

EVAL-AD7858CB
FEATURES

Full-Featured Evaluation Board for the AD7858
EVAL-CONTROL BOARD Compatible
Stand Alone Capability
Compatible with 3.3V and 5V Systems
On-Board Reference and Digital Buffers
Various Linking Options
PC Software for Control and Data Analysis when used
with EVAL-CONTROL BOARD

INTRODUCTION

This Technical Note describes the evaluation board for the AD7858 8-channel, 12-Bit A/D converter. The AD7858 is a high speed, low power ADC that operates from a single +3V to +5V power supply and features throughput rates up to 200KSPS. It features self-calibration and system calibration options and also includes a power down mode. It incorporates an on chip track/hold amplifier and a versatile serial I/O port. This flexible serial interface allows the AD7858 to connect directly to Digital Signal Processors (ADSP-2189M, TMS320C25, etc.) and Microcontrollers (8XC51, 68HC11, etc.). Full data on the AD7858 is available in the AD7858 datasheet which is available from Analog Devices and should be consulted in conjunction with this Technical Note when using the Evaluation Board.

On-board components include an AD780 which is a pin programmable +2.5 V or +3 V ultra high precision bandgap reference, two OP-467 amplifiers, two OP-07's amplifiers, an SSM2141 line receiver and a 74HC04 quad AND gate.

Interfacing to this board is through a 96-way connector. This 96-way connector is compatible with the EVAL-CONTROL BOARD which is also available from Analog Devices. External sockets are provided for the analog input, the clock input, conversion start input, external Vref and external supplies if required.

OPERATING THE AD7858 EVALUATION BOARD
Power Supplies

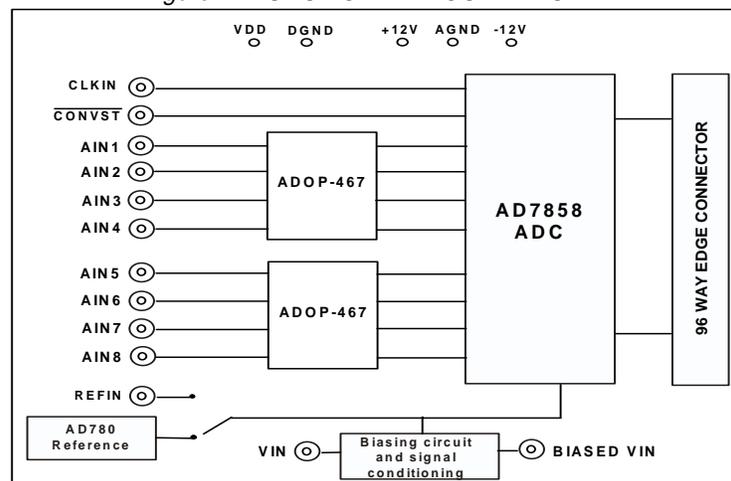
When using this evaluation board with the EVAL-CONTROL BOARD all supplies are provided from the EVAL-CONTROL BOARD through the 96-way connector.

The evaluation board uses extensive ground planes to minimise high frequency noise interference from the on-board clocks or any other sources. The ground plane for the analog section is kept separate from that of the digital section and they are joined only at the AD7858 AGND and DGND pins. Therefore, it is recommended not to connect AGND and DGND elsewhere in the system to avoid ground loop problems.

When using the board as a stand alone unit external supplies must be provided. This evaluation board has five power supply inputs: V_{AA} , +12 V, -12 V, A_{GND} and D_{GND} . The V_{DD} is used to supply both the AV_{DD} and the DV_{DD} of the AD7858 directly, and is also connected to the V_{CC} pin of the 74HC04. The +12V and -12V supply the different op amps, biasing circuit and external reference. The AGND input is connected to the analog ground plane and the DGND input is connected to the digital ground plane.

All analog supply pins are decoupled to AGND with 10 μ F tantalum capacitors in parallel with 0.1 μ F multilayer ceramic capacitors. These pins are the AV_{DD} pin of the AD7858, the +12V and -12V pins of the op amps and SSM2141, and the + V_{IN} pin of the external reference. The digital supply for the AD7858 is decoupled to DGND with a 10 μ F tantalum capacitor in parallel with a 0.1 μ F disc ceramic capacitor at the power supply terminals and at the DV_{DD} pin of the AD7858. The logic chip, 74HC04, is decoupled with a DIL 0.02 μ F capacitor to DGND.

Figure 1. FUNCTIONAL BLOCK DIAGRAM


REV. B

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EVAL-AD7858CB

LINK AND SWITCH OPTIONS

There are a number of link options on the evaluation board which should be set for the required operating setup before using the evaluation board. The functions of these link options are outlined below.

Link No.	Function.
-----------------	------------------

- | | |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LK1-LK8 | <p>These link options are used to select the input source for the eight buffer amplifiers.</p> <p>With these links in position A, the input to the respective buffer amplifier is connected to the associated AINX input socket.</p> <p>With these links in position B, the input to the respective buffer amplifier is connected to AGND.</p> |
| LK9 | <p>This link option is in series with the AIN1 input of the AD7858.</p> <p>With this link in place, the output of the amplifier A1 is connected directly to the AIN1 input.</p> <p>When this link is not in place, the output of A1 is disconnected from AIN1. This is useful in association with LK10 and LK11 in looking at the performance of the AD7858 with input shorted to ground especially in differential mode where AIN1 and AIN2 form a differential pair. LK9 should not be in place if both LK10 and LK11 are in place (LK11 either position A or B).</p> |
| LK10 | <p>This link option connects the AIN1 and AIN2 inputs of the AD7858 together.</p> <p>With this link in place, the AIN1 and AIN2 inputs are connected together. LK10 should not be in place if both LK9 and LK11 are in place (LK11 either position A or B).</p> <p>When generating AIN1 from A1 and AIN2 from A2, this link should not be in place.</p> |
| LK11 | <p>This link option is in series with AIN2 input of the AD7858.</p> <p>With this link in position A, the output of the buffer amplifier A2 is connected directly to the AIN2 input.</p> <p>With this link in position B, the AIN2 input is connected to AGND.</p> <p>LK11 should not be in place if both LK9 and LK10 are in place.</p> |
| LK12 | <p>This link option determines the output voltage from the AD780.</p> <p>With this link in position, the reference voltage output from the AD780 is +3V.</p> <p>With this link unconnected, the reference voltage output from the AD780 is +2.5V.</p> |
| LK13 | <p>This link option selects the reference source for the AD7858 and for the bias circuit.</p> <p>With this link in position, the reference source is the AD780 output voltage.</p> <p>With this link unconnected, the reference source is the internal reference of the AD7858.</p> |
| LK14 | <p>This link option adds a 50Ω termination to AGND at the V_{IN} socket. In most applications this link will be left unconnected.</p> <p>If a 50Ω termination is required this link should be connected. Care must be taken when connecting this link in case the signal source driving the V_{IN} socket cannot drive a 50Ω load.</p> <p>When the signal source driving the V_{IN} socket has a 50Ω output impedance it may be advantageous to connect this link to give the correct termination to AGND.</p> |
| LK15 | <p>This link option is used to select between normal mode operation and sleep mode depending on the status of the PMGT bits of the Control Register.</p> <p>With this link in position A, the $\overline{\text{SLEEP}}$ pin is tied to a logic high and normal operation results.</p> |

With this link in position B, the $\overline{\text{SLEEP}}$ pin is tied to a logic low and the part is put into sleep mode.

