

DN74LS10

Triple 3-input Positive NAND Gates

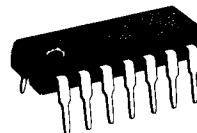
Description

DN74LS10 contains three 3-input positive isolation NAND gate circuits.

Features

- Low power consumption ($P_d = 6\text{mW}$ typical)
- High speed ($t_{pd} = 10\text{ns}$ typical)
- Low output impedance
- Wide operating temperature range ($T_a = -20$ to $+75^\circ\text{C}$)

P-1



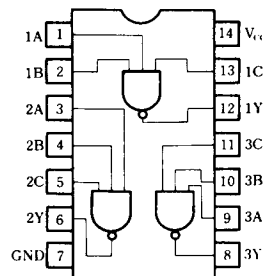
14-pin plastic DIL package

P-4



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}	$V_{CC} = 4.75\text{V}$, $V_{IL} = 0.8\text{V}$ $V_{IH} = 2\text{V}$, $I_{OH} = -400\mu\text{A}$	2.7	3.4		V
	V_{OL1}	$V_{CC} = 4.75\text{V}$		0.25	0.4	V
	V_{OL2}	$V_{IH} = 2\text{V}$		0.35	0.5	V
		$I_{OL} = 8\text{mA}$				
Input current	I_{IH}	$V_{CC} = 5.25\text{V}$ $V_I = 2.7\text{V}$			20	μA
	I_{IL}	$V_{CC} = 5.25\text{V}$ $V_I = 0.4\text{V}$			-0.4	mA
	I_I	$V_{CC} = 5.25\text{V}$ $V_I = 7\text{V}$			0.1	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_{CCH}	$V_{CC} = 5.25\text{V}$		0.6	1.2	mA
	I_{CCL}	$V_{CC} = 5.25\text{V}$		1.8	3.3	mA

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

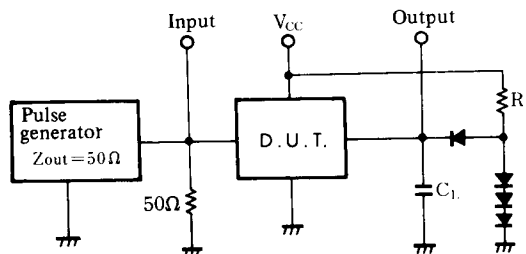
** Only one output at a time short circuited to GND. Also, short circuit time to GND within 1 second.

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

Parameter	Sym	Test conditions	Min	Typ	Max	Unit
Propagation delay time	t_{PLH}	$C_L = 15\text{pF}$, $R_L = 2\text{k}\Omega$		9	15	ns
	t_{PHL}			10	15	ns

※ Switching parameter measurement information

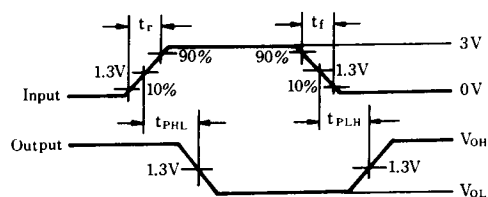
1. Measurement circuit



Notes

- C_L includes probe and tool floating capacitance.
- Diodes are all MA161.

2. Waveforms



Notes

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