WM2012CU
WLAN/BT USB Module

Version	Date	Change Description
1.0	5 Nov 2015	Initial release

Description

WM2012CU is a highly integrated 802.11b/g/n 2T2R and BT 2.1/3.0/4.0 module, It combines a WLAN MAC, a 2T2R capable WLAN baseband, BT Protocol Stack (LM, LL, and LE), BT Baseband, modem. It provides a complete solution for a high throughput performance integrated wireless LAN and Bluetooth device.

It is designed to provide excellent performance with low power consumption and enhance the advantages of robust system and cost-effective. It is targeted at competitive superior performance, better power management applications.

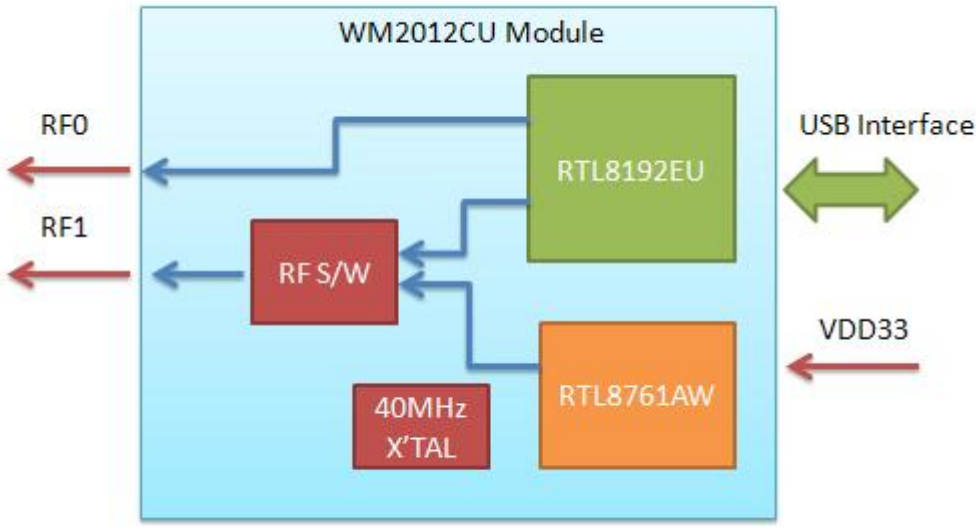
Features

- IEEE802.11b/g/n compliant
- Operates in 2.4GHz frequency bands
- 2x2 MIMO technology improves effective throughput and range over existing 802.11 b/g products
- Data rates: up to 300Mbps
- IEEE802.11d and 802.11h compliant
- BPSK, QPSK, 16 QAM, 64 QAM modulation schemes
- WEP, TKIP, and AES, WPA, WPA2 hardware encryption schemes
- Compatible with Bluetooth v2.1 and v3.0, support Bluetooth 4.0 Low Energy(BLE).
- Fully qualified Bluetooth 2.1+ EDR specification, Bluetooth 3.0 and Bluetooth 4.0 dual mode.
- Enhanced WLAN/BT coexistence control to improve transmission quality in different profiles.
- Small footprint: 25.0×25.0×2.2mm, half-holes PCB module
- OS support: Android, Windows
- RoHS compliance

