

Features

- Operate from 1.65V to 5.5V
- Low Power Current: $I_{CC}=10\mu A$ (Max.)
- $\pm 24mA$ Output Drive ($V_{CC}=3.0V$)
- Power Down Protection
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)

Applications

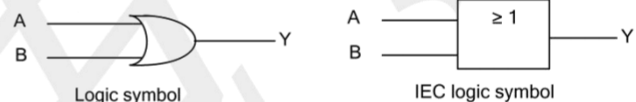
- AV Receiver
- Audio Dock: Portable
- Blu-ray Player and Home Theater
- Embedded PC
- Personal Digital Assistant(PDA)
- Power: Telecom/Server AC/DC Supply: Single Controller: Analog and Digital
- Solid State Drive(SSD): Client and Enterprise
- Wireless Headset, Keyboard, and Mouse

General Description

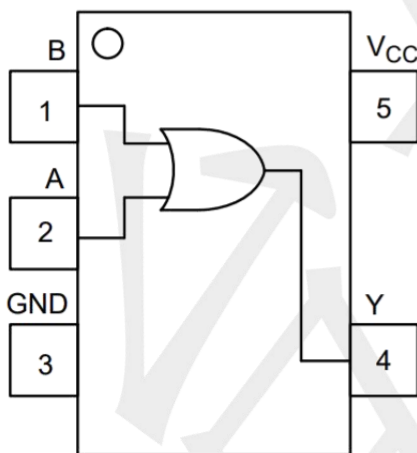
The NL17SZ32DFT2G-TP is a single 2-input OR gate which provides the Function $Y=A+B$ in positive logic circuit.

This device has power-down protective circuit .

Logic Diagram



Pin Configuratio



SOT353

Function Table

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

Note: H: HIGH voltage level; L: LOW voltage level; X: Don't care.

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		-0.5 ~ +6.5	V
VCC or GND Current	ICC	Output in the Power-off state	±100	mA
Continuous Output Current	IOUT	VOUT=0~VCC	±50	mA
Input Clamp Current	I _{IK}	VIN<0	-50	mA
Output Clamp Current	I _{OK}	VOUT<0	-50	mA
Storage Temperature Range	TSTG		-65 ~ +150	°C
Junction to Ambient	θ _{JA}	SOT353	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
		Data retention only	1.5	--	--	V
Input Voltage	VIN		0	--	5.5	V
Output Voltage	VOUT	High or low state	0	--	VCC	V
Low-Level Output Current	I _{OL}	VCC=1.65V	--	--	4	mA
		VCC=2.3V	--	--	8	mA
		VCC=3V	--	--	16	mA
		VCC=3V	--	--	24	mA
		VCC=4.5V	--	--	32	mA
Input Transition Rise or Fall rate	Δt/Δv	VCC=1.8V±0.15V, 2.5V±0.2V	--	--	20	ns/V
		VCC=3.3V±0.3V	--	--	10	ns/V
		VCC=5V±0.5V	--	--	5	ns/V
Operating Temperature	TA		-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	
High-Level Input Voltage	V _{IH}	V _{CC} =1.65V ~ 1.95V	0.65×V _{CC}	--	--	0.65×V _{CC}	--	--	V
		V _{CC} =2.3V ~ 2.7V	1.7	--	--	1.7	--	--	V
		V _{CC} =3V ~ 3.6V	2	--	--	2	--	--	V
		V _{CC} =4.5V ~ 5.5V	0.7×V _{CC}	--	--	0.7×V _{CC}	--	--	V
Low-Level Input Voltage	V _{IL}	V _{CC} =1.65V ~ 1.95V	--	--	0.35×V _{CC}	--	--	0.35×V _{CC}	V
		V _{CC} =2.3V ~ 2.7V	--	--	0.7	--	--	0.7	V
		V _{CC} =3V ~ 3.6V	--	--	0.8	--	--	0.8	V
		V _{CC} =4.5V ~ 5.5V	--	--	0.3×V _{CC}	--	--	0.3×V _{CC}	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 _{OH} =16mA	--	--	0.4	--	--	0.6	V
		V _{CC} =3.0V, I _{OH} =24mA	--	--	0.55	--	--	0.8	V
		V _{CC} =4.5V, I _{OH} =32mA	--	--	0.55	--	--	0.8	V
High-Level Output Voltage	V _{OH}	V _{CC} =1.65 ~ 5.5V, I _{OL} =-100μA	V _{CC} -0.1	--	--	V _{CC} -0.1	--	--	V
		V _{CC} =1.65V, I _{OL} =-4mA	1.2	--	--	0.95	--	--	V
		V _{CC} =2.3V, I _{OL} =-8mA	1.9	--	--	1.7	--	--	V
		V _{CC} =3.0V, I _{OH} =-16mA	2.4	--	--	2.1	--	--	V
		V _{CC} =3.0V, I _{OH} =-24mA	2.3	--	--	2	--	--	V
		V _{CC} =4.5V, I _{OH} =-32mA	3.8	--	--	3.4	--	--	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0 ~ 5.5V, V _{IN} =5.5V or GND	--	--	±5	--	--	±5	μA
Power OFF Leakage Current	I _{OFF}	V _{CC} =0V, V _{IN} or V _{OUT} =5.5V	--	--	±10	--	--	±25	μA
Quiescent Supply Current	I _Q	V _{CC} =1.65 ~ 5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0A	--	--	10	--	--	±10	μA
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	--	--	500	--	--	500	μA

