

Bluetooth LE Module

ME54BS01



Datasheet

V 1.0.0



Version Note

Version	Details	Contributor(s)	Date	Notes
1.0.0	First edit	Michelle	2025.07.16	

Part Number

Model	Hardware Code
ME54BS01	1Y15TI

Click the icon to view and download the latest product documents electronically.
https://en.minewsemi.com/file/ME54BS01-nRF54L15_Datasheet_K_EN.pdf



ME54BS01-nRF54L15

Cost-effective, ultra-low power Bluetooth module supports Bluetooth LE 6.0

ME54BS01 is a highly flexible, ultra-low power, cost-effective Bluetooth module based on nRF54L15. Its powerful Arm® Cortex®-M33 CPU, the core running speed of 128Mhz, in addition, it also comes with 1.5MB NVM space, 256 KB RAM. Hardware with on-board antenna, integrated design highlights the nRF54 series of higher performance, and provide more GPIO development use, while ultra-low system power consumption and excellent RF performance and other powerful supporting resources for Bluetooth connectivity to provide the perfect solution.

FEATURES



Bluetooth 6.0



High cost
Performance



Ultra-low
Power



Supports Bluetooth Channel Sounding,
Bluetooth mesh, Zigbee, Thread, and
other protocol development

KEY PARAMETERS

ME54BS01			
Chip Model	nRF54L15	Antenna	PCB
Module Size	23.2×17.4×2mm	GPIO	19
Flash	1.5MB	RAM	256KB
Receiving Sensitivity	-96dBm	Transmission Power	-40~+7dBm
Current(TX)	0dBm-5mA	Current(RX)	3.2mA

