ISP5261
Data Sheet

Wi-Fi 6 and Bluetooth Low Energy
Built-in Antennas Smart Module

This highly miniaturized LGA module, 12 x 12 x 1. 8mm, is based on the RW610 / RW612 Wi-Fi 6 / Bluetooth LE Wireless MCU. Integrating a Cortex™ M33 CPU, a QSPI flash and a RAM memory combined with optimized antennas, ISP5261 offers the perfect stand-alone Dual-Band Wi-Fi 6 and Bluetooth LE combo module with integrated antennas.

Key Features

- Wi-Fi 6 IEEE 802.11ax/ac/n/a/g/b/e/i/k/v/w
- Wi-Fi dual-band (2.4GHz/5GHz) support, 20MHz channel
- Bluetooth Low Energy 5.3 Long Range, and Wi-Fi Coexistence
- 802.15.4 (WT variant only)
- Matter
- Based on NXP RW610/RW612
- PSA Certified Level 3
- Fully integrated RF Matching and Antennas Wi-Fi & Bluetooth at 2.4 GHz, Wi-Fi at 5 GHz
- Integrated 40 MHz & 32.768 kHz Crystals
- DC/DC converters with loading circuit
- Configurable 54 GPIOs including ADC & DAC
- Digital interfaces
  USB, QSPI, UART, I²S, PDM, PWM
- Power supply 3.3V
- Very small size 12 x 12 x 1.8 mm
- Temperature -40 to +85 °C

Applications

- Low Power Wi-Fi Connections
- IoT router connections
- Thread - Matter - Router Bridge (WT variant only)

Certifications

- Bluetooth SIG
- Wi-Fi Alliance pending
- Matter Ready
- CE pending
- FCC, IC pending
- TELEC pending
- RoHS, Reach & POP compliant
- Conflict Mineral Declaration
- Cyber Resilience Act Declaration

Document Revision History

Revision	Date	Ref	Change Description
R0	15/10/2023	jfc pg	Initial preliminary document
R1	24/11/2023	jfc pg	Errata and typo corrections
R2	04/12/2023	jf pg	Power supply data correction
R3	23/10/2024	jf pg	Remove preliminary references Update electrical values in chapter 2.2 and 2.3 Correct schematic in chapter 2.10 Add configuration pin section in chapter 3
R4	12/03/2025	pg pg	Packaging information update chapter 5
R5	08/01/2026	jf pg	Create WT and WX module variants Moisture sensitivity recommendation update Tape and Reel update to indicate feed direction of the reel and position of modules within the reel

Contents

1. Block Diagram & Features

This module is based on NXP RW61x single-chip Wi-Fi/Bluetooth LE Wireless MCU System on Chip (SoC). It integrates a 32-bit ARM CortexTM-M33 CPU running at 260MHz, 4MB of QSPI flash memory, 1.2MB SRAM as well as analog and digital peripherals. Despite the small size of 12 x 12 x 1.8 mm, the module integrates decoupling capacitors, 40 MHz crystal for Wi-Fi and Bluetooth LE and 32.768kHz crystal for low power timing, DC-DC converters, RF matching circuits and a dual-band antenna. Low power consumption and advanced power management enable battery lifetimes up to several months on AA batteries.

The ISP5261 is available in 2 variants:

- **ISP5261-WX**: includes RW610, providing Wi-Fi and BLE features
- **ISP5261-WT**: includes RW612, providing Wi-Fi, BLE and 802.15.4 features

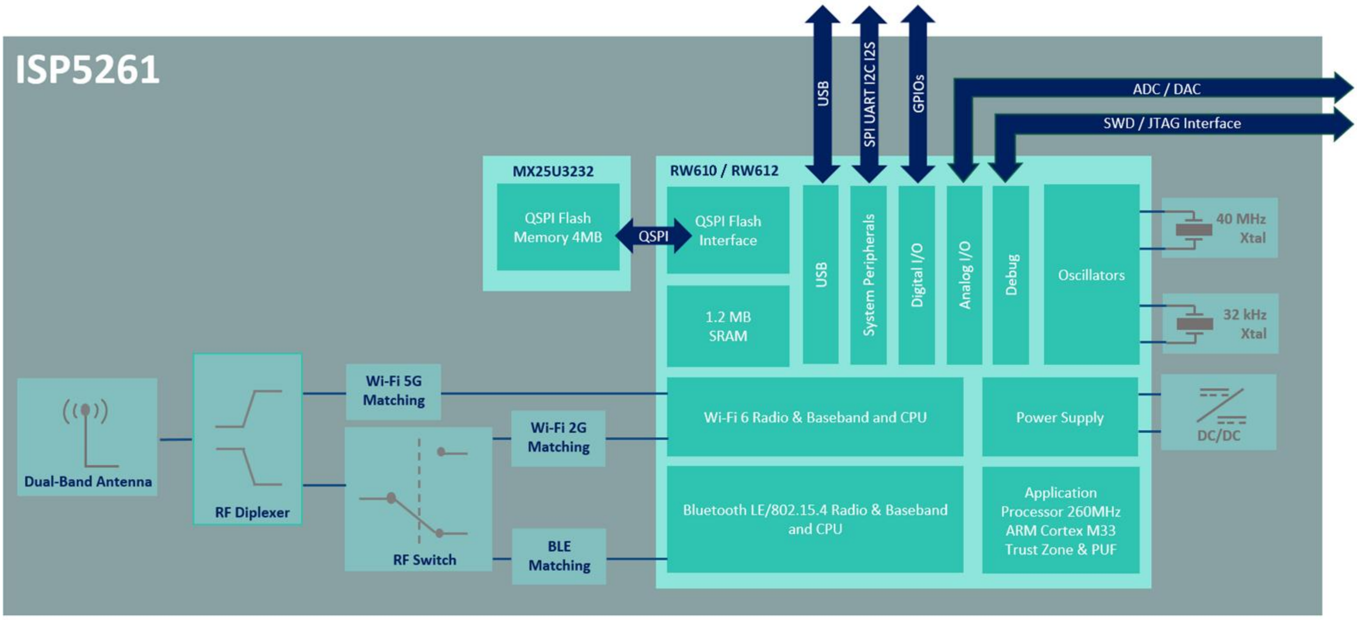
Wi-Fi Communication is compliant with the Wi-Fi Alliance specifications for Wi-Fi 6 including the following protocols: IEEE 802.11ax/ac/n/a/g/b/e/i/k/v/w.

Bluetooth LE connectivity is compliant with Bluetooth 5.3, enabling Long Range. ISP5261 Bluetooth LE section can be used either in Peripheral or Central roles and can handle up to 16 simultaneous central/peripheral connections.

When available, 802.15.4-2015 radio at 2.4 GHz offers support of Matter over Thread and 128-bit AES security.

The Cyber Resilience Act (CRA) is embodied in the EU regulation 2024/2847. ISP5261 rely on microprocessors that have been designed with Platform Security Architecture (PSA) certification in mind. It is certified to PSA Level 3. This level of platform security reduces the risks of vulnerabilities occurring. The MCU offers the TrustZone technology and is protected by a PUF (Physically Unclonable Function).

Block Diagram



ISP5261 block diagram

2. Specifications

2.1. General Notice

The electrical specifications of the module are directly related to the RW61x wireless MCU NXP's chip. Below information is only a summary of the main parameters. For more detailed information, especially about current consumption, please refer to the up-to-date specification of the chipset available on NXP's website.

2.2. Absolute Maximum Ratings

Parameter	Min	Typ	Max	Unit
Input Supply Voltage			3.96	V
USB Supply Voltage respect to ground – VBUS			5.25	V
1.8V IO Pin Voltage			2.16	V
3.3V IO Pin Voltage			3.96	V
Maximum Input Level / Wi-Fi 2.4GHz OFDM			-5	dBm
Maximum Input Level / Wi-Fi 5GHz OFDM			-7	dBm
Maximum Input Level / BLE (1)			-3	dBm
Maximum Input Level / 802.15.4			+3	dBm
Storage Temperature	-55		+125	°C
Moisture Sensitivity Level			3	-
Flash Endurance		100000		cycles

(1) For data rate from 500Kbps to 1Mbps

ATTENTION

CONSERVE PRECAUTION FOR HANDLING
ELECTROSTATIC SENSITIVE DEVICES
Human Body Model Class 3A

2.3. Operating Conditions

Parameter	Min	Typ	Max	Unit
Input Supply Voltage	3.14	3.30	3.46	V
1.8V Operating Input Voltage IO Pins	1.71	1.80	1.89	V
3.3V Operating Input Voltage IO Pins	2.97	3.30	3.46	V
VBUS Supply Voltage	4.75		5.25	V
Operating Temperature Range	-40		+85	°C

2.4. Current Consumption

The figures below are given as an indication of overall current consumption. These figures will be updated after measurements during the qualification phase of development.

