Product Brief of UNIQON Bitle 1

(Issue 4a)

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

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 (0.05 inch) Pitch Castellated Holes for SMT and Easy Hand Soldering
- Contains MCU, 64 KB EEPROM, 64 KB RAM and 64 KB ROM
- Interfaces
  - UART, I2C, SPI Debug
  - GPIO(11 PIOs, 3 AIOs)
  - 4 Channel LED PWM
  - PWM Frequency: ~1 kHz Defaults (64.3-16320 Hz)
  - 10-bit ADC and DAC via AIOs
  - ADC/DAC Voltage Range: 0-1.35 V
  - ADC Sample Rate: <700 Samples/s
- Low Power Consumption
  - ~18 mA @TX, 3 V, 0 dBm, Active Mode
  - ~20 mA @RX, 3 V, Active Mode
  - <0.9 uA @Dormant Mode
- Range: Up to 50 m (164 feet)
- Over the Air Firmware Upgrade
- Small Form Factor: 19.2 x 10 x 2.6 mm (0.76 x 0.39 x 1.02 inches)
- Weight: <1 g (0.035 ounces)
- Integrated PCB Antenna
- Integrated 32.768 kHz and 16 MHz Crystal
- Battery Monitor
- Temperature Sensor
- Integrated Switch-mode Power Supply
- RSSI Monitoring for Proximity Applications (Beacon)
- Direct Connection with Smart Phone
- FCC, KC, TELEC Approved

