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Evaluating the ADAU1772 using the EVAL-ADAU1772Z

EVAL-ADAU1772Z PACKAGE CONTENTS

ADAU1772 evaluation board
EVAL-ADUSB2EBZ (USBi) communications adapter
USB cable with Mini-B plug
Evaluation board/software quick-start guide

DOCUMENTS NEEDED

ADAU1772 data sheet
AN-1006 Applications Note, *Using the EVAL-ADUSB2EBZ*

GENERAL DESCRIPTION

This user guide explains the design and setup of the ADAU1772 evaluation board.

This evaluation board provides full access to all analog and digital I/Os on the ADAU1772. The ADAU1772 core is controlled by Analog Devices, Inc., SigmaStudio™ software, which interfaces to the board via a USB connection. This evaluation board can be powered by a single AAA battery, by the USB bus, or by a single 3.8 V to 6 V supply; any of these are regulated to the voltages required on the board. The PC board is a 4-layer design, with a single ground plane and a single power plane on the inner layers. The board contains connectors for external microphones and speakers. The master clock can be provided externally or by the on-board 12.288 MHz passive crystal.

EVALUATION BOARD TOP SIDE AND BOTTOM SIDE

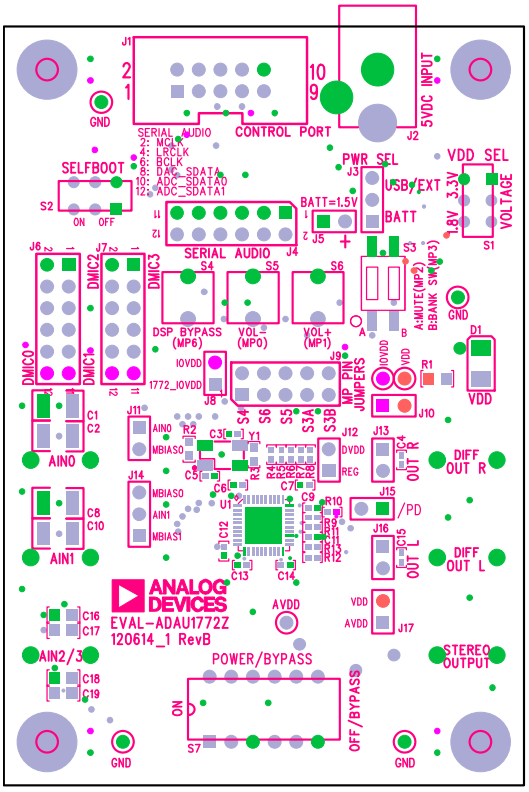

Figure 1. Evaluation Board Top Side

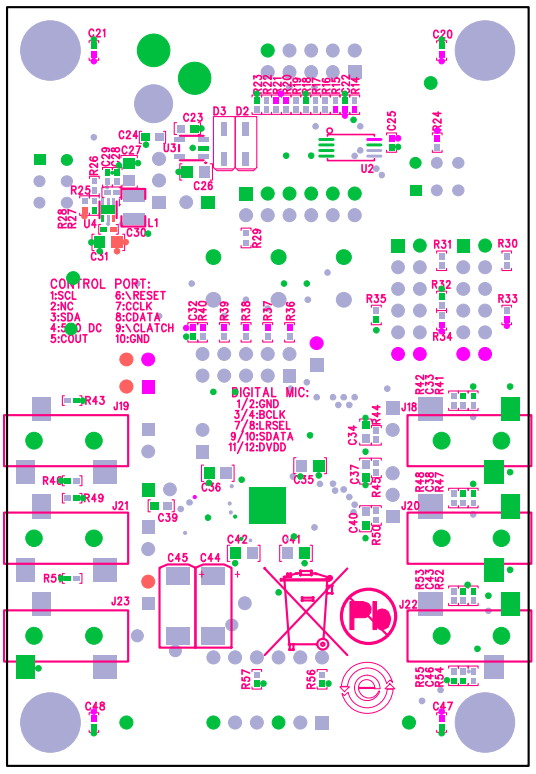

Figure 2. Evaluation Board Bottom Side

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Evaluating the ADAU1772 using the EVAL-ADAU1772Z

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REVISION HISTORY

6/12—Revision 0: Initial Version

EVALUATION BOARD BLOCK DIAGRAMS

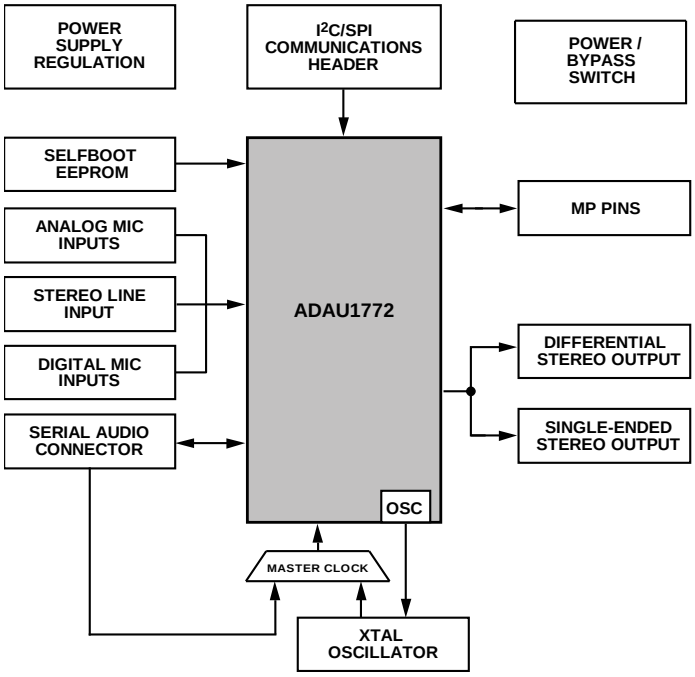


Figure 3. Functional Block Diagram

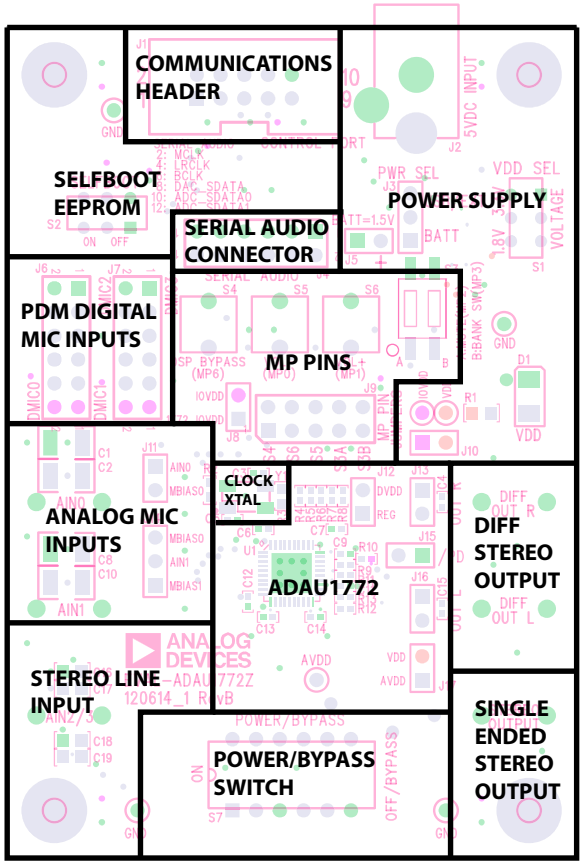


Figure 4. Board Layout Block Diagram

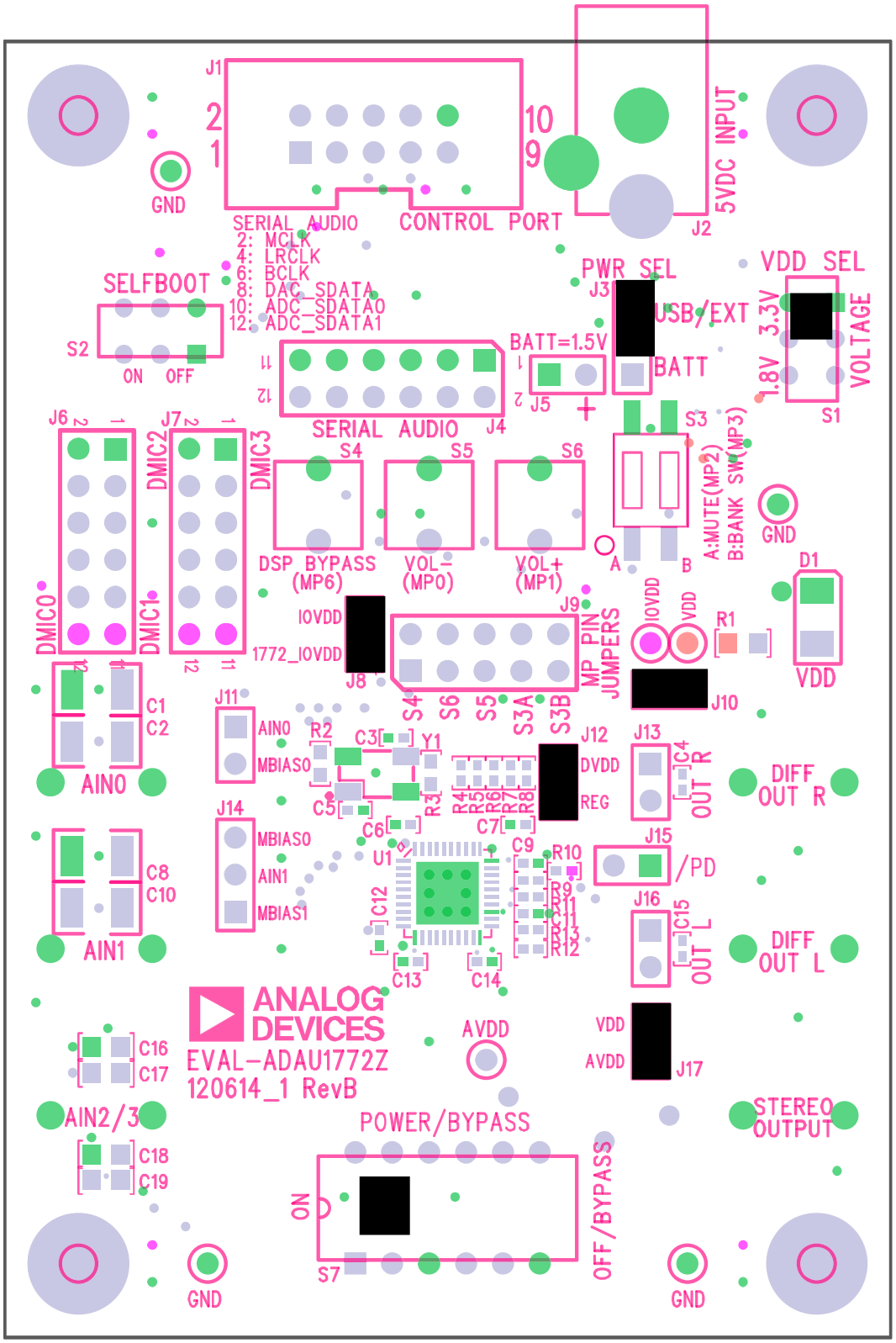


Figure 5. Default Jumper and Switch Settings (A Solid Black Rectangle Indicates a Switch or Jumper Position)

SETTING UP THE EVALUATION BOARD

INSTALLING THE SigmaStudio SOFTWARE

Users can download the latest version of SigmaStudio by completing the following steps:

1. Go to www.analog.com/sigmastudiodownload and fill in the **Email:** and **Software Key:** boxes. You will get a software key with the evaluation board, or you can contact Analog Deviecs, Inc., at sigmadsp@analog.com to request a software key.
2. Chose which version of SigmaStudio you would like and click **Submit**.
3. Download the installer file, open the file, and extract the files to your PC.
4. Install the Microsoft .NET Framework if you do not already have it installed.
5. Install SigmaStudio by double-clicking **setup.exe** and follow the prompts.

