

LC4528B



3006B

CMOS Standard Logic LC4000B Series

Dual Monostable Multivibrator

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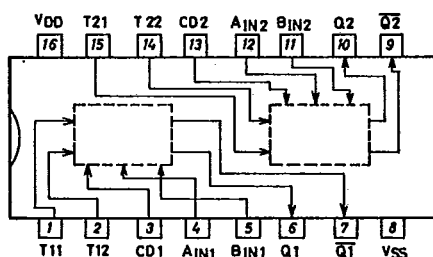
Use

- CMOS standard logic IC for logic circuit

Functions, Features

- Wide operating voltage range, high noise margin, low power dissipation.
- A dual, retriggerable, resettable monostable multivibrator.
- Triggering from leading edge (AIN) or trailing edge (BIN).
- Wide range of output pulse width obtainable by adjusting external resistor (R_X) and external capacitor (C_X).
- Asynchronous reset can be provided externally by setting input C_D to "L" level. Input C_D can be used as trigger inhibit input or can be used to shorten the period of time that elapses between the moment power is applied and the moment monostable operation mode is entered.

Pin Assignment & Circuit Configuration (top view)



Truth Table

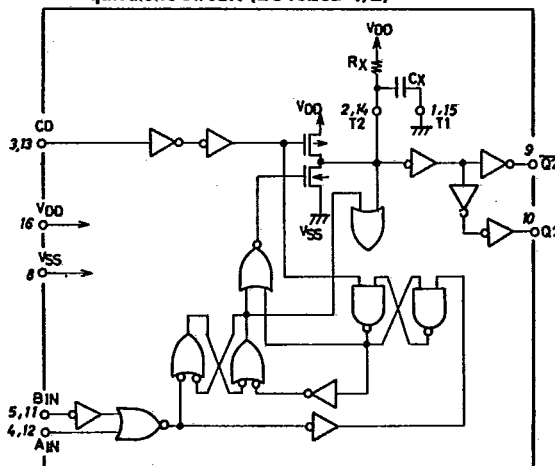
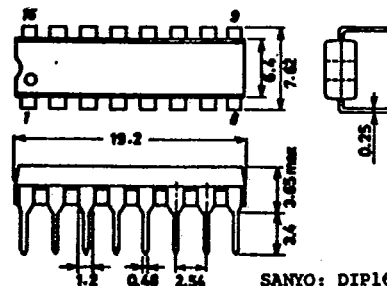
IN PUT			OUT PUT		Note
A	B	C_D	Q	$\bar{Q}$	
1	1	1			OUTPUT PULSE
1	0	1	0	1	INHIBIT
1	1	0	0	1	INHIBIT
0	1	1			OUTPUT PULSE
*	*	0	0	1	INHIBIT

1: [H] Level

0: [L] Level

*: don't care

Equivalent Circuit (LC4528B 1/2)

Case Outline 3006B-D16IC
(unit:mm)

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

Absolute Maximum Ratings at T _a =25°C, V _{SS} =0V			unit
Maximum Supply Voltage	V _{DD} max	V _{SS} -0.5~V _{SS} +20	V
Input Voltage	V _{IN} max	V _{SS} -0.5~V _{DD} +0.5	V
Output Voltage	V _{OUT} max	V _{SS} -0.5~V _{DD} +0.5	V
Input Current	I _{IN}	±10	mA
Allowable Power Dissipation	P _d max	T _a ≤ 85°C 300	mW
Operating Temperature	T _{OP}	-40~+85	°C
Storage Temperature	T _{Stg}	-65~+150	°C
Lead Temperature and Time	10 sec.	260	°C

Allowable Operating Conditions at $T_a=25\pm 2^\circ\text{C}$, $V_{SS}=0\text{V}$

Allowable Operating Conditions at $T_a = 25 \pm 2^\circ\text{C}$, $V_{SS} = 0\text{V}$				unit
Supply Voltage	V_{DD}	$T_a = -40^\circ\text{C} \sim +85^\circ\text{C}$	3~18	V
Input Voltage	V_{IN}	$T_a = -40^\circ\text{C} \sim +85^\circ\text{C}$	0~ V_{DD}	V
External Resistance	R_X		5~1000	k Ω
External Capacitance	C_X		no limit	μF

