

- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

description

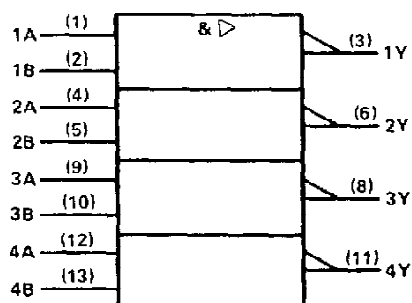
These devices contain four independent 2-input NAND buffer gates. They perform the Boolean functions $Y = A \cdot B$ or $Y = A + \bar{B}$ in positive logic.

The SN54F37 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74F37 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

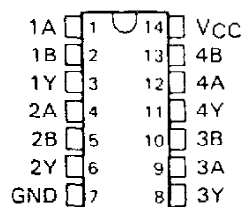
logic symbol†



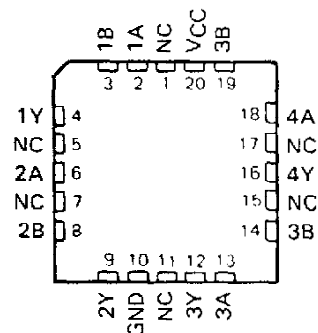
†This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

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

SN54F37 . . . J PACKAGE
 SN74F37 . . . D OR N PACKAGE
 (TOP VIEW)

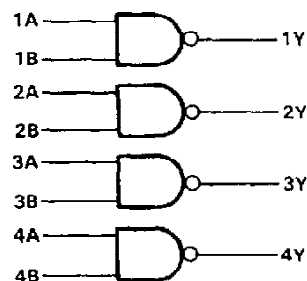


SN54F37 . . . FK PACKAGE
 (TOP VIEW)



NC -- No internal connection

logic diagram (positive logic)



SN54F37, SN74F37

QUADRUPL 2-INPUT POSITIVE-NAND BUFFERS

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

Supply voltage, V_{CC}	-0.5 V to 7 V
Input voltage [†]	-0.5 V to 7 V
Input current	-30 mA to 5 mA
Voltage applied to any output in the high state	-0.5 V to V_{CC}
Current into any output in the low state	128 mA
Operating free-air temperature range: SN54F37	-55°C to 125°C
SN74F37	0°C to 70°C
Storage temperature range	-65°C to 150°C

[†]The input voltage ratings may be exceeded provided the input current ratings are observed.

recommended operating conditions

	SN54F37			SN74F37			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_{IK} Input clamp current			-18			-18	mA
I_{OH} High-level output current			-15			-15	mA
I_{OL} Low-level output current			48			64	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	SN54F37			SN74F37			UNIT
		MIN	TYP [†]	MAX	MIN	TYP [†]	MAX	
V_{IK}	$V_{CC} = 4.5$ V, $I_I = -18$ mA	-0.73		-1.2			-1.2	V
V_{OH}	$V_{CC} = 4.5$ V, $I_{OH} = -1$ mA	2.5	3.4		2.5	3.4		V
	$V_{CC} = 4.5$ V, $I_{OH} = -15$ mA	2			2			
	$V_{CC} = 4.75$ V, $I_{OH} = -1$ mA				2.7			
V_{OL}	$V_{CC} = 4.5$ V, $I_{OL} = 48$ mA	0.35		0.5				V
	$V_{CC} = 4.5$ V, $I_{OL} = 64$ mA				0.40		0.55	
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, $V_I = 0.5$ V			-0.6			-0.6	mA
I_{OS}^{\ddagger}	$V_{CC} = 5.5$ V, $V_O = 0$	-100		-225	-100		-225	mA
I_{CCH}	$V_{CC} = 5.5$ V, $V_I = 0$		3	6		3	6	mA
I_{CCL}	$V_{CC} = 5.5$ V, $V_I = 4.5$ V		23	33		23	33	mA

switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5\text{ V},$ $C_L = 50\text{ pF},$ $R_L = 500\ \Omega,$ $T_A = 25^\circ\text{C}$			$V_{CC} = 4.5\text{ V to }5.5\text{ V},$ $C_L = 50\text{ pF},$ $R_L = 500\ \Omega,$ $T_A = \text{MIN to MAX}^{\S}$			UNIT	
			'F37			SN54F37		SN74F37		
			MIN	TYP [†]	MAX	MIN	MAX	MIN	MAX	
t _{PLH}	A or B	Y	1.5	3.1	5.5	1	7	1.5	6.5	ns
t _{PHI}			1	2.1	4.5	1	6	1	5	

[†] All typical values are at $V_{CC} = 5$ V, $T_A = 25^\circ\text{C}$.

[‡] Not more than one output should be shorted at a time and the duration of the short circuit should not exceed one second.

[§] For conditions shown as MIN or MAX, use the appropriate value specified under Recommended Operating Conditions.

NOTE 1: Load circuits and waveforms are shown in Section 1 of the *F Logic Data Book, 1989*.



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