

# NLX2G32

## Dual 2-Input OR Gate

The NLX2G32 is a high performance dual 2-input OR Gate operating from a 1.65 V to 5.5 V supply.

### Features

- Extremely High Speed:  $t_{PD}$  2.5 ns (typical) at  $V_{CC} = 5$  V
- Designed for 1.65 V to 5.5 V  $V_{CC}$  Operation
- Over Voltage Tolerant Inputs
- LVTTL Compatible – Interface Capability With 5 V TTL Logic with  $V_{CC} = 3$  V
- LVC MOS Compatible
- 24 mA Balanced Output Sink and Source Capability
- Near Zero Static Supply Current Substantially Reduces System Power Requirements
- Replacement for NC7WZ32
- Chip Complexity: FET = 120
- These are Pb-Free Devices

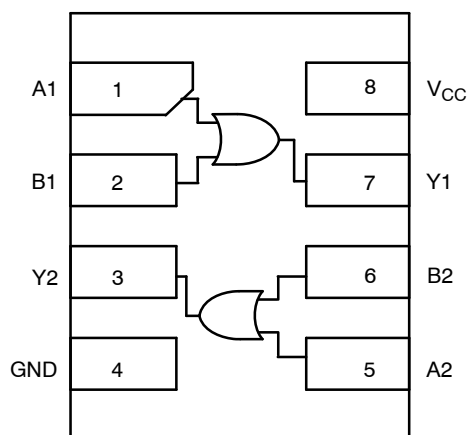


Figure 1. Pinout

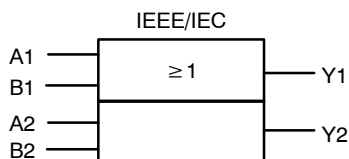


Figure 2. Logic Symbol

### PIN ASSIGNMENT

| Pin | Function |
|-----|----------|
| 1   | A1       |
| 2   | B1       |
| 3   | Y2       |
| 4   | GND      |
| 5   | A2       |
| 6   | B2       |
| 7   | Y1       |
| 8   | $V_{CC}$ |

### FUNCTION TABLE

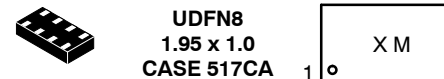
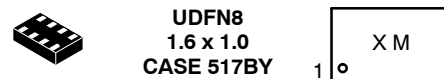
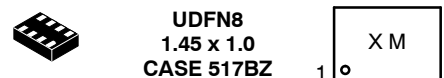
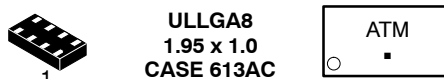
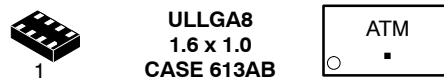
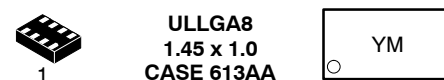
| Input |   | Output<br>$Y = A + B$ |
|-------|---|-----------------------|
| A     | B | Y                     |
| L     | L | L                     |
| L     | H | H                     |
| H     | L | H                     |
| H     | H | H                     |