Application

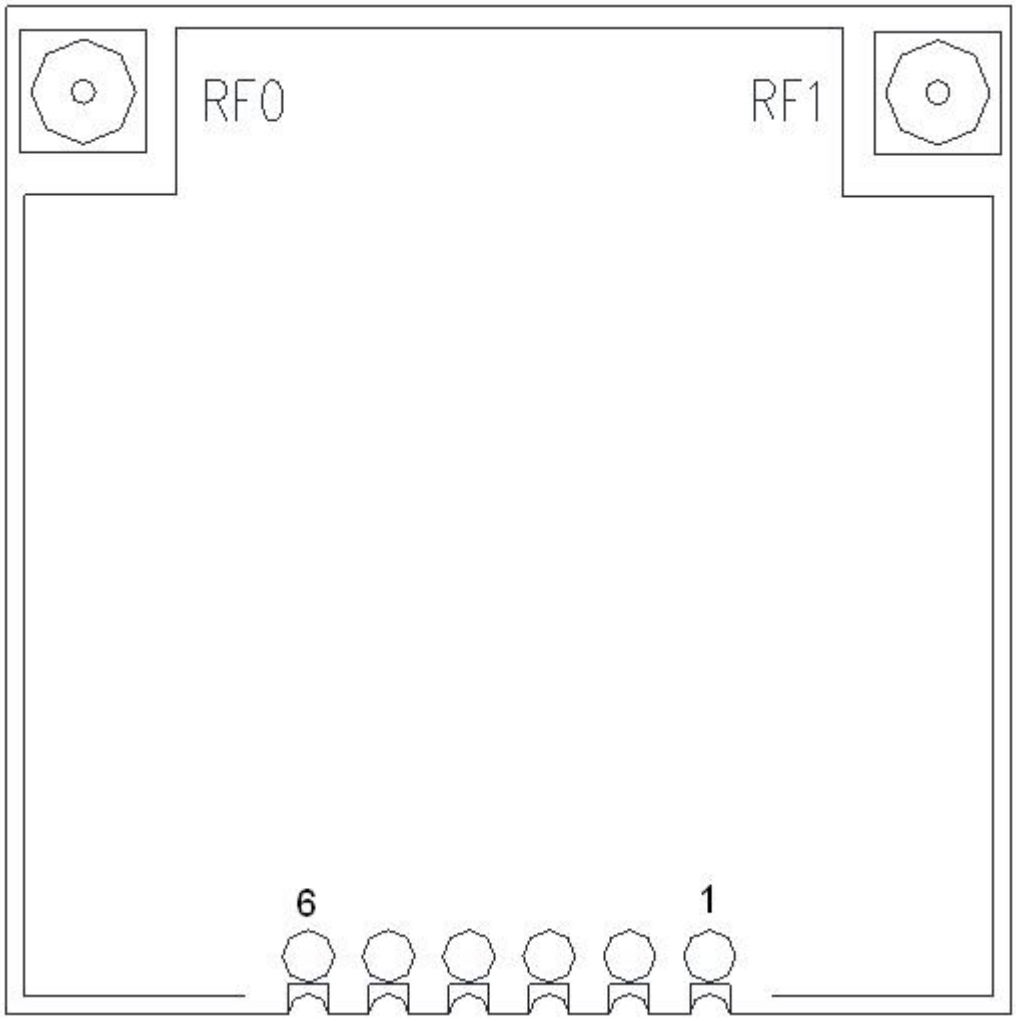
- Mobile Internet Device
- TV
- IP-cam
- STB

Functional Block Diagram



Block Diagram

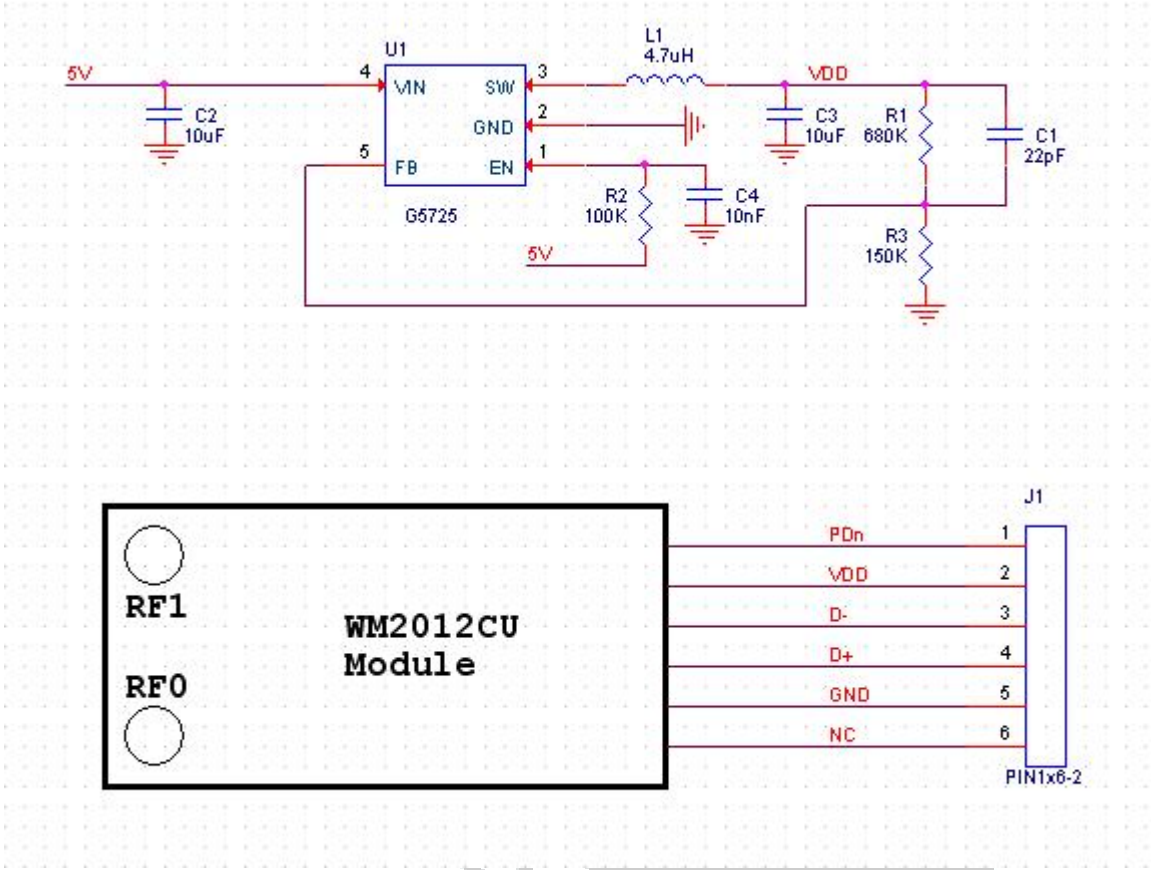
Pin Assignment (Top view)



