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## EVAL-AD7760/AD7762EDZ

### FEATURES

- Full-featured evaluation board for the AD7760/AD7762 EVAL-CED1Z compatible**
- On-board 4.096 V reference**
- Crystal clock oscillator MCLK source**
- PC software for control and data analysis for use with EVAL-CED1Z**
- Filter Programmability – Load custom filter to AD7760/62**

### EVALUATION BOARD DESCRIPTION

This data sheet describes the evaluation board for the AD7760/AD7762  $\Sigma$ - $\Delta$  ADCs. The AD7760 is a 24-bit ADC that combines wide input bandwidth and high speed with the benefits of  $\Sigma$ - $\Delta$  conversion with a performance of 100 dB SNR at 2.5 MSPS, making it ideal for high-speed data acquisition.

The AD7762 derivative is a parallel version with maximum output data rate of 625 kSPS.

Complete specifications for the AD7760/AD7762 devices are available in the AD7760/AD7762 data sheets available from Analog Devices, Inc., and should be consulted in conjunction with this data sheet when using the evaluation board.

The evaluation software is available to download from the AD7760/AD7762 product pages. This includes both the Labview source code and the FPGA interfacing code, which is written for the FPGA on the acquisition board – CED1Z.

The AD7760 interfacing signals are created by the EVAL-CED1Z board which should be used in conjunction with EVAL-AD7760/2EDZ board to enable data acquisition via the provided software and USB link.

The EVAL-AD7760/2EDZ board itself includes all routing required for evaluating the AD7760/2 device.

The MCLK signal for the main device is generated from a 40 MHz crystal oscillator. The user can also choose if required, to drive the AD7760/AD7762 with an external clock source by inserting the 0  $\Omega$  link to the SMB marked “MCLK”.

The AD7760/AD7762 evaluation board comes with an on-board FPGA device that is used to interface with the EVAL-CED1Z board. The combination of the EVAL-AD7760/2EDZ board and EVAL-CED1Z board allied with the EVAL-AD7760/AD7762EDZ software allows the user to upload samples taken by the AD7760/AD7762 device onto a PC showing the waveform being sampled, as well as allowing the data to be shown in histogram or FFT format. The EVAL-AD7760/AD7762EDZ can also be used on a standalone basis (without EVAL-CED1Z); however, in this case the user must provide the required interface and acquisition requirements.

### CONTENTS OF EVALUATION KIT

- AD7760/AD7762 evaluation board (EVAL-AD7760/AD7762EDZ)
- EVAL-AD7760\_2EDZ evaluation software CD—software and drivers

### EVALUATION BOARD BLOCK DIAGRAM

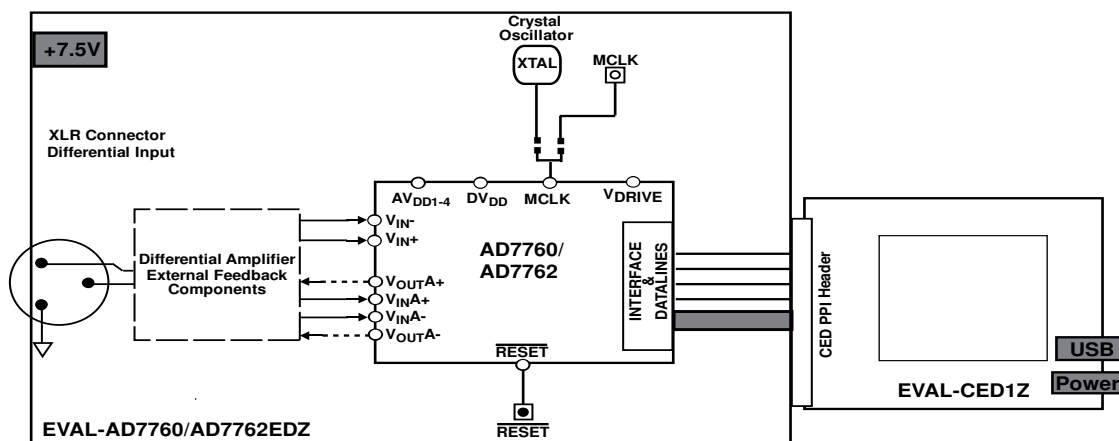


Figure 1.

#### Rev. PrB

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## REVISION HISTORY

08/08—Rev Pr. A –Modified for use with EVAL-CED1Z

03/09 – Rev Pr. B- Modified for Rev G of AD7760\_2 evaluation board.

## **HARDWARE DESCRIPTION**

### **POWER SUPPLIES**

The EVAL-AD776xEDZ must be powered using an external power supply that applies a 7.5 V between the V+ and GND terminals of Connector J2.

This 7.5 V supply is then regulated on board using ADP3334 devices (U9 and U6) to provide the 2.5 V and 5 V signals required by the AD7760/AD7762 device. Supplies AV<sub>DD2</sub>, AV<sub>DD3</sub>, and AV<sub>DD4</sub> are the 5 V supplies to the AD7760/AD7762 device. A voltage of 2.5 V supplies the AD7760/AD7762 pins AVDD1, VDRIVE, and DVDD.

A separately regulated 2.5 V supply is used to power all digital functionality on the EVAL-AD7760/AD7762EDZ excluding the AD7760/AD7762 device. An individually regulated 5 V supply also supplies the crystal oscillator and clock buffer devices on the EVAL-AD7760/AD7762EDZ. Setting LK1 to A means that the MCLK buffer is powered by 5 V, enabling the AD7760/AD7762 device to be operated using an MCLK signal with amplitude of 5 V.

### **DIFFERENTIAL INPUT**

The differential input to the AD7760/AD7762 device is applied through the connector marked J1. This is an XLR audio standard connector. The differential inputs are routed through the AD7760/AD7762 on-board differential amplifier using the external circuit components as detailed in the AD7760/AD7762 data sheets.

### **STANDALONE OPERATION**

The EVAL-AD776xEDZ can be used in a standalone manner (that is, without using the EVAL-CED1Z). In this case, however, the user must provide all the required interface communications and be able to provide a means to acquire the output data from the board.

### **DECOUPLING AND LAYOUT RECOMMENDATIONS**

The data sheets of the AD7760, AD7762, and AD7763 devices contain specific information about the decoupling and layout recommendations required to achieve the optimum specifications.

The EVAL-AD7760/AD7762EDZ adheres to these recommendations completely and is designed as the blueprint for users of the AD7760, AD7762 devices. The Gerber files for the EVAL-AD7760/2EDZ board are available for download from the AD7760 or AD7762 product pages at [www.analog.com](http://www.analog.com)

The EVAL-AD7760/AD7762EDZ is 4-layer boards. One layer is a dedicated ground plane. All supplies to devices on the EVAL-AD7760/AD7762EDZ are decoupled to this ground plane. In addition to the PCB's top and bottom layers, there is also a layer for routing power signals. All layers of the board are detailed in the Evaluation Board Schematic and Artwork section.

In addition, the exposed paddle of an AD7760, AD7762 device is connected by multiple vias to this ground plane. The exposed paddle is not connected to any of the ground pins on the AD7760, AD7762 device.

# EVAL-AD7760/AD7762EDZ

## LINK OPTIONS

The link options on the evaluation board should be set for the required operating setup before using the board. The functions of these links are described in Table 1.

**Table 1. Link Options**

Link No.	Function	Position Descriptions	Default
LK1	Selects the $V_{DD}$ voltage for Clock Buffers U16 and U2.	Position A selects $V_{DD} = 5\text{ V}$ . Achieves maximum performance. Position B selects $V_{DD} = 2.5\text{ V}$	Position A
R9, R10, R13	A $0\ \Omega$ link must be placed in either R9 or R10 to select the MCLK source for the AD7760/AD7762 device. R13 must be in place to link the MCLK signal to the EVAL-CED1Z board to allow for data acquisition using the supplied software.	R9 routes the buffered 40 MHz on-board crystal oscillator to the MCLK pin of the AD7760/AD7762 device. R10 allows the user to input an external MCLK signal through the MCLK SMB connector (J8), which is buffered (by U2) and routed to the MCLK pin of the AD7760/AD7762 device.	R9 and R13.

## SOFTWARE INSTRUCTIONS FOR FIRST-TIME USE

### INSTALLING THE SOFTWARE

The EVAL-AD7760/AD7762 evaluation board includes self-installing software on CD ROM, for controlling and evaluating the performance of the AD7760/AD7762 when it is operated with the EVAL-CED1Z board. The software is compatible with Windows® 2000/XP®. If the setup file does not run automatically, setup.exe can be run from the CD-ROM.

When the CD is inserted into the PC, an installation program automatically begins. This program installs the evaluation software. The user interface on the PC is a dedicated program written especially for the AD7760/AD7762 when operating with the EVAL-CEDZ board.

**The software should be installed before the USB cable is connected between the EVAL-CEDZ and the PC.** This ensures that the appropriate USB driver files have been properly installed before the EVAL-CEDZ is connected to the PC.

When the software is ran for the first time with the EVAL-CEDZ board connected to the PC, the PC will automatically find the new device and will identify it. Follow the onscreen instructions that appear automatically. This installs the drivers for the CED on the PC. If an error appears on screen when the software is first opened, then the PC is not recognizing the USB device. This error is corrected by

1. Opening the PC's Device Manager. The Device Manager is accessed by right clicking on the My Computer Icon, and selecting Properties. When the System Properties Window opens, select the Hardware tab.
2. Click on Device Manager in the Hardware Tab of the System Properties window.
3. Examine the devices listed under the Universal Serial Bus Controller heading.
4. If an unknown device is listed, right click on this option and select, Update Driver.
5. The New Hardware Wizard will run twice, and under the ADI Development Tools the following hardware is listed:

ADI Converter Evaluation and Development Board (WF)

6. Reboot the PC.

This section describes how the evaluation board, the EVAL-CEDZ and the software should be set up to begin using the complete system.