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

Electrical Characteristics at T _a =25±2°C, V _{SS} =0V			min	typ	max	unit
"H" Level Output Voltage	V _{OH}	V _{DD} =5V, I _{OUT} < 1 μA, V _{IN} =V _{SS} , V _{DD}	4.95	5.00		V
		V _{DD} =10V, " "	9.95	10.00		V
		V _{DD} =15V, " "	14.95	15.00		V
"L" Level Output Voltage	V _{OL}	V _{DD} =5V, I _{OUT} < 1 μA, V _{IN} =V _{SS} , V _{DD}		0.00	0.05	V
		V _{DD} =10V, " "		0.00	0.05	V
		V _{DD} =15V, " "		0.00	0.05	V
"H" Level Output Current	I _{OH}	V _{DD} =5V, V _O =4.6V, V _{IN} =V _{SS} , V _{DD}	-0.5	-1.0		mA
		V _{DD} =10V, V _O =9.5V, " "	-1.0	-2.0		mA
		V _{DD} =15V, V _O =13.5V, " "	-3.5	-7.0		mA
"L" Level Output Current	I _{OL}	V _{DD} =5V, V _O =0.4V, V _{IN} =V _{SS} , V _{DD}	0.5	1.0		mA
		V _{DD} =10V, V _O =0.5V, " "	1.0	2.0		mA
		V _{DD} =15V, V _O =1.5V, " "	3.5	7.0		mA
"H" Level Input Voltage	V _{IH}	V _{DD} =5V, V _I =0.5V or 4.5V, I _{OUT} < 1 μA	3.5	2.5		V
		V _{DD} =10V, V _I =1.0V or 9.0V, " "	7.0	5.0		V
		V _{DD} =15V, V _I =1.5V or 13.5V, " "	11.0	7.5		V
"L" Level Input Voltage	V _{IL}	V _{DD} =5V, V _I =0.5V or 4.5V, I _{OUT} < 1 μA		2.5	1.5	V
		V _{DD} =10V, V _I =1.0V or 9.8V, " "		5.0	3.0	V
		V _{DD} =15V, V _I =1.5V or 13.5V, " "		7.5	4.0	V
Input Leak Current	I _{IN}	V _{DD} =18V, V _{IN} =18V		10 ⁻⁶	1.0	μA
		V _{DD} =18V, V _{IN} =0V		-10 ⁻⁶		μA
Quiescent Device Current	I _{DD}	V _{DD} =5V, V _{IN} =V _{DD} , V _{SS}		0.01	1.0	μA
		V _{DD} =10V, " "		0.01	2.0	μA
		V _{DD} =15V, " "		0.01	4.0	μA
Input Stray Capacitance	C _{IN}	All inputs		5.0	7.5	pF

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

Electrical Characteristics at $T_a = -40^\circ\text{C}$, $V_{SS}=0\text{V}$			min	typ	max	unit
"H" Level Output Voltage	V_{OH}	$V_{DD}=5\text{V}$, $ I_{OUT} < 1\ \mu\text{A}$, $V_{IN}=V_{SS}$, V_{DD}	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}$, $V_{IN}=V_{SS}$, 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}	$V_{DD}=5\text{V}$, $V_O=4.6\text{V}$, $V_{IN}=V_{SS}$, V_{DD}	-0.5			mA
		$V_{DD}=10\text{V}$, $V_O=9.5\text{V}$, " "	-1.0			mA
		$V_{DD}=15\text{V}$, $V_O=13.5\text{V}$, " "	-3.5			mA

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			min	typ	max	unit
"L" Level Output Current	I_{OL}	$V_{DD}=5V, V_O=0.4V, V_{IN}=V_{SS}, V_{DD}$	0.5			mA
		$V_{DD}=10V, V_O=0.5V, //$	1.0			mA
		$V_{DD}=15V, V_O=1.5V, //$	3.5			mA
"H" Level Input Voltage	V_{IH}	$V_{DD}=5V, V_O=0.5V \text{ or } 4.5V, I_{OUT} < 1 \mu A$	3.5			V
		$V_{DD}=10V, V_O=1.0V \text{ or } 9.0V, //$	7.0			V
		$V_{DD}=15V, V_O=1.5V \text{ or } 13.5V, //$	11.0			V
"L" Level Input Voltage	V_{IL}	$V_{DD}=5V, V_O=0.5V \text{ or } 4.5V, I_{OUT} < 1 \mu A$			1.5	V
		$V_{DD}=10V, V_O=1.0V \text{ or } 9.8V, //$			3.0	V
		$V_{DD}=15V, V_O=1.5V \text{ or } 13.5V, //$			4.0	V
Input Leak Voltage	I_{IN}	$V_{DD}=18V, V_{IN}=18V$			1.0	μA
		$V_{DD}=18V, V_{IN}=0V$			-1.0	μA
Quiescent Device Current	I_{DD}	$V_{DD}=5V, V_{IN}=V_{DD}, V_{SS}$			1.0	μA
		$V_{DD}=10V, //$			2.0	μA
		$V_{DD}=15V, //$			4.0	μA

