

# 74HC7541; 74HCT7541

Octal Schmitt trigger buffer/line driver; 3-state

Rev. 8 — 3 August 2021

Product data sheet

## 1. General description

The 74HC7541; 74HCT7541 is an 8-bit buffer/line driver with Schmitt-trigger inputs and 3-state outputs. The device features two output enables ( $\overline{OE}1$  and  $\overline{OE}2$ ). A HIGH on  $\overline{OE}n$  causes the outputs to assume a high-impedance OFF-state. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of  $V_{CC}$ . Schmitt trigger inputs transform slowly changing input signals into sharply defined jitter-free output signals.

## 2. Features and benefits

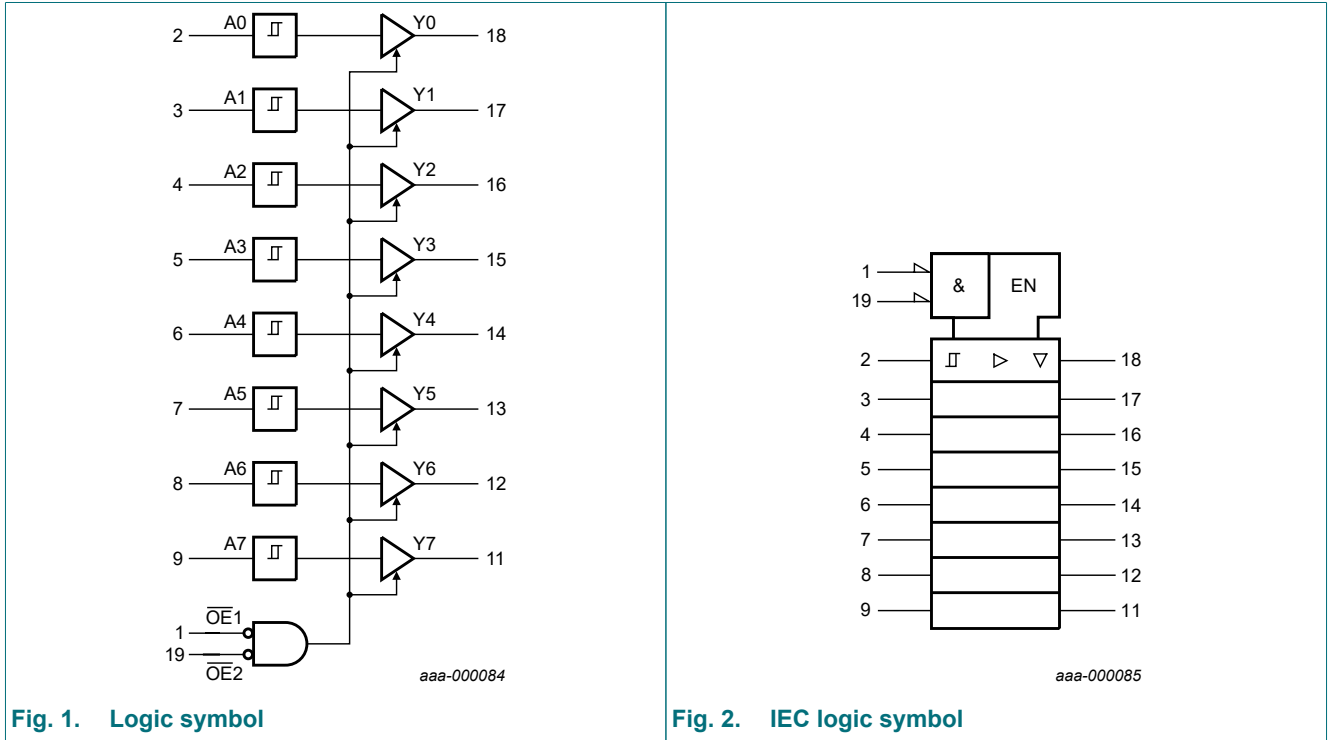
- Wide supply voltage range from 2.0 to 6.0 V
- CMOS low power dissipation
- High noise immunity
- Unlimited input rise and fall times
- Latch-up performance exceeds 100 mA per JESD 78 Class II Level B
- Complies with JEDEC standards:
  - JESD8C (2.7 V to 3.6 V)
  - JESD7A (2.0 V to 6.0 V)
- Non-inverting outputs
- Input levels:
  - For 74HC7541: CMOS level
  - For 74HCT7541: TTL level
- ESD protection:
  - HBM JESD22-A114F exceeds 2000 V
  - MM JESD22-A115-A exceeds 200 V
- Specified from  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  and from  $-40\text{ }^{\circ}\text{C}$  to  $+125\text{ }^{\circ}\text{C}$

