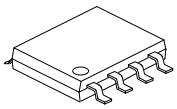
U74LV3G14 **Preliminary** ***CMOS IC***

TRIPLE SCHMITT-TRIGGER INVERTER



SOP-8

■ DESCRIPTION

The **U74LV3G14** is designed as three independent Inverters with Schmitt-trigger action. it may have different input threshold levels for positive-going (V_{T+}) and negative-going (V_{T-}) signals.

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

■ FEATURES

* Wide supply voltage range from 1.65V to 5.5V
* Inputs accept voltages up to 5.5V
* I_{OFF} supports partial-power-down mode
* Low static power consumption; I_{CC}=10μA (Max.)

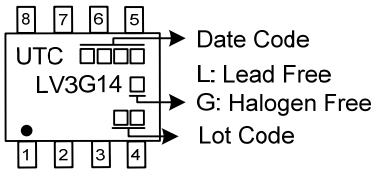
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LV3G14L-S08-R	U74LV3G14G-S08-R	SOP-8	Tape Reel

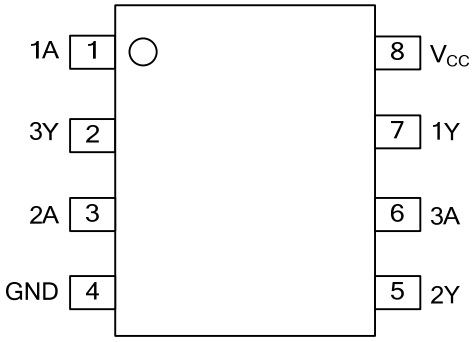
U74LV3G14G-S08-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) S08: SOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION

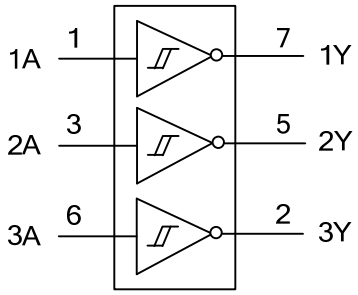


■ FUNCTION TABLE

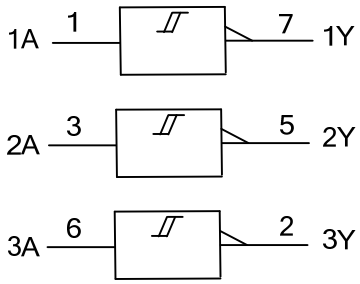
INPUT(A)	OUTPUT(Y)
H	L
L	H

Note: H: High voltage level; L: Low voltage level.

■ LOGIC DIAGRAM (positive logic)



Logic symbol



IEC logic symbol

■ ABSOLUTE MAXIMUM RATING (Unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V_{CC}		-0.5 ~ +7.0	V
Input Voltage	V_{IN}		-0.5 ~ +7.0	V
Output Voltage	V_{OUT}	Output in the high or low state	-0.5 ~ + V_{CC}+0.5	V
		Output in the power-off state	-0.5 ~ +7.0	V
Continuous V_{CC} or GND Current	I_{CC}		±50	mA
Continuous Output Current	I_{OUT}	V_{OUT}=0V ~ V_{CC}	±25	mA
Input Clamp Current	I_{IK}	V_{IN}<0V	-20	mA
Output Clamp Current	I_{OK}	V_{OUT}>V_{CC} or V_{OUT}<0V	±50	mA
Junction Temperature	T_J		+150	°C
Storage Temperature Range	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	RATING	UNIT
Junction to Ambient	θ_{JA}	150	°C/W

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65		5.5	V
		Data retention only	1.5			V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}	High or low state	0		V_{CC}	V
Operating Temperature (Note)	T_A		-40		+125	°C

Note: This condition is only determined from design. It can't be 100% tested in mass production.

■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Positive-Going Input Threshold Voltage	V_{T+}	V_{CC}=1.65V	0.7		1.4	V
		V_{CC}=2.3V	1		1.7	V
		V_{CC}=3.0V	1.3		2.2	V
		V_{CC}=5.5V	2.2		3.7	V
Negative-Going Input Threshold Voltage	V_{T-}	V_{CC}=1.65V	0.3		0.7	V
		V_{CC}=2.3V	0.4		1	V
		V_{CC}=3.0V	0.6		1.3	V
		V_{CC}=5.5V	1.4		2.5	V
Hysteresis Voltage (V_{T+}-V_{T-})	$\triangle V_T$	V_{CC}=1.65V	0.3		0.8	V
		V_{CC}=2.3V	0.4		0.9	V
		V_{CC}=3.0V	0.4		1.1	V
		V_{CC}=5.5V	0.7		1.4	V

