# Features

- Wide supply voltage range from 5V to 15V

- Fully static operation

- 5V, 10V, and 15V parametric ratings

- Standardized symmetrical output characteristics

- Inputs and outputs are protected against electrostatic effects

- Specified from -40℃ to +85℃

- Packaging information: DIP14/SOP14/TSSOP14

DIP-14
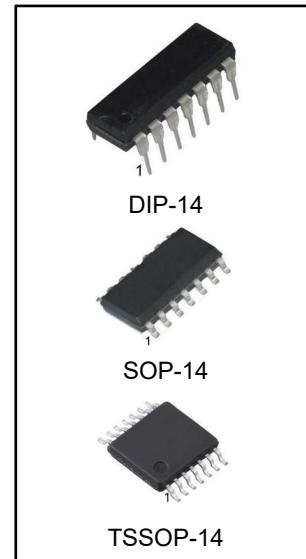
SOP-14

TSSOP-14

Ordering Information

DEVICE	Package Type	MARKING	Packing	Packing Qty
CD4075BE/ CD4075BN	DIP-14	CD4075B	TUBE	1000pcs/Box
CD4075BM/TR	SOP-14	CD4075B	REEL	2500pcs/Reel
CD4075BMT/TR	TSSOP-14	CD4075B	REEL	2500pcs/Reel

General Description

The CD4075B provides the positive triple 3-input OR function. The outputs are fully buffered for highest noise immunity and pattern insensitivity of output impedance.

It operates over a recommended V_{DD} power supply range of 5V to 15V referenced to GND (usually ground). Unused inputs must be connected to V_{DD}, GND, or another input.

Block Diagram
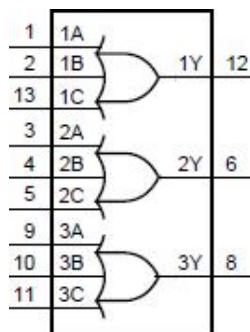
Figure 1. Functional diagram
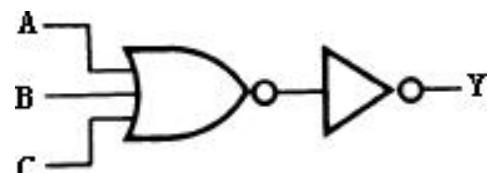
Figure 2. Logic diagram (one gate)

Pin Configurations
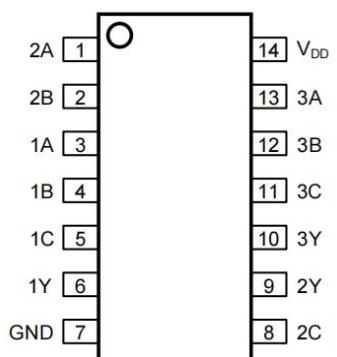
DIP-14,SOP-14,TSSOP-14

Pin Description

Pin No.	Pin Name	Description
1	2A	data input
2	2B	data input
3	1A	data input
4	1B	data input
5	1C	data input
6	1Y	data output
7	GND	ground (0V)
8	2C	data input
9	2Y	data output
10	3Y	data output
11	3C	data input
12	3B	data input
13	3A	data input
14	VDD	supply voltage

Function Table

Input			Output
nA	nB	nC	nY
L	L	L	L
X	X	H	H
X	H	X	H
H	X	X	H

Note: H=HIGH voltage level; L=LOW voltage level; X=don't care.

Electrical Parameter

Absolute Maximum Ratings

(Voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Max.	Unit
supply voltage	V_{DD}	-		-0.5	+18	V
DC input current	I_{IK}	any one input		-	±10	mA
input voltage	V_I	all inputs		-0.5	V_{DD}+0.5	V
storage temperature	T_{stg}	-		-65	+150	℃
total power dissipation	P_{tot}	-		-	500	mW
device dissipation	P	per output transistor		-	100	mW
Soldering temperature	T_L	10s	DIP	245		℃
			SOP	245		

Note:(1)Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is intended to be functional, but specific performance is not ensured.

(2)For DIP14 packages: above 70℃ the value of Ptot derates linearly with 12mW/K.

(3)For SOP14 packages: above 70℃ the value of Ptot derates linearly with 8mW/K.

(4)For (T)SSOP14 packages: above 60℃ the value of Ptot derates linearly with 5.5mW/K.

Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
supply voltage	V_{DD}	-	5	-	15	V
Ambient temperature	Tamb	in free air	-40	-	+85	℃

Electrical Characteristics

DC Characteristics 1

(T_{amb}=25℃, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions (V)			Tamb=25℃			Unit
		VO	VIN	VDD	Min.	Typ.	Max.	
supply current	I_{DD}	-	0, 5	5	-	0.01	0.25	uA
		-	0, 10	10	-	0.01	0.5	uA
		-	0, 15	15	-	0.01	1	uA
LOW-level output current	I_{OL}	0.4	0, 5	5	0.51	1	-	mA
		0.5	0, 10	10	1.1	2.6	-	mA
		1.5	0, 15	15	3.4	6.8	-	mA
HIGH-level output current	I_{OH}	4.6	0, 5	5	-0.51	-1	-	mA
		2.5	0, 5	5	-1.6	-3.2	-	mA
		9.5	0, 10	10	-1.3	-2.6	-	mA
		13.5	0, 15	15	-3.4	-6.8	-	mA
LOW-level output voltage	V_{OL}	-	0, 5	5	-	0	0.05	V
		-	0, 10	10	-	0	0.05	V
		-	0, 15	15	-	0	0.05	V
HIGH-level output voltage	V_{OH}	-	0, 5	5	4.95	5	-	V
		-	0, 10	10	9.95	10	-	V
		-	0, 15	15	14.95	15	-	V
LOW-level input voltage	V_{IL}	0.5, 4.5	-	5	-	-	1.5	V
		1, 9	-	10	-	-	3	V
		1.5, 13.5	-	15	-	-	4	V
HIGH-level input voltage	V_{IH}	4.5	-	5	3.5	-	-	V
		9	-	10	7	-	-	V
		13.5	-	15	11	-	-	V
input leakage current	I_I	-	0, 15	15	-	$\pm 10^{-5}$	±0.1	uA

DC Characteristics 2

(Tamb=-40℃ to +85, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions (V)			Tamb=-40℃		Tamb=+85℃		Unit
		VO	VIN	VDD	Min.	Max.	Min.	Max.	
supply current	I_{DD}	-	0, 5	5	-	0.25	-	7.5	uA
		-	0, 10	10	-	0.5	-	15	uA
		-	0, 15	15	-	1	-	30	uA
LOW-level output current	I_{OL}	0.4	0, 5	5	0.61	-	0.42	-	mA
		0.5	0, 10	10	1.5	-	1.1	-	mA
		1.5	0, 15	15	4	-	2.8	-	mA
HIGH-level output current	I_{OH}	4.6	0, 5	5	-0.61	-	-0.42	-	mA
		2.5	0, 5	5	-1.8	-	-1.1	-	mA
		9.5	0, 10	10	-1.5	-	-1.1	-	mA
		13.5	0, 15	15	-4	-	-2.8	-	mA
LOW-level output voltage	V_{OL}	-	0, 5	5	-	0.05	-	0.05	V
		-	0, 10	10	-	0.05	-	0.05	V
		-	0, 15	15	-	0.05	-	0.05	V
HIGH-level output voltage	V_{OH}	-	0, 5	5	4.95	-	4.95	-	V
		-	0, 10	10	9.95	-	9.95	-	V
		-	0, 15	15	14.95	-	14.95	-	V
LOW-level input voltage	V_{IL}	0.5, 4.5	-	5	-	1.5	-	1.5	V
		1, 9	-	10	-	3	-	3	V
		1.5, 13.5	-	15	-	4	-	4	V
HIGH-level input voltage	V_{IH}	4.5	-	5	3.5	-	3.5	-	V
		9	-	10	7	-	7	-	V
		13.5	-	15	11	-	11	-	V
input leakage current	I_I	-	0, 15	15	-	±0.1	-	±1	uA

AC Characteristics

(Tamb=25℃, GND=0V, tr, tf=20ns, CL=50pF, RL=200kΩ, unless otherwise specified.)

| Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
propagation delay time	t_{PHL}, t_{PLH}	see Figure 4	V_{DD}=5V	-	125	250	ns
			V_{DD}=10V	-	60	120	ns
			V_{DD}=15V	-	45	90	ns
transition time	t_{THL}, t_{TLH}	see Figure 4	V_{DD}=5V	-	100	200	ns
			V_{DD}=10V	-	50	100	ns
			V_{DD}=15V	-	40	80	ns
input capacitance	C_I	any input		-	5	7.5	pF

AC Testing Circuit
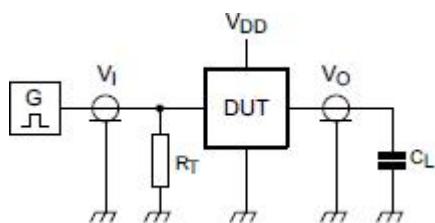
Figure 3. Test circuit for switching times

Definitions for test circuit:

DUT=Device Under Test.