1. Insert the CD into the appropriate computer drive.
2. The dialog box shown in Figure 2 appears.

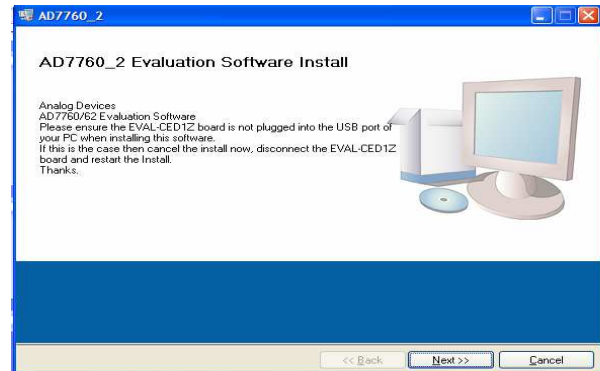


Figure 2. EVAL-AD7760\_2EDZ Setup Dialog Box, Initial Software Install Screen

3. The destination directory can be chosen using the default clicking “Next” as shown in Figure 3). If a different location than the default is preferred, click **Browse** and select the desired location. When ready, click **Next**.

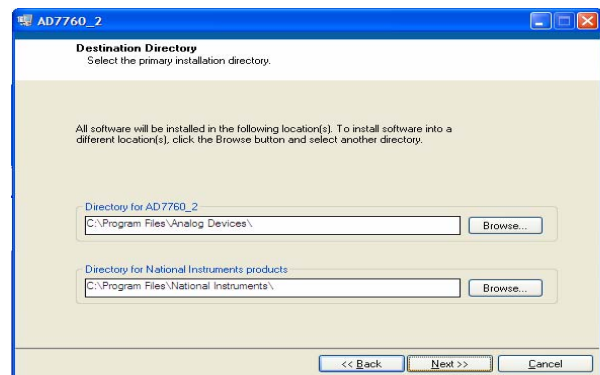


Figure 3. Choose the Destination of the AD776x Software

4. Accept the license agreement by selecting the correct option and clicking “Next” as shown in Figure 4.

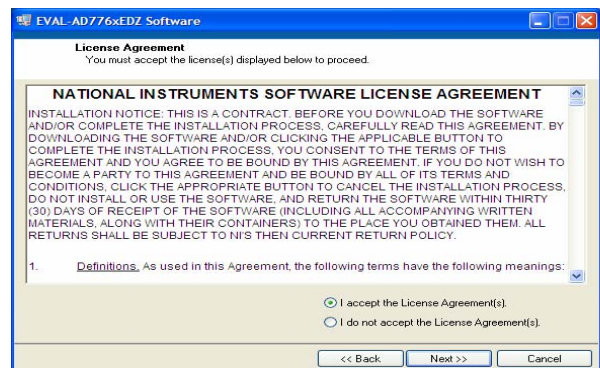


Figure 4. Accept license agreement

# EVAL-AD7760/AD7762EDZ

- To start the installation, click the “Next” button as shown in Figure 5, this window details the actions of the installation.

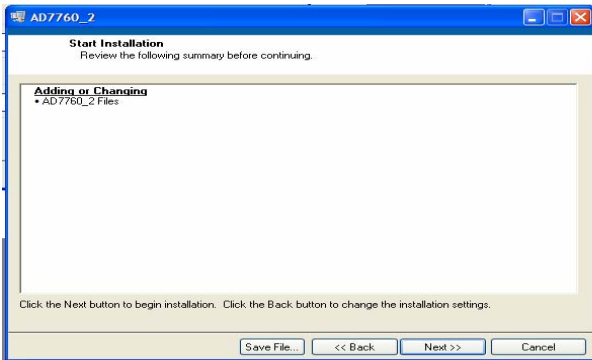


Figure 5. EVAL-AD776xEDZ Install actions

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- The software can now be located by following the path that was chosen during installation. If the default location was chosen, the location of the software in the case of the AD7760 is **Start > All Programs > Analog Devices > AD7760\_2 > AD7760\_2**.

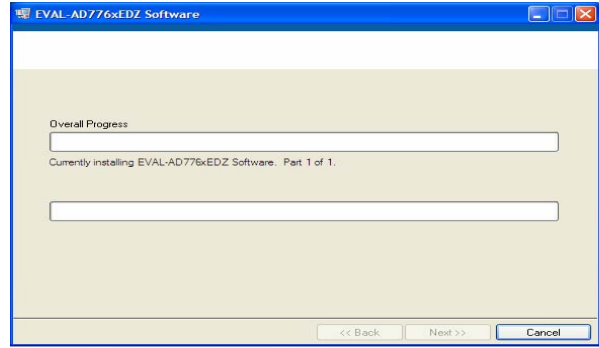


Figure 6. Default Location of AD7760/AD7762 Software

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- On completion of the installation, the window as shown in Figure 7 is displayed.

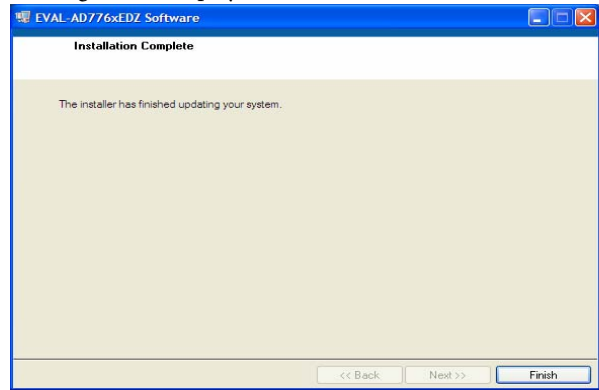


Figure 7. Install Completed

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- On completion of the installation, it is advised that the user re-start the PC in order for the software to take full effect.

## USING THE EVALUATION SYSTEM

### HARDWARE CONNECTIONS

1. Apply power to the EVAL-CED1Z via +7V, 15W power supply provided with the EVAL-CED1Z board. At this stage, the green LED labeled 'Power' on the EVAL-CED1Z should be lighting. This indicates that the EVAL-CED1Z is receiving power. The USB cable can then be connected between the PC and the EVAL-CED1Z.
2. Connect the USB cable between the PC and the EVAL-CED1Z. A green LED positioned beside the USB connector on the EVAL-CEDZ board will light indicating that the USB connection has been established.
3. Power up the EVAL-AD7760/AD7762EDZ evaluation board through Connector J2. Connect a wire from the V+ labeled connector to 7.5 V of an external power supply. Also ensure that there is a GND connection between the GND of J2 and the power supply GND connection.
4. Connect the female connector (J13, marked "CED1Z PPI"), which is on the under side of the EVAL-AD7760/AD7762EB evaluation board to the PPI header of

the EVAL-CED1Z board.

5. Start the EVAL-AD7760/AD7762EDZ software.

The differential input to the AD7760/AD7762 device can be connected to the black connector XLR connector (J1) marked "Differential Input." This differential input is routed to the inputs of the AD7760/AD7762's on-board differential amplifier. As the software will power up the AD7760/2 device it is advisable that users do not apply an analog input until the device is fully powered up.

With the hardware set up, you can now use the software to control the EVAL-CED1Z and the AD7760/AD7762 evaluation board. To launch the software, from the **Analog Devices** menu click on the **AD7760\_2** submenu, then click on the **AD7760\_2 icon**.

Note: In the case where an Error message appears, click OK and restart the application after checking the connection between the adapter board and the USB port on the PC. Also, check that the USB device is identified by the Device Manager as detailed in the first time use of EVAL-CED1Z paragraph of Installing the Software section.



## SOFTWARE INSTRUCTIONS FOR NORMAL USE

Once the initial software installation has been completed, follow these instructions for the general setup of the evaluation software each subsequent time the system is used.

Note that the hardware must be powered up as per the Hardware connections section before attempting the following steps.

1. The download default location for the EVAL-AD7760/AD7762EDZ evaluation software can be found by clicking **Start > All Programs > Analog Devices > AD7760\_2 > AD7760\_2**. If a location other than the default was used, follow the path that was entered during setup.
2. The evaluation software GUI appears –see Figure 10 there are five main control sections as described.
3. To start select the correct AD776x device from the drop down box – selecting AD7760 or AD7762.
4. To Power up the AD7760/2device under evaluation, first click the Power Mode drop down menu, and select either ‘Low Power’ or ‘Normal Power’. This will automatically prompt the EVAL-CED1Z to write to the AD7760/AD7762 registers and power up the AD7760/2 device.

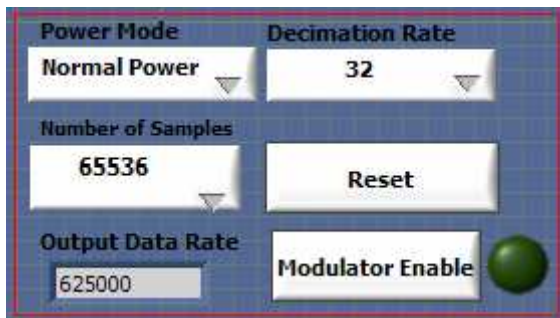


Figure 8. Power, Number of Samples, Decimation Rate and Modulator Mode Control buttons.

