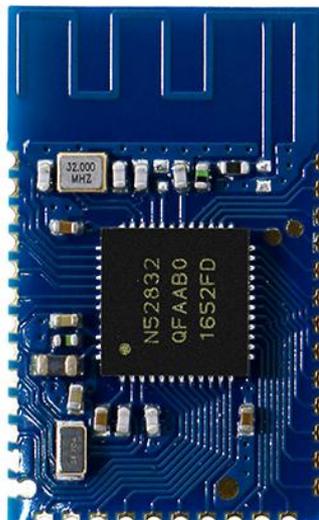


# BLE Bluetooth Module SPECIFICATION

Model No.: DL-N52832

Version: V1.0



**Before using this module, please read this document carefully, and pay attention to the following important matters:**

This module is an electrostatic sensitive product. Please operate it on an anti-static workbench during installation and testing.

The module uses an external antenna by default. The antenna can be a wire antenna or a standard UHF antenna. You can choose a specific antenna according to the actual situation. If the terminal product uses a metal shell, be sure to install the antenna outside the metal shell. Otherwise, the RF signal will be seriously attenuated, which will affect the effective distance.

Metal objects and wires should be kept away from the antenna as much as possible.

When installing the module, nearby objects should be kept at a sufficient safety distance from the module to prevent short circuit damage.

This module should be used in a dry environment. Please do not make any liquid substance come into this module.

Please use an independent voltage regulator circuit to supply power to this module, and avoid sharing with other circuits. The tolerance of the power supply should not be less than 5%.

### **Limitations:**

This module is intended to be embedded in the customer's terminal product application, and does not provide a casing itself. It is not recommended that the customer directly resell this module as a final product without permission.

This series of modules are in accordance with commonly used international standards. If there is any special certification needed, we can adjust certain indicators according to your needs.

This module cannot be applied to life rescue, life-support systems, or any occasion where personal injury or life threatening may be caused by equipment failure. Any organization or individual carrying out the above-mentioned applications shall bear all risks at their own.

We will not be responsible for any direct or indirect damage, injury or loss of profits caused by products that use this module.

### **File version & update management**

<b>DATE</b>	<b>Software Version</b>	<b>Remarks</b>
2017-12-5	V1.0	Standardized Bluetooth BLE module

## 1. Module introduction

### 1.1 Brief introduction

DL-N52832 is a Bluetooth module with small size and low power consumption specially designed for data transmission. The module adopts the nRF52832 radio frequency chip imported from NORDIC, which supports Bluetooth 4.2 and Bluetooth 5.0, the chip comes with high-performance ARM CORTEX-M4 core, and has rich peripheral resources such as UART, I2C, SPI, ADC, DMA, PWM, etc. It includes all the IO ports of nRF52832, which is convenient for multi-functional development.

Compare with mainstream brands on the market (such as TI, Freescale, Siliconlabs, Cypress, and Dialog), nRF52832's technical advantages are prominent.

It has better power consumption performance: most chips consume 5mA-8mA, while nRF52832 consumes 4.6mA-5mA;

It has better RF performance: RF output 4dBm, sensitivity -96dBm;

It has stronger processing capabilities: ARM CORTEX-M4F core;

It has more storage resources: large-capacity Flash is 512KB; RAM is up to 64KB;

It has more powerful multi-protocol support: BLE, ANT, 2.4GHz Proprietary, NFC

Obviously nRF52832 is the leader in this regard, the first choice for IOT applications.

The DL-N52832 module is a hardware platform. There is no program by default at the factory, and users need to carry out secondary development. The antenna output is optimized by professional antenna engineers, and the module has maximized the RF performance of the chip.

We can provide nRF52832 official datasheet and AN documents.

