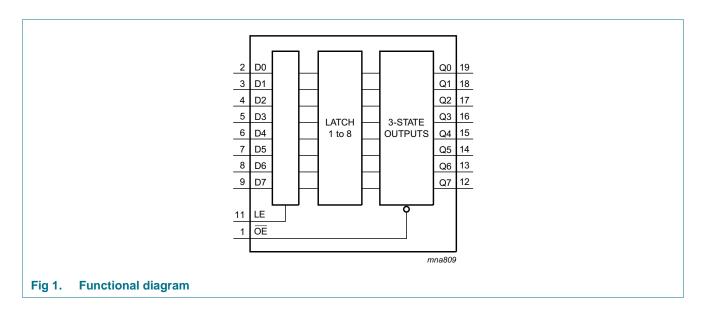
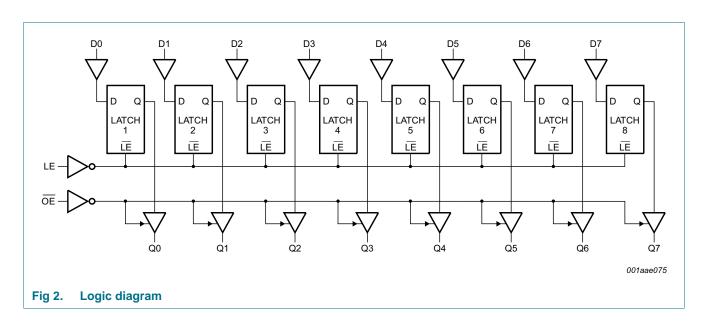
3. Ordering information

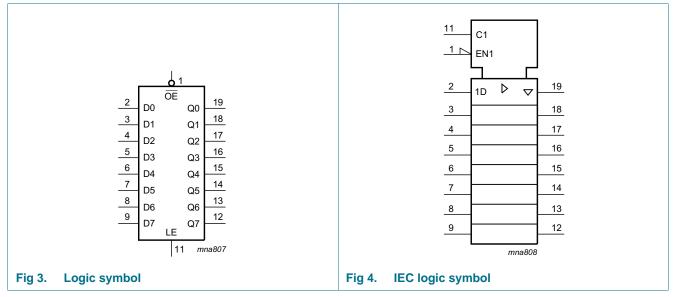
Table 1. Ordering information

74HC573N 74HCT534N 74HC573D 74HCT573D	Package			
	Temperature range	Name	Description	Version
74HC573N	–40 °C to +125 °C	DIP20	plastic dual in-line package; 20 leads (300 mil)	SOT146-1
74HCT534N				
74HC573D	–40 °C to +125 °C	SO20	plastic small outline package; 20 leads;	SOT163-1
74HCT573D			body width 7.5 mm	
74HC573DB	-40 °C to +125 °C	SSOP20	plastic shrink small outline package; 20 leads;	SOT339-1
74HCT573DB			body width 5.3 mm	
74HC573PW	–40 °C to +125 °C	TSSOP20	plastic thin shrink small outline package; 20 leads;	SOT360-1
74HCT573PW			body width 4.4 mm	
74HC573BQ	-40 °C to +125 °C	DHVQFN20	plastic dual in-line compatible thermal enhanced very	SOT764-1
74HCT573BQ	-		thin quad flat package; no leads; 20 terminals; body $2.5 \times 4.5 \times 0.85$ mm	

4. Functional diagram

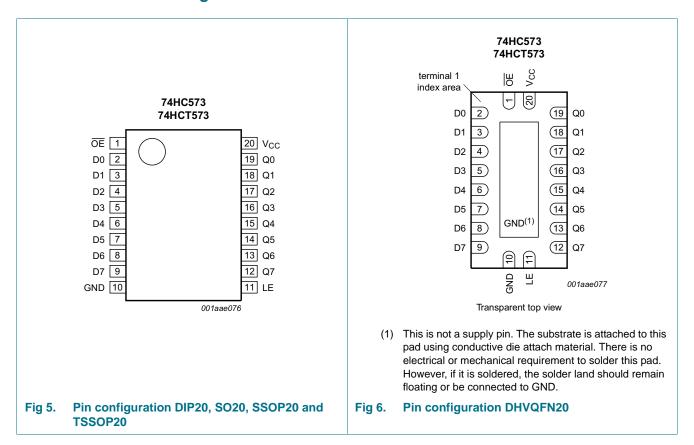






5. Pinning information

5.1 Pinning



5.2 Pin description

Table 2. Pin description

Symbol	Pin	Description
ŌĒ	1	3-state output enable input (active LOW)
D[0:7]	2, 3, 4, 5, 6, 7, 8, 9	data input
GND	10	ground (0 V)
LE	11	latch enable input (active HIGH)
Q[0:7]	19, 18, 17, 16, 15, 14, 13, 12	3-state latch output
V_{CC}	20	supply voltage

