

EVAL-MELODY-7 Evaluation Board

FEATURES

HDMI input and output with HDCP 1.4 technology support
Audio decoding and processing using the [ADSP-21573](#)
Differential line level analog audio output

HARDWARE NEEDED

Analog Devices, Inc., [ICE-2000](#) USB to JTAG adapter
(required for updating the [ADSP-21573](#) firmware)
1 to 3 DB25 to RCA cables, such as the CS-2436-06 from
Infinite Cables
Straight through serial cable: DB9
(required for updating the [ADSP-BF524](#) firmware)

SOFTWARE NEEDED

PC with a licensed copy of [CrossCore Embedded Studio](#)
Rev. 2.5.0 for Windows® (required for updating the [ADSP-21573](#) firmware)
Xilinx® platform cable USB and associated software needed
to program the Xilinx XC2C256 CPLD

GENERAL DESCRIPTION

The [EVAL-MELODY-7](#) evaluation board is a platform that allows users to evaluate Analog Devices products intended for decoding high quality digital audio signals.

The [EVAL-MELODY-7](#) evaluation board provides a Blackfin® [ADSP-BF524](#) processor for system control and a SHARC® [ADSP-21573](#) dual core SHARC+ digital signal processor for audio decoding. This evaluation board also includes High-bandwidth Digital Content Protection (HDCP) 1.4 technology. To order this evaluation board, the user must be licensed for the HDCP 1.4 technology.

Full specifications for the [ADSP-21573](#) and the [ADSP-BF524](#) are listed in the [ADSP-21573](#) data sheet and the [ADSP-BF524](#) data sheet available from Analog Devices and must be consulted in conjunction with this user guide when using the evaluation board.

EVAL-MELODY-7 EVALUATION BOARD PHOTOGRAPH

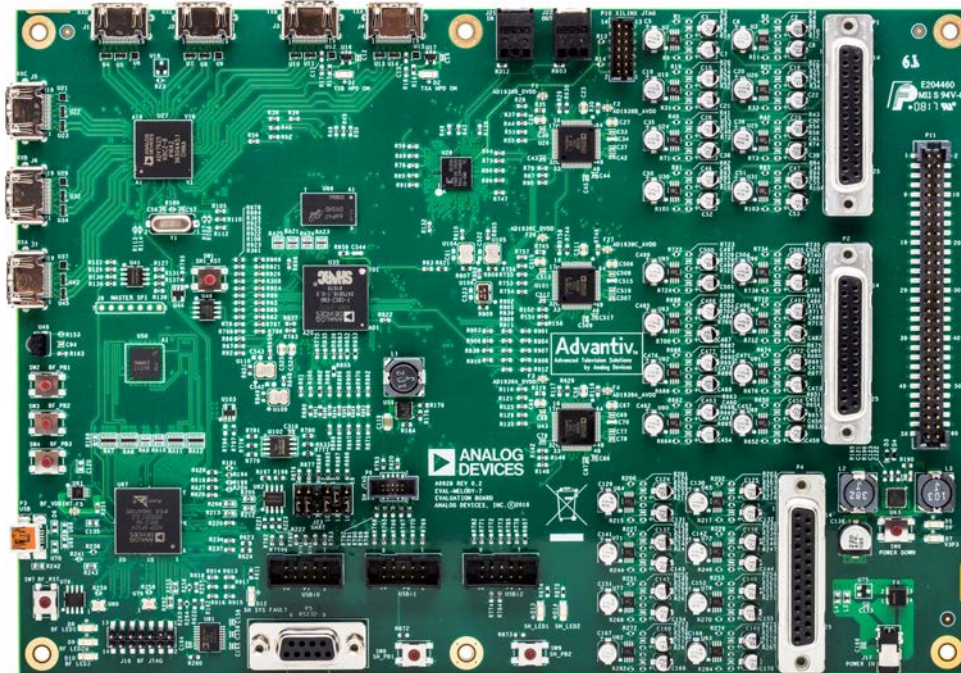


Figure 1.

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REVISION HISTORY

5/2017—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

A block diagram of the EVAL-MELODY-7 platform is shown in Figure 2. The ADV7625 provides the digital audio input and the AD1939 handles the digital audio output. The evaluation board hardware components are described in Table 1.

