

# NAU88L24 Demo Board User Manual

**The PCB name: NAU88L24 Demo Board (Rev.A)**  
**Ordering P/N: NL-NAU88L24I**

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## 1 OVERVIEW

The NAU88L24 is an ultra-low power high performance audio codec designed for smartphone, tablet PC, and other portable devices that supports both analog and digital audio functions. It includes one I2S/PCM interface, one digital mixer, two high quality DACs, two high quality ADCs, two mono differential or one stereo differential analog microphone inputs, four analog single-ended microphone inputs, four digital PDM microphone inputs, one single ended stereo auxiliary or one differential mono inputs, one differential headset mic input, one stereo 2.9W class D loudspeaker amplifier driver for 4  $\Omega$  loads and 5V supply, and one stereo class G headphone amplifier with advanced headset detection.

## 2 INTRODUCTION

The DEMO\_NAU88L24\_QFN system is designed to allow a thorough evaluation of the audio codec.

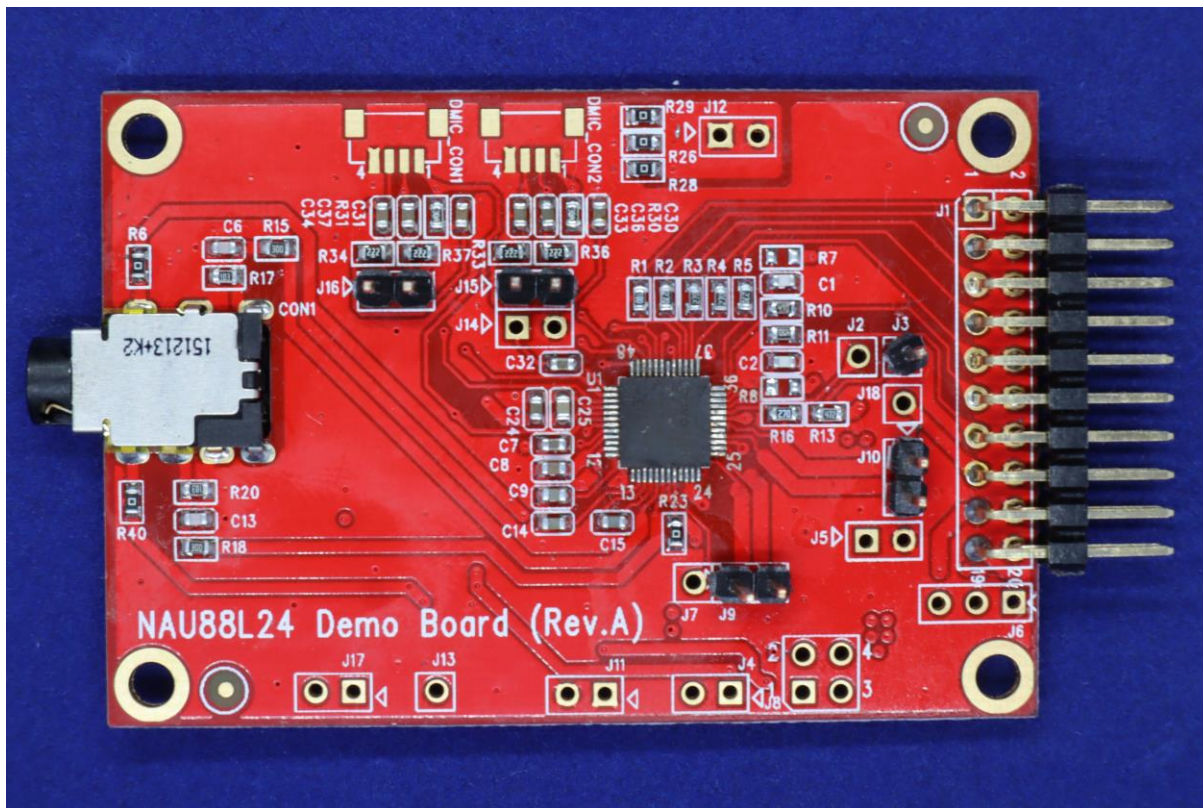


