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Datasheet

产品名称 (Product):   BT 5.0 module

产品型号 (Model No.): HOLYIOT-21014 -nRF52810
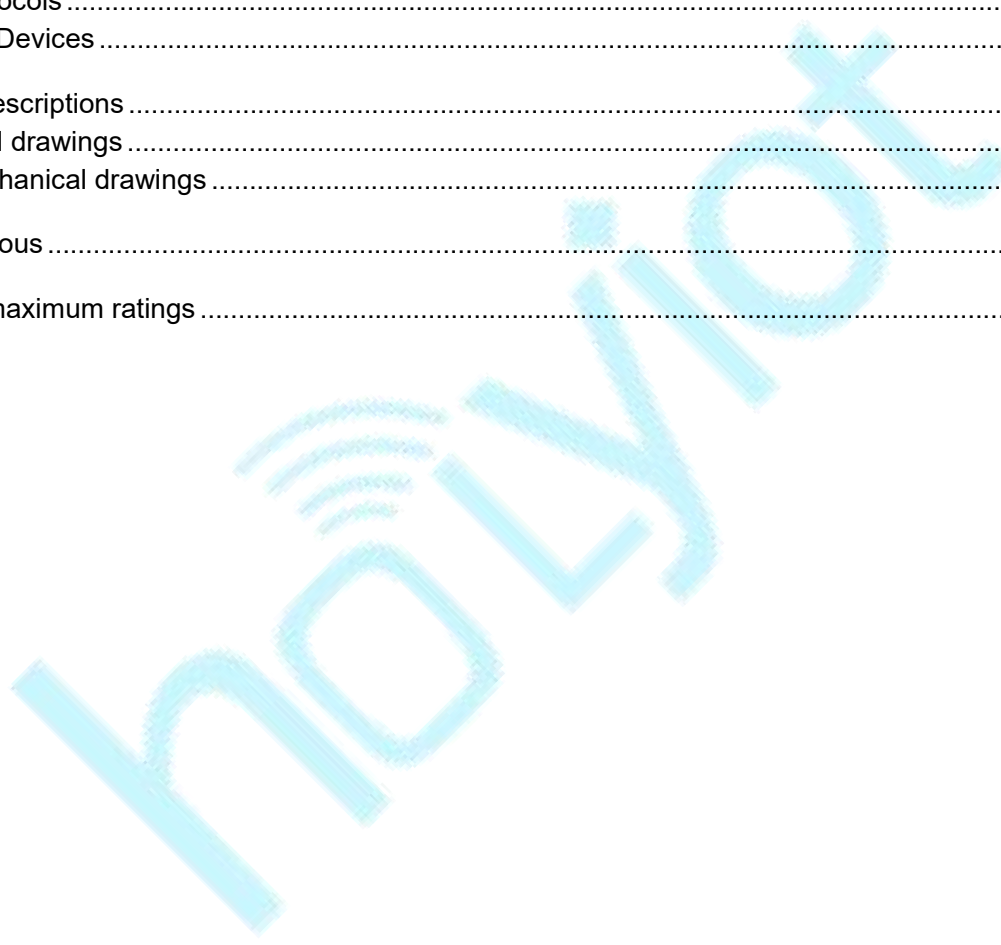
1. Description

HOLYIOT-21014 BLE module is based on Nordic nRF52810 SoC, the nRF52810 SoC is a powerful, highly flexible ultra-low power multi-protocol SoC ideally suited for Bluetooth® low energy (previously called Bluetooth Smart), ANT and 2.4GHz ultra low-power wireless applications. The nRF52810 SoC is built around a 32-bit ARM® Cortex™-M4F CPU with 192kB + 24kB RAM. The embedded 2.4GHz transceiver supports Bluetooth low energy, ANT and proprietary 2.4 GHz protocol stack. It is on air compatible with the nRF51 Series, nRF24L and nRF24AP Series products from Nordic Semiconductor.

Processing power

Multiprotocol radio (bluetooth low energy, ANT, 2.4G proprietary)

Power efficiency

Hardware :

SWD programmer (SWDIO,SWCLK,VDD,GND)

nRF52810-QFAA-QFN48

LIS2DH12

Size : 25mm*25mm

BLE stack & RF 2.4Ghz

Features :

Single chip, highly flexible, 2.4 GHz multi-protocol SoC

32-bit ARM Cortex-M4F Processor

1.7v to 3.6v operation

192kB flash + 24kB RAM

Supports concurrent Bluetooth low energy/ANT protocol operation

Up to +4dBm output power

-96dBm sensitivity, Bluetooth low energy

Thread safe and run-time protected

Event driven API

On air compatible with nRF24L and nRF24AP series

2 data rates (2Mbps/1Mbps)

PPI - maximum flexibility for power-efficient applications and code simplification

Automated power management system with automatic power management of each peripheral

Configurable I/O mapping for analog and digital I/O

3 x Master/Slave SPI

2 x Two-wire interface (I²C)

UART (RTS/CTS)

3 x PWM

AES HW encryption

Real Time Counter (RTC)

Digital microphone interface (PDM)

On-chip balun

Application:

·Internet of Things (IoT)

·SmartHome sensors

·Computer peripherals

·A4WP 'Rezence' wireless charging

·Sports and fitness sensors and hubs

·Smart watches

·Interactive games

·Wearables

·Connected white goods

·Voice-command smart remotes

·Beacons

·Connected health products

·RC Toys

·Building automation and sensor networks

2. **Introduction**

2.1 Programmer

HOLYIOT-21014 module use the Serial Wire Debug(SWD port), the module which layout the SWDIO, SWCLK, VDD, GND for debug and flash your own firmware, more info about the SWD, please visit https://www.silabs.com/community/mcu/32-bit/knowledge-base.entry.html/2014/10/21/serial_wire_debugs-qKCT
You can using the Jlink or Jtag for programmer.

2.2 Software development Tool

It supports the standard Nordic Software Development Tool-chain using Segger Embedded Studio, Keil, IAR and GCC. More info please visit https://www.nordicsemi.com/Software-and-Tools/Development-Tools

2.3 Protocols

This module support Bluetooth 5, Bluetooth Low Energy,Bluetooth mesh,Thread,802.15.4,ANT, 2.4GHz proprietary. So we can use different protocols for different situations.
Software Development Kit
Nordic Semiconductor's Software Development Kits (SDK) are your starting point for software development on the nRF51 and nRF52 Series. It contains source code libraries and example applications covering wireless functions, libraries for all peripherals, bootloaders, wired and OTA FW upgrades, RTOS examples, serialization libraries.
More info please visit https://www.nordicsemi.com/Software-and-Tools/Software/nRF5-SDK
You can also download the SDK for coding development .