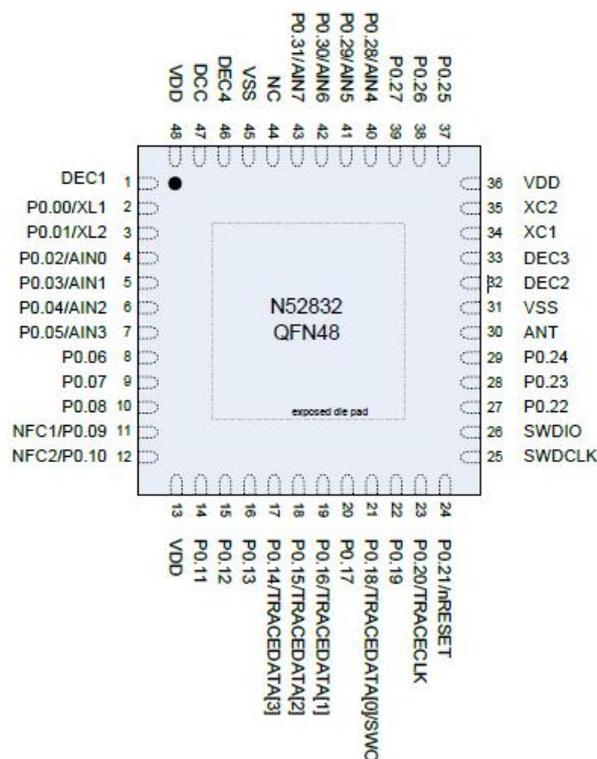
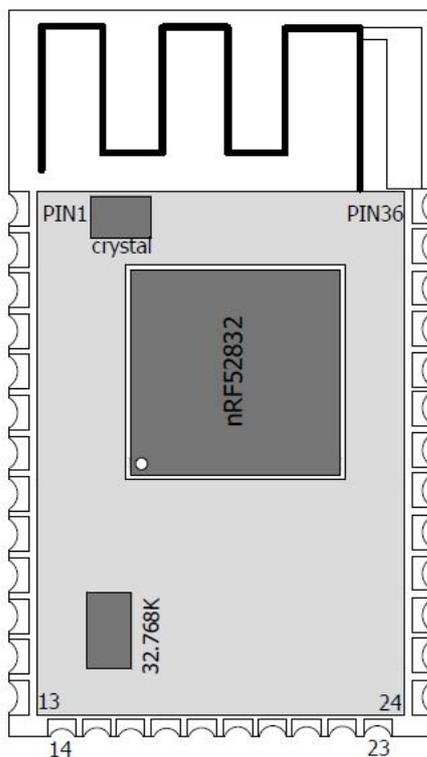
### 1.2 Technical Parameter

Model No.	Core IC	Antenna interface	Size	Operating temperature	Working humidity	Remarks
DL-N52832	nRF52832	PCB ANT	21mm*13mm	-40-85℃	10%-90%	Customizable

1.3 Typical Parameter:

Parameter	Min.	Typi.	Max.	Unit
Emission current	13	14	15	mA
Receive current	4	5	6	mA
Shutdown current	1	2	3	uA
Transmit power	3.8	4	4.3	dBm
Receive sensitivity	-94.5	-95	-96	dBm
Working frequency	2379	2430	2496	MHz
Supply voltage	1.8	3.3	3.6	V
Communication level	1.8	3.3	3.6	V

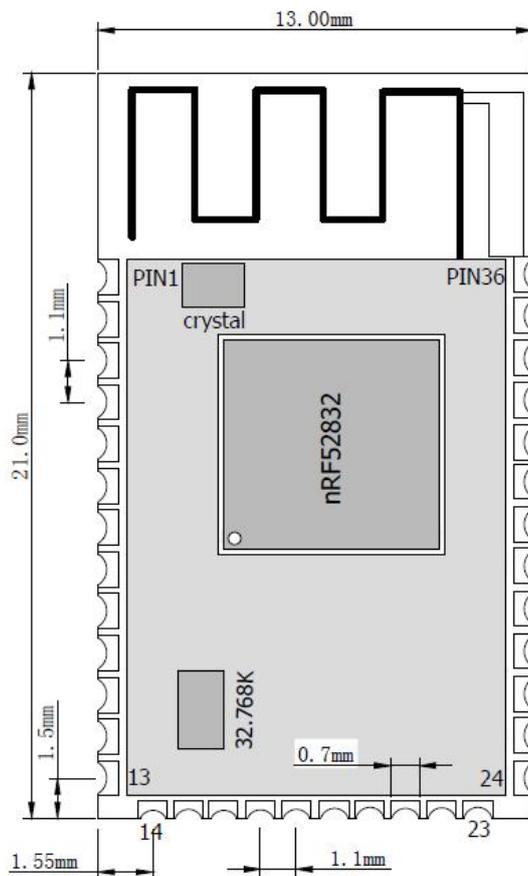
2. Pin definition (see nRF52832 Datasheet for chip PIN definition)



