

## Small Signal Switching Diodes, High Voltage



### MECHANICAL DATA

**Case:** SOD-123

**Weight:** approx. 10.3 mg

**Packaging codes/options:**

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

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

### FEATURES

- Silicon epitaxial planar diodes
- For general purpose
- AEC-Q101 qualified
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3 - RoHS-compliant, AEC-Q101 qualified
- Material categorization:

For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

### PARTS TABLE

| PART   | TYPE DIFFERENTIATION | ORDERING CODE                  | TYPE MARKING | INTERNAL CONSTRUCTION | REMARKS       |
|--------|----------------------|--------------------------------|--------------|-----------------------|---------------|
| BAV19W | $V_R = 100\text{ V}$ | BAV19W-E3-08 or BAV19W-E3-18   | A8           | Single diode          | Tape and reel |
|        |                      | BAV19W-HE3-08 or BAV19W-HE3-18 |              |                       |               |
| BAV20W | $V_R = 150\text{ V}$ | BAV20W-E3-08 or BAV20W-E3-18   | A9           | Single diode          | Tape and reel |
|        |                      | BAV20W-HE3-08 or BAV20W-HE3-18 |              |                       |               |
| BAV21W | $V_R = 200\text{ V}$ | BAV21W-E3-08 or BAV21W-E3-18   | AA           | Single diode          | Tape and reel |
|        |                      | BAV21W-HE3-08 or BAV21W-HE3-18 |              |                       |               |

### 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>                                                    |                                                       |        | $I_F$       | 250   | 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 <sup>(1)</sup>                                                     |                                                       |        | $P_{tot}$   | 410   | mW   |

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

| PARAMETER                                                 | TEST CONDITION | SYMBOL     | VALUE         | UNIT                 |
|-----------------------------------------------------------|----------------|------------|---------------|----------------------|
| Thermal resistance junction to ambient air <sup>(1)</sup> |                | $R_{thJA}$ | 375           | $^{\circ}\text{C/W}$ |
| Junction temperature <sup>(1)</sup>                       |                | $T_j$      | 150           | $^{\circ}\text{C}$   |
| Storage temperature range <sup>(1)</sup>                  |                | $T_{stg}$  | - 65 to + 150 | $^{\circ}\text{C}$   |
| Operating temperature range                               |                | $T_{op}$   | - 55 to + 150 | $^{\circ}\text{C}$   |

#### Note

<sup>(1)</sup> Valid provided that leads are kept at ambient temperature



| ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |                                                                                           |        |          |      |      |      |               |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------|----------|------|------|------|---------------|
| PARAMETER                                                                                         | TEST CONDITION                                                                            | PART   | SYMBOL   | MIN. | 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                                                                                 | $V_R = 0, f = 1\text{ MHz}$                                                               |        | $C_D$    |      | 1.5  |      | pF            |
| Reverse recovery time                                                                             | $I_F = 30\text{ mA}, I_R = 30\text{ mA},$<br>$i_R = 3\text{ mA}, R_L = 100\text{ }\Omega$ |        | $t_{rr}$ |      |      | 50   | ns            |