INSTALLING THE USBi DRIVERS

For Windows XP:

SigmaStudio must be installed to use the USBi. When SigmaStudio has been properly installed, connect the USBi to an available USB port with the included USB cable. At this point, Windows® XP recognizes the device and prompts the user to install drivers (see Figure 6).

Figure 6. Found New Hardware Notification

Select the **Install from a list or specific location (Advanced)** option and click **Next >** (see Figure 7).

Figure 7. Found New Hardware Wizard—Installation

Click **Search for the best driver in these locations**, select **Include this location in the search**, and click **Browse** to find the SigmaStudio 3.7.x\USB drivers directory (see Figure 8).

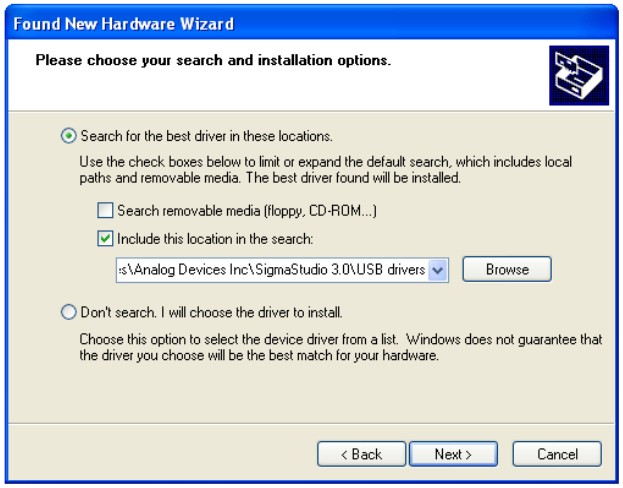


Figure 8. Windows Found New Hardware Wizard—Search and Installation Options

When the warning about Windows Logo testing appears, click **Continue Anyway** (see Figure 9).

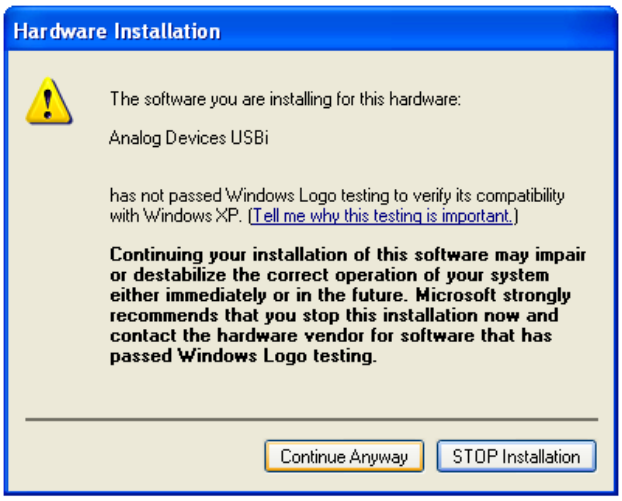


Figure 9. Windows Logo Testing Warning

The USBi drivers should now be installed successfully. Leave the USBi connected to the PC.

For Windows 7 and Vista:

Connect the USBi to an available USB port with the included USB cable. At this point, Windows® 7 recognizes the device and installs the drivers (see Figure 10).

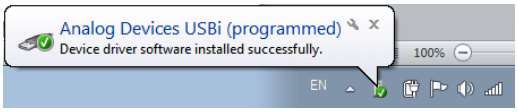


Figure 10. USBI Driver Installed correctly

DEFAULT SWITCH AND JUMPER SETTINGS

The J8, J10, J12, and J17 jumpers must be connected and jumper J3 should be set to the "USB/EXT" power setting. The MP pin jumpers (J9) can be connected as desired to use MP pushbuttons or switches. The mic bias jumpers J11 and J14 can be inserted if microphone bias is needed on inputs 0 and 1.

Switch S7 selects whether the board is to be powered up or if audio is to be bypassed from input to output with the board powered down. For normal operation the switch should be slid to the left. S1 selects whether the ADAU1772 is to be powered from 3.3 V or 1.8 V, the default is 3.3 V. If powering the board via USBi it is important to make sure that the switch on the bottom of the USBi board is set to the correct voltage (1.8 V or 3.3 V). S2 controls self-boot operation, by default it should be slid to the right to disable self-boot.

POWERING UP THE BOARD

To power up the board, connect the ribbon cable of the USBi to J1 (CONTROL PORT) of the EVAL-ADAU1772Z.

CONNECTING THE AUDIO CABLES

Connect a stereo audio source to J22 (AIN2/3). Connect headphones or powered speakers to J23 (Stereo Output). The labels for J22 and J23 are only visible on the bottom of the board.

SETTING UP COMMUNICATIONS IN SIGMASTUDIO

Start SigmaStudio by double-clicking the shortcut on the desktop.

Click **File…New Project** or press **Ctrl+N** to create a new project. The default view of the new project is called the **Hardware Configuration** tab.

To use the USBi in conjunction with SigmaStudio, first select it in the **Communication Channels** subsection of the toolbox on the left side of the **Hardware Configuration** tab, and add it to the project space by clicking and dragging it to the right (seeFigure 11).

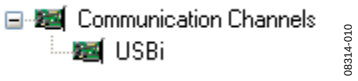


Figure 11. Adding the USBi Communication Channel

If SigmaStudio cannot detect the USBi on the USB port of the computer, then the background of the **USB** label will be red (seeFigure 12). This may happen when the USBi is not connected or when the drivers are incorrectly installed.

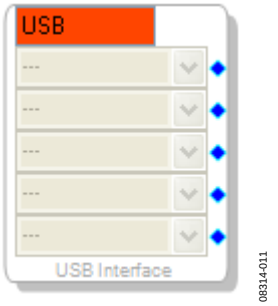


Figure 12. USBi Not Detected by SigmaStudio

If SigmaStudio detects the USBi on the USB port of the computer, the background of the **USB** label changes to orange (see Figure 13).

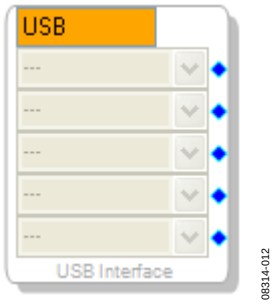


Figure 13. USBi Detected by SigmaStudio

To add an ADAU1772 to the project, select it from the **Processors (ICs / DSPs)** list and drag it to the project space (see Figure 14).

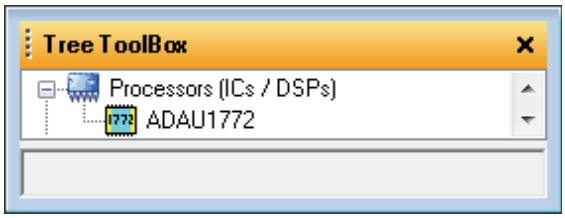


Figure 14. Adding an ADAU1772

To use the USB interface to communicate with the target IC, connect it by clicking and dragging a wire between the blue pin of the USBi and the green pin of the IC (seeFigure 15). The corresponding drop-down box of the USBi automatically fills with the default mode and channel for that IC.

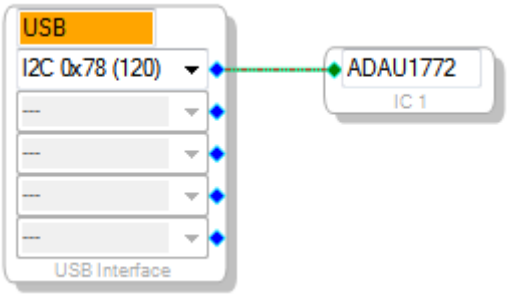


Figure 15. Connecting the USB Interface to an ADAU1772 IC

CREATING A BASIC SIGNAL FLOW

To access the **Schematic** tab, where a signal processing flow can be created, click the **Schematic** tab at the top of the screen (see Figure 16).

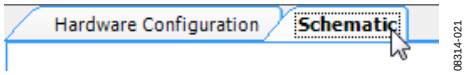


Figure 16. Schematic Tab

The left side of the schematic view includes the **Toolbox**, which contains all of the algorithms that can run in the SigmaDSP. Select the **Input** cell from within the **IO > Audio Input** folder (see Figure 17).

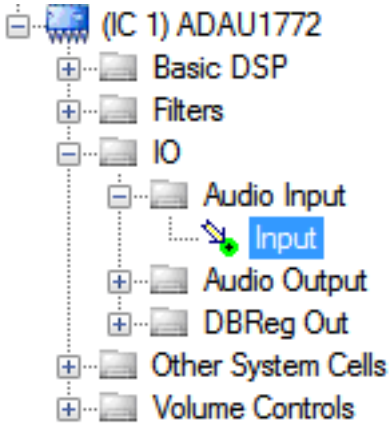


Figure 17. Input Cell Selection

Click and drag the **Input** cell into the blank schematic space to the right of the **Toolbox** (see Figure 18).

Figure 18. Input Cell

Because we are using inputs "**2**" and "**3**" as a stereo pair, deselect inputs "**0**" and "**1**"' and select input boxes "**2**" and "**3**" (see Figure 19).

Figure 19. Inputs 2 and 3 selected

Navigate to the **IO >Audio Output** folder and select the **Output** cell (see Figure 20).

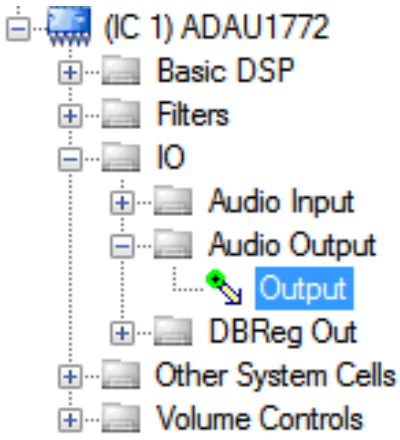


Figure 20. Output Cell Selection

Click and drag an output cell to the schematic. Do this again to create two outputs (see Figure 21). Make sure the output cells are assigned to "**OUT0**" and "**OUT1**" respectively.

