

# SST1120 Specification

Version V1.0.0

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## 1. Product Overview

SST1120 is a BLE module developed by CAN Microelectronics (Changzhou) Co., Ltd. The core processor chip PHY62XX of this module is a BLE SoC with high integration and low power consumption, which is specially designed for various applications such as IoT, mobile devices, wearable electronic devices and smart homes.

PHY62XX chip has industry-leading low power consumption performance and RF performance, it supports BLE 5.2. The chip built in 64 KB SRAM, 16KB-8MB flash, 96 KB ROM, 256bit efuse. The chip supports a variety of low-power working states and can meet the power consumption requirements of various application scenarios. RF output power can be adjusted to achieve the best balance among communication distance, communication rate and power consumption.

SST1120 module provide rich peripheral interfaces, including UART, PWM, ADC, I2C, SPI, PDM, DMA and up to 22 IOs.

SST1120 module has many unique hardware security mechanisms. Hardware encryption accelerator supports AES algorithm.

SST1120 module supports BLE with low power consumption: BLE 5.2 and BLE mesh. Bluetooth rate support: 125Kbps, 500Kbps, 1Mbps, 2Mbps. Support broadcast expansion, multi-broadcast, channel selection.

### 1.1. Characteristic

- Support BLE 5.2, rate support: 125Kbps, 500Kbps, 1Mbps, 2Mbps
- Own 64 KB SRAM, 16KB-8M flash, 96 KB ROM, 256bit efuse
- Support UART/GPIO/ADC/PWM/I2C/SPI/PDM/DMA interface
- Support multiple sleep modes, deep sleep current is less than 1uA
- Support for serial local upgrade and remote Firmware upgrade (FOTA)
- Universal AT instructions can be used easy and quickly
- Support for secondary development, with an integrated Windows development environment

## 2. Main parameters

<b>Model</b>	SST1120
<b>Size</b>	
<b>Antenna</b>	On-board antenna
<b>Frequency</b>	2400~2483.5MHz
<b>Operating temperature</b>	-40°C~85°C
<b>Power supply</b>	Voltage 2.7V~3.6V, Current >200mA
<b>Interface</b>	UART/GPIO/ADC/PWM/I2C/I2S/SPI/PDM/DMA
<b>Bluetooth</b>	BLE 5.2
<b>SPI Flash</b>	16KB-8MB

### 2.1. Static electricity requirements

SST1120 is an electrostatic sensitive device, and special precautions must be taken when handling it.



## 2.2. Electrical characteristics

Parameters		Conditions	Min.	Typical value	Max.	Unit
Power supply voltage		VDD	2.7	3.3	3.6	V
I/O	VIL/VIH	-	-0.3/0.75VDD	-	0.25VDD/VDD+0.3	V
	VOL/VOH	-	N/0.8VIO	-	0.1VIO/N	V
	IMAX	-	-	-	12	mA

## 2.3. BLE RF performance

Description	Typical values			Unit
Operating frequency	2400-2483.5			MHz
Output power				
Mode	Min.	typical	Max.	Unit
BLE 2Mbps	-20	8	10	dBm
BLE 1Mbps	-20	8	10	dBm
BLE 500Kbps	-20	8	10	dBm
BLE 125kbps	-20	8	10	dBm
Receiving sensitivity				
Mode	Min.	typical	Max.	Unit
BLE 2Mbps	-	-93	-	dBm
BLE 1Mbps	-	-96	-	dBm
BLE 500Kbps	-	-97	-	dBm
BLE 125Kbps	-	-102	-	dBm

## 2.4. Power consumption

The following power consumption data are based on a 3.3V power supply, ambient temperature of 25°C and measured using an internal regulator.

