Evaluation Board for 3V to 5V, 12-Bit 200KSPS, Single Channel, Sampling ADC

EVAL-AD7854CB

FEATURES

Full-Featured Evaluation Board for the AD7854
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 AD7854. The AD7854 is a high speed, low power, 12-bit 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 parallel I/O port. This flexible parallel interface allows the AD7854 to connect directly to Digital Signal Processors and Microprocessors as a memory-mapped or I/O device. Full data on the AD7854 is available in the AD7854 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, an AD845 and two OP-07's amplifiers, an SSM2141 line receiver, two 74HC245 buffer/linedrivers, a 74HC74 flip-flop and a 74HC04 inverter.

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 AD7854 EVALUATION BOARD

Power Supplies

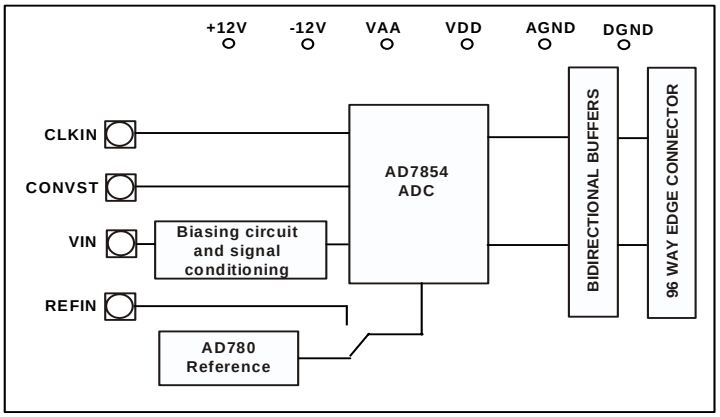
When using this evaluation board with the EVAL-CONTROL BOARD all supplies are provided from the EVAL-CONTROL BOARD through the 96-way connector.

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 AD7854 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 six power supply inputs: V_{DD}, V_{AA}, +12 V, -12 V, A_{GND} and D_{GND}. The V_{DD} is used to to supply the DV_{DD} of the AD7854 directly, and is also connected to the V_{CC} pin of the 74HC04, 74HC74 and the two 74HC245's. The V_{AA} is used to supply the AV_{DD} of the AD7854. 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 10µF tantalum capacitors in parallel with 0.1µF multilayer ceramic capacitors. These pins are the AV_{DD} pin of the AD7854, 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 AD7854 is decoupled to DGND with a 10µF tantalum capacitor in parallel with a 0.1µF disc ceramic capacitor at the power supply terminals and at the DV_{DD} pin of the AD7854. The logic chips are deocupled by 0.1µF multilayer ceramic capacitors to DGND.

Figure 1. FUNCTIONAL BLOCK DIAGRAM



REV. B

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LINK AND SWITCH OPTIONS

There are 15 link options which must be set for the required operating setup before using the evaluation board. The functions of these options are outlined below.

Link No.	Function.
LK1 and LK3	These link options are used to select between two different voltage ranges at the V_{IN} socket (0 to V_{REF} volts or $\pm V_{REF}/2$ volts). The voltage range is changed by connecting in the biasing circuit on the evaluation board or bypassing it. LK1 should only be connected when LK3 is in position B. With LK3 in position A, LK1 should be left unconnected, the biasing circuit is bypassed and the signal supplied at the V_{IN} socket should be in the range 0 to V_{REF} volts. With LK3 in position B, LK1 should be connected, the biasing circuit is connected in and the signal supplied at the V_{IN} socket should be in the range $\pm V_{REF}/2$ volts.
LK2	This link option adds a 50Ω termination to AGND at the V_{IN} socket. In most applications this link will be left unconnected. 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. 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.
LK4	This link must be unconnected if an external supply is used. Otherwise, if the supply from the EVAL-CONTROL BOARD is used this link should be connected. With this link connected the -12 V is supplied from the EVAL-CONTROL BOARD. With this link unconnected the -12 V must be supplied externally at the -12V power supply terminal connector.
LK5	This link option is used to select between a 2.5V or 3.0V external reference. With this link connected a 3.0V external reference is selected. With this link unconnected a 2.5V external reference is selected.
LK6	This link is used to tie the AIN(-) pin to AGND or to $V_{REF}/2$. With this link in position A, the AIN(-) pin is tied to $V_{REF}/2$. With this link in position B, the AIN(-) pin is tied to AGND. When performing a histogram of codes LK7 should be connected and LK6 should be in position A. **(In this case care should be taken to ensure that LK8 is unconnected to avoid shorting the output of the AD845 buffer to AGND through the 50 Ω resistor).**
LK7	With this link connected the AIN(+) and AIN(-) pins are shorted together. With this link unconnected the AIN(+) and AIN(-) pins are not shorted together.
LK8	This link option is used to connect the signal from the AD845 buffer amplifier to the AIN(+) pin of the AD7854. With this link connected, the output of the AD845 buffer amplifier is connected to the 51Ω, 10 nF filter to the AIN(+) pin of the AD7854.

