

Features

- Operation voltage range: 1.65~5.5V
- Inputs Accept Voltages up to 5.5 V Allowing Down Translation to VCC
- $\pm 24\text{mA}$ output drive ($V_{CC}=3.3\text{V}$)
- Low Power Consumption, 10- μA 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 NL27WZ04 is a dual inverter gate, it provides the function $Y = \bar{A}$.

This device has power-down protective circuit, preventing device destruction when it is powered down.

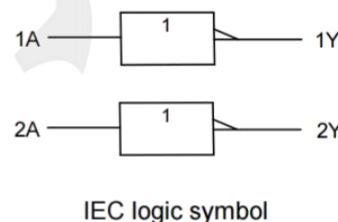
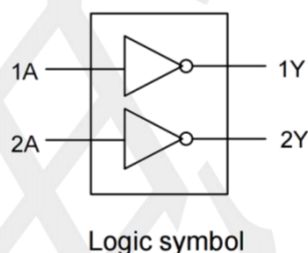
Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION	MARKING
NL27WZ04DTT1G-TP	SOT23-6	Tape and Reel,3000	M5Y
NL27WZ04DFT2G-TP	SOT363	Tape and Reel,3000	M5P

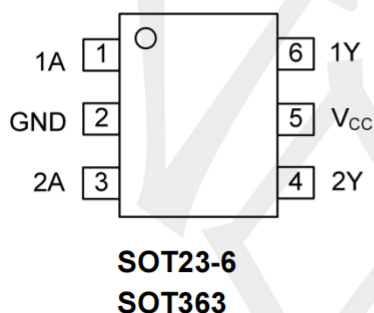
Applications

- 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



Pin Configuratio



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	VCC		-0.5 ~ +6.5	V
Input Voltage	VIN		-0.5 ~ +6.5	V
Output Voltage	VOUT	Power-Down Mode	-0.5 ~ +6.5	V
		Active Mode	-0.5 ~ VCC+0.5	V
VCC or GND Current	ICC		±100	mA
Continuous Output Current	IOUT	VOUT=0~VCC	±50	mA
Input Clamp Current	IIK	VIN<0	-50	mA
Output Clamp Current	IOK	(VOUT>VCC or VOUT<0)	-50	mA
Storage Temperature Range	TSTG		-65 ~ +150	°C
Operating Junction Temperature	TJ		-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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	VCC	Operating	1.65	--	5.5	V
Input Voltage	VIN		0	--	5.5	V
Output Voltage	VOUT	Power-Down Mode	0	--	5.5	V
		Active Mode	0	--	VCC	V
Input Transition Rise or Fall Rate	tr / tf	VCC=1.65V to 2.7V	--	--	20	ns/V
		VCC=2.7V to 5.5V	--	--	10	ns/V

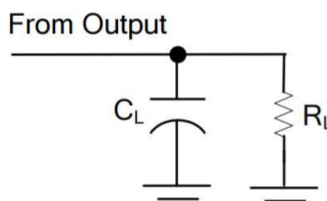
Electrical Characteristics (TA = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V _{IH}	V _{CC} =1.65V ~ 1.95V	0.65×V _{CC}	--	--	V
		V _{CC} =2.3V ~ 2.7V	1.7	--	--	V
		V _{CC} =2.7V ~ 3.6V	2	--	--	V
		V _{CC} =4.5V ~ 5.5V	0.7×V _{CC}	--	--	V
Low-Level Input Voltage	V _{IL}	V _{CC} =1.65V ~ 1.95V	--	--	0.35×V _{CC}	V
		V _{CC} =2.3V ~ 2.7V	--	--	0.7	V
		V _{CC} =2.7V ~ 3.6V	--	--	0.8	V
		V _{CC} =4.5V ~ 5.5V	--	--	0.3×V _{CC}	V
High-Level Output Voltage	V _{OH}	V _{CC} =1.65 ~ 5.5V, I _{OH} =-100μA	V _{CC} -0.1	--	--	V
		V _{CC} =1.65V, I _{OH} =-4mA	1.2	--	--	V
		V _{CC} =2.3V, I _{OH} =-8mA	1.9	--	--	V
		V _{CC} =2.7V, I _{OH} =-12mA	2.2	--	--	V
		V _{CC} =3.0V, I _{OH} =-24mA	2.3	--	--	V
		V _{CC} =4.5V, I _{OH} =-32mA	3.8	--	--	V
Low-Level Output Voltage	V _{OL}	V _{CC} =1.65 ~ 5.5V, I _{OL} =100μA	--	--	0.1	V
		V _{CC} =1.65V, I _{OL} =4mA	--	--	0.45	V
		V _{CC} =2.3V, I _{OL} =8mA	--	--	0.3	V
		V _{CC} =2.7V, I _{OL} =12mA	--	--	0.4	V
		V _{CC} =3.0V, I _{OL} =24mA	--	--	0.55	V
		V _{CC} =4.5V, I _{OL} =32mA	--	--	0.55	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0 ~ 5.5V, V _{IN} =5.5V or GND	--	±0.1	±5	uA
Power OFF Leakage Current	I _{OFF}	V _{CC} =0V, V _{IN} or V _{OUT} =5.5V	--	±0.1	±10	uA
Quiescent Supply Current	I _Q	V _{CC} = 5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0A	--	0.1	10	uA
Additional Quiescent Supply Current Per Input Pin	ΔI _Q	V _{CC} =2.3 ~ 5.5V, One input at V _{CC} -0.6V, Other inputs at V _{CC} or GND	--	5	500	uA

