

## Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceed the OCM data sheet.

## Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
  - Class Q Military
  - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
  - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

# SN5400, SN54LS00, SN54S00 SN7400, SN74LS00, SN74S00 QUADRUPLE 2-INPUT POSITIVE-NAND GATES

SDLS025 - DECEMBER 1983 - REVISED MARCH 1988

- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers and Flat Packages, and Plastic and Ceramic DIPs
- Dependable Texas Instruments Quality and Reliability

## description

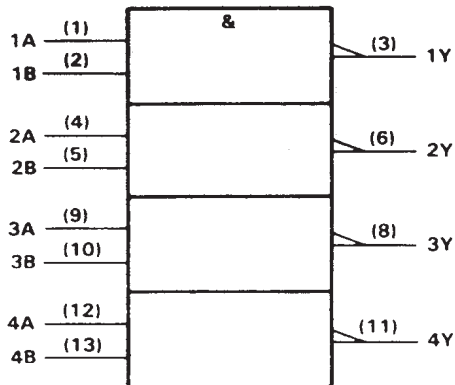
These devices contain four independent 2-input-NAND gates.

The SN5400, SN54LS00, and SN54S00 are characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN7400, SN74LS00, and SN74S00 are characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

FUNCTION TABLE (each gate)

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

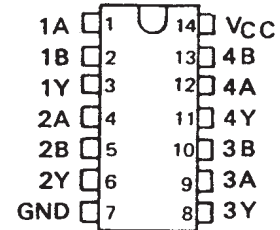
## logic symbol†



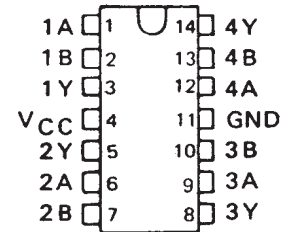
† This symbol is in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12.

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

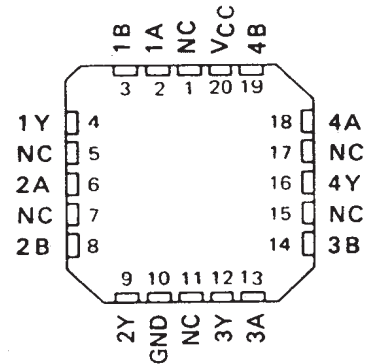
SN5400 . . . J PACKAGE  
SN54LS00, SN54S00 . . . J OR W PACKAGE  
SN7400 . . . N PACKAGE  
SN74LS00, SN74S00 . . . D OR N PACKAGE  
(TOP VIEW)



SN5400 . . . W PACKAGE  
(TOP VIEW)

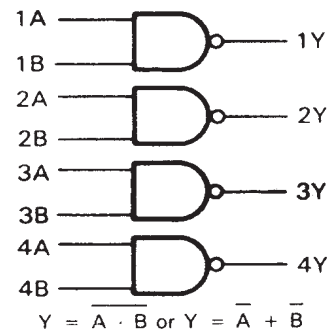


SN54LS00, SN54S00 . . . FK PACKAGE  
(TOP VIEW)



NC - No internal connection

## logic diagram (positive logic)



PRODUCTION DATA information is 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.

