

HD74HCT688

8-bit Magnitude Comparator

HITACHI

ADE-205-563 (Z)
1st. Edition
Sep. 2000

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

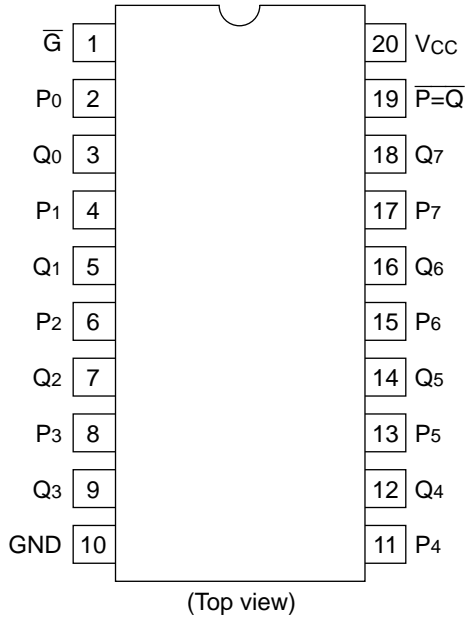
- LSTTL Output Logic Level Compatibility as well as CMOS Output Compatibility
- High Speed Operation: t_{pd} (Data to $\overline{P=Q}$) = 18 ns typ ($C_L = 50$ pF)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 4.5$ to 5.5 V
- Low Input Current: $1 \mu\text{A}$ max
- Low Quiescent Supply Current: I_{CC} (static) = $4 \mu\text{A}$ max ($T_a = 25^\circ\text{C}$)

