

# Dual 2-Input Exclusive-OR Gate

## NL27WZ86

The NL27WZ86 is a high performance dual 2-input Exclusive-OR Gate operating from a 1.65 V to 5.5 V supply.

### Features

- Designed for 1.65 V to 5.5 V  $V_{CC}$  Operation
- 2.9 ns  $t_{PD}$  at  $V_{CC} = 5$  V (typ)
- Inputs/Outputs Overvoltage Tolerant up to 5.5 V
- $I_{OFF}$  Supports Partial Power Down Protection
- Source/Sink 24 mA at 3.0 V
- Available in US8, UDFN8 and UQFN8 Packages
- Chip Complexity < 100 FETs
- -Q Suffix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

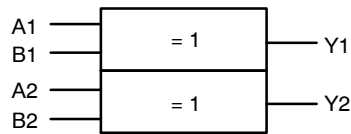
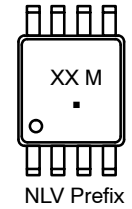
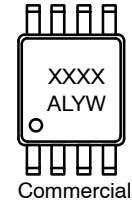


Figure 1. Logic Symbol

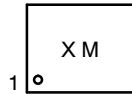
### MARKING DIAGRAMS



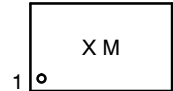
US8  
US SUFFIX  
CASE 493



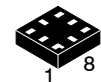
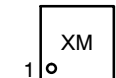
UDFN8, 1.45x1.0  
MU3 SUFFIX  
CASE 517BZ



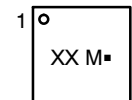
UDFN8, 1.95x1.0  
MU1 SUFFIX  
CASE 517CA



UQFN8, 1.4x1.2  
MQ2 SUFFIX  
CASE 523AS



UQFN8, 1.6x1.6  
MQ1 SUFFIX  
CASE 523AN



- X, XX, XXXX = Specific Device Code
- A = Assembly Location
- L = Lot Code
- Y = Year Code
- W = Week Code
- M = Date Code
- = Pb-Free Package

### ORDERING INFORMATION

See detailed ordering, marking and shipping information in the package dimensions section on page 6 of this data sheet.

# NL27WZ86

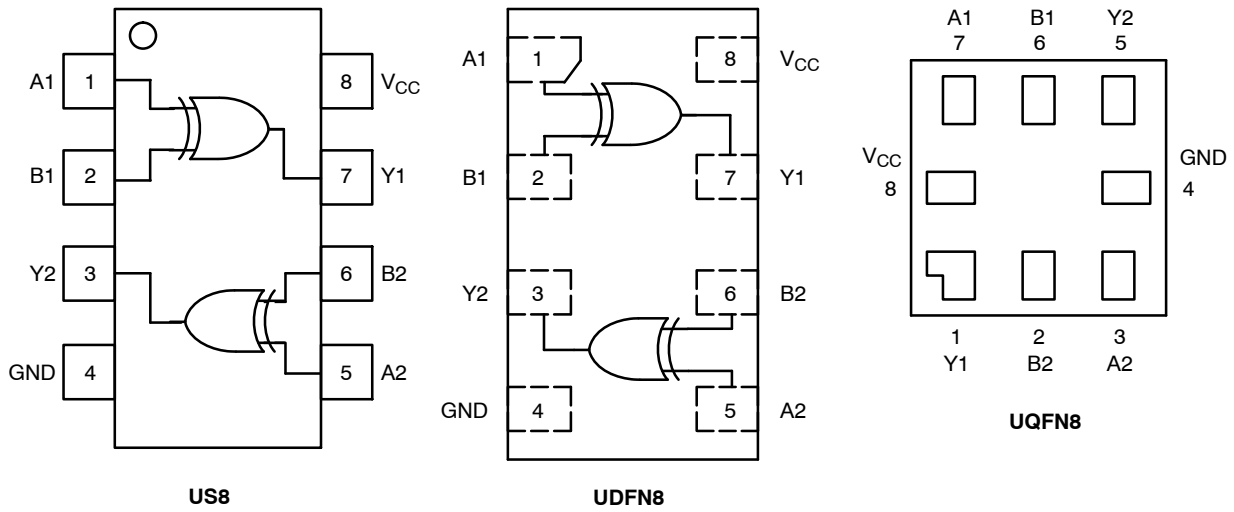


Figure 2. Pinout

### PIN ASSIGNMENT (US8 / UDFN8)

| Pin | Function        |
|-----|-----------------|
| 1   | A1              |
| 2   | B1              |
| 3   | Y2              |
| 4   | GND             |
| 5   | A2              |
| 6   | B2              |
| 7   | Y1              |
| 8   | V <sub>CC</sub> |

