

Dual Unbuffered Inverter

NL27WZU04

The NL27WZU04 is a high performance dual unbuffered inverter operating from a 1.65 to 5.5 V supply.

Features

- Designed for 1.65 V to 5.5 V V_{CC} Operation
- Input Overvoltage Tolerant up to 5.5 V
- I_{OFF} Supports Partial Power Down Protection
- Source/Sink 24 mA at 3.0 V
- Source/Sink 12 mA at 3.0 V (NLV)
- Available in SC-88, SC-74, TSOP-6 and UDFN6 Packages
- Chip Complexity < 100 FETs
- NLV Prefix 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

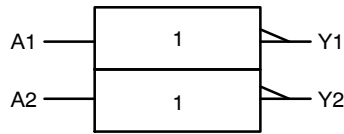
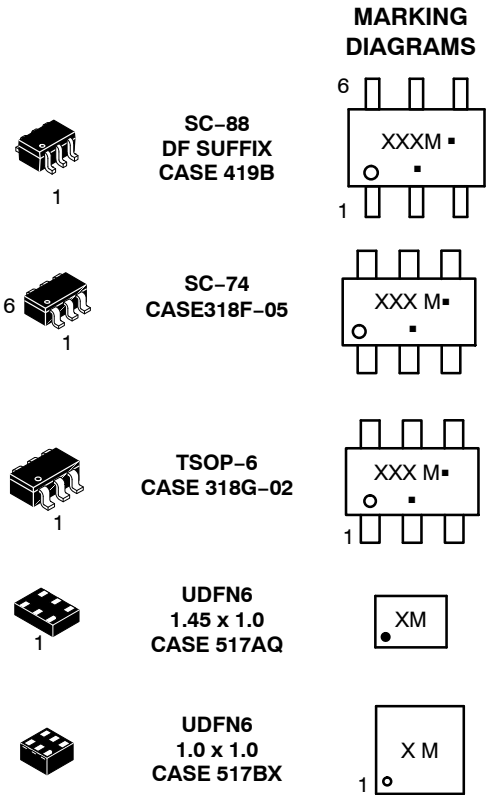


Figure 1. Logic Symbol



X, XXX = Specific Device Code
M = Date Code*
A = Assembly Location
Y = Year
W = Work Week
▪ = Pb-Free Package

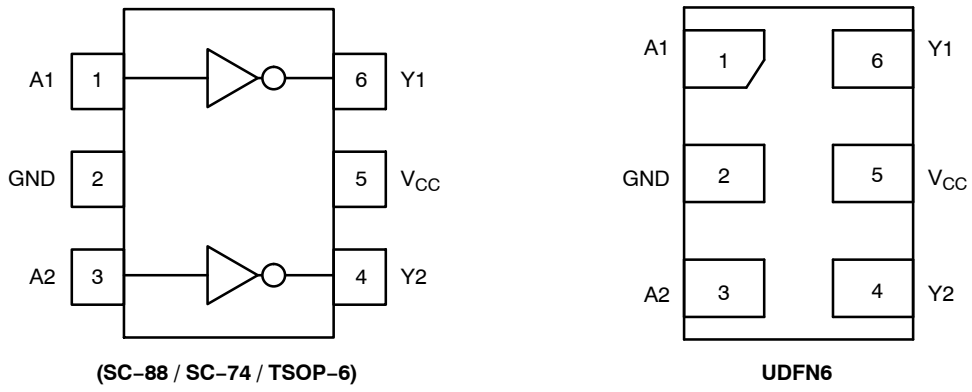
(Note: Microdot may be in either location)

*Date Code orientation and/or position may vary depending upon manufacturing location.

ORDERING INFORMATION

See detailed ordering, marking and shipping information in the package dimensions section on page 7 of this data sheet.

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(SC-88 / SC-74 / TSOP-6)

UDFN6

Figure 2. Pinout (Top View)

PIN ASSIGNMENT

| Pin | Function |
|-----|-----------------|
| 1 | A1 |
| 2 | GND |
| 3 | A2 |
| 4 | Y2 |
| 5 | V _{CC} |
| 6 | Y1 |

