Product Specification

Bluetooth Audio Module
Model Name: BM-A05S

VERSION: 0.6

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TABLE OF CONTENTS

1. INTRODUCTIONS AND SCOPE

BM-A05S is a Bluetooth/BLE dual mode module. It includes high performance Soc RTL8763ESE, which can be applied in Bluetooth transceiver products as head phone, speaker phone, speakers and Bluetooth/BLE Transceiver dongle. BM-A05S is designed for high performance wearable, industrial and consumer applications. The module integrates antenna and completed controller circuit, customer can easily apply it in product.

2. FEATURES

2.1 General

Compliance to BT5.3

Support profile A2DP,AVRCP, HFP

Support UART command: Volume control, ring tone control, music play/pause/stop, answer call…

Support user define ring tone

Build in echo and environment noise cancellation/reduction function (AEC/ENC/ANC)

Build in class D amplifier, differential output

Codec: mSBC/SBC/AAC-LC/CVSD

RCV technology, keep clear voice during HFP mode

Support OTA

Build in different LED flashing mode

Built in antenna

Dimension(LxW): 20mm x 14mm

Operation temperature: 0°C to 70°C

2.2 Peripheral Interface

Aux in x 1ch

MIC in x 2ch

Speaker out

GPIO

12 bit ADC

I2S x 1ch

UART x 1ch

USB Audio x 1ch

Capacitive sensor input

Button input

2.3 Application

Headphone

Speaker/sound bar

Speaker phone

Receiver/ Transmitter dongle

3. MECHANICAL CHARACTERISTICS

3.1 Weight and Dimension

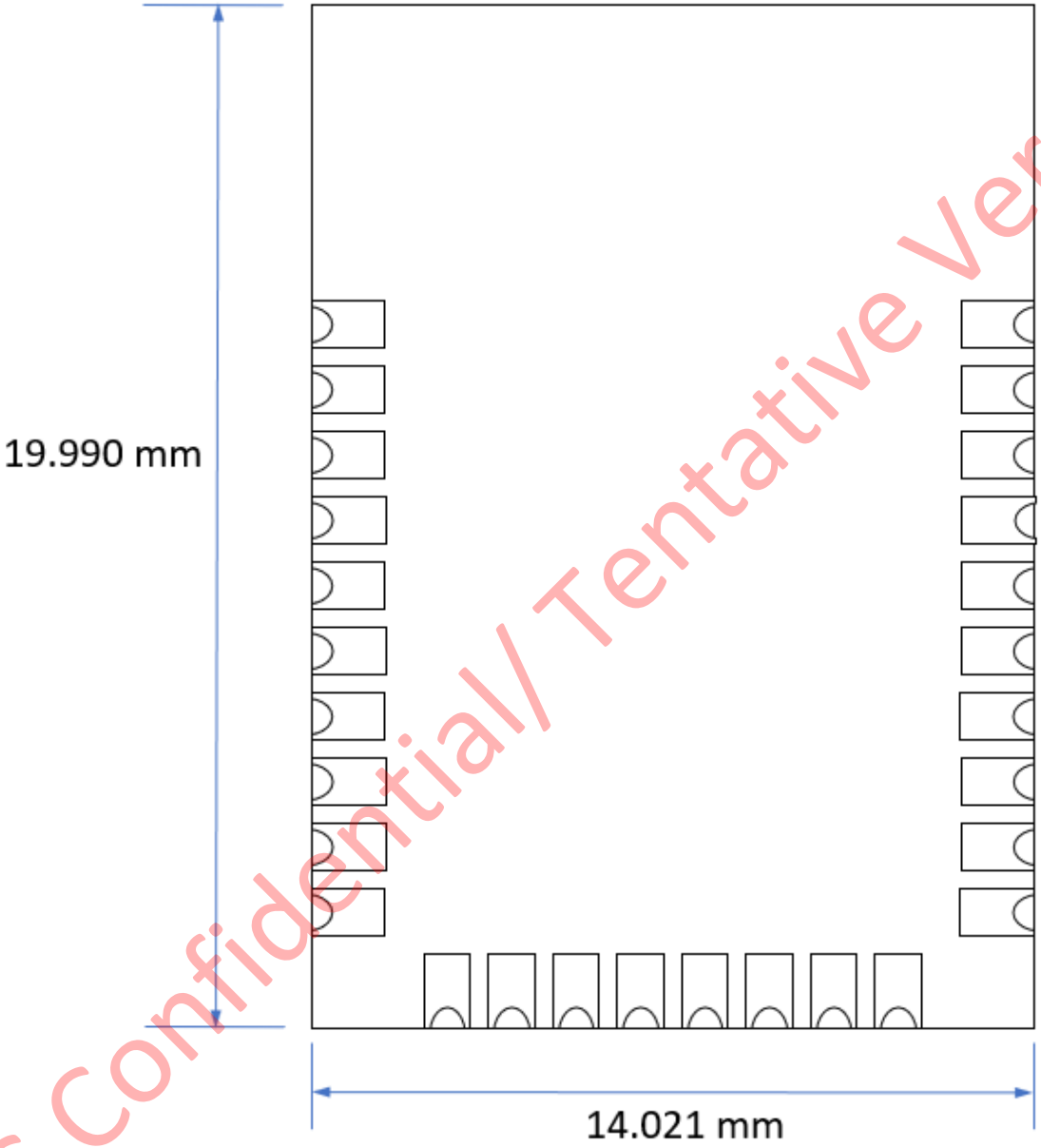
Weight: 0.8g

Dimension(L x W): 19.990mm x 14.021mm (tolerance +/-0.1mm)

3.2 Module Picture

4. EXTERNAL DIMENSION

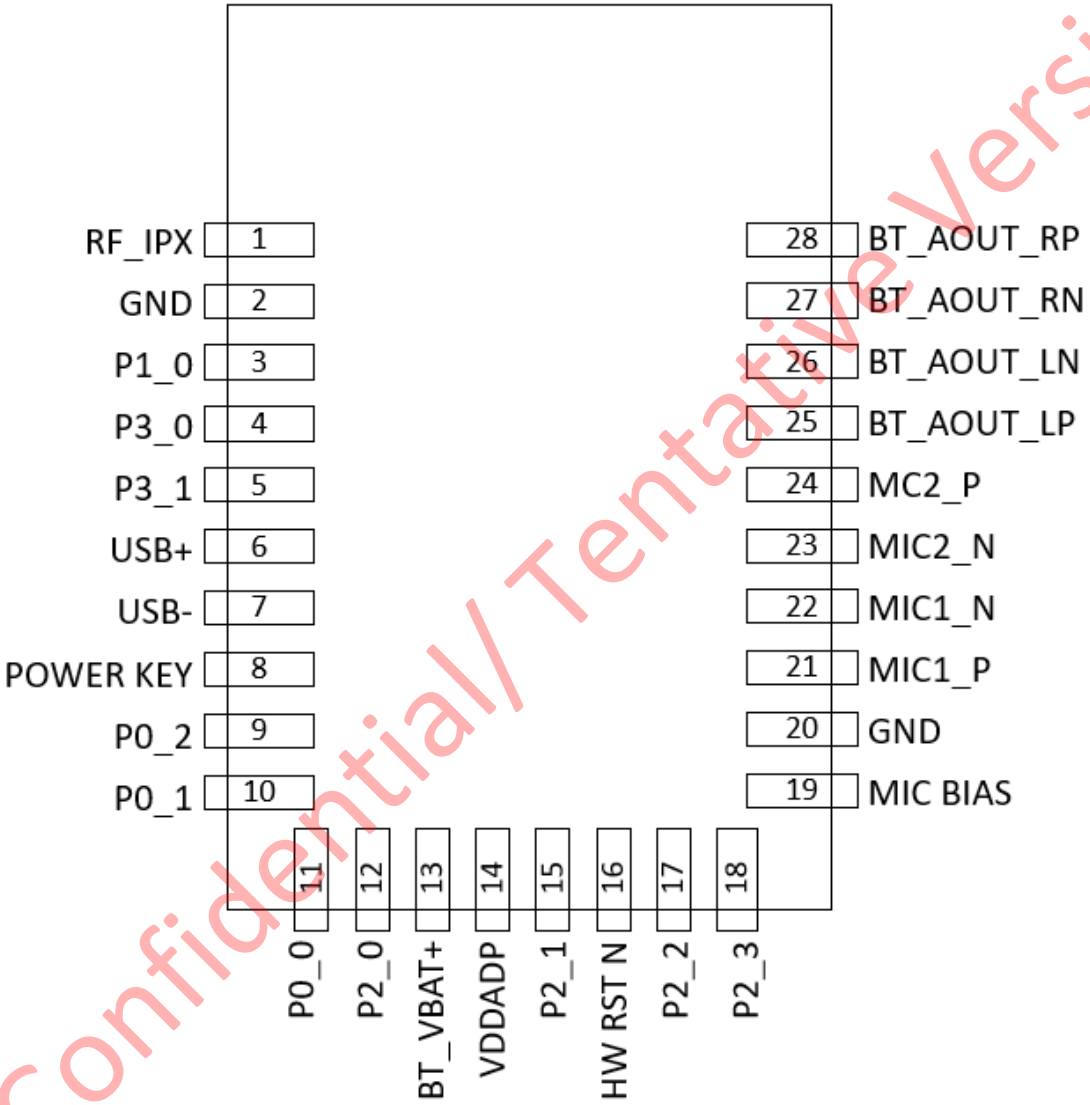
4.1 Outline Dimension of PCBA (unit: mm)



