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# HD74HC4514

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

# HITACHI

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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  $\mu$ A max
- Low Quiescent Supply Current:  $I_{CC}$  (static) = 4  $\mu$ A max ( $T_a = 25^\circ\text{C}$ )

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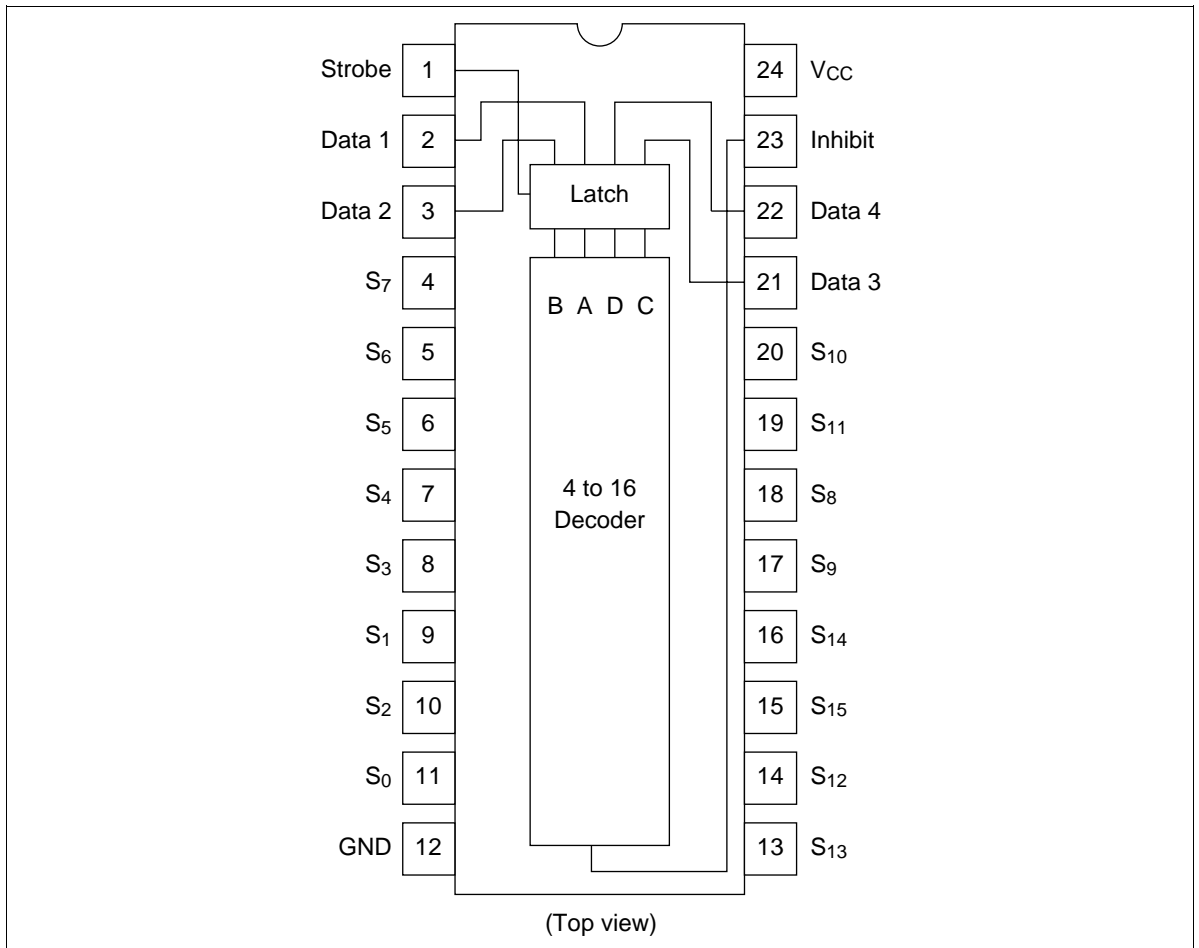
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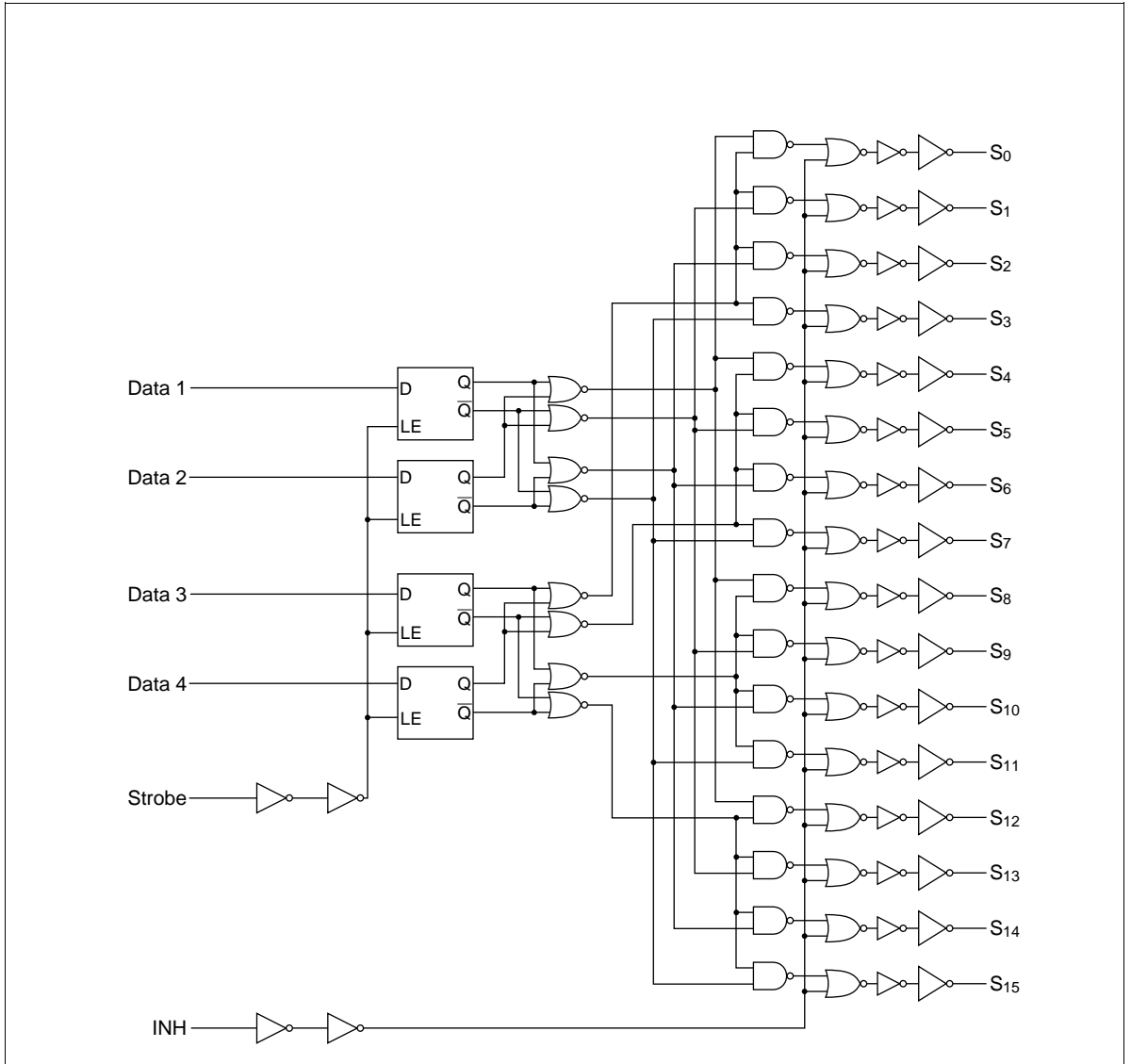
## Function Table (Strobe = High)

