

74128
Buffer

Quad Two-Input NOR Buffer
Product Specification

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
74128	7ns	23mA

FUNCTION TABLE

INPUTS		OUTPUT
A	B	Y
L	L	H
L	H	L
H	L	L
H	H	L

H = HIGH voltage level
L = LOW voltage level

ORDERING CODE

PACKAGES	COMMERCIAL RANGE $V_{CC} = 5V \pm 5\%$; $T_A = 0^{\circ}C$ to $+70^{\circ}C$
Plastic DIP	N74128N

NOTES:
For information regarding devices processed to Military Specifications, see the Signetics Military Products Data Manual.

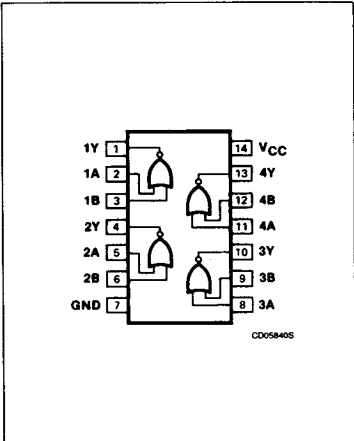
INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

PINS	DESCRIPTION	74
A, B	Inputs	1ul
Y	Output	30ul

NOTE:
Where a 74 unit load is understood to be $40\mu A$ I_{IH} and $-1.6mA$ I_{IL} .

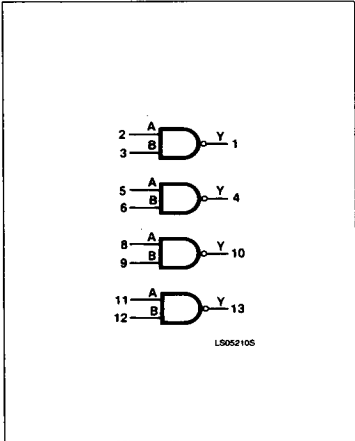
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PIN CONFIGURATION



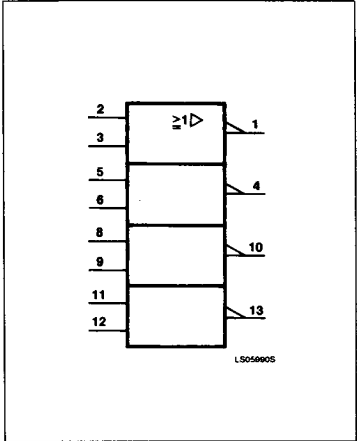
December 4, 1985

LOGIC SYMBOL



5-209

LOGIC SYMBOL (IEEE/IEC)



853-0515 81502

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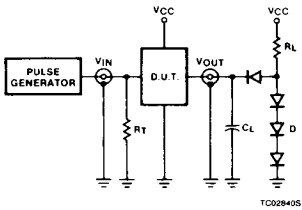
ABSOLUTE MAXIMUM RATINGS (Over operating free-air temperature range unless otherwise noted.)

PARAMETER		74	UNIT
V _{CC}	Supply voltage	7.0	V
V _{IN}	Input voltage	−0.5 to +5.5	V
I _{IN}	Input current	−30 to +5	mA
V _{OUT}	Voltage applied to output in HIGH output state	−0.5 to +V _{CC}	V
T _A	Operating free-air temperature range	0 to 70	°C

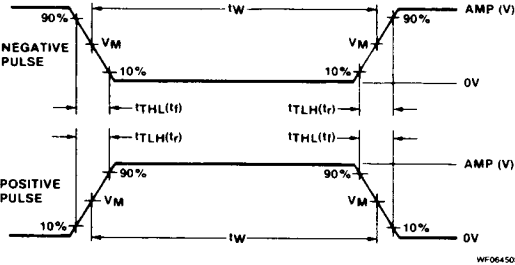
RECOMMENDED OPERATING CONDITIONS

PARAMETER		74			UNIT
		Min	Nom	Max	
V _{CC}	Supply voltage	4.75	5.0	5.25	V
V _{IH}	HIGH-level input voltage	2.0			V
V _{IL}	LOW-level input voltage			+0.8	V
I _{IK}	Input clamp current			−12	mA
I _{OH}	HIGH-level output current			−42.4	mA
I _{OL}	LOW-level output current			48	mA
T _A	Operating free-air temperature	0		70	°C

TEST CIRCUITS AND WAVEFORMS



TC02B40S



WF 06450S

$V_M = 1.3V$ for 74LS; $V_M = 1.5V$ for all other TTL families.

