



## BLE132SA/UA-A Module Datasheet V1.0

GPLus IoT Technology Inc.

No.12-2, Zhouzi St., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

**Contents**

Features.....	1
Applications.....	1
Description.....	2
Specifications.....	2
Mechanical Drawing .....	3
Terminal Description .....	4
Recommended Reflow Profile for Lead Free Solder .....	5
Recommended PCB Layout for Package.....	6
Contact details.....	7

## Features

- Bluetooth specification compliant master, slave and multiple roles simultaneously, single-mode Bluetooth low energy ( BLE4.2) system-on-chip
- Operating supply voltage: from 1.7 to 3.6 V
- Integrated linear regulator and DC-DC step-down converter
- Operating temperature range: -30 °C to 85 °C
- High performance, ultra-low power Cortex-M0 32-bit based architecture core
- Programmable 160 KB Flash
- 24 KB RAM with retention (two 12 KB banks)
- 1 x UART interface
- 1 x SPI interface
- 2 x I<sup>2</sup>C interface
- 14 or 15 GPIO
- 2 x multifunction timer
- 10-bit ADC
- Watchdog & RTC
- DMA controller
- PDM stream processor
- 16 MHz crystal oscillator
- 32 kHz crystal oscillator
- 32 kHz ring oscillator
- Battery voltage monitor and temperature sensor
- Up to +8 dBm available output power (at antenna connector)
- Excellent RF link budget (up to 96 dB)
- Accurate RSSI to allow power control
- Down to 1  $\mu$ A current consumption with active BLE stack (sleep mode)
- Compliant with the following radio frequency regulations: ETSI EN 300 328, EN 300 440, FCC CFR47 Part 15, ARIB STD-T66
- Pre-programmed bootloader via UART

## Applications

- Automotive product
- Watches
- Fitness, wellness and sports
- Consumer medical
- Security/proximity
- Remote control
- Home and industrial automation
- Assisted living
- Mobile phone peripherals
- Lighting PC peripherals

## Description

BLE132SA/UA-A series module is designed based on ST company's BlueNRG-1. The BlueNRG-1 is a very low power Bluetooth low energy (BLE4.2) single-mode system-on-chip compliant with Bluetooth specification.

The BlueNRG-1 extends the features of award-winning BlueNRG network processor, enabling the usage of the embedded Cortex M0 for running the user application code.

The BlueNRG-1 includes 160 KB of programming Flash memory, 24 KB of static RAM memory with retention (two 12 KB banks) and SPI, UART, I<sup>2</sup>C standard communication interface peripherals. It also features multifunction timers, watchdog, RTC and DMA controller.

An ADC is available for interfacing with analog sensors, and for reading the measurement of the integrated battery monitor. A digital filter is available for processing a PDM stream.

The BlueNRG-1 offers the same excellent RF performance of the BlueNRG radio, and the integrated high efficiency DC/DC converter keeps the same ultra-low power characteristics, but the BlueNRG-1 improves the BlueNRG sleep mode current consumption allowing a further increase in the battery lifetime of the applications.

## Specifications

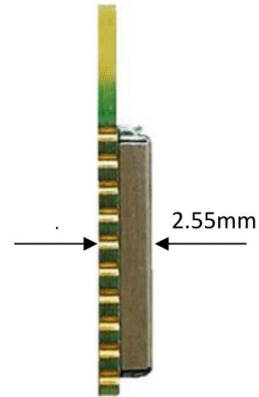
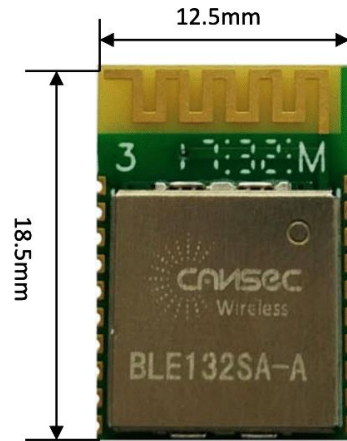
Power consumption when DC-DC converter not active

Parameter		Min	Typ	Max	Unit
Operating Voltage		1.7	-	3.6	V
Operating Temperature		-30	-	85	°C
Current Consumption	Standby	-	0.5	-	uA
	Receive mode	-	14.5	-	mA
	Transmit Mode (8dBm)	-	28.8	-	mA
TX Power		-	7	8	dBm
RX Sensitivity		-	-	-88	dBm

