

HEX BUFFER(OPEN DRAIN)

- 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:
 $V_{NIH} = V_{NIL} = 28\% V_{CC}$ (MIN.)
- WIDE OPERATING VOLTAGE RANGE:
 $V_{CC} (OPR) = 2V$ to $6V$
- PIN AND FUNCTION COMPATIBLE WITH 74 SERIES 07

DESCRIPTION

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

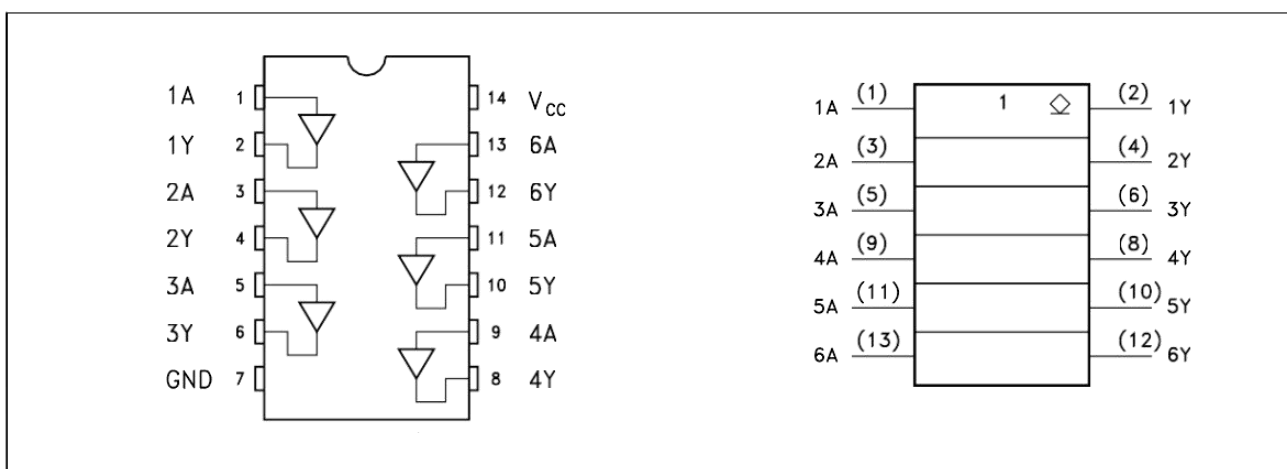
The internal circuit is composed of 2 stages including buffer output, which enables high noise immunity and stable output.

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

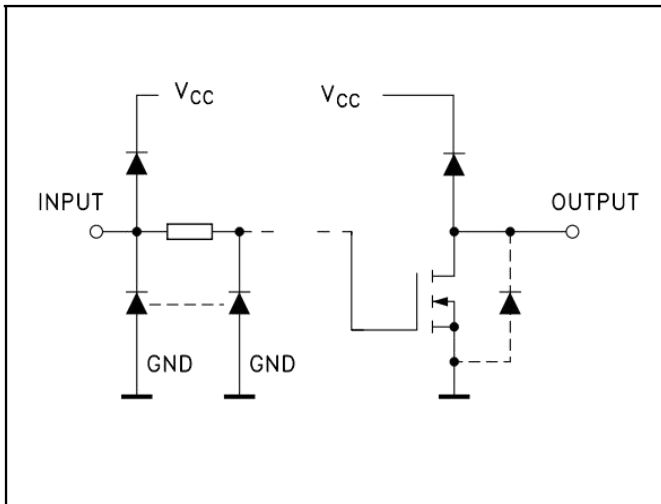
ORDERING INFORMATION

DEVICE	Package Type	MARKING	Packing	Packing Qty
74HC07PG	DIP-14L	74HC07	TUBE	1000pcs/box
74HC07DRG	SOP-14L	74HC07	REEL	2500pcs/reel
74HC07PWRG	TSSOP-14L	HC07	REEL	2500pcs/reel

PIN CONNECTION AND IEC LOGIC SYMBOLS



INPUT AND OUTPUT EQUIVALENT CIRCUIT



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

A	Y
L	L
H	Z

Z:High Impedance

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 _{CC} or I _{GND}	DC V _{CC} or Ground Current	50	mA
P _D	Power Dissipation	500(*)	mW
T _{stg}	Storage Temperature	-65 to +150	°C
T _L	Lead Temperature (10 sec)	300	°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
		V _{CC} (V)		T _A = 25°C			-40 to 85°C		
				Min	Typ	Max	Min	Max	
V _{IH}	High Level Input Voltage	2.0		1.5			1.5		V
		4.5		3.15			3.15		
		6.0		4.2			4.2		
V _{IL}	Low Level Input Voltage	2.0				0.5		0.5	V
		4.5				1.35		1.35	
		6.0				1.8		1.8	
V _{OL}	Low Level Output Voltage	2.0	I _O =20μA		0.0	0.1		0.1	V
		4.5	I _O =20μA		0.0	0.1		0.1	
		6.0	I _O =20μA		0.0	0.1		0.1	
		4.5	I _O =4.0 mA		0.17	0.26		0.33	
		6.0	I _O =5.2 mA		0.18	0.26		0.33	
I _I	Input Leakage Current	6.0	V _I =V _{CC} or GND			0.1		1	A
I _{OZ}	Output Leakage Current	6.0	V _I = V _{IH} or V _{IL} V _O =V _{CC} or GND			0.5		5	A
I _{CC}	Quiescent Supply Current	6.0	V _I = V _{CC} or GND			1		10	A

