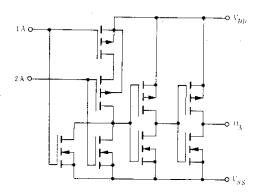
HD14001B

Quadruple 2-input NOR Gate

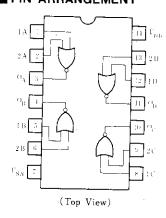
■ FEATURES

- Quiescent Current = 0.5nA typ/pkg @5V
- Noise Immunity = 45% of V_{DD} typ Capable of Driving One Low-power Schottky TTL Load Over the Rated Temperature Range
- Pin-for Pin Replacements for CD4001B and MC14001B Series

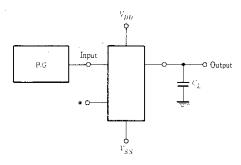
■ CIRCUIT SCHEMATIC (1/4)



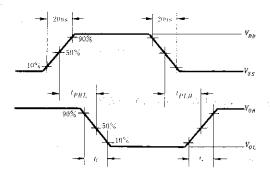
PIN ARRANGEMENT



■ SWITCHING TIME TEST CIRCUIT



* All Unused inputs of OR, NOR gates must be connected to V_{ss}



■ ELECTRICAL CHARACTERISTICS

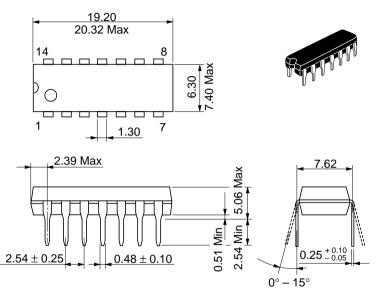
Characteristic	Symbol	Test Conditions		−40°C		25°C			85°C		. T	
	5,111001	$\gamma_{DD}(V)$	Zest Conditions	min	max	min	typ	max	min	max	Unit	
Output Voltage	ĺ	5.0	$V_{in} = V_{DD}$		0.05		0	0.05	-	0.05	v	
	Vol	10			0.05		0	0.05	_	0.05		
		15	·		0.05	-	0	0.05	_	0.05		
		5.0	$V_{in}=0$	4.95	_	4.95	5.0	_	4.95	_	v	
	V_{OH}	10		9.95	-	9.95	10	_	9.95			
		15		14.95	_	14.95	15	_	14.95			
Input Voltage		5.0	$V_{\text{out}} = 4.5 \text{V}$	-	1.5	_	2.25	1.5	-	1.5	v	
	VIL	10	$V_{out}=9.0V$	-	3.0		4.50	3.0	-	3.0		
		15	$V_{out}=13.5\mathrm{V}$	-	4.0		6.75	4 0		4.0		
	!	5.0	$V_{out} = 0.5 \text{V}$	3.5	_	3.5	2.75	-	3.5		v	
	V_{IH}	10	$V_{out} = 1.0 \mathrm{V}$	7.0	_	7.0	5.50		7.0	-		
		15	$V_{out} = 1.5 \mathrm{V}$	11.0		11.0	8.25	- "	11.0			
Output Drive Current		5.0	$V_{OH} = 2.5 \text{V}$	-2.5	_	-2.1	-4.2	_	-1.7	_	πΑ	
	Іон	5.0	$V_{OH} = 4.6V$	-0.52	_	-0.44	-0.88	-	-0.36	-		
	10#	10	$V_{OH}=9.5V$	-1.3		-1.1	-2.25	· –	-0.9	-		
		15	$V_{OH}=13.5\mathrm{V}$	-3.6	_	-3.0	-8.8	_	-2.4			
		5.0	$V_{OL}=0.4V$	0.52	-	0.44	0.88	_	0.36	_		
	I_{OL}	10	$V_{OL} = 0.5 \text{V}$	1.3	-	1.1	2.25	_ :	0.9	-	mА	
		15	$V_{OL} = 1.5 \text{V}$	3.6	_	3.0	8.8	-	2.4	_		
Input Current	I_{ln}	15		-	±0.3		±0.00001	± 0.3	- 1	±1.0	$\mu \mathbf{A}$	
Input Capacitance	Cin	_	$V_{i\pi} = 0$	- !	_	_	5.0	7.5	-	_	рF	
Quiescent Current		5.0	Zero Signal, per Package		1.0		0.0005	1.0	- 1	7.5	μA	
	I_{DD}	10		-	2.0	-	0.0010	2.0	- 1	15.0		
		15	per 1 ackage	-	4.0	-	0.0015	4.0		30.0		
Total Supply Current		5.0	D : 11 0 ====	-	_		0.3		_ :		μA	
	Ir	10	Dynamic $+I_{DD}$, $C_L = 50 \text{pF}$			_	0.6		-	_		
	•	15	per Gate, f=1kHz		_	_	0.9	_		_		

