

TPNX5L2750CGU

Dual channel SPDT bidirectional analog switch

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Features

- Low On-resistance, $R_{on}=1.5\Omega$ when $V_{CC}=5V$
- 1.8V Logic Compatible Control Pin
- High Off-Isolation: $-100dB @ 100KHz$
- COM+/- Overrides V_{CC} to Achieve True Isolation Even When Supply Is Dead
- Low Channel-to-Channel Crosstalk: $-97dB @ 100KHz$
- High Bandwidth ($-3dB @ 700MHz$) Suitable For USB2.0 High-Speed Routing
- Low Quiescent Current ($<2\mu A$) With Very Wide Supply Range ($1.5V \sim 5.5V$)

Applications

- Mobile Phones, Tablets and Notebooks
- Portable media players or Personal media players

General Description

This is a high-speed dual channel analog switch, which has First disconnect, then connect, and bidirectional signal switching function. It can be used Create a dual 2:1 multiplexer or a 1:2 dual de multiplexer.

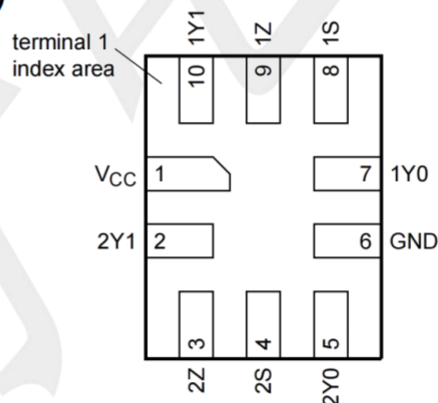
It provides extremely low on resistance, very low THD, and channels

Interstitial interference and high shutdown isolation. These characteristics make

It is suitable for audio signal transmission and switching applications.

The control logic supports 1.5V-5.5V CMOS logic levels. This logic interface can directly interface with various CPU and microcontrollers without increasing the power output current (ICC), thereby reducing Power consumption.

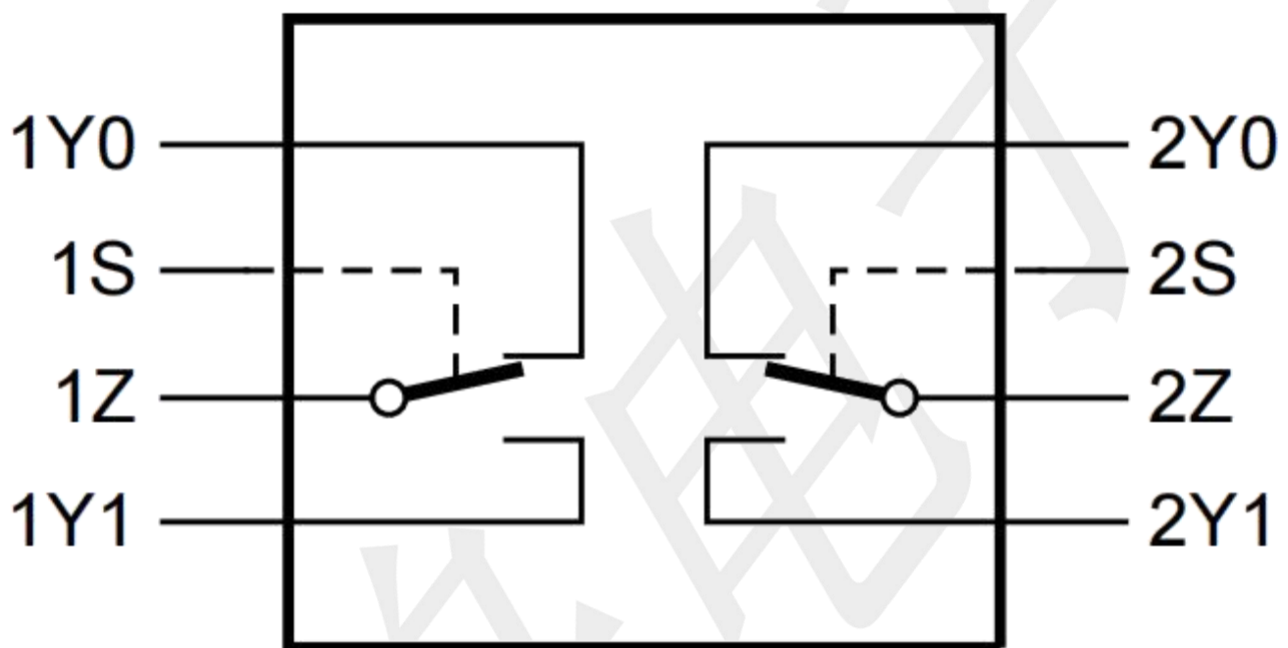
PIN CONFIGURATIONS (TOP VIEW)



