

# 74HC573; 74HCT573

Octal D-type transparent latch; 3-state

Rev. 9 — 5 August 2024

Product data sheet

## 1. General description

The 74HC573; 74HCT573 is an 8-bit D-type transparent latch with 3-state outputs. The device features latch enable (LE) and output enable ( $\overline{OE}$ ) inputs. When LE is HIGH, data at the inputs enter the latches. In this condition the latches are transparent, a latch output will change each time its corresponding D-input changes. When LE is LOW the latches store the information that was present at the inputs a set-up time preceding the HIGH-to-LOW transition of LE. A HIGH on  $\overline{OE}$  causes the outputs to assume a high-impedance OFF-state. Operation of the  $\overline{OE}$  input does not affect the state of the latches. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of  $V_{CC}$ .

## 2. Features and benefits

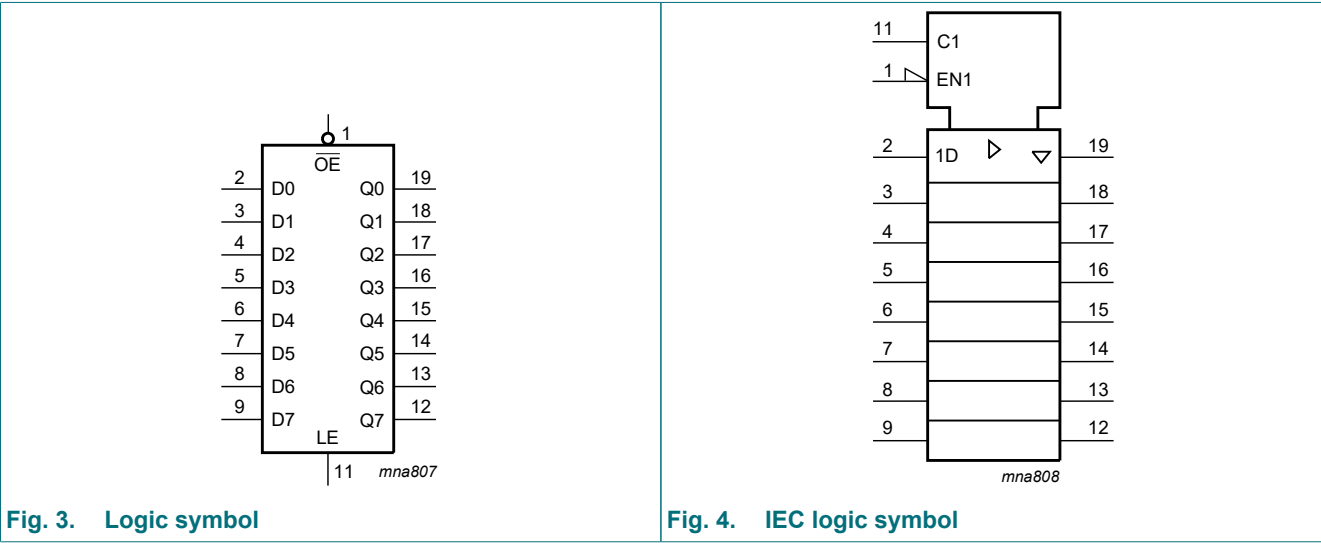
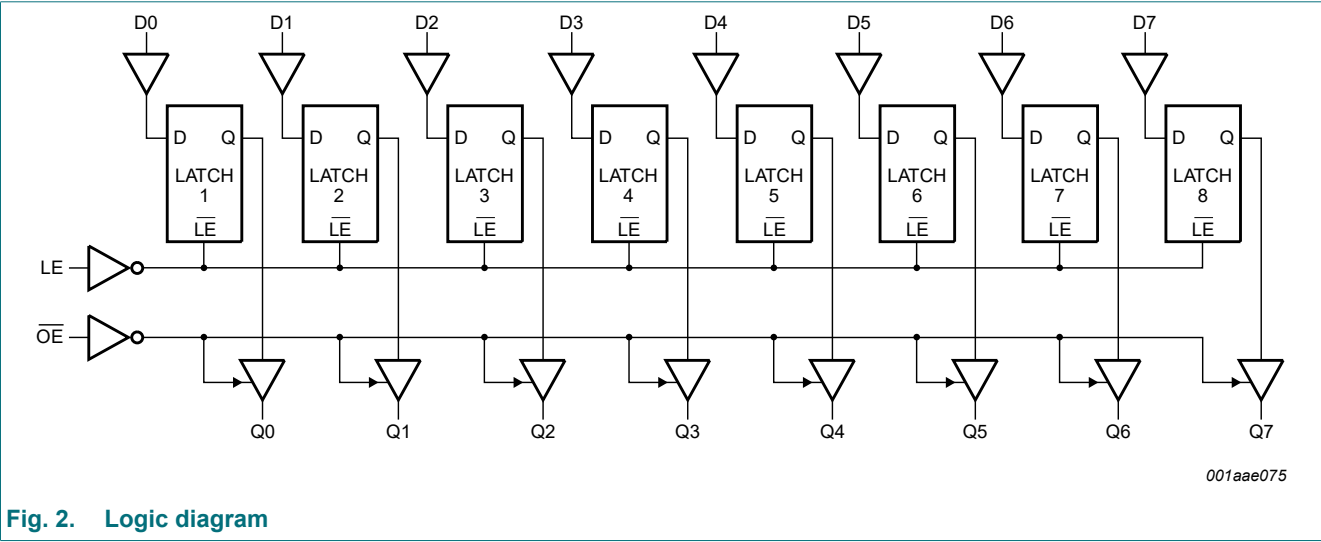
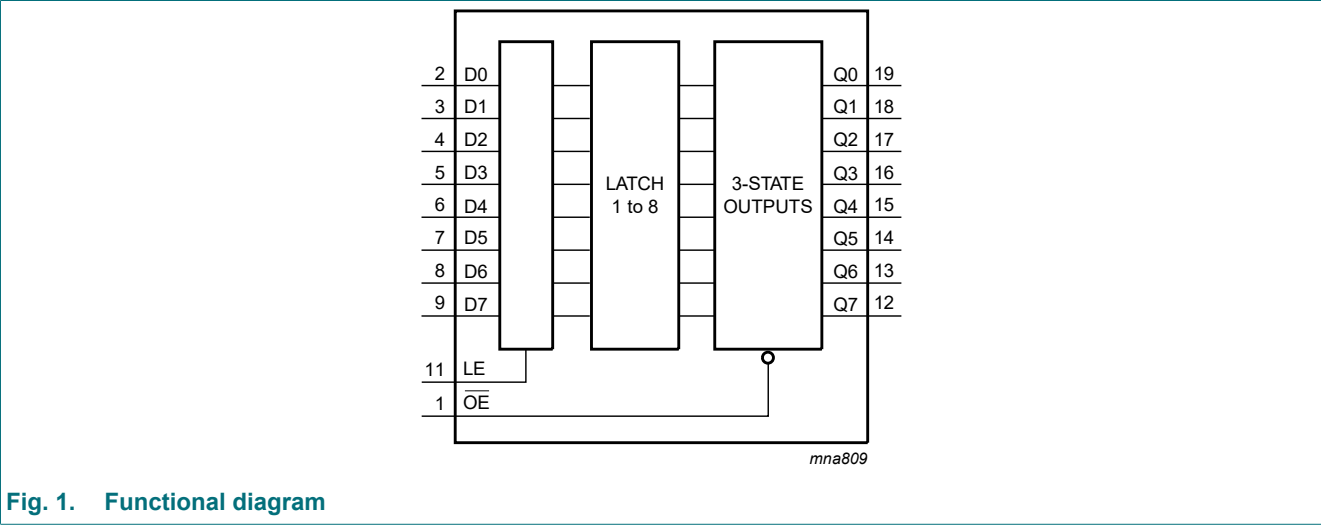
- Wide supply voltage range from 2.0 V to 6.0 V
- CMOS low power dissipation
- High noise immunity
- Input levels:
  - For 74HC573: CMOS level
  - For 74HCT573: TTL level
- Inputs and outputs on opposite sides of package allowing easy interface with microprocessors
- Useful as input or output port for microprocessors and microcomputers
- 3-state non-inverting outputs for bus-oriented applications
- Common 3-state output enable input
- 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)
- ESD protection:
  - HBM: ANSI/ESDA/JEDEC JS-001 class 2 exceeds 2000 V
  - CDM: ANSI/ESDA/JEDEC JS-002 class C3 exceeds 1000 V
- Multiple package options
- Specified from -40 °C to +85 °C and from -40 °C to +125 °C

