

DN74LS38

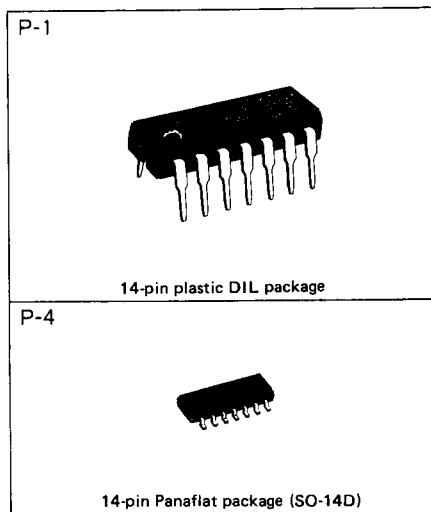
Quad 2-input Positive NAND Buffers (with Open Collector Outputs)

Description

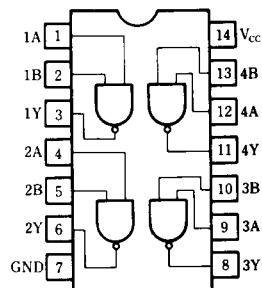
DN74LS38 contains four 2-input positive isolation NAND buffer gate circuits with open collector outputs.

Features

- “Wired” AND capability
- High fan-out ($I_{OL} = 24\text{mA}$ maximum)
- Low power consumption ($P_d = 17.5\text{mW}$ typical)
- High speed ($t_{pd} = 19\text{ns}$ typical)
- Wide operating temperature range ($T_a = -20$ to $+75^\circ\text{C}$)



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}			24	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} = 4.75 V	I _{OL} = 12 mA		0.25	0.4	V
	V _{OL2}	V _{IH} = 2 V	I _{OL} = 24 mA		0.35	0.5	V
Input current	I _{IH}	V _{CC} = 5.25 V	V _I = 2.7 V			20	μA
	I _{IL}	V _{CC} = 5.25 V	V _I = 0.4 V			-0.4	mA
	I _I	V _{CC} = 5.25 V	V _I = 7 V			0.1	mA
Output current	I _{OH}	V _{CC} = 4.75 V, V _I = 0.8 V	V _{OH} = 5.5 V			250	μA
Input clamp voltage	V _{IK}	V _{CC} = 4.75 V	I _I = -18 mA			-1.5	V
Supply current	I _{CCH}	V _{CC} = 5.25 V			0.9	2.0	mA
	I _{CCL}	V _{CC} = 5.25 V			6	12	mA

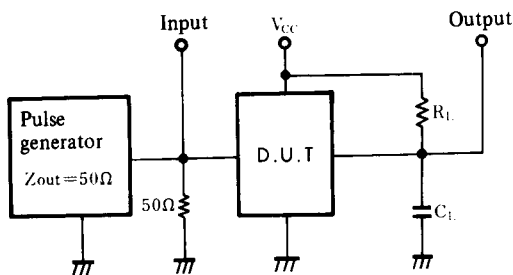
* When constant at V_{CC} = 5V, Ta = 25°C.

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

Parameter	Sym	Test conditions	Min	Typ	Max	Unit
Propagation delay time	t _{PLH}	C _L = 45 pF, R _L = 667 Ω		20	32	ns
	t _{PHL}			18	28	ns

※ Switching parameter measurement information

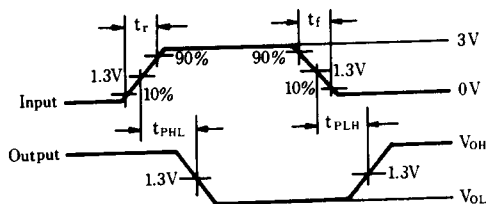
1. Measurement circuit



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 ≤ 15ns, t_f ≤ 6ns, PRR = 1MHz, duty cycle = 50%.