

Features

- Operate from 1.65V to 5.5V
- Inputs Accept Voltages To 5.5V
- High Noise Immunity
- Low Power Dissipation
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 1000-V Charged-Device Model (C101)

General Description

The TC7SZ34 is a single buffer, it provides the function $Y = A$. This device has power-down protective circuit, preventing device destruction when it is powered down.

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



Logic Symbol

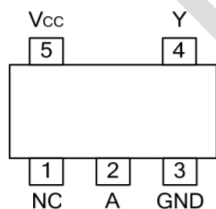


IEC Logic Symbol

Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
TC7SZ34F-TP	SOT23-5	Tape and Reel,3000
TC7SZ34FU-TP	SOT353	Tape and Reel,3000

Pin Configuratio



SOT23-5
SOT353

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

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

Absolute Maximum Ratings

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 Power-off state	-0.5 ~ +6.5	V
		Output in the High or Low state	-0.5 ~ V _{CC} +0.5	V
VCC or GND Current	I _{CC}	Output in the Power-off state	±100	mA
Continuous Output Current	I _{OUT}	V _{OUT} =0~V _{CC}	±50	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}	SOT-23-5	230	°C/W
		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.

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

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation delay from input (A) to output(Y)	t _{PLH} / t _{PHL}	V _{CC} =1.8±0.15V	C _L =15pF, R _L =1MΩ	2	--	9.9	ns
		V _{CC} =2.5±0.2V		1.5	--	6	ns
		V _{CC} =3.3±0.3V		1	--	3.5	ns
		V _{CC} =5±0.5V		1	--	2.9	ns
Propagation delay from input (A) to output(Y)	t _{PLH} / t _{PHL}	V _{CC} =1.8±0.15V, R _L =1KΩ	C _L =30pF	3.2	--	8.6	ns
		V _{CC} =2.5±0.2V, R _L =500Ω		1.5	--	4.4	ns
		V _{CC} =3.3±0.3V	C _L =50pF, R _L =500Ω	1.5	--	4.1	ns
		V _{CC} =5±0.5V		1	--	3.2	ns

Electrical Characteristics (unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	$V_{CC}=1.65V \sim 1.95V$	$0.65 \times V_{CC}$	--	--	V
		$V_{CC}=2.3V \sim 2.7V$	1.7	--	--	V
		$V_{CC}=3V \sim 3.6V$	2	--	--	V
		$V_{CC}=4.5V \sim 5.5V$	$0.7 \times V_{CC}$	--	--	V
Low-Level Input Voltage	V_{IL}	$V_{CC}=1.65V \sim 1.95V$	--	--	$0.35 \times V_{CC}$	V
		$V_{CC}=2.3V \sim 2.7V$	--	--	0.7	V
		$V_{CC}=3V \sim 3.6V$	--	--	0.8	V
		$V_{CC}=4.5V \sim 5.5V$	--	--	$0.3 \times V_{CC}$	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	$I_{I(LEAK)}$	$V_{IN}=5.5V$ or GND, $V_{CC}=0 \sim 5.5V$	--	--	± 1	μA
Power OFF Leakage Current	I_{OFF}	V_{IN} or $V_{OUT}=5.5V, V_{CC}=0V$	--	--	± 10	μA
Quiescent Supply Current	I_Q	$V_{IN}=5.5V$ or GND, $I_{OUT}=0, V_{CC}=1.65 \sim 5.5V$	--	--	10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI_Q	$V_{CC}=3 \sim 5.5V$, One input at $V_{CC}-0.6V$, Other inputs at V_{CC} or GND	--	--	500	μA
Input Capacitance	C_{IN}	$V_{CC}=3.3V, V_{IN}=V_{CC}$ or GND	--	3.5	--	pF

