

TC4071BP/ BF, TC4072BP/ BF, TC4075BP/ BF

C²MOS DIGITAL INTEGRATED CIRCUIT
SILICON MONOLITHIC

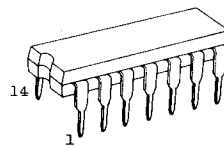
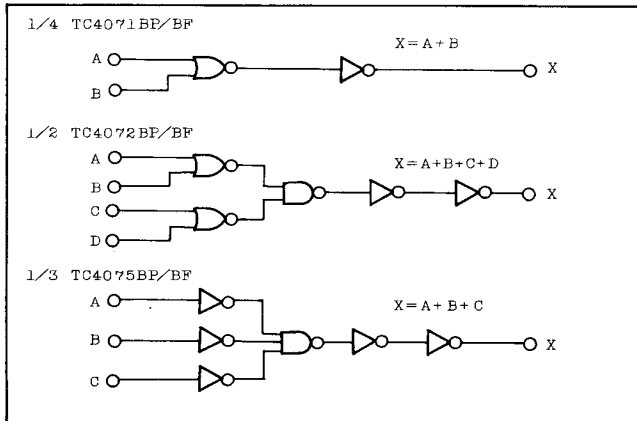
TC4071BP/TC4071BF QUAD 2 INPUT OR GATE
TC4072BP/TC4072BF DUAL 4 INPUT OR GATE
TC4075BP/TC4075BF TRIPLE 3 INPUT OR GATE

TC4071BP/BF, TC4075BP/BF and TC4072BP/BF are positive logic OR gates with two inputs, three inputs and four inputs respectively. As all the outputs of gates are equipped with the buffer circuits of inverters, the input/output propagation characteristic has been improved and the variation of propagation time caused by increase of load capacity is kept minimum.

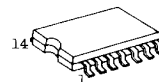
ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	V_{DD}	$V_{SS}-0.5 \sim V_{SS}+20$	V
Input Voltage	V_{IN}	$V_{SS}-0.5 \sim V_{DD}+0.5$	V
Output Voltage	V_{OUT}	$V_{SS}-0.5 \sim V_{DD}+0.5$	V
DC Input Current	I_{IN}	± 10	mA
Power Dissipation	P_D	300(DIP)/180(MFP)	mW
Operating Temperature Range	T_A	$-40 \sim 85$	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	$-65 \sim 150$	$^{\circ}\text{C}$
Lead Temp./Time	T_{sol}	$260^{\circ}\text{C} \cdot 10 \text{ sec}$	

LOGIC DIAGRAM



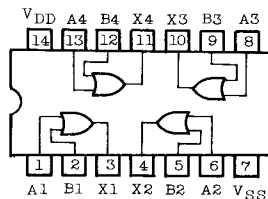
DIP14 (3D14A-P)



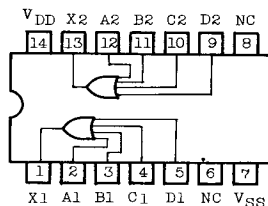
MFP14 (F14GB-P)

PIN ASSIGNMENT (TOP VIEW)

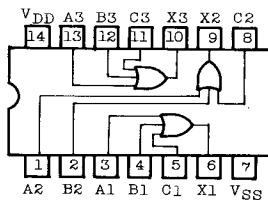
TC4071BP/BF



TC4072BP/BF



TC4075BP/BF



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 _{SS} , 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}	5	-	0.05	-	0.00	0.05	-	0.05	V	
			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 V _{OH} =2.5V V _{OH} =9.5V V _{OH} =13.5V V _{IN} =V _{SS} , V _{DD}	5	-0.61	-	-0.51	-1.0	-	-0.42	-	mA	
			5	-2.5	-	-2.1	-4.0	-	-1.7	-		
			10	-1.5	-	-1.3	-2.2	-	-1.1	-		
			15	-4.0	-	-3.4	-9.0	-	-2.8	-		
Output Low Current	I _{OL}	V _{OL} =0.4V V _{OL} =0.5V V _{OL} =1.5V V _{IN} =V _{SS}	5	0.61	-	0.51	1.5	-	0.42	-	mA	
			10	1.5	-	1.3	3.8	-	1.1	-		
			15	4.0	-	3.4	15.0	-	2.8	-		
Input High Voltage	V _{IH}	V _{OUT} =4.5V V _{OUT} =9.0V V _{OUT} =13.5V I _{OUT} < 1μA	5	3.5	-	3.5	2.75	-	3.5	-	V	
			10	7.0	-	7.0	5.5	-	7.0	-		
			15	11.0	-	11.0	8.25	-	11.0	-		
Input Low Voltage	V _{IL}	V _{OUT} =0.5V, 4.5V V _{OUT} =1.0V, 9.0V V _{OUT} =1.5V, 13.5V I _{OUT} < 1μA	5	-	1.5	-	2.25	1.5	-	1.5	V	
			10	-	3.0	-	4.5	3.0	-	3.0		
			15	-	4.0	-	6.75	4.0	-	4.0		
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	μA	
			10	-	0.5	-	0.001	0.5	-	15		
			15	-	1.0	-	0.002	1.0	-	30		

* All valid input combinations.

TC4071BP/BF, TC4072BP/BF, TC4075BP/BF

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	V _{DD} (V)	MIN.	TYP.	MAX.	UNITS
			5				
Output Transition Time (TC4072BP/BF) (TC4075BP/BF)	t _{TLH}		5	-	80	200	ns
			10	-	50	100	
			15	-	40	80	
Output Transition Time (TC4072BP/BF) (TC4075BP/BF)	t _{THL}		5	-	80	200	
			10	-	50	100	
			15	-	40	80	
Output Transition Time (TC4071BP/BF)	t _{TLH}		5	-	70	200	
			10	-	35	100	
			15	-	30	80	
Output Transition Time (TC4071BP/BF)	t _{THL}		5	-	70	200	
			10	-	35	100	
			15	-	30	80	
Propagation Delay Time (TC4071BP/BF)	t _{pLH}		5	-	65	200	
			10	-	30	100	
			15	-	25	80	
Propagation Delay Time (TC4071BP/BF)	t _{pHL}		5	-	65	200	
			10	-	30	100	
			15	-	25	80	
Propagation Delay Time (TC4072BP/BF)	t _{pLH}		5	-	115	250	
			10	-	45	120	
			15	-	30	90	
Propagation Delay Time (TC4072BP/BF)	t _{pHL}		5	-	115	250	
			10	-	45	120	
			15	-	30	90	
Propagation Delay Time (TC4075BP/BF)	t _{pLH}		5	-	95	250	
			10	-	40	120	
			15	-	30	90	
Propagation Delay Time (TC4075BP/BF)	t _{pHL}		5	-	95	250	
			10	-	40	120	
			15	-	30	90	
Input Capacitance	C _{IN}			-	5	7.5	pF

CIRCUIT AND WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

