
HD74HC4514

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

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Description

This device presents a 4-to-16 line decoder with latched inputs. 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 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 4 μ A max ($T_a = 25^\circ\text{C}$)



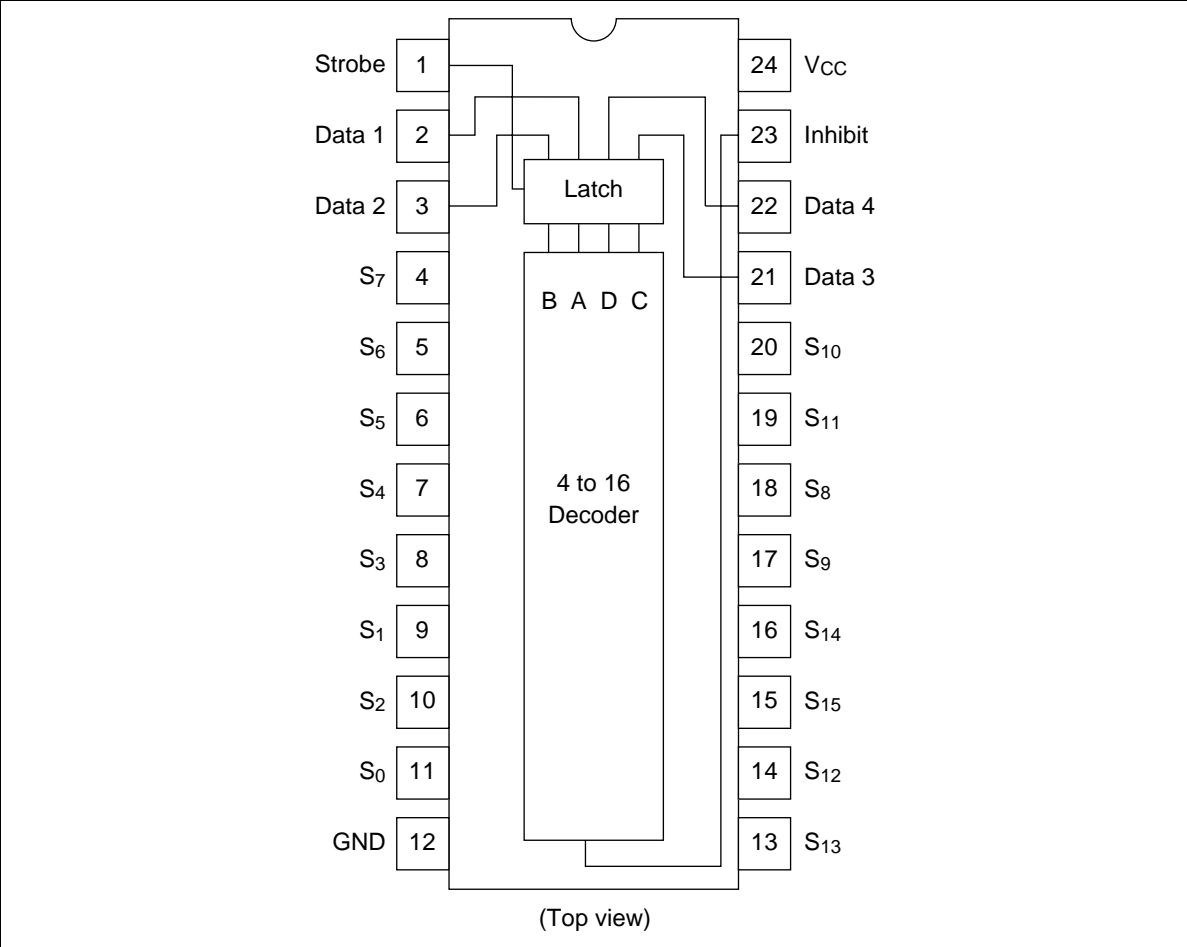
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Function Table (Strobe = High)

Inhibit	Data Inputs				Select Outputs
	D	C	B	A	
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"