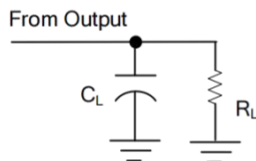
OPERATING CHARACTERISTICS (f=10MHz, TA =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{PD}	V _{CC} =1.8V	--	20	--	pF
		V _{CC} =2.5V	--	20	--	pF
		V _{CC} =3.3V	--	21	--	pF
		V _{CC} =5.0V	--	22	--	pF
Input Capacitance	C _{IN}	V _{CC} =3.3V, V _{IN} =V _{CC} or GND	--	4	--	pF

SWITCHING CHARACTERISTICS (unless otherwise specified)

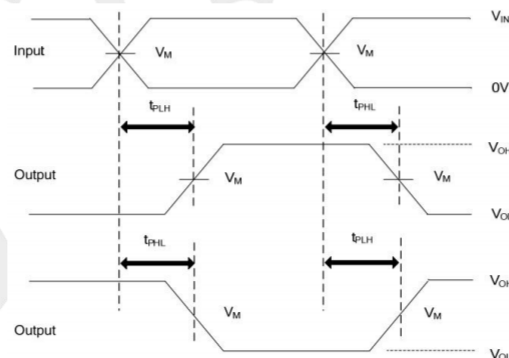
PARAMETER	SYM BOL	TEST Conditions	TA=25°C			TA=-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay from input (A or B) to output(Y)	t _{PLH} / t _{PHL}	V _{CC} =1.8±0.15V, CL=15pF, RL=1MΩ	1.9	--	9	--	--	12	nS
		V _{CC} =2.5±0.2V, CL=15pF, RL=1MΩ	0.8	--	6.5	--	--	9	nS
		V _{CC} =3.3±0.3V, CL=15pF, RL=1MΩ	0.9	--	5.5	--	--	8	nS
		V _{CC} =5±0.5V, CL=15pF, RL=1MΩ	0.8	--	5	--	--	7	nS
		V _{CC} =1.8±0.15V, CL=30pF, RL=1KΩ	2.8	--	9.5	--	--	12.5	nS
		V _{CC} =2.5±0.2V, CL=30pF, RL=500Ω	1.2	--	7.5	--	--	10	nS
		V _{CC} =3.3±0.3V, CL=50pF, RL=500Ω	1.1	--	6.5	--	--	9	nS
		V _{CC} =5±0.5V, CL=50pF, RL=500Ω	1	--	6	--	--	8	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	15pF	1MΩ
2.5V±0.2V	V _{CC}	≤2ns	V _{CC} /2	15pF	1MΩ
3.3V±0.3V	3V	≤2.5ns	1.5V	15pF	1MΩ
5V±0.5V	V _{CC}	≤2.5ns	V _{CC} /2	15pF	1MΩ
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



