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	J①			W①	SN54H10	J①			W②	SN54LS10	J①			W①	SN5410	J①			W②	SN54L10	J①	N①	T②	
	SN74S10	J①	N①			SN74H10	J①	N①			SN74LS10	J①	N①			SN7410	J①	N①			SN74L10	J①	N①	T②	
FAIRCHILD	FM54S10/FM9S10	D①			F①	FM54H10/FM9H10	D①			F②	FM54LS10/FM9LS10	D①			F①	FM5410/FM9N10	D①			F②					
	FC74S10/FC9S10	D①	P①			FC74H10/FC9H10	D①	P①			FC74LS10/FC9LS10	D①	P①		F①	FC7410/FC9N10	D①								
MOTOROLA						MC3105	L①			F①						MC5410	L①			F②					
						MC3005	L①	P①		F①	SN74LS10		P①			MC7410	L①	P①		F②					
N.S.C.	DM54S10		①			DM54H10	J①	N①			DM54LS10				F①	DM5410	J①	N①		F②					
	DM74S10		N①			DM74H10	J①	N①			DM74LS10					DM7410	J①	N①		F②					
PHILIPS	N74S10		①			GJH121/74H10		①			N74LS10		①			FJH121/7410		①							
SIGNETICS	S54S10					S54H10	F①	A①		W②						S5410	F①	A①		W②					
	N74S10					N74H10	F①	A①			N74LS10		A①			N7410	F①	A①							
SIEMENS																FLH111		①							
FUJITSU						MB602	①	M①			74LS10		M①			MB401	①	M①							
HITACHI	HD74S10	①	P①								HD74LS10		P①			HD7410/HD2507	①	P①							
MITSUBISHI	M5S010		P①								M74LS10		P①			M53210		P①							
NEC	μPB2S10	D①									74LS10		C①			μPB202	D①	C①							
TOSHIBA																TD3410A		P①							

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

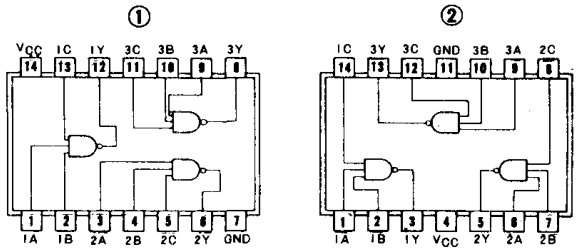
recommended operating conditions

	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

electirstics over recommended operating over free-air temperature range

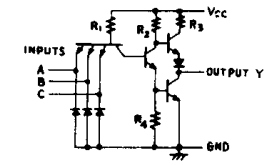
PARAMETER		TEST OCNDITIONS †		MIN	TYP ‡	MAX	UNIT
V_{IH}	High-level input voltage			2			V
V_{IL}	Low-level input voltage					0.8	V
V_I	Input clamp voltage	V_{CC}=MIN, I_I=−18mA				−1.5	V
V_{OH}	High-level output voltage	V_{CC}=MIN, V_{IL}=V_{IL} max, I_{OH}=MAX		2.7	3.4		V
V_{OL}	Low-level output voltage	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
			74LS Family	−20		−100	
I_{CCH}	Supply current	V_{CC}=MAX	Total, outputs high		0.6	1.2	mA
I_{CCL}	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, C_L=15pF,	T_A=25°C, 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 :
$Y = \overline{ABC}$

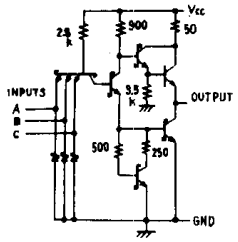
Schematics (each gate)



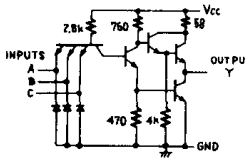
CIRCUIT	R_1	R_2	R_3	R_4
'10	4k	1.6k	130	1k
'L10	40k	20k	500	12k

Input clamp dibdes not on SN54L'/SN74L' circuits.

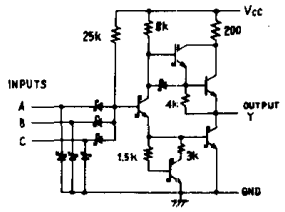
'10, 'L10 CIRCUITS



'S10 CIRCUIT



'H10 CIRCUIT



'LS10 CIRCUIT

Resistor values shown are nominal and in ohms.

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