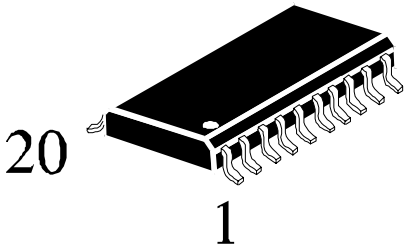
OCTAL D-TYPE LATCH WITH THREE STATE OUTPUTS

IN74VHC373D integrated circuits are designed for using in up-to-date high-performance computers, high-level electronic equipment for consumer application.
IN74VHC373D is identical in pinout to the IC series IN74HC373A, IN74HCT373A, IN74AC373A, IN74ACT373A.
Input voltage levels are compatible with standard C-MOS levels.
Output voltage levels are compatible with input levels of C-MOS, N-MOS and TTL ICs.



Features:

- Supply voltage 2.0 - 5.5 V.
- Low input current: 1.0 mkA; 0.1 mkA at T = 25 °C.
- Output current 8 mA.
- Latchup current not less than 300 mA at T = 85 °C.
- Tolerable value of static potential not less than 2000V as per human body model (HBM) and not less than 200V as per machine model (MM).

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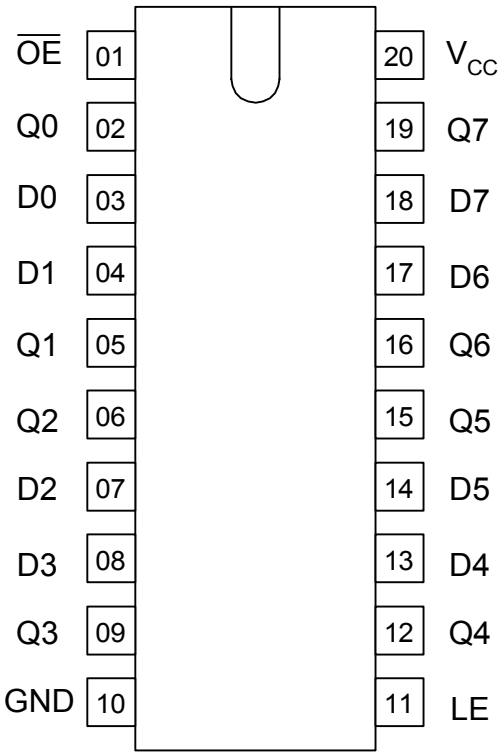
IN74VHC373D truth table

Input		Output
$\overline{G}$	A	Y
L	L	L
L	H	H
H	X	Z

Note –

H - high voltage level;
L - low voltage level;
X - any voltage level (low or high);
Z - output in third state

Pinout



Pins description in IN74VHC373D

Pin No.	Symbol	Description
01	$\overline{OE}$	Input OUTPUT ENABLE
02	Q0	Data output
03	D0	Data input
04	D1	Data input
05	Q1	Data output
06	Q2	Data output
07	D2	Data input
08	D3	Data input
09	Q3	Data output
10	GND	Common output
11	LE	Recording enable input
12	Q4	Data output
13	D4	Data input
14	D5	Data input
15	Q5	Data output
16	Q6	Data output
17	D6	Data input
18	D7	Data input
19	Q7	Data output
20	Vcc	Supply output from voltage source

Absolute maximum conditions*

Parameter, unit	Symbol	Value	
		min	max
Supply voltage, V	V_{CC}	-0.5	7.0
Input voltage, V	Vin	-0.5	7.0
Output voltage, V	Vout	-0.5	Vcc+0.5V
Input diode current, mA	Iik	–	-20
Current of common output and supply output, mA	Icc	–	± 75
Output current, mA	Iout	–	± 25
Output diode current, mA	Iok	–	± 20
Dissipated power, mW	Pd	–	180

*Under absolute maximum conditions operation of microcircuit is not guaranteed. Operation is guaranteed under maximum conditions

Maximum conditions

Parameter, unit	Symbol	Value	
		min	max
Supply voltage, V	V_{CC}	2.0	5.5
Input voltage,V	Vin	0	V_{CC}
Output voltage, V	Vout	0	V_{CC}
Output current, mA	Iout	–	± 8.0
Input rise and fall time, ns/V at Vcc = (3.3 ± 0.3) V at Vcc = (5.0 ± 0.5) V	t_{LH}, t_{HL}	 0 0	 100 20

