

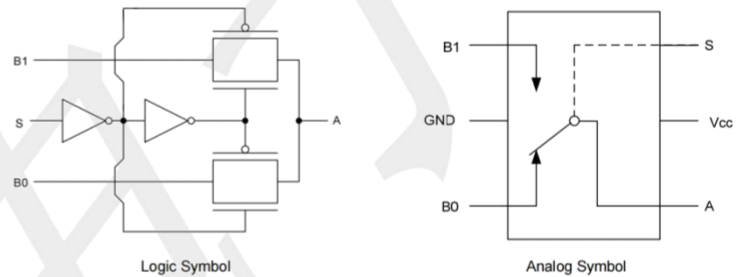
### Features

- Low On-resistance, Ron=1.5Ω 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 (<2uA) With Very Wide Supply Range (1.5V ~ 5.5V)

### Applications

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

### Logic Diagram



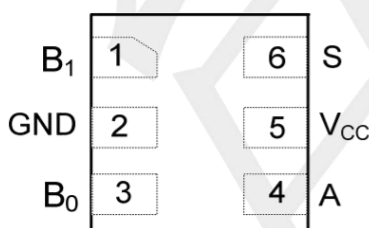
### General Description

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.

### PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	B1	Independent input or output
2	GND	Ground (0 V)
3	B0	Independent input or output
4	A	Common output or input
5	VCC	Supply voltage
6	S	Select input

### Pin Configuratio



DFN1510-6

### Function Table

INPUT(S)	OUTPUT(Y)
L	B0 Connected to A
H	B1 Connected to A

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

## Absolute Maximum Ratings

(Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	-0.3 ~ +6.5	V
Switch Voltage	V <sub>S</sub>	-0.3 ~ +6.5	V
Input Voltage	V <sub>IN</sub>	-0.3 ~ +6.5	V
Continuous Current Through A, B0, B1		±128	mA
Peak Current Through A, B0, B1 (pulsed at 1ms 50% duty cycle)		±200	mA
Storage Temperature Range	T <sub>STG</sub>	-55 ~ +150	°C
Operating Junction Temperature	T <sub>J</sub>	150	°C
Junction to Ambient	R <sub>θJA</sub>	440	°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 <sub>CC</sub>	1.5 ~ 5.5	V
Control Input Voltage	V <sub>SEL</sub>	-0.3 ~ 5.5	V
Input Signal Voltage	V <sub>A</sub>	-0.3 ~ 5.5	V
Operating Temperature	T <sub>A</sub>	-40 ~ +85	°C

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

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V <sub>IH</sub>	VCC=3.3V ~ 5.5V	1.6	--	--	V
		VCC=1.5V ~ 3.3V	1.4	--	--	V
Low-Level Input Voltage	V <sub>IL</sub>	VCC=3.3V ~ 5.5V	--	--	0.6	V
		VCC=1.5V ~ 3.3V	--	--	0.4	V
Supply quiescent current	I <sub>CC</sub>	I <sub>A</sub> =0, V <sub>SEL</sub> =0 or V <sub>SEL</sub> =VCC	--	--	1.0	uA
Increase in ICC per input	I <sub>CC</sub> T	I <sub>A</sub> =0, VCC=4.5V V <sub>SEL</sub> >1.8 or V <sub>SEL</sub> <0.5	--	--	1.0	uA
Off state leakage from A to B0 (or B1)	I <sub>A</sub>	V <sub>A</sub> = 5.5V , V <sub>B0(or B1)</sub> = 0V	--	--	±2.0	uA
On-Resistance	R <sub>ON1</sub>	V <sub>A</sub> =0 ~ 0.5V, I <sub>A</sub> =30mA	--	3.6	3.9	Ω
	R <sub>ON2</sub>	V <sub>A</sub> =0.5 ~ 2.0V, I <sub>A</sub> =30mA	--	3.0	3.5	Ω
	R <sub>ON3</sub>	V <sub>A</sub> =2.0 ~ 4.0V, I <sub>A</sub> =30mA	--	2.5	3.5	Ω
	R <sub>ON4</sub>	V <sub>A</sub> =4.0 ~ 5.5V, I <sub>A</sub> =30mA	--	1.5	1.8	Ω
On-Resistance Flatness	R <sub>FLAT1</sub>	V <sub>A</sub> =0 ~ 0.5V, I <sub>A</sub> =30mA	--	1.6	--	Ω
	R <sub>FLAT2</sub>	V <sub>A</sub> =0.5 ~ 2.0V, I <sub>A</sub> =30mA	--	0.7	--	Ω
	R <sub>FLAT3</sub>	V <sub>A</sub> =2.0 ~ 4.0V, I <sub>A</sub> =30mA	--	0.5	--	Ω
	R <sub>FLAT4</sub>	V <sub>A</sub> =4.0 ~ 5.5V, I <sub>A</sub> =30mA	--	0.3	--	Ω
On-Resistance Matching Between Channels	Δ R <sub>ON</sub>	V <sub>A</sub> =0~5.5V, I <sub>A</sub> =30mA	--	0.1	0.2	Ω

