



#### 4. EV Board Schematic

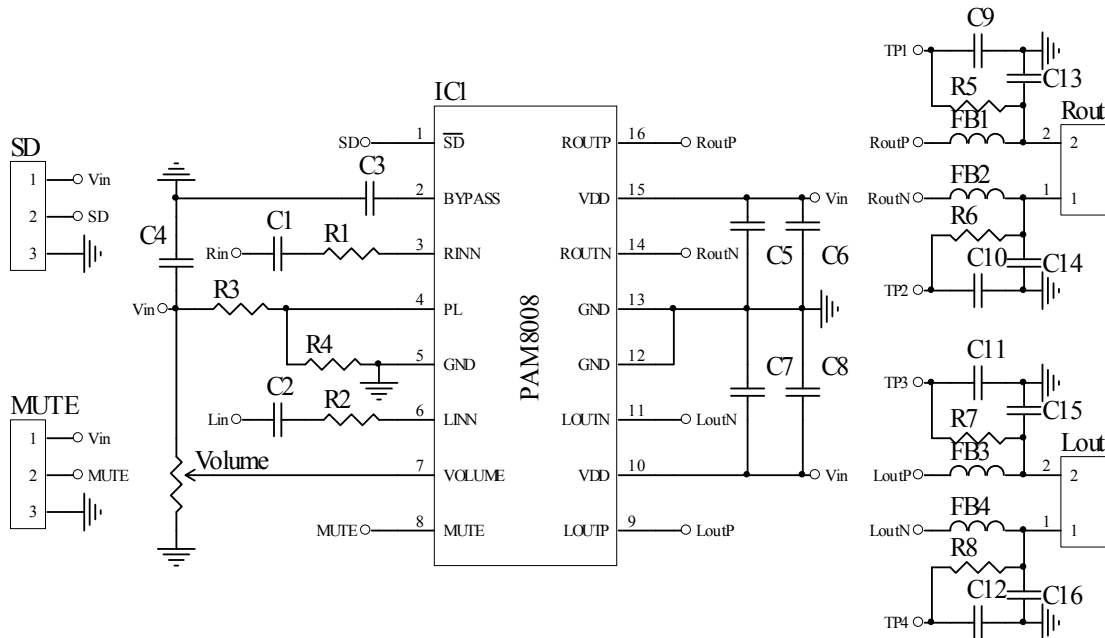
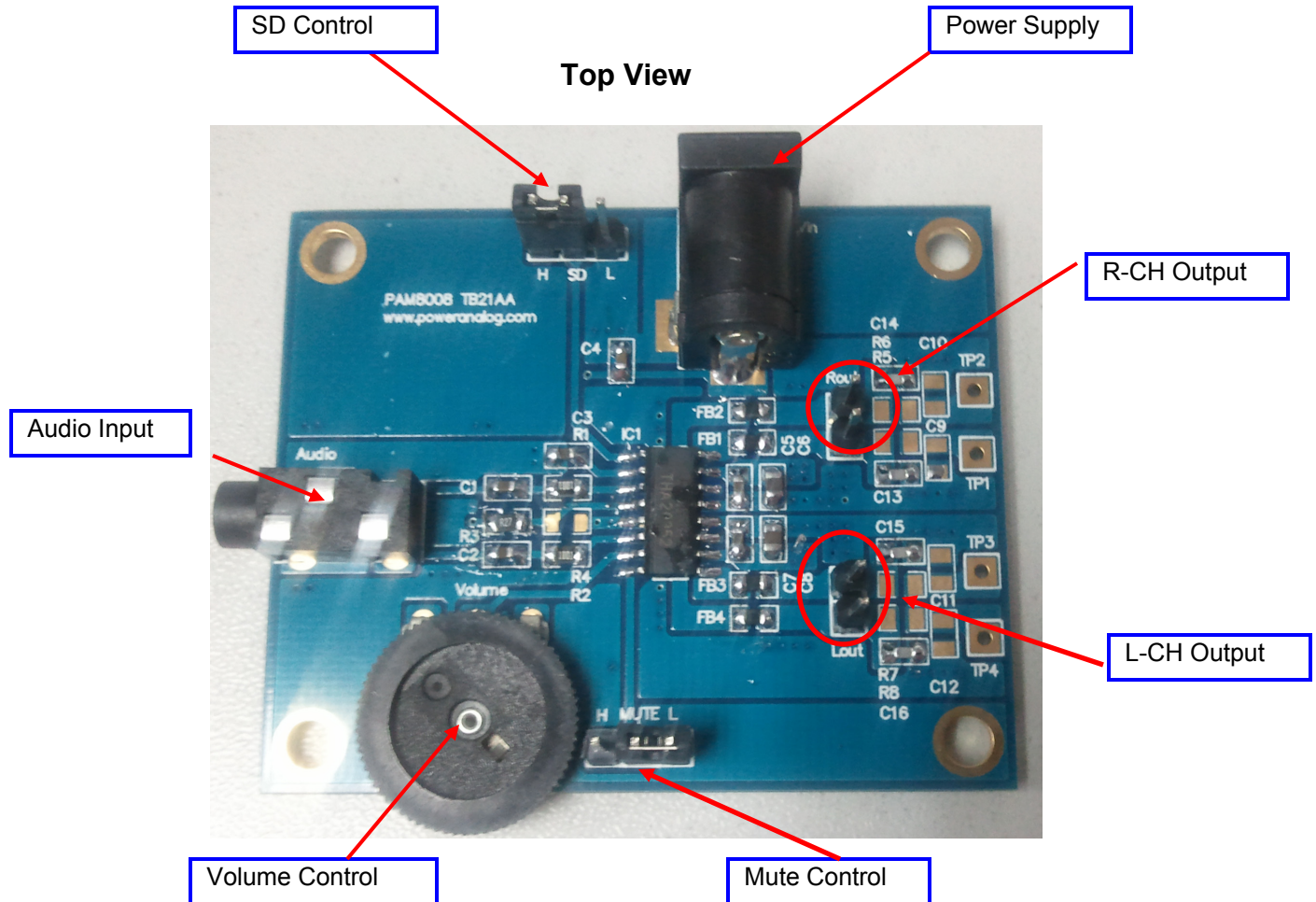


