

DN74LS09

Quad 2-input Positive AND Gates (with Open Collector Outputs)

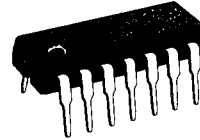
■ Description

DN74LS09 contains four 2-input positive isolation AND gate circuits with open collector outputs.

■ Features

- “Wired” AND capability
- Low power consumption ($P_d = 17\text{mW}$ typical)
- High speed ($t_{pd} = 18.5\text{ns}$ typical)
- Wide operating temperature range ($T_a = -20$ to $+75^\circ\text{C}$)

P-1



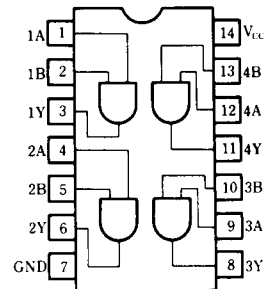
14-pin plastic DIL package

P-4



14-pin 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
HIGH level output voltage	V_{OH}			5.5	V
LOW level output voltage	I_{OL}			8	mA
Operating temperature range	T_{opr}	-20	25	75	$^\circ\text{C}$

■ DC characteristics (Ta = -20 ~ +75°C)

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	I _{O1} = 4 mA		0.25	0.4	V
	V _{OL2}	V _{IL} = 0.8V	I _{O1} = 8 mA		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 _{IH} = 2V V _{O1} = 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			2.4	4.8	mA
	I _{CC1}	V _{CC} = 5.25V			4.4	8.8	mA

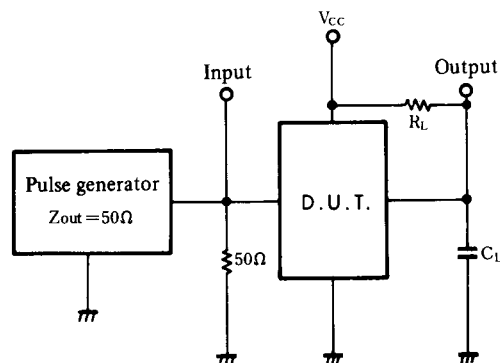
* When constant at V_{CC} = 5V, Ta = 25°C.

■ Switching characteristics (V_{CC} = 5V, Ta = 25°C)

Parameter	Sym	Test conditions	Min	Typ	Max	Unit
Propagation delay time	t _{PLH}	C _L = 15pF, R _L = 2kΩ		20	35	ns
	t _{PHL}			17	35	ns

※ Switching parameter measurement information

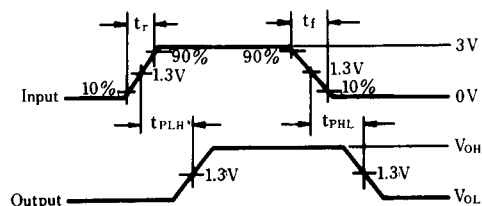
1. Measurement circuit



Notes

- C_L includes probe and tool floating capacitance.

2. Waveforms



Notes

- Input waveform: t_r ≤ 15ns, t_f ≤ 6ns, PRR = 1MHz, duty cycle = 50%.