Mode	Conditions	Typ (3)	Unit
Wi-Fi mode			
Wi-Fi in sleep mode	-	0.23	mA
Wi-Fi idle mode	2.4GHz, Rx, 802.11ax, 20MHz, listening	45	mA
	5GHz, Rx, 802.11ax, 20MHz, listening	60	mA
Wi-Fi Rx mode	2.4GHz, 802.11ax, 20MHz, MCS9	67	mA
	5GHz, 802.11ax, 20MHz, MCS9	77	mA
Wi-Fi Tx mode, max power (1)	2.4GHz, 802.11ax, 20MHz, MCS9 @20dBm	277	mA
	5GHz, 802.11ax, 20MHz, MCS9 @20dBm	427	mA
Bluetooth LE only (Wi-Fi powered down)			
BLE in sleep mode (2)	RAM retention	0.15	mA
BLE Rx mode	BLE Rx 1Mbps	50	mA
BLE Tx mode	BLE Tx @0 dBm	56	mA
	BLE Tx @4 dBm	57	mA
	BLE Tx @15 dBm	105	mA
802.15.4 radio only (MCU in active state, Wi-Fi powered down)			
802.15.4 Rx mode	Rx	50	mA
802.15.4 Tx mode	Tx @0 dBm	56	mA
	Tx @4 dBm	57	mA
	Tx @15 dBm	93	mA
Peak current during device initialization			
Peak digital pre-distortion	@25°C	576	mA

(1) MCU in active state
(2) MCU in deep-sleep mode

2.5. Reference Clock Specifications

Reference clocks	Min	Typ	Max	Unit
Internal High Frequency Clock for RF Stability: 40 MHz Crystal Frequency Tolerance (1)			± 20	ppm
Internal Low Frequency Clock for RTC: 32.768 kHz Crystal Frequency Tolerance (1)			± 20	ppm
Internal RC oscillator 32K			*tbc*	ppm

(1) Including initial tolerance, drift, frequency pulling and temperature (i.e Over operating T°)

2.6. Transmit Frequency Error

Transmit Frequency Error	Min	Typ	Max	Unit
Wi-Fi mode				
Transmit frequency error / 2.4GHz	-5		+5	ppm
Transmit frequency error / 5GHz	-5		+5	ppm
BLE mode				
Transmit frequency error (includes XTAL error)	-30		+30	kHz
802.15.4 radio mode				
Transmit frequency error	-3.5		+3.5	kHz

2.7. Radio specifications

Wi-Fi Mode	Conditions	Min	Typ	Max	Unit
2.4GHz receiver performance					
RF frequency range		2402		2482	MHz
RF signal bandwidth			20		MHz
Receiver sensitivity 802.11ax	4x3.2 20MHz MCS0 Nss1 BCC		-92.9		dBm
	4x3.2 20MHz MCS9 Nss1 BCC		-67.9		dBm
5GHz receiver performance					
RF frequency range		5170		5895	MHz
RF signal bandwidth			20		MHz
Receiver sensitivity 802.11ax	4x3.2 20MHz MCS0 Nss1 BCC		-92.3		dBm
	4x3.2 20MHz MCS9 Nss1 BCC		-67.5		dBm

Wi-Fi Mode	Conditions	Min	Typ	Max	Unit
2.4GHz transmitter performance					
RF frequency range		2402		2482	MHz
Max. linear output power with 20MHz bandwidth	802.11ax MCS9		17		dBm
5GHz transmitter performance					
RF frequency range		5170		5895	MHz
Max. linear output power with 20MHz bandwidth	802.11ax MCS0		21		
	802.11ax MCS9		17		
Load Impedance	@2.4 & 5GHz		50		Ohm
Max. Antenna Gain @2.45GHz				-0.5	dBi
Max. Antenna Gain @5.5GHz				2.15	dBi

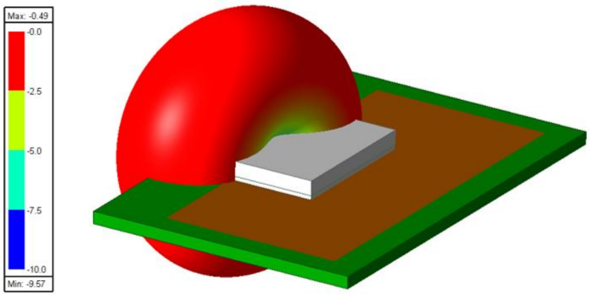
BLE Mode	Conditions	Min	Typ	Max	Unit
RF frequency range		2400		2483.5	
Receiver sensitivity	BLE 1 Mbps		-100.2		dBm
Receiver sensitivity	BLE 1 Mbps		-97.9		dBm
Receiver sensitivity	BLE 1 Mbps		-108.5		dBm
Receiver sensitivity	BLE 1 Mbps		-101.8		dBm
Maximum transmit power			15		dBm
Load Impedance			50		Ohm
Max. Antenna Gain @2.45GHz				-0.5	dBi

802.15.4 Mode	Conditions	Min	Typ	Max	Unit
RF frequency range		2400		2483.5	
Receiver sensitivity			-105.7		dBm
Maximum transmit power			14.3		dBm
Load Impedance			50		Ohm
Max. Antenna Gain @2.45GHz				-0.5	dBi

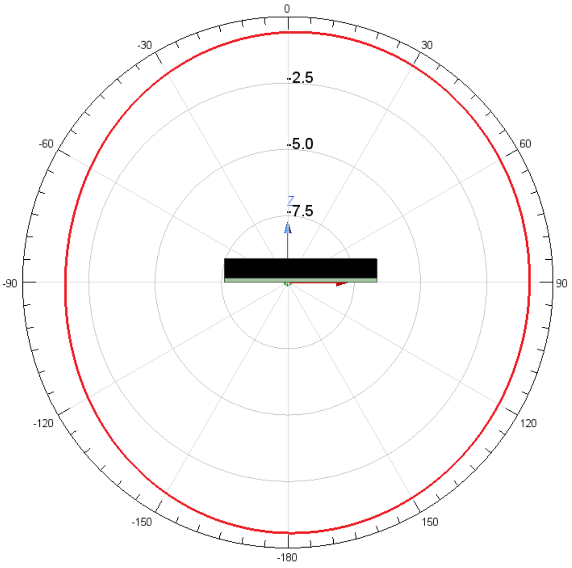
2.8. 2.4GHz Dual-band Antenna Performance

The internal antenna has a maximum gain of -0.5dBi @2.45GHz.

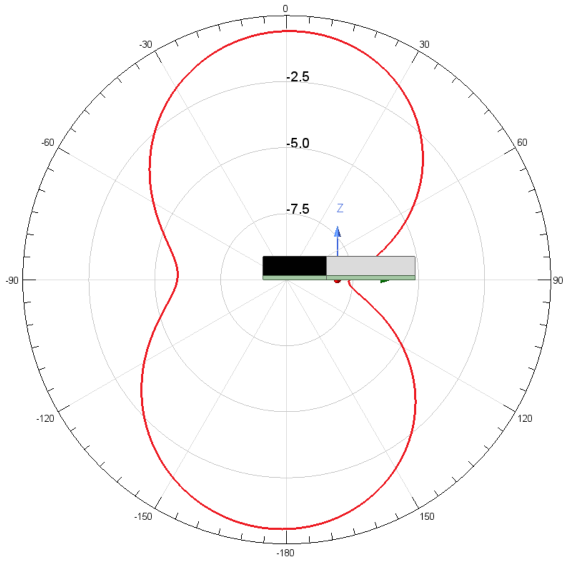
Note that the patterns shown below are for L/W ground aspect ratio that enable best impedance matching conditions combined with quasi-omnidirectional radiating features. Others aspect ratio and too large/small ground planes will tend to degrade impedance matching and to create less omnidirectional pattern.



