

Description :

CD40106 is a low-power, wide operating voltage range Schmitt inverter designed using advanced CMOS technology. It integrates six independent Schmitt inverter circuits internally, with high anti-interference and driving capabilities.

Features :

- Low input current: $I_{IN} \leq 1\mu A$, @ $V_{IN}=V_{DD}=15V$, $T_a=25^\circ C$
- Low static power consumption: $I_{DD} \leq 4\mu A$, @ $V_{DD}=15V$, $T_a=25^\circ C$
- Wide operating voltage range: 3V to 18V
- Encapsulation form: DIP14, SOP14

Application:

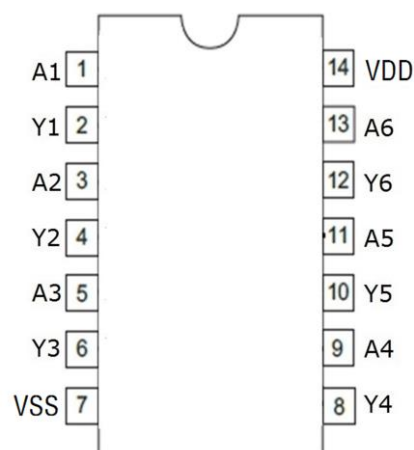
- Monostable multi harmonic oscillator
- High noise environment system
- Waveform and pulse shaper
- Other application areas

Pin Assignment:

PIN NO.	Definition	PIN NO.	Definition
DIP14/SOP14		DIP14/SOP14	
1	A1	14	VDD
2	Y1	13	A6
3	A2	12	Y6
4	Y2	11	A5
5	A3	10	Y5
6	Y3	9	A4
7	VSS	8	Y4

Note: A is the input pin; Y is the output pin.

DIP14/SOP14



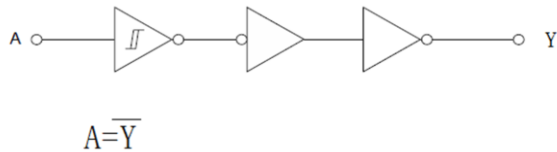
DIP:CD40106BD 1000/BOX
SOP:CD40106 2500/REEL

Absolute Maximum Ratings:

parameter	Symbol	Max	Unit
working voltage	V_{CC}	-0.5-20	V
Input/output voltage	$V_{IN}, V_{I/O}$	-0.5+VSS-VDD+0.5V	V
Input current	I_I	± 10	mA
Dissipated power	P_D	500	mW
working temperature	T_A	0-70	$^\circ C$
Storage temperature	T_S	-65-150	$^\circ C$
Pin welding temperature	T_W	260,10s	$^\circ C$

Note: Limit parameters refer to the limit values that cannot be exceeded under any conditions. If the limit value is exceeded, it may cause physical damage such as product degradation; At the same time, it cannot be guaranteed that the chip can function properly when approaching the limit parameters.

logic diagram



Truth table

Input	Output
A	Y
L	H
H	L

H = High Logic Level

L = Low Logic Level

Recommended operating conditions

parameter	Symbol	Min	Typ	Max	Unit
working voltage	V_{DD}	3		18	V
Input and output voltage	$V_{IN}, V_{I/O}$	0		V_{DD}	V
working temperature	T_A	0		60	°C

electrical characteristic

DC electrical characteristics: ($T_a = 25^\circ\text{C}$)

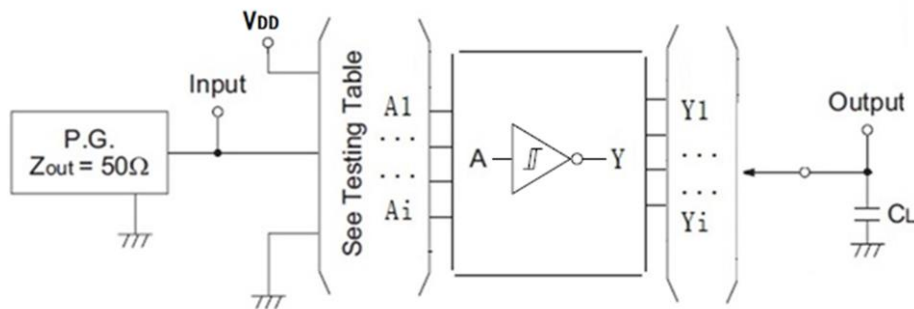
symbol	parameter	Test conditions	V_{DD} (V)	min	typ	max	unit
V_{TP+}	High level Switching thresh old voltage	$ I_O \leq 1\mu\text{A}$	5	—	2.5	—	V
			10	—	4.2	—	V
			15	—	5.8	—	V
V_{TN-}	Low level Switching threshol d voltage	$ I_O \leq 1\mu\text{A}$	5	—	1.2	—	V
			10	—	2.0	—	V
			15	—	2.6	—	V
V_{TH}	Hysteresis vol tage ($V_{TP+} - V_{TN-}$)		5	—	1.3	—	V
			10	—	2.2	—	V
			15	—	3.2	—	V
V_{OH}	high level output voltage	$ I_O < 1\mu\text{A}$	5	4.95	—	—	V
			10	9.95	—	—	V
			15	14.95	—	—	V
V_{OL}	Low Level Output Voltage	$ I_O < 1\mu\text{A}$	5	—	—	0.05	V
			10	—	—	0.05	V
			15	—	—	0.05	V
I_{OH}	High Level Output Current	$V_O = 4.6\text{V}$	5	—	-3.0	—	mA
		$V_O = 9.5\text{V}$	10	—	-6.4	—	mA
		$V_O = 13.5\text{V}$	15	—	-22	—	mA
I_{OL}	Low Level Output Current	$V_O = 0.4\text{V}$	5	—	4.8	—	mA
		$V_O = 0.5\text{V}$	10	—	11.5	—	mA
		$V_O = 1.5\text{V}$	15	—	42	—	mA
I_{IN}	Input Current	$V_{IN} = V_{DD}$ or V_{SS}	18	—	0.01	1	μA
I_{DD}	Working current	$V_{IN} = V_{DD}$ or V_{SS}	5	—	0.01	1	μA
			10	—	0.01	2	μA
			15	—	0.01	4	μA
			18	—	0.01	20	μA

AC electrical characteristics: $C_L=51\text{pF}$, $T_a=25\text{ }^\circ\text{C}$, see testing method.

