WiFi AP Module

MS93MFZ

MS93MFZ-MT7628NN

High-performance, multi-interface, high memory, Multiple working modes, AT/STA Firmware, 2x2MIMOFramework

The MS93MFZ is an AP module based on the MT7628NN SoC and includes everything you need to build an AP router.It supports IEEE802.11b/g/n standard and adopts 2x2 MIMO (Multiple input multiple output) Framework, which enables multiple transceivers of wireless signals and data transmission rate up to 300Mbps.It is equipped with high performance embedded CPU, wireless baseband, RF front-end and various external interfaces. Extended Ethernet, USB, I2C,network, USB, I2C, UART and other interfaces.

FEATURES

Support IEEE802.11b/g/n standard, support bridge, routing, access point 3 working modes

adopts 2x2 MIMO Framework, which enables multiple transceivers of wireless signals and data transmission rate up to 300Mbps

High-performance, adopts MTK's MT7628NN main chip programme, with a main frequency of up to 580MHz.

Multiple interfaces, USB/WAN/LAN/UART etc.

KEY PARAMETER

MS93MFZ			
Chip Model	MTK MT7628NN	**Antenna**	IPEX3
Module size	38.5×26mm(L*W)	**GPIO**	30
Flash	16MB	**RAM**	128MB
Receiving Sensitivity	-98dBm	**Transmission Power**	18dBm
Firmware	AP/STA		

