SN74LVC1G332DBVR-TP

SINGLE 3-INPUT POSITIVE-OR GATE

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Features

- Operate from 1.65V to 5.5V
- Inputs Accept Voltages to 5.5V
- I_{OFF} supports partial-power-down mode
- Low static power consumption; ICC=10μA (Max.)
- ESD Protection Exceeds JESD 22
  -2000-V Human-Body Model (A114-A)
  -200-V Machine Model (A115-A)
  -1000-V Charged-Device Model (C101)

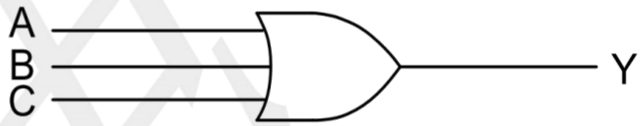
Applications

- 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 SN74LVC1G332DBVR-TPdevice performs the Boolean function in $Y=A+B+C$ or $Y=\overline{A}\bullet\overline{B}\bullet\overline{C}$ positive logic.This device is fully specified for partial-power-down applications using IOFF. The IOFF circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

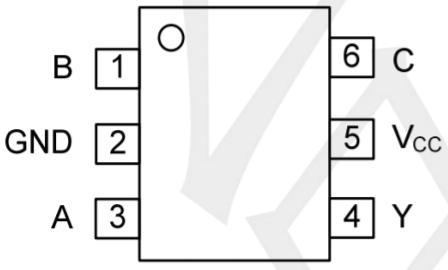
Logic Diagram



Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
SN74LVC1G332DBVR-TP	SOT23-6	Tape and Reel,3000

Pin Configuratio



SOT23-6

Function Table

INPUT			OUTPUT
A	B	C	Y
H	X	X	H
X	H	X	H
X	X	H	H
L	L	L	L

Note: H: HIGH voltage level, L: LOW voltage level, X = Valid H or L

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}	Output in the high or low state	-0.5 ~ V_{CC} + 0.5	**V**
		Output in the power-off state	-0.5 ~ +6.5	**V**
VCC or GND Current	I_{CC}		±100	**mA**
Continuous Output Current	I_{OUT}	VOUT=0~VCC	±50	**mA**
Input Clamp Current	I_{IK}	VIN<0	-50	**mA**
Output Clamp Current	I_{OK}	VOUT>VCC or VOUT<0V	-50	**mA**
Storage Temperature Range	T_{STG}		-65 ~ +150	℃
Junction to Ambient	θ_{JA}	SOT-23-6	230	℃/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 (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65	--	5.5	**V**
		Data retention only	1.5	--	--	**V**
Input Voltage	V_{IN}		0	--	5.5	**V**
Output Voltage	V_{OUT}	High or low state	0	--	VCC	**V**
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	V_{CC}=1.8V±0.15V, 2.5V±0.2V	--	--	20	**ns/V**
		V_{CC}=3.3V±0.3V	--	--	10	**ns/V**
		V_{CC}=5V±0.5V	--	--	5	**ns/V**
Operating Temperature	T_A		-40	--	+125	℃

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-level Input Voltage	V_{IH}	V_{CC}=1.8±0.15V	0.65× V_{CC}	--	--	V
		V_{CC}=2.5±0.2V	1.7	--	--	V
		V_{CC}=3.3±0.3V	2	--	--	V
		VCC=5±0.5V	0.7× V_{CC}	--	--	V
Low-level Input Voltage	V_{IL}	VCC=1.8±0.15V	--	--	0.35× V_{CC}	V
		V_{CC}=2.5±0.2V	--	--	0.7	V
		V_{CC}=3.3±0.3V	--	--	0.8	V
		VCC=5±0.5V	--	--	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}=3.0V, I_{OH}=-16mA	2.4	--	--	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}=3.0V, I_{OH}=16mA	--	--	0.4	V
		V_{CC}=3.0V, I_{OH}=24mA	--	--	0.55	V
		V_{CC}=4.5V, I_{OL}=32mA	--	--	0.55	V
Input Leakage Current (All Input)	$I_{I(LEAK)}$	V_{CC}=0V ~ 5.5V V_{IN}=5.5V or GND	--	--	±5	μA
Power Off Leakage Current	I_{OFF}	V_{CC}=0V, V_{IN} or V_{OUT}=5.5V	--	--	±10	μA
Quiescent Supply Current	I_{CC}	V_{CC}=1.65 ~ 5.5V, V_{IN}=5.5V or GND, I_{OUT}=0	--	--	10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI_{CC}	V_{CC}=3 ~ 5.5V, One input at V_{CC}-0.6V, other inputs at V_{CC} or GND	--	--	500	μA

