

WT588FM01(Serial Port) Specification

Version: V1.03



Note :

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1. Overview

WT588FM01 is a high-performance recording module with long recording distance and good sound quality. It can directly drive 8ohm/0.5W speaker output. The playback sound quality is clear, the volume is large, and it is easy to use. It can realize the recording function through serial port control. In addition, It also has functions such as playing fixed voices, playing recordings, deleting recordings, looping playback, and adjusting volume. (When using serial port control mode, the buttons on the module have no effect.)

2. Characteristics

- Working voltage: 2.0V ~ 5.5V;
- Automatically enter sleep mode when not working;
- Possess serial port control mode: one-line serial port control;
- The power amplifier pushes the speaker directly, with high volume, high fidelity, power saving, 0.5 W/8ohm;
- With recording and playback prompt function, can be connected to LED display;
- Sampling frequency 16KHz, bit rate support 12kbps, 16 kbps (standard serial port program default), 24kbps;
- The standard serial port program has built-in 39 fixed voices;
- The standard serial port program supports four segments of recording, each segment is 8 seconds, and the recording addresses are F5+01, F5+02, F5+03, F5+04;
- The module can record. In the case of no fixed voice, the longest recording time is 70S at a bit rate of 12kbps; the longest recording time is 50S at a bit rate of 16kbps;
- The longest recording time is 30S at a bit rate of 24kbps.

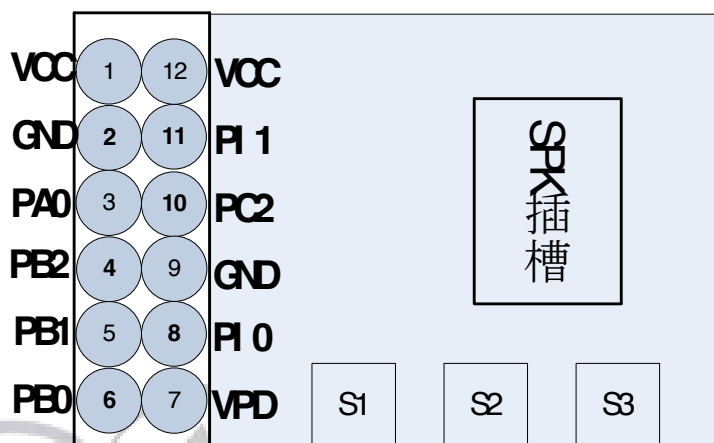
3. Customized Functions

If the standard functions of the module cannot meet the needs of customers, the module can be developed to customize some functions. If you need to develop custom functions, you need to list the required functions first, and then send it to our salesperson for him to submit for evaluation. After the evaluation is passed, an engineer will contact the customer to carry out research and development of

corresponding functions. Some common functions are listed below:

1. Increase the number of recording segments and the corresponding button functions, such as adding 5 segments of recording, next song button and so on.
2. Change the power-on default control method, for example, when the module is powered on, it starts to play recorded files in a large loop.

4. Pin Description



WT588FM01

NO	IO PORT	Function description
1	VCC	2.0~5.5V power supply (pin 1, pin 7 and pin 12 are all the same power supply)
2	GND	Power ground
3	PA0	One-line serial port DATA pin
4	PB2	Not used yet, can cooperate with customers to develop and customize
5	PB1	Not used yet, can cooperate with customers to develop and customize
6	PB0	Not used yet, can cooperate with customers to develop and customize
7	VPD	2.0~5.5V power supply (pin 1, pin 7 and pin 12 are all the same power supply)
8	PI0	BUSY
9	GND	GND
10	PC2	Not used yet, can cooperate with customers to develop and customize
11	PI1	Not used yet, can cooperate with customers to develop and

		customize, can only do output function
12	VCC	2.0~5.5V power supply (pin 1, pin 7 and pin 12 are all the same power supply)

Note: the key is valid at high level

5. Electrical parameters

MARK	RANGE	UNIT
VDD~GND voltage	+2.0~+5.5	V
Recording current	6.5	mA
Play current	86.7	mA
stand-by current	<3	uA
Operating temperature	-20 ~ +75	°C
Module size	38.5*42.8	mm

6. One-line serial communication

The one-wire serial port mode can use the MCU to send data to the WT588F series voice chip through the DATA line to achieve the purpose of control. Can realize control of voice playback, stop, loop, etc.

