



# 74LVCH16541A

16-bit buffer/line driver; 3-state

Rev. 6 — 27 March 2024

Product data sheet

## 1. General description

The 74LVCH16541A is a 16-bit buffer/line driver with 3-state outputs. The 3-state outputs are controlled by the output enable inputs ( $1\overline{O}En$  and  $2\overline{O}En$ ). A HIGH on  $n\overline{O}En$  causes the outputs to assume a high-impedance OFF-state.

Inputs can be driven from either 3.3 V or 5 V devices. When disabled, up to 5.5 V can be applied to the outputs. These features allow the use of these devices in mixed 3.3 V and 5 V applications.

Bus hold on data inputs eliminates the need for external pull-up resistors to hold unused inputs.

## 2. Features and benefits

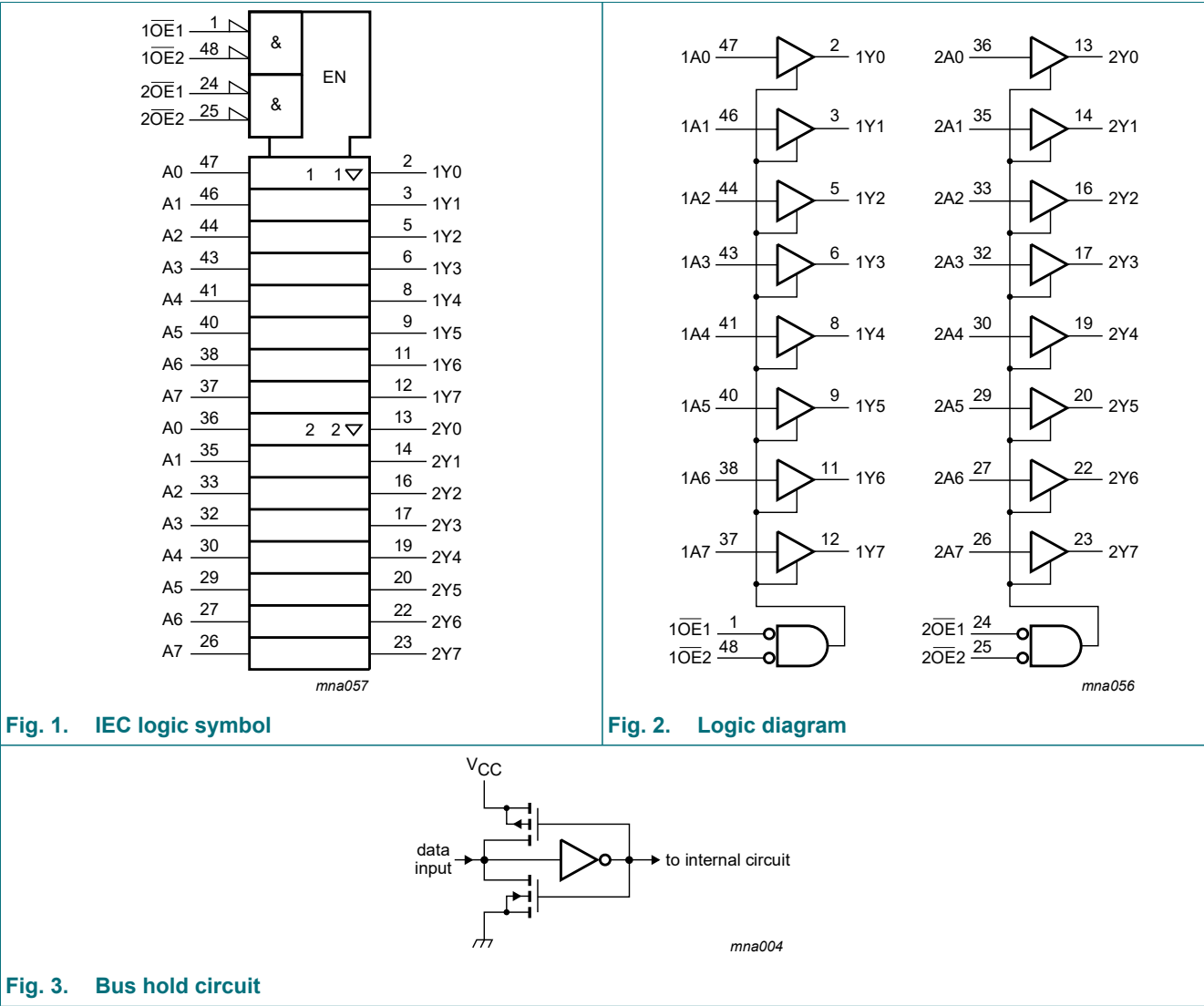
- 5 Volt tolerant inputs and outputs for interfacing with 5 V logic
- Wide supply voltage range from 1.2 V to 3.6 V
- CMOS low-power consumption
- MULTIBYTE flow-through standard pin-out architecture
- Low inductance multiple power and ground pins for minimum noise and ground bounce
- Direct interface with TTL levels
- High-impedance outputs when  $V_{CC} = 0$  V
- All data inputs have bus hold
- Complies with JEDEC standard:
  - JESD8-7A (1.65 V to 1.95 V)
  - JESD8-5A (2.3 V to 2.7 V)
  - JESD8-C/JESD36 (2.7 V to 3.6 V)
- ESD protection:
  - HBM: ANSI/ESDA/JEDEC JS-001 class 2 exceeds 2000 V
  - CDM: ANSI/ESDA/JEDEC JS-002 class C3 exceeds 1000 V
- Specified from -40 °C to +85 °C and -40 °C to +125 °C.

