

# NUP4302MR6

## Schottky Diode Array for Four Data Line ESD Protection

The NUP4302MR6 is designed to protect high speed data line interface from ESD, EFT and lightning.

### Features

- Very Low Forward Voltage Drop
- Fast Switching
- PN Junction Guard Ring for Transient and ESD Protection
- ESD Rating of Class 3B (Exceeding 16 kV) per Human Body Model and Class C (Exceeding 400 V) per Machine Model
- IEC 61000-4-2 Level 4 ESD Protection
- Flammability Rating: UL 94 V-0
- Pb-Free Package is Available

### Applications

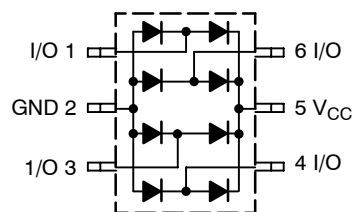
- Ultra High-Speed Switching
- USB 1.1 and 2.0 Power and Data Line Protection
- Digital Video Interface (DVI)
- Monitors and Flat Panel Displays



**ON Semiconductor®**

<http://onsemi.com>

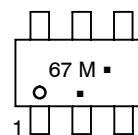
### PIN CONFIGURATION AND SCHEMATIC



### MARKING DIAGRAM



TSOP-6  
CASE 318G  
STYLE 12



- 67 = Specific Device Code
- 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†        |
|---------------|---------------------|------------------|
| NUP4302MR6T1  | TSOP-6              | 3000/Tape & Reel |
| NUP4302MR6T1G | TSOP-6<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.

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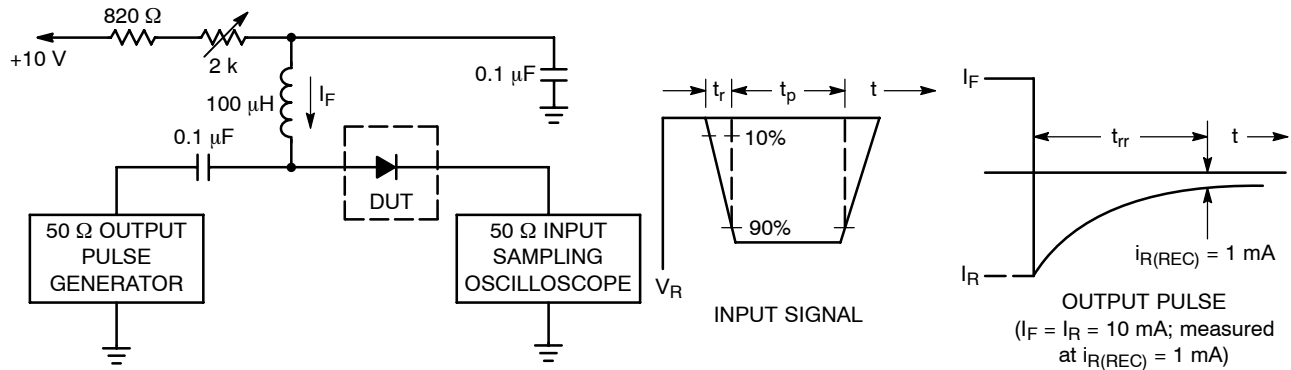
## MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

| Rating   | Symbol    | Value       | Unit             |
|--|-----------|-------------|------------------|
| Peak Reverse Breakdown Voltage                         | $V_{BR}$  | 30          | V                |
| Forward Power Dissipation ( $T_A = 25^\circ\text{C}$ ) | $P_F$     | 225         | mW               |
| Forward Continuous Current                             | $I_F$     | 200         | mA               |
| Junction Operating Temperature                         | $T_J$     | -55 to +125 | $^\circ\text{C}$ |
| Storage Temperature Range                              | $T_{stg}$ | -55 to +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.

## ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

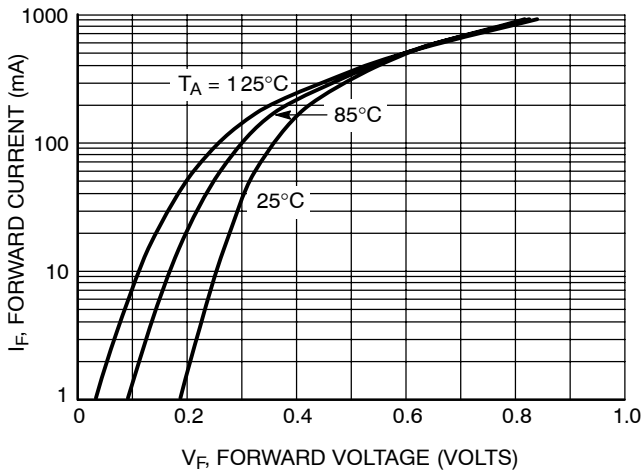
| Parameter                 | Symbol   | Conditions  | Min | Typ | Max      | Unit          |
|---------------------------|----------|---|-----|-----|----------|---------------|
| Reverse Breakdown Voltage | $V_{BR}$ | $I_R = 100 \mu\text{A}$   | 30  |     |          | V             |
| Reverse Leakage           | $I_R$    | $V_R = 25 \text{ V}$  |     |     | 30       | $\mu\text{A}$ |
| Forward Voltage           | $V_F$    | $I_F = 0.1 \text{ mAdc}$  |     |     | 0.28     | V             |
| Forward Voltage           | $V_F$    | $I_F = 1.0 \text{ mAdc}$  |     |     | 0.35     | V             |
| Forward Voltage           | $V_F$    | $I_F = 10 \text{ mAdc}$   |     |     | 0.45     | V             |
| Forward Voltage           | $V_F$    | $I_F = 100 \text{ mAdc}$  |     |     | 1.00     | V             |
| Total Capacitance         | $C_T$    | $V_R = 0 \text{ V}, f = 1.0 \text{ MHz}, \text{I/O to Ground}$<br>$V_R = 0 \text{ V}, f = 1.0 \text{ MHz}, \text{I/O to I/O}$ |     |     | 28<br>18 | pF            |
| Reverse Recovery Time     | $t_{rr}$ | $I_F = I_R = 10 \text{ mA}, I_{R(\text{REC})} = 1.0 \text{ mA}$ (Figure 1)  |     |     | 5.0      | ns            |



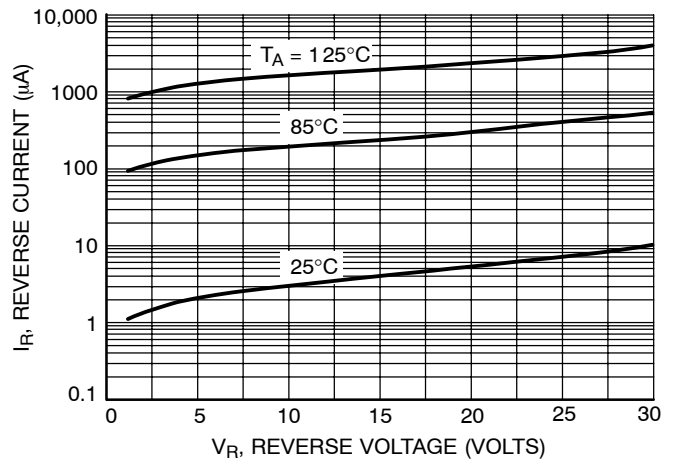
- Notes: 1. A 2.0 k $\Omega$  variable resistor adjusted for a Forward Current ( $I_F$ ) of 10 mA.  
 2. Input pulse is adjusted so  $I_{R(\text{peak})}$  is equal to 10 mA.  
 3.  $t_p \gg t_{rr}$

