# 74LVC623A

## Octal transceiver with dual enable; 3-state

Rev. 5 — 25 November 2011 Product data sheet

## 1. General description

The 74LVC623A is an octal transceiver featuring non-inverting 3-state bus compatible outputs in both send and receive directions. This octal bus transceiver is designed for asynchronous two-way communication between data buses.

The control function implementation allows maximum flexibility in timing. This device allows data transmission from the An bus to the Bn bus or from the Bn bus to the An bus, depending upon the logic levels at the enable inputs (pins OEAB and $\overline{OEBA}$). The enable inputs can be used to disable the device so that the buses are effectively isolated. The dual enable function configuration gives this transceiver the capability to store data by simultaneous enabling of pins OEAB and $\overline{OEBA}$. Each output reinforces its input in this transceiver configuration. Thus, when both control inputs are enabled and all other data sources to the two sets of the bus lines are at high-impedance OFF-state, both sets of the bus lines will remain at their last states. The 8-bit codes appearing on the two sets of buses will be identical.

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

## 2. Features and benefits

- 5 V tolerant inputs and outputs for interfacing with 5 V logic
- Wide supply voltage range from 1.2 V to 3.6 V
- CMOS low power consumption
- Direct interface with TTL levels
- High-impedance when $V_{CC}$ = 0 V
- Complies with JEDEC standard:
  - JESD8-7A (1.65 V to 1.95 V)
  - JESD8-5A (2.3 V to 2.7 V)
  - JESD8-C/JESD36 (2.7 V to 3.6 V)
- ESD protection:
  - HBM JESD22-A114F exceeds 2000 V
  - MM JESD22-A115B exceeds 200 V
  - CDM JESD22-C101E exceeds 1000 V
- 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 |
| 74LVC623AD | −40 °C to +125 °C | SO20 | plastic small outline package; 20 leads; body width 7.5 mm | SOT163-1 |
| 74LVC623ADB | −40 °C to +125 °C | SSOP20 | plastic shrink small outline package; 20 leads; body width 5.3 mm | SOT339-1 |
| 74LVC623APW | −40 °C to +125 °C | TSSOP20 | plastic thin shrink small outline package; 20 leads; body width 4.4 mm | SOT360-1 |