With this link unconnected, the output of the AD845 buffer amplifier is disconnected from the RC filter and thus the AIN(+) pin of the AD7854.

Note that the analog input may also be connected to a component grid for extra signal conditioning.

LK9 This link option is used to select between the external reference and the internal reference.

With this link connected the external reference is selected and this is the default setting.

With this link unconnected the internal 2.5V reference is used unless a reference voltage is supplied at the REFin socket SMB1.

LK10 This link must be unconnected if an external supply is used. Otherwise, if the supply from the EVAL-CONTROL BOARD is used this link should be connected.

With this link connected the +12 V is supplied from the EVAL-CONTROL BOARD.

With this link unconnected the +12 V must be supplied externally at the +12V power supply terminal connector.

LK11 This link option adds a 50Ω 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 50Ω termination is required when using an external $\overline{\text{CONVST}}$ signal this link should be connected.

LK12 This link option is in series with the FL0 input from the 96-way connector. When using the EVAL-CONTROL BOARD this input supplies the conversion start signal for the $\overline{\text{CONVST}}$ input of the AD7854.

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.

LK13 This link option adds a 50Ω termination to DGND to the CLKIN line.

This link option should be unconnected when using the CLKIN from the EVAL-CONTROL BOARD.

If a 50Ω termination is required when using an external CLKIN signal this link should be connected.

LK14 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 AD7854.

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.

LK15 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 AD7854 and the V_{CC} for the logic chips.

With this link connected the V_{DD} is supplied from the EVAL-CONTROL BOARD.

With this link unconnected the V_{DD} must be supplied externally at the DV_{DD} power supply terminal connector.

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 and Switch Positions

Link No.	Position	Function.
LK1	Connected	This connects in the biasing circuit on the evaluation board and sets the analog input range at the V_{IN} socket to $\pm V_{REF}/2$.
LK2	Unconnected	This ensures that there is no 50Ω termination from the V_{IN} socket to AGND.
LK3	B	The biasing circuit is connected in and the signal supplied at the V_{IN} socket should be in the range $\pm V_{REF}/2$ volts.
LK4	Connected	-12V is supplied via the 96-way connector from the EVAL-CONTROL BOARD.
LK5	Unconnected	2.5V external reference selected.
LK6	B	AIN (-) pin is tied to AGND.
LK7	Unconnected	This ensures that the AIN(+) and AIN(-) pins are not shorted together. When performing a histogram of codes test with the EVAL-CONTROL BOARD this link should be connected.
LK8	Connected	This connects the signal at the V_{IN} socket via the biasing circuit to the AIN(+) pin of the AD7854. When performing a histogram of codes with the EVAL-CONTROL BOARD this link should be unconnected.
LK9	Connected	External reference selected.
LK10	Connected	+12V is supplied via the 96-way connector from the EVAL-CONTROL BOARD.
LK11	Unconnected	This ensures there is no 50Ω termination on the $\overline{\text{CONVST}}$ line.
LK12	Connected	$\overline{\text{CONVST}}$ pin is connected to the FL0 pin of the 96 way connector. The $\overline{\text{CONVST}}$ signal is generated by the EVAL-CONTROL BOARD.
LK13	Unconnected	This ensures there is no 50Ω termination on the CLKIN line.
LK14	Connected	CLKIN pin is connected to the SCLK1 pin of the 96-way connector. The CLKIN signal is generated by the EVAL-CONTROL BOARD.
LK15	Connected	V_{DD} is supplied via the 96-way connector. V_{DD} is generated by 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.

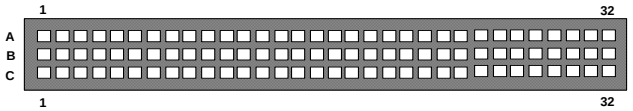

Figure 2. Pin Configuration for the 96-Way Connector (looking in to the AD7854 evaluation board)

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 74HC74 flip-flop and LK14. 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.

FL1 Flag Output. This line is connected to the HBEN pin of the AD7854. The data loaded to the AD7854 registers is sent in two bytes and the HBEN signal is used to differenciate between the upper 8 bits and the lower 8 bits of a 16 bit word.

FL0 Flag Zero. This is a logic input and is connected to the $\overline{\text{CONVST}}$ logic input on the device via the 74HC74 and LK12. A high to low transition on this input resets the AD7854 data register. 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. 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 AD7854 has completed its on-chip calibration sequence.

DB0-DB11 Data lines. Data is transferred to and from the AD7854 via this data bus. When data is written to the AD7854 only DB0-DB7 are used and when data is read from the AD7854 DB0-DB11 are used allowing for a single read operation.

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 LK15) supply lines on the board.

Table II. 96-Way Connector Pin Functions.