Figure 1

#### 5. PAM8008 EVB TB21AA Description

PAM8008 TB21AA is an evaluation board for the PAM8008, a stereo class-D audio power amplifier. The board is targeted to be used in providing a simple and convenient evaluation environment for the PAM8008. Requires parts, the standard RCA jacks for audio inputs, pin jacks for power supply and signal outputs etc. on the board make it easy to be evaluated.

## 6. EV Board View and Jack Description



### EV Board Operational Sequence:

- Connect SD to a high for normal operation
- Connect audio input from audio input jack
- Connect the loading (speaker or power resistor) to the output jack
- Power on: 2.5V to 5.5V DC power supply

## 7. EV Board BOM List

Item	Value	Type	Rating	Description	Vender and port
C1,C2	0.1 $\mu$ F	X5R/X7R, Ceramic/0603	10V	Input coupling CAP	LMK063BJ104KP-F
C5,C7	1 $\mu$ F	X5R/X7R, Ceramic/0603	25V	PVDD coupling CAP,	TMK107B7105KA-T
C6,C8	10 $\mu$ F	X5R/X7R, Ceramic/0805	10V	PVDD main coupling CAP,	LMK107BBJ106MALT
C3	1 $\mu$ F	X5R/X7R, Ceramic/0603	16V	BYPASS CAP	EMK107B7105KA-T
C4	1 $\mu$ F	X5R/X7R, Ceramic/0603	16V	Decoupling CAP	EMK107B7105KA-T
R1, R2	0		1%	Input Resistor	
R3, R4	0 $\Omega$	0805	5%	PL select resistor	
VR1	50k $\Omega$			Volume setting	
FB1,FB2,FB3,FB4	200 $\Omega$	0805	2A	For EMI eliminate components form a FB-CAP filter	
C13,C14,C15,C16	220pF	0603	25V		

