



U74LVC1G06

CMOS IC

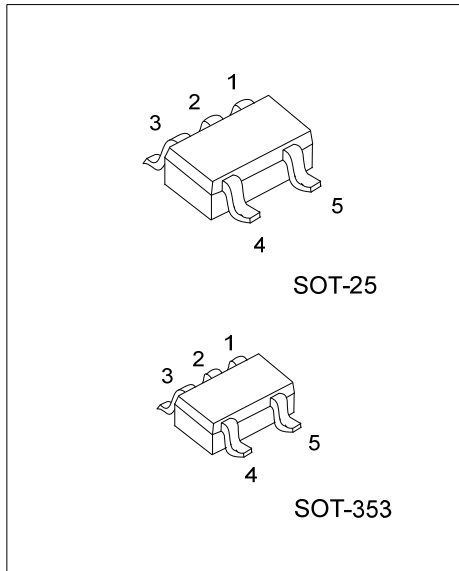
SINGLE INVERTER WITH OPEN-DRAIN OUTPUT

DESCRIPTION

The **U74LVC1G06** is a single inverter and its output is an open drain. This device provides the Function $Y = \overline{A}$ in positive logic.

FEATURES

- * Operate From 1.65V to 5.5V
- * Input and Open-Drain Output Accept Voltages to 5.5V
- * I_{OFF} Supports Partial-Power-Down Mode
- * Low Power Dissipation
- * Max t_{PD} of 4 ns at 3.3V

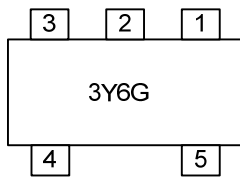


ORDERING INFORMATION

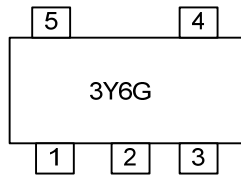
Ordering Number	Package	Packing
U74LVC1G06G-AF5-R	SOT-25	Tape Reel
U74LVC1G06G-AL5-R	SOT-353	Tape Reel

<p>U74LVC1G06G-AL5-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Halogen Free 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free
---	--

MARKING

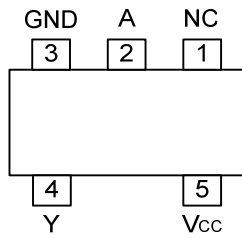


SOT-25



SOT-353

■ PIN CONFIGURATION

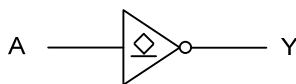


■ FUNCTION TABLE

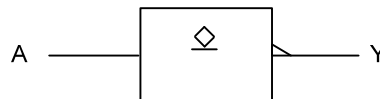
INPUT(A)	OUTPUT(Y)
H	L
L	H

Note: H: HIGH Voltage Level; L: LOW Voltage Level

■ LOGIC DIAGRAM (Positive Logic)



Logic Symbol



IEC Logic Symbol

■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	-0.5 ~ +6.5	V
Input Voltage		V_{IN}	-0.5 ~ +6.5	V
Output Voltage	Output in the High or Low State	V_{OUT}	-0.5 ~ +6.5	V
	Output in the High-Impedance or Power-Off State		-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	SOT-25	θ_{JA}	230	°C/W
	SOT-353		350	

■ 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}		0		V_{CC}	V
Low-Level Output Current	I_{OL}	$V_{CC}=1.65V$			4	mA
		$V_{CC}=2.3V$			8	mA
		$V_{CC}=3V$			16	mA
		$V_{CC}=3V$			24	mA
		$V_{CC}=4.5V$			32	mA
Operating Temperature	T_A		-40		85	°C
Input Transition Rise or Fall Rate	t_R / t_F	$V_{CC}=1.8V\pm0.15V, 2.5V\pm0.2V$			20	ns/V
		$V_{CC}=3.3V\pm0.3V$			10	ns/V
		$V_{CC}=5V\pm0.5V$			5	ns/V