C_L=Load capacitance including jig and probe capacitance.

R_T=Termination resistance should be equal to the output impedance Zo of the pulse generator.

AC Testing Waveforms
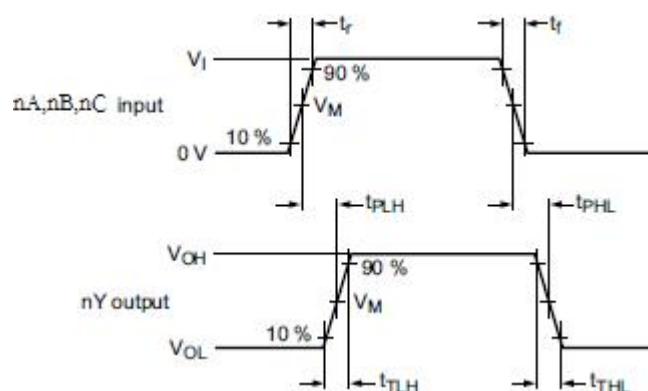
Figure 4. Propagation delay, output transition time

Measurement Points

Supply voltage	Input	Output
VDD	VM	VM
5V to 15V	0.5×V DD	0.5×V DD

Test Data

Supply voltage	Input		Load
VDD	VI	tr , tf	CL
5V to 15V	GND or VDD	≤ 20ns	50pF

Physical Dimensions

DIP-14
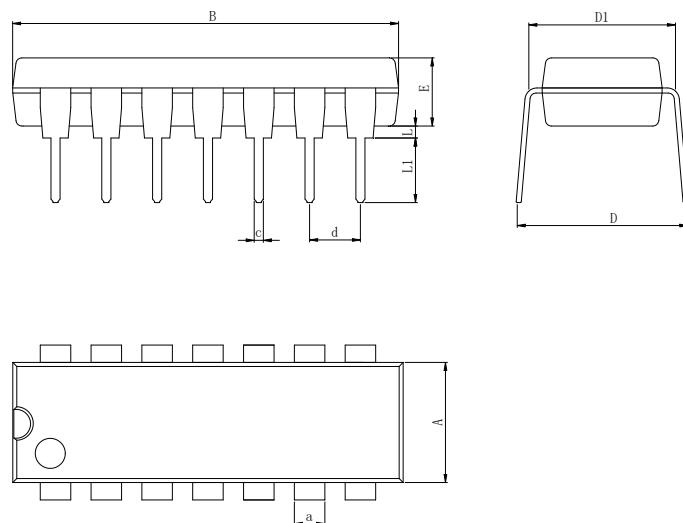
Dimensions In Millimeters(DIP-14)

Symbol:	A	B	D	D1	E	L	L1	a	c	d
Min:	6.10	18.94	8.10	7.42	3.10	0.50	3.00	1.50	0.40	2.54 BSC
Max:	6.68	19.56	10.9	7.82	3.55	0.70	3.60	1.55	0.50	

SOP-14
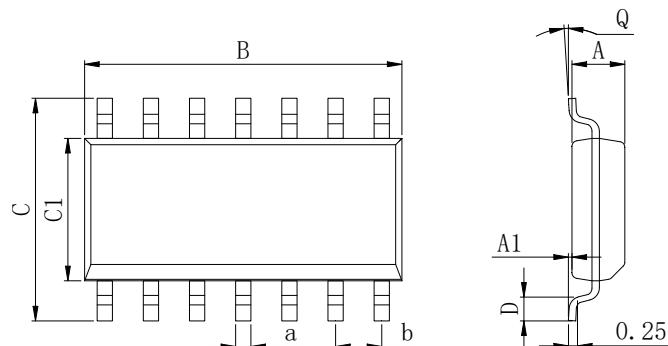
Dimensions In Millimeters(SOP-14)