Pin Definition

Pin	Signal	Input /Output	Description
1	PDn	Input	WLAN/BT Radio on/off function
2	VDD	Power	3.3V Power supply
3	D-	I/O	USB D-
4	D+	I/O	USB D+
5	GND	Power	Ground
6	NC		NC

Application Circuit



Functional Specification

Product Description	
WLAN Standard	IEEE802.11b/g/n compliant
Bluetooth Standard	v2.1+EDR, v3.0, v3.0+HS, v4.0
Main Chipset	RTL8192EU RTL8761AW
Host Interface	USB Interface
Antenna	I-PEX Connector * 2
Dimension	25.0mm x 25.0mm x 2.2mm
Package	Half-hole PCB module
Electrical Specifications	
Frequency Range	ISM Band and Bluetooth: 2.400 to 2.485 GHz
Data Rate	WLAN: 802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: MCS0~MCS15 Bluetooth: Basic rate: 1Mbps Enhance data rate: 2, 3Mbps
Modulation Technique	WLAN: 802.11b: DBPSK, DQPSK, CCK 802.11g: BPSK, QPSK, 16-QAM, 64-QAM 802.11n: BPSK, QPSK, 16-QAM, 64-QAM Bluetooth: GFSK, Π/4 DQPSK, 8DPSK
Operational Channel	WLAN: 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan Bluetooth: Ch0 to Ch78
Security	WPA, WPA-PSK, WPA2, WPA2-PSK, WEP 64bit & 128bit, IEEE 802.11x, IEEE 802.11i
Operating Voltage	3.3V

Temperature Limit Ratings

Parameter	Min.	Max.	Units
Storage Temperature	-40	+125	°C
Ambient Operating Temperature	0	+70	°C

