

BMD-4DR

Bluetooth Class 2 Module

1. Module Features

- EDR compliant with v0.9 of specification for both 2Mbps and 3Mbps modulation modes.
- USB and UART Port
- Support for 802.11 Coexistence

2. Specification

- Operating Conditions
 - Supply Voltage: 2.6V ~3.6V
 - Temperature Range: -20~+70°C
- Radio Characteristics
 - Receiver Sensitivity : -80dBm (Typical)
 - Transmitter Power : 0dBm (Typical)

3. Applications

- PDA
- PCs
- Access Point
- Computer Accessories(compact Flash Cards, PCM/CIA Cards, USB Dongles)

4. Features

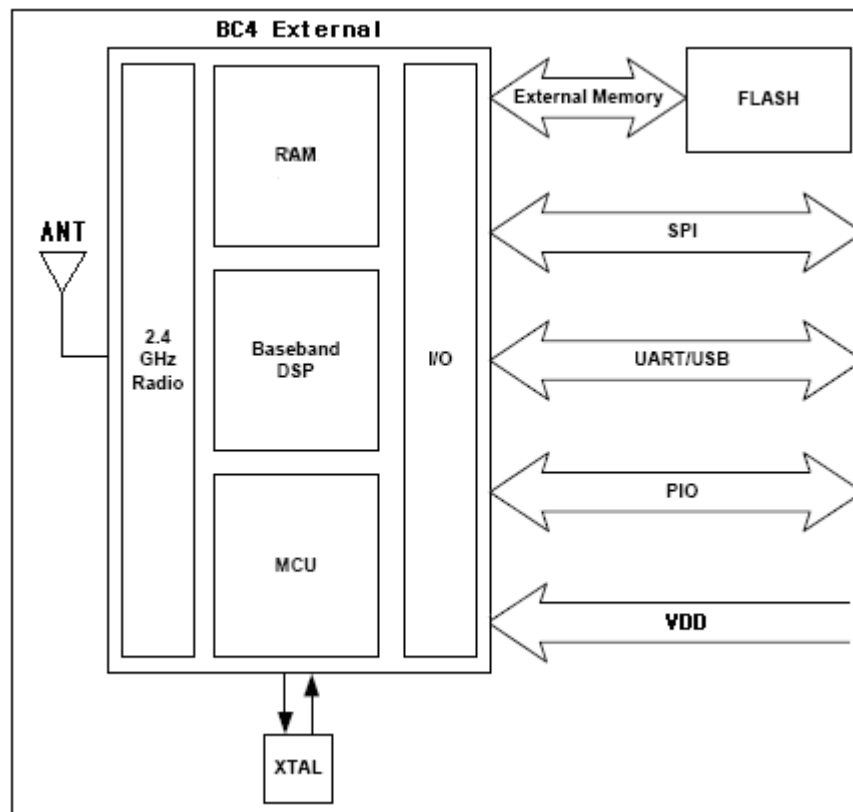
- Size(15 x 26 x 3.2 mm)
- Surface Mountable
- RoHS Compliant



5. Descriptions

The **BMD-4DR** is Class 2 (+4dBm max) Bluetooth Module for Access Point. It's designed to be used as an universal Bluetooth module of **Bluetooth specification version 2.0+EDR.**

6. Block Diagram



7. Electrical Characteristics

Absolute Maximum Ratings			
Parameter	Min	Max	Unit
Storage Temperature	-40	+85	°C
Supply Voltage	2.7	3.6	V
Other Pin Voltage	VSS-0.4	VCC+0.4	V
Recommended Operating Conditions			
Parameter	Min	Max	Unit
Temperature	-20	+70	°C
Supply Voltage	2.7	3.6	V

