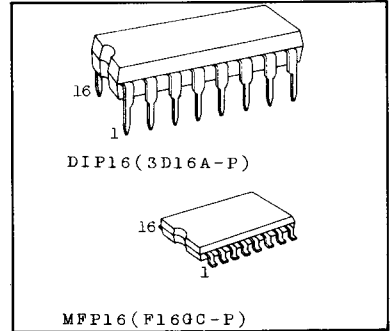


TC4099BP/TC4099BF 8-BIT ADDRESSABLE LATCH

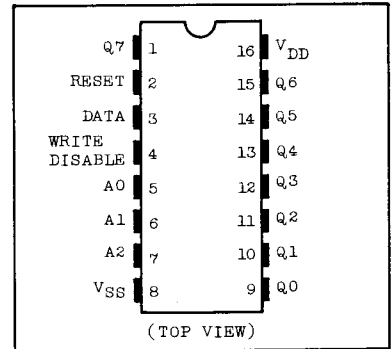
TC4099BP/BF is eight bit latch having one common data input line and eight independent output lines and the latches are controlled by three bit binary address inputs (A0, A1 and A2).
 When WRITE DISABLE input and RESET input is "L", the data is written into the bit selected by the binary address input and other bits retain their previous conditions. When W. DISABLE input becomes "H", write into any bits is inhibited. When W. DISABLE input and RESET input are "H", all the bits are reset to "L".



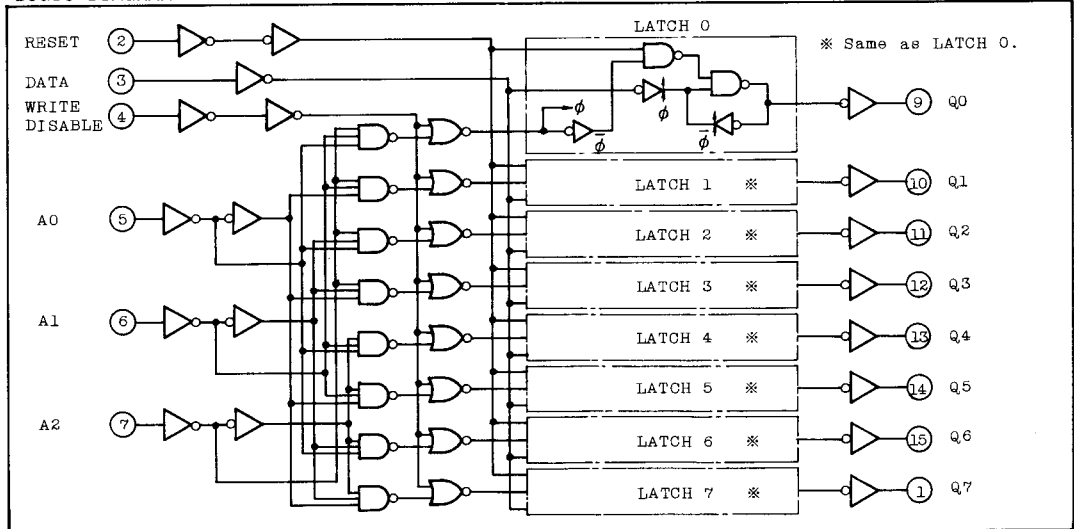
MAXIMUM RATINGS

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 Voltage	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

CONTROL INPUTS		ADDRESS INPUTS			OUTPUTS							
RESET	WRITE DISABLE	A ₂	A ₁	A ₀	Q ₀	Q ₁	Q ₂	Q ₃	Q ₄	Q ₅	Q ₆	Q ₇
H	H	*	*	*	L	L	L	L	L	L	L	L
L	H	*	*	*	-	-	-	-	-	-	-	-
H	L	L	L	L	D	L	L	L	L	L	L	L
H	L	L	L	H	L	D	L	L	L	L	L	L
H	L	L	H	L	L	L	D	L	L	L	L	L
H	L	L	H	H	L	L	L	D	L	L	L	L
H	L	H	L	L	L	L	L	L	D	L	L	L
H	L	H	L	H	L	L	L	L	L	D	L	L
H	L	H	H	L	L	L	L	L	L	L	D	L
H	L	H	H	H	L	L	L	L	L	L	L	D
L	L	L	L	L	D	-	-	-	-	-	-	-
L	L	L	L	H	-	D	-	-	-	-	-	-
L	L	L	H	L	-	-	D	-	-	-	-	-
L	L	L	H	H	-	-	-	D	-	-	-	-
L	L	H	L	L	-	-	-	-	D	-	-	-
L	L	H	L	H	-	-	-	-	-	D	-	-
L	L	H	H	L	-	-	-	-	-	-	D	-
L	L	H	H	H	-	-	-	-	-	-	-	D

