

USBSD MP3 MODULE

1.Features

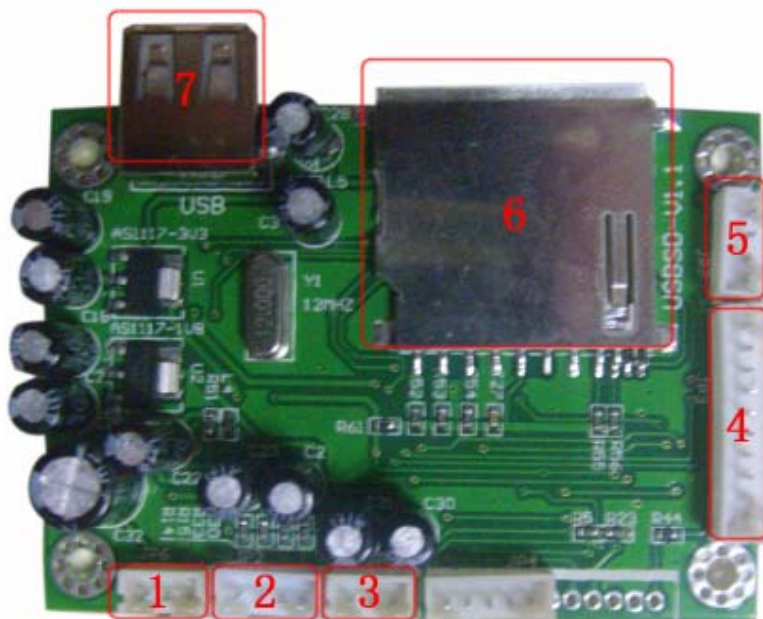
- *Bit rate 32kbps~ 320kbps (MP3), 32kbps ~ 384kbps (WMA)
- *Baud rate :2400
- *DC 5V ,200mA power this module
- *150mW x 2 output, stereo
- *SNR(Signal-to-Noise): 92dB
- *Frequency response: 40Hz~18KHz
- *With Standard MP3 mode, Key mode, Parallel interface mode and Serial interface mode.
- *Support mp3 format , with good sound quality.
- *Support FAT32 format SD card and USB flash memory, 1 GB max.
- *Full speed USB2.0
- *Easy to update the sound files in SD card or USB flash memory by PC
- *Suit for industrial condition.
- *Size 7cm X 5cm

2. Parameter

- * Operating Voltage: DC5V
- * Working Current: $\leq 200\text{mA}$
- * Output Audio: Stereo
- * Audio Power: $150\text{mW} \times 2$
- * Frequency response: 40Hz ~ 18KHz
- * Support MP3 bit rate: 32Kbps ~ 320Kbps
- * Baud Rate: 2400

3. Physical pictures and connection

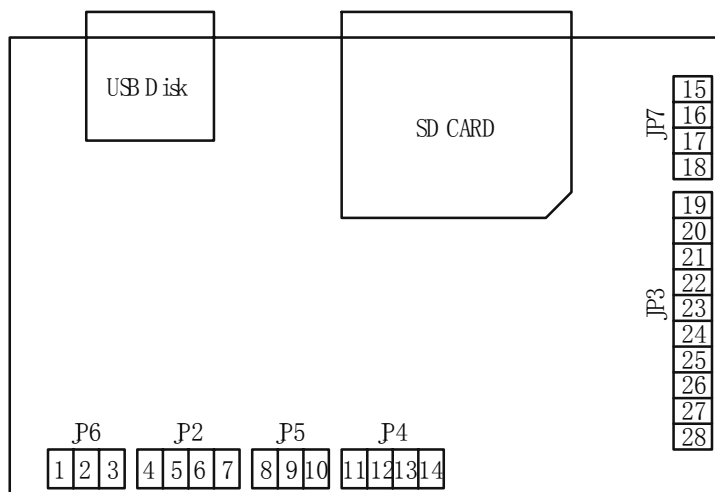
3.1 Physical picture and description



Illustrations and descriptions

- | | |
|------------------------------------|---------------------------------|
| 1. JP6, Power input | 5. JP7, I/O P05-P06 output port |
| 2. JP2, I/O P01-P04 output port | 6. SD card socket |
| 3. JP5, Track R/L output | 7. USB socket |
| 4. JP3, 232serial interface output | |