## 8. External Components Selection

### Input Capacitors (C1, C2)

- (1) Form a high pass filter with  $R_i$ , and the cut off frequency is  $f_c = 1/2 \cdot \pi \cdot R_i \cdot C_i$
- (2) Have a tolerance of 10% or better for matching : any mismatch in capacitance causes an importance mismatch at the corner frequency and below
- (3) Low leakage current needed, 0.1 $\mu$ F, X5R/X7R 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  $f_c = 1/2 \cdot \pi \cdot R_i \cdot C_i$
- (3) 1% tolerance needed for resistor matching to improve CMRR, PSRR

### Power Supply decoupling Caps (C5, C6, C7, C8 )

- (1) Low ESR for good THD, PSRR
- (2) 1 $\mu$ F ceramic for higher frequency transients, spikes, or digital hash on the line of PVDD/AVCC
- (3) 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

### Bias Voltage Capacitor (C3)

- (1) Internal power supply for pre-amplifier,
- (2) 1 $\mu$ F, X5R/X7R ceramic recommend
- (3) Place very closed to the device

### 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

## 9. 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.

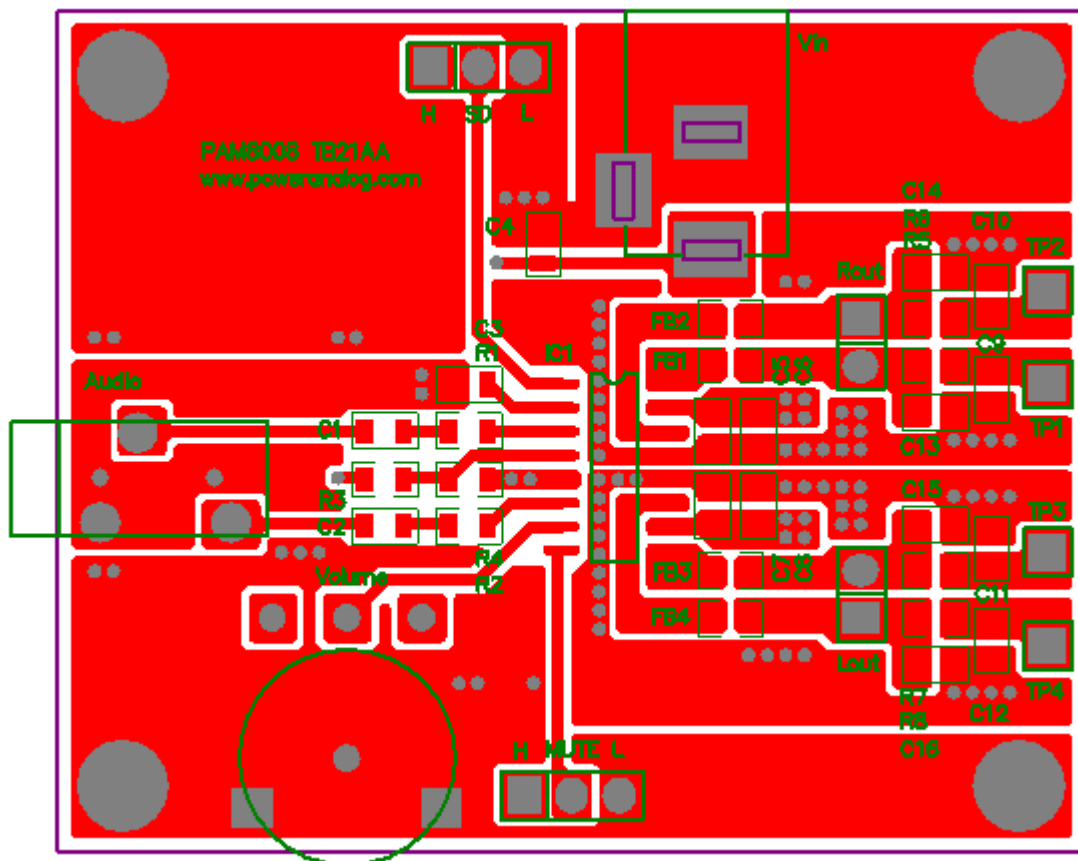
### Power Supply

#### Others

- (1). The power supply capacitors (C5, C6, C7, C8, ) need to place very close to the PAM8008's pins.
- (2). Input capacitors (C1, C2) place closed to input pin as near as possible

## 10. PCB Layout Example

Top Layer



**Bottom Layer**

