

Rayson Bluetooth[®] Module

BC05-MM Class1 Stereo Module BTM-620

Features

- The module is a Max.18dBm(Class 1) module.
- Bluetooth Standard v2.1+EDR.
- Integrated Switched-Mode Regulator.
- Integrated Battery Charger.
- Embedded Kalimba DSP Co-Processor.
- Integrated 16-bit Stereo Audio CODEC 95dB SNR for DAC.
- Enhanced Audibility and Noise Cancellation.
- Integrated with 8M bits flash memory.
- Support Host Interface: USB or UART.
- Support Digital Audio Bus : PCM, I²S or SPDIF.
- HSP/HFP/A2DP/AVRCP profiles support.
- RoHS compliant.
- Small outline. 21 x 16 x 2 mm.

Applications

- High Quality Stereo Wireless Headsets.
- High Quality Mono Headsets.
- Wireless Speakers.
- VOIP Handsets.
- Analogue and USB Multimedia Dongles.
- Bluetooth-Enabled Automotive Wireless Gateways.

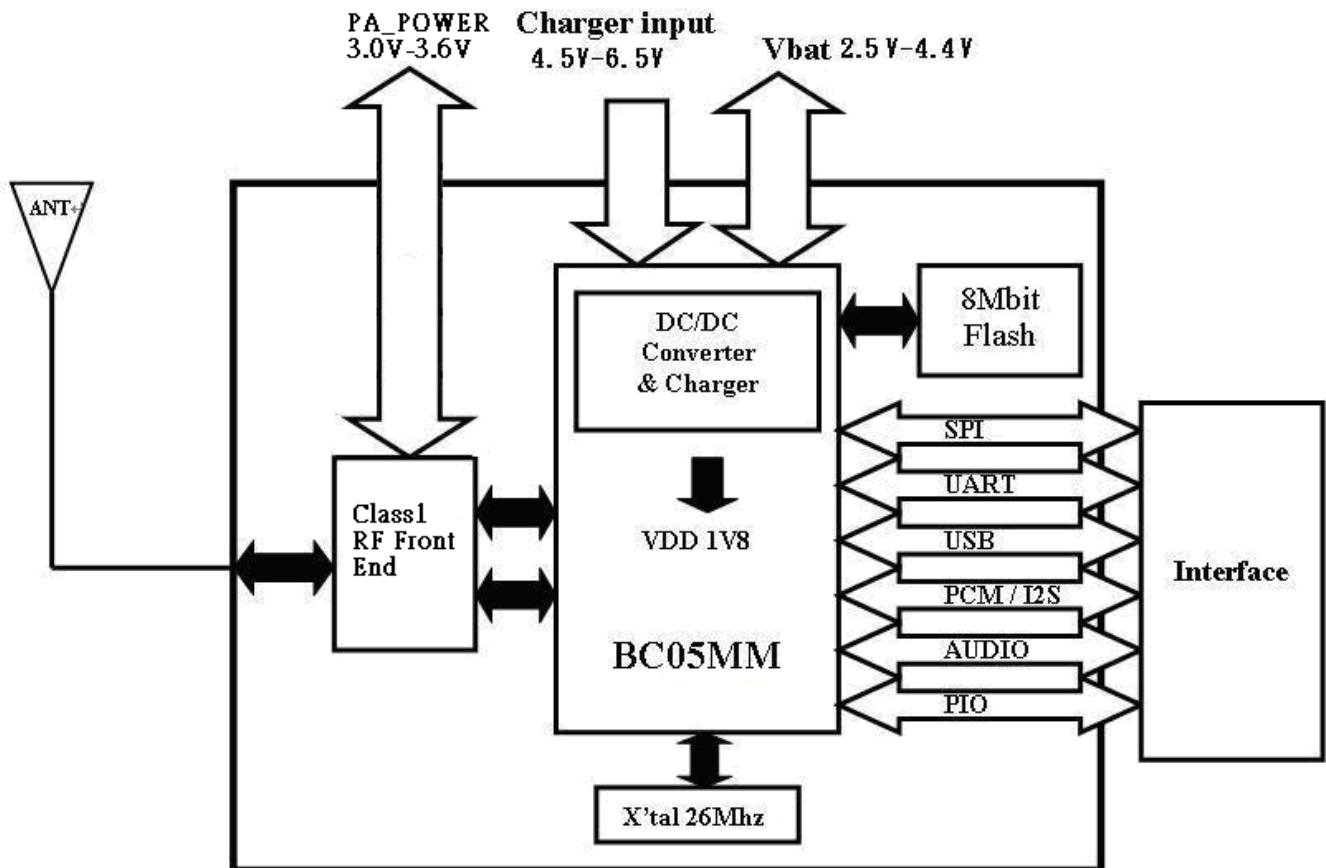
Outline



General Electrical Specification

Absolute Maximum Ratings			
Ratings	Min.	Max.	
Storage Temperature	-40 °C	+85 °C	
Supply Voltage (VBAT)	-0.4V	4.4 V	
Supply Voltage (VDD_CHG)	-0.4V	6.5V	
Supply Voltage (PIO_3v3,VDD_PADS,VDD_USB)	-0.4V	3.6V	
Supply Voltage (POWER_ON)	-0.4V	4.9V	
Supply Voltage (3v3_PA)	-0.3V	4.2V	
Recommended Operating Condition			
Operating Condition	Min.	Max.	
Operating Temperature range	0°C	+70 °C	
Supply Voltage (VBAT)	2.5V	4.4V	
Supply Voltage (VDD_CHG)	4.5V	6.5V	
Supply Voltage (PIO_3v3)	3.0V	3.6V	
Supply Voltage (VDD_PADS,VDD_USB)	1.7V	3.6V	
Supply Voltage (3v3_PA)	3.0V	3.6V	
Power Consumption			
Mode		Average	Unit
Stand-by		0.07~5	mA
Inquiry Scan		4.8~9	mA
Page Scan		50~54	mA
Connected		8.5~11	mA
A2DP Streaming		28~60 (TX) 19~26 (RX)	mA
HFP Active Call		22~25	mA

Block Diagram



