



# Small Signal Fast Switching Diode



## FEATURES

- Silicon epitaxial planar diode
- Fast switching diode
- AEC-Q101 qualified available
- 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

## DESIGN SUPPORT TOOLS

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## 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                    | CIRCUIT CONFIGURATION | TYPE MARKING | REMARKS       |
| 1N4151W     | 1N4151W-E3-08 or 1N4151W-E3-18   | Single                | A5           | Tape and reel |
|             | 1N4151W-HE3-08 or 1N4151W-HE3-18 |                       |              |               |

| ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)      |                                    |                    |       |      |
|--|------------------------------------|--------------------|-------|------|
| PARAMETER  | TEST CONDITION                     | SYMBOL             | VALUE | UNIT |
| Reverse voltage  |                                    | V <sub>R</sub>     | 50    | V    |
| Repetitive peak reverse voltage  |                                    | V <sub>RRM</sub>   | 75    | V    |
| Average rectified current half wave rectification with resistive load <sup>(1)</sup> | f ≥ 50 Hz                          | I <sub>F(AV)</sub> | 150   | mA   |
| Surge current  | t < 1 s and T <sub>j</sub> = 25 °C | I <sub>FSM</sub>   | 500   | mA   |
| Power dissipation <sup>(1)</sup>   |                                    | P <sub>tot</sub>   | 410   | mW   |

| THERMAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified) |                |                   |             |      |
|--|----------------|-------------------|-------------|------|
| PARAMETER  | TEST CONDITION | SYMBOL            | VALUE       | UNIT |
| Thermal resistance junction to ambient air <sup>(1)</sup>                      |                | R <sub>thJA</sub> | 450         | K/W  |
| Junction temperature   |                | T <sub>j</sub>    | 150         | °C   |
| Storage temperature range  |                | T <sub>stg</sub>  | -65 to +150 | °C   |
| Operating temperature range  |                | T <sub>op</sub>   | -55 to +150 | °C   |

