

CD4072 CMOS Dual 4-Input OR Gate

1. General Description

1.1 Description

CD4072 OR gate provides the system designer with direct implementation of the positive-logic OR function and supplement the existing family of CMOS gates.

1.2 Features

- Standardized symmetrical output characteristics

- 100% tested for quiescent current at 18V
- Maximum input current of 1 μ A at 18V and 25 $^{\circ}$ C
- 5V,10V, and 15V parametric ratings

1.3 Device Information

PART NUMBER	PACKAGE
CD4072	DIP
	SOP
	TSSOP

2. Pin Description and Functional Diagram

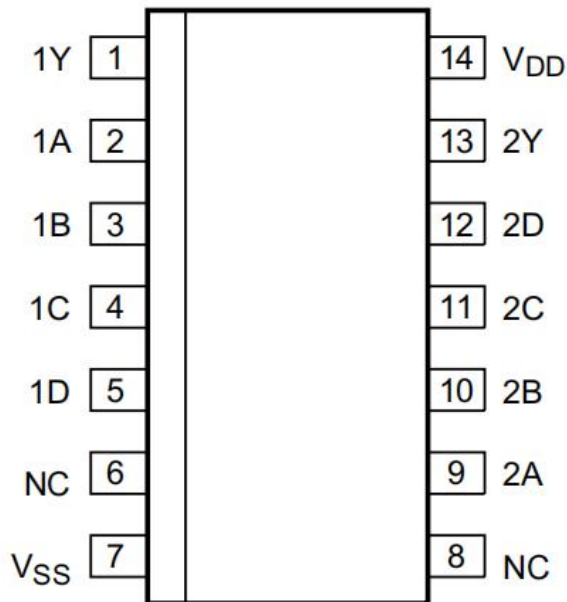


Figure 2.1 Top View

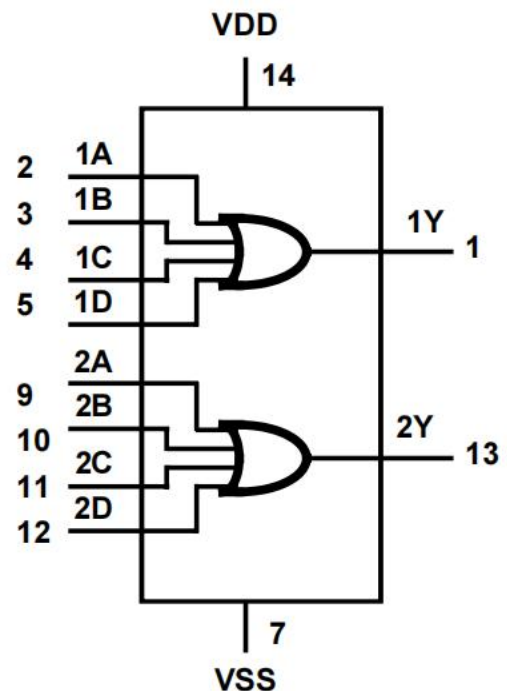


Figure 2.2 Functional Diagram

PIN No.	NAME	I/O	FUNCTION
1	1Y	O	Data Output
2	1A	I	Data Input
3	1B	I	Data Input
4	1C	I	Data Input
5	1D	I	Data Input
6	NC		Not Connected
7	VSS		Ground
8	NC		Not Connected
9	2A	I	Data Input
10	2B	I	Data Input
11	2C	I	Data Input
12	2D	I	Data Input
13	2Y	O	Data Output
14	VDD		Supply Voltage

