

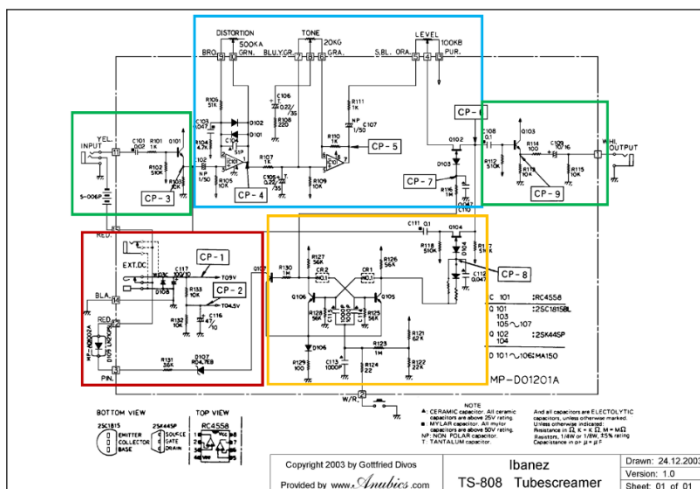
## Analog Circuit Project

Ibanez Tube Screamer 8o8 (TS8o8) was a vintage analog guitar distortion effector that was famous among guitarists. In this project, my teammate and I analyzed, tested and finally built a TS8o8 effector from scratch that could accomplish all the functions of the "Legendary TS8o8" including distortion effect, volume and tone adjustment.

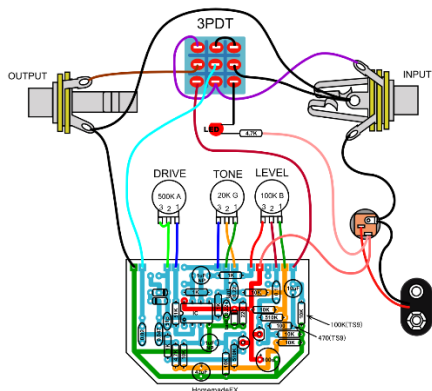
### PCB layout design

Our work started from a circuit diagram of TS8o8. The circuit could be divided into 4 parts: the red power supply, the blue sound effect circuit, the green IO buffer, and the orange switching circuit. The core of this circuit was two clipping diodes that could clip the signal above certain level.

We designed a PCB layout from the circuit diagram. The color notation in this layout was the same as that in circuit diagram.



### Ibanez TS-808



Notice that the switching circuit was accomplished by a 3PDT switch and the IO connectors are 6.5mm connectors compatible with guitar.

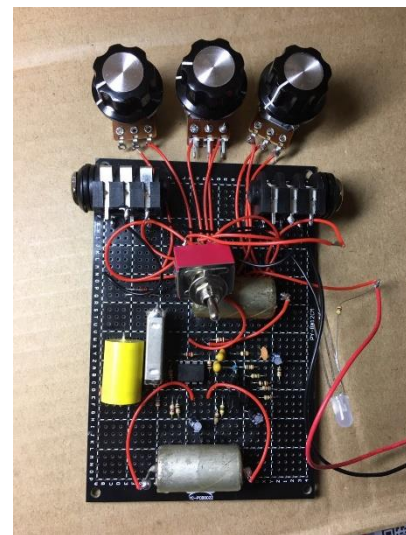
With the PCB layout in hand, we purchased most of the circuit components from local electronics supply stores. Some rare components that was used specifically in audio-related circuits were bought online.

### Soldering the circuit

We soldered the whole circuit by ourselves. Some capacitors were too large to be fit on the PCB board, so we had to change our wiring tactic sometimes in practice.

### Circuit debugging and testing

We built the same circuit on software Multisim to simulate the signals. After finishing soldering the circuit, we used an oscilloscope to check signals at certain testing points in our circuits to see whether they were consistent with the



simulation. The output signal waves in our circuit were almost identical to the software simulation results. We also tested the circuit with a guitar and an amplifier, it worked just as the legendary rock & roll distortion sound.

