



## U74LVC1G34

CMOS IC

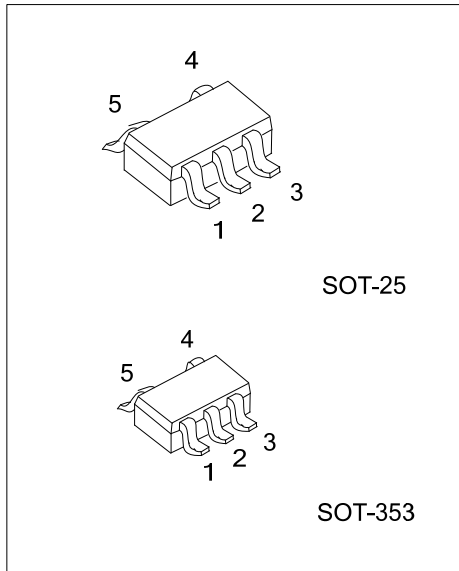
### SINGLE BUFFER GATE

#### DESCRIPTION

The **U74LVC1G34** is a single buffer, it provides the function  $Y = A$ . This device has power-down protective circuit, preventing device destruction when it is powered down.

#### FEATURES

- \* Operate From 1.65V to 5.5V
- \* Inputs Accept Voltages to 5.5V
- \* I<sub>OFF</sub> Supports Partial-Power-Down Mode
- \* Low Power Dissipation
- \* Max t<sub>PD</sub> of 3.5 ns at 3.3V

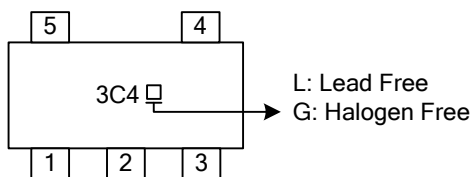


#### ORDERING INFORMATION

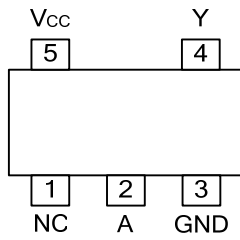
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G34L-AF5-R	U74LVC1G34G-AF5-R	SOT-25	Tape Reel
U74LVC1G34L-AL5-R	U74LVC1G34G-AL5-R	SOT-353	Tape Reel

<p>U74LVC1G34G-AF5-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AF5: SOT-25, AL5: SOT-353</p> <p>(3) G: Halogen Free and Lead Free</p>
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#### MARKING



## ■ PIN CONFIGURATION

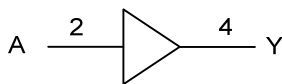


## ■ FUNCTION TABLE

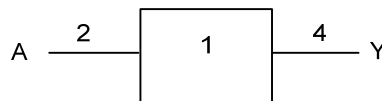
INPUT(A)	OUTPUT(Y)
H	H
L	L

Note: H: HIGH voltage level; L: LOW voltage level.

## ■ LOGIC DIAGRAM (Positive Logic)



Logic Symbol



IEC Logic Symbol

■ ABSOLUTE MAXIMUM RATING (T<sub>A</sub> =25°C , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V <sub>CC</sub>	-0.5 ~ +6.5	V
Input Voltage		V <sub>IN</sub>	-0.5 ~ +6.5	V
Output Voltage	Output in the high or low state	V <sub>OUT</sub>	-0.5 ~ V <sub>CC</sub> +0.5	V
	Output in the high-impedance or power-off state		-0.5 ~ +6.5	V
V <sub>CC</sub> or GND Current		I <sub>CC</sub>	±100	mA
Continuous Output Current (V <sub>OUT</sub> =0 to V <sub>CC</sub> )		I <sub>OUT</sub>	±50	mA
Input Clamp Current (V <sub>IN</sub> <0)		I <sub>IK</sub>	-50	mA
Output Clamp Current (V <sub>OUT</sub> <0)		I <sub>OK</sub>	-50	mA
Operating Temperature		T <sub>OPR</sub>	-40 ~ +85	°C
Storage Temperature Range		T <sub>STG</sub>	-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
Junctions to Ambient	SOT-25	θ <sub>JA</sub>	230	°C/W
	SOT-353		350	

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V <sub>CC</sub>	Operating	1.65		5.5	V
		Data retention only	1.5			V
Input Voltage	V <sub>IN</sub>		0		5.5	V
Output Voltage	V <sub>OUT</sub>	High or low state	0		V <sub>CC</sub>	V
High-Level Output Current	I <sub>OH</sub>	V <sub>CC</sub> =1.65V			-4	mA
		V <sub>CC</sub> =2.3V			-8	mA
		V <sub>CC</sub> =3V			-16	mA
		V <sub>CC</sub> =3V			-24	mA
		V <sub>CC</sub> =4.5V			-32	mA
Low-Level Output Current	I <sub>OL</sub>	V <sub>CC</sub> =1.65V			4	mA
		V <sub>CC</sub> =2.3V			8	mA
		V <sub>CC</sub> =3V			16	mA
		V <sub>CC</sub> =3V			24	mA
		V <sub>CC</sub> =4.5V			32	mA
Input Transition Rise or Fall Rate	t <sub>R</sub> / t <sub>F</sub>	V <sub>CC</sub> =1.8V±0.15V, 2.5V±0.2V			20	ns/V
		V <sub>CC</sub> =3.3V±0.3V			10	ns/V
		V <sub>CC</sub> =5V±0.5V			10	ns/V

