

Rayson

Bluetooth® Module

Class2 BC04-rom HCI Module

BTM-331

Features

- Bluetooth Spec.v2.1+EDR Compliant
- Class 2 Output Power
- Low Voltage Power Supply, 1.8V or 3.3V
- Built-in 16Kbits EEPROM
- Low Power Modes Available: Park, Sniff, Hold and Deep Sleep
- UART or USB Host Interface (BTM340 is USB only)
- Support for 802.11 Co-existence
- Protocol Support HCI or RFCOMM (BC41B143A07)
- RoHS Compliant
- Small outline. 14 x 12 x 2.2 mm

Applications

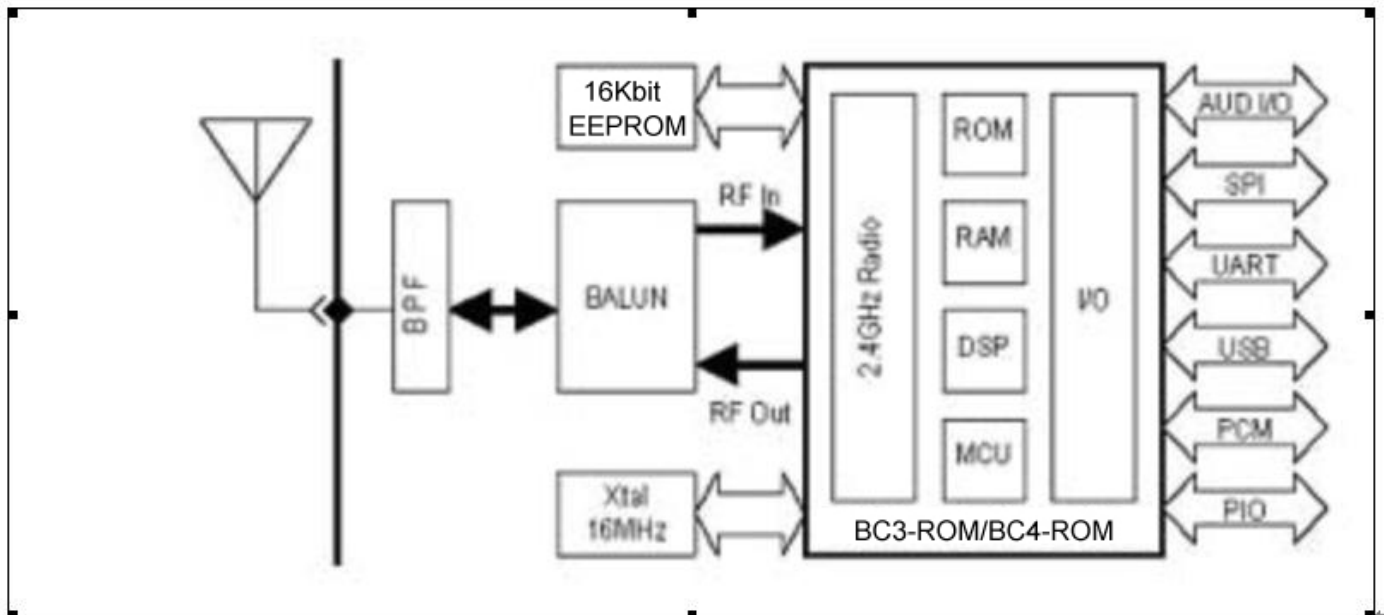
- Domestic and industrial applications
- Phone Dongle
- USB Dongle
- PCs, PDAs

Outline



General Electrical Specification

Block Diagram



Electrical Characteristics

Absolute Maximum Rating	Min	Max
Storage Temperature	-40°C	+150°C
Supply Voltage, Vcc (3.3V Version)	-0.4V	3.7V
Supply Voltage, Vcc (1.8V Version)	-0.4V	2.2V

