

# MMSD914, SMMSD914

## 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   | Vdc  |
| Peak Forward Current                      | $I_F$           | 200   | mAdc |
| Peak Forward Surge Current                | $I_{FM(surge)}$ | 500   | mAdc |
| Non-repetitive Peak Forward Surge Current | $I_{FSM}$       |       |      |
| Pulse Width = 1 second                    |                 | 1.0   | A    |
| Pulse Width = 1 micro second              |                 | 2.0   | A    |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### THERMAL CHARACTERISTICS

| Characteristic                                                                                                 | Symbol          | Max         | Unit                      |
|----------------------------------------------------------------------------------------------------------------|-----------------|-------------|---------------------------|
| Total Device Dissipation FR-5 Board<br>(Note 1)<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$           | 425         | mW                        |
|                                                                                                                |                 | 3.4         | mW/ $^\circ\text{C}$      |
| Thermal Resistance,<br>Junction-to-Ambient                                                                     | $R_{\theta JA}$ | 290         | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature Range                                                                         | $T_J, T_{stg}$  | -55 to +150 | $^\circ\text{C}$          |

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



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SOD-123  
CASE 425  
PLASTIC



### MARKING DIAGRAM



5D = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device      | Package           | Shipping†            |
|-------------|-------------------|----------------------|
| MMSD914T1G  | SOD-123 (Pb-Free) | 3,000 / Tape & Reel  |
| SMMSD914T1G | SOD-123 (Pb-Free) | 3,000 / Tape & Reel  |
| MMSD914T3G  | SOD-123 (Pb-Free) | 10,000 / Tape & Reel |
| SMMSD914T3G | SOD-123 (Pb-Free) | 10,000 / Tape & Reel |

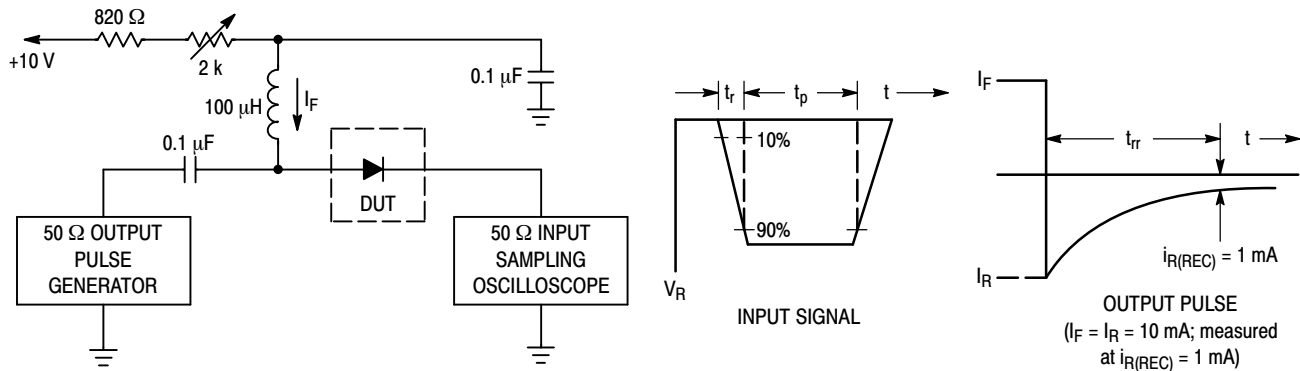
† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