	ROW A	ROWB	ROWC
1		FL1	
2		D0	
3	SCLK1	D1	SCLK1
4	DGND	DGND	DGND
5		D2	
6		D3	
7		D4	
8			
9	/RD	D5	/WR
10		D6	/CS
11		D7	
12	DGND	DGND	DGND
13		D8	
14		D9	
15		D10	
16	DGND	DGND	DGND
17	FL0	D11	/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.

SOCKETS

There are four input sockets relevant to the operation of the AD7854 on this evaluation board. The functions of these sockets are outlined in Table III.

Table III. Socket Functions

Socket	Function
BNC1	Sub-Miniature BNC (SMB) socket for V_{IN} input.
BNC2	Sub-Miniature BNC (SMB) socket for $\overline{CONVST}$ input.
BNC3	Sub-Miniature BNC (SMB) socket for CLKIN input.
SMB1	Sub-Miniature BNC (SMB) socket for off-board reference.

CONNECTORS

There are four connectors on the AD7854 evaluation board as outlined in Table IV.

Table IV. Connector Functions

Connector	Function
SK1	Connector for +12 V and -12 V to the board when using external supplies.
SK2	Connector for the AV_{DD} 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 AD7854 are provided by the EVAL-CONTROL BOARD. Software to communicate with the control board and AD7854 is provided with the AD7854 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-AD7854CB 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.

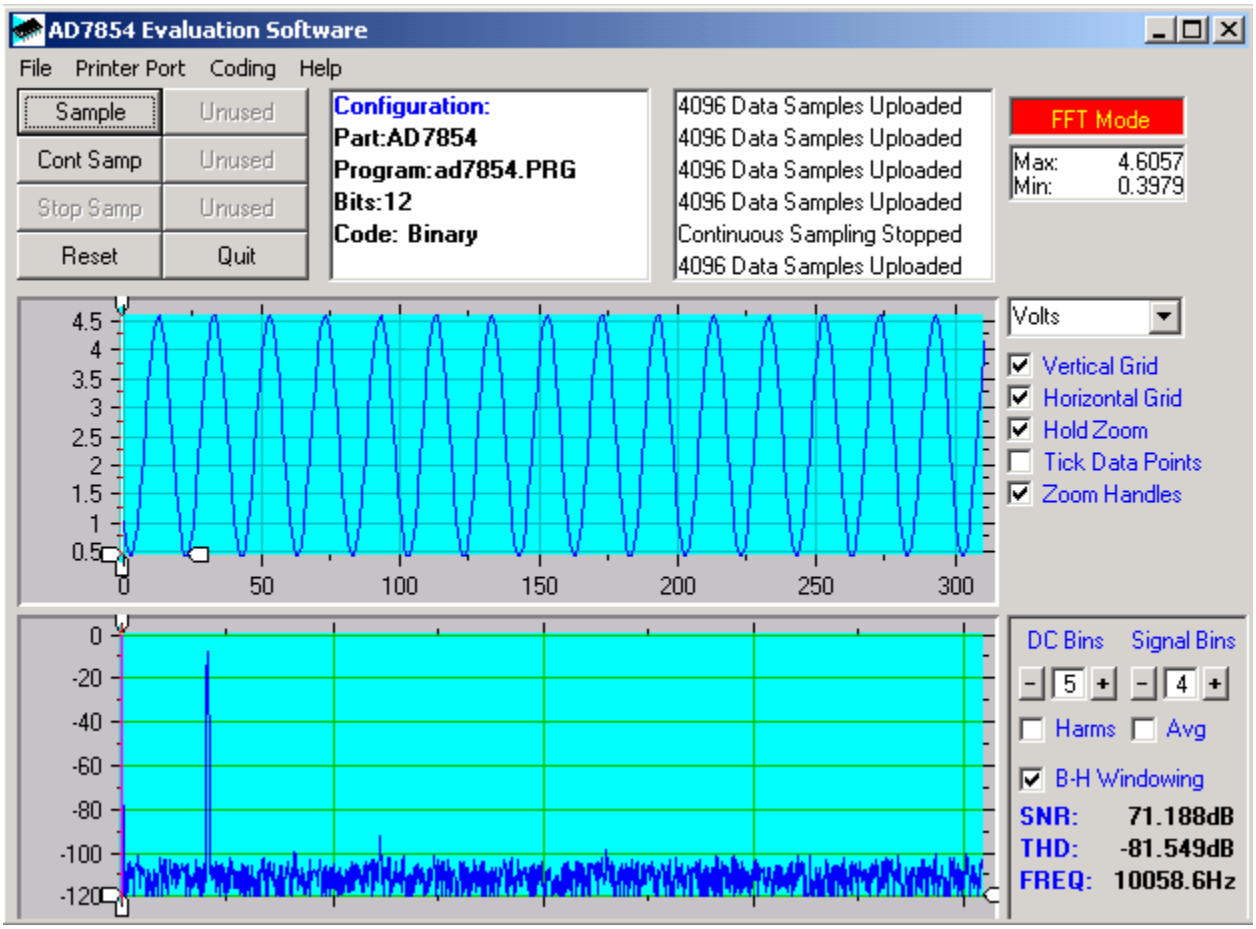

Figure 3. AD7854 Main Screen

SOFTWARE DESCRIPTION

Included in the EVAL-AD7854CB evaluation board package is a CD ROM which contains software for controlling and evaluating the performance of the AD7854 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 AD7854 evaluation board as well as the datasheet for the AD7854. 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 AD7854.