Figure 21. Output Cells

Connect the cells together by left-clicking a blue output dot and dragging to the green output dot of the next cell, connecting input "**2**" to "**OUT0**" and input "**3**" to "**OUT1**"(see Figure 22).

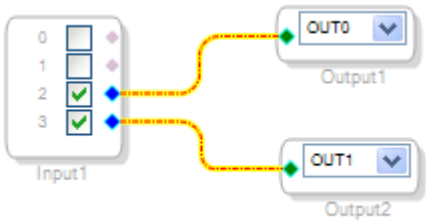


Figure 22. Connected Signal Flow

The basic signal flow is now complete with stereo I/O.

To add Volume control via the buttons labeled "VOL-" and "VOL+", add jumpers to S5 and S6 on J9 (See Figure 23).

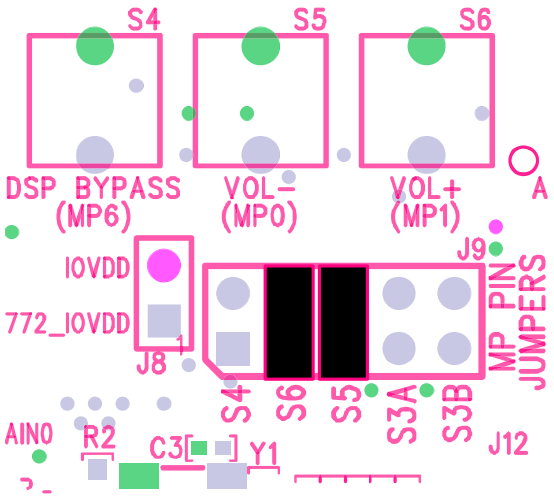


Figure 23. Jumpers for Volume Pushbuttons

Navigate to the **Hardware Configuration.** In the bottom left corner you will see the **IC 1 – ADAU1772 Register Control** tab (see Figure 24).

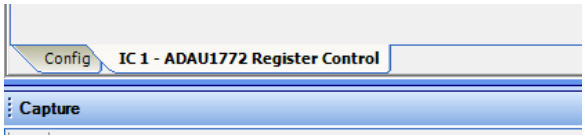


Figure 24. ADAU1772 Register Control Tab

Click on it and find the **Output/Serial Port** tab in the top right corner. In the bottom left corner of the **Output/Serial Port** tab you will find the **Push Button Vol** section. Locate the drop-down menu for **Converters Controlled by PushButton Volume:** and change its value to **All ADCs** (see Figure 25).

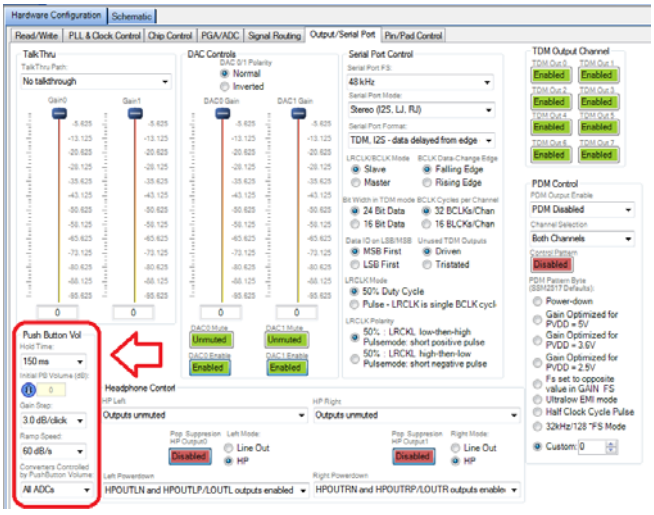


Figure 25. (Output/Serial Port tab)

Navigate to the **Pin/Pad Control** tab. In the **Pin Modes** section change the value of **DAC_SDATA/MP0** to **Push-Button Volume Down** and the value of **ADC_SDATA/PDMOUT/MP1** to **Push-Button Volume Up** (See Figure 26).

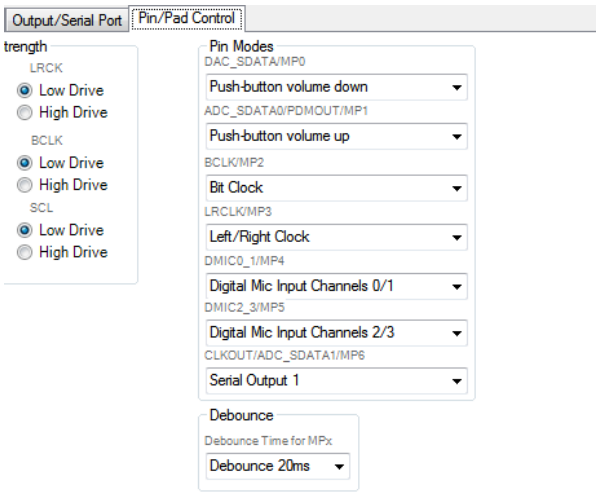


Figure 26. Pin/Pad Control tab

Your schematic is ready to be compiled and downloaded to the evaluation board.

DOWNLOADING THE PROGRAM TO THE DSP

To compile and download the code to the DSP, click **Link-Compile-Download** once in the main toolbar of SigmaStudio (see Figure 27). Alternately, press the **F7** key.

Figure 27. Link-Compile-Download Button

If your project does not compile correctly an error will display (see Figure 28). You must go back and check your work for mistakes.

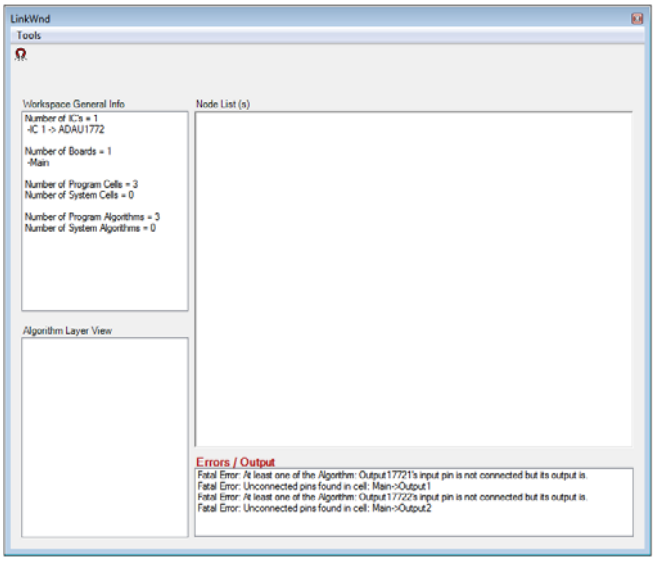


Figure 28. Compile Error

The signal flow should now be running on the evaluation board, and audio should pass from input to output. The volume can be changed in real-time by using the buttons on the board.

USING THE EVALUATION BOARD

POWER

Power can be supplied to the EVAL-ADAU1772Z one of three ways. When jumper J3 is in the USB/EXT position, power can be supplied by connecting the EVAL-ADUSB2EBZ(USBi) board connected to Header J1 (See Figure 29) or by connecting a tip positive 3.8 V dc to 6 V dc power supply on connector J2. To supply power via a 1.5 V battery, jumper J3 must be set to the BATT position and the battery connected to jumper J5. The on-board regulator generates the 3.3 V dc or 1.8 V dc supply, determined by S1, for the on-board circuitry. LED D1 lights up when power is supplied to the board. To connect power to the ADAU1772, connect the J8, J10, J12, and J17 jumpers (see Figure 30).

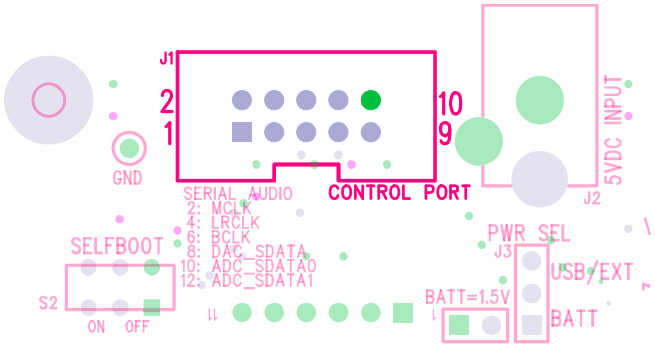


Figure 29. Header J1, Control Port

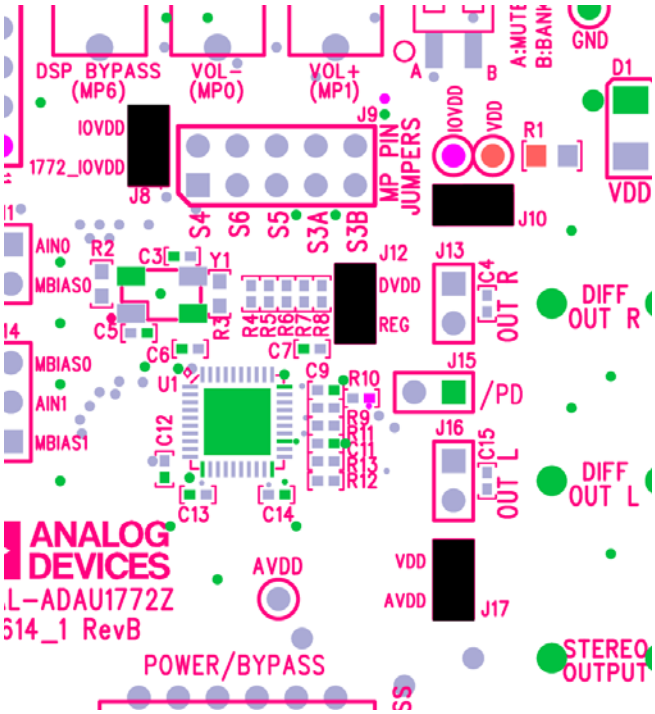


Figure 30. Power Jumpers

INPUTS AND OUTPUTS

The board has multiple audio input and output options, including digital and analog. There are four single-ended analog inputs which are configurable as microphone or line inputs, dual stereo digital microphone inputs, and two differential outputs that can also be used as single-ended.

Analog Microphone Inputs

For microphone signals, the ADAU1772 analog inputs can be configured in single-ended with PGA mode.

Microphone Bias

To add MICBIAS0 to AIN0, connect a jumper to header J11. Similarly, you can add MICBIAS1 or MICBIAS0 to AIN1 by connecting a jumper to headerJ14 (See Figure 31).

