TC6203P_D2

BLE mesh module specification

Version	Date	Description	Author	Auditor
1.0	2021-05-22	Created document	Xiaobing Yu	Chenxiaofei
1.1	2021-10-04	Added	Xiaobing Yu	Chenxiaofei

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1 Product overview

1.1 overview

TC6203P_D2 is a small and low-power bluetooth module, which can be used for SMT and pin manufacturing, and is very suitable for smart household consumer electronics products.TC6203d-SMT which is Based on advanced CMOS technology and highly integrated single BLE chip.

1.2 Module features

- Based on the bluetooth 4.2 standard and Bluetooth® Mesh
- Support Relay、 Proxy、 Friend、 Low Power Node
- Support Mesh OTA、 GATT OTA
- 9dBm TX power and RSSI value -90dBm
- Built-in low power 32bit MCU, maximum frequency is 52MHz
- External 128K/256K Flash

1.3 Module parameters

Table 1. TC6203P_D2 parameters

average output RF power	typ：8dBmmax：13dBm
Rx RSSI value	-90dBm
Operating temperature	-40 ~105℃
Operating temperature	2.2 ~ 3.6 V typ：3.3V
Continuous sending with0dBm output power	17 mA
Continuous receiving working state with mesh net	3uA

1.4 Main application areas

- Smart home(bulb、socket、light switch and other device)

2 Hardware introduction

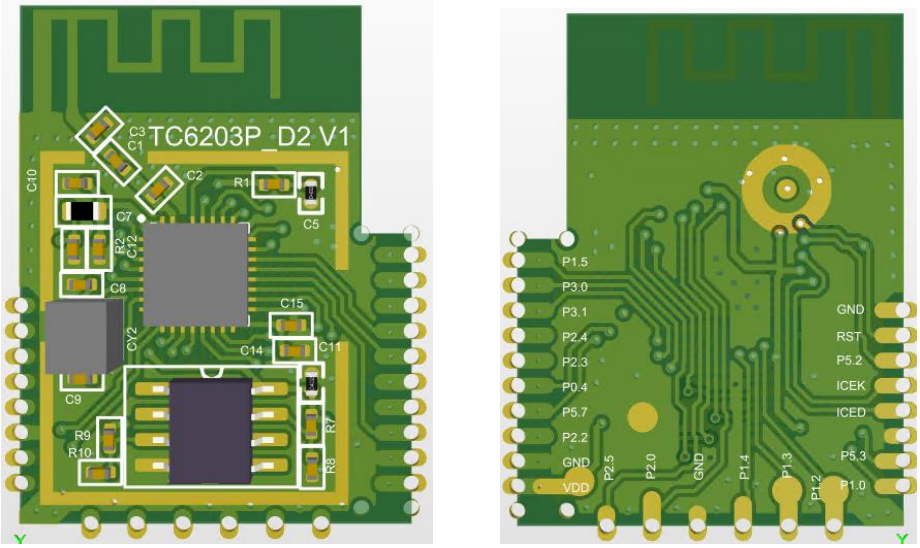

Figure 1. TC6203P_D2outside view

2.1PIN definition

Table 2. TC6203P_D2 PIN definition

Num	Name	I/O	description
1	P1.5	ADC1	I/O
2	P3.0	ADC2	I/O
3	P3.1	ADC3	I/O
4	P2.4	PWM5	PWM(B)
5	P2.3	PWM4/SDA	PWM（G）&I^2C SDA
6	P0.4	PWM1	PWM（C）

7	P5.7	PWM2	PWM（W）
8	P2.2	PWM3/SCL	PWM（R）&I^2C SCL
9	GND	GND	GND
10	VDD	VDD	VDD
11	P2.5	I/O	I/O
12	P2.0	I/O	I/O
13	GND	GND	GND
14	P1.4	I/O	I/O
15	P1.3	RX	UART_RX
16	P1.2	TX	UART_TX
17	P1.0	I/O	I/O
18	P5.3	I/O	I/O
19	NC	I/O	NC
20	ICED	_	JLINK_data
21	ICEK	_	JLINK_ clk
22	P5.2	I/O	I/O
23	RST	RST	RST
24	GND	GND	GND

注：GPIO具体功能建议参考《TC6203a Datasheet_V1.0.pdf》

2.2 Electrical specification

Table 3. TC6203P_D2 electrical specification

item	state	min	normal	max	unit
Storage temperature		-45	–	125	° C
Welding temperature	IPC/JEDEC J-STD-020	–	–	260	° C
Operating voltage		2.2	3.3	3.6	V
Electric current	Work	–	17	–	mA
	deepsleep	2	3	5	uA