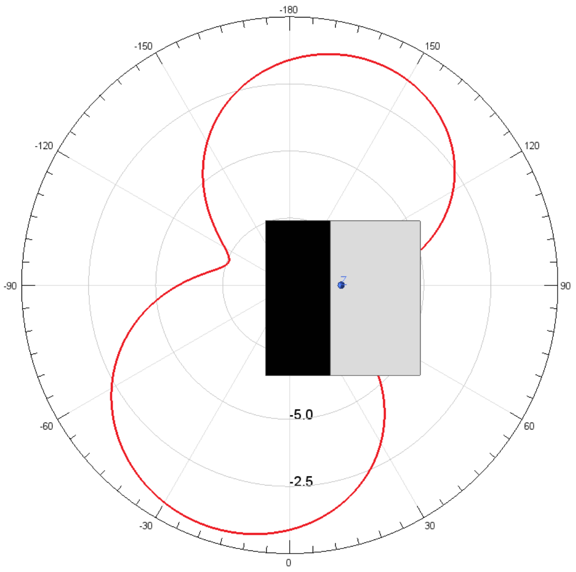
3D radiation pattern @ 2.45GHz



2D radiation pattern (Theta, Phi =0°)



2D radiation pattern (Theta, Phi=90°)

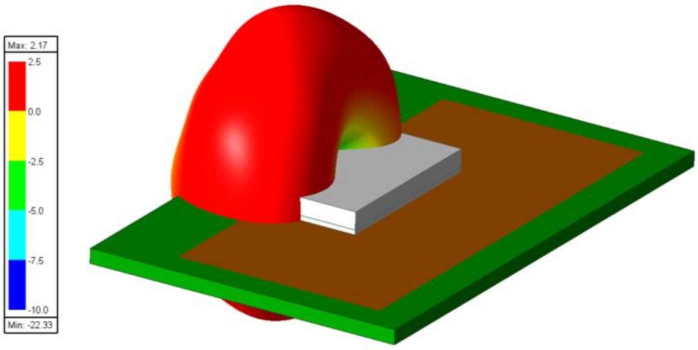


2D radiation pattern (Theta=90°, Phi)

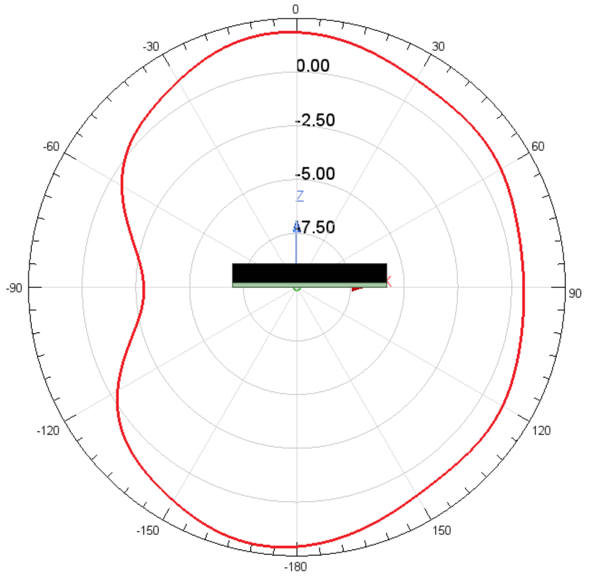
2.9. 5GHz Dual-band Antenna Performance

The internal antenna has a maximum gain of 2.15 dBi @ 5.5GHz.

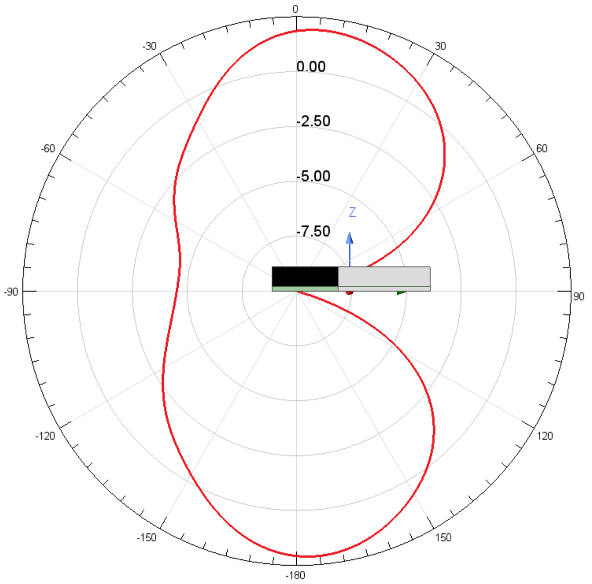
Note that the patterns shown below are for L/W ground aspect ratio that enable best impedance matching conditions combined with quasi-omnidirectional radiating features. Others aspect ratio and too large/small ground planes will tend to degrade impedance matching and to create less omnidirectional pattern.



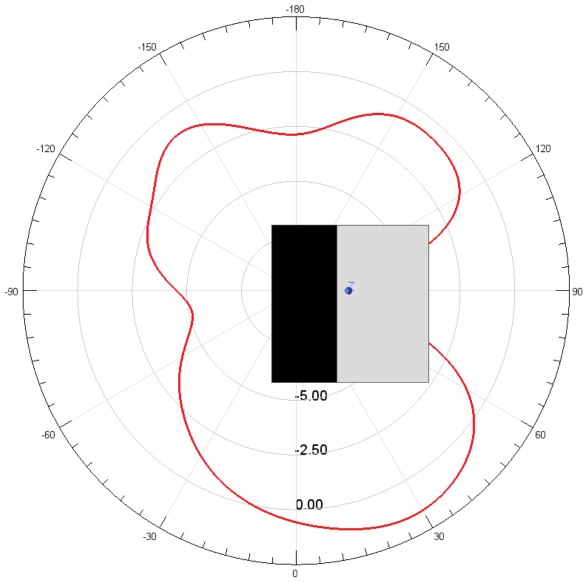
3D radiation pattern @5.5GHz



2D radiation pattern (Theta, Phi =0°)



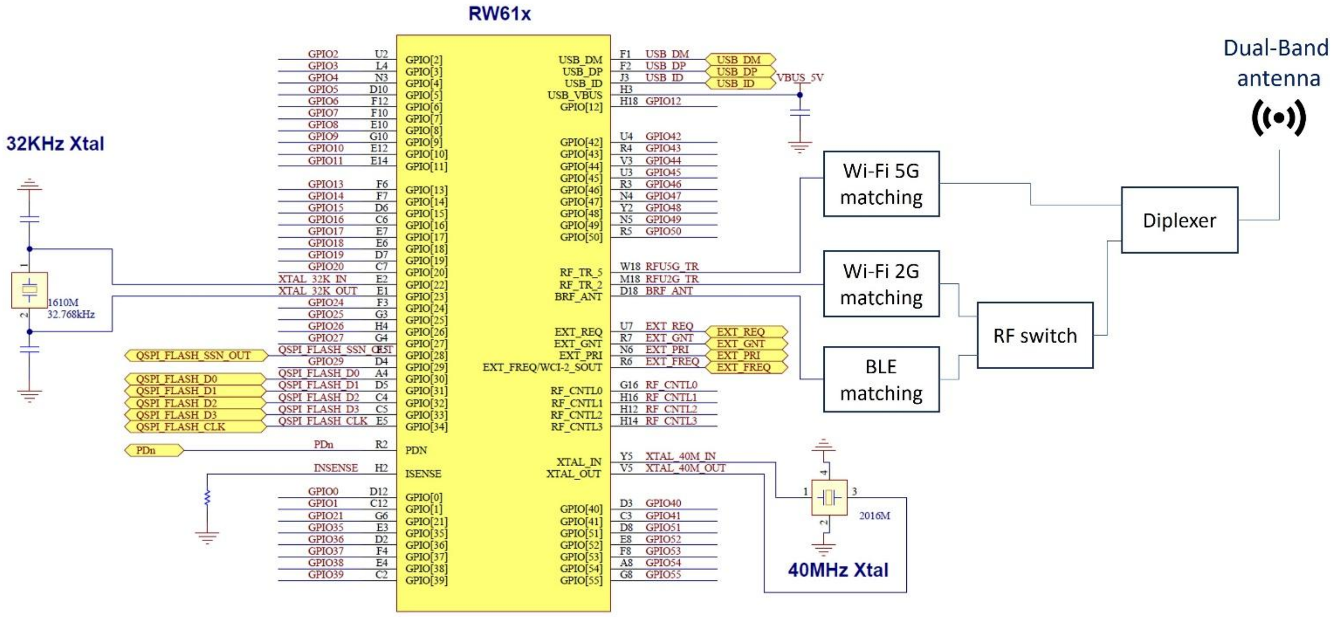
2D radiation pattern (Theta, Phi=90°)



