

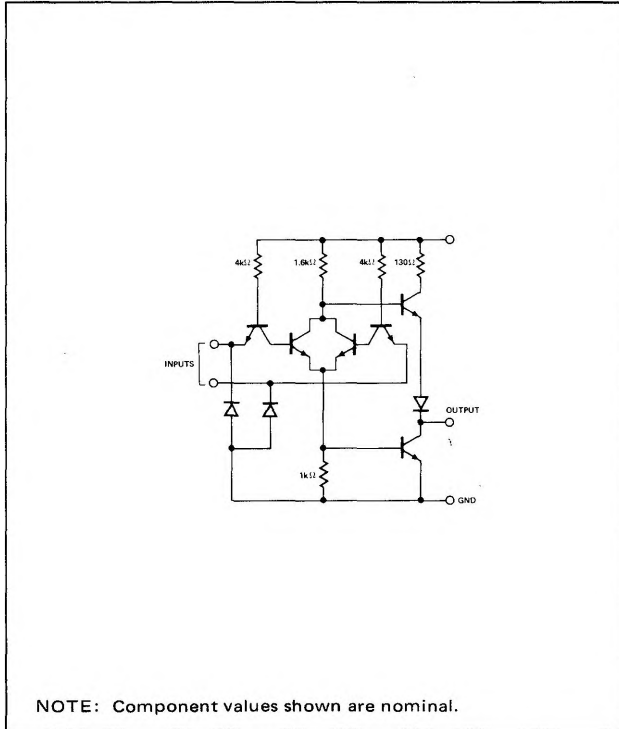
# QUADRUPLE 2-INPUT POSITIVE NOR GATE

# S5402 N7402

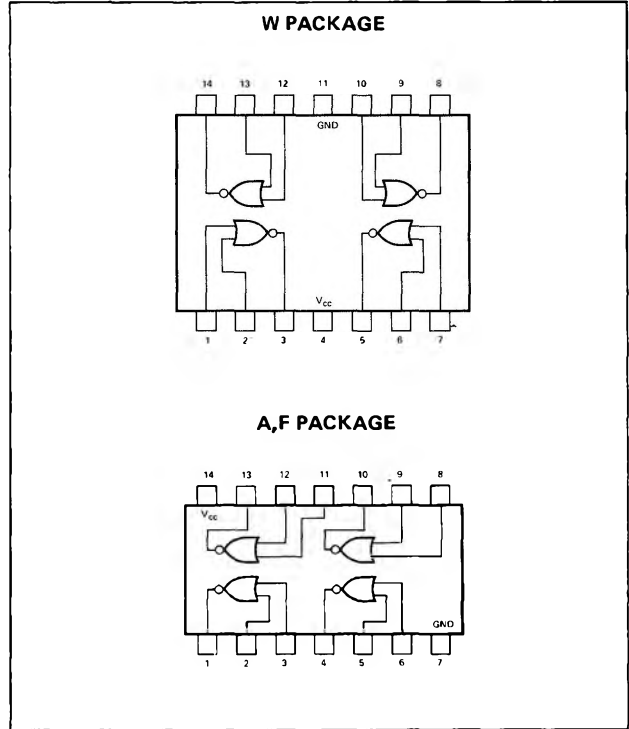
S5402-A,F,W • N7402-A,F

DIGITAL 54/74 TTL SERIES

**SCHEMATIC (each gate)**



**PIN CONFIGURATIONS**



**RECOMMENDED OPERATING CONDITIONS**

	MIN	NOM	MAX	UNIT
Supply Voltage $V_{CC}$ : S5402 Circuits	4.5	5	5.5	V
N7402 Circuits	4.75	5	5.25	V
Normalized Fan-Out from each Output, N			10	
Operating Free-Air Temperature Range, $T_A$ : S5402 Circuits	-55	25	125	°C
N7402 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 either input terminal to ensure logical 0 level at output	$V_{CC} = \text{MIN}$		2	V	
$V_{in(0)}$	Logical 0 input voltage required at both input terminals to ensure logical 1 level at output	$V_{CC} = \text{MIN}$		0.8	V	
$V_{out(1)}$	Logical 1 output voltage	$V_{CC} = \text{MIN}$ , $I_{load} = -400\mu A$	$V_{in} = 0.8V$	2.4 3.3	V	
$V_{out(0)}$	Logical 0 output voltage	$V_{CC} = \text{MIN}$ , $I_{sink} = 16mA$	$V_{in} = 2V$	0.22 0.4	V	
$I_{in(0)}$	Logical 0 level input current (each input)	$V_{CC} = \text{MAX}$ ,	$V_{in} = 0.4V$	-1.6	mA	
$I_{in(1)}$	Logical 1 level input current (each input)	$V_{CC} = \text{MAX}$ , $V_{CC} = \text{MAX}$ ,	$V_{in} = 2.4V$ , $V_{in} = 5.5V$	40 1	$\mu A$ mA	
$I_{OS}$	Short circuit output Current†	$V_{CC} = \text{MAX}$	S5402 N7402	-20 -18	-55 -55	mA

**SIGNETICS DIGITAL 54/74 TTL SERIES - S5402 • N7402**

**ELECTRICAL CHARACTERISTICS (Cont'd)**

PARAMETER		TEST CONDITIONS *		MIN	TYP	MAX	UNIT
$I_{CC(0)}$	Logical 0 level supply current	$V_{CC} = \text{MAX},$	$V_{in} = 5V$		14	27	mA
$I_{CC(1)}$	Logical 1 level supply current	$V_{CC} = \text{MAX},$	$V_{in} = 0$		8	16	mA

**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	$C_L = 15pF,$	$R_L = 400\Omega$		8	15	ns
$t_{pd1}$	Propagation delay time to logical 1 level	$C_L = 15pF,$	$R_L = 400\Omega$		12	22	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.