Octal D-type transparant latch; 3-state Rev. 7 — 8 November 2011

Product data sheet

General description 1.

The 74AHC573; 74AHCT573 is a high-speed Si-gate CMOS device and is pin compatible with Low-power Schottky TTL (LSTTL). It is specified in compliance with JEDEC standard No. 7A.

The 74AHC573; 74AHCT573 consists of eight D-type transparent latches featuring separate D-type inputs for each latch and 3-state true outputs for bus oriented applications. A latch enable input (LE) and an output enable input (OE) are common to all latches.

When pin LE is HIGH, data at the Dn inputs enters the latches. In this condition the latches are transparent, i.e. a latch output will change state each time its corresponding Dn input changes. When pin LE is LOW, the latches store the information that is present at the Dn inputs, after a set-up time preceding the HIGH-to-LOW transition of LE.

When pin OE is LOW, the contents of the 8 latches are available at the outputs. When pin OE is HIGH, the outputs go to the high-impedance OFF-state. Operation of the OE input does not affect the state of the latches.

The 74AHC573; 74AHCT573 is functionally identical to the 74AHC373; 74AHCT373, but has a different pin arrangement.

2. **Features and benefits**

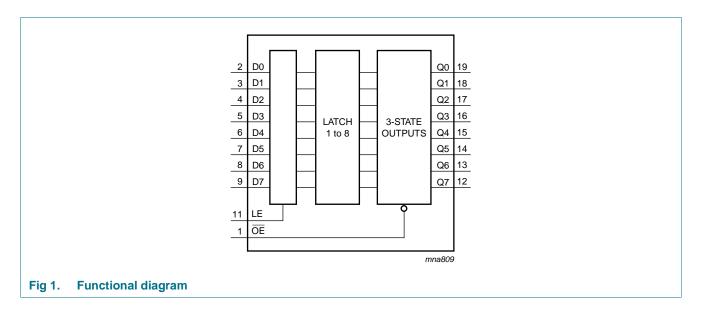
- Balanced propagation delays
- All inputs have a Schmitt trigger action
- Common 3-state output enable input
- Functionally identical to the 74AHC373; 74AHCT373
- Inputs accept voltages higher than V_{CC}
- Input levels:
 - For 74AHC573: CMOS input level
 - For 74AHCT573: TTL input level
- ESD protection:
 - HBM EIA/JESD22-A114E exceeds 2000 V
 - MM EIA/JESD22-A115-A exceeds 200 V
 - CDM EIA/JESD22-C101C exceeds 1000 V
- Multiple package options
- Specified from -40 °C to +85 °C and from -40 °C to +125 °C



3. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
74AHC573				
74AHC573D	–40 °C to +125 °C	SO20	plastic small outline package; 20 leads; body width 7.5 mm	SOT163-
74AHC573PW	–40 °C to +125 °C	TSSOP20	plastic thin shrink small outline package; 20 leads; body width 4.4 mm	SOT360-
74AHC573BQ	–40 °C to +125 °C	DHVQFN20	plastic dual in-line compatible thermal enhanced very thin quad flat package no leads; 20 terminals; body $2.5 \times 4.5 \times 0.85$ mm	SOT764-
74AHCT573				
74AHCT573D	–40 °C to +125 °C	SO20	plastic small outline package; 20 leads; body width 7.5 mm	SOT163-
74AHCT573PW	–40 °C to +125 °C	TSSOP20	plastic thin shrink small outline package; 20 leads; body width 4.4 mm	SOT360-
74AHCT573BQ	–40 °C to +125 °C	DHVQFN20	plastic dual in-line compatible thermal enhanced very thin quad flat package no leads; 20 terminals; body $2.5 \times 4.5 \times 0.85$ mm	SOT764-

