SDLS103

- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers and Flat Packages, and Plastic and Ceramic DIPs
- Dependable Texas Instruments Quality and Reliability

description

These devices contain four independent 2-input NAND buffer gates.

The SN5437, SN54LS37 and SN54S37 are characterized for operation over the full military range of -55 °C to 125 °C. The SN7437, SN74LS37 and SN74S37 are characterized for operation from 0 °C to 70 °C.

FUNCTION TABLE (each gate)

INP	UTS	OUTPUT
A	B	Y
н	н	L
L	×	н
Х	L	н

logic symbol[†]



[†] This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

Pin numbers shown are for D, J, N, and W packages.

SN5437, SN54LS37, SN54S37, SN7437, SN74LS37, SN74S37 OUADRUPLE 2-INPUT POSITIVE-NAND BUFFERS December 1983-Revised March 1988

> SN5437, SN54LS37, SN54S37.... J OR W PACKAGE SN7437.... N PACKAGE SN74LS37, SN74S37.... D OR N PACKAGE (TOP VIEW)

1A [] 1B []2 1Y []3 2A []4 2B []5	U 14 VCC 13 48 12 4A 11 4Y 10 3B
	10 9 3A
	8] 3Y

SN54LS37, SN54S37 ... FK PACKAGE (TOP VIEW)



NC ~ No internal connection

logic diagram



positive logic

$$Y = \overline{A \cdot B}$$
 or $Y = \overline{A} + \overline{B}$

PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard werrenty. Production processing does not necessarily include testing of all parameters.



SN5437, SN54LS37, SN437 SN7437, SN74LS37, SN7437 QUADRUPLE 2-INPUT POSITIVE-NAND BUFFERS

schematics (each gate)



Supply voltage, VCC (see Note 1)	
		5.5 V
LS37	· · · · · · · · · · · · · · · · · · ·	
Operating free-air temperature:	\$N54'	
	SN74'	
Storage temperature range		

NOTE 1: Voltage values are with respect to network ground terminal.

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recommended operating conditions

			SN5437			SN7437		
		MIN	NOM	MAX	MIN	NOM	MAX	UNIT
Vcc	Supply voltage	4.5	5	5.5	4.75	5	5.25	V
VIH	High-level input voltage	2			2			V
VIL	Low-level input voltage		-	0.8			0.8	V
юн	High-level output current			- 1.2			- 1.2	mA
OL	Low-ievel output current			48			48	mΑ
ŤA	Operating free-air temperature	- 55		125	0		70	°C

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

PARAMETER		TEST CONDIT			SN5437	. —	Γ	SN7437	,	LIAUT
PARAMETER		TEST CONUT		MIN	TYP‡	MAX	MIN	TYP‡	MAX	UNIT V V mA μA mA
VIK	V _{CC} ≈ MIN,	l _l = – 12 mA				- 1.5	1		- 1.5	V
VOH	V _{CC} = MIN,	V _{IL} =0.8 V,	^I OH = - 1.2 mA	2.4	3.3		2.4	3.3		V
VOL	V _{CC} = MIN,	V _{IH} = 2 V,	lot = 48 mA		0.2	0.4		0.2	0.4	V
4	V _{CC} = MAX,	V ₁ = 6.5 V				1			1	mA
Чн	VCC = MAX,	V = 2.4 V				40	Γ		40	μA
կլ	V _{CC} = MAX,	V ₁ = 0.4 V				- 1.6	[- 1.6	mA
los§	V _{CC} = MAX			- 20		- 70	- 18		- 70	mA
ГССН	V _{CC} ≈ MAX,	V ₁ = 0 V			9	15.5	_	9	15.5	mA
ICCL	V _{CC} = MAX,	V ₁ = 4.5 V			34	54		34	54	mΑ

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

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\$ All typical values are at $V_{CC} = 5 V$, $T_A = 25^{\circ}C$. \$ Not more than one output should be shorted at a time, and the duration of the short circuit should not exceed one second.

switching characteristics, V_{CC} = 5 V, T_A = 25 $^{\circ}\text{C}$ (see note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CON	DITIONS	MIN	түр	MAX	UNIT
tPLH	A or B	· · ·	R ₁ = 133 Ω,	C ₁ = 45 pF		13	22	กร
TPHL	A 01 B	·	ni - 135 32,			8	15	nŝ

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.



