T-43-21

LC4969

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.

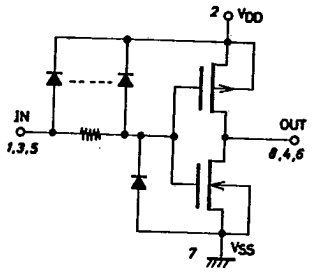
Absolute Maximum Ratings/T_a=25°C, V_{SS}=0V

				unit
Maximum Supply Voltage	V_{DD} max		V_{SS}–0.5 to V_{SS}+20	V
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}		±10	mA
Allowable Power Dissipation	P_d max	$T_a \leqq 85°C$	150	mW
Lead Temperature. Time	T_{sol}	t=10sec	260	°C
Operating Temperature	T_{opg}		–40 to +85	°C
Storage Temperature	T_{stg}		–65 to +150	°C

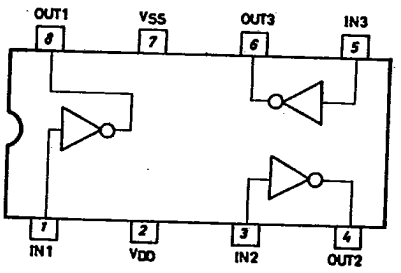
Allowable Operating Conditions/T_a=–40 to +85°C, V_{SS}=0V

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

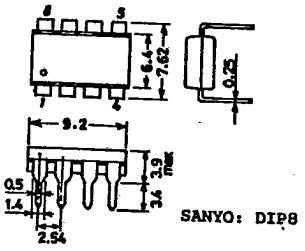
Equivalent Circuit (1/3 LC4969)



Pin Assignement and Block Diagram



Case Outline 3001A-D8IC
(unit:mm)



SANYO: DIP8

Electrical Characteristics/T_a=25°C, V_{SS}=0

			min	typ	max	unit
"H" Level Output Voltage	V_{OH}	V_{DD}=5V, $\|I_{OUT}\|$<1μA, V_{IN}=V_{SS}	4.95			V
		V_{DD}=10V, 〃 〃	9.95			V
		V_{DD}=15V, 〃 〃	14.95			V
"L" Level Output Voltage	V_{OL}	V_{DD}=5V, $\|I_{OUT}\|$<1μA, V_{IN}=V_{DD}			0.05	V
		V_{DD}=10V, 〃 〃			0.05	V
		V_{DD}=15V, 〃 〃			0.05	V
"H" Level Output Current	I_{OH}	V_{DD}=5V, V_O=4.6V, V_{IN}=V_{SS}	−0.51	−1.0		mA
		V_{DD}=10V, V_O=9.5V, 〃	−1.3	−2.6		mA
		V_{DD}=15V, V_O=13.5V, 〃	−3.4	−6.8		mA
"L" Level Output Current	I_{OL}	V_{DD}=5V, V_O=0.4V, V_{IN}=V_{DD}	0.51	1.0		mA
		V_{DD}=10V, V_O=0.5V, 〃	1.3	2.6		mA
		V_{DD}=15V, V_O=1.5V, 〃	3.4	6.8		mA
"H" Level Input Voltage	V_{IH}	V_{DD}=5V, V_O=0.5V, $\|I_{OUT}\|$<1μA	4			V
		V_{DD}=10V, V_O=1.0V 〃	8			V
		V_{DD}=15V, V_O=1.5V, 〃	12.5			V
"L" Level Input Voltage	V_{IL}	V_{DD}=5V, V_O=4.5V, $\|I_{OUT}\|$<1μA			1.0	V
		V_{DD}=10V, V_O=9.0V, 〃			2.0	V
		V_{DD}=15V, V_O=13.5V, 〃			2.5	V
Input Current	I_{IN}	V_{DD}=18V			$\pm10^{-5}$	±1.0 μA
Quiescent Current Dissipation	I_{DD}	V_{DD}=5V, V_{IN}=V_{SS}, V_{DD}		0.01	0.25	μA
		V_{DD}=10V, 〃		0.01	0.5	μA
		V_{DD}=15V, 〃		0.01	1.0	μA
Input Capacitance	C_{IN}			7.5	15	pF

Electrical Characteristics/T_a=−40°C, V_{SS}=0V

			min	typ	max	unit
"H" Level Output Voltage	V_{OH}	V_{DD}=5V, $\|I_{OUT}\|$<1μA, V_{IN}=V_{SS}	4.95			V
		V_{DD}=10V, 〃 〃	9.95			V
		V_{DD}=15V, 〃 〃	14.95			V
"L" Level Output Voltage	V_{OL}	V_{DD}=5V, $\|I_{OUT}\|$<1μA, V_{IN}=V_{DD}			0.05	V
		V_{DD}=10V, 〃 〃			0.05	V
		V_{DD}=15V, 〃 〃			0.05	V
"H" Level Output Current	I_{OH}	V_{DD}=5V, V_O=4.6V, V_{IN}=V_{SS}	−0.61			mA
		V_{DD}=10V, V_O=9.5V, 〃	−1.5			mA
		V_{DD}=15V, V_O=13.5V, 〃	−4			mA
"L" Level Output Current	I_{OL}	V_{DD}=5V, V_O=0.4V, V_{IN}=V_{DD}	0.61			mA
		V_{DD}=10V, V_O=0.5V, 〃	1.5			mA
		V_{DD}=15V, V_O=1.5V, 〃	4			mA
"H" Level Input Voltage	V_{IH}	V_{DD}=5V, V_O=0.5V, $\|I_{OUT}\|$<1μA	4			V
		V_{DD}=10V, V_O=1.0V, 〃	8			V
		V_{DD}=15V, V_O=1.5V, 〃	12.5			V
"L" Level Input Voltage	V_{IL}	V_{DD}=5V, V_O=4.5V, $\|I_{OUT}\|$<1μA			1.0	V
		V_{DD}=10V, V_O=9.0V, 〃			2.0	V
		V_{DD}=15V, V_O=13.5V 〃			2.5	V
Input Current	I_{IN}	V_{DD}=18V			±1.0	μA
Quiescent Current Dissipation	I_{DD}	V_{DD}=5V, V_{IN}=V_{SS}, V_{DD}			0.25	μA
		V_{DD}=10V, 〃			0.5	μA
		V_{DD}=15V, 〃			1.0	μA

LC4969 T-43-21

Electrical Characteristics/T_a=85°C, V_{SS}=0V

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

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

Switching Characteristics/T_a=25±2°C, C_u=50pF, V_{SS}=0V

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

Switching Time Test Circuit and Waveforms