## 3. Ordering information

Table 1. Ordering information

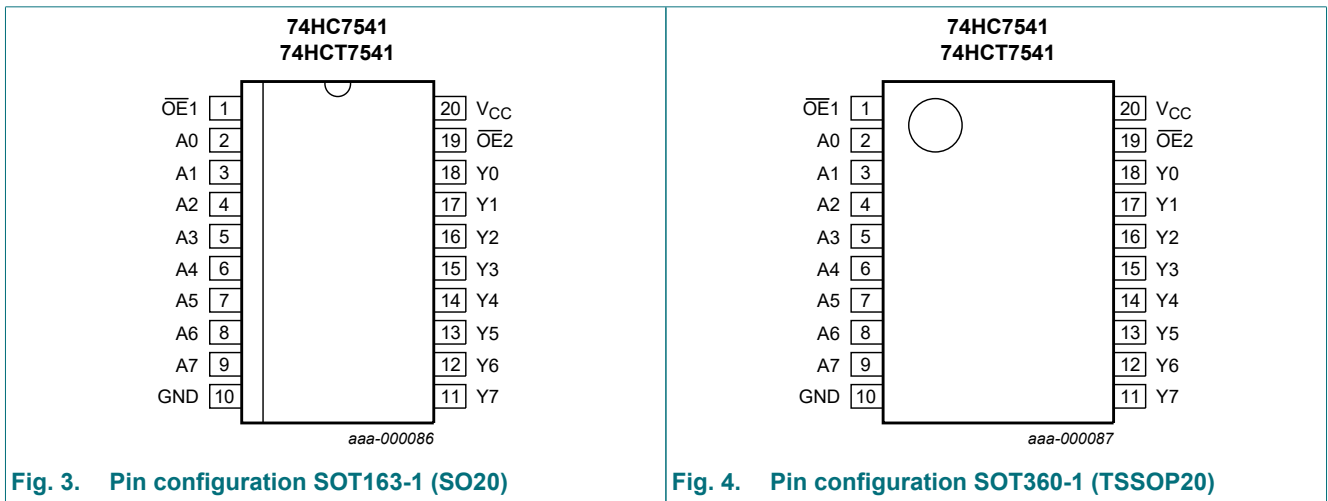
| Type number | Package   |         |  | Version  |
|-------------|---|---------|--|----------|
|             | Temperature range   | Name    | Description  |          |
| 74HC7541D   | $-40\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$ | SO20    | plastic small outline package; 20 leads; body width 7.5 mm             | SOT163-1 |
| 74HCT7541D  |   |         |  |          |
| 74HC7541PW  | $-40\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$ | TSSOP20 | plastic thin shrink small outline package; 20 leads; body width 4.4 mm | SOT360-1 |
| 74HCT7541PW |   |         |  |          |

4. Functional diagram



5. Pinning information

5.1. Pinning



## 5.2. Pin description

Table 2. Pin description

| Symbol                         | Pin                            | Description                      |
|--------------------------------|--------------------------------|----------------------------------|
| OE1                            | 1                              | output enable input (active LOW) |
| A0, A1, A2, A3, A4, A5, A6, A7 | 2, 3, 4, 5, 6, 7, 8, 9         | data input                       |
| GND                            | 10                             | ground (0 V)                     |
| Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7 | 18, 17, 16, 15, 14, 13, 12, 11 | data output                      |
| OE2                            | 19                             | output enable input (active LOW) |
| V <sub>CC</sub>                | 20                             | supply voltage                   |

## 6. Functional description

Table 3. Functional table

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

| Control |     | Input | Output |
|---------|-----|-------|--------|
| OE1     | OE2 | An    | Yn     |
| 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 | +7   | V    |
| I <sub>IK</sub>  | input clamping current  | V <sub>I</sub> < -0.5 V or V <sub>I</sub> > V <sub>CC</sub> + 0.5 V [1] | -    | ±20  | mA   |
| I <sub>OK</sub>  | output clamping current | V <sub>O</sub> < -0.5 V or V <sub>O</sub> > V <sub>CC</sub> + 0.5 V [1] | -    | ±20  | mA   |
| I <sub>O</sub>   | output current          | -0.5 V < V <sub>O</sub> < V <sub>CC</sub> + 0.5 V                       | -    | ±35  | mA   |
| I <sub>CC</sub>  | supply current          |   | -    | 70   | mA   |
| I <sub>GND</sub> | ground current          |   | -70  | -    | mA   |
| T <sub>stg</sub> | storage temperature     |   | -65  | +150 | °C   |
| P <sub>tot</sub> | total power dissipation | [2]   | -    | 500  | mW   |

[1] The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

[2] For SOT163-1 (SO20) package: P<sub>tot</sub> derates linearly with 12.3 mW/K above 109 °C.

