FS-QN9021 Datasheet

Version : V1.1

Date : 2015-07-27

Version	Date	Description	Author	Check
1.0	2015.03			
1.1	2015.07			

1. Description

FS-QN9021 is the NXP single-mode BLE(Bluetooth low energy) chip QN9021 as the core of ultra low power RF transceiver module, follow the low power consumption of Bluetooth protocol, suitable for short distance wireless communication network field.

QN9021 integrates a 32-bit ARM Cortex-M0 processor, 2.4GHz RF transceiver, and a wealth of storage resources and peripherals, with onboard high performance inverted F-type antenna, so that the module has a high sensitivity, high handling capacity, low power, low cost and so on.

In addition, except with onboard antenna, also set aside an external antenna connector, semi-hole package, small size (12.75mm * 17.80mm * 1mm), extensive applications.

2. Features

(1) Low overall cost, excellent performance

(2) Master device can be connected simultaneously 8 slave devices

(3) Ultra-low power

(4) OTA upgrade technology

(5) Interface (I2C, SPI, UART)

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3. Applications

(1) Sport & Health Products

(2) Smart home products

(3) PC Wireless Peripherals

(4) Intelligent wearable device

(5) Automotive electronics

4. Specifications

Technical Specifications	Parameters	Remarks
Frequency	2400MHz~2483.5MHz	
Frequency shift	±5kHz	
Transmit Power	-20dBm ~ 4dBm	Step 2dBm
Receiving sensitivity	-95dBm	W/O DC/DC
Voltage	2.4V ~ 3.6V	
TX Current	13.4mA	W/O DC/DC
RX Current	13.7mA	W/O DC/DC
Standby Current	2uA	
Interface	Uart、SPI、I2C	
Communication Distance	50m	Unobstructed area
Working temperature	-40℃~85℃	
Size	17.80mm*12.75mm*1mm	

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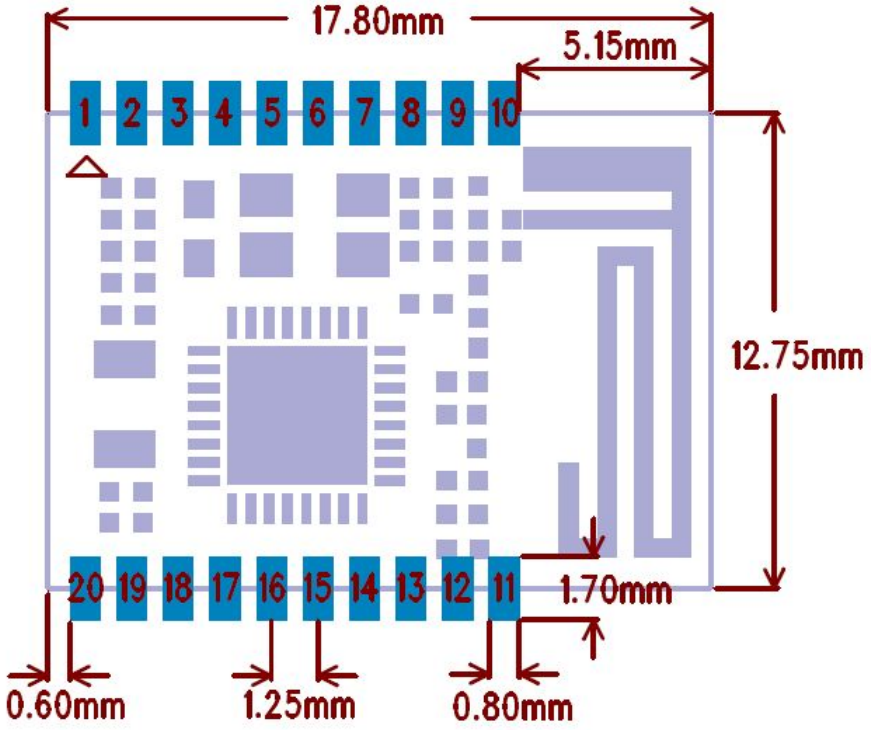
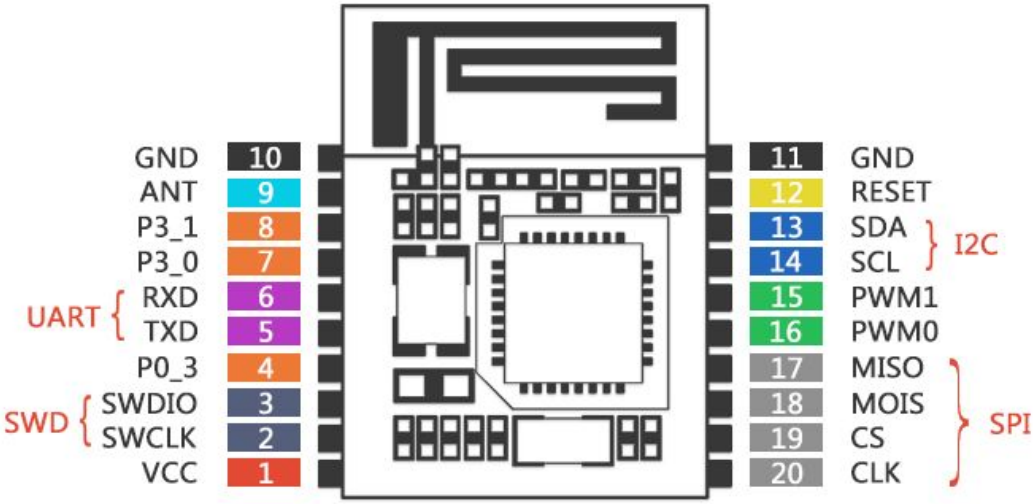