2.4 SoftDevices

Nordic Semiconductor protocol stacks are known as SoftDevices. SoftDevices are pre-compiled, pre-linked binary files. SoftDevices can be programmed in nRF5 series devices, and are freely downloadable from the Nordic website. Please download that here:
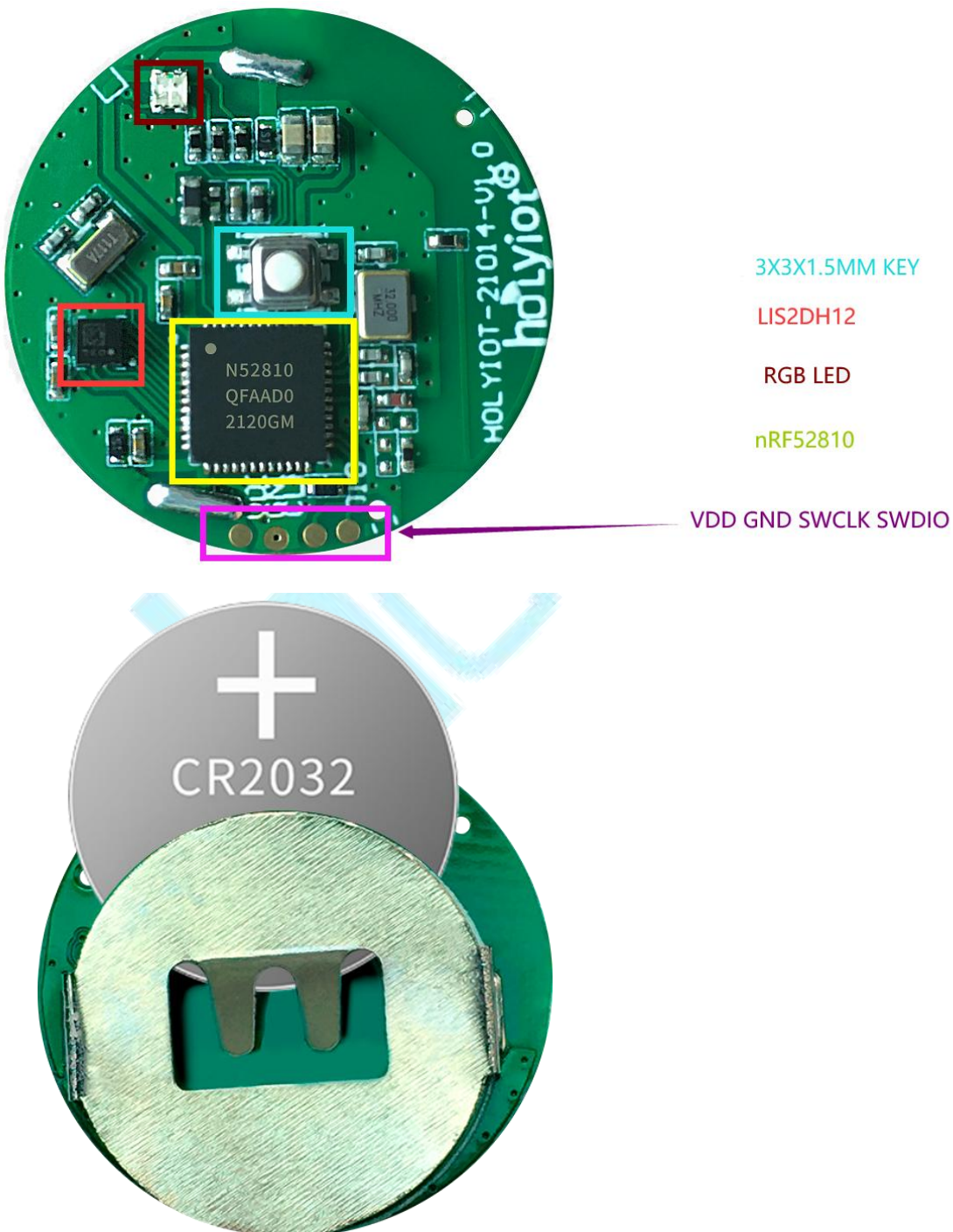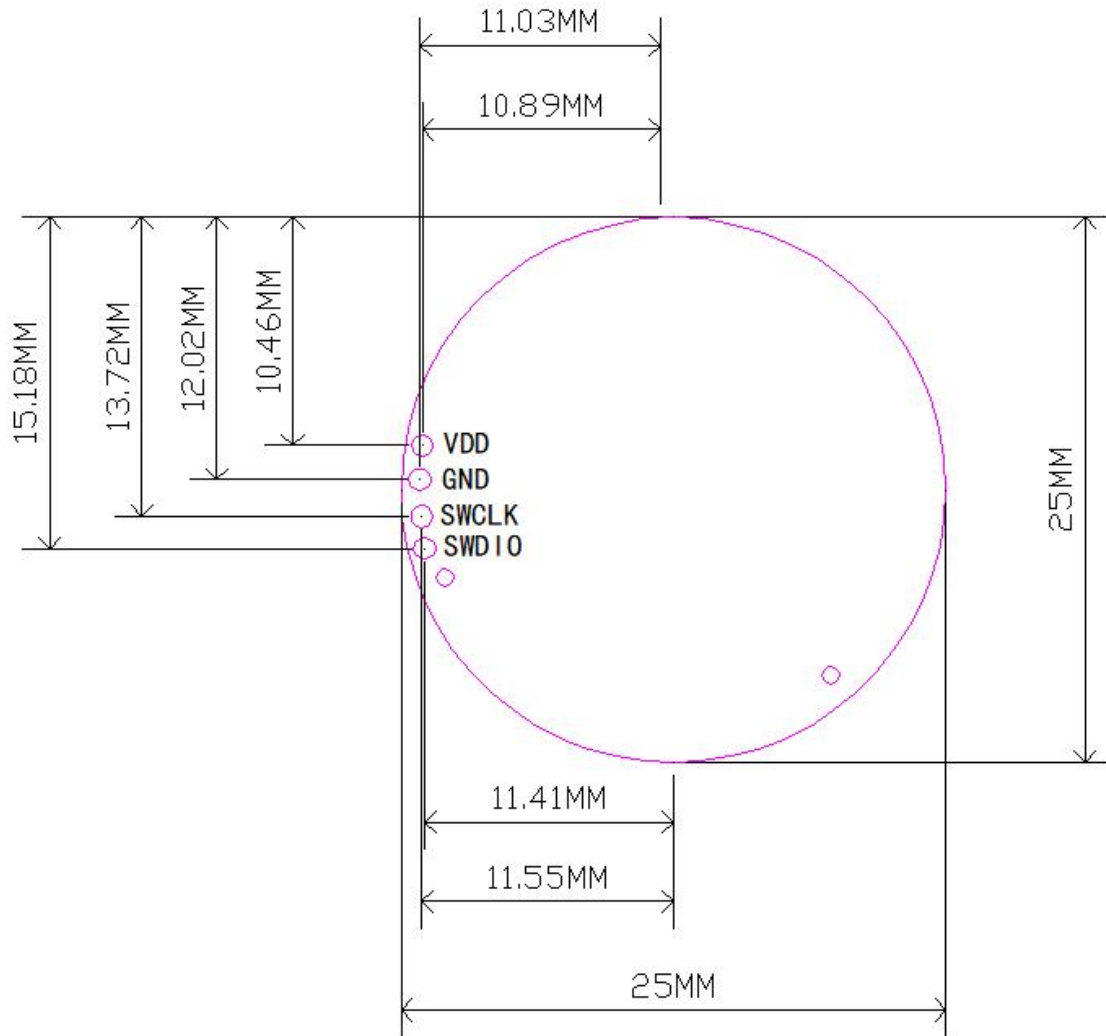https://www.nordicsemi.com/Software-and-Tools/Software/S132

