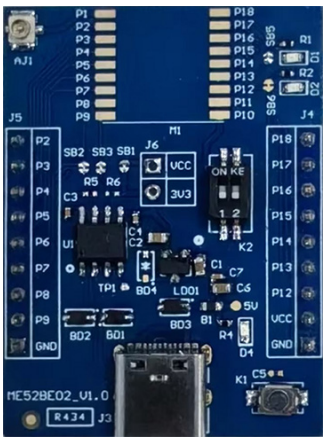
MINEWSEMI

Development Board

ME52BE02



Datasheet

V 1.0.0

Version Note

Version	Details	Contributor(s)	Date	Notes
1.0.0	First edit	Owen	2024.11.15	

Part Number

Model	Hardware Code
ME52BE02	-

Click the icon to view and download the latest product documents electronically.
https://en.minewsemi.com/file/Development_Board_ME52BE02_Datasheet_EN.pdf

INDEX

1 OVERVIEW

ME52BE02 function development board, which integrates a serial port chip and can be powered directly using Type-C. In order to facilitate the development and use of the module, the function development board has some key switches and indication functions, which is more convenient for testing the module during the development process.

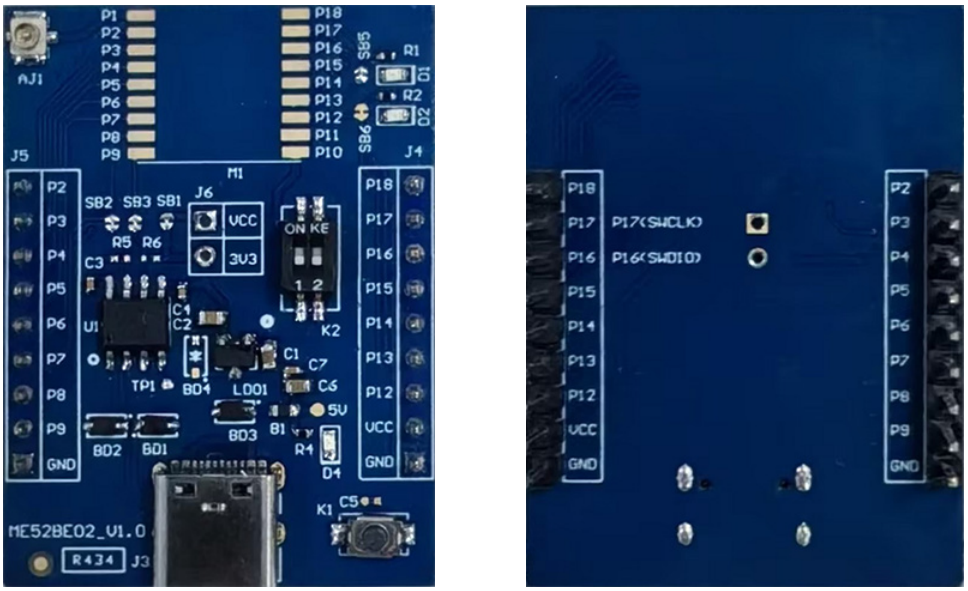
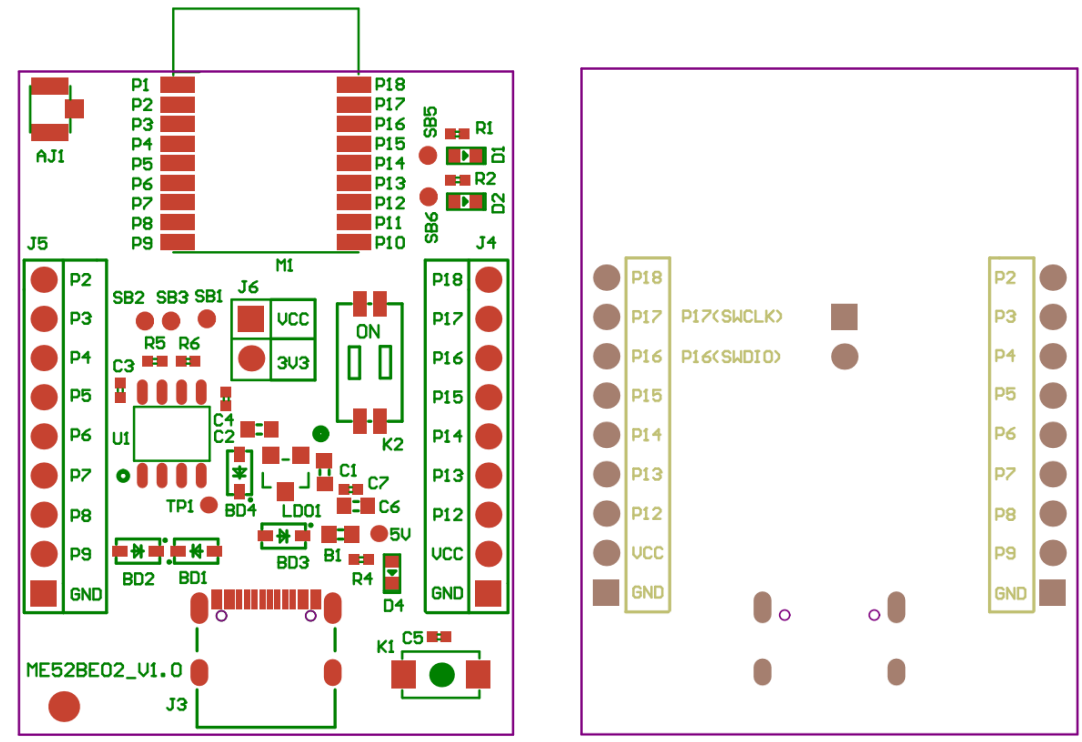