ON Semiconductor®

<http://onsemi.com>

### MARKING DIAGRAMS



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

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

# NLX2G32

## MAXIMUM RATINGS

| Symbol                | Parameter                                                                                                     | Value                  | Unit |
|-----------------------|---------------------------------------------------------------------------------------------------------------|------------------------|------|
| V <sub>CC</sub>       | DC Supply Voltage                                                                                             | − 0.5 to + 7.0         | V    |
| V <sub>I</sub>        | DC Input Voltage                                                                                              | − 0.5 to + 7.0         | V    |
| V <sub>O</sub>        | DC Output Voltage                                                                                             | − 0.5 to + 7.0         | V    |
| I <sub>IK</sub>       | DC Input Diode Current<br>V <sub>I</sub> < GND                                                                | − 50                   | mA   |
| I <sub>OK</sub>       | DC Output Diode Current<br>V <sub>O</sub> < GND                                                               | − 50                   | mA   |
| I <sub>O</sub>        | DC Output Sink Current                                                                                        | ± 50                   | mA   |
| I <sub>CC</sub>       | DC Supply Current per Supply Pin                                                                              | ± 100                  | mA   |
| I <sub>GND</sub>      | DC Ground Current per 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 Seconds                                                               | 260                    | °C   |
| T <sub>J</sub>        | Junction Temperature under Bias                                                                               | + 150                  | °C   |
| θ <sub>JA</sub>       | Thermal Resistance (Note 1)                                                                                   | 250                    | °C/W |
| P <sub>D</sub>        | Power Dissipation in Still Air at 85°C                                                                        | 250                    | 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<br>Human Body Model (Note 2)<br>Machine Model (Note 3)<br>Charged Device Model (Note 4) | > 2000<br>> 200<br>N/A | V    |
| I <sub>Latch-Up</sub> | Latch-Up Performance<br>Above V <sub>CC</sub> and Below GND at 85°C (Note 5)                                  | ± 500                  | mA   |

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.

1. Measured with minimum pad spacing on an FR4 board, using 10 mm-by-1 inch, 2-ounce copper trace with no air flow.
2. Tested to EIA/JESD22-A114-A.
3. Tested to EIA/JESD22-A115-A.
4. Tested to JESD22-C101-A.
5. Tested to EIA/JESD78.

## RECOMMENDED OPERATING CONDITIONS

| Symbol          | Parameter                                                                                                                                                                       | Min              | Max                 | Unit |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|------|
| V <sub>CC</sub> | Supply Voltage<br>Operating<br>Data Retention Only                                                                                                                              | 1.65<br>1.5      | 5.5<br>5.5          | V    |
| V <sub>I</sub>  | Input Voltage (Note 6)                                                                                                                                                          | 0                | 5.5                 | V    |
| V <sub>O</sub>  | Output Voltage (HIGH or LOW State)                                                                                                                                              | 0                | V <sub>CC</sub>     | V    |
| T <sub>A</sub>  | Operating Free-Air Temperature                                                                                                                                                  | − 40             | + 85                | °C   |
| Δt/ΔV           | Input Transition Rise or Fall Rate<br>V <sub>CC</sub> = 1.8 V ± 0.15 V<br>V <sub>CC</sub> = 2.5 V ± 0.2 V<br>V <sub>CC</sub> = 3.0 V ± 0.3 V<br>V <sub>CC</sub> = 5.0 V ± 0.5 V | 0<br>0<br>0<br>0 | 20<br>20<br>10<br>5 | ns/V |

6. Unused inputs may not be left open. All inputs must be tied to a high-logic voltage level or a low-logic input voltage level.

