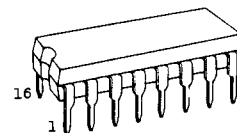


TC4063BP/TC4063BF 4-BIT MAGNITUDE COMPARATOR

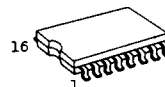
TC4063BP/BF is weighted comparator which compares magnitude of 4 bits input data B0 through B3. When TC4063BP/BF is used, the signals of larger, smaller and equal can be obtained at three output lines by the cascade input mode of three lines of (A>B)IN, (A=B)IN and (A<B)IN. Cascade connection of n number of TC4063BP/BF's easily realizes magnitude comparator of 4 × n bits.

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
Lead Temp./Time	T _{sol}	260°C · 10 sec	

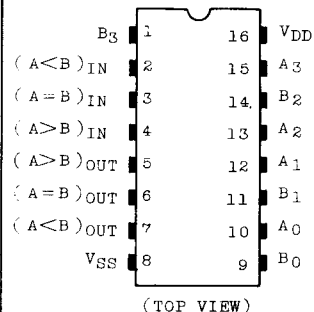


DIP 16 (3D16A-P)

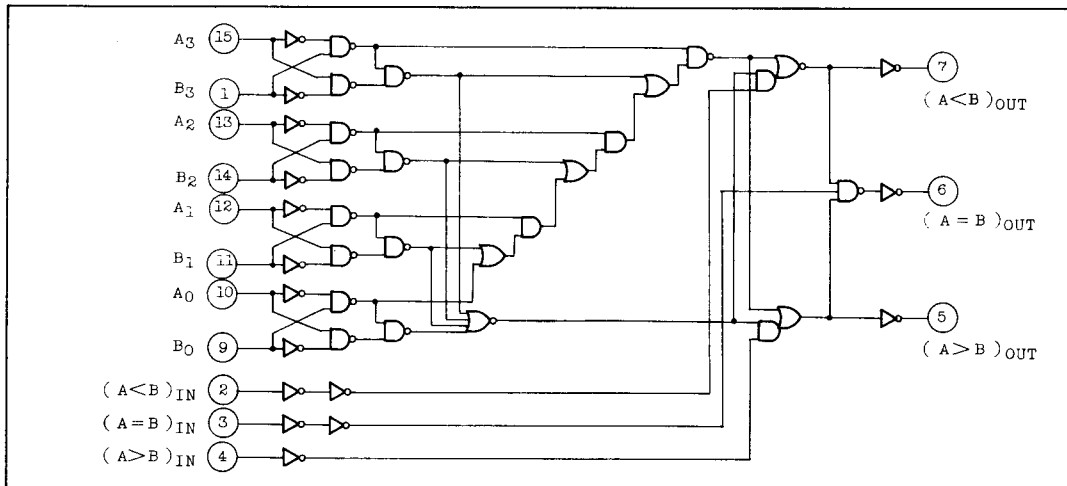


MFP 16 (F16GC-P)

PIN ASSIGNMENT



LOGIC DIAGRAM



TRUTH TABLE

INPUTS							OUTPUTS		
COMPARING				CASCADING					
A ₃ ,B ₃	A ₂ ,B ₂	A ₁ ,B ₁	A ₀ ,B ₀	A < B	A=B	A > B	A < B	A=B	A > B
A ₃ >B ₃	*	*	*	*	*	*	L	L	H
A ₃ =B ₃	A ₂ >B ₂	*	*	*	*	*	L	L	H
A ₃ =B ₃	A ₂ =B ₂	A ₁ >B ₁	*	*	*	*	L	L	H
A ₃ =B ₃	A ₂ =B ₂	A ₁ =B ₁	A ₀ >B ₀	*	*	*	L	L	H
A ₃ =B ₃	A ₂ =B ₂	A ₁ =B ₁	A ₀ =B ₀	L	L	H	L	L	H
A ₃ =B ₃	A ₂ =B ₂	A ₁ =B ₁	A ₀ =B ₀	L	H	L	L	H	L
A ₃ =B ₃	A ₂ =B ₂	A ₁ =B ₁	A ₀ =B ₀	H	L	L	H	L	L
A ₃ =B ₃	A ₂ =B ₂	A ₁ =B ₁	A ₀ <B ₀	*	*	*	H	L	L
A ₃ =B ₃	A ₂ =B ₂	A ₁ <B ₁	*	*	*	*	H	L	L
A ₃ =B ₃	A ₂ <B ₂	*	*	*	*	*	H	L	L
A ₃ <B ₃	*	*	*	*	*	*	H	L	L

