

HD74HC148

8-to-3-line Octal Priority Encoder

HITACHI

ADE-205-447 (Z)
1st. Edition
Sep. 2000

Description

The HD74HC148 encodes eight data lines to three-line (4-2-1) binary (octal). Cascading circuitry (enable input EI and enable output EO) is provided to allow octal expansion without the need for external circuitry. The data inputs and outputs are active at the low logic level.

Features

- High Speed Operation: t_{pd} (0 - 7 to A_0 - A_2) = 15 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°C)

Function Table

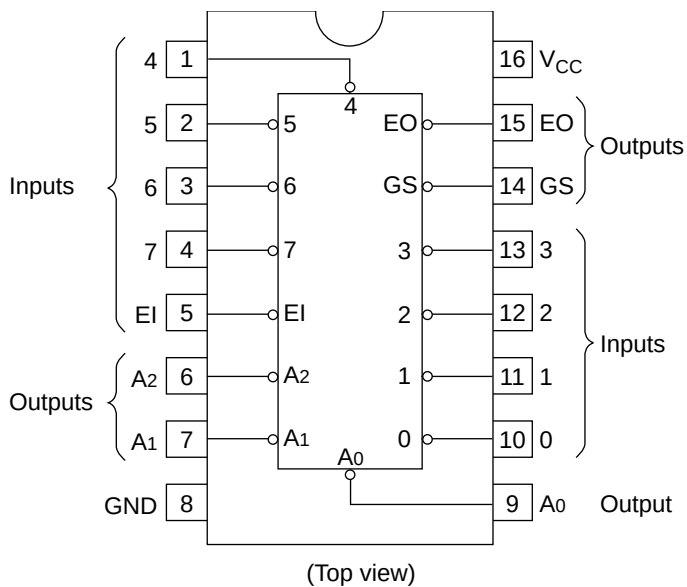
Inputs									Outputs				
EI	0	1	2	3	4	5	6	7	A_2	A_1	A_0	GS	EO
H	X	X	X	X	X	X	X	X	H	H	H	H	H
L	H	H	H	H	H	H	H	H	H	H	H	H	L
L	X	X	X	X	X	X	X	L	L	L	L	L	H
L	X	X	X	X	X	X	L	H	L	L	H	L	H
L	X	X	X	X	X	L	H	H	L	H	L	L	H
L	X	X	X	X	L	H	H	H	L	H	H	L	H
L	X	X	X	L	H	H	H	H	H	L	L	L	H
L	X	X	L	H	H	H	H	H	H	L	H	L	H
L	X	L	H	H	H	H	H	H	H	H	L	L	H
L	L	H	H	H	H	H	H	H	H	H	H	L	H

H : High level

L : Low level

X : Irrelevant

Pin Arrangement



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	

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	—	—	230	—	ns	0 - 7 to A ₀ - A ₂
		4.5	—	15	46	—		
		6.0	—	—	39	—		
	t _{PLH}	2.0	—	—	250	—	ns	0 - 7 to EO
		4.5	—	16	50	—		
		6.0	—	—	43	—		
	t _{PLH}	2.0	—	—	270	—	ns	0 - 7 to GS
		4.5	—	18	54	—		
		6.0	—	—	46	—		
	t _{PLH}	2.0	—	—	230	—	ns	EI to A ₀ - A ₂
		4.5	—	12	46	—		
		6.0	—	—	39	—		
	t _{PLH}	2.0	—	—	250	—	ns	EI to GS
		4.5	—	12	50	—		
		6.0	—	—	43	—		
	t _{PLH}	2.0	—	—	270	—	ns	EI to EO
		4.5	—	12	54	—		
		6.0	—	—	46	—		
Output rise/fall time	t _{TLH}	2.0	—	—	75	—	ns	
	t _{THL}	4.5	—	5	15	—		
		6.0	—	—	13	—		
Input capacitance	Cin	—	—	5	10	—	pF	

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