EVVOSEMI®
THINK CHANGE DO

ESD TVS MOS LDO Diode Sensor DC-DC

Product Specification

Domestic Part Number	CD4049 / CD4050
Overseas Part Number	CD4049 / CD4050
Equivalent Part Number	CD4049 / CD4050

CMOS Hex Inverting Buffer and Converter

1. General Description

1.1 Description

The CD4049 and CD4050 devices are inverting and noninverting hex buffers, and feature logic-level conversion using only one supply voltage (V_{CC}). The input-signal high level (V_{IH}) can exceed the V_{CC} supply voltage when these devices are used for logiclevel conversions. These devices are intended for use as CMOS to DTL or TTL converters and can drive directly two DTL or TTL loads. (V_{CC} = 5V,V_{OL} ≤ 0.4V, and I_{OL} ≥ 3.3mA.)

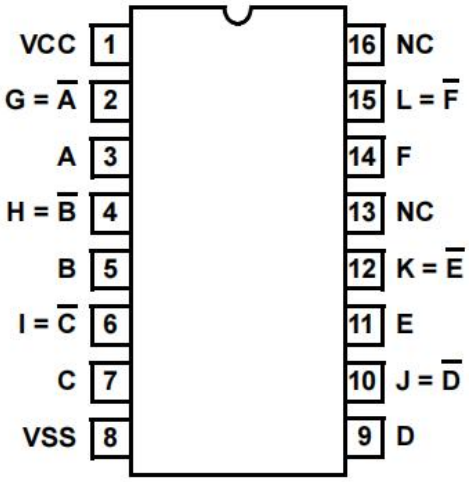
1.2 Features

- CD4049 Inverting
- CD4050 Noninverting
- High sink current for driving 2 TTL loads
- High-to-Low level logic conversion
- 100% tested for quiescent current at 18V
- Maximum input current of 1μA at 18V and 25℃
- 5V,10V, and 15V parametric ratings

1.3 Device Information

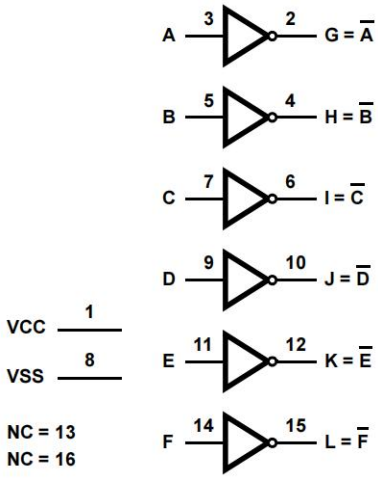
PART NUMBER	PACKAGE
CD4049 CD4050	DIP
	SOP
	TSSOP

2. Pin Description and Functional Diagram

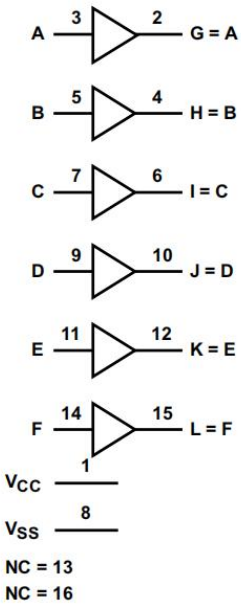


CD4049/CD4050

Figure 2.1 Top View



CD4049



CD4050

Figure 2.2 Functional Diagram

PIN No.	NAME	I/O	FUNCTION	
			CD4049	CD4050
1	VCC		Supply Voltage	Supply Voltage
2	G	O	Data Inverting Output	Data Noninverting Output
3	A	I	Data Input	Data Input
4	H	O	Data Inverting Output	Data Noninverting Output
5	B	I	Data Input	Data Input
6	I	O	Data Inverting Output	Data Noninverting Output
7	C	I	Data Input	Data Input
8	VSS		Ground	Ground
9	D	I	Data Input	Data Input
10	J	O	Data Inverting Output	Data Noninverting Output
11	E	I	Data Input	Data Input
12	K	O	Data Inverting Output	Data Noninverting Output
13	NC		No Connection	No Connection
14	F	I	Data Input	Data Input
15	L	O	Data Inverting Output	Data Noninverting Output
16	NC		No Connection	No Connection

