

HD74LV32

Quad. 2-input OR Gates

Description

The HD74LV32 has four 2-input OR gates in a 14 pin package. Low voltage and high speed operation is suitable at the battery drive product (note type personal computer) and low power consumption extends the life of a battery for long time operation.

Features

- $V_{CC} = 2.0\text{ V to }5.5\text{ V}$
- All inputs $V_{IH} (\text{Max.}) = 5.5\text{ V} (@V_{CC} = 0\text{ V to }5.5\text{ V})$
- Typical V_{OL} ground bounce $< 0.8\text{ V} (@V_{CC} = 3.3\text{ V}, T_a = 25^\circ\text{C})$
- Typical V_{OH} undershoot $> 2.0\text{ V} (@V_{CC} = 3.3\text{ V}, T_a = 25^\circ\text{C})$
- Output current $\pm 6\text{ mA} (@V_{CC} = 3.0\text{ V to }3.6\text{ V})$
 $\pm 12\text{ mA} (@V_{CC} = 4.5\text{ V to }5.5\text{ V})$

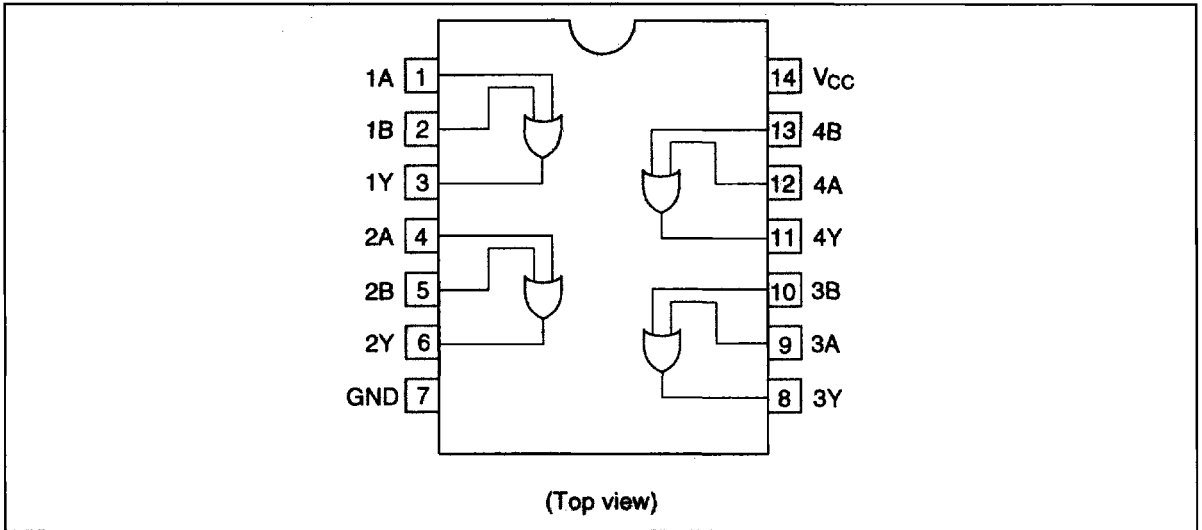
Function Table

Inputs		Output Y
A	B	
L	L	L
H	L	H
L	H	H
H	H	H

H: High level

L: Low level

Pin Arrangement



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit	Conditions
Supply voltage	V_{CC}	-0.5 to 7.0	V	
Input diode current	I_{IK}	-20	mA	$V_I = -0.5$ V
Input voltage	V_I	-0.5 to 7.0	V	
Output diode current	I_{OK}	-50	mA	$V_O = -0.5$ V
		50	mA	$V_O = V_{CC} + 0.5$ V
Output voltage	V_O	-0.5 to $V_{CC} + 0.5$	V	
Output current	I_O	± 25	mA	
V_{CC} , GND current / pin	I_{CC} or I_{GND}	50	mA	
Storage temperature	T_{stg}	-65 to +150	$^{\circ}$ C	

Note: The absolute maximum ratings are values which must not individually be exceeded, and furthermore, no two of which may be realized at the same time.

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Recommended Operating Conditions

Item	Symbol	Ratings	Unit	Conditions
Supply voltage	V_{CC}	2.0 to 5.5	V	
Input / output voltage	V_I	0 to 5.5	V	A, B
	V_O	0 to V_{CC}	V	Y
Operating temperature	T_a	-40 to 85	°C	
Output current	I_{OH}	-6	mA	$V_{CC} = 3.0\text{ V to }3.6\text{ V}$
		-12 *2	mA	$V_{CC} = 4.5\text{ V to }5.5\text{ V}$
	I_{OL}	6	mA	$V_{CC} = 3.0\text{ V to }3.6\text{ V}$
		12 *2	mA	$V_{CC} = 4.5\text{ V to }5.5\text{ V}$
Input rise / fall time *1	t_r, t_f	50	ns/V	$V_{CC} = 5.5\text{ V}$
		100	ns/V	$V_{CC} = 3.6\text{ V}$

Notes: 1. This item guarantees maximum limit when one input switches.

Waveform : Refer to test circuit of switching characteristics.