FUNCTION TABLE

| A Input | Y Output |
|---------|----------|
| L | H |
| H | L |

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MAXIMUM RATINGS

| Symbol | Characteristics | Value | Unit |
|-------------------------------------|--|-------------------------------|------|
| V _{CC} | DC Supply Voltage SC-88 (NLV), TSOP-6 SC-88, SC-74, UDFN6 | -0.5 to +7.0 -0.5 to +6.5 | V |
| V _{IN} | DC Input Voltage SC-88 (NLV), TSOP-6 SC-88, SC-74, UDFN6 | -0.5 to +7.0 -0.5 to +6.5 | V |
| V _{OUT} | DC Output Voltage | -0.5 to V _{CC} + 0.5 | V |
| I _{IK} | DC Input Diode Current V _{IN} < GND | -50 | mA |
| I _{OK} | DC Output Diode Current | ±50 | mA |
| I _{OUT} | DC Output Source/Sink Current | ±50 | mA |
| I _{CC} or I _{GND} | DC Supply Current per Supply Pin or Ground Pin | ±100 | mA |
| T _{STG} | Storage Temperature Range | -65 to +150 | °C |
| T _L | Lead Temperature, 1 mm from Case for 10 secs | 260 | °C |
| T _J | Junction Temperature Under Bias | +150 | °C |
| θ _{JA} | Thermal Resistance (Note 2) SC-88 SC-74 UDFN6 | 377 320 154 | °C/W |
| P _D | Power Dissipation in Still Air SC-88 SC-74 UDFN6 | 332 300 812 | mW |
| MSL | Moisture Sensitivity | Level 1 | - |
| F _R | Flammability Rating Oxygen Index: 28 to 34 | UL 94 V-0 @ 0.125 in | - |
| V _{ESD} | ESD Withstand Voltage (Note 3) Human Body Model Charged Device Model (NLV) Charged Device Model | 2000 1000 N/A | V |
| I _{Latchup} | Latchup Performance (Note 4) (NLV) | ±500 ±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 _{CC} | Positive DC Supply Voltage | 1.65 | 5.5 | V |
| V _{IN} | DC Input Voltage | 0 | 5.5 | V |
| V _{OUT} | DC Output Voltage | 0 | V _{CC} | |
| T _A | Operating Temperature Range | -55 | +125 | °C |
| t _r , t _f | Input Rise and Fall Time V _{CC} = 1.65 V to 1.95 V V _{CC} = 2.3 V to 2.7 V V _{CC} = 3.0 V to 3.6 V V _{CC} = 4.5 V to 5.5 V | 0 0 0 0 | 20 20 10 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.

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DC ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Condition | V _{CC} (V) | T _A = 25°C | | | -55°C ≤ T _A ≤ 125°C | | Units |
|------------------|---------------------------------|---|---|---|--|---|---|---|-------|
| | | | | Min | Typ | Max | Min | Max | |
| V _{IH} | High-Level Input Voltage | | 1.65 to 1.95 | 0.85 V _{CC} | - | - | 0.85 V _{CC} | - | V |
| | | | 2.3 to 5.5 | 0.80 V _{CC} | - | - | 0.80 V _{CC} | - | |
| V _{IL} | Low-Level Input Voltage | | 1.65 to 1.95 | - | - | 0.15 V _{CC} | - | 0.15 V _{CC} | V |
| | | | 2.3 to 5.5 | - | - | 0.20 V _{CC} | - | 0.20 V _{CC} | |
| V _{OH} | High-Level Output Voltage (NLV) | V _{IN} = V _{IH} or V _{IL} I _{OH} = -100 μA | 1.65 to 5.5 | V _{CC} - 0.1 | V _{CC} | - | V _{CC} - 0.1 | - | V |
| | | V _{IN} = GND I _{OH} = -3 mA I _{OH} = -4 mA I _{OH} = -6 mA I _{OH} = -8 mA I _{OH} = -12 mA I _{OH} = -16 mA | 1.65 2.3 2.7 3.0 3.0 4.5 | 1.29 1.9 2.2 2.4 2.3 3.8 | 1.52 2.1 2.3 2.6 2.5 4.2 | - - - - - - | 1.29 1.9 2.2 2.4 2.3 3.8 | - - - - - - | |
| V _{OL} | High-Level Output Voltage | V _{IN} = GND I _{OH} = -100 μA I _{OH} = -4 mA I _{OH} = -8 mA I _{OH} = -12 mA I _{OH} = -16 mA I _{OH} = -24 mA I _{OH} = -32 mA | 1.65 to 5.5 | V _{CC} - 0.1 | V _{CC} | - | V _{CC} - 0.1 | - | V |
| | | 1.65 2.3 2.7 3.0 3.0 4.5 | 1.29 1.9 2.2 2.4 2.3 3.8 | 1.4 2.1 2.4 2.7 2.5 4.0 | - - - - - - | 1.29 1.9 2.2 2.4 2.3 3.8 | - - - - - - | | |
| V _{OL} | Low-Level Output Voltage (NLV) | V _{IN} = V _{IH} I _{OL} = 100 μA | 1.65 to 5.5 | - | - | 0.1 | - | 0.1 | V |
| | | V _{IN} = V _{CC} I _{OL} = 3 mA I _{OL} = 4 mA I _{OL} = 6 mA I _{OL} = 8 mA I _{OL} = 12 mA I _{OL} = 16 mA | 1.65 2.3 2.7 3.0 3.0 4.5 | - - - - - - | 0.08 0.2 0.2 0.24 0.26 0.31 | 0.24 0.3 0.4 0.4 0.55 0.55 | - - - - - - | 0.24 0.3 0.4 0.4 0.55 0.55 | |
| V _{OL} | Low-Level Output Voltage | V _{IN} = V _{CC} I _{OL} = 100 μA I _{OL} = 4 mA I _{OL} = 8 mA I _{OL} = 12 mA I _{OL} = 16 mA I _{OL} = 24 mA I _{OL} = 32 mA | 1.65 to 5.5 | - | - | 0.1 | - | 0.1 | V |
| | | 1.65 2.3 2.7 3.0 3.0 4.5 | - - - - - - | 0.08 0.2 0.22 0.28 0.38 0.42 | 0.24 0.3 0.4 0.4 0.55 0.55 | - - - - - - | 0.24 0.3 0.4 0.4 0.55 0.55 | | |
| I _{IN} | Input Leakage Current | V _{IN} = 5.5 V or GND | 1.65 to 5.5 | - | - | ±0.1 | - | ±1.0 | μA |
| I _{OFF} | Power Off Leakage Current | V _{IN} = 5.5 V | 0 | - | - | 1.0 | - | 10 | μA |
| I _{CC} | Quiescent Supply Current | V _{IN} = V _{CC} 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.