Figure 2-1 NAU88L24 Demo Board

2.1 Top View

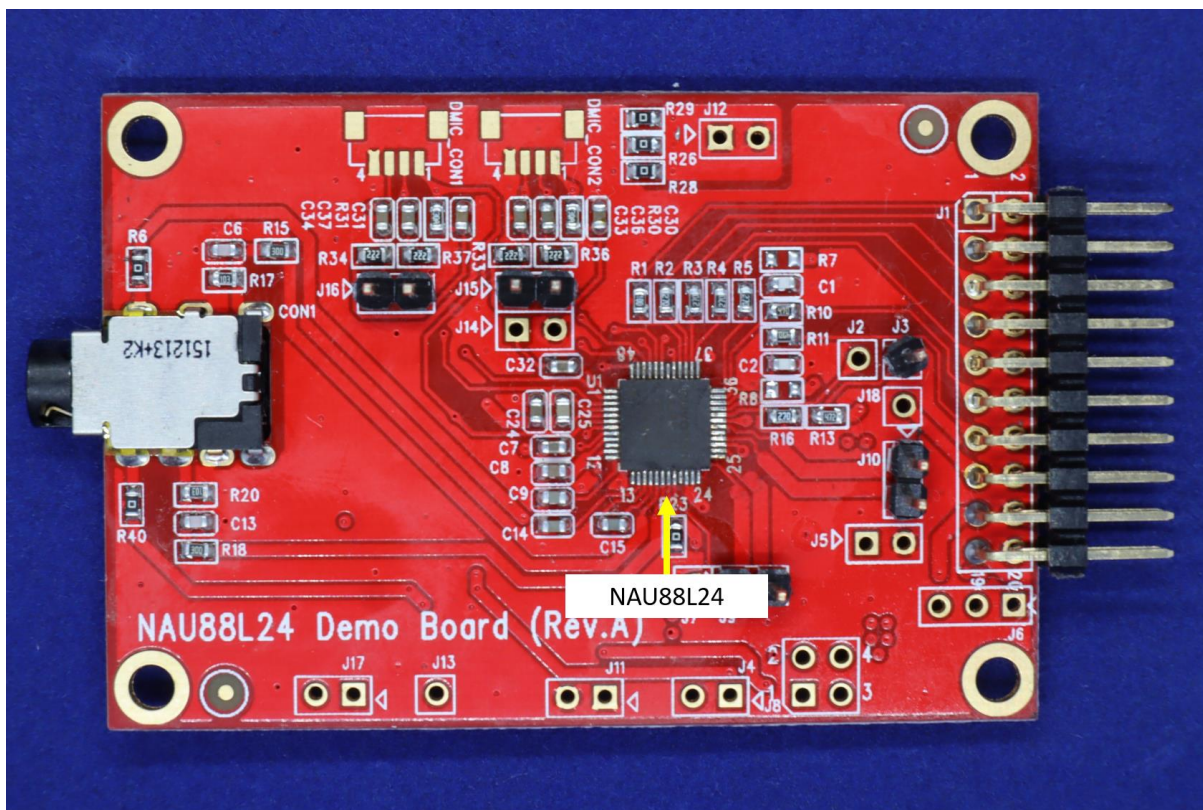


Figure 2.1-1 Top View

Name	Description
NAU88L24	Audio CODEC

Table 2.1-1 Main Components



2.2 Input / Output

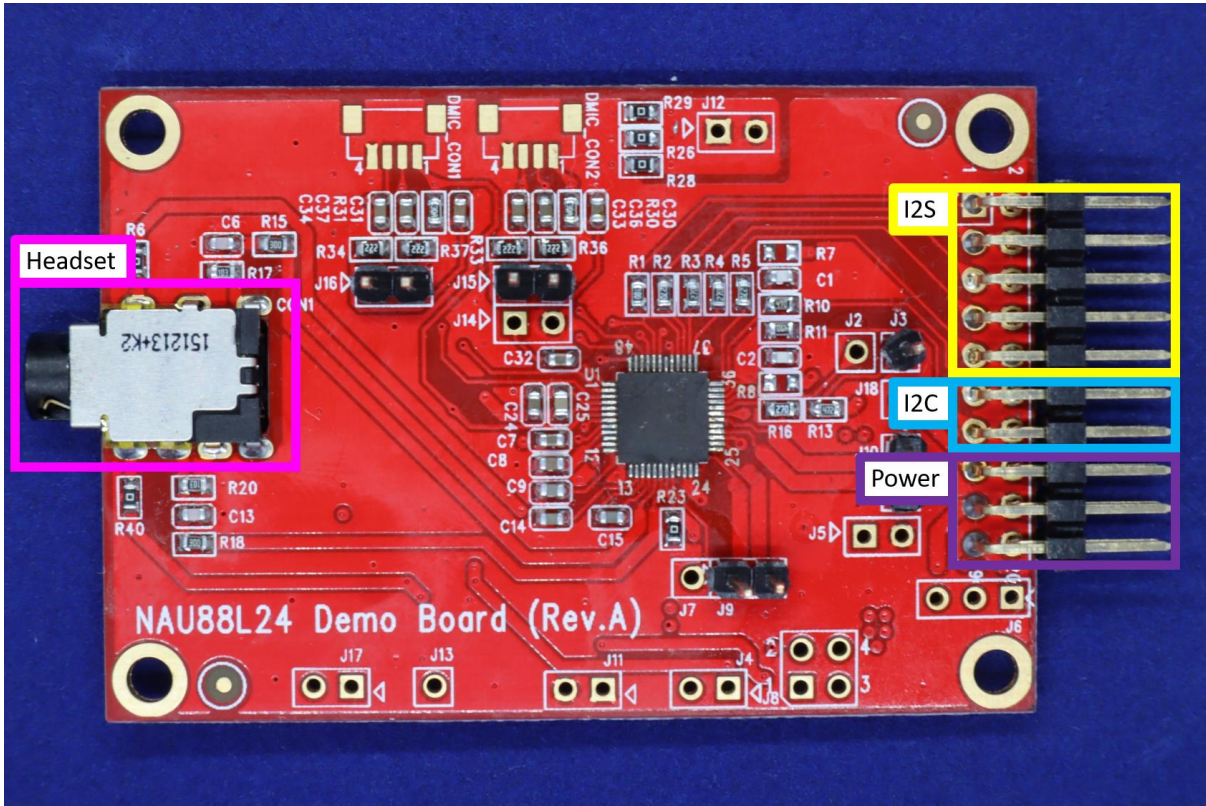


Figure 2.2-1 Input / Output

Name	Description					
JP1	Pin 1	I2S Interface	MCLK, Master Clock	Pin 11	I2C Interface	SDA
	Pin 3		BCLK, Bit Clock	Pin 13		SCL
	Pin 5		DACIN	Pin15 Power. Provide power to Demo board.	VDDIO	
	Pin 7		ADCOUT		VDD1.8	
	Pin 9		FS ,Frame Sync		VDD3.3	
CON1	Headset connector					