## 4. Functional diagram

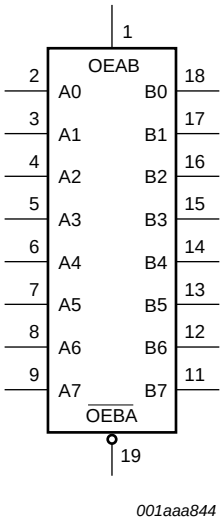



**Fig 1. Logic symbol**

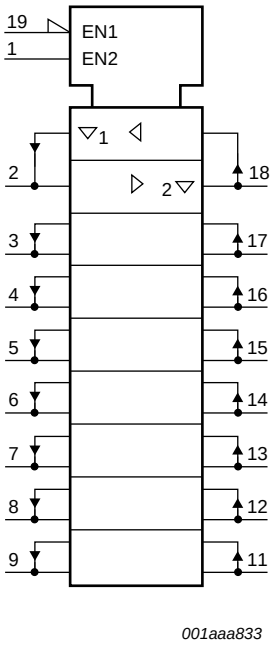



**Fig 2. IEC logic symbol**

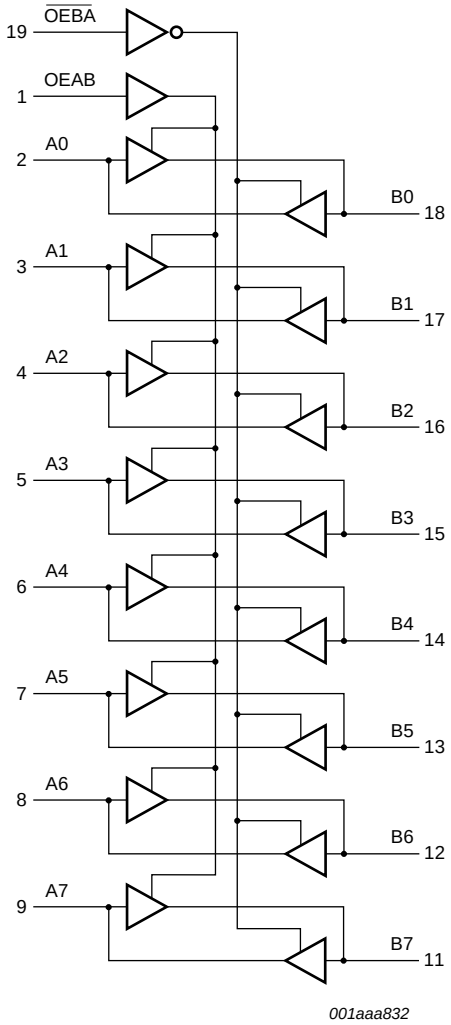



**Fig 3. Logic diagram**

# 5. Pinning information

## 5.1 Pinning

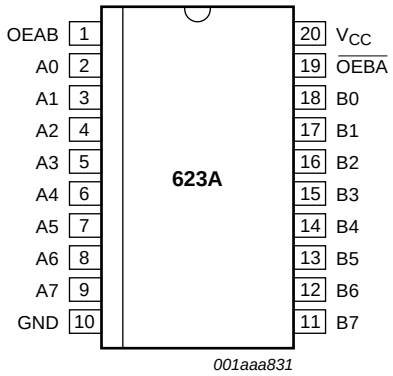



**Fig 4. Pin configuration SO20 and (T)SSOP20**

## 5.2 Pin description

**Table 2. Pin description**

| Pin | Symbol | Description |
|---|---|---|
| 1 | OEAB | output enable input |
| 19 | $\overline{OEBA}$ | output enable input (active LOW) |
| A[0:7] | 2, 3, 4, 5, 6, 7, 8, 9 | data input or output |
| B[0:7] | 18, 17, 16, 15, 14, 13, 12, 11 | data output or input |
| 10 | GND | ground (0 V) |
| 20 | $V_{CC}$ | supply voltage |

## 6. Functional description

**Table 3. Function table[1]**

| Input | | Input or output | |
|---|---|---|---|
| **OEAB** | **$\overline{OEBA}$** | **An** | **Bn** |
| L | L | An = Bn | input |
| H | H | input | Bn = An |
| L | H | Z | Z |
| H | L | An = Bn | input |
| | | input | Bn = An |

[1] H = HIGH voltage level; L = LOW voltage level; 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 |
|---|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | | | −0.5 | +6.5 | V |
| $V_I$ | input voltage | | [1] | −0.5 | +6.5 | V |
| $V_O$ | output voltage | HIGH or LOW state | [2] | −0.5 | $V_{CC}$ + 0.5 | V |
| | | 3-state | [2] | −0.5 | +6.5 | V |
| $I_{IK}$ | input clamping current | $V_I$ < 0 V | | −50 | - | mA |
| $I_{OK}$ | output clamping current | $V_O$ > $V_{CC}$ or $V_O$ < 0 V | | - | ±50 | mA |
| $I_O$ | 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 | [3] | - | 500 | mW |

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

[2] The output voltage ratings may be exceeded if the output current ratings are observed.

[3] For SO20 package: above 70 °C $P_{tot}$ derates linearly with 8 mW/K.
For (T)SSOP20 packages: above 60 °C $P_{tot}$ derates linearly with 5.5 mW/K.

## 8. Recommended operating conditions

**Table 5. Recommended operating conditions**

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | | 1.65 | - | 3.6 | V |
| | | functional | 1.2 | - | - | V |
| $V_I$ | input voltage | | 0 | - | 5.5 | V |
| $V_O$ | output voltage | HIGH or LOW state | 0 | - | $V_{CC}$ | V |
| | | 3-state or $V_{CC}$ = 0 V | 0 | - | 5.5 | V |
| $T_{amb}$ | ambient temperature | in free air | −40 | - | +125 | °C |
| $\Delta t/\Delta V$ | input transition rise and fall rate | $V_{CC}$ = 1.65 V to 2.7 V | 0 | - | 20 | ns/V |
| | | $V_{CC}$ = 2.7 V to 3.6 V | 0 | - | 10 | ns/V |