SWITCHING CHARACTERISTICS (TA = 25°C , unless otherwise specified)

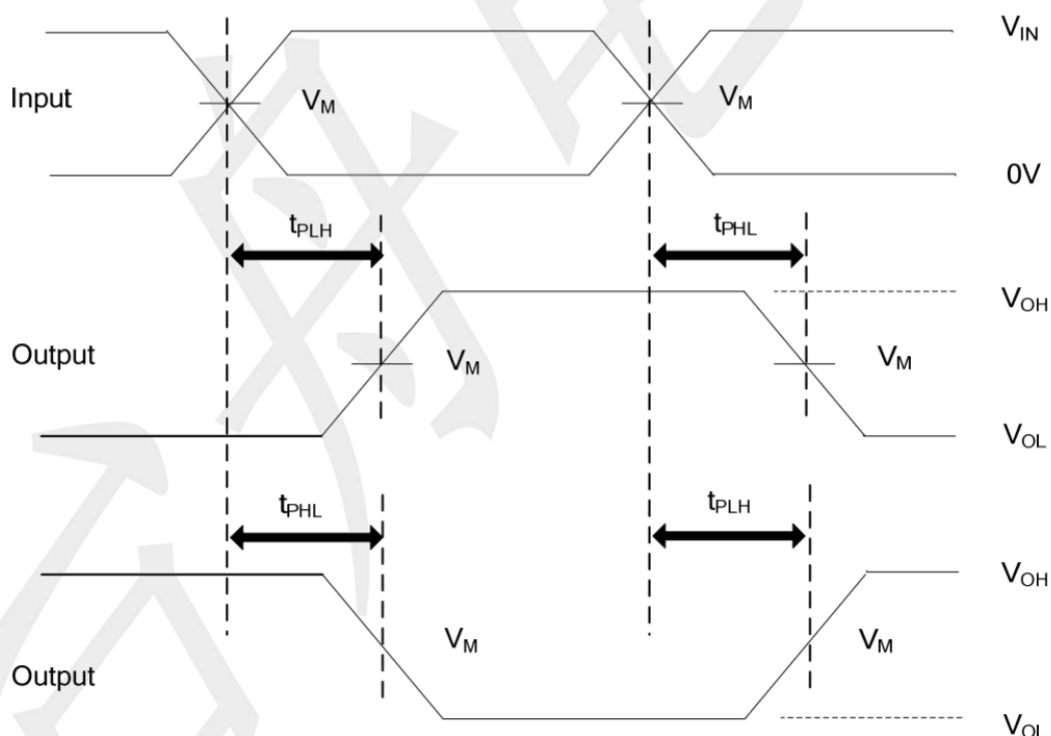
PARAMETER	SYMBOL	TEST Conditions		MIN	TYP	MAX	UNIT
Propagation delay from input (A) to output(Y)	t _{PLH} / t _{PHL}	C _L =30pF	V _{CC} =1.8±0.15V, R _L =1KΩ	1.0	3.5	8.0	nS
			V _{CC} =2.5±0.2V, R _L =500Ω	1.0	2.2	4.4	nS
		C _L =50pF	V _{CC} =2.7 R _L =500Ω	1.0	2.7	5.2	nS
			V _{CC} =3.3±0.3V, R _L =500Ω	0.5	2.7	4.1	nS
			V _{CC} =5.0±0.5V, R _L =500Ω	1.0	1.9	3.2	nS

TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

V _{CC}	Inputs		V _M	C _L	R _L
	V _{IN}	t _R , t _F			
1.8V±0.15V	V _{CC}	≤2ns	V _{CC} /2	30pF	1KΩ
2.5V±0.2V	V _{CC}	≤2ns	V _{CC} /2	30pF	500Ω
2.7V	2.7V	≤2.5ns	1.5V	50pF	500Ω
3.3V±0.3V	2.7V	≤2.5ns	1.5V	50pF	500Ω
5V±0.5V	V _{CC}	≤2.5ns	V _{CC} /2	50pF	500Ω



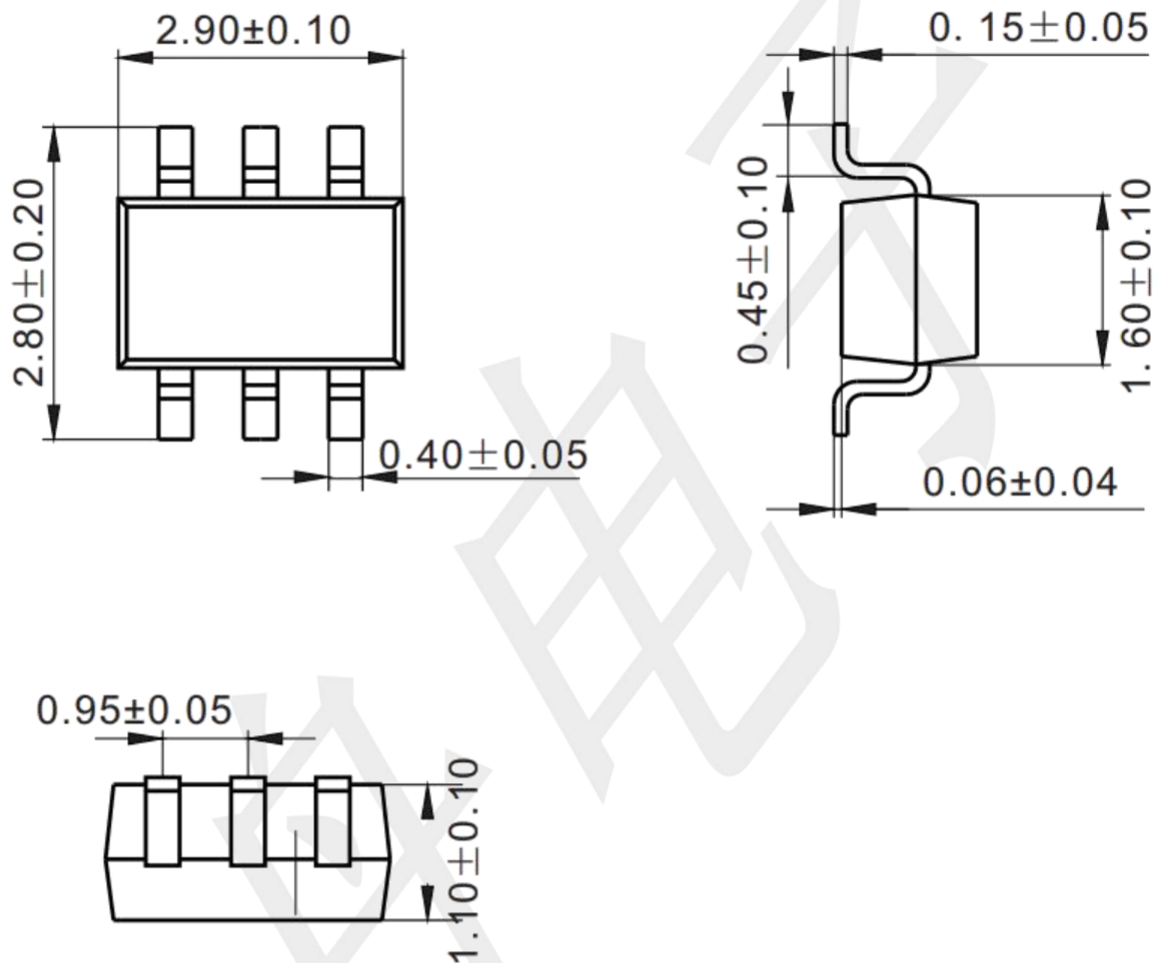
PROPAGATION DELAY TIMES

Notes: 1. C_L includes probe and jig capacitance.

