

## CDW-20U5622-00

## DATASHEET

## Software:

客 户 Customer	客户承认 Approve (请盖印章)	日期 Date

拟制 Design	审核 Check	批准 Approve	版本 Version	日期 Date
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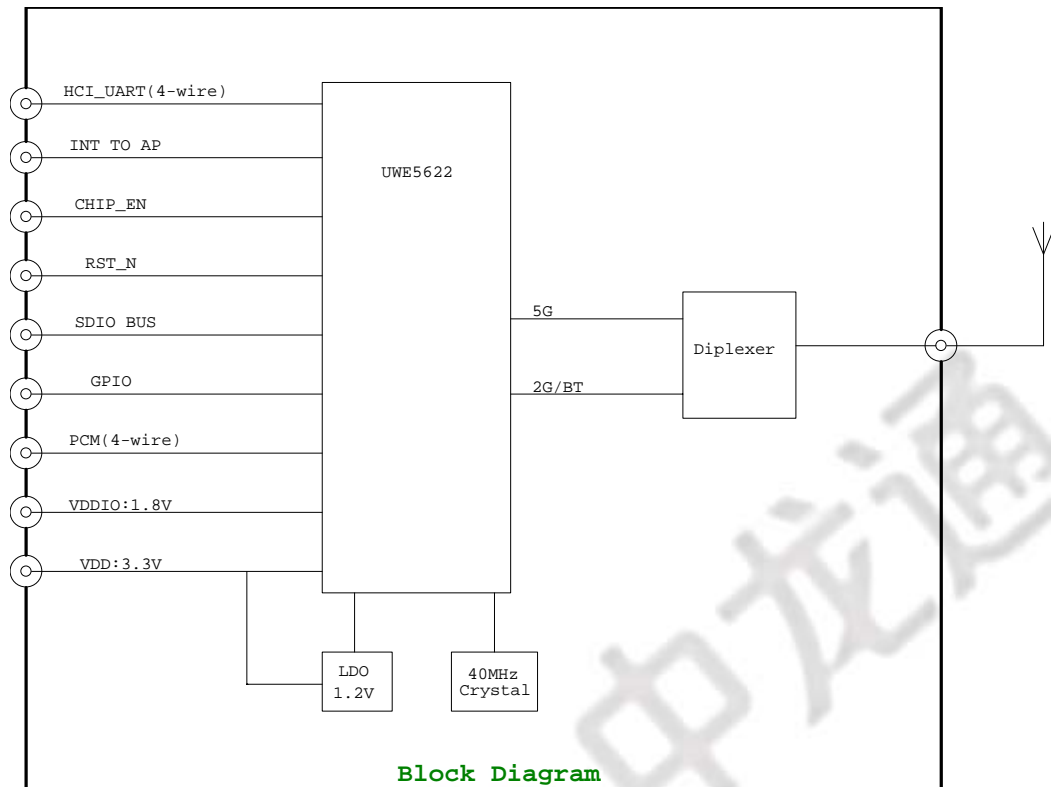
## 1. Overview

The 20U5622 is a single-die wireless local area network (WLAN) and Bluetooth (BT) combination solution to support 1 × 1 IEEE 802.11a/b/g/n/ac WLAN standards and BT 5.0 , enabling seamless integration of WLAN/BT and low-energy technology.

## 2. Features

- Supports a low-power SDIO 3.0 interface for WLAN and a UART/PCM interface for BT
- Provides a highly integrated WLAN system-on-chip (SoC) for 5 GHz 802.11ac, or 2.4 GHz/5 GHz 802.11n WLAN applications
- Support WLAN 2.4GHz and 5GHz band channels
- Supports BT 5.0, BLE, and ANT+ and backward compatibility with BT 1.x and BT 2.x + Enhanced Data Rate
- Supports a single-ended RF port for cleaner and lower cost design
- Supports 20 MHz/40 MHz at 2.4 GHz and supports 20 MHz, 40 MHz, or 80 MHz at 5 GHz
- Supports multiuser MIMO

### 3. Block Diagram



### 4. General Specification

Model	CDW-20U5622-00
Product Name	WLAN 11a/b/g/n/ac SDIO3.0 1T1R + Bluetooth 5.0 module
Major Chipset	UWE5622
Standard	802.11a/b/g/n/ac
Modulation Method	BPSK/ QPSK/ 16-QAM/ 64-QAM/256-QAM
Frequency Band	Dualband 2.4/5GHz
WiFi Interface	SDIO3.0
BT Interface	SDIO
Operating Temperature	-20° C ~ 65° C
Storage Temperature	-40° C ~ 85° C
Humidity	5% to 90% maximum
Dimension	12x12x1.9 (LxWxH) ±0.2mm