8. RF Specification

Transmitter Performance					
Parameter	Condition	Min	Typ.	Max	Unit
Output Power	Normal/extreme test	-6	0	4	dBm
Power Density	Normal/extreme test	-	-	4	dBm
Power Control	Normal/extreme test	2dB ≤ Step size ≤ 8dB			
Frequency Range	Normal/extreme test	2400	-	2483.5	MHz
20dB Bandwidth	Normal/extreme test	-	850	1000	KHz
Adjacent Characteristics	±2MHz	-	-	-20	dBm
	±3MHz	-	-	-40	dBm
	±4MHz	-	-	-40	dBm
Modulation Characteristics	ΔF1avg	140		175	KHz
	ΔF2 max	115			KHz
	ΔF2 avg / ΔF1max			80	%
Initial Carrier Frequency Tolerance		-35	10	35	KHz
Carrier Frequency Drift	One slot packet(DH1)	-25		25	KHz
	Three slot packet(DH3)	-40		40	KHz
	Five slot packet(DH5)	-40		40	KHz
Transceiver Performance					
Parameter	Condition	Min	Typ.	Max	Unit
Out-of-Band Spurious Emissions	30MHz ~ 1MHz	-	-	-36	dBm
	1GHz ~ 12.75GHz	-	-	-30	dBm
	1.8GHz ~ 5.3GHz	-	-	-47	dBm
	5.1GHz ~ 5.3GHz	-	-	-47	dBm
Receiver Performance					
Parameter	Condition	Min	Typ.	Max	Unit
Sensitivity level	Single slot packets	-70	-76	-	dBm
	Multi slot packets	-70	-76	-	dBm
C/I performance	C/I co-channel	-	-	11	dB
	C/I 1MHz(Adjacent channel selectivity)	-	-	0	dB
	C/I 2MHz(Adjacent channel selectivity)	-	-	-30	dB
	C/I ≥3MHz(Adjacent channel selectivity)	-	-	-40	dB
Blocking performance	30MHz ~ 2000MHz	-10			dBm
	2000MHz ~ 2400MHz	-27			dBm
	2500MHz ~ 3000MHz	-27			dBm
	3000MHz ~ 12.75MHz	-10			dBm
Inter-modulation Performance	N=5	-39	-		dBm
Maximum Input Level		-20	-10		dBm

9. Pin Description & Package Outline

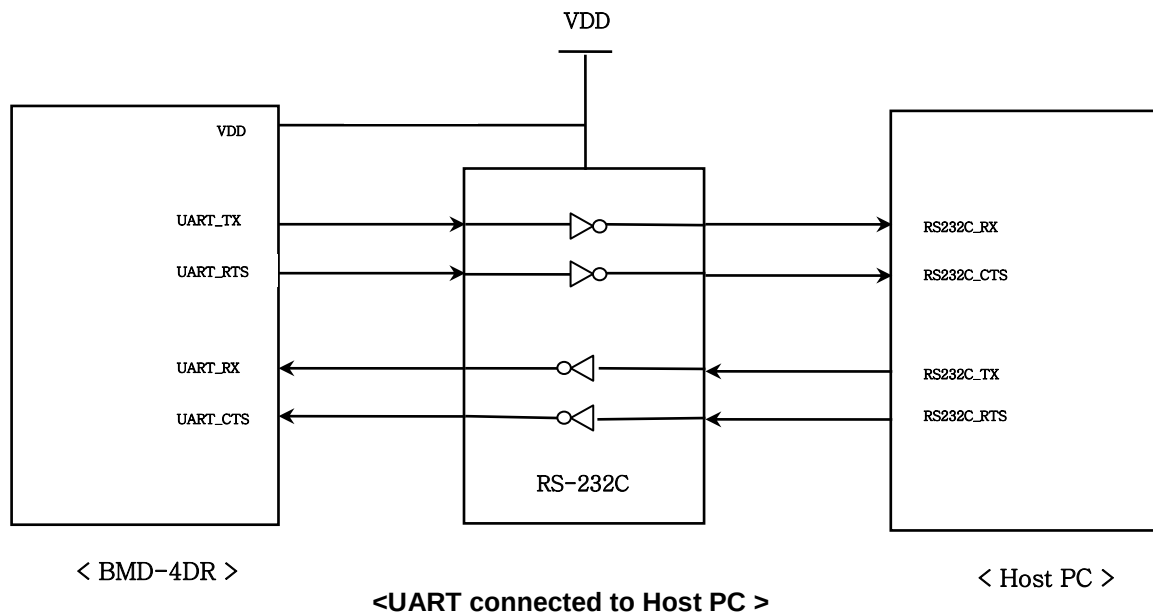
Pin No.	Pin Name	Description
1	GND	Common Ground
2	PIO_7	Programmable input/output line
3	USB_DP	USB Data Positive
4	USB_DN	USB Data Negative
5	RESETB	Reset if Low.
6	PIO_4	Programmable input/output line
7	PIO_2	Programmable input/output line
8	PIO_3	Programmable input/output line
9	PIO_5	Programmable input/output line
10	VDD	Positive supply(3.3V)
11	GND	Common Ground
12	GND	Common Ground
13	UART_CTS	UART Clear to send active low
14	UART_RTS	UART request to send active low
15	UART_RX	UART RX Data
16	UART_TX	UART TX Data
17	SPI_MISO	Serial Peripheral Interface data output
18	SPI_CLK	Serial Peripheral Interface data clock
19	SPI_CSB	Chip select for Synchronous Serial Interface active low
20	SPI_MOSI	Serial Peripheral Interface data input
21	PIO_6	Programmable input/output line
22	GND	Common Ground
23	N.C	N.C
24	N.C	N.C