6. Functional description

Table 3. Function table[1]

Operating mode	Control		Input	Internal	Output
	OE	LE	Dn	latches	Qn
Enable and read register (transparent	L	Н	L	L	L
mode)			Н	Н	Н
Latch and read register	L	L	I	L	L
			h	Н	Н
Latch register and disable outputs	Н	L	I	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;

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	V
I _{IK}	input clamping current	$V_{I} < -0.5 \text{ V or } V_{I} > V_{CC} + 0.5 \text{ V}$		-	±20	mA
I _{OK}	output clamping current	$V_{O} < -0.5 \text{ V or } V_{O} > V_{CC} + 0.5 \text{ V}$		-	±20	mA
Io	output current	$V_{O} = -0.5 \text{ V to } (V_{CC} + 0.5 \text{ V})$		-	±35	mA
I _{CC}	supply current			-	+70	mA
I _{GND}	ground current			-	-70	mA
T _{stg}	storage temperature			-65	+150	°C
P _{tot}	total power dissipation	DIP20 package	<u>[1]</u>	-	750	mW
		SO20, SSOP20, TSSOP20 and DHVQFN20 packages	[2]	-	500	mW

^[1] For DIP20 package: P_{tot} derates linearly with 12 mW/K above 70 °C.

For SSOP20 and TSSOP20 packages: P_{tot} derates linearly with 5.5 mW/K above 60 $^{\circ}\text{C}.$

For DHVQFN20 package: P_{tot} derates linearly with 4.5 mW/K above 60 °C.

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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.

^[2] For SO20: P_{tot} derates linearly with 8 mW/K above 70 °C.

8. Recommended operating conditions

Table 5. Recommended operating conditions

Voltages are referenced to GND (ground = 0 V)

Symbol	Parameter	Conditions		74HC573	3	7	Unit		
			Min	Min Typ Max		Min	Тур	Max	
V _{CC}	supply voltage		2.0	5.0	6.0	4.5	5.0	5.5	V
VI	input voltage		0	-	V _{CC}	0	-	V _{CC}	V
Vo	output voltage		0	-	V _{CC}	0	-	V _{CC}	V
T _{amb}	ambient temperature		-40	+25	+125	-40	+25	+125	°C
Δt/ΔV	input transition rise and fall rate	V _{CC} = 2.0 V	-	-	625	-	-	-	ns/V
		V _{CC} = 4.5 V	-	1.67	139	-	1.67	139	ns/V
		V _{CC} = 6.0 V	-	-	83	-	-	-	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		-40 °C t	o +85 °C	-40 °C to	Unit		
			Min	Тур	Max	Min	Max	Min	Max	V V V V V V V V V V μA
74HC57	3									
V_{IH}	HIGH-level	V _{CC} = 2.0 V	1.5	1.2	-	1.5	-	1.5	-	V
	input voltage	V _{CC} = 4.5 V	3.15	2.4	-	3.15	-	3.15	-	V
		V _{CC} = 6.0 V	4.2	3.2	-	4.2	-	4.2	-	V
V_{IL}	LOW-level	V _{CC} = 2.0 V	-	0.8	0.5	-	0.5	-	0.5	V
	input voltage	V _{CC} = 4.5 V	-	2.1	1.35	-	1.35	-	1.35	V
Vou HIGH-leve		V _{CC} = 6.0 V	-	2.8	1.8	-	1.8	-	1.8	V
V _{OH}	HIGH-level	$V_I = V_{IH}$ or V_{IL}								
output voltage	output voltage	$I_{O} = -20 \mu A; V_{CC} = 2.0 V$	1.9	2.0	-	1.9	-	1.9	-	V
		$I_O = -20 \mu A; V_{CC} = 4.5 V$	4.4	4.5	-	4.4	-	4.4	- 1.35 V - 1.8 V 1.9 - V 4.4 - V 5.9 - V 3.7 - V - 0.1 V	
		$I_O = -20 \mu A; V_{CC} = 6.0 \text{ V}$	5.9	6.0	-	5.9	-	5.9		V
		$I_{O} = -6.0 \text{ mA}; V_{CC} = 4.5 \text{ V}$	3.98	4.32	-	3.84	-	3.7	-	V
		$I_{O} = -7.8 \text{ mA}; V_{CC} = 6.0 \text{ V}$	5.48	5.81	-	5.34	-	5.2	-	V
V_{OL}	LOW-level	$V_I = V_{IH}$ or V_{IL}								
	output voltage	$I_O = 20 \mu A; V_{CC} = 2.0 V$	-	0	0.1	-	0.1	-	0.1	V
		$I_O = 20 \mu A; V_{CC} = 4.5 V$	-	0	0.1	-	0.1	-	0.1	V
		$I_O = 20 \mu A; V_{CC} = 6.0 V$	-	0	0.1	-	0.1	-	0.1	V
		$I_O = 6.0 \text{ mA}; V_{CC} = 4.5 \text{ V}$	-	0.15	0.26	-	0.33	-	0.4	V
		$I_O = 7.8 \text{ mA}; V_{CC} = 6.0 \text{ V}$	-	0.16	0.26	-	0.33	-	0.4	V
II	input leakage current	$V_I = V_{CC}$ or GND; $V_{CC} = 6.0 \text{ V}$	-	-	±0.1	-	±1.0	-	±1.0	μΑ
I _{OZ}	OFF-state output current	$V_I = V_{IH}$ or V_{IL} ; $V_O = V_{CC}$ or GND; $V_{CC} = 6.0 \text{ V}$	-	-	±0.5	-	±5.0	-	±10.0	μА