- LK16 This link option is in series with the BUSY output to the 96-way connector.
This link has the function of connecting the BUSY output to the 96-way connector.
- LK17 This link option adds a 50 Ω termination to DGND to the $\overline{\text{CONVST}}$ line.
This link option should be unconnected when using the $\overline{\text{CONVST}}$ from the EVAL-CONTROL BOARD.
If a 50 Ω termination is required when using an external $\overline{\text{CONVST}}$ signal this link should be connected.
- LK18 This link option adds a 50 Ω termination to DGND to the CLKIN line.
This link option should be unconnected when using the CLKIN from the EVAL-CONTROL BOARD.
If a 50 Ω termination is required when using an external CLKIN signal this link should be connected.
- LK19 This link option is in series with the SCLK1 input from the 96-way connector. When using the EVAL-CONTROL BOARD this input supplies the clock signal for the CLKIN input of the AD7858.
This link should be connected when using the EVAL-CONTROL BOARD and no external CLKIN signal.
This link should be unconnected when using an external CLKIN signal.
- LK20 This link option is in series with the FL0 input from the 96-way connector. When using the EVAL-CONTROL BOARD this input can be used to supply the conversion start signal for the $\overline{\text{CONVST}}$ input of the AD7858.
This link should be connected when using the EVAL-CONTROL BOARD and no external $\overline{\text{CONVST}}$ signal.
This link should be unconnected when using an external $\overline{\text{CONVST}}$ signal.
- LK21 This link option is used to tie the DIN pin to DGND or to connect it to the 96-way connector.
In position A, the DIN pin is connected to the 96-way connector and writing to the part can take place.
In position B, the DIN pin is tied to DGND and there will be no writing to the part.
When using the EVAL-CONTROL BOARD this link should be in position A.
- LK22 Determines the source for the +12V required by the evaluation board.
With this link in position A, the +12V **must be supplied externally** at the +12V power supply terminal connector.
With this link in position B, the +12V is supplied from the EVAL-CONTROL BOARD.
- LK23 Determines the source for the -12V required by the evaluation board.
With this link in position A, the -12V **must be supplied externally** at the -12V power supply terminal connector.
With this link in position B, the -12V is supplied from the EVAL-CONTROL BOARD.
- LK24 **This link must be unconnected if an external supply is used.** This link option is used to select between an external V_{DD} supply and the V_{DD} supply from the EVAL-CONTROL BOARD. The V_{DD} supplies the AV_{DD} and the DV_{DD} for the AD7858 and the V_{CC} for the 74HC04.
With this link connected, the V_{DD} is supplied from the EVAL-CONTROL BOARD. **If this link is connected an external supply must not be connected to the V_{DD} power supply terminal connector.**
With this link unconnected, the V_{DD} must be supplied externally at the V_{DD} power supply terminal connector.
- SW1 This is a push button switch which is used to manually calibrate the AD7858.

EVAL-AD7858CB

SET-UP CONDITIONS

Care should be taken before applying power and signals to the evaluation board to ensure that all link positions are as per the required operating mode. Table I shows the position in which all the links are set when the evaluation board is sent out. These links settings are consistent when operating with the EVAL-CONTROL BOARD.

Table I. Initial Link positions

Link No.	Position	Function.
LK1	A	Input to amplifier A1 comes from the AIN1 socket.
LK2-8	B	Input to amplifiers A2 through A8 connected to AGND.
LK9	Connected	Output of the amplifier A1 connected to the AIN1 input of the AD7858.
LK10	Unconnected	AIN1 and AIN2 inputs of the AD7858 not connected together.
LK11	A	Connects output A2 to AIN2 of AD7858.
LK12	Unconnected	Output of AD780 is +2.5V.
LK13	Connected	Reference source for the AD7858 and bias circuitry is AD780.
LK14	Unconnected	This ensures there is no 50Ω termination on the VIN line.
LK15	A	$\overline{\text{SLEEP}}$ pin tied to high for normal operation.
LK16	Connected	BUSY pin is connected to the $\overline{\text{IRQ2}}$ pin of the 96-way connector.
LK17	Unconnected	This ensures there is no 50Ω termination on the $\overline{\text{CONVST}}$ line.
LK18	Unconnected	This ensures there is no 50Ω termination on the CLKIN line.
LK19	Connected	CLKIN pin is connected to the SCLK1 pin of the 96-way connector. Sets up the board for the CLKIN being generated from the EVAL-CONTROL BOARD.
LK20	Connected	$\overline{\text{CONVST}}$ pin is connected to the FL0 pin of the 96-way connector. Sets up the board for the $\overline{\text{CONVST}}$ being generated from the EVAL-CONTROL BOARD.
LK21	A	DIN pin is connected to the DT0 pin of the 96-way connector. Sets up the board for the DIN generated from the EVAL-CONTROL BOARD.
LK22	B	+12V supplied via the 96-way connector. Sets up the board for +12V generated from the EVAL-CONTROL BOARD.
LK23	B	-12V supplied via the 96-way connector. Sets up the board for -12V generated from the EVAL-CONTROL BOARD.
LK24	Connected	V _{DD} is supplied via the 96-way connector. Sets up the board for V _{DD} generated from the EVAL-CONTROL BOARD.

EVALUATION BOARD INTERFACING

Interfacing to the evaluation board is via a 96-way connector, SK4. SK4 is used to connect the evaluation board to the EVAL-CONTROL BOARD or other system. The pinout for the SK4 connector is shown in Figure 2 and its pin designations are given in Table II.

