

## Small Signal Schottky Diode



### 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
- 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

### 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

### PARTS TABLE

| PART   | ORDERING CODE                  | INTERNAL CONSTRUCTION | TYPE MARKING | REMARKS       |
|--------|--------------------------------|-----------------------|--------------|---------------|
| BAT54W | BAT54W-E3-08 or BAT54W-E3-18   | Single diode          | L4           | Tape and reel |
|        | BAT54W-HE3-08 or BAT54W-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> | $t_p < 1 \text{ s}, \delta < 0.5$ | $I_{FRM}$ | 300   | mA   |
| Surge forward current <sup>(1)</sup>           | $t_p = 10 \text{ ms}$             | $I_{FSM}$ | 600   | mA   |
| Power dissipation <sup>(1)</sup>               |                                   | $P_{tot}$ | 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> |                | $R_{thJA}$ | 650           | K/W                |
| Maximum junction temperature                              |                | $T_j$      | 125           | $^{\circ}\text{C}$ |
| Storage temperature range                                 |                | $T_{stg}$  | - 65 to + 150 | $^{\circ}\text{C}$ |
| Operating temperature range                               |                | $T_{op}$   | - 55 to + 125 | $^{\circ}\text{C}$ |

#### 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                                                                                | Tested with 100 $\mu\text{A}$ pulses                                                             | $V_{(BR)}$ | 30   |      |      | V             |
| Leakage current <sup>(1)</sup>                                                                           | $V_R = 25\text{ V}$                                                                              | $I_R$      |      |      | 2    | $\mu\text{A}$ |
| Forward voltage <sup>(1)</sup>                                                                           | $I_F = 0.1\text{ mA}$                                                                            | $V_F$      |      |      | 240  | mV            |
|                                                                                                          | $I_F = 1\text{ mA}$                                                                              | $V_F$      |      |      | 320  | mV            |
|                                                                                                          | $I_F = 10\text{ mA}$                                                                             | $V_F$      |      |      | 400  | mV            |
|                                                                                                          | $I_F = 30\text{ mA}$                                                                             | $V_F$      |      |      | 500  | mV            |
|                                                                                                          | $I_F = 100\text{ mA}$                                                                            | $V_F$      |      |      | 800  | mV            |
| Diode capacitance                                                                                        | $V_R = 1\text{ V}$ , $f = 1\text{ MHz}$                                                          | $C_D$      |      |      | 10   | 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**

<sup>(1)</sup> Pulse test:  $t_p < 300\text{ }\mu\text{s}$ ,  $\theta < 2\text{ }\%$

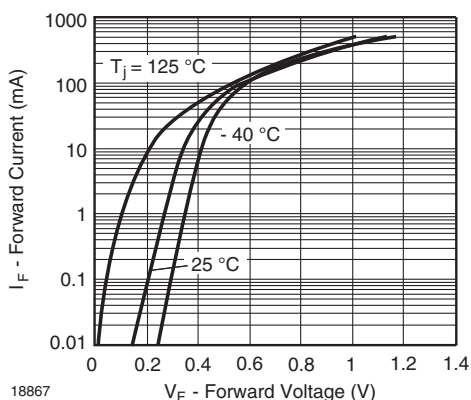
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Typical Forward Current vs. Forward Voltage vs. Various Temperatures

