WM1032WU
WLAN USB Module

Version	Date	Change Description
0.1	28 Jun 2013	Initial release
0.2	08 Mar 2017	Add FCC compliance description

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Description

WM1032WU is a WLAN 11n USB module, which fully supports the features and functional compliance of IEEE 802.11n,e and i standards. It supports up to 150Mbps high-speed wireless network connections.

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

- Operates in 2.4 GHz frequency bands
- 1x1 MIMO technology improves effective throughput and range over existing 802.11 b/g products
- Data rates: up to 150Mbps
- 802.11e-compatible bursting and I standards
- BPSK, QPSK, 16 QAM, 64 QAM modulation schemes
- WEP, TKIP, and AES, WPA, WPA2 hardware encryption schemes
- Small footprint: 25×12×2.2mm, 9-half-holes PCB module
- OS support: Android, Windows
- RoHS compliance

Application

- Mobile Internet Device
- Tablet PC
- Portable Media Player (PMP)
- Portable Navigation Device (PND)
- IP cam

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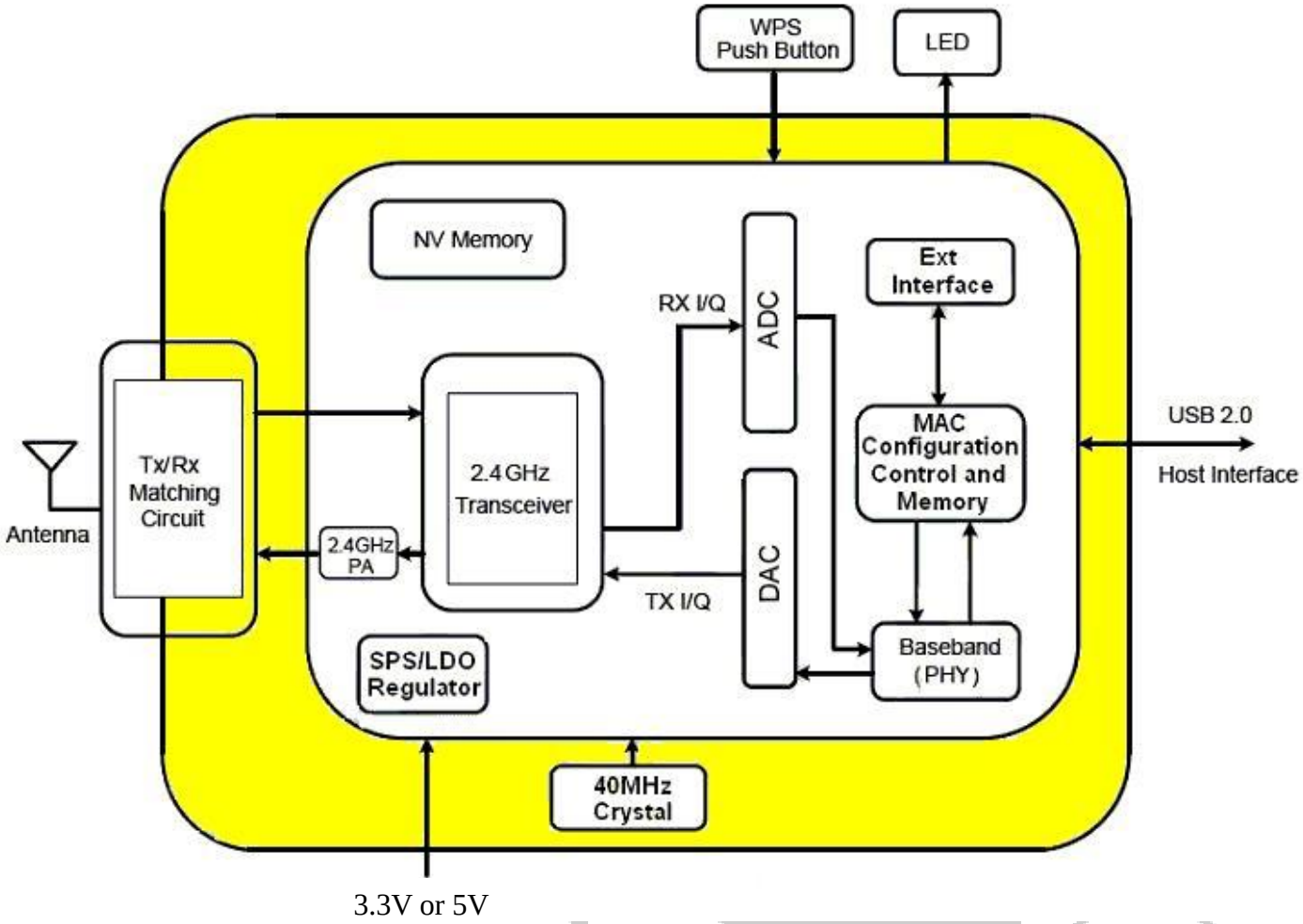
Functional Block Diagram



