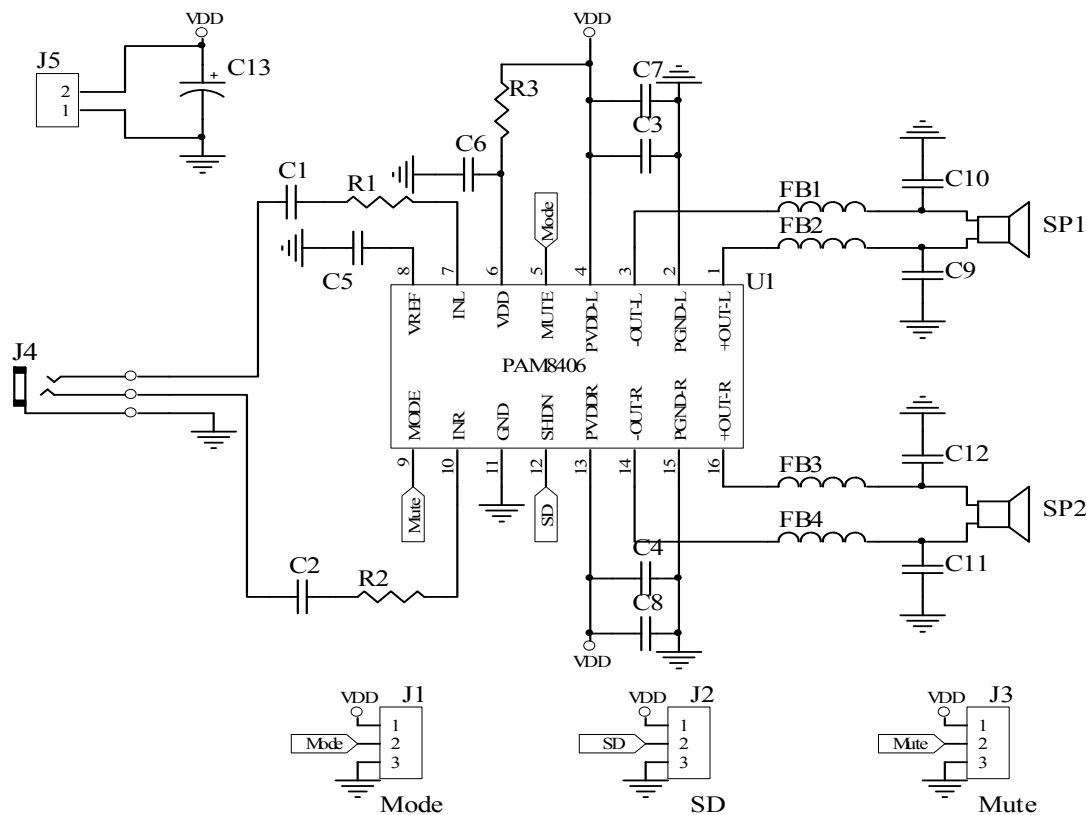


**PAM8406 EV Board User Guide**  
AE Department

**1. Revision Information**

Date	Revision	Description	Comment
2011/11/25	V1.0	Initial Release	

**2. EV Board Schematic**

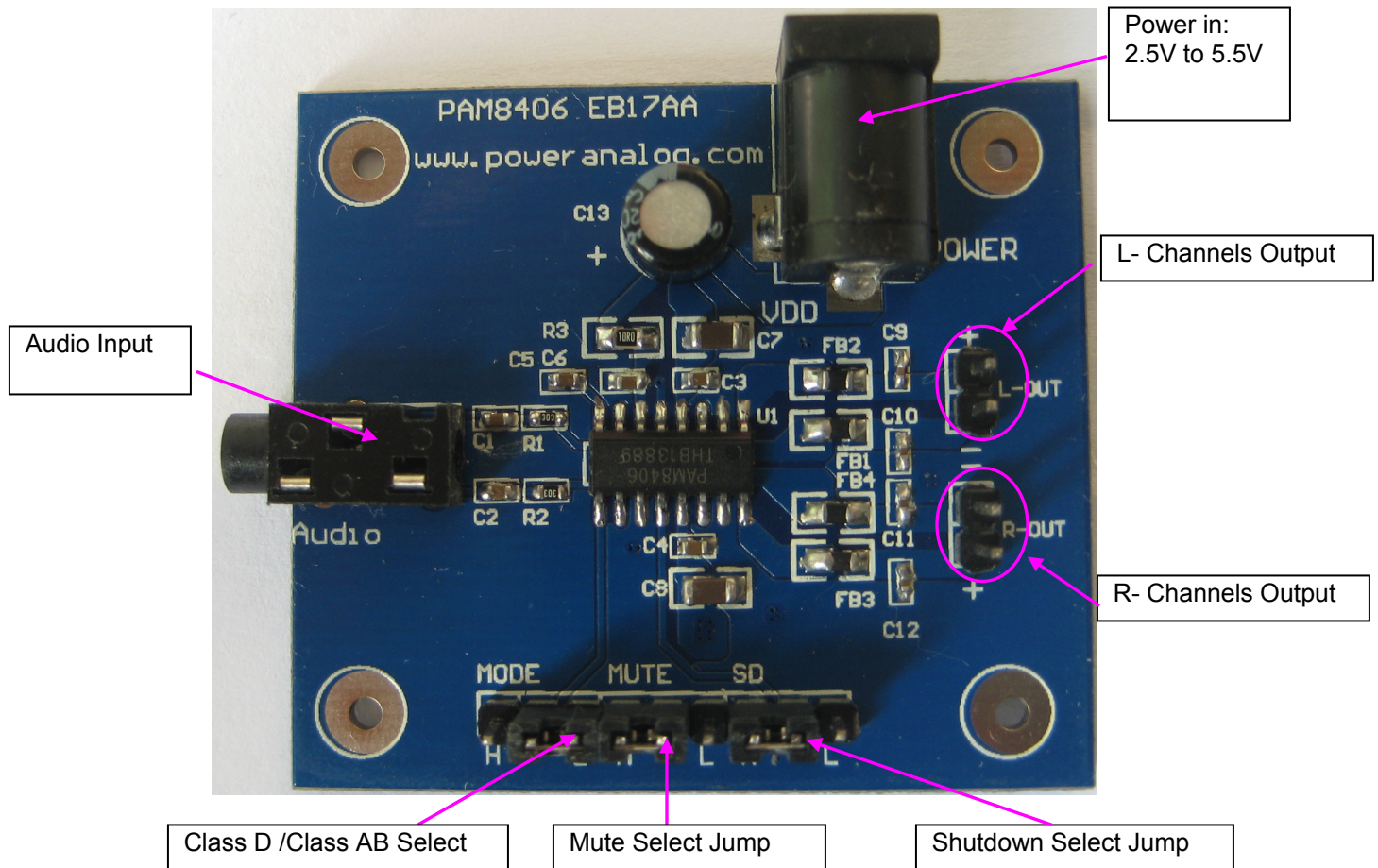


**Figure 1 Demo Board Schematic**

### 3. PAM8406 Demo Board Description

PAM8406 demo board is design for PAM8406 demo and evaluation, targeted to be used in providing a simple and convenient evaluation environment for the PAM8406. Requires parts, potentiometer for standard RCA jacks for audio inputs, pin jacks for power supply and signal outputs, low-pass RC output filter for each channel, etc. on the board make it easy to be evaluated.

### 4. EV Board View



**Figure 2 Demo Board Top View**

#### EV Board Operational Sequence :

- a. Preset the power supply to between 2.5V and 5.5V.
- b. Connect power supply to EV board power.
- c. Connect audio input from audio input jack.
- d. Connect the SPKs to the output jack.
- e. Turn on the power supply and verify that the sound quality of speaker.

## EV Board BOM List

Item	Value	Type	Rating	Description
C7,C8	10 $\mu$ F	X5R/X7R, Ceramic/0805	10V	PVDD main decoupling CAP
C3,C4	1 $\mu$ F	X5R/X7R, Ceramic/0603	10V	PVDD coupling CAP
C6	1 $\mu$ F	X5R/X7R, Ceramic/0603	10V	VDD decoupling CAP
C5	1 $\mu$ F	X5R/X7R, Ceramic/0603	10V	Vref bypass CAP
C1,C2,	1 $\mu$ F	X5R/X7R, Ceramic/0603	10V	Input coupling CAP
R1,R2	10K	0805	1%	Input Resistor
R4	10 $\Omega$	0805	5%	Separate AVCC from PVDD
C13	220 $\mu$ F	Electrolytic	10V	DC coupling CAP
FB1,FB2,FB3,FB4	2A/120 $\Omega$	0805		For EMI
