

CSEVB6101R3 User Manual **Stereo Audio Power Amplifier Evaluation Board (Rev 3)**

Features and Key Specification

- Supply Voltage $\pm 2.5 \sim \pm 11 \text{ V}$
- Audio In $\pm 0.52 \text{ V (max.)} @ \pm 10 \text{ V}$
- Stereo Output Power $10 \text{ W}_{\text{RMS}}$ per channel @ $\pm 10 \text{ V}$, 4Ω (for CS6A4983)

Applications

- Hifi Audio Power Amplifier

Connections

- 3.5mm audio jack
- Speakers screw wire connector
- Power supply screw wire connector



General Description

The amp is stereo efficient, digital amplifier power stage for driving speakers up to $2 \times 10 \text{ W} / 4 \Omega$. The high efficiency of the amp allows it to do $2 \times 10 \text{ W} / 4 \Omega$ without external heat sink. This module has standby and mute function, so Arduino can control it how and when it works.

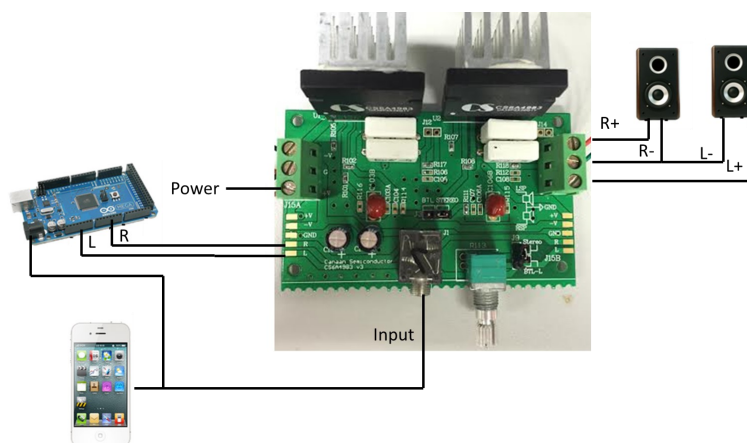


Figure 1. Photo of Stereo Audio Power Amplifier Demo Board (Version 3)

ABSOLUTE MAXIMUM RATINGS

Supply Voltage $ V^+ + V^- $		22V
Differential Input Voltage		$\pm 10V$
Common Mode Input Range		$\pm 10V$
Output current (continuous) Per Channel		4.5A
Power Dissipation (on IC) Per Channel		14.5Wmax
Junction Temperature (T_{JMAX}) (on IC)		-20 ~ 70°C
Soldering Information	SIP Package (10 seconds)	180°C
Storage Temperature		-40 ~ 120°C

CAUTION: Absolute Maximum Ratings indicate limits beyond which damage to the device may occur, including inoperability and degradation of device reliability and/or performance. Functional operation of the device and/or non-degradation at the Absolute Maximum Ratings or other conditions beyond those indicated in the Recommended Operating Conditions is not implied. The Recommended Operating Conditions indicate conditions at which the device is functional and the device should not be operated beyond such conditions. All voltages are measured with respect to the ground pin, unless otherwise specified.

