

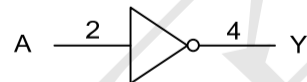
DESCRIPTION

The MC74VHC1G04 is a inverter gate, it provides the Function $Y = \bar{A}$.

FEATURES

- * Operation Voltage Range: 2V ~ 5.5V
- * Low power consumption, $I_{CC} = 1\mu A$ (Max) at 5.5V
- * $\pm 8mA$ output driver at 5V

LOGIC DIAGRAM



Logic symbol

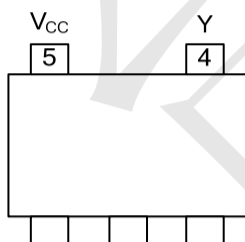


IEC logic symbol

Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
MC74VHC1G04DTT1G-TP	SOT23-5	Tape and Reel,3000
MC74VHC1G04DFT1G-TP	SOT353	Tape and Reel,3000

PIN CONFIGURATION



SOT23-5
/SOT353

FUNCTION TABLE

INPUT(A)	OUTPUT(Y)
H	L
L	H

Note: H: high voltage level; L: low voltage level.

ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ 7	V
Input Voltage	V_{IN}	-0.5 ~ 7	V
Output Voltage	V_{OUT}	-0.5 ~ V_{CC} +0.5	V
V_{CC} or GND Current	I_{CC}	±50	mA
Output Current	I_{OUT}	±25	mA
Input Clamp Current	I_{IK}	-20	mA
Output Clamp Current	I_{OK}	±20	mA
Storage Temperature	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.

THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT23-5	θ_{JA}	280	°C/W
	SOT-353		350	

RECOMMENDED OPERATING COMDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2		5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	$V_{CC}=5.0+0.5V$			20	ns/V
Operating Temperature	T_A		-40		125	°C

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2		5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
High-Level Input Voltage	V_{IH}	$V_{CC}=2.0V$	1.5			V
		$V_{CC}=3.0V$	2.1			
		$V_{CC}=5.5V$	3.85			
Low-Level Input Voltage	V_{IL}	$V_{CC}=2.0V$			0.5	V
		$V_{CC}=3.0V$			0.9	
		$V_{CC}=5.5V$			1.65	
High-Level Output Voltage	V_{OH}	$V_{CC}=2.0V$	1.9	2.0		V
		$V_{CC}=3.0V$	2.9	3.0		
		$V_{CC}=4.5V$	4.4	4.5		
		$V_{CC}=3.0V, I_{OH}=-4mA$	2.58			
		$V_{CC}=4.5V, I_{OH}=-8mA$	3.94			
Low-Level Output Voltage	V_{OL}	$V_{CC}=2.0V$			0.1	V
		$V_{CC}=3.0V$			0.1	
		$V_{CC}=4.5V$			0.1	
		$V_{CC}=3.0V, I_{OL}=4mA$			0.36	
		$V_{CC}=4.5V, I_{OL}=8mA$			0.36	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0V\sim 5.5V$, $V_{IN}=5.5V$ or GND			± 0.1	μA
Quiescent Supply Current	I_Q	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0A$			1	μA
Input Capacitance	C_I	$V_{CC}=5.0V, V_{IN}=V_{CC}$ or GND		2	10	pF

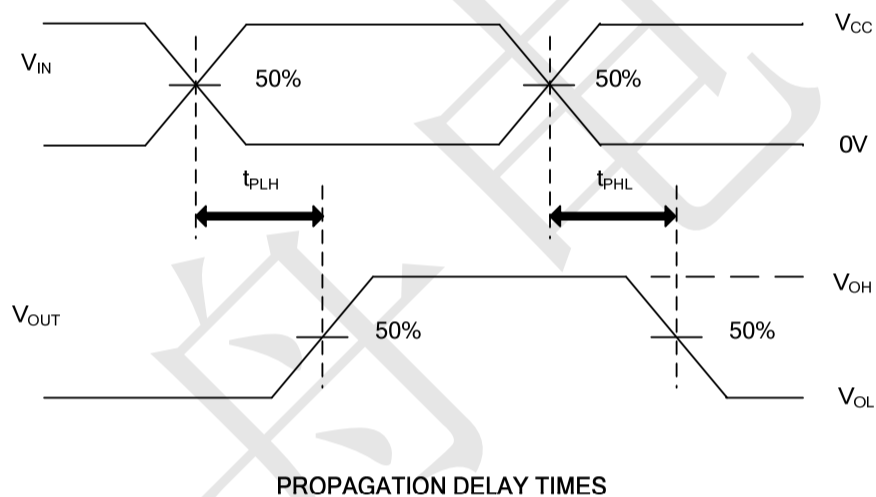
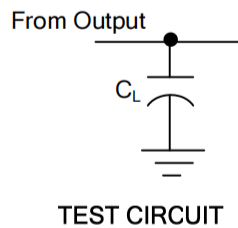
DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Time Input(A) to Output(Y)	t_{PLH}	$V_{CC}=3.3V\pm 0.3V$		5	7.1	ns
		$V_{CC}=5V\pm 0.5V$		3.8	5.5	ns
	t_{PHL}	$V_{CC}=3.3V\pm 0.3V$		5	7.1	ns
		$V_{CC}=5V\pm 0.5V$		3.8	5.5	ns
	t_{PLH}	$V_{CC}=3.3V\pm 0.3V$		7.5	10.6	ns
		$V_{CC}=5V\pm 0.5V$		5.3	7.5	ns
	t_{PHL}	$V_{CC}=3.3V\pm 0.3V$		7.5	10.6	ns
		$V_{CC}=5V\pm 0.5V$		5.3	7.5	ns