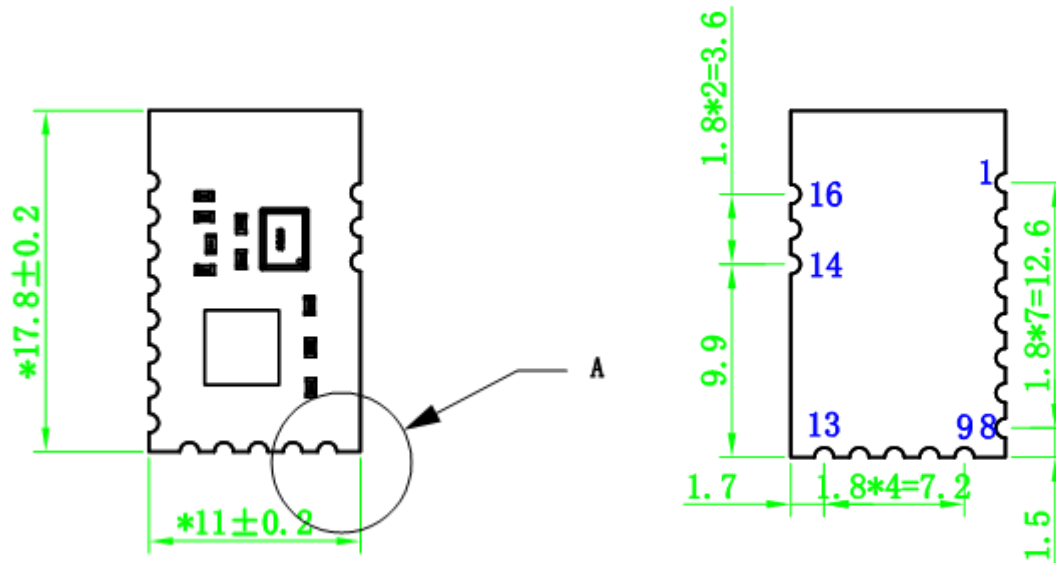
All measurements were completed without the SAW filter at the antenna interface.

All emission data were measured based on the TX\_Burst\_Test & RX\_Burst\_Test mode

Mode	Min.	Average value	Max.	Unit
TX_Burst_Test Power output 8dBm	-	11.5	-	mA
TX_Burst_Test Power output 5dBm	-	9	-	mA
TX_Burst_Test Power output 0dBm	-	8	-	mA
RX_Burst_Test	-	9.4	-	mA

Deep Sleep(With broadcast,1 second interval)	-	50.58	-	uA
Deep Sleep(With broadcast,2 seconds interval)	-	28.25	-	uA
Deep Sleep(Without broadcast)	-	7.2	-	uA
Power Off	-	0.57	-	uA

### 3. Appearance dimensions



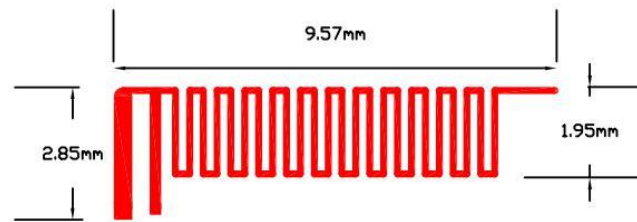
### 4. Pin definition

SST1120 has a total of 14 interfaces. The pin function definition table is the interface definition.