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V _{IH}	V _{CC} =1.65V ~ 1.95V	0.65*V _{CC}			V
		V _{CC} =2.3V ~ 2.7V	1.7			V
		V _{CC} =3V ~ 3.6V	2			V
		V _{CC} =4.5V ~ 5.5V	0.7*V _{CC}			V
Low-Level Input Voltage	V _{IL}	V _{CC} =1.65V ~ 1.95V			0.35*V _{CC}	V
		V _{CC} =2.3V ~ 2.7V			0.7	V
		V _{CC} =3V ~ 3.6V			0.8	V
		V _{CC} =4.5V ~ 5.5V			0.3*V _{CC}	V
Low-Level Output Voltage	V _{OL}	I _{OL} =100μA V _{CC} =1.65 ~ 5.5V			0.1	V
		I _{OL} =4mA V _{CC} =1.65V			0.45	V
		I _{OL} =8mA V _{CC} =2.3V			0.3	V
		I _{OL} =16mA V _{CC} =3.0V			0.4	V
		I _{OL} =24mA V _{CC} =3.0V			0.55	V
		I _{OL} =32mA V _{CC} =4.5V			0.55	V
Input Leakage Current	I _{I(LEAK)}	V _{IN} =5.5V or GND, V _{CC} =0 ~ 5.5V			±5	μA
Power OFF Leakage Current	I _{OFF}	V _{IN} or V _{OUT} =5.5V, V _{CC} =0V			10	μA
3-state Output OFF-state Current	I _{OZ}	V _{IN} =V _{IH} or V _{IL} , V _{OUT} =V _{CC} or GND, V _{CC} =5.5V			±10	μA
Quiescent Supply Current	I _Q	V _{IN} =V _{CC} or GND, I _{OUT} =0 V _{CC} =1.65 ~ 5.5V			10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI _Q	V _{CC} =3 ~ 5.5V, One input at V _{CC} -0.6V, Other inputs at V _{CC} or GND			500	μA
Input Capacitance	C _I	V _{CC} =3.3V, V _{IN} =V _{CC} or GND		4		pF
Output Capacitance	C _O	V _{CC} =3.3V, V _{OUT} =V _{CC} or GND		5		pF

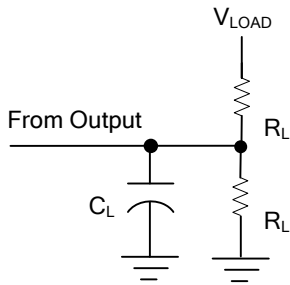
■ SWITCHING CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation delay from input (A) to output(Y)	t _{PZL} / t _{PLZ}	V _{CC} =1.8±0.15V, R _L =1KΩ	C _L =30pF	2.2		6.5	ns
		V _{CC} =2.5±0.2V, R _L =500Ω		1.1		4	ns
		V _{CC} =3.3±0.3V	C _L =50pF R _L =500Ω	1.2		4	ns
		V _{CC} =5±0.5V		1		3	ns

■ OPERATING CHARACTERISTICS (T_A=25°C)

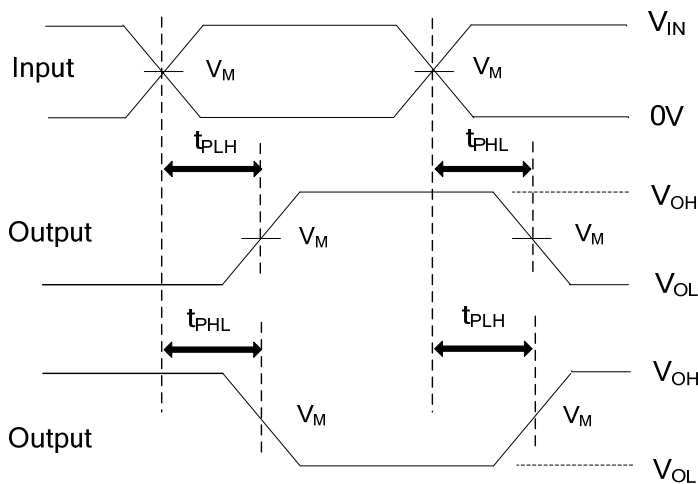
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Power Dissipation Capacitance	C _{PD}	V _{CC} =1.8V	f=10MHz		3		pF
		V _{CC} =2.5V			3		pF
		V _{CC} =3.3V			4		pF
		V _{CC} =5.0V			6		pF

■ 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
3.3V±0.3V	3V	≤2.5ns	1.5V	6V	0.3V	50pF	500Ω
5V±0.5V	V _{CC}	≤2.5ns	V _{CC} /2	2 x V _{CC}	0.3V	50pF	500Ω



PROPAGATION DELAY 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.

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.