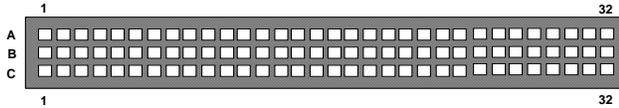


Figure 2. Pin Configuration for the 96-Way Connector (looking in to the AD7858 evaluation board)

96-Way Connector Pin Description

Pin	Description
SCLK1	Serial Clock 1. This is a logic input and is connected to CLKIN pin on the device via LK19. This is the master clock signal for the device. It sets the conversion and calibration times.
DGND	Digital Ground. These lines are connected to the digital ground plane on the evaluation board. It allows the user to provide the digital supply via the connector along with the other digital signals.
DT0	Data Transmit 0. This line is connected to the DIN pin of the AD7858 via LK21. The data to be loaded to the control register of the device is applied to this pin in serial form.
DR0	Data Receive 0. The buffered output data from the AD7858 is received at this pin as a 16-bit serial word.
TFS0,RFS0	Transmit Frame Synchronisation 0, Receive Frame Synchronisation 0. These pins are tied together on the connector and buffered from the $\overline{\text{SYNC}}$ pin on the AD7858.
SCLK0	Serial Clock 0. This is a logic output and is buffered before being applied the SCLK pin on the device. SCLK0 is the serial clock for the SPORT0.
FL0	Flag Zero. This is a logic input and is connected to the $\overline{\text{CONVST}}$ logic input on the device via LK20. A low to high transition on this input puts the track/hold amplifier into its hold mode and starts a conversion.
$\overline{\text{IRQ2}}$	Interrupt Request 2. This is a logic output and is connected to the BUSY logic output on the device via LK16. The output goes high when a conversion begins and stays high until the conversion is complete, at which time it goes low. This output also indicates when the AD7858 has completed its on-chip calibration sequence.

AGND	Analog Ground. These lines are connected to the analog ground plane on the evaluation board.
AV _{DD}	Analog +3V to +5 V Supply. This line is connected to both the AV _{DD} and DV _{DD} (via LK24) supply lines on the board.

Table II. 96-Way Connector Pin Functions.

	ROW A	ROWB	ROWC
1			
2			
3	SCLK1		
4	DGND	DGND	DGND
5	DT0		DR0
6	TFS0		RFS0
7			SCLK0
8			
9			
10			
11			
12	DGND	DGND	DGND
13			
14			
15			
16	DGND	DGND	DGND
17	FL0		/IRQ2
18			
19			
20	DGND	DGND	DGND
21	AGND	AGND	AGND
22	AGND	AGND	AGND
23	AGND	AGND	AGND
24	AGND	AGND	AGND
25	AGND	AGND	AGND
26	AGND	AGND	AGND
27		AGND	
28		AGND	
29	AGND	AGND	AGND
30	-12V	AGND	+12V
31			
32	AVDD	AVDD	AVDD

Note : The unused pins of the 96-way connector are not shown.

EVAL-AD7858CB

SOCKETS

There are thirteen sockets on the AD7858 evaluation board. The functions of these sockets are outlined in Table III.

Table III. Socket Functions

Socket	Function
AIN1-AIN8	Sub-Miniature BNC (SMB) socket for eight analog input channels.
CONVST	Sub-Miniature BNC (SMB) socket for external CONVST input.
CLKIN	Sub-Miniature BNC (SMB) socket for external master clock input.
VREF/2	Sub-Miniature BNC (SMB) socket which provides the voltage about which bipolar signals at the BIASED VIN output swing. This voltage is nominally equal to one half the reference voltage of the AD7858 (either internal or external reference). When using the BIASED VIN voltage as the voltage for the AIN(+) of a differential pair, this VREF/2 voltage should be applied to the respective AIN(-) input.
VIN	Sub-Miniature BNC (SMB) socket for the analog input which is applied to the biasing circuitry. The analog inputs of the AD7858 require an input voltage which is above AGND. The biasing circuitry takes a true bipolar signal at VIN and generates a biased-up bipolar signal which can be applied to the analog inputs.
BIASED VIN	Sub-Miniature BNC (SMB) socket which provides the output of the biasing circuitry. The BIASED VIN signal can be connected to any of the AIN1 to AIN8 input sockets.

CONNECTORS

There are four connectors on the AD7858 evaluation board as outlined in Table IV.

Table IV. Connector Functions

Connector	Function
SK1	Connector for -12 V supply to the board when using external supplies.
SK2	Connector for the +12V supply to the board when using external supplies.
SK3	Connector for the DV _{DD} supply to the board when using external supplies.
SK4	96-Way Connector used to Interface to the EVAL-CONTROL BOARD.

OPERATING WITH THE EVAL-CONTROL BOARD

The evaluation board can be operated in a stand-alone mode or operated in conjunction with the EVAL-CONTROL BOARD. The EVAL-CONTROL BOARD is available from Analog Devices under the order entry "EVAL-CONTROL BRD2". When operated with this control board, all supplies and control signals to operate the AD7858 are provided by the EVAL-CONTROL BOARD. Software to communicate with the control board and AD7858 is provided with the AD7858 evaluation board package. This EVAL-CONTROL BOARD will also operate with all Analog Devices evaluation boards which end with the letters CB in their title.

The 96-way connector on the EVAL-AD7858CB plugs directly into the 96-way connector on the EVAL-CONTROL BOARD. The EVAL-CONTROL BOARD provides all the supplies for the evaluation board. It is powered from a 12V AC transformer. This is a standard 12V AC transformer capable of supplying 1A current and is available as an accessory from Analog Devices under the following part numbers:

EVAL-110VAC-US:	For use in the U.S. or Japan
EVAL-220VAC-UK:	For use in the U.K.
EVAL-220VAC-EU:	For use in Europe

These transformers are also available from other suppliers including Digikey (U.S.) and Campbell Collins (U.K.).

Connection between the EVAL-CONTROL BOARD and the serial port of a PC is via a standard Printer port cable which is provided as part of the EVAL-CONTROL BOARD package. Please refer to the manual which accompanies the EVAL-CONTROL BOARD for more details on the EVAL-CONTROL BOARD package.

