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Team Nexperia

74ALVT16823

18-bit bus-interface D-type flip-flop with reset and enable;
3-state

Rev. 04 — 2 August 2005

Product data sheet

1. General description

The 74ALVT16823 18-bit bus interface register is designed to eliminate the extra packages required to buffer existing registers and provide extra data width for wider data/address paths of buses carrying parity.

The 74ALVT16823 has two 9-bit wide buffered registers with clock enable (pin $n\overline{CE}$) and master reset (pin $n\overline{MR}$) which are ideal for parity bus interfacing in high microprogrammed systems.

The registers are fully edge-triggered. The state of each D input, one set-up time before the LOW-to-HIGH clock transition is transferred to the corresponding Q output of the flip-flop.

It is designed for V_{CC} operation from 2.5 V to 3.0 V with I/O compatibility to 5 V.

2. Features

- Two sets of high speed parallel registers with positive edge-triggered D-type flip-flops
- 5 V I/O compatible
- Ideal where high speed, light loading, or increased fan-in are required with MOS microprocessors
- Bus hold data inputs eliminate the need for external pull-up resistors to hold unused inputs
- Live insertion and extraction permitted
- Power-up 3-state
- Power-up reset
- No bus current loading when output is tied to 5 V bus
- Output capability: +64 mA to -32 mA
- Latch-up protection:
 - ◆ JESD78: exceeds 500 mA
- ESD protection:
 - ◆ MIL STD 883, method 3015: exceeds 2000 V
 - ◆ Machine Model: exceeds 200 V

PHILIPS

3. Quick reference data

Table 1: Quick reference data

$T_{amb} = 25\text{ }^{\circ}\text{C}$.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t _{PLH}	propagation delay nCP to nQx	C _L = 50 pF; V _{CC} = 2.5 V	1.5	2.9	4.5	ns
		C _L = 50 pF; V _{CC} = 3.3 V	1.0	2.3	3.1	ns
t _{PHL}	propagation delay nCP to nQx	C _L = 50 pF; V _{CC} = 2.5 V	1.4	2.7	4.2	ns
		C _L = 50 pF; V _{CC} = 3.3 V	1.0	2.1	2.9	ns
C _i	input capacitance	V _I = 0 V or V _{CC}	-	3	-	pF
C _o	output capacitance	V _{I/O} = 0 V or V _{CC}	-	9	-	pF
I _{CC}	quiescent supply current	outputs disabled; V _{CC} = 2.5 V	-	40	-	μA
		outputs disabled; V _{CC} = 3.3 V	-	70	-	μA

4. Ordering information

Table 2: Ordering information

Type number	Package			Version
	temperature range	Name	Description	
74ALVT16823DL	-40 °C to +85 °C	SSOP56	plastic shrink small outline package; 56 leads; body width 7.5 mm	SOT371-1
74ALVT16823DGG	-40 °C to +85 °C	TSSOP56	plastic thin shrink small outline package; 56 leads; body width 6.1 mm	SOT364-1

5. Functional diagram

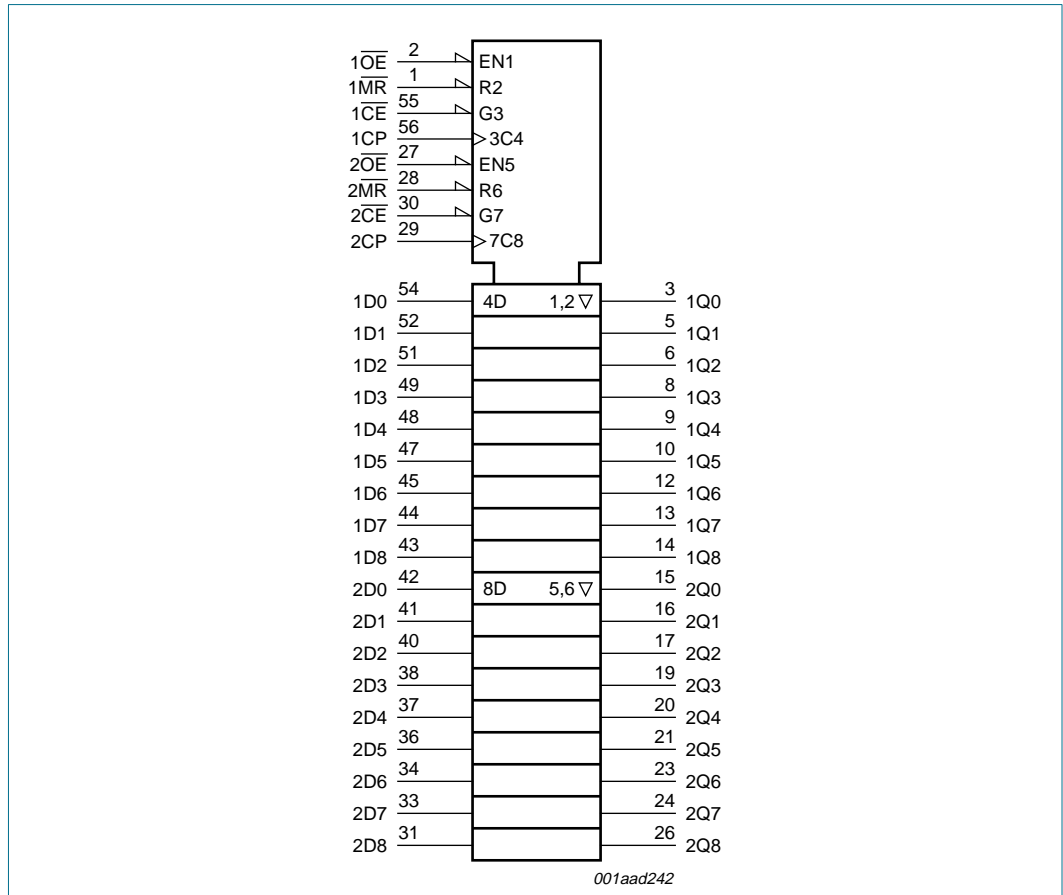


Fig 1. IEC logic symbol

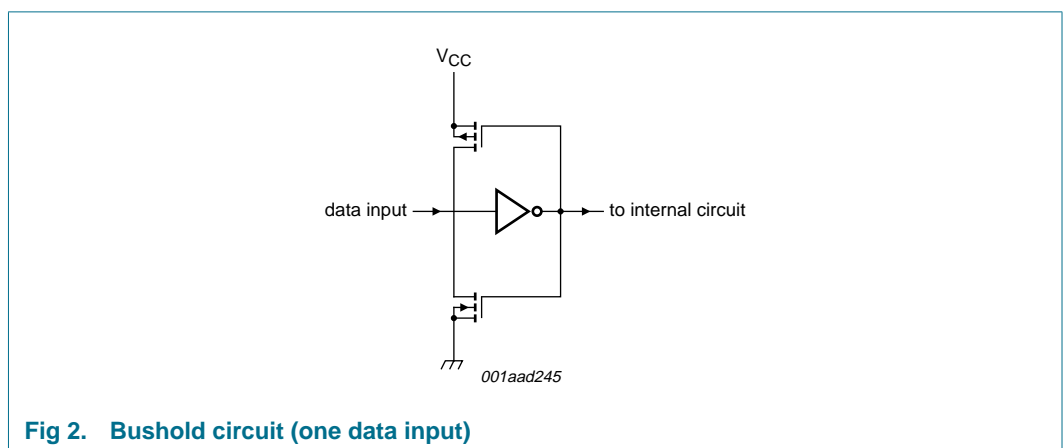


Fig 2. Bushold circuit (one data input)