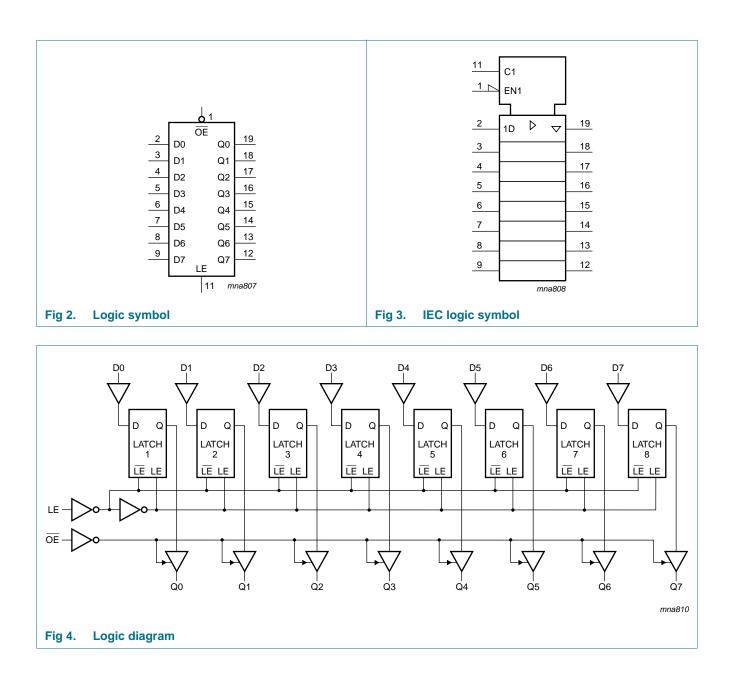
4. Functional diagram



NXP Semiconductors

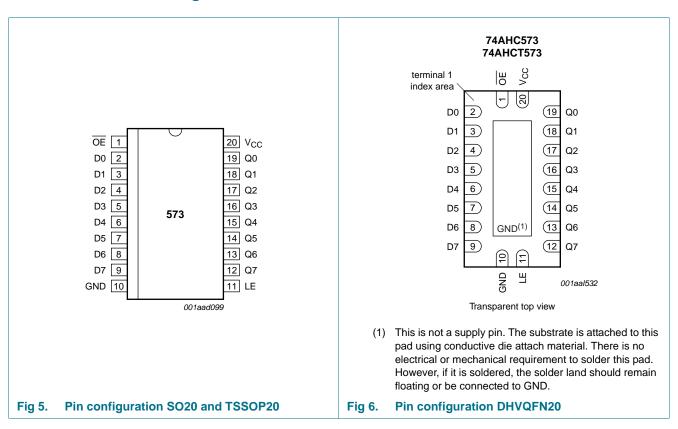
74AHC573; 74AHCT573

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5. Pinning information



5.1 Pinning

5.2 Pin description

Symbol Pin Description OE 1 output enable input (active LOW) D0 to D7 2, 3, 4, 5, 6, 7, 8, 9 data input GND 10 ground (0 V) LE 11 latch enable (active HIGH) Q0 to Q7 19, 18, 17, 16, 15, 14, 13, 12 data output V _{CC} 20 supply voltage	Table 2.	Pin description	
D0 to D7 2, 3, 4, 5, 6, 7, 8, 9 data input GND 10 ground (0 V) LE 11 latch enable (active HIGH) Q0 to Q7 19, 18, 17, 16, 15, 14, 13, 12 data output	Symbol	Pin	Description
GND 10 ground (0 V) LE 11 latch enable (active HIGH) Q0 to Q7 19, 18, 17, 16, 15, 14, 13, 12 data output	OE	1	output enable input (active LOW)
LE 11 latch enable (active HIGH) Q0 to Q7 19, 18, 17, 16, 15, 14, 13, 12 data output	D0 to D7	2, 3, 4, 5, 6, 7, 8, 9	data input
Q0 to Q7 19, 18, 17, 16, 15, 14, 13, 12 data output	GND	10	ground (0 V)
	LE	11	latch enable (active HIGH)
V _{CC} 20 supply voltage	Q0 to Q7	19, 18, 17, 16, 15, 14, 13, 1	2 data output
	V _{CC}	20	supply voltage

6. Functional description

Table 3.Function table^[1]

Operating mode	Input		Internal latch	Output	
	OE	LE	Dn		Qn
Enable and read register (transparent	L	Н	L	L	L
mode)			Н	Н	Н
Latch and read register	L	L	Ι	L	L
			h	Н	Н
Latch register and disable outputs	Н	L	Ι	L	Z
			h	Н	Z

[1] H = HIGH voltage level;

h = HIGH voltage level one set-up time prior to the HIGH-to-LOW LE transition;

L = LOW voltage level;

I = LOW voltage level one set-up time prior to the HIGH-to-LOW LE transition;

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	+7.0	V
VI	input voltage		-0.5	+7.0	V
I _{IK}	input clamping current	V _I < -0.5 V	<u>[1]</u> –20	-	mA
Ι _{ΟΚ}	output clamping current	$V_{\rm O}$ < –0.5 V or $V_{\rm O}$ > $V_{\rm CC}$ + 0.5 V	<u>[1]</u> –20	+20	mA
I _O	output current	V_{O} = -0.5 V to (V _{CC} + 0.5 V)	-25	+25	mA
I _{CC}	supply current		-	+75	mA
I _{GND}	ground current		-75	-	mA
T _{stg}	storage temperature		-65	+150	°C
P _{tot}	total power dissipation	$T_{amb} = -40 \ ^{\circ}C \ to +125 \ ^{\circ}C$	[2] _	500	mW

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

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8. Recommended operating conditions

Table 5.	Operating conditions					
Symbol	Parameter	Conditions	Min	Тур	Max	Unit
74AHC57	'3					
V _{CC}	supply voltage		2.0	5.0	5.5	V
VI	input voltage		0	-	5.5	V
Vo	output voltage		0	-	V _{CC}	V
T _{amb}	ambient temperature		-40	+25	+125	°C
$\Delta t / \Delta V$	input transition rise and fall rate	V_{CC} = 3.0 V to 3.6 V	-	-	100	ns/V
		V_{CC} = 4.5 V to 5.5 V	-	-	20	ns/V
74AHCT5	573					
V _{CC}	supply voltage		4.5	5.0	5.5	V
VI	input voltage		0	-	5.5	V
Vo	output voltage		0	-	V _{CC}	V
T _{amb}	ambient temperature		-40	+25	+125	°C
$\Delta t / \Delta V$	input transition rise and fall rate	V_{CC} = 4.5 V to 5.5 V	-	-	20	ns/V