## 3. Ordering information

Table 1. Ordering information

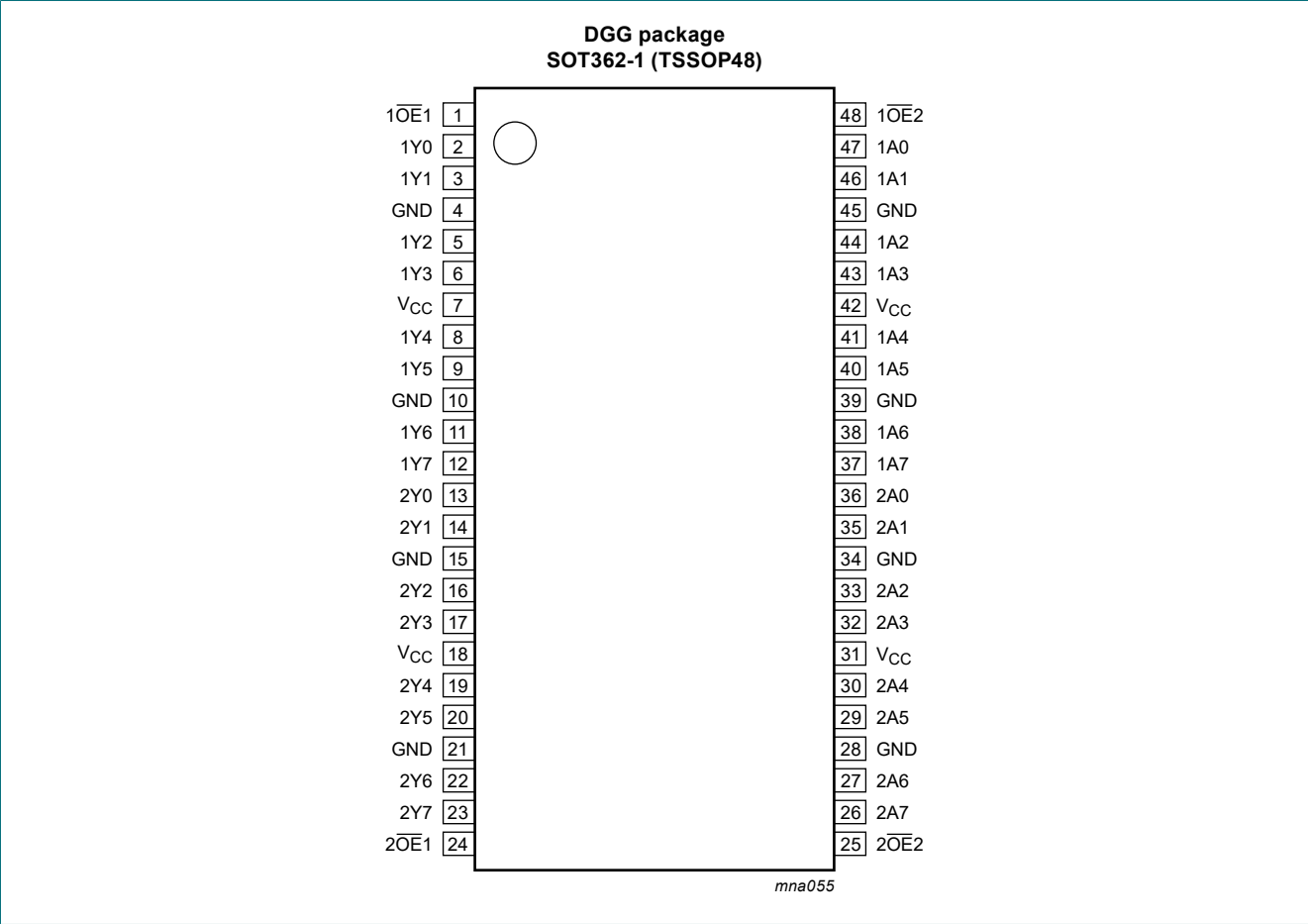
| Type number                     | Package           |         |                                                                        |                          |
|---------------------------------|-------------------|---------|------------------------------------------------------------------------|--------------------------|
|                                 | Temperature range | Name    | Description                                                            | Version                  |
| <a href="#">74LVCH16541ADGG</a> | -40 to +125 °C    | TSSOP48 | plastic thin shrink small outline package; 48 leads; body width 6.1 mm | <a href="#">SOT362-1</a> |

4. Functional diagram



5. Pinning information

5.1. Pinning



5.2. Pin description

Table 2. Pin description

| Name                                   | Pin                            | Description                      |
|----------------------------------------|--------------------------------|----------------------------------|
| 1OE1                                   | 1                              | output enable input (active LOW) |
| 1OE2                                   | 48                             | output enable input (active LOW) |
| 2OE1                                   | 24                             | output enable input (active LOW) |
| 2OE2                                   | 25                             | output enable input (active LOW) |
| GND                                    | 4, 10, 15, 21, 28, 34, 39, 45  | ground (0 V)                     |
| VCC                                    | 7, 18, 31, 42                  | positive supply voltage          |
| 1Y0, 1Y1, 1Y2, 1Y3, 1Y4, 1Y5, 1Y6, 1Y7 | 2, 3, 5, 6, 8, 9, 11, 12       | data output                      |
| 2Y0, 2Y1, 2Y2, 2Y3, 2Y4, 2Y5, 2Y6, 2Y7 | 13, 14, 16, 17, 19, 20, 22, 23 | data output                      |
| 1A0, 1A1, 1A2, 1A3, 1A4, 1A5, 1A6, 1A7 | 47, 46, 44, 43, 41, 40, 38, 37 | data input                       |
| 2A0, 2A1, 2A2, 2A3, 2A4, 2A5, 2A6, 2A7 | 36, 35, 33, 32, 30, 29, 27, 26 | data input                       |

