

Technical Description

The Equipment Under Test (EUT) is a Bluetooth version 2.1 speaker operating from 2402-2480MHz with 1MHz channel spacing. The EUT is powered by 1 x 3.7VDC rechargeable battery. After switch on the EUT and paired with smart device, music can be played by EUT. Also, Music can be played by AUX in cable.

The brief circuit description is listed as below:

- 1) **IC1 acts as MCU (STM32F030K6T6).**
- 2) **U4 acts as Audio Amplifier (HT6873).**
- 3) **U2 acts as Charging Circuit (LY4057).**
- 4) **IC2 acts as Voltage Regulator (DIO6305B).**
- 5) **IC3 acts as Voltage Regulator (XC6206-3.3V).**
- 6) **M1 acts as Bluetooth Module Circuit (F-6188).**
- 7) **X1 is 26MHz crystal oscillator providing clock for M1.**

Antenna Type: Internal antenna

Antenna Gain: 0dBi

Nominal rated field strength: 95.5dB μ V/m at 3m

Maximum allowed field strength of production tolerance: +/- 3dB



The Bluetooth module F-6188 manual

一、Product overview:

Intelligent wireless audio data transmission products F-6188 Bluetooth module for the independent development of our company, is the high price of stereo wireless transmission scheme of low cost, module uses BEKEN chip to provide the high quality and compatibility for the module, the overall better performance. F-6188 Bluetooth module with free driving mode, customers only need to access the application module products, wireless transmission can quickly realize the music, enjoy wireless music.

二、Field of application:

This module is mainly used for music transmission in short distance, can be connected with mobile phone and personal computer, conveniently, the connection between PDA and other digital products, enjoy bluetooth wireless transmission of music.

- ※ Bluetooth audio
- ※ Bluetooth stereo headset
- ※ hands-free phone

The Bluetooth wireless audio transmission

三、Essential qualities:

Bluetooth Profiles

- ※ Bluetooth v2.1+EDR specification support
- ※ A2DPv1.2
- ※ AVRCPv1.0
- ※ HFPv1.5

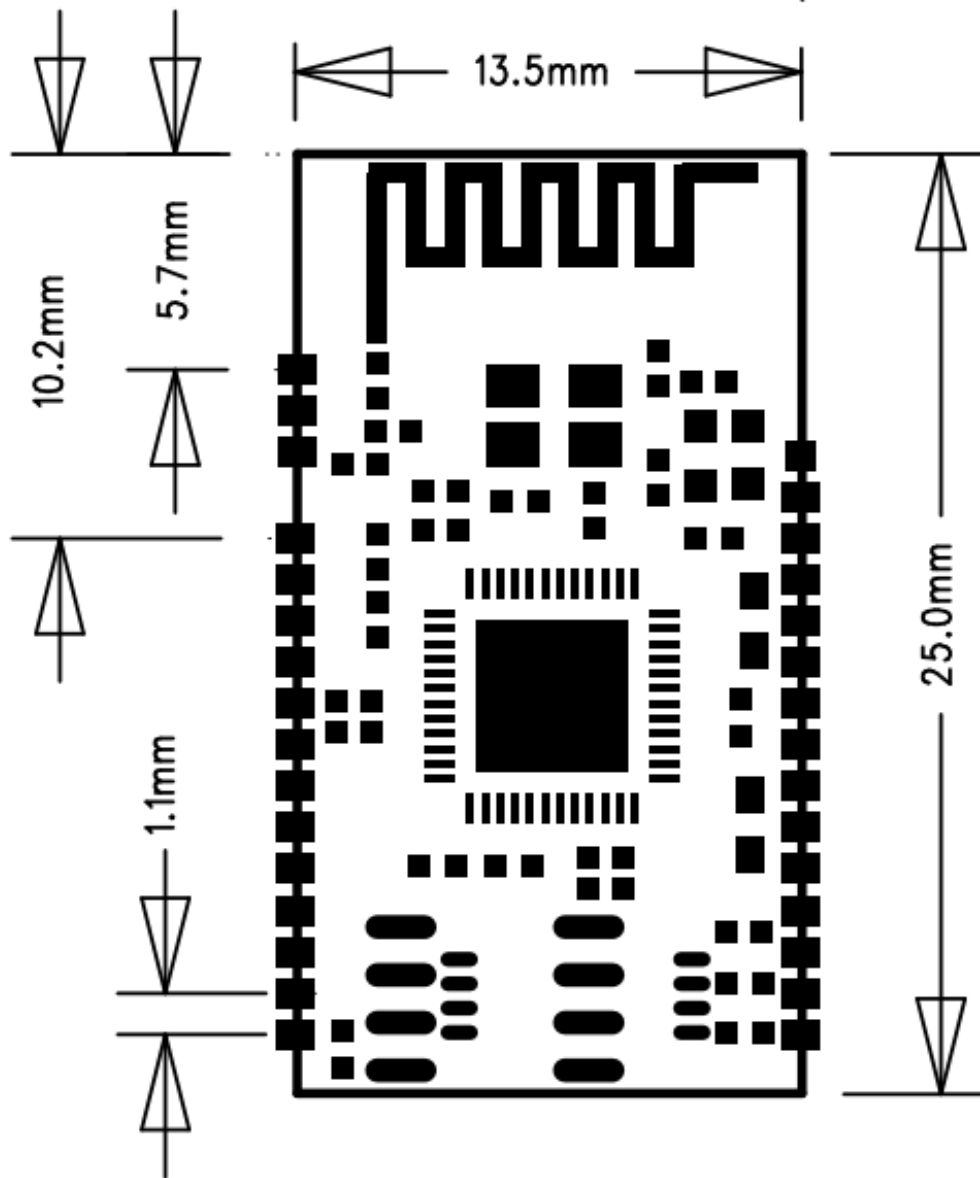
四、Performance parameters:

Model	F-6188
Bluetooth	Bluetooth V2.1



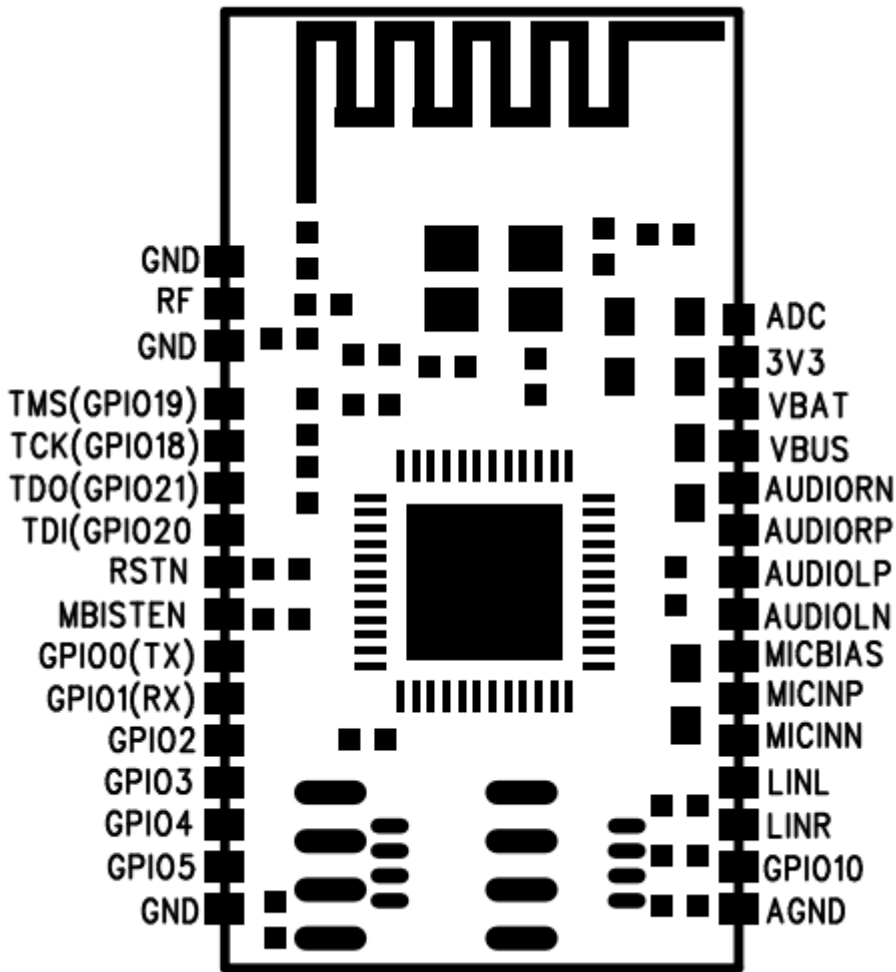
specification	
supply voltage	DC2.8-4.2V
Support Bluetooth protocol	HFPV1.5, A2DPV1.2, AVRCPV1.0
working current	≤60mA
standby current	<500uA
temperature range	-40°C to +85°C
The wireless transmission range	<10 meter
Transmission power:	CLASS2, 4dbm
sensitivity:	-80dBm<0.1%BER
frequency range :	2.4GHz-2.480GHz
External Port:	I2C, SPI and UART interface
audio performance	SBCdecode
The audio Signal to Noise Ratio:	≥75dB
Module size	25X13.5X1.8MM

