Specification

Product name：Bluetooth module

Product model： F-9689

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Edit	Review	Approve

1. Product overview：

F-9689 Bluetooth module is an intelligent wireless audio data transmission product independently developed by our company. It is a low cost and high cost-effective MESH scheme. The module adopts highly integrated single-mode data transmission module of Bluetooth 5.0 chip BK3431Q QFN40, built-in high-performance transceiver and powerful baseband processor. Built-in FLASH program memory for customized applications, better protection of the security of the application (suitable for small data transmission, support MESH, mainly for control).

2. Application area：

The module is mainly used for wireless network communication, the main applications include: location tags, asset tracking, sports and fitness sensors, medical sensors, smart watches, remote controls, toys, light etc.

※ Mobile phone accessories

※ Sports and health equipment

※ Health care and medical equipment

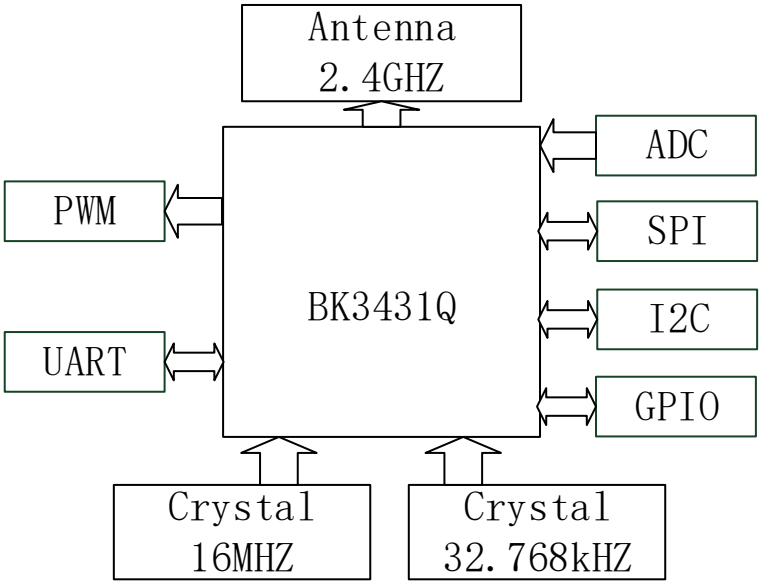
※ Family and building automation

※ Consumer electronics

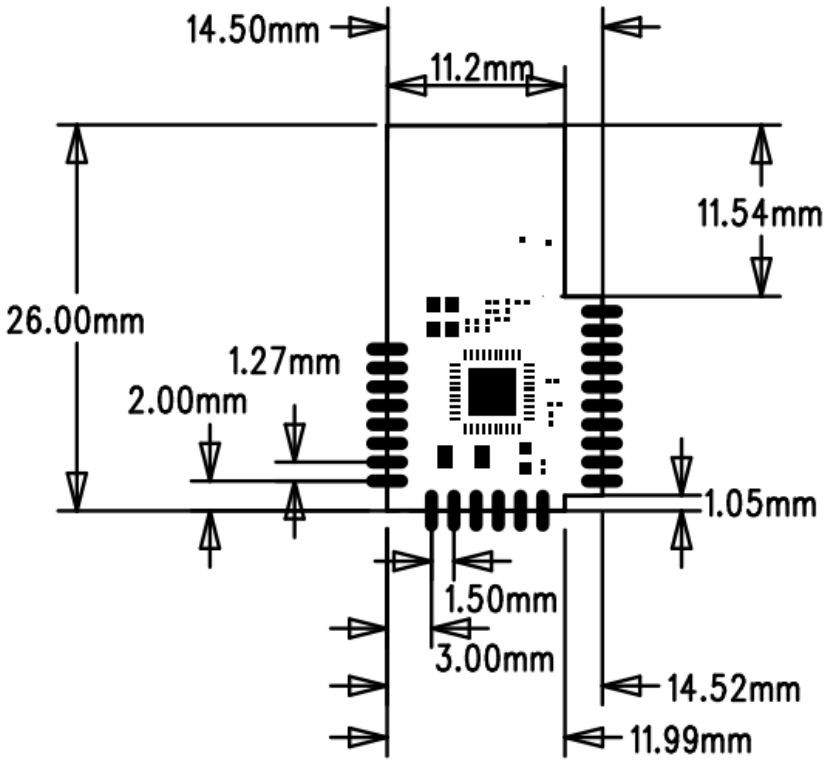
4.performance parameter：

Model	F-9689
Bluetooth specification	Bluetooth V5.0
Service voltage	DC1.8V-3.6V
Bluetooth Profile	ATT,GATT,SMP,L2CAP,GAP
Supply voltage	≤10mA
Standby current	<500uA
Temperature range	-20ºC to +80ºC
The wireless transmission range	0~100(meter)
Transmission power	CLASS2，4dbm
ensitivity	-93dBm<0.1%BER
Frequency range	2.402GHz-2.480GHz
The external interface	SPI, UART, GPIO,I2C
Module size	26.0*14.5 *2mm

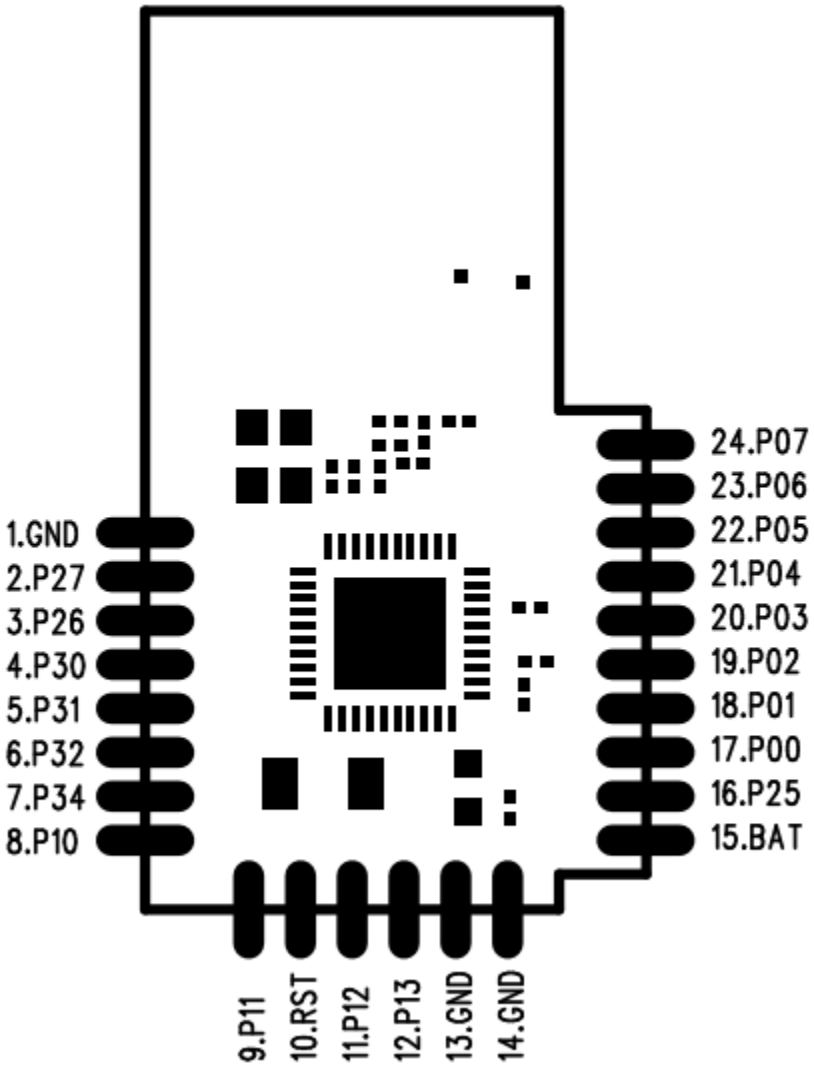
5.Module block diagram：



6.The size of the module graph：



7.Device pin out diagram :



