

# High Voltage Switching Diode

## MMSD103T1G, SMMSD103T1G

### Features

- AEC-Q101 Qualified and PPAP Capable
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant\*

### MAXIMUM RATINGS

| Rating                     | Symbol          | Value | Unit |
|----------------------------|-----------------|-------|------|
| Continuous Reverse Voltage | $V_R$           | 250   | V    |
| Peak Forward Current       | $I_F$           | 200   | mA   |
| Peak Forward Surge Current | $I_{FM(surge)}$ | 625   | mA   |

### THERMAL CHARACTERISTICS

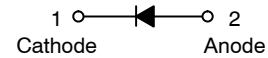
| Characteristic                                                                                                  | Symbol          | Value       | Unit                       |
|-----------------------------------------------------------------------------------------------------------------|-----------------|-------------|----------------------------|
| Forward Power Dissipation, FR-5 Board<br>(Note 1) @ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_F$           | 400<br>3.2  | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance,<br>Junction-to-Case                                                                         | $R_{\theta JL}$ | 174         | $^\circ\text{C/W}$         |
| Thermal Resistance,<br>Junction-to-Ambient                                                                      | $R_{\theta JA}$ | 492         | $^\circ\text{C/W}$         |
| Junction and Storage<br>Temperature Range                                                                       | $T_J, T_{stg}$  | -55 to +150 | $^\circ\text{C}$           |

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.

1. FR-5 =  $1.0 \times 0.75 \times 0.062$  in.



SOD-123  
CASE 425  
STYLE 1



### MARKING DIAGRAM



JS = Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device      | Package              | Shipping†           |
|-------------|----------------------|---------------------|
| MMSD103T1G  | SOD-123<br>(Pb-Free) | 3,000 / Tape & Reel |
| SMMSD103T1G | SOD-123<br>(Pb-Free) | 3,000 / Tape & Reel |

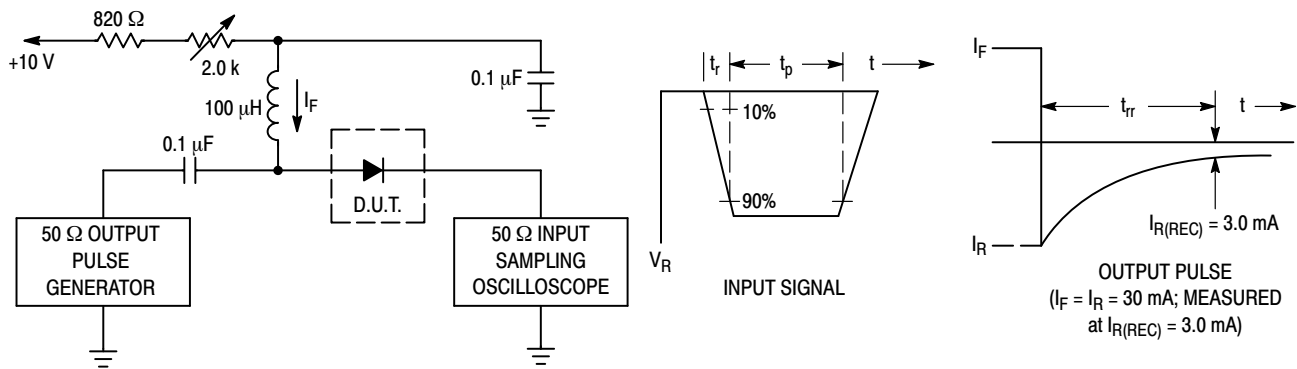
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](http://BRD8011/D).

\*For additional information on our Pb-Free strategy and soldering details, please download the [onsemi Soldering and Mounting Techniques Reference Manual](#), SOLDERRM/D.

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

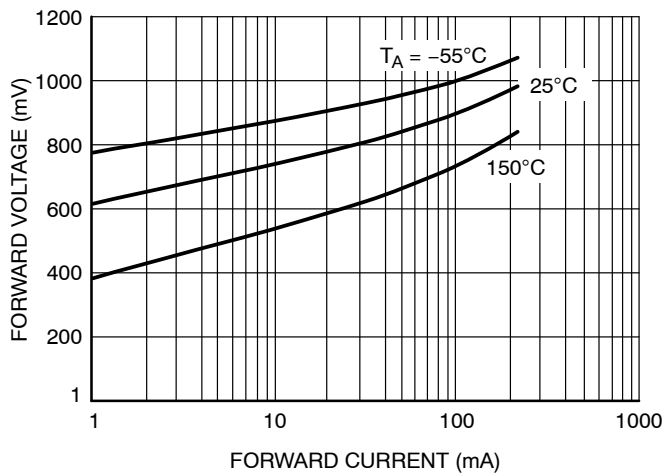
| Characteristic                                                                                                      | Symbol     | Min | Max          | Unit          |
|---------------------------------------------------------------------------------------------------------------------|------------|-----|--------------|---------------|
| <b>OFF CHARACTERISTICS</b>                                                                                          |            |     |              |               |
| Reverse Voltage Leakage Current<br>( $V_R = 200\text{ V}$ )<br>( $V_R = 200\text{ V}$ , $T_J = 150^\circ\text{C}$ ) | $I_R$      | –   | 1.0<br>100   | $\mu\text{A}$ |
| Reverse Breakdown Voltage<br>( $I_{BR} = 100\text{ }\mu\text{A}$ )                                                  | $V_{(BR)}$ | 250 | –            | V             |
| Forward Voltage<br>( $I_F = 100\text{ mA}$ )<br>( $I_F = 200\text{ mA}$ )                                           | $V_F$      | –   | 1000<br>1250 | mV            |
| Diode Capacitance<br>( $V_R = 0$ , $f = 1.0\text{ MHz}$ )                                                           | $C_D$      | –   | 5.0          | pF            |
| Reverse Recovery Time<br>( $I_F = I_R = 30\text{ mA}$ , $R_L = 100\text{ }\Omega$ )                                 | $t_{rr}$   | –   | 50           | ns            |