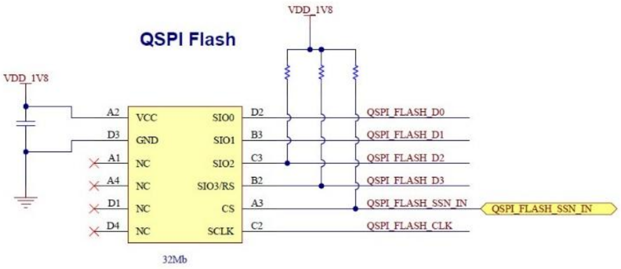
2D radiation pattern (Theta=90°, Phi)

2.10. Electrical Schematic

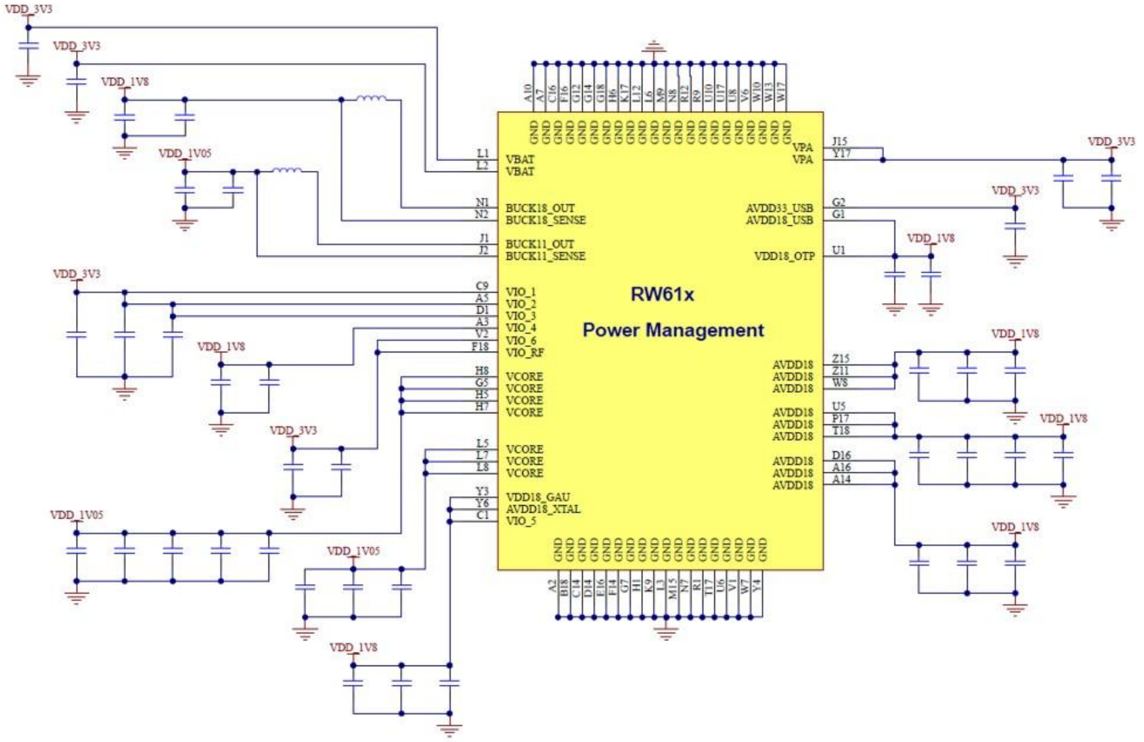
RW61x, RF Front-End and dual-band antenna



Flash memory



Power supplies



3. Pin Description

The module uses an LGA format on a 0.50 mm pitch. The pad layout follows the QFN Jedec standard for LGA parts.

Pin	Name	Pin Function	Description
1	GND	Ground	Ground – Must be connected to ground on application PCB
2	VDD_1V8	Power	1.8V output power supply
3	GPIO42	Digital I/O	General purpose I/O pin
4	EXT_FREQ	Input Signal	External radio frequency input signal (optional)
5	GPIO50	Digital I/O	General purpose I/O pin
6	EXT_PRI	Input Signal	External radio input priority signal (optional)
7	GPIO13	Digital I/O	General purpose I/O pin
8	EXT_REQ	Input Signal	Request from external radio (mandatory)
9	GPIO14	Digital I/O	General purpose I/O pin
10	EXT_GNT	Output Signal	External radio grant output signal (mandatory)
11	GPIO53	Digital I/O	General purpose I/O pin
12	RF_CNTL2	Output Signal	Wi-Fi RF front-end control line 2
13	GPIO9	Digital I/O	General purpose I/O pin
14	RF_CNTL3	Output Signal	Wi-Fi RF front-end control line 3
15	GND	Ground	Ground – Must be connected to ground on application PCB
16	GND	Ground	Ground – Must be connected to ground on application PCB
17	GND	Ground	Ground – Must be connected to ground on application PCB
18	GND	Ground	Ground – Must be connected to ground on application PCB
19	GND	Ground	Ground – Must be connected to ground on application PCB
20	GND	Ground	Ground – Must be connected to ground on application PCB
21	GND	Ground	Ground – Must be connected to ground on application PCB
22	GND	Ground	Ground – Must be connected to ground on application PCB
23	GND	Ground	Ground – Must be connected to ground on application PCB
24	GND	Ground	Ground – Must be connected to ground on application PCB
25	GPIO7	Digital I/O	General purpose I/O pin
26	GND	Ground	Ground – Must be connected to ground on application PCB
27	GPIO8	Digital I/O	General purpose I/O pin
28	GND	Ground	Ground – Must be connected to ground on application PCB
29	GPIO6	Digital I/O	General purpose I/O pin
30	RF I/O	RF I/O	RF I/O pin of the ISP5261's RFFE Should be connected to ANT I/O for normal operation
31	GPIO10	Digital I/O	General purpose I/O pin
32	ANT I/O	RF I/O	Internal dual-band antenna RF I/O pin Should be connected to RF I/O for normal operation
33	GND	Ground	Ground – Must be connected to ground on application PCB
34	GND	Ground	Ground – Must be connected to ground on application PCB

Pin	Name	Pin Function	Description
35	GND	Ground	Ground – Must be connected to ground on application PCB
36	RF_CNTL1	Output Signal	Wi-Fi RF front-end control line 1
37	GPIO12	Digital I/O	General purpose I/O pin
38	GND	Ground	Ground – Must be connected to ground on application PCB
39	GPIO11	Digital I/O	General purpose I/O pin
40	GND	Ground	Ground – Must be connected to ground on application PCB
41	GPIO0	Digital I/O	General purpose I/O pin
42	RF_CNTL0	Output Signal	Wi-Fi RF front-end control line 0
43	GPIO5	Digital I/O	General purpose I/O pin
44	GND	Ground	Ground – Must be connected to ground on application PCB
45	GPIO16	Digital I/O	General purpose I/O pin
46	GND	Ground	Ground – Must be connected to ground on application PCB
47	GPIO54	Digital I/O	General purpose I/O pin
48	GND	Ground	Ground – Must be connected to ground on application PCB
49	GPIO52	Digital I/O	General purpose I/O pin
50	GND	Ground	Ground – Must be connected to ground on application PCB
51	GPIO51	Digital I/O	General purpose I/O pin
52	GND	Ground	Ground – Must be connected to ground on application PCB
53	GPIO1	Digital I/O	General purpose I/O pin
54	GND	Ground	Ground – Must be connected to ground on application PCB
55	GND	Ground	Ground – Must be connected to ground on application PCB
56	GND	Ground	Ground – Must be connected to ground on application PCB
57	GND	Ground	Ground – Must be connected to ground on application PCB
58	QSPI_FLASH_D0	Digital I/O	Data bit 0 for RW61x's FlexSPI flash
59	GPIO17	Digital I/O	General purpose I/O pin
60	QSPI_FLASH_D1	Digital I/O	Data bit 1 for RW61x's FlexSPI flash
61	GPIO18	Digital I/O	General purpose I/O pin
62	QSPI_FLASH_D2	Digital I/O	Data bit 2 for RW61x's FlexSPI flash
63	GPIO19	Digital I/O	General purpose I/O pin
64	QSPI_FLASH_D3	Digital I/O	Data bit 3 for RW61x's FlexSPI flash
65	GPIO20	Digital I/O	General purpose I/O pin
66	QSPI_FLASH_CLK	Digital I/O	Input/Output clock 0 signal for RW61x's FlexSPI flash interface
67	GPIO15	Digital I/O	General purpose I/O pin
68	QSPI_FLASH_SSN_IN	Digital I/O	Chip Select for Macronix Flash Memory
69	GPIO29	Digital I/O	General purpose I/O pin
70	QSPI_FLASH_SSN_OUT	Digital I/O	RW61x's FlexSPI flash client select 0
71	GND	Ground	Ground – Must be connected to ground on application PCB
72	VDD_1V05	Power	1.05V output power supply
73	GPIO38	Digital I/O	General purpose I/O pin
74	GND	Ground	Ground – Must be connected to ground on application PCB

