



SG901-1059 802.11 b/g/n Wireless USB Module

Overview

The SG901-1059 is a high speed module supporting all data rates and the latest standards including 802.11B/G/N Wi-Fi module with a USB 2.0 interface. This module's high level of interoperability and its low cost is desirable for high volume applications. This product is suited for many embedded systems able to support Windows and Linux OS including high bandwidth applications such as set top box.

SG901-1059 WLAN module is designed to operate in 2.4GHz ISM frequency band, it applies a highly integrated MAC/BBP and RF single chip RT3070 with 150Mbps PHY rate supporting. Ralink fully complies with IEEE802.11n draft 3.0 and IEEE802.11b/g feature.



Features

- 802.11b: 1, 2, 5.5, 11Mbps
- 802.11g: 6, 9, 12, 24, 36, 48, 54Mbps
- 802.11n:
 - (20MHz) MCS0-7, Support up to 72 Mbps
 - (40MHz) MCS0-7, Support up to 150Mbps
- OFDM, Peak rate 150Mbps
- Security support for 64/128 WEP, WPA, WPA2, TKIP, AES
- Operates in 2.4GHz frequency bands.
- Low Power Consumption
- Single antenna configuration; I-PEX receptacle for external antenna.

Applications

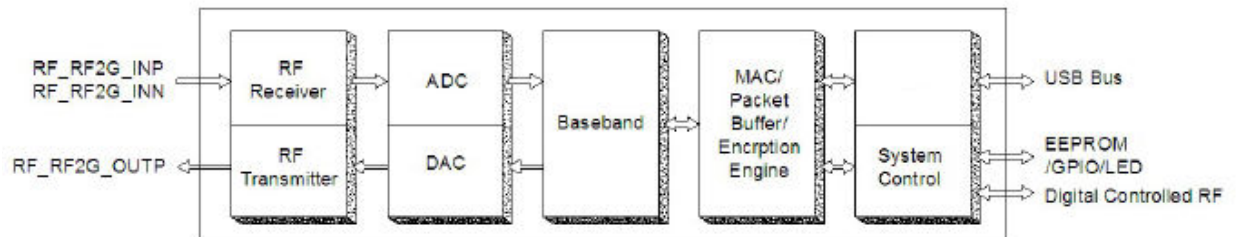
- Personal Digital Assistants (PDA)
- Hand-held Data Transfer Devices
- Video
- IP Cameras
- IP set top box
- GPS
- Internet radio apparatus

Ordering Information

SG901-1059-3.3-C (connector) – Bulk only
SG901-1059-5.0-C (connector) – Bulk only
SG901-1059-3.3-H (header) – Bulk only
SG901-1059-5.0-H (header) – Bulk only



Block Diagram



System Block Diagram of SG901-1059 WLAN Module



General Electrical Specifications

| Parameter | Test Condition / Comment | Min. | Typ. | Max. | Units |
|---|--------------------------|------|-------------|------|-------|
| Absolute Maximum Ratings | | | | | |
| USB Supply | | -0.3 | | 7.0 | V |
| Operating Conditions and Input Power Specifications | | | | | |
| Operating Temperature Range | Operating Range | 0 | | +50 | °C |
| | Storage Range | -20 | | +85 | °C |
| PC Interface | | | USB 2.0/1.1 | | |
| Plug & Play Compatible | | | YES | | |
| Supply Voltage | SG901-1059-5.0 | 4.75 | | 5.2 | V |
| Supply Voltage | SG901-1059-3.3 | 3.14 | 3.3 | 3.48 | V |

RF Characteristics

| Parameter | Test Condition / Comment | Min. | Typ. | Max. | Units |
|----------------------------|--------------------------|------|------------|------|-------|
| Internal Antenna Impedance | | | 50 | | Ohms |
| RX Sensitivity | 11b, 11Mbps | | -84 | | dBm |
| | 11g, 54Mbps | | -68 | | dBm |
| | (HT20) 11n, MSC7 | | -66 | | dBm |
| | (HT40) 11n, MSC7 | | -62 | | dBm |
| TX Output Power | 11b, 11Mbps | 18 | 19 | 20 | dBm |
| | 11g, 54Mbps | 15.5 | 17 | 18.5 | dBm |
| | 802.11n (HT20) | 14.5 | 16 | 17.5 | dBm |
| | 802.11n (HT40) | 14.5 | 16 | 17.5 | dBm |
| TX Spectral MASK | CCK | | PASS | | |
| | OFDM | | PASS | | |
| | QPSK | | PASS | | |
| | BPSK | | PASS | | |
| Preamble Length | | | Long/Short | | |
| Operating Current | | | | 110 | mA |

Interface Details

| Sagrad Part # | Part Number | Item | Comment |
|-----------------|----------------------|--------------------------|--|
| SG901-1066 | | Antenna | External Antenna via an I-PEX receptacle |
| SG901-1059-xx-C | ACESCONN 87213-0600I | Host Interface Connector | 6 Pin 1.0mm Pitch Connector |
| SG901-1059-xx-H | | Host Interface Connector | 6 Pin 2.0mm Male Header |



