

M1MA141WAT1G, M1MA142WAT1G, SM1MA142WAT1G

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

| Rating | Symbol | Value | Unit |
|---|-----------------------|------------|------|
| Reverse Voltage M1MA141WAT1G M1MA142WAT1G, SM1MA142WAT1G | V_R | 40 80 | Vdc |
| Peak Reverse Voltage M1MA141WAT1G M1MA142WAT1G, SM1MA142WAT1G | V_{RM} | 40 80 | Vdc |
| Forward Current Single Dual | I_F | 100 150 | mAdc |
| Peak Forward Current Single Dual | I_{FM} | 225 340 | mAdc |
| Peak Forward Surge Current M1MA141WAT1G M1MA142WAT1G, SM1MA142WAT1G | 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 | $^\circ\text{C}$ |

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. $t = 1$ sec

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

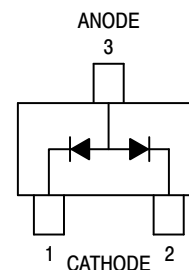


ON Semiconductor®

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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† |
|---------------|--------------------|------------------------|
| M1MA141WAT1G | SC-70 (Pb-Free) | 3,000 / Tape & Reel |
| M1MA142WAT1G | SC-70 (Pb-Free) | 3,000 / Tape & Reel |
| SM1MA142WAT1G | SC-70 (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.

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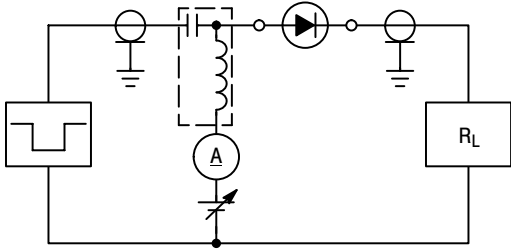
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

| Characteristic | Condition | Symbol | Min | Max | Unit |
|--|--|----------------------|----------|------------|--------------------|
| Reverse Voltage Leakage Current M1MA141WAT1G M1MA142WAT1G, SM1MA142WAT1G | $V_R = 35\text{ V}$ $V_R = 75\text{ V}$ | I_R | – – | 0.1 0.1 | μA_{dc} |
| Forward Voltage | $I_F = 100\text{ mA}$ | V_F | – | 1.2 | Vdc |
| Reverse Breakdown Voltage M1MA141WAT1G, M1MA142WAT1G, SM1MA142WAT1G | $I_R = 100\ \mu\text{A}$ | 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 |

