

Movon MD-4DR Application Note

Module Features

- Bluetooth system v2.0 + EDR
- Enhanced Data Rate(EDR) compliant with v2.0.E.2 of specification for both 2Mbps and 3Mbps modulation modes
- Scatternet Support
- Support for 802.11 Co-existence
- Full Speed Bluetooth Operation with Full Piconet Support
- Standard HCI (UART and USB)

General Description

MD-4DR is a Bluetooth module for 2.4GHz systems including enhanced data rates(EDR) to 3Mbps. It provides a fully compliant Bluetooth system to v2.0 of the specification for data and voice communications. Physical interface to host (UART,USB) can support full Bluetooth data rate 3M baud rate for UART and 12Mbps according to the USB v2.0 specification .

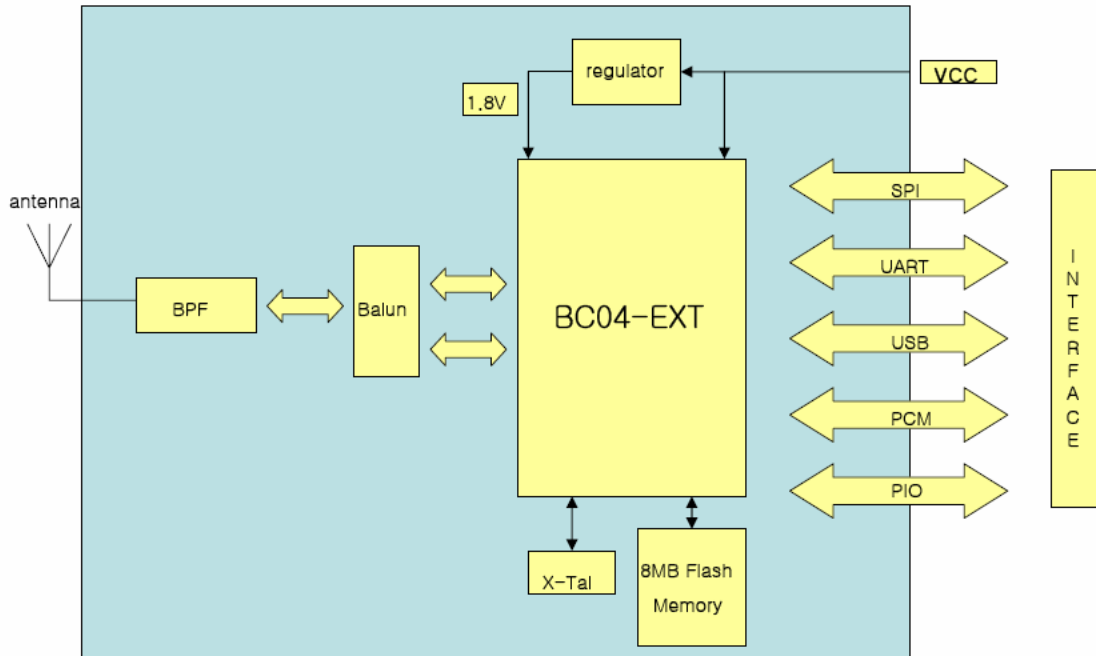
Applications

- Laptop and Desktop PCs
- Digital Camera and Printer
- Computer Accessories(compact Flash Cards, PCMCIA Cards, SD Cards and USB Dongles)
- Personal Digital Assistants (PDAs)

Features

- Size(18.0 X 14.0 X 2.0mm)
- Class2 Support
- Surface Mountable
- Support PCM interface for SCO
- Single 3.3V Power Supply

Overview



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

RF specification

Transmitter Performance					
Parameter	Condition	Min	Typ	Max	Unit
Output Power	Normal/extreme test	-6	2	4	dBm
Power Density	Normal/extreme test	-	-	20	dBm
Power Control	Normal/extreme test				
Frequency Range	Normal/extreme test	2402	-	2480	MHz
20dB Bandwidth	Normal/extreme test	-	850	1000	KHz
Adjacent channel power	± 2 MHz	-	-	-20	dBm
	± 3 MHz	-	-	-40	dBm
	± 4 MHz	-	-	-40	dBm
Modulation Characteristics	ΔF_{1avg}	140	-	175	KHz
	ΔF_{2max}	115	-	-	KHz
	$\Delta F_{2avg}/\Delta F_{1avg}$	-	-	80	%
Initial Carrier Frequency Tolerance		-75	-	75	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-1GHz	-	-	-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	-80	-	dBm
Sensitivity level	Multi slot packets	-70	-	-	dBm
C/I performance	C/I co-channel	-	9	11	dB
	C/I _{1MHz} (adjacent channel)		-2	0	dB
	C/I _{2MHz} (2nd Adjacent channel)		-34	-30	dB
	C/I _{≥ 3MHz} (3 rd adjacent channel)		-43	-40	dB
Blocking performance	30MHz-2000MHz	-10	-	-	dBm
	2000MHz-2400MHz	-27	-	-	dBm
	2500MHz-3000MHz	-27	-	-	dBm

