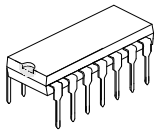
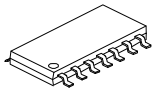
UCD4081B

CMOS IC

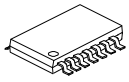
QUAD 2-INPUT AND BUFFERED B SERIES GATE



DIP-14



SOP-14U



TSSOP-14U

■ DESCRIPTION

The **UTC UCD4081B** contains four independent 2-input AND gates,they perform the function Y=A • 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 Rage
* Low Power TTL:
  Fan Out of 2 Driving 74L or 1 Driving 74LS Compatibility

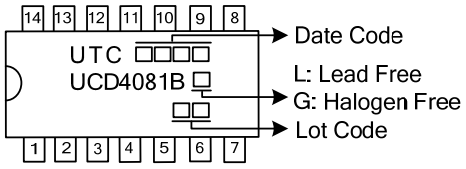
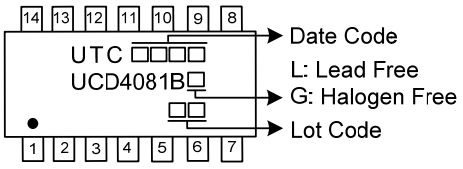
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UCD4081BL-D14-T	UCD4081BG-D14-T	DIP-14	Tube
UCD4081BL-UEA-R	UCD4081BG-UEA-R	SOP-14U	Tape Reel
UCD4081BL-UEB-R	UCD4081BG-UEB-R	TSSOP-14U	Tape Reel

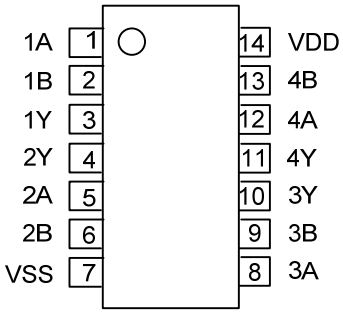
UCD4081BG-D14-T
(1)Packing Type
(2)Package Type
(3)Green Package

(1) T: Tube, R: Tape Reel
(2) D14: DIP-14, UEA: SOP-14U, UEB: TSSOP-14U
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

DIP-14	SOP-14U / TSSOP-14U
	

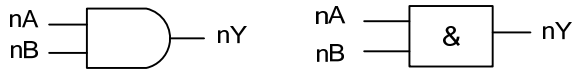
■ PIN CONFIGURATION



■ 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°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	°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

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	DIP-14	θ_{JA}	70	°C/W
	SOP-14U		100	°C/W
	TSSOP-14U		130	°C/W

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

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	High	V_{IH}	V_{DD}= 5.0V,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}= 5.0V,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}= 5.0V, 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}= 5.0V, 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 Curren (Note 1)	High	I_{OH}	V_{DD}= 5.0V,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}= 5.0V,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	μA
Quiescent Supply Current		I_Q	V_{DD}= 5.0V,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: 1. I_{OL} and I_{OH} are tested one output at a time.

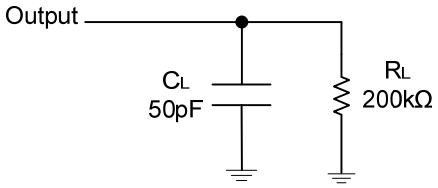
■ SWITCHING CHARACTERISTICS(T_A=25°C, Input: t_R=t_F=20ns, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from Input(A or B) to Output(Y)	t_{PLH}	V_{DD}=5.0V, C_L=50pF, R_L=200kΩ		120	250	ns
		V_{DD}=10V, C_L=50pF, R_L=200kΩ		50	100	
		V_{DD}=15V, C_L=50pF, R_L=200kΩ		35	70	
	t_{PHL}	V_{DD}=5.0V, C_L=50pF, R_L=200kΩ		100	250	
		V_{DD}=10V, C_L=50pF, R_L=200kΩ		40	100	
		V_{DD}=15V, C_L=50pF, R_L=200kΩ		30	70	
Transition Time	t_{TLH} t_{THL}	V_{DD}=5.0V, C_L=50pF, R_L=200kΩ		90	200	ns
		V_{DD}=10V, C_L=50pF, R_L=200kΩ		50	100	
		V_{DD}=15V, C_L=50pF, R_L=200kΩ		40	80	

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

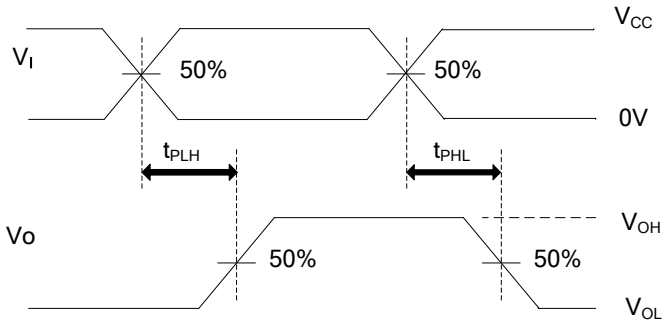
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Average Input Capacitance	C_{IN}	Any Input		5	7.5	pF
Power Dissipation Capacitance	C_{PD}	Any Gate		18		

■ TEST CIRCUIT AND WAVEFORMS



Definitions for test circuit

Note: C_L includes probe and jig capacitance.



Propagation Delay Times