## 5. Electrical Characteristics

### 5.1 WiFi Section:

#### 2.4GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11b/g/n WiFi compliant
Frequency Range	2.400 GHz ~ 2.497 GHz (2.4 GHz ISM Band)
Number of Channels	2.4GHz : Ch1 ~ Ch14
Modulation	802.11b : DQPSK, DBPSK, CCK 802.11 g/n : OFDM /64-QAM, 16-QAM, QPSK, BPSK
Output Power	802.11b / 1Mbps : 17dBm $\pm$ 2 dB @ EVM $\leq$ -10dB 802.11b /11Mbps : 17dBm $\pm$ 2 dB @ EVM $\leq$ -15dB
	802.11g / 6Mbps : 17dBm $\pm$ 2 dB @ EVM $\leq$ -5dB 802.11g /54Mbps : 15 dBm $\pm$ 2 dB @ EVM $\leq$ -28dB
	802.11n /MCS0 : 16 dBm $\pm$ 2 dB @ EVM $\leq$ -5dB 802.11n /MCS7 : 14 dBm $\pm$ 2 dB @ EVM $\leq$ -30dB
Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps PER @ -94 dBm, typical
	- 2Mbps PER @ -92C VC dBm, typical
	- 5.5Mbps PER @ -90 dBm, typical
	- 11Mbps PER @ -86 dBm, typical
Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps PER @ -90 dBm, typical
	- 9Mbps PER @ -89 dBm, typical
	- 12Mbps PER @ -88 dBm, typical
	- 18Mbps PER @ -85 dBm, typical
	- 24Mbps PER @ -82 dBm, typical
	- 36Mbps PER @ -79 dBm, typical
	- 48Mbps PER @ -74 dBm, typical
- 54Mbps PER @ -72 dBm, typical	
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -90 dBm, typical
	- MCS=1 PER @ -87 dBm, typical
	- MCS=2 PER @ -85 dBm, typical
	- MCS=3 PER @ -81 dBm, typical
	- MCS=4 PER @ -78 dBm, typical
	- MCS=5 PER @ -73 dBm, typical
	- MCS=6 PER @ -72 dBm, typical

	- MCS=7 PER @ -70 dBm, typical
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0 PER @ -87 dBm, typical
	- MCS=1 PER @ -84 dBm, typical
	- MCS=2 PER @ -82 dBm, typical
	- MCS=3 PER @ -79 dBm, typical
	- MCS=4 PER @ -75 dBm, typical
	- MCS=5 PER @ -71 dBm, typical
	- MCS=6 PER @ -69 dBm, typical
	- MCS=7 PER @ -67 dBm, typical
Maximum Input Level	802.11b : -10 dBm
	802.11g/n : -20 dBm
Antenna Reference	Small antennas with 0~2 dBi peak gain

### 5GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11a/n/ac WiFi compliant
Frequency Range	4.900 GHz ~ 5.845 GHz (5.0 GHz ISM Band)
Number of Channels	5.0GHz : Please see the table
Modulation	802.11a : OFDM /64-QAM, 16-QAM, QPSK, BPSK 802.11n : OFDM /64-QAM, 16-QAM, QPSK, BPSK 802.11ac : OFDM /256-QAM
Output Power	802.11a / 6Mbps : 17 dBm ± 2 dB @ EVM ≤ -5dB 802.11a /54Mbps : 14 dBm ± 2 dB @ EVM ≤ -25dB 802.11n HT20 /MCS0 : 16 dBm ± 2 dB @ EVM ≤ -5dB 802.11n HT20 /MCS7 : 14 dBm ± 2 dB @ EVM ≤ -28dB 802.11n HT40 /MCS0 : 16 dBm ± 2 dB @ EVM ≤ -5dB 802.11n HT40 /MCS7 : 13dBm ± 2 dB @ EVM ≤ -28dB 802.11ac VHT20 /MCS0 : 16 dBm ± 2 dB @ EVM ≤ -5dB 802.11ac VHT20 /MCS8 : 12 dBm ± 2 dB @ EVM ≤ -30dB 802.11ac VHT40 /MCS0 : 16 dBm ± 2 dB @ EVM ≤ -5dB 802.11ac VHT40 /MCS9 : 11 dBm ± 2 dB @ EVM ≤ -32dB 802.11ac VHT80 /MCS0 : 16 dBm ± 2 dB @ EVM ≤ -5dB 802.11ac VHT80 /MCS9 : 11 dBm ± 2 dB @ EVM ≤ -32dB
Receive Sensitivity (11a,20MHz) @10% PER	- 6Mbps PER @ -94dBm, typical - 9Mbps PER @ -90 dBm, typical - 12Mbps PER @ -87 dBm, typical - 18Mbps PER @ -84 dBm, typical - 24Mbps PER @ -81 dBm, typical - 36Mbps PER @ -78 dBm, typical

