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

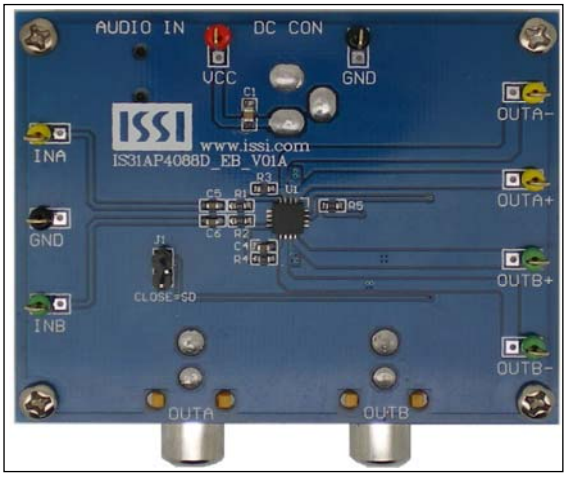

Figure 1: Photo of IS31AP4088D Evaluation Board

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.

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.

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

HIGH-PASS FILTER

The input capacitors C_I (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).

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

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.

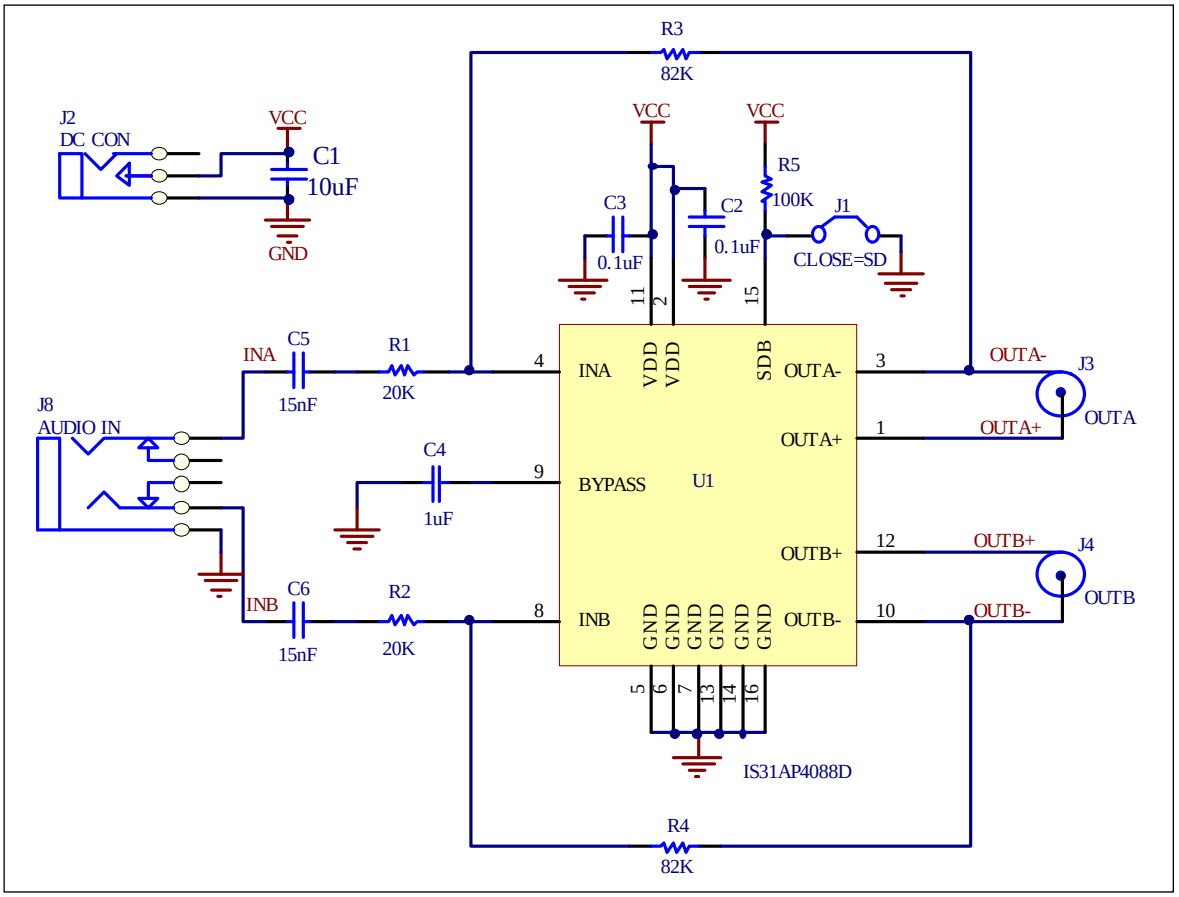

Figure 2: IS31AP4088D Application Schematic

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.