Note: The battery charger is designed to operate with a permanently connected battery. If the application enables the charger input to be connected while the battery is disconnected, then the VBAT pin voltage may become unstable. This in turn may cause damage to the internal switch-mode regulator.

RF Specification: VDD=3.3V Temperature=+20°C**Transmitter**

	Typ	Bluetooth Specification	Unit
Maximum RF transmit power	17	0 to +20	dBm
RF power control range	24	≥16	dB
RF power range control resolution	0.5	-	dB
20dB bandwidth for modulated carrier	940	≤1000	kHz
Adjacent channel transmit power F = F0 ± 2MHz	-36	≤-20	dBm
Adjacent channel transmit power F = F0 ± 3MHz	-45	≤-40	dBm
Adjacent channel transmit power F = F0 ± > 3MHz	≤-50	≤-40	dBm
Δf1avg Maximum Modulation	165	140<f1avg<175	kHz
Δf2max Minimum Modulation	142	115	kHz
Δf1avg/Δf2avg	0.92	≥0.80	
Initial carrier frequency tolerance	±25	±75	kHz
Drift Rate	±14	±20	kHz/50μ
Drift (single slot packet)	±20	±25	kHz
Drift (five slot packet)	±20	±40	kHz

Receiver

	Frequency (GHz)	Typ	Bluetooth Specification	Unit
Sensitivity at 0.1% BER for all packet types	2.402	-82	≤-70	dBm
	2.441	-82		
	2.480	-82		
Maximum received signal at 0.1% BER		≥-10	≥-20	dBm
C/I co-channel		6	≤11	dB
Adjacent channel selectivity C/I F = F0 + 1MHz		-6	≤0	dB
Adjacent channel selectivity C/I F = F0 - 1MHz		-7	≤0	dB
Adjacent channel selectivity C/I F = F0 + 2MHz		-21	≤-20	dB
Adjacent channel selectivity C/I F = F0 - 2MHz		-39	≤-30	dB
Adjacent channel selectivity C/I F = F0 - 3MHz		-43	≤-40	dB
Adjacent channel selectivity C/I F = F0 + 5MHz		-47	≤-40	dB
Adjacent channel selectivity C/I F = Fimage		-17	≤-9	dB
Maximum level of intermodulation interferers		-30	≥-39	dBm
Spurious output level		-156		dBm/Hz