The software which controls the Evaluation Control Board and hence the AD7854 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 AD7854 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

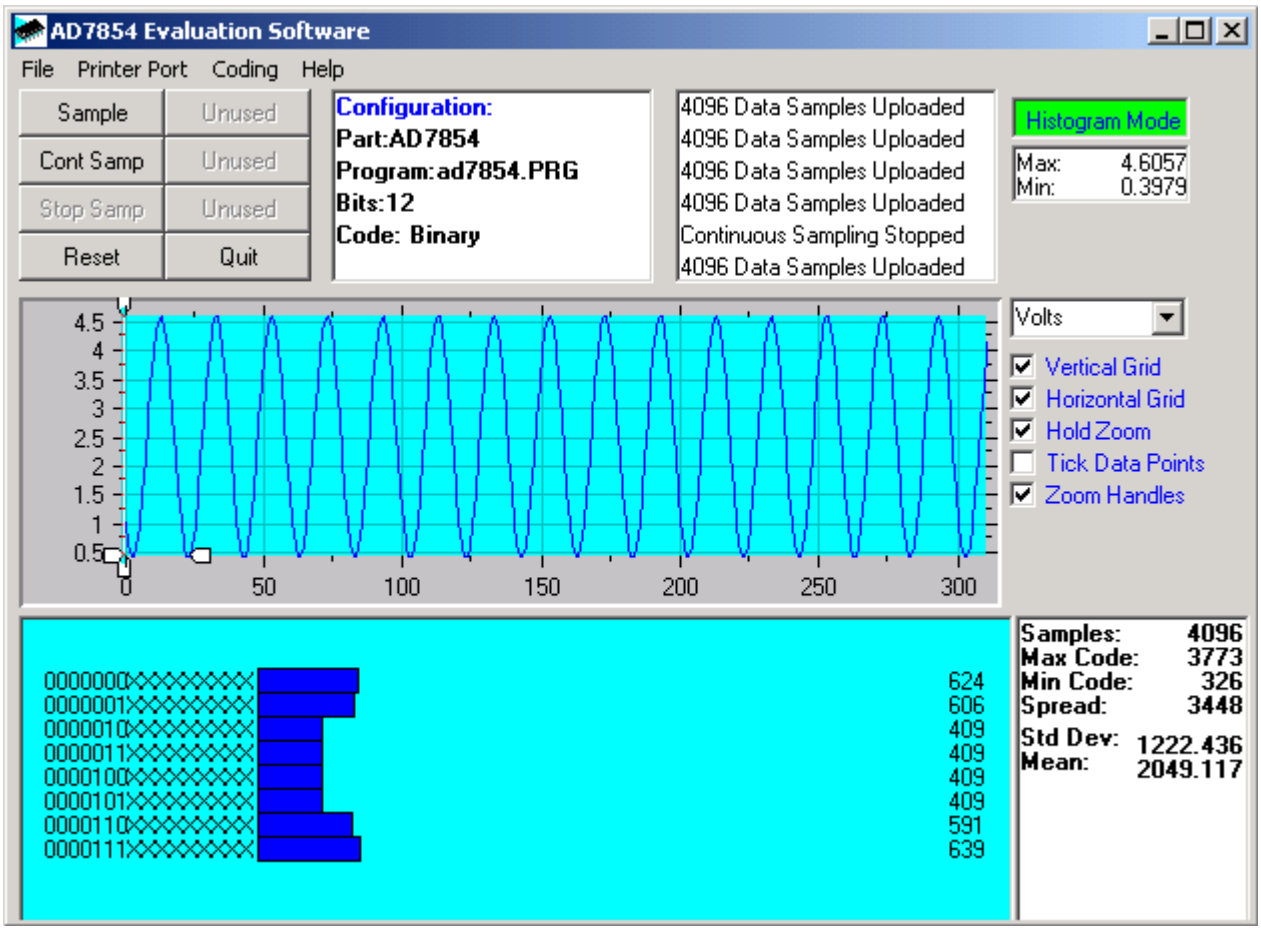

Figure 4. AD7854 Main Screen - Histogram Mode

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 AD7854 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,

