

# 74ALVCH16823

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

Rev. 3 — 1 February 2018

Product data sheet

## 1 General description

The 74ALVCH16823 is a 18-bit edge-triggered flip-flop featuring separate D-type inputs for each flip-flop and 3-state outputs for bus oriented applications. Incorporates bushold data inputs which eliminate the need for external pull-up resistors to hold unused inputs. The 74ALVCH16823 consists of two sections of nine edge-triggered flip-flops. A clock (nCP) input, an output-enable (n $\overline{OE}$ ) input, a master reset (n $\overline{MR}$ ) input and a clock-enable (n $\overline{CE}$ ) input are provided for each total 9-bit section.

With the clock-enable (n $\overline{CE}$ ) input LOW, the D-type flip-flops will store the state of their individual nDn-inputs that meet the set-up and hold time requirements on the LOW-to-HIGH nCP transition. Taking n $\overline{CE}$  HIGH disables the clock buffer, thus latching the outputs. Taking the master reset (n $\overline{MR}$ ) input LOW causes all the nQn outputs to go LOW independently of the clock.

When n $\overline{OE}$  is LOW, the contents of the flip-flops are available at the outputs. When the n $\overline{OE}$  is HIGH, the outputs go to the high impedance OFF-state. Operation of the n $\overline{OE}$  input does not affect the state of flip-flops.

Active bus hold circuitry is provided to hold unused or floating data inputs at a valid logic level.

## 2 Features and benefits

- Wide supply voltage range from 1.2 V to 3.6 V
- CMOS low-power consumption
- Direct interface with TTL levels
- Current drive  $\pm 24$  mA at 3.0 V
- MULTIBYTE flow-through standard pin-out architecture
- Low inductance multiple V<sub>CC</sub> and GND pins for minimum noise and ground bounce
- Output drive capability 50  $\Omega$  transmission lines at 85°C
- All data inputs have bushold
- Complies with JEDEC standard no. 8-1A
- Complies with JEDEC standards:
  - JESD8-5 (2.3 V to 2.7 V)
  - JESD8B/JESD36 (2.7 V to 3.6 V)
- ESD protection:
  - HBM ANSI/ESDA/JEDEC JS-001 exceeds 2000 V
  - CDM JESD22-C101E exceeds 1000 V

### 3 Ordering information

Table 1. Ordering information

Type number	Package			Version
	Temperature range	Name	Description	
74ALVCH16823DGG	-40 °C to +85 °C	TSSOP56	plastic thin shrink small outline package; 56 leads; body width 6.1 mm	SOT364-1

