What applications can be done by using VS1003?

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Alternatives

Audio decoder (slave)

Basic functionality

- MP3/WMA/SP-midi/WAV
- Voice recording from microphone
- Streaming support for internet radio
- Bass and treble functions

Plugins

- DTMF generator
- WMA Rewind
- Spectrum analyzer
- Pitch / tempo shifter
- 8 kHz phone application
- Echo cancellation

Standalone (Master)

Basic Functionality

- Plays MPW/WMA/Sp-midi/WAV files from SD card
- 3 buttons, one LED, no display
- Customization by using EEPROM for boot
- Software power on/off
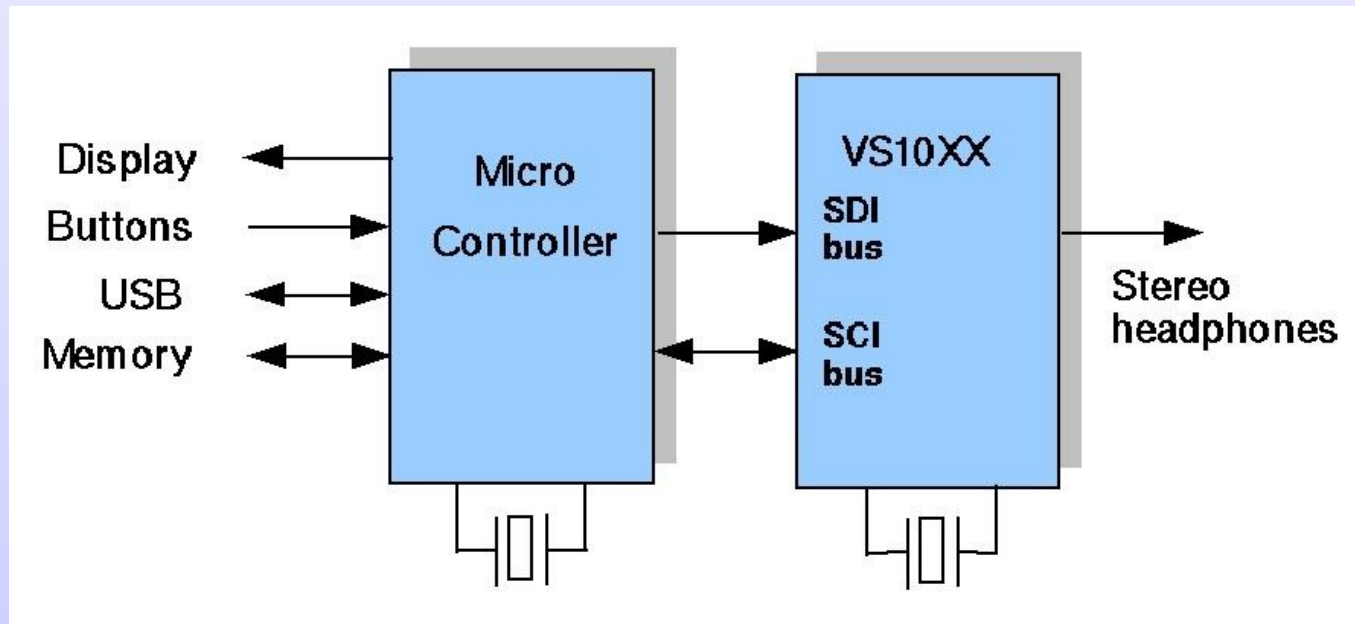- Optional high speed USB support with bridge chip

Plugins/modifications

- 16/32-button interface
- Store file index before power off
- Real-time midi
- Infinite looping
- play/pause from IO level
- Record WAV from microphone

