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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 $10\mu\text{F}$ and $0.1\mu\text{F}$ capacitors. Each device supply pin is again decoupled with a $10\mu\text{F}$ and $0.1\mu\text{F}$ 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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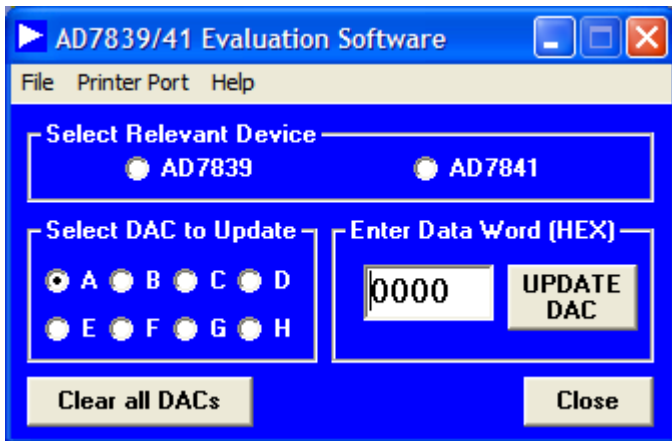
PRELIMINARY TECHNICAL DATA

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.

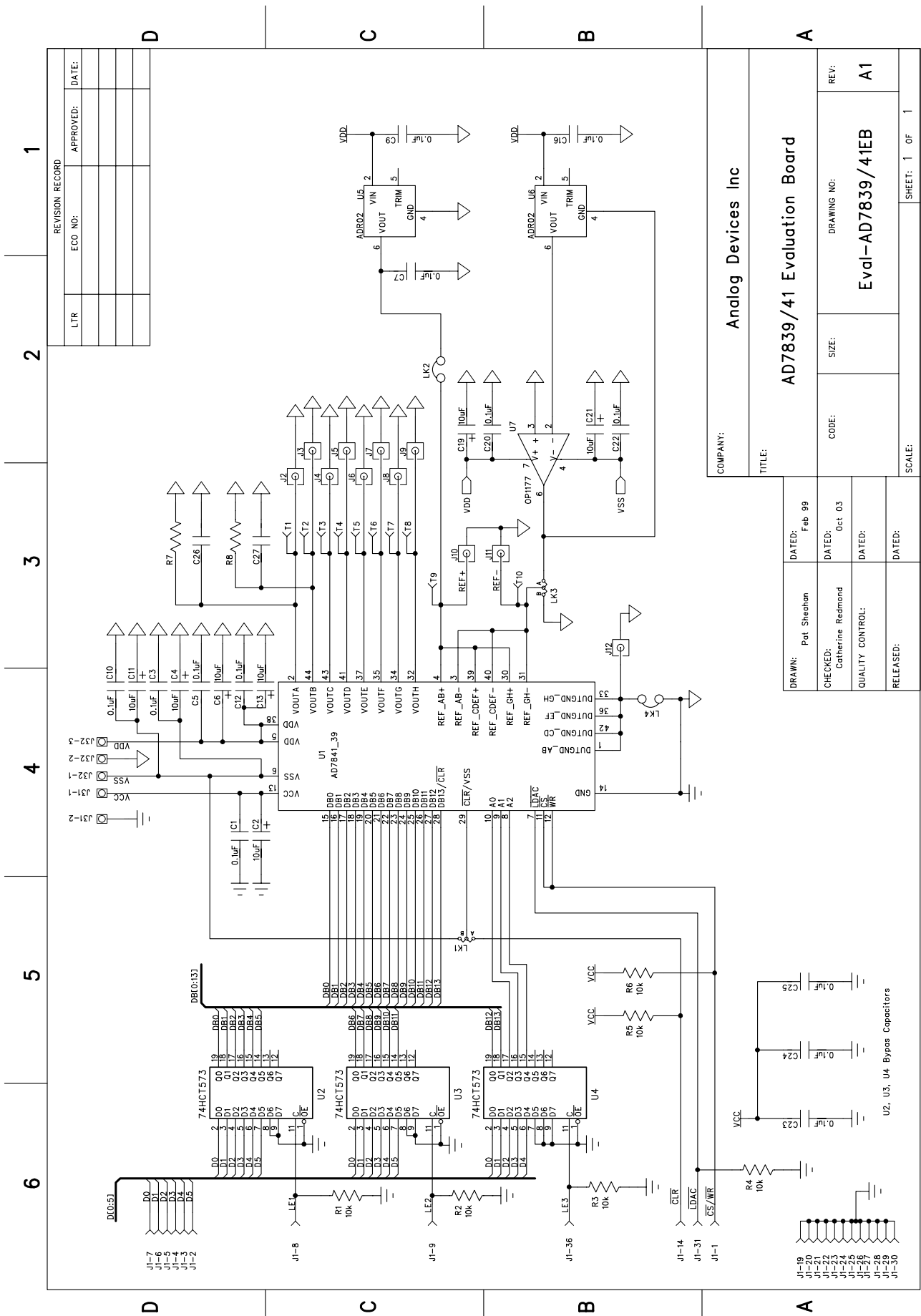
PRELIMINARY TECHNICAL DATA

EVAL-AD7839/EVAL-AD7841

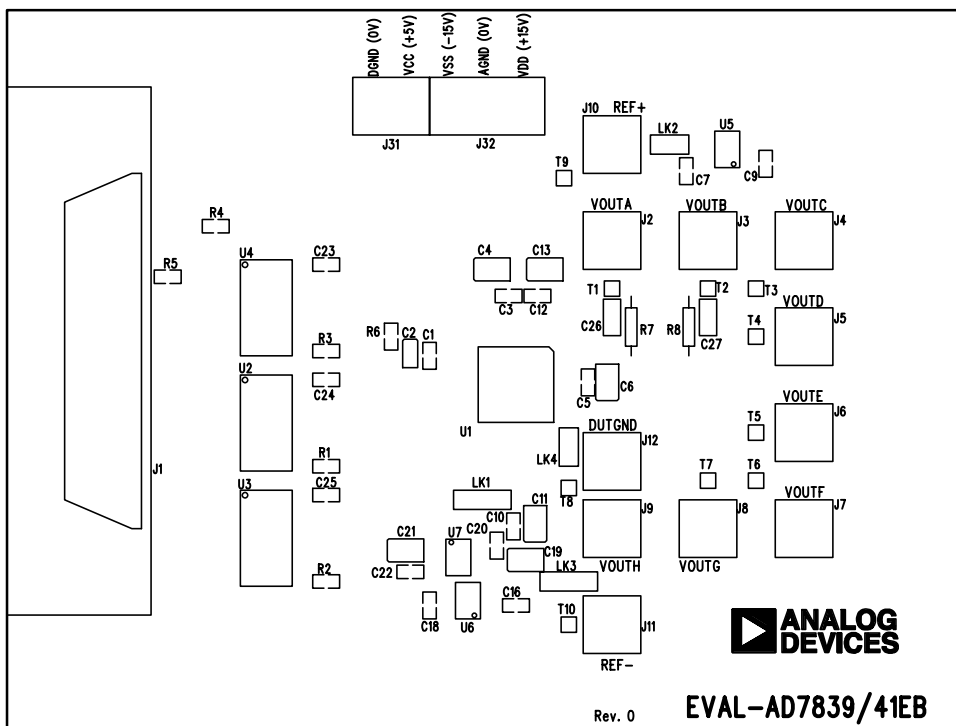
Component Listing

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

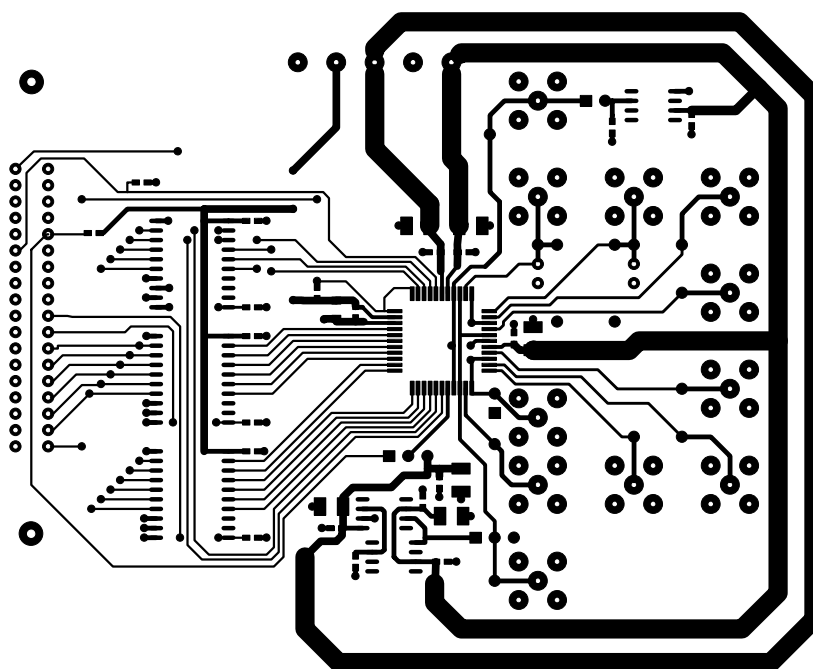
