
HD74HC75

Quad. Bistable Latches

HITACHI

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 the Q output until the enable is permitted to go high again.

Features

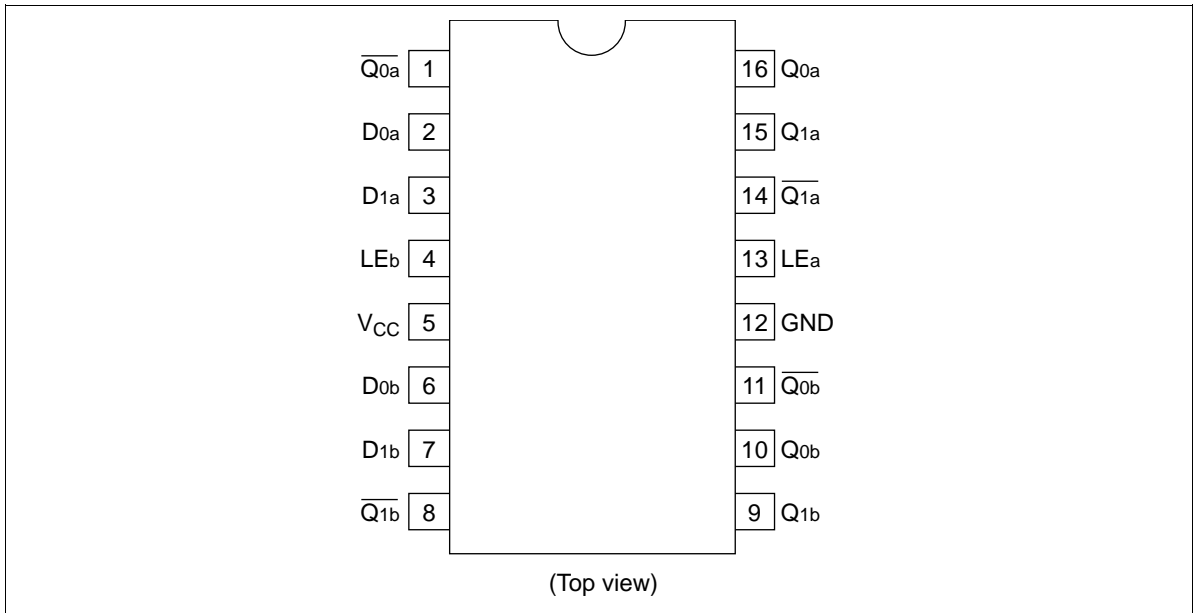
- High Speed Operation: t_{pd} (D to Q) = 12.5 ns typ ($C_L = 50$ pF)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2$ to 6 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 2 μ A max ($T_a = 25^\circ\text{C}$)

Function Table

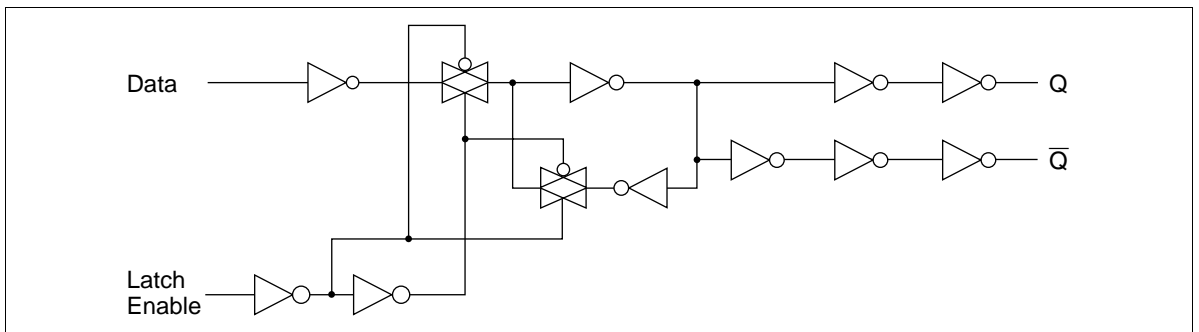
Inputs		Outputs	
D	Latch Enable	Q	\bar{Q}
L	H	L	H
H	H	H	L
X	L	Q_0	\bar{Q}_0

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Pin Arrangement



Block Diagram



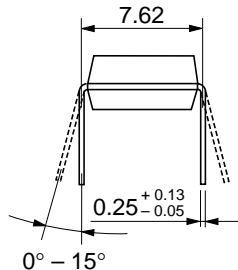
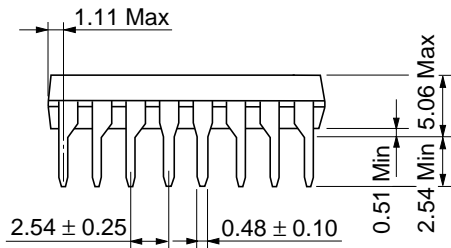
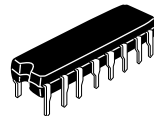
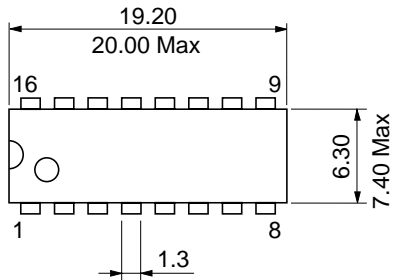
DC Characteristics

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
		6.0	—	0.0	0.1	—	0.1			V
	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	

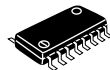
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AC Characteristics ($C_L = 50$ pF, Input $t_r = t_f = 6$ ns)

Item	Symbol	V_{CC} (V)	$T_a = 25^\circ\text{C}$		$T_a = -40$ to $+85^\circ\text{C}$		Unit	Test Conditions		
			Min	Typ	Max	Min			Max	
Propagation delay time	t_{PLH}	2.0	—	—	125	—	155	ns	D to Q	
		4.5	—	12	25	—	31			
		6.0	—	—	21	—	26			
	t_{PHL}	2.0	—	—	110	—	140	ns	D to \bar{Q}	
		4.5	—	13	22	—	28			
		6.0	—	—	19	—	24			
		2.0	—	—	145	—	180			Latch Enable to Q
		4.5	—	12	29	—	36			
		6.0	—	—	25	—	31			
	t_{THL}	2.0	—	—	125	—	155	ns	Latch Enable to \bar{Q}	
		4.5	—	13	25	—	31			
		6.0	—	—	21	—	26			
Output rise/fall time	t_{TLH}	2.0	—	—	75	—	95	ns		
		4.5	—	5	15	—	19			
		6.0	—	—	13	—	16			
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		

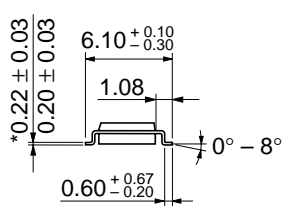


Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g



*Dimension including the plating thickness
Base material dimension

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



*Dimension including the plating thickness
Base material dimension

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

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