

LC4584B

3003A

CMOS Standard Logic LC4000B Series

Hex Schmitt Trigger

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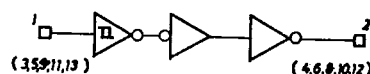
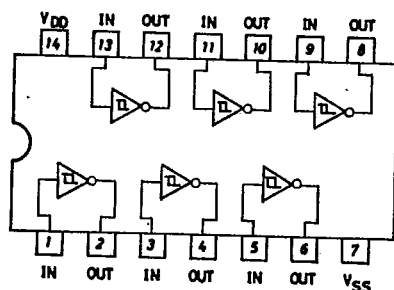
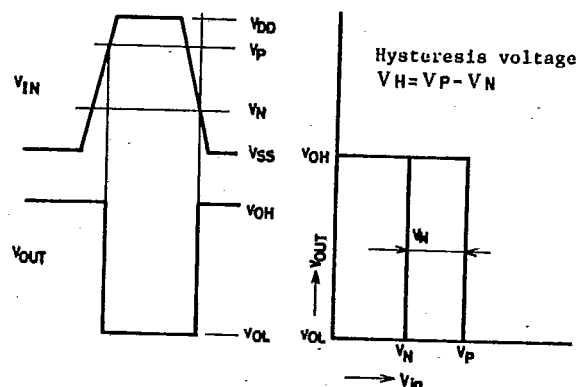
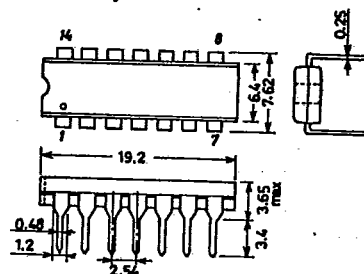
The LC4584B is a Schmitt inverter IC (B series) having such features as wide operating voltage range, high noise margin, low power dissipation.

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

Maximum Supply Voltage	V_{DD} max	$V_{SS}-0.5$ to $V_{SS}+20.0$	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}	± 10	mA
Allowable Power Dissipation	P_{Dmax} $T_a \leq 85^\circ\text{C}$	300	mW
Operating Temperature	T_{opg}	-40 to +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +150	$^\circ\text{C}$
Lead Temperature and Time	T_{sol} $t=10\text{sec}$	260	$^\circ\text{C}$

Allowable Operating Conditions at $T_a=-40$ to $+85^\circ\text{C}$

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

Logic Diagram**Pin Assignment****Input/Output Characteristic****Case Outline 3003A-D14IC (unit:mm)**

SANYO: DIP14

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Electrical Characteristics at $T_a=25^{\circ}\text{C}$, $V_{SS}=0\text{V}$

				V_{CC}	min	typ	max	unit
"H" Level Output Voltage	V_{OH}	$ I_{OUT} < 1\mu\text{A}$, $V_{IN}=V_{SS}$		5	4.95	5.00		V
				10	9.95	10.00		V
				15	14.95	15.00		V
"L" Level Output Voltage	V_{OL}	$ I_{OUT} < 1\mu\text{A}$, $V_{IN}=V_{DD}$		5		0.00	0.05	V
				10		0.00	0.05	V
				15		0.00	0.05	V
"H" Level Output Current	I_{OH}	$V_{IN}=V_{SS}$	$V_o=4.6\text{V}$	5	-0.44	-0.88		mA
			$V_o=9.5\text{V}$	10	-1.1	-2.25		mA
			$V_o=13.5\text{V}$	15	-3.0	-8.8		mA
"L" Level Output Current	I_{OL}	$V_{IN}=V_{DD}$	$V_o=0.4\text{V}$	5	0.44	0.88		mA
			$V_o=0.5\text{V}$	10	1.1	2.25		mA
			$V_o=1.5\text{V}$	15	3.0	8.8		mA
"H" Level Threshold Voltage	V_P	$ I_{OUT} < 1\mu\text{A}$	$V_o=0.4\text{V}$	5	3.5	2.75		V
("H" Level Input Voltage)	(V_{IH})		$V_o=0.5\text{V}$	10	7.0	5.50		V
			$V_o=1.5\text{V}$	15	11.0	8.25		V
"L" Level Threshold Voltage	V_N	$ I_{OUT} < 1\mu\text{A}$	$V_o=4.6\text{V}$	5		2.25	1.5	V
("L" Level Input Voltage)	(V_{IL})		$V_o=9.5\text{V}$	10		4.50	3.0	V
			$V_o=13.5\text{V}$	15		6.75	4.0	V
Hysteresis Voltage	V_H			5	0.5	1.0	2.0	V
(Hysteresis Voltage Range)	(V_{IH})			10	1.0	2.0	4.0	V
				15	2.0	4.0	6.0	V
"H"-Level Input Current	I_{IH}	$V_{IN}=18\text{V}$		18		10^{-5}	0.3	uA
"L"-Level Input Current	I_{IL}	$V_{DD}=0\text{V}$		18		-10^{-5}	-0.3	uA
Quiescent Device Current	I_{DD}			5		0.0005	1.0	uA
				10		0.001	2.0	uA
				15		0.0015	4.0	uA
Input Capacitance	C_{IN}						5	pF