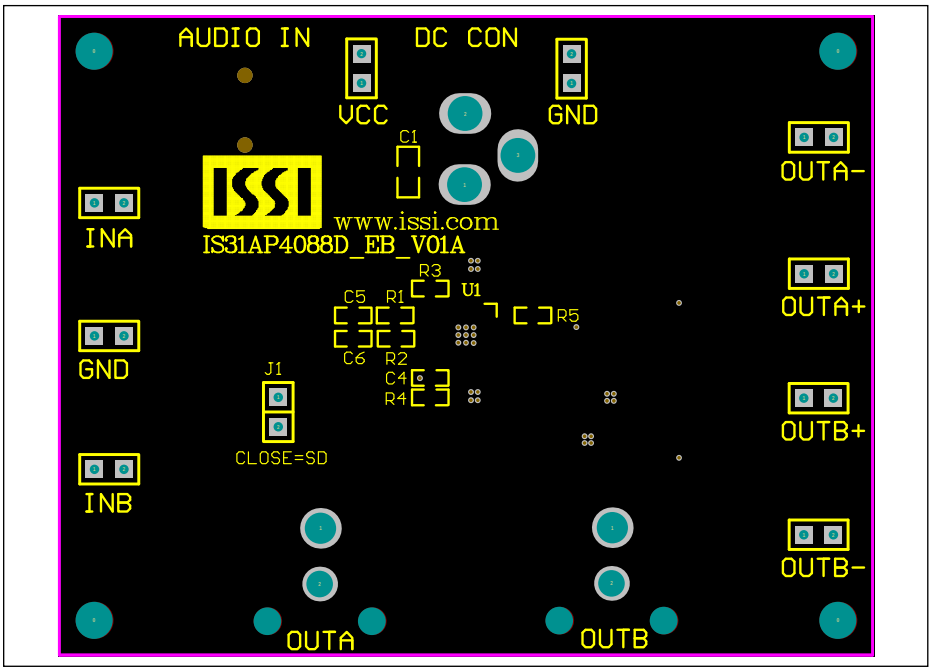

Figure 3: Board Component Placement Guide - Top Layer

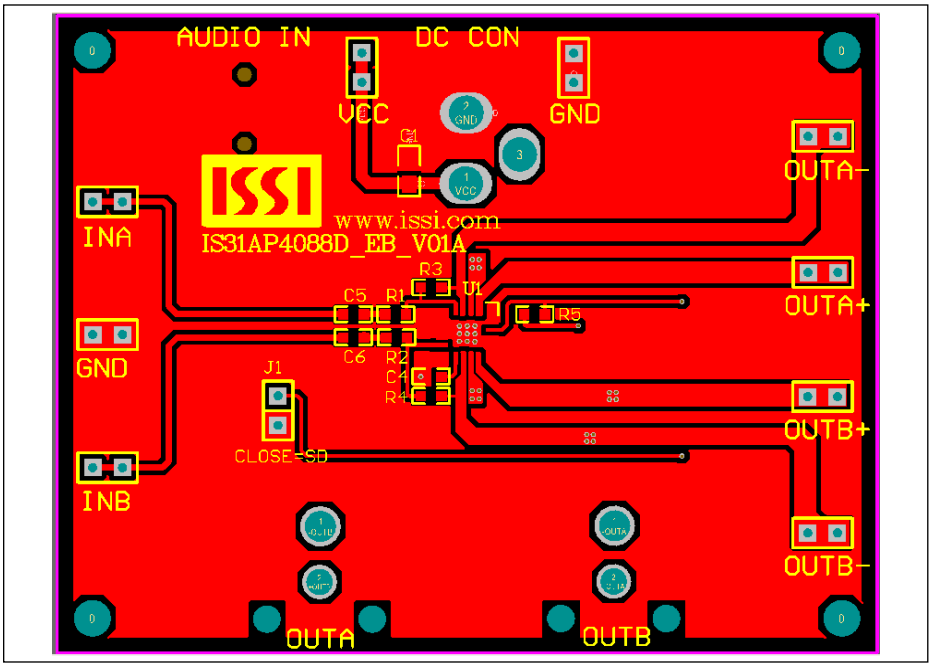

Figure 4: Board PCB Layout - Top Layer