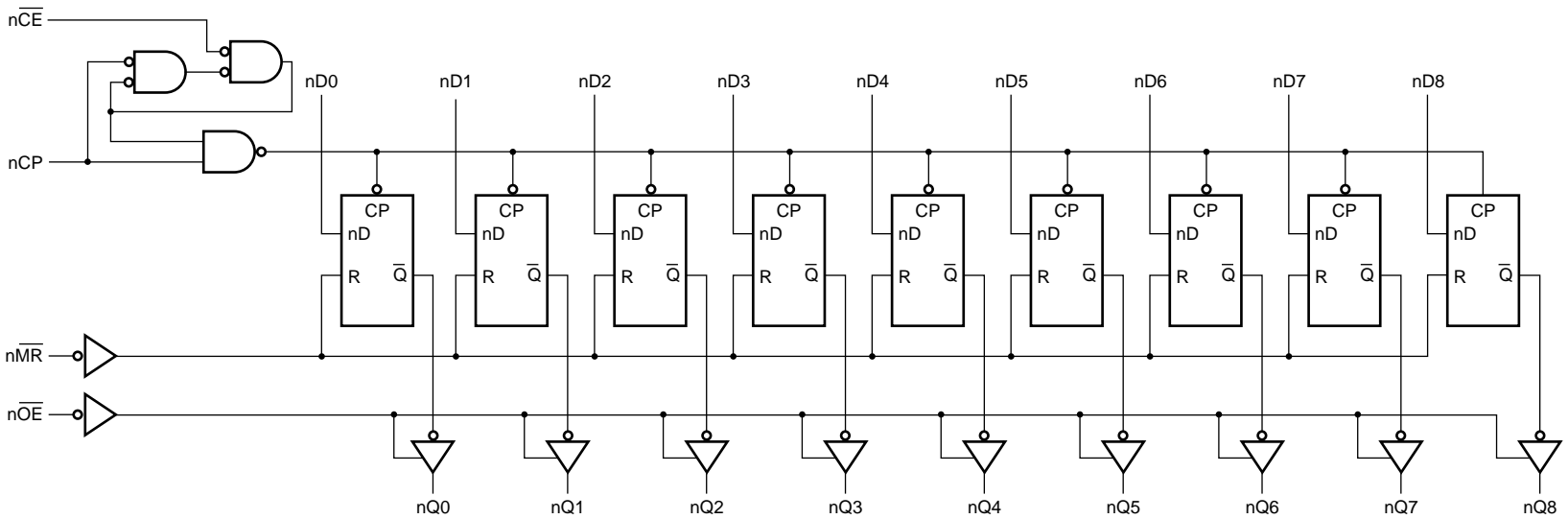
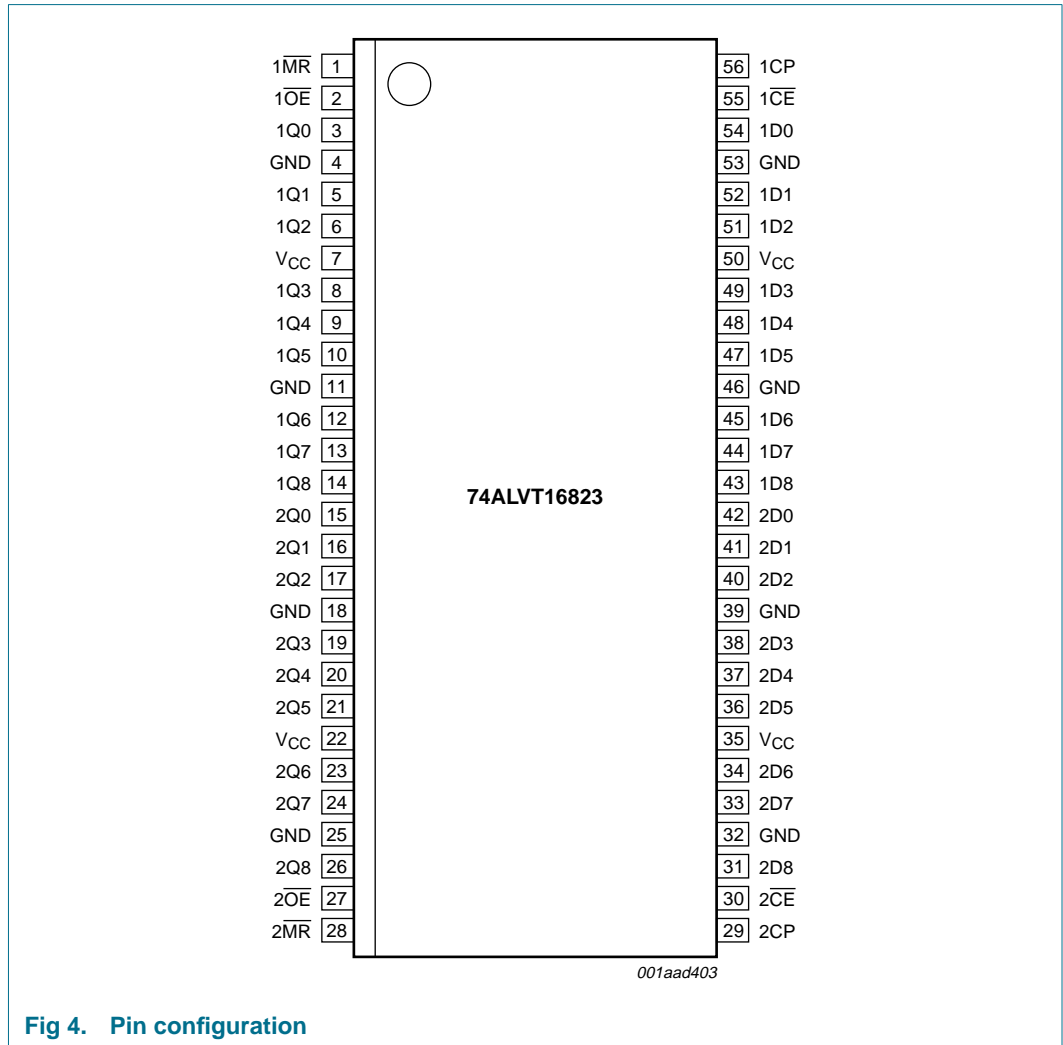


Fig 3. Logic diagram

6. Pinning information

6.1 Pinning



6.2 Pin description

Table 3: Pin description

Symbol	Pin	Description
1MR	1	1 master reset input (active-LOW)
1OE	2	1 output enable input (active-LOW)
1Q0	3	1 data output 0
GND	4	ground (0 V)
1Q1	5	1 data output 1
1Q2	6	1 data output 2
V _{CC}	7	supply voltage
1Q3	8	1 data output 3

