WY-MT7620A 核心板邮票口用户手册

1 简介

WY-MT7620A 是无涯物联科技最新推出的一款基于 MT7620A 的高性能嵌入式 WiFi 模组。

MT7620A 是一款 SOC 芯片，也就是常说的的“片上系统”，顾名思义，这款芯片集成了 CPU、Baseband、Radio 等功能。通俗点讲，这要给这款芯片加上一些外围电路，就很方便的设计一款无线路由出来。这也是联发科一直讲的 Turn Key 的思路。为了缩短大家的产品开发时间和减小开发难度，我们特意开发出了这么一款核心板，不需要其他任何外围电路，上电就能工作起来。

自 2013 年，智能路由突然成为曝光度超高的词汇，从极路由，到目前形形色色的各种智能路由。伴随着智能路由的曝光度提升，联发科的路由芯片也越来越为人所知，而最为人知的就是 MT7620 这款芯片。极一 S、小米路由、百度路由、磊科 Ni360 都采用 MT7620 作为主控芯片。当然，除了做路由，MT7620A 也广泛用于智能家居、医疗、农业、工业等各处需要联网的地方。

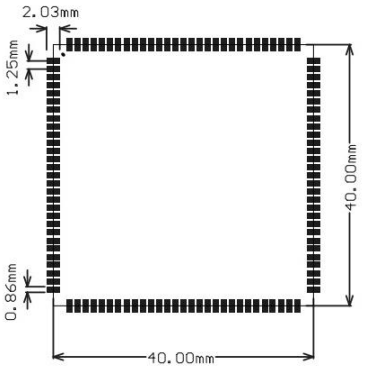
2 性能特点

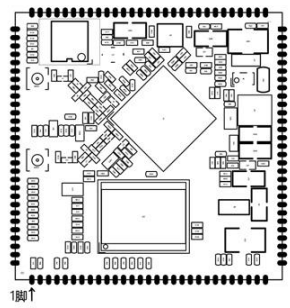
Item	Description
Chipset	CPU:MTK MT7620A Soc Chip
	DDR:Winbond 512M DDR2
	Flash:8M SPI Flash Can be upgraded to 8M,16M,32M,64M,128M and 256M
Technical Standard	802.11b/g/n
Hardware Function	Support 5*10/100Mbps Ethernet ports with Active LED control signals, PHY is Integrated in MT7620A.Support.2*1000Mbps RGMII Ethernet port.
	1*USB 2.0 high speed, client port
	1*PCIE interface
	1*SDHC interface
	2*Uart(1 liteUart;1 Full Uart)
	1*PCM&I2S&GPIO multiplexing interface
	WIFI:802.11b/g/n, 2*2 Antenna, with WIFI LED indicate signal.
WIFI ANT Connector	coaxial connector 3*3mm
Power Input	3.3VDC± 5%
Standby current	<300mA
Operate current	<1100mA
Dimensions	40*40*4mm
Operation Temperature	—20℃ to 70℃
Weight	TBD

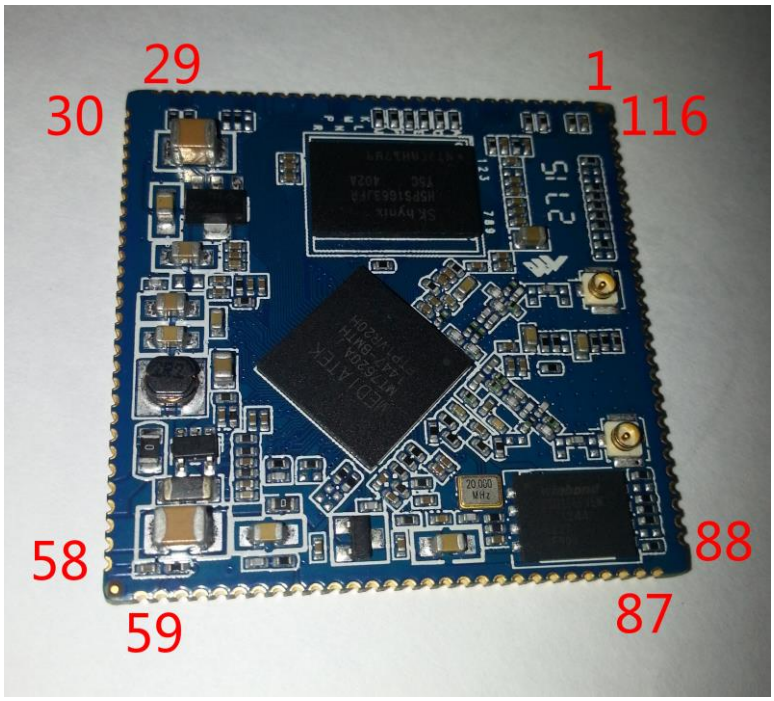
- 超小体积，长宽仅 40mm × 40mm（市面上最小最紧凑功能最全的 7620A 模块）
- 300Mbps WiFi，580MHz 主频，引出 MT7620A 的所有接口
- 标配 32MB Flash、128MB DDR2