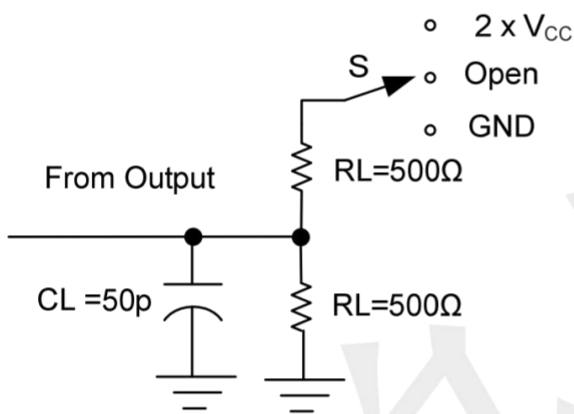
### AC Electronics Characteristics (Ta=25oC, VCC=3.3V, unless otherwise noted)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Turn-On Time	T <sub>ON</sub>	V <sub>A</sub> =1.5V, C <sub>L</sub> =35pF, R <sub>L</sub> =50Ω	--	200	--	ns
Turn-Off Time	T <sub>OFF</sub>	V <sub>A</sub> =1.5V, C <sub>L</sub> =35pF, R <sub>L</sub> =50Ω	--	200	--	ns
Break-Before-Make time	T <sub>B</sub> BM	V <sub>A</sub> =1.5V, C <sub>L</sub> =35pF, R <sub>L</sub> =50Ω	--	500	--	ns
-3dB Bandwidth	BW	R <sub>L</sub> =50Ω, C <sub>L</sub> =0pF	--	350	--	MHz
Off isolation	OIRR	F=1KHz, R <sub>L</sub> =50Ω	--	-81	--	dB
		F=10KHz, R <sub>L</sub> =50Ω	--	-80	--	dB
Crosstalk	Xtalk	F=1KHz, R <sub>L</sub> =50Ω	--	-83	--	dB
		F=10KHz, R <sub>L</sub> =50Ω	--	-82	--	dB
Total Harmonic Distortion	THD	F=20Hz to 20KHz V <sub>A</sub> =600mVp-p @R <sub>L</sub> =32Ω	--	-80	--	dB

### Capacitance (Ta=25oC unless otherwise noted)

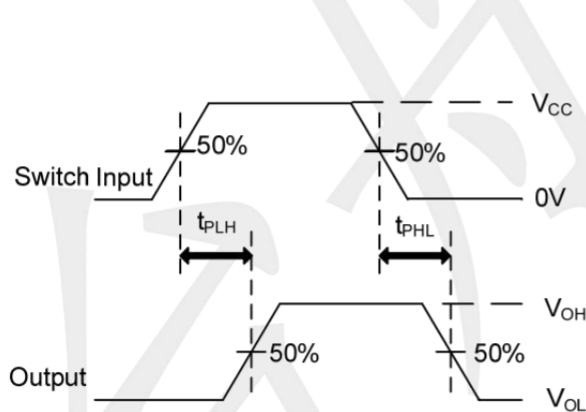
PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Off capacitance	C <sub>OFF</sub>	F=100KHz, VCC=3.3	--	5.0	--	pF
On capacitance	C <sub>ON</sub>	F=100KHz, VCC=3.3	--	7.0	--	pF

