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Datasheet

产品名称 (Product):　　　nRF52840 USB dongle

产品型号 (Model No.):　Holyiot-17120-nRF52840

目录

1. Overview

Holyiot-17120 is powerful, highly flexible ultra-low power Bluetooth low energy (BLE) module using Nordic NRF52840 SoC, with ARM Cortex-M4 CPU, which has floating Point unit (FPU), 1MB flash with cache and 256kB RAM. It offers a wealth of peripherals that include NFC, USB and multiple interface options including Quad SPI (QSPI).

It has high-end security features included to achieve best in clas security with an ARM CryptoCEll cryptographic system on chip and a full AES 128-bit encryption suite, it supports BLE mesh

Bluetooth 5.0 long range

Processing power and flash flexibility

Multiprotocol radio

Power Efficiency

Model	Holyiot-17120-nRF52840
Chip	N52840
Size	27.55mm(L)*11.30mm(W)*1.60mm(H)
BLE Antenna	PCB Antenna
BT Range	500 meters for Bluetooth 5.0
FCC ID	2ALGY-17120-USB

1.1.   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

1.2.   Specifications

- Bluetooth 5 ready multi-protocol radio
 - 2Mbps
 - Long range
 - Advertising extensions
 - Improved coexistence (CSA #2)
- IEEE 802.15.4 radio support
 - Thread
 - Zigbee
- 32-bit ARM Cortex-M4F @ 64MHz
- Up to 111 dB link budget for Bluetooth long range mode
- Full-speed 12Mbs USB controller
- NFC Tag-A
- Software stacks available as downloads
- Programmable output power from +8dBm to -20dBm
- On-air compatible with nRF51, nRF24L and nRF24AP
- Series
- High-precision RSSI
- 128 bit AES/ECB/CCM/AAR co-processor
- Single-ended antenna output (on-chip balun)
- Software stacks available as downloads
- Application development independent of protocol stack
- Wide supply voltage range + 1.7V to 5.5V
- QSPI/SPI/2-wire/I²S/PDM/QDEC
- Programmable Peripheral Interface - PPI
- High speed SPI interface 32MHz
- Quad SPI interface 32MHz
- EasyDMA for all digital interfaces
- RAM mapped FIFO using EasyDMA
- 12bit/200K SPS ADC
- On-chip DC-DC buck converter
- Quadrature demodulator
- -96dBm Sensitivity for Bluetooth low energy
- Arm CryptoCell CC310 crytographic security module
- QSPI/SPI/2-wire/I²S/PDM/QDEC

2. Introduction

Holyiot-17120 is powerful, highly flexible ultra-low power Bluetooth low energy (BLE) module using Nordic NRF52840 SoC, with ARM Cortex-M4 CPU, which has floating Point unit (FPU), 1MB flash with cache and 256kB RAM. It offers a wealth of peripherals that include NFC, USB and multiple interface options including Quad SPI (QSPI).

It has high-end security features included to achieve best in clas security with an ARM CryptoCEll cryptographic system on chip and a full AES 128-bit encryption suite.

2.1 Programmer

Holyiot-17120 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

http://infocenter.nordicsemi.com/index.jsp?topic=/com.nordic.infocenter.nrf52/dita/nrf52/development/nrf52_dev_kit.html&cp=1_1

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 http://www.nordicsemi.com/eng/Products/nRF52840-DK

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: http://www.nordicsemi.com/eng/nordic/download_resource/60625/19/19221576/116072
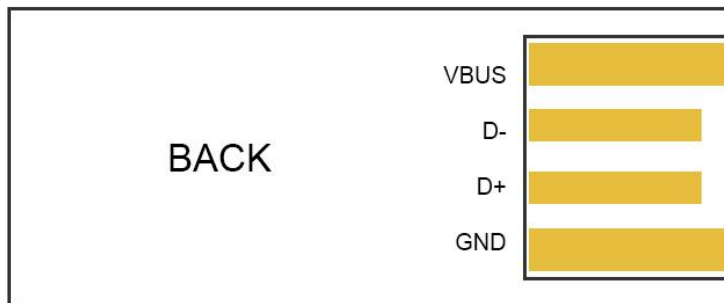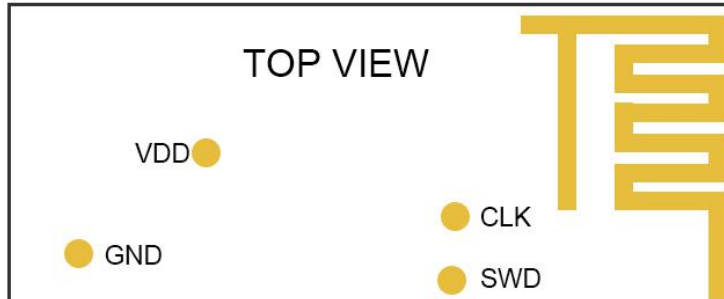
Over-The-Air DFU
The SoC is supported by an Over-The-Air Device Firmware Upgrade (OTA DFU) feature. This allows for in the field updates of application software and SoftDevice.