### PIN ASSIGNMENT (UQFN8)

| Pin | Function        |
|-----|-----------------|
| 1   | Y1              |
| 2   | B2              |
| 3   | A2              |
| 4   | GND             |
| 5   | Y2              |
| 6   | B1              |
| 7   | A1              |
| 8   | V <sub>CC</sub> |

### FUNCTION TABLE

| Inputs |   | Output |
|--------|---|--------|
| A      | B | Y      |
| L      | L | L      |
| L      | H | H      |
| H      | L | H      |
| H      | H | L      |

H = HIGH Logic Level  
L = LOW Logic Level

# NL27WZ86

## MAXIMUM RATINGS

| Symbol                              | Characteristics  | Value   | Unit |
|-------------------------------------|--|---|------|
| V <sub>CC</sub>                     | DC Supply Voltage  | -0.5 to +6.5  | V    |
| V <sub>IN</sub>                     | DC Input Voltage   | -0.5 to +6.5  | V    |
| V <sub>OUT</sub>                    | DC Output Voltage<br>Active-Mode (High or Low State)<br>Tri-State Mode (Note 1)<br>Power-Down Mode (V <sub>CC</sub> = 0 V) | -0.5 to V <sub>CC</sub> + 0.5<br>-0.5 to +6.5<br>-0.5 to +6.5 | V    |
| I <sub>IK</sub>                     | DC Input Diode Current<br>V <sub>IN</sub> < GND  | -50   | mA   |
| I <sub>OK</sub>                     | DC Output Diode Current<br>V <sub>OUT</sub> < GND  | -50   | mA   |
| I <sub>OUT</sub>                    | DC Output Source/Sink Current  | ±50   | mA   |
| I <sub>CC</sub> or I <sub>GND</sub> | DC Supply Current per Supply Pin or Ground Pin   | ±100  | mA   |
| T <sub>STG</sub>                    | Storage Temperature Range  | -65 to +150   | °C   |
| T <sub>L</sub>                      | Lead Temperature, 1 mm from Case for 10 secs   | 260   | °C   |
| T <sub>J</sub>                      | Junction Temperature Under Bias  | +150  | °C   |
| θ <sub>JA</sub>                     | Thermal Resistance (Note 2)<br>US8<br>UQFN8<br>UDFN8   | 250<br>210<br>231   | °C/W |
| P <sub>D</sub>                      | Power Dissipation in Still Air<br>US8<br>UQFN8<br>UDFN8  | 500<br>595<br>541   | mW   |
| MSL                                 | Moisture Sensitivity   | Level 1   | -    |
| F <sub>R</sub>                      | Flammability Rating<br>Oxygen Index: 28 to 34  | UL 94 V-0 @ 0.125 in  | -    |
| V <sub>ESD</sub>                    | ESD Withstand Voltage (Note 3)<br>Human Body Model<br>Charged Device Model   | 2000<br>1000  | V    |
| I <sub>Latchup</sub>                | Latchup Performance (Note 4)   | ±100  | mA   |

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. Applicable to devices with outputs that may be tri-stated.
2. Measured with minimum pad spacing on an FR4 board, using 10mm-by-1inch, 2 ounce copper trace no air flow per JESD51-7.
3. HBM tested to ANSI/ESDA/JEDEC JS-001-2017. CDM tested to EIA/JESD22-C101-F. JEDEC recommends that ESD qualification to EIA/JESD22-A115-A (Machine Model) be discontinued per JEDEC/JEP172A.
4. Tested to EIA/JESD78 Class II.

## RECOMMENDED OPERATING CONDITIONS

| Symbol                          | Characteristics  | Min              | Max                           | Unit |
|---------------------------------|--|------------------|-------------------------------|------|
| V <sub>CC</sub>                 | Positive DC Supply Voltage   | 1.65             | 5.5                           | V    |
| V <sub>IN</sub>                 | DC Input Voltage   | 0                | 5.5                           | V    |
| V <sub>OUT</sub>                | DC Output Voltage<br>Active-Mode (High or Low State)<br>Tri-State Mode (Note 1)<br>Power-Down Mode (V <sub>CC</sub> = 0 V)   | 0<br>0<br>0      | V <sub>CC</sub><br>5.5<br>5.5 |      |
| T <sub>A</sub>                  | Operating Temperature Range  | -55              | +125                          | °C   |
| t <sub>r</sub> , t <sub>f</sub> | Input Rise and Fall Time<br>V <sub>CC</sub> = 1.65 V to 1.95 V<br>V <sub>CC</sub> = 2.3 V to 2.7 V<br>V <sub>CC</sub> = 3.0 V to 3.6 V<br>V <sub>CC</sub> = 4.5 V to 5.5 V | 0<br>0<br>0<br>0 | 20<br>20<br>10<br>5           | ns/V |