VS1003 as Slave Processor

Basic Functionality
- Audio decoding (MP3/WMA/SP-midi/WAV)
- Voice recording from microphone (WAV)
- Streaming support for internet radio (sample rate can be adapted on the fly)
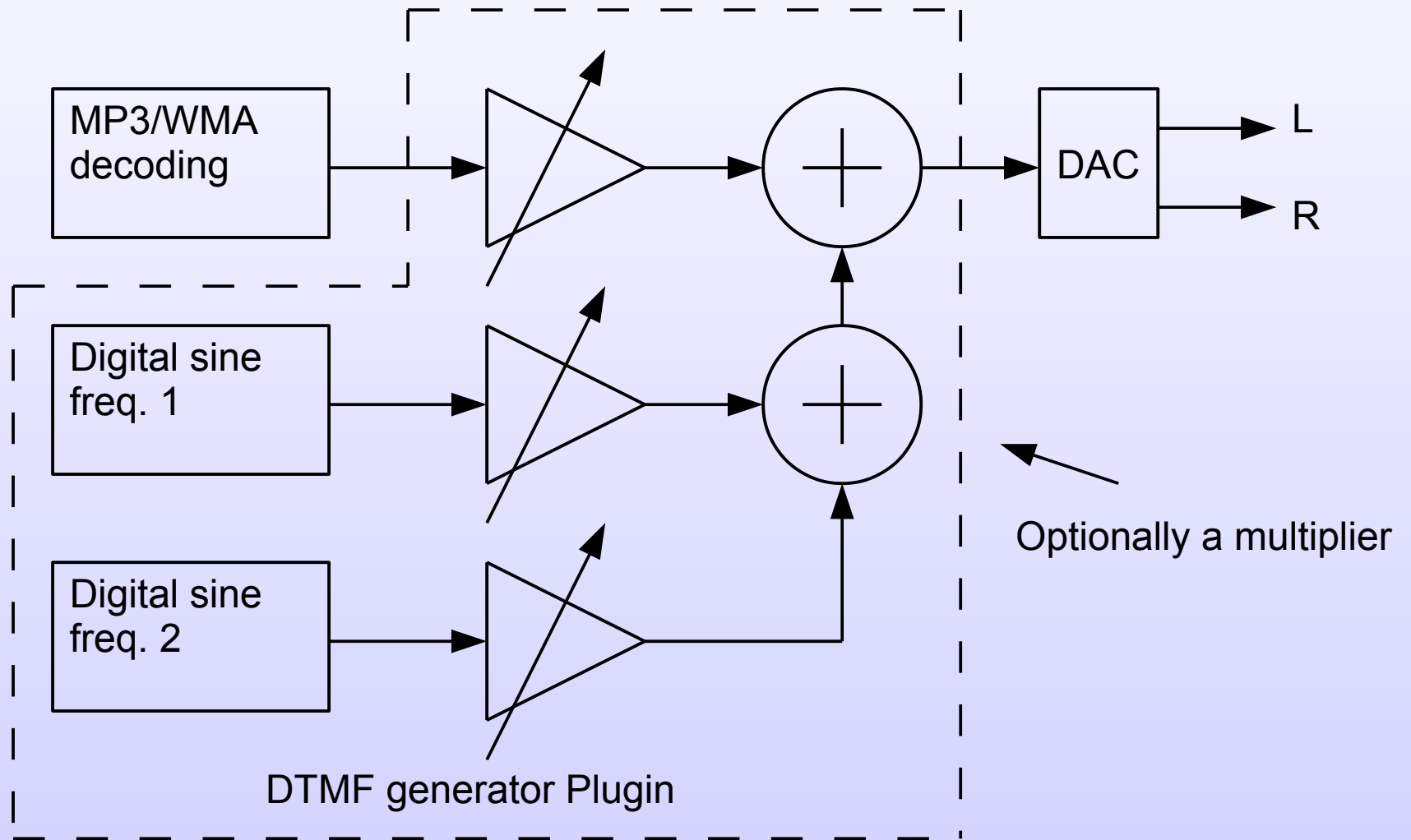- Bass and treble functions

