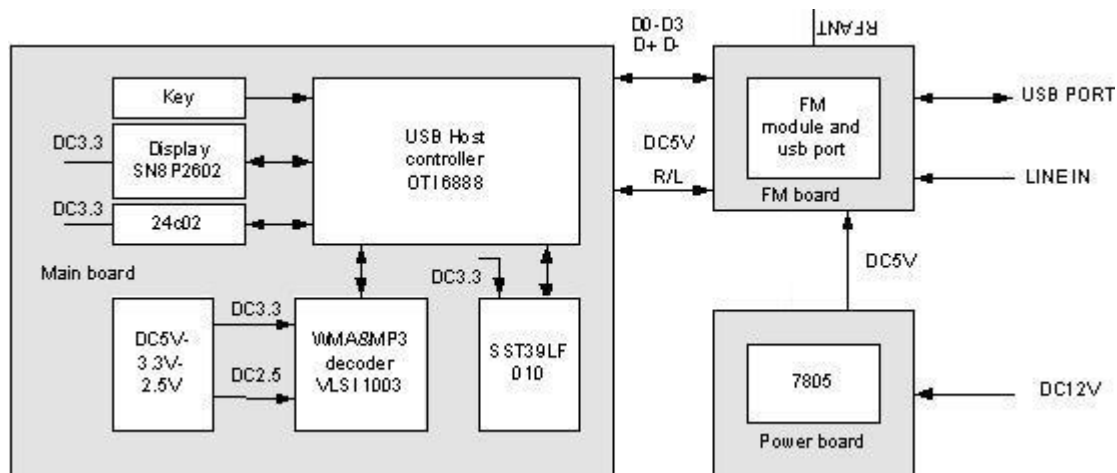


Operation Description

1. system introduce

The EM191F/EM192F is a Car MP3 player that can be read the MP3 audio file in the USB flash disk and transfer the audio signal to the car FM tuner through the built-in FM transmitter. The users can be receive the MP3 music through the car FM tuner. It also has LINE-IN feature which transfers the audio source from the external audio device such as CD, MD player to the car FM tuner. Just insert the USB flash disk which stores MP3 files to the USB port or connect to an external audio device, and adjust the car FM tuner to the channel which is indicated on the car MP3 player.

2. Structure



2.1structure introduce

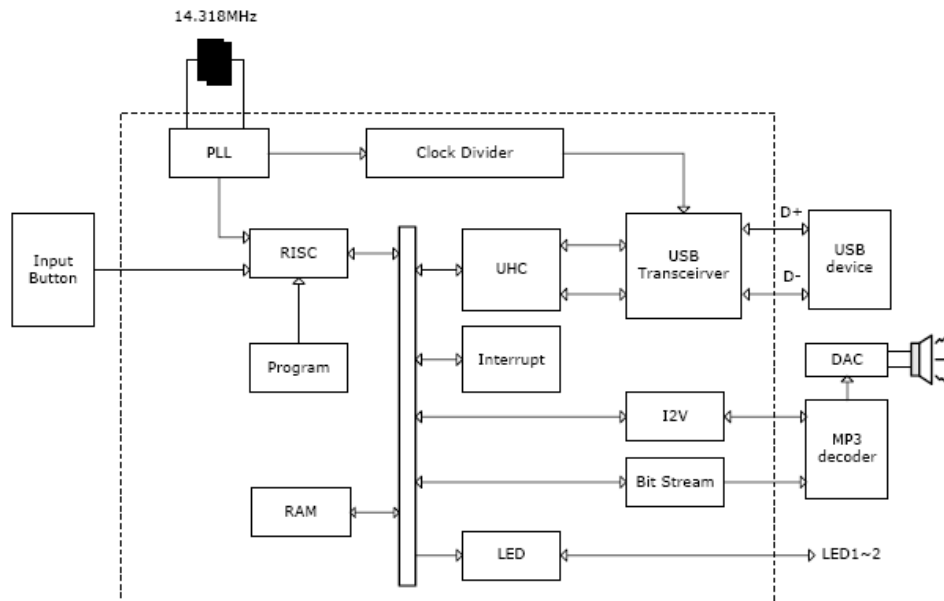
The system is consist of Main board and FM module and Power board,

2.2Main board

The Main board include USB controller and decoder and Frequency display and key input, OTI6888 is a USB HOST controller ,it can be read the MP3 audio file in the USB flash disk, the MP3&WMA audio data is distill by 6888 and sent to decoder VLSI 1003 for audio comeback. the output audio signal is stereo. Four function key ,one is volume+, one is volume-, one is frequency change key, one is play/stop key. the change frequency value can be real time display by one 4-digital segment LED display. Users set parameter of volume and channel number and last song can be save and recovery in power on.

