

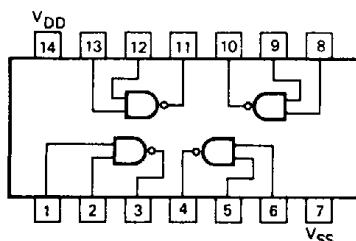
GD4011B • GD4012B

4011B QUAD 2-INPUT NAND GATE

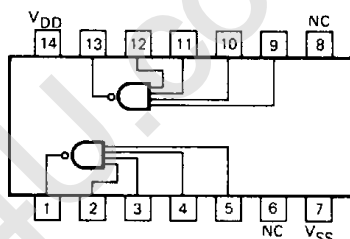
4012B DUAL 4-INPUT NAND GATE

DESCRIPTION – These CMOS logic elements provide the positive input NAND function. The outputs are fully buffered for highest noise immunity and pattern insensitivity of output impedance.

**4011B
LOGIC AND CONNECTION DIAGRAM
DIP (TOP VIEW)**



**4012B
LOGIC AND CONNECTION DIAGRAM
DIP (TOP VIEW)**



NOTE:
The SO Package have the same pinouts
(Connection Diagram) as the Dual In-Line
Package.

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

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

AC CHARACTERISTICS: V_{DD} as shown, $V_{SS} = 0\text{ V}$, $T_A = 25^\circ\text{C}$, 4011B only (See Note 2)

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

AC CHARACTERISTICS: V_{DD} as shown, $V_{SS} = 0\text{ V}$, $T_A = 25^\circ\text{C}$, 4012B only

SYMBOL	PARAMETER	LIMITS									UNITS	TEST CONDITIONS See Note 2	
		$V_{DD} = 5\text{ V}$			$V_{DD} = 10\text{ V}$			$V_{DD} = 15\text{ V}$					
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX			
t_{PLH}	Propagation Delay		73	110		33	60		24	48	ns	$C_L = 50\text{ pF}$, $R_L = 200\text{ k}\Omega$	
t_{PHL}			85	110		31	60		20	48	ns		
t_{TLH}	Output Transition Time		76	135		37	70		27	45	ns		Input Transition Times $\leq 20\text{ ns}$
t_{THL}			67	135		25	70		17	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.

TYPICAL ELECTRICAL CHARACTERISTICS