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

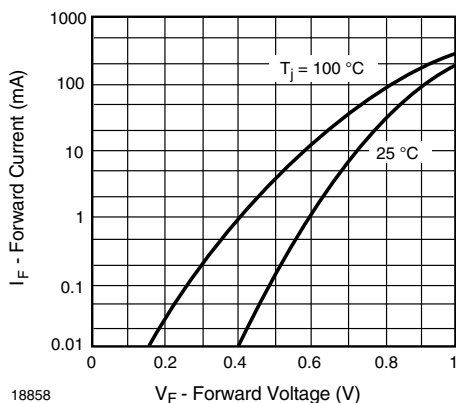


Fig. 1 - Forward Current vs. Forward Voltage

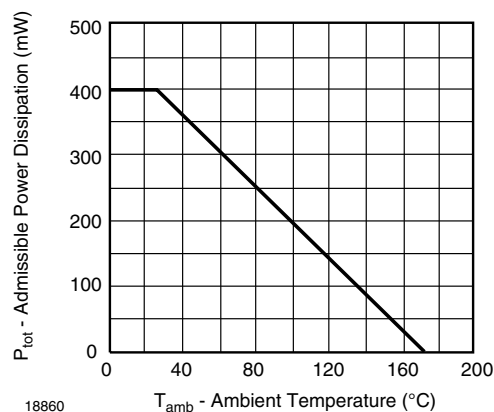


Fig. 3 - Admissible Power Dissipation vs. Ambient Temperature

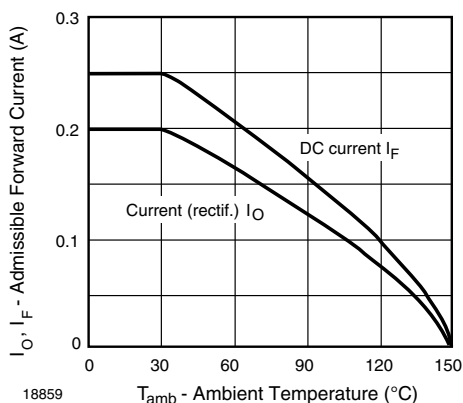


Fig. 2 - Admissible Forward Current vs. Ambient Temperature

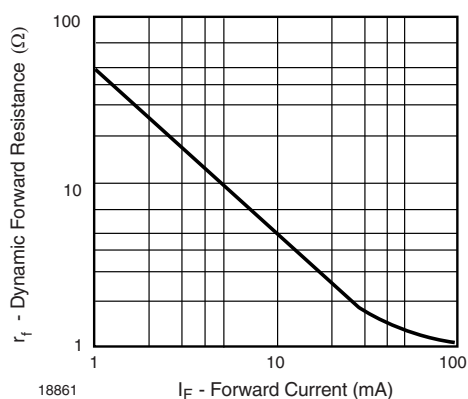


Fig. 4 - Dynamic Forward Resistance vs. Forward Current

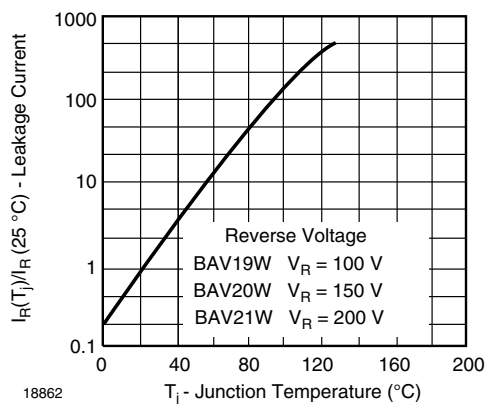


Fig. 5 - Leakage Current vs. Junction Temperature

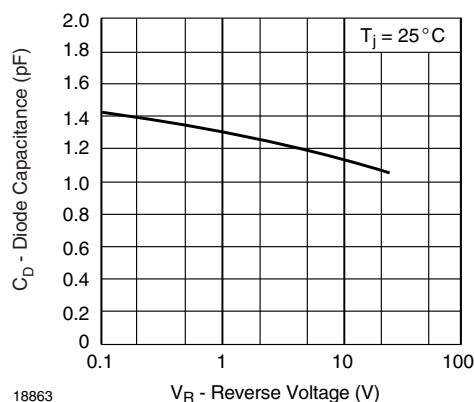
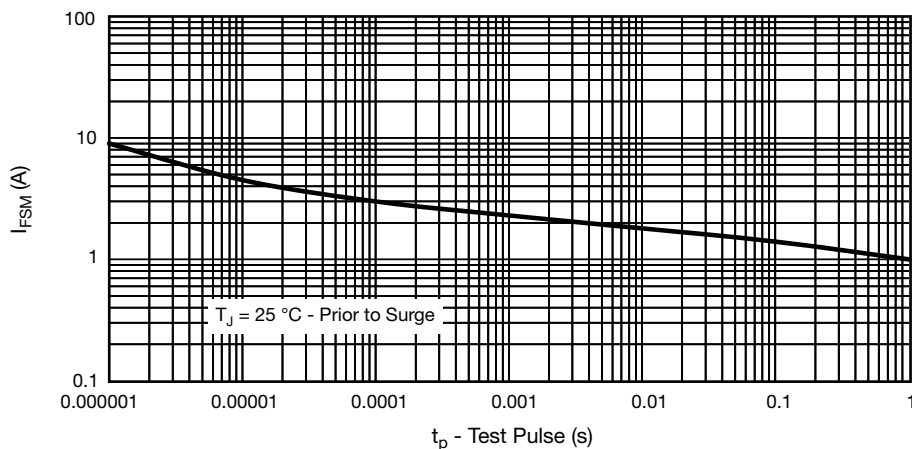
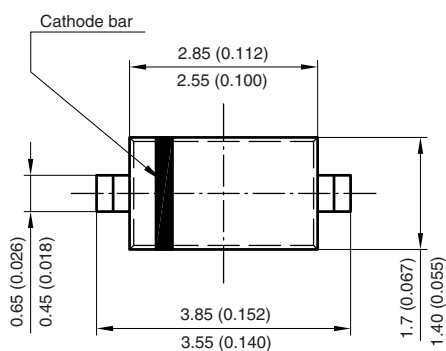
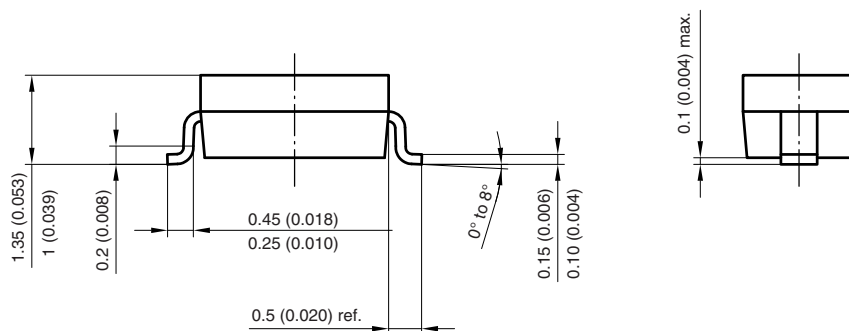


Fig. 6 - Capacitance vs. Reverse Voltage

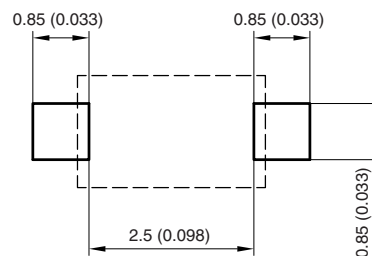

Fig. 7 - Non-Repetitive Peak Forward Current vs. Pulse Duration  
Maximum Admissible Values of Square Pulse



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



Mounting Pad Layout



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17432



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