General Description

The CD4025B is a triple 3-input NOR gate.The outputs are fully buffered for the highest noise immunity and pattern insensitivity to output impedance.

t operates over a recommended Voo power supply range of 3V to 15V referenced to Vss (usually ground). Unused inputs must be connected to Voo,Vss,or another input.

Features

- Wide supply voltage range from 3V 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+105℃
- Packaging information:DIP-14/SOP-14/TSSOP-14

Order Information

DEVICE	Package Type	MARKING	Packing	Packing Qty
CD4025BE/ CD4025BN	DIP-14	CD4025B	TUBE	1000pcs/box
CD4025BM/TR	SOP-14	CD4025B	REEL	2500pcs/reel
CD4025BMT/TR	TSSOP_14	CD4025B	REEL	2500pcs/reel

2.Block Diagram And Pin Description

Block Diagram

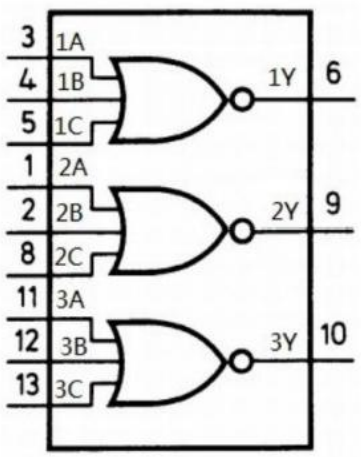


Figure 1.Functional diagram

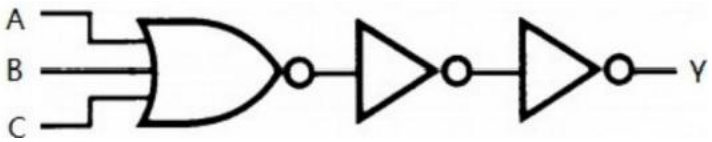
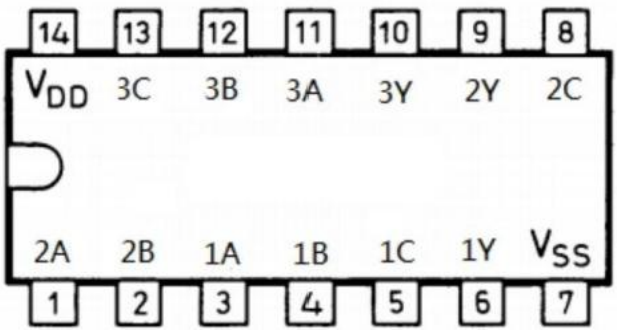


Figure 2.Logic diagram (one gate)

Pin Configurations



DIP-14/SOP-14/TSSOP-14

Pin Description

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

Function Table

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

Note: H=HIGH voltage level;L=LOW voltage level.

Absolute Maximum Ratings

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

Parameter	Symbol	Conditions		Min.	Max.	Unit
supply voltage	VDD			-0.5	+18	V
DC input current	lik	any one input			±10	mA
input voltage	V_1	all inputs		-0.5	Vbo+0.5	V
storage temperature	Tstg			-65	+150	℃
total power dissipation	Ptot				500	mW
device dissipation	P	per output transistor			100	mW
Soldering temperature	TL	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 DIP-14 packages:above 70℃ the value of Pot derates linearly with 12mW/K.

(3) For SOP-14 packages:above 70℃ the value of Pot derates linearly with 8mWIK.

(4) For(T)SSOP-14 packages:above 60C the value of Put derates linearly with 5.5mWIK.

Recommended Operating Conditions

Parameter	Symbo	Conditions	Min.	Typ.	Max	Unit
supply voltage	Voo		**3**		15	V
Ambient temperature	Tamb	**n free air**	**-40**		+85	℃

Electrical Characteristics

DC Characteristics 1

(Tamb=25℃,voltages are referenced to Vss (ground=0V),unless otherwise specified.)

