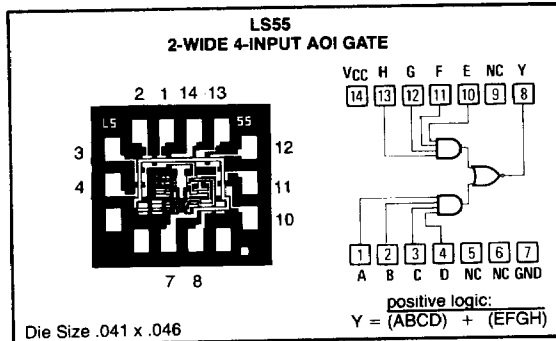
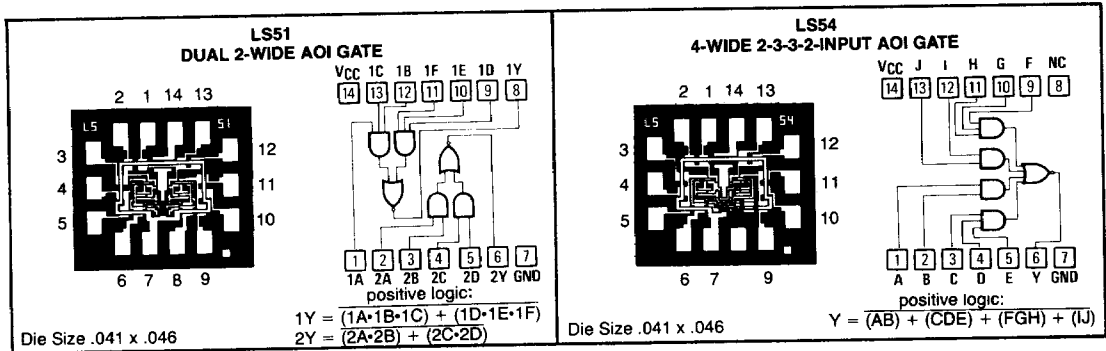


PIN-OUT AND LOGIC DIAGRAMS



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	Low logic level		20	
	Low logic level		10	High logic level		20	
Operating free-air temperature, T_A	-55		125	0		70	°C

AND-OR-Invert Gates

LS51 LS54 LS55

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} =MIN, I _I =-18mA			-1.5			-1.5	V	
V _{OH}	V _{CC} =MIN, I _{OH} =-400μA, V _{IL} =0.7V	2.5	3.4		2.7	3.4		V	
V _{OL}	V _{CC} =MIN, V _{IH} =2V	I _{OL} =4mA		0.25	0.4		0.25	0.4	V
		I _{OL} =8mA					0.35	0.5	
I _I	V _{CC} =MAX, V _I =7V			0.1			0.1	mA	
I _{IH}	V _{CC} =MAX, V _I =2.7V			20			20	μA	
I _{IL}	V _{CC} =MAX, V _I =0.4V			-0.4			-0.4	mA	
I _{OS}	V _{CC} =MAX	-15		-100	-15		-100	mA	
I _{CCH}	V _{CC} =MAX, See Note 1	LS51		0.8	1.6		0.8	1.6	mA
		LS54		0.8	1.6		0.8	1.6	
		LS55		0.4	0.8		0.4	0.8	
I _{CCL}	V _{CC} =MAX, See Note 2	LS51		1.4	2.8		1.4	2.8	mA
		LS54		1.0	2.0		1.0	2.0	
		LS55		0.7	1.3		0.7	1.3	

*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} = 5V, T_A = 25°C.

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

NOTES:

1. I_{CCH} is measured with all inputs grounded, and the outputs open.
2. I_{CCL} is measured with all inputs of one gate at 5V, the remaining inputs grounded, and the outputs open.

Switching Characteristics, V_{CC} = 5V 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 = 15pF, R _L = 2kΩ (See Fig. A, page 2-174)										
t _{PLH}		8	13		8.0	13		8	12	ns
t _{PHL}		12	17		8.0	13		9	13	ns
Test Conditions: C _L = 50pF, R _L = 2kΩ (See Fig. A, page 2-174)										
t _{PLH}		13	18		12	18		13	17	ns
t _{PHL}		15	20		12	18		13	17	ns

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