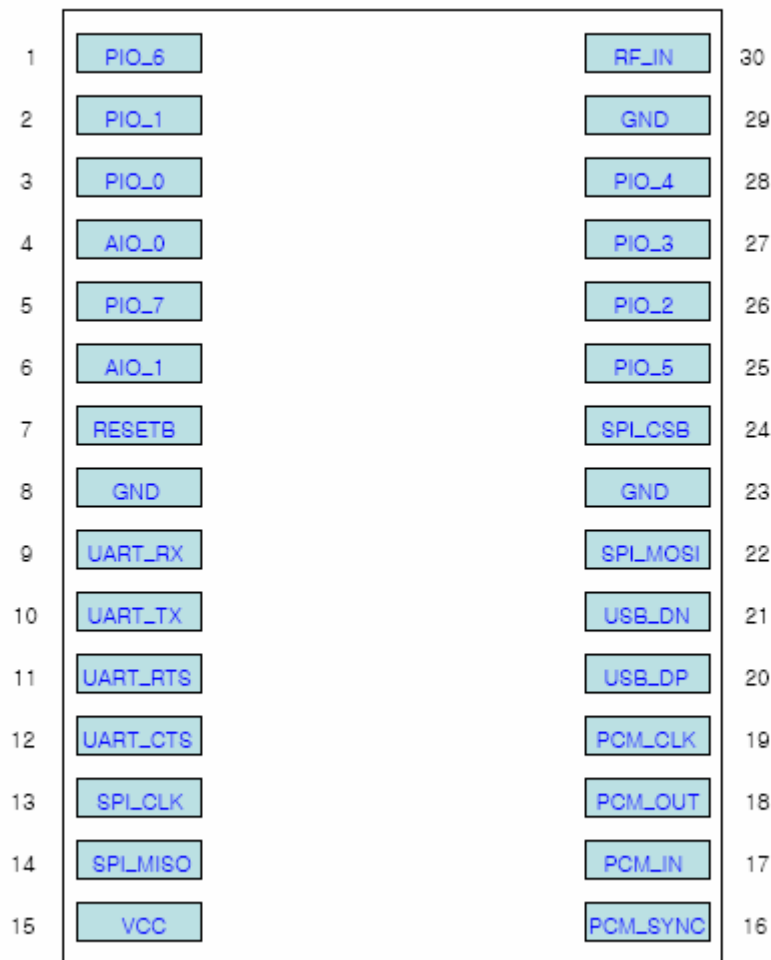
	3000MHz-12.75MHz	-10	-	-	dBm
Intermodulation Performacne	N=5	-39	-	-	dBm
Maximun Input Level		-20	-5	-	dBm

Pin Description

PIO No.	Pin Name	Description	Pad Type
1	PIO_6	Programmable input/output line	Bi-directional
2	PIO_1	Programmable input/output line/TX EN	Bi-directional
3	PIO_0	Programmable input/output line/RX EN	Bi-directional
4	AIO_0	Programmable input/output line	Bi-directional
5	PIO_7	Programmable input/output line	Bi-directional
6	AIO_1	Programmable input/output line	Bi-directional
7	RESETB	Reset if low. Input debounced so must be low for >5ms to cause a reset	CMOS Input
8	GND	Common Ground	Ground
9	UART_RX	UART Data Input	CMOS Input
10	UART_TX	UART Data Output	CMOS Output
11	UART_RTS	UART request to send to active low	CMOS Output
12	UART_CTS	UART request to clear to active low	CMOS Input
13	SPI_CLK	Serial Peripheral Interface Clock	CMOS Input
14	SPI_MISO	Serial Peripheral Interface Data Input	CMOS Output
15	Vcc	Power Supply	Power
16	PCM_SYNC	Synchronous Data Sync	Bi-direction
17	PCM_IN	Synchronous Data Input	CMOS Input
18	PCM_OUT	Synchronous Data Output	CMOS Output
19	PCM_CLK	Synchronous Data Clock	Bi-direction
20	USB_DP	USB Data Plus with selectable internal 1.5KΩ Pull-up resistor	Bi-direction
21	USB_DN	USB Data minus	Bi-direction
22	SPI_MOSI	Serial Peripheral Interface Data Output	Bi-direction
23	GND	Common Ground	Ground
24	SPI_CSB	Chip Select for Synchronous Serial interface active low	CMOS Input

25	PIO_5	Programmable input/output line	Bi-directional
26	PIO_2	Programmable input/output line	Bi-directional
27	PIO_3	Programmable input/output line	Bi-directional
28	PIO_4	Programmable input/output line	Bi-directional
29	GND	Common Ground	Ground
30	RF	RF connection to Antenna	Bi-direction

Pin Map(Bottom View)



Dimension