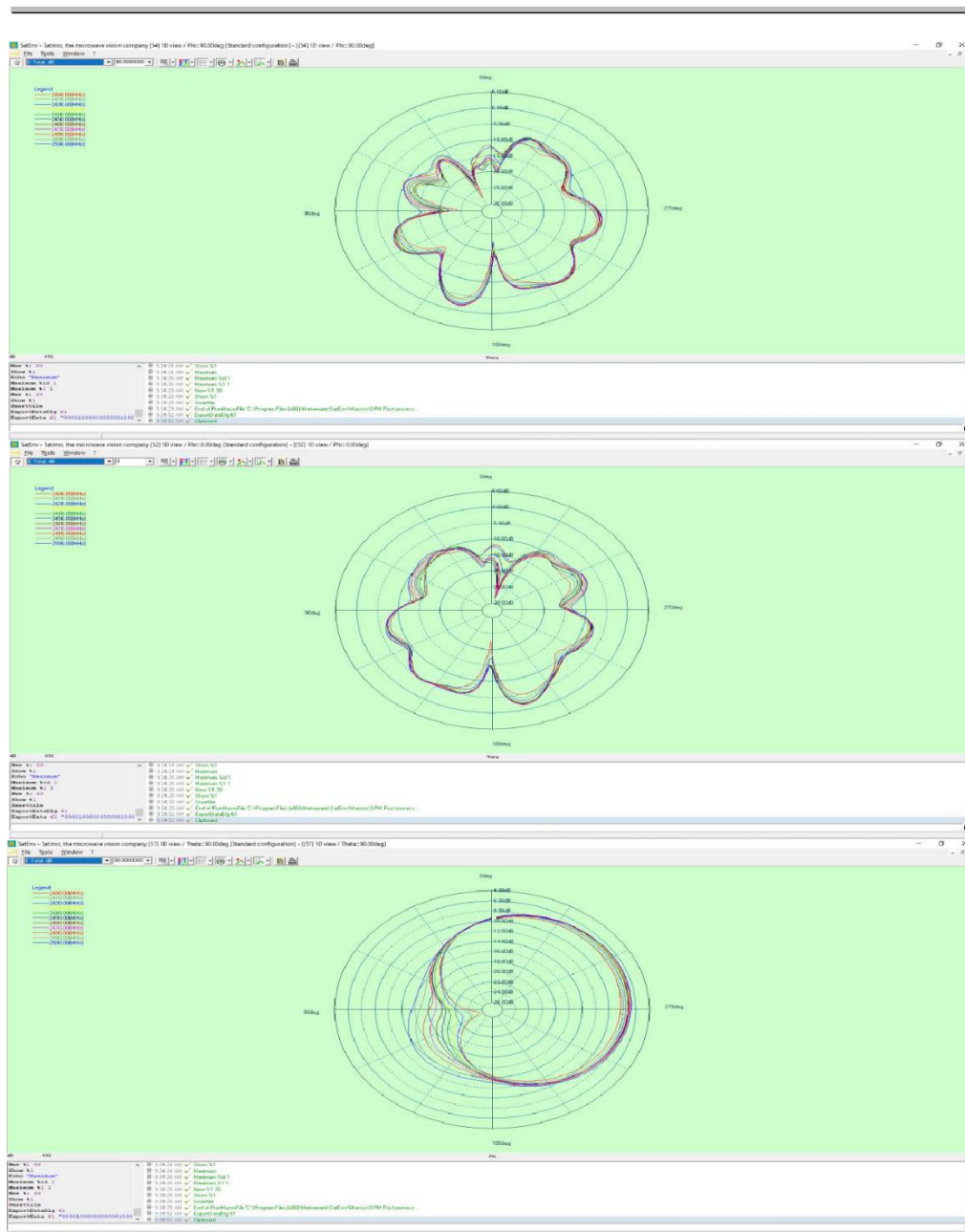
No.	Name	Function
1	GND	Ground(Power negative electrode)
2	3V3	Power input
3	BLE_BUSY	Bluetooth output high level when communication is busy or unavailable, and low level when communication is smooth
4	BLE_EN	Enable
5	BLE_LINK	After the Bluetooth module is connected to Bluetooth, it outputs a low level, otherwise it outputs a high level
6	P32	GPIO32
7	P10	GPIO10
8	P9	GPIO9
9	BLE_RX	UART_RX
10	BLE_TX	UART_TX
11	TM	Test Mode
12	RST	Reset
13	GND	Ground(Power negative electrode)
14	PC0	GPIOC0
15	PB0	GPIOB0
16	GND	Ground(Power negative electrode)

## 5. Antenna parameters

### 5.1. DUT Antenna



### 5.2. 2D Radiation pattern





## 6. Peak Gain

Antenna_Peak Gain	
Frequency (MHz)	Peak_Gain . dBi
2400	-3.52746
2410	-2.85367
2420	-2.15516
2430	-1.78412
2440	-1.69437
2450	-1.55137
2460	-1.49915
2470	-1.37612
2480	-1.49079
2490	-1.57472
2500	-1.7318

