

ZLG52810P0-1-TC

BLE MODULE

DS01010101 V1.00 Date: 2018/01/20

DATA SHEET

DESCRIPTION

The ZLG52810P0-1-TC is a new BLE 5.0 module with high-throughput, low cost, small size and higher speed, lower power consumption. Helping customers bypass the cumbersome hardware design, Software development and process of production to shorten time to the market. The module can be used in various electronic devices easily and widely. According to the user's requirements, the onboard PCB antenna version and the external antenna version are provided. The external antenna version is ZLG52810P0-1C-TC.

APPLICATIONS

- IOT, Industrial control;
- Sport, Health and Medical;
- Smart home;
- iBeacon.



FEATURES

- ◆ ARM® Cortex®-M4 32-bit processor, 64M;
- ◆ Up to 94KB/S transfer rate;
- ◆ Support for protocol: BLE 4.0/4.1/4.2/5;
- ◆ 2.402-2.480GHz free-licence ZISM bands;
- ◆ AES HW encryption with EasyDMA;
- ◆ Wireless uart, customized advertising packet and iBeacon mode Supported;
- ◆ Wide Supply Voltage: 1.7~3.6V, Typ in 3.3V;
- ◆ Deep Sleep Current: 242nA;
- ◆ RX Sensitivity: -96dBm@1Mbps;
-93dBm@2Mbps;
- ◆ -20 ~ +4dBm TX power@4dB steps;
- ◆ Package: 12*17*1.75mm.

Ordering Information

Device	Temperature	Description
ZLG52810P0-1-TC	-40 ℃~+85 ℃	PCB ANT
ZLG52810P0-1C-TC	-40 ℃~+85 ℃	External ANT

**Revise history**

Vision	Date	Description
V0.90	2018/01/20	Creat document
V1.00	2018/03/14	Official Vision



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1. Pin assignments

ZLG52810P0-1-TC module uses half-hole process, ZLG52810P0-1-TC(onboard antenna)and ZLG52810P0-1C –TC(external antenna) use the same pin assignments, see the Figure 1.1,and please refer to Table 1.1 pin assignments for more detail.

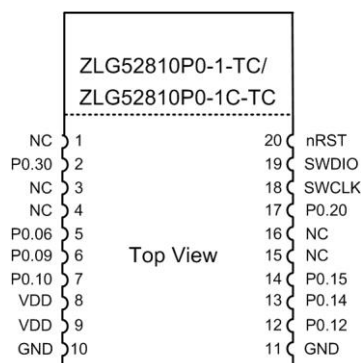


Figure 1.1 pin assignment,top view

Table 1.1 pin assignments

Pin	Define	Default state	Description
1	NC	-	Reserved, keep it floating
2	P0.30	Input	Restore the factory setting pin, pull down the factory setting in the NORMAL mode for 5s, and the module will reset immediately.
3	NC	-	Reserved, keep it floating
4	NC	-	Reserved, keep it floating
5	P0.06	Input	Low-power wake-up pin, falling edge trigger
6	P0.09	Output	Module serial port TX pin
7	P0.10	Input	Module serial port RX pin
8	VDD	VDD	Power pin must be connected to pin 9
9	VDD	VDD	Power pin must be connected to pin 8
10	GND	GND	Power ground pin
11	GND	GND	Power ground pin
12	P0.12	Output	The RTS pin of the serial port of the module is used for flow control. This pin can be left unconnected without serial port flow control. Low level: indicates that the module can receive the serial port data sent by the MCU, and the MCU can continue to send. High level: indicates that the module cannot receive the serial port data sent by the MCU, and the MCU should stop transmitting data (considering that the MCU responds to the flow control signal, there is a delay, so after the output is high, the module can still receive 300 bytes of data)
13	P0.14	Input	The CTS pin of the serial port of the module is used for flow control. This pin can be left unconnected without using serial port flow control. When the user MCU cannot receive data: the pin should be pulled high



