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

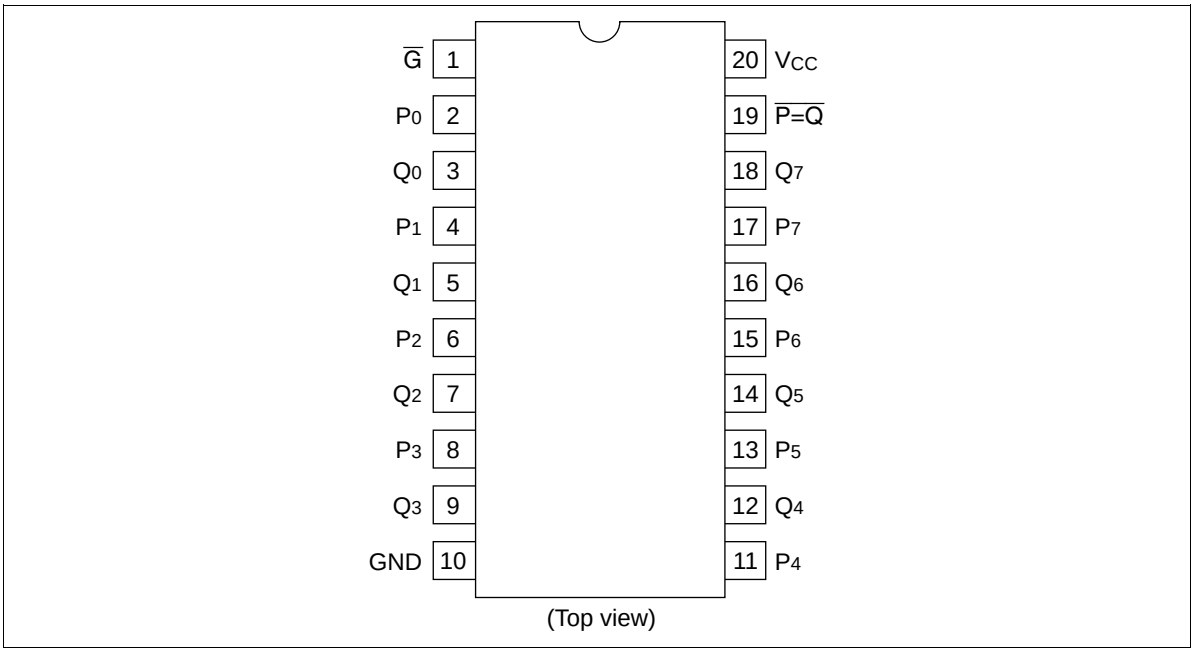
- LSTTL Output Logic Level Compatibility as well as CMOS Output Compatibility
- High Speed Operation: t_{pd} (Data to $\overline{P=Q}$) = 18 ns typ (C_L = 50 pF)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: V_{CC} = 4.5 to 5.5 V
- Low Input Current: 1 µA max
- Low Quiescent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

Function Table

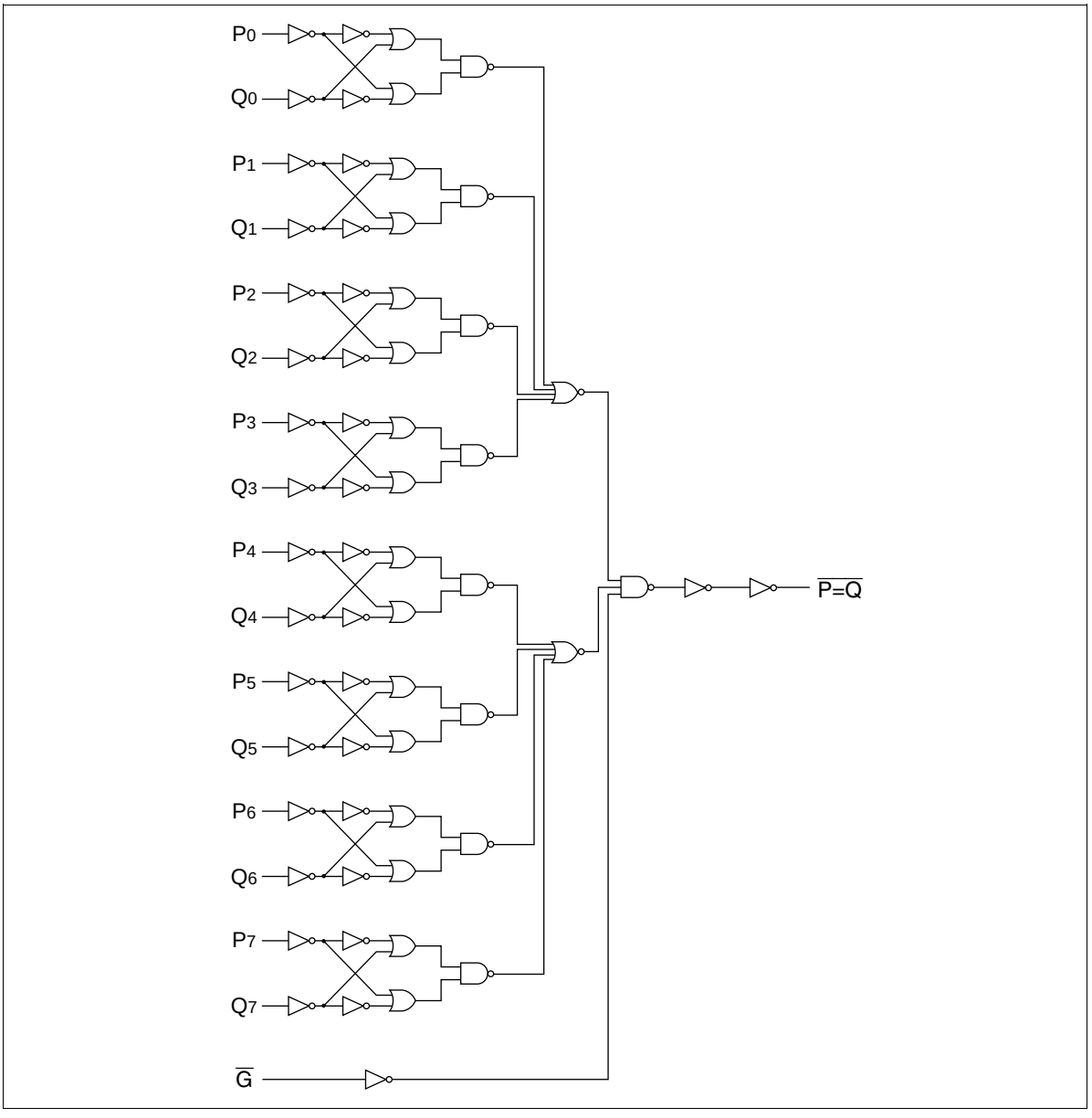
Inputs		
Data P, Q	**Enable $\overline{G}$**	**$\overline{P=Q}$**
P=Q	L	L
P>Q	L	H
P<Q	L	H
X	H	H