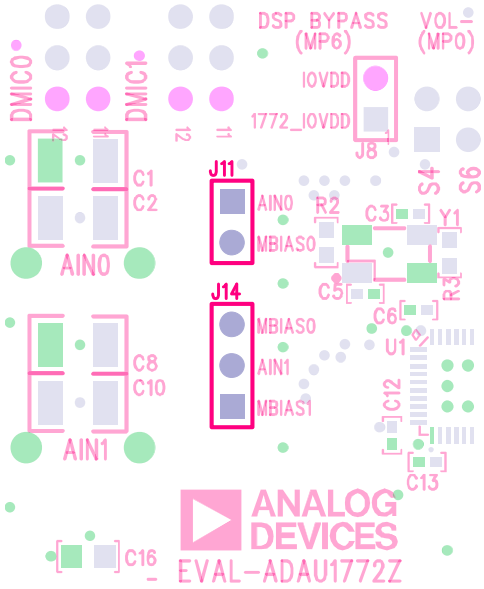
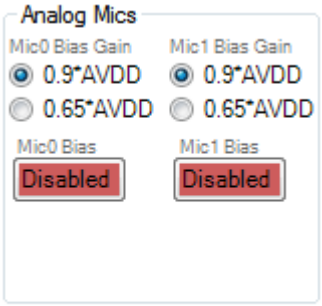


Figure 31. Mic Bias Headers

The Mic Bias circuitry *must be enabled* in the **PGA/ADC** tab of SigmaStudio in order to use. You can also choose the appropriate gain settings here as well (See Figure 32).



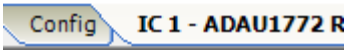


Figure 32. Mic Bias Enable and Gain

Stereo Line Input

The stereo input jack, J22, accepts a standard stereo TRS 1/8-inch mini-plug (tip=left, ring=right) with two channels of audio.

Digital Microphones

PDM digital microphones can be connected to standard 0.100" Headers J6 and J7. For example, the Analog Devices ADMP521 digital microphone on the ADMP521Z evaluation board will plug directly into the header.

To utilize the digital microphone headers on the EVAL-ADAU1772Z board, first make sure that the proper settings have been made in SigmaStudio. Navigate to the **PIN/PAD Control** tab in the **Hardware Configuration/ADAU1772 Register Control** section. Change the value of the **MP6** drop down menu to "Clock Output" (See Figure 33).

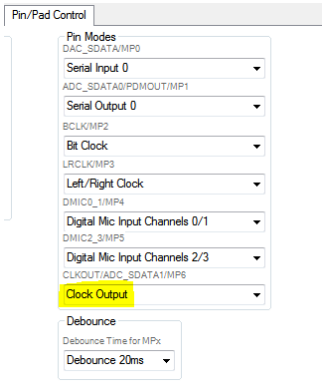


Figure 33. MP6, Clock Output

To set the value of BCLK, go to the **PLL & Clock Control** tab and change the value of the **Output Clock** drop down menu to the desired division on MCLK (See Figure 34).

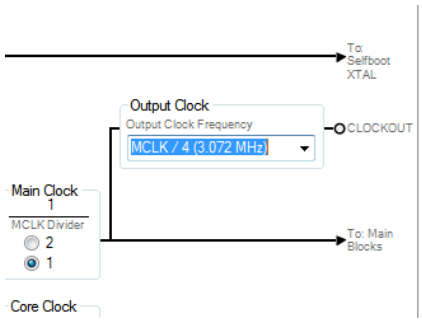


Figure 34. Clock Output Enabled/Divided

Now, set the input of the ADAU1772 to be the digital microphones instead of the ADCs by toggling the appropriate **Decimator Source** settings. Navigate to the **PGA/ADC** tab to find and set the following switches (See Figure 35).

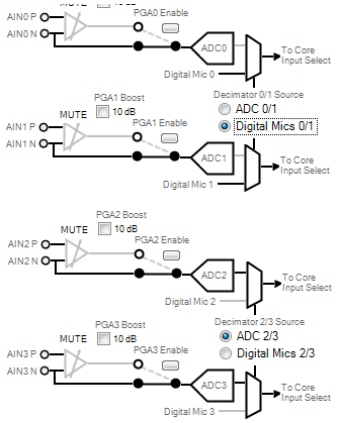


Figure 35. Decimator Source

You are now able to route the digital microphones via the appropriate inputs on the **Audio Input** cell.

Headphone Output

The headphone output, J23, connects to any standard 1/8-inch mini-plug stereo headphones. The output pins can be driven by either a line output driver or a headphone driver by setting the HP_EN_L and HP_EN_R bits in the headphone line output select register (Address 0x0043). Headphones can be driven either single ended or differentially, and there are bits to disable the LN and RN pins if single ended.

Line Outputs

The analog output pins, J19 and J21, can be used to drive differential loads. In their default settings, these pins can drive line loads of 10 Ohms or greater.

To use an external speaker, wires can be soldered to unpopulated header pads J13 and J16 (See Figure 36).

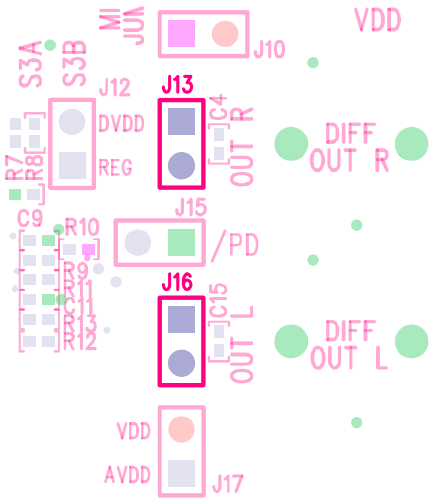


Figure 36. Unpopulated Headers J13 and J16

MP PINS

The MP PIN JUMPERS header J9 provides access to MP pins MP0, MP1, MP2, MP3, and MP6 of the ADAU1772, as well as facilitates the use of the push buttons on the EVAL-ADAU1772Z board. See Figure 46 for the pin-out of the header. These jumpers are used to enable the use of the volume control, mute, and other capabilities of the ADAU1772.

To utilize the full functionality of the MP pins on the ADAU1772 you can change the selections in the drop-down menus under the **Pin/Pad Control** tab in the **Hardware Configuration/ADAU1772 Register Control** section of SigmaStudio (See Figure 37).

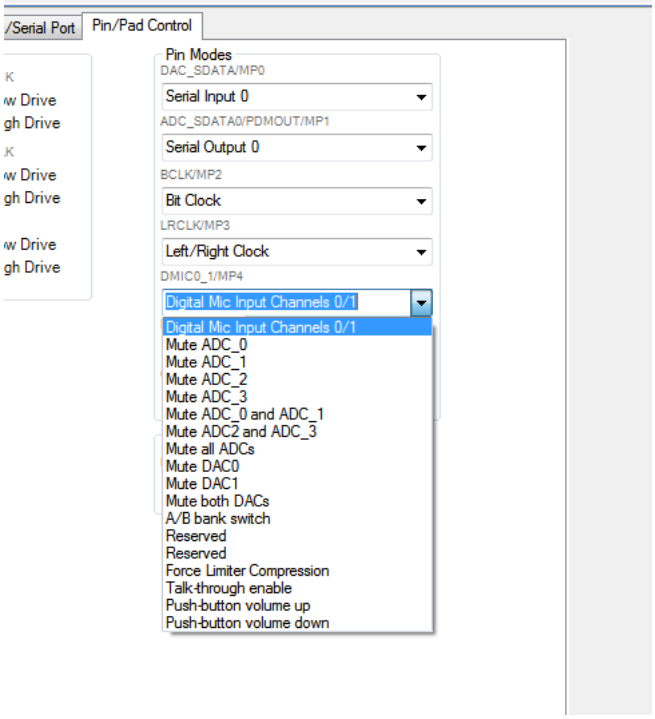


Figure 37. MP PINS Drop Down Menus

MP pins MP4 and MP5 are connected to the Digital Microphone headers J6 and J7.

SERIAL AUDIO INTERFACE

Serial audio signals in I²S, Left Justified, Right Justified, or TDM format can be connected to the Serial Audio Interface Header J4. This header also includes master clock input and output connection pins. In order to use MCLK on the Header J4, you must first install a resistor across the R2 pads. The R2 resistor is not populated from the factory. To use an external MCLK, you will also need to remove resistor R3 from the board to eliminate contention from the XTAL oscillator on the MCLK line. (See Figure 38).

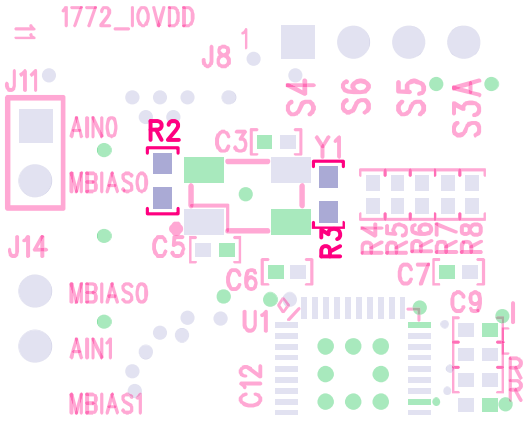


Figure 38.R2 and R3

COMMUNICATIONS HEADER

The Communications Header J1 connects to the EVAL-ADUSB2EBZ. More information about the USBi can be found in the AN-1006 application note.

The IC defaults to I²C mode but can be put into SPI control mode by pulling the $\overline{\text{CLATCH}}$ pin low three times.

SELF-BOOT

To utilize the ADAU1772 self-boot function, go to the hardware configuration tab and add an E2PROM IC to the USBi interface from the Tree Toolbox (see Figure 39).

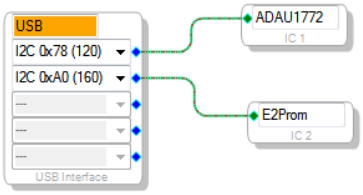


Figure 39. E2PROM

Before writing to the E2PROM, make sure it is already erased by clearing it from SigmaStudio. Right click on the E2PROM and select "Read/Write Window". Then, click the "Clear E2Pro" button to clear the memory(see Figure 40).

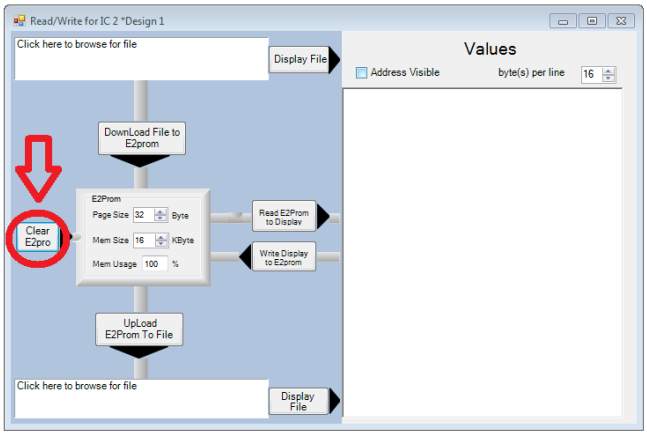


Figure 40. Clear E2PROM

Now, Link-Compile-Download the project (see Figure 27). Right click on the ADAU1772 and select "Write Latest Compilation to E2PROM" (see Figure 41).

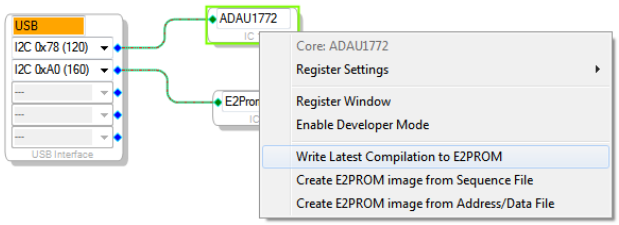


Figure 41. Write to E2PROM

Once the project has been written to the E2PROM, move the self-boot switch, S2, to the "ON" position(see Figure 42). This will make the ADAU1772 boot from the E2PROM when it powers up.

