Product Specification

Product name: Bluetooth module
Product model：F-6988
Document Version：V2.2
Availability date：2018-04-08

Content

1. Product Overview：

F-6988 is an intelligent wireless audio data transmission product independently developed by the company. It is a low-cost and cost-effective stereo wireless transmission solution. The module uses BEKEN's BK3266 chip QFN40 package design. The F-6988 Bluetooth module adopts a driver-free mode. Customers only need to connect the module to the application product to quickly realize the wireless transmission of music, enjoy the fun of wireless music, and support simple data transmission functions. Support intelligent voice prompt and number reporting function; integrated TF card playback function; integrated mobile U disk playback function; support internal LINE-IN; support internal MIC call.

2. Application：

- High-end Bluetooth speaker
- Bluetooth smart speaker
- Bluetooth stereo headset
- Hands-free phone
- Bluetooth wireless audio transmission
- Bluetooth data transmission application
- Support mobile internet peripheral devices

3、Features：

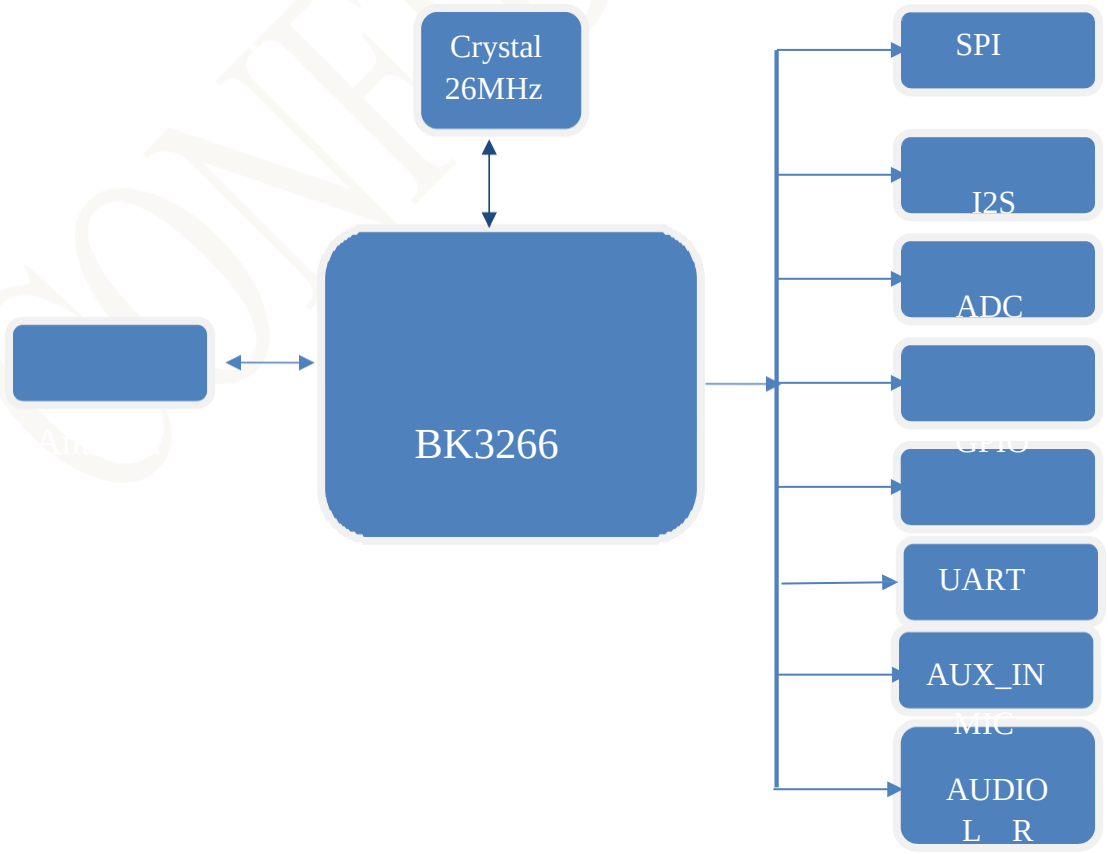
Bluetooth Profiles

- Bluetooth V4.2 specification support
- 9 mA average current for A2DP
- 0.8 uA deep sleep current
- Bluetooth 4.2 classic and low energy
- A2DP v1.3, AVRCP v1.6, HFP v1.7, HID v1.1, AVCTP v1.4, AVDTP v1.3, and SPP v1.2
- True wireless stereo and two active link
- Two wires UART download interface
- 16 bits stereo ADC and DAC
- Stereo line in and dual microphone
- Five bands digital hardware equalizer
- SPI, UART, I2C, SDIO and USB
- I2S master and slave interface with MCLK output
- Interface for external PA and LNA
- Up to 220 mA battery charge cont

