

IS31AP4066D CLASS-AB AUDIO AMPLIFIER

DESCRIPTION

The IS31AP4066D demo board is a fully assembled and tested PCB that uses the IS31AP4066D Class-AB dual bridge-connected audio power amplifier. Designed to drive speaker impedance of 8Ω or larger. The demo board provides dual BTL output, capable of delivering 1.6W into an 8Ω speaker at 5V.

FEATURES

- Supply voltage range from 2.7V to 5.5V
- Delivers 1.6W into an 8Ω speaker at 5V supply (THD+N=10%)
- Delivers 1.3W into an 8Ω speaker at 5V supply (THD+N=1%)
- Available in QFN-16 (3mm × 3mm) package

QUICK START



Figure 1: Photo of IS31AP4066D Evaluation Board

RECOMMENDED EQUIPMENT

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

ABSOLUTE MAXIMUM RATINGS

- ≤ 5.5V power supply
- ≥8Ω speaker

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

PROCEDURE

The IS31AP4066D demo 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 8Ω (or larger) speakers across the (OUTA+, OUTA-) terminal and (OUTB+, OUTB-) terminal. Or connect speakers to the connector (OUTA, OUTB).
- 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 CON).
- 3) Connect the audio sources to the INA terminal (left channel) and INB terminal (right channel); or connect audio sources to the connector (AUDIO IN).
- 4) Turn on the power supply.
- 5) Turn on the audio sources.

ORDERING INFORMATION

| Part No. | Temperature Range | Package |
|----------------------|-----------------------------|-------------------|
| IS31AP4066D-QFLS2-EB | -40°C to +85°C (Industrial) | QFN-16, Lead-free |

Table 1: Ordering Information

For pricing, delivery, and ordering information, please contact Lumissil's analog marketing team at analog@Lumissil.com or (408) 969-6600.

IS31AP4066D CLASS-AB AUDIO AMPLIFIER

DETAILED DESCRIPTION

The IS31AP4066D demo board features the IS31AP4066D Class-AB power amplifier IC, designed to drive speaker impedance of 8Ω or larger.

CUSTOMIZING THE GAIN

The IS31AP4066D demo board is shipped with a gain of 18.3dB and is set by resistors R_I (R_1 , R_2) and R_F (R_3 , R_4). Change resistors R_I and R_F to reconfigure the gain of the board. Gain determined in Equation (1) and refer to IS31AP4066D data sheet for more detail.

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

HIGH-PASS FILTER

The input capacitors C_1 (C_5 , C_6) and input resistors R_I (R_1 , R_2) form a high-pass filter with the corner frequency, f_c determined in Equation (2).

$$f_c = \frac{1}{(2\pi R_I C_I)} \quad (2)$$

SHUTDOWN MODE

Jumper (J1) controls the shutdown pin of the IS31AP4066D IC. Connect the shunt across pin 1 and 2 of the jumper (J1) to enter the shutdown mode of the board.

