

B-LINK® 必联

快乐 · 共享 · 科技

B-LINK®

时尚必联 · 世界必联

郭世粮 销售经理



扫一扫 加我微信

深圳市必联电子有限公司

手机: +86 -15814029397

电话: 0755-28152012

QQ: 262749296

邮箱: ye35@b-link.net.cn

深圳市光明新区观光路与科泰路交汇处华强创意产业园1期1栋A座11楼

WIFI无线模块

生产厂商和方案提供商

Product Specification

Revision	V1.0
Date	2017-9-26
Model Name	BL-M8821CU1
ProductName	IEEE 802.11b/g/n/ac(1T1R) USB WLANAnd BT Module
Bilian Approve Field	



Engineer	QC	Sales	
Customer Approve Field			
Engineer	QC	Manufactory	Purchasing

Shenzhen Bilian Electronic Co., Ltd

Address: No 268,Fuqian Rd.,JuTang Community ,Guanlan Town,Baoan District, Shenzhen, 518110,PRC

Homepage: www.b-link.net.cn

Table of Contents

Revision History	1
1. Introduction	1
1.1 General Description	1
1.2 Features	1
1.3 Applications	2
2. Functional Block Diagram	2
3. Product Technical Specifications	2
3.1 General Specifications	2
3.2 DC Power Consumption	3
3.3 RF Specifications	4
4. Pin Assignments	6
5. Application Information	8
5.1 Typical Application Circuit	8
6. Mechanical Specifications	10
7. Others	10
7.1 Package Information	10
7.2 Storage Temperature and Humidity	11
7.3 Recommended Reflow Profile	11

Revision History

Date	Document Revision	Product Revision	Description
2017/4/6	0.1	V0.1	Preliminary release
2017/9/26	1.0	V1.0	Update the product pictures

1. Introduction

1.1 General Description

BL-M8821CU1 is the module designed by a highly integrated IEEE802.11a/b/g/n/ac MAC/Baseband/RF WLAN and Bluetooth Baseband/RF single chip. It combines a WLAN MAC, a 1T1R capable WLAN baseband, BT Protocol (LM , LL and LE),BT Baseband, modem, and WLAN/BT RF in a single chip. The module provides a complete solution for a high-performance wireless LAN and Bluetooth device. The BT controller supports BT 4.2 system and compatibles Bluetooth 2.1+EDR.

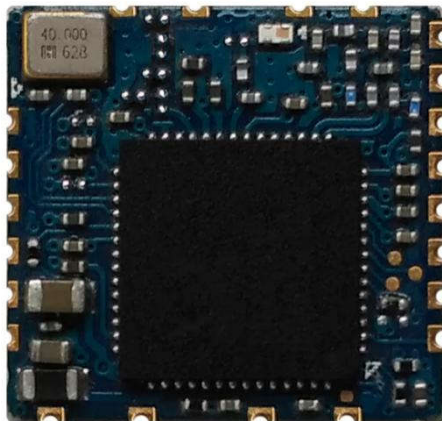


Figure 1 Top View

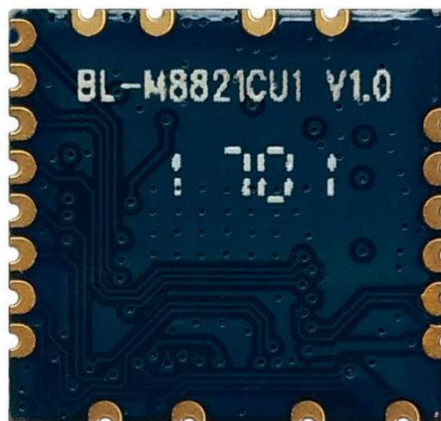


Figure 2 Bottom View

Note:The above pictures are for reference only

1.2 Features

- Operating Frequencies : 2.412~2.4835GHz and 5.180~5.835GHz
- Host Interface is USB 2.0 for WLAN and BT controller
- IEEE Standards : IEEE 802.11a/b/g/n/ac
- Wireless data rate can reach up to 433.3Mbps
- Bluetooth Low Energy Support
- Connect to external antenna through the half hole
- Power Supply: 3.3V±0.2V