## 3. Ordering information

Table 1. Ordering information

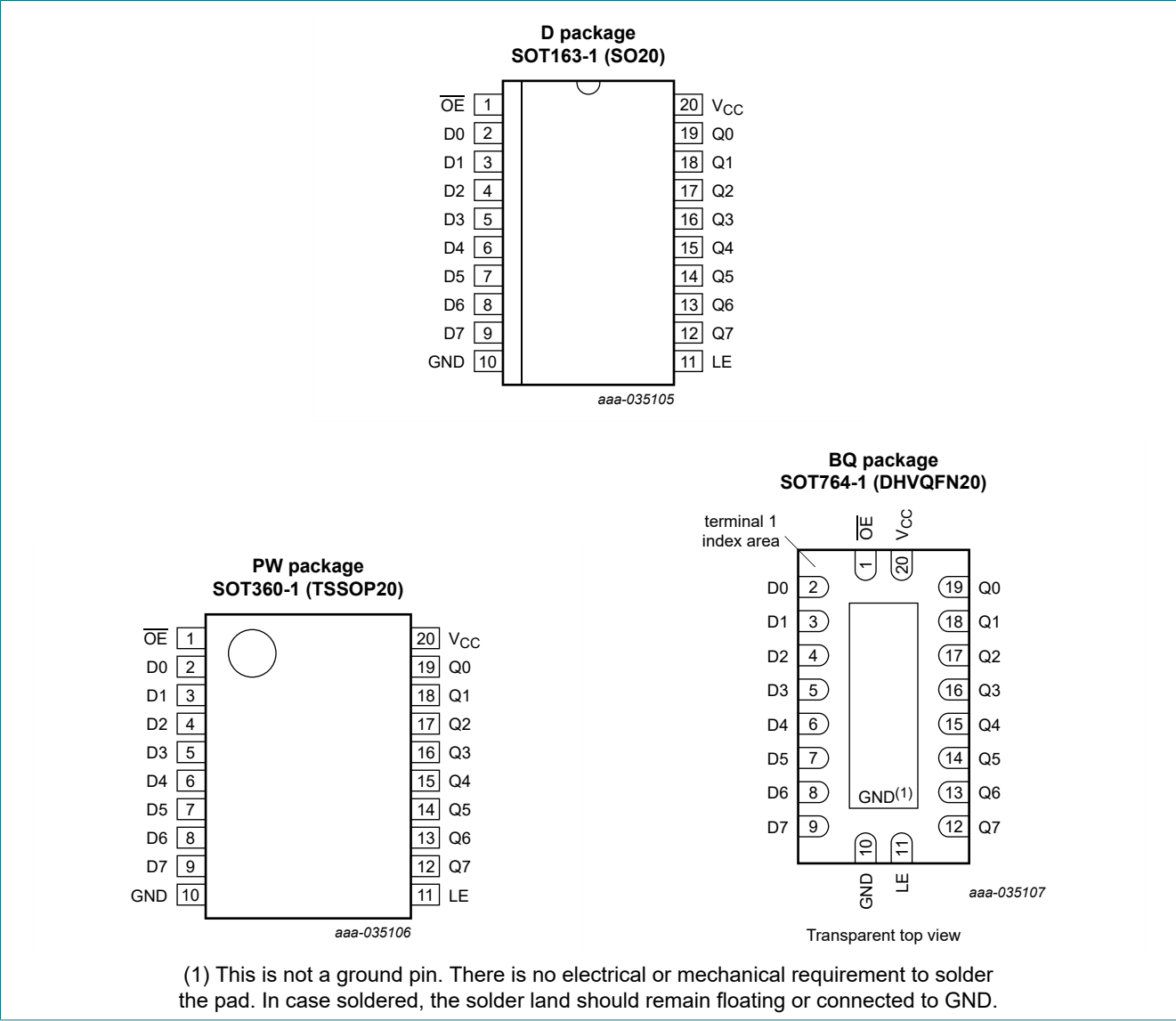
| Type number                                             | Package           |          |                                                                                                                                      |                          |
|---------------------------------------------------------|-------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
|                                                         | Temperature range | Name     | Description                                                                                                                          | Version                  |
| <a href="#">74HC573D</a><br><a href="#">74HCT573D</a>   | -40 °C to +125 °C | SO20     | plastic small outline package; 20 leads;<br>body width 7.5 mm                                                                        | <a href="#">SOT163-1</a> |
| <a href="#">74HC573PW</a><br><a href="#">74HCT573PW</a> | -40 °C to +125 °C | TSSOP20  | plastic thin shrink small outline package; 20 leads;<br>body width 4.4 mm                                                            | <a href="#">SOT360-1</a> |
| <a href="#">74HC573BQ</a><br><a href="#">74HCT573BQ</a> | -40 °C to +125 °C | DHVQFN20 | plastic dual in-line compatible thermal enhanced<br>very thin quad flat package; no leads; 20 terminals;<br>body 2.5 × 4.5 × 0.85 mm | <a href="#">SOT764-1</a> |

4. Functional diagram



5. Pinning information

5.1. Pinning



5.2. Pin description

Table 2. Pin description

| Symbol                         | Pin                            | Description                              |
|--------------------------------|--------------------------------|------------------------------------------|
| $\overline{OE}$                | 1                              | 3-state output enable input (active LOW) |
| D0, D1, D2, D3, D4, D5, D6, D7 | 2, 3, 4, 5, 6, 7, 8, 9         | data input                               |
| GND                            | 10                             | ground (0 V)                             |
| LE                             | 11                             | latch enable input (active HIGH)         |
| Q0, Q1, Q2, Q3, Q4, Q5, Q6, Q7 | 19, 18, 17, 16, 15, 14, 13, 12 | 3-state latch output                     |
| V <sub>CC</sub>                | 20                             | supply voltage                           |

6. Functional description

Table 3. Function table

H = HIGH voltage level; h = HIGH voltage level one set-up time prior to the HIGH-to-LOW LE transition;  
L = LOW voltage level; l = LOW voltage level one set-up time prior to the HIGH-to-LOW LE transition;  
Z = high-impedance OFF-state.

| Operating mode                                 | Control |    | Input | Internal latches | Output |
|------------------------------------------------|---------|----|-------|------------------|--------|
|                                                | OE      | LE | Dn    |                  | Qn     |
| Enable and read register<br>(transparent mode) | L       | H  | L     | L                | L      |
|                                                |         |    | H     | H                | H      |
| Latch and read register                        | L       | L  | l     | L                | L      |
|                                                |         |    | h     | H                | H      |
| Latch register and disable outputs             | H       | L  | l     | L                | Z      |
|                                                |         |    | h     | H                | 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 | -    | ±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 | -    | ±20  | mA   |
| I <sub>O</sub>   | output current          | V <sub>O</sub> = -0.5 V to (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 | [1]                                                                 | -    | 500  | mW   |

- [1] 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.  
For SOT764-1 (DHVQFN20) package: P<sub>tot</sub> derates linearly with 12.9 mW/K above 111 °C.