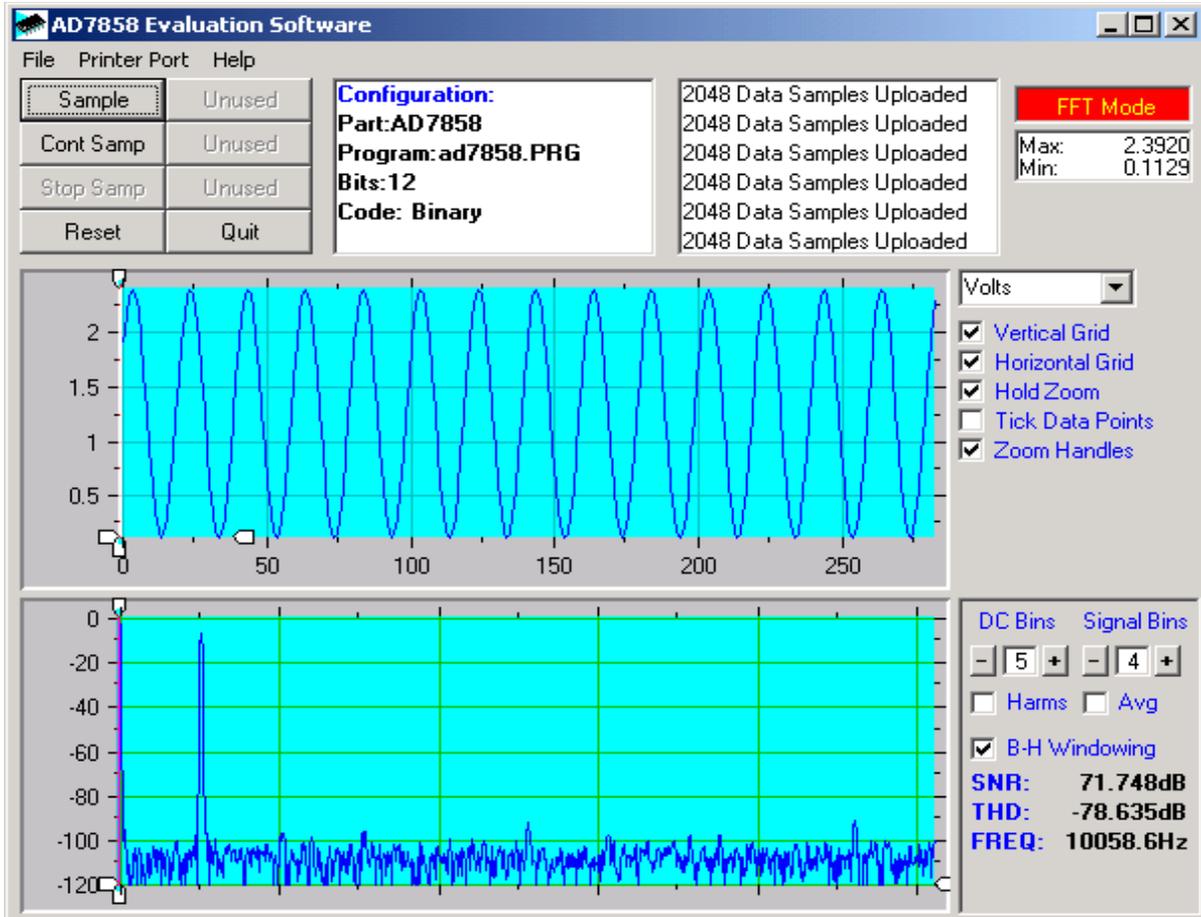


Figure 3. AD7858 Main Screen

SOFTWARE DESCRIPTION

Included in the EVAL-AD7858CB evaluation board package is a CD ROM which contains software for controlling and evaluating the performance of the AD7858 when it is operated with the EVAL-CONTROL BOARD. When the CD is inserted into the PC an installation program will automatically begin. This program will install the evaluation software onto the users machine and will also install the Technical Note for the AD7858 evaluation board as well as the datasheet for the AD7858. All literature on the CD is in Adobe's Portable Documation format (PDF) and will require Acrobat Reader™ to be viewed or printed. The user interface on the PC is a dedicated program written especially for the AD7858.

The software which controls the Evaluation Control Board and hence the AD7858 evaluation board has three main screens. The screen shown in Figure 3 shows the screen which appears when the software is run. The main function of the screen is to allow the user to read a predetermined number of samples from the evaluation board and display them in both the time and frequency domain. The screen can be divided into three sections. The upper most section of the screen contains the control buttons, the menu bar and the status windows. The control buttons allow the user to take samples, reset the part and quit the program. The menu bar allows the user to enter the setup menu, select which printer port is to be used to control the Evaluation Control Board, load and save data, get information about the software, etc.

The status window indicates the setup of the evaluation board/device, number of samples taken and any information/error messages that are generated.

The middle section of the AD7858 Main Screen is a Digital Storage Oscilloscope (DSO). When samples are uploaded from the Evaluation Control Board they are displayed here. The samples can be displayed as either integer values or as voltages. Once the samples are displayed clicking any point on the graph will display the sample number and the value of the point directly beneath the cursor. Along the axis of the graph are the " zoom handles ". These allow the user to zoom in and out to get a closer look at a particular sample if required. When another set of samples are taken the graph will attempt to display all values collected unless the Hold Zoom check box is ticked. If the Hold Zoom box is ticked the graph will keep the same axis settings as for the previous set of data samples. There are additional check boxes in this section to give the user control over the vertical and horizontal grids and data points.

The lowest section of the screen will show either a Fast Fourier Transform (FFT) of the data, or a histogram, which shows the number of occurrences of each particular code read back. The FFT (the default option) is typically used when the user is concerned with examining an ADC's performance in the frequency domain, while the Histogram will give an indication of the ADC's performance to DC signals. The option displayed can be changed by clicking on the FFT