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 Table 6.
 Static characteristics ...continued

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

Symbol	Parameter	Conditions	25 °C			–40 °C t	o +85 °C	–40 °C t	Unit	
			Min	Тур	Max	Min	Max	Min	Max	
I _{CC}	supply current	$V_I = V_{CC}$ or GND; $I_O = 0$ A; $V_{CC} = 6.0 \text{ V}$	-	-	8.0	-	80	-	160	μΑ
C _I	input capacitance		-	3.5	-					pF
74HCT5	73									
V _{IH}	HIGH-level input voltage	V _{CC} = 4.5 V to 5.5 V	2.0	1.6	-	2.0	-	2.0	-	V
V_{IL}	LOW-level input voltage	V _{CC} = 4.5 V to 5.5 V	-	1.2	0.8	-	0.8	-	0.8	V
V _{OH}	HIGH-level	$V_I = V_{IH}$ or V_{IL} ; $V_{CC} = 4.5 \text{ V}$								
	output voltage	$I_{O} = -20 \mu A$	4.4	4.5	-	4.4	-	4.4	-	V
		$I_O = -6 \text{ mA}$	3.98	4.32	-	3.84	-	3.7	-	V
V _{OL}	LOW-level	$V_I = V_{IH}$ or V_{IL} ; $V_{CC} = 4.5 \text{ V}$								
outpu	output voltage	I _O = 20 μA	-	0	0.1	-	0.1	-	0.1	- V - V 0.1 V 0.4 V -1.0 μA
		$I_{O} = 6.0 \text{ mA}$	-	0.16	0.26	-	0.33	-	0.4	V
I _I	input leakage current	$V_I = V_{CC}$ or GND; $V_{CC} = 5.5 \text{ V}$	-	-	±0.1	-	±1.0	-	±1.0	μΑ
I _{OZ}	OFF-state output current	$V_I = V_{IH}$ or V_{IL} ; $V_{CC} = 5.5$ V; $V_O = V_{CC}$ or GND per input pin; other inputs at V_{CC} or GND; $I_O = 0$ A	-	-	±0.5	-	±5.0	-	±10	μА
I _{CC}	supply current	$V_I = V_{CC}$ or GND; $I_O = 0$ A; $V_{CC} = 5.5$ V	-	-	8.0	-	80	-	160	μΑ
Δl _{CC}	additional supply current	$\begin{aligned} V_I &= V_{CC} - 2.1 \text{ V;} \\ \text{other inputs at } V_{CC} \text{ or GND;} \\ V_{CC} &= 4.5 \text{ V to 5.5 V;} \\ I_O &= 0 \text{ A} \end{aligned}$								
		per input pin; Dn inputs	-	35	126	-	158	-	172	μΑ
		per input pin; LE input	-	65	234	-	293	-	319	μΑ
		per input pin; OE input	-	125	450	-	563	-	613	μΑ
C _I	input capacitance		-	3.5	-	-	-	-	-	pF

10. Dynamic characteristics

Table 7. Dynamic characteristics

Voltages are referenced to GND (ground = 0 V); C_L = 50 pF unless otherwise specified; for test circuit see Figure 11.