APPLICATIONS



Smart Home



Computer Accessories



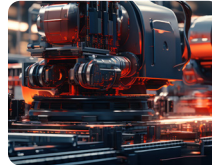
Virtual reality and Augmented reality



Game controllers and Remotes



Medical Devices



Industrial IoT

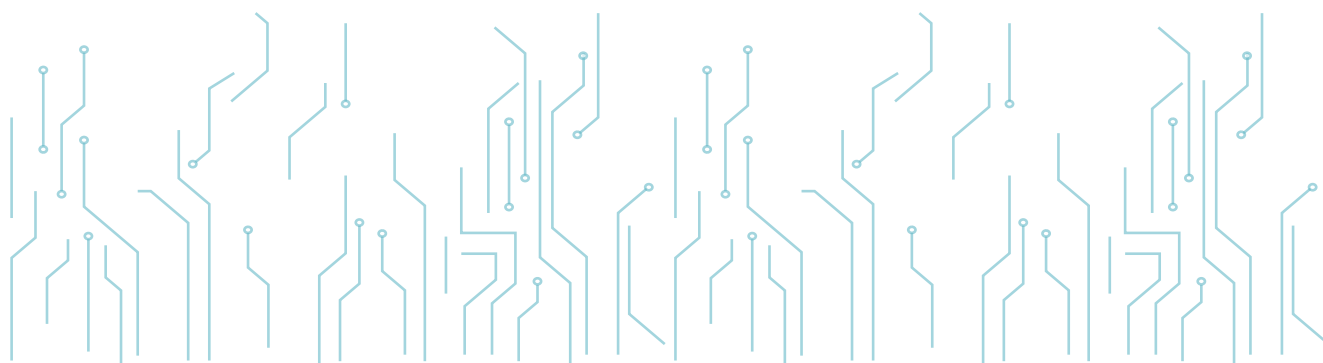
CERTIFICATION



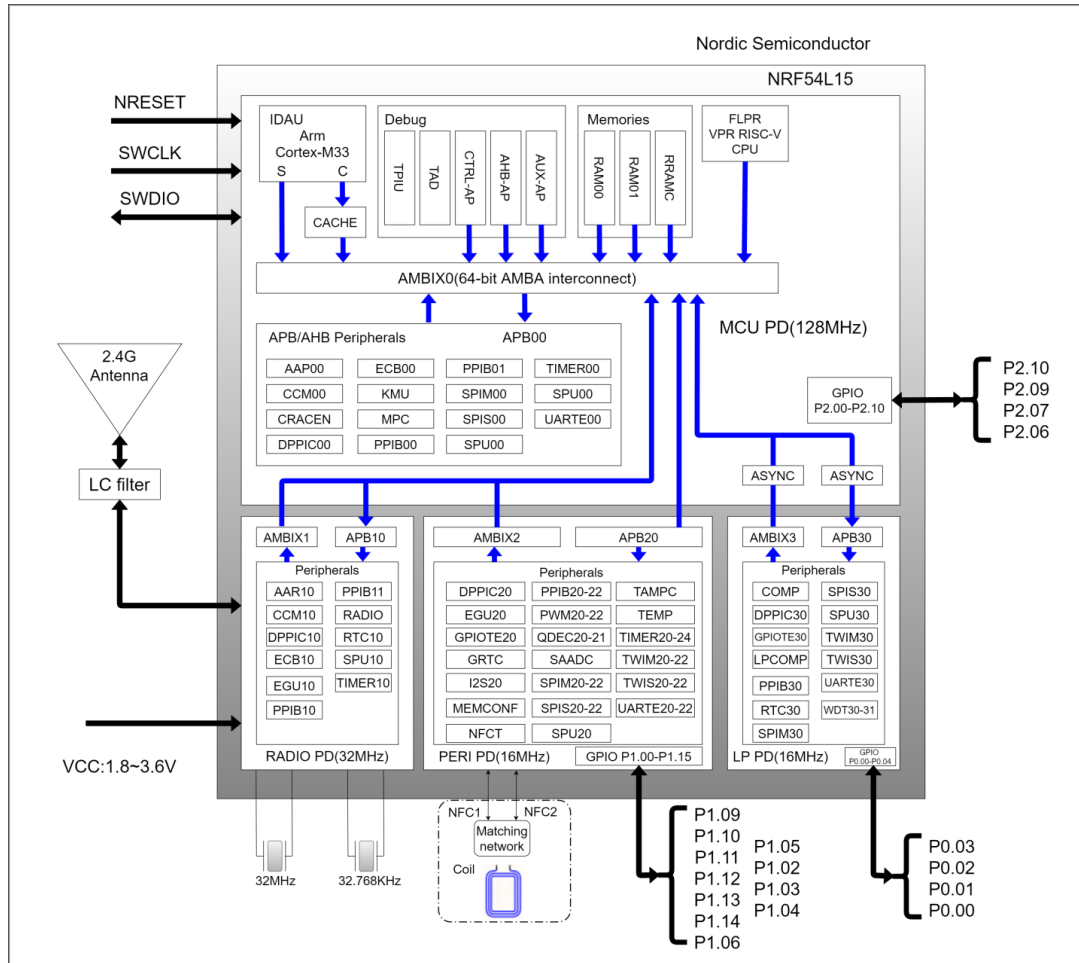


INDEX

1.Block Diagram	05
2.Electrical Specification	05
3.Pin Description	06
4.Pin Definition	06
5.Mechanical Drawing	07
6.Electrical Schematic	07
7.PCB Layout	08
8.Reflow and Soldering.....	08
9.Package Information	09
10.Storage Conditions	10
11.Handling Conditions.....	10
12.Quality	10
13.Copyright Statement.....	11
14.Related Documents	11



