KT1025X Hardware Description and Design Considerations

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| **1, a brief description** | 1, first to test the DEMO provided subject "BT201" modules,  2, if the individual chips. Not tested BT201 direct LAYOUT, at this time the experience is not very rich, very likely background noise. So first of all a good comparison test board manufacturers  3, BT201 program without FM function, please pay attention. Please direct any part of the circuit FM vacant, do not hesitate |
| **2 Notes** | **1, type of Bluetooth audio products, the emergence of background noise or noise is very common, layout of the time do not quite arbitrary,**  **2, did not do audio class products, the best online to learn about, do not just take it for granted, the outcome is self noise But then things**  **3, the core is the analog and digital ground, partly to deal with. I do not understand what that means, please ask an experienced engineer**  4, the power part should be clean, LDO can be used as far as possible without DCDC  5, Bluetooth Bluetooth themselves are high-frequency RF, foreign energy will radiate, background noise can only be as small as possible, we can not be without. But good design, you feel the sound is not noise in the end, unless the instrument to measure. |
| **3, antenna explanation** | 1, an antenna, and some components of the package, please refer to the module PCB DEMO file, the database there.  2, Bluetooth antenna no special requirements. We refer to the package is given, and can be described with reference to  3, Bluetooth antenna, do not do impedance matching, copper thickness to general requirements. Do not try mysterious, Bluetooth low threshold |

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| **4, power supply Description** | 1. , BT201 test board is actually bottomed noise, but very small, basic human ear is difficult to make out of it 2. , You can try using a cell phone chargers, there will be no big noise floor 3. , Preferably battery powered, since the battery is a DC sense, it is very clean. But to consider the battery load capacity 4. , Desktop computers USB output ripple is likely to produce relatively large, will produce background noise. Try not to use 5. , The board if there is The DCDC, it is also prone to noise floor, the optimum power supply is to use such LDO 7805 6. , BT201 module can drive a maximum of 4 ohm speaker 3W. 5V power supply in the case 7. If you want to drive the speakers, be sure to pay attention to the adequacy of current, power supply test use. Because the current is not enough, it can easily lead to broken horn sound, tremolo and so on. 8. **If qualified, their own online buy a few power amplifier module, go back comparison test. We sell a Bluetooth chip, power amplifier**   **Noise, noise floor, breaking the sound and so on, this is part of the extension of knowledge, a lot of trouble, not to say a few words can understand.**  **They are uncertain about how much your think of a way, and we are not taught to solve.** |
| **5, bottom board noise,**  **How to troubleshoot?** | 1. First power supply board, selected from a clean, preferably battery powered, the first stage all the power supply circuit is disconnected 2. And then pick out the headphone output of the chip, with the headphones to hear whether bottomed noise, if not checked-stage amplifier circuit 3. If the player U disk without background noise, noise and play Bluetooth bottom, this does not prove anything. 4. , First with headphones to listen to, whether there is noise or background noise, if not, it means that the power amplifier part caused by, went to check the amplifier. 5. If headphones to listen to, there. Then follow directly disconnect the amplifier, check Bluetooth chip peripheral circuit. Look at what is produced, there is play Bluetooth, mp3 player or there. Bluetooth has, so pay attention to master a few capacitors around whether there are good welding, whether from a Bluetooth closer, combined with other instructions carefully to find it 6. Test noise floor, we do not use the computer's USB, do not use the charging head USB. Try to use clean and strong ability to supply the carrier tape test. The test, as far as possible to test the 5V power supply, do not engage in any 3.7V |

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| **6, Bluetooth noise floor improvement methods**: | (1), and Bluetooth module Bluetooth antenna far as possible from the analog circuit (2), the chip must be connected to the analog input terminal of the power source  (3), then check pin chip around the chip capacitor has no problem, short circuit, or Weld (4), GND Bluetooth portion to let multiple holes. |
| **7, crystal selection and index requirements** | 1. Since Bluetooth frequency offset requirements are relatively high, so the crystal quality of performance is critical to Bluetooth, the selection process must ensure the consistency and stability of the crystal. Crystal frequency deviation must be ≤ ± 10ppm, the recommended load CL 12pF.   Note: Crystal capacitance to ground C102 = C103? = 2 \* CL- (4pF ~ 6pF), wherein CL is the load capacitance of the crystal.   1. , No volume requirements, I recommend DEMO above crystal, low cost, good performance 2. Small volume requirements, recommended 24M-3225, the higher cost, good performance   **With our proposal directly supporting the crystal, free to believe than outside procurement and concessions to quality assurance** |

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| **8, PCB's LAYOUT Notes** | (1), LDO\_IN [i.e. chip 18 feet] of the input voltage should not exceed + 5.5V.  (2), the chip must be strictly distinguish between digital and analog GND AGND. (Refer to give us the BT201 PCB)  (3), a digital to analog ground AGND GND must be routed separately when the PCB traces, and finally the short battery entrance. If the program  There are pre-amplifier, the amplifier connected to the pre-set AGND ground  (4), all the master chip decoupling capacitor must be placed as close to the chip pins, decoupling capacitors to be short circuit  (5), priority placement of the Bluetooth antenna, the RF antenna must be close to the board edge (some arrangements may not do, but must  We must find a open area). Bluetooth RF antenna matching circuit pins must be placed close to the antenna traces short. Bluetooth days  Line shop, the antenna inside the package sent to the yellow line as a reference frame, left and right sides of the antenna space permits  Case, as wide as possible points. As FIG.  (6), 24M crystal oscillator must be close to the chip clock pins (BTOSCO and BTOSCI) is placed. 24M crystal alignment must  To make three-dimensional package, from interference sources, and do not walk line with other data lines during trace.  (7), when the DACL, DACR, AUXL, AUXR, MIC and other audio signal traces, attention away from the digital signal (LCD / LED  Signal, USB, SD, etc.) |