

# NUP2301MW6T1

## Low Capacitance Diode Array for ESD Protection in Two Data Lines

NUP2301MW6T1 is a MicroIntegration™ device designed to provide protection for sensitive components from possible harmful electrical transients; for example, ESD (electrostatic discharge).

### Features

- Low Capacitance (2.0 pf Maximum Between I/O Lines)
- Single Package Integration Design
- Provides ESD Protection for JEDEC Standards JESD22 Machine Model = Class C Human Body Model = Class 3B
- Protection for IEC61000-4-2 (Level 4) 8.0 kV (Contact) 15 kV (Air)
- Ensures Data Line Speed and Integrity
- Fewer Components and Less Board Space
- Direct the Transient to Either Positive Side or to the Ground

### Applications

- T1/E1 Secondary IC Protection
- T3/E3 Secondary IC Protection
- HDSL, IDSL Secondary IC Protection
- Video Line Protection
- Microcontroller Input Protection
- Base Stations
- I<sup>2</sup>C Bus Protection

### MAXIMUM RATINGS (Each Diode) (T<sub>J</sub> = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Reverse Voltage	V <sub>R</sub>	70	Vdc
Forward Current	I <sub>F</sub>	200	mAdc
Peak Forward Surge Current	I <sub>FM(surge)</sub>	500	mAdc
Repetitive Peak Reverse Voltage	V <sub>R</sub> RM	70	V
Average Rectified Forward Current (Note 1) (averaged over any 20 ms period)	I <sub>F(AV)</sub>	715	mA
Repetitive Peak Forward Current	I <sub>FRM</sub>	450	mA
Non-Repetitive Peak Forward Current	I <sub>FSM</sub>		A
t = 1.0 μs		2.0	
t = 1.0 ms		1.0	
t = 1.0 S		0.5	

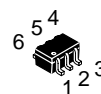
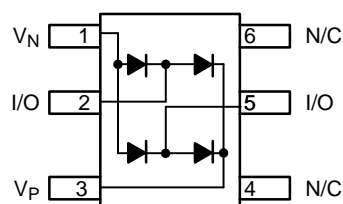
1. FR-5 = 1.0 × 0.75 × 0.062 in.



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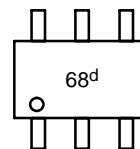
<http://onsemi.com>

### PIN CONFIGURATION AND SCHEMATIC



SC-88  
CASE 419B  
STYLE 23

### MARKING DIAGRAM



68 = Specific Device Code  
d = Date Code  
O = Pin 1 Indicator

### ORDERING INFORMATION

Device	Package	Shipping
NUP2301MW6T1	SC-88	3000/Tape & Reel

# NUP2301MW6T1

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	625	$^{\circ}\text{C}/\text{W}$
Lead Solder Temperature Maximum 10 Seconds Duration	$T_L$	260	$^{\circ}\text{C}$
Junction Temperature	$T_J$	-40 to +85	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^{\circ}\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Reverse Breakdown Voltage ( $I_{(BR)} = 100 \mu\text{A}$ )	$V_{(BR)}$	70	-	-	Vdc
Reverse Voltage Leakage Current ( $V_R = 70 \text{ Vdc}$ ) ( $V_R = 25 \text{ Vdc}$ , $T_J = 150^{\circ}\text{C}$ ) ( $V_R = 70 \text{ Vdc}$ , $T_J = 150^{\circ}\text{C}$ )	$I_R$	-	-	2.5 30 50	$\mu\text{A}$ dc
Capacitance (between I/O pins) ( $V_R = 0 \text{ V}$ , $f = 1.0 \text{ MHz}$ )	$C_D$	-	1.0	2.0	pF
Capacitance (between I/O pin and ground) ( $V_R = 0 \text{ V}$ , $f = 1.0 \text{ MHz}$ )	$C_D$	-	1.6	3	pF
Forward Voltage ( $I_F = 1.0 \text{ mA}$ ) ( $I_F = 10 \text{ mA}$ ) ( $I_F = 50 \text{ mA}$ ) ( $I_F = 150 \text{ mA}$ )	$V_F$	-	-	715 855 1000 1250	mVdc

- FR-5 =  $1.0 \times 0.75 \times 0.062$  in.
- Alumina =  $0.4 \times 0.3 \times 0.024$  in. 99.5% alumina.