# NLX2G32

## DC ELECTRICAL CHARACTERISTICS

| Symbol           | Parameter                                                      | Condition                                                                                                                              | V <sub>CC</sub><br>(V)     | T <sub>A</sub> = +25°C                      |      |                     | T <sub>A</sub> = -40°C to +85°C             |                     | Unit |
|------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------|------|---------------------|---------------------------------------------|---------------------|------|
|                  |                                                                |                                                                                                                                        |                            | Min                                         | Typ  | Max                 | Min                                         | Max                 |      |
| V <sub>IH</sub>  | HIGH Level Input Voltage                                       |                                                                                                                                        | 1.65 to 1.95               | 0.75 V <sub>CC</sub><br>0.7 V <sub>CC</sub> |      |                     | 0.75 V <sub>CC</sub><br>0.7 V <sub>CC</sub> |                     | V    |
| V <sub>IL</sub>  | LOW Level Input Voltage                                        |                                                                                                                                        | 1.65 to 1.95<br>2.3 to 5.5 |                                             |      | 0.3 V <sub>CC</sub> |                                             | 0.3 V <sub>CC</sub> | V    |
| V <sub>OH</sub>  | HIGH Level Output Voltage<br>V <sub>IN</sub> = V <sub>IH</sub> | I <sub>OH</sub> = -100 μA                                                                                                              | 1.65                       | 1.55                                        | 1.65 |                     | 1.55                                        |                     | V    |
|                  |                                                                |                                                                                                                                        | 2.3                        | 2.2                                         | 2.3  |                     | 2.2                                         |                     |      |
|                  |                                                                |                                                                                                                                        | 3.0                        | 2.9                                         | 3.0  |                     | 2.9                                         |                     |      |
|                  |                                                                |                                                                                                                                        | 4.5                        | 4.4                                         | 4.5  |                     | 4.4                                         |                     |      |
|                  |                                                                | I <sub>OH</sub> = -4 mA<br>I <sub>OH</sub> = -8 mA<br>I <sub>OH</sub> = -16 mA<br>I <sub>OH</sub> = -24 mA<br>I <sub>OH</sub> = -32 mA | 1.65                       | 1.29                                        | 1.52 |                     | 1.20                                        |                     |      |
|                  |                                                                |                                                                                                                                        | 2.3                        | 1.9                                         | 2.15 |                     | 1.9                                         |                     |      |
| V <sub>OL</sub>  | Low-Level Output Voltage<br>V <sub>IN</sub> = V <sub>IL</sub>  | I <sub>OL</sub> = 100 μA                                                                                                               | 1.65                       |                                             | 0    | 0.1                 |                                             |                     | V    |
|                  |                                                                |                                                                                                                                        | 2.3                        |                                             | 0    | 0.1                 |                                             |                     |      |
|                  |                                                                |                                                                                                                                        | 3.0                        |                                             | 0    | 0.1                 |                                             |                     |      |
|                  |                                                                |                                                                                                                                        | 4.5                        |                                             | 0    | 0.1                 |                                             |                     |      |
|                  |                                                                | I <sub>OH</sub> = 4 mA<br>I <sub>OH</sub> = 8 mA<br>I <sub>OH</sub> = 16 mA<br>I <sub>OH</sub> = 24 mA<br>I <sub>OH</sub> = 32 mA      | 1.65                       |                                             | 0.08 | 0.24                |                                             |                     |      |
|                  |                                                                |                                                                                                                                        | 2.3                        |                                             | 0.1  | 0.3                 |                                             |                     |      |
| I <sub>IN</sub>  | Input Leakage Current                                          | V <sub>IN</sub> = V <sub>CC</sub> or GND                                                                                               | 0 to 5.5                   |                                             |      | ±0.1                |                                             | ±1.0                | μA   |
| I <sub>OFF</sub> | Power OFF Leakage Current                                      | V <sub>IN</sub> or V <sub>OUT</sub> = 5.5 V                                                                                            | 0.0                        |                                             |      | 1.0                 |                                             | 10                  |      |
| I <sub>CC</sub>  | Quiescent Supply Current                                       | V <sub>IN</sub> = V <sub>CC</sub> or GND                                                                                               | 5.5                        |                                             |      | 1.0                 |                                             | 10                  | μA   |

## AC ELECTRICAL CHARACTERISTICS t<sub>R</sub> = t<sub>F</sub> = 3.0 ns

| Symbol           | Parameter                             | Condition                                      | V <sub>CC</sub><br>(V)  | T <sub>A</sub> = 25°C |            |            | −40°C ≤ T <sub>A</sub> ≤ 85°C |             | Unit |
|------------------|---------------------------------------|------------------------------------------------|-------------------------|-----------------------|------------|------------|-------------------------------|-------------|------|
|                  |                                       |                                                |                         | Min                   | Typ        | Max        | Min                           | Max         |      |
| t <sub>PLH</sub> | Propagation Delay<br>(Figure 3 and 4) | R <sub>L</sub> = 1 MΩ, C <sub>L</sub> = 15 pF  | 1.8 ± 0.15<br>2.5 ± 0.2 | 2.0<br>1.0            | 8.0<br>3.5 | 9.5<br>5.8 | 2.0<br>1.0                    | 10.5<br>6.2 | ns   |
| t <sub>PHL</sub> |                                       | R <sub>L</sub> = 1 MΩ, C <sub>L</sub> = 15 pF  | 3.3 ± 0.3               | 0.8                   | 2.6        | 3.9        | 0.8                           | 4.3         |      |
|                  |                                       | R <sub>L</sub> = 500 Ω, C <sub>L</sub> = 50 pF |                         | 1.2                   | 3.2        | 4.8        | 1.2                           | 5.2         |      |
|                  |                                       | R <sub>L</sub> = 1 MΩ, C <sub>L</sub> = 15 pF  | 5.0 ± 0.5               | 0.5                   | 1.9        | 3.1        | 0.5                           | 3.3         |      |
|                  |                                       | R <sub>L</sub> = 500 Ω, C <sub>L</sub> = 50 pF |                         | 0.8                   | 2.5        | 3.7        | 0.8                           | 4.0         |      |

