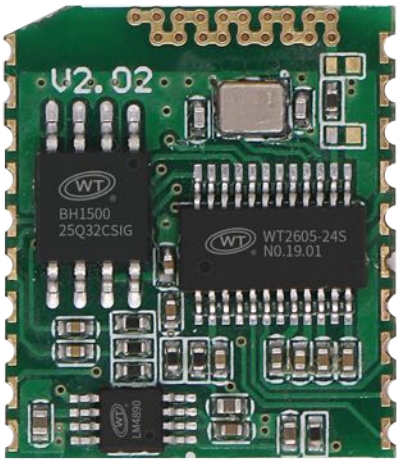
WT2605B03
Bluetooth Module
Specification

Version: V1.01



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CONTENT

1. Overview

WT2605B03-V2.02 Bluetooth audio recording module is an intelligent wireless audio data transmission, recording and MP3 audio playback product independently developed by Shenzhen Waytronic Electronics. It is a low-cost and high-efficiency stereo wireless transmission scheme, which has the characteristics of high integration, small size, low power consumption, high transmission speed and so on. Only a few components can be added to the periphery of the module to realize wireless reception of high-quality stereo audio. By adopting the drive-free mode, customers can quickly realize the wireless transmission of music and enjoy the fun of Bluetooth chip only by connecting the chip into the application product.

WT2605B03-V2.02 has three main features: MP3 function, dual-mode Bluetooth function and UART serial port control. Built-in Flash module, which can be used for external USB flash drive and TF card.

2. Application

The chip is mainly used for short-distance music transmission, and can be easily connected with Bluetooth devices of notebook computers, mobile phones, pads and other digital products to realize wireless music transmission and recording.

- Bluetooth audio
- Bluetooth stereo headphones
- Hands-free phone

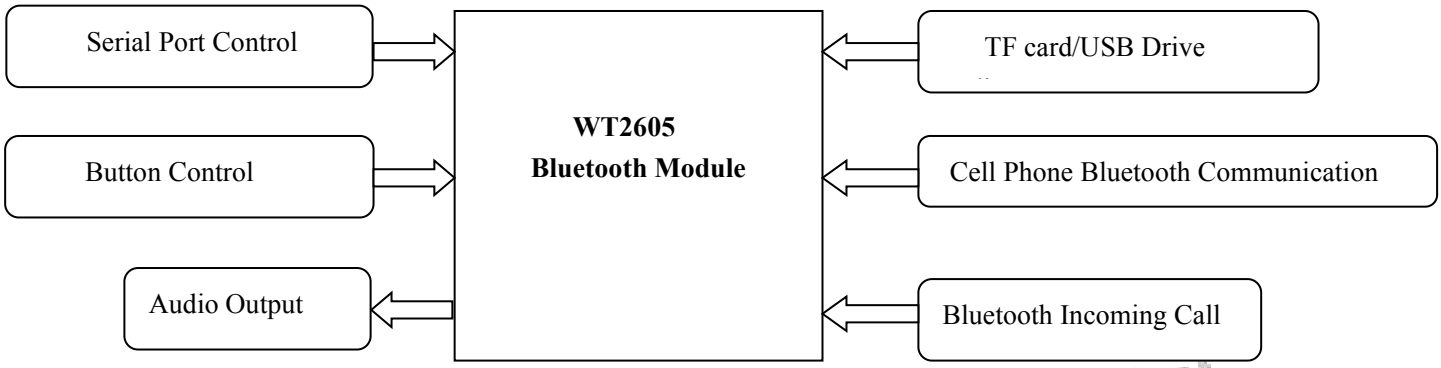
- Bluetooth wireless audio transmission
- Car audio system
- Car hands-free
- Portable navigation equipment
- Bluetooth recording and MIC recording

3. Characteristics

- The working voltage range of the chip is 3.0V-5.0V
- Standard UART communication interface, which can flexibly realize specified address playing, specified file name playing, files playing in specified folder, volume level, up and down music, playing stop, memory switching and selecting playing mode, etc.
- WT2605 is adopted as the core, and three storage modes of SPI-FLASH, TF card and U disk are supported at the same time. SPI-FLASH is stored as a fixed sound source area, and the contents can be changed by using U disk.
- The USB interface realizes the automatic switching between the master and slave (USB card reader) and the function of USB sound card.
- Support FAT, FAT16 and FAT32 file systems, MP3 and WAV(PCM, IMA-ADPCM)
- Support USB flash drive offline upgrade program
- The effective distance of Bluetooth audio can reach 20 meters.
- In MP3 mode, when there is a U disk and TF card, first respond to the U disk and then to the TF card.
- Bluetooth dual-mode function conforms to Bluetooth 5.0 and BLE specifications.
- Typical TX output power +2db
- Audio codec supports 16-bit stereo DAC and two-channel 16-bit ADC.
- High performance stereo, ADC with 90dB signal-to-noise ratio
- Three sets of multifunctional 32-bit timers supporting capture and PWM modes
- Support customized functions: key control mode, infrared control mode, etc.

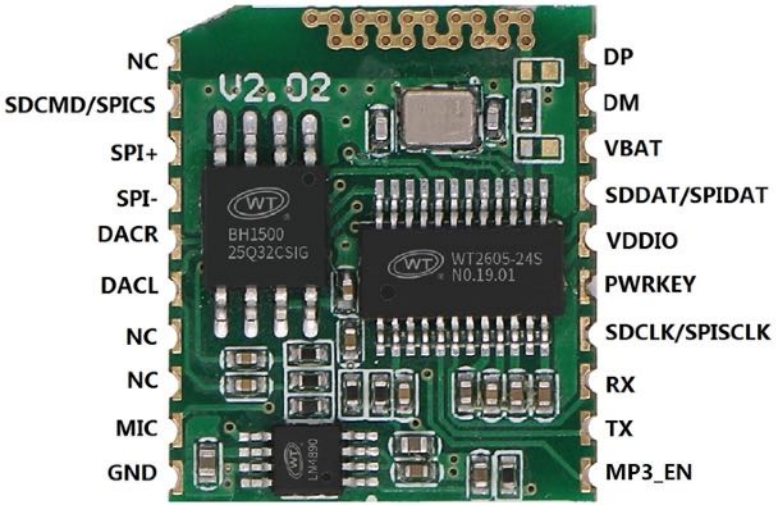
4. Introduction of Functional Block Diagram

Internal structure of the module: audio Bluetooth chip, Flash, 26M crystal oscillator and 1W power amplifier (when not in use, it can be directly connected to external output through resistors).



5. Description of PIN

Description of WT2605B03R's pin



Pin numbers are arranged in the order shown above.

