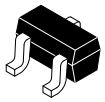
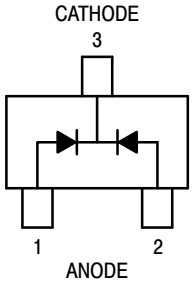
# Common Cathode Silicon Dual Switching Diode

# M1MA141WKT1G, M1MA142WKT1G, SM1MA142WKT1G



**SC−70 (SOT−323)**
**CASE 419**
**STYLE 5**

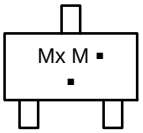



This Common Cathode Silicon Epitaxial Planar Dual Diode is designed for use in ultra high speed switching applications. This device is housed in the SC−70 package which is designed for low power surface mount applications.

### Features

- Fast $t_{rr}$, < 3.0 ns
- Low $C_D$, < 2.0 pF
- 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*

### MARKING DIAGRAM




Mx = Device Code
x = T for 141
U for 142
M = Date Code*
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*Date Code orientation may vary depending upon manufacturing location.

### MAXIMUM RATINGS ($T_A$ = 25°C)

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Reverse Voltage<br>M1MA141WKT1G<br>M1MA142WKT1G, SM1MA142WKT1G | $V_R$ | <br>40<br>80 | Vdc |
| Peak Reverse Voltage<br>M1MA141WKT1G<br>M1MA142WKT1G, SM1MA142WKT1G | $V_{RM}$ | <br>40<br>80 | Vdc |
| Forward Current<br>Single<br>Dual | $I_F$ | <br>100<br>150 | mAdc |
| Peak Forward Current<br>Single<br>Dual | $I_{FM}$ | <br>225<br>340 | mAdc |
| Peak Forward Surge Current<br>M1MA141WKT1G<br>M1MA142WKT1G, SM1MA142WKT1G | $I_{FSM}$<br>(Note 1) | <br>500<br>750 | mAdc |

### THERMAL CHARACTERISTICS

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

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.
1. t = 1 SEC

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

### ORDERING INFORMATION

| Device | Package | Shipping† |
|---|---|---|
| M1MA142WKT1G | SC−70<br>(Pb−Free) | 3,000 /<br>Tape & Reel |
| SM1MA142WKT1G | SC−70<br>(Pb−Free) | 3,000 /<br>Tape & Reel |

**DISCONTINUED** (Note 1)

| | | |
|---|---|---|
| M1MA141WKT1G | SC−70<br>(Pb−Free) | 3,000 /<br>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.

1. **DISCONTINUED:** This device is not recommended for new design. Please contact your **onsemi** representative for information. The most current information on this device may be available on www.onsemi.com.

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**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C)

| Characteristic | Condition | Symbol | Min | Max | Unit |
|---|---|---|---|---|---|
| Reverse Voltage Leakage Current<br>M1MA141WKT1G<br>M1MA142WKT1G, SM1MA142WKT1G | $V_R$ = 35 V<br>$V_R$ = 75 V | $I_R$ | <br>–<br>– | <br>0.1<br>0.1 | μAdc |
| Forward Voltage | $I_F$ = 100 mA | $V_F$ | – | 1.2 | Vdc |
| Reverse Breakdown Voltage<br>M1MA141WKT1G<br>M1MA142WKT1G, SM1MA142WKT1G | $I_R$ = 100 μA | $V_R$ | <br>40<br>80 | <br>–<br>– | Vdc |
| Diode Capacitance | $V_R$ = 0, f = 1.0 MHz | $C_D$ | – | 2.0 | pF |
| Reverse Recovery Time (Figure 1) | $I_F$ = 10 mA, $V_R$ = 6.0 V,<br>$R_L$ = 100 Ω, $I_{rr}$ = 0.1 $I_R$ | $t_{rr}$<br>(Note 2) | – | 3.0 | ns |

