

IS31AP4088D CLASS-AB AUDIO AMPLIFIER

DESCRIPTION

The IS31AP4088D demo board is a fully assembled and tested PCB that uses the IS31AP4088D Class-AB a dual bridge-connected audio power amplifier. Designed to drive speaker impedance of 4Ω or larger. The demo board provides dual BTL output, capable of delivering 2.6W into a 4Ω speaker at 5V.

FEATURES

- Supply voltage range from 2.7V to 5.5V
- Delivers 2.6W into a 4Ω speaker at 5V supply (THD+N=10%)
- Delivers 1.6W into an 8Ω speaker at 5V supply (THD+N=10%)
- Available in QFN-16 (4mm × 4mm) package

QUICK START

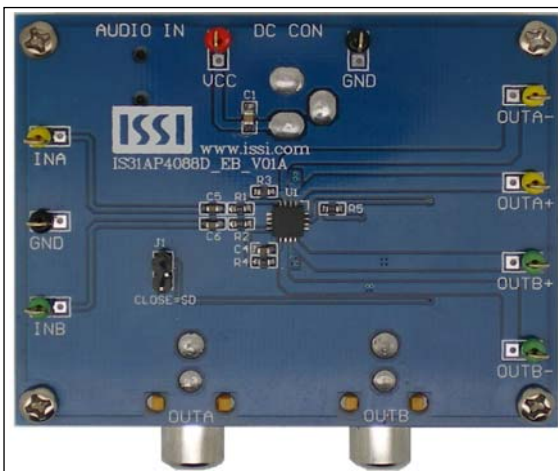


Figure 1: Photo of IS31AP4088D Evaluation Board

RECOMMENDED EQUIPMENT

- 5.0V, 2A power supply
- Audio source (i.e. MP3 player, Notebook PC, etc.)
- 8Ω or 4Ω speaker

ABSOLUTE MAXIMUM RATINGS

- ≤ 5.5V power supply

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

PROCEDURE

The IS31AP4088D 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 4Ω (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
IS31AP4088D-QFLS2-EB	-40°C to +85°C (Industrial)	QFN-16, Lead-free

Table 1: Ordering Information

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

IS31AP4088D CLASS-AB AUDIO AMPLIFIER

DETAILED DESCRIPTION

The IS31AP4088D demo board features the IS31AP4088D Class-AB power amplifier IC, designed to drive speaker impedance of 4Ω or larger.

CUSTOMIZING THE GAIN

The IS31AP4088D 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 IS31AP4088D 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 IS31AP4088D IC. Connect the shunt across pin 1 and 2 of the jumper (J1) to enter the shutdown mode of the board.

