

## Description

The IS31AP4913 evaluation board is a fully assembled and tested PCB. The IS31AP4913 is a high quality stereo headphone driver with 3D-surround and bass enhancement capability. It also features removal of the output DC-blocking capacitors for a reduction in system component count and end cost. 3D-surround and bass-enhancement are controlled via RC network.

## Features

- Supply voltage range from 2.7V to 5.5V
- Low output noise (8 $\mu$ V)
- High SNR (102dB)
- -92dB PSRR
- No output DC-blocking capacitors
- Pulse Count Control serial interface
- Available in QFN-20(3mm  $\times$  3mm) package

## Quick start



Figure 1 Photo of IS31AP4913 Evaluation Board

## Recommended Equipment

- 5.0V, 2A power supply
- Audio source (i.e. MP3 player, Notebook PC, etc.)
- Headphone (32 $\Omega$ )

## Absolute Maximum Ratings

- $\leq 5.5V$  power supply

*Caution: Do not exceed the conditions listed above; otherwise, the board risks permanent damage.*

## Procedure

The evaluation board allows verification of IS31AP4913 device operation.

*Caution: Do not turn on the power supply until all connections are completed.*

1. Connect headphone (32 $\Omega$ ) to the connector (headphone input jack).
2. Connect the ground terminal of the power supply to the GND and the positive terminal to the VCC.
3. Alternatively, connect DC power to connector (DC IN).
4. Connect the audio sources to the INR terminal (right channel) and INL terminal (left channel); or connect audio source directly to connector (AUDIO- IN).
5. Turn on the power supply, and pay attention to the supply current. Be cautious: currents above 200mA are large enough to cause board damage.
6. Turn on the audio source.

## Ordering Information

Part No.	Temperature Range	IC Package
IS31AP4913-QFLS2-EB	-40°C to +85°C (Industrial)	QFN-20, Lead-free

Table 1. Ordering Information

**For pricing, delivery, and ordering information, please contact ISSI at [analog\\_mkt@issi.com](mailto:analog_mkt@issi.com) or (408) 969-6600**

## Performance Description\*

The IS31AP4913 evaluation board has six buttons to switch between the different modes. The operating mode is indicated by an LED illuminated above the appropriate buttons. The (1~4) modes are performed by IS31AP4913.

1. (Default mode) normal: basic operating mode
2. 3D mode: enable 3D enhance function.
3. Bass mode: enable bass enhance function.
4. 3D&Bass: enable 3D and bass enhance function.
5. 2111: use the output DC-blocking capacitors headphone amplifier (HWD2111) drive headphone
6. DIR: use the input audio source drive headphone.

\*Note: IS31AP4913 headphone driver provides solely audio function capability on the evaluation board.

## Software Support

Please refer to the integrated program.