3. System Diagram

3.1 Logic Diagram

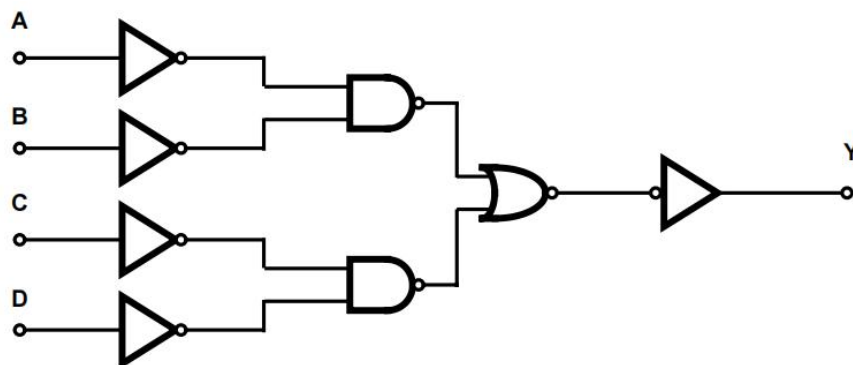


Figure 3.1: CD4072 Logic Diagram

3.2 Truth Table

Input				Output
A	B	C	D	Y
0	0	0	0	0
1	X	X	X	1
X	1	X	X	1
X	X	1	X	1
X	X	X	1	1

X = Don't Care, 1 ≡ High State, 0 ≡ Low State



4. Specifications

4.1 Absolute Maximum Ratings

Symbol	Parameter	MIN	MAX	Unit
V _{DD}	DC Supply Voltage Range (Voltage Referenced to VSS Terminals)	-0.5	20	V
V _I	Input Voltage Range, All Inputs	0.5	V _{DD} +0.5	V
P _D	Power Dissipation		500	mW
T _J	Junction Temperature		125	°C
T _{OP}	Operating Temperature	-40	85	°C

Absolute maximum ratings are those values beyond which the device could be permanently damaged. These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions.

4.2 Electrical Characteristics

4.2.1 DC Specifications

(T_a=25°C, voltages are referenced to VSS (ground=0V), unless otherwise specified)

Symbol	Parameter	Test Condition			MIN	TYP	MAX	Unit
		V _O	V _{IN}	V _{DD}				
I _{DD}	Supply Current	--	0,5	5	--	0	1	uA
		--	0,10	10	--	0	1	uA
		--	0,18	18	--	0	1	uA
I _{OL}	Low Level Output Current	0.4	0,5	5	1.5	3	--	mA
		0.5	0,10	10	4	8	--	mA
		1.5	0,15	15	15	30	--	mA
I _{OH}	High Level Output Current	4.6	0,5	5	-0.5	-2	--	mA
		2.5	0,5	5	-4	-8	--	mA
		9.5	0,10	10	-2	-4	--	mA
		13.5	0,15	15	-7	-14	--	mA
V _{OL}	Low Level Output Voltage	--	0,5	5	--	0	0.05	V
		--	0,10	10	--	0	0.05	V
		--	0,15	15	--	0	0.05	V
V _{OH}	High Level Output Voltage	--	0,5	5	4.95	5	--	V
		--	0,10	10	9.95	10	--	V
		--	0,15	15	14.95	15	--	V
V _{IL}	Low Level Input Voltage	0.5,4.5	--	5	--	--	1.5	V
		1,9	--	10	--	--	3	V
		1.5,13.5	--	15	--	--	4	V
V _{IH}	High Level Input Voltage	0.5,4.5	--	5	3.5	--	--	V
		1,9	--	10	7	--	--	V
		1.5,13.5	--	15	11	--	--	V
I _{IN}	Input Leakage Current	--	0,18	18	--	0	±1	uA

