

# LoRaWAN Module **ME25LS01**



## Datasheet

V 1.0.0



## Version Note

Version	Details	Contributor(s)	Date	Notes
1.0.0	First edit	Vincle, Leo	2024.06.06	

## Part Number

Model	Hardware Code
ME25LS01	4Y10TD

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[https://en.minewsemi.com/file/ME25LS01\\_LR1110\\_Datasheet\\_K\\_EN.pdf](https://en.minewsemi.com/file/ME25LS01_LR1110_Datasheet_K_EN.pdf)



# ME25LS01-LR1110+NRF52840

## High-performance, long-range, small-size, ultra-low-power, supports WiFi-scan/GNSS/BLE/LoRaWAN multi-protocol

The ME25LS01 is an ultra-low-power, high-performance, small-sized module that supports Wi-Fi Scan, GNSS (GPS/BDS), BLE5.3, LoRaWAN and other multi-protocols, and has a large storage capacity of 512KB RAM and 1MB Flash. ME25LS01 has better reception sensitivity, with BLE as low as -96dBm and LoRa as low as -125.6dBm. At the same time, the maximum power of BLE is 6dBm and the maximum power of LoRa is 22dBm, which can meet the needs of longer transmission distance. The module power supply voltage is 3.3V, with abundant GPIO, ADC, Uart, I2C, NFC, etc. It has a completely open source development platform to support customers' secondary development and customization needs.

### FEATURES



Cortex M4 high performance MCU



Low power, dual low power chip combination



BLE 5.3, supports BLE long-range



Abundant IO ports, USB, Uart, I2C, etc



Open-source development platform

### KEY PARAMETER

ME25LS01			
Chip Model	LR1110+nRF52840	Antenna	ANT pin
Module Size	25.5x20x2.6mm	GPIO	44
Flash	1MB	RAM	512KB
Receiving Sensitivity	BLE: -96dBm LoRa: -125.6dBm	Transmission Power	BLE:-40~+8dBm LoRa: 22dBm
Current(TX)	Max- 118mA	Current(RX)	Max-10.7mA