* : Don't care D : Data input - : Holds previous data

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}	

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

CHARACTERISTIC	SYMBOL	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	-	

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.		
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 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} ,V _{DD}	5	0.61	-	0.51	1.2	-	0.42	-	V	
			10	1.5	-	1.3	3.2	-	1.1	-		
			15	4.0	-	3.4	12.0	-	2.8	-		
Input High Voltage	V _{IH}	V _{OUT} =0.5V, 4.5V V _{OUT} =1.0V, 9.0V V _{OUT} =1.5V, 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	-	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)

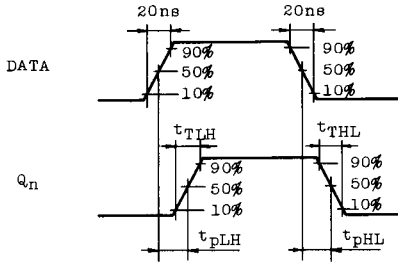
CHARACTERISTIC	SYMBOL	TEST CONDITION	V _{DD} (V)	MIN.	TYP.	MAX.	UNIT
			10	-	35	100	
			15	-	30	80	

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

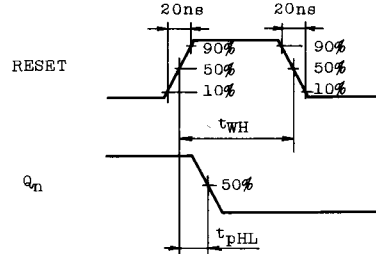
CHARACTERISTIC	SYMBOL	TEST CONDITION	V _{DD} (V)	MIN.	TYP.	MAX.	UNIT
Output Transition Time (High to Low)	t _{THL}		5	-	70	200	ns
			10	-	35	100	
			15	-	30	80	
Propagation Delay Time (DATA - Q)	t _{pLH} t _{pHL}		5	-	110	400	ns
			10	-	50	150	
			15	-	40	100	
Propagation Delay Time (WRITE DISABLE - Q)	t _{pLH} t _{pHL}		5	-	130	400	
			10	-	60	160	
			15	-	45	120	
Propagation Delay Time (ADDRESS - Q)	t _{pLH} t _{pHL}		5	-	150	450	
			10	-	70	200	
			15	-	50	150	
Propagation Delay Time (RESET - Q)	t _{pHL}		5	-	100	350	
			10	-	50	160	
			15	-	35	130	
Min. Pulse Width (DATA)	t _w		5	-	90	200	
			10	-	45	100	
			15	-	35	80	
Min. Pulse Width (WRITE DISABLE ADDRESS)	t _w		5	-	35	320	
			10	-	20	160	
			15	-	15	120	
Min. Pulse Width (RESET)	t _{WH}		5	-	50	150	
			10	-	25	75	
			15	-	20	50	
Min. Set-up Time (DATA - WRITE DISABLE)	t _{SU}		5	-	15	100	
			10	-	10	50	
			15	-	8	35	
Min. Hold Time (DATA - WRITE DISABLE)	t _H		5	-	-	150	
			10	-	-	75	
			15	-	-	50	
Min. Set-up Time (ADDRESS-WRITE DISABLE)	t _{SU}		5	-	20	100	
			10	-	10	50	
			15	-	5	35	
Min. Hold Time (ADDRESS-WRITE DISABLE)	t _H		5	-	-	0	
			10	-	-	0	
			15	-	-	0	
Input Capacitance	C _{IN}			-	5	7.5	pF

WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

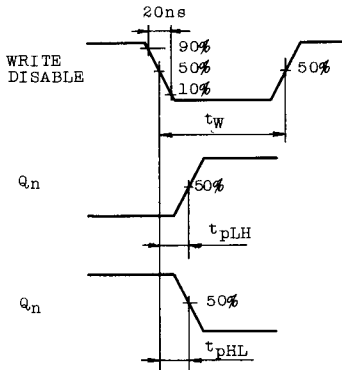
WAVEFORM 1



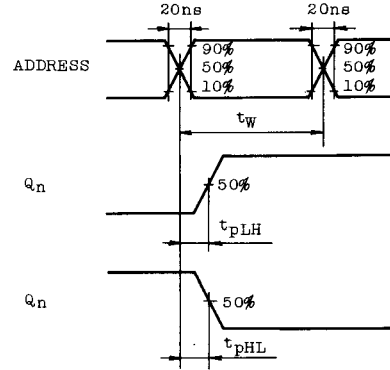
WAVEFORM 2



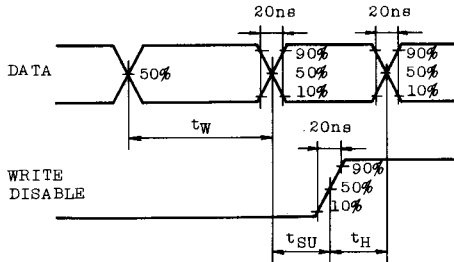
WAVEFORM 3



WAVEFORM 4



WAVEFORM 5



WAVEFORM 6