5. Note that the external voltage supply connected to the EVAL-AD7760/AD7762EDZ board will show approximately ~240mA in ‘Normal Power’ mode, and approx ~170mA in ‘Low Power mode. Seeing this current draw levels change, when switching between the power modes also verifies that the communications between the EVAL-AD7760/2EDZ and EVAL-CED1Z board are operational.
6. The AD7760 or AD7762 device will power up in a default decimation setting of 32. Change the Decimation Rate setting by clicking on the Decimation rate drop down control as shown in Figure 8. This allows the user to vary the over sampling rate and implement the five (for

AD7760) on-chip decimation options offering from a 78kHz to 2.5MHz output data rate from the AD7760.

7. The user can specify the power mode, decimation rate, and number of samples to be acquired (typically 65536 samples) by using the drop-down menus on the software front panel. The software allows the number of samples specified by the user samples to be viewed as a waveform, histogram, or FFT.

The choosing the different decimation rates from the front panel controls writes to the AD7760/2 control register 2 to change the amount of decimation used in the second internal FIR filter of the AD7760. This filter can be set bypassed to enable decimate x8 mode or otherwise set to decimate x2 to x32 in order to enable an overall decimation rate of 16 to 256 for the AD7760 device.

8. Note that for the AD7762 device only operates in decimation rates: Dec x32, Dec x64, Dec x128, and Dec x 256.
9. To show samples output by the EVAL-AD7760/AD7762/EBZ evaluation board Click **Sample** or **Continuous**. Clicking **Sample** gives one set of samples, the length of which is determined by the **No. Samples** selection on the software front panel. Clicking **Continuous** shows continuously updated samples of the analog input to the device.

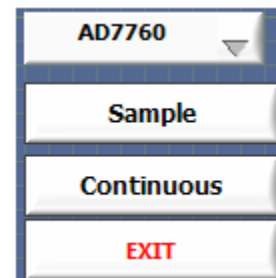


Figure 9.

10. It is important to ensure that the frequency of the  $\overline{\text{DRDY}}$  pulse on an oscilloscope (test point marked DRDY) is checked so that it matches the frequency shown in the **Frequency** text box on the software front panel.
11. If at any stage these do not match, reset the AD7760/AD7762 evaluation board by pressing the  $\overline{\text{RESET}}$  push button on the evaluation board. Then set the decimation rate on the software front panel to the correct default value.

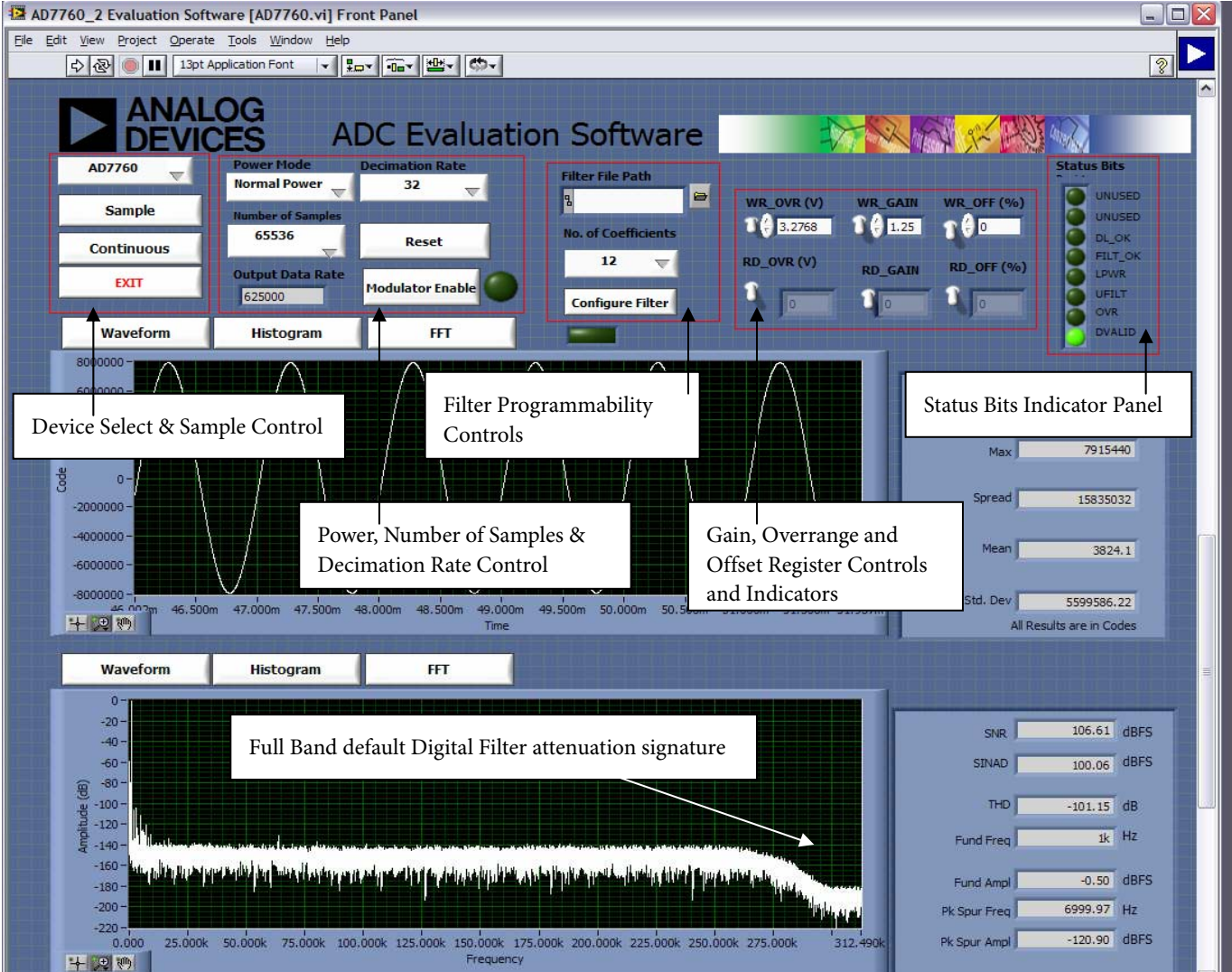


Figure 10. Front Panel GUI showing control and indicator information and the performance with a -0.5dB 1 kHz input tone in decimate by 32 mode when running with the default 40MHz MCLK.

# EVAL-AD7760/AD7762EDZ

## MODULATOR MODE

12. Evaluation of the AD7760 device when using this hardware and software allows the user to use look at the direct raw modulator output from the device –bypassing all the internal FIR filtering.

To enter Modulator mode click the “Modulator Enable” button as shown in Figure 8. When in Modulator Mode the green indicator light beside the control button will be asserted.

Running in modulator mode allows the user to see the noise shaping provided by the AD7760 Sigma-Delta modulator as shown in Figure 11.

13. Click the “Modulator Enable” button to get out of the modulator mode –green indicator light will go off. Reset by clicking the “RESET” button and finally set the decimation rate wanted to running with the internal default FIR filters.