9. Static characteristics

Table 6. Static characteristics

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

Symbol	Parameter	Conditions		25 °C		−40 °C	to +85 °C	- 40 °	°C to +'	125 °C	Unit
			Min	Тур	Max	Min	Max	Min	Тур	Max	1
74AHC5	73										
VIH	HIGH-level	V _{CC} = 2.0 V	1.5	-	-	1.5	-	1.5	-	-	V
	input voltage	V _{CC} = 3.0 V	2.1	-	-	2.1	-	2.1	-	-	V
		V _{CC} = 5.5 V	3.85	-	-	3.85	-	3.85	-	-	V
V _{IL}	LOW-level	V _{CC} = 2.0 V	-	-	0.5	-	0.5	-	-	0.5	V
	input voltage	V _{CC} = 3.0 V	-	-	0.9	-	0.9	-	-	0.9	V
		V _{CC} = 5.5 V	-	-	1.65	-	1.65	-	-	1.65	V
V _{OH} HIGH-level		$V_{I} = V_{IH} \text{ or } V_{IL}$									
	output voltage	I_{O} = –50 $\mu\text{A};$ V_{CC} = 2.0 V	1.9	2.0	-	1.9	-	1.9	-	-	V
		I_{O} = –50 $\mu\text{A};V_{CC}$ = 3.0 V	2.9	3.0	-	2.9	-	2.9	-	-	V
		I_{O} = –50 $\mu\text{A};V_{CC}$ = 4.5 V	4.4	4.5	-	4.4	-	4.4	-	-	V
		$I_{O} = -4.0 \text{ mA}; V_{CC} = 3.0 \text{ V}$	2.58	-	-	2.48	-	2.40	-	-	V
		I_{O} = -8.0 mA; V_{CC} = 4.5 V	3.94	-	-	3.80	-	3.70	-	-	V
V _{OL}	LOW-level	$V_{I} = V_{IH} \text{ or } V_{IL}$									
	output voltage	$I_{O} = 50 \ \mu A; \ V_{CC} = 2.0 \ V$	-	0	0.1	-	0.1	-	-	0.1	V
		$I_{O} = 50 \ \mu A; \ V_{CC} = 3.0 \ V$	-	0	0.1	-	0.1	-	-	0.1	V
		$I_{O} = 50 \ \mu A; \ V_{CC} = 4.5 \ V$	-	0	0.1	-	0.1	-	-	0.1	V
		$I_0 = 4.0 \text{ mA}; V_{CC} = 3.0 \text{ V}$	-	-	0.36	-	0.44	-	-	0.55	V
		$I_{O} = 8.0 \text{ mA}; V_{CC} = 4.5 \text{ V}$	-	-	0.36	-	0.44	-	-	0.55	V

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Symbol	-	ng conditions; voltages are ref Conditions		25 °C			to +85 °C –4		°C to +	125 °C	Unit
Gymbol	i arameter	Conditions	Min	Тур	Мах	Min	Max	Min	Тур	Max	01111
I _{OZ}	OFF-state output current	$V_{I} = V_{IH} \text{ or } V_{IL};$ $V_{O} = V_{CC} \text{ or GND};$ $V_{CC} = 5.5 \text{ V}$	-	-	±0.25	-	±2.5	-	-		μA
lı	input leakage current	$V_I = V_{CC}$ or GND; $V_{CC} = 0 V$ to 5.5 V	-	-	0.1	-	1.0	-	-	2.0	μΑ
I _{CC}	supply current	$\label{eq:VI} \begin{array}{l} V_{I} = V_{CC} \text{ or } GND; \ I_{O} = 0 \ A; \\ V_{CC} = 5.5 \ V \end{array}$	-	-	4.0	-	40	-	-	80	μΑ
CI	input capacitance	$V_I = V_{CC}$ or GND	-	3	10	-	10	-	-	10	pF
Co	output capacitance		-	4	-	-	-	-	-	10	pF
74AHCT	573										
V _{IH}	HIGH-level input voltage	V_{CC} = 4.5 V to 5.5 V	2.0	-	-	2.0	-	2.0	-	-	V
V _{IL}	LOW-level input voltage	V_{CC} = 4.5 V to 5.5 V	-	-	0.8	-	0.8	-	-	0.8	V
V _{OH}	V _{OH} HIGH-level output voltage	$V_{I} = V_{IH} \text{ or } V_{IL}; V_{CC} = 4.5 \text{ V}$									
		I _O = -50 μA	4.4	4.5	-	4.4	-	4.4	-	-	V
		I _O = -8.0 mA	3.94	-	-	3.80	-	3.70	-	-	V
V _{OL}	LOW-level	$V_{I} = V_{IH} \text{ or } V_{IL}; V_{CC} = 4.5 \text{ V}$									
	output voltage	I _O = 50 μA	-	0	0.1	-	0.1	-	-	0.1	V
		I _O = 8.0 mA	-	-	0.36	-	0.44	-	-	0.55	V
I _{OZ}	OFF-state output current		-	-	±0.25	-	±2.5	-	-	±10.0	μA
l _l	input leakage current	$V_{I} = 5.5 V \text{ or GND};$ $V_{CC} = 0 V \text{ to } 5.5 V$	-	-	0.1	-	1.0	-	-	2.0	μΑ
I _{CC}	supply current	$\label{eq:VI} \begin{array}{l} V_{I} = V_{CC} \text{ or } GND; \ I_{O} = 0 \ A; \\ V_{CC} = 5.5 \ V \end{array}$	-	-	4.0	-	40	-	-	80	μΑ
ΔI _{CC}	additional supply current	per input pin; $V_I = V_{CC} - 2.1 \text{ V}; I_O = 0 \text{ A};$ other pins at V_{CC} or GND; $V_{CC} = 4.5 \text{ V}$ to 5.5 V	-	-	1.35	-	1.5	-	-	1.5	mA
Cı	input capacitance	$V_I = V_{CC}$ or GND	-	3	10	-	10	-	-	10	pF
Co	output capacitance		-	4	-	-	-	-	-	10	pF

