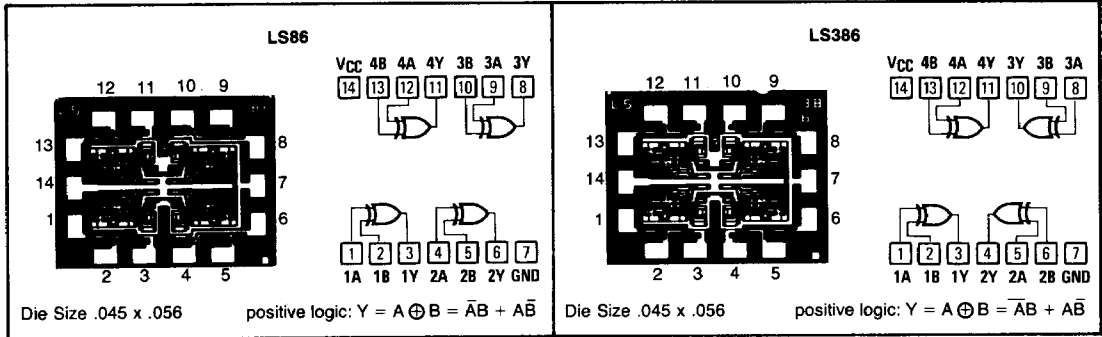


PIN-OUT AND LOGIC DIAGRAMS



LS86 and LS386 are electrically identical. The LS386 is a pin-for-pin replacement for the L386.

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
High-level output current, I_{OH}			-400			-400	μA
Low-level output current, I_{OL}			4			8	mA
Operating free-air temperature, T_A	-55		125	0		70	$^{\circ}C$

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}	$V_{CC} = \text{MIN}, V_{IH} = 2\text{V}$ $V_{IL} = V_{IL\text{max}}, I_{OH} = -400\mu A$	2.5	3.4		2.7	3.4		V
V_{OL}	$V_{CC} = \text{MIN}, V_{IH} = 2\text{V},$ $V_{IL} = V_{IL\text{max}},$		0.25	0.4	0.25	0.25	0.4	V
	$I_{OL} = 4\text{mA}$ $I_{OL} = 8\text{mA}$					0.35	.05	
I_I	$V_{CC} = \text{MAX}, V_I = 7\text{V}$			0.2			0.2	mA
I_{IH}	$V_{CC} = \text{MAX}, V_I = 2.7\text{V}$			40			40	μA
I_{IL}	$V_{CC} = \text{MAX}, V_I = 0.4\text{V}$			-0.8			-0.8	mA
I_{Ost}	$V_{CC} = \text{MAX}$	-15		-100	-15		-100	mA
$I_{CC}^{\dagger\dagger}$	$V_{CC} = \text{MAX}$		6.1	10		6.1	10	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 $V_{CC} = 5\text{V}, T_A = 25^{\circ}C$.

†Not more than one output should be shorted at a time.

†† I_{CC} is measured with the inputs grounded and the outputs open.

Quadruple 2-Input Exclusive-OR Gates

LS86 LS386

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

Parameter	From (Input)		-55°C			+25°C			+125°C			Unit
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Test Conditions: $C_L = 15pF$, $R_L = 2k\Omega$												
t_{PLH}	A or B	Other input low		9	17		8	16		10	18	ns
t_{PHL}				9	14		8	13		10	14	
t_{PLH}	A or B	Other input high		7	14		7	15		10	17	ns
t_{PHL}				7	15		6	12		6	12	
Test Conditions: $C_L = 50pF$, $R_L = 2k\Omega$												
t_{PLH}	A or B	Other input low		11	19		20	10		18	12	ns
t_{PHL}				13	17		17	11		16	12	
t_{PLH}	A or B	Other input high		9	16		19	9		17	12	ns
t_{PHL}				12	19		15	9		16	9	

Note: AC specification shown under -55°C and +125°C are for 9LS devices only. All 50pF specifications are for 9LS only.