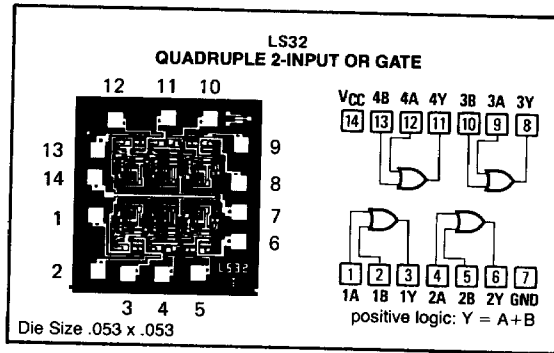


Quadruple 2-Input Positive-OR Gate

LS32

PIN-OUT AND LOGIC DIAGRAM



Recommended Operating Conditions

		9LS/54LS			9LS/74LS			Unit
		Min	Nom	Max	Min	Nom	Max	
Supply voltage, V_{CC}		4.5	5	5.5	4.75	5	5.25	V
Normalized fan-out from each output, N	High logic level			20			20	
	Low logic level			10			20	
Operating free-air temperature, T_A		-55		125	0		70	°C

Electrical Characteristics Over Recommended Free-Air Temperature Range (Unless Otherwise Noted)

Parameter	Test Conditions*	9LS/54LS			9LS/74LS			Unit
		Min	Typ**	Max	Min	Typ**	Max	
V_{IH}		2			2			V
V_{IL}				0.7			0.8	V
V_I	$V_{CC}=\text{MIN}$, $I_I=-18\text{mA}$			-1.5			-1.5	V
V_{OH}	$V_{CC}=\text{MIN}$, $I_{OH}=-400\mu\text{A}$, $V_{IL}=0.7\text{V}$	2.5	3.4		2.7	3.4		V
V_{OL}	$V_{CC}=\text{MIN}$, $V_{IH}=2\text{V}$, $I_{OL}=4\text{mA}$		0.25	0.4		0.25	0.4	V
						0.35	0.5	
I_I	$V_{CC}=\text{MAX}$, $V_I=7\text{V}$			0.1			0.1	mA
I_{IH}	$V_{CC}=\text{MAX}$, $V_I=2.7\text{V}$			20			20	μA
I_{IL}	$V_{CC}=\text{MAX}$, $V_I=0.4\text{V}$			-0.4			-0.4	mA
I_{OS}^\dagger	$V_{CC}=\text{MAX}$	-15		-100	-15		-100	mA
I_{CCH}	$V_{CC}=\text{MAX}$, All inputs at 5V		3.1	6.2		3.1	6.2	mA
I_{CCL}	$V_{CC}=\text{MAX}$, All inputs at 0V		4.9	9.8		4.9	9.8	mA

*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.

Switching Characteristics, $V_{CC} = 5\text{V}$ Over Recommended Free-Air Temperature Range

Parameter	-55°C			+25°C			+125°C			Unit
	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Test Conditions: $C_L = 15\text{pF}$, $R_L = 2\text{k}\Omega$ (See Fig. A, page 2-174)										
t_{PLH}		7	12		7	11		9	13	ns
t_{PHL}		7	13		7	12		9	14	ns
Test Conditions: $C_L = 50\text{pF}$, $R_L = 2\text{k}\Omega$ (See Fig. A, page 2-174)										
t_{PLH}		9	14		8	13		10	15	ns
t_{PHL}		11	17		10	15		12	18	ns

Note: AC specification shown under -55°C and $+125^\circ\text{C}$ are for 9LS devices only. All 50pF specifications are for 9LS only.