Table 3: Pin description ...continued

Symbol	Pin	Description
1Q4	9	1 data output 4
1Q5	10	1 data output 5
GND	11	ground (0 V)
1Q6	12	1 data output 6
1Q7	13	1 data output 7
1Q8	14	1 data output 8
2Q0	15	2 data output 0
2Q1	16	2 data output 1
2Q2	17	2 data output 2
GND	18	ground (0 V)
2Q3	19	2 data output 3
2Q4	20	2 data output 4
2Q5	21	2 data output 5
V _{CC}	22	supply voltage
2Q6	23	2 data output 6
2Q7	24	2 data output 7
GND	25	ground (0 V)
2Q8	26	2 data output 8
2 \overline{OE}	27	2 output enable input (active-LOW)
2 \overline{MR}	28	2 master reset input (active-LOW)
2CP	29	2 clock pulse input (active rising edge)
2 \overline{CE}	30	2 clock enable input (active-LOW)
2D8	31	2 data input 8
GND	32	ground (0 V)
2D7	33	2 data input 7
2D6	34	2 data input 6
V _{CC}	35	supply voltage
2D5	36	2 data input 5
2D4	37	2 data input 4
2D3	38	2 data input 3
GND	39	ground (0 V)
2D2	40	2 data input 2
2D1	41	2 data input 1
2D0	42	2 data input 0
1D8	43	1 data input 8
1D7	44	1 data input 7
1D6	45	1 data input 6
GND	46	ground (0 V)
1D5	47	1 data input 5
1D4	48	1 data input 4
1D3	49	1 data input 3

Table 3: Pin description ...continued

Symbol	Pin	Description
V _{CC}	50	supply voltage
1D2	51	1 data input 2
1D1	52	1 data input 1
GND	53	ground (0 V)
1D0	54	1 data input 0
1 $\overline{\text{CE}}$	55	1 clock enable input (active-LOW)
1CP	56	1 clock pulse input (active rising edge)

7. Functional description

7.1 Function table

Table 4: Function table

Operating mode	Input					Output
	n $\overline{\text{OE}}$	n $\overline{\text{MR}}$	n $\overline{\text{CE}}$	n $\overline{\text{CP}}$	nDx	nQx
clear	L	L	X	X	X	L
load and read data	L	H	L	\uparrow	h	H
					l	L
hold	L	H	H	\uparrow	X	NC
high-impedance	H	X	X	X	X	Z

- [1] H = HIGH voltage level;
h = HIGH voltage level one set-up time prior to the LOW-to-HIGH clock transition;
L = LOW voltage level;
l = LOW voltage level one set-up time prior to the LOW-to-HIGH clock transition;
NC = no change;
X = don't care;
Z = high-impedance OFF-state;
 \uparrow = LOW-to-HIGH clock transition;
 \uparrow = not a LOW-to-HIGH clock transition.

8. Limiting values

Table 5: Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V _{CC}	supply voltage		-0.5	+4.6	V
V _I	input voltage		[1] -0.5	+7.0	V
V _O	output voltage	output in OFF-state or HIGH-state	[1] -0.5	+7.0	V
I _{IK}	input diode current	V _I < 0 V	-50	-	mA
I _{OK}	output diode current	V _O < 0 V	-50	-	mA

Table 5: Limiting values ...continued

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
I _O	output current	output in LOW-state	-	128	mA
		output in HIGH-state	-64	-	mA
T _{stg}	storage temperature		-65	+150	°C
T _j	junction temperature		[2]	150	°C

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

[2] The performance capability of a high-performance integrated circuit in conjunction with its thermal environment can create junction temperatures which are detrimental to reliability.

9. Recommended operating conditions

Table 6: Recommended operating conditions

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CC} = 2.5 V						
V _{CC}	supply voltage		2.3	-	2.7	V
V _I	input voltage		0	-	5.5	V
V _{IH}	HIGH-level input voltage		1.7	-	-	V
V _{IL}	LOW-level input voltage		-	-	0.7	V
I _{OH}	HIGH-level output current		-	-	-8	mA
I _{OL}	LOW-level output current	none	-	-	8	mA
		current duty cycle ≤ 50 %; f ≥ 1 kHz	-	-	24	mA
Δt/Δv	input transition rise or fall rate	outputs enabled	-	-	10	ns/V
T _{amb}	ambient temperature	in free air	-40	-	+85	°C
V_{CC} = 3.3 V						
V _{CC}	supply voltage		3.0	-	3.6	V
V _I	input voltage		0	-	5.5	V
V _{IH}	HIGH-level input voltage		2.0	-	-	V
V _{IL}	LOW-level input voltage		-	-	0.8	V
I _{OH}	HIGH-level output current		-	-	-32	mA
I _{OL}	LOW-level output current	none	-	-	32	mA
		current duty cycle ≤ 50 %; f ≥ 1 kHz	-	-	64	mA
Δt/Δv	input transition rise or fall rate	outputs enabled	-	-	10	ns/V
T _{amb}	ambient temperature	in free air	-40	-	+85	°C

