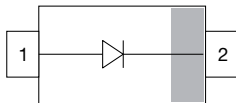


## Small Signal Switching Diode, High Voltage



### FEATURES

- Silicon epitaxial planar diode
- Fast switching diode, especially suited for applications requiring high voltage capability
- 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\_A - 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



### 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 |
| GSD2004W    | GSD2004W-E3-08    | no                 | B7           | Single                | 3 000<br>(8 mm tape on 7" reel)   | 15 000                 |
|             | GSD2004W-HE3_A-08 | yes                |              |                       | 10 000<br>(8 mm tape on 13" reel) | 10 000                 |
|             | GSD2004W-E3-18    | no                 |              |                       |                                   |                        |
|             | GSD2004W-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 |
| Continuous reverse voltage                                                        |                                                    | $V_R$     | 240   | V    |
| Repetitive peak reverse voltage                                                   |                                                    | $V_{RRM}$ | 300   | V    |
| Forward current (continuous) <sup>(1)</sup>                                       |                                                    | $I_F$     | 300   | mA   |
| Repetitive peak forward current <sup>(1)</sup>                                    |                                                    | $I_{FRM}$ | 625   | mA   |
| Non-repetitive peak forward current <sup>(1)</sup>                                | $t_p = 1\text{ }\mu\text{s}$                       | $I_{FSM}$ | 4     | A    |
|                                                                                   | $t_p = 1\text{ s}$                                 | $I_{FSM}$ | 1     | A    |
| Power dissipation                                                                 | on FR-4 board with recommended soldering footprint | $P_{tot}$ | 300   | mW   |
|                                                                                   | Infinite heatsink                                  |           | 410   |      |

#### Note

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

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

| PARAMETER                                          | TEST CONDITION                                                              | SYMBOL     | VALUE       | UNIT               |
|----------------------------------------------------|-----------------------------------------------------------------------------|------------|-------------|--------------------|
| Typical 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 to lead                | Infinite heatsink                                                           | $R_{thJL}$ | 300         |                    |
| Junction temperature                               |                                                                             | $T_j$      | 150         | $^{\circ}\text{C}$ |
| Storage temperature range                          |                                                                             | $T_{stg}$  | -65 to +150 | $^{\circ}\text{C}$ |
| Operating temperature range                        |                                                                             | $T_{op}$   | -55 to +150 | $^{\circ}\text{C}$ |

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

| PARAMETER                 | TEST CONDITION                                                                  | SYMBOL     | MIN. | TYP. | MAX. | UNIT          |
|---------------------------|---------------------------------------------------------------------------------|------------|------|------|------|---------------|
| Reverse breakdown voltage | $I_R = 100\text{ }\mu\text{A}$                                                  | $V_{(BR)}$ | 300  |      |      | V             |
| Leakage current           | $V_R = 240\text{ V}$                                                            | $I_R$      |      |      | 100  | nA            |
|                           | $V_R = 240\text{ V}$ , $T_j = 150\text{ }^{\circ}\text{C}$                      | $I_R$      |      |      | 100  | $\mu\text{A}$ |
| Forward voltage           | $I_F = 100\text{ mA}$                                                           | $V_F$      |      |      | 1    | V             |
|                           | $I_F = 20\text{ mA}$                                                            | $V_F$      |      | 0.83 | 0.87 | V             |
| Diode capacitance         | $V_F = V_R = 0$ , $f = 1\text{ MHz}$                                            | $C_D$      |      |      | 2    | pF            |
| Reverse recovery time     | $I_F = I_R = 30\text{ mA}$ , $i_R = 3\text{ mA}$ ,<br>$R_L = 100\text{ }\Omega$ | $t_{rr}$   |      |      | 50   | ns            |

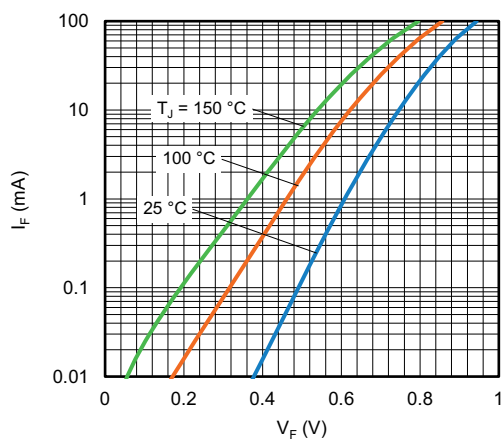
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Current vs. Forward Voltage

