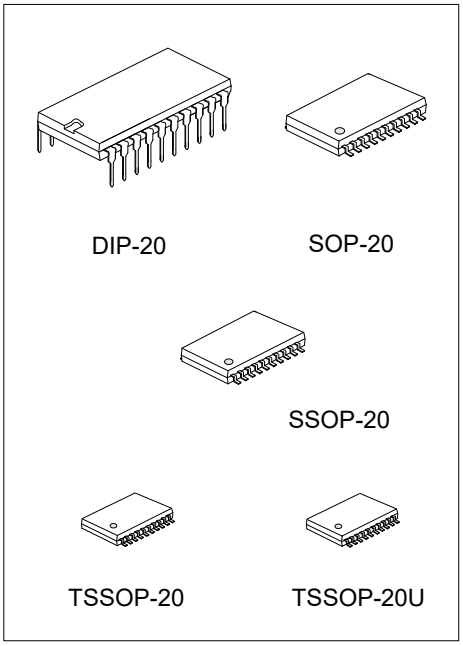
U74HC573

CMOS IC

OCTAL TRANSPARENT D-TYPE LATCHES WITH 3-STATE OUTPUTS



■ DESCRIPTION

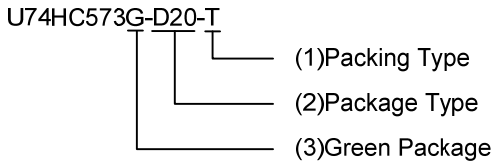
The UTC **U74HC573** is a octal transparent D-type latch with 3-state outputs, and it has 8 channels.

■ 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°C
* Typical V_{OH}>4.3V at V_{CC}=4.5V, T_A=25°C

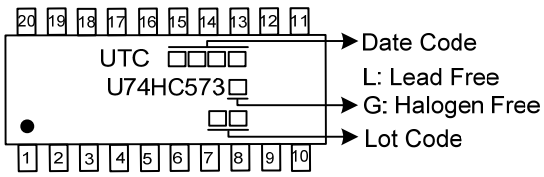
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HC573L-D20-T	U74HC573G-D20-T	DIP-20	Tube
U74HC573L-S20-R	U74HC573G-S20-R	SOP-20	Tape Reel
U74HC573L-R20-R	U74HC573G-R20-R	SSOP-20	Tape Reel
U74HC573L-P20-R	U74HC573G-P20-R	TSSOP-20	Tape Reel
U74HC573L-ULA-R	U74HC573G-ULA-R	TSSOP-20U	Tape Reel

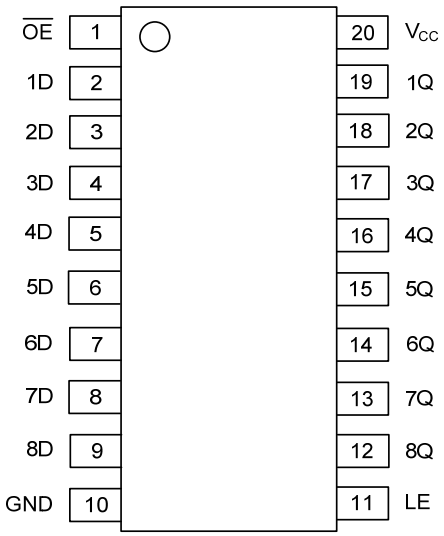


(1) T: Tube, R: Tape Reel
(2) D20: DIP-20, S20: SOP-20, R20: SSOP-20, P20: TSSOP-20, ULA: TSSOP-20U
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION

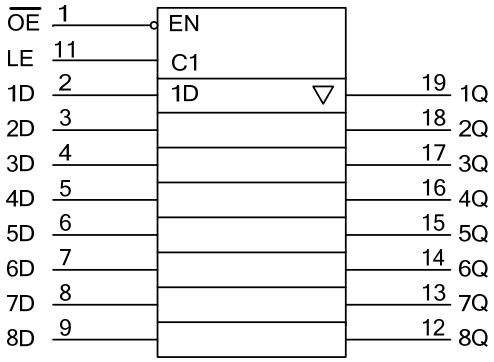


■ FUNCTION TABLE

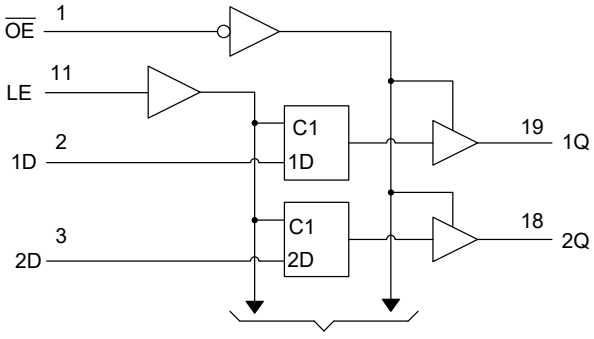
INPUTS($\overline{OE}$)	INPUTS(LE)	INPUTS(D)	OUTPUT(Q)
L	H	H	H
L	H	L	L
L	L	X	Q_0
H	X	X	Z

Note: H: HIGH voltage level; L: LOW voltage level.