			When the user MCU is able to receive data: the pin should be pulled low
14	P0.15	Output	The connection status indication pin outputs a square wave of 0.5 Hz in the unconnected state, and outputs a low level in the connected state.
15	NC	-	Reserved, keep it floating
16	NC	-	Reserved, keep it floating
17	P0.20	Output	Low-power indicator pin, this pin is high during normal operation and low after entering low-power mode
18	SWCLK.	-	Reserve debug interface, keep it floating
19	SWDIO	-	Reserve debug interface, keep it floating
20	nRST	Input	Hardware reset, active low



2. Electrical specification

(1) Recommended Operating Conditions

Table 2.1 Operating Conditions

Parameter	Description	Condition	Min	Typ	Max	Units
VDD	Power Supply	-	1.7	3.3	3.6	V
t _{R_VDD} ⁽¹⁾	VDD rise time	0V~1.7V	-	-	60	ms
TA	Operating Temperature	-	-40	+25	+85	°C

(1) If the power-on time t_{R_VDD} of the module is longer than the maximum value, the power-on reset of the module may be incorrect.

(2) Absolute Maximum Ratings

Table 2.2 Absolute Maximum Ratings

Parameter	Description	Condition	Min	Typ	Max
VDD	Power Supply	-	-0.3	3.9	V
GND	Power Ground	-	-	0	V
V _{I/O}	Voltage of I/O	VDD ≤ 3.6V	-0.3	VDD+0.3	V
Distance ⁽²⁾	Communication distance	Tx Power@0dBm	-	100	m
Ts	Storage Temperature	-	-40	+125	°C

(2) The data obtained is tested in an open area, and the communication distance is affected by the working environment of the module.

(3) Power consumption

Table 2.3 Power consumption

Test Condition: Ta=25°C VDD=3.3V

Symbol	Work mode	Typ	Units
Current	Low Power Mode 2	242	nA
	Low Power Mode 1 + Advertising	3.41~65	μA
	Low Power Mode 1 + Connecting	5.64~164	μA
	Full Speed Mode + Advertising	587.03~648.96	μA
	Full Speed Mode + Connecting	589.63~735.64	μA

(4) Wireless parameters

Table 2.4 Wireless parameters

Symbol	Description	Typ	Units
无线参数	The range of frequency	2402 ~ 2480	MHz
	Output Power	-20 ~ 4	dBm
	Receiving sensitivity	-96dBm@1Mbps -93dBm@2Mbps	dBm



	Maximum input signal Power	0	dBm
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3. TYPICAL APPLICATION CIRCUITS

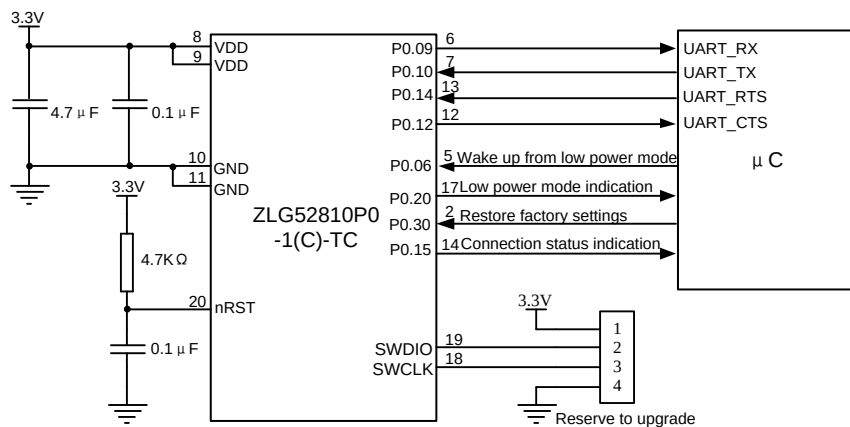


Figure 3.1 TYPICAL APPLICATION CIRCUITS

Note that the pin8 and pin9 must be connected on the outside.