Block Diagram

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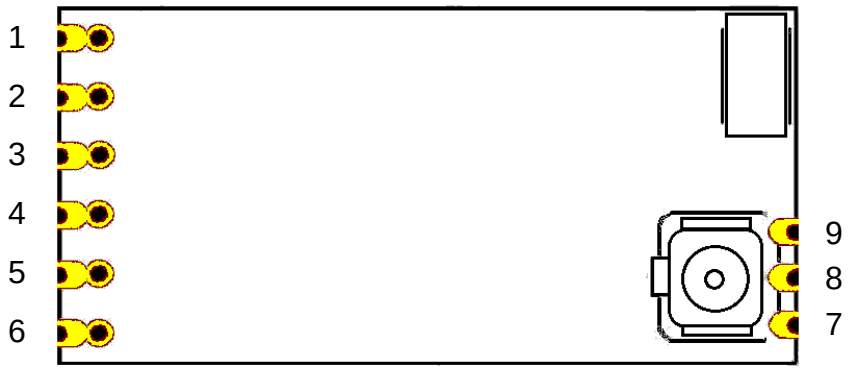
Pin Assignment (Top view)



Pin Definition

Pin	Signal	Input /Output	Description
1	LED	Output	Low enable LED
2	GND	Power	Ground
3	D+	I/O	USB D+
4	D-	I/O	USB D-
5	VDD	Power	3.3V (or optional 5V) Power supply
6	GPIO2	Input	WPS input
7	GND	Power	Ground
8	RF	I/O	WLAN RF port
9	GND	Power	Ground

