

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

| PARAMETER                                                                            | TEST CONDITION         | SYMBOL      | VALUE | UNIT |
|--------------------------------------------------------------------------------------|------------------------|-------------|-------|------|
| Reverse voltage                                                                      |                        | $V_R$       | 75    | V    |
| Repetitive peak reverse voltage                                                      |                        | $V_{RRM}$   | 100   | V    |
| Average rectified current half wave rectification with resistive load <sup>(1)</sup> | $f \geq 50 \text{ Hz}$ | $I_{F(AV)}$ | 150   | mA   |
| Surge forward current                                                                | $t_p < 1 \text{ s}$    | $I_{FSM}$   | 500   | mA   |
|                                                                                      | $t_p = 1 \mu\text{s}$  | $I_{FSM}$   | 2     | A    |
| Power dissipation <sup>(1)</sup>                                                     |                        | $P_{tot}$   | 350   | mW   |

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

| PARAMETER                                                 | TEST CONDITION | SYMBOL     | VALUE       | UNIT               |
|-----------------------------------------------------------|----------------|------------|-------------|--------------------|
| Thermal resistance junction to ambient air <sup>(1)</sup> |                | $R_{thJA}$ | 357         | K/W                |
| 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 | $^{\circ}\text{C}$ |

#### 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)

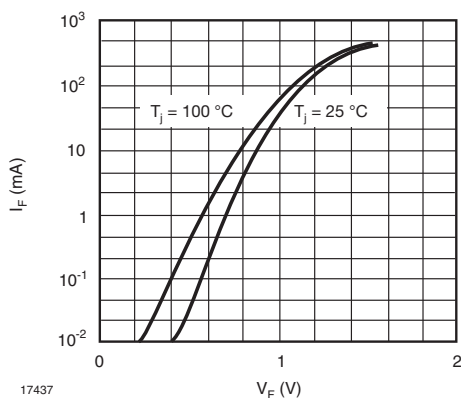


Fig. 1 - Forward Characteristics

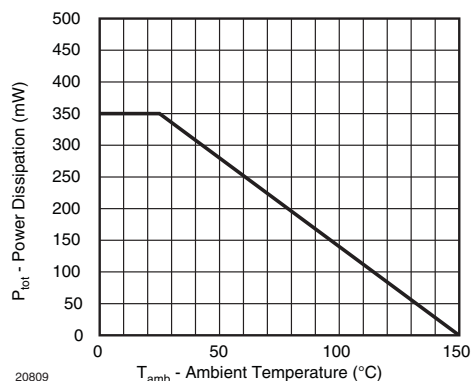


Fig. 3 - Admissible Power Dissipation vs. Ambient Temperature

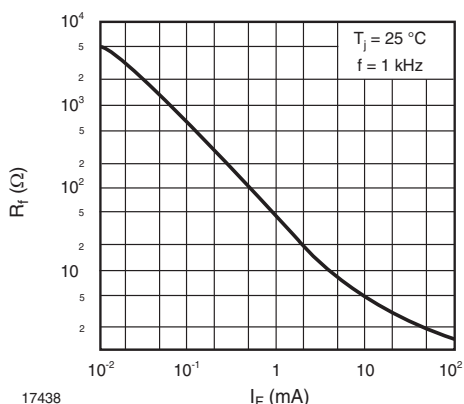


Fig. 2 - Dynamic Forward Resistance vs. Forward Current

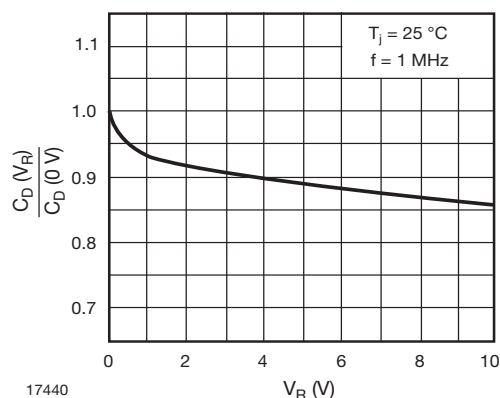


Fig. 4 - Relative Capacitance vs. Reverse Voltage

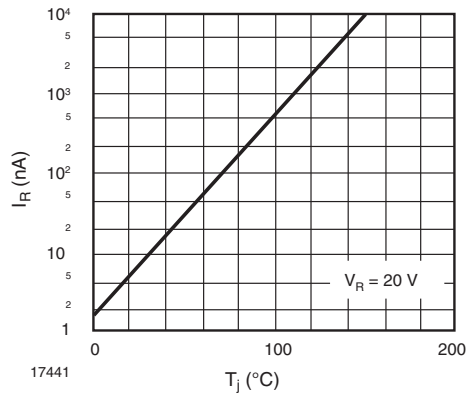


Fig. 5 - Leakage Current vs. Junction Temperature

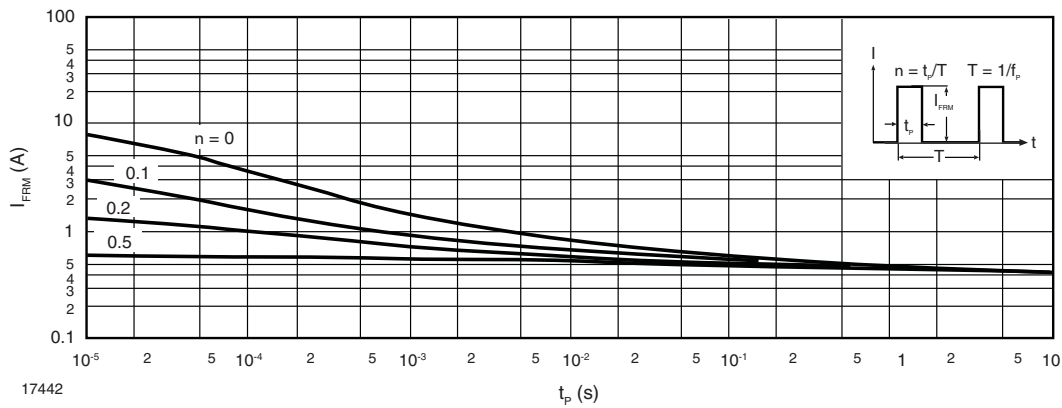
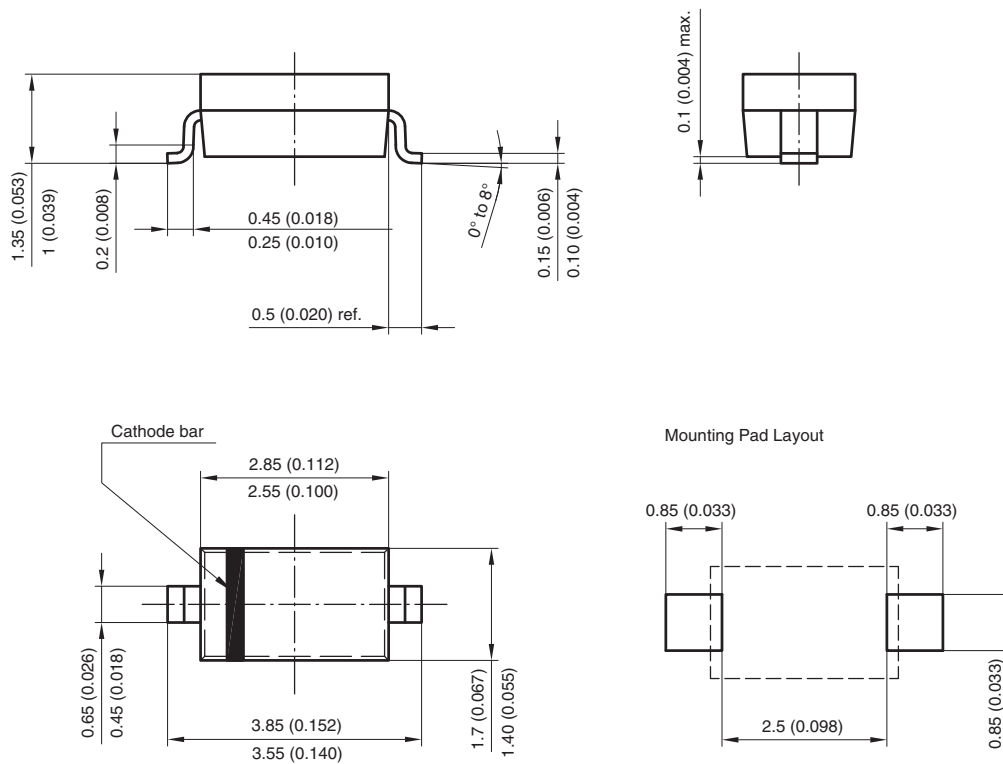


Fig. 6 - Admissible Repetitive Peak Forward Current vs. Pulse Duration



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



Rev. 4 - Date: 24. Sep. 2009  
Document no.: S8-V-3910.01-001 (4)  
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