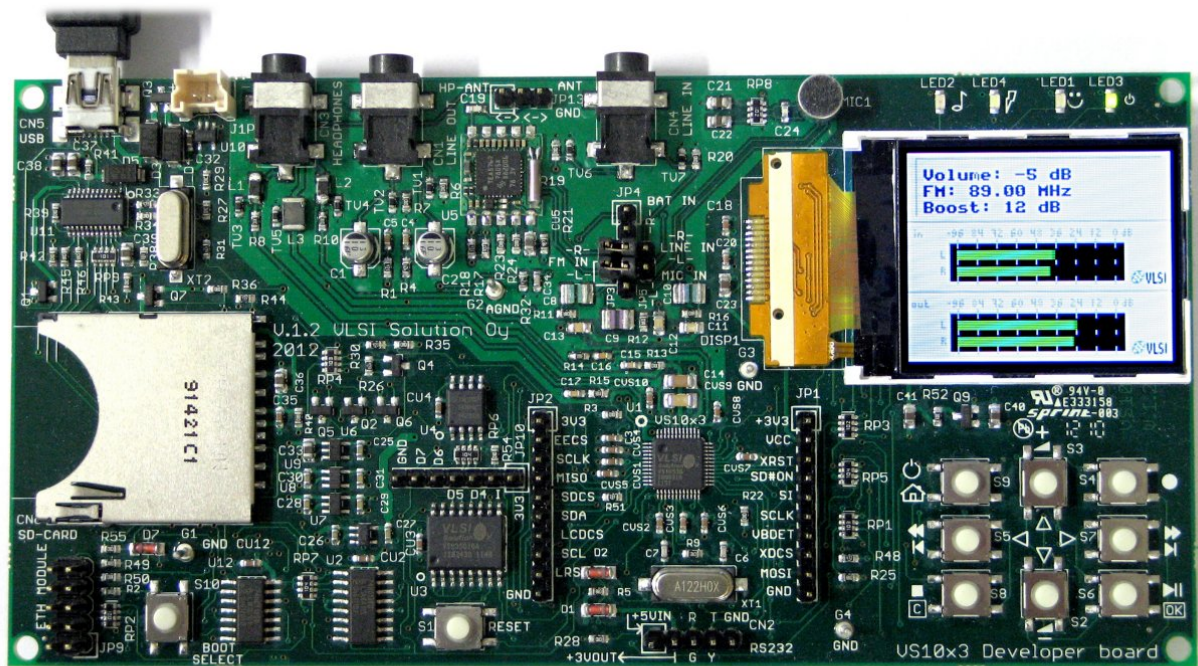


VS8053 / VS1053 Developer Board

Release Notes



A Board for Developing Signal Processing Applications

The VS8053 / VS1053 Developer Board is a feature-rich developer board for developing signal processing applications which have audio input and audio output. The current template software, which is available from VLSI in VSIDE version 2.17 handles:

- High Quality 16-bit, 48 kHz Stereo Audio Input from ADC (Line In).
- An example Signal Processing Function: a simple amplifier.
- High Quality Analog Stereo Audio Output (Line Out / Headphones).
- FM Radio Module (PL102BC : TEA5767) Radio Channel Tuning.
- 1.77" TFT LCD Graphical User Interface.
- Button reading with optional button beep sound.
- Audio Interrupt Handlers written in C Language.
- Signal preconditioning filters: DC blocking and Saturation Limiter

Board Functionality, which is currently OK:

- Stereo Line In.
- Stereo Line Out and Headphone Out. (Same audio to both.)
- FM Radio Module (PL102BC : TEA5767).
- Headphone Wire Antenna / External Antenna Connector.
- 1.77" TFT LCD Module.
- 8 Buttons for User Interface.
- Boot Select Button (for reflashing the SPI Flash).
- Reset Button.
- Extension Connectors for connecting MCU or other ICs.
- USB Connector for Charging a Li-Ion Battery.*
- Li-Ion Battery Connector and Li-Ion Battery Charger IC (100mA charging current).*
- UART port for connecting VSIDE USB UART Cable.

