

5440/7440 Dual 4-Input Positive-NAND Buffer

	Schottky TTL				High-Speed TTL				Low-Power Schottky TTL				Standard TTL				Low-Power TTL			
	Device Type	Package			Device Type	Package			Device Type	Package			Device Type	Package			Device Type	Package		
		C	P	M/CF		C	P	M/CF		C	P	M/CF		C	P	M/CF		C	P	M/CF
T. I.	SN54S40	J	Ⓚ	W	SN54H40	J	Ⓚ	W	SN54LS40	J	Ⓚ	W	SN5440	J	Ⓚ	W				
	SN74S40	J	Ⓚ	W	SN74H40	J	Ⓚ	W	SN74LS40	J	Ⓚ	W	SN7440	J	Ⓚ	W				
FAIRCHILD	FM54S40/FM9S40	D	Ⓚ	F	FM54H40/FM9H40	D	Ⓚ	F	FM54LS40/FM9LS40	D	Ⓚ	F	FM5440/FM9N40	D	Ⓚ	F				
	FC74S40/FC9S40	D	Ⓚ	F	FC74H40/FC9H40	D	Ⓚ	F	FC74LS40/FC9LS40	D	Ⓚ	F	FC7440/FC9N40	D	Ⓚ	F				
MOTOROLA					MC3124	L	Ⓚ	F					MC5440	L	Ⓚ	F				
					MC3024	L	Ⓚ	F	SN74LS40				MC7440	L	Ⓚ	F				
N. S. C.					DM54H40	J	Ⓚ	W	DM54LS40				DM5440	J	Ⓚ	W				
	DM74S40				DM74H40	J	Ⓚ	W	DM74LS40				DM7440	J	Ⓚ	W				
PHILIPS					GJH141/74H40				N74LS40				FJH141/7440							
SIGNETICS	S54S40	F	Ⓚ	W	S54H40	F	Ⓚ	W	N74LS40				S5440	F	Ⓚ	W				
	N74S40	F	Ⓚ	W	N74H40	F	Ⓚ	W				N7440	F	Ⓚ	W					
SIEMENS													FLH141							
FUJITSU					MB605				74LS40				MB404							
HITACHI	HD74S40								HD74LS40				HD7440/HD2501							
MITSUBISHI	M5S040								M53LS40				M53240							
NEC									74LS40				μPB205							
TOSHIBA													TD3440A							

**Electrical Characteristics SN54LS40/SN74LS40**

absolute maximum ratings over operating free-air temperature range

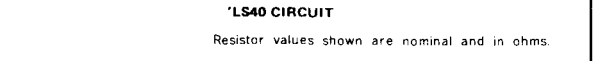
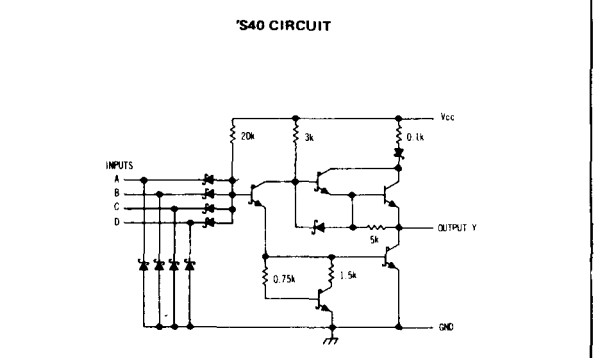
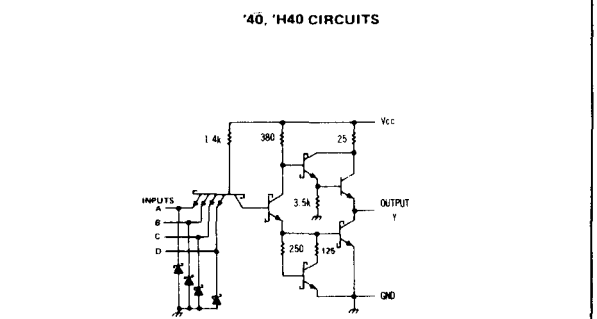
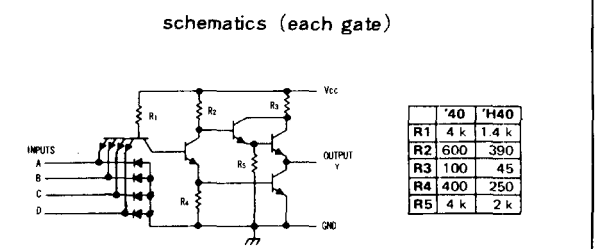
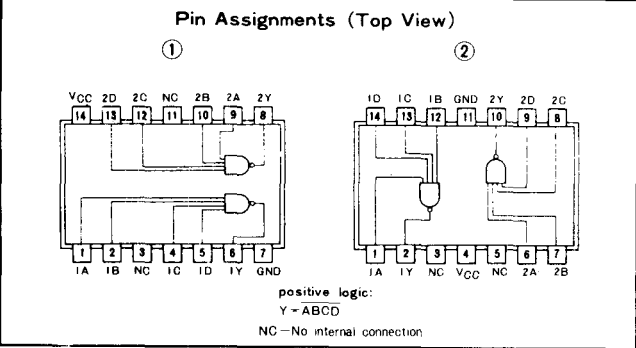
Supply voltage, V <sub>CC</sub>	7V	Operating free-air temperature range	SN54LS	-55°C to 125°C
Input voltage	7V		SN74LS	0°C to 70°C
Intermittent voltage	5.5V	Storage temperature range		-65°C to 150°C

