

Wi-Fi Module

ME16WS01

Datasheet

V 1.0.0

Applicable Product Model
ME16WS01

Version Note

Version	Details	Contributor(s)	Date	Notes
1.0.0	First edit	Vinle	2024.03.14	First edition

ME16WS01-RTL8720DN

**Dual-core High Performance,
Bluetooth 5.0, Low-power, Wi-Fi Dual
Band, Support WiFi AP/STA/AP+STA**



ME16WS01 is a dual-band wireless WiFi module based on RTL8720DN SoC. It has an ARM-v8 core compatible Cortex-M4F RF transceiver with a core running speed of 200Mhz. In addition, it also comes with 2MB FLASH program space, 512KB+64KB RAM, integrated 2.4 GH&5.8G transceiver and other powerful functions. Companion resources provide the perfect solution for WiFi and Bluetooth connectivity. RTL8720DN can support WiFi AP/STA/AP+STA working mode, support BLE auxiliary network distribution, and provides a set of configurable GPIO ports for the control of different peripheral devices.

■ Features

- Bluetooth 5.0
- Dual-core high performance
- IEEE802.11 a/b/g/n, 2.4GHz & 5GHz
- Support HT20/HT40 mode
- Support optional PCB/IPEX antenna
- Support WiFi AP/STA/AP+STA mode
- Supports built-in AES/DES/SHA hardware engine

■ Application

- Smart Home
- Consumer Electronics
- Smart Healthcare
- Security Equipment
- Fitness Equipment

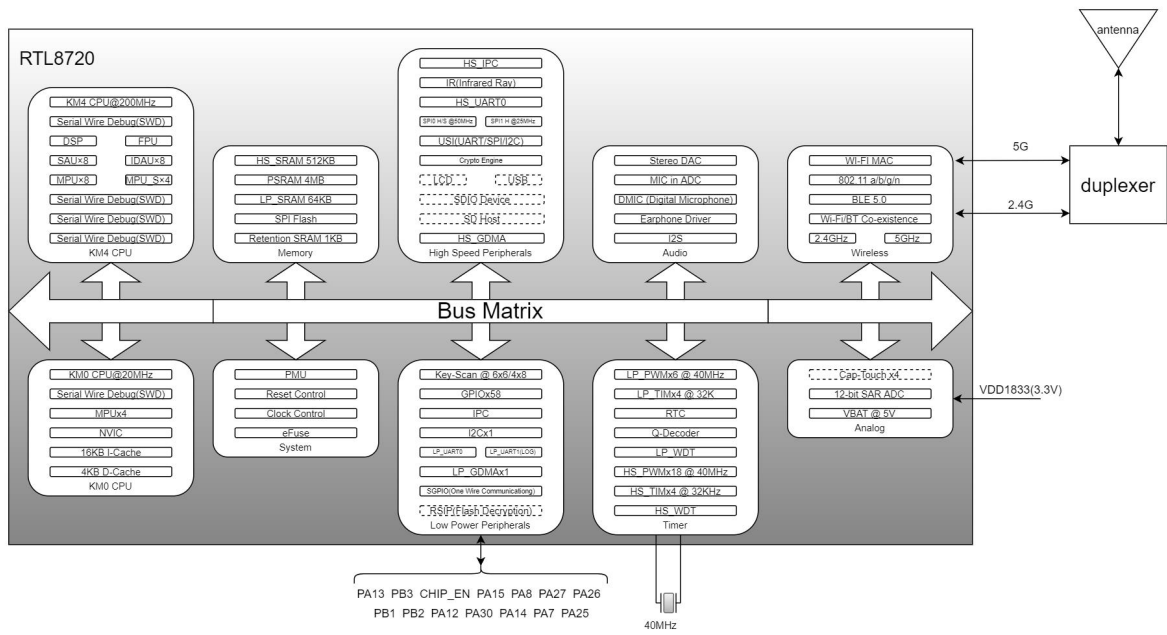
■ Key Parameter

Chip Model	RTL8720DN	Antenna	PCB/IPEX
Module size	24×16×3.4mm	GPIO	11
Flash	2MB	RAM	512KB+64KB
Receiving Sensitivity	BLE: -98dBm Wi-Fi: -95dBm	Transmission Power	BLE: -40 ~ +8dBm Wi-Fi: +20dBm