6.1. Correspondence of the first-line fixed voice address:

Data (hexadecimal)	Function
00H	Play the 0th fixed voice
01H	Play the first fixed voice
02H	Play the second fixed voice
.....	
DDH	Play the third fixed voice
DEH	Play the 222th fixed voice
DFH	Play the 223rd fixed voice

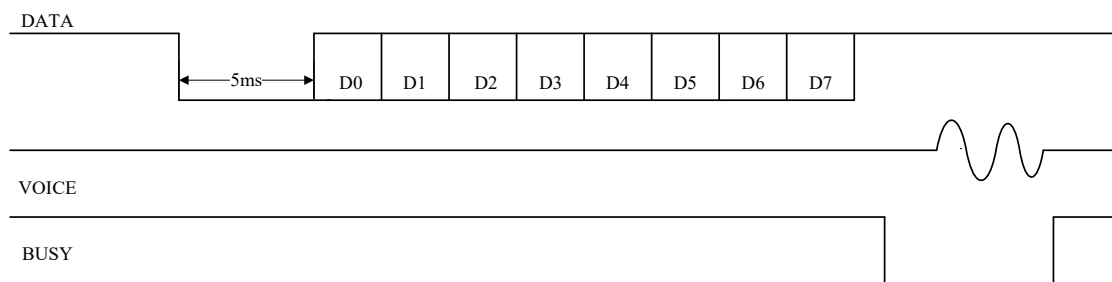
Note: If you want to play the voice of the address, just send the address to automatically play the voice of the address, and the time interval between the two address commands must be greater than 4ms.

6.2. Correspondence table of first-line voice and command code

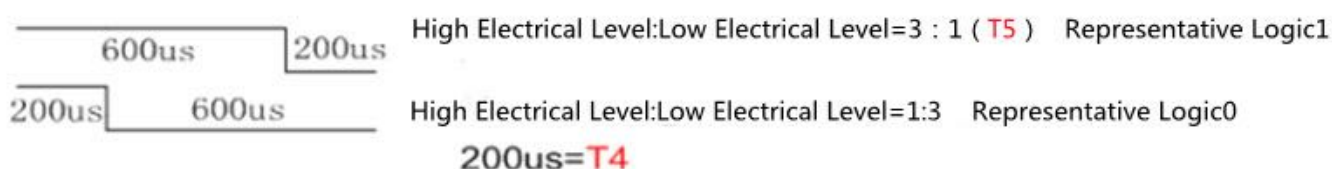
CMD	function	describe
E0H...E7H	E0 has the smallest volume, E7 has the largest volume, a total of 8 levels of volume adjustment	Send this command to adjust the volume at the end of the voice playback or in the standby state.
F2H	Loop current voice	Execute this command to play the current voice in a loop, and it can be sent when the voice is played/stopped. During the execution of the F2 loop command, it can be interrupted by the FE command, ordinary address command, and F3/F8 combined command, and becomes invalid; the playback command must be sent first, and then the loop playback command.
F5H+XXH	Recording section XX instructions	Recording section XX instructions: record a voice and store it in the recording area (a beep will be prompted during recording)
F6H+XXH	Play segment XX recording	F6H+XXH Play the XX section of the recording Play the voice content of the recording area
FC+XXH	Delete section XX recording	Delete the XX section of the recording file (the reserved fixed voice is temporarily not open to delete function)
FD	Delete all recordings	Delete all recording files (the delete function is temporarily not available for the reserved fixed voice)
FEH	Stop playing the current voice/Stop the current recording	Execute this command to stop playing the current voice or stop the current recording.
00H..DFH	Play fixed voice	Perform XXH playback chip internal fixed address voice

Note: The recording address starts from address 01, that is, when the first voice is recorded, F5+01H is sent. After F5 is sent, the data pin is pulled up for 2ms and then pulled down for 5ms, and then the following address is sent. The default recording time is evenly distributed according to the number of recording segments of the program. The chip can record up to 70 seconds of recording. If the program is set to record 10 segments, then each segment can be recorded for 7 seconds. If the program is set to record 5 segments, then each segment can be recorded. It can record for 14 seconds. The customer can contact the salesperson to set the number of recording segments when placing an order, and the customer can also allocate the duration of each recording by themselves, which needs to be explained to the salesperson when placing the order.