2. $t_{rr}$ Test Circuit



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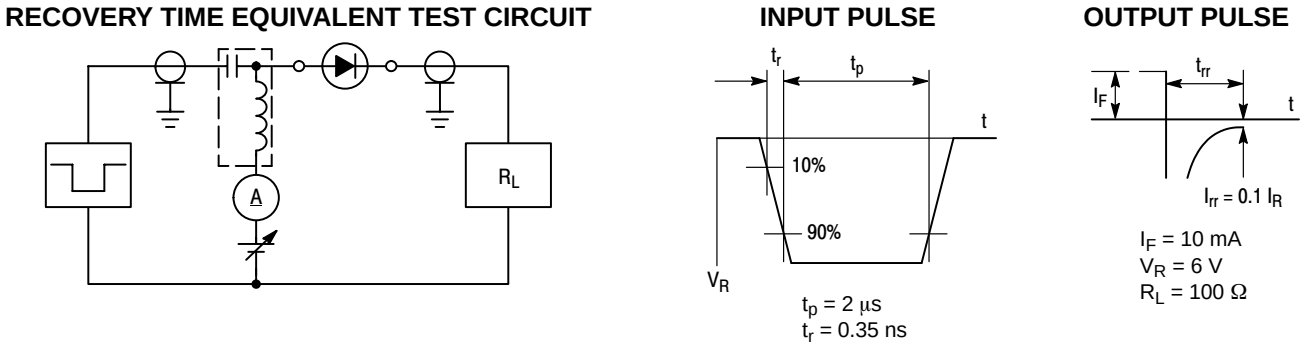



**Figure 1. Recovery Time Equivalent Test Circuit**

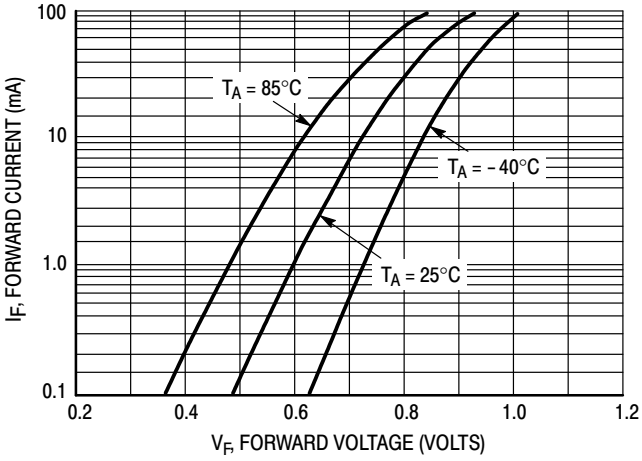



**Figure 2. Forward Voltage**

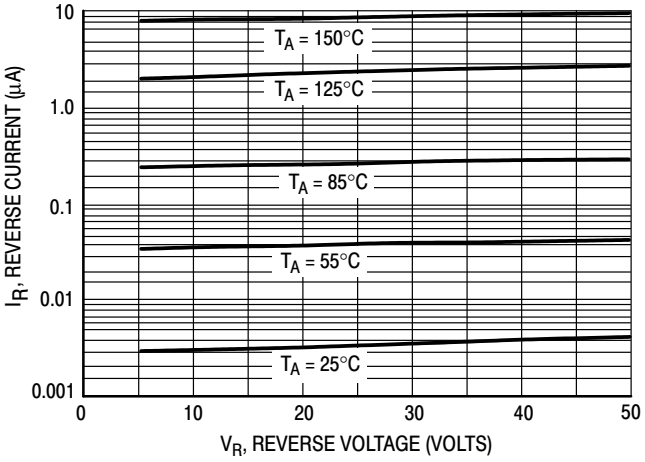



**Figure 3. Reverse Current**

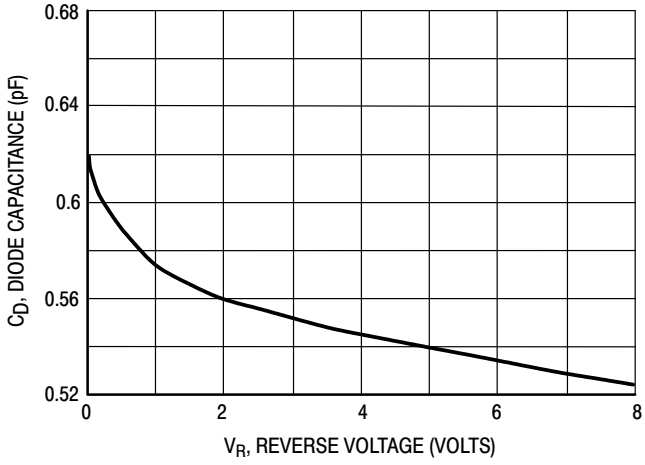
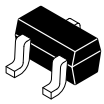