6. Functional description

Table 3. Function table

H = HIGH voltage level; L = LOW voltage level; X = don't care; Z = high-impedance OFF-state

| Input |      |     | Output |
|-------|------|-----|--------|
| nOE1  | nOE2 | nAn | nYn    |
| L     | L    | L   | L      |
| L     | L    | H   | H      |
| X     | H    | X   | Z      |
| H     | X    | X   | Z      |

7. Limiting values

Table 4. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).

| Symbol           | Parameter               | Conditions                                             | Min  | Max                   | Unit |
|------------------|-------------------------|--------------------------------------------------------|------|-----------------------|------|
| V <sub>CC</sub>  | supply voltage          |                                                        | -0.5 | +6.5                  | V    |
| V <sub>I</sub>   | input voltage           | [1]                                                    | -0.5 | +6.5                  | V    |
| I <sub>IK</sub>  | input clamping current  | V <sub>I</sub> < 0                                     | -50  | -                     | mA   |
| I <sub>OK</sub>  | output clamping current | V <sub>O</sub> > V <sub>CC</sub> or V <sub>O</sub> < 0 | -    | ±50                   | mA   |
| V <sub>O</sub>   | output voltage          | output HIGH or LOW state [2]                           | -0.5 | V <sub>CC</sub> + 0.5 | V    |
|                  |                         | output 3-state [2]                                     | -0.5 | +6.5                  | V    |
| I <sub>O</sub>   | output current          | V <sub>O</sub> = 0 V to V <sub>CC</sub>                | -    | ±50                   | mA   |
| I <sub>CC</sub>  | supply current          |                                                        | -    | 100                   | mA   |
| I <sub>GND</sub> | ground current          |                                                        | -100 | -                     | mA   |
| T <sub>stg</sub> | storage temperature     |                                                        | -65  | +150                  | °C   |
| P <sub>tot</sub> | total power dissipation | T <sub>amb</sub> = -40 °C to +125 °C [3]               | -    | 500                   | mW   |

- [1] The minimum input voltage ratings may be exceeded if the input current ratings are observed.  
[2] The output voltage ratings may be exceeded if the output current ratings are observed.  
[3] For SOT362-1 (TSSOP48) packages: P<sub>tot</sub> derates linearly with 12.2 mW/K above 109 °C.

8. Recommended operating conditions

Table 5. Recommended operating operations

| Symbol           | Parameter                           | Conditions                              | Min  | Max             | Unit |
|------------------|-------------------------------------|-----------------------------------------|------|-----------------|------|
| V <sub>CC</sub>  | supply voltage                      |                                         | 1.65 | 3.6             | V    |
|                  |                                     | functional                              | 1.2  | -               | V    |
| V <sub>I</sub>   | input voltage                       |                                         | 0    | 5.5             | V    |
| V <sub>O</sub>   | output voltage                      | output HIGH or LOW state                | 0    | V <sub>CC</sub> | V    |
|                  |                                     | output 3-state or V <sub>CC</sub> = 0 V | 0    | 5.5             | V    |
| T <sub>amb</sub> | ambient temperature                 | in free air                             | -40  | +125            | °C   |
| Δt/ΔV            | input transition rise and fall rate | V <sub>CC</sub> = 1.65 V to 2.7 V       | 0    | 20              | ns/V |
|                  |                                     | V <sub>CC</sub> = 2.7 V to 3.6 V        | 0    | 10              | ns/V |

9. Static characteristics

Table 6. Static characteristics

At recommended operating conditions. Voltages are referenced to GND (ground = 0 V).

