Evaluation Board for 8-/10-/12-Bit, Serial Input, V_{OUT} *Nano*DACs™

EVAL-AD5621EBZ

FEATURES

Full-featured evaluation board for the AD5621
Operates from single 2.7 V to 5.5 V supplies
On-board reference
Direct hookup to USB port of PC
PC software for control of DAC
Power-on reset to midscale or zero scale
3 power-down functions

PACKAGE CONTENTS

AD5621 evaluation board
AD5621 device
5 V reference (REF195)
CD including
- **Self-installing software that allows you to control the DAC and exercise all functions of the device**
- **Electronic version of device data sheet**
- **Electronic version of EVAL-AD5621EBZ data sheet**

On-board ADC for voltage readback

GENERAL DESCRIPTION

This data sheet describes the evaluation board for evaluating the AD5621, AD5611 and AD5601 *nano*DACs. These devices are low power, single 8-/10-/12- bit buffered voltage-out DACs. Operating from single 2.7 V to 5.5 V supplies, the devices are well suited to battery-powered and other applications.

Full data on the AD5621 may be found in the data sheet available from Analog Devices and should be consulted in conjunction with this data sheet when using the evaluation board.

The evaluation board interfaces to the USB port of an IBMcompatible
PC. Software is available with the evaluation board which allows the user to easily program the AD5621.

FUNCTIONAL BLOCK DIAGRAM

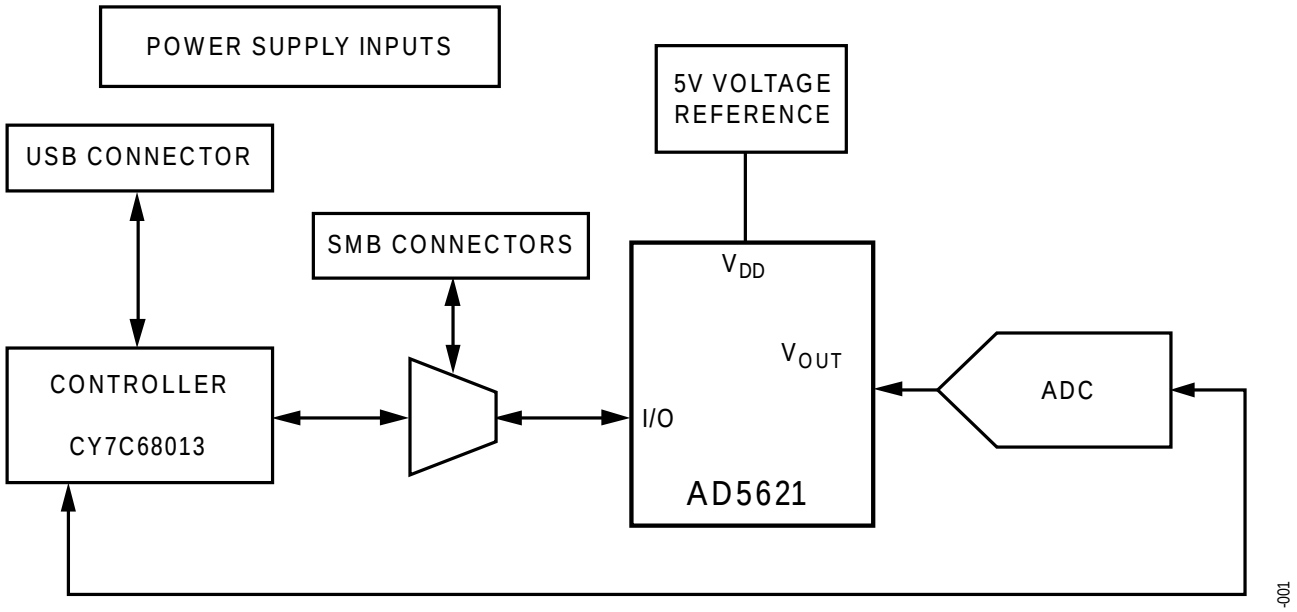

Figure 1.

Rev. 0

One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106, U.S.A.
Tel: 781.329.4700 **www.analog.com**
Fax: 781.461.3113

TABLE OF CONTENTS

REVISION HISTORY

11/08—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

To power the AD5621 evaluation board supply 5.5 V between the AV_{DD} and AGND inputs for the analog supply of the AD5621.