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	VCC	Supply voltage
2	2Y1	Analog/Digital Signal Ports (Normally open)
3	2Z	Common Signal Ports
4	2S	Logic Input Control
5	2Y0	Analog/Digital Signal Ports (Normally closed)
6	GND	Ground
7	1Y0	Analog/Digital Signal Ports (Normally closed)
8	1S	Logic Input Control
9	1Z	Common Signal Ports
10	1Y1	Analog/Digital Signal Ports (Normally open)

BLOCK DIAGRAM



Function Table

Input	Channel on
nS	
L	$nY0 = nZ$
H	$nY1 = nZ$

H = HIGH voltage level; L = LOW voltage level.

Absolute Maximum Ratings

(Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	-0.3 ~ +6.5	V
Input Voltage	V _{IN}	-0.6 ~ +6.5	V
Continuous Current Through NO, NC, COM		±100	mA
Peak Current Through NO, NC, COM (pulsed at 1ms 50% duty cycle)		±200	mA
Storage Temperature Range	T _{STG}	-55 ~ +150	°C
Operating Junction Temperature	T _J	150	°C
Lead Temperature (Soldering, 10 seconds)	T _L	260	°C
Power Dissipation	P _D	250	mW

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 _{CC}	1.5 ~ 5.5	V
Control Input Voltage	V _{IN}	-0.6 ~ 5.5	V
Input Signal Voltage	V _{COM}	-0.6 ~ 5.5	V
Operating Temperature	T _A	-40 ~ +85	°C
Junction to Ambient	R _{θJA}	360	°C/W

DC Electrical Characteristics (TA =25°C, VC=+3.3V, unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
High-Level Input Voltage	VIH	VCC=3.3V ~ 5.5V	1.6	--	--	V
		VCC=1.5V ~ 3.3V	1.4	--	--	V
Low-Level Input Voltage	VIL	VCC=3.3V ~ 5.5V	--	--	0.6	V
		VCC=1.5V ~ 3.3V	--	--	0.4	V
Supply quiescent current	ICC	IA=0, VSEL=0 or VSEL=VCC	--	--	1.0	uA
Increase in ICC per input	ICCT	IA=0, VCC=4.5V VSEL>1.8 or VSEL<0.5	--	--	1.0	uA
Off state leakage from COMx to NCx (or NOx)	ICOMx	VCOM = 5.5V, VNC(or NO) = 0V	--	--	±2.0	uA
On-Resistance	RON1	VA=0 ~ 0.5V, IA=30mA	--	3.6	3.9	Ω
	RON2	VA=0.5 ~ 2.0V, IA=30mA	--	3.0	3.5	Ω
	RON3	VA=2.0 ~ 4.0V, IA=30mA	--	2.5	3.5	Ω
	RON4	VA=4.0 ~ 5.5V, IA=30mA	--	1.5	1.8	Ω
On-Resistance Flatness	RFLAT1	VA=0 ~ 0.5V, IA=30mA	--	1.6	--	Ω
	RFLAT2	VA=0.5 ~ 2.0V, IA=30mA	--	0.7	--	Ω
	RFLAT3	VA=2.0 ~ 4.0V, IA=30mA	--	0.5	--	Ω
	RFLAT4	VA=4.0 ~ 5.5V, IA=30mA	--	0.3	--	Ω
On-Resistance Matching Between Channels	ΔRON	VA=0~5.5V, IA=30mA	--	0.1	0.2	Ω

