



U74LVC1G06

CMOS IC

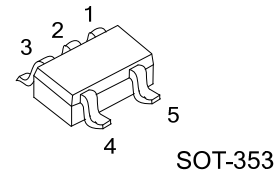
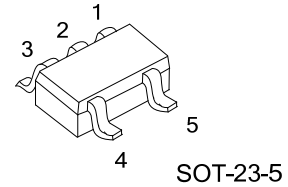
SINGLE INVERTER WITH OPEN-DRAIN OUTPUT

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

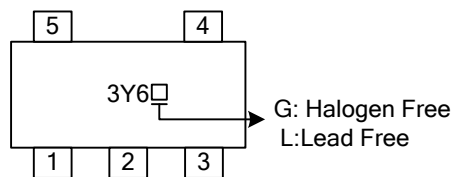


ORDERING INFORMATION

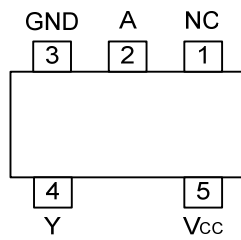
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G06L-AE5-R	U74LVC1G06G-AE5-R	SOT-23-5	Tape Reel
U74LVC1G06L-AL5-R	U74LVC1G06G-AL5-R	SOT-353	Tape Reel

U74LVC1G06L-AL5-R	(1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel (2) AE5: SOT-23-5, AL5: SOT-353 (3) G: Halogen Free, L: Lead Free
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MARKING



■ PIN CONFIGURATION

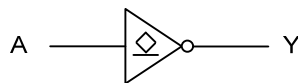


■ FUNCTION TABLE

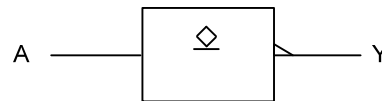
INPUT(A)	OUTPUT(Y)
H	L
L	Z

Note: H: High Voltage Level
L: Low Voltage Level
Z: High-Impedance OFF-State

■ 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-23-5	θ_{JA}	280	°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

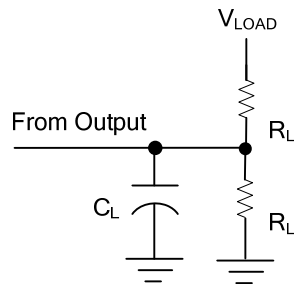
■ SWITCHING CHARACTERISTICS (T_A=25°C)

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	2.2		6.5	ns
		V _{CC} =2.5±0.2V, R _L =500Ω	1.1		6	ns
		V _{CC} =3.3±0.3V	1.2		6	ns
		V _{CC} =5±0.5V, R _L =500Ω	1		5.5	ns

■ OPERATING CHARACTERISTICS (T_A=25°C)

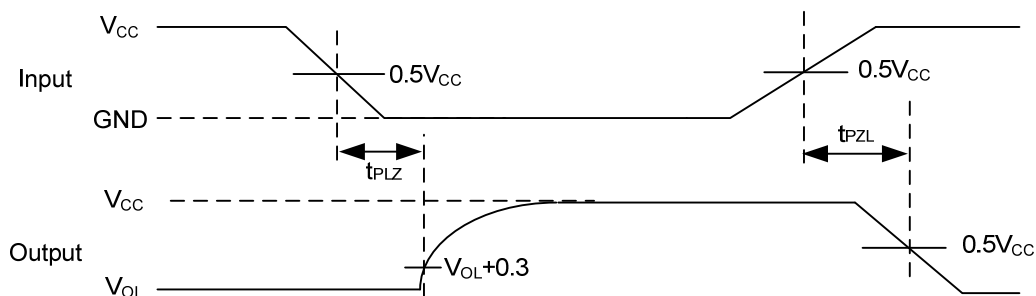
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{PD}	V _{CC} =1.8V		3		pF
		V _{CC} =2.5V		3		pF
		V _{CC} =3.3V		4		pF
		V _{CC} =5.0V		6		pF

■ 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					
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	$0.15V$	$30pF$	$1K\Omega$
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	$0.15V$	$30pF$	500Ω
$3.3V \pm 0.3V$	$3V$	$\leq 2.5ns$	$1.5V$	$6V$	$0.3V$	$50pF$	500Ω
$5V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	$2 \times V_{CC}$	$0.3V$	$50pF$	500Ω



Propagation Delay Times

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