

## CSR BLUETOOTH MODULES

MB-C041-SPP

MB-C041-AT



Specification

Version 1.03

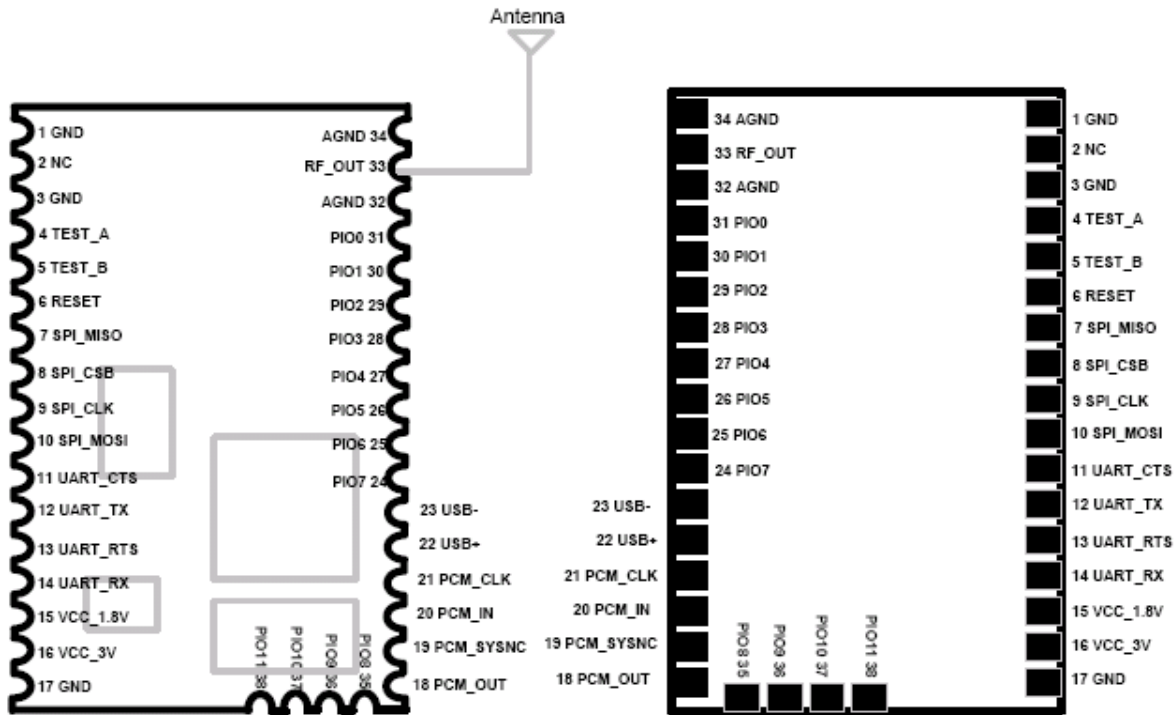
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# 1. Hardware & Technical Information

## 1.1 Pin definition



PIN	Name	Type	Note	PIN	Name	Type	Note
1	GND		Ground	34	GND		Ground
2	NC		Not connected	33	RF_OUT	O	Antenna interface
3	GND		Ground	32	GND		Ground
4	TestA		Internal testing use	31	PIO0	I/O	Programmable I/O
5	TestB		Internal testing use	30	PIO1	I/O	Programmable I/O
6	Reset	I	Low active reset	29	PIO2	I/O	Programmable I/O
7	SPI_MISO		Internal testing use	28	PIO3	I/O	Programmable I/O
8	SPI_CSB		Internal testing use	27	PIO4	I/O	Programmable I/O
9	SPI_CLK		Internal testing use	26	PIO5	I/O	Programmable I/O
10	SPI_MOSI		Internal testing use	25	PIO6	I/O	Programmable I/O
11	UART_CTS	I	UART clear to send	24	PIO7	I/O	Programmable I/O
12	UART_TX	O	UART data output	23	USB-	I/O	USB data negative
13	UART_RTS	O	UART require to send	22	USB+	I/O	USB data positive
14	UART_RX	I	UART data input	21	PCM_CLK	I/O	Synchronous clock
15	VCC_1.8V	O	Voltage output	20	PCM_IN	I	Synchronous data input
16	VCC_3.3V	I	Module supply voltage	19	PCM_SYNC	I/O	Synchronous data SYNC
17	GND		Ground	18	PCM_OUT	O	Synchronous data output
PIN	Name	Type	Note	PIN	Name	Type	Note
35	PIO8	I/O	Programmable I/O	37	PIO10	I/O	Programmable I/O
36	PIO9	I/O	Programmable I/O	38	PIO11	I/O	Programmable I/O

