

# M1MA151WAT1, M1MA152WAT1

Preferred Device

## Common Anode Silicon Dual Switching Diodes

These Common Anode Silicon Epitaxial Planar Dual Diodes are designed for use in ultra high speed switching applications. These devices are housed in the SC-59 package which is designed for low power surface mount applications.

### Features

- Fast  $t_{rr}$ , < 10 ns
- Low  $C_D$ , < 15 pF
- Pb-Free Packages are Available

### MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

| Rating   | Symbol                | Value      | Unit |
|--|-----------------------|------------|------|
| Reverse Voltage<br>M1MA151WAT1<br>M1MA152WAT1      | $V_R$                 | 40<br>80   | Vdc  |
| Peak Reverse Voltage<br>M1MA151WAT1<br>M1MA152WAT1 | $V_{RM}$              | 40<br>80   | Vdc  |
| Forward Current<br>Single<br>Dual                  | $I_F$                 | 100<br>150 | mAdc |
| Peak Forward Current<br>Single<br>Dual             | $I_{FM}$              | 225<br>340 | mAdc |
| Peak Forward Surge Current<br>Single<br>Dual       | $I_{FSM}$<br>(Note 1) | 500<br>750 | mAdc |

### THERMAL CHARACTERISTICS

| Rating               | Symbol    | Max         | Unit             |
|----------------------|-----------|-------------|------------------|
| Power Dissipation    | $P_D$     | 200         | mW               |
| Junction Temperature | $T_J$     | 150         | $^\circ\text{C}$ |
| Storage Temperature  | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

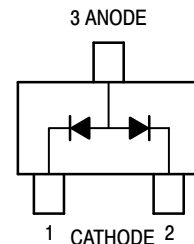
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1.  $t = 1 \text{ SEC}$



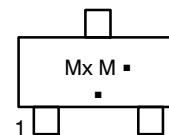
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<http://onsemi.com>



SC-59  
CASE 318D

### MARKING DIAGRAM



Mx = Device Code  
x = N for 151  
O for 152

M = Date Code\*  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation may vary depending upon manufacturing location.

### ORDERING INFORMATION

| Device       | Package            | Shipping†        |
|--------------|--------------------|------------------|
| M1MA151WAT1  | SC-59              | 3000/Tape & Reel |
| M1MA151WAT1G | SC-59<br>(Pb-Free) | 3000/Tape & Reel |
| M1MA152WAT1  | SC-59              | 3000/Tape & Reel |
| M1MA152WAT1G | SC-59<br>(Pb-Free) | 3000/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.

Preferred devices are recommended choices for future use and best overall value.

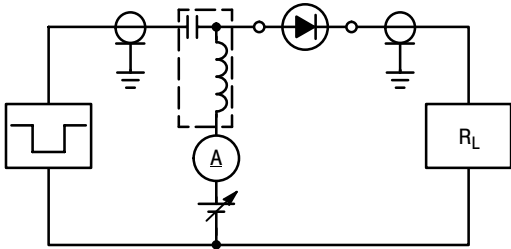
# M1MA151WAT1, M1MA152WAT1

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

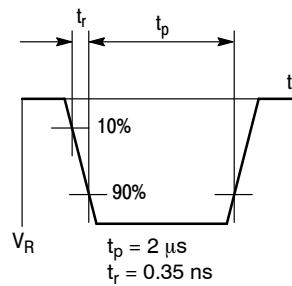
| Characteristic  | Symbol               | Condition  | Min      | Max | Unit             |
|---|----------------------|--|----------|-----|------------------|
| Reverse Voltage Leakage Current<br>M1MA151WAT1<br>M1MA152WAT1 | $I_R$                | $V_R = 35\text{ V}$<br>$V_R = 75\text{ V}$   | -        | 0.1 | $\mu\text{A dc}$ |
| Forward Voltage   | $V_F$                | $I_F = 100\text{ mA}$  | -        | 1.2 | Vdc              |
| Reverse Breakdown Voltage<br>M1MA151WAT1<br>M1MA152WAT1       | $V_R$                | $I_R = 100\ \mu\text{A}$   | 40<br>80 | -   | Vdc              |
| Diode Capacitance   | $C_D$                | $V_R = 0, f = 1.0\text{ MHz}$  | -        | 15  | pF               |
| Reverse Recovery Time (Figure 1)                              | $t_{rr}$<br>(Note 2) | $I_F = 10\text{ mA}, V_R = 6.0\text{ V},$<br>$R_L = 100\ \Omega, I_{rr} = 0.1 I_R$ | -        | 10  | ns               |