VS1003 as Slave Processor

Added functionality with software plugins
- DTMF generator
- WMA Rewind
- Spectrum analyzer
- Pitch / tempo shifter (for karaoke)
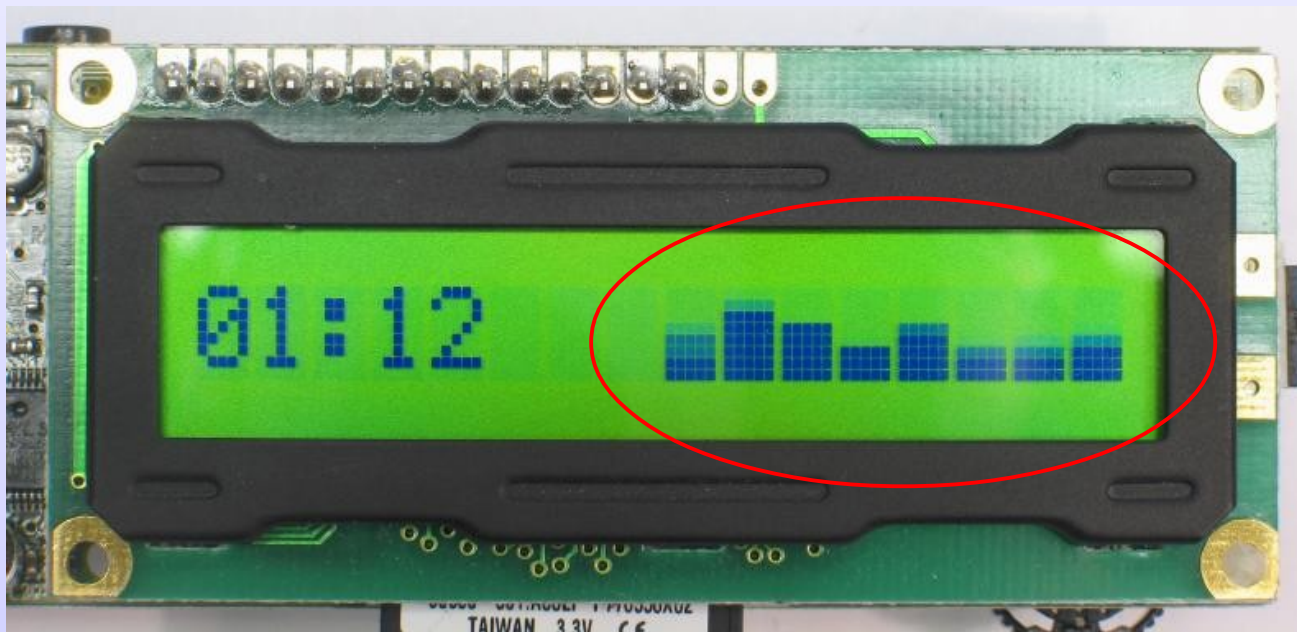- 8 kHz phone application

DTMF plugin

WMA Rewind plugin

- implements a resynchronization code that tries to find the ASF packet boundaries of WMA automatically
- implements broadcast support (ignores file size) for web radio applications

Spectrum Analyzer plugin

- Filters upto 23 frequency bands for a graphical spectrum display
- The number of bands and the center frequencies are configurable
- The analyzer works for all audio file types and streams

