



BTA256M

Bluetooth Module Data Sheet

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Revision History

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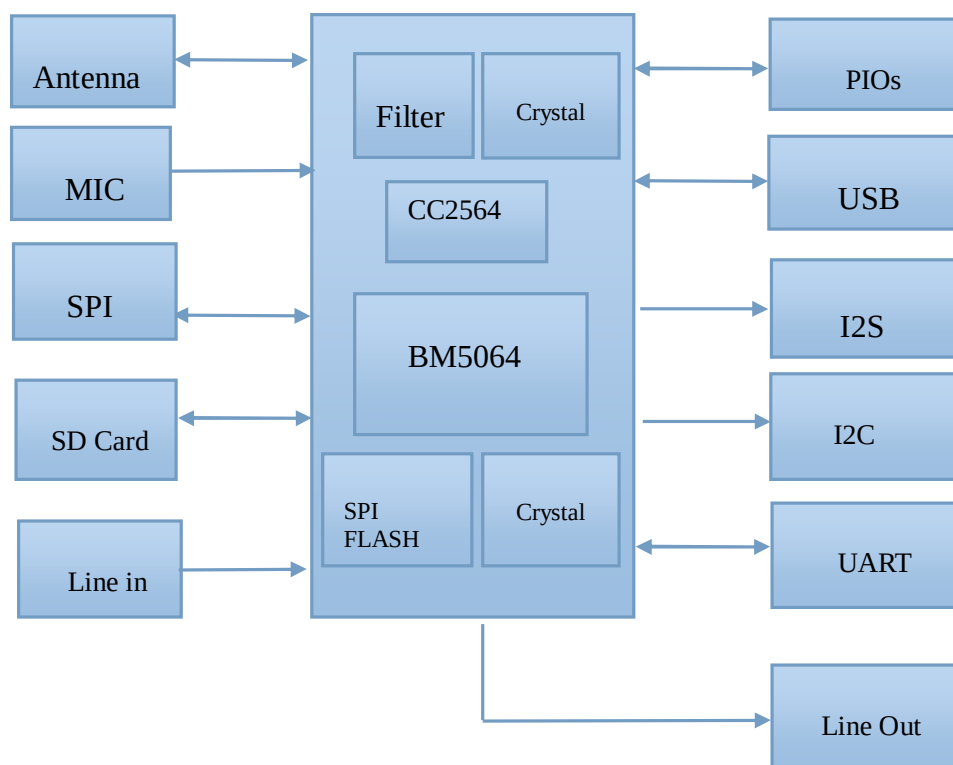
1. INTRODUCTION

The BTA256M Bluetooth® module is a perfect consumer audio solution for wireless applications, such as wireless soundbars, wireless stereo speakers and headphones. It can be connected with any Bluetooth® devices in an operating range. It is slim and light so the designers can have better flexibilities for the product shapes.

The BTA256M Bluetooth® module complies with Bluetooth® specification version 4.0. It supports HSP, HFP, A2DP, AVRCP, SPP, LE....profiles. It integrates an ultra-low-power DSP and application processor with embedded flash memory, a high-performance stereo codec, a power management subsystem in a SOC IC. The dual-core architecture with flash memory enables manufacturers to easily differentiate their products with new features without extending development cycles. It integrates RF Baseband controller, antenna, ... etc. and provides UART interface, programmable I/O, stereo speaker output, microphone input, ... etc.

The detail information of BTA256M Bluetooth® module is presented in this document below.

1.1 Block Diagram





1.2 Features

- ü Small overall dimension(27.9mm x 18mm x 2.5mm)
- ü Bluetooth Specification V4.0(Dual Mode)
- ü Class1.5 support
- ü ARM Cortex-M3,96MHz,SRAM 128KB
- ü Support up to 4Mbits on module SPI flash memory.
- ü Support Firmware Upgrade: USB,SD Card
- ü Physical connection as SMD type
- ü 20-bit audio codec for DAC,16-bt audio codec for ADC
- ü Music Enhancements: SBC
- ü Audio Interfaces: I2S,Line in,Line out,Mic in
- ü Serial Interfaces: UART,USB 2.0,I2C,SPI and SD Card
- ü Support Profiles: SPP,SPP LE,HFP,A2DP,AVRCP,HSP
- ü Built-in RF combo filter, Integrated 26MHz,32.768KHz Crystal
- ü No radio signal interference, support for 802.11 co-existence
- ※ *Some features are optional for customization on demand.*



