

# 74LVC1G18

## 1-of-2 non-inverting demultiplexer with 3-state deselected output

Rev. 02 — 30 August 2007

Product data sheet

### 1. General description

The 74LVC1G18 is a 1-of-2 non-inverting demultiplexer with a 3-state output. The device buffers the data on input pin A and passes it either to output 1Y or 2Y, depending on whether the state of the select input (pin S) is LOW or HIGH. Input can be driven from either 3.3 or 5 V devices. These features allow the use of these devices in a mixed 3.3 and 5 V environment.

This device is fully specified for partial power-down applications using  $I_{OFF}$ . The  $I_{OFF}$  circuitry disables the output, preventing the damaging backflow current through the device when it is powered down.

### 2. Features

- Wide supply voltage range from 1.65 to 5.5 V
- 5 V tolerant input/output for interfacing with 5 V logic
- High noise immunity
- Complies with JEDEC standard:
  - ◆ JESD8-7 (1.65 V to 1.95 V)
  - ◆ JESD8-5 (2.3 V to 2.7 V)
  - ◆ JESD8B/JESD36 (2.7 V to 3.6 V)
- ESD protection:
  - ◆ HBM EIA/JESD22-A114E exceeds 2000 V
  - ◆ MM EIA/JESD22-A115-A exceeds 200 V.
- $\pm 24$  mA output drive ( $V_{CC} = 3.0$  V)
- CMOS low power consumption
- Latch-up performance exceeds 250 mA
- Direct interface with TTL levels
- SOT363 and SOT457 package
- Specified from  $-40$  to  $+85$  °C and  $-40$  to  $+125$  °C.

### 3. Ordering information

Table 1. Ordering information

| Type number | Package               |       |                                                  |         |
|-------------|-----------------------|-------|--------------------------------------------------|---------|
|             | Temperature range     | Name  | Description                                      | Version |
| 74LVC1G18GW | $-40$ °C to $+125$ °C | SC-88 | plastic surface-mounted package; 6 leads         | SOT363  |
| 74LVC1G18GV | $-40$ °C to $+125$ °C | SC-74 | plastic surface-mounted package (TSOP6); 5 leads | SOT457  |

4. Marking

Table 2. Marking

| Type number | Marking code |
|-------------|--------------|
| 74LVC1G18GW | VW           |
| 74LVC1G18GV | V18          |