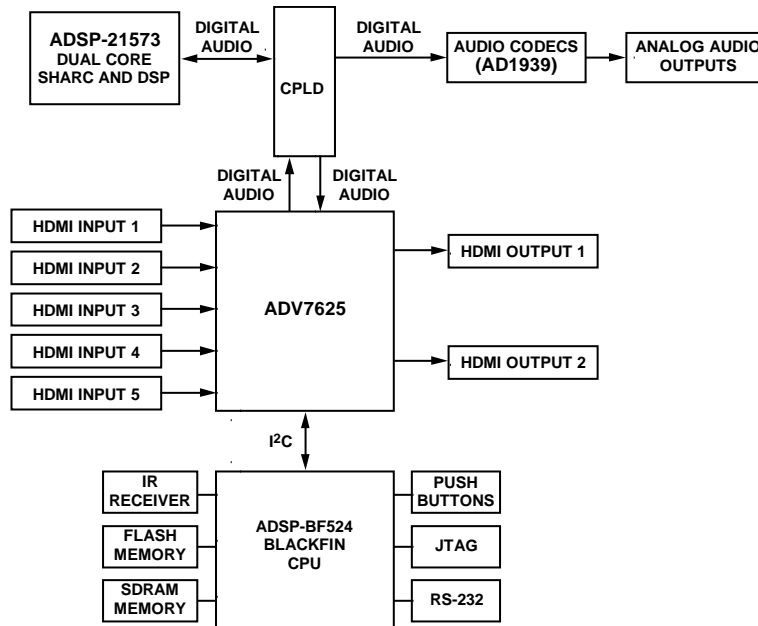


Figure 2.

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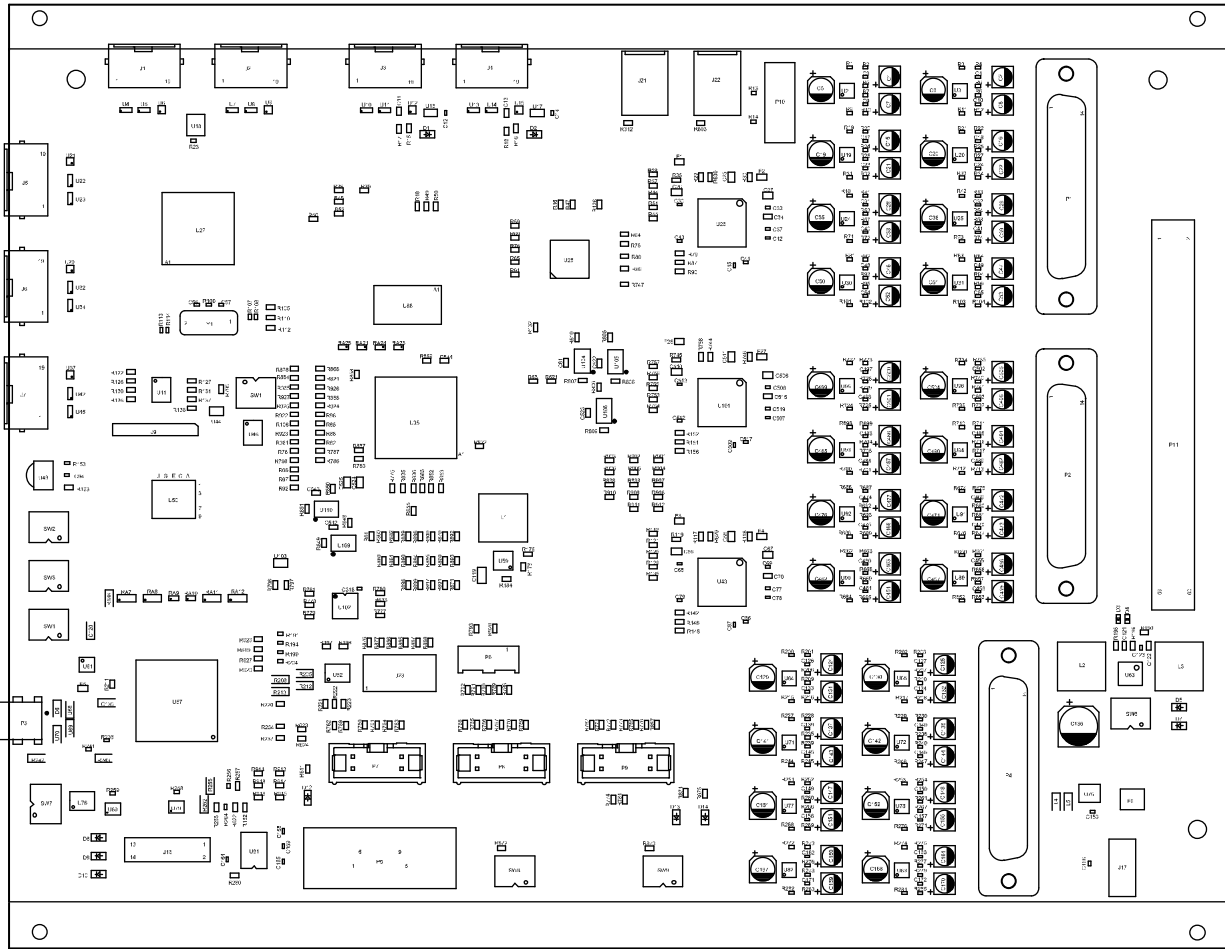


