

DN74LS14

Hex Schmitt-Trigger Inverters

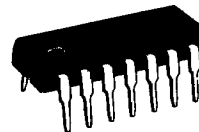
Description

DN74S14 contains six inverter circuits with Schmitt triggers.

Features

- Ideal for waveform shaping
- Low power consumption ($P_d = 50\text{mW}$ typical)
- High speed ($t_{pd} = 15\text{ns}$ typical)
- Wide operating temperature range ($T_a = -20$ to $+75^\circ\text{C}$)

P-1



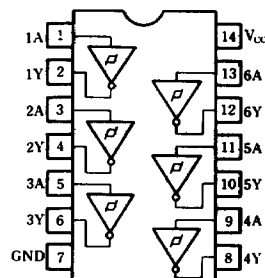
14-pin plastic DIL package

P-4



14-pin Pinflat 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 threshold voltage	V_{T+}	$V_{CC} = 5\text{V}$	1.4	1.6	1.9	V
	V_{T-}	$V_{CC} = 5\text{V}$	0.5	0.8	1.0	V
Hysteresis	ΔV_T	$V_{CC} = 5\text{V}$	0.4	0.8		V
Output voltage	V_{OH}	$V_{CC} = 4.75\text{V}$, $I_{OH} = -400\mu\text{A}$ $V_I = 0.5\text{V}$	2.7	3.4		V
	V_{OL}	$V_{CC} = 4.75\text{V}$, $I_{OL} = 4\text{mA}$ $V_I = 1.9\text{V}$		0.25	0.4	V
	V_{OL}	$V_{CC} = 4.75\text{V}$, $I_{OL} = 8\text{mA}$ $V_I = 1.9\text{V}$		0.35	0.5	V
Input threshold current	I_{T+}	$V_{CC} = 5\text{V}$ $V_I = V_{T+}$		-0.14		mA
	I_{T-}	$V_{CC} = 5\text{V}$ $V_I = V_{T-}$		-0.18		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}	$V_{CC} = 4.75\text{V}$ $V_I = -18\text{mA}$			-1.5	V
Supply current	I_{CCH}	$V_{CC} = 5.25\text{V}$		8.6	16	mA
	I_{CCL}	$V_{CC} = 5.25\text{V}$		12	21	mA

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

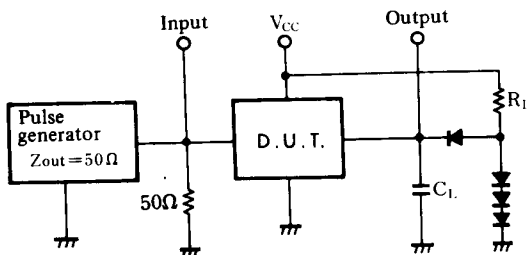
** Only one output at a time short circuited to GND. Also, short circuit time to GND within 1 second.

■ 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}	$C_L = 15\text{pF}$, $R_I = 2\text{k}\Omega$		15	22	ns
	t_{PHL}			15	22	ns

※ Switching parameter measurement information

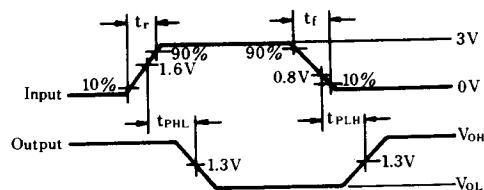
1. Measurement circuit



Notes

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

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%.