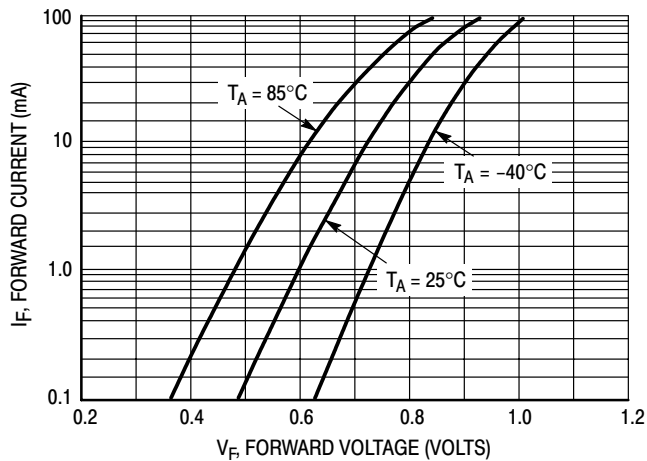


Figure 1. Forward Voltage

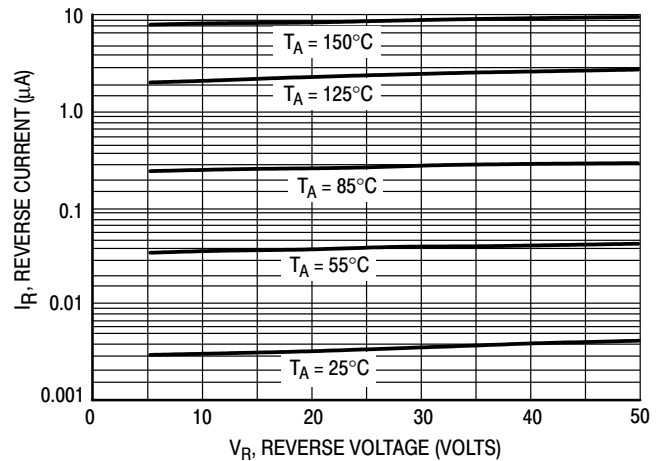


Figure 2. Leakage Current

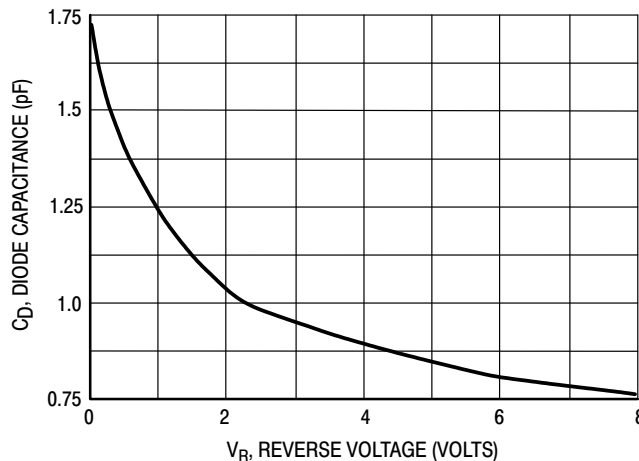
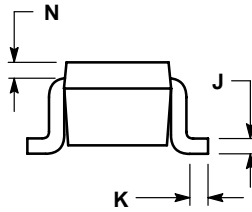
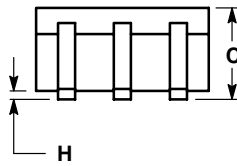
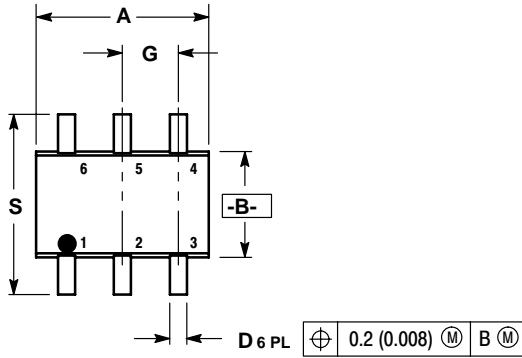


Figure 3. Capacitance

# NUP2301MW6T1

## PACKAGE DIMENSIONS

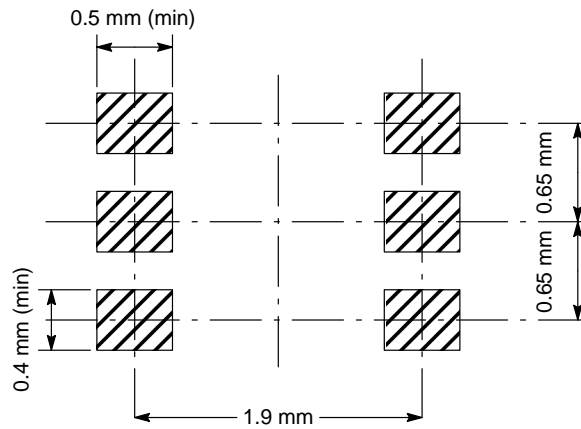
SC-88 (SOT-363)  
CASE 419B-02  
ISSUE N




- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: INCH.  
3. 419B-01 OBSOLETE, NEW STANDARD 419B-02.

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	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20

- STYLE 23:  
PIN 1. Vn  
2. I/O  
3. Vp  
4. N/C  
5. I/O  
6. N/C



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