### APPLICATION



Agricultural automation



Asset tracking



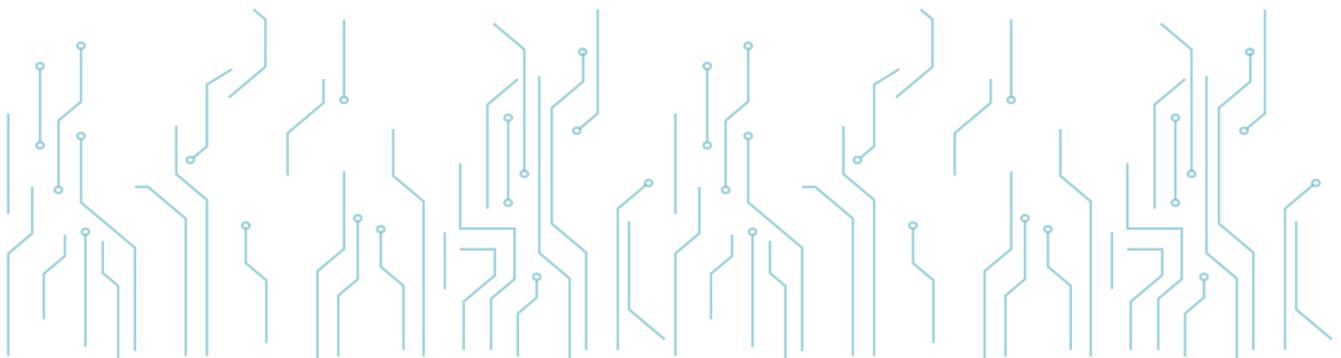
Inventory management



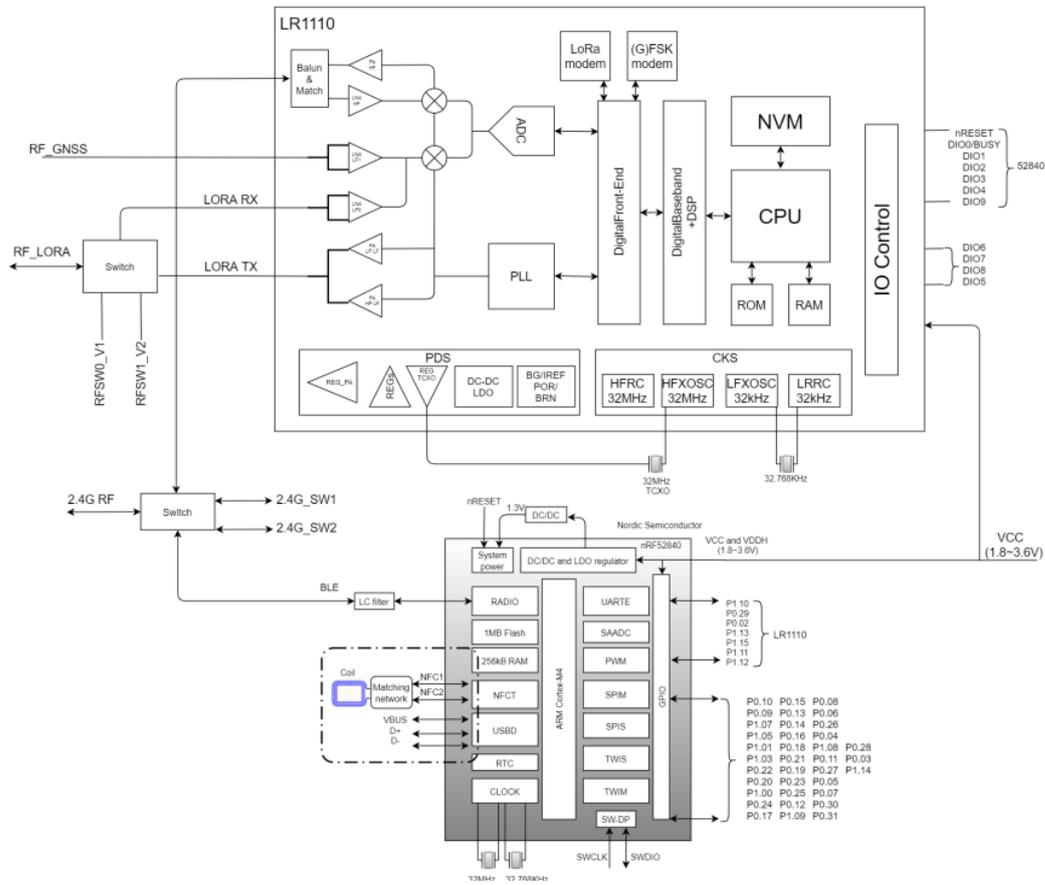
Livestock tracking

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# 1 BLOCK DIAGRAM

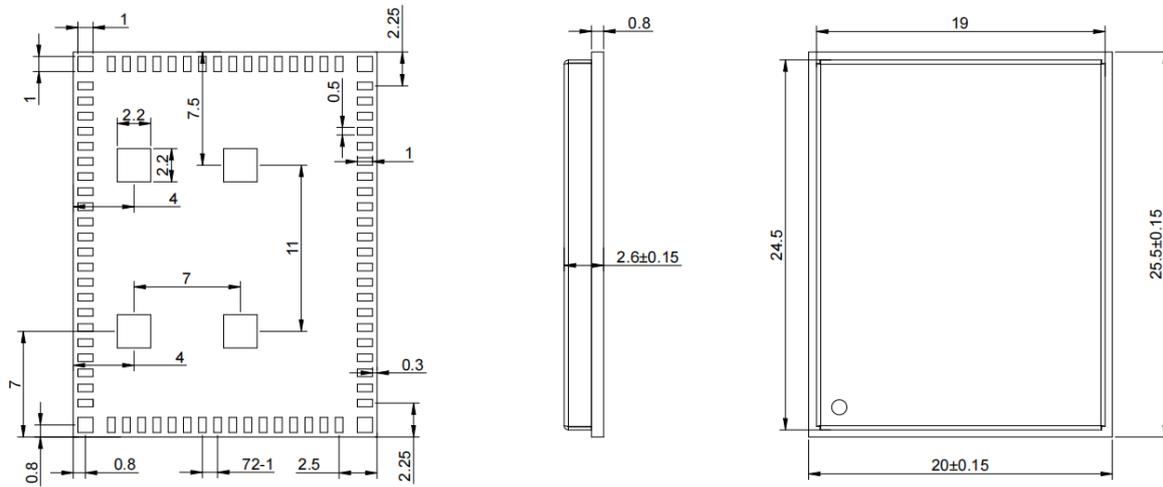


# 2 ELECTRICAL SPECIFICATION

Parameter	Values	Notes
Operating Voltage	1.7V-5.5V	Standard power supply voltage 3.3V
Working Temperature	-40℃~+85℃	Storage temperature is -40℃~+125℃
Operating Frequency	LoRa: 150MHz - 960MHz GNSS: GPS L1, BDS B1	LoRa: support 868MHz/915MHz
Transmission Power	BLE: -40 ~ +8dBm LoRa: +22dBm	Configurable
Current(RX)	10.7mA	Max receiving current
Current(TX)	118mA	Max transmission current
Module Dimension	25.5*19*2.6mm	
Quantity of IO Port	44	I2C、UART、USB、SPI etc.

