
HD74HCT688

8-bit Magnitude Comparator

HITACHI

Description

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 $\overline{P=Q}$) = 18 ns typ ($C_L = 50$ pF)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 4.5$ to 5.5 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 4 μ A max ($T_a = 25^\circ\text{C}$)

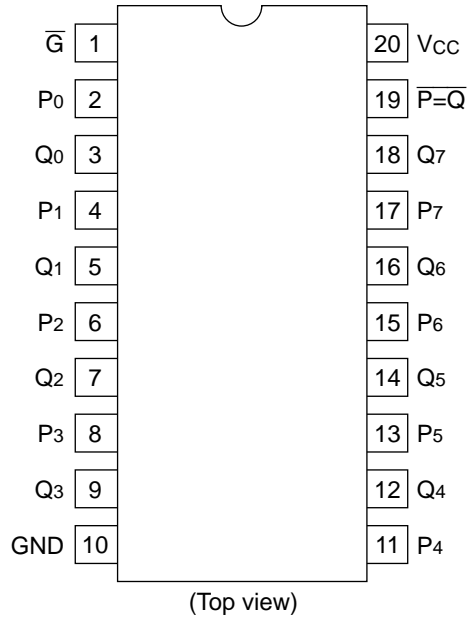
Function Table

Inputs

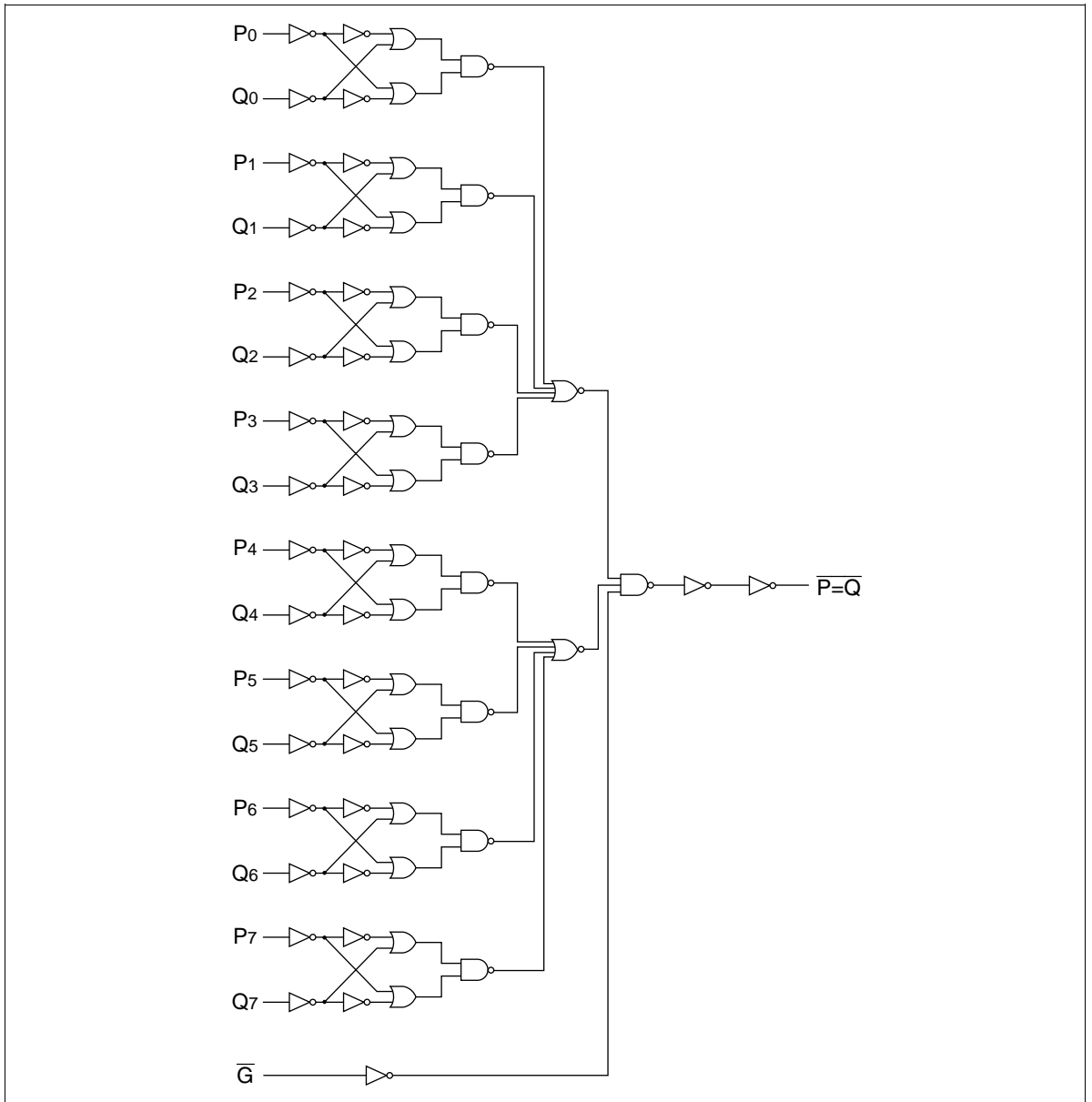
Data P, Q	Enable \overline{G}	$\overline{P=Q}$
P=Q	L	L
P>Q	L	H
P<Q	L	H
X	H	H