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AC ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Condition | V _{CC} (V) | T _A = 25°C | | | -55°C ≤ T _A ≤ 125°C | | Units |
|--------------------------------------|---|--|---------------------|-----------------------|-----|-----|--------------------------------|------|-------|
| | | | | Min | Typ | Max | Min | Max | |
| t _{PLH} t _{PHL} | Propagation Delay Input A to Y (Figure 3 and 4) | R _L = 1 MΩ, C _L = 15 pF | 1.65 to 1.95 | - | 5.5 | 9.8 | - | 11.0 | ns |
| | | R _L = 1 MΩ, C _L = 15 pF | 2.3 to 2.7 | - | 3.3 | 5.7 | - | 6.3 | |
| | | R _L = 1 MΩ, C _L = 15 pF | 3.0 to 3.6 | - | 2.7 | 4.1 | - | 4.5 | |
| | | R _L = 500 Ω, C _L = 50 pF | | - | 4.0 | 6.4 | - | 7.0 | |
| | | R _L = 1 MΩ, C _L = 15 pF | 4.5 to 5.5 | - | 2.2 | 3.3 | - | 3.6 | |
| | | R _L = 500 Ω, C _L = 50 pF | | - | 3.4 | 5.6 | - | 6.2 | |

CAPACITIVE CHARACTERISTICS

| Symbol | Parameter | Condition | Typical | Units |
|------------------|---|---|---------|-------|
| C _{IN} | Input Capacitance | V _{CC} = 5.5 V, V _{IN} = 0 V or V _{CC} | 2.5 | pF |
| C _{OUT} | Output Capacitance | V _{CC} = 5.5 V, V _{IN} = 0 V or V _{CC} | 4.0 | pF |
| C _{PD} | Power Dissipation Capacitance (Note 5) | 10 MHz, V _{CC} = 5.5 V, V _{IN} = 0 V or V _{CC} | 4.0 | pF |

5. C_{PD} 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_{CC(OPR)} = C_{PD} • V_{CC} • f_{in} + I_{CC}. C_{PD} is used to determine the no-load dynamic power consumption; P_D = C_{PD} • V_{CC}² • f_{in} + I_{CC} • V_{CC}.

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

Figure 3. Test Circuit

| Test | Switch Position | C_L , pF | R_L , Ω | R_1 , Ω |
|---------------------|-------------------|------------------------------|------------------|------------------|
| 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 |

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DEVICE ORDERING INFORMATION

| Device | Packages | Specific Device Code | Pin 1 Orientation (See below) | Shipping [†] |
|-------------------------------------|-------------------------|----------------------|----------------------------------|-----------------------|
| NL27WZU04DFT2G | SC-88 | M6 | Q4 | 3000 / Tape & Reel |
| NL27WZU04DFT2G-L22348** | SC-88 | M6 | Q4 | 3000 / Tape & Reel |
| NLV27WZU04DFT2G* | SC-88 | M6 | Q4 | 3000 / Tape & Reel |
| NL27WZU04DBVT1G | SC-74 | M6 | Q4 | 3000 / Tape & Reel |
| NL27WZU04DTT1G** | TSOP-6 | M6 | Q4 | 3000 / Tape & Reel |
| NL27WZU04MU1TCG (In Development) | UDFN6, 1.45 x 1.0, 0.5P | TBD | Q4 | 3000 / Tape & Reel |
| NL27WZU04MU3TCG (In Development) | UDFN6, 1.0 x 1.0, 0.35P | TBD | Q4 | 3000 / Tape & Reel |

