

3001A

Original CMOS Standard Logic LC4900B Series

# Triple Inverter

©1102C

The LC4969 is a triple inverter (EIA/JEDEC standards-met IC product) having such features as wide operating voltage range, high noise immunity, low power dissipation.

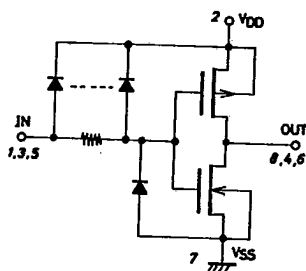
**Absolute Maximum Ratings/ $T_a=25^{\circ}\text{C}$ ,  $V_{SS}=0\text{V}$**

Maximum Supply Voltage	$V_{DD}$ max	$V_{SS}-0.5$ to $V_{SS}+20$	unit
Input Voltage	$V_{IN}$ max	$V_{SS}-0.5$ to $V_{DD}+0.5$	V
Output Voltage	$V_{OUT}$ max	$V_{SS}-0.5$ to $V_{DD}+0.5$	V
Input Current	$I_{IN}$	$\pm 10$	mA
Allowable Power Dissipation	$P_d$ max	$T_a \leq 85^{\circ}\text{C}$	150
Lead Temperature. Time	$T_{sol}$	$t=10\text{sec}$	260
Operating Temperature	$T_{opg}$	-40 to +85	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$	-65 to +150	$^{\circ}\text{C}$

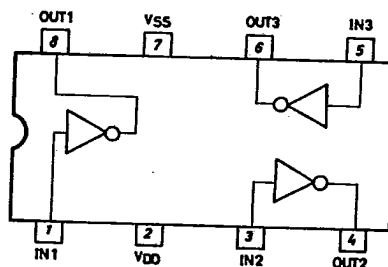
**Allowable Operating Conditions/ $T_a=-40$  to  $+85^{\circ}\text{C}$ ,  $V_{SS}=0\text{V}$**

Supply Voltage	$V_{DD}$	3 to 18	unit
Input Voltage	$V_{IN}$	0 to $V_{DD}$	V

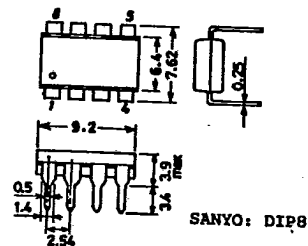
**Equivalent Circuit (1/3 LC4969)**



**Pin Assignment and Block Diagram**



**Case Outline 3001A-D8IC (unit:mm)**



5066AT/ 7164KI/ 2093 KI, TS/II No. 1102-1/4

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Electrical Characteristics/ $T_a=85^\circ\text{C}$ ,  $V_{SS}=0\text{V}$ 

		min	typ	max	unit
"H" Level Output Voltage $V_{OH}$	$V_{DD}=5\text{V}$ , $ I_{OUT}  < 1\ \mu\text{A}$ , $V_{IN}=V_{SS}$	4.95			V
	$V_{DD}=10\text{V}$ , " "	9.95			V
	$V_{DD}=15\text{V}$ , " "	14.95			V
"L" Level Output Voltage $V_{OL}$	$V_{DD}=5\text{V}$ , $ I_{OUT}  < 1\ \mu\text{A}$ , $V_{IN}=V_{DD}$			0.05	V
	$V_{DD}=10\text{V}$ , " "			0.05	V
	$V_{DD}=15\text{V}$ , " "			0.05	V
"H" Level Output Current $I_{OH}$	$V_{DD}=5\text{V}$ , $V_O=4.6\text{V}$ , $V_{IN}=V_{SS}$	-0.36			mA
	$V_{DD}=10\text{V}$ , $V_O=9.5\text{V}$ , " "	-0.9			mA
	$V_{DD}=15\text{V}$ , $V_O=13.5\text{V}$ , " "	-2.4			mA
"L" Level Output Current $I_{OL}$	$V_{DD}=5\text{V}$ , $V_O=0.4\text{V}$ , $V_{IN}=V_{DD}$	0.36			mA
	$V_{DD}=10\text{V}$ , $V_O=0.5\text{V}$ , " "	0.9			mA
	$V_{DD}=15\text{V}$ , $V_O=1.5\text{V}$ , " "	2.4			mA
"H" Level Input Voltage $V_{IH}$	$V_{DD}=5\text{V}$ , $V_O=0.5\text{V}$ , $ I_{OUT}  < 1\ \mu\text{A}$	4			V
	$V_{DD}=10\text{V}$ , $V_O=1.0\text{V}$ , " "	8			V
	$V_{DD}=15\text{V}$ , $V_O=1.5\text{V}$ , " "	12.5			V
"L" Level Input Voltage $V_{IL}$	$V_{DD}=5\text{V}$ , $V_O=4.5\text{V}$ , $ I_{OUT}  < 1\ \mu\text{A}$			1.0	V
	$V_{DD}=10\text{V}$ , $V_O=9.0\text{V}$ , " "			2.0	V
	$V_{DD}=15\text{V}$ , $V_O=13.5\text{V}$ , " "			2.5	V
Input Current $I_{IN}$	$V_{DD}=18\text{V}$			$\pm 1.0$	$\mu\text{A}$
Quiescent Current Dissipation $I_{DD}$	$V_{DD}=5\text{V}$ , $V_{IN}=V_{SS}$ , $V_{DD}$			7.5	$\mu\text{A}$
	$V_{DD}=10\text{V}$ , " "			15	$\mu\text{A}$
	$V_{DD}=15\text{V}$ , " "			30	$\mu\text{A}$

Note) Current direction: (+, no sign: Flowing into device, -: Flowing out of device).

Switching Characteristics/ $T_a=25\pm 2^\circ\text{C}$ ,  $C_U=50\text{pF}$ ,  $V_{SS}=0\text{V}$ 

		min	typ	max	unit
"H" Level Propagation Delay Time	$t_{PLH}$				
	$V_{DD}=5\text{V}$		100	180	ns
	$V_{DD}=10\text{V}$		60	120	ns
"L" Level Propagation Delay Time	$t_{PHL}$				
	$V_{DD}=5\text{V}$		50	100	ns
	$V_{DD}=10\text{V}$		75	150	ns
Output Rise Time	$t_{TLH}$				
	$V_{DD}=5\text{V}$		40	100	ns
	$V_{DD}=15\text{V}$		35	80	ns
Output Fall Time	$t_{THL}$				
	$(t_r)$				
	$V_{DD}=5\text{V}$		130	400	ns
	$(t_f)$				
	$V_{DD}=10\text{V}$		65	200	ns
	$V_{DD}=15\text{V}$		50	160	ns
	$t_{THL}$				
	$(t_f)$				
	$V_{DD}=5\text{V}$		100	200	ns
	$(t_f)$				
	$V_{DD}=10\text{V}$		50	100	ns
	$V_{DD}=15\text{V}$		40	80	ns

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Switching Time Test Circuit and Waveforms