EVAL-AD7839/EVAL-AD7841



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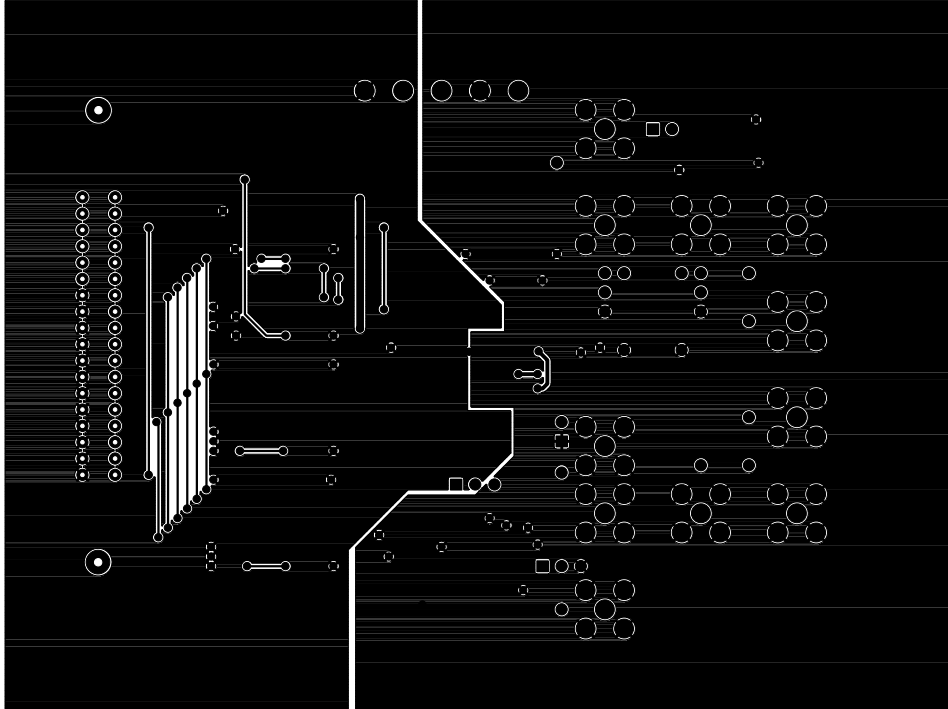
AD7839 EVALUATION BOARD – COMPONENT SIDE VIEW
SILKSCREEN



AD7839 EVALUATION BOARD – COMPONENT SIDE VIEW
COMPONENT SIDE

PRELIMINARY TECHNICAL DATA

EVAL-AD7839/EVAL-AD7841



AD7839 EVALUATION BOARD – COMPONENT SIDE VIEW

SOLDER SIDE