DC electrical characteristics

Symbol	Parameter	Test conditions	V_{CC}, V	Value				Unit
				25 °C		–40 to 85 °C		
				min	max	min	max	
V_{IH}	High input voltage	–	2.0	1.5	–	1.5	–	V
			3.0-5.5	0.7Vcc	–	0.7Vcc	–	
V_{IL}	Low input voltage	–	2.0	–	0.5	–	0.5	
			3.0-5.5	–	0.3Vcc	–	0.3Vcc	
V_{OH}	High output voltage	V_I = V_{IH} or V_{IL} I_O = -50 mkA	2.0	1.92	–	1.9	–	
			3.0	2.92	–	2.9	–	
			4.5	4.42	–	4.4	–	
			5.5	5.52	–	5.4	–	
		V_I = V_{IH} or V_{IL}; I_O = -4 mA	3.0	2.58	–	2.48	–	
		V_I = V_{IH} or V_{IL}; I_O = -8 mA	4.5	3.94	–	3.80	–	
V_{OL}	Low output voltage	V_I = V_{IH} orV_{IL} I_O = 50 mkA	2.0	–	0.09	–	0.1	
			3.0	–	0.09	–	0.1	
			4.5	–	0.09	–	0.1	
			5.5	–	0.09	–	0.1	
		V_I = V_{IH} or V_{IL} I_O = 4 mA	3.0	–	0.36	–	0.44	
		V_I = V_{IH} or V_{IL} I_O = 8 mA	4.5	–	0.36	–	0.44	
I_{OZ}	Output current in "off" state	V_I = V_{IH} or V_{IL} V_O = V_{CC} or 0V	5.5	-	±0.25	-	±2.5	uA
I_I	Input current	V_I = 5.5V or 0V	0 – 5.5	-	±0.1	-	±1.0	
I_{CC}	Consumption current	V_I =V_{CC} or 0V	5.5	-	4.0	-	40.0	

AC electrical characteristics (t_{LH} = t_{HL} = 3.0 ns, R_L = 1 kOhm)

Symbol	Parameter	Test conditions	V_{CC}, V	C_L, pF	Value				Unit
					25°C		-40°C to 85°C		
					min	max	min	max	
t_{PHL}, t_{PLH}	Popagation delay time when switching «on», «off» from input LE to output Q	Fig. 1	3.3 ± 0.3	15	–	11.0	–	13.0	ns
				50	–	14.5	–	16.5	
			5.0 ± 0.5	15	–	7.2	–	8.5	
				50	–	9.2	–	10.5	
	From input D to output Q		3.3 ± 0.3	15	–	11.4	–	13.5	
				50	–	14.9	–	17.0	
			5.0 ± 0.5	15	–	7.2	–	8.5	
				50	–	9.2	–	10.5	
t_{PHZ} , t_{PLZ}	Propagation delay time under transition from high, low level into «off» state	Fig.2	3.3 ± 0.3	50	–	13.2	–	15.0	
			5.0 ± 0.5	50	–	9.2	–	10.5	
t_{PZH} , t_{PZL}	Propagation delay time under transition from «off» state into high, low level	Fig.2	3.3 ± 0.3	15	–	11.4	–	13.5	
				50	–	14.9	–	17.0	
			5.0 ± 0.5	15	–	8.1	–	9.5	
				50	–	10.1	–	11.5	
t_{SU}	Time of setting signal D relativey to LE	Fig.3	3.3 ± 0.3	15	4.0	–	4.0	–	
				50	4.0	–	4.0	–	
			5.0 ± 0.5	15	4.0	–	4.0	–	
				50	4.0	–	4.0	–	
t_H	Retention time, D signal to LE	Fig.3	3.3 ± 0.3	15	1.0	–	1.0	–	
				50	1.0	–	1.0	–	
			5.0 ± 0.5	15	1.0	–	1.0	–	
				50	1.0	–	1.0	–	
t_W	Pulse duration of LE signal	Fig.3	3.3 ± 0.3	15	5.0	–	5.0	–	
				50	5.0	–	5.0	–	
			5.0 ± 0.5	15	5.0	–	5.0	–	
				50	5.0	–	5.0	–	
t_{OSLH}, t_{OSHL}	Propagation delays difference between outputs	–	3.3 ± 0.3	50	–	1.5	–	1.5	
			5.5 ± 0.5	50	–	1.0	–	1.0	