OPERATING CHARACTERISTICS ($T_A=25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	$V_{CC}=5V, f=1MHz$, No load		12		pF

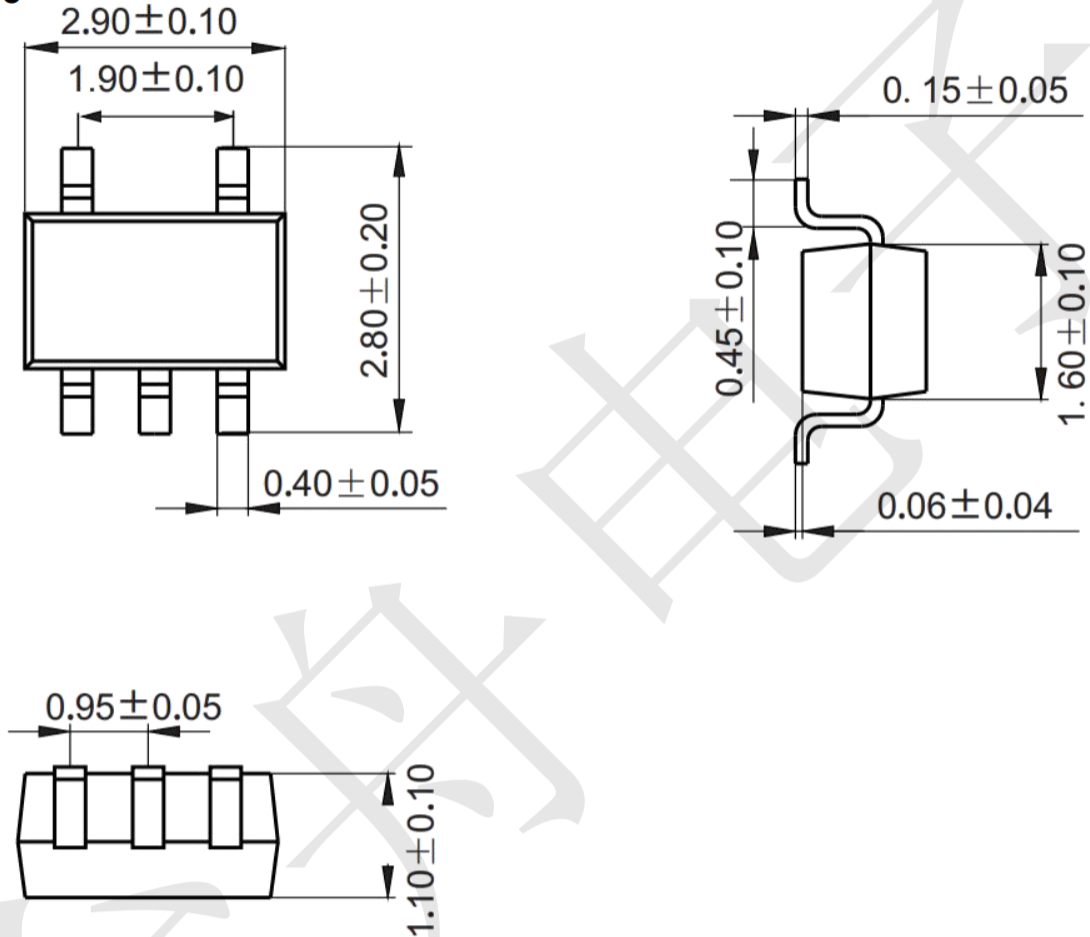
TEST CIRCUIT AND WAVEFORMS



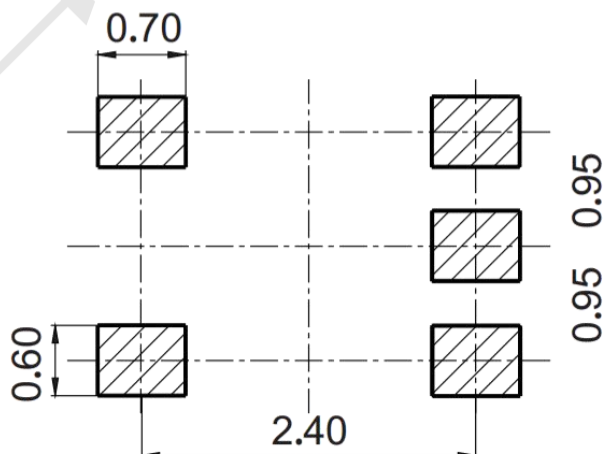
- Notes: 1. C_L includes probe and jig capacitance.