Pitch / Tempo shifter plugin

Background

- changing just the sample rate would change both pitch AND tempo
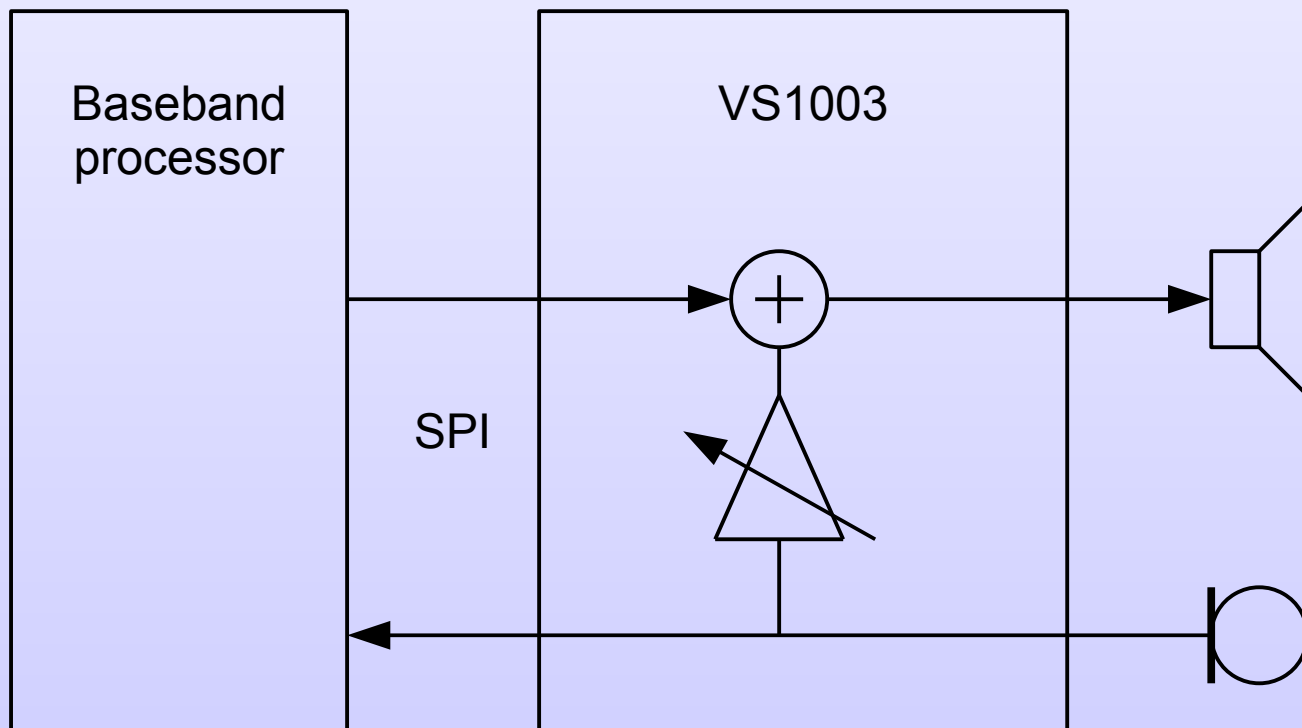
The plugin

- change the pitch of a song without changing the tempo (pitch shifter), or
- change the tempo without changing the pitch

Applications

- Karaoke
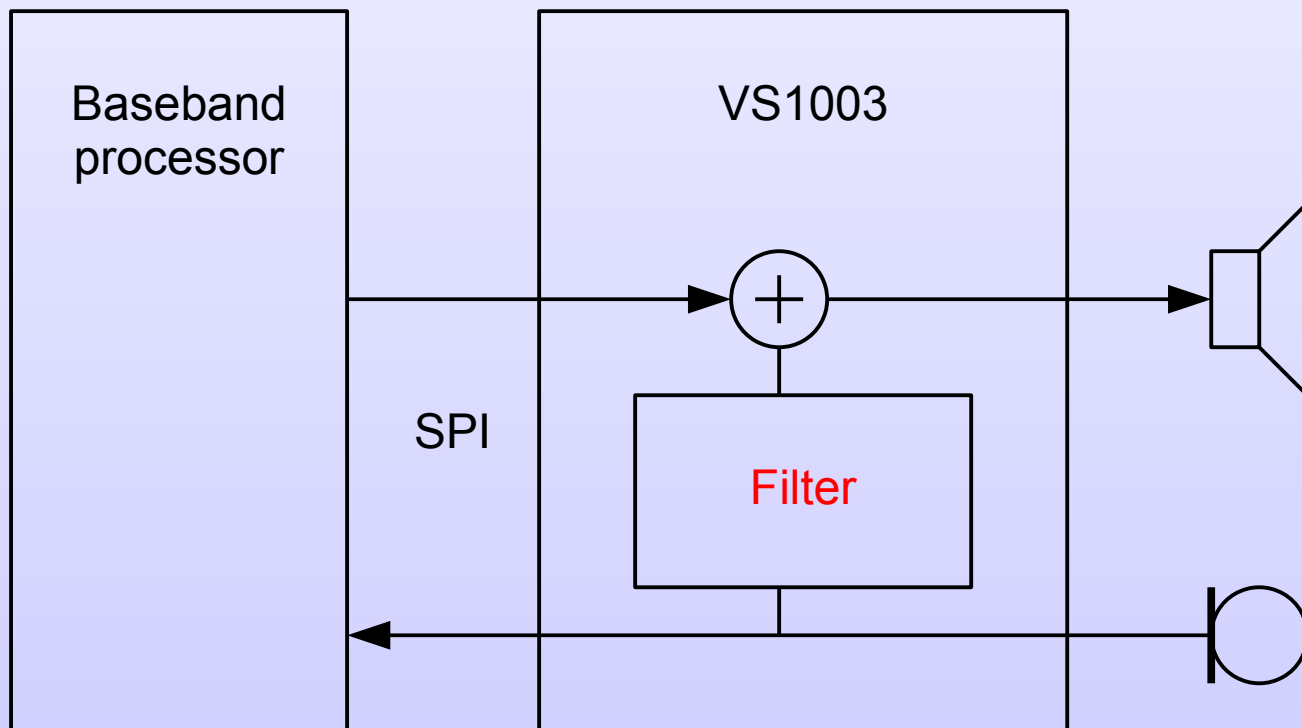- Play an important message slower of voice recorder

