

Bluetooth module F- 3188 Instruction manual

Product description:

The F-3188 Bluetooth module is a self-developed intelligent wireless audio data transmission product. It is a low-cost and high-efficiency stereo wireless transmission solution. The module uses CSR BC8 chip to provide high-quality sound quality and compatibility for the module. Better performance. The F-3188 Bluetooth module adopts a driver-less mode. Customers only need to connect the module to the application product, and they can quickly realize the wireless transmission of music and enjoy the fun of wireless music.

Application areas:

This module is mainly used for short-distance music transmission, and can be easily connected with Bluetooth devices of digital products such as laptops, mobile phones, PDAs, etc., to realize wireless transmission of music.

- ※ Bluetooth audio
- ※ Bluetooth stereo headset
- ※ Speakerphone
- ※ Bluetooth wireless transmission audio

Basic characteristics:

Bluetooth Profiles:

- ※ Bluetooth v4.0 specification support
- ※ HFP v1.6 wide-band speech (HD voice ready)
- ※ HSP v1.2
- ※ A2DP v1.2
- ※ AVRCP v1.4
- ※ Support for smart-phone applications (apps)

Improved Audio Quality:

CSR's latest 2-mic CVC audio enhancements for narrowband and wideband connections including:

- ※ 2-mic far-end audio enhancements
- ※ Near-end audio enhancements (noise suppression AEQ)
- ※ Wind noise reduction
- ※ Packet loss concealment
- ※ Bit error concealment
- ※ Automatic gain control and automatic volume control
- ※ Frequency expansion for improved speech intelligibility
- ※ mSBC codec support for wideband speech

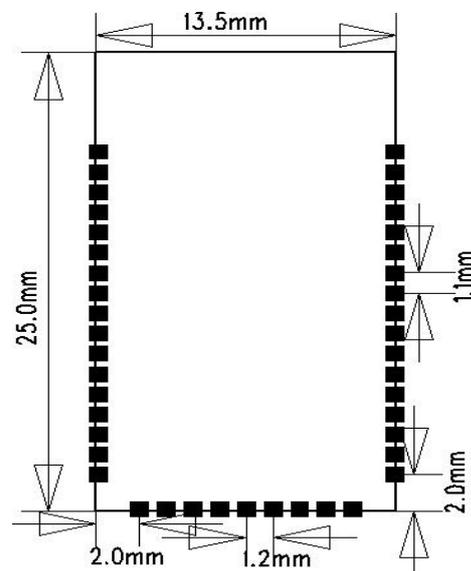
Music Enhancements:

- ※ Configurable 5-band EQ for music playback (rock,pop, classical, jazz, dance etc)
- ※ APTX, SBC, MP3, AAC and Fast stream decoder
- ※ Stereo widening (S3D)
- ※ Volume Boost Additional Functionality Additional Functionality
- ※ Support for voice recognition
- ※ Support for mufti-language programmable audio prompts
- ※ CSR's proximity pairing and CSR's proximity connection
- ※ Multipoint support for HFP connection to 2 handsets for voice
- ※ Multipoint support for A2DP connection to 2 A2DP sources for music playback
- ※ Talk-time extension

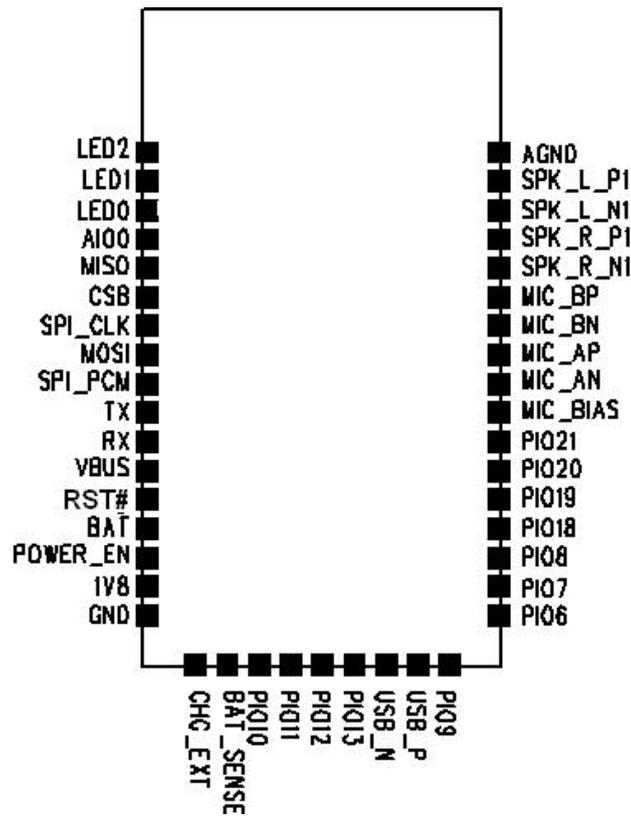
Performance parameters:

Model	F-3188
Bluetooth specification	Bluetooth V4.0
Modulation	GFSK, $\pi/4$ DQPSK, 8DPSK
Supply voltage:	3.3-4.2V
Support Bluetooth protocol	HFPV1.6, HSPV1.2, A2DPV1.2, AVRCPV1.4
Working current	$\leq 30\text{mA}$
Stand-by current	$< 50\mu\text{A}$
Temperature range	-40°C to $+80^{\circ}\text{C}$
Wireless transmission range:	Greater than 10 meters
Transmission power:	Support CLASS1/CLASS2/CLASS3 maximum adjustable 9dBm
Sensitivity:	$-80\text{dBm} < 0.1\% \text{BER}$
Frequency Range:	2.4GHz-2.480GHz
External Interface:	PIO, SPI, I2S and PCM, USB
Audio performance	Support AAC, MP3, SBC, APTX, stereo
Audio signal to noise ratio:	$\geq 75\text{dB}$
Distortion	$\leq 0.1\%$
Module size	25X13.5X0.8MM

Module size:



Module pin definition:



Pin function description:

Pin	Symb	I/O	Description
1	LED2	Bi-directional	LED Driver
2	LED1	Bi-directional	LED Driver
3	LED0	Bi-directional	LED Driver
4	AIO0	Bi-directional	Programmable input/output
5	MISO	Bi-directional with weak pull-down	Programmable input/output Alternative function: SPI data Output PCM1 synchronous data Output
6	CSB	Bi-directional with weak pull-down	Programmable input/output Alternative function: SPI data Output PCM1 synchronous data sync

7	SPI_CLK	Bi-directional with weak pull-down	Programmable input/output Alternative function: SPI clock PCM1 synchronous data Clock
8	MOSI	Bi-directional with weak pull-down	Programmable input/output Alternative function: SPI data input PCM1 synchronous data output
9	SPI_PCM	Input with weak pull-down	SPI/PCM select input 0: PCM/PIO interface 1: SPI
10	TX	Bi-directional with strong pull-down	Programmable input/output Alternative function: UART data output
11	RX	Bi-directional with weak pull-down	Programmable input/output Alternative function: UART data input
12	VBUS	Charger input	
13	RST#		Reset if low,pull low minimum 5ms to case a reset
14	BAT	Battery positive terminal	3.3-4.2V
15	POWER_EN	Input with weak pull-down	Regulator enable input
16	1.8V VBUS	POWER	+1.8V Output
17	GND	Ground	Ground connect battery negative
18	CHG_EXT	External Battery charger	Charge
19	BAT_SENSE	Battery charger sense input	BAT_SENSE
20	PIO10	Bi-directional with strong pull-down	Programmable input/output
21	PIO11	Bi-directional with strong pull-down	Programmable input/output
22	PIO12	Bi-directional with strong pull-down	Programmable input/output
23	PIO13	Bi-directional with strong pull-down	Programmable input/output
24	USB_N	Bi-directional	USB data plus with selectable internal 1.5K pull up resistor
25	USB_P	Bi-directional	USB data minus

26	PIO9	Bi-directional with strong pull-down	Programmable input/output
27	PIO6	Bi-directional with strong pull-down	Programmable input/output
28	PIO7	Bi-directional with strong pull-down	Programmable input/output
29	PIO8	Bi-directional with strong pull-down	Programmable input/output
30	PIO18	Bi-directional with weak pull-down	Programmable input/output
31	PIO19	Bi-directional with weak pull-down	Programmable input/output
32	PIO20	Bi-directional with weak pull-down	Programmable input/output
33	PIO21	Bi-directional with weak pull-down	Programmable input/output
34	MIC_BIAS	Analogue out	Microphone bias
35	MIC_AN	Analogue in	Microphone input negative ,channel A
36	MIC_AP	Analogue in	Microphone input positive ,channel A
37	MIC_BN	Analogue in	Microphone input negative ,channel B
38	MIC_BP	Analogue in	Microphone input positive ,channel B
39	SPK_R_N1	Analogue out	Speaker output positive, right
40	SPK_R_P1	Analogue out	Speaker output negative, right
41	SPK_L_N1	Analogue out	Speaker output positive, left
42	SPK_L_P1	Analogue out	Speaker output negative, left
43	AGND	Analogue Ground	

Design considerations:

Module compatible 8610, 8620, 8640, 8645 four ICs, is a single, two channel

1) BC8610, 8620 are mono chips

At this time, the audio only has PIN41, PIN42 is SPK_L_N, SPK_L_P has audio output, and SPK_R_N, SPK_R_P is empty.

BC8640, 8645 are two-channel chips, SPK_L_N, SPK_L_P, SPK_R_N, SPK_R_P

Have audio output, belong to stereo

2) IO port considerations

PIO21, PIO20, PIO19, PIO18, PIO7, only these 5 IO ports can be used as buttons, and other ports are used for output.

