

Features

- Operation Voltage Range: 1.65V ~ 5.5V
- 5V Tolerant Input/Output for Interfacing with 5V logic
- $\pm 24\text{mA}$ Output Drive ($V_{CC}=3.0\text{V}$)
- CMOS Low-Power Consumption and High Noise Immunity
- 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 **NL27WZ14** is a high-performance, low-power, low-voltage, Si-gate CMOS device which provides two inverters with Schmitt trigger action. It is capable of transforming slowly changed input signals into sharply defined, jitter-free output signals.

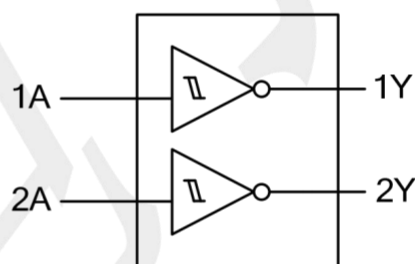
Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION	MARKING
NL27WZ14DTT1G-TP	SOT23-6	Tape and Reel,3000	MAY
NL27WZ14DFT2G-TP	SOT363	Tape and Reel,3000	MAP

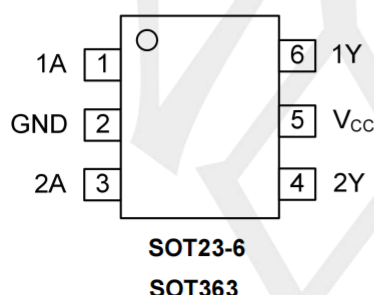
Applications

- AV Receiver
- Audio Dock:Portable
- Blu-ray Player and Home Theater
- Embedded PC
- Personal Digital Assistant(PDA)
- Power:Telecom/Server AC/DC Supply:Single Controller:Analog and Digital

Logic Diagram



Pin Configuratio



Function Table

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

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

Absolute Maximum Ratings (Unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V _{CC}		-0.5 ~ +6.5	V
Input Voltage	V _{IN}		-0.5 ~ +6.5	V
Output Voltage	V _{OUT}	High-impedance	-0.5 ~ +6.5	V
		Power-off	-0.5 ~ +6.5	V
		High State	-0.5 ~ V _{CC} +0.5	V
		Low State	-0.5 ~ V _{CC} +0.5	V
V _{CC} or GND Current	I _{CC}		±100	mA
Continuous Output Current	I _O		±50	mA
Input Clamp Current	I _{IK}		-50	mA
Output Clamp Current	I _{OK}		-50	mA
Storage Temperature Range	T _{STG}		-65 ~ +150	°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	V _{CC}	Operating	1.65	--	5.5	V
Input Voltage	V _{IN}		0	--	5.5	V
Output Voltage	V _{OUT}	High or low state	0	--	V _{CC}	V
High Level Output Current	I _{OH}	V _{CC} = 1.65V	--	--	-4	V
		V _{CC} = 2.3V	--	--	-8	mA
		V _{CC} = 3V	--	--	-16	mA
		V _{CC} = 3V	--	--	-24	mA
		V _{CC} = 4.5V	--	--	-32	mA
Low Level Output Current	I _{OL}	V _{CC} = 1.65V	--	--	4	mA
		V _{CC} = 2.3V	--	--	8	mA
		V _{CC} = 3V	--	--	16	mA
		V _{CC} = 3V	--	--	24	mA
		V _{CC} = 4.5V	--	--	32	mA
Operating Temperature	T _A		-40	--	125	°C

Electrical Characteristics (unless otherwise specified)