Figure 1. Recovery Time Equivalent Test Circuit

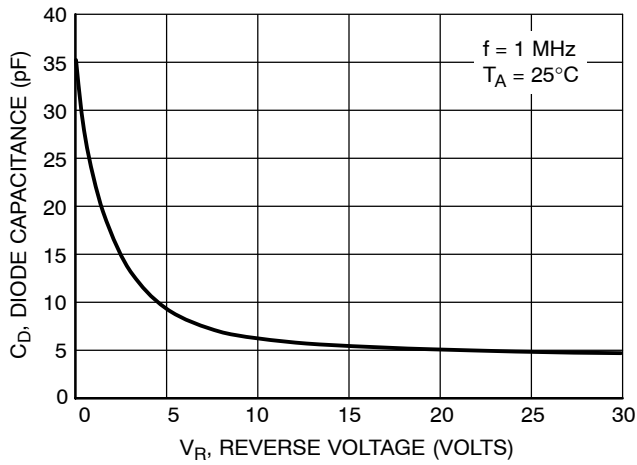
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**Figure 2. Forward Current as a Function of Forward Voltage; Typical Values**



**Figure 3. Reverse Current as a Function of Reverse Voltage; Typical Values**

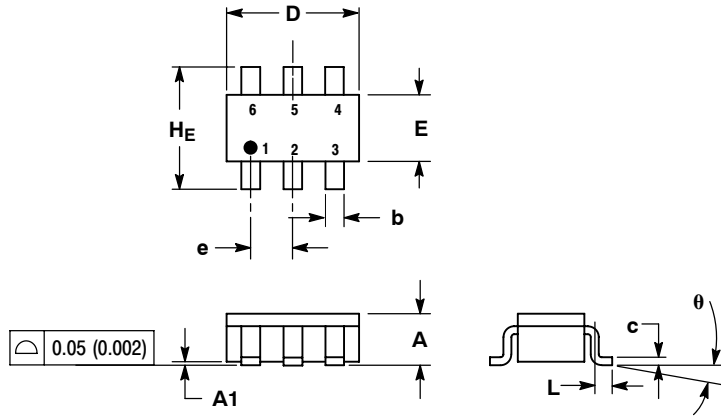


**Figure 4. Diode Capacitance as a Function of Reverse Voltage; Typical Values**

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## PACKAGE DIMENSIONS

TSOP-6  
CASE 318G-02  
ISSUE P



NOTES:

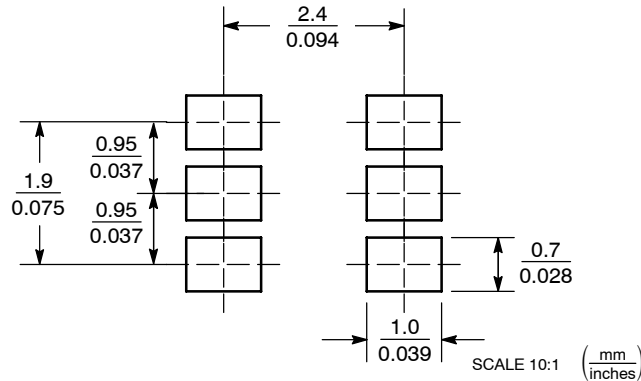
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| DIM | MILLIMETERS |      |      | INCHES |       |       |
|-----|-------------|------|------|--------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN    | NOM   | MAX   |
| A   | 0.90        | 1.00 | 1.10 | 0.035  | 0.039 | 0.043 |
| A1  | 0.01        | 0.06 | 0.10 | 0.001  | 0.002 | 0.004 |
| b   | 0.25        | 0.38 | 0.50 | 0.010  | 0.014 | 0.020 |
| c   | 0.10        | 0.18 | 0.26 | 0.004  | 0.007 | 0.010 |
| D   | 2.90        | 3.00 | 3.10 | 0.114  | 0.118 | 0.122 |
| E   | 1.30        | 1.50 | 1.70 | 0.051  | 0.059 | 0.067 |
| e   | 0.85        | 0.95 | 1.05 | 0.034  | 0.037 | 0.041 |
| L   | 0.20        | 0.40 | 0.60 | 0.008  | 0.016 | 0.024 |
| HE  | 2.50        | 2.75 | 3.00 | 0.099  | 0.108 | 0.118 |
| θ   | 0°          | -    | 10°  | 0°     | -     | 10°   |

STYLE 12:

1. I/O
2. GROUND
3. I/O
4. I/O
5. VCC
6. I/O

### 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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