Symbol	Parameter	Conditions									Unit
			М	in	Тур	Max	Min	Max	Min	Max	
74HC57	3										
t _{pd}	propagation	Dn to Qn; see Figure 7	[1]								
	delay	V _{CC} = 2.0 V	-	-	47	150	-	190	-	225	ns
		V _{CC} = 4.5 V	-	-	17	30	-	38	-	45	ns
		V _{CC} = 5 V; C _L = 15 pF	-	-	14	-	-	-	-	-	ns
		V _{CC} = 6.0 V	-	-	14	26	-	33	-	38	ns
t _{pd}	propagation	LE to Qn; see Figure 8	[1]								
	delay	V _{CC} = 2.0 V	-	-	50	150	-	190	-	225	ns
		V _{CC} = 4.5 V	-	-	18	30	-	38	-	45	ns
		V _{CC} = 5 V; C _L = 15 pF	-	-	15	-	-	-	-	-	ns
		V _{CC} = 6.0 V	-	-	14	26	-	33	-	38	ns
t _{en}	enable time	OE to Qn; see Figure 9	[2]								
		V _{CC} = 2.0 V	-	-	44	140	-	175	-	210	ns
		V _{CC} = 4.5 V	-	-	16	28	-	35	-	42	ns
		V _{CC} = 6.0 V	-	-	13	24	-	30	-	36	ns
t _{dis}	disable time	OE to Qn; see Figure 9	[3]								
		V _{CC} = 2.0 V	-	-	55	150	-	190	-	225	ns
		V _{CC} = 4.5 V	-	-	20	30	-	38	-	45	ns
		V _{CC} = 6.0 V	-	-	16	26	-	33	-	38	ns
t _t	transition	Qn; see Figure 7	[4]								
	time	V _{CC} = 2.0 V	-	-	14	60	-	75	-	90	ns
		V _{CC} = 4.5 V	-	-	5	12	-	15	-	18	ns
		V _{CC} = 6.0 V	-	-	4	10	-	13	-	15	ns
t _W	pulse width	LE HIGH; see Figure 8									
		V _{CC} = 2.0 V	8	0	14	-	100	-	120	-	ns
		V _{CC} = 4.5 V	1	6	5	-	20	-	24	-	ns
		V _{CC} = 6.0 V	1.	4	4	-	17	-	20	-	ns
t _{su}	set-up time	Dn to LE; see Figure 10									
		V _{CC} = 2.0 V	5	0	11	-	65	-	75	-	ns
		V _{CC} = 4.5 V	1	0	4	-	13	-	15	-	ns
		V _{CC} = 6.0 V	9	9	3	-	11	-	13	-	ns
t _h	hold time	Dn to LE; see Figure 10									
		V _{CC} = 2.0 V	5	5	3	-	5	-	5	-	ns
		V _{CC} = 4.5 V	5	5	1	-	5	-	5	-	ns
		V _{CC} = 6.0 V	5	5	1	-	5	-	5	-	ns
C _{PD}	power dissipation capacitance		[5]	-	26	-	-	-	-	-	pF

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 Table 7.
 Dynamic characteristics ...continued

Voltages are referenced to GND (ground = 0 V); $C_L = 50 \text{ pF}$ unless otherwise specified; for test circuit see Figure 11.