## 9. Static characteristics

**Table 6. Static characteristics**

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

| Symbol | Parameter | Conditions | −40 °C to +85 °C | | | −40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ[1] | Max | Min | Max | |
| $V_{IH}$ | HIGH-level input voltage | $V_{CC}$ = 1.2 V | 1.08 | - | - | 1.08 | - | V |
| | | $V_{CC}$ = 1.65 V to 1.95 V | 0.65 × $V_{CC}$ | - | - | 0.65 × $V_{CC}$ | - | V |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 1.7 | - | - | 1.7 | - | V |
| | | $V_{CC}$ = 2.7 V to 3.6 V | 2.0 | - | - | 2.0 | - | V |
| $V_{IL}$ | LOW-level input voltage | $V_{CC}$ = 1.2 V | - | - | 0.12 | - | 0.12 | V |
| | | $V_{CC}$ = 1.65 V to 1.95 V | - | - | 0.35 × $V_{CC}$ | - | 0.35 × $V_{CC}$ | V |
| | | $V_{CC}$ = 2.3 V to 2.7 V | - | - | 0.7 | - | 0.7 | V |
| | | $V_{CC}$ = 2.7 V to 3.6 V | - | - | 0.8 | - | 0.8 | V |
| $V_{OH}$ | HIGH-level output voltage | $V_I$ = $V_{IH}$ or $V_{IL}$ | | | | | | |
| | | $I_O$ = −100 μA; $V_{CC}$ = 1.65 V to 3.6 V | $V_{CC}$ − 0.2 | - | - | $V_{CC}$ − 0.3 | - | V |
| | | $I_O$ = −4 mA; $V_{CC}$ = 1.65 V | 1.2 | - | - | 1.05 | - | V |
| | | $I_O$ = −8 mA; $V_{CC}$ = 2.3 V | 1.8 | - | - | 1.65 | - | V |
| | | $I_O$ = −12 mA; $V_{CC}$ = 2.7 V | 2.2 | - | - | 2.05 | - | V |
| | | $I_O$ = −18 mA; $V_{CC}$ = 3.0 V | 2.4 | - | - | 2.25 | - | V |
| | | $I_O$ = −24 mA; $V_{CC}$ = 3.0 V | 2.2 | - | - | 2.0 | - | V |
| $V_{OL}$ | LOW-level output voltage | $V_I$ = $V_{IH}$ or $V_{IL}$ | | | | | | |
| | | $I_O$ = 100 μA; $V_{CC}$ = 1.65 V to 3.6 V | - | - | 0.2 | - | 0.3 | V |
| | | $I_O$ = 4 mA; $V_{CC}$ = 1.65 V | - | - | 0.45 | - | 0.65 | V |
| | | $I_O$ = 8 mA; $V_{CC}$ = 2.3 V | - | - | 0.6 | - | 0.8 | V |
| | | $I_O$ = 12 mA; $V_{CC}$ = 2.7 V | - | - | 0.4 | - | 0.6 | V |
| | | $I_O$ = 24 mA; $V_{CC}$ = 3.0 V | - | - | 0.55 | - | 0.8 | V |
| $I_I$ | input leakage current | $V_{CC}$ = 3.6 V; $V_I$ = 5.5 V or GND | - | ±0.1 | ±5 | - | ±20 | μA |

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

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

| Symbol | Parameter | Conditions | –40 °C to +85 °C | | | –40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ[1] | Max | Min | Max | |
| $I_{OZ}$ [2] | OFF-state output current | $V_I = V_{IH}$ or $V_{IL}$; $V_{CC}$ = 3.6 V; $V_O$ = 5.5 V or GND; | - | 0.1 | ±5 | - | ±20 | µA |
| $I_{OFF}$ | power-off leakage current | $V_{CC}$ = 0 V; $V_I$ or $V_O$ = 5.5 V | - | 0.1 | ±10 | - | ±20 | µA |
| $I_{CC}$ | supply current | $V_{CC}$ = 3.6 V; $V_I = V_{CC}$ or GND; $I_O$ = 0 A | - | 0.1 | 10 | - | 40 | µA |
| $\Delta I_{CC}$ | additional supply current | per input pin; $V_{CC}$ = 2.7 V to 3.6 V; $V_I = V_{CC} - 0.6$ V; $I_O$ = 0 A | - | 5 | 500 | - | 5000 | µA |
| $C_I$ | input capacitance | $V_{CC}$ = 0 V to 3.6 V; $V_I$ = GND to $V_{CC}$ | - | 4.0 | - | - | - | pF |
| $C_{I/O}$ | input/output capacitance | $V_{CC}$ = 0 V to 3.6 V; $V_I$ = GND to $V_{CC}$ | - | 10.0 | - | - | - | pF |

[1] All typical values are measured at $V_{CC}$ = 3.3 V (unless stated otherwise) and $T_{amb}$ = 25 °C.

[2] For transceivers, the parameter $I_{OZ}$ includes the input leakage current.

## 10. Dynamic characteristics

**Table 7. Dynamic characteristics**

*Voltages are referenced to GND (ground = 0 V). For test circuit see Figure 8.*

| Symbol | Parameter | Conditions | –40 °C to +85 °C | | | –40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ[1] | Max | Min | Max | |
| $t_{pd}$ | propagation delay | An to Bn; Bn to An; see Figure 5 [2] | | | | | | |
| | | $V_{CC}$ = 1.2 V | - | 19 | - | - | - | ns |
| | | $V_{CC}$ = 1.65 V to 1.95 V | 1.7 | 6.4 | 13.5 | 1.7 | 14.2 | ns |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 1.5 | 3.4 | 6.7 | 1.5 | 7.4 | ns |
| | | $V_{CC}$ = 2.7 V | 1.5 | 3.4 | 5.7 | 1.5 | 7.5 | ns |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 1.0 | 2.9 | 5.2 | 1.0 | 6.5 | ns |
| $t_{en}$ | enable time | OEAB to Bn; see Figure 6 [2] | | | | | | |
| | | $V_{CC}$ = 1.2 V | - | 26 | - | - | - | ns |
| | | $V_{CC}$ = 1.65 V to 1.95 V | 2.7 | 8.7 | 17.0 | 2.7 | 17.9 | ns |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 2.2 | 4.8 | 8.9 | 2.2 | 9.8 | ns |
| | | $V_{CC}$ = 2.7 V | 1.5 | 4.2 | 6.9 | 1.5 | 9.0 | ns |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 1.0 | 3.9 | 6.6 | 1.0 | 8.5 | ns |
| | | $\overline{OEBA}$ to An; see Figure 7 [2] | | | | | | |
| | | $V_{CC}$ = 1.2 V | - | 26 | - | - | - | ns |
| | | $V_{CC}$ = 1.65 V to 1.95 V | 2.6 | 8.1 | 17.0 | 2.6 | 17.9 | ns |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 2.2 | 4.5 | 8.9 | 2.2 | 9.8 | ns |
| | | $V_{CC}$ = 2.7 V | 1.5 | 4.6 | 7.5 | 1.5 | 9.5 | ns |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 1.0 | 3.6 | 6.6 | 1.0 | 8.5 | ns |