5. Functional diagram

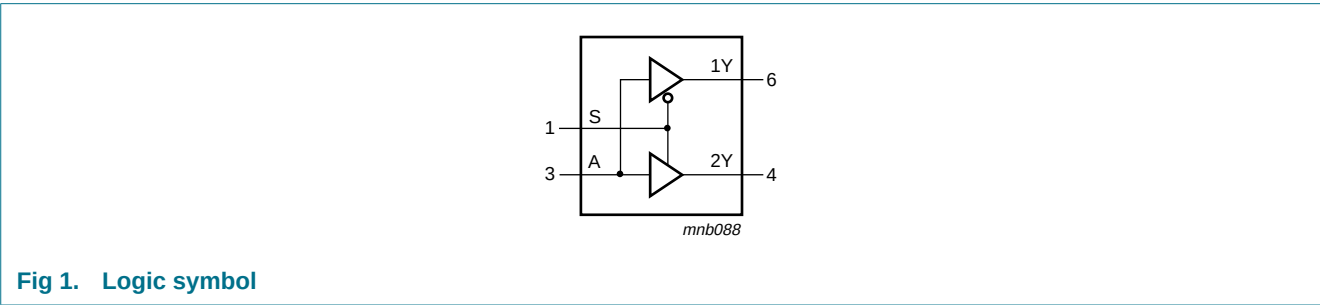


Fig 1. Logic symbol

6. Pinning information

6.1 Pinning

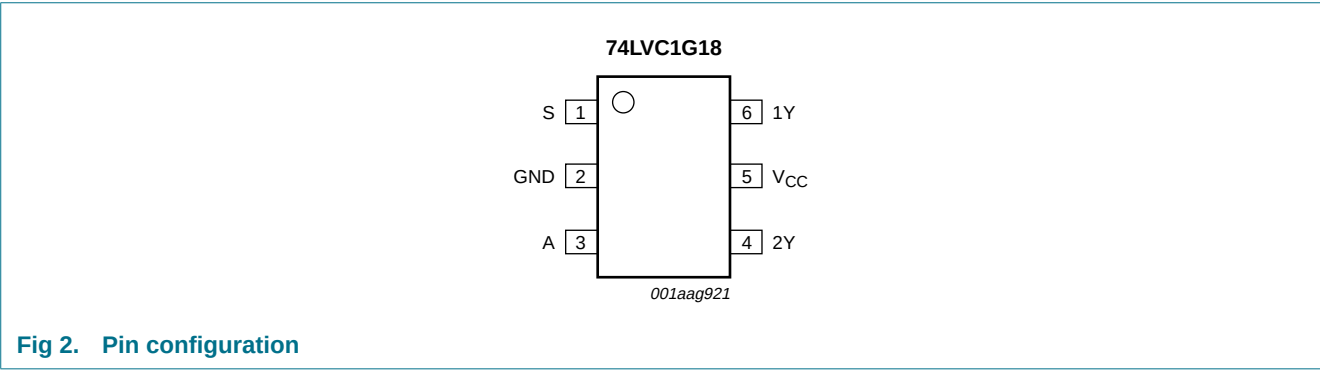


Fig 2. Pin configuration

6.2 Pin description

Table 3. Pin description

| Symbol          | Pin | Description    |
|-----------------|-----|----------------|
| S               | 1   | data select    |
| GND             | 2   | ground (0 V)   |
| A               | 3   | data input     |
| 2Y              | 4   | data output    |
| V <sub>CC</sub> | 5   | supply voltage |
| 1Y              | 6   | data output    |

## 7. Functional description

Table 4. Function table<sup>[1]</sup>

| Input |   | Output |    |
|-------|---|--------|----|
| S     | A | 1Y     | 2Y |
| L     | L | L      | Z  |
| L     | H | H      | Z  |
| H     | L | Z      | L  |
| H     | H | Z      | H  |

[1] H = HIGH voltage level; L = LOW voltage level; Z = high-impedance OFF-state

## 8. Limiting values

Table 5. 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 |
|-----------|-------------------------|-------------------------------|------------------------|----------------|------|
| $V_{CC}$  | supply voltage          |                               | -0.5                   | +6.5           | V    |
| $I_{IK}$  | input clamping current  | $V_I < 0$ V                   | -50                    | -              | mA   |
| $V_I$     | input voltage           |                               | <sup>[1]</sup> -0.5    | +6.5           | V    |
| $I_{OK}$  | output clamping current | $V_O > V_{CC}$ or $V_O < 0$ V | -                      | ±50            | mA   |
| $V_O$     | output voltage          | Active mode                   | <sup>[1][2]</sup> -0.5 | $V_{CC} + 0.5$ | V    |
|           |                         | Power-down mode               | <sup>[1][2]</sup> -0.5 | +6.5           | V    |
| $I_O$     | output current          | $V_O = 0$ V to $V_{CC}$       | -                      | ±50            | mA   |
| $I_{CC}$  | supply current          |                               | -                      | 100            | mA   |
| $I_{GND}$ | ground current          |                               | -100                   | -              | mA   |
| $T_{stg}$ | storage temperature     |                               | -65                    | +150           | °C   |
| $P_{tot}$ | total power dissipation | $T_{amb} = -40$ °C to +125 °C | <sup>[3]</sup> -       | 300            | mW   |

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

[2] When  $V_{CC} = 0$  V (Power-down mode), the output voltage can be 5.5 V in normal operation.

[3] For SC-74 and SC-88 packages: above 87.5 °C the value of  $P_{tot}$  derates linearly with 4.0 mW/K.

## 9. Recommended operating conditions

Table 6. Recommended operating conditions

| Symbol              | Parameter                           | Conditions                      | Min  | Typ | Max      | Unit  |
|---------------------|-------------------------------------|---------------------------------|------|-----|----------|-------|
| $V_{CC}$            | supply voltage                      |                                 | 1.65 | -   | 5.5      | V     |
| $V_I$               | input voltage                       |                                 | 0    | -   | 5.5      | V     |
| $V_O$               | output voltage                      | Active mode                     | 0    | -   | $V_{CC}$ | $V_O$ |
|                     |                                     | $V_{CC} = 0$ V; Power-down mode | 0    | -   | 5.5      | $V_O$ |
| $T_{amb}$           | ambient temperature                 |                                 | -40  | -   | +125     | °C    |
| $\Delta t/\Delta V$ | input transition rise and fall rate | $V_{CC} = 1.65$ V to 2.7 V      | -    | -   | 20       | ns/V  |
|                     |                                     | $V_{CC} = 2.7$ V to 5.5 V       | -    | -   | 10       | ns/V  |