## CAPACITIVE CHARACTERISTICS

| Symbol          | Parameter                     | Condition                                                                | Typical | Unit |
|-----------------|-------------------------------|--------------------------------------------------------------------------|---------|------|
| C <sub>IN</sub> | Input Capacitance             | V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 0 V or V <sub>CC</sub>         | 2.5     | pF   |
| C <sub>PD</sub> | Power Dissipation Capacitance | 10 MHz, V <sub>CC</sub> = 3.3 V, V <sub>I</sub> = 0 V or V <sub>CC</sub> | 9       | pF   |
|                 | (Note 7)                      | 10 MHz, V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 0 V or V <sub>CC</sub> | 11      |      |

7. 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>.

## NLX2G32

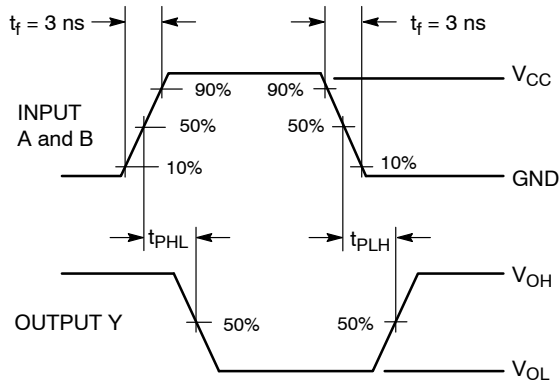
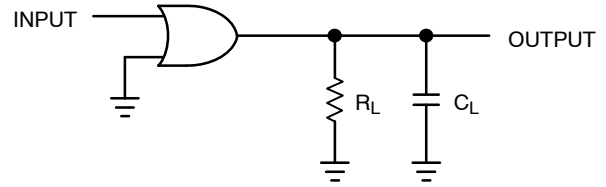


Figure 3. Switching Waveform



A 1-MHz square input wave is recommended for propagation delay tests.

