

CSR Bluetooth Modules

MB-C041-SPP

MB-C041-AT



Specification

Version 1.03

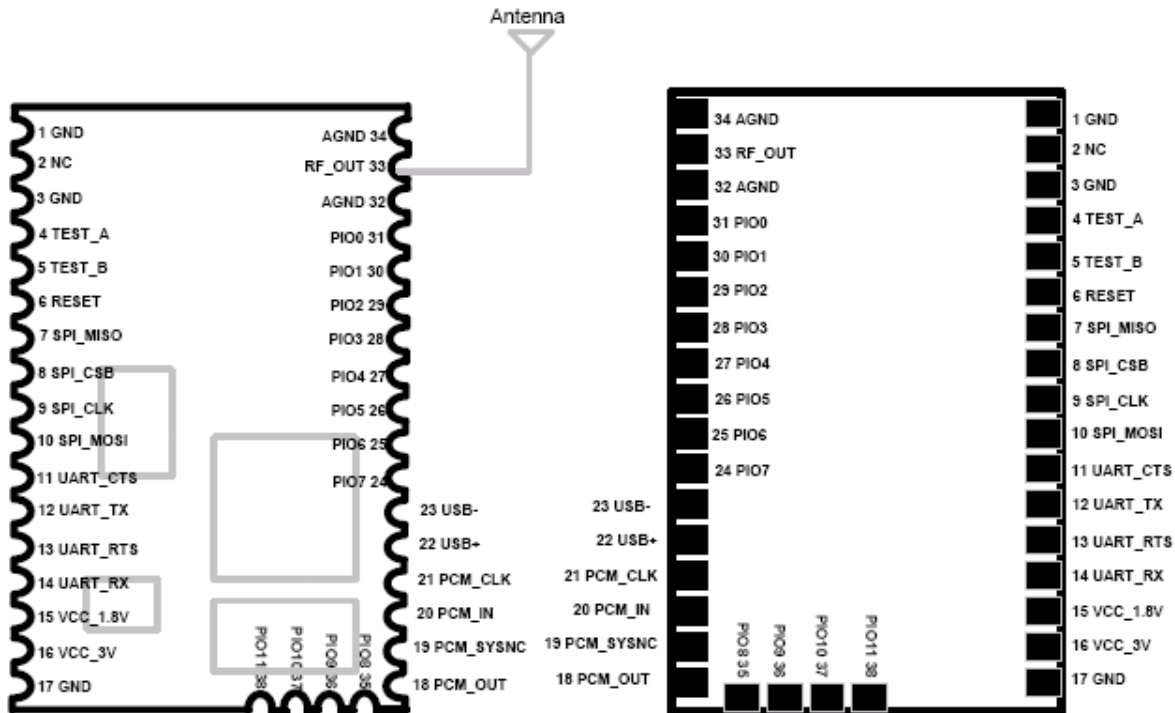
15-MAY-09

Content

| | |
|--|---|
| 1. Hardware & Technical Information..... | 3 |
| 1.1 Pin Definition..... | 3 |
| 1.2 Mechanical Specification..... | 3 |
| 1.3 Block Diagram..... | 4 |
| 1.4 Electrical Characteristics..... | 5 |
| 1.5 Radio Characteristics..... | 6 |
| 1.6 Reference Schematics..... | 7 |
| 2. Software/ Profile..... | 8 |
| 3. Standard Setup Information..... | 9 |
| 4. Customization Information..... | 9 |

