



What applications can be done by using VS1003?

ver. 1.2 / November 2007


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

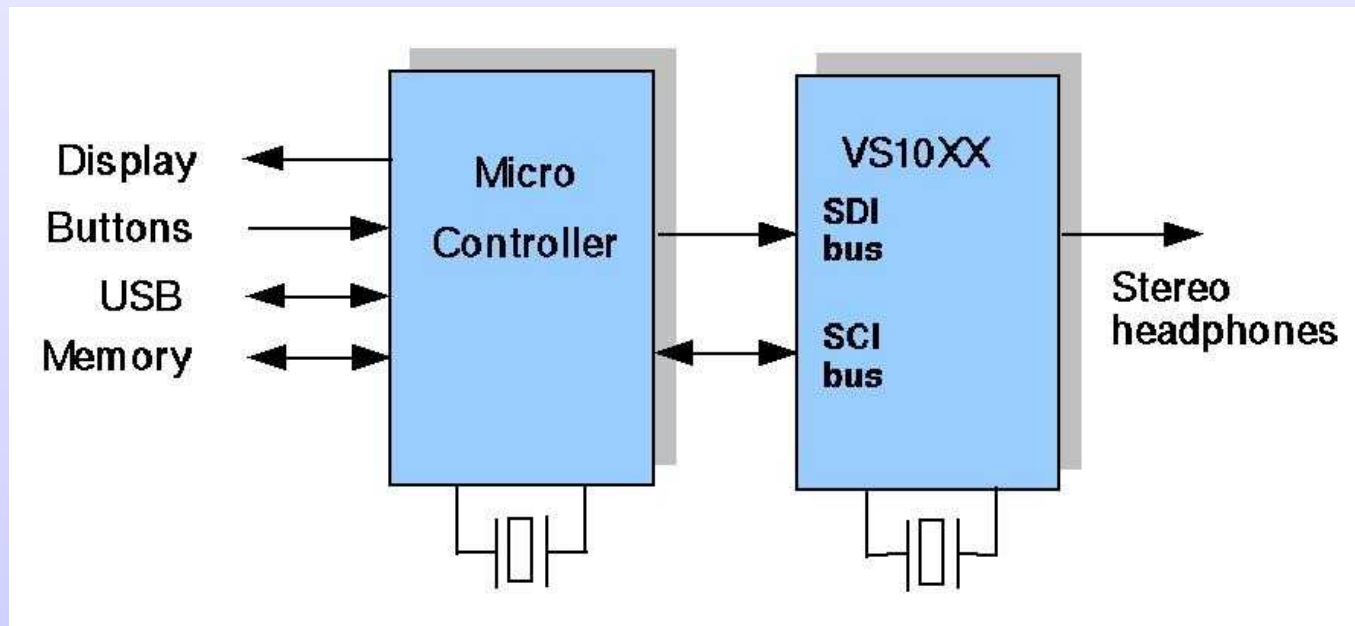
Plugins/modifications

- 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