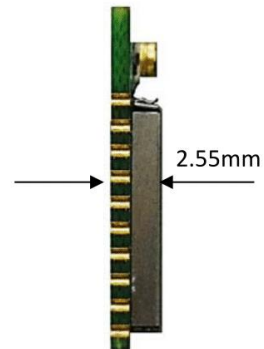
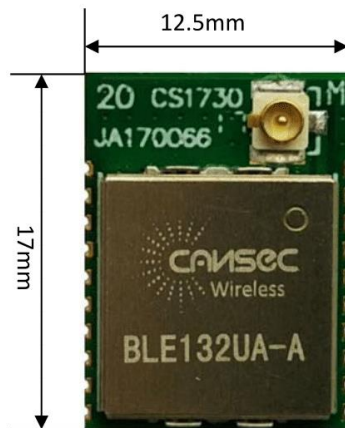
## Mechanical Drawing

Tolerance:  $\pm 0.2\text{mm}$

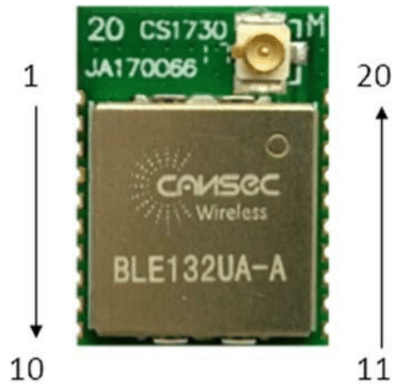
BLE132SA-A:



BLE132UA-A:

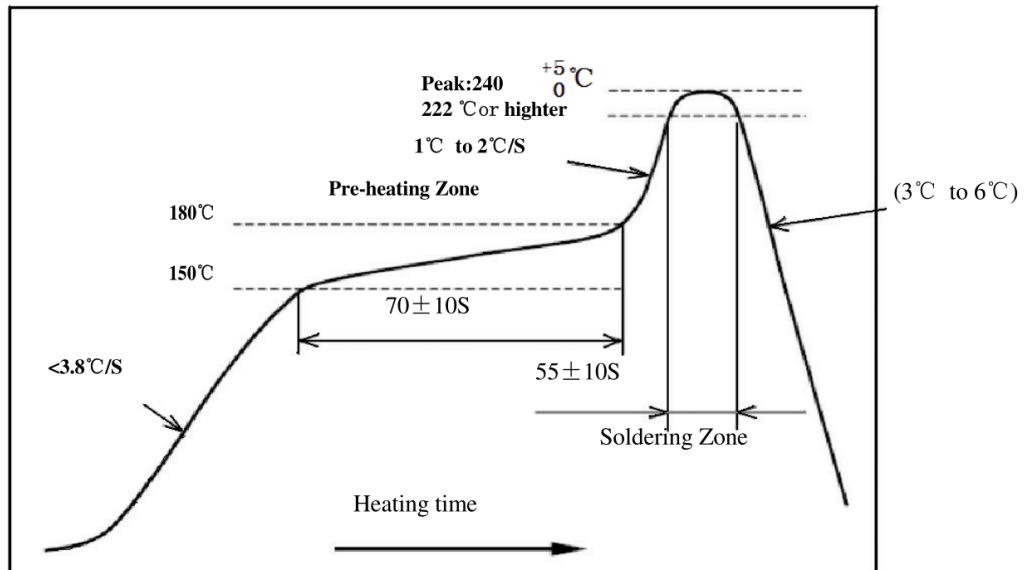


## Terminal Description



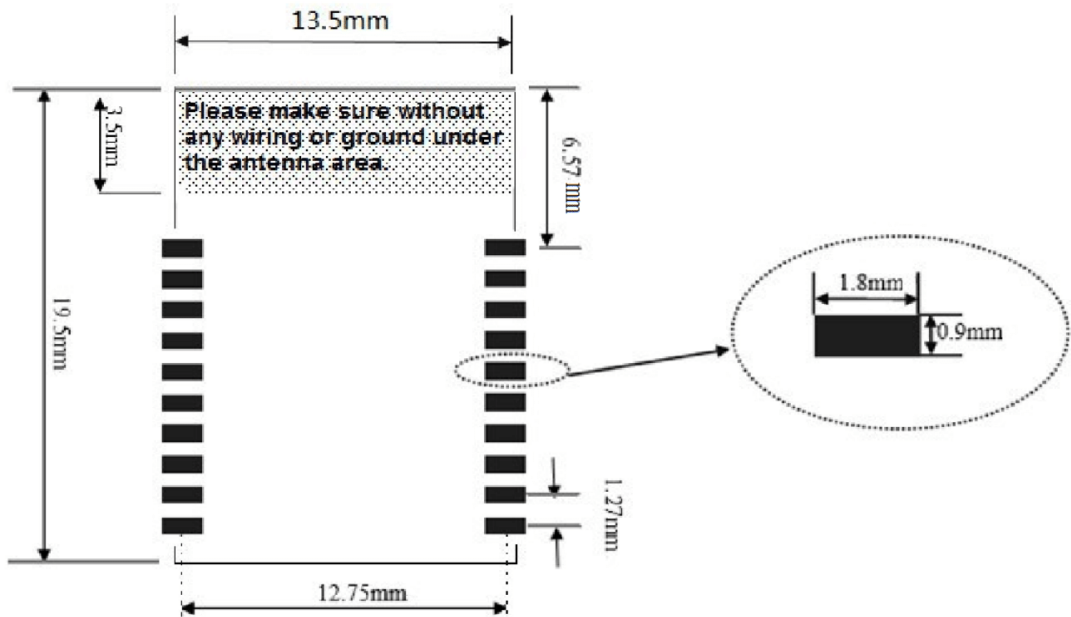
Pad Number	Name	Pin Type	Description
1	RESETN	I	System reset
2	DIO13	I/O	General purpose digital I/O
3	DIO12	I/O	General purpose digital I/O
4	GND	Ground Pin	Connect to GND
5	VDD	POWER	Battery voltage input
6	DIO11	I/O	General purpose digital I/O
7	DIO10	I/O	General purpose digital I/O
8	DIO9	I/O	General purpose digital I/O
9	DIO8	I/O	General purpose digital I/O
10	DIO7/BOOT	I/O	Bootloader pin/ General purpose digital I/O
11	DIO6	I/O	General purpose digital I/O
12	DIO5	I/O	General purpose digital I/O
13	DIO4	I/O	General purpose digital I/O
14	DIO3	I/O	General purpose digital I/O
15	DIO2	I/O	General purpose digital I/O
16	DIO1	I/O	General purpose digital I/O
17	DIO0	I/O	General purpose digital I/O
18	ANATEST0/DIO14	I/O	Analog output/ General purpose digital I/O
19	ADC1	I	ADC input 1
20	ADC2	I	ADC input 2

### Recommended Reflow Profile for Lead Free Solder

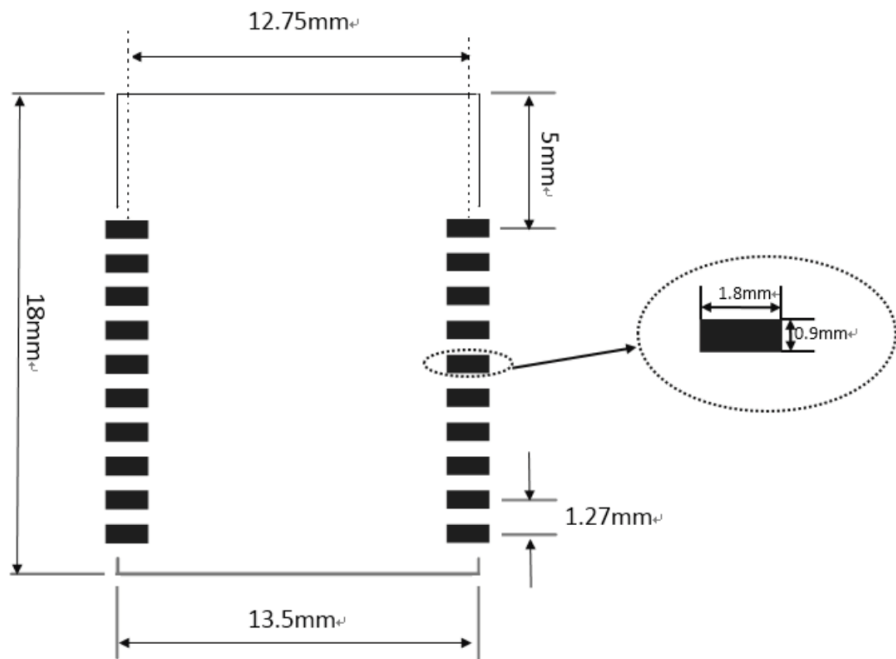


### Recommended PCB Layout for Package

BLE132SA-A:



BLE132UA-A:





## Contact details

For more information, please send email to us. Email:

[jp.chen@gplusiot.net](mailto:jp.chen@gplusiot.net)

[jerry.liu@gplusiot.net](mailto:jerry.liu@gplusiot.net)