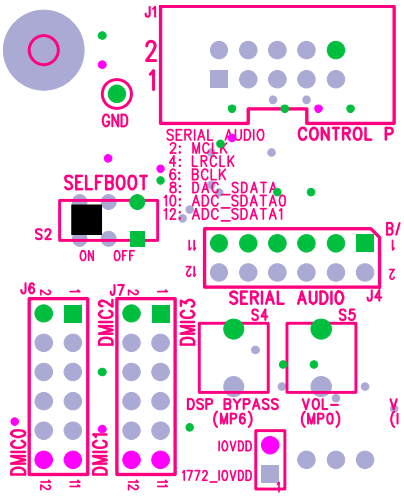


Figure 42. Self-Boot Switch On

POWER-DOWN

The Power-Down Header J15, labeled **/PD** on the silkscreen of the board, provides access to the power-down pin on the ADAU1772. Put a jumper on the header to power down all analog and digital circuits. Before enabling **/PD** be sure to mute the outputs to avoid any pops or clicks when the IC is powered down.

HARDWARE DESCRIPTION

JUMPERS

Table 1. Connector and Jack description

Reference	Functional Name	Description
J1	Control Port	Facilitates communication between the evaluation board and USBi board
J2	5 V DC Input	Provides external power to the board. Accepts 3.8 V DC to 6 V DC input.
J3	Power Select	Jumper used to select power source for the evaluation board. Selectable between USB/External
J4	Serial Audio	Accepts serial audio signals in I^2S, Left Justified, Right Justified, or TDM format.
J5	Battery 1.5 V	Jumper used to power the board via a 1.5 V battery.
J6, J7	Digital Mic Inputs	Headers that allow digital microphones to be connected to the evaluation board.
J8	IOVDD 1772_IOVDD	Jumper supplies power to the IOVDD supply of the ADAU1772 from the power supply section
J9	MP Pin Jumpers	Jumpers used to connect pushbuttons on the board to MP Pins on the ADAU1772.
J10	IOVDD VDD	Jumper connects IOVDD on the ADAU1772 to VDD (3.3 V board supply) on the evaluation board.
J11, J14	Microphone Bias	Jumpers used to add a mic bias to the analog mic inputs AIN0 and AIN1.
J12	DVDD REG	Jumper connects DVDD on the ADAU1772 to its internal regulator.
J13	Out R	Jumper provides access to the Mono Differential Output Right.
J16	Out L	Jumper provides access to the Mono Differential Output Left.
J15	Power Down	Jumper used to power down the ADAU1772 analog and digital circuits
J17	VDD ADD	Connects AVDD on the ADAU1772 to VDD (3.3 V board supply) on the evaluation board.

INTEGRATED CIRCUITS (IC)

Table 2. IC Descriptions

Reference	Functional Name	Description
U1	ADAU1772 SigmaDSP	Digital Audio Signal Processor
U2	Microchip M24C32-F Serial EEPROM	Self-boot memory
U3	ADP1713AUJZ LDO Regulator	Linear regulator that generates 1.5 V from an off-board power supply.
U4	ADP1607 Boost Regulator	Boost regulator that generates 1.8 V or 3.3 V for the board supply from a 1.5 V input.

LED

Table 3. LED Descriptions

Reference	Functional Name	Description
D1	VDD power LED	Illuminates when the evaluation board is powered up.

EVALUATION BOARD SCHEMATICS AND ARTWORK

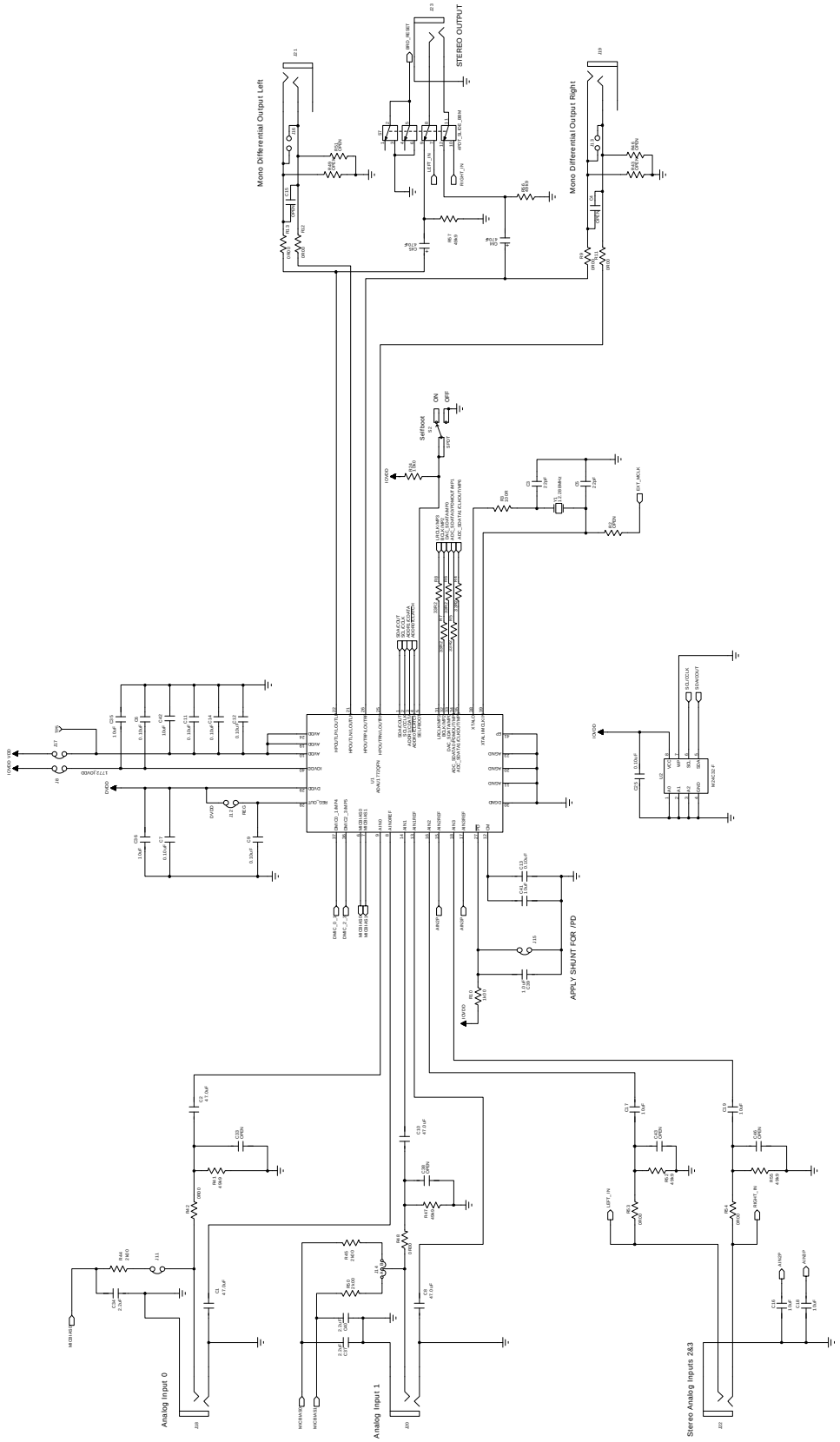


Figure 43. Evaluation Board Schematic—Digital and Analog I/O, Master Clock Generation