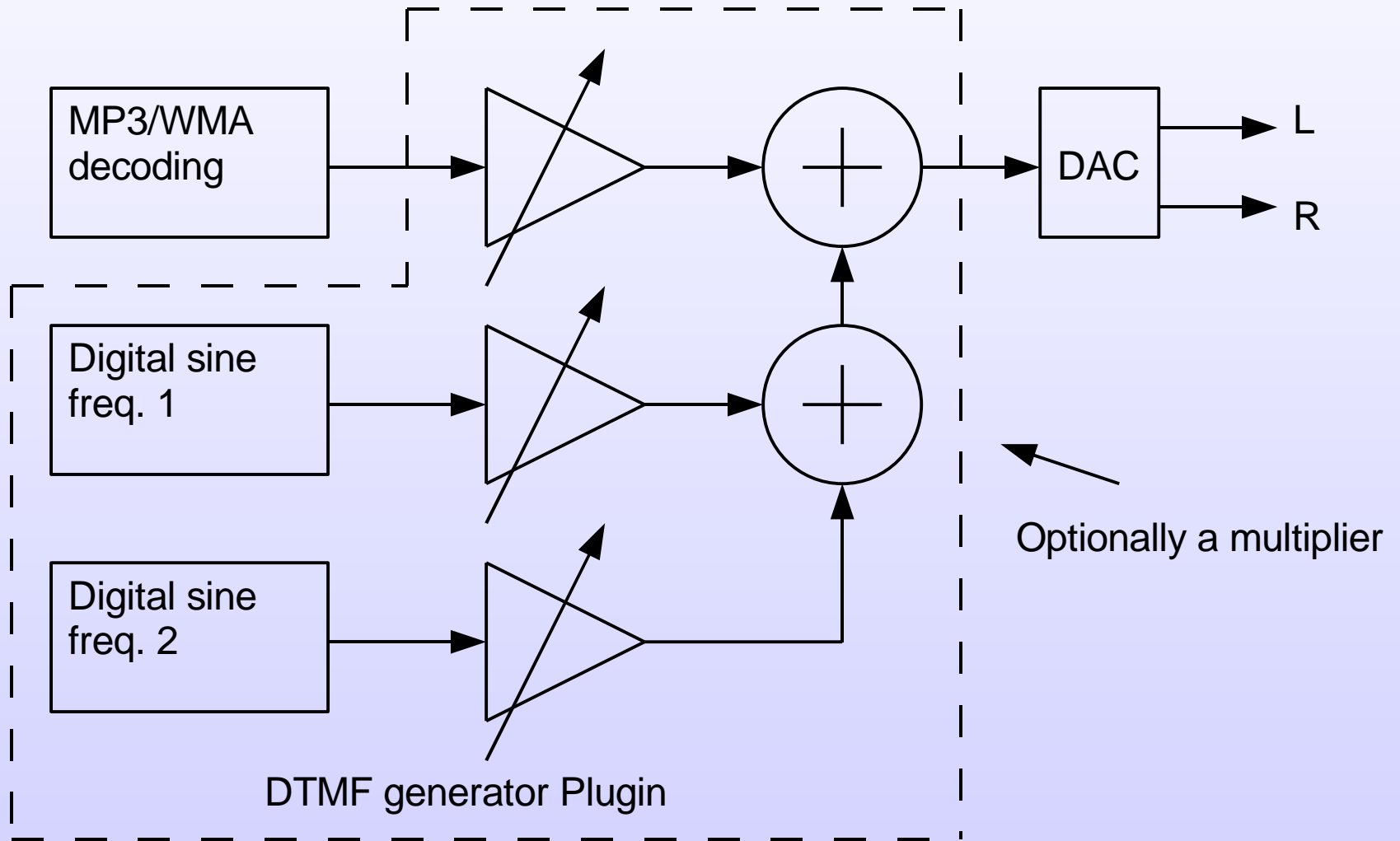


VS1003 as Slave Processor

Added functionality with software plugins

- DTMF generator
- WMA Rewind
- Spectrum analyzer
- Pitch / tempo shifter (for karaoke)
- 8 kHz phone application

