

General 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

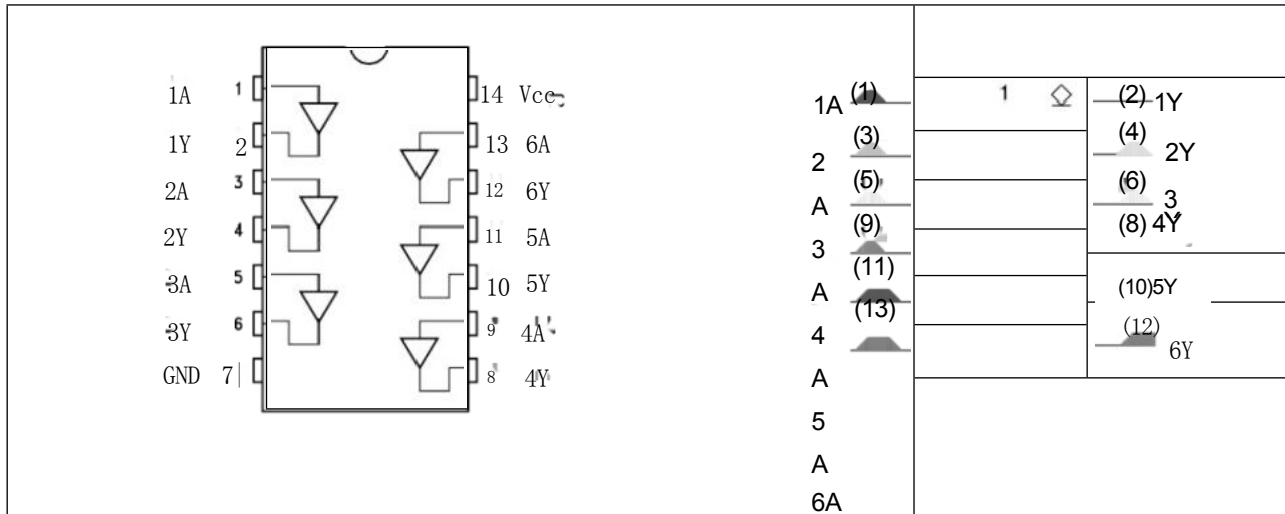
Features

- HIGH SPEED:
tPD = 6ns (TYP.) at VCC = 6V
- LOW POWER DISSIPATION:
ICC = 1μA(MAX.) at TA=25°C
- HIGH NOISE IMMUNITY:
VNIH = VNIL = 28 % VCC (MIN.)
- WIDE OPERATING VOLTAGE RANGE:
VCC (OPR) = 2V to 6V
- PIN AND FUNCTION COMPATIBLE WITH 74 SERIES 07

Order 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

Pin Connection And IEC Logic Symbols



Pin Description

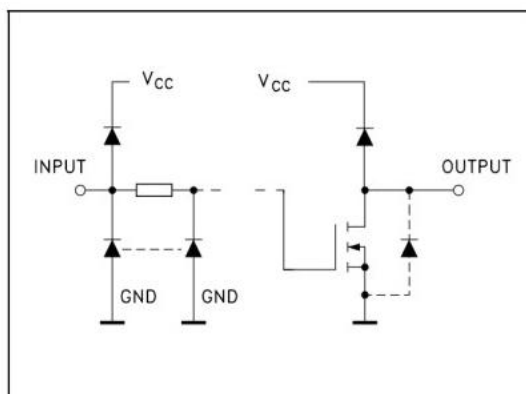
PIN No	SYMBOL	NAME AND FUNCTION
1,3,5,9,11,13	1A to 6A	Data Inputs
2,4,6,8,10,12	1Y to 6Y	Data Outputs
7	GND	Ground (OV)
14	Vcc	Positive Supply Voltage

Truth Table

A	Y
L	L
H	Z

ZZ:High Impedance

Input And Output Equivalent Circuit



Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V _{cc}	Supply Voltage	-0.5 to +7	V
V _I	DC Input Voltage	-0.5 to V _{CC} +0.5	V
V _O	DC Output Voltage	-0.5 to V _{CC} +0.5	V
I _{IK}	DC Input Diode Current	20	mA
I _{OK}	DC Output Diode Current	20	mA
I _O	DC Output Current	25	mA
I _{EE} or I _{GNC}	DC V _{cc} or Ground Current	50	mA
PD	Power Dissipation	500(*)	mW
T _{stg}	Storage Temperature	-65 to +150	°C
T _L	Lead Temperature(10s)	245	°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°C to 85°C

Recommended Operating Conditions

Symbol	Parameter	Value	Unit	
V _{cc}	Supply Voltage	2 to 6	V	
V _I	Input Voltage	0 to V _{cc}	V	
V _O	Output Voltage	0 to V _{CC}	V	
T _{op}	Operating Temperature	-40 to 85	°C	
t _r , t _f	Input Rise and Fall Time	V _{CC} =2.0V	0 to 1000	ns
		V _{CC} =4.5V	0 to 500	ns
		V _{CC} =6.0V	0 to 400	ns