Specifications are subject to change without prior notice

Recommended Operating Conditions	Description	Min	Typ	Max	Units
Operating Temperature Range		-25		+75	°C
Carrier Frequency		2.402		2.480	GHZ
Supply Voltage, Vcc (3.3V Version)		3.0	3.30	3.6	V
Supply Voltage, Vcc (1.8V Version)		1.7	1.8	1.9V	V
RF Output Power	Measured in 50 ohm	-2	0	4	dBm
RX Sensitivity			-83	-80	dBm
Load Impedance	No abnormal Oscillation			5:1	-
Input Low Voltage	RESET,UART,GPIO,PCM	-0.30	-	0.80	V
Input High Voltage	RESET,UART,GPIO,PCM	0.70VDD_PIO	-	VDD_PIO+0.30	V
Output Low Voltage	UART,GPIO,PCM	-	-	0.40	V
Output High Voltage	UART,GPIO,PCM	VDD_PIO-0.40	-	-	V
AverageCurrent Consumption	Receive DM1		46	-	mA

Power Consumption	Units	Average	Peak
SCO Connection HV3 (30ms interval sniff mode)	.mA	17.5	-
SCO Connection HV1	mA	36.3	-
ACL Data Transfer 115.2Kbps UART	mA	17.7	-
ACL Data Transfer 720Kbps USB	mA	8.4	-
Peak Current during RF Burst	mA	38	-
Leakage Current (all off) supply connected	uA	49	-

Vcc = 3.3V; f = 2.45GHz; T = +20°C

Radio Characteristics, VDD = 1.8V Temperature = +20°C						
	Frequency (GHz)	Min	Typ	Max	Bluetooth Specification	Unit
Sensitivity at 0.1% BER ⁽⁶⁾	2.402	-	-80	-78	≤ -70	dBm
	2.441	-	-83	-80		dBm
	2.480	-	-83	-80		dBm
Maximum received signal at 0.1% BER	2.402	0	-	-	≥ -20	dBm
	2.441	0	-	-		dBm
	2.480	0	-	-		dBm
RF transmit power ⁽¹⁾⁽⁶⁾	2.402	-	2.0	-	-6 to +4 ⁽²⁾	dBm
	2.441	-	2.0	-		dBm
	2.480	-	2.0	-		dBm
Initial carrier frequency tolerance	2.402	-	12	75	±75	kHz
	2.441	-	10	75		kHz
	2.480	-	9	75		kHz
bandwidth for modulated	2.402	-	879	1000	≤ 1000	kHz
	2.441	-	816	1000		kHz
	2.480	-	819	1000		kHz
Drift (single slot packet)	2.402	-	-	25	≤25	kHz
	2.441	-	-	25		kHz
	2.480	-	-	25		kHz
Drift (five slot packet)	2.402	-	-	40	≤40	kHz
	2.441	-	-	40		kHz
	2.480	-	-	40		kHz
Drift Rate	2.402	-	-	20	20	kHz/50μs
	2.441	-	-	20		kHz/50μs
	2.480	-	-	20		kHz/50μs
RF power control range		16	35	-	≥16	dB
RF power range control resolution		-	1.8	-	-	dB

Radio Characteristics, VDD =1.8V Temperature = +20°C

	Frequency(G Hz)	Min	Typ	Max	Bluetooth Specification	Unit
$\Delta f1^{avg}$ "Maximum Modulation"	2.402	140	165	175	140< $\Delta f1^{avg}$ <175	kHz
	2.441	140	165	175		kHz
	2.480	140	165	175		kHz
$\Delta f2^{maz}$ "Minimum Modulation"	2.402	115	150	-	115	kHz
	2.441	115	150	-		kHz
	2.480	115	150	-		kHz
C/I co-channel		-	10	11	≤ 11	dB
Adjacent channel selectivity C/I $F=F_0$ +1 MHz ⁽³⁾⁽⁵⁾		-	-4	0	≤ 0	dB
Adjacent channel selectivity C/I $F=F_0 - 1$ MHz ⁽³⁾⁽⁵⁾		-	-4	0	≤ 0	dB
Adjacent channel selectivity C/I $F=F_0$ +2 MHz ⁽³⁾⁽⁵⁾		-	-35	-30	$\leq - 30$	dB
Adjacent channel selectivity C/I $F=F_0 - 2$ MHz ⁽³⁾⁽⁵⁾		-	-21	-20	$\leq - 20$	dB
Adjacent channel selectivity C/I $F>=F_0$ +3 MHz ⁽³⁾⁽⁵⁾		-	-45	-	$\leq - 40$	dB
Adjacent channel selectivity C/I $F<=F_0 - 5$ MHz ⁽³⁾⁽⁵⁾		-	-45	-	$\leq - 40$	dB
Adjacent channel selectivity C/I $F=F_{image}$ ⁽³⁾⁽⁵⁾		-	-18	-9	$\leq - 9$	dB
Adjacent channel transmit power $F=F_0\pm 2$ MHz ⁽⁴⁾⁽⁵⁾		-	-35	-20	$\leq - 20$	dBc
Adjacent channel transmit power $F=F_0\pm 3$ MHz ⁽⁴⁾⁽⁵⁾		-	-55	-40	$\leq - 40$	dBc

