JS-BTM658

JIASHI Bluetooth Module Data Sheet

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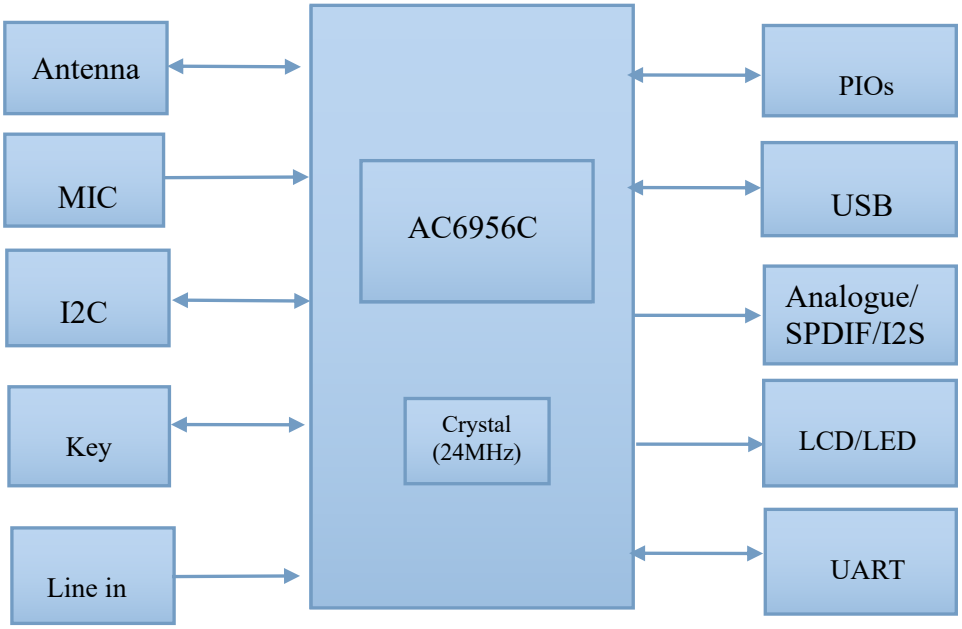
Revision History

Date	Version	Description	Author
2023-5-22	V1.0	■ First release	

CONTENT

1. INTRODUCTION

1.1 Block Diagram



1.2 Features

- ✓ Small overall dimension (13.5 * 20 * 3.0 mm)
- ✓ Based on JIELI chip set AC6956C
- ✓ Compliant with Bluetooth V5.3+BR+EDR+BLE specification
- ✓ 32-bit DSP supports hardware Float Point Unit(FPU)
- ✓ Up to 240MHz programmable processor
- ✓ SBC, AAC Audio decodes supported for BT audio
- ✓ Supports MP2, MP3, WMA, APE, FLAC,AAC, MP4, M4A, WAV, AIF, AIFC audio decoding
- ✓ One analog MIC amplifier, build-in MIC bias generator
- ✓ Supports two PDM digital MIC inputs
- ✓ Meet class1 class2 and class3 transmitting power requirement
- ✓ Support GFSK and π/4 DQPSK all paket types
- ✓ Fast AGC for enhanced dynamic range
- ✓ Supports a2dp\avctp\avdtp\avrcp\hfp\spp\smp\att\gap\gatt\rfcomm\sdp\l2cap profile
- ✓ One full speed USB 2.0 OTG controller
- ✓ Three full-duplex basic UART, UART0 and UART1 supports DMA mode
- ✓ Low voltage LDO for internal digital and analog circuit supply