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

# NL27WZ86

## DC ELECTRICAL CHARACTERISTICS

| Symbol           | Parameter                 | Condition   | V <sub>CC</sub> (V) | T <sub>A</sub> = 25°C  |                 |                        | -55°C ≤ T <sub>A</sub> ≤ 125°C |                        | Units |
|------------------|---------------------------|---|---------------------|------------------------|-----------------|------------------------|--------------------------------|------------------------|-------|
|                  |                           |   |                     | Min                    | Typ             | Max                    | Min                            | Max                    |       |
| V <sub>IH</sub>  | High-Level Input Voltage  |   | 1.65 to 1.95        | 0.65 x V <sub>CC</sub> |                 |                        | 0.65 x V <sub>CC</sub>         |                        | V     |
|                  |                           |   | 2.3 to 5.5          | 0.70 x V <sub>CC</sub> |                 |                        | 0.70 x V <sub>CC</sub>         |                        |       |
| V <sub>IL</sub>  | Low-Level Input Voltage   |   | 1.65 to 1.95        |                        |                 | 0.35 x V <sub>CC</sub> |                                | 0.35 x V <sub>CC</sub> | V     |
|                  |                           |   | 2.3 to 5.5          |                        |                 | 0.30 x V <sub>CC</sub> |                                | 0.30 x V <sub>CC</sub> |       |
| V <sub>OH</sub>  | High-Level Output Voltage | V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub><br>I <sub>OH</sub> = -100 μA<br>I <sub>OH</sub> = -4 mA<br>I <sub>OH</sub> = -8 mA<br>I <sub>OH</sub> = -12 mA<br>I <sub>OH</sub> = -16 mA<br>I <sub>OH</sub> = -24 mA<br>I <sub>OH</sub> = -32 mA | 1.65 to 5.5         | V <sub>CC</sub> - 0.1  | V <sub>CC</sub> | -                      | V <sub>CC</sub> - 0.1          | -                      | V     |
|                  |                           |   | 1.65                | 1.29                   | 1.4             | -                      | 1.29                           | -                      |       |
|                  |                           |   | 2.3                 | 1.9                    | 2.1             | -                      | 1.9                            | -                      |       |
|                  |                           |   | 2.7                 | 2.2                    | 2.4             | -                      | 2.2                            | -                      |       |
|                  |                           |   | 3.0                 | 2.4                    | 2.7             | -                      | 2.4                            | -                      |       |
|                  |                           |   | 3.0                 | 2.3                    | 2.5             | -                      | 2.3                            | -                      |       |
|                  |                           |   | 4.5                 | 3.8                    | 4.0             | -                      | 3.8                            | -                      |       |
| V <sub>OL</sub>  | Low-Level Output Voltage  | V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub><br>I <sub>OL</sub> = 100 μA<br>I <sub>OL</sub> = 4 mA<br>I <sub>OL</sub> = 8 mA<br>I <sub>OL</sub> = 12 mA<br>I <sub>OL</sub> = 16 mA<br>I <sub>OL</sub> = 24 mA<br>I <sub>OL</sub> = 32 mA        | 1.65 to 5.5         | -                      | -               | 0.1                    | -                              | 0.1                    | V     |
|                  |                           |   | 1.65                | -                      | 0.08            | 0.24                   | -                              | 0.24                   |       |
|                  |                           |   | 2.3                 | -                      | 0.2             | 0.3                    | -                              | 0.3                    |       |
|                  |                           |   | 2.7                 | -                      | 0.22            | 0.4                    | -                              | 0.4                    |       |
|                  |                           |   | 3.0                 | -                      | 0.28            | 0.4                    | -                              | 0.4                    |       |
|                  |                           |   | 3.0                 | -                      | 0.38            | 0.55                   | -                              | 0.55                   |       |
|                  |                           |   | 4.5                 | -                      | 0.42            | 0.55                   | -                              | 0.55                   |       |
| I <sub>IN</sub>  | Input Leakage Current     | V <sub>IN</sub> = 5.5 V or GND  | 1.65 to 5.5         | -                      | -               | ±0.1                   | -                              | ±1.0                   | μA    |
| I <sub>OFF</sub> | Power Off Leakage Current | V <sub>IN</sub> = 5.5 V or V <sub>OUT</sub> = 5.5 V   | 0                   | -                      | -               | 1.0                    | -                              | 10                     | μA    |
| I <sub>CC</sub>  | Quiescent Supply Current  | V <sub>IN</sub> = V <sub>CC</sub> or GND  | 5.5                 | -                      | -               | 1.0                    | -                              | 10                     | μA    |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## AC ELECTRICAL CHARACTERISTICS