EVAL-AD7858CB

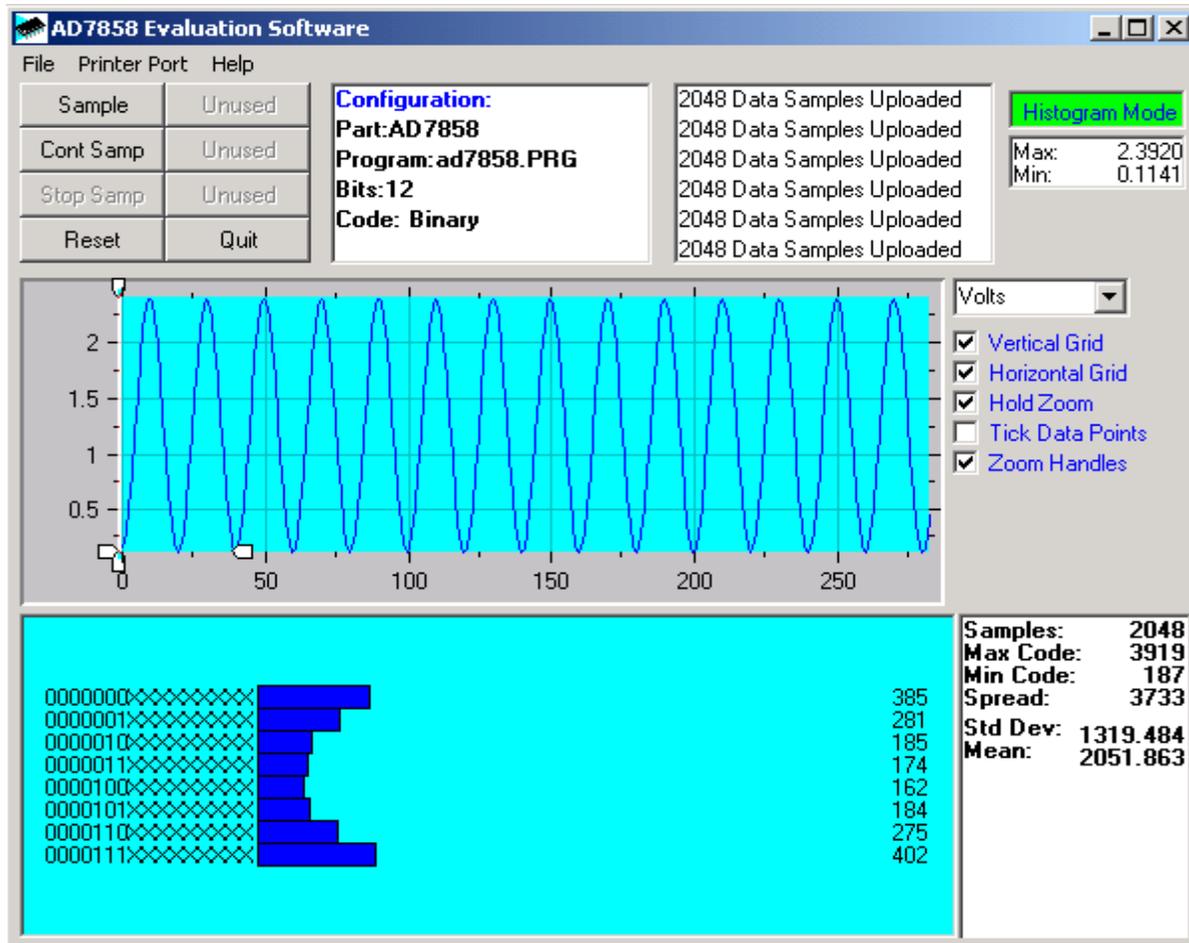


Figure 4. AD7858 Main Screen - Histogram Mode

Mode/Histogram Mode button in the top right of the screen. Figure 4 shows how the Main Screen would look if the Histogram Mode is selected.

Setup Screen

The Setup Screen is responsible for allowing the user to load the required configuration file for the evaluation board. The configuration file will give the software detailed information about the AD7858 evaluation board and part connected to the Evaluation Control Board such as number of bits, maximum sampling rate, output coding, maximum analog input, power supply requirements etc. The configuration file also tells the software the name of the DSP program file which it should download to the Evaluation Control Board. These files are supplied by Analog Devices with the evaluation board. Figure 5 shows the Setup Screen.

SETTING UP THE EVALUATION CONTROL BOARD

The following text describes how the evaluation board, Evaluation Control Board and software should be set up for the user to begin using the complete system. The Evaluation Control Board and evaluation board should be connected together (via the 96-way connector). The power should be applied to the Evaluation Control Board. At this stage the red LED should be flashing which indicates that the Evaluation Control Board is functional and ready to receive instructions. The software, which should have been installed should be loaded before the printer port cable is connected between the Evaluation Control Board and the PC. This will ensure that the printer port has been initialized properly. The printer port cable can then be connected between the PC and the Evaluation Control Board.

Running the Software

With the hardware set up the user is now in a position to use the software to control the Evaluation Control Board and the evaluation board. In the software the user should select the **File** menu and click on **Setup**. This will display the setup form. A window on the left of the setup form lists all the available configuration files. The configuration files are text based files which contain information about the particular evaluation board to be tested. The information will cover such things as the part name, number of samples to be taken,

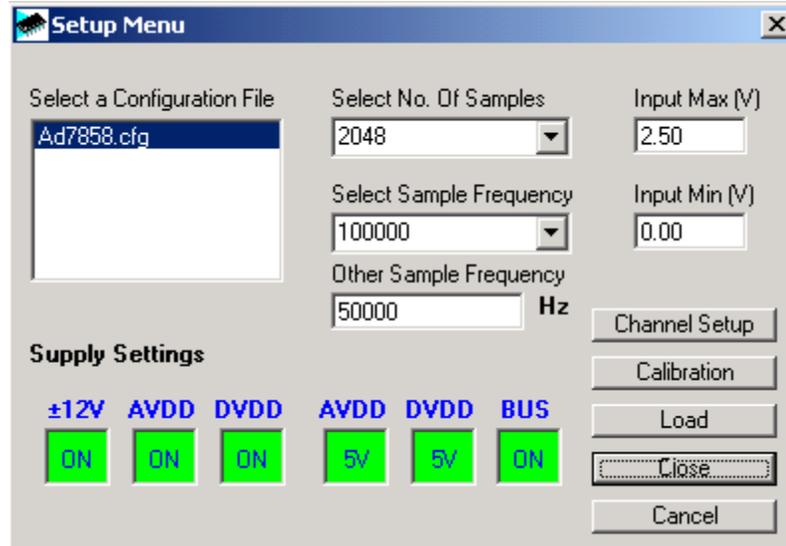


Figure 5. The Setup Screen

default and maximum sampling frequency, power supply settings etc. The configuration file also contains the name of the DSP program file which is to be downloaded to the Evaluation Control Board. The user should select the relevant configuration file and click **Load**. The Evaluation Control Board will be reset and the DSP program will be downloaded. When the download has been completed the power supply settings indicated in the configuration file are set and the user may hear some of the relays clicking. The pull-down menu items such as 'number of samples' and 'sampling frequency' will have been set to the default values specified by the configuration file. The user is free to change these at will.

Included in the Setup menu is the Channel Setup and the Calibration buttons. The Channel Setup button brings the user into the Channel Setup screen. It allows the user to select the mode of operation as regard the power consumption and the analog input channel configuration, single ended or pseudo-differential. By selecting SLG/DIFF=0, the input channels will be shown as differential pairs, positive and negative pin input respectively. If SLG/DIFF=1 is selected the input channels will be configured as single ended. Figures 6 and 7 show the Channel Setup screen for the different input channel configurations.

Pressing the Calibration button brings the user into the Calibration Options screen. Several calibration options are presented as shown in Figure 8. These options include Full internal calibration, Full system calibration, Internal gain & offset calibration, System gain & offset calibration, Internal offset calibration, System offset calibration, Internal gain calibration and System gain calibration. On selecting any of the three Self calibration buttons the part is calibrated appropriately. On selecting one of the System calibration buttons the user will be prompted by an extra pop-up window to apply the required system voltage across the AIN(+) and AIN(-) pins of the AD7858. Upon hitting the OK button in this prompt window the part is calibrated and the software returns to the Calibration Options menu. At this point the user can select OK to return to the Setup menu or select

another calibration option. Please see the AD7858 datasheet for more information related to the Calibration selection.

