

4008B

4-BIT BINARY FULL ADDER

DESCRIPTION – The 4008B is a 4-Bit Binary Full Adder with two 4-bit Data Inputs (A_0 - A_3 , B_0 - B_3); a Carry Input (C_0), four Sum Outputs (S_0 - S_3) and a Carry Output (C_4).

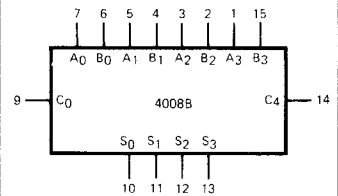
The 4008B uses full lookahead across 4-bits to generate the Carry Output (C_4). This minimizes the necessity for extensive "lookahead" and carry-cascading circuits.

- CARRY LOOKAHEAD BUFFERED OUTPUT
- EASILY CASCADED

PIN NAMES

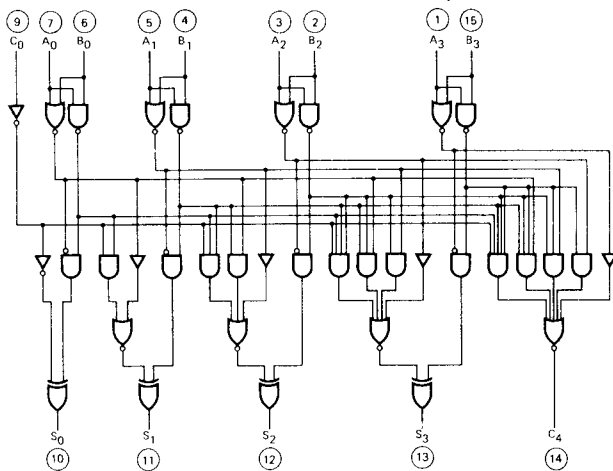
A_0 - A_3 , B_0 - B_3	Data Inputs
C_0	Carry Input
S_0 - S_3	Sum Outputs
C_4	Carry Output

LOGIC SYMBOL



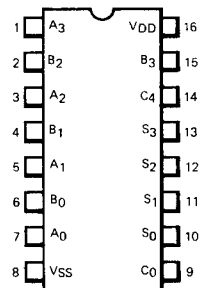
V_{DD} = Pin 16
 V_{SS} = Pin 8

LOGIC DIAGRAM



V_{DD} = Pin 16
 V_{SS} = Pin 8
 ○ = Pin Number

**CONNECTION DIAGRAM
 DIP (TOP VIEW)**



NOTE:
 The Flatpak version has the same pinouts (Connection Diagram) as the Dual In-line Package.

FAIRCHILD CMOS • 4008B

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	μA	MIN, 25°C MAX	All inputs at 0 V or V_{DD}
		XM			5			10			20			
					150			300			600	μA	MIN, 25°C 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, A_n, B_n to S_n		150	300		60	140		50	110	ns	$C_L = 50$ pF, $R_L = 200$ k Ω , Input Transition Times ≤ 20 ns
t_{PHL}			150	300		60	140		50	110	ns	
t_{PLH}	Propagation Delay, A_n, B_n to C_4		138	275		63	130		50	100	ns	
t_{PHL}			138	275		63	130		50	100	ns	
t_{PLH}	Propagation Delay, C_0 to S_n		115	250		69	115		52	90	ns	
t_{PHL}			123	250		69	115		52	90	ns	
t_{PLH}	Propagation Delay, C_0 to C_4		72	200		28	95		23	75	ns	
t_{PHL}			95	200		28	95		23	75	ns	
t_{TLH}	Output Transition Time		60	135		30	75		20	45	ns	
t_{THL}			60	135		30	75		20	45	ns	

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.

APPLICATION

A 2-DIGIT BCD TO 7-BIT BINARY DECODER USING THE 4008B

