

Features

- Wide supply voltage range from 0.8V to 2.7V
- Inputs accept voltages up to 3.6V
- I_{OFF} supports partial-power-down mode
- Low static power consumption; $I_{CC}=0.5\mu A$ (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 inverting buffer with open-drain outputs and it provides the function $Y = \overline{A}$ in positive logic. The output of this device is open-drain, and can be connected to other open-drain outputs to implement active-low wired-OR or active-high wired-AND functions.

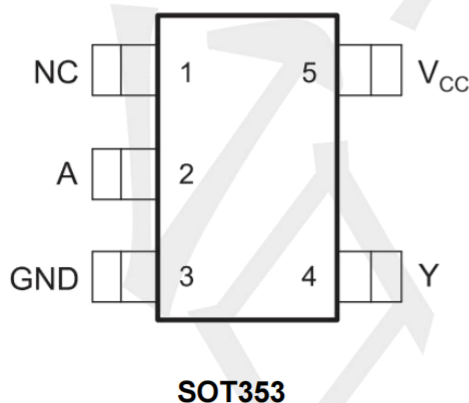
Applications

- 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



Pin Configuratio (TOP VIEW)



Function Table (each gate)

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

Note:H: HIGH voltage level;L: LOW voltage level.
Z: high impedance state.

Absolute Maximum Ratings

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V _{CC}		-0.5 ~ +3.6	V
Input Voltage	V _{IN}		-0.5 ~ +3.6	V
Output Voltage	V _{OUT}	Output in the high or low state	-0.5 ~ +V _{CC} +0.5V	V
		Output in the power-off state	-0.5 ~ +3.6	V
V _{CC} or GND Current	I _{CC}		±50	mA
Continuous Output Current	I _{OUT}	V _{OUT} =0~V _{CC}	±20	mA
Input Clamp Current	I _{IK}	V _{IN} <0	-50	mA
Output Clamp Current	I _{OK}	V _{OUT} <0	-50	mA
Storage Temperature Range	T _{STG}		-65 ~ +150	°C
Junction to Ambient	θ _{JA}		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	0.8	--	2.7	V
Input Voltage	V _{IN}		0	--	3.6	V
Output Voltage	V _{OUT}	High or low state	0	--	V _{CC}	V
Input Transition Rise or Fall Rate	Δt/Δv	V _{CC} =0.8V ~ 2.7V	--	--	200	ns/V
Operating Temperature	T _A		-40	--	+125	°C

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-level Input Voltage	V _{IH}	V _{CC} =0.8V	0.7×V _{CC}	--	--	V
		V _{CC} =1.1V ~ 1.95V	0.65×V _{CC}	--	--	V
		V _{CC} =2.3V ~ 2.7V	1.6	--	--	V
Low-level Input Voltage	V _{IL}	V _{CC} =0.8V	--	--	0.3×V _{CC}	V
		V _{CC} =1.1V ~ 1.95V	--	--	0.35×V _{CC}	V
		V _{CC} =2.3V ~ 2.7V	--	--	0.7	V
Low-Level Output Voltage	V _{OL}	V _{CC} =0.8 ~ 3.6V, I _{OL} =20μA	--	--	0.1	V
		V _{CC} =1.1V, I _{OL} =1.1mA	--	--	0.3×V _{CC}	V
		V _{CC} =1.4V, I _{OL} =1.7mA	--	--	0.31	V
		V _{CC} =1.65V, I _{OL} =1.9mA	--	--	0.31	V
		V _{CC} =2.3V	I _{OL} =2.3mA	--	0.31	V
		V _{CC} =2.7V	I _{OL} =3.1mA	--	0.44	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0 ~ 2.7V, V _{IN} =GND ~ 2.7V	--	--	±0.1	μA
Power OFF Leakage Current	I _{off}	V _{CC} =0 V, V _{IN} or V _{OUT} =0 ~ 2.7V	--	--	±0.2	μA
Additional Power OFF Leakage Current	ΔI _{off}	V _{CC} =0 V~0.2V, V _{IN} or V _{OUT} =0 ~ 2.7V	--	--	±0.2	μA
Quiescent Supply Current	I _{CC}	V _{CC} =0.8 ~2.7V, V _{IN} =V _{CC} or GND, I _{OUT} =0	--	--	0.5	μA
Additional Quiescent Supply Current Per Input Pin	ΔI _{CC}	V _{CC} =2.7 V, V _{IN} =V _{CC} -0.6V, I _{OUT} =0	--	--	40	μA
Input Capacitance	C _I	V _{CC} =0V-2.7V, V _{IN} =V _{CC} or GND	--	1.5	--	pF
Output Capacitance	C _{OUT}	V _{CC} =0V, V _{OUT} =GND	--	1.7	--	pF

