Operational Description

Power section

Input stage is made of 4 parts : the fuse F1 , diode D1, capacitor C4C5 and inductor L1. Fuse's function is to limit the inrush current of rectifier D1 in a safe range, attenuation of differential-mode noise , fault occurs in anywhere else, bring the protection of circuit. C1 keeps input voltage.

The power processing stage consists of the LNK3047PN, L2, D3, and C7. Diode D3 adopts a reverse recovery time (Trr = 35ns) of the quick reply diode. Inductor L2 with appropriate RMS current rating (to meet the temperature rise requirements), capacitor C7 is the output filtering capacitance, the main function is to limit the output voltage ripple. The output is a steady 5V DC voltage.

Diodes D3 and D4's forward voltage drop is the same, both sides of the C7 voltage tracks the output voltage. The resistance divider which is made of R2 and R3 will proceed detection and regulation of C7 voltage. Using of switch cycles to maintain a steady output voltage. When the output voltage rises, the current into the U1，1.2.7.8 pin increases. if the current checks IFB value, then the cycle will not lose, when the current is less than IFB value, it will perform the switching operation cycle , so as to reduce the load, there will be more cycle will be lost, and when the load increased, only a few cycles to be lost.

Then after L3, C9 filter to U2 step-down regulator, The RC filter circuit consists of R4, C10, C3 will proceed filtering of output voltage. The R4 also act as a dummy load, let the switch power to a steady 5V DC voltage.

RF control part

In the case of power supply, manual signal input, press SW1 switch and give a voltage signal to RF control board U1, after signal is processing by U1, recognition, sent to the execution section to proceed load adjustment.

Execution section

After sending the signal to TRIAC through RF control part , relay turns on and then by the RF control ZeroX zero signal detection to off, control the load. Among which electricity into the R6, R7, BAT54S, R8, R9, C11 form a zero-crossing detection circuit gives feedback of RF control section.