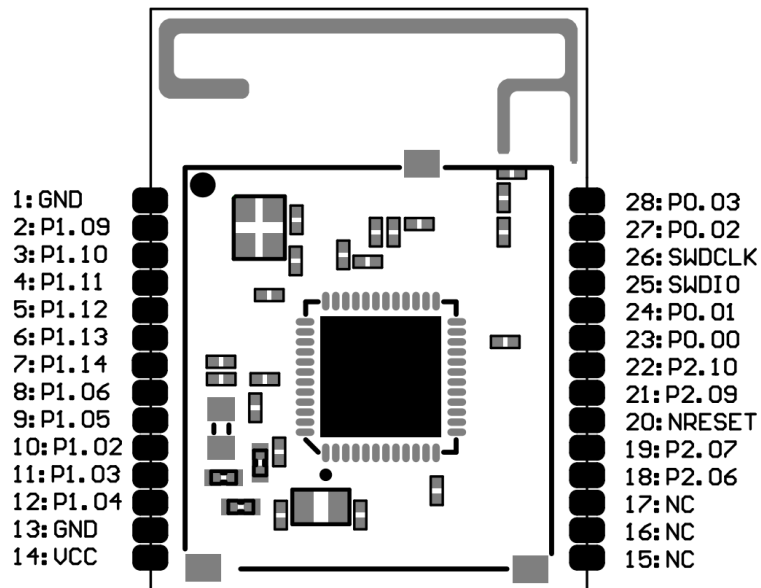
1 BLOCK DIAGRAM



2 ELECTRICAL SPECIFICATION

Parameter	Values	Notes
Working Voltage	1.7V-3.6V	To ensure RF work, it is recommended that the supply voltage is not lower than 2.3V
Working Temperature	-40℃~+105℃	Operating temperature from -40℃ to 105℃
Transmission Power	-40~+7dBm	Configurable
Current(RX)	3.2mA	RF receiving current under 1Mbps pattern
Current(TX)	5mA	RF transmission current under 0dBm pattern
Module Dimensions	23.2*17.4*2mm	
Quantity of IO Port	19	

