

Circuit Description

The working principle of WIFI Radio

DTS-01 WIFI Internet radio can be divided into MCU control circuit part (see Figure 3), audio amplification part (see Figure 2), the main function part (see Figure 1) and module part (see Figure 4).

1.The Main Control:

The main control parts mainly operate the function of power on/off, the state of indication, transfer the information of Encoder to Radio pro by MCU, for details, please refer to the Manual

Figure 3, VOL_B、VOL_A、E2_B、E2_A , separately connecting with Volume encoder terminal and Select encoder terminal, which are used to accept the user's operate information; VOL_B_OUT、VOL_A_OUT、E2_B_OUT、E2_A_OUT, connecting to the corresponding pin of module, which be used to output the user's operate information

D1 is used to indicate Power on/off and the state of sleep; K1 is used to Power on/off and sleep operation.

R97~R104 make the encoder information exchanged in order to adapt to the different requirements of turning.

L2 for static protection, prevent the possible electrostatic from rushing into the MCU U1

When power off, press the Power button, MCU will make the D1 flashing, hold and press the Power button, MCU will make the POWER-SD to high electricity, and the device power on.

Under the condition of working, press the Power button, MCU will make the D1 flashing slowly, then the device enter the sleep time, and about 20 minutes later, it will power off automatically.

Under the condition of working, hold and press the Power button, MCU will make D1 flashing and then the device power off.

Under the condition of power on, If the user operate the Volume encoder or Select encoder, it will send the information VOL_B、VOL_A、E2_B、E2_A to module

2.Audio amplification and charge manage

See figure (2)

Audio amplification part realizes the further amplification of the headphone-level output signal, to promote the speaker took place.

OTL output TDA1905 which is a high-quality I audio amplifier, the MUTE is Shutdown terminal, low-level electricity can close the power amplifier, which is controlled through the operating of Q5 by MCU

In order to prevent channel crosstalk, only picked up a channel of audio signals.

Power Management is completed by MC34063A and RT9167A, MC34063A output 3.7V to supply power for the MCU, RT9167A output 3.3V to supply power for main module. Loudspeaker amplifier is supplied directly from the 12V power.

3.The main function part

See figure (1)

The main function including: Antenna matching network, the main module, headphone amplification, power management, LCD and backlight drivers, clock etc..

The antenna matching network is used to make the RF antenna to be the best state of send and receive information

Main module receive the volume adjust, menu selection signals which send by MCU, as well as directly receive the signals of Select and Back. Complete all of the operations of WIFI Radio, D2 and D3 and its subsidiary resistor is used to change the electricity level and phasic in order to adapt to the needs of RadioPro module.

Headphone amplifier TS482 not only provides adequate current for headset, but also achieved a double-ended output module to the headset connected single-ended conversion; its left and right channels of the split voltage to provide a way to obtain better stability.

Power management part, U100 MC34063A output VCC 3.7V voltage directly, when POWER-SD is high level electricity, U2 RT9167 start, and output the stability voltage VDD 3.3V

J4 is the FPC socket of LCD connected to the 128 * 64 dot matrix

Here uses a special method to drive LCD backlight,: it is compose of C9,C13,Q1,Q2,R7,R30,R31,R34, when the module LED1-ended output negative potential backlight PWM drive signals, charge C13 through Q2、R7, then R30 discharge, making Q1 at the opening state, that is, when LED1 with PWM output that backlight is light, the backlight extinguished when the PWM without output; C19's function is to stabilize the voltage, R34's function is to limit voltage.

J3 is a clock, with sleep function

Alarm Control: when the clock time is

Alarm Control:

When it arrives at the alarm time, MCU output BIBI-CTRL is high, Q6, Q7 are opened, BUZZER1 will make sounds, at this time MCU will detect the location of three SW100 switch. If at this time without any other operation, alarm clock will continue to ring for 20 to 40 minutes; if SW100 is moved to the OFF position, and MCU detected it is at the OFF status, then the alarm will stop immediately; when the alarm clock rings, and SW100 is at the RADIO position then press SNOOZE , BIBI sound will be closed, the machine open INTERNET RADIO automatically, and after connected successfully, it will broadcast the final station that was broadcasted last time; when the alarm clock rings, and SW100 is in ALARM position, then press the Snooze, it will enter the SNOOZE state, at this time, the clock close, five minutes later, the alarm sounded again, until the user turn off the alarm.