HD74HC4514

4-bit Latch/4-to-16-line Decoder

HITACHI

Description

This device presents a 4-to-16 line decoder with latched in puts. The HD74HC4514 presents a high level at the selected output.

This device consists of four storage latches with common strobe and inhibit ($\overline{G}$) inputs. When a low signal is applied to the strobe input, the input data is stored, decoded, and presented to the output. When strobe is high, all sixteen HD74HC4514 outputs are at a low logic level.

Features

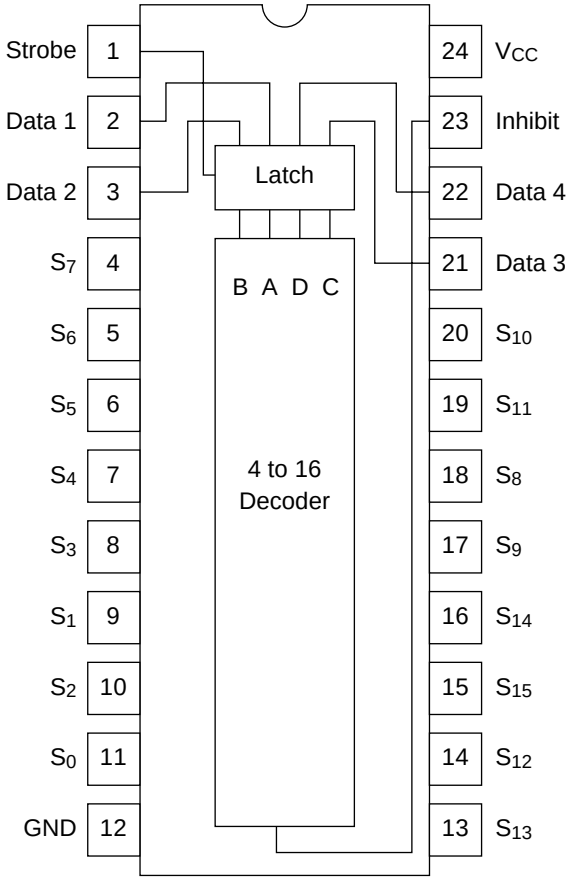
- High Speed Operation: t_{pd} (Data to S) = 20 ns typ (C_L = 50 pF)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: V_{CC} = 2 to 6 V
- Low Input Current: 1 µA max
- Low Quiescent Supply Current: I_{CC} (static) = 4 µA max (Ta = 25°C)

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Function Table (Strobe = High)

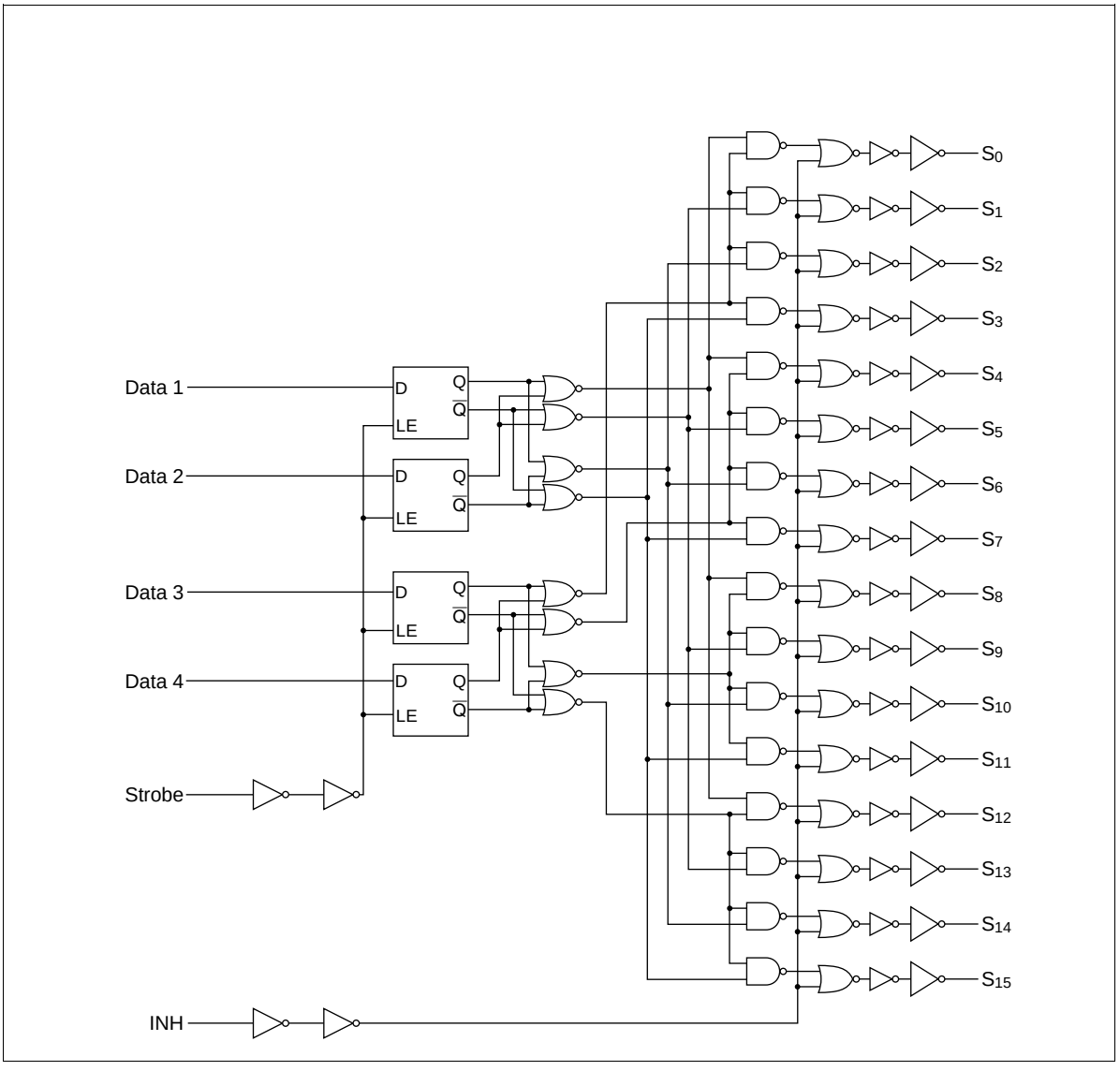
	Data Inputs				
Inhibit	**D**	**C**	**B**	**A**	**Select Outputs**
L	L	L	L	L	S_0
L	L	L	L	H	S_1
L	L	L	H	L	S_2
L	L	L	H	H	S_3
L	L	H	L	L	S_4
L	L	H	L	H	S_5
L	L	H	H	L	S_6
L	L	H	H	H	S_7
L	H	L	L	L	S_8
L	H	L	L	H	S_9
L	H	L	H	L	S_{10}
L	H	L	H	H	S_{11}
L	H	H	L	L	S_{12}
L	H	H	L	H	S_{13}
L	H	H	H	L	S_{14}
L	H	H	H	H	S_{15}
H	X	X	X	X	All output “L”