### TEST CIRCUIT AND WAVEFORMS



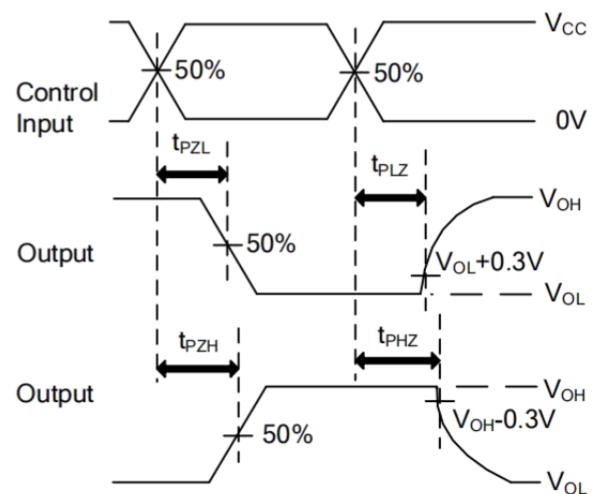
TEST CIRCUIT

TEST	S
t <sub>PLH</sub> /t <sub>PHL</sub>	Open
t <sub>PHZ</sub> /t <sub>PZH</sub>	GND
t <sub>PLZ</sub> /t <sub>PZL</sub>	2 x V <sub>CC</sub>



VOLTAGE WAVEFORMS  
PROPAGATION DELAY TIMES

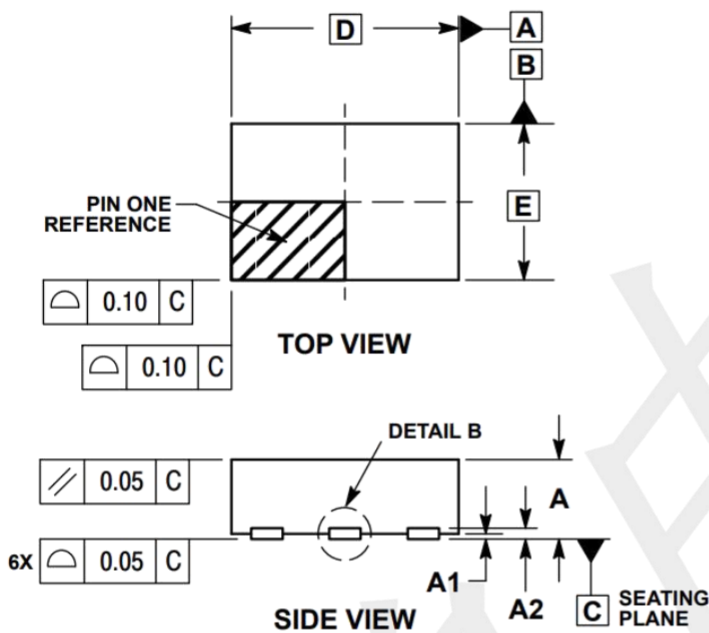
Note: C<sub>L</sub> includes probe and jig capacitance.  
PRR ≤ 1MHz, Z<sub>O</sub> = 50Ω, t<sub>r</sub> ≤ 2.5ns, t<sub>f</sub> ≤ 2.5ns.



VOLTAGE WAVEFORMS  
ENABLE AND DISABLE TIMES

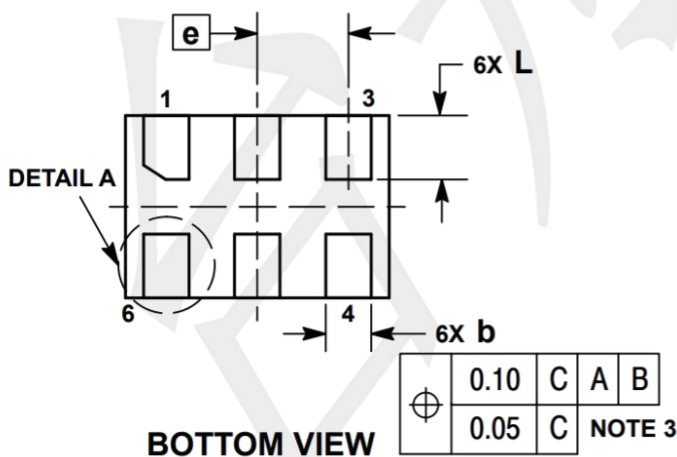
**Package information (unit: mm)**

DFN1510-6



DIM	MILLIMETERS	
	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A2	0.07 REF	
b	0.20	0.30
D	1.45 BSC	
E	1.00 BSC	
e	0.50 BSC	
L	0.30	0.40
L1	---	0.15

**Mounting Pad Layout (unit: mm)**



**MOUNTING FOOTPRINT**