AE ELECTRICAL CHARACTERISTICS (C_L=5pF, Input tr=tf=6ns)

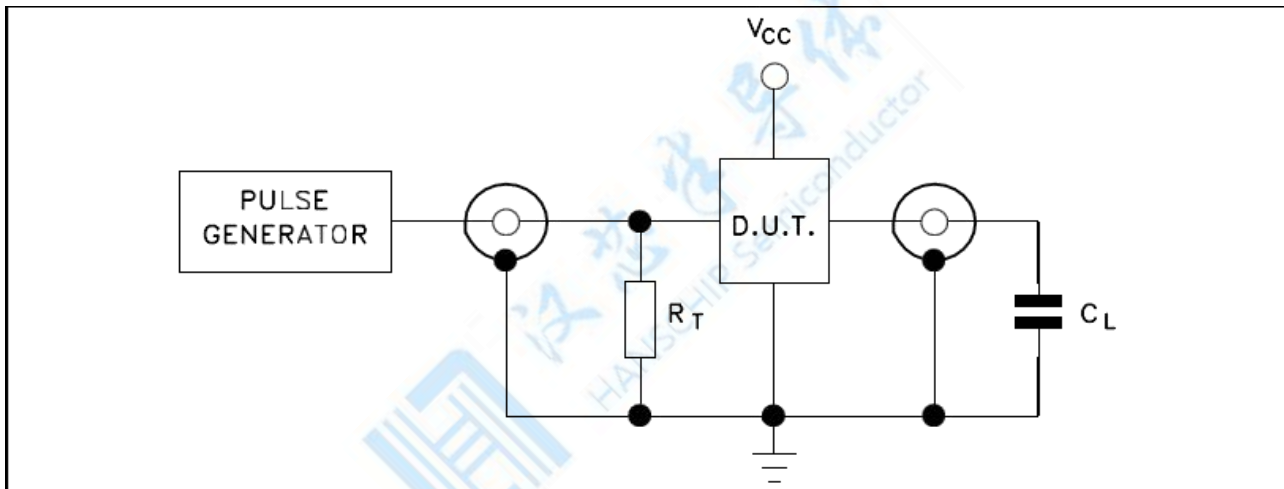
Symbol	Parameter	Test Condition		Value					Unit
		V _{CC} (V)		T _A = 25°C			-40 to 85°C		
				Min.	Typ.	Max.	Min.	Max.	
t _{THL}	Output Transition Time	2.0			30	75		95	ns
		4.5			8	15		19	
		6.0			7	13		16	
t _{PLZ}	Propagation Delay Time	2.0	R _L = 1 K		10	90		115	ns
		4.5			7	18		23	
		6.0			6	15		20	
t _{PZL}	Propagation Delay Time	2.0	R _L = 1 K		17	90		115	ns
		4.5			7	18		23	
		6.0			5	15		20	

CAPACITIVE CHARACTERISTICS

Symbol	Parameter	Test Condition			Value					Unit
		V _{CC} (V)			T _A = 25°C			-40 to 85°C		
					Min.	Typ.	Max.	Min.	Max.	
C _{IN}	Input Capacitance	5.0				5	10		10	pF
C _{OUT}	Output Capacitance	5.0				3				pF
C _{PD}	Power Dissipation Capacitance (note 1)	5.0				4				pF

