

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 @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

Pin Configuratio



DFN1109-6

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.

PIN DESCRIPTION

Pin Number	Symbol	Descriptions
1	B0	Data 0 terminal, Normally closed
2	GND	Ground
3	B1	Data 1 terminal, Normally open
4	SEL	Switch select pin, Digit logic low or high
5	VCC	Power supply
6	A	Common Data terminal, Connect to B0 or B1 according to SEL logic

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, B0, B1		±128	mA
Peak Current Through A, B0, B1 (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 B0 (or B1)	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

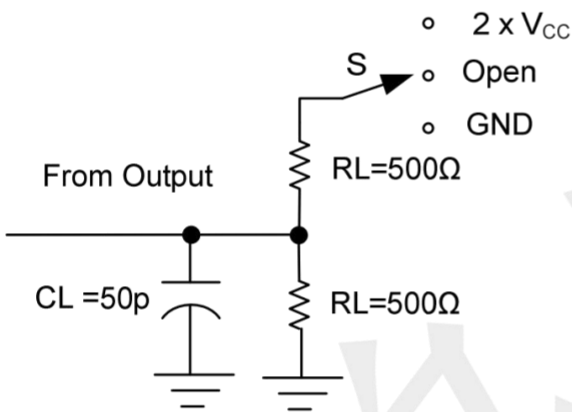
AC Electronics Characteristics (Ta=25oC, VCC=3.3V, unless otherwise noted)

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 _B BM	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 (Ta=25oC unless otherwise noted)

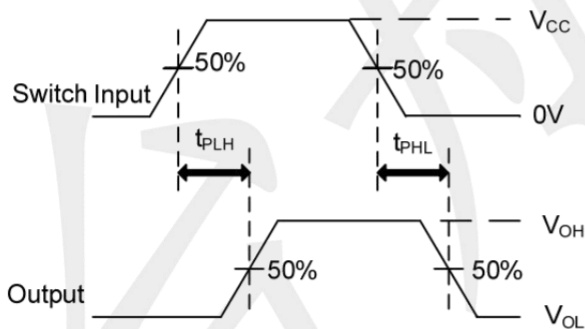
PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Off capacitance	C _{OFF}	F=100KHz, VCC=3.3	--	5.0	--	pF
On capacitance	C _{ON}	F=100KHz, VCC=3.3	--	7.0	--	pF

TEST CIRCUIT AND WAVEFORMS



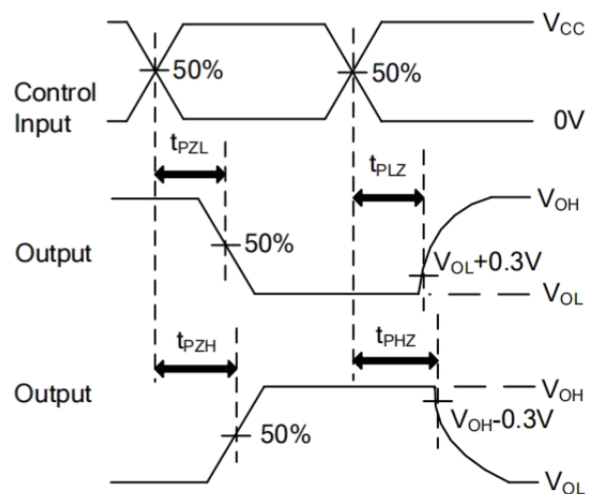
TEST CIRCUIT

TEST	S
t _{PLH} /t _{PHL}	Open
t _{PHZ} /t _{PZH}	GND
t _{PLZ} /t _{PZL}	2 x V _{CC}