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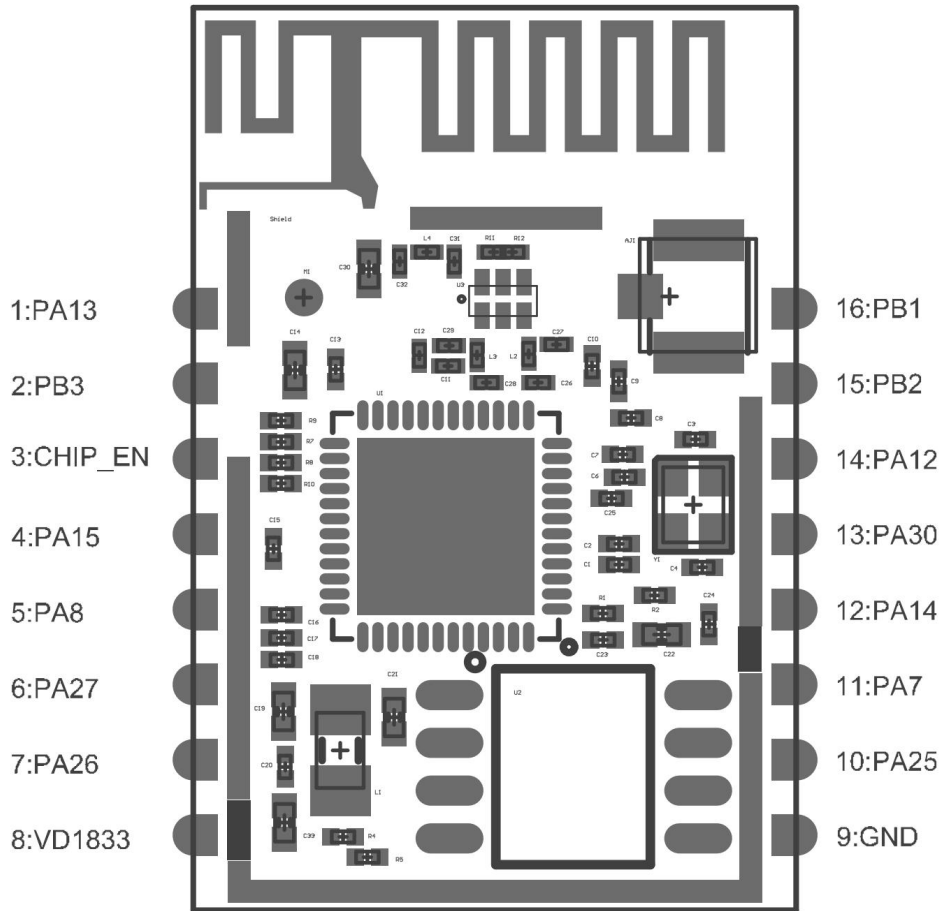
1 Block Diagram



2 Electrical Specification

Parameter	Values	Notes
Working Voltage	3.0V-3.6V	Type voltage 3.3V
Working Current	> 500mA	Peak current greater than 500mA
Working Temperature	-40°C ~ +85°C	Storage temperature is -40°C ~ +125°C
Transmission Power	BLE: -40 ~ +8dBm Wi-Fi: +20dBm	Configurable
Module Dimension	24*16*3.4mm	
Quantity of IO Port	11	

3 Pin Description



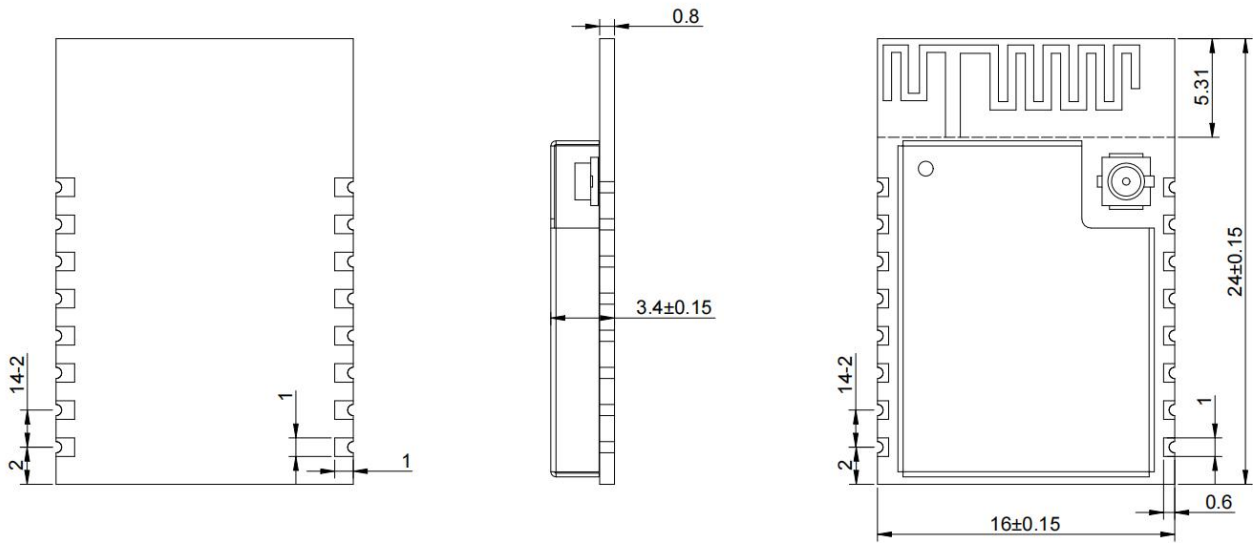
(TOP View)

