

# 74HC125-Q100; 74HCT125-Q100

Quad buffer/line driver; 3-state

Rev. 2 — 19 January 2015

Product data sheet

## 1. General description

The 74HC125-Q100; 74HCT125-Q100 is a quad buffer/line driver with 3-state outputs controlled by the output enable inputs ( $n\overline{OE}$ ). A HIGH on  $n\overline{OE}$  causes the outputs to assume a high impedance OFF-state. Inputs include clamp diodes which enable the use of current limiting resistors to interface inputs to voltages in excess of  $V_{CC}$ .

This product has been qualified to the Automotive Electronics Council (AEC) standard Q100 (Grade 1) and is suitable for use in automotive applications.

## 2. Features and benefits

- Automotive product qualification in accordance with AEC-Q100 (Grade 1)
  - ◆ Specified from  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  and from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Complies with JEDEC standard no. 7A
- Input levels:
  - ◆ The 74HC125-Q100: CMOS levels
  - ◆ The 74HCT125-Q100: TTL levels
- ESD protection:
  - ◆ MIL-STD-883, method 3015 exceeds 2000 V
  - ◆ HBM JESD22-A114F exceeds 2000 V
  - ◆ MM JESD22-A115-A exceeds 200 V ( $C = 200 \text{ pF}$ ,  $R = 0 \Omega$ )
- Multiple package options

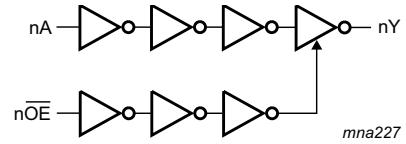
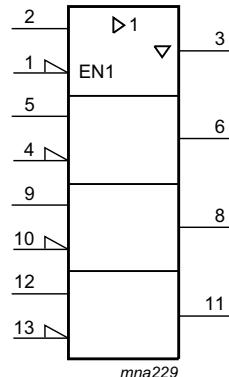
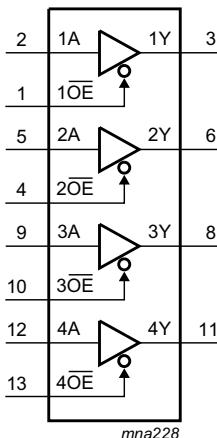
## 3. Ordering information

Table 1. Ordering information

| Type number     | Package                                         |         |                                                                        |  | Version  |
|-----------------|-------------------------------------------------|---------|------------------------------------------------------------------------|--|----------|
|                 | Temperature range                               | Name    | Description                                                            |  |          |
| 74HC125D-Q100   | $-40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ | SO14    | plastic small outline package; 14 leads; body width 3.9 mm             |  | SOT108-1 |
| 74HCT125D-Q100  |                                                 |         |                                                                        |  |          |
| 74HC125PW-Q100  | $-40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ | TSSOP14 | plastic thin shrink small outline package; 14 leads; body width 4.4 mm |  | SOT402-1 |
| 74HCT125PW-Q100 |                                                 |         |                                                                        |  |          |



## 4. Functional diagram



## 5. Pinning information

### 5.1 Pinning

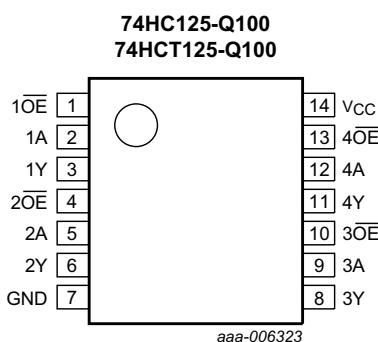


Fig 4. Pin configuration SO14 and TSSOP14

## 5.2 Pin description

Table 2. Pin description

| Symbol             | Pin          | Description                      |
|--------------------|--------------|----------------------------------|
| 1OE, 2OE, 3OE, 4OE | 1, 4, 10, 13 | output enable input (active LOW) |
| 1A, 2A, 3A, 4A     | 2, 5, 9, 12  | data input                       |
| 1Y, 2Y, 3Y, 4Y     | 3, 6, 8, 11  | data output                      |
| GND                | 7            | ground (0 V)                     |
| V <sub>CC</sub>    | 14           | supply voltage                   |

## 6. Functional description

Table 3. Function table<sup>[1]</sup>

| Control | Input | Output |
|---------|-------|--------|
| nOE     | nA    | nY     |
| L       | L     | L      |
|         | H     | H      |
| H       | X     | Z      |

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

## 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 | <sup>[1]</sup> - | ±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 | <sup>[1]</sup> - | ±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 |                                                                     | <sup>[1]</sup> - | 500  | mW   |

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

[2] For SO14 packages: P<sub>tot</sub> derates linearly with 8 mW/K above 70 °C.