8 kHz phone application

- Device is MP3/WMA/SP-midi/WAV decoder
  AND
- 8 kHz audio codec (low latency, sidetone, MIC level information)
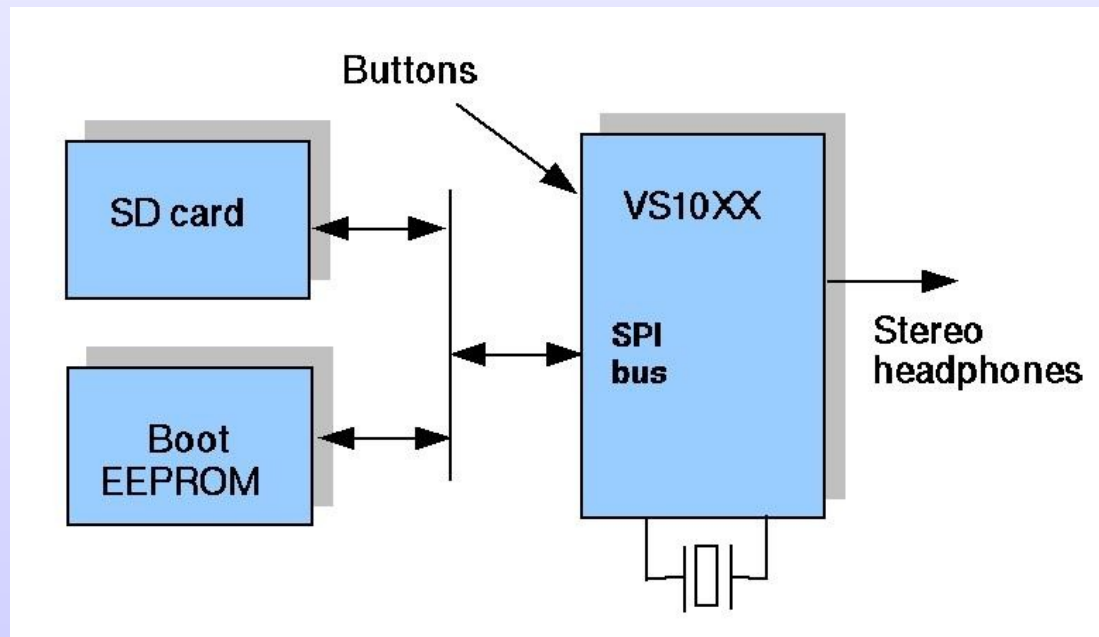
Echo cancellation application

- Device is 8 kHz audio codec (low latency, sidetone, MIC level information) **AND**
- 1000-tap adaptive filter for echo cancellation