### 4 Functional diagram

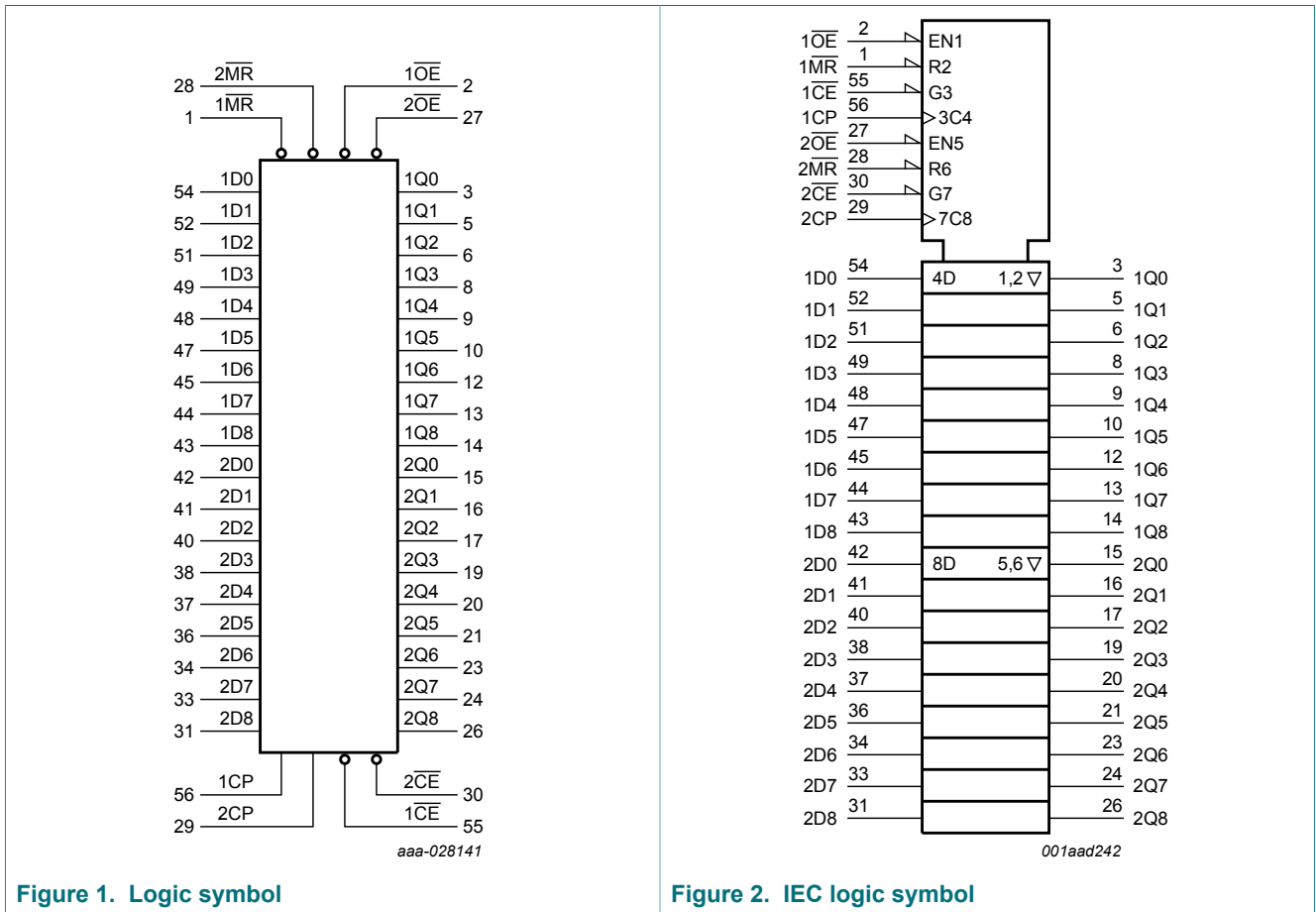


Figure 1. Logic symbol

Figure 2. IEC logic symbol

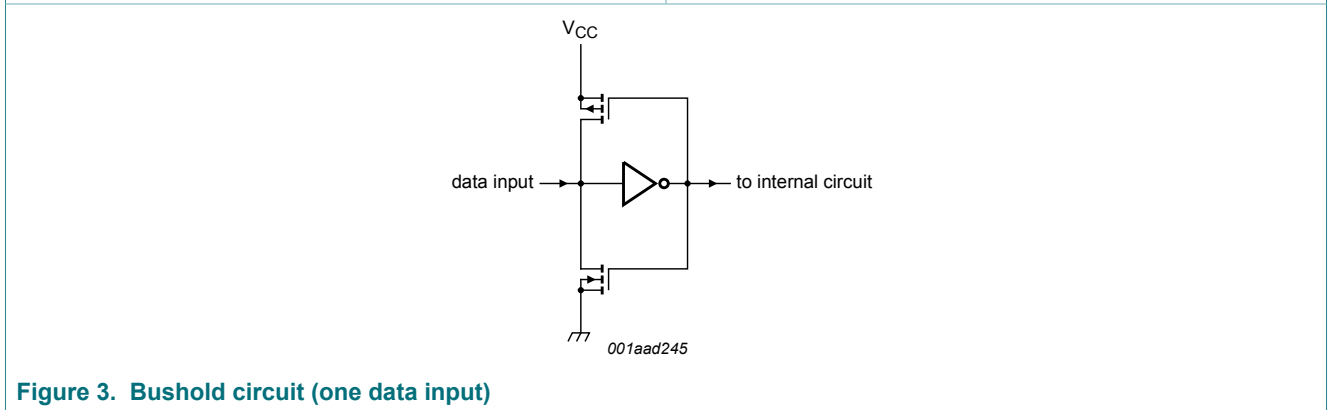


Figure 3. Bushold circuit (one data input)