SWITCHING CHARACTERISTICS

(T_A=25°C，unless otherwise specified)

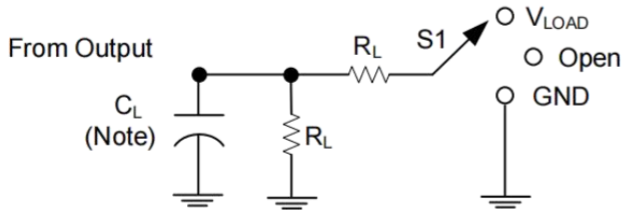
PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation delay from input (A, B or C) to output (Y)	t_{PD}	V_{CC}=1.8V±0.15V	C_L=15pF	2.4	--	17	ns
		V_{CC}=2.5V±0.2V		1.4	--	7	ns
		V_{CC}=3.3V±0.3V		1.2	--	5.5	ns
		V_{CC}=5V±0.5V		0.8	--	4	ns
		V_{CC}=1.8V±0.15V	C_L=30pF or 50pF	2.8	--	17.2	ns
		V_{CC}=2.5V±0.2V		1.5	--	7.5	ns
		V_{CC}=3.3V±0.3V		1.4	--	6	ns
		V_{CC}=5V±0.5V		1	--	5	ns

OPERATING CHARACTERISTICS

(f=10MHz, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_{IN}	V_{CC}=3.3V, V_{IN}=V_{CC} or GND	--	3.5	--	pF
Power Dissipation Capacitance	C_{PD}	V_{CC}=1.8V, f=10MHz	--	18	--	pF
		V_{CC}=2.5V, f=10MHz	--	19	--	pF
		V_{CC}=3.3V, f=10MHz	--	20	--	pF
		V_{CC}=5V, f=10MHz	--	23	--	pF

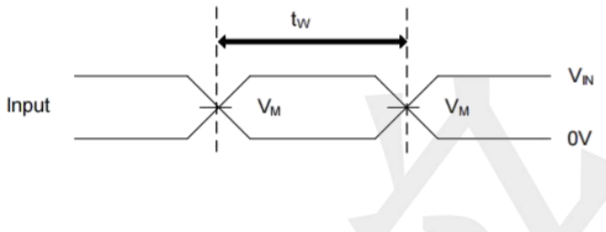
TEST CIRCUIT AND WAVEFORMS



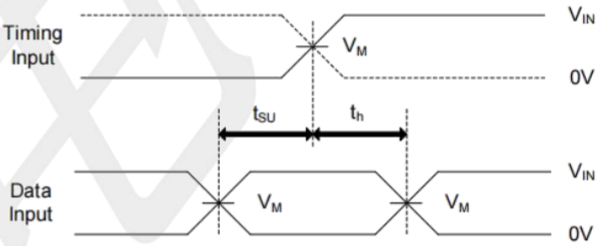
TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND

Note: C_L includes probe and jig capacitance.

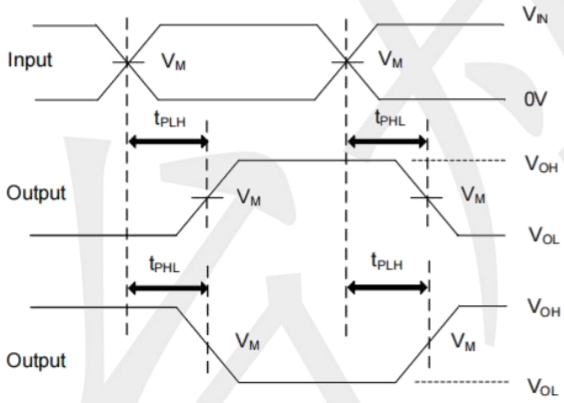
V_{CC}	Inputs		V_M	V_{LOAD}	C_L	R_L	V_Δ
	V_{IN}	t_R / t_F					
1.8V±0.15V	V_{CC}	≤2ns	$V_{CC}/2$	$2\times V_{CC}$	15pF	1MΩ	0.15V
2.5V±0.2V	V_{CC}	≤2ns	$V_{CC}/2$	$2\times V_{CC}$	15pF	1MΩ	0.15V
3.3V±0.3V	3V	≤2.5ns	1.5V	6V	15pF	1MΩ	0.3V
5V±0.5V	V_{CC}	≤2.5ns	$V_{CC}/2$	$2\times V_{CC}$	15pF	1MΩ	0.3V



