



U74LVC1G32B

CMOS IC

SINGLE 2-INPUT POSITIVE-OR GATE

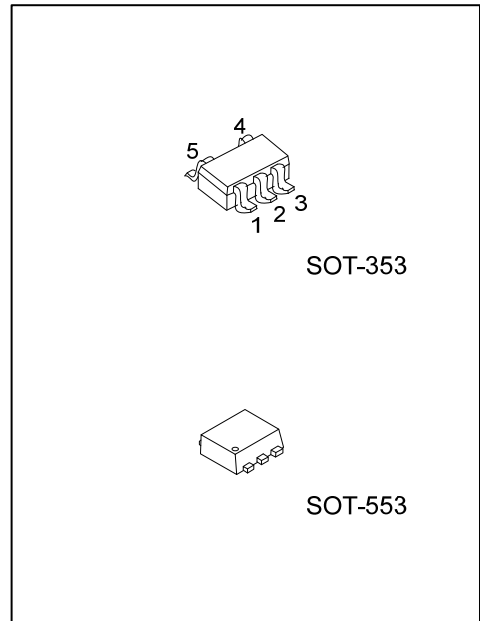
DESCRIPTION

The **U74LVC1G32B** is a single 2-input OR gate which provides the Function $Y=A+B$ in positive logic circuit.

This device has power-down protective circuit to prevent the device from destruction when it is powered down.

FEATURES

- * Operation Voltage Range: 1.65V ~ 5.5V
- * Low Power Current: $I_{CC}=10\mu A$ (Max.)
- * $\pm 24mA$ Output Drive ($V_{CC}=3.0V$)
- * Power Down Protection

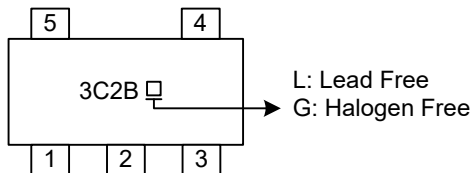


ORDERING INFORMATION

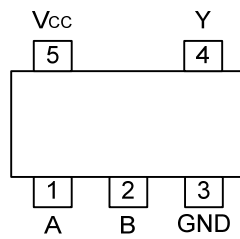
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G32BL-AL5-R	U74LVC1G32BG-AL5-R	SOT-353	Tape Reel
U74LVC1G32BL-AN5-R	U74LVC1G32BG-AN5-R	SOT-553	Tape Reel

<p>U74LVC1G32BG-AL5-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) AL5: SOT-353, AN5: SOT-553 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



■ PIN CONFIGURATION

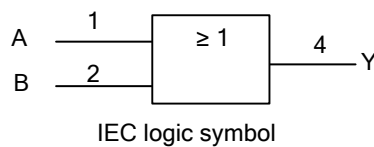
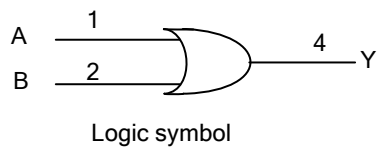


■ FUNCTION TABLE

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

Note: H: HIGH voltage level; L: LOW voltage level; X: Don't care.

■ LOGIC DIAGRAM (Positive Logic)



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V _{CC}		-0.5 ~ +6.5	V
Input Voltage	V _{IN}		-0.5 ~ +6.5	V
Output Voltage	V _{OUT}	Output in the high or low state	-0.5 ~ V _{CC} +0.5	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	I _{OUT}	V _{OUT} =0 ~ V _{CC}	±50	mA
Input Clamp Current	I _{IK}	V _{IN} <0	-50	mA
Output Clamp Current	I _{OK}	V _{OUT} <0	-50	mA
Electrostatic Discharge	V _(ESD)	Human-Body Model (HBM) Per JESD22-A114/115	2000	V
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	
Junctions to Ambient	SOT-353	θ _{JA}	350	°C/W
	SOT-553		370	°C/W
Junctions to Case	SOT-353	θ _{JC}	120	°C/W
	SOT-553		110	°C/W

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	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}	High or low state	0		V _{CC}	V
Input Transition Rise or Fall Rate	Δt/ΔV	V _{CC} =1.8V±0.15V			20	ns/V
		V _{CC} =2.5V±0.2V				
		V _{CC} =3.3V±0.3V			10	ns/V
		V _{CC} =5V±0.5V			5	ns/V
Operating Temperature	T _A		-40		+125	°C

■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V _{IH}	V _{CC} =1.65V ~ 1.95V	0.65× V _{CC}			0.65× V _{CC}			V
		V _{CC} =2.3V ~ 2.7V	1.7			1.7			V
		V _{CC} =3V ~ 3.6V	2			2			V
		V _{CC} =4.5V ~ 5.5V	0.7×V _{CC}			0.7×V _{CC}			V
Low-Level Input Voltage	V _{IL}	V _{CC} =1.65V ~ 1.95V			0.35× V _{CC}			0.35× V _{CC}	V
		V _{CC} =2.3V ~ 2.7V			0.7			0.7	V
		V _{CC} =3V ~ 3.6V			0.8			0.8	V
		V _{CC} =4.5V ~ 5.5V			0.3×V _{CC}			0.3×V _{CC}	V

