Description：

CD4001 is a single-chip wide voltage range CMOS integrated circuit, which has the advantages of low power consumption, anti-interference, and strong flexibility in use. It has symmetrical source and leakage current drive Dynamic capability, compliant with CD4000 series output driver standards. These drivers can also buffer the output, provide higher gain, and improve conversion performance. A diode is installed between VDD and VSS to protect all input terminals from static current interference.

Features：

-Low input current: IIN ≤ 1uA, @ VIN=VDD=18V, Ta=25
-Low static power consumption: typical value IDD=0.01uA, @ VDD=18V, Ta=25 ℃- wide operating voltage range: 3V to 18V
-Packaging form: DIP14, SOP14
-4 groups with 2 inputs or non gates

Application:

-Logic circuit
-Industrial control applications
-Other application areas

PIN NO.SymbolDefinition

Pin Assignment：

pin no.	Symbol	Definition	pin no.	Symbol	Definition
1	A	input A	14	VDD	VDD
2	B	input B	13	H	input H
3	J	output J	12	G	input G
4	K	output K	11	M	output M
5	C	input C	10	L	output L
6	D	input D	9	F	input F
7	VSS	VSS	8	E	input E

DIP14/SOP14
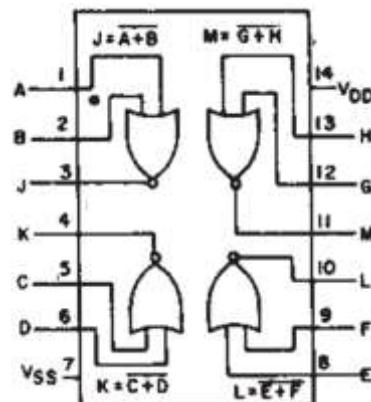
Absolute Maximum Ratings：

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	℃
Storage temperature	T_S	-65-150	℃
Pin welding temperature	T_W	260,10s	℃

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

LOGIC DIAGRAM
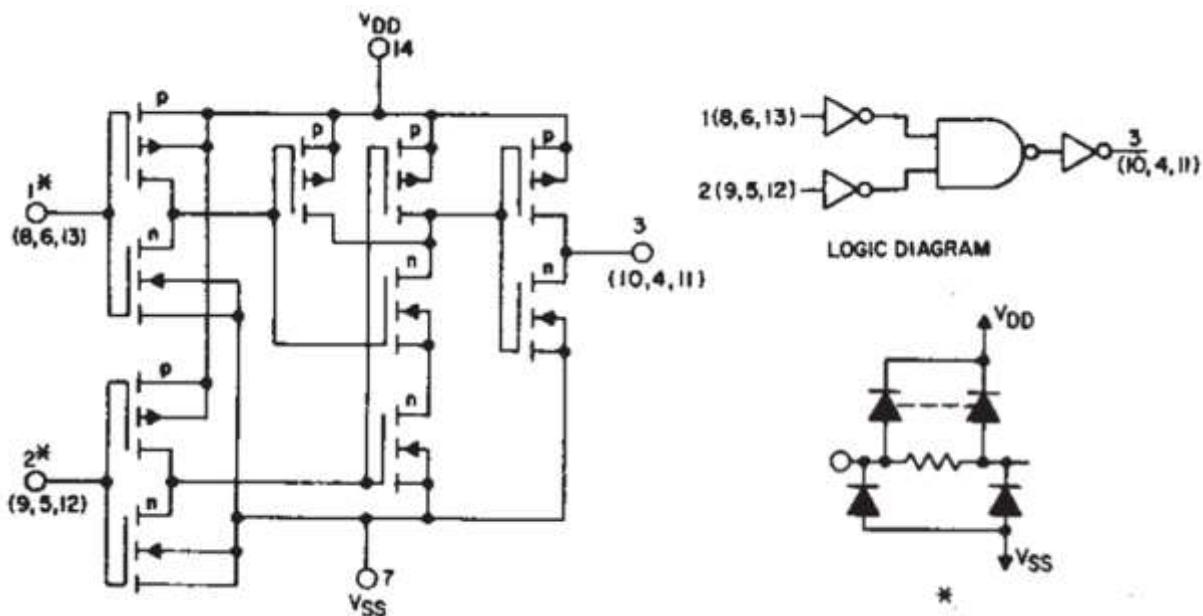
Truth table

INPUTS		OUTPUTS
A、C、E、H	B、D、F、G	J、K、L、M
0	0	1
0	1	0
1	0	0
1	1	0

Note: 0 represents low level; 1 represents high 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		VDD	V
working temperature	T_A	0		60	℃

electrical characteristic

DC electrical characteristics:(Ta=25)

symbol	parameter	Test conditions		VDD（V）	min	typ	max	unit
V_{IH}	High level effective input voltage	$\|I_O\| \leqslant 1uA$	Vo= 0.5V	5	3.5			V
			Vo= 1V	10	7.0			V
			Vo= 1.5V	15	11.0			V
V_{IL}	Low level effective input voltage	$\|I_O\| \leqslant 1uA$	Vo= 4.5V	5			1.5	V
			Vo= 9V	10			3.0	V
			Vo=13.5V	15			4.0	V
V_{OH}	High level output voltage	$\|I_{OUT}\| < 1uA$		5	4.95			V
				10	9.95			V
				15	14.95			V
V_{OL}	Low level output voltage	$\|I_{OUT}\| < 1uA$		5			0.05	V
				10			0.05	V
				15			0.05	V
I_{IN}	Input current	V_{IN}=VDD or VSS		18		0.01	1.0	uA
I_{OH}	High level output current		Vo= 4.6V	5		−1.0		mA
			Vo= 2.5V	5		−4.2		mA
			Vo= 9.5V	10		−2.2		mA
			Vo= 13.5V	15		−8		mA
I_{OL}	Low level output current		Vo= 0.4V	5		2.2		mA
			Vo= 0.5V	10		5.3		mA
			Vo= 1.5V	15		20		mA
I_{DD}	Working current	V_{IN}=VDD or VSS		5		0.01	1	uA
				10		0.01	3	uA
				15		0.01	5	uA
				18		0.01	10	uA