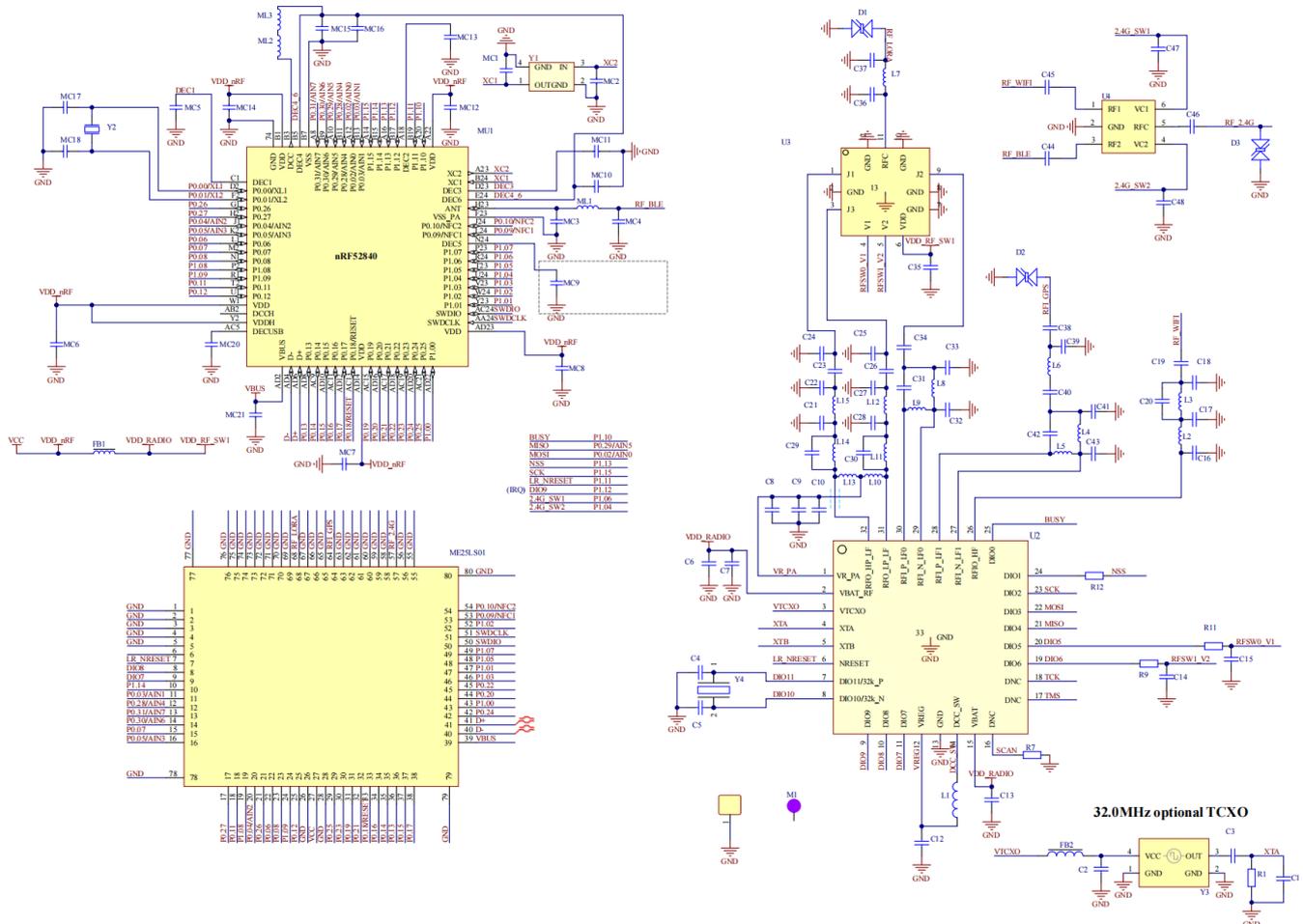


# 5 MECHANICAL DRAWING



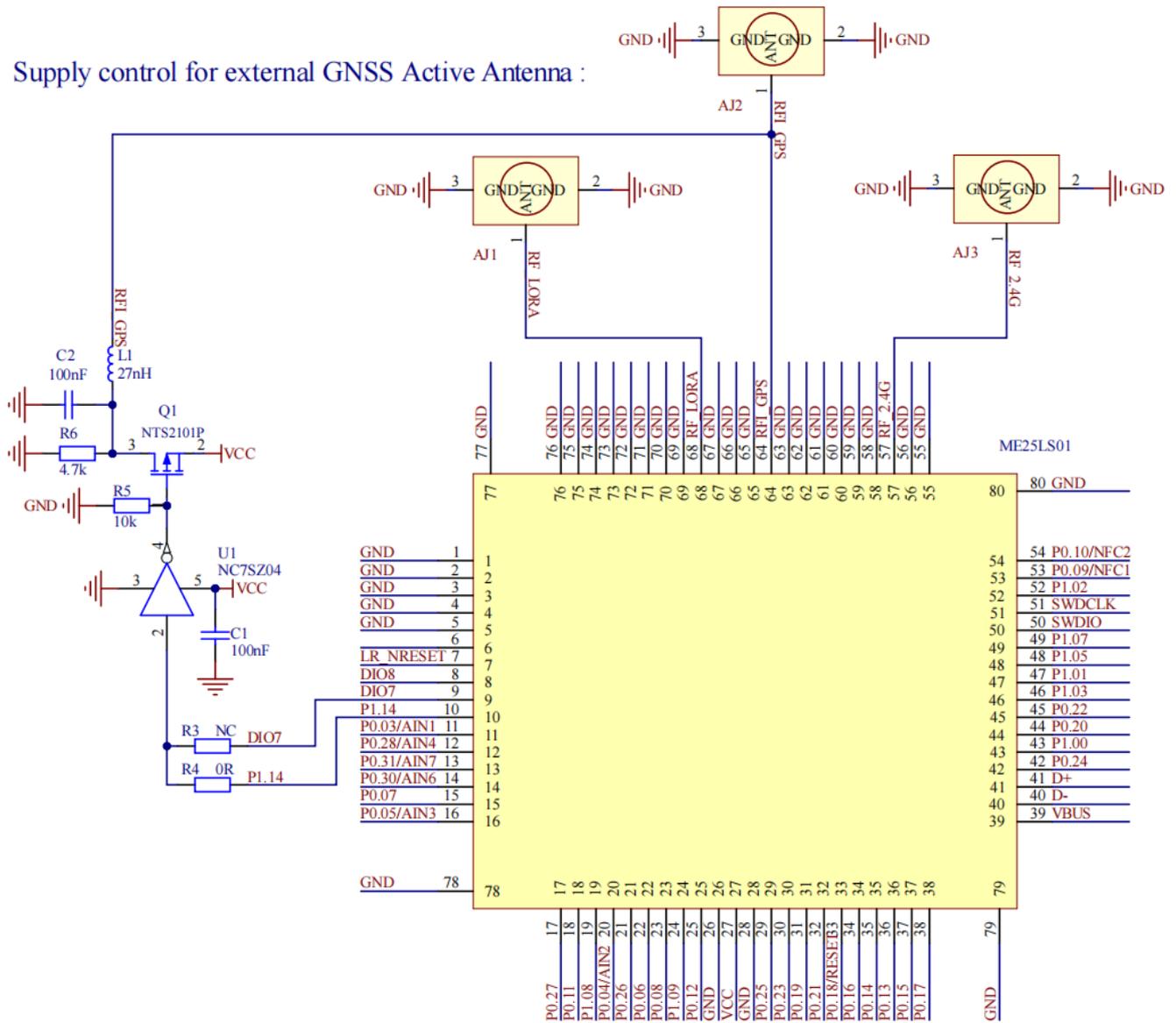
⚠ Default unit: mm Default tolerance: ±0.15

# 6 ELECTRICAL SCHEMATIC



# 7 REFERENCE DESIGN

Supply control for external GNSS Active Antenna :



## 8 PCB LAYOUT

Module antenna area couldn't have GND plane or metal cross line, couldn't place components nearby. It is better to make hollow out or clearance treatment or place it on the edge of PCB board.