Symbol	Parameter	Conditions			25 °C		-40 °C	to +85 °C	-40 °C t	53 r r r 53 r r r r r r r r r r r r r r	Unit
				Min	Тур	Max	Min	Max	Min	Max	
74HCT5	73										
t _{pd}	propagation	Dn to Qn; see Figure 7	[1]								
	delay	V _{CC} = 4.5 V		-	20	35	-	44	-	53	ns
		V _{CC} = 5 V; C _L = 15 pF		-	17	-	-	-	-	-	ns
t _{pd}	propagation	LE to Qn; see Figure 8	[1]								
	delay	V _{CC} = 4.5 V		-	18	35	-	44	-	53	ns
		$V_{CC} = 5 \text{ V}; C_L = 15 \text{ pF}$		-	15	-	-	-	-	-	ns
t _{en}	enable time	OE to Qn; see Figure 9	[2]								
		V _{CC} = 4.5 V		-	17	30	-	38	-	45	ns
t _{dis}	disable time	OE to Qn; see Figure 9	[3]								
		V _{CC} = 4.5 V		-	18	30	-	38	-	45	ns
t _t	transition	Qn; see Figure 7	[4]								
	time	V _{CC} = 4.5 V		-	5	12	-	15	-	18	ns
t _W	pulse width	LE HIGH; see Figure 8									
		V _{CC} = 4.5 V		16	5	-	20	-	24	-	ns
t _{su}	set-up time	Dn to LE; see Figure 10									
		V _{CC} = 4.5 V		13	7	-	16	-	20	-	ns
t _h	hold time	Dn to LE; see Figure 10									
		V _{CC} = 4.5 V		9	4	-	11	-	15	-	ns
C _{PD}	power dissipation capacitance	C_L = 50 pF; f = 1 MHz; V _I = GND to V _{CC} - 1.5 V	[5]	-	26	-	-	-	-	-	pF

- [1] t_{pd} is the same as t_{PLH} and t_{PHL} .
- [2] t_{en} is the same as t_{PZH} and t_{PZL} .
- [3] t_{dis} is the same as t_{PLZ} and t_{PHZ} .
- [4] $\ t_t$ is the same as t_{THL} and $t_{TLH}.$
- [5] C_{PD} is used to determine the dynamic power dissipation (P_D in μW).

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

 f_i = input frequency in MHz;

f_o = output frequency in MHz;

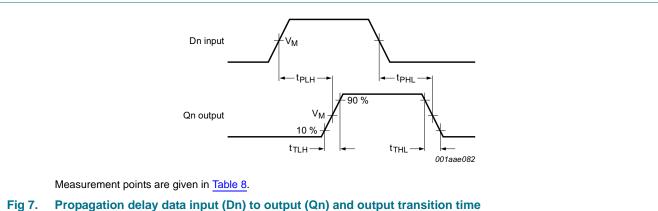
C_L = output load capacitance in pF;

V_{CC} = supply voltage in V;

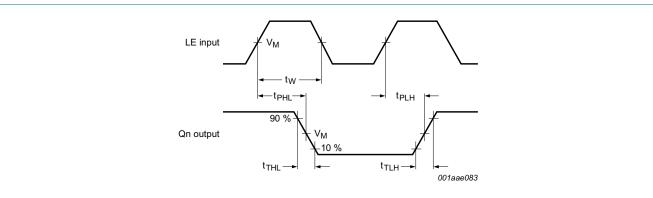
N = number of inputs switching;

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

11. Waveforms

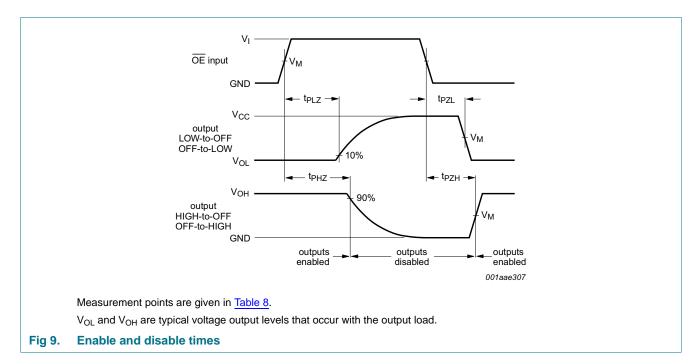


Propagation delay data input (Dn) to output (Qn) and output transition time



Measurement points are given in Table 8.

Fig 8. Pulse width latch enable input (LE), propagation delay latch enable input (LE) to output (Qn) and output transition time



