

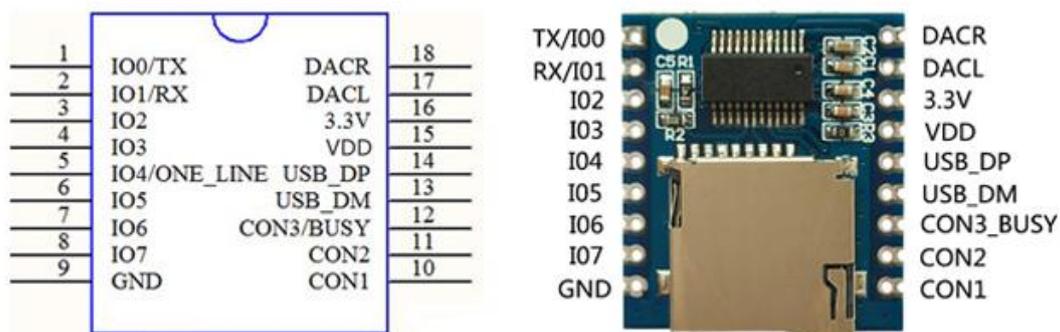
## 1.Description:

XY-V17B is an intelligent voice module developed by the division independently. It integrates IO subsection triggering, UART serial port control, ONE\_line single bus serial port control, and standard MP3, etc. Support MP3,WAV decoding format. Max support 32G TF card storage, can connect the computer to update TF card to store audio files via USB cable.

## 2.Features:

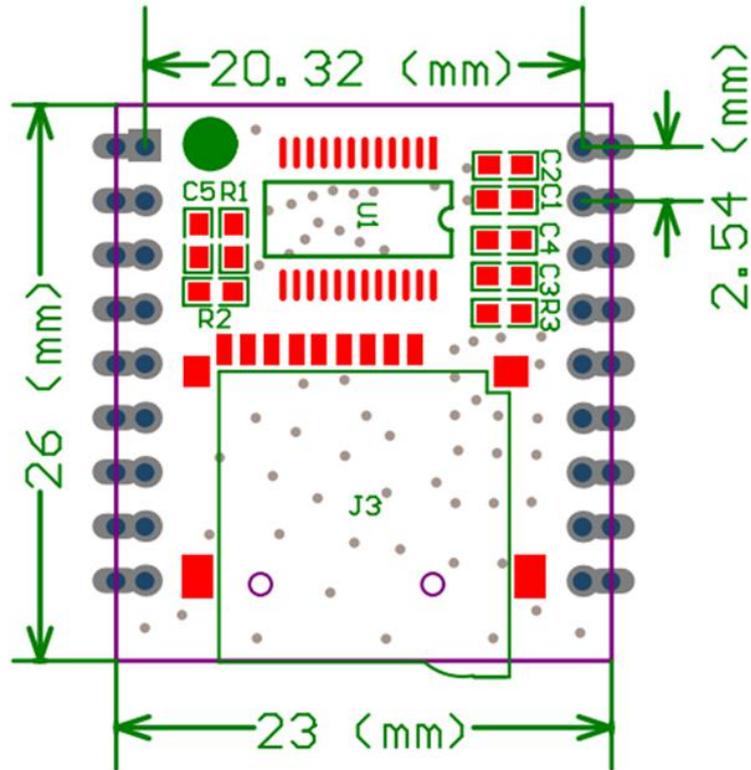
- 1>. Support MP3 and WAV decoding format.
- 2>. Support sampling frequency (KHz) : 8/11.025/12/16/22.05/24/32/44.1/48.
- 3>. 24-bit DAC output, dynamic range support 90dB, SNR support 85dB.
- 4>. Fully support the FAT16/FAT32 file system, with the maximum support 32GB TF card and 32GB U-disk.
- 5>. Support UART serial port control voice broadcast function, can control playback, pause, selections, turn up and down volume and other functions, the largest selection of 65535 tracks.The baud rate is 9600 bit/s.
- 6>. Support IO trigger function, 8 IO ports can trigger 8 musics or 8 IO combinations to trigger 255 songs.
- 7>. Support One\_line single bus serial port control, which can control playback, pause, selection, turn up and down volume and other functions.
- 8>. Support 3 configuration IO for mode selection.