| Symbol           | Parameter                 | Conditions                                                                                                       | -40 °C to +85 °C      |                 |                     | -40 °C to +125 °C     |                     | Unit |
|------------------|---------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|---------------------|-----------------------|---------------------|------|
|                  |                           |                                                                                                                  | Min                   | Typ [1]         | Max                 | Min                   | Max                 |      |
| V <sub>IH</sub>  | HIGH-level input voltage  | V <sub>CC</sub> = 1.2 V                                                                                          | 1.08                  | -               | -                   | 1.08                  | -                   | V    |
|                  |                           | V <sub>CC</sub> = 1.65 V to 1.95 V                                                                               | 0.65V <sub>CC</sub>   | -               | -                   | 0.65V <sub>CC</sub>   | -                   | V    |
|                  |                           | V <sub>CC</sub> = 2.3 V to 2.7 V                                                                                 | 1.7                   | -               | -                   | 1.7                   | -                   | V    |
|                  |                           | V <sub>CC</sub> = 2.7 V to 3.6 V                                                                                 | 2.0                   | -               | -                   | 2.0                   | -                   | V    |
| V <sub>IL</sub>  | LOW-level input voltage   | V <sub>CC</sub> = 1.2 V                                                                                          | -                     | -               | 0.12                | -                     | 0.12                | V    |
|                  |                           | V <sub>CC</sub> = 1.65 V to 1.95 V                                                                               | -                     | -               | 0.35V <sub>CC</sub> | -                     | 0.35V <sub>CC</sub> | V    |
|                  |                           | V <sub>CC</sub> = 2.3 V to 2.7 V                                                                                 | -                     | -               | 0.7                 | -                     | 0.7                 | V    |
|                  |                           | V <sub>CC</sub> = 2.7 V to 3.6 V                                                                                 | -                     | -               | 0.8                 | -                     | 0.8                 | V    |
| V <sub>OH</sub>  | HIGH-level output voltage | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>                                                              |                       |                 |                     |                       |                     |      |
|                  |                           | I <sub>O</sub> = -100 µA; V <sub>CC</sub> = 1.65 V to 3.6 V                                                      | V <sub>CC</sub> - 0.2 | V <sub>CC</sub> | -                   | V <sub>CC</sub> - 0.3 | -                   | V    |
|                  |                           | I <sub>O</sub> = -4 mA; V <sub>CC</sub> = 1.65 V                                                                 | 1.2                   | -               | -                   | 1.05                  | -                   | V    |
|                  |                           | I <sub>O</sub> = -8 mA; V <sub>CC</sub> = 2.3 V                                                                  | 1.8                   | -               | -                   | 1.65                  | -                   | V    |
|                  |                           | I <sub>O</sub> = -12 mA; V <sub>CC</sub> = 2.7 V                                                                 | 2.2                   | -               | -                   | 2.05                  | -                   | V    |
|                  |                           | I <sub>O</sub> = -18 mA; V <sub>CC</sub> = 3.0 V                                                                 | 2.4                   | -               | -                   | 2.25                  | -                   | V    |
|                  |                           | I <sub>O</sub> = -24 mA; V <sub>CC</sub> = 3.0 V                                                                 | 2.2                   | -               | -                   | 2.0                   | -                   | V    |
| V <sub>OL</sub>  | LOW-level output voltage  | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>                                                              |                       |                 |                     |                       |                     |      |
|                  |                           | I <sub>O</sub> = 100 µA; V <sub>CC</sub> = 1.65 V to 3.6 V                                                       | -                     | -               | 0.2                 | -                     | 0.3                 | V    |
|                  |                           | I <sub>O</sub> = 4 mA; V <sub>CC</sub> = 1.65 V                                                                  | -                     | -               | 0.45                | -                     | 0.65                | V    |
|                  |                           | I <sub>O</sub> = 8 mA; V <sub>CC</sub> = 2.3 V                                                                   | -                     | -               | 0.6                 | -                     | 0.8                 | V    |
|                  |                           | I <sub>O</sub> = 12 mA; V <sub>CC</sub> = 2.7 V                                                                  | -                     | -               | 0.4                 | -                     | 0.6                 | V    |
|                  |                           | I <sub>O</sub> = 24 mA; V <sub>CC</sub> = 3.0 V                                                                  | -                     | -               | 0.55                | -                     | 0.8                 | V    |
| I <sub>I</sub>   | input leakage current     | V <sub>CC</sub> = 3.6 V; V <sub>I</sub> = 5.5 V or GND [2]                                                       | -                     | ±0.1            | ±5                  | -                     | ±20                 | µA   |
| I <sub>OZ</sub>  | OFF-state output current  | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>CC</sub> = 3.6 V; V <sub>O</sub> = 5.5 V or GND [2] | -                     | ±0.1            | ±5                  | -                     | ±20                 | µA   |
| I <sub>OFF</sub> | power-off leakage supply  | V <sub>CC</sub> = 0 V; V <sub>I</sub> or V <sub>O</sub> = 5.5 V                                                  | -                     | ±0.1            | ±10                 | -                     | ±20                 | µA   |
| I <sub>CC</sub>  | supply current            | V <sub>CC</sub> = 3.6 V; V <sub>I</sub> = V <sub>CC</sub> or GND; I <sub>O</sub> = 0 A                           | -                     | 0.1             | 20                  | -                     | 80                  | µA   |
| ΔI <sub>CC</sub> | additional supply current | per input pin; V <sub>CC</sub> = 1.65 V to 3.6 V; V <sub>I</sub> = V <sub>CC</sub> - 0.6 V; I <sub>O</sub> = 0 A | -                     | 5               | 500                 | -                     | 5000                | µA   |
| C <sub>I</sub>   | input capacitance         | V <sub>CC</sub> = 0 V to 3.6 V; V <sub>I</sub> = GND to V <sub>CC</sub>                                          | -                     | 5.0             | -                   | -                     | -                   | pF   |

| Symbol            | Parameter                       | Conditions                                              | -40 °C to +85 °C |         |     | -40 °C to +125 °C |     | Unit |
|-------------------|---------------------------------|---------------------------------------------------------|------------------|---------|-----|-------------------|-----|------|
|                   |                                 |                                                         | Min              | Typ [1] | Max | Min               | Max |      |
| I <sub>BHL</sub>  | bus hold LOW current            | V <sub>CC</sub> = 1.65; V <sub>I</sub> = 0.58 V [3] [4] | 10               | -       | -   | 10                | -   | µA   |
|                   |                                 | V <sub>CC</sub> = 2.3; V <sub>I</sub> = 0.7 V           | 30               | -       | -   | 25                | -   | µA   |
|                   |                                 | V <sub>CC</sub> = 3.0; V <sub>I</sub> = 0.8 V           | 75               | -       | -   | 60                | -   | µA   |
| I <sub>BHH</sub>  | bus hold HIGH current           | V <sub>CC</sub> = 1.65; V <sub>I</sub> = 1.07 V [3] [4] | -10              | -       | -   | -10               | -   | µA   |
|                   |                                 | V <sub>CC</sub> = 2.3; V <sub>I</sub> = 1.7 V           | -30              | -       | -   | -25               | -   | µA   |
|                   |                                 | V <sub>CC</sub> = 3.0; V <sub>I</sub> = 2.0 V           | -75              | -       | -   | -60               | -   | µA   |
| I <sub>BHLO</sub> | bus hold LOW overdrive current  | V <sub>CC</sub> = 1.95 V [3] [5]                        | 200              | -       | -   | 200               | -   | µA   |
|                   |                                 | V <sub>CC</sub> = 2.7 V                                 | 300              | -       | -   | 300               | -   | µA   |
|                   |                                 | V <sub>CC</sub> = 3.6 V                                 | 500              | -       | -   | 500               | -   | µA   |
| I <sub>BHHO</sub> | bus hold HIGH overdrive current | V <sub>CC</sub> = 1.95 V [3] [5]                        | -200             | -       | -   | -200              | -   | µA   |
|                   |                                 | V <sub>CC</sub> = 2.7 V                                 | -300             | -       | -   | -300              | -   | µA   |
|                   |                                 | V <sub>CC</sub> = 3.6 V                                 | -500             | -       | -   | -500              | -   | µA   |

- [1] All typical values are measured at V<sub>CC</sub> = 3.3 V (unless stated otherwise) and T<sub>amb</sub> = 25 °C.
- [2] The bus hold circuit is switched off when V<sub>I</sub> > V<sub>CC</sub> allowing 5.5 V on the input pin.
- [3] For data inputs only; control inputs do not have a bus hold circuit.
- [4] The specified sustaining current at the data inputs holds the input below the specified V<sub>I</sub> level.
- [5] The specified overdrive current at the data input forces the data input to the opposite logic input state.