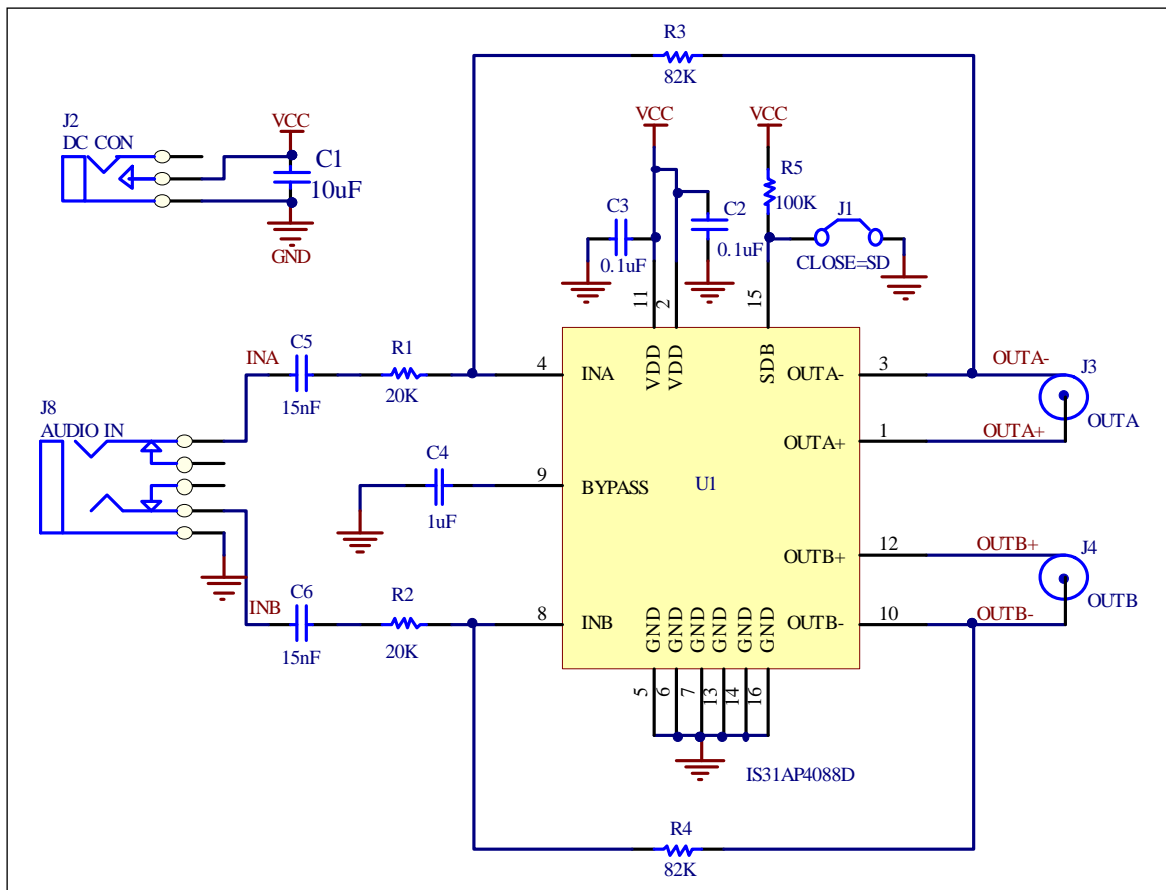


Figure 2: IS31AP4088D Application Schematic

IS31AP4088D CLASS-AB AUDIO AMPLIFIER

BILL OF MATERIALS

Name	Symbol	Description	Qty	Supplier	Part No.
Amplifier	U1	Class-AB power amplifier	1	ISSI	IS31AP4088D
Resistor	R1,R2	RES,20k,1/16W,±1%,SMD	2	Yageo	RC0603FR-0720KL
Resistor	R3,R4	RES,82k,1/16W,±1%,SMD	2	Yageo	RC0603FR-0782KL
Resistor	R5	RES,100k,1/16W,±5%,SMD	1	Yageo	RC0603JR-07100KL
Capacitor	C1	CAP,10µF,10V,±10%,SMD	1	Yageo	CC0805KRX7R6BB106
Capacitor	C2,C3	CAP,0.1µF,50V,±10%,SMD	2	Yageo	CC0603KRX7R9BB104
Capacitor	C4	CAP,1µF,50V,±10%,SMD	1	Yageo	CC0603KRX7R9BB105
Capacitor	C5,C6	CAP,15nF,50V,±10%,SMD	2	Yageo	CC0603KRX7R9BB153
Connector	DC CON	2.5mm DC connector	1		
Connector	OUTA,OUTB	RCA -type plugs	2		
Connector	AUDIO IN	3.5mm min plug	1		

