

SN54F36, SN74F36 QUADRUPLE 2-INPUT POSITIVE-NOR GATES

D2932, MARCH 1987—REVISED JANUARY 1988

- 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

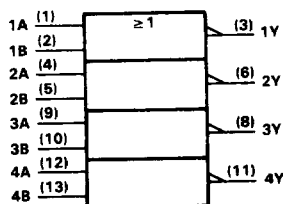
These devices contain four independent 2-input NOR gates. They perform the Boolean functions $Y = \overline{A+B}$ or $Y = \overline{A \cdot B}$ in positive logic.

The SN54F36 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74F36 is characterized for operation from 0°C to 70°C .

FUNCTION TABLE (each gate)

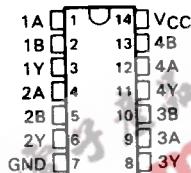
INPUTS		OUTPUT
A	B	Y
H	X	L
X	H	L
L	L	H

logic symbol†

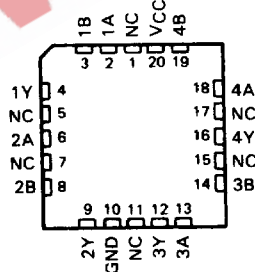


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.
Pin numbers shown are for D, J, and N packages.

SN54F36 ... J PACKAGE
SN74F36 ... D OR N PACKAGE
(TOP VIEW)

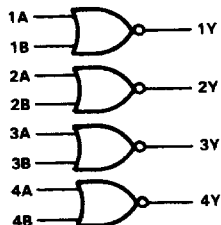


SN54F36 ... FK PACKAGE
(TOP VIEW)



NC—No internal connection

logic diagram (positive logic)



2

Data Sheets

SN54F36, SN74F36 QUADRUPLE 2-INPUT POSITIVE-NOR GATES

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

Supply voltage, V_{CC}	-0.5 V to 7 V
Input voltage†	-1.2 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	40 mA
Operating free-air temperature range: SN54F36	-55°C to 125°C
SN74F36	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

	SN54F36			SN74F36			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			-1			-1	mA
I_{OL} Low-level output current			20			20	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	SN54F36		SN74F36		UNIT		
		MIN	TYP [‡]	MAX	MIN		TYP [‡]	MAX
V_{IK}	$V_{CC} = 4.5$ V, $I_I = -18$ mA			-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	
	$V_{CC} = 4.75$ V, $I_{OH} = -1$ mA			2.7				
V_{OL}	$V_{CC} = 4.5$ V, $I_{OL} = 20$ mA		0.30	0.5		0.30	0.5	V
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}^{\S}	$V_{CC} = 5.5$ V, $V_O = 0$	-60		-150		-60	-150	mA
I_{CCH}	$V_{CC} = 5.5$ V, $V_I = 0$		3.7	5.6		3.7	5.6	mA
I_{CCL}	$V_{CC} = 5.5$ V, See Note 1		8.7	13		8.7	13	mA

switching characteristics (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5$ V, $C_L = 50$ pF, $R_L = 500$ Ω, $T_A = 25^\circ$ C			$V_{CC} = 4.5$ V to 5.5 V, $C_L = 50$ pF, $R_L = 500$ Ω, $T_A = \text{MIN to MAX}^{\dagger}$				UNIT
			'F36			SN54F36		SN74F36		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A or B	Y	1.7	4	5.5	1.7	7.5	1.7	6.5	ns
t_{PHL}			1	2.8	4.3	1	6.5	1	5.3	

[‡]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.

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

NOTES: 1. I_{CCL} is measured with one input per gate at 4.5 V and all others grounded.

2. Load circuits and waveforms are shown in Section 1.