10. Static characteristics

Table 7: Static characteristics

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); $T_{amb} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$V_{CC} = 2.5\text{ V} \pm 0.2\text{ V}$ [1]							
V_{IK}	input clamping voltage	$V_{CC} = 2.3\text{ V}$; $I_{IK} = -18\text{ mA}$	-	-0.85	-1.2	V	
V_{OH}	HIGH-level output voltage	$V_{CC} = 2.3\text{ V}$ to 2.7 V ; $I_{OH} = -100\text{ }\mu\text{A}$	$V_{CC} - 0.2$	V_{CC}	-	V	
		$V_{CC} = 2.3\text{ V}$; $I_{OH} = -8\text{ mA}$	1.8	2.5	-	V	
V_{OL}	LOW-level output voltage	$V_{CC} = 2.3\text{ V}$; $I_{OL} = 100\text{ }\mu\text{A}$	-	0.07	0.2	V	
		$V_{CC} = 2.3\text{ V}$; $I_{OL} = 24\text{ mA}$	-	0.3	0.5	V	
		$V_{CC} = 2.3\text{ V}$; $I_{OL} = 8\text{ mA}$	-	-	0.4	V	
$V_{OL(pu)}$	power-up LOW-level output voltage	$V_{CC} = 2.7\text{ V}$; $I_O = 1\text{ mA}$; $V_I = V_{CC}$ or GND	[2] -	-	0.55	V	
I_{LI}	input leakage current	control pins	$V_{CC} = 2.7\text{ V}$; $V_I = V_{CC}$ or GND	-	0.1	± 1	μA
			$V_{CC} = 0\text{ V}$ to 2.7 V ; $V_I = 5.5\text{ V}$	-	0.1	10	μA
	I/O data pins	$V_{CC} = 2.7\text{ V}$; $V_I = V_{CC}$	[3] -	0.1	1	μA	
		$V_{CC} = 2.7\text{ V}$; $V_I = 0\text{ V}$	[3] -	+0.1	-5	μA	
I_{OFF}	off current	$V_{CC} = 0\text{ V}$; V_I or $V_O = 0\text{ V}$ to 4.5 V	-	+0.1	± 100	μA	
I_{HOLD}	bus hold current data inputs	$V_{CC} = 2.3\text{ V}$; $V_I = 0.7\text{ V}$	[4] -	100	-	μA	
		$V_{CC} = 2.3\text{ V}$; $V_I = 1.7\text{ V}$	[4] -	-70	-	μA	
I_{EX}	external current into output	output HIGH-state when $V_O > V_{CC}$; $V_O = 5.5\text{ V}$; $V_{CC} = 2.3\text{ V}$	-	10	125	μA	
I_{PU}	power-up 3-state output current	$V_{CC} \leq 1.2\text{ V}$; $V_O = 0.5\text{ V}$ to V_{CC} ; $V_I = \text{GND}$ or V_{CC}	[5] -	1	± 100	μA	
I_{PD}	power-down 3-state output current	$V_{CC} \leq 1.2\text{ V}$; $V_O = 0.5\text{ V}$ to V_{CC} ; $V_I = \text{GND}$ or V_{CC}	[5] -	1	± 100	μA	
I_{OZ}	3-state output current	$V_{CC} = 2.7\text{ V}$; $V_I = V_{IL}$ or V_{IH}					
		output HIGH state; $V_O = 2.3\text{ V}$	-	0.5	5	μA	
		output LOW-state; $V_O = 0.5\text{ V}$	-	+0.5	-5	μA	
I_{CC}	quiescent supply current	$V_{CC} = 2.7\text{ V}$; $V_I = \text{GND}$ or V_{CC} ; $I_O = 0\text{ A}$					
		outputs HIGH-state	-	0.04	0.1	mA	
		outputs LOW-state	-	2.7	4.5	mA	
		outputs disabled	[6] -	0.04	0.1	mA	
ΔI_{CC}	additional quiescent supply current per input pin	$V_{CC} = 2.3\text{ V}$ to 2.7 V ; one input at $V_{CC} - 0.6\text{ V}$, other inputs at V_{CC} or GND	[7] -	0.04	0.4	mA	
C_I	input capacitance	$V_I = 0\text{ V}$ or V_{CC}	-	3	-	pF	
C_O	output capacitance	$V_{I/O} = 0\text{ V}$ or 3.0 V	-	9	-	pF	
$V_{CC} = 3.3\text{ V} \pm 0.3\text{ V}$ [8]							
V_{IK}	input clamping voltage	$V_{CC} = 3.0\text{ V}$; $I_{IK} = -18\text{ mA}$	-	-0.85	-1.2	V	
V_{OH}	HIGH-level output voltage	$V_{CC} = 3.0\text{ V}$ to 3.6 V ; $I_{OH} = -100\text{ }\mu\text{A}$	$V_{CC} - 0.2$	V_{CC}	-	V	
		$V_{CC} = 3.0\text{ V}$; $I_{OH} = -32\text{ mA}$	2.0	2.3	-	V	

Table 7: Static characteristics ...continuedAt recommended operating conditions; voltages are referenced to GND (ground = 0 V); $T_{amb} = -40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
V_{OL}	LOW-level output voltage	$V_{CC} = 3.0\text{ V}$; $I_{OL} = 100\text{ }\mu\text{A}$	-	0.07	0.2	V	
		$V_{CC} = 3.0\text{ V}$; $I_{OL} = 16\text{ mA}$	-	0.25	0.4	V	
		$V_{CC} = 3.0\text{ V}$; $I_{OL} = 32\text{ mA}$	-	0.3	0.5	V	
		$V_{CC} = 3.0\text{ V}$; $I_{OL} = 64\text{ mA}$	-	0.4	0.55	V	
$V_{OL(pu)}$	power-up LOW-level output voltage	$V_{CC} = 3.6\text{ V}$; $I_O = 1\text{ mA}$; $V_I = V_{CC}$ or GND	[2] -	-	0.55	V	
I_{LI}	input leakage current	control pins	$V_{CC} = 3.6\text{ V}$; $V_I = V_{CC}$ or GND	-	0.1	± 1	μA
			$V_{CC} = 0\text{ V}$ or 3.6 V ; $V_I = 5.5\text{ V}$	-	0.1	10	μA
		I/O data pins	$V_{CC} = 3.6\text{ V}$; $V_I = V_{CC}$	[3] -	0.5	1	μA
			$V_{CC} = 3.6\text{ V}$; $V_I = 0\text{ V}$	[3] -	+0.1	-5	μA
I_{OFF}	off current	$V_{CC} = 0\text{ V}$; V_I or $V_O = 0\text{ V}$ to 4.5 V	-	0.1	± 100	μA	
I_{HOLD}	bus hold current data inputs	$V_{CC} = 3\text{ V}$; $V_I = 0.8\text{ V}$	75	130	-	μA	
		$V_{CC} = 3\text{ V}$; $V_I = 2.0\text{ V}$	-75	-140	-	μA	
		$V_{CC} = 3.6\text{ V}$; $V_I = 0\text{V}$ to 3.6 V	[9] ± 500	-	-	μA	
I_{EX}	external current into output	output HIGH-state when $V_O > V_{CC}$; $V_O = 5.5\text{ V}$; $V_{CC} = 3.0\text{ V}$	-	10	125	μA	
I_{PU}	power-up 3-state output current	$V_{CC} \leq 1.2\text{ V}$; $V_O = 0.5\text{ V}$ to V_{CC} ; $V_I = \text{GND}$ or V_{CC}	[10] -	1	± 100	μA	
I_{PD}	power-down 3-state output current	$V_{CC} \leq 1.2\text{ V}$; $V_O = 0.5\text{ V}$ to V_{CC} ; $V_I = \text{GND}$ or V_{CC}	[10] -	1	± 100	μA	
I_{OZ}	3-state output current	$V_{CC} = 3.6\text{ V}$; $V_I = V_{IL}$ or V_{IH}					
		output HIGH state; $V_O = 3.0\text{ V}$	-	0.5	5	μA	
		output LOW-state; $V_O = 0.5\text{ V}$	-	+0.5	-5	μA	
I_{CC}	quiescent supply current	$V_{CC} = 3.6\text{ V}$; $V_I = \text{GND}$ or V_{CC} ; $I_O = 0\text{ A}$					
		outputs HIGH-state	-	0.06	0.1	mA	
		outputs LOW-state	-	3.9	5.5	mA	
		outputs disabled	[6] -	0.06	0.1	mA	
ΔI_{CC}	additional quiescent supply current per input pin	$V_{CC} = 3\text{ V}$ to 3.6 V ; one input at $V_{CC} - 0.6\text{ V}$, other inputs at V_{CC} or GND	[7] -	0.04	0.4	mA	
C_I	input capacitance	$V_I = 0\text{ V}$ or V_{CC}	-	3	-	pF	
C_O	output capacitance	$V_{I/O} = 0\text{ V}$ or 3.0 V	-	9	-	pF	

[1] All typical values are at $V_{CC} = 2.5\text{ V}$ and $T_{amb} = 25\text{ }^{\circ}\text{C}$.

