

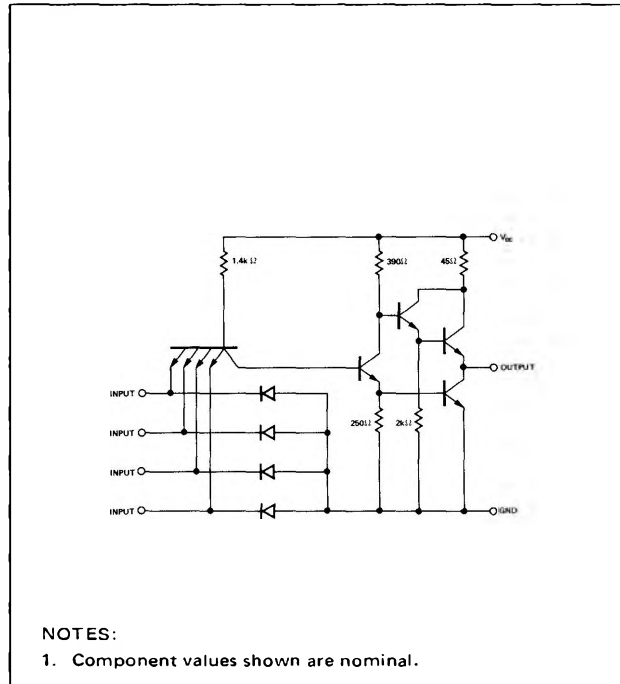
# DUAL 4-INPUT POSITIVE NAND BUFFER

# S54H40 N74H40

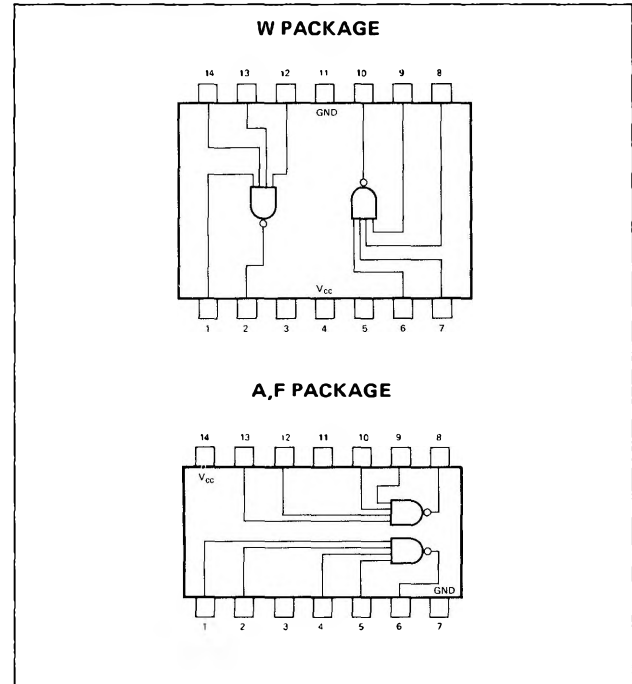
S54H40—A,F,W • N74H40—A,F

DIGITAL 54/74 TTL SERIES

## SCHEMATIC (each gate)



## PIN CONFIGURATIONS



## RECOMMENDED OPERATING CONDITIONS

		MIN	NOM	MAX	UNIT
Supply Voltage $V_{CC}$ :	S54H40 Circuits	4.5	5	5.5	V
	N74H40 Circuits	4.75	5	5.25	V
Normalized Fan-Out from each Output, N				30	
Operating Free-Air Temperature Range, $T_A$ :	S54H40 Circuits	-55	25	125	$^{\circ}\text{C}$
	N74H40 Circuits	0	25	70	$^{\circ}\text{C}$

## 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 level at output	$V_{CC} = \text{MIN}$ ,		2			V
$V_{in(0)}$	Logical 0 input voltage required at any input terminal to ensure logical 1 level at output	$V_{CC} = \text{MIN}$ ,				0.8	V
$V_{out(1)}$	Logical 1 output voltage	$V_{CC} = \text{MIN}$ ,	$V_{in} = 0.8\text{V}$ ,	2.4			V
$V_{out(0)}$	Logical 0 output voltage	$V_{CC} = \text{MIN}$ ,	$V_{in} = 2\text{V}$ ,			0.4	V
$I_{in(0)}$	Logical 0 level input current (each input)	$V_{CC} = \text{MAX}$ ,	$V_{in} = 0.4\text{V}$			-4	mA
$I_{in(1)}$	Logical 1 level input current (each input)	$V_{CC} = \text{MAX}$ ,	$V_{in} = 2.4\text{V}$			100	$\mu\text{A}$
		$V_{CC} = \text{MAX}$ ,	$V_{in} = 5.5\text{V}$			1	mA
$I_{OS}$	Short circuit output current**	$V_{CC} = \text{MAX}$		-40		-125	mA
$I_{CC(0)}$	Logical 0 level supply current	$V_{CC} = \text{MAX}$ ,	$V_{in} = 4.5\text{V}$		25	40	mA
$I_{CC(1)}$	Logical 1 level supply current	$V_{CC} = \text{MAX}$ ,	$V_{in} = 0$		10.4	16	mA

**SIGNETICS DIGITAL 54/74 TTL SERIES — S54H40 • N74H40**

**SWITCHING CHARACTERISTICS,  $V_{CC} = 5V$ ,  $T_A = 25^\circ C$ ,  $N = 30$**

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT
$t_{pd0}$	Propagation delay time to logical 0 level	$C_L = 25pF$ ,	$R_L = 93\Omega$		6.5	12	ns
$t_{pd1}$	Propagation delay time to logical 1 level	$C_L = 25pF$ ,	$R_L = 93\Omega$		8.5	12	ns

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

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

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