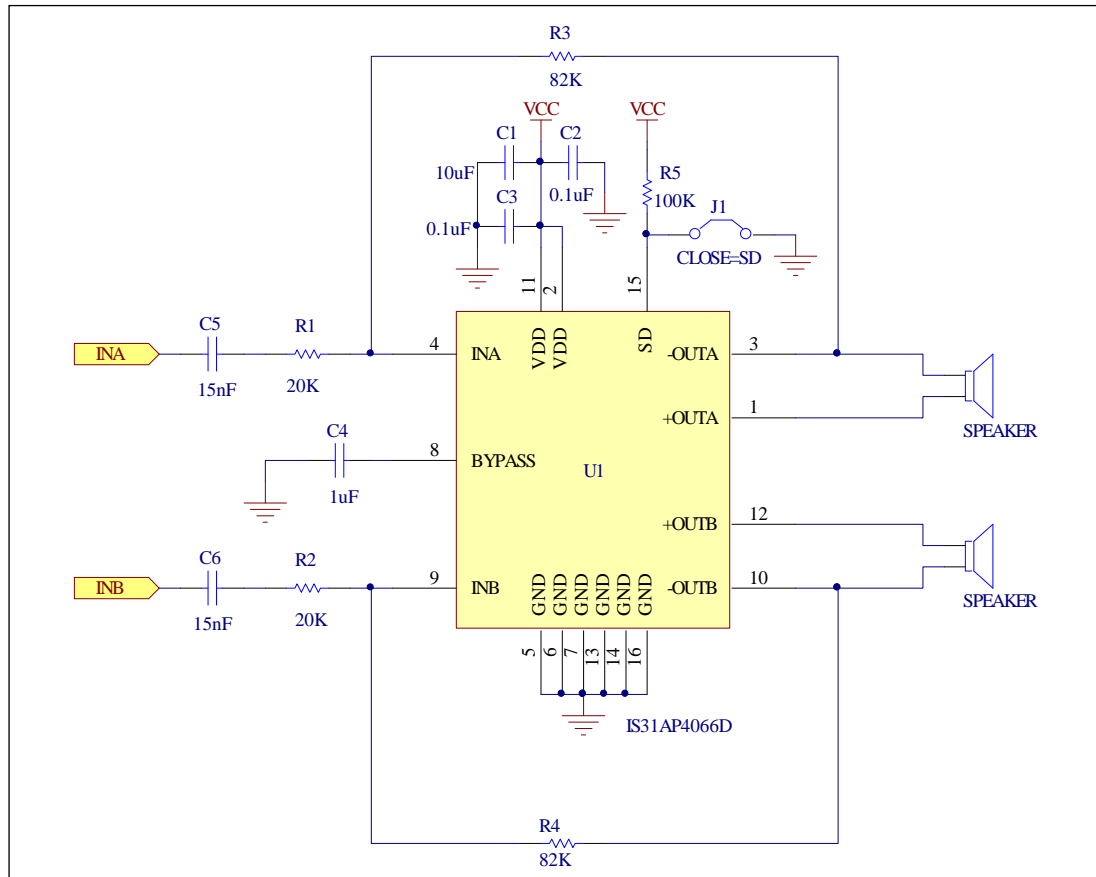


Figure 2: IS31AP4066D Application Circuit

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BILL OF MATERIALS

| Name | Symbol | Description | Qty | Supplier | Part No. |
|-----------|-----------|---------------------------|-----|----------|-------------------|
| Amplifier | U1 | Class- AB power amplifier | 1 | Lumissil | IS31AP4066D |
| Resistor | R1,R2 | RES,20k,1/16W,±1%,SMD | 2 | Yageo | RC0603JR-0720KL |
| Resistor | R3,R4 | RES,82k,1/16W,±1%,SMD | 2 | Yageo | RC0603JR-0782KL |
| Resistor | R5 | RES,100k,1/16W,±5%,SMD | 1 | Yageo | RC0603FR-07100KL |
| Capacitor | C1 | CAP,10µF,10V,±20%,SMD | 1 | Yageo | CC0805KKX7R6BB106 |
| Capacitor | C2 ,C3 | CAP, 0.1µF,50V,±10%,SMD | 2 | Yageo | CC0603KKX7R9BB104 |
| Capacitor | C4 | CAP,1µF,50V,±10%,SMD | 1 | Yageo | CC0603KKX7R9BB105 |
| Capacitor | C5,C6 | CAP,15nF,50V,±10%,SMD | 2 | Yageo | CC0603KKX7R9BB153 |
| Connector | DC IN | 2.5 mm DC connector | 1 | | |
| Connector | OUTA,OUTB | RCA –type connector | 2 | | |
| Connector | AUDIO IN | 3.5mm min connector | 1 | | |

Bill of materials, refers to Figure 2 above.