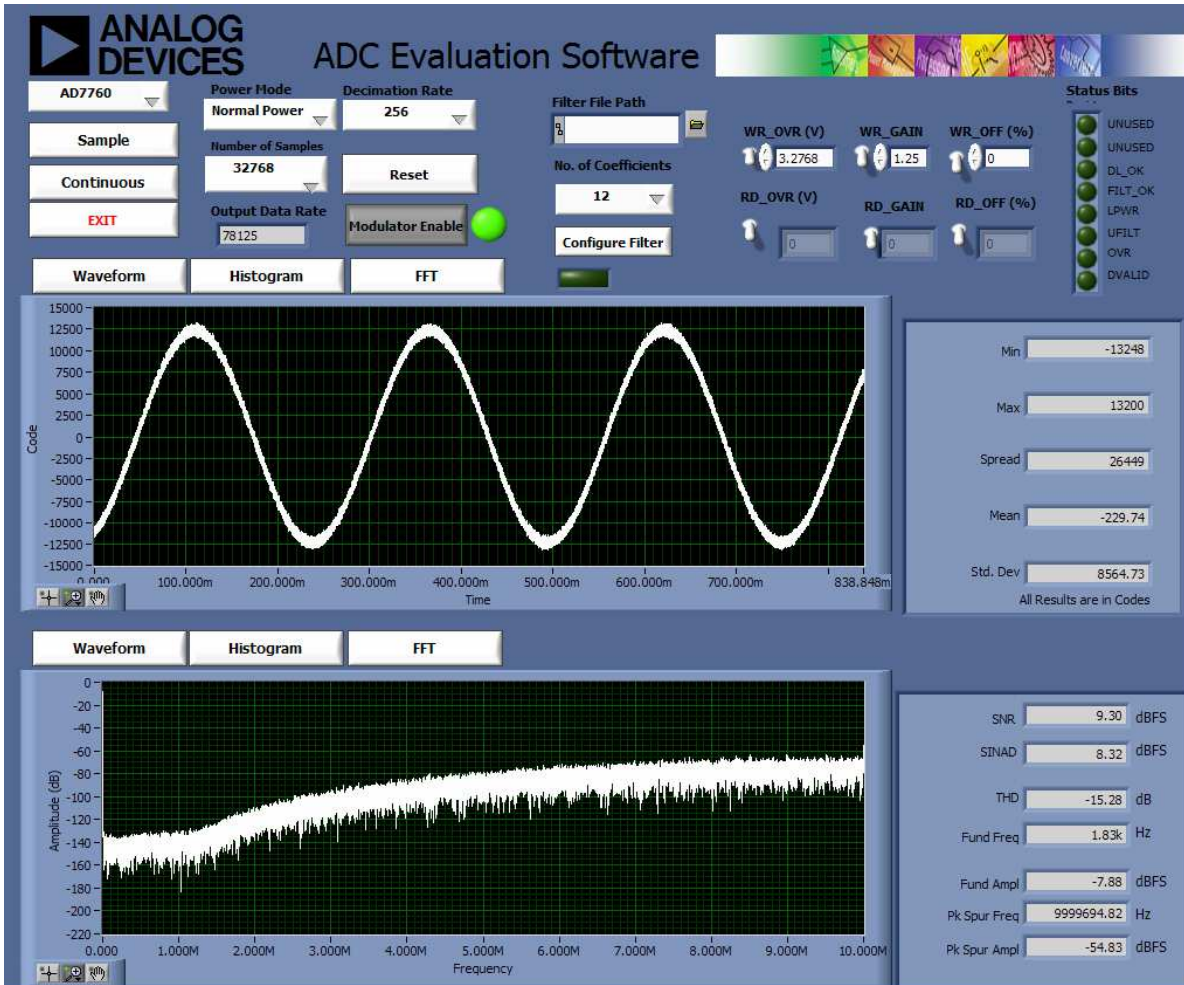


Figure 11. Modulator Mode example of noise shaping provided by the AD7760 Sigma-Delta Modulator. The high frequency content of the modulator output leads to the coarse nature of the waveform shown.

### DOWNLOADING A USER-DEFINED FILTER

The final stage of the AD7760/2 FIR filter can be programmed to suit the user's specific requirements. The filter designed must correspond with the requirements listed in the datasheet – it must be a symmetrical filter with an even number of coefficients. The number of coefficients can be from 12 to 96.

- Due to the symmetry of the filter, the coefficients will repeat. Thus, only half of the coefficients are required to be sent to the AD7760/2 device.
- The AD7760/2 software reads the coefficients from a text file and writes each coefficient to the AD7760/2. The filter file should contain the correct checksum, which is also written to the ADC, and the file must be in the correct format.

- An example of this format is shown in Figure 12. This example corresponds to the example digital filter in the Downloading A User Defined Filter section in the AD7760/2 datasheet.
- Each of the 32 bit words (in this case there are 12 words for the coefficients + the checksum) are in a Hexadecimal format – there must also be no spaces between the characters and no text, spaces or notation before or after any of the hex words to be written. The software implements a text read from each line of the file and then translates this value to the correct binary 32 –bit word to be written to the AD7760/2 as per the description in the datasheet.

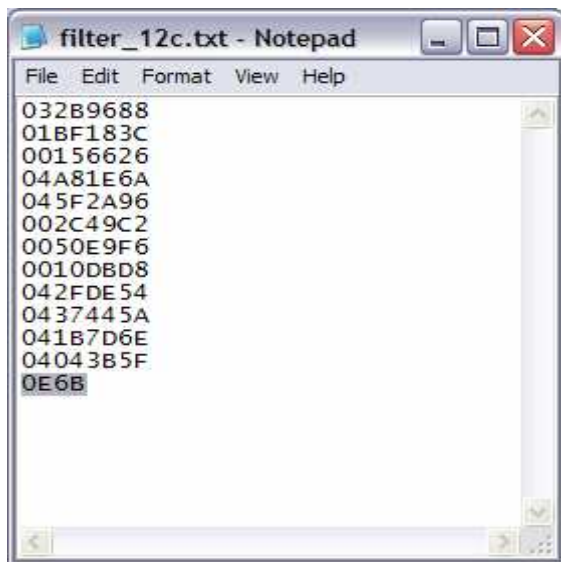


Figure 12. Example of format required for filter coefficients to be downloaded correctly.

- To download a filter,
  - Select the number of coefficients that will be downloaded – this is half the filter length – so if you have a 24 tap filter you select 12 in the drop down selection shown in Figure 13.

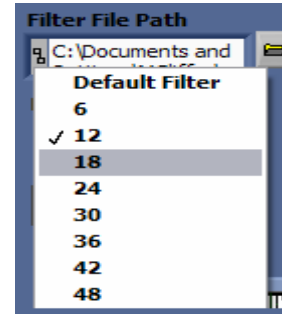


Figure 13. Number of coefficients to be sent to the AD7760/2 device.

- Now click on the folder icon and browse to the location of the filter text file. The install will have placed a copy of the datasheet example at Program files/Analog Device/ AD7760\_2 this file is called “filter\_12c.txt”

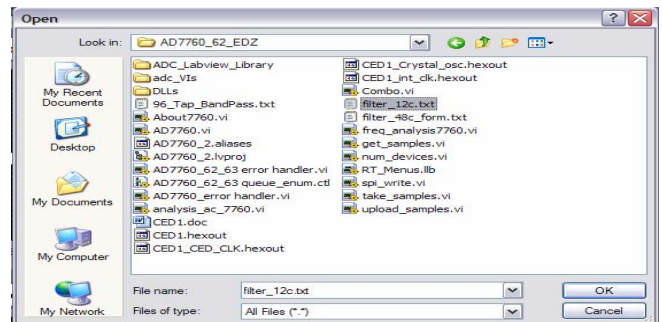


Figure 14. Browse to select the specific text file.

- Finally click the “Configure Filter” button to download the user-defined filter.
- Once this is done then, click the “Sample” button to acquire a batch of samples from the AD7760/2 device.
- The filter example used in the AD7760/2 datasheet will show a slower transition band. The FFT of this filter implementation is shown in Figure 15. As highlighted, the status bits output by the ADC will show if the filter file has been downloaded correctly. The indicators for the DL\_OK, FILT\_OK and UFILT are all asserted to show a successful filter download.

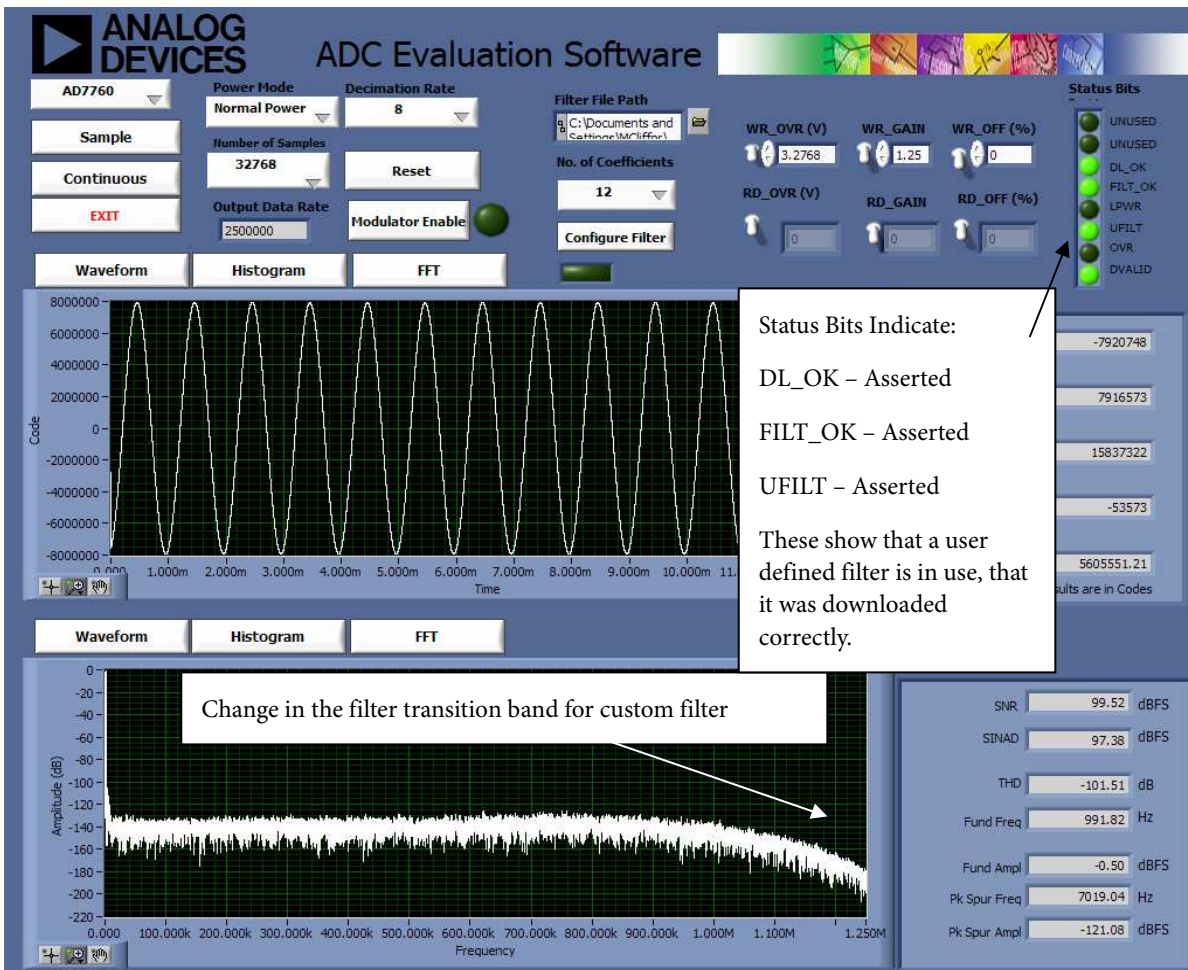


Figure 15. User-defined filter example – implemented on evaluation board. See indicators illuminated, and custom filter transition band.

