GOOWI

GWLE1010B
Bluetooth Low Energy Module
Data Sheet

(Document Number:GWLE-1010B-01B)

GooWi Technology Co., Ltd

GOOWI

GWLE1010B Module

CSR1010
Rev1.0
Apr. 2015

Device Features

- A small and cost effective Bluetooth® Low Energy System
- Bluetooth® specification v4.1
- Single module compliant – Supports mater or slave mode
- Integrated Bluetooth low energy stack: GAP,GATT,ATT,L2CAP,SMP
- RSSI monitoring for proximity applications
- Programmable general purpose
- 10-bti ADC
- 12 digital PIOs
- 3 analogue AIOs
- UART
- I2C interface
- Wakeup-interrupt
- Watchdog timer
- Software programmable
- Ultra Low current consumption
- PCB antenna

General Description

GWLE1010B from GooWi is a single-mode Bluetooth low energy module. It's for low power sensors and accessories, such as health device, active 3D glasses. GWLE1010B offers all Bluetooth low energy features: radio, stack, profiles. GWLE1010B also provides flexible hardware interface to connect sensors, simple user interfaces and even driver display device directly.

GooWi setups the software development platform in the lab, provides the full software and customization service to our valuable customers.

Applications

- Health and medical
- Security and proximity
- Sports and fitness
- Entertainment
- Human interface device
- Smart Home

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Version History

Version No	Author	Date	Remark
Rev1.0	alvin	2015-4-18	Init Version

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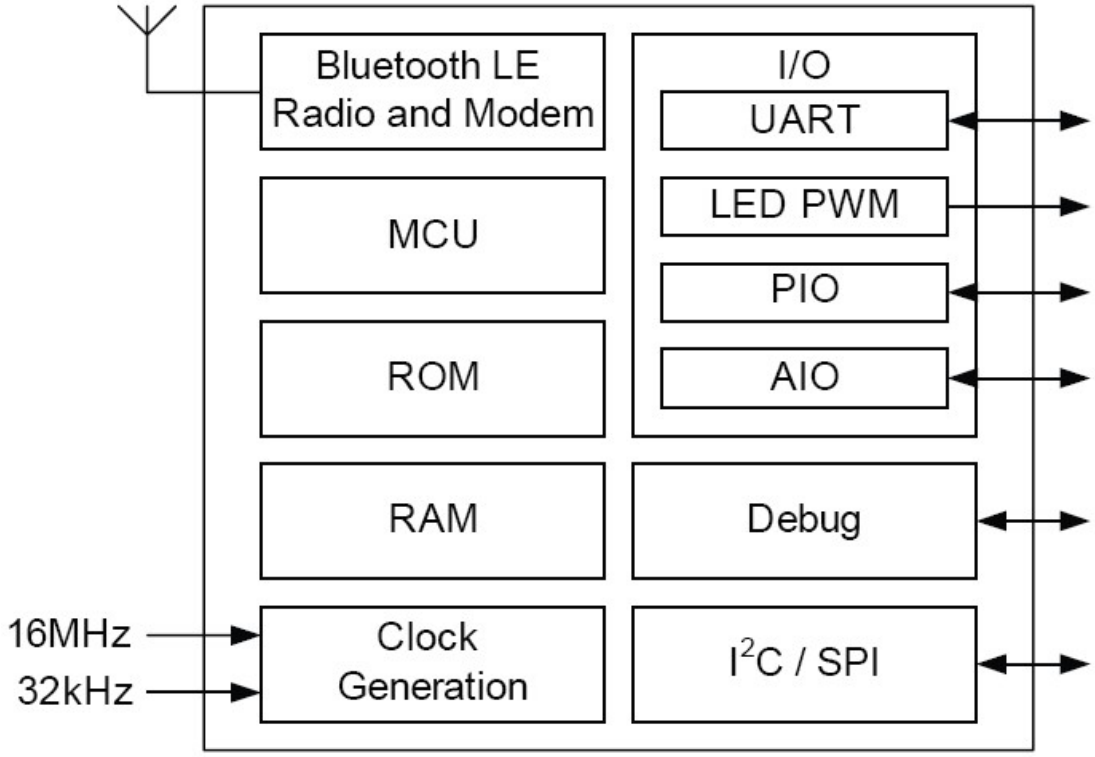
System Architecture



Specifications

Operating Frequency Band	2.4GHz ~ 2.48GHz unlicensed ISM band
Bluetooth Specification	V4.1
Output Power	7.5dBm (MAX)
Operating Voltage	1.8V-3.6V
Host Interface	UART
Dimension	20.5mm (L) x 11.95 (W) mm x 2.5 (H) mm

NOTES:Specifications are subject to change without prior notice

Electrical Characteristics

Absolute Maximum Ratings

Rating	Min	Max	Unit
Storage temperature	-40	85	°C
Battery (VDD_BAT) operation(a)	1.8	4.4	V
I/O supply voltage （VDD_IO）	-0.4	4.4	V
Other terminal voltages	VSS - 0.4	VDD + 0.4	V

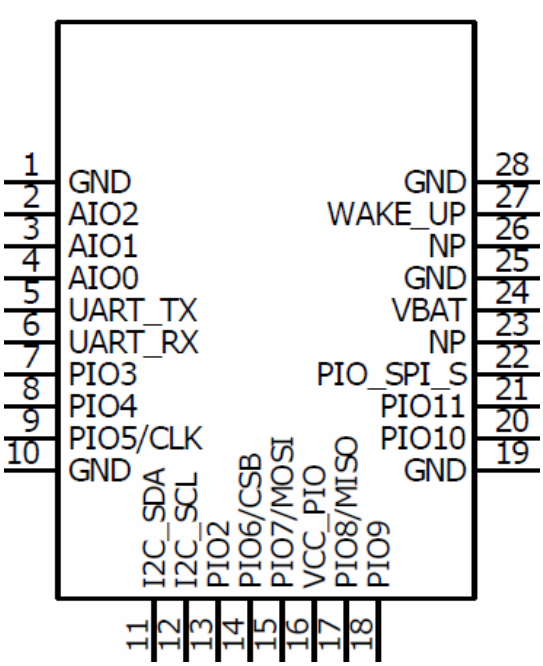
Recommended Operation Conditions

Operating Condition	Min	Typ	Max	Unit
Operating temperature range	-30	-	85	°C
Battery (VDD_BAT) operation	1.8	-	3.6	V
I/O supply voltage (VDD_IO)	1.2	-	3.6	V