2. duty cycle $\leq 50\%$

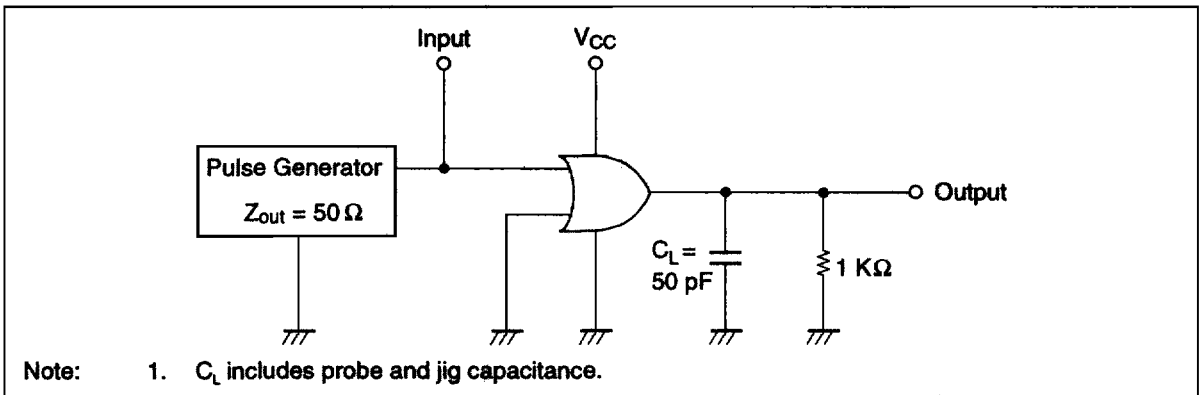
Electrical Characteristics

Item	Symbol	$V_{CC}(V)$	$T_a = -40\text{ to }85^\circ\text{C}$		Unit	Test Conditions
			Min	Max		
Input voltage	V_{IH}	2.7 to 3.6	2.0	—	V	
		4.5 to 5.5	$V_{CC} \times 0.7$	—	V	
	V_{IL}	2.7 to 3.6	—	0.8	V	
		4.5 to 5.5	—	$V_{CC} \times 0.3$	V	
Output voltage	V_{OH}	2.7 to 5.5	$V_{CC} - 0.2$	—	V	$I_{OH} = -100\ \mu\text{A}$
		3.0	2.4	—	V	$I_{OH} = -6\ \text{mA}$
		4.5	3.6	—	V	$I_{OH} = -12\ \text{mA}$
	V_{OL}	2.7 to 5.5	—	0.2	V	$I_{OL} = 100\ \mu\text{A}$
		3.0	—	0.4	V	$I_{OL} = 6\ \text{mA}$
		4.5	—	0.5	V	$I_{OL} = 12\ \text{mA}$
Input current	I_{IN}	0 to 5.5	—	± 1.0	μA	$V_{IN} = 5.5\text{ V or GND}$
Quiescent supply current	I_{CC}	5.5	—	20	μA	$V_{IN} = V_{CC}\text{ or GND}$
	ΔI_{CC}	3.0 to 3.6	—	500	μA	$V_{IN} = \text{one input at } (V_{CC} - 0.6)\text{V, other inputs at } V_{CC}\text{ or GND}$

Switching Characteristics

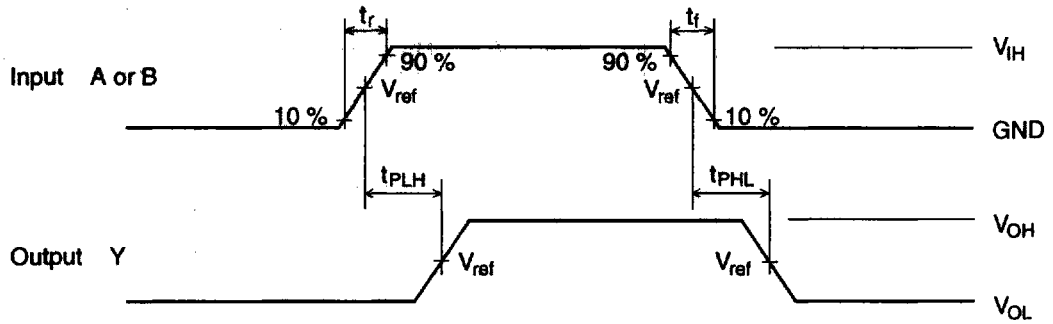
Item	Symbol	V _{CC} (V)	Ta = 25°C			Ta = -40 to 85°C			Unit	From (Input)	To (Output)	
			Min	Typ	Max	Min	Typ	Max				
Propagation delay time	t _{PLH}	2.7	—	10.0	16.0	1.0	—	17.5	ns	A or B	Y	
			3.3±0.3	—	8.0	13.5	1.0	—				15.0
			5.0±0.5	—	6.0	11.0	1.0	—				12.0
Input capacitance	C _{IN}	3.3±0.3	—	—	—	—	2.5	—	pF			

Test Circuit



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Waveforms



Symbol	$V_{CC} = 2.7\text{ V},$ $3.3 \pm 0.3\text{ V}$	$V_{CC} = 5.0 \pm 0.5\text{ V}$
V_{IH}	2.7 V	V_{CC}
V_{ref}	1.5 V	$50\%V_{CC}$

- Notes:
1. $t_r = 2.5\text{ ns}, t_f = 2.5\text{ ns}$
 2. Input waveform : PRR = 10 MHz, duty cycle 50%