

# MMSD4148, SMMSD4148

## Switching Diode

### Features

- SOD-123 Surface Mount Package
- High Breakdown Voltage
- Fast Speed Switching Time
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable\*
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### MAXIMUM RATINGS

| Rating  | Symbol         | Value          | Unit |
|---|----------------|----------------|------|
| Continuous Reverse Voltage  | $V_R$          | 100            | V    |
| Forward Current   | $I_F$          | 200            | mA   |
| Forward Surge Current<br>(Note 1)   | $I_{FSM}$      | 1.0<br>2.0     | A    |
| Repetitive Peak Forward Current<br>(Pulse Wave = 1 sec, Duty Cycle = 66%) | $I_{FRM}$      | 0.5            | A    |
| Operating and Storage Junction Temperature Range                          | $T_J, T_{stg}$ | -55 to<br>+150 | °C   |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Typical Values

### THERMAL CHARACTERISTICS

| Characteristic  | Symbol          | Max        | Unit        |
|---|-----------------|------------|-------------|
| Total Device Dissipation FR-5 Board (Note 2)<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$           | 425<br>3.4 | mW<br>mW/°C |
| Thermal Resistance Junction-to-Ambient  | $R_{\theta JA}$ | 290        | °C/W        |

2. FR-5 = 1.0 oz Cu, 1.0 in<sup>2</sup> pad

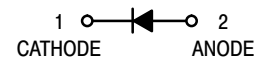


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SOD-123  
CASE 425  
STYLE 1



### MARKING DIAGRAM



5I = Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device        | Package              | Shipping†               |
|---------------|----------------------|-------------------------|
| MMSD4148T1G   | SOD-123<br>(Pb-Free) | 3,000 /<br>Tape & Reel  |
| SMMSD4148T1G* | SOD-123<br>(Pb-Free) | 3,000 /<br>Tape & Reel  |
| MMSD4148T3G   | SOD-123<br>(Pb-Free) | 10,000 /<br>Tape & Reel |
| SMMSD4148T3G* | SOD-123<br>(Pb-Free) | 10,000 /<br>Tape & Reel |

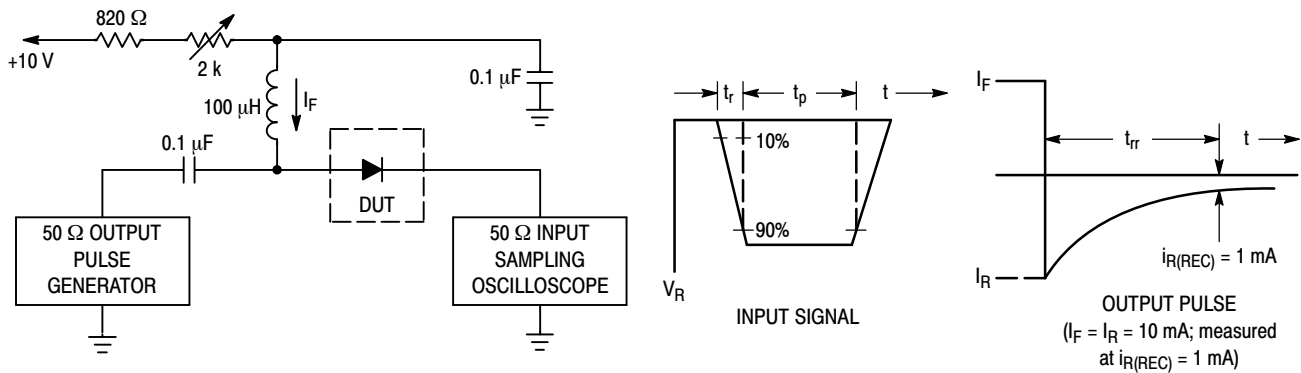
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MMSD4148, SMMSD4148

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic  | Symbol     | Min | Max       | Unit                |
|---|------------|-----|-----------|---------------------|
| <b>OFF CHARACTERISTICS</b>  |            |     |           |                     |
| Reverse Breakdown Voltage<br>( $I_{BR} = 100 \mu\text{A}$ )                             | $V_{(BR)}$ | 100 | –         | V                   |
| Reverse Voltage Leakage Current<br>( $V_R = 20 \text{ V}$ )<br>( $V_R = 75 \text{ V}$ ) | $I_R$      | –   | 25<br>5.0 | nA<br>$\mu\text{A}$ |
| Forward Voltage<br>( $I_F = 10 \text{ mA}$ )  | $V_F$      | –   | 1000      | mV                  |
| Diode Capacitance<br>( $V_R = 0 \text{ V}$ , $f = 1.0 \text{ MHz}$ )                    | $C_D$      | –   | 4.0       | pF                  |
| Reverse Recovery Time<br>( $I_F = I_R = 10 \text{ mA}$ ) (Figure 1)                     | $t_{rr}$   | –   | 4.0       | ns                  |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



1. A 2.0 k $\Omega$  variable resistor adjusted for a Forward Current ( $I_F$ ) of 10 mA.
2. Input pulse is adjusted so  $I_{R(\text{peak})}$  is equal to 10 mA.
3.  $t_p \gg t_{rr}$

