

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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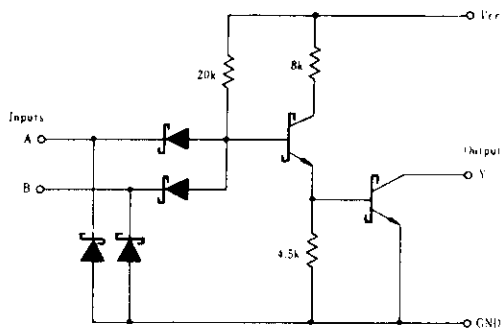
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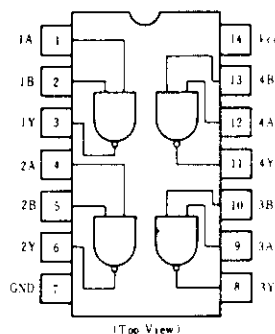
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● **Quadruple 2-input Positive NAND Gates (with Open Collector Outputs)**

■CIRCUIT SCHEMATIC(1/4)



■ PIN ARRANGEMENT



RECOMMENDED OPERATING CONDITIONS

Item	Symbol	min	typ	max	Unit
High level output voltage	V_{OH}	—	—	5.5	V
Low level output current	I_{OL}	—	—	8	mA

■ ELECTRICAL CHARACTERISTICS ($T_a = -20 \sim +75^\circ\text{C}$)

Item	Symbol	Test Conditions	min	typ*	max	Unit
Input voltage	V_{IH}		2.0	—	—	V
	V_{IL}		—	—	0.8	V
Output voltage	V_{OL}	$V_{CC}=4.75V, V_{IH}=2V$ $I_{OL}=8mA$	—	—	0.5	V
		$I_{OL}=4mA$	—	—	0.4	
Input current	I_{IH}	$V_{CC}=5.25V, V_I=2.7V$	—	—	20	μA
	I_{IL}	$V_{CC}=5.25V, V_I=0.4V$	—	—	—0.4	mA
	I_I	$V_{CC}=5.25V, V_I=7V$	—	—	0.1	mA
Output current	I_{OH}	$V_{CC}=4.75V, V_{IL}=0.8V, V_{OH}=5.5V$	—	—	100	μA
Supply current	I_{CCH}	$V_{CC}=5.25V$	—	0.8	1.6	mA
	I_{CCL}	$V_{CC}=5.25V$	—	2.4	4.4	mA
Input clamp voltage	V_{IK}	$V_{CC}=4.75V, I_{IN}=-18mA$	—	—	—1.5	V

* $V_{CC}=5V, T_a=25^{\circ}C$

■ SWITCHING CHARACTERISTICS ($V_{CC}=5V$, $T_a=25^{\circ}C$)

Item	Symbol	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	$C_L = 15\text{pF}, R_L = 2\text{k}\Omega$	—	17	32	ns
	t_{PHL}		—	15	28	ns

Note) Refer to Test Circuit and Waveform of the Common Item



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



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

*Dimension including the plating thickness
Base material dimension



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

Cautions

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