Table 6. Static characteristics ... continued

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10. Dynamic characteristics

Table 7. Dynamic characteristics

Voltages are referenced to GND (ground = 0 V); for test circuit see <u>Figure 11</u>.

$\begin{tabular}{ c c c c c } \label{eq:cc} $$ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $$	18.5 8.5	ns ns
	18.5 8.5	
$\begin{tabular}{ c c c c } \hline \mbox{V}_{CC} = 3.0 \ V \ to \ 3.6 \ V \\ \hline \mbox{C}_L = 15 \ \mbox{PF} & - & 5.5 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 7.8 & 14.5 & 1.0 & 16.5 & 1.0 \\ \hline \mbox{V}_{CC} = 4.5 \ V \ to \ 5.5 \ V \\ \hline \mbox{C}_L = 15 \ \mbox{PF} & - & 3.9 & 6.8 & 1.0 & 8.0 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 5.5 & 8.8 & 1.0 & 10.0 & 1.0 \\ \hline \mbox{LE to } Qn; see \ \mbox{Figure 8} & \end{tabular} & \end{tabular} \\ \hline \mbox{V}_{CC} = 3.0 \ V \ to \ 3.6 \ V \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 5.8 & 11.9 & 1.0 & 14.0 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 5.8 & 11.9 & 1.0 & 14.0 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 5.8 & 11.9 & 1.0 & 14.0 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 5.8 & 11.5 & 1.0 & 17.5 & 1.0 \\ \hline \mbox{V}_{CC} = 3.0 \ V \ to \ 5.5 \ V \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 5.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 5.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 5.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 5.8 & 11.5 & 1.0 & 17.0 & 1.0 \\ \hline \mbox{V}_{CC} = 4.5 \ V \ to \ 5.5 \ V \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 6.3 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 6.3 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline \mbox{C}_L = 15 \ \mbox{PF} & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline \mbox{C}_L = 50 \ \mbox{PF} & - & 9.7 & 14.5 & 1.0 & 16.5 & 1.0 \\ \hline \mbox{V}_{CC} = 4.5 \ V \ to \ 5.5 \ V \\ \hline \end{tabular}$	18.5 8.5	
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$ \begin{array}{ c c c } V_{CC} = 4.5 \ V \ to \ 5.5 \ V \\ \hline C_L = 15 \ pF & - & 3.9 & 6.8 & 1.0 & 8.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 5.5 & 8.8 & 1.0 & 10.0 & 1.0 \\ \hline LE \ to \ Qn; see \ Figure \ 8 & 12 \\ \hline V_{CC} = 3.0 \ V \ to \ 3.6 \ V \\ \hline C_L = 15 \ pF & - & 5.8 & 11.9 & 1.0 & 14.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 8.3 & 15.4 & 1.0 & 17.5 & 1.0 \\ \hline V_{CC} = 4.5 \ V \ to \ 5.5 \ V \\ \hline C_L = 15 \ pF & - & 4.2 & 7.7 & 1.0 & 9.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 5.9 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 5.9 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 5.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline C_L = 50 \ pF & - & 5.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline C_L = 50 \ pF & - & 5.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline C_L = 50 \ pF & - & 6.3 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline V_{CC} = 4.5 \ V \ to \ 5.5 \ V \\ \hline C_L = 15 \ pF & - & 4.4 & 7.7 & 1.0 & 9.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 6.3 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline V_{CC} = 3.0 \ V \ to \ 3.6 \ V \\ \hline C_L = 15 \ pF & - & 6.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline C_L = 50 \ pF & - & 6.8 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 9.7 & 14.5 & 1.0 & 16.5 & 1.0 \\ \hline V_{CC} = 4.5 \ V \ to \ 5.5 \ V \\ \hline \end{array}$	8.5	ns
