

HD74HC75

Quad. Bistable Latches

HITACHI

ADE-205-422 (Z)
1st. Edition
Sep. 2000

Description

This latch is ideally suited for use as temporary storage for binary information processing, input/output, and indicator units. Information present at the data (D) input is transferred to the Q output when the latch enable (LE) is high. The Q output will follow the data input as long as the enable remains high. when the enable goes low, the information that was present at the data input at the time the transition occurred is retained at thte Q output unit the enable is permitted to go high again.

Features

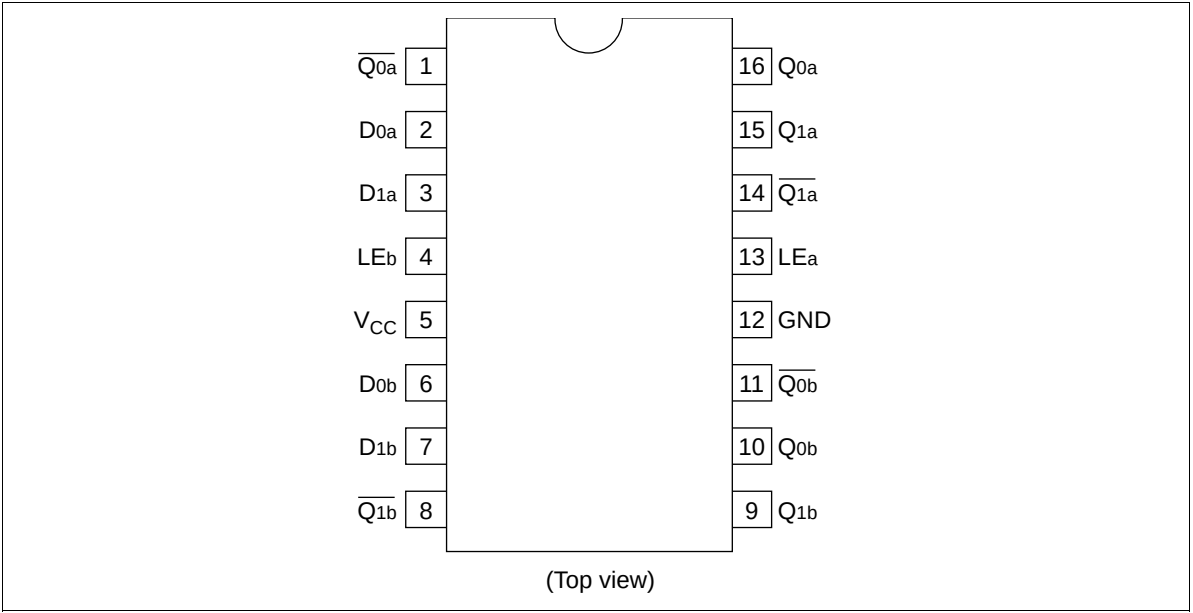
- High Speed Operation: t_{pd} (D to Q) = 12.5 ns typ ($C_L = 50$ pF)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2$ to 6 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 2 μ A max ($T_a = 25^\circ\text{C}$)

Function Table

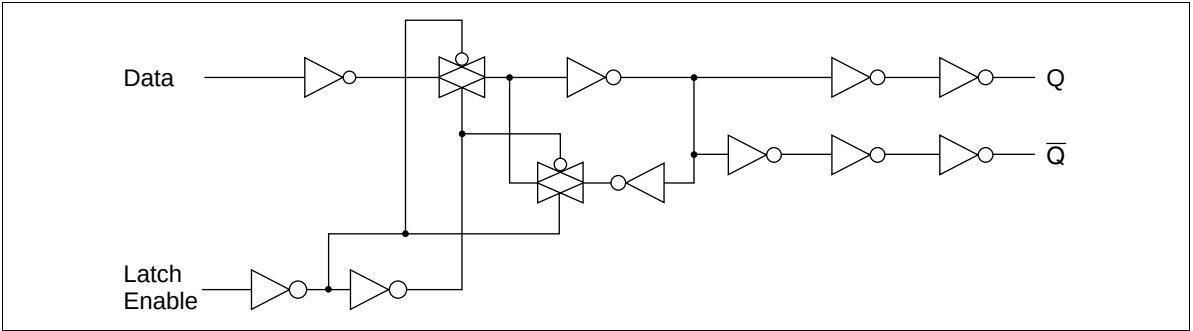
Inputs		Outputs	
D	Latch Enable	Q	$\overline{Q}$
L	H	L	H
H	H	H	L
X	L	Q_0	$\overline{Q}_0$

