
HD74HC677

16-bit Address Comparator

HITACHI

ADE-205-524 (Z)
1st. Edition
Sep. 2000

Description

The HD74HC677 address comparator simplifies addressing of memory boards and/or other peripheral devices. The four P inputs are normally hard wired with a preprogrammed address. An internal decoder determines what input information applied to the 16 A inputs must be low or high to cause a low state at the output (Y). For example, a positive-logic bit combination of 0111 (decimal 7) at the P input determines that inputs A₁ through A₇ must be low and that inputs A₈ through A₁₆ must be high to cause the output to go low. Equality of the address applied at the A inputs to the preprogrammed address is indicated by the output being low.

The HD74HC677 features an enable input (G). When G is low, the device is enabled. When G is high, the device is disabled and the output is high regardless of the A and P inputs.

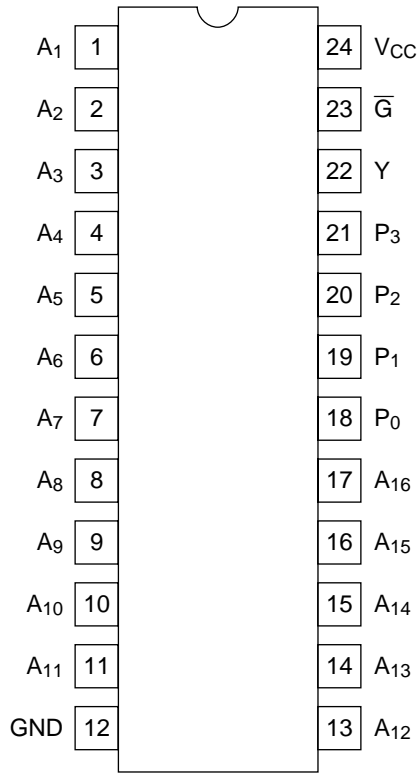
Features

- High Speed Operation: t_{pd} (A to Y) = 17 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 ($T_a = 25^\circ\text{C}$)

Function Table

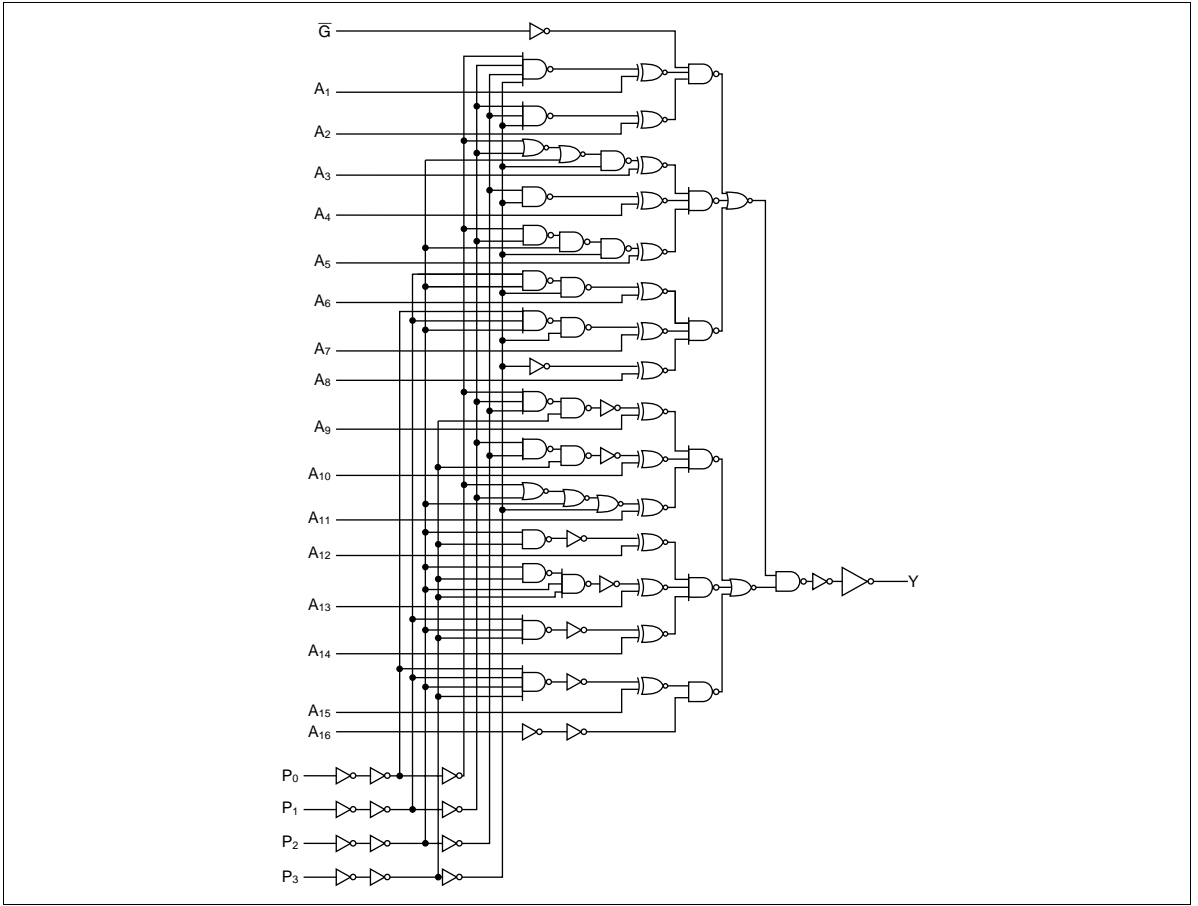
\overline{G}	Inputs																Output Y				
	P ₃	P ₂	P ₁	P ₀	A ₁	A ₂	A ₃	A ₄	A ₅	A ₆	A ₇	A ₈	A ₉	A ₁₀	A ₁₁	A ₁₂		A ₁₃	A ₁₄	A ₁₅	A ₁₆
L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L
L	L	L	L	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L
L	L	L	H	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L
L	L	L	H	H	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	L
L	L	H	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	L
L	L	H	L	H	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L
L	L	H	H	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	L
L	L	H	H	H	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	L
L	H	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	L
L	H	L	L	H	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	L
L	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L
L	H	L	H	H	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L
L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	L
L	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L
L	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L
L	All other combinations																			H	
H	Any combination																			H	