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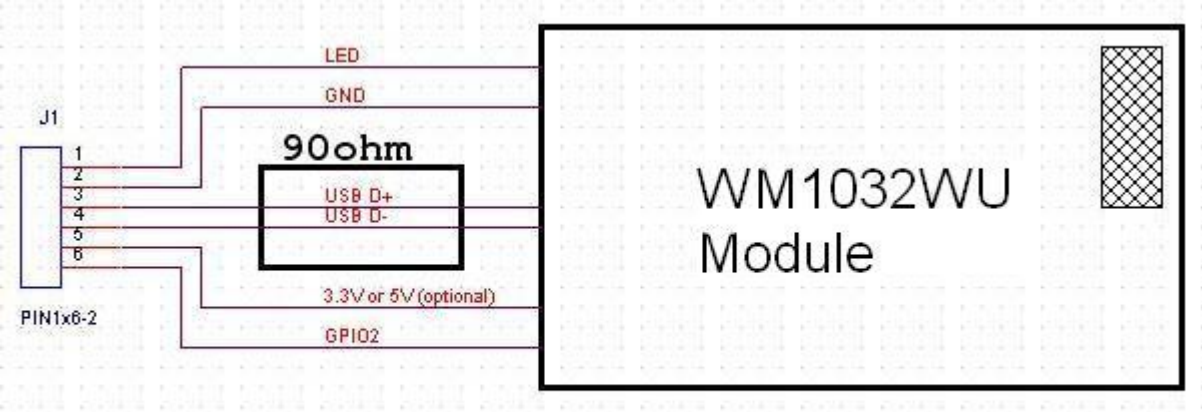
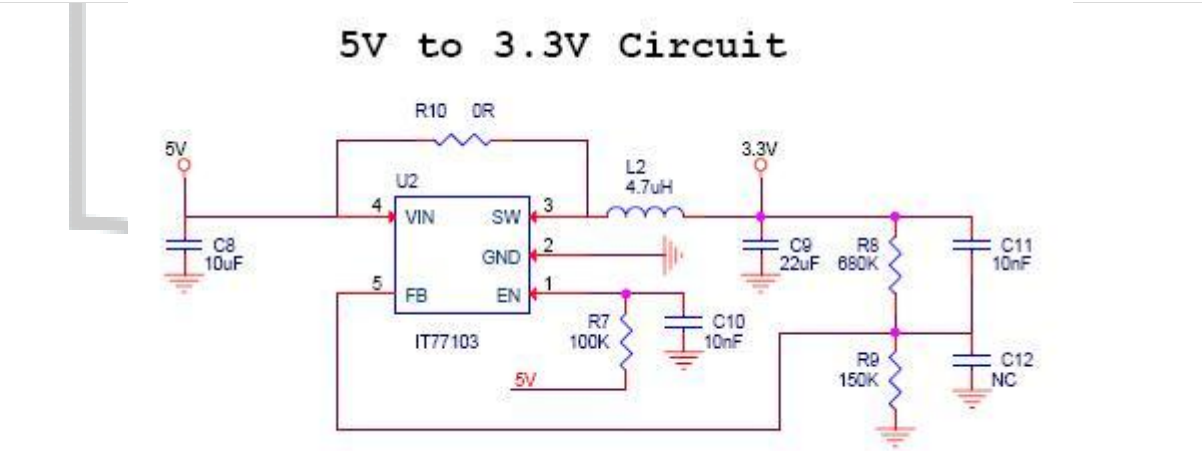
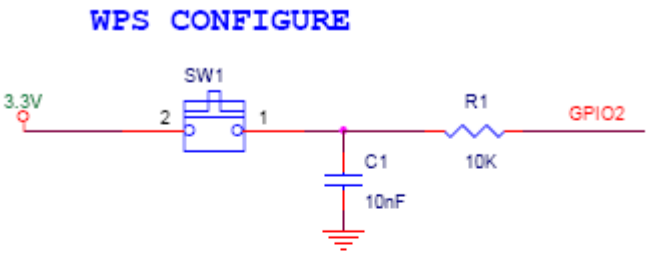
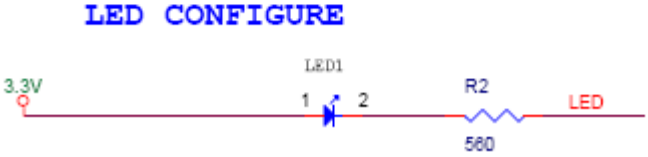
Application Circuit









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Functional Specification

Product Description	
WLAN Standard	IEEE802.11b/g/n, Wi-Fi compliant
Host Interface	USB 2.0
Main Chipset	RTL8188EUS
Dimension	25mm x 12mm x 2.2mm
Package	Half-hole PCB module
Electrical Specifications	
Frequency Range	2.412 to 2.484 GHz
Data Rate	802.11b: 11, 5.5, 2, 1 Mbps DSSS 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps OFDM 802.11n: HT20 MCS0~7, HT40 MCS0~7
Modulation Technique	802.11b: CCK, DQPSK, DBPSK 802.11g: 64 QAM, 16 QAM, QPSK, BPSK 802.11n: BPSK, QPSK, 16-QAM, 64-QAM
Operational Channel	**2.4GHz:** 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan
Security	WPA, WPA-PSK, WPA2, WPA2-PSK, WEP 64bit & 128bit, IEEE 802.11x, IEEE 802.11i
Operating Voltage	3.3V (or 5V, optional)

Temperature Limit Ratings

Parameter	Min.	Max.	Units
Storage Temperature	-40	+125	^{o}C
Ambient Operating Temperature	0	+70	^{o}C

