

WiFi AP Module |

MS93MFZ

DateSheet

V 1.0.0

Applicable Product Model
MS93MFZ

Version Note

Version	Details	Contributor(s)	Date	Notes
1.0.0	First edit	Vincle	2023.10.08	

MS93MFZ-MT7628NN

**High-performance, multi-interface,
high memory, Multiple working modes,
AT/STA Firmwave, 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.

■ Application

Wireless AP Router
Wireless Adapter
WiFi Repeater
Gateway
Smart Home
Wireless Storage
IP Camera

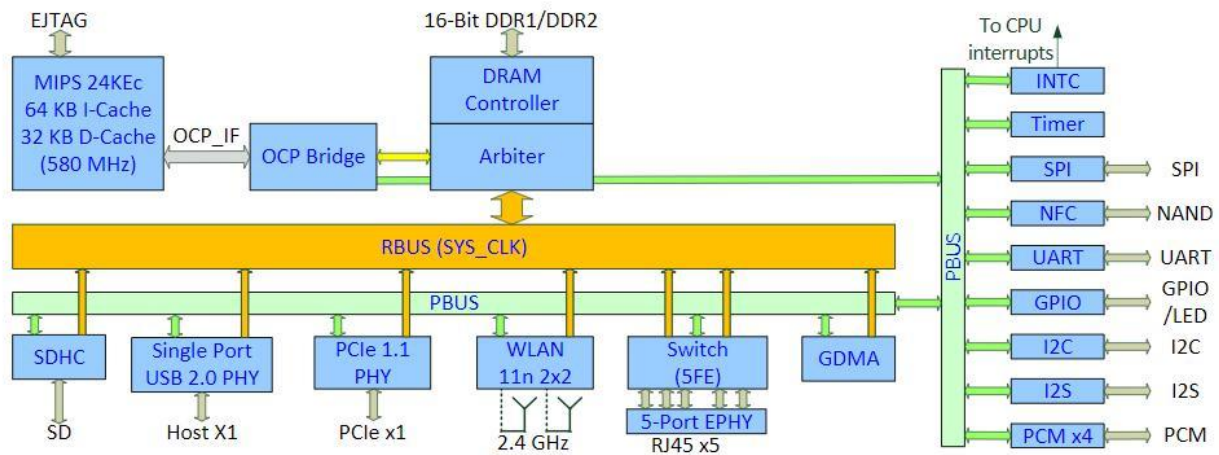
■ Key parameter

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		

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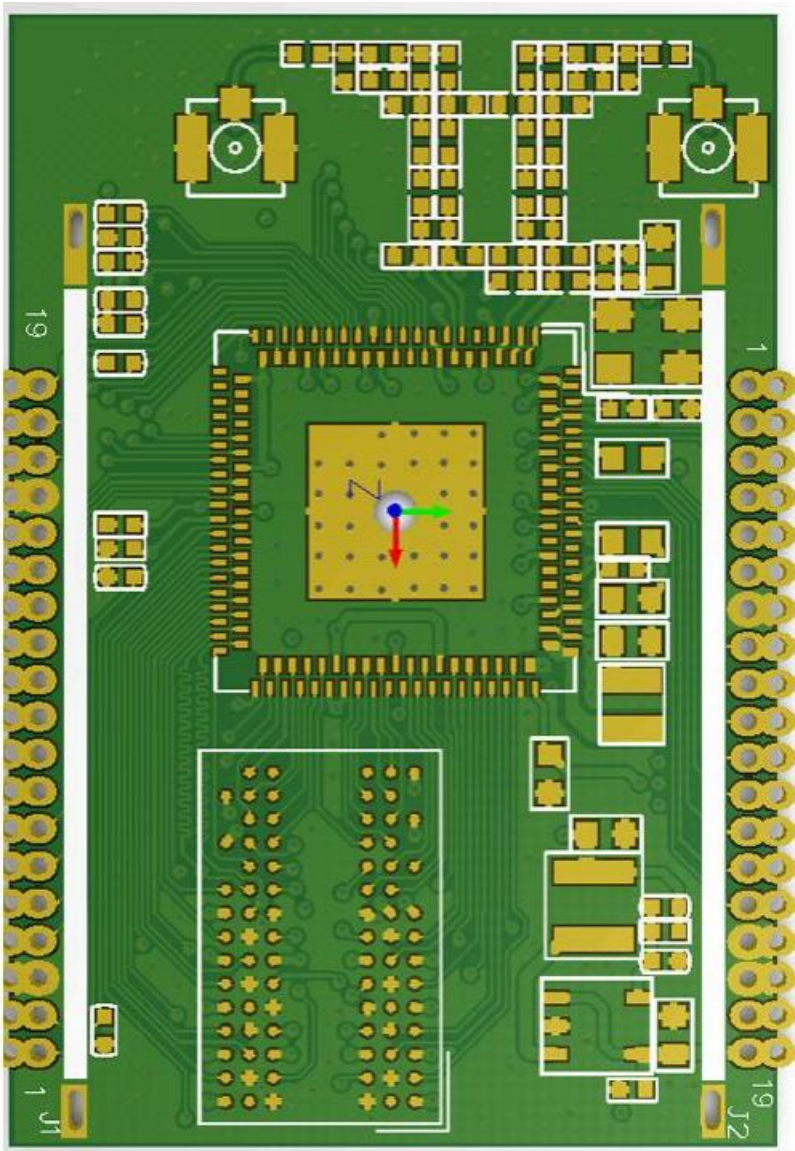
1 Block Diagram