10. Dynamic characteristics

Table 7. Dynamic characteristics

Voltages are referenced to GND (ground = 0 V). For test circuit see Fig. 6.

| Symbol             | Parameter         | Conditions                                 | -40 °C to +85 °C |         |      | -40 °C to +125 °C |      | Unit |
|--------------------|-------------------|--------------------------------------------|------------------|---------|------|-------------------|------|------|
|                    |                   |                                            | Min              | Typ [1] | Max  | Min               | Max  |      |
| t <sub>pd</sub>    | propagation delay | nAn to nYn; see Fig. 4 [2]                 |                  |         |      |                   |      |      |
|                    |                   | V <sub>CC</sub> = 1.2 V                    | -                | 10      | -    | -                 | -    | ns   |
|                    |                   | V <sub>CC</sub> = 1.65 V to 1.95 V         | 1.8              | 4.7     | 10.4 | 1.8               | 12.0 | ns   |
|                    |                   | V <sub>CC</sub> = 2.3 V to 2.7 V           | 1.5              | 2.6     | 5.2  | 1.5               | 6.0  | ns   |
|                    |                   | V <sub>CC</sub> = 2.7 V                    | 1.0              | 2.5     | 5.0  | 1.0               | 6.5  | ns   |
|                    |                   | V <sub>CC</sub> = 3.0 V to 3.6 V           | 1.0              | 2.2     | 4.2  | 1.0               | 5.5  | ns   |
| t <sub>en</sub>    | enable time       | n $\overline{O}E$ n to nYn; see Fig. 5 [2] |                  |         |      |                   |      |      |
|                    |                   | V <sub>CC</sub> = 1.2 V                    | -                | 17      | -    | -                 | -    | ns   |
|                    |                   | V <sub>CC</sub> = 1.65 V to 1.95 V         | 1.5              | 5.5     | 14.6 | 1.5               | 16.8 | ns   |
|                    |                   | V <sub>CC</sub> = 2.3 V to 2.7 V           | 1.0              | 3.2     | 7.7  | 1.0               | 8.9  | ns   |
|                    |                   | V <sub>CC</sub> = 2.7 V                    | 1.5              | 3.4     | 6.9  | 1.5               | 9.0  | ns   |
|                    |                   | V <sub>CC</sub> = 3.0 V to 3.6 V           | 1.0              | 2.6     | 5.6  | 1.0               | 7.0  | ns   |
| t <sub>dis</sub>   | disable time      | n $\overline{O}E$ n to nYn; see Fig. 5 [2] |                  |         |      |                   |      |      |
|                    |                   | V <sub>CC</sub> = 1.2 V                    | -                | 9.0     | -    | -                 | -    | ns   |
|                    |                   | V <sub>CC</sub> = 1.65 V to 1.95 V         | 2.6              | 7.3     | 9.2  | 2.6               | 10.6 | ns   |
|                    |                   | V <sub>CC</sub> = 2.3 V to 2.7 V           | 1.0              | 4.1     | 5.2  | 1.0               | 6.0  | ns   |
|                    |                   | V <sub>CC</sub> = 2.7 V                    | 1.5              | 4.6     | 6.5  | 1.5               | 8.5  | ns   |
|                    |                   | V <sub>CC</sub> = 3.0 V to 3.6 V           | 1.5              | 4.5     | 5.5  | 1.5               | 7.0  | ns   |
| t <sub>sk(o)</sub> | output skew time  | nYn; V <sub>CC</sub> = 3.0 V to 3.6 V [3]  | -                | -       | 1.0  | -                 | 1.5  | ns   |

| Symbol          | Parameter                     | Conditions                                             | -40 °C to +85 °C |         |     | -40 °C to +125 °C |     | Unit |
|-----------------|-------------------------------|--------------------------------------------------------|------------------|---------|-----|-------------------|-----|------|
|                 |                               |                                                        | Min              | Typ [1] | Max | Min               | Max |      |
| C <sub>PD</sub> | power dissipation capacitance | per input; V <sub>I</sub> = GND to V <sub>CC</sub> [4] |                  |         |     |                   |     |      |
|                 |                               | V <sub>CC</sub> = 1.65 V to 1.95 V                     | -                | 8.5     | -   | -                 | -   | pF   |
|                 |                               | V <sub>CC</sub> = 2.3 V to 2.7 V                       | -                | 12.1    | -   | -                 | -   | pF   |
|                 |                               | V <sub>CC</sub> = 3.0 V to 3.6 V                       | -                | 15.3    | -   | -                 | -   | pF   |

- [1] Typical values are measured at T<sub>amb</sub> = 25 °C and V<sub>CC</sub> = 1.2 V, 1.8 V, 2.5 V, 2.7 V, and 3.3 V respectively.
- [2] t<sub>pd</sub> is the same as t<sub>PLH</sub> and t<sub>PHL</sub>.  
t<sub>en</sub> is the same as t<sub>PZL</sub> and t<sub>PZH</sub>.  
t<sub>dis</sub> is the same as t<sub>PLZ</sub> and t<sub>PHZ</sub>.
- [3] Skew between any two outputs of the same package switching in the same direction. This parameter is guaranteed by design.
- [4] C<sub>PD</sub> is used to determine the dynamic power dissipation (P<sub>D</sub> in μW).  
 $P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma(C_L \times V_{CC}^2 \times f_o)$  where:  
f<sub>i</sub> = input frequency in MHz; f<sub>o</sub> = output frequency in MHz  
C<sub>L</sub> = output load capacitance in pF  
V<sub>CC</sub> = supply voltage in Volts  
N = number of inputs switching  
Σ(C<sub>L</sub> × V<sub>CC</sub><sup>2</sup> × f<sub>o</sub>) = sum of the outputs