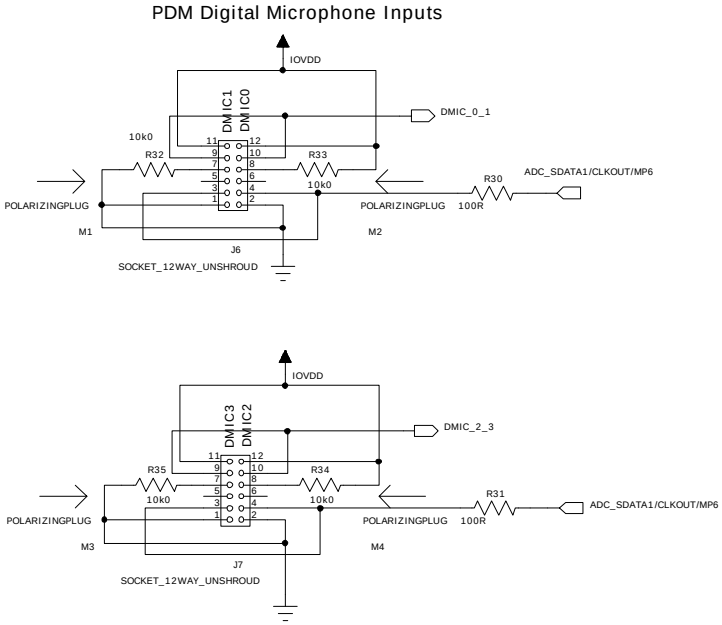


Figure 44. Evaluation Board Schematic—PDM Digital Microphone Interface

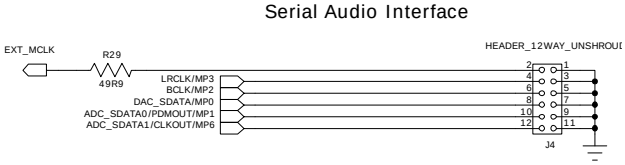


Figure 45. Evaluation Board Schematic—Serial Audio Interface

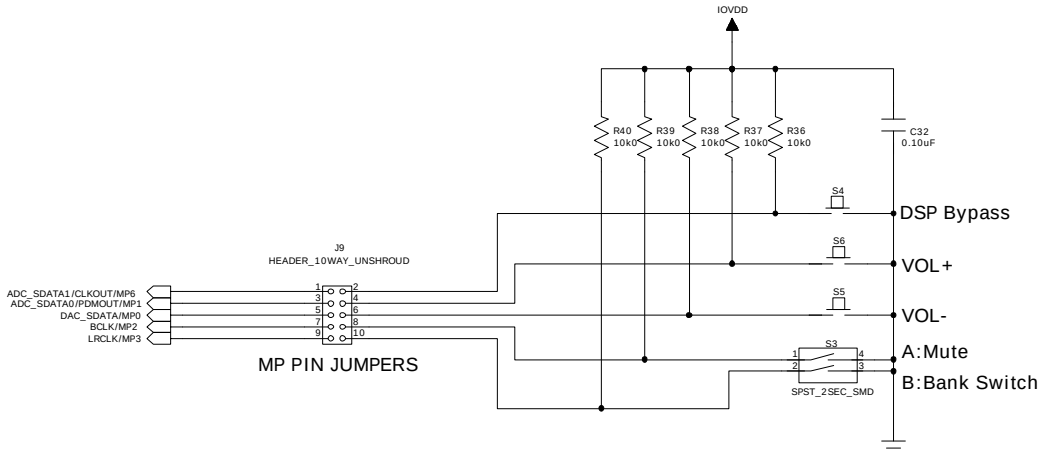


Figure 46. Evaluation Board Schematic—MP Pin Jumpers

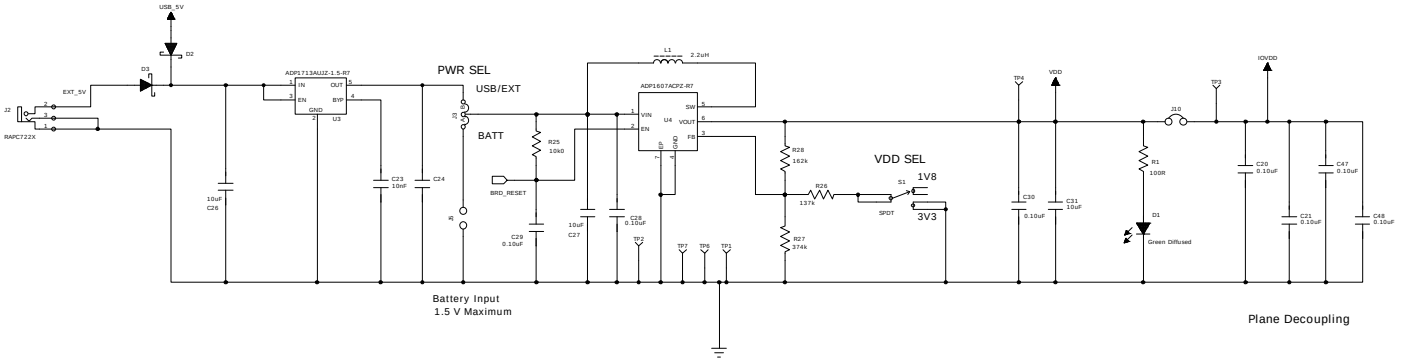


Figure 47. Evaluation Board Schematic—Power Supply

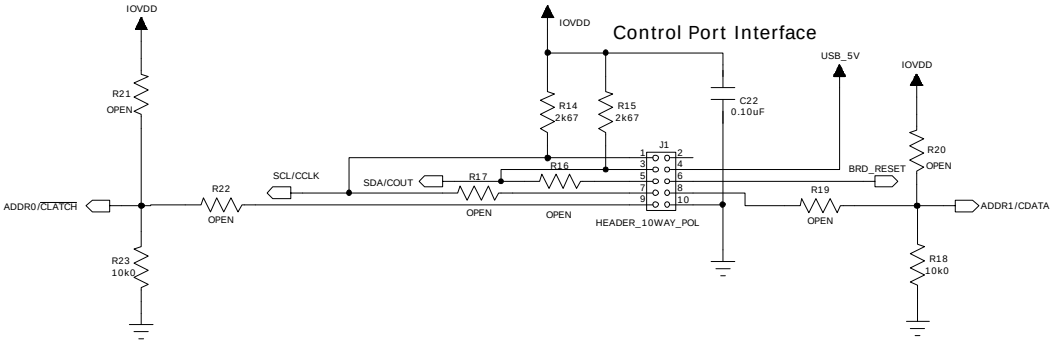


Figure 48. Evaluation Board Schematic—Control Port Interface

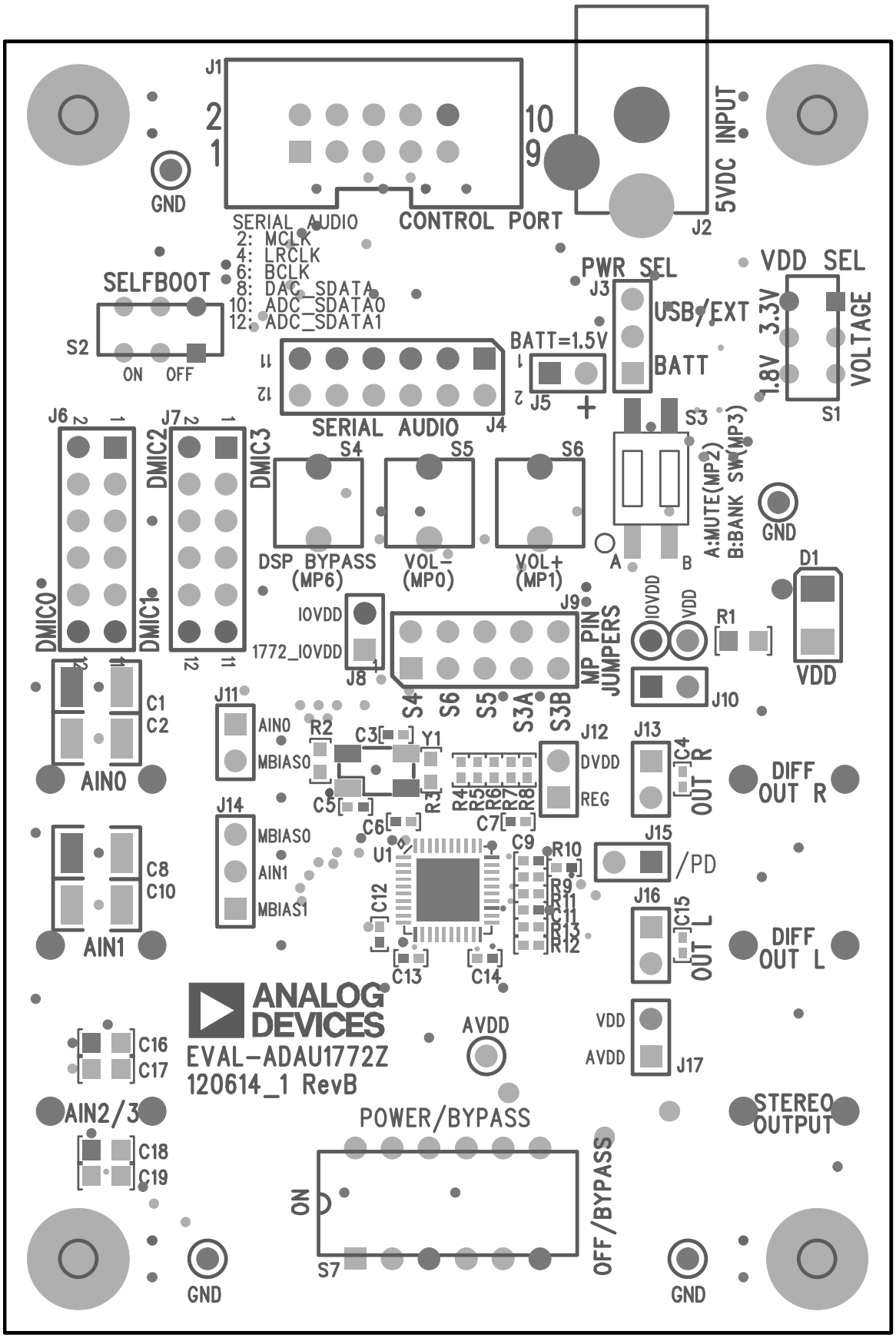


Figure 49. Evaluation Board Layout—Top Assembly

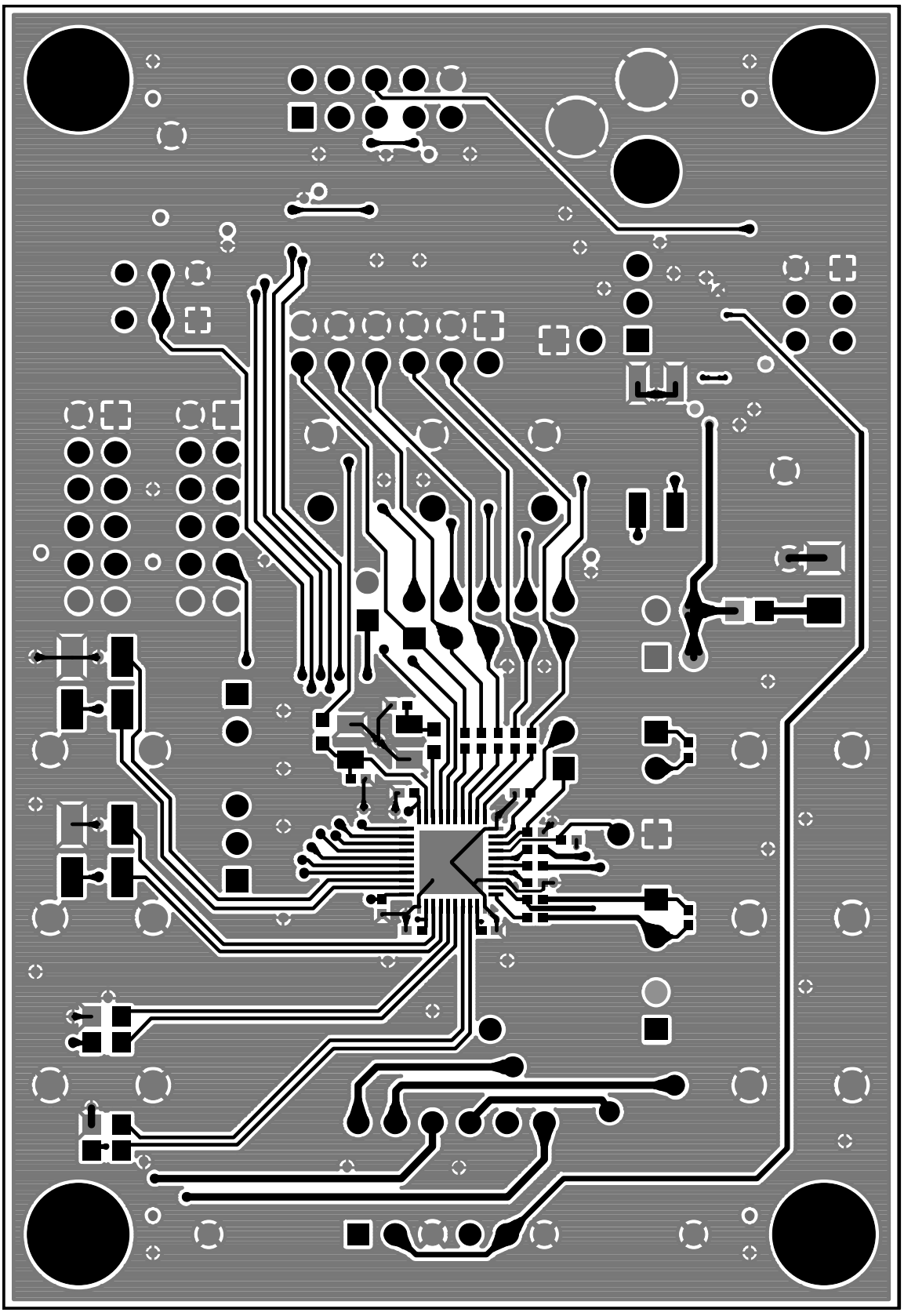


Figure 50. Evaluation Board Layout—Top Copper

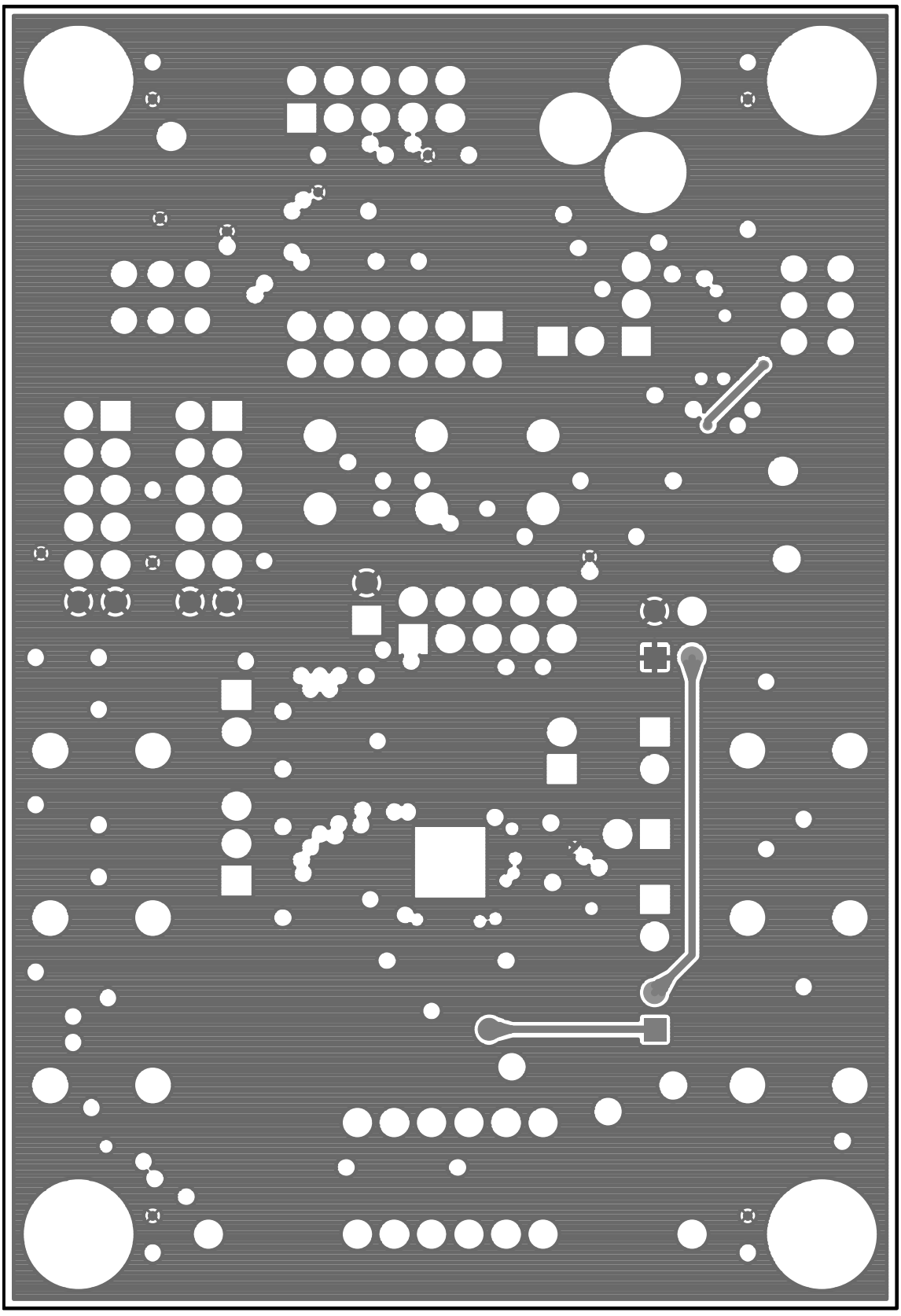


Figure 51. Evaluation Board Layout—Power Plane

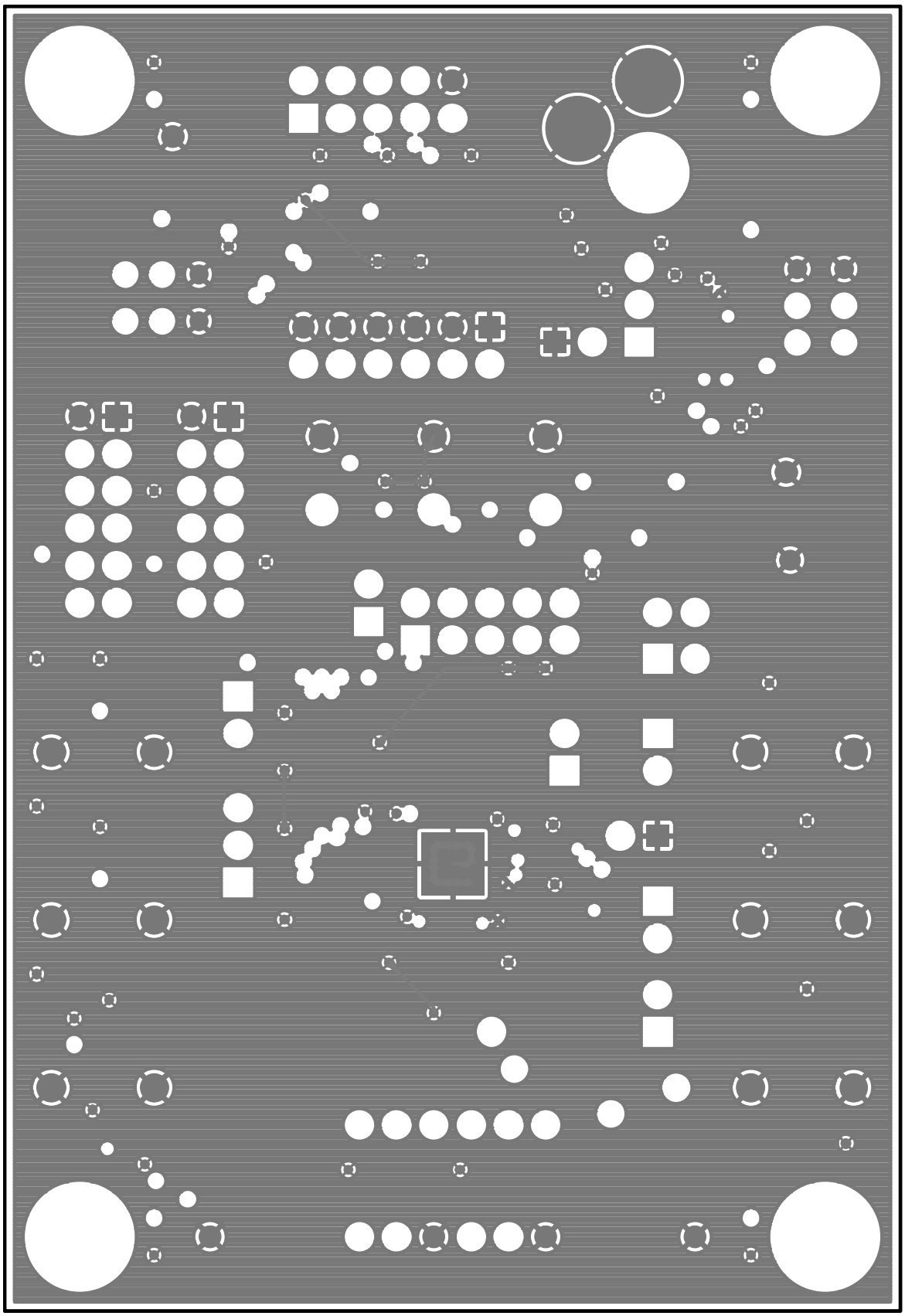


Figure 52. Evaluation Board Layout—Ground Plane

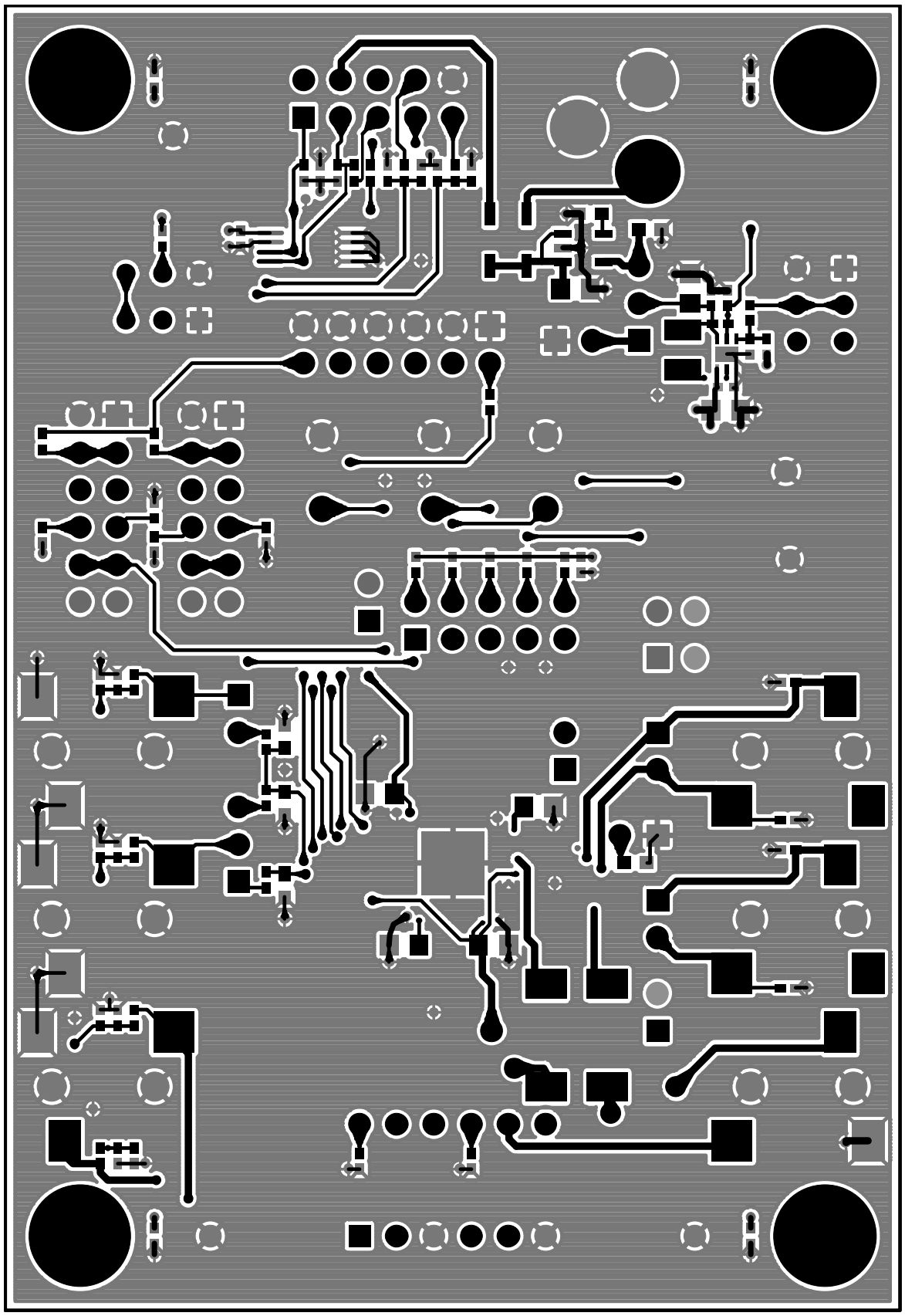


Figure 53. Evaluation Board Layout—Bottom Copper

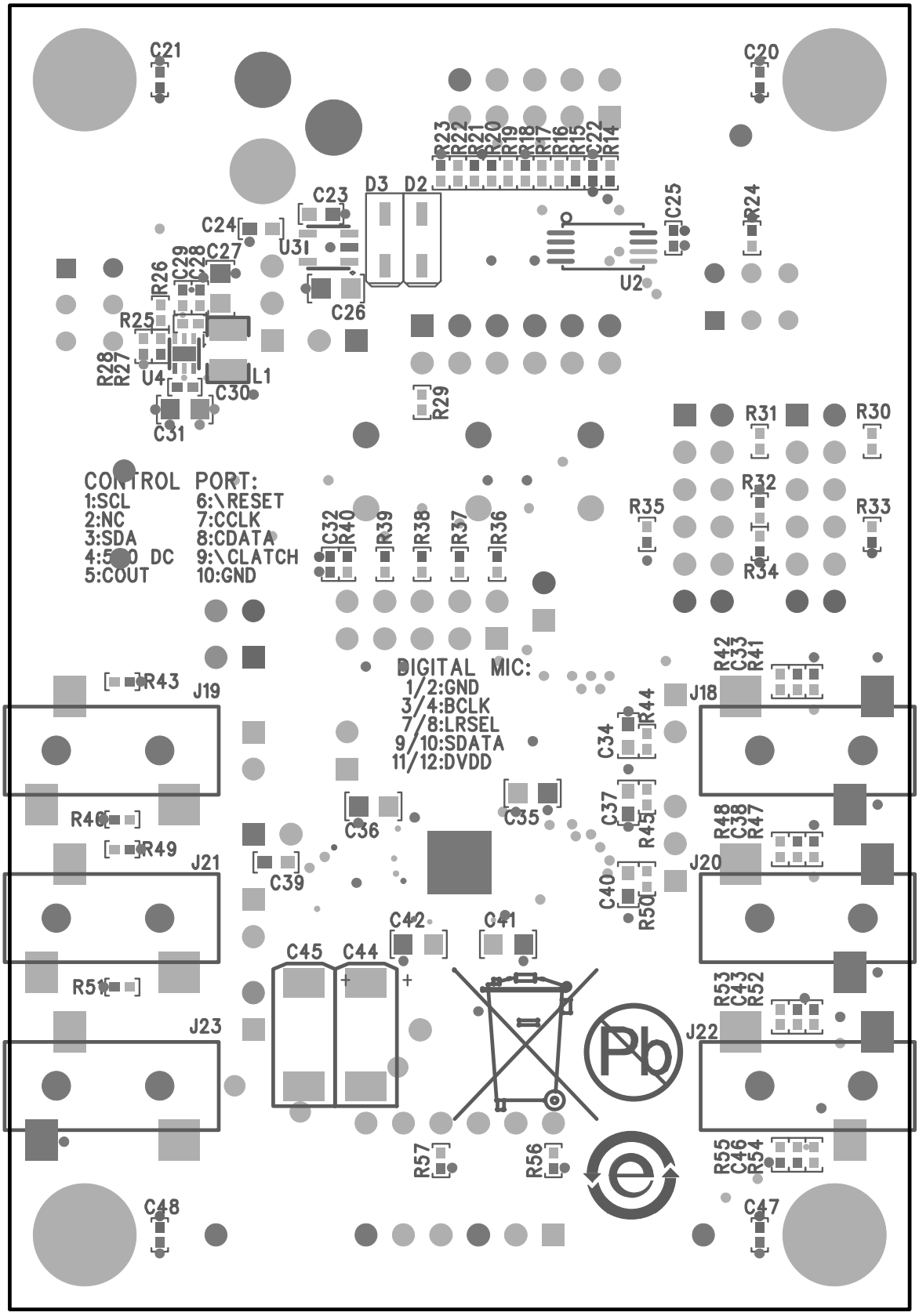


Figure 54. Evaluation Board Layout—Bottom Assembly

ORDERING INFORMATION

BILL OF MATERIALS

Table 4.

Qty.	Designator	Value	Description	Part Number	Manufacturer
17	C6-7 C9 C11-14 C20-22 C25 C28-30 C32 C47-48	0.10uF	Multilayer Ceramic 16V X7R (0402)	ECJ-0EX1C104K	Panasonic EC
8	R9 R11-13 R42 R48 R53-54	0R00	Chip Resistor 5% 63mW Thick Film 0402	ERJ-2GE0R00X	Panasonic EC
1	C24	1.0uF	Multilayer Ceramic 16V X7R (0603)	GRM188R71C105KA12D	Murata ENA
1	C39	1.0uF	Multilayer Ceramic 16V X7R (0603)	EMK107BJ105KA-TR	Taiyo Yuden
2	R30-31	100R	Chip Resistor 1% 63mW Thick Film 0402	MCR01MZPF1000	Rohm
1	R3	100R	Chip Resistor 1% 100mW Thick Film 0603	ERJ-3EKF1000V	Panasonic EC
