WG201 – USB-WiFi Module
Datasheet

Name: 802.11b/g/n USB WiFi Module
Model NO.: WG201
Revision: 1.0

Revision History:

Revision	Description	Approved	Date
1.0	Initial	George	20130218

General Description

WG201 is an 802.11n b/g wifi one-stream USB interface designed specifically to provide enhanced WiFi performance and value for home gateways, set-top boxes, gaming consoles, printers, IP cameras, and variety of other products that host processors not originally intended to support WiFi functions. WG201's MT7601 single-chip features a new architecture that integrates both a CPU and memory to run more of the WiFi function on-chip. The integrated CPU offloads the wireless processing overhead from the host appliance and enables consumer electronic devices to support WiFi functions seamlessly without change of original host processors.

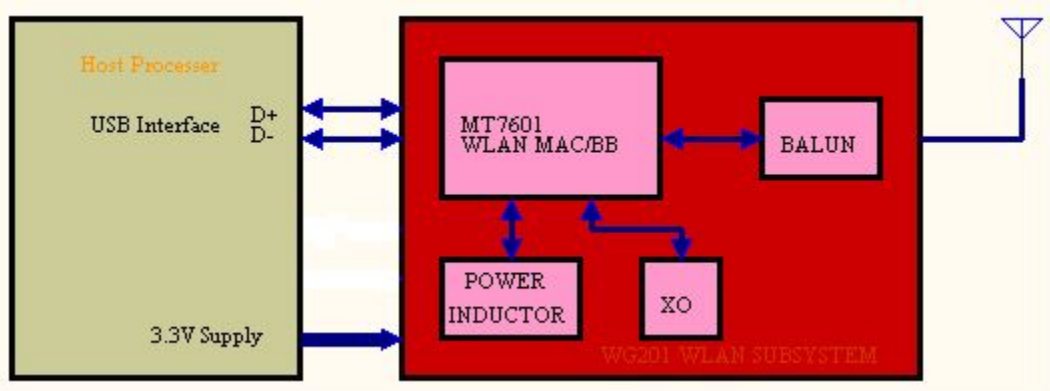
Applications

- Desktop Computer
- Laptop Computer,
- IP Camera
- IP TV
- IP DVD(Internet VOD Player)
- Set Top Box
- Home Gateways
- Gaming Consoles
- Printers

Features

- Compliant to IEEE 802.11b/g/n WLANs
- 2.4 GHz WLAN MAC/BB processing
- WEP, TKIP, and AES hardware encryption
- Windows XP/Vista/7, and Linux drivers.
- Supported Linux kernel AP/Station/IBSS/Monitor-mode drivers for industrial, academic, or personal projects at highest flexibility and lowest cost.
- USB 2.0 high speed interface.
- Supports 72.2 Mbps for 20 MHz and 150 Mbps for 40 MHz channel operations.
- Supports IEEE 802.11b/802.11g backward compatibility allowing inter-operability among multiple wifi networks.
- The only one-stream 802.11n solution with one antenna port.
- RoHS compliance meets environment-friendly requirement.
- 12.7(L) x 12.3(W) x 2.55(H) mm small dimension

Applications Block Diagram



Performance Specification

Wireless Specifications

Model	WG201
ANTENNA TYPE	IPEX connector or PCB pin
Standard Conformance	802.11b, 802.11g, and 802.11n
Frequency Range	USA: 2.400 ~ 2.483GHz Europe: 2.400 ~ 2.483GHz Japan: 2.400 ~ 2.497GHz China: 2.400 ~ 2.483GHz
Modulation Technique	DSSS with CCK, DQPSK, DBPSK OFDM with BPSK, QPSK, 16QAM, 64QAM
Channel Spacing	5MHz
Data Rate	802.11b: 1, 2, 5.5 and 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: 20MHz channel: 1Nss: 65Mbps @ 800GI, 72.2Mbps @ 400GI (Max.) 40MHz channel: 1Nss: 135Mbps @ 800GI, 150Mbps @ 400GI (Max.)
Operating Channels	USA/Canada: 11 (1~11) Major Europe Countries: 13 (1~13) France: 4 (10~13) Japan: 14 for 802.11b (1~13 or 14th), 13 for 802.11g (1~13) China: 13 (1~13)
Wi-Fi Compliance	Wi-Fi 2.4GHz by request
Security	64/128/152-bit WEP encryption 802.1x authentication AES-CCM & TKIP encryption