## WRITING TO GAIN, OFFSET & OVERRANGE REGISTERS

17. The EVAL-AD7760/2EDZ board allows the user to write to the on-board registers for control of gain correction, offset correction, and the setting of the overrange flag.
18. As an example of this, the default value of the gain correction register, 1.25 can be changed to a value of 1.00. Do this by setting the value in the WR\_GAIN text box to 1.00. Click on the white WR\_GAIN switch on the front panel in order to write to the gain register.
19. To check that the value has been written correctly click on the white RD\_GAIN switch on the front panel and the value of the AD7760/2 gain register will be shown in the RD\_GAIN indicator box.

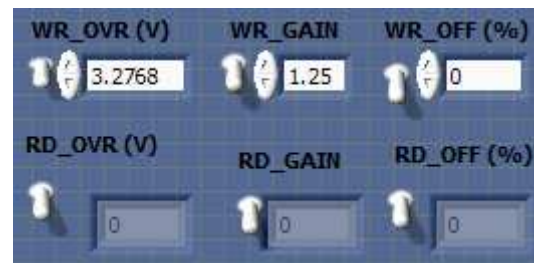


Figure 16. Overrange, Gain, Offset register Write and Read functions.

EVALUATION BOARD SCHEMATIC AND ARTWORK

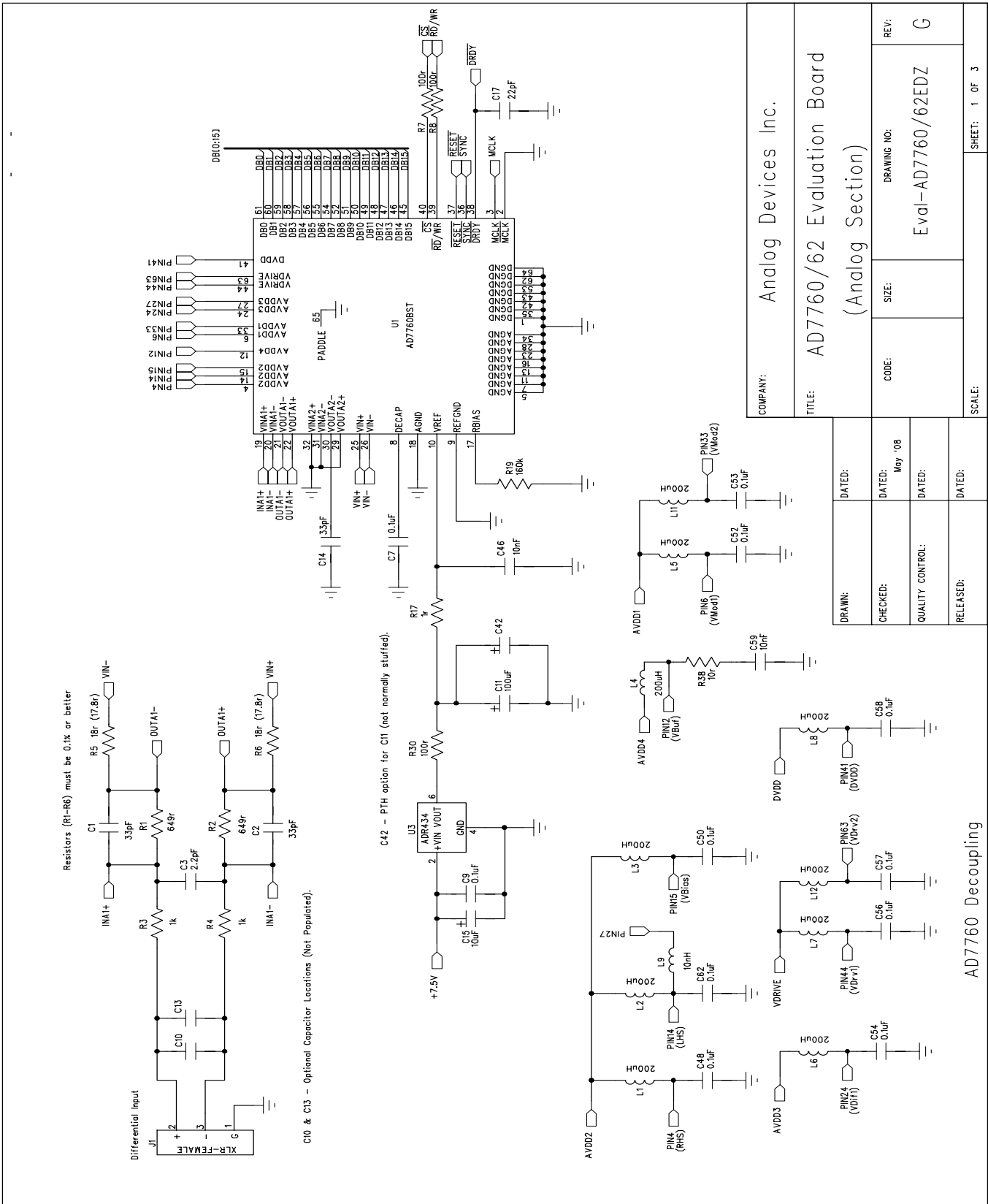


Figure 17. EVAL-AD7760/AD7762EDZ Schematic (Analog Section Rev.G) Page 1 of 4

# EVAL-AD7760/AD7762EDZ

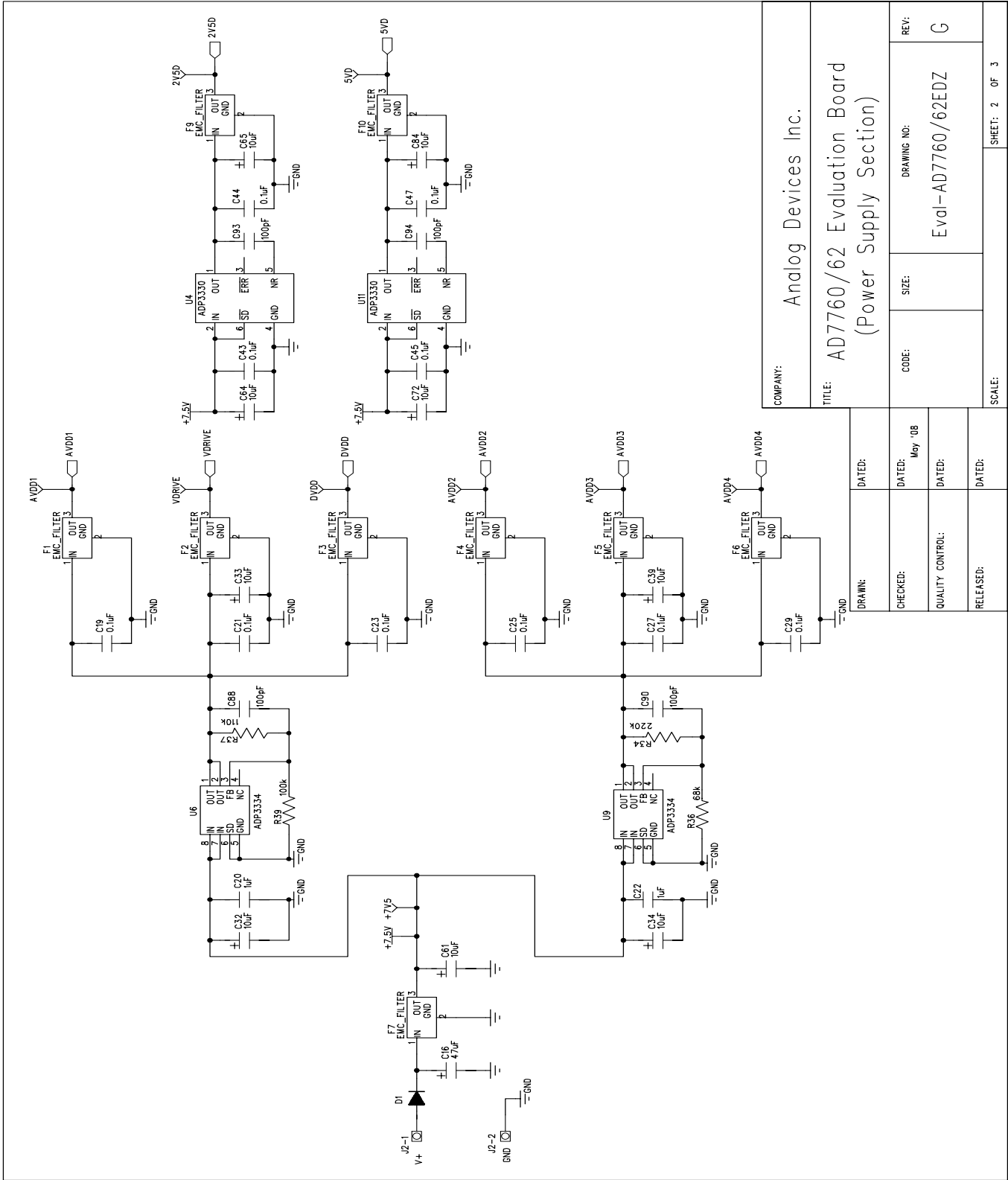


Figure 18. EVAL-AD7760/AD7762EDZ Schematic (Power Supply Section Rev G) Page 2 of 3

COMPANY:		Analog Devices Inc.	
TITLE:		AD7760/62 Evaluation Board (Power Supply Section)	
CODE:	SIZE:	DRAWING NO:	REV:
		Eval-AD7760/62EDZ	G
SCALE:		SHEET: 2 OF 3	

