

74HC2G04 Series

DUAL INVERTER GATE

WWW.TECHPUBLIC.COM

Features

- Operation voltage range: 2.0~6.0V
- High noise immunity
- Balanced propagation delays
- Low Power Consumption, 10- μ A Max ICC
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)

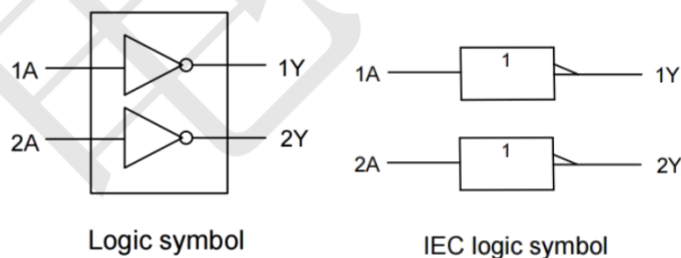
General Description

The 74HC2G04 is a dual inverter. Inputs include clamp diodes that enable the use of current limiting resistors to interface inputs to voltages in excess of VCC.

Applications

- AV Receiver
- Audio Dock: Portable
- IP Phones: Wired and Wireless
- Embedded PC
- Personal Digital Assistant(PDA)
- Power: Telecom DC/DC Module: Analog and Digital

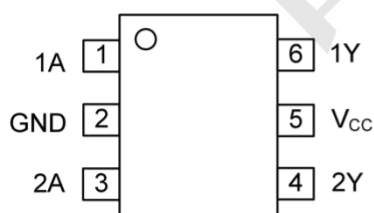
Logic Diagram



Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
74HC2G04GV	SOT23-6	Tape and Reel,3000
74HC2G04GW	SOT363	Tape and Reel,3000

Pin Configuratio



SOT23-6
SOT363

Function Table

INPUT(nA)	OUTPUT(nY)
H	L
L	H

Note:H: HIGH voltage level;L: LOW voltage level.

Absolute Maximum Ratings

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V _{CC}		-0.5 ~ +7.0	V
Input Voltage	V _{IN}		-0.5 ~ +7.0	V
Output Voltage	V _{OUT}		-0.5 ~ +7.0	V
V _{CC} or GND Current	I _{CC}		±50	mA
Continuous Output Current	I _{OUT}	V _{OUT} =0~V _{CC}	±25	mA
Input Clamp Current	I _{IK}	V _{IN} <0	±20	mA
Output Clamp Current	I _{OK}	(V _{OUT} >V _{CC} or V _{OUT} <0)	±20	mA
Storage Temperature Range	T _{STG}		-65 ~ +150	°C
Operating Junction Temperature	T _J		-40 ~ +125	°C
Junction to Ambient	θ_{JA}	SOT-23-6	230	°C/W
		SOT363	280	°C/W

Note:

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.

Recommended Operating Conditions(TA =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{CC}	Operating	2.0	5.0	6.0	V
Input Voltage	V _{IN}		0	5.0	V _{CC}	V
Output Voltage	V _{OUT}		0	5.0	V _{CC}	V
input transition rise and fall rate	$\Delta t/\Delta V$	V _{CC} =2.0V	--	--	625	ns/V
		V _{CC} =4.5V	--	--	139	ns/V
		V _{CC} =6.0V	--	--	83	ns/V