※ ***Some features are optional for customization on demand.***

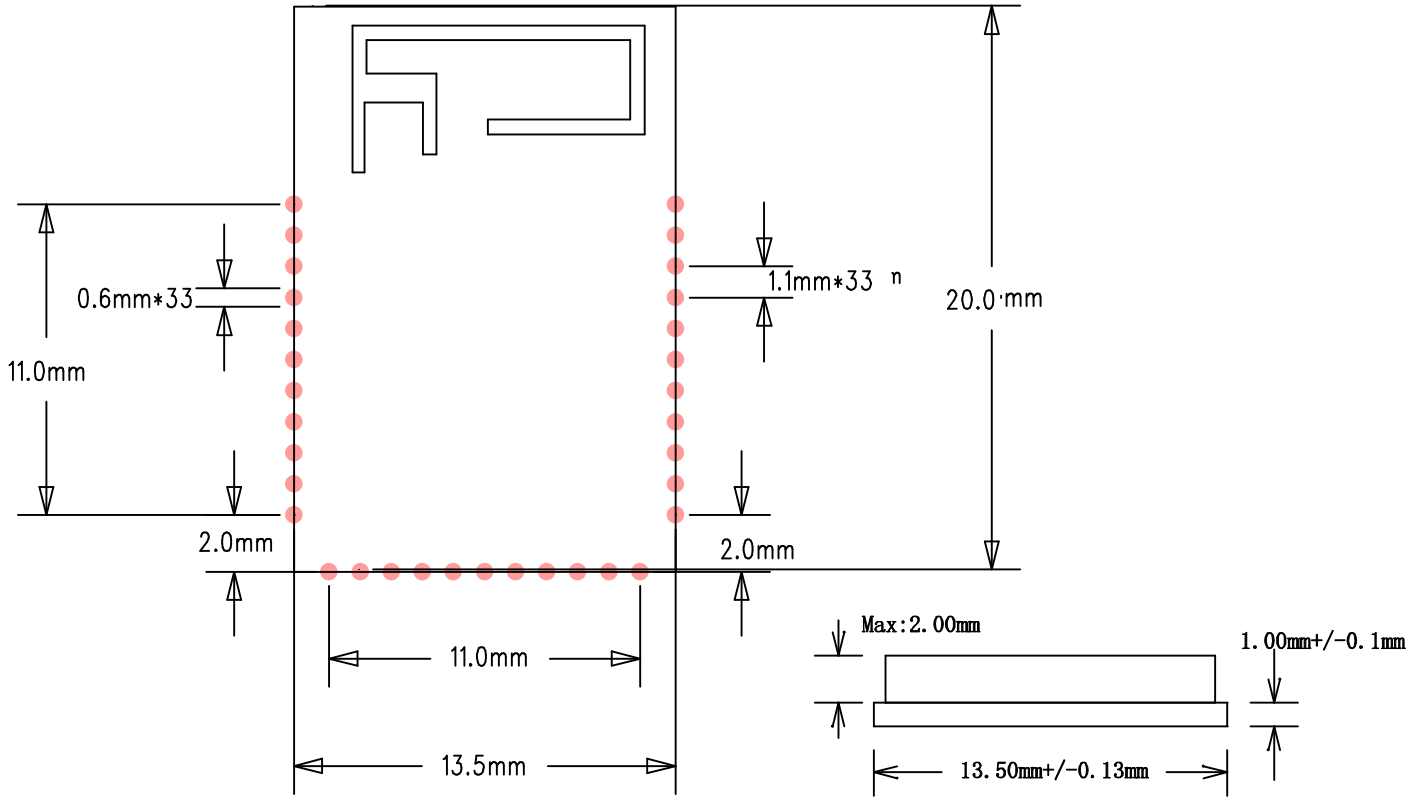
1.3 Application

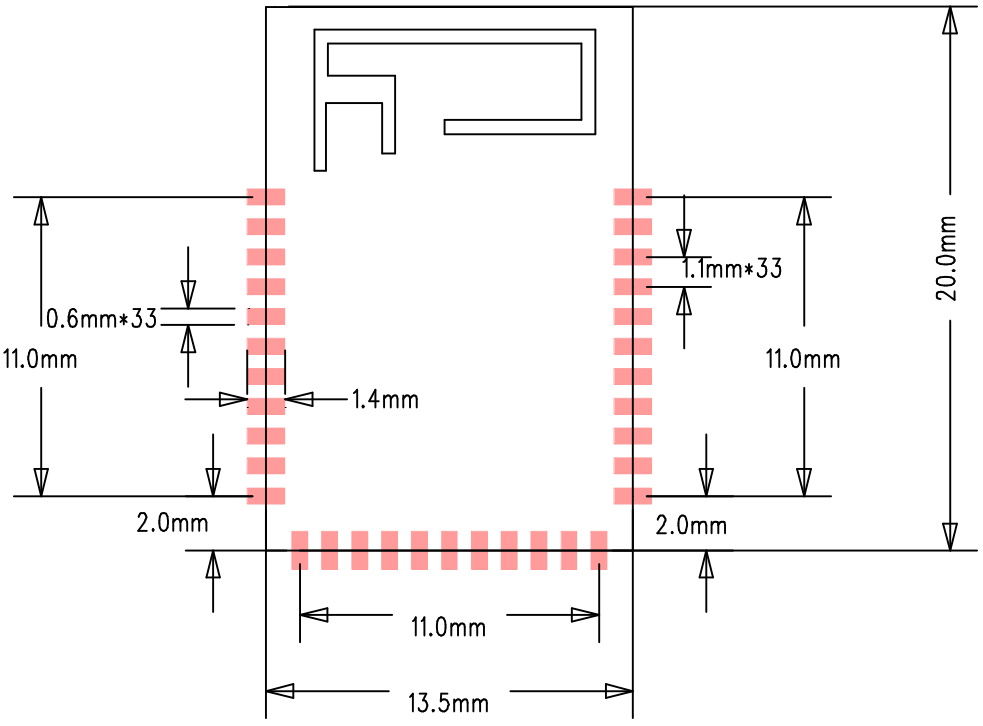
- ✓ Bluetooth Stereo Sound Box
- ✓ Bluetooth Mono Sound Box
- ✓ Bluetooth TWS Sound Box
- ✓ Massage chair
- ✓ Electric bicycle
- ✓ Golf cart
- ✓ Running Machine
- ✓ Eye massage instrument
- ✓ Helmet
- ✓ Lamp/Lighting

2. GENERAL SPECIFICATION

Bluetooth Specification	
Chip Set	AC6956C
Module ID	JS-BTM658
BT Standard	Bluetooth® V5.3 specification
RF TX Output Power	-6~6dBm (typical)
RX Sensitivity	-88dBm (typical)
Frequency Band	2.402GHz~2.480GHz ISM Band
Modulation Type	GFSK,π/4 DQPSK,8DPSK
Channel No.	79(for Classic),40(for BLE)
Baseband Crystal OSC	24MHz
Hopping	1600hops/sec, 1MHz channel space
RF Input Impedance	50 ohms
Environmental	RoHS Compliant

