BL-M8852BS2

802.11ax 1200Mbps WLAN + BT v5.2

SDIO Module Specification

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（Top View）

（Bottom View）

Module Name: BL-M8852BS2	
Module Type: 802.11a/b/g/n/ac/ax 1200Mbps WLAN + Bluetooth v5.2 Combo SDIO Module	
Revision: V1.0	
Customer Approval:	
Company:	
Title:	
Signature:	Date:
LB-link Approval:	
Title:	
Signature:	Date:

Revision History

Revision	Summary	Release Date	Revised By
0.1	Initial release	2022-10-18	
1.0	official version	2022-12-12	
1.0	Content optimization	2023-03-17	Qx

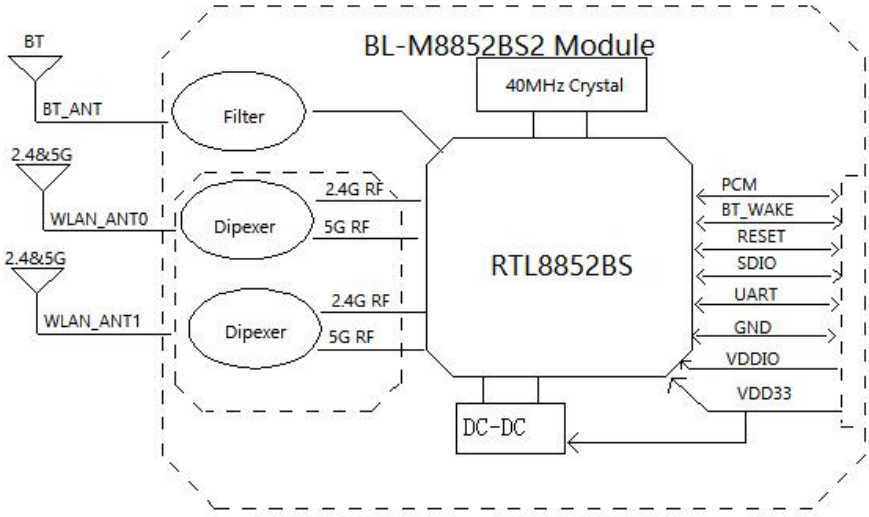
1.Introduction

The BL-M8852BS2 is a highly integrated Dual-band WLAN + Bluetooth Combo module. It combines a 2T2R Dual-band WLAN subsystem with SDIO3.0 interface controllers and a Bluetooth v5.2 subsystem with UART interface controller. The module compatible IEEE 802.11a/b/g/n/ac/ax standard and provides the maximum PHY rate up to 1201Mbps, it supports Bluetooth dual mode with v5.2/v4.2/v2.1 compliant. The module provides a complete solution for high-performance integrated WALN and Bluetooth devices such as OTT Boxes, Set-top Boxes, HD Cameras, etc.

1.1 Features

- 50pin half hole pads with 13.1*15.1*2.1mm ultra small profile
- Operating Frequencies: 2.4~2.4835GHz or 5.15~5.85GHz
- Support Dual-band 2T2R mode with 20/40/80Mhz bandwidth
- Support 802.11ax with OFDMA and MU-MIMO
- Dual Mode Bluetooth support: Simultaneous LE and BR / EDR
- DC 3.3V main power supply and 3.3V/1.8V IO power supply

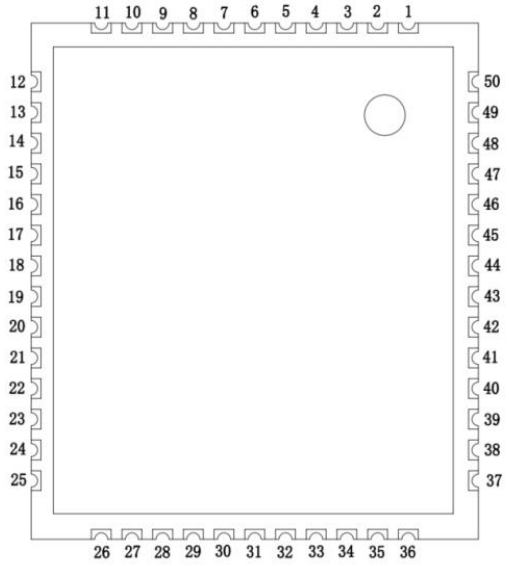
1.2 Block Diagram



1.3 General Specifications

Module Name	BL-M8852BS2
Chipset	RTL8852BS-CG
WLAN Standards	IEEE802.11a/b/g/n/ac/ax
Host Interface	SDIO for WLAN & UART for BT
Antenna	Connect to external antennas through the half hole
Dimension	15.1*13.1*2.10mm (L*W*H)
Power Supply	VDD33=3.3V±0.2V@1000 mA (Max) VDDIO=3.3V±0.2V / 1.8V±0.1V
Operation Temperature	-20℃ to +70℃
Operation Humidity	10% to 95% RH (Non-Condensing)

2. Pin Assignments



(TOP View)

2.1 Pin Definition

No	Pin Name	Type	I/O Level	Module Pin Description
1	GND	RF		RF Ground connections
2	ANT1	RF		2.4G / 5G RF PAD for WLAN_ANT1