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

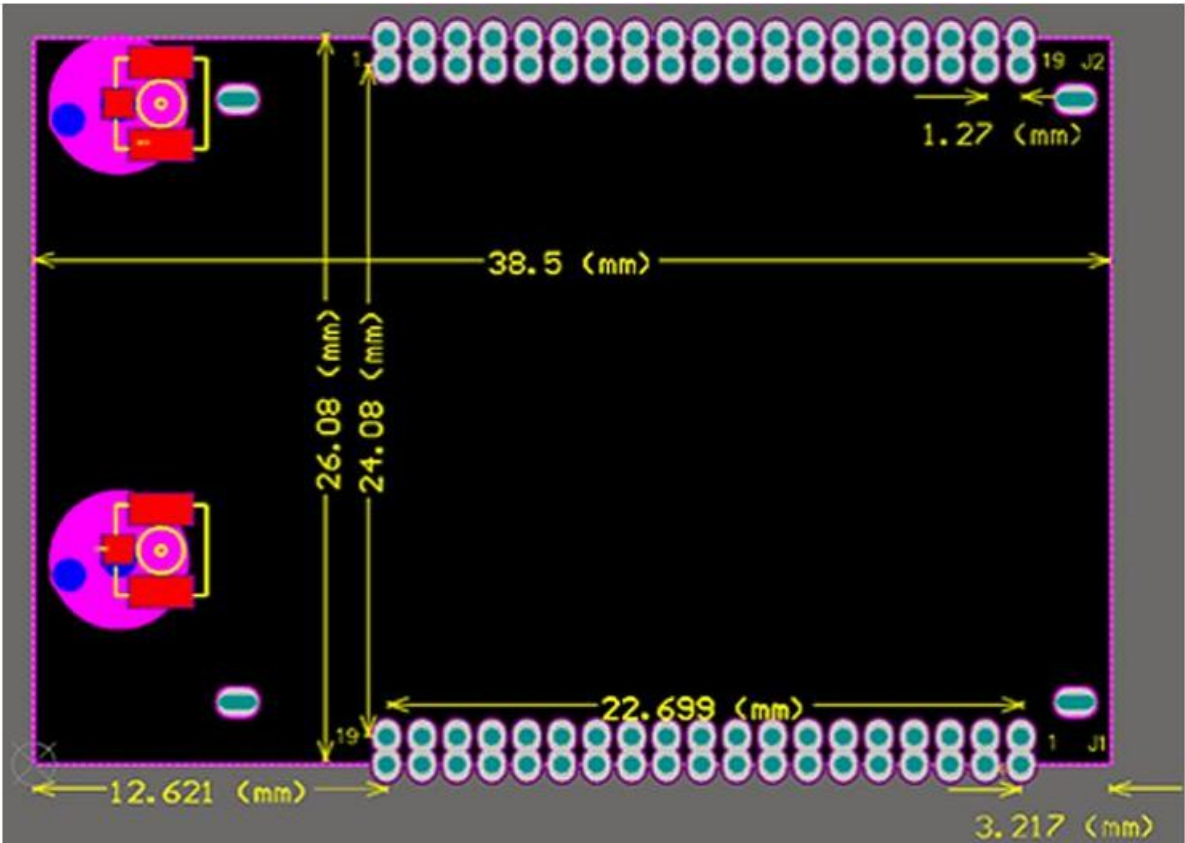


4 Pin Definition

Connector J1			
1	USB_D-	GPIO	
2	USB_D+		
3	GND		
4	SD_D2	MDI_TN_P4	WAN4
5	SD_D3	MDI_TP_P4	
6	SD_CMD	MDI_RN_P4	
7	SD_CLK	MDI_RP_P4	
8	SD_CD	MDI_TN_P3	WAN3
9	SD_WP	MDI_TF_P3	
10	SD_D0	MDI_RN_P3	
11	SD_D1	MDI_RP_P3	
12	TXON0	MD1_TN_P0	WAN0
13	TXOP0	MDI_TP_P0	
14	RXIN0	MDI_RN_P0	