3.2. Play board socket connection remark



3.3 The instruction of play board socket connection

MARK	SOCKET	FUNCTION
1	JP6	DC+5V input
2		GND
3		N/C
4	JP2	I/O,P01
5		I/O,P02
6		I/O,P03
7		I/O,P04
8	JP5	Audio output L
9		Audio output GND
10		Audio output R
11	JP4	N/C
12		N/C
13		N/C
14		N/C
15	JP7	I/O , P05
16		I/O , P06
17		N/C
18		N/C
19	JP3	Serial Port TXD
20		Serial Port RXD
21		N/C
22		N/C
23		N/C
24		N/C
25		N/C
26		N/C
27		N/C
28		N/C

Note: P01,P02,P03,P04,P05,P06,TXD,RXD need connect 10KΩ resistor to power positive (pull up resistor)
 See application circuits .
 The N/C pins no need connect any components , prohibit to connect to other I/O

4. Control modes

4.1 Standard mode

Serial number	I/O port	Functions	Serial number	I/O port	Funtions
1	P01	Play/ pause	4	P04	VOL-
2	P02	Up	5	P05	VOL+
3	P03	Down	6	P06	Stop

Note: The name of MP3 in the file must be seriated, otherwise can not be identify and play.

4.2 Key mode

One key trigger corresponding one sound , and the sound files' name must be 001.mp3 to 006.mp3.

Serial number	I/O port	Functions	Serial number	I/O port	Funtions
1	P01	001.mp3	4	P04	004.mp3
2	P02	002.mp3	5	P05	005.mp3
3	P03	003.mp3	6	P06	006.mp3

4.3. Parallel interface mode

Serial number	I/O port	Functions	Serial number	I/O port	Funtions
1	P01	SBT	4	P04	address A4
2	P02	address A0	5	P05	address A5
3	P03	address A1	6	P06	address A6

Parallel Voice Address correspondence

From 00H to 1FH ,total 32 addresses corresponding 32 sounds.

HEX addresses	Binary addresses	MP3 files
00H	00000	001
01H	00001	002
02H	00010	003
03H	00011	004
.....		
1CH	11100	029
1DH	11101	030
1EH	11110	031
1FH	11111	032

4.4. Serial interface mode

This communication protocol based on RS 232 serial interface , baud rate 2400 . This protocol including start code,data length, data bit ,end code.

Data format:

Start code	data length	Operating code	Folder name tens	Folder name ones	MP3 name hundred	MP3 name tens	MP3 name ones	End code
7E	XX	XX	XX	XX	XX	XX	XX	7E

4.4.1. The operation code descriptions

Start code: 7e

Data length: Total bytes include “data length” , “operating code” , “Folder name tens” , “Folder name ones” , “MP3 name hundred” , “MP3 name tens” , “MP3 name ones” . except “start code” and “end code”.

Operating code

Description	Operating code	Data
Play advertisement(Replay)	A0H	xx xx xx xx xx
Pause advertisement	A1H	None
Play advertisement from pause	A2H	None
Stop advertisement	A3H	None
Adjust volume	A4H	0-8 (total 8 level volume)
Play background music(Replay)	B0H	xx xx xx xx xx
Pause background music	B1H	None
Play background music from pause	B2H	None
Stop background music	B3H	None

Data bit should follow operating codes A0, A4 ,B0

Folder name tens and Folder name ones:

The Folder name in SD card or in USB flash memory should be “advert01” ,

Folder name tens “0” corresponding ASCII code is “30H”

Folder name ones “0” corresponding ASCII code is “31H”

MP3 name hundred, MP3 name tens, and MP3 name ones:

For example, 682.mp3 in folder advert01

MP3 name hundred “6” corresponding ASCII code is “36H”

MP3 name tens “8” corresponding ASCII code is “38H”

MP3 name ones “2” corresponding ASCII code is “32H”

End code: 7e

4.4.2. Examples

Play ads voice

.Play 002.mp3 as a advertisement in advert01 folder.