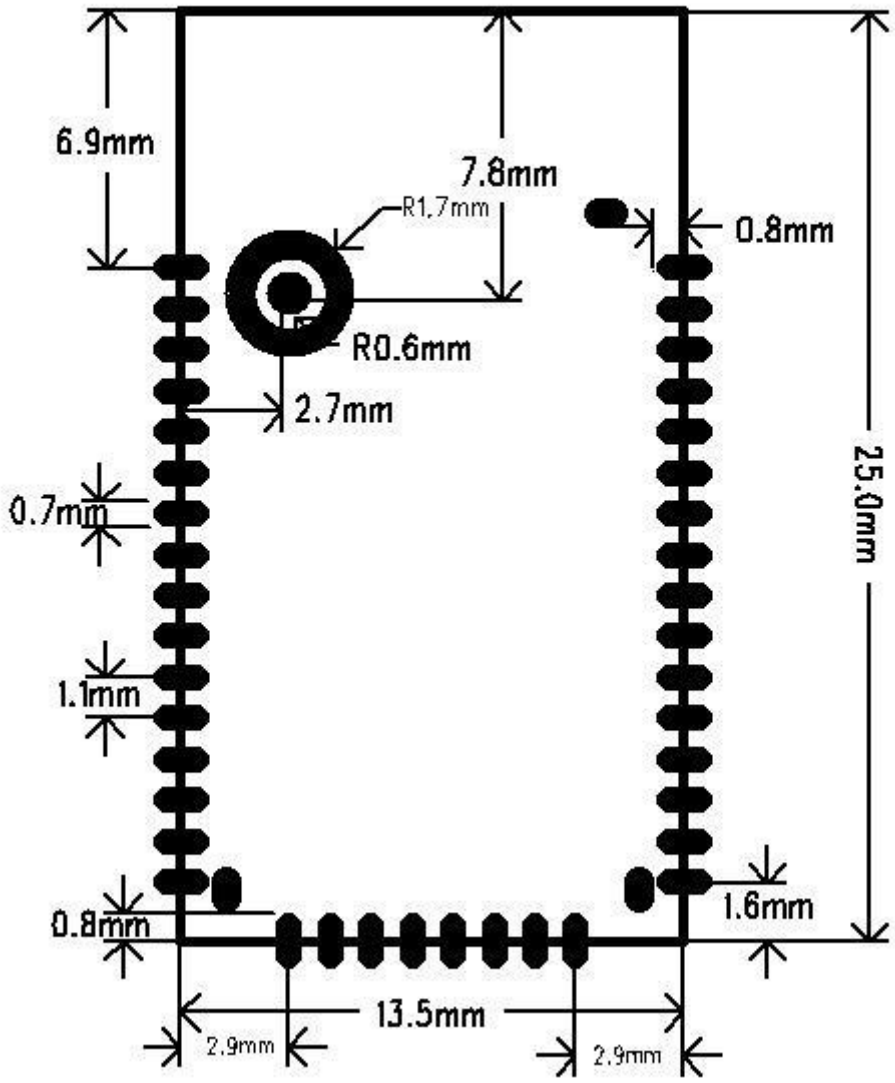
4. Performance Parameter：

Model	F-6988
Bluetooth Version	Bluetooth V4.2
Power	DC3.3-4.2V
Bluetooth Profile	A2DP v1.3, AVRCP v1.6, HFP v1.7, HID v1.1, AVCTP v1.4, AVDTP v1.3, and SPP v1.2
Working Current	≤20mA
Standby Current	<500uA
Temperature	-40ºC to +80ºC