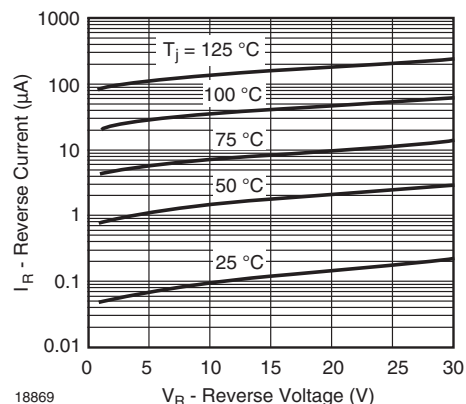


Fig. 3 - Typical Reverse Current vs. Reverse Voltage vs. Various Temperatures

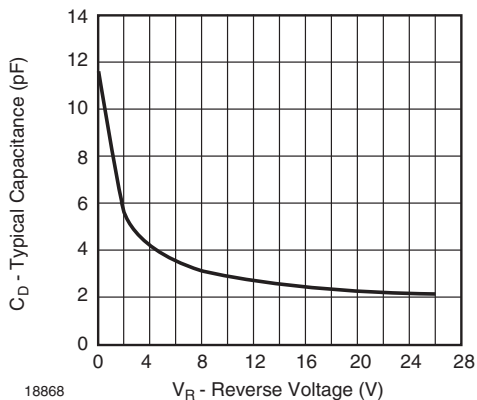
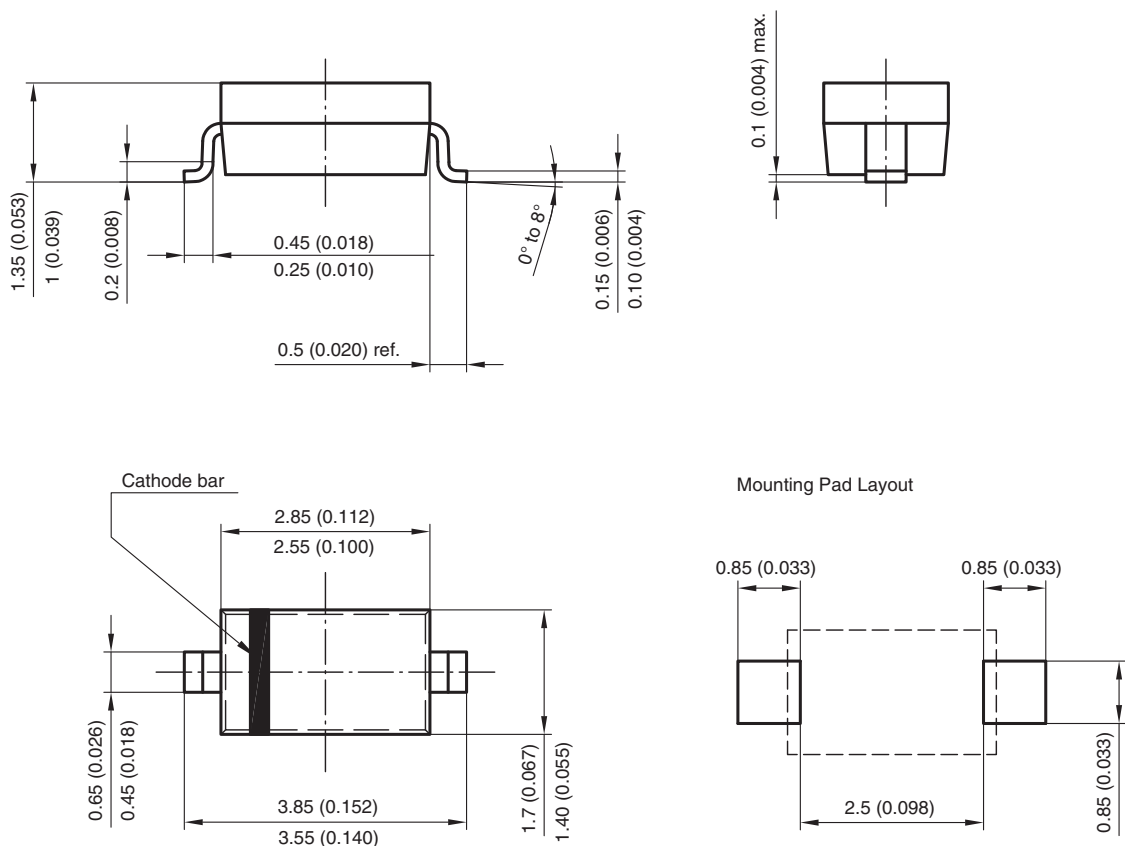


Fig. 2 - Typical Capacitance vs. Reverse Applied Voltage



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



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