3. System Diagram

3.1 Schematic Diagram

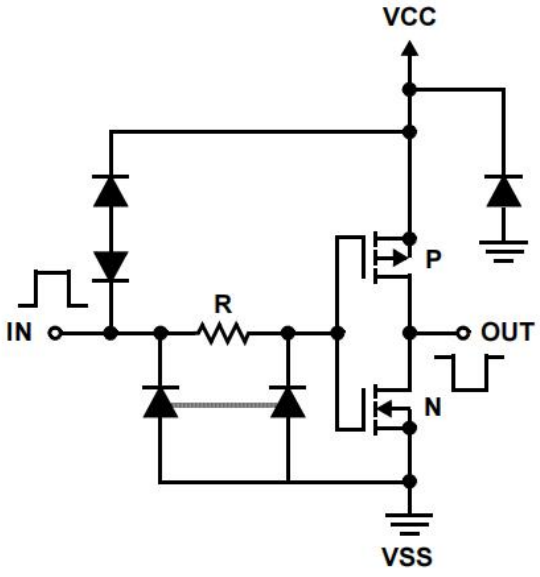


Figure 3.1：CD4049 Schematic Diagram

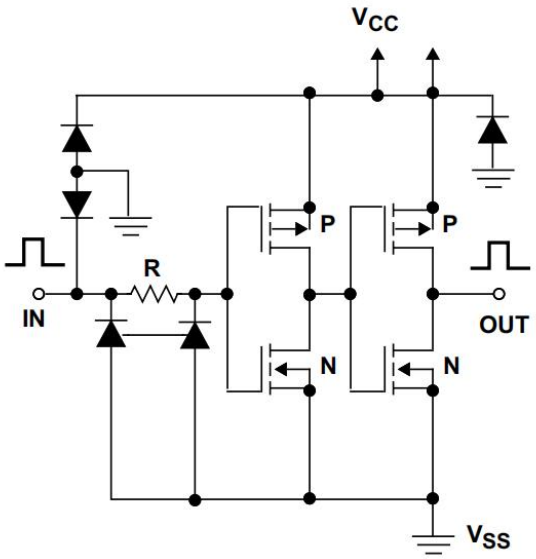


Figure 3.2：CD4050 Schematic Diagram

4. Specifications

4.1 Absolute Maximum Ratings

Symbol	Parameter	MIN	MAX	Unit
V_{CC}	DC Supply Voltage Range (Voltage Referenced to VSS Terminals)	-0.5	20	V
V_I	Input Voltage Range, All Inputs	0.5	VCC+0.5	V
P_D	Power Dissipation		500	mW
T_J	Junction Temperature		125	℃
T_{OP}	Operating Temperature	-40	85	℃

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 normal operating conditions.

