

DN74LS386 N74LS386

Quad 2-input Exclusive OR Gates

■ Description

DN74LS386 contains four 2-input exclusive OR gate circuits.

■ Features

- Low power consumption ($P_d = 30.5\text{mW}$ typical)
- High speed ($t_{pd} = 11\text{ns}$ typical)
- Low output impedance
- Wide operating temperature range ($T_a = -20$ to $+75^\circ\text{C}$)

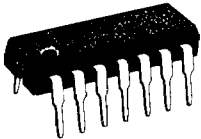
■ Truth tables

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

Notes

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

P-1



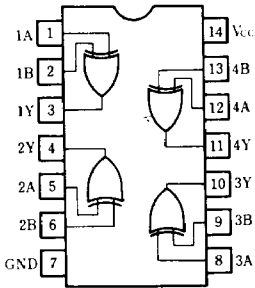
14-pin plastic DIL package

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14-pin Panaflat package (SO-14D)

Pin configuration (top view)



■ Recommended operating conditions

Parameter	Sym	Min	Typ	Max	Unit
Supply voltage	V_{cc}	4.75	5.00	5.25	V
Output current	I_{OH}			-400	μA
	I_{OL}			8	mA
Operating temperature range	T_{opr}	-20	25	75	$^\circ\text{C}$

■ DC characteristics ($T_a = -20 \sim +75^\circ\text{C}$)

Parameter	Sym	Test conditions	Min	Typ*	Max	Unit
Input voltage	V_{IH}		2.0			V
	V_{IL}				0.8	V
Output voltage	V_{OH}	$V_{CC} = 4.75\text{V}$, $V_{IH} = 2\text{V}$ $V_{IL} = 0.8\text{V}$, $I_{OH} = -400\mu\text{A}$	2.7	3.4		V
	V_{OL1}	$V_{CC} = 4.75\text{V}$ $V_{IH} = 2\text{V}$, $I_{OL} = 4\text{mA}$		0.25	0.4	V
	V_{OL2}	$V_{IL} = 0.8\text{V}$, $I_{OL} = 8\text{mA}$		0.35	0.5	V
Input current	I_{IH}	$V_{CC} = 5.25\text{V}$ $V_I = 2.7\text{V}$			40	μA
	I_{IL}	$V_{CC} = 5.25\text{V}$ $V_I = 0.4\text{V}$			-0.8	mA
	I_I	$V_{CC} = 5.25\text{V}$ $V_I = 7\text{V}$			0.2	mA
Output short circuit current**	I_{OS}	$V_{CC} = 5.25\text{V}$, $V_O = 0\text{V}$	-15		-100	mA
Input clamp voltage	V_{IK}	$V_{CC} = 4.75\text{V}$ $I_I = -18\text{mA}$			-1.5	V
Supply current***	I_{CC}	$V_{CC} = 5.25\text{V}$		6.1	10	mA

* When constant at $V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$.

** Only one output at a time short circuited to GND. Also, short circuit time to GND within 1 second.

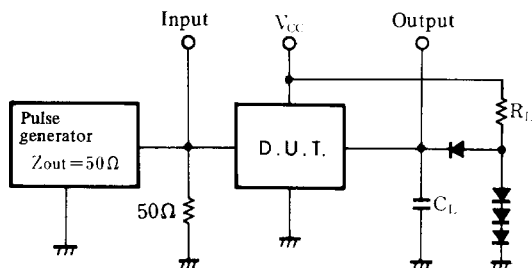
*** Measured with all outputs open and all inputs grounded.

■ Switching characteristics ($V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$)

Parameter	Sym	Inputs	Test conditions	Min	Typ	Max	Unit
Propagation delay time	t_{PLH}	A or B	Other input = LOW $C_L = 15\text{pF}$ $R_L = 2\text{k}\Omega$		12	23	ns
	t_{PHL}				10	17	
	t_{PLH}	A or B	Other input = HIGH		20	30	ns
	t_{PHL}				13	22	

※ Switching parameter measurement information

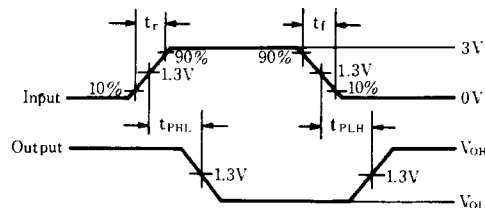
1. Measurement circuit



Notes

1. C_L includes probe and tool floating capacitance.
2. Diodes are all MA161 or equivalent.

2. Waveforms



Notes

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