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

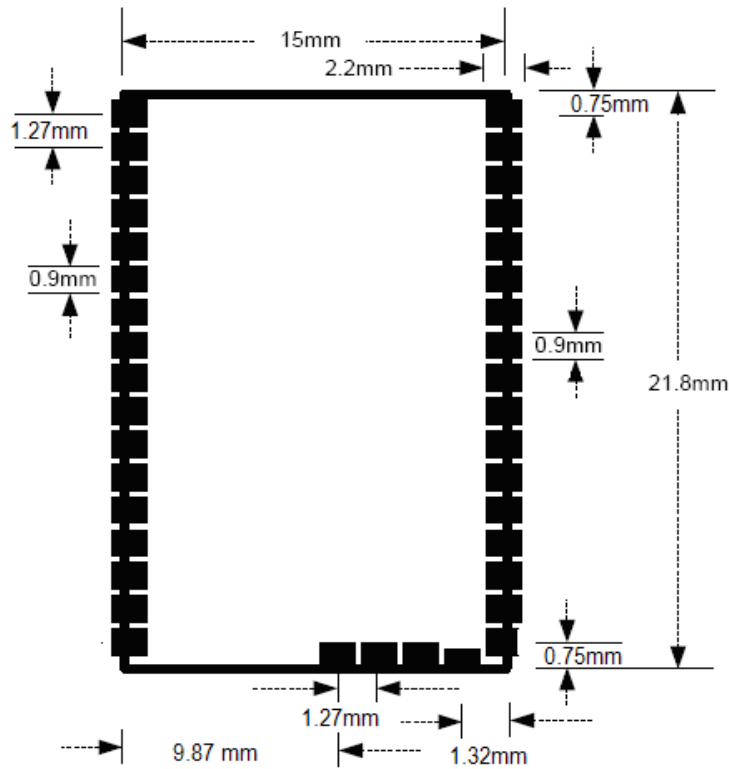
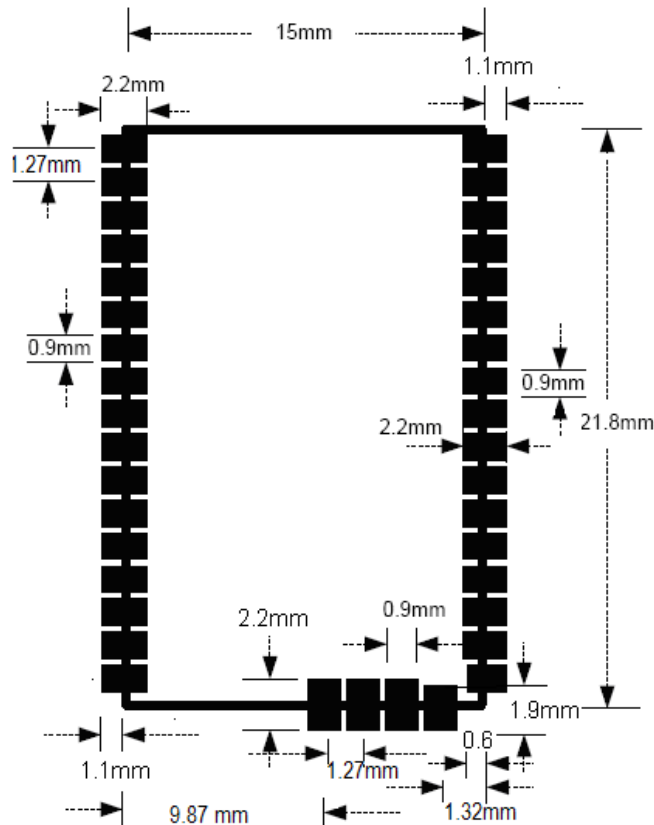