Connector Pin List (Host Interface)

6-pin 1.0mm pitch connector

| SIGNAL NAME | PIN NUMBER | DESCRIPTION | NOTES |
|----------------------|------------|------------------------------------|-----------------------|
| VCC (3.3 or 5.0 VDC) | 1 | Supply | USB Standard Function |
| UD- | 2 | Complementary USB Data | USB Standard Function |
| UD+ | 3 | Complementary USB Data | USB Standard Function |
| GND | 4 | Ground | USB Standard Function |
| LED | 5 | Low Active for WLAN LED Link. | |
| TX | 6 | Low Voltage to disable RF function | |

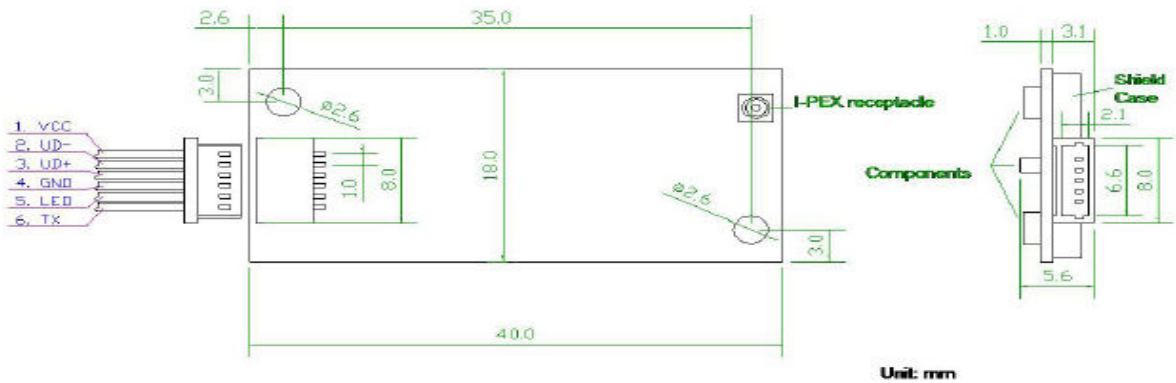
6-pin 2.0mm pitch male header

| SIGNAL NAME | PIN NUMBER | DESCRIPTION | NOTES |
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| VCC (3.3 or 5.0 VDC) | 1 | Supply | USB Standard Function |
| UD- | 2 | Complementary USB Data | USB Standard Function |
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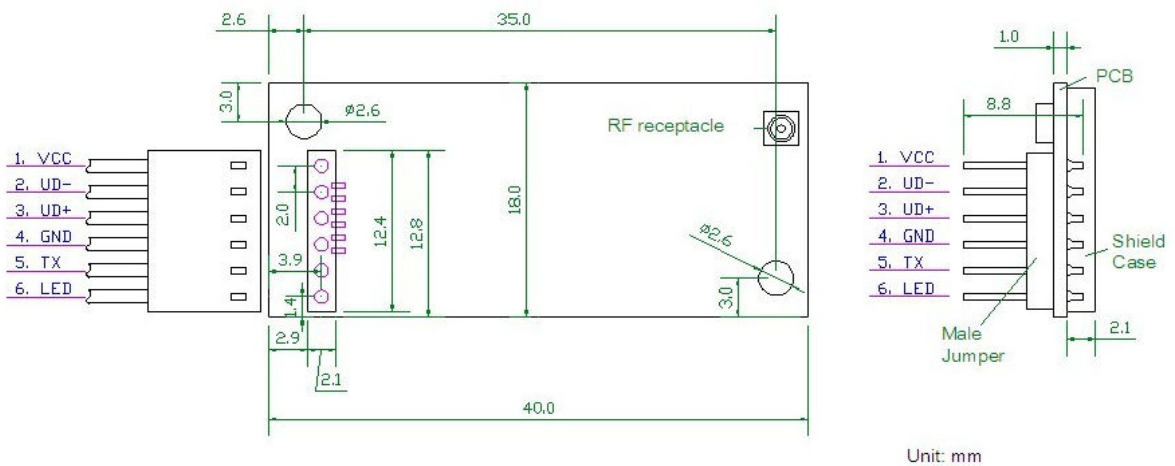


Mechanical Drawing

6-pin 1.0 mm pitch male connector



6-pin 2.0 mm pitch male header



For custom applications: the direction of the male header can be mounted upside down, please contact Sagrad Inc. for availability.



Regulatory Approval

| Agency | Approval |
|-----------------|------------|
| Industry Canada | In-Process |
| FCC | In-Process |
| Part 15 | ✓ |
| CE | ✓ |
| RoHS | ✓ |

Suggested Antennas

- Airgain N2420
- Thinkyard T000701 & T000805

Software Support

| Operating System | Driver |
|-----------------------|-----------|
| Linux 2.4/2.6 | Available |
| Windows 2000/XP/VISTA | Available |
| Windows CE 5.0/6.0 | Available |

Security Support

- Complete Security Features – WPA/WP2, 64/128/152-bit WEP, WPS