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES

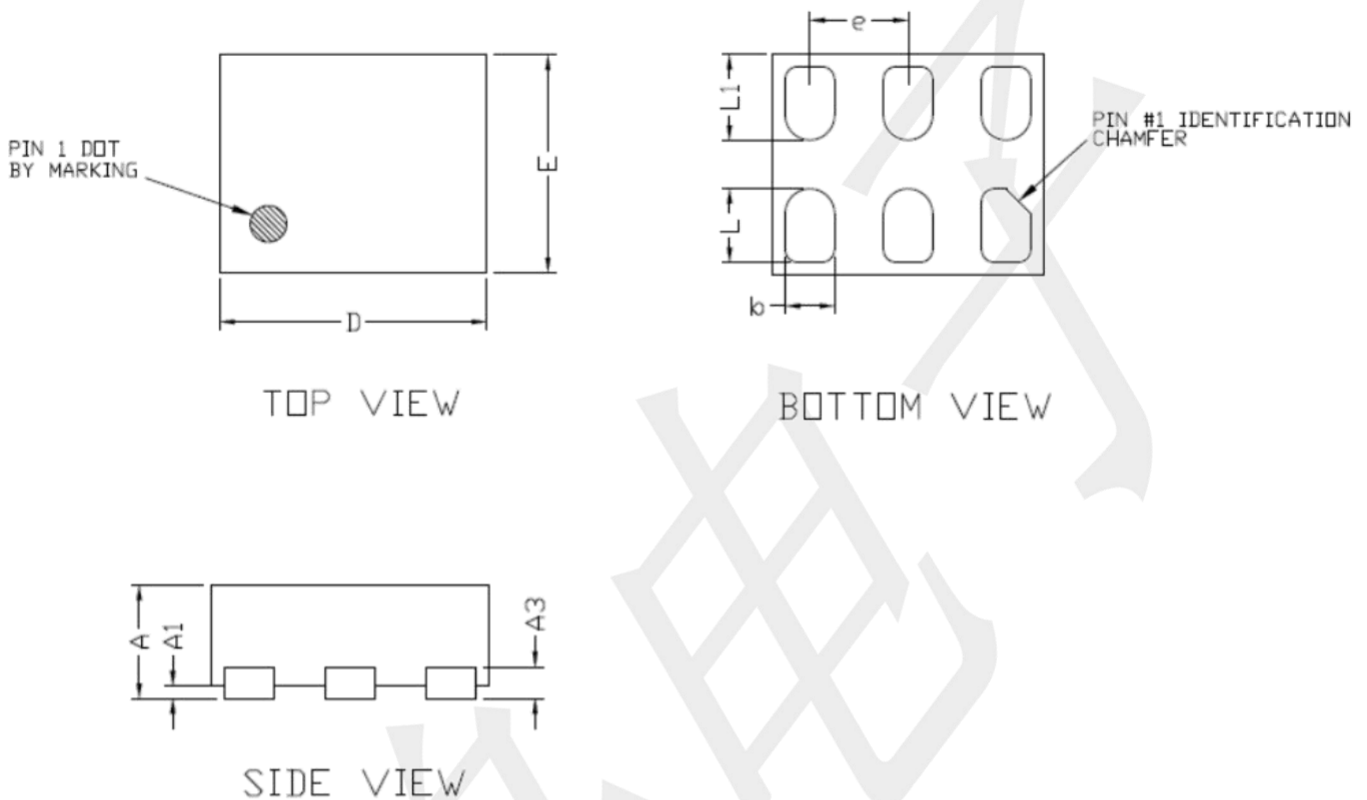
Note: C_L includes probe and jig capacitance.
PRR ≤ 1MHz, Z_O = 50Ω, t_r ≤ 2.5ns, t_f ≤ 2.5ns.



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES

Package information

DFN1109-6



COMMON DIMENSIONS(MM)			
PKG.	X1:EXTREME THIN		
REF.	MIN.	NOM.	MAX
A	0.40	—	0.50
A1	0.00	—	0.05
A3	0.125 REF.		
D	1.05	1.10	1.15
E	0.85	0.90	0.95
b	0.15	0.20	0.25
L	0.25	0.30	0.35
L1	0.30	0.35	0.40
e	0.40 BSC		