	- 48Mbps PER @ -74 dBm, typical
	- 54Mbps PER @ -72 dBm, typical
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -93 dBm, typical
	- MCS=1 PER @ -90 dBm, typical
	- MCS=2 PER @ -87 dBm, typical
	- MCS=3 PER @ -84 dBm, typical
	- MCS=4 PER @ -81 dBm, typical
	- MCS=5 PER @ -78 dBm, typical
	- MCS=6 PER @ -76 dBm, typical
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0 PER @ -90 dBm, typical
	- MCS=1 PER @ -87 dBm, typical
	- MCS=2 PER @ -84 dBm, typical
	- MCS=3 PER @ -80 dBm, typical
	- MCS=4 PER @ -77 dBm, typical
	- MCS=5 PER @ -74 dBm, typical
	- MCS=6 PER @ -72 dBm, typical
Receive Sensitivity (11ac,20MHz) @10% PER	- MCS=0, NSS1 PER @ -92 dBm, typical
	- MCS=1, NSS1 PER @ -89 dBm, typical
	- MCS=2, NSS1 PER @ -86 dBm, typical
	- MCS=3, NSS1 PER @ -83 dBm, typical
	- MCS=4, NSS1 PER @ -80 dBm, typical
	- MCS=5, NSS1 PER @ -77dBm, typical
	- MCS=6, NSS1 PER @ -74 dBm, typical
	- MCS=7, NSS1 PER @ -72 dBm, typical
- MCS=8, NSS1 PER @ -70 dBm, typical	
Receive Sensitivity (11ac,40MHz) @10% PER	- MCS=0, NSS1 PER @ -89 dBm, typical
	- MCS=1, NSS1 PER @ -86 dBm, typical
	- MCS=2, NSS1 PER @ -83 dBm, typical
	- MCS=3, NSS1 PER @ -80 dBm, typical
	- MCS=4, NSS1 PER @ -77 dBm, typical
	- MCS=5, NSS1 PER @ -74 dBm, typical
	- MCS=6, NSS1 PER @ -72 dBm, typical
	- MCS=7, NSS1 PER @ -69 dBm, typical
- MCS=8, NSS1 PER @ -67 dBm, typical	

	- MCS=9, NSS1 PER @ -65 dBm, typical
Receive Sensitivity (11ac,80MHz) @10% PER	- MCS=0, NSS1 PER @ -86 dBm, typical
	- MCS=1, NSS1 PER @ -83 dBm, typical
	- MCS=2, NSS1 PER @ -80 dBm, typical
	- MCS=3, NSS1 PER @ -77 dBm, typical
	- MCS=4, NSS1 PER @ -74 dBm, typical
	- MCS=5, NSS1 PER @ -71 dBm, typical
	- MCS=6, NSS1 PER @ -68 dBm, typical
	- MCS=7, NSS1 PER @ -65 dBm, typical
	- MCS=8, NSS1 PER @ -62 dBm, typical
	- MCS=9, NSS1 PER @ -58dBm, typical
Maximum Input Level	802.11a/n/ac : -20 dBm
Antenna Reference	Small antennas with 0~2 dBi peak gain

## 5.2 5GHz(20MHz) Channel table

Band (GHz)	Operating Channel Numbers	Channel center frequencies(MHz)
5.15GHz~5.25GHz	36	5180
	40	5200
	44	5220
	48	5240
5.25GHz~5.35GHz	52	5260
	56	5280
	60	5300
	64	5320
5.5GHz~5.7GHz	100	5500
	104	5520
	108	5540
	112	5560
	116	5580
	120	5600
	124	5620
	128	5640
132	5660	



	136	5680
	140	5700
5.725GHz~5.825GHz	149	5745
	153	5765
	157	5785
	161	5805
	165	5825

### 5.3 Bluetooth Section:

Feature	Description
<b>General Specification</b>	
Bluetooth Standard	Bluetooth V5.0 of 1, 2 and 3 Mbps.
Host Interface	SDIO
Antenna Reference	Small antennas with 0~2 dBi peak gain
Frequency Band	2402 MHz ~ 2480 MHz
Number of Channels	79 channels
Modulation	FHSS, GFSK, DPSK, DQPSK

