

QUADRUPLE 2-INPUT POSITIVE NAND BUFFER

S5437
S5438
N7437
N7438

DIGITAL 54/74 TTL SERIES

S5437-A,F,W • S5438-A,F,W • N7437-A,F,W • N7438-A,F

DESCRIPTION

The S5437/N7437 is a NAND Gate (output low only when all inputs are high) the same as N7400 except that it will drive 3 times as many loads. The S5438/N7438 is also a NAND Gate but is open-collector similar to N7403. Each one is the same pinout.

The S5437/N7437 and S5438/N7438 contain four 2-input NAND gates in a package with a guaranteed fan-out of 30-Series 54/74 loads in both the logical "1" (1.2mA), and logical "0" (48mA) states. The S5438/N7438 has an open collector output for "WIRE-AND" applications but still retains the high sink current capability of the S5437/N7437.

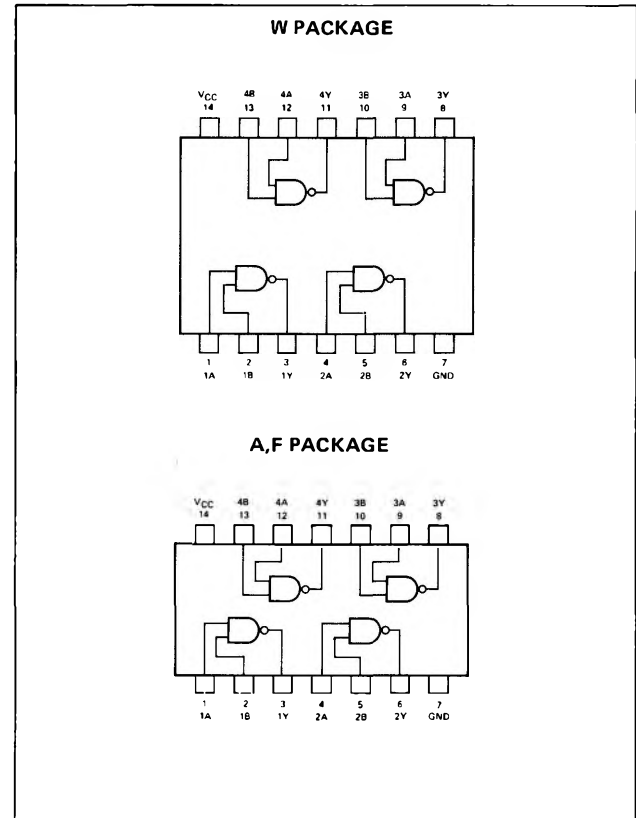
ABSOLUTE MAXIMUM RATINGS (over operating temperature range unless otherwise noted)

Supply Voltage V_{CC} (See Note 1)	7V
Input Voltage (See Note 1)	5.5V
Interrmitter Voltage (See Note 2)	5.5V
Output Voltage (See Notes 1 and 3):	
S5438, N7438 Circuits	5.5V
Operating Free-Air Temperature Range:	
S5437, S5438 Circuits	-55°C to 125°C
N7437, N7438 Circuits	0°C to 70°C
Storage Temperature Range	-65°C to 150°C

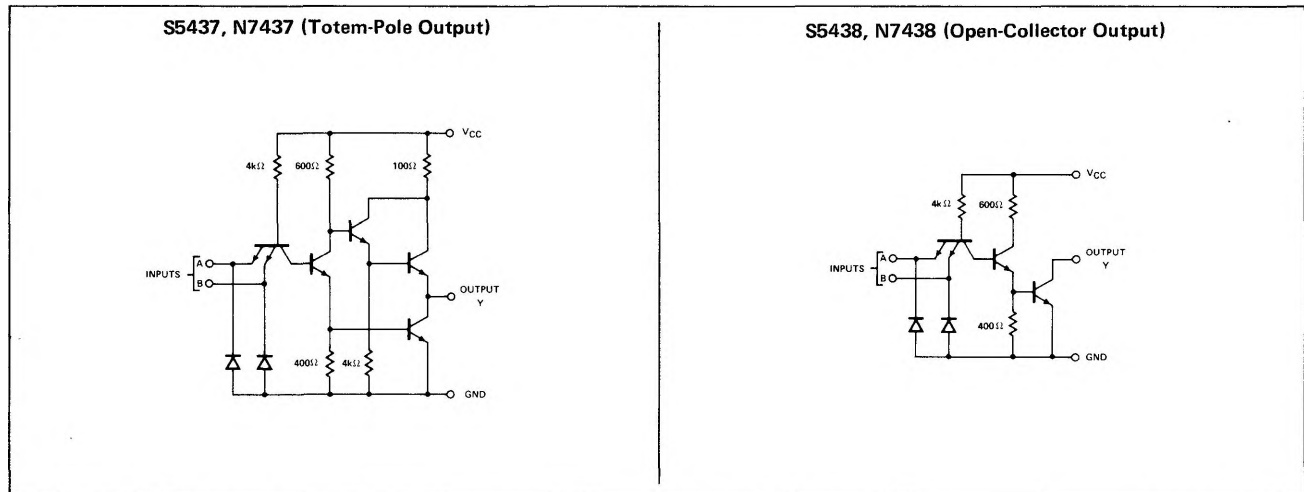
NOTES:

1. Voltage values, except intermitter voltage, are with respect to network ground terminal.
2. This is the voltage between two emitters of a multiple-emitter transistor.
3. This is the maximum voltage which should be applied to any output when it is in the off state.

PIN CONFIGURATIONS



SCHEMATICS (each buffer)



RECOMMENDED OPERATING CONDITIONS

	S5437, S5438			N7437, N7438			UNIT
	MIN	TYP	MAX	MIN	TYP	MAX	
Supply Voltage V_{CC}	4.5	5	5.5	4.75	5	5.25	V
Normalized Fan-Out from each Output, N			30			30	
Operating Free-Air Temperature Range, T_A	-55	25	125	0	25	70	°C

SIGNETICS DIGITAL 54/74 TTL SERIES - S5437 • S5438 • N7437 • N7438

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	$V_{CC} = \text{MAX}, I_I = -12\text{mA}$			-1.5	V
V_{OH}	High-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2\text{V}, I_{OH} = 1.2\text{mA}$	2.4	3.3		V
V_{OL}	Low-level output voltage	$V_{CC} = \text{MIN}, V_{IL} = 0.8\text{V}, I_{OL} = 48\text{mA}$		0.22	0.4	V
I_I	Input current at max. input voltage	$V_{CC} = \text{MAX}, V_I = 5.5\text{V}$			1	mA
I_{IH}	High-level input current	$V_{CC} = \text{MAX}, V_I = 2.4\text{V}$			40	μA
I_{IL}	Low-level input current	$V_{CC} = \text{MAX}, V_I = 0.4\text{V}$			-1.6	mA
I_{OS}	Short-circuit output current	$V_{CC} = \text{MAX}$	-20		-55	mA
I_{CCH}	Supply current, high-level output	$V_{CC} = \text{MAX},$ See Note 2		15	22	mA
I_{CCL}	Supply current, low-level output	$V_{CC} = \text{MAX},$ See Note 3		23	38	mA

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

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PHL}	Propagation delay time, high-to-low-level output	$C_L = 45\text{pF}, R_L = 133\Omega$		13	22	ns
t_{PLH}	Propagation delay time, low-to-high-level output			8	15	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 $V_{CC} = 5\text{V}, T_A = 25^\circ\text{C}$.
- † Not more than one output should be shorted at a time.