3	GND	RF		RF Ground connections
4	GND	RF		RF Ground connections
5	GND	RF		RF Ground connections
6	GND	RF		RF Ground connections
7	GND	RF		RF Ground connections
8	GND	RF		RF Ground connections
9	ANT0	RF		2.4G / 5G RF PAD for WLAN_ANT0
10	GND	RF		RF Ground connections
11	GND	RF		RF Ground connections
12	BT_ANT	RF		2.4G RF PAD for BT_ANT
13	GND	RF		RF Ground connections
14	GPIO5	I/O	VDDIO	Shared with GPIO5. Power on Trap Pin : Do not pull it high before T_{Trap_Ready} (500ms Typical)
15	SD_RESET	I	VDDIO	Shared with GPIO9. This pin can externally shut down the WLAN function when SD_RESET is pulled low. When this pin is pulled low, SDIO interface will be disabled. We suggest configuring the control pin in Host side as open drain output. (Reserved UART_RXD for BQB test)
16	WL_WAKE_HOST	O	VDDIO	Shared with GPIO10. This WLAN device to wake-up Host output
17	SD_CMD	I/O	VDDIO	SDIO command line
18	SD_CLK	I	VDDIO	SDIO clock line
19	SD_D3	I/O	VDDIO	SDIO data3 line
20	SD_D2	I/O	VDDIO	SDIO data2 line
21	SD_D0	I/O	VDDIO	SDIO data0 line
22	SD_D1	I/O	VDDIO	SDIO data1 line
23	GND	P		Ground connections
24	NC	/		NC
25	NC	/		NC
26	NC	/		NC
27	PCM_SYNC	I/O	VDDIO	Shared with GPIO2. Power on Trap Pin. PCM Synchronization control input(Slave mode) / output(Master mode).
28	PCM_IN	I	VDDIO	Shared with GPIO0. PCM data Input. Power on Trap :

				GPIO0~4 is mode select T_{Trap_Ready}=500ms(Typical) 0: Normal operation mode 1: Test/debug mode
29	PCM_OUT	O	VDDIO	Shared with GPIO1. Power on Trap Pin. PCM data Out
30	PCM_CLK	I/O	VDDIO	Shared with GPIO3. Power on Trap Pin. PCM Clock input(Slave mode) / output(Master mode)
31	NC	/		NC
32	GND	P		Ground connections
33	NC	/		NC
34	VDDIO	P		1.8V±0.1V or 3.3V±0.2V power for SDIO interface and other I/Os
35	NC	/		NC
36	VDD33	P		3.3V Main Power Supply
37	NC	/		NC
38	BT-DIS	I	VDDIO	Shared with GPIO11. This pin can externally shut down the BT function when BT-DIS is pulled Low. When this Pin is pulled low, UART interface will be also disabled. This pin can be also defined as the BT Radio-off function with host interface remaining connected. (Reserved UART_TXD for BQB test)
39	GND	P		Ground connections
40	UART_TXD	O	VDDIO	UART data out
41	UART_RXD	I	VDDIO	UART data input
42	UART_RTS	O	VDDIO	UART RTS out
43	UART_CTS	I	VDDIO	UART CTS input
44	WL-DIS	I	VDDIO	Shared with GPIO15. This pin can be defined as the WLAN Radio-off function with host interface remaining connected. When this pin is pulled low, WLAN Radio will be disabled
45	GPIO4	I	VDDIO	Shared with GPIO4. Power on Trap Pin
46	GND	P		Ground connections
47	SUSCLK	I	VDDIO	External 32K clock input. Power on Trap Pin : Do not pull it high before T_{Trap_Ready} (500ms Typical)
48	GND	P		Ground connections
49	HOST_WAKE_BT	I	VDDIO	Shared with GPIO13. The Host to wake-up this BT device input
50	BT_WAKE_HOST	O	VDDIO	Shared with GPIO14. This BT device to wake-up Host output

P: Power or Ground; I/O: In/Output; I: Input; O :Output; O/D:Open Drain Output;
RF: Analog RF Port or RF Ground;

3. Electrical and Thermal Specifications

3.1 Recommended Operating Conditions

Parameters		Min	Typ	Max	Units
Ambient Operating Temperature		-20	25	70	℃
External Antenna VSWR			1.7	2	/
Supply Voltage	VDD33	3.1	3.3	3.5	V
	VDDIO/3.3V	3.1	3.3	3.5	V
	VDDIO/1.8V	1.7	1.8	1.9	V

3.2 Digital 3.3V IO DC Specifications

Symbol	Parameter	Min	Typ	Max	Units
VIH	Input High Voltage	2.0	3.3	3.6	V
VIL	Input Low Voltage	--	0	0.09	V
VOH	Output High Voltage	2.97	--	3.3	V
VOL	Output Low Voltage	0	--	0.33	V

3.3 Digital 1.8V I/O DC Specifications

Symbol	Parameter	Min	Typ	Max	Units
VIH	Input High Voltage	1.26	1.8	3.6	V
VIL	Input Low Voltage	--	0	0.8	V
VOH	Output High Voltage	1.62	--	1.8	V
VOL	Output Low Voltage	0	--	0.18	V