**Figure 1. Recovery Time Equivalent Test Circuit**

# MMSD4148, SMMSD4148

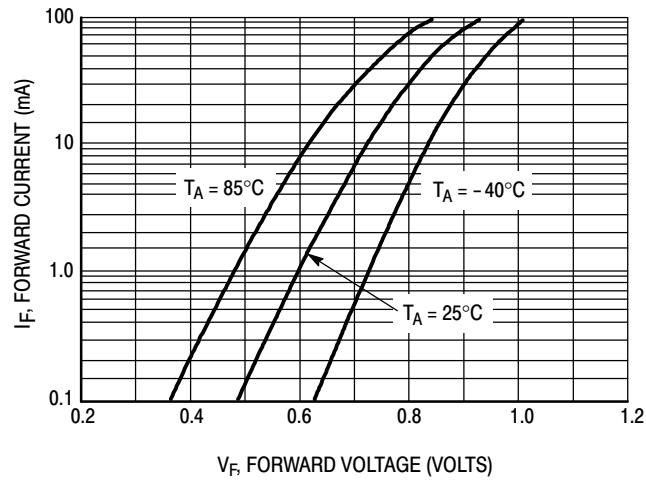


Figure 2. Forward Voltage

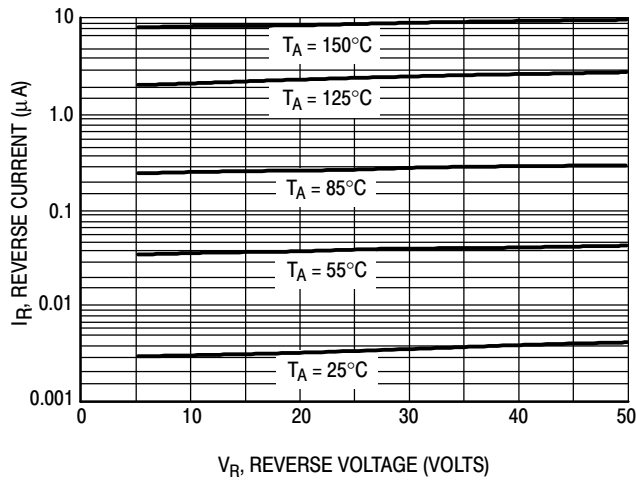


Figure 3. Leakage Current

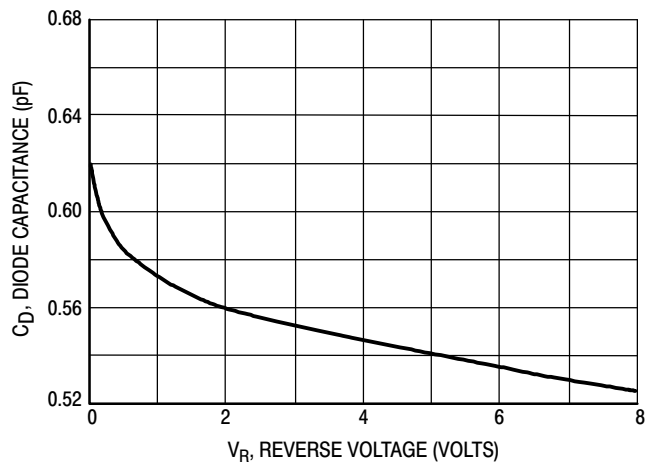
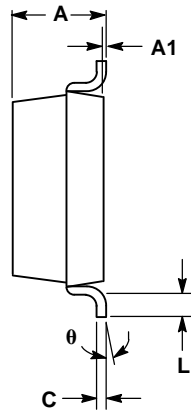
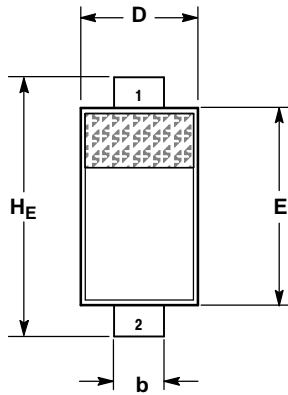


Figure 4. Capacitance

# MMSD4148, SMMSD4148

## PACKAGE DIMENSIONS

SOD-123  
CASE 425-04  
ISSUE G



NOTES:

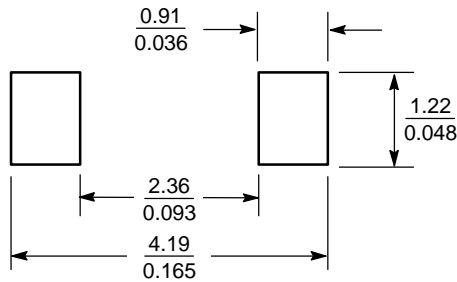
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | MILLIMETERS |      |      | INCHES |       |       |
|-----|-------------|------|------|--------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN    | NOM   | MAX   |
| A   | 0.94        | 1.17 | 1.35 | 0.037  | 0.046 | 0.053 |
| A1  | 0.00        | 0.05 | 0.10 | 0.000  | 0.002 | 0.004 |
| b   | 0.51        | 0.61 | 0.71 | 0.020  | 0.024 | 0.028 |
| c   | ---         | ---  | 0.15 | ---    | ---   | 0.006 |
| D   | 1.40        | 1.60 | 1.80 | 0.055  | 0.063 | 0.071 |
| E   | 2.54        | 2.69 | 2.84 | 0.100  | 0.106 | 0.112 |
| HE  | 3.56        | 3.68 | 3.86 | 0.140  | 0.145 | 0.152 |
| L   | 0.25        | ---  | ---  | 0.010  | ---   | ---   |
| θ   | 0°          | ---  | 10°  | 0°     | ---   | 10°   |

STYLE 1:

- PIN 1. CATHODE
- PIN 2. ANODE

### SOLDERING FOOTPRINT\*



SCALE 10:1 (mm/inches)

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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