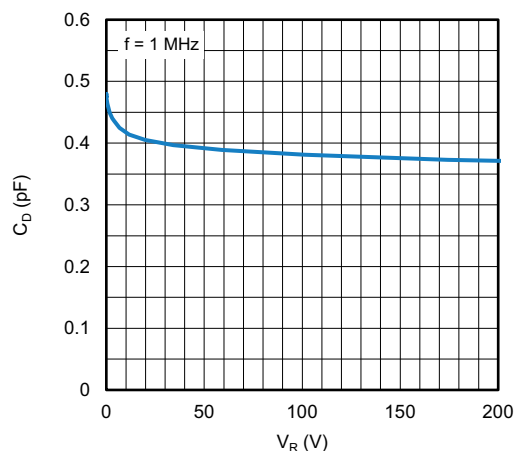


Fig. 3 - Typical Capacitance vs. Reverse Voltage

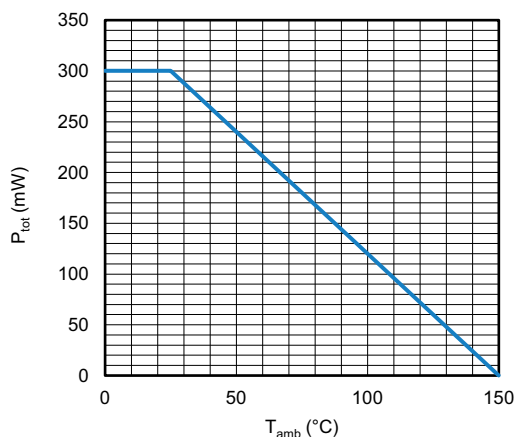


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

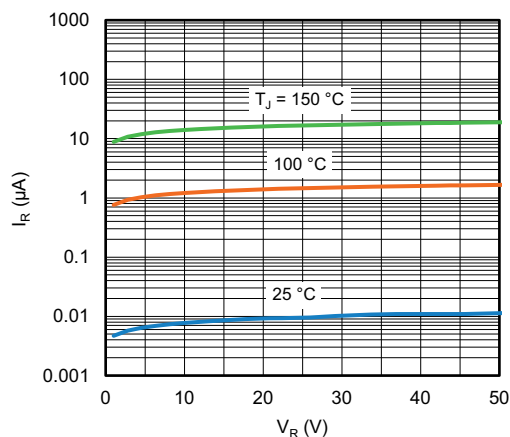
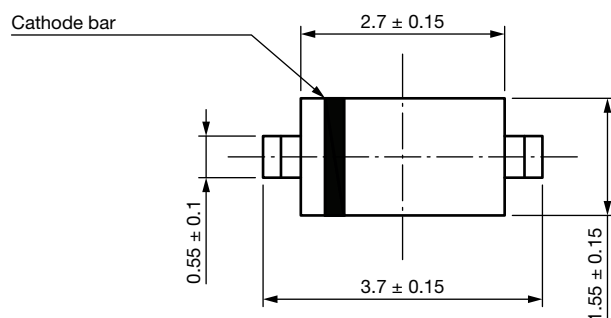
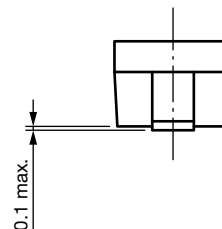
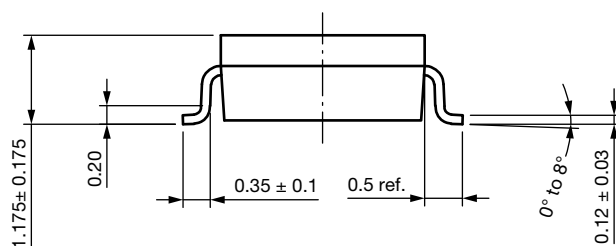
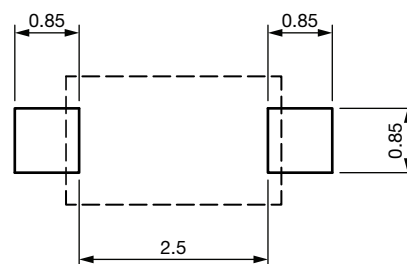