Pin	Name	Type	Description
1	NC		Empty foot
2	SDCMD/SPICS	I/O	TF internal chip selection or chip selection terminal of SPI-FLASH internal memory
3	SPI+	O	Horn terminal 1W 8R
4	SPI-	O	Horn terminal 1W 8R
5	DAC R	O	DAC right channel output
6	DAC L	O	DAC left channel output
7	NC		Empty foot
8	NC		Empty foot
9	MIC	I	Microphone terminal
10	GND	POW	Power ground
11	MP3_EN		Empty feet, stay suspended.
12	TXD	I/O	UART serial port data output terminal
13	RXD	I/O	UART asynchronous serial port data input terminal
14	SDCLK/SPISCLK	I/O	TF card clock pin or FLASH clock pin
15	PWRKEY	I	AD key
16	VDDIO	POW	Internal 3.3V digital power supply
17	SDDAT/SPIDA	I	TF card data pin or FLASH data pin
18	VBAT4.2V	POW	Module power supply terminal
19	DM	I/O	USB data terminal DM
20	DP	I/O	USB data terminal DP

6. Introduction of PIN

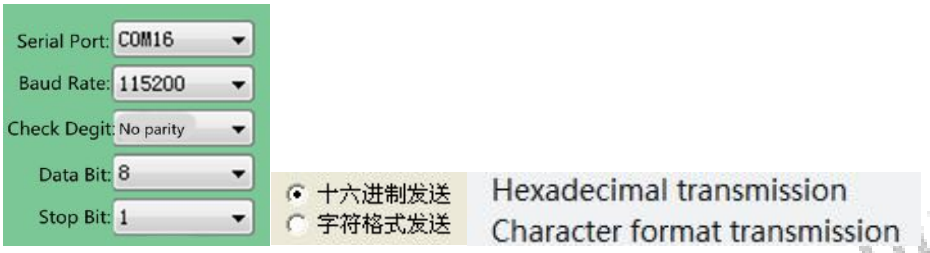
6.1. Introduction of I/O port functions

- RXD/TXD standard serial communication, default standard baud rate 115200
- PWRKEY port can be used to customize key functions, such as up and down, module switch, Bluetooth switch, play/pause, recording, etc. 5 buttons can be customized.

6.2. Serial Port Control Part

6.2.1. Protocol command format

WT2605B03-V2.02 has built-in standard UART asynchronous serial interface, which belongs to 3.3V TTL level interface. It can be converted to RS232 level by MAX3232 chip. The format of communication data is: start bit: 1 bit; Data bits: 8 bits; Parity bit: none; Stop bit: 1 bit. To use the computer serial port debugging assistant, it is necessary to set the serial port parameters correctly, as shown in the figure:



Start Code	Length	Command Code	Parameters	Accumulation and verification	Ending Code
0X7E	As follows	As follows	As follows	As follows	0XEF

Note: "Length" refers to the length+command code+parameter+checksum, and "accumulation and checksum" refers to the lower eight bits of the accumulated sum of length+command code+parameter.

CMD(Hexadecimal)	Corresponding Function
A0	索引 FLASH 播放←Index FLASH playback
A2	指定 TF 卡根目录索引播放←Specify TF card root index playback
A3	指定 TF 卡文件名播放←Specify TF card file name to play.
A4	指定 TF 卡文件夹内文件索引播放←Specify file index play in TF card folder
A5	指定 TF 卡文件夹内文件名播放←Specify file name play in TF card folder
A6	指定 U 盘根目录索引播放←Specify the U disk root index play
A7	指定 U 盘文件名播放←Specify USB disk file name to play
A8	指定 U 盘文件夹内文件索引播放←Specify the file index play in the U disk folder
A9	指定 U 盘文件夹内文件名播放←Specify the file name play in the U disk folder
AA	暂停放音命令←Pause playback command
AB	停止命令←Stop command

AC	下一曲命令←Next song command
AD	上一曲命令←Last song command
AE	音量控制命令←Volume control command
AF	指定播放模式←Specify the playback mode
B1	插播指令←Insertion instruction
B2	指定 EQ 格式←Specify EQ format
B3	获取当前播放文件总时长←Get the total duration of the currently playing file
B4	获取播放当前的时长←Get the current playing time
BB	切换当前工作模式←Switch current working mode
BC	接听电话←answer a call
BD	挂断电话←hang up
BE	切换盘符←Switch drive letter
BF	断开蓝牙链接←Disconnect Bluetooth link
C0	查询版本号←Query version number
C1	查询当前设置音量←Query the currently set volume
C2	查询当前工作状态←Query the current working status
C5	查询 TF 卡内音乐文件总数←Query the total number of music files in TF card
C6	查询 TF 卡内指定文件夹内音乐文件总数←Query the total number of music files in the specified folder in TF card
C7	查询 U 盘音乐总数←Query the total number of U disk music
C8	查询 U 盘指定文件夹音乐总数←Query the total number of music in the specified folder of U disk
C9	查询当前播放文件曲目←Query the currently playing file track
CA	查询当前外设连接状态←Query the current peripheral connection status
CB	查询当前播放歌曲的歌曲名←Query the song name of the currently playing song
CC	查询 FLASH 总曲目数目←Query the total number of FLASH tracks
D0	查询当前工作盘符←Query the current working disk letter
D1	修改蓝牙名字←Modify Bluetooth name
D2	查询当前蓝牙名字←Query the current Bluetooth name
D3	查询蓝牙 Mac 地址←Query Bluetooth Mac address
D6	设置来电时是否自动接听←Set whether to automatically answer the incoming call
D7	设置通话时接听通道←Set the answering channel during the call
DA	停止录音←Stop recording
DB	重拨上次电话指令←Redial last call instruction
E1	获取电量←Get electricity
E2	SD 卡/U 盘根目录索引删除(当前盘符)←SD card /U disk root index deletion (current drive letter)

E3	SD 卡/U 盘根目录文件名删除←Delete the file name of SD card /U disk root directory
E4	SD 卡/U 盘文件夹文件索引删除←SD card /U disk folder file index deletion
E5	SD 卡/U 盘文件夹文件名索引删除←File name index deletion of SD card /U disk folder
E6	全删除←Delete all
E7	U 盘拷贝←U disk copy
E9	根目录索引录音←Root directory recording
EA	根目录文件名录音←Root file name recording
EB	指定文件夹索引录音←Specify folder index recording
EC	指定文件夹文件名录音←Specify folder file name recording
ED	打开关闭蓝牙←Turn on/off bluetooth
FF	扩展指令←Extended instruction

Table 2 Communication control instructions

6.2.2. Write Operation Instruction

Write operation instruction return code format

Start Code	Length	Command Code	Parameters	Accumulation and verification	Ending Code
0X7E	xx	xx	xx	xx	0XEF

Note: After each write command is executed, the operation code corresponding to the command is returned. The return code format is consistent with the sending code format.

Operating code： : 0x00 Indicates that the command is executed normally

: 0xFE Indicates that the command format is wrong and will not be executed

: 0xFF Indicates that the command is executed incorrectly or the device to be operated is not online

For example, send index play command: 7E05A0001A7EF; WT2605 returns 7E 04 A0 00 A4 EF, which means that the instruction was successfully executed; If the return code is: 7E 04 A0 FF A3 EF, the execution of this instruction is wrong.

