

74HC07 HEX BUFFER (OPEN DRAIN)

1. General Description

1.1 Description

The 74HC07 is an high speed CMOS HEX OPEN DRAIN BUFFER.

The internal circuit is composed of 2 stages including buffer output, which enables high noise immunity and stable output.

All inputs are equipped with protection circuits against static discharge and transient voltage.

1.2 Features

- Low power dissipation

$$I_{CC}=10\mu A(MAX)@TA=25^{\circ}C$$

- Wide operating voltage range $V_{CC}=2V$ to $6V$
- Pin and function compatible with 74 series 07

1.3 Device Information

PART NUMBER	PACKAGE
74HC07	DIP
	SOP
	TSSOP

2. Connection Diagrams and Pin Description

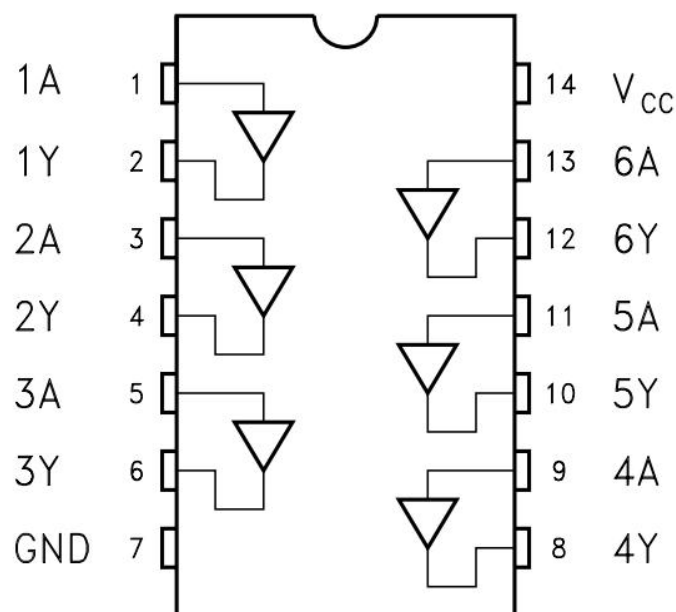


Figure 2.1: Top View



PIN No.	NAME	I/O	FUNCTION
1	1A	I	Input
2	1Y	O	Output
3	2A	I	Input
4	2Y	O	Output
5	3A	I	Input
6	3Y	O	Output
7	GND	-	Ground
8	4Y	O	Output
9	4A	I	Input
10	5Y	O	Output
11	5A	I	Input
12	6Y	O	Output
13	6A	I	Input
14	Vcc	-	Power Pin

Signal Types:I= input, O = Output

3. System Diagram

3.1 Logic Diagram



Figure 3.1: 74HC07 Logic Diagram

3.2 Function Table

Input A	OUTPUT Y
0	0
1	Z

Z = High Impedance, 1=High State, 0=Low State

4. Specifications

4.1 Absolute Maximum Ratings

Symbol	Parameter	MIN	MAX	Unit
V_{CC}	Supply Voltage	-0.5	7	V
V_I	DC Input Voltage	-0.5	$V_{CC} + 0.5$	V
V_O	DC Output Voltage	-0.5	$V_{CC} + 0.5$	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 Recommended Operating Conditions

Symbol	Parameter	Test Condition	MIN	NOM	MAX	Unit
V_{CC}	Supply Voltage		2	5	6	V
V_{IH}	High Level Input Voltage	$V_{CC}=2V$	1.5			V
		$V_{CC}=4.5V$	3.15			V
		$V_{CC}=6V$	4.2			V
V_{IL}	Low Level Input Voltage	$V_{CC}=2V$			0.5	V
		$V_{CC}=4.5V$			1.35	V
		$V_{CC}=6V$			1.8	V
V_I	Input voltage		0		V_{CC}	V
V_O	Output Voltage		0		V_{CC}	V



4.3 Electrical Characteristics

($T_a=25^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified)