| Symbol                                 | Parameter                           | V <sub>CC</sub> (V) | Test Conditions  | T <sub>A</sub> = 25°C |     |     | T <sub>A</sub> = -55 to 125°C |      | Units |
|--|-------------------------------------|---------------------|--|-----------------------|-----|-----|-------------------------------|------|-------|
|  |                                     |                     |  | Min                   | Typ | Max | Min                           | Max  |       |
| t <sub>PLH</sub> ,<br>t <sub>PHL</sub> | Propagation Delay,<br>(A or B) to Y | 1.65 to 1.95        | C <sub>L</sub> = 15 pF<br>R <sub>L</sub> = 1 MΩ<br>R <sub>1</sub> = Open | -                     | 7.9 | 9.0 | -                             | 10.5 | ns    |
|  |                                     | 2.3 to 2.7          |  | -                     | 4.1 | 7.0 | -                             | 7.5  |       |
|  |                                     | 3.0 to 3.6          |  | -                     | 3.0 | 4.8 | -                             | 5.2  |       |
|  |                                     | 4.5 to 5.5          |  | -                     | 2.2 | 3.5 | -                             | 3.8  |       |
|  |                                     | 3.0 to 3.6          | C <sub>L</sub> = 50 pF,<br>R <sub>L</sub> = 500 Ω, R <sub>1</sub> = Open | -                     | 3.8 | 5.4 | -                             | 5.9  |       |
|  |                                     | 4.5 to 5.5          |  | -                     | 2.9 | 4.2 | -                             | 4.6  |       |

## CAPACITIVE CHARACTERISTICS

| Symbol           | Parameter                                 | Condition   | Typical | Units |
|------------------|---|---|---------|-------|
| C <sub>IN</sub>  | Input Capacitance                         | V <sub>CC</sub> = 5.5 V, V <sub>IN</sub> = 0 V or V <sub>CC</sub>         | 2.5     | pF    |
| C <sub>OUT</sub> | Output Capacitance                        | V <sub>CC</sub> = 5.5 V, V <sub>IN</sub> = 0 V or V <sub>CC</sub>         | 2.5     | pF    |
| C <sub>PD</sub>  | Power Dissipation Capacitance<br>(Note 5) | 10 MHz, V <sub>CC</sub> = 3.3 V, V <sub>IN</sub> = 0 V or V <sub>CC</sub> | 9       | pF    |
|                  |   | 10 MHz, V <sub>CC</sub> = 5.5 V, V <sub>IN</sub> = 0 V or V <sub>CC</sub> | 11      |       |

5. C<sub>PD</sub> is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load. Average operating current can be obtained by the equation: I<sub>CC(OPR)</sub> = C<sub>PD</sub> • V<sub>CC</sub> • f<sub>in</sub> + I<sub>CC</sub>. C<sub>PD</sub> is used to determine the no-load dynamic power consumption; P<sub>D</sub> = C<sub>PD</sub> • V<sub>CC</sub><sup>2</sup> • f<sub>in</sub> + I<sub>CC</sub> • V<sub>CC</sub>.

# NL27WZ86



$C_L$  includes probe and jig capacitance  
 $R_T$  is  $Z_{OUT}$  of pulse generator (typically 50  $\Omega$ )  
 $f = 1$  MHz

**Figure 3. Test Circuit**

| Test                | Switch Position   | $C_L$ , pF                   | $R_L$ , $\Omega$ | $R_1$ , $\Omega$ |
|---------------------|-------------------|------------------------------|------------------|------------------|
| $t_{PLH} / t_{PHL}$ | Open              | See AC Characteristics Table |                  |                  |
| $t_{PLZ} / t_{PZL}$ | $2 \times V_{CC}$ | 50                           | 500              | 500              |
| $t_{PHZ} / t_{PZH}$ | GND               | 50                           | 500              | 500              |

X = Don't Care



**Figure 4. Switching Waveforms**

| $V_{CC}$ , V | $V_{mi}$ , V | $V_{mo}$ , V          |   | $V_Y$ , V |
|--------------|--------------|-----------------------|---|-----------|
|              |              | $t_{PLH}$ , $t_{PHL}$ | $t_{PZL}$ , $t_{PLZ}$ , $t_{PZH}$ , $t_{PHZ}$ |           |
| 1.65 to 1.95 | $V_{CC}/2$   | $V_{CC}/2$            | $V_{CC}/2$                                    | 0.15      |
| 2.3 to 2.7   | $V_{CC}/2$   | $V_{CC}/2$            | $V_{CC}/2$                                    | 0.15      |
| 3.0 to 3.6   | $V_{CC}/2$   | $V_{CC}/2$            | $V_{CC}/2$                                    | 0.3       |
| 4.5 to 5.5   | $V_{CC}/2$   | $V_{CC}/2$            | $V_{CC}/2$                                    | 0.3       |

