

DUAL SCHMITT-TRIGGER INVERTER

1. Description

The FLH **74LVC2G14** is a high-performance, low-power, low-voltage, Si-gate CMOS device which provides two inverters with Schmitt trigger action. It is capable of transforming slowly changed input signals into sharply defined, jitter-free output signals.

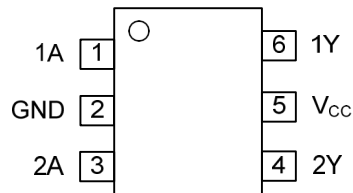
2. Features

- Operate From 1.65V to 5.5V
- 5V Tolerant Input/Output for Interfacing with 5V logic
- $\pm 24\text{mA}$ Output Drive ($V_{CC} = 3.3\text{V}$)
- CMOS Low-Power Consumption and High Noise Immunity

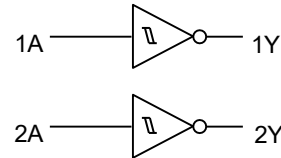
3. Applications

- Voltage Level Shifting
- General Purpose Logic
- Power Down Signal Isolation

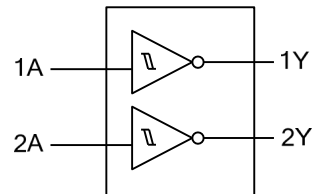
4. Pinning



5. Logic Diagram



6. Logic Symbol



7. Pinning Description

Pin Name	Pin Number	Function
1A	1	Data Input
GND	2	Ground
2A	3	Data Input
2Y	4	Data Output
V	5	Supply Voltage
1Y	6	Data Output

8. Function Table

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

H=High level

L=Low Level

9. Ordering Information

Part Number	Description	Package Type	Packing	SPQ
74LVC2G14DW6		SOT-363	Tape Reel	
74LVC2G14M6		SOT-26/SOT-23-6	Tape Reel	

10. ABSOLUTE MAXIMUM RATING

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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ +6.5	V
Input Voltage	V_{IN}	-0.5 ~ +6.5	V
Output Voltage	High-impedance	-0.5 ~ 6.5	V
	Power-off		
	High State	-0.5 ~ $V_{CC}+0.5$	V
	Low State		
V_{CC} or GND Current	I_{CC}	± 100	mA
Continuous Output Current	I_O	± 50	mA
Input Clamp Current	I_{IK}	-50	mA
Output Clamp Current	I_{OK}	-50	mA
Storage Temperature	T_{STG}	-65 ~ + 150	$^{\circ}\text{C}$

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.

11. THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-363	θ_{JA}	350
	SOT-26		230

12. RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		1.65		5.5	V
Control Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}	High or low state	0		V_{CC}	V
High Level Output Current	I_{OH}	$V_{CC}=1.65\text{V}$			-4	mA
		$V_{CC}=2.3\text{V}$			-8	mA
		$V_{CC}=3\text{V}$			-16	mA
		$V_{CC}=3\text{V}$			-24	mA
		$V_{CC}=4.5\text{V}$			-32	mA
Low Level Output Current	I_{OL}	$V_{CC}=1.65\text{V}$			4	mA
		$V_{CC}=2.3\text{V}$			8	mA
		$V_{CC}=3\text{V}$			16	mA
		$V_{CC}=3\text{V}$			24	mA
		$V_{CC}=4.5\text{V}$			32	mA
Operating Temperature	T_{OPR}		-40		+125	$^{\circ}\text{C}$