Start code	Data length	Operating code	Folder name tens	Folder name ones	MP3 name hundred	MP3 name tens	MP3 name ones	End code
7E	07	A0	30	31	30	30	32	7E

Pause playing ads voice.

Start code	Data length	Operating code	The End code
7E	02	A1	7E

Play ads voice from pause

Start code	Data length	Operating code	The End code
7E	02	A2	7E

Stop playing ads voice

Start code	Data length	Operating code	The End code
7E	02	A3	7E

Adjust volume

The maximum volume level is level 8, level 0 is mute.

Start code	Data length	Adjust volume	Maximum	End code
7E	03	A4	08	7E

Play background voice

Play 032.mp3 of advert01, send data as follows:

Start code	Data length	Operating code	Folder name tens	Folder name ones	MP3 name hundred	MP3 name tens	MP3 name ones	End code
7E	07	B0	30	31	30	33	32	7E

Pause playing background ads voice.

Start code	Data length	Operating code	The End code
7E	02	B1	7E

Play background ads voice from pause

Start code	Data length	Operating code	The End code
7E	02	B2	7E

Stop playing background ads voice

Start code	Data length	Operating code	The End code
7E	02	B3	7E

5.Contents in SD card or USB flash memory.

This module only can read the folder “advert01” in SD card or USB flash memory . And the sound files in this folder must be name as 001.mp3, 002.mp3.....999.mp3 .

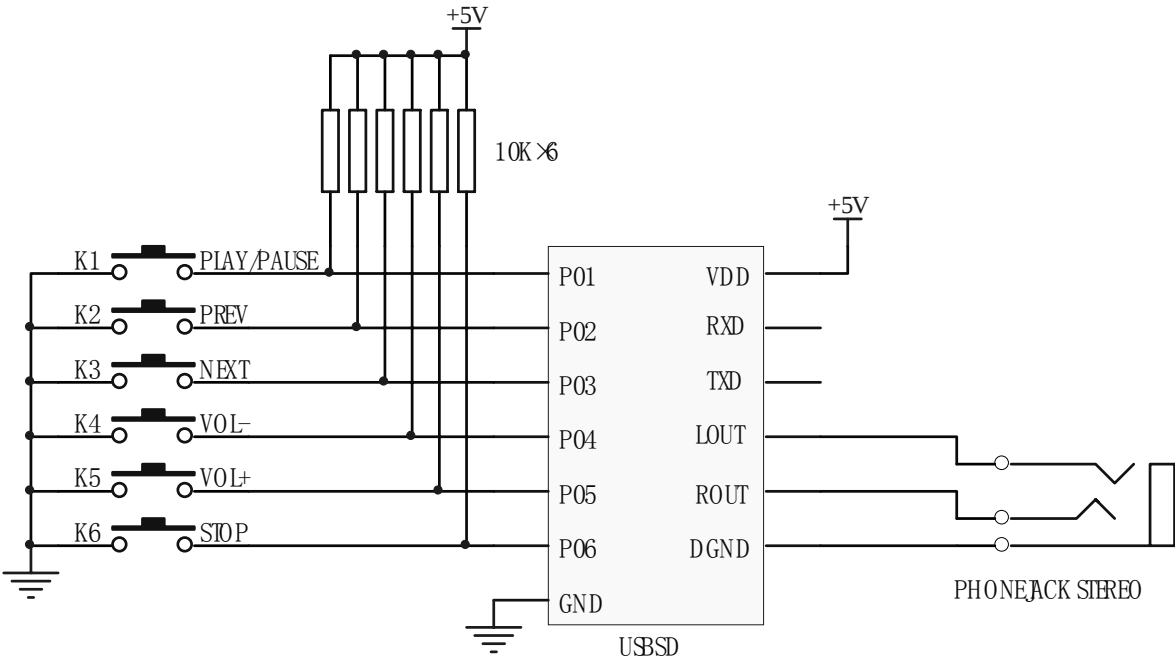
For choosing different control mode, just copy one normal mp3 file to the advert01 folder , and rename the mp3 file to Model1.mp3 or Model2.mp3 or Model3.mp3 , different name for different mode , see following list .