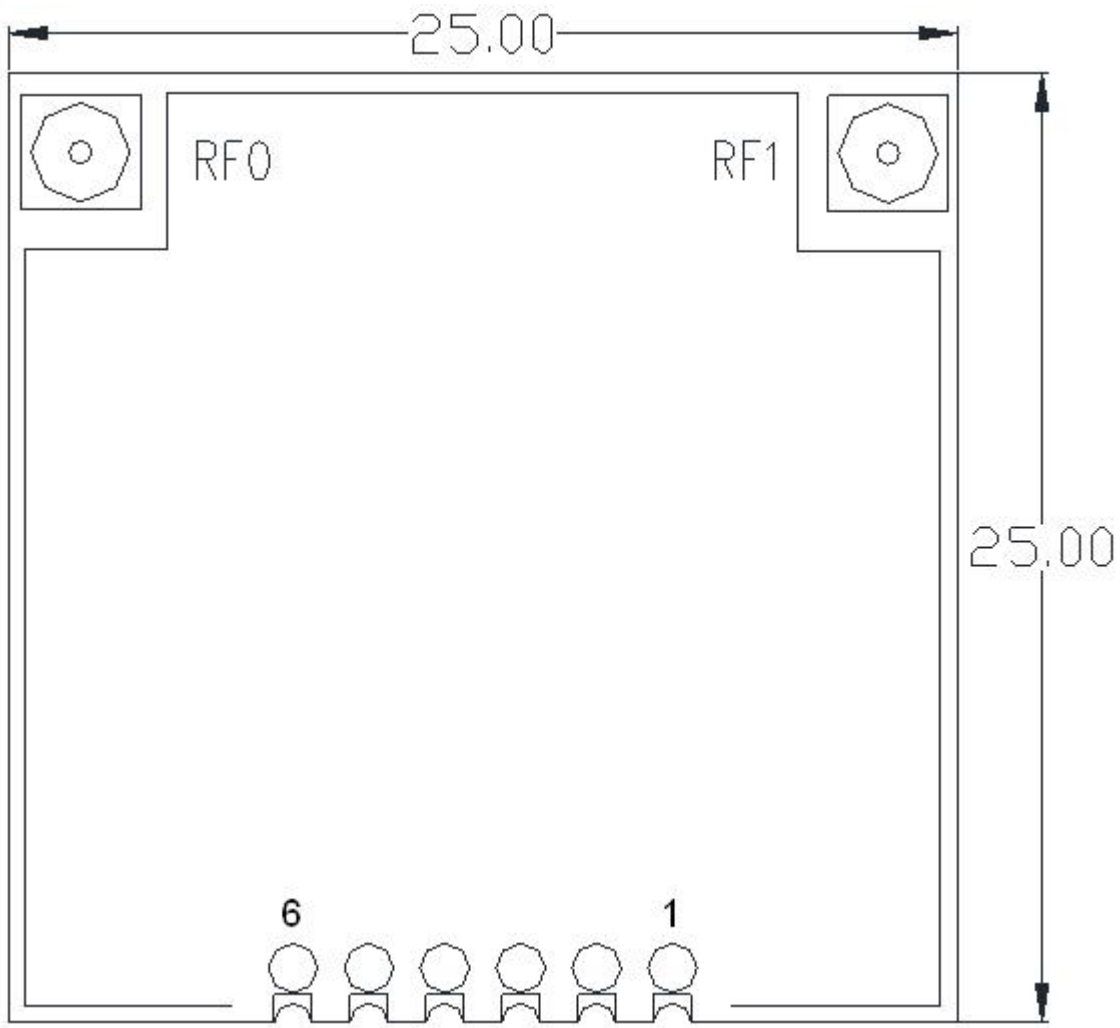
Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
VDD33	USB interface VDD	-0.3 to 3.6	V

