

iBT-05

Bluetooth Module for Audio Application

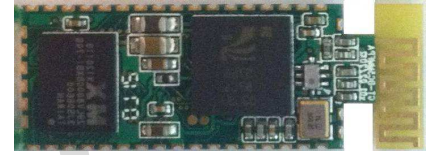
( Bluetooth® Qualified QDID : B019925)

Doc. Name : iBT-05-Rev0.3.01
Date : 2012-09-04
Revision : 0.3.01

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1. Overview

iBT-05 is a Class 2 Bluetooth module supporting Bluetooth V3.0 specification. It is implemented by using the CSR BlueCore5-Multimedia chip (BC5MM-EXT). iBT-05 is designed for receiving audio data transmitting from a mobile device. It can also be used to control the audio playing function of the remote device.



2. Features

- A single chip radio and baseband IC for Bluetooth applications
- Fully Qualified Bluetooth v3.0 specification with Enhanced Data Rate support
- Class 2 power output (10Meter minimum)
- Support for 802.11 co-existence
- High quality 95dB SNR DAC playback
- Support for noise and echo cancellation
- Configurable 5-band EQ
- Supporting profiles : A2DP, AVRCP, HSP and HFP
- Build-in PCB antenna
- Optional iAP and SPP support for app communication
- Optional AAC and MP3 direct streaming
- Optional ATI or CVC echo cancellation algorithm
- Supply voltage : 3.0V to 3.6V
- RoHS compliant
- Dimension: 34.0mm (L) x 12mm (W) x 2.2mm (H)

3. Applications

- Wireless speakers
- Stereo headset
- Hands-free car kit
- VoIP handsets
- Docking Stations

