

M1MA141KT1, M1MA142KT1

Preferred Device

Single Silicon Switching Diode

This Silicon Epitaxial Planar 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

- Pb-Free Package is Available
- Fast t_{rr} , < 3.0 ns
- Low C_D , < 2.0 pF
- Available in 8 mm Tape and Reel
 - Use M1MA141/2KT1 to order the 7 inch/3000 unit reel
 - Use M1MA141/2KT3 to order the 13 inch/10,000 unit reel

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

| Rating | Symbol | Value | Unit |
|----------------------------|-----------------------|-------|------|
| Reverse Voltage | M1MA141KT1 | 40 | Vdc |
| | M1MA142KT1 | 80 | |
| Peak Reverse Voltage | M1MA141KT1 | 40 | Vdc |
| | M1MA142KT1 | 80 | |
| Forward Current | I_F | 100 | mAdc |
| Peak Forward Current | I_{FM} | 225 | mAdc |
| Peak Forward Surge Current | I_{FSM} (Note 1) | 500 | mAdc |

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.

THERMAL CHARACTERISTICS

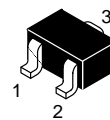
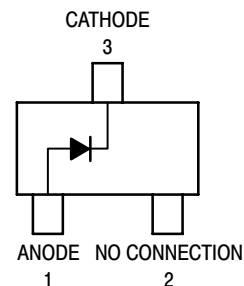
| Rating | Symbol | Max | Unit |
|----------------------|-----------|------------|------------------|
| Power Dissipation | P_D | 150 | mW |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 ~ +150 | $^\circ\text{C}$ |

1. $t = 1$ sec



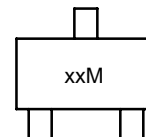
ON Semiconductor®

<http://onsemi.com>



SC-70 (SOT-323)
CASE 419
STYLE 2

MARKING DIAGRAM



xx = MH for 141
= MI for 142
M = Date Code

ORDERING INFORMATION

| Device | Package | Shipping† |
|-------------|--------------------|------------------|
| M1MA141KT1 | SC-70 | 3000/Tape & Reel |
| M1MA142KT1 | SC-70 | 3000/Tape & Reel |
| M1MA142KT1G | 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 Specification Brochure, BRD8011/D.

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

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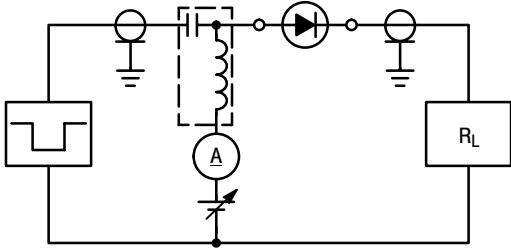
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

| Characteristic | | Symbol | Condition | Min | Max | Unit |
|----------------------------------|------------|-----------------------------|---|-----|-----|------------------|
| Reverse Voltage Leakage Current | M1MA141KT1 | I _R | V _R = 35 V | – | 0.1 | μA _{dc} |
| | M1MA142KT1 | | V _R = 75 V | – | 0.1 | |
| Forward Voltage | | V _F | I _F = 100 mA | – | 1.2 | V _{dc} |
| Reverse Breakdown Voltage | M1MA141KT1 | V _R | I _R = 100 μA | 40 | – | V _{dc} |
| | M1MA142KT1 | | | 80 | – | |
| Diode Capacitance | | C _D | V _R = 0, f = 1.0 MHz | – | 2.0 | pF |
| Reverse Recovery Time (Figure 1) | | t _{rr} (Note 2) | I _F = 10 mA, V _R = 6.0 V, R _L = 100 Ω, I _{rr} = 0.1 I _R | – | 3.0 | ns |