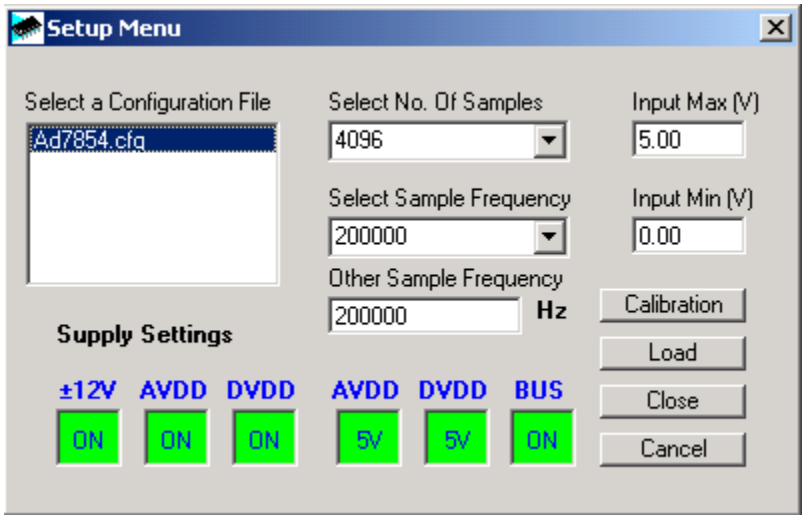

Figure 5. The Setup Screen

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 Calibration button. Pressing the Calibration button brings the user into the Calibration Options screen. Several calibration options are presented in the Calibration Options screen as shown in Figure 6. 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 AD7854. 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 AD7854 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 AD7854 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 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.

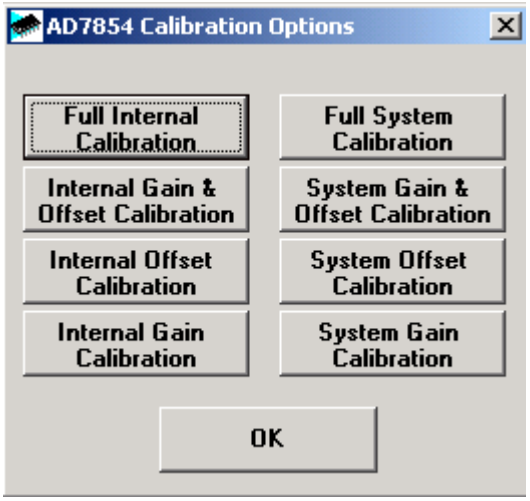

Figure 6. The Calibration Options Screen

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.

Coding

This menu item allows to select the output coding. The coding is straight binary in Unipolar mode and twos complement in Bipolar mode. When the configuration file is downloaded the output coding by default will be straight binary, that means that the expected input voltage range is 0 to Vref, Unipolar mode.

