■ INTRODUCTION

ZEN-BH88istheBluetooth2.1+EDRmoduleforintelligentwirelessaudiotransmissionproductsdesignedbyourcompany.F-6188alsoisthelowcost stereo audio Bluetoothsolution with high performance.ThemainchipisBK8000Lchip,which providing high qualityand goodcompatibility.Withoutanyexternal driver,themodulecan be connected toyourequipmentto enjoyhigh quality music easily.

■ APPLICATIONS

ZEN-BH88isusedforBluetoothaudio transmission, anditisconveniencetoconnectto mobile phone, personal computer,PDAand other digital products which have Bluetoothhardwareto enjoy wirelessmusic.The major application includes:

- ✧ Bluetoothspeaker
- ✧ Bluetoothstereo headset

■ FEATURES

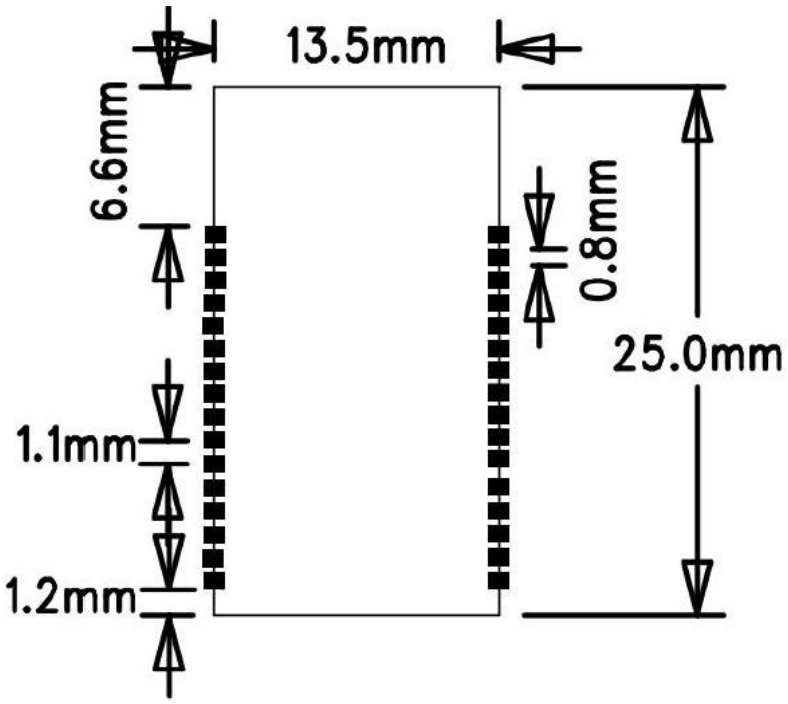
BluetoothProfiles listbelow:

- ✧ BluetoothV2.1+EDRspecification support
- ✧ A2DPV1.2
- ✧ AVRCP V1.4
- ✧ HFPV1.5
- ✧ GAVDPV1.2
- ✧ HSPV1.2
- ✧ IOP