**Table 7. Dynamic characteristics** *…continued*

*Voltages are referenced to GND (ground = 0 V). For test circuit see Figure 8.*

| Symbol | Parameter | Conditions | –40 °C to +85 °C | | | –40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ[1] | Max | Min | Max | |
| $t_{dis}$ | disable time | OEAB to Bn; see Figure 6 [2] | | | | | | |
| | | $V_{CC}$ = 1.2 V | - | 12 | - | - | - | ns |
| | | $V_{CC}$ = 1.65 V to 1.95 V | 2.3 | 4.7 | 10.5 | 2.3 | 11.1 | ns |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 1.0 | 2.6 | 5.7 | 1.0 | 6.4 | ns |
| | | $V_{CC}$ = 2.7 V | 1.5 | 4.2 | 6.2 | 1.5 | 8.0 | ns |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 1.0 | 3.2 | 5.5 | 1.0 | 7.0 | ns |
| | | $\overline{OEBA}$ to An; see Figure 7 [2] | | | | | | |
| | | $V_{CC}$ = 1.2 V | - | 11 | - | - | - | ns |
| | | $V_{CC}$ = 1.65 V to 1.95 V | 3.6 | 5.2 | 10.1 | 3.6 | 10.7 | ns |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 1.0 | 2.9 | 5.5 | 1.0 | 6.1 | ns |
| | | $V_{CC}$ = 2.7 V | 1.5 | 3.7 | 5.5 | 1.5 | 7.0 | ns |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 1.0 | 3.4 | 5.3 | 1.0 | 7.0 | ns |
| $t_{sk(o)}$ | output skew time | $V_{CC}$ = 3.0 V to 3.6 V [3] | - | - | 1.0 | - | 1.5 | ns |
| $C_{PD}$ | power dissipation capacitance | per input; $V_I$ = GND to $V_{CC}$ [4] | | | | | | |
| | | $V_{CC}$ = 1.65 V to 1.95 V | - | 11.9 | - | - | - | pF |
| | | $V_{CC}$ = 2.3 V to 2.7 V | - | 15.5 | - | - | - | pF |
| | | $V_{CC}$ = 3.0 V to 3.6 V | - | 18.8 | - | - | - | pF |

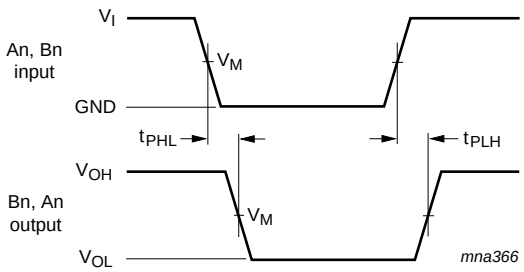
[1] Typical values are measured at $T_{amb}$ = 25 °C and $V_{CC}$ = 1.2 V, 1.8 V, 2.5 V, 2.7 V, and 3.3 V respectively.

[2] $t_{pd}$ is the same as $t_{PLH}$ and $t_{PHL}$.
$t_{en}$ is the same as $t_{PZL}$ and $t_{PZH}$.
$t_{dis}$ is the same as $t_{PLZ}$ and $t_{PHZ}$.

[3] Skew between any two outputs of the same package switching in the same direction. This parameter is guaranteed by design.

[4] $C_{PD}$ is used to determine the dynamic power dissipation ($P_D$ 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:
$f_i$ = input frequency in MHz; $f_o$ = output frequency in MHz
$C_L$ = output load capacitance in pF
$V_{CC}$ = supply voltage in Volts
N = number of inputs switching
$\Sigma(C_L \times V_{CC}^2 \times f_o)$ = sum of the outputs

