

Features

- Low On-resistance, $R_{on}=2.5\Omega$
- 1.8V Logic Compatible Control Pin
- Overrides V+ to Achieve True Isolation Even When Supply Is Dead
- High Off-Isolation: -100dB @ 100KHz
- Low Channel-to-Channel Crosstalk: -97dB @ 100KHz
- High Bandwidth (-3dB @ 700MHz) Suitable For USB2.0 High-Speed Routing
- Low Quiescent Current (<2uA) With Very Wide Supply Range (1.5V ~ 5.5V)

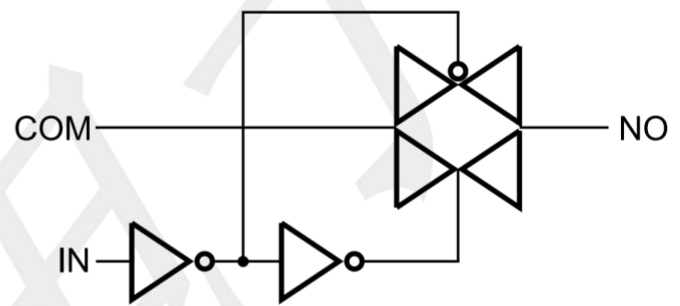
General Description

The is a low voltage single-pole,double-throw (SPDT) analog switch intending for use in chopping,modem, signal gating, and signal multiplexing for analog-to-digital and digital -to-analog conversion systems.

Applications

- Cell phones and TWS headset
- Audio, Video, UART, USB2.0 Signal and Supply Routing

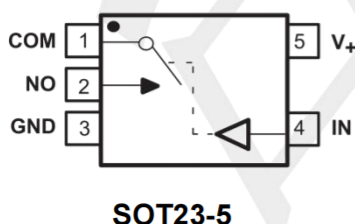
Logic Diagram



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	COM	Analog Switch—Common
2	NO	Analog Switch—Normally Open
3	GND	Ground
4	IN	Digital control pin to connect COM to NO
5	V+	Supply voltage

Pin Configuratio



Function Table

INPUT(IN)	NO TO COM, COM TO NO
L	OFF
H	ON

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

Absolute Maximum Ratings

(Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V+	-0.3 ~ +6.5	V
Switch Voltage	V _S	-0.3 ~ +6.5	V
Input Voltage	V _{IN}	-0.3 ~ +6.5	V
Continuous Current Through IN, COM, NO		±60	mA
Peak Current Through IN, COM, NO (pulsed at 1ms 50% duty cycle)		±100	mA
Continuous Current Through V+&GND		±100	mA
Storage Temperature Range	T _{STG}	-55 ~ +150	°C
Operating Junction Temperature	T _J	150	°C
Junction to Ambient	R _{θJA}	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.

Recommend operating ratings

(Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage Operating	V+	1.6 ~ 5.5	V
Control Input Voltage	V _{SEL}	-0.3 ~ 5.5	V
Input Signal Voltage	V _A	-0.3 ~ 5.5	V
Operating Temperature	T _A	-40 ~ +85	°C

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

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V _{IH}	V ₊ =3.3V ~ 5.5V	1.6	--	--	V
		V ₊ =1.5V ~ 3.3V	1.4	--	--	V
Low-Level Input Voltage	V _{IL}	V ₊ =3.3V ~ 5.5V	--	--	0.6	V
		V ₊ =1.5V ~ 3.3V	--	--	0.4	V
Supply quiescent current	I _{CC}	I _A =0, V _{SEL} =0 or V _{SEL} =V ₊	--	--	1.0	uA
Increase in ICC per input	I _{CC} T	I _A =0, V ₊ =4.5V V _{SEL} >1.8 or V _{SEL} <0.5	--	--	1.0	uA
Off state leakage from IN to COM (or NO)	I _A	V _A = 5.5V , V _{B0(or B1)} = 0V	--	--	±2.0	uA
On-Resistance	R _{ON1}	V _A =0 ~ 0.5V, I _A =30mA	--	5.6	9.9	Ω
	R _{ON2}	V _A =0.5 ~ 2.0V, I _A =30mA	--	4.6	8.0	Ω
	R _{ON3}	V _A =2.0 ~ 4.0V, I _A =30mA	--	4.0	6.0	Ω
	R _{ON4}	V _A =4.0 ~ 5.5V, I _A =30mA	--	2.5	5.5	Ω
On-Resistance Flatness	R _{FLAT1}	V _A =0 ~ 0.5V, I _A =30mA	--	1.6	--	Ω
	R _{FLAT2}	V _A =0.5 ~ 2.0V, I _A =30mA	--	0.7	--	Ω
	R _{FLAT3}	V _A =2.0 ~ 4.0V, I _A =30mA	--	0.5	--	Ω
	R _{FLAT4}	V _A =4.0 ~ 5.5V, I _A =30mA	--	0.3	--	Ω
On-Resistance Matching Between Channels	Δ R _{ON}	V _A =0~5.5V, I _A =30mA	--	0.1	0.2	Ω

