

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
7408	15ns	16mA
74LS08	9ns	3.4mA
74S08	5ns	25mA

ORDERING CODE

PACKAGES	COMMERCIAL RANGE $V_{CC} = 5V \pm 5\%$; $T_A = 0^\circ C$ to $+70^\circ C$
Plastic DIP	N7408N, N74LS08N, N74S08N
Plastic SO	N74LS08N, N74S08N

FUNCTION TABLE

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

H = HIGH voltage level
L = LOW voltage level

NOTE:

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

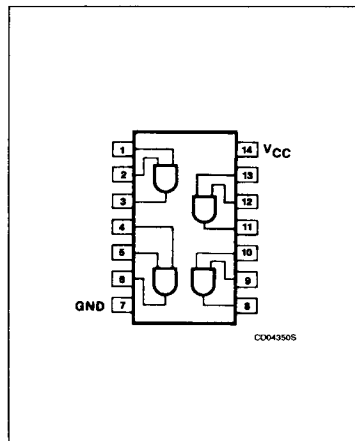
INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

PINS	DESCRIPTION	74	74S	74LS
A, B	Inputs	1uI	1Sul	1LSul
Y	Output	10uI	10Sul	10LSul

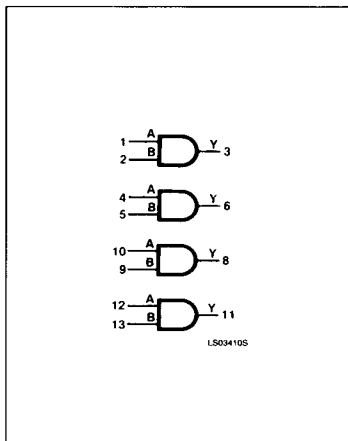
NOTE:

Where a 74 unit load (uI) is understood to be $40\mu A$ I_{IH} and $-1.6mA$ I_{IL} , a 74S unit load (Sul) is $50\mu A$ I_{IH} and $-2.0mA$ I_{IL} , and 74LS unit load (LSul) is $20\mu A$ I_{IH} and $-0.4mA$ I_{IL} .

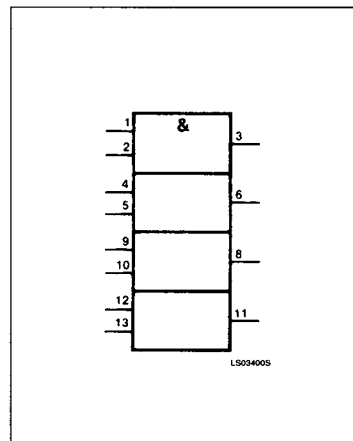
PIN CONFIGURATION



LOGIC SYMBOL



LOGIC SYMBOL (IEEE/IEC)



