# MM4148, MM4448

## Mini Melf Switching Diode

**Mini Melf**

| Features |
|---|
| • Electrical data identical with the devices 1N4148 and 1N4448 respectively |
| • Weight:0.03g |

| Applications |
|---|
| • Extreme fast switches |
| • Moisture Sensitivity Level 1 |
| • Polarity: Color band denotes cathode end |

| Ordering Information | | |
|---|---|---|
| Part No. | Package | Packing |
| MM4148, 4448 | Mini Melf | 2500 / Tape & Reel |

**Absolute Maximum Ratings ($T_A$=25°C unless otherwise noted)**

| Parameter | Symbol | Limit | Unit |
|---|---|---|---|
| Repetitive peak reverse voltage | $V_{RRM}$ | 100 | V |
| Reverse voltage | $V_R$ | 75 | V |
| Peak forward surge current tp=1μs | $I_{FSM}$ | 2 | A |
| Repetitive peak forward current | $I_{FRM}$ | 500 | mA |
| Forward current | $I_F$ | 300 | mA |
| Average forward current $V_R$=0 | $I_{FAV}$ | 150 | mA |
| Power dissipation | $P_V$ | 500 | mW |
| Operating junction temperature | $T_J$ | -50~150 | °C |
| Storage temperature range | $T_{STG}$ | -50~150 | °C |
| Junction ambient on PC board 50mmx50mmx1.6mm | $R_{\theta JA}$ | 500 | K/W |

**Electrical Characteristics ($T_A$=25°C unless otherwise noted)**

| Parameter | Condition | Type | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| Forward voltage | $I_F$=5mA | MM4448 | $V_F$ | 0.62 | — | 0.72 | V |
| | $I_F$=50mA | MM4148 | $V_F$ | — | 0.86 | 1 | V |
| | $I_F$=100mA | MM4448 | $V_F$ | — | 0.93 | 1 | V |
| Reverse current | $V_R$=20V | | $I_R$ | — | — | 25 | nA |
| | $V_R$=20V, $T_J$=150°C | | $I_R$ | — | — | 50 | μA |
| | $V_R$=75V | | $I_R$ | — | — | 5 | μA |
| Breakdown voltage | $I_R$=100μA, $t_p$/T=0.01, $t_p$=0.3ms | | $V_{(BR)}$ | 100 | — | — | V |
| Diode capacitance | $V_R$=0, f=1MH$_Z$, $V_{HF}$=50mV | | $C_D$ | — | — | 4 | pF |
| Rectification efficiency | $V_{HF}$=2V, f=100MH$_Z$ | | $\eta_r$ | 45 | — | — | % |
| Reverse recovery time | $I_F$=$I_R$=10mA, $i_R$=1mA | | $t_{rr}$ | — | — | 8 | ns |
| | $I_F$=10mA, $V_R$=6V $i_R$=0.1x$I_R$, $R_L$=100Ω | | | — | — | 4 | ns |