## 10. Static characteristics

**Table 7. Static characteristics**

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

| Symbol                                     | Parameter                 | Conditions                                                                                                   | Min                    | Typ <sup>[1]</sup> | Max                    | Unit |
|--------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------|------------------------|--------------------|------------------------|------|
| <b>T<sub>amb</sub> = -40 °C to +85 °C</b>  |                           |                                                                                                              |                        |                    |                        |      |
| V <sub>IH</sub>                            | HIGH-level input voltage  | V <sub>CC</sub> = 1.65 V to 1.95 V                                                                           | 0.65 × V <sub>CC</sub> | -                  | -                      | V    |
|                                            |                           | V <sub>CC</sub> = 2.3 V to 2.7 V                                                                             | 1.7                    | -                  | -                      | V    |
|                                            |                           | V <sub>CC</sub> = 2.7 V to 3.6 V                                                                             | 2.0                    | -                  | -                      | V    |
|                                            |                           | V <sub>CC</sub> = 4.5 V to 5.5 V                                                                             | 0.7 × V <sub>CC</sub>  | -                  | -                      | V    |
| V <sub>IL</sub>                            | LOW-level input voltage   | V <sub>CC</sub> = 1.65 V to 1.95 V                                                                           | -                      | -                  | 0.35 × V <sub>CC</sub> | V    |
|                                            |                           | V <sub>CC</sub> = 2.3 V to 2.7 V                                                                             | -                      | -                  | 0.7                    | V    |
|                                            |                           | V <sub>CC</sub> = 2.7 V to 3.6 V                                                                             | -                      | -                  | 0.8                    | V    |
|                                            |                           | V <sub>CC</sub> = 4.5 V to 5.5 V                                                                             | -                      | -                  | 0.3 × V <sub>CC</sub>  | V    |
| V <sub>OH</sub>                            | HIGH-level output voltage | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>                                                          |                        |                    |                        |      |
|                                            |                           | I <sub>O</sub> = -100 µA; V <sub>CC</sub> = 1.65 V to 5.5 V                                                  | V <sub>CC</sub> - 0.1  | -                  | -                      | V    |
|                                            |                           | I <sub>O</sub> = -4 mA; V <sub>CC</sub> = 1.65 V                                                             | 1.2                    | -                  | -                      | V    |
|                                            |                           | I <sub>O</sub> = -8 mA; V <sub>CC</sub> = 2.3 V                                                              | 1.9                    | -                  | -                      | V    |
|                                            |                           | I <sub>O</sub> = -12 mA; V <sub>CC</sub> = 2.7 V                                                             | 2.2                    | -                  | -                      | V    |
|                                            |                           | I <sub>O</sub> = -24 mA; V <sub>CC</sub> = 3.0 V                                                             | 2.3                    | -                  | -                      | V    |
|                                            |                           | I <sub>O</sub> = -32 mA; V <sub>CC</sub> = 4.5 V                                                             | 3.8                    | -                  | -                      | V    |
| V <sub>OL</sub>                            | LOW-level output voltage  | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>                                                          |                        |                    |                        |      |
|                                            |                           | I <sub>O</sub> = 100 µA; V <sub>CC</sub> = 1.65 V to 5.5 V                                                   | -                      | -                  | 0.1                    | V    |
|                                            |                           | I <sub>O</sub> = 4 mA; V <sub>CC</sub> = 1.65 V                                                              | -                      | -                  | 0.45                   | V    |
|                                            |                           | I <sub>O</sub> = 8 mA; V <sub>CC</sub> = 2.3 V                                                               | -                      | -                  | 0.3                    | V    |
|                                            |                           | I <sub>O</sub> = 12 mA; V <sub>CC</sub> = 2.7 V                                                              | -                      | -                  | 0.4                    | V    |
|                                            |                           | I <sub>O</sub> = 24 mA; V <sub>CC</sub> = 3.0 V                                                              | -                      | -                  | 0.55                   | V    |
|                                            |                           | I <sub>O</sub> = 32 mA; V <sub>CC</sub> = 4.5 V                                                              | -                      | -                  | 0.55                   | V    |
| I <sub>I</sub>                             | input leakage current     | V <sub>CC</sub> = 0 V to 5.5 V; V <sub>I</sub> = 5.5 V or GND                                                | -                      | ±0.1               | ±5                     | µA   |
| I <sub>OZ</sub>                            | OFF-state output current  | V <sub>CC</sub> = 3.6 V; V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>O</sub> = 5.5 V or GND | -                      | ±0.1               | ±10                    | µA   |
| I <sub>OFF</sub>                           | power-off leakage current | V <sub>CC</sub> = 0 V; V <sub>I</sub> or V <sub>O</sub> = 5.5 V                                              | -                      | ±0.1               | ±10                    | µA   |
| I <sub>CC</sub>                            | supply current            | V <sub>I</sub> = 5.5 V or GND; V <sub>CC</sub> = 1.65 V to 5.5 V; I <sub>O</sub> = 0 A                       | -                      | 0.1                | 10                     | µA   |
| ΔI <sub>CC</sub>                           | additional supply current | per pin; V <sub>CC</sub> = 2.3 V to 5.5 V; V <sub>I</sub> = V <sub>CC</sub> - 0.6 V; I <sub>O</sub> = 0 A    | -                      | 5                  | 500                    | µA   |
| C <sub>I</sub>                             | input capacitance         | V <sub>CC</sub> = 3.3 V; V <sub>I</sub> = GND to V <sub>CC</sub>                                             | -                      | 2.5                | -                      | pF   |
| <b>T<sub>amb</sub> = -40 °C to +125 °C</b> |                           |                                                                                                              |                        |                    |                        |      |
| V <sub>IH</sub>                            | HIGH-level input voltage  | V <sub>CC</sub> = 1.65 V to 1.95 V                                                                           | 0.65 × V <sub>CC</sub> | -                  | -                      | V    |
|                                            |                           | V <sub>CC</sub> = 2.3 V to 2.7 V                                                                             | 1.7                    | -                  | -                      | V    |
|                                            |                           | V <sub>CC</sub> = 2.7 V to 3.6 V                                                                             | 2.0                    | -                  | -                      | V    |
|                                            |                           | V <sub>CC</sub> = 4.5 V to 5.5 V                                                                             | 0.7 × V <sub>CC</sub>  | -                  | -                      | V    |