^{*} To calculate total supply current at frequency other than 1kHz. $@V_{DD} = 5.0 \text{V} \ I_T = (0.3 \mu\text{A/kHz}) f + I_{DD}/4$ $@V_{DD} = 10 \text{V} \ I_T = (0.6 \mu\text{A/kHz}) f + I_{DD}/4$ $@V_{DD} = 15 \text{V} \ I_T = (0.9 \mu\text{A/kHz}) f + I_{DD}/4$

SWITCHING CHARACTERISTICS $(C_L = 50 \,\mathrm{pF}, Ta = 25 \,\mathrm{^{\circ}C})$

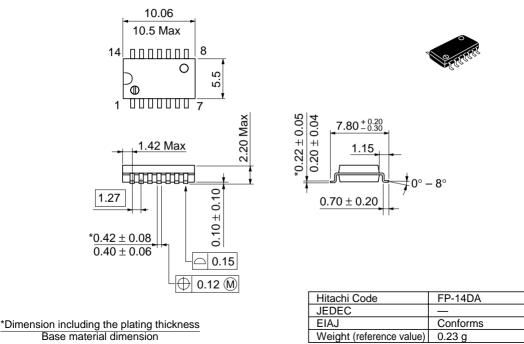
Characteristic	Symbol	$V_{DD}(\mathbf{V})$	min	typ	max	Unit	
		5.0	_	100	200		
Output Rise Time	t-	10	_	50	100	ns	
	į	15	_	40	80		
		5.0	_	100	200	ns	
Output Fall Time	t f	10	_	50	100		
		15	_	40	80		
		5.0	_	125	250	nsʻ	
	t _{PLH}	10	-	50	100		
Propagation Delay Time	i	15	-	40	80		
Tropagation Delay Time		5.0	_	125	250		
	tPHL	10	_	50	100	ns	
		15	_	40	80	1	

Unit: mm

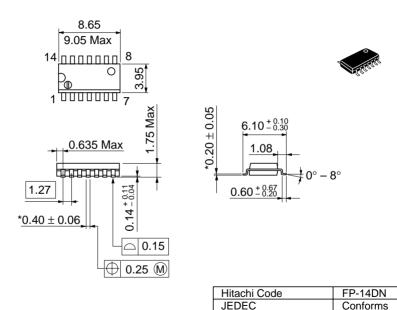


Hitachi Code	DP-14
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.97 g

Unit: mm



Unit: mm



EIAJ

Weight (reference value)

Conforms

0.13 g

*Pd plating

Cautions

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HTACHI

Hitachi, Ltd.

Semiconductor & Integrated Circuits.

Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

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For further information write to:

Hitachi Semiconductor (America) Inc. 179 East Tasman Drive, San Jose,CA 95134 Tel: <1> (408) 433-1990 Fax: <1>(408) 433-0223 Hitachi Europe GmbH Electronic components Group Dornacher Stra§e 3 D-85622 Feldkirchen, Munich Germany Tel: <49> (89) 9 9180-0

Fax: <49> (89) 9 29 30 00 Hitachi Europe Ltd. Electronic Components Group. Whitebrook Park

Maidenhead Berkshire SL6 8YA, United Kingdom Tel: <44> (1628) 585000

Fax: <44> (1628) 778322

Lower Cookham Road

Hitachi Asia Pte. Ltd. 16 Collyer Quay #20-00 Hitachi Tower Singapore 049318 Tel: 535-2100 Fax: 535-1533

Hitachi Asia Ltd. Taipei Branch Office 3F, Hung Kuo Building. No.167, Tun-Hwa North Road, Taipei (105) Tel: <886> (2) 2718-3666 Fax: <886> (2) 2718-8180

Hitachi Asia (Hong Kong) Ltd. Group III (Electronic Components) 7/F., North Tower, World Finance Centre, Harbour City, Canton Road, Tsim Sha Tsui, Kowloon, Hong Kong Tel: <852> (2) 735 9218

Fax: <852> (2) 730 0281 Telex: 40815 HITEC HX

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