4.2 Electrical Characteristics

4.2.1 DC Specifications

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

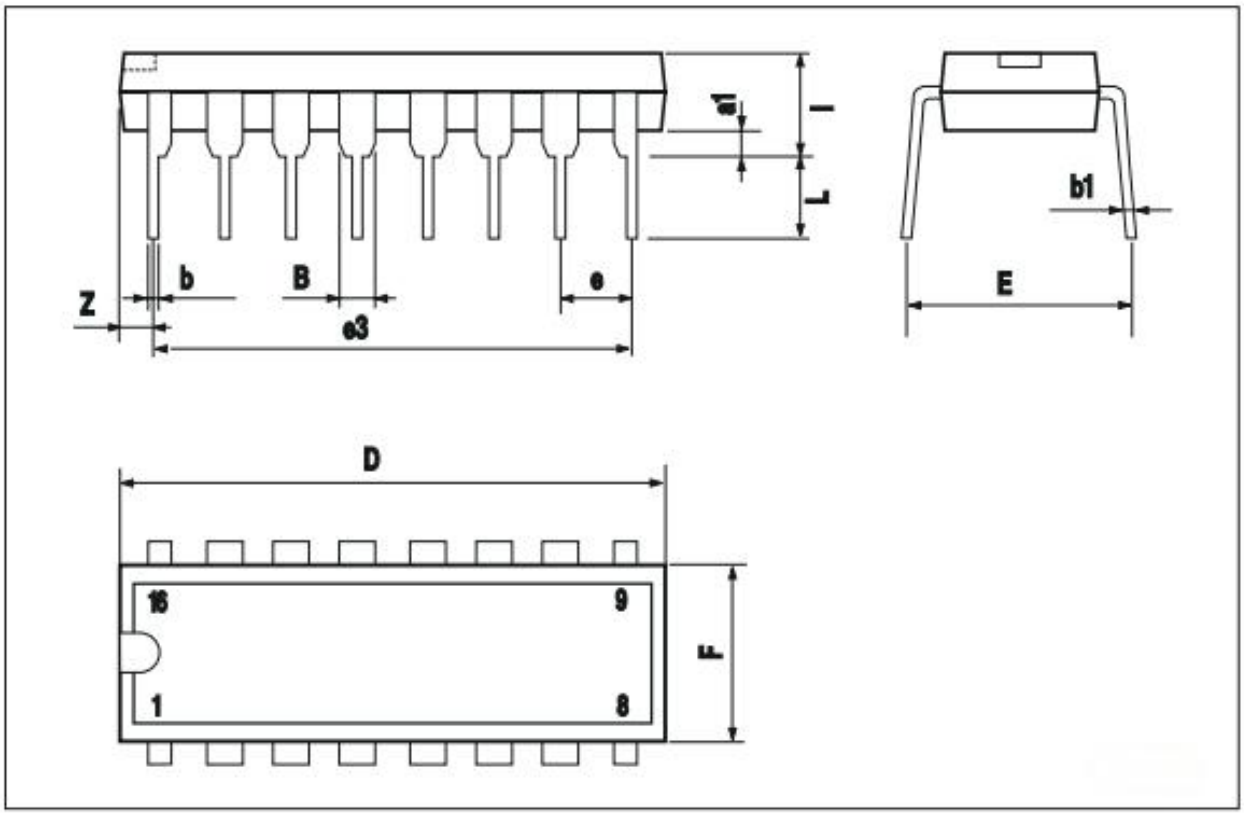
Symbol	Parameter	Test Condition			MIN	TYP	MAX	Unit
		VO	VIN	VCC				
I_{CC}	Supply Current	--	0,5	5	--	0	1	uA
		--	0,10	10	--	0	1	uA
		--	0,18	18	--	0	1	uA
I_{OL}	Low Level Output Current	0.4	0,5	5	7	--	--	mA
		0.5	0,10	10	15	--	--	mA
		1.5	0,15	15	50	--	--	mA
I_{OH}	High Level Output Current	4.6	0,5	5	-0.5	-1.5	--	mA
		2.5	0,5	5	-3.5	-7	--	mA
		9.5	0,10	10	-1.5	-4	--	mA
		13.5	0,15	15	-7	-15	--	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} (CD4049)	Low Level Input Voltage	0.5,4.5	--	5	--	--	1	V
		1,9	--	10	--	--	2	V
		1.5,13.5	--	15	--	--	2.5	V
V_{IH} (CD4049)	High Level Input Voltage	0.5,4.5	--	5	4	--	--	V
		1,9	--	10	8	--	--	V
		1.5,13.5	--	15	12.5	--	--	V

Symbol	Parameter	Test Condition			MIN	TYP	MAX	Unit
		VO	VIN	VCC				
V_{IL} (CD4050)	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} (CD4050)	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

