

SN5426, SN54LS26, SN7426, SN74LS26

QUADRUPLE 2-INPUT HIGH-VOLTAGE INTERFACE POSITIVE-NAND GATES

DECEMBER 1983—REVISED MARCH 1988

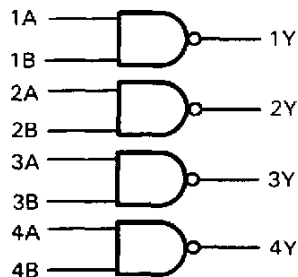
- For Driving Low-Threshold-Voltage MOS Inputs

description

These 2-input open-collector NAND gates feature high-output voltage ratings for interfacing with low-threshold-voltage MOS logic circuits or other 12-volt systems. Although the output is rated to withstand 15 volts, the V_{CC} terminal is connected to the standard 5-volt source.

The SN5426 and SN54LS26 are characterized for operation over the full military temperature range of -55°C to 125°C . The SN7426 and SN74LS26 are characterized for operation from 0°C to 70°C .

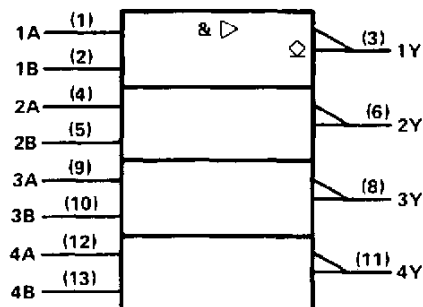
logic diagram



positive logic

$$Y = \overline{AB}$$

logic symbol†

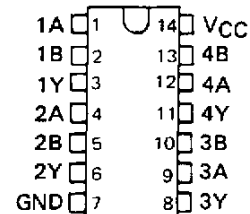


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

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

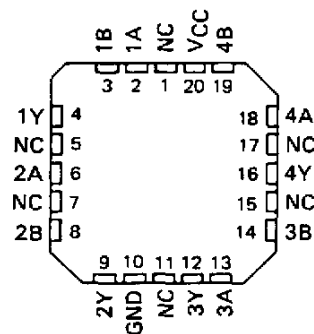
SN5426 . . . J PACKAGE
SN54LS26 . . . J OR W PACKAGE
SN7426 . . . N PACKAGE
SN74LS26 . . . D OR N PACKAGE

(TOP VIEW)



SN54LS26 . . . FK PACKAGE

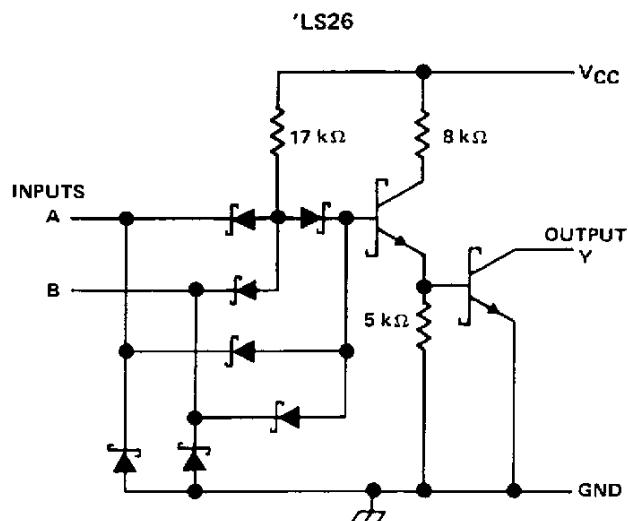
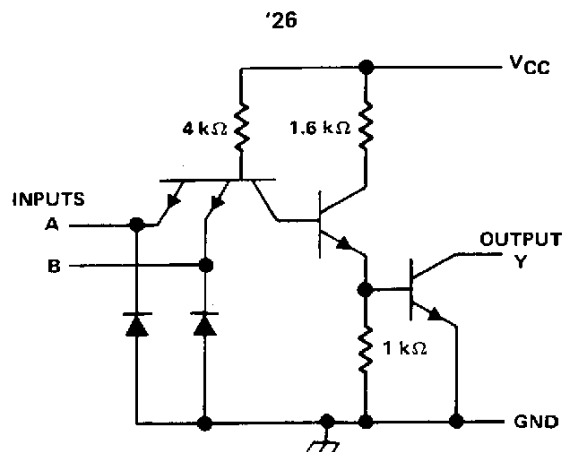
(TOP VIEW)



NC - No internal connection

SN5426, SN54LS26, SNSN7426, SN74LS26 **QUADRUPLE 2-INPUT** **HIGH-VOLTAGE INTERFACE POSITIVE-NAND GATES**

schematics



Resistor values shown are nominal.

