

## Small Signal Fast Switching Diodes



### FEATURES

- Silicon epitaxial planar diodes
- Material categorization:  
for definitions of compliance please see  
[www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### APPLICATIONS

- Extreme fast switches



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### LINKS TO ADDITIONAL RESOURCES



### MECHANICAL DATA

**Case:** MiniMELF (SOD-80)

**Weight:** approx. 31 mg

**Cathode band color:** black

**Packaging codes / options:**

08/2.5K per 7" reel (8 mm tape), 12.5K/box

18/10K per 13" reel (8 mm tape), 10K/box

### PARTS TABLE

| PART     | TYPE DIFFERENTIATION                                                                     | ORDERING CODE              | TYPE MARKING | CIRCUIT CONFIGURATION | REMARKS       |
|----------|------------------------------------------------------------------------------------------|----------------------------|--------------|-----------------------|---------------|
| LL4148-M | $V_{RRM} = 100\text{ V}$ ,<br>$V_F = \text{max. } 1000\text{ mV at } I_F = 50\text{ mA}$ | LL4148-M-08 or LL4148-M-18 | -            | Single                | Tape and reel |

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

| PARAMETER                        | TEST CONDITION               | SYMBOL      | VALUE | UNIT |
|----------------------------------|------------------------------|-------------|-------|------|
| Repetitive peak reverse voltage  |                              | $V_{RRM}$   | 100   | V    |
| Reverse voltage                  |                              | $V_R$       | 75    | V    |
| Peak forward surge current       | $t_p = 1\text{ }\mu\text{s}$ | $I_{FSM}$   | 2     | A    |
| Repetitive peak forward current  |                              | $I_{FRM}$   | 500   | mA   |
| Forward continuous current       |                              | $I_F$       | 300   | mA   |
| Average forward current          | $V_R = 0$                    | $I_{F(AV)}$ | 150   | mA   |
| Power dissipation <sup>(1)</sup> |                              | $P_{tot}$   | 500   | mW   |

#### Note

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

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

| PARAMETER                                                 | TEST CONDITION | SYMBOL     | VALUE       | UNIT               |
|-----------------------------------------------------------|----------------|------------|-------------|--------------------|
| Thermal resistance junction to ambient air <sup>(1)</sup> |                | $R_{thJA}$ | 300         | K/W                |
| Junction temperature                                      |                | $T_j$      | 175         | $^{\circ}\text{C}$ |
| Storage temperature range                                 |                | $T_{stg}$  | -65 to +175 | $^{\circ}\text{C}$ |

#### 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                                                                                          | $I_F = 50\text{ mA}$                                                                       | $V_F$      |      | 0.860 | 1    | V             |
| Reverse current                                                                                          | $V_R = 20\text{ V}$                                                                        | $I_R$      |      |       | 25   | nA            |
|                                                                                                          | $V_R = 20\text{ V}, T_J = 150\text{ }^{\circ}\text{C}$                                     | $I_R$      |      |       | 50   | $\mu\text{A}$ |
|                                                                                                          | $V_R = 75\text{ V}$                                                                        | $I_R$      |      |       | 5    | $\mu\text{A}$ |
| Breakdown voltage                                                                                        | $I_R = 100\text{ }\mu\text{A}, t_p/T = 0.01,$<br>$t_p = 0.3\text{ ms}$                     | $V_{(BR)}$ | 100  |       |      | V             |
| Diode capacitance                                                                                        | $V_R = 0\text{ V}, f = 1\text{ MHz},$<br>$V_{HF} = 50\text{ mV}$                           | $C_D$      |      |       | 4    | pF            |
| Reverse recovery time                                                                                    | $I_F = I_R = 10\text{ mA},$<br>$i_R = 1\text{ mA}$                                         | $t_{rr}$   |      |       | 8    | ns            |
|                                                                                                          | $I_F = 10\text{ mA}, V_R = 6\text{ V},$<br>$i_R = 0.1 \times I_R, R_L = 100\text{ }\Omega$ |            |      |       | 4    |               |