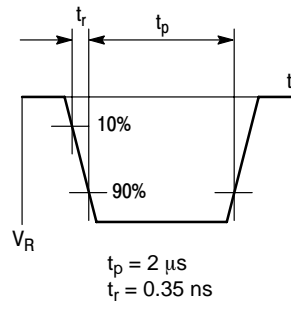
2. t_{rr} Test Circuit

M1MA141KT1, M1MA142KT1

RECOVERY TIME EQUIVALENT TEST CIRCUIT



INPUT PULSE



OUTPUT PULSE

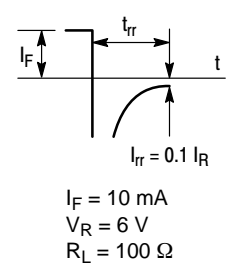


Figure 1. Recovery Time Equivalent Test Circuit

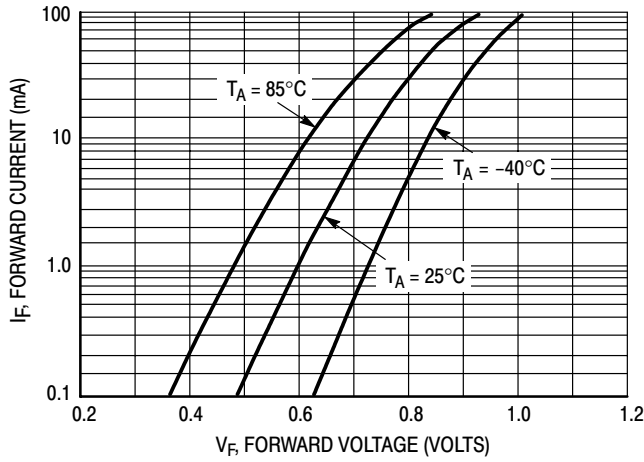


Figure 2. Forward Voltage

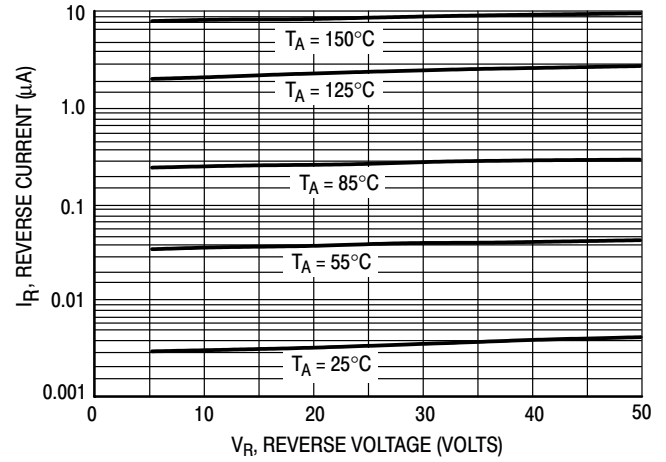


Figure 3. Reverse Current

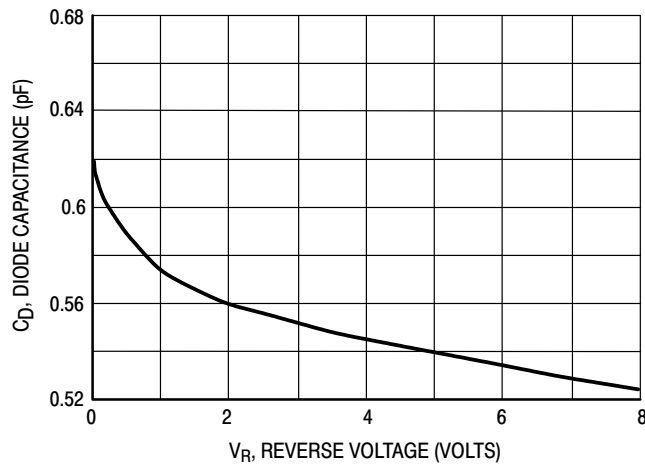
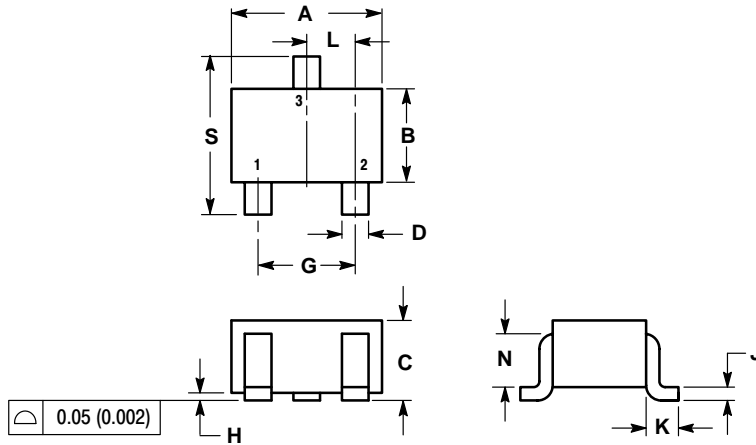


Figure 4. Diode Capacitance

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PACKAGE DIMENSIONS

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

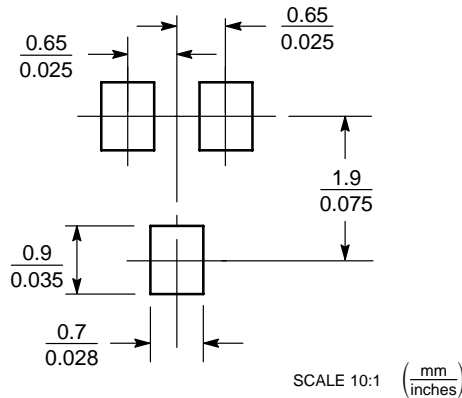


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.


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

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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