For TSSOP14 packages: P<sub>tot</sub> derates linearly with 5.5 mW/K above 60 °C.

## 8. Recommended operating conditions

**Table 5. Recommended operating conditions**

Voltages are referenced to GND (ground = 0 V)

| Symbol              | Parameter                           | Conditions              | 74HC125-Q100 |      |                 | 74HCT125-Q100 |      |                 | 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   |
| $\Delta t/\Delta V$ | 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   |      |
| <b>74HC125-Q100</b> |                           |                                                                                                                        |       |      |      |                  |      |                   |       |      |
| 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>O</sub> = V <sub>CC</sub> or GND; V <sub>CC</sub> = 6.0 V | -     | -    | ±0.5 | -                | ±5.0 | -                 | ±10.0 | μA   |

**Table 6. Static characteristics ...continued**

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  |      |
| 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   |
| <b>74HCT125-Q100</b> |                           |                                                                                                                                                                  |       |      |      |                  |      |                   |      |      |
| 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    |
| 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 | per input pin;<br>V <sub>I</sub> = V <sub>CC</sub> − 2.1 V; I <sub>O</sub> = 0 A;<br>other inputs at V <sub>CC</sub> or GND;<br>V <sub>CC</sub> = 4.5 V to 5.5 V | -     | 100  | 360  | -                | 450  | -                 | 490  | 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);  $C_L = 50 \text{ pF}$  unless otherwise specified; for test circuit see [Figure 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>74HC125-Q100</b> |                               |                                                                           |       |     |     |                  |     |                   |     |      |
| $t_{pd}$            | propagation delay             | nA to nY; see <a href="#">Figure 5</a> [1]                                |       |     |     |                  |     |                   |     |      |
|                     |                               | $V_{CC} = 2.0 \text{ V}$                                                  | -     | 30  | 100 | -                | 125 | -                 | 150 | ns   |
|                     |                               | $V_{CC} = 4.5 \text{ V}$                                                  | -     | 11  | 20  | -                | 25  | -                 | 30  | ns   |
|                     |                               | $V_{CC} = 5 \text{ V}; C_L = 15 \text{ pF}$                               | -     | 9   | -   | -                | -   | -                 | -   | ns   |
|                     |                               | $V_{CC} = 6.0 \text{ V}$                                                  | -     | 9   | 17  | -                | 21  | -                 | 26  | ns   |
| $t_{en}$            | enable time                   | nOE to nY; see <a href="#">Figure 6</a> [2]                               |       |     |     |                  |     |                   |     |      |
|                     |                               | $V_{CC} = 2.0 \text{ V}$                                                  | -     | 41  | 125 | -                | 155 | -                 | 190 | ns   |
|                     |                               | $V_{CC} = 4.5 \text{ V}$                                                  | -     | 15  | 25  | -                | 31  | -                 | 38  | ns   |
|                     |                               | $V_{CC} = 6.0 \text{ V}$                                                  | -     | 12  | 21  | -                | 26  | -                 | 32  | ns   |
| $t_{dis}$           | disable time                  | nOE to nY; see <a href="#">Figure 6</a> [3]                               |       |     |     |                  |     |                   |     |      |
|                     |                               | $V_{CC} = 2.0 \text{ V}$                                                  | -     | 41  | 125 | -                | 155 | -                 | 190 | ns   |
|                     |                               | $V_{CC} = 4.5 \text{ V}$                                                  | -     | 15  | 25  | -                | 31  | -                 | 38  | ns   |
|                     |                               | $V_{CC} = 6.0 \text{ V}$                                                  | -     | 12  | 21  | -                | 26  | -                 | 32  | ns   |
| $t_t$               | transition time               | nY; see <a href="#">Figure 5</a> [4]                                      |       |     |     |                  |     |                   |     |      |
|                     |                               | $V_{CC} = 2.0 \text{ V}$                                                  | -     | 14  | 60  | -                | 75  | -                 | 90  | ns   |
|                     |                               | $V_{CC} = 4.5 \text{ V}$                                                  | -     | 5   | 12  | -                | 15  | -                 | 18  | ns   |
|                     |                               | $V_{CC} = 6.0 \text{ V}$                                                  | -     | 4   | 10  | -                | 13  | -                 | 15  | ns   |
| $C_{PD}$            | power dissipation capacitance | $C_L = 50 \text{ pF}; f = 1 \text{ MHz}; V_I = \text{GND to } V_{CC}$ [5] | -     | 22  | -   | -                | -   | -                 | -   | pF   |