For SOT360-1 (TSSOP20) package: P<sub>tot</sub> derates linearly with 10.0 mW/K above 100 °C.

## 8. Recommended operating conditions

**Table 5. Recommended operating conditions**

*Voltages are referenced to GND (ground = 0 V)*

| Symbol           | Parameter           | Conditions | 74HC7541 |     |                 | 74HCT7541 |     |                 | Unit |
|------------------|---------------------|------------|----------|-----|-----------------|-----------|-----|-----------------|------|
|                  |                     |            | Min      | Typ | Max             | Min       | Typ | Max             |      |
| V <sub>CC</sub>  | supply voltage      |            | 2.0      | 5.0 | 6.0             | 4.5       | 5.0 | 5.5             | V    |
| V <sub>I</sub>   | input voltage       |            | 0        | -   | V <sub>CC</sub> | 0         | -   | V <sub>CC</sub> | V    |
| V <sub>O</sub>   | output voltage      |            | 0        | -   | V <sub>CC</sub> | 0         | -   | V <sub>CC</sub> | V    |
| T <sub>amb</sub> | ambient temperature |            | -40      | +25 | +125            | -40       | +25 | +125            | °C   |

## 9. Static characteristics

**Table 6. Static characteristics**

*At recommended operating conditions; voltages are referenced to GND (ground = 0 V).*

| Symbol          | Parameter                 | Conditions  | 25 °C |      |      | -40 °C to +85 °C |      | -40 °C to +125 °C |      | Unit |
|-----------------|---------------------------|---|-------|------|------|------------------|------|-------------------|------|------|
|                 |                           |   | Min   | Typ  | Max  | Min              | Max  | Min               | Max  |      |
| <b>74HC7541</b> |                           |   |       |      |      |                  |      |                   |      |      |
| V <sub>OH</sub> | HIGH-level output voltage | V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>   |       |      |      |                  |      |                   |      |      |
|                 |                           | I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 2.0 V  | 1.9   | 2.0  | -    | 1.9              | -    | 1.9               | -    | V    |
|                 |                           | I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 4.5 V  | 4.4   | 4.5  | -    | 4.4              | -    | 4.4               | -    | V    |
|                 |                           | I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 6.0 V  | 5.9   | 6.0  | -    | 5.9              | -    | 5.9               | -    | V    |
|                 |                           | I <sub>O</sub> = -6.0 mA; V <sub>CC</sub> = 4.5 V   | 3.98  | 4.32 | -    | 3.84             | -    | 3.7               | -    | V    |
|                 |                           | I <sub>O</sub> = -7.8 mA; V <sub>CC</sub> = 6.0 V   | 5.48  | 5.81 | -    | 5.34             | -    | 5.2               | -    | V    |
| V <sub>OL</sub> | LOW-level output voltage  | V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>   |       |      |      |                  |      |                   |      |      |
|                 |                           | I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 2.0 V   | -     | 0    | 0.1  | -                | 0.1  | -                 | 0.1  | V    |
|                 |                           | I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 4.5 V   | -     | 0    | 0.1  | -                | 0.1  | -                 | 0.1  | V    |
|                 |                           | I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 6.0 V   | -     | 0    | 0.1  | -                | 0.1  | -                 | 0.1  | V    |
|                 |                           | I <sub>O</sub> = 6.0 mA; V <sub>CC</sub> = 4.5 V  | -     | 0.15 | 0.26 | -                | 0.33 | -                 | 0.4  | V    |
|                 |                           | I <sub>O</sub> = 7.8 mA; V <sub>CC</sub> = 6.0 V  | -     | 0.16 | 0.26 | -                | 0.33 | -                 | 0.4  | V    |
| I <sub>I</sub>  | input leakage current     | V <sub>I</sub> = V <sub>CC</sub> or GND; V <sub>CC</sub> = 6.0 V  | -     | -    | ±0.1 | -                | ±1.0 | -                 | ±1.0 | μA   |
| I <sub>OZ</sub> | OFF-state output current  | V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub> ; V <sub>CC</sub> = 6.0 V;<br>V <sub>O</sub> = V <sub>CC</sub> or GND | -     | -    | ±0.5 | -                | ±5.0 | -                 | ±10  | μA   |
| I <sub>CC</sub> | supply current            | V <sub>I</sub> = V <sub>CC</sub> or GND; I <sub>O</sub> = 0 A;<br>V <sub>CC</sub> = 6.0 V                                 | -     | -    | 8.0  | -                | 80   | -                 | 160  | μA   |
| C <sub>I</sub>  | input capacitance         |   | -     | 3.5  | -    | -                | -    | -                 | -    | pF   |