**Table 7.** Static characteristics ...continued

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

| Symbol           | Parameter                 | Conditions                                                                                                      | Min                   | Typ <sup>[1]</sup> | Max                    | Unit |
|------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------|--------------------|------------------------|------|
| V <sub>IL</sub>  | LOW-level input voltage   | V <sub>CC</sub> = 1.65 V to 1.95 V                                                                              | -                     | -                  | 0.35 × V <sub>CC</sub> | V    |
|                  |                           | V <sub>CC</sub> = 2.3 V to 2.7 V                                                                                | -                     | -                  | 0.7                    | V    |
|                  |                           | V <sub>CC</sub> = 2.7 V to 3.6 V                                                                                | -                     | -                  | 0.8                    | V    |
|                  |                           | V <sub>CC</sub> = 4.5 V to 5.5 V                                                                                | -                     | -                  | 0.3 × V <sub>CC</sub>  | V    |
| V <sub>OH</sub>  | HIGH-level output voltage | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>                                                             |                       |                    |                        |      |
|                  |                           | I <sub>O</sub> = -100 µA; V <sub>CC</sub> = 1.65 V to 5.5 V                                                     | V <sub>CC</sub> - 0.1 | -                  | -                      | V    |
|                  |                           | I <sub>O</sub> = -4 mA; V <sub>CC</sub> = 1.65 V                                                                | 0.95                  | -                  | -                      | V    |
|                  |                           | I <sub>O</sub> = -8 mA; V <sub>CC</sub> = 2.3 V                                                                 | 1.7                   | -                  | -                      | V    |
|                  |                           | I <sub>O</sub> = -12 mA; V <sub>CC</sub> = 2.7 V                                                                | 1.9                   | -                  | -                      | V    |
|                  |                           | I <sub>O</sub> = -24 mA; V <sub>CC</sub> = 3.0 V                                                                | 2.0                   | -                  | -                      | V    |
|                  |                           | I <sub>O</sub> = -32 mA; V <sub>CC</sub> = 4.5 V                                                                | 3.4                   | -                  | -                      | V    |
| V <sub>OL</sub>  | LOW-level output voltage  | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>                                                             |                       |                    |                        |      |
|                  |                           | I <sub>O</sub> = 100 µA; V <sub>CC</sub> = 1.65 V to 5.5 V                                                      | -                     | -                  | 0.1                    | V    |
|                  |                           | I <sub>O</sub> = 4 mA; V <sub>CC</sub> = 1.65 V                                                                 | -                     | -                  | 0.70                   | V    |
|                  |                           | I <sub>O</sub> = 8 mA; V <sub>CC</sub> = 2.3 V                                                                  | -                     | -                  | 0.45                   | V    |
|                  |                           | I <sub>O</sub> = 12 mA; V <sub>CC</sub> = 2.7 V                                                                 | -                     | -                  | 0.60                   | V    |
|                  |                           | I <sub>O</sub> = 24 mA; V <sub>CC</sub> = 3.0 V                                                                 | -                     | -                  | 0.80                   | V    |
|                  |                           | I <sub>O</sub> = 32 mA; V <sub>CC</sub> = 4.5 V                                                                 | -                     | -                  | 0.80                   | V    |
| I <sub>I</sub>   | input leakage current     | V <sub>CC</sub> = 0 V to 5.5 V; V <sub>I</sub> = 5.5 V or GND                                                   | -                     | -                  | ±20                    | µA   |
| I <sub>OZ</sub>  | OFF-state output current  | V <sub>CC</sub> = 3.6 V; V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> ;<br>V <sub>O</sub> = 5.5 V or GND | -                     | -                  | ±20                    | µA   |
| I <sub>OFF</sub> | power-off leakage current | V <sub>CC</sub> = 0 V; V <sub>I</sub> or V <sub>O</sub> = 5.5 V                                                 | -                     | -                  | ±20                    | µA   |
| I <sub>CC</sub>  | supply current            | V <sub>I</sub> = 5.5 V or GND;<br>V <sub>CC</sub> = 1.65 V to 5.5 V; I <sub>O</sub> = 0 A                       | -                     | -                  | 40                     | µA   |
| ΔI <sub>CC</sub> | additional supply current | per pin; V <sub>CC</sub> = 2.3 V to 5.5 V;<br>V <sub>I</sub> = V <sub>CC</sub> - 0.6 V; I <sub>O</sub> = 0 A    | -                     | -                  | 5000                   | µA   |

[1] All typical values are measured at V<sub>CC</sub> = 3.3 V and T<sub>amb</sub> = 25 °C.

