



U74AHC21

CMOS IC

DUAL 4-INPUT AND GATES

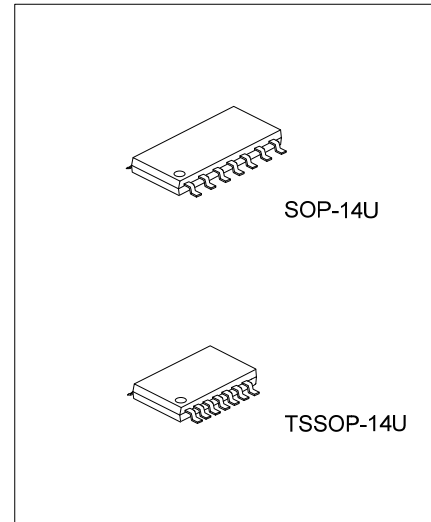
DESCRIPTION

The **U74AHC21** contains two independent 4-input AND gates.
They perform the Boolean function $Y=A \bullet B \bullet C \bullet D$ or

$Y=\overline{A} + \overline{B} + \overline{C} + \overline{D}$ in positive logic.

FEATURES

- * Operation voltage range: 2 ~ 5.5V
- * Low power dissipation: $I_{CC}=2\mu A$ (Max.)
- * $\pm 8mA$ output drive at 5V

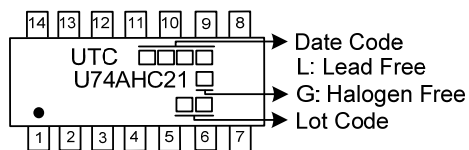


ORDERING INFORMATION

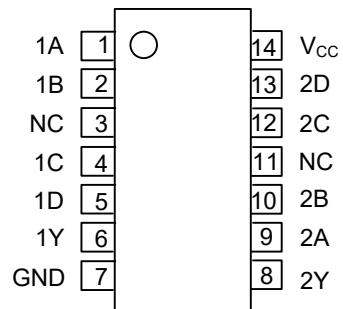
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC21L-UEA-R	U74AHC21G-UEA-R	SOP-14U	Tape Reel
U74AHC21L-UEB-R	U74AHC21G-UEB-R	TSSOP-14U	Tape Reel

U74AHC21G-UEA-R (1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) UEA: SOP-14U, UEB: TSSOP-14U (3) G: Halogen Free and Lead Free, L: Lead Free
--	---

MARKING



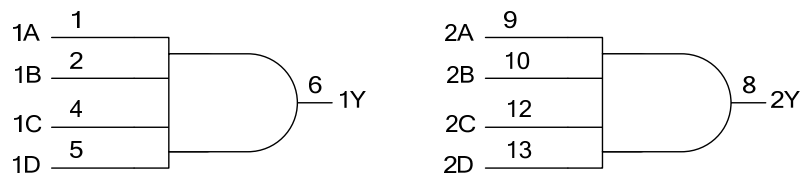
PIN CONFIGURATION



FUNCTION TABLE (each gate)

INPUT(A)	INPUT(B)	INPUT(C)	INPUT(D)	OUTPUT(Y)
H	H	H	H	H
L	X	X	X	L
X	L	X	X	L
X	X	L	X	L
X	X	X	L	L

LOGIC DIAGRAM (positive logic)



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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	-0.5 ~ 7	V
Input Clamp Current (V _I <0)	I _{IK}	-20	mA
Output Clamp Current (V _O <0 or V _O >V _{CC})	I _{OK}	±20	mA
Output Current	I _{OUT}	±25	mA
V _{CC} or GND Current	I _{CC}	±50	mA
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 (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{CC}		2		5.5	V
Input Voltage	V _{IN}		0		V _{CC}	V
Output Voltage	V _{OUT}		0		V _{CC}	V
Input Transition Rise or Fall Rate $\Delta t/\Delta V$	$\Delta t/\Delta V$	V _{CC} =3V±0.3V			100	ns
		V _{CC} =5V±0.5V			20	ns
Operating Temperature	T _A		-40		+125	°C

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V _{IH}	V _{CC} =2V	1.5			V
		V _{CC} =3V	2.1			V
		V _{CC} =5.5V	3.85			V
Low-Level Input Voltage	V _{IL}	V _{CC} =2V			0.5	V
		V _{CC} =3V			0.9	V
		V _{CC} =5.5V			1.65	V
High-Level Output Voltage	V _{OH}	V _{CC} =2V, I _{OH} =50μA	1.9			V
		V _{CC} =3V, I _{OH} =50μA	2.9			V
		V _{CC} =4.5V, I _{OH} =50μA	4.4			V
		V _{CC} =3V, I _{OH} =4mA	2.58			V
		V _{CC} =4.5V, I _{OH} =8mA	3.94			V
Low-Level Output Voltage	V _{OL}	V _{CC} =2V, I _{OL} =50μA			0.1	V
		V _{CC} =3V, I _{OL} =50μA			0.1	V
		V _{CC} =4.5V, I _{OL} =50μA			0.1	V
		V _{CC} =3V, I _{OL} =4mA			0.36	V
		V _{CC} =4.5V, I _{OL} =8mA			0.36	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =6V, V _{IN} =V _{CC} or GND			±0.1	μA
Quiescent Supply Current	I _{CC}	V _{CC} =5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0			2	μA
Input Capacitance	C _{IN}	V _{CC} =5V			4	pF

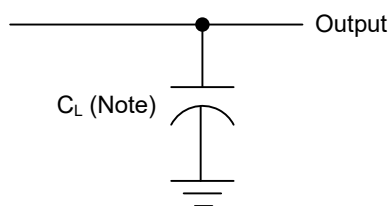
■ DYNAMIC CHARACTERISTICS (Input: t_r=t_f=3ns, T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION		MIN	TYP	MAX	UNIT
Propagation delay from Input (A, B, C, D) to output (Y)	t _{PLH}	V _{CC} =3.3±0.3V	C _L =15pF		6.2	8.8	ns
			C _L =50pF		8.7	12.3	ns
	t _{PHL}	V _{CC} =5±0.5V	C _L =15pF		4.5	5.9	ns
			C _L =50pF		5.8	7.9	ns

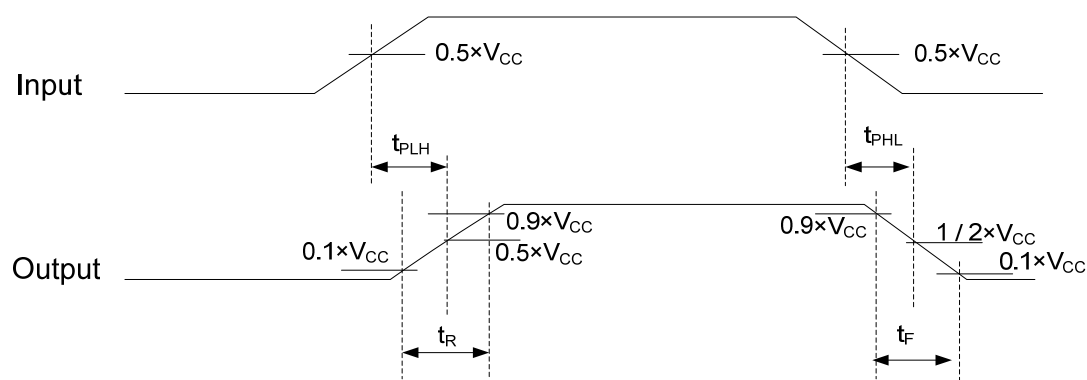
■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{PD}	No load		18		pF

■ TEST CIRCUIT AND WAVEFORMS



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.