT |
|--|---|--------|-------------|-------|------|
| Continuous reverse voltage   |   | BAV19W | $V_R$       | 100   | V    |
|  |   | BAV20W | $V_R$       | 150   | V    |
|  |   | BAV21W | $V_R$       | 200   | V    |
| Repetitive peak reverse voltage  |   | BAV19W | $V_{RRM}$   | 120   | V    |
|  |   | BAV20W | $V_{RRM}$   | 200   | V    |
|  |   | BAV21W | $V_{RRM}$   | 250   | V    |
| DC Forward current <sup>(1)</sup>  |   |        | $I_F$       | 300   | mA   |
| Rectified current (average) half wave rectification with resist. load <sup>(1)</sup> |   |        | $I_{F(AV)}$ | 200   | mA   |
| Repetitive peak forward current <sup>(1)</sup>                                       | $f \geq 50\text{ Hz}$ , $\theta = 180^{\circ}$        |        | $I_{FRM}$   | 625   | mA   |
| Surge forward current  | $t < 1\text{ s}$ , $T_j = 25\text{ }^{\circ}\text{C}$ |        | $I_{FSM}$   | 1     | A    |
| Power dissipation  | On FR-4 board with recommended soldering footprint    |        | $P_{tot}$   | 300   | mW   |
|  | Infinite heatsink                                     |        |             | 410   | mW   |

## Note

<sup>(1)</sup> Infinite heatsink



| <b>THERMAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |   |            |             |                    |
|---|---|------------|-------------|--------------------|
| PARAMETER   | TEST CONDITION  | SYMBOL     | VALUE       | UNIT               |
| Thermal resistance junction to ambient air  | according to JEDEC® 51-3 on FR-4 board with recommended soldering footprint | $R_{thJA}$ | 420         | K/W                |
| Thermal resistance junction to lead   | Infinite heat sink  | $R_{thJL}$ | 300         | K/W                |
| Junction temperature  |   | $T_j$      | 150         | $^{\circ}\text{C}$ |
| Storage temperature range   |   | $T_{stg}$  | -65 to +150 | $^{\circ}\text{C}$ |
| Operating temperature range   |   | $T_{op}$   | -55 to +150 | $^{\circ}\text{C}$ |

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |  |        |          |      |      |               |
|--|--|--------|----------|------|------|---------------|
| PARAMETER  | TEST CONDITION   | PART   | SYMBOL   | TYP. | MAX. | UNIT          |
| Forward voltage  | $I_F = 100\text{ mA}$  |        | $V_F$    |      | 1    | V             |
|  | $I_F = 200\text{ mA}$  |        | $V_F$    |      | 1.25 | V             |
| Leakage current  | $V_R = 100\text{ V}$   | BAV19W | $I_R$    |      | 100  | nA            |
|  | $V_R = 100\text{ V}, T_j = 100\text{ }^{\circ}\text{C}$                              | BAV19W | $I_R$    |      | 15   | $\mu\text{A}$ |
|  | $V_R = 150\text{ V}$   | BAV20W | $I_R$    |      | 100  | nA            |
|  | $V_R = 150\text{ V}, T_j = 100\text{ }^{\circ}\text{C}$                              | BAV20W | $I_R$    |      | 15   | $\mu\text{A}$ |
|  | $V_R = 200\text{ V}$   | BAV21W | $I_R$    |      | 100  | nA            |
|  | $V_R = 200\text{ V}, T_j = 100\text{ }^{\circ}\text{C}$                              | BAV21W | $I_R$    |      | 15   | $\mu\text{A}$ |
| Dynamic forward resistance   | $I_F = 10\text{ mA}$   |        | $r_f$    | 5    |      | $\Omega$      |
| Diode capacitance  | $V_R = 0, f = 1\text{ MHz}$  |        | $C_D$    | 0.5  |      | pF            |
| Reverse recovery time  | $I_F = 30\text{ mA}, I_R = 30\text{ mA}, i_R = 3\text{ mA}, R_L = 100\text{ }\Omega$ |        | $t_{rr}$ |      | 50   | ns            |