PARAMETER	SYM BOL	TEST Conditions	TA =25°C			TA =-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Positive-Going Input Threshold Voltage	V _{T+}	V _{CC} =1.65V	0.7	1.24	1.5	0.7	--	1.7	V
		V _{CC} =2.3V	1.0	1.54	1.8	1.0	--	2.0	V
		V _{CC} =3V	1.3	1.86	2.2	1.3	--	2.4	V
		V _{CC} =4.5V	1.9	2.59	3.1	1.9	--	3.3	V
		V _{CC} =5.5V	2.2	3.08	3.7	2.2	--	3.8	V
Negative-Going Input Threshold Voltage	V _{T-}	V _{CC} =1.65V	0.25	0.61	0.9	0.25	--	1.1	V
		V _{CC} =2.3V	0.4	0.82	1.15	0.4	--	1.35	V
		V _{CC} =2.7V	0.6	1.15	1.5	0.6	--	1.7	V
		V _{CC} =4.5V	1.0	1.73	2.0	1.0	--	2.2	V
		V _{CC} =5.5V	1.2	2.13	2.5	1.2	--	2.5	V
Hysteresis Voltage (V _{T+} -V _{T-})	ΔV _T	V _{CC} =1.65V	0.15	0.67	1.0	0.15	--	1.2	V
		V _{CC} =2.3V	0.25	0.72	1.1	0.25	--	1.3	V
		V _{CC} =2.7V	0.4	0.73	1.2	0.4	--	1.4	V
		V _{CC} =4.5V	0.6	0.92	1.5	0.6	--	1.7	V
		V _{CC} =5.5V	0.7	1.02	1.7	0.7	--	1.9	V
High-Level Output Voltage	V _{OH}	V _{CC} =1.65 ~ 5.5V, I _{OH} =-100μA	V _{CC} -0.1	--	--	V _{CC} -0.1	--	--	V
		V _{CC} =1.65V, I _{OH} =-4mA	1.2	--	--	0.95	--	--	V
		V _{CC} =2.3V, I _{OH} =-8mA	1.9	--	--	1.7	--	--	V
		V _{CC} =3.0V, I _{OH} =-16mA	2.2	--	--	1.9	--	--	V
		V _{CC} =3.0V, I _{OH} =-24mA	2.3	--	--	2.0	--	--	V
		V _{CC} =4.5V, I _{OH} =-32mA	3.8	--	--	3.4	--	--	V
Low-Level Output Voltage	V _{OL}	V _{CC} =1.65 ~ 5.5V, I _{OL} =100μA	--	--	0.1	--	--	0.1	V
		V _{CC} =1.65V, I _{OL} =4mA	--	--	0.45	--	--	0.7	V
		V _{CC} =2.3V, I _{OL} =8mA	--	--	0.3	--	--	0.45	V
		V _{CC} =3.0V, I _{OL} =16mA	--	--	0.4	--	--	0.6	V
		V _{CC} =3.0V, I _{OL} =24mA	--	--	0.55	--	--	0.8	V
		V _{CC} =4.5V, I _{OL} =32mA	--	--	0.55	--	--	0.8	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0 ~ 5.5V, V _{IN} =5.5V or GND	--	--	±5	--	--	±5	uA
Power OFF Leakage Current	I _{OFF}	V _{CC} =0V, V _{IN} or V _{OUT} =5.5V	--	±0.1	±10	--	--	±10	uA
Quiescent Supply Current	I _Q	V _{CC} =1.65 ~ 5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0A	--	0.1	10	--	--	10	uA
Additional Quiescent Supply Current Per Input Pin	ΔI _Q	V _{CC} =3 ~ 5.5V, One input at V _{CC} -0.6V, Other inputs at V _{CC} or GND, I _{OUT} =0A	--	5	500	--	--	500	uA

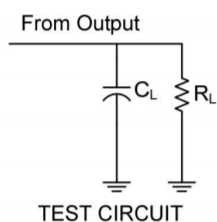
OPERATING CHARACTERISTICS (f=10MHz, TA =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Input Capacitance	CI	V _{CC} =3.3V, V _{IN} =V _{CC} or GND	--	4	--	pF
Power Dissipation Capacitance	CPD	V _{CC} =1.8V, f=10MHz	--	16	--	pF
		V _{CC} =2.5V, f=10MHz	--	17	--	pF
		V _{CC} =3.3V, f=10MHz	--	18	--	pF
		V _{CC} =5V, f=10MHz	--	21	--	pF

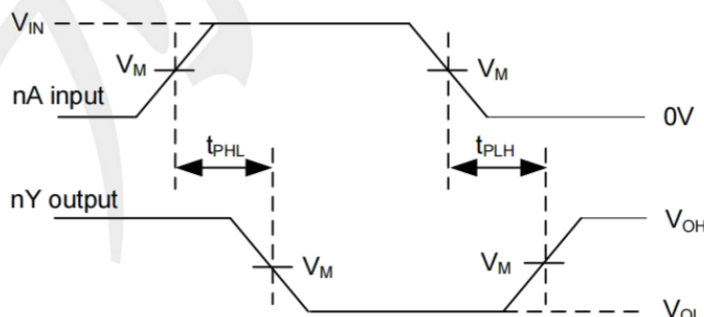
SWITCHING CHARACTERISTICS (TA =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	TA =25°C			TA =-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay from input (A or B) to output(Y)	t _{PLH} / t _{PHL}	V _{CC} =1.8V±0.15V, V _{IN} =V _{CC} , C _L =30pF, R _L =1KΩ	3.9	--	13	1.0	--	15	nS
		V _{CC} =2.5V±0.2V, V _{IN} =V _{CC} , C _L =30pF, R _L =500Ω	1.9	--	6.5	1.0	--	8.5	nS
		V _{CC} =3.3V±0.3V, V _{IN} =3V, C _L =50pF, R _L =500Ω	2.0	--	6.1	1.0	--	8.1	nS
		V _{CC} =5V±0.5V, V _{IN} =V _{CC} , C _L =50pF, R _L =500Ω	1.5	--	5	0.5	--	6.0	nS

