

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

REVISED MAY 1983

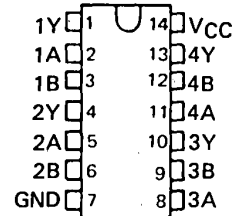
- Current Sinking Capability up to 80 mA
- Guaranteed Fan-Out of 30 Series 54/74 Loads
- Dependable Texas Instruments Quality and Reliability

## 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  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN7439 is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

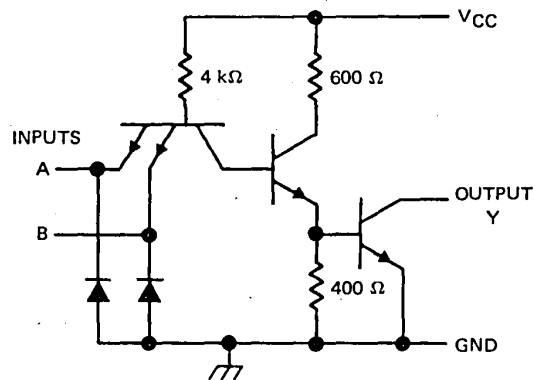
SN5439 ... J PACKAGE  
SN7439 ... J OR N PACKAGE  
(TOP VIEW)



## positive logic

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

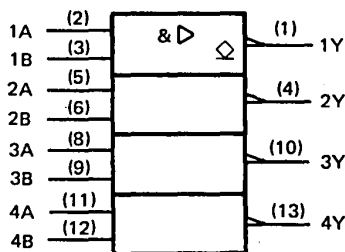
## schematics (each gate)



FUNCTION TABLE (each gate)

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

## logic symbol †



Pin numbers shown on logic notation are for J or N packages.

## PRODUCTION DATA

This document contains 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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# TYPES SN5439, SN7439 QUADRUPLE 2-INPUT POSITIVE-NAND BUFFERS WITH OPEN-COLLECTOR OUTPUTS

## 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 .....	$-55^{\circ}\text{C}$ to $125^{\circ}\text{C}$
SN7439 .....	$0^{\circ}\text{C}$ to $70^{\circ}\text{C}$
Storage temperature range .....	$-65^{\circ}\text{C}$ to $150^{\circ}\text{C}$

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			V
$V_{OH}$	High-level output voltage				5.5			V
$I_{OL}$	Low-level output voltage				60			mA
					80 <sup>†</sup>			
$T_A$	Operating free-air temperature	-55		125	0		70	$^{\circ}\text{C}$

<sup>†</sup>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 <sup>†</sup>	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
$I_{OH}$	$V_{CC} = \text{MIN}$ , $V_{OH} = 5.5 \text{ V}$	-0.25			-0.25			mA
$V_{OL}$	$V_{CC} = \text{MIN}$ , $I_{OL} = 48 \text{ mA}$	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			$\mu\text{A}$
$I_{IL}$	$V_{CC} = \text{MAX}$ , $V_I = 0.4 \text{ V}$	-1.6			-1.6			mA
$I_{CCH}$	$V_{CC} = \text{MAX}$ , $V_I = 0 \text{ V}$	54			54			mA

<sup>†</sup> 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: See General Information Section for load circuits and voltage waveforms.

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TTL DEVICES