## 1.2 Mechanical Specification

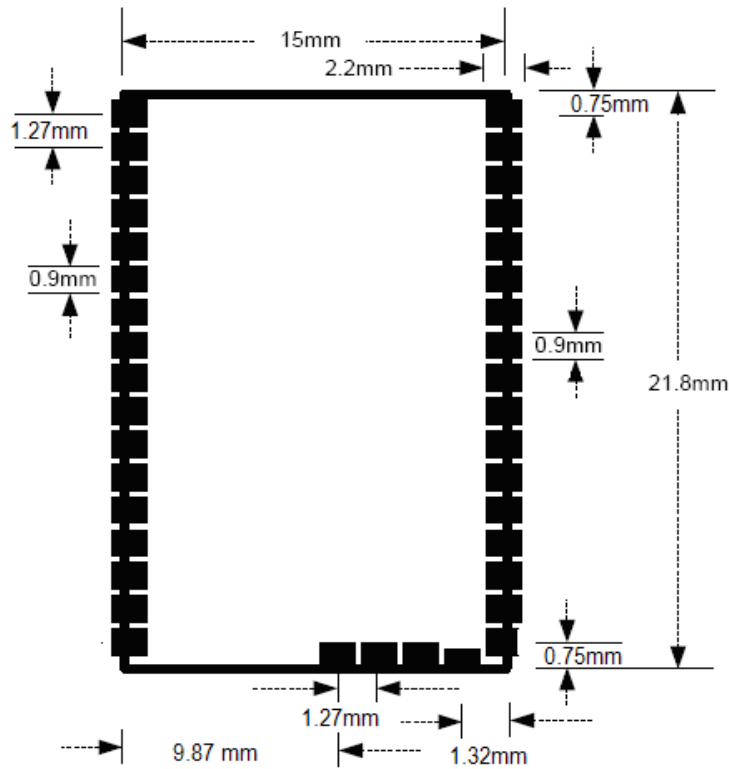
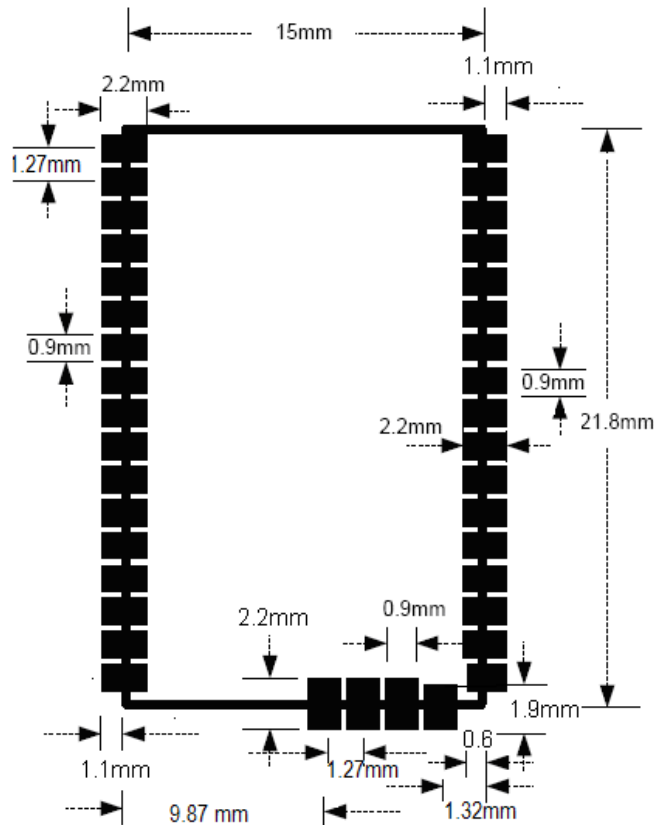


Fig. 1.2.1 Mechanical Specification

### Recommend PCB Layout:



## Layout Note:

1. Use solid power and ground planes
2. Ensure there is defined returned path for the signals
3. Power plane extent should be within ground plane extent