### 2. $t_{rr}$ Test Circuit

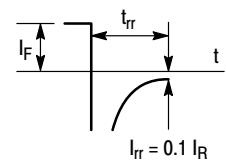
#### RECOVERY TIME EQUIVALENT TEST CIRCUIT



#### INPUT PULSE



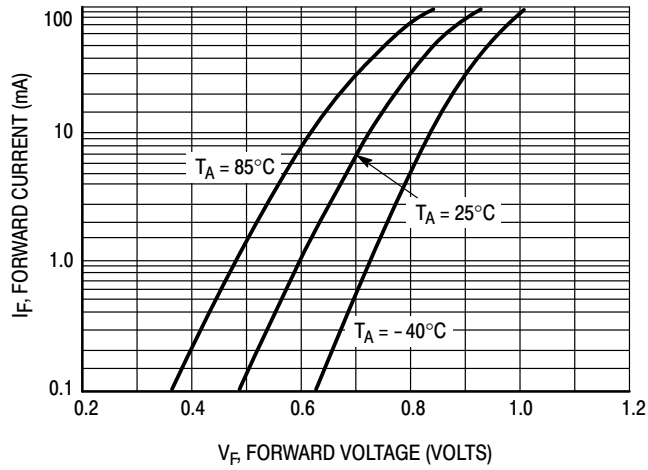
#### OUTPUT PULSE



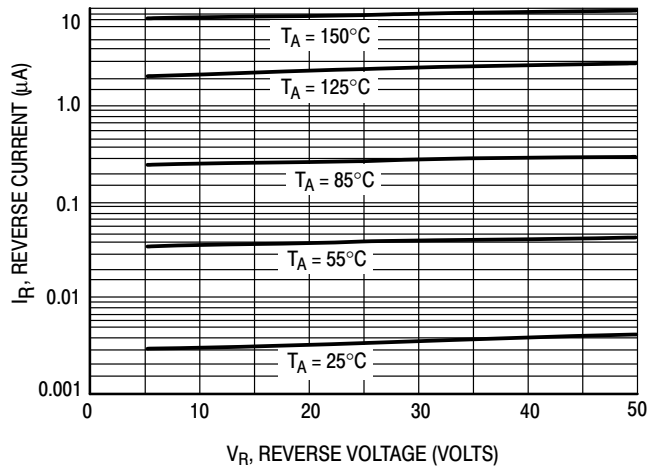
$I_F = 10\text{ mA}$   
 $V_R = 6\text{ V}$   
 $R_L = 100\ \Omega$