## Rating and Characteristics Curves

Fig 1 Forward Current vs. Forward Voltage

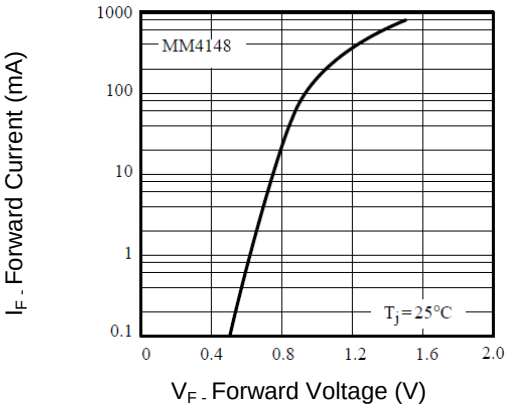



Fig 2 Forward Current vs. Forward Voltage

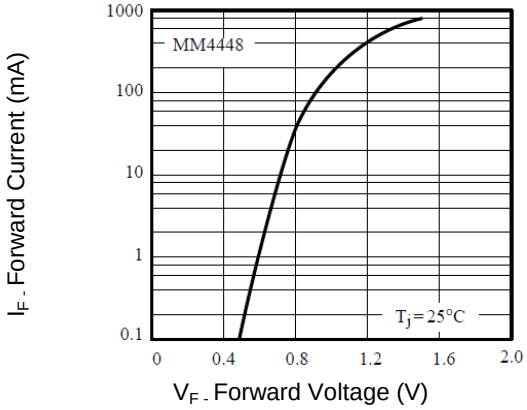



Fig 3 Reverse Current vs. Reverse Voltage

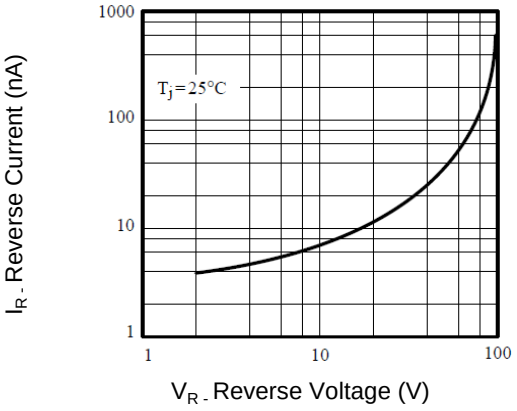



Fig 4 Diode Capacitance vs. Reverse Voltage

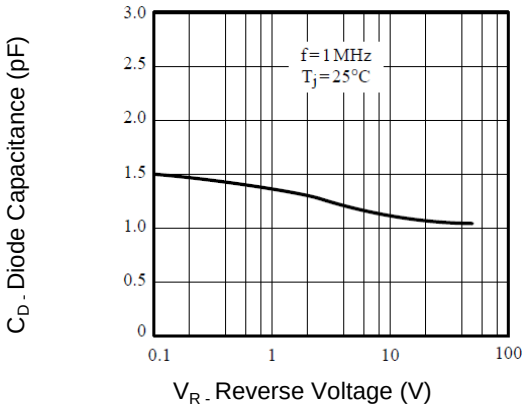
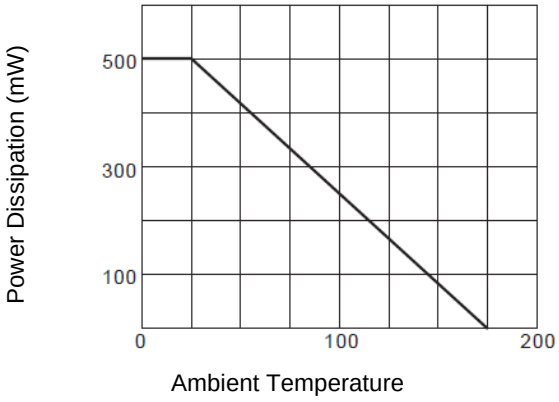
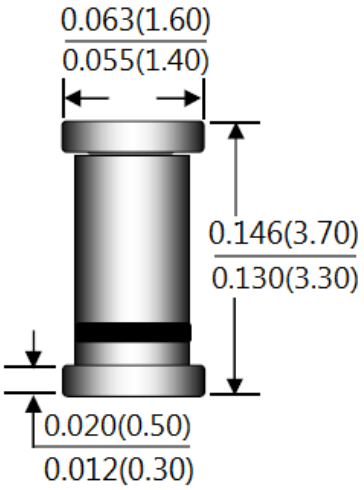



Fig 5 Derating Curve



## Package Outline Dimensions

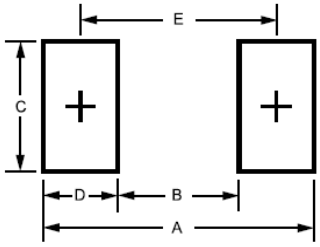



**Mini Melf**

Dimensions in inches and (millimeters)

## Suggested Pad Layout

| Outline / Symbol | Mini Melf |
|---|---|
| | Unit (mm) |
| A | 4.40 |
| B | 2.60 |
| C | 1.80 |
| D | 0.90 |
| E | 3.50 |




## Tape & Reel Specification

| Item | Symbol | Dimension |
|---|---|---|
| | | Unit (mm) |
| Carrier width | A | 1.8max |
| Carrier length | B | 4.0max |
| Carrier depth | C | 1.8max |
| Sprocket hole | d | 1.5±1 |
| Reel outside diameter | D | 178±2 |
| Reel inner diameter | D1 | 50min |
| Feed hole width | D2 | 13.0±0.5 |
| Sprocket hole position | E | 1.75±0.1 |
| Punch hole position | F | 5.5±0.1 |
| Punch hole pitch | P | 4.0±0.1 |
| Sprocket hole pitch | P0 | 4.0±0.1 |
| Embossment center | P1 | 2.0±0.05 |
| Overall tape thickness | T | 1.1max |
| Tape width | W | 8.0±0.30 |
| Reel width | W1 | 10.4max |