| Symbol           | Parameter                 | Conditions   | 25 °C |      |      | -40 °C to +85 °C |      | -40 °C to +125 °C |      | Unit |
|------------------|---------------------------|--|-------|------|------|------------------|------|-------------------|------|------|
|                  |                           |  | Min   | Typ  | Max  | Min              | Max  | Min               | Max  |      |
| <b>74HCT7541</b> |                           |  |       |      |      |                  |      |                   |      |      |
| V <sub>OH</sub>  | HIGH-level output voltage | V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub> ; V <sub>CC</sub> = 4.5 V  |       |      |      |                  |      |                   |      |      |
|                  |                           | I <sub>O</sub> = -20 µA  | 4.4   | 4.5  | -    | 4.4              | -    | 4.4               | -    | V    |
|                  |                           | I <sub>O</sub> = -6.0 mA   | 3.98  | 4.32 | -    | 3.84             | -    | 3.7               | -    | V    |
| V <sub>OL</sub>  | LOW-level output voltage  | V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub> ; V <sub>CC</sub> = 4.5 V  |       |      |      |                  |      |                   |      |      |
|                  |                           | I <sub>O</sub> = 20 µA;  | -     | 0    | 0.1  | -                | 0.1  | -                 | 0.1  | V    |
|                  |                           | I <sub>O</sub> = 6.0 mA;   | -     | 0.15 | 0.26 | -                | 0.33 | -                 | 0.4  | V    |
| I <sub>I</sub>   | input leakage current     | V <sub>I</sub> = V <sub>CC</sub> or GND; V <sub>CC</sub> = 5.5 V   | -     | -    | ±0.1 | -                | ±1.0 | -                 | ±1.0 | µA   |
| I <sub>OZ</sub>  | OFF-state output current  | V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub> ; V <sub>CC</sub> = 5.5 V;<br>V <sub>O</sub> = V <sub>CC</sub> or GND  | -     | -    | ±0.5 | -                | ±5.0 | -                 | ±10  | µA   |
| I <sub>CC</sub>  | supply current            | V <sub>I</sub> = V <sub>CC</sub> or GND; I <sub>O</sub> = 0 A;<br>V <sub>CC</sub> = 5.5 V  | -     | -    | 8.0  | -                | 80   | -                 | 160  | µA   |
| ΔI <sub>CC</sub> | additional supply current | per input pin; I <sub>O</sub> = 0 A;<br>V <sub>I</sub> = V <sub>CC</sub> - 2.1 V;<br>other inputs at V <sub>CC</sub> or GND;<br>V <sub>CC</sub> = 4.5 V to 5.5 V |       |      |      |                  |      |                   |      |      |
|                  |                           | An input   | -     | 20   | 72   | -                | 90   | -                 | 98   | µA   |
|                  |                           | $\overline{\text{OEn}}$ input  | -     | 130  | 468  | -                | 585  | -                 | 637  | µA   |
| C <sub>I</sub>   | input capacitance         |  | -     | 3.5  | -    | -                | -    | -                 | -    | pF   |

## 10. Dynamic characteristics

**Table 7. Dynamic characteristics**

GND = 0 V; C<sub>L</sub> = 50 pF; for test circuit see Fig. 7.

| Symbol           | Parameter         | Conditions                                      | 25 °C |     |     | -40 °C to +85 °C |     | -40 °C to +125 °C |     | Unit |
|------------------|-------------------|---|-------|-----|-----|------------------|-----|-------------------|-----|------|
|                  |                   |   | Min   | Typ | Max | Min              | Max | Min               | Max |      |
| <b>74HC7541</b>  |                   |   |       |     |     |                  |     |                   |     |      |
| t <sub>pd</sub>  | propagation delay | An to Yn; see Fig. 5 [1]                        |       |     |     |                  |     |                   |     |      |
|                  |                   | V <sub>CC</sub> = 2.0 V                         | -     | 39  | 120 | -                | 150 | -                 | 180 | ns   |
|                  |                   | V <sub>CC</sub> = 4.5 V                         | -     | 14  | 24  | -                | 30  | -                 | 36  | ns   |
|                  |                   | V <sub>CC</sub> = 5.0 V; C <sub>L</sub> = 15 pF | -     | 10  | -   | -                | -   | -                 | -   | ns   |
|                  |                   | V <sub>CC</sub> = 6.0 V                         | -     | 11  | 20  | -                | 26  | -                 | 32  | ns   |
| t <sub>en</sub>  | enable time       | $\overline{\text{OEn}}$ to Yn; see Fig. 6 [1]   |       |     |     |                  |     |                   |     |      |
|                  |                   | V <sub>CC</sub> = 2.0 V                         | -     | 44  | 160 | -                | 200 | -                 | 240 | ns   |
|                  |                   | V <sub>CC</sub> = 4.5 V                         | -     | 16  | 32  | -                | 40  | -                 | 48  | ns   |
|                  |                   | V <sub>CC</sub> = 6.0 V                         | -     | 13  | 27  | -                | 34  | -                 | 41  | ns   |
| t <sub>dis</sub> | disable time      | $\overline{\text{OEn}}$ to Yn; see Fig. 6 [1]   |       |     |     |                  |     |                   |     |      |
|                  |                   | V <sub>CC</sub> = 2.0 V                         | -     | 58  | 160 | -                | 200 | -                 | 240 | ns   |
|                  |                   | V <sub>CC</sub> = 4.5 V                         | -     | 21  | 32  | -                | 40  | -                 | 48  | ns   |
|                  |                   | V <sub>CC</sub> = 6.0 V                         | -     | 17  | 27  | -                | 34  | -                 | 41  | ns   |