Notice: For antenna, choose between PCB antenna or IPEX mount interface.

4 Pin Definition

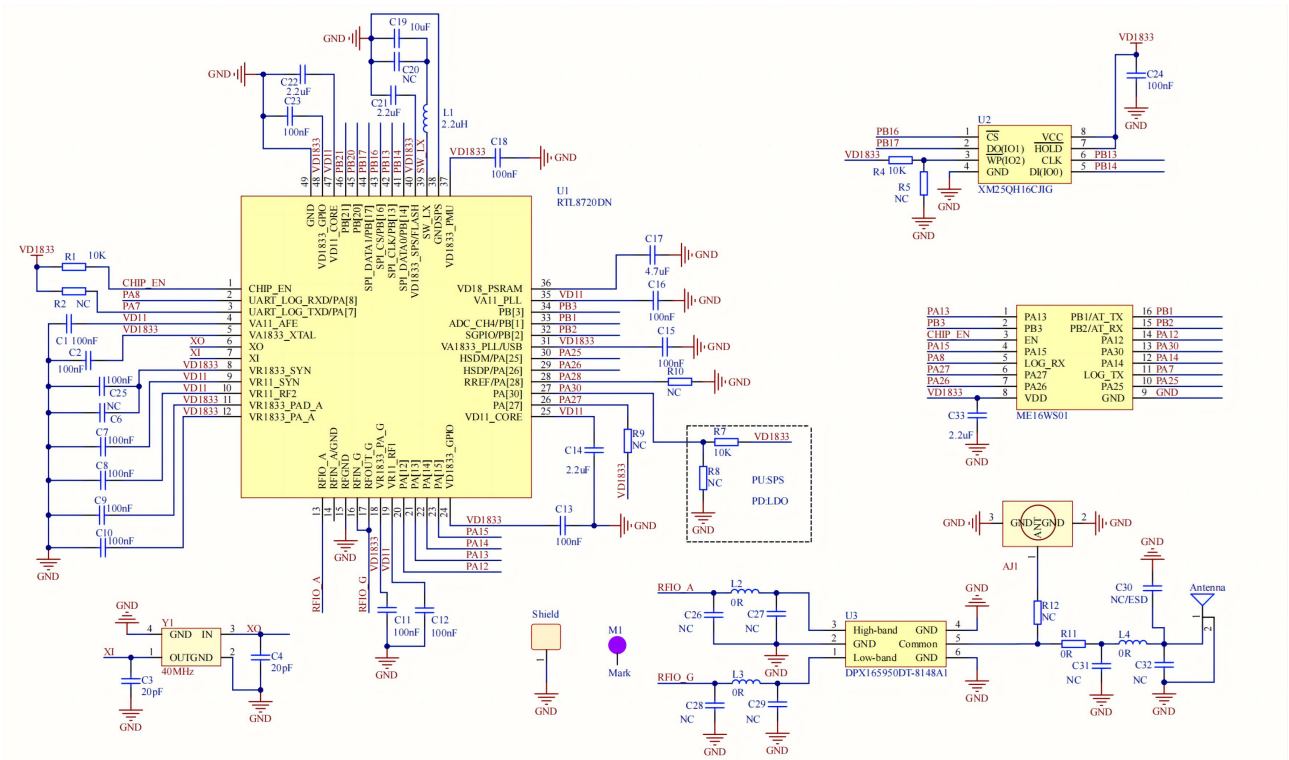
Pin Number	Symbol	Definition
1	PA13	LP_PWM1/SPI1_MISO
2	PB3	ADC/SWD_CLK
3	CHIP_EN	Chip enable, active high level
4	PA15	SPI1_CS
5	PA8	UART LOG_RX, Download updated firmware with RX pin
6	PA27	SWD_DATA
7	PA26	LP_I2C_SDA/LP_PWM5
8	VD1833	Power supply, VDD 3.3V, with this pin
9	GND	Grounded
10	PA25	LP_I2C_SCL/LP_PWM4
11	PA7	UART LOG_TX, Download updated firmware with TX pin
12	PA14	SPI1_CLK
13	PA30	LP_PWM1
14	PA12	SPI1_MOSI/LP_PWM0
15	PB2	I/O pin multiplexing, UART receive pin (RX)
16	PB1	I/O pin multiplexing, UART transmit (TX)

