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Evaluation Board for AD7839/AD7841, 8-Channel, 13/14-Bit, Parallel input, Voltage-Output DACs

Preliminary Technical Data

EVAL-AD7839/EVAL-AD7841

FEATURES

Full Featured Evaluation Board
On Board Reference and Buffers
Various Link Options
Direct Hook up to Printer Port of IC
PC Software for control of DACs

INTRODUCTION

This Technical Note describes the evaluation board for the AD7839/41, 8 channel 13/14 bit DACs.

The AD7839/41 contains eight 13/14-bit DACs on one monolithic chip. It has output voltages with a full-scale range of ± 10 V from reference voltages of ± 5 V.

The AD7839/41 accepts 13/14-bit parallel loaded data from the external bus into one of the input registers under the control of the WR , CS , and DAC channel address pins, $A0$ – $A2$. The DAC outputs are updated on reception of new data into the DAC registers. All the outputs may be updated simultaneously by taking the $LDAC$ input low.

Each DAC output is buffered with a gain-of-two amplifier into which an external DAC offset voltage can be inserted via the $DUTGNDx$ pins.

OPERATING THE AD7839/41 EVALUATION BOARD

Power Supplies

The following external supplies must be provided: + 5V between the V_{CC} and $DGND$ inputs for the digital supply of the AD7839/41. V_{DD} and V_{SS} should be supplied with ± 15 V respectively. Note that V_{DD} and V_{SS} must provide sufficient headroom for the output voltage range.

Both $AGND$ and $DGND$ inputs are provided on the board. The $AGND$ and $DGND$ planes are connected at one location close to the DAC. 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 $10\mu F$ and $0.1\mu F$ capacitors. Each device supply pin is again decoupled with a $10\mu F$ and $0.1\mu F$ capacitor pair to the relevant ground plane.

LINK OPTIONS

There are a number of link options on the evaluation board which should be set for the required operating setup before using the board. The functions of these link options are described in detail below. This board accommodates both the AD7839 and the AD7841 DACs, both pinouts are similar, the exceptions are taken care of using link options as described below.

| Link No. | Function |
|----------|---|
| LK1 | Position A : Connects AD7841 CLR/ pin to CLR/ input Position B : Connects AD7839 Vss pin to Vss supply. |
| LK2 | Allows the on board reference to be disconnected should the user wish to drive the reference input through the SMB input. |
| LK3 | For bipolar output range, LK3 should be connected to position A, for unipolar output range, connect to position B. |
| LK4 | $DUTGND$ may be driven to the DUT voltage level ± 2 V max/min. |

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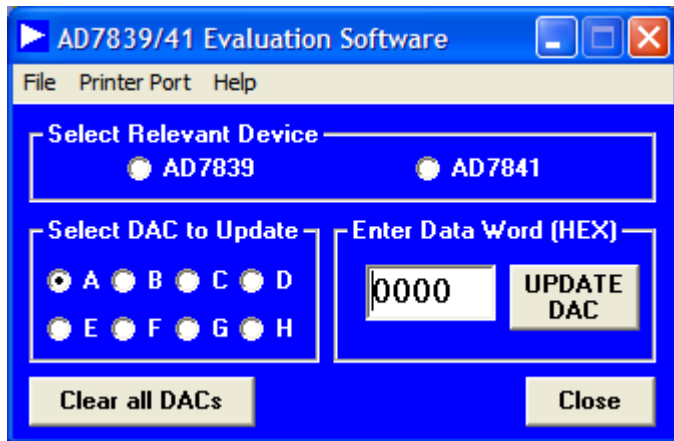
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EVAL-AD7839/EVAL-AD7841

EVALUATION BOARD SOFTWARE

Software Installation

The AD7839/41 evaluation kit consists of self-installing software on CD-ROM. In the event of the setup file not running automatically, run the file setup.exe from the CD-ROM. Software is compatible with Win95 to Windows2000. Ensure that the Centronics cable connects the PC to the AD7839/41 eval board. Run the executable file from the Analog Devices Menu. The main screen with drop down menus (File, Printer Port and Help) looks as follows:



To update a particular DAC, select the DAC channel, enter the DAC word and click "Update DAC" button.