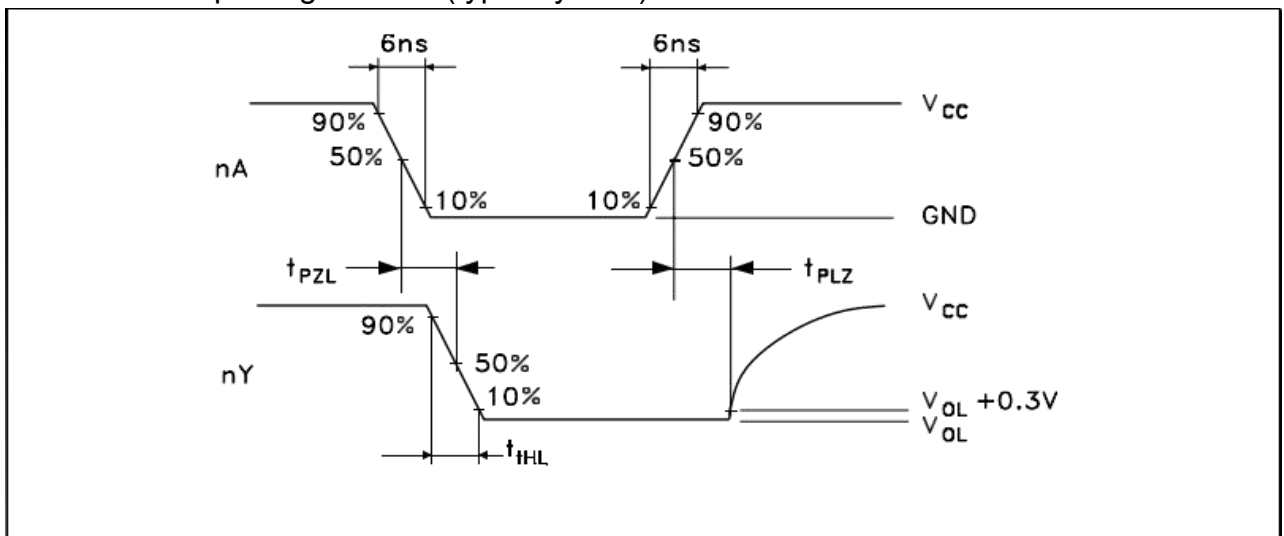
C_{PD} is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average operating current can be obtained by the following equation. $I_{CC(opr)} = C_{PD} \times V_{CC} \times f_{IN} + I_{CC}/6$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

TEST CIRCUIT

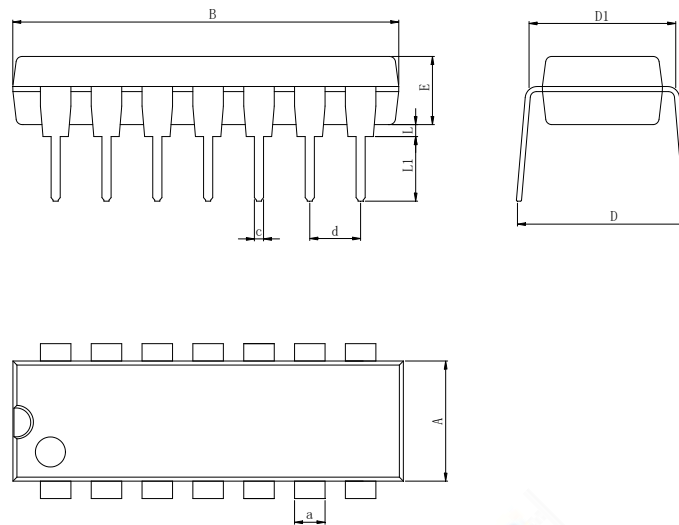


C_L = 50pF or equivalent (includes jig and probe capacitance)

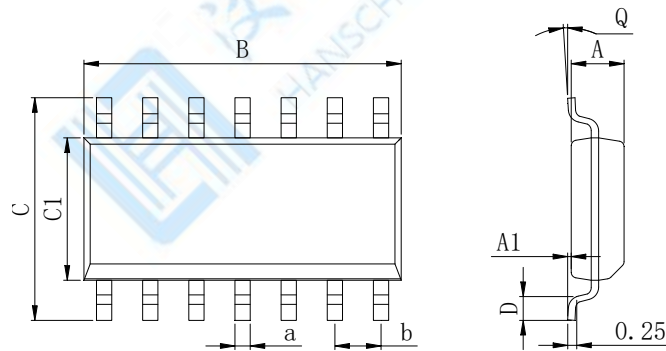
R_T = Z_{OUT} of pulse generator (typically 50Ω)



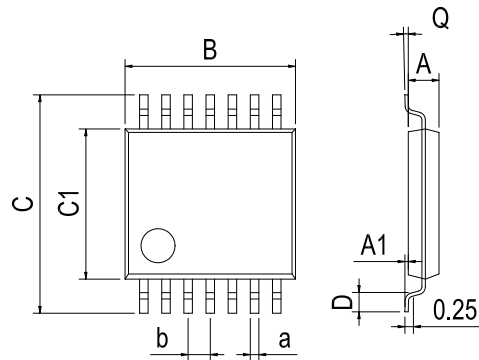
WAVEFORM: PROPAGATION DELAY TIME (f=1MHz; 50% duty cycle)

PHYSICAL DIMENSIONS
DIP-14L

Dimensions In Millimeters(DIP14L)

Symbol:	A	B	D	D1	E	L	L1	a	c	d
Min:	6.10	18.94	8.40	7.42	3.10	0.50	3.00	1.50	0.40	2.54 BSC
Max:	6.68	19.56	9.00	7.82	3.55	0.70	3.60	1.55	0.50	

SOP14L

Dimensions In Millimeters(SOP14L)

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	

TSSOP-14L


Dimensions In Millimeters(TSSOP14L)									
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	



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