■ LOGIC SYMBOL



■ LOGIC DIAGRAM



■ ABSOLUTE MAXIMUM RATING (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
Storage Temperature	T_{STG}	-65 ~ + 150	°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.

■ RECOMMENDED OPERATING CONDITIONS (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}=2.0V	1.5			V
		V_{CC}=4.5V	3.15			V
		V_{CC}=6.0V	4.2			V
Low-level Input Voltage	V_{IL}	V_{CC}=2.0V	0		0.5	V
		V_{CC}=4.5V	0		1.35	V
		V_{CC}=6.0V	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}=2.0V	0		1	μs
		V_{CC}=4.5V	0		0.5	μs
		V_{CC}=6.0V	0		0.4	μs
Operating Temperature	T_A		-40		+125	°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	DIP-20	θ_{JA}	52	°C/W
	SOP-20		80	°C/W
	SSOP-20		96	°C/W
	TSSOP-20 TSSOP-20U		103	°C/W

■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-level Input Voltage	V_{IH}	V_{CC}=2.0V	1.5			1.5			V
		V_{CC}=4.5V	3.15			3.15			V
		V_{CC}=6.0V	4.2			4.2			V
Low-level Input Voltage	V_{IL}	V_{CC}=2.0V	0		0.5			0.5	V
		V_{CC}=4.5V	0		1.35			135	V
		V_{CC}=6.0V	0		1.8			1.8	V
Output Voltage High-Level	V_{OH}	V_{CC}=2.0V, I_{OH}=-20μA	1.9	1.998		1.9			V
		V_{CC}=4.5V, I_{OH}=-20μA	4.4	4.499		4.4			V
		V_{CC}=6.0V, I_{OH}=-20μA	5.9	5.999		5.9			V
		V_{CC}=4.5V, I_{OH}=-6mA	3.98	4.3		3.7			V
		V_{CC}=6.0V, I_{OH}=-7.8mA	5.48	5.8		5.2			V
Output Voltage Low-Level	V_{OL}	V_{CC}=2.0V, I_{OL}=20μA		2	100			100	mV
		V_{CC}=4.5V, I_{OL}=20μA		1	100			100	mV
		V_{CC}=6.0V, I_{OL}=20μA		1	100			100	mV
		V_{CC}=4.5V, I_{OL}=6mA		170	260			400	mV
		V_{CC}=6.0V, I_{OL}=7.8mA		150	260			400	mV
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}=6.0V, V_{IN}=V_{CC} or GND		±0.1	±100			±1000	nA
Disable Output Leakage Current	I_{OZ}	V_{CC}=6.0V, V_{OUT}=V_{CC} or GND		±0.01	±0.5			±10	μA
Quiescent Supply Current	I_Q	V_{CC}=6.0V, V_{IN}=V_{CC} or GND, I_{OUT}=0			8			160	μA