Once all the settings have been decided, the user can click **Close** to return to the main form.

Taking Samples

When the user clicks **Sample** the software will instruct the Evaluation Control Board to take the required number of samples at the required frequency from the evaluation board. The AD7858 evaluation board will run up to 200 KSPS so the user can choose the sampling frequency up to this rate and may also choose the number of samples to be taken. These samples are then uploaded and displayed. An FFT and Histogram are also calculated and displayed. If the user clicks **Cont Samp** the software will repeat the process indefinitely until the user clicks the button **Stop Samp**. While the software is continuously sampling data the other control buttons are disabled.

Other Buttons

The **Reset** button will cause the Evaluation Control Board to perform a reset function. When this happens the power supplies are turned off and the program in DSP memory is lost. The user should repeat the setup instructions to download another program if required.

The **Quit** button will exit the software, the program running on the Evaluation Control Board is not terminated.

MENU BAR ITEMS

The main screen of the Evaluation Control Board contains a number of options available as pull-down menu items. The functions of these are listed below.

File Menu

Setup Menu: Selecting this option displays the Setup Screen as shown in Figure 5.

Load Raw Data: Selecting this option allows the user to load data which had been saved by the software during a previous session.

Save Raw Data: Selecting this option allows the user to save the current set of sample data points. The data can be

EVAL-AD7858CB



Figure 6. The Channel Setup Screen, Pseudo-differential configuration



Figure 7. The Channel Setup Screen, Single Ended configuration

reloaded to the Evaluation Control Board software at a later date or can be used by other programs for further analysis.

Save Binary Data: Selecting this option allows the user to save the current set of sample data points. The data is saved in binary format as a text file. This method can be useful for examining code flicker, looking for stuck bits, etc.

Save FFT Data: Selecting this option allows the user to save the current set of FFT data points. FFT data cannot be reloaded into the Evaluation Control Board software but can be loaded into other software packages for further analysis.

Exit: Quits the program.

Printer Port

This menu item allows the user to select which printer port should be used for communication with the Evaluation Control Board.

LPT1: This option selects 0x378 as the printer port address. This is the default option.

LPT2: This option selects 0x278 as the printer port address.

PRN: This option selects 0x3BC as the printer port address.

Help

This menu item gives information about the current revision of software for the particular evaluation board being used.

SOFTWARE CONFIGURATION FILES

Software Configuration Files give the Evaluation Control Board software information on how the software and hardware should perform. They contain information such as the name of the DSP program to download, the default and maximum sample frequencies, the number of samples to take and the power supply settings to use. A typical Software Configuration File (*.cfg) is shown in Listing 1.

```
[EVAL-CONTROL BOARD]
partname:AD7858
programname:ad7858.PRG
```

```
samplefrequency:50000
maxsamplefrequency:200000
samples:2048
+/-15V:on
dvdd:5:on
avdd:5:on
bus:on
;options 2scomp, binary
dataformat:binary
numberofbits:12
inputVmax:2.5
inputVmin:0
[endofconfig]
```