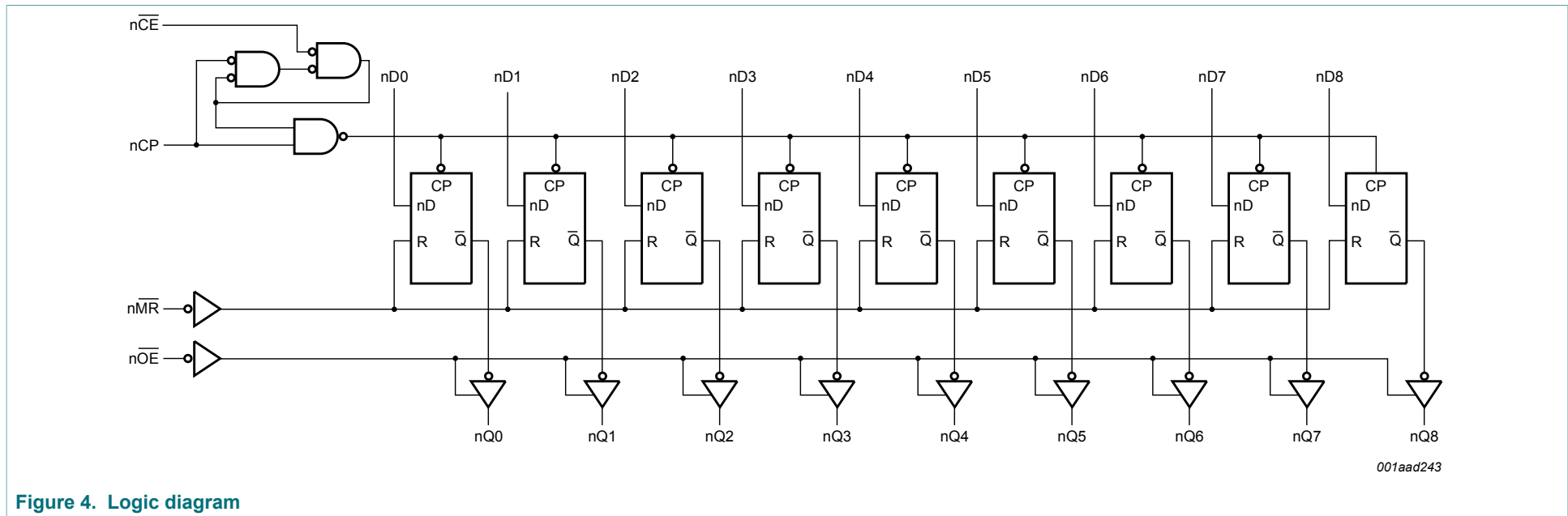
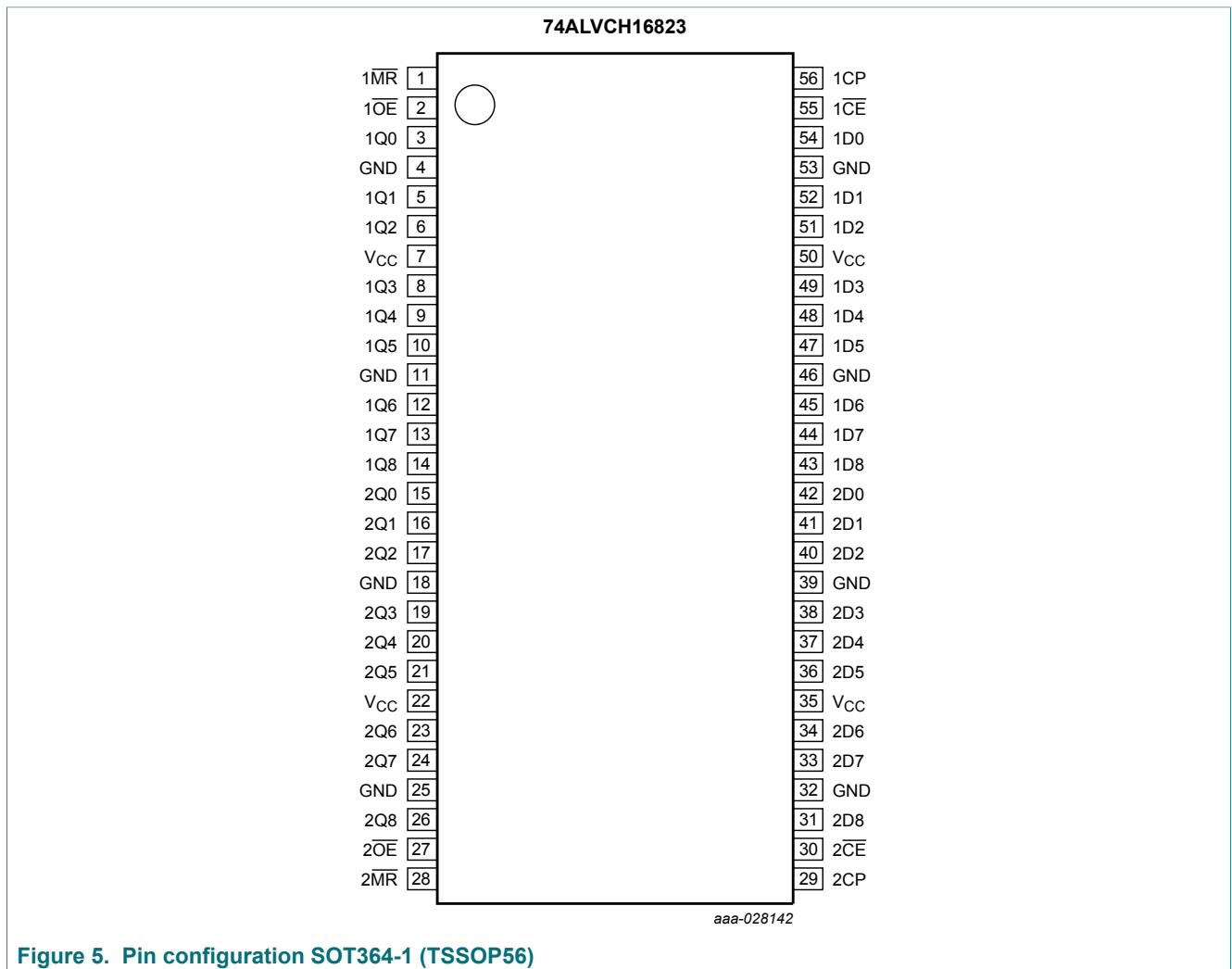


Figure 4. Logic diagram

## 5 Pinning information

### 5.1 Pinning



## 5.2 Pin description

Table 2. Pin description

Symbol	Pin	Description
1D0, 1D1, 1D2, 1D3, 1D4, 1D5, 1D6, 1D7, 1D8	54, 52, 51, 49, 48, 47, 45, 44, 43	data inputs
1Q0, 1Q1, 1Q2, 1Q3, 1Q4, 1Q5, 1Q6, 1Q7, 1Q8	3, 5, 6, 8, 9, 10, 12, 13, 14	data outputs
2D0, 2D1, 2D2, 2D3, 2D4, 2D5, 2D6, 2D7, 2D8	42, 41, 40, 38, 37, 36, 34, 33, 31	data inputs
2Q0, 2Q1, 2Q2, 2Q3, 2Q4, 2Q5, 2Q6, 2Q7, 2Q8	15, 16, 17, 19, 20, 21, 23, 24, 26	data outputs
1 $\overline{\text{MR}}$ , 2 $\overline{\text{MR}}$	1, 28	master reset inputs (active-LOW)
1 $\overline{\text{OE}}$ , 2 $\overline{\text{OE}}$	2, 27	output enable inputs (active LOW)
1CP, 2CP	56, 29	clock pulse inputs (active rising edge)
1 $\overline{\text{CE}}$ , 2 $\overline{\text{CE}}$	55, 30	clock enable inputs (active-LOW)
GND	4, 11, 18, 25, 32, 39, 46, 53	ground (0 V)
V <sub>CC</sub>	7, 22, 35, 50	supply voltage

## 6 Functional description

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

Operating mode	Input					Output
	n $\overline{\text{OE}}$	n $\overline{\text{MR}}$	n $\overline{\text{CE}}$	nCP	nDn	nQn
clear	L	L	X	X	X	L
load and read data	L	H	L	↑	h	H
	L	H	L	↑	l	L
hold	L	H	L	L	X	NC
	L	H	H	X	X	NC
disable outputs	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;

## 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	+4.6	V
$V_I$	input voltage	For control pins <sup>[1]</sup>	-0.5	+5.5	V
		For data inputs <sup>[1]</sup>	-0.5	$V_{CC} + 0.5$	V
$V_O$	output voltage	<sup>[1]</sup>	-0.5	$V_{CC} + 0.5$	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	-	$\pm 50$	mA
$I_{O(\text{sink/source})}$	output sink or source current	$V_O = 0$ V to $V_{CC}$	-	$\pm 50$	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>[2]</sup>	-	600	mW

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

[2] Above 55 °C the value of  $P_{tot}$  derates linearly with 8 mW/K.