8. Recommended operating conditions

Table 5. Recommended operating conditions

Voltages are referenced to GND (ground = 0 V)

| Symbol           | Parameter                           | Conditions              | 74HC573 |      |                 | 74HCT573 |      |                 | 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   |
| Δt/ΔV            | input transition rise and fall rate | V <sub>CC</sub> = 2.0 V | -       | -    | 625             | -        | -    | -               | ns/V |
|                  |                                     | V <sub>CC</sub> = 4.5 V | -       | 1.67 | 139             | -        | 1.67 | 139             | ns/V |
|                  |                                     | V <sub>CC</sub> = 6.0 V | -       | -    | 83              | -        | -    | -               | ns/V |

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   |      |
| 74HC573         |                           |                                                                                                                        |       |      |      |                  |      |                   |       |      |
| V <sub>IH</sub> | HIGH-level input voltage  | V <sub>CC</sub> = 2.0 V                                                                                                | 1.5   | 1.2  | -    | 1.5              | -    | 1.5               | -     | V    |
|                 |                           | V <sub>CC</sub> = 4.5 V                                                                                                | 3.15  | 2.4  | -    | 3.15             | -    | 3.15              | -     | V    |
|                 |                           | V <sub>CC</sub> = 6.0 V                                                                                                | 4.2   | 3.2  | -    | 4.2              | -    | 4.2               | -     | V    |
| V <sub>IL</sub> | LOW-level input voltage   | V <sub>CC</sub> = 2.0 V                                                                                                | -     | 0.8  | 0.5  | -                | 0.5  | -                 | 0.5   | V    |
|                 |                           | V <sub>CC</sub> = 4.5 V                                                                                                | -     | 2.1  | 1.35 | -                | 1.35 | -                 | 1.35  | V    |
|                 |                           | V <sub>CC</sub> = 6.0 V                                                                                                | -     | 2.8  | 1.8  | -                | 1.8  | -                 | 1.8   | 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> = -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>IH</sub> or V <sub>IL</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>IH</sub> or V <sub>IL</sub> ; V <sub>CC</sub> = 6.0 V; V <sub>O</sub> = V <sub>CC</sub> or GND | -     | -    | ±0.5 | -                | ±5.0 | -                 | ±10.0 | µA   |
| I <sub>CC</sub> | supply current            | V <sub>I</sub> = V <sub>CC</sub> or GND; I <sub>O</sub> = 0 A; V <sub>CC</sub> = 6.0 V                                 | -     | -    | 8.0  | -                | 80   | -                 | 160   | µA   |
| C <sub>I</sub>  | input capacitance         |                                                                                                                        | -     | 3.5  | -    |                  |      |                   |       | pF   |
| 74HCT573        |                           |                                                                                                                        |       |      |      |                  |      |                   |       |      |
| V <sub>IH</sub> | HIGH-level input voltage  | V <sub>CC</sub> = 4.5 V to 5.5 V                                                                                       | 2.0   | 1.6  | -    | 2.0              | -    | 2.0               | -     | V    |
| V <sub>IL</sub> | LOW-level input voltage   | V <sub>CC</sub> = 4.5 V to 5.5 V                                                                                       | -     | 1.2  | 0.8  | -                | 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> ; 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 mA                                                                                                 | 3.98  | 4.32 | -    | 3.84             | -    | 3.7               | -     | V    |
| V <sub>OL</sub> | LOW-level output voltage  | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</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                                                                                                | -     | 0.16 | 0.26 | -                | 0.33 | -                 | 0.4   | V    |

| Symbol           | Parameter                 | Conditions                                                                                                                               | 25 °C |     |      | -40 °C to +85 °C |      | -40 °C to +125 °C |      | Unit |
|------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|------|------------------|------|-------------------|------|------|
|                  |                           |                                                                                                                                          | Min   | Typ | Max  | Min              | Max  | Min               | Max  |      |
| 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>IH</sub> or V <sub>IL</sub> ; V <sub>CC</sub> = 5.5 V; 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; V <sub>CC</sub> = 5.5 V                                                   | -     | -   | 8.0  | -                | 80   | -                 | 160  | µA   |
| ΔI <sub>CC</sub> | additional supply current | V <sub>I</sub> = V <sub>CC</sub> - 2.1 V; other inputs at V <sub>CC</sub> or GND; V <sub>CC</sub> = 4.5 V to 5.5 V; I <sub>O</sub> = 0 A |       |     |      |                  |      |                   |      |      |
|                  |                           | per input pin; Dn inputs                                                                                                                 | -     | 35  | 126  | -                | 158  | -                 | 172  | µA   |
|                  |                           | per input pin; LE input                                                                                                                  | -     | 65  | 234  | -                | 293  | -                 | 319  | µA   |
|                  |                           | per input pin; $\overline{\text{OE}}$ input                                                                                              | -     | 125 | 450  | -                | 563  | -                 | 613  | µA   |
| C <sub>I</sub>   | input capacitance         |                                                                                                                                          | -     | 3.5 | -    | -                | -    | -                 | -    | pF   |

10. Dynamic characteristics

Table 7. Dynamic characteristics

Voltages are referenced to GND (ground = 0 V); C<sub>L</sub> = 50 pF unless otherwise specified; for test circuit see Fig. 9.