Table 2.2-1 Input / Output



2.3 Jumpers

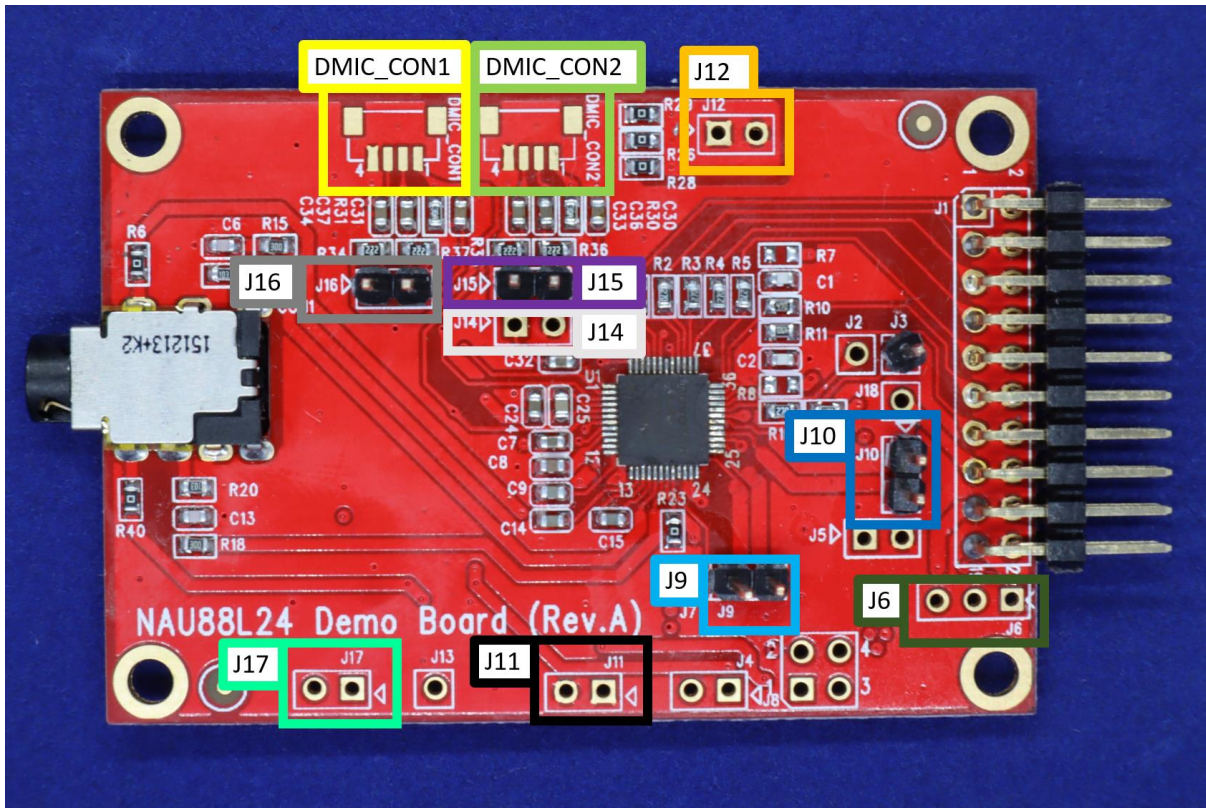
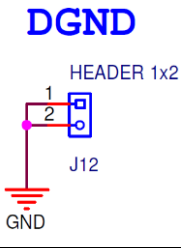
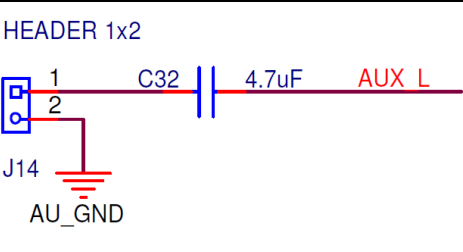
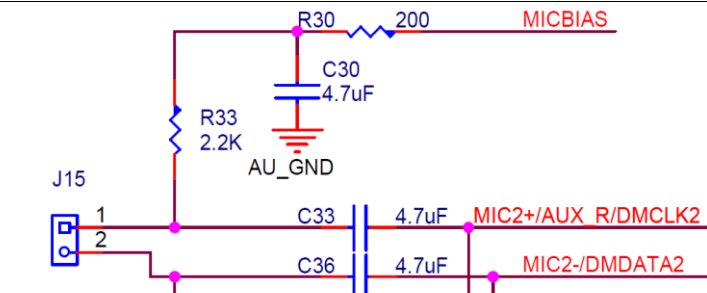
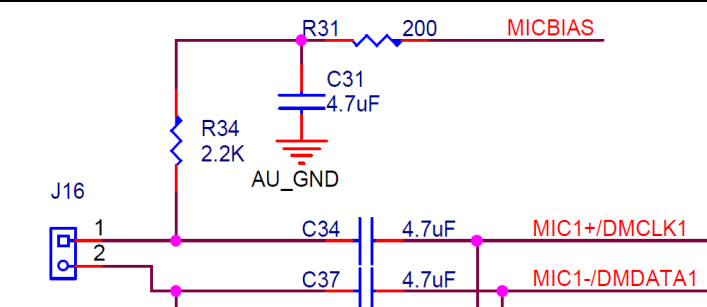


