

5410/7410 Triple 3-Input Positive-NAND Gate

	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.	SN54S10	J	Ⓣ	W	SN54H10	J	Ⓣ	W	SN54LS10	J	Ⓣ	W	SN5410	J	Ⓣ	W	SN54L10	J	Ⓣ	T	Ⓣ	
	SN74S10	J	Ⓣ	N	SN74H10	J	Ⓣ	N	SN74LS10	J	Ⓣ	N	SN7410	J	Ⓣ	N	SN74L10	J	Ⓣ	N	T	Ⓣ
FAIRCHILD	FM54S10/FM9S10	Ⓣ	Ⓣ	F	FM54H10/FM9H10	Ⓣ	Ⓣ	F	FM54LS10/FM9LS10	Ⓣ	Ⓣ	F	FM5410/FM910	Ⓣ	Ⓣ	F						
	FC74S10/FC9S10	Ⓣ	Ⓣ	F	FC74H10/FC9H10	Ⓣ	Ⓣ	F	FC74LS10/FC9LS10	Ⓣ	Ⓣ	F	FC7410/FC910	Ⓣ	Ⓣ	F						
MOTOROLA					MC3105	L	Ⓣ	F					MC5410	L	Ⓣ	F						
					MC3065	L	Ⓣ	P	F	SN74LS10	P	Ⓣ	MC7410	L	Ⓣ	P	F					
N.S.C.	DM54S10	Ⓣ	Ⓣ	Ⓣ	DM54H10	J	Ⓣ	N	DM54LS10	J	Ⓣ	N	DM5410	J	Ⓣ	N	DM7410	J	Ⓣ	N	F	Ⓣ
	DM74S10	Ⓣ	Ⓣ	Ⓣ	DM74H10	J	Ⓣ	N	DM74LS10	J	Ⓣ	N	DM7410	J	Ⓣ	N	DM7410	J	Ⓣ	N	F	Ⓣ
PHILIPS	N74S10	Ⓣ	Ⓣ	Ⓣ	GJH121/74H10	Ⓣ	Ⓣ	Ⓣ	N74LS10	Ⓣ	Ⓣ	Ⓣ	FJH121/7410	Ⓣ	Ⓣ	Ⓣ						
SIGNETICS	S54S10	F	Ⓣ	A	S54H10	F	Ⓣ	A	S54LS10	F	Ⓣ	A	S5410	F	Ⓣ	A	S7410	F	Ⓣ	A	W	Ⓣ
	N74S10	F	Ⓣ	A	N74H10	F	Ⓣ	A	N74LS10	F	Ⓣ	A	N7410	F	Ⓣ	A						
SIEMENS													FLH111	Ⓣ	Ⓣ							
FUJITSU					MB602	Ⓣ	M	Ⓣ	74LS10	M	Ⓣ	Ⓣ	MB401	Ⓣ	M	Ⓣ						
HITACHI	HD74S10	Ⓣ	P	Ⓣ					HD74LS10	P	Ⓣ	Ⓣ	HD7410/HD2507	Ⓣ	P	Ⓣ						
MITSUBISHI	M5S010	P	Ⓣ	Ⓣ					M74LS10	P	Ⓣ	Ⓣ	M53210	P	Ⓣ	Ⓣ						
NEC									74LS10	Ⓣ	Ⓣ	Ⓣ	μPB202	Ⓣ	Ⓣ	Ⓣ						
	μPB2S10	Ⓣ	Ⓣ	Ⓣ																		
TOSHIBA													TD3410A	P	Ⓣ							

Electrical Characteristics SN54LS10/SN74LS10

absolute maximum ratings over operating free-air temperature range

Supply voltage, V _{CC}	7V	Operating free-air temperature range	SN54LS	-55°C to 125°C
Input voltage	7V		SN74LS	0°C to 70°C
Interemitter voltage	5.5V	Storage temperature range		-65°C to 150°C