3.4 Current Consumption

Conditions : VDD33&VDDIO=3.3V ; Ta:25℃			
Use Case	VDD33 Current)		
	Typ(I_{RMS})	MAX(I_{Peak})	Units
WLAN&BT Unassociated (Linux Driver)	151	740	mA
2.4G WLAN TCP throughput TX 90Mbps (Linux Driver)	302	740	mA
5G WLAN TCP throughput TX 90Mbps (Linux Driver)	396	930	mA
2.4G 11b@1Mbps TX@18dBm (1RF test)	449	508	mA
2.4G 11b@1Mbps RX (1RF test)	178	204	mA
2.4G 11g@6Mbps TX@18dBm (1RF test)	397	508	mA
2.4G 11n@HT20_MCS8 TX@18dBm (2RF test)	558	812	mA
2.4G 11n@HT40_MCS15 TX@16dBm (2RF test)	294	748	mA
2.4G 11ax@HE40_MCS0 TX@16dBm (2RF test)	439	740	mA
2.4G 11ax@HE40_MCS11 TX@15dBm (2RF test)	304	748	mA
2.4G 11ax@HE40_MCS11 RX (2RF-Test)	190	228	mA
5G 11a@54Mbps TX@17dBm (1RF test)	681	860	mA
5G 11a@54Mbps RX (1RF-Test)	175	296	mA
5G 11n@HT20_MCS0 TX@17dBm (1RF test)	645	850	mA
5G 11ac@VHT80_MCS0 TX@17dBm (2RF test)	436	868	mA
5G 11ax@HE80_MCS0 TX@16dBm (2RF test)	430	844	mA
5G 11ax@HE80_MCS0 RX (2RF-Test)	200	236	mA
5G 11ax@HE80_MCS11 TX@15dBm (2RF test)	328	868	mA
5G 11ax@HE80_MCS11 RX (2RF-Test)	200	236	mA
BT			
DH1 TX(RF-Test) @5dBm	240	268	mA
3DH1 TX(RF-Test) @5dBm	240	268	mA
LE 1M TX(RF-Test) @5dBm	229	268	mA
LE 2M TX(RF-Test) @5dBm	215	268	mA
LE 2M RX(RF-Test)	215	244	mA

4. WLAN & Bluetooth RF Specifications

4.1 2.4G WLAN RF Specification

Conditions : VDD33=3.3V ; Ta:25℃	
Features	**Description**
WLAN Standard	IEEE 802.11b/g/n/ax, CSMA/CA
Frequency Range	2.4~2.4835GHz (2.4GHz ISM Band)
Channels	Ch1~Ch13 (For 20MHz Channels)
Modulation	802.11b (DSSS): CCK, DQPSK, DBPSK; 802.11g (OFDM): BPSK, QPSK, QAM16, QAM64; 802.11n (OFDM): BPSK, QPSK, QAM16, QAM64; 802.11ax (OFDMA): BPSK, BPSK_DCM, QPSK, QPSK_DCM, QAM16, QAM16_DCM, QAM64, QAM256, QAM1024;
Data Rate	802.11b: 1, 2, 5.5, 11Mbps; 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps; 802.11n (HT20): MCS0~MCS7(1T1R_SISO) 6.5~72.2Mbps; 802.11n (HT20): MCS8~MCS15(2T2R_MIMO) 13~144.4Mbps; 802.11n (HT40): MCS0~MCS7(1T1R) 13.5~150Mbps; 802.11n (HT40): MCS8~MCS15(2T2R) 27~300Mbps; 802.11ax (HE_MU,26~242RU): MCS0~MCS11(1T1R) 0.4~143.4Mbps; 802.11ax (HE_MU,26~242RU): MCS0~MCS11(2T2R) 0.8~286.8Mbps; 802.11ax (HE_SU, non-OFDMA 20MHz): MCS0~MCS11(1T1R) 3.6~143.4Mbps; 802.11ax (HE_SU, non-OFDMA 20MHz): MCS0~MCS11(2T2R) 7.3~286.8Mbps; 802.11ax (HE_SU, non-OFDMA 40MHz): MCS0~MCS11(1T1R) 7.3~286.8Mbps; 802.11ax (HE_SU, non-OFDMA 40MHz): MCS0~MCS11(2T2R) 14.6~573.5Mbps;
Frequency Tolerance	≦±20ppm

2.4G Transmitter Specifications (WLAN_ANT0&WLAN_ANT1，TX power tolerance calibrated)			
TX Rate	**Recommended Target TX Power ≦ (dBm)**	**TX Power Tolerance (dB)**	**EVM (dB)**
802.11b@1~11Mbps	18	±2	≦-10
802.11g@6Mbps	18	±2	≦-10
802.11g@54Mbps	17	±2	≦-25
802.11n@HT20_MCS0	18	±2	≦-10
802.11n@HT20_MCS7	17	±2	≦-28
802.11n@HT40_MCS0	17	±2	≦-10
802.11n@HT40_MCS7	16	±2	≦-28
802.11ax@HE_SU 20M_MCS0	16	±2	≦-10
802.11ax@HE_SU 20M_MCS11	15	±2	≦-35

802.11ax@HE_SU 40M_MCS0	16	±2	≦-10
802.11ax@HE_SU 40M_MCS11	15	±2	≦-35
2.4G Receiver Specifications (WLAN_ANT0&WLAN_ANT1)			
RX Rate	**Min Input Level (Typ)**	**Max Input Level (Typ)**	**PER**
802.11b@1Mbps	-94dBm	-5dBm	< 8%
802.11b@11Mbps	-87dBm	-5dBm	< 8%
802.11g@6Mbps	-92dBm	-5dBm	< 10%
802.11g@54Mbps	-74dBm	-5dBm	< 10%
802.11n@HT20_MCS0	-92dBm	-5dBm	< 10%
802.11n@HT20_MCS7	-72dBm	-5dBm	< 10%
802.11n@HT40_MCS0	-89dBm	-5dBm	< 10%
802.11n@HT40_MCS7	-69dBm	-5dBm	< 10%
802.11ax@HE_SU 20M_MCS0	-91dBm	-5dBm	< 10%
802.11ax@HE_SU 20M_MCS11	-63dBm	-5dBm	< 10%
802.11ax@HE_SU 40M_MCS0	-88dBm	-5dBm	< 10%
802.11ax@HE_SU 40M_MCS11	-60dBm	-5dBm	< 10%

4.2 5G WLAN RF Specification

Conditions: VDD33=3.3V; Ta:25℃	
Features	**Description**
WLAN Standard	IEEE 802.11a/n/ac/ax, CSMA/CA
Frequency Range	5.15~5.25GHz; 5.25~5.35GHz; 5.47~5.73GHz; 5.735~5.835GHz (5GHz ISM Band)
Channels	Ch36, Ch40, Ch44, Ch48; Ch52~Ch64; Ch100~Ch140; Ch149~Ch165 (For 20MHz Channels)
Modulation	802.11a (OFDM): BPSK, QPSK, QAM16, QAM64; 802.11n (OFDM): BPSK, QPSK, QAM16, QAM64; 802.11ac (OFDM): BPSK, QPSK, QAM16, QAM64, QAM256; 802.11ax (OFDMA): BPSK, BPSK_DCM, QPSK, QPSK_DCM, QAM16, QAM16_DCM, QAM64, QAM256, QAM1024;

Data Rate	802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps; 802.11n (HT20): MCS0~MCS7(1T1R_SISO) 6.5~72.2Mbps; 802.11n (HT20): MCS8~MCS15(2T2R_MIMO) 13~144.4Mbps; 802.11n (HT40): MCS0~MCS7(1T1R) 13.5~150Mbps; 802.11n (HT40): MCS8~MCS15(2T2R) 27~300Mbps; 802.11ac (VHT20): MCS0~MCS8(1T1R) 6.5~86.7Mbps; 802.11ac (VHT20): MCS0~MCS8(2T2R) 13~173.3Mbps; 802.11ac (VHT40): MCS0~MCS9(1T1R)13.5~200Mbps; 802.11ac (VHT40): MCS0~MCS9(2T2R)27~400Mbps; 802.11ac (VHT80): MCS0~MCS9(1T1R)29.3~433.3Mbps; 802.11ac (VHT80): MCS0~MCS9(2T2R)58.5~866.7Mbps; 802.11ax (HE_MU,26~484RU): MCS0~MCS11(1T1R) 0.4~286.8Mbps; 802.11ax (HE_MU,26~484RU): MCS0~MCS11(2T2R) 0.8~573.5Mbps; 802.11ax (HE_SU, non-OFDMA 20MHz): MCS0~MCS11(1T1R) 3.6~143.4Mbps; 802.11ax (HE_SU, non-OFDMA 20MHz): MCS0~MCS11(2T2R) 7.3~286.8Mbps; 802.11ax (HE_SU, non-OFDMA 40MHz): MCS0~MCS11(1T1R) 7.3~286.8Mbps; 802.11ax (HE_SU, non-OFDMA 40MHz): MCS0~MCS11(2T2R) 14.6~573.5Mbps; 802.11ax (HE_SU, non-OFDMA 80MHz): MCS0~MCS11(1T1R) 15.3~600.4Mbps; 802.11ax (HE_SU, non-OFDMA 80MHz): MCS0~MCS11(2T2R) 30.6~1201Mbps;
Frequency Tolerance	≦ ±20ppm

5G Transmitter Specifications (WLAN_ANT0&WLAN_ANT1，TX power tolerance calibrated)

TX Rate	Recommended Target TX Power ≦ (dBm)	TX Power Tolerance (dB)	EVM (dB)
802.11a@6Mbps	18	±2	≦-10
802.11a@54Mbps	17	±2	≦-25
802.11n@HT20_MCS0	17	±2	≦-10
802.11n@HT20_MCS7	16	±2	≦-28
802.11n@HT40_MCS0	17	±2	≦-10
802.11n@HT40_MCS7	16	±2	≦-28
802.11ac@VHT20_MCS0	17	±2	≦-10
802.11ac@VHT20_MCS8	16	±2	≦-32
802.11ac@VHT80_MCS0	17	±2	≦-10
802.11ac@VHT80_MCS9	16	±2	≦-32

802.11ax@HE_SU 20M_MCS0	16	±2	≦-10
802.11ax@HE_SU 20M_MCS11	15	±2	≦-35
802.11ax@HE_SU 80M_MCS0	16	±2	≦-10
802.11ax@HE_SU 80M_MCS11	15	±2	≦-35
5G Receiver Specifications (WLAN_ANT0&WLAN_ANT1)			
RX Rate	**Min Input Level (Typ)**	**Max Input Level (Typ)**	**PER**
802.11a@6Mbps	-92dBm	-5dBm	< 10%
802.11a@54Mbps	-74dBm	-5dBm	< 10%
802.11n@HT20_MCS0	-91dBm	-5dBm	< 10%
802.11n@HT20_MCS7	-72dBm	-5dBm	< 10%
802.11n@HT40_MCS0	-88dBm	-5dBm	< 10%
802.11n@HT40_MCS7	-69dBm	-5dBm	< 10%
802.11ac@VHT80_MCS0	-85dBm	-5dBm	< 10%
802.11ac@VHT80_MCS9	-60dBm	-5dBm	< 10%
802.11ax@HE_SU 80M_MCS0	-82dBm	-5dBm	< 10%
802.11ax@HE_SU 80M_MCS11	-56dBm	-5dBm	< 10%

4.3 Bluetooth RF Specification

Conditions: VDD33=3.3V; Ta:25℃	
Features	**Description**
Bluetooth Specification	Bluetooth Core Specification v5.2/4.2/2.1
Frequency Range	2.4~2.4835GHz (2.4GHz ISM Band)
Channels	Bluetooth Classic: Ch0~Ch78 (For 1MHz Channels); Bluetooth Low Energy: Ch0~Ch39 (For 2MHz Channels);
Power Classes	Bluetooth Classic: Class1; Bluetooth Low Energy: Class1.5;
Data Rate & Modulation	BR_1Mbps: GFSK; EDR_2Mbps: π/4-DQPSK; EDR_3Mbps: 8DPSK; LE_125Kbps: GFSK (Coded_S=8); LE_500Kbps: GFSK (Coded_S=2); LE_1Mbps: GFSK (Uncoded);

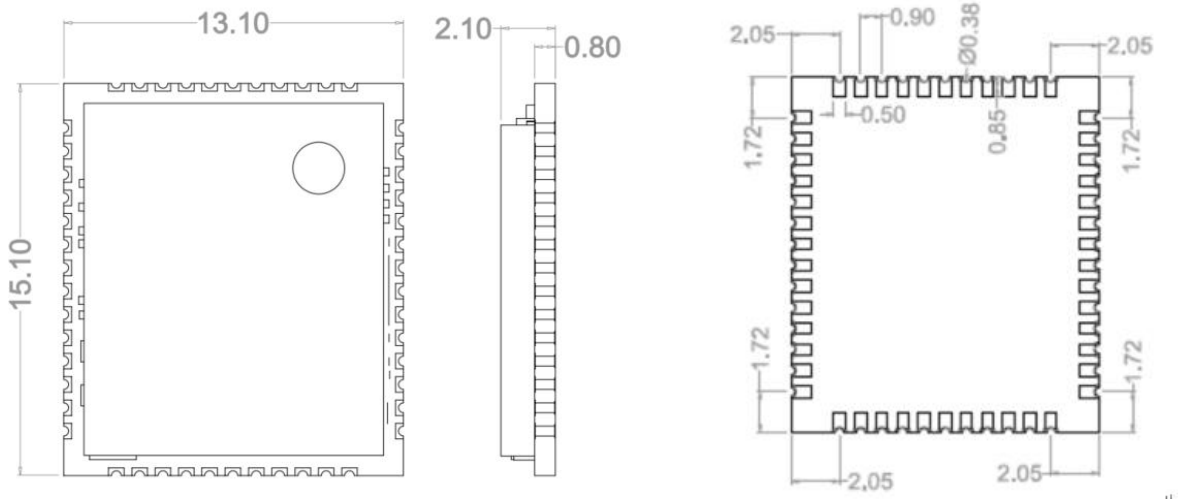
	LE_2Mbps: GFSK (Uncoded);		
Bluetooth Transmitter Specifications (BT_ANT)			
Items	**Min**	**Typ**	**Max**
TX Power			
BR_1M	2dBm	5dBm	8dBm
EDR_2M /3M	2dBm	5dBm	8dBm
LE_125K/500K/1M/2M	2dBm	5dBm	8dBm
Items	**Min**	**Typ**	**Max**
BR_1M (DH1) Modulation Characteristics			
Δf1avg	140KHz	165.1KHz	175KHz
Δf2avg	115KHz	153.1KHz	/
Δf2max	115KHz	153.1KHz	/
Δf2avg/Δf1avg	0.8	0.92	/
BR_1M (DH1) Initial Carrier Frequency Tolerance			
Init Freq Error	-75kHz	13.7kHz	+75kHz
EDR_3M(3DH5) EDR Carrier Frequency Stability and Modulation Accuracy			
ωi	-75KHz	3.02KHz	+75KHz
ωi+ωo	-75KHz	3.49KHz	+75KHz
ωo	-10KHz	0.41KHz	+10KHz
8DPSK RMS DEVM	/	0.037	0.13
8DPSK Peak DEVM	/	0.072	0.25
LE_1M Modulation Characteristics			
Δf1avg	225KHz	252.28KHz	275KHz
Δf2avg	185KHz	231.54KHz	/
Δf2max	185KHz	224.60KHz	/
Δf2avg/Δf1avg	0.8	0.918	/
LE_2M Modulation Characteristics			
Δf1avg	450KHz	499.73KHz	550KHz
Δf2avg	370KHz	495.79KHz	/

Δf2max	370KHz	477.90KHz	/
Δf2avg/Δf1avg	0.8	0.992	/

Bluetooth Receiver Specifications (BT_ANT)				
Items	**Sensitivity**		**Maximum Input Level**	
	Input Level(Typ)	**BER**	**Input Level(Typ)**	**BER**
BR_1M (DH1)	-90dBm	≦0.1%	-10dBm	≦0.1%
EDR_3M (3DH5)	-83dBm	≦0.01%	-10dBm	≦0.1%
	Input Level(Typ)	**PER**	**Input Level(Typ)**	**PER**
LE_125K	-95dBm	≦5%	-10dBm	≦5%
LE_1M	-90dBm	≦5%	-10dBm	≦5%
LE_2M	-87dBm	≦5%	-10dBm	≦5%

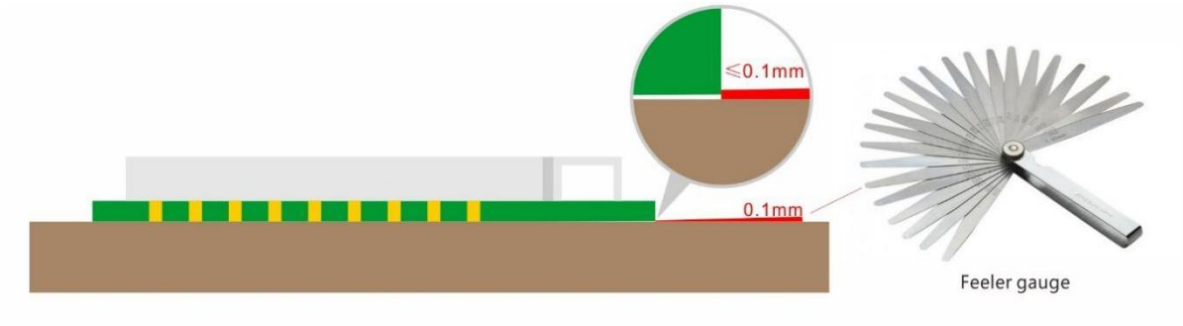
5. Mechanical Specifications

5.1 Module Outline Drawing



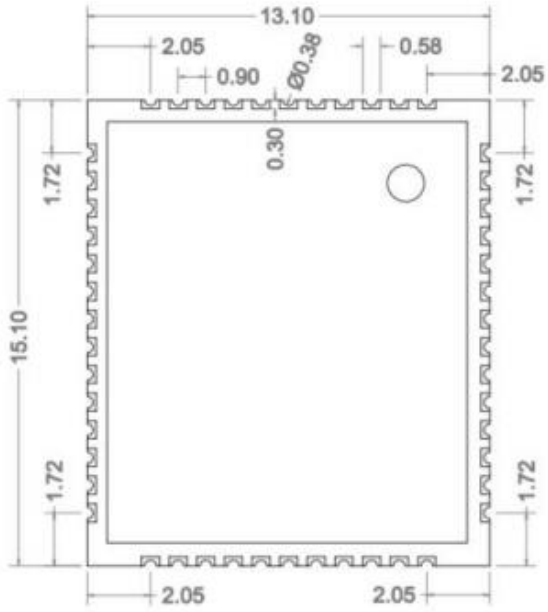
(Top View) (Side View) (Bottom View)

Module dimension: 15.1*13.1*2.1mm(L*W*H; Tolerance: ±0.15mm)

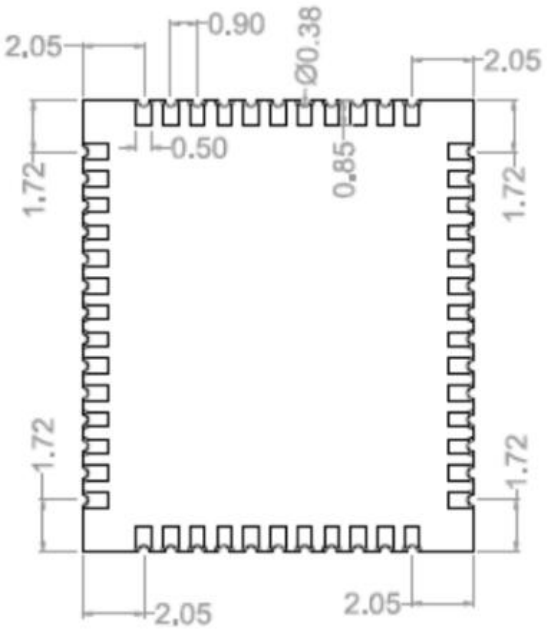


Module Bow and Twist：≤0.1mm

5.2 Mechanical Dimensions



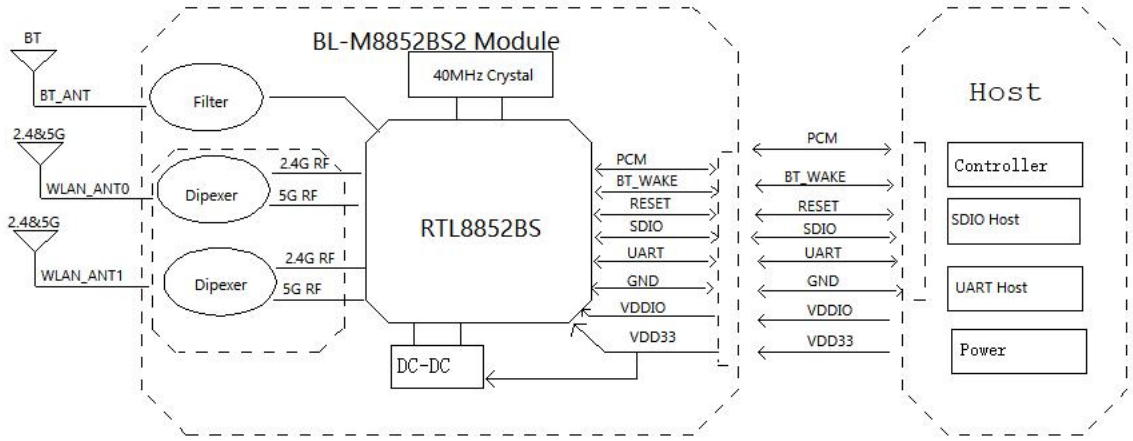
(Top View)



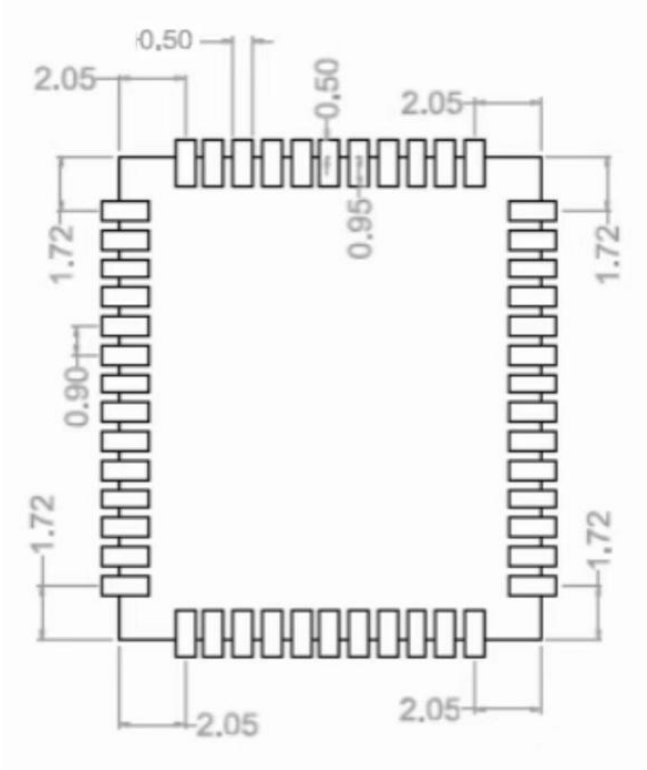
(Bottom View)

6. Application Information

6.1 Typical Application Circuit

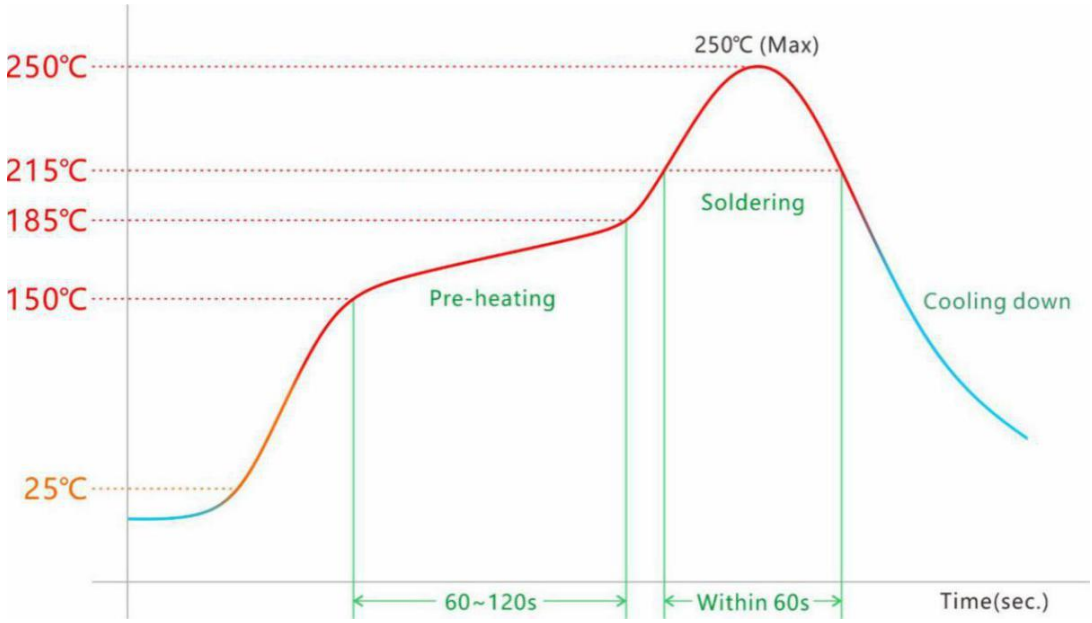


6.2 Recommend PCB Layout Footprint



(Design Unit: mm)

6.3 Reflow Soldering Standard Conditions



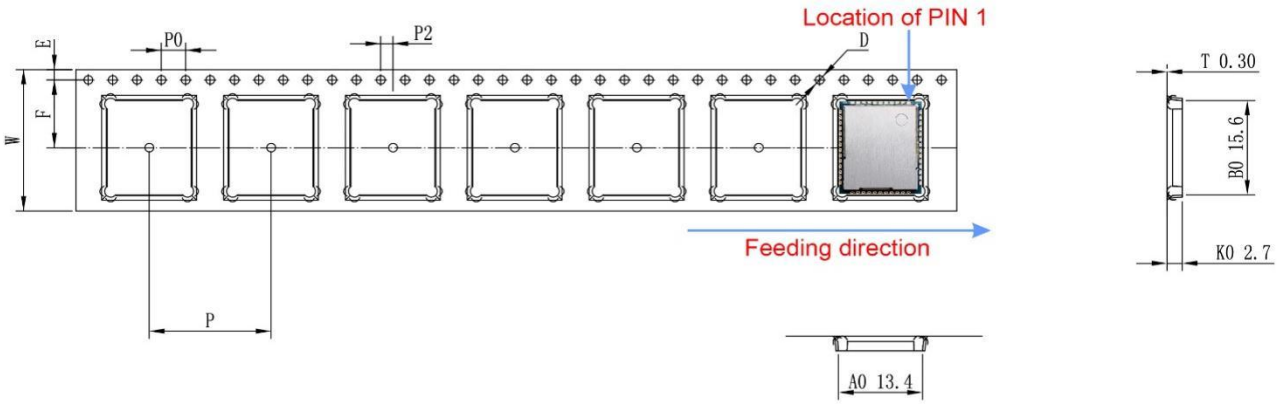
Please use the reflow within 2 times.
Set up the highest temperature within 250℃.

7. Key Components of Module

No.	Parts	Specification	Manufacturer	Note
1	Chipset	RTL8852BS-CG	Realtek Semiconductor Corp.	
2	PCB	BL-M8852BS2	SHEN ZHEN QILI ELECTRON CO.,LTD	
			Huizhou Dayawan Kexiang Technology Circuit Board Co., Ltd	
			ShenZhen Tie Fa Technology Limited	
			Quzhou Sunlord Electronics Co.,Ltd	
3	Crystal	40MHz-2016	HOSONIC ELECTRONIC CO.,LTD	
			Chengde oscillator Electronic Technology CO.,LTD	
			JinHua East Crystal Electronic CO.,LTD	
4	Diplexer	DIP1608	Walsin Technology Corporation	
			FTR Technology Corporation	
			Shenzhen Sunlord Electronics Co.,Ltd	

8. Package and Storage Information

8.1 Package Dimensions



ITEM	W	A0	B0	K0	E	F	P	P0	P2	D	T
DIM	24.00+0.3	13.40±0.1	15.60±0.1	2.70±0.1	1.75±0.1	11.5±0.1	20.00±0.1	4.00±0.1	2.00±0.1	Ø1.5±0.1	0.30±0.05

Package specification:

1. 1,000 modules per roll and 5,000 modules per box.
2. Outer box size: 37.5*36*29cm.
3. The diameter of the blue environment-friendly rubber plate is 13 inches, with a total thickness of 28mm (with a width of 24mm carrying belt).
4. Put 1 package of dry agent (20g) and humidity card in each anti-static vacuum bag.
5. Each carton is packed with 5 boxes..

8.2 Storage Conditions

Absolute Maximum Ratings:

Storage temperature: -40℃ to +85℃,

Storage humidity: 10% to 95 （Non-Condensing）

Recommended Storage Conditions:

Storage temperature: 5℃ to +40℃,

Storage humidity: 20% to 90% RH

Please use this Module within 12month after vacuum-packaged.

The Module shall be stored without opening the packing.

After the packing opened, the Module shall be used within 72hours.

When the color of the humidity indicator in the packing changed,

The Module shall be baked before soldering.

Baking condition: 60℃, 24hours, 1time.

ESD Sensitivity：

ESD Protection: 2KV (HBM, Maximum rating)

The Module is a static-sensitive electronic device.

Do not operate or store near strong electrostatic fields.

Take proper ESD precautions!

ESD CAUTION