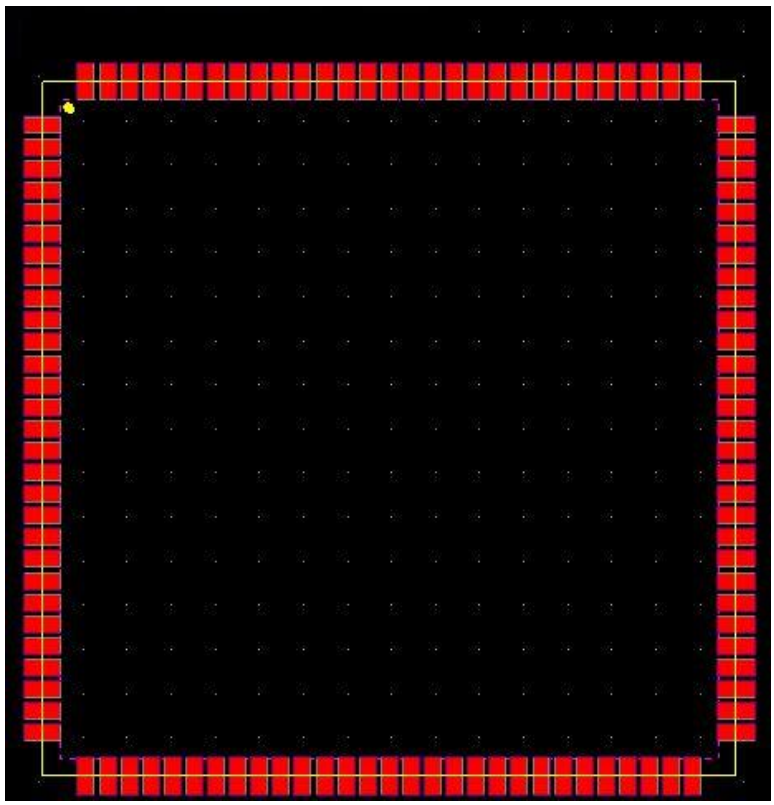
3 尺寸与管脚定义

封装信息：



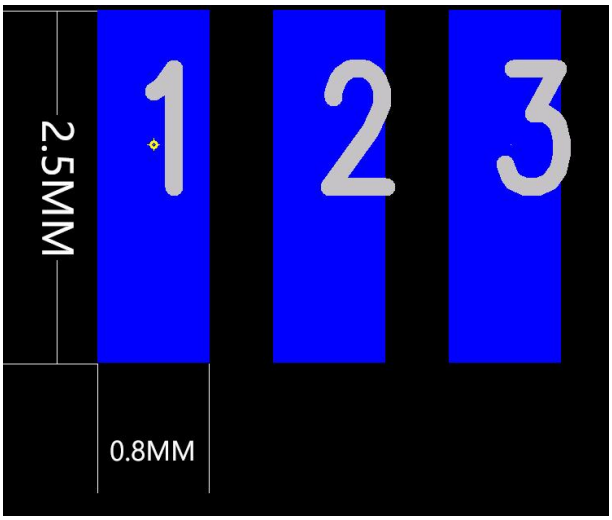






we will supply the reference pads design.

pins reference size:



管脚定义：

Pin	Ouer Name	Description
1	ND_GND	These pin shared with Nand and SD interface
2	ND_WP/SD_WP	
3	ND_RB_N/SD_CLK	
4	ND_CLE/SD_CD	
5	ND_ALE/SD_CMD	
6	ND_D7/BT_ANT	
7	ND_D6/BT_WACT	
8	ND_D5/BT_AUX	
9	ND_D4/BT_STAT	
10	ND_D3/SD_D3	
11	ND_D2/SD_D2	
12	ND_D1/SD_D1	
13	ND_D0/SD_D0	
14	TXD	Uart Full
15	RXD	
16	DSR_N	
17	DCD_N	
18	DTR_N	
19	RIN	
20	CTS_N	

