

OCTAL TRANSPARENT D-TYPE LATCHES WITH 3-STATE OUTPUTS

1. Description

The FLH 74HC573 is a octal transparent D-type latch with 3-state outputs, and it has 8 channels.

2. Features

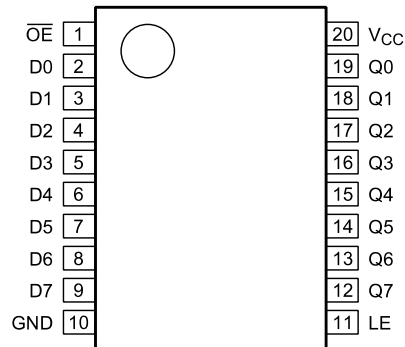
- Operate from 2V to 6V
- Max t_{PD} of 57ns at 4.5 V
- Typical $V_{OL} < 0.17V$ at $V_{CC} = 4.5V$, $T_A = 25^\circ C$
- Typical $V_{OH} > 4.3V$ at $V_{CC} = 4.5V$, $T_A = 25^\circ C$

3. Ordering Information

Type Number	Package Type	Packing
74HC573D	SOP-20	Tape & Reel
74HC573N	DIP-20	Tube
74HC573PW	TSSOP-20	Tape & Reel

Note: If the physical information is inconsistent with the ordering information, please refer to the actual product.

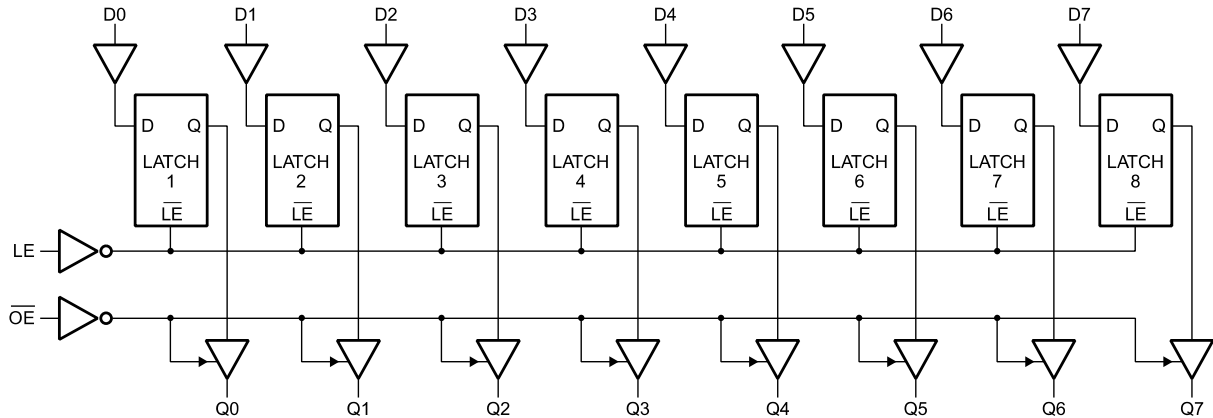
4. Pin Assignments



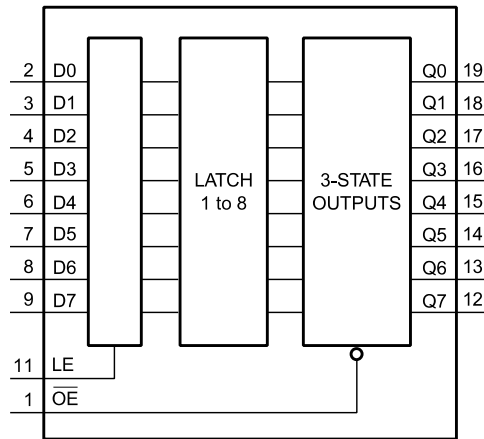
5. Pin Description

Symbol	Pin	Description
OE	1	3-state output enable input (active LOW)
D0, D1, D2, D3, D4, D5, D6, D7	2, 3, 4, 5, 6, 7, 8, 9	data input
GND	10	ground (0 V)
LE	11	latch enable input (active HIGH)
Q0, Q1, Q2, Q3, Q4, Q5, Q6, Q7	19, 18, 17, 16, 15, 14, 13, 12	3-state latch output
V _{CC}	20	supply voltage

6. Logic Diagram



7. Functional Diagram



8. Function table

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

Z = high-impedance OFF-state.

