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## Description

The IS31AP4991 evaluation board is a fully assembled and tested PCB that uses the IS31AP4991 Class-AB power amplifier to drive an 8Ω or larger speaker in portable audio applications. The evaluation board accepts a single-ended input signal. The evaluation board provides a BTL output capable of delivering 1.2W into an 8Ω speaker at 5V.

## Features

- Supply voltage range from 2.7V to 5.5V
- Delivers 1.2W into an 8Ω speaker at 5V supply. (THD+N=10%).
- Ultra-low distortion (0.025%@0.5W, 1kHz)
- Available in MSOP-8 and SOP-8 package

## Quick Start

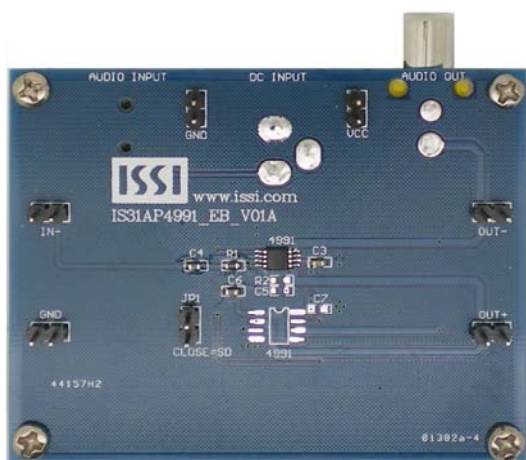


Figure 1. Photo of IS31AP4991 Evaluation Board

## Recommended Equipment

- 5.0V, 2A power supply
- Audio source (i.e. MP3 player, Notebook PC) 8Ω Speakers

## Absolute Maximum Ratings

- ≤ 5.5V power supply

*Caution: Do not exceed the conditions listed above; otherwise the board will be damaged.*

## Procedure

The IS31AP4991 evaluation board can be used to verify IC operation by following these procedures.

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

1. Connect an 8Ω (or larger) speaker across the OUT-terminal and OUT+ terminal. Or connect speaker to the connector (AUDIO OUT).
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 INPUT).
3. Connect the audio source to the IN- terminal; or connect audio source to the connector (AUDIO INPUT).
4. Turn on the power supply.
5. Turn on the audio source.

## Ordering Information

| Part No.           | Temperature Range           | IC Package                 |
|--------------------|-----------------------------|----------------------------|
| IS31AP4991-SLS2-EB | -40°C to +85°C (Industrial) | MSOP-8 or SOP-8, 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 call +1-408-969-6600**

## Device Operation

The IS31AP4991 evaluation board features the IS31AP4991 Class-AB power amplifier IC, designed for driving speakers with a load of 8Ω or greater.

## Gain Configuration

The IS31AP4991 evaluation board comes with preset gain of 18.3dB and which is controlled by resistors R<sub>1</sub> (R<sub>1</sub>) and R<sub>F</sub> (R<sub>2</sub>). Adjust the values of resistors R<sub>1</sub> and R<sub>F</sub> to obtain the desired gain setting. These resistances can be obtained from Equation (1)

$$Gain = \frac{2 \times R_F}{R_1} \left( \frac{V}{V} \right) \quad (1)$$

## High-Pass Filter Configuration

The input capacitor C<sub>1</sub> (C<sub>4</sub>) and input resistor R<sub>1</sub> (R<sub>1</sub>) form a high-pass filter with the corner frequency, f<sub>c</sub>, determined in Equation (2) and refer to IS31AP4991 data sheet for more detail.

$$f_c = \frac{1}{(2\pi R_1 C_1)} \quad (2)$$

## Shutdown Mode

Jumper (JP1) controls the shutdown pin of the IS31AP4991 IC. Connect the shunt across pins 1 and 2 of jumper (JP1) to put the board in shutdown mode.