Recommended Operating Conditions

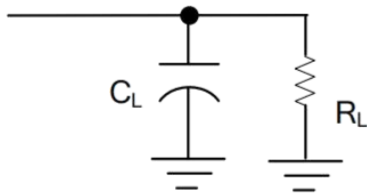
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65	--	5.5	V
		Data retention only	1.5	--	--	V
Input Voltage	V_{IN}		0	--	5.5	V
Output Voltage	V_{OUT}	High or low state	0	--	V_{CC}	V
High-Level Output Current	I_{OH}	$V_{CC}=1.65V$	--	--	-4	mA
		$V_{CC}=2.3V$	--	--	-8	mA
		$V_{CC}=3V$	--	--	-16	mA
		$V_{CC}=3V$	--	--	-24	mA
		$V_{CC}=4.5V$	--	--	-32	mA
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
Input Transition Rise or Fall Rate	t_R / t_F	$V_{CC}=1.8V\pm 0.15V, 2.5V\pm 0.2V$	--	--	20	ns/V
		$V_{CC}=3.3V\pm 0.3V$	--	--	10	ns/V
		$V_{CC}=5V\pm 0.5V$	--	--	10	ns/V
Operating Temperature	T_A		-40	--	+125	°C

OPERATING CHARACTERISTICS (f=10MHz, $T_A = 25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Power Dissipation Capacitance	C_{PD}	$V_{CC}=1.8V$	f=10MHz	--	16	--	pF
		$V_{CC}=2.5V$		--	16	--	pF
		$V_{CC}=3.3V$		--	16	--	pF
		$V_{CC}=5V$		--	18	--	pF

