

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; I_{CC}=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)

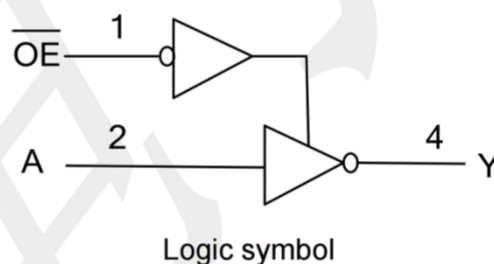
General Description

The is a single line driver with a 3-state output. The output is disabled when the output-enable ($\overline{OE}$) input is high. To ensure the high-impedance state during power up or power down, $\overline{OE}$ should be tied to V_{CC} through a pullup resistor, the minimum value of the resistor is determined by the current-sinking capability of the driver.

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

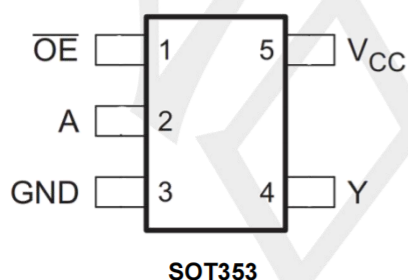
Logic Diagram



Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION	Marking
SN74LVC1G240DCKR	SOT353	Tape and Reel,3000	CK5

Pin Configuratio



Function Table

INPUT($\overline{OE}$)	INPUT(A)	OUTPUT(Y)
L	H	L
L	L	H
H	X	Z

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

Absolute Maximum Ratings (Unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	VCC		-0.5 ~ +6.5	V
Input Voltage	VIN		-0.5 ~ +6.5	V
Output Voltage	VOUT	Output in the high or low state	-0.5 ~ VCC + 0.5	V
		Output in the power-off state	-0.5 ~ +6.5	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<0V	-50	mA
Storage Temperature Range	TSTG		-65 ~ +150	°C
Junction to Ambient	θJA	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 (Unless otherwise specified)

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
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	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	$V_{CC}=1.8V \pm 0.15V$	$0.65 \times V_{CC}$	--	--	V
		$V_{CC}=2.5 \pm 0.2V$	1.7	--	--	V
		$V_{CC}=3.3 \pm 0.3V$	2	--	--	V
		$V_{CC}=5 \pm 0.5V$	$0.7 \times V_{CC}$	--	--	V
Low-Level Input Voltage	V_{IL}	$V_{CC}=1.8V \pm 0.15V$	--	--	$0.35 \times V_{CC}$	V
		$V_{CC}=2.5 \pm 0.2V$	--	--	0.7	V
		$V_{CC}=3.3 \pm 0.3V$	--	--	0.8	V
		$V_{CC}=5 \pm 0.5V$	--	--	$0.35 \times V_{CC}$	V
High-Level Output Voltage	V_{OH}	$V_{CC}=1.65 \sim 5.5V, I_{OH}=-100\mu A$	$V_{CC}-0.1$	--	--	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}	$V_{CC}=1.65 \sim 5.5V, I_{OL}=100\mu A$	--	--	0.1	V
		$V_{CC}=1.65V, I_{OL}=4mA$	--	--	0.45	V
		$V_{CC}=2.3V, I_{OL}=8mA$	--	--	0.3	V
		$V_{CC}=3.0V, I_{OL}=16mA$	--	--	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	$I_{I(LEAK)}$	$V_{CC}=0 \sim 5.5V, V_{IN}=5.5V$ or GND	--	± 0.1	± 5	μA
Power OFF Leakage Current	I_{OFF}	$V_{CC}=0V, V_{IN}$ or $V_{OUT}=5.5V$	--	± 0.1	± 10	μA
OFF-state output current	I_{OZ}	$V_{CC}=3.6V, V_{IN} = V_{IH}$ or $V_{IL}, V_{OUT}=5.5V$ or GND	--	--	10	μA
Quiescent Supply Current	I_{CC}	$V_{CC}=1.65 \sim 5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$	--	--	10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI_{CC}	$V_{CC}=3 \sim 5.5V$, One input at $V_{CC}-0.6V$, Other inputs at V_{CC} or GND	--	--	500	μA
Input Capacitance	C_I	$V_{CC}=3.3V, V_{IN}=V_{CC}$ or GND	--	4.0	--	PF

SWITCHING CHARACTERISTICS

(unless otherwise specified)