Active push command: when the Flash, SD card and U disk stop playing or the Bluetooth status changes, the module will actively push the play stop message, refer to 0xC2 command→0xC2 指令

Power-on initialization complete push command: 7E 04 01 00 05 EF

Index FLASH (A0)

Start Code	Length	Command	Parameter	Track high position	Low track	Check Code
7E	05	A0	00	01	XX	EF

This command can specify the files in Flash to play, which is affected by the order in which the files are stored.The files are sorted in index order.Among them, "7E05A0001A6EF" means that the voice with index number 01 is played in Flash. Check code = length+command+high track position+low track position. Note: When specified to play, if the specified track does not exist, it will not affect the current play.

Specify TF card root index play (A2)

Start Code	Length	Command	Parameter	Track high position	Low track	Check Code
7E	05	A2	00	01	XX	EF

This command can specify the files in TF card to be played, which is affected by the order in which the files are stored.The files are sorted in index order.Among them, "7E 05 A2 00 01 A8 EF" means that the voice with index number 01 is played in TF card. Check code = length+command+high track position+low track position. Note: When specified to play, if the specified track does not exist, it will not affect the current play.

Specify TF card file name to play (A3)

Start Code	Length	Command	File name(high-low)				Check Code	End Code
7E	07	A3	54	30	30	32	XX	EF

This command can specify the file name in the root directory of TF card to play (the file name can support up to eight bytes); Among them, "54, 30, 30 and 32" are ASCLL codes of T002 respectively, and only the file name exists in the form of ASCLL codes; The above instruction indicates that the audio file named "T002.MP3" in the specified root directory will be played.

Specify file index play in TF card folder (A4)

Start Code	Length	Command	File name(high-low					File Index(high-low)		Check Code	End Code
7E	0A	A4	4D	55	53	49	43	00	01	XX	EF

This command can specify the file index in the folder under the root directory to play (the folder name is fixed with 5 characters); Among them: only the folder name exists in the form of ASCLL code; The above instruction indicates that the audio file with index number 01 in the folder named "MUSIC" in the specified root directory will be played.

Specify file name play in TF card folder (A5)

Start Code	Length	Command	Folder Name(high-low)					File name(high-low)				Check Code	End Code
7E	0C	A5	4D	55	53	49	43	54	30	30	32	XX	EF

This command can specify the file name under the root directory to play (the folder name is fixed with 5 characters, and the file name can support up to 8 bytes); Among them, "54, 30, 30 and 32" are ASCLL codes of T002 respectively, and only the folder name and file name exist in the form of ASCLL codes; The above instruction indicates that the audio file named "T002.MP3" in the folder named "MUSIC" in the specified root directory will be played.

Specify the index play of U disk root directory (A6)

Start Code	Length	Command	Track high position	Low track	Check Code	End Code
7E	05	A6	00	01	XX	EF

This command can specify the files in TF card to be played, which is affected by the order in which the files are stored. The files are sorted in index order. Among them, "7E 05 A6 00 01 A8 EF" means that the voice with index number 01 is played in the U disk. Check code = length+command+high track position+low track position.

Specify the USB flash drive file name to play (A7)

Start Code	Length	Command	File name(high-low				Check Code	End Code
7E	07	A7	54	30	30	32	XX	EF

This command can specify the file name in the root directory of TF card to play (the file name can support up to eight bytes); Among them, "54, 30, 30 and 32" are ASCLL codes of T002 respectively, and only the file name exists in the form of ASCLL codes; The above instruction indicates that the audio file named "T002.MP3" in the specified root directory will be played.

Specify file index play in USB flash drive folder (A8)

Start Code	Length	Command	File name(high-low					File Index(high-low)		Check Code	End Code
7E	0A	A8	4D	55	53	49	43	00	01	XX	EF

This command can specify the file index in the folder under the root directory to play (the folder name is fixed with 5 characters); Among them: only the folder name exists in the form of ASCLL code; The above instruction indicates that the audio file with index number 01 in the folder named "MUSIC" in the specified root directory will be played.

Specify file name play in USB flash drive folder (A9)

Start Code	Length	Command	Folder Name(high-low)					File name(high-low)				Check Code	End Code
7E	0C	A9	4D	55	53	49	43	54	30	30	32	XX	EF

This command can specify the file name under the root directory to play (the folder name is fixed with 5 characters, and the file name can support up to 8 bytes); Among them, "54, 30, 30 and 32" are ASCLL codes of T002 respectively, and only the folder name and file name exist in the form of ASCLL codes; The above instruction indicates that the audio file named "T002.MP3" in the folder named "MUSIC" in the specified root directory will be played.

Pause playback command (AA)

Start Code	Length	Command	Check Code	End Code
7E	03	AA	AD	EF

If the instruction is sent when the audio is playing, the audio will be paused, and the data will be sent again, and the audio will continue to be played from where it was paused.

Stop command (AB)

Start Code	Length	Command	Check Code	End Code
7E	03	AB	AE	EF

If the audio is playing, send this command to stop playing the currently playing music.

Next command (AC)

Start Code	Length	Command	Check Code	End Code
7E	03	AC	AF	EF

This command can trigger the next piece of music to be played, and when the last piece of music is played, sending this command can trigger the first piece of music to be played.

Command of the previous song (AD)

Start Code	Length	Command	Check Code	End Code
7E	03	AD	B0	EF

This command can trigger the last music to be played. When the first music is played, sending this command can trigger the last music to be played.

Volume control command (AE)

Start Code	Length	Command	Voice Volume Level	Check Code	End Code
7E	04	AE	1E	XX	EF

There are 32 levels of volume, ranging from 00 to 31, of which 00 is silent and 31 is the maximum volume. In the example, in order to send the maximum volume of 30 levels, this instruction can modify and adjust the volume in real time. The default volume of power-on is 26.

Specify the playback mode (AF)

Start Code	Length	Command	Parameter	Check Code	End Code
7E	04	AF	00: No-loop single playback mode	B3	EF
			01: Single loop playback mode	B4	
			02: All tracks loop playback mode (default)	B5	
			03: Folder rotation mode	B6	
			04: Random mode	B7	

Insertion instruction (B1)

Start Code	Length	Command	Marking word	Track high position	Low track	Check Code	End Code
7E	06	B1	XX	00	01	XX	EF

Note: When receiving this instruction, pause the currently playing track, then execute the playing track specified in this instruction, and then play the originally paused track after playing (the deviation can be within 1 second or the whole second). When the first insertion order is not finished, when the second insertion order is sent, the order is invalid. Only after the first interrupted music is played can the interrupted music be interrupted again. Interruptions between the same device or different devices are supported.