TEST CIRCUIT AND WAVEFORMS



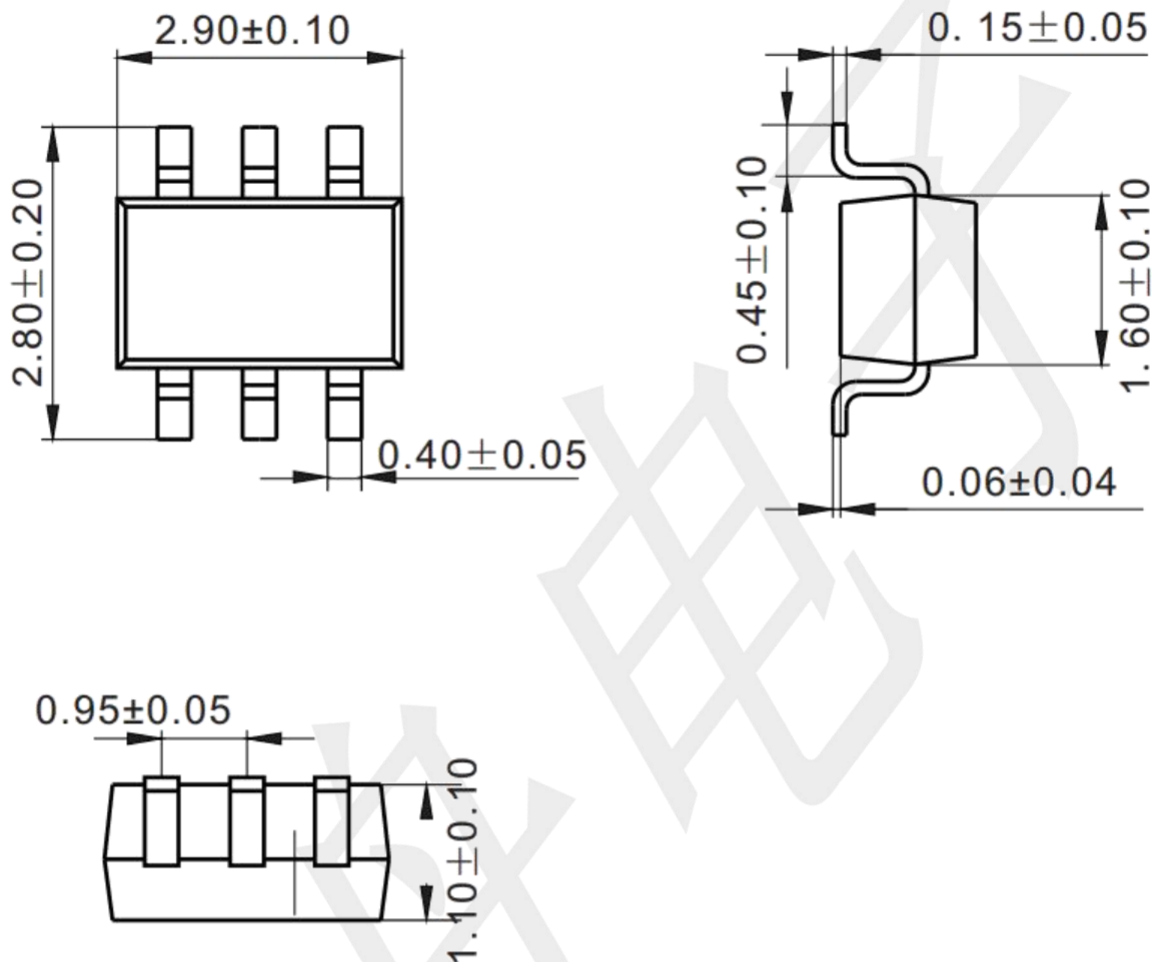
V _{CC}	Inputs		V _M	C _L	R _L
	V _{IN}	t _R , t _F			
1.8V±0.15V	V _{CC}	≤2ns	V _{CC} /2	30pF	1kΩ
2.5V±0.2V	V _{CC}	≤2ns	V _{CC} /2	30pF	500Ω
3.3V±0.3V	3V	≤2.5ns	1.5V	50pF	500Ω
5V±0.5V	V _{CC}	≤2.5ns	V _{CC} /2	50pF	500Ω



