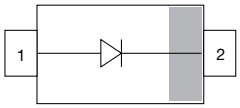
# Small Signal Fast Switching Diode




## FEATURES

- Silicon epitaxial planar diode
- Fast switching diodes ($t_{rr} \leq 4$ ns)
- 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

AUTOMOTIVE GRADE Available

Pb-free

e3

RoHS COMPLIANT

## LINKS TO ADDITIONAL RESOURCES

3D Models | 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 |
|---|---|---|---|---|---|---|
| 1N4151W | 1N4151W-E3-08 | no | AL | Single | 3 000 (8 mm tape on 7" reel) | 15 000 |
| | 1N4151W-HE3_A-08 | yes | | | | |
| | 1N4151W-E3-18 | no | | | 10 000 (8 mm tape on 13" reel) | 10 000 |
| | 1N4151W-HE3_A-18 | yes | | | | |

## ABSOLUTE MAXIMUM RATINGS ($T_{amb}$ = 25 °C, unless otherwise specified)

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|
| Reverse voltage | | $V_R$ | 50 | V |
| Repetitive peak reverse voltage | | $V_{RRM}$ | 75 | V |
| Continuous forward current (1) | | $I_F$ | 300 | mA |
| Average rectified current half wave rectification with resistive load (1) | f ≥ 50 Hz | $I_{F(AV)}$ | 250 | mA |
| Surge current (1) | t < 1 s and $T_j$ = 25 °C | $I_{FSM}$ | 500 | mA |
| Power dissipation | On FR-4 board with recommended soldering footprint | $P_{tot}$ | 280 | mW |
| | Infinite heatsink | | 380 | mW |

**Note**

(1) Infinite heatsink

## THERMAL CHARACTERISTICS ($T_{amb}$ = 25 °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 | $R_{thJA}$ | 440 | K/W |
| Thermal resistance junction to lead | Infinite heatsink | $R_{thJL}$ | 330 | K/W |
| Junction temperature | | $T_j$ | 150 | °C |
| Storage temperature range | | $T_{stg}$ | -65 to +150 | °C |
| Operating temperature range | | $T_{op}$ | -55 to +150 | °C |

| **ELECTRICAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Forward voltage | $I_F$ = 50 mA | $V_F$ | | | 1.0 | V |
| Leakage current | $V_R$ = 50 V | $I_R$ | | | 50 | nA |
| | $V_R$ = 20 V, $T_j$ = 150 °C | $I_R$ | | | 50 | µA |
| Reverse breakdown voltage | $I_R$ = 5 µA (pulsed) | $V_{(BR)}$ | 75 | | | V |
| Diode capacitance | $V_F = V_R$ = 0 V | $C_D$ | | | 1.5 | pF |
| Reverse recovery time | $I_F$ = 10 mA, $I_R$ = 10 mA $i_R$ = 1 mA | $t_{rr}$ | | | 4 | ns |
| | $I_F$ = 10 mA, $i_R$ = 1 mA $V_R$ = 6 V, $R_L$ = 100 Ω | $t_{rr}$ | | | 2 | ns |