10.1. Waveforms and test circuit

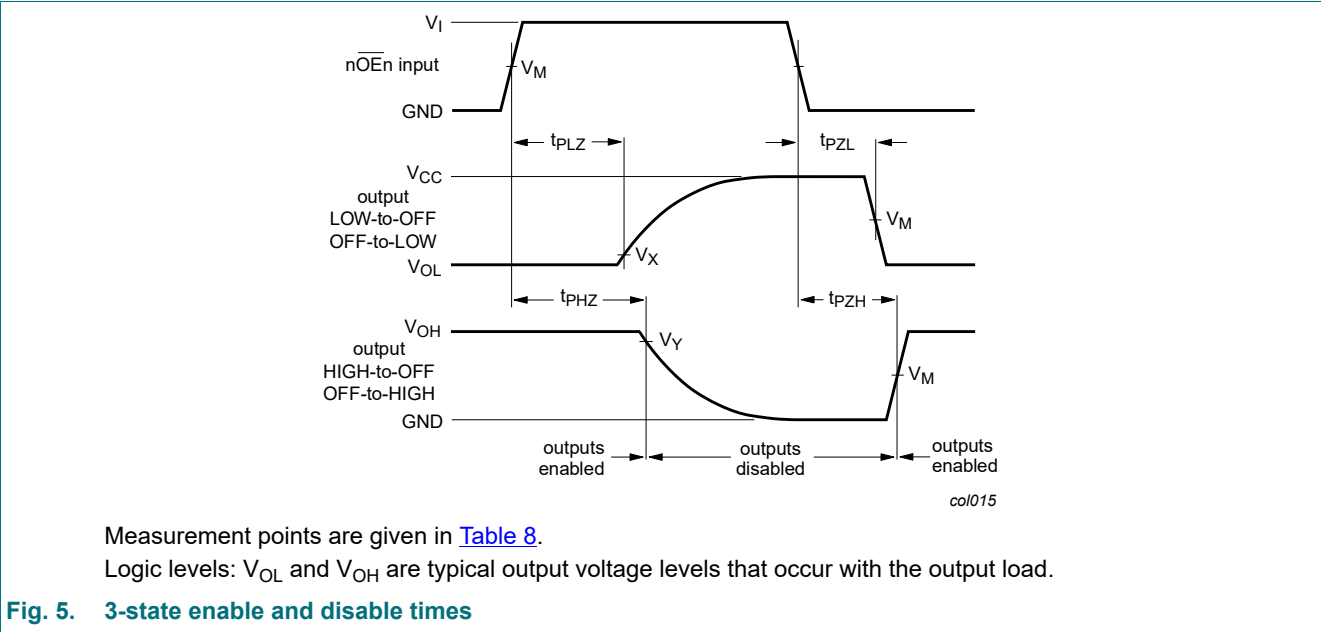
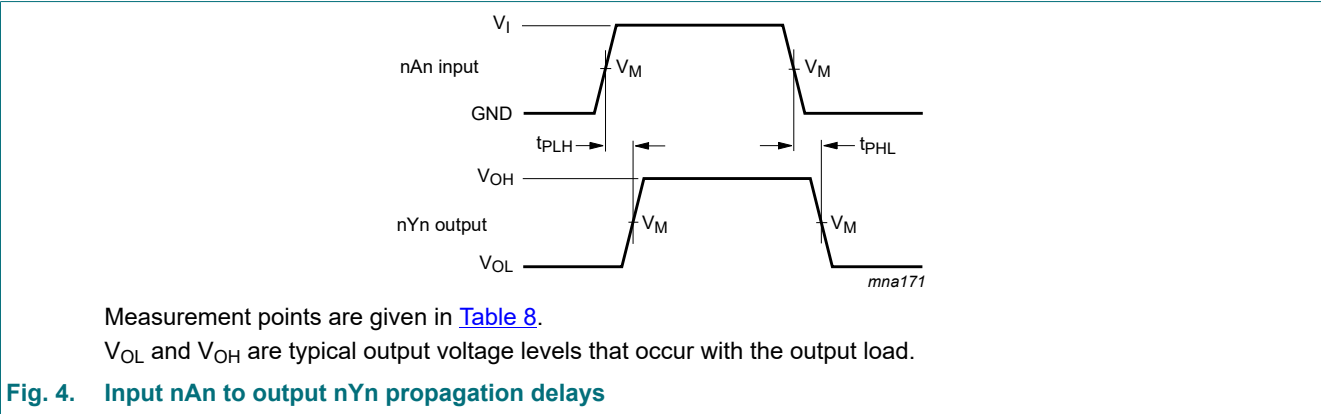
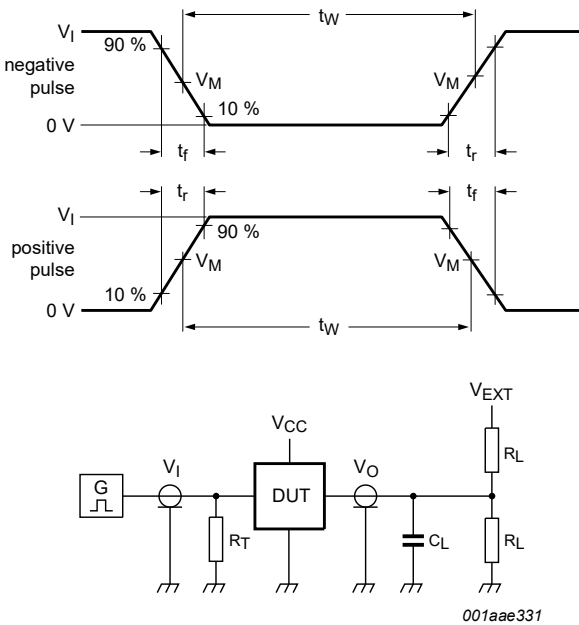