13. ELECTRICAL CHARACTERISTICS

 (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Positive-Going Input Threshold Voltage	VT+	V _{CC} =1.65V	0.70	1.24	1.40	V
		V _{CC} =2.3V	1.00	1.54	1.70	V
		V _{CC} =3V	1.30	1.86	2.20	V
		V _{CC} =4.5V	1.90	2.59	3.10	V
		V _{CC} =5.5V	2.20	3.08	3.70	V
Negative-Going Input Threshold Voltage	VT-	V _{CC} =1.65V	0.30	0.57	0.70	V
		V _{CC} =2.3V	0.40	0.82	1.00	V
		V _{CC} =3V	0.60	1.15	1.30	V
		V _{CC} =4.5V	1.10	1.73	2.00	V
		V _{CC} =5.5V	1.40	2.13	2.50	V
Hysteresis Voltage (VT+ - VT-)	ΔVT	V _{CC} =1.65V	0.30	0.67	0.80	V
		V _{CC} =2.3V	0.40	0.72	0.90	V
		V _{CC} =3V	0.40	0.71	1.10	V
		V _{CC} =4.5V	0.60	0.86	1.30	V
		V _{CC} =5.5V	0.70	0.95	1.40	V
High-Level Output Voltage	V _{OH}	V _{CC} =1.65~5.5V, I _{OH} =-100uA	V _{CC} -0.1			V
		V _{CC} =1.65V, I _{OH} =-4mA	1.20			V
		V _{CC} =2.3V, I _{OH} =-8mA	1.90			V
		V _{CC} =3V, I _{OH} =-16mA	2.40			V
		V _{CC} =3V, I _{OH} =-24mA	2.30			V
		V _{CC} =4.5V, I _{OH} =-32mA	3.80			V
Low-Level Output Voltage	V _{OL}	V _{CC} =1.65~5.5V, I _{OL} =100uA			0.10	V
		V _{CC} =1.65V, I _{OL} =4mA			0.45	V
		V _{CC} =2.3V, I _{OL} =8mA			0.30	V
		V _{CC} =3V, I _{OL} =16mA			0.40	V
		V _{CC} =3V, I _{OL} =24mA			0.55	V
		V _{CC} =4.5V, I _{OL} =32mA			0.55	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0V to 5.5V, V _{IN} =0 or 5.5V			±5	μA
Power OFF Leakage Current	I _{OFF}	V _{CC} =0V, V _{IN} or V _{OUT} =5.5V,			±10	μA
Quiescent Supply Current	I _Q	V _{CC} =1.65V to 5.5V, I _{OUT} =0 V _{IN} =5.5V or GND		0.1	10	μA
Additional Quiescent Supply Current Per Pin	ΔI _Q	V _{CC} =3V to 5.5V One input at V _{CC} -0.6V, Other inputs at V _{CC} or GND, I _{OUT} =0			500	μA
Input Capacitance	C _{IN}	V _{CC} =3.3V, V _{IN} =V _{CC} or GND		4		pF

14. SWITCHING CHARACTERISTICS

(T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay from = Input (nA) to Output(nY)	t _{PLH} / t _{PHL}	V _{CC} = 1.8V±0.15V, V _{IN} =V _{CC} C _L =30pF, R _L =1KΩ	3.90		9.50	ns
		V _{CC} =2.5V±0.2V, V _{IN} =V _{CC} C _L =30pF, R _L =500Ω	1.90		5.70	ns
		V _{CC} = 3.3V±0.3V, V _{IN} =3V C _L =50pF, R _L =500Ω	2.00		5.40	ns
		V _{CC} =5V±0.5V, V _{IN} =V _{CC} C _L =50pF, R _L =500Ω	1.5		4.3	ns

15. OPERATING CHARACTERISTICS

(T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{PD}	V _{CC} =1.8V, f=10MHz		16		pF
		V _{CC} =2.5V, f=10MHz		17		pF
		V _{CC} =3.3V, f=10MHz		18		pF
		V _{CC} =5V, f=10MHz		21		pF

16. TEST CIRCUITS AND WAVEFORMS

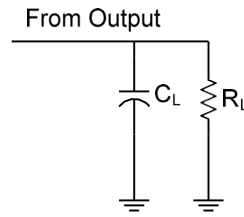


Fig. 1. TEST CIRCUIT

V _{CC}	Inputs		V _M	C _L	R _L
	V _{IN}	t _R , t _F			
1.8V±0.15V	V _{CC}	≤2ns	V _{CC} /2	30pF	1kΩ
2.5V±0.2V	V _{CC}	≤2ns	V _{CC} /2	30pF	500Ω
3.3V±0.3V	3V	≤2.5ns	1.5V	50pF	500Ω
5V±0.5V	V _{CC}	≤2.5ns	V _{CC} /2	50pF	500Ω

