

INTRODUCTION

This project aims to implement a cost-effective wave player based on AVR (ATmega / ATiny Series) with CD-Audio Quality, which can play 8-bit/16-bit Mono/Stereo standard RIFF (Resource Interchange File Format) wave files. This project can be applied into many applications such as bus / subway auto-announcing system, elevator voice indication system.

Why WAV over MP3

- >A WAV file format is simpler than MP3 and Easy to decode.
- >WAV file is loseless .Thus there is no deterioraion in audio quality.

USES

- >Compare to OTP chip which is One Time Programmable 1GB, SD card can store over 200 songs
- >SD card can be formated and rewrote again and again..

COMPONENTS

- >ATMega-1284p - It is low power CMOS 8bit based on AVR architecture.
- >Push Buttons: 2
- > Capacitors: 4.7nF(2), 22pF(2)
- >Resistors: 1M ohm(2), 3.9k ohm(2), 3.3k ohm(3), 1.8k ohm(3), 4.7k ohm(1), 330 ohm
- >USB-UART Module FT232RL - This is a USB to serial UART(TTL Level) converter module.
- >AMS1117 3.3V -It regulates the input voltage down to a fixed 3.3V output
- >SD card(1GB)

PROTOCOLS

- >SPI-The Serial peripheral interface(SPI) is a synchronous serial communication interface specification used for short-distance communication,primarily in embedded systems.
- >FAT32 file system - Standard file system so that SD card can be operated normally in any PC with FAT support. With this method, it is very convenient to replace /

update audio files, the difficulty is that a lightweight File System must be implemented so that MCU is able to retrieve data via standard FAT16/32.

SCHEMATIC

