

# 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 contacts Lumissil's analog marketing team at [analog@Lumissil.com](mailto: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.

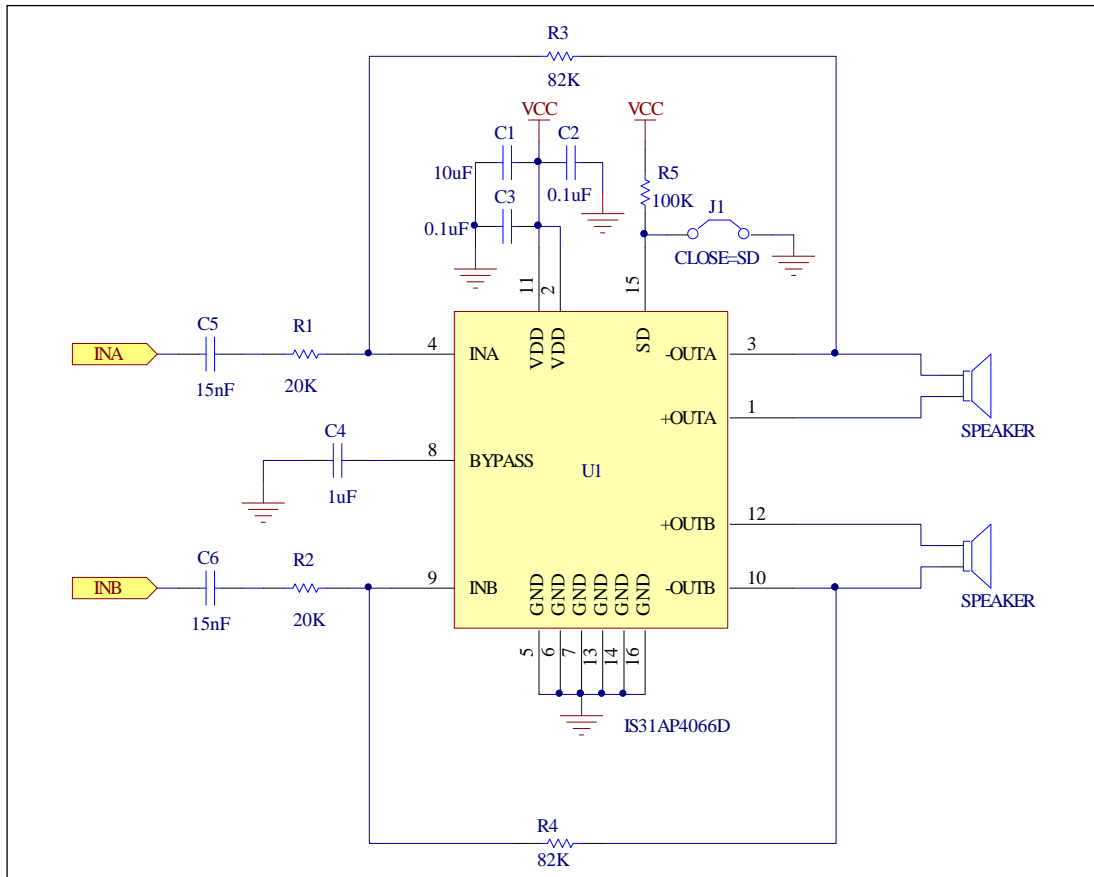


Figure 2: IS31AP4066D Application Circuit