21	RTS_N	
22	UART_3.3V	Uart Lite
23	UART_TXD2	
24	UART_RXD2	
25	UART_GND	
26	I2C_GND	I2C
27	I2C_SCLK	
28	I2C_SD	
29	MDI_GND	Ethernet Port 0
30	MDI_RP_P0	
31	MDI_RN_P0	
32	MDI_TP_P0	
33	MDI_TN_P0	
34	MDI_GND	Ethernet Port 1
35	MDI_RP_P1	
36	MDI_RN_P1	
37	MDI_TP_P1	
38	MDI_TN_P1	
39	MDI_GND	Ethernet Port2
40	MDI_RP_P2	
41	MDI_RN_P2	
42	MDI_TP_P2	
43	MDI_TN_P2	
44	MDI_GND	Ethernet Port3
45	MDI_RP_P3	
46	MDI_RN_P3	
47	MDI_TP_P3	
48	MDI_TN_P3	
49	MDI_GND	Ethernet Port4
50	MDI_RP_P4	
51	MDI_RN_P4	
52	MDI_TP_P4	
53	MDI_TN_P4	
54	VIN_GND	3.3V 电源输入
55	VIN_GND	
56	VIN_3.3V	
57	VIN_3.3V	

58	GE_3.3V	RGMII 1000M/Ethernet Interface
59	GE_GND	
60	GE_MDIO	
61	GE_MDC	
62	GE2_TXD3	
63	GE2_TXD2	
64	GE2_TXD1	
65	GE2_TXD0	
66	GE2_TXEN	
67	GE2_TXCLK	
68	GE1_TXD3	
69	GE1_TXD2	
70	GE1_TXD1	
71	GE1_TXD0	
72	GE1_TXEN	
73	GE1_TXCLK	
74	GE2_RXD3	
75	GE2_RXD2	
76	GE2_RXD1	
77	GE2_RXD0	
78	GE2_RXDV	
79	GE2_RXCLK	
80	GE1_RXD3	
81	GE1_RXD2	
82	GE1_RXD1	
83	GE1_RXD0	
84	GE1_RXDV	
85	GE1_RXCLK	
86	GE_CLK_25M	
87	GE_GND	
88	GE_3.3V	
89	UPHY0_PADP	USB
90	UPHY0_PADM	
91	UPHY0_GND	
92	PCIE_1.2V	PCIE Interface
93	PCIE_PERST_N	
94	PCIE_TXP	

95	PCIE_TXN	
96	PCIE_RXP	
97	PCIE_RXN	
98	APCK_RFCKOP	
99	APCK_RFCKON	
100	PCIE_CLK_A_IN	
101	PCIE_GND	
102	PCIE_3.3V	
103	JTAG_DINT	These pin shared with JTAG and ETH LED, WPS LED, interface
104	JTAG_RST_N	
105	WDT_RST_N	
106	GPIO	
107	JTAG_TCK	
108	JTAG_TMS	
109	JTAG_TDO	
110	JTAG_TD1	
111	JTAG_TRST	
112	WLED_N	Wireless LED
113	ND_CS_N	Nand/SD
114	ND_RE_N	
115	ND_WE_N	
116	ND_3.3V	

4 电气特性

Parameters	Sym	Condiction	Min	Typ	Max	Unit
3.3V Supply Voltage	3.3VD		3.16	3.30	3.6	V
3.3V Current Consumption	Icc3.3	IDEL	N/A	300	N/A	mA
		WIFI TX*2 Maxum 17dbm	N/A	820	N/A	mA
		Wifi and 1 Ethernet port connected to PC	N/A	550	N/A	mA
		Ethernet ports to wifi,10Mbps throughput.	N/A	640	N/A	mA
		Ethernet ports to wifi,30Mbps throughput.	N/A	700	N/A	mA
		Ethernet ports to wifi,50Mbps throughput.	N/A	770	N/A	mA
		Ethernet ports to wifi,80Mbps throughput.	N/A	860	N/A	mA

5 设计指南

This part contains the schematic and PCB design notes for the customer who use the Core moudle for their own production. You can see our reference design and the MT7620A Spec for more detail design information.

5.1 Power

There is only one external power 3.3VDC for the Core Moudle. Other powers as 1.8VDC,1.5VDC and 1.2VDC are all generated from the Core Moudle internally.