 **TEXAS  
INSTRUMENTS**

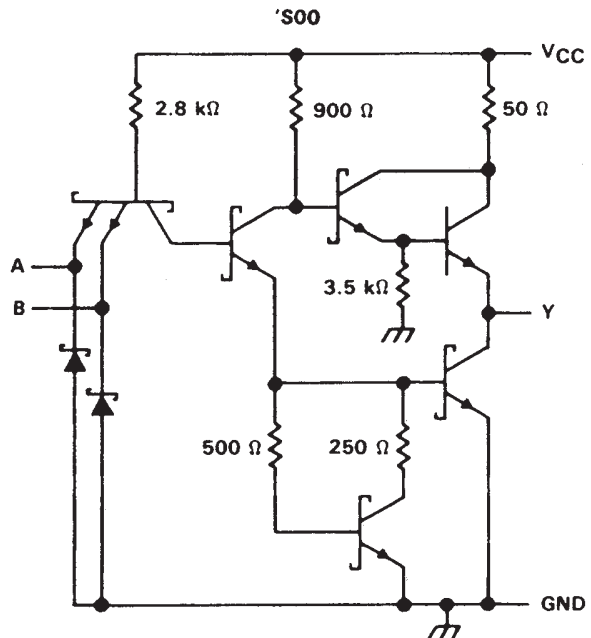
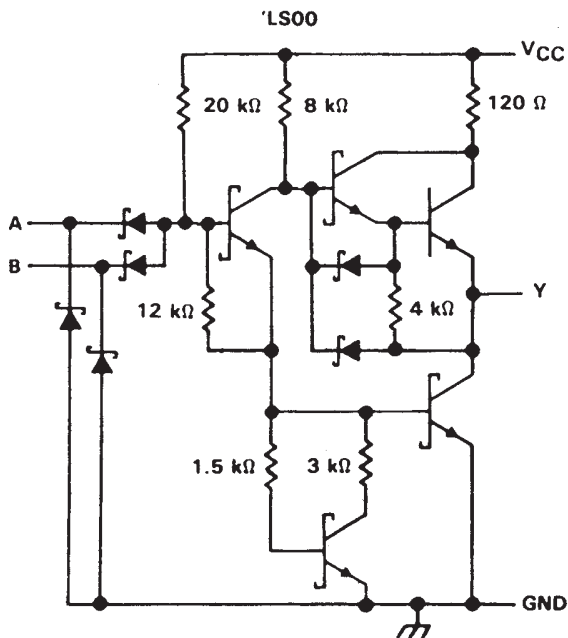
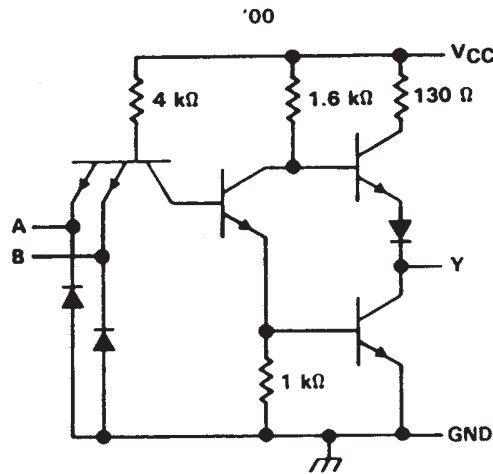
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**SN5400, SN54LS00, SN54S00  
SN7400, SN74LS00, SN74S00  
QUADRUPLE 2-INPUT POSITIVE-NAND GATES**

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**schematics (each gate)**



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: '00, 'S00 .....	5.5 V
'LS00 .....	7 V
Operating free-air temperature range: 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.



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SN5400, SN54LS00, SN54S00  
SN7400, SN74LS00, SN74S00  
**QUADRUPLE 2-INPUT POSITIVE-NAND GATES**  
SDLS025 – DECEMBER 1983 – REVISED MARCH 1988

**recommended operating conditions**

	SN5400			SN7400			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
V <sub>CC</sub> Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V <sub>IH</sub> High-level input voltage	2			2			V
V <sub>IL</sub> Low-level input voltage			0.8			0.8	V
I <sub>OH</sub> High-level output current			– 0.4			– 0.4	mA
I <sub>OL</sub> Low-level output current			16			16	mA
T <sub>A</sub> Operating free-air temperature	– 55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS †	SN5400			SN7400			UNIT
		MIN	TYP ‡	MAX	MIN	TYP ‡	MAX	
V <sub>IK</sub>	V <sub>CC</sub> = MIN, I <sub>I</sub> = – 12 mA			– 1.5			– 1.5	V
V <sub>OH</sub>	V <sub>CC</sub> = MIN, V <sub>IL</sub> = 0.8 V, I <sub>OH</sub> = – 0.4 mA	2.4	3.4		2.4	3.4		V
V <sub>OL</sub>	V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V, I <sub>OL</sub> = 16 mA		0.2	0.4		0.2	0.4	V
I <sub>I</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 5.5 V			1			1	mA
I <sub>IH</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 2.4 V			40			40	μA
I <sub>IL</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 0.4 V			– 1.6			– 1.6	mA
I <sub>OS</sub> §	V <sub>CC</sub> = MAX	– 20		– 55	– 18		– 55	mA
I <sub>CCH</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 0 V		4	8		4	8	mA
I <sub>CCL</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 4.5 V		12	22		12	22	mA

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

‡ All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

§ Not more than one output should be shorted at a time.