6.3. Timing diagram of the first-line serial port:



After pulling down the data line for 5ms (the time range is 5ms-20ms), send 8-bit data, send the low bit first, then the high bit, and use the ratio of high level to low level to represent the value of each data bit.



Note: The high level must be in the front and the low level in the back.

It is recommended to use 200us: 600us. Value range: 40us:120us ~ 400us:1200us. It is recommended to use 3:1 and 1:3 level ratios (the level ratio range is 3:1~5:1, 1:3~1:5) to ensure stable communication.

Because the WT588F voice initialization time takes a long time and cannot respond to commands during initialization, it is recommended that users use the code-linking function to send a group of coded addresses and then delay 2ms before sending the next group of coded addresses; but between F3 and the address The interval is still 2ms;

Chip IO port, the default internal 1M pull-down. Therefore, when the customer is doing low-power sleep, the DATA can be pulled down after playback to prevent backflow; if the DATA is pulled down, the DATA must be pulled up for more than 5ms before sending the command before sending the command.

6.4. Sample program

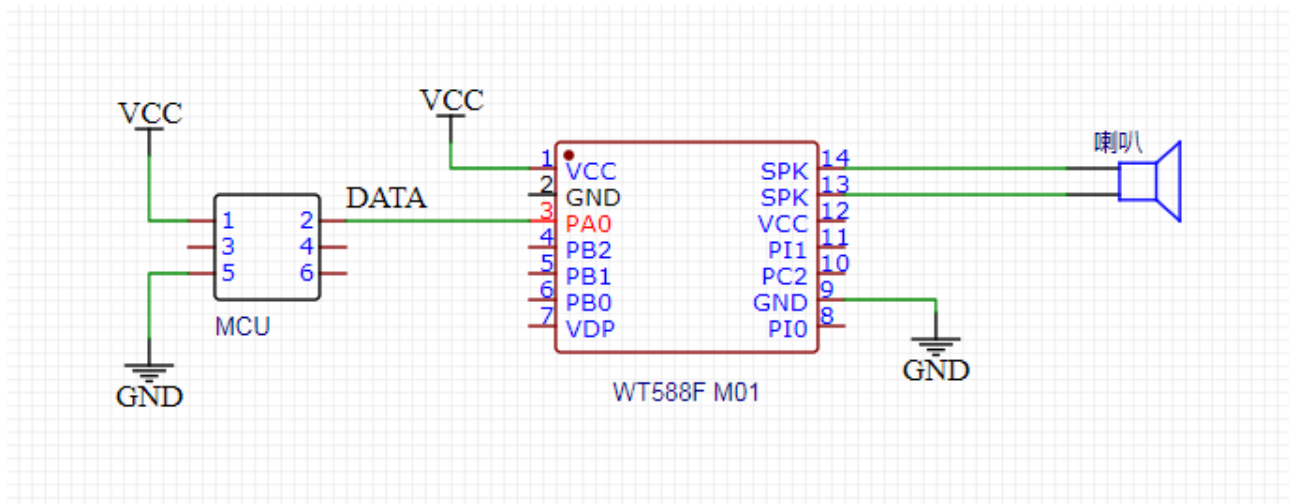
```
#define UC8 unsigned char
#define P_DATA P01
/*-----
```

```
;module name:Line_1A_WT588F(UC8 DDATA)
;FUNCTION:accomplish
one
Line serial communication function
;Entry: DDATA is sending data
;Out:
;P_DATA Data port
;-----*/
Void Line_1A_WT588F( UC8 DDATA)
{
    UC8 S_DATA, j;
    bit B_DATA;

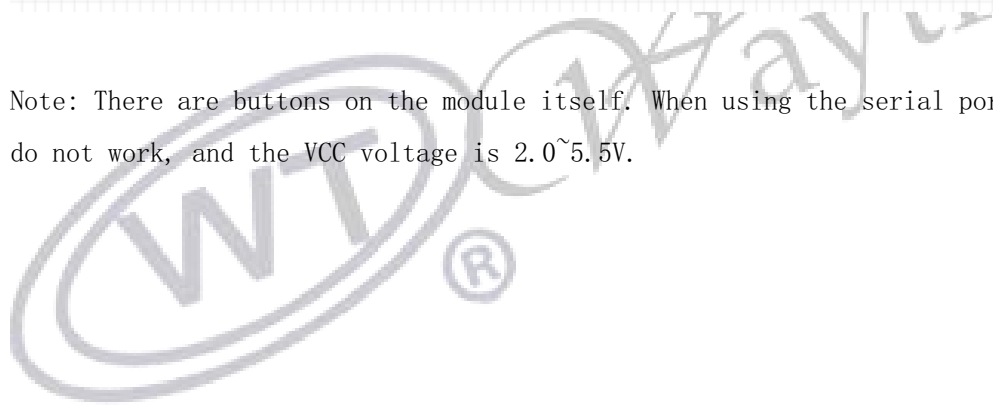
    S_DATA = DDATA;
    P_DATA = 0;
    Delay_1ms(5); //Delay 5ms
    B_DATA = S_DATA&0X01;

    for(j=0;j<8;j++)
    {
        if(B_DATA == 1)
        {
            P_DATA = 1;
            Delay_N10us(60); //Delay 600us
            P_DATA = 0;
            Delay_N10us(20); //Delay 200us
        }
        else
        {
            P_DATA = 1;
            Delay_N10us(20); //Delay 200us
            P_DATA = 0;
            Delay_N10us(60); //Delay 600us
        }
        S_DATA = S_DATA>>1;
        B_DATA = S_DATA&0X01;
    }
    P_DATA = 1;
}
```