Symbol	Parameter	Test Condition	MIN	TYP	MAX	Unit
V_{OL}	Low Level Output Voltage	$V_I=V_{IH}$ or V_{IL} , $V_{CC}=2\text{V}$, $I_O=20\mu\text{A}$	--	0	0.1	V
		$V_I=V_{IH}$ or V_{IL} , $V_{CC}=4.5\text{V}$, $I_O=20\mu\text{A}$	--	0	0.1	V
		$V_I=V_{IH}$ or V_{IL} , $V_{CC}=6\text{V}$, $I_O=20\mu\text{A}$	--	0	0.1	V
		$V_I=V_{IH}$ or V_{IL} , $V_{CC}=4.5\text{V}$, $I_O=4\text{mA}$	--	--	0.26	V
		$V_I=V_{IH}$ or V_{IL} , $V_{CC}=6\text{V}$, $I_O=5.2\text{mA}$	--	--	0.26	V
I_I	Input Leakage Current	$V_{CC}=6\text{V}$, $V_I=V_{CC}$ or GND	--	0	± 1	μA
I_{OZ}	Output Leakage Current	$V_{CC}=6\text{V}$, $V_O=V_{CC}$ or GND, $V_I=V_{IH}$ or V_{IL}	--	0	± 2	μA
I_{CC}	Quiescent Supply Current	$V_{CC}=6\text{V}$, $V_I=V_{CC}/\text{GND}$, $I_O=0$	--	0	10	μA

5. Application Information

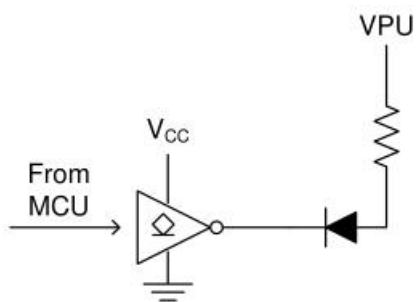


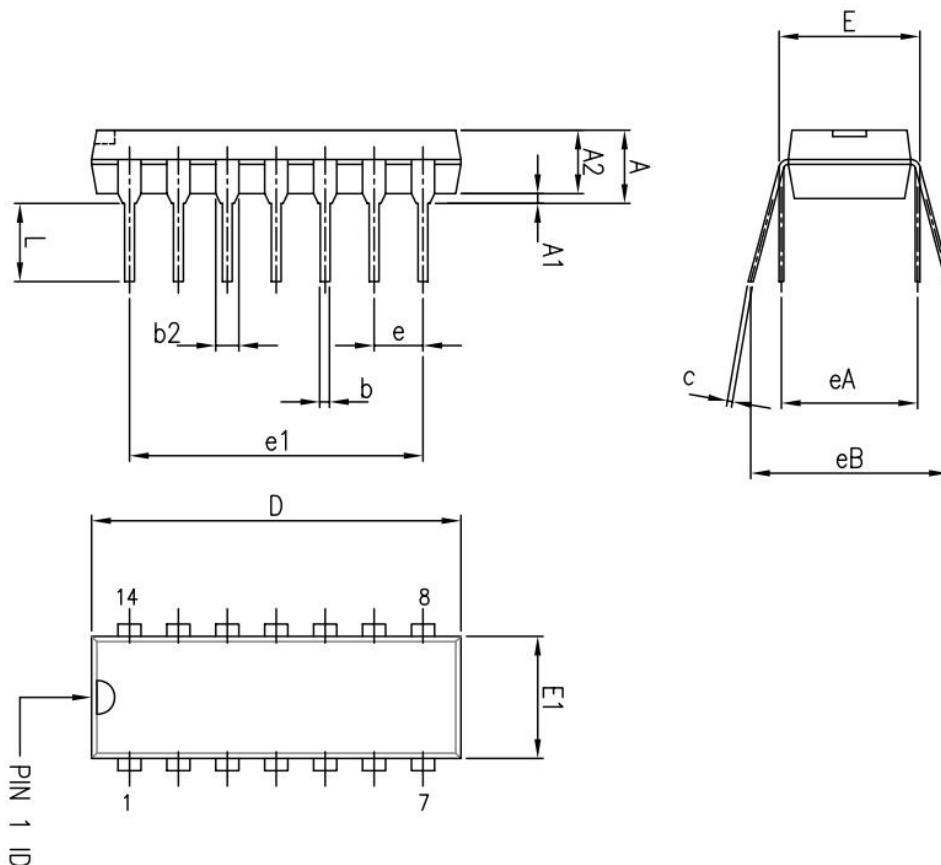
Figure 5.1: Typical application schematic