Table 7. Dynamic characteristics ...continued

Voltages are referenced to GND (ground = 0 V);  $C_L = 50 \text{ pF}$  unless otherwise specified; for test circuit see [Figure 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>74HCT125-Q100</b> |                               |                                                                                       |       |     |     |                  |     |                   |     |      |
| $t_{pd}$             | propagation delay             | nA to nY; see <a href="#">Figure 5</a> [1]                                            |       |     |     |                  |     |                   |     |      |
|                      |                               | $V_{CC} = 4.5 \text{ V}$                                                              | -     | 15  | 25  | -                | 31  | -                 | 38  | ns   |
|                      |                               | $V_{CC} = 5 \text{ V}; C_L = 15 \text{ pF}$                                           | -     | 12  | -   | -                | -   | -                 | -   | ns   |
| $t_{en}$             | enable time                   | n $\bar{OE}$ to nY; see <a href="#">Figure 6</a> [2]                                  |       |     |     |                  |     |                   |     |      |
|                      |                               | $V_{CC} = 4.5 \text{ V}$                                                              | -     | 15  | 28  | -                | 35  | -                 | 42  | ns   |
| $t_{dis}$            | disable time                  | n $\bar{OE}$ to nY; see <a href="#">Figure 6</a> [3]                                  |       |     |     |                  |     |                   |     |      |
|                      |                               | $V_{CC} = 4.5 \text{ V}$                                                              | -     | 15  | 25  | -                | 31  | -                 | 38  | ns   |
| $t_t$                | transition time               | nY; see <a href="#">Figure 5</a> [4]                                                  | -     | 5   | 12  | -                | 15  | -                 | 18  | ns   |
| $C_{PD}$             | power dissipation capacitance | $C_L = 50 \text{ pF}; f = 1 \text{ MHz}; V_I = \text{GND to } V_{CC} - 1.5 \text{ V}$ | [5]   | -   | 24  | -                | -   | -                 | -   | pF   |

[1]  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .[2]  $t_{en}$  is the same as  $t_{PZH}$  and  $t_{PZL}$ .[3]  $t_{dis}$  is the same as  $t_{PLZ}$  and  $t_{PHZ}$ .[4]  $t_t$  is the same as  $t_{THL}$  and  $t_{TLH}$ .[5]  $C_{PD}$  is used to determine the dynamic power dissipation ( $P_D$  in  $\mu\text{W}$ ).

$$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \sum(C_L \times V_{CC}^2 \times f_o) \text{ where:}$$

 $f_i$  = input frequency in MHz; $f_o$  = output frequency in MHz; $C_L$  = output load capacitance in pF; $V_{CC}$  = supply voltage in V;

N = number of inputs switching;

 $\sum(C_L \times V_{CC}^2 \times f_o)$  = sum of outputs.