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

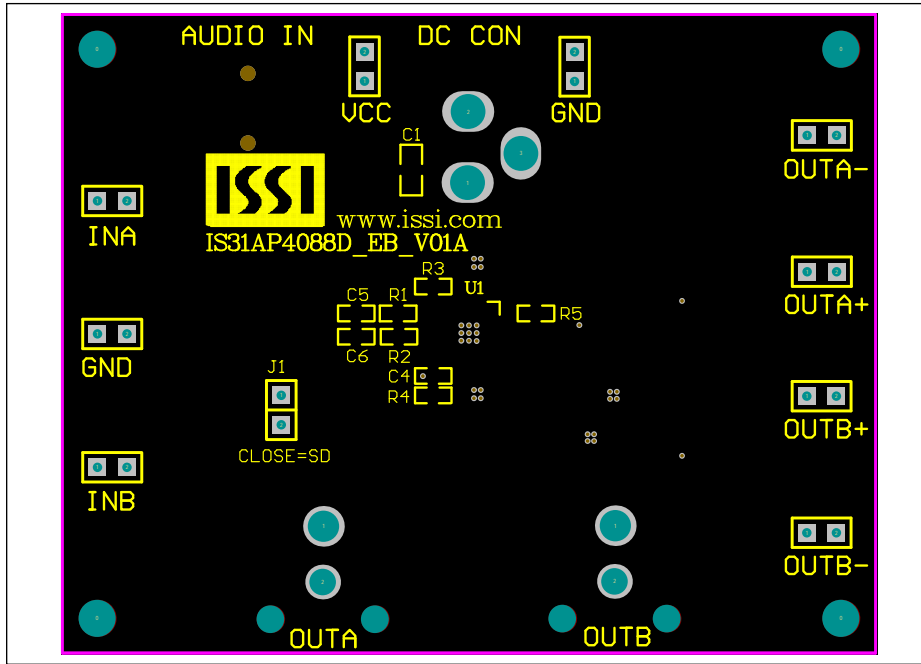


Figure 3: Board Component Placement Guide - Top Layer

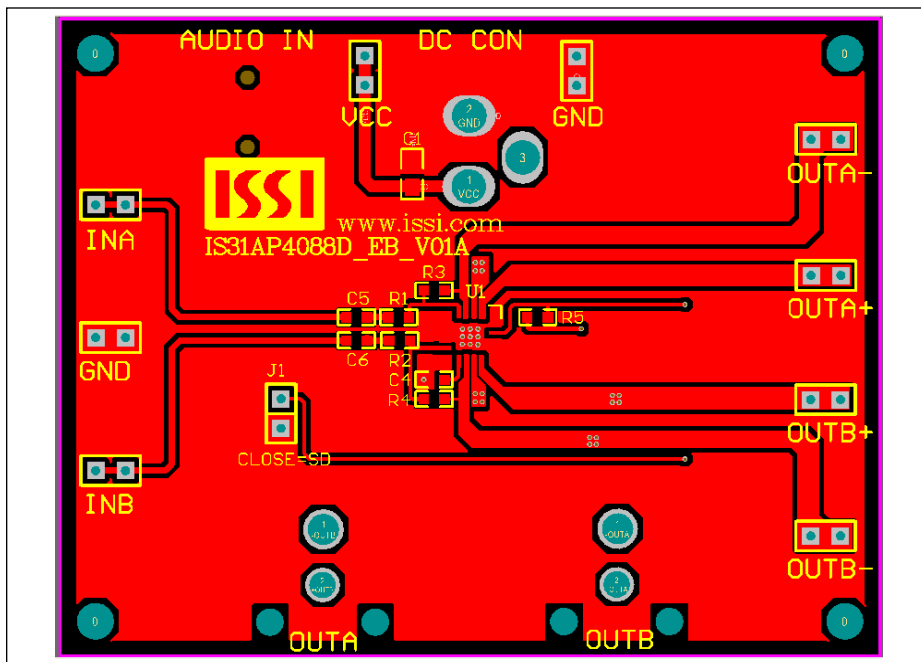


Figure 4: Board PCB Layout - Top Layer