SN54LS37, SN74LS37 QUADRUPLE 2-INPUT POSITIVE-NAND BUFFERS

recommended operating conditions

	SN54LS37			S	UNIT		
	MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC} Supply voltage	4.5	5	5.5	4.75	5	5.25	v
VIH High-level input voltage	2		_	2	_		_ V
VIL Low-level input voltage			0.7			0.8	V
OH High-level output current			- 1.2			- 1.2	mΑ
OL Low-level output current			12		-	24	лmА
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 CONDIT		SN54LS37 SN74LS37			37			
FARAMETER		TEST CONDIT		MIN	TYP‡	MAX	MIN	TYP‡	MAX	UNIT
٧IK	V _{CC} = MIN,	iι = - 18 mA				- 1.5			- 1.5	V
V _{OH}	V _{CC} = MIN,	V _{IL} ≖ MAX,	юн = – 1.2 mA	2.5	3.4		2.7	3.4		V
Ve	V _{CC} = MIN,	V _{IH} = 2 V,	1 ₀₁ = 12 mA		0.25	0.4		0.25	0.4	v
Vol	V _{CC} = MIN,	V _{JH} = 2 V,	<u>lol = 24 mA</u>					0.35	0.5	1 ĭ
կ	V _{CC} = MAX,	V ₁ = 7 V				0.1	[0.1	mA
ЧΗ	V _{CC} = MAX,	V _I ≠ 2.7 V				20			20	μA
μ	V _{CC} = MAX,	V ₁ = 0.4 V		_		- 0.4			- 0.4	mA
IOS §	V _{CC} = MAX			- 30		130	- 30		- 130	mA
Іссн_	VCC = MAX,	V1 = 0 V			0.9	2		0.9	2	mΑ
^I CCL	V _{CC} = MAX,	V _I = 4.5 V		_	6	12		6	12	mA

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

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[‡] All typical values are at V_{CC} = 5 V, T_A = 25° C. § Not more than one output should be shorted at a time, and the duration of the short-circuit should not exceed one second.

switching characteristics, $V_{CC} = 5 V$, $T_A = 25^{\circ}C$ (see note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CON		MIN TYP	MAX	UNIT
^t PLH	A or B	v	P 667 0		12	24	ns
^t PH∟	AOIB		R _L = 667 Ω,	C _L = 45 pF	12	24	រាន

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.



SN54S37, SN74S37 QUADRUPLE 2-INPUT POSITIVE-NAND BUFFERS

recommended operating conditions

			SN54S37			SN74S37			
		MIN	NOM	MAX	MIN	NOM	MAX	UNIT	
Vcc	Supply voltage	4.5	5	5.5	4.75	- 5	5.25	V	
⊻ін	High-level input voltage	2			2		_	V	
VIL	Low-level input voltage			0.8			0.8	V	
юн	High-level output current			- 3			- 3	mA	
IOL.	Low-level output current			60			60	mA	
TA	Operating free-air temperature	- 55		125	0		70	°c	

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

	TEST CONDITIONS [†]	SN54S37	SN74S37	
PARAMETER	TEST CONDITIONS (ΜΙΝ ΤΥΡ‡ ΜΑΧ	MIN TYP: MAX	יואט ך
VIK	$V_{CC} = MIN, I_1 = -18 \text{ mA}$	- 1.2	- 1.2	V
Voн	$V_{CC} = MIN$, $V_{IL} = 0.8 V$, $l_{OH} = -3 mA$	2.5 3.4	2.7 3.4	V
VOL	V _{CC} = MIN, V _{IH} = 2 V, I _{OL} = 60 mA	0.5	0.5	V
1	V _{CC} = MAX, VI = 5.5 V	1	1	mA
Чн	V _{CC} = MAX, V _I = 2.7 V	0.1	0.1	mA
11	V _{CC} = MAX, V _I = 0.5 V	-4	- 4	mA
los§	V _{CC} = MAX	- 50 - 225	- 50 - 225	mA
ГССН	$V_{CC} = MAX, V_1 = 0 V$	20 36	20 36	mA
ICCL	V _{CC} = MAX, V _I = 4.5	46 80	46 80	mA

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† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions. ‡ All typical values are at $V_{CC} = 5 V$, $T_A = 25^{\circ}C$. § Not more than one output should be shorted at a time, and the duration of the short circuit should not exceed 100 milliseconds.

FROM то PARAMETER TEST CONDITIONS UNIT MIN TYP MAX (INPUT) (OUTPUT) 4 6.5 ^tPLH ns C_L = 50 pF $R_{\rm L}$ = 93 Ω_{\star} 4 ^tPHL 6.5 ns Y A or B 6 ^tPLH ΠS $\mathsf{R}_{\mathsf{L}}=93~\Omega,$ C_L = 150 pF 6 [†]PHL ns

switching characteristics, $V_{CC} = 5 V$, $T_A = 25^{\circ}C$ (see note 2)

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.



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