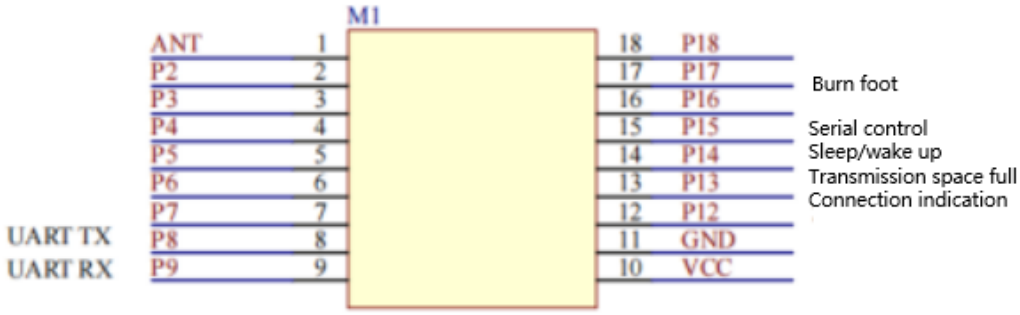
Figure 1: ME52BE02 Front/Back

2 ME52BE02 FUNCTIONAL MARKER



Identification	Type	Function
K1	KEY	P18 Connect to key
K2	Dip switch	P14,P15 1-4：P14（Sleep/wake up） 2-3：P15（Serial control）
D1	LED	P13 Connection light
D2	LED	P12 Connection light
D4	LED	Power supply light
J3	Type-C	Type-C power supply port, standard 5V power supply
AJ1	IPEX	Module If using external antenna pin module can use the IPEX seat to access the antenna

3 ME52BE02 PIN DEFINITION



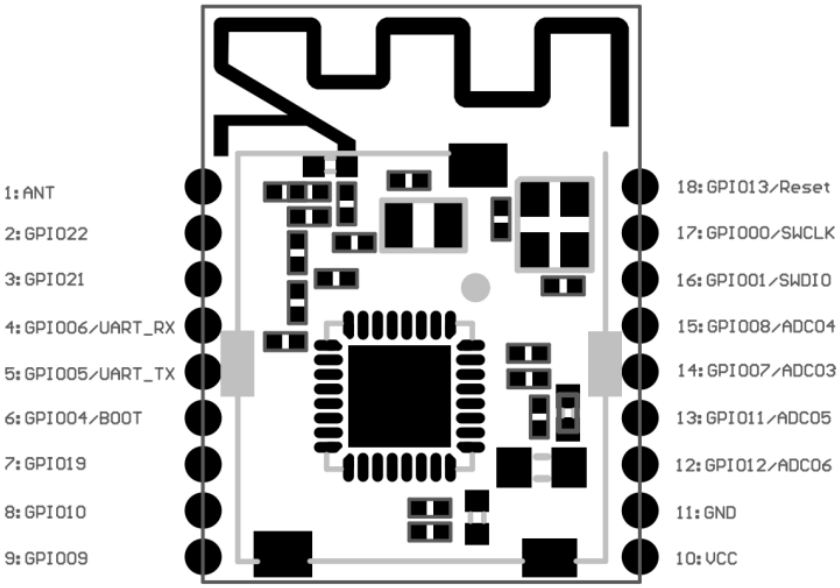
Pin Number	Symbol	Type	Description	Definition
1	P1	External antenna pin		By default, the module uses its built-in antenna, and this pin can remain unconnected. If you do not wish to use the built-in antenna, an external antenna can be connected via this pin. In the case of using an external antenna, the internal resistor connected to the built-in antenna must be reconfigured to connect to this pin. Please consult with the sales team to confirm these configuration requirements.
2	P2-P7	Digital I/O	GPIO	Not used in firmware, floating
3	P8	Digital I/O	UART TX	TX of Bluetooth Module
4	P9	Digital I/O	UART RX	RX of Bluetooth Module
5	VCC	VCC	Power supply	
6	GND	GND	Ground	
7	P12	CON_IND	Connection indication	Sleep state: low level Broadcast status: Low level Connection status: High level

