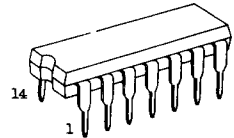


TC4006BP

C^{MOS} DIGITAL INTEGRATED CIRCUIT
SILICON MONOLITHIC

TC4006BP 18-STAGE STATIC SHIFT REGISTER

TC4006BP is static shift register of 18 bits maximum which consists of two 4 bit shift registers and two 5 bit shift registers, and the clock is supplied from the common **CLOCK** input for all the shift registers. Since 5 bit shift register is provided with 4 bit output D_{n+4} in addition to serial data output D_{n+5} , the shift register with arbitrary number of stages of 4, 5, 8, 9, 10, 12, 13, 14, 16, 17 and 18 can be obtained by the combination of inputs and outputs of 4 bit and 5 bit shift registers. Each register is shifted by the falling edge of **CLOCK**.

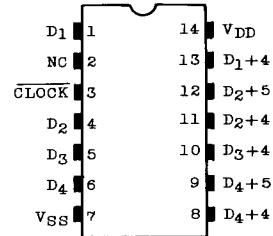


DIP 14(3D14A-P)

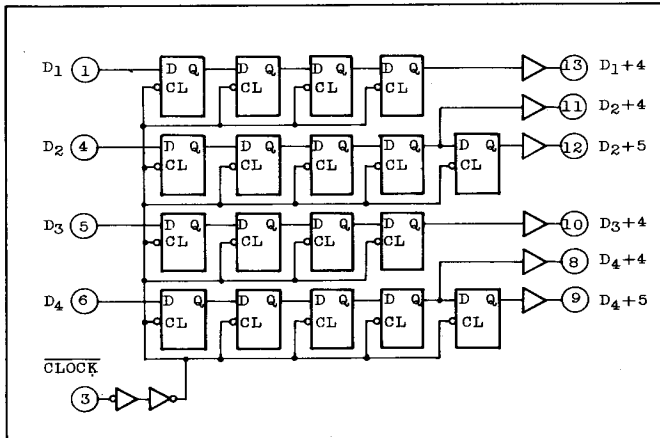
MAXIMUM RATINGS

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	mW
Operating Ambient Temperature Range	T_A	$-40 \sim 85$	$^{\circ}C$
Storage Temperature Range	T_{stg}	$-65 \sim 150$	$^{\circ}C$
Lead Temp./Time	T_{sol}	$260^{\circ}C \cdot 10sec$	

PIN ASSIGNMENT



LOGIC DIAGRAM



TRUTH TABLE (SINGLE STAGE)

INPUTS		OUTPUT
D_n	CLOCK	D_{n+1}
L		L
H		H
*		D_n

* Don't care

RECOMMENDED OPERATING CONDITIONS (VSS=0V)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
DC Supply Voltage	VDD		3	-	18	V
Input Voltage	VIN		0	-	VDD	V

STATIC ELECTRICAL CHARACTERISTICS (VSS=0V)

CHARACTERISTIC	SYM-BOL	TEST CONDITION	VDD (V)	-40°C		25°C			85°C		UNIT	
				MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.		
High-Level Output Voltage	VOH	IOUT < 1μA VIN=VSS,VDD	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	VOL	IOUT < 1μA VIN=VSS,VDD	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	IOH	VOH=4.6V	5	-0.61	-	-0.51	-1.0	-	-0.42	-	mA	
		VOH=2.5V	5	-2.5	-	-2.1	-4.0	-	-1.7	-		
		VOH=9.5V	10	-1.5	-	-1.3	-2.2	-	-1.1	-		
		VOH=13.5V	15	-4.0	-	-3.4	-9.0	-	-2.8	-		
		VIN=VSS,VDD										
Output Low Current	IOL	VOL=0.4V	5	0.61	-	0.51	1.5	-	0.42	-	mA	
		VOL=0.5V	10	1.5	-	1.3	3.8	-	1.1	-		
		VOL=1.5V	15	4.0	-	3.4	15.0	-	2.8	-		
		VIN=VSS,VDD										
Input High Voltage	VIH	VOUT=0.5V, 4.5V	5	3.5	-	3.5	2.75	-	3.5	-	V	
		VOUT=1.0V, 9.0V	10	7.0	-	7.0	5.5	-	7.0	-		
		VOUT=1.5V, 13.5V	15	11.0	-	11.0	8.25	-	11.0	-		
		IOUT < 1μA										
Input Low Voltage	VIL	VOUT=0.5V, 4.5V	5	-	1.5	-	2.25	1.5	-	1.5	V	
		VOUT=1.0V, 9.0V	10	-	3.0	-	4.5	3.0	-	3.0		
		VOUT=1.5V, 13.5V	15	-	4.0	-	6.75	4.0	-	4.0		
		IOUT < 1μA										
Input Current	"H" Level	IIH	VIH=18V	18	-	0.1	-	10 ⁻⁵	0.1	-	1.0	μA
	"L" Level	IIL	VIL=0V	18	-	-0.1	-	-10 ⁻⁵	-0.1	-	-1.0	
Quiescent Device Current	IDD	VIN=VSS,VDD *	5	-	5	-	0.005	5	-	150	μA	
			10	-	10	-	0.010	10	-	300		
			15	-	20	-	0.015	20	-	600		

* All valid input combinations.

TC4006BP

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	VDD (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	t _{pLH} t _{pHL}		5	-	170	400	ns
			10	-	75	200	
			15	-	65	160	
Max. Clock Frequency	f _{CL}		5	2.5	8	-	MHz
			10	5	17	-	
			15	7	20	-	
Min. Clock Pulse Width	t _w		5	-	60	180	ns
			10	-	30	80	
			15	-	25	50	
Max. Clock Rise Time Max. Clock Fall Time	t _{rCL} t _{fCL}		5	20	-	-	μs
			10	2.5	-	-	
			15	1.0	-	-	
Min. Set-up Time (DATA - CLOCK)	t _{SU}		5	-	20	100	ns
			10	-	8	50	
			15	-	5	40	
Min. Hold Time (DATA - CLOCK)	t _H		5	-	-2	60	ns
			10	-	4	40	
			15	-	5	30	
Input Capacitance	C _{IN}			-	5	7.5	pF

WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