Figure 3. Assembly Drawing (Top Side) of the EVAL-MELODY-7 Printed Circuit Board (PCB)

Table 1. Evaluation Board Hardware Components

Reference Designator	Function	Description
J17	Power connector	The 5 V at 3.6 A power supply is connected at J17.
SW7	ADSP-BF524 reset	This push button switch resets the ADSP-BF524 processor.
SW1	ADSP-21573 reset	This push button switch resets the ADSP-21573 processor.
P5	RS-232 port	RS-232 interface for ADSP-BF524 or ADSP-21573 (configurable). A straight through serial cable must be connected between a PC and this port to update the firmware for the ADSP-BF524.
P3	ADSP-BF524 USB port	Unused at this time.
J16	ADSP-BF524 JTAG	An ICE-2000 JTAG emulator can be connected here to restore the ADSP-BF524 universal bootloader (uboot) or to step through the ADSP-BF524 source code.
P6	ADSP-21573 JTAG	An ICE-2000 JTAG emulator can be connected here to program the ADSP-21573 flash or to step through ADSP-21573 source code.
J7	HDMI Input 1 (RXA)	High-Definition Multimedia Interface (HDMI) connector for receiving audio and video over HDMI (from a Blu-ray player, for example).
J6	HDMI Input 2 (RXB)	Unused.
J5	HDMI Input 3 (RXC)	Unused.
J1	HDMI Input 4 (RXD)	Unused.
J2	HDMI Input 5 (RXE)	Unused.
J4	HDMI Output 1 (TXA)	HDMI connector for transmitting audio and video over HDMI (to a TV, for example).
J3	HDMI Output 2 (TXB)	Unused.
D10	ADSP-BF524 LED	Indicates status of ADSP-BF524 (flashes when firmware is running).
D13	ADSP-21573 LED 1	ADSP-21573 status LED 1 (functionality depends on software).
D14	ADSP-21573 LED 2	ADSP-21573 status LED 2 (functionality depends on software).

Reference Designator	Function	Description
D12	ADSP-21573 fault	If lit, this LED indicates that the ADSP-21573 has experienced a system fault.
P4	Output 1 to Output 8	DB25 female connector containing differential line level analog audio outputs (P4 Channel 1 to Channel 8).
P1	Output 9 to Output 16	DB25 female connector containing differential line level analog audio outputs (P1 Channel 1 to Channel 8).
P2	Output 17 to Output 24	Unused.

EVALUATION BOARD SOFTWARE

The software on the [EVAL-MELODY-7](#) evaluation board consists of firmware and a configuration code running on three devices:

- [ADSP-BF524](#) application processor (U67)
- [ADSP-21573](#) audio processor (U35)
- Xilinx XC2C256 complex programmable logic device (CPLD) (U28)

For the evaluation board to work correctly, all three devices must be configured for the desired application. The software and full documentation package for this evaluation board must

be requested through the software request form (SRF) process on the Analog Devices website. For additional options, contact a local Analog Devices sales or distribution representative.

The software passes video from the RXA input to the TXA output, processes the extracted audio in [ADSP-21573](#), and the line level analog audio output is available on Connector P4 Channel 1 to Channel 8 and Connector P1 Channel 1 to Channel 8. It is recommended to purchase the CS-2436-06 from Infinite Cables because its RCA cables are labeled with the channel number.

RELATED LINKS

Resource	Description
ADSP-21573	SHARC+ Dual Core DSP with ARM Cortex-A5
ADSP-BF524	Blackfin Embedded Processor

I²C refers to a communications protocol originally developed by Philips Semiconductors (now NXP Semiconductors).

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