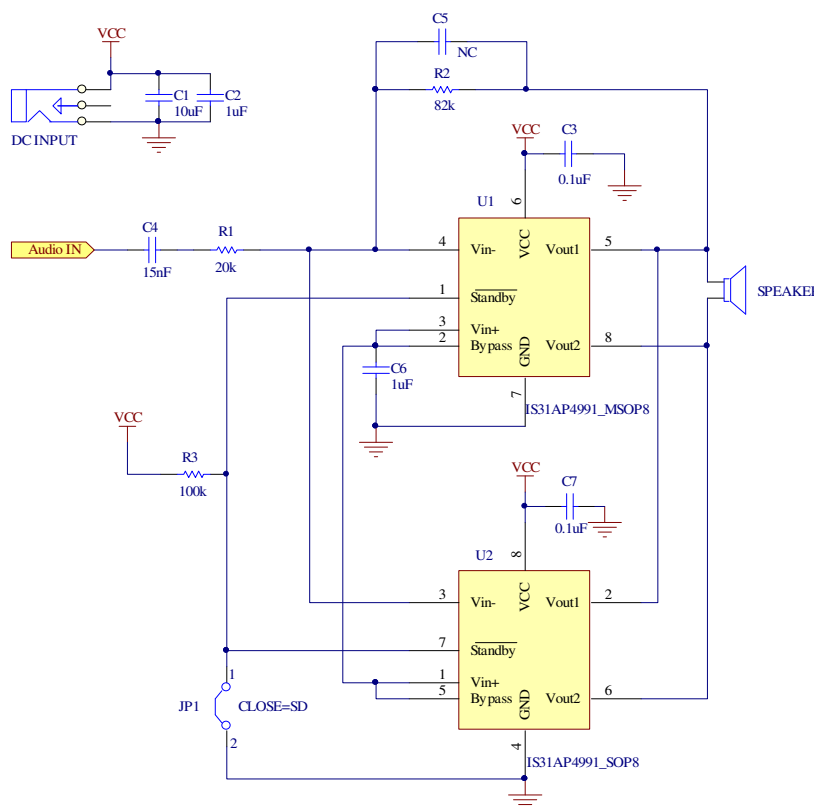


Figure 2. IS31AP4991 Application Circuit





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**Bill of Materials**

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| No. | Name               | Description   | Symbol | Manufacturer PN |
|-----|--------------------|---------------|--------|-----------------|
| 1   | Audio Amplifier IC | Class AB      | U1, U2 | IS31AP4991      |
| 2   | Resistor           | 20k $\Omega$  | R1     |                 |
| 3   | Resistor           | 82k $\Omega$  | R2     |                 |
| 4   | Resistor           | 100k $\Omega$ | R3     |                 |
| 5   | Capacitor          | 10 $\mu$ F    | C1     |                 |
| 5   | Capacitor          | 15nF          | C4     |                 |
| 7   | Capacitor          | 1 $\mu$ F     | C2, C6 |                 |
| 8   | Capacitor          | 0.1 $\mu$ F   | C3, C7 |                 |