APPLICATION

Smart Home

Gateway

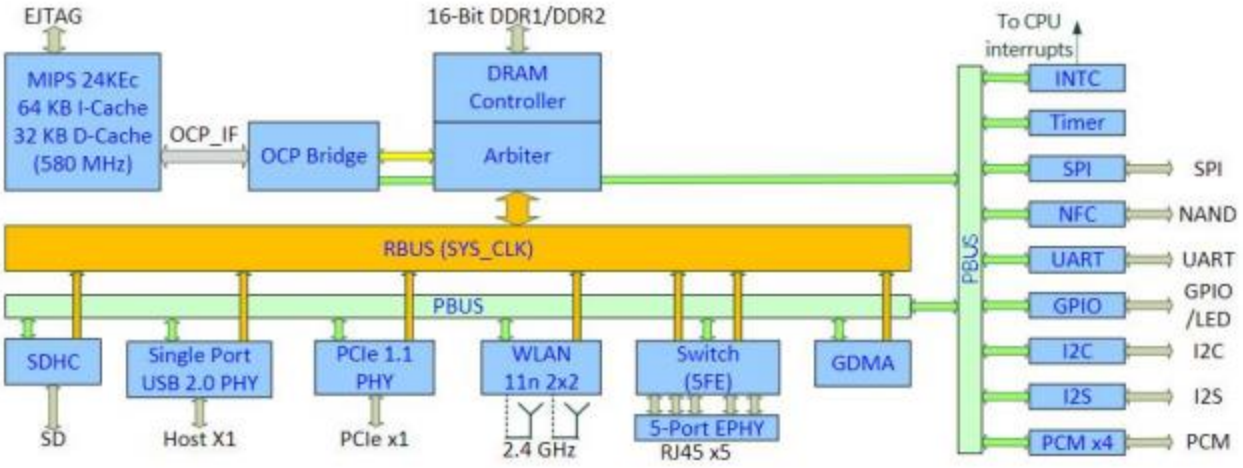
IP Camera

Wireless Storage

Wireless AP Router

Wireless Adapter

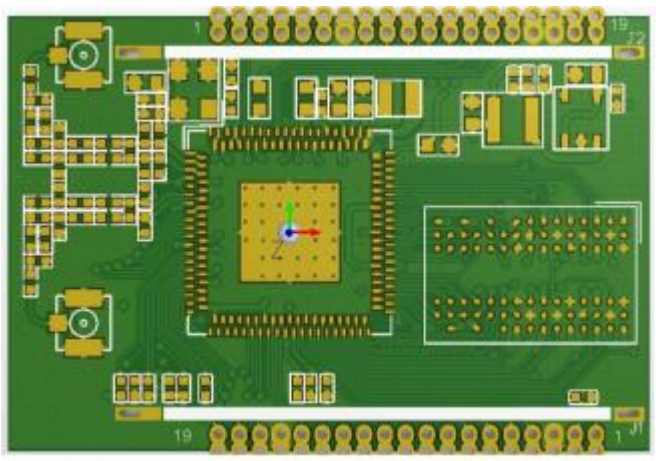
1 BLOCK DIAGRAM



2 ELECTRICAL SPECIFICATION

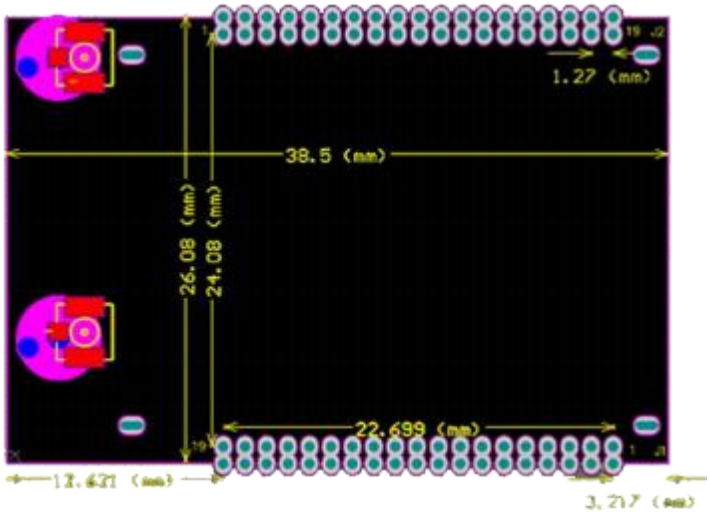
Parameter	Values	Notes
Working Voltage	2.97V-3.63V	To ensure RF work, supply voltage suggest not lower than 3.3V
Working Temperature	-10℃~+70℃	Storage temperature is -20℃~+80℃
Transmission Power	18dBm	Configurable
Module Dimension	35.8*26mm	
Quantity of IO Port	30	

3 PIN DESCRIPTION



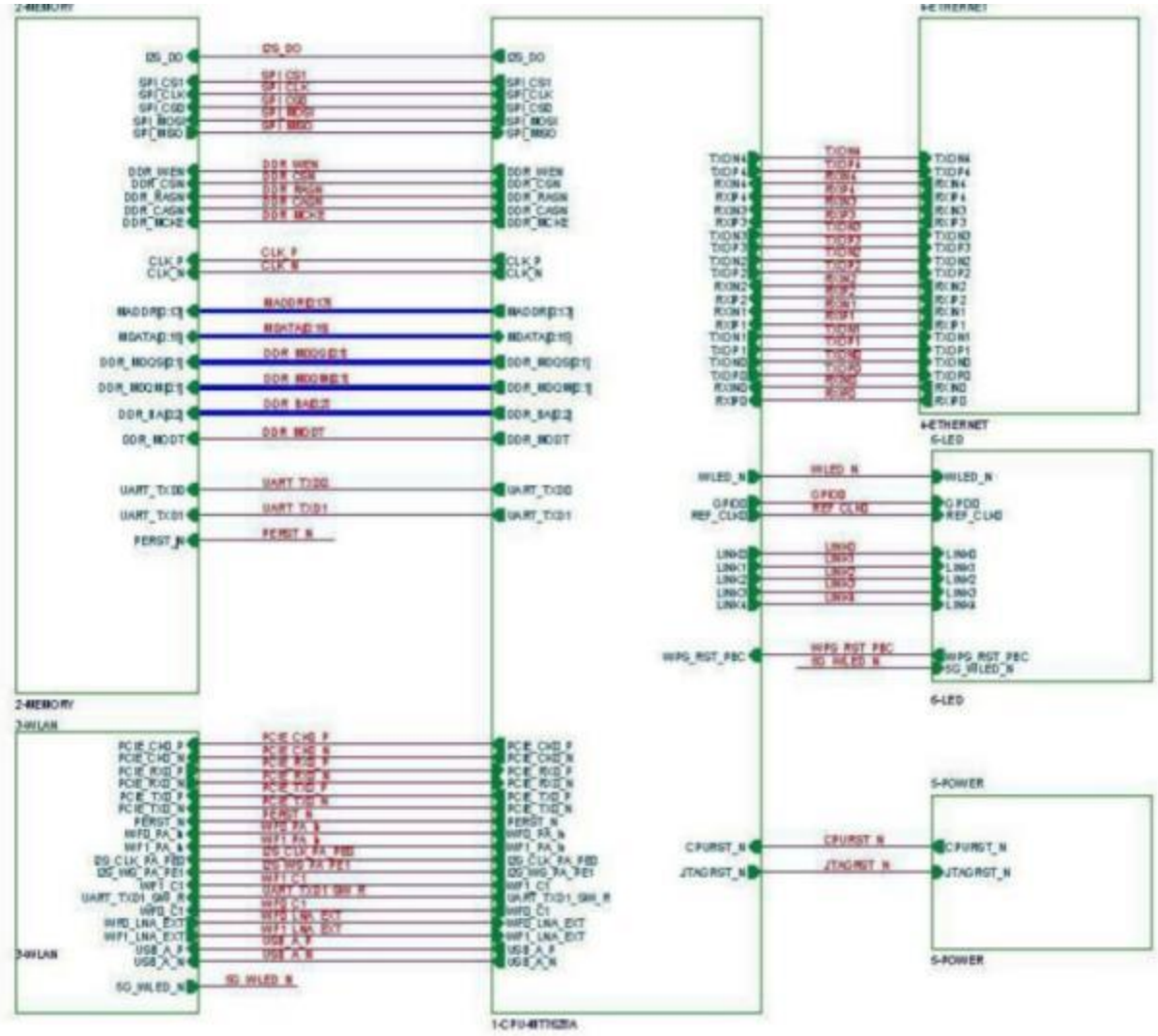
16	GND		16	GND
17	UART_RXD0	GPIO#13	17	GND
18	UART_TXD0	GPIO#12	18	VIN
19	GPIO_0	GPIO#11	19	VIN

