



## U74LVC07A

CMOS IC

### HEX BUFFERS WITH OPEN-DRAIN OUTPUTS

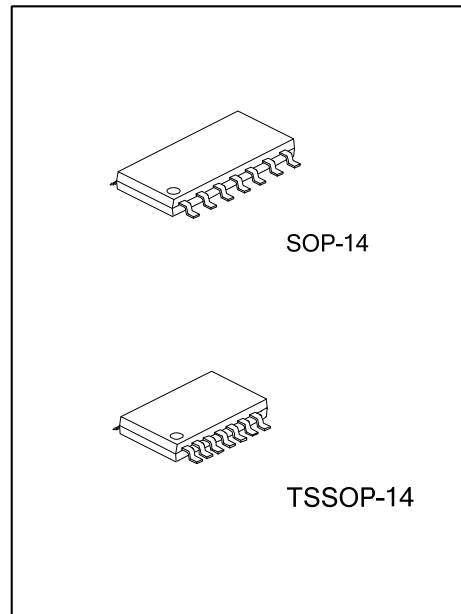
#### DESCRIPTION

The **U74LVC07A** contain six independent buffers with open drain outputs. The outputs are open-drain and can be connected to other open-drain outputs to implement active-LOW wired-OR or active-HIGH wired-AND functions

Inputs can be driven from 1.8V, 2.5V, 3.3V, or 5V devices. This feature allows the use of these devices as translators in a mixed-system environment.

#### FEATURES

- \* Operate from 1.65V to 5.5V
- \* Inputs and open-drain outputs accept voltages to 5.5V
- \* Direct interface with TTL levels
- \* I<sub>off</sub> supports partial-power-down mode

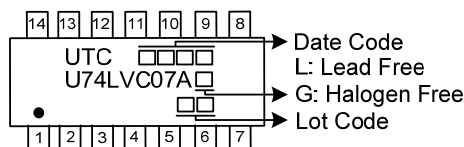


#### ORDERING INFORMATION

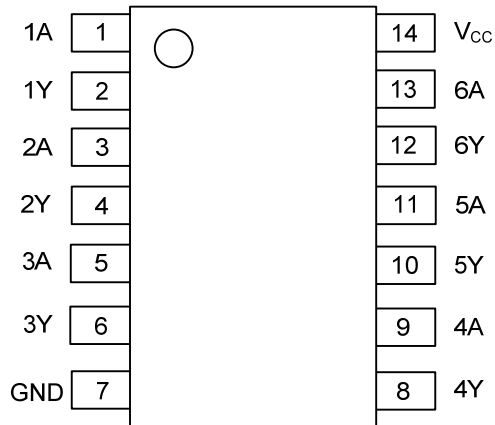
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC07AL-S14-R	U74LVC07AG-S14-R	SOP-14	Tape Reel
U74LVC07AL-P14-R	U74LVC07AG-P14-R	TSSOP-14	Tape Reel

<p>U74LVC07AG-P14-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) P14: TSSOP-14 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



■ PIN CONFIGURATION

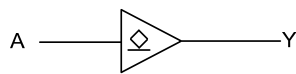


■ FUNCTION TABLE(each buffer)

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

Note: H: HIGH voltage level; L: LOW voltage level; Z=high-impedance OFF-state.

■ LOGIC DIAGRAM(each inverter)



Logic symbol

■ ABSOLUTE MAXIMUM RATING (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	-0.5 ~ +6.5	V
Input Voltage	V <sub>IN</sub>	-0.5 ~ +6.5	V
Output Voltage	V <sub>OUT</sub>	-0.5 ~ V <sub>CC</sub> +0.5	V
V <sub>CC</sub> or GND Current	I <sub>CC</sub>	±100	mA
Continuous Output Current (V <sub>OUT</sub> =0 to V <sub>CC</sub> )	I <sub>OUT</sub>	±50	mA
Input Clamp Current (V <sub>IN</sub> <0)	I <sub>IK</sub>	-50	mA
Output Clamp Current (V <sub>OUT</sub> <0)	I <sub>OK</sub>	-50	mA
Storage Temperature Range	T <sub>STG</sub>	-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	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V <sub>CC</sub>	Operating	1.65		5.5	V
Input Voltage	V <sub>IN</sub>		0		5.5	V
Output Voltage	V <sub>OUT</sub>		0		V <sub>CC</sub>	V
Low-level Output Current	I <sub>OL</sub>	V <sub>CC</sub> =1.65V			4	mA
		V <sub>CC</sub> =2.3V			12	mA
		V <sub>CC</sub> =2.7V			12	mA
		V <sub>CC</sub> =3V			24	mA
		V <sub>CC</sub> =4.5V			24	mA
Operating Temperature	T <sub>A</sub>		-40		+125	°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ <sub>JA</sub>	113	°C/W