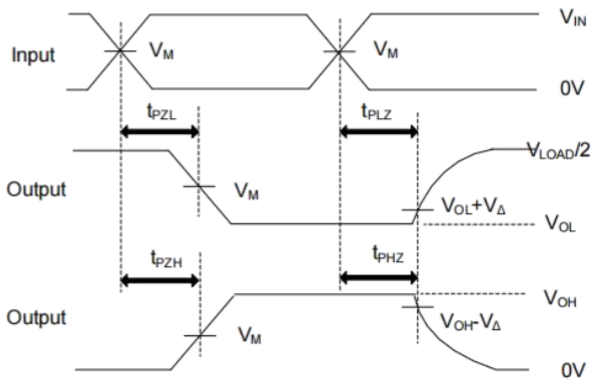
PULSE WIDTH



SETUP TIME AND HOLD TIME



PROPAGATION DELAY TIMES



ENABLE AND DISABLE 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 informantion (Unit: mm)

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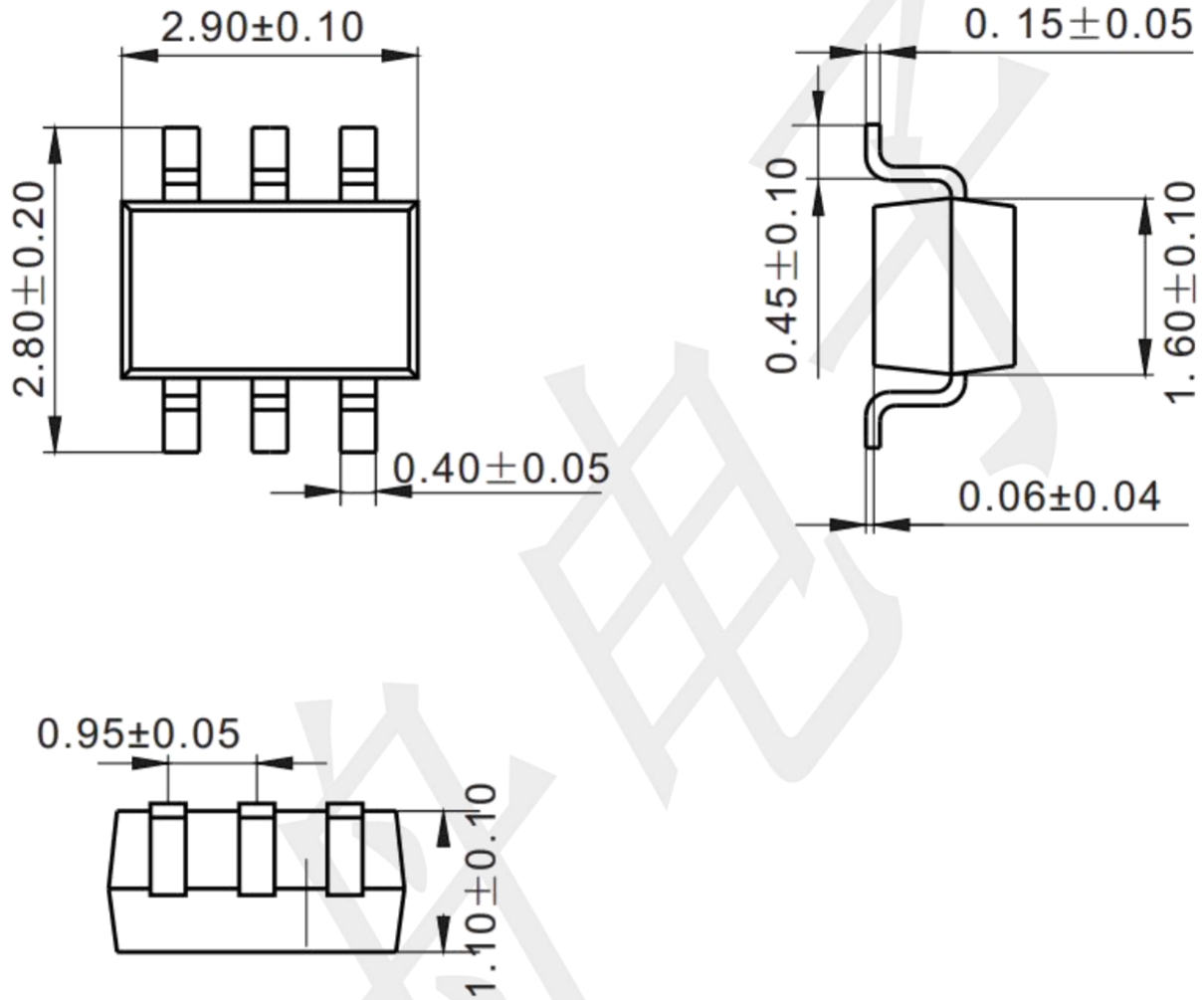

Mounting Pad Layout (unit: mm)