DRAWN:	DATED:
CHECKED:	DATED: May '08
QUALITY CONTROL:	DATED:
RELEASED:	DATED:

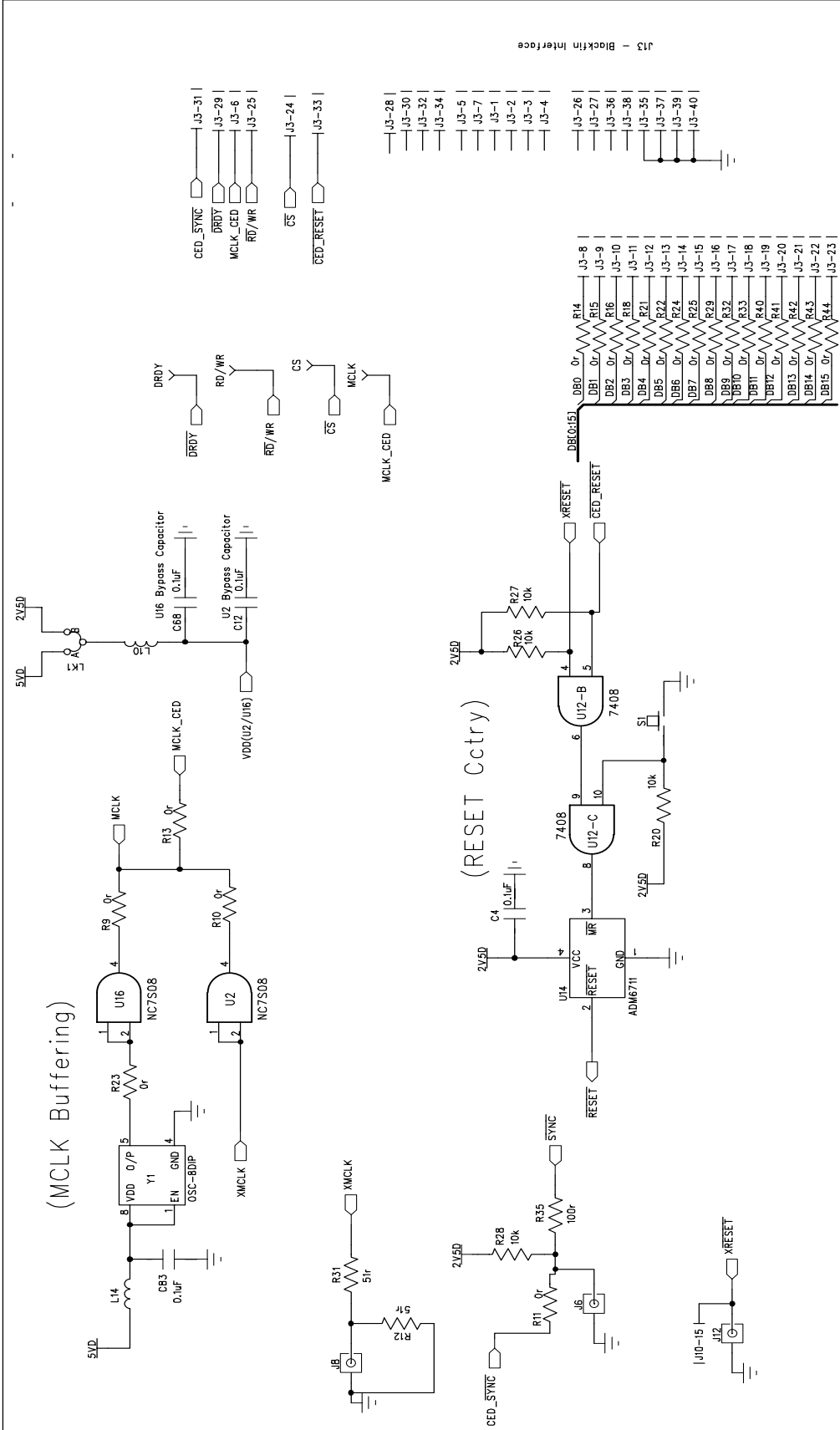
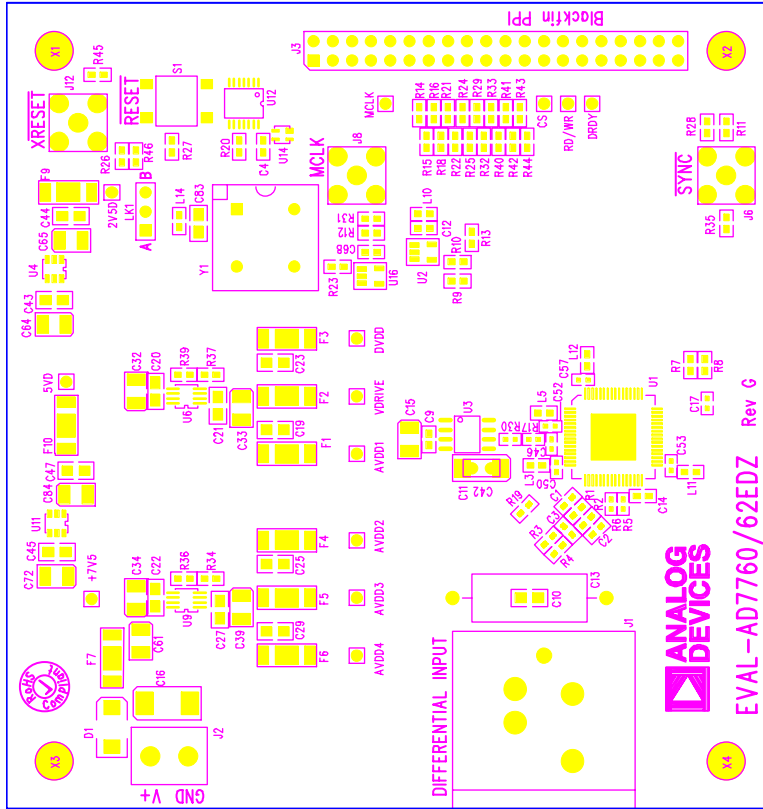


Figure 19. EVAL-AD7760/AD7762EDZ Schematic (Interface Section Rev F) Page 3 of 3

COMPANY: Analog Devices Inc.		DRAWING NO: EVAL-AD7760/62EDZ		REV: G
TITLE: AD7760/AD7762 Evaluation Board (Interface Section)		CODE:	SIZE:	SCALE: 3 OF 3
DRAWN:	DATED:	CHECKED: May '08	QUALITY CONTROL:	RELEASED:

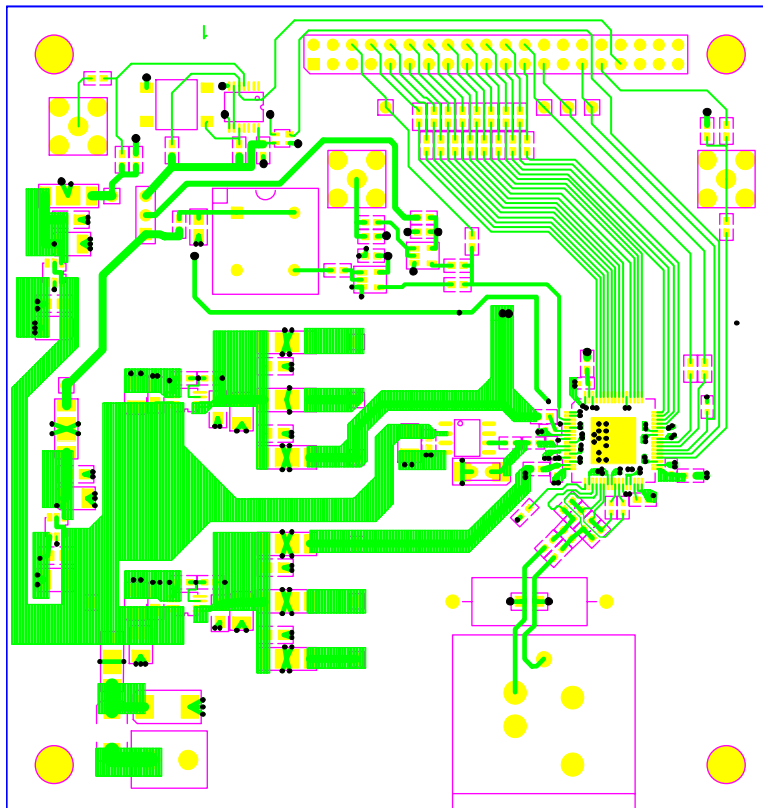


# EVAL-AD7760/AD7762EDZ



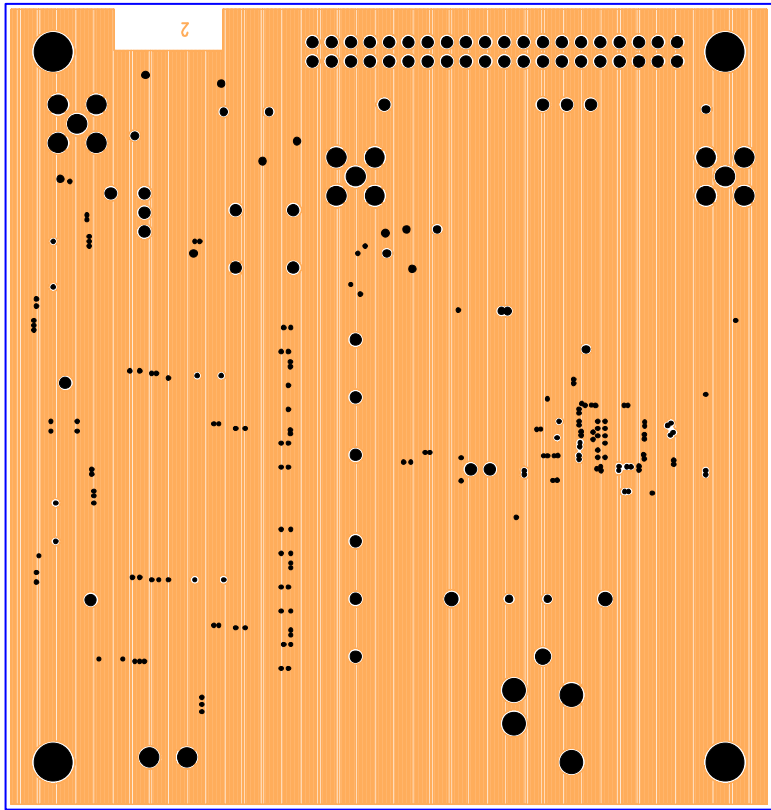
EVAL-AD7760/62EDZ (Rev. G) – Component Side View  
Silkscreen Top