Hitachi semiconductor

Pin Arrangement



Block Diagram



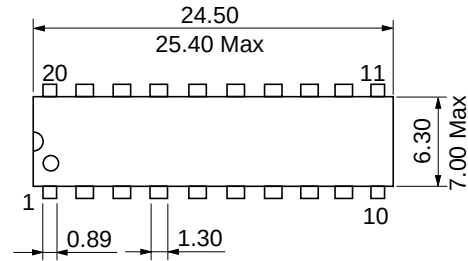
DC Characteristics

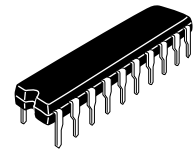
Item	Symbol	Ta = 25°C Min	Typ	Max	Ta = –40 to +85°C Min	Max	Unit	Test Conditions V_{CC} (V)		
Input voltage	V_{IH}	2.0	—	—	2.0	—	V	4.5 to 5.5		
	V_{IL}	—	—	0.8	—	0.8	V	4.5 to 5.5		
Output voltage	V_{OH}	4.4	—	—	4.4	—	V	4.5	Vin = V_{IH} or V_{IL}	I_{OH} = –20 µA
		4.18	—	—	4.13	—		4.5		I_{OH} = –4 mA
	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	Iin	—	—	±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, Iout = 0 µA	

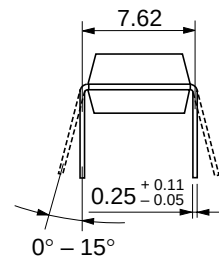
AC Characteristics (C_L = 50 pF, Input t_r = t_f = 6 ns)

Item	Symbol	Ta = 25°C Min	Typ	Max	Ta = –40 to +85°C Min	Max	Unit	Test Conditions 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} t_{THL}	—	5	15	—	19	ns	4.5	
Input capacitance	Cin	—	5	10	—	10	pF	—	

Unit: mm

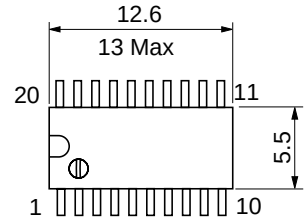


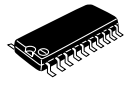


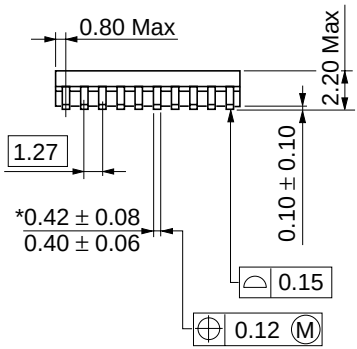


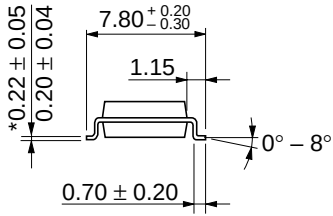
Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.26 g

Unit: mm





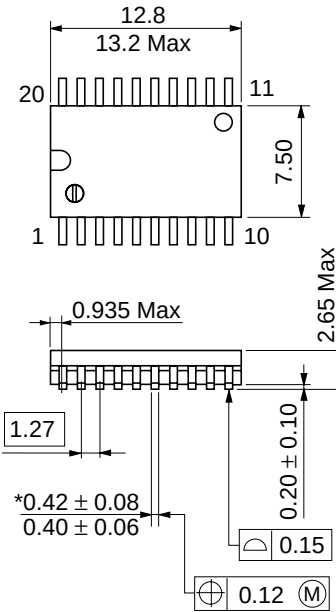


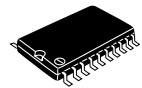


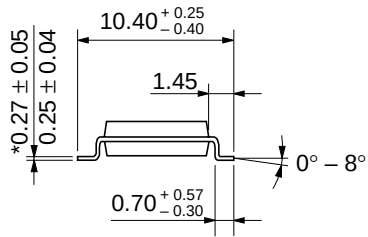
*Dimension including the plating thickness
Base material dimension

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

Unit: mm







*Dimension including the plating thickness
Base material dimension

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

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