*) Battery not included, 3.7 volt Li-Ion battery must be obtained separately

Board Functionality, which requires additional software not yet available:

- SD Card Slot
- USB SD Card Reader IC*
- Electret Microphone
- Battery Level Monitor
- 25VF016 SPI Flash (16 megabit / 2 megabyte)**
- VS23S010 SPI RAM (1 megabit / 128 kilobyte) ***

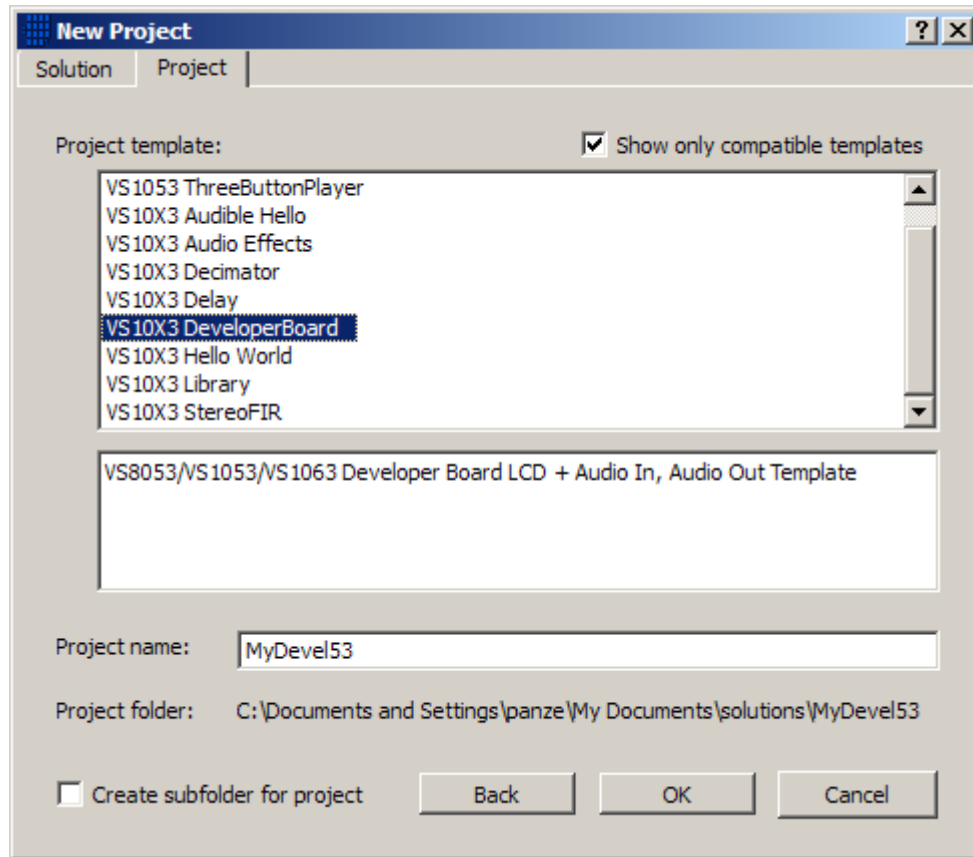
*) The USB SD card reader functionality works, but is not yet useful because there is no software available for the VS8053/VS1053 to access the SD card.

***) The SPI flash can currently only be used for booting the board.

***) Engineering Sample of new product, may not be available on all boards.

Software Loading using VSIDE

The default software which is prommed to the board at VLSI can be found from VSIDE version 2.17. First select File->New Solution->VS1053 Solution->VS10X3 DeveloperBoard.



This opens the software solution with the software release notes. Please familiarize yourself with the information shown to you, since it may have changed after this document was written.

VS8051/VS1053/VS1063 Developer Board LCD + Audio In, Audio Out Template

This is an audio in + audio out + LCD display template for the
VS8053 / VS1053 / VS1063 DEVELOPER BOARD.

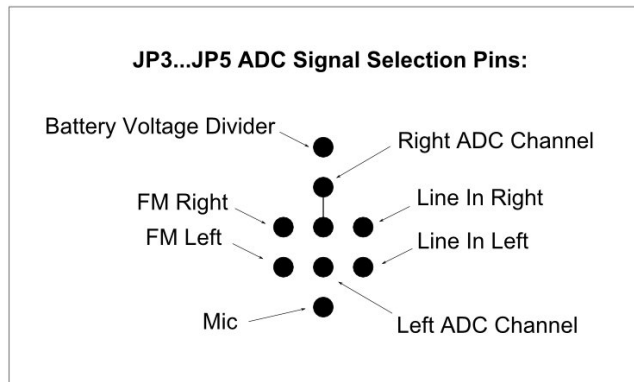
It is useful for developing signal processing filter software. Insert your audio filter code into the interrupt handler in audioint.c.. The default example "filter" in this template is a "boost by -12dB / -6dB / 0dB / +6dB / +12dB filter" and you can select the boosting with the top-right button on the developer board.

Additionally this example configures the onboard FM tuner (TEA5767) to 89.0 MHz, and you can change the frequency by using the center-left, center-right, bottom-left and bottom-right buttons.

You can use the jumper array on the left side of the LCD screen to select which inputs to route to the left and right line inputs.