$ \begin{array}{ c c c c c c } \hline C_L = 15 pF & - & 3.9 & 6.8 & 1.0 & 8.0 & 1.0 \\ \hline C_L = 50 pF & - & 5.5 & 8.8 & 1.0 & 10.0 & 1.0 \\ \hline LE to Qn; see Figure 8 & 12 & & & & & \\ \hline V_{CC} = 3.0 V to 3.6 V & & & & & & \\ \hline C_L = 15 pF & - & 5.8 & 11.9 & 1.0 & 14.0 & 1.0 \\ \hline C_L = 50 pF & - & 8.3 & 15.4 & 1.0 & 17.5 & 1.0 \\ \hline V_{CC} = 4.5 V to 5.5 V & & & & & \\ \hline C_L = 15 pF & - & 4.2 & 7.7 & 1.0 & 9.0 & 1.0 \\ \hline C_L = 50 pF & - & 5.9 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 pF & - & 5.9 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 pF & - & 5.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline C_L = 50 pF & - & 5.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline C_L = 50 pF & - & 5.8 & 15.0 & 1.0 & 17.0 & 1.0 \\ \hline C_L = 50 pF & - & 6.3 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 pF & - & 6.3 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 pF & - & 6.3 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 pF & - & 6.3 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 pF & - & 6.3 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline C_L = 50 pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline C_L = 50 pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline C_L = 50 pF & - & 9.7 & 14.5 & 1.0 & 16.5 & 1.0 \\ \hline V_{CC} = 4.5 V to 5.5 V \\ \hline \end{array}$		
$ \begin{array}{ c c c c c c } C_L = 50 \ pF & - & 5.5 & 8.8 & 1.0 & 10.0 & 1.0 \\ \hline \mbox{LE$ to Qn; see Figure 8} & [2] & & & & & & & & & & & & & & & & & & &$		
	11.0	ns
$ \begin{array}{ c c c c c } \hline V_{CC} = 3.0 \ V \ to \ 3.6 \ V \\ \hline C_L = 15 \ pF & - & 5.8 & 11.9 & 1.0 & 14.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 8.3 & 15.4 & 1.0 & 17.5 & 1.0 \\ \hline V_{CC} = 4.5 \ V \ to \ 5.5 \ V \\ \hline C_L = 15 \ pF & - & 4.2 & 7.7 & 1.0 & 9.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 5.9 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 5.9 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline V_{CC} = 3.0 \ V \ to \ 3.6 \ V \\ \hline C_L = 15 \ pF & - & 5.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline C_L = 50 \ pF & - & 5.8 & 11.5 & 1.0 & 13.5 & 1.0 \\ \hline C_L = 50 \ pF & - & 8.3 & 15.0 & 1.0 & 17.0 & 1.0 \\ \hline V_{CC} = 4.5 \ V \ to \ 5.5 \ V \\ \hline C_L = 15 \ pF & - & 4.4 & 7.7 & 1.0 & 9.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 6.3 & 9.7 & 1.0 & 11.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline C_L = 15 \ pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ \hline C_L = 50 \ pF & - & 9.7 & 14.5 & 1.0 & 16.5 & 1.0 \\ \hline V_{CC} = 4.5 \ V \ to \ 5.5 \ V \\ \hline \end{array}$		ns
$ \frac{V_{CC} = 4.5 \text{ V to } 5.5 \text{ V } }{C_{L} = 15 \text{ pF}} - 4.2 7.7 1.0 9.0 1.0 }{C_{L} = 50 \text{ pF}} - 5.9 9.7 1.0 11.0 1.0 } \\ \frac{OE}{C_{L} = 50 \text{ pF}} - 5.9 9.7 1.0 11.0 1.0 }{V_{CC} = 3.0 \text{ V to } 3.6 \text{ V } } \\ \frac{V_{CC} = 3.0 \text{ V to } 3.6 \text{ V } }{C_{L} = 15 \text{ pF}} - 5.8 11.5 1.0 13.5 1.0 }{C_{L} = 50 \text{ pF}} - 8.3 15.0 1.0 17.0 1.0 } \\ \frac{V_{CC} = 4.5 \text{ V to } 5.5 \text{ V } }{C_{L} = 15 \text{ pF}} - 4.4 7.7 1.0 9.0 1.0 }{C_{L} = 50 \text{ pF}} - 6.3 9.7 1.0 11.0 11.0 } \\ \frac{OE}{C_{L} = 50 \text{ pF}} - 6.3 9.7 1.0 11.0 11.0 }{C_{L} = 50 \text{ pF}} - 6.8 11.0 1.0 11.0 } \\ \frac{OE}{C_{L} = 15 \text{ pF}} - 6.8 11.0 1.0 13.0 1.0 }{C_{L} = 50 \text{ pF}} - 6.8 11.0 1.0 13.0 1.0 } \\ \frac{OE}{C_{L} = 50 \text{ pF}} - 6.8 11.0 1.0 1.0 13.0 1.0 }{C_{L} = 50 \text{ pF}} - 6.8 11.0 1.0 1.0 13.0 1.0 } \\ \frac{OE}{C_{L} = 50 \text{ pF}} - 9.7 14.5 1.0 16.5 1.0 }{V_{CC} = 4.5 \text{ V to } 5.5 \text{ V } } $	15.0	ns
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$\begin{array}{cccc} C_L = 15 \ pF & - & 6.8 & 11.0 & 1.0 & 13.0 & 1.0 \\ C_L = 50 \ pF & - & 9.7 & 14.5 & 1.0 & 16.5 & 1.0 \\ V_{CC} = 4.5 \ V \ to \ 5.5 \ V \end{array}$		
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$V_{CC} = 4.5 \text{ V} \text{ to } 5.5 \text{ V}$	14.0	ns
	18.5	ns
$C_1 = 15 \text{ pF}$ - 4.6 7.7 1.0 9.0 1.0		
	10.0	ns
C _L = 50 pF - 7.4 9.7 1.0 11.0 1.0	12.5	ns
W pulse width LE HIGH; see Figure 8		
$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$ 5.0 5.0 - 5.0	-	ns
$V_{CC} = 4.5 V \text{ to } 5.5 V$ 5.0 5.0 - 5.0	-	ns
su set-up time Dn to LE; see Figure 10		
$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$ 3.5 3.5 - 3.5		ns
$V_{CC} = 4.5 V \text{ to } 5.5 V$ 3.5 3.5 - 3.5	-	ns

