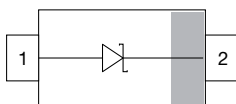


## Small Signal Schottky Diode



### FEATURES

- These diodes feature 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 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 - 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  
Available



**RoHS**  
COMPLIANT

### LINKS TO ADDITIONAL RESOURCES



3D Models

**SPICE**

Models



Marking



Parametric  
Search



Order Samples

### 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   | ORDERING CODE   | AEC-Q101 QUALIFIED | TYPE MARKING | CIRCUIT CONFIGURATION | TAPED UNITS PER REEL              | MINIMUM ORDER QUANTITY |
|--------|-----------------|--------------------|--------------|-----------------------|-----------------------------------|------------------------|
| BAT54W | BAT54W-E3-08    | no                 | L8           | Single                | 3 000<br>(8 mm tape on 7" reel)   | 15 000                 |
|        | BAT54W-HE3_A-08 | yes                |              |                       | 10 000<br>(8 mm tape on 13" reel) | 10 000                 |
|        | BAT54W-E3-18    | no                 |              |                       |                                   |                        |
|        | BAT54W-HE3_A-18 | yes                |              |                       |                                   |                        |

### PACKAGE

| PACKAGE NAME | WEIGHT  | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL     | SOLDERING CONDITIONS         |
|--------------|---------|--------------------------------------|--------------------------------|------------------------------|
| SOD-123      | 10.6 mg | UL 94 V-0                            | MSL 1<br>(according J-STD-020) | Peak temperature max. 260 °C |

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ °C}$ , 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> | duty cycle $t_p / T < 0.5$                         | $I_{FRM}$ | 300   | mA   |
| Surge forward current <sup>(1)</sup>           | $t_p = 10\text{ ms}$                               | $I_{FSM}$ | 600   | mA   |
| Power dissipation                              | on FR-4 board with recommended soldering footprint | $P_{tot}$ | 230   | mW   |
|                                                | Infinite heatsink                                  |           | 350   | mW   |

#### Note

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

**THERMAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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 lead           | Infinite heatsink                                                           | $R_{thJL}$ | 280         | K/W                |
| 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 | $^{\circ}\text{C}$ |

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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:  $t_p < 300\text{ }\mu\text{s}$ , duty cycle  $t_p/T < 0.02$



