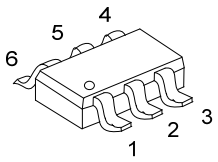
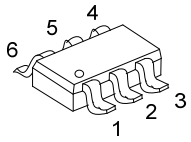
U74LVC2G17

CMOS IC

DUAL SCHMITT-TRIGGER BUFFER



SOT-26



SOT-363

■ DESCRIPTION

The UTC **U74LVC2G17** is a high-performance, low-power, low-voltage, Si-gate CMOS device which provides two independent buffers with Schmitt trigger action. It is capable of transforming slowly changed input signals into sharply defined, jitter-free output signals.

■ FEATURES

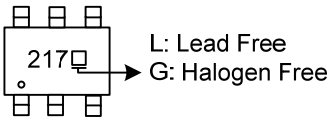
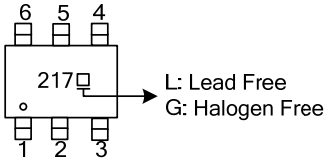
* Operate From 1.65V to 5.5V
* 5 V tolerant input/output for interfacing with 5 V logic
*±24mA output drive (V_{CC} = 3.3V)
* CMOS low-power consumption and high noise immunity
* I_{OFF} Supports Partial-Power-Down Mode Operation
* Latch-up performance exceeds 100mA
* Specified from -40 °C to +125 °C

■ ORDERING INFORMATION

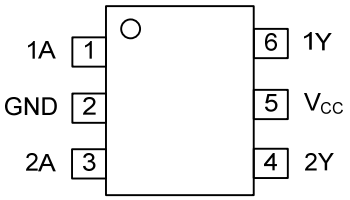
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC2G17L-AG6-R	U74LVC2G17G-AG6-R	SOT-26	Tape Reel
U74LVC2G17L-AL6-R	U74LVC2G17G-AL6-R	SOT-363	Tape Reel

U74LVC2G17G-AG6-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AG6: SOT-26, AL6: SOT-363 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-26	SOT-363
	

■ PIN CONFIGURATION

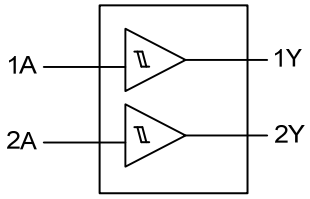


■ FUNCTION TABLE

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

H=High Level
L=Low Level

■ LOGIC SYMBOL



■ ABSOLUTE MAXIMUM RATING (Unless otherwise specified) (Note 1)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	-0.5 ~ 6.5	V
Input Voltage (Note 2)		V_{IN}	-0.5 ~ 6.5	V
Output Voltage (Note 2,3)	High-Impedance	V_{OUT}	-0.5 ~ 6.5	V
	Power-Off State			
	High State		-0.5 ~ V_{CC}+0.5	V
	Low State			
Input Clamp Current (V_{IN}<0)		I_{IK}	-50	mA
Output Clamp Current (V_{OUT}<0)		I_{OK}	-50	mA
Output Current		I_{OUT}	±50	mA
V_{CC} or GND Current		I_{CC}	±100	mA
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-65 ~ +150	°C

Notes: 1. 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.
2. The input negative-voltage and output voltage ratings may be exceeded if the input and output current ratings are observed.
3. The value of V_{CC} is provided in the recommended operating conditions table.

■ RECOMMENDED OPERATING CONDITIONS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65		5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}	High or low state	0		V_{CC}	V
Operating Temperature	T_A		–40		+125	°C

Note: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.

■ ELECTRICAL CHARACTERISTICS (unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V_{T+}	V_{CC}=1.65V	0.7		1.5	0.7		1.7	V
		V_{CC}=2.3V	1.0		1.8	1.0		1.8	V
		V_{CC}=3.0V	1.3		2.2	1.3		2.4	V
		V_{CC}=4.5V	1.9		3.1	1.9		3.3	V
		V_{CC}=5.5V	2.2		3.7	2.2		3.8	V
Low-Level Input Voltage	V_{T-}	V_{CC}=1.65V	0.25		0.9	0.25		1.1	V
		V_{CC}=2.3V	0.4		1.15	0.4		1.35	V
		V_{CC}=3.0V	0.6		1.5	0.6		1.7	V
		V_{CC}=4.5V	1.0		2.0	1.0		2.2	V
		V_{CC}=5.5V	1.2		2.5	1.2		2.5	V
Hysteresis Voltage	ΔV_T	V_{CC}=1.65V	0.15		1.0	0.15		1.2	V
		V_{CC}=2.3V	0.25		1.1	0.25		1.3	V
		V_{CC}=3.0V	0.4		1.2	0.4		1.4	V
		V_{CC}=4.5V	0.6		1.5	0.6		1.7	V
		V_{CC}=5.5V	0.7		1.7	0.7		1.9	V
High-Level Output Voltage	V_{OH}	V_{CC}=1.65V~5.5V, I_{OH}=-100μA	V_{CC} -0.1			V_{CC} -0.1			V
		V_{CC}=1.65V, I_{OH}=-4mA	1.2			0.95			V
		V_{CC}=2.3V, I_{OH}=-8mA	1.9			1.7			V
		V_{CC}=3.0V, I_{OH}=-16mA	2.2			1.9			V
		V_{CC}=3.0V, I_{OH}=-24mA	2.3			2.0			V
		V_{CC}=4.5V, I_{OH}=-32mA	3.8			3.4			V