Dc Specifications

Symbol	Parameter	Test Condition		Value					Unit
		Vcc(V)		TA=25°C			-40 to 85°C		
				Min	Typ	Max	Min	Max	
VIH	High Level Input Voltage	2.0		1.5			1.5		V
		4.5		3.15			3.15		
		6.0		4.2			4.2		
VL	Low Level Input Voltage	2.0				0.5		0.5	V
		4.5				1.35		1.35	
		6.0				1.8		1.8	
VoL	Low Level Output Voltage	2.0	io=20μA		0.0	0.1		0.1	V
		4.5	io=20μA		0.0	0.1		0.1	
		6.0	io=20μA		0.0	0.1		0.1	
		4.5	io=4.0 mA		0.17	0.26		0.33	
		6.0	io=5.2 mA		0.18	0.26		0.33	
	Input Leakage Current	6.0	VI=VCC or GND			0.1		1	μA
IoZ	Output Leakage Current	6.0	VI=VIH or VIL,Vo=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=t=6ns)

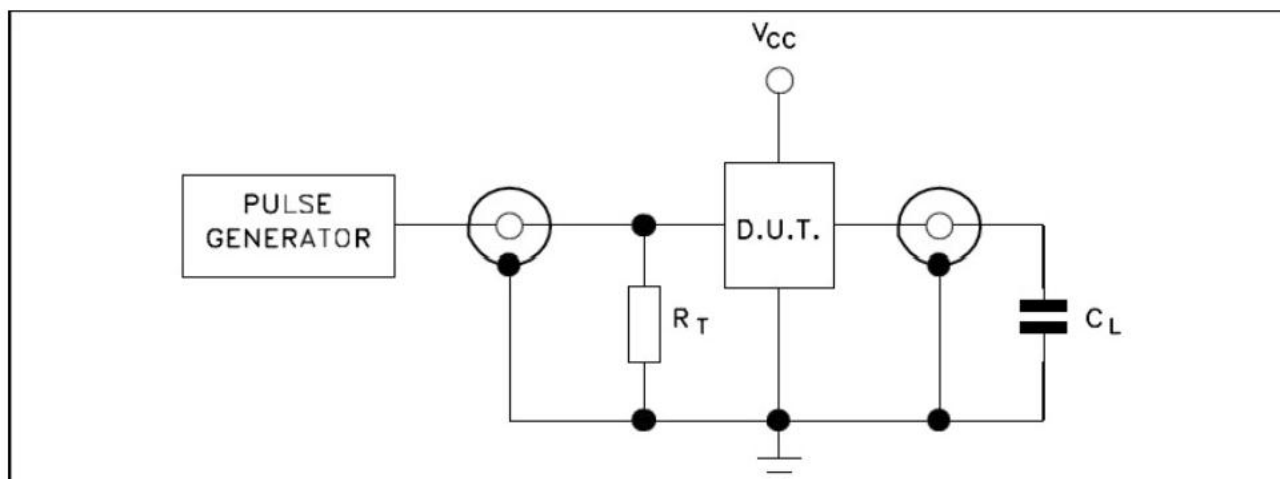
Symbol	Parameter	Test Condition		Value					Unit
		Vcc(V)		TA =25°C			-40 to 85°C		
				Min	Typ.	Max	Min.	Max	
tTHL	Output Transition Time	2.0			30	75		95	ns
		4.5			8	15		19	
		6.0			7	13		16	
tPLZ	Propagation Delay Time	2.0	RL=1KC		10	90		115	ns
		4.5			7	18		23	
		6.0			6	15		20	
tPZL	Propagation Delay Time	2.0	RL=1 KQ		17	90		115	ns
		4.5			7	18		23	
		6.0			5	15		20	