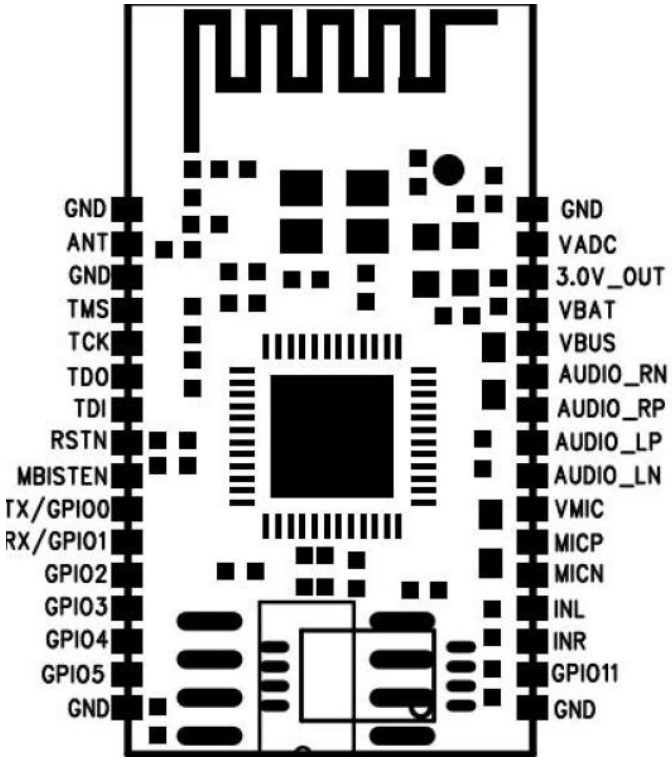
■ PARAMETERS

MODEL	ZEN-BH88
Bluetooth	BluetoothV2.1+EDR
SupportedBluetoothProfile	HFPV1.5,A2DPV1.2,AVRCPV1.4,HSP1.2,GAVDP1.2, IOP
Powerconsumption	≦25mA
Standby current	<500uA
SupplyVoltage	DC2.8~4.2V
Operation Temperature	-40~+85℃
Wireless Transmission Range	>10m
TransmissionPower	CLASS2 4dBm
Sensitivity	-80dBm@0.1%BER
Frequency Range	2.4GHz-2.480GHz
Interface	I2C,SPIandUART
Audio Performance	SBCalgorithm
Audio SNR	≧75dB
Module size	25.00X13.50X1.80mm

■ OutlineDimension(Module Footprint)



■ Device PinoutDiagram



■ Pin Definition

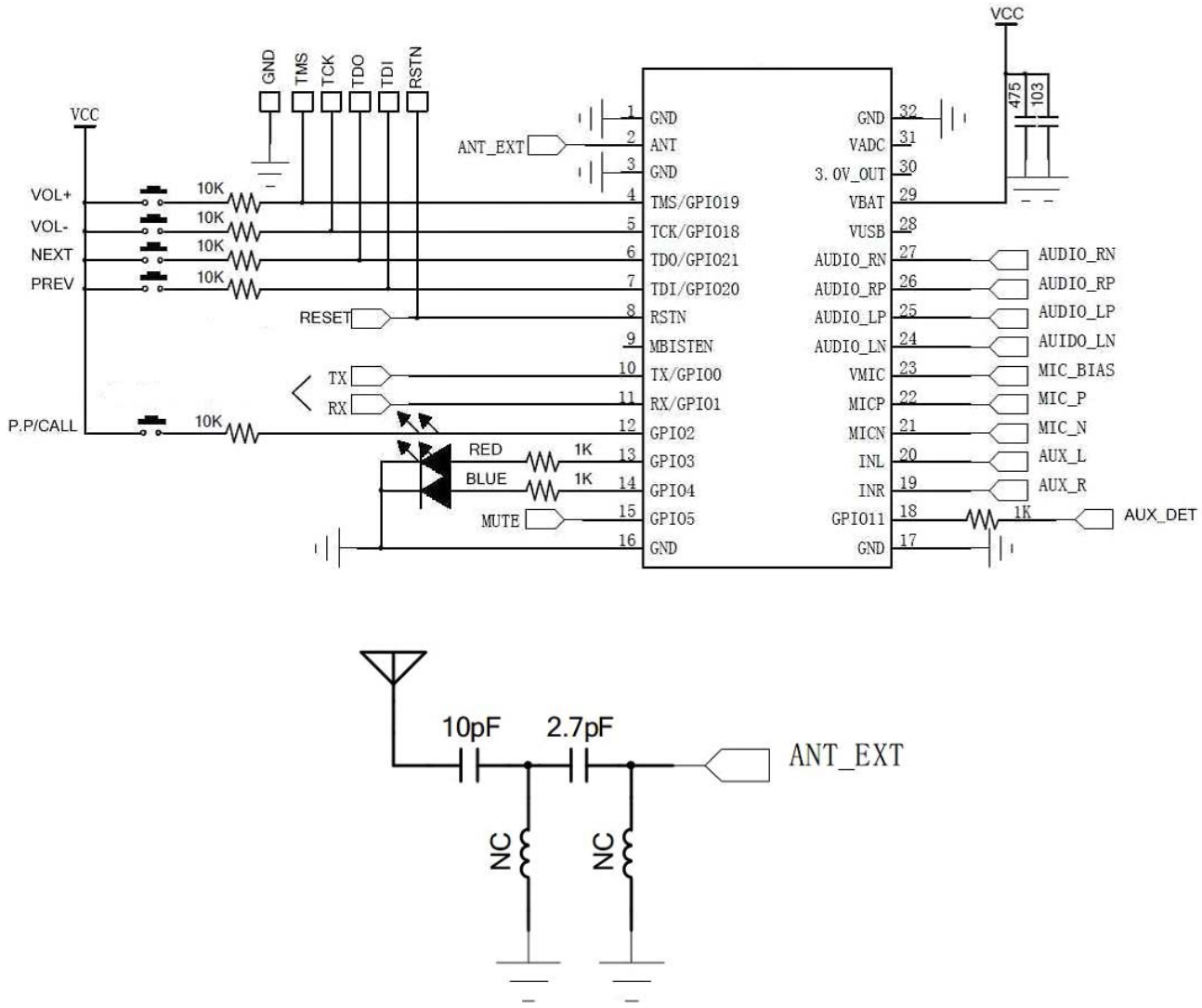
Pin	Symbol	I/O	Description
1	GND	GND	RF _ GND
2	ANT	ANT	AN T PORT
3	GND	GND	RF _ GND
4	TM S (GP IO 19)	Digital I/ O	JT AG pi n
5	TM S (GP IO 18)	Digital I/ O	JT AG pi n
6	TM S (GP IO 21)	Digital I/ O	JT AG pi n
7	TM S (GP IO 20)	Digital I/ O	JT AG pi n
8	RSTN	Digital I/ O	JT AG pi n/ Re s e t pi n- l ow active
9	MBISTEN	Digital I/ O	Memory bit check
10	GPIO0(TX)	Digital I/ O	UART TX
11	GPIO1 (RX)	Digital I/ O	UART RX
12	GPIO2	Digital I/ O	General purpose I/O 2
13	GPIO3	Digital I/ O	General purpose I/O 3
14	GPIO4	Digital I/ O	General purpose I/O 4
15	GPIO5	DigitalI/ O	General purpose I/O 5
16	GND	GND	G round, connect to bat t e r y negative
17	AGND	AGND	G round, connect to bat t e r y negative
18	GPIO11	Digital I/ O	General purpose I/O 11
19	LINR	AUX_ INPUT	LINR
20	LINL	AUX_ INPUT	LINL
21	MICN	MIC_	MICN
22	MICP	MCI+	MICP
23	VMIC	VMIC	VMIC
24	AUDIOLN	Audio output	Left channel audio output negative
25	AUDIOLP	Audio output	Left channel audio output positive
26	AUDIORP	Audio output	Right channel audio output positive
27	AUDIORN	Audio output	Rightchannel audio output negative
28	VBUS	Charge port	VB US
29	VBAT	Power	P owe r supply
30	3V0	Power	3. 0V out put
31	ADC	Power	ADC input
32	GND	GND	GN D

