

TC4073BP/TC4073BF TRIPLE 3 INPUT AND GATE
TC4081BP/TC4081BF QUAD 2 INPUT AND GATE
TC4082P DUAL 4 INPUT AND GATE

TC4081BP/BF, TC4073BP/BF and TC4082BP are positive logic AND gates with two inputs, three inputs and four inputs respectively.

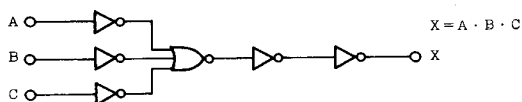
Since all the outputs of these gates are equipped with the buffer circuits of inverters, the input/output propagation characteristic has been improved and variation of propagation time caused by increase of load capacity is kept minimum.

ABSOLUTE MAXIMUM RATINGS

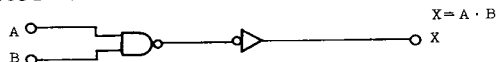
CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	V _{DD}	V _{SS} -0.5 ~ V _{SS} +20	V
Input Voltage	V _{IN}	V _{SS} -0.5 ~ V _{DD} +0.5	V
Output Voltage	V _{OUT}	V _{SS} -0.5 ~ V _{DD} +0.5	V
DC Input Current	I _{IN}	±10	mA
Power Dissipation	P _D	300(DIP)/180(MFP)	mW
Operating Temperature Range	T _A	-40 ~ 85	°C
Storage Temperature Range	T _{stg}	-65 ~ 150	°C
Laed Temp./Time	T _{sol}	260°C • 10 sec	

LOGIC DIAGRAM

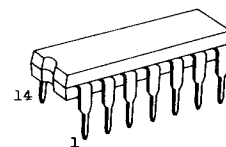
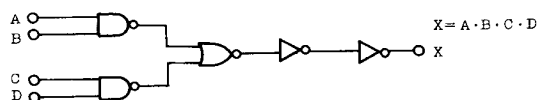
1/3 TC4073BP/BF



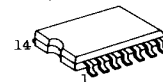
1/4 TC4081BP/BF



1/2 TC4082BP



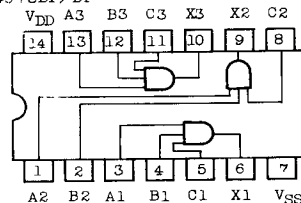
DI P14 (3D14A-F)



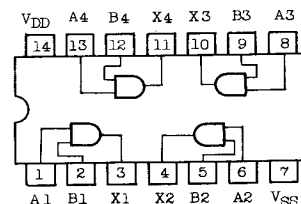
MFP14 (F14GB-P)

PIN ASSIGNMENT (TOP VIEW)

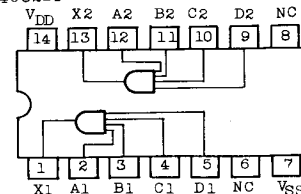
TC4073BP/BF



TC4081BP/BF



TC4082BP



TC4073BP/BF, TC4081BP/BF, TC4082BP

RECOMMENDED OPERATING CONDITIONS (V_{SS}=0V)

CHARACTERISTIC	SYMBOL		MIN.	TYP.	MAX.	UNITS
DC Supply Voltage	V _{DD}		3	-	18	V
Input Voltage	V _{IN}		0	-	V _{DD}	V

STATIC ELECTRICAL CHARACTERISTICS (V_{SS}=0V)