## 11. Waveforms

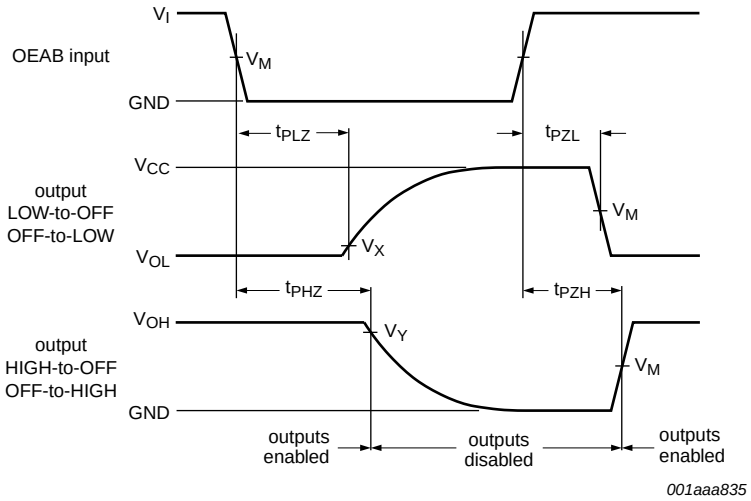



$V_M$ = 1.5 V at $V_{CC} \geq$ 2.7 V;

$V_M = 0.5 \times V_{CC}$ at $V_{CC}$ < 2.7 V.

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

**Fig 5. The inputs An, Bn to outputs Bn, An propagation delays**



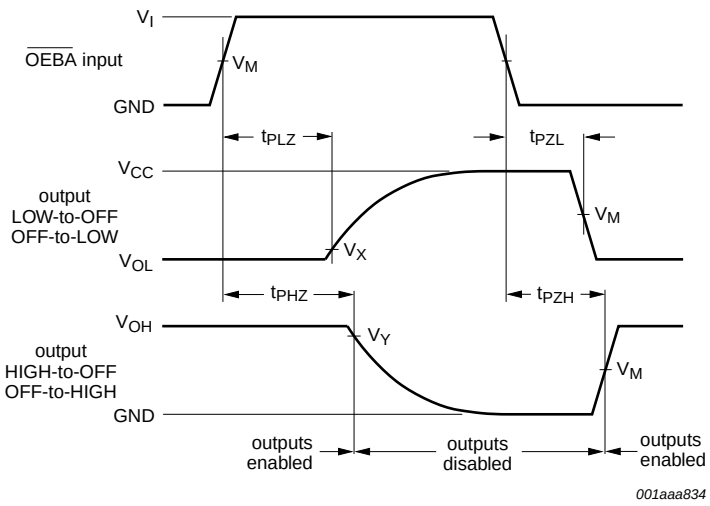

Measurement points are given in Table 8.

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

**Fig 6. 3-state enable and disable times for OEAB input**

**Table 8. Measurement points**

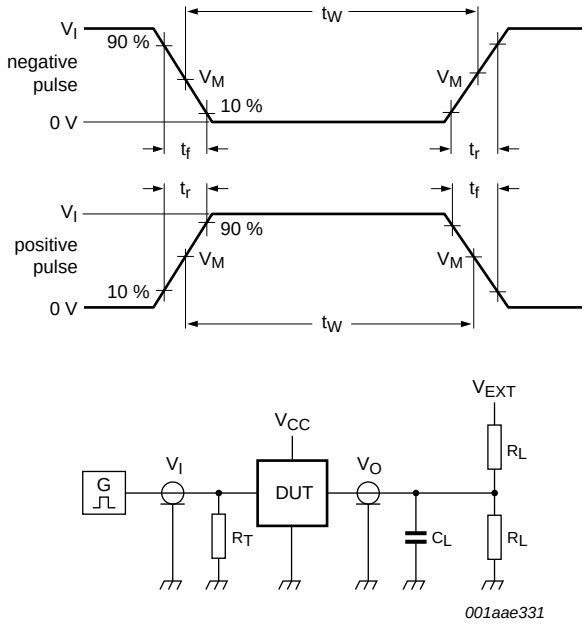
| Supply voltage | Input | Output | | |
|---|---|---|---|---|
| $V_{CC}$ | $V_M$ | $V_M$ | $V_X$ | $V_Y$ |
| < 2.7 V | $0.5 \times V_{CC}$ | $0.5 \times V_{CC}$ | $V_{OL}$ + 0.15 V | $V_{OH}$ − 0.15 V |
| ≥ 2.7 V | 1.5 V | 1.5 V | $V_{OL}$ + 0.3 V | $V_{OH}$ − 0.3 V |




Measurement points are given in Table 8.

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

**Fig 7. 3-state enable and disable times for $\overline{OEBA}$ input**




Test data is given in Table 9.

Definitions for test circuit:

$R_L$ = Load resistance.

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

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

$V_{EXT}$ = External voltage for measuring switching times.