Fig. 1.2.1 Mechanical Specification

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

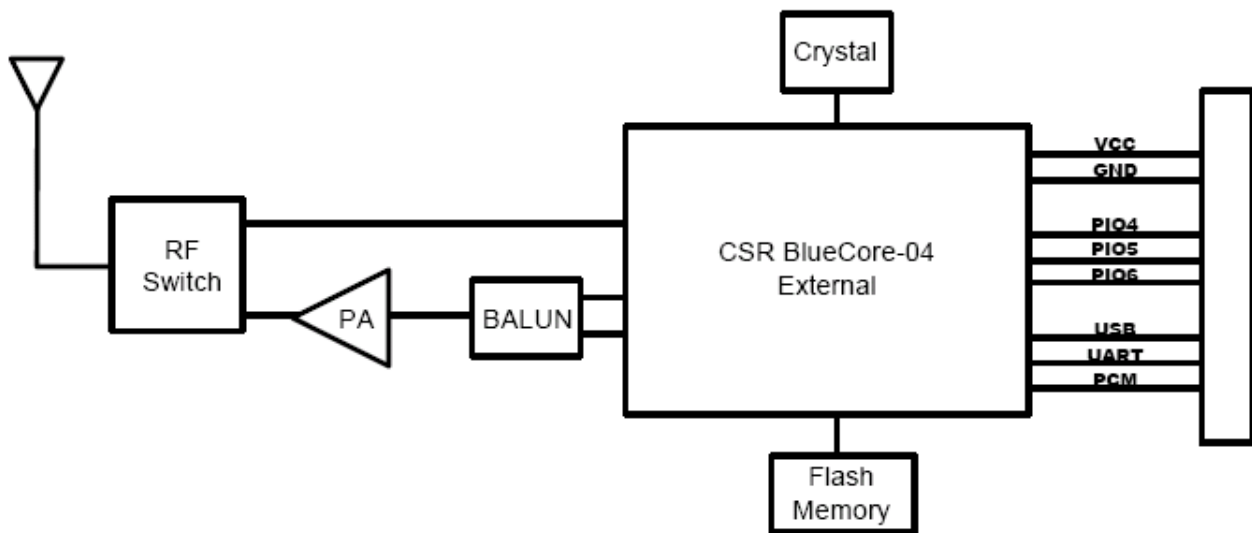


Fig 1.3.1 MB-C041 Class1 BT2.0 Module Block Diagram

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

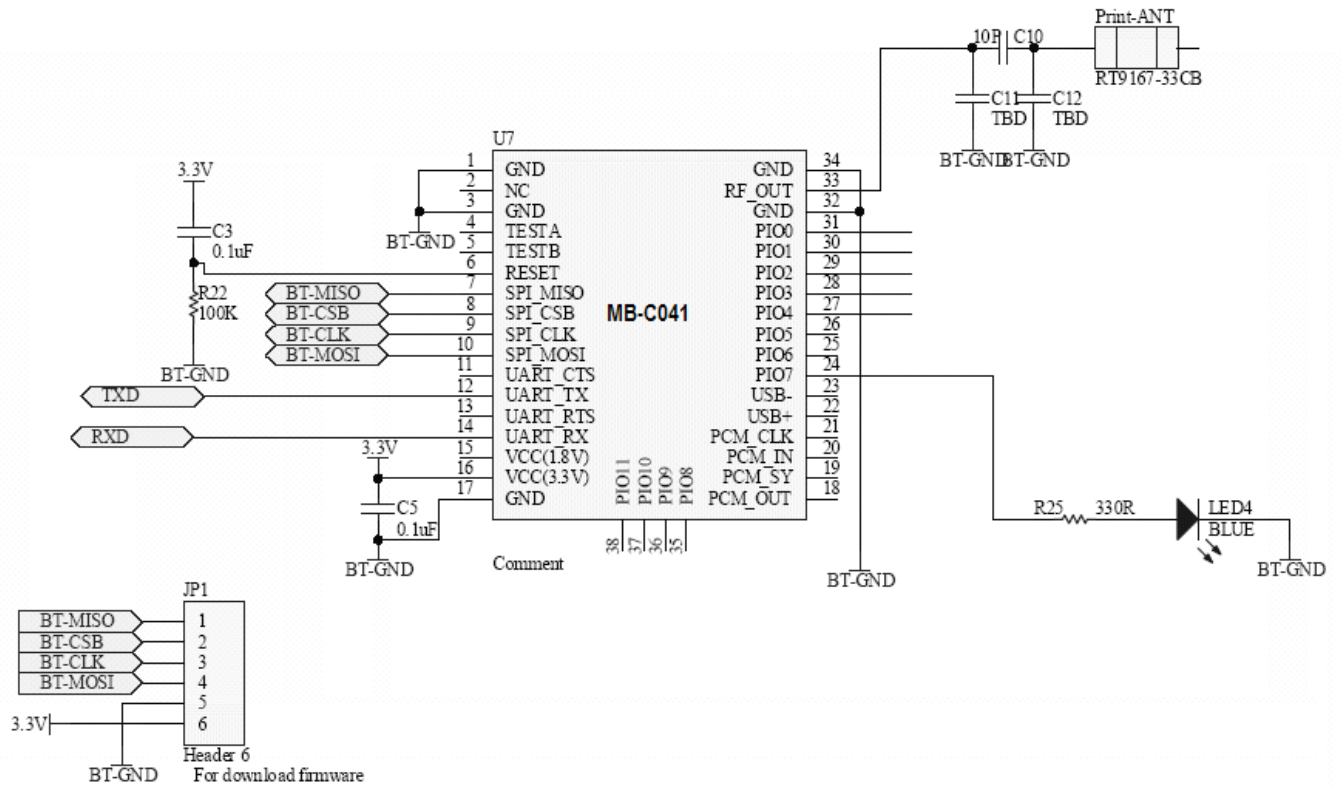
| | |
|-------------------------------|--------------|
| Voltage Range | 3.3V±0.3V |
| Operating Temperature Range | -20°C ~ 60°C |
| Storage Temperature Range | -20°C ~ 80°C |
| Relative Humidity (Operating) | ≤90% |
| Relative Humidity (Storage) | ≤90% |

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 | |
| | | | |
| | | | |