Transmit Power And Receive Sensitivity

Transmit Power	target power tolerance ±2dBm 802.11b: 19 dBm for 802.11b CCK 802.11g: +17dBm @ 6, 9, 12,18,24,36,48Mbps +15dBm @ 54Mbps 802.11n HT20: +15dBm @ MCS 7/15 802.11n HT40: +15dBm @ MCS 7/15			
Receiver Sensitivity		Data Rate	IEEE Spec(1 Rx dBm)	Typical
	802.11b	1M	-82	-92
		5.5M	-80	-89
		11M	-76	-87
	802.11g	6M	-82	-92
		9M	-81	-92
		12M	-79	-91
		18M	-77	-90
		24M	-74	-86
		36M	-70	-83
		48M	-66	-78
		54M	-65	-76
	802.11n HT20	MCS0	-82	-92
		MCS1	-79	-91
		MCS2	-77	-90
		MCS3	-74	-85
		MCS4	-70	-82
		MCS5	-66	-79
		MCS6	-65	-75
		MCS7	-64	-73
	802.11n HT40	MCS0	-79	-88
		MCS1	-76	-87
		MCS2	-74	-86
		MCS3	-71	-82
		MCS4	-67	-78
		MCS5	-63	-75
		MCS6	-62	-72
		MCS7	-61	-70
Operation Distance		Outdoor		Indoor

	802.11b	150m @ 11Mbps	30m @ 11Mbps
		300m @ 1Mbps	100m @ 1Mbps
	802.11g	50m @ 54Mbps	30m @ 54Mbps
		300m @ 6Mbps	100m @ 6Mbps
	802.11n HT20	30m @ 150Mbps	20m @ 150Mbps
		30m @ 65Mbps	20m @ 65Mbps
		250m @ 6.5Mbps	100m @ 6.5Mbps

Electrical Characteristics

Absolute Maximum Rating

Parameter	Symbol	Min	Max	Units
Supply Voltage	VDD_3V3	0.3	4	V
RF input (reference to 50 Ω)	RFin		10	dBm
Storage Temperature	Tstore	-40	125	°C
Junction Temperature	Tjunction		125	°C
Electrostatic Discharge Tolerance	ESD		2000	V

Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units
Supply Voltage	VDD_3V3	3	3.3	3.6	V
RF input (reference to 50 Ω)	RFin		10	dBm	dBm
Case temperature	Tcase	-10	45	110	°C
Thermal Parameter	PsiJT			3.23	°C/W
LED, WPS				14	mA

Power Consumption for 2.4 GHz Operation

Mode	Operating Mode	VDD_3V3(mA)

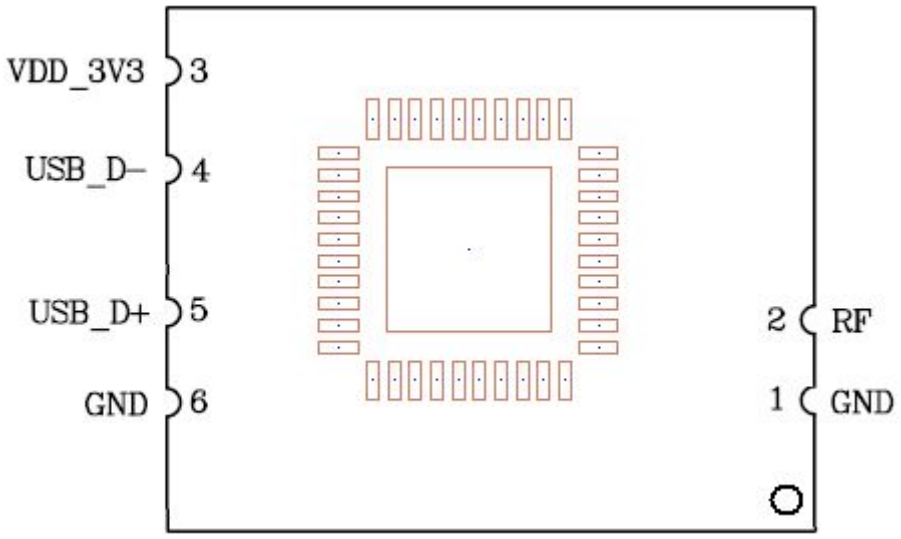
HT40 @15dBm	Sleep	1.1
	TX	210
	RX	151
802.11g @17dBm	Sleep	1.1
	TX	233
	RX	151
802.11b @19dBm	Sleep	1.1
	TX	242
	RX	151

Note:

For Tx, transmitter and synthesizer are on. Tx power at 18 dBm for 802.11b/g/HT20 and 16 dBm HT40.

For Rx, receiver and synthesizer are on with maximum receiver gain.