## 1.3 Block Diagram

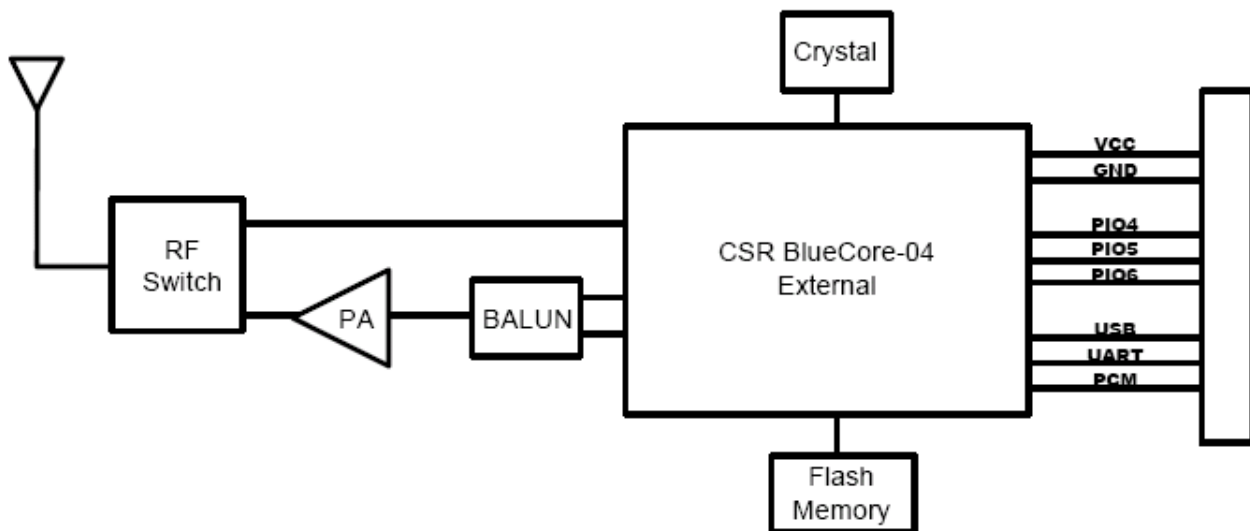


Fig 1.3.1 MB-C041 Class1 BT2.0 Module Block Diagram

1.4 Electrical Characteristics  
MB-C041 / Class1

	MIN	Typ.	MAX	Unit
Supply Voltage	3.0	3.3	3.6	V
RX Supply Current		60		mA
TX Supply Current(Normal)		65		mA
TX Supply Current(Continuous)		100		mA
Sleep Supply Current		1		mA
Storage Temperature	-20		+85	°C

■ Power Consumption

Mode	Avg.
Standby	1mA
Transmit	65mA
Receive	60mA

■ Operating Conditions

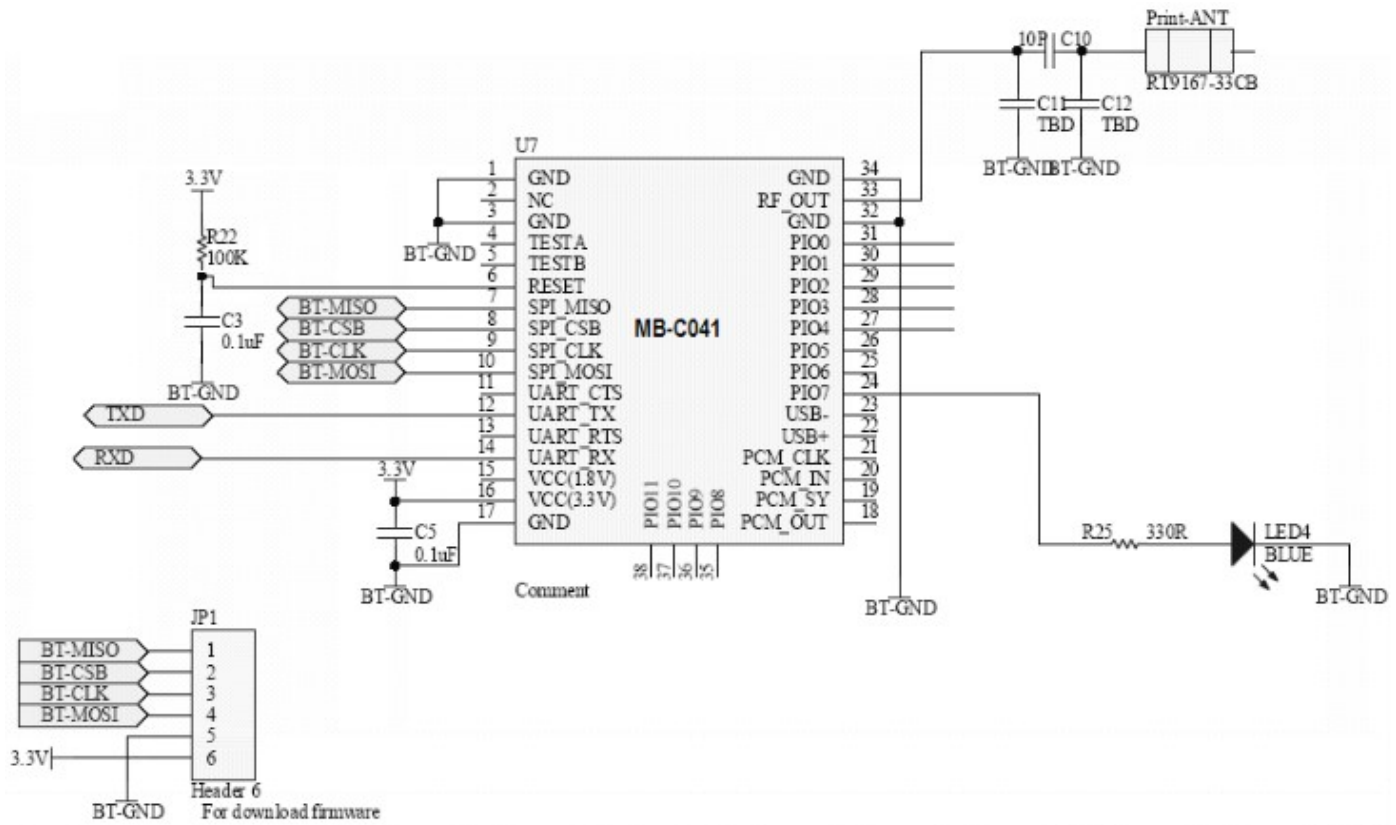
Voltage Range	3.3V±0.3V
Operating Temperature Range	-20°C ~ 60°C
Storage Temperature Range	-20°C ~ 80°C
Relative Humidity (Operating)	≤90%
Relative Humidity (Storage)	≤90%

