1. Summary

ZEN-BDM89 Bluetooth module provides an integrated solution for delivering high quality stereo audio. On the module, a low power consumption Bluetooth SoC - BK3260N is employed, and the chip offers the module Bluetooth version 4.2 EDR stack and application profiles. So the module can be used for both control and multimedia hybrid applications.

2. Applications

The module is good for audio and small data communication in short distance.

※ Wireless stereo speakers and head sets
※ Remote control for media player
※ Smart phone streaming
※ Wireless audio transmitters
※ Wireless audio docking station for smartphones

3. Features

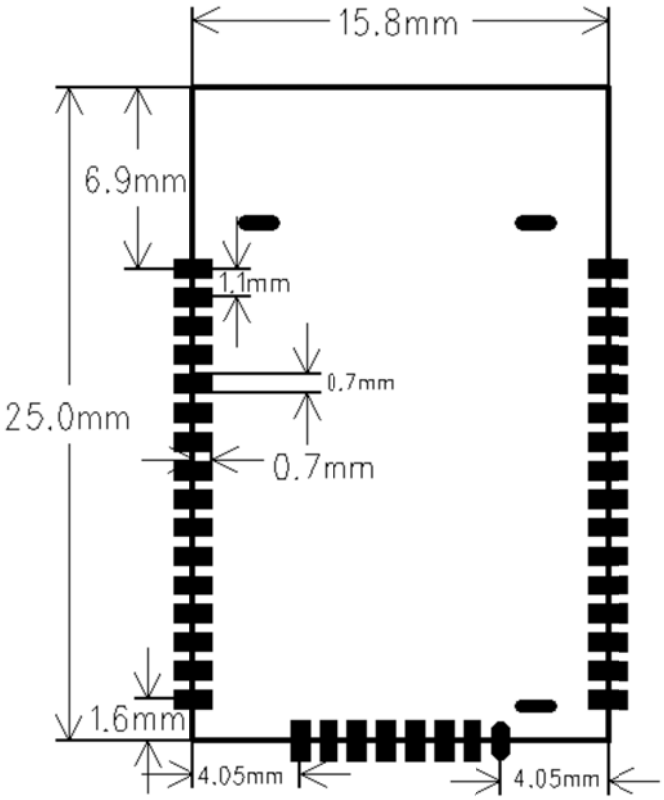
Bluetooth Profiles

※ Bluetooth V4.2 specification support
※ A2DP V1.2
※ AVCTP V1.4
※ AVDTP V1.2
※ AVRCP V1.5
※ GAVDP V1.2
※ HFP V1.5
※ HSP V1.2