The USB interface is full speed, it conforms to USB specification Version 1.1 .

BLOCK DIAGARM OF OTI6888



VLSI 1003 is a single-chip solution for an MPEG layer 1,2 and 3 audio decoder. It is receive input bitstream through a serial input bus from the OTI-6888. which it worked slave mode The input stream is decoded control to an 18-bit oversample, multi-bit, sigma-delta DAC. The decoding is controlled via a serial control bus, after decoded, stereo audio signal be amplified and send to the FM circuit.

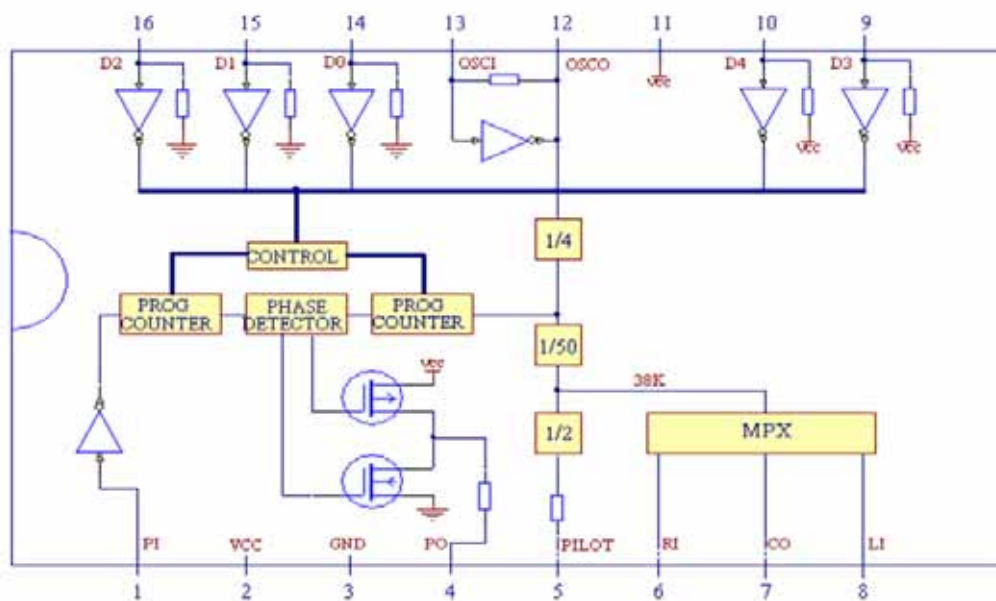
2.3FM board

The FM board include USB port and Ear phone jack and FM transmitter,

The HY1417 is a low power stereo FM transmitter, It user CMOS technology with supply voltage from 2.8V to 5.5V, and very low standard current of 2.5mA. this chip consist of a stereo modulator for broadcasting a FM signal on the air. The PLL(phase lock loop) circuit, a built-in 38Khz oscillator circuit and programmable control circuit.

Stereo audio signal from VLSI-1003 and the 38Khz signal will be mixed and processed, then this stereo modulated signal will be add to the outside oscillator (L2,DF1,Df2,CX,Q1 and assemble circuit). The voltage/frequency control pulse signal from pin5 will be add to there too, After amplified FM radio signal be send to space by one antenna (The antenna is internal wire connect to FM board)at last. Stereo audio signal can also be input from the audio jack which connect to the outside audio player.

Change the voltage of the programmable control port (pin9,14,15,16 connected to the controller OTI-6888), the output frequency could be change into 12 point, low 5 point is 88.1Mhz, 88.3Mhz, 88.5Mhz, 88.7Mhz. 88.9Mhz. high 7 point is 106.7Mhz. 106.9Mhz. 107.1Mhz. 107.3Mhz. 107.5Mhz. 107.7Mhz. 107.9Mhz.



2.4 Power

the main supply power circuit made of UTC7805 which conform voltage from DC 12V to DC 5V. the DC 3.3V voltage by XC62FP3302PR, the DC 2.5V voltage can be get by serial one diode through DC 3.3V supply power. these supply all voltage for system work need.