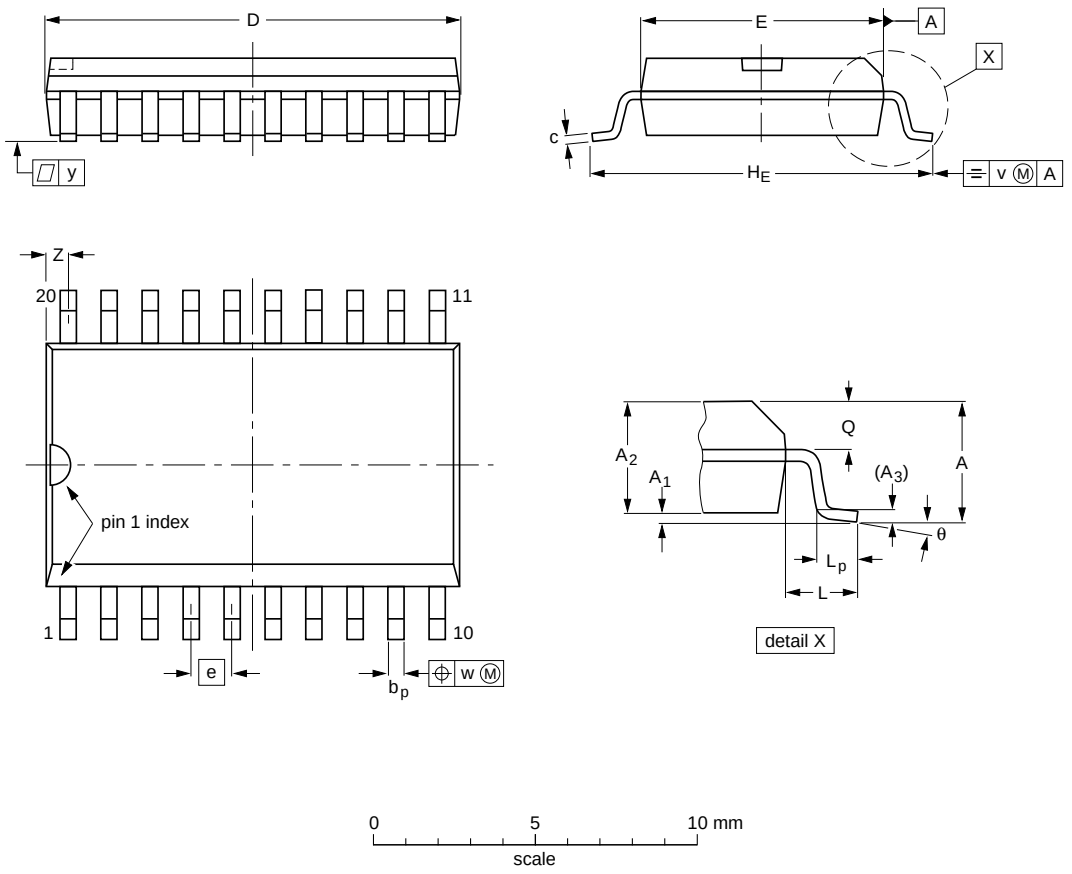
**Fig 8. Test circuit for measuring switching times**

**Table 9. Test data**

| Supply voltage | Input | | Load | | $V_{EXT}$ | | |
|---|---|---|---|---|---|---|---|
| | $V_I$ | $t_r$, $t_f$ | $C_L$ | $R_L$ | $t_{PLH}$, $t_{PHL}$ | $t_{PLZ}$, $t_{PZL}$ | $t_{PHZ}$, $t_{PZH}$ |
| 1.2 V | $V_{CC}$ | ≤ 2 ns | 30 pF | 1 kΩ | open | 2 × $V_{CC}$ | GND |
| 1.65 V to 1.95 V | $V_{CC}$ | ≤ 2 ns | 30 pF | 1 kΩ | open | 2 × $V_{CC}$ | GND |
| 2.3 V to 2.7 V | $V_{CC}$ | ≤ 2 ns | 30 pF | 500 Ω | open | 2 × $V_{CC}$ | GND |
| 2.7 V | 2.7 V | ≤ 2.5 ns | 50 pF | 500 Ω | open | 2 × $V_{CC}$ | GND |
| 3.0 V to 3.6 V | 2.7 V | ≤ 2.5 ns | 50 pF | 500 Ω | open | 2 × $V_{CC}$ | GND |

## 12. Package outline

**SO20: plastic small outline package; 20 leads; body width 7.5 mm** **SOT163-1**




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

| UNIT | A max. | $A_1$ | $A_2$ | $A_3$ | $b_p$ | c | D (1) | E (1) | e | $H_E$ | L | $L_p$ | Q | v | w | y | Z (1) | θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 2.65 | 0.3<br>0.1 | 2.45<br>2.25 | 0.25 | 0.49<br>0.36 | 0.32<br>0.23 | 13.0<br>12.6 | 7.6<br>7.4 | 1.27 | 10.65<br>10.00 | 1.4 | 1.1<br>0.4 | 1.1<br>1.0 | 0.25 | 0.25 | 0.1 | 0.9<br>0.4 | $8^o$<br>$0^o$ |
| inches | 0.1 | 0.012<br>0.004 | 0.096<br>0.089 | 0.01 | 0.019<br>0.014 | 0.013<br>0.009 | 0.51<br>0.49 | 0.30<br>0.29 | 0.05 | 0.419<br>0.394 | 0.055 | 0.043<br>0.016 | 0.043<br>0.039 | 0.01 | 0.01 | 0.004 | 0.035<br>0.016 | |