Work Range	<10 m
Transmit Power	CLASS2，4dbm
Sensitivity	-81dBm<0.1%BER
Frequency Range	2.402GHz-2.480GHz
External Interface	SPI, UART, I2C, GPIO,SDIO and USB
Audio performance	SBC 解码
SNR	≥75dB
Dimension	25 X 13.5 X 2mm

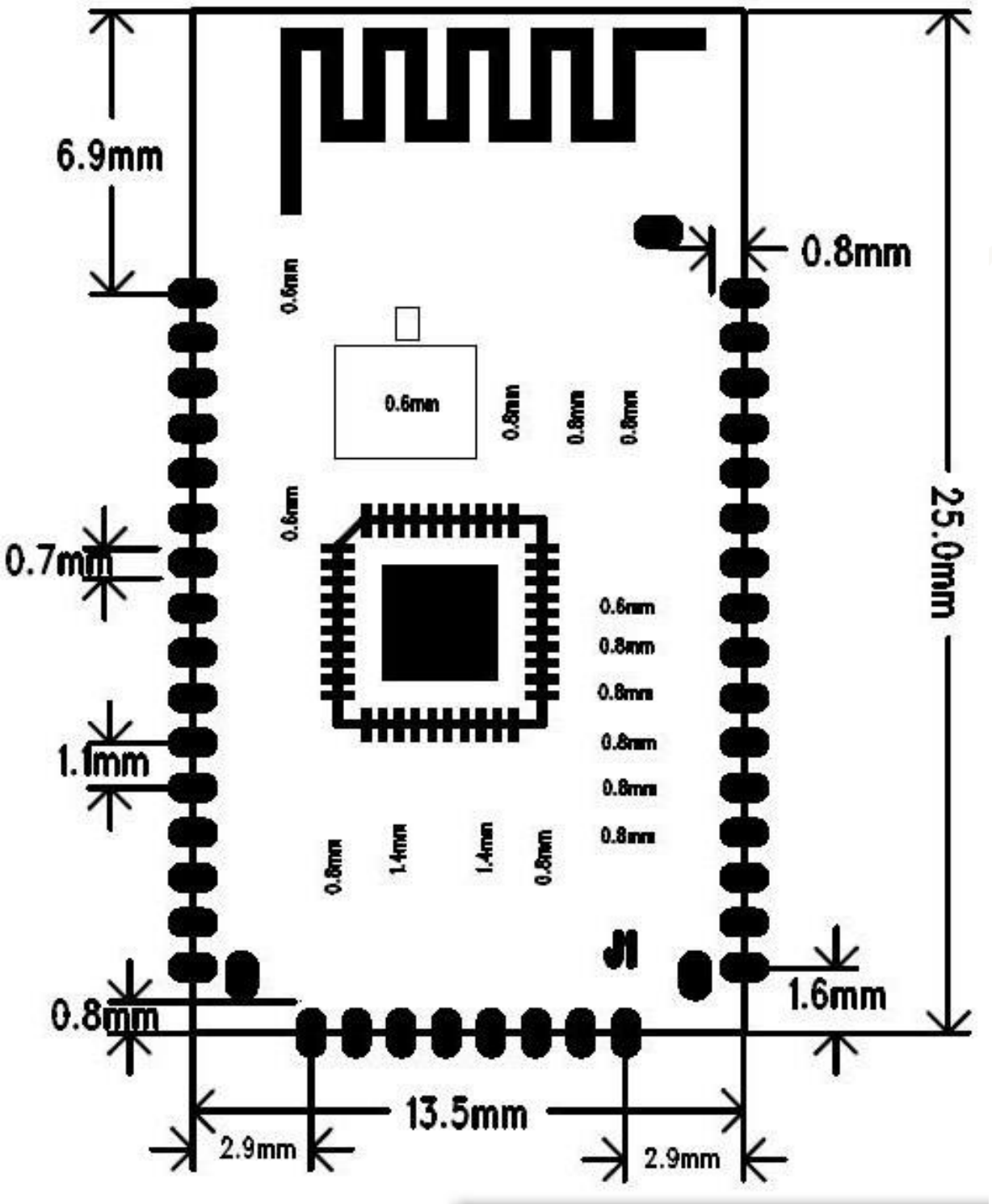
5. Module Block Diagram:



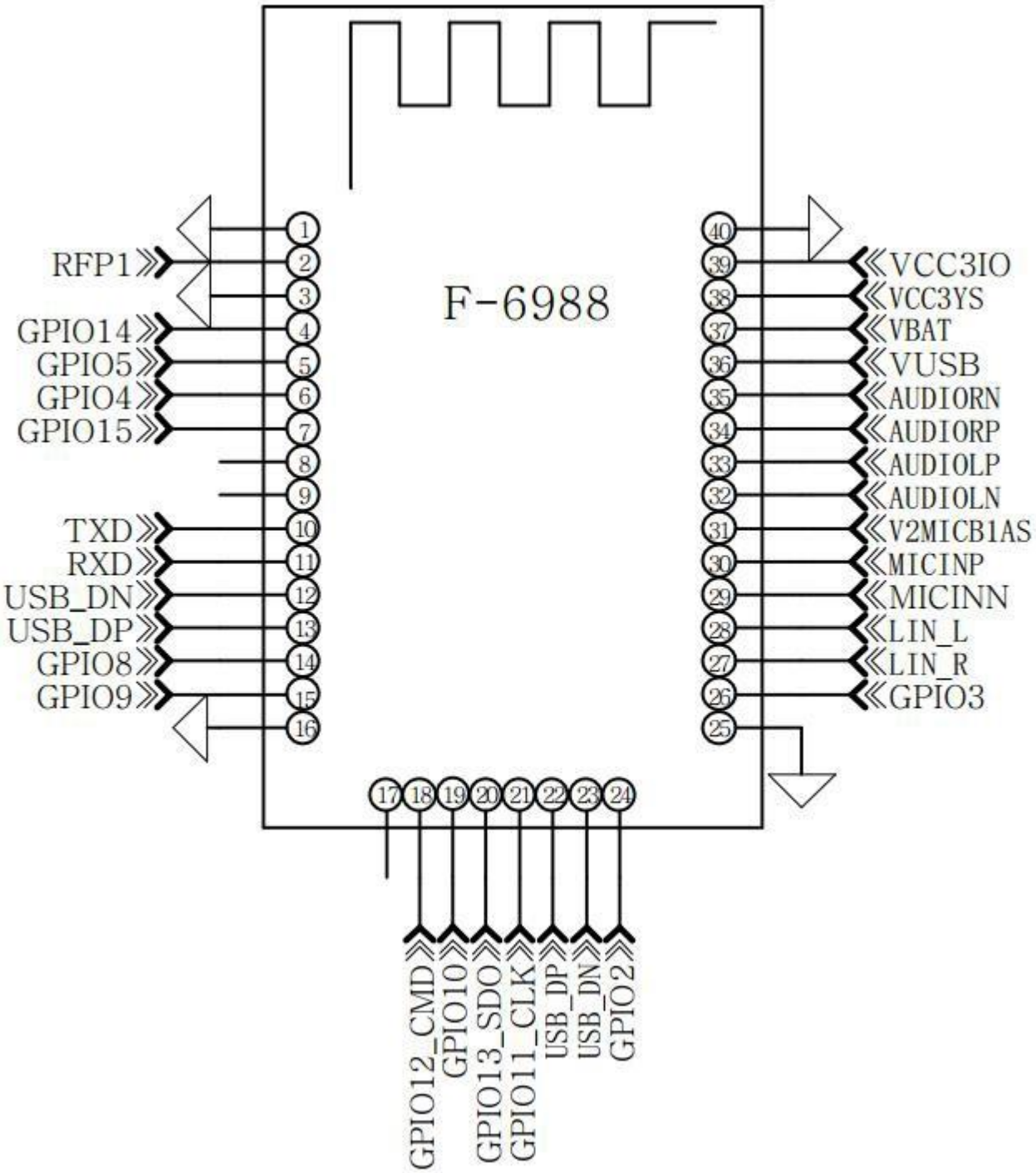
6. The Size of the Module：



7. Module packaging material height dimension：



8、Device Pin Out Diagram



9. Pin Definition：

Pin	Symb	I/O	Description
1	GND	GND	RF_GND
2	RF_OUT	RF	RF_OUT / NC
3	GND	GND	RF_GND
4	GPIO14	Digital I/O	GPIO14, JTAG_TDO/PWM5/ADC7/PCM_DOUT
5	GPIO5	Digital I/O	GPIO5,SPI_MISO//I2C_SDA
6	GPIO4	Digital I/O	GPIO4,SPI_MOSI//I2C_SCL
7	GPIO15	Digital I/O	GPIO15, Soft shut down and wake up (active high)
8	NC	NC	NC
9	NC	NC	NC
10	TX	Digital I/O	GPIO0, UART_TXD/I2C_SCL, Download port
11	RX	Digital I/O	GPIO1, UART_RXD/I2C_SDA, Download port
12	USB_DN/NC	Digital I/O	GPIO7, PWM1 / USBN./NC
13	USB_DP/NC	Digital I/O	GPIO6, PWM0 / USBP./NC
14	GPIO8	Digital I/O	GPIO8, SD_CLK//SPI2_SCK
15	GPIO9	Digital I/O	GPIO9, SD_CMD/TX_EN/SPI2_MOSI
16	GND	GND	Ground connect battery negative
17	NC	NC	NC
18	GPIO12_CMD	Digital I/O	GPIO12,JTAG_TMS/PWM3/PCM_CLK/SD_CMD/ SPI2_MOSI
19	GPIO10	Digital I/O	GPIO10, SD_DATA0/RX_EN/SPI2_MISO
20	GPIO13_SDO	Digital I/O	GPIO13,JTAG_TDI/PWM4/ADC6/PCM_DIN/S D_DATA0/SPI2_MISO
21	GPIO11_CLK	Digital I/O	GPIO11,JTAG_TCK/PWM2/ADC4/PCM_SYNC/S D_CLK//SPI2_SCK