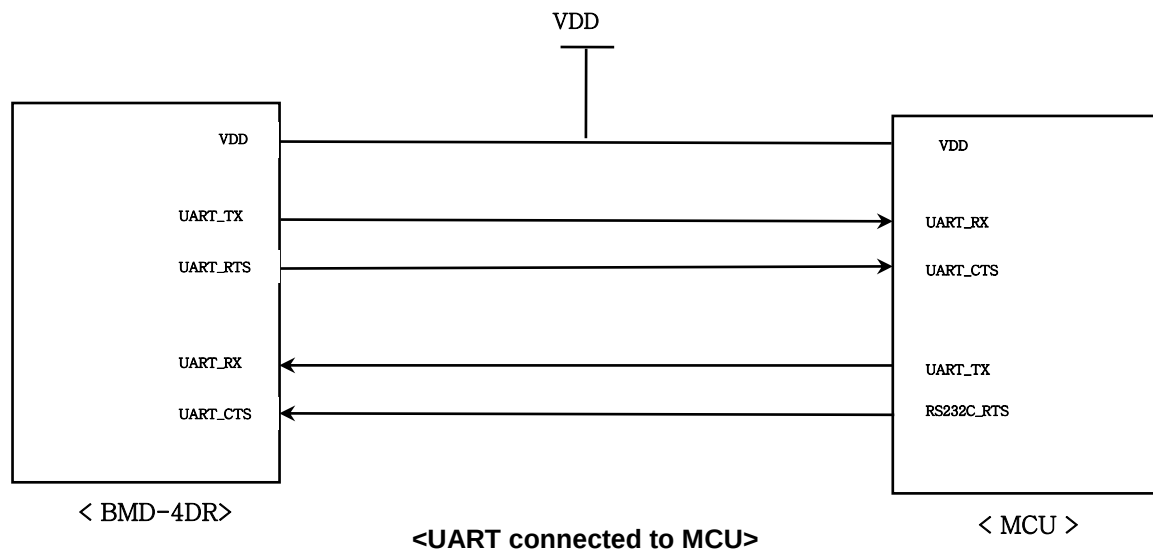
10. UART Interface

BMD-4DR is Universal Asynchronous Receiver Transmitter(UART) interface provides a simple mechanism for communicating with other serial device using the RS232 standard.