## 11. Dynamic characteristics

**Table 8. Dynamic characteristics**

Voltages are referenced to GND (ground = 0 V). For test circuit see [Figure 5](#).

| Symbol           | Parameter                     | Conditions                                                                       | –40 °C to +85 °C |                    |      | –40 °C to +125 °C |      | Unit |
|------------------|-------------------------------|----------------------------------------------------------------------------------|------------------|--------------------|------|-------------------|------|------|
|                  |                               |                                                                                  | Min              | Typ <sup>[1]</sup> | Max  | Min               | Max  |      |
| t <sub>pd</sub>  | propagation delay             | A to nY; see <a href="#">Figure 3</a> <sup>[2]</sup>                             |                  |                    |      |                   |      |      |
|                  |                               | V <sub>CC</sub> = 1.65 V to 1.95 V                                               | 1.0              | 5.1                | 10.0 | 1.0               | 12.5 | ns   |
|                  |                               | V <sub>CC</sub> = 2.3 V to 2.7 V                                                 | 1.0              | 3.2                | 5.5  | 0.5               | 6.9  | ns   |
|                  |                               | V <sub>CC</sub> = 2.7 V                                                          | 1.0              | 3.2                | 5.4  | 0.5               | 6.8  | ns   |
|                  |                               | V <sub>CC</sub> = 3.0 V to 3.6 V                                                 | 1.0              | 3.0                | 5.0  | 0.5               | 6.3  | ns   |
| t <sub>en</sub>  | enable time                   | S to nY; see <a href="#">Figure 3</a> <sup>[3]</sup>                             |                  |                    |      |                   |      |      |
|                  |                               | V <sub>CC</sub> = 1.65 V to 1.95 V                                               | 1.0              | 5.8                | 11.0 | 1.0               | 13.8 | ns   |
|                  |                               | V <sub>CC</sub> = 2.3 V to 2.7 V                                                 | 1.0              | 3.6                | 6.2  | 0.5               | 7.8  | ns   |
|                  |                               | V <sub>CC</sub> = 2.7 V                                                          | 1.0              | 3.6                | 6.0  | 0.5               | 7.5  | ns   |
|                  |                               | V <sub>CC</sub> = 3.0 V to 3.6 V                                                 | 1.0              | 3.1                | 5.2  | 0.5               | 6.5  | ns   |
| t <sub>dis</sub> | disable time                  | S to nY; see <a href="#">Figure 3</a> <sup>[4]</sup>                             |                  |                    |      |                   |      |      |
|                  |                               | V <sub>CC</sub> = 1.65 V to 1.95 V                                               | 1.0              | 4.8                | 9.0  | 1.0               | 11.3 | ns   |
|                  |                               | V <sub>CC</sub> = 2.3 V to 2.7 V                                                 | 1.0              | 2.7                | 5.3  | 0.5               | 6.6  | ns   |
|                  |                               | V <sub>CC</sub> = 2.7 V                                                          | 1.0              | 3.5                | 5.2  | 0.5               | 6.5  | ns   |
|                  |                               | V <sub>CC</sub> = 3.0 V to 3.6 V                                                 | 1.0              | 3.3                | 4.9  | 0.5               | 6.1  | ns   |
| C <sub>PD</sub>  | power dissipation capacitance | V <sub>I</sub> = GND to V <sub>CC</sub> ; V <sub>CC</sub> = 3.3 V <sup>[5]</sup> |                  |                    |      |                   |      |      |
|                  |                               | V <sub>CC</sub> = 1.65 V to 1.95 V                                               | 1.0              | 4.8                | 9.0  | 1.0               | 11.3 | ns   |
|                  |                               | V <sub>CC</sub> = 2.3 V to 2.7 V                                                 | 1.0              | 2.7                | 5.3  | 0.5               | 6.6  | ns   |
|                  |                               | V <sub>CC</sub> = 2.7 V                                                          | 1.0              | 3.5                | 5.2  | 0.5               | 6.5  | ns   |
|                  |                               | V <sub>CC</sub> = 3.0 V to 3.6 V                                                 | 1.0              | 3.3                | 4.9  | 0.5               | 6.1  | ns   |
| C <sub>PD</sub>  | power dissipation capacitance | V <sub>CC</sub> = 4.5 V to 5.5 V                                                 | 0.5              | 2.2                | 3.3  | 0.5               | 4.1  | ns   |
|                  |                               | V <sub>I</sub> = GND to V <sub>CC</sub> ; V <sub>CC</sub> = 3.3 V <sup>[5]</sup> | -                | 28.8               | -    | -                 | -    | pF   |

[1] Typical values are measured at T<sub>amb</sub> = 25 °C and V<sub>CC</sub> = 1.8 V, 2.5 V, 2.7 V, 3.3 V and 5.0 V respectively.

[2] t<sub>pd</sub> is the same as t<sub>PLH</sub> and t<sub>PHL</sub>

[3] t<sub>en</sub> is the same as t<sub>PZH</sub> and t<sub>PZL</sub>

[4] t<sub>dis</sub> is the same as t<sub>PLZ</sub> and t<sub>PHZ</sub>

[5] C<sub>PD</sub> is used to determine the dynamic power dissipation (P<sub>D</sub> in μW).