Figure 1. Reverse Recovery Time Equivalent Test Circuit

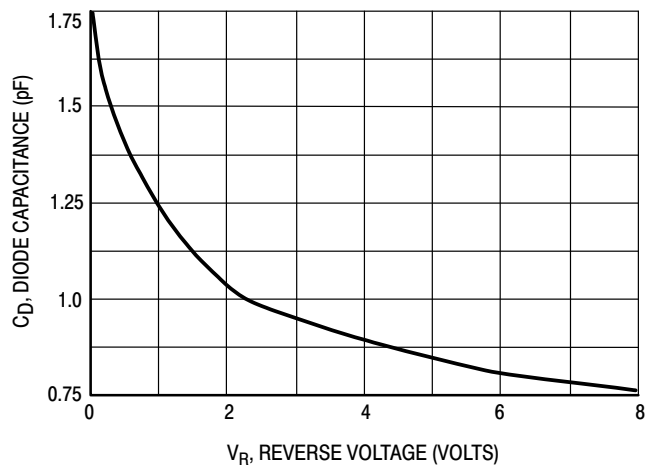
# M1MA151WAT1, M1MA152WAT1



**Figure 2. Forward Voltage**



**Figure 3. Leakage Current**



**Figure 4. Capacitance**

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

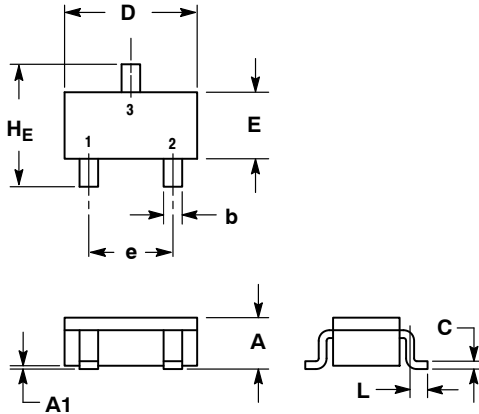
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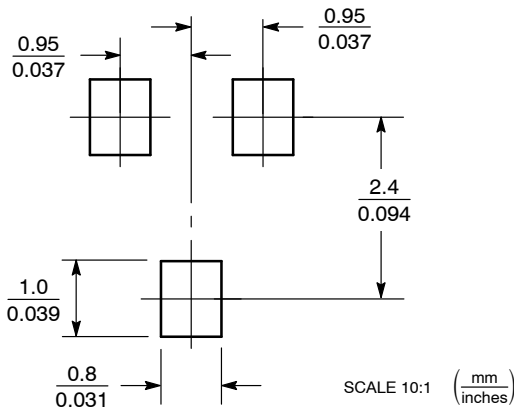
SC-59  
CASE 318D-04  
ISSUE H

DATE 28 JUN 2012

SCALE 2:1



### SOLDERING FOOTPRINT\*

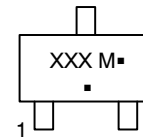


\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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

| DIM | MILLIMETERS |      |      | INCHES |       |       |
|-----|-------------|------|------|--------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN    | NOM   | MAX   |
| A   | 1.00        | 1.15 | 1.30 | 0.039  | 0.045 | 0.051 |
| A1  | 0.01        | 0.06 | 0.10 | 0.001  | 0.002 | 0.004 |
| b   | 0.35        | 0.43 | 0.50 | 0.014  | 0.017 | 0.020 |
| c   | 0.09        | 0.14 | 0.18 | 0.003  | 0.005 | 0.007 |
| D   | 2.70        | 2.90 | 3.10 | 0.106  | 0.114 | 0.122 |
| E   | 1.30        | 1.50 | 1.70 | 0.051  | 0.059 | 0.067 |
| e   | 1.70        | 1.90 | 2.10 | 0.067  | 0.075 | 0.083 |
| L   | 0.20        | 0.40 | 0.60 | 0.008  | 0.016 | 0.024 |
| HE  | 2.50        | 2.80 | 3.00 | 0.099  | 0.110 | 0.118 |

### 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.

STYLE 1: PIN 1. BASE  
2. EMITTER  
3. COLLECTOR

STYLE 2: PIN 1. ANODE  
2. N.C.  
3. CATHODE

STYLE 3: PIN 1. ANODE  
2. ANODE  
3. CATHODE

STYLE 4: PIN 1. CATHODE  
2. N.C.  
3. ANODE

STYLE 5: PIN 1. CATHODE  
2. CATHODE  
3. ANODE

STYLE 6: PIN 1. ANODE  
2. CATHODE  
3. ANODE/CATHODE

|                  |             |  |
|------------------|-------------|--|
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| DESCRIPTION:     | SC-59       | PAGE 1 OF 1  |

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