

TYPES SN54ALS37A, SN74ALS37A QUADRUPLE 2-INPUT POSITIVE-NAND BUFFERS

D2661, APRIL 1982—REVISED DECEMBER 1983

- Package Options Include Both Plastic and Ceramic Chip Carriers in Addition to Plastic and Ceramic DIPs
- Dependable Texas Instruments Quality and Reliability

description

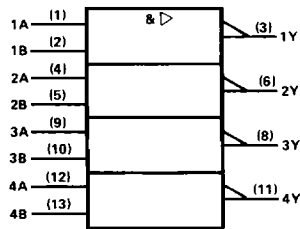
These devices contain four independent 2-input NAND buffer gates. They perform the Boolean functions $Y = \bar{A} \cdot \bar{B}$ or $Y = \bar{A} + \bar{B}$ in positive logic.

The SN54ALS37A is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS37A is characterized for operation from 0°C to 70°C .

FUNCTION TABLE
(each gate)

INPUTS		OUTPUT
A	B	Y
H	H	L
L	X	H
X	L	H

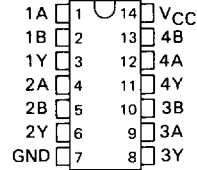
logic symbol



Pin numbers shown are for J and N packages.

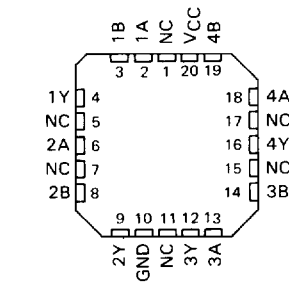
SN54ALS37A . . . J PACKAGE
SN74ALS37A . . . N PACKAGE

(TOP VIEW)



SN54ALS37A . . . FH PACKAGE
SN74ALS37A . . . FN PACKAGE

(TOP VIEW)



NC—No internal connection

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ALS AND AS CIRCUITS

**TYPES SN54ALS37A, SN74ALS37A
QUADRUPLE 2-INPUT POSITIVE-NAND BUFFERS**

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

Supply voltage, V_{CC}	7 V
Input voltage	7 V
Operating free-air temperature range: SN54ALS37A	-55 °C to 125 °C
SN74ALS37A	0 °C to 70 °C
Storage temperature range	-65 °C to 150 °C

recommended operating conditions

		SN54ALS37A			SN74ALS37A			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.8			0.8	V
I_{OH}	High-level output current			-1			-2.6	mA
I_{OL}	Low-level output current			12			24	mA
T_A	Operating free-air temperature	-55		125	0		70	°C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	SN54ALS37A			SN74ALS37A			UNIT
		MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5 V, I_I = -18 mA$			-1.5			-1.5	V
V_{OH}	$V_{CC} = 4.5 V \text{ to } 5.5 V, I_{OH} = -0.4 mA$	$V_{CC}-2$			$V_{CC}-2$			V
	$V_{CC} = 4.5 V, I_{OH} = -1 mA$	2.4	3.3					
	$V_{CC} = 4.5 V, I_{OH} = -2.6 mA$				2.4	3.2		
V_{OL}	$V_{CC} = 4.5 V, I_{OL} = 12 mA$		0.25	0.4		0.25	0.4	V
	$V_{CC} = 4.5 V, I_{OL} = 24 mA$					0.35	0.5	
I_I	$V_{CC} = 5.5 V, V_I = 7 V$			0.1			0.1	mA
I_{IH}	$V_{CC} = 5.5 V, V_I = 2.7 V$			20			20	µA
I_{IL}	$V_{CC} = 5.5 V, V_{IL} = 0.4 V$			-0.1			-0.1	mA
$I_{O\ddagger}$	$V_{CC} = 5.5 V, V_O = 2.25 V$	-30		-112	-30		-112	mA
I_{CCH}	$V_{CC} = 5.5 V, V_I = 0 V$		0.86	1.6		0.86	1.6	mA
I_{CCL}	$V_{CC} = 5.5 V, V_I = 4.5 V$		4.8	7.8		4.8	7.8	mA

† All typical values are at $V_{CC} = 5 V, T_A = 25 °C$.

‡ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS} .

switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5 V \text{ to } 5.5 V,$ $C_L = 50 pF,$ $R_L = 500 \Omega,$ $T_A = \text{MIN to MAX}$				UNIT
			SN54ALS37A		SN74ALS37A		
			MIN	MAX	MIN	MAX	
t_{PLH}	A or B	Y	2	10	2	8	ns
t_{PHL}	A or B	Y	2	10	2	7	ns

NOTE 1: For load circuit and voltage waveforms, see page 1-12.

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