C9,C10,C11,C12,	220pF	X5R/X7R, Ceramic/0603	10V	

## 5. External Components Selection

### Power Supply decoupling Caps (C3, C4, C6, C7, C8)

- (1) Low ESR for good THD, PSRR
- (2) C3,C4 and C6, 1.0 $\mu$ F ceramic for higher frequency transients, spikes
- (3) C7 and C8, Additional 10 $\mu$ F or greater for low frequency noise filtering and serves as a local storage capacitor for supplying current during large signal transients on the amplifier outputs.
- (4) Need place very closed to the IC

### Input Capacitors (C1, C2)

- (1) Form a high pass filter with  $R_i$ , and the cut off frequency is  $f_c = 1/2\pi R_i C_i$
- (2) Low leakage current needed, ceramic recommend

### Input Resistors (R1, R2)

- (1) Limit the closed-loop gain
- (2) Form a high pass filter with  $C_i$ , and the cut off frequency is  $f_c = 1/2\pi R_i C_i$
- (3) 1% tolerance needed for resistor matching to improve CMRR, PSRR

### VREF Bypass Capacitor (C5)

- (1). 1 $\mu$ F ceramic recommend
- (2). Need place very closely to the pin for good THD, PSRR

### EMI Eliminate Filter (FB1, FB2, FB3 and FB4)

- (1) High impedance at high frequency and very low impedance at low frequency
- (2) The current rating is higher than 2A

## 6. PCB Layout Guidelines

### Grounding

- (1) Use plane grounding or separate grounds
- (2) Do not use one line connecting power GND and analog GND
- (3) Output noise grounds must tie to system ground at the power in exclusively.
- (4) Signal currents for the inputs need to be returned to quiet ground. This ground only ties to the signal components and the GND pin.