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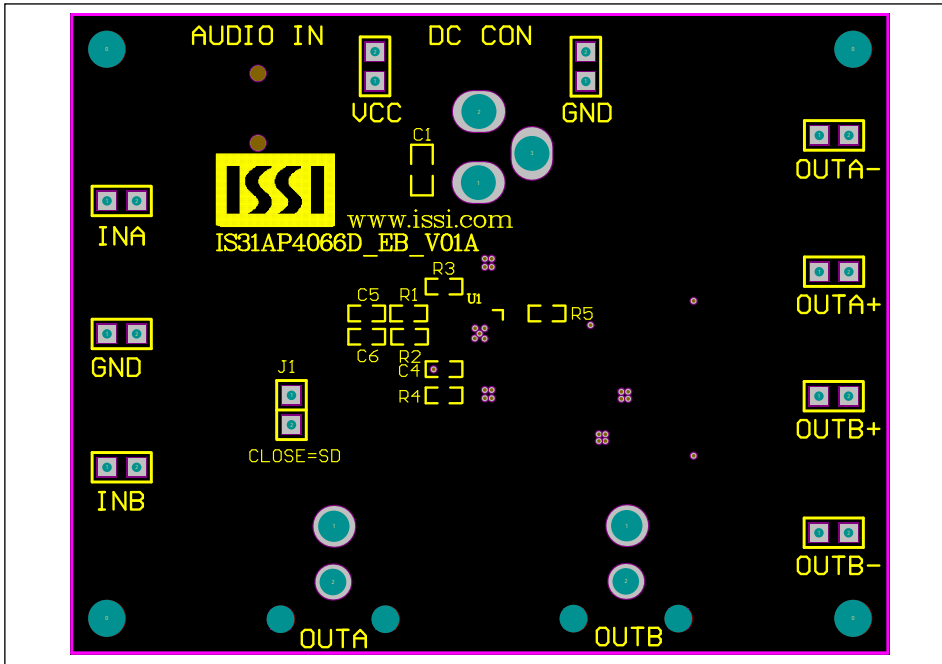