1	R1	100R	Chip Resistor 1% 125mW Thick Film 0805	ERJ-6ENF1000V	Panasonic EC
13	R18 R23-25 R32-40	10k0	Chip Resistor 1% 63mW Thick Film 0402	MCR01MZPF1002	Rohm
1	C23	10nF	Multilayer Ceramic 25V NP0 (0603)	C1608C0G1E103J	TDK Corp
11	C16-19 C26-27 C31 C35-36 C41-42	10uF	Multilayer Ceramic 10V X7R (0805)	GRM21BR71A106KE51L	Murata ENA
1	R26	137k	Chip Resistor 1% 63mW Thick Film 0402	ERJ-2RKF1373X	Panasonic ECG
1	R28	162k	Chip Resistor 1% 63mW Thick Film 0402	ERJ-2RKF1623X	Panasonic ECG
1	R10	1k00	Chip Resistor 1% 63mW Thick Film 0402	ERJ-2RKF1001X	Panasonic EC
3	C34 C37 C40	2.2uF	Multilayer Ceramic 10V X7R (0603)	GRM188R71A225KE15D	Murata ENA
1	L1	2.2uH	2.2 uH Inductor	LQH32PN2R2NN0L	Murata Electronics
2	C3 C5	22pF	Multilayer Ceramic 50V NP0 (0402)	GRM1555C1H220JZ01D	Murata ENC
3	R44-45 R50	2k00	Chip Resistor 1% 63mW Thick Film 0402	ERJ-2RKF2001X	Panasonic EC
2	R14-15	2k67	Chip Resistor 1% 63mW Thick Film 0402	CRCW04022K67FKED	Vishay/Dale
5	R4-8	33R2	Chip Resistor 1% 63mW Thick Film 0402	RMCF0402FT33R2	Stackpole
1	R27	374k	Chip Resistor 1% 63mW Thick Film 0402	ERJ-2RKF3743X	Panasonic ECG
2	C44-45	470uF	SMD Tantalum Capacitor SMD D 6.3V	TR3D477M6R3C0200	Vishay/Sprague
4	C1-2 C8 C10	47.0uF	CAP CER 47UF 6.3V X7R 1210	GCM32ER70J476KE19L	Murata
6	R41 R47 R52 R55-57	49k9	Chip Resistor 1% 63mW Thick Film 0402	CRCW040249K9FKED	Vishay/Dale
1	R29	49R9	Chip Resistor 1% 63mW Thick Film 0402	MCR01MZPF49R9	Rohm
1	S7	4PDT Slide	4PDT Slide Switch Vertical Break-Before-Make	ASE4204	Tyco
1	Y1	12.288MHz	CRYSTAL 12.288 MHZ SMT 18PF	ABM3B-12.288MHZ-10-1-U-T	Abracon Corp
1	U1	ADAU1772	4 ADC 2 DAC ANC Codec	ADAU1772	Analog Devices
1	U4	ADP1607ACPZ-R7	Synchronous Boost DC/DC Converter	ADP1607ACPZ-R7	Analog Devices Inc