3. Product Descriptions

3.1 Mechanical drawings
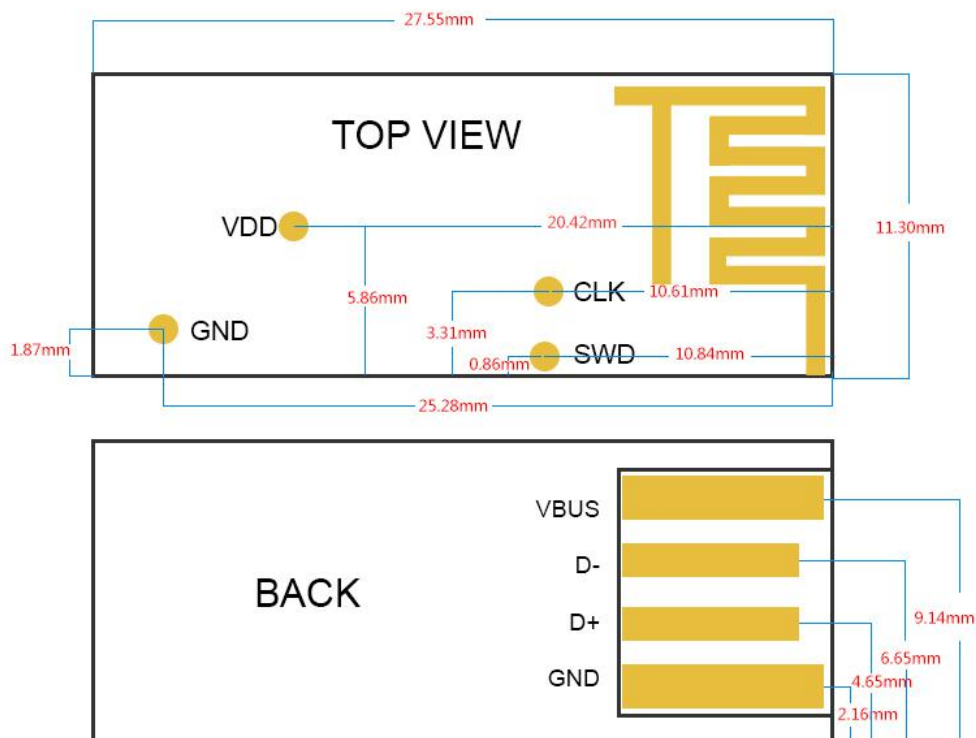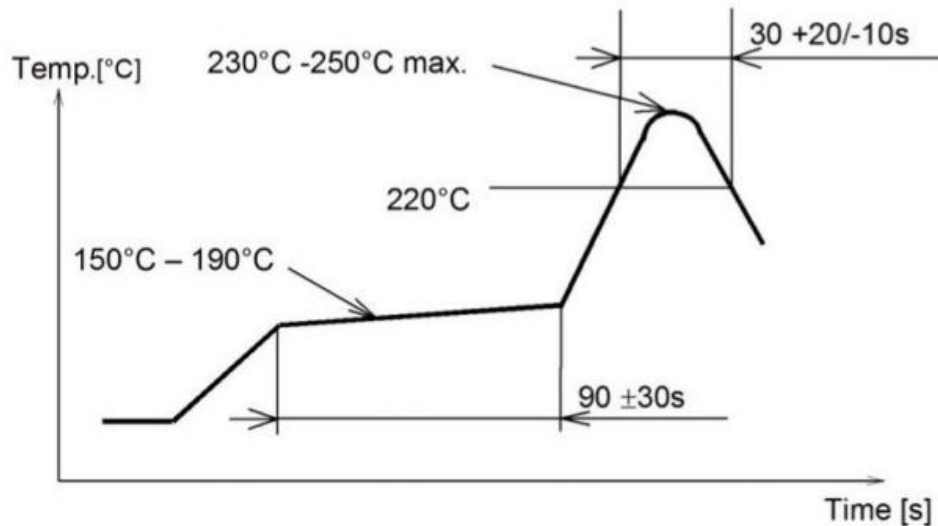
3.2 Pin assignments

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

	Note	Min.	Max.	Unit
Supply voltages				
VDD		-0.3	+3.9	V
VDDH		-0.3	+5.8	V
VBUS		-0.3	+5.8	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 (AQFN package)				
Storage temperature		-40	+125	°C
MSL	Moisture Sensitivity Level		2	
ESD HBM	Human Body Model		4	kV
ESD CDM_{QF}	Charged Device Model		750	V
	(AQFN73, 7×7 mm package)			
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

FCC Warning Statement

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

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.

RF Exposure Statement

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance of 20Cm the radiator your body. This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter