



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



## Description

The IS31AP4912 is stereo headphone drivers designed to allow the removal of the output DC-blocking capacitors for reduced component count and cost. The IS31AP4912 is ideal for small portable electronics where size and cost are critical design parameters.

## Features

- No output DC-blocking capacitors
- Supply voltage from 2.7V ~ 5.5V
- Low output noise (7 $\mu$ V)
- High SNR (103dB)
- -95dB PSRR
- Thermal protect circuit
- Integrated click-and-pop suppression circuitry
- UTQFN-12 (2mm  $\times$  2mm) package

## Quick Start

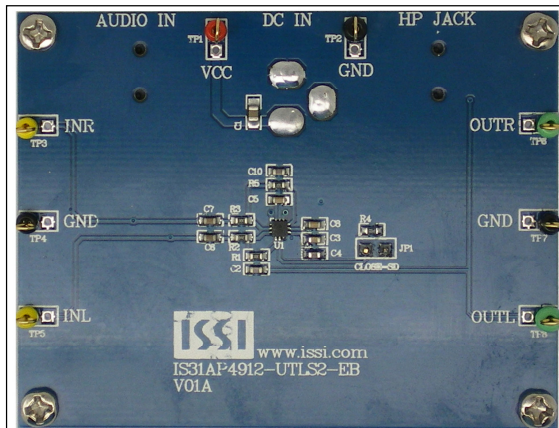


Figure 1: Photo of IS31AP4912 Evaluation Board

## 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 will be damaged.**

## Procedure

The IS31AP4912 Evaluation board is fully assembled and tested. Follow the steps listed below to verify board operation.

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

- 1) Connect headphone (32 $\Omega$ ) to the connector (HP JACK).
- 2) Connect the ground terminal of the power supply to the GND and the positive terminal to the VCC. Or connect DC power to connector (DC IN).
- 3) Connect the audio sources to the INR terminal (right channel) and INL terminal (left channel); or connect audio sources to the connector (AUDIO IN).
- 4) Turn on the power supply, and pay attention to the supply current. If the current exceeds 200mA, please check for circuit fault.
- 5) Turn on the audio sources.

## Ordering Information

| Part No.            | Temperature Range           | Package             |
|---------------------|-----------------------------|---------------------|
| IS31AP4912-UTLS2-EB | -40°C to +85°C (Industrial) | UTQFN-12, Lead-free |

Table 1: Ordering Information

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



## Gain Setting

The input resistors  $R_{IN}$  (R2, R3) and feedback resistors  $R_F$  (R1, R5) set the gain of the amplifier according to Equation (1).

$$Gain = \frac{R_F}{R_{IN}} \left( \frac{V}{V} \right) \quad (1)$$

**\*Note:**

Please refer to the datasheet to get more information about IS31AP4912.

## High Pass Filter

The input capacitors (C6, C7) and input resistors (R2, R3) form a high pass filter with the corner frequency,  $f_c$ , determined in Equation (2).

$$f_c = \frac{1}{2\pi R_{IN} C_{IN}} \quad (2)$$

## Shutdown mode

Close Jumper (JP1) enter shutdown mode.

