

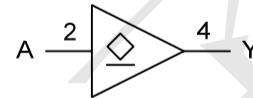
DESCRIPTION

The MC74VHC1G07 is a CMOS device with open-drain output providing a buffer and it follows the Function $Y=A$.

FEATURES

- * Operation voltage range: 2 ~ 5.5V
- * Max tPD of 7.5 ns at 5V
- * Low static power consumption; ICC=1μA (Max.)
- * ±8mA output drive at 5V

LOGIC DIAGRAM



Logic symbol

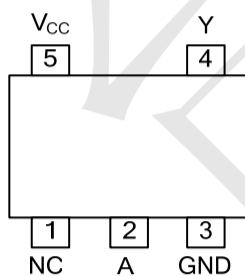


IEC logic symbol

Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
MC74VHC1G07DTT1G-TP	SOT23-5	Tape and Reel,3000
MC74VHC1G07DFT1G-TP	SOT353	Tape and Reel,3000

PIN CONFIGURATION



SOT23-5/
SOT353

FUNCTION TABLE

INPUT A	OUTPUT Y
H	Z
L	L

Note: H: High Voltage Level

L: Low Voltage Level

Z: High-Impedance OFF-State

ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V _{CC}		-0.5 ~ +7.0	V
Input Voltage	V _{IN}		-0.5 ~ +7.0	V
Input Clamp Current	I _{IK}	V _{IN} <0V	-20	mA
Output Clamp Current (Note 2)	I _{OK}	V _{OUT} <0V	-20	mA
Continuous Output Current	I _{OUT}		±25	mA
Continuous V _{CC} or GND Current	I _{CC}		±50	mA
Power Dissipation	SOT23-5	P _D	300	mW
	SOT-353		250	mW
Operating Temperature	T _{OPR}		-40 ~ + 125	°C
Storage Temperature Range	T _{STG}		-65 ~ + 150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

RECOMMENDED OPERATING CONDITIONS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{CC}		2.0		5.5	V
Input Voltage	V _{IN}		0		5.5	V
Output Voltage	V _{OUT}		0		5.5	V
Input Transition Rise or Fall Rate	Δt/Δv	V _{CC} =3.3±0.3V			100	ns/V
		V _{CC} =5.0±0.5V			20	ns/V

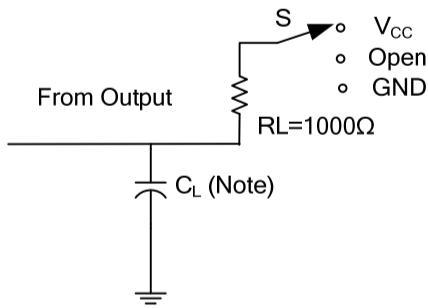
STATIC CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V _{IH}	V _{CC} = 2.0V	1.5			V
		V _{CC} =3.0V	2.1			V
		V _{CC} =5.5V	3.85			V
Low-Level Input Voltage	V _{IL}	V _{CC} = 2.0V			0.5	V
		V _{CC} =3.0V			0.9	V
		V _{CC} =5.5V			1.65	V
Low-Level Output Voltage	V _{OL}	I _{OL} =50μA	V _{CC} =2.0V		0.1	V
			V _{CC} =3.0V		0.1	V
			V _{CC} =4.5V		0.1	V
		I _{OL} =4mA, V _{CC} =3.0V			0.36	V
		I _{OL} =8mA, V _{CC} =4.5V			0.36	V
Input Leakage Current	I _{I(LEAK)}	V _{IN} =V _{CC} or GND, V _{CC} =5.5V			±0.1	μA
3-state output OFF-state current	I _{OZ}	V _{IN} =V _{IH} or V _{IL} , V _{OUT} =V _{CC} or GND V _{CC} =5.5V			±0.25	μA
Quiescent Supply Current	I _{CC}	V _{IN} =V _{CC} or GND, I _{OUT} =0A V _{CC} =5.5V			1.0	μA
Input Capacitance	C _{IN}	V _{IN} =V _{CC} or GND		1.5		pF