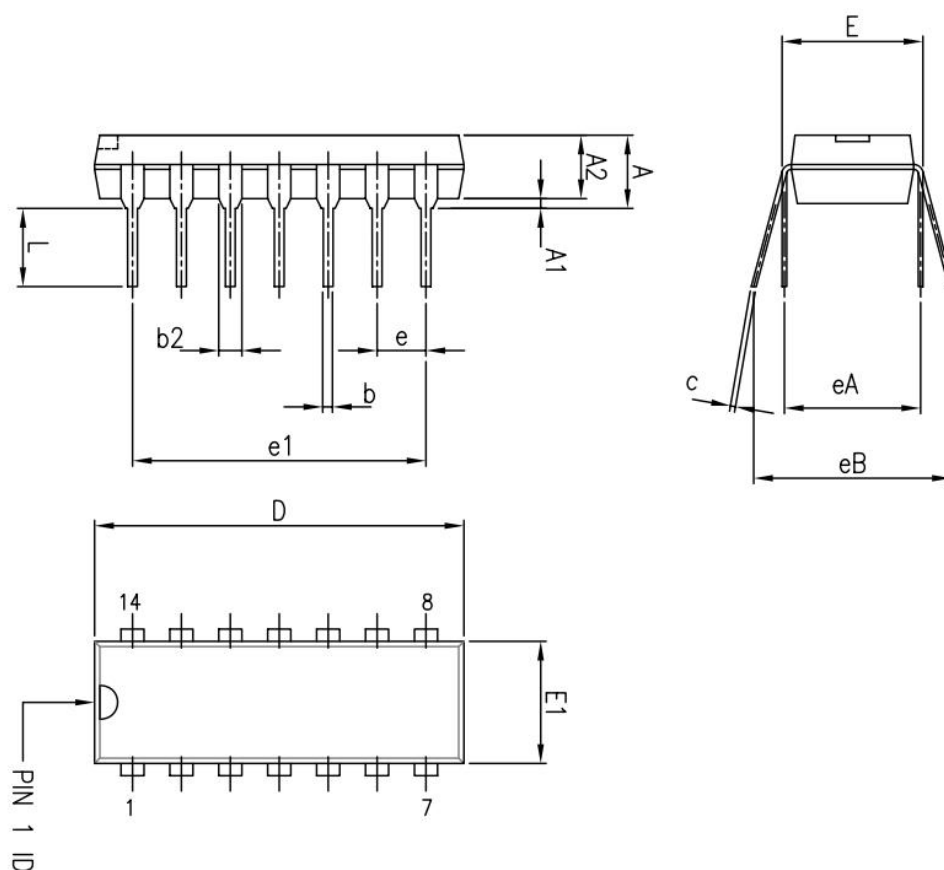


5. Ordering Information

Orderable Device	Package Type	Pins	Packing	Package Qty
CD4072ND14ATBE	DIP	14	Tube	25
CD4072NS14ARDQ	SOP	14	Tape & Reel	4000
CD4072TS14ARBQ	TSSOP	14	Tape & Reel	2000

