MBTL1

Bluetooth Low Energy Module

Contents

Revision History

Date	Version No.	Description	Author
2019.10.31	V1.0	Initial version	WangLei
2019.11.18	V1.1	Mainly updated the sections below 1) change Operating Temperature 2) update the RX Sensitivity 3) update the power dissipation in Section 3.3 4) update the mechanical size	WangLei
2019.12.20	V1.2	1)update the module Number: MBTEL1 2)change support Bluetooth support 4.2 and keep BLE wireless technology standards 3)add FCC & IC streatment	WangLei
2020.01.06	V1.3	Update the TX output power up to +5.5dBm.	

1 .Overview

The MBTEL1 module is designed with Telink BLE SoC TLSR8258 with internal Flash and audio support, the radio frequency(RF), digital processing, protocols stack software and profiles. MBTEL1 support BLE specification up to Bluetooth 4.2, allows easy connectivity with Bluetooth Smart Ready mobile phones, tablets, laptops, which supports BLE slave and master mode operation, including broadcast, encryption, connection updates, and channel map updates.

1.1 Key features

General features

1) Embedded 32-bit proprietary microcontroller , max. running speed up to 48MHz
2) Program memory: internal 512kB (TLSR8258F512)
   Data memory: 64kB on-chip SRAM
3) RTC and other timers:
   • Clock source of 24MHz&32.768kHz Crystal and 32kHz/24MHz embedded RC oscillator
   • Three general 32-bit timers with four selectable modes in active mode
   • Watchdog timer
   • A low-frequency 32kHz timer available in low power mode
4) A rich set of I/Os:
   • Up to 32/17 GPIOs depending on package option. All digital IOs can be used as GPIOS.
   • DMIC (Digital Mic).
   • AMIC (Analog Mic).
   • I2S.

- Stereo Audio output.
- SPI.
- I2C.
- UART with hardware flow control and 7816 protocol support.
- USB.
- Swire debug Interface.

5) Up to 6 channels of differential PWM:
   - PWM1~PWM5: 5-channel normal PWM output.
   - PWM0: 1 channel with IR/IR FIFO/IR DMA FIFO mode for IR generation.
6) Sensor:
   - 14bit 10-channel (only GPIO input) SAR ADC, with 4-channel differential input PGA
   - Temperature sensor
7) Power supply: 1.8V~3.6V.
8) Compatible with USB2.0 Full speed mode. Supports ISP (In-System Programming) via USB port.

RF features

1) Supports 2.4GHz IoT standards into a single SoC, including BLE, BLE Mesh
2) Bluetooth version 4.2 with 1Mbps
3) Rx Sensitivity: -93dBm
4) Tx output power: up to +5.5dBm.
5) On-board PCB antenna.
6) With shielding cover

1.2 Typical applications

The MBTEL1 module can be applied to IoT (Internet of Things) and HID (Human Interface Devices) applications, such as BLE smart devices, BLE mesh devices, It's typical applications include, but are not limited to the following:

- Smartphone and tablet accessories;
- Sports and fitness tracking;
- Wireless toys;
- Building Automation;
- Consumer Electronics;
- Health Care.
- RF Remote Control;
- Wearable devices;
- Smart Lighting, Smart Home devices;
- Intelligent Logistics/Transportation/City;
- Industrial Control;

1.3 Block diagram

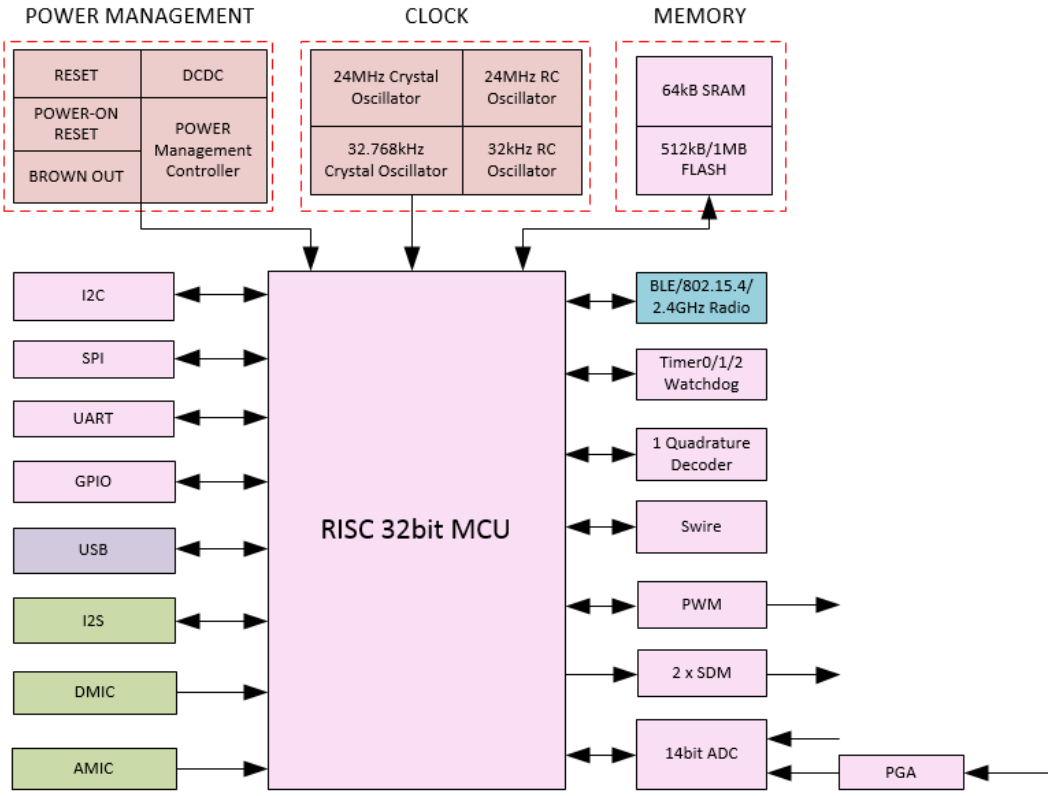


Figure 1-1 Block diagram of TLSR8258

*Note: Modules marked with different colors belong to different power domains.

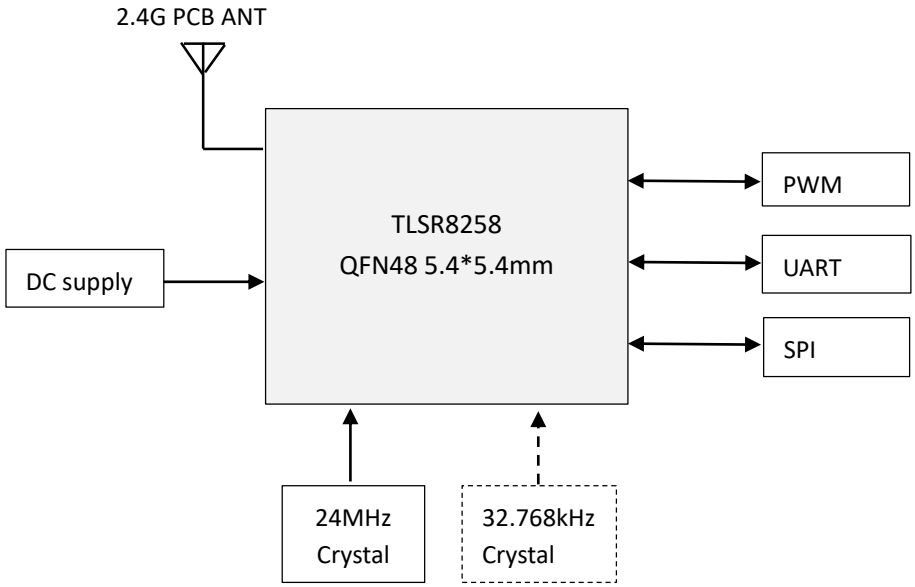


Figure 1-2 Block diagram of MBTEL1

2 Pin Configuration and Functions

2.1 Pin Layout

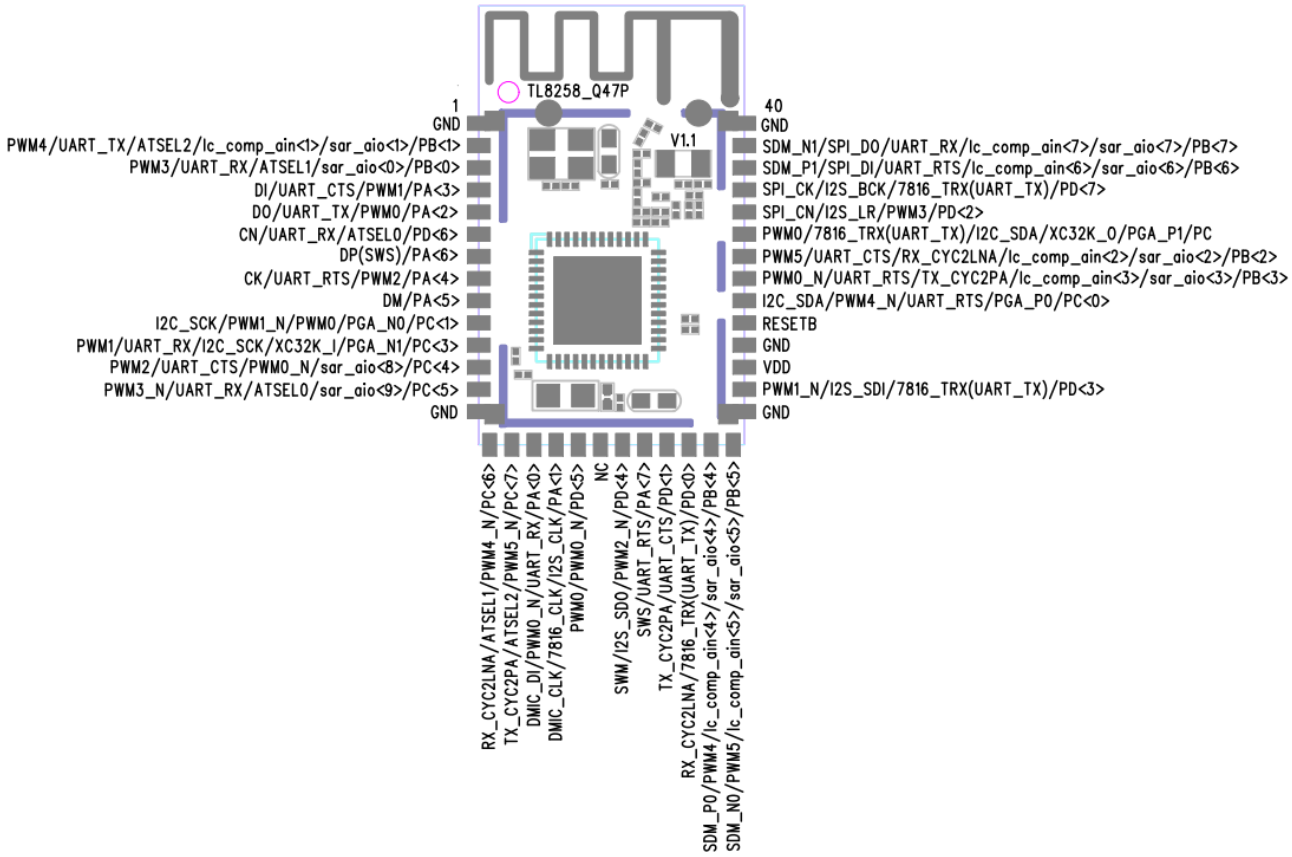


Figure 2−1 Pin assignment for MBTEL1

Functions of 40 pins for the MBTEL1

Table 2−1 Pin functions for MBTEL1

No.	Pin Name	Type	Description
1	GND	PWR	Power ground
2	PWM4/UART_TX/ATSEL2/lc_comp _ain<1>/sar_aio<1>/PB<1>	Digital I/O	PWM4 output / UART_TX / Antenna select pin 2 / Low power comparator input / SAR ADC input / GPIO PB[1]
3	PWM3/UART_RX/ATSEL1/ sar_aio<0>/PB<0>	Digital I/O	PWM3 output / UART_RX / Antenna select pin 1 / SAR ADC input / GPIO PB[0]
4	DI/UART_CTS/PWM1/PA<3>	Digital I/O	SPI data input (I2C_SDA) / UART_CTS / PWM1 output / GPIO PA[3]
5	DO/UART_TX/PWM0/PA<2>	Digital I/O	SPI data output / UART_TX / PWM0 output / GPIO PA[2]
6	CN/UART_RX/ATSEL0/PD<6>	Digital I/O	SPI chip select (Active low) / UART_RX / Antenna select pin 0 / GPIO PD[6]
7	DP(SWS)/PA<6>	Digital I/O	USB data positive (Single wire slave) / GPIO PA[6]

8	CK/UART_RTS/PWM2/PA<4>	Digital I/O	SPI clock (I2C_SCK) / UART_RTS / PWM2 output / GPIO PA[4]
9	DM/PA<5>	Digital I/O	USB data minus / GPIO PA[5]
10	I2C_SCK/PWM1_N/PWM0/ PGA_N0/PC<1>	Digital I/O	I2C serial clock / PWM1 inverting output / PWM0 output / PGA left channel negative input / GPIO PC[1]
11	PWM1/UART_RX/I2C_SCK/XC32K_ I/PGA_N1/PC<3>	Digital I/O	PWM1 output / UART_RX / I2C serial clock / (optional) 32kHz crystal input / PGA right channel negative input / GPIO PC[3]
12	PWM2/UART_CTS/PWM0_N/ sar_aio<8>/PC<4>	Digital I/O	PWM2 output / UART_CTS / PWM0 inverting output / SAR ADC input / GPIO PC[4]
13	PWM3_N/UART_RX/ATSEL0/ sar_aio<9>/PC<5>	Digital I/O	PWM3 inverting output / UART_RX / Antenna select pin 0 / SAR ADC input / GPIO PC[5]
14	GND	Digital I/O	Power ground
15	RX_CYC2LNA/ATSEL1/PWM4_N/ PC<6>	Digital I/O	Control external LNA / Antenna select pin 1 / PWM4 inverting output / GPIO PC[6]
16	TX_CYC2PA/ATSEL2/PWM5_N/ PC<7>	Digital I/O	Control external PA / Antenna select pin 2 / PWM5 inverting output / GPIO PC[7]
17	DMIC_DI/PWM0_N/UART_RX/ PA<0>	Digital I/O	DMIC data input / PWM0 inverting output / UART_RX / GPIO PA[0]
18	DMIC_CLK/7816_CLK/I2S_CLK/ PA<1>	Digital I/O	DMIC clock / UART 7816 clock / I2S clock / GPIO PA[1]
19	PWM0/PWM0_N/PD<5>	Digital I/O	PWM0 output / PWM0 inverting output / GPIO PD[5]
20	NC	NC	NC
21	SWM/I2S_SDO/PWM2_N/ PD<4>	Digital I/O	Single wire master / I2S serial data output / PWM2 inverting output / GPIO PD[4]
22	SWS/UART_RTS/PA<7>	Digital I/O	Single wire slave/ UART_RTS / GPIO PA[7]
23	TX_CYC2PA/UART_CTS/PD<1>	Digital I/O	Control external PA / UART_CTS / GPIO PD[1]
24	RX_CYC2LNA/7816_TRX (UART_TX)/PD<0>	Digital I/O	Control external LNA / UART 7816 TRX (UART_TX) / GPIO PD[0]
25	SDM_P0/PWM4/lc_comp_ain<4>/ sar_aio<4>/PB<4>	Digital I/O	SDM positive output 0 / PWM4 output / Low power comparator input / SAR ADC input / GPIO PB[4]
26	SDM_N0/PWM5/lc_comp_ain<5>/ sar_aio<5>/PB<5>	Digital I/O	SDM negative output 0 / PWM5 output / Low power comparator input / SAR ADC input / GPIO PB[5]
27	GND	PWR	power ground
28	I2C_SDA/PWM4_N/UART_RTS/ PGA_P0/PC<0>	Digital I/O	I2C serial data / PWM4 inverting output / UART_RTS / PGA left channel positive input / GPIO PC[0]
29	VDD	PWR	power supply
30	GND	PWR	power ground

31	RESETB	RESET	Power on reset, active low
32	I2C_SDA/PWM4_N/UART_RTS/ PGA_P0/PC<0>	Digital I/O	I2C serial data / PWM4 inverting output / UART_RTS / PGA left channel positive input /GPIOPC[0]
33	PWM0_N/UART_RTS/TX_CYC2PA/ lc_comp_ain<3>/sar_aio<3>/PB<3>	Digital I/O	PWM0 inverting output / UART_RTS / Control external PA / Low power comparator input / SAR ADC input / GPIO PB[3]
34	PWM5/UART_CTS/RX_CYC2LNA/ lc_comp_ain<2>/sar_aio<2>/PB<2>	Digital I/O	PWM5 output / UART_CTS / Control external LNA / Low power comparator input / SAR ADC input / GPIO PB[2]
35	PWM0/7816_TRX(UART_TX)/I2C_ SDA/XC32K_O/PGA_P1/PC<2>	Digital I/O	PWM0 output / UART 7816 TRX (UART_TX) / I2C serial data / (optional) 32kHz crystal output / PGA right channel positive input / GPIO PC[2]
36	SPI_CN/I2S_LR/PWM3/PD<2>	Digital I/O	SPI chip select (Active low) / I2S left right channel select / PWM3 output / GPIO PD[2]
37	SPI_CK/I2S_BCK/7816_TRX (UART_TX)/PD<7>	Digital I/O	SPI clock (I2C_SCK) / I2S bit clock / UART 7816 TRX (UART_TX) / GPIO PD[7]
38	SDM_P1/SPI_DI/UART_RTS/ lc_comp_ain<6>/sar_aio<6>/ PB<6>	Digital I/O	SDM positive output 1 / SPI data input (I2C_SDA) / UART_RTS / Low power comparator input / SAR ADC input /GPIO PB[6]
39	SDM_N1/SPI_DO/UART_RX/ lc_comp_ain<7>/sar_aio<7>/ PB<7>	Digital I/O	SDM negative output 1 / SPI data output / UART_RX / Low power comparator input / SAR ADC input / GPIO PB[7]
40	GND	PWR	power ground

Notes

1) All digital IOs including PA<0> ~ PD<7> can be used as GPIOs and have configurable pull-up/pull-down resistor.
2) SPI:
   • PD<7>: SPI_CK, PB<6>: SPI_DI, PB<7>: SPI_DO, PD<2>: SPI_CN
   • PA<2>: DO, PA<3>: DI, PA<4>: CK, PD<6>: CN
3) I2C:
   • PC<0> ~ PC<3> can be used as I2C. PC<0>: I2C_SDA, PC<1>: I2C_SCK, PC<2>: I2C_SDA,PC<3>: I2C_SCK
   • I2C can also be multiplexed with SPI interface, i.e. I2C_SDA/I2C_SCK can be multiplexed with SPI_DI (DI)/SPI_CK (CK) respectively.
4) Audio PGA/AMIC input: PC<0>~PC<3>.
5) DMIC: PA<0>: DMIC_DI, PA<1>: DMIC_CLK
6) I2S: PD<7>: I2S_BCK, PA<1>: I2S_CLK, PD<2>: I2S_LR, PD<3>: I2S_SDI, PD<4>: I2S_SDO
7) Stereo audio output: PB<4>: SDM_P0, PB<5>: SDM_N0, PB<6>: SDM_P1, PB<7>: SDM_N1
8) UART:
   • PA<0>: UART_RX, PA<2>: UART_TX, PB<0>: UART_RX, PB<1>: UART_TX, PB<7>: UART_RX, PC<3>: UART_RX, PC<5>: UART_RX, PD<6>: UART_RX
   • UART hardware flow control:
   PA<3>: UART_CTS, PA<4>: UART_RTS, PA<7>: UART_RTS, PB<2>: UART_CTS, PB<3>:UART_RTS, PB<6>: UART_RTS, PC<0>: UART_RTS, PC<4>: UART_CTS, PD<1>: UART_CTS

• UART 7816:

PD<7>: 7816_TRX (UART_TX), PA<1>: 7816_CLK, PC<2>: 7816_TRX (UART_TX), PD<0>:7816_TRX (UART_TX), PD<3>: 7816_TRX (UART_TX)

9) USB: PA<5>: DM, PA<6>: DP

10) Single Wire debug interface:

• PA<7>: SWS.

• SWS can also be multiplexed with DP.

• PD<4>: SWM

11) RX_CYC2LNA & TX_CYC2PA:

• PB<2>: RX_CYC2LNA, PB<3>: TX_CYC2PA, PC<6>: RX_CYC2LNA, PC<7>: TX_CYC2PA, PD<0>: RX_CYC2LNA, PD<0>: RX_CYC2LNA, PD<1>: TX_CYC2PA

• RX_CYC2LNA/TX_CYC2PA serves to control enabling external PA/LNA

12） ATSEL0~2:

• PB<0>: ATSEL1, PB<1>: ATSEL2, PC<5>: ATSEL0, PC<6>: ATSEL1, PC<7>: ATSEL2, PD<6>:ATSEL0

• ATSEL0~2 serves to select one of up to eight external antennas connected to the antenna select component. The selected antenna channel is connected to the RF_IO pin.

13） Low power comparator input: PB<1>~ PB<7>.

14） ADC GPIO input: PB<0>~ PB<7>, PC<4>~ PC<5>.

15） Do not use PC<7:5> for dynamic applications. It's highly recommended to use these IOs in DC applications, e.g. as control or detect lines.

16） Pin drive strength:

• PA<5:7> and PB<0:3> support drive strength up to 8mA (8mA when "DS"=1, 4mA when"DS"=0); PB<4:7> support drive strength up to 16mA (16mA when "DS"=1, 12mA when"DS"=0); other GPIOs (PA<0:4>, PC<0:7> and PD<0:7>) support drive strength up to 4mA(4mA when "DS"=1, 2mA when "DS"=0).

DS: Drive strength. Default: 1 (high DS level).

• "DS" configuration will take effect when the pin is used as output.

3 Electrical Specifications

Note: The electrical characteristics currently listed in this section are target specifications and only supplied for reference. Some data may be updated according to actual test results.

3.1 Absolute maximum ratings

Table 3-1 Absolute maximum ratings

Characteristics	Sym.	Min.	Max	Unit	Test Condition
Supply Voltage	VDD	-0.3	3.6	V	Includes ripples
Storage temperature Range	T_{Str}	-30	85	°C	

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

3.2 Recommended operating condition

Table 3-2 Recommended operating condition

Item	Sym.	Min	Typ.	Max	Unit	Condition
Power-supply voltage	VDD	1.8	3.3	3.6	V	Includes ripples
Storage temperature Range	T_{Str}	-30		85	°C	
Operating Temperature Range	T_{Opr}	-30		85	°C	

3.3 DC characteristics

Table 3-3 DC characteristics (VDD=3.3V, T=25℃)

Item	Sym.	Min	Typ.	Max	Unit	Condition
RX current	I_{Rx}		6.3		mA	@BLE RX
Tx current	I_{Tx}		5.4		mA	@0dBM with DCDC

3.4 AC characteristics

Table 3-4 AC characteristics (VDD=3.3V, T=25℃)

Item	Sym.	Min	Typ.	Max	Unit	Condition
Digital inputs/outputs						
Input high voltage	VIH	0.7VDD		VDD	V	
Input low voltage	VIL	VSS		0.3VDD	V	
Output high voltage	VOH	0.9VDD		VDD	V	
Output low voltage	VOL	VSS		0.1VDD	V	
RF performance						
RF frequency range		2380		2500	MHz	Programmablein 1MHz step
Data rate	BLE 1Mbps, ±250kHz deviation BLE 125kbps, ±250kHz deviation BLE 500kbps, ±250kHz deviation					
BLE 1Mbps RF_Rx performance (±250kHz deviation)*1						
Sensitivity	1Mbps		-93		dBm	
Frequency Offset Tolerance		-250		+300	kHz	
Co-channel rejection			-11		dB	Wanted signal at -67dBm

Item	Sym.	Min	Typ.	Max	Unit	Condition
In-band blocking rejection (Equal Modulation Interference)	+1/-1 MHz offset		1/3		dB	Wanted signal at -67dBm
	+2/-2 MHz offset		37/39		dB	
	>=3MHz offset		42		dB	
Image rejection			37		dB	Wanted signal at -67dBm
BLE 1Mbps RF_Tx performance						
Output power, maximum setting			10		dBm	
Output power, minimum setting			-45		dBm	
Programmable output power range		55			dB	
Modulation 20dB bandwidth			2.5		MHz	
Modulation 20dB bandwidth			2.7		MHz	
BLE 500kbps RF_Rx performance (±250kHz deviation)*2						
Sensitivity	500kbps		-93		dBm	
Frequency Offset Tolerance		-150		+50	kHz	
Co-channel rejection			-1		dB	Wanted signal at -67dBm
In-band blocking rejection (Equal Modulation Interference)	+1/-1 MHz offset		34/36		dB	Wanted signal at -67dBm
	+2/-2 MHz offset		42/42		dB	
	>=3MHz offset		42		dB	
Image rejection			42		dB	Wanted signal at -67dBm
BLE 500kbps RF_Tx performance						
Output power, maximum setting			10		dBm	
Output power, minimum setting			-45		dBm	
Programmable output power range		55			dB	
Modulation 20dB bandwidth			2.5		MHz	

Item	Sym.	Min	Typ.	Max	Unit	Condition
BLE 125kbps RF_Rx performance (±250kHz deviation)*3						
Sensitivity	125kbps		-93		dBm	
Frequency Offset Tolerance		-150		+50	kHz	
Co-channel rejection			-3		dB	Wanted signal at -67dBm
In-band blocking rejection	+1/-1 MHz offset		32/34		dB	Wanted signal at -67dBm
	+2/-2 MHz offset		42/42		dB	
	>=3MHz offset		42		dB	
Image rejection			42		dB	Wanted signal at -67dBm
BLE 125kbps RF_Tx performance						
Output power, maximum setting			10		dBm	
Output power, minimum setting			-45		dBm	
Programmable output power range		55			dB	
Modulation 20dB bandwidth			2.5		MHz	

*1 For actual sensitivity level of BLE 1Mbps mode, please refer to Bluetooth 4.2 specification.

*2 For actual sensitivity level of BLE 500kbps mode, please refer to Bluetooth 4.2 specification.

*3 For actual sensitivity level of BLE 125kbps mode, please refer to Bluetooth 4.2 specification.

4 Application Diagram

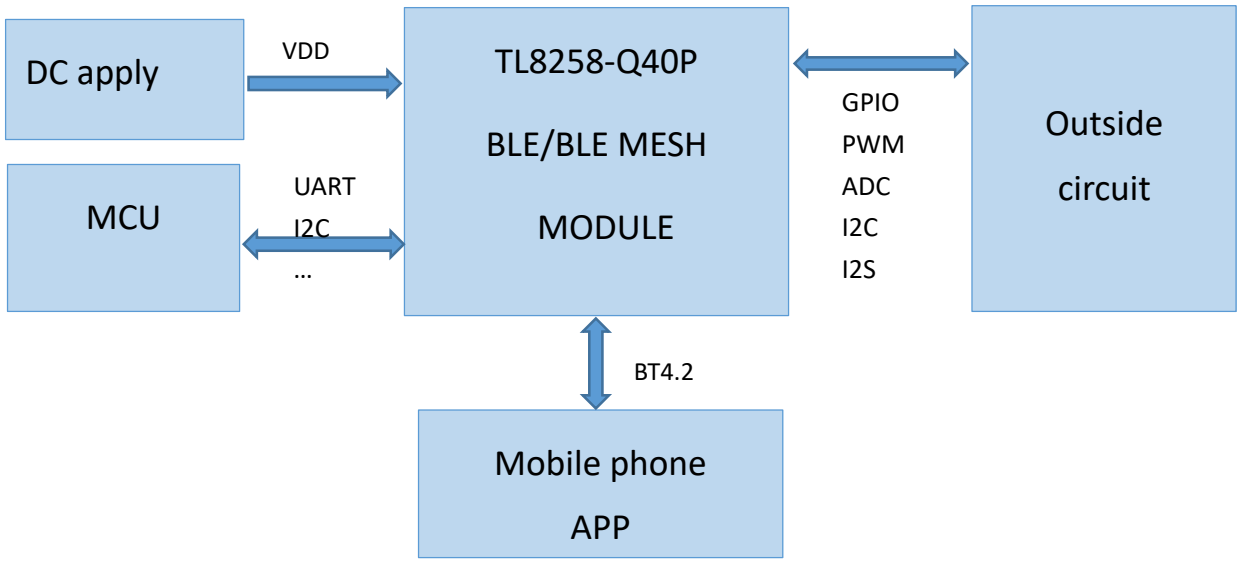
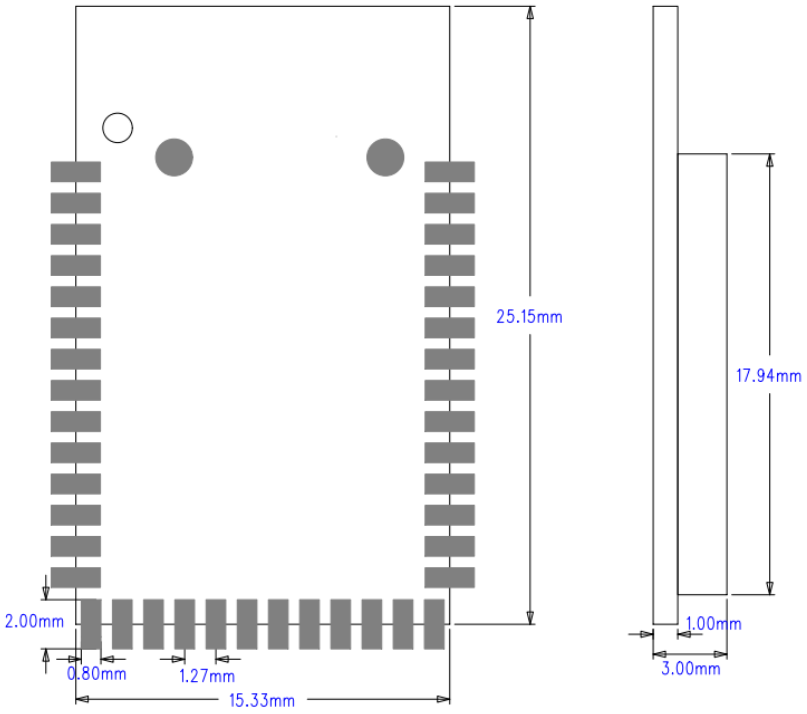


Figure 4-1 Application diagram for TL8258-Q40P

5 Mechanical and Package

5.1 Recommended PCB Footprint



L: 15.33 mm±0.15mm ; W: 25.15 mm±0.15 mm ; H: 3.00 mm±0.15 mm

Figure 5-1 Recommended PCB Footprint

Note：

It is recommended to place this module at the edge of the main board. The module PCB antenna isoriented towards the outside of the board. The antenna is away from some sources of interference such as DCDC. The antenna area should be hollowed all layers. Try not to route under the module.

5.2 Packaging Information

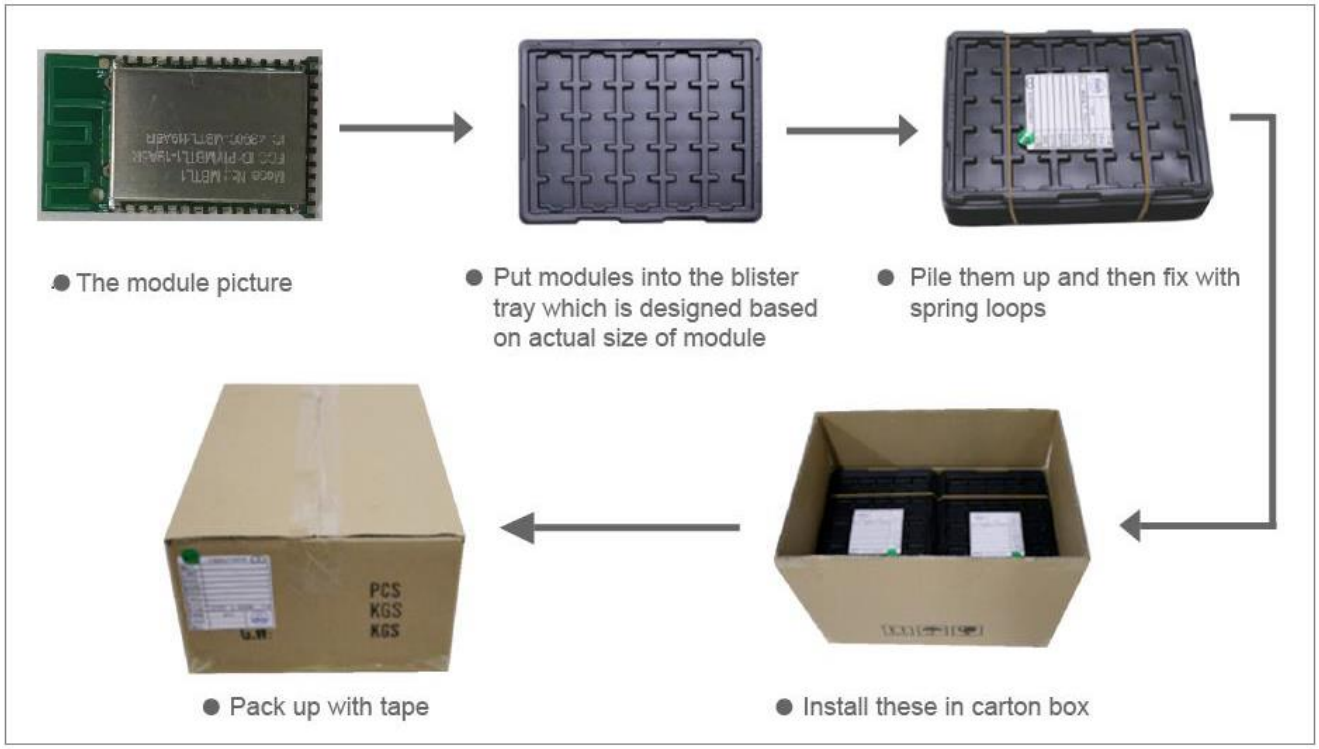


Figure 5-2 Package way

6 Thermal Reflow

Referred to IPC/JEDEC standard
Peak temperature :< 250℃
Number of times :< 2

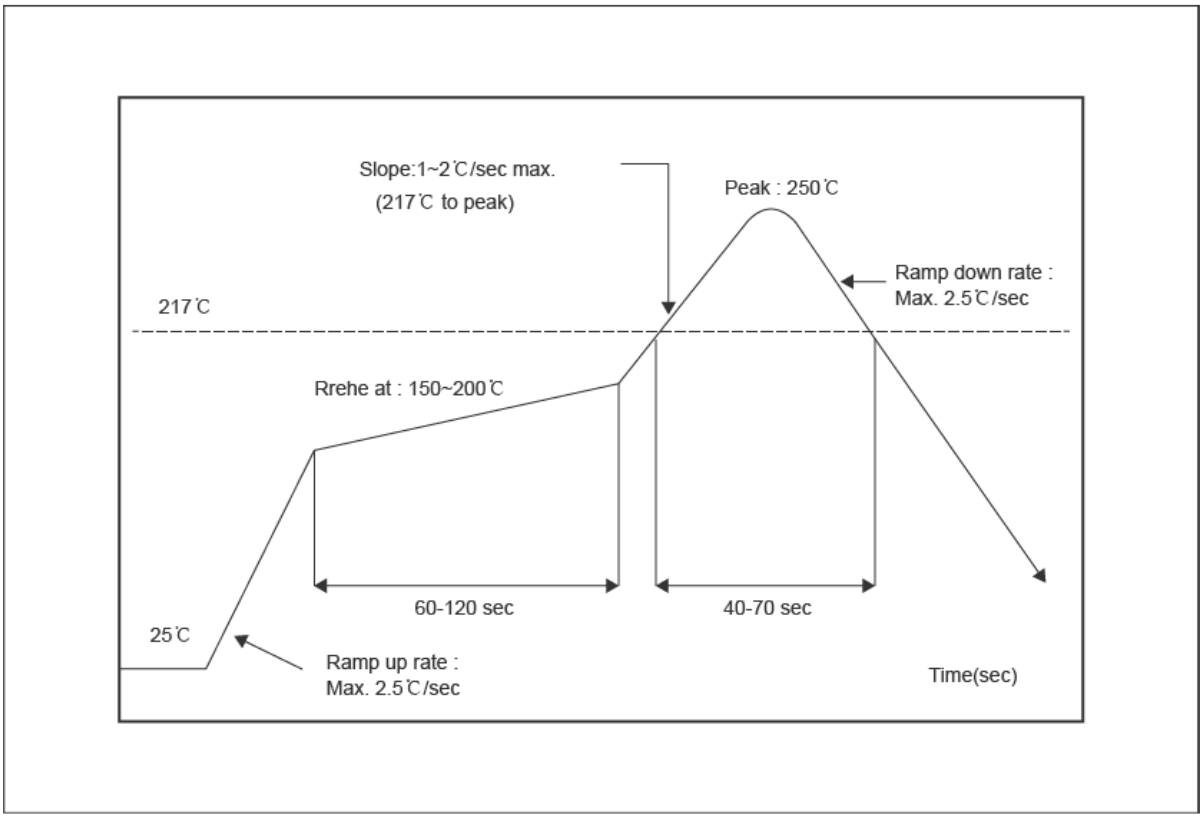


Figure 6-1. Recommended Reflow for Lead Free Solder

7 FCC & IC Statement

For FCC statement

This device complies with Part 15.247 of the FCC Rules. Host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. Host manufacturer in any case shall ensure host product which is installed and operating with the module is in compliant with Part 15B requirements.

Please note that For a Class B or Class A digital device or peripheral, FCC Rules are as following you may refer to:

For Class B

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.

For Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency

energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning: changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
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.

RF Exposure compliance statement

This module complies with FCC 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.
The device can be used in portable exposure condition without restriction

Antenna Information

This module is tested with the following antenna

Module No.	Antenna Type	Frequency	Max. Antenna Gain
MBTL1	PIFA Antenna	2402-2480MHz	0.47dBi

Antenna Change Notice to Host manufacturer:
Recommend using antenna which certified with this module mentioned in this manual.
If you desire to increase antenna gain and either change antenna type or use same antenna type certified, a Class II permissive change application is required to be filed by us, or you (host manufacturer) can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application, based on the new emissions testing. Please perform testing on frequency bands where the antenna gain is highest, worst-case band-edges based on original filing, and only on frequency bands where the antenna gain is highest.
Notice regarding trace antenna to host product manufacturer:
Any deviation(s) from the defined parameters of the antenna trace, as described by this instruction, host product manufacturer must notify us that you wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by us, or you (host manufacturer) can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

Labelling and compliance statement instruction for host product manufacturer

Please notice that 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 FCC ID: PIYMBTL1-19A5R" any similar wording that expresses the same meaning may be used.
FCC regulatory Compliance Statement mentioned in this manual shall be properly included in host product manual per FCC Rules.
The host product manufacturer shall be aware not to provide information to the end user on how to install or remove this module in your host product manual.

Guide on test modes and additional testing requirements

Host product manufacturer is ultimately responsible for testing their end-product for any additional compliance

requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, additional transmitter(s) in the host, etc.).

Test software access to different test modes:

(1) Fixed frequency test: 8258_Test_EMI_v0003.bin

(2) Bluetooth transmission：8258_module.bin

For IC statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with IC RSS-102 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.

Cet équipement est conforme aux limites d'exposition aux radiations IC CNR-102 établies pour un environnement non contrôlé. Cet émetteur ne doit pas être situé ou fonctionner conjointement avec une autre antenne ou un autre émetteur.

Please notice that if the IC 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 IC: 4390C-MBTL119A5R" any similar wording that expresses the same meaning may be used.

L'étiquette d'homologation d'un module d'Innovation, Sciences et Développement économique Canada devra être posée sur le produit hôte à un endroit bien en vue, en tout temps. En l'absence d'étiquette, le produit hôte doit porter une étiquette sur laquelle figure le numéro d'homologation du module d'Innovation, Sciences et Développement économique Canada, précédé du mot « contient », ou d'une formulation similaire allant dans le même sens et qui va comme suit :

Contient IC: 4390C-MBTL119A5R est le numéro d'homologation du module