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =1.65V ~ 1.95V	0.65×V <sub>CC</sub>			V
		V <sub>CC</sub> =2.3V ~ 2.7V	1.7			V
		V <sub>CC</sub> =2.7V ~ 3.6V	2			V
		V <sub>CC</sub> =4.5V ~ 5.5V	0.7×V <sub>CC</sub>			V
Low-level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =1.65V ~ 1.95V			0.35×V <sub>CC</sub>	V
		V <sub>CC</sub> =2.3V ~ 2.7V			0.7	V
		V <sub>CC</sub> =2.7V ~ 3.6V			0.8	V
		V <sub>CC</sub> =4.5V ~ 5.5V			0.3×V <sub>CC</sub>	V
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =1.65 ~ 5.5V, I <sub>OL</sub> =100μA			0.2	V
		V <sub>CC</sub> =1.65V, I <sub>OL</sub> =4mA			0.45	V
		V <sub>CC</sub> =2.3V, I <sub>OL</sub> =12mA			0.7	V
		V <sub>CC</sub> =2.7V, I <sub>OL</sub> =12mA			0.4	V
		V <sub>CC</sub> =3.0V, I <sub>OL</sub> =24mA			0.55	V
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =32mA			0.55	V
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>IN</sub> =5.5V or GND, V <sub>CC</sub> =3.6V			±5	μA
Power OFF Leakage Current	I <sub>OFF</sub>	V <sub>IN</sub> or V <sub>OUT</sub> =5.5V, V <sub>CC</sub> =0V			±10	μA
Quiescent Supply Current	I <sub>CC</sub>	V <sub>IN</sub> = V <sub>CC</sub> or GND, I <sub>OUT</sub> =0 V <sub>CC</sub> =3.6V			10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI <sub>CC</sub>	V <sub>CC</sub> =2.7 ~ 3.6V, I <sub>OUT</sub> =0 One input at V <sub>CC</sub> -0.6V, Other inputs at V <sub>CC</sub> or GND			500	μA
Input Capacitance	C <sub>I</sub>	V <sub>IN</sub> = V <sub>CC</sub> or GND, V <sub>CC</sub> =3.3V		5		pF

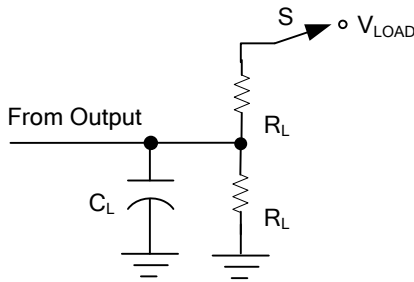
■ SWITCHING CHARACTERISTICS (T<sub>A</sub>=-40~+125°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (nA) to output(nY)	t <sub>PLZ</sub> t <sub>PZL</sub>	V <sub>CC</sub> =1.8±0.15V, C <sub>L</sub> =30pF, R <sub>L</sub> =1KΩ	1		5.6	ns
		V <sub>CC</sub> =2.5±0.2V, C <sub>L</sub> =30pF, R <sub>L</sub> =500Ω	1		3.4	ns
		V <sub>CC</sub> =2.7V, C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω			3.3	ns
		V <sub>CC</sub> =3.3±0.3V, C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω	1		3.6	ns
		V <sub>CC</sub> =5±0.5V, C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω	1		2.6	ns

■ OPERATING CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

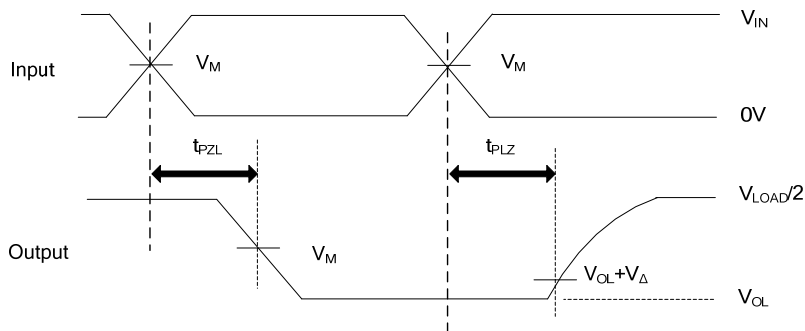
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance Per Inverter	C <sub>PD</sub>	V <sub>CC</sub> =1.8±0.15V, f=10MHz		1.8		pF
		V <sub>CC</sub> =2.5±0.2V, f=10MHz		2.0		pF
		V <sub>CC</sub> =3.3±0.3V, f=10MHz		2.5		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

V <sub>CC</sub>	Inputs		V <sub>M</sub>	V <sub>LOAD</sub>	V <sub>Δ</sub>	C <sub>L</sub>	R <sub>L</sub>
	V <sub>IN</sub>	t <sub>R</sub> , t <sub>F</sub>					
1.8V±0.15V	V <sub>CC</sub>	≤2ns	V <sub>CC</sub> /2	2 x V <sub>CC</sub>	0.15V	30pF	1KΩ
2.5V±0.2V	V <sub>CC</sub>	≤2ns	V <sub>CC</sub> /2	2 x V <sub>CC</sub>	0.15V	30pF	500Ω
2.7V	2.7V	≤2.5ns	1.5V	2 x V <sub>CC</sub>	0.3V	50pF	500Ω
3.3V±0.3V	2.7V	≤2.5ns	1.5V	2 x V <sub>CC</sub>	0.3V	50pF	500Ω
5V±0.5V	V <sub>CC</sub>	≤2.5ns	V <sub>CC</sub> /2	2 x V <sub>CC</sub>	0.3V	50pF	500Ω



ENABLE AND DISABLE TIMES

Notes: 1. C<sub>L</sub> includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: PRR ≤10MHz, Z<sub>O</sub> = 50Ω.

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