PAM8007 EV Board User Guide

AE Department

1. Revision Information

Date	Revision	Description	Comment
2011/03/14	V1.0	Initial Release	

2. EV Board Schematic

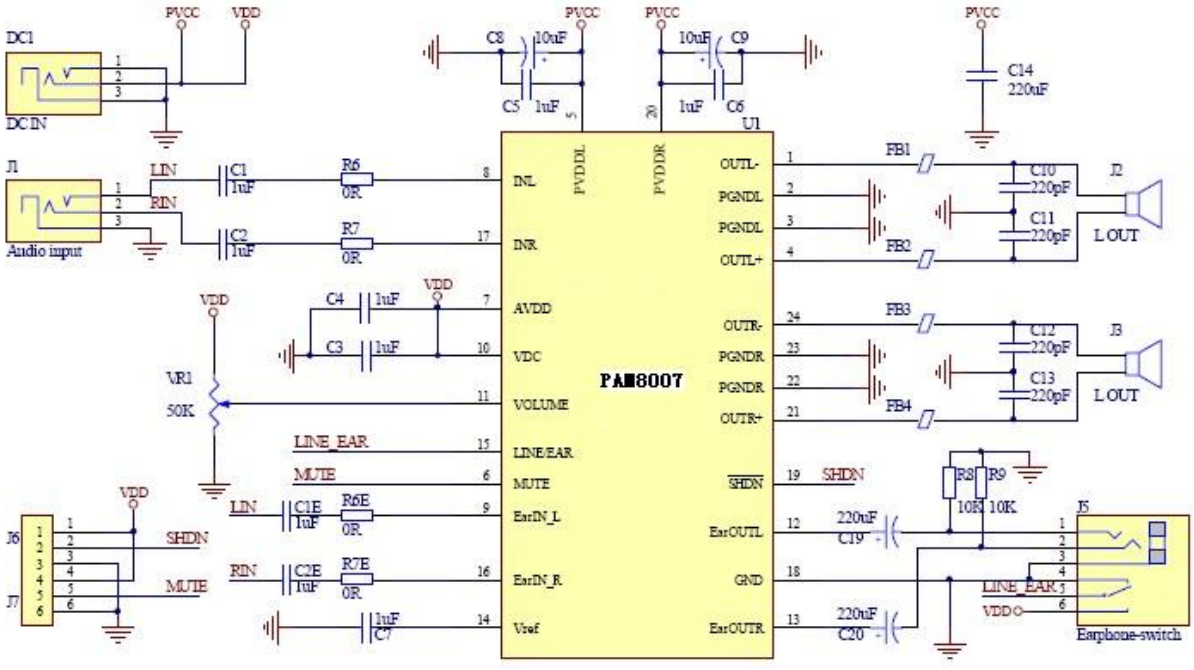

Figure 1 Demo Board Schematic

3. PAM8007 Demo Board Description

PAM8007 demo board is design for PAM8007 demo and evaluation, targeted to be used in providing a simple and convenient evaluation environment for the PAM8007. 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

