

- 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**

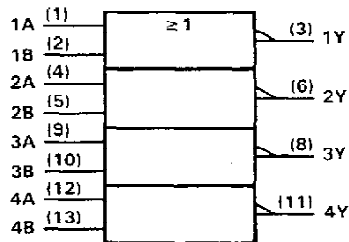
These devices contain four independent 2-input NOR gates. They perform the Boolean functions  $Y = \overline{A+B}$  or  $Y = \overline{A} \cdot \overline{B}$  in positive logic.

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)

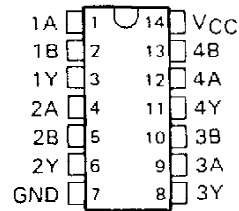
INPUTS		OUTPUT
A	B	Y
H	X	L
X	H	L
L	L	H

**logic symbol†**

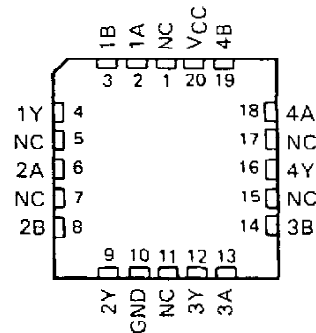


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12. Pin numbers shown are for D, J, and N packages.

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

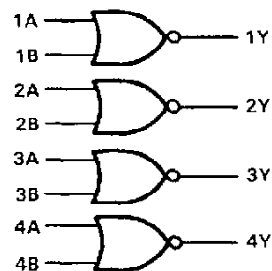


SN54F36 . . . FK PACKAGE  
 (TOP VIEW)



NC—No internal connection

**logic diagram (positive logic)**



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



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**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 <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
$I_{OS}^{\S}$	$V_{CC} = 5.5$ 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, $T_A = 25$ °C			$V_{CC} = 4.5$ V to 5.5 V, $C_L = 50$ pF, $R_L = 500$ Ω, $T_A = \text{MIN to MAX}^{\ddagger}$				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	

<sup>‡</sup>All typical values are at  $V_{CC} = 5$  V,  $T_A = 25$  °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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