[2] For valid test results, data must not be loaded into the flip-flops (or latches) after applying power.

[3] Unused pins at V_{CC} or GND.

[4] Not guaranteed.

[5] This parameter is valid for any V_{CC} between 0 V and 1.2 V with a transition time of up to 10 ms. From $V_{CC} = 1.2\text{ V}$ to $V_{CC} = 2.5\text{ V} \pm 0.2\text{ V}$ a transition time of 100 μs is permitted. This parameter is valid for $T_{amb} = 25\text{ }^{\circ}\text{C}$ only.[6] I_{CC} is measured with outputs pulled up to V_{CC} or pulled down to ground.[7] This is the increase in supply current for each input at the specified voltage level other than V_{CC} or GND.[8] All typical values are at $V_{CC} = 3.3\text{ V}$ and $T_{amb} = 25\text{ }^{\circ}\text{C}$.

[9] This is the bus hold overdrive current required to force the input to the opposite logic state.

[10] This parameter is valid for any V_{CC} between 0 V and 1.2 V with a transition time of up to 10 ms. From $V_{CC} = 1.2$ V to $V_{CC} = 3.3$ V ± 0.3 V a transition time of 100 μ s is permitted. This parameter is valid for $T_{amb} = 25$ °C only.

11. Dynamic characteristics

Table 8: Dynamic characteristics

Voltages are referenced to GND (ground = 0 V); for test circuit see [Figure 10](#);

$T_{amb} = -40$ °C to $+85$ °C.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CC} = 2.5$ V ± 0.2 V [1]						
f_{max}	maximum clock frequency	see Figure 5	150	-	-	MHz
t_{PLH}	propagation delay nCP to nQx	see Figure 5	1.5	2.9	4.5	ns
t_{PHL}	HIGH-to-LOW propagation delay					
	nCP to nQx	see Figure 5	1.4	2.7	4.2	ns
	nMR to nQx	see Figure 7	1.5	2.7	4.2	ns
t_{PZH}	output enable time to HIGH-level	see Figure 8	2.1	3.4	5.0	ns
t_{PZL}	output enable time to LOW-level	see Figure 9	1.8	3.0	4.7	ns
t_{PHZ}	output disable time from HIGH-level	see Figure 8	1.7	3.0	4.3	ns
t_{PLZ}	output disable time from LOW-level	see Figure 9	1.4	2.3	3.3	ns
$t_{su(H)}$	set-up time HIGH					
	nDx to nCP	see Figure 6	1.0	0.5	-	ns
	nCE to nCP	see Figure 6	1.0	0.2	-	ns
$t_{su(L)}$	set-up time LOW					
	nDx to nCP	see Figure 6	1.8	1.3	-	ns
	nCE to nCP	see Figure 6	+0.5	-0.1	-	ns
$t_{h(H)}$	hold time HIGH					
	nDx to nCP	see Figure 6	+0.1	-1.4	-	ns
	nCE to nCP	see Figure 6	1.0	0.2	-	ns
$t_{h(L)}$	hold time LOW					
	nDx to nCP	see Figure 6	+0.1	-0.5	-	ns
	nCE to nCP	see Figure 6	+1.0	-0.1	-	ns
t_{WH}	pulse width HIGH nCP	see Figure 5	2.0	0.8	-	ns
t_{WL}	pulse width LOW					
	nCP	see Figure 5	3.0	2.1	-	ns
	nMR	see Figure 7	2.0	0.8	-	ns
t_{rec}	recovery time nMR to nCP	see Figure 7	2.0	1.3	-	ns
$V_{CC} = 3.3$ V ± 0.3 V [2]						
f_{max}	maximum clock frequency	see Figure 5	250	-	-	MHz
t_{PLH}	propagation delay nCP to nQx	see Figure 5	1.0	2.3	3.1	ns
t_{PHL}	HIGH-to-LOW propagation delay					
	nCP to nQx	see Figure 5	1.0	2.1	2.9	ns
	nMR to nQx	see Figure 7	1.0	2.3	2.9	ns
t_{PZH}	output enable time to HIGH-level	see Figure 8	1.7	2.7	4.0	ns
t_{PZL}	output enable time to LOW-level	see Figure 9	1.4	2.3	3.5	ns

Table 8: Dynamic characteristics ...continued

Voltages are referenced to GND (ground = 0 V); for test circuit see [Figure 10](#);

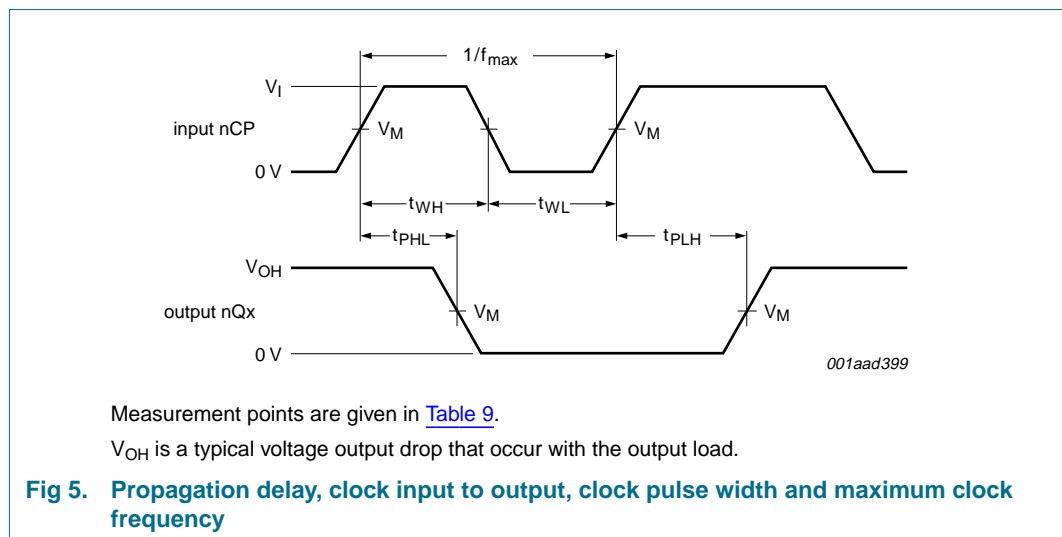
$T_{amb} = -40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$.