1.3 Application

- ü Wired or wireless speakers and headphones
- ü Wireless POS machine
- ü Wireless data transmission
- ü Portable health & fitness equipment

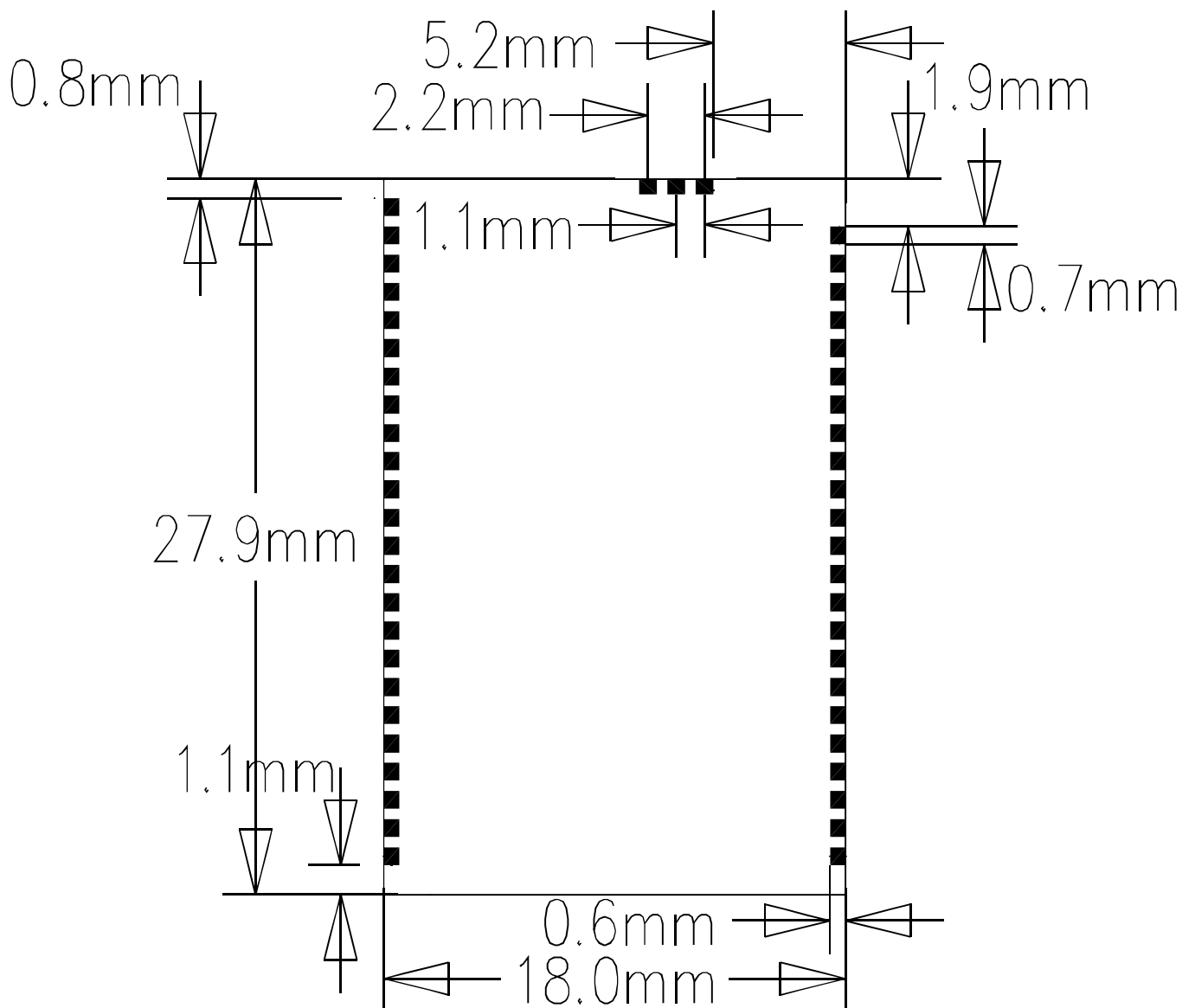


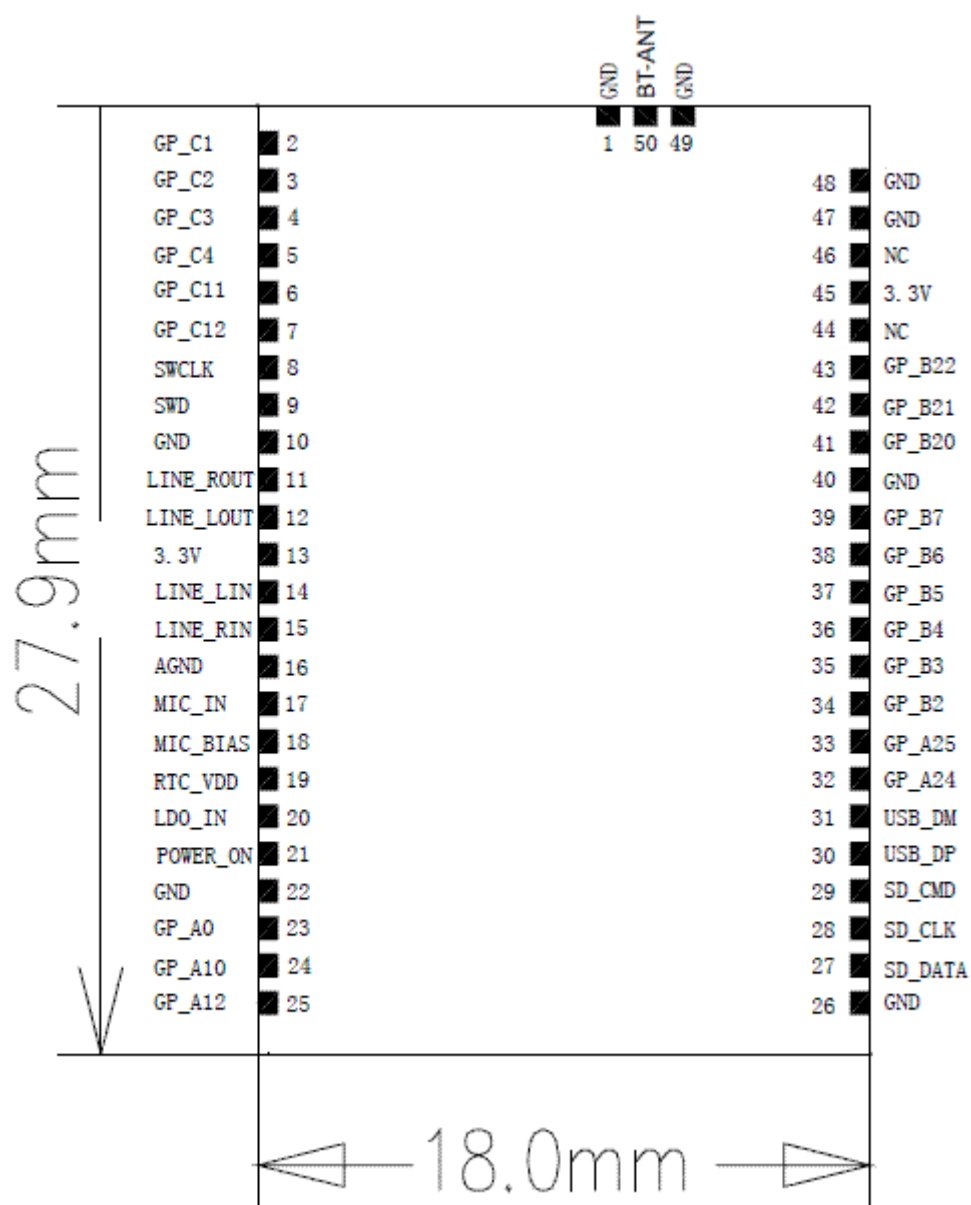
2. GENERAL SPECIFICATION

General Specification				
Chip Set	TI CC2564,MV BM5064			
Module ID	BTA256M			
BT Standard	Bluetooth® V4.0 specification			
Frequency Band	2.402GHz~2.480GHz ISM Band			
Modulation	FHSS,GFSK,DPSK,DQPSK			
Number of channels	79 channels for Classic Bluetooth 40 channels for Bluetooth Low Energy			
Baseband Crystal OSC	26MHz			
RF Input Impedance	50 ohms			
Host Interface	I PIO,UART,I2C,SPI,USB I Line-in,Line-out,Mic in,I2S			
Profile	HSP,HFP,A2DP,AVRCP,SPP,SPP LE			
Operating Environment				
Temperature	-40°C to +85°C			