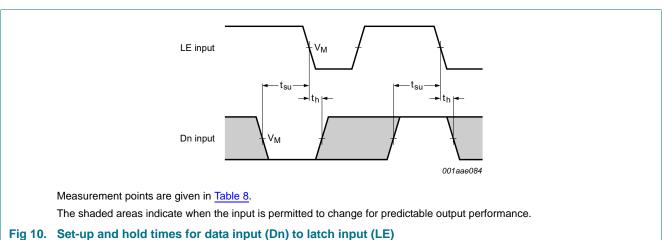
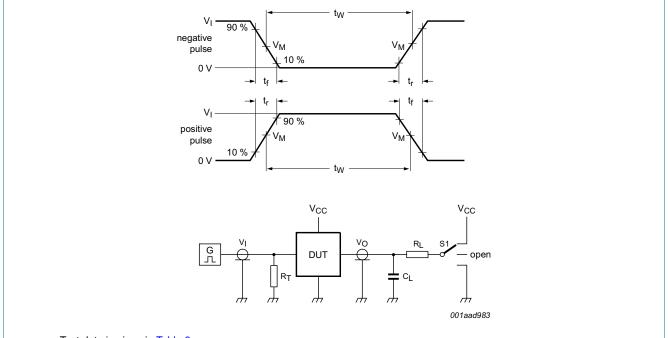


Table 8. Measurement points

Туре	Input	Output
	V _M	V_{M}
74HC573	0.5V _{CC}	0.5V _{CC}
74HCT573	1.3 V	1.3 V



Test data is given in Table 9.

Definitions test circuit:

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

 C_L = Load capacitance including jig and probe capacitance.

R_L = Load resistance.

S1 = Test selection switch.

Fig 11. Test circuit for measuring switching times

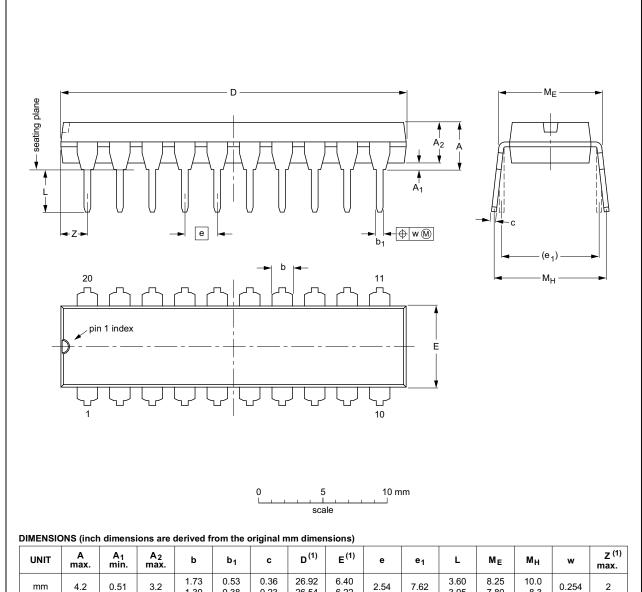
Table 9. Test data

Туре	Input		Load		S1 position		
	VI	t _r , t _f	CL	R _L	t _{PHL} , t _{PLH}	t _{PZH} , t _{PHZ}	t _{PZL} , t _{PLZ}
74HC573	V _{CC}	6 ns	15 pF, 50 pF	1 kΩ	open	GND	V _{CC}
74HCT573	3 V	6 ns	15 pF, 50 pF	1 kΩ	open	GND	V _{CC}

12. Package outline

DIP20: plastic dual in-line package; 20 leads (300 mil)

SOT146-1



UNIT	A max.	A ₁ min.	A ₂ max.	b	b ₁	С	D ⁽¹⁾	E ⁽¹⁾	е	e ₁	L	ME	Мн	w	Z ⁽¹⁾ max.
mm	4.2	0.51	3.2	1.73 1.30	0.53 0.38	0.36 0.23	26.92 26.54	6.40 6.22	2.54	7.62	3.60 3.05	8.25 7.80	10.0 8.3	0.254	2
inches	0.17	0.02	0.13	0.068 0.051	0.021 0.015	0.014 0.009	1.060 1.045	0.25 0.24	0.1	0.3	0.14 0.12	0.32 0.31	0.39 0.33	0.01	0.078