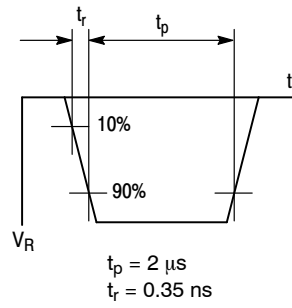
2. t_{rr} Test Circuit

M1MA141WAT1G, M1MA142WAT1G, SM1MA142WAT1G

RECOVERY TIME EQUIVALENT TEST CIRCUIT



INPUT PULSE



OUTPUT PULSE

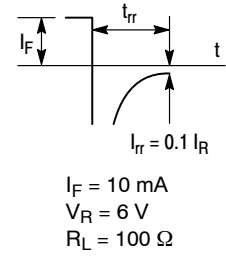


Figure 1. Recovery Time Equivalent Test Circuit

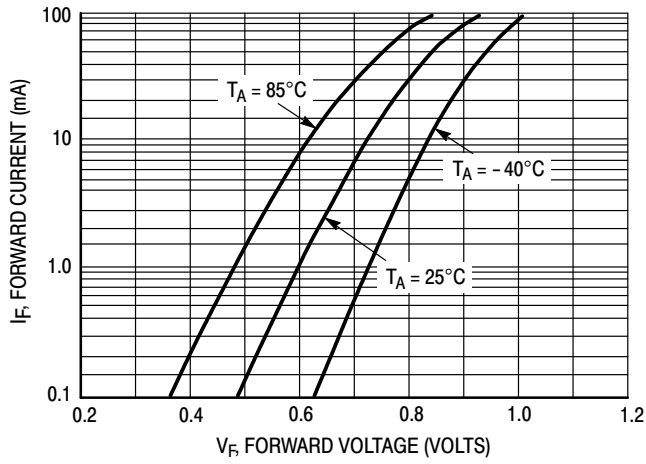


Figure 2. Forward Voltage

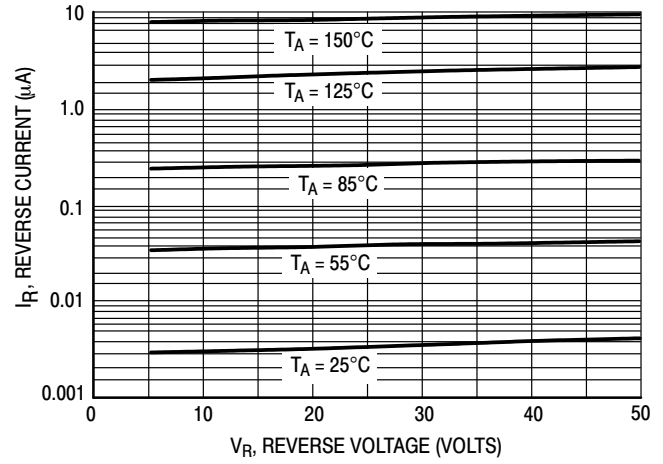


Figure 3. Reverse Current

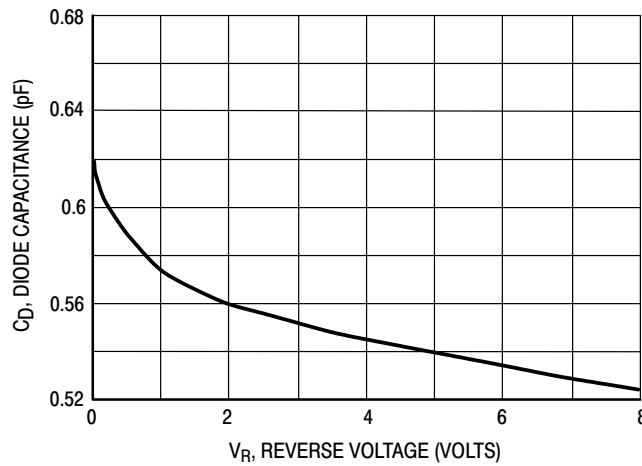
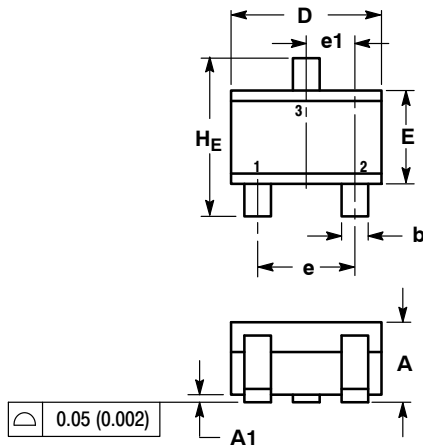


Figure 4. Diode Capacitance

M1MA141WAT1G, M1MA142WAT1G, SM1MA142WAT1G

PACKAGE DIMENSIONS

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



NOTES:

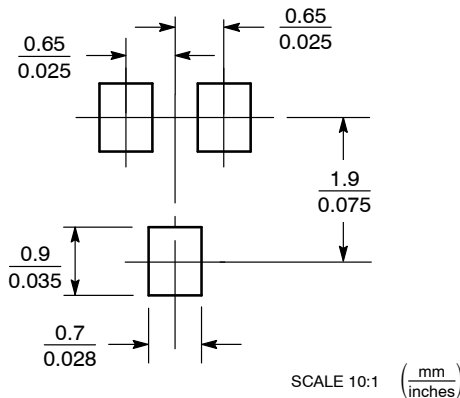
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| 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 | 0.70 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 | 0.20 | 0.38 | 0.56 | 0.008 | 0.015 | 0.022 |
| HE | 2.00 | 2.10 | 2.40 | 0.079 | 0.083 | 0.095 |

STYLE 4:

- PIN 1: CATHODE
- CATHODE
- 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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