### 5.4 RF Specification

	Packet type	Channel	Spec	TX power(dBm)	DEVM RMS (%)		
					Spec	RMS	Peak
Classic/EDR Tx Power and EVM	DH5	0	0~20	7.5	/	/	/
		39		7.7	/	/	/
		78		7.5	/	/	/
	2DH5	0	0~20	5.7	20%~35%	3.4%	9.0%
		39		6.2		3.4%	7.8%
		78		6.1		3.4%	8.4%
	3DH5	0	0~20	5.7	13%~25%	3.0%	7.8%
		39		6.2		3.2%	7.5%
		78		6.1		3.1%	8.8%

BLE TX Power	Rate	Channel	Spec	Test Result
	1M	0	-20~10	3.2
		19		3.8
		39		3.7
	2M	0	-20~10	3.2
		19		3.8
		39		3.7
	LES500K	0	-20~10	3.5
		19		3.5
		39		3.5
	LES125K	0	-20~10	3.5
		19		3.5
39		3.5		

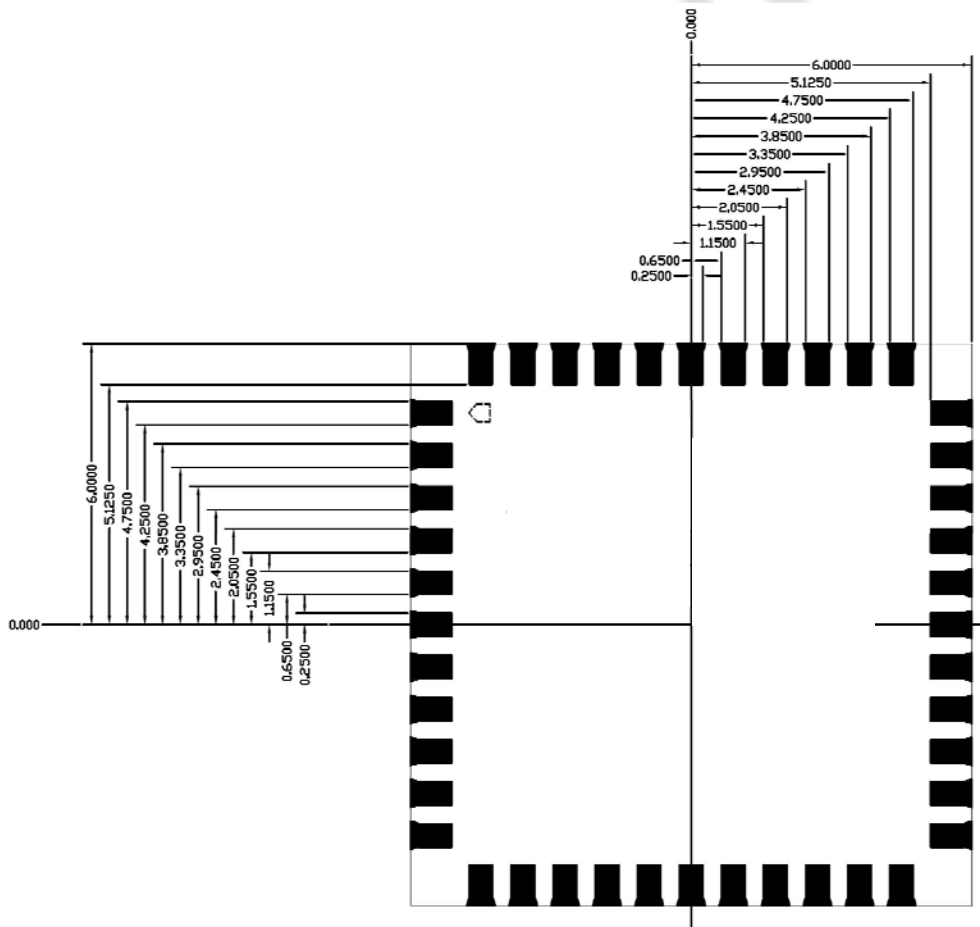
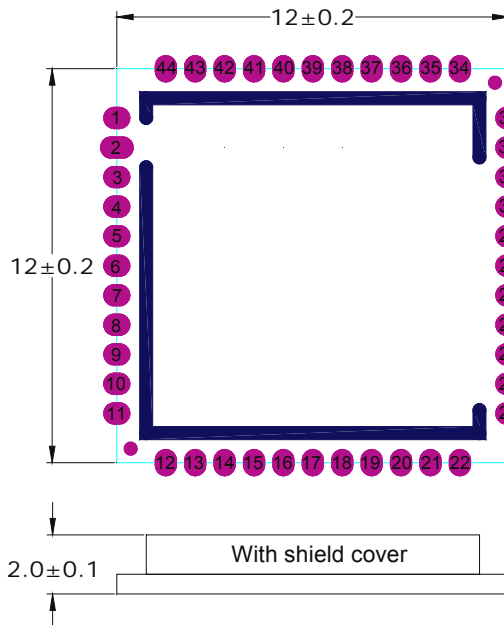
Sensitivity(dBm)							
Rate	SPEC	CH0		CH39		CH78	
		Dirty OFF	Dirty ON	Dirty OFF	Dirty ON	Dirty OFF	Dirty ON
BR	-70dBm	-91.9	-91.4	-92.5	-92.0	-92.3	-91.7
EDR2		-91.4	-91	-92.3	-91.8	-91.9	-91.4
EDR3		-85.2	-81.9	-85.9	-82.9	-85.4	-82.2
BT5.0	SPEC	CH0		CH19		CH39	
LE1M	-70dBm	-95	-94.5	-96.5	-96	-95.5	-95
LE2M	-70dBm	-92	-91.5	-93	-92.5	-92.5	-92
LE500K	-75dBm	-98	-97.5	-99.5	-99	-98.5	-98
LE125K	-82dBm	-103	-102.5	-104	-103.5	-103.5	-103