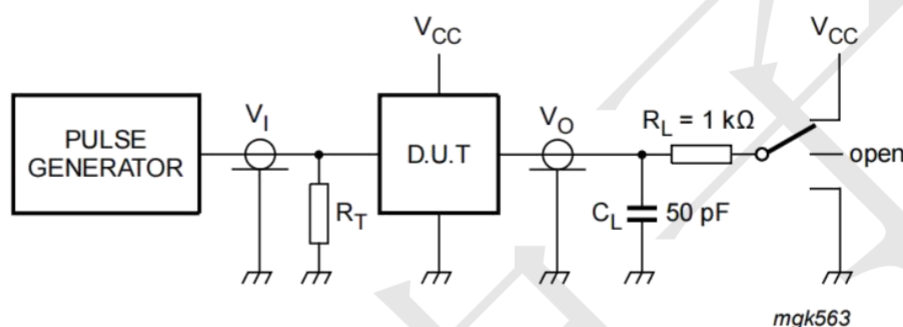
Static characteristics (TA =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V _{IH}	V _{CC} =2.0V	1.5	1.2	--	V
		V _{CC} =4.5V	3.15	2.4	--	V
		V _{CC} =6.0V	4.2	3.2	--	V
Low-Level Input Voltage	V _{IL}	V _{CC} =2.0V	--	0.8	0.5	V
		V _{CC} =4.5V	--	2.1	1.35	V
		V _{CC} =6.0V	--	2.8	1.8	V
High-Level Output Voltage	V _{OH}	V _{CC} =2.0V, I _{OH} =-20μA	1.9	2.0	--	V
		V _{CC} =4.5V, I _{OH} =-20μA	4.4	4.5	--	V
		V _{CC} =6.0V, I _{OH} =-20μA	5.9	6.0	--	V
		V _{CC} =4.5V, I _{OH} =-4.0mA	4.18	4.32	--	V
		V _{CC} =6.0V, I _{OH} =-5.2mA	5.68	5.81	--	V
Low-Level Output Voltage	V _{OL}	V _{CC} =2.0V, I _{OL} = 20μA	--	0	0.1	V
		V _{CC} =4.5V, I _{OL} = 20μA	--	0	0.1	V
		V _{CC} =6.0V, I _{OL} = 20μA	--	0	0.1	V
		V _{CC} =4.5V, I _{OH} = 4.0mA	--	0.15	0.26	V
		V _{CC} =6.0V, I _{OH} = 5.2mA	--	0.16	0.26	V
Input Leakage Current	I _I	V _{CC} =0 ~ 6.0V, V _{IN} =6.0V or GND	--	--	±0.1	uA
Quiescent Supply Current	I _Q	V _{CC} = 5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0A	--	--	1.0	uA
input capacitance	C _I		--	1.5	--	pF

Dynamic characteristics (TA =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
propagation delay	tpd	C _L =50pF	V _{CC} =2.0	--	22	75 nS
			V _{CC} =4.5	--	8.0	15 nS
			V _{CC} =6.0	--	6.0	13 nS
transition time	tt	C _L =50pF	V _{CC} =2.0	--	18	75 nS
			V _{CC} =4.5	--	6.0	15 nS
			V _{CC} =6.0	--	5.0	13 nS
power dissipation capacitance	CPD	V _I = GND to V _{CC}	--	9.0	--	pF

TEST CIRCUIT AND WAVEFORMS



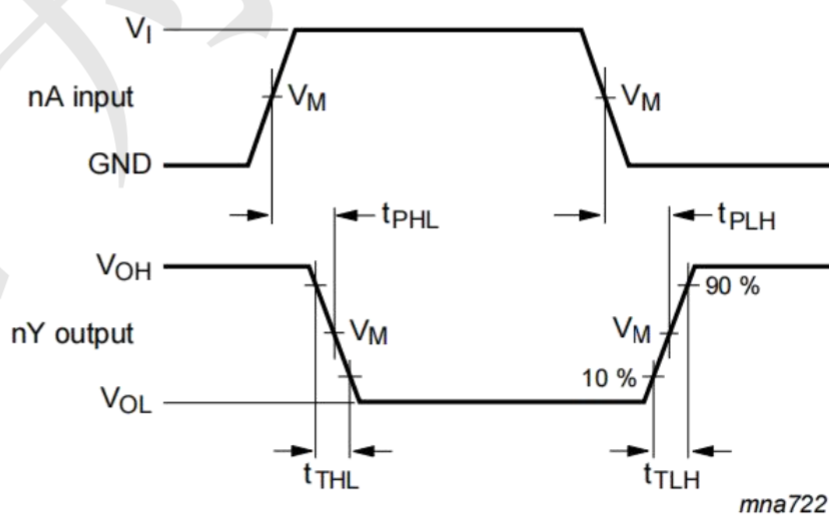
Definitions test circuit:

R_L = Load resistance.