5. Pin Definition



number	Name	Description
1	VCC	Power supply
2	P0_7	0: SWCLK (I):Default to SWCLK (input with pull-up) 1: P0_7 (I/O):GPIO 2: AIN3 (AI):ADC input channel 3 3: ACMP1- (AI):Analog comparator 1 negative input
3	P0_6	0: SWDIO (I/O):Default to SWDIO (input with pull-up) 1: P0_6 (I/O):GPIO 2: AIN2 (AI):ADC input channel 2 3: ACMP1+ (AI):Analog comparator 1 positive input
4	P0_3	0: P0_3 (I/O):GPIO 1: CLKOUT0 (O):Clock output 0 2: T0_ECLK (I/O):Timer 0 external clock input or PWM output
5	P0_0	0: P0_0 (I/O):GPIO 1: TXD0 (O):UART0 Tx data output with pull-up 2: DAT0 (I/O):In 4-wire mode, SPI0 output data. In 3-wire mode, data I/O 3: RTCI (I):RTC input capture
6	P1_7	0: P1_7 (I/O):GPIO 1: RXD0 (I):UART0 Rx data input 2: DIN0 (I):SPI0 input data in 4-wire mode, invalid in 3-wire mode 3: T0_0 (O):Timer 0 PWM output
7	P3_0	0: P3_0 (I/O):GPIO 1: T2_1 (I/O):Timer 1 input capture /clock or PWM output 2: AIN0 (AI):ADC input channel 0 3: ACMP0+ (AI):Analog comparator positive input
8	P3_1	0: P3_1 (I/O):GPIO 1: T0_2 (I/O):Timer 0 input capture /clock or PWM output 2: AIN1 (I):ADC input channel 1 3: ACMP0- (I):Analog comparator negative input
9	ANT	Antenna
10	GND	Ground
11	GND	Ground
12	RESET	Hardware reset, active low
13	P2_3	0: P2_3 (I/O):GPIO

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		1: SDA (I/O):I2C data transmit 2: ACMP0_0 (O):Analog comparator result output 3: T3_0 (I/O):Timer 3 input capture /clock or PWM output
14	P2_4	0: P2_4 (I/O):GPIO 1: SCL (I/O):I2C master clock output with pull-up 2: PWM1 (O):PWM1 output 3: T3_ECLK (I/O):Timer 3 external clock input or PWM output
15	P2_6	0: P2_6 (I/O):GPIO 1: PWM1 (O):PWM1 output 2: T2_0 (I/O):Timer 2 input capture /clock or PWM output
16	P2_7	0: P2_7 (I/O):GPIO 1: ACMP1_0 (O):Analog comparator result output 2: PWM0 (O):PWM0 output 3: T1_ECLK (I/O):Timer 1 external clock input or PWM output
17	P1_0	0: P1_0 (I/O):GPIO 1: DIN1 (I):SPI1 input data in 4-wire mode, invalid in 3-wire mode 2: RXD1 (I):UART1 Rx data 3: T2_ECLK (I/O):Timer 2 external clock input or PWM output
18	P1_1	0: P1_1 (I/O):GPIO 1: DAT1 (I/O):In 4-wire mode, SPI1 output data. In 3-wire mode, data I/O 2: TXD1 (O):UART1 Tx data 3: T1_0 (I/O):Timer 1 input capture /clock or PWM output
19	P1_2	0: P1_2 (I/O):GPIO 1: nCS1_0 (I/O):SPI1 slave select for master/slave mode 2: CTS1 (I):UART1 CTS 3: ADCT (AI):ADC conversion external trigger
20	P1_3	0: P1_3 (I/O):GPIO 1: SPICLK1 (I/O):SPI1 clock 2: RTS1 (O):UART1 RTS 3: CLKOUT1 (O):Clock output 1

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6. Note

（1） If the FS-QN9021 module is welded on the PCB board, the antenna corresponding to the location of the antenna is prohibited from the copper processing, otherwise it will interfere with the Bluetooth signal.

（2）The radio signal is also affected by the environment, such as trees, metals and other obstacles will have a certain absorption or reflection of the wireless signal. In practical application, the distance of data transmission should be determined according to the actual environment.

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