1.3 Applications

- MID
- IP Camera
- STB
- Smart TV
- E-book
- Other devices which need to be supported by wireless network

2. Functional Block Diagram

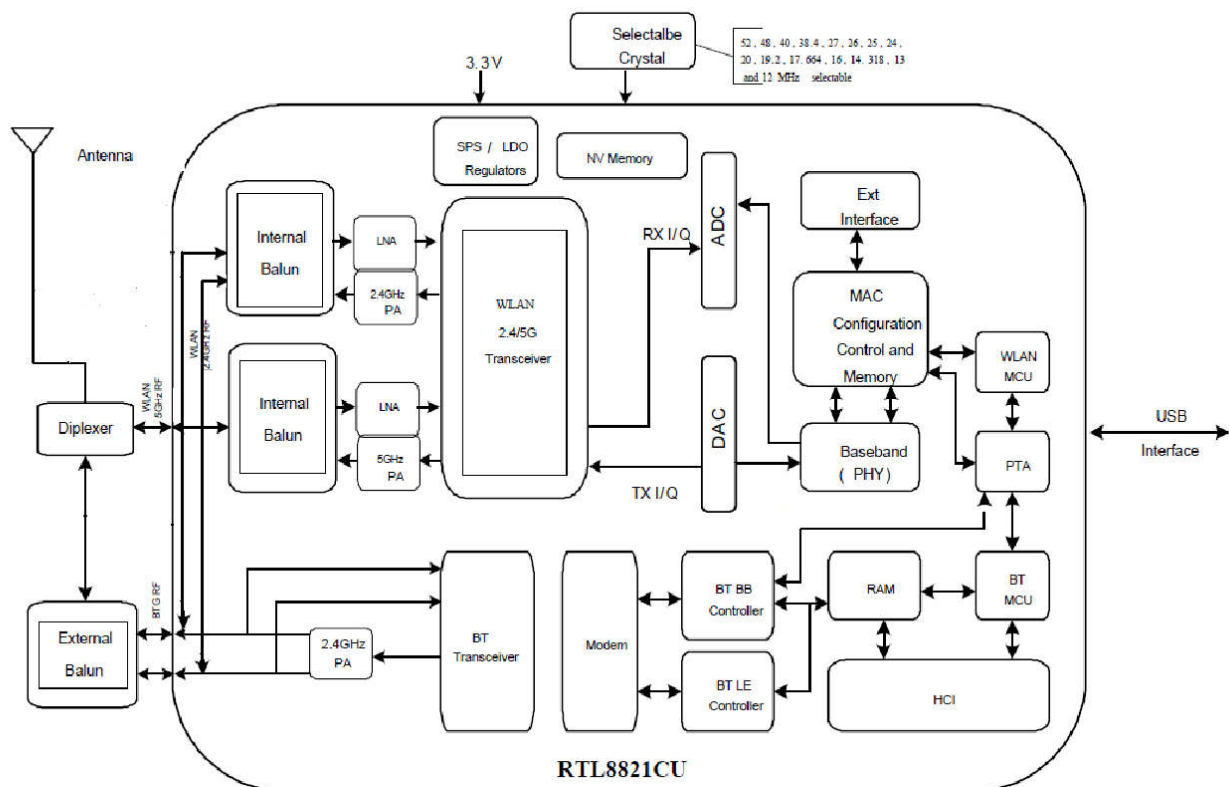


Figure 3 BL-M8821CU1 block diagram

3. Product Technical Specifications

3.1 General Specifications

Item	Description
Product Name	BL-M8821CU1
Main Chip	RTL8821CU-CG
Host Interface	USB 2.0
IEEE Standards	IEEE 802.11a/b/g/n/ac