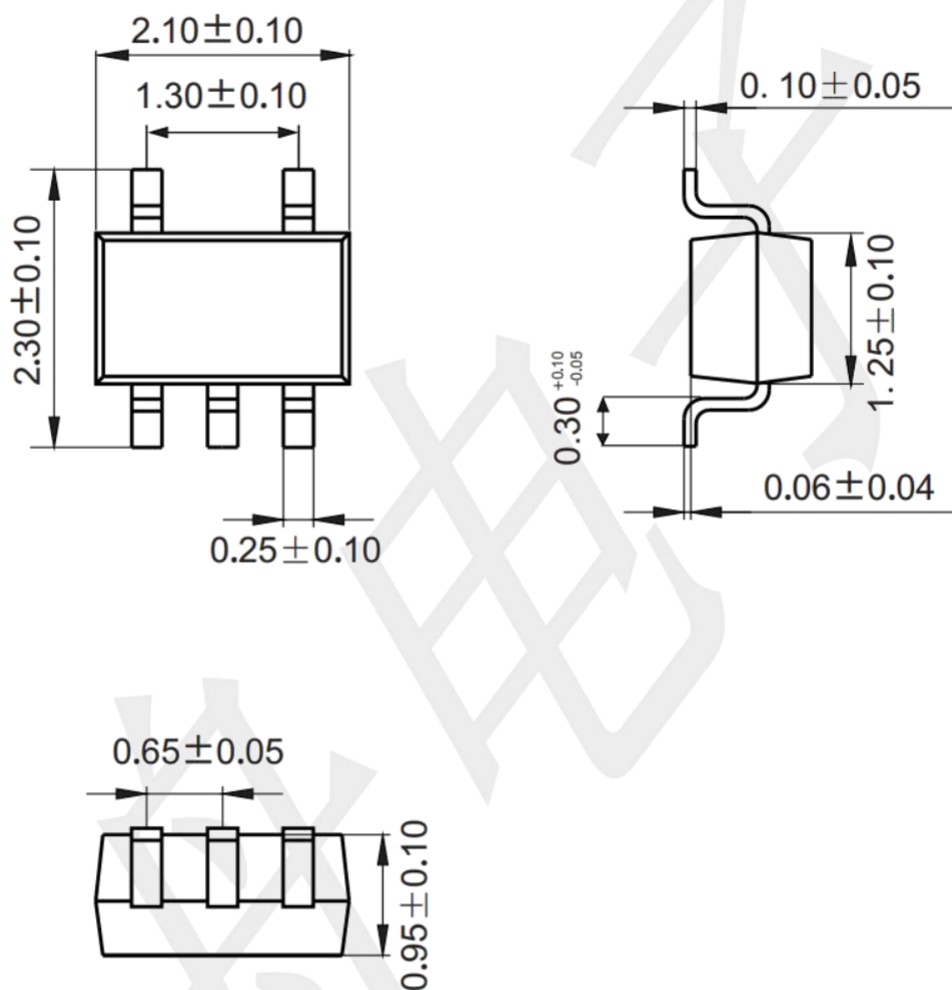
PROPAGATION DELAY TIMES

Notes: 1. C_L includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: P_{RR} ≤ 10MHz, Z_O = 50Ω.

Package information

SOT353 (Unit: mm)



Mounting Pad Layout (unit: mm)