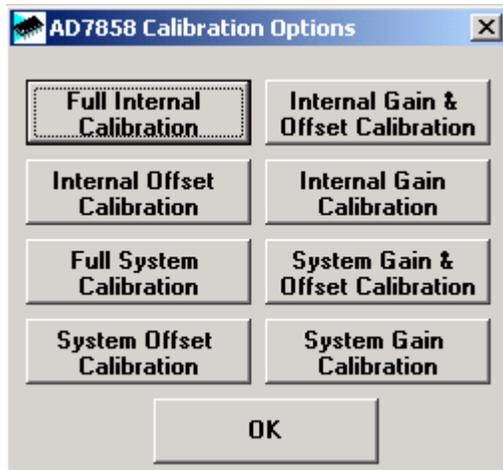


Figure 8. The Calibration Options Screen

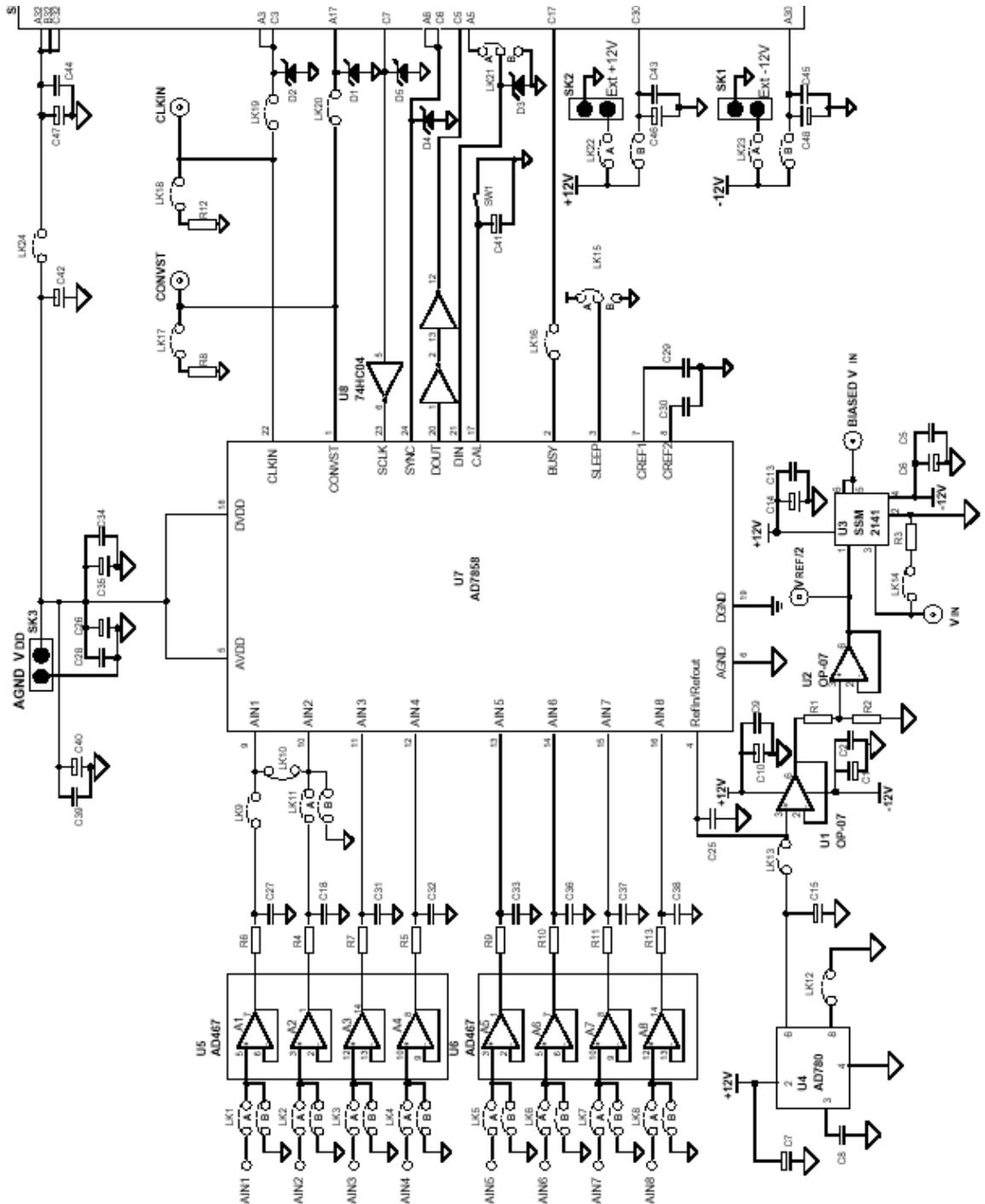


Figure 7. AD7858 Evaluation Board Circuit Diagram

EVAL-AD7858CB

Table V. AD7858 Evaluation Board Bill Of Materials

Qty	Part Type	Reference Designator	Manuf. No.	Vendor/Supplier No.
1	AD7858	U7	AD7858AN	ADI
2	ADOP07	U1, U2	ADOP07CN	ADI
1	SSM2141	U3	SSM2141P	ADI
1	AD780	U4	AD780AN	ADI
2	OP-467	U5, U6	OP-467GP	ADI
1	74HC04	U8	MM74HC04N	Motorola
5	SD103C	D1, D2, D3, D4, D5		Hewlett Packard
1	1 μ F Tantalum Bead	C7		AVX-Kyocera
13	10 μ F Tantalum Bead	C1,C3,C6,C10,C12,C14,C15, C17,C20,C21,C24,C26,C35		AVX-Kyocera
4	47 μ F Tantalum Bead	C40,C46,C47,C48		AVX-Kyocera
12	0.01 μ F Multilayer Ceramic	C8,C18,C25,C27,C30,C31, C32,C33,C36,C37,C38,C41		Philips
18	0.1 μ F Multilayer Ceramic	C2,C4,C5,C9,C11,C13,C16, C19,C22,C23,C28,C29C34, C39,C42,C43,C44,C45		Philips
2	10K Ω \pm 0.1% 0.25W	R1,R2		Welwyn RC55 Series
10	51 Ω \pm 1% 0.25W	R3,R4,R5,R6,R7,R8,R9, R10,R11,R12,R13		Multicomp
3	2 Pin Power Connector	SK1,SK2,SK3	Lumberg KRM2	FEC 151-785
1	96 Pin 90 ⁰ DIN41612 Plug	SK4	Siemens	FEC 269-931
11	2 Way Jumper (2x1)	LK9,LK10,LK12,LK13,LK14, LK16,LK17,LK18,LK19,LK20, LK24	Harwin	FEC 511-705
11	2 Way Jumper (2x2)	LK1-LK8,LK11,LK22,LK23	Harwin	FEC511-791
1	2 Way Jumper (1x3)	LK15,LK21	Harwin	
24	Shorting Links	LK1-LK24	Berg	FEC 528-456
13	50 Ω Gold Plated SMB	VREF/2,Vin, Biased Vin, AIN1-AIN8,CONVST, CLKIN	M/ACOM	FEC 310-682
4	8 Way Low Profile IC Socket	U1-U4	Harwin	
3	14 Way Low Profile IC socket	U5,U6,U8	Harwin	
1	Keyboard Switch	SW1	Omron	
4	Rubber Stick-on Feet	Each Corner	3M	FEC 148-922
1	EVAL-AD7858CB			P.C.B.

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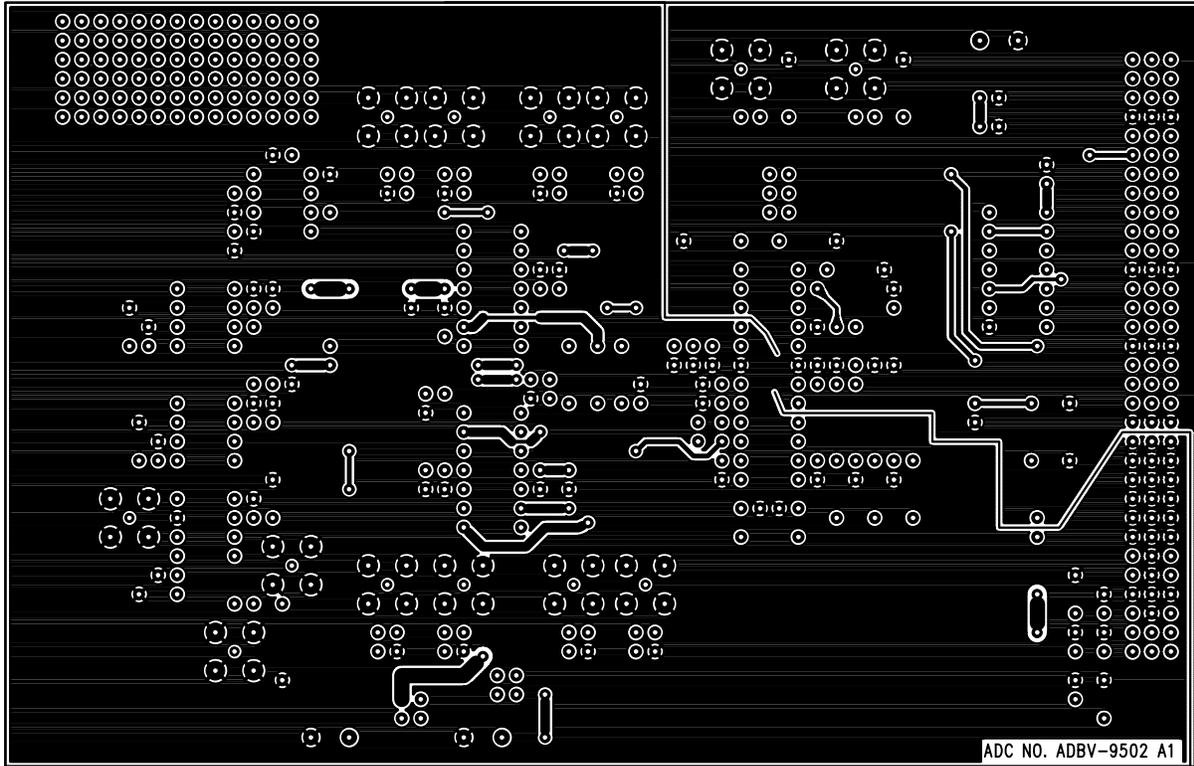


