IS-ZB-001

Hardware Specification

Shenzhen RF-star Technology Co.,Ltd

Index

Module Parameters

MCU	Silicon Labs: EFR32MG1B232F256GM32-C0
Supply Voltage	2.3V ~ 3.6V，3. 3V will be recommended
Frequency	2405 MHz ～ 2480MHz
Sensitivity	-98 dBm
Frequency Error	±20 kHz
FLASH	256KB
RAM	32KB
Operating Temperature Range	-40℃ ～ +85℃
Storage Temperature Range	-40℃ ～ +125℃
Module Size	20.4*14.8*1.7mm
RX Current	8.7mA (1Mbps GFSK)
RX Current	9.8mA (250kbps 0-QPSK DSSS)
TX Current	8.2mA (at 0dBm)
Deep Sleep Mode	5.5uA

Pin Definition

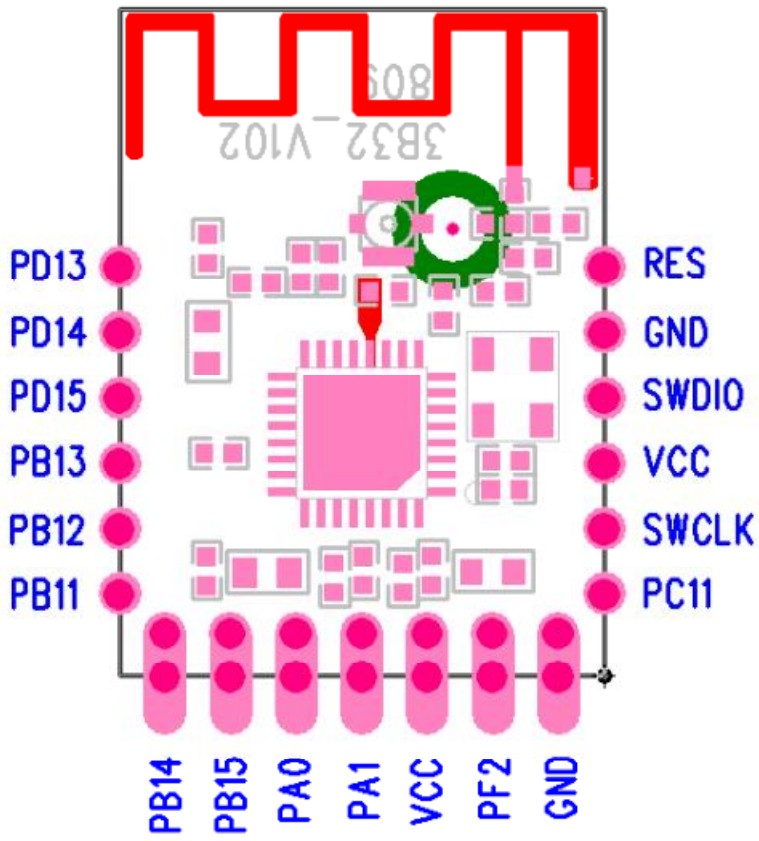

Figure 1 Pin Definition

Pin No.	Pin Name	Function	**Remarks**
Pin1	PD13	I/O	
Pin2	PD14	I/O	
Pin3	PD15	I/O	
Pin4	PB13	I/O	
Pin5	PB12	I/O	
Pin6	PB11	I/O	
Pin7	PB14	I/O	
Pin8	PB15	I/O	
Pin9	PA0	I/O	
Pin10	PA1	I/O	
Pin11	VCC	VCC	Power supply，(2.3V to 3.6 V)3. 3V will be recommended
Pin12	PF2	I/O	
Pin13	GND	Groud	Grounding

Pin14	PC11	I/O	
Pin15	SWCLK	SWCLK	Connect the J-Link simulator SWCLK
Pin16	VCC	VCC	Power supply，(2.3V to 3.6 V)3. 3V will be recommended
Pin17	SWDIO	SWDIO	Connect the J-Link simulaor SWDIO
Pin18	GND	Groud	Grounding
Pin19	RES	RESET	Active when set low level