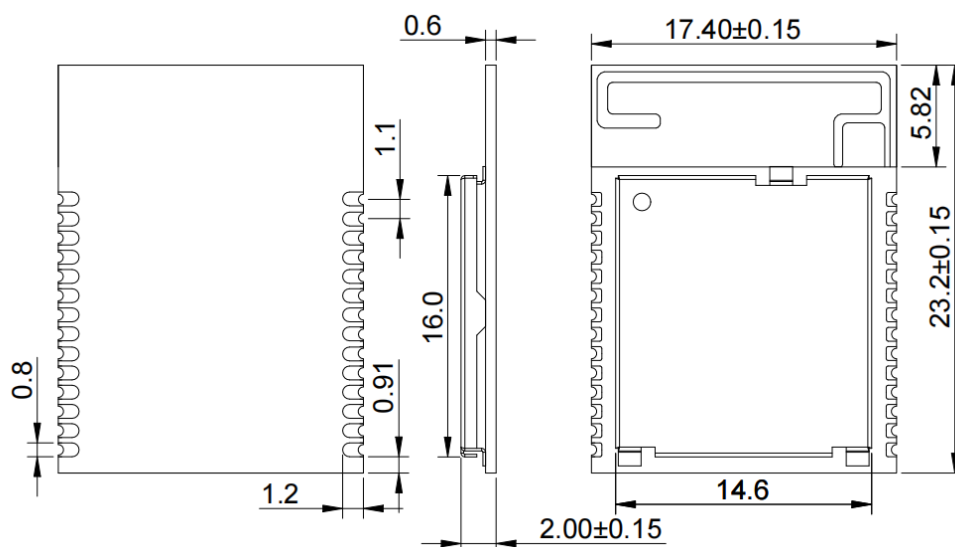
3 PIN DESCRIPTION



4 PIN DEFINITION

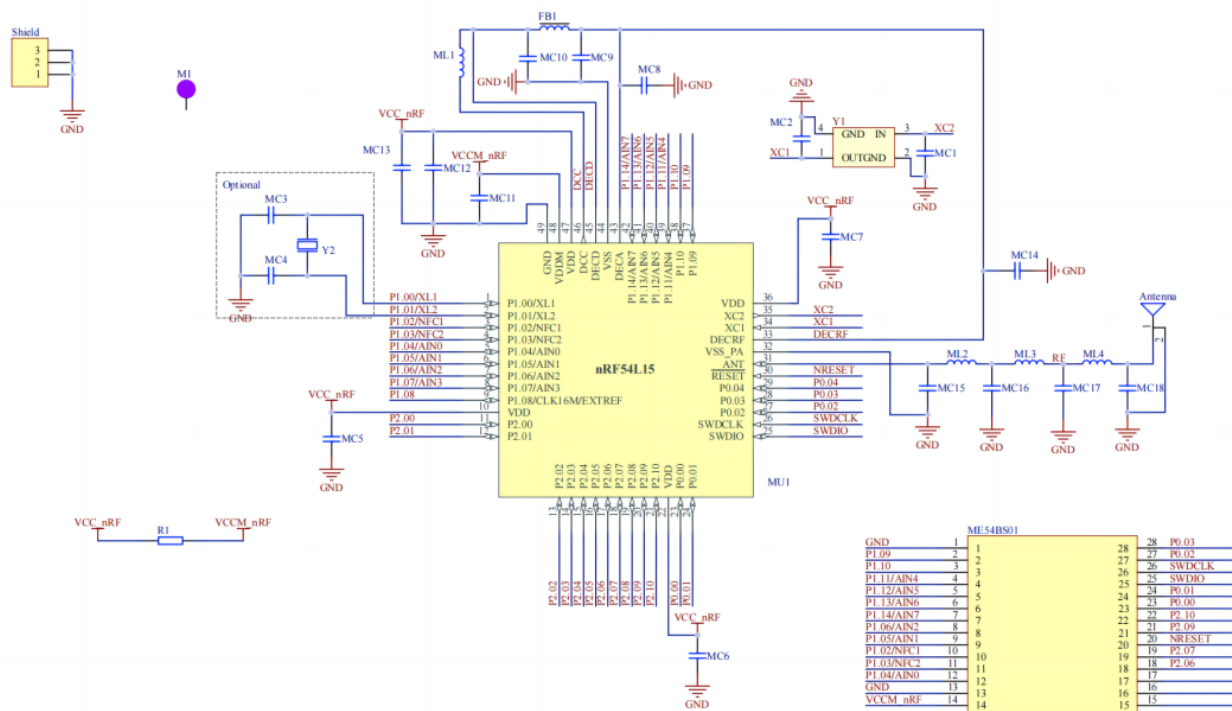
Pin Number	Symbol	Type	Definition
1/13	GND	GND	GND
2-12	P1.02-P1.06/ P1.09-P1.14	I/O	General-Purpose I/O (GPIO) pins
14	VCC	VCC	Power supply, default 1.8V-3.6V
15-17	NC	NC	Empty pins
18-19	P2.06/P2.07	I/O	General-Purpose I/O (GPIO) pins
20	NRESET	Reset pin	Reset
21-24	P2.03-P2.10/ P0.00-P0.01	I/O	General-Purpose I/O (GPIO) pins
25/26	SWDIO/SWDCLK	Programming Pins	Programming pin, when programming, just connect the power supply pin, ground, and these two pins
27-28	P0.02-P0.03	I/O	General-Purpose I/O (GPIO) pins

5 MECHANICAL DRAWING



Default unit: mm Default tolerance: ± 0.15

6 ELECTRICAL SCHEMATIC



Notice: Before placing an order, please confirm the specific configuration required with the salesperson.



7 PCB LAYOUT

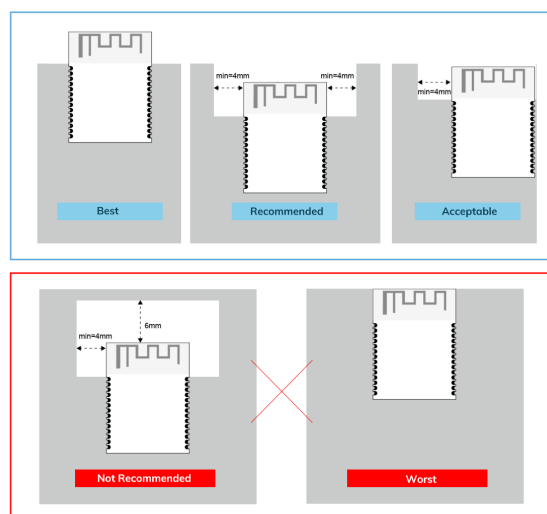
There should be no GND plane or metal cross wiring in the module antenna area, and no components should be placed nearby. It is best to make a hollow or clear area, or place it on the edge of the PCB board. The reference example is as follows:



Notice: It is strongly recommended to use the first design method. The module antenna design is debugged according to the first wiring.