The system will not play this MP3 file ,

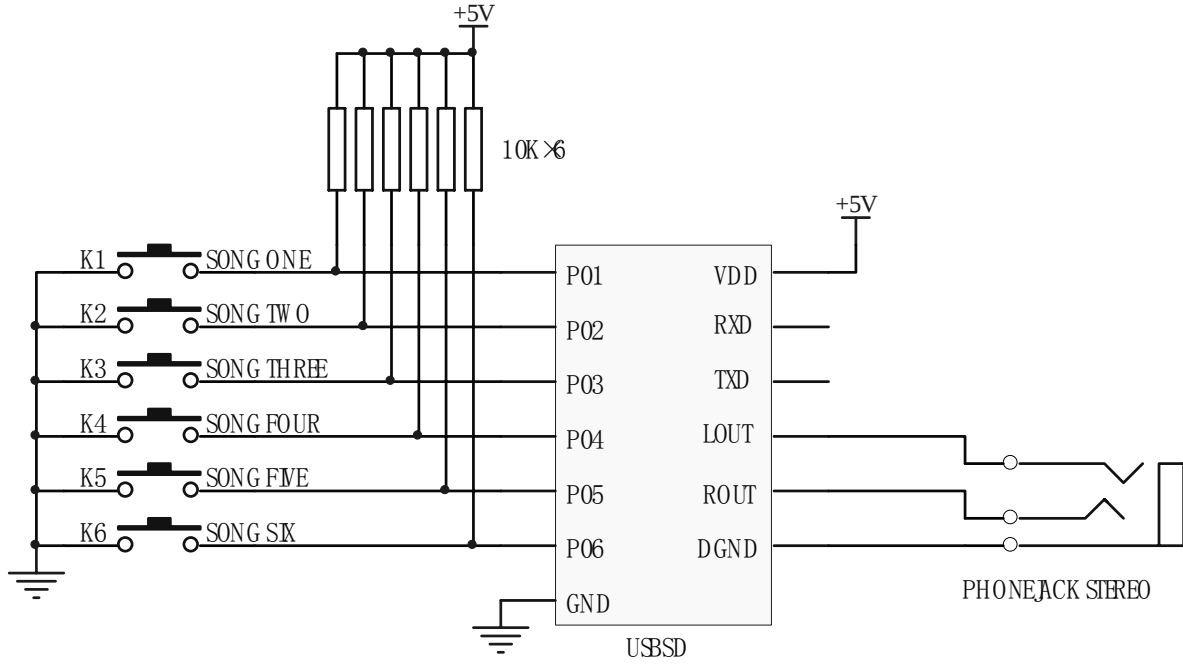
Serial number	Files name	Operating modes
1	Model1.mp3	standard mode or serial mode
2	Model2.mp3	key mode or serial mode
3	model3.mp3	parallel mode or serial mode