Fig. 4 - Typical Reverse Leakage Current vs. Reverse Voltage

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


Foot print recommendation



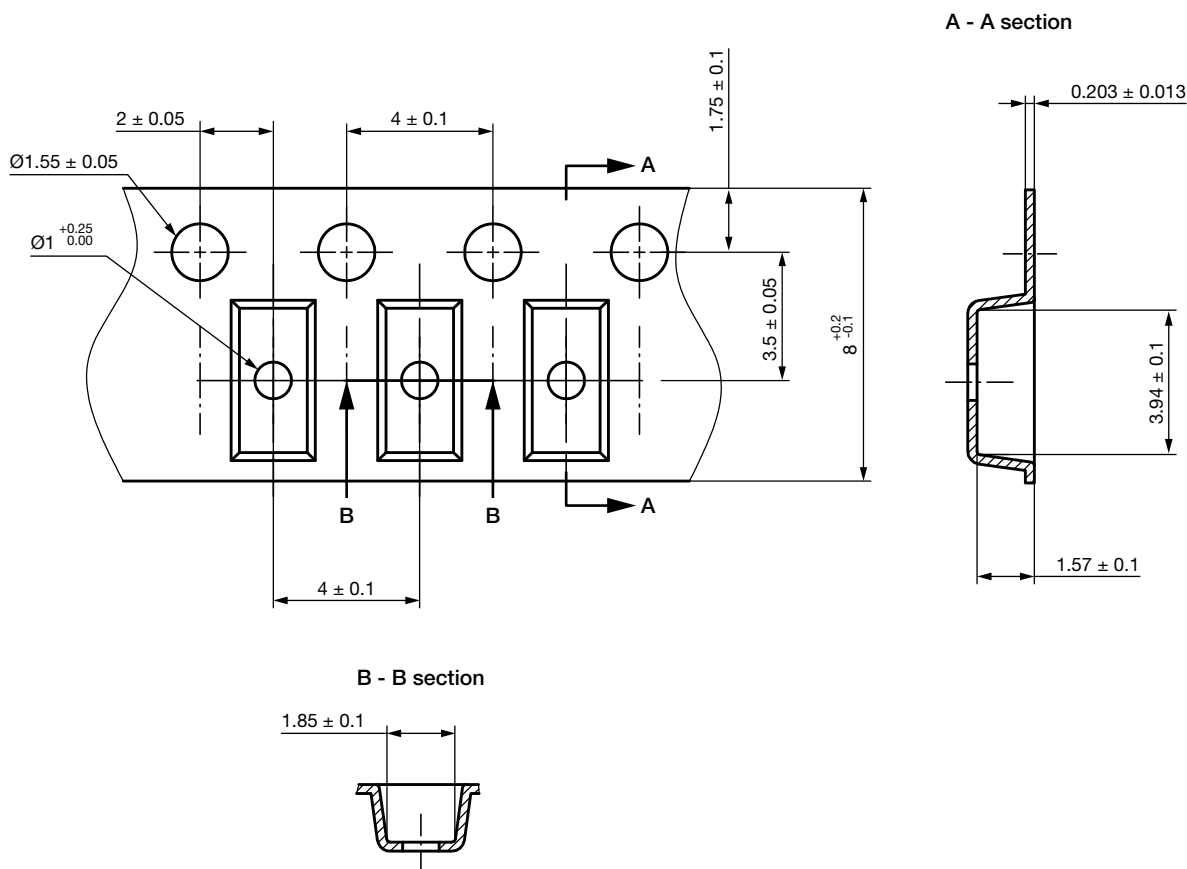
Rev. 01 - Date: 18. Jan. 2022

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

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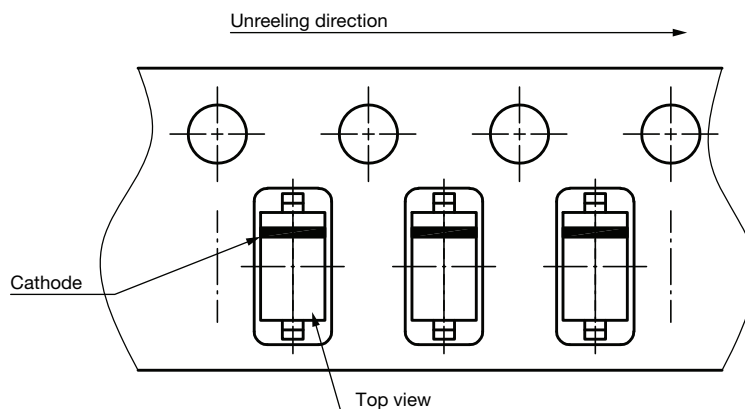
## CARRIER TAPE SOD-123



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

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## ORIENTATION IN CARRIER TAPE SOD-123



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

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