

# M1MA141WKT1, M1MA142WKT1

Preferred Device

## Common Cathode Silicon Dual Switching Diode

This Common Cathode Silicon Epitaxial Planar Dual Diode is designed for use in ultra high speed switching applications. This device is housed in the SC-70 package which is designed for low power surface mount applications.

### Features

- Fast  $t_{rr}$ , < 3.0 ns
- Low  $C_D$ , < 2.0 pF
- Available in 8 mm Tape and Reel  
Use M1MA141/2WKT1 to order the 7 inch/3000 unit reel.
- Pb-Free Packages are Available

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

| Rating                     | Symbol      | Value                 | Unit |      |
|----------------------------|-------------|-----------------------|------|------|
| Reverse Voltage            | M1MA141WKT1 | $V_R$                 | 40   | Vdc  |
|                            | M1MA142WKT1 |                       | 80   |      |
| Peak Reverse Voltage       | M1MA141WKT1 | $V_{RM}$              | 40   | Vdc  |
|                            | M1MA142WKT1 |                       | 80   |      |
| Forward Current            | Single      | $I_F$                 | 100  | mAdc |
|                            | Dual        |                       | 150  |      |
| Peak Forward Current       | Single      | $I_{FM}$              | 225  | mAdc |
|                            | Dual        |                       | 340  |      |
| Peak Forward Surge Current | Single      | $I_{FSM}$<br>(Note 1) | 500  | mAdc |
|                            | Dual        |                       | 750  |      |

### THERMAL CHARACTERISTICS

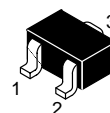
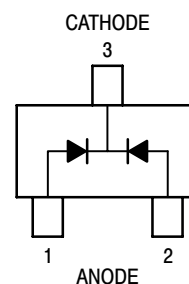
| Rating               | Symbol    | Max         | Unit             |
|----------------------|-----------|-------------|------------------|
| Power Dissipation    | $P_D$     | 150         | mW               |
| Junction Temperature | $T_J$     | 150         | $^\circ\text{C}$ |
| Storage Temperature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

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



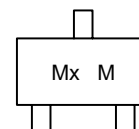
ON Semiconductor®

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SC-70 (SOT-323)  
CASE 419  
STYLE 5

### MARKING DIAGRAM



x = T for 141  
U for 142  
M = Date Code

### ORDERING INFORMATION

| Device       | Package            | Shipping†          |
|--------------|--------------------|--------------------|
| M1MA141WKT1  | SC-70              | 3000 / Tape & Reel |
| M1MA141WKT1G | SC-70<br>(Pb-Free) | 3000 / Tape & Reel |
| M1MA142WKT1  | SC-70              | 3000 / Tape & Reel |
| M1MA142WKT1G | SC-70<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.

# M1MA141WKT1, M1MA142WKT1

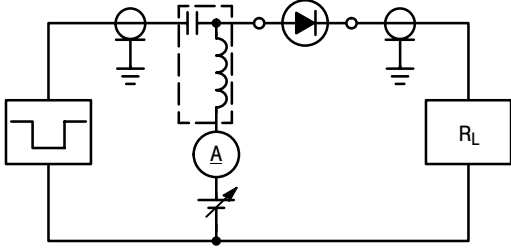
## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

| Characteristic                   |             | Condition   | Symbol               | Min | Max | Unit          |
|----------------------------------|-------------|---|----------------------|-----|-----|---------------|
| Reverse Voltage Leakage Current  | M1MA141WKT1 | $V_R = 35\text{ V}$   | $I_R$                | -   | 0.1 | $\mu\text{A}$ |
|                                  | M1MA142WKT1 | $V_R = 75\text{ V}$   |                      | -   | 0.1 |               |
| Forward Voltage                  |             | $I_F = 100\text{ mA}$   | $V_F$                | -   | 1.2 | Vdc           |
| Reverse Breakdown Voltage        | M1MA141WKT1 | $I_R = 100\ \mu\text{A}$  | $V_R$                | 40  | -   | Vdc           |
|                                  | M1MA142WKT1 |   |                      | 80  | -   |               |
| Diode Capacitance                |             | $V_R = 0, f = 1.0\text{ MHz}$   | $C_D$                | -   | 2.0 | pF            |
| Reverse Recovery Time (Figure 1) |             | $I_F = 10\text{ mA}, V_R = 6.0\text{ V}, R_L = 100\ \Omega, I_{rr} = 0.1 I_R$ | $t_{rr}$<br>(Note 2) | -   | 3.0 | ns            |

