

SN5439, SN7439 QUADRUPLE 2-INPUT POSITIVE-NAND BUFFERS WITH OPEN-COLLECTOR OUTPUTS

SDLS106 - MAY 1983 - REVISED MARCH 1988

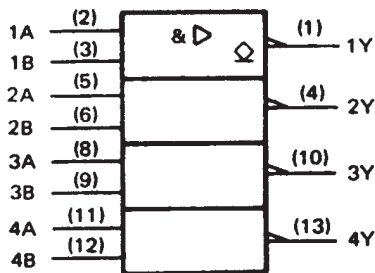
- **Current Sinking Capability up to 80 mA**
- **Guaranteed Fan-Out of 30 Series 54/74 Loads**
- **Dependable Texas Instruments Quality and Reliability**

description

These devices contain four independent 2-input NAND buffers. The open-collector outputs require pull-up resistors to perform correctly. They may be connected to other open-collector outputs to implement active-low wired-OR or active-high wired-AND functions. Open-collector devices are often used to generate higher V_{OH} levels.

The SN5439 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN7439 is characterized for operation from 0°C to 70°C .

logic symbol†

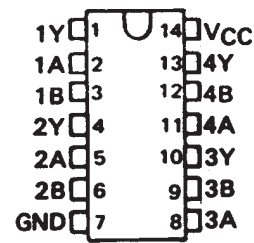


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

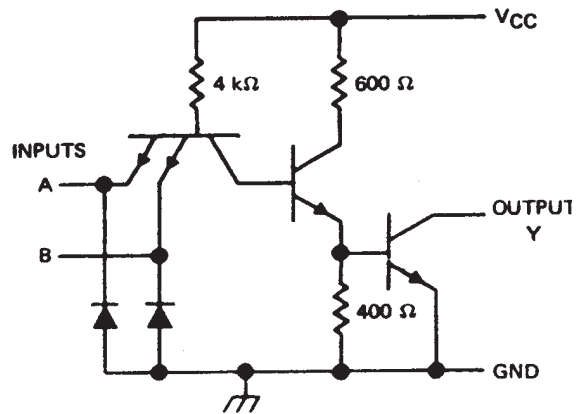
FUNCTION TABLE (each gate)

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

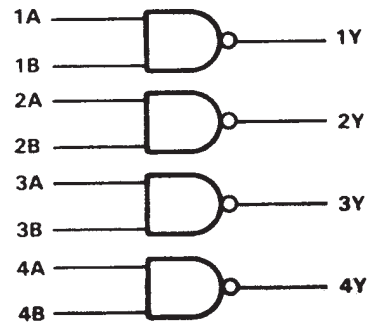
SN5439 . . . J PACKAGE
SN7439 . . . N PACKAGE
(TOP VIEW)



schematics (each gate)



logic diagram



positive logic

$$Y = \overline{A \cdot B} \text{ or } Y = \overline{A} + \overline{B}$$

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

Supply voltage, V_{CC} (see Note 1)	7V
Input voltage	7V
Off-state output voltage	7V
Operating free-air temperature range: SN5439	-55°C to 125°C
SN7439	0°C to 70°C
Storage temperature range	-65°C to 150°C

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

recommended operating conditions

		SN5439			SN7439			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
V_{OH}	High-level output voltage			5.5			5.5	V
I_{OL}	Low-level output voltage			60			60	mA
							80†	
T_A	Operating free-air temperature	-55		125	0		70	°C

†The extended limit applies only if V_{CC} is maintained between 4.75 and 5.25 V.

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	SN5439			SN7439			UNIT
		MIN	TYP	MAX	MIN	TYP	MAX	
V_{IK}	$V_{CC} = \text{MIN}, I_I = -12 \text{ mA}$			-1.5			-1.5	V
I_{OH}	$V_{CC} = \text{MIN}, V_{IL} = 0.8 \text{ V}, V_{OH} = 5.5 \text{ V}$						0.25	mA
	$V_{CC} = \text{MIN}, V_{IL} = 0.7 \text{ V}, V_{OH} = 5.5 \text{ V}$			0.25				
V_{OL}	$V_{CC} = \text{MIN}, I_{OL} = 48 \text{ mA}$			0.4			0.4	V
	$V_{CC} = \text{MIN}, I_{OL} = 60 \text{ mA}$			0.5			0.5	
	$V_{CC} = 4.75 \text{ V}, I_{OL} = 80 \text{ mA}$						0.6	
I_I	$V_{CC} = \text{MAX}, V_I = 5.5 \text{ V}$			1			1	mA
I_{IH}	$V_{CC} = \text{MAX}, V_I = 2.4 \text{ V}$			40			40	μA
I_{IL}	$V_{CC} = \text{MAX}, V_I = 0.4 \text{ V}$			-1.6			-1.6	mA
I_{CCH}	$V_{CC} = \text{MAX}, V_I = 0$			54			54	mA

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

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

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	SN5439		SN7439		UNIT
				MIN	MAX	MIN	MAX	
t_{PLH}	A or B	Y	$R_L = 133 \Omega, C_L = 45 \text{ pF}$		22		22	ns
t_{PHL}					18		18	

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



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