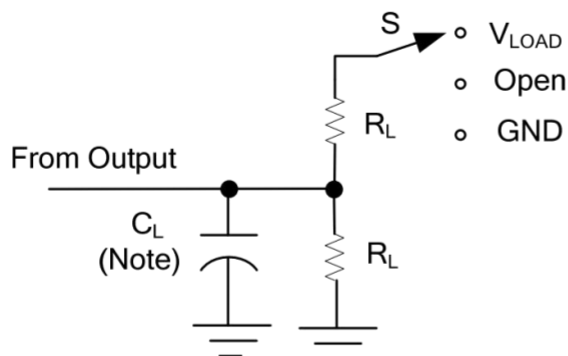
PARAMETER	SYMBOL	TEST Conditions		MIN	TYP	MAX	UNIT
Propagation Delay From Input A to Output Y	t _{PD}	C _L =15pF R _L =1MΩ	V _{CC} =1.8±0.15V	2.1	--	6.9	nS
			V _{CC} =2.5±0.2V	0.9	--	4.6	nS
			V _{CC} =3.3±0.3V	0.7	--	3.7	nS
			V _{CC} =5±0.5V	0.5	--	3.4	nS
		CL=30pF,RL=1KΩ	V _{CC} =1.8±0.15V	3.0	--	8.6	nS
		CL=30pF,RL=500Ω	V _{CC} =2.5±0.2V	1.4	--	5.5	nS
		CL=50pF RL=500Ω	V _{CC} =3.3±0.3V	1.1	--	4.5	nS
			V _{CC} =5±0.5V	1.0	--	4.0	nS
Propagation delay from input ($\overline{OE}$) to output(Y)	t _{en}	CL=30pF,RL=1KΩ	V _{CC} =1.8±0.15V	3.8	--	10	nS
		CL=30pF,RL=500Ω	V _{CC} =2.5±0.2V	2.1	--	6.5	nS
		CL=50pF RL=500Ω	V _{CC} =3.3±0.3V	1.4	--	5.4	nS
			V _{CC} =5±0.5V	1.1	--	5.2	nS
Propagation delay from input ($\overline{OE}$) to output(Y)	t _{dis}	CL=30pF,RL=1KΩ	V _{CC} =1.8±0.15V	2.1	--	9.4	nS
		CL=30pF,RL=500Ω	V _{CC} =2.5±0.2V	1.0	--	4.9	nS
		CL=50pF RL=500Ω	V _{CC} =3.3±0.3V	1.4	--	5.2	nS
			V _{CC} =5±0.5V	1.0	--	4.1	nS

OPERATING CHARACTERISTICS

(f=10MHz, unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	Output enabled	V _{CC} =1.8V	--	17	--	PF
		V _{CC} =2.5V	--	17	--	PF
		V _{CC} =3.3V	--	18	--	PF
		V _{CC} =5V	--	20	--	PF
	Output disabled	V _{CC} =1.8V	--	1.0	--	PF
		V _{CC} =2.5V	--	1.0	--	PF
		V _{CC} =3.3V	--	1.0	--	PF
		V _{CC} =5V	--	2.0	--	PF

