BLE51822C Specification

BLE51822C series modules based on Nordic SoC nRF51822, support Bluetooth Low Energy single mode. The nRF51822 is a powerful, highly flexible multi-protocol SoC ideally suited for Bluetooth® low energy and 2.4GHz ultra low-power wireless applications. The nRF51822 is built around a 32-bit ARM® Cortex™ M0 CPU with 256kB flash + 16kB RAM. The embedded 2.4GHz transceiver supports Bluetooth low energy.

Applications

- Mobile phone accessories
- PC peripherals
- Consumer Electronics (CE) remote controls
- Proximity/Alert sensors
- Sports, fitness and healthcare sensors
- Smart RF tags
- Toys and electronic games
- Intelligent domestic appliances
- Industrial and commercial sensors

Features

- RF
  a) • -93dBm sensitivity in Bluetooth® low energy mode
  b) • TX Power -20 to +4dBm in 4 dB steps
  c) • TX Power -30dBm Whisper mode
  d) • 13 mA peak RX, 10.5 mA peak TX (0 dBm)
  e) • RSSI (1 dB resolution)
- ARM® Cortex™-M0 32 bit processor
- 256K or 128K flash，16kB RAM
- Support 3 power supply methods: DC/DC，LDO and 1.8V
- On board 32.768kHz crystal oscillator
- 22 GPIOs
- Fast Access Interface for Debugging*

