BLE Micro

From Wiki 来自痴汉的爱

Contents

Introduction

The BLE Mcicro is a low cost ARM cortex-m0 based module for Bluetooth® Smart designs with the nRF51822 SoC. The module gives access to at most 23 GPIO pins via pin pads and incorporates an on board PCB antenna to minimize material cost but also with a good performance.The application engineers can easily apply the module for theirs application without worrying about the specific impedance matching or soldering fine pitch related radio designing issues.

Features

- Multi-protocol 2.4GHz radio
- 32-bit ARM Cortex M0 processor
- 256kB flash/16kB RAM
- Programmable output power from +4dBm to -20dBm
- Flexible and configurable 23 pin GPIO
- Wide supply voltage range (1.8 V to 3.6 V)
- RSSI

Specification

↑TOP

| Specification	Value
Microprocessor	nRF51822 based on 32-bit ARM Cortex M0
Outline Dimension	13.0mm x 18.5mm x 2.3mm
Power supply	3.3V
On-air data rate	250 kbps, 1 Mbps or 2 Mbps
Modulation	GFSK
Output power	Programmable: +4 to -20dBm in 4dB steps
Sensitivity	-92.5dBm Bluetooth low energy -96dBm at 250kb -90dBm at 1Mbs -85dBm at 2Mbs
Radio current consumption LDO at 1.8V	16mA – TX at +4dBM output power 10.5mA – TX at 0dBm output power 13mA – RX at 1Mbs
Radio current consumption DC-DC at 3V	10.5mA – TX at +4dBm output power 8.1mA – TX at 0dBm output power 9.5mA – RX at 1Mbs
System current consumption	420nA – No RAM retention 530nA - 8k RAM retention 2μA – All peripherals in IDLE mode
Hardware Security	128-bit AES ECB/CCM/AAR co-processor
GPIO	23
Peripherals	10-bit ADC Temperature sensor RTC RNG

Pinout

Bottom view of BLE Micro:
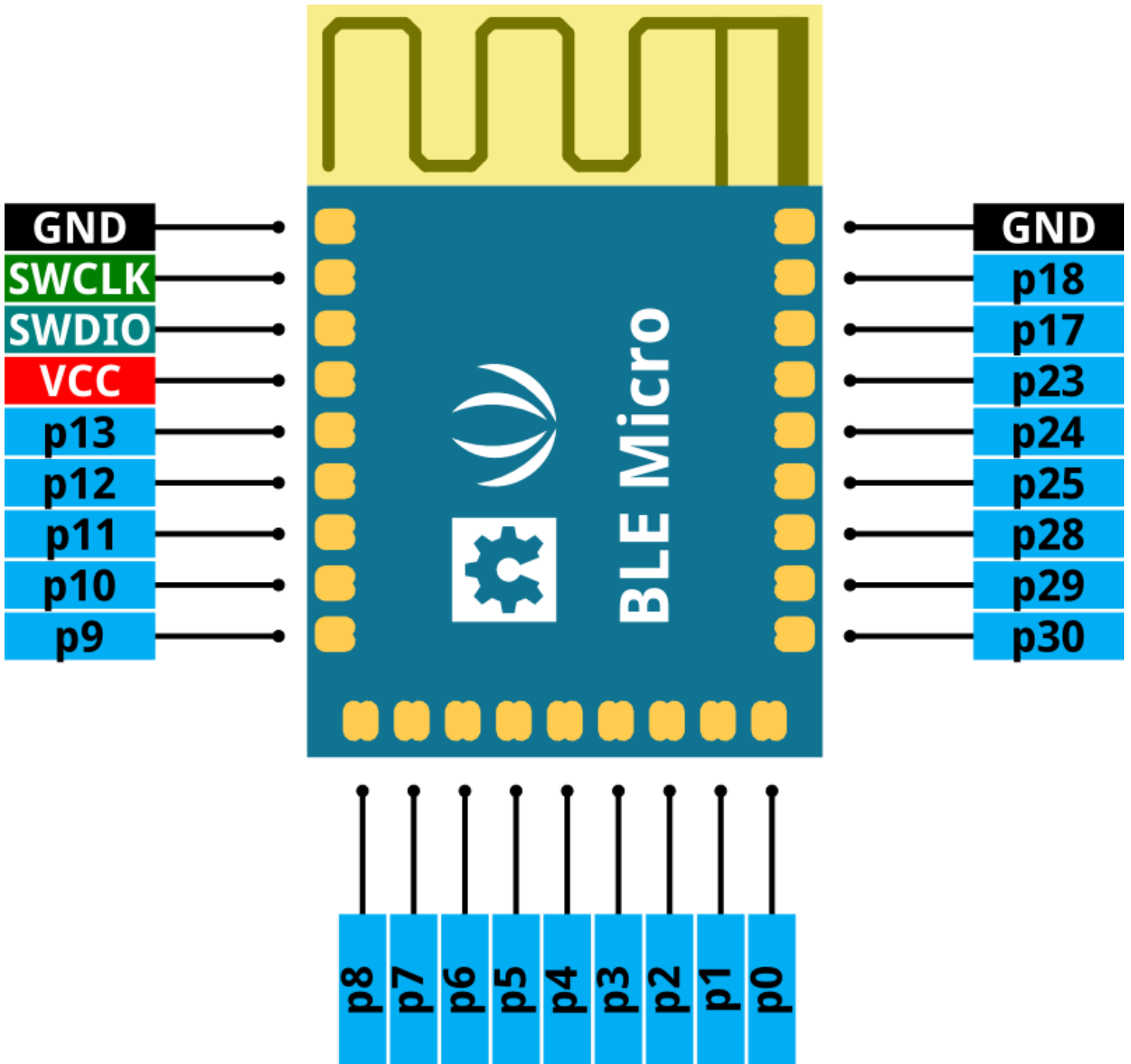
Note: the pin SWDIO is also nRESET.