## IS31AP4066D CLASS-AB AUDIO AMPLIFIER

### 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.*

**IS31AP4066D CLASS-AB AUDIO AMPLIFIER**

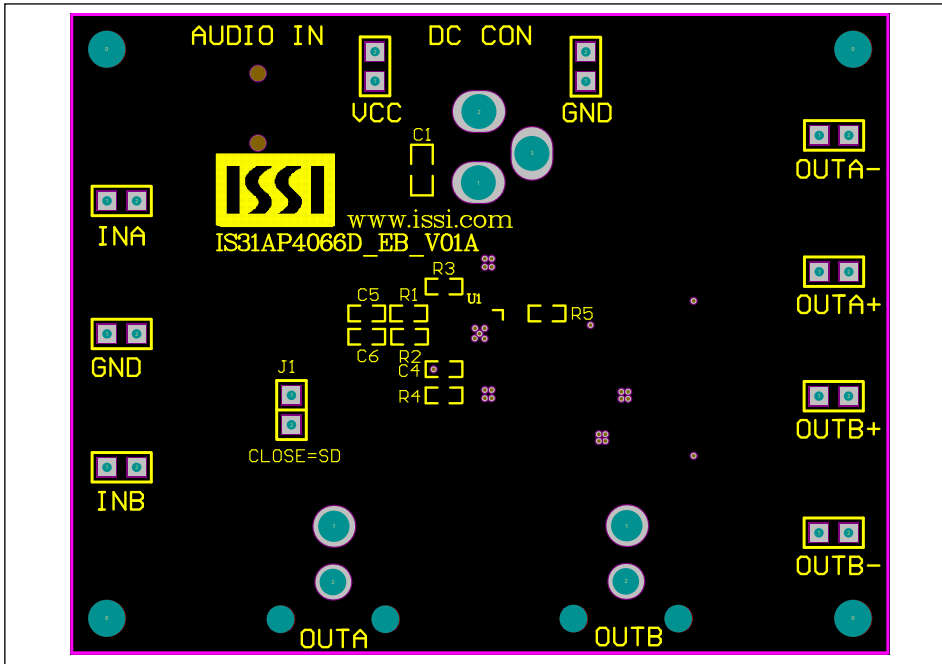


Figure 3: Board Component Placement Guide - Top Layer

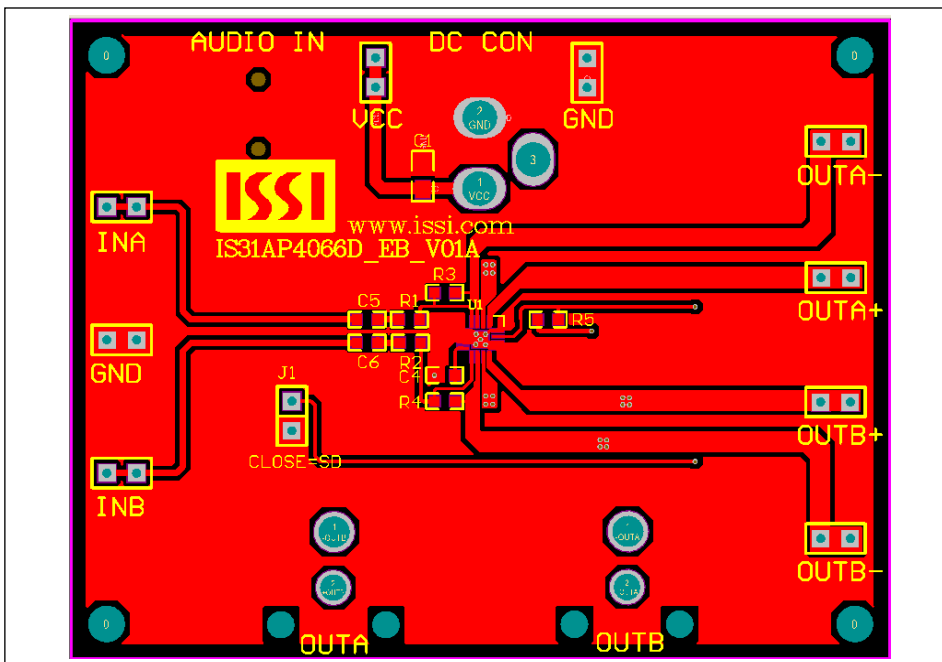


Figure 4: Board PCB Layout - Top Layer

