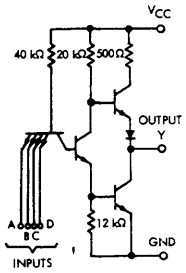
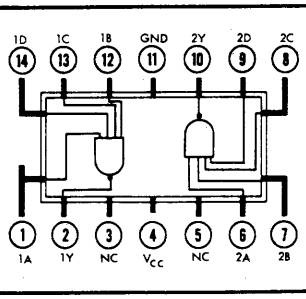
schematic (each gate)

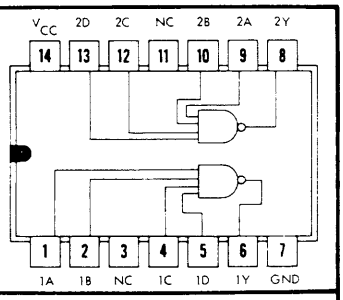


NOTES: 1. Component values shown are nominal.
2. NC — No internal connection.

T
FLAT PACKAGE (TOP VIEW)



J OR N
DUAL-IN-LINE PACKAGE (TOP VIEW)



positive logic

$Y = \overline{ABCD}$

recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply Voltage V_{CC}: SN54L20 Circuits	4.5	5	5.5	V
SN74L20 Circuits	4.75	5	5.25	V
Normalized Fan-Out From Each Output, N			10	
Operating Free-Air Temperature Range, T_A: SN54L20 Circuits	−55	25	125	°C
SN74L20 Circuits	0	25	70	°C

electrical characteristics (over recommended operating free-air temperature range unless otherwise noted)

PARAMETER		TEST FIGURE	TEST CONDITIONS†	MIN	MAX	UNIT
$V_{in(1)}$	Logical 1 input voltage required at all input terminals to ensure logical 0 level at output	1		2		V
$V_{in(0)}$	Logical 0 input voltage required at any input terminal to ensure logical 1 level at output	2			0.7	V
$V_{out(1)}$	Logical 1 output voltage	2	V_{CC} = MIN, V_{in} = 0.7 V, I_{load} = −100 μA	2.4		V
$V_{out(0)}$	Logical 0 output voltage	1	V_{CC} = MIN, V_{in} = 2 V, I_{sink} = 2 mA		0.3	V
$I_{in(0)}$	Logical 0 level input current (each input)	3	V_{CC} = MAX, V_{in} = 0.3 V		−0.18	mA
$I_{in(1)}$	Logical 1 level input current (each input)	4	V_{CC} = MAX, V_{in} = 2.4 V		10	μA
			V_{CC} = MAX, V_{in} = 5.5 V		100	μA
I_{OS}	Short-circuit output current	5	V_{CC} = MAX, V_{in} = 0, V_{out} = 0	−3	−15	mA
$I_{CC(0)}$	Logical 0 level supply current (average per gate)	6	V_{CC} = MAX, V_{in} = 5 V		0.51	mA
$I_{CC(1)}$	Logical 1 level supply current (average per gate)	6	V_{CC} = MAX, V_{in} = 0		0.2	mA

switching characteristics, V_{CC} = 5 V, T_A = 25°C, N = 10

PARAMETER		TEST FIGURE	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{pd0}	Propagation delay time to logical 0 level	35	C_L = 50 pF, R_L = 4 kΩ		31	60	ns
t_{pd1}	Propagation delay time to logical 1 level	35	C_L = 50 pF, R_L = 4 kΩ		35	60	ns

†For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable circuit type.

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