# NL27WZ86

## DEVICE ORDERING INFORMATION

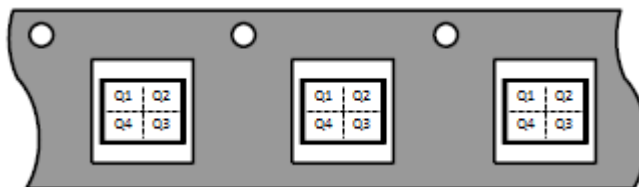
| Device  | Packages                 | Specific Device Code | Pin 1 Orientation<br>(See below) | Shipping <sup>†</sup> |
|---|--------------------------|----------------------|----------------------------------|-----------------------|
| NL27WZ86USG                                       | US8                      | L8                   | Q4                               | 3000 / Tape & Reel    |
| NL27WZ86USG-Q*<br>(Please contact <b>onsemi</b> ) | US8                      | L8                   | Q4                               | 3000 / Tape & Reel    |
| NL27WZ86MQ1TCG                                    | UQFN8, 1.6 x 1.6, 0.5P   | AC                   | Q1                               | 3000 / Tape & Reel    |
| NL27WZ86MU1TCG<br>(Please contact <b>onsemi</b> ) | UDFN8, 1.95 x 1.0, 0.5P  | TBD                  | TBD                              | 3000 / Tape & Reel    |
| NL27WZ86MU3TCG<br>(Please contact <b>onsemi</b> ) | UDFN8, 1.45 x 1.0, 0.35P | TBD                  | TBD                              | 3000 / Tape & Reel    |
| NL27WZ86MQT2CG<br>(Please contact <b>onsemi</b> ) | UQFN8, 1.4 x 1.2, 0.4P   | TBD                  | TBD                              | 3000 / Tape & Reel    |

<sup>†</sup>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.

\*-Q Suffix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable.

### Pin 1 Orientation in Tape and Reel

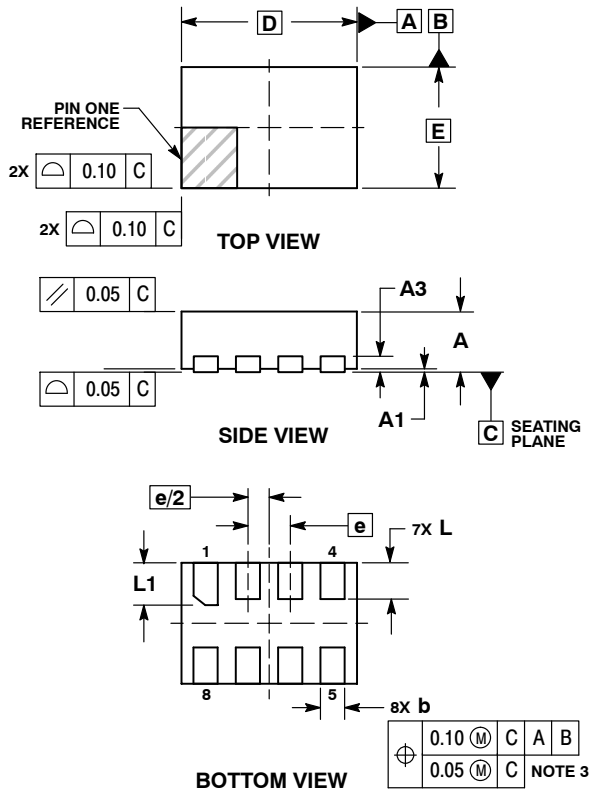
Direction of Feed



# NL27WZ86

## PACKAGE DIMENSIONS

UDFN8, 1.45x1, 0.35P  
CASE 517BZ  
ISSUE O

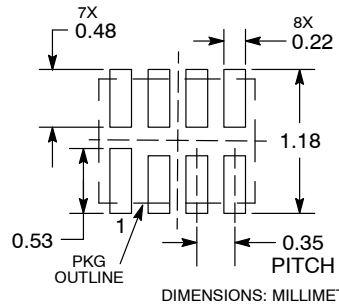


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.20 MM FROM TERMINAL TIP.
4. PACKAGE DIMENSIONS EXCLUSIVE OF BURRS AND MOLD FLASH.

| MILLIMETERS |          |      |
|-------------|----------|------|
| DIM         | MIN      | MAX  |
| A           | 0.45     | 0.55 |
| A1          | 0.00     | 0.05 |
| A3          | 0.13 REF |      |
| b           | 0.15     | 0.25 |
| D           | 1.45 BSC |      |
| E           | 1.00 BSC |      |
| e           | 0.35 BSC |      |
| L           | 0.25     | 0.35 |
| L1          | 0.30     | 0.40 |