## 6. Electrical Characteristics

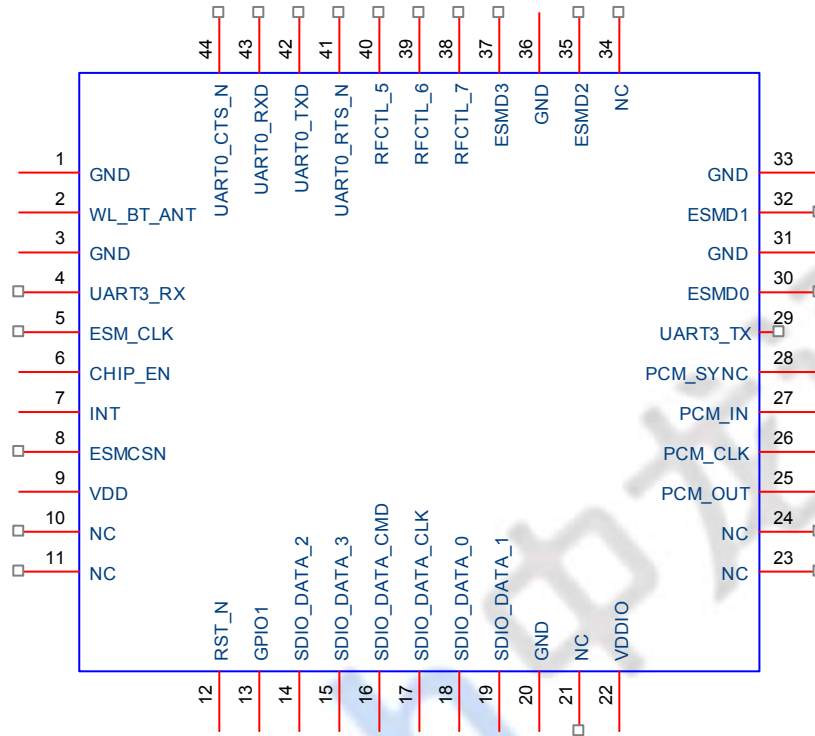
symbol	Parameter	Minimum	Typical	Maximum	Units
VDD	3.3V supply voltage	3.0	3.3	3.6	V
VDDIO	I/O supply voltage	1.62	1.8 or 3.3	3.46	V
VDD	3.3V rating current	--	--	1000	mA

## 7. Physical Dimensions

(Unit: mm)



## 8. Pin Description



NO.	Name	Type	Description
1	GND	—	Ground connections
2	RF	I/O	RF I/O port (2.4G and 5G)
3	GND	—	Ground connections
4	UART3_RX	—	No connect, keep floating
5	ESMCLK	—	No connect, keep floating
6	CHIP_EN	I	WL/BT Power enable
7	INT	O	INT to AP
8	ESMCSN	—	No connect, keep floating
9	VDD	P	3.3V INPUT
10	NC	—	No connect, keep floating
11	NC	—	No connect, keep floating
12	RST_N	I	External reset input, active low
13	GPIO1	I/O	SD_INT
14	SD_DAT2	I/O	SDIO DATA2