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

Supply voltage, V_{CC} (see Note 1)	7 V
Input voltage: '26	5.5 V
'LS26	7 V
Operating free-air temperature: SN54'	-55°C to 125°C
SN74'	0°C to 70°C
Storage temperature range	-65°C to 150°C

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

SN54LS26, SN74LS26
QUADRUPL 2-INPUT
HIGH-VOLTAGE INTERFACE POSITIVE-NAND GATES

recommended operating conditions

	SN54LS26			SN74LS26			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC} Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V_{IH} High-level input voltage	2			2			V
V_{IL} Low-level input voltage			0.7			0.8	V
V_{OH} High-level output voltage			15			15	V
I_{OL} Low-level output current			4			8	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†	SN54LS26			SN74LS26			UNIT
		MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}	$V_{CC} = \text{MIN}, I_I = -18 \text{ mA}$		-1.5			-1.5		V
I_{OH}	$V_{CC} = \text{MIN}, V_{IL} = \text{MAX}, V_{OH} = 12 \text{ V}$			50			50	μA
	$V_{CC} = \text{MIN}, V_{IL} = \text{MAX}, V_{OH} = 15 \text{ V}$			1			1	mA
V_{OL}	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, I_{OL} = 4 \text{ mA}$	0.25	0.4		0.25	0.4		V
	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, I_{OL} = 8 \text{ mA}$				0.35	0.5		
I_I	$V_{CC} = \text{MAX}, V_I = 7 \text{ V}$		0.1			0.1		mA
I_{IH}	$V_{CC} = \text{MAX}, V_{IH} = 2.7 \text{ V}$		20			20		μA
I_{IL}	$V_{CC} = \text{MAX}, V_{IL} = 0.4 \text{ V}$		-0.4			-0.4		mA
I_{CCH}	$V_{CC} = \text{MAX}, V_I = 0$	0.8	1.6		0.8	1.6		mA
I_{CCL}	$V_{CC} = \text{MAX}, V_I = 4.5 \text{ V}$	2.4	4.4		2.4	4.4		

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

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

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

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	A or B	Y	$R_L = 2 \text{ k}\Omega, C_L = 15 \text{ pF}$		17	32	ns
t_{PHL}					15	28	ns

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

SN5426, SN7426
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HIGH-VOLTAGE INTERFACE POSITIVE-NAND GATES

recommended operating conditions

	SN5426			SN7426			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC} Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V _{IH} High-level input voltage	2			2			V
V _{IL} Low-level input voltage			0.8			0.8	V
V _{OH} High-level output voltage			15			15	V
I _{OL} Low-level output current			16			16	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†	SN5426			SN7426			UNIT
		MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V _{IK}	V _{CC} = MIN, I _I = -12 mA			-1.5			-1.5	V
I _{OH}	V _{CC} = MIN, V _{IL} = 0.8 V, V _{OH} = 12 V						50	μA
	V _{CC} = MIN, V _{IL} = 0.7 V, V _{OH} = 12 V			50				
	V _{CC} = MIN, V _{IL} = 0.8 V, V _{OH} = 15 V						1	mA
	V _{CC} = MIN, V _{IL} = 0.7 V, V _{OH} = 15 V			1				
V _{OL}	V _{CC} = MIN, V _{IH} = 2 V, I _{OL} = 16 mA			0.4			0.4	V
I _I	V _{CC} = MAX, V _I = 5.5 V			1			1	mA
I _{IH}	V _{CC} = MAX, V _I = 2.4 V			40			40	μA
I _{IL}	V _{CC} = MAX, V _I = 0.4 V			-1.6			-1.6	mA
I _{CCCH}	V _{CC} = MAX, V _I = 0			4			4	mA
I _{CCCL}	V _{CC} = MAX, V _I = 4.5 V			12			12	mA

†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°C.

switching characteristics, V_{CC} = 5 V, T_A = 25°C (see note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t _{PLH}	A or B	Y	R _L = 1 kΩ, C _L = 15 pF		16	24	ns
t _{PHL}					11	17	ns

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

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