Pinout

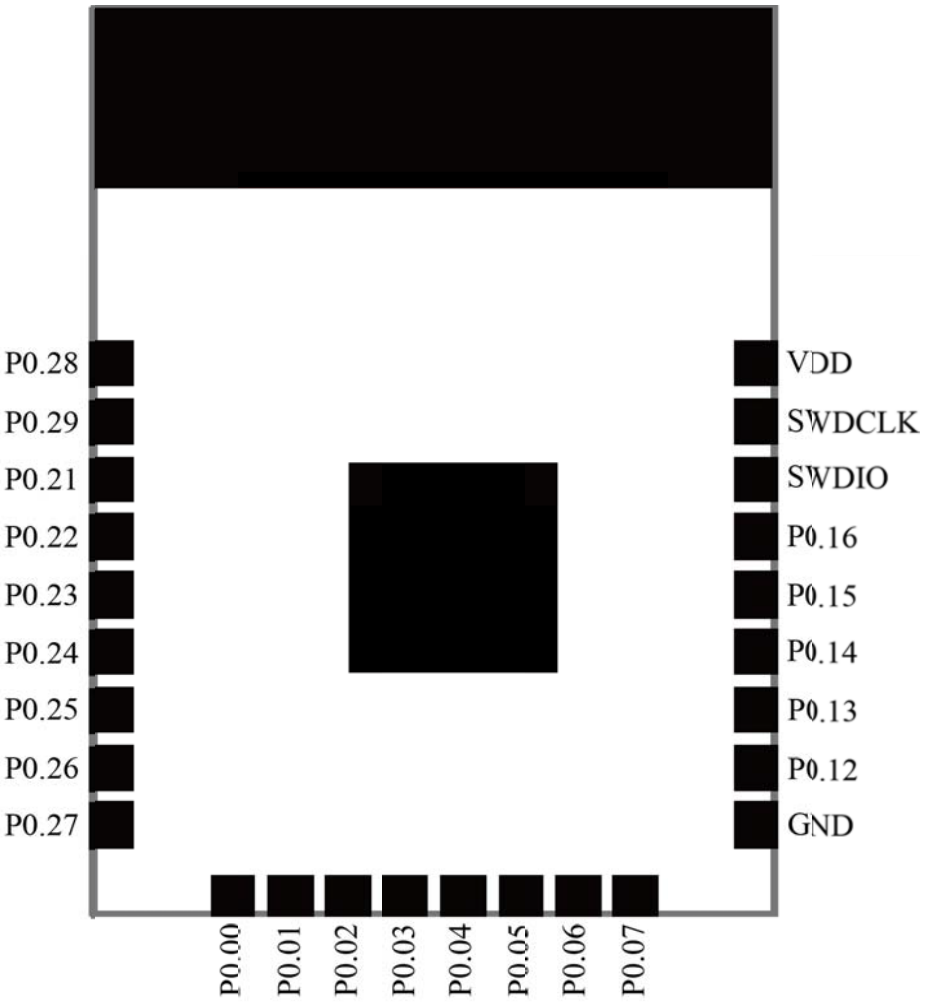

Fig1. Module Pinout

Pin Functions

PIN-NAME	PIN-TYPE	DESCRIPTION
VDD	Power	Power supply
GND	Power	Ground (0 V)
SWDCLK	Digital input	HW debug and flash programming I/O
SWDIO nRESET	Digital I/O	System reset (active low). Also HW debug and flash programming I/O
P0.00 AREF0	Digital I/O Analog input	General purpose I/O pin ADC Reference voltage
P0.01 AIN2	Digital I/O Analog input	General purpose I/O pin ADC input 2
P0.02 AIN3	Digital I/O Analog input	General purpose I/O pin ADC input 3
P0.03 AIN4	Digital I/O Analog input	General purpose I/O pin ADC input 4
P0.04 AIN5	Digital I/O Analog input	General purpose I/O pin ADC input 5
P0.05 AIN6	Digital I/O Analog input	General purpose I/O pin ADC input 6
P0.06 AIN7 AREF1	Digital I/O Analog input Analog input	General purpose I/O pin ADC input 7 ADC Reference voltage
P0.07	Digital I/O	General purpose I/O pin
P0.12	Digital I/O	General purpose I/O pin
P0.13	Digital I/O	General purpose I/O pin
P0.14	Digital I/O	General purpose I/O pin
P0.15	Digital I/O	General purpose I/O pin
P0.16	Digital I/O	General purpose I/O pin
P0.21	Digital I/O	General purpose I/O pin
P0.22	Digital I/O	General purpose I/O pin
P0.23	Digital I/O	General purpose I/O pin
P0.24	Digital I/O	General purpose I/O pin
P0.25	Digital I/O	General purpose I/O pin
P0.26 AIN0 XL2	Digital I/O Analog input Analog output	General purpose I/O pin ADC input 0 Connection for 32.768 kHz crystal
P0.27 AIN1 XL1	Digital I/O Analog input Analog input	General purpose I/O pin ADC input 1 Connection for 32.768 kHz crystal or external 32.768 kHz clock reference
P0.28	Digital I/O	General purpose I/O pin
P0.29	Digital I/O	General purpose I/O pin

Absolute maximum ratings

Symbol	Min.	Max.	Unit
Storage temperature	-40	125	℃
VDD	-0.3	3.6	V
I/O pin voltage	-0.3	VDD+0.3	V

Operating conditions

Symbol	Min.	Typ.	Max.	Unit
Temperature	-25	25	75	℃
LDO VDD	1.8	3.0	3.6	V
DC/DC VDD	2.1	3．0	3.6	V
1.8V VDD	1.75	1.8	1.95	V

Current

Symbol	Min.	Typ.	Max.	Unit
$I_{OFF,16k}$		0.8		uA
$I_{CPU,Flash}$		4.4		mA
$I_{CPU,RAM}$		2.4		mA
$I_{TX,0dBm}$		10.5		mA
$I_{RX,1M}$		13		mA