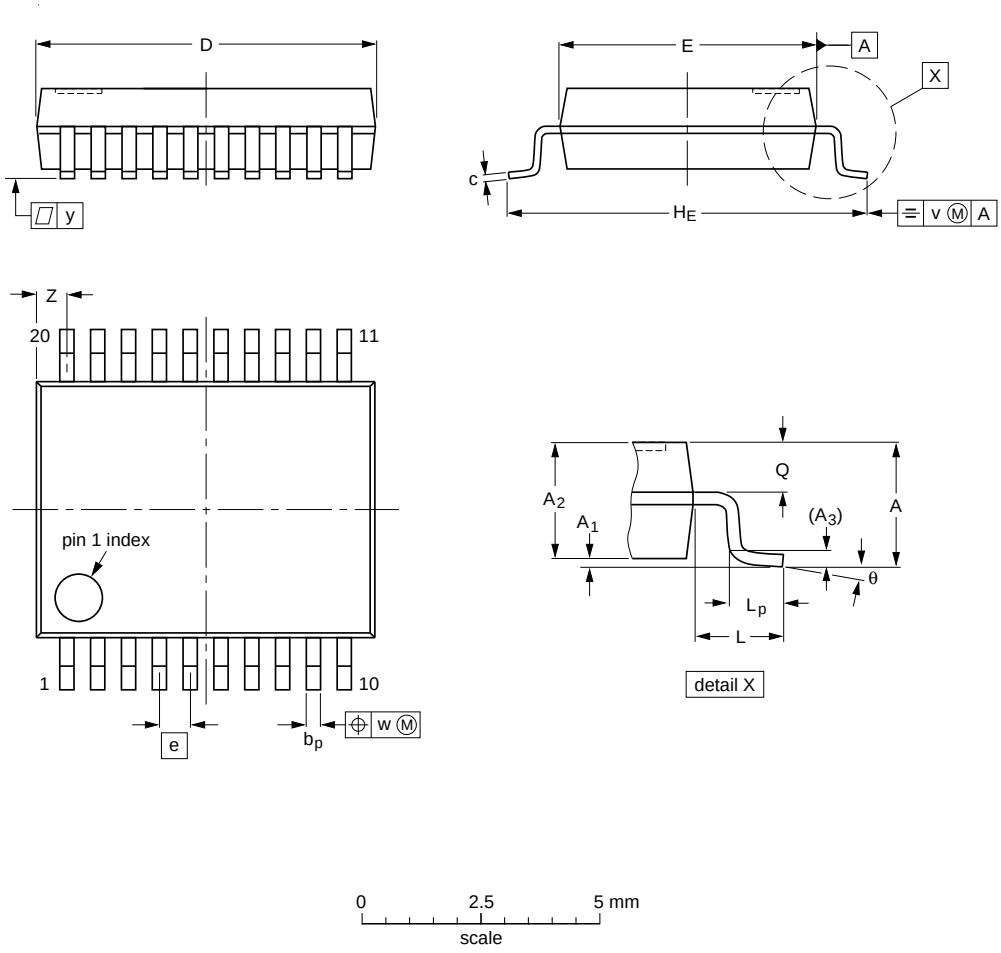
**Note**

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

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT163-1 | 075E04 | MS-013 | | | | ~~99-12-27~~<br>03-02-19 |

**Fig 9. Package outline SOT163-1 (SO20)**

**SSOP20: plastic shrink small outline package; 20 leads; body width 5.3 mm** **SOT339-1**




**DIMENSIONS (mm are the original dimensions)**

| UNIT | A max. | $A_1$ | $A_2$ | $A_3$ | $b_p$ | c | $D^{(1)}$ | $E^{(1)}$ | e | $H_E$ | L | $L_p$ | Q | v | w | y | $Z^{(1)}$ | θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 2 | 0.21<br>0.05 | 1.80<br>1.65 | 0.25 | 0.38<br>0.25 | 0.20<br>0.09 | 7.4<br>7.0 | 5.4<br>5.2 | 0.65 | 7.9<br>7.6 | 1.25 | 1.03<br>0.63 | 0.9<br>0.7 | 0.2 | 0.13 | 0.1 | 0.9<br>0.5 | $8^o$<br>$0^o$ |