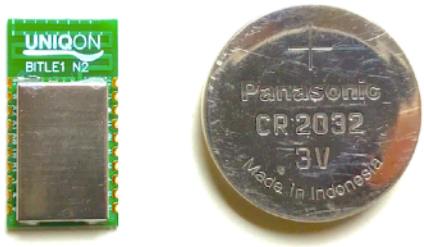


Fig 1. Bitle 1 Top View

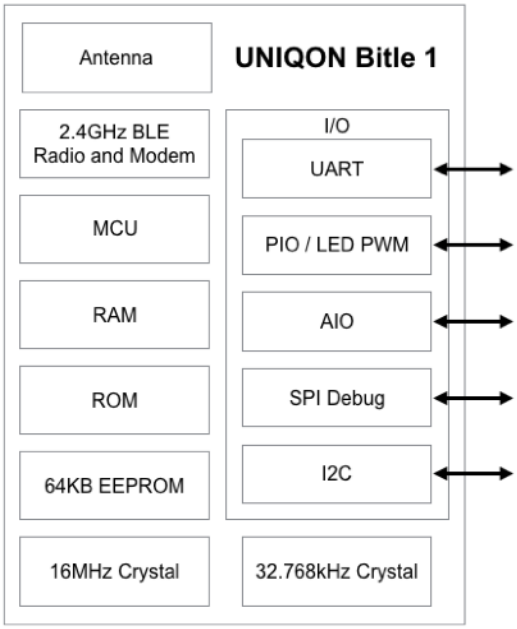


Fig 2. Block Diagram

Applications

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

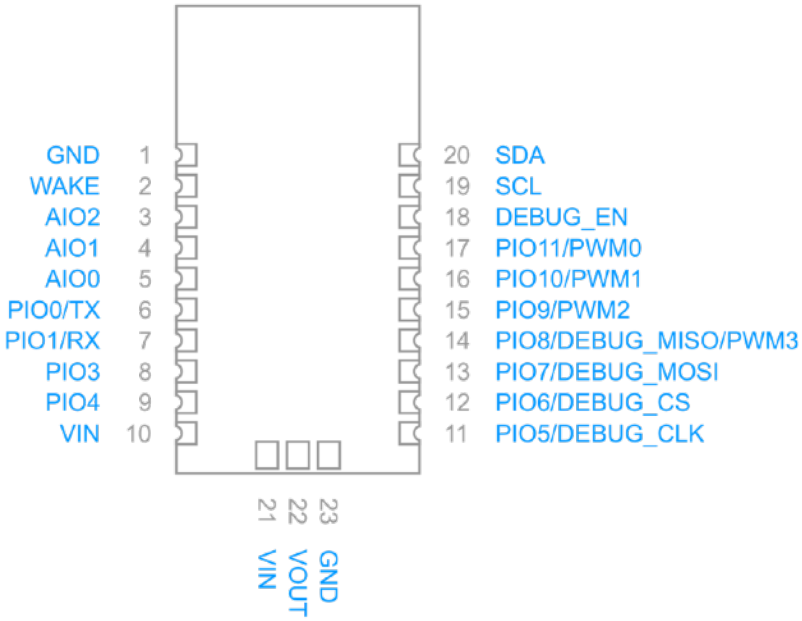
RF Specification

Specification	Description
Frequency Band	2,402 MHz to 2,480 MHz
Modulation	8 DPSK, PI/4 DQPSK, GFSK
Maximum Data Rate	250 kbps (Practical <110 kbps)
Range	<50 m (164 feet)
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 @3 V
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 (-4 °F to 167 °F)
Storage Temperature	-30 °C to 95 °C (-22 °F to 203 °F)