Operating Frequencies	2.412GHz~2.4835GHz /5.180GHz~5.835GHz
Modulation	WiFi: 802.11b: CCK, DQPSK, DBPSK 802.11a/g: 64-QAM,16-QAM, QPSK, BPSK 802.11n: 64-QAM,16-QAM, QPSK, BPSK 802.11ac: 256-QAM,64-QAM,16-QAM, QPSK, BPSK BT: 8DPSK, $\pi/4$ DQPSK,GFSK
Working Mode	Infrastructure, Ad-Hoc
Wireless Data Rate	WiFi: 802.11b: 1, 2, 5.5, 11Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: HT20 reach up to 72.2Mbps, HT40 reach up to 150Mbps 802.11ac: VHT20 reach up to 173.3Mbps, VHT40 reach up to 239Mbps, VHT80 reach up to 433.3Mbps BT: 1Mbps for Basic Rate 2, 3 Mbps for Enhanced Data Rate
Rx Sensitivity	-96dBm (Min)
TX Power	19.5dBm (Max)
Antenna Type	Connect to external antenna through the IPEX connector
Dimension(L*W*H)	13.0*12.2*1.5mm (L*W*H) , Tolerance: ± 0.15 mm
Power Supply	3.3V \pm 0.2V
Power Consumption	Standby 82mA@3.3V (Max) TX mode 420 mA@3.3V (Max)
Clock Source	40MHz
Working Temperature	-10° C to +50° C
Storage Temperature	-40° C to +70° C

ESD CAUTION: Although this module is designed to be as robust as possible, Electrostatic Discharge (ESD) can damage this module. It must be protected from ESD at all times and handled under the protection of ESD.

3.2 DC Power Consumption

Vcc=3.3V, Ta= 25 °C, unit: mA		
Supply current	Typ.	Max
Standby (RF disabled)	82	104
802.11b	1Mbps	11Mbps

Supply current	Typ.	Max.	Typ.	Max.
TX mode	375	404	350	420
Rxmode	80	104	80	104
802.11g	6Mbps		54Mbps	
Supply current	Typ.	Max.	Typ.	Max.
TX mode	325	388	240	376
Rxmode	85	112	86	116
802.11n HT20	MCS0		MCS7	
Supply current	Typ.	Max.	Typ.	Max.
TX mode	320	380	239	372
Rxmode	87	112	88	116
802.11n HT40	MCS0		MCS7	
Supply current	Typ.	Max.	Typ.	Max.
TX mode	286	352	215	360
Rxmode	89	116	90	120
802.11a	6Mbps		54Mbps	
Supply current	Typ.	Max.	Typ.	Max.
TX mode	340	420	270	380
Rxmode	90	120	91	124
802.11n HT40(5G)	MCS0		MCS7	
Supply current	Typ.	Max.	Typ.	Max.
TX mode	320	392	240	384
Rxmode	92	124	93	128
802.11ac	MCS0		MCS9	
Supply current	Typ.	Max.	Typ.	Max.
TX mode	300	380	240	388
Rxmode	104	132	106	144

3.3 RFSpecifications

TX Power	2.4G: 802.11b: $17 \pm 1.5\text{dBm}$ 802.11g/11n-HT20: $15 \pm 1.5\text{dBm}$ 802.11n -HT40: $14 \pm 1.5\text{dBm}$ 5G: 802.11a/11n-HT20: $14 \pm 1.5\text{dBm}$ 802.11n-HT40: $13 \pm 1.5\text{dBm}$ 802.11ac: $12 \pm 1.5\text{dBm}$
----------	--