DTMF plugin

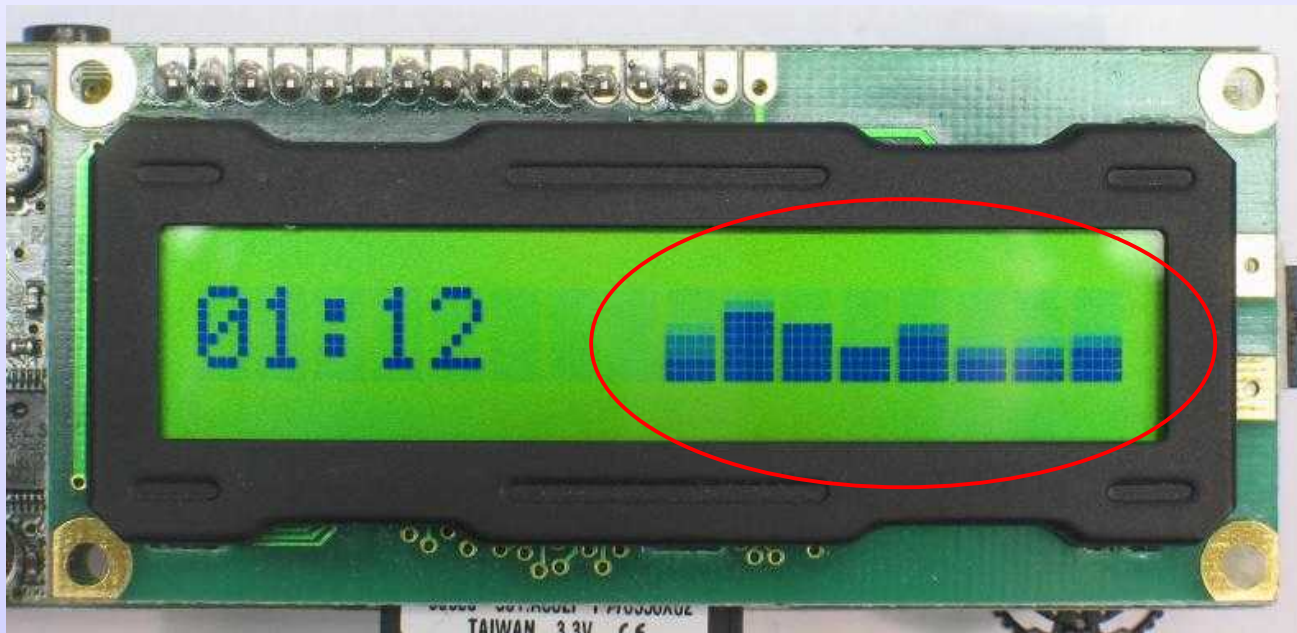


WMA Rewind plugin

- 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

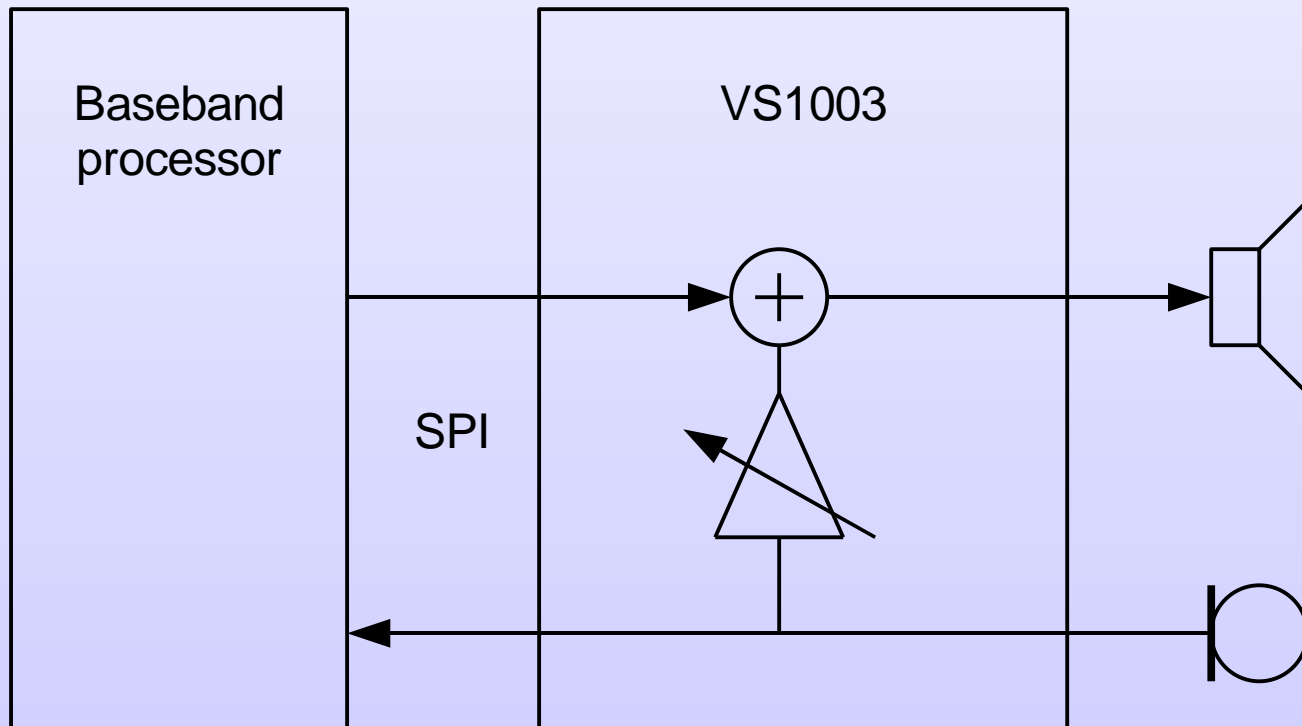
- Karaoke
- Play an important message slower of voice recorder