Humidity	10%~95% Non-Condensing			
Environmental	RoHS Compliant			
Bluetooth Specification				
Characteristics	Condition	TYP	BT Spec.	Unit
Output Power	Class 1.5	9.9	10.5	dBm
Modulation GFSK	dF1 avg	161	140 ~ 175	KHz
	dF2 max	129	>115	KHz
	dF2avg/dF1avg	86	80	%
Modulation EDR @ 8DPSK	RMS DEVM	5	13	%
	%99 DEVM	10	20	%
	Peaj DEVM	12	25	%
Sensitivity @ Dirty Tx On	GFSK@ BER=0.1%	-91	-70	dBm
	Π/4-DQPSK@ BER=0.1%	-91	-70	dBm
	8DPSK@ BER=0.1%	-84	-70	dBm
Maximum Input Level	GFSK@ BER=0.1%	-10	-20	dBm
	Π/4-DQPSK@ BER=0.1%	-10	-20	dBm
	8DPSK@ BER=0.1%	-10	-20	dBm



3. PHYSICAL CHARACTERISTIC







3.1 Pin Description

Pin#	Pin Name	Pad Type	Description
1	GND	GND	GND
2	GP_C1	I/O	GPIO_C1/12m_16m_out2(o)/buart_rts_2(o)
3	GP_C2	I/O	GPIO_C2/ir_2 / wakeup8(i)
4	GP_C3	I/O	GPIO_C3/uart_txd_2(o)
