

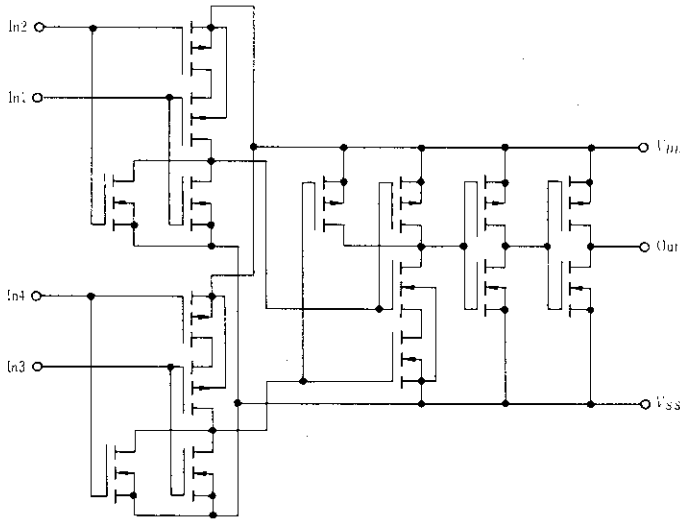
# HD14072B

## Dual 4-input OR Gate

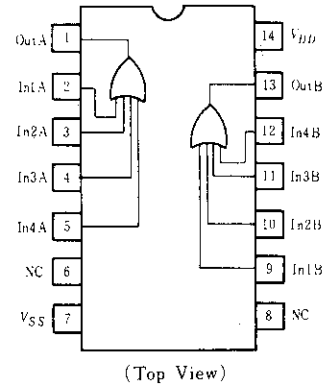
### FEATURES

- 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 CD4072B and MC14072B Series

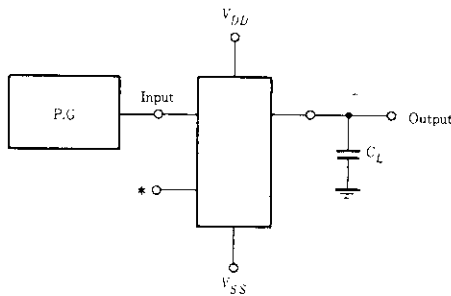
### CIRCUIT SCHEMATIC (1/2)



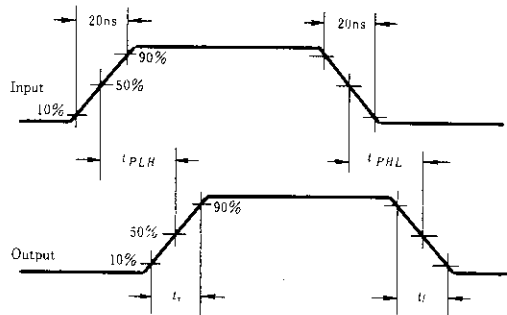
### PIN ARRANGEMENT



### 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		Unit	
			min	max	min	typ	max	min	max		
Output Voltage	V <sub>OL</sub>	V <sub>in</sub> = 0	5.0	-	0.05	-	0	0.05	-	0.05	V
			10	-	0.05	-	0	0.05	-	0.05	
			15	-	0.05	-	0	0.05	-	0.05	
	V <sub>OH</sub>	V <sub>in</sub> = V <sub>DD</sub>	5.0	4.95	-	4.95	5.0	-	4.95	-	V
			10	9.95	-	9.95	10	-	9.95	-	
			15	14.95	-	14.95	15	-	14.95	-	
Input Voltage	V <sub>IL</sub>	V <sub>out</sub> = 0.5V	5.0	-	1.5	-	2.25	1.5	-	1.5	V
			10	-	3.0	-	4.50	3.0	-	3.0	
			15	-	4.0	-	6.75	4.0	-	4.0	
	V <sub>IH</sub>	V <sub>out</sub> = 4.5V	5.0	3.5	-	3.5	2.75	-	3.5	-	V
			10	7.0	-	7.0	5.50	-	7.0	-	
			15	11.0	-	11.0	8.25	-	11.0	-	
Output Drive Current	I <sub>OH</sub>	V <sub>OH</sub> = 2.5V	5.0	-2.5	-	-2.1	-4.2	-	-1.7	-	mA
			5.0	-0.52	-	-0.44	-0.88	-	-0.36	-	
			10	-1.3	-	-1.1	-2.25	-	-0.9	-	
			15	-3.6	-	-3.0	-8.8	-	-2.4	-	
	I <sub>OL</sub>	V <sub>OL</sub> = 0.4V	5.0	0.52	-	0.44	0.88	-	0.36	-	mA
			10	1.3	-	1.1	2.25	-	0.9	-	
15			3.6	-	3.0	8.8	-	2.4	-		
Input Current	I <sub>in</sub>	15	-	±0.3	-	±0.0001	±0.3	-	±1.0	μA	
Input Capacitance	C <sub>in</sub>	-	-	-	-	5.0	7.5	-	-	pF	
Quiescent Current	I <sub>DD</sub>	Zero Signal, per Package	5.0	-	1.0	-	0.0005	1.0	-	7.5	μA
			10	-	2.0	-	0.0010	2.0	-	15.0	
			15	-	4.0	-	0.0015	4.0	-	30.0	
Total Supply Current*	I <sub>T</sub>	Dynamic +I <sub>DD</sub> , C <sub>L</sub> = 50pF per Gate, f = 1kHz	5.0	-	-	-	0.3	-	-	-	μA
			10	-	-	-	0.6	-	-	-	
			15	-	-	-	0.9	-	-	-	

\* To calculate total supply current at frequency other than 1kHz.  
 @ V<sub>DD</sub> = 5.0V I<sub>T</sub> = (0.3μA/kHz) / f + I<sub>DD</sub>/2 @ V<sub>DD</sub> = 10V I<sub>T</sub> = 10.6μA/kHz / f + I<sub>DD</sub>/2 @ V<sub>DD</sub> = 15V I<sub>T</sub> = (0.9μA/kHz) / f + I<sub>DD</sub>/2

■ SWITCHING CHARACTERISTICS (C<sub>L</sub> = 50pF, T<sub>a</sub> = 25°C)

Characteristic	Symbol	V <sub>DD</sub> (V)	min	typ	max	Unit
Output Rise Time	t <sub>r</sub>	5.0	-	100	200	ns
		10	-	50	100	
		15	-	40	80	
Output Fall Time	t <sub>f</sub>	5.0	-	100	200	ns
		10	-	50	100	
		15	-	40	80	
Propagation Delay Time	t <sub>PLH</sub>	5.0	-	160	320	ns
		10	-	65	130	
		15	-	50	100	
	t <sub>PHL</sub>	5.0	-	160	320	ns
		10	-	65	130	
		15	-	50	100	



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

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