5 Mechanical Drawing



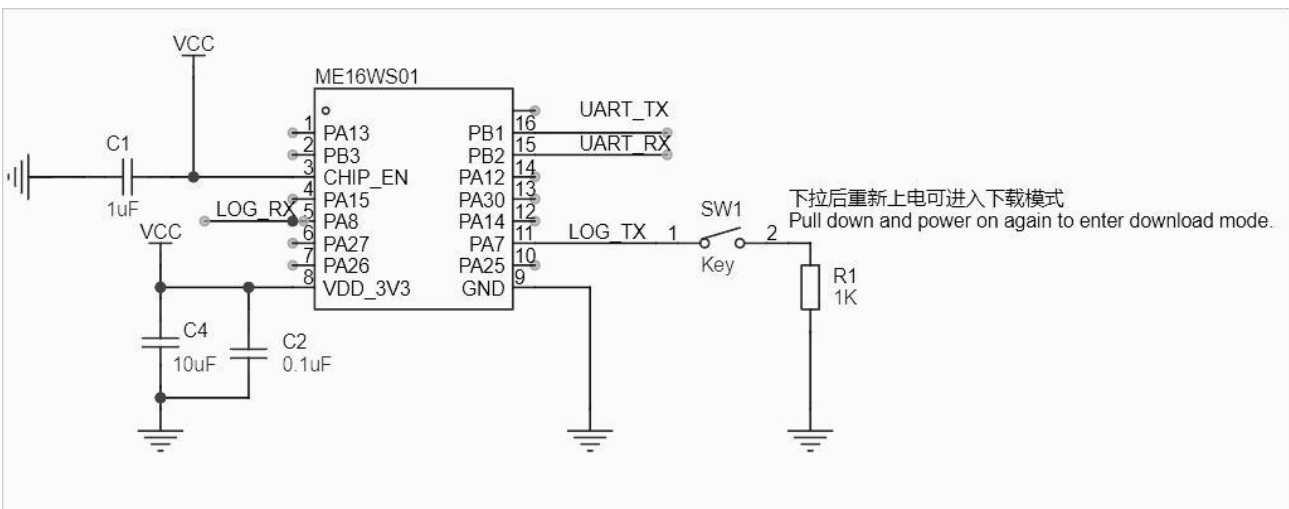
* (Default unit: mm Default tolerance: ±0.15)