■ NOTICE

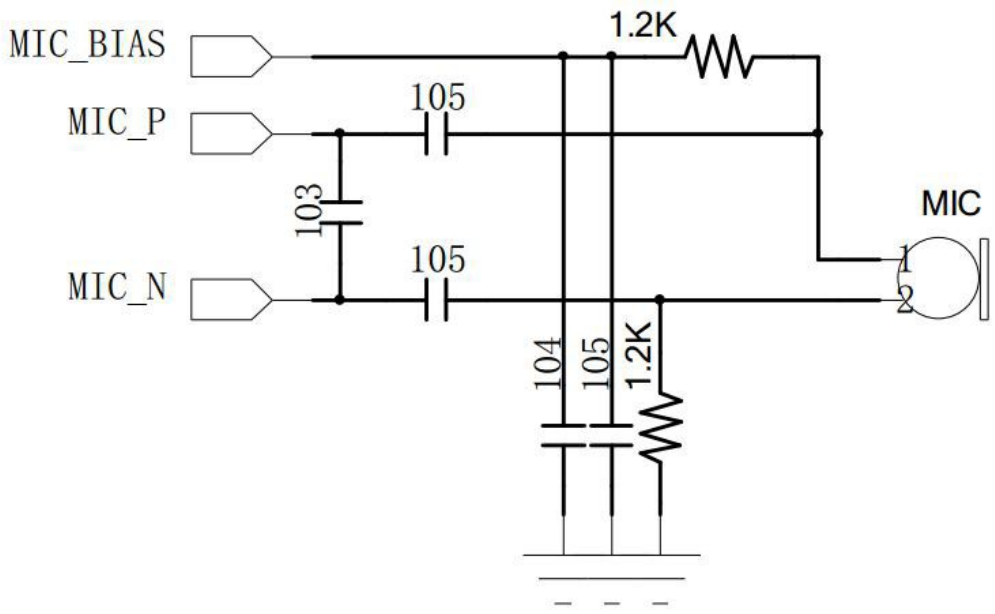
Inordertoget better SNR,pleasepay attentiontothe hardwaredesignofpower amplifier,DCbooster and themodulepowersupply circuit.