recommended operating conditions

	SN54LS40			SN74LS40			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V <sub>CC</sub>	4.5	5	5.5	4.75	5	5.25	V
High-level output current, I <sub>OH</sub>			-1.2			-1.2	mA
Low-level output current, I <sub>OL</sub>			12			24	mA
Operating free-air temperature, T <sub>A</sub>	-55		125	0		70	°C

**electrical characteristics over recommended operating free-air temperature range**

PARAMETER	TEST CONDITIONS†	MIN	TYP‡	MAX	UNIT	
V <sub>IH</sub>	High-level input voltage		2		V	
V <sub>IL</sub>	Low-level input voltage			0.8	V	
V <sub>I</sub>	Input clamp voltage	V <sub>CC</sub> - MIN, I <sub>I</sub> = -18 mA		-1.5	V	
V <sub>OH</sub>	High-level output voltage	V <sub>CC</sub> - MIN, V <sub>IL</sub> = V <sub>IL</sub> max, I <sub>OH</sub> = MAX	2.7	3.3	V	
V <sub>OL</sub>	Low-level output voltage	V <sub>CC</sub> - MIN, V <sub>IH</sub> = 2 V, I <sub>OL</sub> = 12 mA	0.25	0.4	V	
I <sub>I</sub>	input current at maximum input voltage	V <sub>CC</sub> = MAX, V <sub>I</sub> = 7V		0.1	mA	
I <sub>IH</sub>	High-level input current	V <sub>CC</sub> = MAX, V <sub>IH</sub> = 2.7V		20	μA	
I <sub>IL</sub>	Low-level input current	V <sub>CC</sub> = MAX, V <sub>IL</sub> = 0.4V		-0.4	mA	
I <sub>OS</sub>	Short-circuit output current †		54LS Family	-30	-130	mA
			74LS Family	-30	-130	
I <sub>QCH</sub>	Supply current	V <sub>CC</sub> = MAX	Total, outputs high	0.45	1	mA
I <sub>QCL</sub>	Supply current		Total, outputs low	3	6	mA
I <sub>CC</sub>	Supply current	V <sub>CC</sub> = 5 V	Average per gate (50% duty cycle)	0.86		mA
t <sub>PLH</sub>	Propagation delay time, low-to-high-level output	V <sub>CC</sub> = 5 V, T <sub>A</sub> = 25°C		12	24	ns
t <sub>PHL</sub>	Propagation delay time, high-to-low-level output	C <sub>L</sub> = 45PF, R <sub>L</sub> = 667Ω		12	24	ns



† 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 duration of the short-circuit should not exceed one second for '40, or 'H40; or 100 milliseconds for 'S40.