

4006B

18-STAGE STATIC SHIFT REGISTER

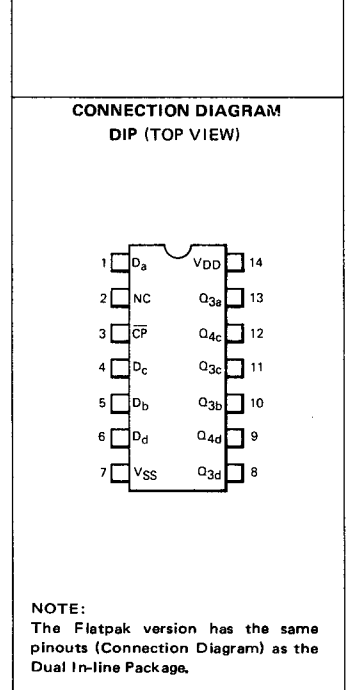
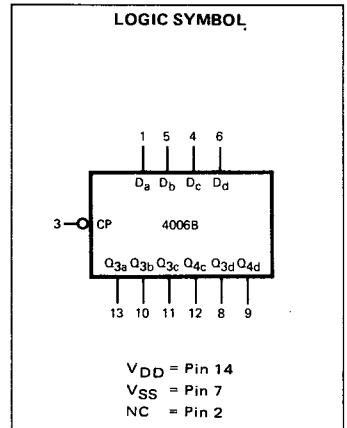
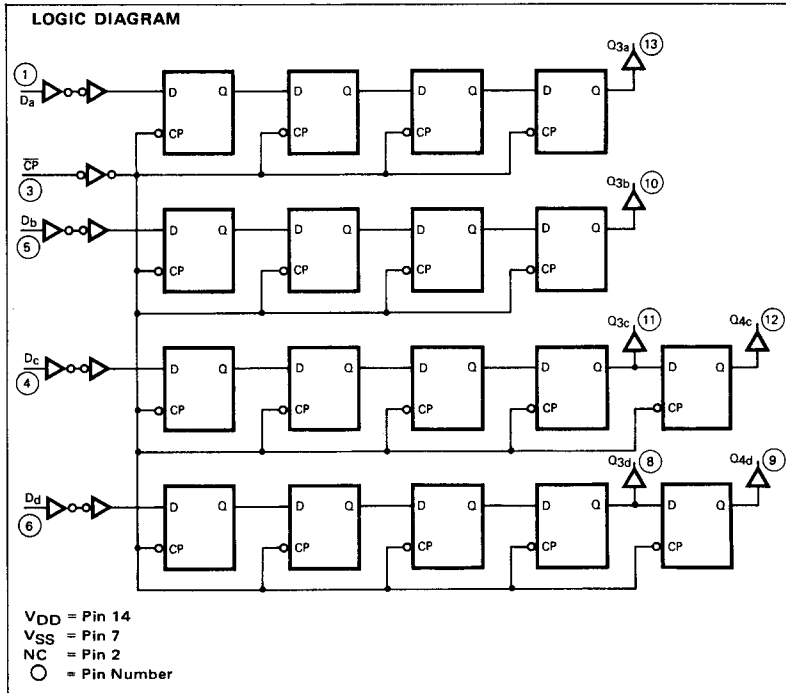
DESCRIPTION — The 4006B is an 18-stage Shift Register arranged as two 4-stage and two 5-stage shift registers with a common Clock Input (CP). The two 4-stage shift registers, each have a Data Input (D_a, D_b) and a Data Output (Q_{3a}, Q_{3b}); the two 5-stage shift registers each have a Data Input (D_c, D_d) and Data Outputs from the fourth and fifth stages ($Q_{3c}, Q_{4c}, Q_{3d}, Q_{4d}$).

The registers can be operated in parallel or interconnected to form a single shift register of up to 18 bits. Data is shifted into the first register position of each register from the Data Inputs (D_a - D_d) and all the data in each register is shifted one position to the right on the HIGH-to-LOW transition of the Clock Input (CP).

- CLOCK EDGE-TRIGGERED ON A HIGH-TO-LOW TRANSITION
- CASCADABLE
- SERIAL-TO-SERIAL DATA TRANSFER

PIN NAMES

D_a - D_d	Data Inputs
CP	Clock Input (H→L Edge-Triggered)
Q_{3a} - Q_{3d}, Q_{4c}, Q_{4d}	Data Outputs



FAIRCHILD CMOS • 4006B

DC CHARACTERISTICS: V_{DD} as shown, $V_{SS} = 0$ V (See Note 1)

SYMBOL	PARAMETER		LIMITS									UNITS	TEMP	TEST CONDITIONS
			$V_{DD} = 5$ V			$V_{DD} = 10$ V			$V_{DD} = 15$ V					
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX			
I_{DD}	Quiescent Power Supply Current	XC			20			40			80	μ A	MIN, 25°C	All inputs at 0 V or V_{DD}
		XM			5			10			20	μ A	MAX	
					150			300			600		MAX	

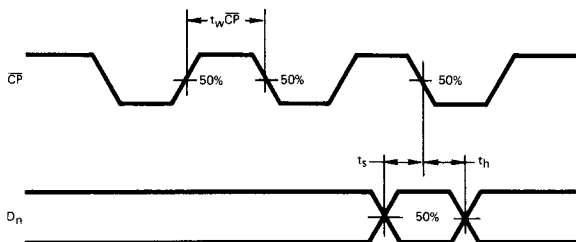
AC CHARACTERISTICS AND SET-UP REQUIREMENTS: V_{DD} as shown, $V_{SS} = 0$ V, $T_A = 25^\circ$ C (See Note 2)

SYMBOL	PARAMETER		LIMITS									UNITS	TEST CONDITIONS
			$V_{DD} = 5$ V			$V_{DD} = 10$ V			$V_{DD} = 15$ V				
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX		
t_{PLH}	Propagation Delay, \overline{CP} to any Q_n		90	200		39	100		30	80	ns	$C_L = 50$ pF, $R_L = 200$ k Ω Input Transition Times ≤ 20 ns	
t_{PHL}			90	200		35	100		25	80			
t_{TLH}	Output Transition Time		60	135		30	75		20	45	ns		
t_{THL}			60	135		30	75		20	45			
t_{wCP}	CP Minimum Pulse Width		100	50		50	20		40	13	ns		
t_s	Set-Up Time, D_n to \overline{CP}		30	12		15	5		15	5	ns		
t_h	Hold Time, D_n to \overline{CP}		30	1		15	4		10	4	ns		
f_{MAX}	Maximum Input Clock Frequency (Note 3)		8	19		15	30		18	36	MHz		

NOTES:

- Additional DC Characteristics are listed in this section under 4000B Series CMOS Family Characteristics.
- Propagation Delays and Output Transition Times are graphically described in this section under 4000B Series CMOS Family Characteristics.
- For f_{MAX} , input rise and fall times are greater than or equal to 5 ns and less than or equal to 20 ns.
- It is recommended that input rise and fall times to the Clock Input be less than 15 μ s at $V_{DD} = 5$ V, 4 μ s at $V_{DD} = 10$ V, and 3 μ s at $V_{DD} = 15$ V.

SWITCHING WAVEFORMS



**MINIMUM CLOCK PULSE WIDTH
AND SET-UP AND HOLD TIMES, D_n TO \overline{CP}**

NOTE: Set-up and Hold Times are shown as positive values but may be specified as negative values.