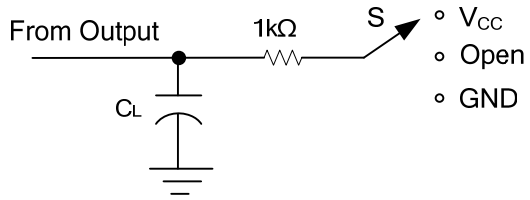
■ SWITCHING CHARACTERISTICS (See TEST CIRCUIT AND WAVEFORMS)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay from input (D) to output (Q)	t_{PLH}/t_{PHL}	V_{CC}=2.0V, C_L=50pF		77	175			225	ns
		V_{CC}=4.5V, C_L=50pF		26	35			45	ns
		V_{CC}=6.0V, C_L=50pF		23	30			38	ns
		V_{CC}=2.0V, C_L=150pF		95	200			255	ns
		V_{CC}=4.5V, C_L=150pF		33	40			51	ns
		V_{CC}=6.0V, C_L=150pF		21	34			43	ns
Propagation delay from input (LE) to output (Q)		V_{CC}=2.0V, C_L=50pF		87	175			220	ns
		V_{CC}=4.5V, C_L=50pF		27	35			45	ns
		V_{CC}=6.0V, C_L=50pF		23	30			38	ns
		V_{CC}=2.0V, C_L=150pF		103	225			285	ns
		V_{CC}=4.5V, C_L=150pF		33	45			58	ns
		V_{CC}=6.0V, C_L=150pF		29	38			48	ns
Output enable time from input ($\overline{OE}$) to output (Q)	t_{PZL}/t_{PZH}	V_{CC}=2.0V, C_L=50pF		68	150			210	ns
		V_{CC}=4.5V, C_L=50pF		24	30			42	ns
		V_{CC}=6.0V, C_L=50pF		21	26			36	ns
		V_{CC}=2.0V, C_L=150pF		85	200			270	ns
		V_{CC}=4.5V, C_L=150pF		29	40			54	ns
		V_{CC}=6.0V, C_L=150pF		26	34			47	ns
Output disable time from input ($\overline{OE}$) to output (Q)	t_{PLZ}/t_{PHZ}	V_{CC}=2.0V, C_L=50pF		47	150			225	ns
		V_{CC}=4.5V, C_L=50pF		23	30			45	ns
		V_{CC}=6.0V, C_L=50pF		21	26			38	ns
Pulse Width	t_W	V_{CC}=2.0V	80			120			ns
		V_{CC}=4.5V	16			24			ns
		V_{CC}=6.0V	14			20			ns
Setup Time	t_{SU}	V_{CC}=2.0V	50			75			ns
		V_{CC}=4.5V	10			15			ns
		V_{CC}=6.0V	9			13			ns
Hold Time	t_H	V_{CC}=2.0V	20			24			ns
		V_{CC}=4.5V	5			5			ns
		V_{CC}=6.0V	5			5			ns

■ OPERATING CHARACTERISTICS (Unless otherwise specified)

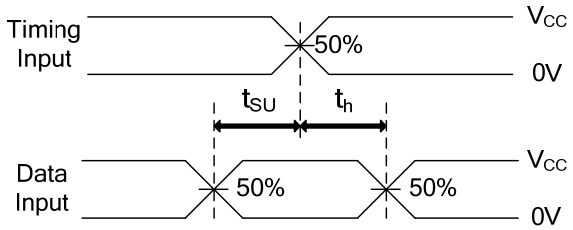
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_{IN}	V_{CC}=2.0V~6.0V		3	10	pF
Power Dissipation Capacitance	C_{PD}	No load		50		pF

■ TEST CIRCUIT AND WAVEFORMS

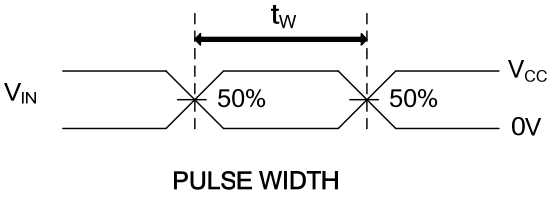


TEST CIRCUIT

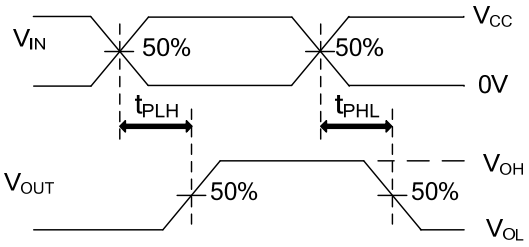
TEST	S
t_{PLH}/t_{PHL}	Open
t_{PHZ}/t_{PZH}	GND
t_{PLZ}/t_{PZL}	V_{CC}



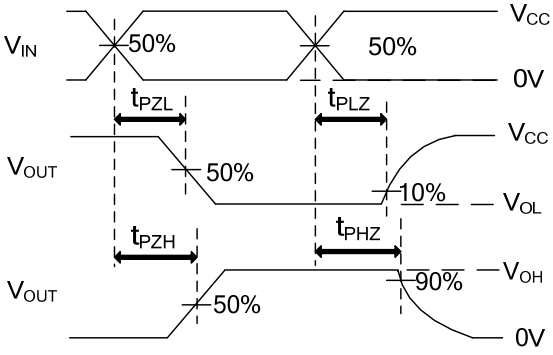
SETUP TIME AND HOLD TIME



PULSE WIDTH



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

Note: C_L includes probe and jig capacitance.
PRR≤1MHz, Zo=50Ω, t_R≤6ns, t_F≤6ns