ELETRICAL CHARACTERISTICS

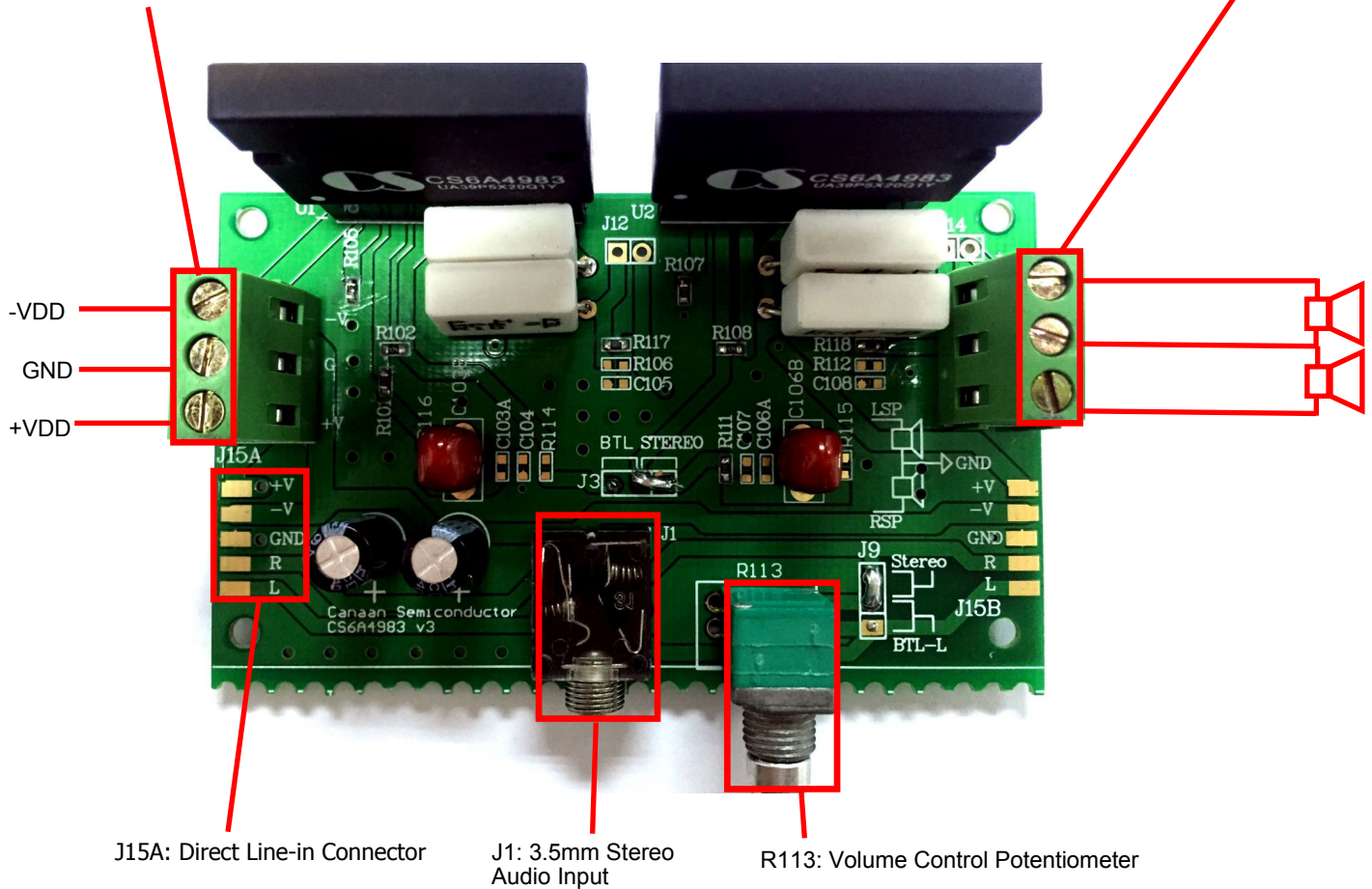
Application circuit 1 with $+V_{CC} = -V_{EE} = 11V$, and $8\ \Omega$ load stereo (unless otherwise specified. $T_A = 25^\circ C$).

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units (Limits)
I_{CC}	Total Quiescent Power Supply Current (stereo)	$V_{IN} = 0V, V_O = 0V, I_O = 0A$	-	18	20	mA
I_{OP}	Operating Current (stereo)	$V_{IN} = \pm 0.4V$, 1kHz sine wave $R_L = 8\ \Omega, V_O = \pm 6.2V$.	-	1.12	1.2	A
I_{OUT}	Continuous output current / channel	$V_{IN} = \pm 0.4V$, 1kHz sine wave $R_L = 8\ \Omega, V_O = \pm 6.2V$.	-	550	600	mA
THD	Total Harmonic Distortion	$R_L = 8\ \Omega, A_v = 20x$ $V_{OUT} = \pm 4V, f = 500Hz$	-	0.0029	-	%
		$8\ \Omega, A_v = 20x$ $V_{OUT} = \pm 4V, f = 1kHz$	-	0.0029	-	
A_v	Closed Loop Voltage Gain	$f = 1kHz$	-	17.4	-	mV/mV
V_{OM}	Maximum Output Voltage Swing	$THD + N \geq 0.01\%, f = 20Hz$ to $20kHz$ $R_L = 2K\ \Omega$	-	-	20	V_{PP}
SR	Slew Rate	$V_{IN} = \pm 0.4V_{pp}, R_L = 2K\ \Omega,$ $C_L = 100pF, f = 1kHz$	-	13	-	V/ μs
V_{OS}	Input Offset Voltage per channel	$V_{IN} = 0V, V_O = 0V$	-	3	-	mV
I_B	Input Bias Current per channel	$V_{IN} = 0V$	-	-	20	nA
PSRR	Power Supply Rejection Ratio	$V_{CC} = \pm 9 \sim \pm 11V, V_{OUT} = 0V$	-	80	-	dB