■ ELECTRICAL CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Low-Level Output Voltage	V_{OL}	V_{CC}=1.65V~5.5V, I_{OL}=100μA			0.1			0.1	V
		V_{CC}=1.65V, I_{OL}=4mA			0.45			0.7	V
		V_{CC}=2.3V, I_{OL}=8mA			0.3			0.45	V
		V_{CC}=3.0V. I_{OL}=16mA			0.4			0.6	V
		V_{CC}=3.0V, I_{OL}=24mA			0.55			0.8	V
		V_{CC}=4.5V, I_{OL}=32mA			0.55			0.8	V
Input Leakage Current	$I_{I(LEAK)}$	V_{IN} =0 to 5.5V, V_{CC} = 0~5.5V			±5			±10	μA
Power OFF Leakage Current	I_{OFF}	V_{IN} or V_{OUT}=5.5V, V_{CC} = 0			±10			±10	μA
Quiescent Supply Current	I_{CC}	V_{IN}=V_{CC} or GND, I_{OUT} =0 V_{CC}=1.65~5.5V			10			10	μA
Additional Quiescent Supply Current	ΔI_{CC}	One input at V_{CC} -0.6V Other inputs at V_{CC} or GND, I_{OUT} =0, V_{CC} =3V~5.5 V			500			500	μA

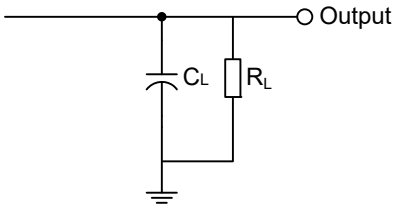
■ SWITCHING CHARACTERISTICS (see TEST CIRCUIT AND WAVEFORMS)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay nA to nY	t_{PLH} t_{PHL}	V_{CC} =1.8V±0.15V, C_L=30pF, R_L=1KΩ	1		16.3	1		18.1	ns
		V_{CC}=2.5V±0.2V, C_L=30pF, R_L=500Ω	1		13.7	1		14.5	ns
		V_{CC}=3.3V±0.3V, C_L=50pF, R_L=500Ω	1		10.4	1		12.1	ns
		V_{CC}=5V±0.5V , C_L=50pF, R_L=500Ω	1		8.3	1		10.4	ns

■ OPERATING CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_I	V_{IN}=V_{CC} or GND, V_{CC}=3.3V		4		pF
Power Dissipation Capacitance	C_{PD}	V_{CC}=5V, f=10MHz		21		pF

■ TEST CIRCUITS AND WAVEFORMS

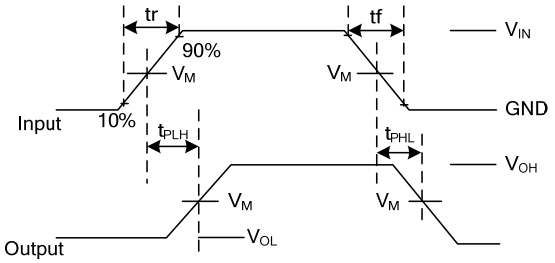


V_{CC}	V_{IN}	t_R, t_F	V_M	C_L	R_L
1.65V~1.95V	V_{CC}	≤2ns	$V_{CC}/2$	30pF	1kΩ
2.3V~2.7V	V_{CC}	≤2ns	$V_{CC}/2$	30pF	500Ω
3.0V~3.6V	3V	≤2.5ns	1.5V	50pF	500Ω
4.5V~5.5V	V_{CC}	≤2.5ns	$V_{CC}/2$	50pF	500Ω

Definitions for test circuit:

R_L = Load resistance.

C_L = Load capacitance including jig and probe capacitance.



Notes: 1. V_{OL} and V_{OH} are typical output drop that occur with the output load.

2. t_{PLH} and t_{PHL} are the same as t_{PD} .