Figure 4. Test Circuit

### DEVICE ORDERING INFORMATION

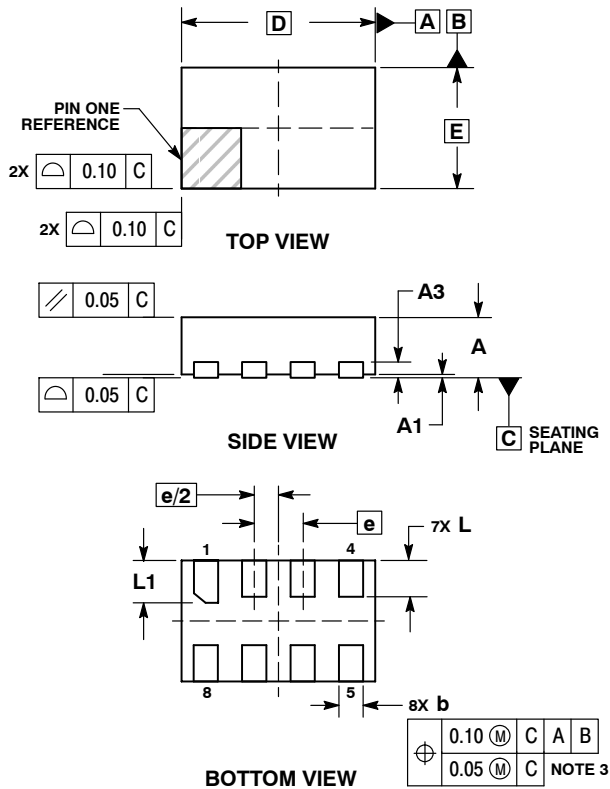
| Device Order Number | Package Type                       | Tape and Reel Size <sup>†</sup>  |
|---------------------|------------------------------------|----------------------------------|
| NLX2G32AMX1TCG      | ULLGA, 1.95x1 (Pb-Free)            | 178 mm, 3000 Units / Tape & Reel |
| NLX2G32BMX1TCG      | ULLGA, 1.6x1 (Pb-Free)             | 178 mm, 3000 Units / Tape & Reel |
| NLX2G32CMX1TCG      | ULLGA, 1.45x1 (Pb-Free)            | 178 mm, 3000 Units / Tape & Reel |
| NLX2G32DMUTCG       | UDFN8, 1.95 x 1.0, 0.5P (Pb-Free)  | 3000 Units / Tape & Reel         |
| NLX2G32EMUTCG       | UDFN8, 1.6 x 1.0, 0.4P (Pb-Free)   | 3000 Units / Tape & Reel         |
| NLX2G32FMUTCG       | UDFN8, 1.45 x 1.0, 0.35P (Pb-Free) | 3000 Units / 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.

# NLX2G32

## PACKAGE DIMENSIONS

UDFN8 1.6x1.0, 0.4P  
CASE 517BY  
ISSUE O

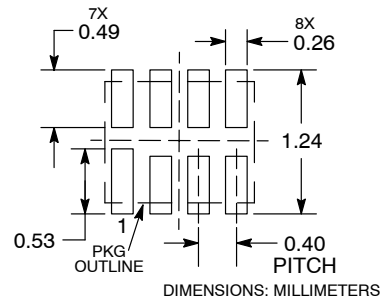


### NOTES:

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.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | 0.45        | 0.55 |
| A1  | 0.00        | 0.05 |
| A3  | 0.13 REF    |      |
| b   | 0.15        | 0.25 |
| D   | 1.60 BSC    |      |
| E   | 1.00 BSC    |      |
| e   | 0.40 BSC    |      |
| L   | 0.25        | 0.35 |
| L1  | 0.30        | 0.40 |

### RECOMMENDED SOLDERING FOOTPRINT\*

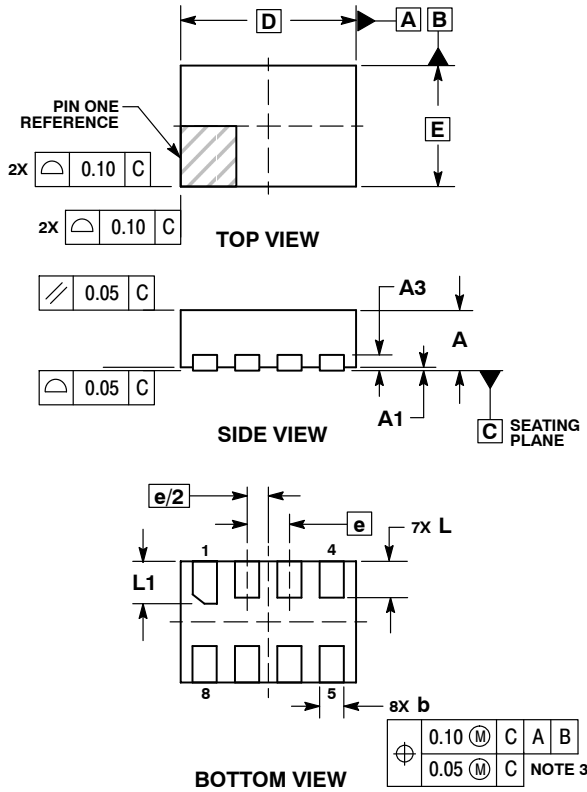


\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# NLX2G32

## PACKAGE DIMENSIONS

UDFN8 1.45x1.0, 0.35P  
CASE 517BZ  
ISSUE O

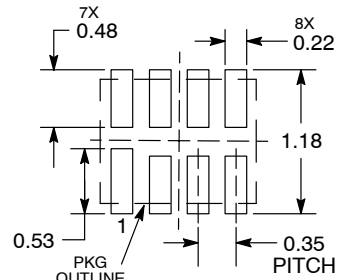


### NOTES:

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.

