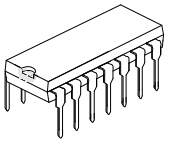
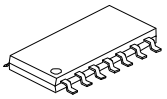
U74HC32

CMOS IC

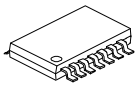
QUADRUPLE 2-INPUT POSITIVE-OR GATES



DIP-14



SOP-14



TSSOP-14

■ DESCRIPTION

The UTC **U74HC32** devices contain four independent 2-input OR gates. They perform the Boolean function $Y = \overline{\overline{A} \bullet \overline{B}}$ or Y = A + B in positive logic.

■ FEATURES

* Wide Operating Voltage Range of 2.0V ~ 6.0V
* Low Power Consumption, 2μA Max I_{CC}
* ±5.2mA Output Drive at 5V
* Low Input Current of 1μA Max

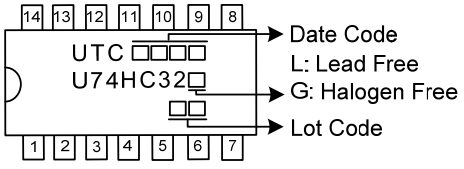
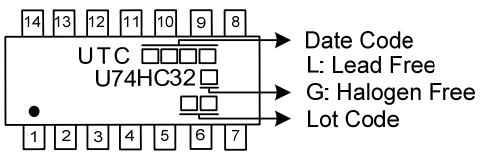
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HC32L-D14-T	U74HC32G-D14-T	DIP-14	Tube
U74HC32L-S14-R	U74HC32G-S14-R	SOP-14	Tape Reel
U74HC32L-P14-R	U74HC32G-P14-R	TSSOP-14	Tape Reel

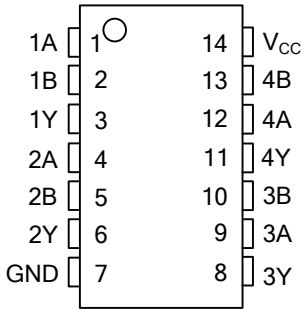
U74HC32G-D14-T
(1)Packing Type
(2)Package Type
(3)Green Package

(1) T: Tube, R: Tape Reel
(2) D14: DIP-14, S14: SOP-14, P14: TSSOP-14
(3) G: Halogen Free and Lead Free, L: Lead Free

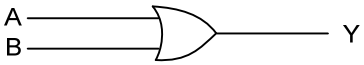
■ MARKING

DIP-14	SOP-14 / TSSOP-14
	

■ PIN CONFIGURATION



■ LOGIC DIAGRAM (Positive Logic)



■ FUNCTION TABLE (Each Inverter)

INPUT		OUTPUT
A	B	Y
H	X	H
X	H	H
L	L	L

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage Range	V_{CC}	-0.5 ~ 7	V
Input Clamp Current (Note 2)	I_{IK} ($V_{IN}<0$ or $V_{IN}>V_{CC}$	±20	mA
Output Clamp Current (Note 2)	I_{OK} ($V_{OUT}<0$ or $V_{OUT}>V_{CC}$	±20	mA
Continuous Output Current	I_O(V_{OUT} = 0 ~ V_{CC})	±25	mA
Continuous Current Through	V_{CC} or GND	±50	mA
Storage Temperature	T_{STG}	-65 ~ +150	°C

Notes: 1. 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.
2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Ambient to Junction	SOP-14	θ_{JA}	86	°C/W
	DIP-14		80	°C/W
	TSSOP-14		113	°C/W

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2	4.5	6	V
Input Voltage	V_{IN}		0		V_{CC}	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input transition Rise/Fall Time	dt/dv	V_{CC}=4.5V			500	ns
Operating Temperature	T_A		-40		+125	°C

Note: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.

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

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V_{IH}	V_{CC}=2V	1.4			1.5			V
		V_{CC}=4.5V	3			3.15			V
		V_{CC}=6V	4.2			4.2			V
Low- Level Input Voltage	V_{IL}	V_{CC}=2V			0.7			0.5	V
		V_{CC}=4.5V			1.5			1.35	V
		V_{CC}=6V			2			1.8	V
High-Level Output Voltage	V_{OH}	V_{CC}=4.5V, V_{IN}=V_{IH} or V_{IL}, I_{OH}=-20μA	4.4	4.5		4.4			V
		V_{CC}=4.5V, V_{IN}=V_{IH} or V_{IL}, I_{OH}=-5.2mA	3.98	4.3		3.84			V
Low-level Input Voltage	V_{OL}	V_{CC}=4.5V, V_{IN}=V_{IH} or V_{IL}, I_{OL}=20μA		0.001	0.1			0.1	V
		V_{CC}=4.5V, V_{IN}=V_{IH} or V_{IL} ,I_{OL}=5.2mA		0.18	0.26			0.33	V
Input Current	I_{IN}	V_{CC}=6V, V_{IN}=V_{CC} or 0			±0.1			±1	uA
Quiescent Supply Current	I_{CC}	V_{CC}=6V, V_{IN}=V_{CC} or 0, I_{OUT}=0			2			20	μA

Note: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.

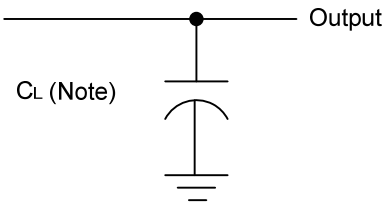
■ SWITCHING CHARACTERISTICS OVER RECOMMENDED OPERATING FREE-AIR TEMPERATURE RANGE (C_L=50 pF, T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
ropagation Delay from A or B) Y	t_{PD}	V_{CC}=2V			43			125	ns
		V_{CC}=4.5V			18			25	ns
		V_{CC}=6V			15			23	ns
utput Rise and Fall Time to Y	t_T	V_{CC}=2V			33			95	ns
		V_{CC}=4.5V			19			22	ns
		V_{CC}=6V			17			19	ns

■ OPERATING CHARACTERISTICS (f=10MHz, T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance Per Gate	C_{PD}	No load		20		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: CL includes probe and jig capacitance.