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

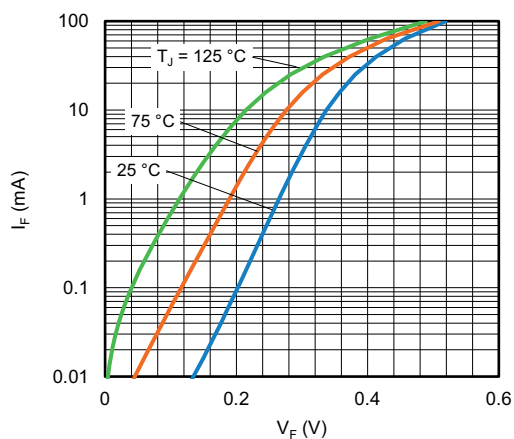


Fig. 1 - Typical Forward Current vs. Forward Voltage

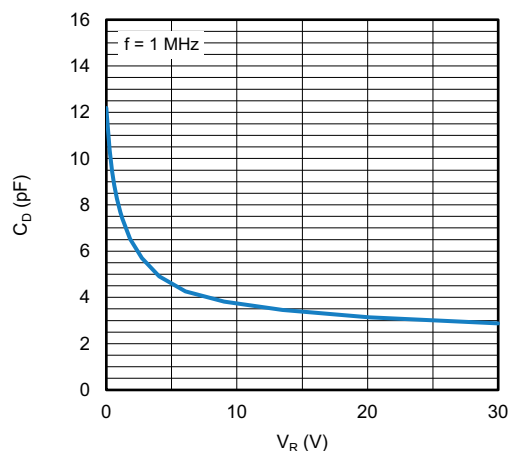


Fig. 3 - Typical Reverse Characteristics

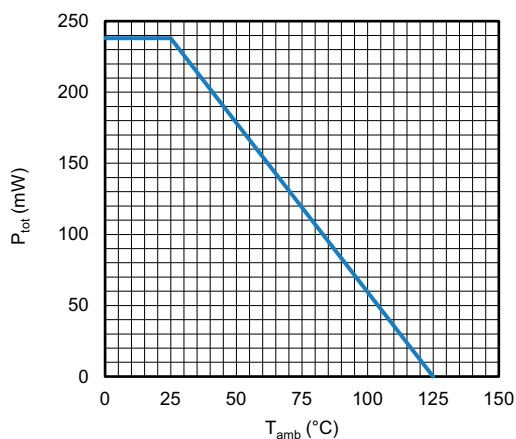


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

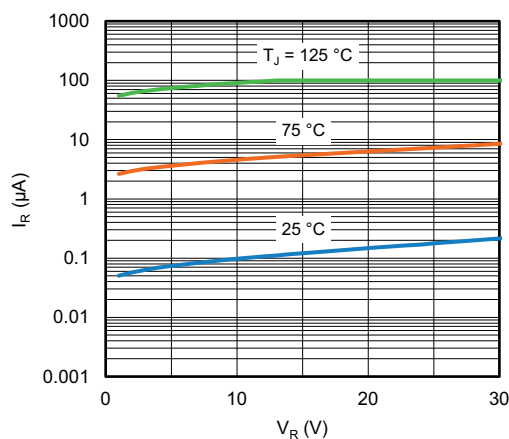
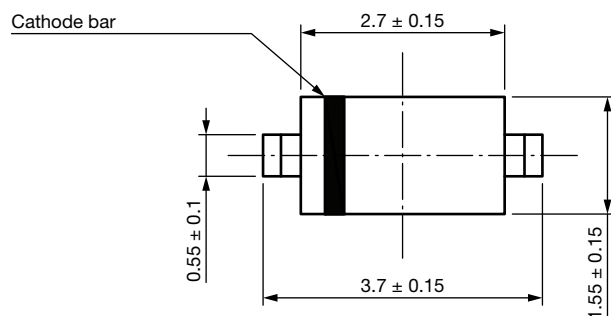
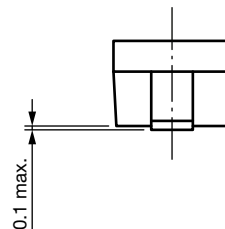
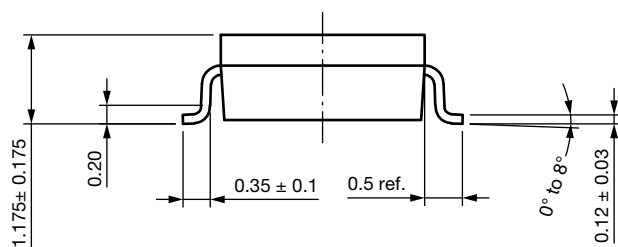


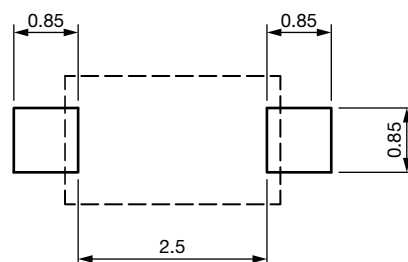
Fig. 4 - Typical Capacitance vs. Reverse Voltage