*Table 2. Please refer to Figure 2 for additional information.*

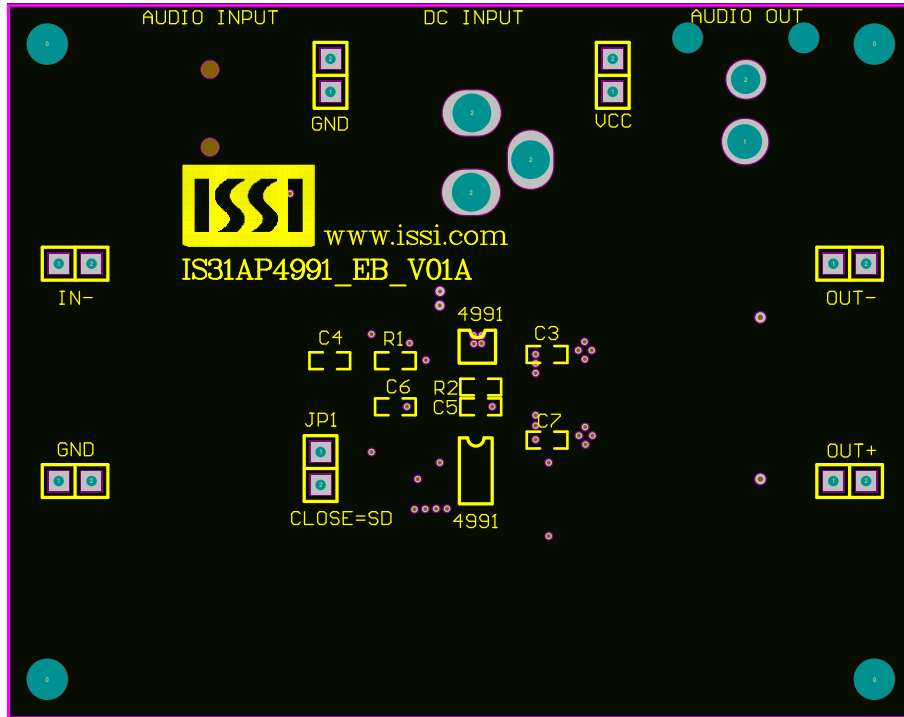


Figure 3. Board Component Placement Guide -Top Layer

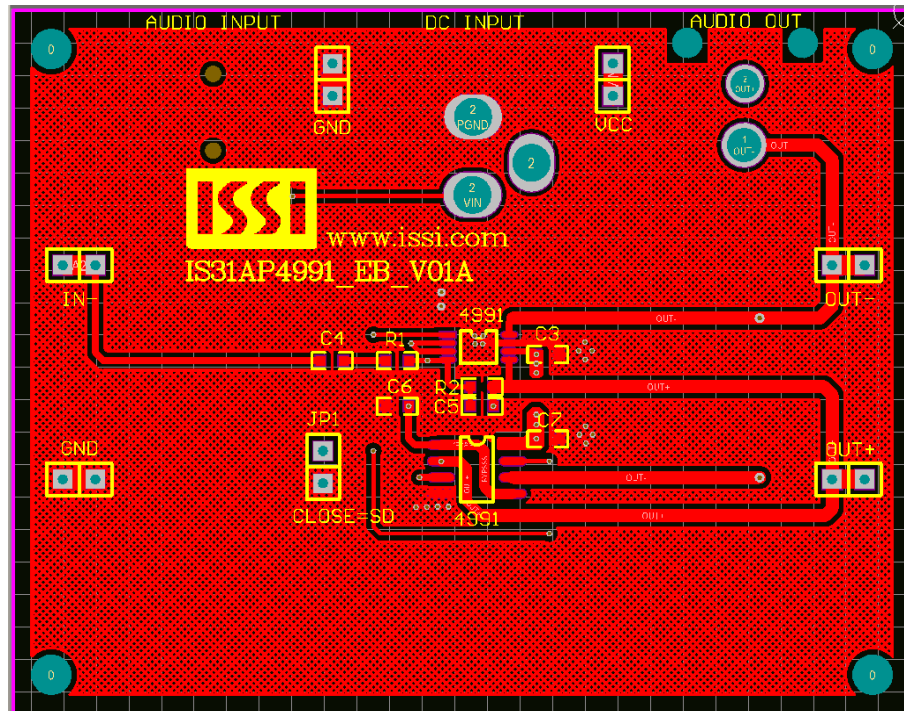


Figure 4. Board PCB Layout- Top Layer