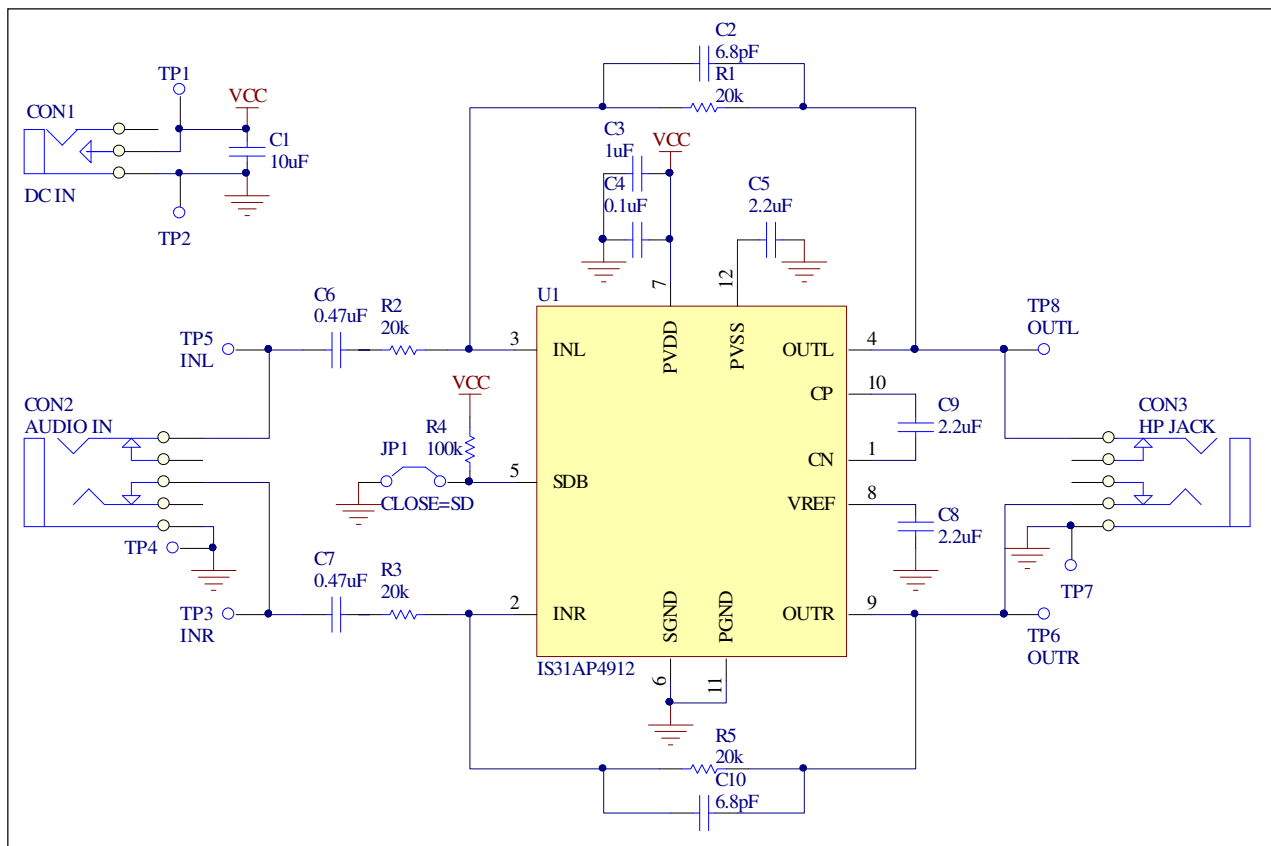


Figure 2: IS31AP4912 Application Schematic



### Bill of Materials

| Name            | Symbol      | Description             | Qty | Supplier | Part No.   |
|-----------------|-------------|-------------------------|-----|----------|------------|
| Audio Amplifier | U1          | Stereo Headphone Driver | 1   | ISSI     | IS31AP4912 |
| Resistors       | R1,R2,R3,R5 | RES,20k,1/16W,±5%,SMD   | 4   |          |            |
| Resistor        | R4          | RES,100k,1/16W,±5%,SMD  | 1   |          |            |
| Capacitor       | C1          | CAP,10µF,16V,±20%,SMD   | 1   |          |            |
| Capacitors      | C2,C10      | CAP, 6.8pF,16V,±20%,SMD | 2   |          |            |
| Capacitor       | C3          | CAP,1µF,16V,±20%,SMD    | 1   |          |            |
| Capacitor       | C4          | CAP,0.1µF,16V,±20%,SMD  | 1   |          |            |
| Capacitors      | C5,C8,C9    | CAP,2.2µF,16V,±20%,SMD  | 3   |          |            |
| Capacitors      | C6,C7       | CAP,0.47µF,16V,±20%,SMD | 2   |          |            |

Table 2: Bill of Materials, refer to Figure 2 above.

