

DN74LS136 *N74LS136*

Quad 2-input Exclusive OR Gates (with Open Collector Outputs)

■ Description

DN74LS136 contains four 2-input exclusive OR gate circuits with open collector outputs.

■ Features

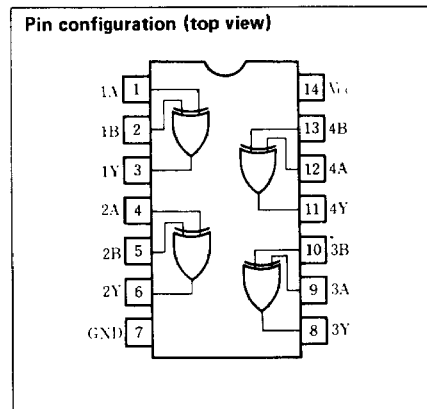
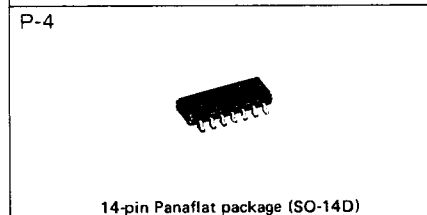
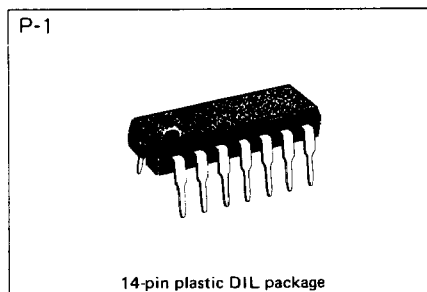
- “Wired” AND capability
- Low power consumption ($P_d = 30.5\text{mW}$ typical)
- High speed ($t_{pd} = 18\text{ns}$ typical)
- Wide operating temperature range ($T_a = -20$ to $+75^\circ\text{C}$)

■ Truth tables

Inputs		Outputs
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	L

Notes

1. H: HIGH voltage level.
2. L: LOW voltage level.



■ Recommended operating conditions

Parameter	Sym	Min	Typ	Max	Unit
Supply voltage	V_{CC}	4.75	5.00	5.25	V
HIGH level output voltage	V_{OH}			5.5	V
LOW level output voltage	I_{OL}			8	mA
Operating temperature range	T_{opr}	-20	25	75	$^\circ\text{C}$

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■ DC characteristics (Ta = -20 ~ +75°C)

Parameter	Sym	Test conditions	Min	Typ*	Max	Unit
Input voltage	V _{IH}		2.0			V
	V _{IL}				0.8	V
Output current	I _{OH}	V _{CC} = 4.75V, V _{IH} = 2V V _{IL} = 0.8V, V _{OH} = 5.5V			100	μA
Output voltage	V _{OL1}	V _{CC} = 4.75V V _{IH} = 2V I _{OL} = 4mA		0.25	0.4	V
	V _{OL2}	V _{CC} = 4.75V V _{IH} = 2V I _{OL} = 8mA		0.35	0.5	V
Input current	I _{IH}	V _{CC} = 5.25V V _I = 2.7V			40	μA
	I _{IL}	V _{CC} = 5.25V V _I = 0.4V			-0.8	mA
	I _I	V _{CC} = 5.25V V _I = 7V			0.2	mA
Input clamp voltage	V _{IK}	V _{CC} = 4.75V I _I = -18mA			-1.5	V
Supply current**	I _{CC}	V _{CC} = 5.25V		6.1	10	mA

* When constant at V_{CC} = 5V, Ta = 25°C.

** I_{CC} is measured with all outputs open and 4.5V applied to one side of each gate while the other side is grounded.

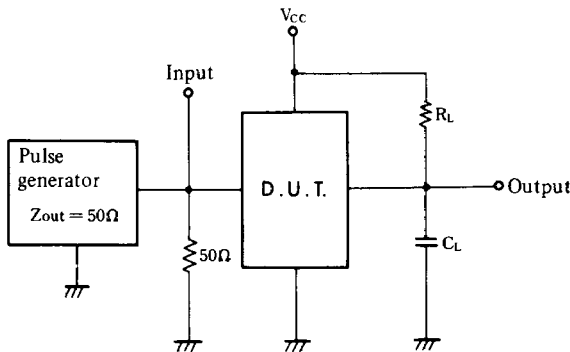
■ Switching characteristics (V_{CC} = 5V, Ta = 25°C)

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Parameter	Sym	Inputs	Test conditions	Min	Typ	Max	Unit
Propagation delay time	t _{PLH}	A or B	Other input = LOW C _L = 15pF		18	30	ns
	t _{PHL}				18	30	
	t _{PLH}	A or B	Other input = HIGH R _L = 2KΩ		18	30	ns
	t _{PHL}				18	30	

※ Switching parameter measurement information

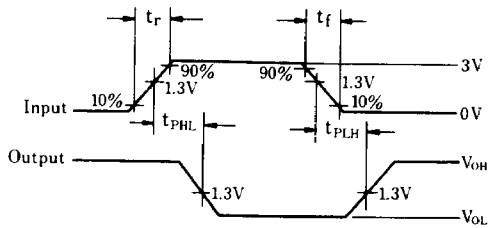
1. Measurement circuit



Notes

1. C_L includes probe and tool floating capacitance.

2. Waveforms



Notes

1. Input waveform: tr ≤ 15ns, tf ≤ 6ns, PRR = 1MHz, duty cycle 50%