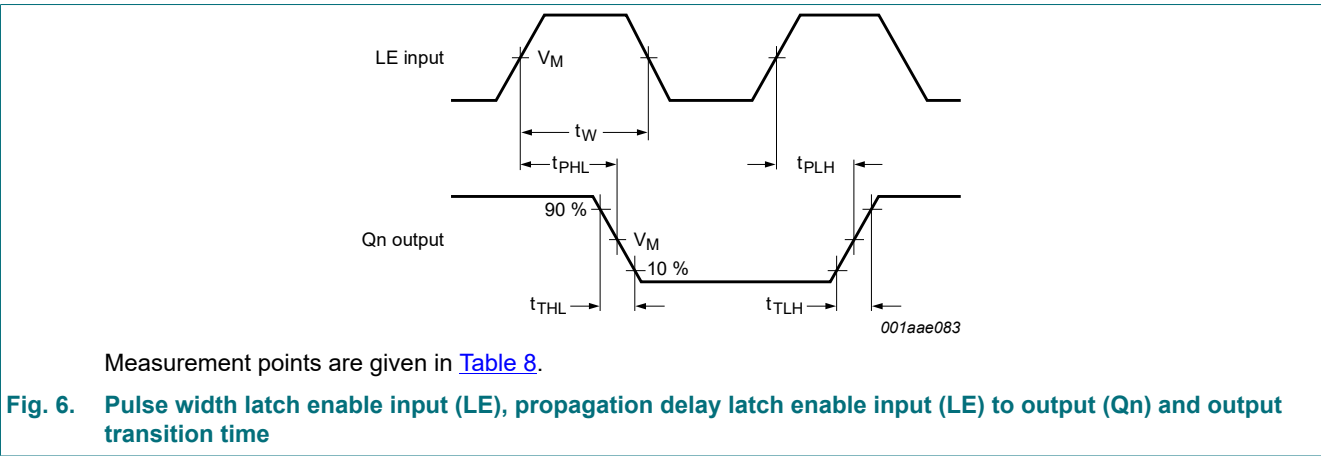
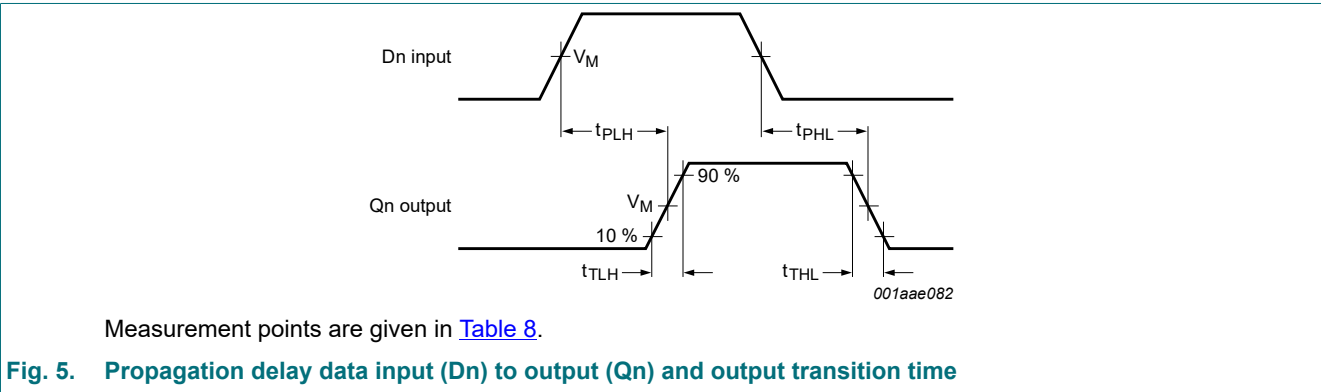
| Symbol           | Parameter               | Conditions                                                   | 25 °C |     |     | -40 °C to +85 °C |     | -40 °C to +125 °C |     | Unit |
|------------------|-------------------------|--------------------------------------------------------------|-------|-----|-----|------------------|-----|-------------------|-----|------|
|                  |                         |                                                              | Min   | Typ | Max | Min              | Max | Min               | Max |      |
| 74HC573          |                         |                                                              |       |     |     |                  |     |                   |     |      |
| t <sub>pd</sub>  | propagation delay       | Dn to Qn; see <a href="#">Fig. 5</a> [1]                     |       |     |     |                  |     |                   |     |      |
|                  |                         | V <sub>CC</sub> = 2.0 V                                      | -     | 47  | 150 | -                | 190 | -                 | 225 | ns   |
|                  |                         | V <sub>CC</sub> = 4.5 V                                      | -     | 17  | 30  | -                | 38  | -                 | 45  | ns   |
|                  |                         | V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF                | -     | 14  | -   | -                | -   | -                 | -   | ns   |
|                  |                         | V <sub>CC</sub> = 6.0 V                                      | -     | 14  | 26  | -                | 33  | -                 | 38  | ns   |
|                  |                         | LE to Qn; see <a href="#">Fig. 6</a> [1]                     |       |     |     |                  |     |                   |     |      |
|                  |                         | V <sub>CC</sub> = 2.0 V                                      | -     | 50  | 150 | -                | 190 | -                 | 225 | ns   |
|                  |                         | V <sub>CC</sub> = 4.5 V                                      | -     | 18  | 30  | -                | 38  | -                 | 45  | ns   |
|                  |                         | V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF                | -     | 15  | -   | -                | -   | -                 | -   | ns   |
|                  | V <sub>CC</sub> = 6.0 V | -                                                            | 14    | 26  | -   | 33               | -   | 38                | ns  |      |
| t <sub>en</sub>  | enable time             | $\overline{\text{OE}}$ to Qn; see <a href="#">Fig. 7</a> [2] |       |     |     |                  |     |                   |     |      |
|                  |                         | V <sub>CC</sub> = 2.0 V                                      | -     | 44  | 140 | -                | 175 | -                 | 210 | ns   |
|                  |                         | V <sub>CC</sub> = 4.5 V                                      | -     | 16  | 28  | -                | 35  | -                 | 42  | ns   |
|                  |                         | V <sub>CC</sub> = 6.0 V                                      | -     | 13  | 24  | -                | 30  | -                 | 36  | ns   |
| t <sub>dis</sub> | disable time            | $\overline{\text{OE}}$ to Qn; see <a href="#">Fig. 7</a> [3] |       |     |     |                  |     |                   |     |      |
|                  |                         | V <sub>CC</sub> = 2.0 V                                      | -     | 55  | 150 | -                | 190 | -                 | 225 | ns   |
|                  |                         | V <sub>CC</sub> = 4.5 V                                      | -     | 20  | 30  | -                | 38  | -                 | 45  | ns   |
|                  |                         | V <sub>CC</sub> = 6.0 V                                      | -     | 16  | 26  | -                | 33  | -                 | 38  | ns   |