## 7. Design guidance

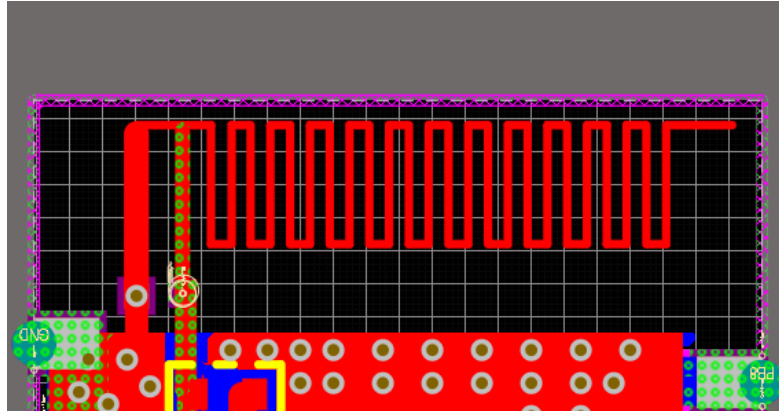
### 7.1. Power supply

- Recommended 3.3V voltage, peak current over 200mA.
- Power supply is recommend to use LDO; If the DC-DC is used, the ripple is recommended to be controlled within 30mV
- The DC-DC power supply circuit proposes to reserve the dynamic response capacitance to optimize the output ripple with large load changes.
- 3.3V power interface it is recommended to add ESD devices.

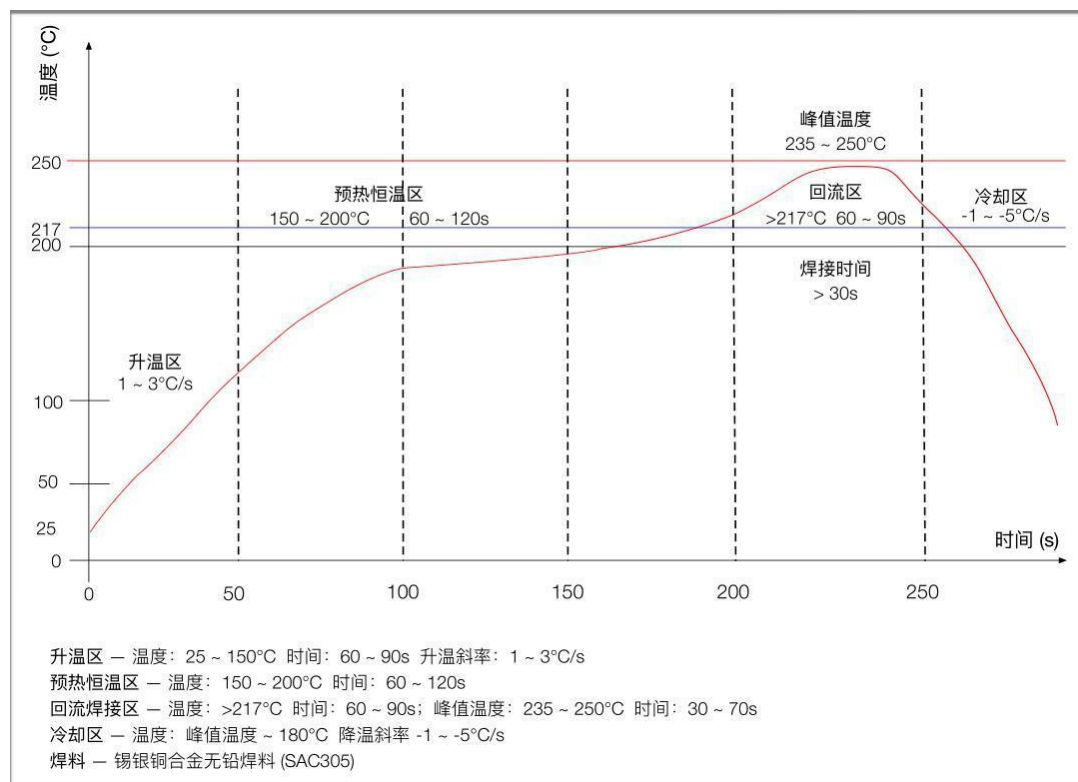
### 7.2. Antenna layout requirements

modules should be placed near the edge of the plate, and the forbidden space of the antenna should be as large as possible





## 8. Flow welding curve diagram



**FCC Caution:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this device. The module is limited to installation in mobile or fixed applications.

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.

**Note:** This device has been tested and found to comply with the limits for a Class B digital device, according to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if not installed

and used following the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to connect the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the device and receiver.
- Connect the device to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### **Radiation Exposure Statement**

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following :“Contains Transmitter Module FCC ID: 2BCRSSST1120 Or Contains FCC ID: 2BCRSSST1120”

When the module is installed inside another device, the user manual of the host must contain below warning statements;

1. 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.
  - (2) This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Any company of the host device which install this modular with Single modular approval should perform the test of radiated emission and spurious emission according to FCC part 15C : 15.247 and 15.209 requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.209 requirement, then the host can be sold legally.