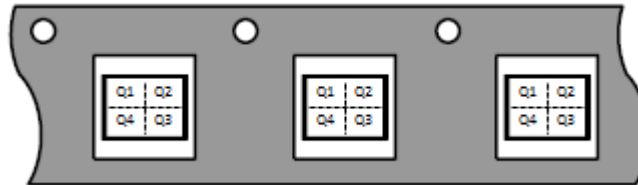
[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

**Please refer to NLV specifications for this device.

Pin 1 Orientation in Tape and Reel

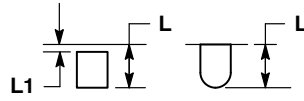
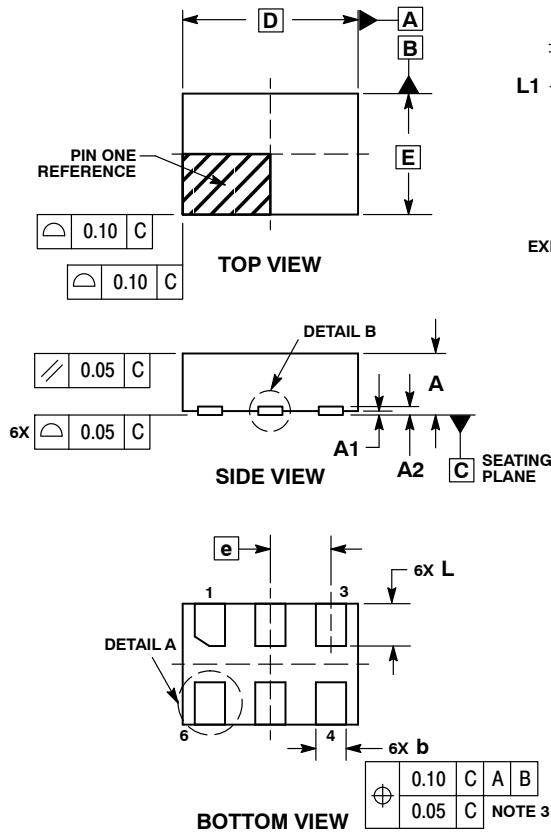
Direction of Feed



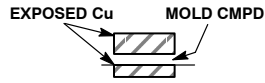
NL27WZU04

PACKAGE DIMENSIONS

UDFN6, 1.45x1.0, 0.5P
CASE 517AQ
ISSUE O



DETAIL A
OPTIONAL
CONSTRUCTIONS



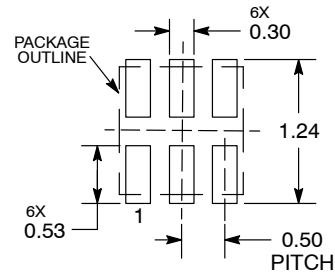
DETAIL B
OPTIONAL
CONSTRUCTIONS

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 | 0.55 |
| A1 | 0.00 | 0.05 |
| A2 | 0.07 | REF |
| b | 0.20 | 0.30 |
| D | 1.45 | BSC |
| E | 1.00 | BSC |
| e | 0.50 | BSC |
| L | 0.30 | 0.40 |
| L1 | --- | 0.15 |

MOUNTING FOOTPRINT



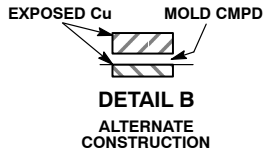
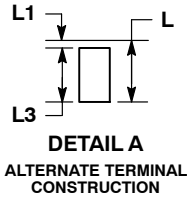
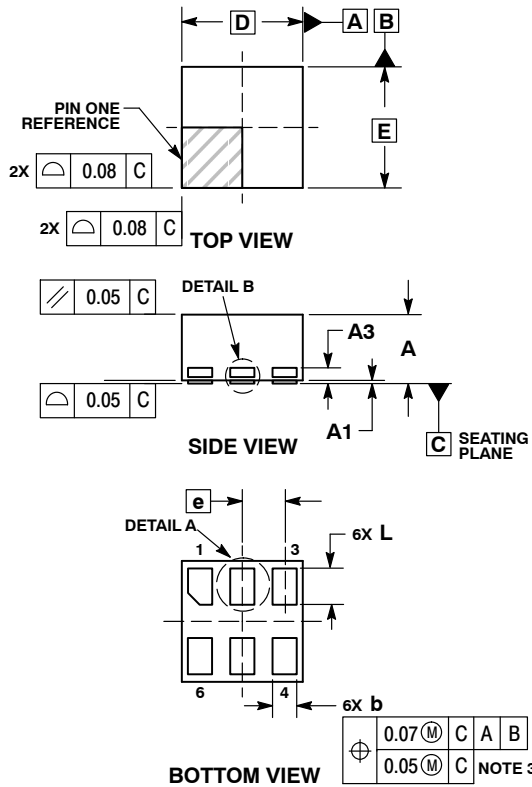
DIMENSIONS: MILLIMETERS