## 3.Module pin instructions:



| <b>No.</b> | <b>Pin Name</b> | <b>Instruction</b>   |
|------------|-----------------|--|
| 1          | IO0/UART_TX     | IO trigger mode is input IO0;UART mode is TX.                                  |
| 2          | IO1/UART_RX     | IO trigger mode is input IO1;UART mode is RX pin.                              |
| 3          | IO2             | IO trigger mode input IO2.   |
| 4          | IO3             | IO trigger mode input IO3.   |
| 5          | IO4/ONE_LINE    | IO mode input IO4;One_Line mode data sends pins.                               |
| 6          | IO5             | IO trigger mode input IO5.   |
| 7          | IO6             | IO trigger mode input IO6.   |
| 8          | IO7             | IO trigger mode input IO7.   |
| 9          | GND             | Ground   |
| 10         | CON1            | Mode Configuration pins 1.   |
| 11         | CON2            | Mode Configuration pins 2.   |
| 12         | CON3/BUSY       | Mode Configuration pins 3; Busy output, Playing output High, Pause output LOW. |
| 13         | USB_DM          | USB DM signal  |
| 14         | USB_DP          | USB DP signal  |
| 15         | VDD/5V          | Module power supply, 3.3-5V voltage input .                                    |
| 16         | 3.3V            | LDO 3.3V output , maximum output current 100mA.                                |
| 17         | DACL            | Audio left channel output.   |
| 18         | DACR            | Audio right channel output.  |

#### 4.Module dimensions:



### 5. Mode configuration and pin function:

| Control Mode           | Configuration Pin |      |      | I/O Function   |         |         |         |         |           |         |         |
|------------------------|-------------------|------|------|--|---------|---------|---------|---------|-----------|---------|---------|
|                        | CON3              | CON2 | CON1 | IO7  | IO6     | IO5     | IO4     | IO3     | IO2       | IO1     | IO0     |
| I/O Integrated Mode 0  | 0                 | 0    | 0    | Key combination play, can play $2^8-1(255)$ Songs.   |         |         |         |         |           |         |         |
| I/O Integrated Mode 1  | 0                 | 0    | 1    | Level combination play, can play $2^8-1(255)$ Songs. |         |         |         |         |           |         |         |
| I/O Independent Mode 0 | 0                 | 1    | 0    | Music 8  | Music 7 | Music 6 | Music 5 | Music 4 | Music 3   | Music 2 | Music 1 |
| I/O Independent Mode 1 | 0                 | 1    | 1    | Music 8  | Music 7 | Music 6 | Music 5 | Music 4 | Music 3   | Music 2 | Music 1 |
| UART Mode              | 1                 | 0    | 0    |  |         |         |         |         |           | RXD     | TXD     |
| One-Line Mode          | 1                 | 0    | 0    |  |         |         | TXD     |         |           |         |         |
| Standard MP3 Mode      | 1                 | 0    | 1    |  |         |         | RPT     | EQ      | P/P/M ODE | PREV/V- | NEXT/V+ |

Note:

1>. "key combination play" : Return to the original high level after the

corresponding level from I/O0-I/O7 output, similar to the key triggered once. Similar instantaneous switch.

2>. "Level combination play" :The trigger signal remains the same, similar to a self-locking switch.

3>.The difference between "I/O Integrated/Independent Mode 0" and "I/O Integrated/Independent Mode 1" :Mode 0 will continue playing the current song to the end after release level .Mode 1 will stop playing immediately after release level.

## 6.Mode operation instruction:

1>. I/O integrated mode 0(Key combination playing).

It will stop playing current song to the end after I/O0-7 release input signal(return to high) at 'I/O Integrated Mode';It will playing new song when get new input signal during playing and stop after end of song;It will play repeatedly if keep input;Busy pin will output valid signal(High) during playing.

Note: the song must be named for 5bit.