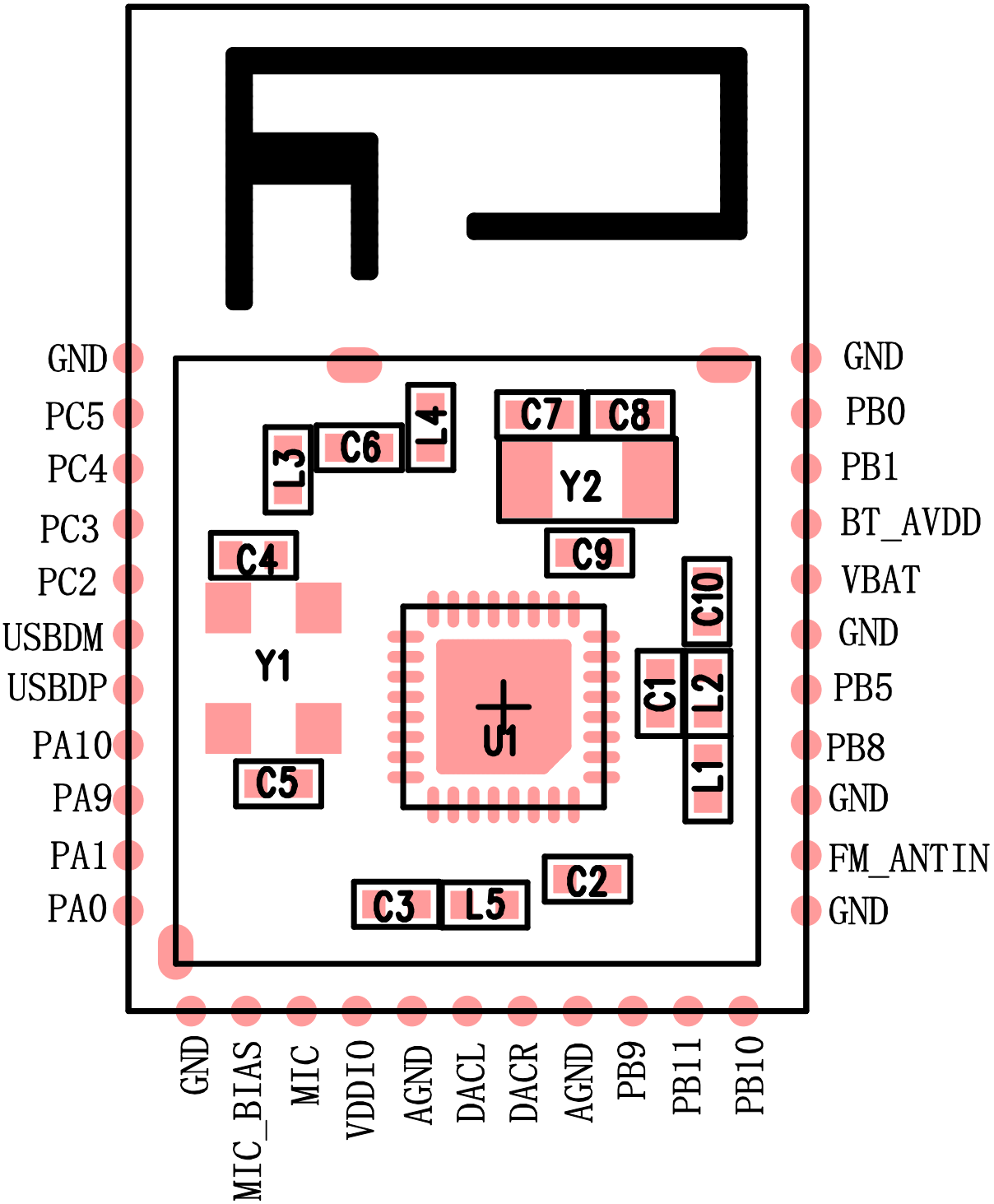
3. PHYSICAL CHARACTERISTIC





备注:

模块拼板连接处,实际分板存在毛边,生产工艺对毛边尺寸控制为:正 0.6mm


GND
PC5
PC4
PC3
PC2
USBDM
USBDP
PA10
PA9
PA1
PA0
GND
PB0
PB1
BT_AVDD
VBAT
GND
PB5
PB8
GND
FM_ANTIN
GND
GND
MIC_BIAS
MIC
VDDIO
AGND
DACL
DACR
AGND
PB9
PB11
PB10
C6
L4
L3
C7
C8
Y2
C4
C9
C10
C1
L2
L1
Y1
U1
C5
C3
L5
C2

3.1 Pin Description

Pin#	Pin Name	Pad Type	Description
1	GND	Ground	Ground
2	PC5	GPIO	SD1CLKA：SD1 Clock(A); SPI1DOB：SPI1 Data Out(B); UART2RXD：Uart2 Data In(D); IIC_SDA_B：IIC SDA(B); ADC13：ADC Input Channel 13; PWMCH5L：Motor PWM Channel5(L)；
3	PC4	GPIO	SD1CMDA：SD1 Command(A); SPI1CLKB：SPI1 Clock(B); UART2TXD：Uart2 Data Out(D); IIC_SCL_B：IIC SCL(B); ADC10：ADC Input Channel 10; PWMCH5H：Motor PWM Channel5(H)；
4	PC3	GPIO	SD1DAT0A：SD1 Data0(A); SPI1DIB：SPI1 Data In(B);
5	PC2	GPIO	SD1DAT1A：SD1 Data1(A); ALNK1_DAT0：Audio Link Data0; Touch12：Touch Input Channel 12; FPIN5：Motor Auto-Stop Protective Pin5；
6	USB_DM	USB Negative Data (pull down)	UART1RXD：Uart1 Data In(D); IIC_SDA_A：IIC SDA(A);
7	USB_DP	USB Negative Data (pull down)	UART1TXD：Uart1 Data Out(D); IIC_SCL_A：IIC SCL(A); ADC12：ADC Input Channel 12;
8	PA10	GPIO	SD0CLKA：SD0 Clock(A); ALNK0_LRCKB：Audio Link Word Select(B); ADC3：ADC Input Channel 3; SPDIF_IN_B：Sony/Philips Digital Interface Input(B) TMR1：Timer1 Clock Input; Touch9：Touch Input Channel 9; UART2RXB：Uart2 Data In(B); PWMCH4L：Motor PWM Channel4(L)；
9	PA9	GPIO	SD0CMA：SD0 Command(A); ALNK0_SCLKB：Audio Link Serial Clock(B); SPDIF_IN_A：Sony/Philips Digital Interface Input(A) Touch8：Touch Input Channel 8; UART2TXB：Uart2 Data Out(B); PWMCH4H：Motor PWM Channel4(H)；
10	PA1	GPIO	AMUX0R：Analog Channel0 Right; Touch1：Touch Input Channel 1; ADC0：ADC Input Channel 0; UART1RXC：Uart1 Data In(C); PWMCH0L：Motor PWM Channel0(L)；
11	PA0	GPIO	AMUX0L：Analog Channel0 Left;