Absolute Maximum Ratings

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

Recommended Operating Range

Symbol	Parameter	Min	Typ	Max	Units
VDD	USB interface VDD	3.15	3.3	3.45	V

Optional 5V

Symbol	Parameter	Min	Typ	Max	Units
VDD	USB interface VDD	4.75	5.0	5.25	V

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RF Characteristics

Parameter	Description	Min	Typ	Max	Unit
Frequency Range		2412	2442	2484	MHz
Output Power	802.11b, 1~11Mbps DSSS		17		dBm
	802.11g, 6~54Mbps OFDM		14		dBm
	802.11n, HT20 MCS0~7		13		dBm
	802.11n, HT40 MCS0~7		13		dBm
TX Power Accuracy			±1.5		dBm
RX Sensitivity	1 Mbps DSSS		-90		dBm
	2 Mbps DSSS		-88		dBm
	5.5 Mbps DSSS		-87		dBm
	11 Mbps DSSS		-85		dBm
RX Sensitivity	6 Mbps OFDM		-88		dBm
	9 Mbps OFDM		-85		dBm
	12 Mbps OFDM		-82		dBm
	18 Mbps OFDM		-80		dBm
	24 Mbps OFDM		-78		dBm
	36 Mbps OFDM		-77		dBm
	48 Mbps OFDM		-73		dBm
	54 Mbps OFDM		-72		dBm
RX Sensitivity BW=20MHz Green Field 800nS Guard Interval Non-STBC	MCS 0		-88		dBm
	MCS 1		-85		dBm
	MCS 2		-83		dBm
	MCS 3		-80		dBm
	MCS 4		-77		dBm
	MCS 5		-72		dBm
	MCS 6		-70		dBm
	MCS 7		-69		dBm
RX Sensitivity BW=40MHz Green Field 800nS Guard Interval Non-STBC	MCS 0		-87		dBm
	MCS 1		-81.5		dBm
	MCS 2		-79		dBm
	MCS 3		-76		dBm
	MCS 4		-72		dBm
	MCS 5		-69		dBm
	MCS 6		-67.5		dBm
	MCS 7		-67		dBm

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Power Consumption Characteristics

VDD = 3.3V

Description	Performance	
	TYP	UNITS
Tx mode, Unassociated Idle	125	mA
Tx mode, Unassociated Idle (power save)	25	mA
Tx mode, HT40, MCS 7 @ 13dBm	335	mA
Tx mode, HT20, MCS 7 @ 13dBm	333	mA
Tx mode, OFDM, 54M @ 14 dBm	350	mA
Tx mode, CCK, 11M @ 17 dBm	379	mA
Rx mode, Continuous Rx	125	mA
Power Down	1	mA

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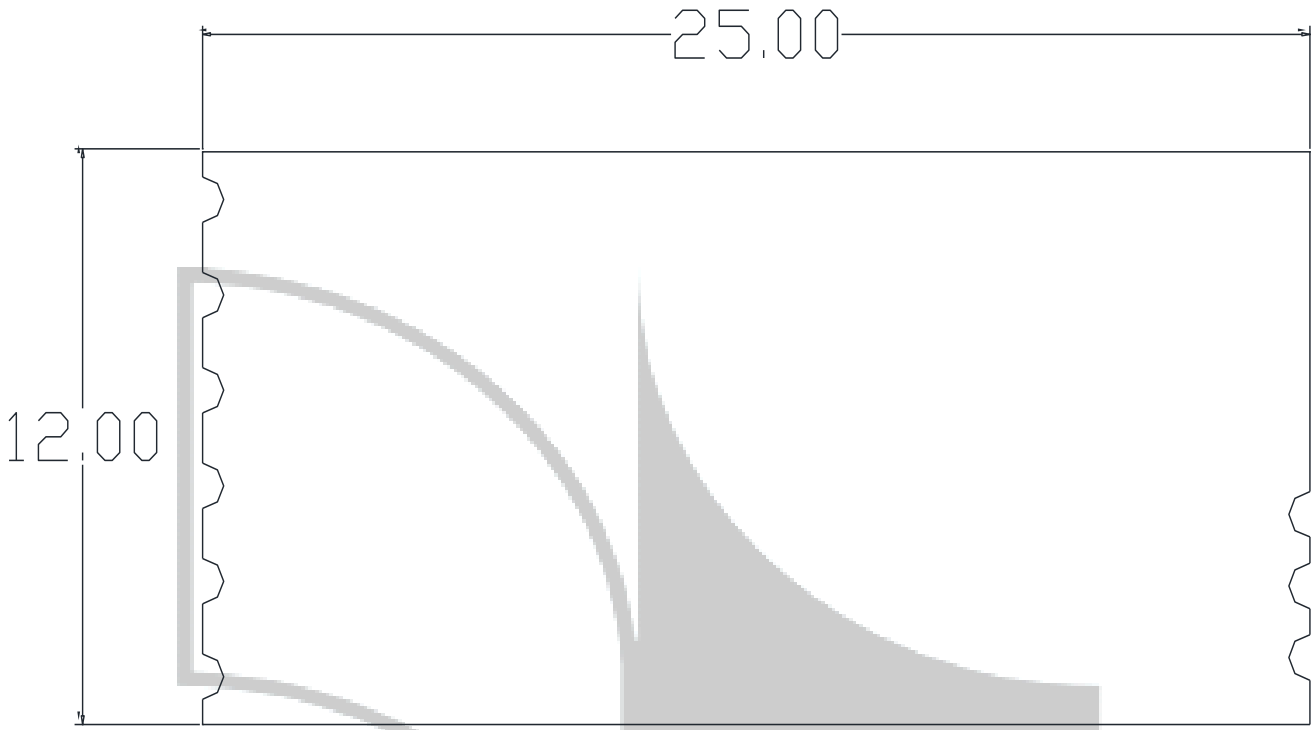
Module Dimensions