Capacitance characteristics

Symbol	Parameter	Test conditions	V_{CC}, V	Value		Unit
				25 °C		
				min	max	
C_I	Input capacity	-	5.0		10	pF
C_O	Output capacity	-	5.0		12	pF
C_{PD}	Dynamic capacity	V_I = 0 V orV_{CC}	5.0		54	pF

Noise characteristics (C_L = 50 pF)

Symbol	Parameter	V_{CC}, V	Value		Unit
			min	max	
V_{OLP}	Positive noise of low output voltage	5.0	-	0.9	V
V_{OLV}	Negative noise of low output voltage	5.0	-0.9	-	
V_{IHD}	Input dynamic high voltage	5.0	3.5	-	
V_{ILD}	Input dynamic low voltage	5.0	-	1.5	

- Time diagram of input and output pulses

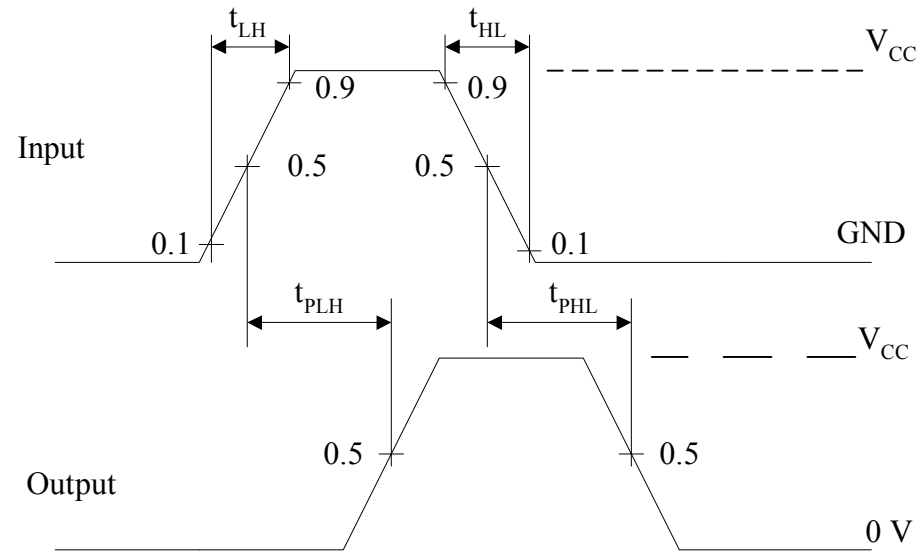


Fig. 1

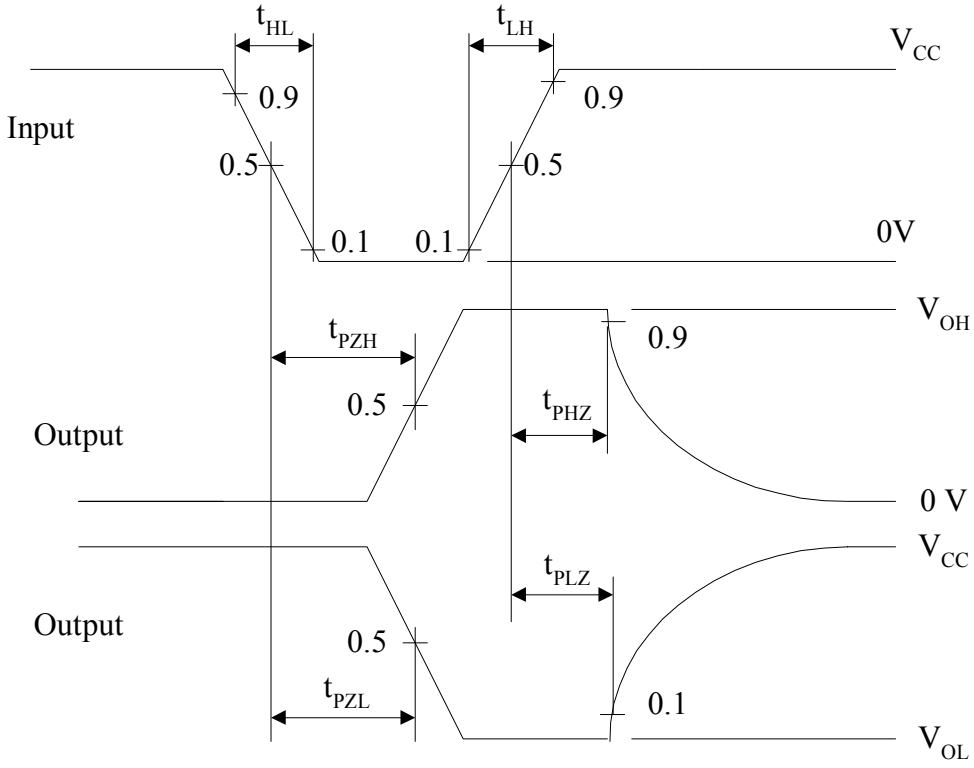


Fig.2

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Time diagram of input pulses

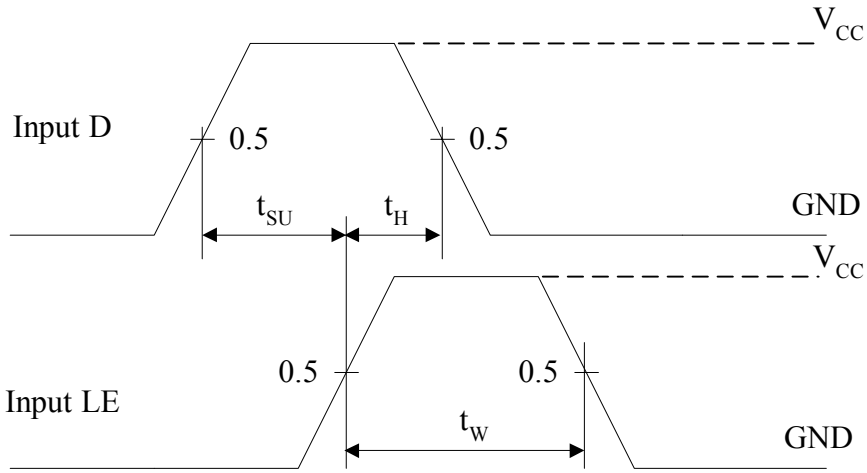
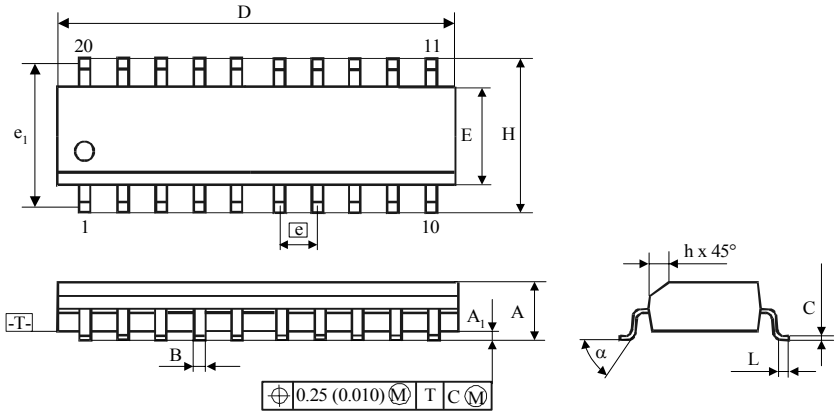


Fig.3

MS-013AC Package dimensions



	A	A_1	**B**	C	D	E	e	e_1	H	h	L	α
						mm						°
min	2.35	0.10	0.33	0.23	12.60	7.40	1.27	9.53	10.00	0.25	0.40	0
max	2.65	0.30	0.51	0.32	13.00	7.60	(nom)	(nom)	10.65	0.75	1.27	8