Music control:

| IO7   | IO6   | IO5   | IO4   | IO3   | IO2   | IO1   | IO0   | Song      |
|-------|-------|-------|-------|-------|-------|-------|-------|-----------|
| 1     | 1     | 1     | 1     | 1     | 1     | 1     | 0     | 00001.mp3 |
| 1     | 1     | 1     | 1     | 1     | 1     | 0     | 1     | 00002.mp3 |
| 1     | 1     | 1     | 1     | 1     | 1     | 0     | 0     | 00003.mp3 |
| 1     | 1     | 1     | 1     | 1     | 0     | 1     | 1     | 00004.mp3 |
| 1     | 1     | 1     | 1     | 1     | 0     | 1     | 0     | 00005.mp3 |
| 1     | 1     | 1     | 1     | 1     | 0     | 0     | 1     | 00006.mp3 |
| 1     | 1     | 1     | 1     | 1     | 0     | 0     | 0     | 00007.mp3 |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....     |
| 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 00255.mp3 |

2>. I/O integrated mode 1(Level combination playing)

It will keep playing current song when get trigger signal.It will stop playing immediately after release level.Busy pin will output valid signal(High) during playing.Note: the song must be named for 5bit.

Music control:

| IO7   | IO6   | IO5   | IO4   | IO3   | IO2   | IO1   | IO0   | Song      |
|-------|-------|-------|-------|-------|-------|-------|-------|-----------|
| 1     | 1     | 1     | 1     | 1     | 1     | 1     | 0     | 00001.mp3 |
| 1     | 1     | 1     | 1     | 1     | 1     | 0     | 1     | 00002.mp3 |
| 1     | 1     | 1     | 1     | 1     | 1     | 0     | 0     | 00003.mp3 |
| 1     | 1     | 1     | 1     | 1     | 0     | 1     | 1     | 00004.mp3 |
| 1     | 1     | 1     | 1     | 1     | 0     | 1     | 0     | 00005.mp3 |
| 1     | 1     | 1     | 1     | 1     | 0     | 0     | 1     | 00006.mp3 |
| 1     | 1     | 1     | 1     | 1     | 0     | 0     | 0     | 00007.mp3 |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....     |
| 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 00255.mp3 |

3>. I/O independent mode 0((Key independent controlling)

I/O0-I/O7 independently controls 8 songs.It will stop playing current song to the end after I/O0-7 release input signal(return to high);It will playing new song

when get new input signal during playing and stop after end of song;It will play repeatedly if keep input;Busy pin will output valid signal(High) during playing.

Note: the song must be named for 5bit.

| IO7 | IO6 | IO5 | IO4 | IO3 | IO2 | IO1 | IO0 | Song      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----------|
| 1   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 00001.mp3 |
| 1   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 00002.mp3 |
| 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 00003.mp3 |
| 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 00004.mp3 |
| 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1   | 00005.mp3 |
| 1   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 00006.mp3 |
| 1   | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 00007.mp3 |
| 0   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 00008.mp3 |

4>. I/O independent mode 1(Level independent controlling)

I/O0-I/O7 independently controls 8 songs.It will keep play repeatedly specify the triggered song.It will stop playing immediately after release level.Busy pin will output valid signal(High) during playing.

Note: the song must be named for 5bit.

| IO7 | IO6 | IO5 | IO4 | IO3 | IO2 | IO1 | IO0 | Song      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----------|
| 1   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 00001.mp3 |
| 1   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 00002.mp3 |
| 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 00003.mp3 |
| 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 00004.mp3 |
| 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1   | 00005.mp3 |
| 1   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 00006.mp3 |
| 1   | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 00007.mp3 |
| 0   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 00008.mp3 |

5>. UART serial port mode

5.1>. Communication format

Adopt full duplex serial port communication;

Baud rate 9600, data bits 8, stop bit 1, check bit N.

Start code - command type - data length (n) - data 1- data n- and test (SM)

Command code: fixed to 0xAA.

Command type: used to distinguish the type of command.

Data length: the number of bytes of data in an command.

Data: the relevant data in the command, when the length of data is 1, means that there is only CMD and no data bits.

Test: it is low 8 bits of the sum of all the bytes. that is, When the starting code and the data are added, take out low 8 bits.

Data format: sent data or command, high 8-bit data is in front, low 8-bit is in the back.

5.2>. Communication protocol

The following is a data definition for the return and identification of the chip.

A. Playing State definition: the system is on the stop state when power on.

00(stop) 01(play) 02(pause)

B. Disk character definition: it is stopped after the switch disk.

USB:00 SD:01 FLASH:02 NO\_DEVICE: FF.