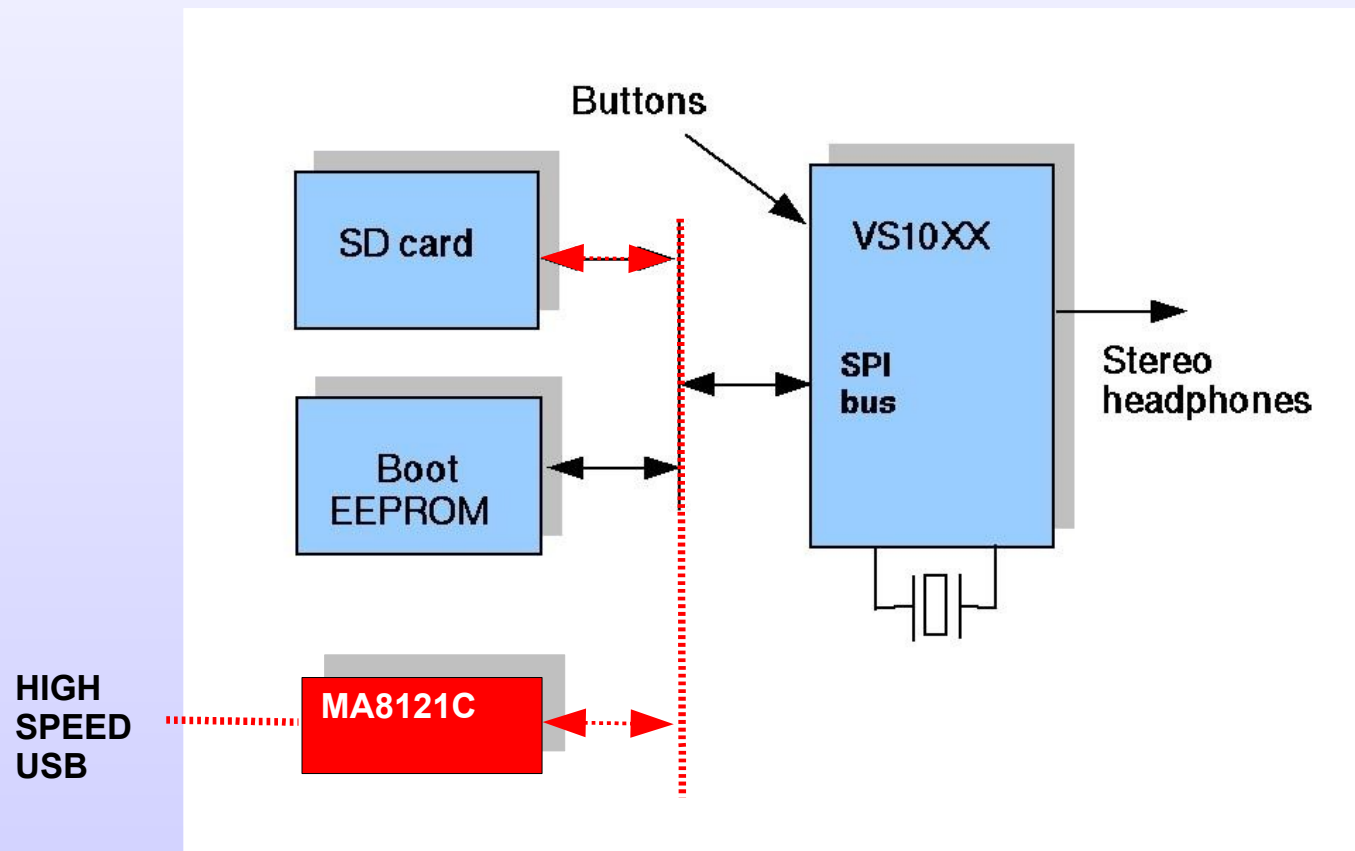# VS1003 as Standalone

Basic Functionality

- Plays MPW/WMA/Sp-midi/WAV files from card (FAT)
- 3 buttons, one LED, no display
- Customization by using EEPROM for boot
- MMC, SD, SDHC cards supported