AC electrical characteristics: Ta=25，RL=200k, CL=47pF, see test method.

parameter	symbol	Test conditions	min	typ	max	unit
INPUTS to OUTPUTS	t_{PHL} t_{PLH}	VDD=5V		80		ns
		VDD=10V		45		ns
		VDD=15V		35		ns
Transition time	t_{THL} t_{TLH}	VDD=5V		35		ns
		VDD=10V		20		ns
		VDD=15V		15		ns

test method

1. Measurement wiring and waveform diagram
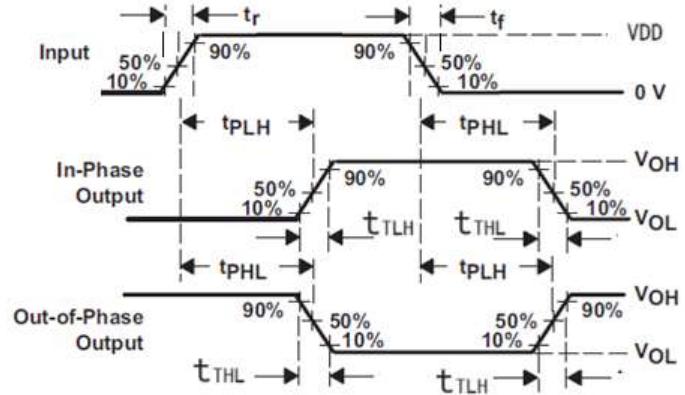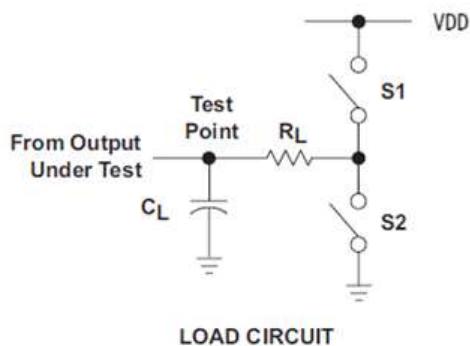
Note: 1. The CL capacitor is an external patch capacitor (0805), connected near the output pin, and the capacitor ground is connected near the chip VSS;

    2. Input: Port input level, f=1MHz, D=50%; tr=tf $\leqslant$ 20ns;

    3. Output: Output test terminal;

    4. S1 is open, S2 is closed;

    5. The above are the corresponding test items in the AC electrical characteristics table.

PACKAGE MECHANICAL DATA

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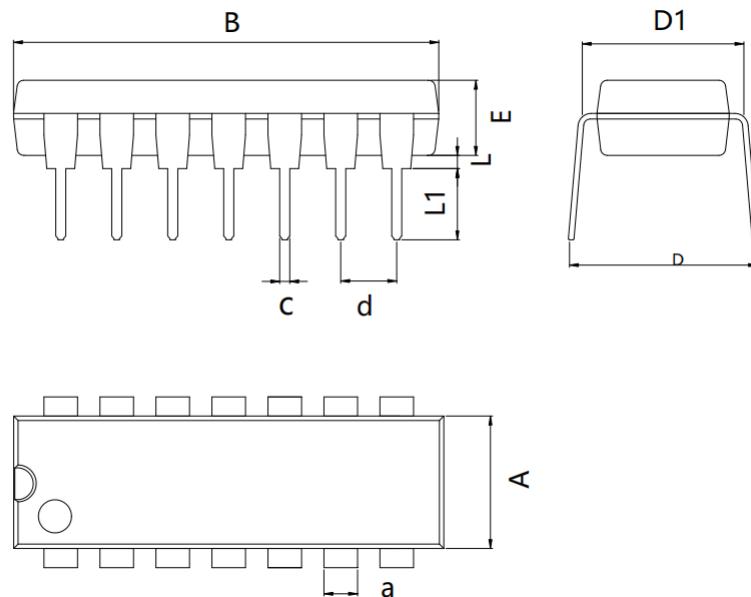
Dimensions In Millimeters(DIP14)										
Symbol:	A	B	D	D1	E	L	L1	a	C	d
Min:	6.10	18.94	8.40	7.42	3.10	0.50	3.00	1.50	0.40	2.54 BSC
Max:	6.68	19.56	9.00	7.82	3.55	0.70	3.60	1.55	0.50	

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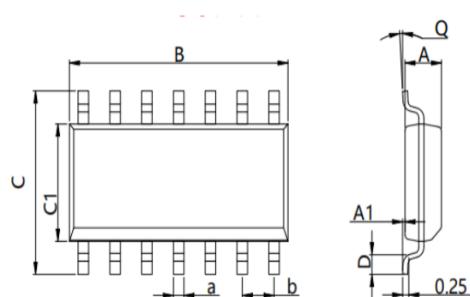
Dimensions In Millimeters(SOP14)								
Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	1.35	0.05	8.55	5.80	3.80	0.40	0°	0.35	1.27 BSC
Max:	1.55	0.20	8.75	6.20	4.00	0.80	8°	0.45	