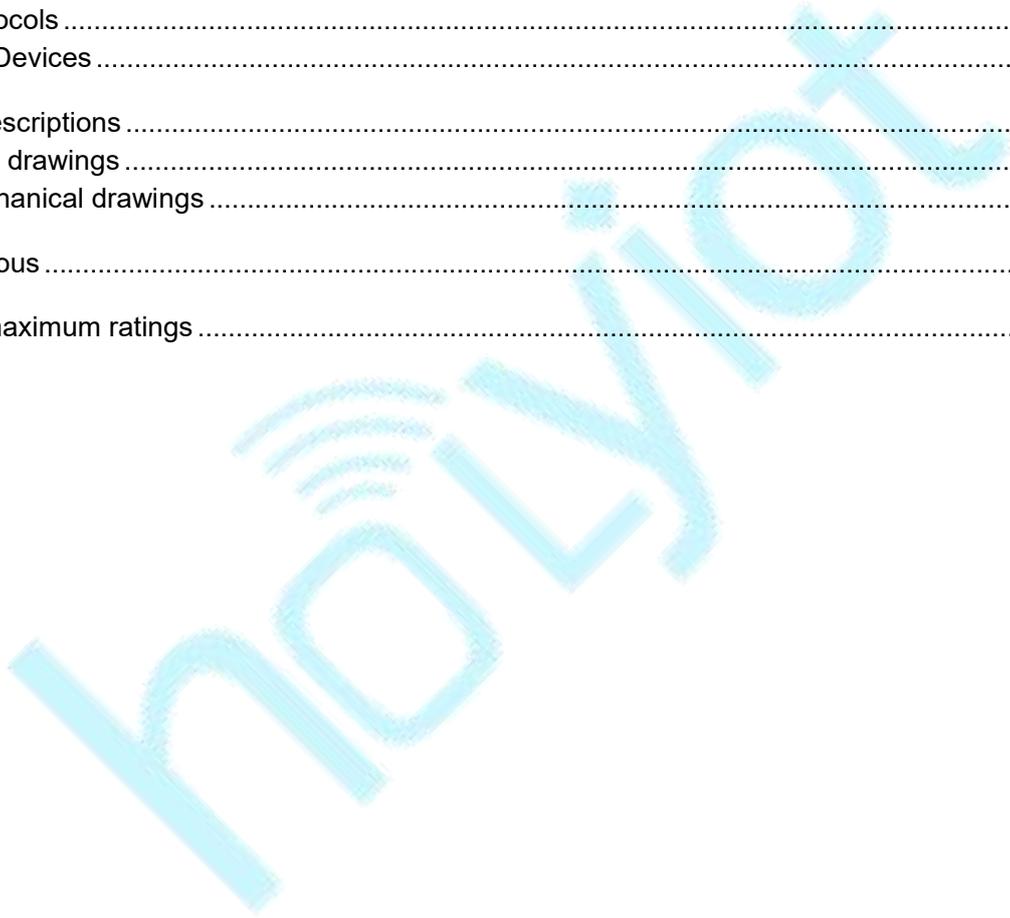


Datasheet

产品名称 (Product): BT 5.0 module

产品型号 (Model No.): HOLYIOT-21091-LSM6DSOWTR

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1. Description

HOLYIOT-21091 BLE module is based on Nordic nRF52832 SoC, the nRF52832 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 nRF52832 SoC is built around a 32-bit ARM® Cortex™-M4F CPU with 256kB + 32kB 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)

nRF52832-QFAA-QFN48

LPS22HB

LSM6DSOWTR

QMC6310

SHT30-DIS

Size : 25mm*25mm

BLE stack & RF 2.4Ghz

Features :

- 2.4 GHz transceiver
 - -96 dBm sensitivity in *Bluetooth*® low energy mode
 - Supported data rates: 1 Mbps, 2 Mbps *Bluetooth*® low energy mode
 - -20 to +4 dBm TX power, configurable in 4 dB steps
 - On-chip balun (single-ended RF)
 - 5.3 mA peak current in TX (0 dBm)
 - 5.4 mA peak current in RX
 - RSSI (1 dB resolution)
- ARM® Cortex®-M4 32-bit processor with FPU, 64 MHz
 - 215 EEMBC CoreMark® score running from flash memory
 - 58 µA/MHz running from flash memory
 - 51.6 µA/MHz running from RAM