5 MECHANICAL DRAWING



Default unit： mm Default tolerance： ±0.15

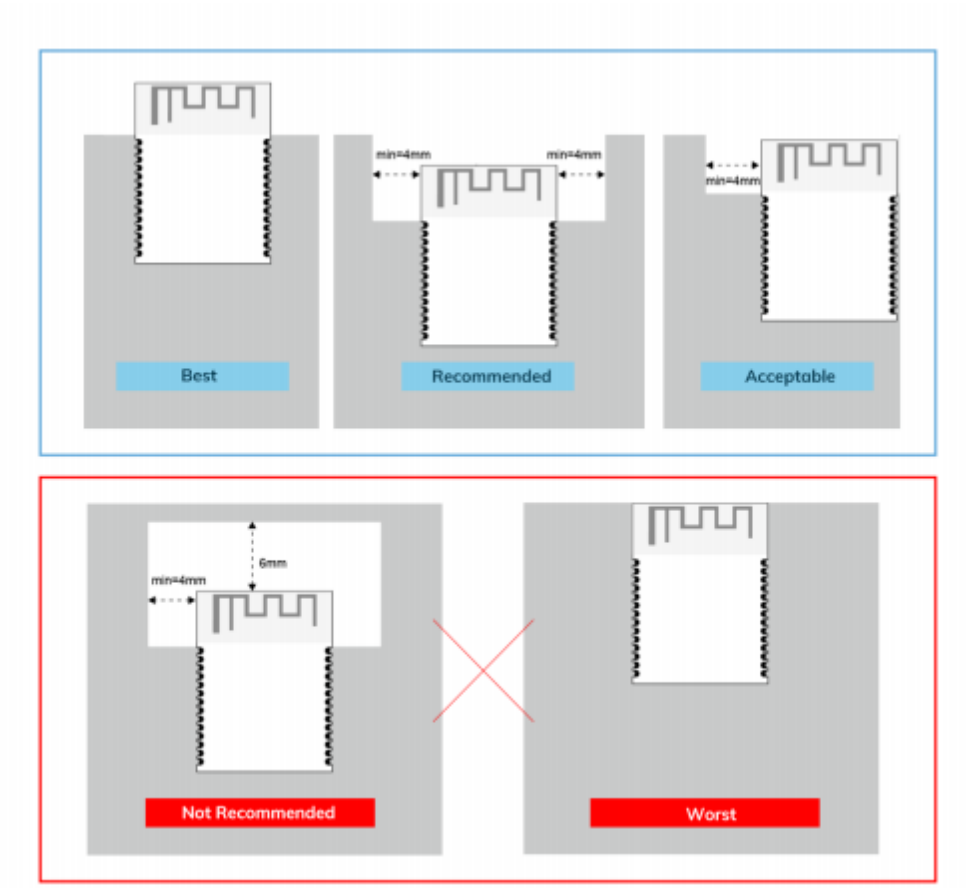
6 MODULE INTERFACE SCHEMATIC



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.

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.

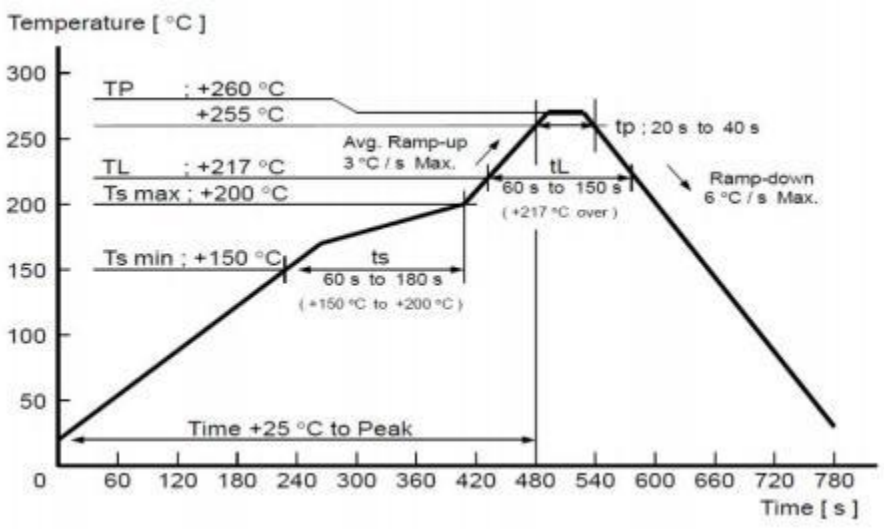
7) Module should be placed on edge of circuit board and keep a distance away from other circuits.

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℃;

Refer to IPC/JEDEC standard ; Peak TEMP<260℃; 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 ℃ for 24 hours without disassembling the tape.

4) Before using SMT, please adopt ESD protection measure.

9 PACKAGE INFORMATION

Packing detail	Specification	Net weight	Gross weight	Dimension
MS93MFZ	-	-	-	-

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 (CI2, 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.

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, 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, capa- ble of meeting high-volume production demands.

13 COPYRIGHT STATEMENT