\*Note: Please refer to the datasheet to get more information about IS31AP4913

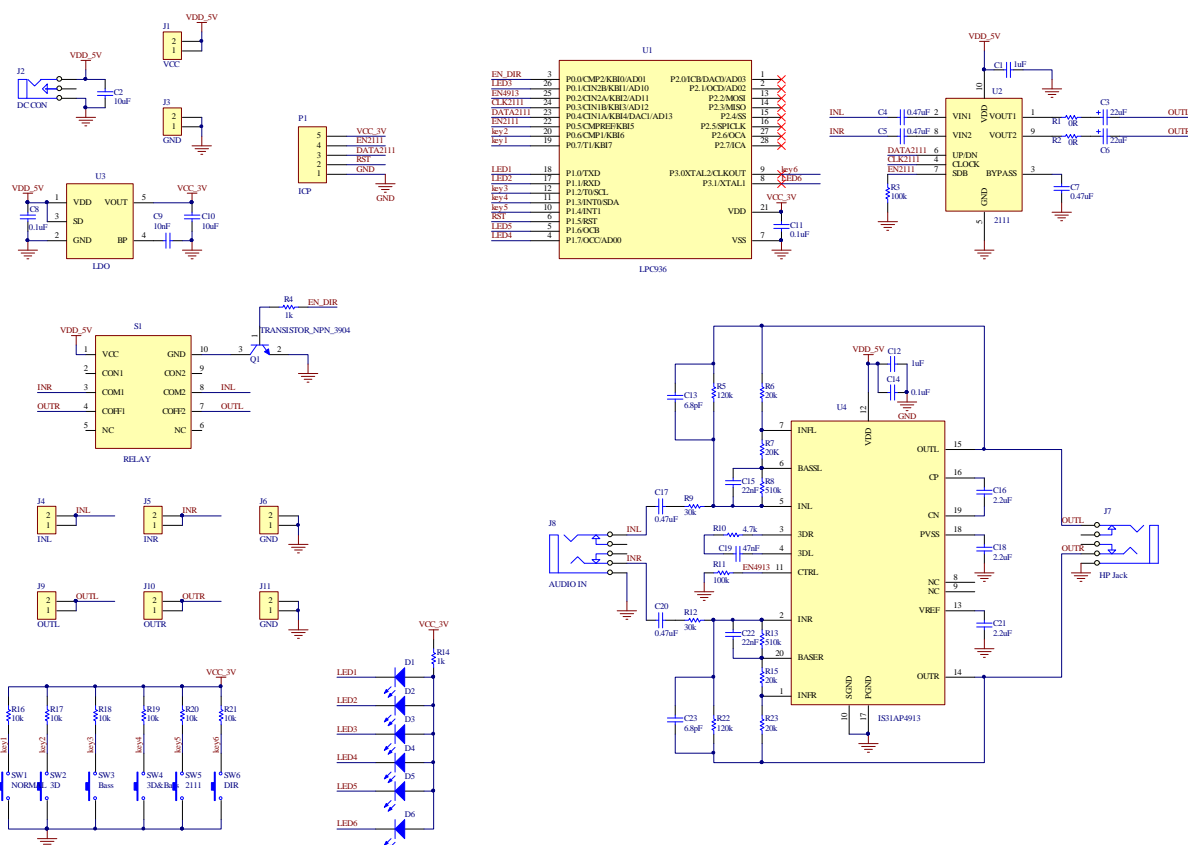


Figure 2: IS31AP4913 Application Circuit

## Bill of Materials

No.	Name	Symbol	Description	Manufacturer PN
1	USB Control	U1	Controller	LPC936
2	HP Amp	U2	CSMSC Headphone Driver	CSMSC HWD2111
3	LDO	U3	Low-Drop Out Regulator	EUTECH
4	HP Driver	U4	ISSI Stereo Headphone Driver	IS31AP4913-QFLS2
5	Relay	S1	Panasonic	
6	Resistors	R1~R23	Refer to Figure 2	
6	Capacitors	C1~C23	Refer to Figure 2	

Table 2: Bill of Materials; Refer to Figure 2 for additional information.