Any I/O pin voltage		2.2	_	3.3	V
Static levels （ HBM）	TAMB=25° C	–	–	2	KV

2.3 Module mechanical dimensions

TC6203P_D2 physical size（units：mm）：

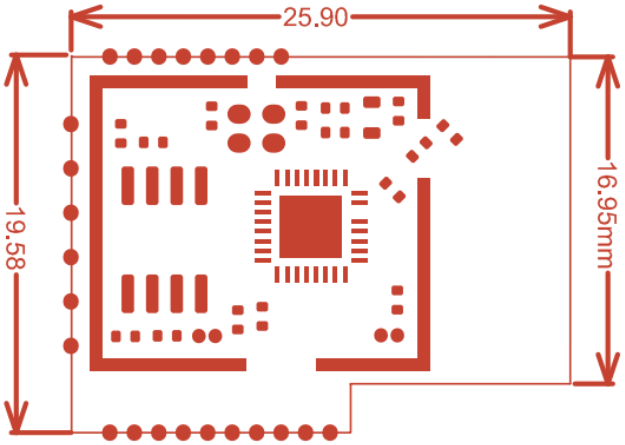

Figure 2. TC6203P_D2 mechanical dimensions

3 operation instruction

3.1 Production guide

It is suggested to use SMT machine to patch the package module of stamp mouth, and finish the
patch within 24 hours after the packaging is unpacked. Otherwise, it should be vacuumized again
to avoid the bad patch caused by dampness.
If the package contains a humidity indicator card, it is recommended to judge whether the module
needs to be baked according to the humidity indicator card. The baking conditions are as follows:
Stoving temperature： 125℃±5℃；
Alarm temperature: 130℃；
After cooling less than 36℃ under natural conditions, SMT patch can be performed.
If the unsealing time is more than 3 months, special attention should be paid to whether the product is affected by moisture. Because of the PCB process, more than 3 months may lead to the

oxidation of the welding pad, and problems such as virtual welding and missed welding may occur
during the placement process.
In order to ensure the qualified rate of reflow welding, it is recommended to extract 10% of the
product for the first patch for visual inspection and AOI detection, so as to ensure the rationality of
furnace temperature control, device adsorption mode and placement mode.
Operators at all stations must wear electrostatic gloves during production.

3.2 Reflow welding instructions

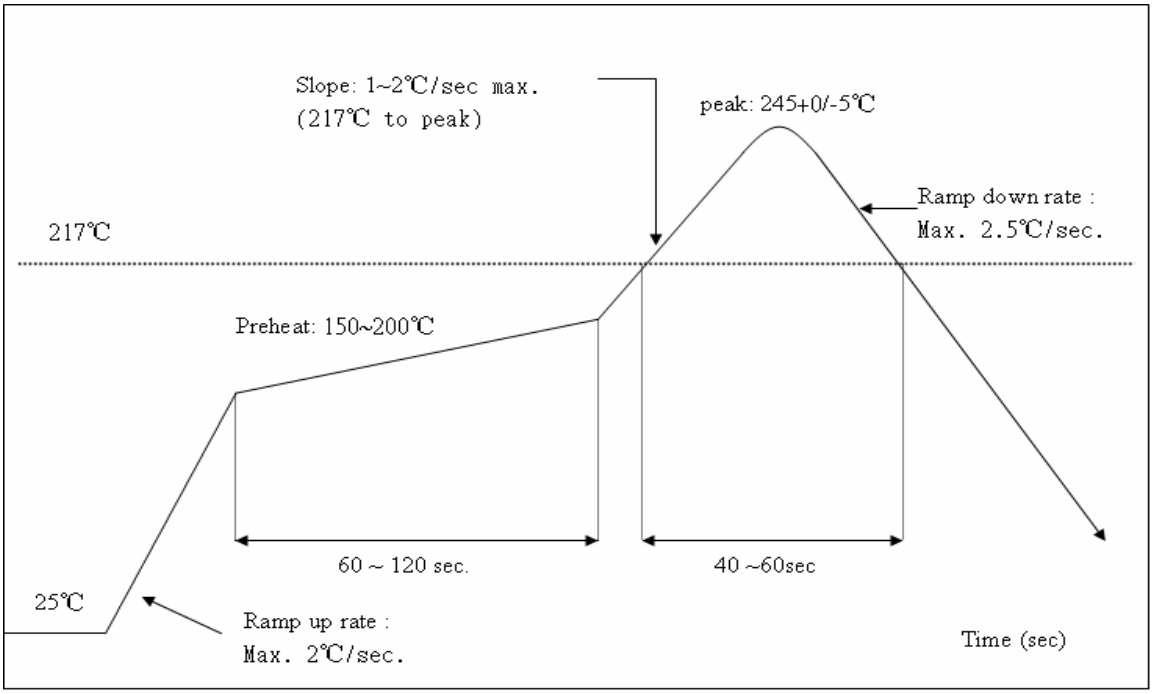

Figure3. TC6203P_D2 graph of reflow weldng temperature

FCC Statement
FCC standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247
PCB antenna with antenna gain 0dBi
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 user's authority to operate the equipment.
Note: This equipment has been tested and found to comply with the limits for a Class B 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 radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into 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.

FCC 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.
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: : 2AVUD-TC6203P Or Contains FCC ID: : 2AVUD-TC6203P"
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.
Note: This equipment has been tested and found to comply with the limits for a Class B 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 radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into 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.
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 modular approval should perform the test of radiated & conducted emission and spurious emission,etc. according to FCC part 15C : 15.247 and 15.209 & 15.207 ,15B Class B requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.209 & 15.207 ,15B Class B requirement, then the host can be sold legally.