Over-The-Air DFU

The SoC is supported by an Over-The-Air Device Firmware Upgrade (OTA DFU) feature. This allows for in the field updates of application software and SoftDevice.

3. Product Descriptions

3.1 Real drawings

3X3X1.5MM KEY

LIS2DH12

RGB LED

nRF52810

VDD GND SWCLK SWDIO

3.2 Mechanical drawings

PIN No.	PIN define	Functions
1	VDD	power
2	GND	*Ground*
3	SWCLK	Digital I/O^2(serial wire debug)
4	SWDIO	Digital input(serial wire debug)

4. Miscellaneous

Soldering Temperature-Time Profile for Re-Flow Soldering. Maximum number of cycles for re-flow is 2. No opposite side re-flow is allowed due to module weight.
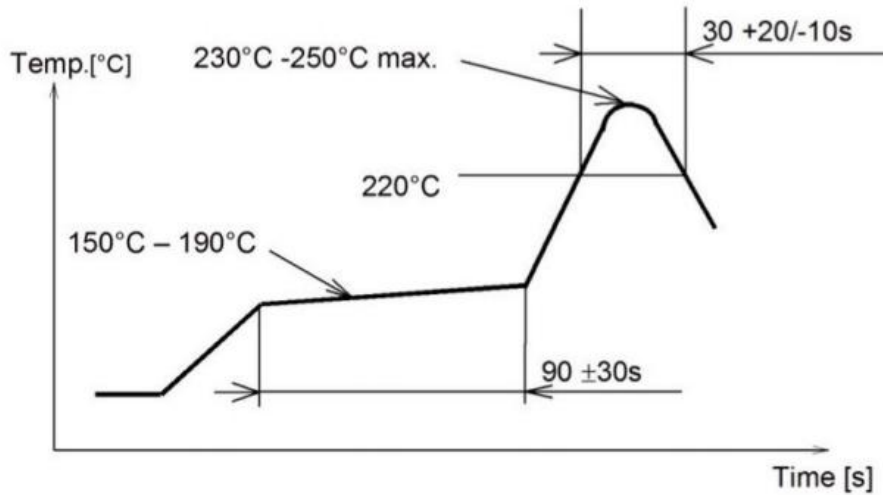
5. Absolute maximum ratings

Maximum ratings are the extreme limits to which the chip can be exposed for a limited amount of time without permanently damaging it. Exposure to absolute maximum ratings for prolonged periods of time may affect the reliability of the device.

Absolute maximum ratings:

	Min.	Max.	Unit
Supply voltages			
VDD	-0.3	+3.9	V
VSS		0	V
I/O pin voltage			
$V_{I/O}$, VDD ≤3.6 V	-0.3	VDD + 0.3 V	V
$V_{I/O}$, VDD >3.6 V	-0.3	3.9 V	V
NFC antenna pin current			
$I_{NFC1/2}$		80	mA
Radio			
RF input level		10	dBm
Environmental QFN48, 6×6 mm package			
Storage temperature	-40	+125	°C
MSL (moisture sensitivity level)		2	
ESD HBM (human body model)		4	kV
ESD CDM (charged device model)		1000	V
Environmental WLCSP, 3.0×3.2 mm package			
Storage temperature	-40	+125	°C
MSL		1	
ESD HBM		2	kV
ESD CDM		500	V
Flash memory			
Endurance	10 000		Write/erase cycles
Retention	10 years at 40°C		

ATTENTION

OBSERVE PRECAUTION FOR HANDLING
ELECTROSTATIC SENSITIVE DEVICE

HBM (Human Body Model): Class 3A