5	GP_C4	I/O	GPIO_C4/uart_rxd_2(i)
6	GP_C11	I/O	GPIO_C11/i2s_do_1(o) / pcm_do_2(o)
7	GP_C12	I/O	GPIO_C12/i2s_din_1(i) / pcm_din_2(i)
8	SWCLK	I/O	GPIO_C13/swclk (i)
9	SWD	I/O	GP_C14/swd (io)
10	GND	GND	GND
11	LINE_ROUT	ANALOG	R-channel Audio analog output
12	LINE_LOUT	ANALOG	L-channel Audio analog output
13	3.3V	POWER	3.3V Power supply
14	LINE_LIN	ANALOG	R-channel Audio analog input
15	LINE_RIN	ANALOG	L-channel Audio analog input
16	AGND	GND	Analog Ground
17	MIC_IN	ANALOG	MIC input
18	MIC_BIAS	POWER	Microphone bias voltage output
19	RTC_VDD	POWER	Power supply for RTC
20	LDO_IN	POWER	Power supply for internal LDO
21	POWER_ON	ANALOG	Power on key input
22	GND	GND	GND
23	GP_A0	I/O	pwm0_0(o)/uart_txd_0(o)/lcd_d0(io)
24	GP_A10	I/O	pwm3_0(o) / pwc_0(i) / ir_0(i) / reset(i) / wakeup0(i)



