

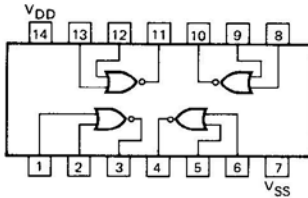
# 4001B

# 4002B

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

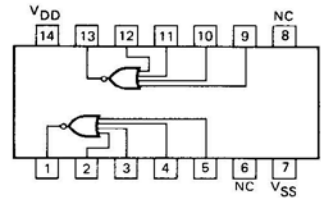
**DESCRIPTION** – These CMOS logic elements provide the positive input NOR function. The outputs are fully buffered for highest noise immunity and pattern insensitivity of output impedance.

**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	$\mu$ 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	$\mu$ A	MIN, 25°C	
					7.5			15			30		MAX	

**AC CHARACTERISTICS:**  $V_{DD}$  as shown,  $V_{SS} = 0$  V,  $T_A = 25^\circ\text{C}$ , 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 $\Omega$
$t_{PHL}$			60	110		25	60		20	48		
$t_{TLH}$	Output Transition Time		60	135		30	70		20	45	ns	Input Transition Times $\leq 20$ ns
$t_{THL}$			60	135		30	70		20	45		

**AC CHARACTERISTICS:**  $V_{DD}$  as shown,  $V_{SS} = 0$  V,  $T_A = 25^\circ\text{C}$ , 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 $\Omega$
$t_{PHL}$			70	110		30	60		23	48		
$t_{TLH}$	Output Transition Time		75	135		40	70		30	45	ns	Input Transition Times $\leq 20$ ns
$t_{THL}$			60	135		23	70		15	45		

**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.

TYPICAL ELECTRICAL CHARACTERISTICS

