

## 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

- These diodes feature very low turn-on voltage and fast switching. These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges
- For general purpose applications
- 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       |
| BAT42W      | BAT42W-E3-08 or BAT42W-E3-18   | Single diode          | L2           | Tape and reel |
|             | BAT42W-HE3-08 or BAT42W-HE3-18 |                       |              |               |
| BAT43W      | BAT43W-E3-08 or BAT43W-E3-18   | Single diode          | L3           |               |
|             | BAT43W-HE3-08 or BAT43W-HE3-18 |                       |              |               |

| ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified) |                                  |           |       |      |
|-----------------------------------------------------------------------------------------|----------------------------------|-----------|-------|------|
| PARAMETER                                                                               | TEST CONDITION                   | SYMBOL    | VALUE | UNIT |
| Repetitive peak reverse voltage                                                         |                                  | $V_{RRM}$ | 30    | V    |
| Forward continuous current <sup>(1)</sup>                                               |                                  | $I_F$     | 200   | mA   |
| Repetitive peak forward current <sup>(1)</sup>                                          | $t_p < 1\text{ s}, \delta < 0.5$ | $I_{FRM}$ | 500   | mA   |
| Surge forward current <sup>(1)</sup>                                                    | $t_p < 10\text{ ms}$             | $I_{FSM}$ | 4     | A    |
| Power dissipation <sup>(1)</sup>                                                        | $T_{amb} = 65^{\circ}\text{C}$   | $P_{tot}$ | 200   | 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                                                                            | PART   | SYMBOL     | MIN. | TYP. | MAX. | UNIT          |
| Reverse breakdown voltage                                                                                | $I_R = 100\text{ }\mu\text{A}$ (pulsed)                                                   |        | $V_{(BR)}$ | 30   |      |      | V             |
| Leakage current <sup>(1)</sup>                                                                           | $V_R = 25\text{ V}$                                                                       |        | $I_R$      |      |      | 0.5  | $\mu\text{A}$ |
|                                                                                                          | $V_R = 25\text{ V}, T_j = 100\text{ }^{\circ}\text{C}$                                    |        | $I_R$      |      |      | 100  | $\mu\text{A}$ |
| Forward voltage <sup>(1)</sup>                                                                           | $I_F = 200\text{ mA}$                                                                     |        | $V_F$      |      |      | 1000 | mV            |
|                                                                                                          | $I_F = 10\text{ mA}$                                                                      | BAT42W | $V_F$      |      |      | 400  | mV            |
|                                                                                                          | $I_F = 50\text{ mA}$                                                                      | BAT42W | $V_F$      |      |      | 650  | mV            |
|                                                                                                          | $I_F = 2\text{ mA}$                                                                       | BAT43W | $V_F$      | 260  |      | 330  | mV            |
|                                                                                                          | $I_F = 15\text{ mA}$                                                                      | BAT43W | $V_F$      |      |      | 450  | mV            |
| Diode capacitance                                                                                        | $V_R = 1\text{ V}, f = 1\text{ MHz}$                                                      |        | $C_D$      |      | 7    |      | pF            |
| Reverse recovery time                                                                                    | $I_F = 10\text{ mA}, I_R = 10\text{ mA},$<br>$i_R = 1\text{ mA}, R_L = 100\text{ }\Omega$ |        | $t_{rr}$   |      |      | 5    | ns            |

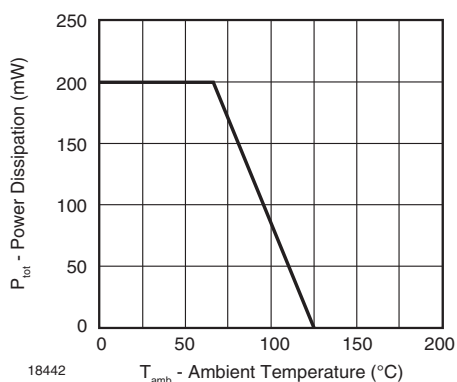
**Note**(1) Pulse test;  $t_p \leq 300\text{ }\mu\text{s}$ ,  $t_p/T < 0.02$ **TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature

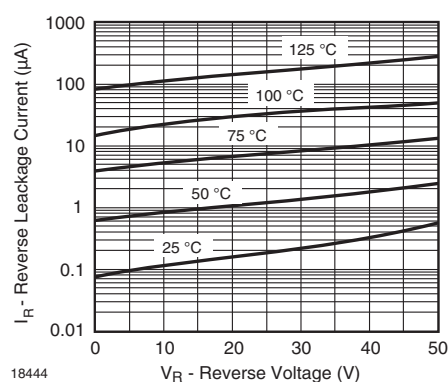


Fig. 3 - Typical Reverse Characteristics

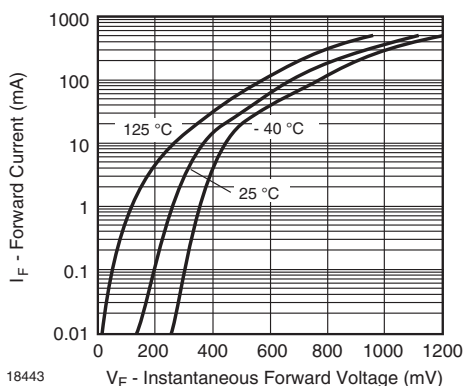


Fig. 2 - Typical Forward Characteristics

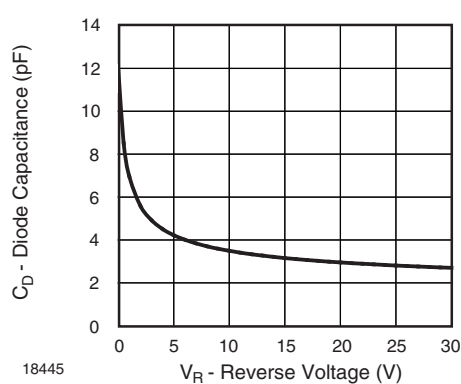
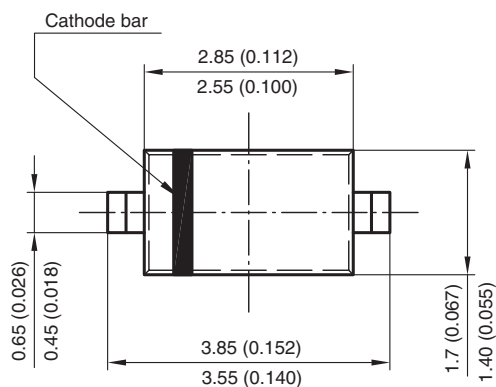
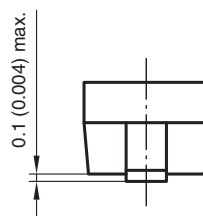
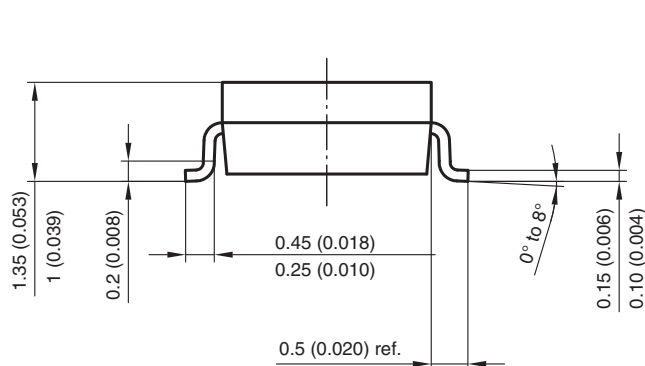


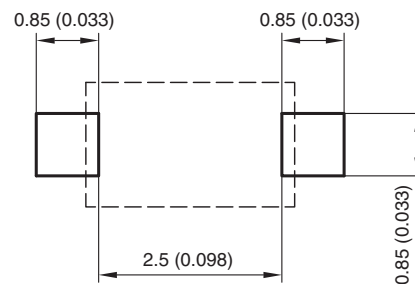
Fig. 4 - Typical Capacitance vs. Reverse Voltage



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



Mounting Pad Layout



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17432



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