Pin Number	Symbol	Type	Description	Definition
8	P13	FIFO_FULL	Transmission space full	Check transmission space availability 0: Bluetooth module has available space, data can be transmitted. 1: Master stops transmission, awaiting space to become available.
9	P14	Digital/Analog I/O	Sleep/Wake	Low level to wake-up,high level to sleep, no floating
10	P15	Digital/Analog I/O	Serial port control	Serial port on / off to control pin, no floating 0: serial port open, can send and receive serial port data 1: Serial port off
11	P16	Digital I/O	Burn data pin	Used for burning firmware
12	P17	Digital I/O	Burn clock pin	Used for burning firmware
13	P18	Digital I/O		Connect to key

*The above table provides the general pin definitions for the module application with transparent transmission firmware. The actual pin definitions may vary depending on the specific application of the module. Please refer to the module's datasheet for the exact details.

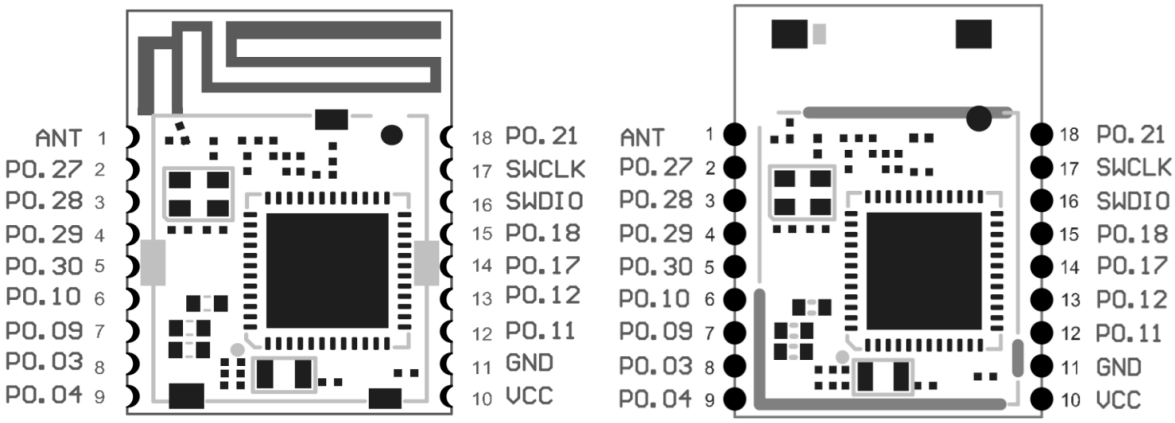
4 APPLICABLE MODULES PIN DEFINITION

4.1 ME52BS02 Pin Definition



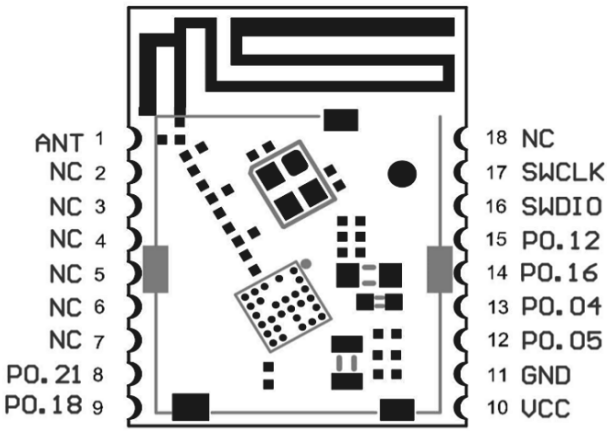
Pin Number	Symbol	Type	Description	Definition
1	ANT	External antenna pin		By default, the module uses its built-in antenna, and this pin can remain unconnected. If you do not wish to use the built-in antenna, an external antenna can be connected via this pin. In the case of using an external antenna, the internal resistor connected to the built-in antenna must be reconfigured to connect to this pin. Please consult with the sales team to confirm these configuration requirements.
2	GPIO22	Digital I/O	GPIO	Not used in UART, floating
3	GPIO21	Digital I/O	GPIO	Not used in UART, floating
4	GPIO06/UART_RX	Digital I/O	Burn firmware	I/O Pin multiplexing，GPIO 06 /UART_RX；
5	GPIO05/UART_TX	Digital I/O	Burn firmware	I/O Pin multiplexing，GPIO 05 /UART_TX；
6	GPIO044/BOOT	Digital I/O	BOOT	Digital GPIO/BOOT
7	GPIO19	Digital I/O	GPIO	Not used in UART, floating
8	GPIO10	Digital I/O	UART TX	TX of Bluetooth Module
9	GPIO09	Digital I/O	UART RX	RX of Bluetooth Module
10	VCC	VCC	Power supply	
11	GND	GND	Ground	