Parameter	Symbol	Conditions (V)			Tamb=25℃			Unit
		Vo	ViN	VDp	Min.	Typ.	Max	
supply current	IDD		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	Iol	0.4	0,5	5	0.51	1		mA
		0.5	0,10	10	1.3	2.6		mA
		1.5	0,15	15	3.4	6.8		mA
HIGH-level output current	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	Vol		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	VoH		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	VL	0.5,4.5		5			1.5	V
		1,9		10			3	V
		1.5,13.5		15			4	V
HIGH-level input voltage	VH	0.5		5	3.5			V
		1		10	7			V
		1.5		15	11			V
input leakage current	I		0,15	15		±10-5	±0.1	uA

DC Characteristics 2

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

Parameter	Symbol	Conditions (V)			Tamb=-40℃		Tamb=+85℃		Unit
		Vo	VIN	VDD	Min.	Max.	Min.	Max.	
supply current	IDD		0,5	5		0.25		7.5	uA
			0,10	10		0.5		15	uA
			0,15	15				30	uA
LOW-level output current	Iol	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	IoH	4.6	0,5	5	-0.61		-0.42		mA
		2.5	0,5	5	-1.8		-1.3		mA
		9.5	0,10	10	-1.5		-1.1		mA
		13.5	0,15	15	-4		-2.8		mA
LOW-level output voltage	Vol		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	VoH		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	VL	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	VH	0.5		5	3.5		3.5		V
		1		10	7		7		V
		1.5		15	11		11		V
input leakage current	I		0,15	15		±0.1		±1	uA

AC Characteristics

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

Parameter	Symbol	Conditions		Min.	Typ.	Max	Unit
propagation delay time	tpHL,tpLH	see Figure 4	Vbp=5V		125	250	**ns**
			Vbp=10V		60	120	ns
			Vpp=15V		**45**	90	ns
transition time	trhL,tTLH	see Figure 4	Vbo=5V		100	200	NS
			Vbp=10V		50	100	ns
			Vbp=15V		40	80	ns
input capacitance	C	any input			5	7.5	pF

Testing Circuit

AC Testing Circuit

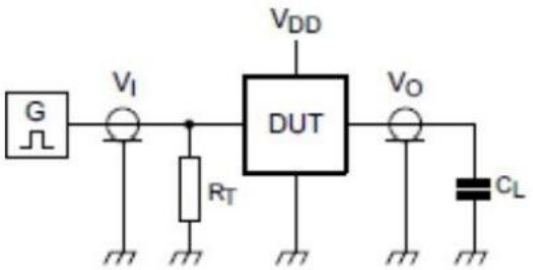


Figure 3.Test circuit for switching times

Definitions for test circuit:

DUT=Device Under Test.

C_1=Load capacitance including jig and probe capacitance.

