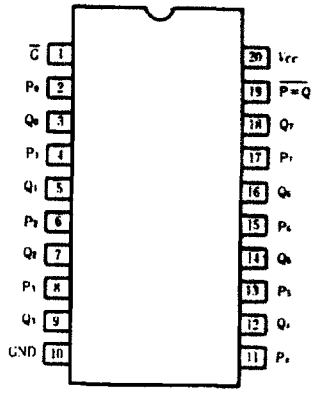
HD74HCT688 ● 8-bit Magnitude Comparator

The HD74HCT688 compares bit for bit two 8-bit words and indicate whether or not they are equal. The $\overline{P=Q}$ output indicates equality when it is low. A single active low enable is provided to facilitate cascading of several packages and enable comparison of words greater than 8 bits. This device is useful in memory block decoding applications, where memory block enable signals must be generated from computer address information.

■ FEATURES

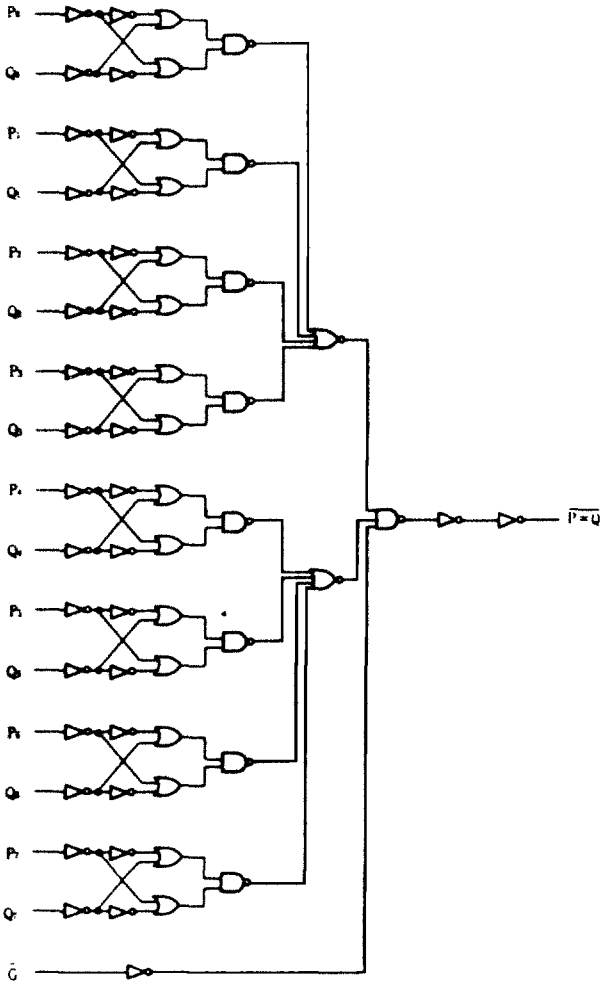
- LSTTL Output Logic Level Compatibility as well as CMOS Output Compatibility
- High Speed Operation: t_{pd} (Data to $\overline{P=Q}$)=18ns typ. (C_L=50pF)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: Vcc=4.5~5.5V
- Low Input Current: 1μA max.
- Low Quiescent Supply Current: Icc (static)=4μA max. (Ta=25°C)

■ PIN ARRANGEMENT



(Top View)

■ BLOCK DIAGRAM



■ FUNCTION TABLE

Inputs		$\overline{P=Q}$
Data P, Q	Enable $\overline{G}$	
P=Q	L	L
P>Q	L	H
P<Q	L	H
X	H	H

■ DC CHARACTERISTICS

Item	Symbol	V_{CC}(V)	Test Conditions		Ta=25°C min	typ	max	Ta=−40~+85°C min	max	Unit
Input Voltage	V_{IH}	4.5~5.5			2.0	—	—	2.0	—	V
	V_{IL}	4.5~5.5			—	—	0.8	—	0.8	V
Output Voltage	V_{OH}	4.5	V_{in}=V_{IH} or V_{IL}	I_{OH}=−20μA	4.4	—	—	4.4	—	V
		4.5		I_{OH}=−4mA	4.18	—	—	4.13	—	
	V_{OL}	4.5	V_{in}=V_{IH} or V_{IL}	I_{OL}=20μA	—	—	0.1	—	0.1	V
		4.5		I_{OL}=4mA	—	—	0.26	—	0.33	
Input Current	I_{in}	5.5	V_{in}=V_{CC} or GND		—	—	±1.0	—	±1.0	μA
Quiescent Current	I_{CC}	5.5	V_{in}=V_{CC} or GND, I_{out}=0μA		—	—	4.0	—	40	μA

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

Item	Symbol	V_{CC}(V)	Test Conditions	Ta=25°C min	typ	max	Ta=−40~+85°C min	max	Unit
Propagation Delay Time	t_{PLH}	4.5	Por Q to Output	—	17	42	—	53	ns
	t_{PHL}	4.5		—	19	42	—	53	
	t_{PLH}	4.5	Enable to Output	—	9	24	—	30	ns
	t_{PHL}	4.5		—	12	24	—	30	
Output Rise/Fall Time	t_{TLH} t_{THL}	4.5		—	5	15	—	19	ns
Input Capacitance	C_{in}	—		—	5	10	—	10	pF