12	GPIO12/ADC06	CON_IND	Connection indication	Sleep state: low level Broadcast status: Low level Connection status: High level
13	GPIO11/ADC05	FIFO_FULL	Transmission space full	Check transmission space availability 0: Bluetooth module has available space, data can be transmitted. 1: Master stops transmission, awaiting space to become available.
14	GPIO07/ADC03	Digital/Analog I/O	Sleep/Wake	Low level to wake-up, high level to sleep, no floating
15	GPIO08/ADC04	Digital/Analog I/O	Serial port control	Serial port on / off to control pin, no floating 0: serial port open, can send and receive serial port data 1: Serial port off
16	GPIO01/SWDIO	Digital I/O	Burn data pin	Used for burning firmware
17	GPIO00/SWCLK	Digital I/O	Burn clock pin	Used for burning firmware
18	GPIO13/Reset	Digital I/O		Digital GPIO/Reset

4.2 MS50SFA Pin Definition



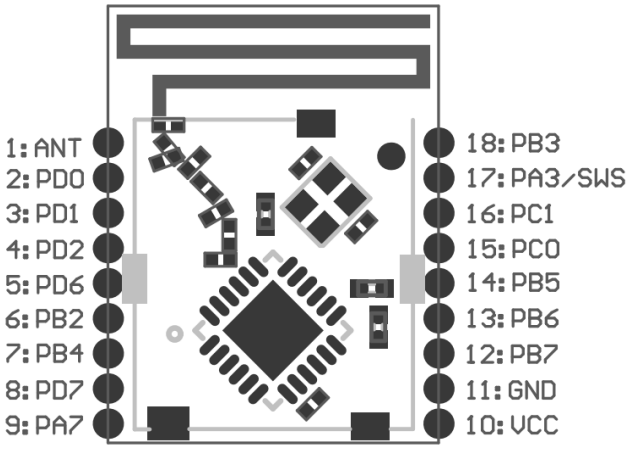
Pin Number	Symbol	Type	Description	Definition
1	ANT		External antenna pins	Using the module's built-in antenna, this pin is directly suspended in the air.If the module's built-in antenna is not used, the antenna can be externally connected through this pin. When connecting the antenna, the resistor connected to the antenna needs to be horizontally welded to this pin
2~7	P0.27 to P0.09		GPIO	Not used in UART, floating
8	P0.03	BTX	UART TX	TX of Bluetooth Module
9	P0.04	BRX	UART RX	RX of Bluetooth Module
10	VCC	VCC	Power Supply	
11	GND	GND	Ground	
12	P0.11	CON_IND	Connection indication	Sleep state: low level Broadcast status: Low level Connection status: High level
13	P0.12	FIFO_FULL	Transmission space full	Determine if the transmission space is available when it is full 0: Bluetooth module has available space for transmission 1: Host stops transmitting and waits for free space to be released
14	P0.17	SLP	Sleep/Awake	Low level to wake-up, high level to sleep, no floating
15	P0.18	BTDATA	Serial port control	Serial port on / off to control pin, no floating 0: serial port open, can send and receive serial port data 1: Serial port off
16	SWCLK		Burn data pin	Used for burning firmware
17	SWDIO		Burn clock pin	Used for burning firmware
18	P0.21		GPIO	Not used in UART, floating