PCB Package Size

Thickness of the module is 1.9 ± 0.2 mm。

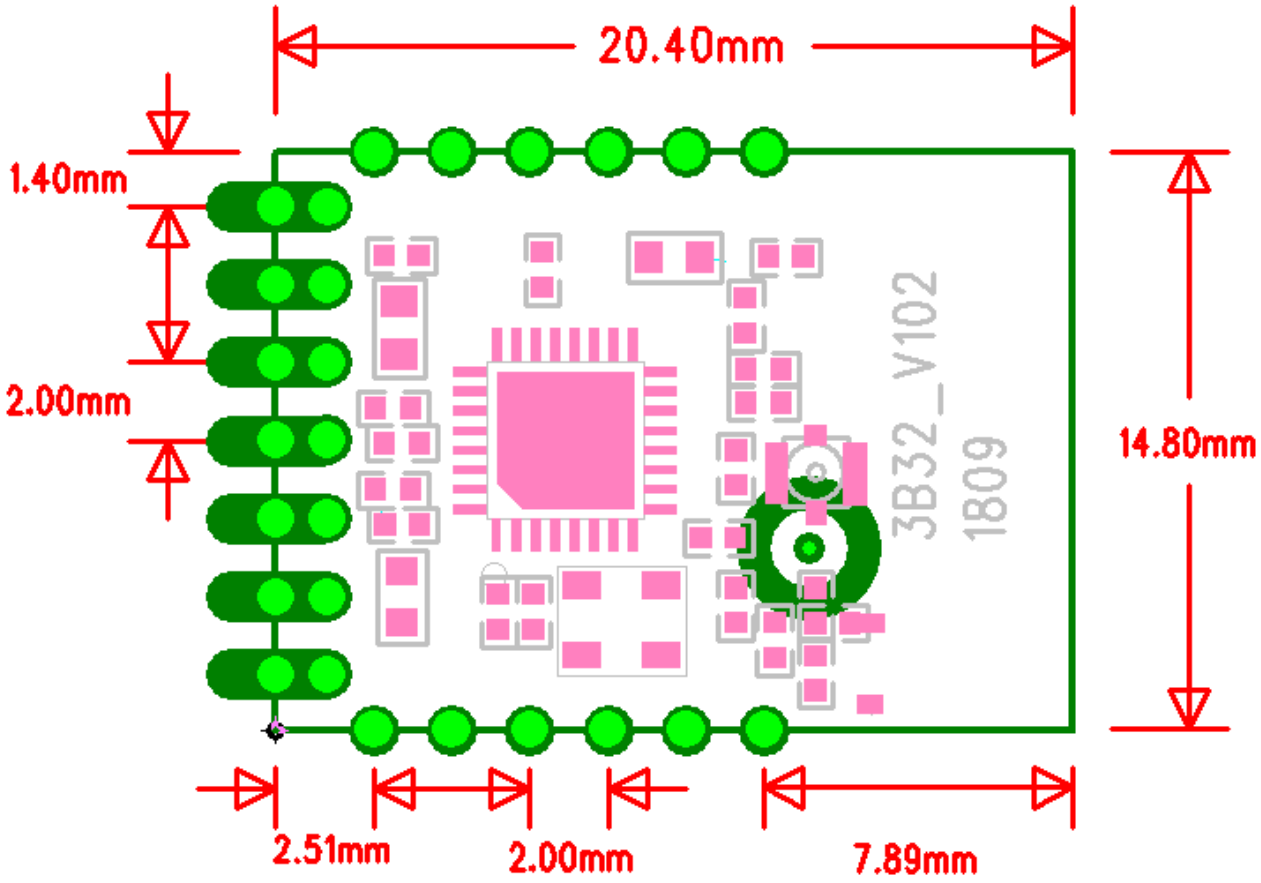

Figure 2 Module Size

Schematic Diagram

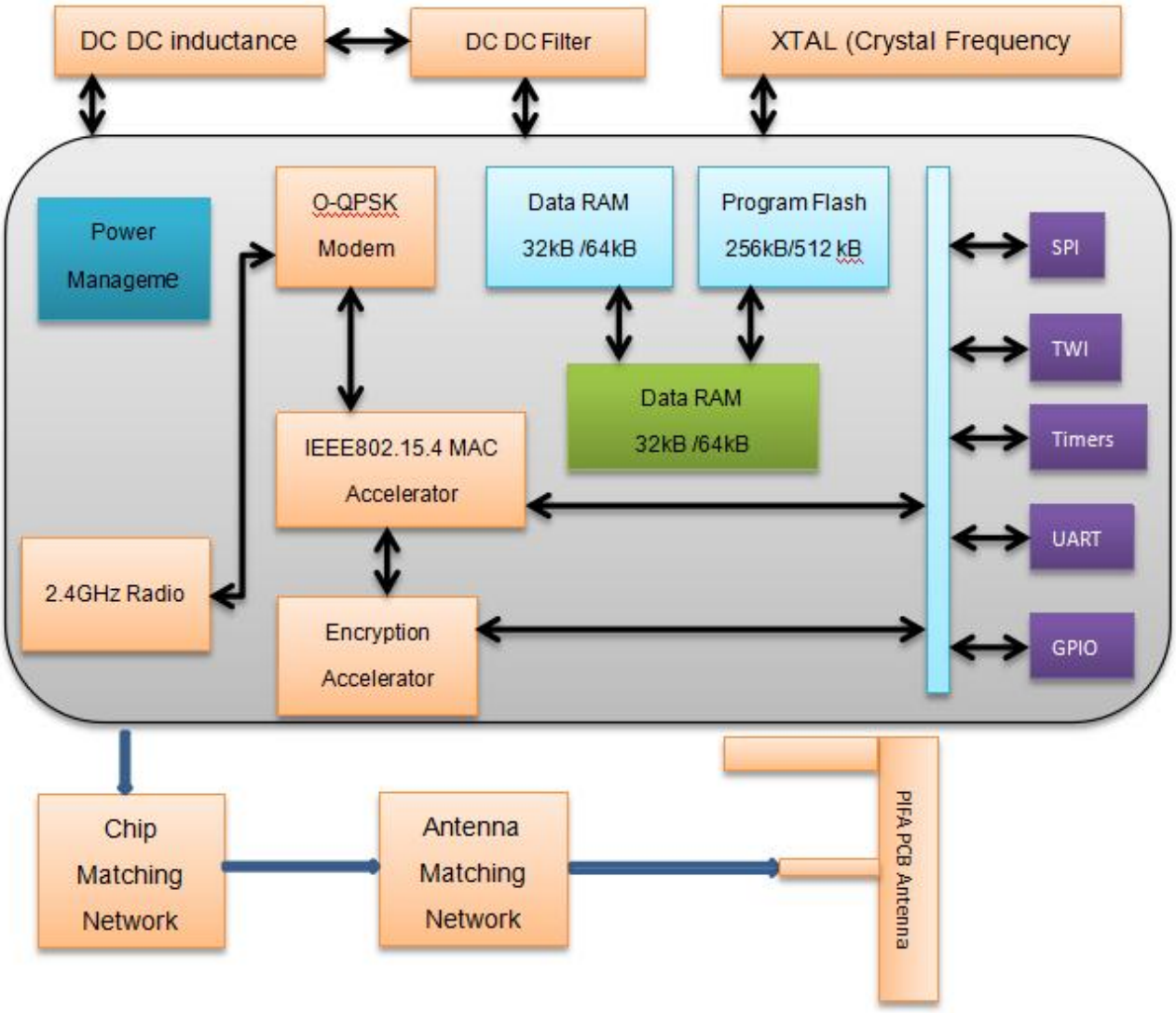

Figure 3 Schematic Diagram

Layout Proposals

The serpentine antenna on PCB is free space electromagnetic radiation. The place and layout range are keys to enhance the data rate and transmit range.