			Touch0：Touch Input Channel 0; CLKOUT0： UART1TXC：Uart1 Data Out(C); PWMCH0H：Motor PWM Channel0(H)；
12	GND	Ground	Ground
13	MIC_BIAS	GPIO	MIC_BIAS：Microphone Bias Output
14	MIC	Analog	MIC：MIC Input Channel;
15	VDDIO	Supply	IO Power 3.3v
16	AGND	Ground	Analog Ground
17	DACL	/	DAC Left Channel
18	DACR	/	DAC Right Channel
19	AGND	Ground	Analog Ground
20	PB9	GPIO	AMUX2L：Analog Channel2 Left; SPI2CLKA：SPI2 Clk(A); CAP0：Timer0 Capture; UART2TXC：Uart2 Data Out(C); PWMCH3H：Motor PWM Channel3(H)；
21	PB11	GPIO	SDPG:SDC Power Gate; SPDIF_OUT：Sony/Philips Digital Interface Out
22	PB10	GPIO	AMUX2R：Analog Channel2 Right; SPI2DOA：SPI2 Data Out(A); ADC9：ADC Input Channel 9; UART2RXC：Uart2 Data In(C); PWMCH3L：Motor PWM Channel3(L)；
23	GND	Ground	Ground
24	FM_ANTIN	/	FM Single Input
25	GND	Ground	Ground
26	PB8	GPIO	AMUX1R：Analog Channel1 Right; SPI2_DIA：SPI2 Data In(A); ADC8：ADC Input Channel 8; CLKOUT1：Clk Out1;
27	PB5	GPIO (High Voltage Resistance)	PWM3：Timer3 PWM Output; CAP1：Timer1 Capture; UART0TXC：Uart0 Data Out(C); UART0RXC：Uart0 Data In(C);
28	GND	Ground	Ground
29	VBAT	Supply	Power Supply
30	BT_AVDD	Supply	BT Power

31	PB1	GPIO (pull up)	Long Press Reset； SPI1DOA：SPI1 Data Out(A); ADC5：ADC Input Channel 5; TMR2：Timer2 Clock Input; UART1RXA：Uart1 Data In(A);
32	PB0	GPIO (High Voltage Resistance)	SPI1CLKA：SPI1 Clock(A); UART1TXA：Uart1 Data Out(A); PWMCH1H：Motor PWM Channel1(H)；
33	GND	Ground	Ground

4.ELECTRICAL CHARACTERISTIC

4.1 Absolute maximum ratings

Symbol	Description	Min	Max	Unit
Tamb	Ambient Temperature	-20	+70	℃
Tstg	Storage temperature	-65	+150	℃
VBAT	Supply Voltage	2.2	5.5	V
LDO_IN	Charger Voltage	4.5	5.5	V
$V_{3.3IO}$	3.3V IO Input Voltage	-0.3	VDDIO+0.3	V

4.2 Battery Charge

Symbol	Description	Min	Typ	Max	Unit	Test Conditions
LDO_IN	Charge Input Voltage	4.5	5	5.5	V	
V_{Charge}	Charge Voltage	4.15	4.2	4.25		
I_{Charge}	Charge Current	20		320	mA	Charge current at fast charge mode
I_{Trikl}	Trickle Charge Current	20	45	70	mA	$V_{BAT}<V_{Trikl}$