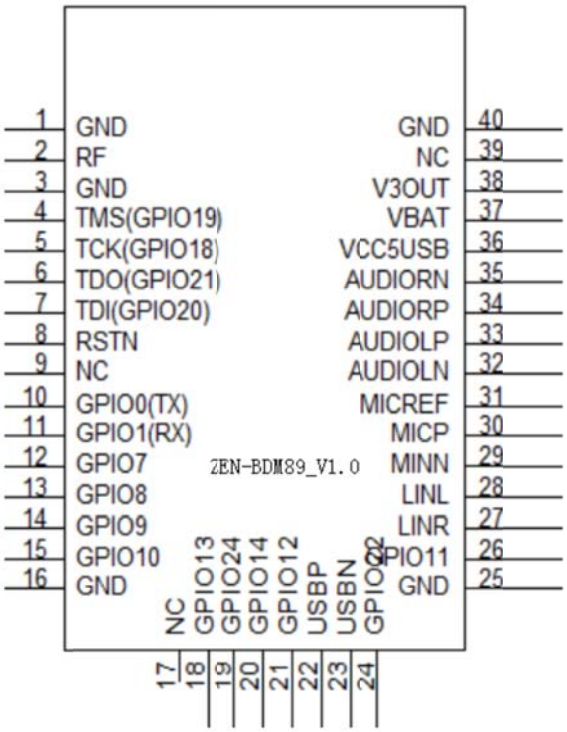
4. Parameters

Model	ZEN-BDM89
Version	Bluetooth V4.2
Operation voltage	DC3.3-4.2V
Bluetooth profiles	A2DP V1.2, AVCTP V1.4, AVDTP V1.2, AVRCP V1.5, GAVDP V1.2, HFPV1.5,HSP V1.2
Operation current	≤20mA
Standby Current	<10uA
Work temperature	-40ºC to +80ºC
Wireless range	≥10 米
Transmission power	CLASS2，4dbm
Sensitivity	-80dBm<0.1%BER
Frequency	2.402GHz-2.480GHz
Communication interface	UART
Audio decoding	SBC
Audio SNR	≥75dB
Module size	25×15.8×2.8mm（thickness 2.8mm, including mask）

5. Module size for PCB



6. Module pin assignment



7. Module pin description

Pin	***Name***	*I/O*	*Description*
1	GND	GND	RF_GND
2	RF	RF	RF
3	GND	GND	RF_GND
4	TMS(GPIO19)	Digital I/O	JTAG pin，key input for voice UP
5	TCK(GPIO18)	Digital I/O	JTAG pin , key input for voice DOWN
6	TDO(GPIO21)	Digital I/O	JTAG pin , key input for NEXT
7	TDI(GPIO20	Digital I/O	JTAG pin , key input for PREVIOUS
8	RSTN	Digital I/O	JTAG pin / Reset pin , low active
9	NC	NC	NC
10	GPIO0(TX)	Digital I/O	UART TX
11	GPIO1(RX)	Digital I/O	UART RX
12	GPIO7	Digital I/O	GPIO7 , key input for PLAY/PAUSE
13	GPIO8	Digital I/O	GPIO8
14	GPIO9	Digital I/O	GPIO9
15	GPIO10	Digital I/O	GPIO10, Mute, low active
16	GND	GND	Ground ， connect battery negative
17	NC	NC	NC
18	GPIO13	Digital I/O	GPIO13
19	GPIO24	Digital I/O	GPIO24
20	GPIO14	Digital I/O	GPIO14
21	GPIO12	Digital I/O	GPIO12
22	USBP	USB	Not used
23	USBN	USB	Not used
24	GPIO22	Digital I/O	GPIO22
25	GND	GND	GND
26	GPIO11	Digital I/O	GPIO11
27	LINR	AUX_INPUT	LINR
28	LINL	AUX_INPUT	LINL
29	MICN	MICN	MICN
30	MICP	MIC+	MICP
31	MICREF	VMIC	MICREF
32	AUDIOLN	Audio output	Left channel audio output negative
33	AUDIOLP	Audio output	Left channel audio output positive
34	AUDIORP	Audio output	Right channel audio output positive
35	AUDIORN	Audio output	Right channel audio output negative
36	VCC5USB	VCC5USB	5V input charging
37	VBAT	Power supply	Power supply
38	VCC	Power	3.3v output
39	NC	NC	NC
40	GND	GND	GND

8. Control instructions by UART

The module can be controlled by instructions input in UART

Instructions	*format*
Play/pause	AT+MA\r\n
Stop	AT+MC\r\n
Next	AT+MD\r\n
Previous	AT+ME\r\n
Voice up	AT+CK\r\n
Voice down	AT+CL\r\n
Mute on	AT+CX\r\n
Mute off	AT+CY\r\n
Baud rate inquiry	AT+BD\r\n
Baud rate selection	AT+BD=01\r\n, select 9600bps AT+BD=02\r\n, select 19200bps AT+BD=03\r\n, select 38400bps AT+BD=04\r\n, select 57600bps AT+BD=05\r\n, select 115200bps
Change the module name	AT+NM=NAME\r\n