2. $P_{RR} \leq 1\text{MHz}$, $Z_O = 50\Omega$, $t_R \leq 3\text{ns}$, $t_F \leq 3\text{ns}$.

Package information (Unit: mm)

SOT23-5

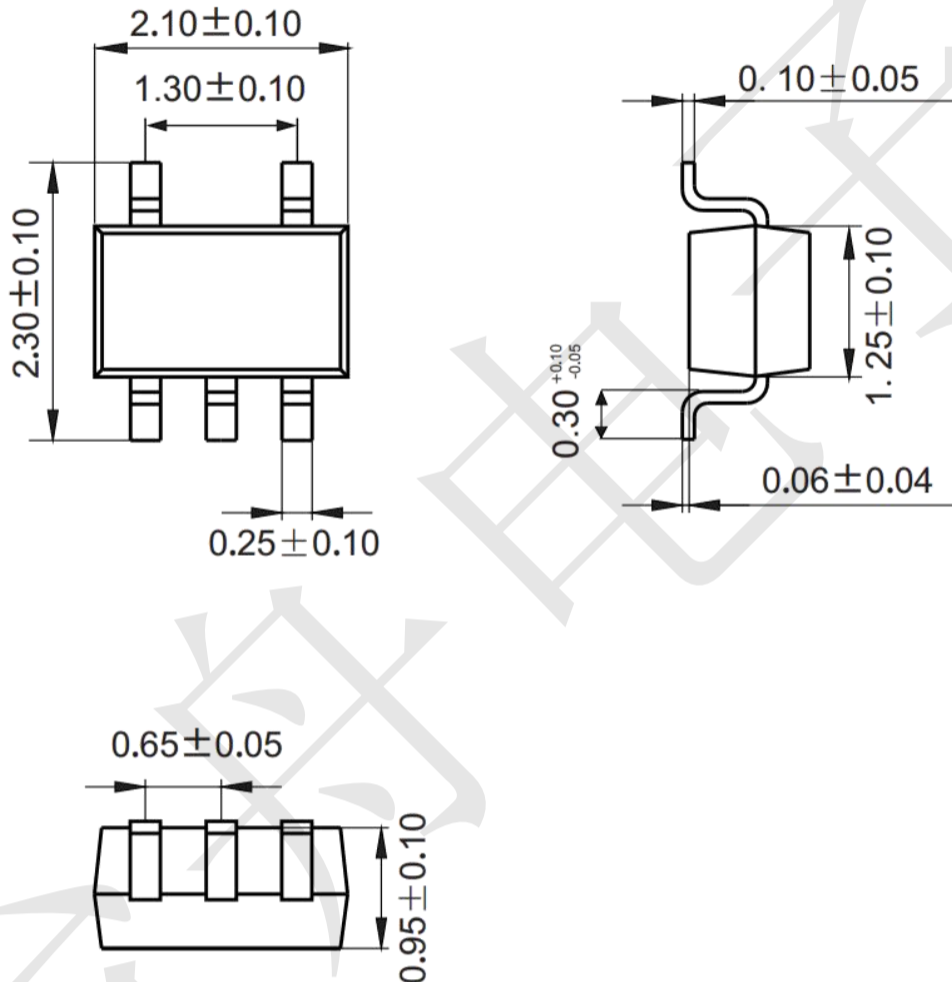


Mounting Pad Layout (Unit: mm)



Package information (Unit: mm)

SOT353



Mounting Pad Layout (Unit: mm)