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

			min	typ	max	unit
"H" Level Output Voltage	V_{OH}	$V_{DD}=5V, I_{OUT} < 1 \mu A, V_{IN}=V_{SS}, V_{DD}$	4.95			V
		$V_{DD}=10V, //$	9.95			V
		$V_{DD}=15V, //$	14.95			V
"L" Level Output Voltage	V_{OL}	$V_{DD}=5V, I_{OUT} < 1 \mu A, V_{IN}=V_{SS}, V_{DD}$			0.05	V
		$V_{DD}=10V, //$			0.05	V
		$V_{DD}=15V, //$			0.05	V
"H" Level Output Current	I_{OH}	$V_{DD}=5V, V_O=4.6V, V_{IN}=V_{SS}, V_{DD}$	-0.4			mA
		$V_{DD}=10V, V_O=9.5V, //$	-0.8			mA
		$V_{DD}=15V, V_O=13.5V, //$	-2.8			mA
"L" Level Output Current	I_{OL}	$V_{DD}=5V, V_O=0.4V, V_{IN}=V_{SS}, V_{DD}$	0.4			mA
		$V_{DD}=10V, V_O=0.5V, //$	0.8			mA
		$V_{DD}=15V, V_O=1.5V, //$	2.8			mA
"H" Level Input Voltage	V_{IH}	$V_{DD}=5V, V_O=0.5V \text{ or } 4.5V, I_{OUT} < 1 \mu A$	3.5			V
		$V_{DD}=10V, V_O=1.0V \text{ or } 9.0V, //$	7.0			V
		$V_{DD}=15V, V_O=1.5V \text{ or } 13.5V, //$	11.0			V
"L" Level Input Voltage	V_{IL}	$V_{DD}=5V, V_O=0.5V \text{ or } 4.5V, I_{OUT} < 1 \mu A$			1.5	V
		$V_{DD}=10V, V_O=1.0V \text{ or } 9.8V, //$			3.0	V
		$V_{DD}=15V, V_O=1.5V \text{ or } 13.5V, //$			4.0	V
Input Leak Current	I_{IN}	$V_{DD}=18V, V_{IN}=18V$			1.0	μA
		$V_{DD}=18V, V_{IN}=0V$			-1.0	μA
Quiescent Device Current	I_{DD}	$V_{DD}=5V, V_{IN}=V_{DD}, V_{SS}$			7.5	μA
		$V_{DD}=10V, //$			15.0	μA
		$V_{DD}=15V, //$			30	μA

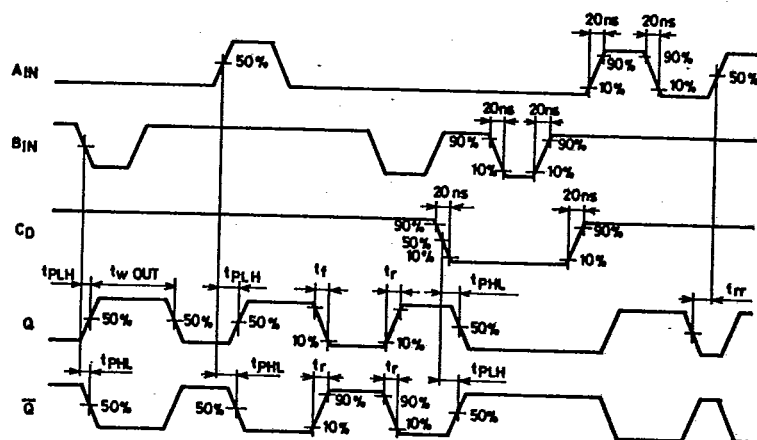
Note) Current direction: +, no sign: Flowing into SSI,
 - : Flowing out of SSI.

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

			min	typ	max	unit
Output Rise Time	t_r	$V_{DD}=5V$		130	400	ns
		$V_{DD}=10V$		65	200	ns
		$V_{DD}=15V$		50	160	ns
Output Fall Time	t_f	$V_{DD}=5V$		100	200	ns
		$V_{DD}=10V$		50	100	ns
		$V_{DD}=15V$		40	80	ns

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Switching Time Test Waveforms



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Characteristics of output pulse width at IC typ value

