

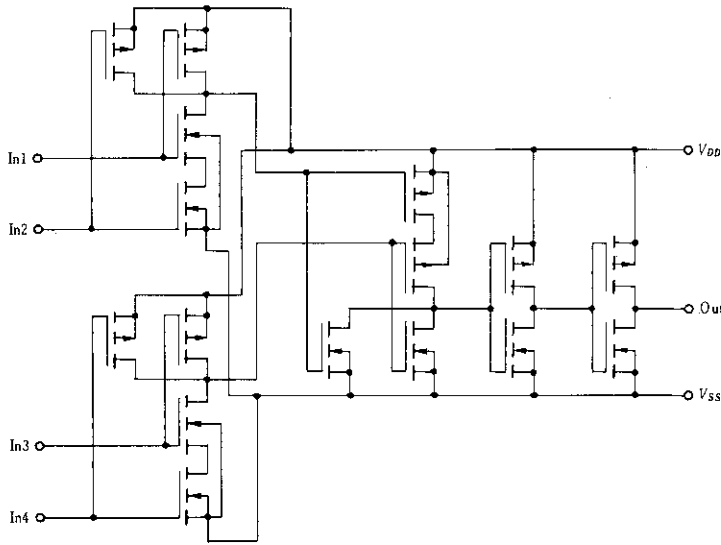
# HD14082B

## Dual 4-input AND Gate

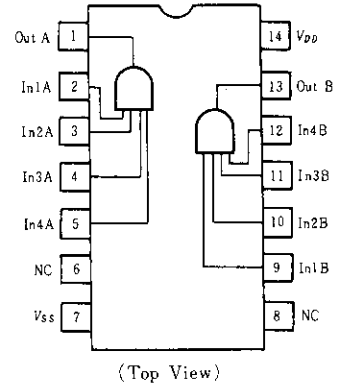
### FEATURES

- 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 CD4082B and MC14082B Series

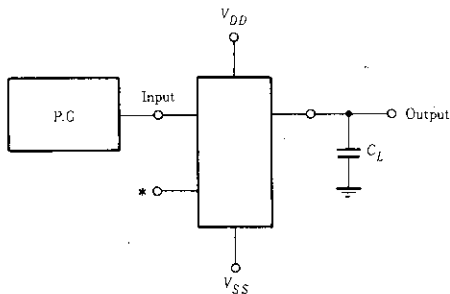
### CIRCUIT SCHEMATIC (1/2)



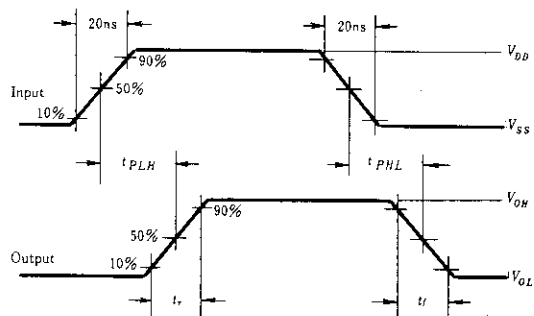
### PIN ARRANGEMENT



### SWITCHING TIME TEST CIRCUIT



注) \* All unused inputs of AND, NAND gates must be connected to  $V_{DD}$ .