Marking word: →00；means：Designated index address in insert FLASH

→01；means：Designated index address in inserted TF card

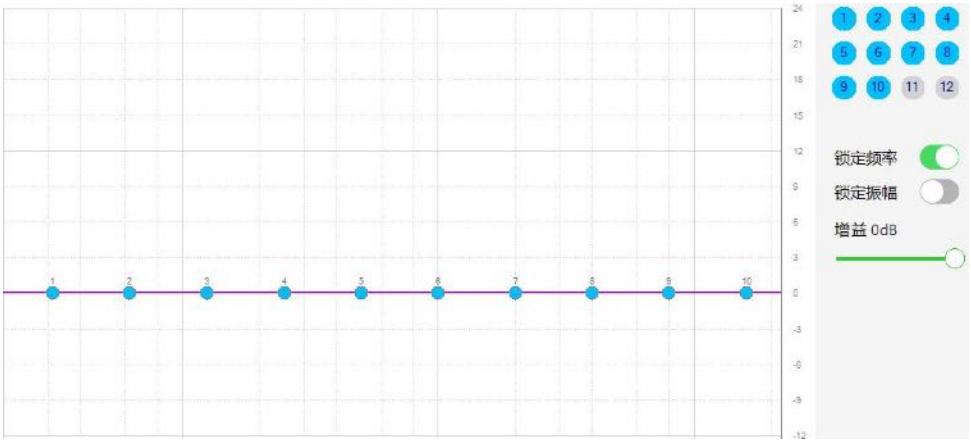
→02；means：Specify the index address in the inserted USB flash drive.

Specify EQ mode (B2)

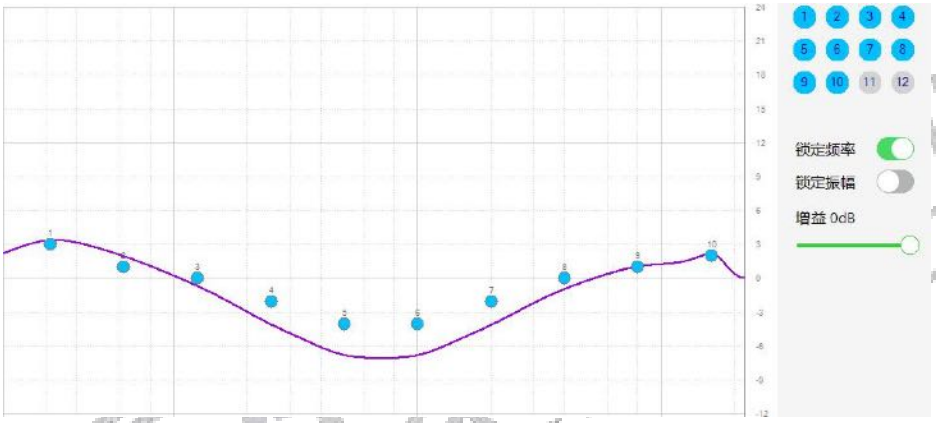
Start Code	Length	Command	Parameter	Check Code	End Code
7E	04	B2	00：Normal (default)	B6	EF
			01：Pop	B7	
			02：Rock	B8	
			03：Jazz	B9	
			04：Classic	BA	
			05：Base	BB	

Changing the instruction can adjust the audio playing effect, and there are 6 kinds of playing effects.

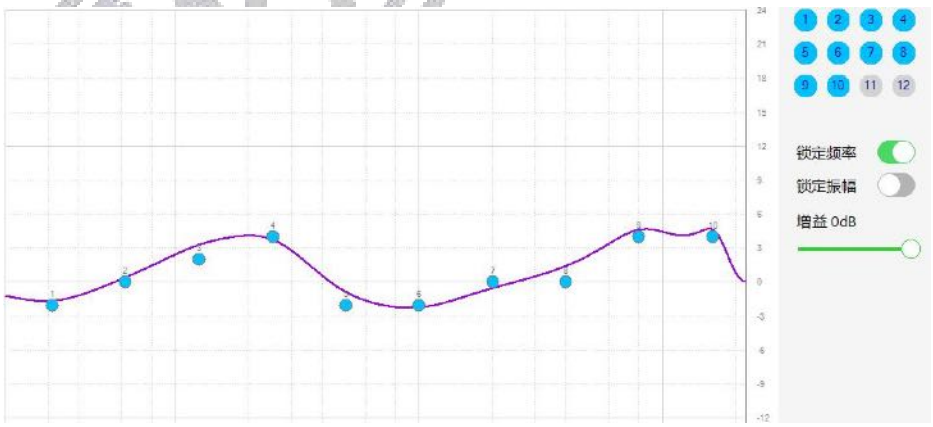
Normal (default):



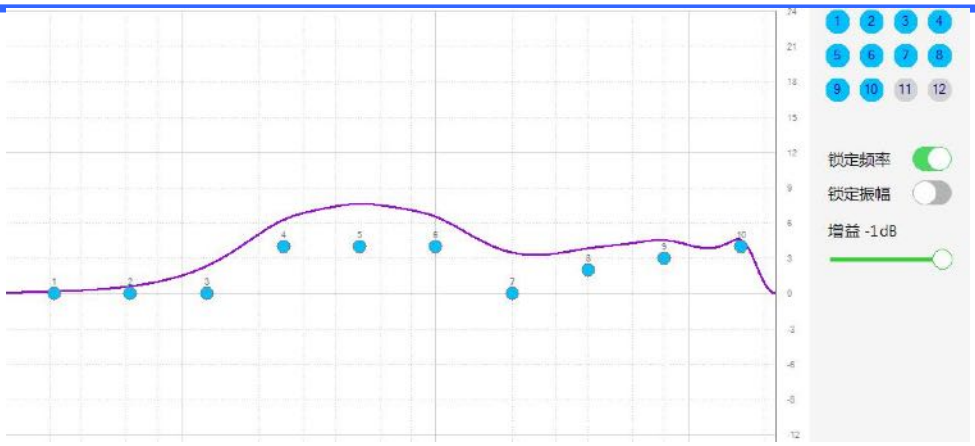
Pop:



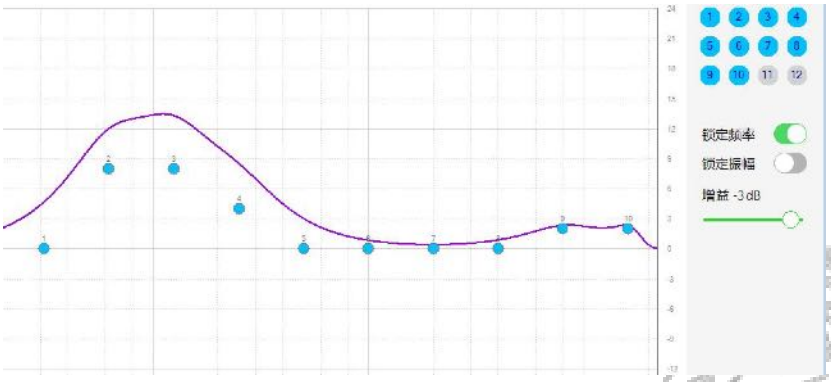
Rock:



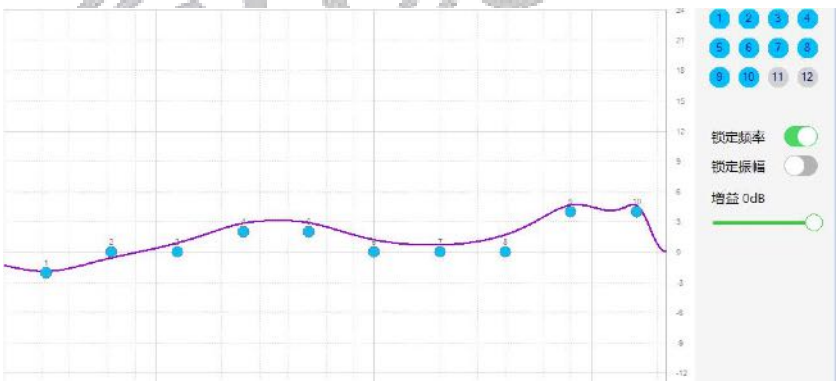
Jazz:



Classic:



Base:



Get the total duration of the currently playing file (B3)

Start Code	Length	Command	Check Code	End Code
7E	03	B3	B6	EF

Return Format：

Start Code	Length	Command	Duration	Check Code	End Code

7E	XX	B3	XX	XX	EF

Note: This command can only query files in TF card and U disk, and it can only be queried in the playing state, and the time is accurate to seconds.

Get the current playing time (B4)

Start Code	Length	Command	Check Code	End Code
7E	03	B4	B7	EF

Return Format:

Start Code	Length	Command	Duration	Check Code	End Code
7E	XX	B4	XX	XX	EF

Note: This command can only query files in TF card and U disk, and it can only be queried in the playing state, and the time is accurate to seconds.

Switch the current working mode (BB)

Start Code	Length	Command	Check Code	End Code
7E	03	BB	BE	EF

If it is currently in Bluetooth mode, send this command, then switch to audio mode; if Bluetooth is connected, Bluetooth will keep working in the background after switching, and the Bluetooth connection will not be disconnected; If the current mode is audio mode, send the command to switch to Bluetooth mode. Audio mode can play the voice in SD card or U disk.

Note: If TF card and U disk do not exist, you can also switch modes. After switching, actively return to the current working state, refer to 0xD0 instruction.→0xD0 指令。

Instruction of picking up the phone

Start Code	Length	Command	Check Code	End Code
7E	03	BC	BF	EF

Enter this command when calling to connect the phone.

Instruction of hanging up(BD)

Start Code	Length	Command	Check Code	End Code
7E	03	BD	C0	EF

Enter this command when the phone is connected to hang up the phone.

Switch letter (BE)

Start Code	Length	Command	Parameter	Check Code	End Code
7E	04	BE	XX	XX	EF

Parameter: →00；means：Switch to TF card

→01；means：Switch to USB flash drive

Disconnect Bluetooth link (BF)

Start Code	Length	Command	Check Code	End Code
7E	03	BF	C2	EF

After Bluetooth is disconnected, if the Bluetooth device wants to connect the module again, it needs to be manually connected.

Read operation instruction

Query version number (C0)

Start Code	Length	Command	Check Code	End Code
7E	03	C0	C3	EF

Query the currently set volume (C1)

Start Code	Length	Command	Check Code	End Code
7E	03	C1	C4	EF

Return Format

Start Code	Length	Command	Voice Volume Value	Check Code	End Code
7E	04	C1	xx	xx	EF

Read the current working state (C2)

Start Code	Length	Command	Check Code	End Code
7E	03	C2	C5	EF

Return Format

Start Code	Length	Command	Parameter 1	Parameter 2	Check Code	End Code
7E	05	C2	xx	xx	xx	EF

Parameter 1: Return to Bluetooth status; Parameter 2: Return to MP3 status (i.e. the playing status of voice in Flash, SD card and U disk)

Parameter
01: MP3 play 02: MP3 stop 03: MP3 Pause 04: Bluetooth Play 05: answering state 06: ringing state 07: Bluetooth connection in progress (no playback, no answer) 08: Bluetooth disconnected (completed) 09: Bluetooth disconnected 0A: Bluetooth call outgoing 0B: Bluetooth music pause

Query the total number of music files in TF card (C5) (including files in folders)

Start Code	Length	Command	Check Code	End Code
7E	03	C5	C8	EF

Return Format

Start Code	Length	Command	Amount of files	Check Code	End Code
7E	xx	C5	xx	xx	EF

Query the total number of music files in the specified folder in TF card (C6)

Start Code	Length	Command	Folder name (high-low)					Check Code	End Code
7E	08	C6	4D	55	53	49	43	XX	EF

Among them: the folder name exists in the form of ASCLL code; The above instruction indicates the total number of audio files in the folder named "MUSIC" in the read root directory.

Return Format

Start Code	Length	Command	Amount of files	Check Code	End Code
7E	xx	C6	xx	xx	EF

Query the total number of music files in the U disk (C7)

(including files in folders)

Start Code	Length	Command	Check Code	End Code
7E	03	C7	CA	EF

Return Format

Start	Length	Command	Amount	Check	End Code

Code			of files	Code	
7E	xx	C7	xx	xx	EF

Query the total number of music files in the specified folder in U disk (C8)

Start Code	Length	Comm and	File name(high-low)					Check Code	End Code
7E	08	C8	4D	55	53	49	43	XX	EF

Among them: the folder name exists in the form of ASCLL code; The above instruction indicates the total number of audio files in the folder named "MUSIC" in the read root directory.

Return Format

Start Code	Length	Command	Amount of files	Check Code	End Code
7E	xx	C8	xx	xx	EF

Query the currently playing file track (C9)

Start Code	Length	Command	Check Code	End Code
7E	03	C9	CC	EF

Return Format

Start Code	Length	Command	File track	Check Code	End Code
7E	xx	C9	xx	xx	EF

Query the current peripheral connection status (CA)

Start Code	Length	Command	Check Code	End Code
7E	03	CA	CD	EF

Return Format

Start Code	Length	Command	Parameter	Check Code	End Code
7E	xx	CA	xx	xx	EF

exists, 1-does not exist.

example：

0X01: without PC connection(BIT3=0), without USB drive(BIT2=0), without TF card(BIT1=0)，with SPI-FLASH(BIT0=1)

0X03: without PC connection(BIT3=0), without USB drive(BIT2=0), with TF card(BIT1=1)， with SPI-FLASH(BIT0=1)

0X05: without PC connection(BIT3=0), with USB drive(BIT2=1), without TF card(BIT1=0)， with SPI-FLASH(BIT0=1)

0X07: without PC connection(BIT3=0), with USB drive(BIT2=1), with TF card(BIT1=1)， with SPI-FLASH(BIT0=1)

Query the song name (CB) of the currently playing song

Start Code	Length	Command	Check Code	End Code
7E	03	CB	CE	EF

Return Format

Start Code	Length	Command	File Name	Check Code	End Code
7E	xx	CB	xx	xx	EF

Note: File names exceeding 8 bytes (excluding suffixes) are returned in Unicode encoding format, and file names within 8 bytes are returned in GBK encoding.

