BLK-MD-BC05-B Bluetooth Module

AND DEMO BOARD 설명서

1.Demo Board 설명서

1-1 개념 설명

BC-05 Demo Board는 블루투스 모듈 " BC-05-B " 의 동작을 확인하고 실험/실습 할 수 있도록 만들어진 실험용 보드이다.

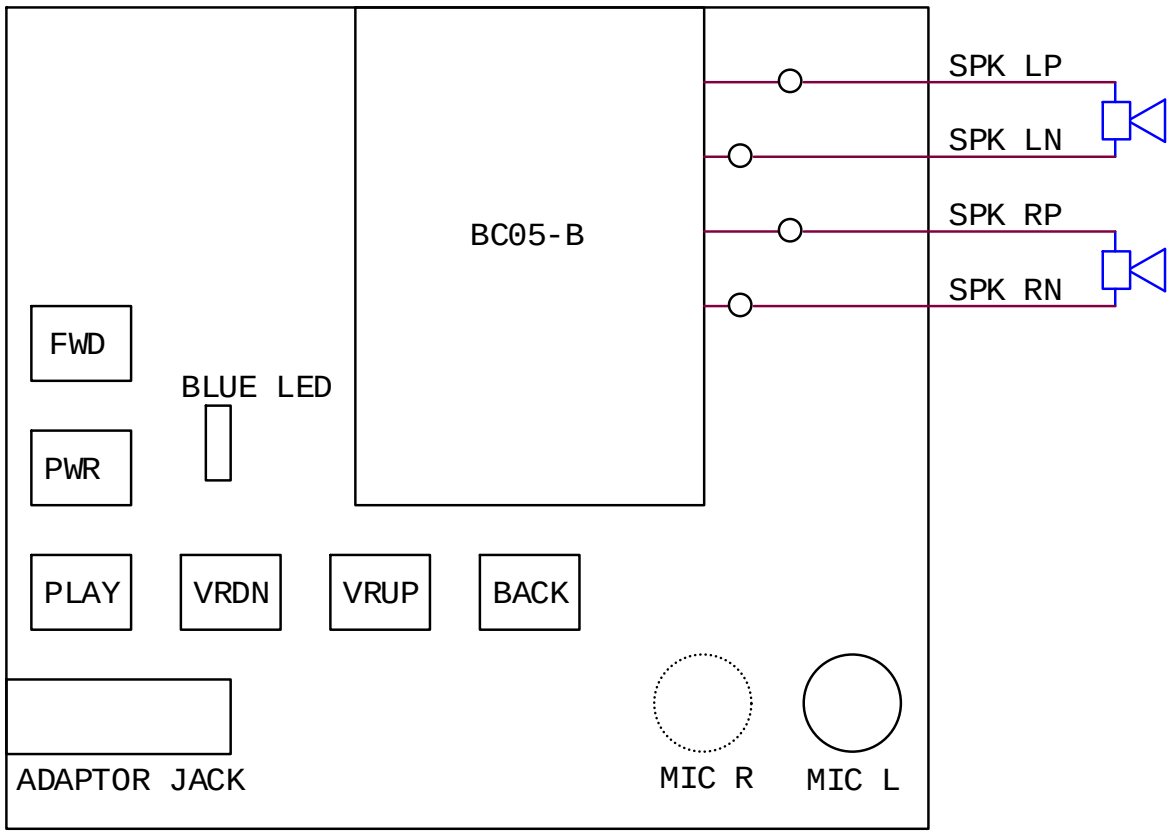
1-2 동작 전압

본 보드는 DC 6.0V ~ DC 12V까지 동작된다.

다만 아답터 전원 사용시, DC 12Volts (HU10467-11002A) 사용을 권고 한다.