4.3 MS46SF1 Pin Definition



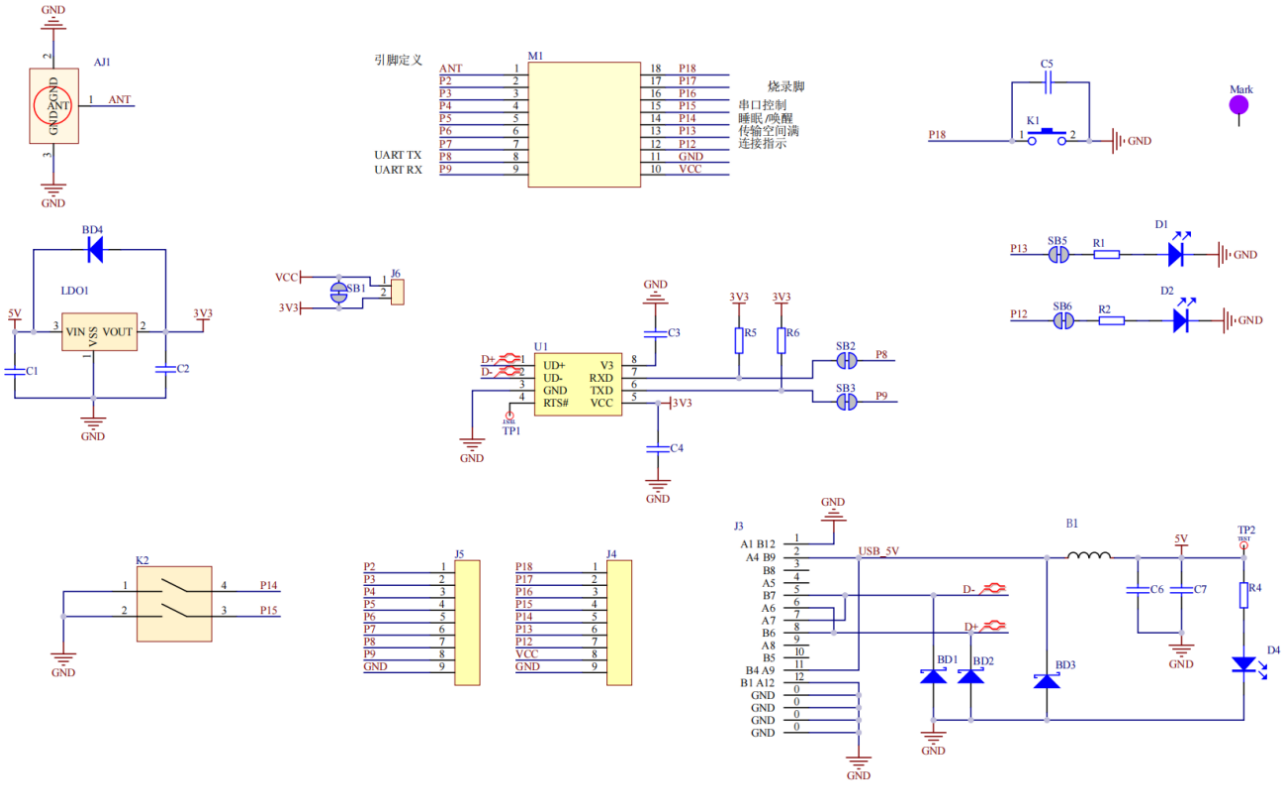
Pin Number	Symbol	Type	Description	Definition
1	ANT		External antenna pins	Using the module's built-in antenna, this pin is directly suspended in the air.If the module's built-in antenna is not used, the antenna can be externally connected through this pin. When connecting the antenna, the resistor connected to the antenna needs to be horizontally welded to this pin
2~7	NC		GPIO	Not used in UART, floating
8	P0.21	BTX	UART TX	TX of Bluetooth Module
9	P0.18	BRX	UART RX	RX of Bluetooth Module
10	VCC	VCC	Power Supply	
11	GND	GND	Ground	
12	P0.05	CON_IND	Connection indication	Sleep state: low level Broadcast status: Low level Connection status: High level
13	P0.04	FIFO_FULL	Transmission space full	Determine if the transmission space is available when it is full 0: Bluetooth module has available space for transmission 1: Host stops transmitting and waits for free space to be released
14	P0.16	SLP	Sleep/Awake	Low level to wake-up, high level to sleep, no floating
15	P0.12	BTDATA	Serial port control	Serial port on / off to control pin, no floating 0: serial port open, can send and receive serial port data 1: Serial port off
16	SWDIO		Burn clock pin	Used for burning firmware
17	SWCLK		Burn data pin	Used for burning firmware
18	NC			