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

### RECOMMENDED SOLDERING FOOTPRINT\*



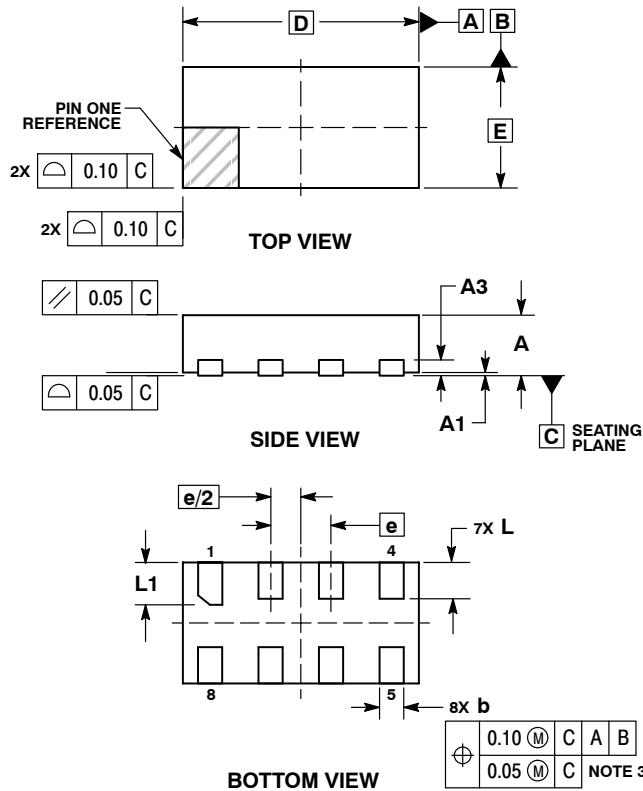
DIMENSIONS: MILLIMETERS

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

# NLX2G32

## PACKAGE DIMENSIONS

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

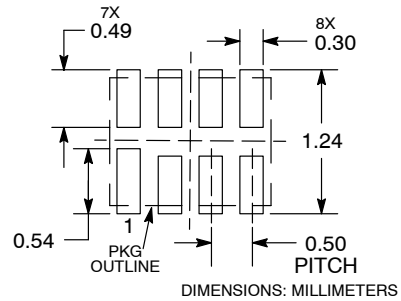


### NOTES:

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           | 1.95 BSC |      |
| E           | 1.00 BSC |      |
| e           | 0.50 BSC |      |
| L           | 0.25     | 0.35 |
| L1          | 0.30     | 0.40 |