Figure 20. EVAL-AD7760/AD7762EDZ Component Side Top Silkscreen Artwork



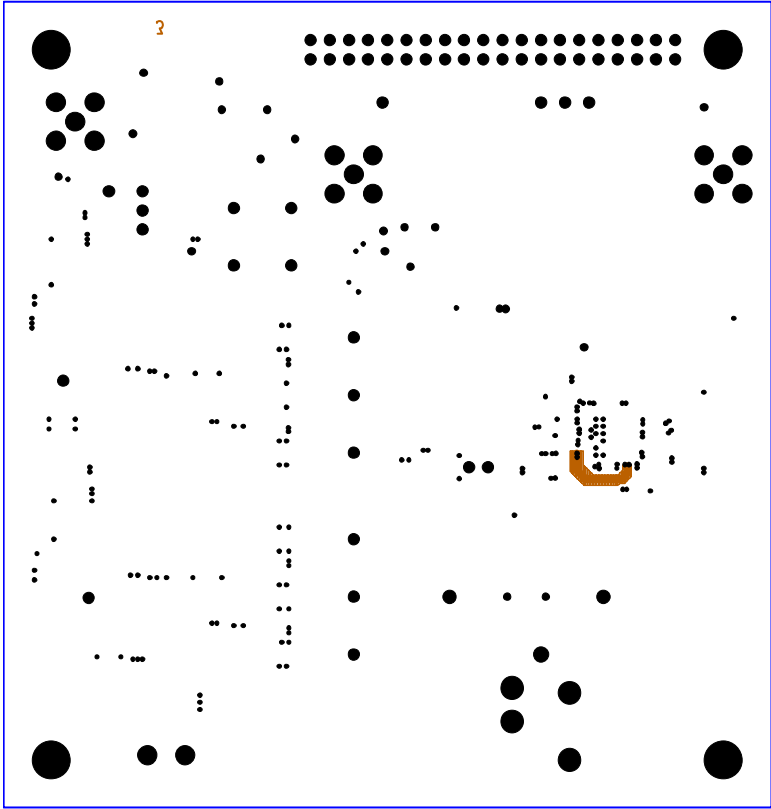
EVAL-AD7760/62EDZ (Rev. G) – Component Side View  
Component Side – Layer 1

Figure 21. EVAL-AD7760/AD7762EDZ Component Side Layer 1 Artwork



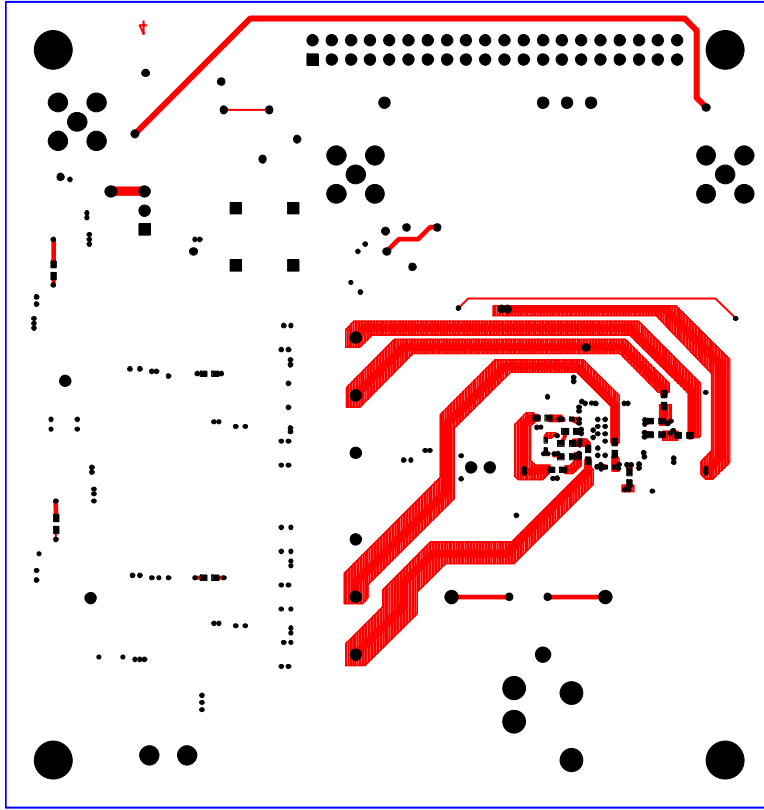
EVAL-AD7760/62EDZ (Rev. C) – Component Side View  
Ground Plane – Layer 2

Figure 22. EVAL-AD7760/AD7762EDZ Ground Plane Layer 2 Artwork



EVAL-AD7760/62EDZ (Rev. C) – Component Side View  
Power – Layer 3

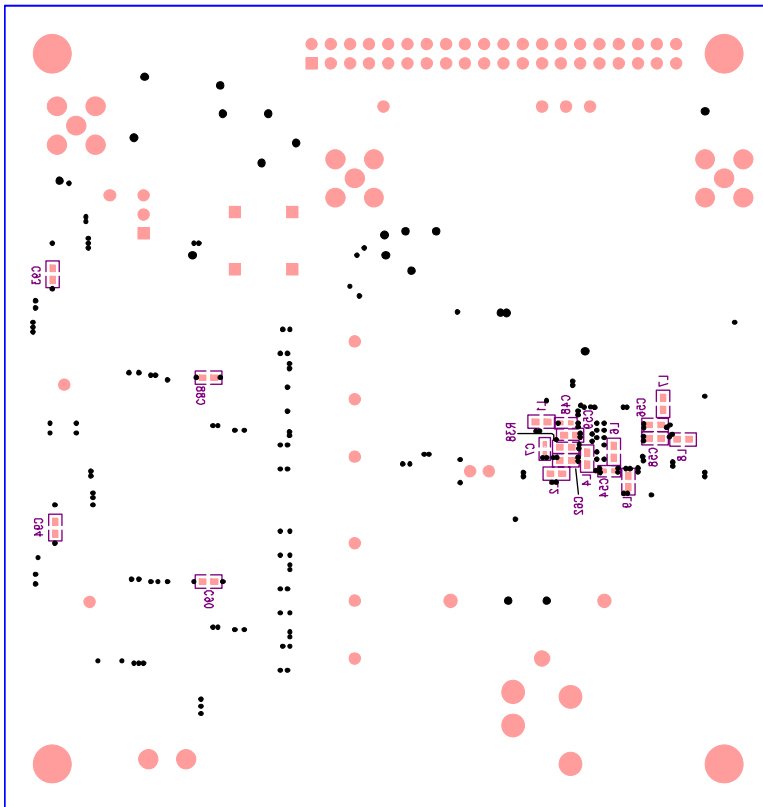
Figure 23. EVAL-AD7760/AD7762EDZ Power Plane Layer 2 Artwork



EVAL-AD7760/AD7762EDZ (Rev. G) - Component Side View

Solder Side - Layer 4

Figure 24. EVAL-AD7760/AD7762EDZ Solder Side Layer 4 Artwork



EVAL-AD7760/AD7762EDZ (Rev. G) - Component Side View

silkscreen Bottom

Figure 25. EVAL-AD7760/AD7762EDZ Component Side Bottom Silkscreen Artwork

## ORDERING INFORMATION

### BILL OF MATERIALS

Table 2.

