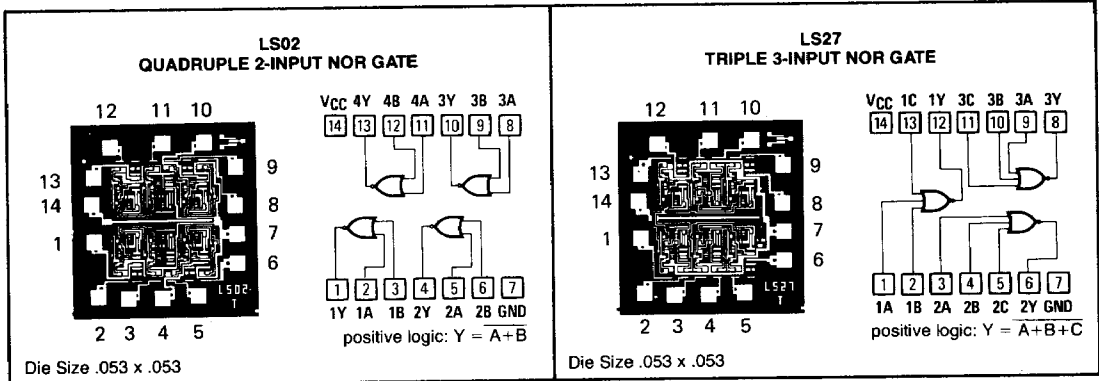


PIN-OUT AND LOGIC DIAGRAMS



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	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			V	
V_I	$V_{CC}=\text{MIN}, I_I=-18\text{mA}$			-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}	$V_{CC}=\text{MIN},$	$I_{OL}=4\text{mA}$	0.25		0.4	0.25	0.4	V
		$I_{OL}=8\text{mA}$			0.35	0.5		
I_I	$V_{CC}=\text{MAX}, V_I=7\text{V}$			0.1			mA	
I_{IH}	$V_{CC}=\text{MAX}, V_I=2.7\text{V}$			20			μA	
I_{IL}	$V_{CC}=\text{MAX}, V_I=0.4\text{V}$			-0.4			mA	
I_{OS}	$V_{CC}=\text{MAX},$	-15		-100	-15	-100	mA	
I_{CCH}^\dagger	$V_{CC}=\text{MAX},$ All inputs at 0V	LS02	1.6	3.2	1.6	3.2	mA	
		LS27	2.0	4.0	2.0	4.0		
I_{CCL}	$V_{CC}=\text{MAX},$ All inputs at 5V	LS02	2.8	5.4	2.8	5.4	mA	
		LS027	3.4	6.8	3.4	6.8		

*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}		5	11		6.0	11		8	13	ns
t_{PHL}		7	14		6.0	12		4	14	ns
Test Conditions: $C_L = 50\text{pF}, R_L = 2\text{k}\Omega$ (See Fig. A, page 2-174)										
t_{PLH}		8	13		8	13		10	15	ns
t_{PHL}		10	15		7	14		7	15	ns

