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).

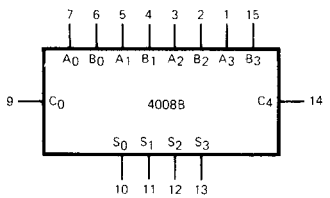
The 4008B uses full lookahead across 4-bits to generate the Carry Output (C_4). This minimizes the necessity for extensive "lookahead" and carry-cascading circuits.

- **CARRY LOOKAHEAD BUFFERED OUTPUT**
- **EASILY CASCADED**

PIN NAMES

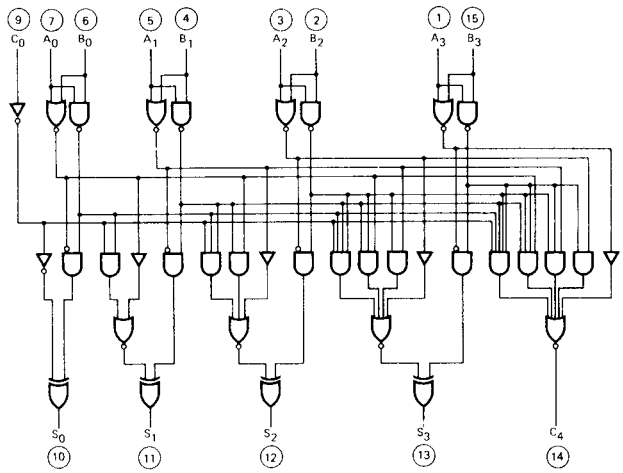
A_0-A_3, B_0-B_3	Data Inputs
C_0	Carry Input
S_0-S_3	Sum Outputs
C_4	Carry Output

LOGIC SYMBOL



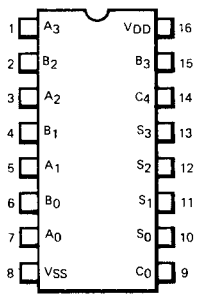
V_{DD} = Pin 16
V_{SS} = Pin 8

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.

7

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			20 100			40 300			80 600	μA	MIN, 25°C MAX	All inputs at 0 V or V_{DD}
		XM			5 150			10 300			20 600	μA	MIN, 25°C MAX	

AC CHARACTERISTICS AND SET-UP REQUIREMENTS: V_{DD} as shown, V_{SS} = 0 V, T_A = 25°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 kΩ, 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_o to S_n		115	250		69	115		52	90	ns	
t_{PHL}			123	250		69	115		52	90	ns	
t_{PLH}	Propagation Delay, C_o 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:

1. Additional DC Characteristics are listed in this section under 4000B Series CMOS Family Characteristics.
2. 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