6 Electrical Schematic



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

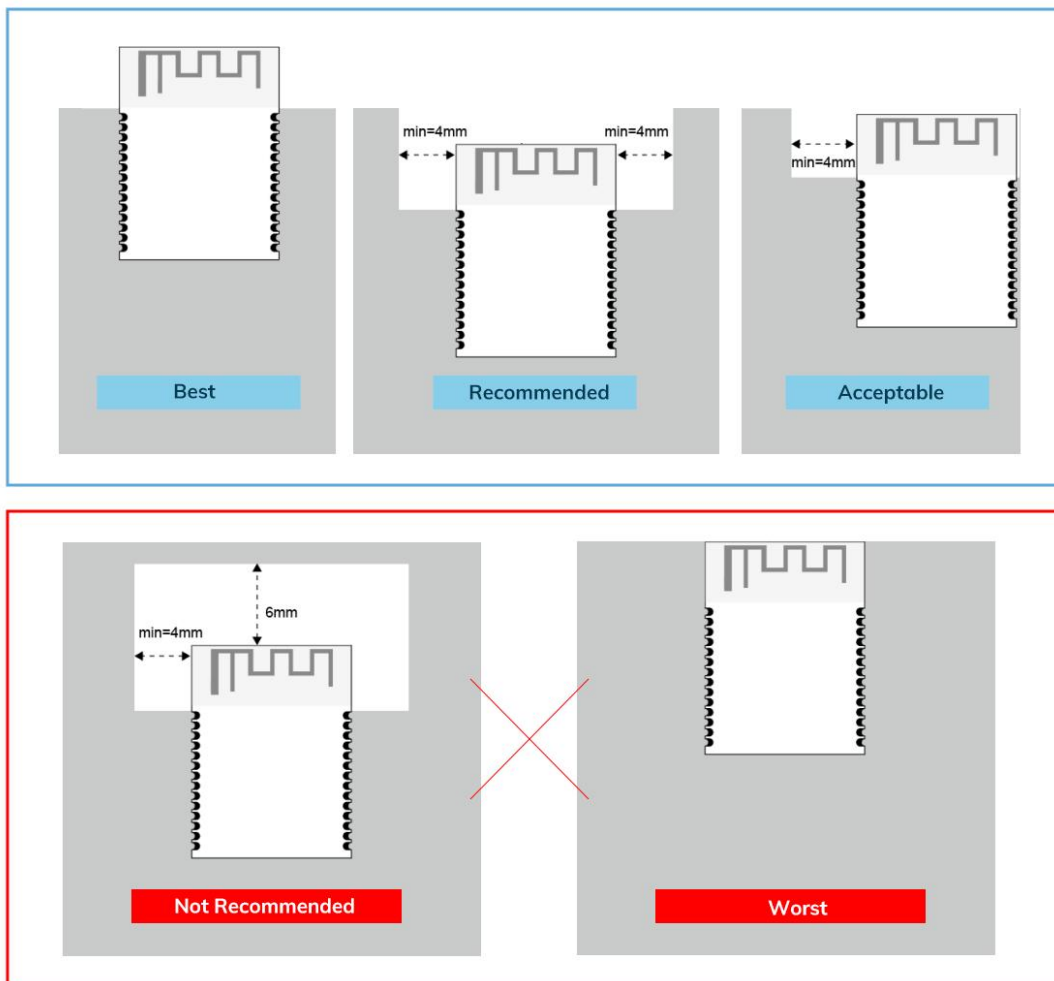
6.1 Design Guide Reference



7 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.

Notice: Refer to examples as below, and highly suggest to use the first design and the adjustment of modules antenna design according to the first wiring.



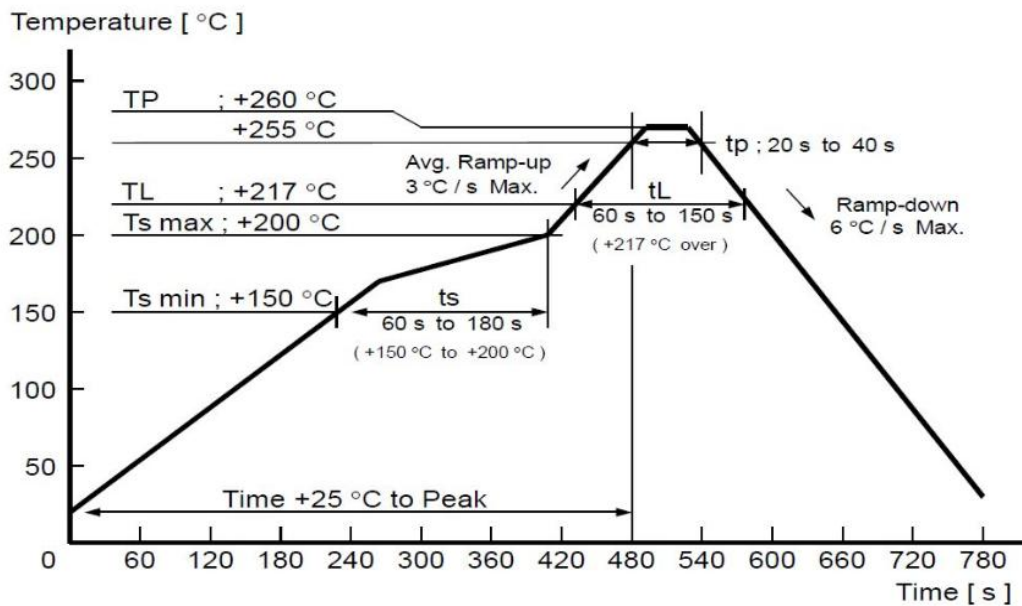
Layout Notes:

- 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.

