

EVAL-MELODY-8 Evaluation Board

FEATURES

HDMI input and output with HDCP 1.4 technology support
Audio decoding and processing using the [ADSP-21569](#)
Differential line level analog audio output

EQUIPMENT NEEDED

Analog Devices [ICE-2000](#) USB to JTAG adapter (required for updating the [ADSP-21569](#) firmware)
1 to 3 DB25 to RCA cables, such as the CS-2436-06 from Infinite Cables (required to listen to the analog audio)
Straight through serial cable: DB9 (required for updating the [ADSP-BF524](#) firmware)
Xilinx platform cable USB (required to program the XC2C256)

SOFTWARE NEEDED

PC with a licensed copy of [CrossCore® Embedded Studio](#) Rev. 2.9.0 for Windows® (required for updating the [ADSP-21569](#) firmware)
[Xilinx ISE Design Suite 14.7](#) (required to program the XC2C256)

GENERAL DESCRIPTION

The EVAL-MELODY-8 board is a platform that allows users to evaluate Analog Devices, Inc., products intended for decoding high quality, digital audio signals.

The EVAL-MELODY-8 board includes a Blackfin® [ADSP-BF524](#) processor for system control and a SHARC® [ADSP-21569](#), which is a SHARC+® single core, high performance, digital signal processor for audio decoding. The evaluation board also includes the [ADV7625](#) High-Definition Multimedia Interface (HDMI®) transceiver with high bandwidth digital content protection (HDCP) 1.4 technology. To order the EVAL-MELODY-8 board, the user must be licensed for the HDCP 1.4 technology.

Full specifications for the [ADSP-21569](#) are listed in the [ADSP-21569](#) data sheet. Full specifications for the [ADSP-BF524](#) are listed in the [ADSP-BF524](#) data sheet. Consult the data sheets in conjunction with this user guide when using the EVAL-MELODY-8 board.

EVAL-MELODY-8 EVALUATION BOARD PHOTOGRAPH

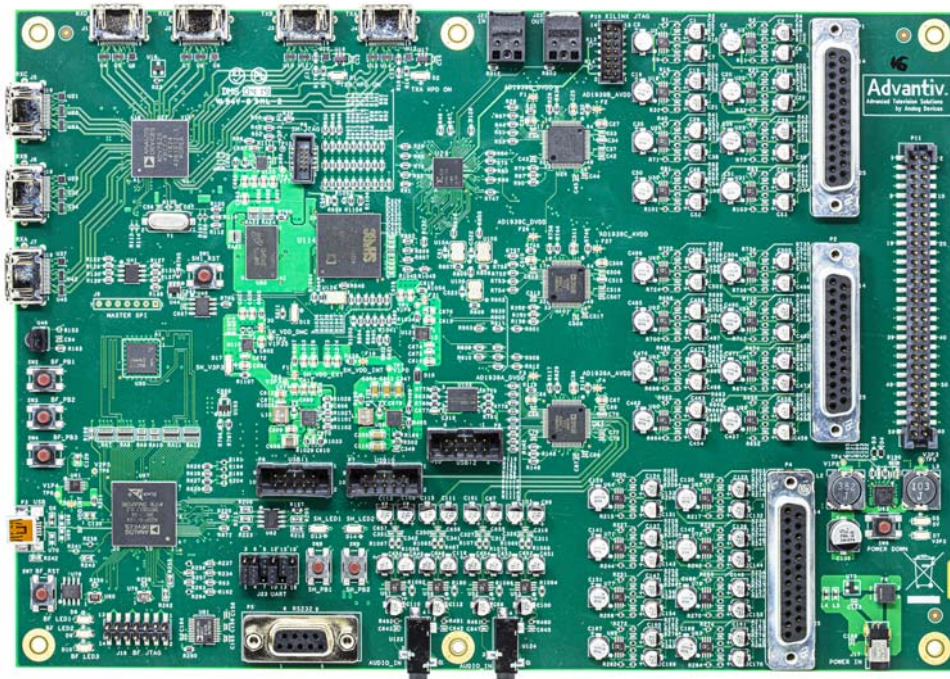


Figure 1.

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REVISION HISTORY

4/2020—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

Figure 2 shows a block diagram of the EVAL-MELODY-8 board platform. The on-board [ADV7625](#) device provides the digital audio input and the on-board [AD1939](#) device handles the digital

audio output. Table 1 describes the EVAL-MELODY-8 board hardware component.