8 kHz phone application

- Device is MP3/WMA/SP- midi/WAV decoder

AND

- 8 kHz audio codec (low latency, sidetone, MIC level information)

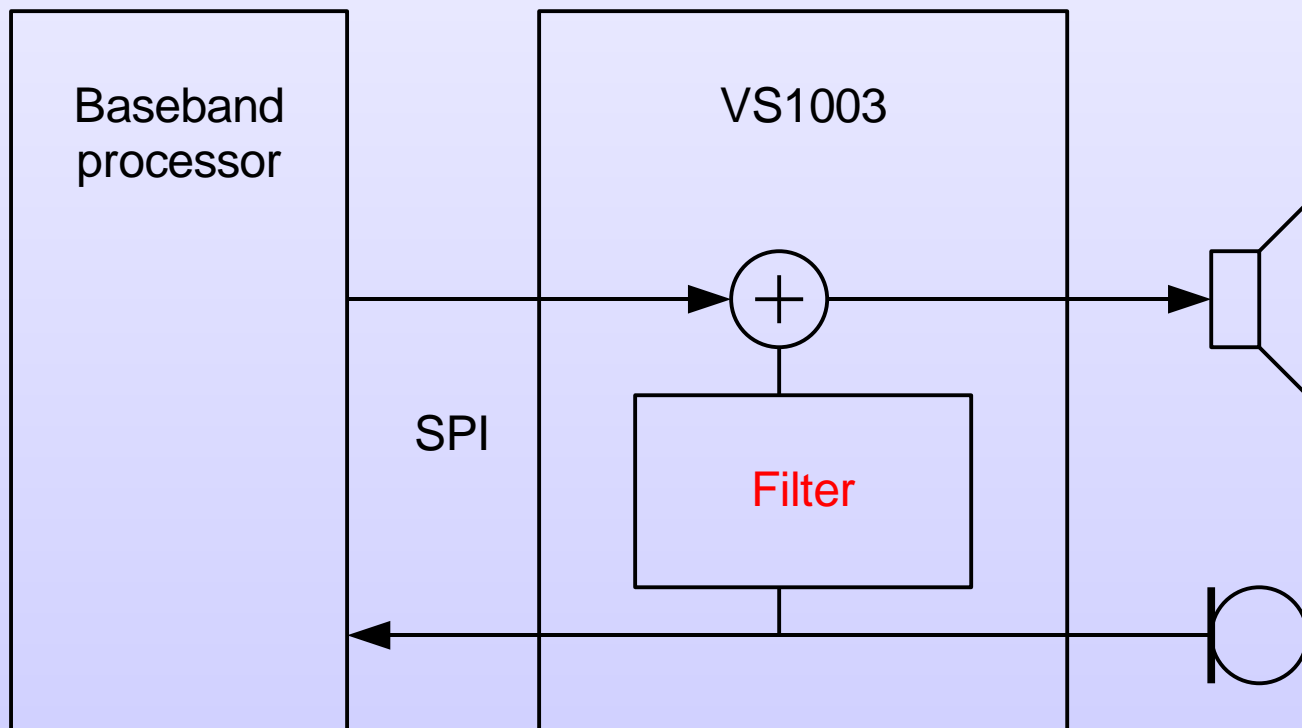


Echo cancellation application

- Device is 8 kHz audio codec (low latency, sidetone, MIC level information)