PRELIMINARY TECHNICAL DATA

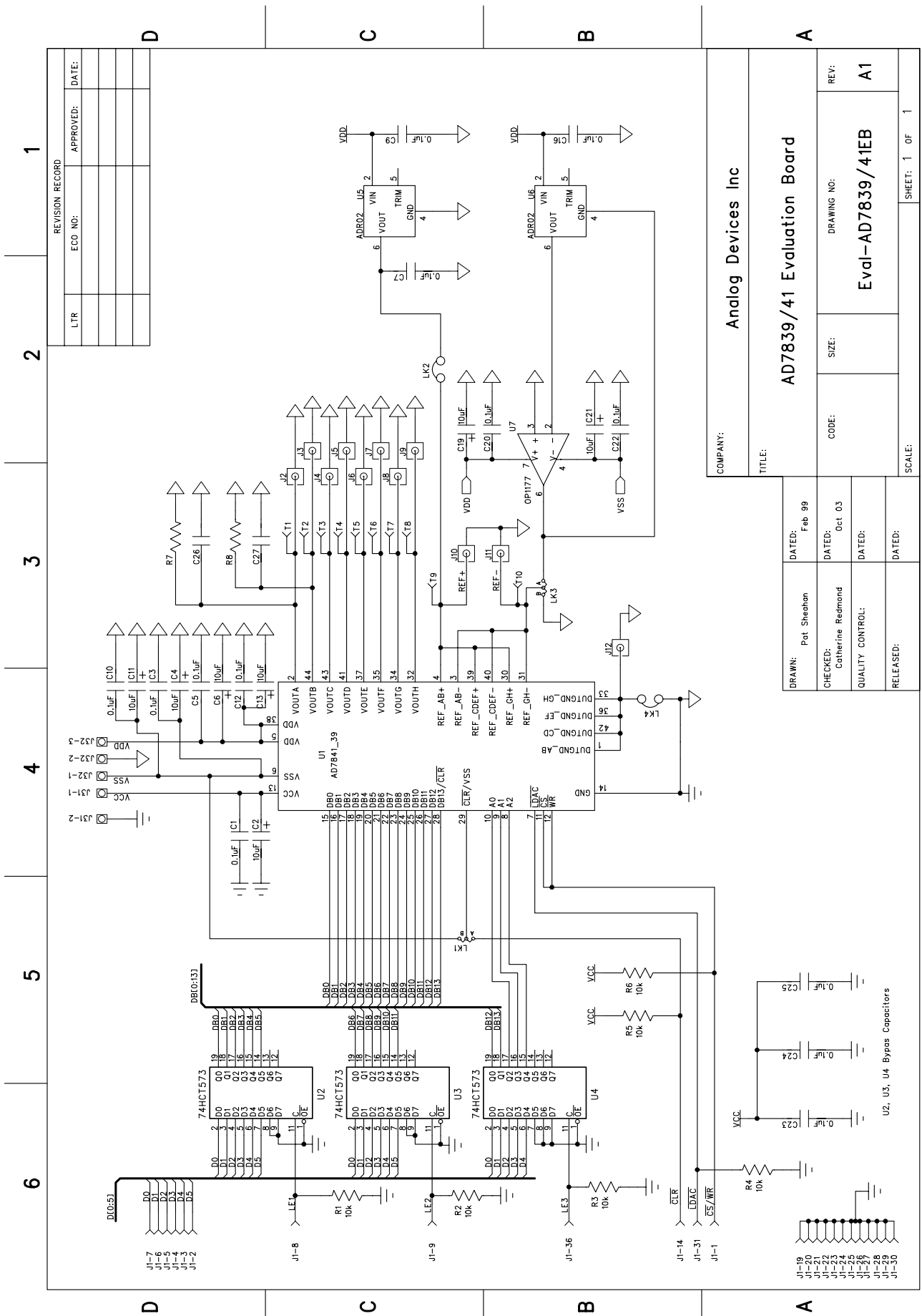
EVAL-AD7839/EVAL-AD7841

Component Listing

| Name | Part Type | Value | Part Description | Stock Code |
|------|--------------|-------|---|-----------------------|
| C1 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C2 | CAP+ | 10uF | 10V DC Tantalum Capacitor | FEC 197-130 |
| C3 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C4 | CAP+ | 10uF | 20V DC Tantalum Capacitor | FEC 355-2512 |
| C5 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C6 | CAP+ | 10uF | 20V DC Tantalum Capacitor | FEC 355-2512 |
| C7 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C9 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C10 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C11 | CAP+ | 10uF | 20V DC Tantalum Capacitor | FEC 355-2512 |
| C12 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C13 | CAP+ | 10uF | 20V DC Tantalum Capacitor | FEC 355-2512 |
| C16 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C18 | CAP | | | Not inserted |
| C19 | CAP+ | 10uF | 20V DC Tantalum Capacitor | FEC 355-2512 |
| C20 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C21 | CAP+ | 10uF | 20V DC Tantalum Capacitor | FEC 355-2512 |
| C22 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C23 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C24 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C25 | CAP | 0.1uF | 16V DC X7R Ceramic Capacitor | FEC 432-210 |
| C26 | CAP | ??? | Load Capacitor | |
| C27 | CAP | ??? | Load Capacitor | |
| J1 | CENTRONICS | | 36 Pin 90° Centronics Connector | FEC 147-753 |
| J2 | SMB | | SMB Jack | FEC 410-8164 |
| J3 | SMB | | SMB Jack | FEC 410-8164 |
| J4 | SMB | | SMB Jack | FEC 410-8164 |
| J5 | SMB | | SMB Jack | FEC 410-8164 |
| J6 | SMB | | SMB Jack | FEC 410-8164 |
| J7 | SMB | | SMB Jack | FEC 410-8164 |