22	USB_DP	Digital I/O	GPIO6, PWM0 / USBP
23	USB_DN	Digital I/O	GPIO7, PWM1 / USBN
24	GPIO2	Digital I/O	GPIO2, SPI_CSN/ADC1/IrDA/Capture Time
25	GND	GND	GND
26	GPIO3	Digital I/O	GPIO3, SPI_SCK/ADC2/CLKOUT
27	LINR	AUX_INPUT	LINR
28	LINL	AUX_INPUT	LINL
29	MICINA	MIC-NC	Microphone input negative,/NC
30	MICINP	MIC+	Microphone input positive

31	V2MICB1AS	VMIC	Microphone reference voltage
32	AUDIOLN	Audio output	Audio left channel negative
33	AUDIOLP	Audio output	Audio left channel positive
34	AUDIORP	Audio output	Audio right channel positive
35	AUDIORN	Audio output	Audio right channel negative
36	VUSB	Power	VUSB (4.7-5.2V)
37	VBAT	Power supply	Power supply(3.3V-4.2V)
38	VCC3YS	Power	3.3V OUTPUT
39	VCC3IO	VCCSD	SD POWER
40	GND	GND	GND

10. Design Notes:

During the application of the F-6988 module, please pay attention to avoid the influence of interference sources such as power amplifier, boost circuit, DC/DC circuit, etc. on the module, and avoid the power supply circuit of the module forming a series loop with the high-power circuit unit, so as to improve the SNR of the whole machine.

