



UCD4011C

Preliminary

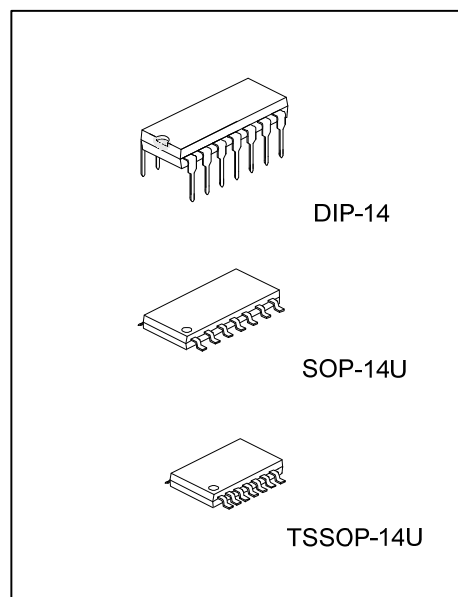
CMOS IC

**QUAD 2-INPUT NAND
BUFFERED B SERIES GATE**■ **DESCRIPTION**

The **UTC UCD4011C** contains four independent 2-input NAND gates which perform the function $Y = A \bullet B$ in positive logic.

■ **FEATURES**

- * 5V-10V-15V Parametric Ratings
- * Quad 2-Input NAND Gate
- * Symmetrical Output Characteristics

■ **ORDERING INFORMATION**

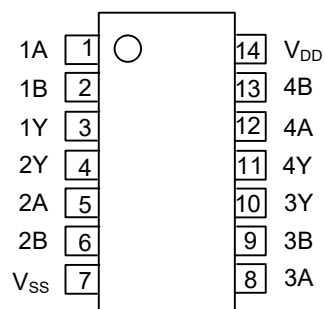
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UCD4011CL-D14-T	UCD4011CG-D14-T	DIP-14	Tube
UCD4011CL-UEA-R	UCD4011CG-UEA-R	SOP-14U	Tape Reel
UCD4011CL-UEB-R	UCD4011CG-UEB-R	TSSOP-14U	Tape Reel

UCD4011CG-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
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■ **MARKING**

DIP-14	SOP-14U / TSSOP-14U
14 13 12 11 10 9 8 UTC □□□□ UCD4011C□ □□ 1 2 3 4 5 6 7 → Date Code → L: Lead Free → G: Halogen Free → Lot Code	14 13 12 11 10 9 8 UTC □□□□ UCD4011C□ □□ 1 2 3 4 5 6 7 → Date Code → L: Lead Free → G: Halogen Free → Lot Code

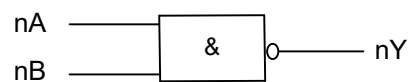
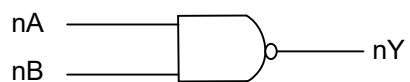
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V _{DD}		-0.5 ~ 18	V
Input Voltage	V _I		-0.5 ~ V _{DD} +0.5	V
Output Voltage	V _O		-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	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{DD}		3		15	V
Operating Temperature	T _A		-40		+125	°C

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V _{IH}	V _{DD} = 5V, V _O =0.5V	3.5			V
		V _{DD} = 10V, V _O =1.0V	7.0			
		V _{DD} = 15V, V _O =1.5V	11.0			
Low-Level Input Voltage	V _{IL}	V _{DD} = 5V, V _O =4.5V			1.5	V
		V _{DD} = 10V, V _O =9.0V			3.0	
		V _{DD} = 15V, V _O =13.5V			4.0	
High-Level Output Voltage	V _{OH}	V _{DD} = 5V, I _O < 1μA	4.95	5		V
		V _{DD} = 10V, I _O < 1μA	9.95	10		
		V _{DD} = 15V, I _O < 1μA	14.95	15		
Low-Level Output Voltage	V _{OL}	V _{DD} = 5V, I _O < 1μA		0	0.05	V
		V _{DD} = 10V, I _O < 1μA		0	0.05	
		V _{DD} = 15V, I _O < 1μA		0	0.05	
High-Level Output Current (Note)	I _{OH}	V _{DD} = 5V, V _O =4.6V	-0.51			mA
		V _{DD} = 10V, V _O =9.5V	-1.3			
		V _{DD} = 15V, V _O =13.5V	-3.4			
Low-Level Output Current (Note)	I _{OL}	V _{DD} = 5V, V _O =0.4V	0.51			mA
		V _{DD} = 10V, V _O =0.5V	1.3			
		V _{DD} = 15V, V _O =1.5V	3.4			
Input Leakage Current	I _{I(LEAK)}	V _{DD} = 15V, V _{IN} = V _{DD} or V _{SS}			±0.1	μA
Quiescent Supply Current	I _Q	V _{DD} = 5V, V _{IN} = V _{DD} or V _{SS} , I _{OUT} = 0			0.25	μA
		V _{DD} = 10V, V _{IN} = V _{DD} or V _{SS} , I _{OUT} = 0			0.5	
		V _{DD} = 15V, V _{IN} = V _{DD} or V _{SS} , I _{OUT} = 0			1.0	

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

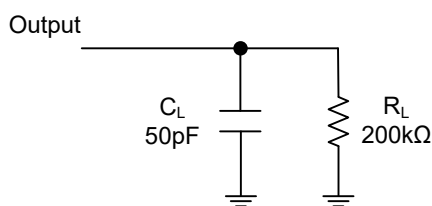
■ SWITCHING CHARACTERISTICS (T_A=25°C, Input: t_R=t_F=20ns, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay From Input (A or B) to Output (Y)	t _{PLH} / t _{PHL}	V _{DD} =5V, C _L =50pF, R _L =200kΩ		90	250	ns
		V _{DD} =10V, C _L =50pF, R _L =200kΩ		50	120	
		V _{DD} =15V, C _L =50pF, R _L =200kΩ		40	90	
Output Transition Time	t _{TLH} / t _{THL}	V _{DD} =5V, C _L =50pF, R _L =200kΩ		80	200	ns
		V _{DD} =10V, C _L =50pF, R _L =200kΩ		45	100	
		V _{DD} =15V, C _L =50pF, R _L =200kΩ		40	80	

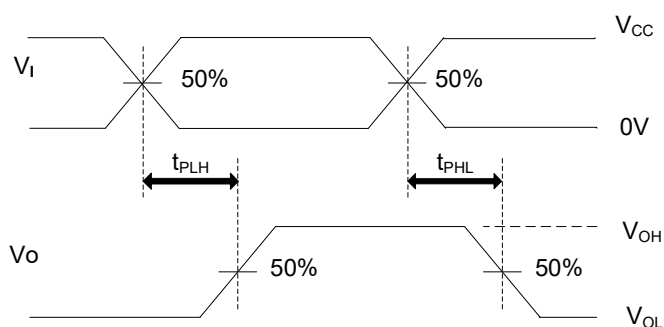
■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Average Input Capacitance	C _{IN}	Any Input			7.5	pF

■ TEST CIRCUIT AND WAVEFORMS



Definitions for test circuit



Propagation Delay Times

Note: C_L includes probe and jig capacitance.

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