

Hex Buffer(Open Drain)

Features

• HIGH SPEED:

 t_{PD} = 6ns (TYP.) at V_{CC} = 6V

- LOW POWER DISSIPATION: $I_{CC} = 1\mu A(MAX.)$ at $T_A=25^{\circ}C$
- HIGH NOISE IMMUNITY:

 $V_{\text{NIH}} = V_{\text{NIL}} = 28 \% V_{\text{CC}}$ (MIN.)

- WIDE OPERATING VOLTAGE RANGE:
 - V_{CC} (OPR) = 2V to 6V
- PIN AND FUNCTION COMPATIBLE WITH 74 SERIES 07



Ordering Information

DEVICE	Package Type	MARKING	Packing	Packing Qty
74HC07N	DIP-14	74HC07	TUBE	1000pcs/box
74HC07M/TR	SOP-14	74HC07	REEL	2500pcs/reel
74HC07MT/TR	TSSOP-14	HC07	REEL	2500pcs/reel



DeScription

The 74HC07 is an high speed CMOS HEX OPEN DRAIN BUFFER fabricated with silicon gate C²MOS technology.

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 excess voltage.

Pin Connection And lec Logic Symbols



Pin Description

PIN No	SYMBOL	NAME AND FUNCTION
1, 3, 5, 9,11,13	1A to 6A	Data Inputs
2, 4, 6, 8,10,12	1Y to 6Y	Data Outputs
7	GND	Ground (0V)
14	V _{CC}	Positive Supply Voltage

Truth Table

А	Y
L	L
Н	Z

ZZ:High Impedance



Input And Output Equivalent Circuit



Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
VCC	Supply Voltage	-0.5 to +7	V
VI	DC Input Voltage	-0.5 to VCC + 0.5	V
Vo	DC Output Voltage	-0.5 to VCC + 0.5	V
ΙK	DC Input Diode Current	20	mA
IOK	DC Output Diode Current	20	mA
IO	DC Output Current	25	mA
$I_{\rm CC}$ or $I_{\rm GND}$	DC VCC or Ground Current	50	mA
PD	Power Dissipation	500(*)	mW
T _{stg}	Storage Temperature	-65 to +150	°C
TL	Lead Temperature (10s)	260	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied.

(*) 500mW at 65°C; derate to 300mW by 10mW/°C from 65°Cto 85°C

Recommended Opera Ting Conditions

Symbol	Parameter		Value	Unit
VCC	Supply Voltage		2 to 6	V
VI	Input Voltage		0 to V _{CC}	V
Vo	Output Voltage	0 to VCC	V	
Т _{ор}	Operating Temperature		-40 to 85	°C
		VCC = 2.0V	0 to 1000	ns
t _r , t _f	Input Rise and Fall Time	V _{CC} = 4.5V	0 to 500	ns
		0 to 400	ns	



Dc Specifications

		Test Condition								
Symbol	Parameter	Veen			TA = 25°C	-40		9 85°C	Unit	
		*CC(V)		Min	Тур	Max	Min	Мах		
	Lligh Lovel Input	2.0		1.5			1.5			
VIH	Noltage	4.5		3.15			3.15		V	
Voltage	voltage	6.0		4.2			4.2			
		2.0				0.5		0.5		
VIL Voltage	4.5				1.35		1.35	V		
	Voltage	6.0				1.8		1.8		
		2.0	Ι <u>Ο</u> =20μΑ		0.0	0.1		0.1	V	
		4.5	Ι <u>Ο</u> =20μΑ		0.0	0.1		0.1		
VOL	Low Level Output	6.0	IO=20µA		0.0	0.1		0.1		
	vollage	4.5	IO=4.0 mA		0.17	0.26		0.33		
		6.0	IO=5.2 mA		0.18	0.26		0.33		
IJ	Input Leakage Current	6.0	VI=VCC or GND			0.1		1	μΑ	
loz	Output Leakage Current	6.0	VI = VIH or VILVO=VCC or GND			0.5		5	μA	
ICC	Quiescent Supply Current	6.0	VI = VCC or GND			1		10	μA	

AC Electrical Characteristics(CL=5pF,Input tr=tf=6ns)

		Te	st Condition							
Symbol	Parameter	Veedu		TA = 25°C			-40 to	85°C	Unit	
				Min.	Тур.	Max.	Min.	Max.		
	0 / / T	2.0			30	75		95		
tTHL Time	4.5			8	15		19	ns		
	6.0			7	13		16			
		2.0			10	90		115	ns	
^t PLZ	Propagation Delay	4.5	R _L = 1 KΩ		7	18		23		
		6.0			6	15		20		
		2.0			17	90		115		
tPZL	Propagation Delay	4.5	RL = 1 KΩ		7	18		23	ns	
		6.0			5	15		20		



Capacitive Charactristics

Symbol		Test Condition								
	Parameter	VCC(V)			TA = 25°C			-40 to	Unit	
					Min.	Тур.	Max.	Min.	Max.	
CIN	Input Capacitance	5.0				5	10		10	pF
COUT	Output Capacitance	5.0				3				pF
CPD	Power Dissipation Capacitance (note1)	5.0				4				pF

 C_{PD} is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average operating current can be obtained by the following equation. $I_{CC(opr)} = C_{PD} \times V_{CC} \times f_{IN} + I_{CC}/6$ (per gate)

Test Circuit



CL = 50pF or equivalent (includes jig and probe capacitance) RT = ZOUT of pulse generator (typically 50Ω)



WAVEFORM:PROPAGA TION DELAY TIME(f=1MHz;50% duty cycle)



Physical Dimensions

DIP-14





Dimensions In Millimeters(DIP-14)											
Symbol:	A	В	D	D1	E	L	L1	а	с	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	В	С	C1	D	Q	а	b	
Min:	1.35	0.05	8.55	5.80	3.80	0.40	0°	0.35	1 27 860	
Max:	1.55	0.20	8.75	6.20	4.00	0.80	8°	0.45	1.27 BSC	



TSSOP-14



Dimensions In Millimeters(TSSOP-14)										
Symbol:	А	A1	В	С	C1	D	Q	а	b	
Min:	0.85	0.05	4.90	6.20	4.30	0.40	0°	0.20	0.65.890	
Max:	0.95	0.20	5.10	6.60	4.50	0.80	8°	0.25	0.05 650	



Revision History

DATE	REVISION	PAGE
2019-3-4	New	1-9
2023-9-18	Modify features ang descriptions、Update encapsulation type、Updated DIP-14 Physical dimension、Update Title	1、4、6
2024-10-31	Update Lead Temperature	3



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