TX Constellation Error(EVM)	2.4G: 802.11b: <-22dB@11Mbps 802.11g: <-28dB@54Mbps 802.11n-HT20: <-28dB@72.2Mbps 802.11n-HT40:< -28dB@150Mbps 5G: 802.11a: <-28dB@54Mbps 802.11n-HT20: <-28dB@72.2Mbps 802.11n-HT40: <-28dB@150Mbps 802.11ac:< -32dB@433Mbps
Receiver Minimum Input Sensitivity@PER	1Mbps: -96dBm@PER<8%; 11Mbps:-90dBm@PER<8%; 54Mbps:-72dBm@PER<10%; 150Mbps:-69dBm@PER<10%; 433Mbps:-59dBm@PER<10%;

RFTest Report										
PathA										
2.4G										
Mode	Rate(Mbps)	Power(dBm)			EVM(dB)			Sensitivity(dBm)		
		CH1	CH7	CH13	CH1	CH7	CH13	CH1	CH7	CH13
11b	1	18.93	18.37	19.22	-33.81	-37.73	-37.84	-96	-96	-96
	11	17.19	16.79	16.92	-26.74	-27.27	-24.98	-90	-90	-90
11g	9	17.83	18.05	17.69	-26.19	-24.04	-24.94	-91	-91	-91
	54	15.72	15.44	15.48	-34.08	-32.80	-31.81	-75	-75	-75
Mode	Rate(Mbps)	Power(dBm)			EVM(dB)			Sensitivity(dBm)		
		CH3	CH7	CH11	CH3	CH7	CH11	CH3	CH7	CH11
11n	MCS0	16.78	17.28	16.87	-30.13	-27.60	-27.78	-89	-89	-89
HT40	MCS7	14.97	14.99	14.99	-34.46	-33.68	-34.61	-70	-70	-70
BT	Rate(Mbps)	Power(dBm)						Sensitivity(dBm)		
		CH0		CH50		CH75		CH37	CH38	CH39
DH1	1	5.94		5.35		5.31		-77	-77	-77
3DH5	3	5.28		5.08		5.07		-73	-73	-73

RFTest Report				
PathA				
5G				
Mod	Rate(Power(dBm)	EVM(dB)	Sensitivity(dBm)

e	Mbps)	CH 36	CH 100	CH 140	CH 161	CH 36	CH100	CH140	CH161	CH 36	CH 100	CH 140	CH 161
11a	9	15.56	16.02	16.22	16.08	-24.32	-26.25	-24.10	-24.93	-90	-90	-90	-90
	54	14.29	14.86	14.60	14.48	-29.62	-31.00	-30.43	-30.92	-74	-74	-74	-74
Mod e	Rate(Mbps)	Power(dBm)				EVM(dB)				Sensitivity(dBm)			
		CH 38	CH 102	CH 142	CH 159	CH 38	CH102	CH142	CH159	CH 38	CH 102	CH 142	CH 159
11n 40	MCS0	16.75	16.63	16.76	16.99	-25.09	-27.21	-26.30	-25.59	-88	-87	-87	-87
	MCS7	14.44	14.48	14.33	14.74	-30.65	-31.13	-30.45	-31.74	-69	-69	-69	-69
Mod e	Rate(Mbps)	Power(dBm)				EVM(dB)				Sensitivity(dBm)			
		CH 42	CH 106	CH 138	CH 155	CH 42	CH106	CH138	CH155	CH 42	CH 106	CH 138	CH 155
11ac	MCS0	15.99	15.47	15.21	15.50	-27.71	-27.64	-28.39	-28.33	-84	-84	-84	-84
	MCS9	13.73	13.34	13.29	13.40	-35.50	-32.91	-36.04	-35.52	-60	-59	-59	-59

