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 = 30.5mW typical)
- High speed (t_{pd} = 18ns typical)
- Wide operating temperature range (Ta = −20 to +75°C)

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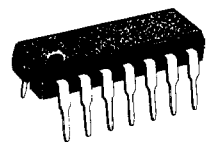

14-pin plastic DIL package

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14-pin Panaflat package (SO-14D)

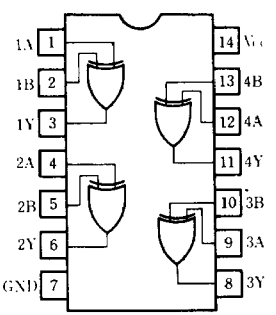
■ Truth tables

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.

Pin configuration (top view)



■ 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	Topr	−20	25	75	℃

■ DC characteristics ($Ta = -20 \sim +75℃$)

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}	$V_{CC}=4.75V$ $V_{IH}=2V$ $V_{IL}=0.8V$	$I_{OL}=4mA$		0.25	0.4	V
	V_{OL2}		$I_{OL}=8mA$		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.

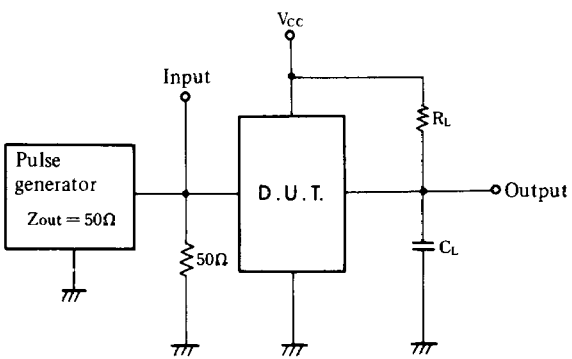
** I_{CC} is measured with all outputs open and 4.5V applied to one side of each gate while the other side is grounded.

■ Switching characteristics ($V_{CC}=5V$, $Ta=25℃$)

Parameter	Sym	Inputs	Test conditions		Min	Typ	Max	Unit
Propagation delay time	t_{PLH}	A or B	Other input = LOW	$C_L=15pF$ $R_L=2K\Omega$		18	30	ns
	t_{PHL}					18	30	
	t_{PLH}	A or B	Other input = HIGH			18	30	ns
	t_{PHL}					18	30	

※ Switching parameter measurement information

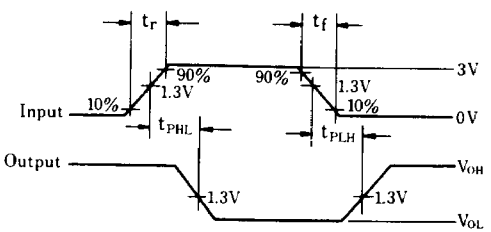
1. Measurement circuit



Notes

1. C_L includes probe and tool floating capacitance.

2. Waveforms



Notes

1. Input waveform: $t_r \leqq 15ns$, $t_f \leqq 6ns$, PRR=1MHz duty cycle 50%