- Data watchpoint and trace (DWT), embedded trace macrocell (ETM), and instrumentation trace macrocell (ITM)
- Serial wire debug (SWD)
- Trace port
- Flexible power management
 - 1.7 V–3.6 V supply voltage range
 - Fully automatic LDO and DC/DC regulator system
 - Fast wake-up using 64 MHz internal oscillator
 - 0.3 μ A at 3 V in System OFF mode
 - 0.7 μ A at 3 V in System OFF mode with full 64 kB RAM retention
 - 1.9 μ A at 3 V in System ON mode, no RAM retention, wake on RTC
- Memory
 - 512 kB flash/64 kB RAM
 - 256 kB flash/32 kB RAM
- Nordic SoftDevice ready
- Support for concurrent multi-protocol
- Type 2 near field communication (NFC-A) tag with wakeup-on-field and touch-to-pair capabilities
- 12-bit, 200 ksps ADC - 8 configurable channels with programmable gain
- 64 level comparator
- 15 level low power comparator with wakeup from System OFF mode
- Temperature sensor
- 32 general purpose I/O pins
- 3x 4-channel pulse width modulator (PWM) unit with EasyDMA
- Digital microphone interface (PDM)
- 5x 32-bit timer with counter mode
- Up to 3x SPI master/slave with EasyDMA
- Up to 2x I2C compatible 2-wire master/slave
- I2S with EasyDMA
- UART (CTS/RTS) with EasyDMA
- Programmable peripheral interconnect (PPI)
- Quadrature decoder (QDEC)
- AES HW encryption with EasyDMA
- Autonomous peripheral operation without CPU intervention using PPI and EasyDMA
- 3x real-time counter (RTC)
- Single crystal operation
- Package variants
 - QFN48 package, 6 × 6 mm
 - WLCSP package, 3.0 × 3.2 mm

Application:

Internet of Things(IoT)

- Home automation
- Sensor networks
- Building automation
- Industrial
- Retail

Personal area networks

- Health/fitness sensor and monitor devices
- Medical devices
- Key fobs and wrist watches