| Symbol           | Parameter                     | Conditions   | 25 °C |     |     | -40 °C to +85 °C |     | -40 °C to +125 °C |     | Unit |
|------------------|-------------------------------|--|-------|-----|-----|------------------|-----|-------------------|-----|------|
|                  |                               |  | Min   | Typ | Max | Min              | Max | Min               | Max |      |
| t <sub>t</sub>   | transition time               | see Fig. 5 [2]   |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 2.0 V  | -     | 14  | 60  | -                | 75  | -                 | 90  | ns   |
|                  |                               | V <sub>CC</sub> = 4.5 V  | -     | 5   | 12  | -                | 15  | -                 | 18  | ns   |
|                  |                               | V <sub>CC</sub> = 6.0 V  | -     | 4   | 10  | -                | 13  | -                 | 15  | ns   |
| C <sub>PD</sub>  | power dissipation capacitance | per package; V <sub>I</sub> = GND to V <sub>CC</sub> [3]         | -     | 30  | -   | -                | -   | -                 | -   | pF   |
| <b>74HCT7541</b> |                               |  |       |     |     |                  |     |                   |     |      |
| t <sub>pd</sub>  | propagation delay             | An to Yn; see Fig. 5 [1]   |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 4.5 V  | -     | 19  | 32  | -                | 40  | -                 | 48  | ns   |
|                  |                               | V <sub>CC</sub> = 5.0 V; C <sub>L</sub> = 15 pF                  | -     | 16  | -   | -                | -   | -                 | -   | ns   |
| t <sub>en</sub>  | enable time                   | OE <sub>n</sub> to Yn; see Fig. 6 [1]                            |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 4.5 V  | -     | 18  | 32  | -                | 40  | -                 | 48  | ns   |
| t <sub>dis</sub> | disable time                  | OE <sub>n</sub> to Yn; see Fig. 6 [1]                            |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 4.5 V  | -     | 20  | 32  | -                | 40  | -                 | 48  | ns   |
| t <sub>t</sub>   | transition time               | V <sub>CC</sub> = 4.5 V; see Fig. 5 [2]                          | -     | 5   | 12  | -                | 15  | -                 | 18  | ns   |
| C <sub>PD</sub>  | power dissipation capacitance | per package; V <sub>I</sub> = GND to V <sub>CC</sub> - 1.5 V [3] | -     | 32  | -   | -                | -   | -                 | -   | pF   |

[1] 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>.

[2] t<sub>t</sub> is the same as t<sub>THL</sub> and t<sub>TLH</sub>.

[3] 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;

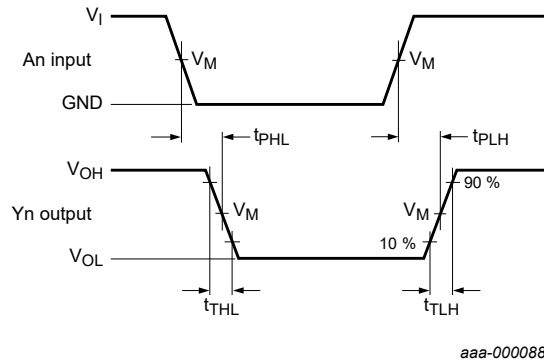
C<sub>L</sub> = output load capacitance in pF;

V<sub>CC</sub> = supply voltage in V;

N = number of inputs switching;

Σ(C<sub>L</sub> × V<sub>CC</sub><sup>2</sup> × f<sub>o</sub>) = sum of outputs.

