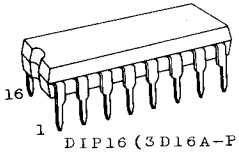
TC4572BP/BF

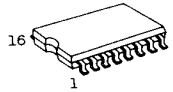
TC4572BP/TC4572BF HEX GATE
(4 INVERTERS Plus 2-Input NOR Gate Plus 2-Input NAND Gate)

TC4572BP/BF is a multiple gate that contains 4-circuit inverters, 1 circuit 2-input NOR GATE, and 1 circuit 2-input NAND GATE in one package.

Since each gate is of "B" type equipped with a buffer consisting of 2-stage inverters, it has high noise immunity.



DIP16 (3D16A-P)

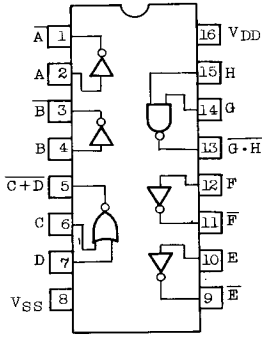


MFP16 (F16GC-P)

ABSOLUTE MAXIMUM RATINGS

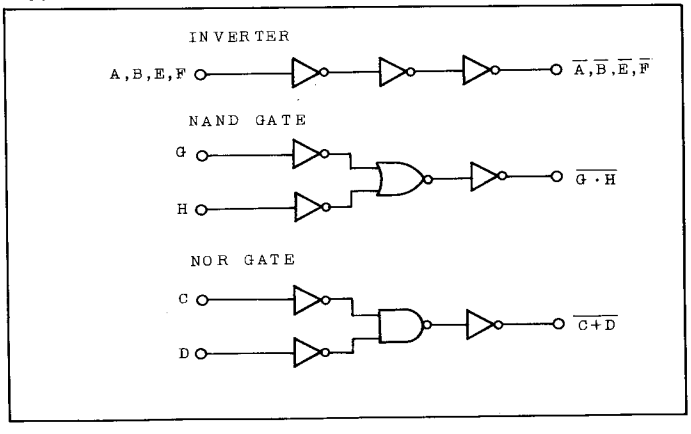
CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	V_{DD}	$V_{SS}-0.5 \sim V_{SS}+20$	V
Input Voltage	V_{IN}	$V_{SS}-0.5 \sim V_{DD}+0.5$	V
Output Voltage	V_{OUT}	$V_{SS}-0.5 \sim V_{DD}+0.5$	V
DC Input Current	I_{IN}	±10	mA
Power Dissipation	P_D	300 (DIP) / 180 (MFP)	mW
Operating Temperature Range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

PIN ASSIGNMENT



(TOP VIEW)

LOGIC DIAGRAM



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 CONDITIONS	V_{DD} (V)	-40°C MIN.	-40°C MAX.	25°C MIN.	25°C TYP.	25°C MAX.	85°C MIN.	85°C MAX.	UNITS
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 $V_{IN}=V_{SS}$, 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 V_{OH}=2.5V	5	-0.61	-	-0.51	-1.0	-	-0.42	-	mA
		V_{OH}=9.5V	5	-2.5	-	-2.1	-4.0	-	-1.7	-	
		V_{OH}=13.5V	10	-1.5	-	-1.3	-2.2	-	-1.1	-	
		$V_{IN}=V_{SS}$, V_{DD}	15	-4.0	-	-3.4	-9.0	-	-2.8	-	
Output Low Current	I_{OL}	V_{OL}=0.4V V_{OL}=0.5V	5	0.61	-	0.51	1.5	-	0.42	-	
		V_{OL}=1.5V	10	1.5	-	1.3	3.8	-	1.1	-	
		$V_{IN}=V_{SS}$, V_{DD}	15	4.0	-	3.4	15.0	-	2.8	-	
Input High Voltage	V_{IH}	V_{OUT}=0.5V, 4.5V V_{OUT}=1.0V, 9.0V	5	3.5	-	3.5	2.75	-	3.5	-	V
		V_{OUT}=1.5V,13.5V	10	7.0	-	7.0	5.5	-	7.0	-	
		$\|I_{OUT}\|$<1μA	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	5	-	1.5	-	2.25	1.5	-	1.5	
		VOUT=1.5V,13.5V	10	-	3.0	-	4.5	3.0	-	3.0	
		$\|I_{OUT}\|$<1μA	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
Input Current "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	-	3.8	μA
			10	-	0.5	-	0.001	0.5	-	7.5	
			15	-	1.0	-	0.002	1.0	-	15	

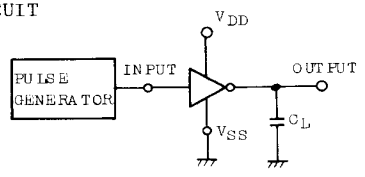
* All valid input combinations.

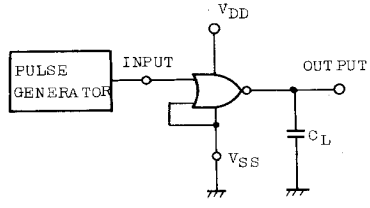
DYNAMIC ELECTRICAL CHARACTERISTICS (Ta=25°C, V_{SS}=0V, C_L=50pF)

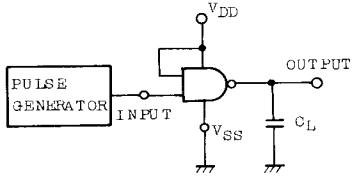
CHARACTERISTIC	SYMBOL	TEST CONDITION	V_{DD}(V)	MIN.	TYP.	MAX.	UNITS
Output Transition Time (Low to High)	t_{TLH}		5	–	80	200	ns
			10	–	50	100	
			15	–	40	80	
Output Transition Time (High to Low)	t_{THL}		5	–	80	200	
			10	–	50	100	
			15	–	40	80	
Propagation Delay Time (INVERTER)	t_{pLH} t_{pHL}		5	–	90	200	
			10	–	40	110	
			15	–	30	85	
Propagation Delay Time (NAND)	t_{pLH} t_{pHL}		5	–	95	200	
			10	–	45	110	
			15	–	35	85	
Propagation Delay Time (NOR)	t_{pLH} t_{pHL}		5	–	95	200	
			10	–	45	110	
			15	–	35	85	
Input Capacitance	C_{IN}			–	5	7.5	pF

CIRCUIT AND WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

CIRCUIT







WAVEFORM