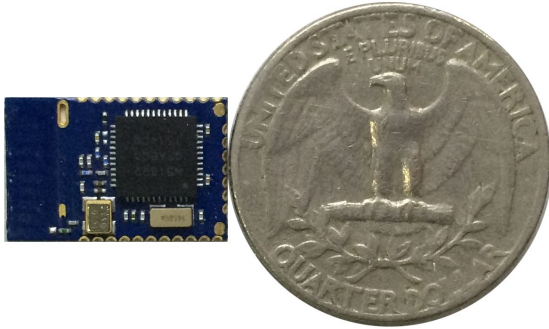




BDE-BLEM501P

Bluetooth Low Energy Module



- 0.4uA @ 3V OFF mode
- Antenna: PCB antenna
- Size:
 - 16.55mm x10.88mm x 1.5mm (Without Shielding)
 - 16.55mm x10.88mm x 2.2mm (With Shielding)
- BQB certification
- FCC, CE, RoHs compliant

Descriptions

BDE-BLEM501P is a Bluetooth 4.0 single-mode compliant Bluetooth low energy module targeted at low power sensors and PC/Phone accessories.

BDE-BLEM501P highly integrates Bluetooth Low Energy radio, stack, profile and applications in a SoC, without the need of using an external MCU. The module also offers flexible hardware interfaces for the different application.

It enables ultra low power connectivity and data transfer for the applications that are sensitive to power consumption, size and cost.

Key Features

- Bluetooth 4.0 single-mode compliant
- Support master and slave mode
- Integrated Bluetooth Low Energy stack, no external MCU needed
- RF performance
 - TX power: -20dBm to 4dBm in 4dB steps
 - RX sensitivity: up to -93dBm
- Communication range: 100m (LOS)
- Ultra low power Cortex-M0 32 bit processor
 - 16KB RAM
 - 256KB or 128KB embedded flash
 - 19 GPIOs
 - 10-bit ADC
 - Data interfaces: UART x 1, I2C x 2, SPI x 3 (2 master, 1 slave)
 - 32 bit timer x1, 16 bit timer x 2
- Ultra low power consumption:
 - 13mA peak RX, 10.5mA peak TX (0dBm)

Applications

- Medical devices
- Sports and fitness equipments
- Home electronics
- Mobile and PC accessories
- Industry automation



Block Diagram

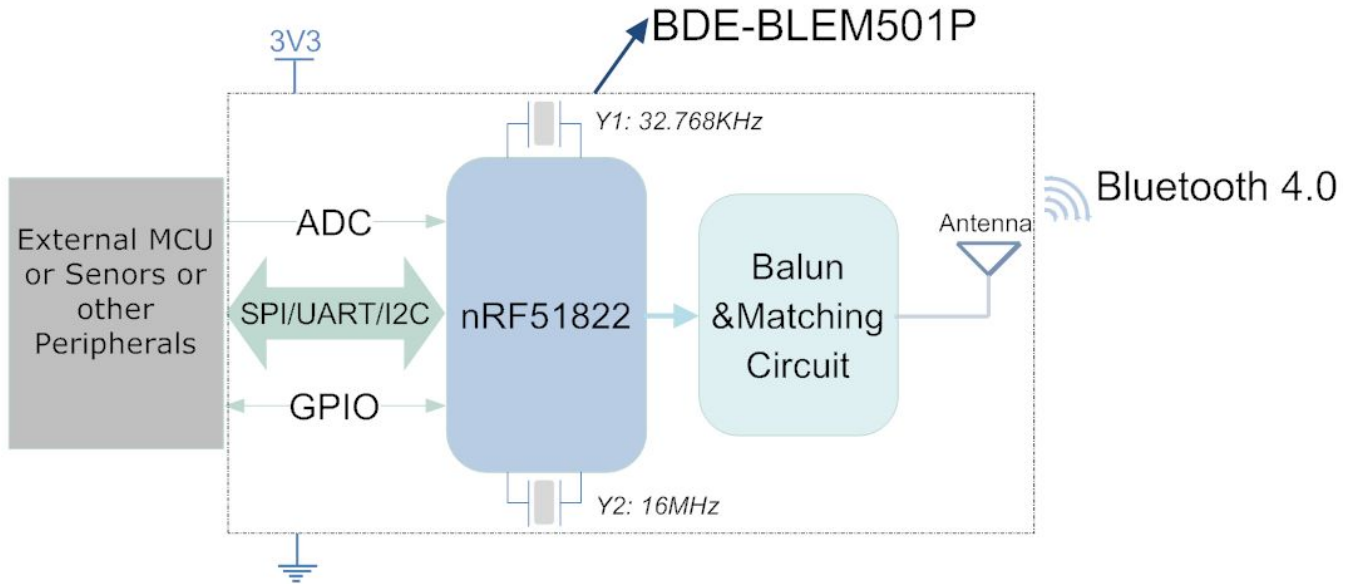


Fig. 1: Block diagram of BDE-BLEM501P

Electrical Characteristics

■ Absolute maximum rating

Rating	Min	Typ	Max	Unit
Storage Temperature	-40	-	125	°C
VDD	-0.3	-	3.6	V
Other Terminals	-0.2	-	$VDD+0.3 \leq 3.6$	V

