

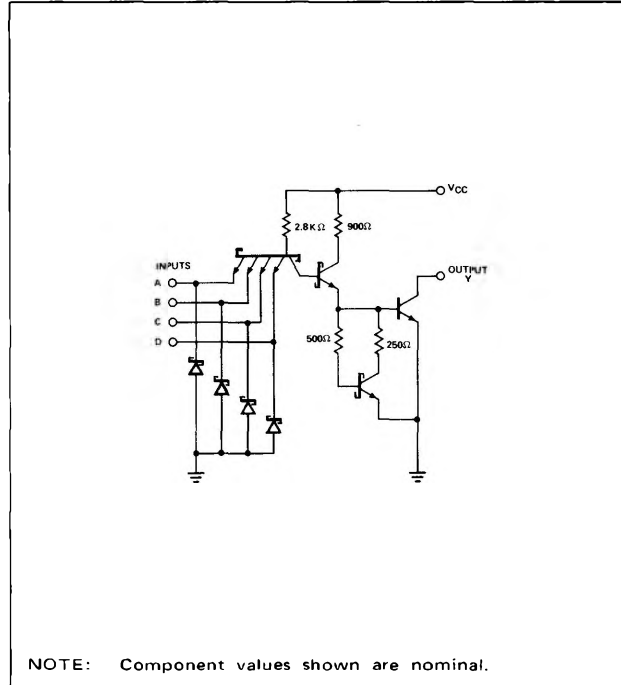
POSITIVE-NAND GATE WITH OPEN-COLLECTOR OUTPUTS

S54S22 N74S22

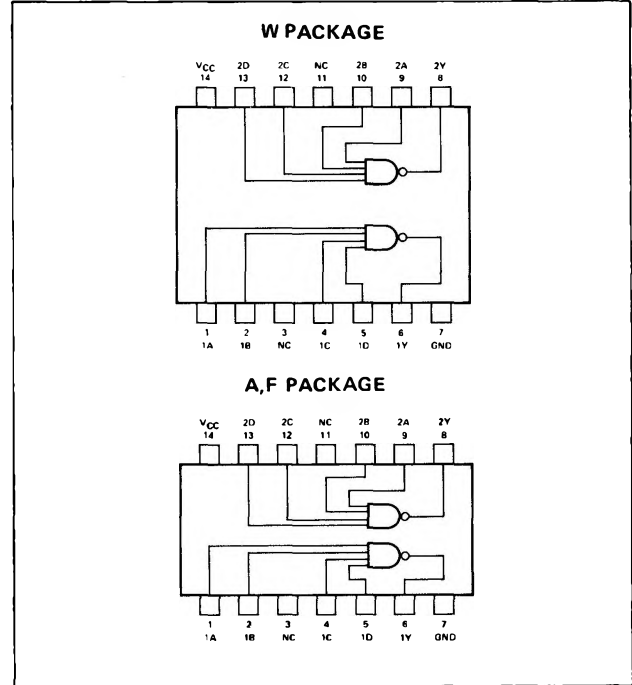
S54S22-A,F,W • N74S22-A,F

DIGITAL 54/74 TTL SERIES

SCHEMATIC (each gate)



PIN CONFIGURATIONS



RECOMMENDED OPERATING CONDITIONS

	S54S22			N74S22			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 any Output, N			10			10	
Operating Free-Air Temperature, 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
I_{OH} High-level output current	$V_{CC} = \text{MIN}, V_{OH} = 5.5\text{V}$			250	μA
V_{OL} Low-level output voltage	$V_{CC} = \text{MIN}, I_{OL} = 20\text{mA}$			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	μA
I_{IL} Low-level input current (each input)	$V_{CC} = \text{MAX}, V_I = 0.5\text{V}$			-2	mA
I_{CCH} Supply current, high-level output (average per gate)	$V_{CC} = \text{MAX},$ All inputs at 0V		1.5	3.3	mA
I_{CCL} Supply current, low-level output (average per gate)	$V_{CC} = \text{MAX},$ All inputs at 5V		5	9	mA

SIGNETICS DIGITAL 54/74 TTL SERIES — S54S22 • N74S22

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

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-	$C_L = 15pF$,	$R_L = 280\Omega$	2	5	7.5	ns
	level output	$C_L = 50pF$,	$R_L = 280\Omega$		7.5		
t_{PHL}	Propagation delay time, high-to-	$C_L = 15pF$,	$R_L = 280\Omega$	2	4.5	7	ns
	low-level output	$C_L = 50pF$,	$R_L = 280\Omega$		7		

* 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 $V_{CC} = 5V$, $T_A = 25^\circ C$.

NOTES:

- A. The pulse generator has the following characteristics: $V_{in(1)} = 3V$, $V_{in(0)} = 0V$, $t_1 = t_0 = 2.5ns$, PRR = 1MHz, duty cycle = 50%, and $Z_{out} \approx 50\Omega$.
- B. Inputs not under test are at 2.7V.
- C. C_L includes probe and jig capacitance.