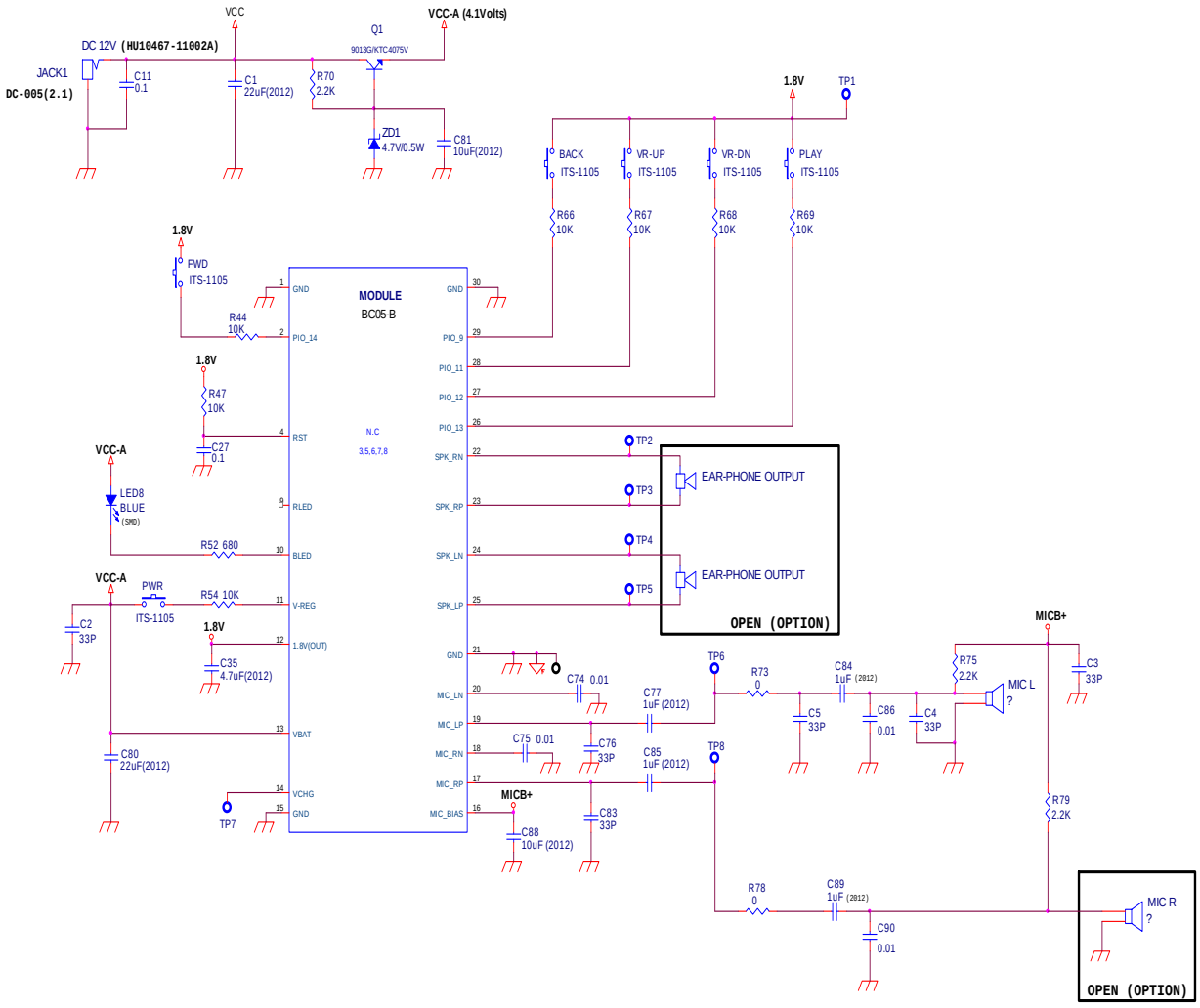
1-3 보드 구성 BLOCK DIAGRAM

*. 참고 : 스피커는 별도로 부착이 요구 됩니다. (임피턴스 : 32 옴 또는 헤드셋 이어폰)



참고사항 - 본 보드에 부착된 " BC-05-B" 모듈은 MASK-VERSION으로 별도의 구동 소프트웨어 없이 사용될 수 있다.

1-4 회로도



1-5 스마트 폰 과 페어링 하기

① 전원을 보드에 인가한다.

② PWR 스위치를 약 3초간 누른다.

③ BLUE LED가 빠르게 깜박거림을 확인한다.