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub> =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =1.65V ~ 1.95V	0.65*V <sub>CC</sub>			V
		V <sub>CC</sub> =2.3V ~ 2.7V	1.7			V
		V <sub>CC</sub> =3V ~ 3.6V	2			V
		V <sub>CC</sub> =4.5V ~ 5.5V	0.7*V <sub>CC</sub>			V
Low-Level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =1.65V ~ 1.95V			0.35*V <sub>CC</sub>	V
		V <sub>CC</sub> =2.3V ~ 2.7V			0.7	V
		V <sub>CC</sub> =3V ~ 3.6V			0.8	V
		V <sub>CC</sub> =4.5V ~ 5.5V			0.3*V <sub>CC</sub>	V
High-Level Output Voltage	V <sub>OH</sub>	I <sub>OH</sub> =-100μA V <sub>CC</sub> =1.65 ~ 5.5V	V <sub>CC</sub> -0.1			V
		I <sub>OH</sub> =-4mA V <sub>CC</sub> =1.65V	1.2			V
		I <sub>OH</sub> =-8mA V <sub>CC</sub> =2.3V	1.9			V
		I <sub>OH</sub> =-16mA V <sub>CC</sub> =3.0V	2.4			V
		I <sub>OH</sub> =-24mA V <sub>CC</sub> =3.0V	2.3			V
		I <sub>OH</sub> =-32mA V <sub>CC</sub> =4.5V	3.8			V
Low-Level Output Voltage	V <sub>OL</sub>	I <sub>OL</sub> =100μA V <sub>CC</sub> =1.65 ~ 5.5V			0.1	V
		I <sub>OL</sub> =4mA V <sub>CC</sub> =1.65V			0.45	V
		I <sub>OL</sub> =8mA V <sub>CC</sub> =2.3V			0.3	V
		I <sub>OL</sub> =16mA V <sub>CC</sub> =3.0V			0.4	V
		I <sub>OL</sub> =24mA V <sub>CC</sub> =3.0V			0.55	V
		I <sub>OL</sub> =32mA V <sub>CC</sub> =4.5V			0.55	V
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>IN</sub> =5.5V or GND, V <sub>CC</sub> =0 ~ 5.5V			±1	μA
Power OFF Leakage Current	I <sub>OFF</sub>	V <sub>IN</sub> or V <sub>OUT</sub> =5.5V, V <sub>CC</sub> =0V			±10	μA
Quiescent Supply Current	I <sub>Q</sub>	V <sub>IN</sub> =5.5V or GND, I <sub>OUT</sub> =0 V <sub>CC</sub> =1.65 ~ 5.5V			10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI <sub>Q</sub>	V <sub>CC</sub> =3 ~ 5.5V, One input at V <sub>CC</sub> -0.6V, Other inputs at V <sub>CC</sub> or GND			500	μA
Input Capacitance	C <sub>IN</sub>	V <sub>CC</sub> =3.3V, V <sub>IN</sub> =V <sub>CC</sub> or GND		3.5		pF

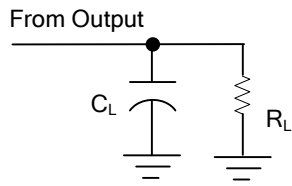
■ SWITCHING CHARACTERISTICS (T<sub>A</sub>=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A) to output(Y)	t <sub>PLH</sub> / t <sub>PHL</sub>	V <sub>CC</sub> =1.8±0.15V	C <sub>L</sub> =15pF, R <sub>L</sub> =1MΩ	2	9.9	ns
		V <sub>CC</sub> =2.5±0.2V		1.5	6	ns
		V <sub>CC</sub> =3.3±0.3V		1	3.5	ns
		V <sub>CC</sub> =5±0.5V		1	2.9	ns
Propagation delay from input (A) to output(Y)	t <sub>PLH</sub> / t <sub>PHL</sub>	V <sub>CC</sub> =1.8±0.15V, R <sub>L</sub> =1KΩ	C <sub>L</sub> =30pF	3.2	8.6	ns
		V <sub>CC</sub> =2.5±0.2V, R <sub>L</sub> =500Ω		1.5	4.4	ns
		V <sub>CC</sub> =3.3±0.3V	C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω	1.5	4.1	ns
		V <sub>CC</sub> =5±0.5V		1	3.2	ns