■ ELECTRICAL CHARACTERISTICS (Cont.) (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40°C~+125°C			UNIT	
			MIN	TYP	MAX	MIN	TYP	MAX		
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	2.4			2.1			V
			I _{OH} =-24mA	2.3			2.0			V
V _{CC} =4.5V, I _{OH} =-32mA	3.8			3.4			V			
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			0.5	V
			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 _{CC} =0V ~ 5.5V, V _{IN} =5.5V or GND			±5			±5	μA	
Power OFF Leakage Current	I _{OFF}	V _{CC} =0V, V _{IN} or V _{OUT} =5.5V			±10			±25	μA	
Quiescent Supply Current	I _Q	V _{CC} =1.65V ~ 5.5V, V _{IN} =5.5V or GND, I _{OUT} =0			10			10	μA	
Additional Quiescent Supply Current Per Input Pin	ΔI _Q	V _{CC} =3V ~ 5.5V, One input at V _{CC} -0.6V, Other inputs at V _{CC} or GND			500			500	μA	

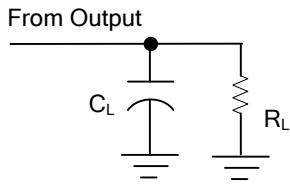
■ SWITCHING CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40°C~+125°C			UNIT	
			MIN	TYP	MAX	MIN	TYP	MAX		
Propagation Delay From Input (A or B) to Output (Y)	t _{PLH} / t _{PHL}	C _L =15pF, R _L =1MΩ	V _{CC} =1.8V±0.15V			9			12	ns
			V _{CC} =2.5V±0.2V			6.5			9	ns
			V _{CC} =3.3V±0.3V			5.5			8	ns
			V _{CC} =5V±0.5V			5			7	ns
		C _L =30pF, R _L =1KΩ	V _{CC} =1.8V±0.15V			9.5			12.5	ns
			V _{CC} =2.5V±0.2V			7.5			10	ns
			V _{CC} =3.3V±0.3V			6.5			9	ns
C _L =50pF, R _L =500Ω	V _{CC} =5V±0.5V			6			8	ns		

■ OPERATING CHARACTERISTICS (f=10MHz, T_A=25°C, unless otherwise specified)

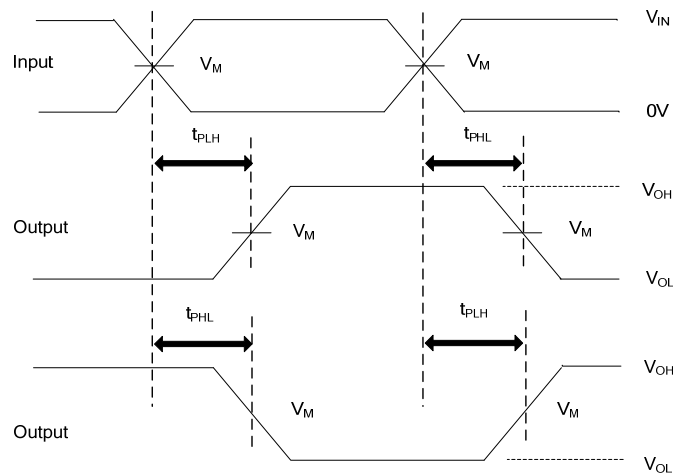
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C _{IN}	V _{CC} =3.3V, V _{IN} =V _{CC} or GND		5		pF
Power Dissipation Capacitance	C _{PD}	V _{CC} =1.8V		20		pF
		V _{CC} =2.5V		20		pF
		V _{CC} =3.3V		21		pF
		V _{CC} =5V		22		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

V _{CC}	INPUTS		V _M	C _L	R _L
	V _{IN}	t _R , t _F			
1.8V±0.15V	V _{CC}	≤2ns	V _{CC} /2	15pF	1MΩ
2.5V±0.2V	V _{CC}	≤2ns	V _{CC} /2	15pF	1MΩ
3.3V±0.3V	3V	≤2.5ns	1.5V	15pF	1MΩ
5V±0.5V	V _{CC}	≤2.5ns	V _{CC} /2	15pF	1MΩ
1.8V±0.15V	V _{CC}	≤2ns	V _{CC} /2	30pF	1KΩ
2.5V±0.2V	V _{CC}	≤2ns	V _{CC} /2	30pF	500Ω
3.3V±0.3V	3V	≤2.5ns	1.5V	50pF	500Ω
5V±0.5V	V _{CC}	≤2.5ns	V _{CC} /2	50pF	500Ω



PROPAGATION DELAY TIMES

- Notes: 1. C_L includes probe and jig capacitance.
 2. All input pulses are supplied by generators having the following characteristics: P_{RR} ≤ 10MHz, Z_O = 50Ω.

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