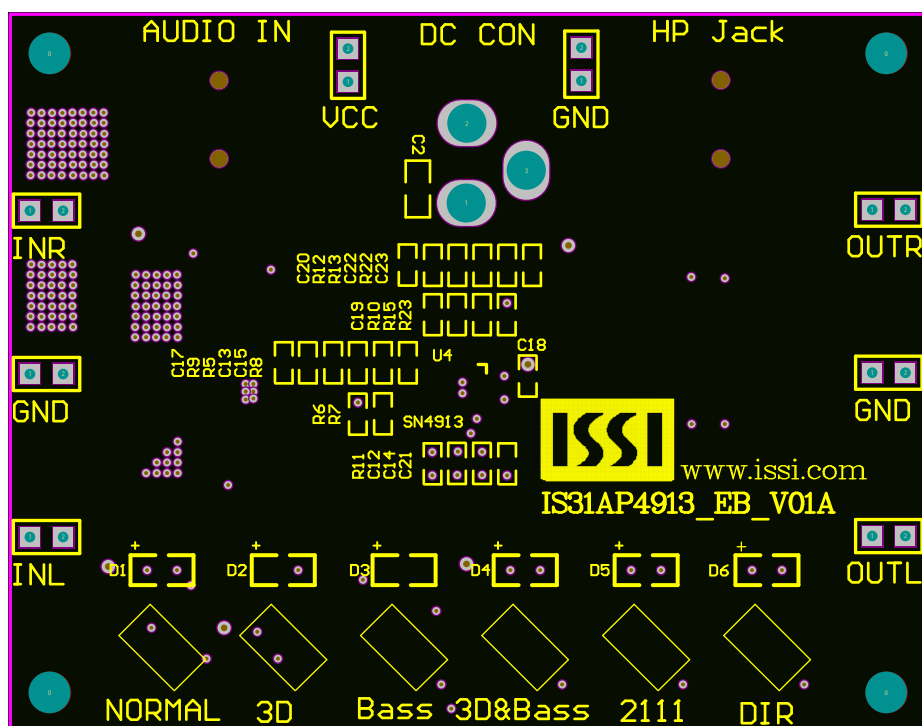


Figure 3: Board Component Placement Guide -Top Layer

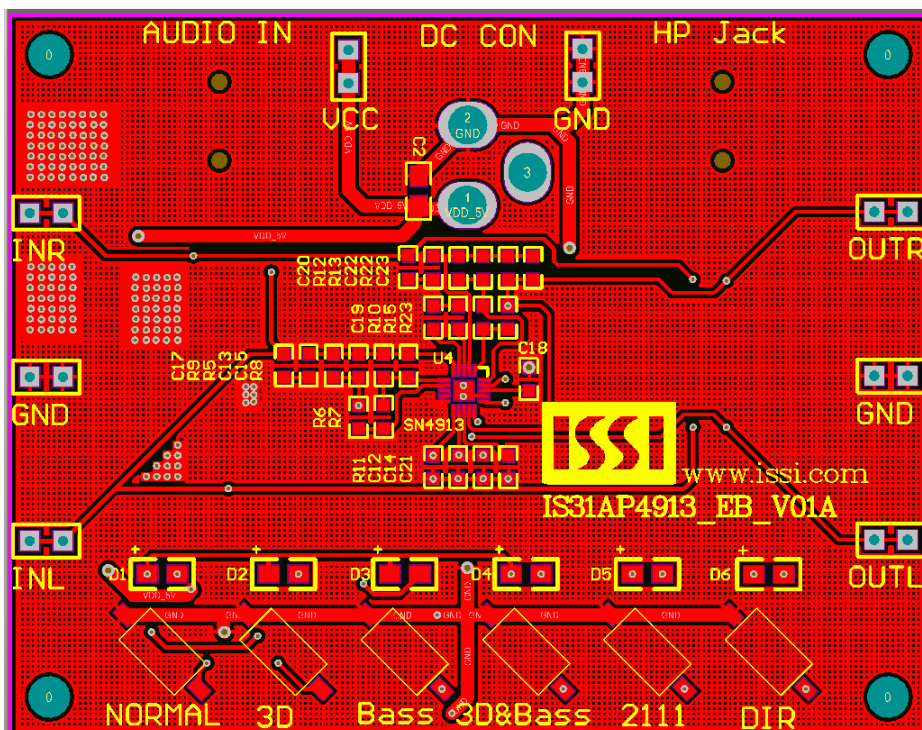
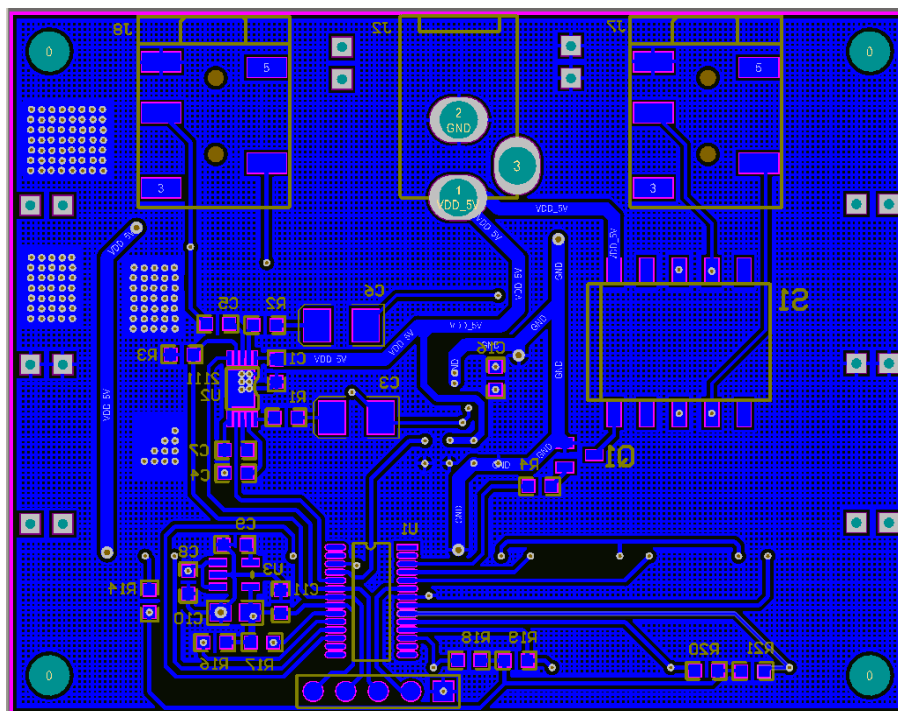