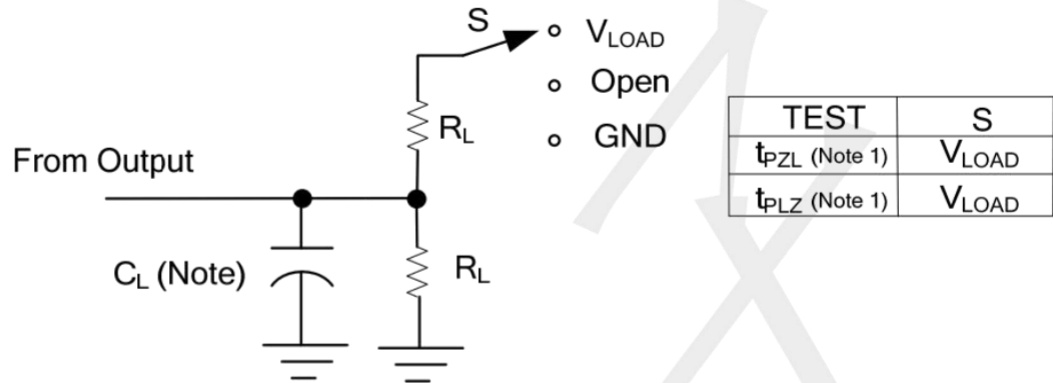
OPERATING CHARACTERISTICS (f=10MHz, TA =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	CPD	V _{CC} =0.8V	--	1.0	--	pF
		V _{CC} =1.2±0.1V	--	1.0	--	pF
		V _{CC} =1.5±0.1V	--	1.0	--	pF
		V _{CC} =1.8±0.15V	--	1.0	--	pF
		V _{CC} =2.5±0.2V	--	1.0	--	pF

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

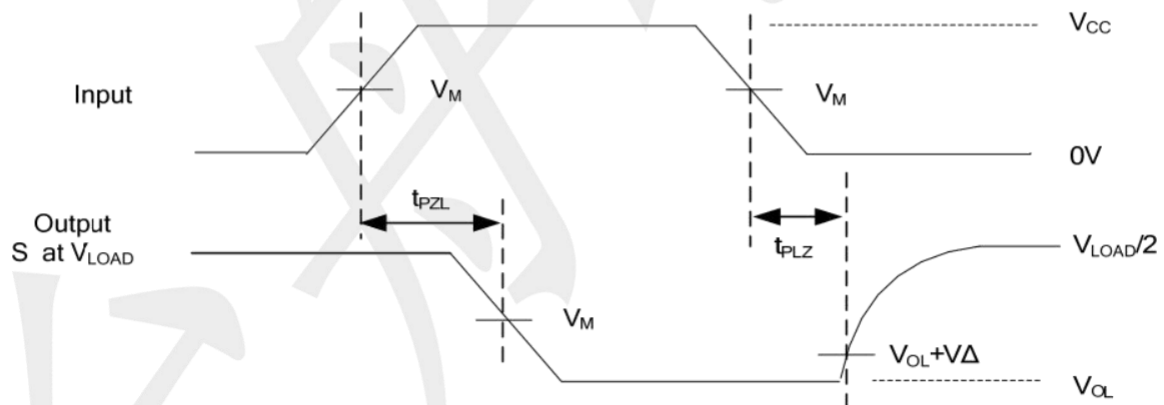
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from inputs (A) to output(Y)	t _{PD}	CL=5pF, RL=1MΩ	V _{CC} =0.8V	--	12.8	ns
			V _{CC} =1.2±0.1V	2.3	12.0	ns
			V _{CC} =1.5±0.1V	1.8	3.5	ns
			V _{CC} =1.8±0.15V	1.5	3.1	ns
			V _{CC} =2.5±0.2V	1.2	2.2	ns
		CL=10pF, RL=1MΩ	V _{CC} =0.8V	--	15.8	ns
			V _{CC} =1.2±0.1V	2.7	12	ns
			V _{CC} =1.5±0.1V	2.2	4.3	ns
			V _{CC} =1.8±0.15V	1.9	3.9	ns
			V _{CC} =2.5±0.2V	1.9	2.9	ns
		CL=15pF, RL=1MΩ	V _{CC} =0.8V	--	18.8	ns
			V _{CC} =1.2±0.1V	3.2	12.0	ns
			V _{CC} =1.5±0.1V	2.6	5.0	ns
			V _{CC} =1.8±0.15V	2.3	4.8	ns
			V _{CC} =2.5±0.2V	2.1	3.5	ns
		CL=30pF, RL=1MΩ	V _{CC} =0.8V	--	27.8	ns
			V _{CC} =1.2±0.1V	4.4	12.0	ns
			V _{CC} =1.5±0.1V	3.6	7.6	ns
			V _{CC} =1.8±0.15V	3.2	7.4	ns
			V _{CC} =2.5±0.2V	2.9	5.4	ns

TEST CIRCUIT AND WAVEFORMS



Note:1. Since this device has open drain outputs, the t_{PLZ} and t_{PZL} is the same as t_{PLH} and t_{PHL} .

