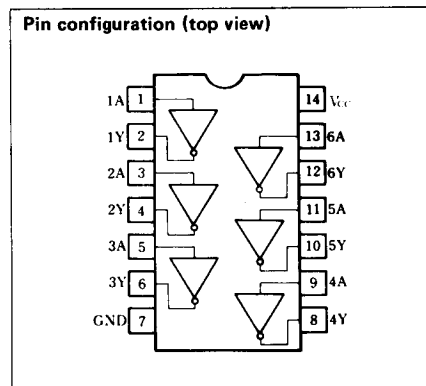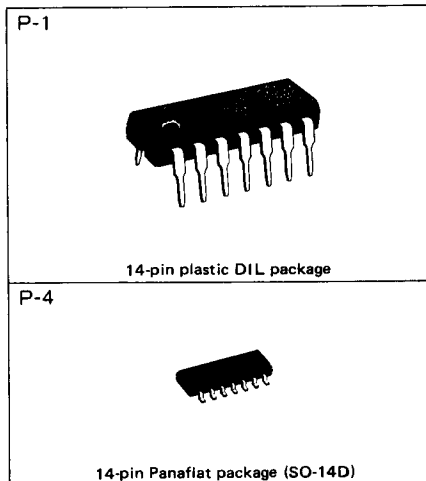# DN74LS05

Hex Inverters (with Open Collector Outputs)

■ Description

DN74LS05 contains six inverter circuits with open collector outputs.

■ Features

- "Wired" AND capability
- Low power consumption (P_d = 12mW typical)
- High speed (t_{pd} = 16ns typical)
- Wide operating temperatures range (Ta = −20 to +75°C)

P-1

14-pin plastic DIL package

P-4

14-pin Panaflat package (SO-14D)

Pin configuration (top view)

Pin		Pin	
1A	1	14	Vcc
1Y	2	13	6A
2A	3	12	6Y
2Y	4	11	5A
3A	5	10	5Y
3Y	6	9	4A
GND	7	8	4Y

■ 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 ~ +75℃)

Parameter	Sym	Test conditions		Min	Typ*	Max	Unit
Input voltage	V_{IH}			2.0			V
	V_{IL}					0.8	V
Output voltage	V_{OL1}	$V_{CC} = 4.75V$ $V_{IH} = 2V$	$I_{OL} = 4mA$		0.25	0.4	V
	V_{OL2}		$I_{OL} = 8mA$		0.35	0.5	V
Input current	I_{IH}	$V_{CC} = 5.25V$ $V_I = 2.7V$				20	μA
	I_{IL}	$V_{CC} = 5.25V$ $V_I = 0.4V$				−0.4	mA
	I_I	$V_{CC} = 5.25V$ $V_I = 7V$				0.1	mA
Output current	I_{OH}	$V_{CC} = 4.75V$, $V_{IL} = 0.8V$ $V_{OH} = 5.5V$				100	μA
Input clamp voltage	V_{IK}	$V_{CC} = 4.75V$ $I_I = −18mA$				−1.5	V
Supply current	I_{CCH}	$V_{CC} = 5.25V$			1.2	2.4	mA
	I_{CCL}	$V_{CC} = 5.25V$			3.6	6.6	mA

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

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

Parameter	Sym	Test conditions	Min	Typ	Max	Unit
Propagation delay time	t_{PLH}	$C_L = 15pF$, $R_L = 2k\Omega$		17	32	ns
	t_{PHL}			15	28	ns

※ Switching parameter measurement information

1. Measurement circuit
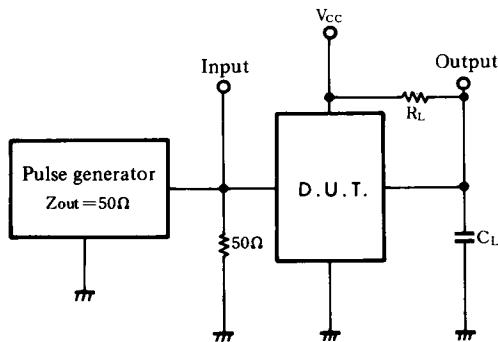
2. Waveforms

Notes
1. C_L includes probe and tool floating capacitance.
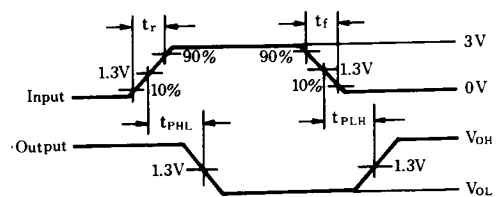
Notes
1. Input waveform: $t_r \leqq 15ns$, $t_f \leqq 6ns$, PRR = 1MHz, duty cycle = 50%.