C. Volume: the volume is 31grades, 0-30.The default is 20grade.

D. Play mode: the default is the single stop when power on.

Cycle for all songs (00) : play the whole songs in sequence and play it after the play.

Single cycle (01) : play the current song all the time.

Single stop (02) : Only play current song once and then stop.

Random play (03) : random play.

Directory loop (04) : play the songs in the current folder in order, and then play them after the play. The directory does not contain subdirectory.

Directory random (05): random play in the current folder, and the directory does not contain subdirectory.

Directory order play (06) : play the songs in the current folder in order and stop after the play. The directory does not contain subdirectory.

Sequential play (07) : play the whole songs in order and stop after it is played.

E. EQ definition: the default EQ is NORMAL(00).

NORMAL(00) POP(01) ROCK(02) JAZZ(03) CLASSIC(04)

F. Composition play definition: combination play is combined by filename. The file requirements are stored under the "XY" file. You can change the name of the file you want to combine to two bytes, which is generally recommended as a number. Such as: 01. Mp3, 02. Mp3.

### 5.3>. Communication command

Control command:

| Command       | Command code | Return |
|---------------|--------------|--------|
| Play          | AA 02 00 AC  | None   |
| Pause         | AA 03 00 AD  | None   |
| Stop          | AA 04 00 AE  | None   |
| Previous      | AA 05 00 AF  | None   |
| Next          | AA 06 00 B0  | None   |
| Volume +      | AA 14 00 BE  | None   |
| Volume -      | AA 15 00 BF  | None   |
| Previous file | AA 0E 00 B8  | None   |
| Next file     | AA 0F 00 B9  | None   |
| Stop playing  | AA 10 00 BA  | None   |

Setting Command:

| Command         | Command code          | Return | Remark                     |
|-----------------|-----------------------|--------|----------------------------|
| Set Volume      | AA 13 01 VOL SM       | None   | VOL:0x00-0xFF              |
| Set Loop mode   | AA 18 01 Loop-mode SM | None   | Loop-mode:0x00-0x07        |
| Set Cycle times | AA 19 02 H L SM       | None   | H:0x00-0xFF<br>L:0x00-0xFF |
| Set EQ          | AA 1A 01 EQ SM        | None   | EQ:0x00-0x04               |

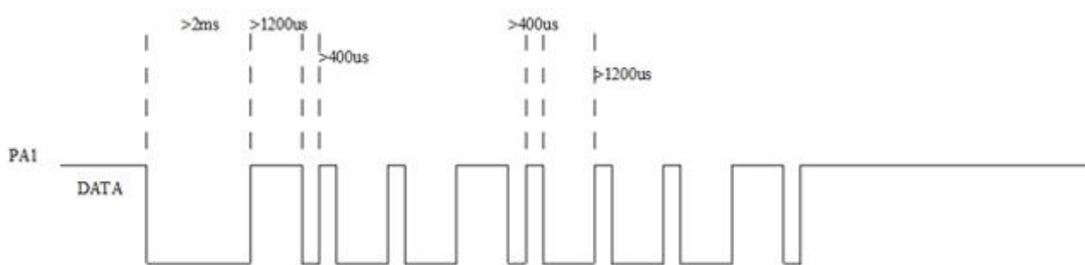
|                                |                               |      |   |
|--------------------------------|-------------------------------|------|---|
| Specified Song                 | AA 07 02 S.N.H S.N.LSM        | None | S.N.H:0x00-0xFF<br>S.N.L:0x00-0xFF                    |
| Specified Path                 | AA 08 Length Drive Path SM    | None | Length:0x00-0xFF<br>Drive:0x00-0xFF<br>Path:0x00-0xFF |
| Switch Specified Drive         | AA 0B 01 Drive SM             | None | Drive:0x00-0xFF                                       |
| Specified song to be interplay | AA 16 03 Drive S.N.H S.N.L SM | None | Drive:0x00-0xFF<br>S.N.H:0x00-0xFF<br>S.N.L:0x00-0xFF |
| Specified path to be interplay | AA 17 Length Drive Path SM    | None | Length:0x00-0xFF<br>Drive:0x00-0xFF<br>Path:0x00-0xFF |
| Select but no play             | AA 1F 02 S.N.H S.N.L SM       | None | S.N.H:0x00-0xFF<br>S.N.L:0x00-0xFF                    |