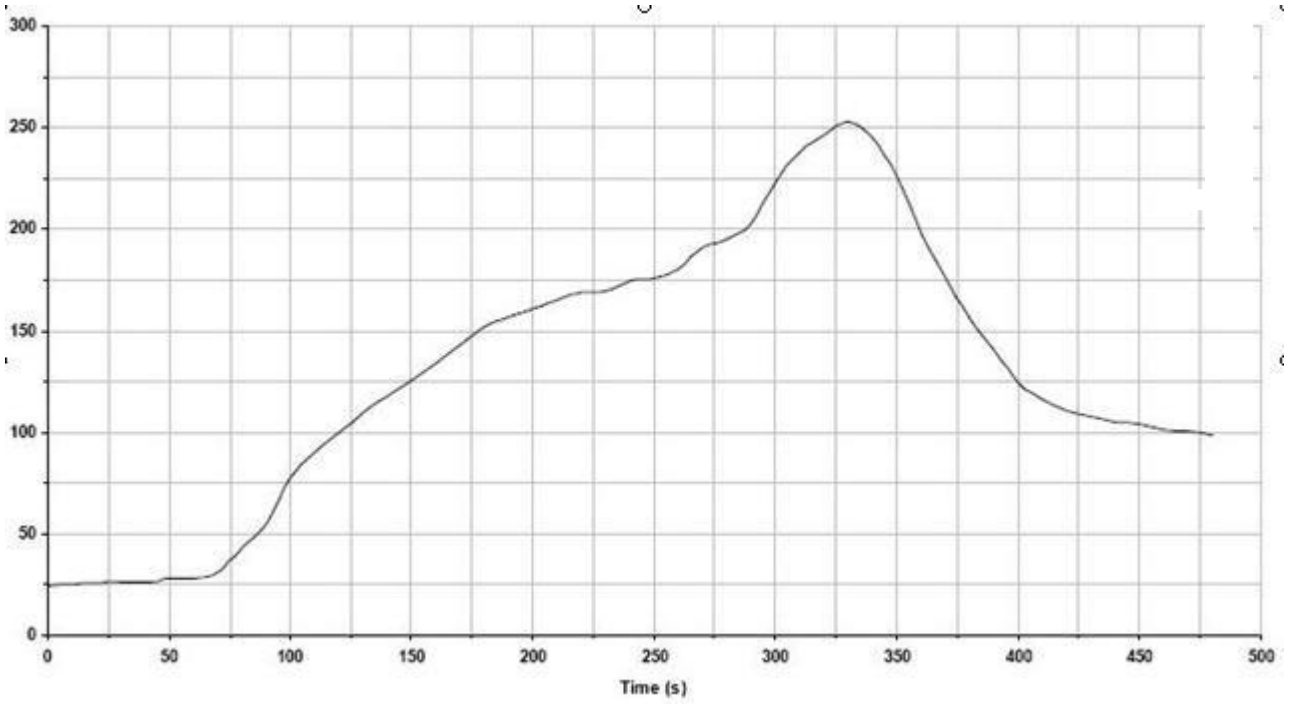
11. Notes:

A. Regarding the use environment of wireless Bluetooth, wireless signals including Bluetooth applications are greatly affected by the surrounding environment, such as Obstacles such as trees and metals will absorb wireless signals to a certain extent, so in practical applications, the distance of data transmission is affected to a certain extent.

B. Because the Bluetooth module must be matched with the existing system, it is placed in the shell. Because the metal shell has a shielding effect on the radio frequency signal. Therefore, it is not recommended to install in a metal enclosure.

C. PCB layout: The antenna part of the Bluetooth module is a PCB antenna. Metal will weaken the function of the antenna. When laying the module, it is strictly forbidden to lay the ground and wire under the module antenna. It is better if it can be hollowed out.

12.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℃