4.4 MS52SF1 Pin Definition

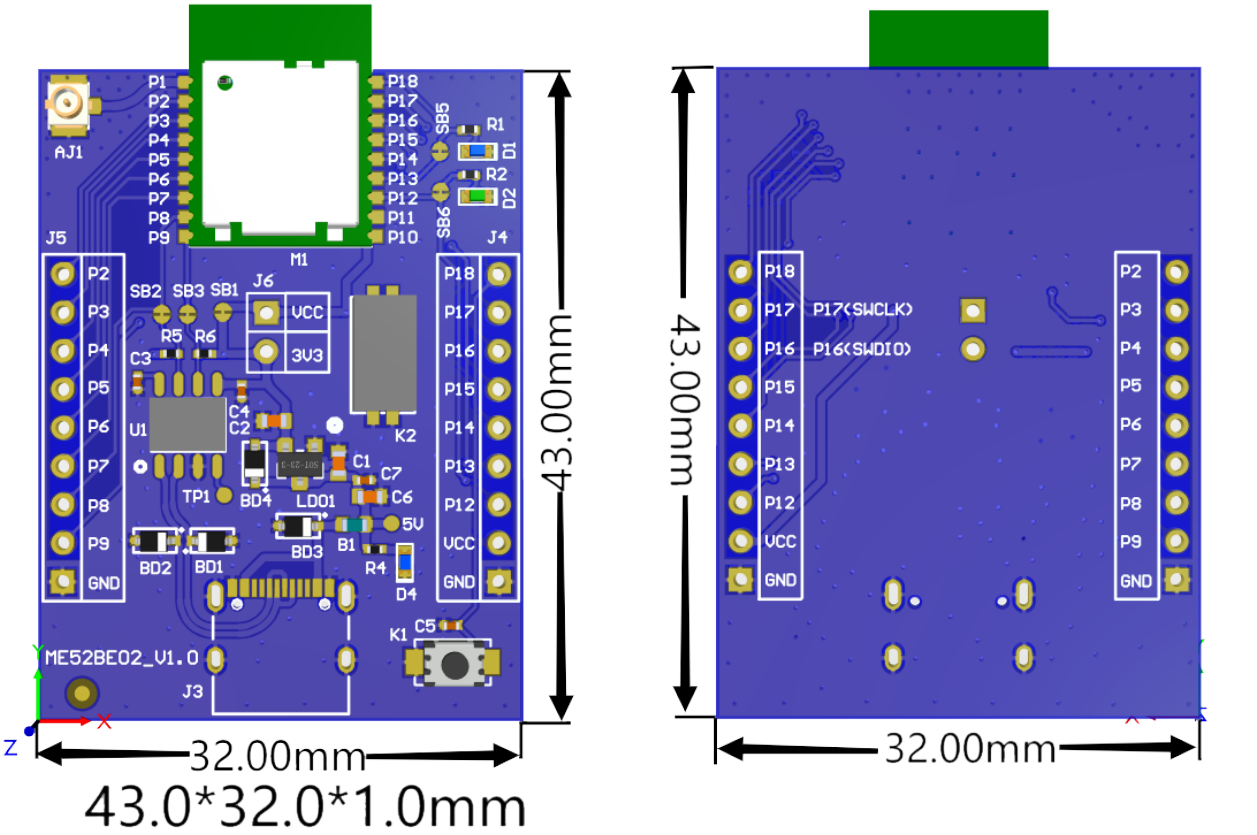


Pin Number	Symbol	Type	Description	Definition
1	ANT		External antenna pins	Using the module's built-in antenna, this pin is directly suspended in the air.If the module's built-in antenna is not used, the antenna can be externally connected through this pin. When connecting the antenna, the resistor connected to the antenna needs to be horizontally welded to this pin
2~7	PD0 to PB4		GPIO	Not used in UART, floating
8	PD7	BTX	UART TX	TX of Bluetooth Module
9	PA7	BRX	UART RX	RX of Bluetooth Module
10	VCC	VCC	Power Supply	3.3V power supply interface, need to be connected with VDDH
11	GND	GND	Ground	
12	PB7	CON_IND	Connection indication	Sleep state: low level Broadcast status: Low level Connection status: High level
13	PB6		GPIO	Not used in UART, floating
14	PB5	SLP	Sleep/Awake	Low level to wake-up, high level to sleep, no floating
15	PC0	BTDATA	Serial port control	Serial port on / off to control pin, no floating 0: serial port open, can send and receive serial port data 1: Serial port off
16	PC1		GPIO	Not used in UART, floating
17	PA3/SWS		Burn pin	For 5V power supply, connect this pin only. For 3.3V supply, connect with VDD.
18	PB3		GPIO	Not used in UART, floating

5 ELECTRICAL SCHEMATIC



6 MECHANICAL DRAWING



7 APPLICABLE PRODUCT MODELS

Order Model	Antenna Type	Module Model - Chip Type
ME52BS02	PCB	ME52BS02-OM6626
MS50SFA	PCB	MS50SFA1-nRF52810
	Ceramic	MS50SFA2-nRF52810
	PCB	MS50SFA1-nRF52832
	Ceramic	MS50SFA2-nRF52832
MS46SF1	PCB	MS46SF1-nRF52805
MS52SF1	PCB	MS52SF1-TLSR8208

8 STORAGE CONDITIONS

- **Please use this product within 6 months after signing the receipt.**
  - This product should be stored without opening the package at an ambient temperature of 5~35°C and a humidity of 20~70%RH.
  - This product should be left for more than 6 months after receipt and should be confirmed before use.
  - The product must be stored in a non-corrosive gas (Cl2, NH3, SO2, NOx, etc.).
  - To avoid damaging the packaging material, do not apply any excessive mechanical shocks, including but not limited to sharp objects adhering to the packaging material and product dropping.

- **This product is suitable for MSL2 (based on JEDEC standard J-STD-020).**