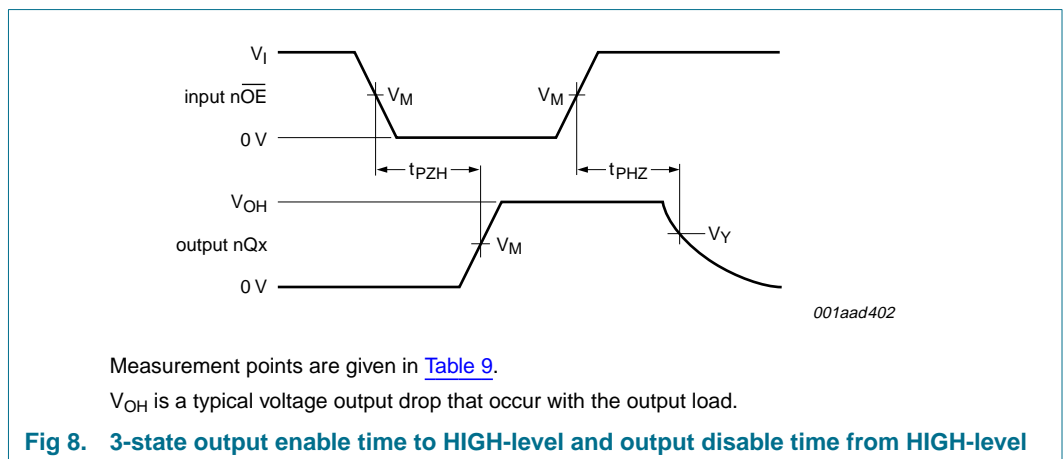
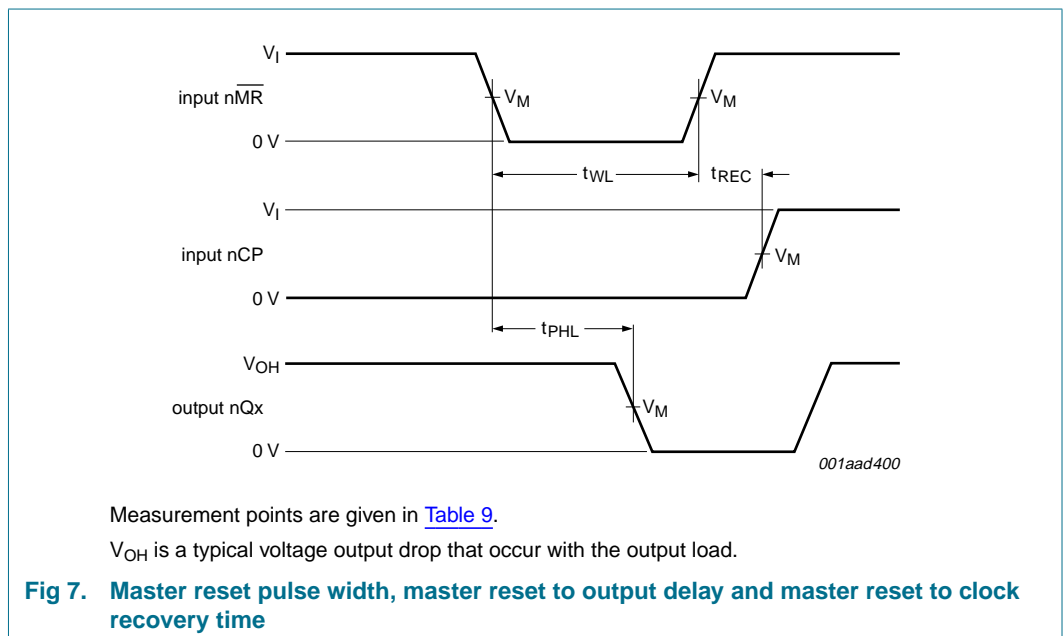
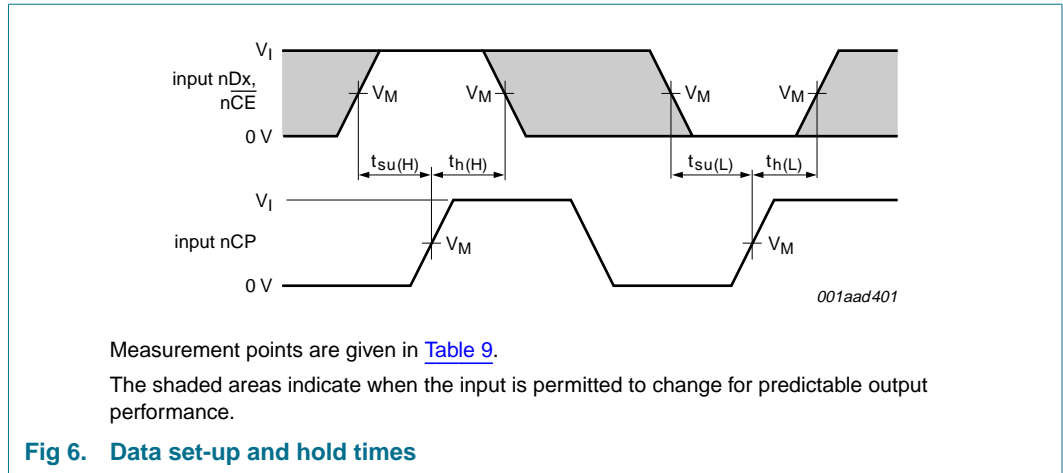
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t_{PHZ}	output disable time from HIGH-level	see Figure 8	2.2	3.1	4.0	ns
t_{PLZ}	output disable time from LOW-level	see Figure 9	1.8	2.6	3.5	ns
$t_{su(H)}$	set-up time HIGH					
	nDx to nCP	see Figure 6	1.0	0.5	-	ns
	$\overline{\text{nCE}}$ to nCP	see Figure 6	1.0	0.1	-	ns
$t_{su(L)}$	set-up time LOW					
	nDx to nCP	see Figure 6	1.6	1.1	-	ns
	$\overline{\text{nCE}}$ to nCP	see Figure 6	+0.5	-0.5	-	ns
$t_{h(H)}$	hold time HIGH					
	nDx to nCP	see Figure 6	+0.1	-0.7	-	ns
	$\overline{\text{nCE}}$ to nCP	see Figure 6	1.0	0.5	-	ns
$t_{h(L)}$	hold time LOW					
	nDx to nCP	see Figure 6	+0.1	-0.5	-	ns
	$\overline{\text{nCE}}$ to nCP	see Figure 6	+1.0	-0.1	-	ns
t_{WH}	pulse width HIGH nCP	see Figure 5	1.5	0.7	-	ns
t_{WL}	pulse width LOW					
	nCP	see Figure 5	2.5	1.4	-	ns
	$\overline{\text{nMR}}$	see Figure 7	2.0	1.5	-	ns
t_{rec}	recovery time $\overline{\text{nMR}}$ to nCP	see Figure 7	2.0	1.1	-	ns

[1] All typical values are measured at $V_{CC} = 2.5\text{ V}$ and $T_{amb} = 25\text{ }^{\circ}\text{C}$.

[2] All typical values are measured at $V_{CC} = 3.3\text{ V}$ and $T_{amb} = 25\text{ }^{\circ}\text{C}$.