Operating mode	Control		Input	Internal latches	Output
	OE	LE	Dn		Qn
Enable and read register (transparent mode)	L	H	L	L	L
			H	H	H
Latch and read register	L	L	l	L	L
			h	H	H
Latch register and disable outputs	H	L	l	L	Z
			h	H	Z

9. ABSOLUTE MAXIMUM RATING

($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ 7	V
V_{CC} or GND Current	I_{CC}	± 70	mA
Output Current	I_{OUT}	± 35	mA
Input Clamp Current	I_{IK}	± 20	mA
Output Clamp Current	I_{OK}	± 20	mA
Operating Temperature	T_{OPR}	-40 ~ + 85	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-65 ~ + 150	$^{\circ}\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

10. THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	52	$^{\circ}\text{C}/\text{W}$
		80	$^{\circ}\text{C}/\text{W}$
		103	$^{\circ}\text{C}/\text{W}$

11. RECOMMENDED OPERATING CONDITIONS

($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2	5	6	V
High-level Input Voltage	V_{IH}	$V_{CC}=2.0\text{V}$	1.5			V
		$V_{CC}=4.5\text{V}$	3.15			V
		$V_{CC}=6.0\text{V}$	4.2			V
Low-level Input Voltage	V_{IL}	$V_{CC}=2.0\text{V}$	0		0.5	V
		$V_{CC}=4.5\text{V}$	0		1.35	V
		$V_{CC}=6.0\text{V}$	0		1.8	V
Input Voltage	V_{IN}		0		V_{CC}	V
Output Voltage	V_{OUT}	High or low state	0		V_{CC}	V
Input Rise or Fall Times	t_R, t_F	$V_{CC}=2.0\text{V}$	0		1	μs
		$V_{CC}=4.5\text{V}$	0		0.5	μs
		$V_{CC}=6.0\text{V}$	0		0.4	μs

12. ELECTRICAL CHARACTERISTICS

($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage High-Level	V_{OH}	$V_{CC}=2.0\text{V}$, $I_{OH}=-20\mu\text{A}$	1.9	1.998		V
		$V_{CC}=4.5\text{V}$, $I_{OH}=-20\mu\text{A}$	4.4	4.499		V
		$V_{CC}=6.0\text{V}$, $I_{OH}=-20\mu\text{A}$	5.9	5.999		V
		$V_{CC}=4.5\text{V}$, $I_{OH}=-6\text{mA}$	3.98	4.3		V
		$V_{CC}=6.0\text{V}$, $I_{OH}=-7.8\text{mA}$	5.48	5.8		V
Output Voltage Low-Level	V_{OL}	$V_{CC}=2.0\text{V}$, $I_{OL}=20\mu\text{A}$		2	100	mV
		$V_{CC}=4.5\text{V}$, $I_{OL}=20\mu\text{A}$		1	100	mV
		$V_{CC}=6.0\text{V}$, $I_{OL}=20\mu\text{A}$		1	100	mV
		$V_{CC}=4.5\text{V}$, $I_{OL}=6\text{mA}$		170	260	mV
		$V_{CC}=6.0\text{V}$, $I_{OL}=7.8\text{mA}$		150	260	mV
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=6.0\text{V}$, $V_{IN}=V_{CC}$ or GND		± 0.1	± 100	nA
Disable Output Leakage Current	I_{OZ}	$V_{CC}=6.0\text{V}$, $V_{OUT}=V_{CC}$ or GND		± 0.01	± 0.5	μA
Quiescent Supply Current	I_Q	$V_{CC}=6.0\text{V}$, $V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			8	μA
Input Capacitance	C_{IN}	$V_{CC}=2.0\text{V}\sim 6.0\text{V}$		3	10	pF

13. SWITCHING CHARACTERISTICS

(See TEST CIRCUIT AND WAVEFORMS)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (D) to output (Q)	t_{PLH}/t_{PHL}	$V_{CC}=2.0\text{V}$, $C_L=50\text{pF}$		77	175	ns
		$V_{CC}=4.5\text{V}$, $C_L=50\text{pF}$		26	35	ns
		$V_{CC}=6.0\text{V}$, $C_L=50\text{pF}$		23	30	ns
		$V_{CC}=2.0\text{V}$, $C_L=150\text{pF}$		95	200	ns
		$V_{CC}=4.5\text{V}$, $C_L=150\text{pF}$		33	40	ns
		$V_{CC}=6.0\text{V}$, $C_L=150\text{pF}$		21	34	ns
Propagation delay from input (LE) to output (Q)	t_{PLH}/t_{PHL}	$V_{CC}=2.0\text{V}$, $C_L=50\text{pF}$		87	175	ns
		$V_{CC}=4.5\text{V}$, $C_L=50\text{pF}$		27	35	ns
		$V_{CC}=6.0\text{V}$, $C_L=50\text{pF}$		23	30	ns
		$V_{CC}=2.0\text{V}$, $C_L=150\text{pF}$		103	225	ns
		$V_{CC}=4.5\text{V}$, $C_L=150\text{pF}$		33	45	ns
		$V_{CC}=6.0\text{V}$, $C_L=150\text{pF}$		29	38	ns
Output enable time from input (\overline{OE}) to output (Q)	t_{PZL}/t_{PZH}	$V_{CC}=2.0\text{V}$, $C_L=50\text{pF}$		68	150	ns
		$V_{CC}=4.5\text{V}$, $C_L=50\text{pF}$		24	30	ns
		$V_{CC}=6.0\text{V}$, $C_L=50\text{pF}$		21	26	ns
		$V_{CC}=2.0\text{V}$, $C_L=150\text{pF}$		85	200	ns
		$V_{CC}=4.5\text{V}$, $C_L=150\text{pF}$		29	40	ns
		$V_{CC}=6.0\text{V}$, $C_L=150\text{pF}$		26	34	ns
Output disable time from input	t_{PLZ}/t_{PHZ}	$V_{CC}=2.0\text{V}$, $C_L=50\text{pF}$		47	150	ns