8.Pin definition：

Pin	Symb	I/O	Description
1	GND	GND	GND
2	P27	Digital I/O	General purpose IO
3	P26	Digital I/O	General purpose IO
4	P30	Digital I/O	General purpose IO
5	P31	Digital I/O	General purpose IO/ADC1
6	P32	Digital I/O	General purpose IO/ADC2
7	P34	Digital I/O	General purpose IO
8	P10	Digital I/O	General purpose IO/PWM0
9	P11	Digital I/O	General purpose IO/PWM1
10	RTS	Analog	Active low pin reset
11	P12	Digital I/O	General purpose IO/PWM2
12	P13	Digital I/O	General purpose IO/PWM3

13	GND	GND	GND
14	GND	GND	GND
15	BAT	Power	Power
16	P25	Digital I/O	General purpose IO
17	P00	Digital I/O	GPIO0/UART1_TXD
18	P01	Digital I/O	GPIO1/UART1_RXD
19	P02	Digital I/O	General purpose IO/I2_SCL
20	P03	Digital I/O	General purpose IO/I2_SDA/JTAG_NTRST
21	P04	Digital I/O	General purpose IO/SPI_SCK/JTAG_TDI
22	P05	Digital I/O	General purpose IO/SPI_MOSI/ JTAG_TD0
23	P06	Digital I/O	General purpose IO / SPI_MISO/ JTAG_TCK
24	P07	Digital I/O	General purpose IO / SPI_NSS/ JTAG_TMS

9.Design notes:

In order to better SNR, please pay attention to the hardware design of PA, DC booster, DC/DC circuit and the module power circuit to avoid influencing module.

10.Note:

A. The signal strength is depending on the environment of Bluetooth application, such as wood and metal will block the transmission signal to get the shorter transmission distance.

B. Because of metal will block the signal transmission, it is recommend not to using the metal housing.

C. PCB layout guideline: no any copper existed in the antenna area of the module is the PCB antenna, the metal will weaken the function of the antenna when the antenna module to the module board, following prohibited paving and walk the line.

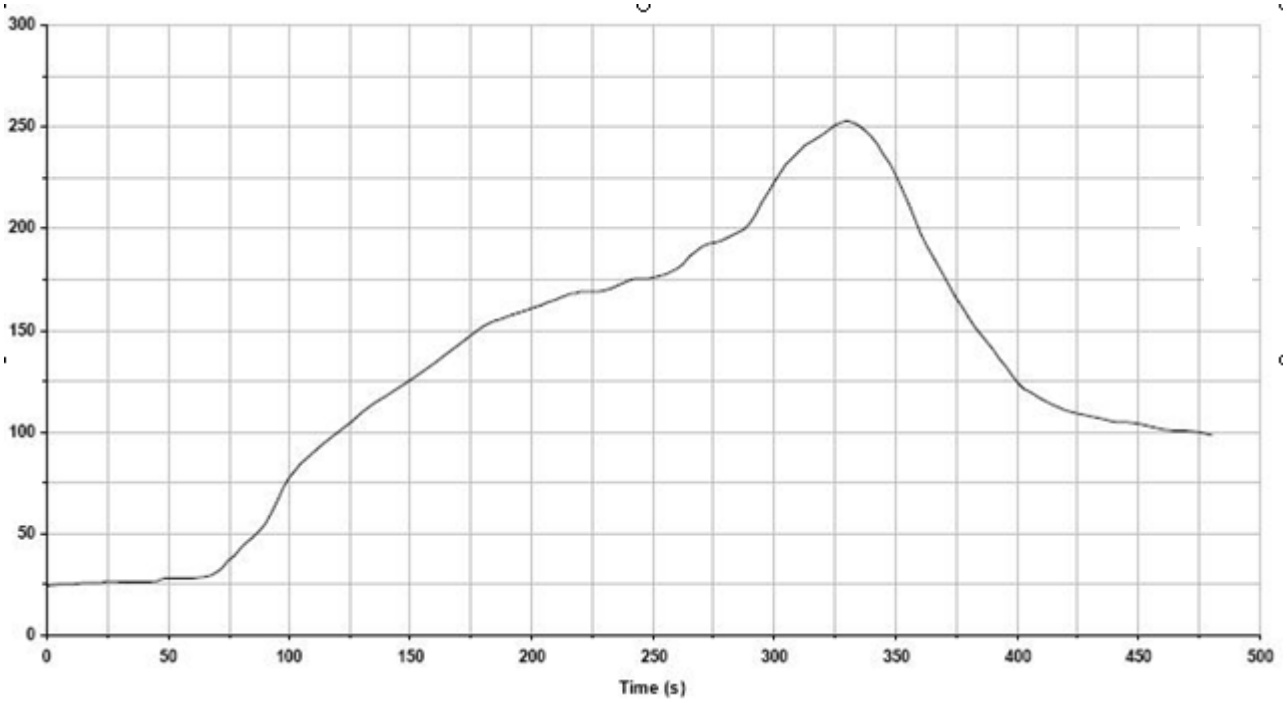
D. If the module antenna next to the battery、 metal, liquid crystal screen, loudspeaker, at least keep them away from antenna distance 15mm