Figure 2.3-1 Jumpers

Name	Pin definition	Description
J9	Class-D amplifier Left Channel Output	<p>SPKR_LP SPKR_LN</p> <p>1 2</p> <p>J9</p>
J10	Class-D amplifier Right Channel Output	<p>SPKR_RP SPKR_RN</p> <p>1 2</p> <p>J10</p>
J11 (NC)	AGND	<p>AGND</p> <p>HEADER 1x2</p> <p>1 2</p> <p>J11</p> <p>AU_GND</p>

<p>J12 (NC)</p>	<p>DGND</p>	 <p>DGND</p> <p>HEADER 1x2</p> <p>1 2</p> <p>J12</p> <p>GND</p>
<p>J14 (NC)</p>	<p>AUX_IN (Single-End)</p>	 <p>HEADER 1x2</p> <p>1 2</p> <p>J14</p> <p>AU_GND</p> <p>C32 4.7uF</p> <p>AUX L</p>
<p>J15</p>	<p>MIC2 Analog Input</p>	 <p>R30 200 MICBIAS</p> <p>C30 4.7uF</p> <p>R33 2.2K</p> <p>AU_GND</p> <p>J15</p> <p>1 2</p> <p>C33 4.7uF</p> <p>C36 4.7uF</p> <p>MIC2+/AUX R/DMCLK2</p> <p>MIC2-/DMDATA2</p> <p>R36 2.2K</p> <p>AU_GND</p> <p>AU_GND</p> <p>4 3 2 1</p> <p>DMIC_CON2 CN2</p>
<p>DMIC_CON2 (NC)</p>		
<p>J16</p>	<p>MIC1 Analog Input</p>	 <p>R31 200 MICBIAS</p> <p>C31 4.7uF</p> <p>R34 2.2K</p> <p>AU_GND</p> <p>J16</p> <p>1 2</p> <p>C34 4.7uF</p> <p>C37 4.7uF</p> <p>MIC1+/DMCLK1</p> <p>MIC1-/DMDATA1</p> <p>R37 2.2K</p> <p>AU_GND</p> <p>AU_GND</p> <p>4 3 2 1</p> <p>DMIC_CON1 CN1</p>
<p>DMIC_ CON1 (NC)</p>		