Pin Configurations - Top View

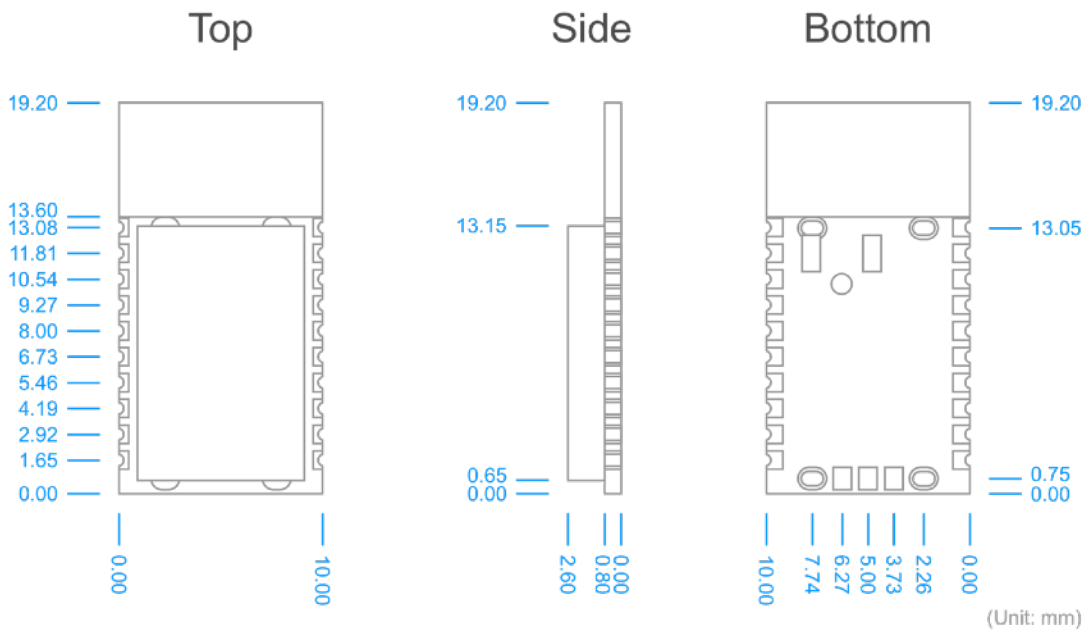


Pin Description

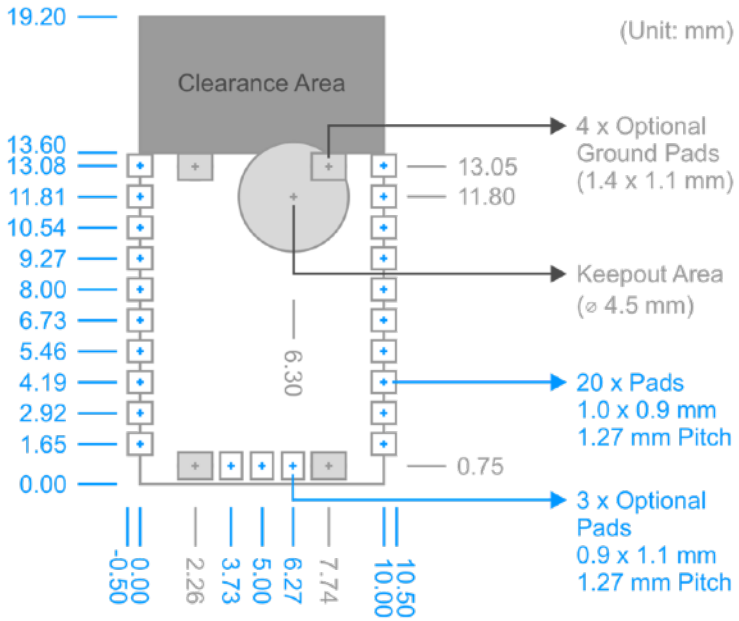
Pin	Symbol	Description
1	GND	Ground
2	WAKE	Input to wake up from hibernate or dormant mode
3	AIO2	Analog input/output (0-1.35 V)
4	AIO1	Analog input/output (0-1.35 V)
5	AIO0	Analog input/output (0-1.35 V)
6	PIO0/TX	Digital input/output or UART transmit (TX)
7	PIO1/RX	Digital input/output or UART receive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

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 (1.8-4.3 V)
22	VOUT	(Optional) Voltage output from internal SMPS (1.35 V)
23	GND	(Optional) Ground