## 8 Recommended operating conditions

**Table 5. Recommended operating conditions**

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{CC}$	supply voltage	2.5 V range for maximum speed performance at 30 pF output load	2.3	2.7	V
		3.3 V range for maximum speed performance at 50 pF output load	3.0	3.6	V
		for low-voltage applications	1.2	3.6	V
$V_I$	input voltage	for data inputs	0	$V_{CC}$	V
		for control inputs	0	5.5	V
$V_O$	output voltage		0	$V_{CC}$	V
$T_{amb}$	ambient temperature	in free air	-40	+85	°C
$\Delta t/\Delta V$	input transition rise and fall rate	$V_{CC} = 2.3$ V to 3.0 V	-	20	ns/V
		$V_{CC} = 3.0$ V to 3.6 V	-	10	ns/V

## 9 Static characteristics

**Table 6. Static characteristics**

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

Symbol	Parameter	Conditions	Min	Typ <sup>[1]</sup>	Max	Unit
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC</sub> = 1.2 V	V <sub>CC</sub>	-	-	V
		V <sub>CC</sub> = 1.8 V	0.7V <sub>CC</sub>	0.9	-	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.7	1.2	-	V
		V <sub>CC</sub> = 2.7 V to 3.6 V	2.0	1.5	-	V
V <sub>IL</sub>	LOW-level input voltage	V <sub>CC</sub> = 1.2 V	-	-	GND	V
		V <sub>CC</sub> = 1.8 V	-	0.9	0.2V <sub>CC</sub>	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	1.2	0.7	V
		V <sub>CC</sub> = 2.7 V to 3.6 V	-	1.5	0.8	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> = -100 μA; V <sub>CC</sub> = 1.8 V to 3.6 V	V <sub>CC</sub> - 0.2	V <sub>CC</sub>	-	V
		I <sub>O</sub> = -6 mA; V <sub>CC</sub> = 1.8 V	V <sub>CC</sub> - 0.4	V <sub>CC</sub> - 0.10	-	V
		I <sub>O</sub> = -6 mA; V <sub>CC</sub> = 2.3 V	V <sub>CC</sub> - 0.3	V <sub>CC</sub> - 0.08	-	V
		I <sub>O</sub> = -12 mA; V <sub>CC</sub> = 2.3 V	V <sub>CC</sub> - 0.5	V <sub>CC</sub> - 0.17	-	V
		I <sub>O</sub> = -18 mA; V <sub>CC</sub> = 2.3 V	V <sub>CC</sub> - 0.6	V <sub>CC</sub> - 0.26	-	V
		I <sub>O</sub> = -12 mA; V <sub>CC</sub> = 2.7 V	V <sub>CC</sub> - 0.5	V <sub>CC</sub> - 0.14	-	V
		I <sub>O</sub> = -24 mA; V <sub>CC</sub> = 3.0 V	V <sub>CC</sub> - 1.0	V <sub>CC</sub> - 0.28	-	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> = 1.8 V to 3.6 V	-	GND	0.20	V
		I <sub>O</sub> = 6 mA; V <sub>CC</sub> = 1.8 V	-	0.09	0.30	V
		I <sub>O</sub> = 6 mA; V <sub>CC</sub> = 2.3 V	-	0.07	0.20	V
		I <sub>O</sub> = 12 mA; V <sub>CC</sub> = 2.3 V	-	0.15	0.40	V
		I <sub>O</sub> = 18 mA; V <sub>CC</sub> = 2.3 V	-	0.23	0.60	V
		I <sub>O</sub> = 12 mA; V <sub>CC</sub> = 2.7 V	-	0.14	0.40	V
		I <sub>O</sub> = 24 mA; V <sub>CC</sub> = 3.0 V	-	0.27	0.55	V
I <sub>I</sub>	input leakage current	per control pin; V <sub>CC</sub> = 1.8 V to 3.6 V; V <sub>I</sub> = 5.5 V or GND	-	0.1	5	μA
		per data pin; V <sub>CC</sub> = 1.8 V to 3.6 V; V <sub>I</sub> = V <sub>CC</sub> or GND	-	0.1	5	μA
I <sub>OZ</sub>	OFF-state output current	V <sub>CC</sub> = 1.8 V to 2.7 V; V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>O</sub> = V <sub>CC</sub> or GND	-	0.1	5	μA
		V <sub>CC</sub> = 2.7 V to 3.6 V; V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>O</sub> = V <sub>CC</sub> or GND	-	0.1	10	μA
I <sub>CC</sub>	supply current	V <sub>CC</sub> = 2.3 V to 3.6 V; V <sub>I</sub> = V <sub>CC</sub> or GND; I <sub>O</sub> = 0 A	-	0.2	40	μA
ΔI <sub>CC</sub>	additional supply current	V <sub>CC</sub> = 2.7 V to 3.6 V; V <sub>I</sub> = V <sub>CC</sub> - 0.6 V; I <sub>O</sub> = 0 A	-	150	750	μA