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

f<sub>i</sub> = input frequency in MHz;

f<sub>o</sub> = output frequency in MHz;

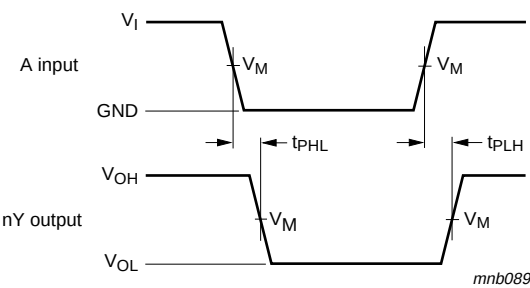
C<sub>L</sub> = output load capacitance in pF;

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

N = number of inputs switching;

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

12. AC waveforms

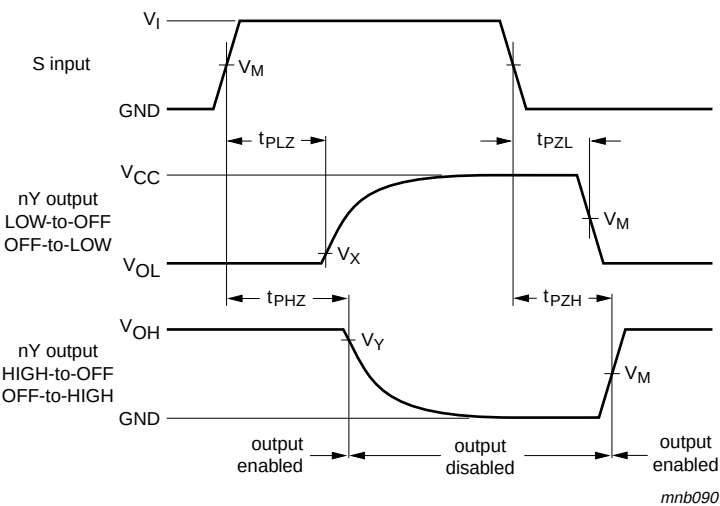


Measurement points are given in Table 9.  $V_{OL}$  and  $V_{OH}$  are typical output voltage levels that occur with the output load.

Fig 3. Input A to output Y propagation delays

Table 9. Measurement points

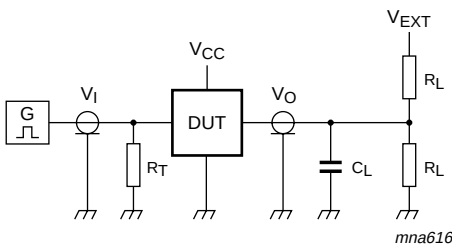
| $V_{CC}$         | $V_M$               | Input    |               |
|------------------|---------------------|----------|---------------|
|                  |                     | $V_I$    | $t_r = t_f$   |
| 1.65 V to 1.95 V | $0.5 \times V_{CC}$ | $V_{CC}$ | $\leq 2.0$ ns |
| 2.3 V to 2.7 V   | $0.5 \times V_{CC}$ | $V_{CC}$ | $\leq 2.0$ ns |
| 2.7 V            | 1.5 V               | 2.7 V    | $\leq 2.5$ ns |
| 3.0 V to 3.6 V   | 1.5 V               | 2.7 V    | $\leq 2.5$ ns |
| 4.5 V to 5.5 V   | $0.5 \times V_{CC}$ | $V_{CC}$ | $\leq 2.5$ ns |



Measurement points are given in Table 9.  $V_{OL}$  and  $V_{OH}$  are typical output voltage levels that occur with the output load.

- $V_X = V_{OL} + 0.3$  V at  $V_{CC} \geq 2.7$  V.
- $V_X = V_{OL} + 0.15$  V at  $V_{CC} < 2.7$  V.
- $V_Y = V_{OH} - 0.3$  V at  $V_{CC} \geq 2.7$  V.
- $V_Y = V_{OH} - 0.15$  V at  $V_{CC} < 2.7$  V.

Fig 4. 3-state enable and disable times



Test data is given in [Table 10](#).  
Definitions for test circuit:  
 $R_L$  = Load resistance.  
 $C_L$  = Load capacitance including jig and probe capacitance.  
 $R_T$  = Termination resistance should be equal to the output impedance  $Z_o$  of the pulse generator.  
 $V_{EXT}$  = External voltage for measuring switching times.