Electrical Characteristics at $T_a=-40^{\circ}\text{C}$, $V_{SS}=0\text{V}$

				V_{CC}	min	typ	max	unit
"H" Level Output Voltage	V_{OH}	$ I_{OUT} < 1\mu\text{A}$, $V_{IN}=V_{SS}$		5	4.95			V
				10	9.95			V
				15	14.95			V
"L" Level Output Voltage	V_{OL}	$ I_{OUT} < 1\mu\text{A}$, $V_{IN}=V_{SS}$		5			0.05	V
				10			0.05	V
				15			0.05	V
"H" Level Output Current	I_{OH}	$V_{IN}=V_{SS}$	$V_o=4.6\text{V}$	5	-0.52			mA
			$V_o=9.5\text{V}$	10	-1.3			mA
			$V_o=13.5\text{V}$	15	-3.6			mA
"L" Level Output Current	I_{OL}	$V_{IN}=V_{DD}$	$V_o=0.4\text{V}$	5	0.52			mA
			$V_o=0.5\text{V}$	10	1.3			mA
			$V_o=1.5\text{V}$	15	3.6			mA
"H" Level Threshold Voltage	V_P	$ I_{OUT} < 1\mu\text{A}$	$V_o=0.4\text{V}$	5	3.5			V
("H" Level Input Voltage)	(V_{IH})		$V_o=0.5\text{V}$	10	7.0			V
			$V_o=1.5\text{V}$	15	11.0			V
"L" Level Threshold Voltage	V_N	$ I_{OUT} < 1\mu\text{A}$	$V_o=4.6\text{V}$	5			1.5	V
("L" Level Input Voltage)	(V_{IL})		$V_o=9.5\text{V}$	10			3.0	V
			$V_o=13.5\text{V}$	15			4.0	V
"H" Level Input Current	I_{IH}	$V_{DD}=18\text{V}$		18			0.3	uA
"L" Level Input Current	I_{IL}	$V_{DD}=0\text{V}$		18			-0.3	uA
Quiescent Device Current	I_{DD}			5			1.0	uA
				10			2.0	uA
				15			4.0	uA

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

				V_{CC}	min	typ	max	unit
"H" Level Output Voltage	V_{OH}	$ I_{OUT} < 1\mu\text{A}$, $V_{IN} = V_{SS}$		5	4.95			V
				10	9.95			V
				15	14.95			V
"L" Level Output Voltage	V_{OL}	$ I_{OUT} < 1\mu\text{A}$, $V_{IN} = V_{DD}$		5		0.05		V
				10		0.05		V
				15		0.05		V
"H" Level Output Current	I_{OH}	$V_{IN} = V_{SS}$	$V_O = 4.6\text{V}$	5	-0.36			mA
			$V_O = 9.5\text{V}$	10	-0.9			mA
			$V_O = 13.5\text{V}$	15	-2.4			mA
"L" Level Output Current	I_{OL}	$V_{IN} = V_{DD}$	$V_O = 0.4\text{V}$	5	0.36			mA
			$V_O = 0.5\text{V}$	10	0.9			mA
			$V_O = 1.5\text{V}$	15	2.4			mA
"H" Level Threshold Voltage (V_{IH})	V_P (V_{IH})	$ I_{OUT} < 1\mu\text{A}$	$V_O = 0.4\text{V}$	5	3.5			V
			$V_O = 0.5\text{V}$	10	7.0			V
			$V_O = 1.5\text{V}$	15	11.0			V
"L" Level Threshold Voltage (V_{IL})	V_N (V_{IL})	$ I_{OUT} < 1\mu\text{A}$	$V_O = 4.6\text{V}$	5		1.5		V
			$V_O = 9.5\text{V}$	10		3.0		V
			$V_O = 13.5\text{V}$	15		4.0		V
"H" Level Input Current	I_{IH}	$V_{IN} = 18\text{V}$		18		1.0		μA
"L" Level Input Current	I_{IL}	$V_{IN} = 0\text{V}$		18		-1.0		μA
Quiescent Device Current	I_{DD}			5		7.5		μA
				10		15.0		μA
				15		34.0		μA

Current Direction : + (no sign): Flowing into device
 - : Flowing out of device

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

		V_{DD}	min	typ	max	unit
Output Rise Time	t_{TLH} (t_r)	5		100	200	ns
		10		50	100	ns
		15		40	80	ns
Output Fall Time	t_{THL} (t_f)	5		100	200	ns
		10		50	100	ns
		15		40	80	ns
"H" Level Propagation Delay Time	t_{PLH}	5		125	250	ns
		10		50	100	ns
		15		40	80	ns
"L" Level Propagation Delay Time	t_{PHL}	5		125	250	ns
		10		50	100	ns
		15		40	80	ns

Switching Time Test Circuit and Waveforms