### RECOMMENDED SOLDERING FOOTPRINT\*

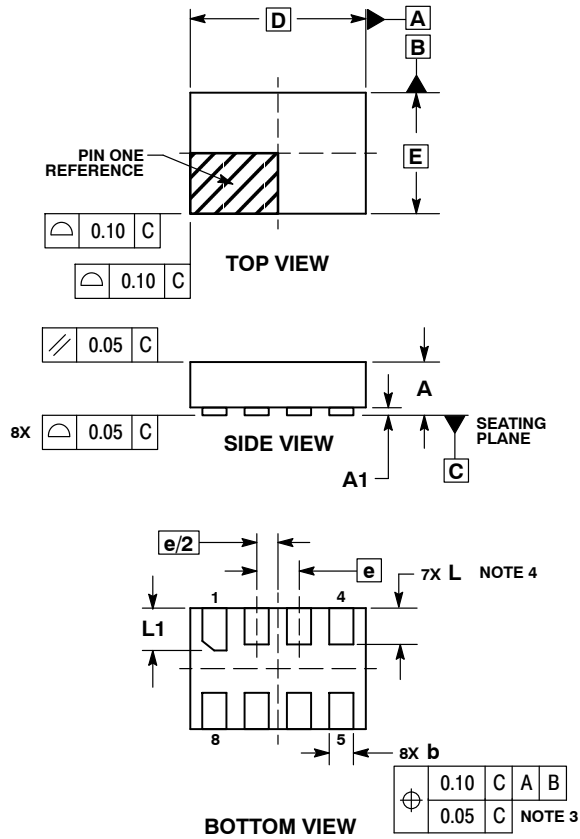


\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# NLX2G32

## PACKAGE DIMENSIONS

ULLGA8 1.45x1.0, 0.35P  
CASE 613AA  
ISSUE A

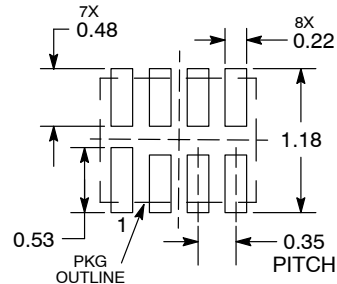


### NOTES:

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.
4. A MAXIMUM OF 0.05 PULL BACK OF THE PLATED TERMINAL FROM THE EDGE OF THE PACKAGE IS ALLOWED.

| MILLIMETERS |      |      |
|-------------|------|------|
| DIM         | MIN  | MAX  |
| A           | ---  | 0.40 |
| A1          | 0.00 | 0.05 |
| 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 |

### MOUNTING FOOTPRINT SOLDERMASK DEFINED\*



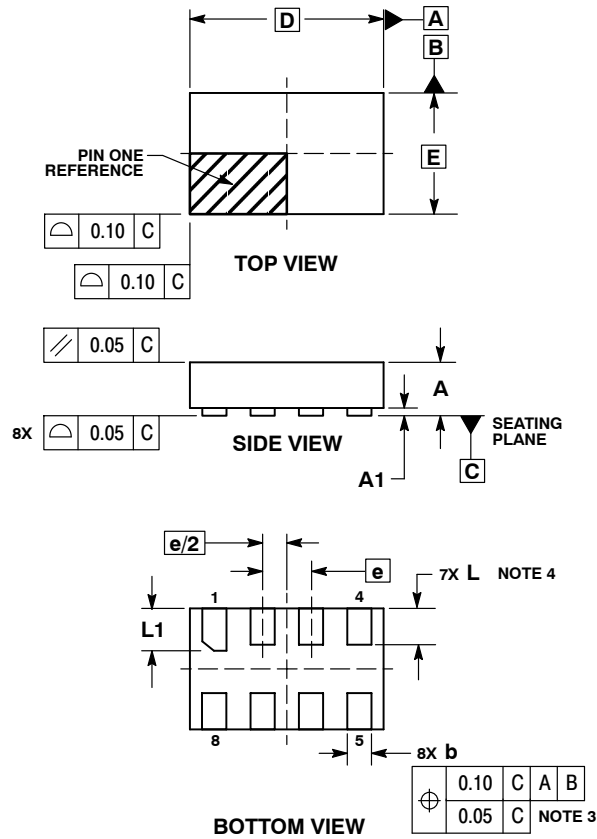
DIMENSIONS: MILLIMETERS

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

# NLX2G32

## PACKAGE DIMENSIONS

ULLGA8 1.6x1.0, 0.4P  
CASE 613AB  
ISSUE A

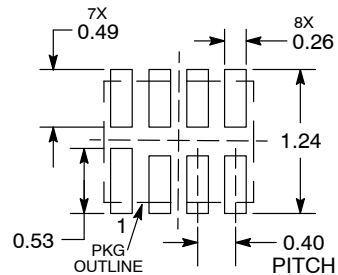


### NOTES:

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.
4. A MAXIMUM OF 0.05 PULL BACK OF THE PLATED TERMINAL FROM THE EDGE OF THE PACKAGE IS ALLOWED.