### Others

- (1) The power supply decoupling capacitors need to place very close to the PAM8406's pins.
- (2) The output route should be far away from audio input route.

## 7. PCB Layout Example

Top Layer

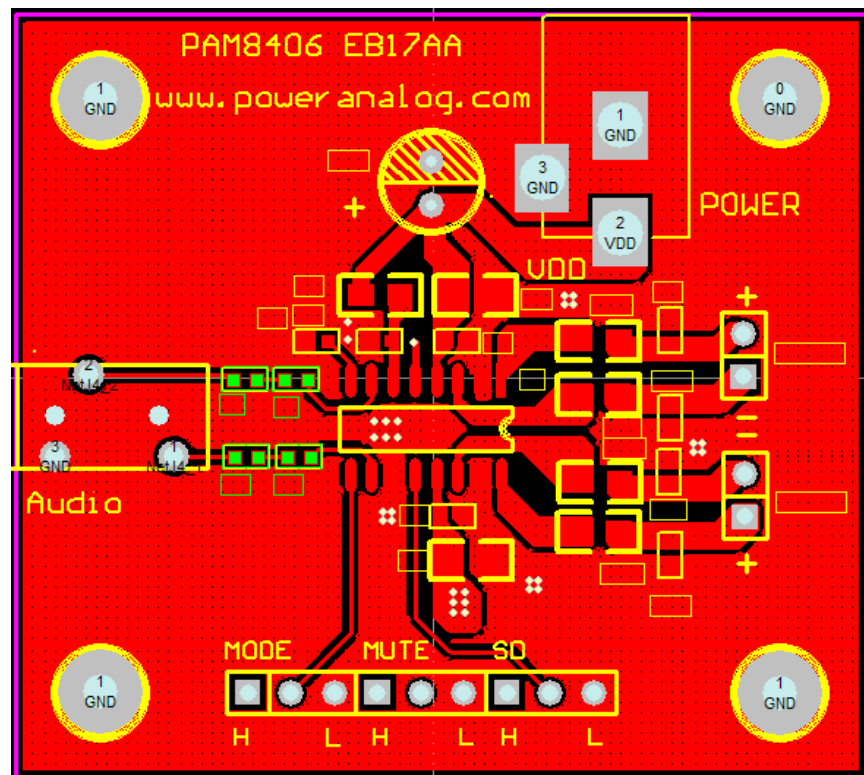
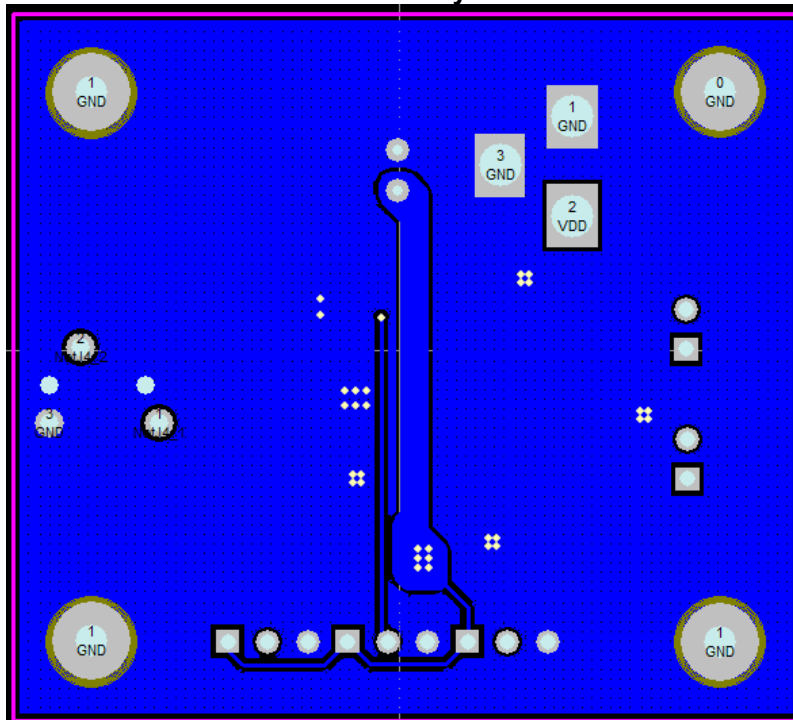


Figure 3

**Bottom Layer**



**Figure 4**