④ 스마트 폰 에서 블루투스를 설정한다.

⑤ 스마트 폰 에서 기기 검색을 하고 선택한다.

⑥ ID/PW 를 수락한다.

⑦ 페어링이 되면, BLUE LED가 천천히 깜박인다. (약 2초에 한번)

1-6 동작 실험 하기

① 스피커 출력 (SPK RN , RP , LN , LP)

* 스피커 16 ohm 또는 32 ohm 을 SPK LN과 SPK LP 사이에 연결한다.

* 스마트 폰에 저장된 음원을 재생 시킨다.

* Demo Board에 연결된 스피커를 통하여 음원을 확인 할 수 있다.

② KEY 동작 확인을 음원 재생 중에 할 수 있다.

③ MIC 동작 확인

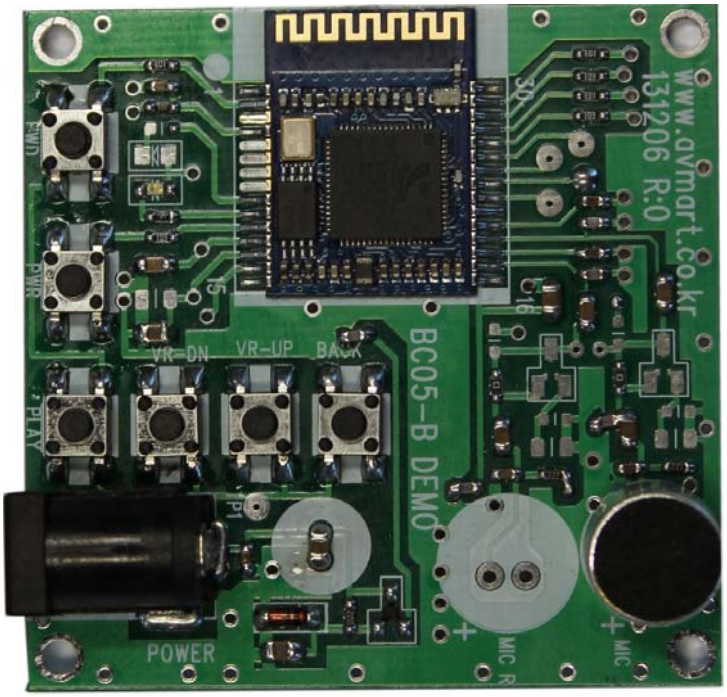
* Demo 보드와 페어링된 스마트폰으로 다른 전화기를 사용하여 전화를 건다.

* 페어링된 스마트폰으로 전화벨이 울리면 전화를 받는다.

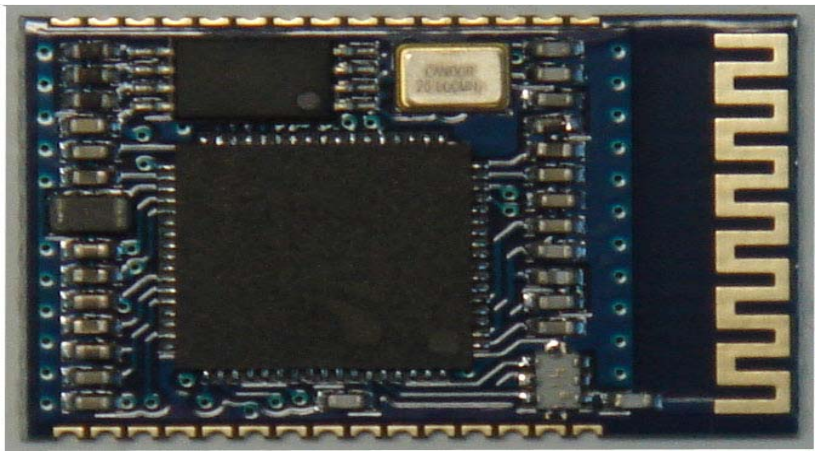
* 블루투스를 통하여 자동으로 Demo 보드와 상대방 전화가 연결된다.

* Demo 보드에 연결된 MIC와 스피커를 통하여 통화가 이루어 진다.