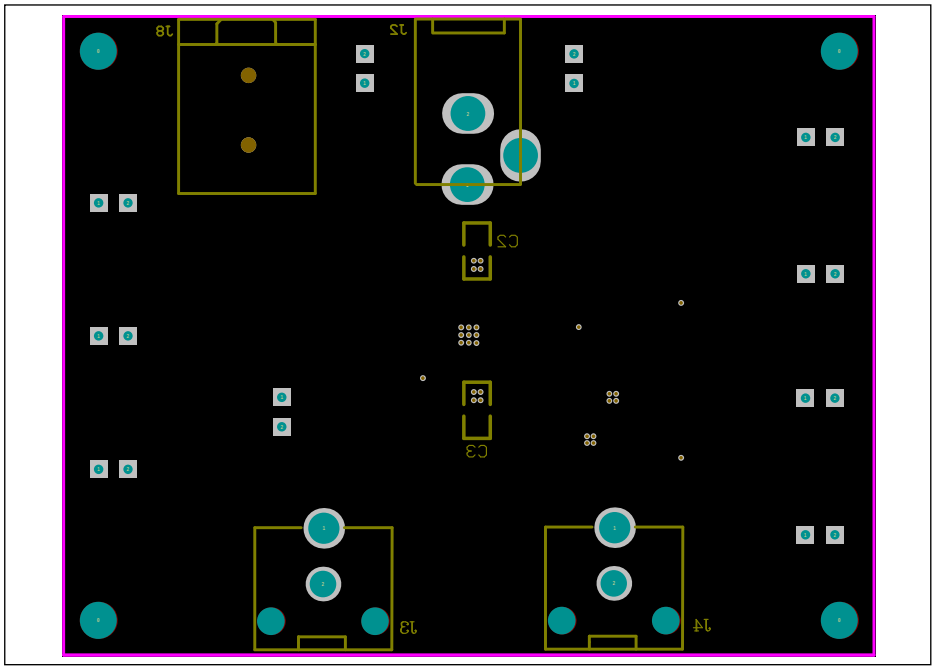

Figure 5: Board Component Placement Guide - Bottom Layer

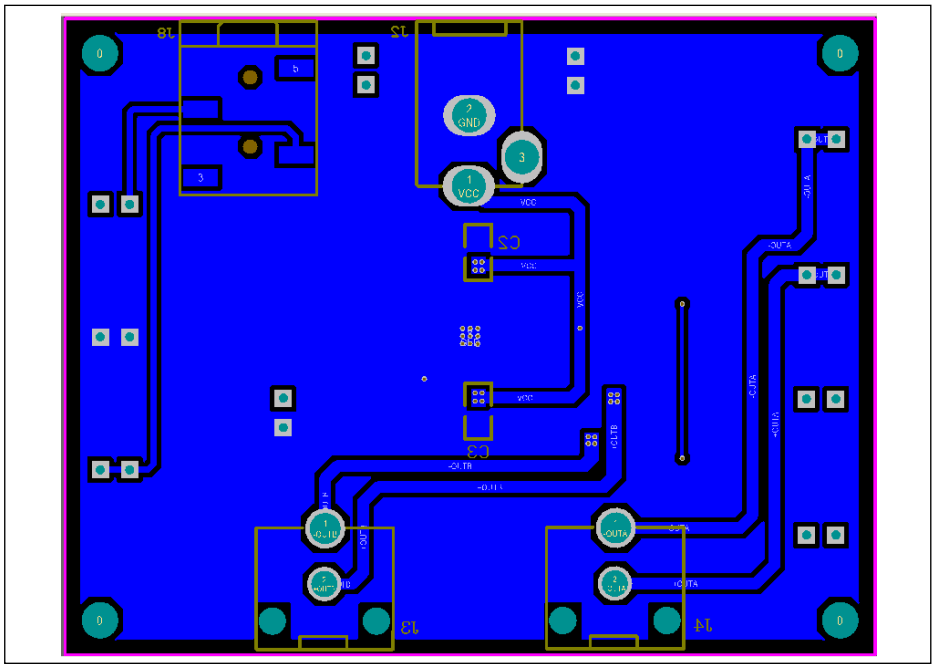

Figure 6: Board PCB Layout - Bottom Layer