* Don't care

* Don't care

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

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

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

CHARACTERISTIC	SYM-BOL	TEST CONDITION	V _{DD} (V)	-40°C		25°C			85°C		UNIT
				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} ,V _{DD}	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	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 _{SS} ,V _{DD}									

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

CHARACTERISTIC	SYM-BOL	TEST CONDITION	V _{DD} (V)	-40°C		25°C			85°C		UNIT
				MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.	
Output Low Current	I _{OL}	V _{OL} =0.4V	5	0.61	-	0.51	1.5	-	0.42	-	mA
		V _{OL} =0.5V	10	1.5	-	1.3	3.8	-	1.1	-	
		V _{OL} =1.5V	15	4.0	-	3.4	15.0	-	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 Voltage	V _{IL}	V _{OUT} =0.5V, 4.5V	5	-	1.5	-	2.25	1.5	-	1.5	V
		V _{OUT} =1.0V, 9.0V	10	-	3.0	-	4.5	3.0	-	3.0	
		V _{OUT} =1.5V, 13.5V	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	-	5	-	0.005	5	-	150	μA
			10	-	10	-	0.010	10	-	300	
			15	-	20	-	0.015	20	-	600	

* All valid input combinations.

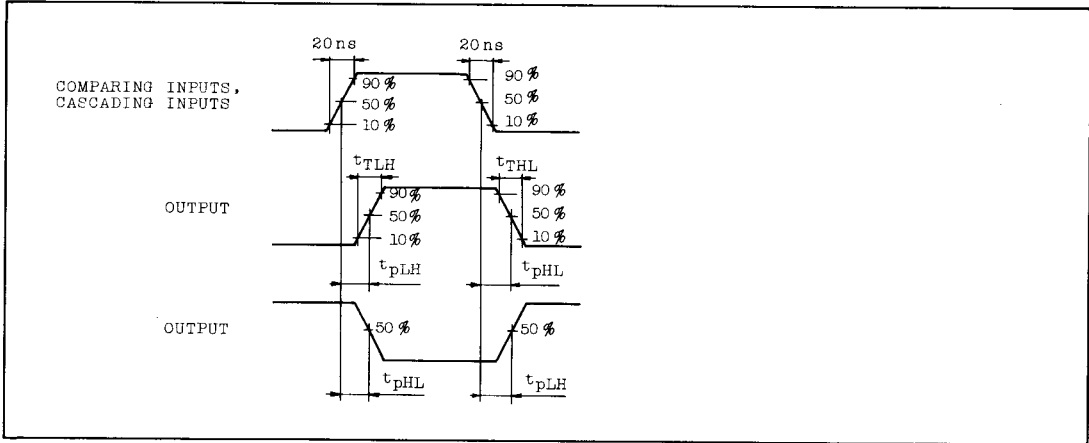
DYNAMIC ELECTRICAL CHARACTERISTICS (T_a=25°C, V_{SS}=0V, C_L=50pF)

CHARACTERISTIC	SYMBOL	TEST CONDITION	V _{DD} (V)	MIN.	TYP.	MAX.	UNIT
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	ns
			10	-	50	100	
			15	-	40	80	
Propagation Delay Time (COMPARING INPUTS - OUTPUTS)	t _{pLH} t _{pHL}		5	-	340	1250	ns
			10	-	140	500	
			15	-	100	350	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	VDD (V)	MIN.	TYP.	MAX.	UNIT
Propagation Delay Time (CASCADING INPUTS - OUTPUTS)	t _{pLH} t _{pHL}		5	-	280	1000	ns
			10	-	110	400	
			15	-	90	280	
Input Capacitance	C _{IN}			-	5	7.5	pF

WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS



APPLICATION CIRCUIT

