5401/7401 Quadruple 2-Input Positive-NAND Gate with Open-Collector Output

	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.						SN54H01	J③			W②	SN54LS01	J①			W①	SN5401	J①			W②	SN54L01			T②	
						SN74H01	J③	N③			SN74LS01	J①	N①			SN7401	J①	N①			SN74L01			T②	
FAIRCHILD						FM54H01/FM9H01	D③			F②						FM5401/FM9N01	D①			F②					
						FC74H01/FC9H01	D③	P③								FC7401/FC9N01	D①	P①							
MOTOROLA						MC3104	L③			F②						MC5401	L①			F②					
						MC3004	L③	P②		F③						MC7401	L①	P①		F②					
N.S.C.						DM54H01	J③	N③			DM54LS01					DM5401	J①	N①		W②	DM54L01				F②
						DM74H01	J③	N③			DM74LS01					DM7401	J①	N①			DM74L01				F②
PHILIPS																									
						GJH231/74H01		①			N74LS01		①			FJH231/7401		①							
SIGNETICS						S54H01	F③	A③		W②						S5401	F①	A①		W②					
						N74H01	F③	A③			N74LS01		A①			N7401	F①	A①							
SIEMENS																									
																FLH201		①							
FUJITSU																									
											74LS01		M①			MB416		①	M①						
HITACHI																									
											HD74LS01		P①			HD7401/HD2509		①	P①						
MITSUBISHI																									
																M53201		P①							
NEC																									
																μPB215	D①	C①							
TOSHIBA																									
																TD3401A		P①							

Electrical Characteristics SN54LS01/SN74LS01

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

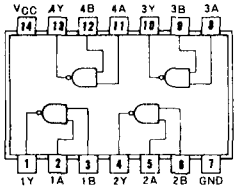
	SN54LS01			SN74LS01			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V_{CC}	4.5	5	5.5	4.75	5	5.25	V
High-level output voltage, V_{OH}			5.5			5.5	V
Low-level output current, I_{OL}			4			8	mA
Operating free-air temperature, T_A	−55		125	0		70	°C

electrical characteristics over recommended operating free-air temperature range

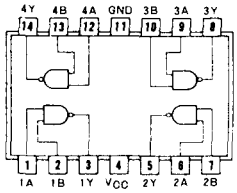
	PARAMETER	TEST CONDITIONS†		MIN	TYP‡	MAX	UNIT
V_{IH}	High-level input voltage			2			V
V_{IL}	Low-level input voltage					0.8	V
V_I	Input clamp voltage	V_{CC}=MIN, I_I=−18mA				−1.5	V
I_{OH}	High-level output current	V_{CC}=MIN, V_{IL}=V_{IL} max, V_{OH}=5.5V				100	μA
V_{OL}	Low-level output voltage	V_{CC}=MIN, V_{IH}=2V, I_{OL}=4mA			0.25	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_{CCH}	Supply current	V_{CC}=MAX	Total, outputs high		4	8	mA
I_{CCL}	Supply current		Total, outputs low		12	22	mA
I_{OC}	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		17	32	ns
t_{PHL}	Propagation delay time, high-to-low-level output				15	28	ns

Pin Assignments (Top View)

①

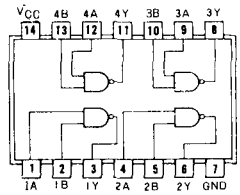


②

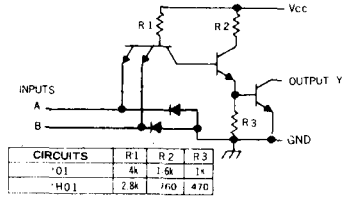


positive logic :
$Y = \overline{AB}$

③

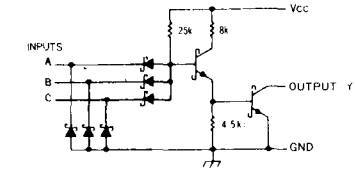


Schematics (each gate)

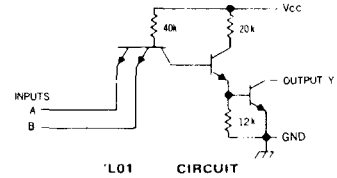


CIRCUITS	R1	R2	R3
'01	4k	1.6k	1k
'H01	2.8k	760	470

'01, 'H01 CIRCUITS



'LS01 CIRCUIT



'L01 CIRCUIT

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.