



**UCD4001B**

Preliminary

CMOS IC

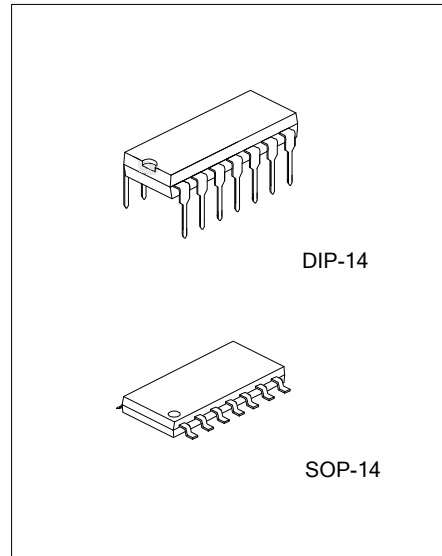
**QUAD 2-INPUT NOR  
BUFFERED B SERIES GATE**

■ DESCRIPTION

The **UTC UCD4001B** contains four independent 2-input NOR gates, they perform the function  $Y = \overline{A+B}$  in positive logic.

■ FEATURES

- \* 5V-10V-15V Parametric Ratings
- \* Quad 2-Input NOR Gate
- \* Symmetrical Output Characteristics
- \* Maximum Input Current of 1uA at 15V Over Full Package Temperature Range
- \* Low Power TTL:  
Fan Out of 2 Driving 74L Compatibility or 1 Driving 74LS



■ ORDERING INFORMATION

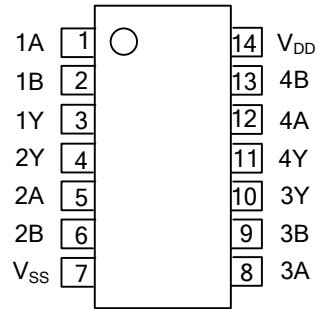
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UCD4001BL-D14-R	UD4001BG-D14-R	DIP-14	Tube
-	UD4001BG-S14-R	SOP-14	Tape Reel

<p>UCD4001BL-D14-T</p> <pre>                 (1)Packing Type                 (2)Package Type                 (3)Green Package           </pre>	<p>(1) T: Tube, R: Tape Reel                  (2) D14: DIP-14, S14: SOP-14                  (3) L: Lead Free, G: Halogen Free and Lead Free</p>
--	---

■ MARKING

DIP-14	SOP-14

■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

INPUT(A)	INPUT(B)	OUTPUT(Y)
H	H	L
H	L	L
L	H	L
L	L	H

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATING( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{DD}$	-0.5 ~ 18	V
Input Voltage	$V(nA, nB)$	-0.5 ~ $V_{DD} + 0.5$	V
Output Voltage	$V(nY)$	-0.5 ~ $V_{DD} + 0.5$	V
Storage Temperature	$T_{STG}$	-65 ~ + 150	$^{\circ}\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.  
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{DD}$	3 ~ 15	V
Operating Temperature	$T_{OP}$	-40 ~ 125	$^{\circ}\text{C}$

■ ELECTRICAL CHARACTERISTICS( $T_A=25^{\circ}\text{C}$ )

