

## Small Signal Schottky Diode



### 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 mm tape), 15K/box

### FEATURES

- For general purpose applications
- This diode features very low turn-on voltage and fast switching
- This device is protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges
- 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   | ORDERING CODE                  | INTERNAL CONSTRUCTION | TYPE MARKING | REMARKS       |
|--------|--------------------------------|-----------------------|--------------|---------------|
| BAT46W | BAT46W-E3-08 or BAT46W-E3-18   | Single Diode          | L6           | Tape and reel |
|        | BAT46W-HE3-08 or BAT46W-HE3-18 |                       |              |               |

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

| PARAMETER                                      | TEST CONDITION                   | SYMBOL    | VALUE | UNIT |
|------------------------------------------------|----------------------------------|-----------|-------|------|
| Repetitive peak reverse voltage                |                                  | $V_{RRM}$ | 100   | V    |
| Forward continuous current <sup>(1)</sup>      |                                  | $I_F$     | 150   | mA   |
| Repetitive peak forward current <sup>(1)</sup> | $t_p < 1\text{ s}, \delta < 0.5$ | $I_{FRM}$ | 350   | mA   |
| Surge forward current <sup>(1)</sup>           | $t_p < 10\text{ ms}$             | $I_{FSM}$ | 750   | mA   |
| Power dissipation <sup>(1)</sup>               | $T_{amb} = 65^{\circ}\text{C}$   | $P_{tot}$ | 150   | mW   |

#### Note

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

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

| PARAMETER                                                 | TEST CONDITION | SYMBOL     | VALUE         | UNIT               |
|-----------------------------------------------------------|----------------|------------|---------------|--------------------|
| Thermal resistance junction to ambient air <sup>(1)</sup> |                | $R_{thJA}$ | 300           | K/W                |
| Junction temperature                                      |                | $T_j$      | 125           | $^{\circ}\text{C}$ |
| Operating temperature range                               |                | $T_{op}$   | - 55 to + 125 | $^{\circ}\text{C}$ |
| Storage temperature range                                 |                | $T_{stg}$  | - 55 to + 150 | $^{\circ}\text{C}$ |

#### Note

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

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |                                                        |            |      |      |      |               |
|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------|------------|------|------|------|---------------|
| PARAMETER                                                                                                | TEST CONDITION                                         | SYMBOL     | MIN. | TYP. | MAX. | UNIT          |
| Reverse breakdown voltage                                                                                | $I_R = 100\text{ }\mu\text{A}$ (pulsed)                | $V_{(BR)}$ | 100  |      |      | V             |
| Leakage current <sup>(1)</sup>                                                                           | $V_R = 1.5\text{ V}$                                   | $I_R$      |      |      | 0.5  | $\mu\text{A}$ |
|                                                                                                          | $V_R = 1.5\text{ V}, T_j = 60\text{ }^{\circ}\text{C}$ | $I_R$      |      |      | 5    | $\mu\text{A}$ |
|                                                                                                          | $V_R = 10\text{ V}$                                    | $I_R$      |      |      | 0.8  | $\mu\text{A}$ |
|                                                                                                          | $V_R = 10\text{ V}, T_j = 60\text{ }^{\circ}\text{C}$  | $I_R$      |      |      | 7.5  | $\mu\text{A}$ |
|                                                                                                          | $V_R = 50\text{ V}$                                    | $I_R$      |      |      | 2    | $\mu\text{A}$ |
|                                                                                                          | $V_R = 50\text{ V}, T_j = 60\text{ }^{\circ}\text{C}$  | $I_R$      |      |      | 15   | $\mu\text{A}$ |
|                                                                                                          | $V_R = 75\text{ V}$                                    | $I_R$      |      |      | 5    | $\mu\text{A}$ |
|                                                                                                          | $V_R = 75\text{ V}, T_j = 60\text{ }^{\circ}\text{C}$  | $I_R$      |      |      | 20   | $\mu\text{A}$ |
| Forward voltage <sup>(1)</sup>                                                                           | $I_F = 0.1\text{ mA}$                                  | $V_F$      |      |      | 250  | mV            |
|                                                                                                          | $I_F = 10\text{ mA}$                                   | $V_F$      |      |      | 450  | mV            |
|                                                                                                          | $I_F = 250\text{ mA}$                                  | $V_F$      |      |      | 1000 | mV            |
| Diode capacitance                                                                                        | $V_R = 0\text{ V}, f = 1\text{ MHz}$                   | $C_D$      |      | 10   |      | pF            |
|                                                                                                          | $V_R = 1\text{ V}, f = 1\text{ MHz}$                   | $C_D$      |      | 6    |      | pF            |