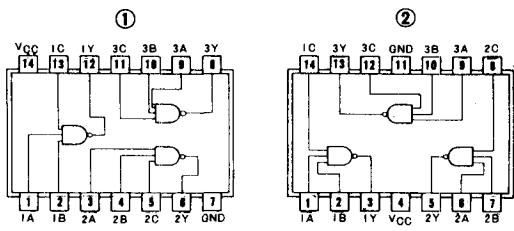
recommended operating conditions

	SN54LS10			SN74LS10			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V _{CC}	4.5	5	5.5	4.75	5	5.25	V
High-level output current, I _{OH}			-400			-400	μA
Low-level output current, I _{OL}			4			8	mA
Operating free-air temperature, T _A	-55		125	0		70	°C

electricals over recommended operating over free-air temperature range

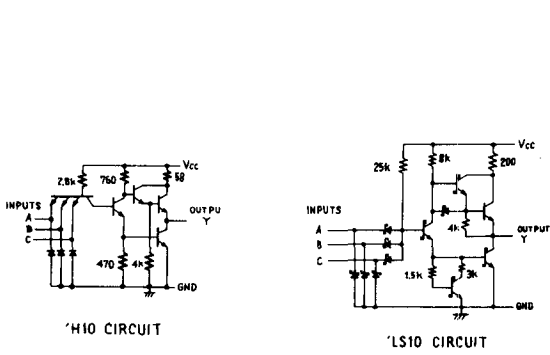
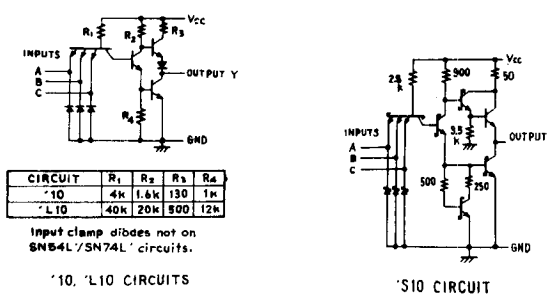
PARAMETER	TEST CONDITIONS †	MIN	TYP ‡	MAX	UNIT	
V _{IH}	High-level input voltage		2		V	
V _{IL}	Low-level input voltage			0.8	V	
V _I	Input clamp voltage	V _{CC} =MIN, I _I =-18mA		-1.5	V	
V _{OH}	High-level output voltage	V _{CC} =MIN, I _{OH} =MAX, V _{IL} =V _{IL} max.	2.7	3.4	V	
V _{OL}	Low-level output voltage	V _{CC} =MIN, V _{IH} =2V, I _{OL} =4mA		0.4	V	
I _I	Input current at maximum input voltage	V _{CC} =MAX, V _I =7V		0.1	mA	
I _{IH}	High-level input current	V _{CC} =MAX, V _{IH} =2.7V		20	μA	
I _{IL}	Low-level input current	V _{CC} =MAX, V _{IL} =0.4V		-0.4	mA	
I _{OS}	Short-circuit output current *	V _{CC} =MAX	54LS Family	-20	-100	mA
I _{QCH}	Supply current		Total, outputs high	0.6	1.2	mA
I _{QCL}	Supply current		Total, outputs low	1.8	3.3	mA
I _{CC}	Supply current	V _{CC} =5V	Average per gate (50% duty cycle)	0.4		mA
t _{PLH}	Propagation delay time, low-to-high-level output	V _{CC} =5V, T _A =25°C, C _L =15pF, R _L =2kΩ		9	15	ns
t _{PHL}	Propagation delay time, high-to-low-level output			10	15	ns

Pin Assignments (Top View)



positive logic:
Y = ABC

Schematics (each gate)



Resistor values shown are nominal and in ohms.

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
‡ All typical values are at V_{CC}=5V, T_A=25°C.
* Not more than one output should be shorted at a time, and for SN54H/SN74H and SN54S/SN74S, duration of short-circuit should not exceed 1 second.