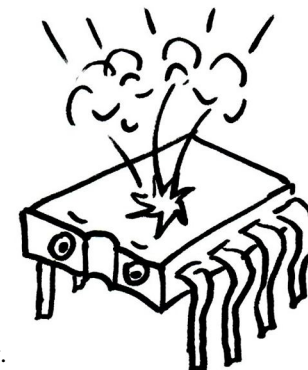


## TR-808 hihats project – revised Dec 2009 (corrected routing issue)

### handwired perfboard construction

<http://ericarcher.net/devices/tr808-clone/>

Eric Archer 2009



This analog hihat circuit is adapted from the schematic in the TR-808 Service Manual. Transistors have been substituted. It is intended to be close to the original sound. The noise generator portion is also taken from the original schematics. I ditched the wacky transistor voltage reference (Q9) for the 4584 schmitt trigger noise source and just used a 78L05 regulator. I changed some resistor values too for convenience.

I built it on PC-4 perfboard. you could use any pad-per-hole 0.1" grid board though. Dont build this on a solderless breadboard - you wont want to take it apart!

The layout doesnt include a power connector. The circuit needs +/-15V or +/-12V. You'll have to add the power connections. Look carefully at the PWR page. The positive and negative supply rails are shown but not labeled as to which is which. Remember that pin 8 of the TL072 is (+) and pin 4 is (-)... then you'll see which is which.

And you'll have to add output jacks of some sort. for output I just wired up a 3.5mm mono plug for CH and OH and run them into a mixer. The shell of the plug goes to GND of this circuit, and the tip goes to CHOUT or OHOUT.

If you are planning on triggering the circuit from a logic signal, the easiest way is to tie ACCENT to +12V (+15V), and connect the logic signal to TRIGGER. You'll have to make the trigger pulse short (like 5ms) or you'll hear a double-trigger on the negative edge of the pulse. Or you can add my diode-cap-resistor network (described elsewhere on my site) that makes triggering independent of pulsewidth.

I laid this circuit out with a mix of 7.2mm x 2.5mm film capacitors (5mm LS) like Wima MKP, Epcos B32529, or AVX BQ-series, and some larger footprint film caps.

---- construction procedure ---

start by printing out the four pages with wiring routing on them.

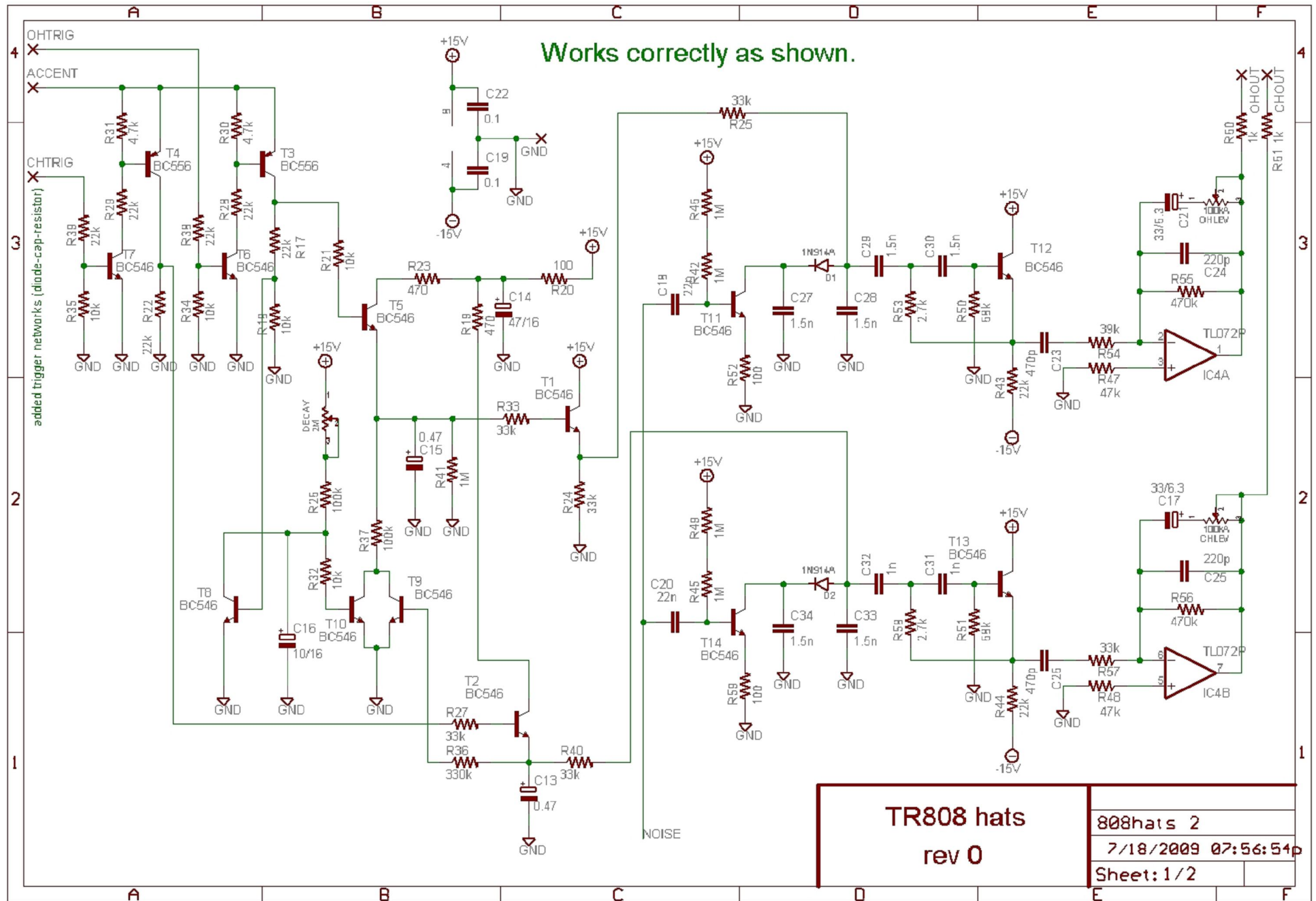
STEP 1: referring to the **placement** and **values** pages, install all the components on the perfboard.

