

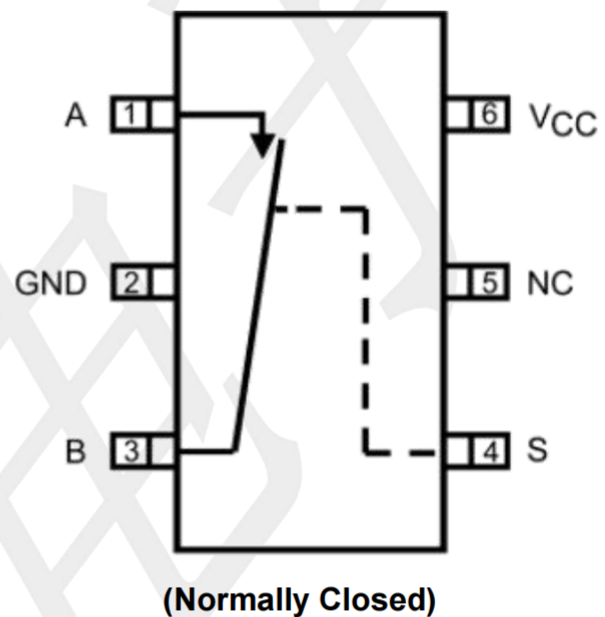
Features

- Low On-resistance, $R_{on}=1.5\Omega$ when $A=5V$
- 1.8V Logic Compatible Control Pin
- A Overrides VCC to Achieve True Isolation Even When Supply Is Dead
- High Off-Isolation: $-100dB$ @ $100KHz$
- Low Channel-to-Channel Crosstalk: $-97dB$ @ $100KHz$
- High Bandwidth ($-3dB$ @ $350MHz$) Suitable For USB2.0 High-Speed Routing
- Low Quiescent Current ($<2\mu A$) With Very Wide Supply Range ($1.5V \sim 5.5V$)

Applications

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

Logic Diagram



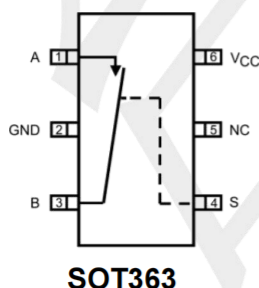
General Description

The and are high-performance Single-Pole / Single-Throw (SPST) analog switches. The devices feature ultra-low and operate over a wide VCC range of 1.65 V to 5.5 V. The devices are fabricated with sub-micron CMOS technology to achieve fast switching speeds. The select input is TTL-level compatible.

PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	A	Common output or input
2	GND	Ground (0 V)
3	B	Independent input or output
4	S	Select input
5	NC	No Connect
6	VCC	Supply voltage

Pin Configuration



Function Table

INPUT(S)	OUTPUT(A to B)
L	ON
H	OFF

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

Absolute Maximum Ratings

(Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	VCC	-0.3 ~ +6.5	V
Switch Voltage	VS	-0.3 ~ +6.5	V
Input Voltage	VIN	-0.3 ~ +6.5	V
Continuous Current Through A, B		±128	mA
Peak Current Through A, B (pulsed at 1ms 50% duty cycle)		±200	mA
Storage Temperature Range	TSTG	-55 ~ +150	°C
Operating Junction Temperature	TJ	150	°C
Junction to Ambient	RθJA	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	VCC	1.5 ~ 5.5	V
Control Input Voltage	VSEL	-0.3 ~ 5.5	V
Input Signal Voltage	VA	-0.3 ~ 5.5	V
Operating Temperature	TA	-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}	VCC=3.3V ~ 5.5V	1.6	--	--	V
		VCC=1.5V ~ 3.3V	1.4	--	--	V
Low-Level Input Voltage	V _{IL}	VCC=3.3V ~ 5.5V	--	--	0.6	V
		VCC=1.5V ~ 3.3V	--	--	0.4	V
Supply quiescent current	I _{CC}	I _A =0, V _{SEL} =0 or V _{SEL} =VCC	--	--	1.0	uA
Increase in ICC per input	I _{CC} T	I _A =0, VCC=4.5V V _{SEL} >1.8 or V _{SEL} <0.5	--	--	1.0	uA
Off state leakage from A to B	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	--	3.6	3.9	Ω
	R _{ON2}	V _A =0.5 ~ 2.0V, I _A =30mA	--	3.0	3.5	Ω
	R _{ON3}	V _A =2.0 ~ 4.0V, I _A =30mA	--	2.5	3.5	Ω
	R _{ON4}	V _A =4.0 ~ 5.5V, I _A =30mA	--	1.5	1.8	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

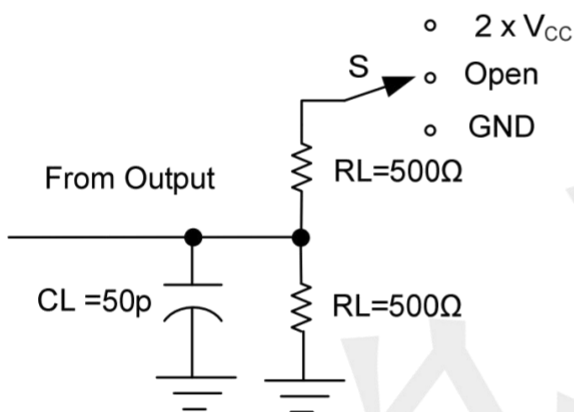
AC Electronics Characteristics (Ta=25oC, VCC=3.3V, unless otherwise noted)