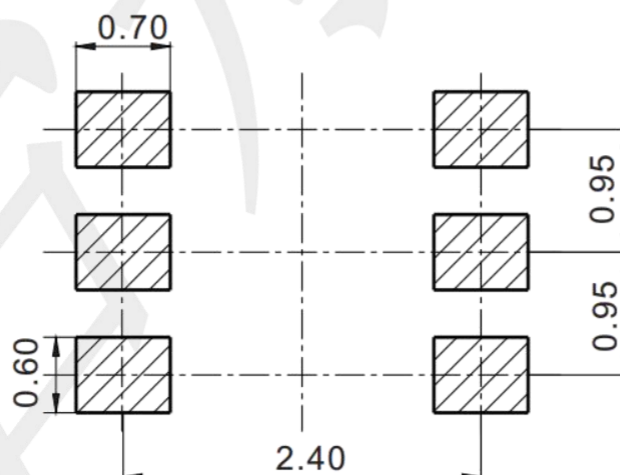
- Note: 1. C_L includes probe and jig capacitance.
2. All input pulses are supplied by generators having the following characteristics:
 PRR≤1MHz, Z_O = 50Ω: t_R≤2ns, t_F ≤2ns (V_{CC}=1.8V±0.15V and V_{CC}=2.5V±0.2V)
 t_R ≤2.5ns, t_F ≤2.5ns (V_{CC} =3.3V±0.3V and V_{CC}=5V±0.5V)

Package information

SOT23-6 (Unit: mm)

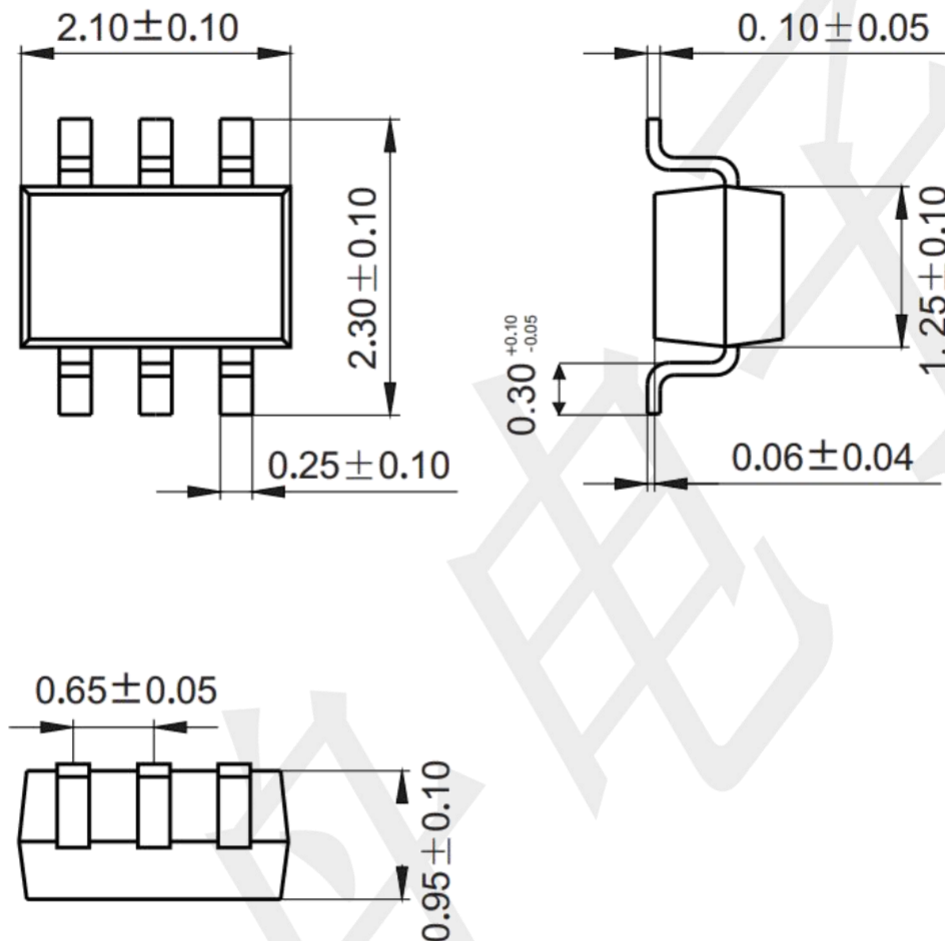


Mounting Pad Layout (unit: mm)



Package information

SOT363 (Unit: mm)



Mounting Pad Layout (unit: mm)

