

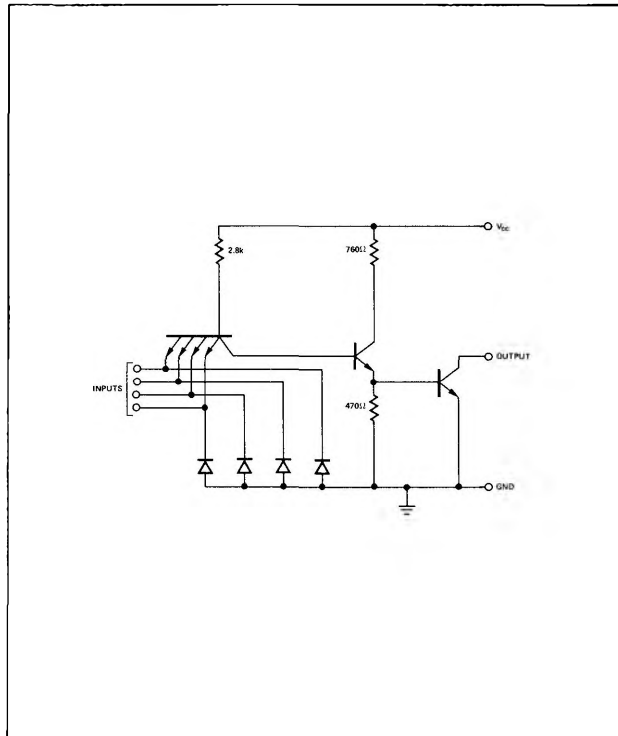
# DUAL 4-INPUT POSITIVE NAND GATE WITH OPEN COLLECTOR OUTPUT

# S54H22 N74H22

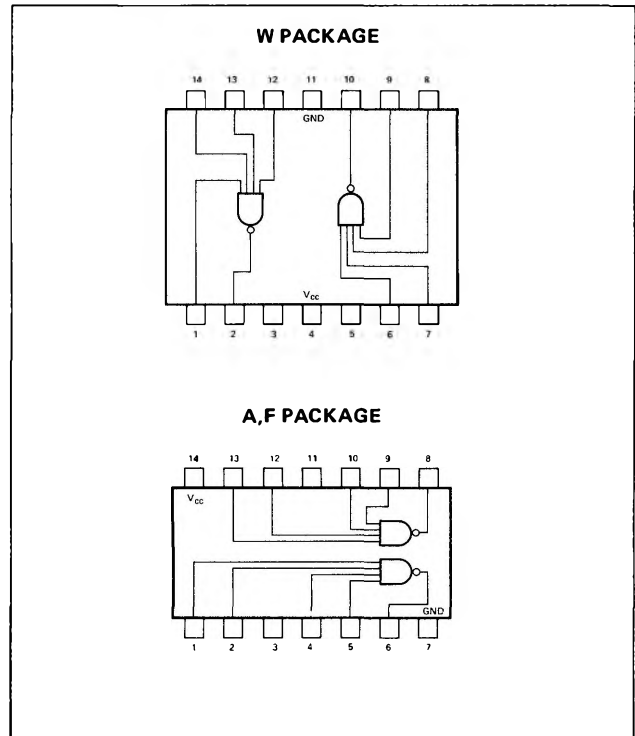
S54H22-A,F,W • N74H22-A,F

DIGITAL 54/74 TTL SERIES

**SCHEMATIC (each gate)**



**PIN CONFIGURATIONS**



**RECOMMENDED OPERATING CONDITIONS**

	MIN	NOM	MAX	UNIT
Supply Voltage $V_{CC}$ : S54H22 Circuits	4.5	5	5.5	V
N74H22 Circuits	4.75	5	5.25	V
Normalized Fan-Out from each Output, N			10	
Operating Free-Air Temperature Range: S54H22 Circuits	-55	25	125	°C
N74H22 Circuits	0	25	70	°C

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

PARAMETER	TEST CONDITIONS*	MIN	TYP**	MAX	UNIT
$V_{in(1)}$	Logical 1 input voltage required at all input terminals to ensure logical 0 <sub>(on)</sub> level at output	2			V
$V_{in(0)}$	Logical 0 input voltage required at any input terminal to ensure logical 1 <sub>(off)</sub> level at output			0.8	V
$I_{out(1)}$	Output reverse current	$V_{CC} = \text{MIN},$ $V_{out(1)} = 5.5\text{V}$	$V_{in} = 0.8\text{V},$	250	μA
$V_{out(0)}$	Logical 0 output voltage (on level)	$V_{CC} = \text{MIN},$ $I_{sink} = 20\text{mA}$	$V_{in} = 2\text{V},$	0.4	V
$I_{in(0)}$	Logical 0 level input current (each input)	$V_{CC} = \text{MAX},$ $V_{in} = 0.4\text{V}$		-2	mA
$I_{in(1)}$	Logical 1 level input current (each input)	$V_{CC} = \text{MAX},$ $V_{CC} = \text{MAX},$	$V_{in} = 2.4\text{V}$ $V_{in} = 5.5\text{V}$	50 1	μA mA
$I_{CC(0)}$	Logical 0 level supply current	$V_{CC} = \text{MAX},$ $V_{in} = 4.5\text{V}$		13 20	mA
$I_{CC(1)}$	Logical 1 level supply current	$V_{CC} = \text{MAX},$ $V_{in} = 0$		3.4 5.0	mA

**SIGNETICS DIGITAL 54/74 TTL SERIES — S54H22 • N74H22**

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

PARAMETER		TEST CONDITIONS†	MIN	TYP**	MAX	UNIT
$t_{pd0}$	Propagation delay time to logical 0 level	$C_L = 25pF$ , $R_L = 280\Omega$		7.5	12.0	ns
$t_{pd1}$	Propagation delay time to logical 1 level	$C_L = 25pF$ , $R_L = 280\Omega$		10.0	15.0	ns

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

† Not more than one output should be shorted at a time and duration of short circuit test should not exceed 1 second.