Pin number	Name	Pin direction	Usage
------------	------	---------------	-------

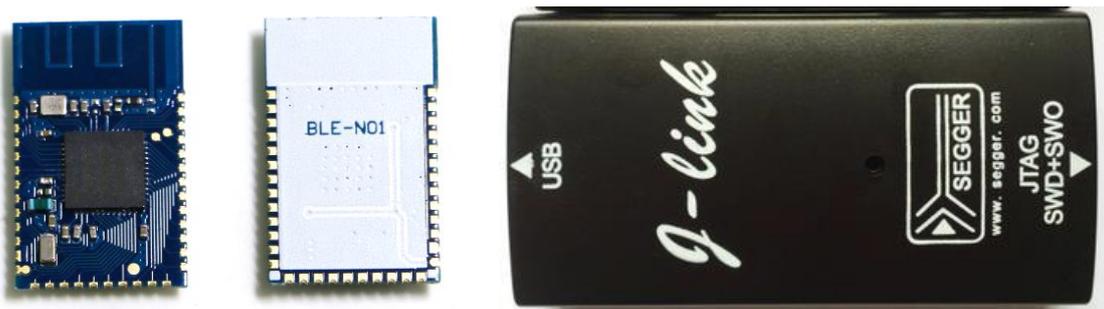
1	P0.25	Input/Output	MCU GPIO
2	P0.26	Input/Output	MCU GPIO
3	P0.27	Input/Output	MCU GPIO
4	P0.28	Input/Output	MCU GPIO
5	P0.29	Input/Output	MCU GPIO
6	P0.30	Input/Output	MCU GPIO
7	P0.31	Input/Output	MCU GPIO
8	P0.00		XL1
9	P0.01		XL2
10	P0.02	Input/Output	MCU GPIO
11	P0.03	Input/Output	MCU GPIO
12	GND	Input	Grounding, connect to power ground
13	VDD	Input	Power supply, 1.8-3.6V DC
14	P0.04	Input/Output	MCU GPIO
15	P0.05	Input/Output	MCU GPIO
16	P0.06	Input/Output	MCU GPIO
17	P0.07	Input/Output	MCU GPIO
18	P0.08	Input/Output	MCU GPIO
19	P0.09	Input/Output	MCU GPIO
20	P0.10	Input/Output	MCU GPIO
21	P0.11	Input/Output	MCU GPIO
22	P0.12	Input/Output	MCU GPIO
23	P0.13	Input/Output	MCU GPIO
24	P0.14	Input/Output	MCU GPIO
25	P0.15	Input/Output	MCU GPIO
26	P0.16	Input/Output	MCU GPIO
27	P0.17	Input/Output	MCU GPIO
28	P0.18	Input/Output	MCU GPIO
29	P0.19	Input/Output	MCU GPIO
30	P0.20	Input/Output	MCU GPIO
31	P0.21	Input/Output	MCU GPIO
32	SWDCLK	Input	Serial line debugging, SCLK input debugging, and programming
33	SWDIO	Input	Serial line debugging and programming debugging
34	P0.22	Input/Output	MCU GPIO
35	P0.23	Input/Output	MCU GPIO
36	P0.24	Input/Output	MCU GPIO

### 3. Module Size



### 4. Development tool

No	Key words	Instructions for use
1	Program burning	<p>1. The module has a built-in RAM microcontroller, and the program download uses the J-LINK downloader. You cannot use the serial port or any other JTAG, ISP, ICP tools.</p> <p>2. The burning of the program needs to be completed in two parts. Since the protocol stack provided by NORDIC is not loaded in the program, during the secondary development, you need to use the official burning tool nRFgo studio to burn the protocol stack, and then use nRFgo studio to burn the hex of the application code; you can also use the official burning tool nRFgo studio to burn the protocol stack, and then use IAR or KEIL to download.</p> <p>Official download link:  <a href="http://www.nordicsemi.com/eng/Products/Bluetooth-low-energy/nRF52832/(language)/eng-GB">http://www.nordicsemi.com/eng/Products/Bluetooth-low-energy/nRF52832/(language)/eng-GB</a></p>