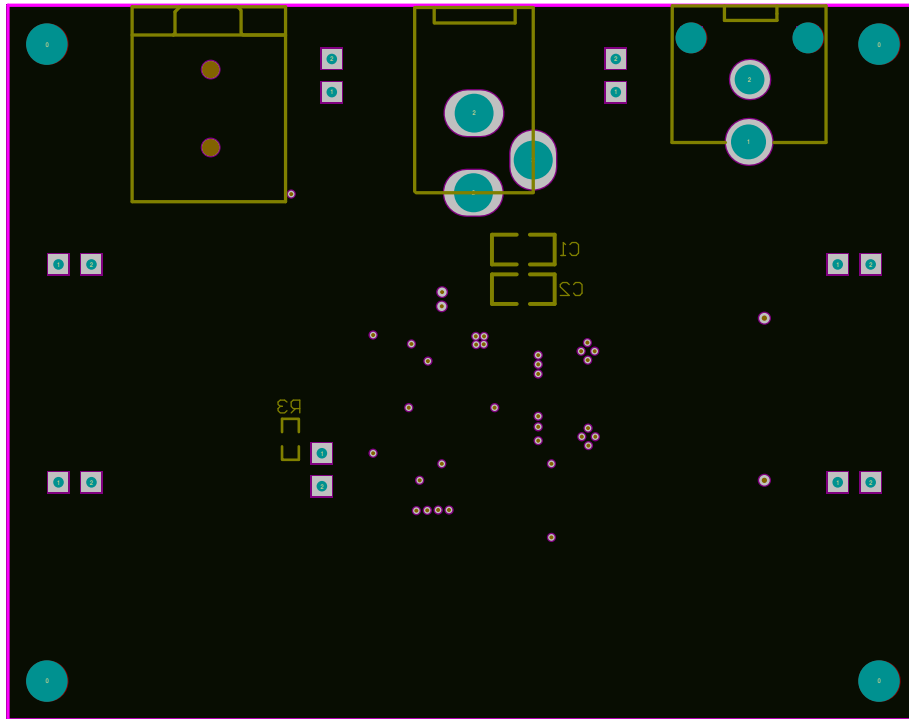


Figure 5. Board Component Placement Guide -Bottom Layer

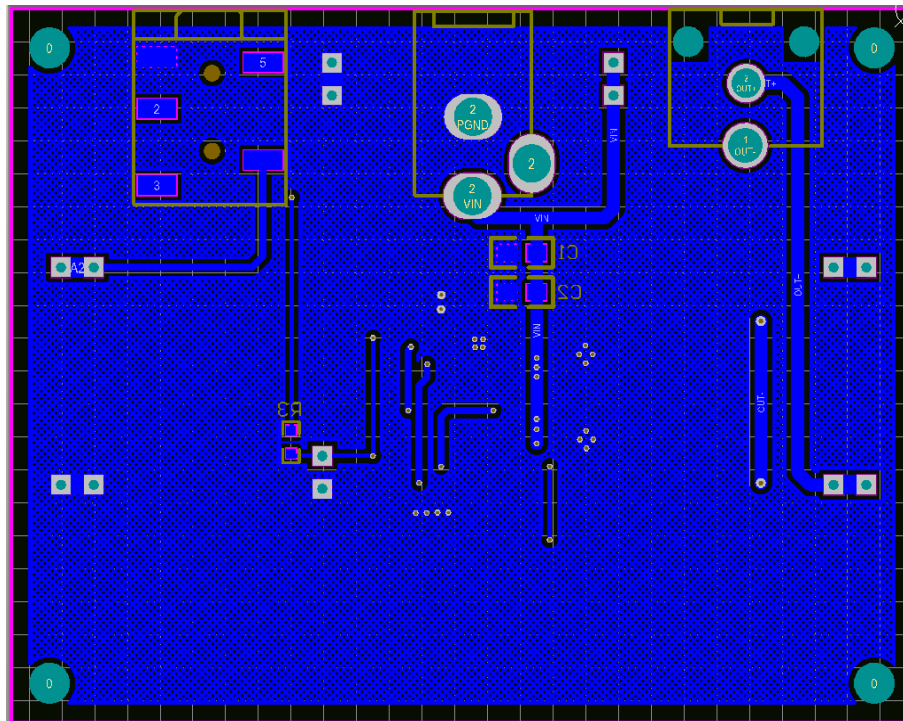


Figure 6. Board PCB Layout -Bottom Layer



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