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	--	350	--	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)

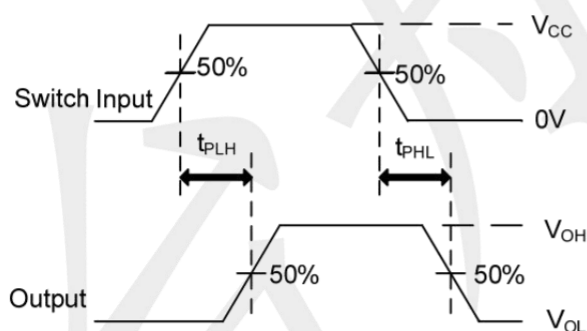
PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Off capacitance	C_{OFF}	$F=100\text{KHz}$, $V_{CC}=3.3$	--	5.0	--	pF
On capacitance	C_{ON}	$F=100\text{KHz}$, $V_{CC}=3.3$	--	7.0	--	pF

TEST CIRCUIT AND WAVEFORMS



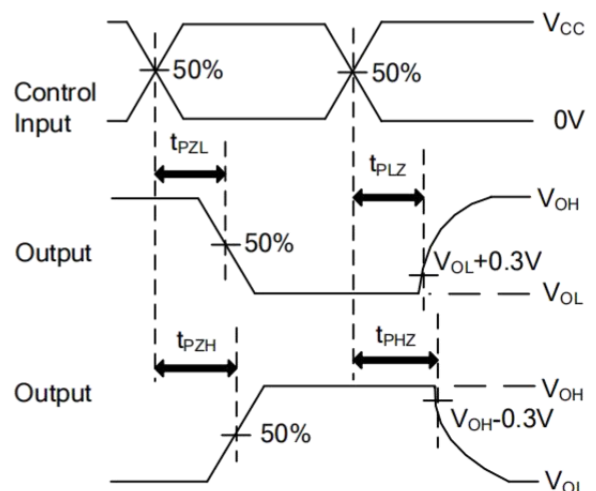
TEST CIRCUIT

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**

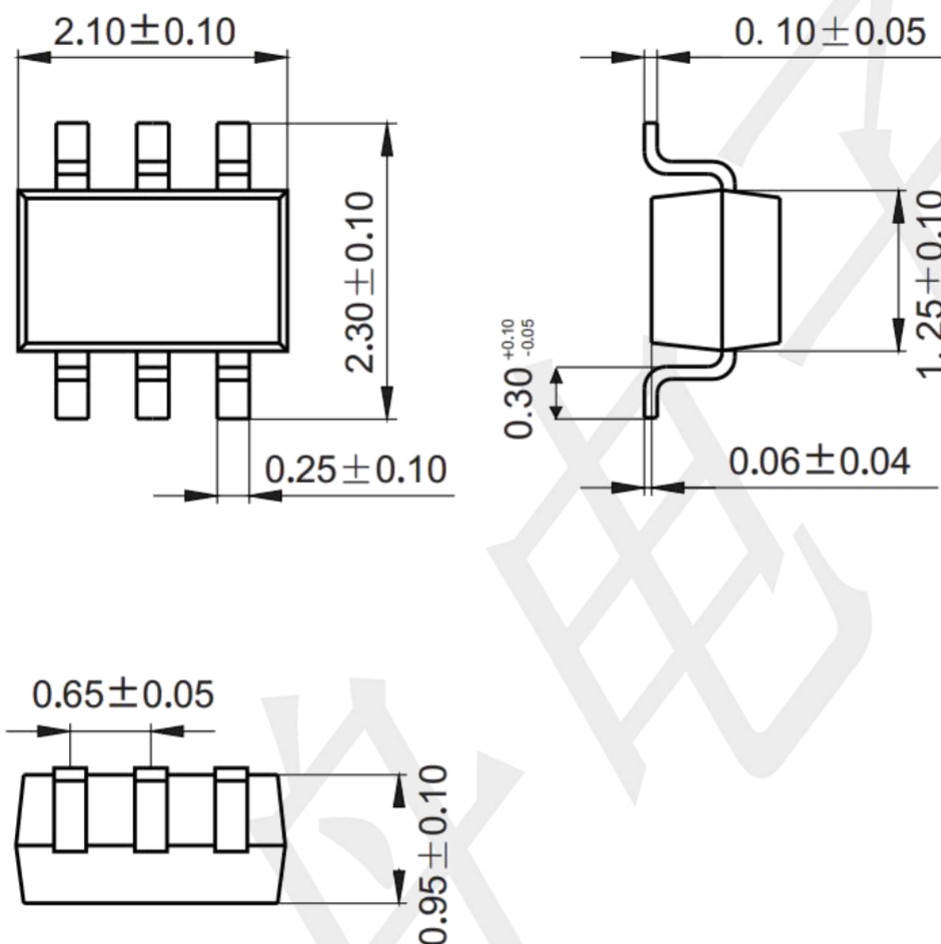
Note: C_L includes probe and jig capacitance.
 $PRR \leq 1\text{MHz}$, $Z_O = 50\Omega$, $t_r \leq 2.5\text{ns}$, $t_f \leq 2.5\text{ns}$.



**VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES**

Package information (Unit: mm)

SOT363



Mounting Pad Layout (unit: mm)