6. Ordering Information

Orderable Device	Package Type	Pins	Packing	Package Qty
74HC07ND14ATBE	DIP	14	Tube	25
74HC07NS14ARDQ	SOP	14	Tape & Reel	4000
74HC07TS14ARBQ	TSSOP	14	Tape & Reel	2000

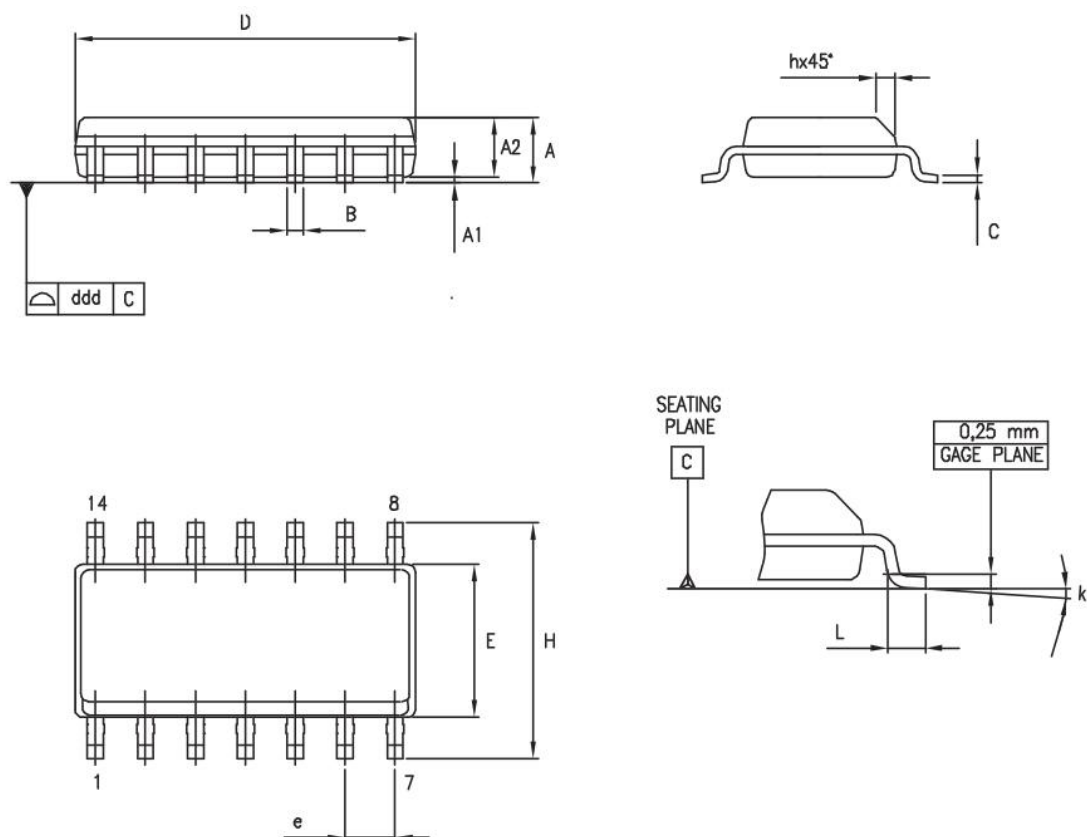
7. Package Information

7.1 DIP14



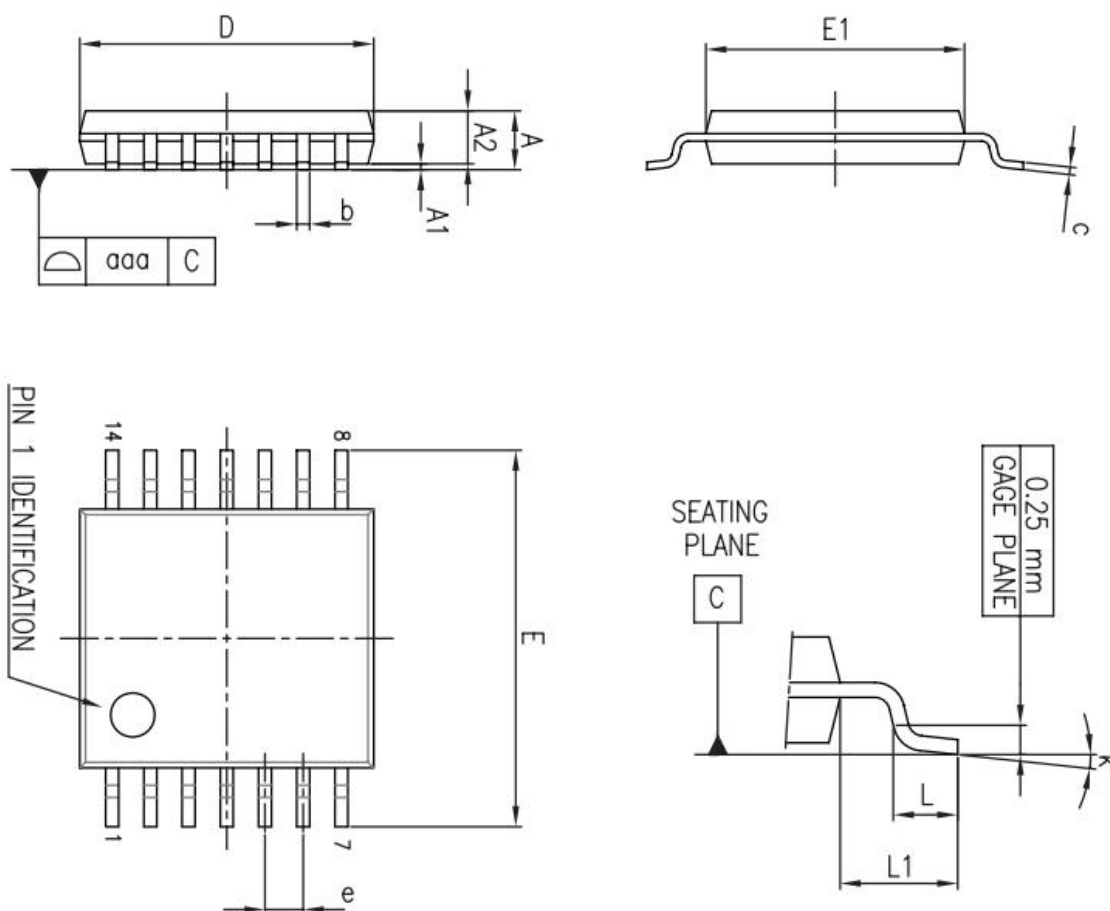
Dimensions						
Ref.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			5.33			0.21
A1	0.38			0.015		
A2	2.92	3.30	4.95	0.11	0.13	0.19
b	0.36	0.46	0.56	0.014	0.018	0.022
b2	1.14	1.52	1.78	0.04	0.06	0.07
c	0.20	0.25	0.36	0.007	0.009	0.01
D	18.67	19.05	19.69	0.73	0.75	0.77
E	7.62	7.87	8.26	0.30	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

7.2 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

7.3 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