

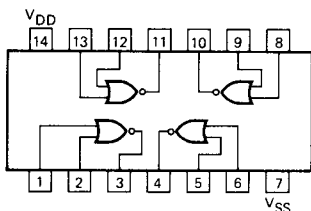
4001B

4002B

QUAD 2-INPUT NOR GATE • DUAL 4-INPUT NOR GATE

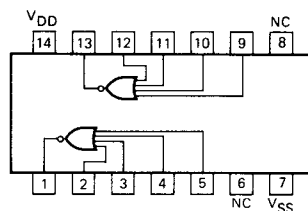
DESCRIPTION – These CMOS logic elements provide the positive input NOR function. The outputs are fully buffered for highest noise immunity and pattern insensitivity of output impedance.

4001B
LOGIC AND CONNECTION DIAGRAM
DIP (TOP VIEW)



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

4002B
LOGIC AND CONNECTION DIAGRAM
DIP (TOP VIEW)



DC CHARACTERISTICS: V_{DD} as shown, $V_{SS} = 0$ V

| SYMBOL | PARAMETER | LIMITS | | | | | | | | | UNITS | TEMP | TEST CONDITIONS See Note 1 | | |
|----------|-----------------|----------------|-----|-----|-----------------|-----|-----|-----------------|-----|-----|-------|---------|-------------------------------|-------------------------------|-----------|
| | | $V_{DD} = 5$ V | | | $V_{DD} = 10$ V | | | $V_{DD} = 15$ V | | | | | | | |
| | | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX | | | | | |
| I_{DD} | Quiescent Power | XC | | | 1 | | | 2 | | | 4 | μ A | MIN, 25°C | All inputs at 0 V or V_{DD} | |
| | | | | | 7.5 | | | 15 | | | 30 | | MAX | | |
| | Supply Current | XM | | | 0.25 | | | 0.5 | | | 1 | | μ A | | MIN, 25°C |
| | | | | | 7.5 | | | 15 | | | 30 | | | | MAX |

AC CHARACTERISTICS: V_{DD} as shown, $V_{SS} = 0$ V, $T_A = 25^\circ$ C, 4001B only (See Note 2)

| SYMBOL | PARAMETER | LIMITS | | | | | | | | | UNITS | TEST CONDITIONS See Note 2 |
|-----------|------------------------|----------------|-----|-----|-----------------|-----|-----|-----------------|-----|-----|-------|--|
| | | $V_{DD} = 5$ V | | | $V_{DD} = 10$ V | | | $V_{DD} = 15$ V | | | | |
| | | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX | | |
| t_{PLH} | Propagation Delay | | 60 | 110 | | 25 | 60 | | 20 | 48 | ns | $C_L = 50$ pF, $R_L = 200$ k Ω |
| t_{PHL} | | | 60 | 110 | | 25 | 60 | | 20 | 48 | ns | |
| t_{TLH} | Output Transition Time | | 60 | 135 | | 30 | 70 | | 20 | 45 | ns | Input Transition Times ≤ 20 ns |
| t_{THL} | | | 60 | 135 | | 30 | 70 | | 20 | 45 | ns | |

AC CHARACTERISTICS: V_{DD} as shown, $V_{SS} = 0$ V, $T_A = 25^\circ$ C, 4002B only

| SYMBOL | PARAMETER | LIMITS | | | | | | | | | UNITS | TEST CONDITIONS See Note 2 |
|-----------|------------------------|----------------|-----|-----|-----------------|-----|-----|-----------------|-----|-----|-------|--|
| | | $V_{DD} = 5$ V | | | $V_{DD} = 10$ V | | | $V_{DD} = 15$ V | | | | |
| | | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX | | |
| t_{PLH} | Propagation Delay | | 65 | 110 | | 30 | 60 | | 20 | 48 | ns | $C_L = 50$ pF, $R_L = 200$ k Ω |
| t_{PHL} | | | 70 | 110 | | 30 | 60 | | 23 | 48 | ns | |
| t_{TLH} | Output Transition Time | | 75 | 135 | | 40 | 70 | | 30 | 45 | ns | Input Transition Times ≤ 20 ns |
| t_{THL} | | | 60 | 135 | | 23 | 70 | | 15 | 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.

TYPICAL ELECTRICAL CHARACTERISTICS