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



- Notes: 1. A 2.0 kΩ 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**

# MMSD914, SMMSD914

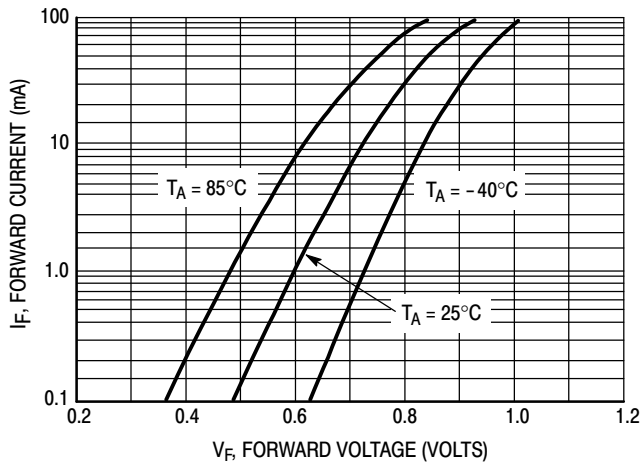


Figure 2. Forward Voltage

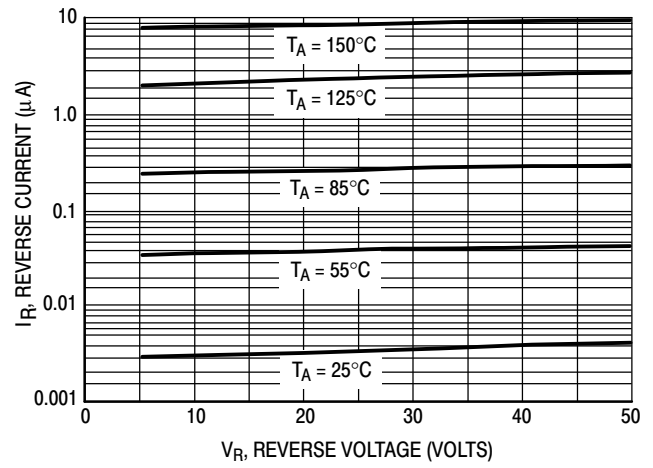


Figure 3. Leakage Current

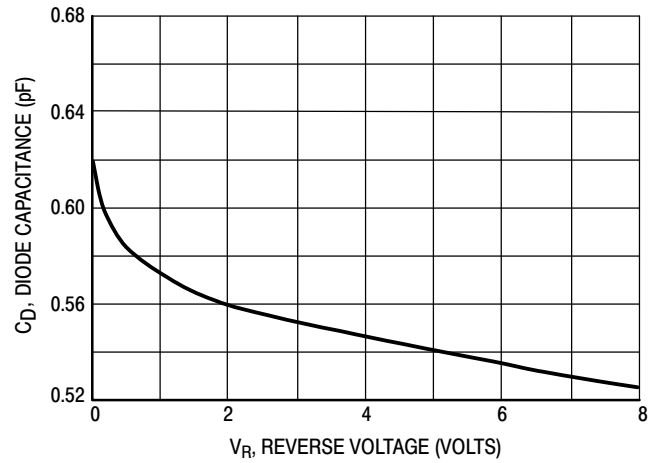
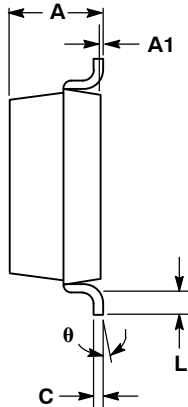
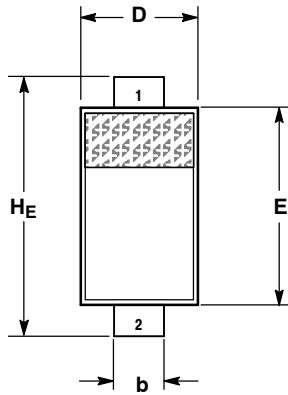


Figure 4. Capacitance

# MMSD914, SMMSD914

## PACKAGE DIMENSIONS

### SOD-123 CASE 425-04 ISSUE G

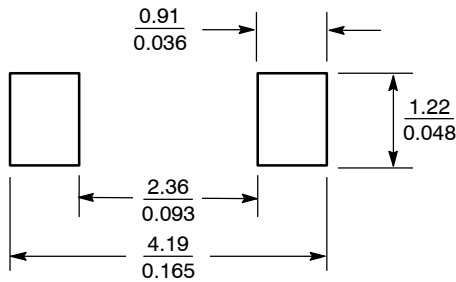


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.

| 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 |
| H <sub>E</sub> | 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  
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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