DYNAMIC CHARACTERISTICS (Input: t_r, t_f≤3ns; PRR≤1MHz, T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation delay from input (A) to output (Y)	t _{PZL}	V _{CC} =3.3±0.3 V	C _L =15 pF		3.5	5.6	ns
			C _L =50 pF		5.0	8.0	ns
	C _L =15 pF			5.8	7.9	ns	
	C _L =50 pF			8.3	11.5	ns	
	t _{PLZ}	V _{CC} =5±0.5 V	C _L =15 pF		2.5	3.9	ns
			C _L =50 pF		3.6	5.5	ns
	C _L =15 pF			4.2	5.1	ns	
	C _L =50 pF			6.0	7.5	ns	

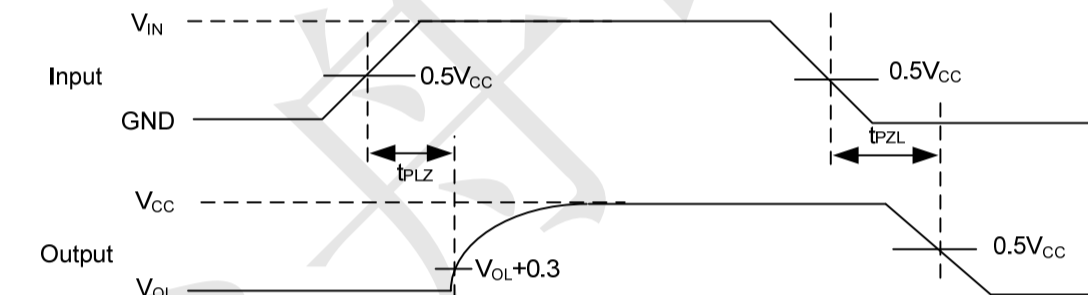
TEST CIRCUIT AND WAVEFORMS



TEST	S
t_{PLH}/t_{PHL}	Open
t_{PHZ}/t_{PZH}	GND
t_{PLZ}/t_{PZL}	V_{CC}

TEST CIRCUIT

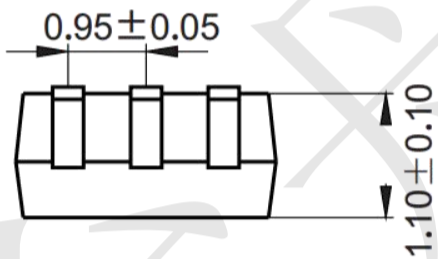
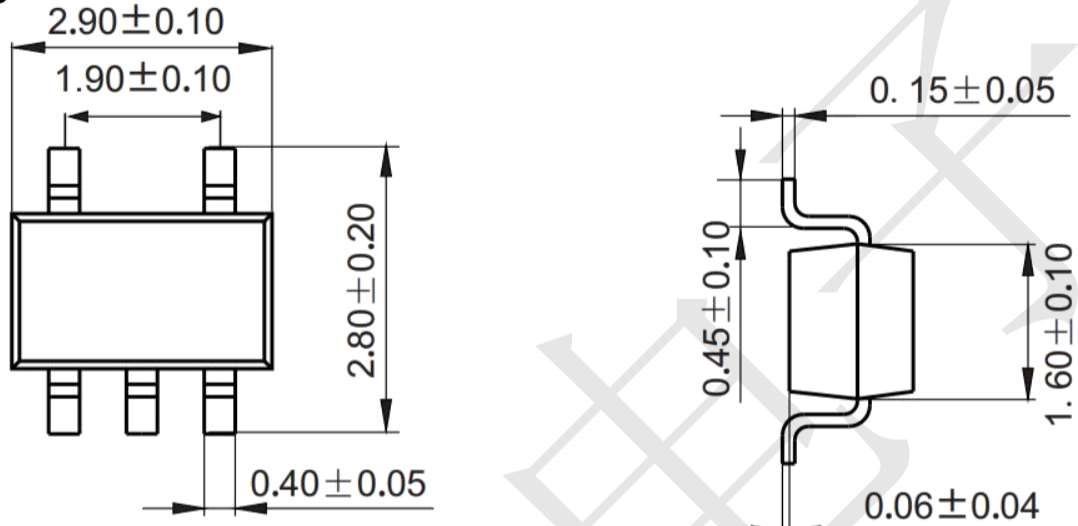
Note: C_L includes probe and jig capacitance.