4. Pin Assignments

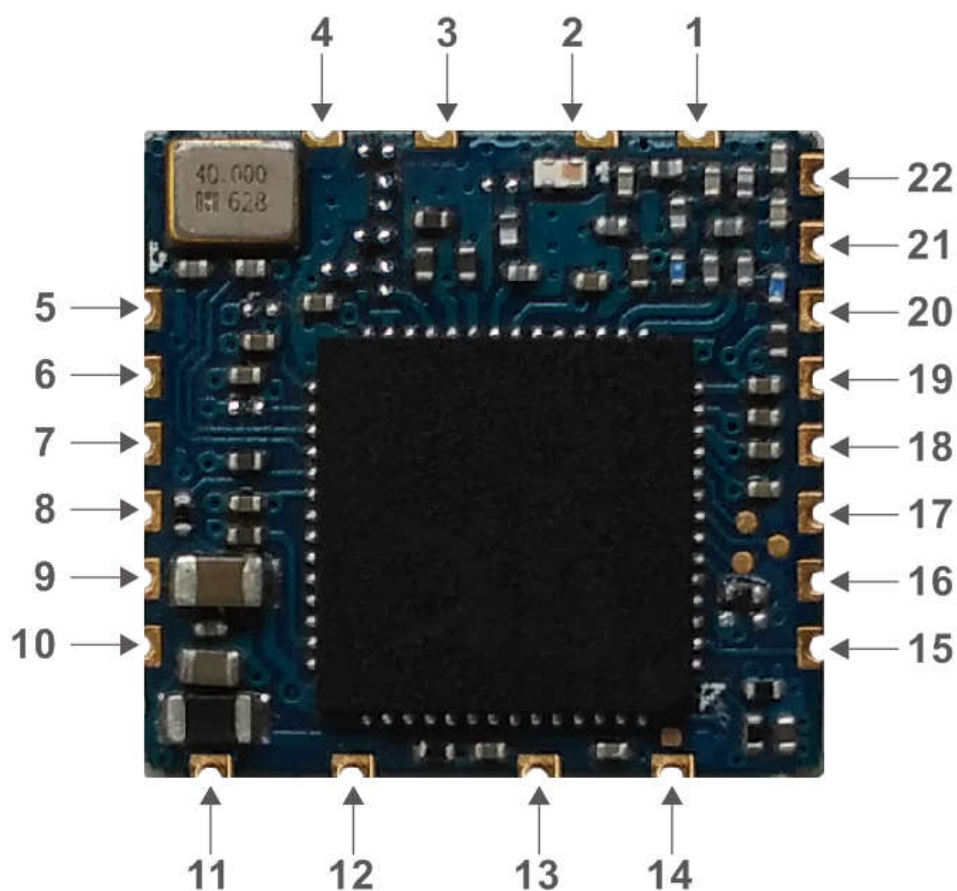


Figure 4 Pin Assignments (Top view)

The following signal type codes are used in the tables:

I:Input

O:Output

O/D: Open Drain

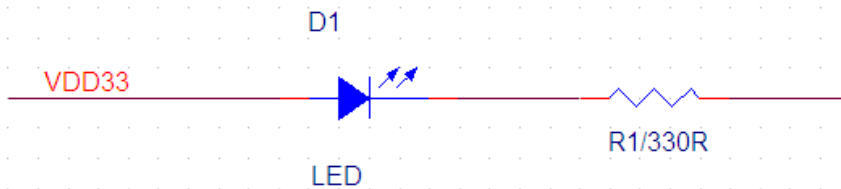
P:Power Pin

Pin No:	Pin Name	Type	Description
1	GND	P	Ground
2	RF_0	I/O	2G&5G WIFI and BT ANT
3	NC	/	/
4	GND	P	Ground
5、6、7、8	NC	/	Floating(Don't connected to ground)
9	BT_WAKE_HOST	O	Bluetooth device to wake up HOST
10	HOST_WAKE_BT	I	HOST to wake up Bluetooth device
11	VIN	P	VDD3.3V Power Supply
12	USB_DM	I/O	USB Transmitter/Receiver Differential Pair
13	USB_DP	I/O	USB Transmitter/Receiver Differential Pair
14	GND	P	ground
15	3DD_SYNC	I/O	PCM_OUT/GPIO1
16	WL_DIS	I	WIFI DISABLE (Low potential)
17	BT_DIS	I	BT DISABLE (Low potential)
18	CHIP_EN	I	High asserting for use/ Low asserting reset
19	HST_WAKE_WL	I	HOST to wake up WIFI
20	WL_WAKE_HST	O	WIFI to wake up HOST
21	WPS	I/O	WPS Switch (GPIO)
22	LED	I/O	External LED Control(GPIO)