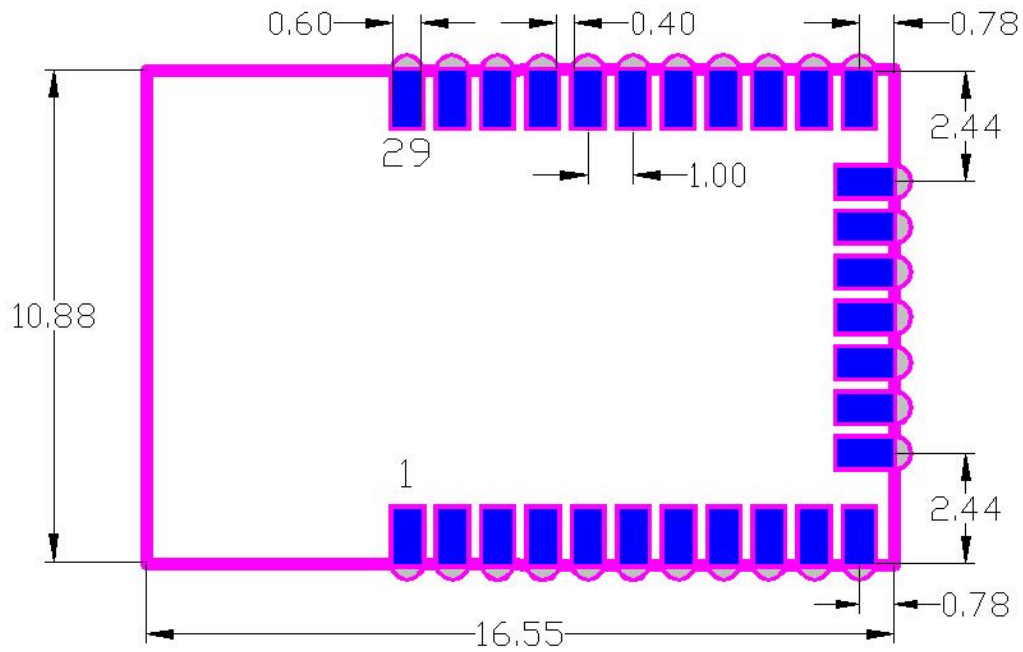
■ Recommended operating conditions

Rating	Min	Typ	Max	Unit
Operating Temperature	-20	-	70	°C
VDD	1.8	3	3.6	V



Overall Dimensions

Fig. 2 shows the overall dimensions of BDE-BLEM501P. The module measures 16.55mm long by 10.88mm wide by 1.5mm high without board level shield.



All Dimensions are in millimeter

Fig. 2: Overall Dimensions of BDE-BLEM501P



Pin Definitions

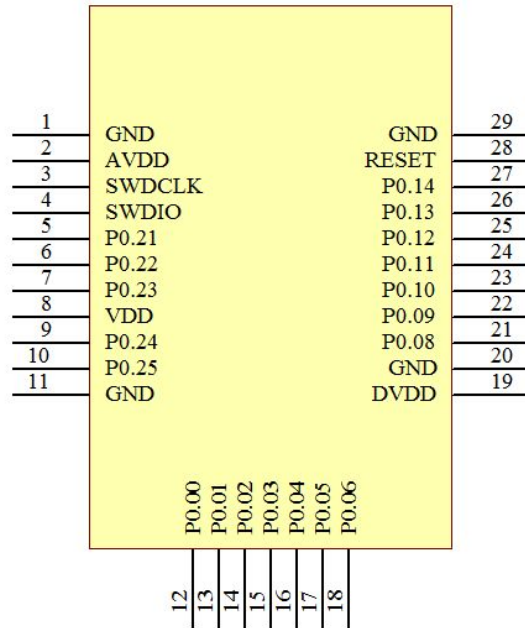


Fig. 3: The pinout of BDE-BLEM501P (TOP)