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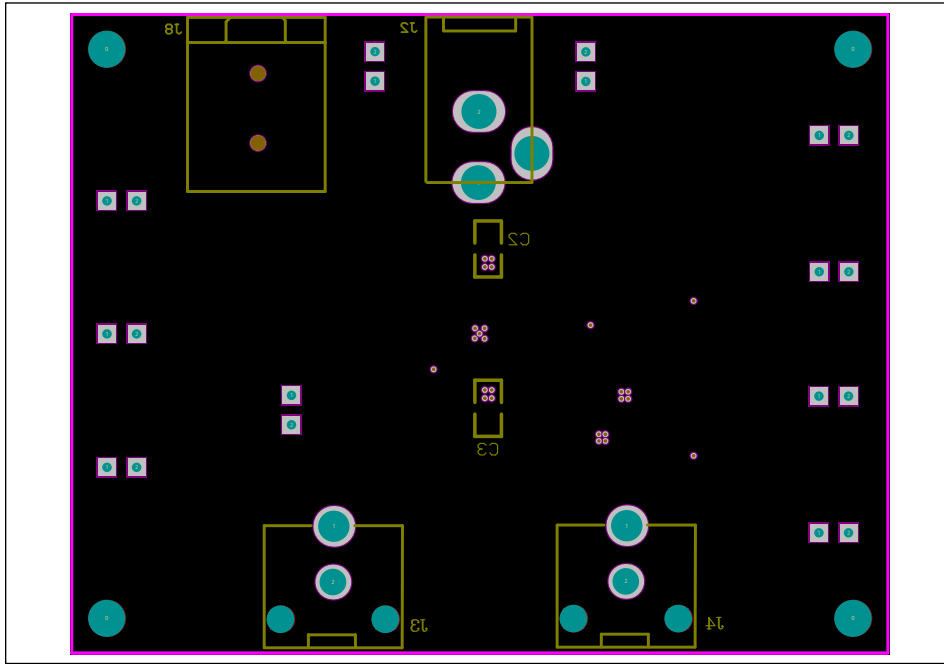


Figure 5: Board Component Placement Guide - Bottom Layer

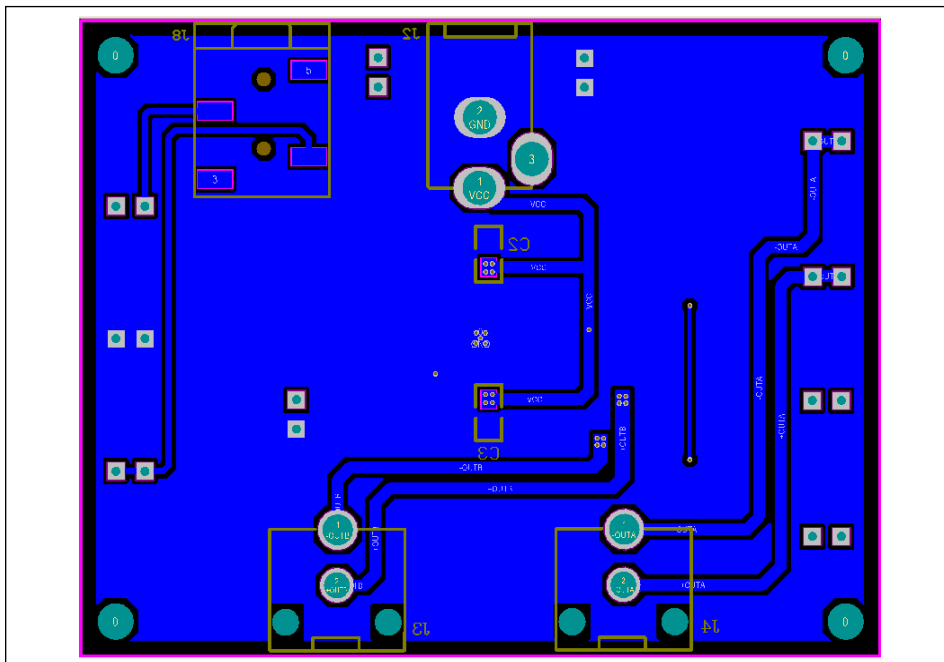


Figure 6: Board PCB Layout - Bottom Layer

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