Note: 1. C_L includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: PRR≤1MHz, Z_O = 50Ω: t_R≤2ns,

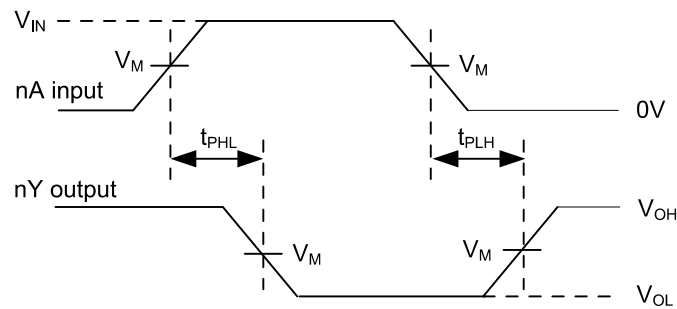


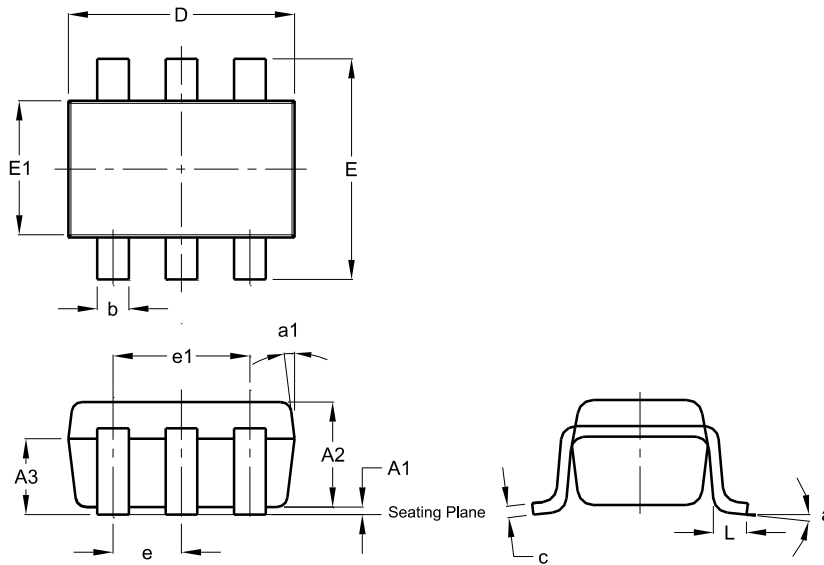
Fig. 2. PROPAGATION DELAY TIMES

t_F ≤ 2ns (V_{CC}=1.8V±0.15V and V_{CC}=2.5V±0.2V)

t_R ≤ 2.5ns, t_F ≤ 2.5ns (V_{CC}=3.3V±0.3V and V_{CC}=5V±0.5V)

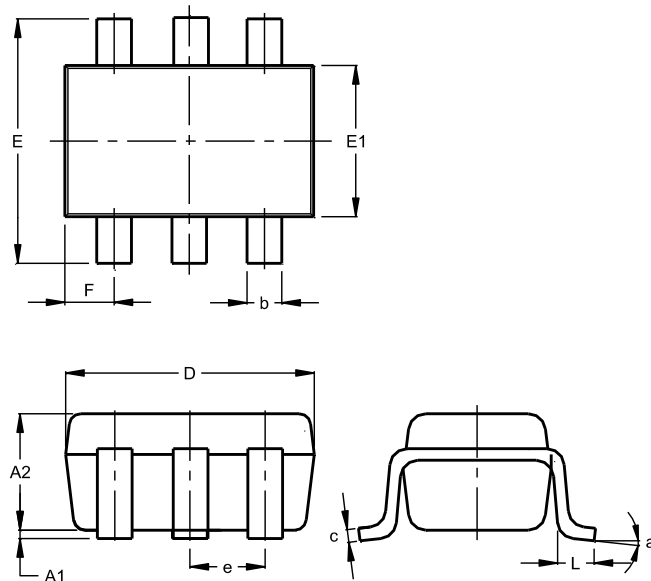
17. Package Outlines

SOT-26



SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

SOT-363



SOT363			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

18. Disclaimers

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