Pin	Name	Pin Function	Description
75	GPIO37	Digital I/O	General purpose I/O pin
76	GND	Ground	Ground – Must be connected to ground on application PCB
77	GPIO39	Digital I/O	General purpose I/O pin
78	GPIO35	Digital I/O	General purpose I/O pin
79	GPIO40	Digital I/O	General purpose I/O pin
80	GPIO41	Digital I/O	General purpose I/O pin
81	GPIO36	Digital I/O	General purpose I/O pin
82	GPIO24	Digital I/O	General purpose I/O pin
83	GND	Ground	Ground – Must be connected to ground on application PCB
84	GND	Ground	Ground – Must be connected to ground on application PCB
85	GND	Ground	Ground – Must be connected to ground on application PCB
86	USB_DP	USB Data	USB D+
87	GPIO25	Digital I/O	General purpose I/O pin
88	USB_DM	USB Data	USB D-
89	GPIO26	Digital I/O	General purpose I/O pin
90	USB_ID	USB Data	USB OTG ID pin
91	GPIO27	Digital I/O	General purpose I/O pin
92	VBUS_5V	Power	USB-VBUS 5V analog power supply
93	GPIO3	Digital I/O	General purpose I/O pin
94	GPIO4	Digital I/O	General purpose I/O pin
95	GPIO49	Digital I/O	General purpose I/O pin
96	GPIO46	Digital I/O	General purpose I/O pin
97	GPIO47	Digital I/O	General purpose I/O pin
98	PDn	Input	Full Power-Down (Active low) This pin has an internal weak pull-down.
99	GPIO43	Digital I/O	General purpose I/O pin
100	GPIO2	Digital I/O	General purpose I/O pin
101	GPIO21	Digital I/O	General purpose I/O pin
102	GPIO48	Digital I/O	General purpose I/O pin
103	GPIO55	Digital I/O	General purpose I/O pin
104	GPIO45	Digital I/O	General purpose I/O pin
105	GND	Ground	Ground – Must be connected to ground on application PCB
106	GPIO44	Digital I/O	General purpose I/O pin
107	VDD_3V3	Power	3.3V External Power Supply for ISP5261
108	VDD_3V3	Power	3.3V External Power Supply for ISP5261
109-120	GND	Ground	Ground – Must be connected to ground on application PCB

Configuration pins

The following configuration pins require special attention. Following a reset, they will start as inputs and immediately change to their normal function after. The state of these pins read during the reset will provide additional configuration.

To select 1, leave the pin floating (internal pull-up resistor present).
To select 0, add a 51k resistor or less to the ground.

NB: Do not directly connect any of these pins to any reference voltage!

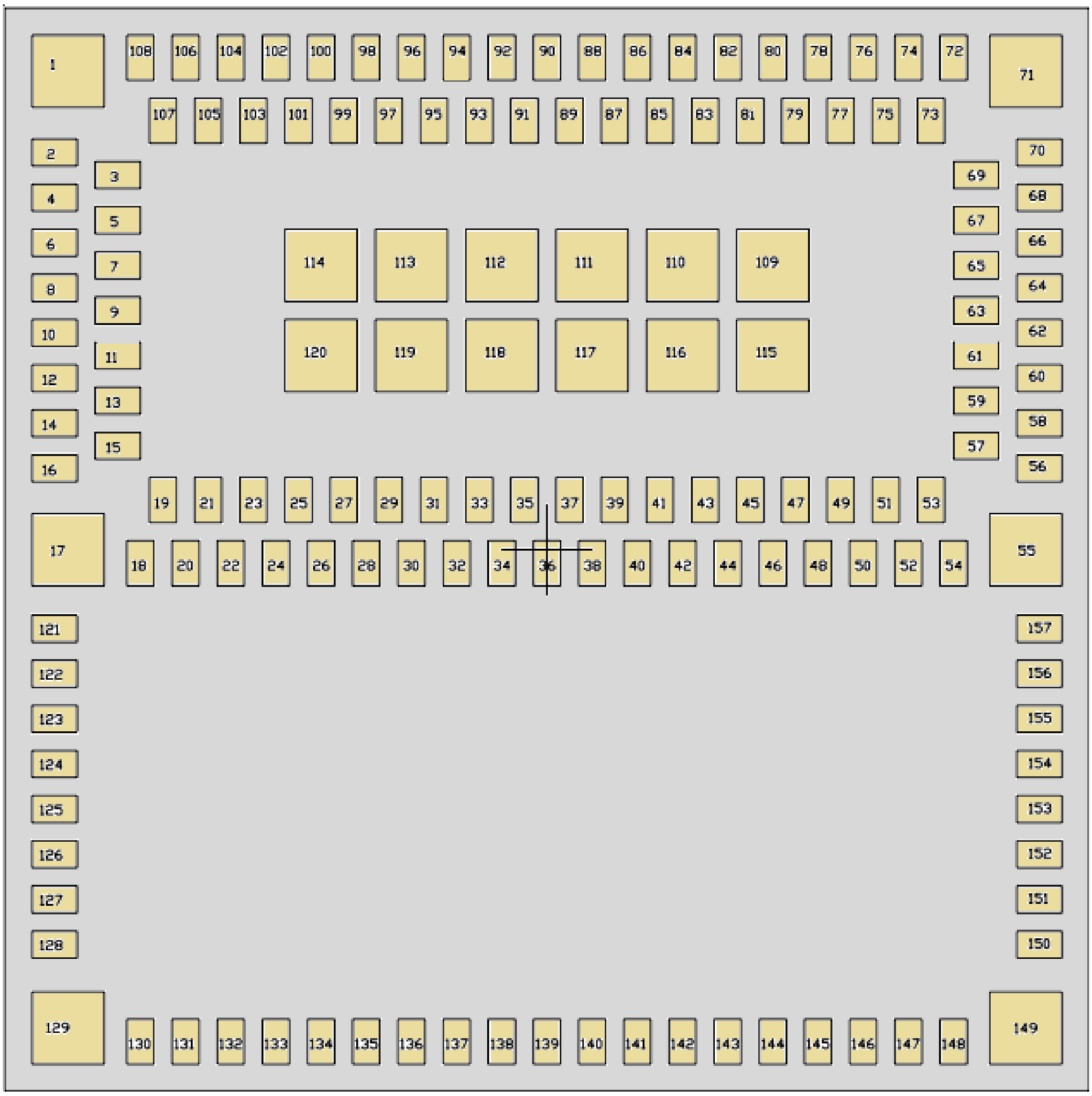
Pin	Name	Configuration Function	Description
42	RF_CTNL0	Reserved	Leave this pin floating.
36	RF_CTNL1	Reserved	Leave this pin floating.
12	RF_CTNL2	CONFIG_DAP_USE_JTAG	Debug interface selection: 0 = DAP uses SWD 1 = DAP uses JTAG (default) The corresponding GPIOs will be set to either SWD or JTAG depending of the state of the pin.
14	RF_CTNL3	CONFIG_XOSC_SEL	Reference clock frequency selection: 0 = 38.4 MHz 1 = 40 MHz (default) Leave this pin floating as the module is using 40MHz.
8	EXT_REQ	CONFIG_HOST[0]	Host configuration options. See the table below.
10	EXT_GNT	CONFIG_HOST[1]	Host configuration options. See the table below.
6	EXT_PRI	CONFIG_HOST[2]	Host configuration options. See the table below.
4	EXT_FREQ	CONFIG_HOST[3]	Host configuration options. See the table below.