CHARACTERISTIC		SYMBOL	TEST CONDITION	V _{DD} (V)	-40°C		25°C			85°C		UNITS
					MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.	
High-Level Output Voltage	V _{OH}	I _{OUT} < 1μA V _{IN} =V _{DD}	5	4.95	-	4.95	5.00	-	4.95	-	V	
			10	9.95	-	9.95	10.00	-	9.95	-		
			15	14.95	-	14.95	15.00	-	14.95	-		
Low-Level Output Voltage	V _{OL}	I _{OUT} < 1μA V _{IN} =V _{SS} , V _{DD}	5	-	0.05	-	0.00	0.05	-	0.05		
			10	-	0.05	-	0.00	0.05	-	0.05		
			15	-	0.05	-	0.00	0.05	-	0.05		
Output High Current	I _{OH}	V _{OH} =4.6V	5	-0.61	-	-0.51	-1.0	-	-0.42	-	mA	
		V _{OH} =2.5V	5	-2.5	-	-2.1	-4.0	-	-1.7	-		
		V _{OH} =9.5V	10	-1.5	-	-1.3	-2.2	-	-1.1	-		
		V _{OH} =13.5V	15	-4.0	-	-3.4	-9.0	-	-2.8	-		
		V _{IN} =V _{DD}										
Output Low Current	I _{OL}	V _{OL} =0.4V	5	0.61	-	0.51	1.2	-	0.42	-		
		V _{OL} =0.5V	10	1.5	-	1.3	3.2	-	1.1	-		
		V _{OL} =1.5V	15	4.0	-	3.4	12.0	-	2.8	-		
		V _{IN} =V _{SS} , V _{DD}										
Input High Voltage	V _{IH}	V _{OUT} =0.5V, 4.5V	5	3.5	-	3.5	2.75	-	3.5	-	V	
		V _{OUT} =1.0V, 9.0V	10	7.0	-	7.0	5.5	-	7.0	-		
		V _{OUT} =1.5V, 13.5V	15	11.0	-	11.0	8.25	-	11.0	-		
		I _{OUT} < 1μA										
Input Low Current	V _{IL}	V _{OUT} =0.5V	5	-	1.5	-	2.25	1.5	-	1.5		
		V _{OUT} =1.0V	10	-	3.0	-	4.5	3.0	-	3.0		
		V _{OUT} =1.5V	15	-	4.0	-	6.75	4.0	-	4.0		
		I _{OUT} < 1μA										
Input Current	"H" Level	I _{IH}	V _{IH} =18V	18	-	0.1	-	10 ⁻⁵	0.1	-	1.0	μA
	"L" Level	I _{IL}	V _{IL} =0V	18	-	-0.1	-	-10 ⁻⁵	-0.1	-	-1.0	
Quiescent Device Current	I _{DD}	V _{IN} =V _{SS} , V _{DD} *	5	-	0.25	-	0.001	0.25	-	7.5		
			10	-	0.5	-	0.001	0.5	-	15		
			15	-	1.0	-	0.002	1.0	-	30		

* All valid input combinations.

DYNAMIC ELECTRICAL CHARACTERISTICS (Ta=25°C, VSS=0V, CL=50pF)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	V _{DD} (V)	MIN.	TYP.	MAX.	UNITS
Output Transition Time (TC4073BP/BF) (TC4082BP/BF)	t _{TLH}		5 10 15	- - -	80 50 40	200 100 80	ns
Output Transition Time (TC4073BP/BF) (TC4082BP/BF)	t _{THL}		5 10 15	- - -	80 50 40	200 100 80	
Output Transition Time (TC4081BP/BF)	t _{TLH}		5 10 15	- - -	70 35 30	200 100 80	
Output Transition Time (TC4081BP/BF)	t _{THL}		5 10 15	- - -	70 35 30	200 100 80	
Propagation Delay Time (TC4073BP/BF)	t _{pLH}		5 10 15	- - -	115 50 35	250 120 90	
Propagation Delay Time (TC4073BP/BF)	t _{pHL}		5 10 15	- - -	115 50 35	250 120 90	
Propagation Delay Time (TC4081BP/BF)	t _{pLH}		5 10 15	- - -	65 30 25	200 100 80	
Propagation Delay Time (TC4081BP/BF)	t _{pHL}		5 10 15	- - -	65 30 25	200 100 80	
Propagation Delay Time (TC4082BP)	t _{pLH}		5 10 15	- - -	110 50 35	250 120 90	
Propagation Delay Time (TC4082BP)	t _{pHL}		5 10 15	- - -	110 50 35	250 120 90	
Input Capacitance	C _{IN}			-	5	7.5	pF

CIRCUIT AND WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