6. Package Information

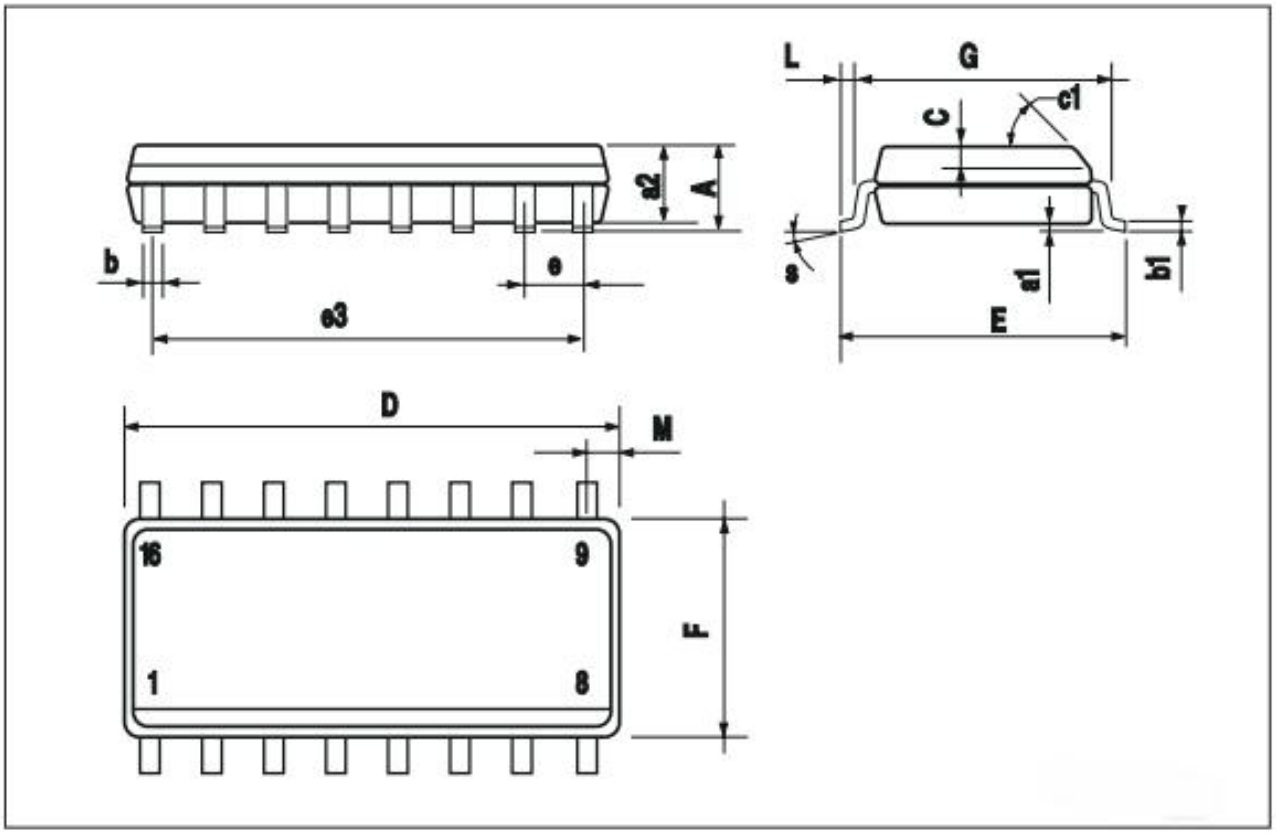
6.1 DIP16

Dim.	mm.			inch.		
	Min.	Typ.	Max.	Min.	Typ.	Max.
a1	0.51			0.020		
B	0.77		1.65	0.030		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		17.78			0.700	
F			7.1			0.280
I			5.1			0.201
L		3.3			0.130	
Z			1.27			0.050