Interactive entertainment devices

- Remote controls
- Gaming controllers

Beacons

A4WP wireless chargers and devices

Remote control toys

Computer peripherals and I/O devices

- Mouse
- Keyboard
- Multi-touch trackpad
- Gaming

2. Introduction

2.1 Programmer

HOLYIOT-21091 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

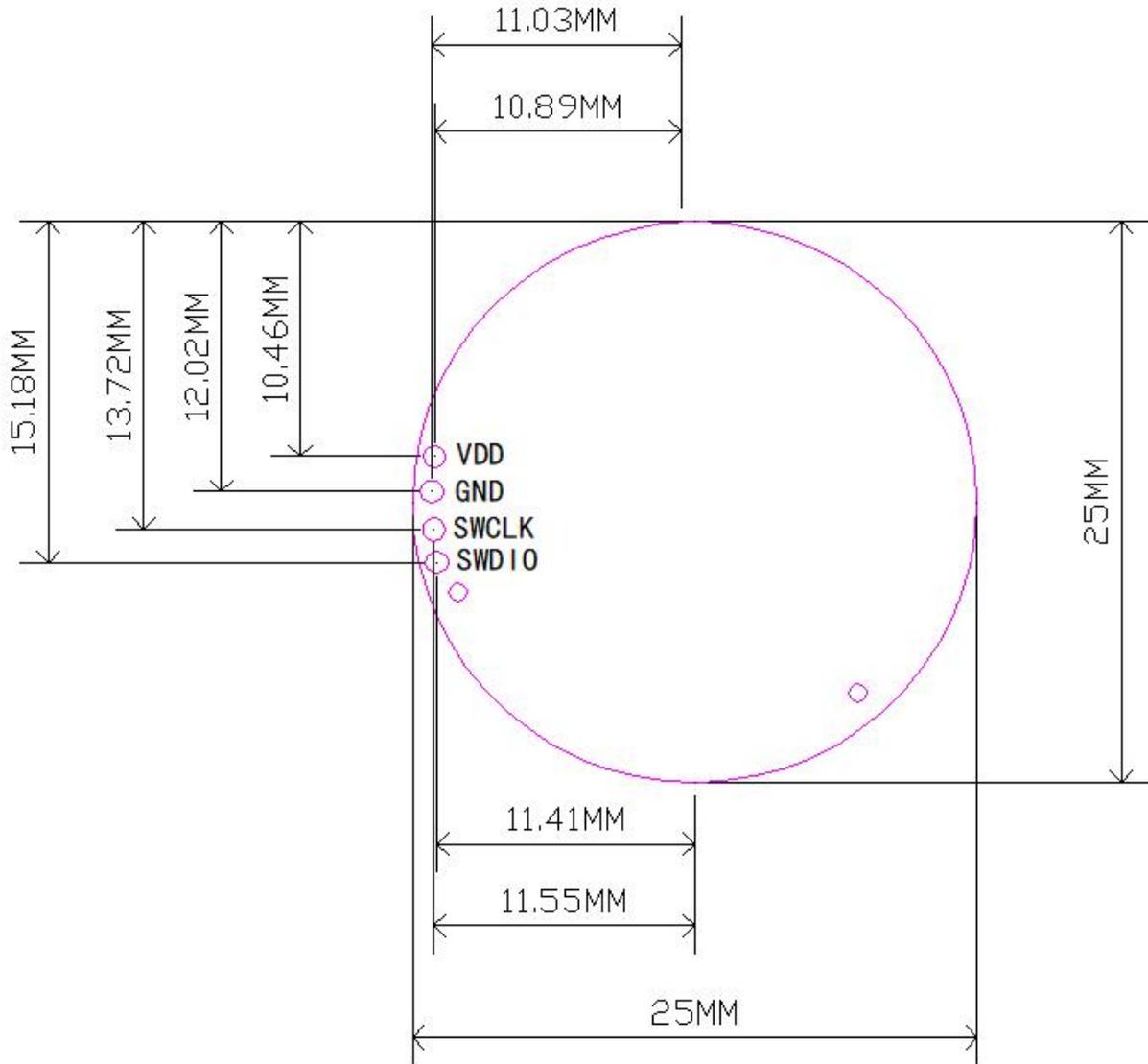
3.1 Real drawings



- SHT30-DIS-B
- LPS22HB
- KEY_3x3x1.5mm_250g
- nRF52832
- QMC6310
- LSM6DSOWTR
- SWD



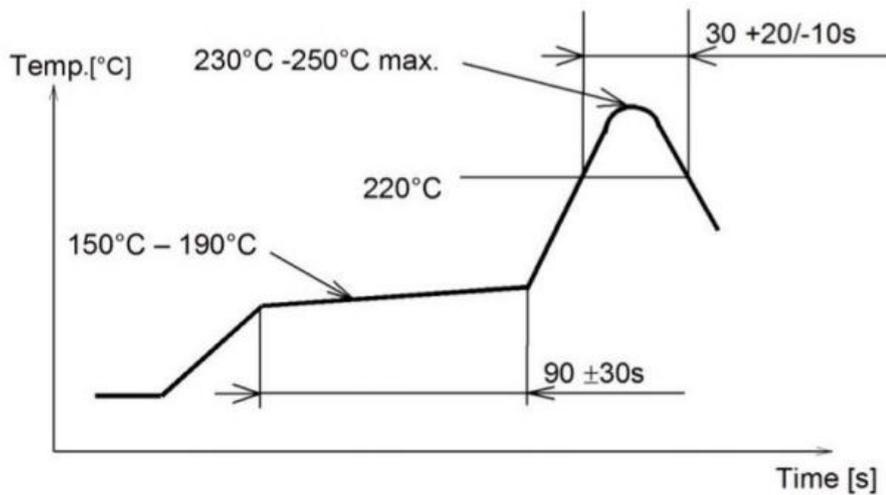
3.2 Mechanical drawings



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 _{IO} , VDD ≤ 3.6 V	-0.3	VDD + 0.3 V	V
V _{IO} , 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 WLCSF, 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		



holyiot

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