■ OPERATING CHARACTERISTICS (T<sub>A</sub>=25°C)

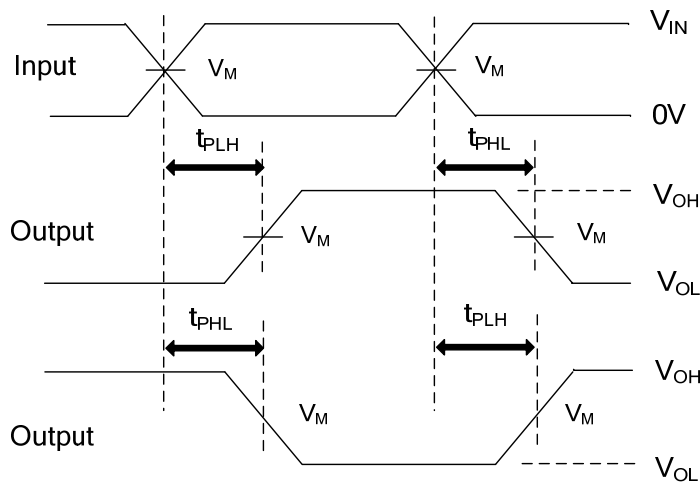
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C <sub>PD</sub>	V <sub>CC</sub> =1.8V	f=10MHz		16	pF
		V <sub>CC</sub> =2.5V			16	pF
		V <sub>CC</sub> =3.3V			16	pF
		V <sub>CC</sub> =5V			18	pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

V <sub>CC</sub>	INPUTS		V <sub>M</sub>	C <sub>L</sub>	R <sub>L</sub>
	V <sub>IN</sub>	t <sub>R</sub> , t <sub>F</sub>			
1.8V±0.15V	V <sub>CC</sub>	≤2ns	V <sub>CC</sub> /2	15pF	1MΩ
2.5V±0.2V	V <sub>CC</sub>	≤2ns	V <sub>CC</sub> /2	15pF	1MΩ
3.3V±0.3V	3V	≤2.5ns	1.5V	15pF	1MΩ
5V±0.5V	V <sub>CC</sub>	≤2.5ns	V <sub>CC</sub> /2	15pF	1MΩ

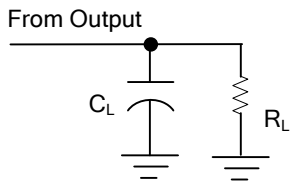


PROPAGATION DELAY TIMES

Note: C<sub>L</sub> includes probe and jig capacitance.

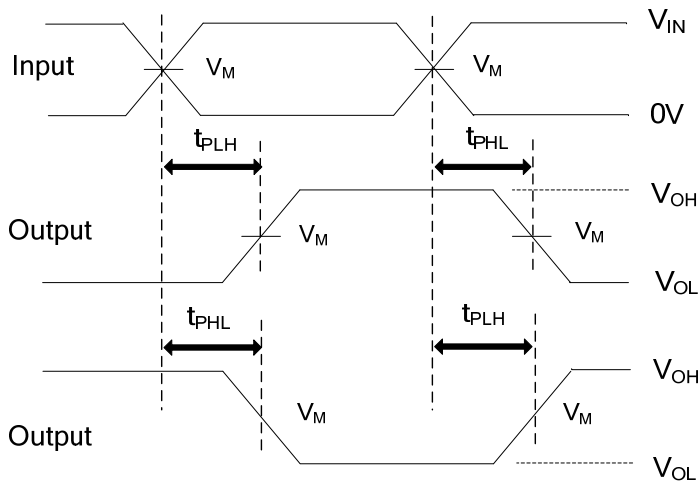
All input pulses are supplied by generators having the following characteristics: P<sub>RR</sub> ≤10MHz, Z<sub>O</sub> = 50Ω.

■ TEST CIRCUIT AND WAVEFORMS(Cont.)



TEST CIRCUIT

V <sub>CC</sub>	INPUTS		V <sub>M</sub>	C <sub>L</sub>	R <sub>L</sub>
	V <sub>IN</sub>	t <sub>R</sub> , t <sub>F</sub>			
1.8V±0.15V	V <sub>CC</sub>	≤2ns	V <sub>CC</sub> /2	30pF	1KΩ
2.5V±0.2V	V <sub>CC</sub>	≤2ns	V <sub>CC</sub> /2	30pF	500Ω
3.3V±0.3V	3V	≤2.5ns	1.5V	50pF	500Ω
5V±0.5V	V <sub>CC</sub>	≤2.5ns	V <sub>CC</sub> /2	50pF	500Ω



PROPAGATION DELAY TIMES

Note: C<sub>L</sub> includes probe and jig capacitance.

All input pulses are supplied by generators having the following characteristics: P<sub>RR</sub> ≤10MHz, Z<sub>O</sub> = 50Ω.

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