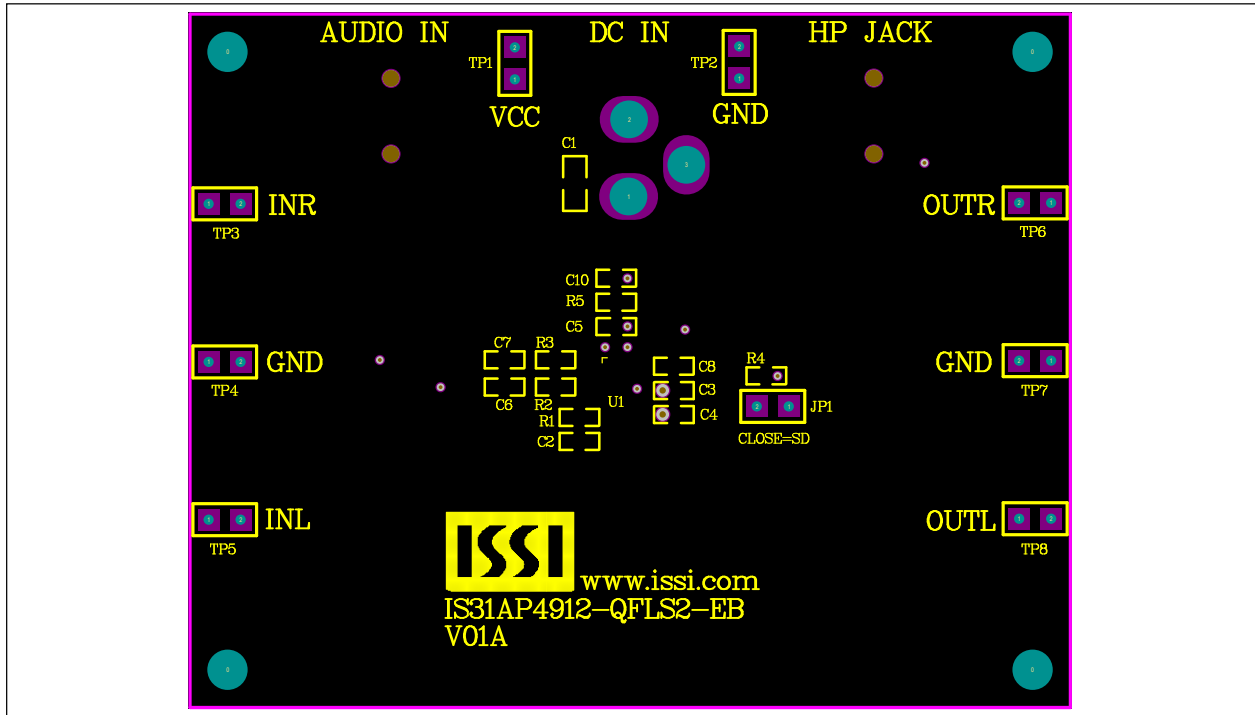


Figure 3: Board Component Placement Guide -Top Layer

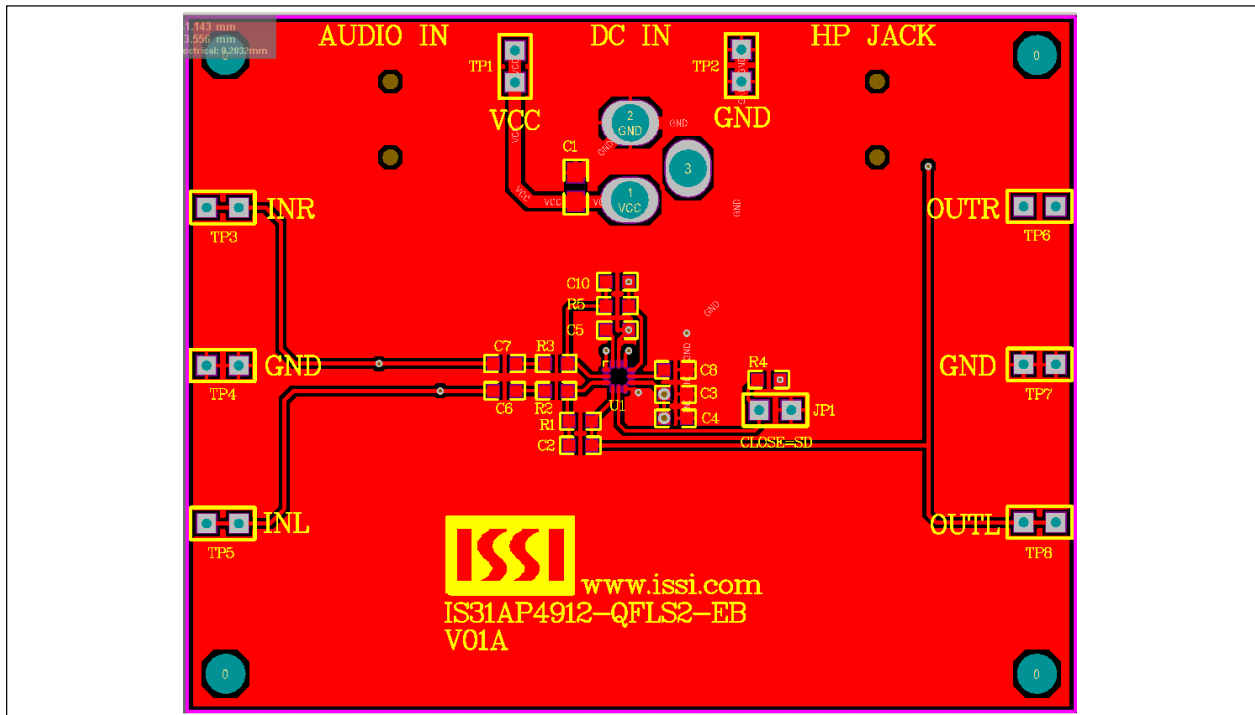


Figure 4: Board PCB Layout- Top Layer

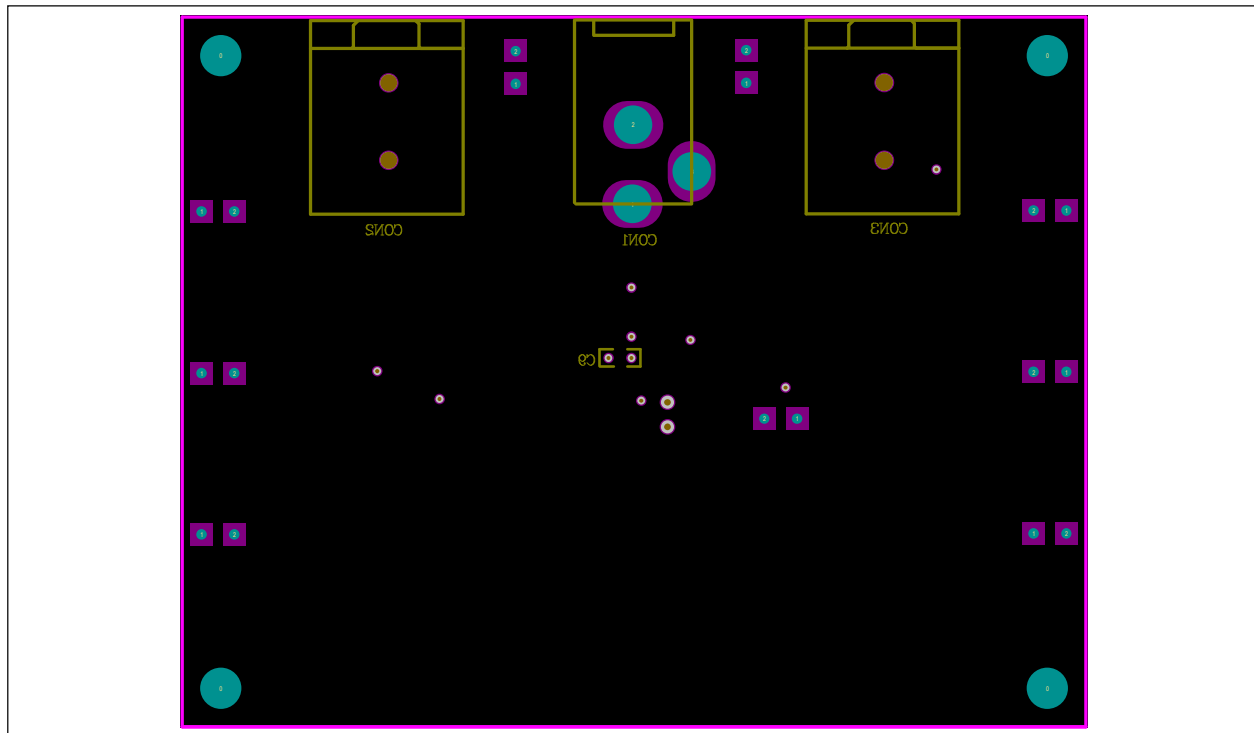


Figure 5: Board Component Placement Guide -Bottom Layer

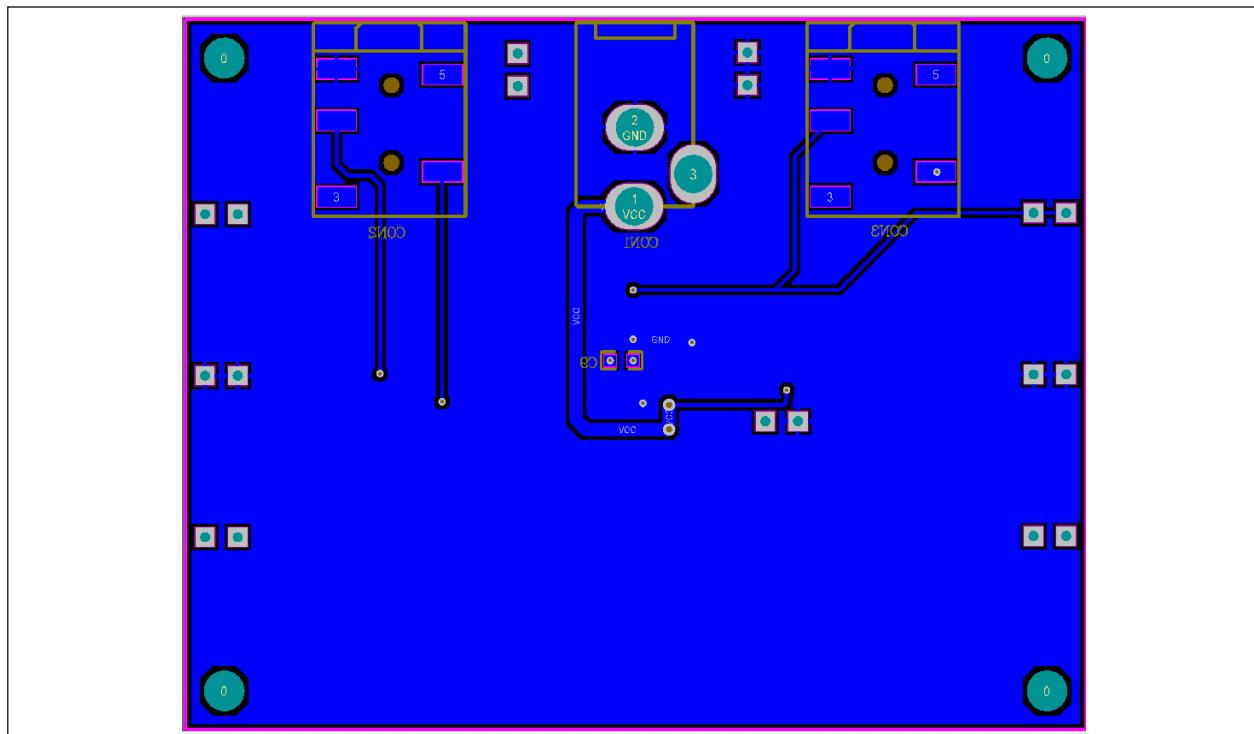


Figure 6: Board PCB Layout-Bottom Layer



## IS31AP4912 Stereo Headphone Driver Evaluation Board Guide

---

Copyright © 2013 Integrated Silicon Solution, Inc. All rights reserved. ISSI reserves the right to make changes to this specification and its products at any time without notice. ISSI assumes no liability arising out of the application or use of any information, products or services described herein. Customers are advised to obtain the latest version of this device specification before relying on any published information and before placing orders for products.

Integrated Silicon Solution, Inc. does not recommend the use of any of its products in life support applications where the failure or malfunction of the product can reasonably be expected to cause failure of the life support system or to significantly affect its safety or effectiveness. Products are not authorized for use in such applications unless Integrated Silicon Solution, Inc. receives written assurance to its satisfaction, that:

- a.) the risk of injury or damage has been minimized;
- b.) the user assume all such risks; and
- c.) potential liability of Integrated Silicon Solution, Inc is adequately protected under the circumstances