Thus，Below are the layout proposals for antenna and route:

1, Place the antenna on the edge(corner) of the PCB backplane.

2, Make sure there is no signal or copper foil in each layer.

3, Hollowing out the yellow pane part (figure 4) to make less S11 interference.

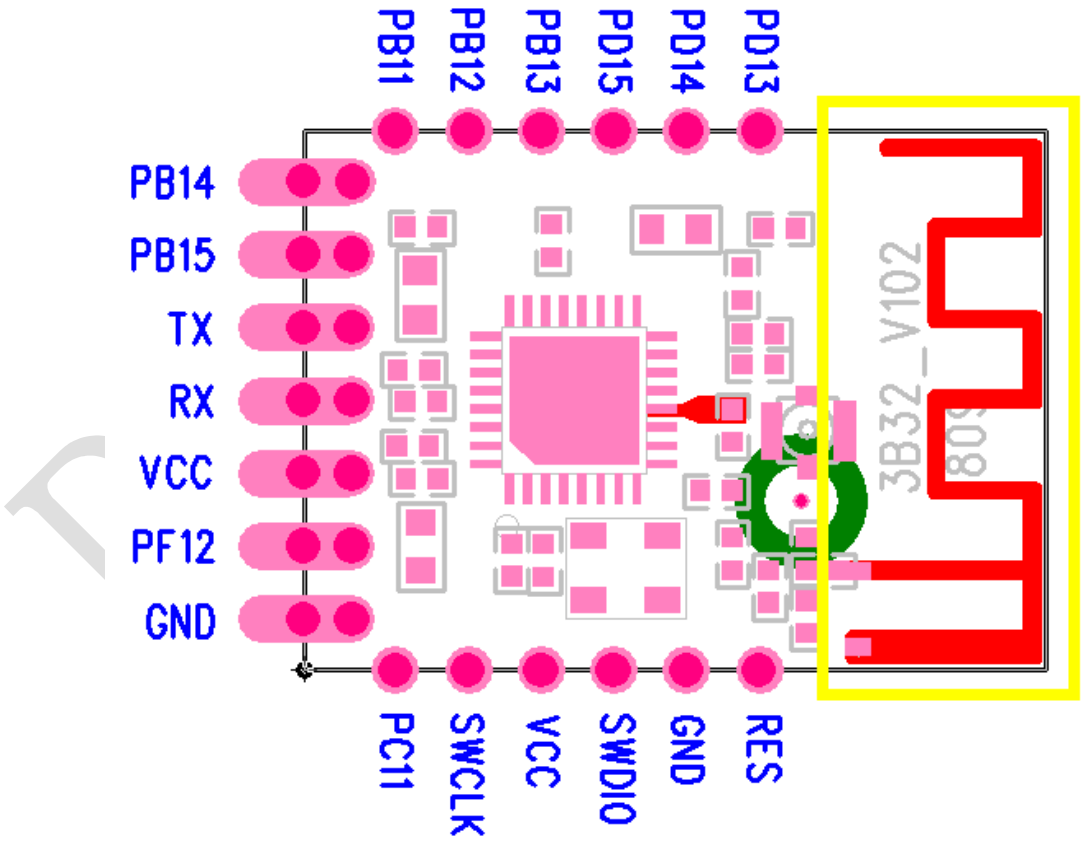

Figure 4

Recommended Operating Conditions

Notes：

(1) The operating temperature is limited to the change of crystal's frequency;

(2) To ensure the RF performance, the ripple wave on the source must be less than ±300mV。

Identification	Test Condition	Min	Typ	Max	Unit
Source & IO	Battery mode	2.3	3.3	3.6	V
Operating Temperature	/	-40	25	85	℃
Environmental Hot Pendulum		-20		20	℃/Min

Reflow Conditions

1. Heating mode：conventional convection or IR convection；
2. Times allowed to reflow: 2 times, for the below reflow (conditions)（figure 5）；
3. Temperature curve: the reflow should be in accordance with the temperature curve shown below (figure 5)；
4. Highest：245°C。