The following table describes all the possible combination of boot options using CONFIG_HOST pins.

CONFIG_HOST[3:0]	Description
1111	Boot from FlexSPI Flash (default)
1110	ISP boot (UART/I2C/SPI/USB)
1101	Serial boot (UART/I2C/SPI/USB)
1100	ISP boot (SDIO)
1011	Serial boot (SDIO)
1010	Reserved

In normal operation, the module is supposed to boot from SPI flash (CONFIG_HOST[3:0] = 1111). This is why we recommend using these pins floating.
For more information refer to the RW61x datasheet.

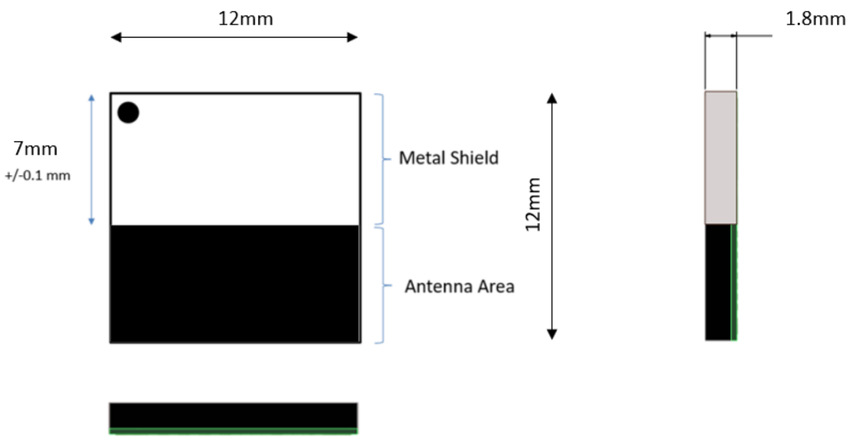
ISP5261 Pinout Top View



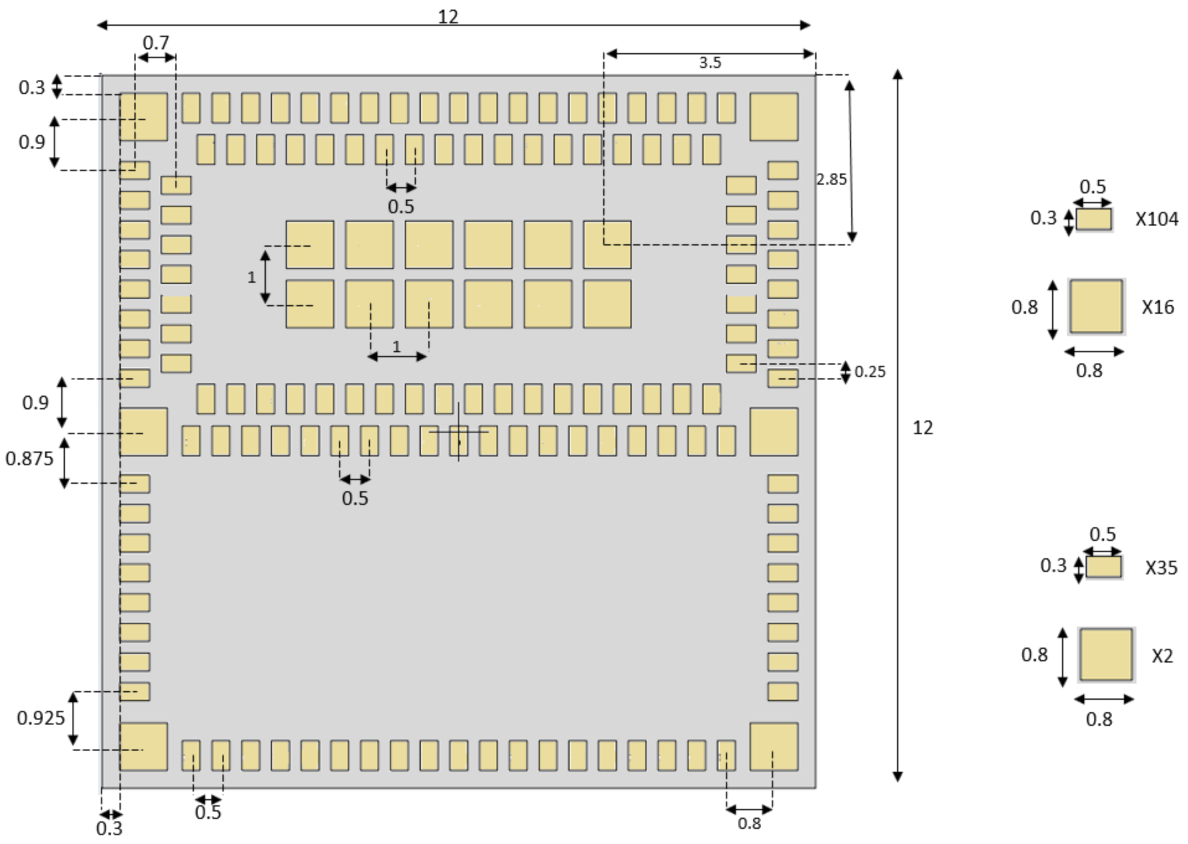
4. Mechanical Outline

4.1. Mechanical Dimensions

Package dimensions (in mm)



Dimensional drawing for 157-Pad LGA Package (in mm)



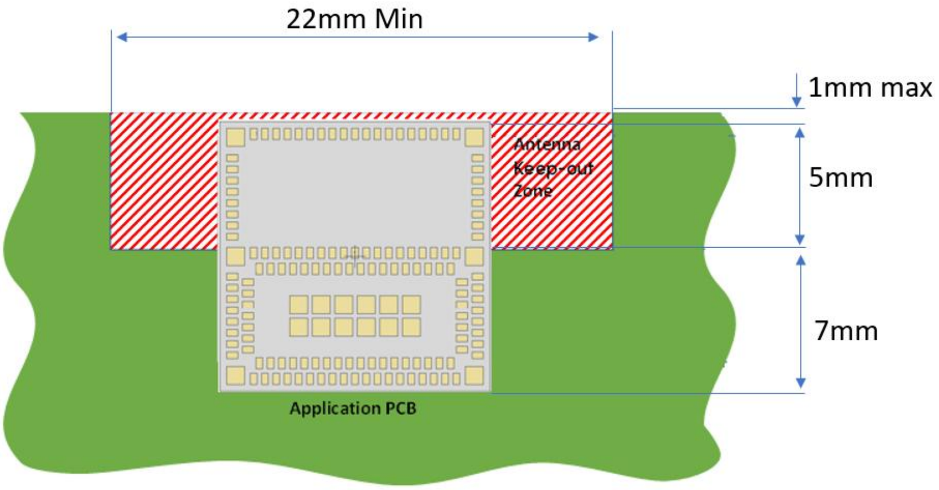
4.2. SMT Assembly Guidelines

For PCB Land Patterns and Solder Mask layout, Insight SiP recommends the use of the same dimensions as the module pads, i.e. 0.3 x 0.5 mm for standard pads and 0.8 x 0.8 mm for corner pads.

Please contact Insight SiP for more detailed information.

4.3. Antenna Keep-Out Zone

For optimal antenna performance, it is recommended to respect a metal exclusion zone to the edge of the board: no metal, no traces and no components on any application PCB layer except mechanical LGA pads.



4.4. Electromagnetic Interference

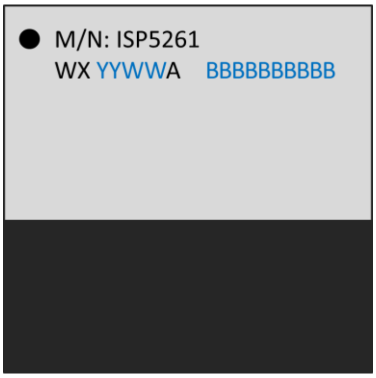
Keep this product away from other transmitters and devices generating high frequencies that may interfere with operation.