| J8 | SMB | | SMB Jack | FEC 410-8164 |
| J9 | SMB | | SMB Jack | FEC 410-8164 |
| J10 | SMB | | SMB Jack | FEC 410-8164 |
| J11 | SMB | | SMB Jack | FEC 410-8164 |
| J12 | SMB | | SMB Jack | FEC 410-8164 |
| J31 | CONPOWER | | 2 Pin Terminal Block | FEC 151-785 |
| J32 | CONPOWER3 | | 3 Pin Terminal Block | FEC 151-786 |
| LK1 | JUMPER2/SIP3 | | Left for AD7841 - right for AD7839 | FEC 511-717 & 150-411 |
| LK2 | JUMPER | | 2 Pin Header | FEC 511-705 & 150-411 |
| LK3 | JUMPER2/SIP3 | | 3 Pin Header | FEC 511-717 & 150-411 |
| LK4 | JUMPER | | 2 Pin Header | FEC 511-705 & 150-411 |
| R1 | RES | 10k | 0.063W Resistor | FEC 911-355 |
| R2 | RES | 10k | 0.063W Resistor | FEC 911-355 |
| R3 | RES | 10k | 0.063W Resistor | FEC 911-355 |
| R4 | RES | 10k | 0.063W Resistor | FEC 911-355 |
| R5 | RES | 10k | 0.063W Resistor | FEC 911-355 |
| R6 | RES | 10k | 0.063W Resistor | FEC 911-355 |
| R7 | RES | | Load Resistor | |
| R8 | RES | | Load Resistor | |
| T1 | TESTPOINT | | Testpoint | FEC 240-345 |
| T2 | TESTPOINT | | Testpoint | FEC 240-345 |
| T3 | TESTPOINT | | Testpoint | FEC 240-345 |
| T4 | TESTPOINT | | Testpoint | FEC 240-345 |
| T5 | TESTPOINT | | Testpoint | FEC 240-345 |
| T6 | TESTPOINT | | Testpoint | FEC 240-345 |
| T7 | TESTPOINT | | Testpoint | FEC 240-345 |
| T8 | TESTPOINT | | Testpoint | FEC 240-345 |
| T9 | TESTPOINT | | Testpoint | FEC 240-345 |
| T10 | TESTPOINT | | Testpoint | FEC 240-345 |
| U1 | AD7841_39 | | 13/14 Bit Parallel Input Voltage Output DAC | AD7839AS / AD7841AS |
| U2 | 74HCT573 | | Octal D-Type Transparent Latch | FEC 492-097 |
| U3 | 74HCT573 | | Octal D-Type Transparent Latch | FEC 492-097 |
| U4 | 74HCT573 | | Octal D-Type Transparent Latch | FEC 492-097 |
| U5 | ADR02 | | 5V Reference | ADR02AR |
| U6 | ADR02 | | 5V Reference | ADR02AR |
| U7 | OP1177 | | Precision, Low Loise, Single OP Amp | OP1177AR |