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

NL27WZU04

PACKAGE DIMENSIONS

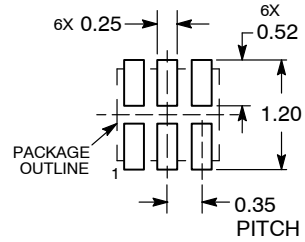
UDFN6, 1x1, 0.35P
CASE 517BX
ISSUE O



- 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 | 0.50 | 0.65 |
| A1 | 0.00 | 0.05 |
| A3 | 0.13 REF | |
| <i>b</i> | 0.17 | 0.23 |
| D | 1.00 BSC | |
| E | 1.00 BSC | |
| <i>e</i> | 0.35 | |
| L | 0.20 | 0.40 |
| L1 | --- | 0.15 |
| L3 | 0.26 | 0.33 |

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSION: MILLIMETERS

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

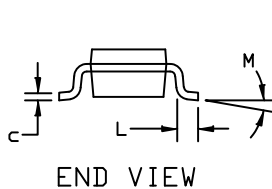
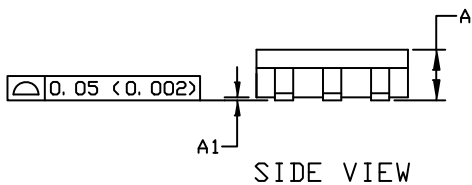
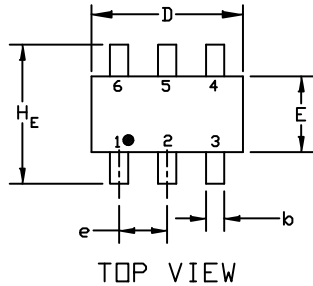
MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



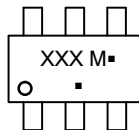
SCALE 2:1

SC-74
CASE 318F
ISSUE P

DATE 07 OCT 2021



GENERIC MARKING DIAGRAM*



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

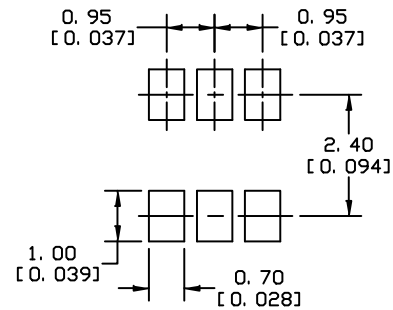
(Note: Microdot may be in either location)

*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.

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994
2. CONTROLLING DIMENSION: INCHES
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.

| 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 | 0.37 | 0.50 | 0.010 | 0.015 | 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 |
| HE | 2.50 | 2.75 | 3.00 | 0.099 | 0.108 | 0.118 |
| L | 0.20 | 0.40 | 0.60 | 0.008 | 0.016 | 0.024 |
| M | 0* | --- | 10* | 0* | --- | 10* |



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

SOLDERING FOOTPRINT

- | | | | | | |
|---|--|---|--|---|---|
| <p>STYLE 1: PIN 1. CATHODE 2. ANODE 3. CATHODE 4. CATHODE 5. ANODE 6. CATHODE</p> | <p>STYLE 2: PIN 1. NO CONNECTION 2. COLLECTOR 3. EMITTER 4. NO CONNECTION 5. COLLECTOR 6. BASE</p> | <p>STYLE 3: PIN 1. EMITTER 1 2. BASE 1 3. COLLECTOR 2 4. EMITTER 2 5. BASE 2 6. COLLECTOR 1</p> | <p>STYLE 4: PIN 1. COLLECTOR 2 2. EMITTER 1/EMITTER 2 3. COLLECTOR 1 4. EMITTER 3 5. BASE 1/BASE 2/COLLECTOR 3 6. BASE 3</p> | <p>STYLE 5: PIN 1. CHANNEL 1 2. ANODE 3. CHANNEL 2 4. CHANNEL 3 5. CATHODE 6. CHANNEL 4</p> | <p>STYLE 6: PIN 1. CATHODE 2. ANODE 3. CATHODE 4. CATHODE 5. CATHODE 6. CATHODE</p> |
| <p>STYLE 7: PIN 1. SOURCE 1 2. GATE 1 3. DRAIN 2 4. SOURCE 2 5. GATE 2 6. DRAIN 1</p> | <p>STYLE 8: PIN 1. EMITTER 1 2. BASE 2 3. COLLECTOR 2 4. EMITTER 2 5. BASE 1 6. COLLECTOR 1</p> | <p>STYLE 9: PIN 1. EMITTER 2 2. BASE 2 3. COLLECTOR 1 4. EMITTER 1 5. BASE 1 6. COLLECTOR 2</p> | <p>STYLE 10: PIN 1. ANODE/CATHODE 2. BASE 3. EMITTER 4. COLLECTOR 5. ANODE 6. CATHODE</p> | <p>STYLE 11: PIN 1. EMITTER 2. BASE 3. ANODE/CATHODE 4. ANODE 5. CATHODE 6. COLLECTOR</p> | |