Figure 3: Board Component Placement Guide - Top Layer

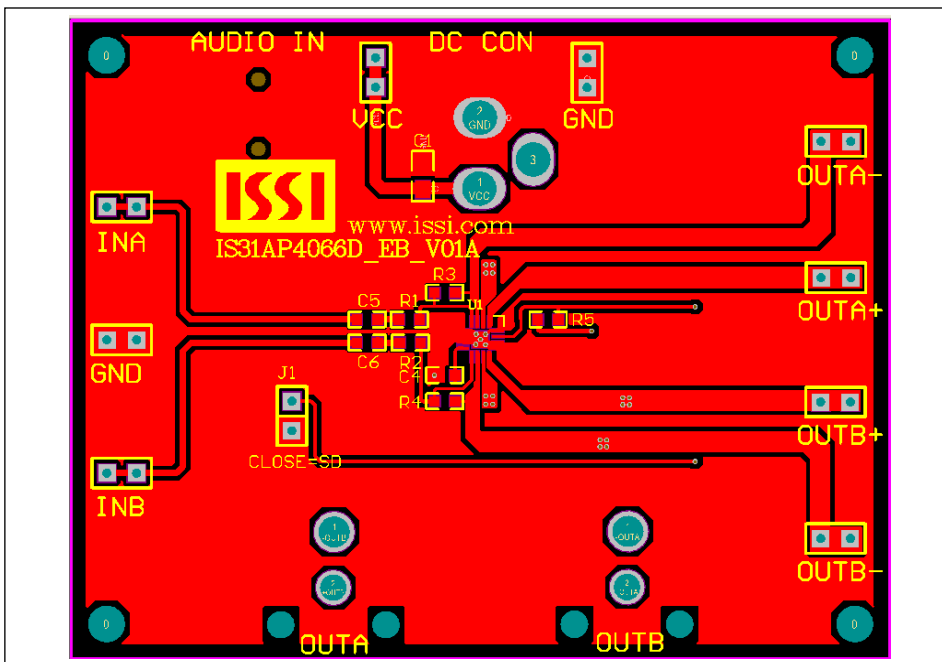


Figure 4: Board PCB Layout - Top Layer

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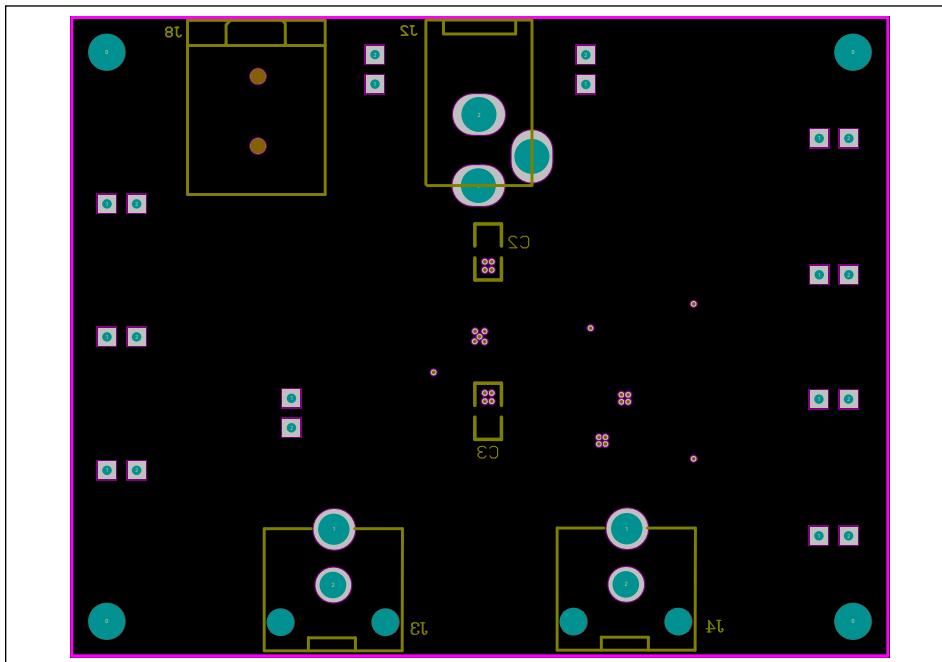


Figure 5: Board Component Placement Guide - Bottom Layer

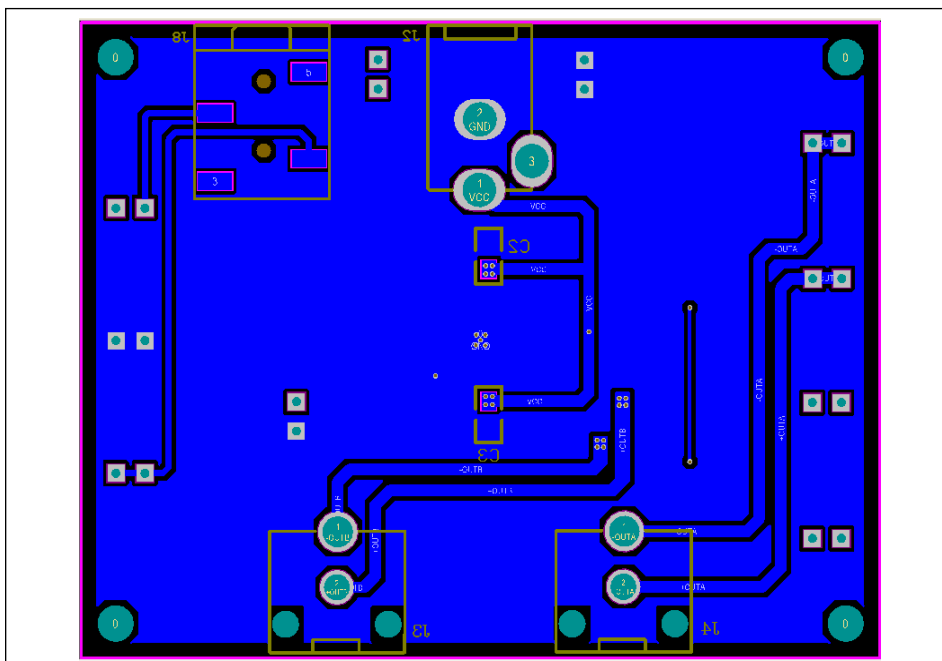


Figure 6: Board PCB Layout - Bottom Layer

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