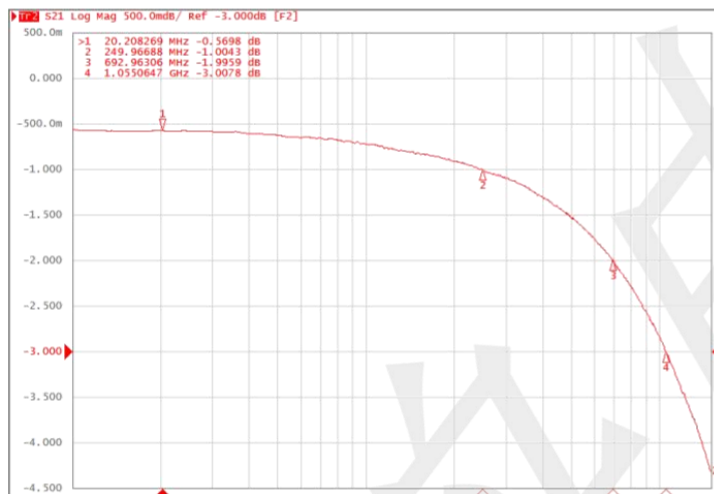
AC Electronics Characteristics (Ta=25°C, VCC=+3.3V, unless otherwise noted)

PARAMETER	SYMBOL	TEST Conditions	MIN	TYP	MAX	UNIT
Turn-On Time	TON	VA=1.5V, CL=35pF, RL=50Ω	--	200	--	ns
Turn-Off Time	TOFF	VA=1.5V, CL=35pF, RL=50Ω	--	200	--	ns
Break-Before-Make time	TBBM	VA=1.5V, CL=35pF, RL=50Ω	--	500	--	ns
-3dB Bandwidth	BW	RL=50Ω, CL=5pF	--	550	--	MHz
		RL=50Ω, CL=0pF	--	700	--	MHz
Off isolation	OIRR	F=1KHz, RL=50Ω	--	-81	--	dB
		F=10KHz, RL=50Ω	--	-80	--	dB
Crosstalk	Xtalk	F=1KHz, RL=50Ω	--	-83	--	dB
		F=10KHz, RL=50Ω	--	-82	--	dB
Total Harmonic Distortion	THD	F=20Hz to 20KHz VA=600mVp-p @RL=32Ω	--	-80	--	dB

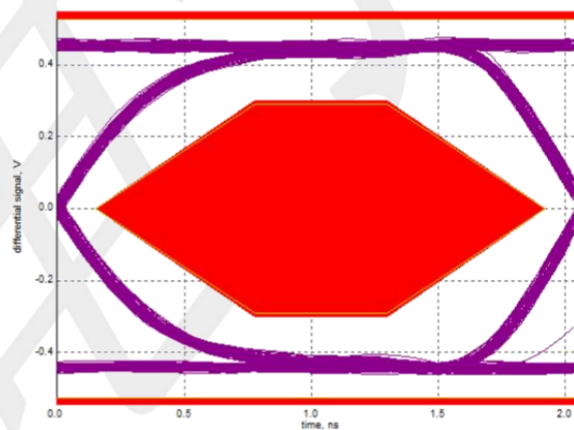
Capacitance ($T_a=25^\circ\text{C}$, $V_{CC}=+3.3\text{V}$, unless otherwise noted)

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

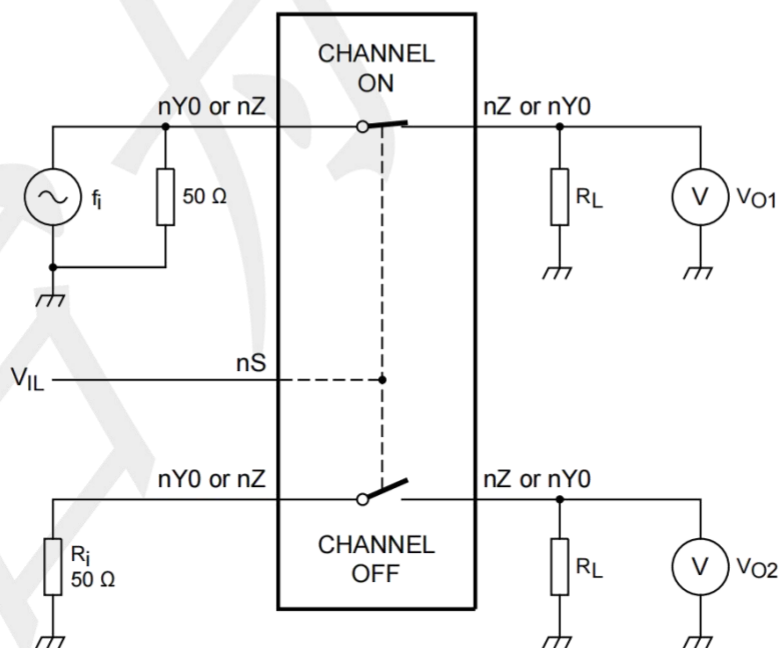
Typical Characteristics ($T_a=25^\circ\text{C}$, $V_{CC}=3.3\text{V}$, unless otherwise noted)