AIO

Input Voltage Levels	Min	Typ	Max	Unit
Input voltage	0	-	1.3	V

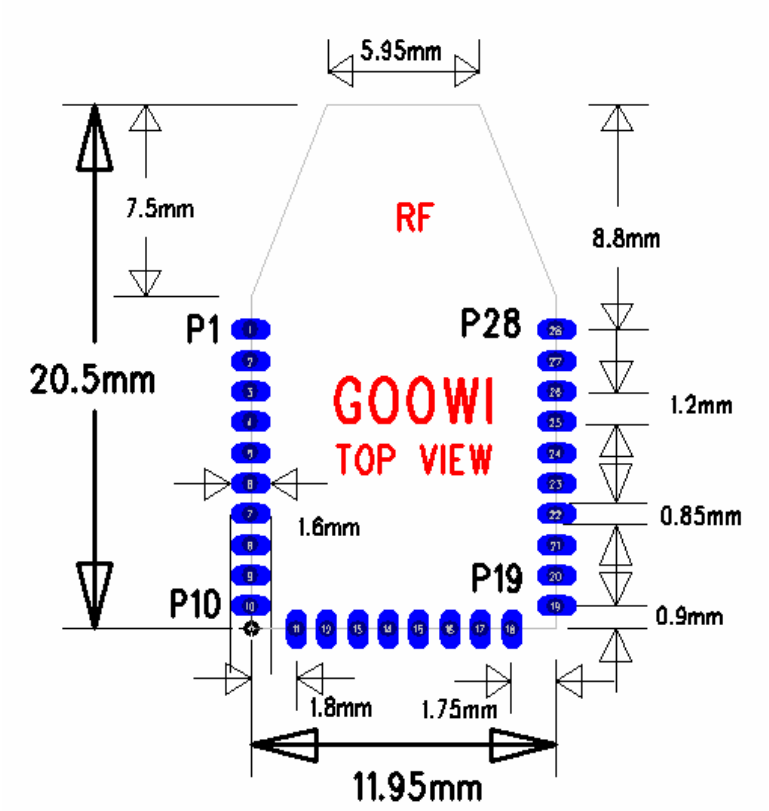
Pin Definition



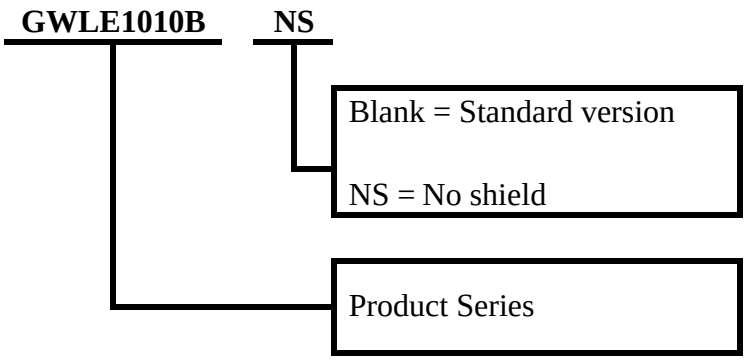
Pin No	Name	Type	Function	Remark
1	GND	GND	Ground	
2	AIO2	Bi-directional	Analogue programmable input/output line	
3	AIO1	Bi-directional	Analogue programmable input/output line	
4	AIO0	Bi-directional	Analogue programmable input/output line	
5	PIO0	Bi-directional	Programmable Input/Output Line 0 UART Data Output (TX)	
6	PIO1	Bi-directional	Programmable Input/Output Line 1 UART Data Input (RX)	
7	PIO3	Bi-directional	Programmable Input/Output Line 3 SPI serial flash data input	
8	PIO4	Bi-directional	Programmable Input/Output Line 4 SPI serial flash chip select	

9	PIO5/CLK	Bi-directional	Programmable Input/Output Line 5	
			Serial Peripheral Interface Clock	
10	GND	GND	Ground	
11	I2C_SDA	Bi-directional	I2C data input/output or SPI serial flash data output	
12	I2C_SCL	Bi-directional	I2C clock or SPI serial flash clock output	
13	PIO2	Bi-directional	Programmable Input/Output Line or I2C power	
14	PIO6/CSB	Bi-directional	Programmable Input/Output Line 6	
			Chip Select For Synchronous Serial Interface	
15	PIO7/MOSI	Bi-directional	Programmable Input/Output Line 7	
			SPI MOSI	
16	VCC_PIO	Power	Positive supply for all digital I/O port	
17	PIO8/MISO	Bi-directional	Programmable Input/Output Line 8	
			SPI MISO	
18	PIO9	Bi-directional	Programmable Input/Output Line 9	
19	GND	GND	Ground	
20	PIO10	Bi-directional	Programmable Input/Output Line 10	
21	PIO11	Bi-directional	Programmable Input/Output Line 11	
22	PIO_SPI_S	Input	Selects spi debug (Input with strong internal Pull-down)	
23	NP	NC	Not connected	
24	VBAT	Power	Battery input	
25	GND	GND	Ground	
26	NP	NC	Not connected	
27	WAKE	Input	Input to wake csr1000 QFN from hibernate (input has no internal pull-up or pull-down, Use external pull-down)	
28	GND	GND	Ground	