Alternatively place link 6 in position B, which powers the analog circuitry from the USB port (default setting).

Both AGND and DGND inputs are provided on the board. The AGND and DGND planes are connected at one location close to the AD5621. It is recommended not to connect AGND and DGND elsewhere in the system to avoid ground loop problems.

Each supply is decoupled to the relevant ground plane with 10 µF and 0.1 µF capacitors. Each device supply pin is also decoupled with a 10 µF and 0.1 µF capacitor pair to the relevant ground plane.

LINK OPTIONS

A number of link and switch options on the evaluation board should be set for the required operating setup before using the board. The functions of these link options are described in detail in Table 2. The default setup is for control by the PC via the USB port. The default link options are listed in Table 1.

Table 1. Link Options Setup for PC Control (Default)

Link No.	Option
LK1	B
LK2	Inserted
LK3	B
LK4	B
LK6	B
LK7	A

Table 2. Link Functions

Link No.	Function
LK1	This link selects the DAC voltage source. • Position A selects the AVDD analog circuitry power supply source. • Position B selects the on-board REF195 5 V reference or SMB connector J4 as the power supply source (see LK3).
LK2	This link connects a 0.1 µF capacitor to AGND. It is recommended to connect this when using the on-board reference.
LK3	This link selects the DAC voltage source when LK1 is in position B. • Position A selects the on-board REF195 5v reference. • Position B selects SMB connector J4.
LK4	This link selects the AVDD power supply source for the REF195. Position A selects J6 as the REF195 power supply source. Position B selects the AVDD as the REF195 power supply source (see LKX).
LK5	This link selects the AVDD power supply source for the REF195. • Position A selects J6 as the REF195 power supply source. • Position B selects the AVDD as the REF195 power supply source (see LK5).
LK6	This link selects the reference source. • Position A selects the internal reference as the reference source. The part must be written to via software to turn on the internal reference. • Position B selects the on-board REF195 5 V reference as the reference source.
LK7	This link selects whether the AD5621 evaluation board is controlled by the PC via the USB port or by an external source via the SMB connectors J1 to J5. • Position A selects control by the PC via the USB port. • Position B selects control by an external source via the SMB connectors J1 to J5.

EVALUATION BOARD SOFTWARE

INSTALLING THE SOFTWARE

The AD5621EBZ evaluation kit includes self-installing software on CD-ROM. The software is compatible with Microsoft® Windows® 2000 or higher.

Install the evaluation board software before connecting the evaluation board to the USB port of the PC. This ensures the evaluation board is correctly recognized when connected to the PC.

1. Start the Windows operating system and insert the CD-ROM.

   The installation software launches automatically. If it does not, use Windows Explorer to locate the file **setup.exe** on the CD-ROM. Select this file to start the installation procedure.

2. At the prompt, select a destination directory, which is **C:\Program Files\Analog Devices\AD5621** by default.

   Once the directory is selected, the installation procedure copies the files into the relevant directories on the hard drive. The installation program creates a program group called **Analog Devices** with subgroup **AD5621** in the **Start** menu of the taskbar.

OPERATING THE SOFTWARE

1. To open the software, click **Start** > **All Programs** > **Analog Devices** > **AD5621** > **AD5621 Evaluation Software**.

2. Choose the part to be tested as shown in Figure 2.

Figure 2. Device Selection

3. Select how the device should operate. Choose **Normal** to operate the device in normal mode. For power-down mode, choose one of the three available options(**Tri-State**, **100 kOhm to GND** , **1 kOhm to GND** or **Three State**) and click **Write** as shown in Figure2.