5. PIN ASSIGNMENT AND DESCRIPTION

5.1 Pin Assignment

Top Side View



5.2 Pin Descriptions

Pin	Symbol	type	Description
1	RF_IPX		Radio transmitter output and receiver input(dual mode)
2	GND	GND	Ground
3	P1_0	I/O	Programmable GPIO
4	P3_0	I/O	Programmable GPIO / UART RX(default)
5	P3_1	I/O	Programmable GPIO / UART TX(default)
6	USB+	AI/O	USB signal positive
7	USB-	AI/O	USB signal negative
8	POWER KEY		MFB
9	P0_2	I/O	Programmable GPIO
10	P0_1	I/O	Programmable GPIO
11	P0_0	I/O	Programmable GPIO
12	P2_0	I/O	Programmable GPIO / Firmware Upgrade Switch pin (Low: Operation firmware upgrade)
13	BT_VBAT+		VBAT
14	VDDADP		ADP_IN
15	P2_1	I/O	Programmable GPIO
16	HW RST N	I/PU	Hardware Reset
17	P2_2	I/O	Programmable GPIO
18	P2_3	I/O	Programmable GPIO
19	MIC BIAS	PO	Microphone bias output
20	GND	GND	Ground
21	MIC1_P	AH	MIC1 input positive
22	MIC1_N	AH	MIC1 input negative
23	MIC2_N	AH	MIC2 input negative
24	MIC2_P	AH	MIC2 input positive
25	BT_AOUT_LP		SPKL_P
26	BT_AOUT_LN		SPKL_P
27	BT_AOUT_RN		SPKR_N
28	BT_AOUT_RP		SPKR_P

Legend:
I/O = Digital input/output, A = Analog Pin；PWR = Power Pin；GND = Ground

6. ELECTRICAL CHARACTERISTICS

6.1 Voltage Input

There are two ways of power source input as below:

6.1.1 System Power Input, use BT_VBAT+(pin13) as power input: 2.8Vdc~4.5Vdc

6.1.2 For Battery Charging and USB function, use VDDADP (pin14) as power input: 4.5Vdc~5.5Vdc

6.2 Current Consumption

6.2.1 Headset Mode

5.5mA(ave)

6.2.2 Triple Dongle Mode

Vbat(3.6Vdc): 1.3mA (ave)

VDDADP(5Vdc): 6.5mA(ave)

