

VS10XX REAL-TIME MIDI INPUT

VSMPG “VLSI Solution Audio Decoder”

Project Code:
Project Name: VSMPG

Revision History			
Rev.	Date	Author	Description
0.8	2005-11-20	PO	Initial version

1 VS10xx Real-Time Midi Input

All information in this document is provided as-is without warranty. Features are subject to change without notice.

With a small addition to the prototyping board / standalone player board, it can be used as a standalone real-time MIDI synthesizer, that takes its input from a generic MIDI keyboard. The following circuit implements a MIDI IN connection that can be used with all standard MIDI equipments that has a MIDI OUT connection.

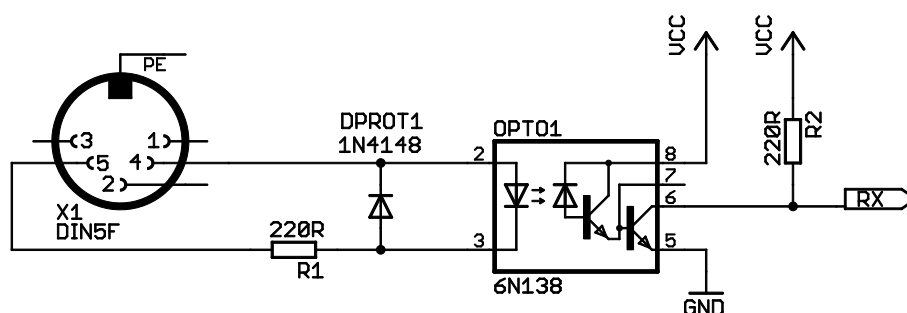


Figure 1.1: MIDI IN

This is very convenient way to compose MIDI music intended to be played with the VS1003B or VS1033C. Optimizing and fine-tuning the music to the specific chip will become faster and easier.

In addition to the handling of real-time MIDI IN from UART (31250 bps), the RT-Midi code also handles real-time input from the serial data interface (SDI). Both UART and SDI inputs can be used with the same code, but they should not be used simultaneously.

When SDI is used, 0xff must be sent first, then the actual MIDI byte. This guarantees that the midi command goes straight to processing and does not get stuck waiting in the 16-bit SDI receive register.

1.1 Boot Images

The real-time midi input software is loaded from SPI eeprom at power-up or reset when GPIO0 is tied high with a pull-up resistor. The memory has to be an SPI Bus Serial EEPROM with 16-bit addresses. The SPI EEPROM boot images can be found from the `code/` subdirectory. **Note that this application is highly chip-specific. It only works on the exact firmware versions mentioned.**

Chip	File	Features
VS1003B	<code>rtmidi1003b.bin</code>	Version for VS1003B
VS1033C	<code>rtmidi1033c.bin</code>	Version for VS1033C

The input clock is assumed to be 12.288 MHz. The `SCL_CLOCKF` value is `0xa000` (3.5×12.288 MHz). Volume (`SCL_VOL`) default value is `0x0c0c`, i.e. -6 dB.

1.2 Loading Through SCI

The software can also be loaded through SCI in the same way as all patch codes. The application loading tables are available in the `code/` subdirectory. After the code is loaded, it is started by writing `0x30` to `SCI_AIADDR`.

Chip	File	Features
VS1003B	<code>rtmidi1003b.c</code>	Version for VS1003B
VS1033C	<code>rtmidi1033c.c</code>	Version for VS1033C

2 Document Version Changes

Version 0.8, 2006-11-20

- First version
 - VS1003B and VS1033C versions.