Power consumption:

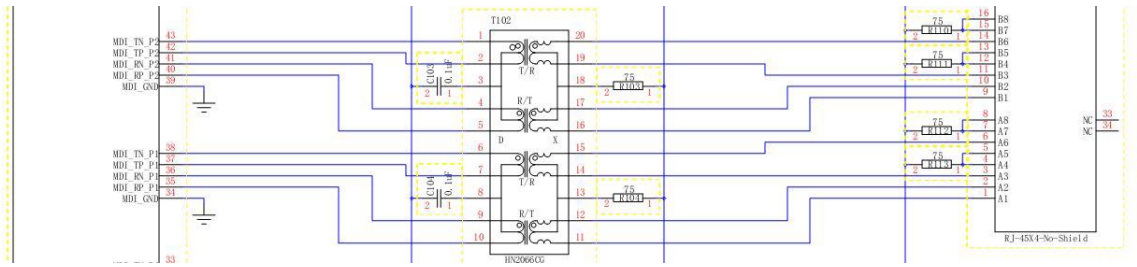
For the 3.3VDC,the main board should supply at least 1A current for the module, for security use ,the Margin should be 30% at least.

Power Ripple:

Small ripple is necessary for better performance, especially for the RF property. The 3.3VDC ripple should be ≤50mV at idle state and ≤100mV at full load.

5.2 Ethernet Port

There are 5 10/100M Ethernet port available form the Core moudle. For the MT7620A chip has already integrated the 10/100M Ethernet PHY, so the customer can only connect the ports to the Transformer directly. These Port are changed to Current type. As seen in the below.



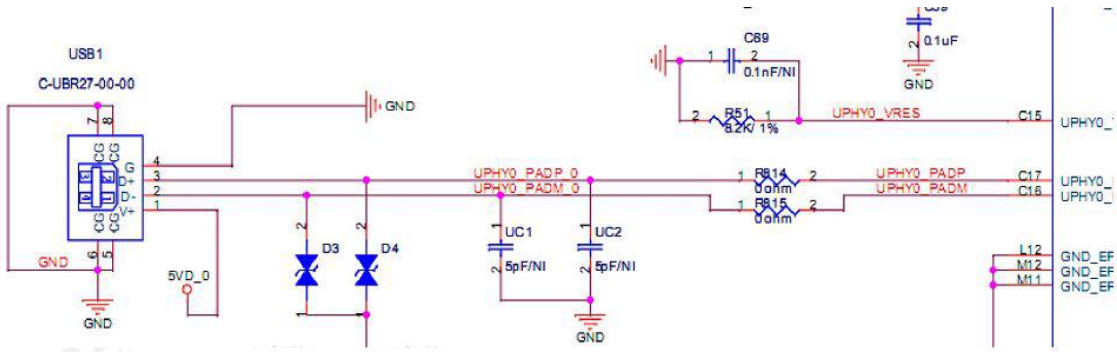
5.3 Ethernet Port

There are 2 RGMII(1000M) Ethernet port available form the Core moudle.Plz Follow the reference Design.

5.4 USB

USB 2.0 interface are available, customer can configure them to host or host/device by change the software configuration. Careful layou include equal length, appropriate space and 90ohm differential resistor for the differential USB signal is necessary.

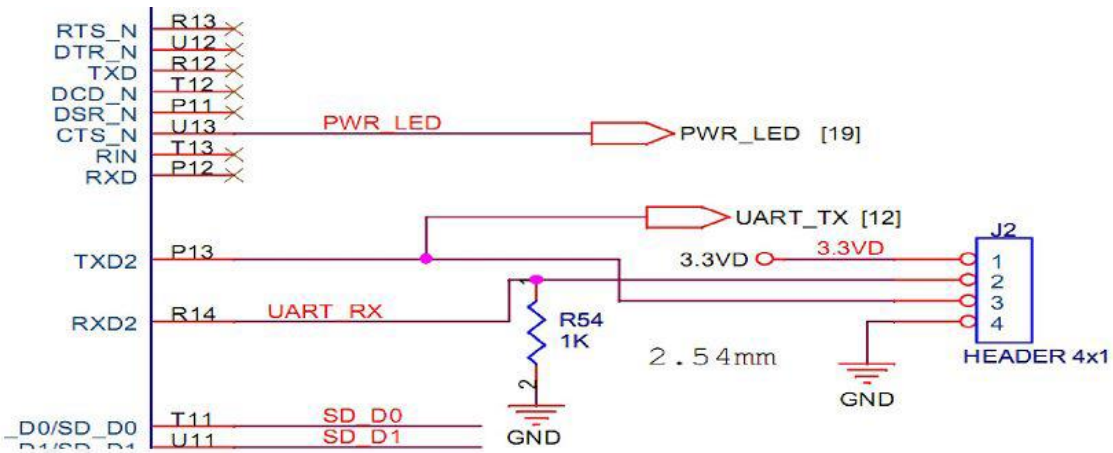
ESD protection can be reserved.



5.5 UART Port

There are two UART port One is UART Lite ，The other one is UART Full，Both can be used as the serial port for system debug or used as communication with Zigbee For attention, the external UART chip like RS232 is necessary when using the port.