Fig 5. Load circuitry for switching times

Table 10. Test data

| V <sub>CC</sub>  | Input           |                                 | Load           |                | V <sub>EXT</sub>                    |                                     |                                     |
|------------------|-----------------|---------------------------------|----------------|----------------|-------------------------------------|-------------------------------------|-------------------------------------|
|                  | V <sub>I</sub>  | t <sub>r</sub> = t <sub>f</sub> | C <sub>L</sub> | R <sub>L</sub> | t <sub>PLH</sub> , t <sub>PHL</sub> | t <sub>PZH</sub> , t <sub>PHZ</sub> | t <sub>PZL</sub> , t <sub>PLZ</sub> |
| 1.65 V to 1.95 V | V <sub>CC</sub> | ≤ 2.0 ns                        | 30 pF          | 1 kΩ           | open                                | GND                                 | 2 × V <sub>CC</sub>                 |
| 2.3 V to 2.7 V   | V <sub>CC</sub> | ≤ 2.0 ns                        | 30 pF          | 500 Ω          | open                                | GND                                 | 2 × V <sub>CC</sub>                 |
| 2.7 V            | 2.7 V           | ≤ 2.5 ns                        | 50 pF          | 500 Ω          | open                                | GND                                 | 6 V                                 |
| 3.0 V to 3.6 V   | 2.7 V           | ≤ 2.5 ns                        | 50 pF          | 500 Ω          | open                                | GND                                 | 6 V                                 |
| 4.5 V to 5.5 V   | V <sub>CC</sub> | ≤ 2.5 ns                        | 50 pF          | 500 Ω          | open                                | GND                                 | 2 × V <sub>CC</sub>                 |



13. Package outline

Plastic surface-mounted package; 6 leadsSOT363

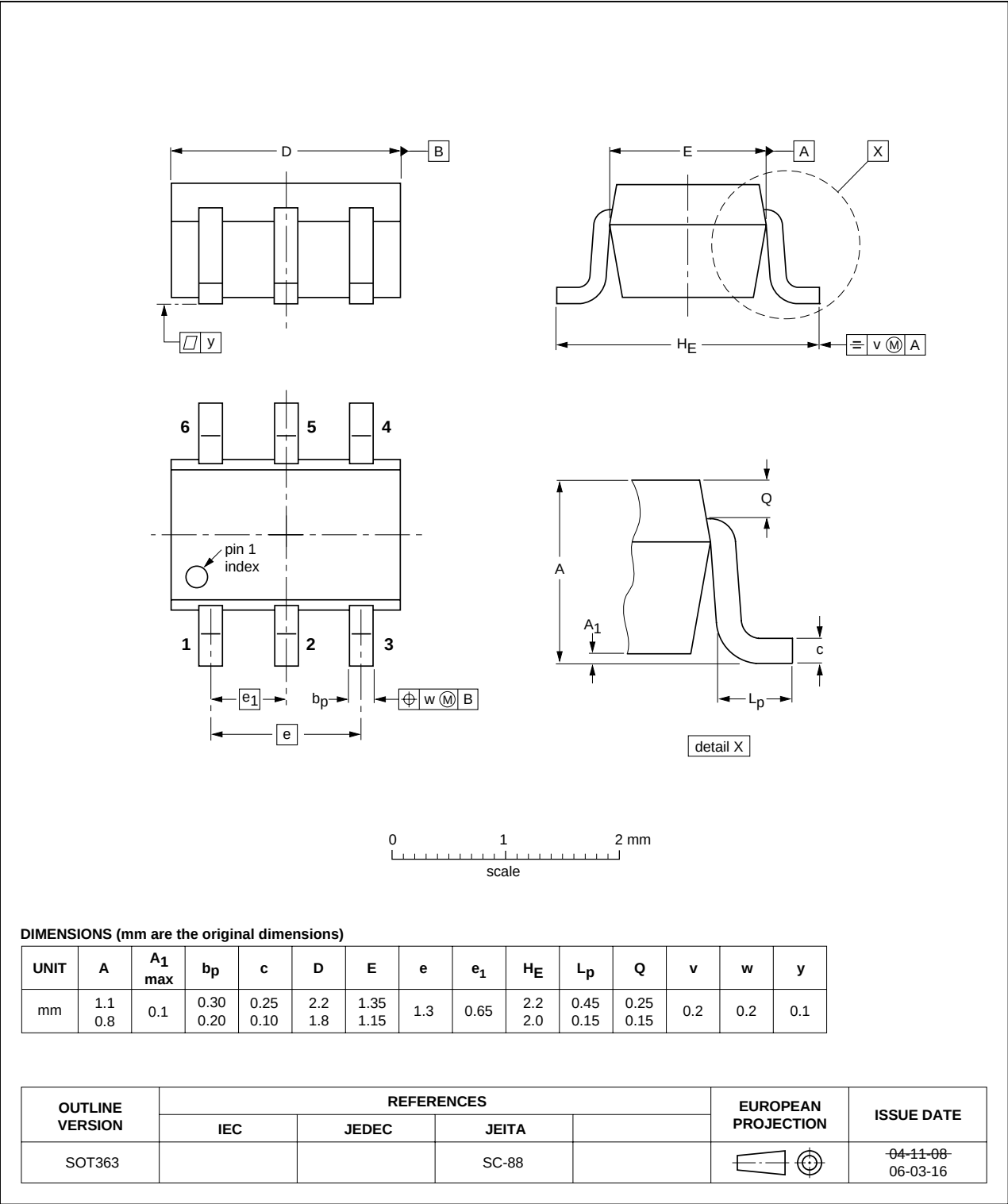


Fig 6. Package outline SOT363 (SC-88)