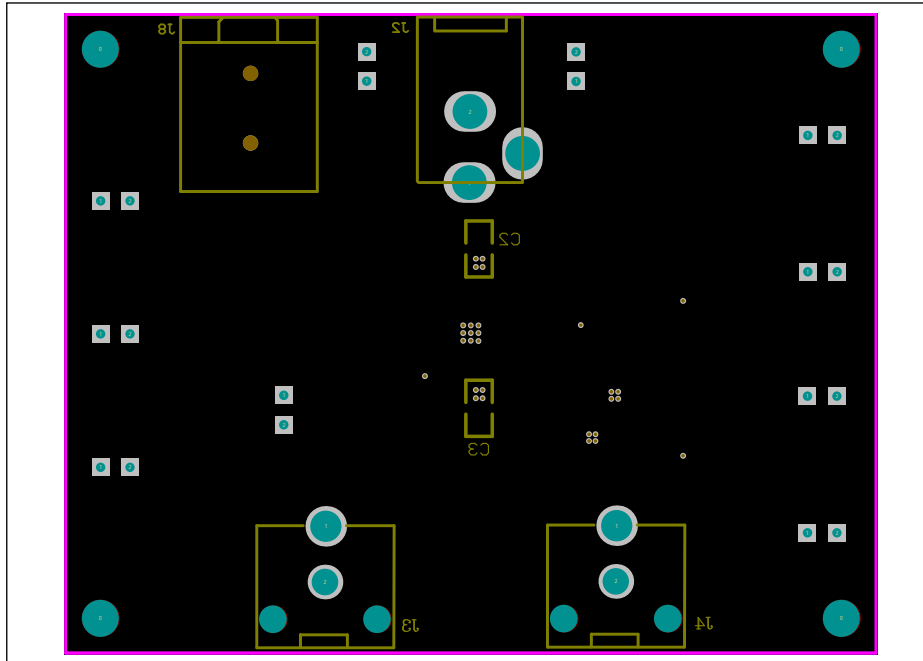


Figure 5: Board Component Placement Guide - Bottom Layer

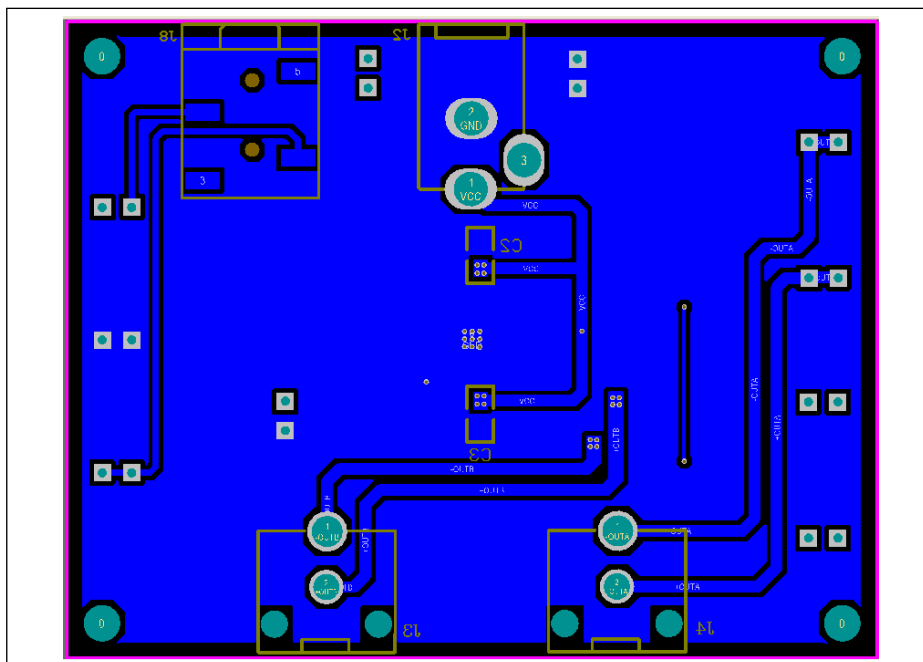


Figure 6: Board PCB Layout - Bottom Layer

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