Query Command:

| Command                      | Command code | Return                    |
|------------------------------|--------------|---------------------------|
| Query play status            | AA 01 00 AB  | AA 01 01, play status, SM |
| Query current online drive   | AA 09 00 B3  | AA 09 01, drive, SM       |
| Query current play drive     | AA 0A 00 B4  | AA 0A 01, drive, SM       |
| Query Number of songs        | AA 0C 00 B6  | AA 0C 02S.N.H S.N.L SM    |
| Query current song           | AA 0D 00 B7  | AA 0D 02 S.N.H S.N.L SM   |
| Query folder directory song  | AA 11 00 BB  | AA 11 02 S.N.H S.N.L SM   |
| Query folder Number of songs | AA 12 00 BC  | AA 12 02 S.N.H S.N.L SM   |

6>. One\_line Single bus serial port mode

Waveform:



→ High:Low=1:3 Means : 0



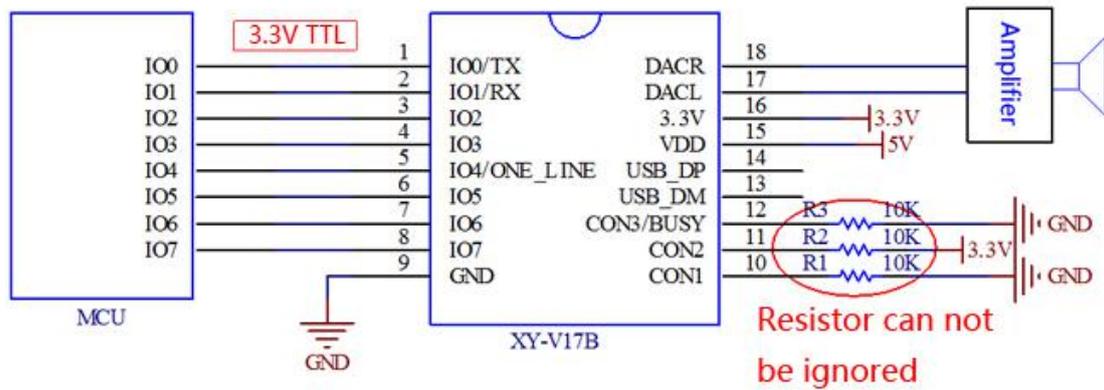
→ High:Low=3:0 Means : 1

Command format:

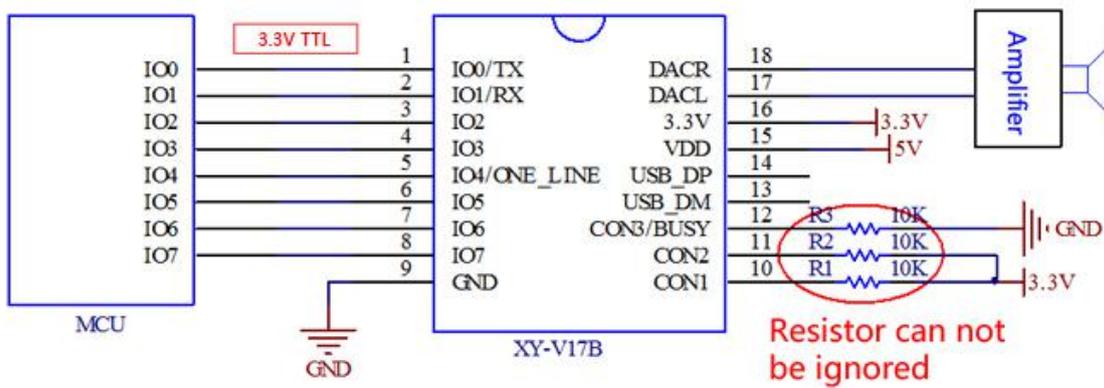
| Command(HEX) | Function               | Note   |
|--------------|------------------------|--|
| 00           | No. 0                  | The number 0-9 has corresponding functions, such as selecting music, setting the volume, setting EQ, setting cycle mode, setting channel, setting the repertoire, and sending the digital at first and then send function command. |
| 01           | No. 1                  |  |
| 02           | No. 2                  |  |
| 03           | No. 3                  |  |
| 04           | No. 4                  |  |
| 05           | No. 5                  |  |
| 06           | No. 6                  |  |
| 07           | No. 7                  |  |
| 08           | No. 8                  |  |
| 09           | No. 9                  |  |
| 0A           | Number reset           | Sent the number of Cleared   |
| 0B           | Confirm choosing song  | Cooperate with Numbers to achieve.   |
| 0C           | Volume setting         |  |
| 0D           | EQ setting             |  |
| 0E           | Loop mode setting      |  |
| 0F           | Channel setting        |  |
| 10           | Interplay song setting |  |
| 11           | Play                   |  |
| 12           | Pause                  |  |
| 13           | Stop                   |  |
| 14           | Previous               |  |
| 15           | Previous directory     |  |
| 16           | Next directory         |  |
| 17           | SD card selection      |  |
| 18           | SD card selection      |  |
| 19           | U disk selection       |  |
| 1A           | FLASH selection        |  |
| 1B           | System sleep           |  |
| 1C           | Stop Playing           |  |