Query the total number of FLASH tracks (CC)

Start Code	Length	Command	Check Code	End Code
7E	03	CC	DF	EF

Return Format

Start Code	Length	Command	File Amount	Check Code	End Code
7E	xx	CC	xx	xx	EF

Query Current Work (D0)

Start Code	Length	Command	Check Code	End Code
7E	03	D0	D3	EF

Return Format

Start Code	Length	Command	Start Code	Check Code	End Code
7E	xx	D0	xx	xx	EF

Parameters
0、SPI-flash 1、TF card 2、USB Drive 3 、 Bluetooth 4、PC 5、IDLE

Modify Bluetooth name (D1)(maximum supported 32 bytes)

Start Code	Length	Command	Parameter 1	Name of Bluetooth	Check Code	End Code
7E	XX	D1	00	XX （ 1~32 bytes）	XX	EF

Note: Bluetooth name is written in ASCLL code, which can support 32 bytes at most (length, parameters and check code should be calculated according to Bluetooth name), and parameter 0 is the modified audio Bluetooth name; 1 parameter to modify BLE Bluetooth name; When modifying, if the song is playing, it will stop playing, and the Bluetooth connection state will be disconnected. After the modification is completed, the Bluetooth name will not be updated until it is switched to Bluetooth mode or powered on again.

Query the current Bluetooth name (D2)

Start Code	Length	Command	Parameter	Check Code	End Code
7E	04	D2	XX	XX	EF

Parameter： 00 indicates→Audio Bluetooth, which is returned according to the actual Bluetooth name. The power-on will actively push the audio Bluetooth name.

01 indicates→BLE Bluetooth, return according to the actual Bluetooth name

Return Format

Start Code	Length	Command	Parameter	Check Code	End Code
7E	xx	D2	xx	xx	EF

Query the current Bluetooth MAC address (D3)

Start Code	Length	Command	Check Code	End Code
7E	03	D3	D6	EF

Return Format

Start Code	Length	Command	Parameter	Check Code	End Code
7E	xx	D3	xx	xx	EF

Note: Bluetooth MAC address is fixed at 6 bytes, and power-on will actively push this instruction.

Set up automatic answering when calling (D6)

Start Code	Length	Command	Parameter	Check Code	End Code
7E	03	D6	XX	XX	EF

Parameter：01 means→Don't answer the call automatically.

02 means→Automatically answer incoming calls.

Set the receiving channel during the call (D7)

Start Code	Length	Command	Check Code	End Code
7E	03	D7	DA	EF

Note: When the module is in the call state, send this command to switch the call channel between the mobile phone and Bluetooth.

Stop recording (DA)

Start Code	Length	Command	Check Code	End Code
7E	03	DA	DD	EF

Note: This command is used to stop recording.

Redial last call instruction (DB)

Start Code	Length	Command	Check Code	End Code
7E	03	DB	DE	EF

Note: This command is used to replay the last call.

Acquisition of electricity (E1)

Start Code	Length	Command	Check Code	End Code
7E	03	E1	E4	EF

Return Format

Start Code	Length	Command	Parameter	Check Code	End Code
7E	xx	E1	xx	xx	EF

Return parameter: return according to the input voltage value of VBAT pin, and the parameter is two bytes.

SD card /U disk root index deletion (current drive letter) (E2)

Start Code	Length	Command	Index		Check Code	End Code
7E	05	E2	00	01	XX	EF

Note: The deleted position is the first voice of the current drive index.

Delete the file name of SD card /U disk root directory (E3)

Start Code	Length	Command	File Name					Check Code	End Code
7E	08	E3	4D	55	53	49	43	XX	EF

Note: The deleted location is the voice whose current drive name is MUSIC.

Delete SD card /U disk folder file index (E4)

Start	Length	Command	File Name	Index	Check	End

Code										Code	Code
7E	0A	E4	52	45	43	4F	44	00	01	XX	EF

Note: The deleted location is the first voice in the index of the current drive RECOD folder.

Delete the file name index of SD card /U disk folder (E5)

Start Code	Length	Command	File Name					File Name				Check Code	End Code
7E	0C	E5	52	45	43	4F	44	31	30	30	31	XX	EF

Note: the location to delete is the current drive letter RECOD file name 1001.MP3 voice.

Delete all (E6)

Start Code	Length	Command	Check Code	End Code
7E	03	E6	E9	EF

Note: Delete all voices of the current letter.

U disk copy (E7)

Start Code	Length	Command	Check Code	End Code
7E	03	E7	EA	EF

Root directory recording (E9)

Start Code	Length	Command	Parameter	High Bit	Low Bit	Check Code	End Code
7E	06	E9	XX	00	01	XX	EF

Parameter: 00 indicates→MIC USB Drive Root directory index file serial number

01 indicates→MIC SD Root directory index file serial number

10 indicates→BT USB Drive Root directory index file serial number

11 indicates→BT SD Root directory index file serial number

The above instruction indicates that recording is indexed in the root directory.

Root directory recording (EA)(The file name can support up to eight bytes)

Start Code	Length	Command	Parameter	Folder Name(high-low)					Check Code	End Code
7E	09	EA	XX	4D	55	53	49	43	XX	EF

Parameter 00 indicates→MIC USB drive Root directory file name

01 indicates→MIC SD Root directory file name

10 indicates→BT USB drive Root directory file name

11 indicates→BT SD Root directory file name

The above instruction means recording in the root directory, and the file name is MUSIC.MP3

Specify folder index recording (EB)(The folder name is fixed at 5 characters)

Start Code	Length	Command	Parameter	File Name					File Index		Check Code	End Code
7E	0B	EB	XX	52	45	43	4F	44	00	01	XX	EF

Parameter:00 indicates→MIC USB drive Serial number of folder index file

01 indicates→MIC SD Serial number of folder index file

10 indicates→BT USB drive Serial number of folder index file

11 indicates→BT SD Serial number of folder index file

The above instruction indicates that recording is indexed in RECOD folder.

Specify folder file name recording (EC)（The file name supports up to eight bytes, and the folder name is fixed at five characters.）

Start Code	Length	Command	Parameter	File Name					File Name				Check Code	End Code
7E	0D	EC	XX	52	45	43	4F	44	31	30	30	31	XX	EF

Parameter 00 means→MIC USB drive File name recording in specified folder

01 means→MIC SD File name recording in specified folder

10 means→BT USB drive File name recording in specified folder

11 means→BT SD File name recording in specified folder

The above instructions indicate recording in the RECOD folder, with the file name of 1001.MP3

Turn Bluetooth on and off (ED)

Start Code	Length	Command	Parameter 1	Parameter 2	Check Code	End Code
7E	XX	ED	XX	XX	XX	EF

Parameter 1: 00 indicates that audio Bluetooth and BLE Bluetooth are selected simultaneously.

01 indicates that BLE Bluetooth is selected

Parameter 2: 00 indicates that the status is set to on.

01 indicates that the status is set to off.

6.2.3. Expansion instruction (FF)

BLE data transmission instruction (01)

Start Code	Length	Spreading code	Type	Command	Data packet	Check Code	End Code
7E	XX	FF	05	01	XX	XX	EF

Note: It is recommended that the maximum packet length of data packet should not exceed 20 bytes, which is not supported yet.