■ ELECTRICAL CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Output Voltage	V_{OH}	V_{CC}=1.65 ~ 5.5V, I_{OH}=-50μA	V_{CC}-0.1			V
		V_{CC}=1.65V, I_{OH}=-1mA	1.35			V
		V_{CC}=2.3V, I_{OH}=-2mA	2			V
		V_{CC}=3.0V, I_{OH}=-6mA	2.48			V
		V_{CC}=4.5V, I_{OH}=-12mA	3.8			V
Low-Level Output Voltage	V_{OL}	V_{CC}=1.65 ~ 5.5V, I_{OL}=50μA			0.1	V
		V_{CC}=1.65V, I_{OL}=1mA			0.3	V
		V_{CC}=2.3V, I_{OL}=2mA			0.4	V
		V_{CC}=3.0V, I_{OL}=6mA			0.44	V
		V_{CC}=4.5V, I_{OL}=12mA			0.55	V
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}=0 ~ 5.5V, V_{IN}=5.5V or GND			±1	μA
Power OFF Leakage Current	I_{OFF}	V_{CC}=0V, V_{IN} or V_{OUT}=5.5V			±5	μA
Quiescent Supply Current	I_{CC}	V_{CC}=1.65 ~ 5.5V, V_{IN}=V_{CC} or GND, I_{OUT}=0			10	μA

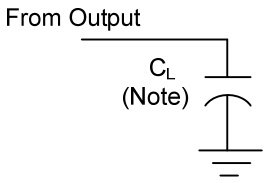
■ DYNAMIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		T_A=25°C			T_A=--40~+125°C			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay from input (A) to output(Y)	t_{PD}	V_{CC}=1.8±0.15V	C_L=15pF		14	32	1		34	ns
			C_L=50pF		21	43	1		46	ns
		V_{CC}=2.5±0.2V	C_L=15pF		8	19.7	1		22	ns
			C_L=50pF		12	24	1		27	ns
		V_{CC}=3.3±0.3V	C_L=15pF		7	12.8	1		15	ns
			C_L=50pF		10	16.3	1		18.5	ns
		V_{CC}=5±0.5V	C_L=15pF		4.5	8.6	1		10	ns
			C_L=50pF		6.5	10.6	1		12	ns

■ OPERATING CHARACTERISTICS (f=10MHz, unless otherwise specified)

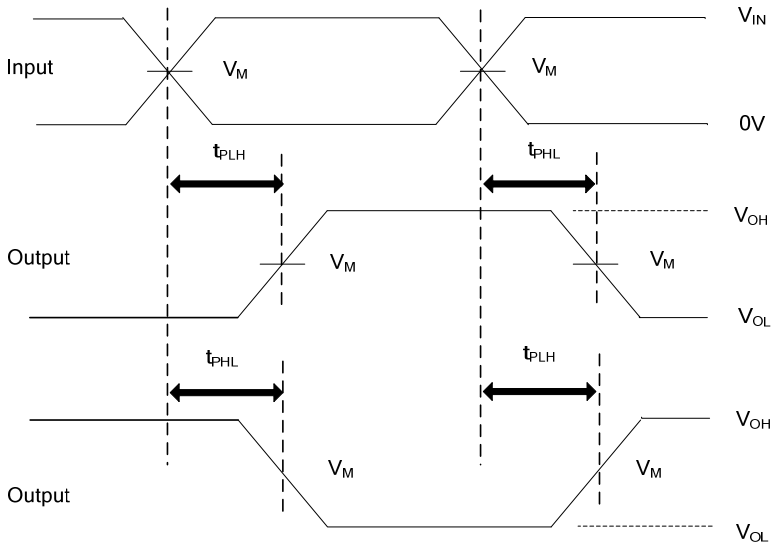
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_I	V_{CC}=3.3V, V_{IN}=V_{CC} or GND		3.0		pF
Power Dissipation Capacitance	C_{PD}	V_{CC}=3.3V		8.5		pF
		V_{CC}=5V		10		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

V_{CC}	Inputs		V_M	C_L
	V_{IN}	t_R, t_F		
1.8V±0.15V	V_{CC}	≤3ns	$V_{CC}/2$	15/50pF
2.5V±0.2V	V_{CC}	≤3ns	$V_{CC}/2$	15/50pF
3.3V±0.3V	V_{CC}	≤3ns	$V_{CC}/2$	15/50pF
5V±0.5V	V_{CC}	≤3ns	$V_{CC}/2$	15/50pF



PROPAGATION DELAY TIMES

Notes: 1. C_L includes probe and jig capacitance.
2. All input pulses are supplied by generators having the following characteristics: PRR ≤10MHz, Z_O = 50Ω.