Dimension

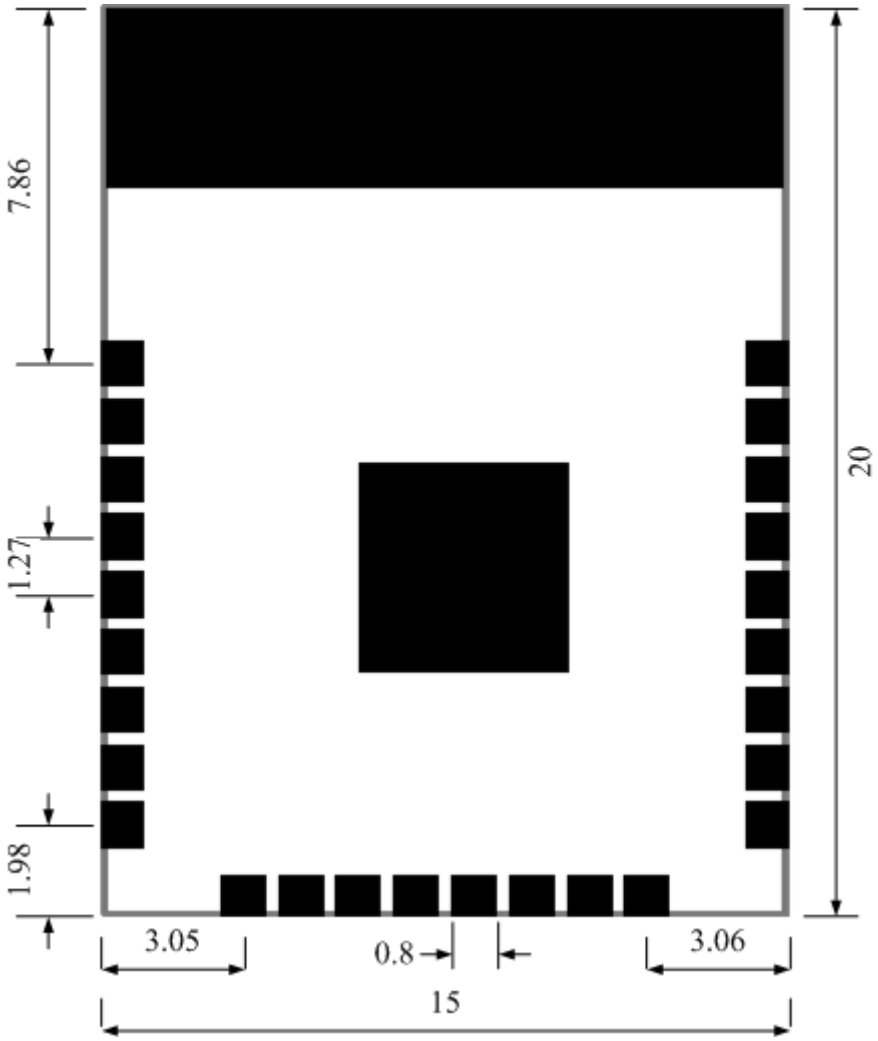

Fig2. Module Dimension (Unit: mm)

Fast Access Interface for Debugging

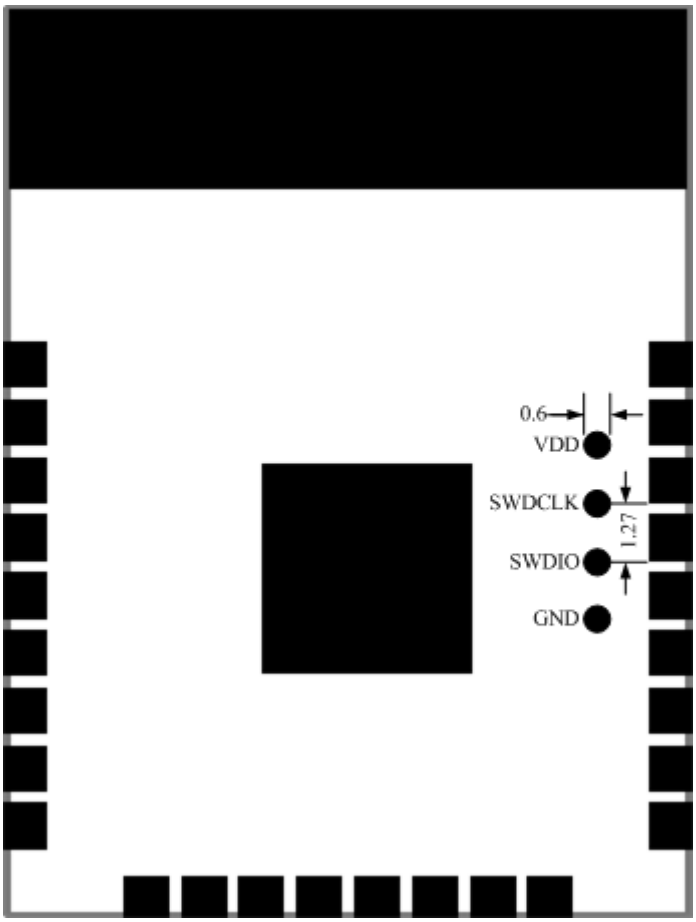

Fig3. Fast Access Interface for Debugging (Unit: mm)

Hints

1. The BLE51822C can work from 1.8V to 3.6V. You can select one of the three power supply modes (DC/DC, LDO, 1.8V) to meet your requirements. If the voltage is higher than 3.3V, a DC regulator is recommended.
2. If the cooperative MCU has the different voltage requirement with BLE51822C, please do not forget to match the voltage of communication pins.
3. PCB antenna can NOT overlap with any other PCB, metal or circuit.