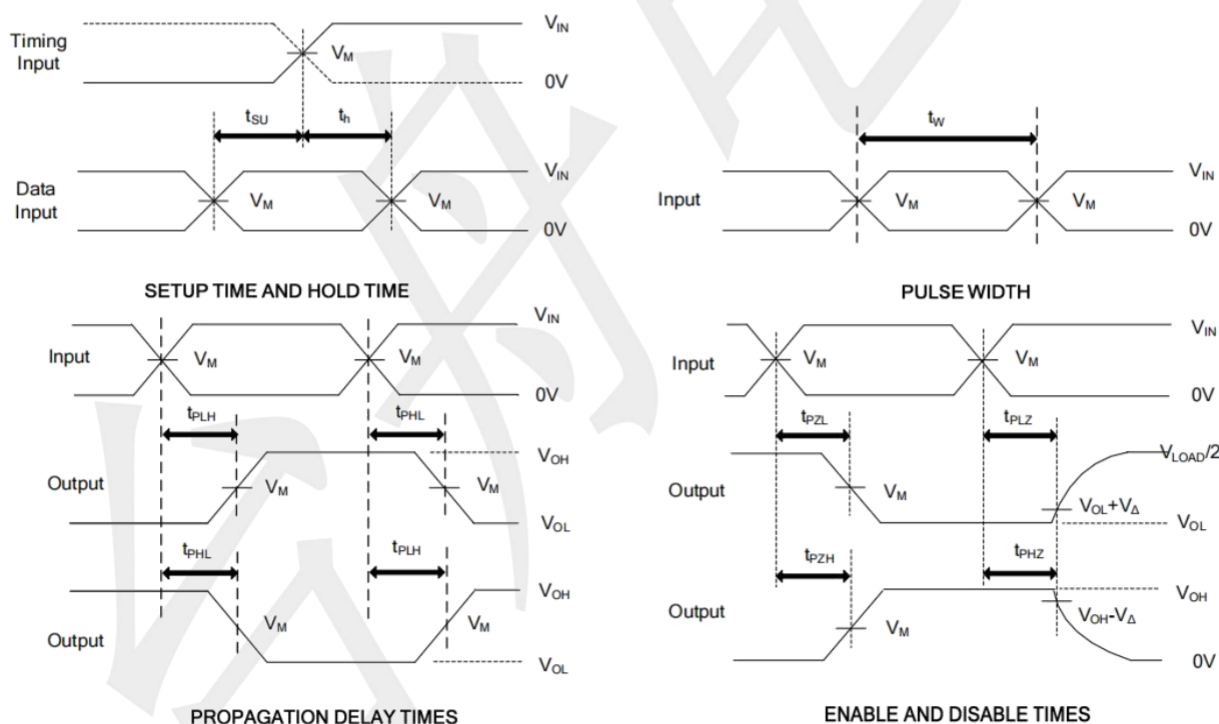
TEST CIRCUIT AND WAVEFORMS



TEST	S
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}	V_{IN}	t_R / t_F	V_M	V_{LOAD}	C_L	R_L	V_{Δ}
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	30pF	1K Ω	0.15V
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	30pF	500 Ω	0.15V
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	6V	50pF	500 Ω	0.3V
$5V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	$2 \times V_{CC}$	50pF	500 Ω	0.3V

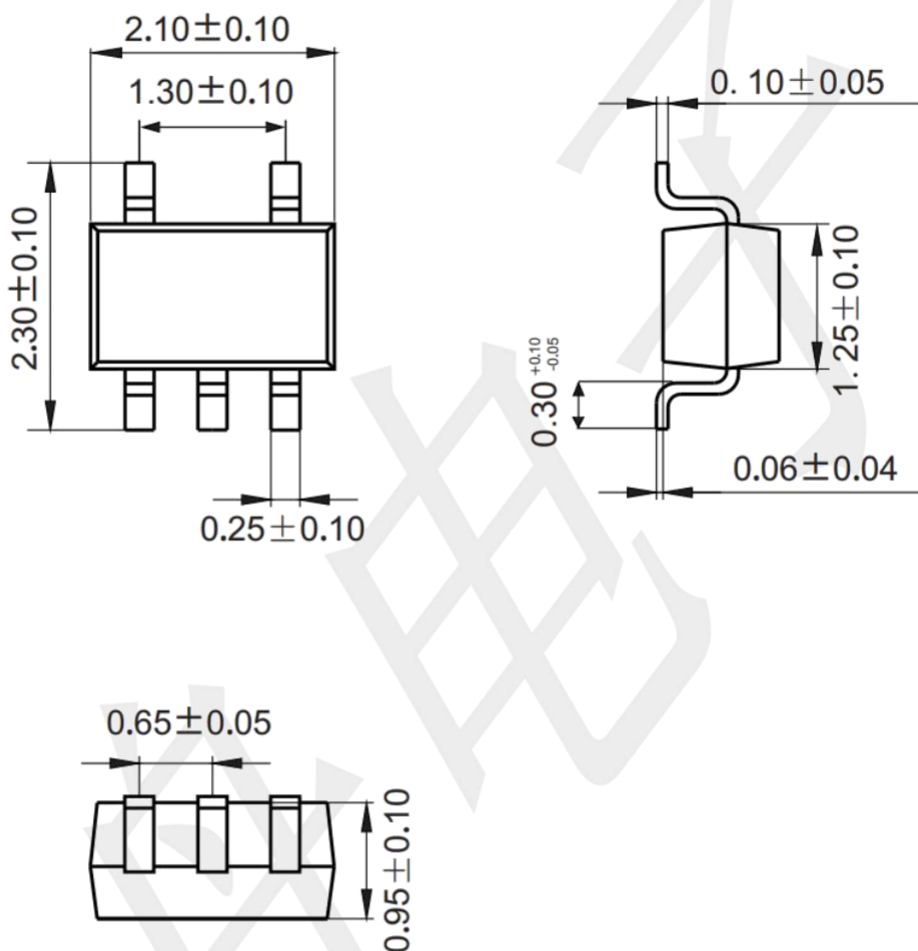


Notes: 1. C_L includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: PRR $\leq 10MHz$, $Z_O = 50\Omega$.

Package information

SOT353 (Unit: mm)



Mounting Pad Layout (unit: mm)

