

7432, LS32, S32 Gates

Quad Two-Input OR Gate
Product Specification

Logic Products

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
7432	12ns	19mA
74LS32	14ns	4.0mA
74S32	4ns	28mA

ORDERING CODE

PACKAGES	COMMERCIAL RANGE $V_{CC} = 5V \pm 5\%$; $T_A = 0^\circ C$ to $+70^\circ C$
Plastic DIP	N7432N, N74LS32N, N74S32N
Plastic SO - 14	N74LS32D, N74S32D

FUNCTION TABLE

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

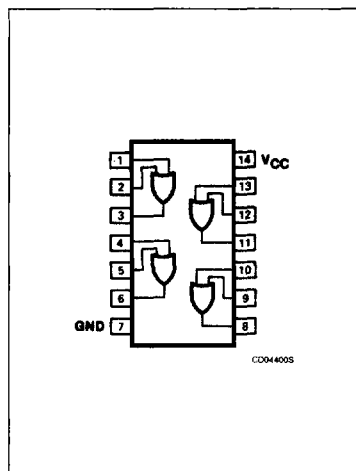
INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

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

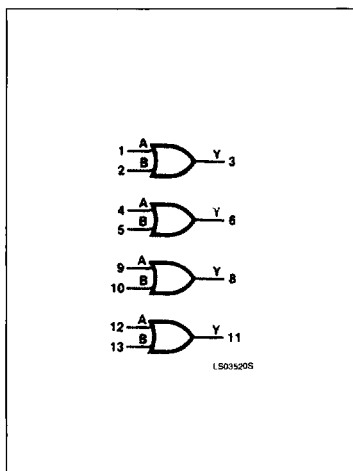
NOTE:

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

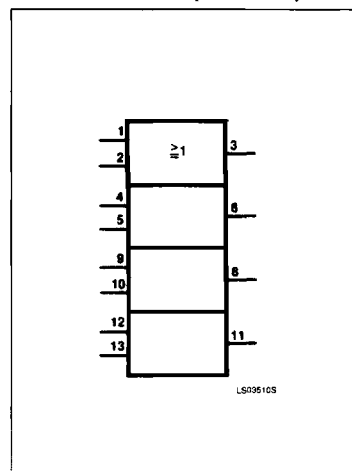
PIN CONFIGURATION



LOGIC SYMBOL



LOGIC SYMBOL (IEEE/IEC)



Gates

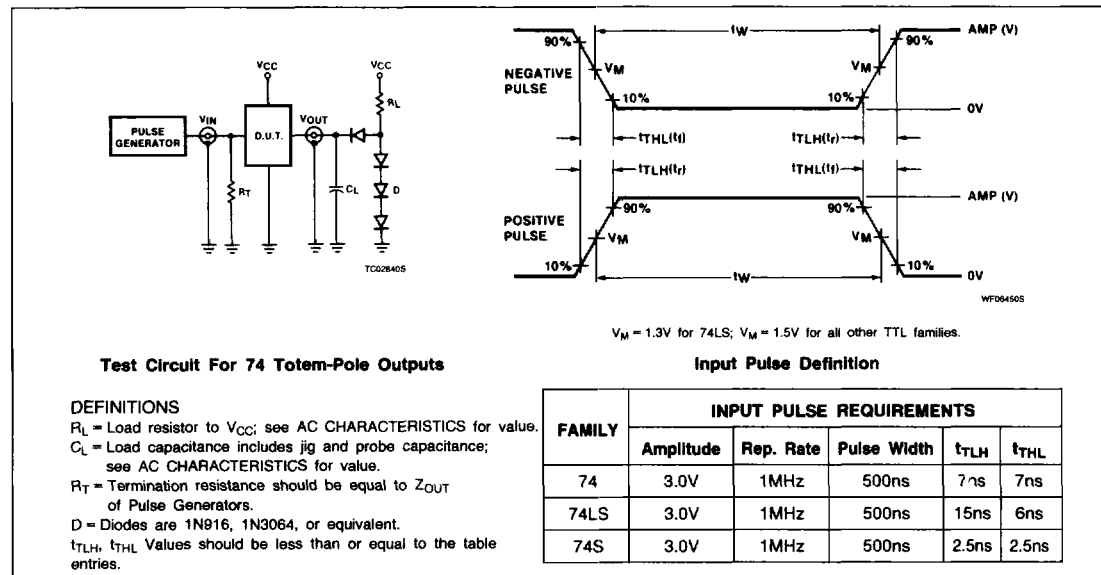
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ABSOLUTE MAXIMUM RATINGS (Over operating free-air temperature range unless otherwise noted.)

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

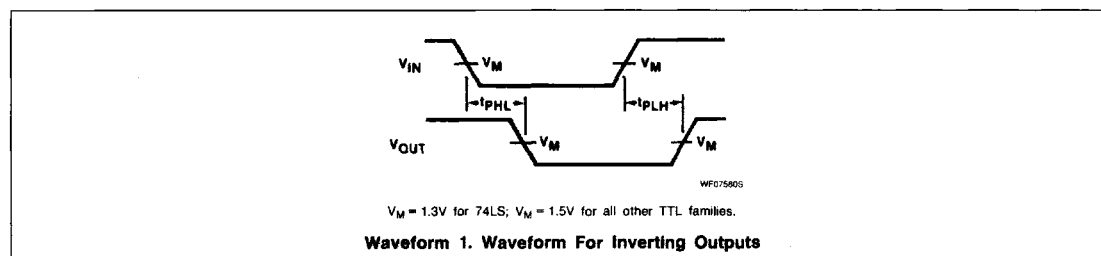
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DC ELECTRICAL CHARACTERISTICS (Over recommended operating free-air temperature range unless otherwise noted.)

PARAMETER		TEST CONDITIONS ¹		7432			74LS32			74S32			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		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			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			-1.2	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		-100	mA
I _{CC}	Supply current (total)	V _{CC} = MAX	I _{CCH} Outputs HIGH		15	22		3.1	6.2		18	32	mA	
			I _{CCL} Outputs LOW		23	38		4.9	9.8		38	68	mA	

NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
- All typical values are at $V_{CC} = 5\text{V}$, $T_A = 25^\circ\text{C}$.
- I_{OS} is tested with $V_{OUT} = +0.5\text{V}$ and $V_{CC} = V_{CC} \text{ MAX} + 0.5\text{V}$. 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** $T_A = 25^\circ\text{C}$, $V_{CC} = 5.0\text{V}$

PARAMETER	TEST CONDITIONS	74		74LS		74S		UNIT
		$C_L = 15\text{pF}, R_L = 400\Omega$		$C_L = 15\text{pF}, R_L = 2\text{k}\Omega$		$C_L = 15\text{pF}, R_L = 280\Omega$		
		Min	Max	Min	Max	Min	Max	
t_{PLH} t_{PHL} Propagation delay	Waveform 1		15 22		22 22		7.0 7.0	ns