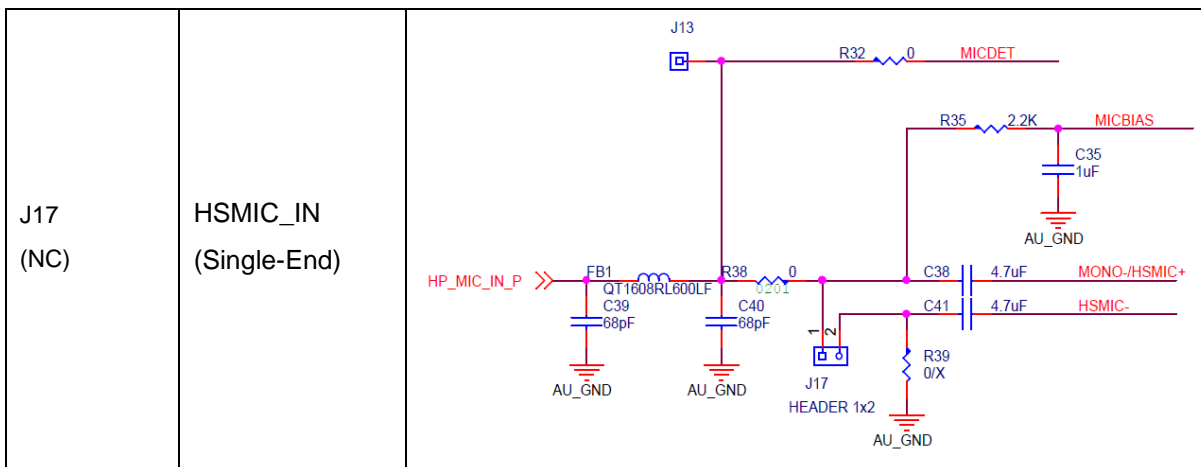


Table 2.3-1 Jumpers

2.4 Schematic

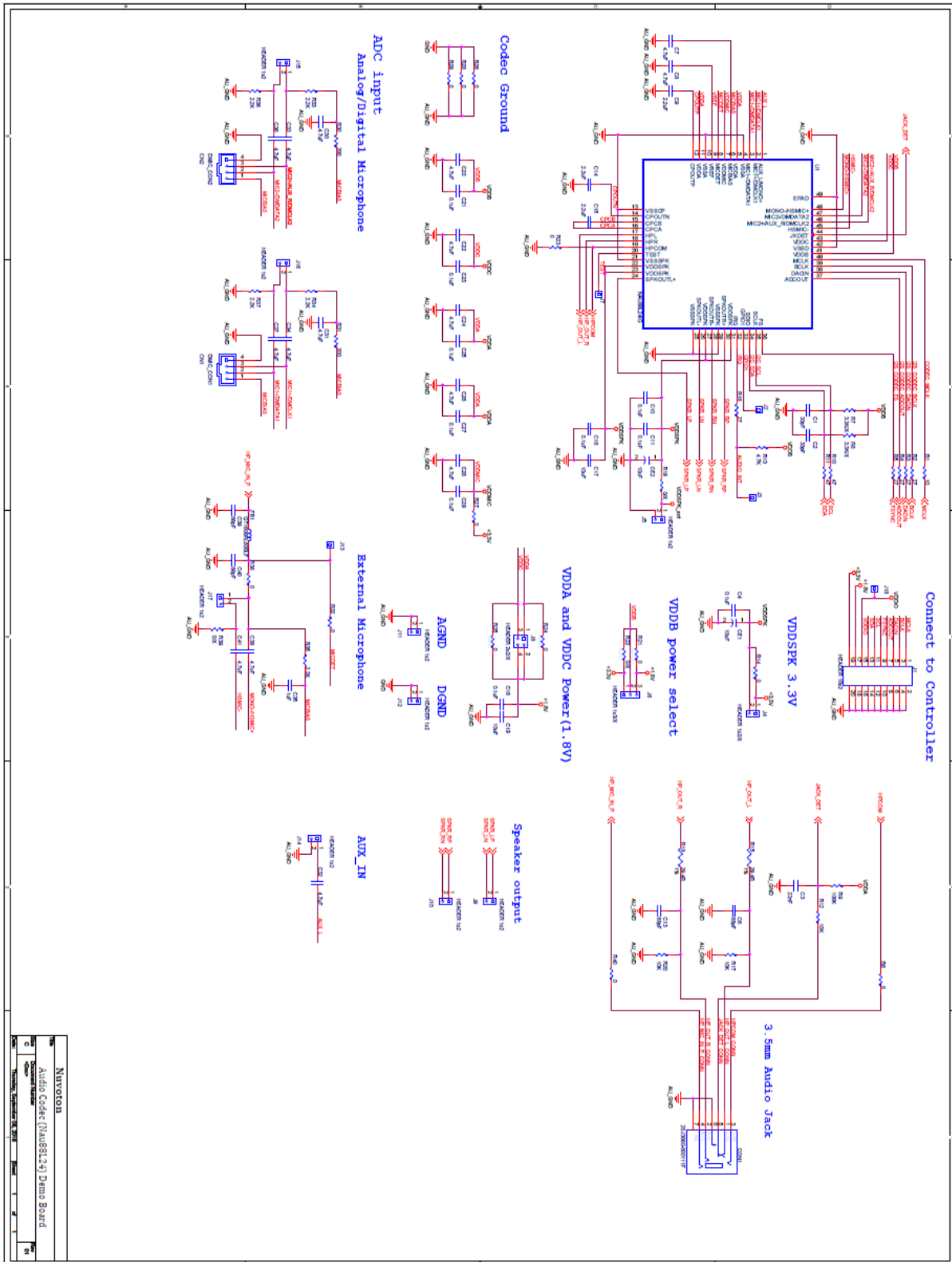


Figure 2.4-1 Schematic

2.5 Bare Board

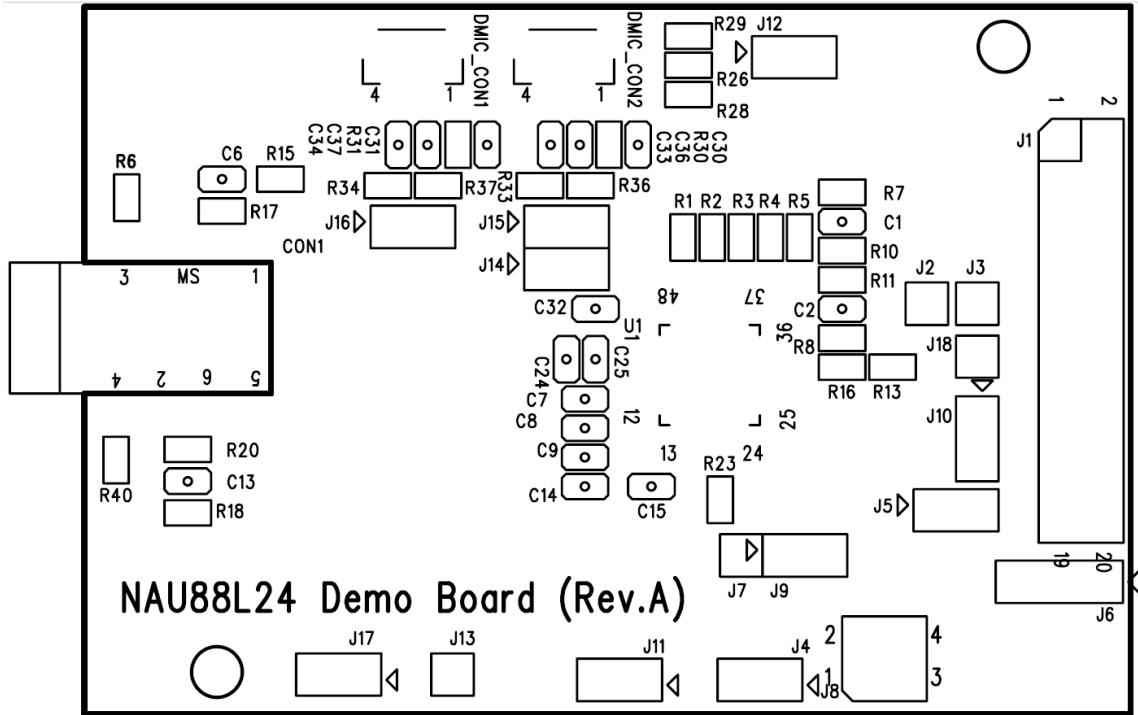


Figure 2.5-1 Top View of Bare Board

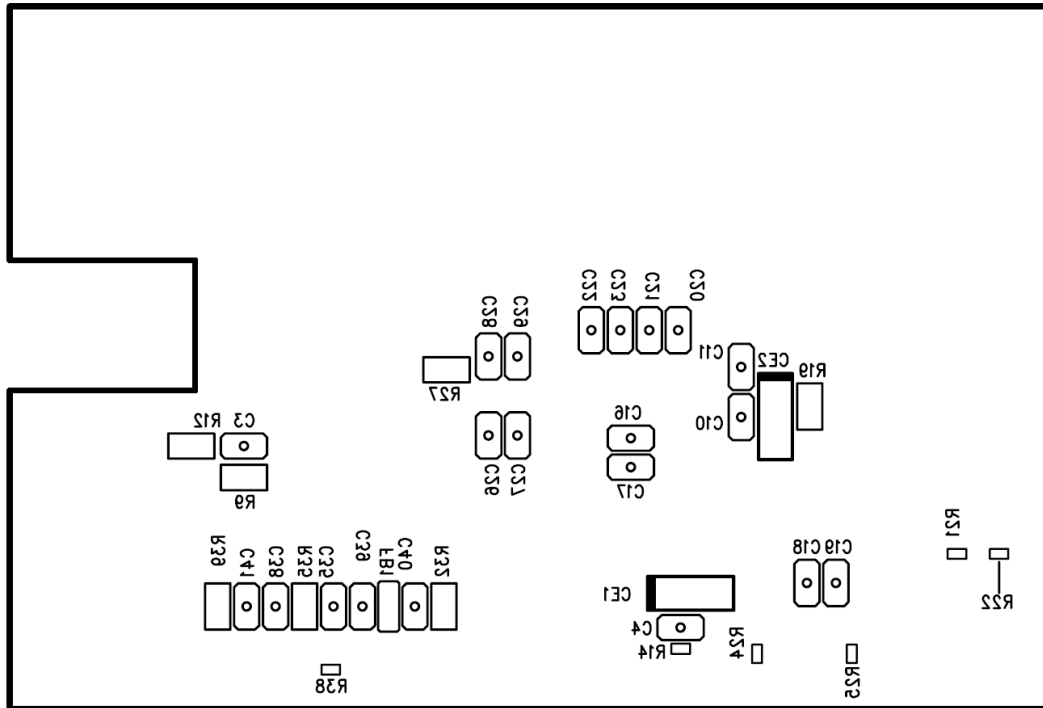


Figure 2.5-2 Bottom View of Bare Board



### 3 CONNECTED TO AUDIO CONTROL BOARD

If there is Nuvoton's Audio Control