15	RXIP0	MD_RP_P0	
16	GND		
17	UART_RXD0	GPIO#13	
18	UART_TXD0	GPIO#12	
19	GPIO_0	GPIO#11	

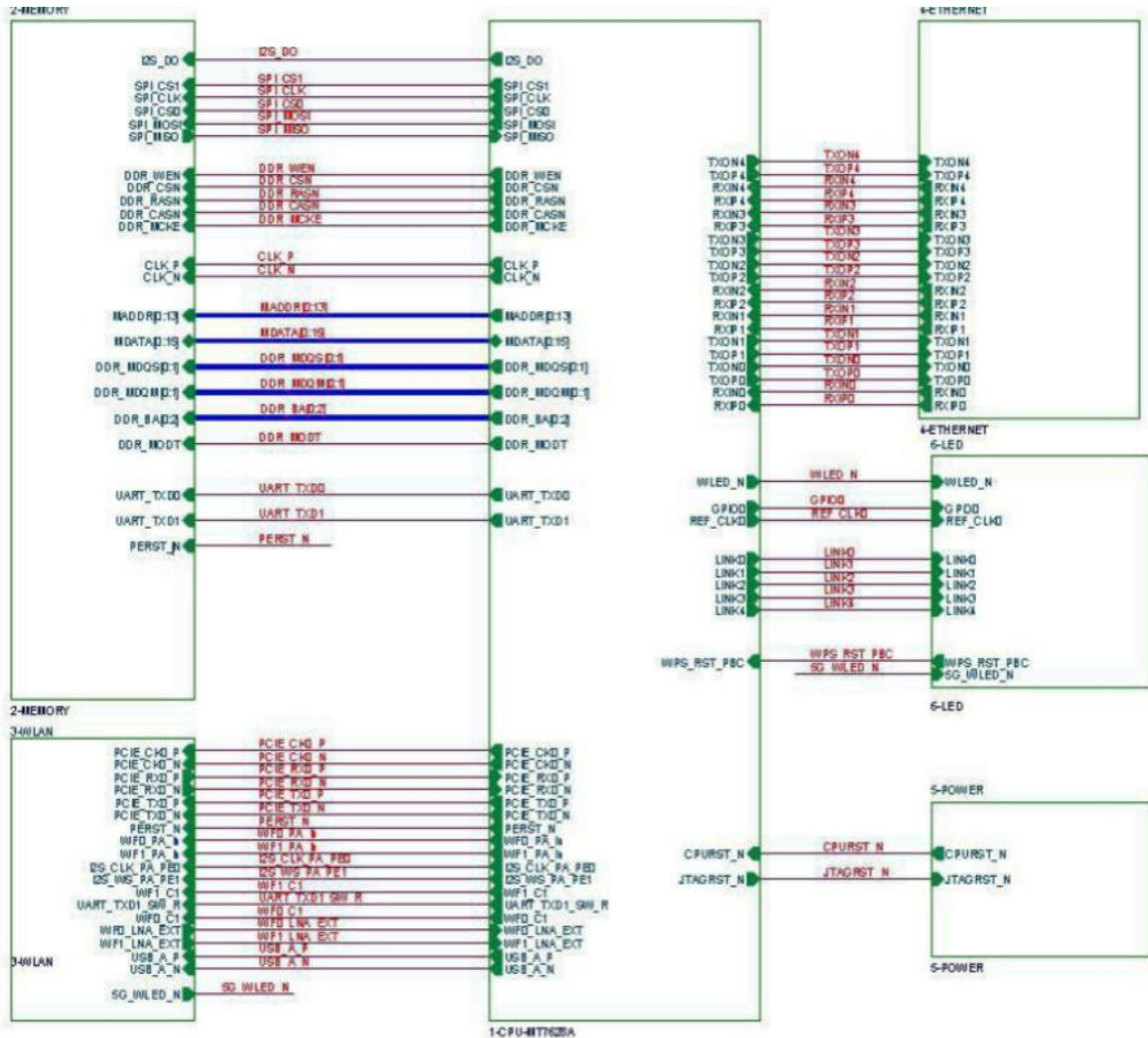
Connector J2		
1	I2C_SD	GPO#5
2	I2C_SCLK	GPO#4
3	I2C_CLK	GPIO#3
4	I2S_WS	GPIO#2
5	I2S_DO	GPIO#1
6	I2S_DI	GPO#0
7	GND	
8	UART_RXD1	GPIO#46
9	UART_TXD1	GPO#45
10	WLED_N	GPIO#44
11	LINK0	
12	LINK3	
13	LINK4	
14	WPS_RES_PBC	
15	REF_CLKO	GPO#38
16	GND	
17	GND	
18	VIN	
19	VIN	