Table 1: Pin definitions of BDE-BLEM501P

Pin Number	Pin Name	Definitions
1	GND	Power ground
2	AVDD	Power supply for analog circuit
3	SWDCLK	HW debug and flash programming IO
4	SWDIO	HW debug and flash programming IO
5	P0.21	GPIO
6	P0.22	GPIO
7	P0.23	GPIO
8	VDD	Power supply
9	P0.24	GPIO
10	P0.25	GPIO
11	GND	Power ground
12	P0.00	GPIO/ADC reference voltage
13	P0.01	GPIO/ADC input
14	P0.02	GPIO/ADC input
15	P0.03	GPIO/ADC input



16	P0.04	GPIO/ADC input
17	P0.05	GPIO/ADC input
18	P0.06	GPIO/ADC input
19	DVDD	Power supply of digital circuit
20	GND	Power ground
21	P0.08	GPIO
22	P0.09	GPIO
23	P0.10	GPIO
24	P0.11	GPIO
25	P0.12	GPIO
26	P0.13	GPIO
27	P0.14	GPIO
28	RESET	Reset pin, active low
29	GND	Power ground

**Note: Two-wire Master (I2C), UART, SPI can be configured to any GPIO*

Module Location

In order to get a fine performance when integrate the module to your product, it is advised to use the recommended module location to the respective PCB.