Capacitive Characteristics

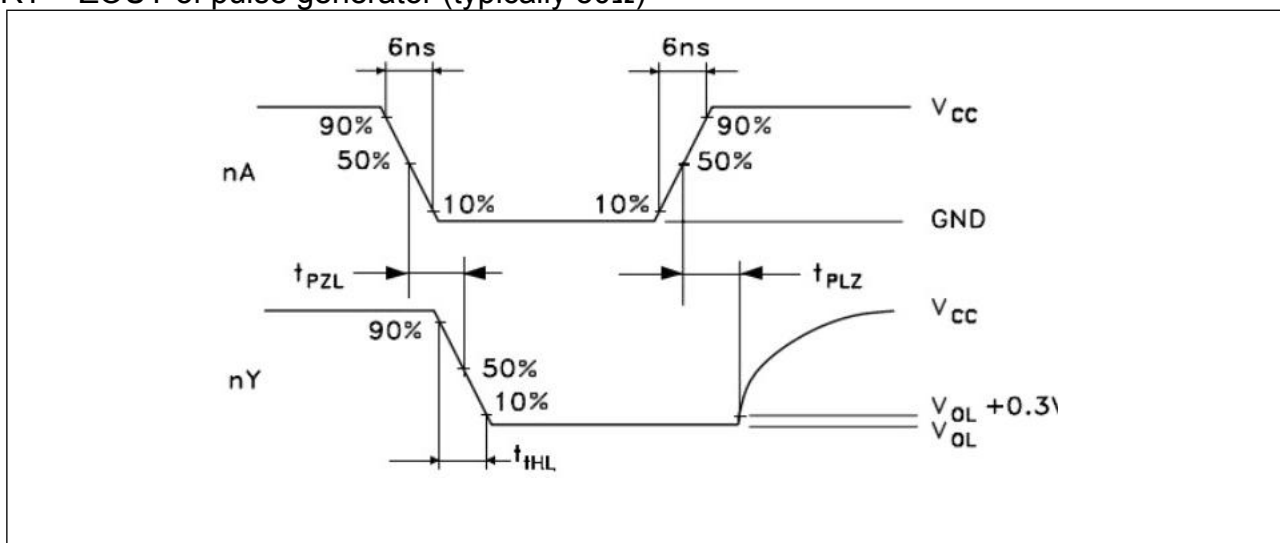
Symbol	Parameter	Test Condition			Value					Unit
		Vcc(V)			TA=25°C			-40 to 85°C		
					Min.	Typ.	Max.	Min.	Max.	
CIN	Input Capacitance	5.0				5	10		10	pF
COUT	Output Capacitance	5.0				3				pF
CPD	Power Dissipation Capacitance(note1)	5.0				4				pF

C_{pp} 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. $I_{CCOPN} = C_p D \times V_{CC} \times f_{in} + I_{CC}/6$ (per gate)

Test Circuit



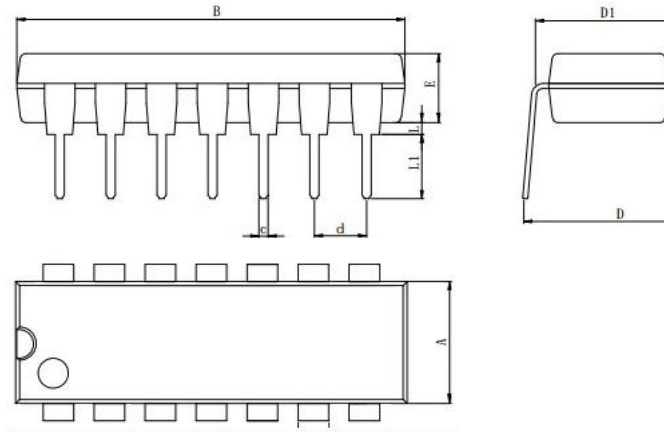
C_L = 50pF or equivalent (includes jig and probe capacitance)
R_T = Z_{OUT} of pulse generator (typically 50Ω)



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

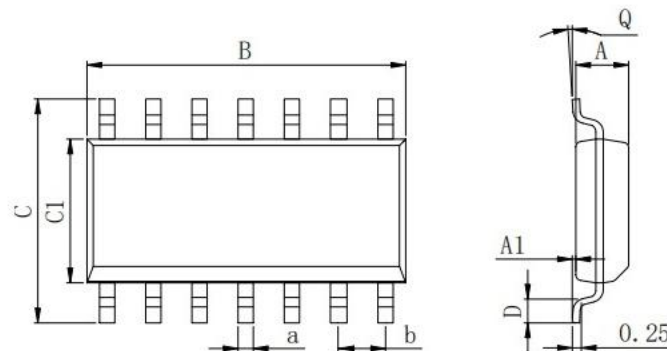
Physical Dimensions

DIP-14



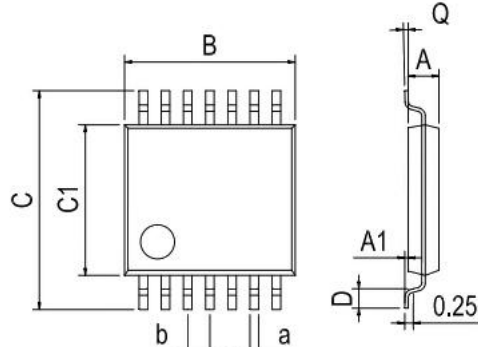
Dimensions In Millimeters(DIP-14)										
Symbol:	A	B	D	D1	E	L	L1	a	C	d
Min:	6.10	18.94	8.10	7.42	3.10	0.50	3.00	1.50	0.40	2.54 BSC
Max:	6.68	19.56	10.9	7.82	3.55	0.70	3.60	1.55	0.50	

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

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	