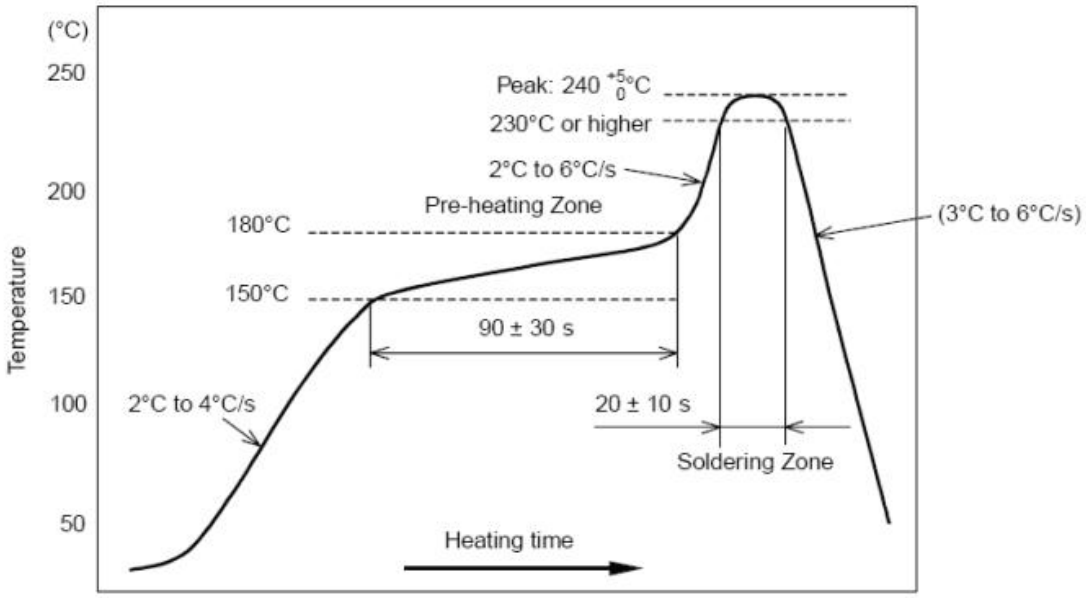

Figure 5 Parts' heat-resistance temperature curve for welding(welding point）

Electrostatic Discharge Warnings

Module will be damaged for the discharge of static, RF star suggest that all modules should follow the 3 precautions below.:

1, According to the anti-static measures, bare hands are not allowed to touch modules.

2, Modules must be placed in anti- static areas.

3,Take the anti-static circuitry(when inputting HV or VHF) into consideration in product design.

Static may result in the degradation in performance of module, even causing the failure.

Contact Us

SHENZHEN RF STAR TECHNOLOGY CO.,LTD.

Tel：0755–8632 9829 Web: www.szrfstar.com

Fax：0755–8632 9413 E-mail：sales@szrfstar.com

Add：2F,Block8,Dist.A,Internet Industry Base,Baoyuan Road ,Baoan Dist,Shenzhen

IS-ZB-001(ZIGBEE) Module

This module is shenzhen letter chi da technology co., LTD., based on the Silabs EFR32MG1B232 chip design of Wireless Gecko series system level module (SoC), based on the 32-bit energy-saving ARM architecture (M4 nuclear, 40 MHZ operating frequency, integrated with 2.4 GHz balanced/unbalanced converter, 2.4 GHz send power of up to 19.5 dBm power amplifier (PA) of the radio transceiver.Able to support wireless communication protocols such as Thread and ZigBee.It is mainly used for home connection, lighting, health and medical care, measurement and home and building automationandsafety.

FCC Statement

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.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

If the FCC identification number is not visible when the module is installed inside the host, then the outside of the device into which the module is installed must also display a label referring to the enclosed module.

This exterior label can use wording such as the following:

“Contains Transmitter Module Contains FCC ID: 2ABN2-RSZB001” or

“Contains FCC ID: 2ABN2-RSZB001” Any similar wording that expresses the same meaning may be used.

The host, which the modular was installed in, should provide the shielding for the transmitter.