6.3 Temperature Specification

Operation temperature range: 0°C ~ 70°C

Storage temperature range: -40°C~105°C

6.4AUXDAC Characteristics

Resolution 24bits

Maximum input voltage: 5V

Input Impedance(bypass mode): 7Mohm

6.5Radio Characteristics

Frequency range 2402MHz~2480MHz

RX sensitivity -97dBm (PER <= 30.8%)

RX maximum input level -1dBm (PER <= 30.8%)

TX maximum output power 8dBm

6.6Digital I/O Characteristics

Parameter	Condition	Min	Typical	Max
Input high voltage	Vbat = 3V	2.1	--	3.6
Input low voltage	Vbat = 3V	-0.4	--	0.4
Outputhigh voltage	Vbat = 3V	2.6	--	--
Output low voltage	Vbat = 3V	--	--	0.4
Input high voltage	Vbat = 1.8V	1.26	--	2.2
Input low voltage	Vbat = 1.8V	-0.4	--	0.4
Output high voltage	Vbat = 1.8V	1.6	--	--
Output low voltage	Vbat = 1.8V	--	--	0.2

6.7Audio Codec Characters

6.7.1 Output Sample Rate
8, 16, 32, 44.1, 48, 88.2, 96KHz

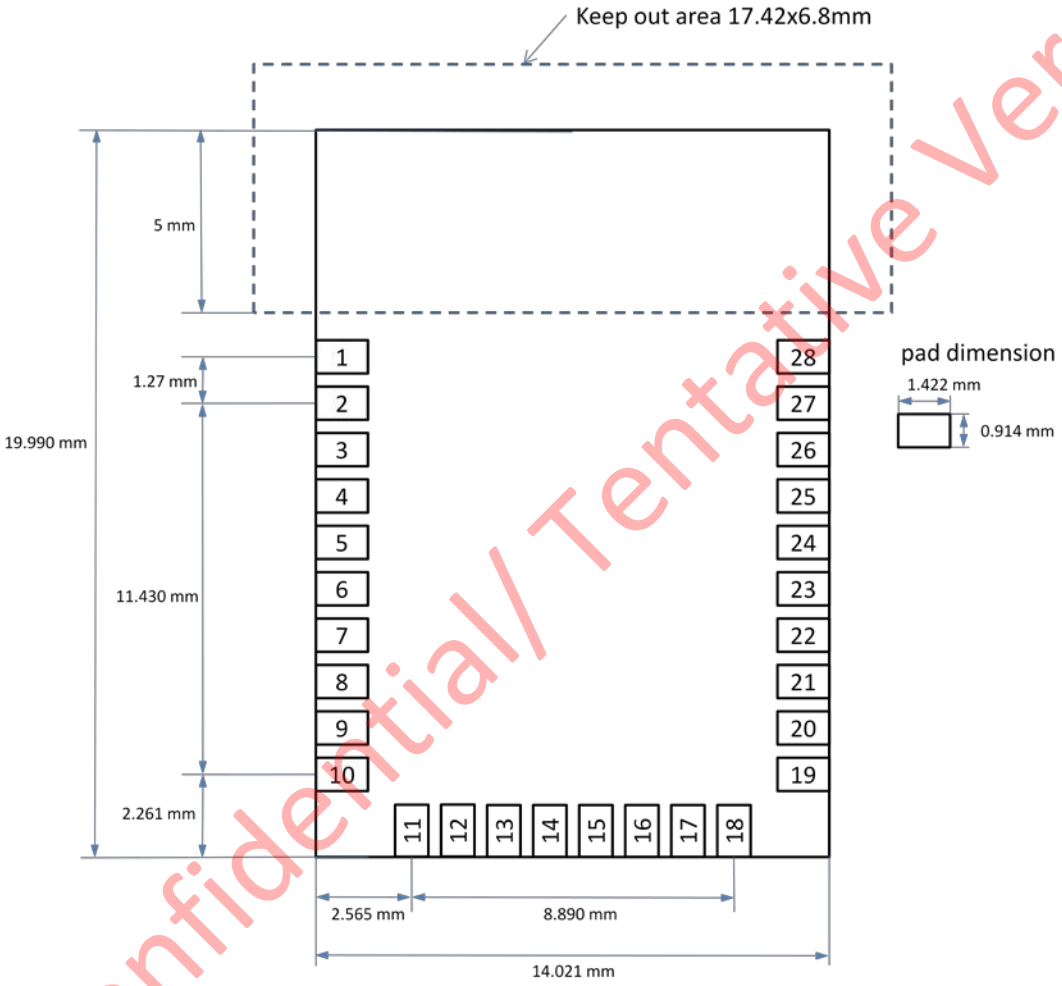
6.7.1 Maximum Output Power
Load 32 Ohm: 31mW (1Vrms)
Load 16 Ohm: 40mW (0.8Vrms)