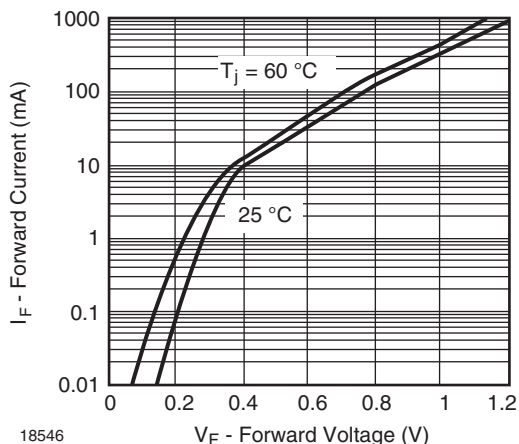
**Note**
<sup>(1)</sup> Pulse test;  $t_p \leq 300\text{ }\mu\text{s}$ ,  $\delta < 2\%$ 
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Typical Instantaneous Forward Characteristics

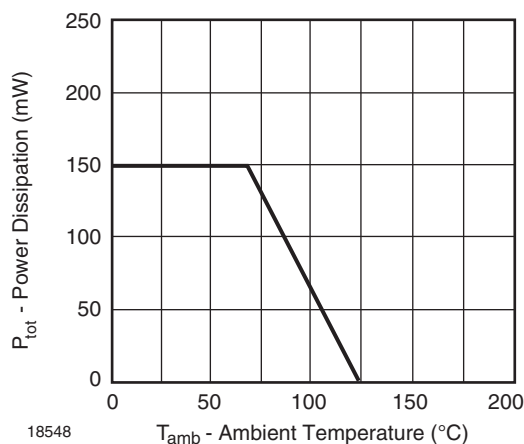


Fig. 3 - Admissible Power Dissipation vs. Ambient Temperature

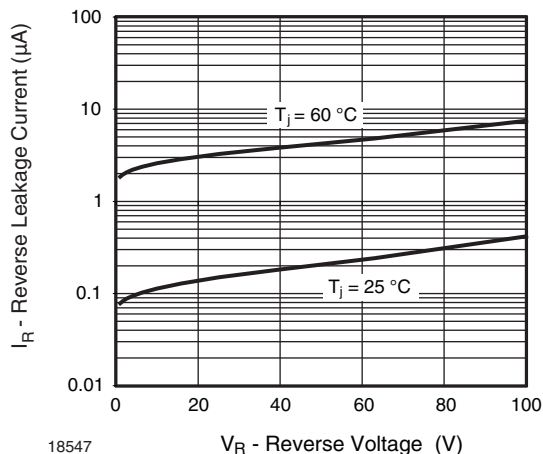
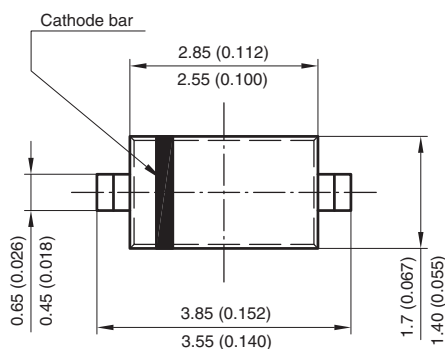
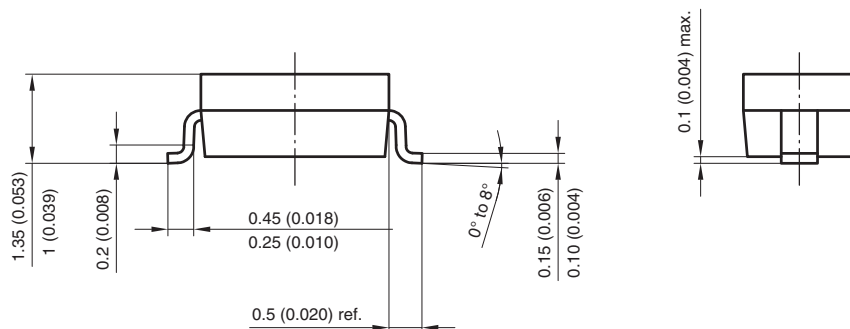


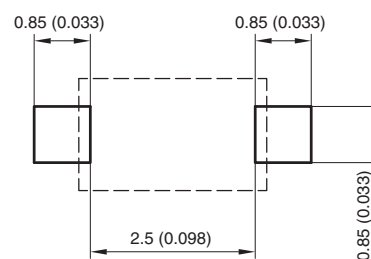
Fig. 2 - Typical Reverse Characteristics



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



Mounting Pad Layout



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17432



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