### RECOMMENDED SOLDERING FOOTPRINT\*

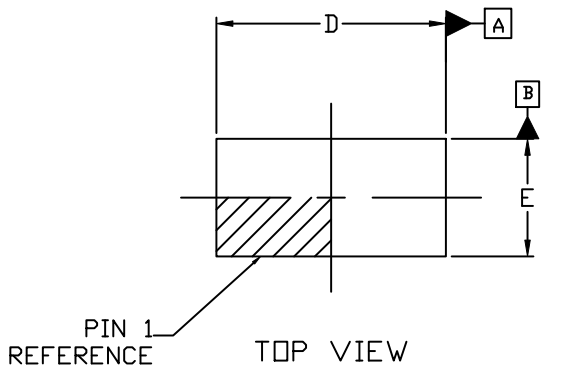


\*For additional information on our Pb-Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# NL27WZ86

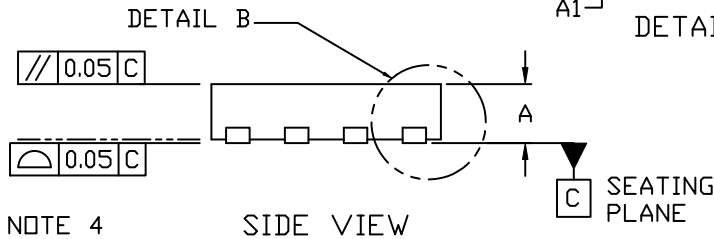
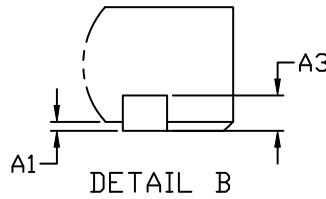
## PACKAGE DIMENSIONS

UDFN8, 1.95x1.0, 0.5P  
CASE 517CA  
ISSUE A

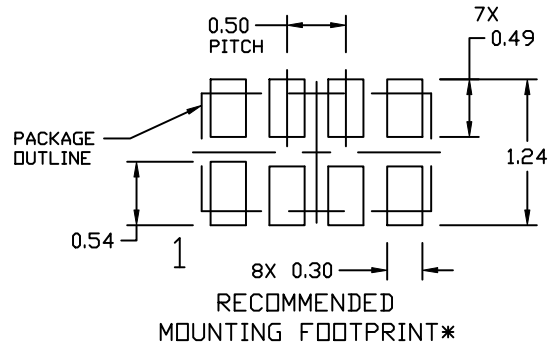
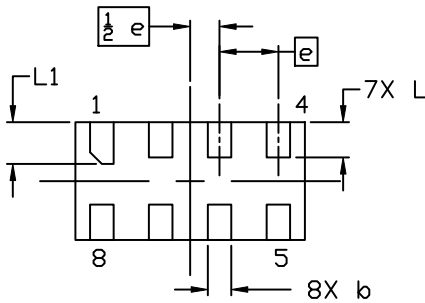


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.20 MM FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO ALL THE TERMINALS.
5. PACKAGE DIMENSIONS EXCLUSIVE OF BURRS AND MOLD FLASH.



| DIM | MILLIMETERS |      |      |
|-----|-------------|------|------|
|     | MIN.        | NOM. | MAX. |
| A   | 0.45        | 0.50 | 0.55 |
| A1  | 0.00        | ---  | 0.05 |
| A3  | 0.13 REF    |      |      |
| b   | 0.15        | 0.20 | 0.25 |
| D   | 1.85        | 1.95 | 2.05 |
| E   | 0.90        | 1.00 | 1.10 |
| e   | 0.50 BSC    |      |      |
| L   | 0.25        | 0.30 | 0.35 |
| L1  | 0.30        | 0.35 | 0.40 |



|   |      |   |   |   |
|---|------|---|---|---|
| ⊕ | 0.10 | C | A | B |
|   | 0.05 | C |   |   |

NOTE 3

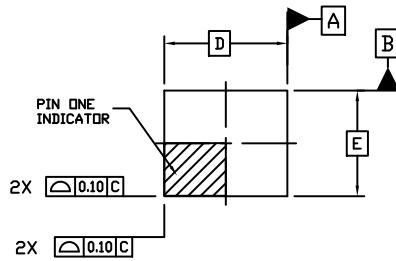
\* For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



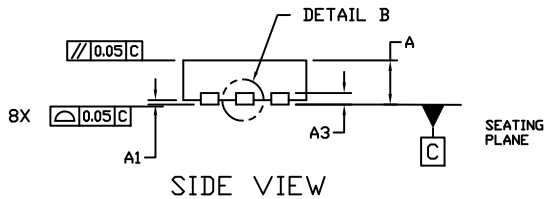
# NL27WZ86

## PACKAGE DIMENSIONS

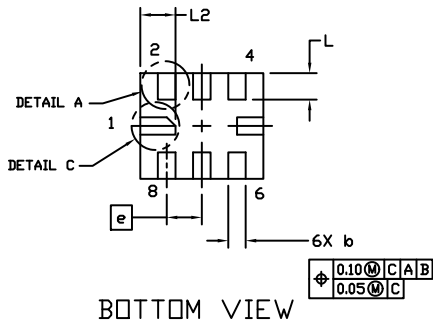
UQFN8, 1.40x1.20, 0.40P  
CASE 523AS  
ISSUE B