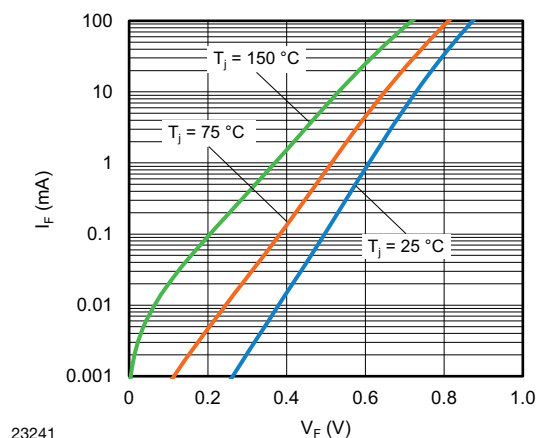
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Current vs. Forward Voltage

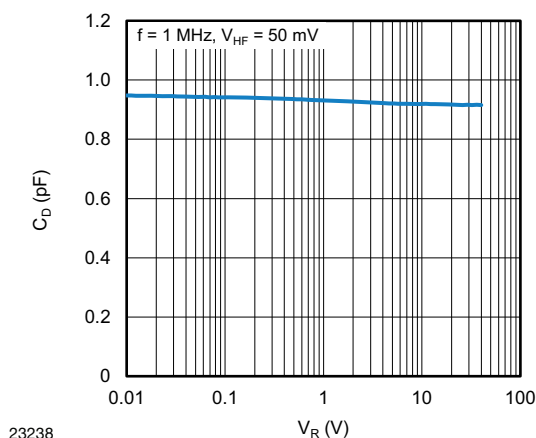


Fig. 3 - Typical Capacitance vs. Reverse Voltage

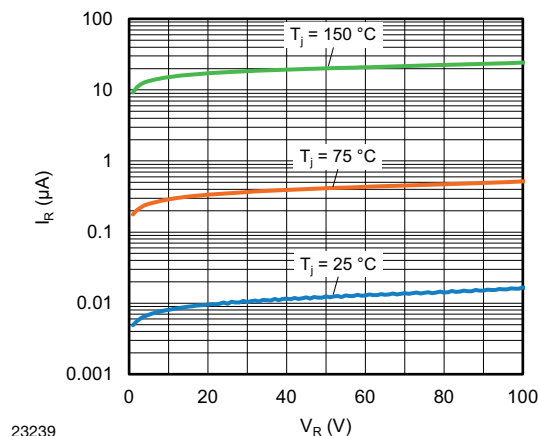
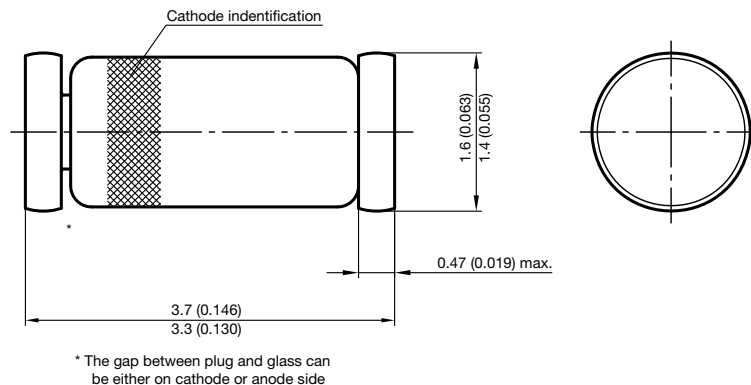
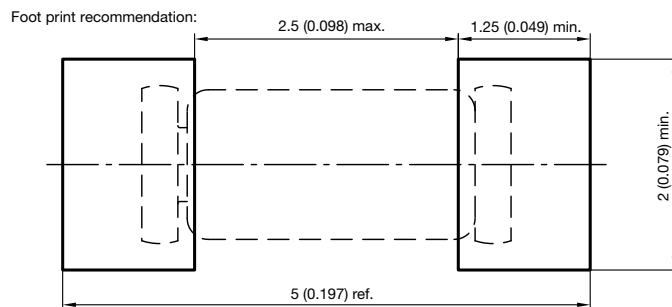


Fig. 2 - Typical Reverse Leakage Current vs. Reverse Voltage



**PACKAGE DIMENSIONS** in millimeters (inches): **MiniMELF (SOD-80)**



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