

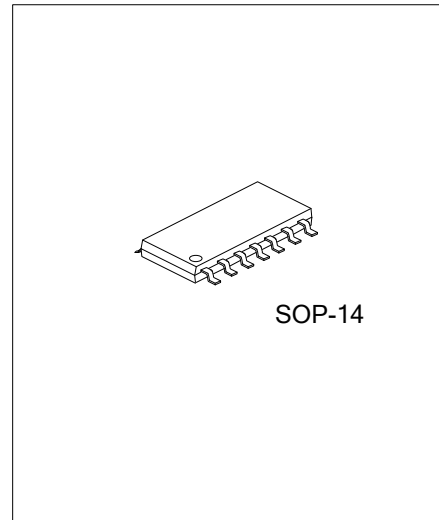


CD4081B

Preliminary

CMOS IC

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



■ **DESCRIPTION**

The **UTC CD4081B** contains four independent 2-input AND gates, they perform the function $Y=A \bullet B$ in positive logic.

■ **FEATURES**

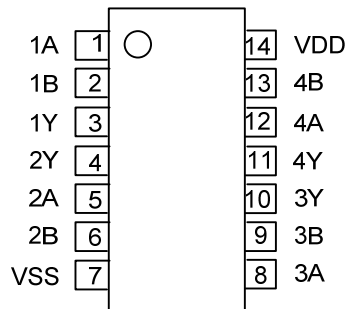
- * 5V-10V-15V Parametric Ratings
- * Quad 2-Input AND Gate
- * Symmetrical Output Characteristics
- * Maximum Input Current of 1uA at 15V Over Full Package Temperature Range
- * Low Power TTL:
Fan Out of 2 Driving 74L or 1 Driving 74LS Compatibility

■ **ORDERING INFORMATION**

Ordering Number		Package	Packing
Lead Free	Halogen Free		
CD4081BL-S14-R	CD4081BG-S14-R	SOP-14	Tape Reel

<p>CD4081BL-S14-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Free</p>	<p>(1) R: Tape Reel (2) S14: SOP-14 (3) G: Halogen Free, L: Lead Free</p>
--------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------

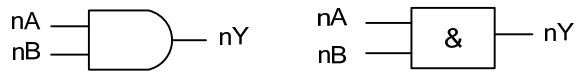
■ PIN CONFIGURATION



■ 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($T_a=25^{\circ}\text{C}$)

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	μA	
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	μA	
		$V_{DD}= 10\text{V}, V_{IN} = V_{DD}$ 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

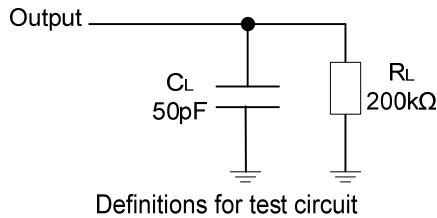
■ SWITCHING CHARACTERISTICS($T_a=25^\circ\text{C}$, Input: $t_R=t_F=20\text{ns}$, unless otherwise specified)

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	

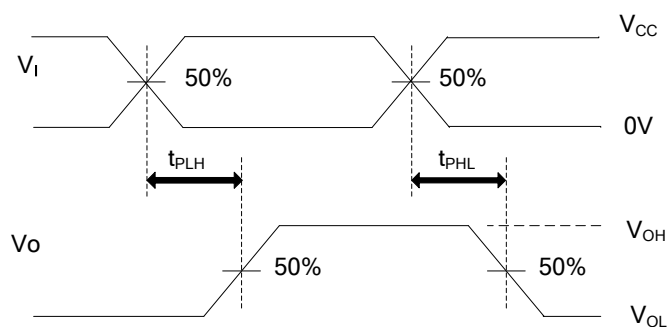
■ OPERATING CHARACTERISTICS($T_a=25^\circ\text{C}$)

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

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.