HD74HCT688

Pin Arrangement



Block Diagram

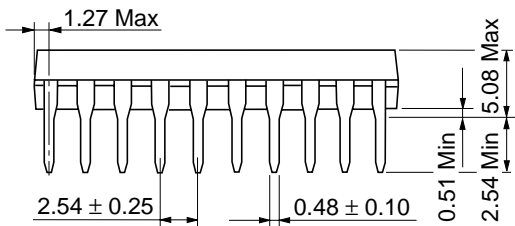
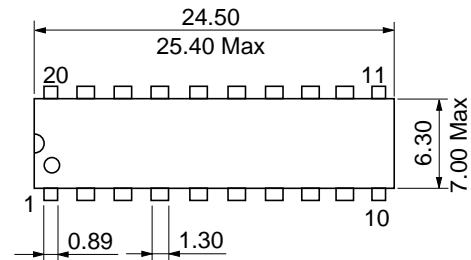


DC Characteristics

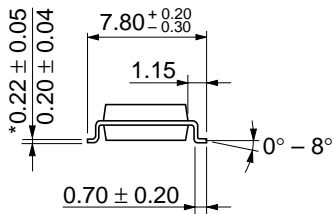
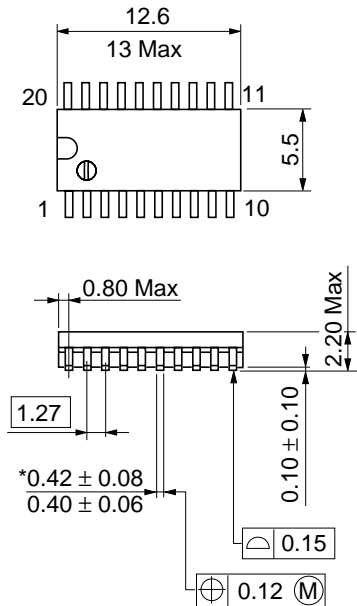
Item	Symbol	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions	
		Min	Typ	Max	Min		Max	V _{cc} (V)
Input voltage	V _{IH}	2.0	—	—	2.0	—	V	4.5 to 5.5
	V _{IL}	—	—	0.8	—	0.8	V	4.5 to 5.5
Output voltage	V _{OH}	4.4	—	—	4.4	—	V	4.5 Vin = V _{IH} or V _{IL} I _{OH} = -20 μA
		4.18	—	—	4.13	—		4.5 I _{OH} = -4 mA
	V _{OL}	—	—	0.1	—	0.1	V	4.5 Vin = V _{IH} or V _{IL} I _{OL} = 20 μA
		—	—	0.26	—	0.33		4.5 I _{OL} = 4 mA
Input current	I _{in}	—	—	±0.1	—	±1.0	μA	5.5 Vin = V _{cc} or GND
Quiescent current	I _{cc}	—	—	4.0	—	40	μA	5.5 Vin = V _{cc} or GND, I _{out} = 0 μA

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

Item	Symbol	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions	
		Min	Typ	Max	Min		Max	V _{cc} (V)
Propagation delay time	t _{PLH}	—	17	42	—	53	ns	4.5 Por Q to output
	t _{PHL}	—	19	42	—	53		4.5
	t _{PLH}	—	9	24	—	30	ns	4.5 Enable to output
	t _{PHL}	—	12	24	—	30		4.5
Output rise/fall time	t _{TLH}	—	5	15	—	19	ns	4.5
	t _{THL}	—	5	15	—	19		4.5
Input capacitance	C _{in}	—	5	10	—	10	pF	—

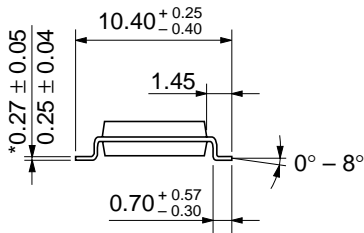
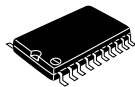
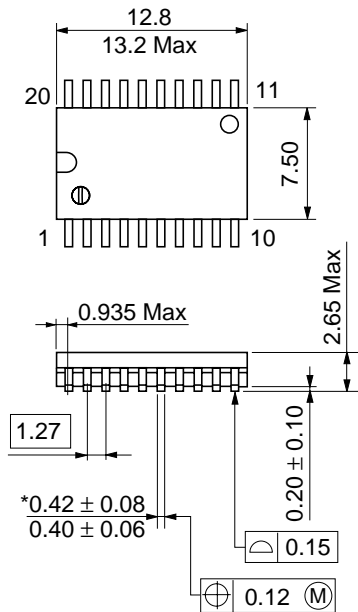


Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.26 g



Hitachi Code	FP-20DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.31 g

*Dimension including the plating thickness
Base material dimension



Hitachi Code	FP-20DB
JEDEC	Conforms
EIAJ	—
Weight (reference value)	0.52 g

*Dimension including the plating thickness
Base material dimension

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