### Layout Notes:

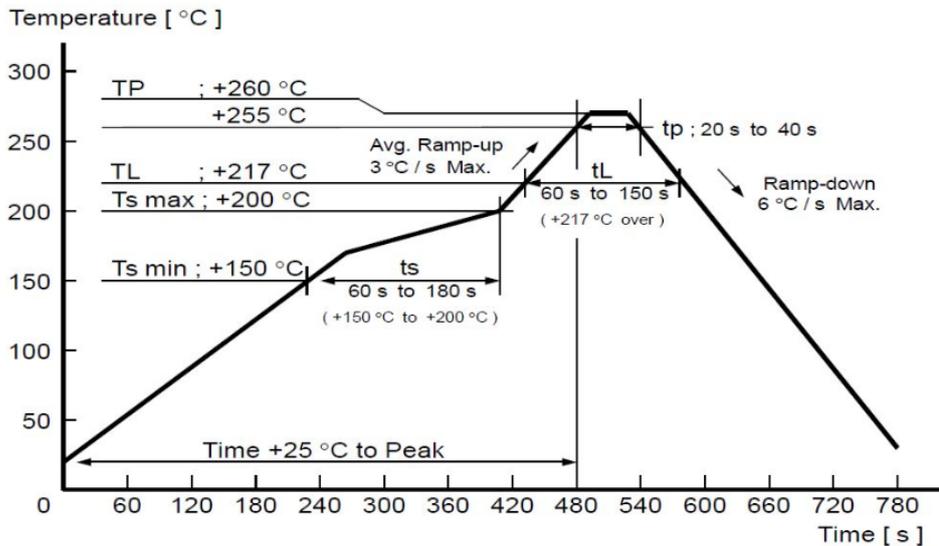
- 1) Preferred Module antenna area completely clearance and not be prevented by metals, otherwise it will influence antenna's effect (as above DWG. indication).
- 2) Cover the external part of module antenna area with copper as far as possible to reduce the main board's signal cable and other disturbing.
- 3) It is preferred to have a clearance area of 4 square meter or more area around the module antenna (including the shell) to reduce the influence to antenna.
- 4) Device should be grounded well to reduce the parasitic inductance.
- 5) Do not cover copper under module's antenna in order to avoid affect signal radiation or lead to transmission distance affected.
- 6) Antenna should keep far from other circuits to prevent radiation efficiency reduction or affects the normal operation of other lines.
- 7) Module should be placed on edge of circuit board and keep a distance away from other circuits.
- 8) Suggesting to use magnetic beads to insulate module's access power supply.



External antenna can be connected to ME25LS01 module through RF pin by customer's own hardware design. Above antenna design is for reference only. Please feel free to contact our sales engineer for further technical support