10.1. Waveforms and test circuit

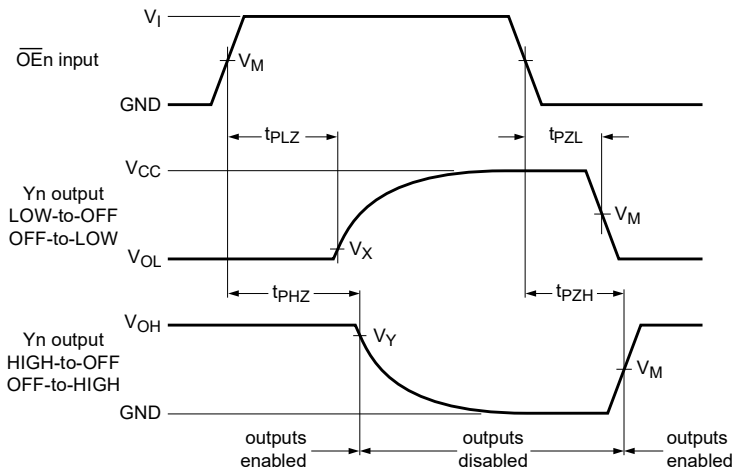


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Measurement points are given in [Table 8](#).

$V_{OL}$  and  $V_{OH}$  are typical voltage output levels that occur with the output load.

Fig. 5. Input to output propagation delays



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Measurement points are given in [Table 8](#).

$V_{OL}$  and  $V_{OH}$  are typical voltage output levels that occur with the output load.

Fig. 6. 3-state enable and disable times

Table 8. Measurement points

| Type      | Input       | Output      |             |             |
|-----------|-------------|-------------|-------------|-------------|
|           | $V_M$       | $V_M$       | $V_X$       | $V_Y$       |
| 74HC7541  | $0.5V_{CC}$ | $0.5V_{CC}$ | $0.1V_{CC}$ | $0.9V_{CC}$ |
| 74HCT7541 | 1.3 V       | 1.3 V       | $0.1V_{CC}$ | $0.9V_{CC}$ |

