

Product Brief of UNIQON Bitle 1

(Issue 3a)

Bluetooth Version 4.1 Module for Internet of Things Applications
- BLE(Bluetooth Low Energy) Only Module

Features

- UNIQON Cloud Integration
- Mesh Network (Supports CSRmesh)
 - Up to 32000 Devices Per Network
- Wide Input Voltage Range: 1.8-4.3 V
- 1.27 mm Pitch Castellated Holes for SMT and Easy Hand Soldering
- Contains MCU, 64KB EEPROM, 64KB RAM and 64KB ROM
- Interfaces
 - UART, I2C, SPI Debug
 - GPIO(11 PIOs, 3 AIos)
 - 4 LED PWM
 - PWM Frequency: 64.3-16320Hz
 - 10-bit ADC and DAC via AIos
 - ADC/DAC Voltage Range: 0-1.35V
 - ADC Sample Rate: <700 Samples/s
- Low Power Consumption
 - ~18 mA @TX, 3V, 0dBm, Active Mode
 - ~20 mA @RX, 3V, Active Mode
 - <0.9 uA @Dormant Mode
- BLE Central and Peripheral
- Range: Up to 100m
- Over the Air Firmware Upgrade
- Small Form Factor: 19.2 x 10 x 2.6 mm
- Weight: <1g
- Integrated PCB Antenna
- Integrated 32.768kHz and 16MHz Crystal
- Battery Monitor
- Temperature Sensor
- Integrated Switch-mode Power Supply
- RSSI Monitoring for Proximity Applications (Beacon)
- Direct Connection with Smart Phone



Fig 1. Bitle 1 Top View

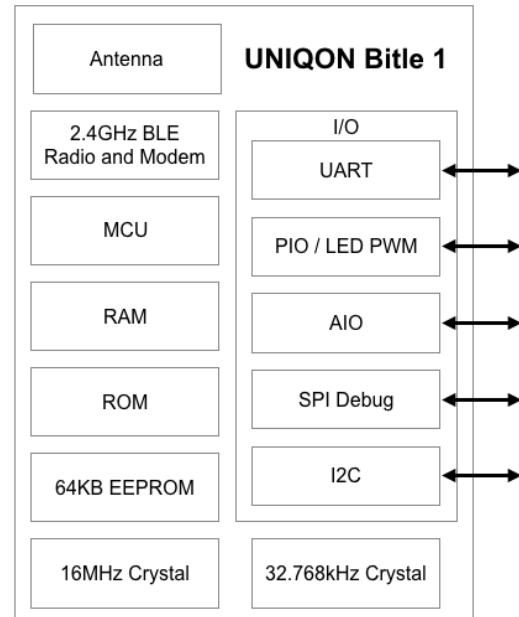


Fig 2. Block Diagram

Applications

- Smart Home Applications: Lighting, Security Sensors, Remote Controls, Actuators, HVAC
- Internet of Things Applications
- Wearable Devices
- Cable Replacements: Keyboard, Mouse

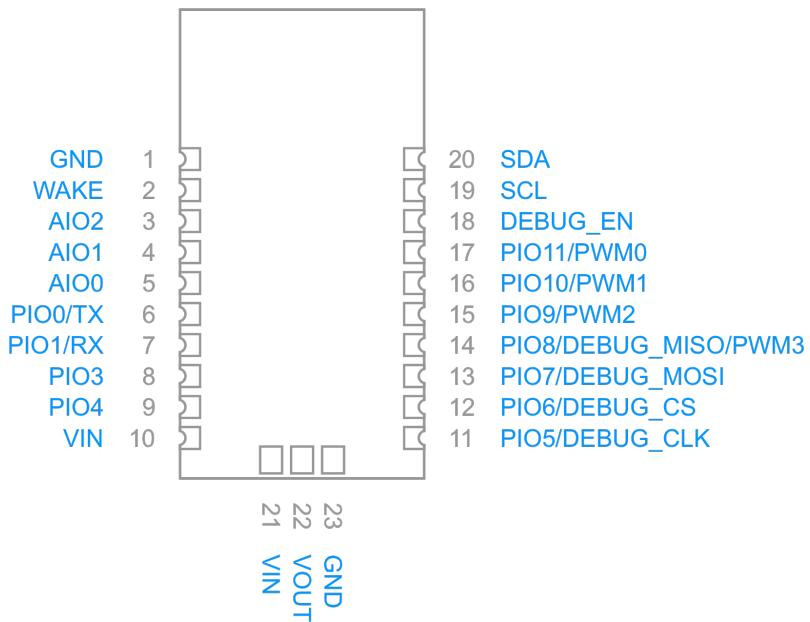
RF Specification

Specification	Description
Frequency Band	2,402 MHz to 2,480 MHz
Modulation	GFSK
Maximum Data Rate	250 kbps (Practical <110kbps)
Range	<100 m
Transmit Power	<7 dBm
Receiver Sensitivity	-92.5 dBm

Electric Specification

Specification	Description
Supply Voltage	1.8 V to 4.3 V DC (Supports direct connection with Lithium-ion battery)
TX/RX Peak Current	~18/20 mA @3V
Idle Current	~1 mA
Deep Sleep Current	<5 uA
Hibernate Current	<1.9 uA
Dormant Current	<0.9 uA
Operating Temperature	-20 °C to 75 °C
Storage Temperature	-30°C to 95°C