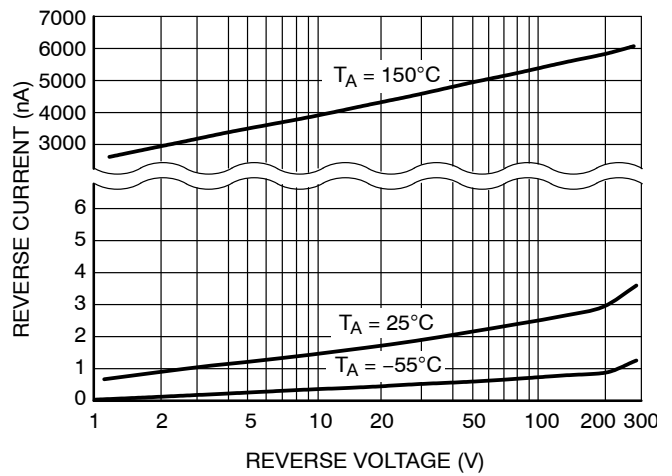
- Notes: 1. A 2.0 k $\Omega$  variable resistor adjusted for a Forward Current ( $I_F$ ) of 30 mA.  
 2. Input pulse is adjusted so  $I_{R(\text{peak})}$  is equal to 30 mA.  
 3.  $t_p \gg t_{rr}$

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

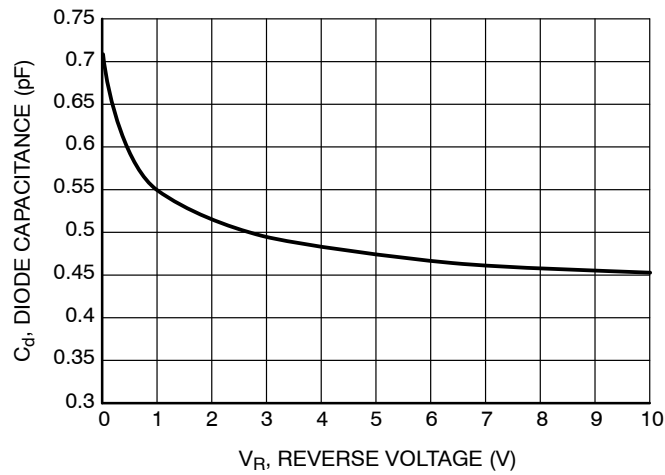
# MMSD103T1G, SMMSD103T1G



**Figure 2. Forward Voltage**



**Figure 3. Reverse Leakage**



**Figure 4. Diode Capacitance**


**SOD-123 2-LEAD, 1.60x2.69x1.16**  
**CASE 425**  
**ISSUE H**

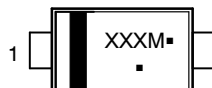
DATE 29 FEB 2024



## NOTES:

1. DIMENSION AND TOLERANCING PER ASME Y14.5M, 2018
2. CONTROLLING DIMENSION: MILLIMETERS

| DIM | MILLIMETER |      |      |
|-----|------------|------|------|
|     | MIN.       | NOM. | MAX. |
| A   | 0.94       | 1.17 | 1.35 |
| A1  | 0.00       | 0.05 | 0.10 |
| A2  | 1.16 REF.  |      |      |
| b   | 0.51       | 0.61 | 0.71 |
| c   | —          | —    | 0.15 |
| D   | 1.40       | 1.60 | 1.80 |
| E   | 2.54       | 2.69 | 2.84 |
| H   | 3.56       | 3.68 | 3.86 |
| L   | 0.25 REF.  |      |      |
| ⌀   | 0°         |      | 10°  |
| θ1  | 0°         |      | 10°  |

**GENERIC MARKING DIAGRAM\***


XXX = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

STYLE 1:  
PIN 1. CATHODE  
2. ANODE

**RECOMMENDED MOUNTING FOOTPRINT**

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

|                         |                                       |                                                                                                                                                                                  |
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| <b>DESCRIPTION:</b>     | <b>SOD-123 2-LEAD, 1.60x2.69x1.16</b> | <b>PAGE 1 OF 1</b>                                                                                                                                                               |

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