V_{CC}	V_{IN}	t_R / t_F	V_M	V_{LOAD}	C_L	R_L	V_{Δ}
0.8	V_{CC}	3ns	$V_{CC}/2$	$2 \times V_{CC}$	5,10,15,30pF	5k Ω	0.1V
$1.2 \pm 0.1V$	V_{CC}	3ns	$V_{CC}/2$	$2 \times V_{CC}$	5,10,15,30pF	5k Ω	0.1V
$1.5 \pm 0.1V$	V_{CC}	3ns	$V_{CC}/2$	$2 \times V_{CC}$	5,10,15,30pF	5k Ω	0.1V
$1.8 \pm 0.15V$	V_{CC}	3ns	$V_{CC}/2$	$2 \times V_{CC}$	5,10,15,30pF	5k Ω	0.15V
$2.5 \pm 0.2V$	V_{CC}	3ns	$V_{CC}/2$	$2 \times V_{CC}$	5,10,15,30pF	5k Ω	0.15V



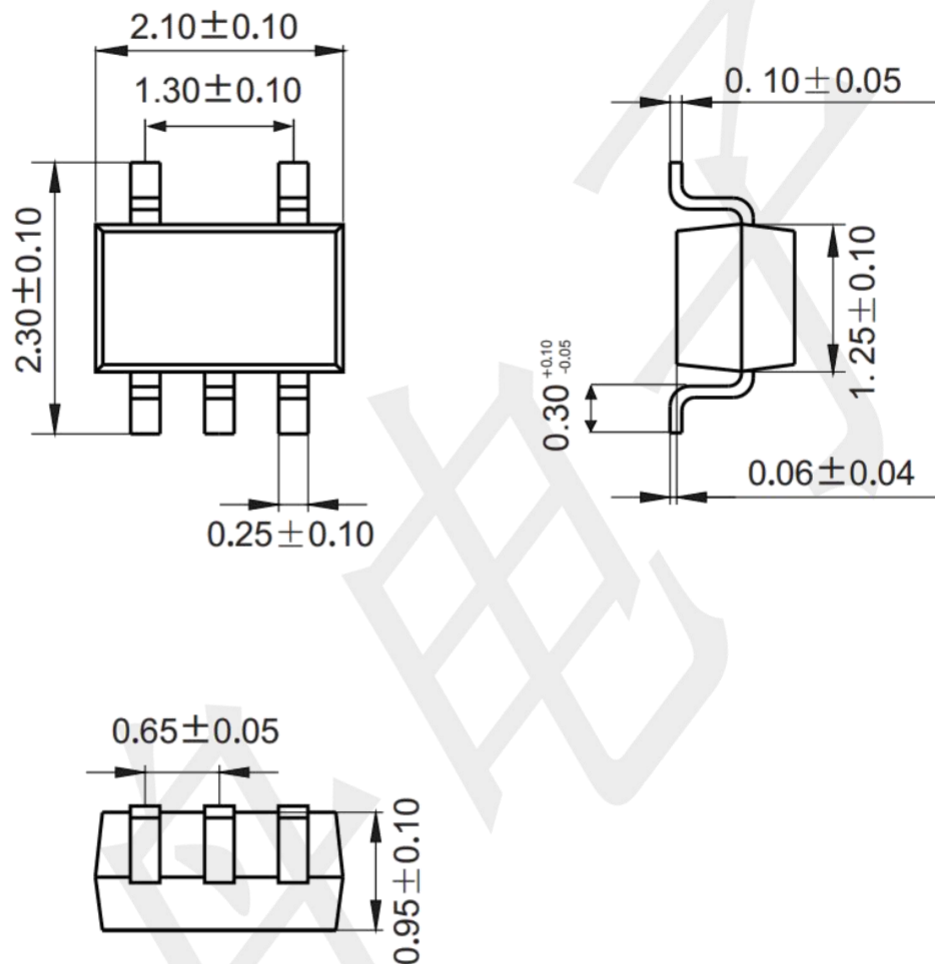
PROPAGATION DELAY FROM INPUT(A) TO OUTPUT(Y) AND OUTPUT TRANSITION TIME

Notes:

- CL includes probe and jig capacitance.
- All input pulses are supplied by generators having the following characteristics: PRR $\leq 10\text{MHz}$, $Z_O = 50\Omega$.

Package information (Unit: mm)

SOT353



Mounting Pad Layout (unit: mm)