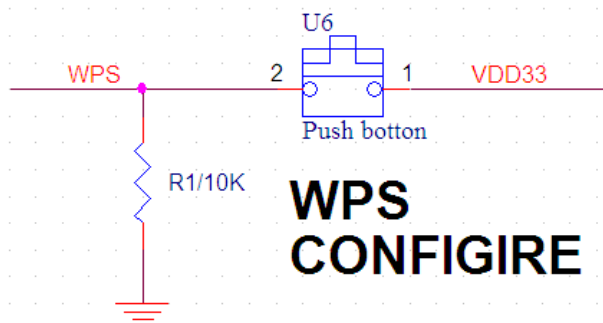
5. Application Information

5.1 Typical Application Circuit

LED Circuit



WPS Circuit



RF reference circuit

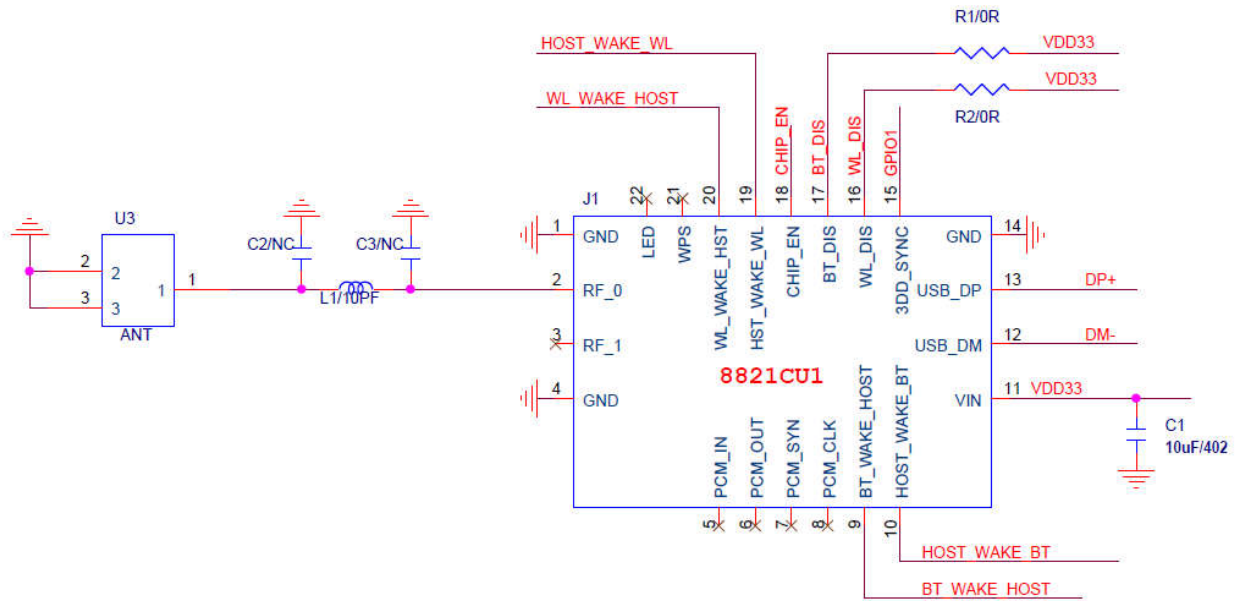


Figure 5 Typical application circuit

NOTE:

- 1、RF trace need to keep 50 ohm impedance.
- 2、USB differential pair need to keep 90ohm impedance.
- 3、C1 10uF closed to Module pin 11
- 4、Reserved 0R between Module pin 16 pin 17 and Host