When BMD-4DR is connected to another digital device, UART_RX and UART_TX transfer data between the two device. The remaining two signal, UART_CTS, UART_RTS, can be used to implement RS232 hardware flow control where both are active low indicators.

All UART connections are implemented using CMOS technology and have signaling levels of 0V and VDD.



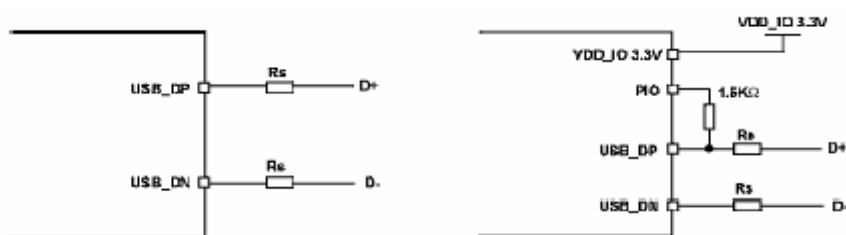


11. USB Interface

BDM-4DR USB devices contain a full speed(12Mbit/s) USB interface that is capable of driving of a USB cable directly. No external USB transceiver is required. The device operates as a USB peripheral, responding to requests from a master host controller such as a PC. Both the OHCI and UHCI standards supported. The set of the USB endpoints implemented can behave as specified in the USB section of the Bluetooth specification v2.0+EDR.

As USB is Master/Slave oriented system in common with other USB peripherals, BMD-4DR only supports USB slave operation.

BMD-4DR is has an internal USB pull-up resistor. This pulls the USB+ pin weakly high when BMD-4DR is ready to enumerate. It signal to the PC that it is a full speed(12Mbit/s) USB device.



<USB Connections for BUS Power Mode>

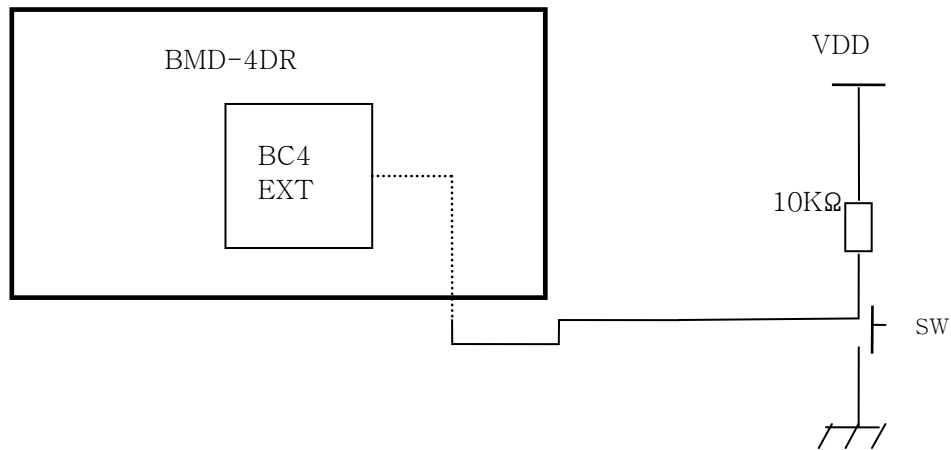
<USB Connections for Self Power Mode>

Identifier	Value	Function
R_s	27 nominal	Impedance matching to USB cable

12. RESETB

BMD-4DR may be reset from several source: RESETB pin, power on reset, a UART break character or via a software configured watchdog timer.

The RESETB pin is an active low reset and is internally filtered using the internal low frequency clock oscillator. A reset will be performed between 1.5 and 4.0ms following RESET being active. It is recommended that RESET is applied for applied for a period greater than 5ms.



< BMD-4DR Manual Reset >

13. Dimension