## TYPICAL CHARACTERISTICS ($T_{amb}$ = 25 °C, unless otherwise specified)

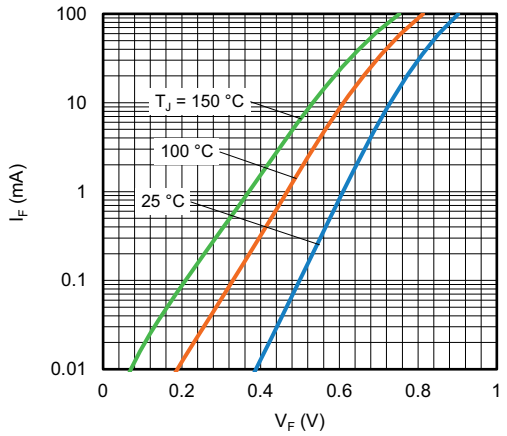



Fig. 1 - Typical Forward Current vs. Forward Voltage

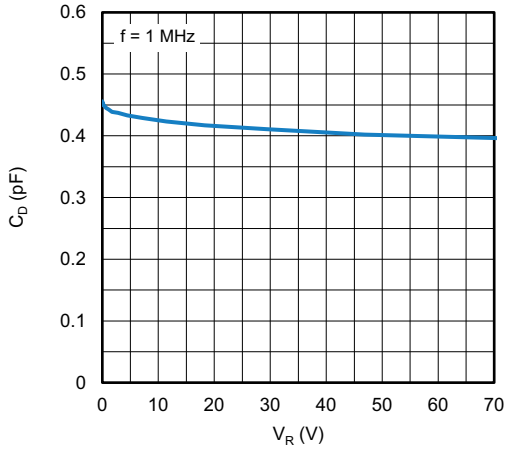



Fig. 3 - Typical Capacitance vs. Reverse Voltage

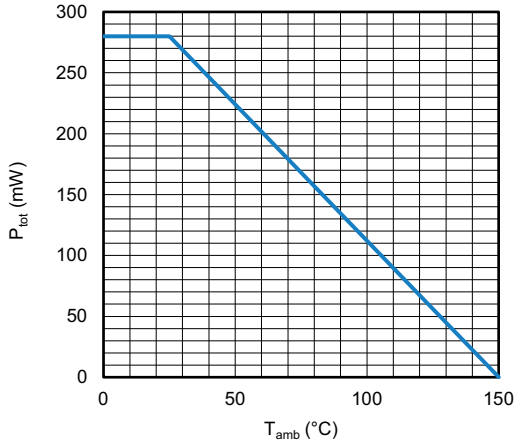



Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

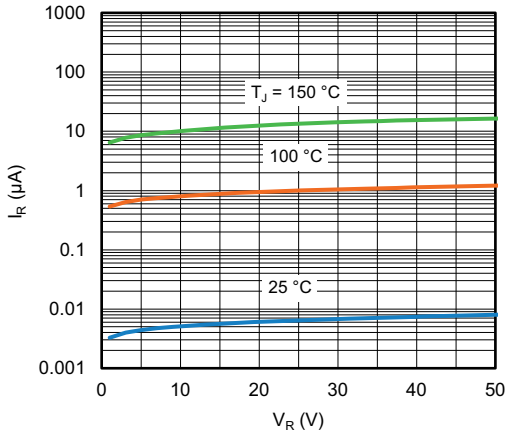
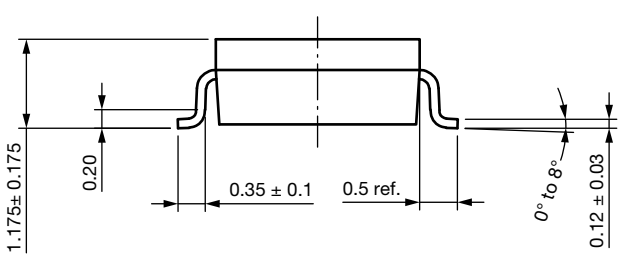
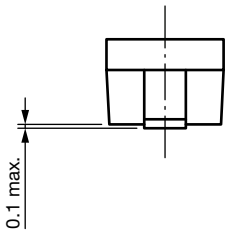
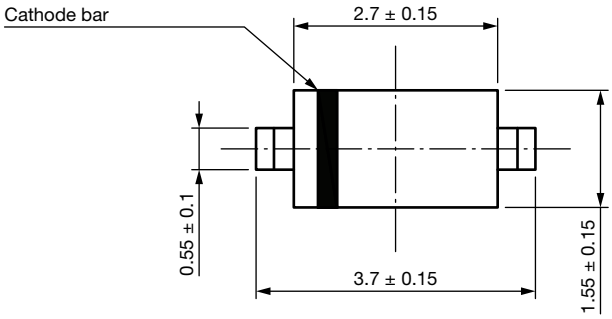



Fig. 4 - Typical Reverse Leakage Current vs. Reverse Voltage

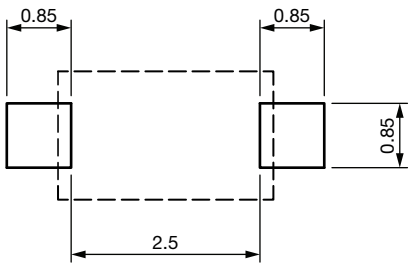
**PACKAGE DIMENSIONS** in millimeters (inches): **SOD-123**