Pin Arrangement



(Top view)

Logic Diagram



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	

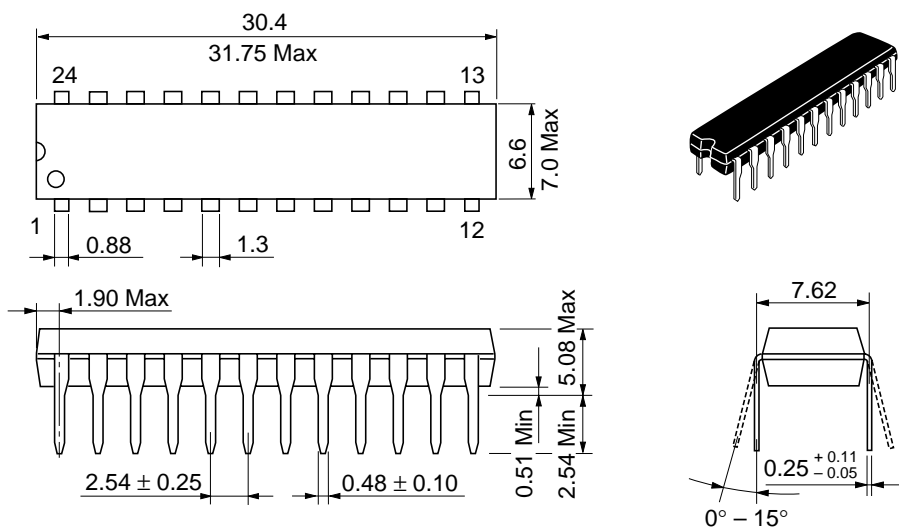
HD74HC677

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	—	—	310	—	390	ns	P to Y
		4.5	—	23	62	—	78		
		6.0	—	—	52	—	66		
	t_{PHL}	2.0	—	—	180	—	225	ns	A to Y
		4.5	—	17	36	—	45		
		6.0	—	—	31	—	38		
	t_{PLH}	2.0	—	—	125	—	155	ns	\bar{G} to Y
		4.5	—	13	25	—	31		
		6.0	—	—	21	—	26		
Output rise/fall time	t_{TLH}	2.0	—	—	75	—	95	ns	
	t_{THL}	4.5	—	5	15	—	19		
		6.0	—	—	13	—	16		
Input capacitance	C_{in}	—	—	5	10	—	10	pF	

Package Dimensions

Unit: mm



Hitachi Code	DP-24N
JEDEC	—
EIAJ	Conforms
Mass (reference value)	1.84 g

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