Dimension



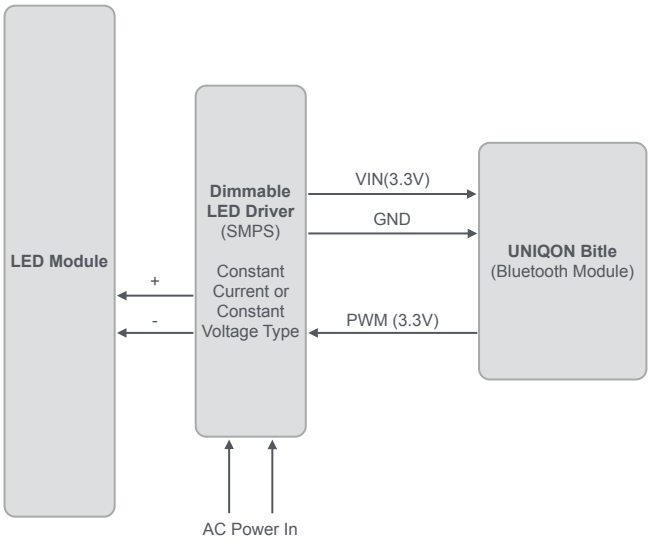
Recommended PCB Pattern



Application Block Digrams to Control LED Lightings

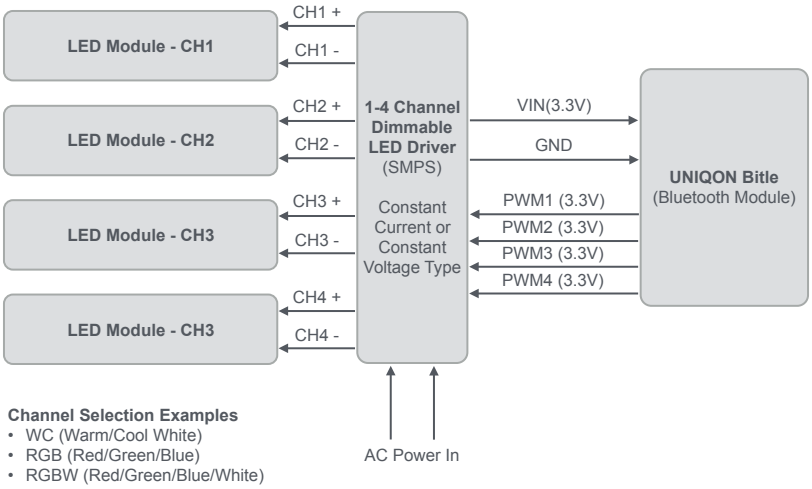
LED Application Block Diagram - 1

for Dimmable LED Driver with 3.3V Output



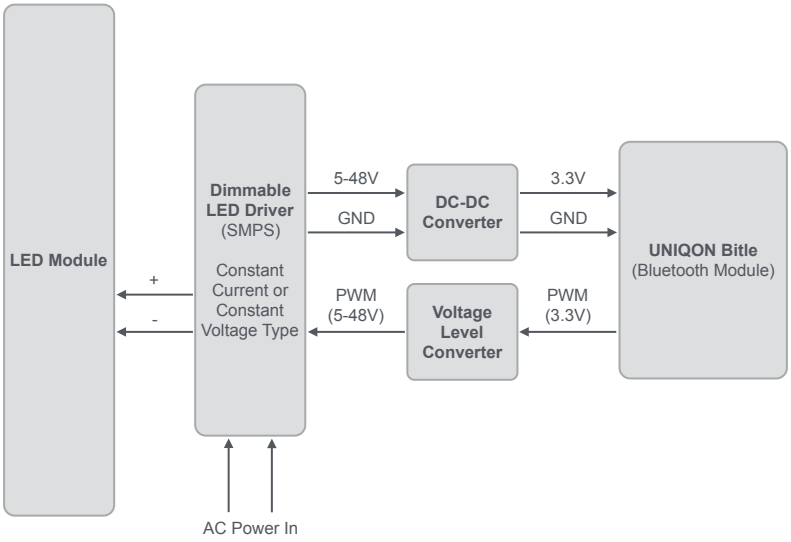
LED Application Block Diagram - 2

for 1-4 Channel Dimmable LED Driver with 3.3V Output



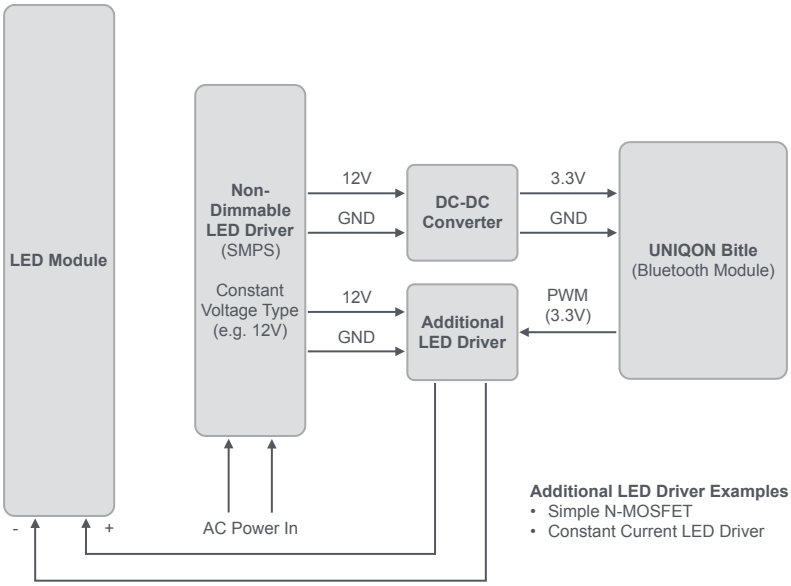
LED Application Block Diagram - 3

for Dimmable LED Driver with 5-48V Output



LED Application Block Diagram - 4

for Non-dimmable Constant Voltage LED Driver



Caution! : It does not support non-dimmable constant current LED driver