## 11. Waveforms

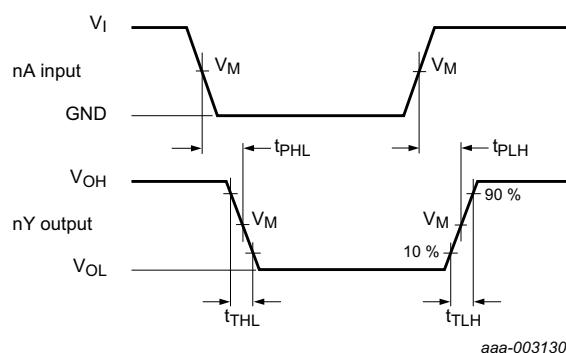
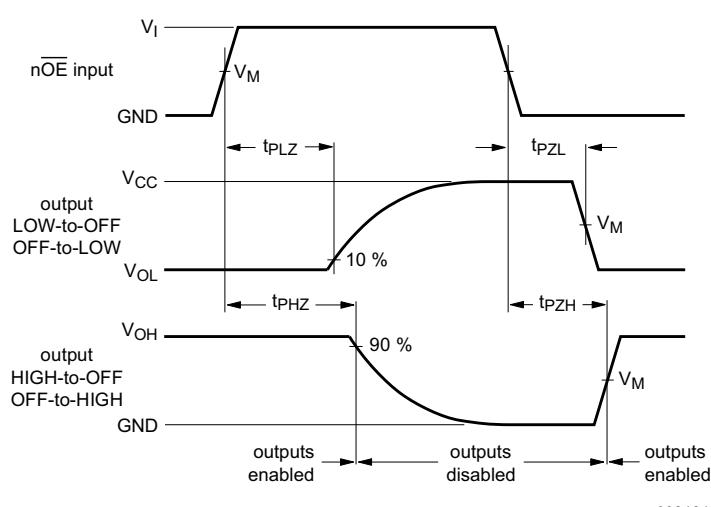
Measurement points are given in [Table 8](#). $V_{OL}$  and  $V_{OH}$  are typical voltage output levels that occur with the output load.

Fig 5. Propagation delay input (nA) to output (nY)



aaa-003131

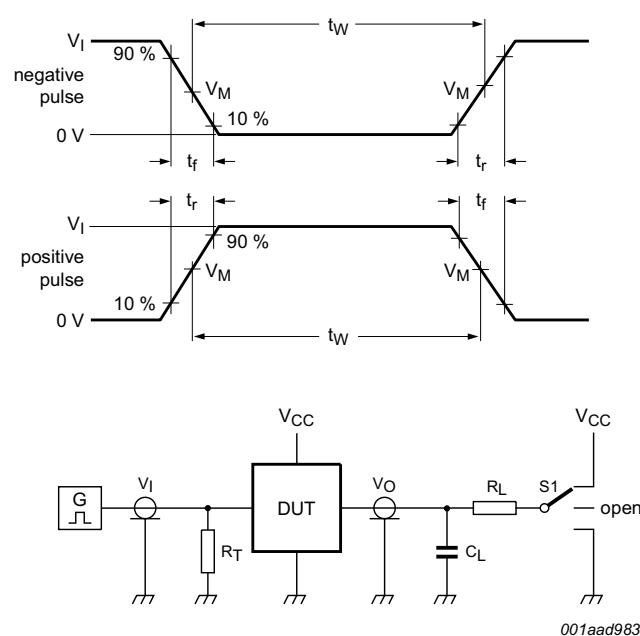
Measurement points are given in [Table 8](#).

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

**Fig 6. Enable and disable times**

**Table 8. Measurement points**

| Type          | Input       | Output      |
|---------------|-------------|-------------|
|               | $V_M$       | $V_M$       |
| 74HC125-Q100  | $0.5V_{CC}$ | $0.5V_{CC}$ |
| 74HCT125-Q100 | 1.3 V       | 1.3 V       |



Test data is given in [Table 9](#).

Definitions test circuit:

$R_T$  = Termination resistance should be equal to output impedance  $Z_o$  of the pulse generator.

$C_L$  = Load capacitance including jig and probe capacitance.

$R_L$  = Load resistance.

$S1$  = Test selection switch.