Symbol	Parameter	Conditions	Min	Typ <sup>[1]</sup>	Max	Unit
I <sub>BHL</sub>	bus hold LOW current	V <sub>CC</sub> = 2.3 V; V <sub>I</sub> = 0.7 V	45	-	-	μA
		V <sub>CC</sub> = 3.0 V; V <sub>I</sub> = 0.8 V	75	150	-	μA
I <sub>BHH</sub>	bus hold HIGH current	V <sub>CC</sub> = 2.3 V; V <sub>I</sub> = 1.7 V	-45	-	-	μA
		V <sub>CC</sub> = 3.0 V; V <sub>I</sub> = 2.0 V	-75	-175	-	μA
I <sub>BHLO</sub>	bus hold LOW overdrive current	V <sub>CC</sub> = 2.7 V	300	-	-	μA
		V <sub>CC</sub> = 3.0 V	450	-	-	μA
I <sub>BHHO</sub>	bus hold HIGH overdrive current	V <sub>CC</sub> = 2.7 V	-300	-	-	μA
		V <sub>CC</sub> = 3.6 V	-450	-	-	μA
C <sub>I</sub>	input capacitance		-	5.0	-	pF

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

## 10 Dynamic characteristics

**Table 7. Dynamic characteristics**

At recommended operating conditions; T<sub>amb</sub> = -40 °C to +85 °C; voltages are referenced to GND (ground = 0 V); for test circuit see [Figure 10](#)

Symbol	Parameter	Conditions	Min	Typ <sup>[1]</sup>	Max	Unit	
t <sub>pd</sub>	propagation delay	nCP to nQn; see <a href="#">Figure 6</a> <sup>[2]</sup>					
		V <sub>CC</sub> = 1.2 V	-	10.6	-	ns	
		V <sub>CC</sub> = 1.8 V	1.5	4.5	7.5	ns	
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.0	2.8	4.9	ns	
		V <sub>CC</sub> = 2.7 V	1.0	2.7	4.3	ns	
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.0	2.5	3.7	ns	
		nMR to nQn; see <a href="#">Figure 8</a>					
		V <sub>CC</sub> = 1.2 V	-	9.9	-	ns	
		V <sub>CC</sub> = 1.8 V	1.5	4.6	7.4	ns	
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.0	2.9	5.0	ns	
		V <sub>CC</sub> = 2.7 V	1.0	3.1	4.6	ns	
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.0	2.6	4.0	ns	
t <sub>en</sub>	enable time	nOE to nQn; see <a href="#">Figure 9</a> <sup>[3]</sup>					
		V <sub>CC</sub> = 1.2 V	-	10.4	-	ns	
		V <sub>CC</sub> = 1.8 V	1.5	4.4	7.7	ns	
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.0	2.8	5.3	ns	
		V <sub>CC</sub> = 2.7 V	1.0	3.1	5.2	ns	
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.0	2.5	4.3	ns	



Symbol	Parameter	Conditions	Min	Typ <sup>[1]</sup>	Max	Unit
t <sub>dis</sub>	disable time	n $\overline{OE}$ to nQn; see <a href="#">Figure 9</a> <sup>[4]</sup>				
		V <sub>CC</sub> = 1.2 V	-	6.7	-	ns
		V <sub>CC</sub> = 1.8 V	1.5	3.3	5.5	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.0	2.2	4.1	ns
		V <sub>CC</sub> = 2.7 V	1.0	3.1	4.3	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.0	2.8	3.9	ns
t <sub>su</sub>	set-up time	nDn to nCP; see <a href="#">Figure 7</a>				
		V <sub>CC</sub> = 1.8 V	1.5	0.2	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.2	0.2	-	ns
		V <sub>CC</sub> = 2.7 V	1.5	0.4	-	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.2	0.2	-	ns
		n $\overline{CE}$ to nCP; see <a href="#">Figure 7</a>				
		V <sub>CC</sub> = 1.8 V	2.0	-0.2	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.8	-0.2	-	ns
		V <sub>CC</sub> = 2.7 V	1.9	-0.1	-	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.5	-0.1	-	ns
t <sub>h</sub>	hold time	nDn to nCP; see <a href="#">Figure 7</a>				
		V <sub>CC</sub> = 1.8 V	0.6	-0.2	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	0.8	-0.1	-	ns
		V <sub>CC</sub> = 2.7 V	0.6	-0.2	-	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	0.8	0.0	-	ns
		n $\overline{CE}$ to nCP; see <a href="#">Figure 7</a>				
		V <sub>CC</sub> = 1.8 V	0.3	0.2	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	0.3	0.2	-	ns
		V <sub>CC</sub> = 2.7 V	0.4	0.1	-	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	0.5	0.1	-	ns
t <sub>w</sub>	pulse width	nCP HIGH or LOW; see <a href="#">Figure 6</a>				
		V <sub>CC</sub> = 1.8 V	4.0	2.0	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	3.0	1.6	-	ns
		V <sub>CC</sub> = 2.7 V	3.0	1.6	-	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	2.5	1.4	-	ns
		nMR HIGH or LOW; see <a href="#">Figure 8</a>				
		V <sub>CC</sub> = 1.8 V	4.0	0.8	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	3.0	0.4	-	ns
		V <sub>CC</sub> = 2.7 V	3.0	0.6	-	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	2.5	0.3	-	ns

Symbol	Parameter	Conditions	Min	Typ <sup>[1]</sup>	Max	Unit
t <sub>rec</sub>	recovery time	nMR to nCP; see <a href="#">Figure 8</a>				
		V <sub>CC</sub> = 1.8 V	0.8	0.2	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.0	0.3	-	ns
		V <sub>CC</sub> = 2.7 V	0.8	0.1	-	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.0	0.2	-	ns
f <sub>max</sub>	maximum frequency	nCP; see <a href="#">Figure 6</a>				
		V <sub>CC</sub> = 1.8 V	125	250	-	MHz
		V <sub>CC</sub> = 2.3 V to 2.7 V	150	300	-	MHz
		V <sub>CC</sub> = 2.7 V	150	300	-	MHz
		V <sub>CC</sub> = 3.0 V to 3.6 V	200	350	-	MHz
C <sub>PD</sub>	power dissipation capacitance	per latch; V <sub>I</sub> = GND to V <sub>CC</sub> <sup>[5]</sup>				
		outputs enabled	-	16	-	pF
		outputs disabled	-	10	-	pF

[1] Typical values are measured at T<sub>amb</sub> = 25 °C

Typical values for V<sub>CC</sub> = 2.3 V to 2.7 V are measured at V<sub>CC</sub> = 2.5 V.