15	SD_DAT3	I/O	SDIO DATA3
16	SD_CMD	I/O	SDIO command line
17	SD_CLK	I/O	SDIO CLK
18	SD_DAT0	I/O	SDIO DATA0
19	SD_DAT1	I/O	SDIO DATA1
20	GND	—	Ground connections
21	NC	—	No connect, keep floating
22	VDDIO	P	I/O Voltage supply input 1.8V(only)
23	NC	—	No connect, keep floating
24	NC	—	No connect, keep floating
25	PCM_OUT	O	PCM data output
26	PCM_CLK	I/O	PCM CLK
27	PCM_IN	I	PCM data input
28	PCM_SYNC	I	PCM sync signal
29	UART3_TX	—	No connect, keep floating
30	ESMD0	—	No connect, keep floating
31	GND	—	Ground connections
32	ESMD1	—	No connect, keep floating
33	GND	—	Ground connections
34	NC	—	No connect, keep floating
35	ESMD2	—	No connect, keep floating
36	GND	—	Ground connections
37	ESMD3	—	No connect, keep floating
38	RFCTL_7	—	No connect, keep floating
39	RFCTL_6	—	No connect, keep floating
40	RFCTL_5	—	No connect, keep floating
41	UART0_RTS_N	I	Bluetooth UART interface(reserved)
42	UART0_TXD	O	Bluetooth UART interface(reserved)
43	UART0_RXD	I	Bluetooth UART interface(reserved)
44	UART0_CTS_N	I	Bluetooth UART interface(reserved)

## Note:

Strapping PIN:PIN38~PIN40(RFCTL7,6,5) default High (111), do not change.

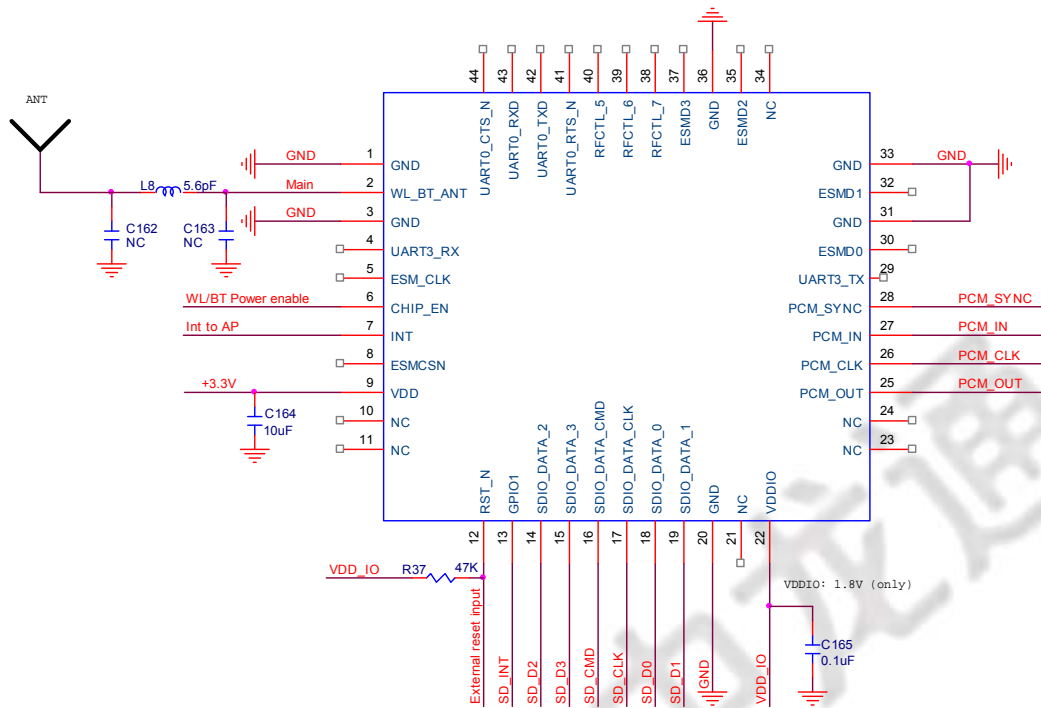
## 9. Suplier

二级供应商清单	
物料名称	供应商品牌
晶振	JWT/FK/TKD/Murata/TXC
双工器	TDK/ACX/GLEAD
电感	Sunlord/ CHILISIN/ SAMWHA/Murata
wifi 芯片	UNISOC
LDO	SGM
电容	SAMSUNG /EYANG
电阻	UniOhm /YAGEO
PCB(12x12x0.6mm)	A,O,I