Recommended alternatives or upgrades

If you just use WiFi (only connect the pin 1/2/11/12/13/14), you can replace it with the following solution:

BL-R7601MU2 BL-R8188EU1 BL-R8801MU2

Details please refer to :www.b-link.net.cn

6. Mechanical Specifications

Module dimension: Typical (L*W * H): 13.0mm*12.2mm*1.50mm Tolerance : +/-0.15mm

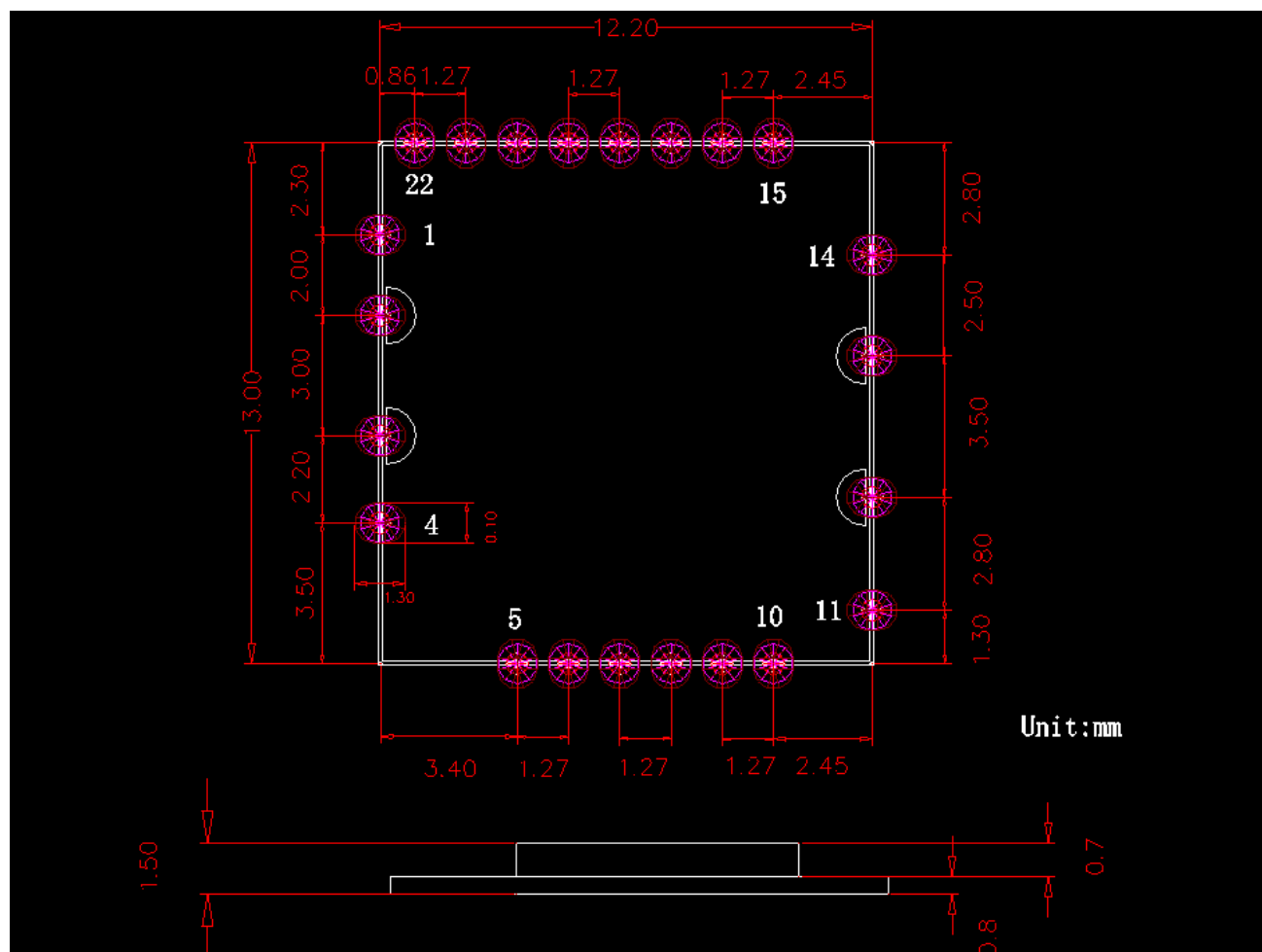


Figure 6 Module dimension

7. Others

7.1 Package Information



Figure 7 Package Information

7.2 Storage Temperature and Humidity

1. Storage Condition: Moisture barrier bag must be stored under 30°C, humidity under 85% RH.