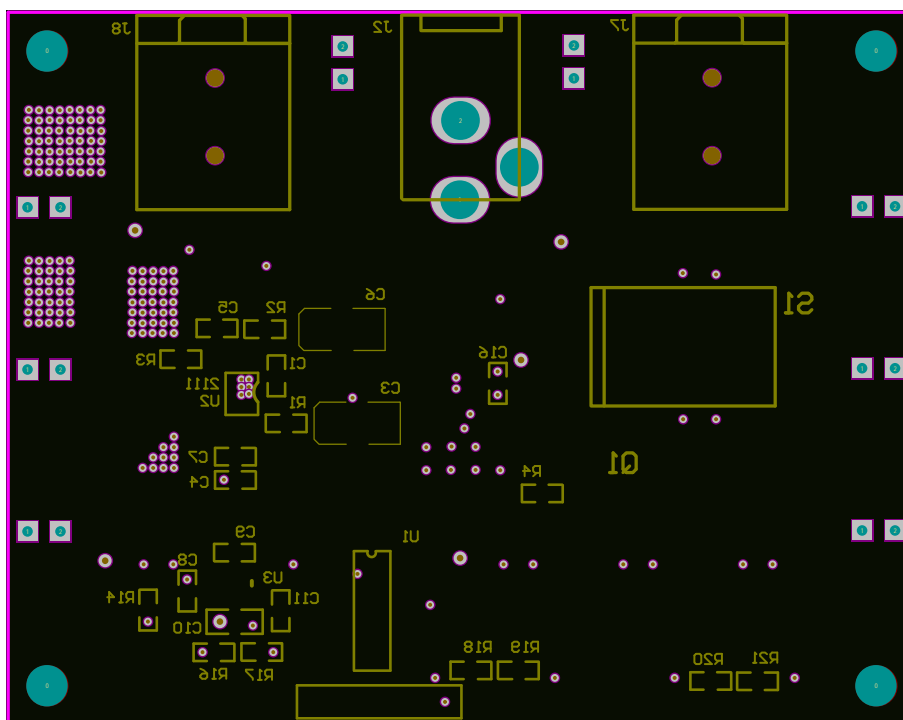


Figure 4: Board PCB Layout- Top Layer





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