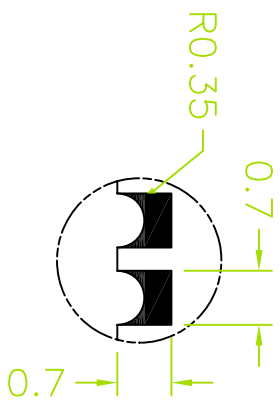
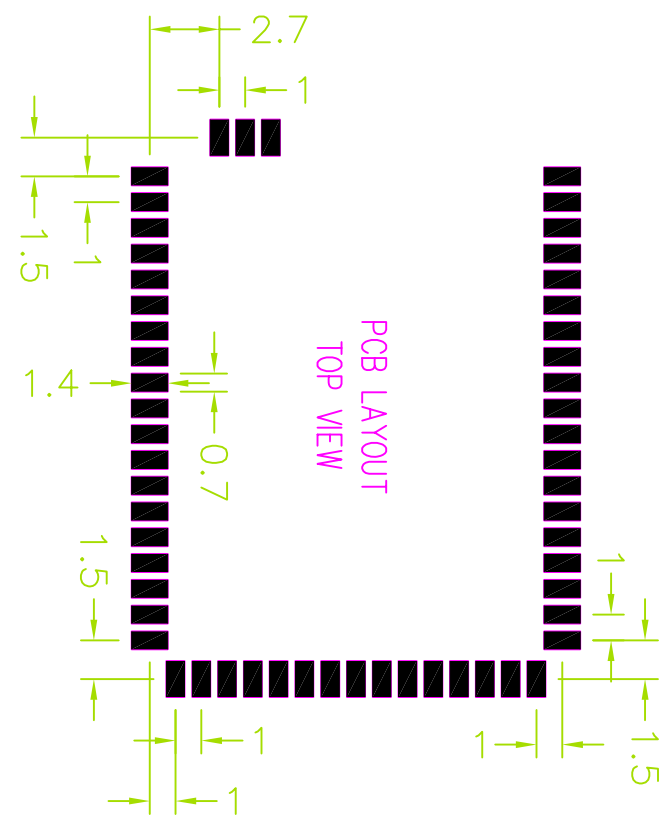
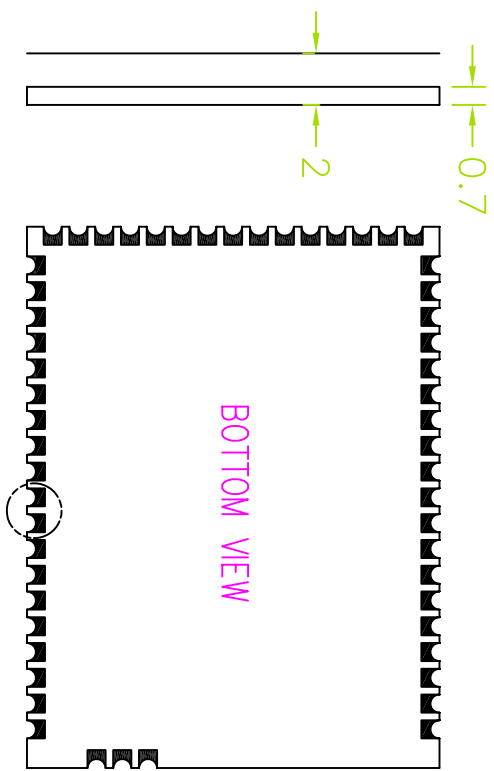
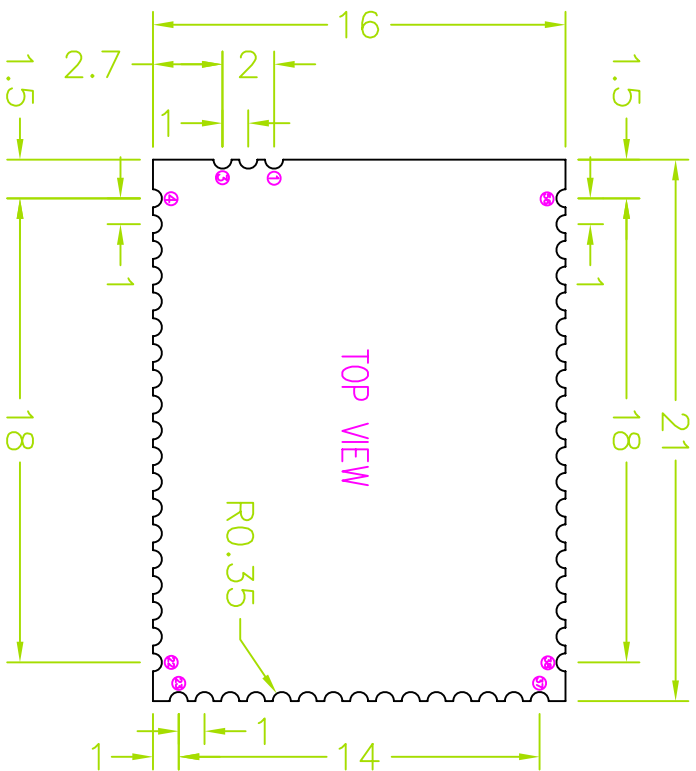
BTM-620 Pin Functions