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

AC Testing Waveforms

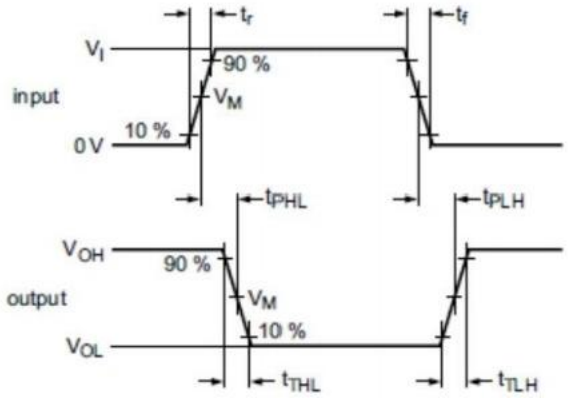


Figure 4.Propagation delay,output transition time

Measurement Points

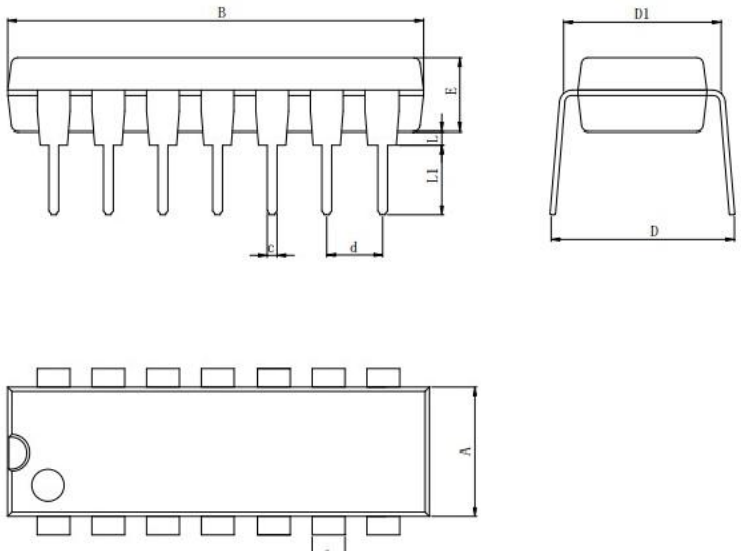
Supply voltage	Input	Output
VDD	Vm	VM
5V to 15V	0.5×VDD	0.5×VDD

Test Data

Supply voltage	Input		Load
VDD	V_1	t,tf	CL
5V to 15V	Vss or Vpd	≤20ns	50pF

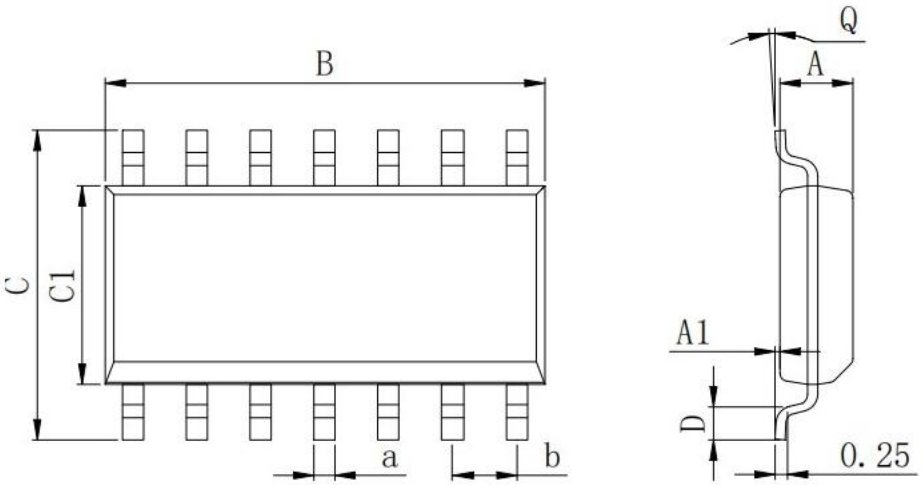
Physical Dimensions

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**	

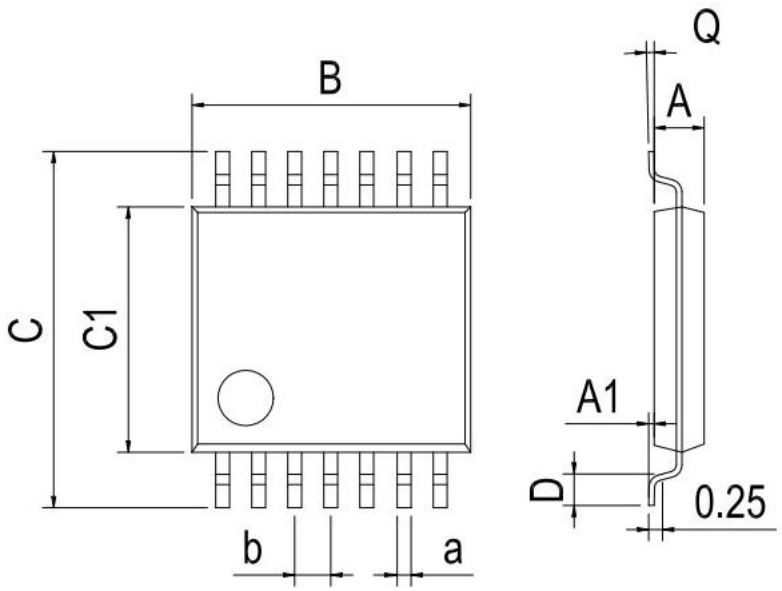
SOP-14



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(TSSOP-14)									
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	