9. Application note

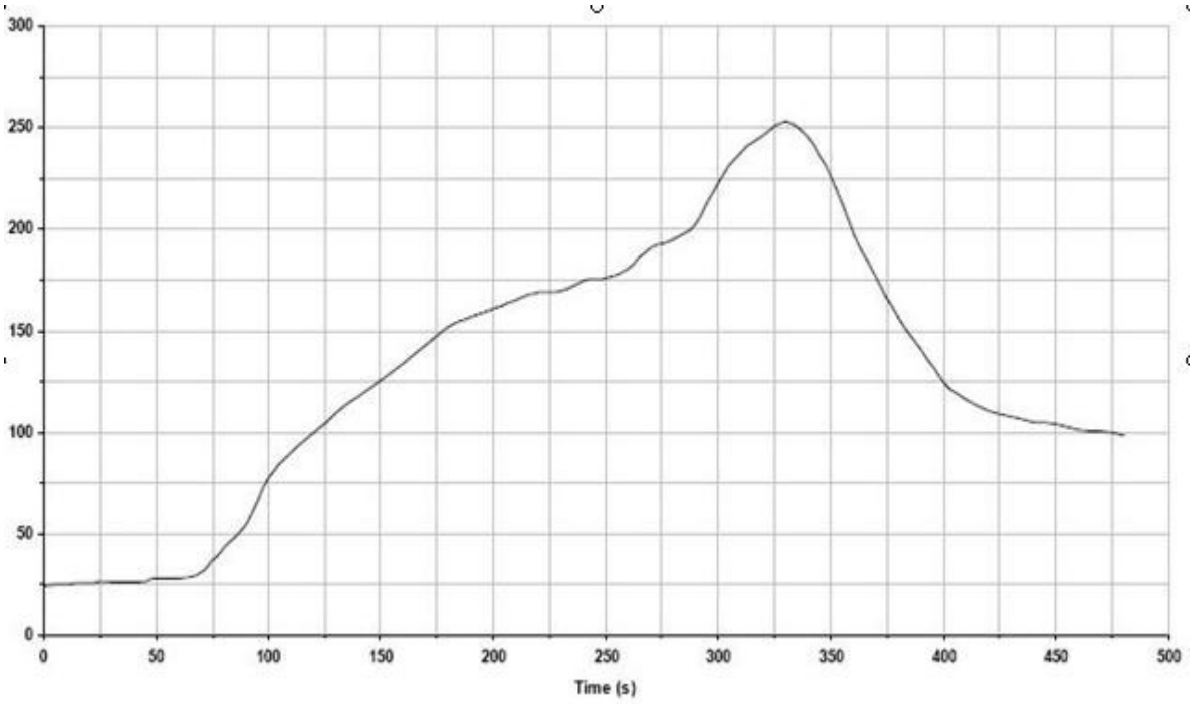
1) The power amplifier and the boost circuit may disturb the module, please avoid to make any series connection with the module and any high power circuit in PCB layout, otherwise, the SNR will be decreased.

2) The wireless signal will be influenced by many factor. The signal can be absorbed or blocked by wood, metal, etc., so the wireless range may be shortened in different circumstance.

3) Especially, the metal shell is not recommended, it will block the wireless signal badly.

4) The module has an on board PCB antenna. Do not place any metal layer under the module PCB antenna when layout your PCB. Cutting the PCB under the module PCB antenna if possible.

10. Recommended reflow soldering condition



-Initial Ramp=1-2.5℃/sec to 175℃ equilibrium -Equilibrium time=60 to 80 seconds -Ramp to Maximum temperature (250℃)=3℃/sec Max -Time above liquids temperature(217℃): 45 - 90 seconds - Device absolute maximum reflow temperature: 250℃

FCC Warning

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.

NOTE: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement:

Note 1: The modular transmitter must be equipped with either a permanently affixed label or must be capable of electronically displaying its FCC identification number.

Note 2: If using a permanently affixed label, the modular transmitter must be labeled with its own FCC identification number, and, if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: 2ANMBZEN-BDM89” or “Contains FCC ID: 2ANMBZEN-BDM89.” Any similar wording that expresses the same meaning may be used. The Grantee may either provide such a label, an example of which must be included in the application for equipment authorization, or, must provide adequate instructions along with the module which explain this requirement. In the latter case, a copy of these instructions must be included in the application for equipment authorization.