C_L = Load capacitance including jig and probe capacitance.

R_T = Termination resistance should be equal to output impedance Z_o of the pulse generator.

Testcircuitformeasuringswitchingtimes

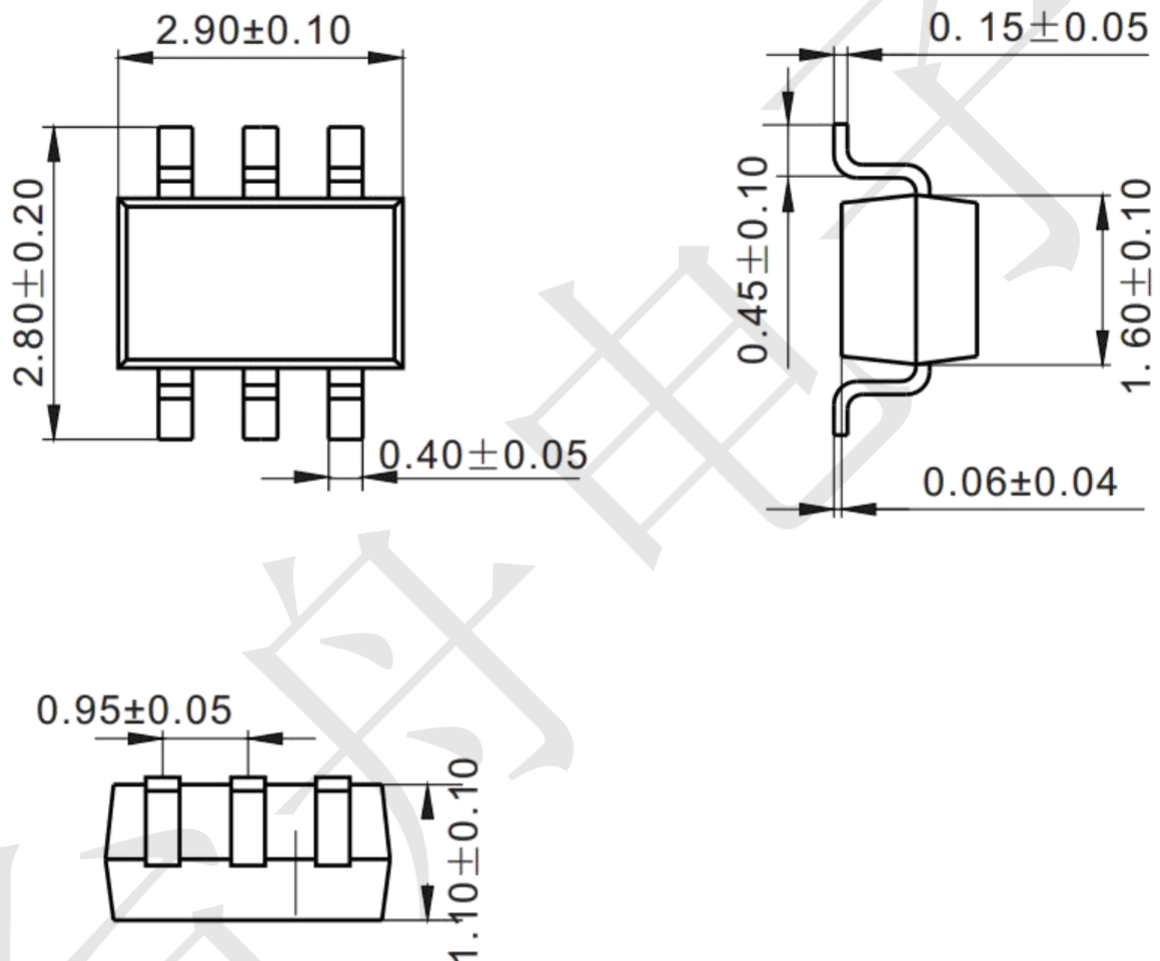


V_{OL} and V_{OH} are typical voltage output levels that occur with the output load.