1-7 BC-05 DEMO 1



2. Description



BLK-MD-BC05-B is the latest generation of Bolutek' s stereo bluetooth modules.
It provides the highest level of integration with integrated 2.4GHZ radio, battery

Charger, stereo codec and antenna ready to hit mono and stereo audio applications.

BLK-MD-BC05-B is also completely ready to support the latest Bluetooth 2.1 + EDR

Standard.

3. Key Features

Bluetooth 2.1 + EDR compliant

Bluetooth solution for mono and stereo audio solutions

Integrated DSP, stereo codec and battery charger

Class 2 - range up to 30 meters

Industrial temperature range from -40℃ to +85℃

Low power consumption

Supported Bluetooth profiles : HFP, A2DP, AVRCP

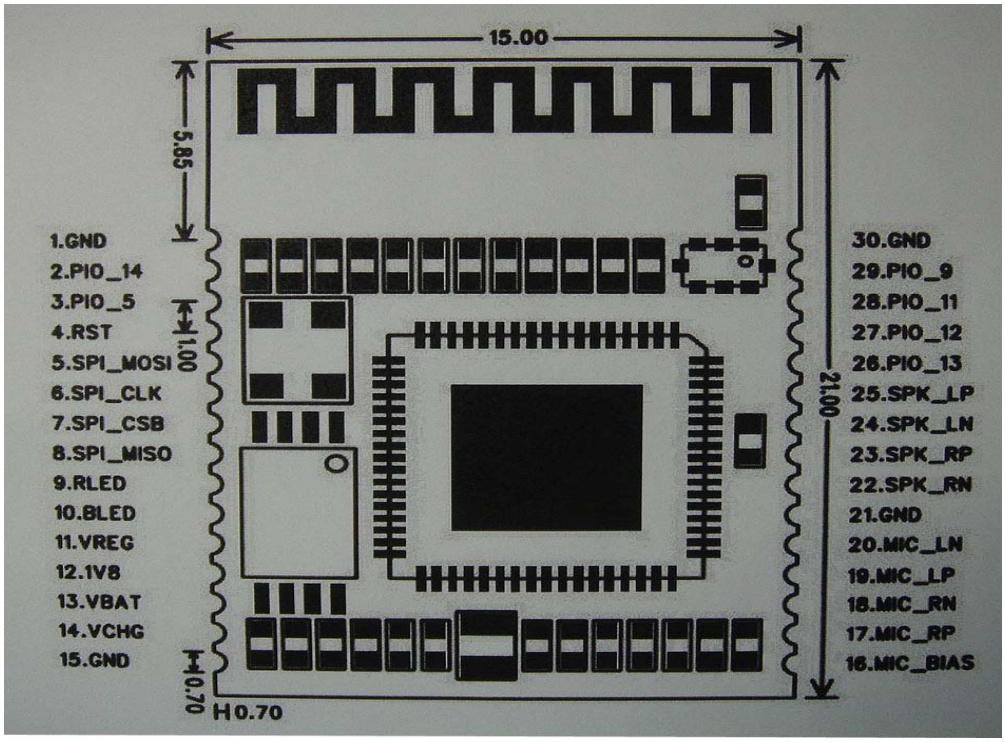
4. Applications

High quality stereo headsets

High quality mono headsets

Bluetooth speakers

5. Pin Definition



6. Pin Function Described

Pin NO.	Pin definition	Input / Output	Pin a description of
1	GND	VSS	Ground pot
2	PIO_14	Bi-Directional	Programmable input/output line
3	PIO_5	Bi-Directional	Programmable input/output line
4	RST	CMOS input	Internal pull-up Reset if low
5	SPI_MOSI	CMOS input	Serial peripheral interface data input
6	SPI_CLK	CMOS input	Serial peripheral interface data clock
7	SPI_CSB	CMOS input	Chip select for serial peripheral interface, Actine low
8	SPI_MISO	CMOS input	Serial peripheral interface data Output
9	RLED	Output	Pick up Red led, instructions, bluetooth related working state