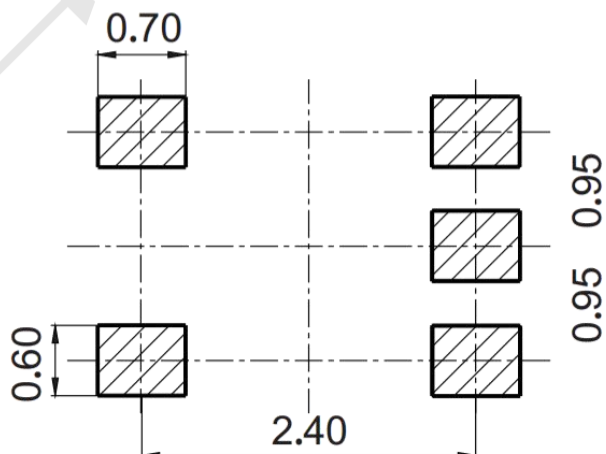
PROPAGATION DELAY TIMES

Package information (Unit: mm)

SOT23-5

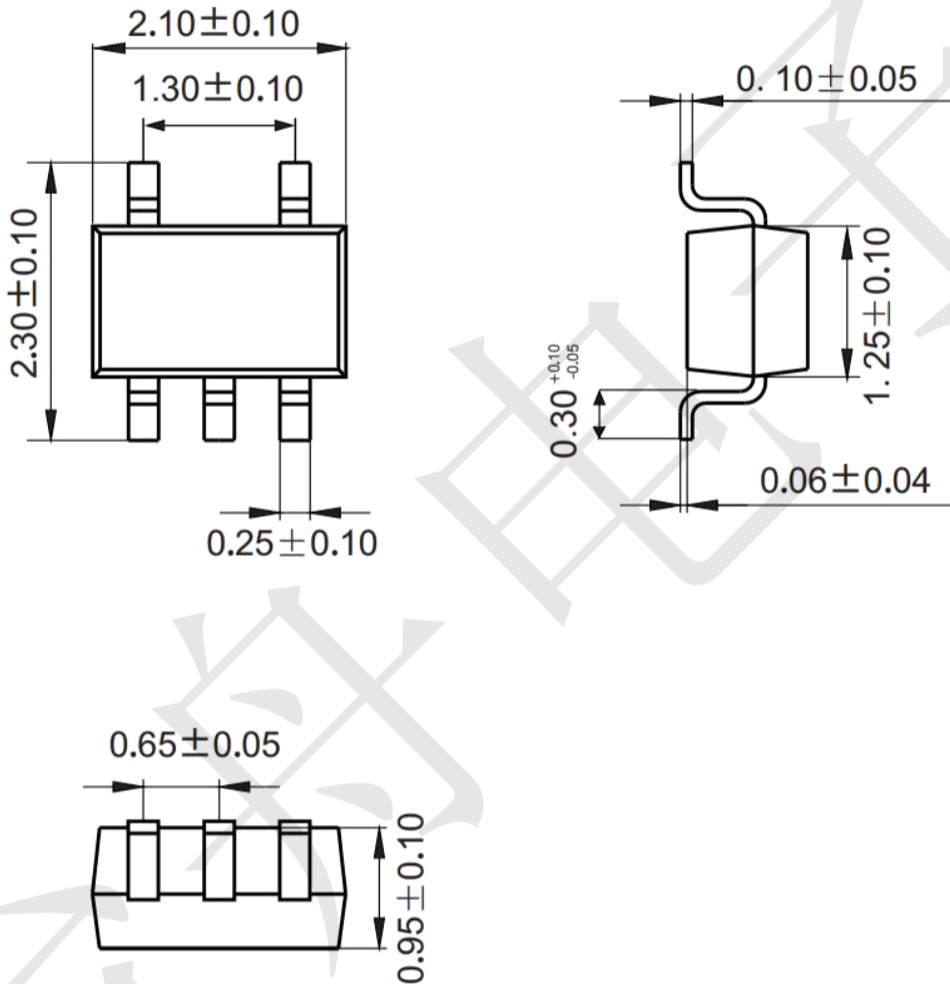


Mounting Pad Layout (Unit: mm)



Package information (Unit: mm)

SOT353



Mounting Pad Layout (Unit: mm)