5. Package & Ordering Information

5.1. Marking

M	/N	:	I	S	P	5	2	6	1									
T	T		Y	Y	W	W	R		B	B	B	B	B	B	B	B	B	B

ISP5261	Part Number
TT	2 letters Module Variant
YY	2 digits year number
WW	2 digits week number
R	1 letter Hardware revision
BBBBBBBBBB	10 caracters Build code

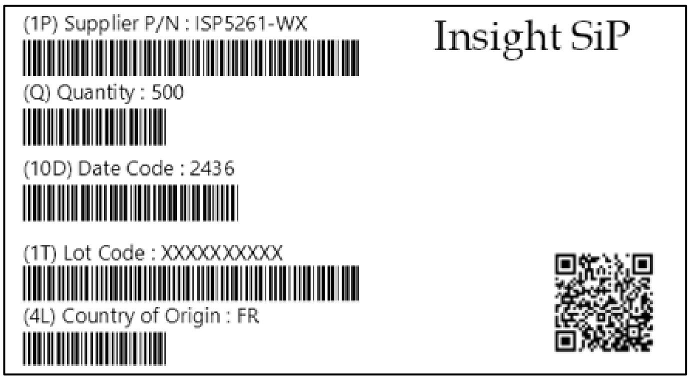


Certification labels for CE, FCC, IC and Telec are printed directly on the module when applicable.

5.2. Package Labelling

A label indicating the Module Part Number, Quantity, Date Code, Lot Code and Country of Origin are applied to the bag, the reel and the box, whichever is applicable.

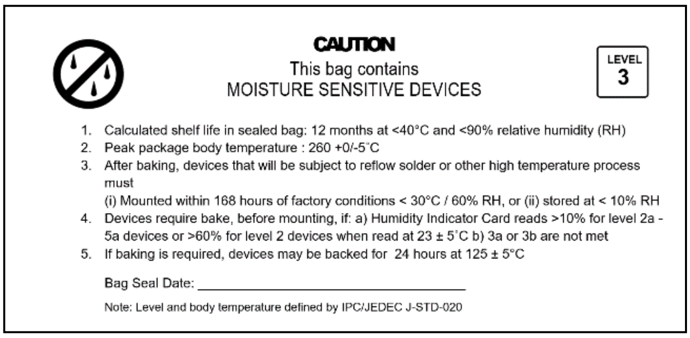
Information is available with bar code 1D according to Code 39 and bar code 2D according to Data Matrix ECC 200 from ECIA standard.



(1P) Supplier P/N : ISP5261-WX
(Q) Quantity : 500
(10D) Date Code : 2436
(1T) Lot Code : XXXXXXXXXX
(4L) Country of Origin : FR

Insight SiP

A second label on the bag is present to indicate the MSL level and packaging date.



CAUTION
This bag contains
MOISTURE SENSITIVE DEVICES

LEVEL
3

1. Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)
2. Peak package body temperature : 260 +0/-5˚C
3. After baking, devices that will be subject to reflow solder or other high temperature process must
   (i) Mounted within 168 hours of factory conditions < 30°C / 60% RH, or (ii) stored at < 10% RH
4. Devices require bake, before mounting, if: a) Humidity Indicator Card reads >10% for level 2a - 5a devices or >60% for level 2 devices when read at 23 ± 5˚C b) 3a or 3b are not met
5. If baking is required, devices may be backed for 24 hours at 125 ± 5°C

Bag Seal Date: ______________________________

Note: Level and body temperature defined by IPC/JEDEC J-STD-020

5.3. Prototype Packaging

For engineering samples and prototype quantities up to 99 units, deliveries are provided in thermoformed trays.

They are delivered in vacuumed sealed pack with desiccant pack and humidity sensors. Please see section 6.2 for more information on moisture sensitivity.

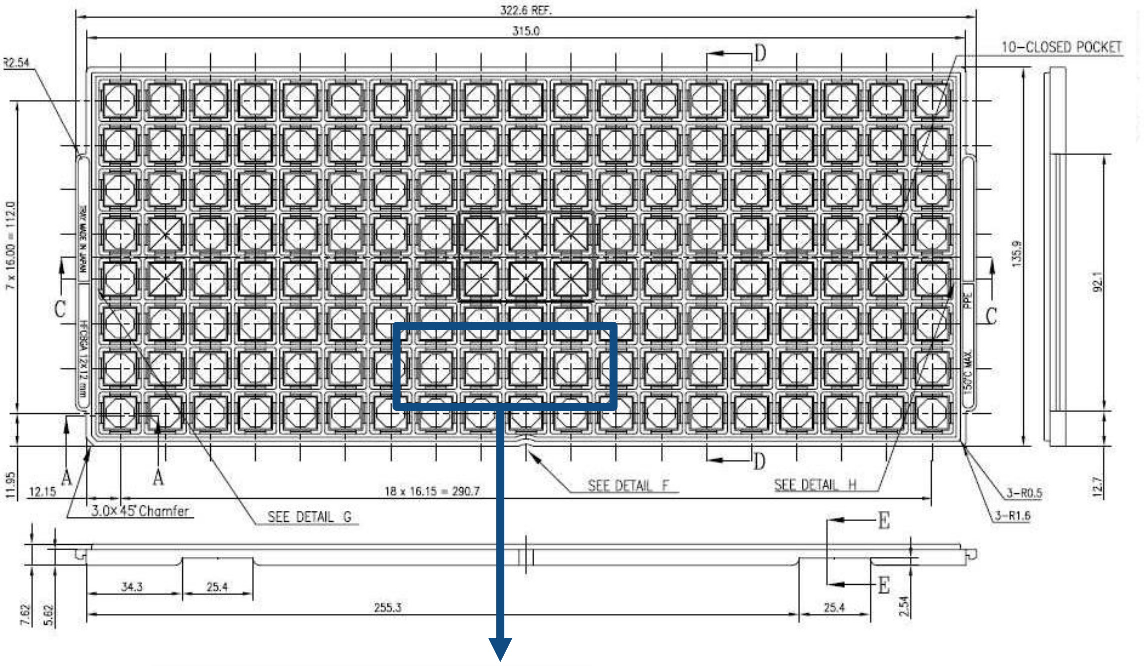
Please order with "ST" code packaging suffix.

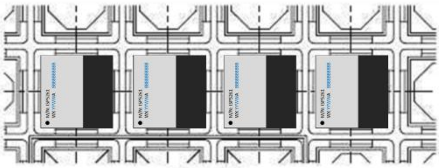
5.4. Jedec Trays

For pre-production volumes, ISP5261 are available in Jedec trays.

They are delivered in vacuumed sealed pack with desiccant pack and humidity sensors. These Jedec trays are also suitable for further baking at 125°C. Please see section 6.2 for more information on moisture sensitivity. Please order with "JT" code packaging suffix.

Refer to tray sizes below. Complete information on Jedec trays is available on request.



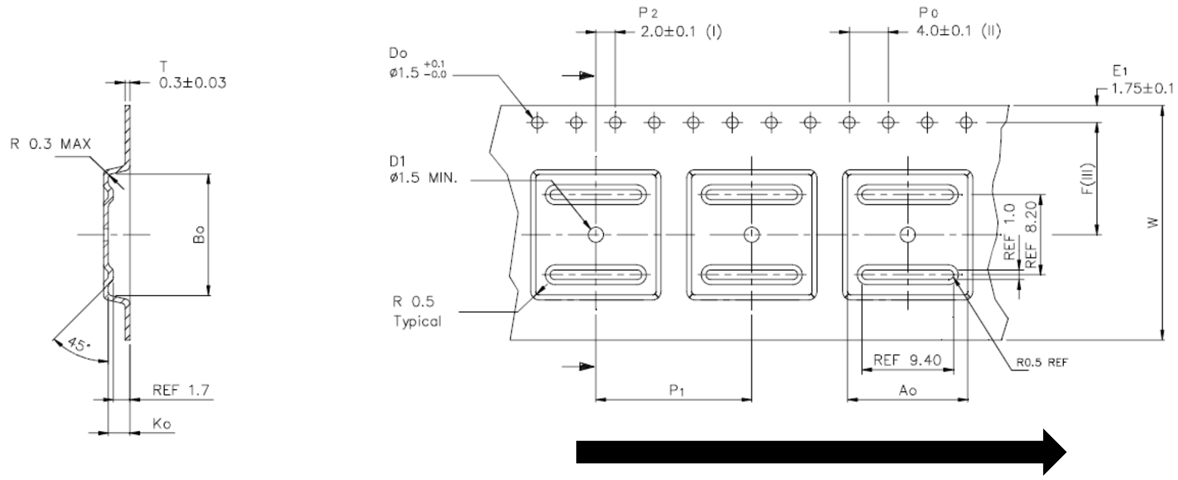


Top view position of modules within the tray.