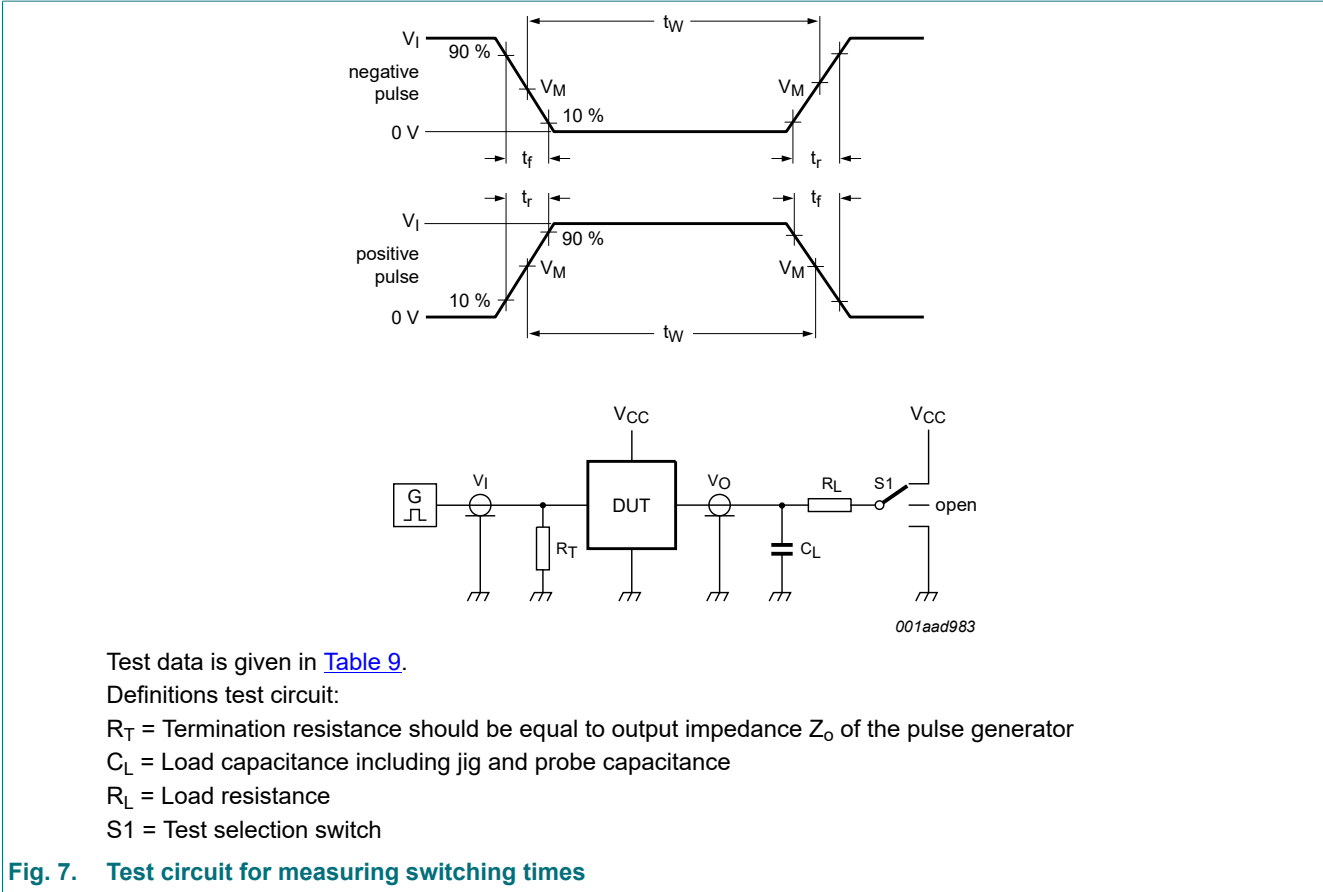


Fig. 7. Test circuit for measuring switching times

Table 9. Test data

| Type      | Input    |            | Load         |              | S1 position        |                    |                    |
|-----------|----------|------------|--------------|--------------|--------------------|--------------------|--------------------|
|           | $V_I$    | $t_r, t_f$ | $C_L$        | $R_L$        | $t_{PHL}, t_{PLH}$ | $t_{PZH}, t_{PHZ}$ | $t_{PZL}, t_{PLZ}$ |
| 74HC7541  | $V_{CC}$ | 6 ns       | 15 pF, 50 pF | 1 k $\Omega$ | open               | GND                | $V_{CC}$           |
| 74HCT7541 | 3 V      | 6 ns       | 15 pF, 50 pF | 1 k $\Omega$ | open               | GND                | $V_{CC}$           |



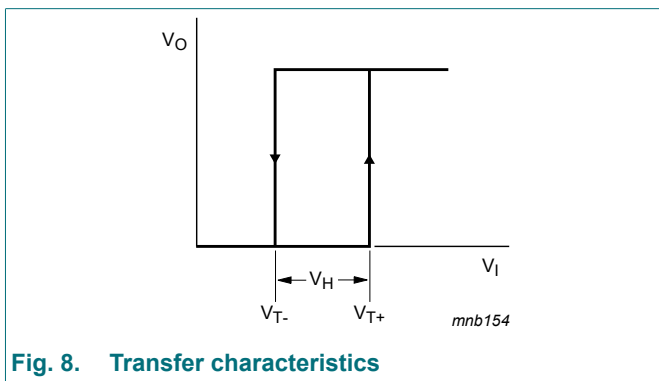
## 11. Transfer characteristics

**Table 10. Transfer characteristics**

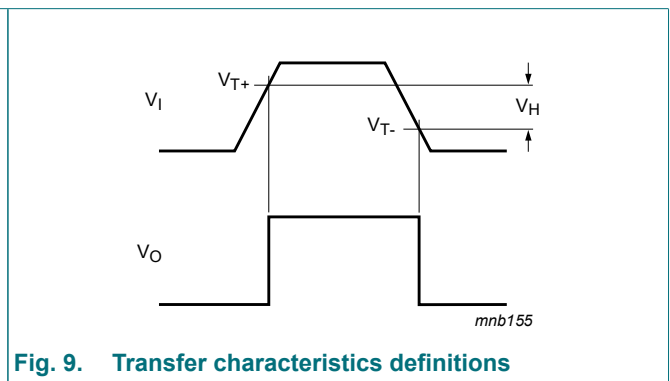
At recommended operating conditions; voltages are referenced to GND (ground = 0 V); see Fig. 8 and Fig. 9.