Mechanical Dimension



Ordering Information



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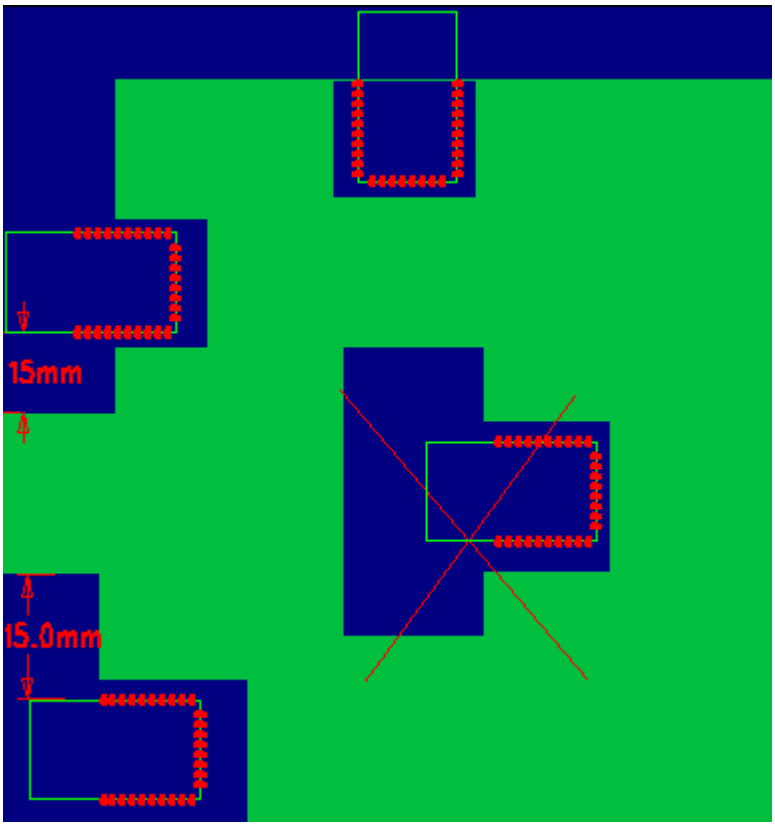
PCB Layout Guidelines

Here we mainly describe the RF part layout consideration.

