



U74LVC06A

CMOS IC

HEX INVERTER BUFFERS/DRIVERS WITH OPEN-DRAIN OUTPUTS

DESCRIPTION

The **U74LVC06A** contain six independent inverter buffers/drivers with open drain outputs, and performs the Boolean function $Y = \overline{A}$ in positive logic.

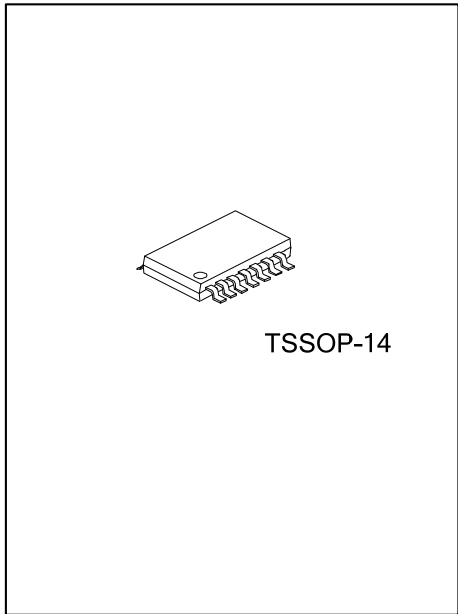
This device has power-down protective circuit preventing destruction of the device when it is powered down.

FEATURES

- * Operate From 1.65V to 3.6V
- * Inputs and Open-Drain Outputs Accept Voltages to 5.5V
- * I_{OFF} Supports Partial-Power-Down Mode
- * Low Power Dissipation

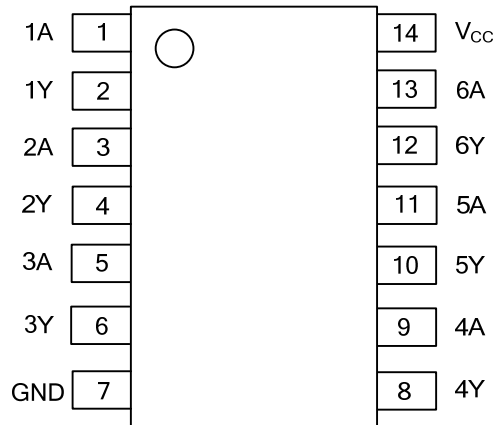
ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC06AL-P14-R	U74LVC06AG-P14-R	TSSOP-14	Tape Reel
U74LVC06AL-P14-T	U74LVC06AG-P14-T	TSSOP-14	Tube



<p>U74LVC06AL-P14-R</p>	<p>(1) R: Tape Reel, T: Tube (2) P14: TSSOP-14 (3) G: Halogen Free, L: Lead Free</p>
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■ PIN CONFIGURATION

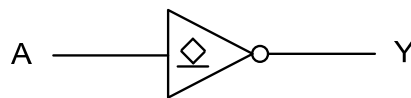


■ FUNCTION TABLE (Each Inverter)

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

Note: H: HIGH voltage level; L: LOW voltage level.

■ LOGIC DIAGRAM (Each Inverter)



Logic Symbol

■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ +6.5	V
Input Voltage	V_{IN}	-0.5 ~ +6.5	V
Output Voltage	V_{OUT}	-0.5 ~ +6.5	V
V_{CC} or GND Current	I_{CC}	±100	mA
Continuous Output Current ($V_{OUT}=0$ to V_{CC})	I_{OUT}	±50	mA
Input Clamp Current ($V_{IN}<0$)	I_{IK}	-50	mA
Output Clamp Current ($V_{OUT}<0$)	I_{OK}	-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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	113	°C /W

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65		3.6	V
		Data retention only	1.5			V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		5.5	V
Operating Temperature	T_A		-40		85	°C
Low-Level Output Current	I_{OL}	$V_{CC}=1.65V$			4	mA
		$V_{CC}=2.3V$			8	mA
		$V_{CC}=2.7V$			12	mA
		$V_{CC}=3V$			24	mA

■ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	$V_{CC}=1.65V \sim 1.95V$	$0.65 \cdot V_{CC}$			V
		$V_{CC}=2.3V \sim 2.7V$	1.7			V
		$V_{CC}=2.7V \sim 3.6V$	2			V
Low-Level Input Voltage	V_{IL}	$V_{CC}=1.65V \sim 1.95V$			$0.35 \cdot V_{CC}$	V
		$V_{CC}=2.3V \sim 2.7V$			0.7	V
		$V_{CC}=2.7V \sim 3.6V$			0.8	V
Low-Level Output Voltage	V_{OL}	$I_{OL}=100\mu A$ $V_{CC}=1.65 \sim 3.6V$			0.2	V
		$I_{OL}=4mA$ $V_{CC}=1.65V$			0.45	V
		$I_{OL}=8mA$ $V_{CC}=2.3V$			0.7	V
		$I_{OL}=12mA$ $V_{CC}=2.7V$			0.4	V
		$I_{OL}=24mA$ $V_{CC}=3.0V$			0.55	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{IN}=5.5V$ or GND, $V_{CC}=3.6V$			±5	μA
Power OFF Leakage Current	I_{OFF}	V_{IN} or $V_{OUT}=5.5V$, $V_{CC}=0V$			±10	μA
Quiescent Supply Current	I_Q	$V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$, $V_{CC}=3.6V$			10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI_Q	$V_{CC}=2.7 \sim 3.6V$, One input at $V_{CC}-0.6V$, $I_{OUT}=0$, Other inputs at V_{CC} or GND			500	μA
Input Capacitance	C_{IN}	$V_{IN}=V_{CC}$ or GND, $V_{CC}=3.3V$		5		pF

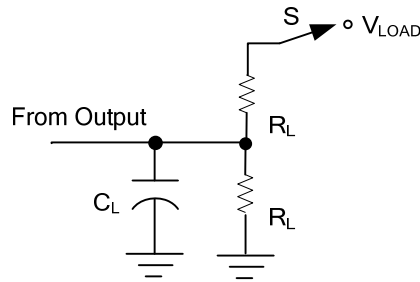
■ SWITCHING CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation delay from input (nA) to output(nY)	t _{PLZ} / t _{PZL}	V _{CC} =1.8±0.15V, R _L =1KΩ	C _L =30pF	1.4		3.9	ns
		V _{CC} =2.5±0.2V, R _L =500Ω		1.0		3.1	ns
		V _{CC} =2.7V, R _L =500Ω	C _L =50pF	1.0		3.9	ns
		V _{CC} =3.3±0.3V, R _L =500Ω		1.0		3.7	ns

■ OPERATING CHARACTERISTICS (T_A=25°C)

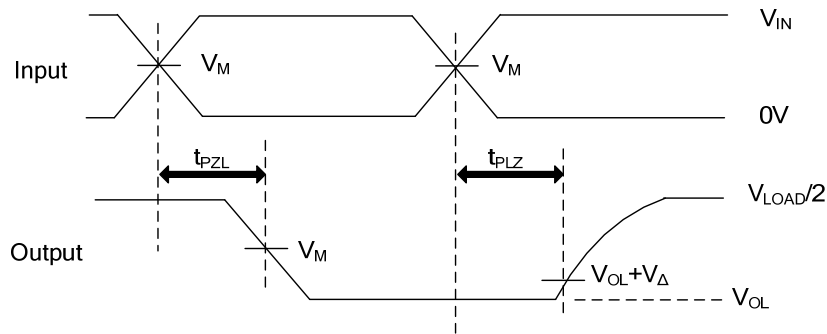
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Power Dissipation Capacitance Per Inverter	C _{PD}	V _{CC} =1.8±0.15V	f=10MHz		2.1		pF
		V _{CC} =2.5±0.2V			2.3		pF
		V _{CC} =3.3±0.3V			2.5		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

V _{CC}	INPUTS		V _M	V _{LOAD}	V _Δ	C _L	R _L
	V _{IN}	t _r , t _f					
1.8V±0.15V	V _{CC}	≤2ns	V _{CC} /2	2 x V _{CC}	0.15V	30pF	1KΩ
2.5V±0.2V	V _{CC}	≤2ns	V _{CC} /2	2 x V _{CC}	0.15V	30pF	500Ω
2.7V	2.7V	≤2.5ns	1.5V	6V	0.3V	50pF	500Ω
3.3V±0.3V	2.7V	≤2.5ns	1.5V	6V	0.3V	50pF	500Ω



ENABLE AND DISABLE TIMES

Note: C_L includes probe and jig capacitance.

All input pulses are supplied by generators having the following characteristics: PRR ≤10MHz, Z_o = 50Ω.

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