5 Mechanical Drawing



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

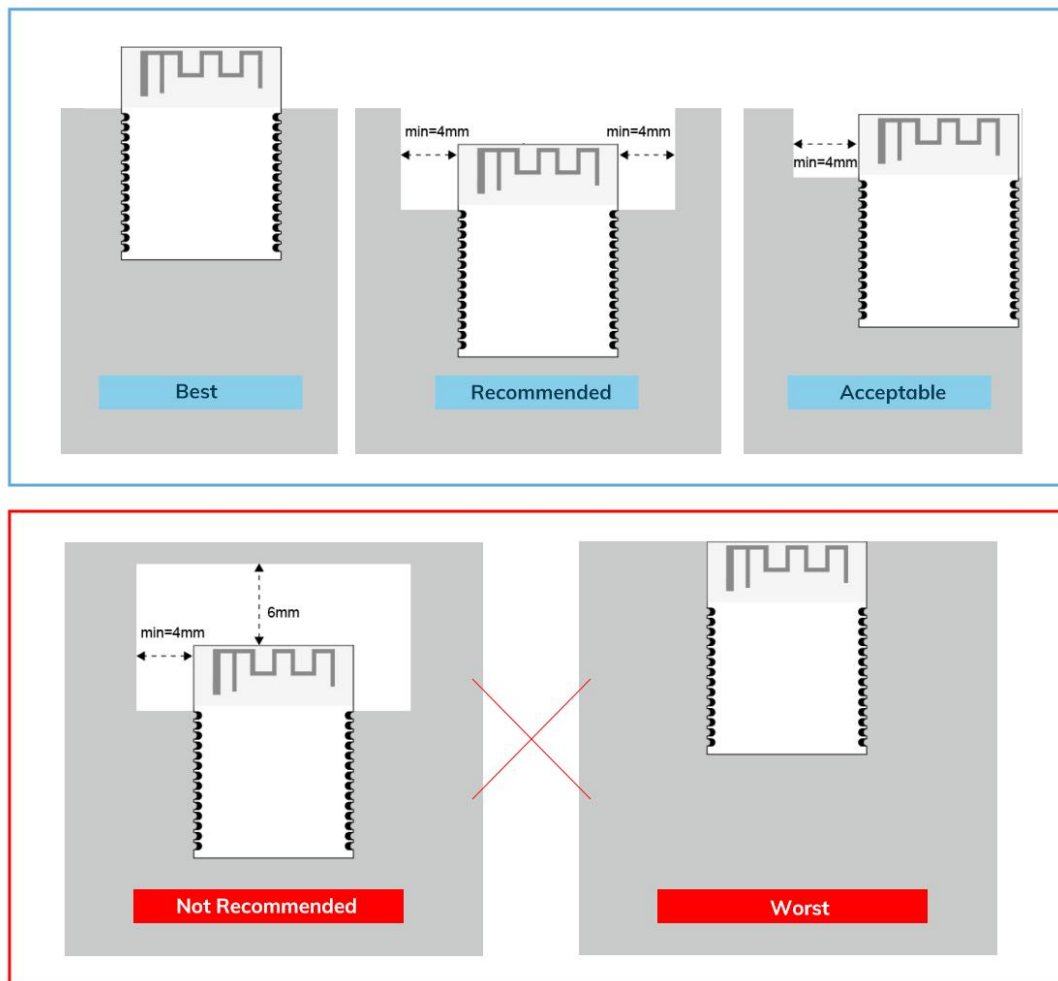
6 Module Interface Schematic



7 PCB Layout

Module antenna area(Include ipex 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.



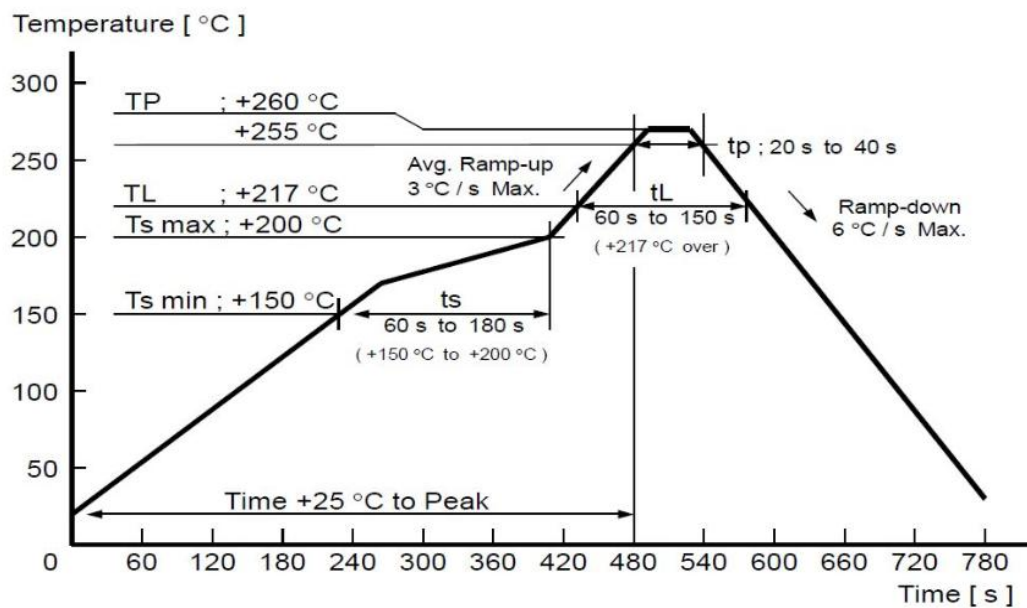
Layout notes:

- 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(TBD)



Packing detail	Specification	Net weight	Gross weight
Quantity	TBD	/	/

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

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

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● Contact Us

Shenzhen Minewsemi Co., Ltd. is committed to swiftly delivering top-quality connectivity modules to our customers. For assistance and support, please feel free to contact our relevant personnel, or contact us as follows:

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