1. Thesignal strengthisdependingontheenvironmentofBluetoothapplication. Wood andmetalthat block the module will decreasethetransmission signal and makethetransmissiondistance shorter.
2. becauseofmetalwill block thesignaltransmissionseriously,itisrecommendednottousingthemetal housing.
3. PCBlayout guideline:Do not place anycopperinthe antenna areaofthe module.

■ APPLICATIONCIRIUIT

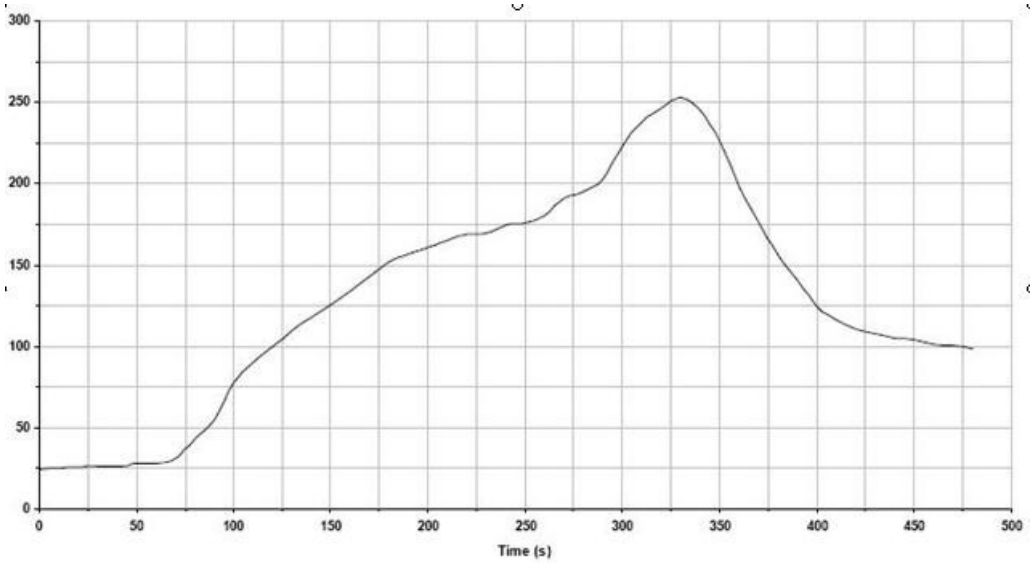


Note: The module has a built-in PCB antenna. And an external antenna can be added if needed.



MICrecommended specification:sensitivity-38dB +/-2dB, working voltage:DC2V

■ THEREFLOW TEMPERATURE



Keyfeaturesoftheprofile:

- ✓ Initial ramp=1~2.5℃/sto175℃equilibrium
- ✓ equilibriumtime =60to80seconds
- ✓ Ramp to maximum temperature (250℃) =3℃/smax
- ✓ Timeaboveliquidstemperature (217℃):45-90seconds
- ✓ Deviceabsolutemaximumreflowtemperature:250℃

FCC Label: The FCC ID is on the front of the device. It is easily visible.

The device FCC ID is 2AOC9-BH88.

A label with the following statements must be attached to the host end product:

This device contains FCC ID: 2AOC9-BH88.

The manual provides guidance to the host manufacturer will be included in the documentation that will be provided to the OEM.

The module is limited to installation in mobile or fixed applications.

The separate approval is required for all other operating configurations, including portable configurations and different antenna configurations.

The OEM integrators are responsible for ensuring that the end-user has no manual or instructions to remove or install module.

The module is limited to OEM installation ONLY.

Module grantee (the party responsible for the module grant) shall provide guidance to the host manufacturer for ensuring compliance with the Part 15 Subpart B requirements.

The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with the Part 15 Subpart B requirements, the host manufacturer is required to show compliance with the Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitting and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions) with the Radio essential requirements. The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in the Part 15 Subpart B or emissions are complaint with the Radio aspects.

CAUTION:
Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

FCC RF Exposure Requirements

This device complies with FCC RF radiation exposure limits set forth for an uncontrolled enviroment.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter and must be installed to provide a separation distance of at least 20cm from all persons.

FCC Regulations

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.