No.	Pin Name	Pin Type	Pin Description
1	GND	GND	Common Ground
2	ANT	Analogue	Connect to 50 ohm Antenna (RF Signal)
3	GND	GND	Common Ground
4	GND	GND	Common Ground
5	3v3_PA	VDD	Positive supply for external PA
6	PIO_3v3	VDD	Positive supply for PIO0 and PIO1 *(a)
7	AIO1	Bi-directional	Analogue programmable input/output line
8	AIO0	Bi-directional	Analogue programmable input/output line
9	USB_DN	Bi-directional	USB data minus
10	USB_DP	Bi-directional	USB data plus
11	VDD_USB	VDD	Positive supply for UART/USB ports
12	UART_RX	CMOS Input	UART RX Data
13	UART_TX	CMOS Output	UART TX Data
14	UART_RTS	CMOS Output	UART request to send ,active low
15	UART_CTS	CMOS Input	UART clear to send ,active low
16	PIO12	Bi-directional	Programmable input/output line
17	PIO10	Bi-directional	Programmable input/output line
18	PIO9	Bi-directional	Programmable input/output line
19	PIO7	Bi-directional	Programmable input/output line
20	PIO15	Bi-directional	Programmable input/output line
21	PIO11	Bi-directional	Programmable input/output line
22	PIO13	Bi-directional	Programmable input/output line
23	GND	GND	Common Ground
24	PIO8	Bi-directional	Programmable input/output line
25	PIO14	Bi-directional	Programmable input/output line
26	PIO5	Bi-directional	Programmable input/output line
27	PIO6	Bi-directional	Programmable input/output line
28	RESETB	CMOS input	Reset if low. Input debounced so must be low for >5ms to cause a reset
29	VDD_PADS	VDD	Positive supply for PIO and all other digital Input/Output ports
30	PCM_CLK	Bi-directional	Synchronous data clock
31	PCM_IN	CMOS input,	Synchronous data input
32	PCM_SYNC	Bi-directional	Synchronous data sync
33	PCM_OUT	CMOS output	Synchronous data output
34	SPI_MOSI	CMOS Input	SPI data input
35	SPI_CS#	CMOS Input	Chip select for Serial Peripheral