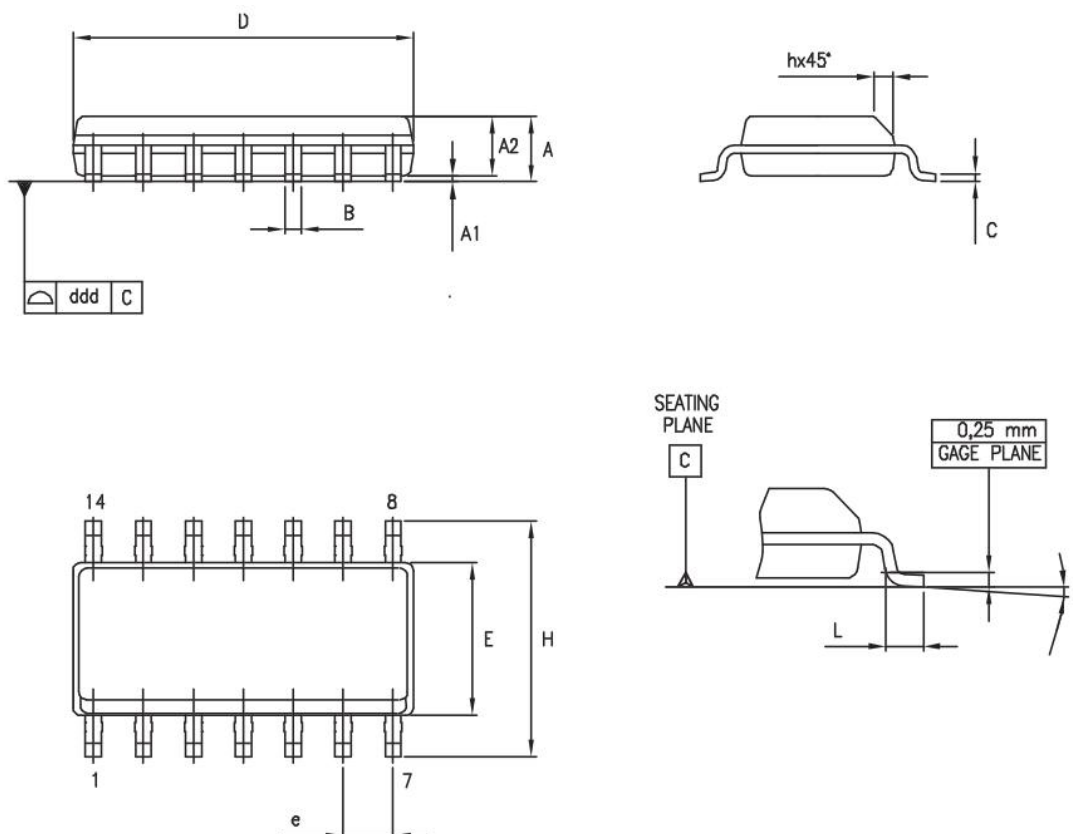
6. Package Information

6.1 DIP14



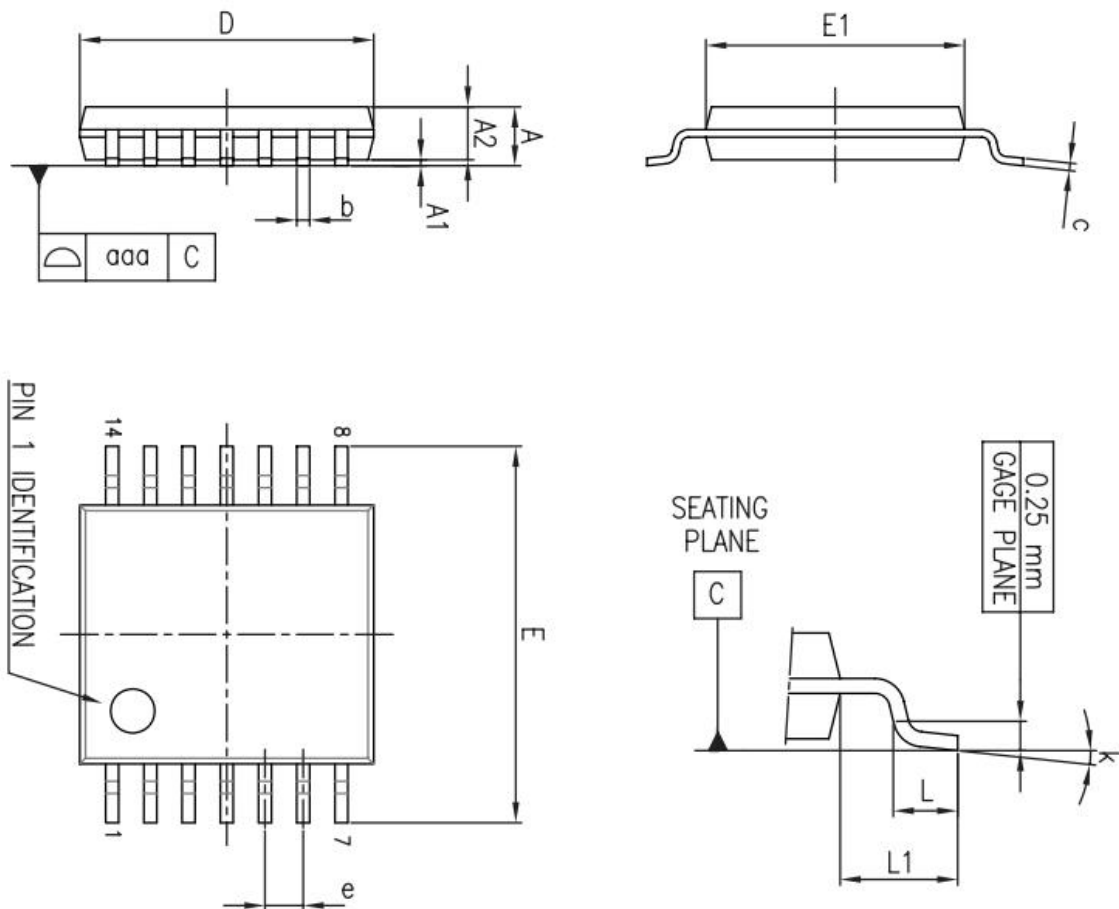
Dimensions						
Ref.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			5.33			0.21
A1	0.38			0.015		
A2	2.92	3.30	4.95	0.11	0.13	0.19
b	0.36	0.46	0.56	0.014	0.018	0.022
b2	1.14	1.52	1.78	0.04	0.06	0.07
c	0.20	0.25	0.36	0.007	0.009	0.01
D	18.67	19.05	19.69	0.73	0.75	0.77
E	7.62	7.87	8.26	0.30	0.31	0.32
E1	6.10	6.35	7.11	0.24	0.25	0.28
e		2.54			0.10	
e1		15.24			0.60	
eA		7.62			0.30	
eB			10.92			0.43
L	2.92	3.30	3.81	0.11	0.13	0.15

6.2 SOP14



Dimensions						
Ref.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.35		1.75	0.05		0.068
A1	0.10		0.25	0.004		0.009
A2	1.10		1.65	0.04		0.06
B	0.33		0.51	0.01		0.02
C	0.19		0.25	0.007		0.009
D	8.55		8.75	0.33		0.34
E	3.80		4.0	0.15		0.15
e		1.27			0.05	
H	5.80		6.20	0.22		0.24
h	0.25		0.50	0.009		0.02
L	0.40		1.27	0.015		0.05
k	8° (max.)					
ddd			0.10			0.004

6.3 TSSOP14



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.20			0.047
A1	0.05		0.15	0.002	0.004	0.006
A2	0.80	1.00	1.05	0.031	0.039	0.041
b	0.19		0.30	0.007		0.012
c	0.09		0.20	0.004		0.0089
D	4.90	5.00	5.10	0.193	0.197	0.201
E	6.20	6.40	6.60	0.244	0.252	0.260
E1	4.30	4.40	4.50	0.169	0.173	0.176
e		0.65			0.0256	
L	0.45	0.60	0.75	0.018	0.024	0.030
L1		1.00			0.039	
k	0°		8°	0°		8°
aaa			0.10			0.004