25	GP_A12	I/O	12m_16m_out0(o) / buart_rts_0(o) / lcd_wr(o)
26	GND	GND	GND
27	SD_DATA	I/O	sd_dat_1(io) / spim_miso_1(i)
28	SD_CLK	I/O	sd_clk_1(o) / spim_clk_1 (o)
29	SD_CMD	I/O	sd_cmd_1(io) / spim_mosi_1 (o)
30	USB_DP	I/O	OTG USB2_DP
31	USB_DM	I/O	OTG USB2_DM
32	GP_A24	I/O	USB1_DP/buart_rxd_1(i)
33	GP_A25	I/O	USB1_DM/buart_txd_1(o)
34	GP_B2	I/O	mclk_out_0(o) / mclk_in_0(i)
35	GP_B3	I/O	i2s_lrck_0(io) / pcm_sync_0(io) / spim_miso_2(i)
36	GP_B4	I/O	i2s_bclk_0(io) / pcm_clk_0(io) / spim_clk_2(o)
37	GP_B5	I/O	i2s_do_0(o) / pcm_do_0(o) / spim_mosi_2(o)
38	GP_B6	I/O	i2s_din_0(i) / pcm_din_0(i) / uart_rxd_1(i)
39	GP_B7	I/O	uart_txd_1(o) / ir_1(i) / pwm5_0(o)
40	GND	GND	GND
41	GP_B20	I/O	spim_mosi_3(o) / spis_mosi(i) / pwm7_1(o)
42	GP_B21	I/O	spim_clk_3(o) / spis_clk(i) / pwm6_1(o)
43	GP_B22	I/O	spim_miso_3(i) / spis_miso(o) / pwm5_1(o)
44	NC	NC	NC
45	3.3V	POWER	3.3V Power supply
46	NC	NC	NC
47	GND	GND	GND
48	GND	GND	GND
49	GND	GND	GND
50	BT_ANT	RF Port	RF IN/OUT

4. REFERENCE SCHEMATIC

Next page for detail(TBD)





5. ELECTRICAL CHARACTERISTIC

5.1 Absolute Maximum Rating

Absolute Maximum Ratings	Min	Max	Unit
Power supply Voltage (VBAT)	-0.5	+4.0	V
Voltage of I/O pins	-0.5	+3.6	V
Storage Temperature	-55	+125	°C

5.2 Recommended Operating Conditions

Recommended Operating Conditions	Min	TYP	Max	Unit
Power supply Voltage (VBAT)		3.3	3.6	V
Voltage of I/O pins	0	3.3	3.6	V
Operating Temperature	-30	25	75	°C

5.3 Input/output Terminal Characteristics

I/O pins	Test Conditions	Min	Max	Unit
Logic input low, V_{IL}		0	0.75	V
Logic input high, V_{IH}		2.1	3.6	V
Logic output low, V_{OL}	6mA	0	0.6	V
Logic output high, V_{OH}	6mA	2.7	3.3	V



5.4 Powr Consumption

Test conditions: VBAT=3.3V; Temp=25 °C

Current @ VBAT

Item	Typ.(Target)	Max.	Unit
idle + sleep	0.04		mA
ACL	27		mA
ACL sniff	6.8		mA
ACL sniff + sleep	0.04	0.6 (peak)	mA
eSCO 2EV3(ACL connection on)	30		mA
eSCO 2EV3 + ACL sniff	13.5		mA
eSCO 2EV3 + ACL sniff + sleep	11.1	12.2	mA
Inquiry_scan and page_scan	398		μA
Inquiry_scan	99		μA
page_scan	256		μA
Adertising,nonconnectable (one time/1s)	107		μA
Adertising,discoverable (one time/1s)	113		μA
Scanning (one time/1s)	319		μA
Connected (master role) (one time/500ms)	125		μA



5.5 RF Characteristics

Receiver		Average	Bluetooth Spec	Transmitter		Average	Bluetooth Spec	Unit
Sensitivity at 0.1 Ber	2402MHz	-86	<=-70	Output Power	2402MHz	9.7	<=10dBm	dBm
	2441MHz	-85			2441MHz	9.5		dBm
	2480MHz	-87			2480MHz	9.5		dBm