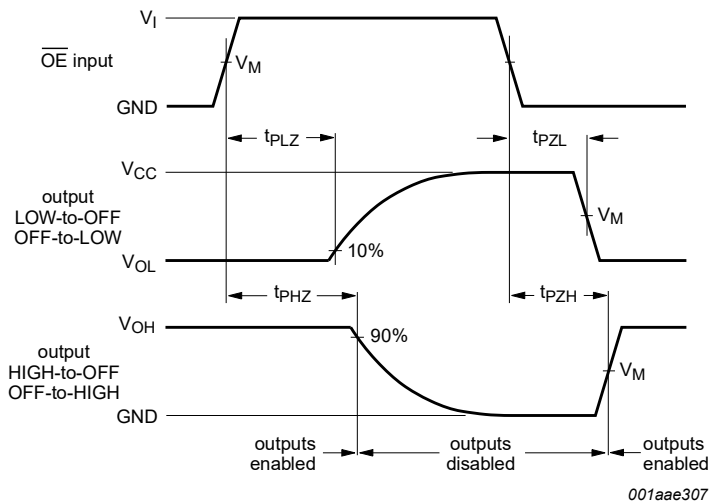
| Symbol           | Parameter                     | Conditions                                                                     | 25 °C |     |     | -40 °C to +85 °C |     | -40 °C to +125 °C |     | Unit |
|------------------|-------------------------------|--------------------------------------------------------------------------------|-------|-----|-----|------------------|-----|-------------------|-----|------|
|                  |                               |                                                                                | Min   | Typ | Max | Min              | Max | Min               | Max |      |
| t <sub>t</sub>   | transition time               | Qn; see Fig. 5 [4]                                                             |       |     |     |                  |     |                   |     |      |
|                  |                               | 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   |
| t <sub>W</sub>   | pulse width                   | LE HIGH; see Fig. 6                                                            |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 2.0 V                                                        | 80    | 14  | -   | 100              | -   | 120               | -   | ns   |
|                  |                               | V <sub>CC</sub> = 4.5 V                                                        | 16    | 5   | -   | 20               | -   | 24                | -   | ns   |
|                  |                               | V <sub>CC</sub> = 6.0 V                                                        | 14    | 4   | -   | 17               | -   | 20                | -   | ns   |
| t <sub>su</sub>  | set-up time                   | Dn to LE; see Fig. 8                                                           |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 2.0 V                                                        | 50    | 11  | -   | 65               | -   | 75                | -   | ns   |
|                  |                               | V <sub>CC</sub> = 4.5 V                                                        | 10    | 4   | -   | 13               | -   | 15                | -   | ns   |
|                  |                               | V <sub>CC</sub> = 6.0 V                                                        | 9     | 3   | -   | 11               | -   | 13                | -   | ns   |
| t <sub>h</sub>   | hold time                     | Dn to LE; see Fig. 8                                                           |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 2.0 V                                                        | 5     | 3   | -   | 5                | -   | 5                 | -   | ns   |
|                  |                               | V <sub>CC</sub> = 4.5 V                                                        | 5     | 1   | -   | 5                | -   | 5                 | -   | ns   |
|                  |                               | V <sub>CC</sub> = 6.0 V                                                        | 5     | 1   | -   | 5                | -   | 5                 | -   | ns   |
| C <sub>PD</sub>  | power dissipation capacitance | C <sub>L</sub> = 50 pF; f = 1 MHz; V <sub>I</sub> = GND to V <sub>CC</sub> [5] | -     | 26  | -   | -                | -   | -                 | -   | pF   |
| 74HCT573         |                               |                                                                                |       |     |     |                  |     |                   |     |      |
| t <sub>pd</sub>  | propagation delay             | Dn to Qn; see Fig. 5 [1]                                                       |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 4.5 V                                                        | -     | 20  | 35  | -                | 44  | -                 | 53  | ns   |
|                  |                               | V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF                                  | -     | 17  | -   | -                | -   | -                 | -   | ns   |
|                  |                               | LE to Qn; see Fig. 6 [1]                                                       |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 4.5 V                                                        | -     | 18  | 35  | -                | 44  | -                 | 53  | ns   |
|                  |                               | V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF                                  | -     | 15  | -   | -                | -   | -                 | -   | ns   |
| t <sub>en</sub>  | enable time                   | OE to Qn; see Fig. 7 [2]                                                       |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 4.5 V                                                        | -     | 17  | 30  | -                | 38  | -                 | 45  | ns   |
| t <sub>dis</sub> | disable time                  | OE to Qn; see Fig. 7 [3]                                                       |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 4.5 V                                                        | -     | 18  | 30  | -                | 38  | -                 | 45  | ns   |
| t <sub>t</sub>   | transition time               | Qn; see Fig. 5 [4]                                                             |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 4.5 V                                                        | -     | 5   | 12  | -                | 15  | -                 | 18  | ns   |
| t <sub>W</sub>   | pulse width                   | LE HIGH; see Fig. 6                                                            |       |     |     |                  |     |                   |     |      |
|                  |                               | V <sub>CC</sub> = 4.5 V                                                        | 16    | 5   | -   | 20               | -   | 24                | -   | 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>su</sub> | set-up time                   | Dn to LE; see Fig. 8                                                                  |       |     |     |                  |     |                   |     |      |
|                 |                               | V <sub>CC</sub> = 4.5 V                                                               | 13    | 7   | -   | 16               | -   | 20                | -   | ns   |
| t <sub>h</sub>  | hold time                     | Dn to LE; see Fig. 8                                                                  |       |     |     |                  |     |                   |     |      |
|                 |                               | V <sub>CC</sub> = 4.5 V                                                               | 9     | 4   | -   | 11               | -   | 15                | -   | ns   |
| C <sub>PD</sub> | power dissipation capacitance | C <sub>L</sub> = 50 pF; f = 1 MHz;<br>V <sub>I</sub> = GND to V <sub>CC</sub> - 1.5 V | [5]   | -   | 26  | -                | -   | -                 | -   | pF   |