Get Bluetooth music file name (A0)

Start Code	Length	Spreading code	Type	Command	Data packet	Check Code	End Code
7E	XX	FF	05	A0	XX	XX	EF

Return Format

Start Code	Length	Spreading Code	Data Packet	Check Code	End Code
7E	XX	FF 05 A0	XX （ N bytes）	XX	EF

Note: The file name is returned in UTF-8 encoding format.

Get the total playing time of current Bluetooth music (A1)

Start Code	Length	Spreading code	Type	Command	Check Code	End Code
7E	XX	FF	05	A1	XX	EF

Return Format

Start Code	Length	Spreading Code	Duration	Check Code	End Code
7E	XX	FF 05 A1	XX （ N bytes）	XX	EF

Bluetooth music data push command (A3)

Start Code	Length	Spreading code	Type	Command	Parameter	Data Packet	Check Code	End Code
7E	XX	FF	05	A3	01~02	XX	XX	EF

This command will push the song data information obtained from the mobile phone to the lower computer, and the obtained data is related to the mobile APP.

Parameter: 01 is the song information push parameter.

02 song file check value

The data packet is returned in UTF-8 encoding format.

Turn off Bluetooth music data push command (A4)

Start Code	Length	Spreading code	Type	Command	Parameter	Check Code	End Code
7E	XX	FF	05	A4	00~01	XX	EF

Parameters: 00 is on, 01 is off; By default, when it is turned off, Bluetooth song information will be pushed in real time, and the obtained song information is related to the mobile APP.

Fast forward and rewind music (A5)

Start Code	Length	Spreading code	Type	Command	Parameter	Check Code	End Code
7E	XX	FF	05	A5	XX	XX	EF

Parameter: 00 means music fast forward, 01 means music fast backward; Bluetooth music fast forward is related to mobile APP, some apps support it and some don't.

Stop music fast forward and fast rewind (A6)

Start Code	Length	Spreading code	Type	Command	Parameter	Check Code	End Code
7E	XX	FF	05	A6	XX	XX	EF

Parameter: 00 means stop music fast forward, 01 means stop music fast backward.

Get phone book information (B0)

Start Code	Length	Spreading code	Type	Command	Parameter	Check Code	End Code
7E	XX	FF	05	B0	XX	XX	EF

Parameter: 00 means to get the local number; 01 means to get the incoming number; 02 means to get the outgoing number; 03 means to get missed calls.

Return Format

Start Code	Length	Spreading Code	Return Type	Return Parameter	Data Packet	Check Code	End Code
7E	XX	FF 05 B0	XX（1 byte）	XX（1 byte）	XX（N bytes）	XX	EF

Return type / Return Parameter	00（Local Number）	01（Caller number）	02（Calling number）	03（missed call）
01（Name）	Local number name	Caller number name	Name of outgoing number	Missed number name
02（Number）	Local number	Caller number	Calling number	Missed number
03（Type）	Local number	Call time	Power-off time	Missing number time

Example: Suppose that on September 1st, 2020, at 10: 30: 30, Zhang San made a phone call with the number of 130 3333 333.

Send: 7E 06 FF 05 B0 02 BC EF

Return: 7E 0D FF 05 B0 02 01 E5 BC A0 E4 B8 89 2A EF -> Name of outgoing number: Zhang San

7E 12 FF 05 B0 02 02 31 33 30 33 33 33 33 33 33 33 33 F6 EF ->Telephone number: 130 3333 3333

7E 16 FF 05 B0 02 03 32 30 32 30 30 39 30 31 54 31 30 33 30 33 30 D8 EF ->Power-off time

Stop acquiring phone book information (B1)

Start Code	Length	Spreading Code	Type	Command	Check Code	End code
7E	XX	FF	05	B1	XX	EF

Inquire about the phone book information status (B2)

Start Code	Length	Spreading Code	Type	Command	Check Code	End code
7E	XX	FF	05	B2	XX	EF

Return Format

Start Code	Length	Spreading Code	Return Parameter	Check Code	End Code
7E	XX	FF 05 B2	XX（1 byte）	XX	EF

Return parameter: 00 means free, 01 means getting.

Inquire about the calling number (B3)

Start Code	Length	Spreading Code	Type	Com mand	Check Code	End code
7E	XX	FF	05	B3	XX	EF

Return Format

Start Code	Length	Spreading Code	Data Packet	Check Code	End Code
7E	XX	FF 05 B3	XX（N 字节）	XX	EF

Query call duration (B4)

Start Code	Leng th	Spreadi ng Code	Type	Com mand	Check Code	End code
7E	XX	FF	05	B4	XX	EF

Return Format

Start Code	Length	Spreading Code	Duration	Check Code	End Code
7E	XX	FF 05 B4	XX （ 2 bytes）	XX	EF

7. Electrical Parameter

7.1. Audio Playing Parameters

Audio Format	Sample Rate	Baud Rate	Sound Track	Position speed	TF Card	USB Drive	Flash
MP3	≤48K	≤320Kbps	1/2	16	√	√	√
WAV	≤44.1K	≤384Kbps	1/2	16	√	√	×

Table 3 Audio Parameter

7.2. Bluetooth Radio Frequency Characteristics

Transmitting Terminal	Unit	Minimum	Typical Value	Maximum	Condition
Radio Frequency Output Power	dBm	--	2	--	
RMS DEVM	%	--	5.5	--	2dBm，DH5 packet
PEAK DEVM	%	--	12.5	--	
EDR Relative Transmission Power	dB		-0.2		

7.3. Electrical Parameter

Symbol	Description	Minimum	Typical Value	Maximum	Unit
VBAT	Power supply pin voltage	3.0	3.7	5.0	V
IVBAT	External power supply current, no load	25	--	--	mA
T	Working temperature	-40	--	+85	℃

7.4. IO Characteristics

Symbol	Description	Minimum	Typical Value	Maximum	Unit	Condition
VIL	Input low level	-0.3	--	1.27	V	VDDIO=3.3V
VIH	Input high level	2.03	--	3.6	V	VDDIO=3.3V
Driver	Output drive capability	--	8	--	mA	VDDIO=3.3V