| Symbol           | Parameter                        | Conditions              | 25 °C |      |      | -40 °C to +85 °C |      | -40 °C to +125 °C |      | Unit |
|------------------|----------------------------------|-------------------------|-------|------|------|------------------|------|-------------------|------|------|
|                  |                                  |                         | Min   | Typ  | Max  | Min              | Max  | Min               | Max  |      |
| <b>74HC7541</b>  |                                  |                         |       |      |      |                  |      |                   |      |      |
| $V_{T+}$         | positive-going threshold voltage | $V_{CC} = 2.0\text{ V}$ | -     | -    | 1.5  | -                | 1.5  | -                 | 1.5  | V    |
|                  |                                  | $V_{CC} = 4.5\text{ V}$ | -     | -    | 3.15 | -                | 3.15 | -                 | 3.15 | V    |
|                  |                                  | $V_{CC} = 6.0\text{ V}$ | -     | -    | 4.2  | -                | 4.2  | -                 | 4.2  | V    |
| $V_{T-}$         | negative-going threshold voltage | $V_{CC} = 2.0\text{ V}$ | 0.3   | -    | -    | 0.3              | -    | 0.3               | -    | V    |
|                  |                                  | $V_{CC} = 4.5\text{ V}$ | 1.35  | -    | -    | 1.35             | -    | 1.35              | -    | V    |
|                  |                                  | $V_{CC} = 6.0\text{ V}$ | 1.8   | -    | -    | 1.8              | -    | 1.8               | -    | V    |
| $V_H$            | hysteresis voltage               | $V_{CC} = 2.0\text{ V}$ | 0.1   | 0.20 | -    | 0.1              | -    | 0.1               | -    | V    |
|                  |                                  | $V_{CC} = 4.5\text{ V}$ | 0.25  | 0.40 | -    | 0.25             | -    | 0.25              | -    | V    |
|                  |                                  | $V_{CC} = 6.0\text{ V}$ | 0.3   | 0.5  | -    | 0.3              | -    | 0.3               | -    | V    |
| <b>74HCT7541</b> |                                  |                         |       |      |      |                  |      |                   |      |      |
| $V_{T+}$         | positive-going threshold voltage | $V_{CC} = 4.5\text{ V}$ | -     | -    | 2.0  | -                | 2.0  | -                 | 2.0  | V    |
|                  |                                  | $V_{CC} = 5.5\text{ V}$ | -     | -    | 2.1  | -                | 2.1  | -                 | 2.1  | V    |
| $V_{T-}$         | negative-going threshold voltage | $V_{CC} = 4.5\text{ V}$ | 0.7   | -    | -    | 0.64             | -    | 0.6               | -    | V    |
|                  |                                  | $V_{CC} = 5.5\text{ V}$ | 0.8   | -    | -    | 0.74             | -    | 0.7               | -    | V    |
| $V_H$            | hysteresis voltage               | $V_{CC} = 4.5\text{ V}$ | 0.17  | 0.23 | -    | -                | -    | -                 | -    | V    |
|                  |                                  | $V_{CC} = 5.5\text{ V}$ | 0.17  | 0.23 | -    | -                | -    | -                 | -    | V    |

### 11.1. Transfer characteristics waveforms



**Fig. 8. Transfer characteristics**



**Fig. 9. Transfer characteristics definitions**

12. Package outline

SO20: plastic small outline package; 20 leads; body width 7.5 mm

SOT163-1



Fig. 10. Package outline SOT163-1 (SO20)

TSSOP20: plastic thin shrink small outline package; 20 leads; body width 4.4 mm

SOT360-1



Fig. 11. Package outline SOT360-1 (TSSOP20)

## 13. Abbreviations

Table 11. Abbreviations

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

## 14. Revision history

Table 12. Revision history

| Document ID          | Release date   | Data sheet status     | Change notice | Supersedes           |
|----------------------|--|-----------------------|---------------|----------------------|
| 74HC_HCT7541 v.8     | 20210803   | Product data sheet    | -             | 74HC_HCT7541 v.7     |
| 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 74HC7541DB (SOT339-1/SSOP20) removed.</li> <li><a href="#">Section 2</a> updated.</li> <li><a href="#">Section 7</a>: Derating values for <math>P_{tot}</math> total power dissipation updated.</li> </ul> |                       |               |                      |
| 74HC_HCT7541 v.7     | 20160304   | Product data sheet    | -             | 74HC_HCT7541 v.6     |
| Modifications:       | <ul style="list-style-type: none"> <li>Type numbers 74HC7541N and 74HCT7541N (SOT146-1) removed.</li> </ul>  |                       |               |                      |
| 74HC_HCT7541 v.6     | 20131216   | Product data sheet    | -             | 74HC_HCT7541 v.5     |
| Modifications:       | <ul style="list-style-type: none"> <li>New general description (errata).</li> </ul>  |                       |               |                      |
| 74HC_HCT7541 v.5     | 20121231   | Product data sheet    | -             | 74HC_HCT7541 v.4     |
| Modifications:       | <ul style="list-style-type: none"> <li><math>I_{OZ}</math> added to static characteristics table.</li> </ul>   |                       |               |                      |
| 74HC_HCT7541 v.4     | 20111219   | Product data sheet    | -             | 74HC_HCT7541 v.3     |
| Modifications:       | <ul style="list-style-type: none"> <li>Legal pages updated.</li> </ul>   |                       |               |                      |
| 74HC_HCT7541 v.3     | 20110725   | Product data sheet    | -             | 74HC_HCT7541_CNV v.2 |
| 74HC_HCT7541_CNV v.2 | 19970917   | Product specification | -             | -                    |

## 15. 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".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <https://www.nexperia.com>.

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For sales office addresses, please send an email to: [salesaddresses@nexperia.com](mailto:salesaddresses@nexperia.com)

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