

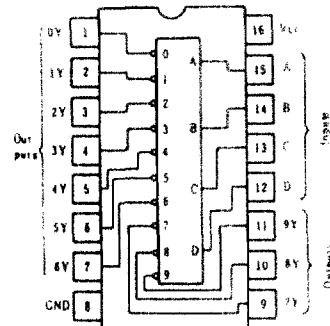
HD74HC42 ● BCD-to-Decimal Decoder

Data on the four input pins select one of the 10 outputs corresponding to the value of the BCD number on the inputs. An output will go low when selected, otherwise it remains high. If the input data is not a valid BCD number all outputs will remain high.

■ FEATURES

- High Speed Operation: $t_{pd} = 13\text{ns typ.}$ ($C_L = 50\text{pF}$)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2 \sim 6\text{V}$
- Low Input Current: $1\mu\text{A max.}$
- Low Quiescent Supply Current: $I_{CC}(\text{static}) = 4\mu\text{A max.}$ ($T_a = 25^\circ\text{C}$)

■ PIN ARRANGEMENT

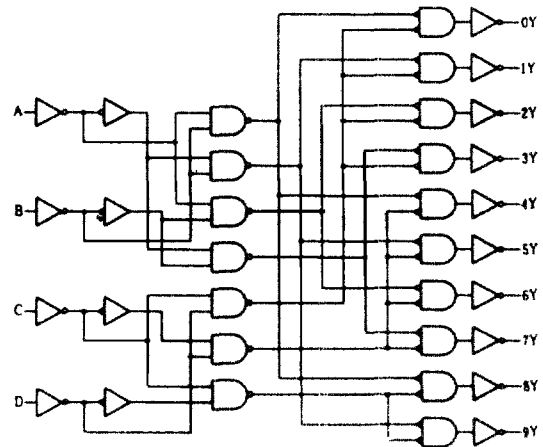


(Top View)

■ FUNCTION TABLE

No.	BCD Inputs				Decimal Outputs										
	D	C	B	A	0	1	2	3	4	5	6	7	8	9	
0	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H
1	L	L	L	H	H	L	H	H	H	H	H	H	H	H	H
2	L	L	H	L	H	H	L	H	H	H	H	H	H	H	H
3	L	L	H	H	H	H	H	L	H	H	H	H	H	H	H
4	L	H	L	L	H	H	H	H	L	H	H	H	H	H	H
5	L	H	L	H	H	H	H	H	H	L	H	H	H	H	H
6	L	H	H	L	H	H	H	H	H	H	L	H	H	H	H
7	L	H	H	H	H	H	H	H	H	H	H	L	H	H	H
8	H	L	L	L	H	H	H	H	H	H	H	H	L	H	H
9	H	L	L	H	H	H	H	H	H	H	H	H	H	L	H
INVALID	H	L	H	L	H	H	H	H	H	H	H	H	H	H	H
	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H
	H	H	L	L	H	H	H	H	H	H	H	H	H	H	H
	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H
	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H
	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

■ LOGIC DIAGRAM



HD74HC42

DC CHARACTERISTICS

Item	Symbol	V _{CC} (V)	Test Conditions	T _a =25°C			T _a =-40~+85°C		Unit				
				min	typ	max	min	max					
Input Voltage	V _{IH}	2.0	V _{IH} =V _{IH} or V _{IL}	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	V _{IH} =V _{IH} or V _{IL}	I _{OH} =-20μA	1.9	2.0	—	1.9	—	V			
		4.5			4.4	4.5	—	4.4	—				
		6.0			5.9	6.0	—	5.9	—				
		V _{OL}		V _{IH} =V _{IH} or V _{IL}	I _{OL} =20μA	I _{OH} =-4mA	4.18	—	—		4.13	—	
							I _{OL} =5.2mA	5.68	—		—	5.63	—
								—	0.0		0.1	—	0.1
	V _{OL}	V _{IH} =V _{IH} or V _{IL}	I _{OL} =20μA	I _{OH} =-4mA	—	0.0	0.1	—	0.1	V			
					I _{OL} =4mA	—	—	0.26	—		0.33		
						I _{OL} =5.2mA	—	—	0.26		—	0.33	
					Input Current		I _{in}	6.0	V _{IH} =V _{CC} or GND		—	—	±0.1
Quiescent Supply Current	I _{CC}	6.0	V _{IH} =V _{CC} or GND, I _{in} =0μA	—	—	4.0	—	40	μA				

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

Item	Symbol	V _{CC} (V)	Test Conditions	T _a =25°C			T _a =-40~+85°C		Unit
				min	typ	max	min	max	
Propagation Delay Time	t _{PLH}	2.0		—	—	150	—	190	ns
		4.5		—	13	30	—	38	
		6.0		—	—	26	—	33	
	t _{PHL}	2.0		—	—	150	—	190	ns
		4.5		—	13	30	—	38	
		6.0		—	—	26	—	33	
Output Rise/Fall Time	t _{TLH} t _{THL}	2.0	—	—	75	—	95	ns	
		4.5	—	5	15	—	19		
		6.0	—	—	13	—	16		
Input Capacitance	C _i	—		—	5	10	—	10	pF