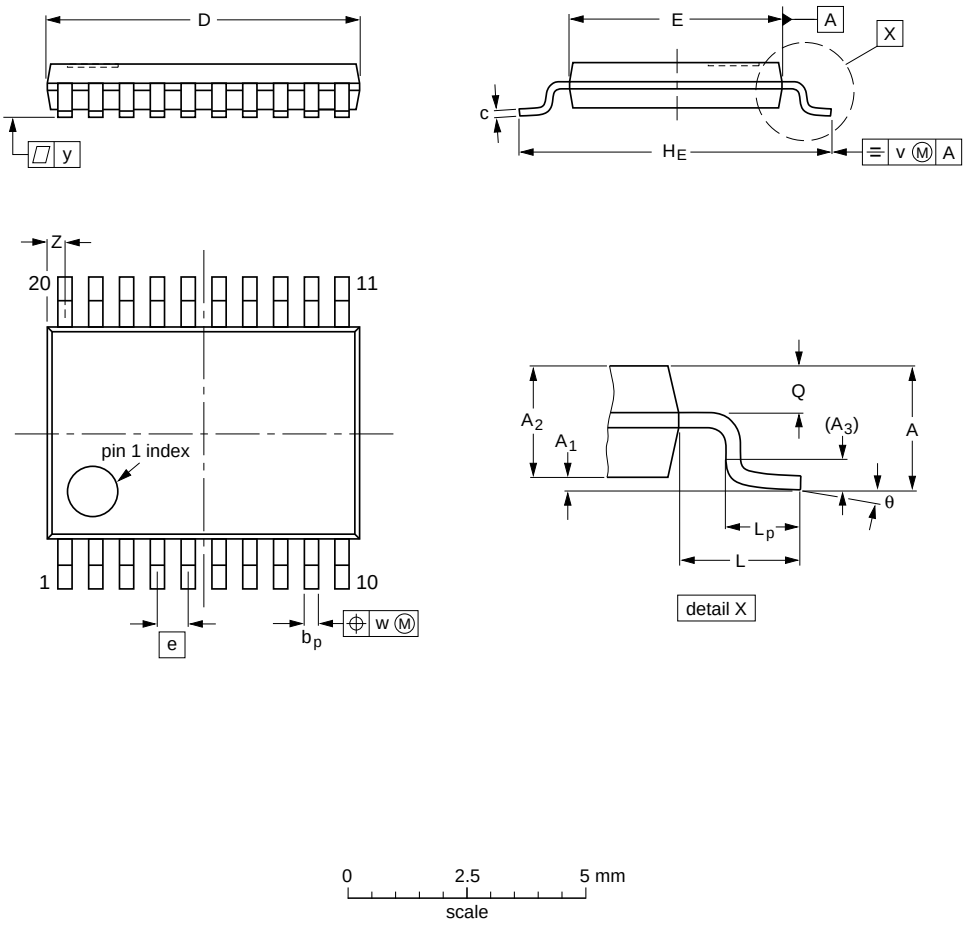
**Note**

1. Plastic or metal protrusions of 0.2 mm maximum per side are not included.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT339-1 | | MO-150 | | | | ~~99-12-27~~<br>03-02-19 |

**Fig 10. Package outline SOT339-1 (SSOP20)**

**TSSOP20: plastic thin shrink small outline package; 20 leads; body width 4.4 mm** **SOT360-1**




**DIMENSIONS (mm are the original dimensions)**

| UNIT | A max. | $A_1$ | $A_2$ | $A_3$ | $b_p$ | c | D (1) | E (2) | e | $H_E$ | L | $L_p$ | Q | v | w | y | Z (1) | θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1 | 0.15<br>0.05 | 0.95<br>0.80 | 0.25 | 0.30<br>0.19 | 0.2<br>0.1 | 6.6<br>6.4 | 4.5<br>4.3 | 0.65 | 6.6<br>6.2 | 1 | 0.75<br>0.50 | 0.4<br>0.3 | 0.2 | 0.13 | 0.1 | 0.5<br>0.2 | $8^o$<br>$0^o$ |

**Notes**

1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.
2. Plastic interlead protrusions of 0.25 mm maximum per side are not included.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT360-1 | | MO-153 | | | | ~~99-12-27~~<br>03-02-19 |

**Fig 11. Package outline SOT 360-1 (TSSOP20)**

## 13. Abbreviations

**Table 10. Abbreviations**

| Acronym | Description |
|---|---|
| CDM | Charged Device Model |
| DUT | Device Under Test |
| ESD | ElectroStatic Discharge |
| HBM | Human Body Model |
| MM | Machine Model |
| TTL | Transistor-Transistor Logic |

## 14. Revision history

**Table 11. Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| 74LVC623A v.5 | 20111125 | Product data sheet | - | 74LVC623A v.4 |
| Modifications: | • Typographical errors corrected | | | |
| 74LVC623A v.4 | 20111107 | Product data sheet | - | 74LVC623A v.3 |
| Modifications: | • The format of this document has been redesigned to comply with the new identity guidelines of NXP Semiconductors.<br>• Legal texts have been adapted to the new company name where appropriate.<br>• Table 4, Table 5, Table 6, Table 7, and Table 9: values added for lower voltage ranges.<br>• DHVQFN package added to Section 3 and Section 12. | | | |
| 74LVC623A v.3 | 20040506 | Product specification | - | 74LVC623A v.2 |
| 74LVC623A v.2 | 19980729 | Product specification | - | - |

# 15. Legal information

## 15.1 Data sheet status

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

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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## 17. Contents





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**Date of release: 25 November 2011**
**Document identifier: 74LVC623A**