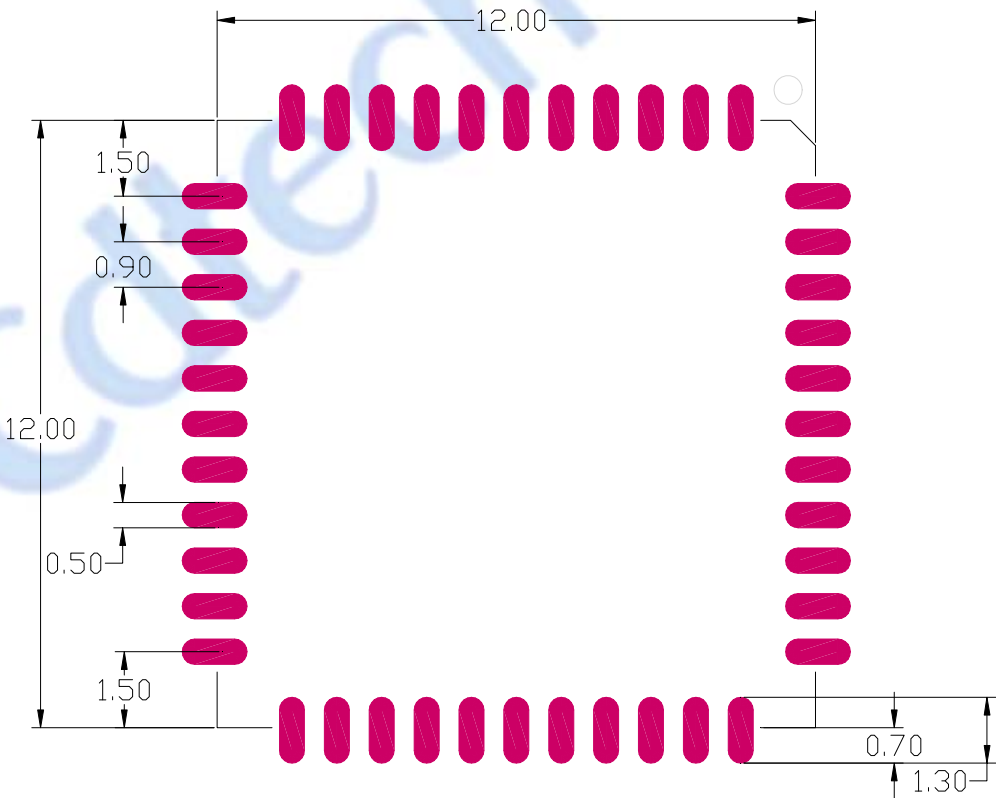
## 10. Physical photo



### 11. Application schematic



### 12. Layout Recommendation



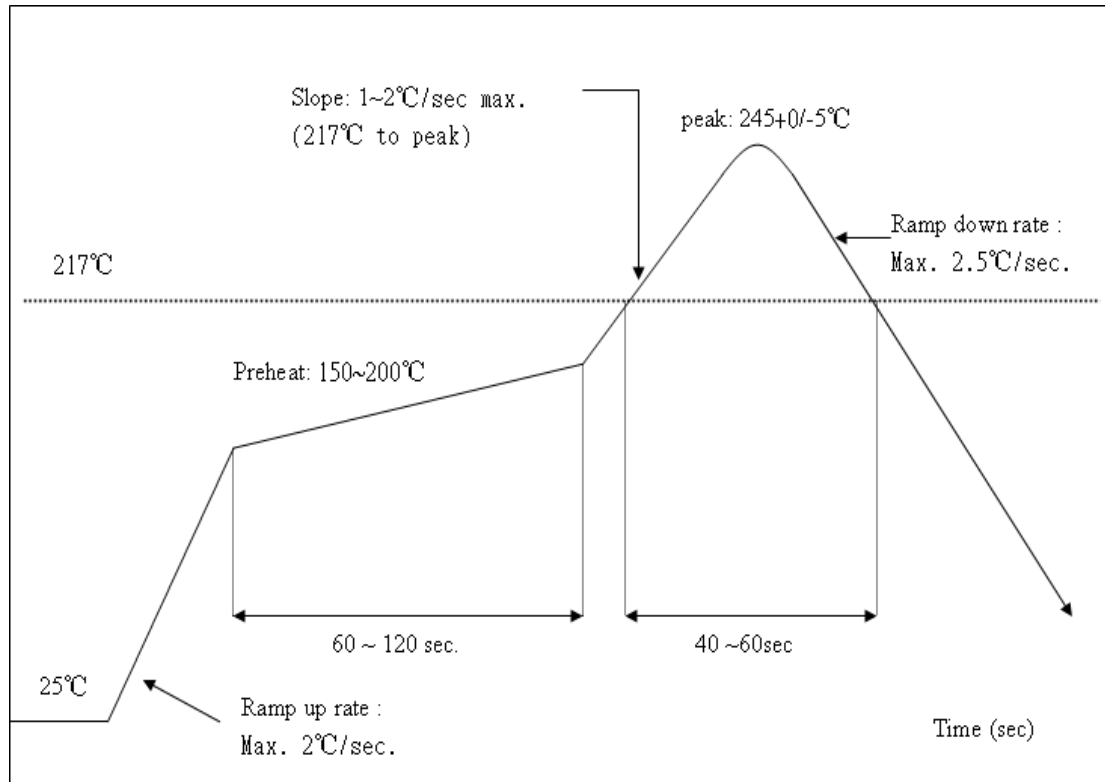
(Top view)

### 13. Recommended Reflow Profile

Referred IPC/JEDEC standard.