Plastic surface-mounted package (TSOP6); 6 leads

SOT457

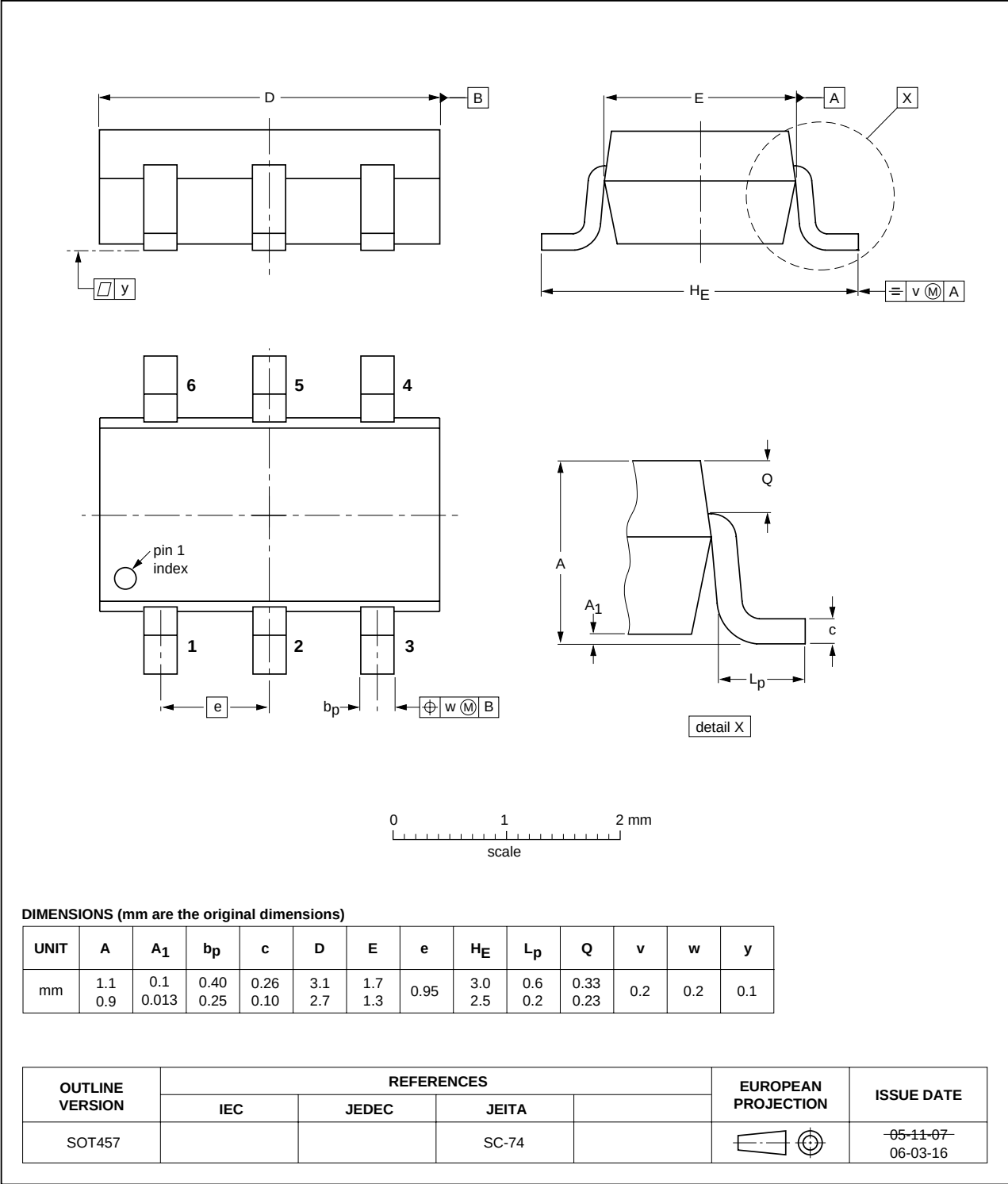


Fig 7. Package outline SOT457 (SC-74)

## 14. 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             |

## 15. Revision history

Table 12. Revision history

| Document ID    | Release date                                                                                                                                                                                                                                                                                                                                                                        | Data sheet status     | Change notice | Supersedes  |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------|-------------|
| 74LVC1G18_2    | 20070830                                                                                                                                                                                                                                                                                                                                                                            | Product data sheet    | -             | 74LVC1G18_1 |
| Modifications: | <ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• In <a href="#">Section 10 "Static characteristics"</a>, changed conditions for input leakage and supply current.</li></ul> |                       |               |             |
| 74LVC1G18_1    | 20030725                                                                                                                                                                                                                                                                                                                                                                            | Product specification | -             | -           |

## 16. Legal information

### 16.1 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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