



**UCD4081B**

Preliminary

CMOS IC

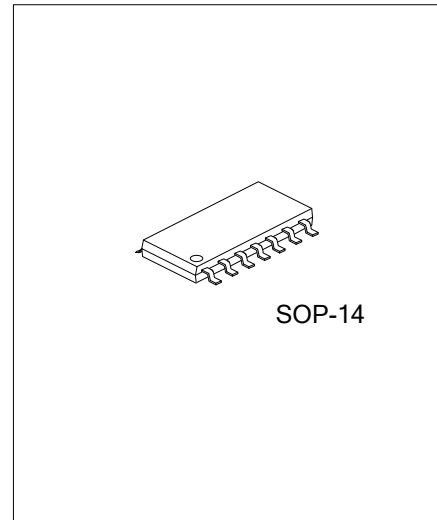
**QUAD 2-INPUT AND  
BUFFERED B SERIES GATE**

■ DESCRIPTION

The **UTC UCD4081B** contains four independent 2-input AND gates, they perform the function  $Y=A \bullet B$  in positive logic.

■ FEATURES

- \* 5V-10V-15V Parametric Ratings
- \* Quad 2-Input AND 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 or 1 Driving 74LS Compatibility

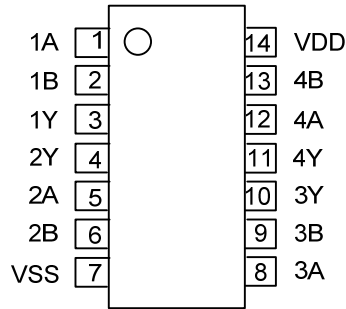


■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UCD4081BL-S14-R	UCD4081BG-S14-R	SOP-14	Tape Reel

<p>UCD4081BL-S14-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Free</p>	<p>(1) R: Tape Reel (2) S14: SOP-14 (3) L: Lead Free, G: Halogen Free</p>
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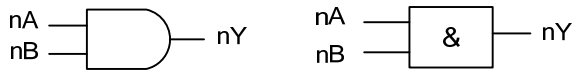
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ 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
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	$T_{OPR}$	-40 ~ +125	$^{\circ}\text{C}$

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

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	High	$V_{IH}$	$V_{DD}= 5.0\text{V}, V_O=0.5\text{V}$	3.5	3		V
			$V_{DD}= 10\text{V}, V_O=1.0\text{V}$	7.0	6		
			$V_{DD}= 15\text{V}, V_O=1.5\text{V}$	11.0	9		
	Low	$V_{IL}$	$V_{DD}= 5.0\text{V}, V_O=4.5\text{V}$		2	1.5	V
			$V_{DD}= 10\text{V}, V_O=9.0\text{V}$		4	3.0	
			$V_{DD}= 15\text{V}, V_O=13.5\text{V}$		6	4.0	
Output Voltage	High	$V_{OH}$	$V_{DD}= 5.0\text{V}, I_{OH}=1\mu\text{A}$	4.95	5		V
			$V_{DD}= 10\text{V}, I_{OH}=1\mu\text{A}$	9.95	10		
			$V_{DD}= 15\text{V}, I_{OH}=1\mu\text{A}$	14.95	15		
	Low	$V_{OL}$	$V_{DD}= 5.0\text{V}, I_{OL}=1\mu\text{A}$		0	0.05	V
			$V_{DD}= 10\text{V}, I_{OL}=1\mu\text{A}$		0	0.05	
			$V_{DD}= 15\text{V}, I_{OL}=1\mu\text{A}$		0	0.05	
Output Current (Note 1)	High	$I_{OH}$	$V_{DD}= 5.0\text{V}, V_O=4.6\text{V}$	0.51	0.88		mA
			$V_{DD}= 10\text{V}, V_O=9.5\text{V}$	1.3	2.25		
			$V_{DD}= 15\text{V}, V_O=13.5\text{V}$	3.4	8.8		
	Low	$I_{OL}$	$V_{DD}= 5.0\text{V}, V_O=0.4\text{V}$	0.51	0.88		
			$V_{DD}= 10\text{V}, V_O=0.5\text{V}$	1.3	2.25		
			$V_{DD}= 15\text{V}, V_O=1.5\text{V}$	3.4	8.8		
Input Leakage Current	$I_{I(LEAK)}$	$V_{DD}= 15\text{V}, V_{IN} = V_{DD}$ or GND			0.1	$\mu\text{A}$	
Quiescent Supply Current	$I_Q$	$V_{DD}= 5.0\text{V}, V_{IN} = V_{DD}$ or $V_{SS}, I_{OUT} = 0$		0.004	0.25	$\mu\text{A}$	
		$V_{DD}= 10\text{V}, V_{IN} = V_{DD}$ or $V_{SS}, I_{OUT} = 0$		0.005	0.5		
		$V_{DD}= 15\text{V}, V_{IN} = V_{DD}$ or $V_{SS}, I_{OUT} = 0$		0.006	1.0		

Note: 1.  $I_{OL}$  and  $I_{OH}$  are tested one output at a time

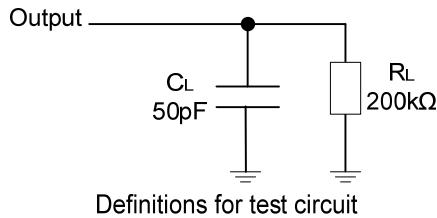
■ SWITCHING CHARACTERISTICS( $T_A=25^\circ\text{C}$ , Input:  $t_R=t_F=20\text{ns}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from Input(A or B) to Output(Y)	$t_{PLH}$	$V_{DD}=5.0\text{V}$ , $C_L=50\text{pF}$ , $R_L=200\text{k}\Omega$		120	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	
	$t_{PHL}$	$V_{DD}=5.0\text{V}$ , $C_L=50\text{pF}$ , $R_L=200\text{k}\Omega$		100	250	
		$V_{DD}=10\text{V}$ , $C_L=50\text{pF}$ , $R_L=200\text{k}\Omega$		40	100	
		$V_{DD}=15\text{V}$ , $C_L=50\text{pF}$ , $R_L=200\text{k}\Omega$		30	70	
Transition Time	$t_{TLH}$	$V_{DD}=5.0\text{V}$ , $C_L=50\text{pF}$ , $R_L=200\text{k}\Omega$		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	

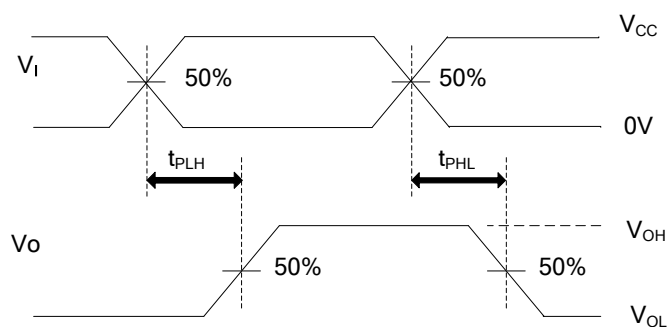
■ OPERATING CHARACTERISTICS( $T_A=25^\circ\text{C}$ , unless otherwise specified)

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		18		

■ TEST CIRCUIT AND WAVEFORMS



Note:  $C_L$  includes probe and jig capacitance.



Propagation Delay Times

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