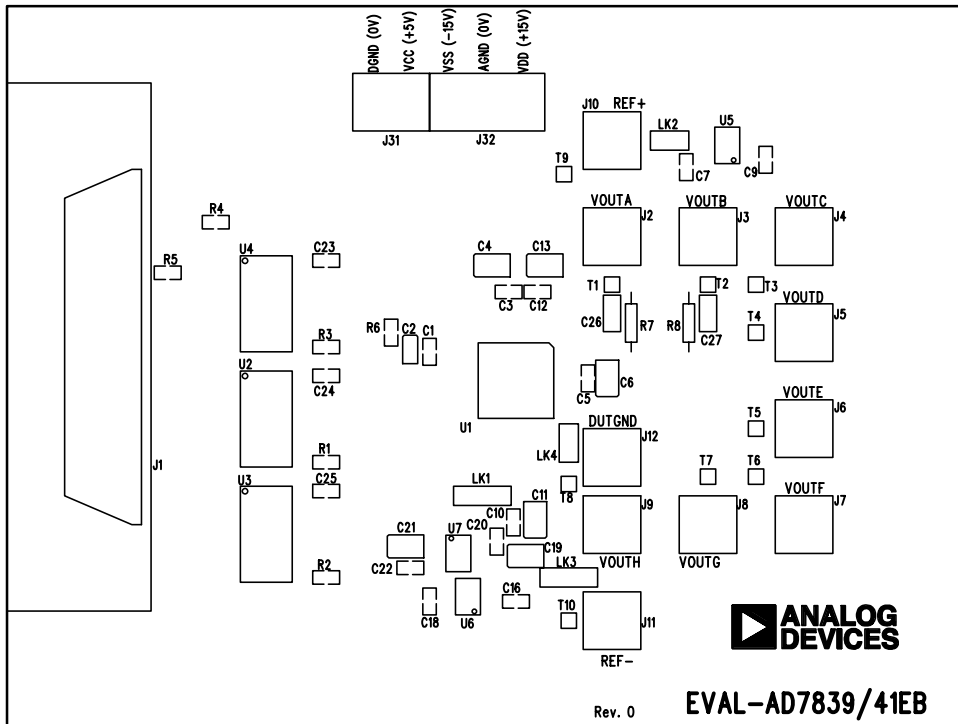
PRELIMINARY TECHNICAL DATA

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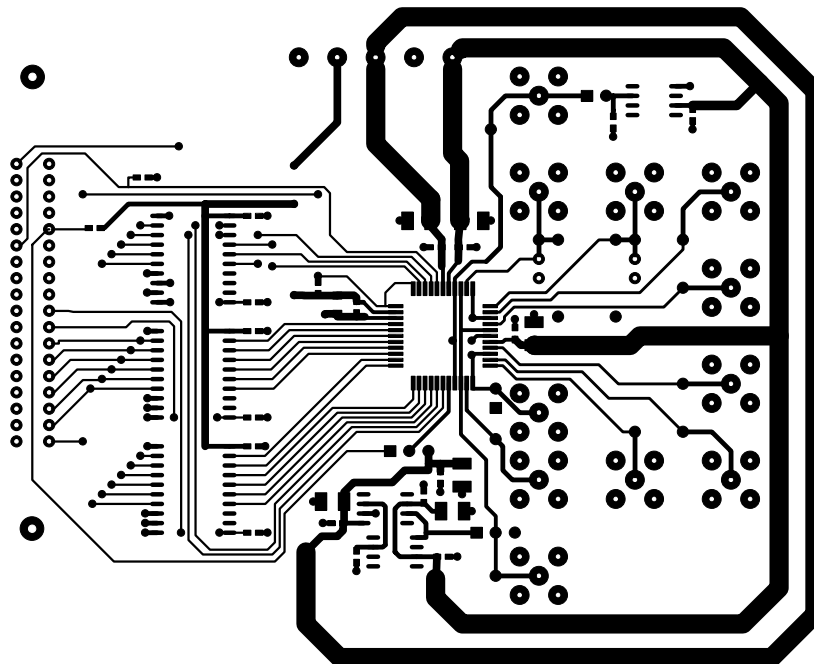


PRELIMINARY TECHNICAL DATA

EVAL-AD7839/EVAL-AD7841



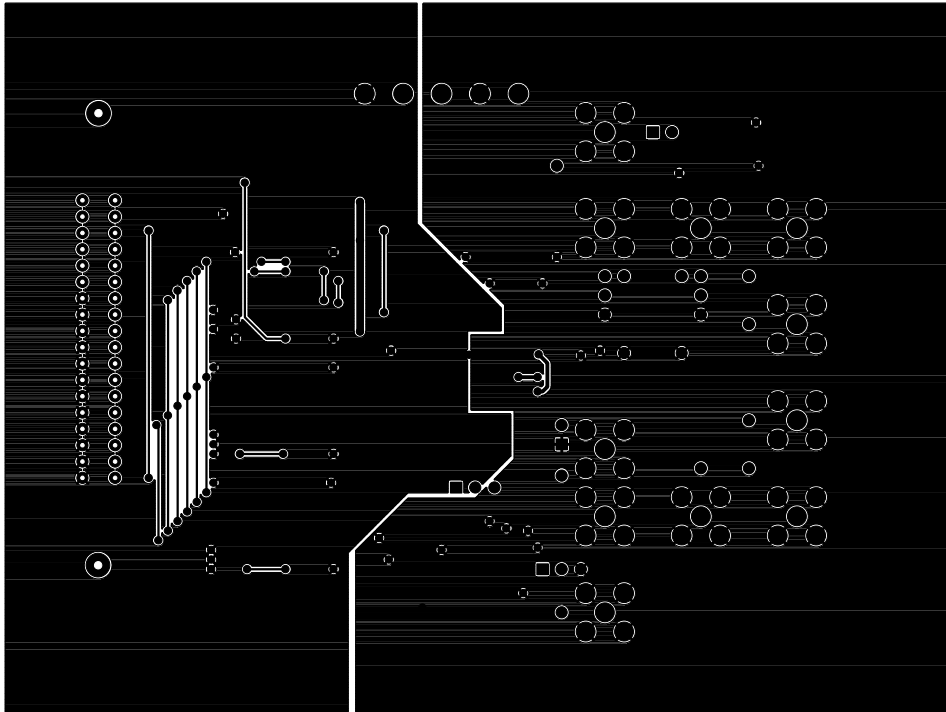
AD7839 EVALUATION BOARD - COMPONENT SIDE VIEW
SILKSCREEN



AD7839 EVALUATION BOARD - COMPONENT SIDE VIEW
COMPONENT SIDE

PRELIMINARY TECHNICAL DATA

EVAL-AD7839/EVAL-AD7841



AD7839 EVALUATION BOARD – COMPONENT SIDE VIEW

SOLDER SIDE