

GD54/74S00

QUADRUPLE 2-INPUT POSITIVE NAND GATES

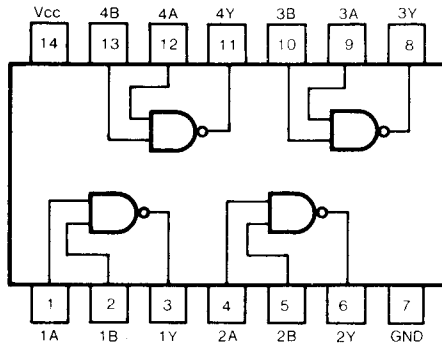
Description

This device contains four independent 2-input NAND gates. It performs the Boolean functions $Y = \overline{A \cdot B}$ or $Y = \overline{A + \overline{B}}$ in positive logic.

Function Table (each gate)

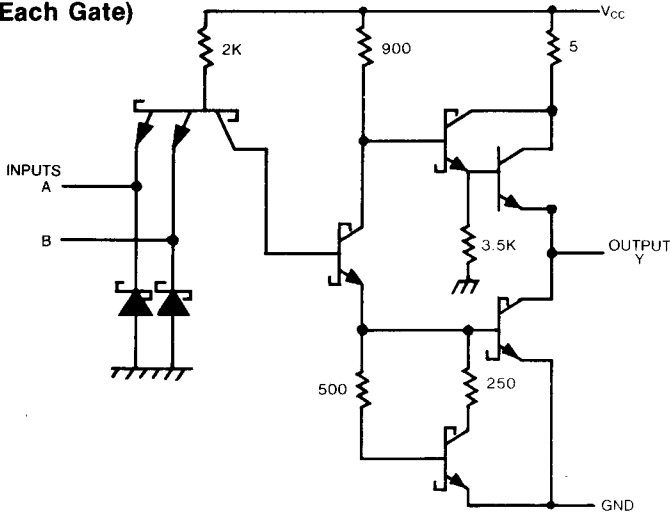
INPUTS		OUTPUT
A	B	Y
H	H	L
L	X	H
X	L	H

Pin Configuration



Suffix-Blank: Plastic Dual In Line Package
 Suffix-J : Ceramic Dual In Line Package

Schematics (Each Gate)



Absolute Maximum Ratings

- Supply voltage, V_{cc} 7V
- Input voltage 5.5V
- Operating free-air temperature range 54LS -55°C to 125°C
 74LS 0°C to 70°C
- Storage temperature range -65°C to 150°C

Recommended Operating Conditions

SYMBOL	PARAMETER		MIN	NOM	MAX	UNIT
V _{CC}	Supply voltage	54	4.5	5	5.5	V
		74	4.75	5	5.25	
I _{OH}	High-level output current				-1	mA
I _{OL}	Low-level output current				20	mA
T _A	Operating free-air temperature	54	-55		125	°C
		74	0		70	

Electrical Characteristics over recommended operating free-air temperature range (unless otherwise noted)

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP (Note 1)	MAX	UNIT	
V _{IH}	High-level input voltage		2			V	
V _{IL}	Low-level input voltage		54		0.8	V	
			74		0.8		
V _{IK}	Input clamp voltage	V _{CC} =Min, I _I = -18mA			-1.2	V	
V _{OH}	High-level output voltage	V _{CC} =Min, V _{IL} =Max I _{OH} =Max.	54	2.5	3.4	V	
			74	2.7	3.4		
V _{OL}	Low-level output voltage	V _{CC} =Min, I _{OL} =Max, V _{IH} =Min			0.5	V	
I _I	Input current at maximum input voltage	V _{CC} =Max, V _I =5.5V			1	mA	
I _{IH}	High-level input current	V _{CC} =Max, V _I =2.7V			50	μA	
I _{IL}	Low-level input current	V _{CC} =Max, V _I =0.5V			-2	mA	
I _{OS}	Short-circuit output current	V _{CC} =Max (Note 2)	-40		-100	mA	
I _{CCH}	Supply current	Total with outputs high	V _{CC} =Max			10 16	mA
I _{CCL}		Total with outputs low	V _{CC} =Max			20 36	mA

Note 1: All typical values are at V_{CC}=5V, T_A=25°C.

Note 2: Not more than one output should be shorted at a time, and duration of the short-circuit should not exceed one second.

Switching Characteristics, V_{CC} = 5V, T_A = 25°C

SYMBOL	PARAMETER	TEST CONDITION#	MIN	TYP	MAX	UNIT
t _{PLH}	Propagation delay time, low-to-high-level output	C _L = 15pF, R _L = 280Ω		3	4.5	ns
t _{PHL}	Propagation delay time, high-to-low-level output			3	5	

#For load circuit and voltage waveforms, see page 3-12.