Typical values for V<sub>CC</sub> = 3.0 V to 3.6 V are measured at V<sub>CC</sub> = 3.3 V.

[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>PZL</sub> and t<sub>PZH</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;

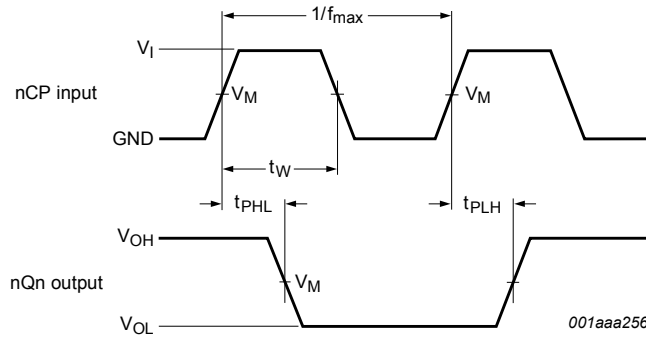
C<sub>L</sub> = output load capacitance in pF;

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

N = total load switching outputs;

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

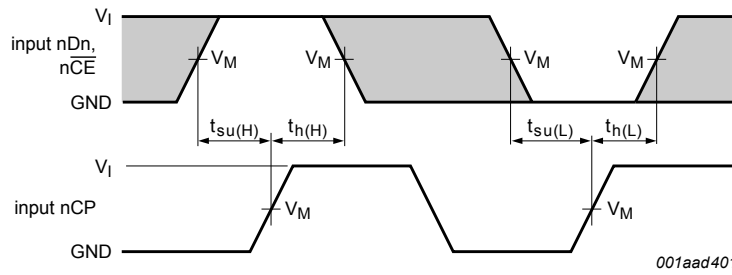
10.1 Waveforms and test circuit



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

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

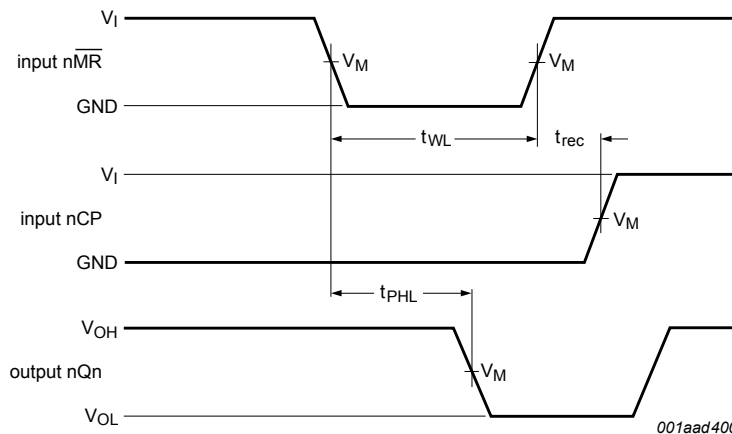
**Figure 6. Propagation delay clock input (nCP) to output (nQn), clock pulse (nCP) width and maximum clock (nCP) frequency**



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

The shaded areas indicate when the input is permitted to change for predictable output performance.

**Figure 7. Data set-up and hold times for the nDn or nCE input to the nCP input**



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

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

**Figure 8. Master reset (nMR) pulse width, master reset (nMR) to output (nQn) propagation delay and master reset (nMR) to clock (nCP) recovery time**