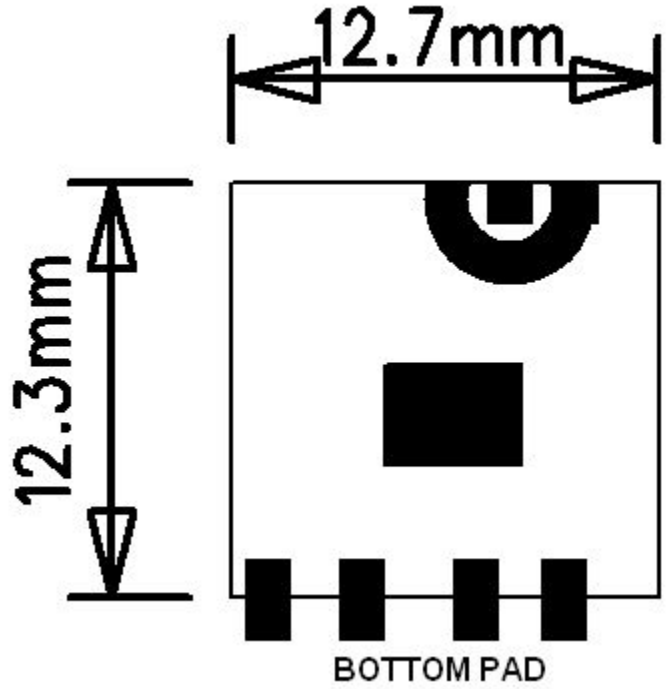
Module Pinout

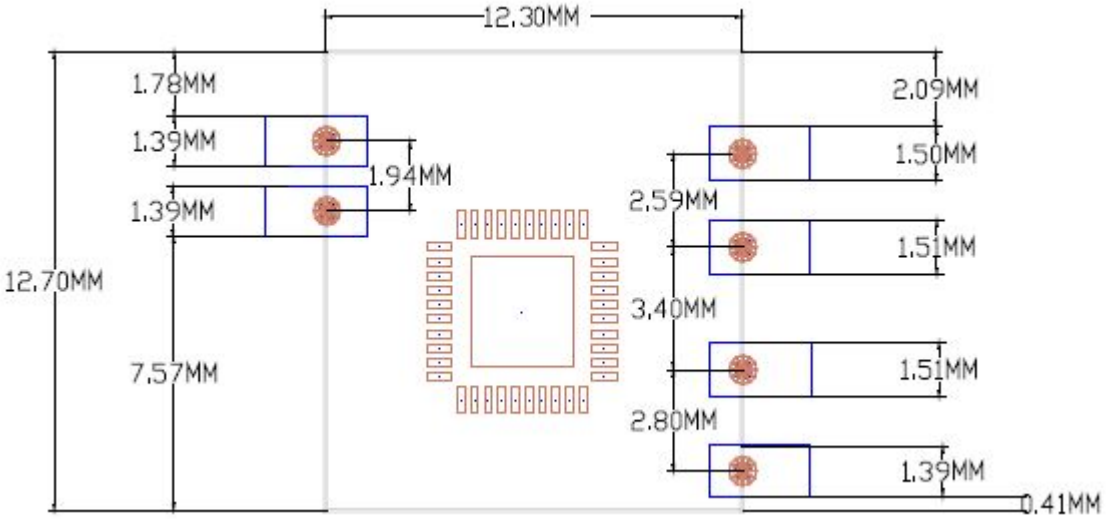


Pin Description

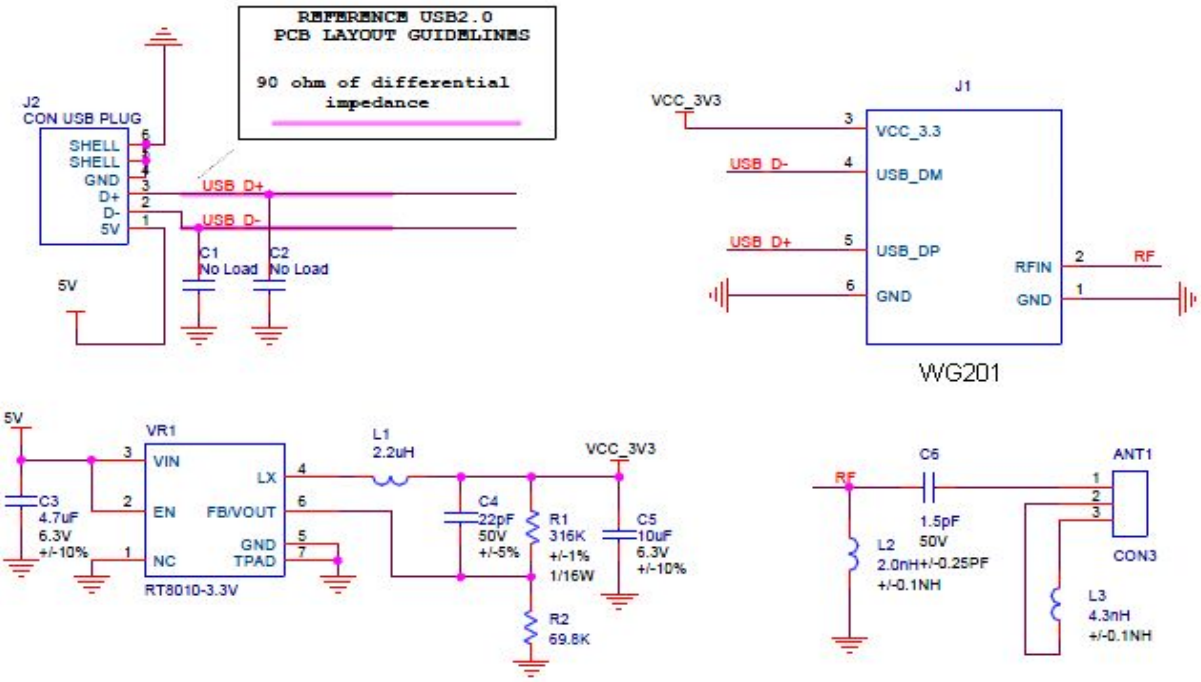
Pin No.	Pin name	I/O	Description	Remark
1	GND	G	Ground	up to 24mA
2	RF	RF port	Antenna	
3	VDD_3V3	P	Module Power Supply	
4	USB_D-	I/O	USB Interface DM	
5	USB_D+	I/O	USB Interface DP	
6	GND	G	Ground	