Note: "selection" and "interplay" are played according to the track name, for example, the track is named "00123. Mp3", and the selected data is "0x01", "0x02" "0x03" "0x0B", and the selection is completed.

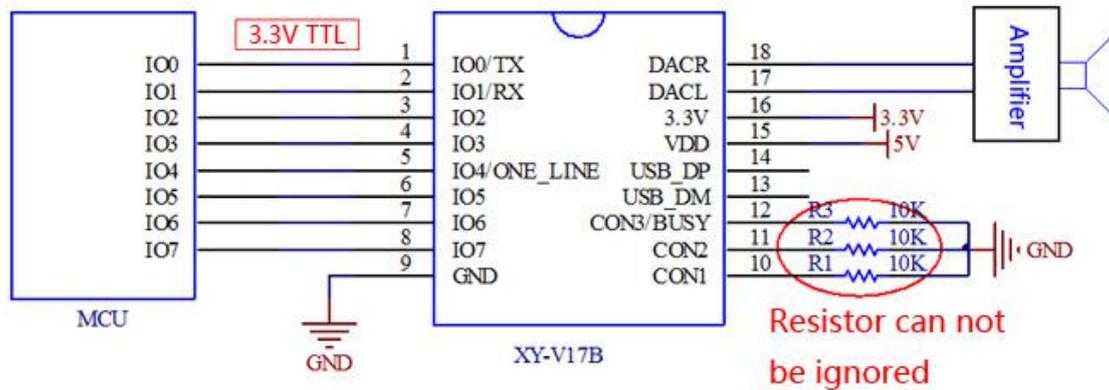
## 7. Typical application circuit:



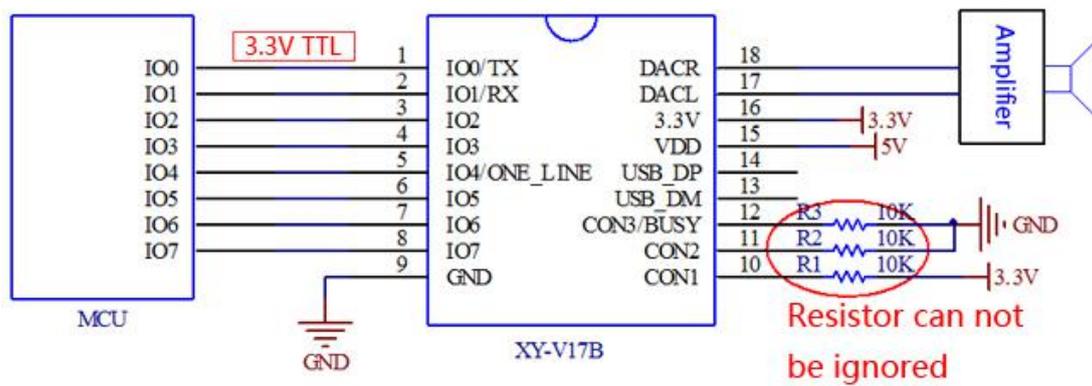
I/O Independent Mode 0



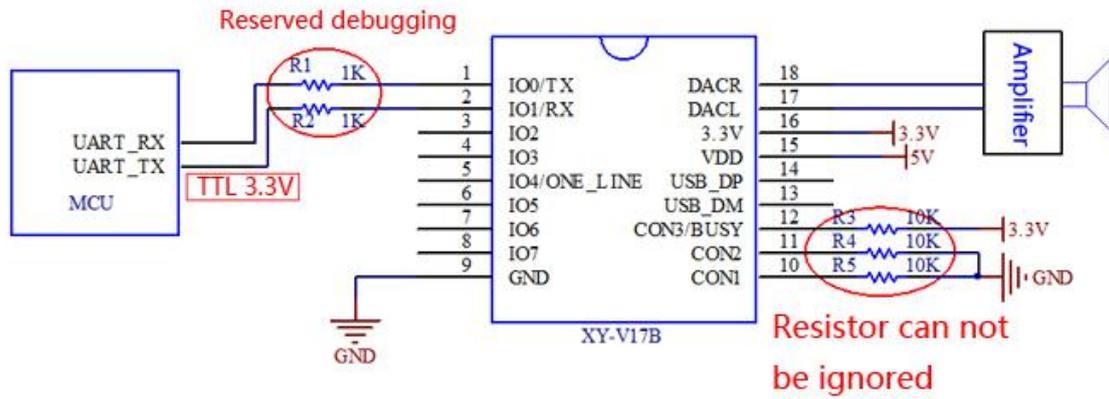
I/O Independent Mode 1



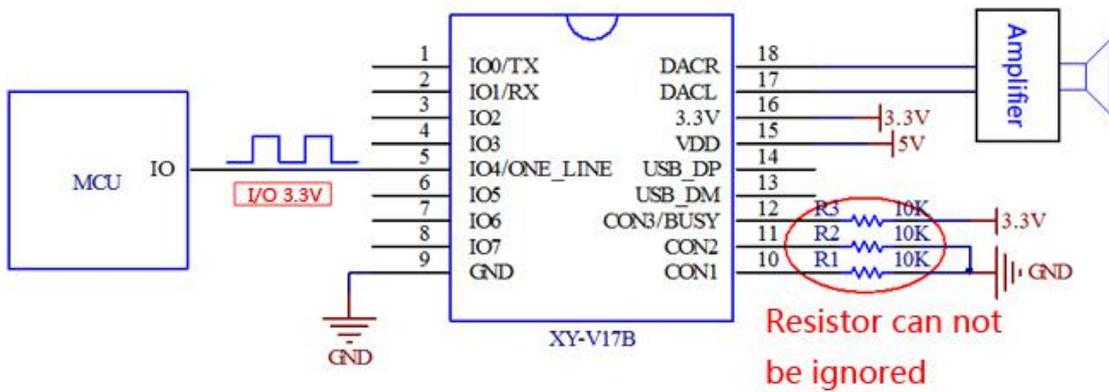
I/O Integrated Mode 0



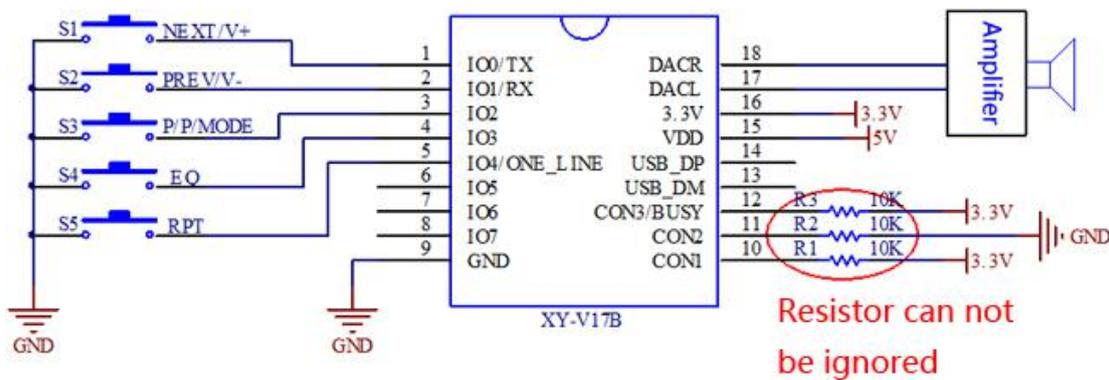
I/O Integrated Mode 1



UART Mode



One-Line Mode



Standard MP3 Mode