

LSD1EV-STBLENRG0
Product Manual



Product name : BLUENRG-A Bluetooth module

Product model: LSD1EV-STBLENRG0

Version: V1.1

Revision Record

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Chapter 1: Functions and features

This low power consumption bluetooth module is a type of high performance IOT transceiver based on ST BLUENRG-134 integrated circuit with Cortex-M0 core and 24kB RAM,160kB Flash, supporting 32MHz high frequency crystal oscillator and 32K low frequency crystal oscillator. The module use smart and small stamp interface avoiding complex RF hardware , which is convenient for secondary development and application.

Chapter 2: Specifications and parameters

Table 1 Module parameters

Parameters	Perfromance		Remarks
Working voltage	1.7V~3.6V		
Working temperature	-40°C~105°C		
Working frequency range	2400MHz~2483.5MHz		
Transmitted power and current consumption	Transmitted power	Current consumption	Test condition
	8dBm	15.1mA	DC-DC Converter Active
	4dBm	10.9mA	
	2dBm	9mA	
	-2dBm	8.3mA	
	-5dBm	7.7mA	
	-8dBm	7.1mA	
	-11dBm	6.8mA	
	-14dBm	6.6mA	
Receive current	7.7mA(peak)		
Receiving sensitivity	-84dBm		
Power consumption	Sleep mode	0.9uA	Use internal 32K crystal

			oscillator
	Sleep mode	2.1uA	Use internal 32K oscillator
	Standby mode	500nA	Stop mode
Transmission distance (0dBm)	>15m		See cautions
Overall dimensions	13mm*10mm*1mm		Length* Width* Height

Note: “transmission distance”is affected by surrounding environment and air humidity, which is only for reference.

Chapter 3: Layout and interface description

3.1 Overall dimension drawing

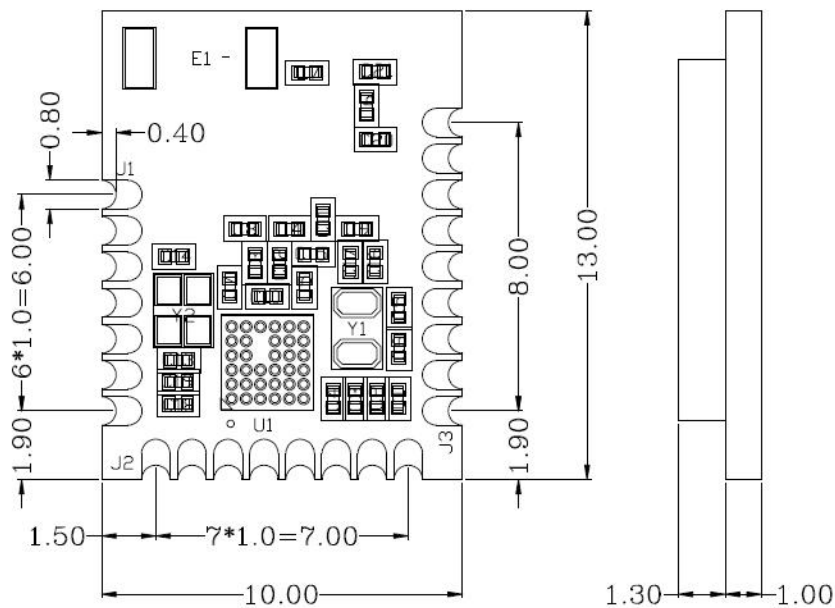


Figure1: Dimension drawing

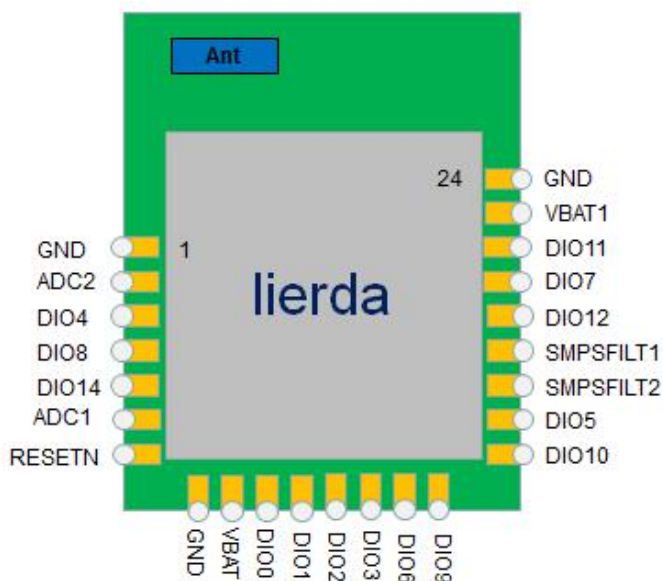


Figure 2: Outline drawing

3.2 Interface description

Pin	Name	Type	Description
1	GND		Power ground
2	ADC2	GPIO	ADC2
3	DIO4	GPIO	UART_RXD
4	DIO8	GPIO	UART_TXD
5	DIO14	GPIO	I2C1_CLK
6	ADC1	GPIO	ADC1
7	RESETN		Reset pin
8	GND		Power ground
9	BAT	Power	1.7~3.6V
10	DIO0	GPIO	UART_CTS
11	DIO1	GPIO	UART_RTS
12	DIO2	GPIO	PWM0
13	DIO3	GPIO	PWM1
14	DIO6	GPIO	UART_RTS
15	DIO9	GPIO	SWCLK
16	DIO10	GPIO	SWDIO

17	DIO5	GPIO	UART_TXD
18	SMPSFILT2	GPIO	DC-DC
19	SMPSFILT1	GPIO	DC-DC
20	DIO12	GPIO	I2C1_CLK
21	DIO7	GPIO	I2C2_DAT
22	DIO11	GPIO	UART_RXD
23	BAT	Power	1.7~3.6V
24	GND		Power ground

Please see detailed pin description in latest BlueNRG-1 Data Sheet.

Chapter 4: Module application

4.1 Application circuit

Active DC-DC Converter:

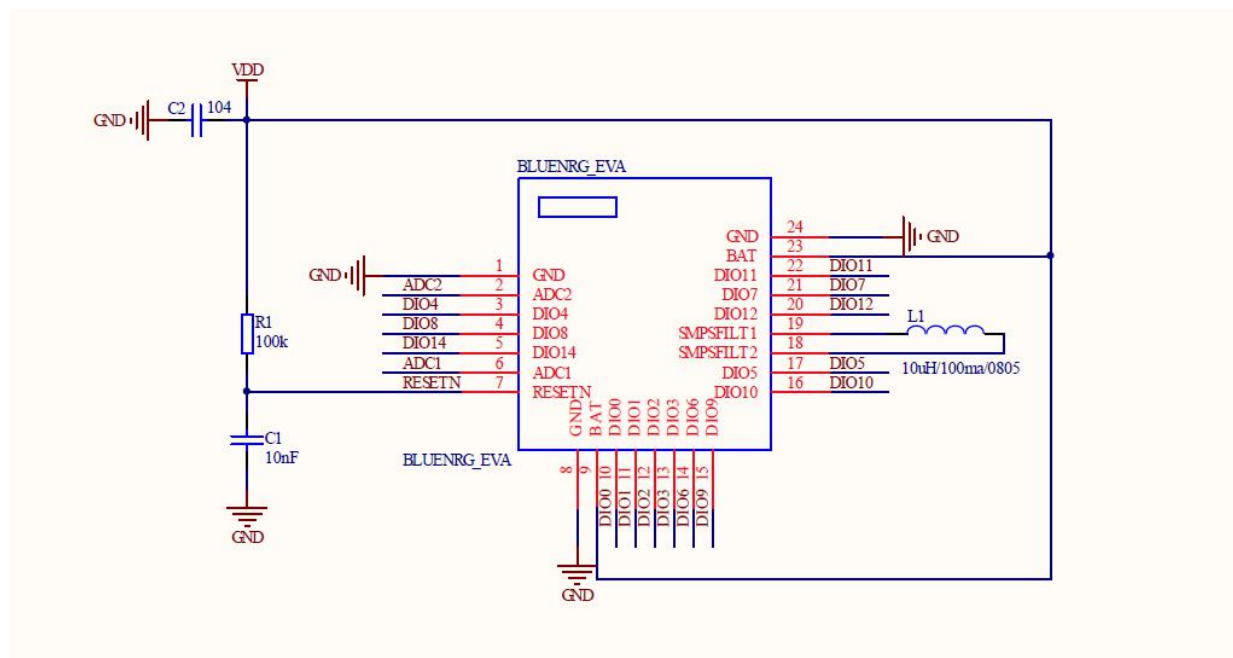


Figure 3: Active DC-DC application circuit

Use internal LDO, non-active DC-DC Converter:

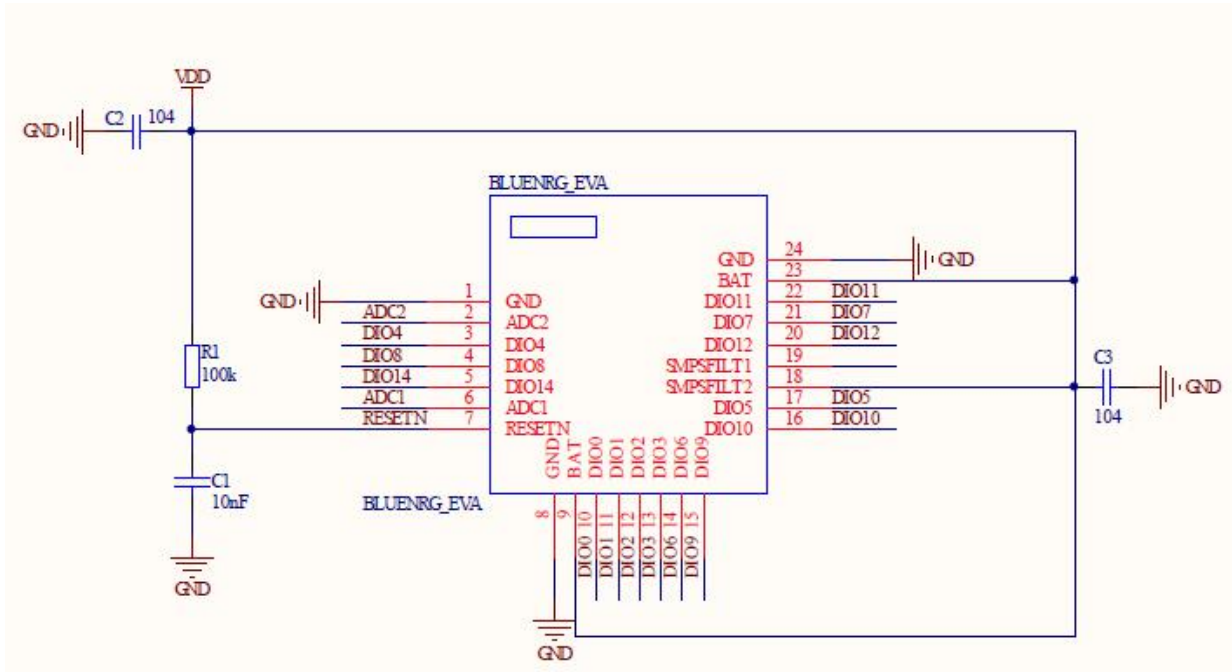


Figure 4: Non-active DC-DC

Active DC-DC Converter can greatly reduce system power consumption, but sensibility will be affected. The use of internal LDO will increase sensibility with slightly higher power consumption.

4.2 Cautions

In order to maximize RF performance, users should comply with following principles:

1. It is recommended to use DC power supply for the module, making ripple coefficient as small as possible. The module should be reliable earthing, and also positive and negative charges are correctly connected, otherwise it will create permanent damage;
2. It is recommended to place the module at open area of base plate edge with antenna outwards;
3. The PCB plate below antenna should be clear without copper deposition, i.e. no grounding or signal trace at layout level below antenna. Refer to clear space in figure 5:

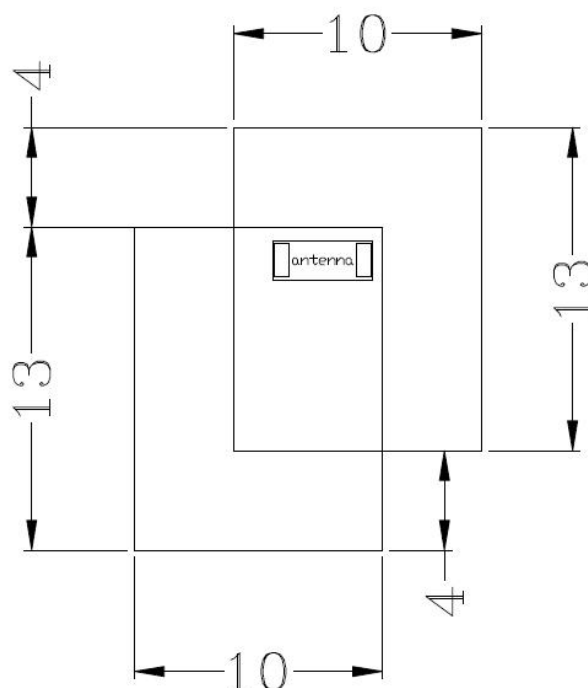


Figure 5

4. It is better to have metal parts away from antenna, since communication distance of the module will be shortened in different surrounding environments .

4.3 Module download and debug

The module supports Serial Wire Debug protocol, and pins are DIO9(SWCLK),DIO10(SWDIO). It can be downloaded and debugged when using J-link or ST-LINK. when the module is on power or reset, if DIO7 is at high level circuit, it will start Boot model and can not be used. Universal synchronous receiver transmitter can be used for RW.

4.4 Development board

Please see details in LSD1RF-EVBGP001.

4.5 Reference manual

BlueNRG-1_GATT_database_size.pdf
BlueNRG-1_Over_The_Air_Bootloader.pdf
BlueNRG-1_UART_bootloader_protocol.pdf
PM0257-BlueNRG-1 BLE stack programming guidelines.pdf
AN4820-BlueNRG-1 low power modes.pdf

Notes to users

- 1、 Welcome to use LIERDA products. Please read this note before use. If you have already used the products, which indicating you have read and accepted it.
- 2、 LIERDA reserves the right for final explanation and revision. The manual is subject to change without prior notice.

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