Pin Configurations

PIN	NAME	TYPE	FUNCTION	REMARK
1	GND	Ground	Ground	
2	VCC	Power	3.3V or 1.8V Power Supply Input	
3	AIO0	Bi-directional	Programmable Input/Output Line	
4	AIO1	Bi-directional	Programmable Input/Output Line	
5	UART_RTS	CMOS Output	UART Request To Send (Active Low)	
6	UART_CTS	CMOS Input	UART Clear To Send (Active Low)	
7	UART_RX	CMOS Input	UART Data Input (Active High)	
8	UART_TX	CMOS Output	UART Data Output (Active High)	
9	USB_DN	Bi-directional	USB Data Minus	
10	USB_DP	Bi-directional	USB Data Plus	
11	PCM_OUT	CMOS Output	Synchronous Data Output	
12	PCM_IN	CMOS Input	Synchronous Data Input	
13	PCM_CLK	Bi-directional	Synchronous Data Clock	
14	PCM_SYNC	Bi-directional	Synchronous Data Sync	
15	SPI_CSB	CMOS Input	Chip Select For Synchronous Serial Interface	
16	SPI_CLK	CMOS Input	Serial Peripheral Interface Clock	
17	SPI_MOSI	CMOS Input	Serial Peripheral Interface Data Input	
18	SPI_MISO	CMOS Output	Serial Peripheral Interface Data Output	
19	RESET	CMOS Input	Reset if high. Input debounced so must be high for >5ms to cause a reset	
20	PIO5	Bi-directional	Programmable Input/Output line, BT_Active output	
21	PIO4	Bi-directional	Host transport Selection	
22	PIO3	Bi-directional	Programmable Input / Output Line	
23	PIO2	Bi-directional	Programmable Input / Output Line	
24	PIO1	Bi-directional	Host transport Selection	
25	GND	Ground	Ground	
26	RF_IO	ANT	Antenna Interface	
27	GND	Ground	Ground	
28	PIO0	Bi-directional	Host transport Selection	
29	PIO9	Bi-directional	Programmable Input/Output Line	
30	PIO10	Bi-directional	Programmable Input/Output Line, WLAN_Active input	
31	PIO11	Bi-directional	Programmable Input/Output Line	
32	Reserved	N/C	Leave unconnected	
33	Reserved	N/C	Leave unconnected	
34	Reserved	N/C	Leave unconnected	
35	Reserved	N/C	Leave unconnected	
36	VREG_EN	CMOS Input	Internal Regulator enable input (Active High)	

Pin values			Host Transport	Features	
PIO0	PIO1	PIO4		Auto system clock adaptation	Auto baud rate adaptation
0	0	0	BCSP	Available	Available
0	0	1	BCSP with 2 stop bits	Available	Available
0	1	0	USB, 16MHz crystal	Not available	Not appropriate
0	1	1	USB, 26MHz crystal	Not available	Not appropriate
1	0	0	Three-wire UART	Available	Available
1	0	1	H4DS	Available	Available
1	1	0	UART(H4)	Available	Available
1	1	1	Undefined		