The connector on your main board can be usb,DB9,and any other kinds. Pull up to 3.3V on the RXD is necessary.



5.6 I2C

One I2C port can be use. External pull up to 3.3V is necessary.

6.7 PCM

The PCM Pin be share with UARTF/I2S , detailed Info Plz refer Datasheet.

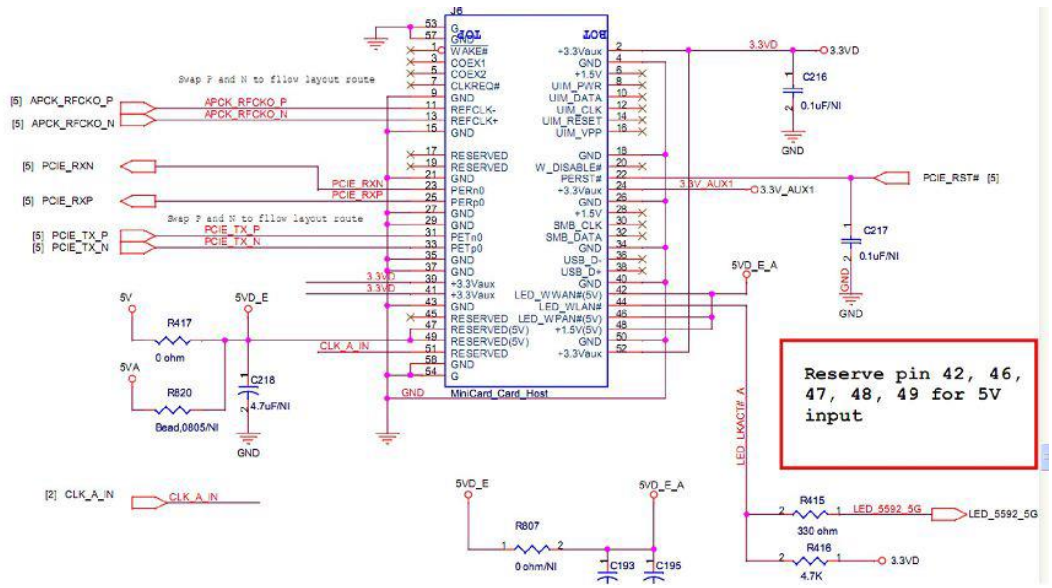
Controlled by the UARTF_SHARE_MODE register.

Pin Name	3'b000 UARTF	3'b001 PCM, UARTF	3'b010 PCM, I2S	3'b011 I2S UARTF	3'b100 PCM, GPIO	3'b101 GPIO, UARTF	3'b110 GPIO I2S	3'b111 GPIO
RIN	RIN	PCMDTX	PCMDTX	RXD	PCMDTX	GPIO#14	GPIO#14	GPIO#14
DSR_N	DSR_N	PCMDRX	PCMDRX	CTS_N	PCMDRX	GPIO#13	GPIO#13	GPIO#13
DCD_N	DCD_N	PCMCLK	PCMCLK	TXD	PCMCLK	GPIO#12	GPIO#12	GPIO#12
DTR_N	DTR_N	PCMFS	PCMFS	RTS_N	PCMFS	GPIO#11	GPIO#11	GPIO#11
RXD	RXD	RXD	I2SSDI	I2SSDI	GPIO#10	RXD	I2SSDI	GPIO#10
CTS_N	CTS_N	CTS_N	I2SSDO	I2SSDO	GPIO#9	CTS_N	I2SSDO	GPIO#9
TXD	TXD	TXD	I2SWS	I2SWS	GPIO#8	TXD	I2SWS	GPIO#8
RTS_N	RTS_N	RTS_N	I2SCLK	I2SCLK	GPIO#7	RTS_N	I2SCLK	GPIO#7

6.8 PCIE

One PCIE interface ,Can be used as expand the PCIE wifi card(802.11a/802.11ac)

and storage.



5.9 GPIO

The Core Module Supply One Standard GPIO(GPIO0)，But almost 45 GPIO be used with UART Full,RGMII,I2C,ETH,at all。If these Pin is free，you can change it to GPIO mode，Plz Follow MT7620A Datasheet.

5.10 Antenna Connecter

The RF switch coaxial connector on the Core Moudle is I-PEX: 20279-001E-01.If the RF connected to the customer’ s main boad, the RF match circuit and suitable trace should be noted.

6 Recommended Reflow Profile Recommended

Referred to IPC/JEDEC standard.
Peak Temperature : <250°C
Number of Times : ≤2 times