1. Plastic or metal protrusions of 0.25 mm (0.01 inch) maximum per side are not included.

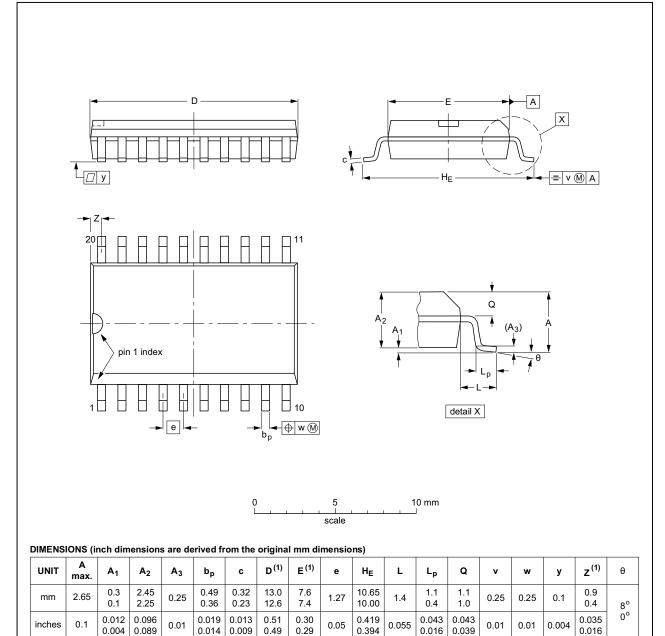
OUTLINE		REFER	RENCES		EUROPEAN	ISSUE DATE	
VERSION	IEC	IEC JEDEC		JEITA		ISSUE DATE	
SOT146-1		MS-001	SC-603			99-12-27 03-02-13	

Fig 12. Package outline SOT146-1 (DIP20)

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SO20: plastic small outline package; 20 leads; body width 7.5 mm

SOT163-1



Note

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

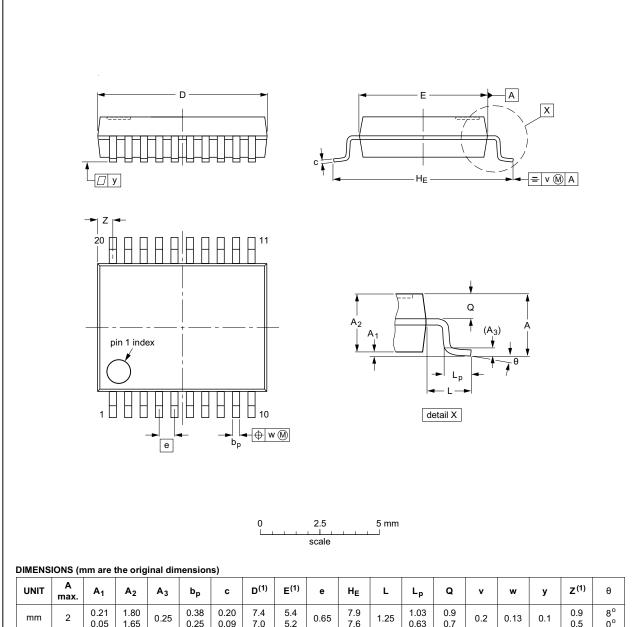
OUTLINE		REFER	RENCES	EUROPEAN	ISSUE DATE	
VERSION	IEC	JEDEC	JEITA	PROJECTION	ISSUE DATE	
SOT163-1	075E04	MS-013			99-12-27 03-02-19	

Fig 13. Package outline SOT163-1 (SO20)

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SSOP20: plastic shrink small outline package; 20 leads; body width 5.3 mm

SOT339-1



UNIT	A max.	A ₁	A ₂	A ₃	bp	С	D ⁽¹⁾	E ⁽¹⁾	е	HE	L	Lp	ø	v	¥	у	Z ⁽¹⁾	θ
mm	2	0.21 0.05	1.80 1.65	0.25	0.38 0.25	0.20 0.09	7.4 7.0	5.4 5.2	0.65	7.9 7.6	1.25	1.03 0.63	0.9 0.7	0.2	0.13	0.1	0.9 0.5	8° 0°

Note

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

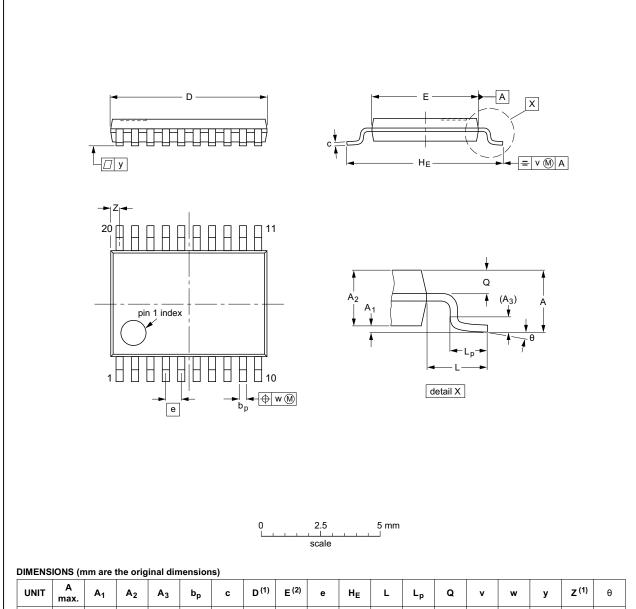
OUTLINE		REFER	ENCES	EUROPEAN	ISSUE DATE
VERSION	IEC	JEDEC	JEITA	PROJECTION	ISSUE DATE
SOT339-1		MO-150			99-12-27 03-02-19