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

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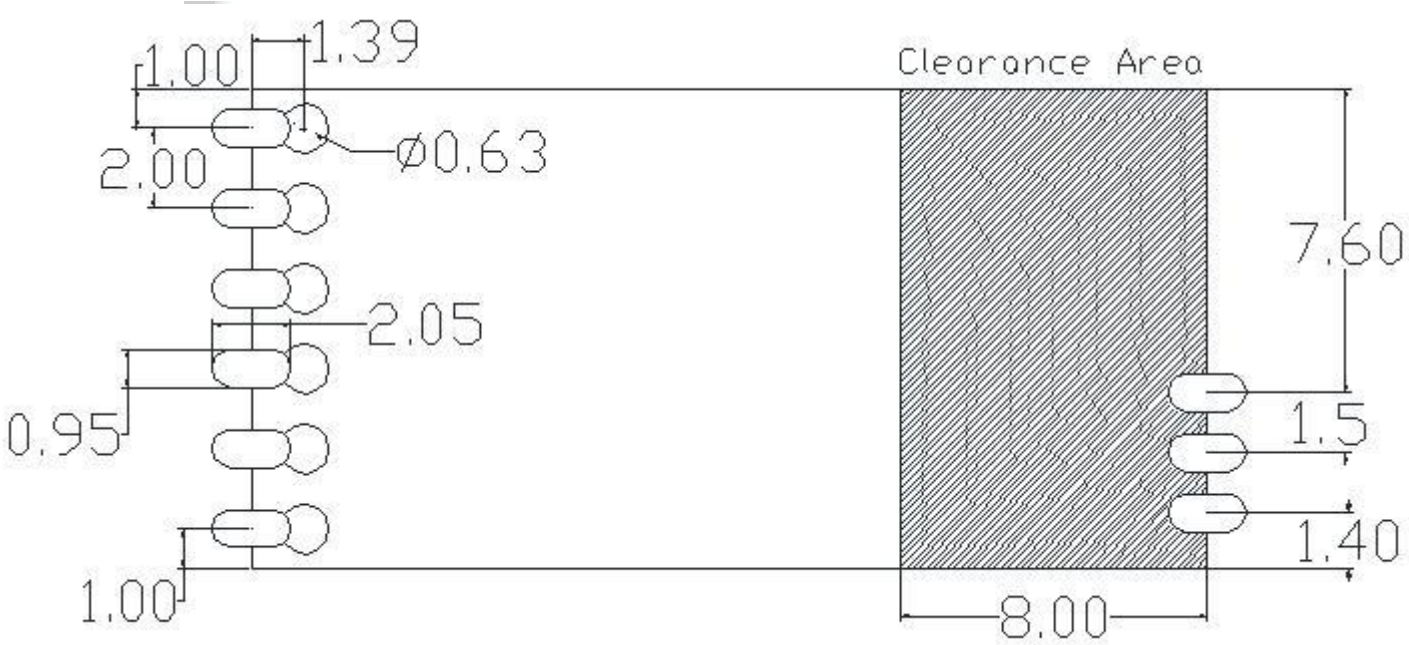
Layout Design Guide

The recommended layout pads for WM1032WU module are shown below. (module top view)

- Do not route any digital or analog signal traces between the RF traces and reference ground.
- don't 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.