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	High	$V_{IH}$	$V_{DD}= 5V, V_O=0.5V$	3.5	3		V
			$V_{DD}= 10V, V_O=1.0V$	7.0	6		
			$V_{DD}= 15V, V_O=1.5V$	11.0	9		
	Low	$V_{IL}$	$V_{DD}= 5V, V_O=4.5V$		2	1.5	V
			$V_{DD}= 10V, V_O=9.0V$		4	3.0	
			$V_{DD}= 15V, V_O=13.5V$		6	4.0	
Output Voltage	High	$V_{OH}$	$V_{DD}= 5V, I_{OH}=-1\mu A$	4.95	5		V
			$V_{DD}= 10V, I_{OH}=-1\mu A$	9.95	10		
			$V_{DD}= 15V, I_{OH}=-1\mu A$	14.95	15		
	Low	$V_{OL}$	$V_{DD}= 5V, I_{OL}=1\mu A$		0	0.05	V
			$V_{DD}= 10V, I_{OL}=1\mu A$		0	0.05	
			$V_{DD}= 15V, I_{OL}=1\mu A$		0	0.05	
Output Current (Note)	High	$I_{OH}$	$V_{DD}= 5V, V_O=4.6V$	-0.51	-0.88		mA
			$V_{DD}= 10V, V_O=9.5V$	-1.3	-2.25		
			$V_{DD}= 15V, V_O=13.5V$	-3.4	-8.8		
	Low	$I_{OL}$	$V_{DD}= 5V, V_O=0.4V$	0.51	0.88		
			$V_{DD}= 10V, V_O=0.5V$	1.3	2.25		
			$V_{DD}= 15V, V_O=1.5V$	3.4	8.8		
Input Leakage Current		$I_{I(LEAK)}$	$V_{DD}= 15V, V_{IN} = V_{DD}$ or GND			0.1	$\mu A$
Quiescent Supply Current		$I_Q$	$V_{DD}= 5V, V_{IN} = V_{DD}$ or $V_{SS}, I_{OUT} = 0$		0.004	0.25	$\mu A$
			$V_{DD}= 10V, V_{IN} = V_{DD}$ or $V_{SS}, I_{OUT} = 0$		0.005	0.5	
			$V_{DD}= 15V, V_{IN} = V_{DD}$ or $V_{SS}, I_{OUT} = 0$		0.006	1.0	

Note:  $I_{OL}$  and  $I_{OH}$  are tested one output at a time

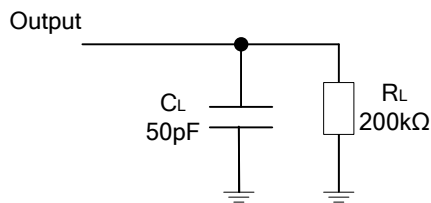
■ SWITCHING CHARACTERISTICS( $T_A=25^\circ\text{C}$ , Input:  $t_R=t_F=20\text{ns}$ , unless otherwise specified )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from Input(A or B) to Output(Y)	$t_{PLH}$	$V_{DD}=5\text{V}, C_L=50\text{pF}, R_L=200\text{k}\Omega$		110	250	ns
		$V_{DD}=10\text{V}, C_L=50\text{pF}, R_L=200\text{k}\Omega$		50	100	
		$V_{DD}=15\text{V}, C_L=50\text{pF}, R_L=200\text{k}\Omega$		35	70	
	$t_{PHL}$	$V_{DD}=5\text{V}, C_L=50\text{pF}, R_L=200\text{k}\Omega$		120	250	
		$V_{DD}=10\text{V}, C_L=50\text{pF}, R_L=200\text{k}\Omega$		50	100	
		$V_{DD}=15\text{V}, C_L=50\text{pF}, R_L=200\text{k}\Omega$		35	70	
Transition Time	$t_{TLH}$	$V_{DD}=5\text{V}, C_L=50\text{pF}, R_L=200\text{k}\Omega$		90	200	ns
		$V_{DD}=10\text{V}, C_L=50\text{pF}, R_L=200\text{k}\Omega$		50	100	
	$t_{THL}$	$V_{DD}=15\text{V}, C_L=50\text{pF}, R_L=200\text{k}\Omega$		40	80	

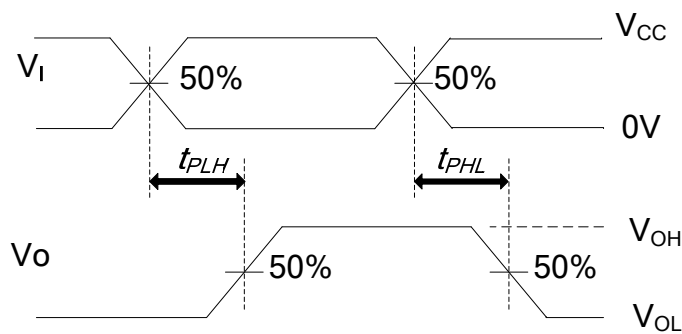
■ OPERATING CHARACTERISTICS( $T_A=25^\circ\text{C}$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Average Input Capacitance	$C_{IN}$	Any Input		5	7.5	pF
Power Dissipation Capacitance	$C_{PD}$	Any Gate		14		

■ TEST CIRCUIT AND WAVEFORMS



Definitions for test circuit



Propagation Delay Times

Note:  $C_L$  includes probe and jig capacitance.

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.