Table 8. Measurement points

| Supply voltage   | Input           |                       | Output                |                          |                          |
|------------------|-----------------|-----------------------|-----------------------|--------------------------|--------------------------|
| V <sub>CC</sub>  | V <sub>I</sub>  | V <sub>M</sub>        | V <sub>M</sub>        | V <sub>X</sub>           | V <sub>Y</sub>           |
| 1.2 V            | V <sub>CC</sub> | 0.5 × V <sub>CC</sub> | 0.5 × V <sub>CC</sub> | V <sub>OL</sub> + 0.15 V | V <sub>OH</sub> - 0.15 V |
| 1.65 V to 1.95 V | V <sub>CC</sub> | 0.5 × V <sub>CC</sub> | 0.5 × V <sub>CC</sub> | V <sub>OL</sub> + 0.15 V | V <sub>OH</sub> - 0.15 V |
| 2.3 V to 2.7 V   | V <sub>CC</sub> | 0.5 × V <sub>CC</sub> | 0.5 × V <sub>CC</sub> | V <sub>OL</sub> + 0.15 V | V <sub>OH</sub> - 0.15 V |
| 2.7 V            | 2.7 V           | 1.5 V                 | 1.5 V                 | V <sub>OL</sub> + 0.3 V  | V <sub>OH</sub> - 0.3 V  |
| 3.0 V to 3.6 V   | 2.7 V           | 1.5 V                 | 1.5 V                 | V <sub>OL</sub> + 0.3 V  | V <sub>OH</sub> - 0.3 V  |



Test data is given in [Table 9](#).  
Definitions for test circuit:  
 $R_L$  = Load resistance;  
 $C_L$  = Load capacitance including jig and probe capacitance;  
 $R_T$  = Termination resistance should be equal to output impedance  $Z_o$  of the pulse generator;  
 $V_{EXT}$  = External voltage for measuring switching times.

Fig. 6. Test circuit for measuring switching times

Table 9. Test data

| Supply voltage   | Input           |                                 | Load           |                | V <sub>EXT</sub>                    |                                     |                                     |
|------------------|-----------------|---------------------------------|----------------|----------------|-------------------------------------|-------------------------------------|-------------------------------------|
|                  | V <sub>I</sub>  | t <sub>r</sub> , t <sub>f</sub> | C <sub>L</sub> | R <sub>L</sub> | t <sub>PLH</sub> , t <sub>PHL</sub> | t <sub>PLZ</sub> , t <sub>PZL</sub> | t <sub>PHZ</sub> , t <sub>PZH</sub> |
| 1.2 V            | V <sub>CC</sub> | ≤ 2 ns                          | 30 pF          | 1 kΩ           | open                                | 2 × V <sub>CC</sub>                 | GND                                 |
| 1.65 V to 1.95 V | V <sub>CC</sub> | ≤ 2 ns                          | 30 pF          | 1 kΩ           | open                                | 2 × V <sub>CC</sub>                 | GND                                 |
| 2.3 V to 2.7 V   | V <sub>CC</sub> | ≤ 2 ns                          | 30 pF          | 500 Ω          | open                                | 2 × V <sub>CC</sub>                 | GND                                 |
| 2.7 V            | 2.7 V           | ≤ 2.5 ns                        | 50 pF          | 500 Ω          | open                                | 2 × V <sub>CC</sub>                 | GND                                 |
| 3.0 V to 3.6 V   | 2.7 V           | ≤ 2.5 ns                        | 50 pF          | 500 Ω          | open                                | 2 × V <sub>CC</sub>                 | GND                                 |