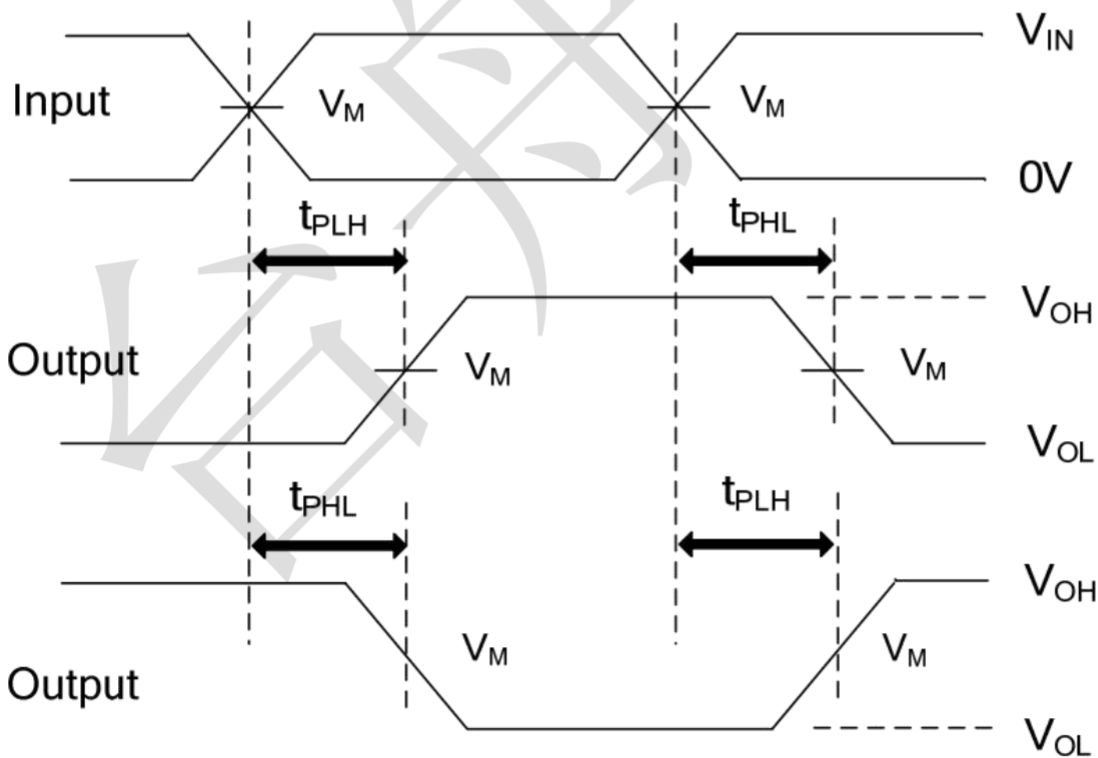
TEST CIRCUIT AND WAVEFORMS

From Output



TEST CIRCUIT

V_{CC}	INPUTS		V_M	C_L	R_L
	V_{IN}	t_R, t_F			
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	15pF	1M Ω
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	15pF	1M Ω
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	15pF	1M Ω
$5V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	15pF	1M Ω

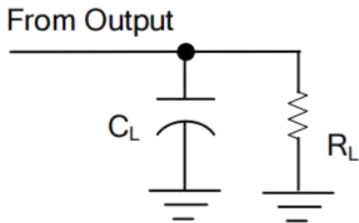


PROPAGATION DELAY TIMES

Note: C_L includes probe and jig capacitance.

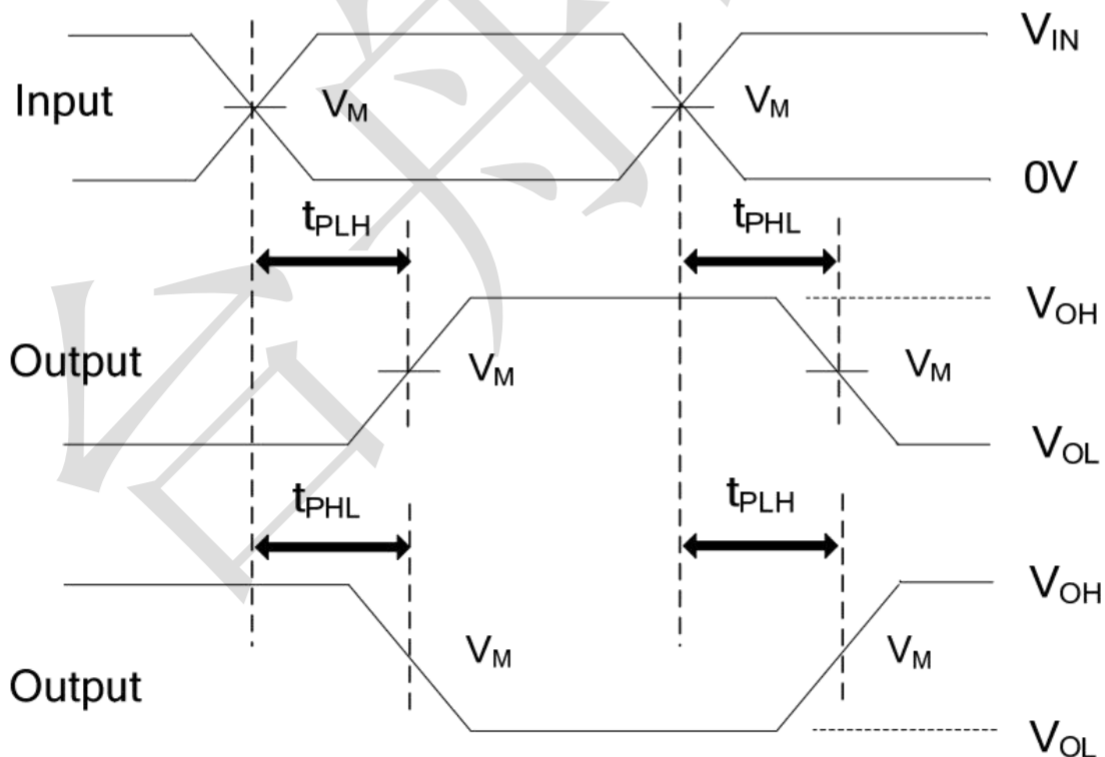
All input pulses are supplied by generators having the following characteristics: PRR $\leq 10MHz$, $Z_O = 50\Omega$.

TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

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



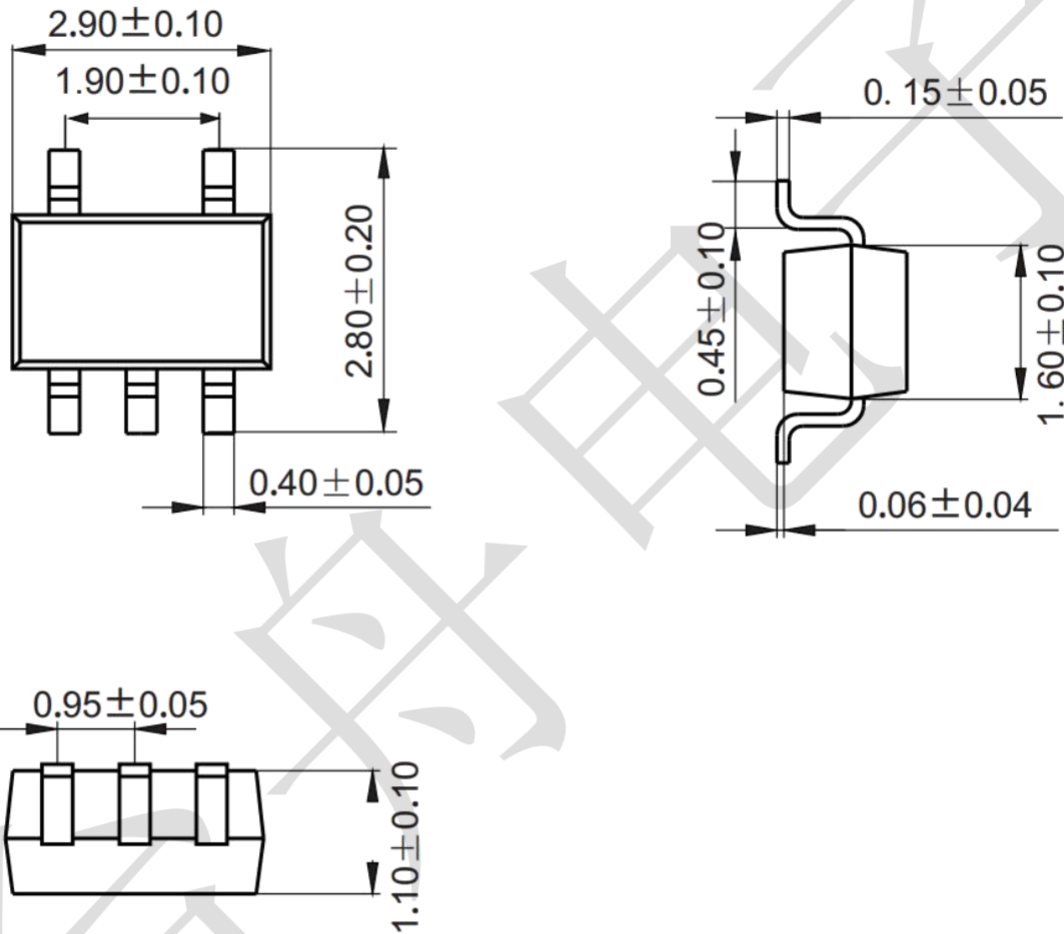
PROPAGATION DELAY TIMES

Note: C_L includes probe and jig capacitance.