Board, NAU88L24 Demo Board can be used with Audio Control Board (USB\_I2C\_I2S\_Control\_Board\_V1.1). When the Audio Control Board is connected to the NAU88L24 Demo Board, the PC or USB host can use the GUI to control the NAU88L24 Demo Board and know the status of the NAU88L24 Demo Board.

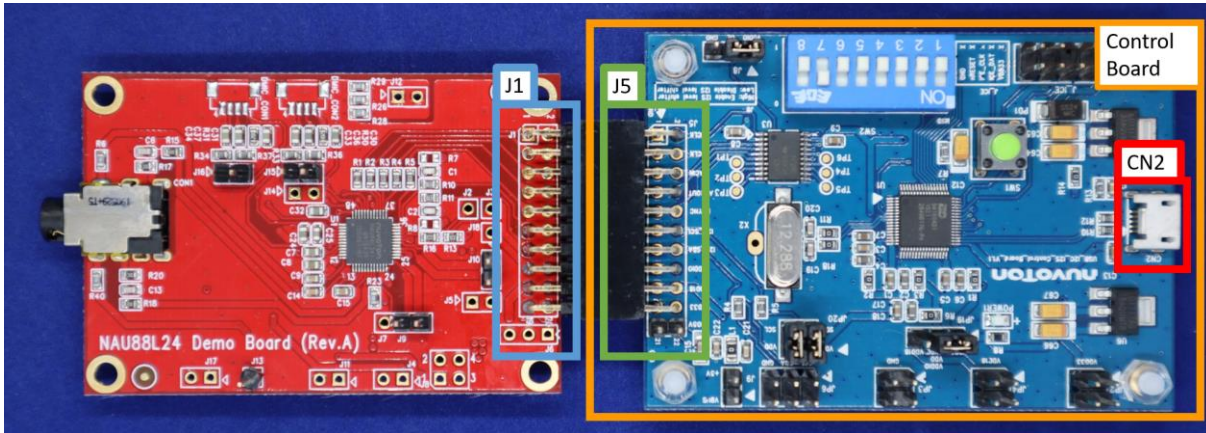


Figure 3-1 Connection Audio Control Board

**Signal path:**

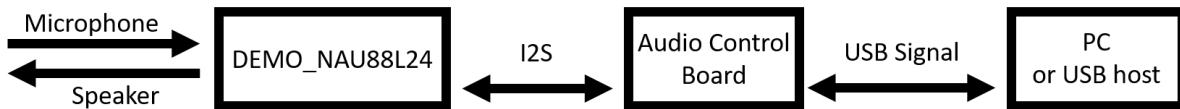


Figure 3-2 Signal Path

**Board setting SOP:**

Reference Figure 3-1

Step1: Connect J1 of the NAU88L24 Demo Board to J5 of the Audio Control Board.

Step2: Connect CN2 of the Audio Control Board to PC or USB host via USB cable.

#### 4 REVISION HISTORY

Date	Revision	Description
2021.02.23	1.0	1 <sup>st</sup> version release

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