| | | |
|------------------|-------------|---|
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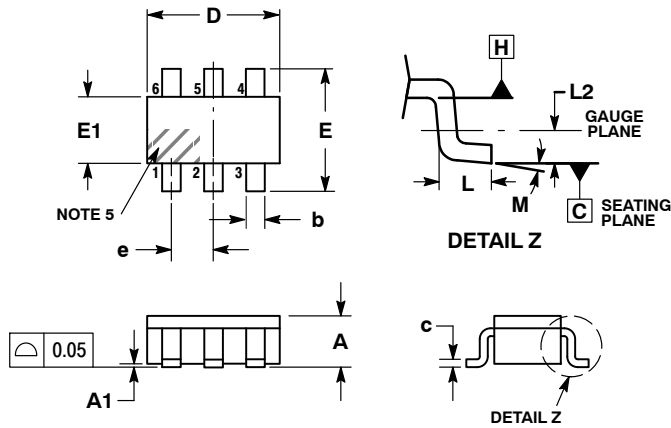
MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



SCALE 2:1

TSOP-6 CASE 318G-02 ISSUE V

DATE 12 JUN 2012



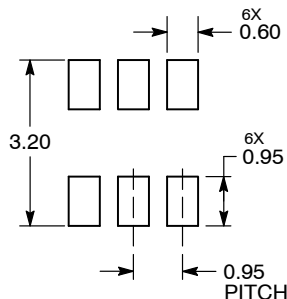
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE. DIMENSIONS D AND E1 ARE DETERMINED AT DATUM H.
5. PIN ONE INDICATOR MUST BE LOCATED IN THE INDICATED ZONE.

| DIM | MILLIMETERS | | |
|-----|-------------|------|------|
| | MIN | NOM | MAX |
| A | 0.90 | 1.00 | 1.10 |
| A1 | 0.01 | 0.06 | 0.10 |
| b | 0.25 | 0.38 | 0.50 |
| c | 0.10 | 0.18 | 0.26 |
| D | 2.90 | 3.00 | 3.10 |
| E | 2.50 | 2.75 | 3.00 |
| E1 | 1.30 | 1.50 | 1.70 |
| e | 0.85 | 0.95 | 1.05 |
| L | 0.20 | 0.40 | 0.60 |
| L2 | 0.25 BSC | | |
| M | 0° | - | 10° |

- | | | | | | |
|--|--|---|---|---|--|
| <p>STYLE 1: PIN 1. DRAIN 2. DRAIN 3. GATE 4. SOURCE 5. DRAIN 6. DRAIN</p> | <p>STYLE 2: PIN 1. EMITTER 2 2. BASE 1 3. COLLECTOR 1 4. EMITTER 1 5. BASE 2 6. COLLECTOR 2</p> | <p>STYLE 3: PIN 1. ENABLE 2. N/C 3. R BOOST 4. Vz 5. V in 6. V out</p> | <p>STYLE 4: PIN 1. N/C 2. V in 3. NOT USED 4. GROUND 5. ENABLE 6. LOAD</p> | <p>STYLE 5: PIN 1. EMITTER 2 2. BASE 2 3. COLLECTOR 1 4. EMITTER 1 5. BASE 1 6. COLLECTOR 2</p> | <p>STYLE 6: PIN 1. COLLECTOR 2. COLLECTOR 3. BASE 4. EMITTER 5. COLLECTOR 6. COLLECTOR</p> |
| <p>STYLE 7: PIN 1. COLLECTOR 2. COLLECTOR 3. BASE 4. N/C 5. COLLECTOR 6. EMITTER</p> | <p>STYLE 8: PIN 1. Vbus 2. D(in) 3. D(in)+ 4. D(out)+ 5. D(out) 6. GND</p> | <p>STYLE 9: PIN 1. LOW VOLTAGE GATE 2. DRAIN 3. SOURCE 4. DRAIN 5. DRAIN 6. HIGH VOLTAGE GATE</p> | <p>STYLE 10: PIN 1. D(OUT)+ 2. GND 3. D(OUT)- 4. D(IN)- 5. VBUS 6. D(IN)+</p> | <p>STYLE 11: PIN 1. SOURCE 1 2. DRAIN 2 3. DRAIN 2 4. SOURCE 2 5. GATE 1 6. DRAIN 1/GATE 2</p> | <p>STYLE 12: PIN 1. I/O 2. GROUND 3. I/O 4. I/O 5. VCC 6. I/O</p> |
| <p>STYLE 13: PIN 1. GATE 1 2. SOURCE 2 3. GATE 2 4. DRAIN 2 5. SOURCE 1 6. DRAIN 1</p> | <p>STYLE 14: PIN 1. ANODE 2. SOURCE 3. GATE 4. CATHODE/DRAIN 5. CATHODE/DRAIN 6. CATHODE/DRAIN</p> | <p>STYLE 15: PIN 1. ANODE 2. SOURCE 3. GATE 4. DRAIN 5. N/C 6. CATHODE</p> | <p>STYLE 16: PIN 1. ANODE/CATHODE 2. BASE 3. EMITTER 4. COLLECTOR 5. ANODE 6. CATHODE</p> | <p>STYLE 17: PIN 1. EMITTER 2. BASE 3. ANODE/CATHODE 4. ANODE 5. CATHODE 6. COLLECTOR</p> | |