5.5. Tape and Reel

ISP5261 are also available in Tape & Reel. They are delivered in vacuumed sealed pack with desiccant pack and humidity sensors. Reels are proposed in standard quantities of 500 units (330 mm / 13" reel). Please order with "RS" code packaging suffix for 500-unit reel.

This packaging is not suitable for high temperature baking.

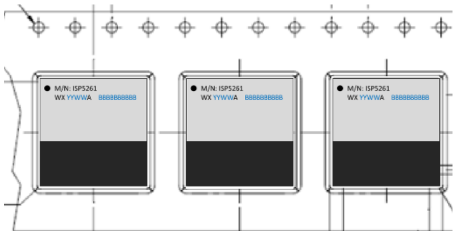


Feed direction

Ao	12.35 +/−0.1
Bo	12.35 +/−0.1
Ko	2.20 +/−0.1
F	11.50 +/−0.1
P1	16.00 +/−0.1
W	24.15 +/−0.1

(I) Measured from centreline of sprocket hole to centreline of pocket.
(II) Cumulative tolerance of 10 sprocket holes is ± 0.20 .
(III) Measured from centreline of sprocket hole to centreline of pocket.
(IV) Other material available.

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATE



Top view position of modules within the reel.

5.6. Ordering Information

ISP5261 - TT - ZZ

ISP5261	Part Number
- WX	Basic variant with RW610
- WT	Variant including 802.15.4 radio with RW612
- EB	Evaluation Board
- TB	Test board
- ST	Standard Tray
- JT	Jedec Tray Packaging
- RS	Reel of 500 units

6. Storage and Soldering Information

6.1. Storage and Handling

- Keep this product away from other high frequency devices which may interfere with operation such as other transmitters and devices generating high frequencies.
- Do not expose the module to the following conditions:
  - Corrosive gasses such as Cl2, H2S, NH3, SO2, or NOX
  - Extreme humidity or salty air
  - Prolonged exposure to direct Sunlight
  - Temperatures beyond those specified for storage
- Do not apply mechanical stress.
- Do not drop or shock the module.
- Avoid static electricity, ESD and high voltage as these may damage the module.

ATTENTION

CONSERVE PRECAUTION FOR HANDLING
ELECTROSTATIC SENSITIVE DEVICES

6.2. Moisture Sensitivity

ISP5261 has been tested MSL-3 according to standards.

All plastic packages absorb moisture. During typical solder reflow operations when SMDs are mounted onto a PCB, the entire PCB and device population are exposed to a rapid change in ambient temperature. Any absorbed moisture is quickly turned into superheated steam. This sudden change in vapor pressure can cause the package to swell. If the pressure exerted exceeds the flexural strength of the plastic mold compound, then it is possible to crack the package. Even if the package does not crack, interfacial delamination can occur.

To prevent such failures, baking is mandatory before assembly under the following conditions (per JEDEC standards J-STD-033 and J-STD-020):

- The vacuum-sealed moisture barrier bag has been stored for more than 12 months from the date of sealing.
- The moisture barrier bag seems to be damaged or the humidity indicator card shows humidity levels above the acceptable threshold.
- The bag has been opened, and the components have been exposed to ambient conditions (approximately <=30°C/60% RH) for more than 168 hours.

In case one the above condition is true, please follow the baking instructions below before assembly:

- Remove the modules from the reels, place them in trays or plates capable of withstand elevated temperatures
- Bake them at 125°C for 24 hours (Minimum required bake time for MSL3 components with 1 mm thickness before assembling is 8 hours according to JEDEC J-STD-033D in table 4-1)

After baking, modules can be handled at room conditions (approximately <=30°C/60% RH) for up to 168 hours before assembly.

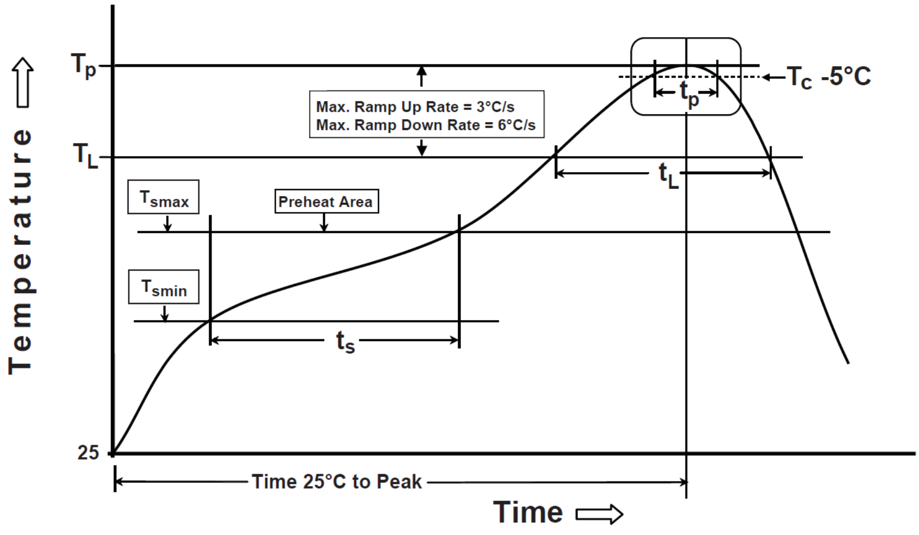
CAUTION

MOISTURE
SENSITIVE DEVICES

LEVEL
3

6.3. Soldering information

Recommendation for RoHS reflow process is according to Jedec J–STD-020 and 033 standard profiles.



Preheat/Soak Temperature Min (T_{smin}) Temperature Max (T_{smax}) Time (t_s) from (T_{smin} to T_{smax})	150 °C 200 °C 60-120 sec
Ramp-up rate (T_L to T_p)	3 °C/sec max
Liquidous temperature (T_L) Time (t_L) maintained above T_L	217 °C 60-150 sec

Peak package body temperature (T_p)	260°C (+0/-5°C)
Classification Temperature (T_c) Time (t_p) maintained above T_C-5 °C	260 °C 30 sec
Ramp-down rate (T_p to T_L)	6 °C/sec max
Time 25 °C to peak temperature	8 mn max

7. Quality and User information

7.1. Certifications

- Bluetooth SIG – Declaration ID #Q334482
- Wi-Fi Alliance – Certification pending
- CE – Certification pending
- FCC – Certification pending
- IC – Certification pending
- TELEC – Certification pending
- RoHS3 compliant
- Reach & POP compliant
- Minerals responsible initiative compliant
- Cyber Resilience Act compliant
- Matter & Thread Ready

Further paragraphs will be added to this data sheet once the product is fully certified.

7.2. Discontinuity

Normally a product will continue to be manufactured as long as all of the following are true:
- The manufacturing method is still available.
- There are no replacement products.
- There is demand for it in the market.

In case of obsolescence, Insight SiP will follow Jedec Standard JSD-48. A Product Discontinuation Notice (PDN) will be sent to all distributors and made available on our website. After this, the procedure goes as follows:
- Last Order Date will be 6 months after the PDN was published.
- Last Shipment Date will be 6 months after Last Order Date, i.e. 12 months after PDN.

7.3. Disclaimer

Insight SiP's products are designed and manufactured for general consumer applications, so testing and use of the product shall be conducted at customer's own risk and responsibility. Please conduct validation and verification and sufficient reliability evaluation of the products in actual condition of mounting and operating environment before commercial shipment of the equipment. Please also pay attention (i) to apply soldering method that don't deteriorate reliability, (ii) to minimize any mechanical vibration, shock, exposure to any static electricity, (iii) not to overstress the product during and after the soldering process.

The products are not designed for use in any application which requires especially high reliability where malfunction of these products can reasonably be expected to result in personal injury or damage to the third party's life, body or property, including and not limited to (i) aircraft equipment, (ii) aerospace equipment, (iii) undersea equipment, (iv) power plant control equipment, (v) medical equipment, (vi) transportation equipment, (vii) traffic signal equipment, (viii) disaster prevention / crime prevention equipment.

The only warranty that Insight SiP provides regarding the products is its conformance to specifications provided in datasheets. Insight SiP hereby disclaims all other warranties regarding the products, express or implied, including without limitation any warranty of fitness for a particular purpose, that they are defect-free, or against infringement of intellectual property rights. Insight SiP customers agree to indemnify and defend Insight SiP against all claims, damages, costs and expenses that may be incurred, including without any limitation, attorney fees and costs, due to the use of products.