1	U3	ADP1713AUJZ-	Fixed Low-Dropout Voltage	Inc.	ADP1713AUJZ-1.5-R7

Qty.	Designator	Value	Description	Part Number	Manufacturer
		1.5-R7	Regulator		
1	J1	2x5	10-way Shroud Polarized Header	N2510-6002RB	3M
1	J9	2x5	10-way Unshrouded	PBC05DAAN	or cut PBC36DAAN
1	J4	2x6	12-way Unshrouded	PBC06DAAN	or cut PBC36DAAN
6	J8 J10-12 J15 J17	2-Jumper	2-pin Header Unshrouded Jumper 0.10"; use Shunt Tyco 881545-2	PBC02SAAN; or cut PBC36SAAN	Sullins Electronics Corp
2	J3 J14	3-Jumper	3-pos SIP Header	PBC03SAAN; or cut PBC36SAAN	Sullins
1	D1	Green Diffused	Green Diffused 10millicandela 565nm 1206	SML-LX1206GW-TR	Lumex Opto
1	U2	M24C32-F	32K I2C™ CMOS Serial EEPROM	M24C32-F	ST
2	D2-3	Schottky	Schottky 30V 0.5A SOD123 Diode	MBR0530T1G	On Semiconductor
6	J18-23	SJ-3523-SMT	Sterero Mini Jack	Digi-Key	SJ-3523-SMT
10	R16-17 R19-22 R43 R46 R49 R51	OPEN	Do Not Stuff	OPEN	Do Not Stuff
1	R2	OPEN	Do Not Stuff	OPEN	Do Not Stuff
6	C4 C15 C33 C38 C43 C46	OPEN	Do Not Stuff	Do Not Stuff	Do Not Stuff
1	J2	RAPC722X	Mini Power Jack 0.08" R/A TH	RAPC722X	Switchcraft
2	J6-7	2x6	12-way Socket Unshrouded	PPPC062LFBN-RC	3M
2	S1-2	SPDT	SPDT Slide Switch PC Mount	EG1271	E-Switch
1	S3	2x SPST	2 Section SPST SMD Switch Raised Act	219-2LPST	CTS Corp
3	S4-6		Tact Switch Long Stroke (normally open)	B3M-6009	Omron Electronics
7	TP1-7	5002	Mini Test Point White .1" OD	5002	Keystone Electronics

RELATED LINKS

Resource	Description
ADAU1772	Product Page, 4 ADC, 2 DAC Low-Power Codec with Audio Processor

NOTES

NOTES

I²C refers to a communications protocol originally developed by Philips Semiconductors (now NXP Semiconductors).

ESD Caution

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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