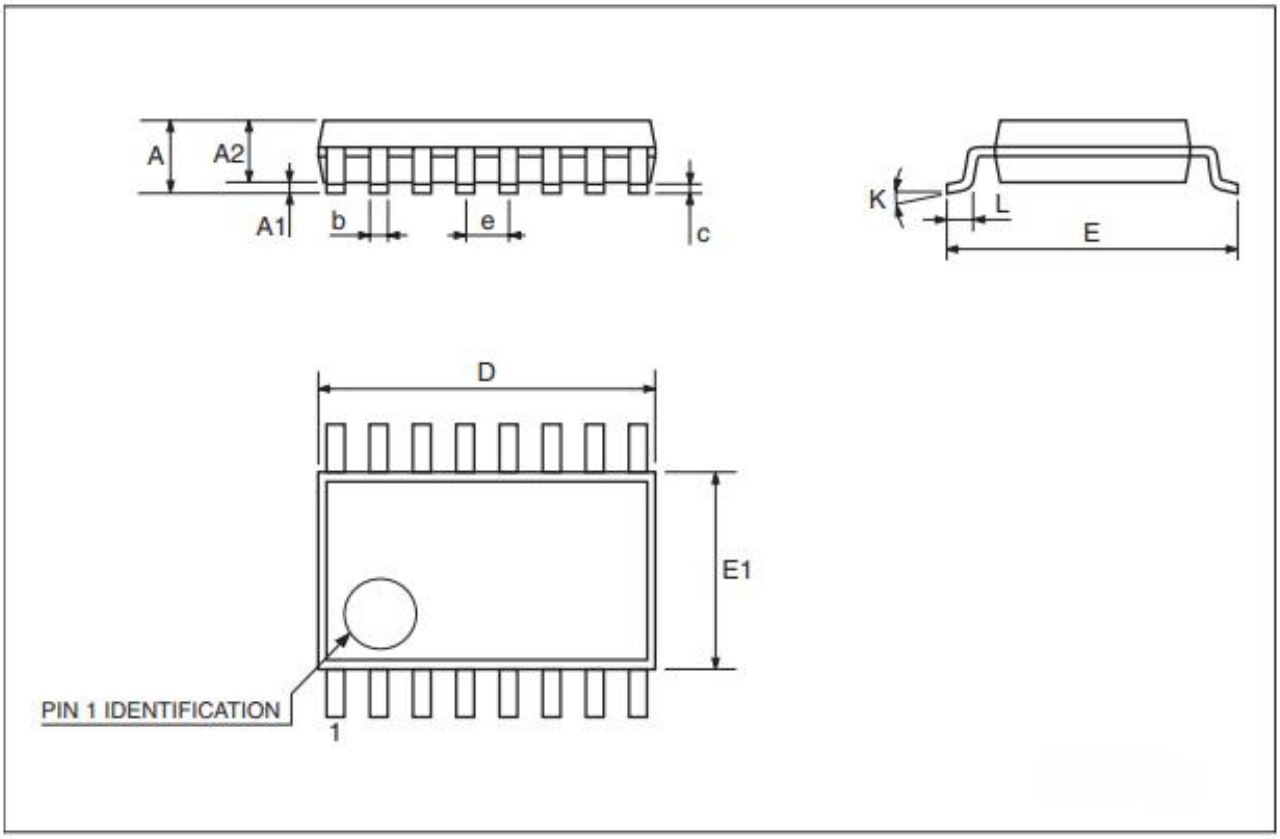
6.2 SOP16

Dim.	mm.			inch.		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.068
a1	0.1		0.25	0.004		0.010
a2			1.64			0.063
b	0.35		0.46	0.013		0.018
b1	0.19		0.25	0.007		0.010
C		0.5			0.019	
c1	45° (typ.)					
D	9.8		10	0.385		0.393
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		8.89			0.350	
F	3.8		4.0	0.149		0.157
G	4.6		5.3	0.181		0.208
L	0.5		1.27	0.019		0.050
M			0.62			0.024
S	8° (max.)					



6.3 TSSOP16

Dim.	mm.			inch.		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.2			0.047
A1	0.05		0.15	0.002	0.004	0.006
A2	0.8	1	1.05	0.031	0.039	0.041
b	0.19		0.30	0.007		0.012
c	0.09		0.20	0.004		0.0079
D	4.9	5	5.1	0.193	0.197	0.201
E	6.2	6.4	6.6	0.244	0.252	0.260
E1	4.3	4.4	4.48	0.169	0.173	0.176
e		0.65 BSC			0.0256 BSC	
K	0°		8°	0°		8°
L	0.45	0.60	0.75	0.018	0.024	0.030



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