AND

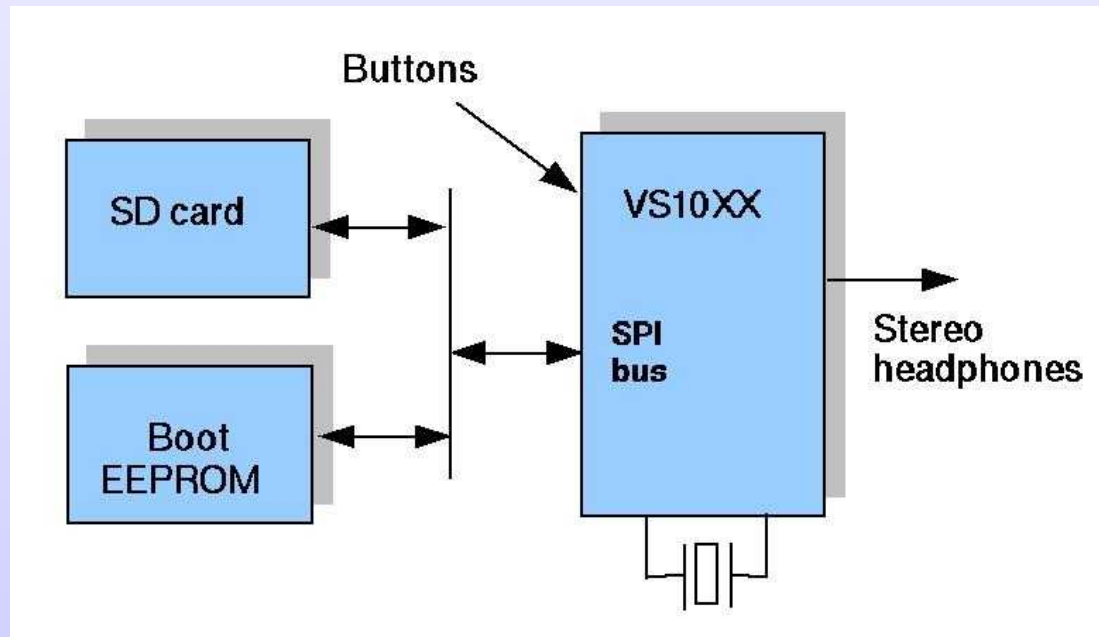
- 1000- tap adaptive filter for echo cancellation