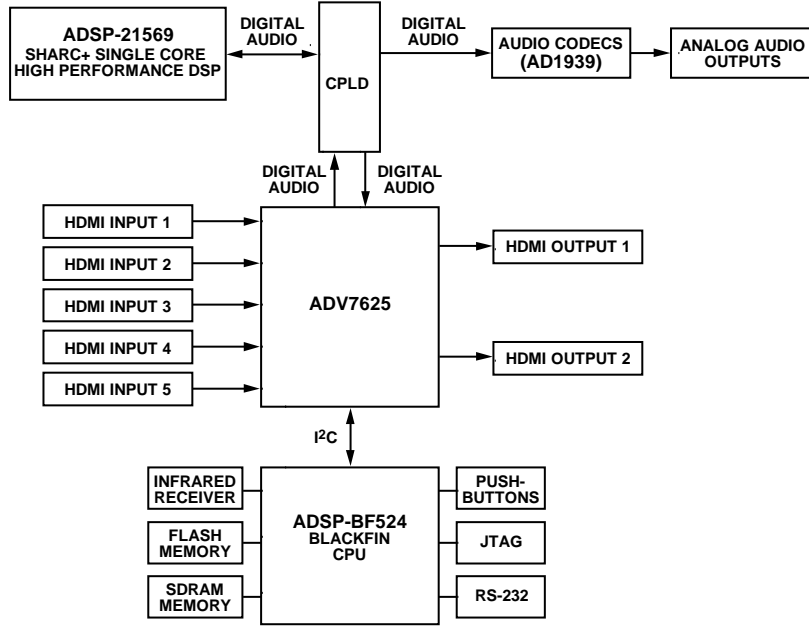


Figure 2. EVAL-MELODY-8 Hardware Block Diagram

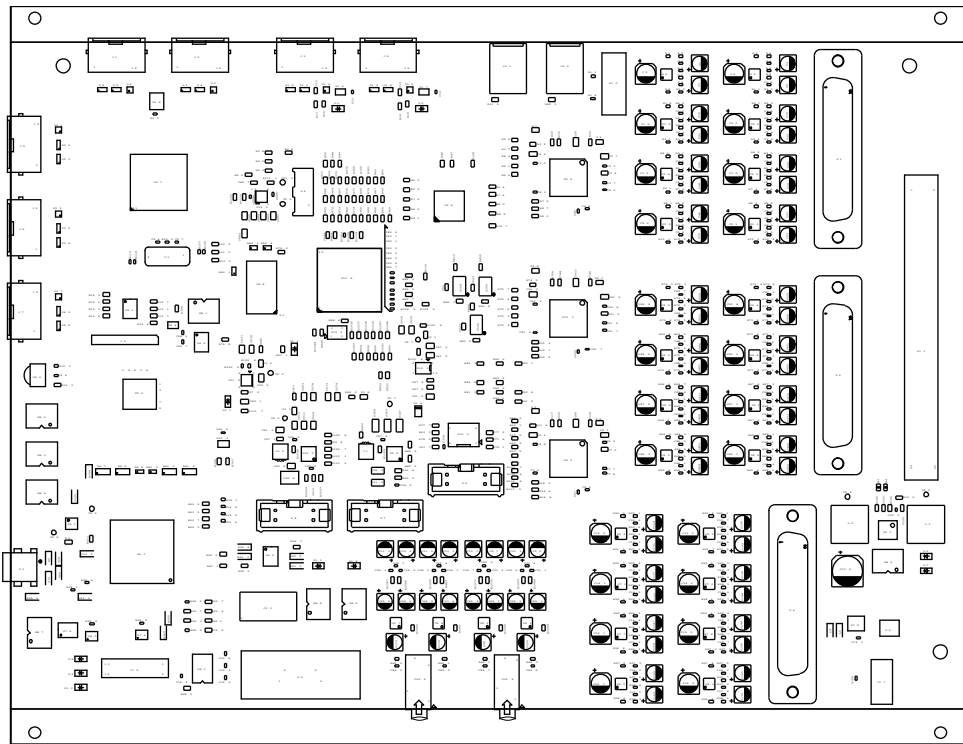


Figure 3. EVAL-MELODY-8 Printed Circuit Board (PCB) Assembly Drawing (Top Side)

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-21569 reset	This push-button switch resets the ADSP-21569 processor.
P5	RS-232 port	This port is the RS-232 interface for the ADSP-BF524 or the ADSP-21569 (configurable). Connect a straight through serial cable (DB9) between the PC and this port to update the firmware for the ADSP-BF524 .
P3	ADSP-BF524 USB port	Unused.
J16	ADSP-BF524 JTAG	Connect an ICE-2000 Joint Test Action Group (JTAG) emulator at J16 to restore the ADSP-BF524 universal bootloader (uboot) or to step through the ADSP-BF524 source code.
P6	ADSP-21569 JTAG	Connect an ICE-2000 JTAG emulator to program the ADSP-21569 flash or to step through the ADSP-21569 source code.
J7	HDMI Input 1 (RxA)	HDMI connector for receiving audio and video over HDMI (from a Blu-ray Disc® 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 the status of the ADSP-BF524 and flashes when the firmware is running.
D13	ADSP-21569 LED 1	ADSP-21569 Status LED 1 (functionality depends on software).
D14	ADSP-21569 LED 2	ADSP-21569 Status LED 2 (functionality depends on software).
D12	ADSP-21569 fault	The LED lights up to indicate when the ADSP-21569 experiences a system fault.
P4	Output 1 to Output 8	The DB25 female connector contains differential, line level, analog audio outputs (P4 Channel 1 to Channel 8).
P1	Output 9 to Output 16	The DB25 female connector contains 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-8 board consists of firmware and a configuration code running on the following three devices:

- [ADSP-BF524](#) application processor (U67)
- [ADSP-21569](#) audio processor (U114)
- Xilinx® XC2C256 complex programmable logic device (CPLD) (U28)

For the EVAL-MELODY-8 board to work correctly, configure all three devices for the desired application. Request the software and full documentation package for the EVAL-MELODY-8 board 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 HDMI RxA input to the TxA output and processes the extracted audio in the [ADSP-21569](#). The line level analog audio output is available on Channel 1 to Channel 8 of the P4 connector, and Channel 1 to Channel 8 of the P1 connector. 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-21569	SHARC+ Single Core High Performance DSP (Up to 1 GHz)
ADSP-BF524	Blackfin Embedded Processor



ESD Caution
ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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