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Symbol	Parameter	Conditions			25 °C		−40 °C	to +85 °C	−40 °C t	o +125 °C	Unit
				Min	Typ[1]	Max	Min	Max	Min	Max	
t _h	hold time	Dn to LE; see Figure 10									
		V_{CC} = 3.0 V to 3.6 V		1.5	-	-	1.5	-	1.5	-	ns
		V_{CC} = 4.5 V to 5.5 V		1.5	-	-	1.5	-	1.5	-	ns
C _{PD}	power dissipation capacitance	$f_i = 1 \text{ MHz};$ V _I = GND to V _{CC}	[5]	-	12	-	-	-	-	-	pF
74AHCT	573; V _{CC} = 4.5	5 V to 5.5 V									
t _{pd} propagation		Dn to Qn; see Figure 7	[2]								
	delay	C _L = 15 pF		-	3.5	5.5	1	6.5	1	7.0	ns
		C _L = 50 pF		-	4.9	7.5	1	8.5	1	9.5	ns
		LE to Qn; see Figure 8	[2]								
		C _L = 15 pF		-	3.9	6.0	1	7.0	1	7.5	ns
		C _L = 50 pF		-	5.5	8.5	1	9.5	1	11.0	ns
t _{en}	enable time	OE to Qn; see Figure 9	[3]								
		C _L = 15 pF		-	4.1	6.5	1	7.5	1	8.5	ns
		C _L = 50 pF		-	5.9	8.5	1	10.0	1	11.0	ns
t _{dis}	disable time	OE to Qn; see Figure 9	[4]								
		C _L = 15 pF		-	4.5	6.5	1	7.5	1	8.5	ns
		C _L = 50 pF		-	6.4	9.0	1	10.0	1	11.5	ns
tw	pulse width	LE HIGH; see Figure 8		5.0	-	-	5.0	-	5.0	-	ns
t _{su}	set-up time	Dn to LE; see Figure 10		3.5	-	-	3.5	-	3.5	-	ns
t _h	hold time	Dn to LE; see Figure 10		1.5	-	-	1.5	-	1.5	-	ns
C _{PD}	power dissipation capacitance	$f_i = 1 \text{ MHz};$ V _I = GND to V _{CC}	<u>[5]</u>	-	18	-	-	-	-	-	pF

Table 7. Dynamic characteristics ... continued

[1] Typical values are measured at nominal supply voltage (V_{CC} = 3.3 V and V_{CC} = 5.0 V).

- $\label{eq:tpd} [2] \quad t_{pd} \text{ is the same as } t_{PHL} \text{ and } t_{PLH}.$
- $[3] \quad t_{en} \mbox{ is the same as } t_{PZH} \mbox{ and } t_{PZL}.$
- - f_i = input frequency in MHz;

 $f_o = output frequency in MHz;$

 C_L = output load capacitance in pF;

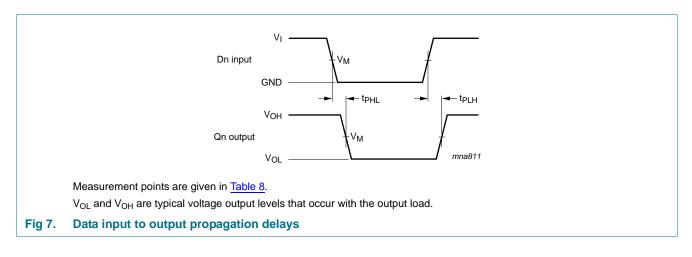
 V_{CC} = supply voltage in V;

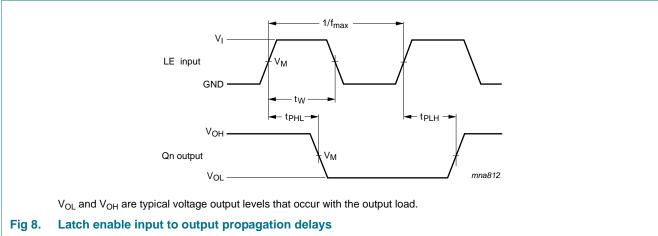
N = number of inputs switching;