12. Waveforms





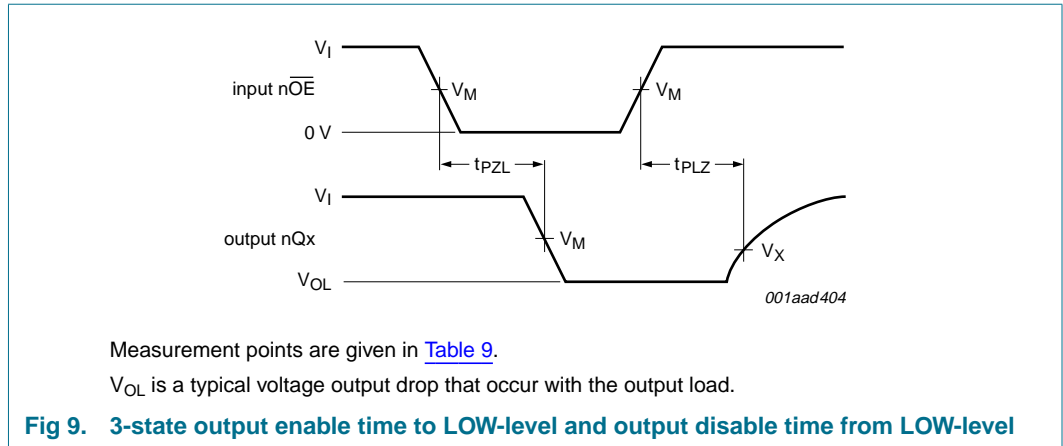


Table 9: Measurement points

Supply voltage	Input	Output		
	V_M	V_M	V_X	V_Y
$\geq 3\text{ V}$	1.5 V	1.5 V	$V_{OL} + 0.3\text{ V}$	$V_{OH} - 0.3\text{ V}$
$\leq 2.7\text{ V}$	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$V_{OL} + 0.3\text{ V}$	$V_{OH} - 0.3\text{ V}$

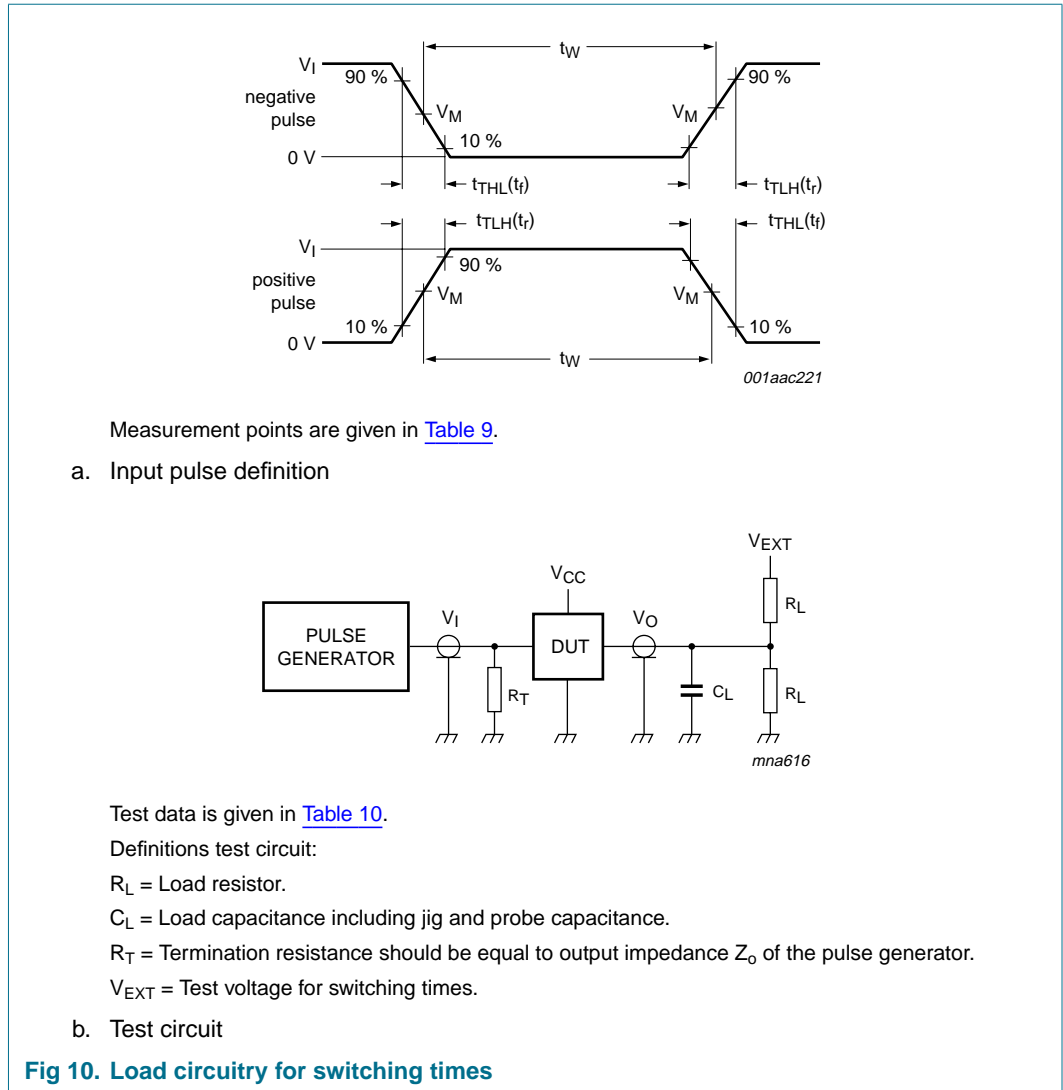


Table 10: Test data

Input				Load		V_{EXT}		
V_I	f_i	t_w	t_r, t_f	C_L	R_L	t_{PLZ}, t_{PZL}	t_{PLH}, t_{PHL}	t_{PHZ}, t_{PZH}
3.0 V or V_{CC} whichever is less	≤ 10 MHz	500 ns	≤ 2.5 ns	50 pF	500 Ω	6 V or $2 \times V_{CC}$	open	GND