Placement of the module and antenna



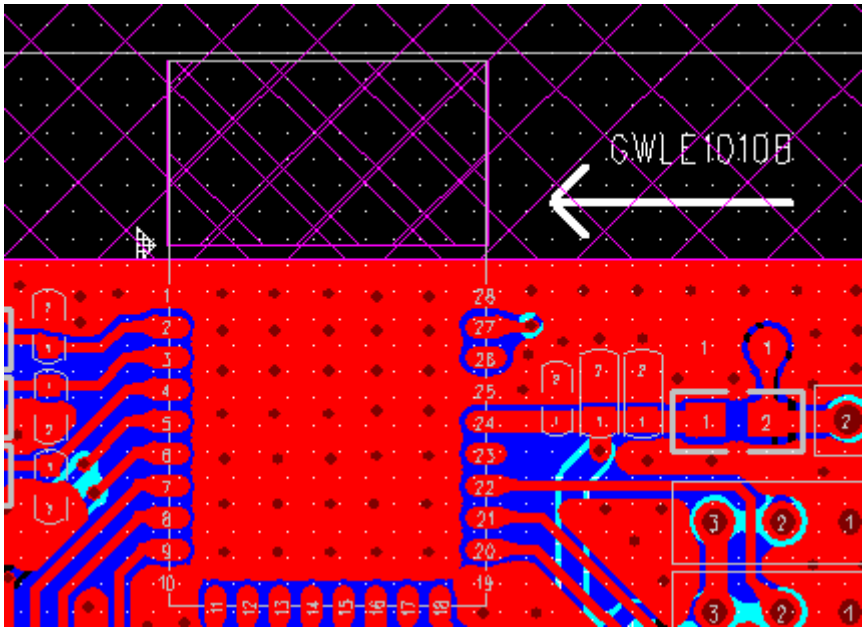
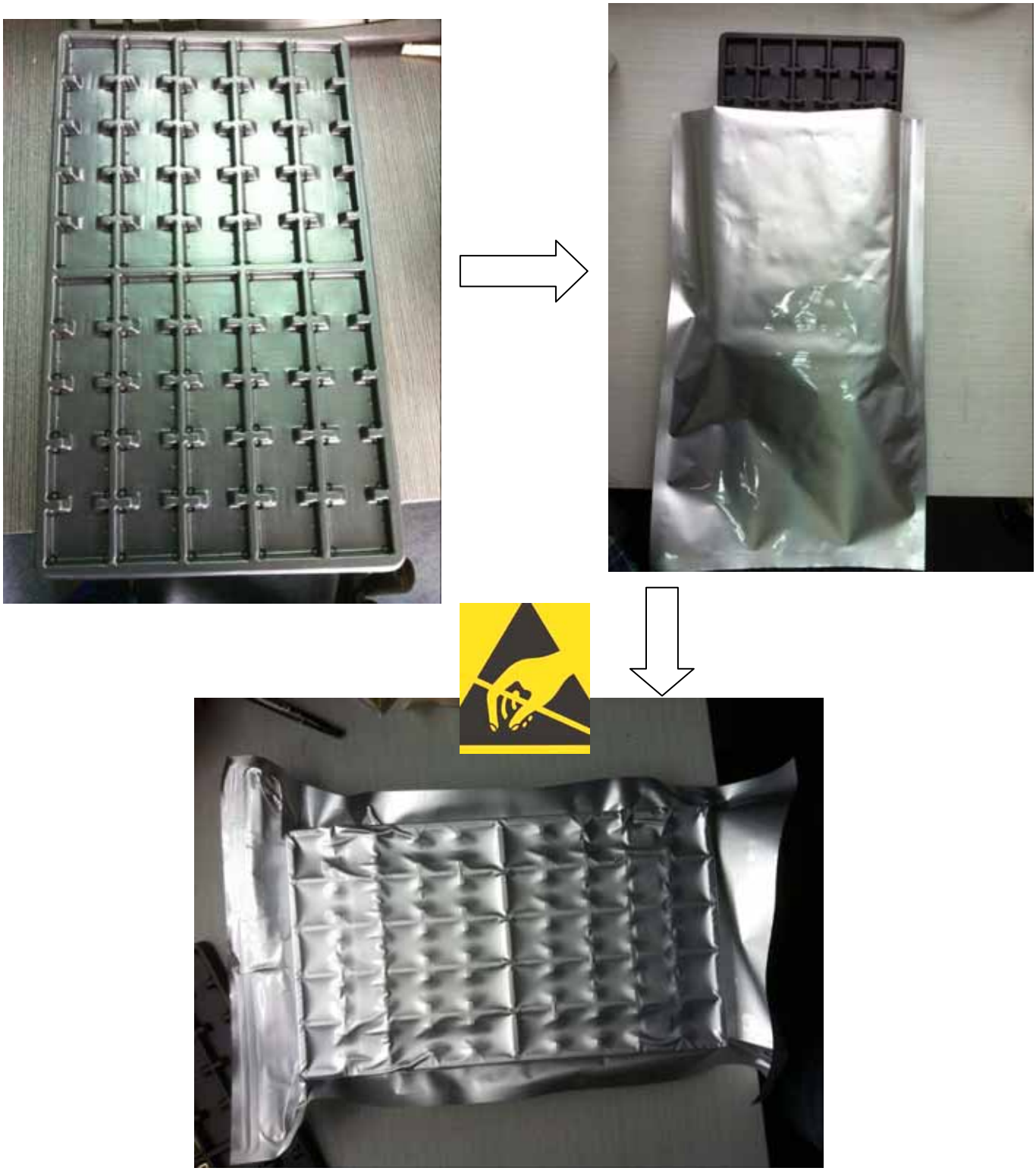


Figure 1: Example layout

The following list is aimed to avoid EMC problems caused by RF part of the module.

- Do not remove copper from the PCB more than needed. Use ground filling as much as possible. However remove small floating islands after copper pour.
- Do not place a ground plane underneath the antenna. The grounding areas under the module should be designed as shown in Figure 1.
- When using overlapping ground areas use conductive vias separated max. 3 mm apart at the edge of the ground areas. This prevents RF to penetrate inside the PCB. Use ground vias extensively all over the PCB. All the traces in (and on) the PCB are potential antennas.
- Avoid loops.
- Ensure that signal lines have return paths as short as possible. With sensitive analog signals, such as analog audio, use solid ground plane and make sure that the return path for the signal lines is low impedance and follows the signal lines all the way.

Package



Pumping air into vacuum state, anti-static packaging

Document Reference

Document	Reference,Date
BlueCore5 Charger Description and Calibration Procedure Application Note	CS-113282-ANP,2007
CSR1010 Data sheet	CS-231985-DS
Core Speficication of the Bluetooth System	V4.0, 17 December 2009
GooWi GWLE1010B reference schematic	GWLE1010B

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