Recommended Operating Range

Symbol	Parameter	Min	Typ	Max	Units
VDD33	USB interface VDD	3.0	3.3	3.6	V

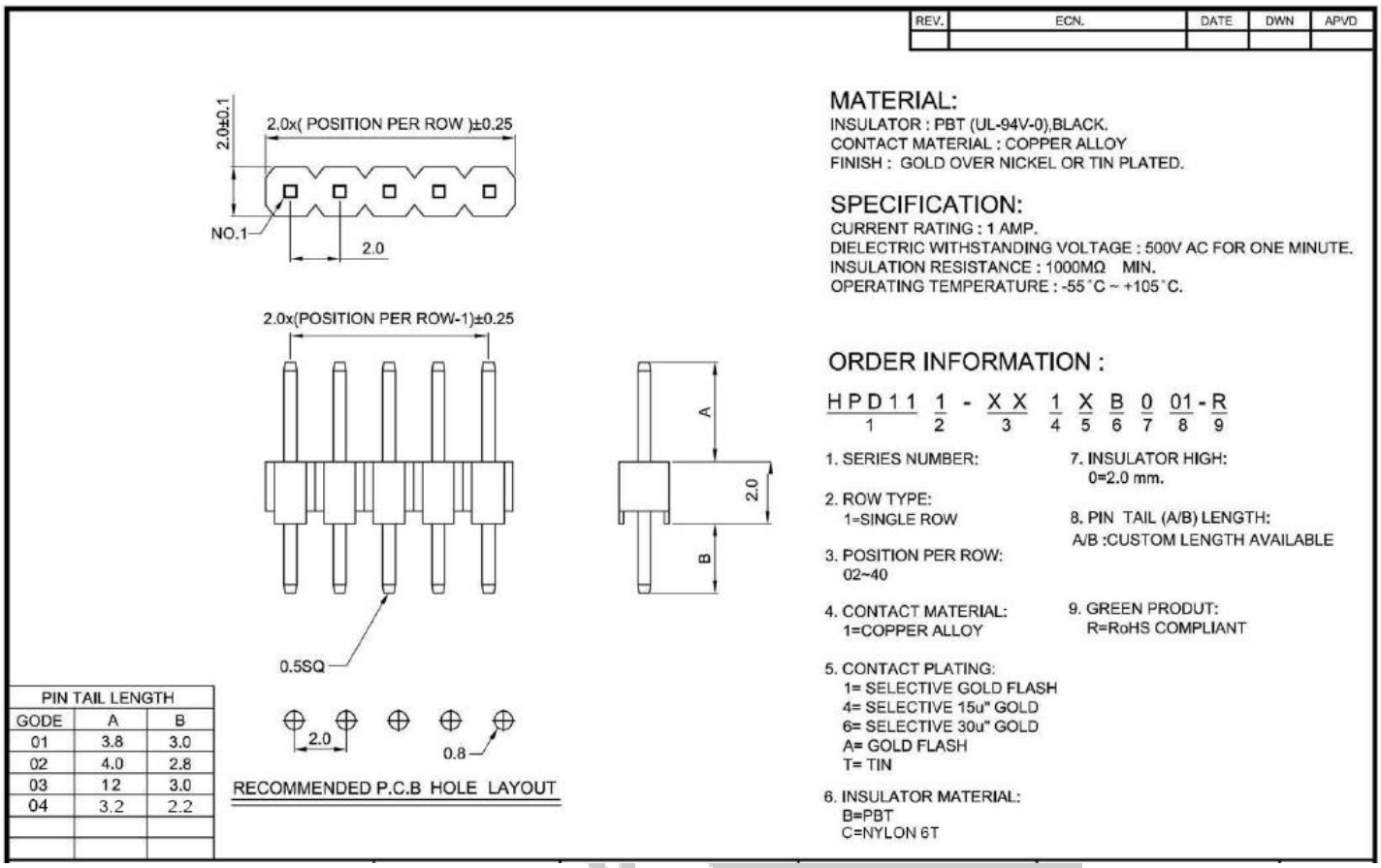
Module Dimensions



All dimensions are in millimeters.
Tolerance: +/- 0.15mm

Pin Header Specification

Recommend part is code 04.