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:AD7854
programname:ad7854.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:5.0
inputVmin:0
[endofconfig]
```

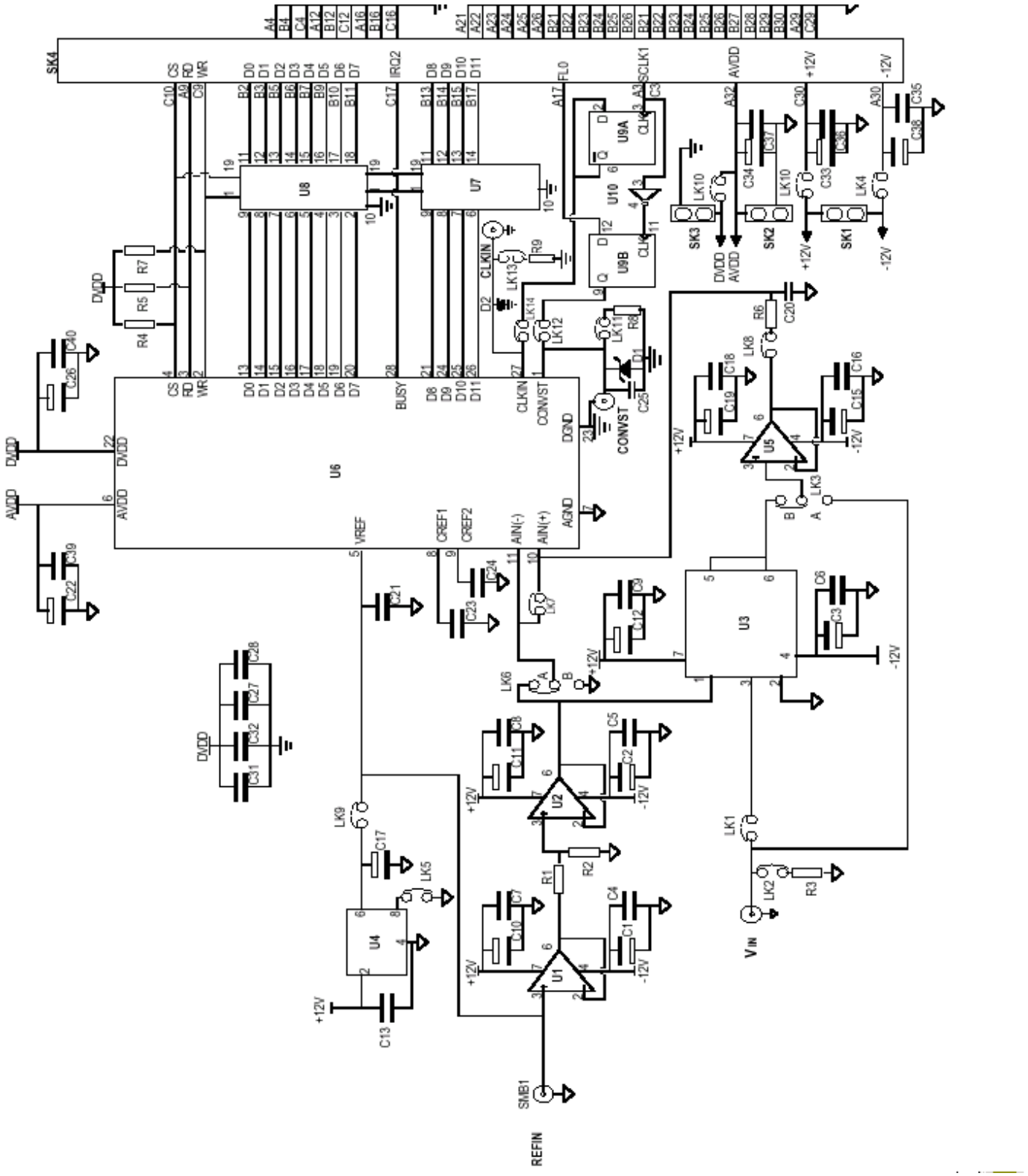

Figure 7. AD7854 Evaluation Board Circuit Diagram

Table V. AD7854 Evaluation Board Bill Of Materials

Qty	Part Type	Reference Designator	Manuf. No.	Vendor/Supplier No.
1	AD7854	U6	AD7854AQ	ADI
1	AD845	U5	AD845KN	ADI
2	ADOP07	U1, U2	ADOP07CN	ADI
1	SSM2141	U3	SSM2141P	ADI
1	AD780	U4	AD780AN	ADI
2	74HCT245	U7, U8	MM74HCT245N	National Semiconductors
1	74HC74	U9	MM74HC74AN	National Semiconductors
1	74HC04	U10	MM74HC04N	National Semiconductors
2	HP 5082-2810	D1, D2		Hewlett Packard