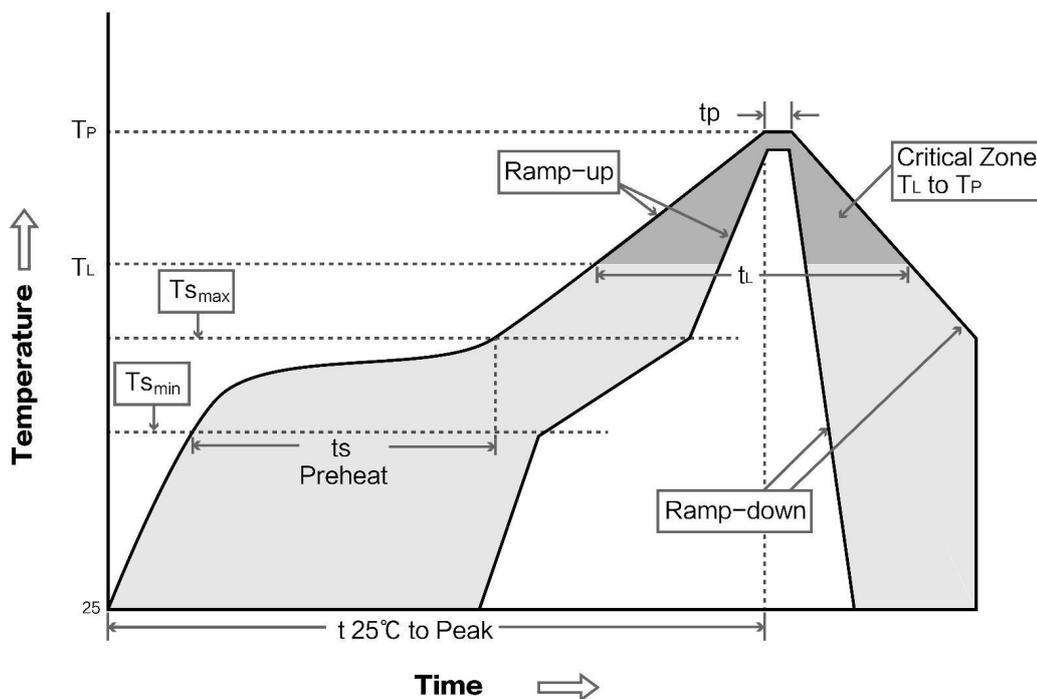


Modules and development tool (universal version)

### 5. Production guidance

Curve characteristics	Lead solder paste process	Lead-free solder paste process
Solder Paste	Sn63/Pb37	Sn96.5/Ag3/Cu0.5
Preheat Temperature min (T <sub>smin</sub> )	100°C	150°C
Preheat temperature max (T <sub>smax</sub> )	150°C	200°C
Preheat Time (T <sub>smin</sub> to T <sub>smax</sub> )(t <sub>s</sub> )	60-120 sec	60-120 sec
Average ramp-up rate(T <sub>smax</sub> to T <sub>p</sub> )	3°C/second max	3°C/second max
Liquidous Temperature (T <sub>L</sub> )	183°C	217°C
Time ( t <sub>L</sub> ) Maintained Above ( T <sub>L</sub> )	60-90 sec	30-90 sec
Peak temperature ( T <sub>p</sub> )	220-235°C	230-250°C
Average ramp-down rate ( T <sub>p</sub> to T <sub>smax</sub> )	6°C/second max	6°C/second max
Time 25°C to peak temperature	6 minutes max	8 minutes m

#### 5.1 Reflow soldering curve



## 6. Instructions for use

- ① The module antenna defaults to the PCB on-board antenna, and the impedance is tested base on bare board. The matching degree of the module will be affected by different applications, by its placement and the structure of the shell, as well as other internal components of the product. Please provide a complete prototype, if you need to optimize the antenna impedance;
- ② When the RF chip is in the pure receiving state, the power consumption is the receiving current. It is normal, if different power consumption level and chip specification been found, after secondary development (re-loaded with software)
- ③ If you want to minimize the power consumption, please try to attenuate its output power, according to the actual application scenario, and wireless transmission distance, which can effectively reduce the average power consumption of the system.
- ④ This BLE module is a high-precision radio frequency communication component. The diameter of the half-hole immersion gold process is extremely thin. The chip is original imported from Nordic. The crystal is in the smallest package. And the capacitors we use are all well-known brands such as Murata and Samsung. Please make sure ESD protection is executed, and strictly follow the standard temperature curve for reflow soldering; during future production, please try to avoid manual welding & direct human contact.

We will not accept product return or exchange, due to appearance damage or ESD damage caused by secondary processing.

## 7. Contact us

### **Shenzhen DreamLnk Technology Co., Ltd**

★ Data collection, Smart home, Internet of Things applications, Wireless remote control technology, Remote active RFID, Antennas ★

**Office Add.:** Room 603, Unit C, Zone A, Huameiju Business Center, Xihu Rd., Bao'an District, Shenzhen, Guangdong Province, China

**Factory Add.:** 5th Floor, Building B, Huazhi Innovation Valley, No. 7 Yuhua Street, 138 Industrial Zone, Tangxia Town, Dongguan, Guangdong Province, China

**TEL.:** +86-755-29369047

**FAX:** +86-755-27844601

**Mobile:** +86 13760215716

**Wechat:** wsj\_james

**E-mail:** [james@dreamlnk.com](mailto:james@dreamlnk.com)

**Web:** [www.iot-rf.com](http://www.iot-rf.com)