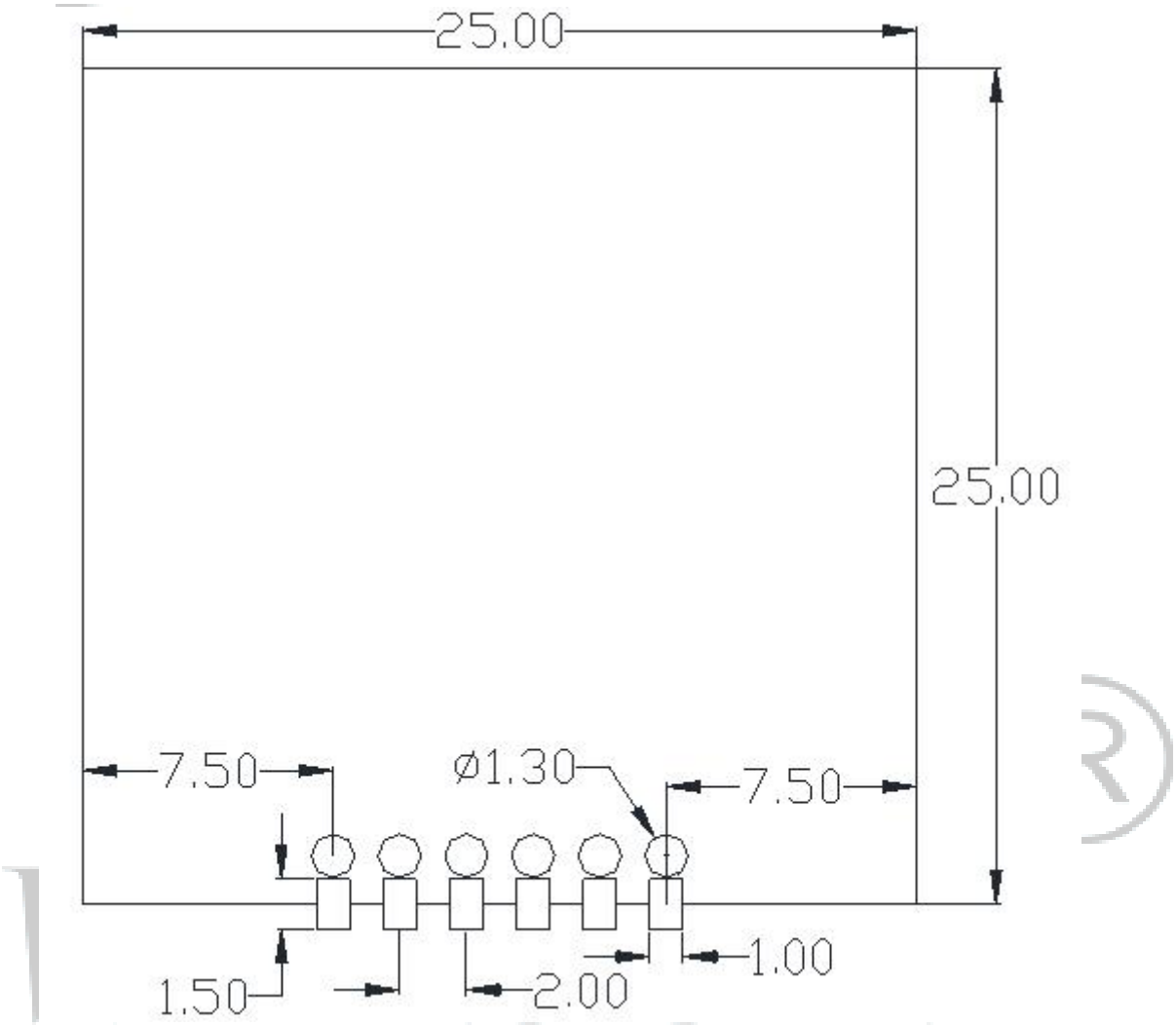


PIN TAIL LENGTH		
GODE	A	B
01	3.8	3.0
02	4.0	2.8
03	12	3.0
04	3.2	2.2

Layout Design Guide

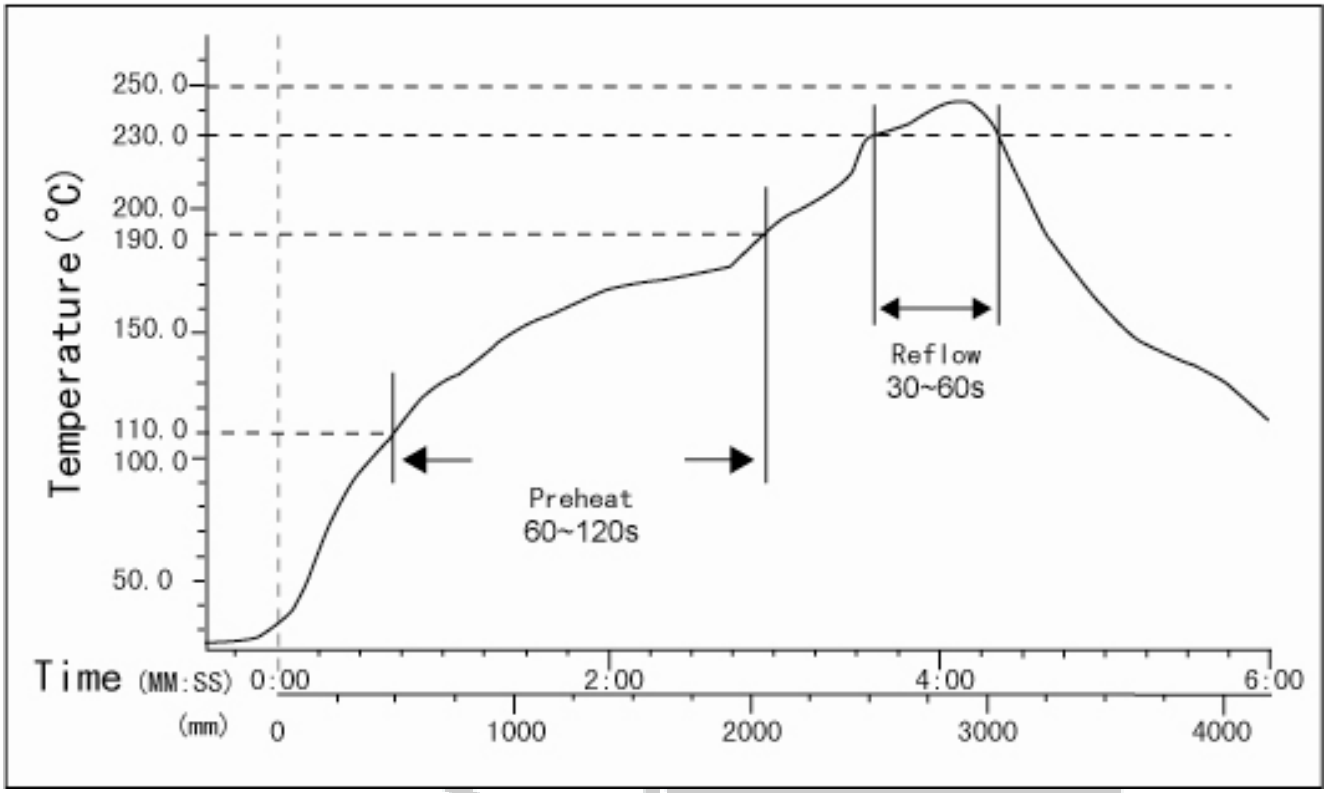
The recommended layout pads for WM2012CU module are shown below. (Module top view)

