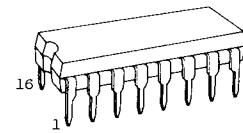
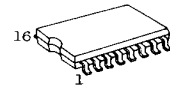


TC4528BP/TC4528BF DUAL MONOSTABLE MULTIVIBRATOR

TC4528BP/BF contains two circuits of monostable multivibrators with the capabilities of retrigger operation and reset operation in one chip. The trigger operation can be achieved either by rising edge or falling edge if one of two inputs A and B are selected. As the pulse width of mono-stable multivibrator output is determined by the time constant of external resistor (Rx) and external capacitor (Cx), wide range of output pulse width can be obtained. The asynchronous reset operation from outside can be achieved by setting CD input to "L" level, and this CD input can be also applied for inhibiting the trigger operation and for shortening the time period from turning the power on the time when TC4528B becomes able to perform the mono-stable operation.



DIP16(3D16A-P)

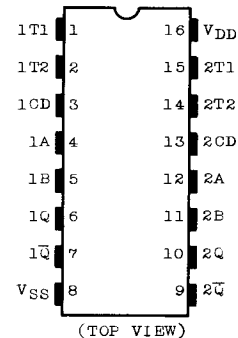


MFP16(F16GC-P)

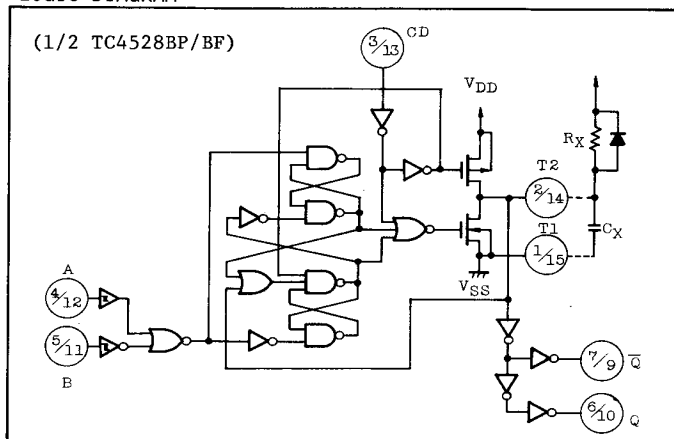
ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNITS
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	

PIN ASSIGNMENT



LOGIC DIAGRAM

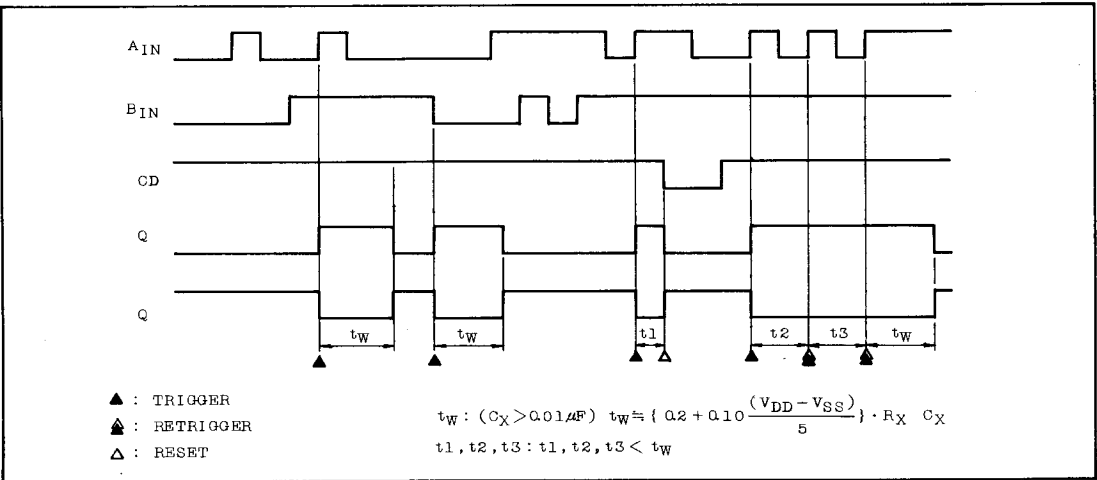


TRUTH TABLE

INPUT			OUTPUT		NOTE
A	B	CD	Q	Q̄	
	H	H			OUTPUT PULSE
	L	H	L	H	INHIBIT
H		H	L	H	INHIBIT
L		H			OUTPUT PULSE
*	*	L	L	H	INHIBIT