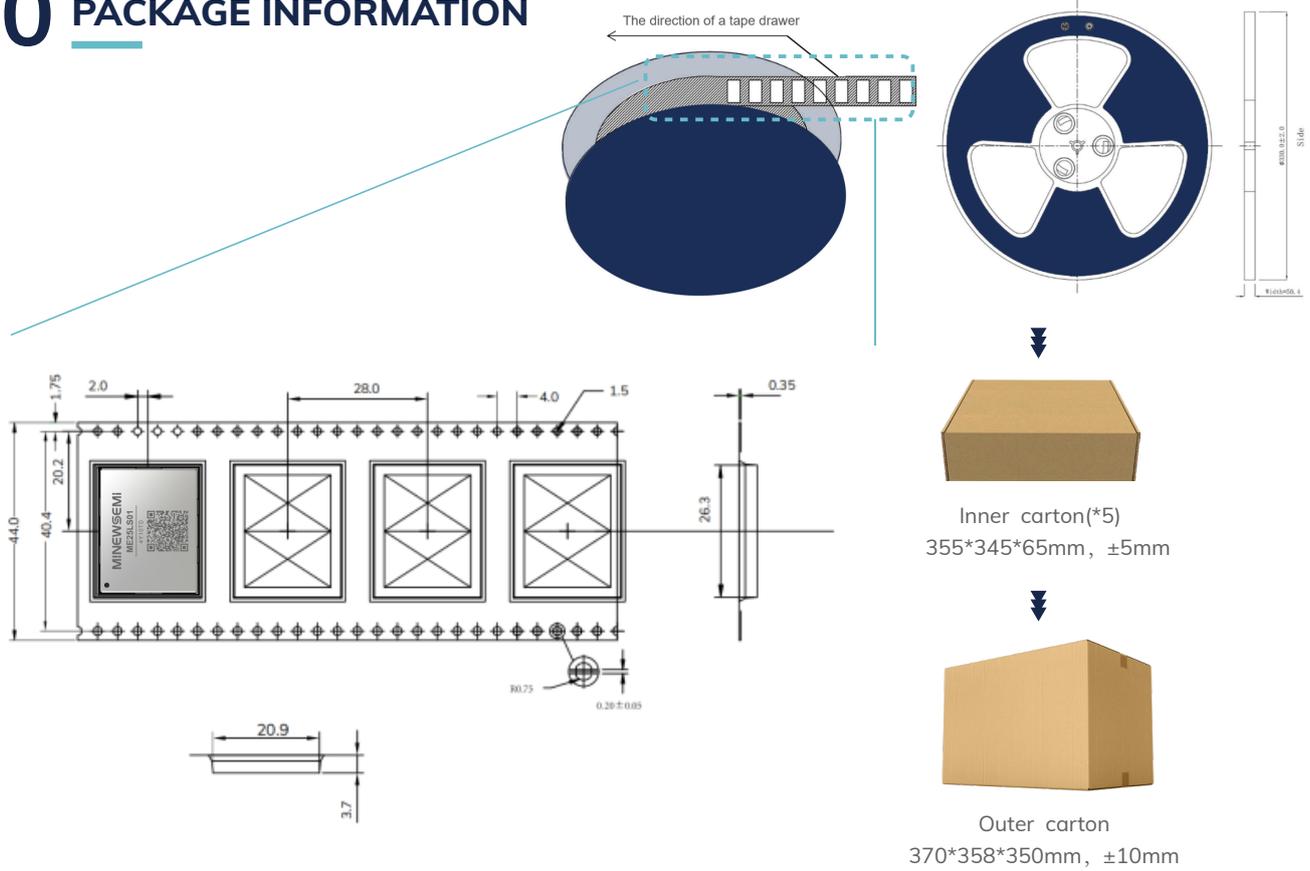
## 9 REFLOW AND SOLDERING

- 1) Do SMT according to above reflow oven temperature deal curve. Max. Temperature is 260°C; Refer to IPC/JEDEC standard; Peak TEMP<260°C; Times: ≤2 times, suggest only do once reflow soldering on module surface in case of SMT double pad involved. Contact us if special crafts involved.



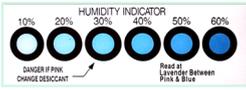
- 2) Suggesting to make 0.2mm thickness of module SMT for partial ladder steel mesh, then make the opening extend 0.8mm
- 3) After unsealing, it cannot be used up at one time, should be vacuumed for storage, couldn't be exposed in the air for long time. Please avoid getting damp and soldering-pan oxidizing. If there are 7 to 30 days interval before using online SMT, suggest to bake at 65-70 °C for 24 hours without disassembling the tape.
- 4) Before using SMT, please adopt ESD protection measure.

# 10 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
		<b>Other:</b>	
Inner carton(*5) 355*345*65mm, ±5mm	Outer carton 370*358*350mm, ±10mm	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	Dimension
ME25LS01	620PCS	-	-	W=44mm, T=0.35mm

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

# 11 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 (Cl<sub>2</sub>, NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>x</sub>, 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°C;
  2. 90°C +8/-0°C, 24hours, 1times  
The base tape can be baked together with the product at this temperature. Please pay attention to the uniformity of heat.

# 12 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.

# 13 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.

## 14 COPYRIGHT STATEMENT

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## 15 RELATED DOCUMENTS

- LR1110\_Chip\_Datasheet  
[https://en.minewsemi.com/file/LR1110\\_Chip\\_Datasheet\\_EN.pdf](https://en.minewsemi.com/file/LR1110_Chip_Datasheet_EN.pdf)
- nRF52840\_Chip\_Datasheet  
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