



UNISONIC TECHNOLOGIES CO., LTD

U74LVC1G17

CMOS IC

SINGLE SCHMITT-TRIGGER BUFFER

■ DESCRIPTION

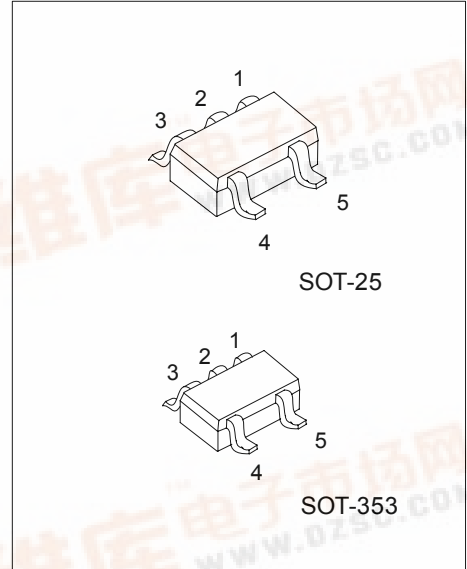
The U74LVC1G17 is a single Schmitt-trigger buffer, it provides the function $Y=A$.

The device have different input threshold levels for positive-going (V_{T+}) and negative-going (V_{T-}) signals because of the Schmitt-trigger action in the input.

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

■ FEATURES

- * Operation Voltage Range: 1.65~5.5V
- * Low Power Dissipation: $I_{CC}=10\mu A(\text{Max})$
- * 24mA output drive ($V_{CC}=3.0V$)
- * High Noise Immunity
- * Power Down Protection



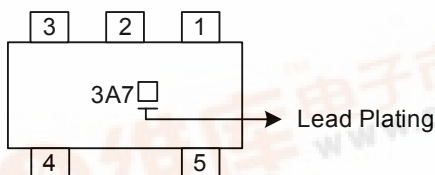
*Pb-free plating product number:
U74LVC1G17L

■ ORDERING INFORMATION

Order Number		Package	Packing
Normal	Lead Free Plating		
U74LVC1G17-AF5-R	U74LVC1G17L-AF5-R	SOT-25	Tape Reel
U74LVC1G17-AL5-R	U74LVC1G17L-AL5-R	SOT-353	Tape Reel

<p>U74LVC1G17L-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25, AL5: SOT-353 (3) L: Lead Free Plating, Blank: Pb/Sn</p>
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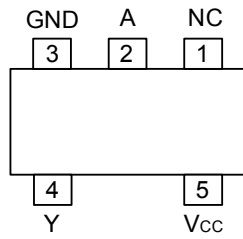
■ MARKING



U74LVC1G17

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■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

INPUT	OUTPUT
A	Y
L	L
H	H

■ LOGIC DIAGRAM (positive logic)



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ABSOLUTE MAXIMUM RATING (unless otherwise specified)(Note 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	-0.5~6.5	V
Input Voltage	V _{IN}	-0.5~6.5	V
Output Voltage(active mode)	V _{OUT}	-0.5~V _{CC} +0.5	V
Output Voltage(power-down mode)	V _{OUT}	-0.5~6.5	V
Input Clamp Current(V _{IN} <0)	I _{IK}	-50	mA
Output Clamp Current(V _O <0)	I _{OK}	-50	mA
Output Current	I _{OUT}	±50	mA
V _{CC} or GND Current	I _{CC}	±100	mA
Storage Temperature	T _{STG}	-65 ~ +150	

Note 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

2. 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.

RECOMMENDED OPERATING COMDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNI T
Supply Voltage	V _{CC}	Operating	1.65		5.5	V
		Data retention only				V
Input Voltage	V _{IN}		0		5.5	V
Output Voltage	V _{OUT}		0		V _{CC}	V
Operating Temperature	T _A		-40		85	

STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Positive-going Input Threshold Voltage	V _{T+}	V _{CC} = 1.65V	0.76		1.16	V
		V _{CC} = 2.3V	1.08		1.56	
		V _{CC} = 3.0V	1.48		1.92	
		V _{CC} = 4.5V	2.16		2.74	
		V _{CC} = 5.5V	2.61		3.33	
Negative-going Input Threshold Voltage	V _{T-}	V _{CC} = 1.65V	0.35		0.62	V
		V _{CC} = 2.3V	0.56		0.88	
		V _{CC} = 3.0V	0.84		1.2	
		V _{CC} = 4.5V	1.41		1.97	
		V _{CC} = 5.5V	1.87		2.4	
HysteresisVoltage (V _{T+} -V _{T-})	V _T	V _{CC} = 1.65V	0.36		0.64	V
		V _{CC} = 2.3V	0.45		0.78	
		V _{CC} = 3.0V	0.51		0.87	
		V _{CC} = 4.5V	0.58		1.04	
		V _{CC} = 5.5V	0.69		1.11	
High-Level Output Voltage	V _{OH}	V _{CC} = 1.65V~4.5V, I _{OH} =-100μA	V _{CC} -0.1			V
		V _{CC} = 1.65V, I _{OH} =-4mA	1.2			
		V _{CC} = 2.3V, I _{OH} =-8mA	1.9			
		V _{CC} = 3.0V, I _{OH} =-16mA	2.4			
		V _{CC} = 3.0V, I _{OH} =-24mA	2.3			
Low-Level Output Voltage	V _{OL}	V _{CC} = 1.65V~4.5V, I _{OL} =100μA			0.1	V
		V _{CC} = 1.65V, I _{OL} =4mA			0.45	
		V _{CC} = 2.3V, I _{OL} =8mA			0.3	
		V _{CC} = 3.0V, I _{OL} =16mA			0.4	
		V _{CC} = 3.0V, I _{OL} =24mA			0.55	
		V _{CC} = 4.5V, I _{OL} =32mA			0.55	

■ STATIC CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}= 0\sim 5.5V, V_{IN}=V_{CC}$ or GND			±5	μA
Power OFF Leakage Current	I_{OFF}	$V_{CC}= 0V, V_{IN}$ or $V_{CC}=5.5V$			±10	μA
Quiescent Supply Current	I_Q	$V_{CC}= 1.65V\sim 5.5V, V_{IN}=V_{CC}$ or GND $I_{OUT}=0$			10	μA
Additional Quiescent Supply Current	ΔI_Q	$V_{CC}= 3V\sim 5.5V$, One input at $V_{CC}-0.6V$, other inputs at V_{CC} or GND			500	μA
Input Capacitance	C_{IN}	$V_{CC}= 3.3V, V_{IN}=V_{CC}$ or GND		4.5		pF

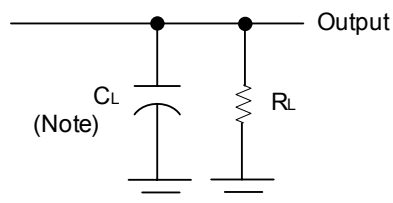
■ DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	$V_{CC}(V)$	$C_L=15$ pF		$C_L=30$ or 50 pF		UNIT
			MIN	MAX	MIN	MAX	
Propagation delay from input (A or B) to output(Y)	t_{PLH}/t_{PHL}	1.8 ± 0.15	2.8	9.9	3.8	11	ns
		2.5 ± 0.2	1.6	5.5	2	6.5	
		3.3 ± 0.3	1.5	4.6	1.8	5.5	
		5 ± 0.5	0.9	4.4	1.2	5	

Operating Characteristics

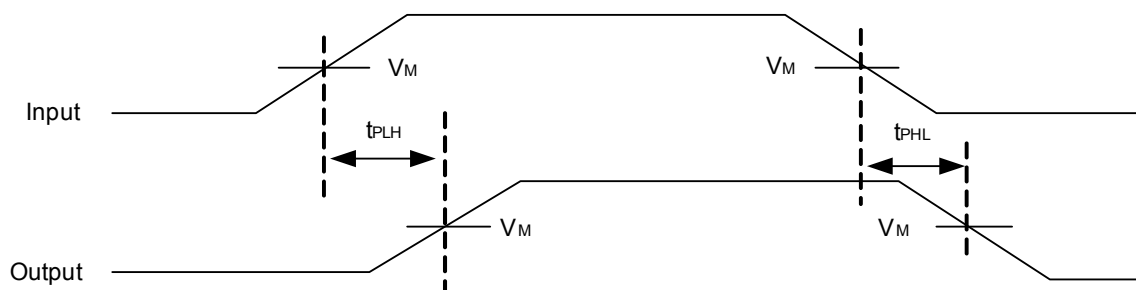
PARAMETER	SYMBOL	TEST CONDITIONS	$V_{CC}=1.8V$	$V_{CC}=2.5V$	$V_{CC}=3.3V$	$V_{CC}=5V$	UNIT
Power Dissipation Capacitance	Cpd	f=10MHz	20	21	22	25	pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

V_{CC}	V_{IN}	t_R, t_F	V_M	C_L	R_L
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	15pF	1M
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	15pF	1M
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	15pF	1M
$5V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	15pF	1M
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	30pF	1K
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	30pF	500
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	50pF	500
$5V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	50pF	500



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