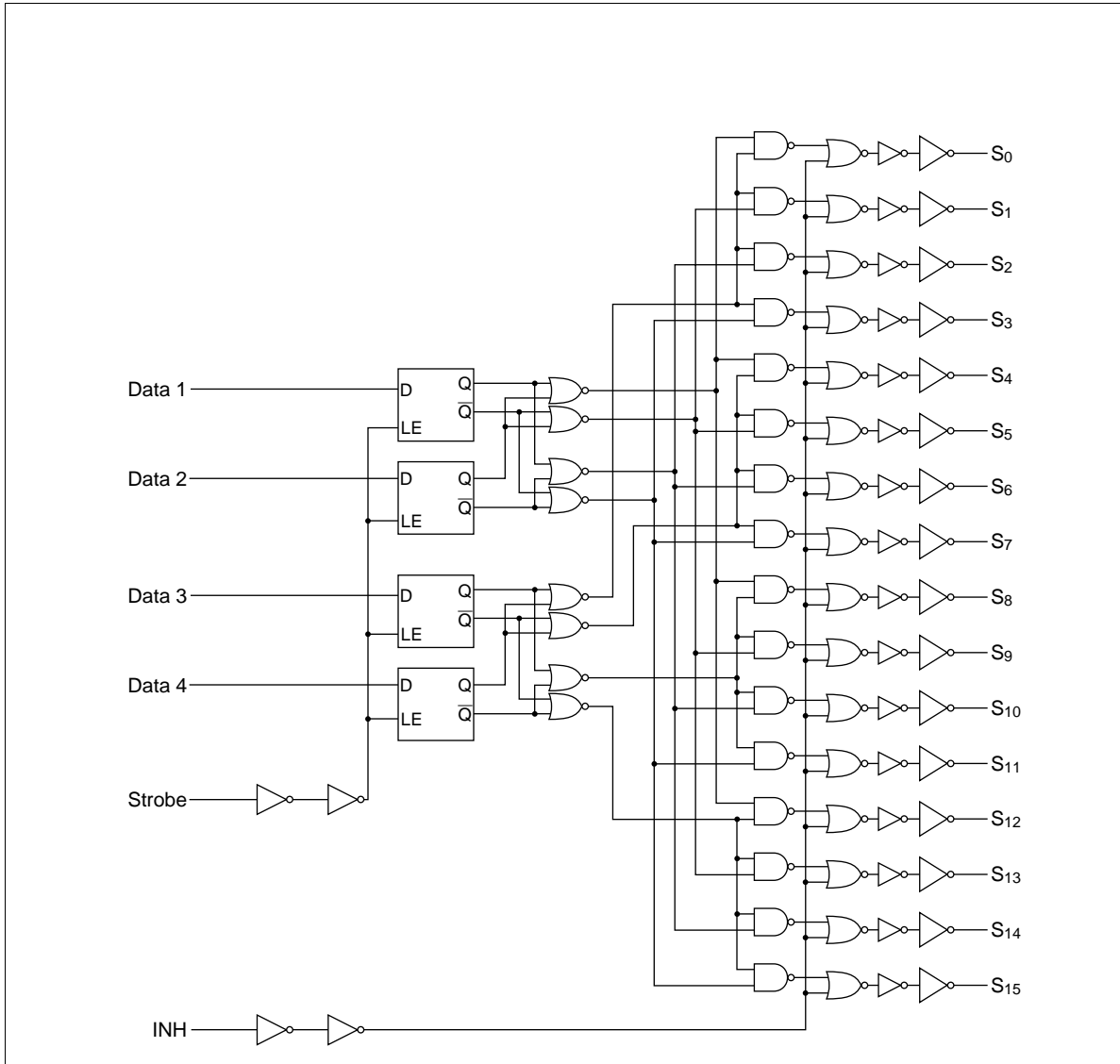
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Pin Arrangement



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Logic Diagram



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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	—	—	4.0	—	40	μA		Vin = V _{CC} or GND, I _{out} = 0 μA	

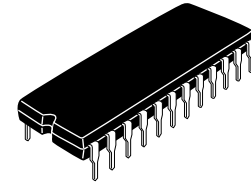
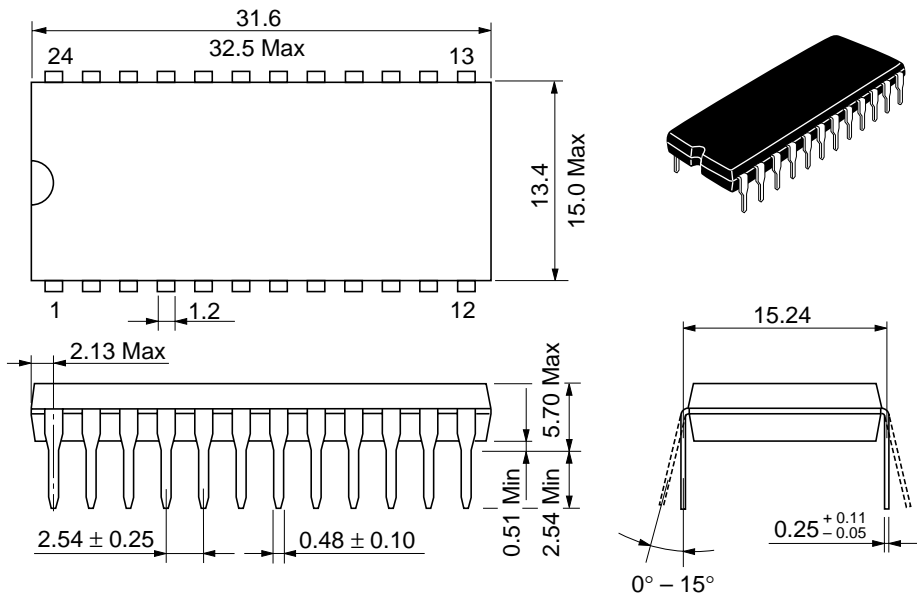
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AC Characteristics ($C_L = 50$ pF, Input $t_r = t_f = 6$ ns)

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	—	—	200	—	250	ns	Data to output	
		4.5	—	20	40	—	50			
		6.0	—	—	34	—	43			
	t_{PLH}	t_{PHL}	2.0	—	—	175	—	220	ns	Inhibit to output
			4.5	—	13	35	—	44		
			6.0	—	—	30	—	37		
	t_{PLH}	t_{PHL}	2.0	—	—	200	—	250	ns	Strobe to output
			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	C_{in}	—	—	5	10	—	10	pF		

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Unit: mm



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

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