* Don't Care

TIMING CHART



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
External Resistance	R_X		5	—	1000	$k\Omega$
External Capacitance	C_X		No Limits			μF

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	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} < 1\mu A$ $V_{IN} = V_{SS}, V_{DD}$	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} < 1\mu A$ $V_{IN} = V_{SS}, V_{DD}$	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	—	
		$V_{IN} = V_{SS}, V_{DD}$									
Output Low Current	I_{OL}	$V_{OL} = 0.4V$	5	0.61	—	0.51	1.2	—	0.42	—	mA
		$V_{OL} = 0.5V$	10	1.5	—	1.3	3.2	—	1.1	—	
		$V_{OL} = 1.5V$	15	4.0	—	3.4	12.0	—	2.8	—	
		$V_{IN} = V_{SS}, V_{DD}$									

STATIC ELECTRICAL CHARACTERISTICS (Continued)

Characteristic		Symbol	Test Conditions	V _{DD} (V)	-40°C		25°C			85°C		Units	
					Min.	Max.	Min.	Typ.	Max.	Min.	Max.		
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 _{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 CONDITIONS	V _{DD} (V)	MIN.	TYP.	MAX.	UNITS
Output Transition Time (Low to High)	t _{TLH}		5	-	70	200	ns
			10	-	35	100	
			15	-	30	80	
Output Transition Time (High to Low)	t _{THL}		5	-	70	200	
			10	-	35	100	
			15	-	30	80	
Propagation Delay Time (A, B - Q, $\bar{Q}$)	t _{pLH}	R _X =5kΩ C _X =15pF	5	-	230	650	
			10	-	110	240	
		R _X =10kΩ C _X =1000pF	15	-	80	180	
			5	-	440	-	
	t _{pHL}	R _X =10kΩ C _X =10000pF	10	-	220	-	
			15	-	160	-	
		R _X =10kΩ C _X =10000pF	5	-	2.2	5	μs
			10	-	1.1	3	
Propagation Delay Time (CD - Q, $\bar{Q}$)	t _{pLH}	R _X =5kΩ C _X =15pF	15	-	0.9	2	
			5	-	150	600	ns
			10	-	70	225	
Propagation Delay Time (CD - Q, $\bar{Q}$)	t _{pHL}	R _X =10kΩ C _X =1000pF	15	-	50	170	
			5	-	260	-	
			10	-	130	-	
Propagation Delay Time (CD - Q, $\bar{Q}$)	t _{pLH}	R _X =10kΩ C _X =1000pF	15	-	100	-	
			5	-	700	-	
			10	-	400	-	
Propagation Delay Time (CD - Q, $\bar{Q}$)	t _{pHL}	R _X =10kΩ C _X =10000pF	15	-	320	-	
			5	-	700	-	
			10	-	400	-	

DYNAMIC ELECTRICAL CHARACTERISTICS (Continued)

CHARACTERISTIC	SYMBOL	TEST CONDITION	V _{DD} (V)	MIN.	TYP.	MAX.	UNITS
Min. Input Pulse Width (A, B)	t _{WH}	R _X =5k Ω	5	-	40	150	ns
	t _{WL}	C _X =15pF	10	-	20	75	
			15	-	15	55	
Min. Retrigger Time	t _{rr}	R _X =5k Ω	5	0	-	-	
		C _X =15pF	10	0	-	-	
			15	0	-	-	
		R _X =10k Ω	5	0	-	-	
		C _X =1000pF	10	0	-	-	
			15	0	-	-	
Output Pulse Width	t _w OUT	R _X =5k Ω	5	-	190	-	
		C _X =15pF	10	-	140	-	
			15	-	140	-	
		R _X =10k Ω	5	20	35	45	μ s
		C _X =10000pF	10	35	45	55	
			15	40	50	60	
Input Capacitance	C _{IN}			-	5	7.5	pF

WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