10	BLED	Output	Pick up Blue led, instructions, bluetooth related working state
11	VREG	Input	MFB
12	1 V 8	Output	1.8V output
13	VBAT	Input	Lithium battery interface
14	VCHG	Input	Charging interface
15	GND	VSS	Ground pot
16	MIC_BIAS	Output	The microphone power output terminal
17	MIC_RP	Input	The Right channel microphone input the difference
18	MIC_RN	Input	The Right channel microphone input the difference negative
19	MIC_LP	Input	The Left channel microphone input the difference
20	MIC_LN	Input	The Left channel microphone input the difference negative
21	GND	VSS	Ground pot
22	SPK_RN	Output	The Right channel audio differential Output the negative
23	SPK_RP	Output	The right channel audio differential Output is terminal
24	SPK_LN	Output	The left channel audio differential output Is negative
25	SPK_LP	Output	The left channel audio differential output Is terminal
26	PIO_13	Bi-Directional	Programmable input/output line
27	PIO_11	Bi-Directional	Programmable input/output line
28	PIO_12	Bi-Directional	Programmable input/output line
29	PIO_9	Bi-Directional	Programmable input/output line
30	GND	Bi-Directional	Ground pot

7. Electrical Characteristic

7-1. Recommend Using Conditions

Operating Conditions	Minimum	Typical value	Maximum	Unit
Operating temperature	-40	-	85	℃
Current peak	0	-	50	mA
VBAT	+3.0	+3.7	+4.5	V

7-2. Stereo Encoder

Parameter	Condition		Minimum	Typical	Maximum	Unit
Resolution			-	-	16	Bits
Input Sample Rate, Sample			8	-	44.1	KHz
Signal to Noise Radio, SNR(a)	Fin = 1Khz B/W = 20Hz-20KHz A-Weighted THD+N<1% 150m Vpk-pk	8KHz	-	79	-	dB
		11.025KHz	-	77	-	dB
		16KHz	-	76	-	dB
		22.050KHz	-	76	-	dB
		32KHz	-	75	-	dB
		44.1KHz	-	75	-	dB
Digital Gain	Digital Gain Resolution =1/32dB		-24	-	21.5	dB
Analogue Gain	Analogue Gain Resolution =3dB		-	-	42	dB
Input full scale at maximum gain (differential)			-	4	-	mV
Input full scale at maximum gain (differential)			-	800	-	mV
3dB Bandwidth			-	20	-	KHZ
Microphone made input impedance			-	6	-	Ω
THD+N(microphone input @ 30mV rms input			-	0.04	-	%

(a)Improved SNR performance can be achieved at the expense of current consumption .See Optimizing BlueCore5-Multimedia ADC Performance Application Note details.

7-3. Stereo Decoder

Parameter	Condition	Minimum		Typical	MaXimum	Unit
Resolution		-		-	16	Bits
Input Sample		8		-	48	KHz
Signal to Noise Radio, SNR	Fin=1Khz B/W=20Hz-20KHz A-Weighted 32KTHD + N <0.01%	8KHz	-	95	-	dB
		11.025	-	95	-	dB
		16KH	-	95	-	dB
		22.050	-	95	-	dB
		H	-	95	-	dB
		44.1KH	-	95	-	dB
Digital Gain	Digital Gain	-24	-	21.5	-	dB
Analogue Gain	Analogue Gain	0	-	-21	-	dB
Output voltage full-scale swing(differential)(a)			-	750	-	mV

Allow load	Resistive	16(8)	–	O.C	Ω
Allow load	Capactive	–	–	500	pF
THD+N 100KΩ load		–	–	0.01	%
THD+N 16Ω load		–	–	0.1	%
SNR (Load =16Ω , 0dBFS input relative to digital Silence)		–	95	–	dB

(a)Any combination of gain (digital and/or analogue)and input signal which results in the output signal level exceeding the minimum or maximum signal level (analogue or digital)could result in distortion.