11. Package outline

TSSOP48: plastic thin shrink small outline package; 48 leads; body width 6.1 mm

SOT362-1

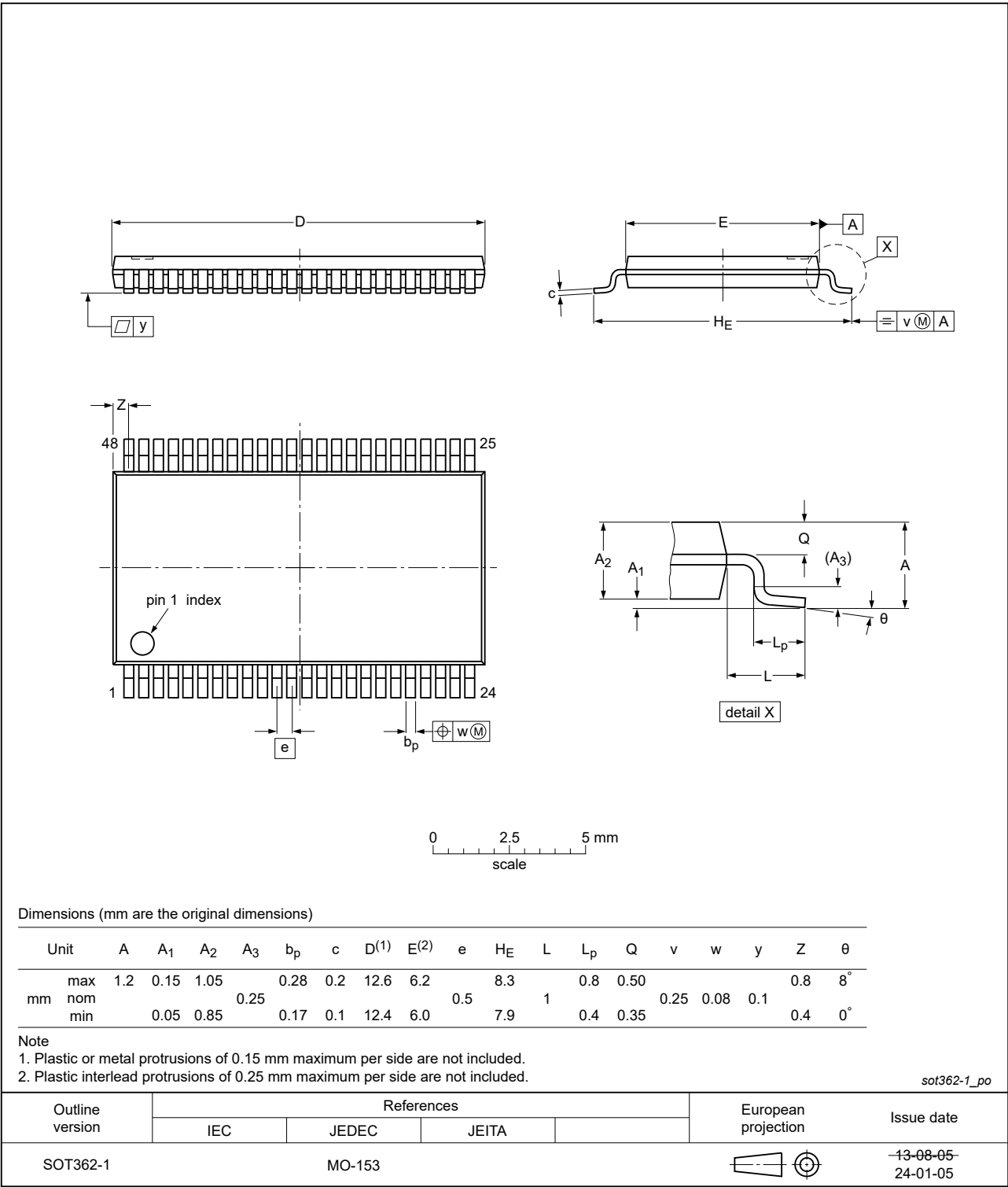


Fig. 7. Package outline SOT362-1 (TSSOP48)

12. Abbreviations

Table 10. Abbreviations

| Acronym | Description                             |
|---------|-----------------------------------------|
| CDM     | Charged Device Model                    |
| CMOS    | Complementary Metal-Oxide Semiconductor |
| DUT     | Device Under Test                       |
| ESD     | ElectroStatic Discharge                 |
| HBM     | Human Body Model                        |
| TTL     | Transistor-Transistor Logic             |

13. Revision history

Table 11. Revision history

| Document ID      | Release date                                                                                                                                                                                                                                                                                                                                                                                                                         | Data sheet status     | Change notice | Supersedes       |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------|------------------|
| 74LVCH16541A v.6 | 20240327                                                                                                                                                                                                                                                                                                                                                                                                                             | Product data sheet    | -             | 74LVCH16541A v.5 |
| Modifications:   | <ul style="list-style-type: none"><li><a href="#">Fig. 7</a>: Updated package outline drawing SOT362-1 (TSSOP48).</li></ul>                                                                                                                                                                                                                                                                                                          |                       |               |                  |
| 74LVCH16541A v.5 | 20230803                                                                                                                                                                                                                                                                                                                                                                                                                             | Product data sheet    | -             | 74LVCH16541A v.4 |
| Modifications:   | <ul style="list-style-type: none"><li><a href="#">Section 2</a>: ESD specification updated according to the latest JEDEC standard.</li><li><a href="#">Section 7</a>: Derating values for P<sub>tot</sub> total power dissipation updated.</li></ul>                                                                                                                                                                                 |                       |               |                  |
| 74LVCH16541A v.4 | 20190501                                                                                                                                                                                                                                                                                                                                                                                                                             | Product data sheet    | -             | 74LVCH16541A v.3 |
| Modifications:   | <ul style="list-style-type: none"><li>The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li><li>Legal texts have been adapted to the new company name where appropriate.</li><li>Type number 74LVCH16541ADL (SOT370-1) removed.</li><li>Package outline drawing <a href="#">SOT362-1</a> (TSSOP48) updated.</li><li>Typo corrected in <a href="#">Table 8</a>.</li></ul>         |                       |               |                  |
| 74LVCH16541A v.3 | 20120215                                                                                                                                                                                                                                                                                                                                                                                                                             | Product data sheet    | -             | 74LVCH16541A v.2 |
| Modifications:   | <ul style="list-style-type: none"><li>The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li><li>Legal texts have been adapted to the new company name where appropriate.</li><li><a href="#">Table 4</a>, <a href="#">Table 5</a>, <a href="#">Table 6</a>, <a href="#">Table 7</a>, and <a href="#">Table 9</a>: values added for lower voltage ranges.</li></ul> |                       |               |                  |
| 74LVCH16541A v.2 | 20040218                                                                                                                                                                                                                                                                                                                                                                                                                             | Product specification | -             | 74LVCH16541A v.1 |
| 74LVCH16541A v.1 | 19980519                                                                                                                                                                                                                                                                                                                                                                                                                             | Product specification | -             | -                |

## 14. Legal information

### Data sheet status

| Document status [1][2]         | Product status [3] | Definition                                                                            |
|--------------------------------|--------------------|---------------------------------------------------------------------------------------|
| Objective [short] data sheet   | Development        | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification      | This document contains data from the preliminary specification.                       |
| Product [short] data sheet     | Production         | This document contains the product specification.                                     |

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
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