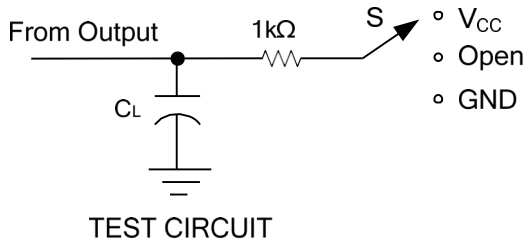
\overline{OE} to output (Q)		$V_{CC}=4.5V, C_L=50pF$		23	30	ns
		$V_{CC}=6.0V, C_L=50pF$		21	26	ns
Pulse Width	t_W	$V_{CC}=2.0V$	80			ns
		$V_{CC}=4.5V$	16			ns
		$V_{CC}=6.0V$	14			ns
Setup Time	t_{SU}	$V_{CC}=2.0V$	50			ns
		$V_{CC}=4.5V$	10			ns
		$V_{CC}=6.0V$	9			ns
Hold Time	t_H	$V_{CC}=2.0V$	20			ns
		$V_{CC}=4.5V$	5			ns
		$V_{CC}=6.0V$	5			ns

14. OPERATING CHARACTERISTICS

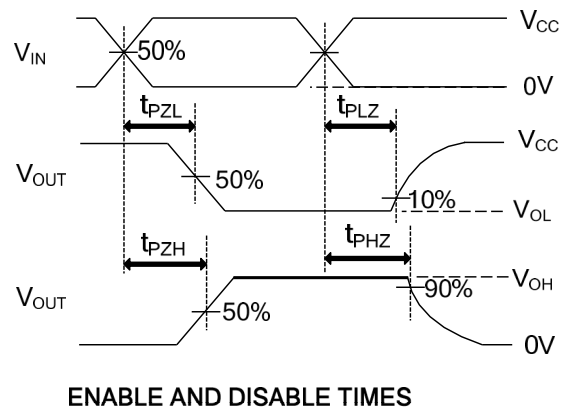
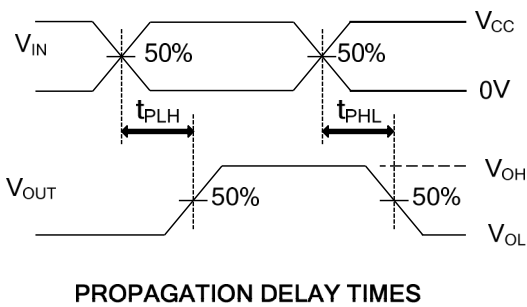
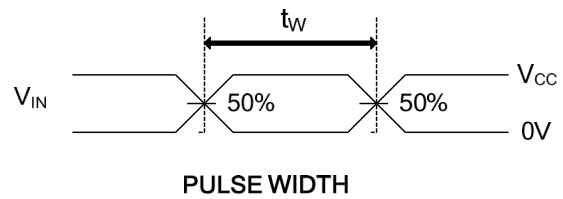
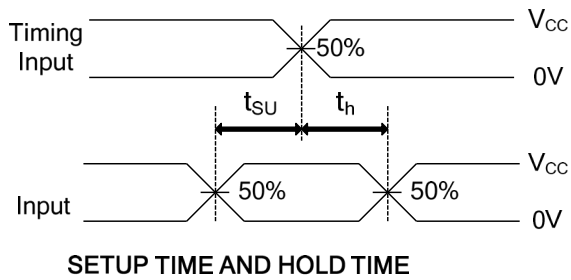
($T_A=25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	No load		50		pF

15. TEST CIRCUIT AND WAVEFORMS



TEST	S
t _{PLH} / t _{PHL}	Open
t _{PHZ} / t _{PZH}	GND
t _{PLZ} / t _{PZL}	V _{CC}


Note:

C_L includes probe and jig capacitance.

PRR ≤ 1MHz, Z_o = 50Ω, t_r ≤ 6ns, t_f ≤ 6ns

16. Disclaimers

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