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

GENERIC MARKING DIAGRAM*



IC

STANDARD

- | | |
|--|---|
| <p>XXX = Specific Device Code A = Assembly Location Y = Year W = Work Week ▪ = Pb-Free Package</p> | <p>XXX = Specific Device Code M = Date Code ▪ = Pb-Free Package</p> |
|--|---|

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

*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.

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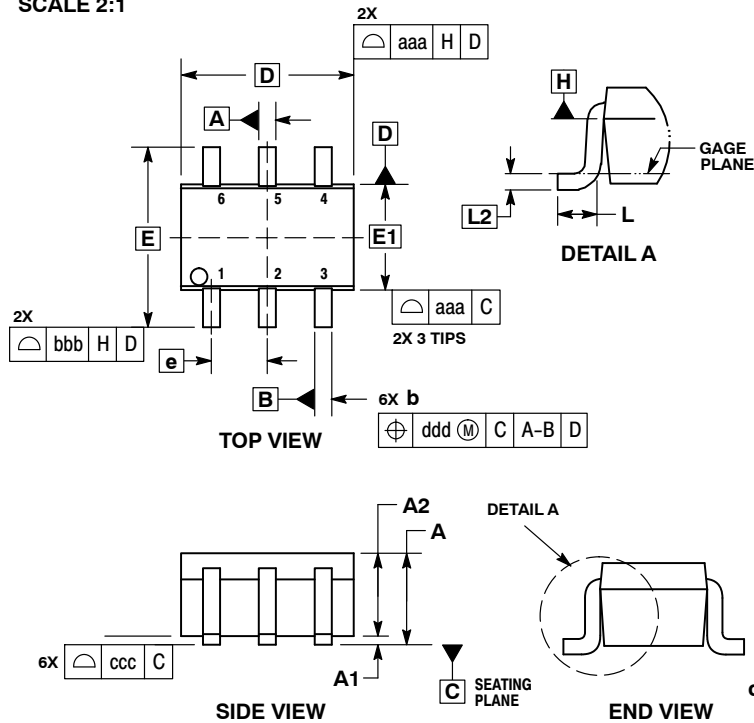
MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



1
SCALE 2:1

SC-88/SC70-6/SOT-363
CASE 419B-02
ISSUE Y

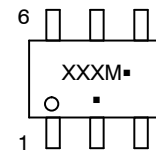
DATE 11 DEC 2012



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
 2. CONTROLLING DIMENSION: MILLIMETERS.
 3. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.20 PER END.
 4. DIMENSIONS D AND E1 AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY AND DATUM H.
 5. DATUMS A AND B ARE DETERMINED AT DATUM H.
 6. DIMENSIONS b AND c APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.08 AND 0.15 FROM THE TIP.
 7. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 TOTAL IN EXCESS OF DIMENSION b AT MAXIMUM MATERIAL CONDITION. THE DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OF THE FOOT.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|-----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | --- | --- | 1.10 | --- | --- | 0.043 |
| A1 | 0.00 | --- | 0.10 | 0.000 | --- | 0.004 |
| A2 | 0.70 | 0.90 | 1.00 | 0.027 | 0.035 | 0.039 |
| b | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |
| C | 0.08 | 0.15 | 0.22 | 0.003 | 0.006 | 0.009 |
| D | 1.80 | 2.00 | 2.20 | 0.070 | 0.078 | 0.086 |
| E | 2.00 | 2.10 | 2.20 | 0.078 | 0.082 | 0.086 |
| E1 | 1.15 | 1.25 | 1.35 | 0.045 | 0.049 | 0.053 |
| e | 0.65 BSC | | | 0.026 BSC | | |
| L | 0.26 | 0.36 | 0.46 | 0.010 | 0.014 | 0.018 |
| L2 | 0.15 BSC | | | 0.006 BSC | | |
| aaa | 0.15 | | | 0.006 | | |
| bbb | 0.30 | | | 0.012 | | |
| ccc | 0.10 | | | 0.004 | | |
| ddd | 0.10 | | | 0.004 | | |

GENERIC MARKING DIAGRAM*



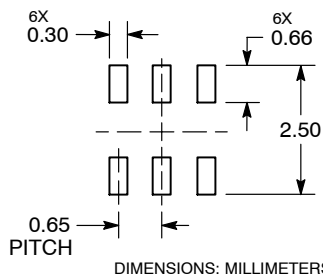
- XXX = Specific Device Code
- M = Date Code*
- = Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation and/or position may vary depending upon manufacturing 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.