**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

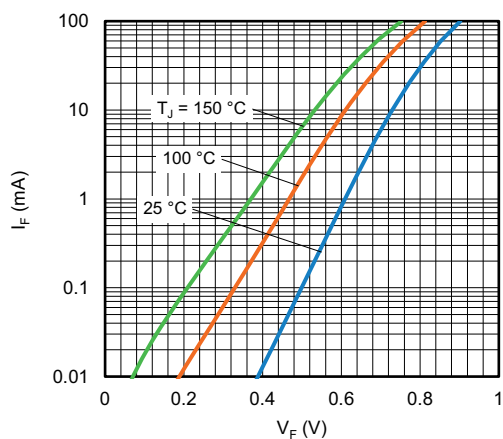


Fig. 1 - Typical Forward Current vs. Forward Voltage

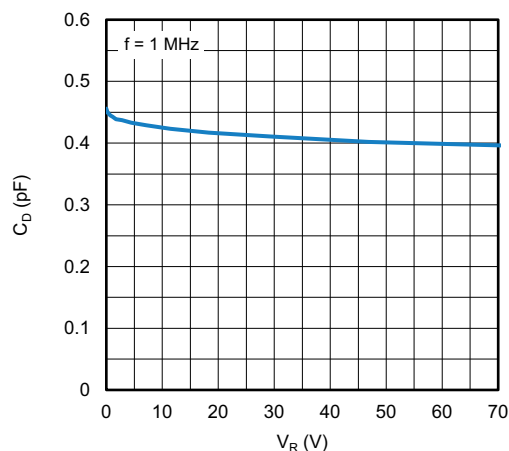


Fig. 3 - Typical Capacitance vs. Reverse Voltage

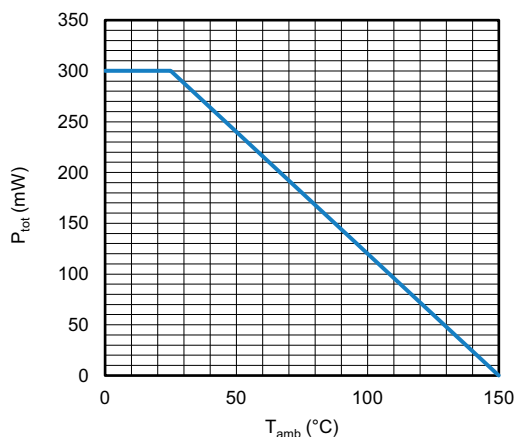


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

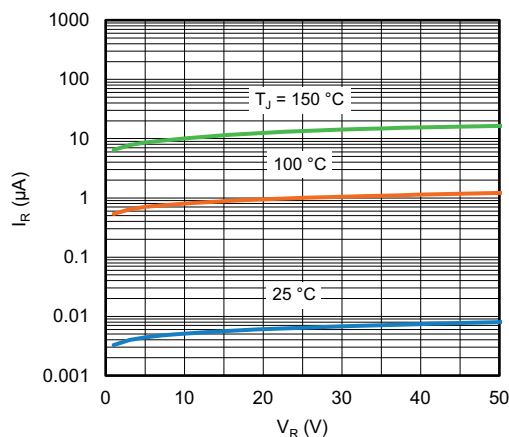
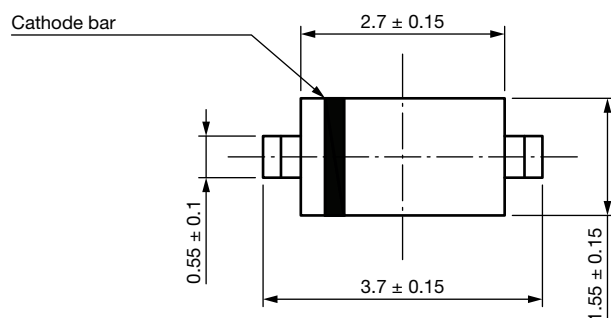
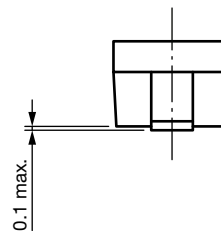
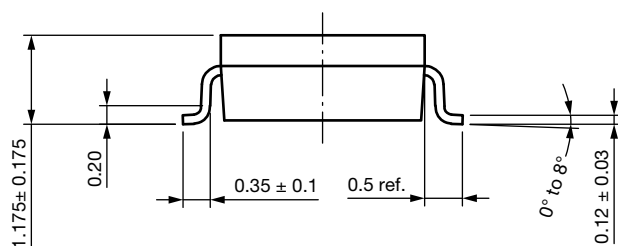


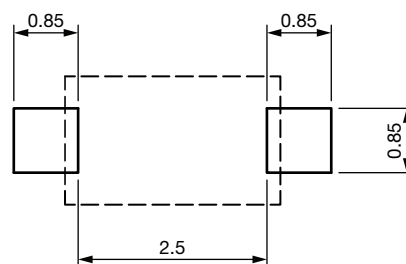
Fig. 4 - Typical Reverse Leakage Current vs. Reverse Voltage



