

To all our customers

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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

## Cautions

Keep safety first in your circuit designs!

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Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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# HD74HC01

Quad. 2-input NAND Gates (with open drain outputs)

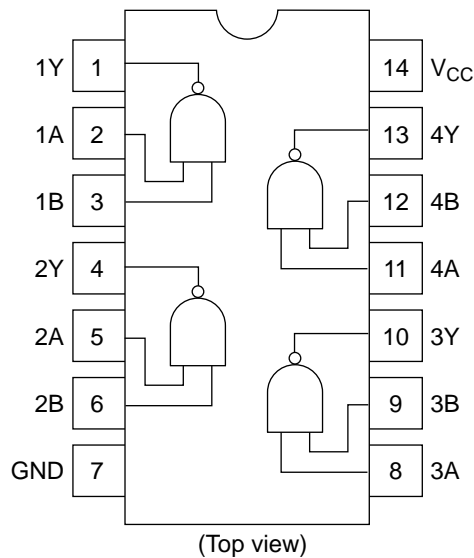
**RENESAS**

ADE-205-404 (Z)  
1st. Edition  
Sep. 2000

## Features

- High Speed Operation:  $t_{pd} = 9 \text{ ns typ}$  ( $C_L = 50 \text{ pF}$ )
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage:  $V_{CC} = 2 \text{ to } 6 \text{ V}$
- Low Input Current:  $1 \mu\text{A max}$
- Low Quiescent Supply Current:  $I_{CC}(\text{static}) = 1 \mu\text{A max}$  ( $T_a = 25^\circ\text{C}$ )

## Pin Arrangement



## DC Characteristics

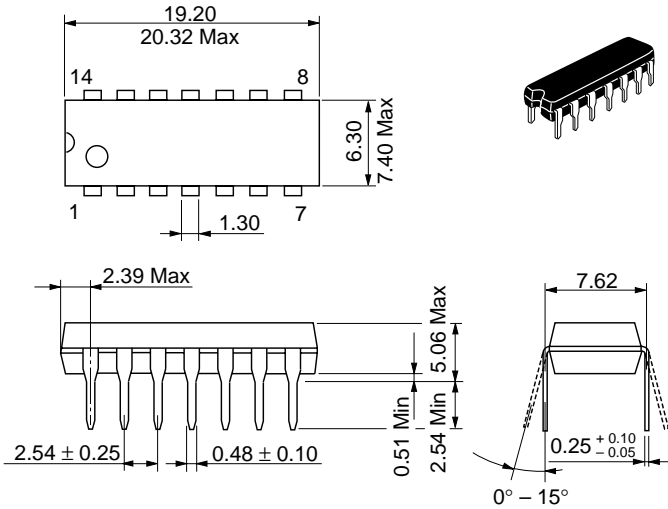
Item	Symbol	V <sub>CC</sub> (V)	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions		
			Min	Typ	Max	Min			Max	
Input voltage	V <sub>IH</sub>	2.0	1.5	—	—	1.5	—	V		
		4.5	3.15	—	—	3.15	—			
		6.0	4.2	—	—	4.2	—			
	V <sub>IL</sub>	2.0	—	—	0.5	—	0.5		V	
		4.5	—	—	1.35	—	1.35			
		6.0	—	—	1.8	—	1.8			
Output voltage	V <sub>OL</sub>	2.0	—	0.0	0.1	—	0.1	V		Vin = V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OL</sub> = 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 <sub>OL</sub> = 4 mA	
		6.0	—	—	0.26	—	0.33			
		6.0	—	—	0.26	—	0.33			I <sub>OL</sub> = 5.2 mA
Off-state output current	I <sub>o(off)</sub>	6.0	—	—	±0.5	—	±5.0	μA	Vin = V <sub>IH</sub> or V <sub>IL</sub> , Vout = V <sub>CC</sub> or GND	
Input current	I <sub>in</sub>	6.0	—	—	±0.1	—	±1.0	μA	Vin = V <sub>CC</sub> or GND	
Quiescent supply current	I <sub>CC</sub>	6.0	—	—	1.0	—	10	μA	Vin = V <sub>CC</sub> or GND, I <sub>out</sub> = 0 μA	

## AC Characteristics (C<sub>L</sub> = 50 pF, Input t<sub>r</sub> = t<sub>f</sub> = 6 ns)

Item	Symbol	V <sub>CC</sub> (V)	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions	
			Min	Typ	Max	Min			Max
Propagation delay time	t <sub>PLH</sub>	2.0	—	—	90	—	115	ns	
		4.5	—	11	18	—	23		
		6.0	—	—	15	—	20		
	t <sub>PHL</sub>	2.0	—	—	90	—	112		ns
		4.5	—	7	18	—	22		
		6.0	—	—	15	—	18		
Output fall time	t <sub>THL</sub>	2.0	—	—	75	—	95	ns	
		4.5	—	5	15	—	19		
		6.0	—	—	13	—	16		
Input capacitance	C <sub>in</sub>	—	—	5	10	—	10	pF	

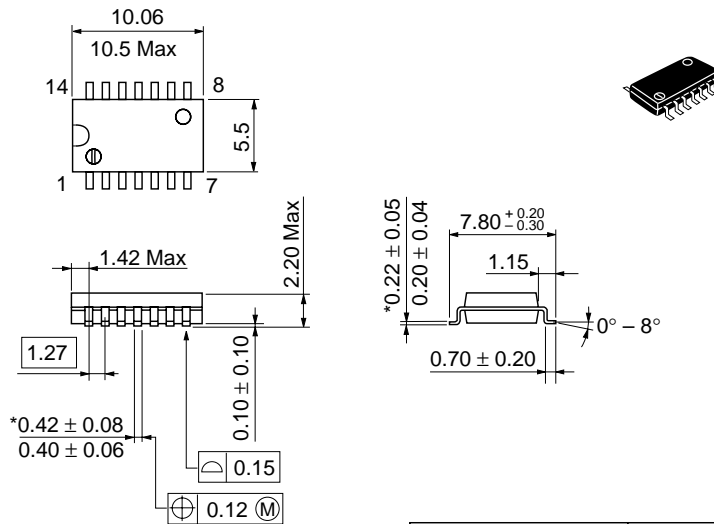
Package Dimensions

Unit: mm



Hitachi Code	DP-14
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.97 g

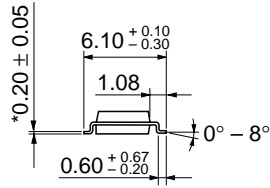
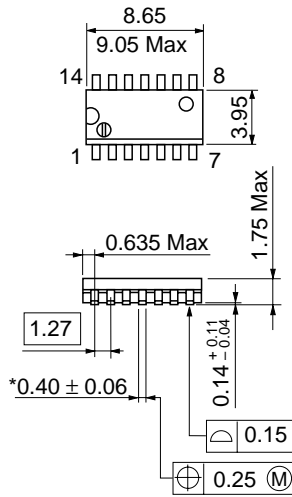
Unit: mm



Hitachi Code	FP-14DA
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.23 g

\*Dimension including the plating thickness  
Base material dimension

Unit: mm



\*Pd plating

Hitachi Code	FP-14DN
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.13 g

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