

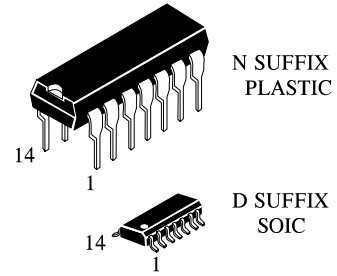
IN74LV02

QUAD 2-INPUT NOR GATE

The IN74LV02 is a low-voltage Si-gate CMOS device that is pin and function compatible with 74HC/HCT02A, 74ALS02

Features:

- Wide Operating Voltage: 1.0÷5.5 V
- Input voltage levels are compatible with standard C-MOS levels
- Accepts TTL input levels between $V_{CC} = 2.7\text{ V}$ and $V_{CC} = 3.6\text{ V}$
- Output voltage levels are compatible with input levels C-MOS, N-MOS and TTL microcircuits.
- Maximum input current: 1.0 mA; 0.1 mA at $T = 25\text{ }^{\circ}\text{C}$.
- Consumption current 8 mA.



ORDERING INFORMATION

IN74LV02N Plastic

IN74LV02D SOIC

IZ74LV02 Chip

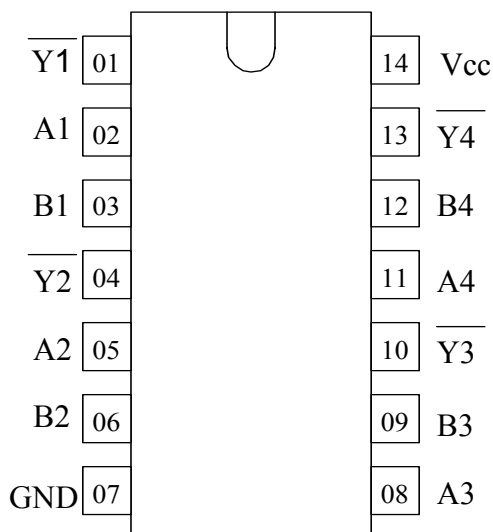
$T_A = -40^{\circ} \div 125^{\circ}\text{ C}$ for all packages

IN74LV02 truth table

Input		Output
A	B	$Y = \overline{A + B}$
L	L	H
L	H	L
H	L	L
H	H	L

Note –
H - high voltage level;
L - low voltage level;

Pinout



Pins description in IN74LV02D

Pin No.	Symbol	Pin description
01	$\overline{Y1}$	Output
02	A1	Input
03	B1	Input
04	$\overline{Y2}$	Output
05	A2	Input
06	B2	Input
07	GND	Common output
08	A3	Input
09	B3	Input
10	$\overline{Y3}$	Output
11	A4	Input
12	B4	Input
13	$\overline{Y4}$	Output
14	V_{CC}	Supply output from voltage source

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Absolute maximum ratings*

Symbol	Parameter	Value	Unit
V_{CC}	Supply voltage	from -0.5 to +5.0	V
I_{IK}^{*1}	Input diode current	± 20	mA
I_{OK}^{*2}	Output diode current	± 50	mA
I_O^{*3}	Output current source-drain	± 25	mA
I_{CC}	Supply output current	± 50	mA
I_{GND}	Common output current	± 50	mA
P_D	Dissipation power at free air change, Plastic DIP SOIC *4	750 500	mW
T_{stg}	Storage temperature	from -65 to +150	$^{\circ}C$
T_L		260	$^{\circ}C$

* Under absolute maximum conditions operation of microcircuits is not guaranteed. Operation under maximum conditions is guaranteed.

*1 If $V_I < -0.5V$ or $V_I > V_{CC} + 0.5 V$.

*2 If $V_O < -0.5V$ or $V_O > V_{CC} + 0.5 V$.

*3 If $-0.5V < V_O < V_{CC} + 0.5 V$.

*4 Under operation in the temperature range from $65^{\circ}C$ to $125^{\circ}C$ value of dissipation power drops down - to $12 \text{ mW}/^{\circ}C$ for Plastic DIP
- to $8 \text{ mW}/^{\circ}C$ for SOIC

Maximum conditions

Symbol	Parameter	Min	Max	Unit
V_{CC}	Supply voltage	1.2	5.5	V
V_{IN}	Input voltage	0	V_{CC}	V
V_{OUT}	Output voltage	0	V_{CC}	V
T_A	Operation temperature. For all packages	-40	125	$^{\circ}C$
t_{LH}, t_{HL}	Period of signal rise and fall edges (Figure 1)			ns
	$1.0 \leq V_{CC} < 1.2 \text{ B}$	0	500	
	$2.0 \leq V_{CC} < 2.7 \text{ B}$		200	
	$2.7 \leq V_{CC} < 3.6 \text{ B}$		100	
	$3.6 \leq V_{CC} \leq 5.5 \text{ B}$		50	

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DC electrical characteristics