**PACKAGE DIMENSIONS** in millimeters (inches): **SOD-123**



Foot print recommendation



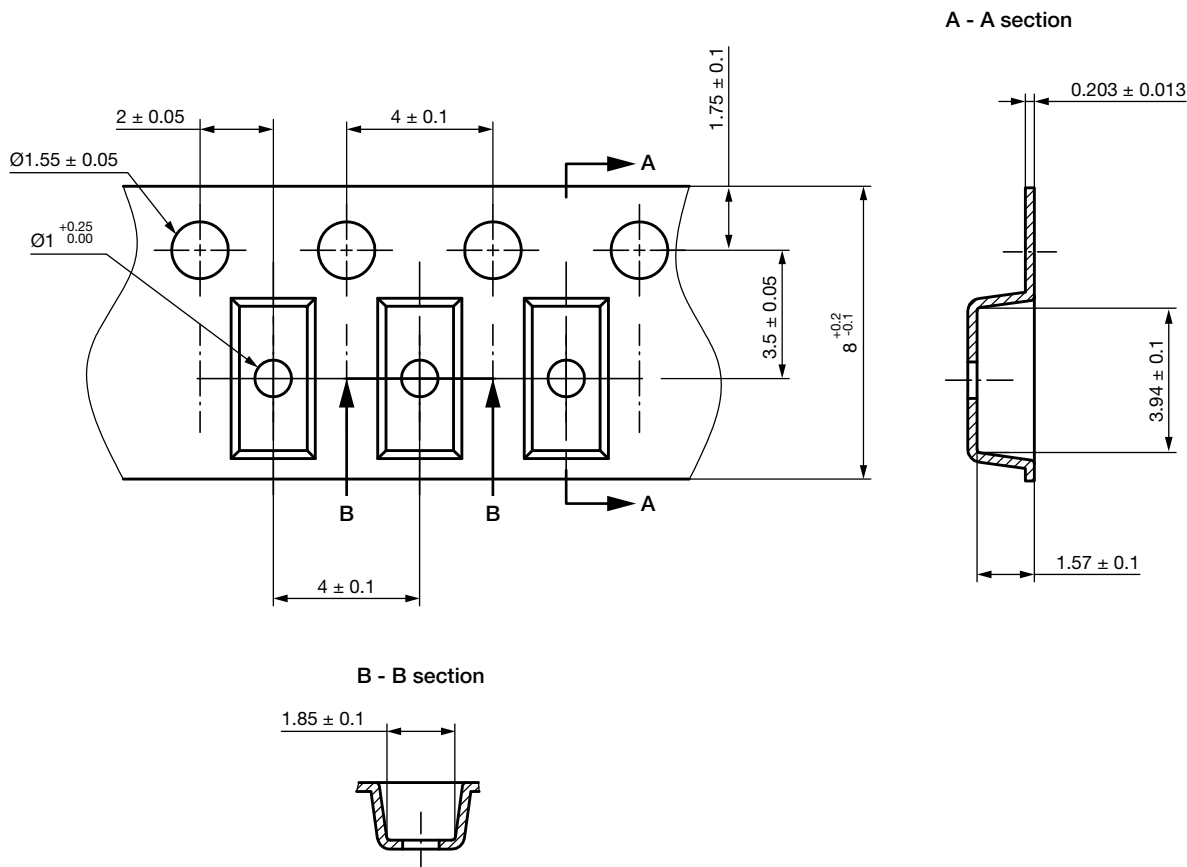
Rev. 01 - Date: 18. Jan. 2022

Document no.: S8-V-3910.01-003 (4)

23223



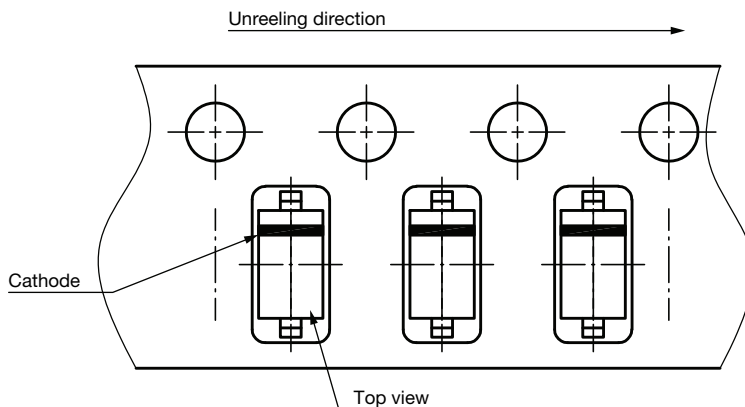
**CARRIER TAPE SOD-123**



Rev. 02 - Date: 21. Jan. 2014  
Document no.: S8-V-3717.10-002 (4)

23224

**ORIENTATION IN CARRIER TAPE SOD-123**



Rev. 02 - Date: 07. Nov. 2022  
Document no.: S8-V-3717.10-003 (4)

23225



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.