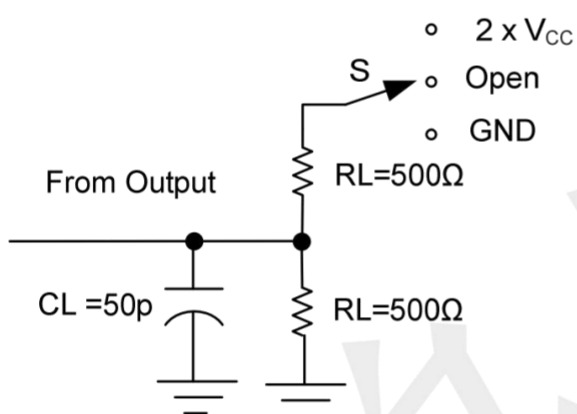
AC Electronics Characteristics (Ta=25oC, VCC=3.3V, unless otherwise noted)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Turn-On Time	T _{ON}	V _A =1.5V, C _L =35pF, R _L =50Ω	--	200	--	ns
Turn-Off Time	T _{OFF}	V _A =1.5V, C _L =35pF, R _L =50Ω	--	200	--	ns
Break-Before-Make time	T _{BBM}	V _A =1.5V, C _L =35pF, R _L =50Ω	--	500	--	ns
-3dB Bandwidth	BW	R _L =50Ω, C _L =0pF	--	700	--	MHz
Off isolation	OIRR	F=1KHz, R _L =50Ω	--	-81	--	dB
		F=10KHz, R _L =50Ω	--	-80	--	dB
Crosstalk	Xtalk	F=1KHz, R _L =50Ω	--	-83	--	dB
		F=10KHz, R _L =50Ω	--	-82	--	dB
Total Harmonic Distortion	THD	F=20Hz to 20KHz V _A =600mVp-p @R _L =32Ω	--	-80	--	dB

Capacitance ($T_a=25^\circ\text{C}$ unless otherwise noted)

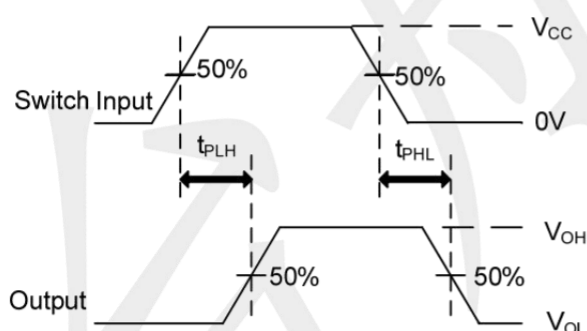
PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Off capacitance	C_{OFF}	$F=100\text{KHz}$, $V_+=3.3$	--	5.0	--	pF
On capacitance	C_{ON}	$F=100\text{KHz}$, $V_+=3.3$	--	7.0	--	pF

TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

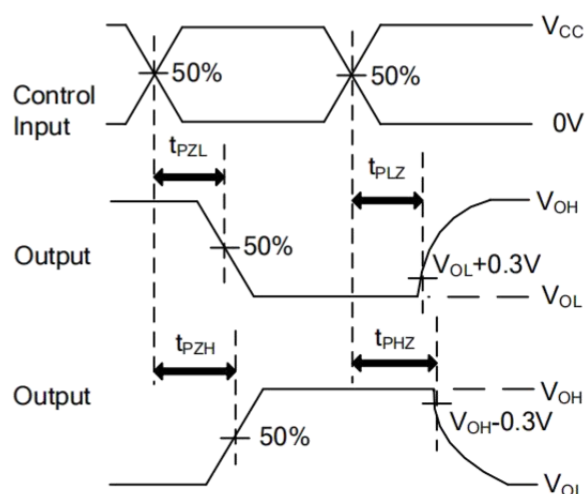
TEST	S
t_{PLH}/t_{PHL}	Open
t_{PHZ}/t_{PZH}	GND
t_{PLZ}/t_{PZL}	$2 \times V_{CC}$



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES

Note: C_L includes probe and jig capacitance.