Fig 14. Package outline SOT339-1 (SSOP20)

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TSSOP20: plastic thin shrink small outline package; 20 leads; body width 4.4 mm

SOT360-1



 				,		-,												
UNIT	A max.	A ₁	A ₂	A ₃	bp	С	D ⁽¹⁾	E (2)	е	HE	L	Lp	Q	v	w	у	Z ⁽¹⁾	θ
mm	1.1	0.15 0.05	0.95 0.80	0.25	0.30 0.19	0.2 0.1	6.6 6.4	4.5 4.3	0.65	6.6 6.2	1	0.75 0.50	0.4 0.3	0.2	0.13	0.1	0.5 0.2	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.

	REFER	EUROPEAN	ISSUE DATE		
IEC	JEDEC	JEITA		PROJECTION	ISSUE DATE
	MO-153				99-12-27 03-02-19
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Fig 15. Package outline SOT360-1 (TSSOP20)

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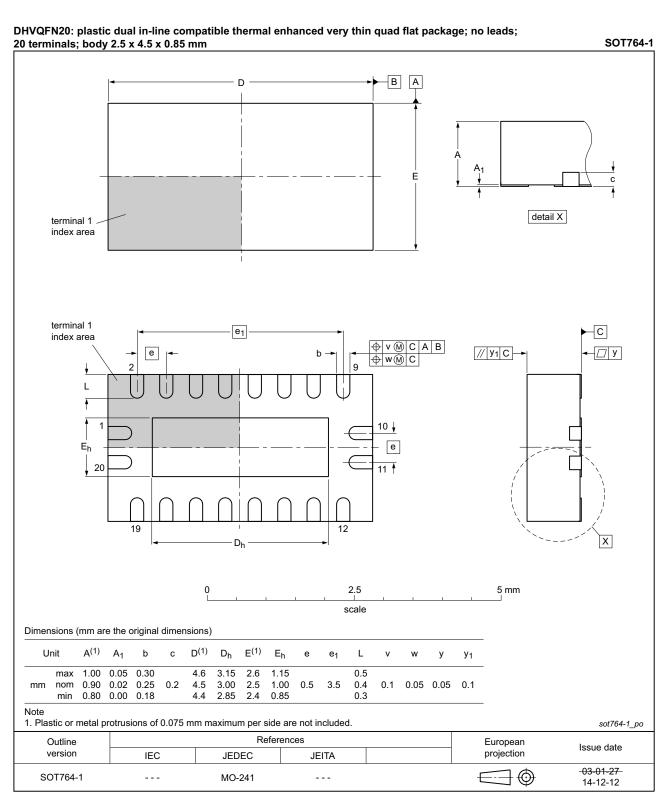


Fig 16. Package outline SOT764-1 (DHVQFN20)

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13. Abbreviations

Table 10. Abbreviations

Acronym	Description
CMOS	Complementary Metal Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
НВМ	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	
74HC_HCT573 v.6	20150126	Product data sheet	-	74HC_HCT573 v.5	
Modifications:	• <u>Table 7</u> : Po	wer dissipation capacitanc	e condition for 74HCT	573 is corrected.	
74HC_HCT573 v.5	20120815	Product data sheet	-	74HC_HCT573 v.4	
Modifications:	Alternative	descriptive title corrected (errata).		
74HC_HCT573 v.4	20120806	Product data sheet	-	74HC_HCT573 v.3	
Modifications:		of this data sheet has been of NXP Semiconductors.	n redesigned to comp	ly with the new identity	
	 Legal texts 	have been adapted to the	new company name v	where appropriate.	
74HC_HCT573 v.3	20060117	Product data sheet	-	74HC_HCT573_CNV v.2	
74HC_HCT573_CNV v.2	19901201	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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Octal D-type transparent latch; 3-state

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