  - After opening the package, the product must be stored at ≤30°C/<60%RH. It is recommended to use the product within 3-6 months after opening the package.
  - When the color of the indicator in the package changes, the product should be baked before welding.

- **Baking is not required for one year if exposure is limited to <30°C and 60%RH. Refer to MSL2 for exposure criteria for moisture sensitivity level. If exposed to (≥168h@85°C/60%RH) conditions or stored for more than one year, recommended baking conditions.**
  1. 120 +5/-5°C, 8 hours, 1 time
  Products must be baked individually on heat-resistant trays because the materials (base tape, reel tape, and cover tape) are not heat-resistant, and the packaging material may be deformed at temperatures of 120℃;
  2、90℃ +8/-0℃，24hours，1times
  The base tape can be baked together with the product at this temperature. Please pay attention to the uniformity of heat.

9 HANDLING CONDITIONS

• Be careful in handling or transporting products because excessive stress or mechanical shock may break products.

• Handle with care if products may have cracks or damages on their terminals. If there is any such damage, the characteristics of products may change. Do not touch products with bare hands that may result in poor solder ability and destroy by static electrical charge.

10 QUALITY

Cognizant of our commitment to quality, we operate our own factory equipped with state-of-the-art production facilities and a meticulous quality management system. We hold certifications for ISO9001, ISO14001, ISO27001, OHSA18001, BSCI.

Every product undergoes stringent testing, including transmit power, sensitivity, power consumption, stability, and aging tests. Our fully automated module production line is now in full operation, boasting a production capacity in the millions, capable of meeting high-volume production demands.

11 COPYRIGHT STATEMENT

12 RELATED DOCUMENTS

- MinewSemi_Product_Naming_Reference_Manual_V1.0
  https://en.minewsemi.com/file/MinewSemi_Product_Naming_Reference_Manual_EN.pdf
- MinewSemi_Connectivity_Module_Catalogue
  https://en.minewsemi.com/file/MinewSemi_Connectivity_Module_Catalogue_EN.pdf

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MINEWSEMI

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