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.

STYLES ON PAGE 2

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SC-88/SC70-6/SOT-363
CASE 419B-02
ISSUE Y

DATE 11 DEC 2012

| | | | | | |
|---|---|--|--|--|--|
| STYLE 1: PIN 1. EMITTER 2 2. BASE 2 3. COLLECTOR 1 4. EMITTER 1 5. BASE 1 6. COLLECTOR 2 | STYLE 2: CANCELLED | STYLE 3: CANCELLED | STYLE 4: PIN 1. CATHODE 2. CATHODE 3. COLLECTOR 4. EMITTER 5. BASE 6. ANODE | STYLE 5: PIN 1. ANODE 2. ANODE 3. COLLECTOR 4. EMITTER 5. BASE 6. CATHODE | STYLE 6: PIN 1. ANODE 2 2. N/C 3. CATHODE 1 4. ANODE 1 5. N/C 6. CATHODE 2 |
| STYLE 7: PIN 1. SOURCE 2 2. DRAIN 2 3. GATE 1 4. SOURCE 1 5. DRAIN 1 6. GATE 2 | STYLE 8: CANCELLED | STYLE 9: PIN 1. EMITTER 2 2. EMITTER 1 3. COLLECTOR 1 4. BASE 1 5. BASE 2 6. COLLECTOR 2 | STYLE 10: PIN 1. SOURCE 2 2. SOURCE 1 3. GATE 1 4. DRAIN 1 5. DRAIN 2 6. GATE 2 | STYLE 11: PIN 1. CATHODE 2 2. CATHODE 2 3. ANODE 1 4. CATHODE 1 5. CATHODE 1 6. ANODE 2 | STYLE 12: PIN 1. ANODE 2 2. ANODE 2 3. CATHODE 1 4. ANODE 1 5. ANODE 1 6. CATHODE 2 |
| STYLE 13: PIN 1. ANODE 2. N/C 3. COLLECTOR 4. EMITTER 5. BASE 6. CATHODE | STYLE 14: PIN 1. VREF 2. GND 3. GND 4. IOUT 5. VEN 6. VCC | STYLE 15: PIN 1. ANODE 1 2. ANODE 2 3. ANODE 3 4. CATHODE 3 5. CATHODE 2 6. CATHODE 1 | STYLE 16: PIN 1. BASE 1 2. EMITTER 2 3. COLLECTOR 2 4. BASE 2 5. EMITTER 1 6. COLLECTOR 1 | STYLE 17: PIN 1. BASE 1 2. EMITTER 1 3. COLLECTOR 2 4. BASE 2 5. EMITTER 2 6. COLLECTOR 1 | STYLE 18: PIN 1. VIN1 2. VCC 3. VOUT2 4. VIN2 5. GND 6. VOUT1 |
| STYLE 19: PIN 1. IOUT 2. GND 3. GND 4. V CC 5. V EN 6. V REF | STYLE 20: PIN 1. COLLECTOR 2. COLLECTOR 3. BASE 4. EMITTER 5. COLLECTOR 6. COLLECTOR | STYLE 21: PIN 1. ANODE 1 2. N/C 3. ANODE 2 4. CATHODE 2 5. N/C 6. CATHODE 1 | STYLE 22: PIN 1. D1 (i) 2. GND 3. D2 (j) 4. D2 (c) 5. VBUS 6. D1 (c) | STYLE 23: PIN 1. Vn 2. CH1 3. Vp 4. N/C 5. CH2 6. N/C | STYLE 24: PIN 1. CATHODE 2. ANODE 3. CATHODE 4. CATHODE 5. CATHODE 6. CATHODE |
| STYLE 25: PIN 1. BASE 1 2. CATHODE 3. COLLECTOR 2 4. BASE 2 5. EMITTER 6. COLLECTOR 1 | STYLE 26: PIN 1. SOURCE 1 2. GATE 1 3. DRAIN 2 4. SOURCE 2 5. GATE 2 6. DRAIN 1 | STYLE 27: PIN 1. BASE 2 2. BASE 1 3. COLLECTOR 1 4. EMITTER 1 5. EMITTER 2 6. COLLECTOR 2 | STYLE 28: PIN 1. DRAIN 2. DRAIN 3. GATE 4. SOURCE 5. DRAIN 6. DRAIN | STYLE 29: PIN 1. ANODE 2. ANODE 3. COLLECTOR 4. EMITTER 5. BASE/ANODE 6. CATHODE | STYLE 30: PIN 1. SOURCE 1 2. DRAIN 2 3. DRAIN 2 4. SOURCE 2 5. GATE 1 6. DRAIN 1 |

Note: Please refer to datasheet for style callout. If style type is not called out in the datasheet refer to the device datasheet pinout or pin assignment.

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