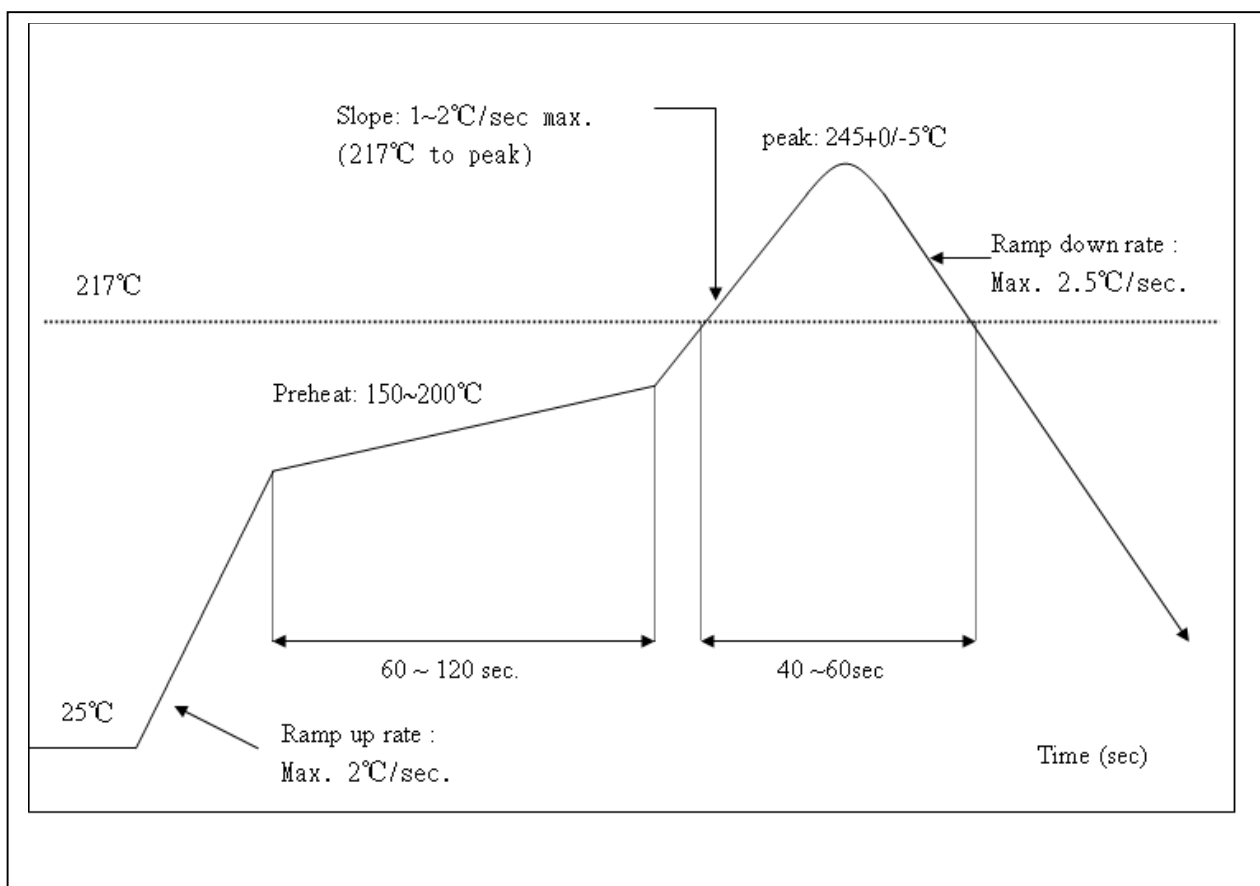


6. RECOMMENDED TEMPERATURE REFLOW PROFILE

The soldering profile depends on various parameters necessitating a set up for each application. The data here is given only for guidance on solder reflow.

Peak Temperature : $<250^{\circ}\text{C}$

Number of Times : _2 times





7. PACKAGING INFORMATION

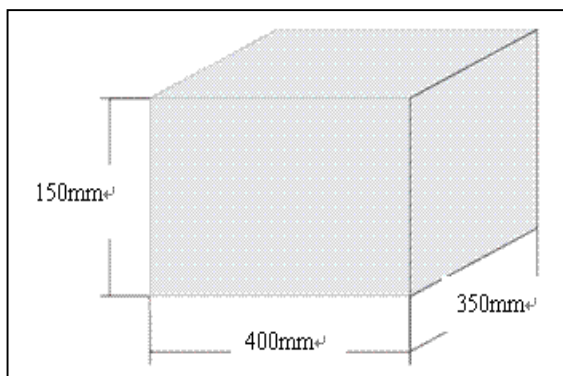
1. BLUETOOTH® Module: BTA256M



2. Assembly



3. Dimension



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