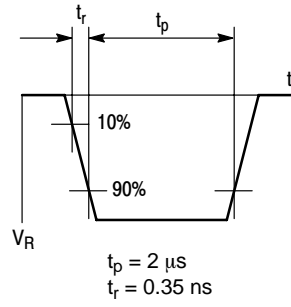
2.  $t_{rr}$  Test Circuit

# M1MA141WKT1, M1MA142WKT1

## RECOVERY TIME EQUIVALENT TEST CIRCUIT



## INPUT PULSE



## OUTPUT PULSE

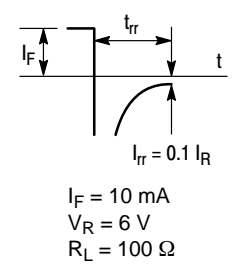


Figure 1. Recovery Time Equivalent Test Circuit

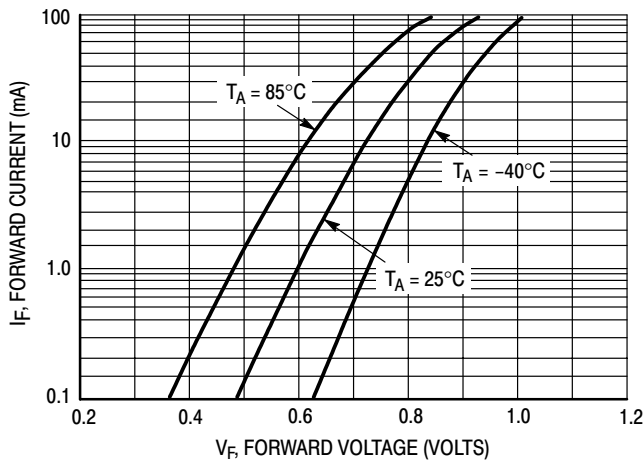


Figure 2. Forward Voltage

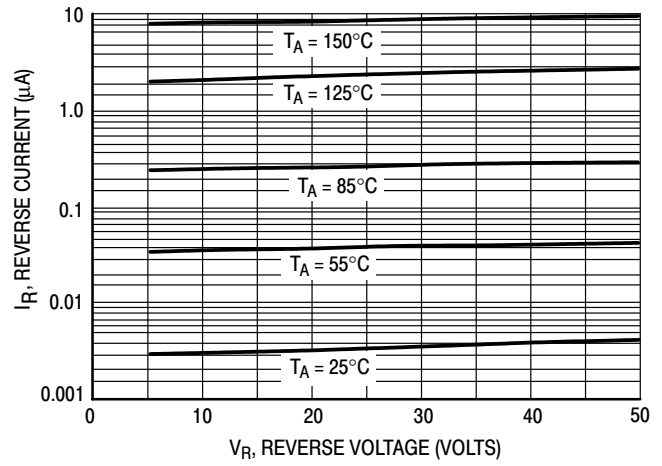


Figure 3. Reverse Current

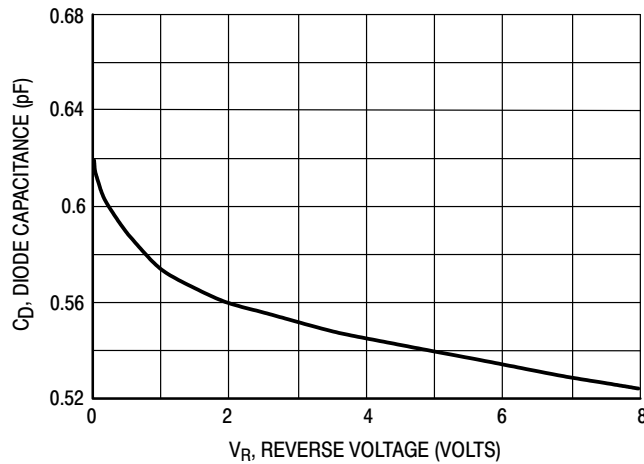
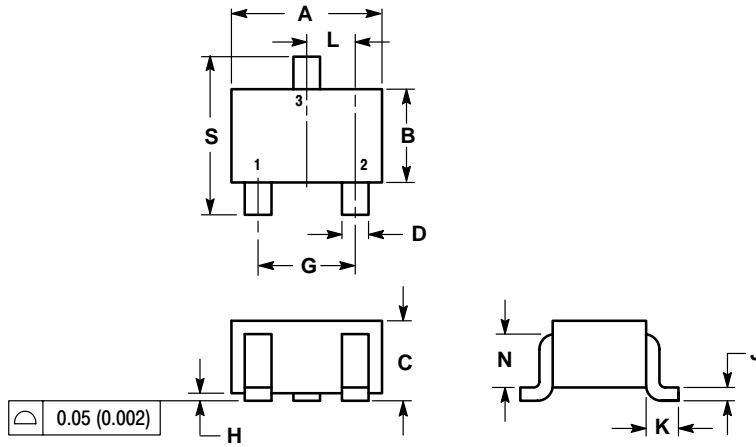


Figure 4. Diode Capacitance

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## PACKAGE DIMENSIONS

SC-70 (SOT-323)  
CASE 419-04  
ISSUE L



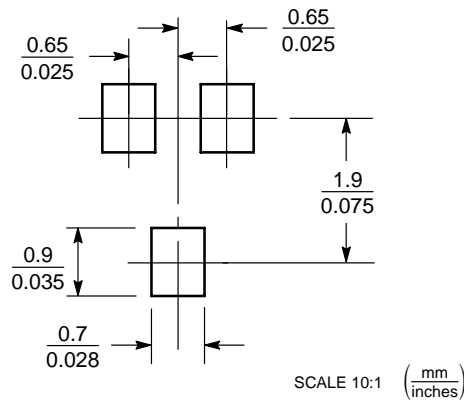
NOTES:

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


| DIM | INCHES    |       | MILLIMETERS |      |
|-----|-----------|-------|-------------|------|
|     | MIN       | MAX   | MIN         | MAX  |
| A   | 0.071     | 0.087 | 1.80        | 2.20 |
| B   | 0.045     | 0.053 | 1.15        | 1.35 |
| C   | 0.032     | 0.040 | 0.80        | 1.00 |
| D   | 0.012     | 0.016 | 0.30        | 0.40 |
| G   | 0.047     | 0.055 | 1.20        | 1.40 |
| H   | 0.000     | 0.004 | 0.00        | 0.10 |
| J   | 0.004     | 0.010 | 0.10        | 0.25 |
| K   | 0.017 REF |       | 0.425 REF   |      |
| L   | 0.026 BSC |       | 0.650 BSC   |      |
| N   | 0.028 REF |       | 0.700 REF   |      |
| S   | 0.079     | 0.095 | 2.00        | 2.40 |

- STYLE 6:  
PIN 1. EMITTER  
2. BASE  
3. COLLECTOR

### 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.

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