

Quadruple 2-Input Exclusive-OR, -NOR Gates With Open-Collector Outputs

PIN-OUT AND LOGIC DIAGRAMS

<p style="text-align: center;">LS136 QUADRUPLE 2-INPUT EXCLUSIVE-OR WITH OPEN-COLLECTOR OUTPUTS</p> <p style="text-align: center;">Die Size .045 x .056 positive logic: $Y = A \oplus B = \overline{A}B + A\overline{B}$</p>	<p style="text-align: center;">LS266 QUADRUPLE 2-INPUT EXCLUSIVE-NOR WITH OPEN-COLLECTOR OUTPUTS</p> <p style="text-align: center;">Die Size .045 x .056 positive logic: $Y = A \odot B = AB + \overline{A}\overline{B}$</p>
---	---

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 voltage, V_{OH}			5.5			5.5	V
Low-level output current, I_{OL}			4			8	mA
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
I_{OH}	$V_{CC} = \text{MIN}, V_{IH} = 2\text{V}, V_{IL} = V_{IL\text{max}}, V_{OH} = 5.5\text{V}$			100			100	μA
V_{OL}	$V_{CC} = \text{MIN}, V_{IH} = 2\text{V}, V_{IL} = V_{IL\text{max}}$	$I_{OL} = 4\text{mA}$	0.25	0.4	0.25	0.4		V
		$I_{OL} = 8\text{mA}$			0.35	0.5		
I_I	$V_{CC} = \text{MAX}, V_I = 7\text{V}$			0.2			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_{CC}^\dagger	LS266		8	13		8	13	mA
	LS136	$V_{CC} = \text{MAX},$	6.1	10	6.1	10		

*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 $V_{CC} = 5\text{V}, T_A = 25^\circ\text{C}$.

† I_{CC} is measured with one input of each gate at 4.5V, the other inputs grounded, and the outputs open.

Quadruple 2-Input Exclusive-OR, -NOR Gates With Open-Collector Outputs

LS136 LS266

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

Parameter	From (input)	To (output)	-55°C			+25°C			+125°C			Unit
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Test Conditions: $C_L = 15pF$, $R_L = 2k\Omega$ (See Figure B on page 2-174)												
t_{PLH}	A or B	Other input low		14	18		13	17		20	26	ns
t_{PHL}				10	16		9	14		10	16	
t_{PLH}	A or B	Other input high		12	16		13	17		8	12	ns
t_{PHL}				10	16		18	13		7	12	
Test Conditions: $C_L = 50pF$, $R_L = 2k\Omega$ (See Figure B on page 2-174)												
t_{PLH}	A or B	Other input low		31	35		30	35		36	42	ns
t_{PHL}				16	23		13	19		14	21	
t_{PLH}	A or B	Other input high		30	35		31	36		35	41	ns
t_{PHL}				19	23		13	19		13	19	

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