Gates

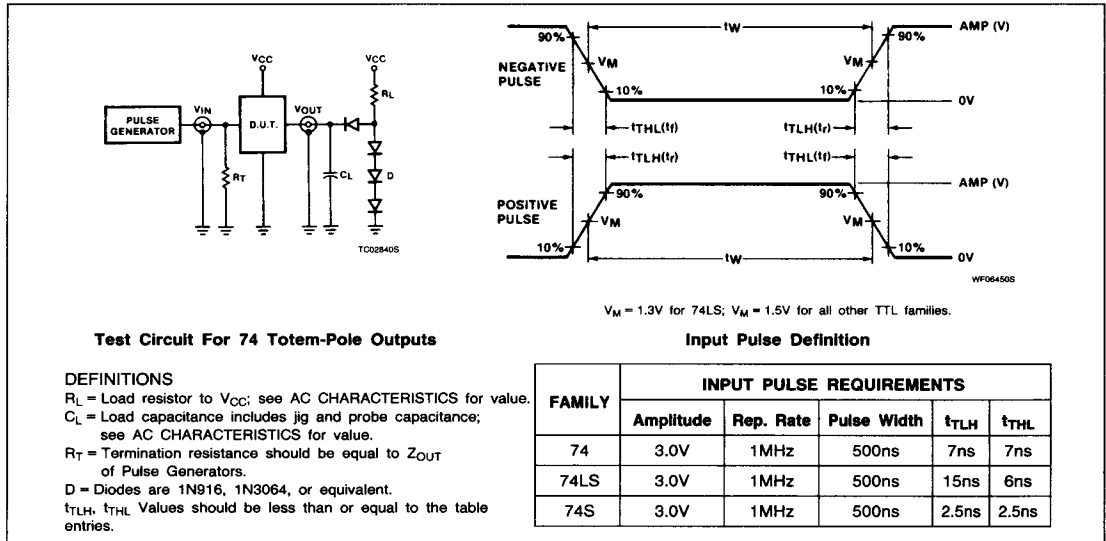
7408, LS08, S08

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

PARAMETER	74	74LS	74S	UNIT
V_{CC} Supply voltage	7.0	7.0	7.0	V
V_{IN} Input voltage	-0.5 to +5.5	-0.5 to +7.0	-0.5 to +5.5	V
I_{IN} Input current	-30 to +5	-30 to +1	-30 to +5	mA
V_{OUT} Voltage applied to output in HIGH output state	-0.5 to + V_{CC}	-0.5 to + V_{CC}	-0.5 to + V_{CC}	V
T_A Operating free-air temperature range	0 to 70			°C

RECOMMENDED OPERATING CONDITIONS

PARAMETER	74			74LS			74S			UNIT
	Min	Nom	Max	Min	Nom	Max	Min	Nom	Max	
V_{CC} Supply voltage	4.75	5.0	5.25	4.75	5.0	5.25	4.75	5.0	5.25	V
V_{IH} HIGH-level input voltage	2.0			2.0			2.0			V
V_{IL} LOW-level input voltage			+0.8			+0.8			+0.8	V
I_{IK} Input clamp current			-12			-18			-18	mA
I_{OH} HIGH-level output current			-800			-400			-1000	μA
I_{OL} LOW-level output current			16			8			20	mA
T_A Operating free-air temperature	0		70	0		70	0		70	°C

TEST CIRCUITS AND WAVEFORMS

Gates

7408, LS08, S08

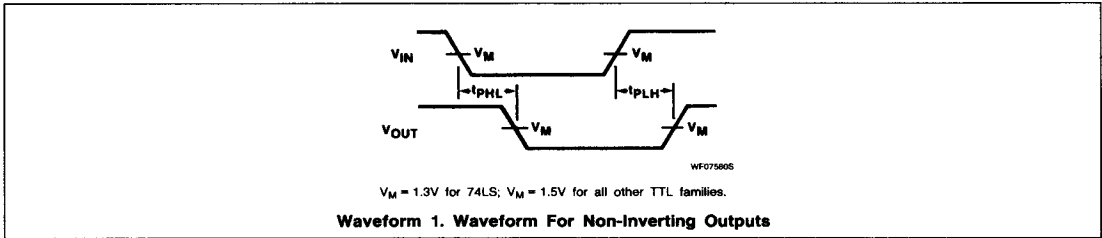
DC ELECTRICAL CHARACTERISTICS (Over recommended operating free-air temperature range unless otherwise noted.)

PARAMETER	TEST CONDITIONS ¹	7408			74LS08			74S08			UNIT
		Min	Typ ²	Max	Min	Typ ²	Max	Min	Typ ²	Max	
V _{OH}	HIGH-level output voltage	V _{CC} = MIN, V _{IH} = MIN, I _{OH} = MAX		2.4	3.4			2.7	3.4		V
V _{OL}	LOW-level output voltage	V _{CC} = MIN, V _{IL} = MAX	I _{OL} = MAX		0.2	0.4		0.35	0.5		V
			I _{OL} = 4mA (74LS)					0.25	0.4		V
V _{IK}	Input clamp voltage	V _{CC} = MIN, I _I = I _{IK}			-1.5			-1.5			V
I _I	Input current at maximum input voltage	V _{CC} = MAX	V _I = 5.5V		1.0					1.0	mA
			V _I = 7.0V					0.1			mA
I _{IH}	HIGH-level input current	V _{CC} = MAX	V _I = 2.4V		40						μA
			V _I = 2.7V					20		50	μA
I _{IL}	LOW-level input current	V _{CC} = MAX	V _I = 0.4V		-1.6			-0.4			mA
			V _I = 0.5V							-2.0	mA
I _{OS}	Short-circuit output current ³	V _{CC} = MAX		-18		-55	-20		-100	-40	mA
I _{CC}	Supply current (total)	V _{CC} = MAX	I _{COH}	Outputs HIGH	11	21		2.4	4.8		mA
			I _{CCL}	Outputs LOW	20	33		4.4	8.8		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		74LS		74S		UNIT
			C _L = 15pF, R _L = 400Ω		C _L = 15pF, R _L = 2kΩ		C _L = 15pF, R _L = 280Ω		
			Min	Max	Min	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation delay	Waveform 1		27 19		15 20		7.0 7.5	ns