4. Pin Drawing

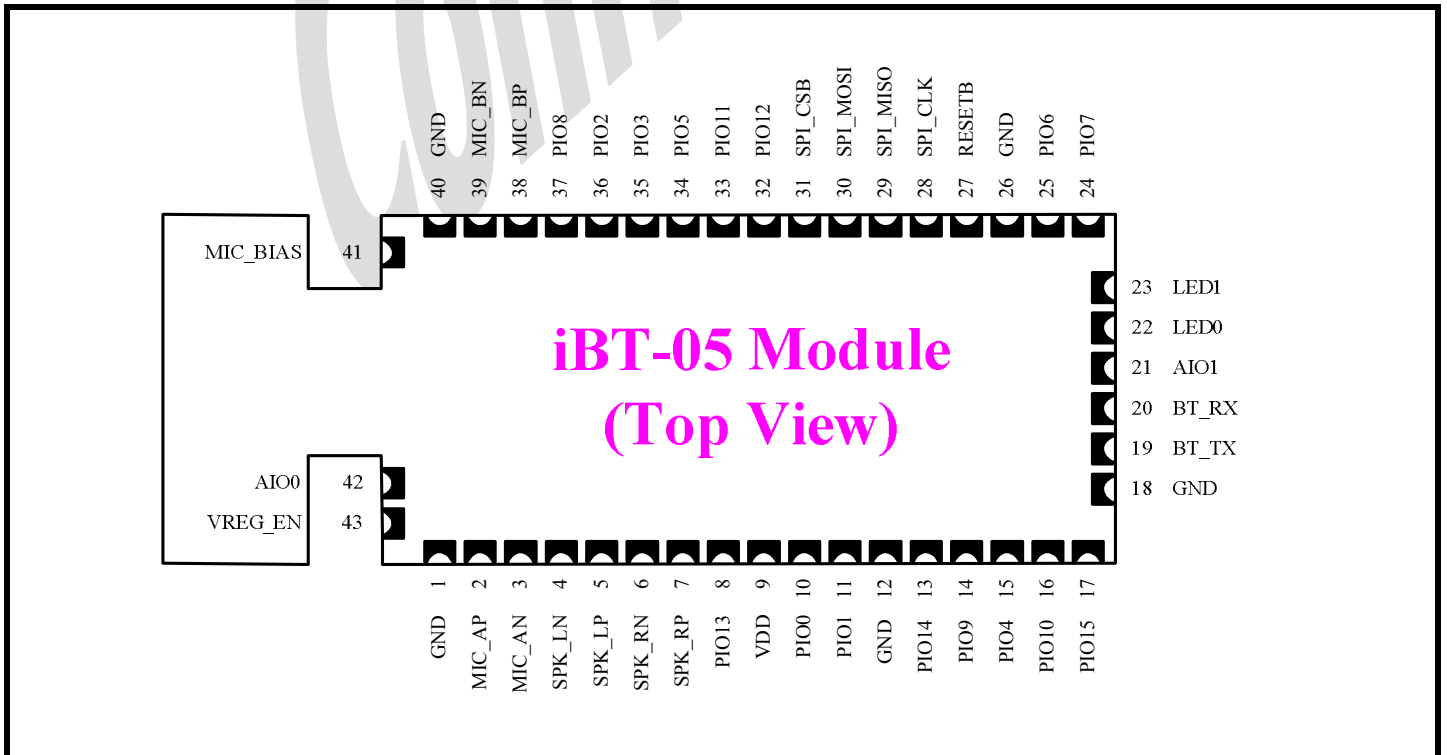


Figure 1 iBT-05 Pin Diagram

5. Pin Description

Pin No.	Pin Name	Usage	Pin Type	Pin Descriptions
1	GND			Ground
2	MIC_AP		AI	Microphone A Positive Input
3	MIC_AN		AI	Microphone A Negative Input
4	SPK_LN		AO	Left Speaker Negative Output
5	SPK_LP		AO	Left Speaker Positive Output
6	SPK_RN		AO	Right Speaker Negative Output
7	SPK_RP		AO	Right Speaker Positive Output
8	PIO13		B	Programmable I/O pin
9	VDD			3.3V Supply Input
10	PIO0		B	Programmable I/O pin
11	PIO1		B	Programmable I/O pin
12	GND			Ground
13	PIO14		B	Programmable I/O pin
14	PIO9		B	Programmable I/O pin
15	PIO4		B	Programmable I/O pin
16	PIO10		B	Programmable I/O pin
17	PIO15		B	Programmable I/O pin
18	GND			Ground
19	BT_TX		O4, PU	Bluetooth UART Data Output
20	BT_RX		IS, PD	Bluetooth UART Data Input
21	AIO1		A, B	Analog / Programmable I/O
22	LED0		OD4	Open Drain LED Driver Output
23	LED1		OD4	Open Drain LED Driver Output
24	PIO7		B	Programmable I/O pin
25	PIO6		B	Programmable I/O pin
26	GND			Ground
27	RESETB		IS, PU	Active Low Module Reset. Must be low for > 5mS
28	SPI_CLK		IS, PD	Serial Peripheral Interface Clock
29	SPI_MISO		O4, PD	Serial Peripheral Output Data
30	SPI_MOSI		IS, PD	Serial Peripheral Input Data
31	SPI_CSB		IS, PU	Active Low Chip Select for Serial Peripheral Interface
32	PIO12		B	Programmable I/O pin
33	PIO11		B	Programmable I/O pin
34	PIO5		B	Programmable I/O pin
35	PIO3		B	Programmable I/O pin
36	PIO2		B	Programmable I/O pin
37	PIO8		B	Programmable I/O pin
38	MIC_BP		B	Microphone B Positive Input
39	MIC_BN			Microphone B Negative Input
40	GND			Ground
41	MIC_BIAS		A	Microphone Bias
42	AIO0		A, B	Analog Input / Programmable I/O
43	VREG_EN		I, WPD	Active High to enable the internal 1.8V regulator which will then wake up the iBT-03 module

O4 4mA output pad
 OD Open drain output pad
 I Input
 IS Schmidt Trigger Input
 B Bidirectional

SPU Strong Pull-up
 SPD Strong Pull-down
 WPU Weak Pull-up
 WPD Weak Pull-down
 A Analog