PCB Footprint and Dimensions

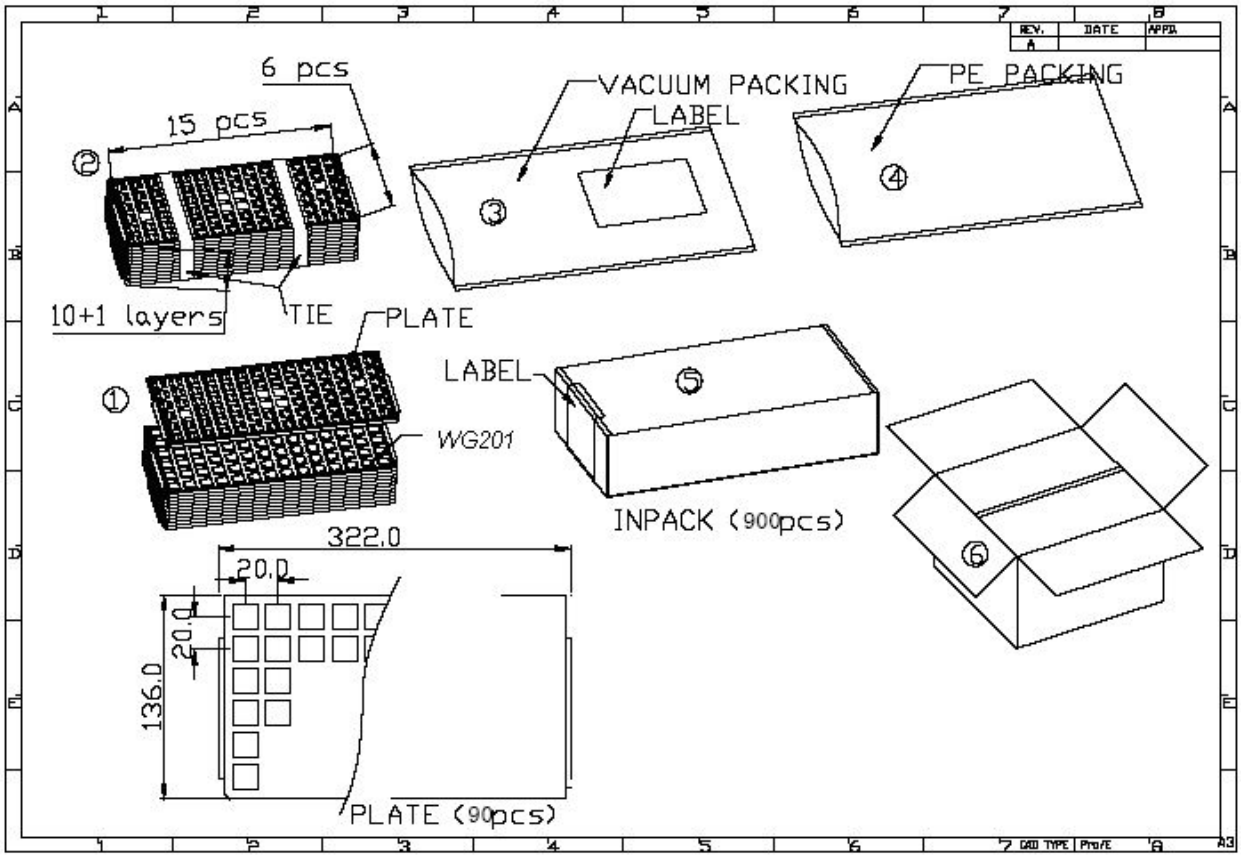




Reference design schematic



Packaging Specification



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