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

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11. Waveforms

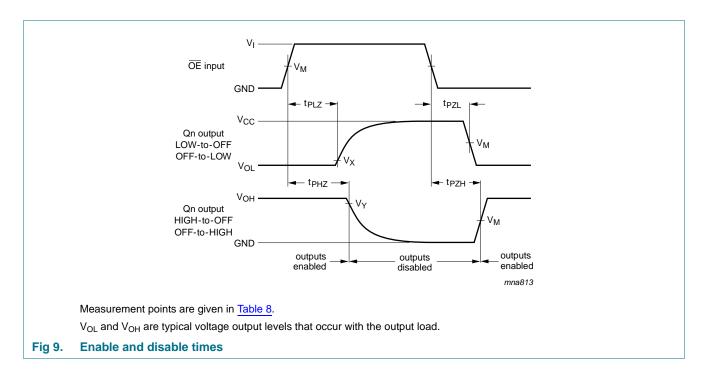




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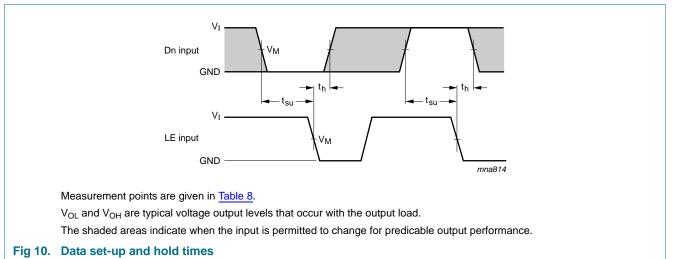


Table 8. Measurement points							
Туре	Input	Output					
	V _M	V _M	V _X	V _Y			
74AHC573	$0.5\times V_{CC}$	$0.5 \times V_{CC}$	V _{OL} + 0.3 V	$V_{OH} - 0.3 V$			
74AHCT573	1.5 V	$0.5\times V_{CC}$	V _{OL} + 0.3 V	$V_{OH} - 0.3 \ V$			

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74AHC573; 74AHCT573

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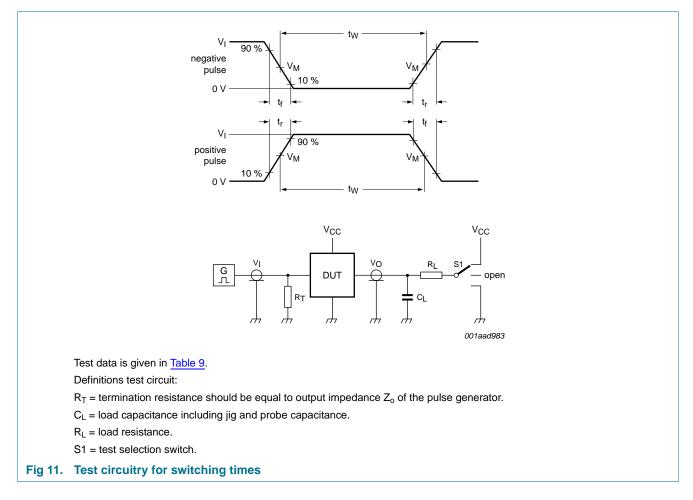


Table 9. Test data

Туре	Input		Load	Load		S1 position		
	VI	t _r , t _f	CL	RL	t _{PHL} , t _{PLH}	t _{PZH} , t _{PHZ}	t _{PZL} , t _{PLZ}	
74AHC573	V _{CC}	\leq 3.0 ns	15 pF, 50 pF	1 kΩ	open	GND	V _{CC}	
74AHCT573	3.0 V	\leq 3.0 ns	15 pF, 50 pF	1 kΩ	open	GND	V _{CC}	



12. Package outline

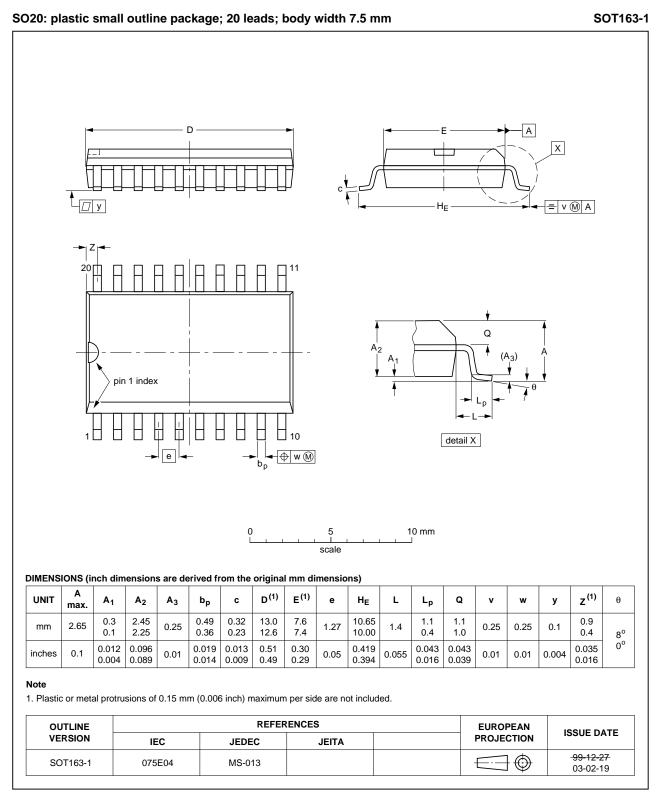


Fig 12. Package outline SOT163-1 (SO20)