9	10µF±20% Tantalum(16V)	C1,C2,C3,C10,C11,C12, C15,C19,C21	TAG106MO16	AVX-Kyocera
17	0.1µF Ceramic(X7R±20%)	C4,C5,C6,C7,C8,C9,C16, C18,C23,C27,C28,C30, C31,C32,C35,C36,C37	CW20C104M	Philips
4	0.01µF Ceramic(X7R±20%)	C13,C14,C20,C24	CW15C103M	Philips
7	47µF±20% Tantalum(16V)	C17,C22,C26,C29,C33, C34,C38	TAG476MO16	AVX-Kyocera
1	220pF Polysterene	C25	42742201	Philips
3	0.1µF Surface Mount(X7R)	C39,C40,C41	12065C104KATOOJ	AVX-Kyocera
2	10KΩ ±0.1% 0.25W Metal Film Resistor	R1,R2		Welwyn RC55 Series
4	51Ω ±1% 0.25W Carbon Film Resistor	R3,R6,R8,R9		Multicomp
3	10KΩ ±1% 0.25W Carbon Film Resistor	R4,R5,R7		Multicomp
13	Pin Headers (1x2 way)	Lk1,LK2,LK4,LK5,LK7 Lk8,LK9,LK10,LK11, Lk12,LK13,LK14,LK15	M20-9993606	Harwin