Symbol	Parameter	Test conditions	V _{CC} , V	Value						Unit	
				25°C		-40°C to 85°C		-40°C to 125°C			
				min	max	min	max	min	max		
V _{IH}	High level input voltage	V _O = V _{CC} -0.1 V	1.2	0.9	-	0.9	-	0.9	-	V	
			2.0	1.4	-	1.4	-	1.4	-		
			2.7	2.0	-	2.0	-	2.0	-		
			3.0	2.0	-	2.0	-	2.0	-		
			3.6	2.0	-	2.0	-	2.0	-		
			4.5	3.15	-	3.15	-	3.15	-		
			5.5	3.85	-	3.85	-	3.85	-		
V _{IL}	Low level input voltage	V _O = 0.1 B	1.2	-	0.3	-	0.3	-	0.3	V	
			2.0	-	0.6	-	0.6	-	0.6		
			2.7	-	0.8	-	0.8	-	0.8		
			3.0	-	0.8	-	0.8	-	0.8		
			3.6	-	0.8	-	0.8	-	0.8		
			4.5	-	4.35	-	4.35	-	4.35		
			5.5	-	5.35	-	5.35	-	5.35		
V _{OH}	High level output voltage	V _I = V _{IH} or V _{IL} I _O = -100 uA	1.2	1.05	-	1.0	-	1.0	-	V	
			2.0	1.85	-	1.8	-	1.8	-		
			2.7	2.55	-	2.5	-	2.5	-		
			3.0	2.85	-	2.8	-	2.8	-		
			3.6	3.45	-	3.4	-	3.4	-		
			4.5	4.35	-	4.3	-	4.3	-		
V _{OL}	Low level output voltage	V _I = V _{IH} or V _{IL} I _O = 100 uA	1.2	-	0.15	-	0.2	-	0.2	V	
			2.0	-	0.15	-	0.2	-	0.2		
			2.7	-	0.15	-	0.2	-	0.2		
V _{OL}	Low level output voltage	V _I = V _{IH} or V _{IL} I _O = 100 uA	3.0	-	0.15	-	0.2	-	0.2	V	
			3.6	-	0.15	-	0.2	-	0.2		
			4.5	-	0.15	-	0.2	-	0.2		
			5.5	-	0.15	-	0.2	-	0.2		
			V _I = V _{IH} or V _{IL} ; I _O = 6 mA	3.0	-	0.33	-	0.4	-		0.5
			V _I = V _{IH} or V _{IL} ; I _O = 12 mA	4.5	-	0.40	-	0.55	-		0.65
I _I	Input current	V _I = V _{CC} or 0 V	5.5	-	±0.1	-	±1.0	-	±1.0	uA	
I _{CC}	Consumption current	V _I = V _{CC} or 0 V I _O = 0 uA	5.5	-	8.0	-	80	-	160	uA	
I _{CC1}	Additional input consumption current	V _I = V _{CC} - 0.6 V; I _O = 0 uA	5.5	-	8.0	-	80	-	160	uA	

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AC electrical characteristics ($t_{LH} = t_{HL} = 2.5 \text{ ns}$, $C_L = 50 \text{ pF}$, $R_L = 1 \text{ K}\Omega$)

Symbol	Parameter	Test conditions	V_{CC} , V	Value				-40 to 125 °C		Unit
				25 °C		-40 to 85 °C				
				min	max	min	max	min	max	
t_{PHL} , t_{PLH}	Propagation delay time when switching "on", "off"	Fig.1	1.2	-	80	-	85	-	95	ns
			2.0	-	17	-	21	-	26	
			2.7	-	12	-	15	-	19	
			3.0	-	10	-	12	-	15	
			4.5	-	8	-	10	-	13	
C_I	Input capacity	-	3.0	-	7	-	-	-	-	pF
C_{PD}	Dynamic capacity	$V_I = 0 \text{ V}$ or V_{CC}	3.0	-	44	-	-	-	-	

- Time diagram of input and output pulses

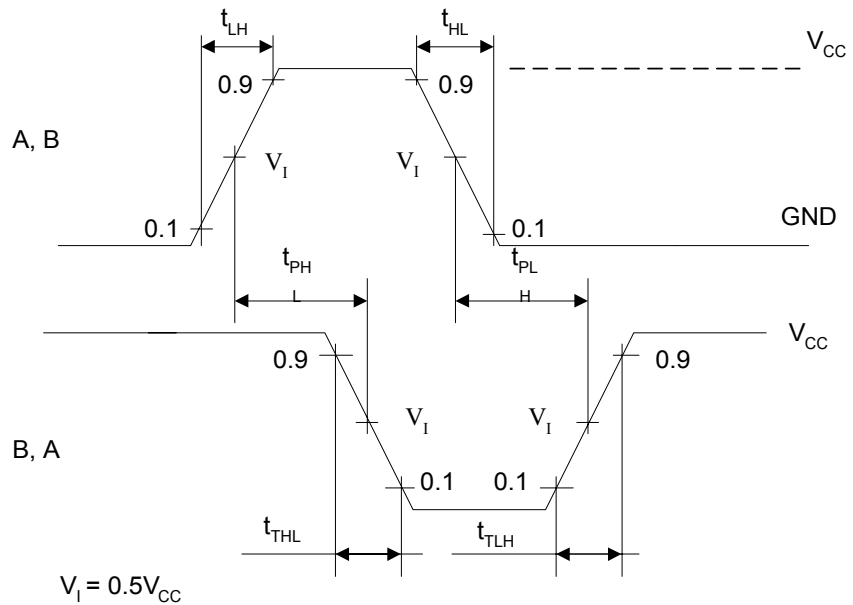


Fig.1