Connection Description

J2: Voltage Power Supply Connector

J4: Audio Output Connector

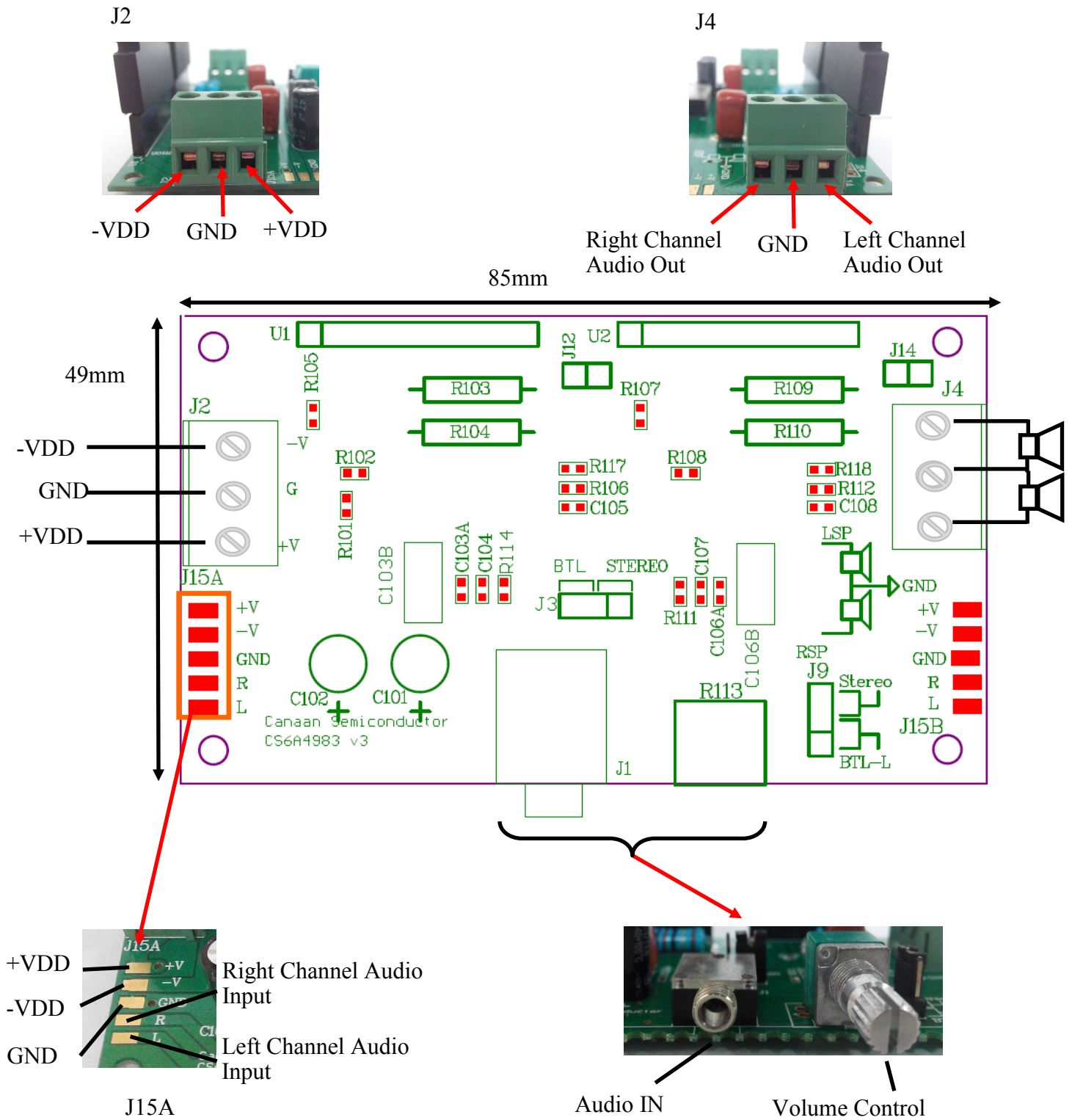


J15A: Direct Line-in Connector

J1: 3.5mm Stereo
Audio Input

R113: Volume Control Potentiometer

(Cont') Connection Description



Operation—Single End Stereo Audio Amplifier

Power

Dual rail DC power (from $\pm 3.5V \sim \pm 10V$) should be supplied to CSEVB6101R3 through the connector “J2”, where positive voltage should be supplied to “+VDD” and negative voltage should be supplied to “-VDD”.