6.7.1 Signal to Noise Ratio
Load 32 Ohm: 106 dBA (Tentative Spec. T.B.C)
Load 16 Ohm: 104 dBA (Tentative Spec. T.B.C)

7. FOOTPRINT AND LAOUT NOTICE

7.1 Footprint

Make sure no ground pad is in the keep out area. If PCB is multi layer, please make sure no routing and no ground pad in each layer inside keep out area



unit: mm

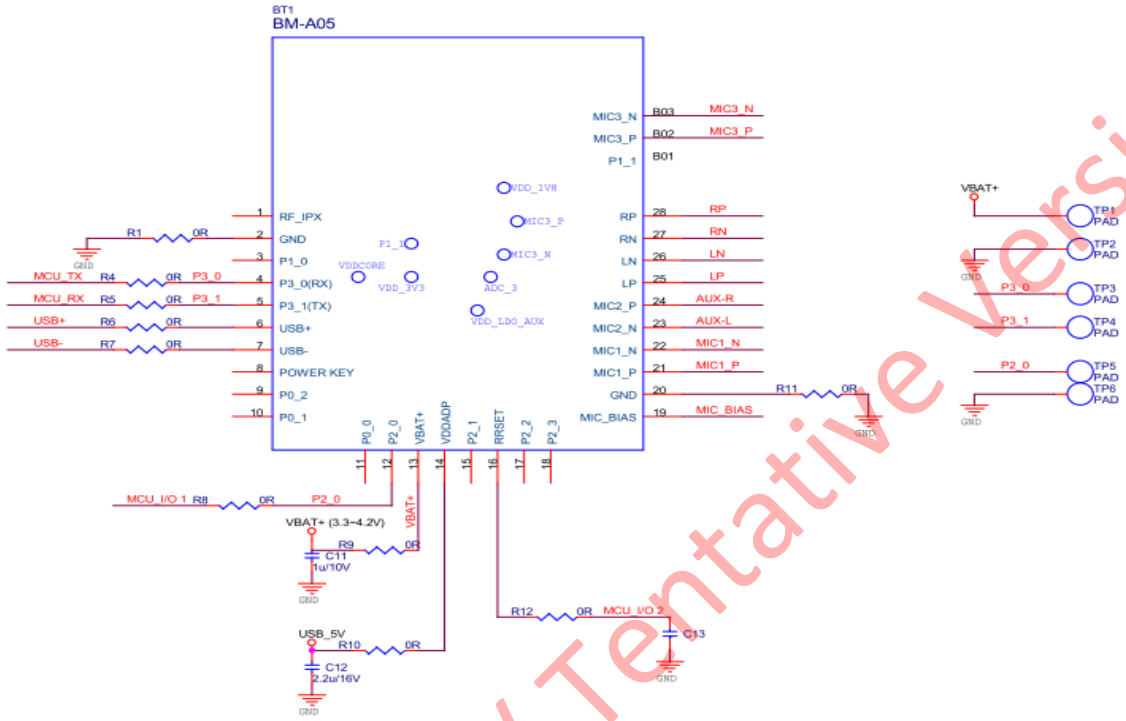
7.2Placement Notice

7.2.1 Place BM-A05 module at the edge of PCB, and antenna side should be placed toward edge of PCB.

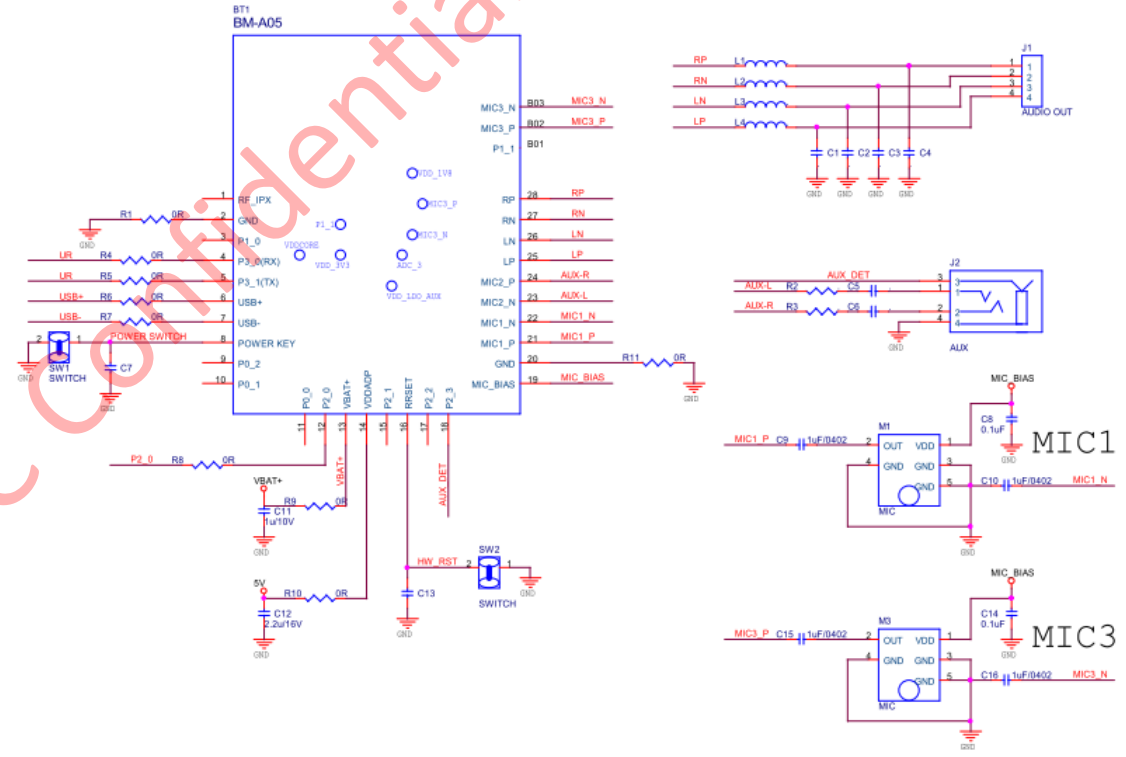
7.2.2 Routing of high speed signal, high voltage signal, crystal signal… under module may affect audio or RF performance. If it is necessary, keep a ground layer between customer's main board and BM-A05 module.

8. REFERENCE CIRCUIT

8.1 Reference Circuit of Triple Dongle



8.2 Reference Circuit of Bluetooth Audio Application



8.3 Design Notice

8.2.1 Firmware Upgrade Interface

Pin4(P3_0), Pin5(P3_1), Pin12(P2_0), Pin13(VBAT+), Pin2 or Pin20(GND) is necessary for firmware upgrade

8.2.2 UART Interface

UART RX: Pin4(P3_0)
UART TX: Pin5(P3_1)

8.2.3USB Audio

USB 5V: Pin14(VDDADP)
USB DP: Pin6(USB+)
USB DM: Pin7(USB-)
USB GND:Pin2 or PIN20(GND)

8.2.3 BLE HID

USB 5V: Pin14(VDDADP)
USB DP: Pin6(USB+)
USB DM: Pin7(USB-)
USB GND:Pin2 or PIN20(GND)

9. SHIPPING PACKAGE

Packed by reel, 800pcs modules per reel (T.B.D)

MOQ 800pcs