五、The size graph of the module :





六、Module pin definition diagram



七、Pin description



Pin	Symb	I/O	Description
1	RF_GND	RF_GND	RF_GND
2	ANT	ANT	ANT PORT
3	RF_GND	RF_GND	RF_GND
4	TMS (GPIO19)	Digital I/O	JTAG pin
5	TCK (GPIO18)	Digital I/O	JTAG pin
6	TDO (GPIO21)	Digital I/O	JTAG pin
7	TDI (GPIO20)	Digital I/O	JTAG pin
8	RSTN	Digital I/O	JTAG pin / Reset pin-low active
9	MBISTEN	Digital I/O	Memory bit check
10	GPIO0 (TX)	Digital I/O	UART TX
11	GPIO1 (RX)	Digital I/O	UART RX
12	GPIO2	Digital I/O	GPIO2
13	GPIO3	Digital I/O	GPIO3
14	GPIO4	Digital I/O	GPIO4
15	GPIO5	Digital I/O	GPIO5
16	GND	GND	Ground connect battery negative
17	AGND	AGND	Ground connect battery negative
18	GPIO10	Digital I/O	GPIO10
19	LINR	AUX_INPUT	LINR
20	LINL	AUX_INPUT	LINL
21	MICINN	MIC-	MICINN
22	MICINP	MIC+	MICINP
23	MICBIAS	MICBIAS	MICBIAS
24	AUDIOLN	Audio output	Left channel audio output negative
25	AUDIOLP	Audio output	Left channel audio output positive
26	AUDIORP	Audio output	Right channel audio output positive
27	AUDIORN	Audio output	Right channel audio output negative
28	VBUS	Charge port	VBUS
29	VBAT	Power supply	Power supply
30	3V0	Power	3.0V output
31	ADC	Power	ADC input
32			



八、Connection circuit notice:

The F-6188 module in the application process, please pay attention to avoid the influence of power amplifier, a boost circuit to avoid interference source module, module power supply circuit with high power circuit unit to form a series circuit, in order to improve the SNR

九、Notice:

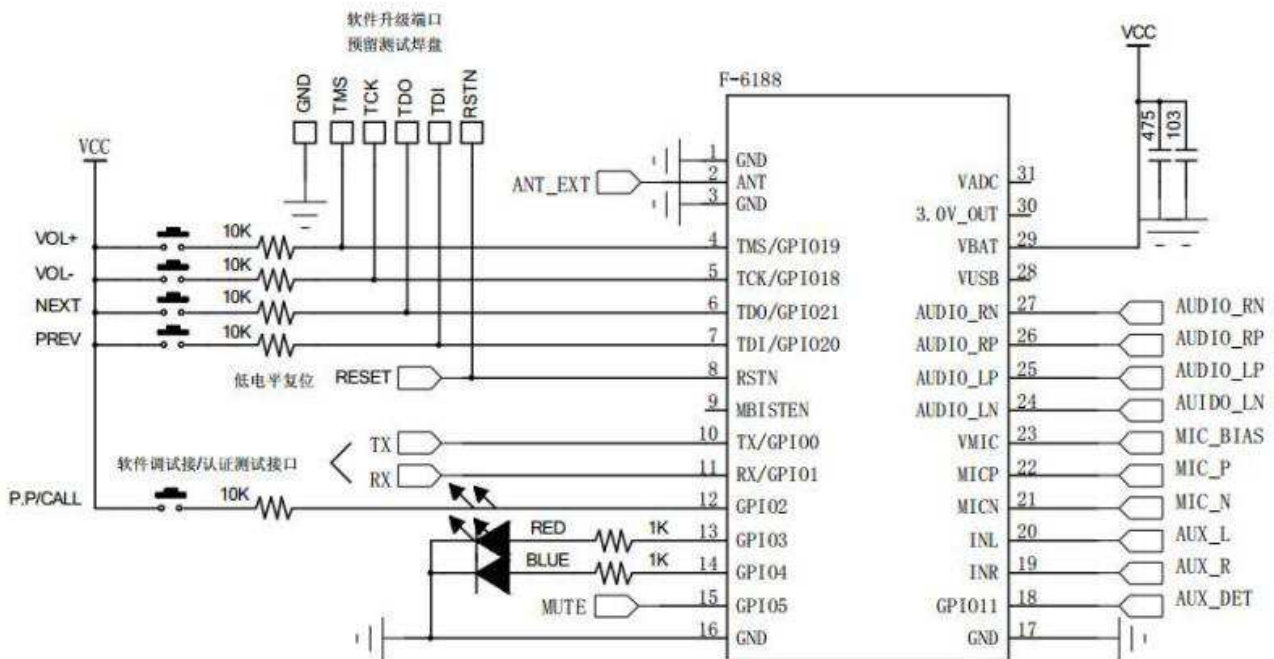
A. About the Bluetooth wireless application environment, wireless signal includes a Bluetooth application are influenced by the surrounding environment, such as

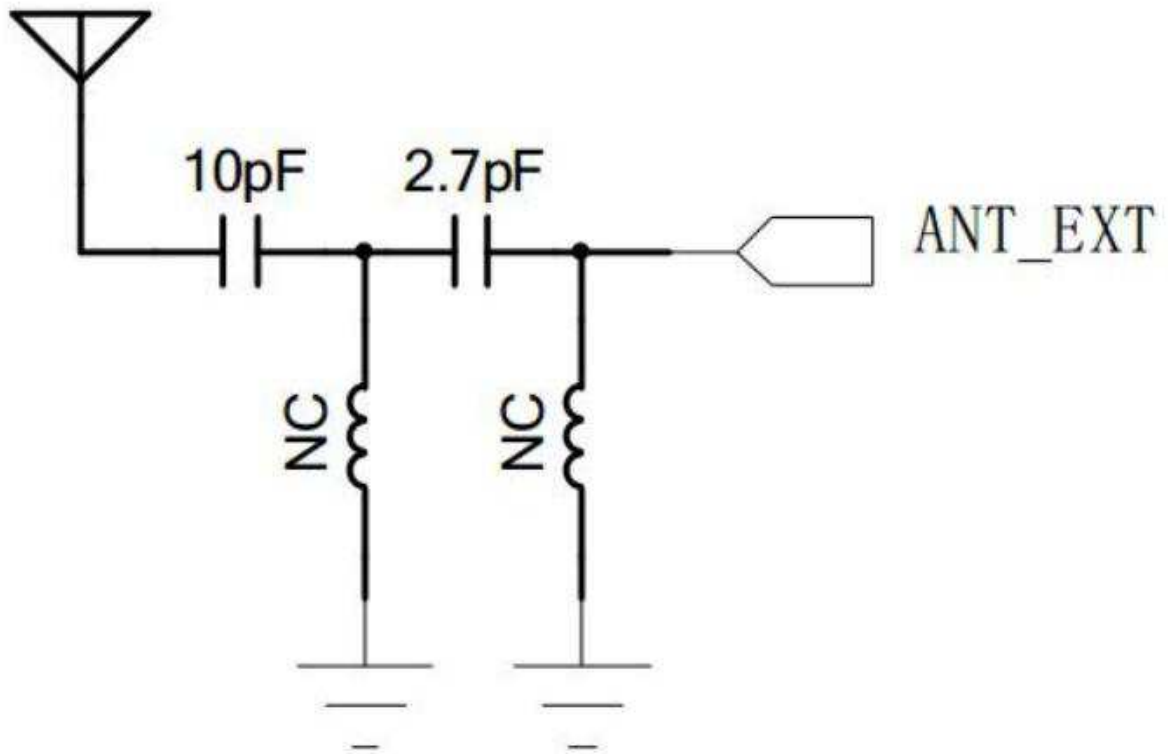
Wood, metal and other obstacles will be absorbed on the wireless signal, thus in the practical application, influence the distance of data transmission