VS1003 as Standalone

Optional High Speed USB support

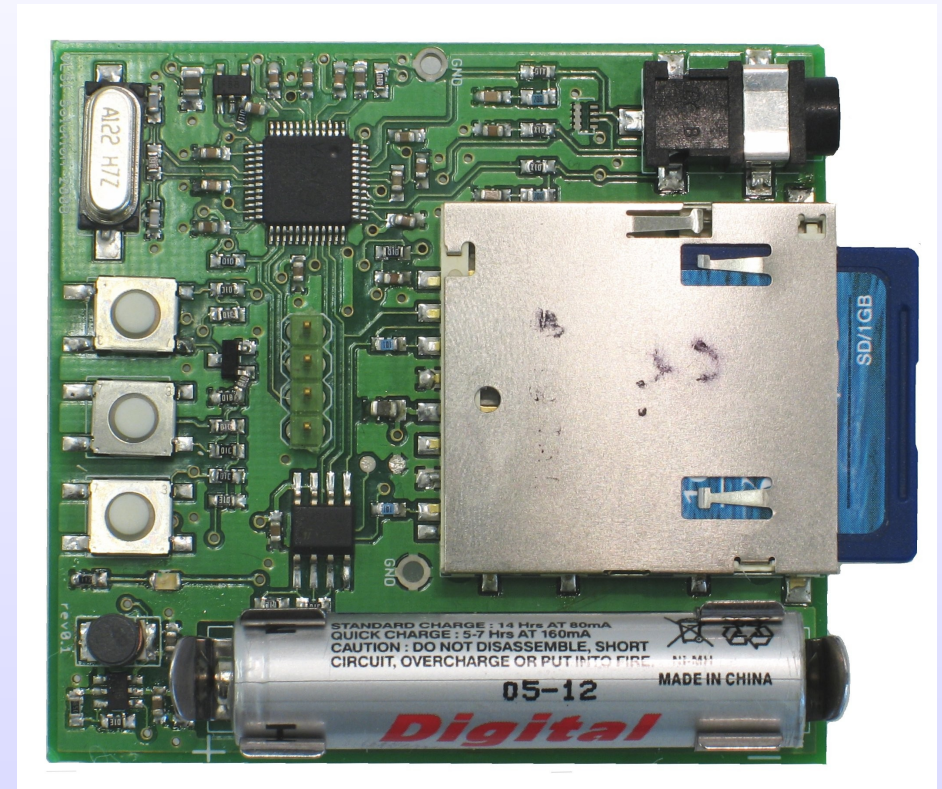- **Low cost usb bridge disconnects VS1003 from the SPI bus when SD card is made visible as Removable Mass Storage to PC via High Speed USB**

VS1003 as Standalone

Modified functionality

- 16/32-button interface
- Store file index before power off
- Real-time midi
- Infinite looping
- play/pause from IO level
- Record WAV from microphone
- Software power on/off
- **Low cost & high sound quality**
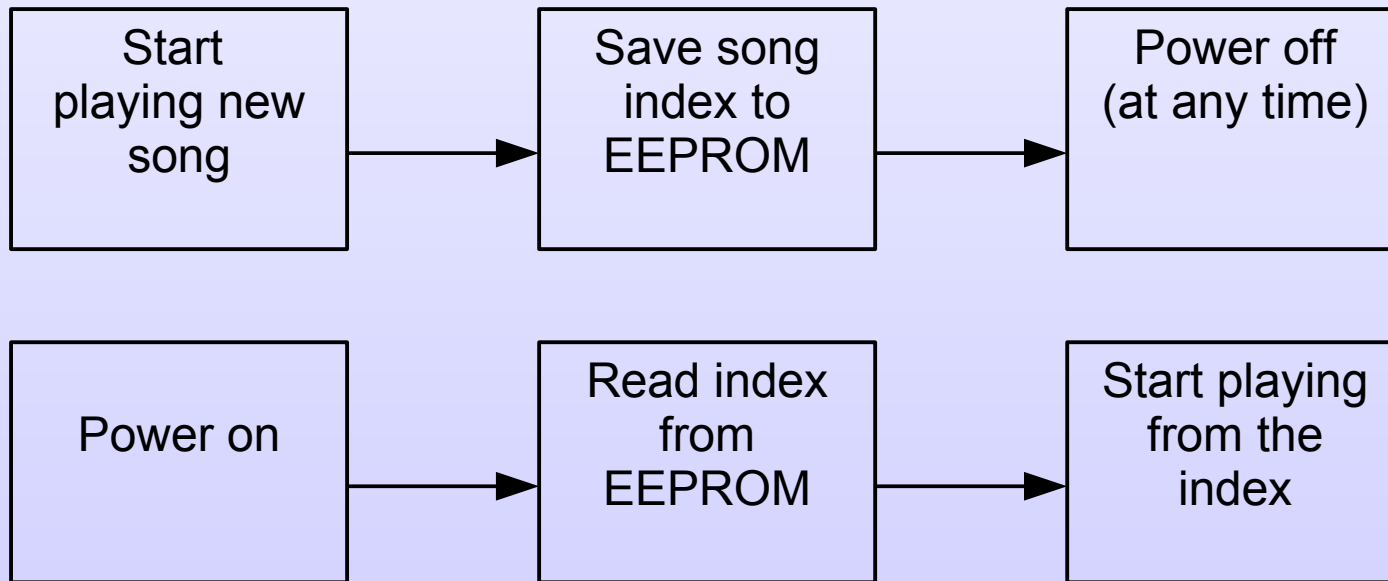
16/32 button interface application