4. Enter the DAC code in hex code. Select the field populated with zeroes (**000**) for decimal or **Hex** for hex.

5. Select **Write** to update DAC output.

SCHEMATICS AND ARTWORK

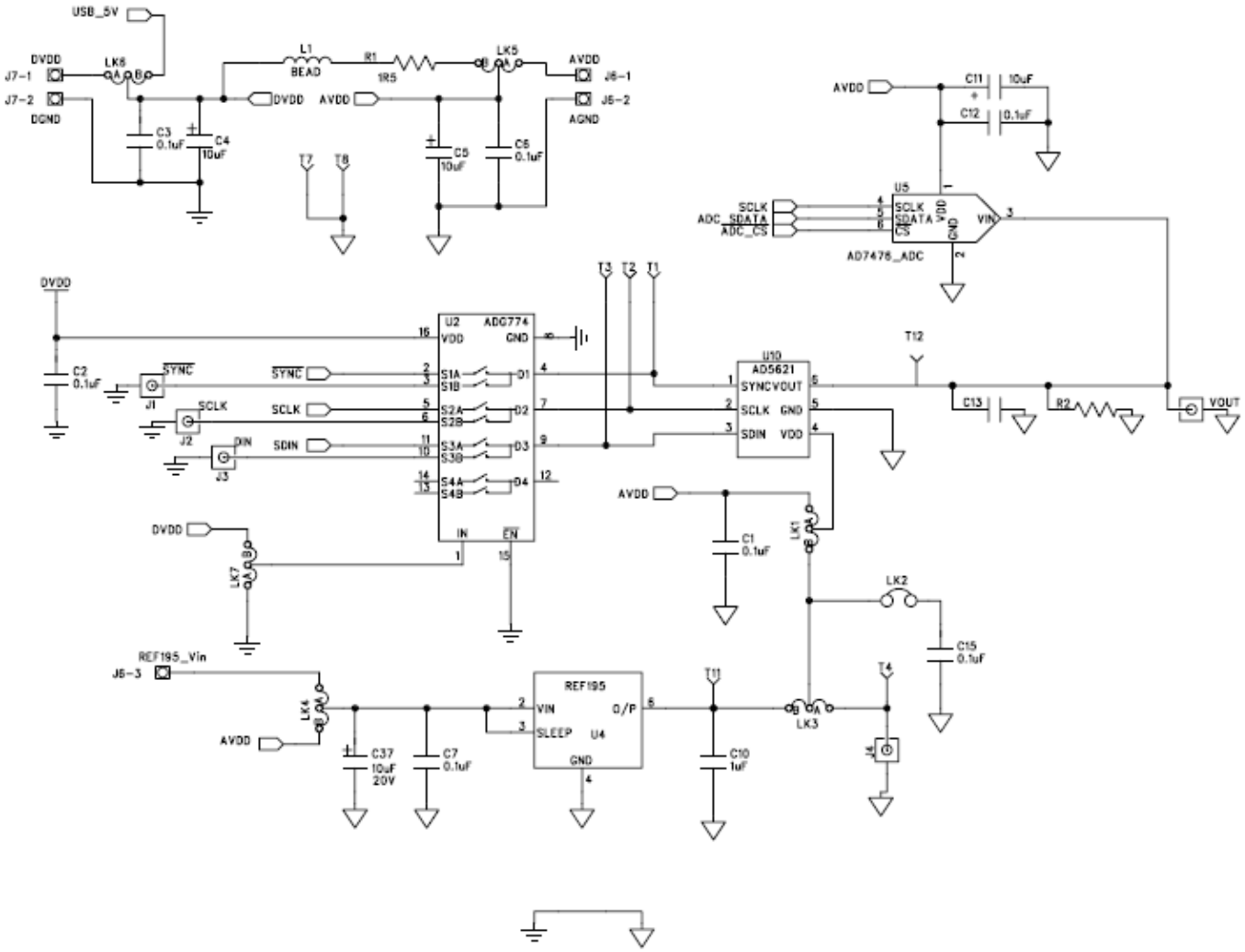

Figure3. Evaluation Board Schematic for EVAL-AD5621EBZ

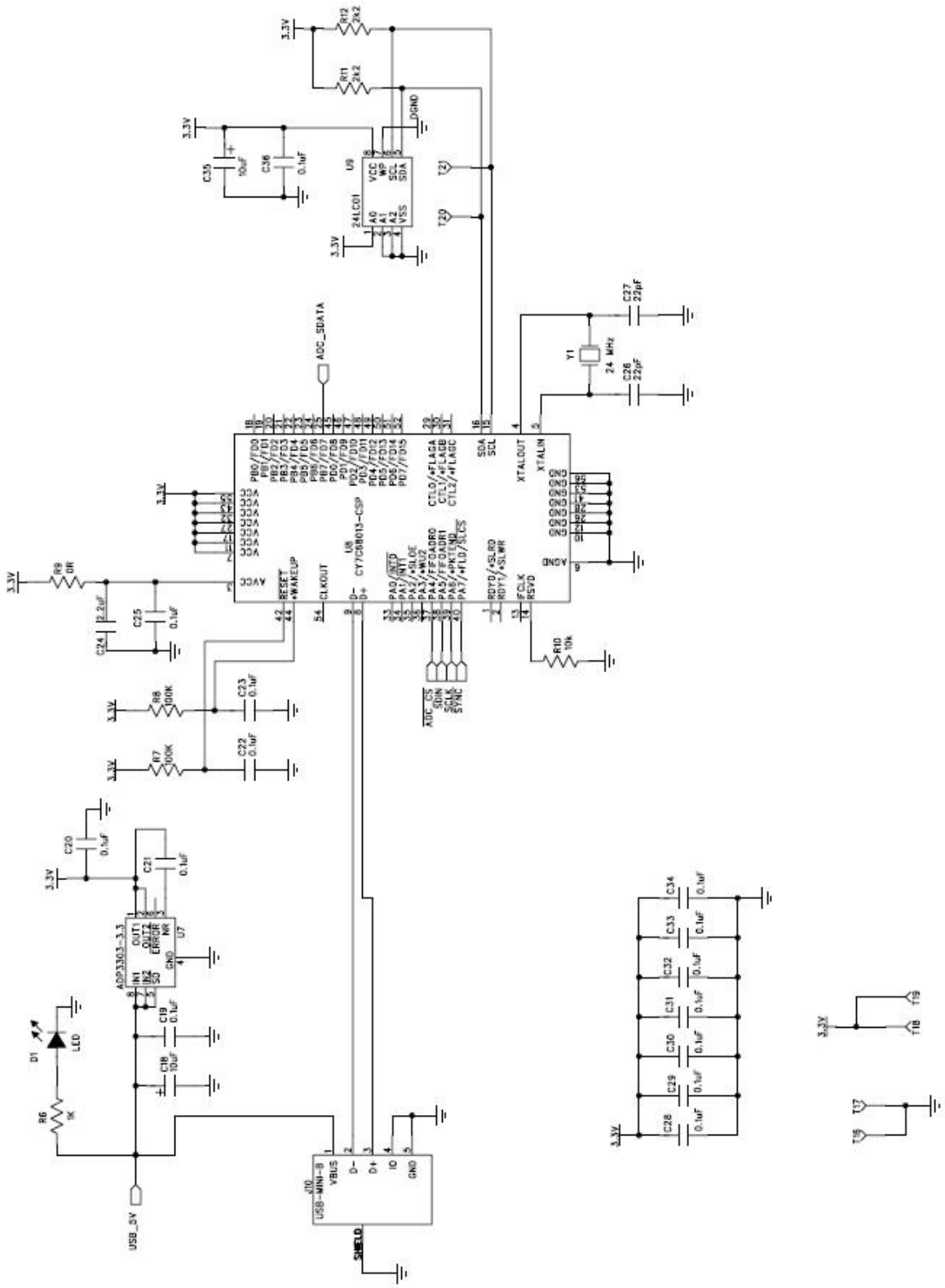

Figure4 . Evaluation Board Schematic for AD5621 Controller

PCB LAYERS FOR EVAL-AD5621EBZ

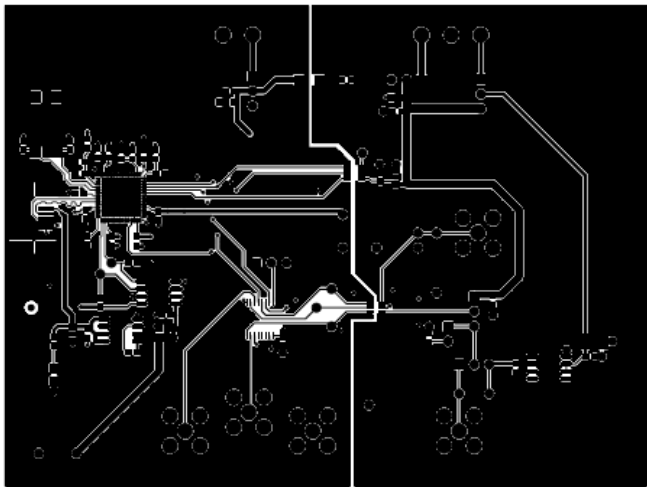

Figure 5. EVAL-AD5621EBZ—
Component Side Artwork

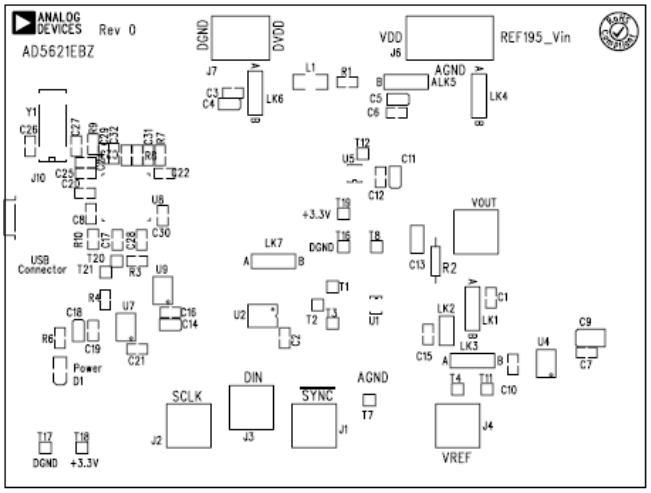

Figure6. EVAL-AD5621EBZ
Component Side View (Top)

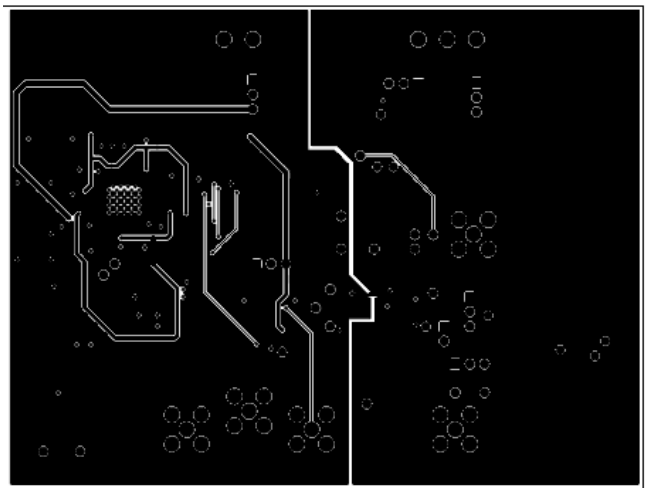