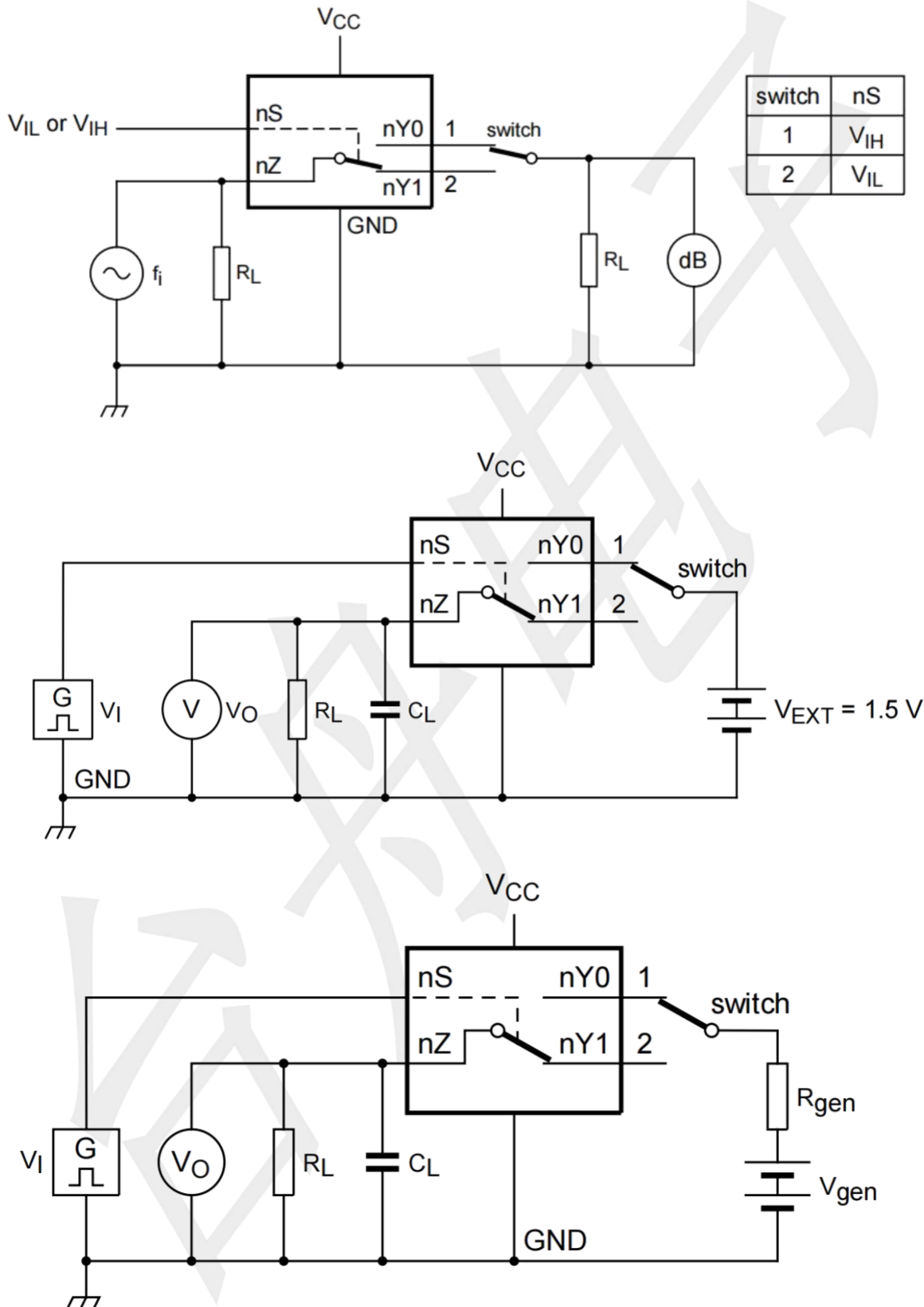
Bandwidth



Eye Diagram (480Mbps)

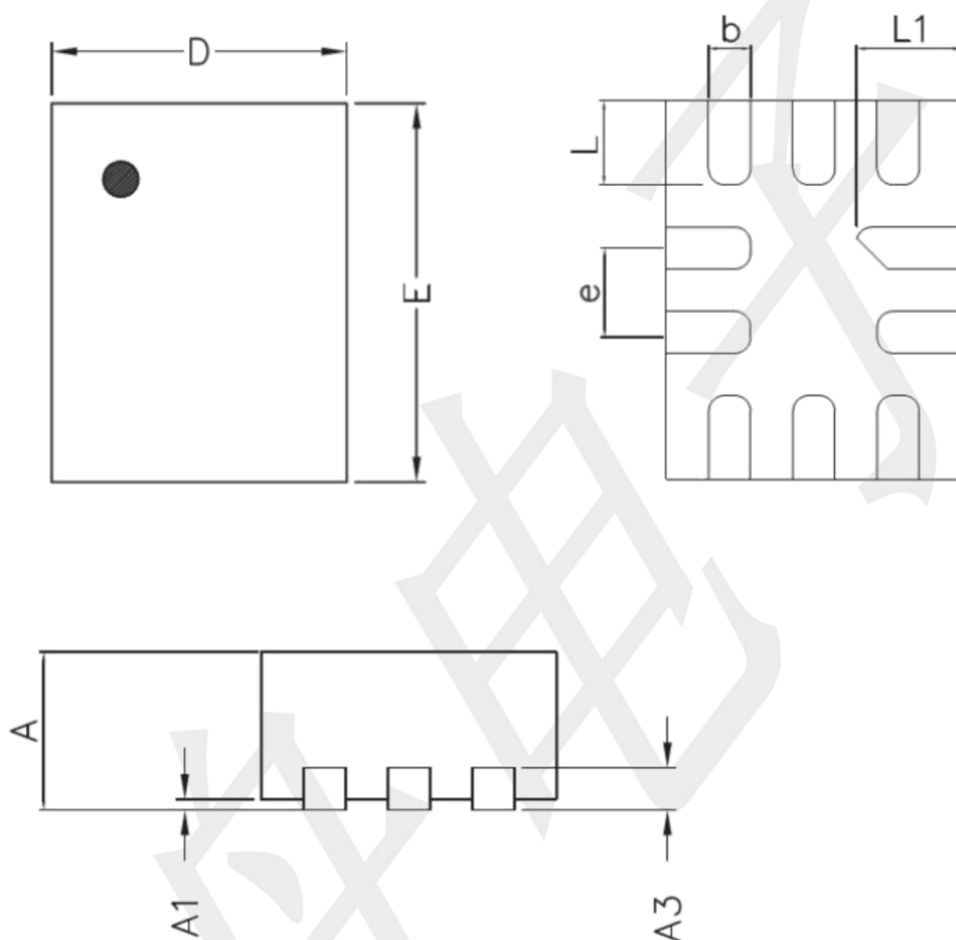


Typical Characteristics ($T_a=25^{\circ}\text{C}$, $V_{CC}=3.3\text{V}$, unless otherwise noted)



Package information

QFN1418-10L (Unit: mm)



Symbol	Dimension in Millimeters	
	Min.	Max.
A	0.450	0.550
A1	0.000	0.050
A3	0.152 Ref.	
D	1.350	1.450
E	1.750	1.850
b	0.150	0.250
e	0.400 Typ.	
L	0.350	0.450
L1	0.450	0.550