- Device is standalone player but has 16/32 button interface
- Uses line-in input to measure voltage of resistor string supplied by reference voltage of VS1003

Applications
- Jukebox
- Guide with various language options
- Help panel of industrial machine

Store file index plugin

- Device is standalone player
- The played file index will be stored to the EEPROM
- Index of last song is always in EEPROM when powered off
- When powered on, playing will continue from the beginning of the song that was interrupted

```
┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│    Start     │      │  Save song   │      │  Power off   │
│ playing new  │ ───► │  index to    │ ───► │ (at any time)│
│    song      │      │   EEPROM     │      │              │
└──────────────┘      └──────────────┘      └──────────────┘

┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│              │      │  Read index  │      │ Start playing│
│   Power on   │ ───► │    from      │ ───► │  from the    │
│              │      │   EEPROM     │      │    index     │
└──────────────┘      └──────────────┘      └──────────────┘
```
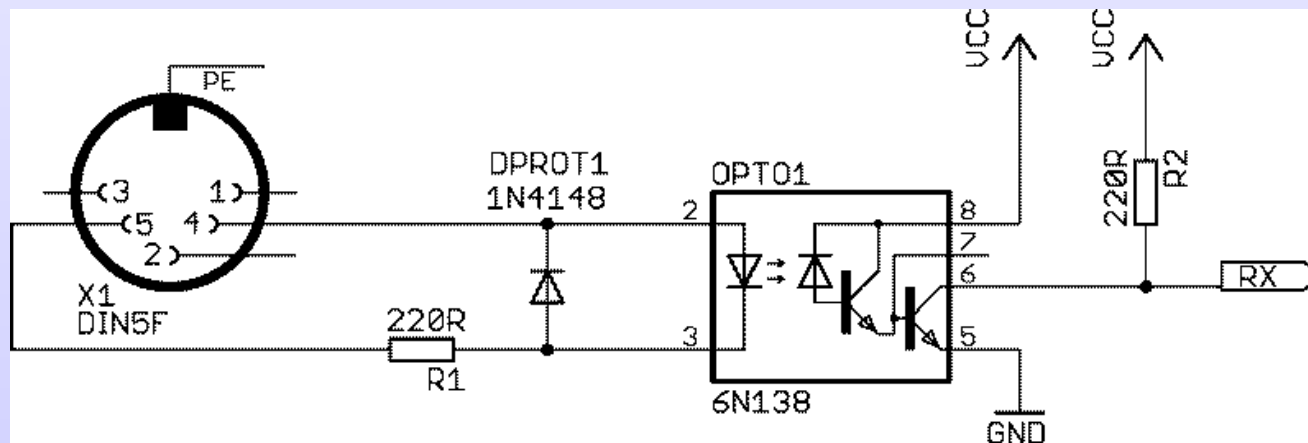
Midi synthesizer application

- With simple external HW (see below) generic midi output can be connected to MIDI IN of VS1003
- No buttons required

Applications
- Keyboard accessory
- Portable keyboard
- Toys

Infinite looping plugin

- Device is standalone player
- Loops all the contents automatically and infinitely
- Automatically starting from power-up

Applications
- Advertisements
- Toys

Play/pause from IO level plugin

- Device is standalone player
- Starts and stops based on IO level
- No register writings needed

Applications
- Master does not support SPI

Button	Short Keypress	Long Keypress
SW1	Next song	Volume up
SW2	Pause/Play	Low: pause, High: play
SW3	Previous song	Volume down

Record WAV from microphone application

- Device is standalone player (slightly stripped)
  AND Recorder:
- takes the signal from microphone input,
- encodes it into IMA ADPCM,
- and saves it on top of an existing VSRECORD.WAV

Applications
- Voice recorder
- Interactive toy

Do you have other ideas?

Our support will help you

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