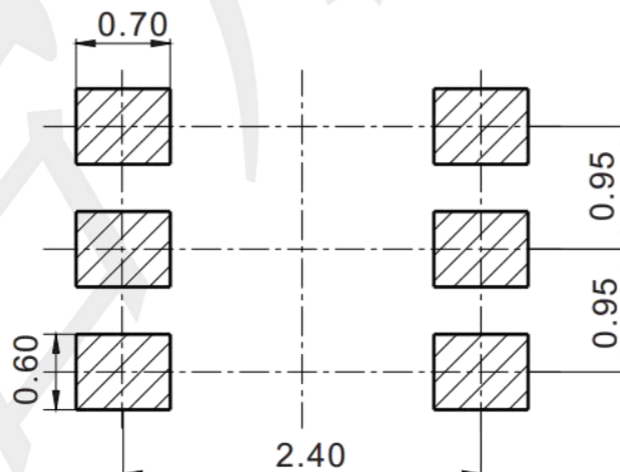
2. All input pulses are supplied by generators having the following characteristics: PRR ≤10MHz, Z_o=50Ω.

Package information

SOT23-6 (Unit: mm)

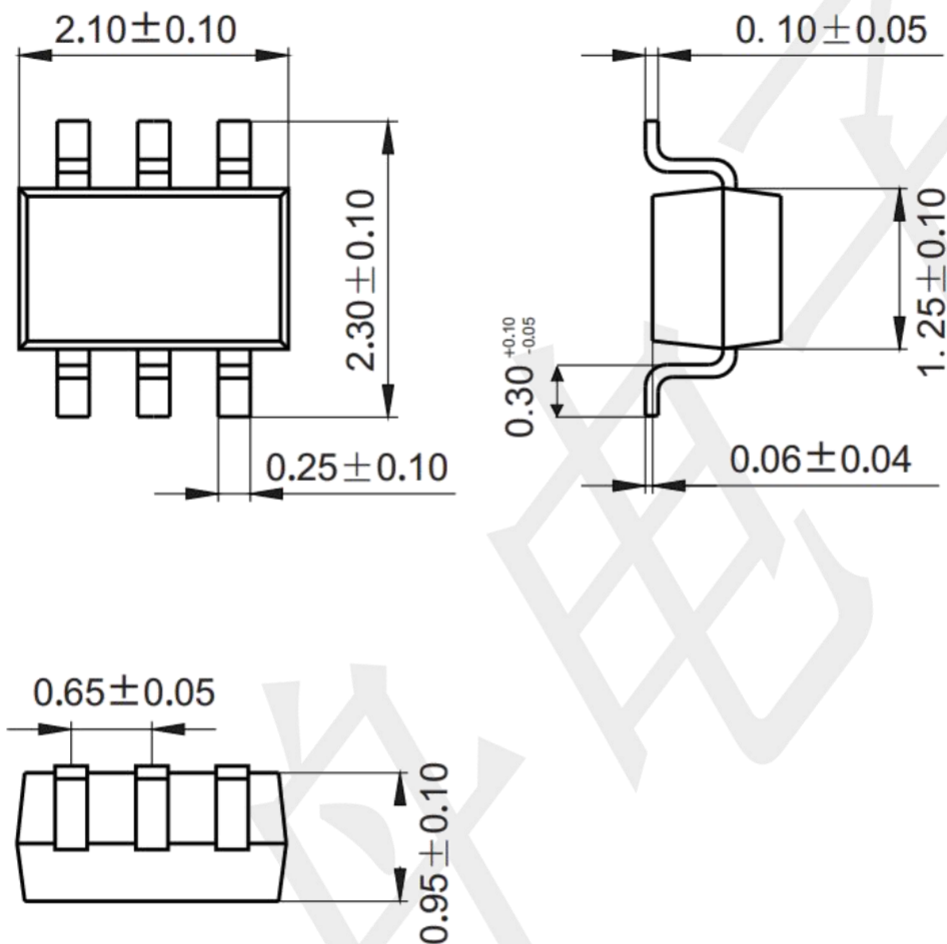


Mounting Pad Layout (unit: mm)



Package information

SOT363 (Unit: mm)



Mounting Pad Layout (unit: mm)