4.3 DAC Characteristics

Parameter	Min	Typ	Max	Unit	Test Conditions
Frequency Response	20	_	20K	V	1KHz/0dB 10Kohm loading With A-Weighted Filter
THD+N	_	-75	_	dB	
S/N	_	95	_	dB	
Crosstalk	_	-90	_	dB	
Output Swing		1		Vms	
Dynamic Range		90		dB	1KHz/-60dB 10Kohm loading With A-Weighted Filter
DAC Output Power	11		_	mW	32ohm loading

4.4 ADC Characteristics

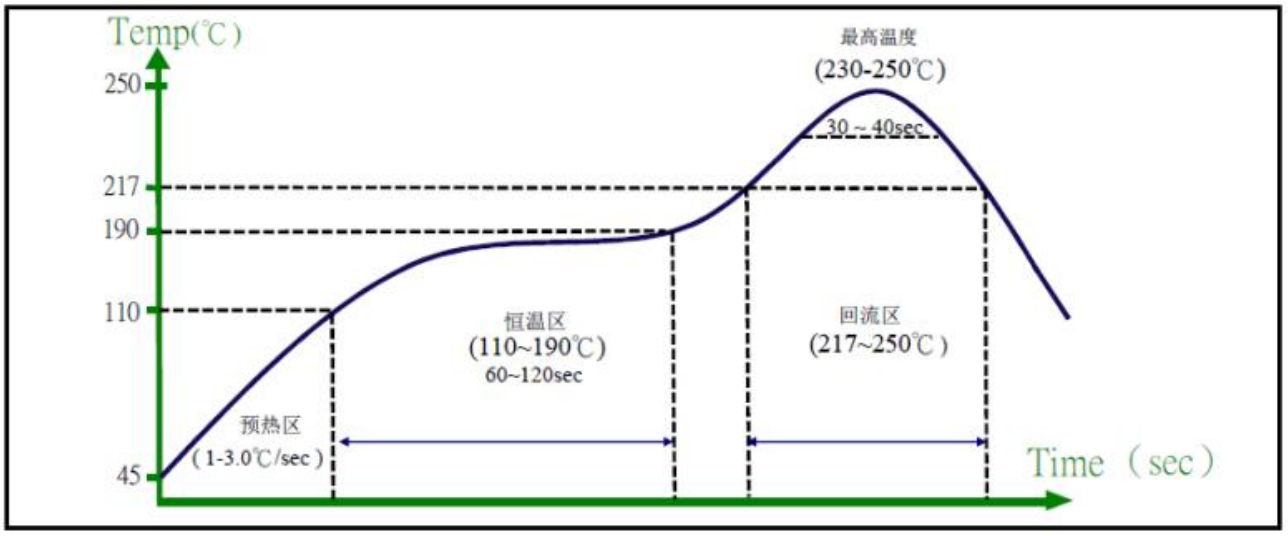
Parameter	Min	Typ	Max	Unit	Test Conditions
Dynamic Range		80		dB	1KHz/-60dB
S/N	_	90	91	dB	1KHz/-60dB
THD+N	_	-70	_	dB	1KHz/-60dB
Crosstalk	_	-80	_	dB	1KHz/-60dB

4.5 RF characteristics

Receiver		Average	Bluetooth Spec	Transmitter		Average	Bluetooth Spec	Unit
Sensitivity at0.1 BER	2402MHz	-88	<=-70	Output Power	2402MHz	2.5	-6~+4	dBm
	2441MHz	-88			2441MHz	2.5		dBm
	2480MHz	-88			2480MHz	2.5		dBm

5. REFLOW PROFILE

Reflow number of times: ≤ 2times



温度范围与要求

1. 预热区:60-90℃以下,升温率1 - 3.0℃/sec
2. 恒温区: 110-190℃时间为 60 - 120sec
3. 217℃以上: 30 - 90sec
4. 230℃ - 250℃ 时间为 30 -40sec
5. 最高温度: 230℃ - 250℃.

6. PACKAGING INFORMATION

1. BLUETOOTH® Module: JS-BTM658