Pin Arrangement



(Top view)

Logic Diagram



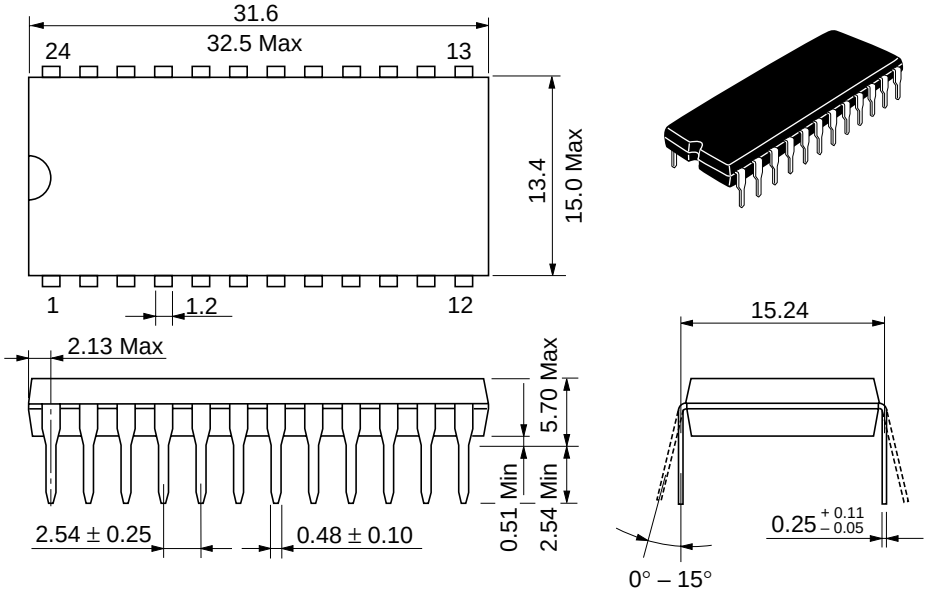
DC Characteristics

Item	Symbol	V_{CC} (V)	Ta = 25°C Min	Typ	Max	Ta = –40 to +85°C Min	Max	Unit	Test Conditions
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	Iin	6.0	—	—	±0.1	—	±1.0	µA	Vin = V_{CC} or GND
Quiescent supply current	I_{CC}	6.0	—	—	4.0	—	40	µA	Vin = V_{CC} or GND, Iout = 0 µA

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

			Ta = 25°C			Ta = –40 to +85°C			
Item	**Symbol**	**V_{cc} (V)**	**Min**	**Typ**	**Max**	**Min**	**Max**	**Unit**	**Test Conditions**
Propagation delay time	t_{PLH}	2.0	—	—	200	—	250	ns	Data to output
	t_{PHL}	4.5	—	20	40	—	50		
		6.0	—	—	34	—	43		
	t_{PLH}	2.0	—	—	175	—	220	ns	Inhibit to output
	t_{PHL}	4.5	—	13	35	—	44		
		6.0	—	—	30	—	37		
	t_{PLH}	2.0	—	—	200	—	250	ns	Strobe to output
	t_{PHL}	4.5	—	21	40	—	50		
		6.0	—	—	34	—	34		
Setup time	t_{su}	2.0	100	—	—	125	—	ns	Data to strobe
		4.5	20	3	—	25	—		
		6.0	17	—	—	21	—		
Hold time	t_h	2.0	5	—	—	5	—	ns	Strobe to data
		4.5	5	–1	—	5	—		
		6.0	5	—	—	5	—		
Pulse width	t_w	2.0	80	—	—	100	—	ns	Strobe
		4.5	16	4	—	20	—		
		6.0	14	—	—	17	—		
Output rise/fall time	t_{TLH}	2.0	—	—	75	—	95	ns	
	t_{THL}	4.5	—	6	15	—	19		
		6.0	—	—	13	—	16		
Input capacitance	Cin	—	—	5	10	—	10	pF	

Unit: mm



Hitachi Code	DP-24
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	3.1 g

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