- [1] t<sub>pd</sub> is the same as t<sub>PLH</sub> and t<sub>PHL</sub>.
- [2] t<sub>en</sub> is the same as t<sub>PZH</sub> and t<sub>PZL</sub>.
- [3] t<sub>dis</sub> is the same as t<sub>PLZ</sub> and t<sub>PHZ</sub>.
- [4] t<sub>i</sub> is the same as t<sub>THL</sub> and t<sub>TLH</sub>.
- [5] 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.

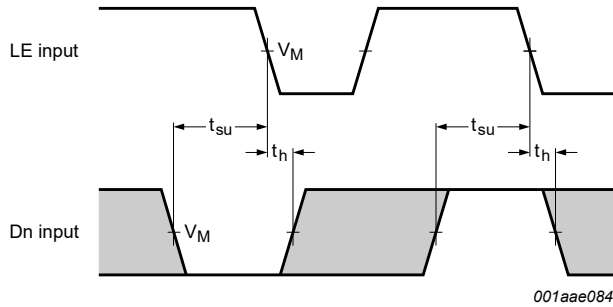
10.1. Waveforms and test circuit





Measurement points are given in [Table 8](#).  
 $V_{OL}$  and  $V_{OH}$  are typical voltage output levels that occur with the output load.

Fig. 7. Enable and disable times



Measurement points are given in [Table 8](#).  
The shaded areas indicate when the input is permitted to change for predictable output performance.

Fig. 8. Set-up and hold times for data input (Dn) to latch input (LE)

Table 8. Measurement points

| Type     | Input               | Output              |
|----------|---------------------|---------------------|
|          | $V_M$               | $V_M$               |
| 74HC573  | $0.5 \times V_{CC}$ | $0.5 \times V_{CC}$ |
| 74HCT573 | 1.3 V               | 1.3 V               |

