

SPECIFICATIONS

Model: TL8821CUB

Interface: USB

Version: V1.1

Pin: 22Pin

Pages: 14

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1. Summary :

TL8821CUB is a new generation of intelligent and highly integrated Realtek RTL8821CU-CG chip design, IEEE 802.11 a/b/g/n/ac MAC/baseband/RF wireless LAN Bluetooth baseband/radio frequency single chip. For Wireless LAN , it supports 802.11ac solution, with multi-user MIMO (multiple input, multiple output) STA mode and USB2.0 network interface controller. Bluetooth operation supports Bluetooth 2.1/4.2 and USB interface controller.

2. Product Feature:

- Support 2.4GHz and 5.8GHz frequency band.
- Support 802.11 b/g/n/ac wireless standard.
- The frequency band supports 20 MHz and 40 MHz bandwidth.
- Interface mode: USB interface 2.0.
- The small size is easy to use, and the peripheral circuit is also simple.
- Support STA/AP two working modes.
- Support Bluetooth BT2.1+EDR/BT3.0 and BT4.2.
- Dual frequency 1T1R mode, stable transmission, speed up to 600Mbps
- The power supply range is wide to 3.1V-3.6V, and 3.3V is recommended

3. Product Picture:

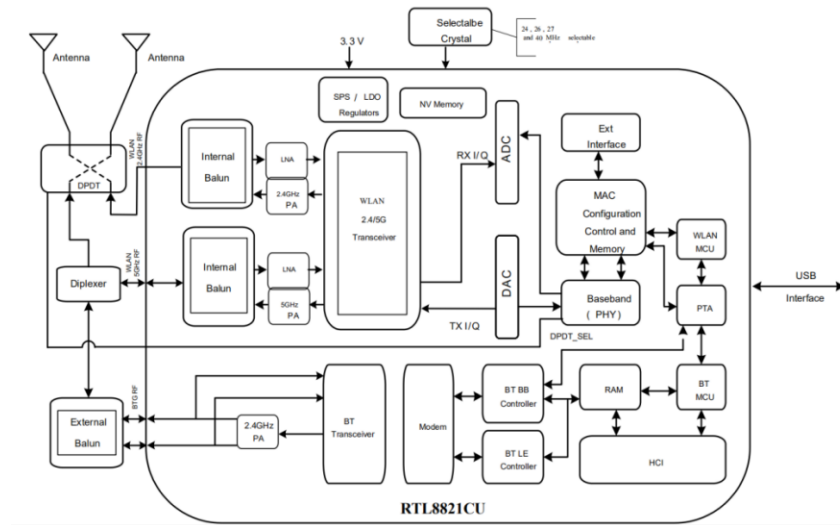
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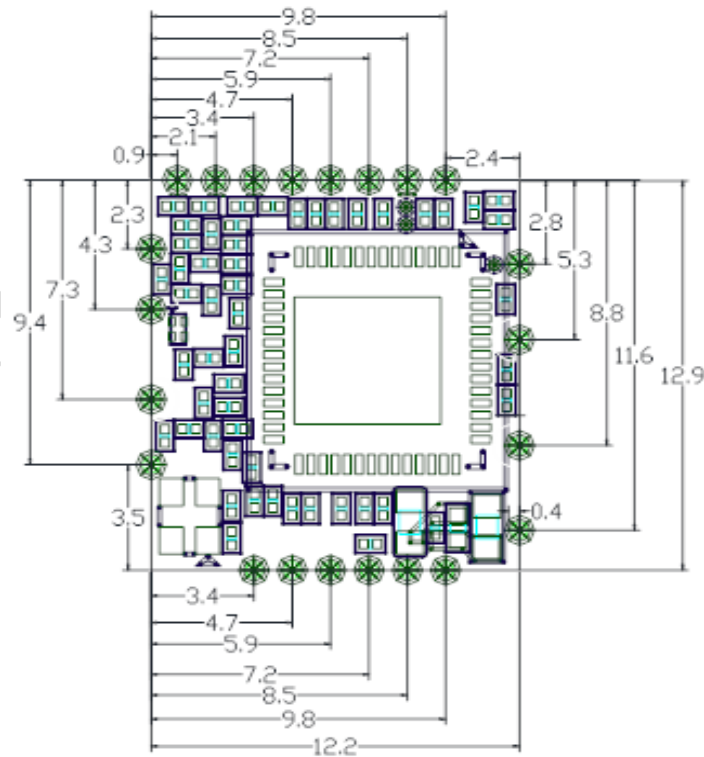
Back