Audio In

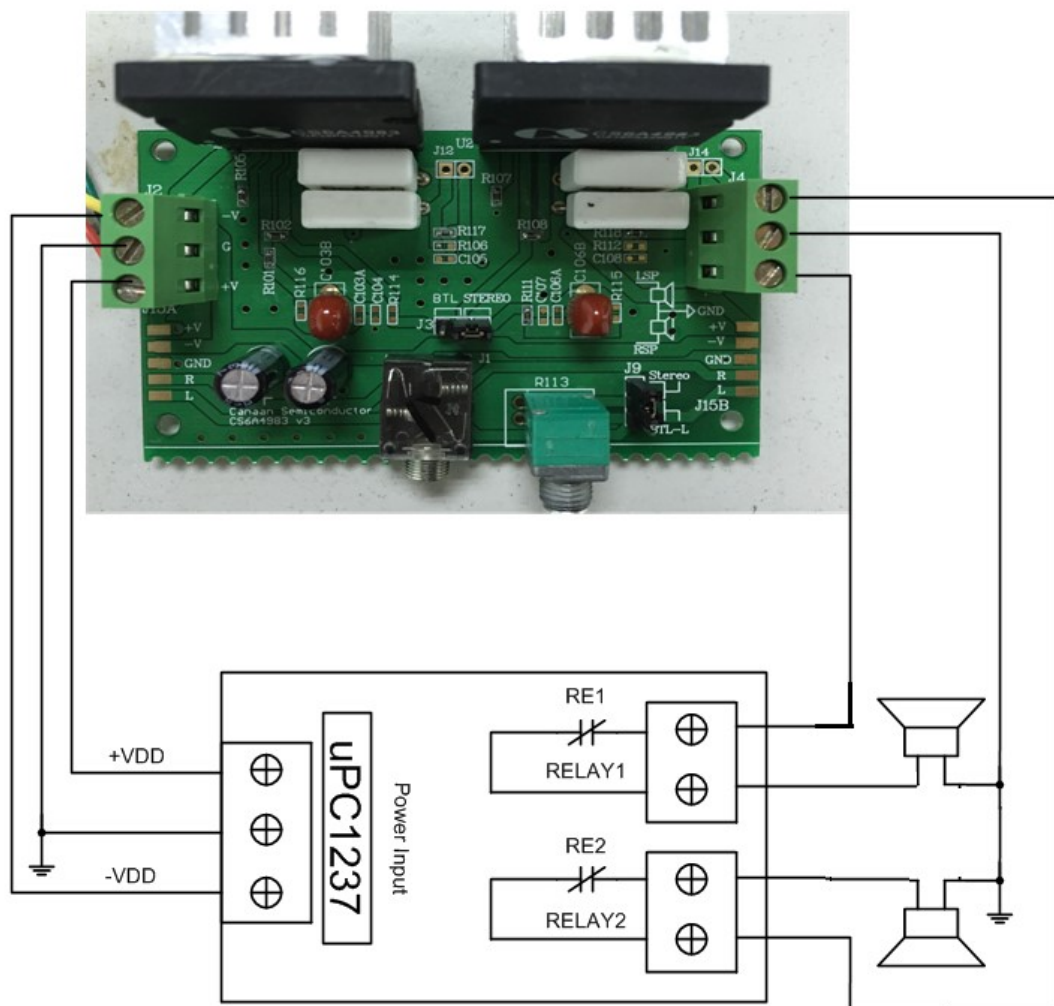
The audio input signal can be applied to CSEVB6101R3 through either 3.5mm audio jack (connector “J1”) or direct line-in (connector “J15A”). For any case, the maximum level of input signal should be limited to $\pm 0.52V$ at $VDD = \pm 10V$. The power level of the audio input to the input CS6A4983 amplifier can be controlled via the “Volume Control” located next to the 3.5mm audio jack.

It should be noted that 3.5mm audio input and direct line-in should not be applied to CSEVB6101R3 simultaneously.

Output Speaker

Output speaker (with load impedance equals or greater than 40 Ω) could be used with CSEVB6101R3 through the connector “J4”.

To avoid damage of the speaker during power on/off of the CSEVB6101R3, external speaker protection circuit (uPC1237 based speaker protection circuit is recommended, but other compatible speaker protector circuit could also be used) should be used. The connection of the speaker protection circuit is shown below.



Revision History

Date	Rev	Description
March 2015	A	First Release

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