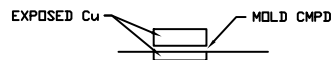
TOP VIEW



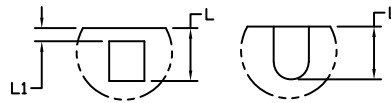
SIDE VIEW



BOTTOM VIEW



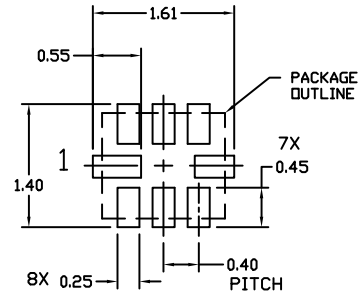
DETAIL B  
ALTERNATE CONSTRUCTION



DETAIL A  
ALTERNATE CONSTRUCTIONS



DETAIL C  
ALTERNATE CONSTRUCTION  
NOTE 4



RECOMMENDED  
MOUNTING FOOTPRINT \*

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.25MM FROM THE TERMINAL TIP.
4. REFER TO SPECIFIC DEVICE DATA SHEET FOR PIN 1 NOTCH LOCATION.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN.        | MAX. |
| A   | 0.45        | 0.55 |
| A1  | 0.00        | 0.05 |
| A3  | 0.13        | REF  |
| b   | 0.15        | 0.25 |
| D   | 1.40        | BSC  |
| E   | 1.20        | BSC  |
| e   | 0.40        | BSC  |
| L   | 0.20        | 0.40 |
| L1  | ---         | 0.15 |
| L2  | 0.30        | 0.50 |

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

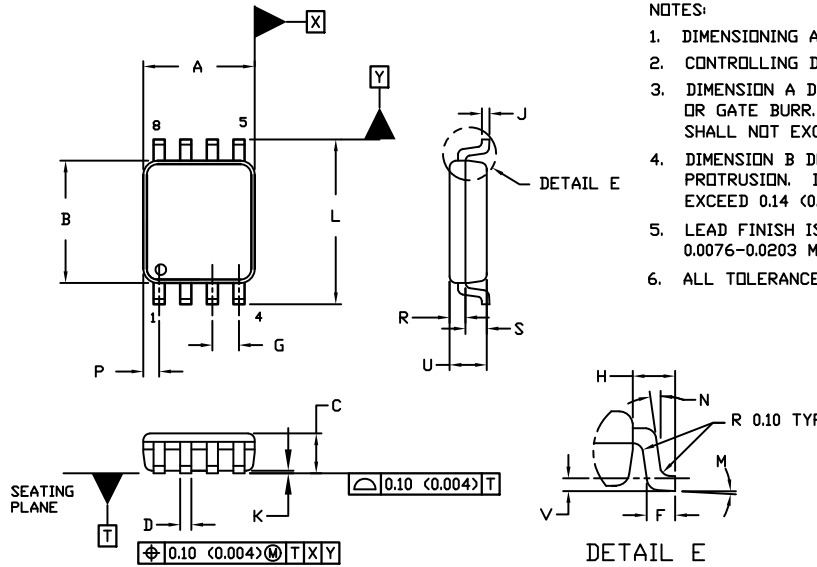
# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



SCALE 4:1

**US8**  
CASE 493  
ISSUE F

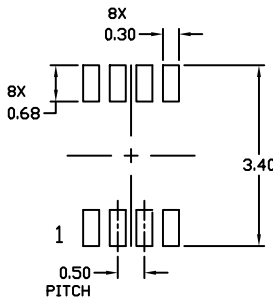
DATE 01 SEP 2021



**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSION, OR GATE BURR. MOLD FLASH, PROTRUSION, OR GATE BURR SHALL NOT EXCEED 0.14 (0.0055") PER SIDE.
4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH AND PROTRUSION SHALL NOT EXCEED 0.14 (0.0055") PER SIDE.
5. LEAD FINISH IS SOLDER PLATING WITH THICKNESS OF 0.0076-0.0203 MM (0.003-0.008").
6. ALL TOLERANCE UNLESS OTHERWISE SPECIFIED ±0.0508 MM (0.002").