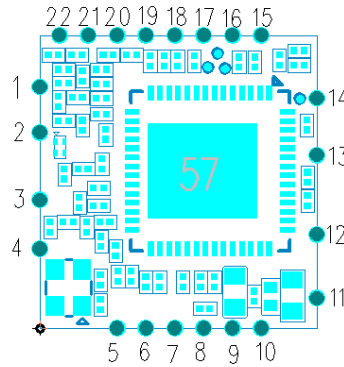
4. Chip Diagram:



5. Module Dimension Drawing



6. Pin Definition



Pin	Name	Description
1	GND	GND
2	RFIO	RF_0
3	SO	RF_1
4	GND	GND
5	NC	No connection(floating)
6	NC	No connection(floating)
7	NC	No connection(floating)
8	NC	No connection(floating)
9	BT_WAKE_HOST	GPIO14 USB WAKE
10	HOST_WAKE_BT	GPIO13 USB WAKE
11	VIN	VDD3.3V Power Supply
12	USB DM	USB Transmitter
13	USB DP	USB Transmitter
14	GND	GND
15	GPIO1	General Purpose Input/ Output Pin
16	WL_DIS	WIFI DISABLE (Low Potential)
17	BT_DIS	GPIO11/BT_DIS_N
18	CHIP_EN	High asserting for use/Low asserting for reset
19	HST_WAKE_WL	HOST to wake up WIFI
20	WL_WAKE_HST	WIFI to wake up HOST
21	GPIO2	General Purpose Input/ Output Pin
22	WL_LED	LED Pin (Active Low), shared with GPIO8

7. Product Technical Specification

Index item	Description
Product Name	TL8821CUB
Main IC	RTL8821CU-CG
Interface	USB2.0
Operating Frequency	2.400GHz-2.4835GHz 5.15~5.835GHz
WiFi Standards	IEEE 802.11b/g/n/ac
Modulation System	802.11b: CCK, DQPSK, DBPSK 802.11g: 64-QAM,16-QAM, QPSK, BPSK 802.11n: 64-QAM,16-QAM, QPSK, BPSK 802.11ac: 256-QAM, 64-QAM,16-QAM, QPSK, BPSK
Wireless Communication Speed	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0~7, HT20 reach up to 72.2Mbps; HT40 reach up to 150 Mbps 802.11ac: MCS0~8, VHT20 reach up to 173.3Mbps, VHT40 reach up to 239Mbps, MCS0~9, VHT80 reach up to 433.3Mbps
Dimensions	13.0*12.2*2.1mm (L*W*H)
Operating Voltage	DC 3.3V
encryption scheme	WEP/TKIP/WPA/WPA2
Operating Temperature	0 ℃ to +70 ℃
Storage Temperature	-55 ℃ to +125 ℃

8. RF Technical Parameter

Transmitted Power	802.11b:18 ±1.5dBm
	802.11g:15 ±1.5dBm
	802.11n HT20/HT40:15 ±1.5dBm
	802.11ac HT80:13 ±1.5dBm
Vector Error (EVM)	802.11b: <-20dB@11Mbps
	802.11g: <-27dB@54Mbps
	802.11nHT20:< -28dB@65Mbps
	802.11nHT40:< -28dB@135Mbps
	802.11ac HT80:< -32dB@433Mbps
Receive Sensitivity	1Mbps: -95dBm@PER<8%;
	11Mbps:-88dBm@PER<8%;
	54Mbps:-73dBm@PER<10%;
	65Mbps:-71.5dBm@PER<10%;
	433Mbps:-59dBm@PER<10%;

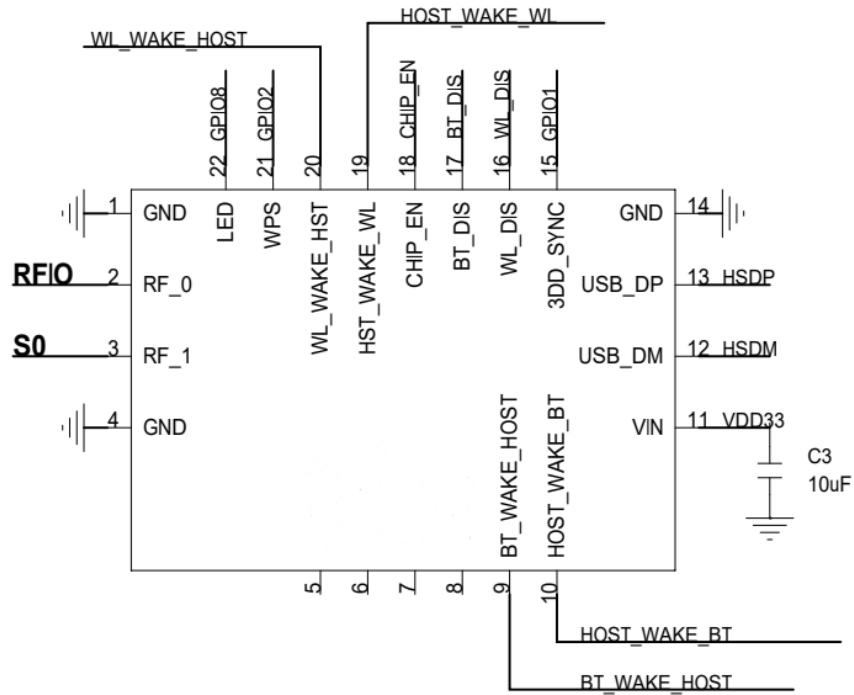
BT							
Mode	Rate(Mbps)	POWER			Sensitivity(dBm)		
		CH0	CH50	CH75	CH37	CH38	CH39
DH1	1	5.92	5.34	5.32	-77	-77	-77
3DH5	3	5.27	5.06	5.04	-73	-73	-73