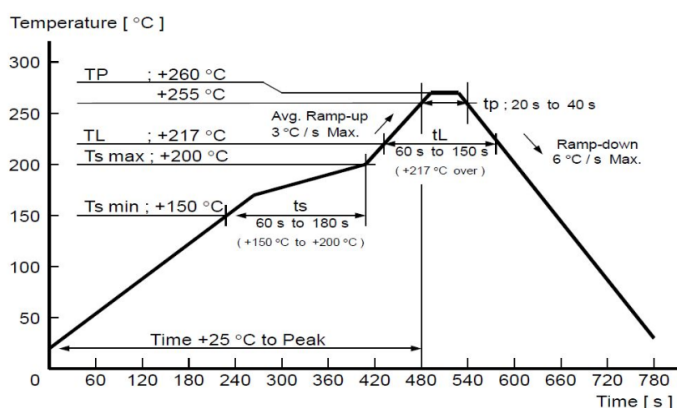
Layout Notes:

- 1)The module's antenna area should be completely clear of any metal obstructions to avoid affecting antenna performance (as shown in the diagram).
- 2)Outside the module's antenna area, try to maintain a solid copper pour to minimize interference from the mainboard signal lines or other sources.
- 3)A clear area of at least 4mm should surround the module's antenna (including its casing) to reduce interference with the antenna.
- 4)Ensure good grounding for components to minimize parasitic inductance.
- 5)Do not place copper under the module's antenna to prevent interference with signal radiation, which could affect transmission distance.
- 6)The antenna should be kept away from other circuits to maintain radiation efficiency and avoid impacting the normal operation of other circuits.
- 7)Position the module as close to the edge of the circuit board as possible, away from other circuitry.
- 8) It is recommended to use a ferrite bead for isolation when connecting the module to the power supply.