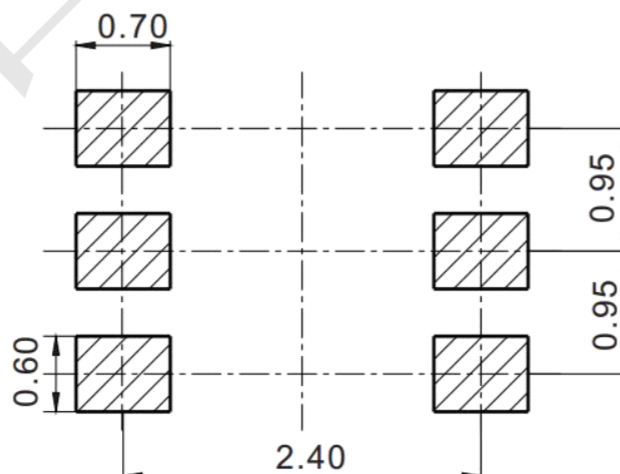
The data input (nA) to output (nY) propagation delays and output transition times

Package information

SOT23-6 (Unit: mm)

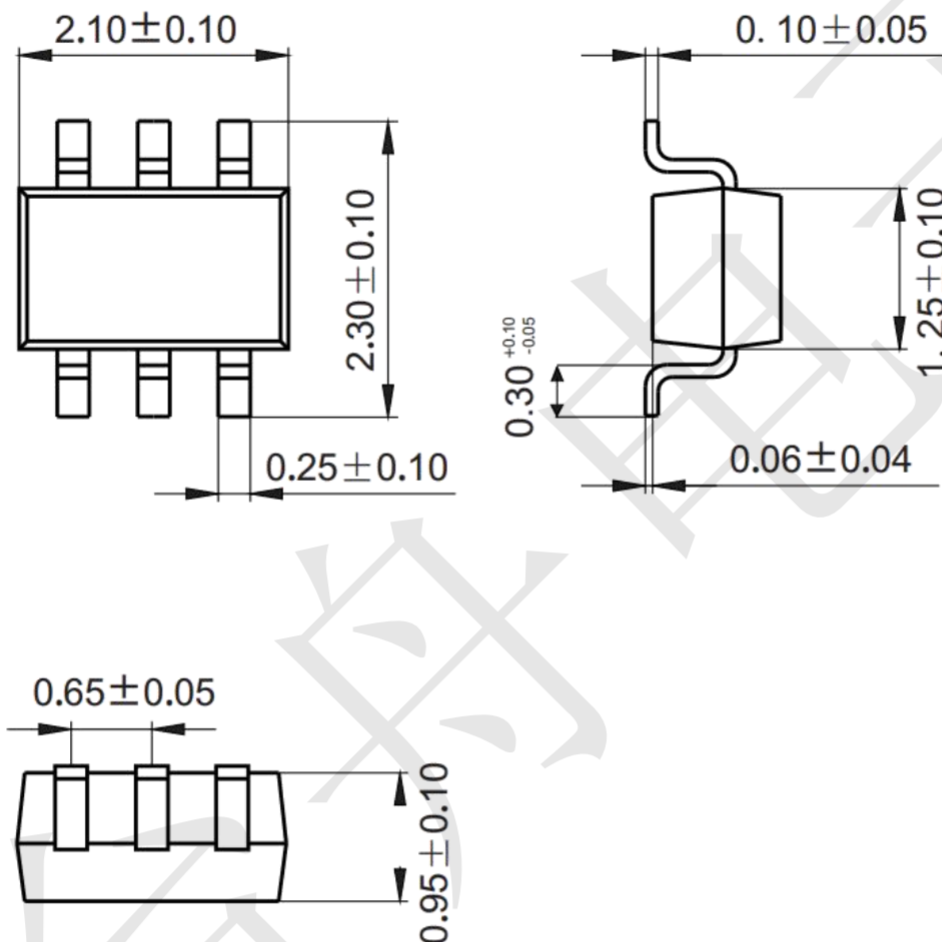


Mounting Pad Layout (unit: mm)



Package information

SOT363 (Unit: mm)



Mounting Pad Layout (unit: mm)