VS1003 as Standalone

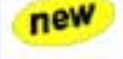



Basic Functionality

- 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

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

16/32 button interface application

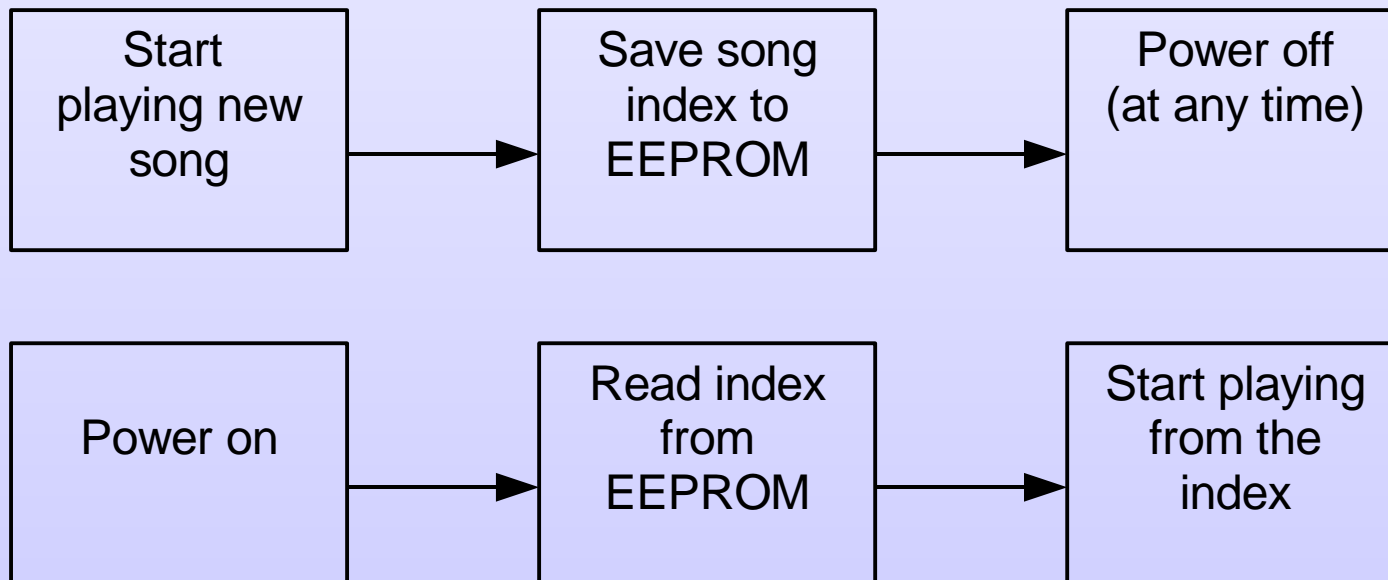
- Device is standalone player but has 16/32 button interface
- Uses line- in input to measure voltage of resistor string supplied by reference voltage of VS1003

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

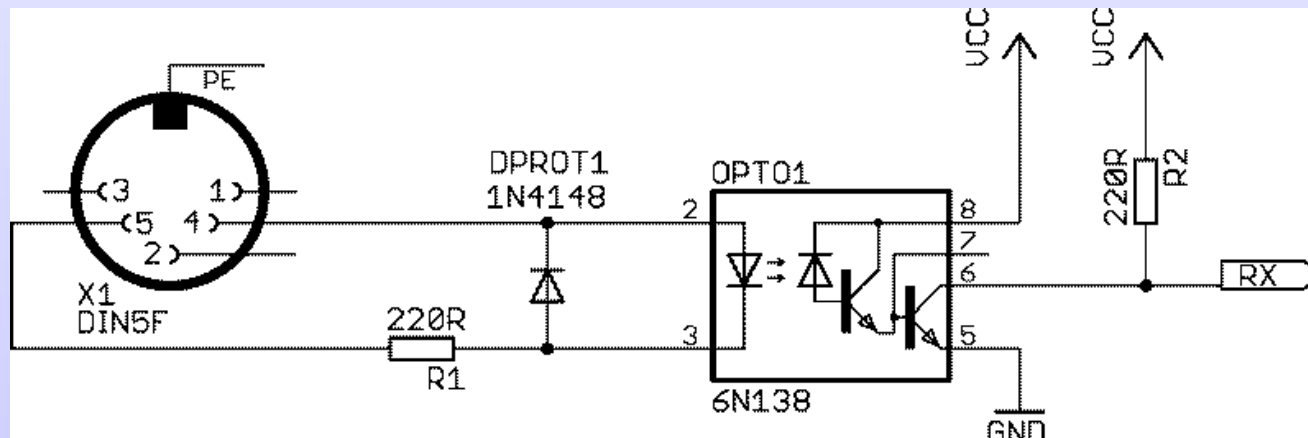


Midi synthesizer application

- 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

WMA only application

- Device is WMA/SP- midi/WAV decoder
- MP3 feature is disabled with the plugin
- Unit price is 0.50 USD less
- Application can be any of the those mentioned before (but without mp3)
- Customer must make agreement with VLSI
- Available only to qualified customers
- Customer shall contact Microsoft for the WMA license¹ (current license fee is 0.10 USD per device with 400 kUSD annual maximum)

¹ "Windows Media Components Final Product Agreement"

Do you have other ideas?

Our support will help you

email: mp3@vlsi.fi

tel. +358 3 3140 2139

fax. +358 3 3140 8288