All dimensions are in millimeters.
Tolerance: +- 0.05mm

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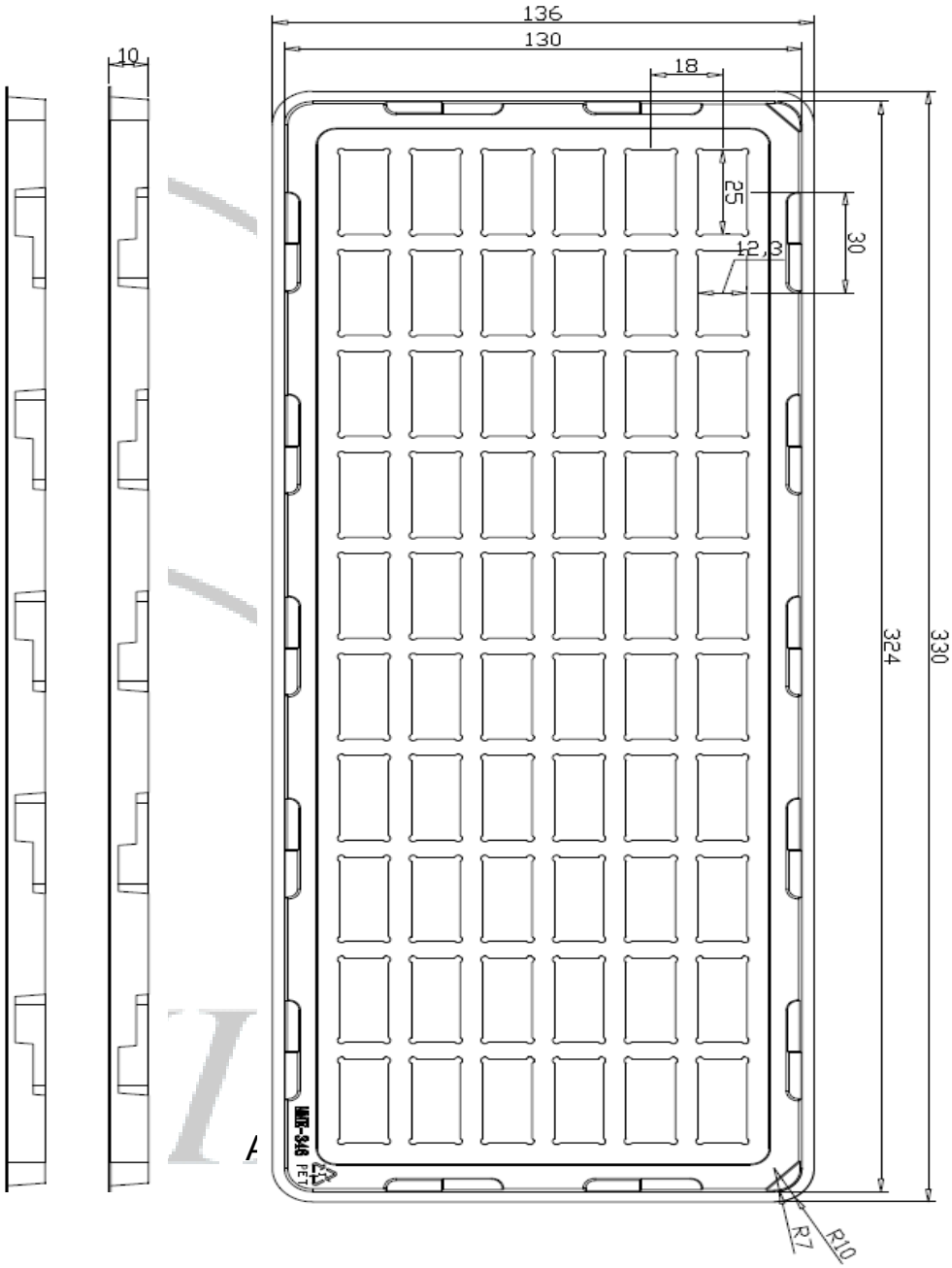
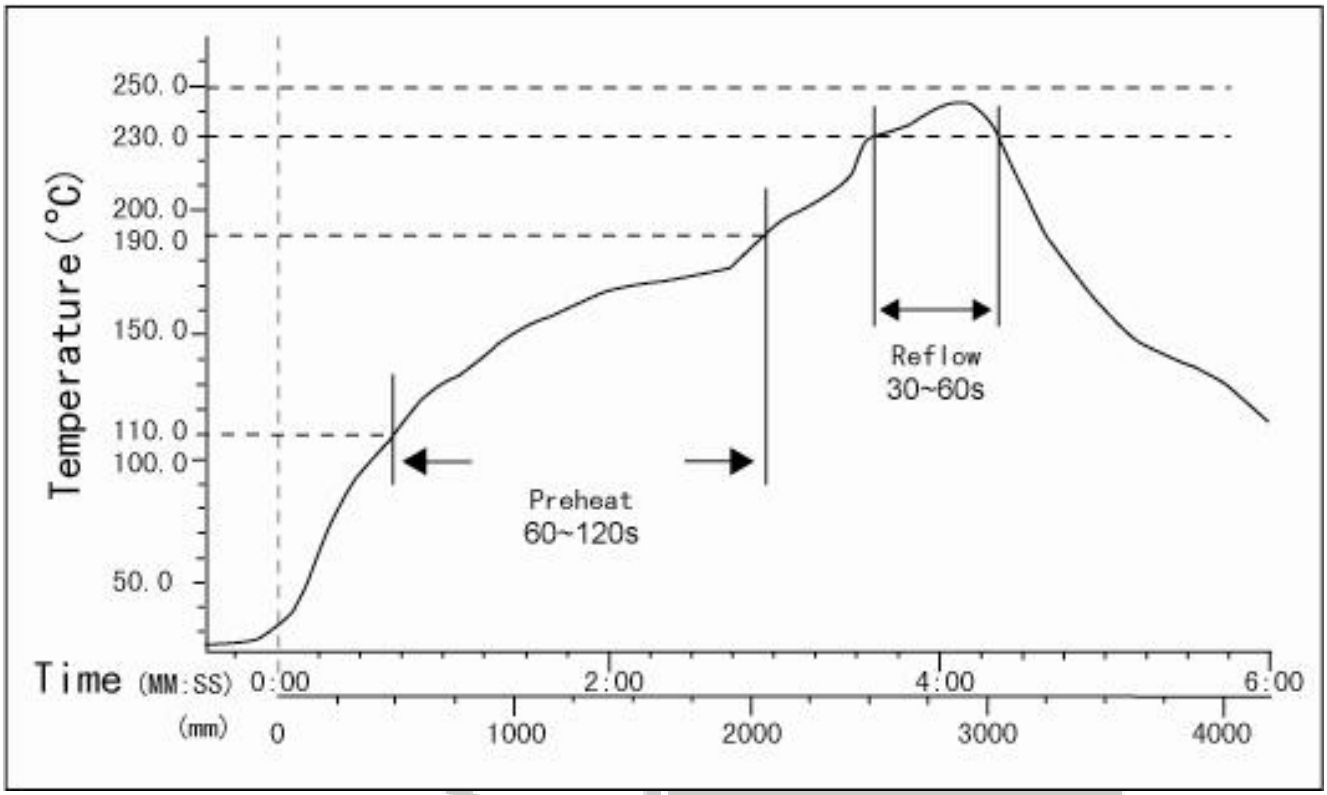
Package Information

Wieson offer one box for 600 pcs module. Each box has 11 trays inside. The top of empty tray is using for fixed the first package tray. The other 10 trays packaged module inside. Each tray dimensions is shown below.



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 ^{o}C per second, the Ramp-down temperature speed is 1~4 ^{o}C per second.
4. This temperature reflow chart is for reference only, it depends on the manufaturing machine's characters requirement.

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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.

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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: 2AAK6WM1032WU; IC: 20126-WM1032WU"

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.

■ Canada, Industry Canada (IC)

This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) 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:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution: Exposure to Radio Frequency Radiation.

To comply with RSS 102 RF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.

Pour se conformer aux exigences de conformité CNR 102 RF exposition, une distance de séparation d'au moins 20 cm doit être maintenue entre l'antenne de cet appareil et toutes les personnes.

■ NCC Caution

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。

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