Name	Value	PCB Decal	PART DESC	STOCK CODE
C1	33pF	0603	50V NPO Multilayer Ceramic Capacitor	FEC 498555
C2	33pF	0603	50V NPO Multilayer Ceramic Capacitor	FEC 498555
C3	2.2pF	0603	50V NPO Multilayer Ceramic Capacitor	FEC 721888
C4	0.1uF	0603	16V X7R Multilayer Ceramic Capacitor	FEC 9406140
C7	0.1uF	0402	16V Y5V Multilayer Ceramic Capacitor	FEC 3019482
C9	0.1uF	0603	16V X7R Multilayer Ceramic Capacitor	FEC 9406140
C10	n/a	0805	Optional Capacitor Footprint (0805)	Do not insert
C11	100uF	CAP\TAJ_C	10v Tantalum Capacitor	FEC 197180
C12	0.1uF	0603	16V X7R Multilayer Ceramic Capacitor	FEC 9406140
C13	n/a	R1W	Optional Capacitor Footprint (0805)	Do not insert
C14	33pF	0603	50V NPO Multilayer Ceramic Capacitor	FEC 498555
C15	10uF	CAP\TAJ_B	20V Tantalum Capacitor	FEC 197427
C16	47uF	CAP\TAJ_D	20V Tantalum Capacitor	FEC 197464
C17	22pF	0402	50V C0G Multilayer Ceramic Capacitor	FEC 8819629
C19	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C20	1uF	0805	16V X7R Multilayer Ceramic Capacitor	FEC 9527710
C21	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C22	1uF	0805	16V X7R Multilayer Ceramic Capacitor	FEC 9527710
C23	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C25	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C27	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C29	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C32	10uF	CAP\TAJ_B	20V Tantalum Capacitor	FEC 197427
C33	10uF	CAP\TAJ_B	20V Tantalum Capacitor	FEC 197427
C34	10uF	CAP\TAJ_B	20V Tantalum Capacitor	FEC 197427
C39	10uF	CAP\TAJ_B	20V Tantalum Capacitor	FEC 197427
C42	n/a	CAP\MR04	PTH Capacitor Location	Do not insert
C43	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C44	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C45	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C46	10nF	0402	16V X7R Multilayer Ceramic Capacitor	FEC 578149
C47	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C48	0.1uF	0402	16V Y5V Multilayer Ceramic Capacitor	FEC 3019482
C50	0.1uF	0402	16V Y5V Multilayer Ceramic Capacitor	FEC 3019482
C52	0.1uF	0402	16V Y5V Multilayer Ceramic Capacitor	FEC 3019482
C53	0.1uF	0402	16V Y5V Multilayer Ceramic Capacitor	FEC 3019482
C54	0.1uF	0402	16V Y5V Multilayer Ceramic Capacitor	FEC 3019482
C56	0.1uF	0603	16V X7R Multilayer Ceramic Capacitor	FEC 9406140
C57	0.1uF	0402	16V Y5V Multilayer Ceramic Capacitor	FEC 3019482
C58	0.1uF	0603	16V X7R Multilayer Ceramic Capacitor	FEC 9406140
C59	10nF	0603	25V X7R Multilayer Ceramic Capacitor	FEC 499146
C61	10uF	CAP\TAJ_B	20V Tantalum Capacitor	FEC 197427
C62	0.1uF	0603	16V X7R Multilayer Ceramic Capacitor	FEC 9406140
C64	10uF	CAP\TAJ_B	20V Tantalum Capacitor	FEC 197427
C65	10uF	CAP\TAJ_B	20V Tantalum Capacitor	FEC 197427

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C68	0.1uF	0603	16V X7R Multilayer Ceramic Capacitor	FEC 9406140
C72	10uF	CAP\TAJ_B	20V Tantalum Capacitor	FEC 197427
C83	0.1uF	0805	50V X7R Multilayer Ceramic Capacitor	FEC 9406387
C84	10uF	CAP\TAJ_B	20V Tantalum Capacitor	FEC 197427
C88	100pF	0603	50V NPO Multilayer Ceramic Capacitor	FEC 9406115
C90	100pF	0603	50V NPO Multilayer Ceramic Capacitor	FEC 9406115
C93	100pF	0603	50V NPO Multilayer Ceramic Capacitor	FEC 9406115
C94	100pF	0603	50V NPO Multilayer Ceramic Capacitor	FEC 9406115
D1		DO-214AA	2A Rectifier Diode	FEC 9843876
F1		EMC_FILTER	1nF 3-Terminal Capacitor	FEC 9528202
F2		EMC_FILTER	1nF 3-Terminal Capacitor	FEC 9528202
F3		EMC_FILTER	1nF 3-Terminal Capacitor	FEC 9528202
F4		EMC_FILTER	1nF 3-Terminal Capacitor	FEC 9528202
F5		EMC_FILTER	1nF 3-Terminal Capacitor	FEC 9528202
F6		EMC_FILTER	1nF 3-Terminal Capacitor	FEC 9528202
F7		EMC_FILTER	1nF 3-Terminal Capacitor	FEC 9528202
F9		EMC_FILTER	1nF 3-Terminal Capacitor	FEC 9528202
F10		EMC_FILTER	1nF 3-Terminal Capacitor	FEC 9528202
J1		XLR-FEMALE	XLR Female Audio Connector	FEC 724518
J2		CON\POWER2	2 Pin Terminal Block (5mm Pitch)	FEC 151789
J3		HEADER40	40-Pin (2x20) PC104 Stackthrough Header	FEC 359907
J6		SMB	50 Ohm SMB Jack	FEC 4194512
J8		SMB	50 Ohm SMB Jack	FEC 4194512
J12		SMB	50 Ohm SMB Jack	FEC 4194512
L1		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L2		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L3		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L4		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L5		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L6		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L7		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L8		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L9	10nH	0603	Inductor	FEC 3877024
L10		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L11		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L12		0603	Ferrite Bead (Wurth Electronik)	74279266LF
L14		0603	Ferrite Bead (Wurth Electronik)	74279266LF
LK1		LINK-3P	3 Pin SIL Header (with shorting block)	FEC 1022248
R1	649R 0.1%	0603	Holsworthy (Tyco)	RN73C1J649RBTG
R2	649R 0.1%	0603	Holsworthy (Tyco)	RN73C1J649RBTG
R3	1k 0.1%	0603	Holsworthy (Tyco)	RN73C1J1K0BTG
R4	1k 0.1%	0603	Holsworthy (Tyco)	RN73C1J1K0BTG
R5	18r (17.8r) 0.1%	0402	Holsworthy (Tyco)	RN73C1J17R8BTG
R6	18r (17.8r) 0.1%	0402	Holsworthy (Tyco)	RN73C1J17R8BTG
R7	100r	0603	SMD Resistor	FEC 9330364
R8	100r	0603	SMD Resistor	FEC 9330364
R9	0r	0603	SMD Resistor	FEC 9331662
R10	0r	0603	SMD Resistor	Do not insert
R11	0r	0603	SMD Resistor	Do not insert
R12	51r	0603	SMD Resistor	FEC 9331336

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R13	0r	0603	SMD Resistor	Do not insert
R14	0r	0603	SMD Resistor	FEC 1357983
R15	0r	0603	SMD Resistor	FEC 1357983
R16	0r	0603	SMD Resistor	FEC 1357983
R17	1r	0402	SMD Resistor	FEC 9238123
R18	0r	0603	SMD Resistor	FEC 1357983
R19	160k	0603	SMD Resistor	FEC 9330682
R20	10k	0603	SMD Resistor	FEC 9330399
R21	0r	0603	SMD Resistor	FEC 1357983
R22	0R	0603	SMD Resistor	FEC 1357983
R23	0R	0603	SMD Resistor	FEC 9331662
R24	0r	0603	SMD Resistor	FEC 1357983
R25	0r	0603	SMD Resistor	FEC 1357983
R26	10k	0603	SMD Resistor	FEC 9330399
R27	10k	0603	SMD Resistor	FEC 9330399
R28	10K	0603	SMD Resistor	FEC 9330399
R29	0r	0603	SMD Resistor	FEC 1357983
R30	100R	0402	SMD Resistor	FEC 9239111
R31	51R	0603	SMD Resistor	FEC 9331336
R32	0r	0603	SMD Resistor	FEC 1357983
R33	0r	0603	SMD Resistor	FEC 1357983
R34	220k	0603	SMD Resistor	FEC 9330836
R35	100R	0603	SMD Resistor	FEC 9330364
R36	68k	0603	SMD Resistor	FEC 9331468
R37	110k	0603	SMD Resistor	FEC 9330461
R38	10R	0603	SMD Resistor	FEC 9330429
R39	100k	0603	SMD Resistor	FEC 9330402
R40	0r	0603	SMD Resistor	FEC 1357983
R41	0r	0603	SMD Resistor	FEC 1357983
R42	0r	0603	SMD Resistor	FEC 1357983
R43	0r	0603	SMD Resistor	FEC 1357983
R44	0r	0603	SMD Resistor	FEC 1357983
R45	100r	0603	SMD Resistor	Do not insert
R46	0r	0603	SMD Resistor	Do not insert
S1		SW_PB_SMD_6MM	SMD Push Button Switch (sealed 6mm x 6mm)	FEC 177-807
U1	AD7760BSV	LQFP64_PADDLE	ADC	AD7760BSVZ AD7762BSVZ
U2	NC7S08	SOT23-5	Single Gate TTL	FEC 1013807
U3	ADR434	SO8NB	Voltage Reference	ADR434ARZ
U4	ADP3330	SOT23-6	Low Dropout Regulator	ADP3330ARTZ-2.5
U6	ADP3334	MSO8	Low Dropout Regulator	ADP3334ARMZ
U9	ADP3334	MSO8	Low Dropout Regulator	ADP3334ARMZ
U11	ADP3330	SOT23-6	Low Dropout Regulator	ADP3330ARTZ-5
U12	7408	TSSOP-14	QUAD 2-INPUT POS-AND GATE	FEC 1102978
U14	ADM6711	SC70-4(LARGE_PIN_2)	Reset Generator	ADM6711ZAKSZ
U16	NC7S08	SOT23-5	Single Gate TTL	FEC 1013807
Y1	40MHz	OSC_DIP8	OSC-8DIP MX045HS40M0000	Digikey CTX175-ND

# EVAL-AD7760/AD7762EDZ

## ORDERING GUIDE

Model	Description
EVAL-AD7760EDZ	Evaluation Kit
EVAL-AD7762EDZ	Evaluation Kit
EVAL-CED1Z	Converter Evaluation and Development (CED) Board

## 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.

## NOTES