Table 1 iBT-05 Pin Description Table

6. Electrical Specification

6.1. Absolute Maximum Rating

Item	Symbol	Rating	Unit
Power Supply Voltage	VDD	-0.4 to 3.7	V
Peak Current	I _{pk}	0 - 70	mA
Storage Temperature	T _{STG}	-20 to 85	°C

6.2. Recommended Operating Condition

Item	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	VDD	3.0	3.3	3.6	V
RF Operating Temperature		0	25	80	°C
Operating Temperature		0	25	55	°C

6.3. Digital Input / Output Port Characteristics

VDD=3.3V, operating temperature = 25 °C unless specified otherwise

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Input Voltage Levels						
V _{IL}	Input low voltage		-0.3		0.25*VDD	V
V _{IH}	Input high voltage		0.625*VDD		VDD+0.3	V
V _{sch}	Schmitt voltage level		0.25*VDD		0.625*VDD	V
Output Voltage Levels						
V _{OL}	Output low voltage	I _{OL} = -4mA			0.125	V
V _{OH}	Output high voltage	I _{OH} = 4mA	0.75*VDD		VDD	V
Input and Tri-state Current with						
	Strong pull-up		-100	-40	-10	uA
	Strong pull-down		10	40	100	uA
	Weak pull-up		-5	-1	-0.2	uA
	Weak pull-down		0.2	1	5	uA
	I/O Pad leakage current		-1	0	1	uA
	Input Capacitance		1		5	pF
Current Consumption						
	Operating Current	Depends on profiles		35		mA
	Standby Current				0.5	mA

6.4. RF Characteristics

VDD=3.3V, operating temperature = 20 °C unless specified otherwise

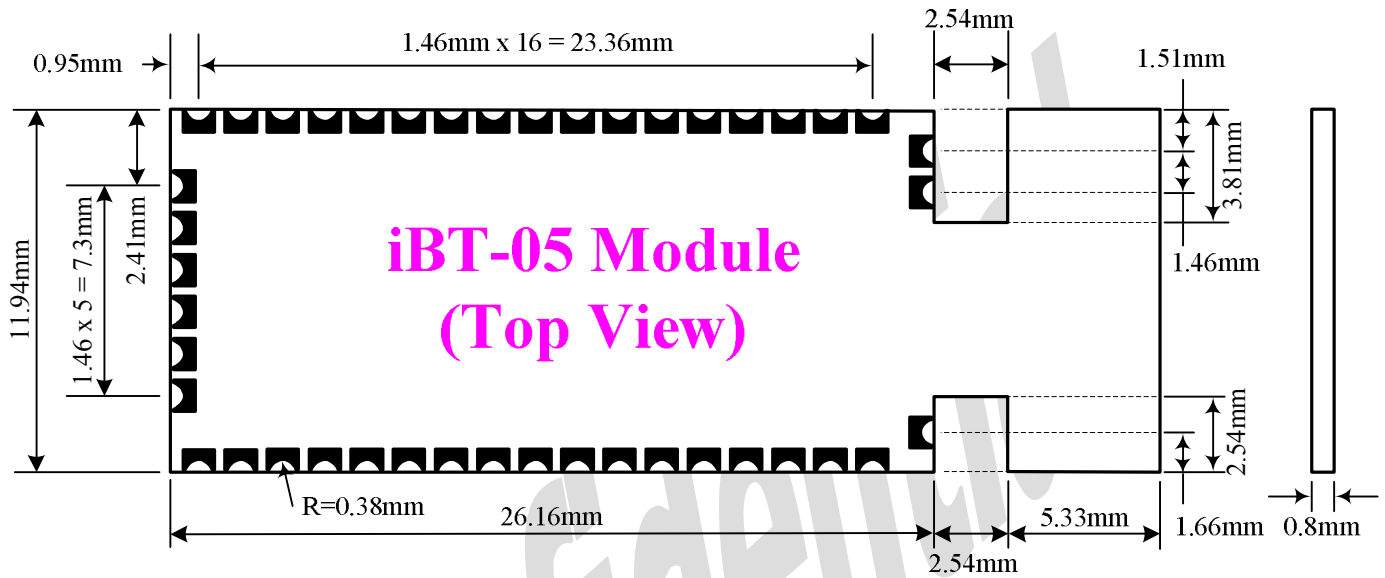
Receiver	Units	Min	Typ	Max	Bluetooth Spec
Sensitivity at 0.1% BER	dBm		-83	-82	≤ -70
Maximum Receiver Signal at 0.1% BER	dBm		-6	0	≥ -20
C/I Co-Channel	dB		10	11	≤ 11
Adjacent Channel Selectivity C/I +1MHz	dB		-4	0	≤ 0
Adjacent Channel Selectivity C/I -1MHz	dB		-4	0	≤ 0
2 nd Adjacent Channel Selectivity C/I +2Mhz	dB		-35	-30	≤ -30
2 nd Adjacent Channel Selectivity C/I -2Mhz	dB		-21	-20	≤ -20
3 rd Adjacent Channel Selectivity C/I +3Mhz	dB		-45		≤ -40
3 rd Adjacent Channel Selectivity C/I -3Mhz	dB		-45		≤ -40