Figure 7. EVAL-AD5621EBZ Solder-Side Artwork

ORDERING INFORMATION

BILLS OF MATERIALS

Table 3. EVAL-AD5621EBZ Bill of Materials

Name	Stock Code
R2	73017015
U1	AD5621BKSZ-REEL7
U5	AD7476ARTZ-REEL7
U2	ADG774BRQZ
U7	ADP3303ARZ-3.3
U9	Digikey 24LC64-I/SN-ND
C24	Digikey 445-1588-1-ND
U8	Embassy CY7C68013-56LFC
J6, J7	FEC 151-785
C4, C5, C14, C18,	FEC 197-130
C9	FEC 197-427
T1, T2, T3, T4, T7, T8, T11,T12, T16, T17, T18, T19, T20, T21	FEC 240-333
J1-4	FEC 310-682
VOUT	FEC 310-682
J10	FEC 476-8309
C11	FEC 498-737
LK2	FEC 511-705&150-411
LK1, 3-7	FEC 512-047 & 150-411
D1	FEC 515-620
Y1	FEC 569-872
L1	FEC 581-094
C1-C3, C6-C8, C15-C17,C19-C23, C25-C32	FEC 722-005
R1	FEC 758-267
R9	FEC 772-227
R6	FEC 911-239
R3,R4	FEC 911-276
R7,R8	FEC 911-471
R10	FEC 911-975
U4	REF195ESZ

Ordering Guide

Model	Description
EVAL-A5621EBZ	Evaluation Board

ESD CAUTION

ESD (electrostatic discharge) sensitive device. Electrostatic charges as high as 4000 V readily accumulate on the human body and test equipment and can discharge without detection. Although this product features proprietary ESD protection circuitry, permanent damage may occur on devices subjected to high energy electrostatic discharges. Therefore, proper ESD precautions are recommended to avoid performance degradation or loss of functionality.

EB06141-0-7/06(0)