Dimension

Top View

18.42

5.46

1.27

1.27   1.27

12.7

1

27

9

19

10

18
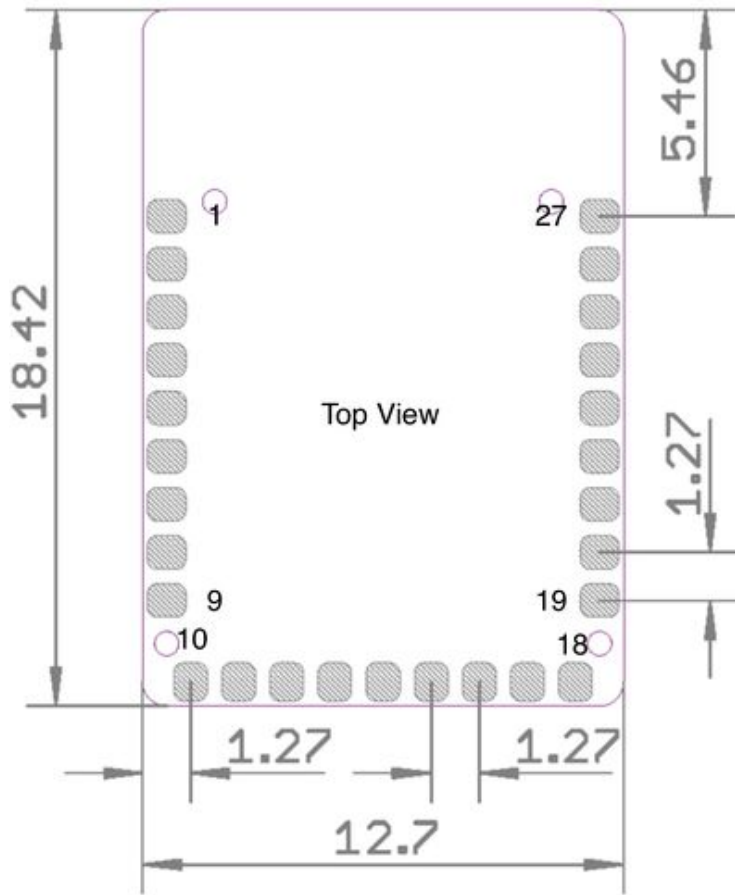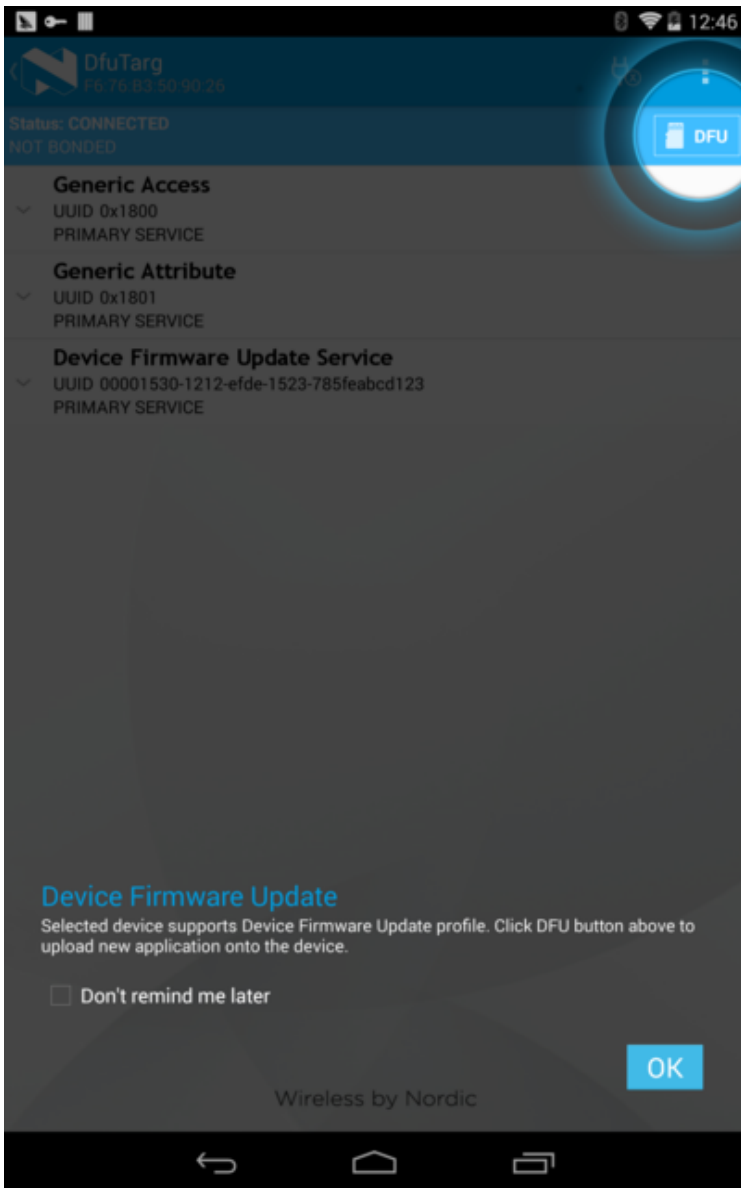
Over-The-Air

The BLE Micro is pre-flashed Nordic S110 SoftDevice 6.0, an OTA bootloader and a BLE UART app. To enter OTA mode:

1. pull down p18
2. power on the BLE Micro
3. a BLE device named DfuTarg can be scaned
4. use nRF Master Control Panel to upgrade the BLE app

Develop Applications

Go to Seeedstudio mbed BLE project (https://github.com/Seeed-Studio/mbed_ble/tree/softdevice_v6) to start developing. After you get your custom application hex file, use OTA to upgrade your BLE Micro.

BLE UART

By default, the BLE Micro is acted as a BLE to UART device. It can be connected to Android or iOS.

- BLE Device Name: nRF UART
- UART RX: p7
- UART TX: p8
- UART Baud: 38400
- Android App: nRF UART on Goole Play (https://play.google.com/store/apps/details?id=com.nordicsemi.nrfUARTv2&hl=en)
- iOS App: nRF UART on iTunes (https://itunes.apple.com/us/app/nrf-uart/id614594903?mt=8)

Resources

- Schematic pdf (http://www.seeedstudio.com/wiki/File:BLE_Micro.pdf)

- Eagle file (http://www.seeedstudio.com/wiki/File:BLE_Micro_v1.0.zip)
- Eagle Library (http://www.seeedstudio.com/wiki/File:BLE_Micro_Eagle_Library.zip)
- Firmware (http://www.seeedstudio.com/wiki/File:Ble_micro_firmware.zip)

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- This page was last modified on 23 September 2014, at 08:32.
- This page has been accessed 2,461 times.