**Fig 7. Test circuit for measuring switching times**

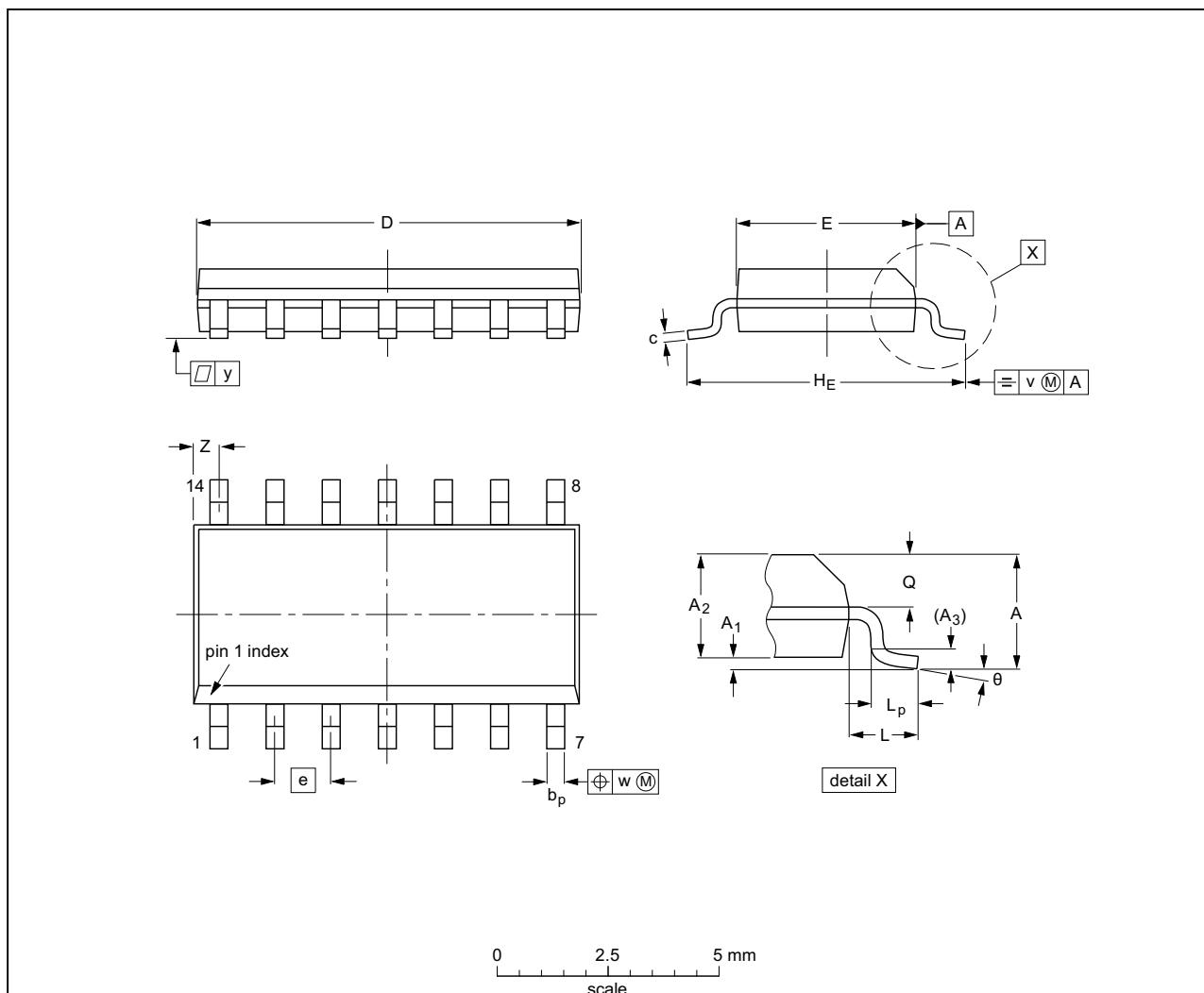
**Table 9. Test data**

| Type          | Input    |            | Load         |              | S1 position        |                    |                    |
|---------------|----------|------------|--------------|--------------|--------------------|--------------------|--------------------|
|               | $V_I$    | $t_r, t_f$ | $C_L$        | $R_L$        | $t_{PHL}, t_{PLH}$ | $t_{PZH}, t_{PHZ}$ | $t_{PZL}, t_{PLZ}$ |
| 74HC125-Q100  | $V_{CC}$ | 6 ns       | 15 pF, 50 pF | 1 k $\Omega$ | open               | GND                | $V_{CC}$           |
| 74HCT125-Q100 | 3 V      | 6 ns       | 15 pF, 50 pF | 1 k $\Omega$ | open               | GND                | $V_{CC}$           |

## 12. Package outline

SO14: plastic small outline package; 14 leads; body width 3.9 mm

SOT108-1



### DIMENSIONS (inch dimensions are derived from the original mm dimensions)

| UNIT   | A<br>max.      | A <sub>1</sub> | A <sub>2</sub> | A <sub>3</sub> | b <sub>p</sub> | c                | D <sup>(1)</sup> | E <sup>(1)</sup> | e    | H <sub>E</sub> | L     | L <sub>p</sub> | Q              | v    | w    | y     | Z <sup>(1)</sup> | θ        |
|--------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------|----------------|-------|----------------|----------------|------|------|-------|------------------|----------|
| mm     | 1.75<br>0.10   | 0.25<br>1.25   | 1.45           | 0.25           | 0.49<br>0.36   | 0.25<br>0.19     | 8.75<br>8.55     | 4.0<br>3.8       | 1.27 | 6.2<br>5.8     | 1.05  | 1.0<br>0.4     | 0.7<br>0.6     | 0.25 | 0.25 | 0.1   | 0.7<br>0.3       | 8°<br>0° |
| inches | 0.069<br>0.004 | 0.010<br>0.049 | 0.057          | 0.01           | 0.019<br>0.014 | 0.0100<br>0.0075 | 0.35<br>0.34     | 0.16<br>0.15     | 0.05 | 0.244<br>0.228 | 0.041 | 0.039<br>0.016 | 0.028<br>0.024 | 0.01 | 0.01 | 0.004 | 0.028<br>0.012   | 0°<br>0° |

### Note

1. Plastic or metal protrusions of 0.15 mm (0.006 inch) maximum per side are not included.

| OUTLINE<br>VERSION | REFERENCES |        |       |  | EUROPEAN<br>PROJECTION | ISSUE DATE           |
|--------------------|------------|--------|-------|--|------------------------|----------------------|
|                    | IEC        | JEDEC  | JEITA |  |                        |                      |
| SOT108-1           | 076E06     | MS-012 |       |  |                        | 99-12-27<br>03-02-19 |

Fig 8. Package outline SOT108-1 (SO14)

TSSOP14: plastic thin shrink small outline package; 14 leads; body width 4.4 mm

SOT402-1

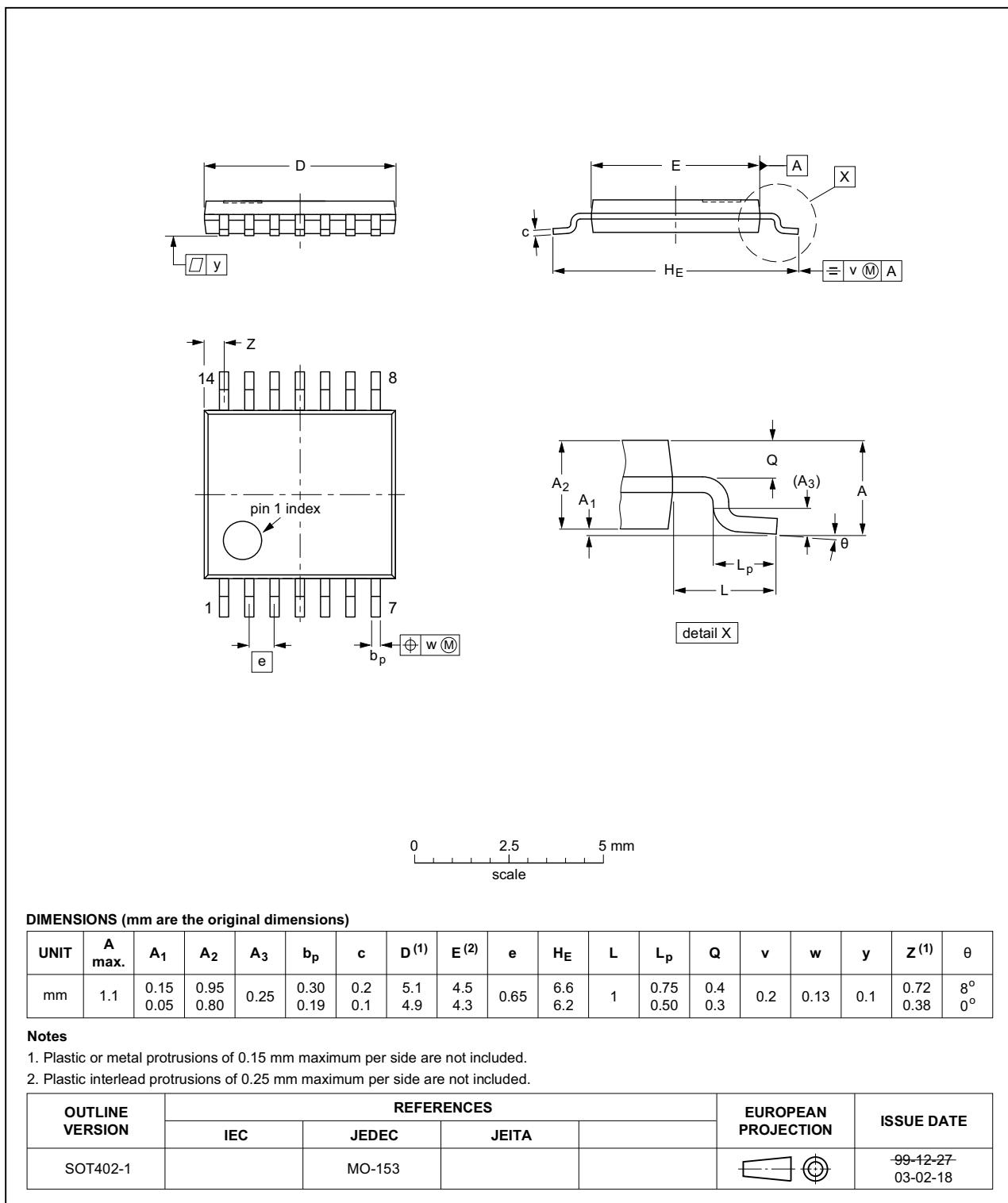


Fig 9. Package outline SOT402-1 (TSSOP14)

## 13. Abbreviations

**Table 10. Abbreviations**

| Acronym | Description                                    |
|---------|------------------------------------------------|
| CMOS    | Complementary Metal Oxide Semiconductor        |
| LSTTL   | Low-power Schottky Transistor-Transistor Logic |
| ESD     | ElectroStatic Discharge                        |
| HBM     | Human Body Model                               |
| MM      | Machine Model                                  |
| MIL     | Military                                       |
| TTL     | Transistor-Transistor Logic                    |

## 14. Revision history

**Table 11. Revision history**

| Document ID          | Release date                                                                                        | Data sheet status  | Change notice | Supersedes           |
|----------------------|-----------------------------------------------------------------------------------------------------|--------------------|---------------|----------------------|
| 74HC_HCT125_Q100 v.2 | 20150119                                                                                            | Product data sheet | -             | 74HC_HCT125_Q100 v.1 |
| Modifications:       | • <a href="#">Table 7</a> : Power dissipation capacitance condition for 74HCT125-Q100 is corrected. |                    |               |                      |
| 74HC_HCT125_Q100 v.1 | 20130226                                                                                            | Product data sheet | -             | -                    |

## 15. Legal information

### 15.1 Data sheet status

| Document status <sup>[1][2]</sup> | Product status <sup>[3]</sup> | 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 URL <http://www.nxp.com>.

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## 17. Contents

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|           |                                               |           |
|-----------|-----------------------------------------------|-----------|
| <b>1</b>  | <b>General description</b> .....              | <b>1</b>  |
| <b>2</b>  | <b>Features and benefits</b> .....            | <b>1</b>  |
| <b>3</b>  | <b>Ordering information</b> .....             | <b>1</b>  |
| <b>4</b>  | <b>Functional diagram</b> .....               | <b>2</b>  |
| <b>5</b>  | <b>Pinning information</b> .....              | <b>2</b>  |
| 5.1       | Pinning .....                                 | 2         |
| 5.2       | Pin description .....                         | 3         |
| <b>6</b>  | <b>Functional description</b> .....           | <b>3</b>  |
| <b>7</b>  | <b>Limiting values</b> .....                  | <b>3</b>  |
| <b>8</b>  | <b>Recommended operating conditions</b> ..... | <b>4</b>  |
| <b>9</b>  | <b>Static characteristics</b> .....           | <b>4</b>  |
| <b>10</b> | <b>Dynamic characteristics</b> .....          | <b>6</b>  |
| <b>11</b> | <b>Waveforms</b> .....                        | <b>7</b>  |
| <b>12</b> | <b>Package outline</b> .....                  | <b>10</b> |
| <b>13</b> | <b>Abbreviations</b> .....                    | <b>12</b> |
| <b>14</b> | <b>Revision history</b> .....                 | <b>12</b> |
| <b>15</b> | <b>Legal information</b> .....                | <b>13</b> |
| 15.1      | Data sheet status .....                       | 13        |
| 15.2      | Definitions.....                              | 13        |
| 15.3      | Disclaimers.....                              | 13        |
| 15.4      | Trademarks.....                               | 14        |
| <b>16</b> | <b>Contact information</b> .....              | <b>14</b> |
| <b>17</b> | <b>Contents</b> .....                         | <b>15</b> |

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