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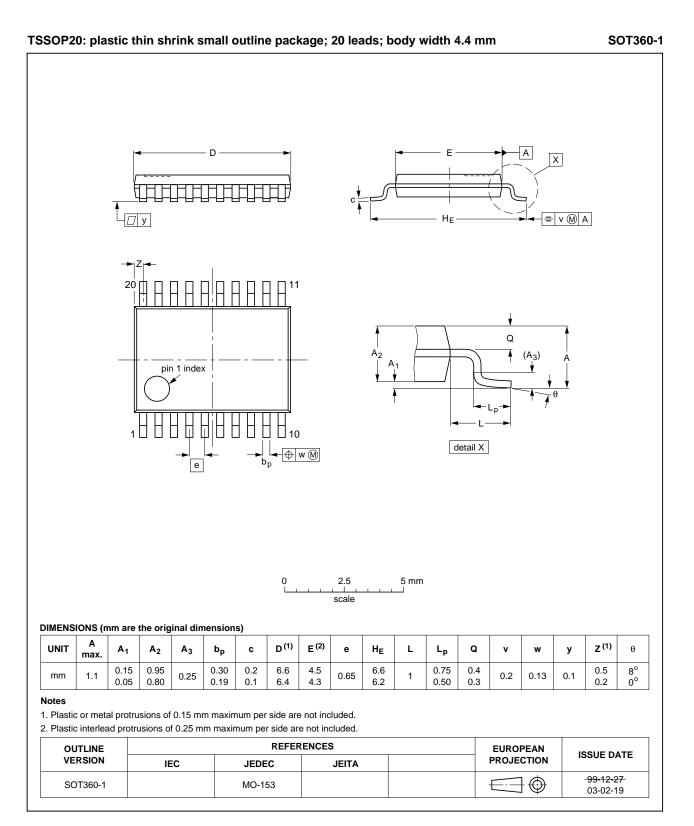
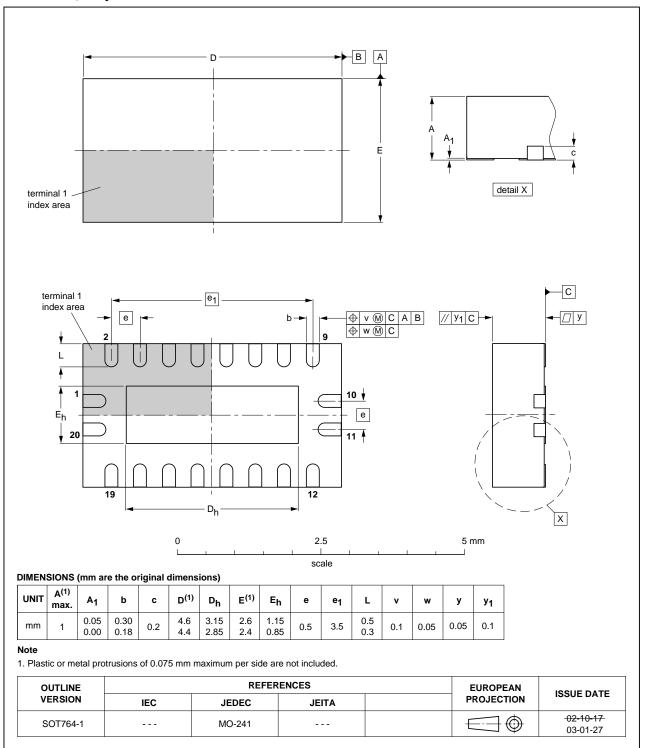


Fig 13. Package outline SOT360-1 (TSSOP20)

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DHVQFN20: plastic dual in-line compatible thermal enhanced very thin quad flat package; no leads; 20 terminals; body 2.5 x 4.5 x 0.85 mm SOT764-1

Fig 14. Package outline SOT764-1 (DHVQFN20)

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13. Abbreviations

Table 10.	Abbreviations
Acronym	Description
CDM	Charged Device Model
CMOS	Complementary Metal-Oxide Semiconductor
ESD	ElectroStatic Discharge
HBM	Human Body Model
MM	Machine Model
TTL	Transistor-Transistor Logic

14. Revision history

Table 11. Revision histo	ory			
Document ID	Release date	Data sheet status	Change notice	Supersedes
74AHC_AHCT573 v.7	20111108	Product data sheet	-	74AHC_AHCT573 v.6
Modifications:	 Legal pages 	updated.		
74AHC_AHCT573 v.6	20101125	Product data sheet	-	74AHC_AHCT573 v.5
74AHC_AHCT573 v.5	20100325	Product data sheet	-	74AHC_AHCT573 v.4
74AHC_AHCT573 v.4	20100303	Product data sheet	-	74AHC_AHCT573 v.3
74AHC_AHCT573 v.3	20080424	Product data sheet	-	74AHC_AHCT573 v.2
74AHC_AHCT573 v.2	20031208	Product specification	-	74AHC_AHCT573 v.1
74AHC_AHCT573 v.1	19990927	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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