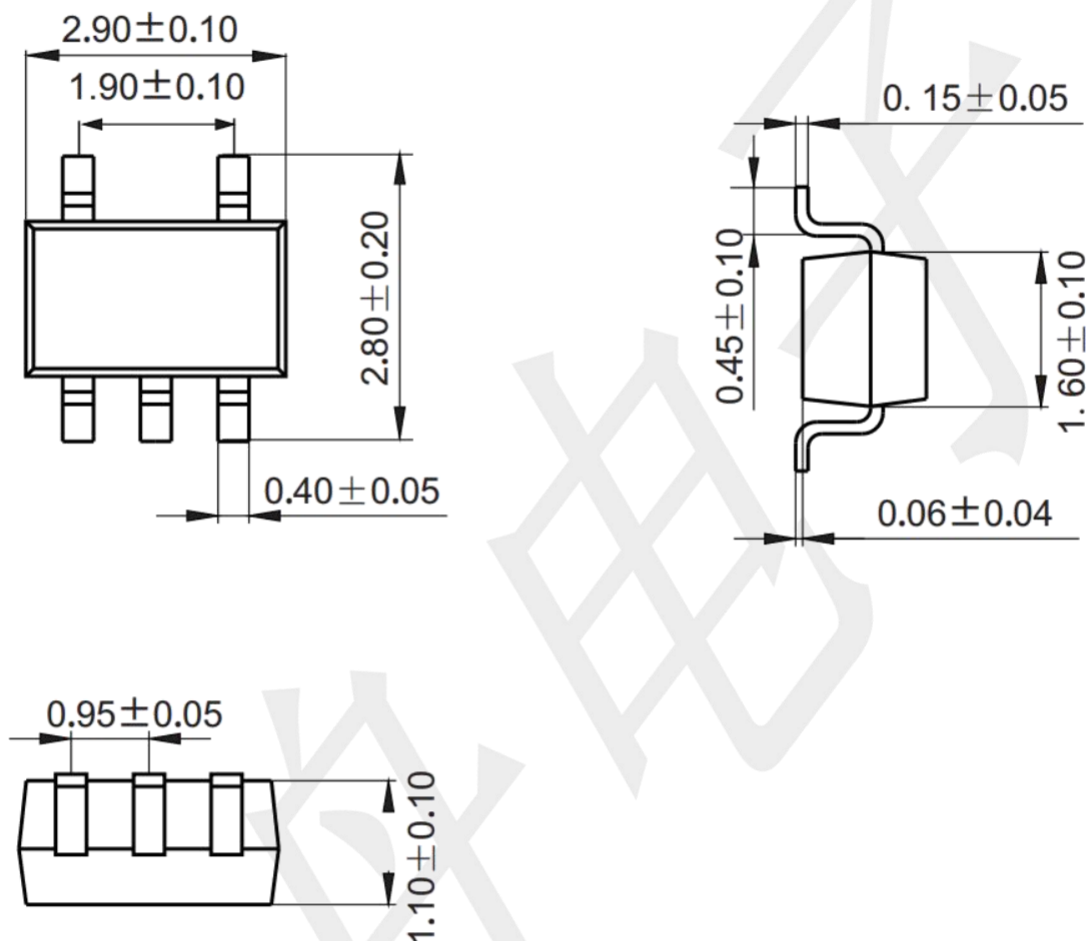
$PRR \leq 1\text{MHz}$, $Z_O = 50\Omega$, $t_R \leq 2.5\text{ns}$, $t_F \leq 2.5\text{ns}$.



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES

Package informantion

SOT23-5 (Unit: mm)



Mounting Pad Layout (Unit: mm)