### Note

<sup>(1)</sup> Valid provided that electrodes are kept at ambient temperature



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

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

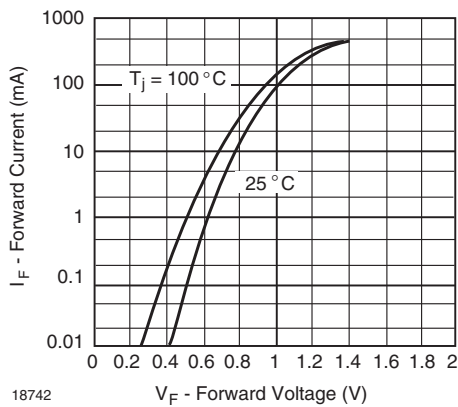


Fig. 1 - Forward Current vs. Forward Voltage

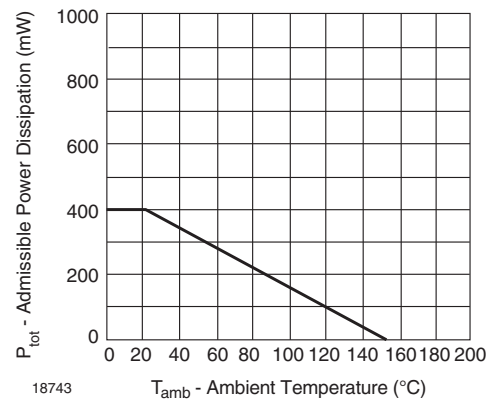


Fig. 3 - Admissible Power Dissipation vs. Ambient Temperature

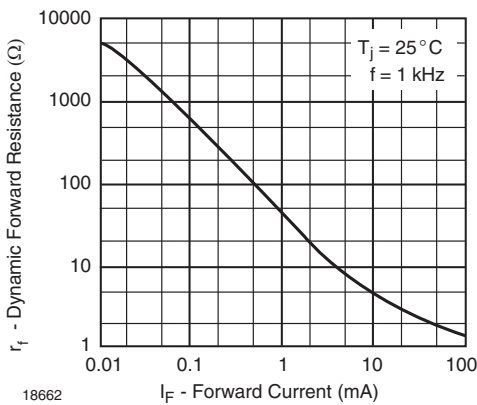


Fig. 2 - Dynamic Forward Resistance vs. Forward Current

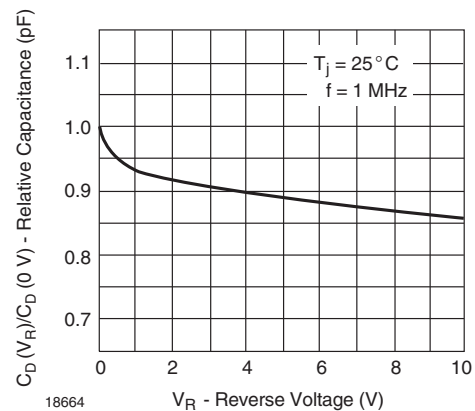


Fig. 4 - Relative Capacitance vs. Reverse Voltage

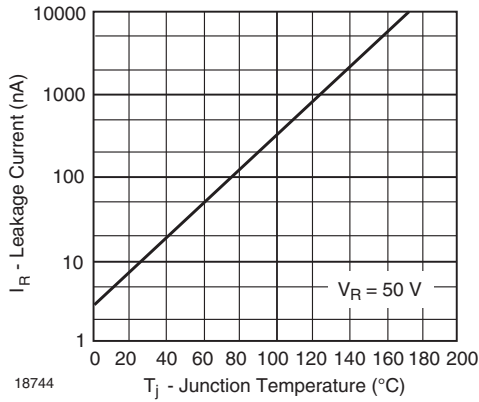


Fig. 5 - Leakage Current vs. Junction Temperature

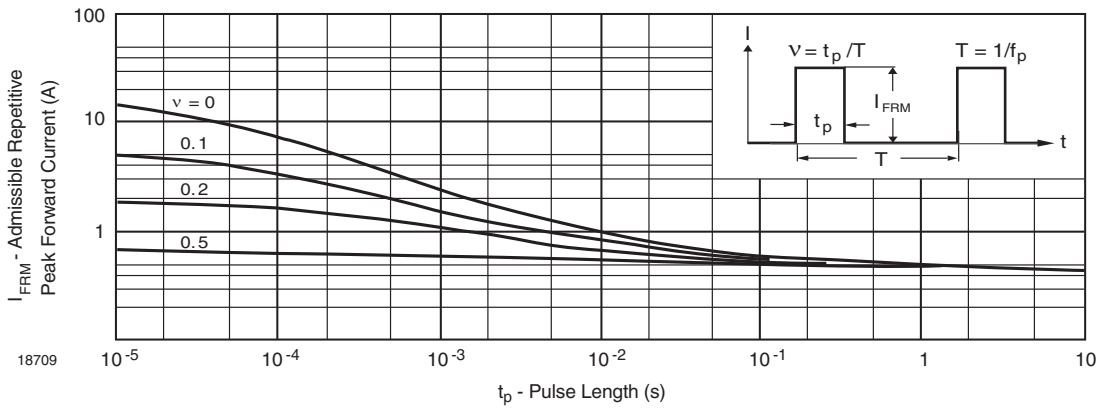
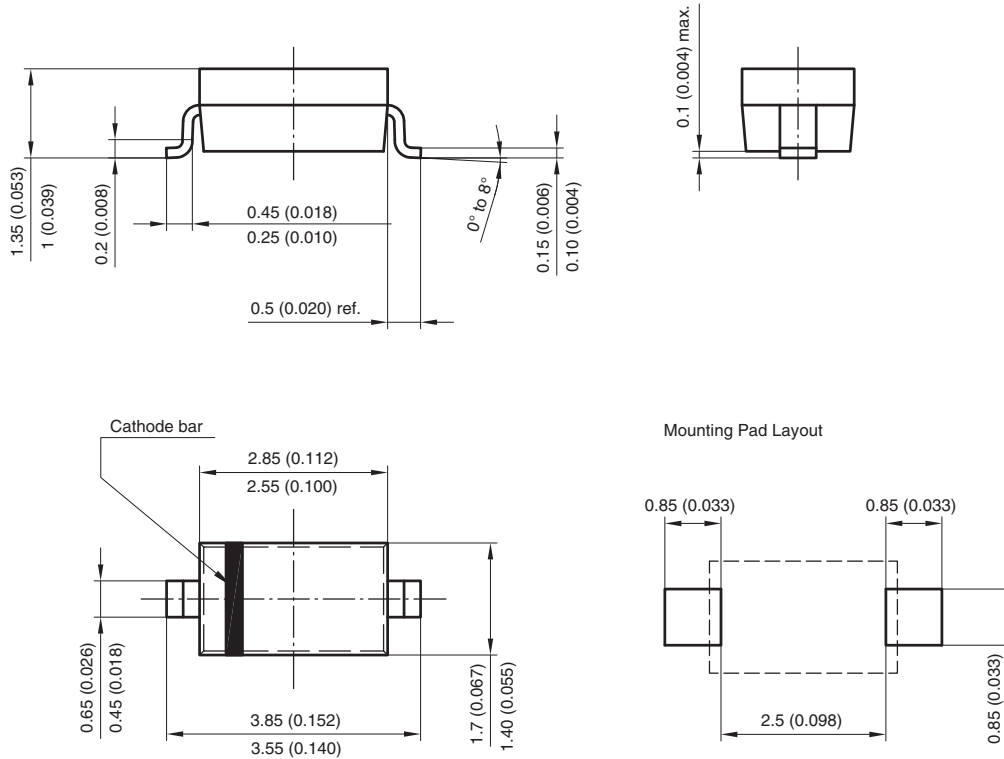


Fig. 6 - Admissible Repetitive Peak Forward Current vs. Pulse Duration



PACKAGE DIMENSIONS in millimeters (inches): SOD-123



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