B. Because Bluetooth module to complete the existing system, placed in the shell. Because of the metal shell on the radio frequency test signal Is a shielding effect. It is recommended not to install in a metal shell.

C. PCB Layout: The antenna part of the Bluetooth module is the PCB antenna, the metal will weaken the function of antenna, while to the module layout, below the antenna module is prohibit paving and walk the line, if hollow out it is better

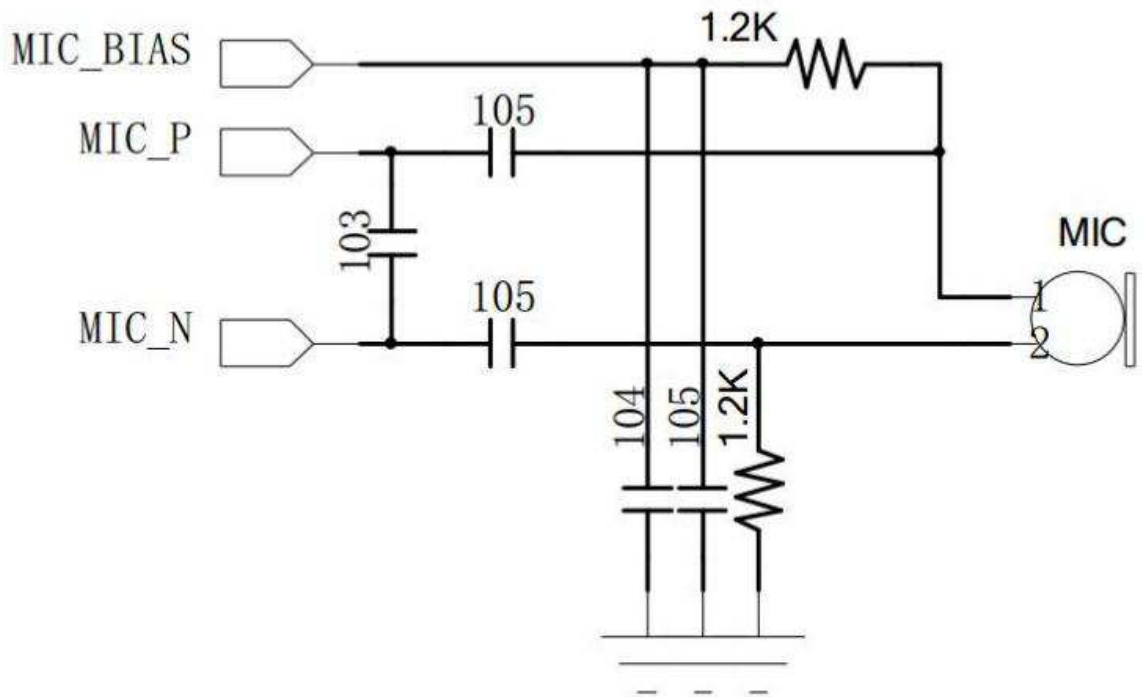
十、Application circuit:





Notice: The module has built-in antenna, external antenna as the need increases

MIC circuit:



MIC Recommended Specification: sensitivity $-38\text{dB}/\pm 2\text{dB}$ DC2V working voltage