4. Antenna layout specification

The ZLG52810P0-1-TC module uses a PCB on-board antenna design. In order to achieve the best effect of wireless signal radiation, the area around the antenna must be kept at least 20 mm away from the wire or other metal objects. This requirement applies to all pcb layers, not just the top layer. Because any conductive object near the antenna can severely damage the performance of the radiated signal from the PCB antenna, the effect of communication will be greatly reduced. As shown in Figure 4.1, the above three layouts are correct, and the following three layouts affect the wireless signal quality.

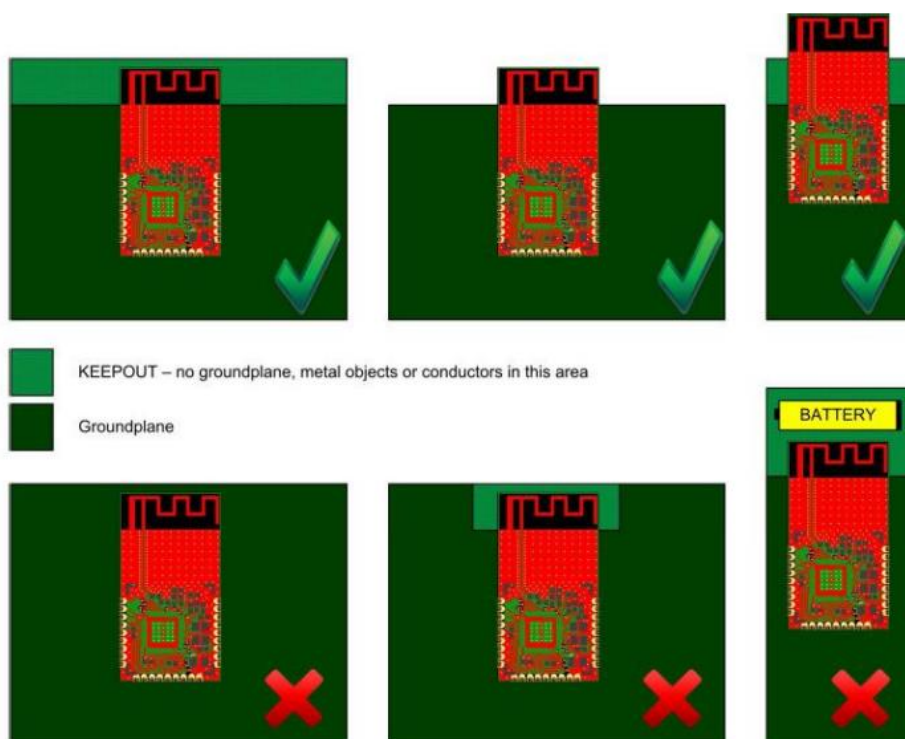


Figure 4.1 Recommend installation

5. Mechanical size

The mechanical size of module is as shown in Figure 5.1,unit: mm (millimeters)。

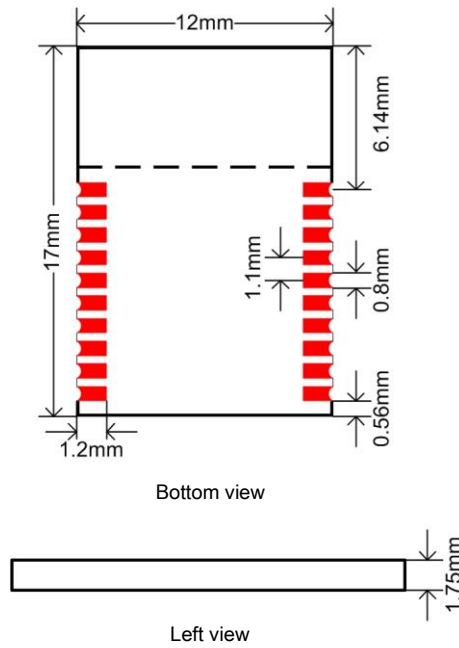


Figure5.1 module size

注： [1] Length and width dimensional tolerance: Min:0.2mm,Typical:0.3mm,Max:0.4mm;