VDD=3.3V, operating temperature = 20 °C unless specified otherwise

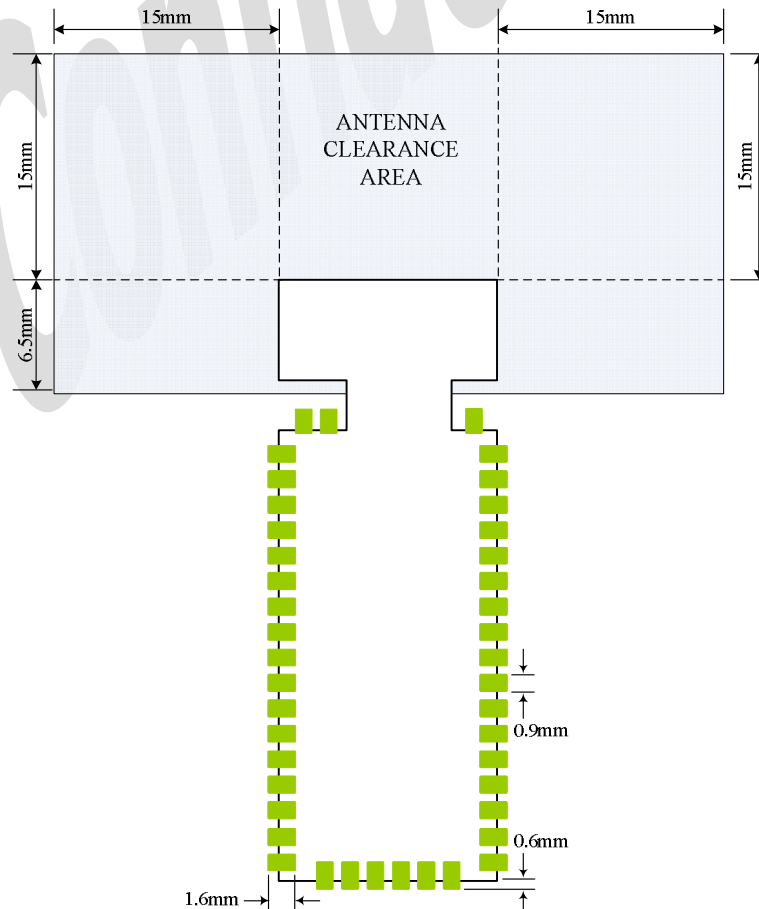
Transmitter	Units	Min	Typ	Max	Bluetooth Spec
RF Output Power	dBm	0	2	4	-6 to +4
RF Power Control Range	dB	16	35		> 16
RF Power Range Control Resolution	dB		1.8		-
20dB Bandwidth for modulated Carrier	kHz		879	1000	< 1000
2 nd Adjacent Channel Power (+/- 2Mhz)	dBm		-35	-20	≤ -20
3 rd Adjacent Channel Power (+/- 3Mhz)	dBm		-45	-40	≤ -40

7. Module Dimension and PCB Layout Guideline

7.1. Module Dimension



7.2. PCB Layout Guideline



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