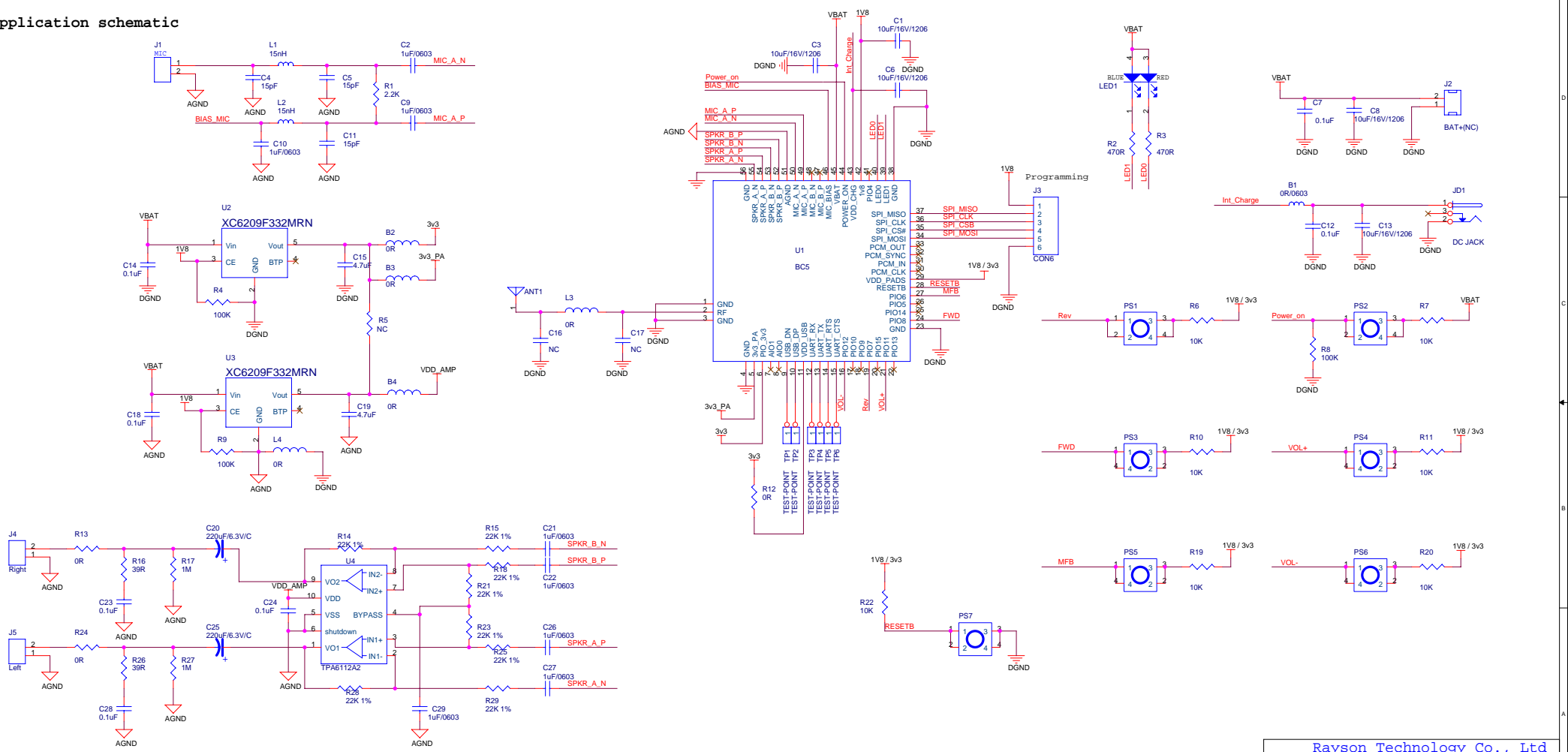
			Interface (SPI),active low
36	SPI_CLK	CMOS Input	SPI clock
37	SPI_MISO	CMOS Output	SPI data output
38	GND	GND	Common Ground
39	LED1	Open drain output	LED Driver
40	LED0	Open drain output	LED Driver
41	PIO4	Bi-directional	Programmable input/output line
42	1V8	VDD	1V8 Output
43	VDD_CHG	Charger input	Lithium ion/polymer battery charger input
44	POWER_ON	Analogue	Take high to enable switch-mode regulator
45	VBAT	Battery terminal +ve	Lithium ion/polymer battery positive terminal. Battery charger output and input to switch-mode regulator
46	MIC_BIAS	Analogue	Microphone bias
47	MIC_B_P	Analogue	Microphone input positive, right
48	MIC_B_N	Analogue	Microphone input negative, right
49	MIC_A_P	Analogue	Microphone input positive, left
50	MIC_A_N	Analogue	Microphone input negative, left
51	AGND	AGND	Analog Ground
52	SPKR_B_P	Analogue	Speaker output positive, right
53	SPKR_B_N	Analogue	Speaker output negative, right
54	SPKR_A_P	Analogue	Speaker output positive, left
55	SPKR_A_N	Analogue	Speaker output negative, left
56	GND	GND	Common Ground

*(a) PIO0 and PIO1 are used to control RF components.

Dimension
Unit: mm



Application schematic



Rayson Technology Co., Ltd		
Title	<Title>	BTM620 RX-HIC
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