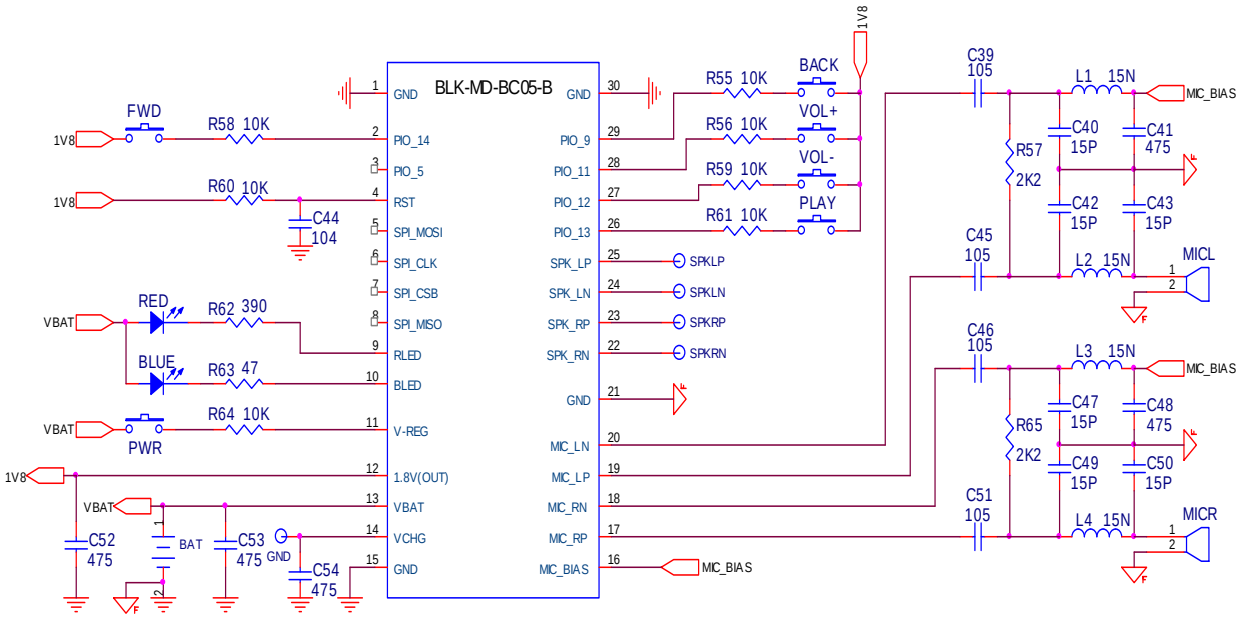
8. Buttons That

Pin	Function	Mode of	Explain
PIO13	stop	Click quick convert	In the state of play, control the remote bluetooth audio source suspend play
	Play	Click quick convert	In the pause state , control the remote bluetooth audio source start playing
	Disconnect	Hold key to keep at Least 2 seconds	In the connection state, disconnect and remote bluetooth audio source equipment of
	Reconnect	Hold key to keep at Least 2 seconds	In the disconnect state,to establish a bluetooth audio equipment and remote
PIO11	Volume UP	Click or continuous hold	Continuous on increasing the volume (local volume control levels 23 adjustable) default volume level : 15
PIO12	Volume down	Click or continuous hold	Continuous hold down the volume diminishing (local volume control levels 23 adjustable)
PIO14	FWD	Quick click	Control the remote play a song under bluetooth audio source
PIO9	PREV	Quick click	Remote bluetooth audio source control on a play music

Note : Only in audio stream start state, to receive a stereo bluetooth audio source remote audio stream; similarly, only in remote control start state, to realize the remote control of the player bluetooth audio source.

Any one party does not have AVRCP agreement, is impossible to realize the remote control function.

9. Typical Application Circuit



참고사항: 본 제품은 Program이 mask되어 있는 version 입니다.(Mask Version)

페어링 하여 사용하기

PWR SWITCH 를 약2초간 누른다---→ 스마트폰에서 블루투스를 설정한다---→ 스마트 폰에서 기기 선택을 헤드셋으로 한다.----→ BLK-MD-BC05 을 선택한다.

10. 연락처

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- ◆ 전화 : 02 - 6443 - 4703
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- ◆ 대량 구매 시 가격 협상 가능함.
- ◆ 예상소비자 가격 : ₩25,000- (부가세별도)