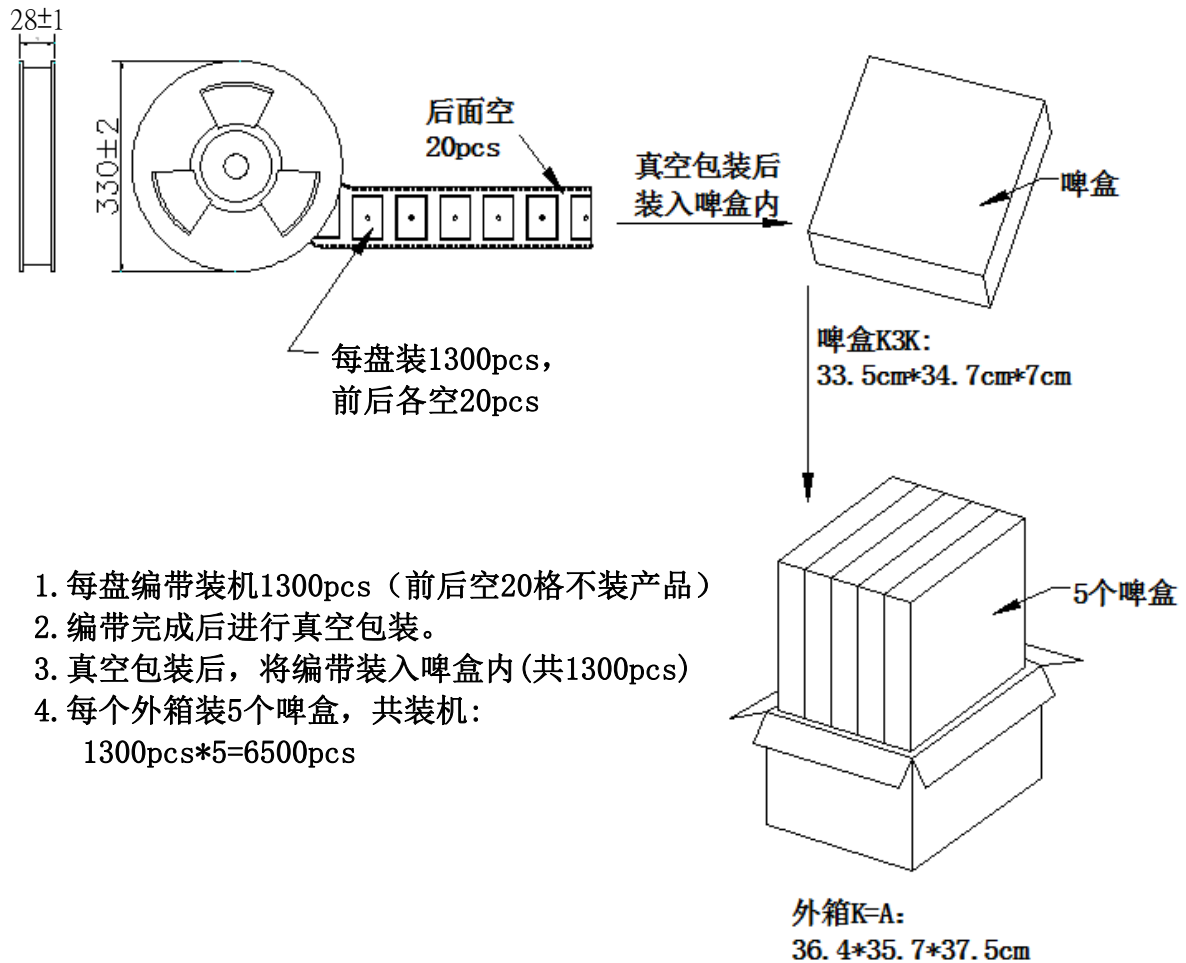
Peak Temperature :  $<250^{\circ}\text{C}$

Number of Times : 2 times





## 14. Packing information



1. 每盘编带装机1300pcs（前后空20格不装产品）
2. 编带完成后进行真空包装。
3. 真空包装后，将编带装入啤盒内（共1300pcs）
4. 每个外箱装5个啤盒，共装机：  
1300pcs\*5=6500pcs

**ESD CAUTION**

The 20U5622-00 module is ESD (electrostatic discharge) sensitive device and may be damaged with ESD or spike voltage. Although 20U5622-00 module is with built-in ESD protection circuitry, please handle with care to avoid the permanent malfunction or the performance degradation.