

- 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

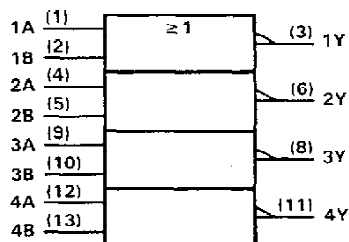
These devices contain four independent 2-input NOR gates. They perform the Boolean functions  $Y = \overline{A+B}$  or  $Y = \overline{A} \cdot \overline{B}$  in positive logic.

The SN54F36 is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74F36 is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

FUNCTION TABLE (each gate)

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

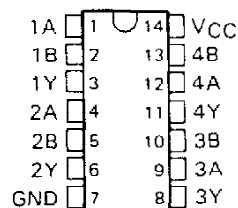
### logic symbol†



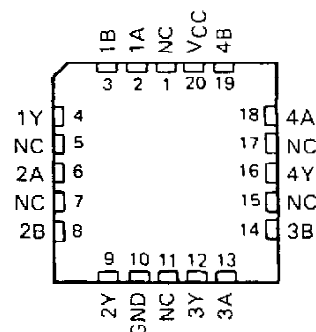
† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

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

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

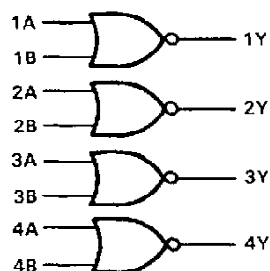


SN54F36 . . . FK PACKAGE  
(TOP VIEW)



NC—No internal connection

### logic diagram (positive logic)



# SN54F36, SN74F36 QUADRUPL 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 <sup>†</sup>	-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

<sup>†</sup>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 <sup>‡</sup>	MAX	MIN	TYP <sup>‡</sup>	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
$I_{OS}^§$	$V_{CC} = 5.5$ 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 <sub>CC</sub> = 5 V, C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500 Ω, T <sub>A</sub> = 25 °C			V <sub>CC</sub> = 4.5 V to 5.5 V, C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500 Ω, T <sub>A</sub> = MIN to MAX <sup>†</sup>			UNIT	
			'F36			SN54F36		SN74F36		
			MIN	TYP	MAX	MIN	MAX	MIN		MAX
t <sub>PLH</sub>	A or B	Y	1.7	4	5.5	1.7	7.5	1.7	6.5	ns
t <sub>PHL</sub>			1	2.8	4.3	1	6.5	1	5.3	

<sup>‡</sup>All typical values are at  $V_{CC} = 5$  V,  $T_A = 25^\circ\text{C}$ .

<sup>§</sup>Not more than one output should be shorted at a time and the duration of the short circuit should not exceed one second.

<sup>¶</sup>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.

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