[2] Module thickness: 1.75mm, ± 0.2 mm。

6. Reflow soldering temperature reference curve

温度设置 (摄氏度)								
温区	1	2	3	4	5	6	7	8
上温区	170	180	180	180	190	210	275	270
下温区	170	180	180	180	190	210	275	270
传送带速度 (毫米/分): 720								

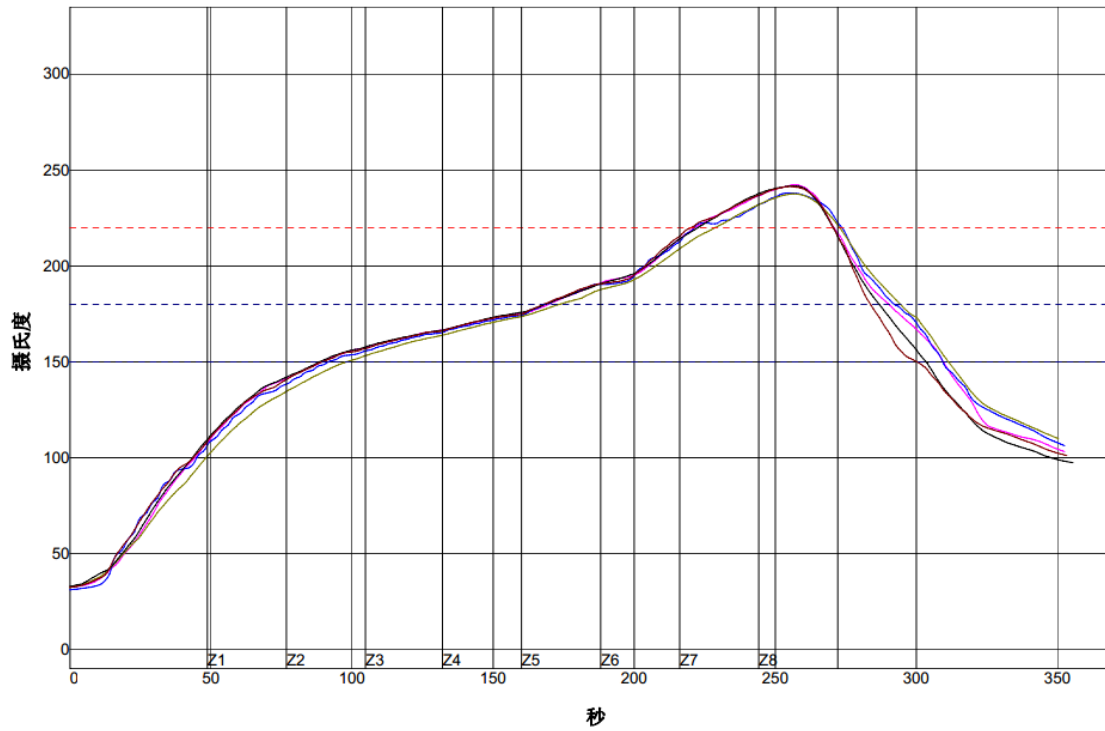


Figure 6.1 Reflow soldering temperature graph



7. FCC Statement

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.

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

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.

The BLE Wireless Transmission Module is designed to comply with the FCC statement. FCC ID is 2AIVAZLG52810. The host system using BLE Wireless Transmission Module Module, should have label indicated it contain modular's FCC ID: 2AIVAZLG52810 . This radio module must not installed to colocate and operating simultaneously with other radios in host system

additional testing and equipment authorization may be required to operating simultaneously with other radio.

To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain including cable loss in a mobile-only exposure condition must not exceed 5dBi in the 2.4G band.

The BLE Wireless Transmission Module and its antenna must not be co-located or operating in conjunction with any other transmitter or antenna within a host device.

RF warning for Mobile device:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.



8. Disclaimer

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