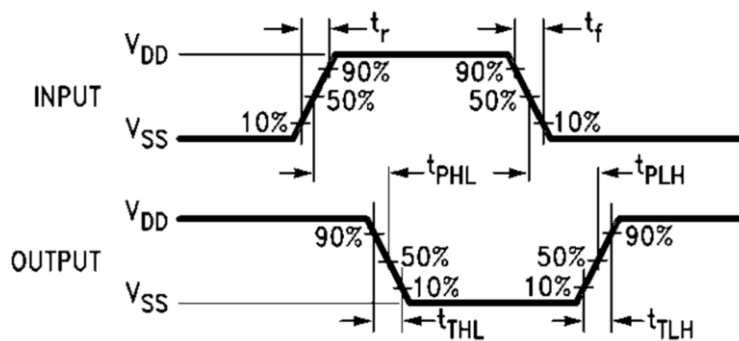
parameter	symbol	Test conditions	min	typ	max	unit
最大传输延迟时间 A to Y	t_{PHL}	$V_{DD}=5\text{V}$	—	80	—	ns
	t_{PLH}		—	140	—	ns
	t_{PHL}	$V_{DD}=10\text{V}$	—	45	—	ns
	t_{PLH}		—	75	—	ns
	t_{PHL}	$V_{DD}=15\text{V}$	—	35	—	ns
	t_{PLH}		—	55	—	ns
输出上升/下降 延迟时间	t_{THL}	$V_{DD}=5\text{V}$	—	30	—	ns
	t_{TLH}		—	30	—	ns
	t_{THL}	$V_{DD}=10\text{V}$	—	15	—	ns
	t_{TLH}		—	20	—	ns
	t_{THL}	$V_{DD}=15\text{V}$	—	10	—	ns
	t_{TLH}		—	15	—	ns

test method

1. Test wiring diagram



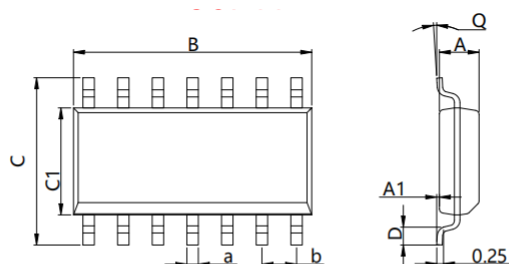
2. Schematic diagram of waveform measurement



Note:

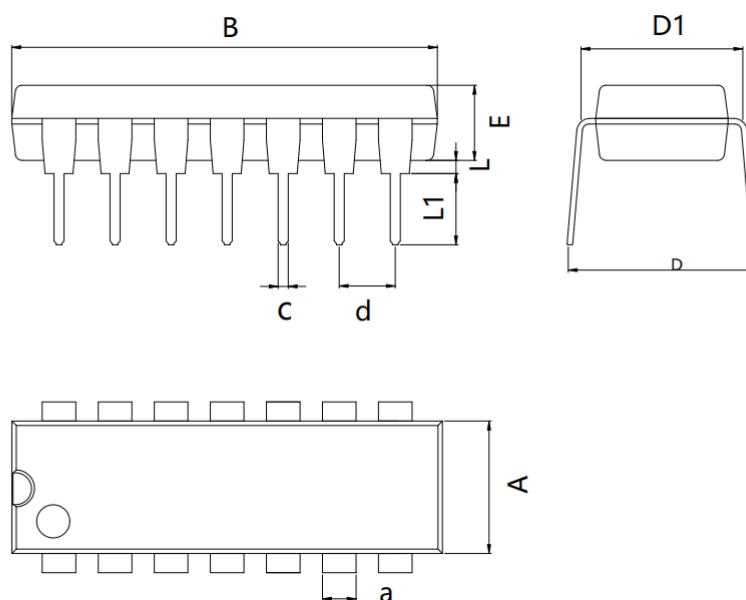
1. See Testing Table refers to the corresponding testing items in the AC electrical characteristics table;
2. The C_L capacitor is an external patch capacitor (0603), connected near the output pin, and the capacitor ground is close to the chip V_{SS} ;
3. Input: Port input level, $f=1\text{MHz}$, $D=50\%$ square wave, $t_r=t_f \leq 20\text{ns}$;
4. Output: Y-end output test.

SOP14



Dimensions In Millimeters(SOP14)									
Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	1.35	0.05	8.55	5.80	3.80	0.40	0°	0.35	1.27 BSC
Max:	1.55	0.20	8.75	6.20	4.00	0.80	8°	0.45	

DIP14



Dimensions In Millimeters(DIP14)										
Symbol:	A	B	D	D1	E	L	L1	a	C	d
Min:	6.10	18.94	8.40	7.42	3.10	0.50	3.00	1.50	0.40	2.54 BSC
Max:	6.68	19.56	9.00	7.82	3.55	0.70	3.60	1.55	0.50	