■ Location in X-Y plane

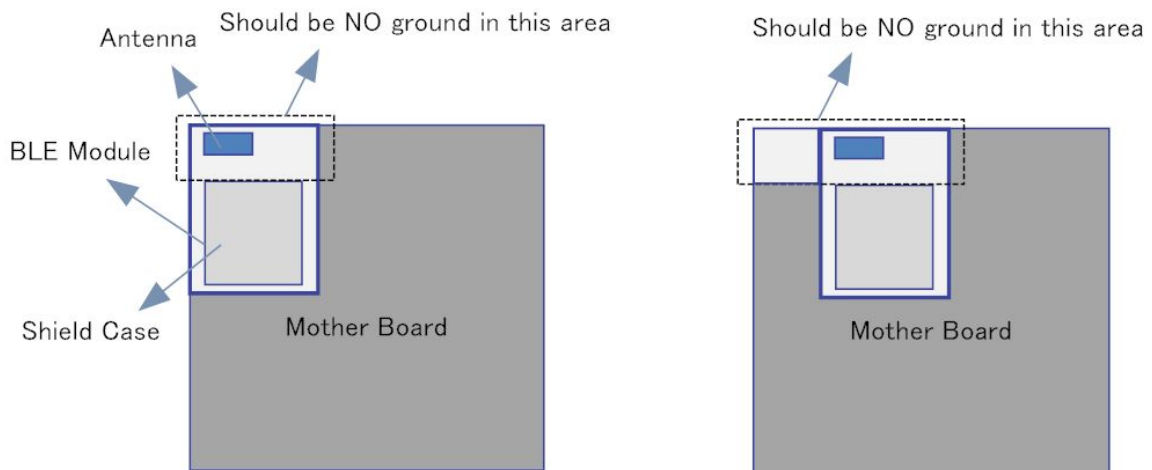


Fig. 4: Recommended location in X-Y plane

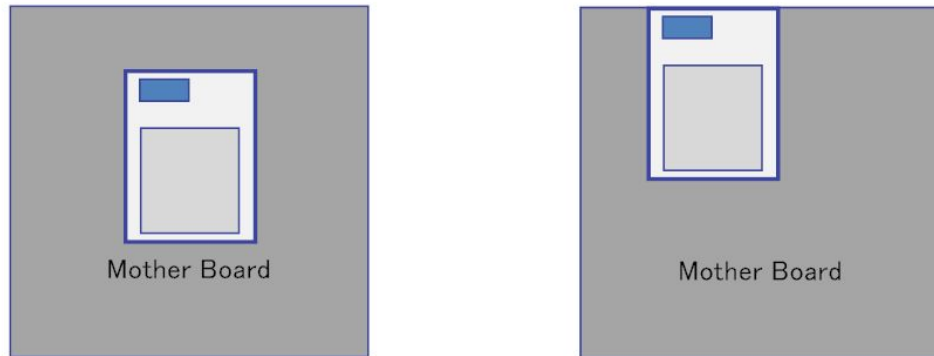


Fig. 5: Not recommended location in X-Y plane

■ Location in Z plane

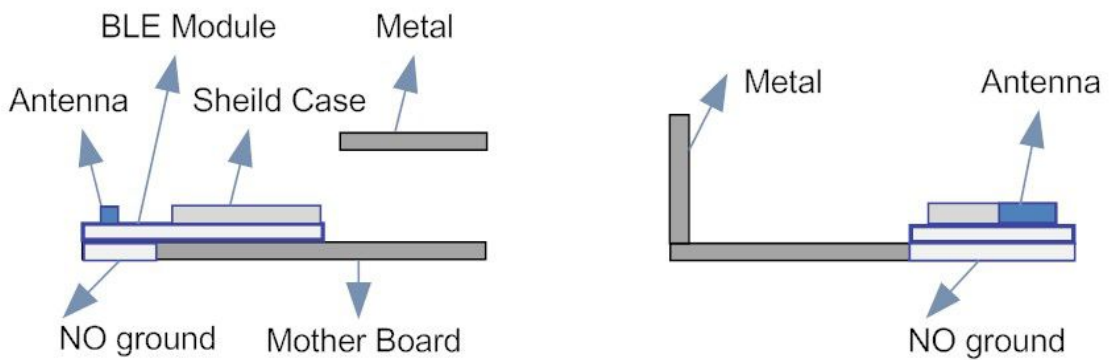


Fig. 6: Recommended location in Z plane



Fig. 7: Not recommended location in Z plane

Typical Solder Reflow Profile

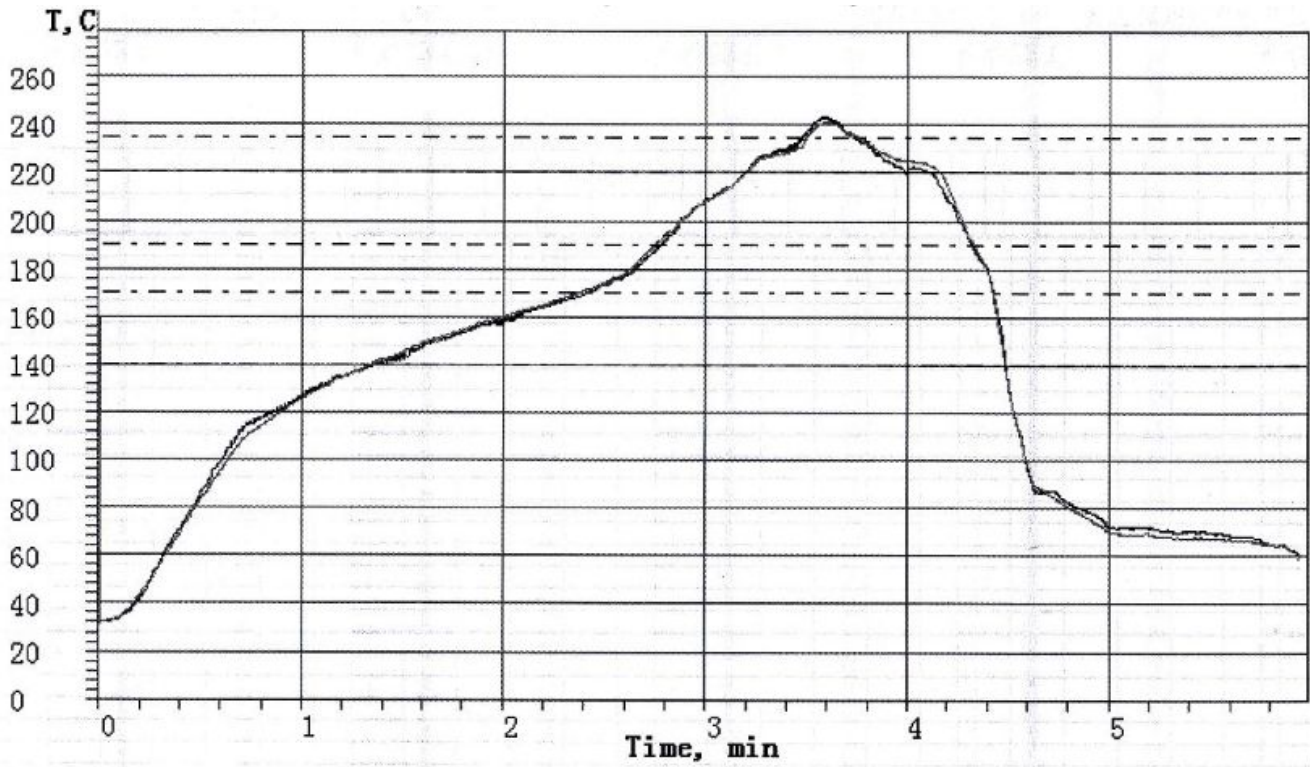


Fig. 8: Typical Solder Reflow Profile

Ordering Information

Part No.	Package Type	Quantity Per Tray	MOQ
BDE-BLEM501P	Tray	110	2200





Fig. 9: Package information

Contacts

BDE Technology Co. Ltd

Address: Innovation Building C1-1105, 182 Science Ave, Science City, Guangzhou, 510663, China

494 E Thornhill Ln, Palatine, IL 60074, USA

Tel: +86-020-28065335 Fax: +86-020-28065338

Website: www.bdecomm.com Email: info@bdecomm.com