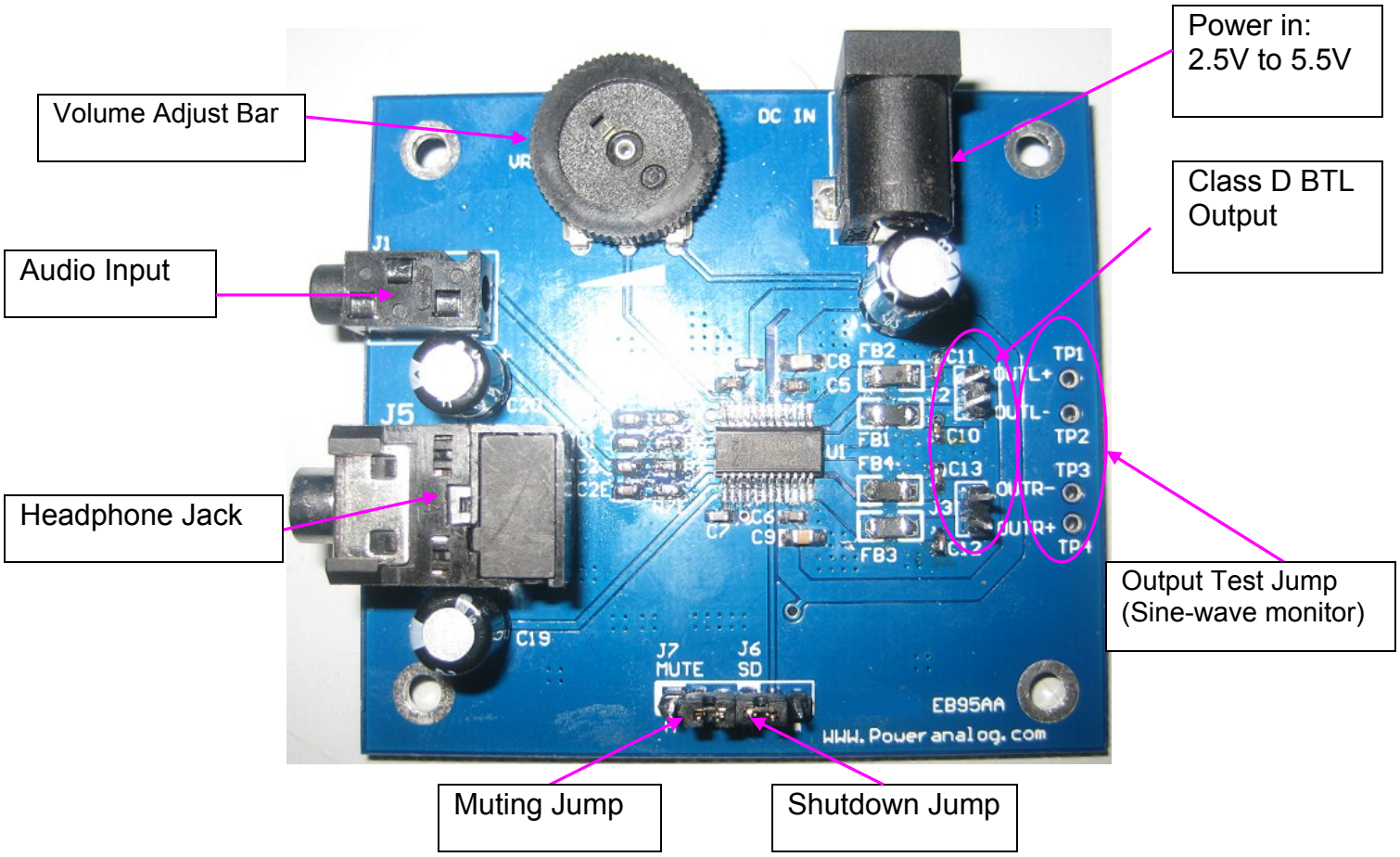

Figure 2 Demo Board Top View

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 BTL 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
C8,C9	10μF	X5R/X7R, Ceramic/0805	10V	PVDD main decoupling CAP
C5,C6	1μF	X5R/X7R, Ceramic/0603	10V	PVDD coupling CAP
C1,C2,C1E,C2E	1μF	X5R/X7R, Ceramic/0603	10V	Input coupling CAP
C4	1μF	X5R/X7R, Ceramic/0603	10V	VDD decoupling CAP
C7	1μF	X5R/X7R, Ceramic/0603	10V	Vref bypass CAP
C19,C20	220μF	Electrolytic	10V	Class AB output decoupling CAP
FB1,FB2,FB3,FB4	2A/120Ω	0805		For EMI
C10,C11,C12,C13	220pF	X5R/X7R, Ceramic/0603	10V	For EMI
VR1	50K			VOL Bias

5. External Components Selection

Power Supply decoupling Caps (C4, C5, C6, C8, C9)

(1) Low ESR for good THD, PSRR

(2) C5,C6 and C4, 1.0μF ceramic for higher frequency transients, spikes.

(3) C8 and C9, Additional 10μF 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, C1E2, C2E)

(1). Form a high pass filter with Ri, and the cut off frequency is $fc=1/2\prod Ri*Ci$

(2). Low leakage current needed, ceramic recommended.

VREF Bypass Capacitor (C7)

(1). 1uF ceramic recommended.

(2). Need place very closely to the pin for good THD, PSRR

Class AB Output Capacitors (C19, C20)

(1). Form a low pass filter with RL, and the cut off frequency is $fc=1/2\prod RL*COi$

(2). Low leakage current needed

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 quite ground. This ground only ties to the signal components and the GND pin.

Others

(1) The power supply de coupling capacitors need to place very close to the PAM8007's pins.

(2) The output route should be far away from audio input route.

7. PCB Layout Example

Top Layer

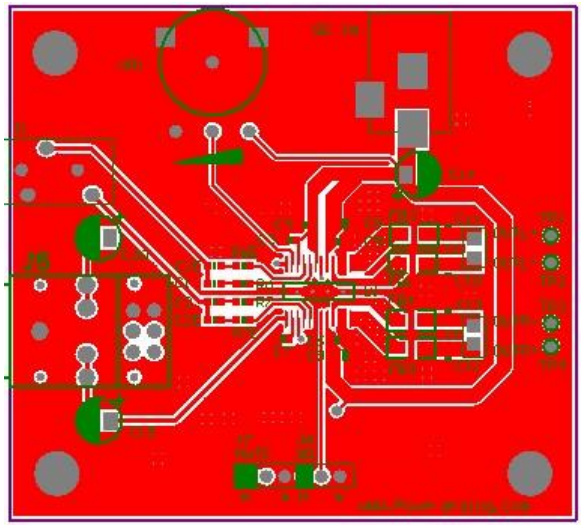

Figure 3

Bottom Layer

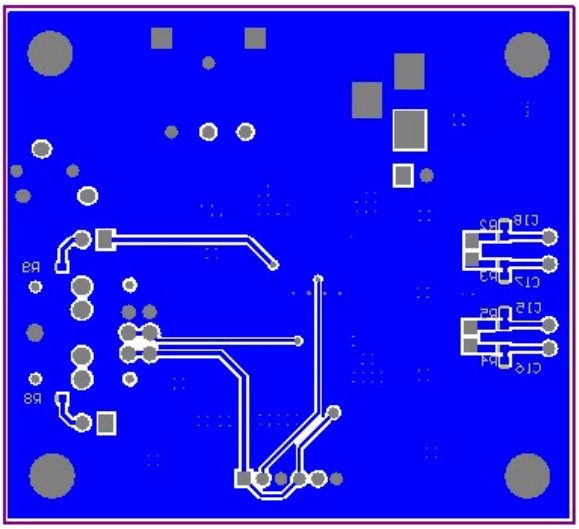

Figure 4