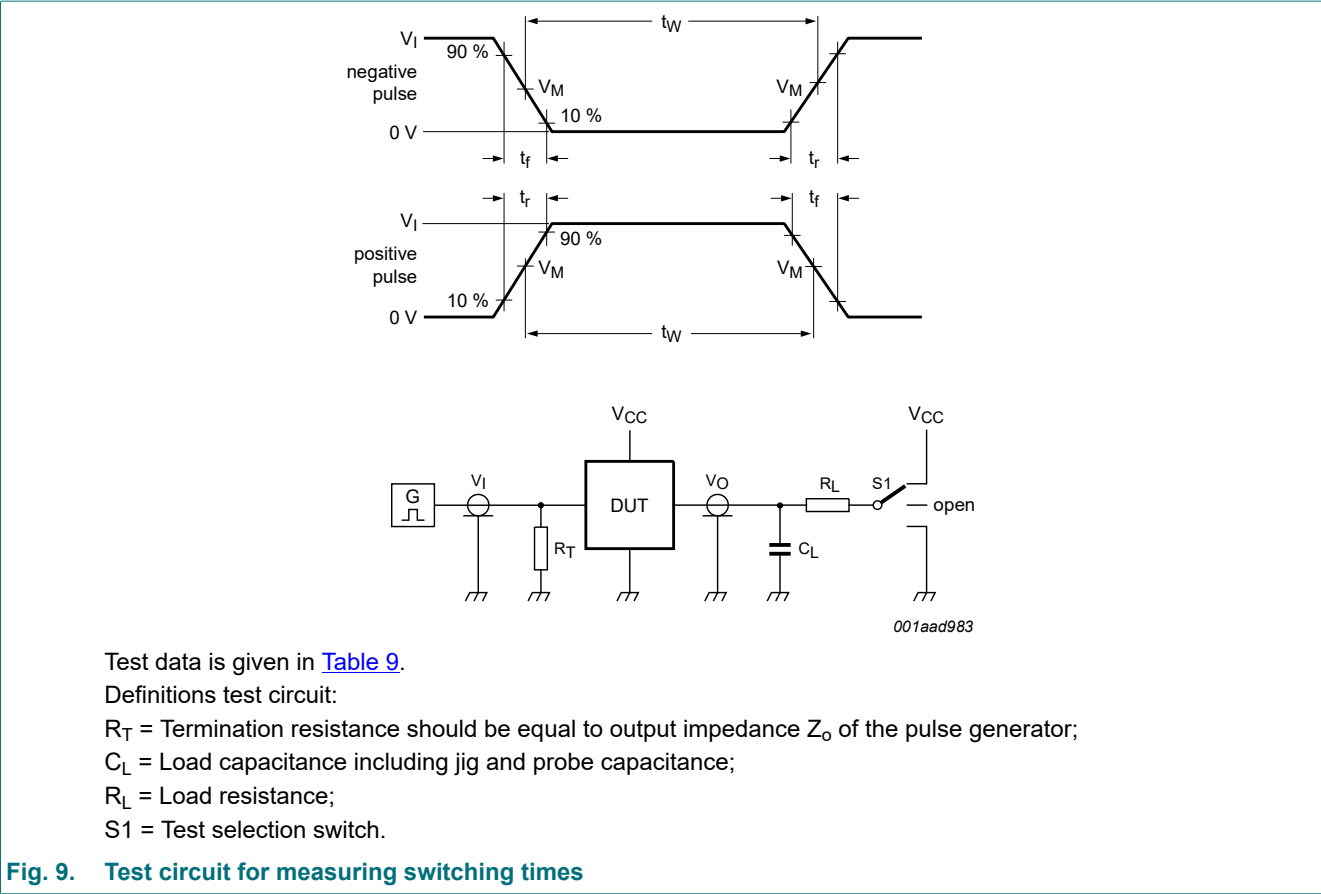


Fig. 9. Test circuit for measuring switching times

Table 9. Test data

| Type     | Input    |            | Load         |              | S1 position        |                    |                    |
|----------|----------|------------|--------------|--------------|--------------------|--------------------|--------------------|
|          | $V_I$    | $t_r, t_f$ | $C_L$        | $R_L$        | $t_{PHL}, t_{PLH}$ | $t_{PZH}, t_{PHZ}$ | $t_{PZL}, t_{PLZ}$ |
| 74HC573  | $V_{CC}$ | 6 ns       | 15 pF, 50 pF | 1 k $\Omega$ | open               | GND                | $V_{CC}$           |
| 74HCT573 | 3 V      | 6 ns       | 15 pF, 50 pF | 1 k $\Omega$ | open               | GND                | $V_{CC}$           |

11. 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)

DHVQFN20: plastic dual in-line compatible thermal enhanced very thin quad flat package; no leads;  
20 terminals; body 2.5 x 4.5 x 0.85 mm

SOT764-1



Fig. 12. Package outline SOT764-1 (DHVQFN20)

12. Abbreviations

Table 10. Abbreviations

| Acronym | Description                               |
|---------|-------------------------------------------|
| ANSI    | American National Standards Institute     |
| CDM     | Charged Device Model                      |
| CMOS    | Complementary Metal Oxide Semiconductor   |
| DUT     | Device Under Test                         |
| ESD     | ElectroStatic Discharge                   |
| ESDA    | ElectroStatic Discharge Association       |
| HBM     | Human Body Model                          |
| JEDEC   | Joint Electron Device Engineering Council |
| TTL     | Transistor-Transistor Logic               |

13. Revision history

Table 11. Revision history

| Document ID         | Release date                                                                                                                                                                                                                                         | Data sheet status     | Change notice | Supersedes          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------|---------------------|
| 74HC_HCT573 v.9     | 20240805                                                                                                                                                                                                                                             | Product data sheet    | -             | 74HC_HCT573 v.8     |
| Modifications:      | <ul style="list-style-type: none"><li><a href="#">Section 2</a>: ESD specification updated according to the latest JEDEC standard.</li></ul>                                                                                                         |                       |               |                     |
| 74HC_HCT573 v.8     | 20210910                                                                                                                                                                                                                                             | Product data sheet    | -             | 74HC_HCT573 v.7     |
| Modifications:      | <ul style="list-style-type: none"><li>Type numbers 74HC573DB and 74HCT573DB (SO339-1/SSOP20) removed.</li><li><a href="#">Section 2</a> updated.</li><li><a href="#">Section 7</a>: Derating values for P<sub>tot</sub> have been updated.</li></ul> |                       |               |                     |
| 74HC_HCT573 v.7     | 20160304                                                                                                                                                                                                                                             | Product data sheet    | -             | 74HC_HCT573 v.6     |
| Modifications:      | <ul style="list-style-type: none"><li>Type numbers 74HC573N and 74HCT573N (SOT146-1) removed.</li></ul>                                                                                                                                              |                       |               |                     |
| 74HC_HCT573 v.6     | 20150126                                                                                                                                                                                                                                             | Product data sheet    | -             | 74HC_HCT573 v.5     |
| Modifications:      | <ul style="list-style-type: none"><li><a href="#">Table 7</a>: Power dissipation capacitance condition for 74HCT573 is corrected.</li></ul>                                                                                                          |                       |               |                     |
| 74HC_HCT573 v.5     | 20120815                                                                                                                                                                                                                                             | Product data sheet    | -             | 74HC_HCT573 v.4     |
| Modifications:      | <ul style="list-style-type: none"><li>Alternative descriptive title corrected (errata).</li></ul>                                                                                                                                                    |                       |               |                     |
| 74HC_HCT573 v.4     | 20120806                                                                                                                                                                                                                                             | Product data sheet    | -             | 74HC_HCT573 v.3     |
| 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></ul> |                       |               |                     |
| 74HC_HCT573 v.3     | 20060117                                                                                                                                                                                                                                             | Product data sheet    | -             | 74HC_HCT573_CNV v.2 |
| 74HC_HCT573_CNV v.2 | 19901201                                                                                                                                                                                                                                             | 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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