

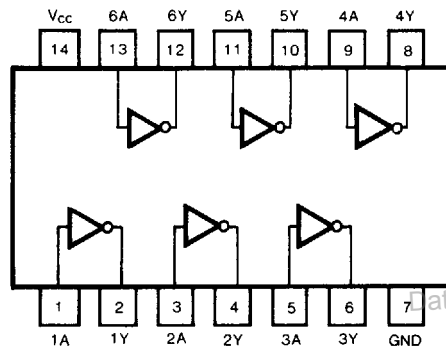
GD54/74LS04

HEX INVERTERS

Description

This device contains six independent inverters. It performs the Boolean function $Y = \bar{A}$.

Pin Configuration

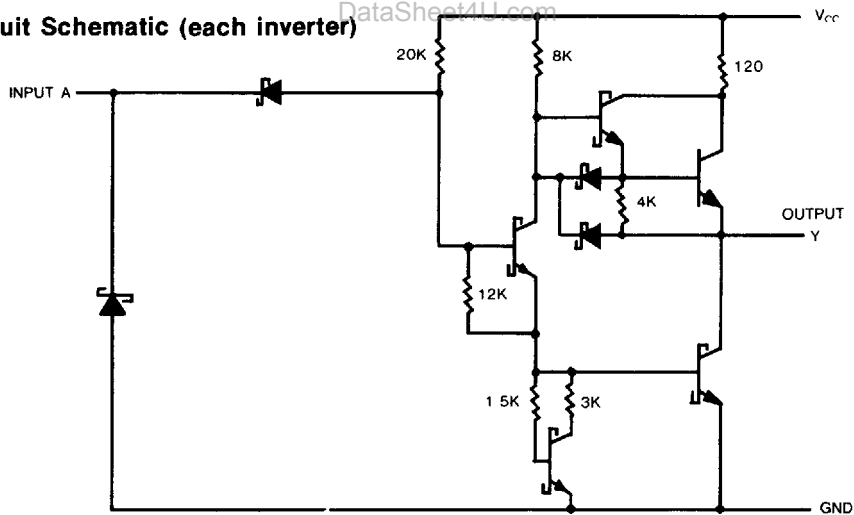


Suffix-Blank. Plastic Dual In Line Package
 Suffix-J. Ceramic Dual In Line Package

Function Table (each inverter)

INPUT	OUTPUT
A	Y
H	L
L	H

Circuit Schematic (each inverter)



Absolute Maximum Ratings

- Supply voltage, V_{cc} 7V
- Input voltage 7V
- 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	54,74			-400	μA
I_{OL}	Low-level output current	54			4	mA
		74			8	
T_A	Operating free-air temperature	54	-55		125	$^{\circ}C$
		74	0		70	

Electrical Characteristics over recommended operating free air temperature (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		0.7	V	
			74		0.8		
V_{IK}	Input clamp voltage	$V_{CC} = \text{Min}, I_I = -18\text{mA}$			-1.5	V	
V_{OH}	High-level output voltage	$V_{CC} = \text{Min}, V_{IL} = \text{Max}$	54	2.5	3.4	V	
		$I_{OH} = \text{Max}$	74	2.7	3.4		
V_{OL}	Low-level output voltage	$V_{CC} = \text{Min}, I_{OL} = 4\text{mA}$	54,74		0.25	0.4	V
		$V_{IH} = \text{Min}, I_{OL} = 8\text{mA}$	74		0.35	0.5	
I_I	Input current at maximum input voltage	$V_{CC} = \text{Max}, V_I = 7\text{V}$				0.1	mA
I_{IH}	High-level input current	$V_{CC} = \text{Max}, V_I = 2.7\text{V}$				20	μA
I_{IL}	Low-level input current	$V_{CC} = \text{Max}, V_I = 0.4\text{V}$				-0.4	mA
I_{OS}	Short-circuit output current	$V_{CC} = \text{Max}$ (Note 2)		-20		-100	mA
I_{CCH}	Supply current	Total with outputs high	$V_{CC} = \text{Max}$		1.2	2.4	mA
I_{CCL}		Total with outputs low	$V_{CC} = \text{Max}$		3.6	6.6	mA

Note 1: All typical values are at $V_{CC} = 5\text{V}$, $T_A = 25^{\circ}C$.

Note 2: Not more than one output should be shorted at a time, and duration should not exceed one second

Switching Characteristics, $V_{CC} = 5\text{V}$, $T_A = 25^{\circ}C$

SYMBOL	PARAMETER	TEST CONDITION#	MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output	$C_L = 15\text{pF}, R_L = 2\text{k}\Omega$		9	15	ns
t_{PHL}	Propagation delay time, high-to-low-level output		10	15	ns	

#For load circuit and voltage waveforms, see page 3-11.