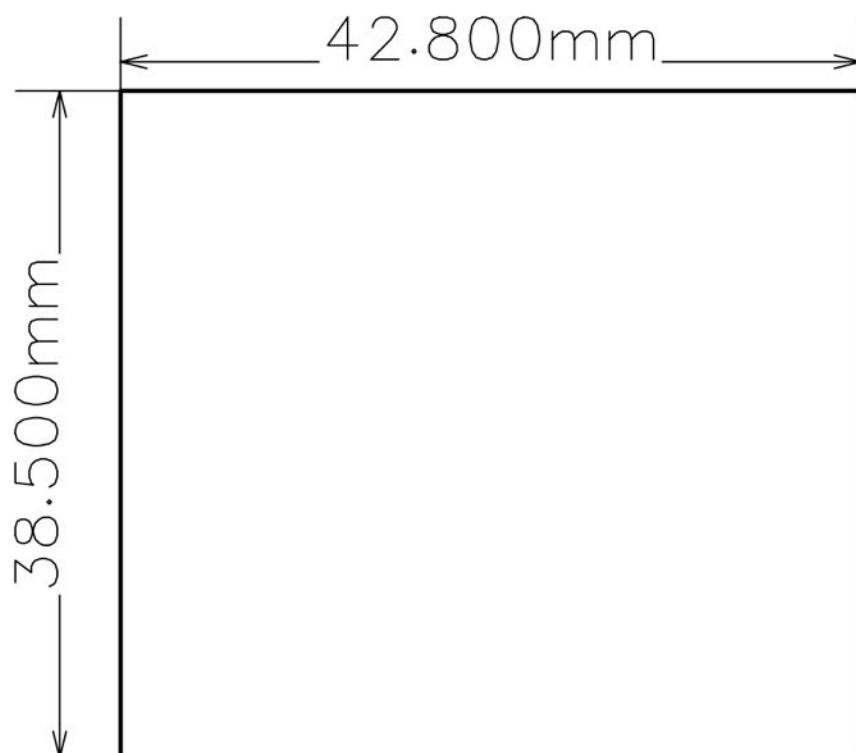

7. Application circuit



Note: There are buttons on the module itself. When using the serial port version, the module buttons do not work, and the VCC voltage is 2.0~5.5V.



8. Package dimensions



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