

M1MA141WAT1, M1MA142WAT1

Preferred Device

Common Anode Silicon Dual Switching Diode

This Common Anode 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} , < 10 ns
- Low C_D , < 15 pF
- Pb-Free Package is Available

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

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

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 ~ +150 | $^\circ\text{C}$ |

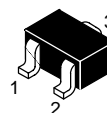
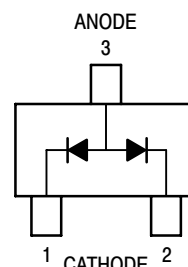
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. $t = 1$ sec



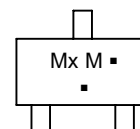
ON Semiconductor®

<http://onsemi.com>



SC-70 (SOT-323)
CASE 419
STYLE 4

MARKING DIAGRAM



Mx = Device Code
x = N for 141
O for 142

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† |
|--------------|--------------------|------------------|
| M1MA141WAT1 | SC-70 | 3000/Tape & Reel |
| M1MA141WAT1G | SC-70 (Pb-Free) | 3000/Tape & Reel |
| M1MA142WAT1 | SC-70 | 3000/Tape & Reel |
| M1MA142WAT1G | SC-70 (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.

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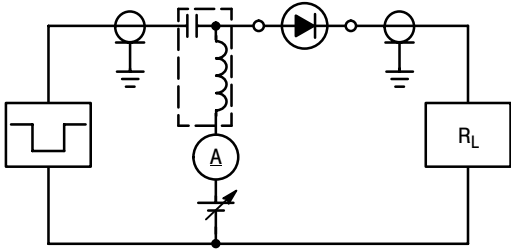
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

| Characteristic | Condition | Symbol | Min | Max | Unit |
|---|--|----------------------|----------|-----|--------------------|
| Reverse Voltage Leakage Current M1MA141WAT1 M1MA142WAT1 | $V_R = 35\text{ V}$ $V_R = 75\text{ V}$ | I_R | – | 0.1 | μA_{dc} |
| Forward Voltage | $I_F = 100\text{ mA}$ | V_F | – | 1.2 | Vdc |
| Reverse Breakdown Voltage M1MA141WAT1 M1MA142WAT1 | $I_R = 100\ \mu\text{A}$ | V_R | 40 80 | – | Vdc |
| Diode Capacitance | $V_R = 0, f = 1.0\text{ MHz}$ | C_D | – | 15 | 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} (Note 2) | – | 10 | ns |