| MILLIMETERS |      |      |
|-------------|------|------|
| DIM         | MIN  | MAX  |
| A           | ---  | 0.40 |
| A1          | 0.00 | 0.05 |
| b           | 0.15 | 0.25 |
| D           | 1.60 | BSC  |
| E           | 1.00 | BSC  |
| e           | 0.40 | BSC  |
| L           | 0.25 | 0.35 |
| L1          | 0.30 | 0.40 |

### MOUNTING FOOTPRINT SOLDERMASK DEFINED\*



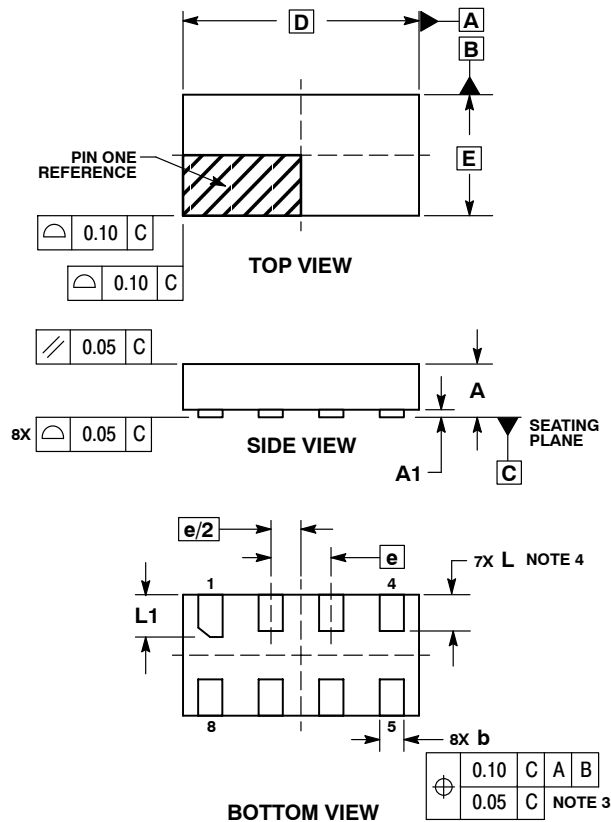
DIMENSIONS: MILLIMETERS

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

# NLX2G32

## PACKAGE DIMENSIONS

ULLGA8 1.95x1.0, 0.5P  
CASE 613AC  
ISSUE A

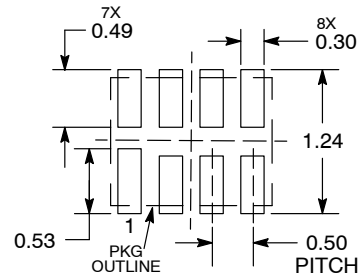


### NOTES:

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.
4. A MAXIMUM OF 0.05 PULL BACK OF THE PLATED TERMINAL FROM THE EDGE OF THE PACKAGE IS ALLOWED.

| MILLIMETERS |      |      |
|-------------|------|------|
| DIM         | MIN  | MAX  |
| A           | ---  | 0.40 |
| A1          | 0.00 | 0.05 |
| b           | 0.15 | 0.25 |
| D           | 1.95 | BSC  |
| E           | 1.00 | BSC  |
| e           | 0.50 | BSC  |
| L           | 0.25 | 0.35 |
| L1          | 0.30 | 0.40 |

### MOUNTING FOOTPRINT SOLDERMASK DEFINED\*



DIMENSIONS: MILLIMETERS

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

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marketing.pdf](http://www.onsemi.com/site/pdf/Patent-Marketing.pdf). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC 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. "Typical" parameters which may be provided in SCILLC 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. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC 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 SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
Email: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

N. American Technical Support: 800-282-9855 Toll Free  
USA/Canada

Europe, Middle East and Africa Technical Support:  
Phone: 421 33 790 2910

Japan Customer Focus Center  
Phone: 81-3-5817-1050

ON Semiconductor Website: [www.onsemi.com](http://www.onsemi.com)

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local  
Sales Representative