**switching characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C (see note 2)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t <sub>PLH</sub>	A or B	Y	R <sub>L</sub> = 400 Ω, C <sub>L</sub> = 15 pF		11	22	ns
t <sub>PHL</sub>					7	15	ns

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

**SN5400, SN54LS00, SN54S00  
SN7400, SN74LS00, SN74S00  
QUADRUPLE 2-INPUT POSITIVE-NAND GATES**

SDLS025 – DECEMBER 1983 – REVISED MARCH 1988

**recommended operating conditions**

	SN54LS00			SN74LS00			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
V <sub>CC</sub> Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V <sub>IH</sub> High-level input voltage	2			2			V
V <sub>IL</sub> Low-level input voltage			0.7			0.8	V
I <sub>OH</sub> High-level output current			-0.4			-0.4	mA
I <sub>OL</sub> Low-level output current			4			8	mA
T <sub>A</sub> Operating free-air temperature	-55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS †	SN54LS00			SN74LS00			UNIT
		MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V <sub>IK</sub>	V <sub>CC</sub> = MIN, I <sub>I</sub> = -18 mA			-1.5			-1.5	V
V <sub>OH</sub>	V <sub>CC</sub> = MIN, V <sub>IL</sub> = MAX, I <sub>OH</sub> = -0.4 mA	2.5	3.4		2.7	3.4		V
V <sub>OL</sub>	V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V, I <sub>OL</sub> = 4 mA		0.25	0.4		0.25	0.4	V
	V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V, I <sub>OL</sub> = 8 mA					0.35	0.5	
I <sub>I</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 7 V			0.1			0.1	mA
I <sub>IH</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 2.7 V			20			20	µA
I <sub>IL</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 0.4 V			-0.4			-0.4	mA
I <sub>OS</sub> §	V <sub>CC</sub> = MAX	-20		-100	-20		-100	mA
I <sub>CCH</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 0 V		0.8	1.6		0.8	1.6	mA
I <sub>CCL</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 4.5 V		2.4	4.4		2.4	4.4	mA

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

‡ All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C

§ Not more than one output should be shorted at a time, and the duration of the short-circuit should not exceed one second.

**switching characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C (see note 2)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t <sub>PLH</sub>	A or B	Y	R <sub>L</sub> = 2 kΩ, C <sub>L</sub> = 15 pF		9	15	ns
t <sub>PHL</sub>					10	15	ns

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



SN5400, SN54LS00, SN54S00  
SN7400, SN74LS00, SN74S00  
**QUADRUPLE 2-INPUT POSITIVE-NAND GATES**  
SDLS025 – DECEMBER 1983 – REVISED MARCH 1988

**recommended operating conditions**

	SN54S00			SN74S00			UNIT		
	MIN	NOM	MAX	MIN	NOM	MAX			
V <sub>CC</sub> Supply voltage	4.5	5	5.5	4.75	5	5.25	V		
V <sub>IH</sub> High-level input voltage	2			2			V		
V <sub>IL</sub> Low-level input voltage	0.8			0.8			V		
I <sub>OH</sub> High-level output current	-1			-1			mA		
I <sub>OL</sub> Low-level output current	20			20			mA		
T <sub>A</sub> Operating free-air temperature	-55			125			0	70	°C

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

PARAMETER	TEST CONDITIONS †	SN54S00			SN74S00			UNIT
		MIN	TYP ‡	MAX	MIN	TYP ‡	MAX	
V <sub>IK</sub>	V <sub>CC</sub> = MIN, I <sub>I</sub> = -18 mA	-1.2			-1.2			V
V <sub>OH</sub>	V <sub>CC</sub> = MIN, V <sub>IL</sub> = 0.8 V, I <sub>OH</sub> = -1 mA	2.5	3.4		2.7	3.4		V
V <sub>OL</sub>	V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V, I <sub>OL</sub> = 20 mA	0.5			0.5			V
I <sub>I</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 5.5 V	1			1			mA
I <sub>IH</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 2.7 V	50			50			μA
I <sub>IL</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 0.5 V	-2			-2			mA
I <sub>OS</sub> §	V <sub>CC</sub> = MAX	-40		-100	-40		-100	mA
I <sub>CCH</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 0 V	10 16			10 16			mA
I <sub>CCL</sub>	V <sub>CC</sub> = MAX, V <sub>I</sub> = 4.5 V	20 36			20 36			mA

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

‡ All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

§ Not more than one output should be shorted at a time, and the duration of the short-circuit should not exceed one second.

**switching characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C (see note 2)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t <sub>PLH</sub>	A or B	Y	R <sub>L</sub> = 280 Ω, C <sub>L</sub> = 15 pF	3	4.5		ns
t <sub>PHL</sub>				3	5		ns
t <sub>PLH</sub>			R <sub>L</sub> = 280 Ω, C <sub>L</sub> = 50 pF	4.5			ns
t <sub>PHL</sub>				5			ns

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

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## SN74LS00, QUAD 2-INPUT POSITIVE-NAND GATES

Device Status: Active

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- > [Features](#)
- > [Datasheets](#)
- > [Pricing/Samples/Availability](#)
- > [Application Notes](#)
- > [Related Documents](#)
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Parameter Name	SN74LS00
Voltage Nodes (V)	5
Vcc range (V)	4.75 to 5.25
Input Level	TTL
Output Level	TTL
Output Drive (mA)	-0.4/8
No. of Gates	4
Static Current	3
tpd(max) (ns)	15

### Description

These devices contain four independent 2-input-NAND gates.