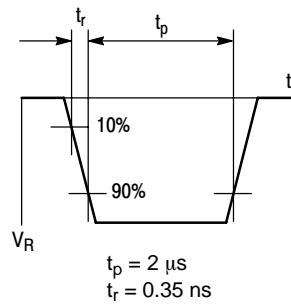
2. t_{rr} Test Circuit

M1MA141WAT1, M1MA142WAT1

RECOVERY TIME EQUIVALENT TEST CIRCUIT



INPUT PULSE



OUTPUT PULSE

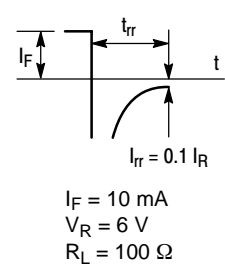


Figure 1. Recovery Time Equivalent Test Circuit

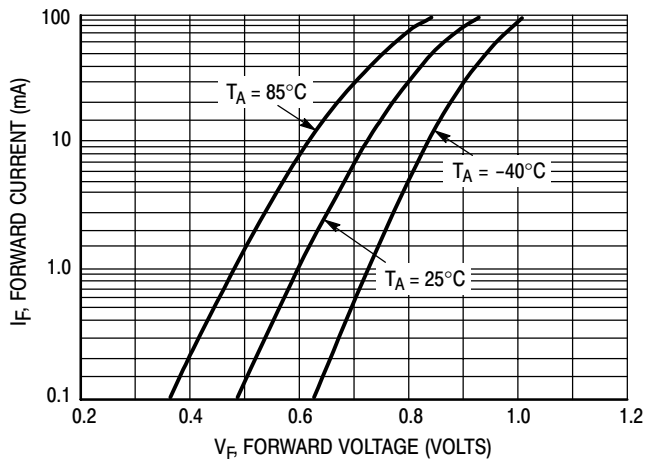


Figure 2. Forward Voltage

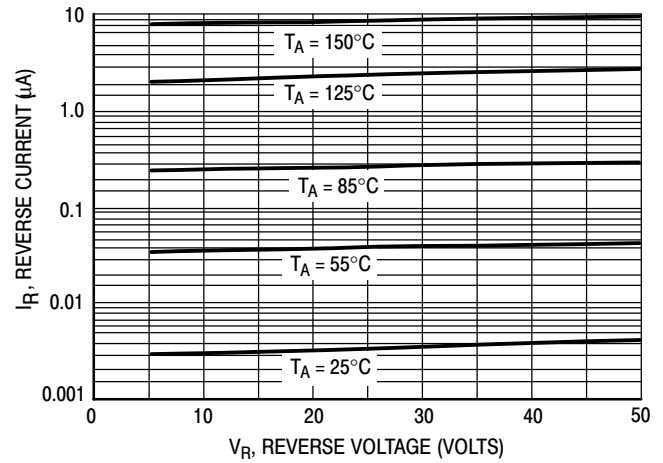


Figure 3. Reverse Current

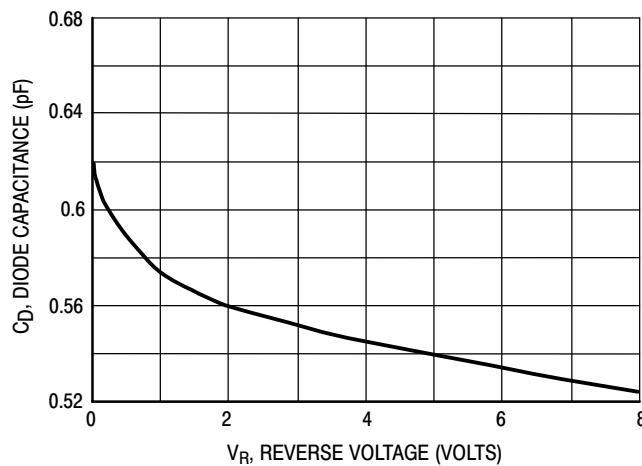
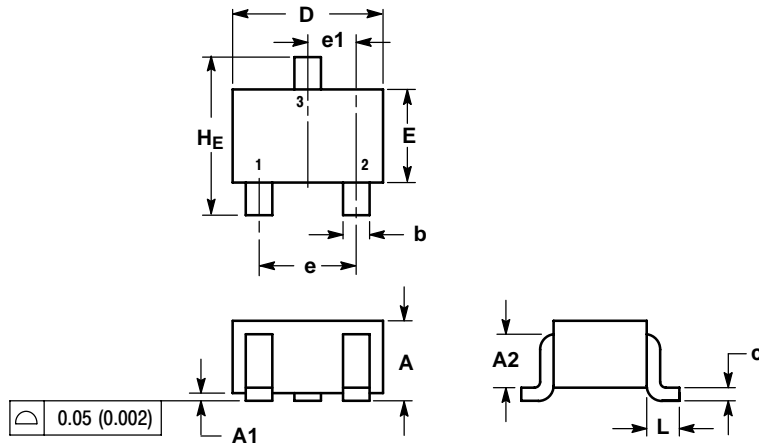


Figure 4. Diode Capacitance

M1MA141WAT1, M1MA142WAT1

PACKAGE DIMENSIONS

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

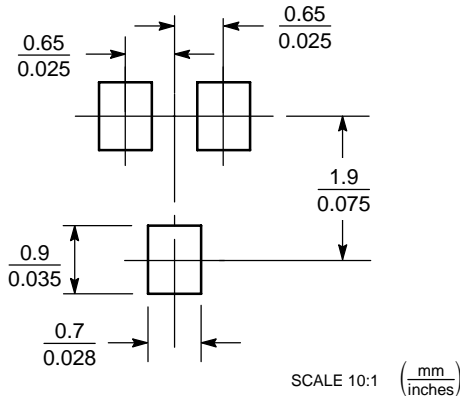


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|-----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.80 | 0.90 | 1.00 | 0.032 | 0.035 | 0.040 |
| A1 | 0.00 | 0.05 | 0.10 | 0.000 | 0.002 | 0.004 |
| A2 | 0.7 REF | | | 0.028 REF | | |
| b | 0.30 | 0.35 | 0.40 | 0.012 | 0.014 | 0.016 |
| c | 0.10 | 0.18 | 0.25 | 0.004 | 0.007 | 0.010 |
| D | 1.80 | 2.10 | 2.20 | 0.071 | 0.083 | 0.087 |
| E | 1.15 | 1.24 | 1.35 | 0.045 | 0.049 | 0.053 |
| e | 1.20 | 1.30 | 1.40 | 0.047 | 0.051 | 0.055 |
| e1 | 0.65 BSC | | | 0.026 BSC | | |
| L | 0.425 REF | | | 0.017 REF | | |
| HE | 2.00 | 2.10 | 2.40 | 0.079 | 0.083 | 0.095 |

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

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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