- DO NOT route any digital or analog signal traces between the RF traces and reference ground.
- DO NOT put any metal shielding in the surrounding area of module and try to leave the module placed in the corner of chassis board as close as possible.
- DO NOT put any metal plane into clearance area. Please keep the clearance area close to the corner of main board or out of the board's edge.



All dimensions are in millimeters.
Tolerance: +/- 0.15mm

Reference Temperature Reflow Chart



Note:

1. If the system PCBA is double side design please reflow the side without this module first.
2. Don't let the solder machine temperature over 250℃ or follow solder paste vender's recommended temperature.
3. The Ramp-up temperature speed is 1~4 °C per second, the Ramp-down temperature speed is 1~4 °C per second.
4. This temperature reflow chart is for reference only, it depends on the manufaturing machine's characters requirement.

Compliance Information

- FCC Compliance

  This equipment has been tested and found to comply with the limits for a Class digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to the radio communications. However, there are no guarantees that interference will not occur in a particular installation.

- Troubleshooting

  If this equipment does cause harmful interference to radio reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following instructions.
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Consult dealer or an experienced radio technician.

- Conditions

  Operation is subject to the following conditions
  - This device may not cause harmful interference.
  - This device must accept any interference received, including interference that may cause undesired operation.

- FCC Caution

  This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

  Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

  This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and consider removing the no-collocation statement.

End Product Labeling
This transmitter module is authorized only for use in device where the antenna may be installed such that 20cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following:
"Contains FCC ID: 2AAK6WM2012CU"

Manual Information to the End User
The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module
in the user's manual of the end product which integrates this module.The end user manual shall include all required regulatory information/warming as shown in this manual.

- IC Caution

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- this device may not cause interference
- this device must accept any interference, including interference that may cause undesired operation of the device

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.L'exploitation est autorisée aux deux conditions suivantes:

- l'appareil ne doit pas produire de brouillage, et
- l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Pour se conformer aux exigences de conformité RF canadienne l'exposition, cet appareil et son antenne ne doivent pas être co-localisés ou fonctionnant en conjonction avec une autre antenne ou transmetteur.

End Product Labeling
This transmitter module is authorized only for use in device where the antenna may be installed such that 20cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following:
"Contains IC ID: 20126-WM2012CU"

■ NCC 警語

根據 NCC 低功率電波輻射性電機管理辦法　規定:

第十二條　經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條　低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。
低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

此模組於取得認證後將依規定於模組本體標示審驗合格標籤，並要求平台廠商於平台上標示「本產品內含射頻模組：ID 編號」字樣。