13. Package outline

SSOP56: plastic shrink small outline package; 56 leads; body width 7.5 mm

SOT371-1

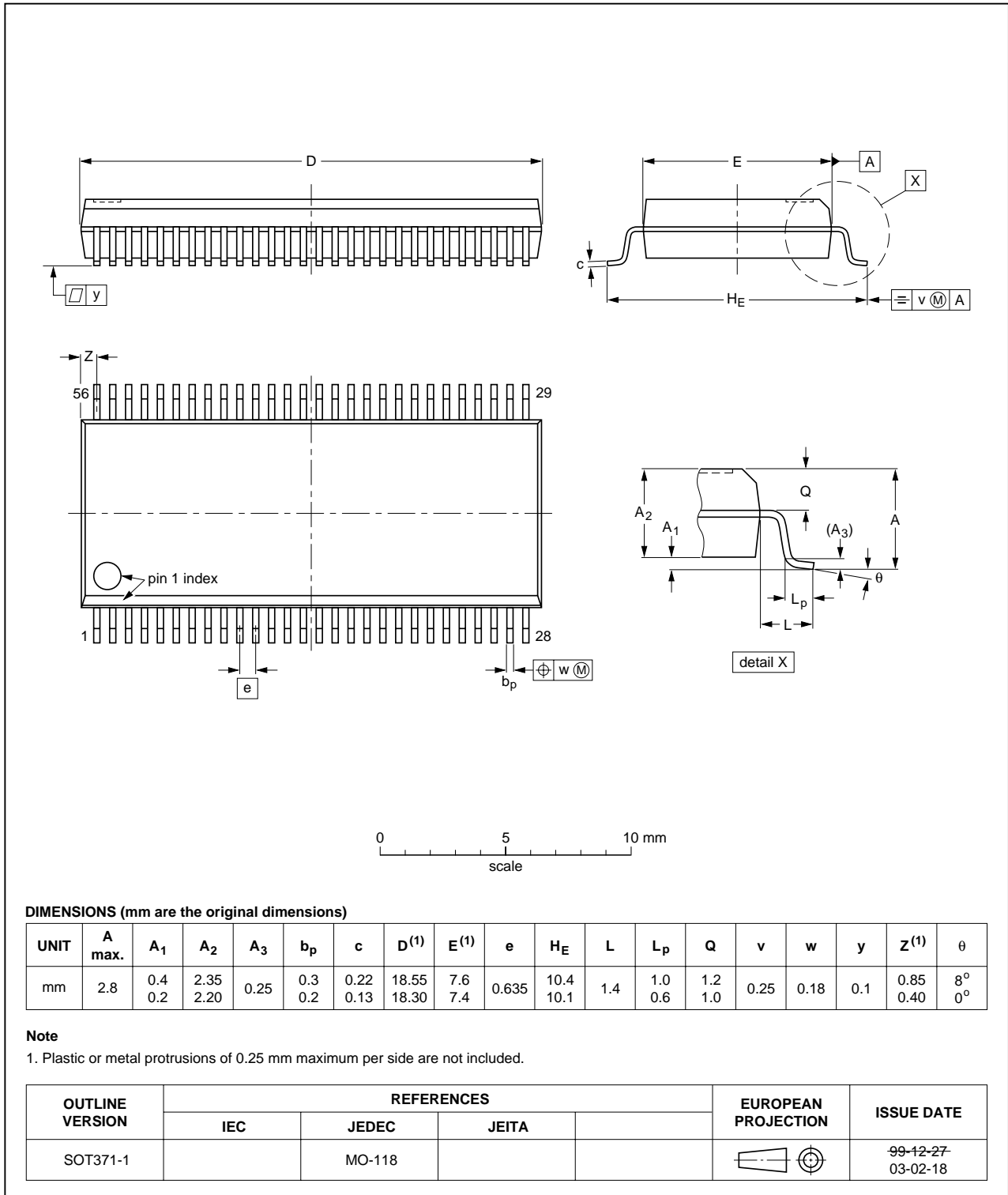


Fig 11. Package outline SOT371-1 (SSOP56)

TSSOP56: plastic thin shrink small outline package; 56 leads; body width 6.1 mm

SOT364-1

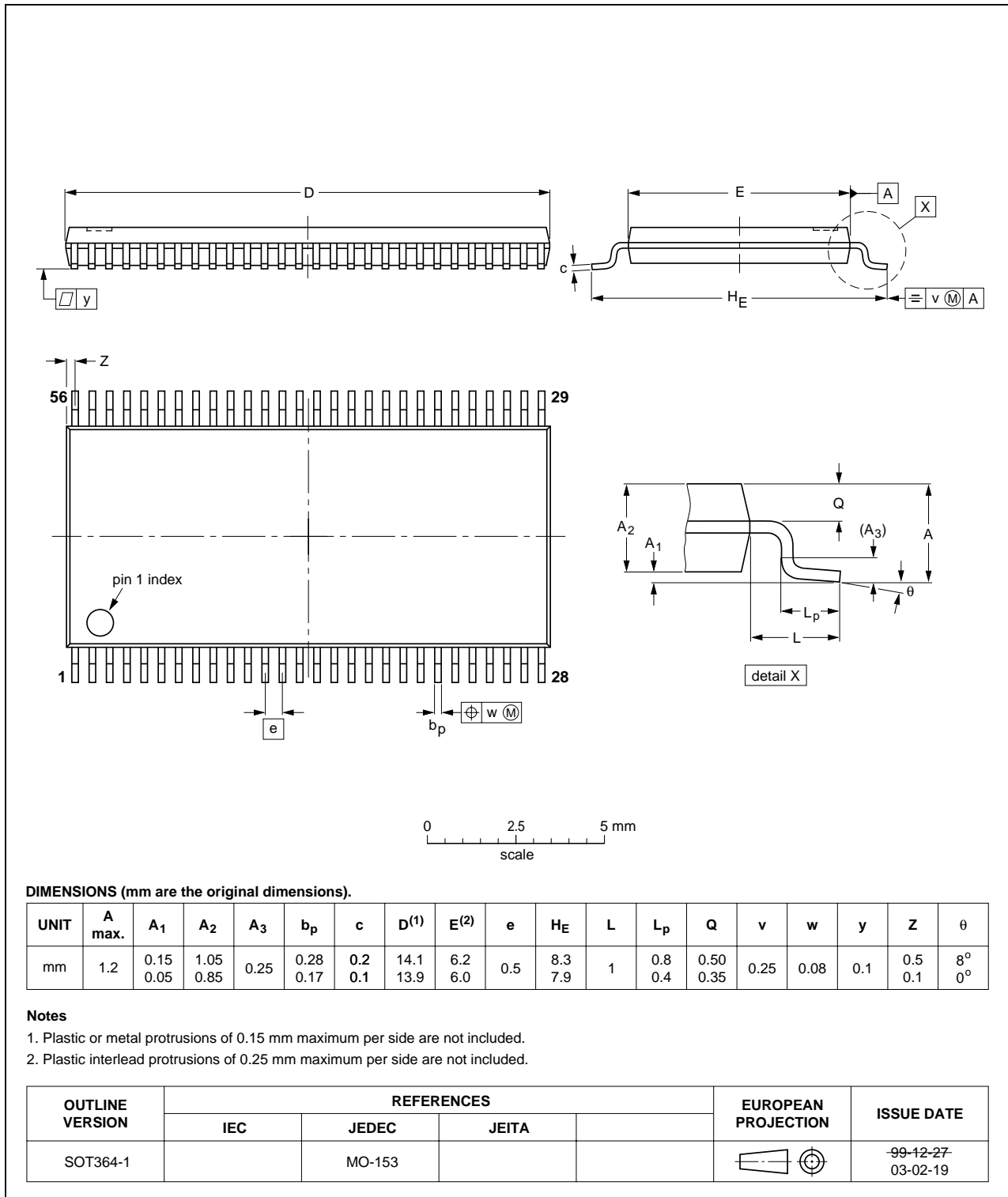


Fig 12. Package outline SOT364-1 (TSSOP56)

14. Revision history

Table 11: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
74ALVT16823_4	20050802	Product data sheet	-	-	74ALVT16823_3
Modifications:					
			<ul style="list-style-type: none">• The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors.• Section 2: modified 'Jedec Std 17' into 'JESD78'• Table 8: changed propagation delays.		
74ALVT16823_3	19980612	Product specification	-	9397 750 04016	74ALVT16823_2
74ALVT16823_2	19980612	Product specification	-	9397 750 04016	74ALVT16823
74ALVT16823	19980303	-	-	-	-

15. Data sheet status

Level	Data sheet status ^[1]	Product status ^{[2] [3]}	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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[1] Please consult the most recently issued data sheet before initiating or completing a design.

[2] The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Date of release: 2 August 2005
Document number: 74ALVT16823_4

Published in The Netherlands