The calculated shelf life for the dry packed product shall be a 12 months from the bag seal date.

Humidity indicator cards must be blue, <30%.

2. Products require baking before mounting if humidity indicator cards reads > 30% temp < 30°C, humidity < 70% RH, over 96 hours.

Baking condition: 125°C, 12 hours.

Baking times: 1 time.

7.3 Recommended Reflow Profile

Reflow soldering shall be done according to the solder reflow profile, Typical Solder Reflow Profile is illustrated in Figures 8. The peak temperature is 245°C.

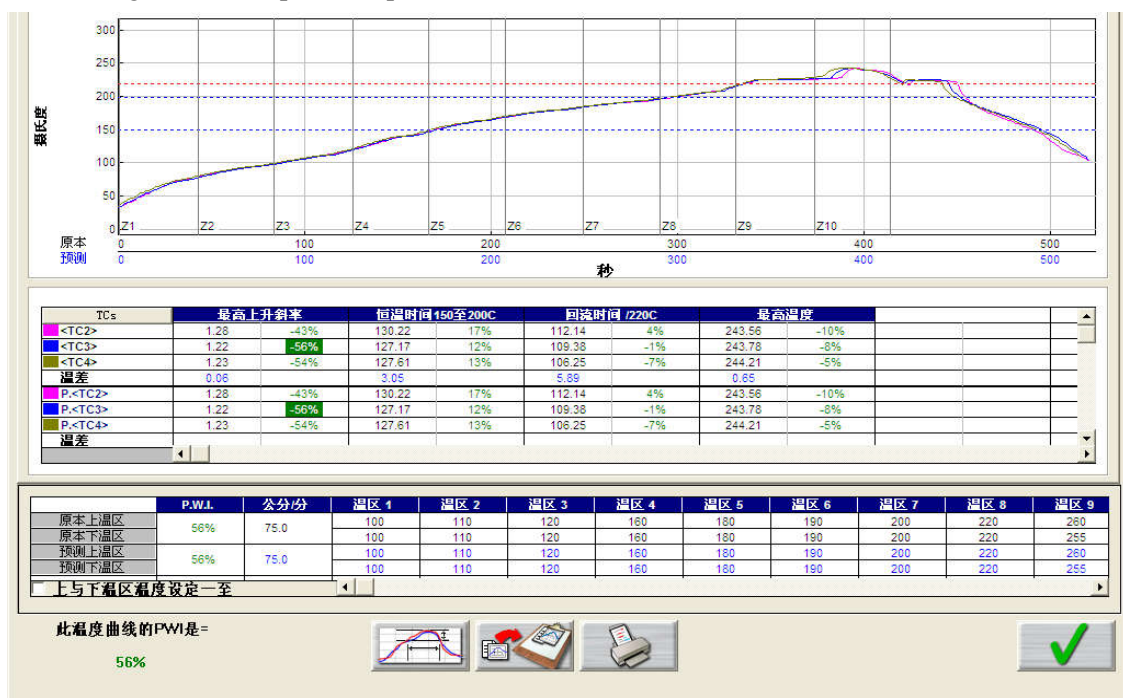


Figure 8 Typical Solder Reflow Profile