2	Pin Headers (1x2 way)	LK3,LK6		
4	50Ω Gold Plated SMB	SMB1,BNC1,BNC2,BNC3	M/ACOM	FEC 310-682
1	96 Pin 90° DIN41612 Plug	SK4	Siemens	FEC 269-931
3	2 Pin Power Connector	SK1,SK2,SK3	Lumberg KRM2	FEC 151-785
15	Shorting Links	LK1 - LK15	Berg	FEC 528-456
136	Ultralow Profile Socket Pins	U2 - U10	Harwin	FEC 519-959
4	Rubber Stick-on Feet	Each Corner	3M	FEC 148-922
1	EVAL-AD7854CB			P.C.B.

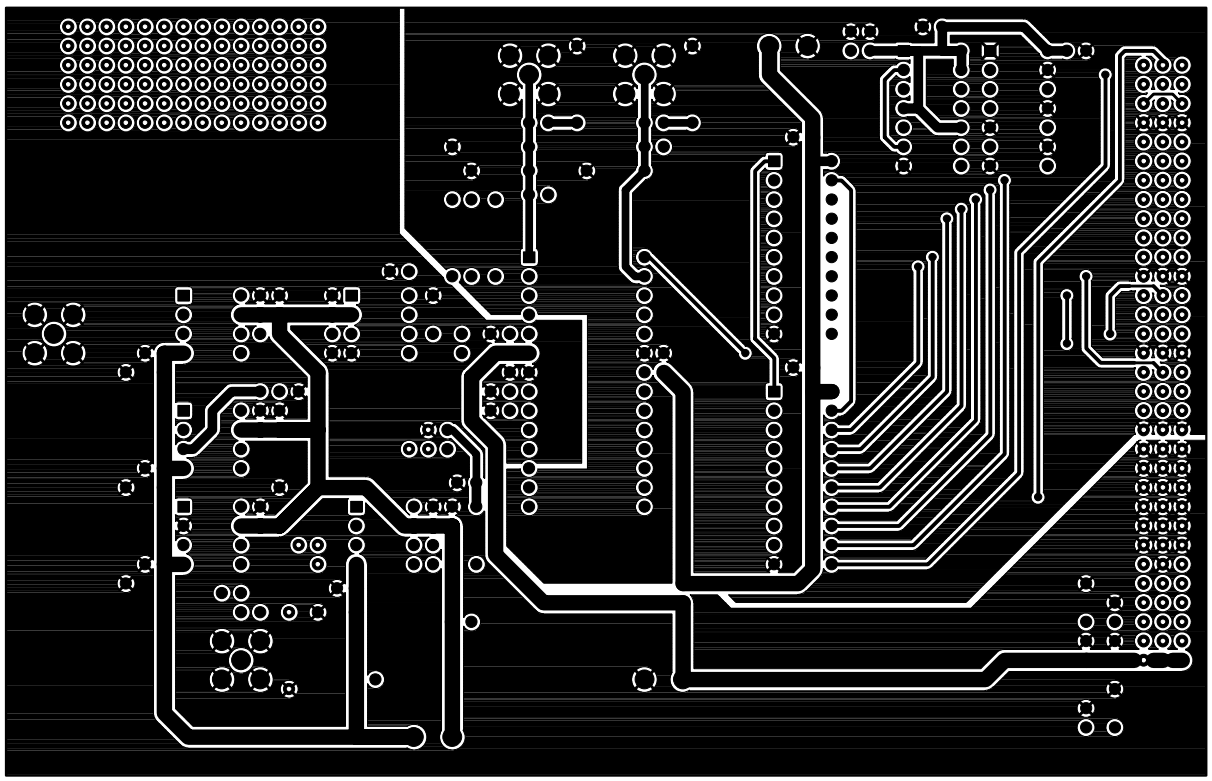

Figure 8. Component Side Artwork

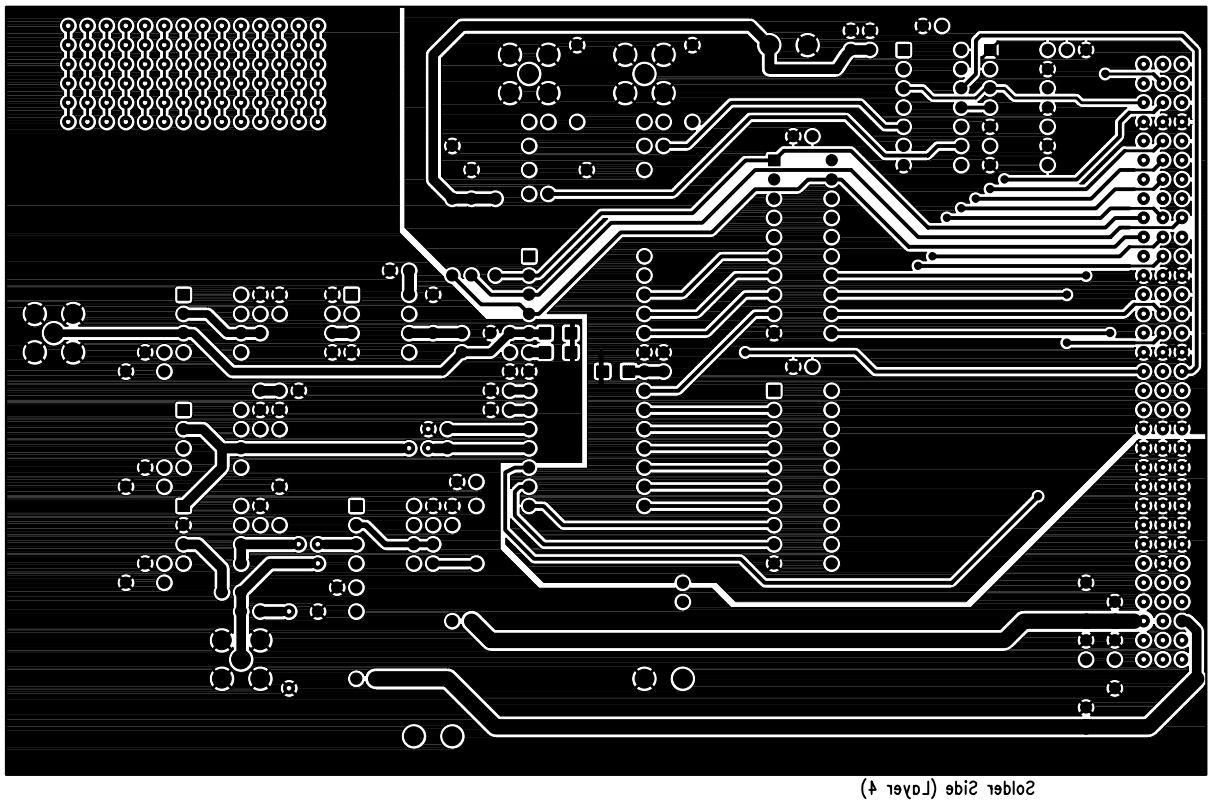

Figure 9. Solder Side Artwork

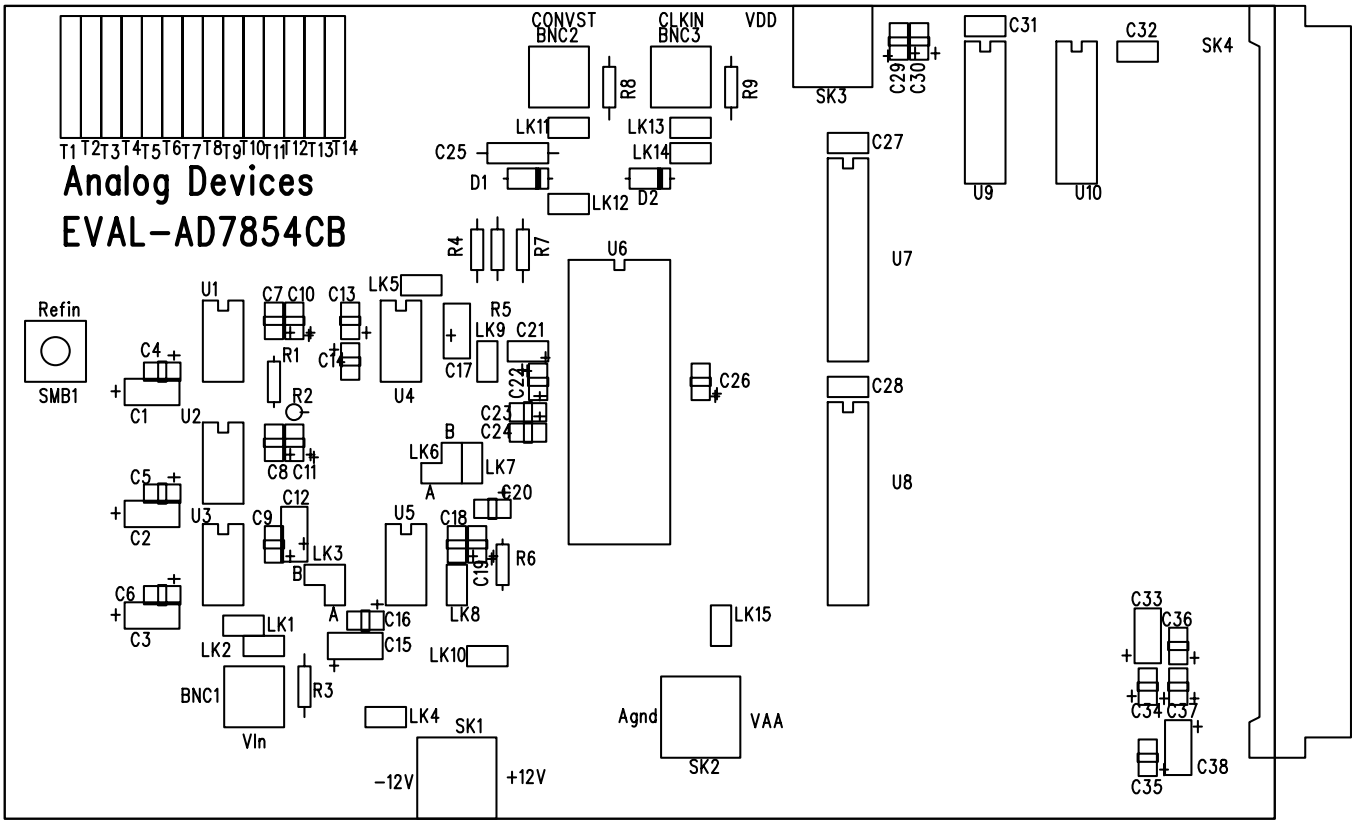

Figure 10. AD7854 Evaluation Board Component Placement Drawing.