## ELECTRICAL CHARACTERISTICS

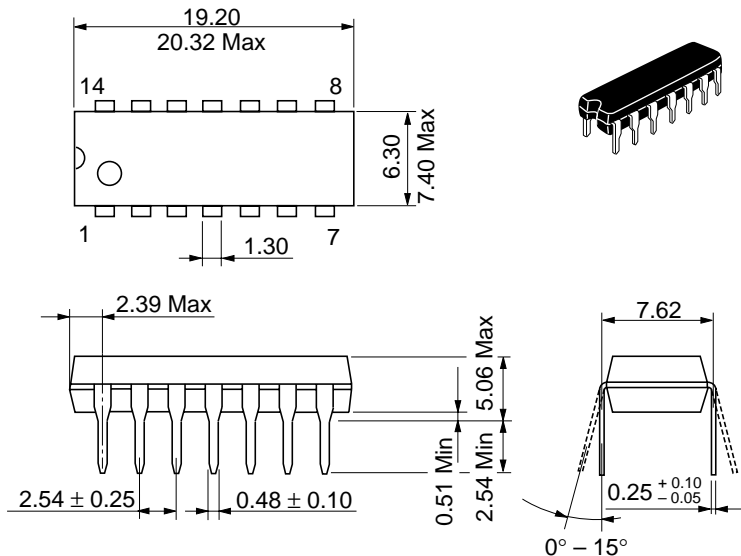
Characteristic	Symbol	$V_{DD}$ (V)	Test Conditions	-40°C		25°C			85°C		Unit
				min	max	min	typ	max	min	max	
Output Voltage	$V_{OL}$	5.0	$V_{in}=0$	-	0.05	-	0	0.05	-	0.05	V
		10		-	0.05	-	0	0.05	-	0.05	
		15		-	0.05	-	0	0.05	-	0.05	
	$V_{OH}$	5.0	$V_{in}=V_{DD}$	4.95	-	4.95	5.0	-	4.95	-	V
		10		9.95	-	9.95	10	-	9.95	-	
		15		14.95	-	14.95	15	-	14.95	-	
Input Voltage	$V_{IL}$	5.0	$V_{out}=0.5V$	-	1.5	-	2.25	1.5	-	1.5	V
		10	$V_{out}=1.0V$	-	3.0	-	4.50	3.0	-	3.0	
		15	$V_{out}=1.5V$	-	4.0	-	6.75	4.0	-	4.0	
	$V_{IH}$	5.0	$V_{out}=4.5V$	3.5	-	3.5	2.75	-	3.5	-	V
		10	$V_{out}=9.0V$	7.0	-	7.0	5.50	-	7.0	-	
		15	$V_{out}=13.5V$	11.0	-	11.0	8.25	-	11.0	-	
Output Drive Current	$I_{OH}$	5.0	$V_{OH}=2.5V$	-2.5	-	-2.1	-4.2	-	-1.7	-	mA
		5.0	$V_{OH}=4.6V$	-0.52	-	-0.44	-0.88	-	-0.36	-	
		10	$V_{OH}=9.5V$	-1.3	-	-1.1	-2.25	-	-0.9	-	
	$I_{OL}$	15	$V_{OH}=13.5V$	-3.6	-	-3.0	-8.8	-	-2.4	-	
		5.0	$V_{OL}=0.4V$	0.52	-	0.44	0.88	-	0.36	-	mA
		10	$V_{OL}=0.5V$	1.3	-	1.1	2.25	-	0.9	-	
15	$V_{OL}=1.5V$	3.6	-	3.0	8.8	-	2.4	-			
Input Current	$I_{in}$	15		-	$\pm 0.3$	-	$\pm 0.0001$	$\pm 0.3$	-	$\pm 1.0$	$\mu A$
Input Capacitance	$C_{in}$	-	$V_{in}=0$	-	-	-	5.0	7.5	-	-	pF
Quiescent Current	$I_{DD}$	5.0	Zero Signal, per Package	-	1.0	-	0.0005	1.0	-	7.5	$\mu A$
		10		-	2.0	-	0.0010	2.0	-	15.0	
		15		-	4.0	-	0.0015	4.0	-	30.0	
Total Supply Current*	$I_T$	5.0	Dynamic + $I_{DD}$ , $C_L=50pF$ per Gate, $f=1kHz$	-	-	-	0.3	-	-	-	$\mu A$
		10		-	-	-	0.6	-	-	-	
		15		-	-	-	0.9	-	-	-	

\* To calculate total supply current at frequency other than 1kHz.

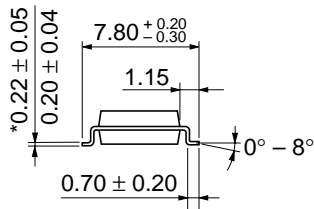
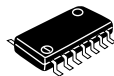
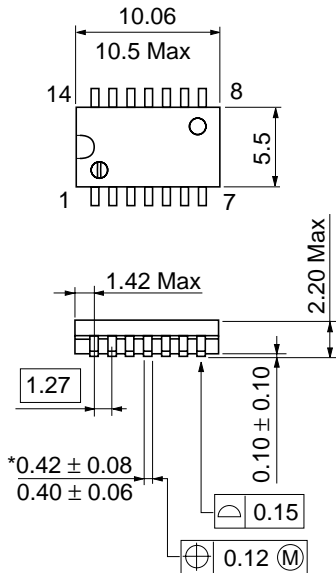
@  $V_{DD}=5.0V$   $I_T=(0.3\mu A/kHz)f+I_{DD}/2$  @  $V_{DD}=10V$   $I_T=(0.6\mu A/kHz)f+I_{DD}/2$  @  $V_{DD}=15V$   $I_T=(0.9\mu A/kHz)f+I_{DD}/2$

## SWITCHING CHARACTERISTICS ( $C_L=50pF$ , $T_a=25^\circ C$ )

Characteristic	Symbol	$V_{DD}$ (V)	min	typ	max	Unit
Output Rise Time	$t_r$	5.0	-	100	200	ns
		10	-	50	100	
		15	-	40	80	
Output Fall Time	$t_f$	5.0	-	160	250	ns
		10	-	60	100	
		15	-	40	80	
Propagation Delay Time	$t_{PLH}$	5.0	-	160	320	ns
		10	-	65	130	
		15	-	50	100	
	$t_{PHL}$	5.0	-	160	320	ns
		10	-	65	130	
		15	-	50	100	

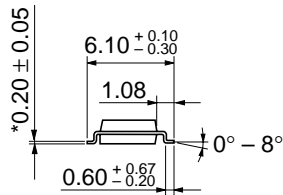
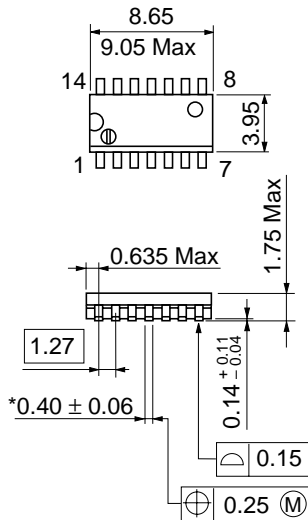


Hitachi Code	DP-14
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.97 g



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

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