6. Application Circuit

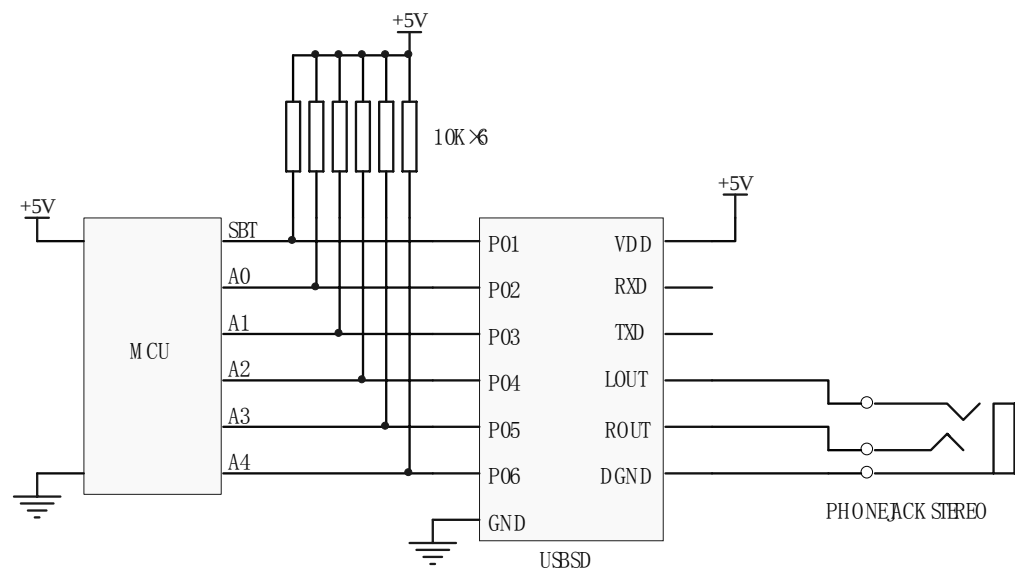
6.1. Standard mode



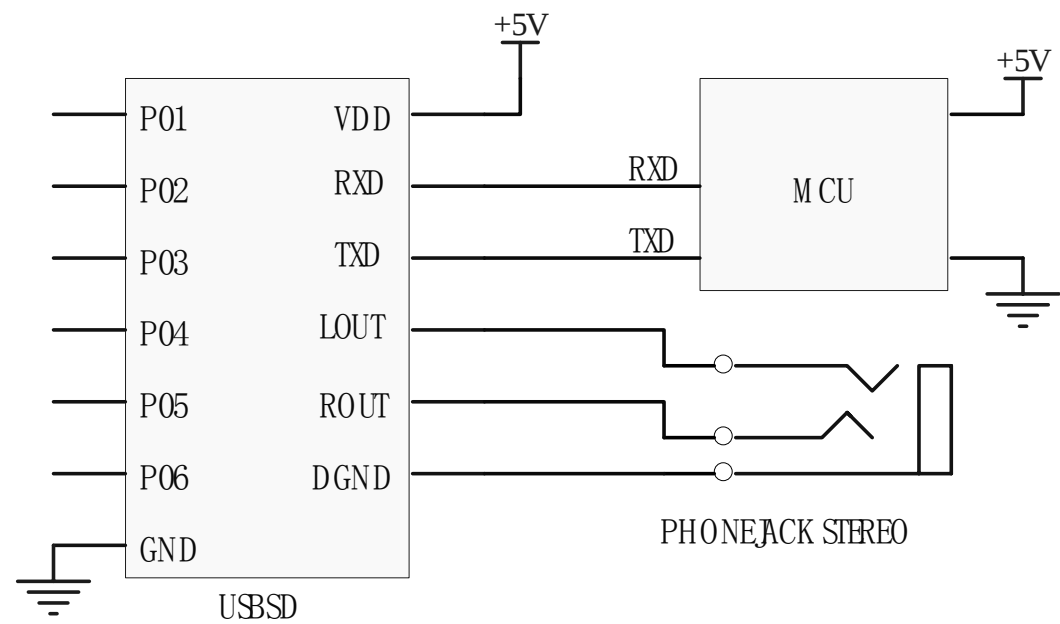
6.2.Key mode



6.3. Parallel Mode



6.4. Serial Mode



7.Versions

Version	Data	Description
V1.0	2008-9-18	Original version
V1.1	2009-4-18	Serial control operation code amendments
V1.2	2009-10-19	Update connection remark and add application circuit

8.Contact information

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