9. DC Power Consumption

VCC3.3V ,TA=25°C, unit:mA		
Model	TX/RX	Current Max
802.11b (11Mbps)	TX	321
	RX	68
802.11g (54Mbps)	TX	311
	RX	70
802.11n HT20(MCS7)	TX	311
	RX	70
802.11n HT40(MCS7)	TX	310
	RX	75
802.11ac (MCS9)	TX	309
	RX	84

10. Peripheral Circuit Reference

Reference circuit



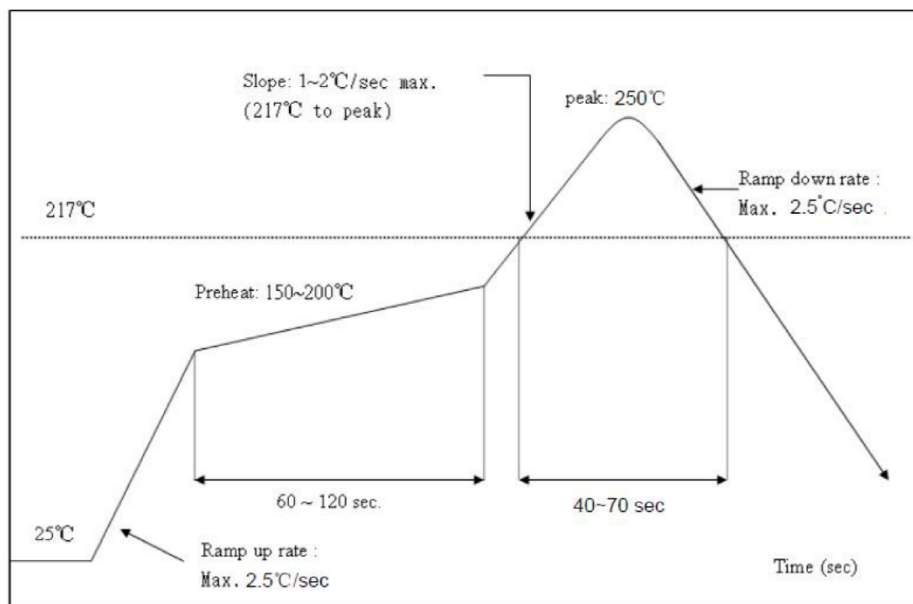
11. PCB Design Requirement

- The USB cable needs to be differentially equal in length and have an impedance of 90 ohms.
- The power supply is recommended to be 3.3V 1A/above.

12.Environmental Requirements

Operating Temperature	Temperature:0°Cto+70°C
	Relative
Storage Temperature	Temperature:-55°Cto+125°C(non-condensin
	Relative

Standard temperature of reflow soldering



- Temperature rise zone: Temperature: <150 °C, time: between 60 and 90 seconds, and the slope is controlled between 1 and 3 °C/S.
- Preheating constant temperature zone: temperature: 150°C~200°C, time: between 60-120 seconds, slope between 0.3-0.8.
- Reflow soldering area: peak temperature 235°C~250°C (recommended peak temperature <245°C), time 30-70 seconds.
- Cooling zone: Temperature: 217°C~170°C, with a slope of 3~5°C/S. The solder is tin-silver-copper alloy lead-free solder/Sn&Ag&Cu Lead-free solder (SAC305).

13. Packaging Info

- Use vacuum tape and reel packaging;
- Reel color: blue;
- Built-in desiccant in vacuum packaging, 6-color humidity card;
- Other unfinished matters shall be packaged and executed according to customer requirements;



14. Purchase Info

TL8821CUB_X

R:Taping