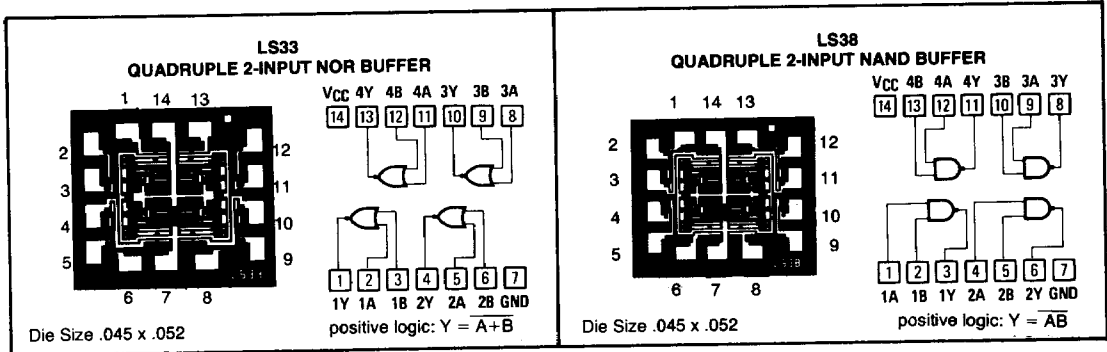


PIN-OUT AND LOGIC DIAGRAMS



Recommended Operating Conditions

	9LS/54LS			9LS/74LS			Unit
	Min	Nom	Max	Min	Nom	Max	
Supply voltage, V_{CC} (See Note 1)	4.5	5	5.5	4.75	5	5.25	V
High-level output voltage, V_{OH}			5.5			5.5	V
Low-level output current, I_{OL}			22			22	mA
Operating free-air temperature, T_A	-55		125				°C

NOTE 1: Voltage values are with respect to network ground terminal.

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
I_{OH}	$V_{CC} = \text{MIN}, V_{IL} = V_{IL\text{max}}, V_{OH} = 5.5\text{V}$			250			250	μA
V_{OL}	$V_{CC} = \text{MIN}, V_{IH} = 2\text{V}$			0.25	0.4	0.25	0.4	V
	$I_{OL} = 12\text{mA}$					0.35	0.5	V
	$I_{OL} = 24\text{mA}$							V
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_{CCH}	$V_{CC} = \text{MAX}, \text{All inputs at } 0\text{V}$		1.8	3.6		1.8	3.6	mA
			0.9	2.0		0.9	2.0	mA
I_{CCL}	$V_{CC} = \text{MAX}, \text{All inputs at } 4.5\text{V}$		6.9	13.8		6.9	1.38	mA
			6.0	12.0		6.0	12.0	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 $V_{CC} = 5\text{V}, T_A = 25^\circ\text{C}$.

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: $C_L = 45\text{pF}, R_L = 667\Omega$ (See Figure B, page 2-174)										
t_{PLH}		17	25	7.0	17	25		29	37	ns
t_{PHL}		13	22	4.0	9	16		10	17	ns
Test Conditions: $C_L = 125\text{pF}, R_L = 667\Omega$ (See Figure B, page 2-174)										
t_{PLH}		30	45		32	42		44	56	ns
t_{PHL}		22	36		18	35		15	35	ns

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

