



# Small Signal Fast Switching Diode



### FEATURES

- Silicon epitaxial planar diode
- Fast switching diodes
- 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                    | TYPE MARKING | CIRCUIT CONFIGURATION | REMARKS       |
| 1N4148W     | 1N4148W-E3-08 or 1N4148W-E3-18   | A2           | Single                | Tape and reel |
|             | 1N4148W-HE3-08 or 1N4148W-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>     | 75    | V    |
| Repetitive peak reverse voltage  |                       | V <sub>RRM</sub>   | 100   | V    |
| Average rectified current half wave rectification with resistive load <sup>(1)</sup> | f ≥ 50 Hz             | I <sub>F(AV)</sub> | 150   | mA   |
| Surge forward current  | t <sub>p</sub> < 1 s  | I <sub>FSM</sub>   | 500   | mA   |
|  | t <sub>p</sub> = 1 μs | I <sub>FSM</sub>   | 2     | A    |
| Power dissipation <sup>(1)</sup>   |                       | P <sub>tot</sub>   | 350   | 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> | 357         | 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.

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |  |          |      |      |      |               |
|--|--|----------|------|------|------|---------------|
| PARAMETER  | TEST CONDITION   | SYMBOL   | MIN. | TYP. | MAX. | UNIT          |
| Forward voltage  | $I_F = 10\text{ mA}$   | $V_F$    |      |      | 1    | V             |
|  | $I_F = 100\text{ mA}$  | $V_F$    |      |      | 1.2  | V             |
| Leakage current  | $V_R = 20\text{ V}$  | $I_R$    |      |      | 25   | nA            |
|  | $V_R = 75\text{ V}$  | $I_R$    |      |      | 5    | $\mu\text{A}$ |
|  | $V_R = 100\text{ V}$   | $I_R$    |      |      | 100  | $\mu\text{A}$ |
|  | $V_R = 20\text{ V}, T_J = 150\text{ }^{\circ}\text{C}$   | $I_R$    |      |      | 50   | $\mu\text{A}$ |
| Diode capacitance  | $V_F = V_R = 0\text{ V}$   | $C_D$    |      |      | 4    | pF            |
| Voltage rise when switching ON   | Tested with 50 mA pulses,<br>$t_p = 0.1\text{ }\mu\text{s}$ , rise time < 30 ns,<br>$f_p = (5\text{ to }100)\text{ kHz}$ | $V_{fr}$ |      |      | 2.5  | V             |
| Reverse recovery time  | $I_F = 10\text{ mA}, I_R = 1\text{ mA}, V_R = 6\text{ V},$<br>$R_L = 100\text{ }\Omega$                                  | $t_{rr}$ |      |      | 4    | ns            |

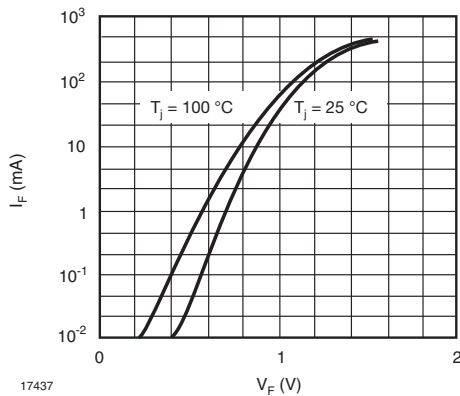
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Characteristics

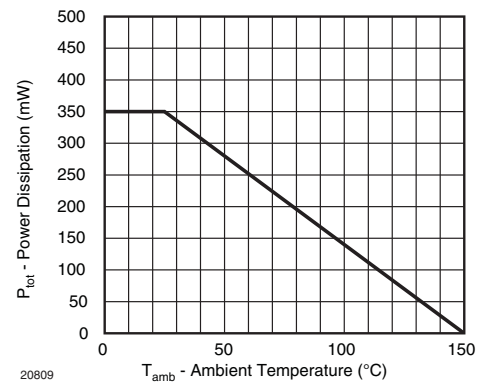


Fig. 3 - Admissible Power Dissipation vs. Ambient Temperature

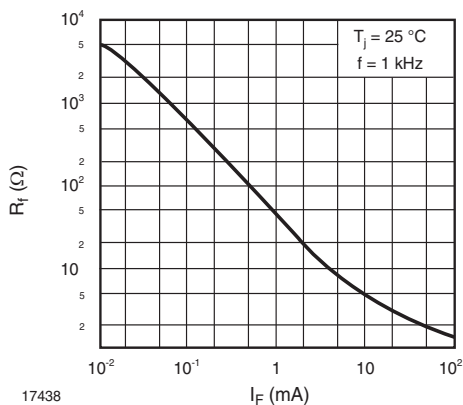


Fig. 2 - Dynamic Forward Resistance vs. Forward Current



Fig. 4 - Relative Capacitance vs. Reverse Voltage



Fig. 5 - Leakage Current vs. Junction Temperature

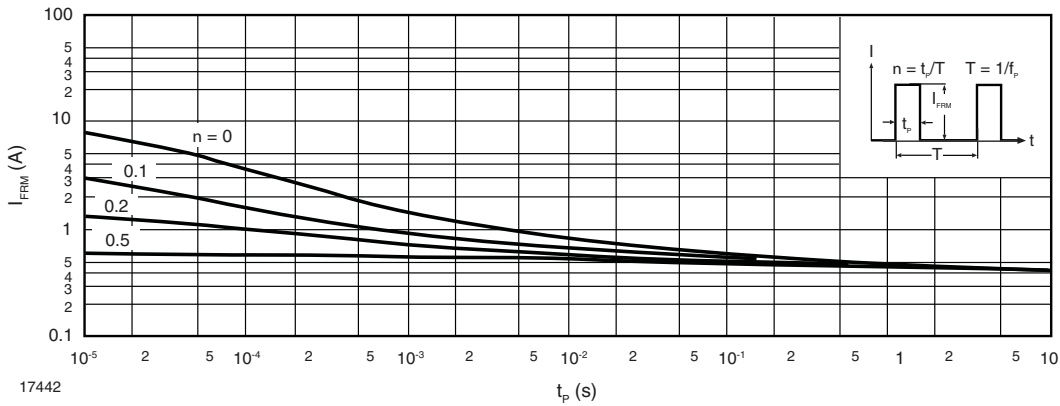


Fig. 6 - Admissible Repetitive Peak Forward Current vs. Pulse Duration



PACKAGE DIMENSIONS in millimeters (inches): SOD-123



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