ADC Input Signal Selection

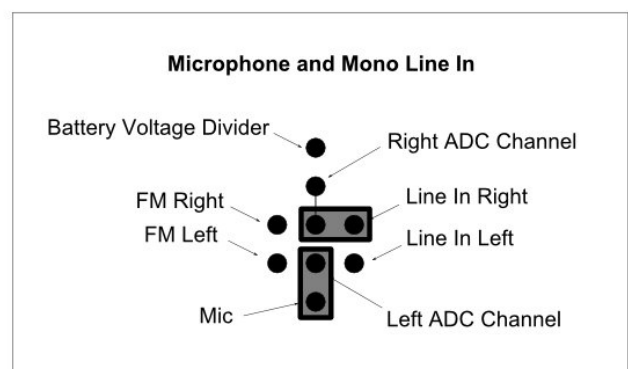
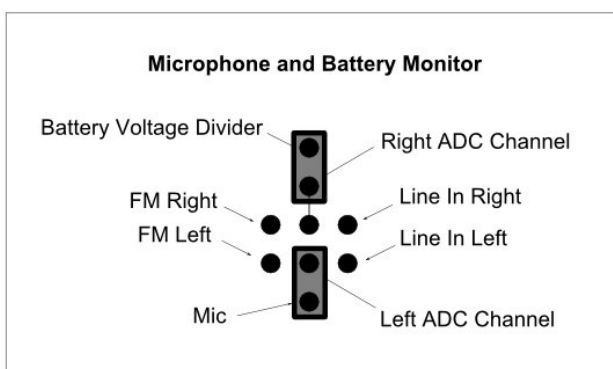
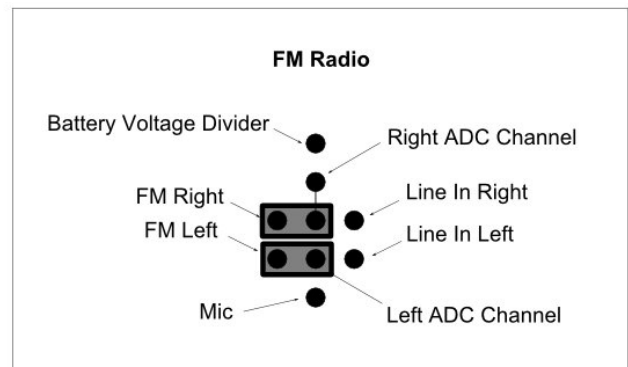
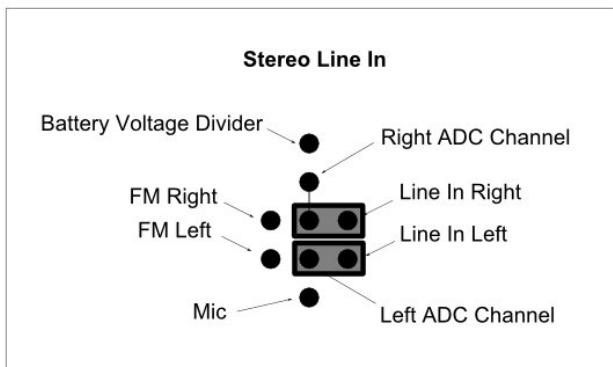
In the middle of the board, to the left side from the LCD display is a set of jumpers which can be used to select which signals go to the VS8053 A/D Converter:



There are 6 analog signal sources available:

- Line In Left, Line In Right
- FM Radio Left, FM Radio Right
- Microphone
- Battery Voltage Divider

These signal sources can be somewhat freely routed to the two available ADC input channels of the VS8053. Here are examples of some possible selections:



Power Up and Boot from the SPI Flash

The board has a software power-off function, which will switch off the power whenever the GBUF signal goes to 0 volts. This implies that the power button must be pushed long enough for the software to activate and switch on the GBUF.

To boot from the SPI Flash, apply 5 volt power either to the USB connector or to the RS232 connector's +5V pin. Press POWER ON button (S9) for approximately two seconds to allow the board to boot from the SPI flash and switch on the power.

The LCD will come on and the software will run.

Hardware Power Off

To power off, press the RESET button. All LEDs will go off.

Software Power Off

To switch the power off via software, write "1" to APDOWN1 and APDOWN2 bits of the SCI_STATUS register.

Resetting

To reset, press the RESET button together with the POWER ON button. The POWER led (LED3) will come on. If there is bootable software in the SPI flash, the code will be loaded.

Reset without loading SPI FLASH software

Keep BOOT SELECT and POWER ON buttons pressed while pressing RESET for a short time. The POWER led (LED3) and IDLE led (LED1) will light but the LCD display will not come on.

Writing the SPI Flash

To write the SPI flash, first do the "Reset without loading SPI FLASH software".

Then use the VSIDE (v 2.17 or later) prommer module "VS1053 Universal Prommer (SST25xxB compatible)" from the Project -> Prommer/Flasher Utility.