E. When layout the power supply line recommended star line, and to ensure that the Bluetooth module Power supply lines is better , and BT should be with the amplifier, power amplifier, MCU, separately, and the underside of the BT has no other interference.

F. suggests the module antenna part floating on the floor, do not go around the antenna control line, power line, audio line, MIC interference lines;

G. If the module antenna near the row seats, Because of metal will block the signal transmission, it is recommended to use professional high-gain antenna.

11.Recommended reflow temperature：



Key features of the profile:

-Initial Ramp=1-2.5℃/sec to 175℃ equilibrium

-Equilibrium time=60 to 80 seconds

-Ramp to Maximum temperature (250℃)=3℃/sec Max

-Time above liquidus temperature(217℃): 45 - 90 seconds

-Device absolute maximum reflow temperature: 250℃

12. Application schematic diagram：

Reference schematic diagram for reference purposes only!

(OEM) Integrator has to assure compliance of the entire end-product incl. the integrated RF Module. For 15 B (§15.107 and if applicable §15.107) compliance, the host manufacturer is required to show compliance with 15 while the module is installed and operating.

Furthermore the module should be transmitting and the evaluation should confirm that the module's intentional emissions (15C) are compliant (fundamental / out-of-band). Finally the integrator has to apply the appropriate equipment authorization (e.g. Verification) for the new host device per definition in §15.101.

Integrator is reminded to assure that these installation instructions will not be made available to the end user of the final host device.

The final host device, into which this RF Module is integrated has to be labelled with an auxilliary lable stating the FCC ID of the RF Module, such as "Contains FCC ID: 2AR7VF-9689"

"This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
(1) this devicemay not cause harmful interference, and
(2) this devicemust accept any interference received, including interference thatmay cause undesired operation."

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection
against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
--Reorient or relocate the receiving antenna.
--Increase the separation between the equipment and receiver.
--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
--Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Module statement

The single-modular transmitter is a self-contained, physically delineated, component for which compliance can be demonstrated independent of the host operating conditions, and which complies with all eight requirements of § 15.212(a)(1) as summarized below.

1) The radio elements have the radio frequency circuitry shielded.

2) The module has buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal.

3) The module contains power supply regulation on the module.

4) The module contains a permanently attached antenna.

5) The module demonstrates compliance in a stand-alone configuration.

6) The module is labeled with its permanently affixed FCC ID label

7) The module complies with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.

8) The module complies with RF exposure requirements.

This transmitter/module must not be collocated or operating in conjunction with any other antenna or transmitter.