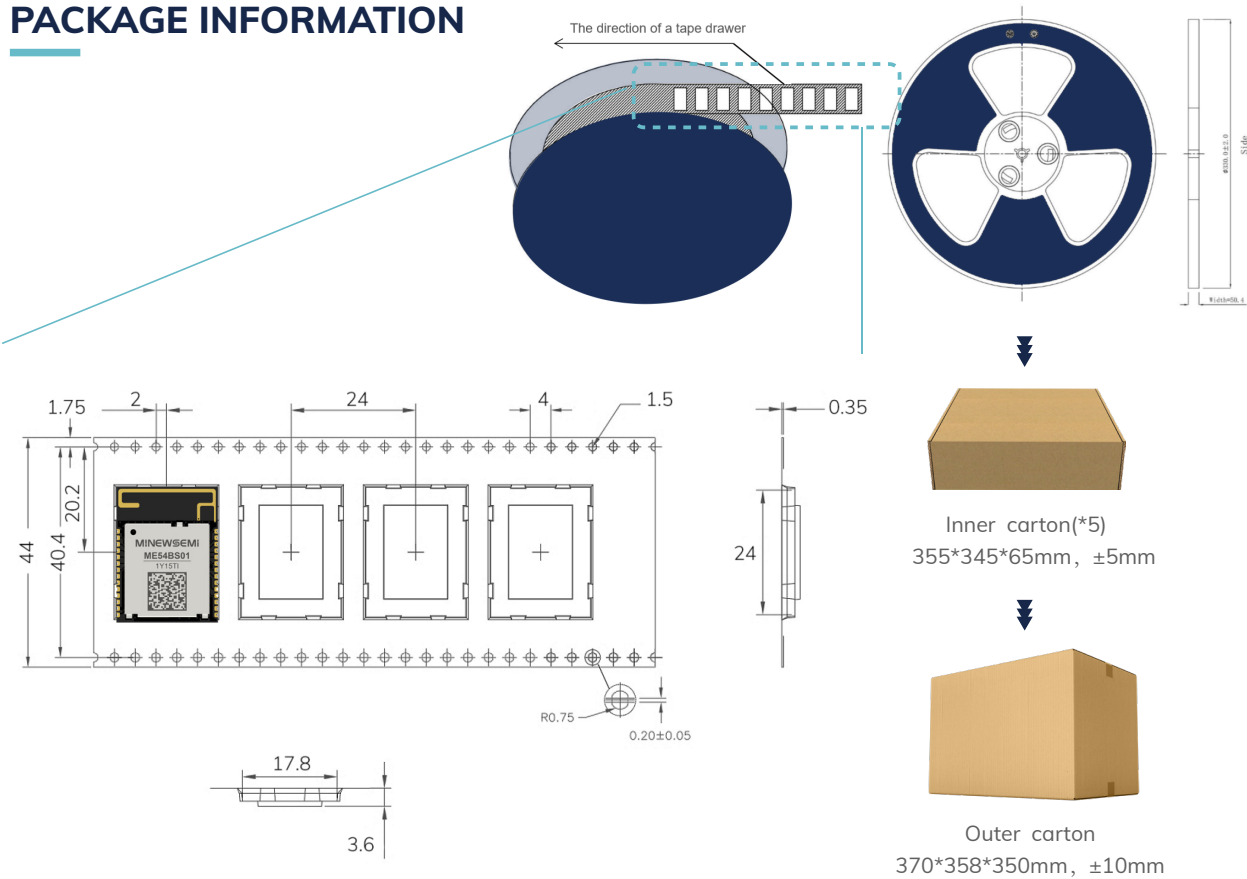
8 REFLOW AND SOLDERING

- 1) Perform SMT according to the reflow oven temperature profile provided below, with a maximum temperature of 260°C;
- 2) Follow IPC/JEDEC standards; Peak temperature: < 260°C; Number of reflows: ≤2 times; For SMT involving double-sided placement, it is recommended that the module side undergoes reflow soldering only once. For any special processes, please contact our company.
- 3) Module SMT recommended steel mesh thickness 0.13-0.15mm;
- 4) After opening, if the entire package is not used at once, it should be stored in a vacuum to prevent long-term exposure to air, which can cause moisture absorption and pad oxidation. If there is a gap of 7 to 30 days before reuse, it is recommended to bake the tape at 65-70°C for 24 hours without unrolling it before returning to SMT.
- 5) ESD protection measures should be implemented before using SMT.



9

PACKAGE INFORMATION

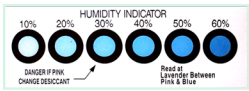


Remarks

General material list for FCL packaging:



Carrier tape packaging tray



Humidity Indicator
(1 pcs/bag)



Desiccant
(placed in a vacuum bag)



Vacuum bag



Inner carton(*5)
355*345*65mm, ±5mm



Outer carton
370*358*350mm, ±10mm

Other:

- Moisture-proof label (attached to the vacuum bag)
- Certification label (attached to the vacuum bag)
- Outer box label

Default unit: mm Default tolerance: ±0.1

Packing Detail	Specification	Net Weight	Gross Weight	Dimensions
ME54BS01	650PCS	682.5g	1513.5g	W=44mm, T=0.35mm

Note: Default weight tolerance all are within 10g (except the special notes)

10 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, NO_x, 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 timeProducts 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 °C;
 2. 90 °C ±8/-0 °C, 24hours, 1timesThe base tape can be baked together with the product at this temperature. Please pay attention to the uniformity of heat.

11 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.

12 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, OHSAS18001, 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.

13 COPYRIGHT STATEMENT

This manual and all the contents contained in it are owned by Shenzhen Minewsemi Co., Ltd. and are protected by Chinese laws and applicable international conventions related to copyright laws.

The certified trademarks included in this product and related documents have been licensed for use by MinewSemi. This includes but is not limited to certifications such as BQB, RoHS, REACH, CE, FCC, BQB, IC, SRRC, TELEC, WPC, RCM, WEEE, etc. The respective textual trademarks and logos belong to their respective owners. For example, the Bluetooth® textual trademark and logo are owned by Bluetooth SIG, Inc. Other trademarks and trade names are those of their respective owners. Due to the small size of the module product, the "®" symbol is omitted from the Bluetooth Primary Trademarks information in compliance with regulations.

The company has the right to change the content of this manual according to the technological development, and the revised version will not be notified otherwise. Without the written permission and authorization of the company, any individual, company, or organization shall not modify the contents of this manual or use part or all of the contents of this manual in other ways. Violators will be held accountable in accordance with the law.

14 RELATED DOCUMENTS

- [MinewSemi_Product_Naming_Reference_Manual_V1.0](https://en.minewsemi.com/file/MinewSemi_Product_Naming_Reference_Manual_EN.pdf)
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)
https://en.minewsemi.com/file/MinewSemi_Connectivity_Module_Catalogue_EN.pdf



For product change notifications and regular updates of Minewsemi documentation, please register on our website: www.minewsemi.com

MINESEMI
Innovative IoT Module Expert



SHENZHEN MINEWSEMI CO., LTD.



0086-755-2801 0353



<https://minewsemi.com>



minewsemi@minew.com



<https://store.minewsemi.com>



Gangzhilong Technology Park, Qinglong Road, Longhua District, Shenzhen