Function Table

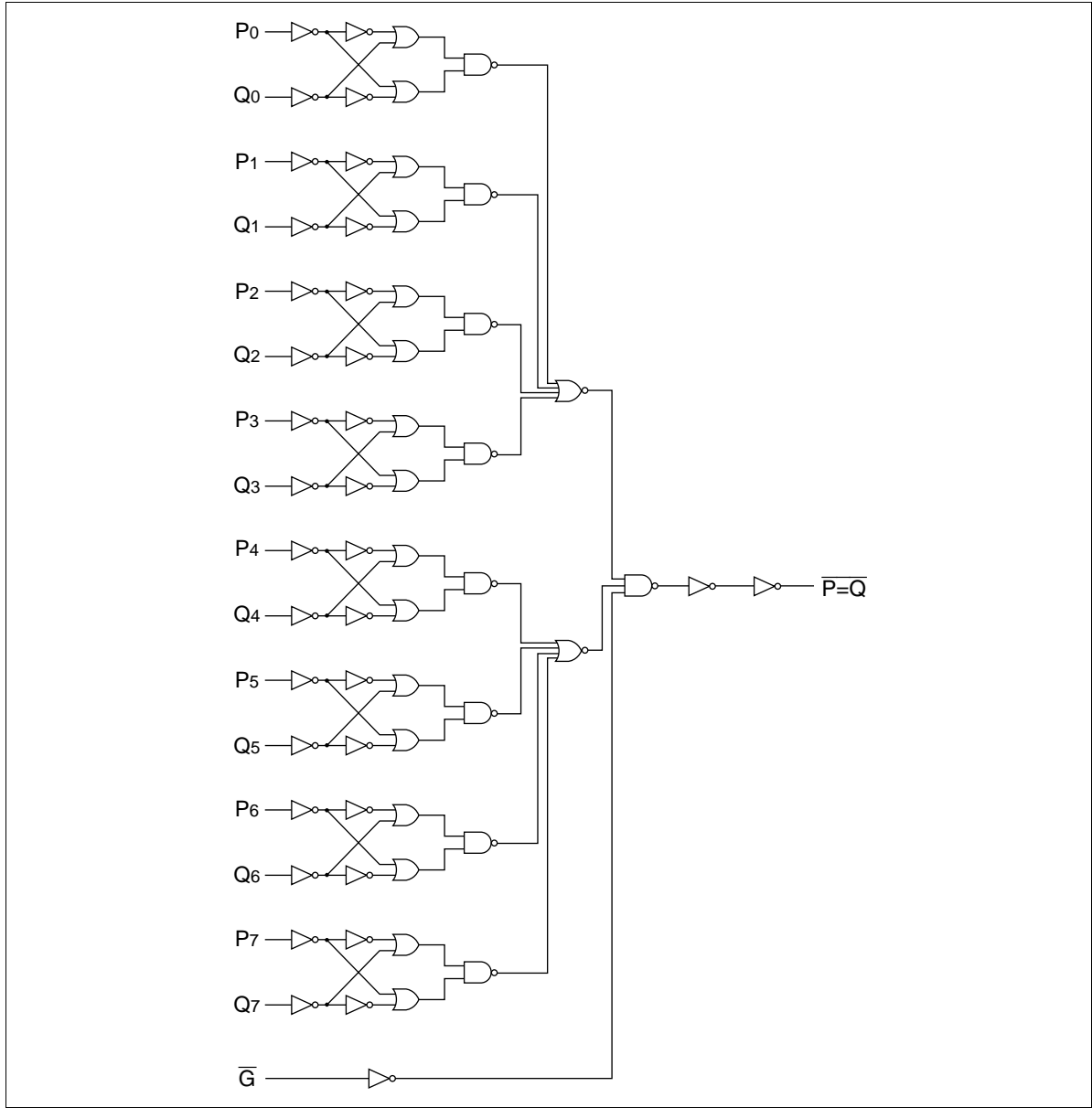
Inputs

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

Pin Arrangement



Block Diagram



DC Characteristics

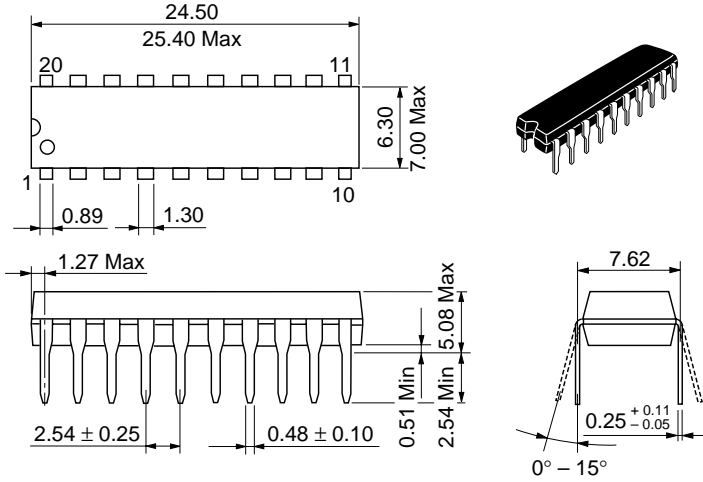
Item	Symbol	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions		
		Min	Typ	Max	Min		Max	V _{CC} (V)	
Input voltage	V _{IH}	2.0	—	—	2.0	—	V	4.5 to 5.5	
	V _{IL}	—	—	0.8	—	0.8	V	4.5 to 5.5	
Output voltage	V _{OH}	4.4	—	—	4.4	—	V	4.5	Vin = V _{IH} or V _{IL} I _{OH} = -20 μA
		4.18	—	—	4.13	—		4.5	
	V _{OL}	—	—	0.1	—	0.1	V	4.5	Vin = V _{IH} or V _{IL} I _{OL} = 20 μA
		—	—	0.26	—	0.33		4.5	
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	—	

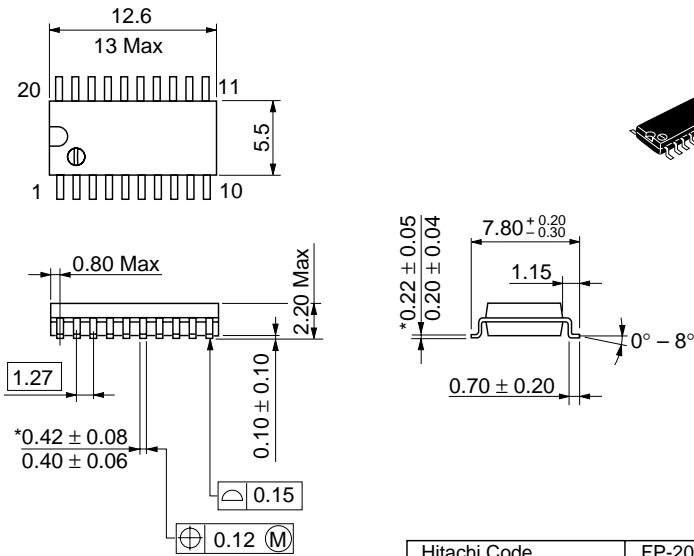
Package Dimensions

Unit: mm



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

Unit: mm

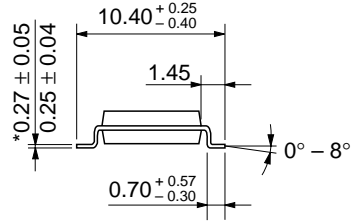
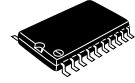
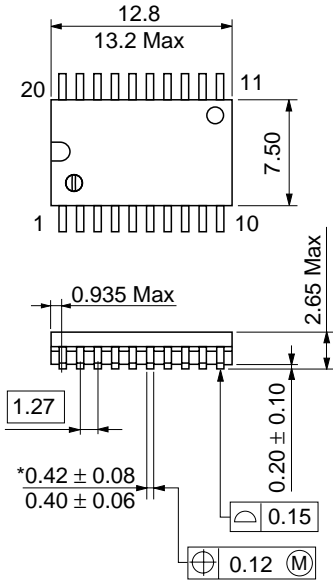


*Dimension including the plating thickness
Base material dimension

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

HD74HCT688

Unit: mm



*Dimension including the plating thickness
Base material dimension

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

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