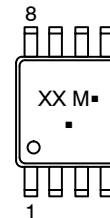
| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN.        | MAX. | MIN.      | MAX.  |
| A   | 1.90        | 2.10 | 0.075     | 0.083 |
| B   | 2.20        | 2.40 | 0.087     | 0.094 |
| C   | 0.60        | 0.90 | 0.024     | 0.035 |
| D   | 0.17        | 0.25 | 0.007     | 0.010 |
| F   | 0.20        | 0.35 | 0.008     | 0.014 |
| G   | 0.50 BSC    |      | 0.020 BSC |       |
| H   | 0.40 REF    |      | 0.016 REF |       |
| J   | 0.10        | 0.18 | 0.004     | 0.007 |
| K   | 0.00        | 0.10 | 0.000     | 0.004 |
| L   | 3.00        | 3.25 | 0.118     | 0.128 |
| M   | 0°          | 6°   | 0°        | 6°    |
| N   | 0°          | 10°  | 0°        | 10°   |
| P   | 0.23        | 0.34 | 0.010     | 0.013 |
| R   | 0.23        | 0.33 | 0.009     | 0.013 |
| S   | 0.37        | 0.47 | 0.015     | 0.019 |
| U   | 0.60        | 0.80 | 0.024     | 0.031 |
| V   | 0.12 BSC    |      | 0.005 BSC |       |



RECOMMENDED \*  
MOUNTING FOOTPRINT

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

**GENERIC MARKING DIAGRAM\***



- XX = Specific Device Code
- M = Date Code
- = Pb-Free Package

(Note: Microdot may be in either location)

\*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.

|                         |                    |  |
|-------------------------|--------------------|--|
| <b>DOCUMENT NUMBER:</b> | <b>98AON04475D</b> | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| <b>DESCRIPTION:</b>     | <b>US8</b>         | <b>PAGE 1 OF 1</b>   |

onsemi and ONSEMI are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

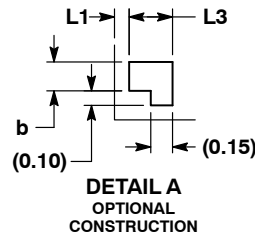
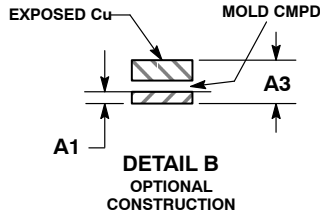
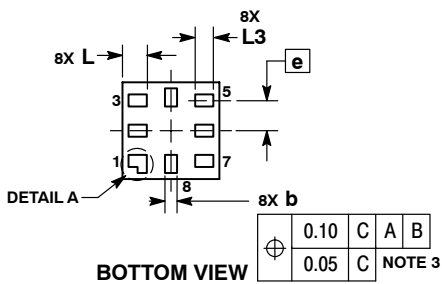
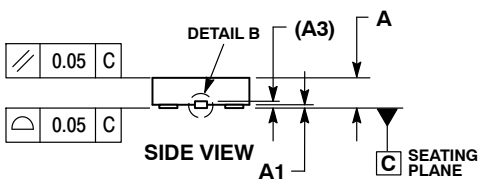
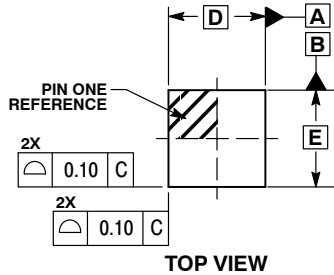
# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



SCALE 4:1

UQFN8, 1.60x1.60, 0.50P  
CASE 523AN  
ISSUE O

DATE 26 NOV 2008

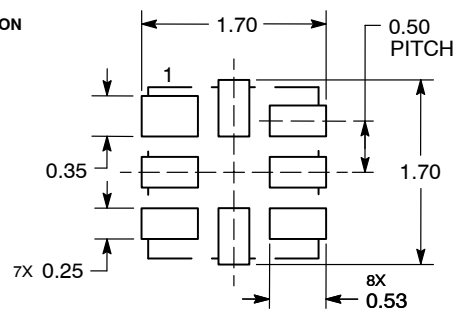


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 mm FROM THE TERMINAL TIP.

| MILLIMETERS |      |      |
|-------------|------|------|
| DIM         | MIN  | MAX  |
| A           | 0.45 | 0.60 |
| A1          | 0.00 | 0.05 |
| A3          | 0.13 | REF  |
| b           | 0.15 | 0.25 |
| D           | 1.60 | BSC  |
| E           | 1.60 | BSC  |
| e           | 0.50 | BSC  |
| L           | 0.35 | 0.45 |
| L1          | ---  | 0.15 |
| L3          | 0.25 | 0.35 |

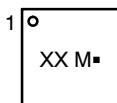
SOLDERING FOOTPRINT\*



DIMENSIONS: MILLIMETERS

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

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.

|                  |                         |  |
|------------------|-------------------------|--|
| DOCUMENT NUMBER: | 98AON36348E             | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| DESCRIPTION:     | UQFN8, 1.60X1.60, 0.50P | PAGE 1 OF 1  |

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at [www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)