Foot print recommendation

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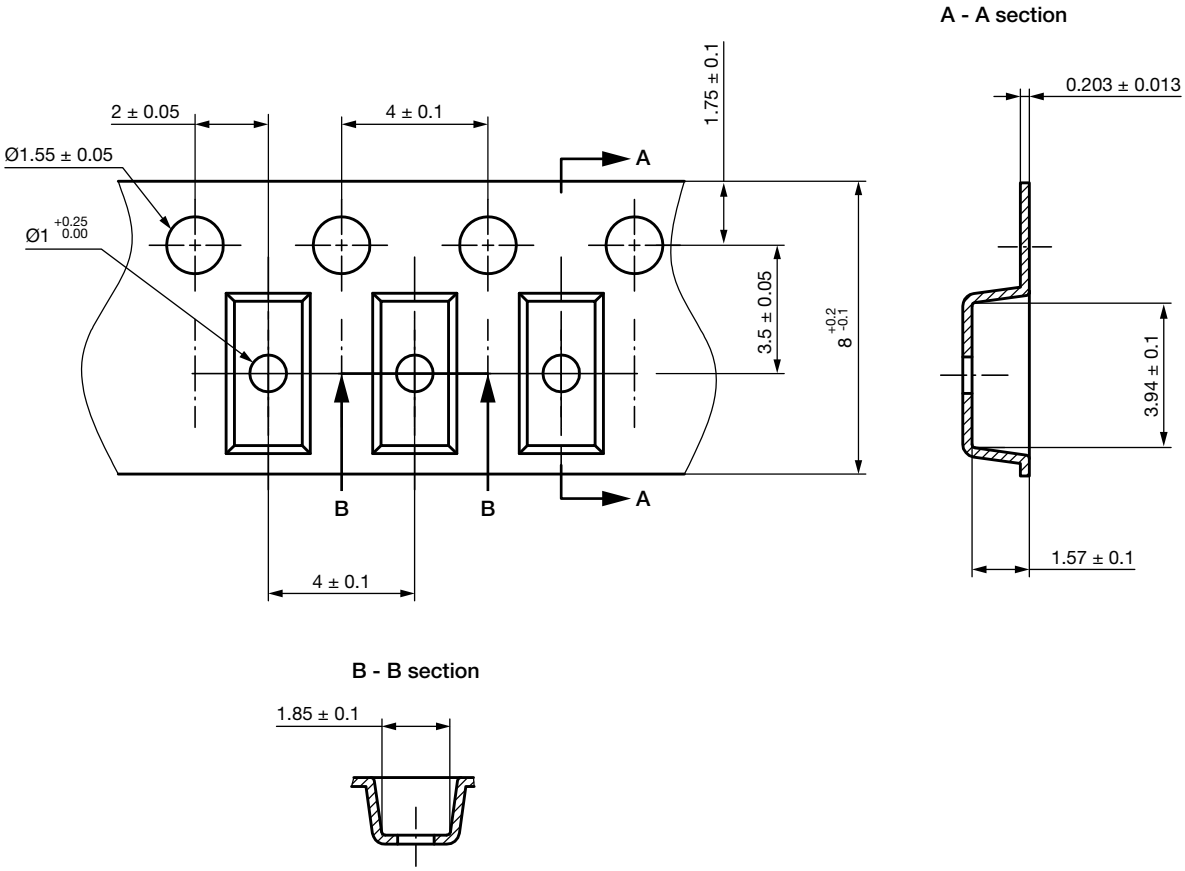
23223

## CARRIER TAPE SOD-123

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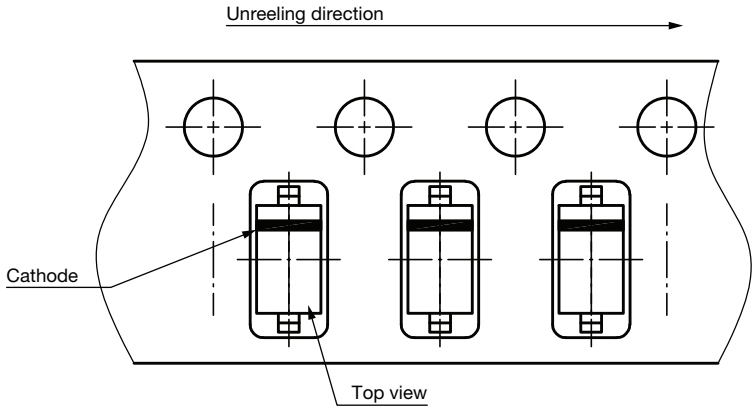
23224

## ORIENTATION IN CARRIER TAPE SOD-123

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23225

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