Inhibit	Data Inputs				Select Outputs
	D	C	B	A	
L	L	L	L	L	S <sub>0</sub>
L	L	L	L	H	S <sub>1</sub>
L	L	L	H	L	S <sub>2</sub>
L	L	L	H	H	S <sub>3</sub>
L	L	H	L	L	S <sub>4</sub>
L	L	H	L	H	S <sub>5</sub>
L	L	H	H	L	S <sub>6</sub>
L	L	H	H	H	S <sub>7</sub>
L	H	L	L	L	S <sub>8</sub>
L	H	L	L	H	S <sub>9</sub>
L	H	L	H	L	S <sub>10</sub>
L	H	L	H	H	S <sub>11</sub>
L	H	H	L	L	S <sub>12</sub>
L	H	H	L	H	S <sub>13</sub>
L	H	H	H	L	S <sub>14</sub>
L	H	H	H	H	S <sub>15</sub>
H	X	X	X	X	All output "L"

Pin Arrangement



## Logic Diagram



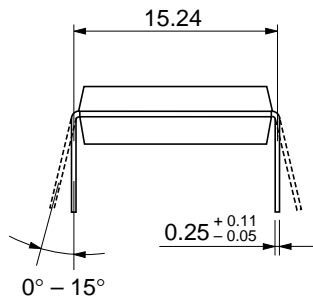
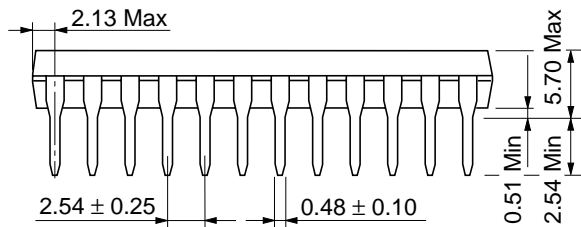
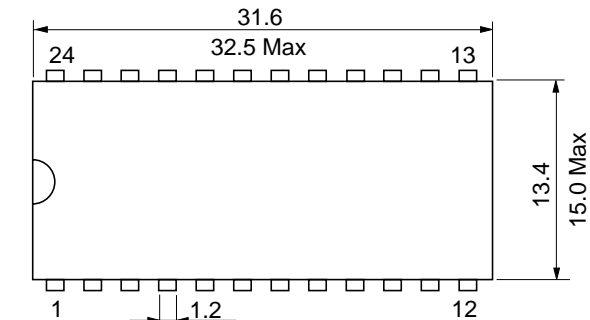
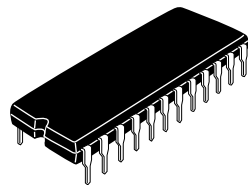
DC Characteristics

Item	Symbol	V <sub>CC</sub> (V)	Ta = 25°C			Ta = -40 to +85°C		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Input voltage	V <sub>IH</sub>	2.0	1.5	—	—	1.5	—	V		
		4.5	3.15	—	—	3.15	—			
		6.0	4.2	—	—	4.2	—			
	V <sub>IL</sub>	2.0	—	—	0.5	—	0.5	V		
		4.5	—	—	1.35	—	1.35			
		6.0	—	—	1.8	—	1.8			
Output voltage	V <sub>OH</sub>	2.0	1.9	2.0	—	1.9	—	V	Vin = V <sub>IH</sub> or V <sub>IL</sub> I <sub>OH</sub> = -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 <sub>OH</sub> = -4 mA
		6.0	5.68	—	—	5.63	—			I <sub>OH</sub> = -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 <sub>OL</sub> = 4 mA			
	6.0	—	—	0.26	—	0.33	I <sub>OL</sub> = 5.2 mA			
Input current	I <sub>in</sub>	6.0	—	—	±0.1	—	±1.0	μA	Vin = V <sub>CC</sub> or GND	
Quiescent supply current	I <sub>CC</sub>	6.0	—	—	4.0	—	40	μA	Vin = V <sub>CC</sub> or GND, I <sub>out</sub> = 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		
	$t_{PHL}$	2.0	—	—	175	—	220	ns	Inhibit to output
		4.5	—	13	35	—	44		
		6.0	—	—	30	—	37		
	$t_{PLH}$	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	



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

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