The SN5400, SN54LS00, and SN54S00 are characterized for operation over the full military temperature range of -55°C to 125°C. The SN7400, SN74LS00, and SN74S00 are characterized for operation from 0°C to 70°C.

### Features

- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers and Flat Packages, and Plastic and Ceramic DIPS
- Dependable Texas Instruments Quality and Reliability

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### Datasheets

Full datasheet in Acrobat PDF: [sdls025.pdf](#) (195 KB)

Full datasheet in Zipped PostScript: [sdls025.psz](#) (379 KB)



## Pricing/Samples/Availability

Orderable Device	Package	Pins	Temp (°C)	Status	Price/unit USD (100-999)	Pack Qty	Availability / Samples
SN74LS00D	<a href="#">D</a>	14	0 TO 70	ACTIVE	0.30	50	<a href="#">Check stock or order</a>
SN74LS00DBLE	<a href="#">DB</a>	14	0 TO 70	OBSOLETE			
SN74LS00DBR	<a href="#">DB</a>	14	0 TO 70	ACTIVE	0.25	2000	<a href="#">Check stock or order</a>
SN74LS00DR	<a href="#">D</a>	14	0 TO 70	ACTIVE	0.28	2500	<a href="#">Check stock or order</a>
SN74LS00J	<a href="#">J</a>	14	0 TO 70	OBSOLETE			
SN74LS00N	<a href="#">N</a>	14	0 TO 70	ACTIVE	0.24	25	<a href="#">Check stock or order</a>
SN74LS00NSR	<a href="#">NS</a>	14	0 TO 70	ACTIVE	0.33	2000	<a href="#">Check stock or order</a>
SN74LS00PS	<a href="#">PS</a>	8	0 TO 70	ACTIVE			<a href="#">Check stock or order</a>

## Application Reports

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- [DESIGNING WITH LOGIC](#) (SDYA009C - Updated: 02/05/1999)
- [DESIGNING WITH THE SN54/74LS123](#) (SDLA006A - Updated: 02/05/1999)
- [INPUT AND OUTPUT CHARACTERISTICS OF DIGITAL INTEGRATED CIRCUITS](#) (SDYA010 - Updated: 02/05/1999)
- [LIVE INSERTION](#) (SDYA012 - Updated: 02/05/1999)

## Related Documents

- [DOCUMENTATION RULES \(SAP\) AND ORDERING INFORMATION](#) (SZZU001B, 4 KB - Updated: 05/09/1999)
- [LOGIC SELECTION GUIDE FEBRUARY 2000](#) (SDYU001M, 13837 KB - Updated: 02/25/2000)
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## SN74S00, QUAD 2-INPUT POSITIVE-NAND GATES

Device Status: Active

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Parameter Name	SN74S00
Voltage Nodes (V)	5
Vcc range (V)	4.75 to 5.25
Input Level	TTL
Output Level	TTL
Output Drive (mA)	-1/20
No. of Gates	4
Static Current	26
tpd(max) (ns)	5

### Description

These devices contain four independent 2-input-NAND gates.

The SN5400, SN54LS00, and SN54S00 are characterized for operation over the full military temperature range of -55°C to 125°C. The SN7400, SN74LS00, and SN74S00 are characterized for operation from 0°C to 70°C.

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## Pricing/Samples/Availability

Orderable Device	Package	Pins	Temp (°C)	Status	Price/unit USD (100-999)	Pack Qty	Availability / Samples
SN74S00D	<a href="#">D</a>	14	0 TO 70	ACTIVE	0.48	50	<a href="#">Check stock or order</a>
SN74S00DR	<a href="#">D</a>	14	0 TO 70	ACTIVE	0.43	2500	<a href="#">Check stock or order</a>
SN74S00N	<a href="#">N</a>	14	0 TO 70	ACTIVE	0.46	25	<a href="#">Check stock or order</a>
SN74S00N3	<a href="#">N</a>	14	0 TO 70	OBSOLETE			
SN74S00PS	<a href="#">PS</a>	8	0 TO 70	ACTIVE			<a href="#">Check stock or order</a>

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