Input Pulse Definition

FAMILY	INPUT PULSE REQUIREMENTS				
	Amplitude	Rep. Rate	Pulse Width	t _{TLH}	t _{THL}
74	3.0V	1MHz	500ns	7ns	7ns
74LS	3.0V	1MHz	500ns	15ns	6ns
74S	3.0V	1MHz	500ns	2.5ns	2.5ns

Test Circuit For 74 Totem-Pole Outputs

DEFINITIONS

R_L = Load resistor to V_{CC}; see AC CHARACTERISTICS for value.

C_L = Load capacitance includes jig and probe capacitance; see AC CHARACTERISTICS for value.

R_T = Termination resistance should be equal to Z_{OUT} of Pulse Generators.

D = Diodes are 1N916, 1N3064, or equivalent.

t_{TLH}, t_{THL} Values should be less than or equal to the table entries.

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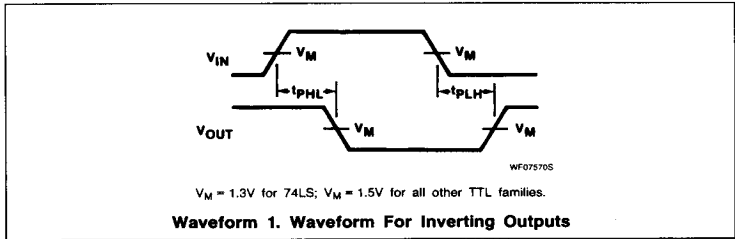
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DC ELECTRICAL CHARACTERISTICS (Over recommended operating free-air temperature range unless otherwise noted.)

PARAMETER	TEST CONDITIONS ¹	74128			UNIT
		Min	Typ ²	Max	
V _{OH} HIGH-level output voltage	V _{CC} = MIN, V _{IL} = 0.8V, I _{OH} = -2.4mA	2.4	3.4		V
	V _{CC} = MIN, V _{IL} = 0.4V, I _{OH} = -13.2V	2.4			V
	V _{CC} = MIN, V _{IL} = 0.4V, I _{OH} = MAX	2.0			V
V _{OL} LOW-level output voltage	V _{CC} = MIN, V _{IH} = MIN, I _{OL} = MAX		0.2	0.4	V
V _{IK} Input clamp voltage	V _{CC} = MIN, I _I = I _{IK}			-1.5	V
I _I Input current at maximum input voltage	V _{CC} = MAX, V _I = 5.5V			1.0	mA
I _{IH} HIGH-level input current	V _{CC} = MAX, V _I = 2.4V			40	μA
I _{IL} LOW-level input current	V _{CC} = MAX, V _I = 0.4V			-1.6	mA
I _{OS} Short-circuit output current ³	V _{CC} = MAX	-70		-180	mA
I _{CC} Supply current (total)	V _{CC} = MAX	I _{CCH} Outputs HIGH	12	21	mA
		I _{CCL} Outputs LOW	33	57	mA

- NOTES:
1. For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
2. All typical values are at V_{CC} = 5V, T_A = 25°C.
3. I_{OS} is tested with V_{OUT} = +0.5V and V_{CC} = V_{CC} MAX + 0.5V. Not more than one output should be shorted at a time and duration of the short circuit should not exceed one second.

AC WAVEFORM



AC ELECTRICAL CHARACTERISTICS T_A = 25°C, V_{CC} = 5.0V

PARAMETER		TEST CONDITIONS	74		UNIT
			R _L = 133Ω		
			Min	Max	
t _{PLH}	Propagation delay	Waveform 1, C _L = 50pF		9	ns
t _{PHL}				12	
t _{PLH}	Propagation delay	Waveform 1, C _L = 150pF		15	ns
t _{PHL}				18	