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Pin Arrangement



Block Diagram



DC Characteristics

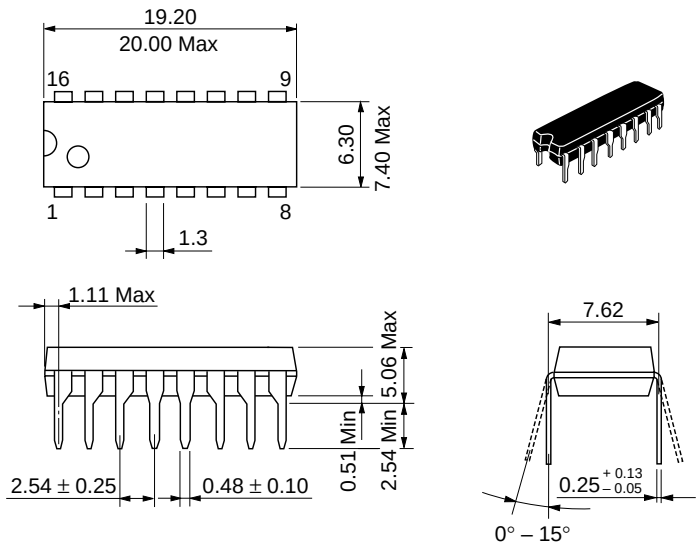
Item	Symbol	V _{CC} (V)	Ta = 25°C			Ta = -40 to +85°C		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Input voltage	V _{IH}	2.0	1.5	—	—	1.5	—	V		
		4.5	3.15	—	—	3.15	—			
		6.0	4.2	—	—	4.2	—			
	V _{IL}	2.0	—	—	0.5	—	0.5	V		
		4.5	—	—	1.35	—	1.35			
		6.0	—	—	1.8	—	1.8			
Output voltage	V _{OH}	2.0	1.9	2.0	—	1.9	—	V	Vin = V _{IH} or V _{IL} I _{OH} = -20 μA	
		4.5	4.4	4.5	—	4.4	—			
		6.0	5.9	6.0	—	5.9	—			
		4.5	4.18	—	—	4.13	—			I _{OH} = -4 mA
		6.0	5.68	—	—	5.63	—			I _{OH} = -5.2 mA
	V _{OL}	2.0	—	0.0	0.1	—	0.1	V	Vin = V _{IH} or V _{IL} I _{OL} = 20 μA	
		4.5	—	0.0	0.1	—	0.1			
		6.0	—	0.0	0.1	—	0.1			
		4.5	—	—	0.26	—	0.33			I _{OL} = 4 mA
		6.0	—	—	0.26	—	0.33			I _{OL} = 5.2 mA
Input current	I _{in}	6.0	—	—	±0.1	—	±1.0	μA	Vin = V _{CC} or GND	
Quiescent supply current	I _{CC}	6.0	—	—	2.0	—	20	μA	Vin = V _{CC} or GND, I _{out} = 0 μA	

AC Characteristics (C_L = 50 pF, Input t_r = t_f = 6 ns)

Item	Symbol	V _{CC} (V)	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions
			Min	Typ	Max	Min		
Propagation delay time	t _{PLH}	2.0	—	—	125	—	ns	D to Q
		4.5	—	12	25	—		
		6.0	—	—	21	—		
	t _{PHL}	2.0	—	—	110	—		D to $\overline{Q}$
		4.5	—	13	22	—		
		6.0	—	—	19	—		
		2.0	—	—	145	—		Latch Enable to Q
		4.5	—	12	29	—		
		6.0	—	—	25	—		
		2.0	—	—	125	—		Latch Enable to $\overline{Q}$
		4.5	—	13	25	—		
		6.0	—	—	21	—		
Output rise/fall time	t _{TLH}	2.0	—	—	75	—	ns	
	t _{THL}	4.5	—	5	15	—		
		6.0	—	—	13	—		
Setup time	t _{SU}	2.0	100	—	—	125	ns	Data to Latch Enable
		4.5	20	4	—	25		
		6.0	17	—	—	21		
Hold time	t _H	2.0	5	—	—	5	ns	Latch Enable to Data
		4.5	5	0	—	5		
		6.0	5	—	—	5		
Pulse width	t _W	2.0	80	—	—	100	ns	Latch Enable
		4.5	16	5	—	20		
		6.0	14	—	—	17		
Input capacitance	C _{in}	—	—	5	10	—	10	pF

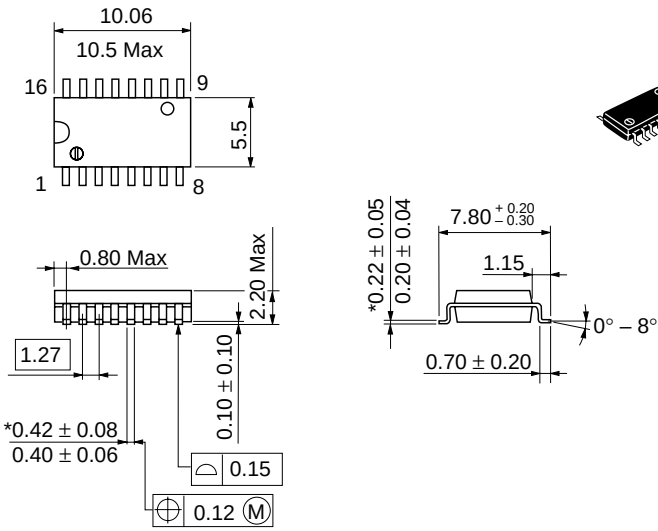
Package Dimensions

Unit: mm



Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	1.07 g

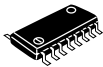
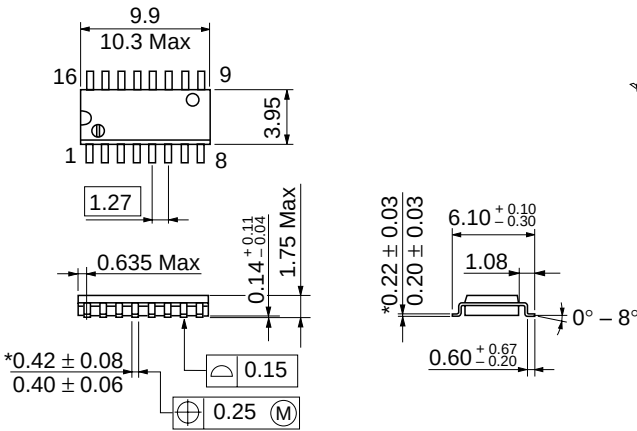
Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DA
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.24 g

Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DN
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.15 g

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