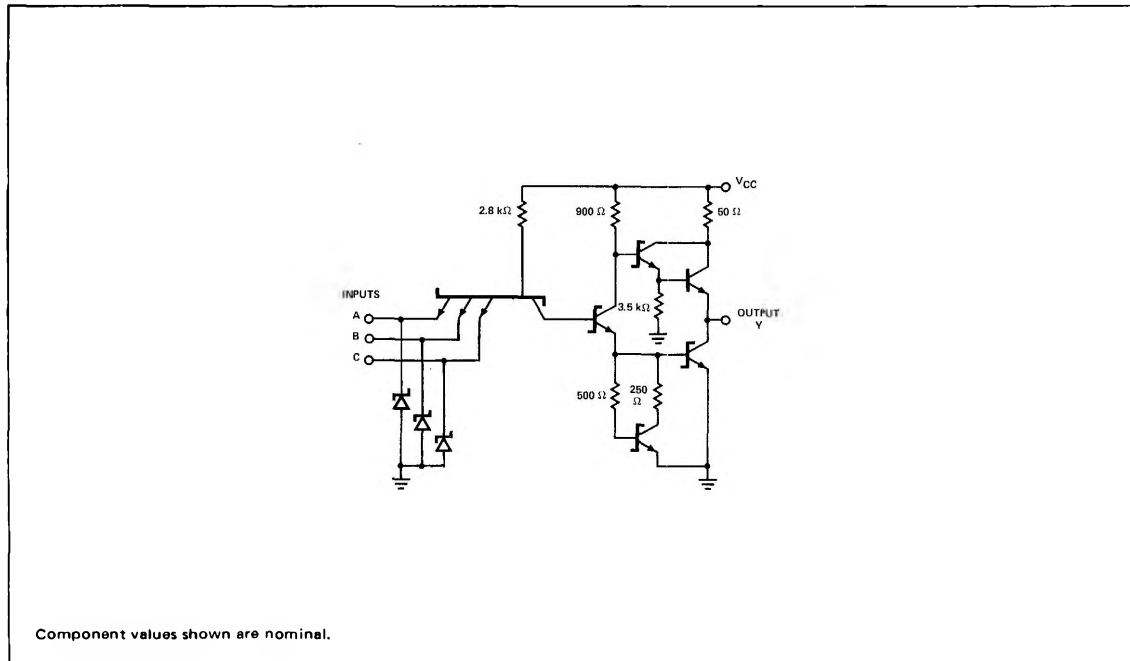


**SCHEMATIC DIAGRAM**



**RECOMMENDED OPERATING CONDITIONS**

		S54S10			S74S10			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, $V_{CC}$		4.5	5	5.5	4.75	5	5.25	V
Normalized fan-out from each output, N	High logic level	20			20			
	Low logic level	10			10			
Operating free-air, $T_A$		-55	125		0	70		°C

## ELECTRICAL CHARACTERISTICS (over recommended operating free-air temperature range unless otherwise noted)

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	$V_{CC} = \text{MIN.}$	$I_I = -18 \text{ mA}$			-1.2	V	
$V_{OH}$	High-level output voltage	$V_{CC} = \text{MIN.}$ $I_{OH} = -1 \text{ mA}$	$V_{IL} = 0.8 \text{ V.}$	Series 54S	2.5	3.4		V
				Series 74S	2.7	3.4		V
$V_{OL}$	Low-level output voltage	$V_{CC} = \text{MIN.}$ $I_{OL} = 20 \text{ mA}$	$V_{IH} = 2 \text{ V.}$			0.5	V	
$I_I$	Input current at maximum input voltage	$V_{CC} = \text{MAX.}$	$V_I = 5.5 \text{ V}$			1	mA	
$I_{IH}$	High-level input current (each input)	$V_{CC} = \text{MAX.}$	$V_I = 2.7 \text{ V}$			50	$\mu\text{A}$	
$I_{IL}$	Low-level input current (each input)	$V_{CC} = \text{MAX.}$	$V_I = 0.5 \text{ V}$			-2	mA	
$I_{OS}$	Short-circuit output current ‡	$V_{CC} = \text{MAX.}$		-40		-100	mA	
$I_{CCH}$	Supply current, high-level output (average per gate)	$V_{CC} = \text{MAX.}$	All inputs at 0 V		2.5	4	mA	
$I_{CCL}$	Supply current, low-level output (average per gate)	$V_{CC} = \text{MAX.}$	All inputs at 5 V		5	9	mA	

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

\*\*All typical values are at  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^\circ\text{C}$ .

‡Not more than one output should be shorted at a time, and duration of the short-circuit test should not exceed one second.

SWITCHING CHARACTERISTICS,  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^\circ\text{C}$ ,  $N = 10$ 

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT
$t_{PLH}$	Propagation delay time, low-to-high-level output	$C_L = 15 \text{ pF}$ , $R_L = 280 \Omega$	N O T E	2	3	4.5	ns
		$C_L = 50 \text{ pF}$ , $R_L = 280 \Omega$			4.5		
$t_{PHL}$	Propagation delay time, high-to-low-level output	$C_L = 15 \text{ pF}$ , $R_L = 280 \Omega$	1	2	3	5	ns
		$C_L = 50 \text{ pF}$ , $R_L = 280 \Omega$			5		

NOTE 1: Load circuit and waveforms are shown on page 2-293