Pin Configurations



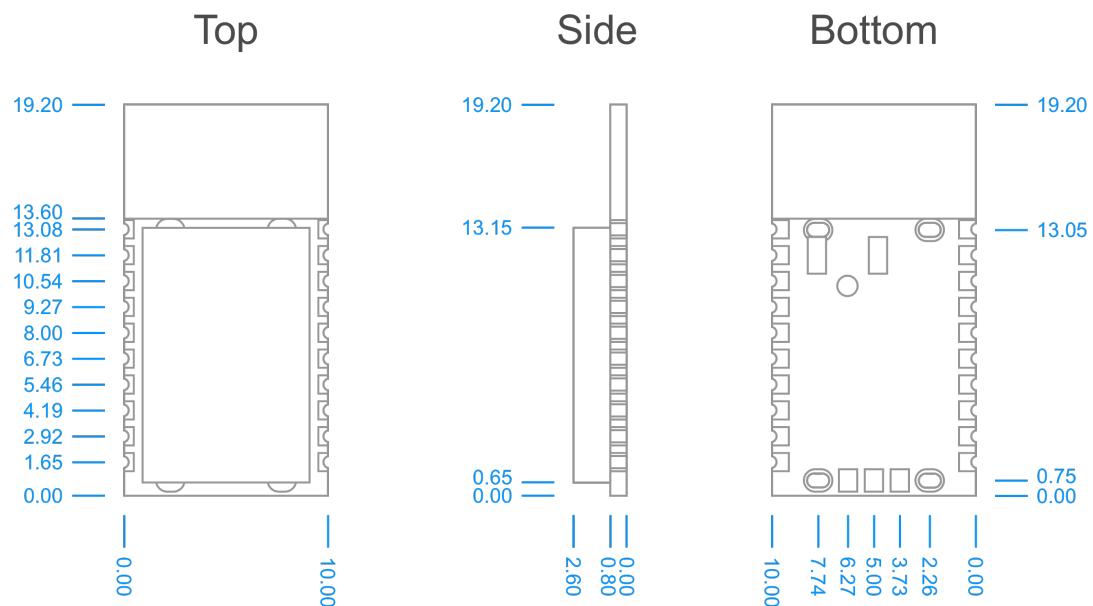
Pin Description

Pin	Symbol	Description
1	GND	Ground
2	WAKE	Input to wake up from hibernate or dormant mode
3	AIO2	Analog input/output (0-1.35V)
4	AIO1	Analog input/output (0-1.35V)
5	AIO0	Analog input/output (0-1.35V)
6	PIO0/TX	Digital input/output or UART transmit (TX)
7	PIO1/RX	Digital input/output or UART receive (RX)
8	PIO3	Digital input/output
9	PIO4	Digital input/output
10	VIN	Supply voltage (1.8-4.3V)

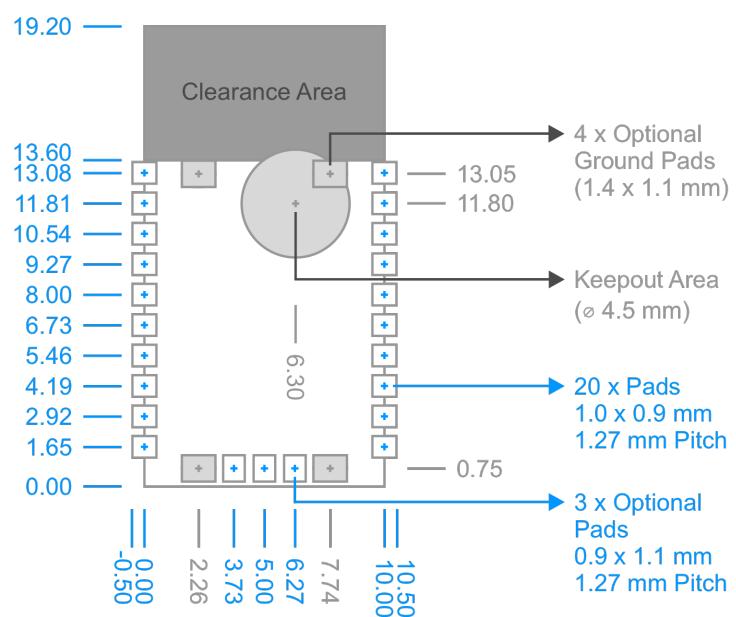


Pin	Symbol	Description
11	PIO5/DEBUG_CLK	Digital input/output or debug SPI CLK
12	PIO6/DEBUG_CS	Digital input/output or debug SPI CS
13	PIO7/DEBUG_MOSI	Digital input/output or debug SPI MOSI
14	PIO8/DEBUG_MISO/PWM3	Digital input/output or debug SPI MISO or PWM output
15	PIO9/PWM2	Digital input/output or PWM output
16	PIO10/PWM1	Digital input/output or PWM output
17	PIO11/PWM0	Digital input/output or PWM output
18	DEBUG_EN	Debug SPI enable
19	SCL	I2C SCL
20	SDA	I2C SDA
21	VIN	(Optional) Supply voltage (1.8-4.3V)
22	VOUT	(Optional) Voltage output from internal SMPS (1.35V)
23	GND	(Optional) Ground

Dimension



Recommended PCB Pattern



FCC Information

This device complies with part 15 of the FCC Results. Operation is subject to the following two conditions :

- (1) This Device may not cause harmful interface, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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 correct the interference by one or more of the following measures:

- 1.1. Reorient or relocate the receiving antenna.
- 1.2. Increase the separation between the equipment and receiver.
- 1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
- 1.4. Consult the dealer or experienced radio/TV technician for help.

WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

"CAUTION : Exposure to Radio Frequency Radiation.

Antenna shall be mounted in such a manner to minimize the potential for human contact during normal operation. The antenna should not be contacted during operation to avoid the possibility of exceeding the FCC radio frequency exposure limit.