## 1.5 Radio Characteristics

■ MB-C041 Class1 Module

	Frequency (GHz)	MIN	TYP	MAX	BT Spec	Unit
Sensitivity at 0.1%BER	2.402	-	-80	-86	<= -70	dBm
	2.441	-	-80	-86		dBm
	2.480	-	-80	-86		dBm
RF Transmit Power	2.402	15.0	16.0		<= 15	dBm
	2.441	15.0	16.0			dBm
	2.480	15.0	16.0			dBm
Initial Carrier Frequency Tolerance	2.402	-	5	75	75	kHz
	2.441	-	5	75		kHz
	2.480	-	5	75		kHz
20dB bandwidth for modulated carrier		-	900	1000	<=1000	kHz
Drift (Five slots packet)		-	15	-	40	kHz
Drift Rate		-	13	-	20	kHz
$\Delta f1_{avg}$ "Maximum Modulation"	2.402	140	165	175	140 < $\Delta f1_{avg}$	kHz
	2.441	140	165	175		kHz
	2.480	140	165	175		kHz
$\Delta f2_{max}$ "Minimum Modulation"	2.402	115	190	-	115	kHz
	2.441	115	190	-		kHz
	2.480	115	190	-		kHz

## 1.6 Reference Schematics





## 2. Software / Profile

### 2.1 MB-C041-SPP Software function

Stack / Profile	MB-C041 (Class1 BT2.0 module)
SPP	V

#### a. Pairing mode

Power on the module and MB-C041-SPP will be stay in pairing mode

#### b. Connection

Turn on Bluetooth function/Software in master device(like PC with BT dongle) and make a search for Bluetooth device. When master device found Bluetooth device named "SPP", make Bluetooth connection with SPP with pin code "0000". MB-C041-SPP will automatically response itself and established the connection.

#### c. Data Transmission / Receiving

When the Connection was established, User can input data to UART\_RX. MB-C041-SPP will send data out via UART\_RX to Master device.

User can get the data sent from Master device as well from UART\_RX.

#### d. AT command

MB-C041-SPP will not response to any AT command send from user. If there is a specified function to implement, we can accept OEM custom f/w.

### 2.2 MB-C041-AT Software function

#### a. AT command

MB-C041-AT will act only when you send AT command. You can find the detailed command list in "MBC04 AT command" document.

### 3. Standard Setup Information

	Parameter		Value
1	Part number		MB-C041-SPP
2	Baud Rate		9600
3	Pin Code Prompt		Disable
4	Local Name		SPP
5	LED PIN24(PIO 7)	Power on	Flash 26 times[ON time frame: 80ms, OFF time frame: 140ms]
		Connect	Flash with ON one time within 1 second,[ON time frame: 35ms]
		Disconnected	Flash with ON one time within 3 seconds, [ON time frame : 35ms]

### 4. Customization Information

	Parameter		Value
1	Baud Rate		
2	Pin Code Prompt		
3	Local Name		
4	LED PIN24(PIO 7)	Connected	
		Disconnected	