7.5. Audio DAC Characteristics

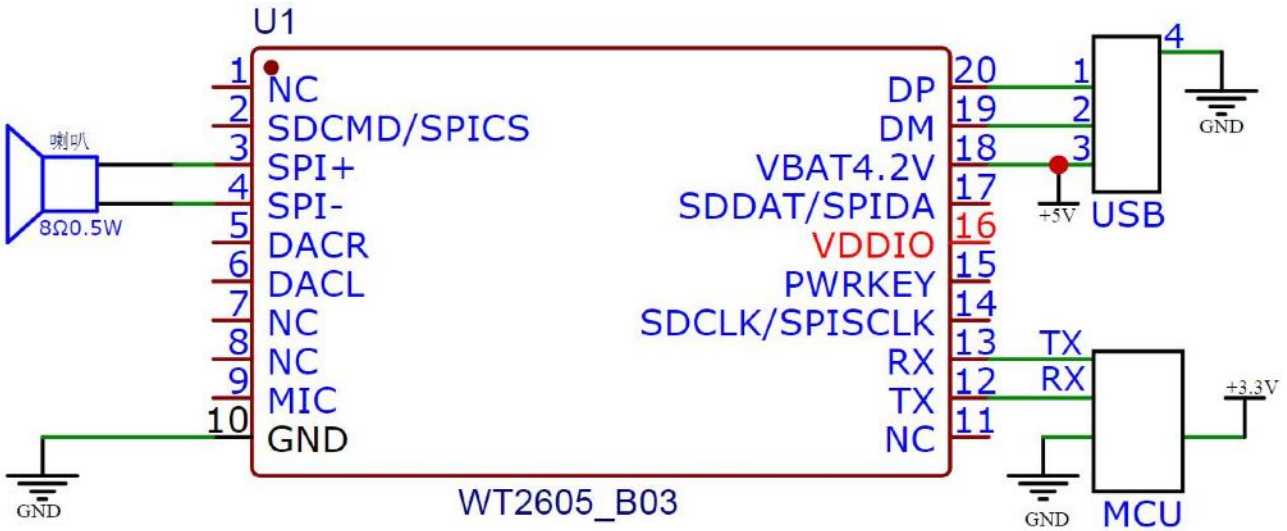
Symbol	Description	Minimum	Typical Value	Maximum	Unit	Condition
SNR	SNR	--	96	--	dB	VCM cap = 1uF VDDDAC cap = 1uF With A-WT Filter Output -3dBV Fin = 1KHz
THD+N	Total Harmonic Distortion	--	-86	--	dB	VCM cap = 1uF VDDDAC cap = 1uF With A-WT Filter Output -3dBV， 10K loading Fin = 1KHz
Output	Maximum Output Voltage	--	2.6	--	Vpeak-peak	32ohm loading

7.6. Audio ADC Characteristics

Symbol	Description	Minimum	Typical Value	Maximum	Unit	Condition
SNR	SNR	--	90	--	dB	VCM cap = 1uF VDDDAC cap = 1uF With A-WT Filter Output -3dBV Fin = 1KHz
THD+N	Total Harmonic Distortion	--	-87	--	dB	VCM cap = 1uF VDDDAC cap = 1uF With A-WT Filter Output -3dBV， 10K loading Fin = 1KHz
Input Range	Input sine wave peak amplitude	0	--	VCM	V	Aux input, aux 0db gain

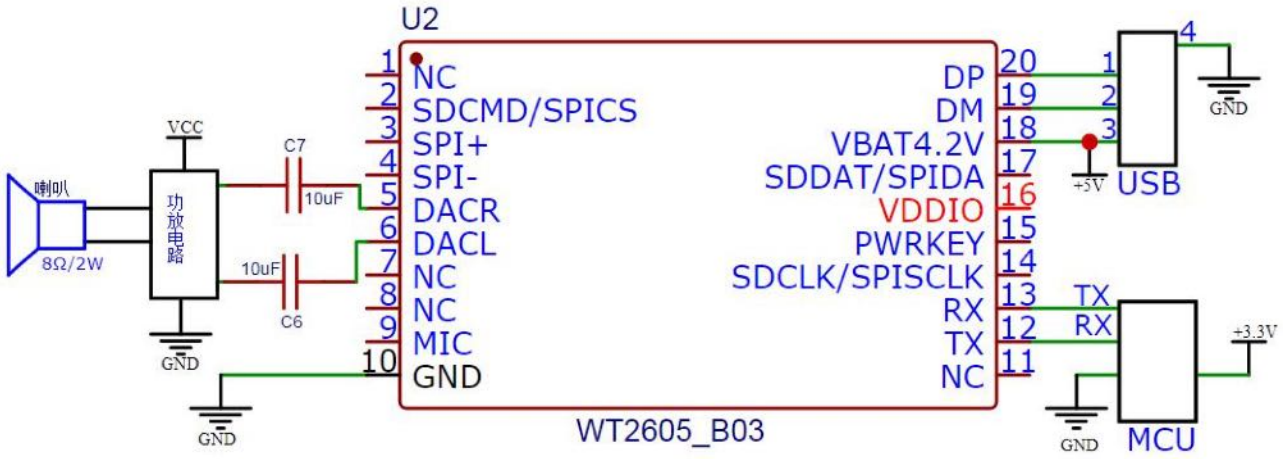
8. Application circuit diagram

8.1. Application Circuit for Directly Driving Horn

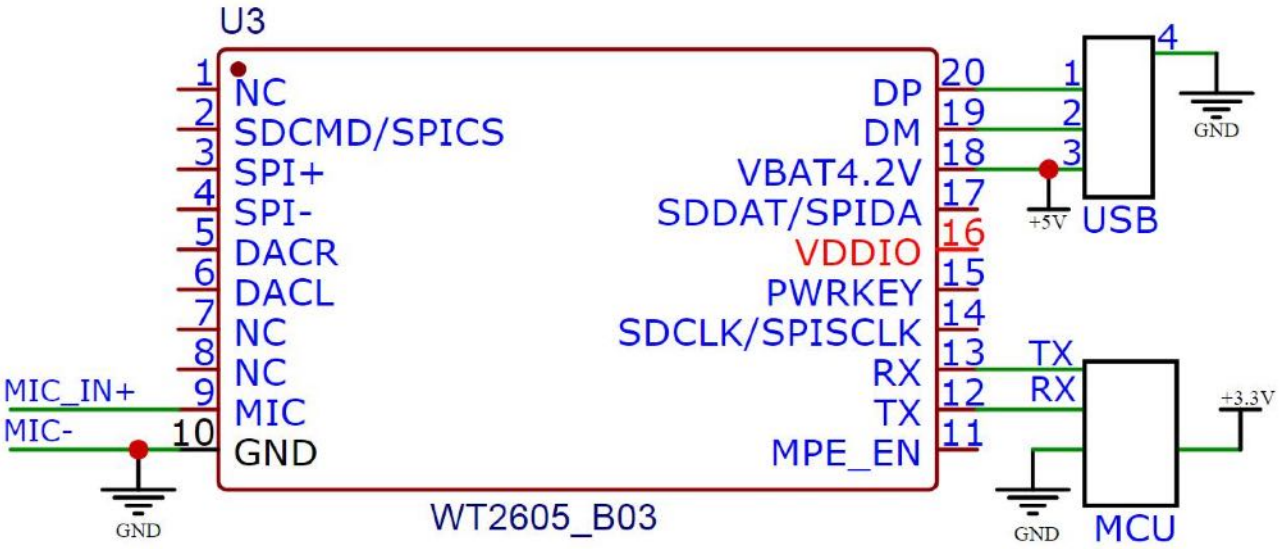


Note: the IO port of WT2605B03-V2.02 is 3.3V level

External Power Amplifier Circuit



8.2. MIC Circuit Diagram



8.3. Chip Size Drawing