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



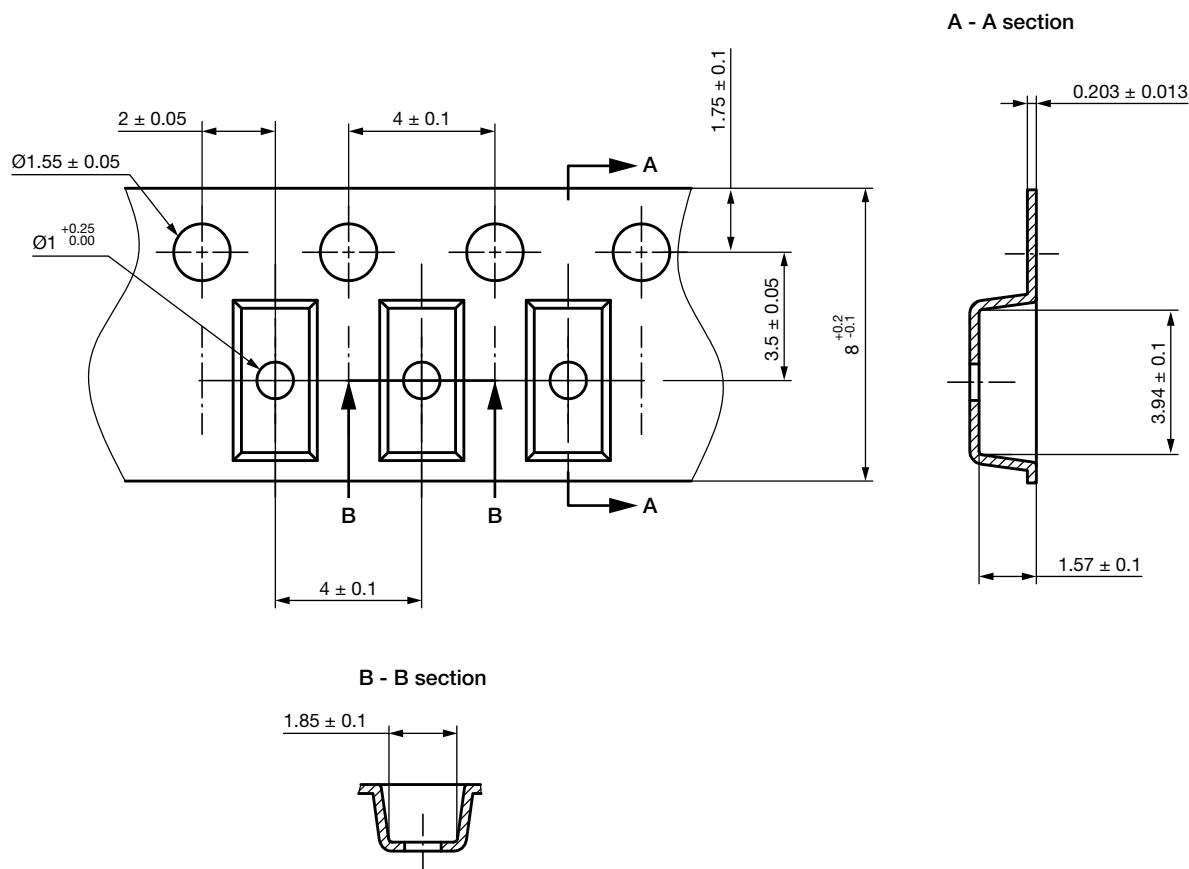
Foot print recommendation



Rev. 01 - Date: 18. Jan. 2022

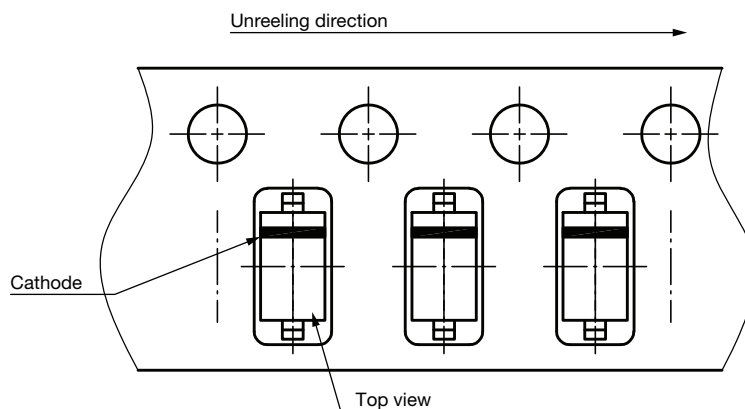
Document no.: S8-V-3910.01-003 (4)

23223

**CARRIER TAPE SOD-123**


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

23224

**OIRIENTATION IN CARRIER TAPE SOD-123**


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

23225



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