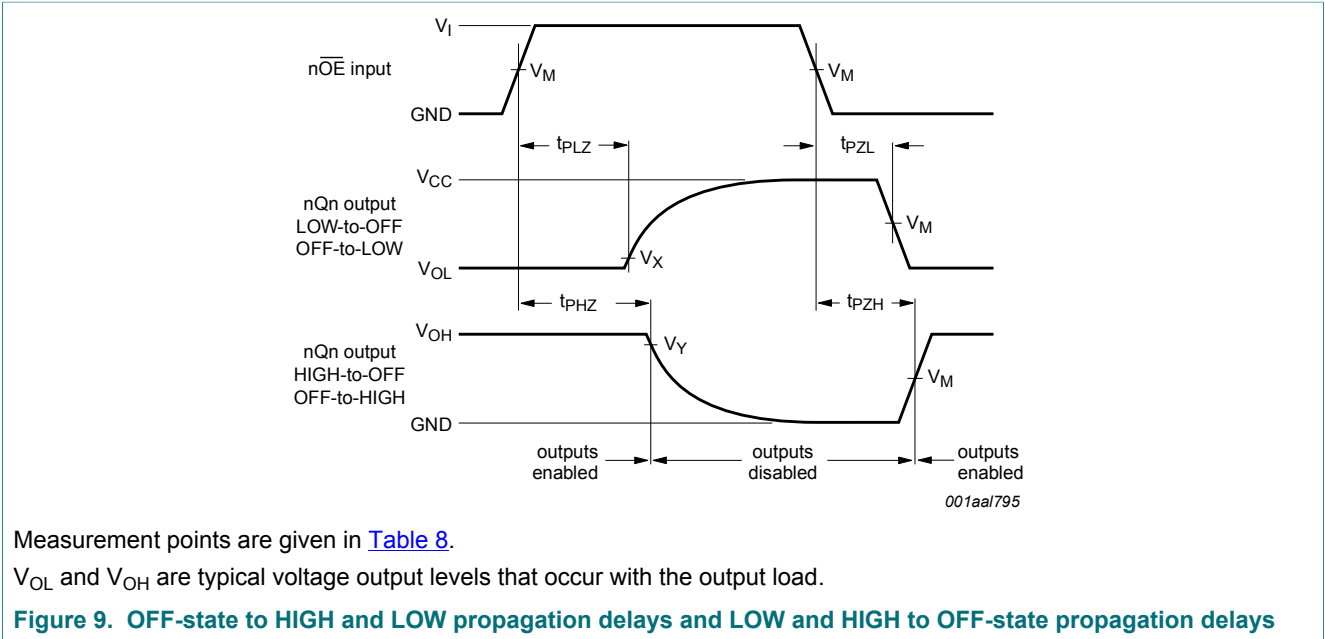
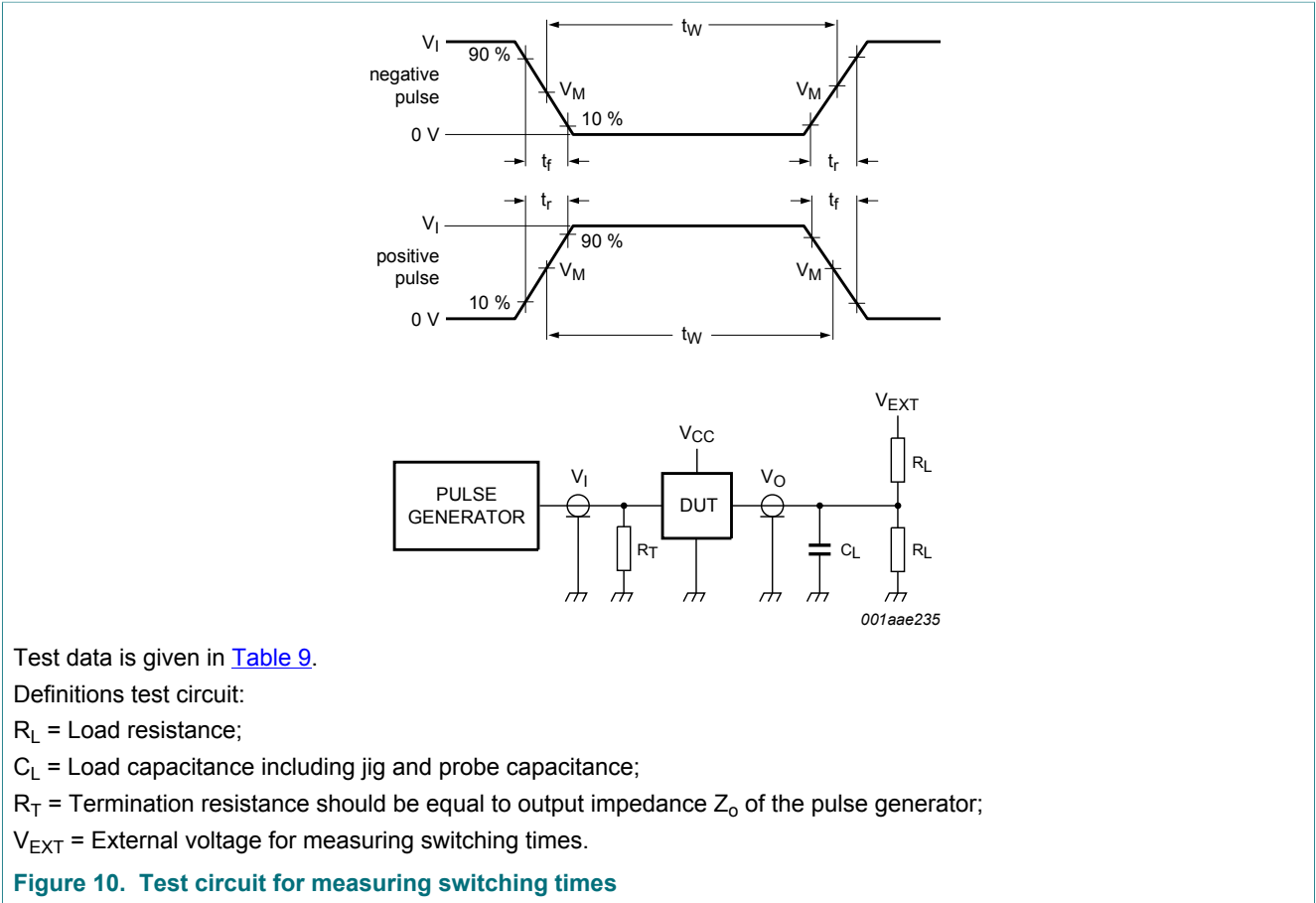


Table 8. Measurement points

$V_{CC}$	Input		Output		
	$V_I$	$V_M$	$V_M$	$V_X$	$V_Y$
$< 2.7\text{ V}$	$V_{CC}$	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$V_{OL} + 0.15\text{ V}$	$V_{OH} - 0.15\text{ V}$
$\geq 2.7\text{ V}$	$2.7\text{ V}$	$1.5\text{ V}$	$1.5\text{ V}$	$V_{OL} + 0.3\text{ V}$	$V_{OH} - 0.3\text{ V}$



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

Definitions 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.