Circuit connection note:

When the F-3188 external amplifier is connected, it must be connected to the differential input amplifier. If the amplifier is not connected to the differential input, an op amp must be connected to balance the two differential levels. Otherwise, there will be a “beep” impact sound.

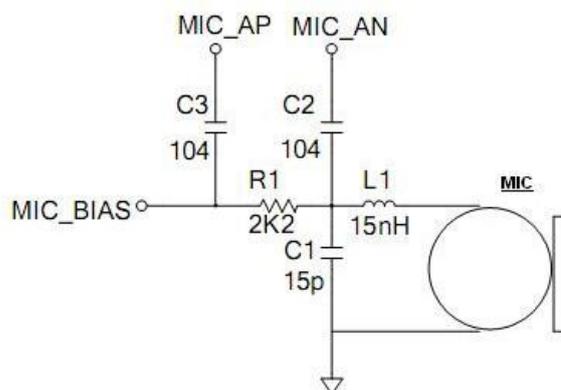
Precautions:

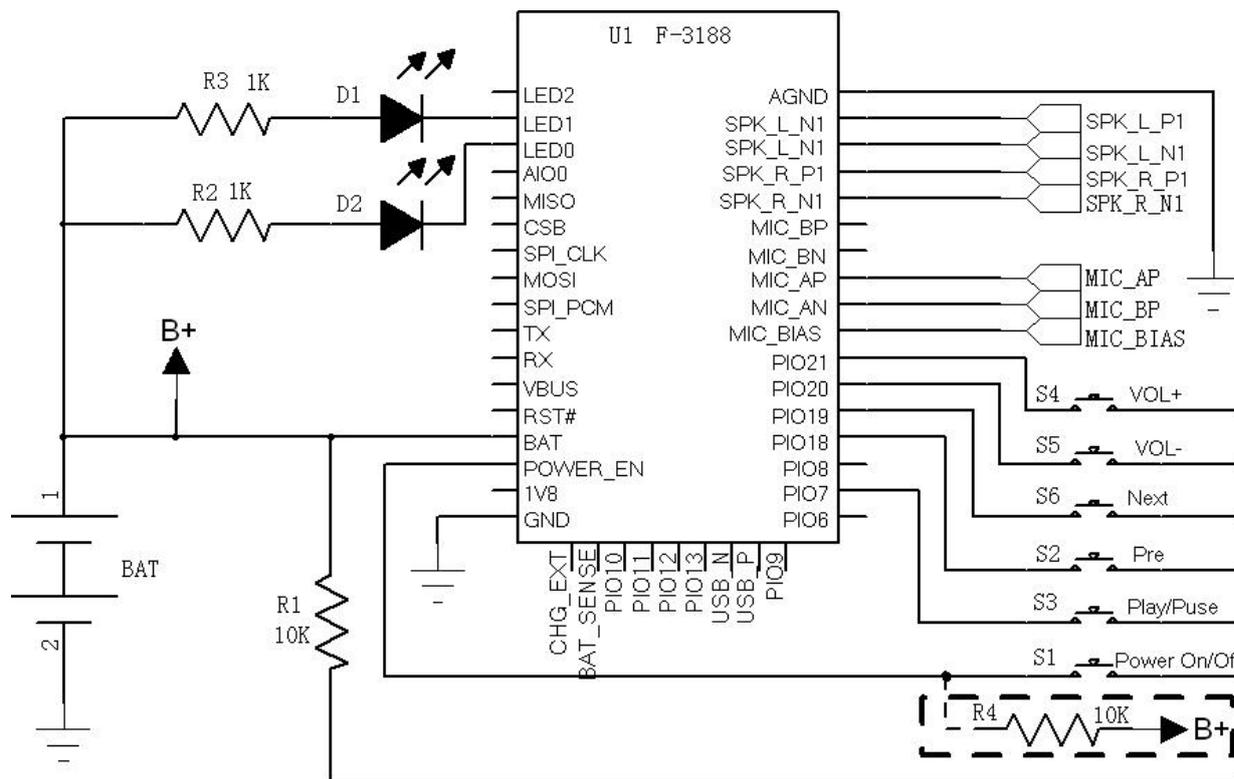
A. Regarding the wireless Bluetooth usage environment, wireless signals including Bluetooth applications are greatly affected by the surrounding environment, such as Obstructions such as trees and metals have a certain absorption of wireless signals, so in practical applications, the distance of data transmission is affected to some extent.

B. Since the Bluetooth module is equipped with an existing system, it is placed in the casing. Because the metal casing is shielded from the radio frequency signal. Therefore, it is not recommended to install it in a metal case.

C. PCB layout: The antenna part of the Bluetooth module is a PCB antenna. Since the metal will weaken the function of the antenna, it is strictly forbidden to lay the ground and trace under the module antenna when the module is laid. If it can be hollowed out, it is better.

Application circuit diagram:





如若要上电即开机，侧用10K电阻接电池正极（如虚线框所示）替代S1开关电路