8 Reflow and Soldering

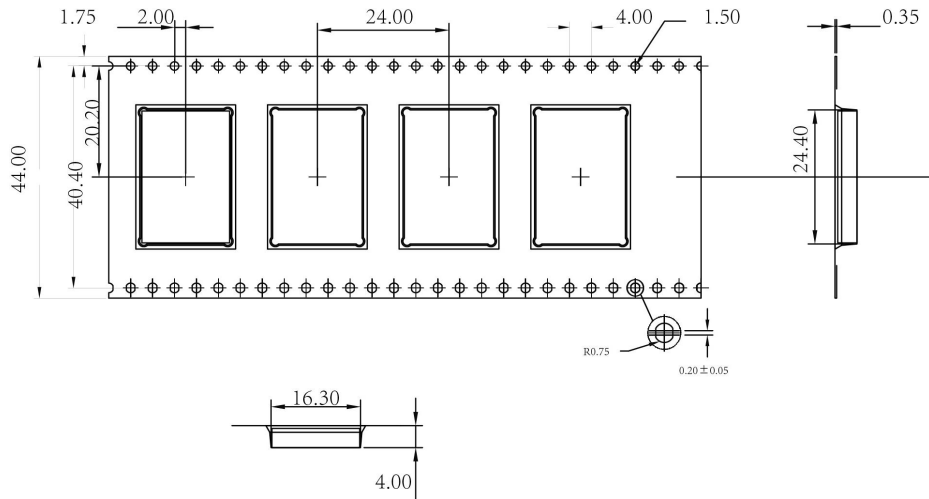
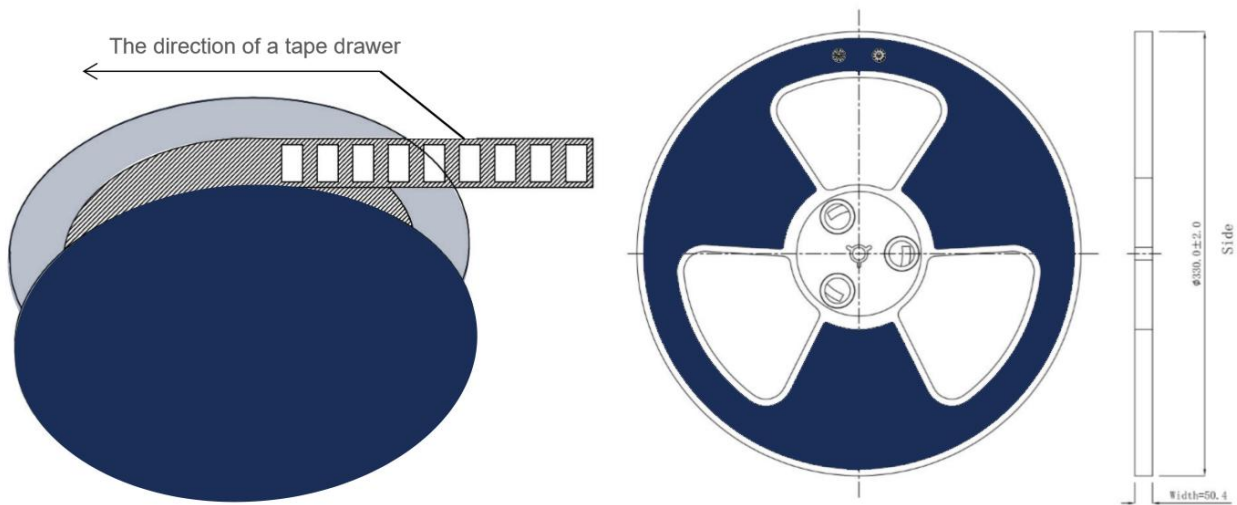
1) Do SMT according to above reflow oven temperature deal curve. Max. Temperature is 260°C;

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.

9 Package Information



* (Default unit: mm Default tolerance: ± 0.1)

Packing detail	Specification	Net weight	Gross weight	Dimension
Quantity	640PCS	-	-	W=44mm, T=0.35mm

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

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