**Figure 10. Test circuit for measuring switching times**

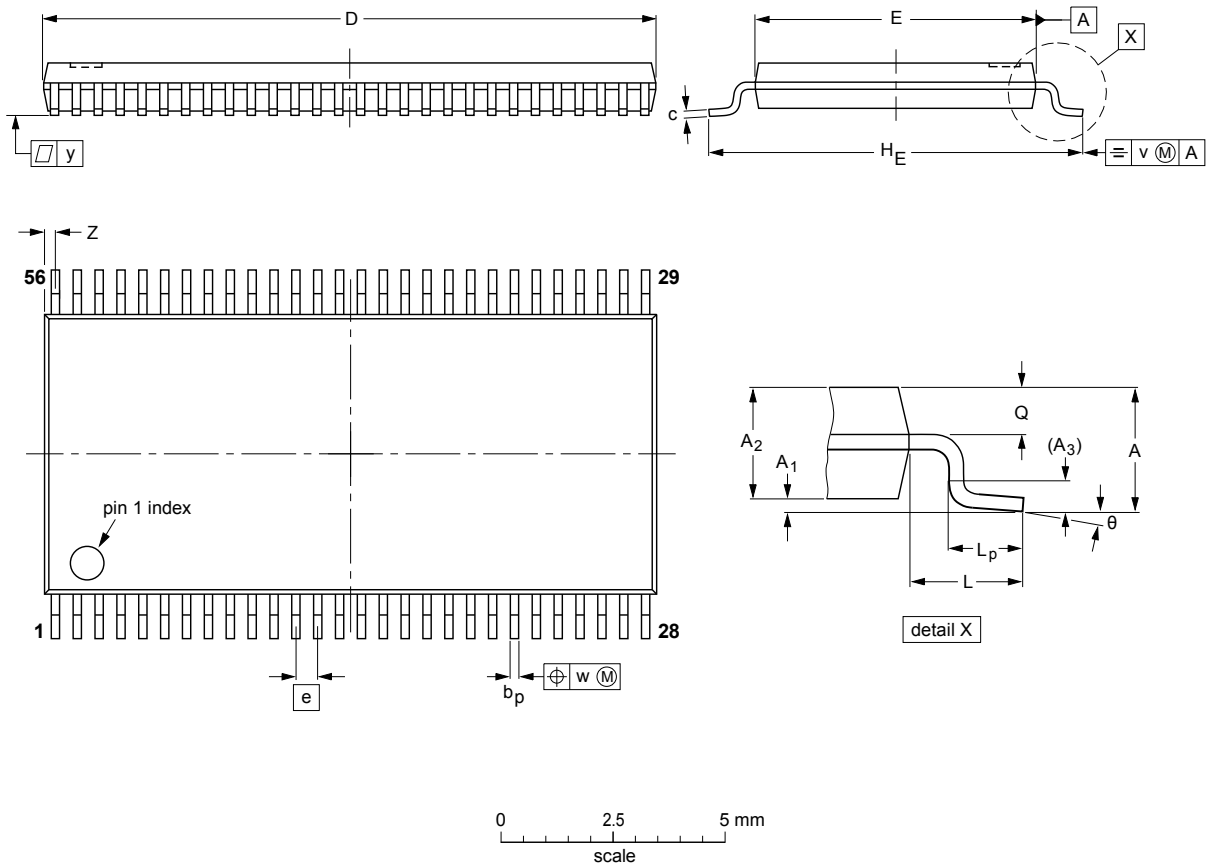
**Table 9. Test data**

Input			Load		$V_{EXT}$		
$V_{CC}$	$V_I$	$t_r, t_f$	$R_L$	$C_L$	$t_{PHZ}, t_{PZH}$	$t_{PLZ}, t_{PZL}$	$t_{PLH}, t_{PHL}$
< 2.7 V	$V_{CC}$	$\leq 2.0$ ns	500 $\Omega$	30 pF	GND	$2 \times V_{CC}$	open
$\geq 2.7$ V	2.7 V	$\leq 2.5$ ns	500 $\Omega$	50 pF	GND	$2 \times V_{CC}$	open

11 Package outline

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

SOT364-1



DIMENSIONS (mm are the original dimensions).

UNIT	A max.	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	b <sub>p</sub>	c	D <sup>(1)</sup>	E <sup>(2)</sup>	e	H <sub>E</sub>	L	L <sub>p</sub>	Q	v	w	y	Z	θ
mm	1.2	0.15 0.05	1.05 0.85	0.25	0.28 0.17	0.2 0.1	14.1 13.9	6.2 6.0	0.5	8.3 7.9	1	0.8 0.4	0.50 0.35	0.25	0.08	0.1	0.5 0.1	8° 0°

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		
SOT364-1		MO-153			99-12-27 03-02-19

Figure 11. Package outline SOT364-1 (TSSOP56)

## 12 Abbreviations

Table 10. Abbreviations

Acronym	Description
CMOS	Complementary Metal-Oxide Semiconductor
DUT	Device Under Test
TTL	Transistor-Transistor Logic

## 13 Revision history

Table 11. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74ALVCH16823 v.3	20180201	Product data sheet	-	74ALVCH16823 v.2
Modifications:	<ul style="list-style-type: none"> <li>The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li> <li>Legal texts have been adapted to the new company name where appropriate.</li> <li>Type number 74ALVCH16823DL (SOT371-1 / SSOP56) removed</li> </ul>			
74ALVCH16823 v.2	19980729	Product specification	-	74ALVCH16823 v.1
74ALVCH16823 v.1	19980729	Product specification	-	-

## 14 Legal information

### 14.1 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.nexperia.com>.

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