**Figure 4. Diode Capacitance**



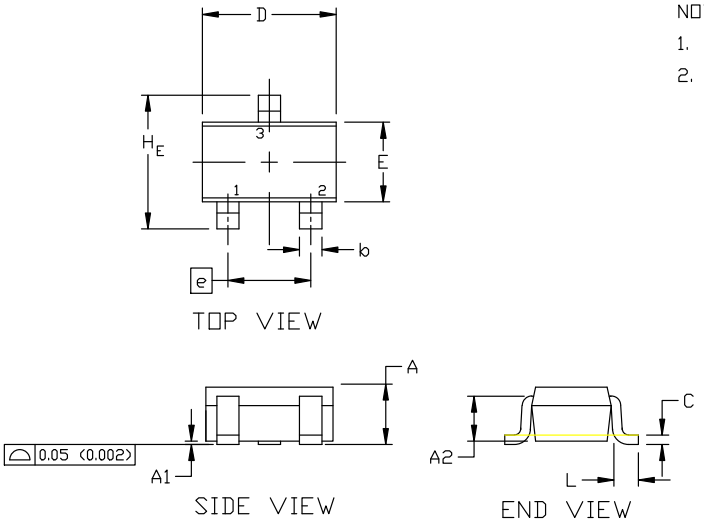
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**SCALE 4:1**

**SC−70 (SOT−323)**
CASE 419
ISSUE R

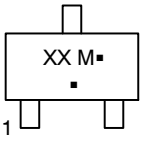
DATE 11 OCT 2022




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

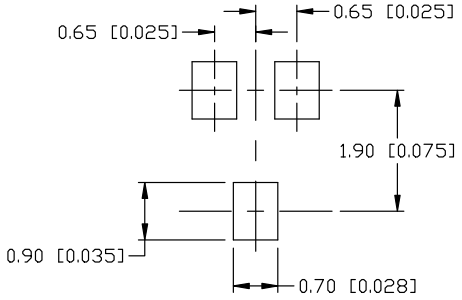
| | MILLIMETERS | | | INCHES | | |
|---|---|---|---|---|---|---|
| DIM | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. |
| A | 0.80 | 0.90 | 1.00 | 0.032 | 0.035 | 0.040 |
| A1 | 0.00 | 0.05 | 0.10 | 0.000 | 0.002 | 0.004 |
| A2 | 0.70 REF | | | 0.028 BSC | | |
| b | 0.30 | 0.35 | 0.40 | 0.012 | 0.014 | 0.016 |
| c | 0.10 | 0.18 | 0.25 | 0.004 | 0.007 | 0.010 |
| D | 1.80 | 2.00 | 2.20 | 0.071 | 0.080 | 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 |
| $H_E$ | 2.00 | 2.10 | 2.40 | 0.079 | 0.083 | 0.095 |

## GENERIC MARKING DIAGRAM




XX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

*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.




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

SOLDERING FOOTPRINT

STYLE 1:
CANCELLED

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

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

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

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

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

STYLE 7:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

STYLE 8:
PIN 1. GATE
2. SOURCE
3. DRAIN

STYLE 9:
PIN 1. ANODE
2. CATHODE
3. CATHODE−ANODE

STYLE 10:
PIN 1. CATHODE
2. ANODE
3. ANODE−CATHODE

STYLE 11:
PIN 1. CATHODE
2. CATHODE
3. CATHODE

| | | |
|---|---|---|
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| **DESCRIPTION:** | **SC−70 (SOT−323)** | **PAGE 1 OF 1** |

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