



UCD4001B

Preliminary

CMOS IC

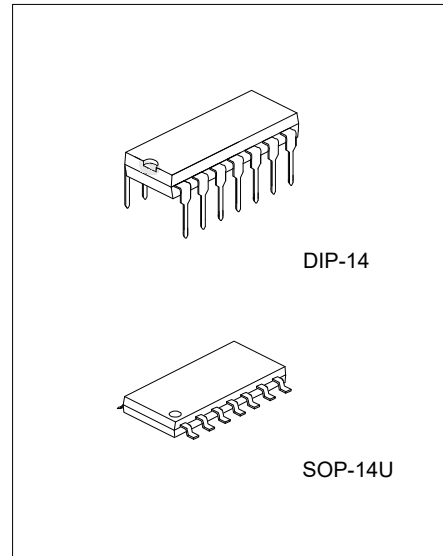
**QUAD 2-INPUT NOR
BUFFERED B SERIES GATE**

■ 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

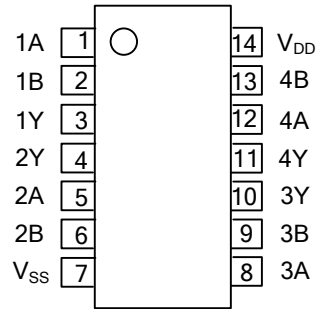
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UCD4001BL-D14-R	UCD4001BG-D14-R	DIP-14	Tube
UCD4001BL-UEA-R	UCD4001BG-UEA-R	SOP-14U	Tape Reel

<p>UCD4001BG-D14-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) D14: DIP-14, UEA: SOP-14U (3) G: Halogen Free and Lead Free, L: Lead Free</p>
---	--

■ MARKING

DIP-14	SOP-14U

■ 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°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	°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 _{OPR}	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

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} =-1μA	4.95	5	V	
			V _{DD} = 10V, I _{OH} =-1μA	9.95	10		
			V _{DD} = 15V, I _{OH} =-1μA	14.95	15		
	Low	V _{OL}	V _{DD} = 5V, I _{OL} =1μA		0	0.05	V
			V _{DD} = 10V, I _{OL} =1μA		0	0.05	
			V _{DD} = 15V, I _{OL} =1μA		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	mA	
			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	μA	
Quiescent Supply Current	I _Q	V _{DD} = 5V, V _{IN} = V _{DD} or V _{SS} , I _{OUT} = 0		0.004	0.25	μA	
		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.

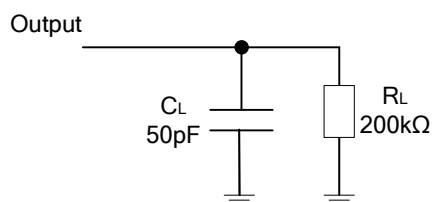
■ SWITCHING CHARACTERISTICS ($T_A=25^\circ\text{C}$, Input: $t_R=t_F=20\text{ns}$, unless otherwise specified)

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	

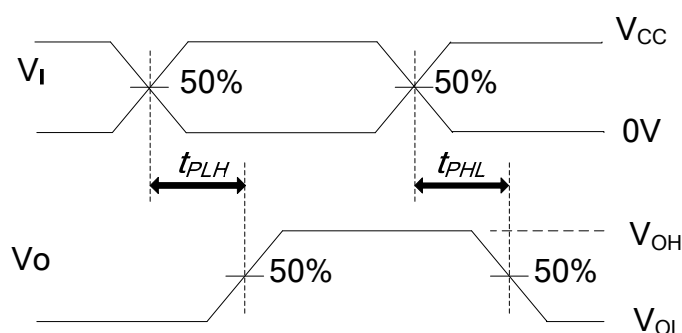
■ OPERATING CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

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. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.