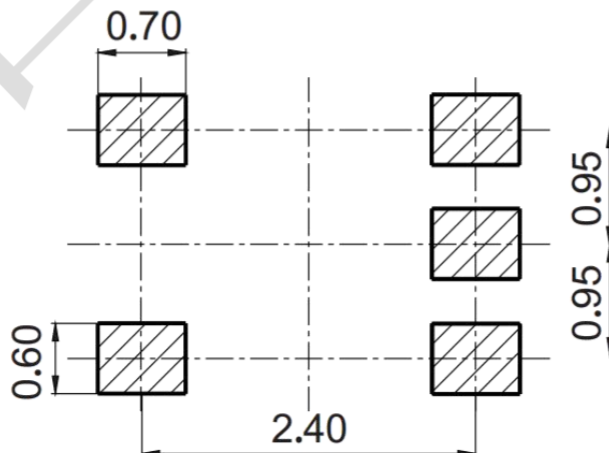
All input pulses are supplied by generators having the following characteristics: PRR $\leq 10MHz$, $Z_O = 50\Omega$.

Package information

SOT23-5 (Unit: mm)

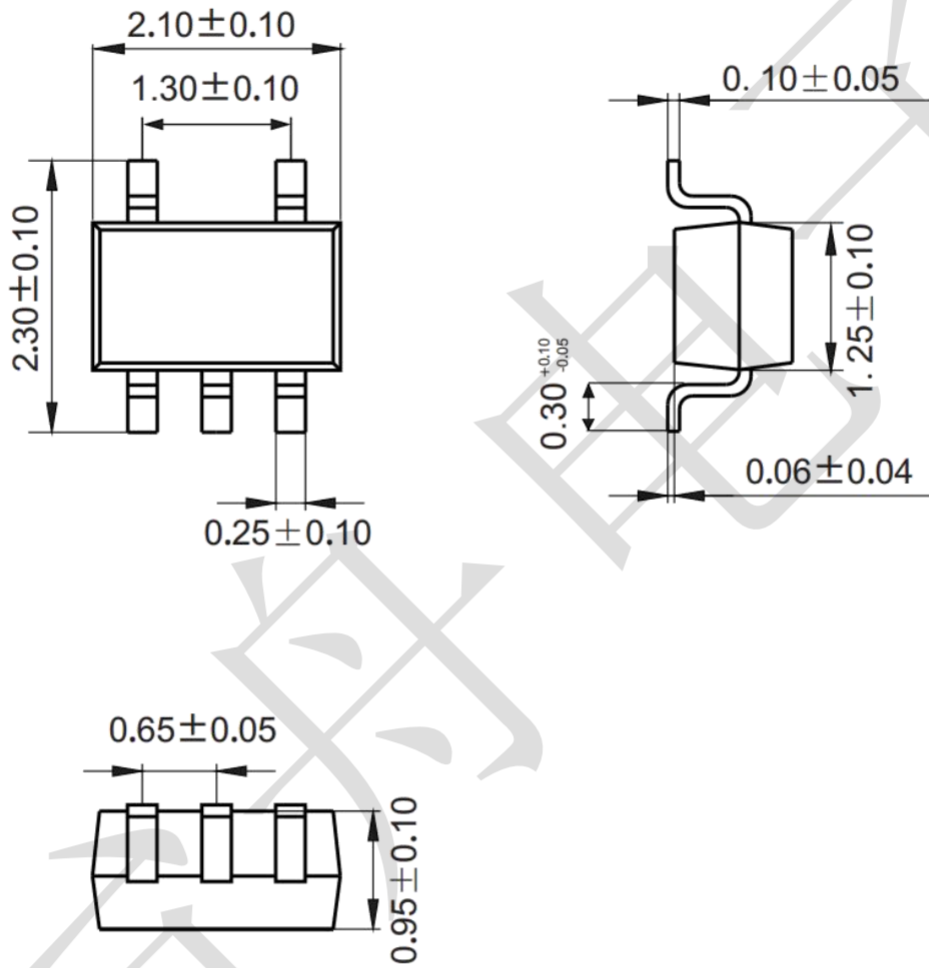


Mounting Pad Layout (unit: mm)



Package information

SOT353 (Unit: mm)



Mounting Pad Layout (unit: mm)

