2 x 8 Watt Class D Bluetooth Audio Amplifier Board
TSA2110A
User’s Guide
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NOTES:

Product Version:       V1r2
Document Version:      v1.0
Chapter 1. Overview

1.1 Overview

This is a 2x8W audio amplifier board with Bluetooth 4.0 integrated. It has perfect class-D architecture (Based on TPA3110D2) and each channel has 8W power output. This board can be powered by any DC8V-16V power supply. It can be used to drive any 4Ω or 8Ω passive speakers. It's perfect for your Hi-Fi application.

![Figure 1-1 FRONT VIEW](image)

1.2 Features

- Working Voltage: DC8V~16V
- AMP Type: Digital Class D
- 8W output power per channel
- Bluetooth 4.0
- Over/under voltage protection
- Over current protection
- Over temperature protection
- Entrance: Screw terminals
- Weight: 0.025 kg
- Dimensions: 80 x 48 x 17 mm
1.3 Applications

- Personal computer
- Desktop amplifier
- Microphone preamplifier
- Home DIY
- Vending machine, Lifts
- Interactive kiosks

1.4 Quick Start

Suggested connection is shown in figure 1-3.

**FIGURE 1-3 CONNECTION DIAGRAM**
Chapter 2. Hardware Detail

2.1 Power Connection

To power the amplifier, please use jack J3. Pay attention to the connector type, it must be positive inside and negative outside.

FIGURE 2-1 Power CONNECTION

<table>
<thead>
<tr>
<th>Connector Mark</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jack</td>
<td>J3</td>
</tr>
<tr>
<td></td>
<td>DC power supply socket</td>
</tr>
</tbody>
</table>

Note: The minimum supply voltage shall be referred to Chapter 3.

2.2 Output Connection

You can use terminals to output audio signal.

FIGURE 2-2 OUTPUT CONNECTION
### TABLE 2-2 OUTPUT CONNECTION

<table>
<thead>
<tr>
<th>Connector Mark</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal Blocks</td>
<td></td>
</tr>
<tr>
<td>J5</td>
<td>Output of Channel Left</td>
</tr>
<tr>
<td>J6</td>
<td>Output of Channel Right</td>
</tr>
</tbody>
</table>

**Note:**
1. Never connect more than one group of speaker to the audio output.
2. Never connect L- and L+ together since they belong to different NETs.

#### 2.3 LED Indicator

The amplifier has 2 LED indicators to indicate its working status.

**FIGURE 2-3 LED INDICATOR**
### TABLE 2-3 LED INDICATOR

<table>
<thead>
<tr>
<th>LED Status</th>
<th>Board Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Not powered</td>
</tr>
<tr>
<td>Flash</td>
<td>Powered, no device connected</td>
</tr>
<tr>
<td>OFF</td>
<td>Powered, device connected</td>
</tr>
</tbody>
</table>
2.4 Volume Control

There are 3 buttons on the board: Forward/VOL+, Rewind/VOL- and Play/Pause.
Forward/VOL+: Long press the button to increase the volume, short press the button to play the previous song.
Rewind/VOL-: Long press the button to decrease the volume, short press the button to play the next song.
Play/Pause: Click the button to play or pause the music.
Chapter 3. Electrical Characteristics

Following table lists all typical data of the Amp board. TA = 20°C, fIN = 1 kHz sine ware, RL = 4Ω. (Unless otherwise stated)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Condition</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage (V)</td>
<td>-</td>
<td>8</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Quiescent Current (mA)</td>
<td>SD = 2V, No load, Vcc = 12V</td>
<td>-</td>
<td>20</td>
<td>35</td>
</tr>
<tr>
<td>Input Sensitivity (V)</td>
<td>Gain = 26dB</td>
<td>-</td>
<td>0.283</td>
<td>-</td>
</tr>
<tr>
<td>Input Impedance (Kohm)</td>
<td>-</td>
<td>-</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>Gain (dB)</td>
<td>-</td>
<td>-</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Output Power (W rms)</td>
<td>THD+N = 10%, Vcc = 12V</td>
<td>-</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>Efficiency (%)</td>
<td>Vcc = 12V, RL = 8Ω, PO = 5W</td>
<td>-</td>
<td>86</td>
<td>-</td>
</tr>
<tr>
<td>Minimum Load (ohm)</td>
<td>-</td>
<td>3.2</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Frequency Response (Hz)</td>
<td>±3dB</td>
<td>20</td>
<td>-</td>
<td>22k</td>
</tr>
<tr>
<td>Operating Temperature (°C)</td>
<td>-</td>
<td>-40</td>
<td>20</td>
<td>65</td>
</tr>
</tbody>
</table>
Chapter 4. Mechanical Drawing

FIGURE 4-1 MECHANICAL DRAWING
Chapter 5. Contact Us

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