Figure 9. Component Side Artwork

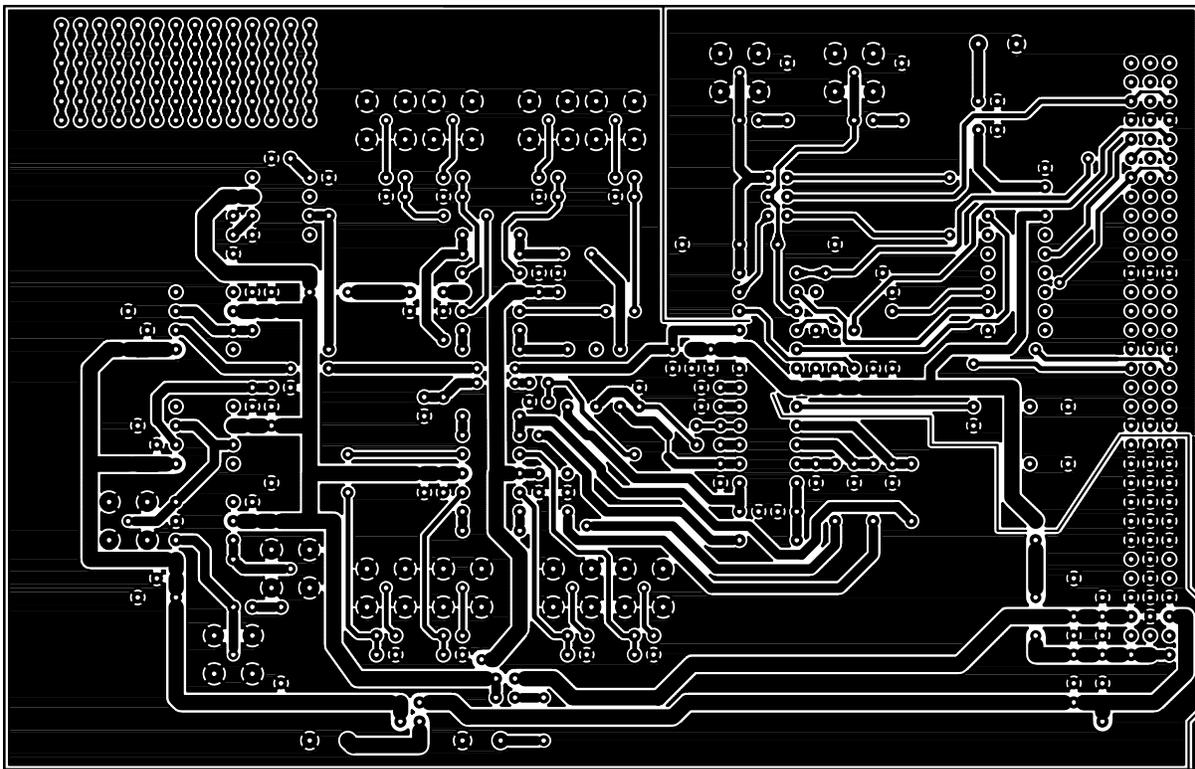


Figure 10. Solder Side Artwork

EVAL-AD7858CB

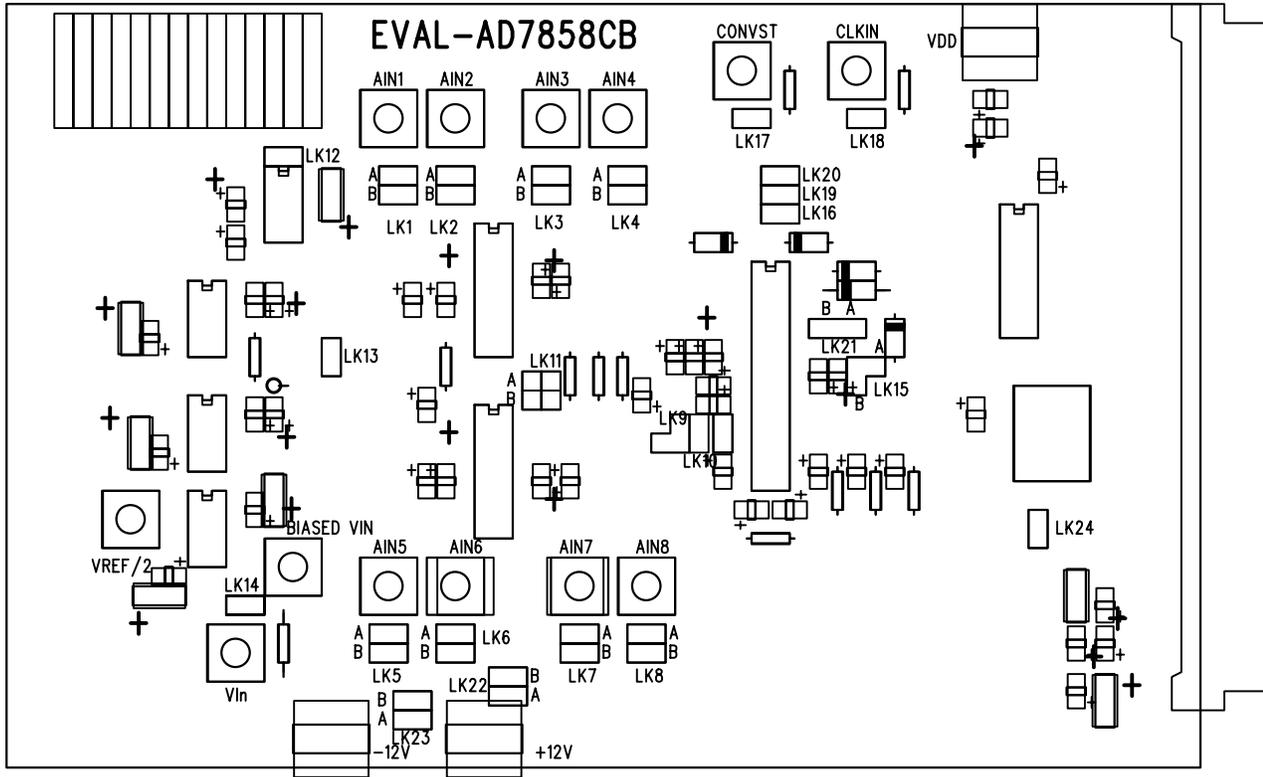


Figure 11. AD7858 Evaluation Board Component Placement Drawing.