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	

Physical Dimensions

TSSOP-14
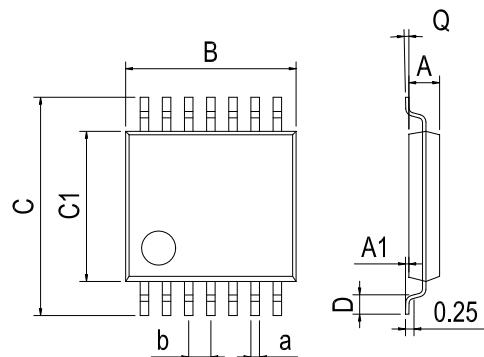
Dimensions In Millimeters(TSSOP14)								
Symbol：	A	A1	B	C	C1	D	Q	a	b
Min：	0.85	0.05	4.90	6.20	4.30	0.40	0°	0.20	0.65 BSC
Max：	0.95	0.20	5.10	6.60	4.50	0.80	8°	0.25	

Revision History

DATE	REVISION	PAGE
2012-3-8	New	1-10
2023-11-14	Update encapsulation type 、 Update Lead Temperature 、 Updated DIP-14 dimension、Add annotation for Maximum Ratings、Updated Ambient temperature and supply voltage range、Update DIP Package New Model	1、3、7

IMPORTANT STATEMENT:

Huaguan Semiconductor reserves the right to change its products and services without notice. Before ordering, the customer shall obtain the latest relevant information and verify whether the information is up to date and complete. Huaguan Semiconductor does not assume any responsibility or obligation for the altered documents.

Customers are responsible for complying with safety standards and taking safety measures when using Huaguan Semiconductor products for system design and machine manufacturing. You will bear all the following responsibilities: Select the appropriate Huaguan Semiconductor products for your application; Design, validate and test your application; Ensure that your application meets the appropriate standards and any other safety,security or other requirements. To avoid the occurrence of potential risks that may lead to personal injury or property loss.

Huaguan Semiconductor products have not been approved for applications in life support, military, aerospace and other fields, and Huaguan Semiconductor will not bear the consequences caused by the application of products in these fields. All problems, responsibilities and losses arising from the user's use beyond the applicable area of the product shall be borne by the user and have nothing to do with Huaguan Semiconductor, and the user shall not claim any compensation liability against Huaguan Semiconductor by the terms of this Agreement.

The technical and reliability data (including data sheets), design resources (including reference designs), application or other design suggestions, network tools, safety information and other resources provided for the performance of semiconductor products produced by Huaguan Semiconductor are not guaranteed to be free from defects and no warranty, express or implied, is made. The use of testing and other quality control technologies is limited to the quality assurance scope of Huaguan Semiconductor. Not all parameters of each device need to be tested.

The documentation of Huaguan Semiconductor authorizes you to use these resources only for developing the application of the product described in this document. You have no right to use any other Huaguan Semiconductor intellectual property rights or any third party intellectual property rights. It is strictly forbidden to make other copies or displays of these resources. You should fully compensate Huaguan Semiconductor and its agents for any claims, damages, costs, losses and debts caused by the use of these resources. Huaguan Semiconductor accepts no liability for any loss or damage caused by infringement.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Logic Gates *category:*

Click to view products by HGSEMI *manufacturer:*

Other Similar products are found below :

NL17SG32DFT2G CD4068BE NL17SG86DFT2G NLX1G11AMUTCG NLX1G97MUTCG 74LS38 74LVC1G08Z-7 CD4025BE
NLV17SZ00DFT2G NLV17SZ126DFT2G NLV27WZ17DFT2G NLV74HC02ADR2G 74HC32S14-13 74LS133 74LVC1G32Z-7
74LVC1G86Z-7 NLV74HC14ADR2G NLV74HC20ADR2G NLVVHC1G09DFT1G NLX2G86MUTCG 74LVC2G32RA3-7
74LVC2G00HD4-7 NL17SG02P5T5G 74LVC2G86HK3-7 NLVVHC1G14DFT2G NLX1G99DMUTWG NLVVHC1G00DFT2G
NLV7SZ57DFT2G NLV74VHC04DTR2G NLV27WZ00USG NLU1G86CMUTCG NLU1G08CMUTCG NL17SZ32P5T5G
NL17SZ00P5T5G NL17SH02P5T5G 74AUP2G00RA3-7 NLVVHC1GT00DFT2G NLV74HC02ADTR2G NLX1G332CMUTCG
NLVHCT132ADTR2G NL17SG86P5T5G NL17SZ05P5T5G NLV74VHC00DTR2G NLVVHC1G02DFT1G NLV74HC86ADR2G
74LVC2G32HK3-7 74LVC2G86RA3-7 NL17SZ38DBVT1G NLV18SZ00DFT2G NLVVHC1G07DFT1G