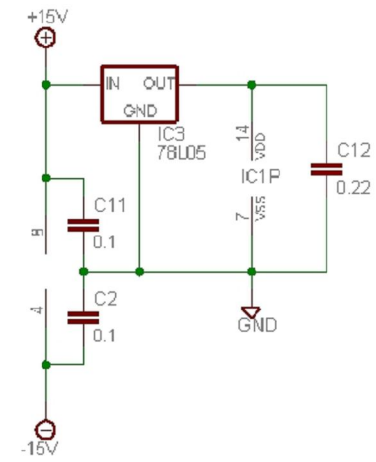
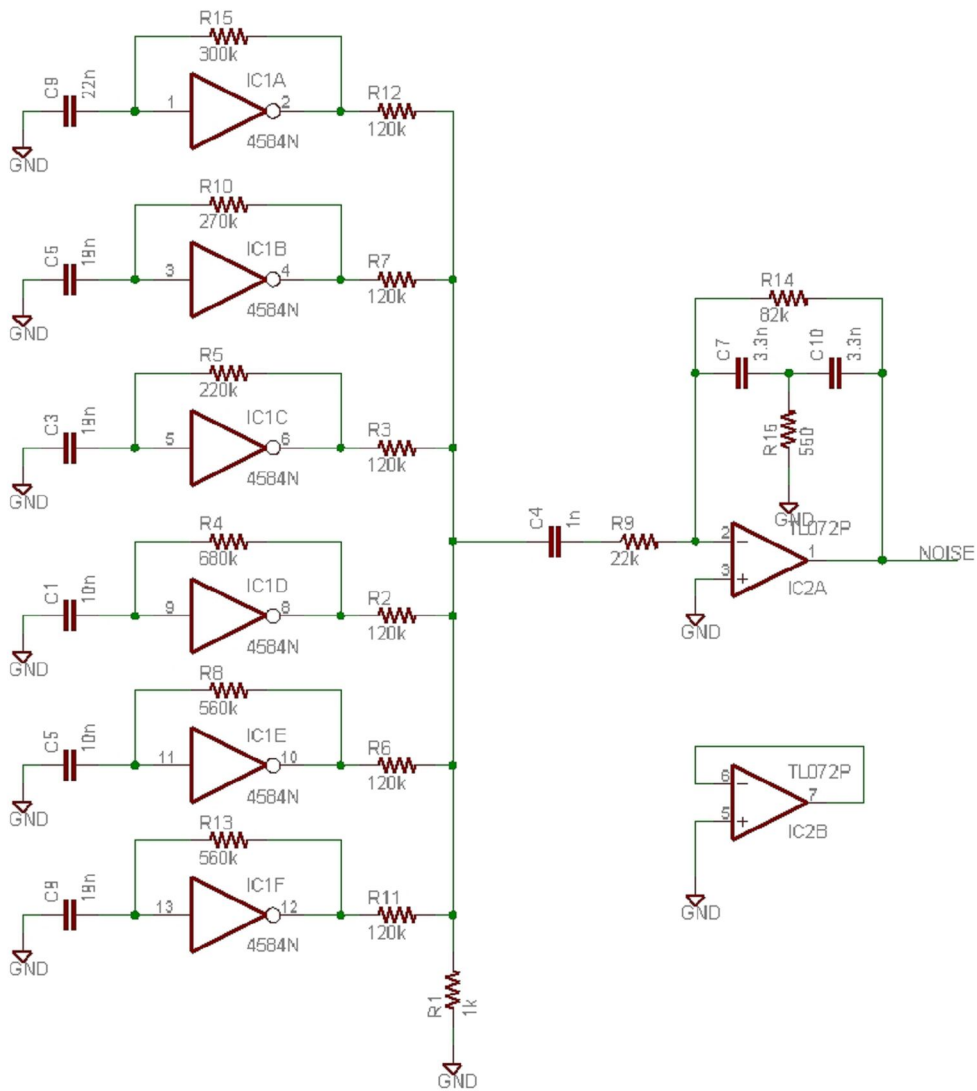
STEP 2: referring to **GND**, **PWR**, **routing1**, and **routing2**, make all the connections that are possible by bending and cutting component leads. use fine tipped needle nose pliers to bend the leads so they make efficient connections. make sure you thoroughly heat all solder joints so there arent any surprise open circuits later.

on the printouts, carefully trace all connections as you make them, using a colored pen or highlighter. that way you can keep track of whats left to do; when all the lines are traced, the wiring is done.

STEP 3: finish the remaining connections using short pieces of wire. 30- or 28- gauge "wire wrap" wire is recommended. this is solid core wire with high-temperature insulation. to do the wiring reliably, you really need high temperature insulation that doesn't shrink when heated. Strip the wires carefully so you don't nick the conductor and make an unreliable connection.

Works correctly as shown.

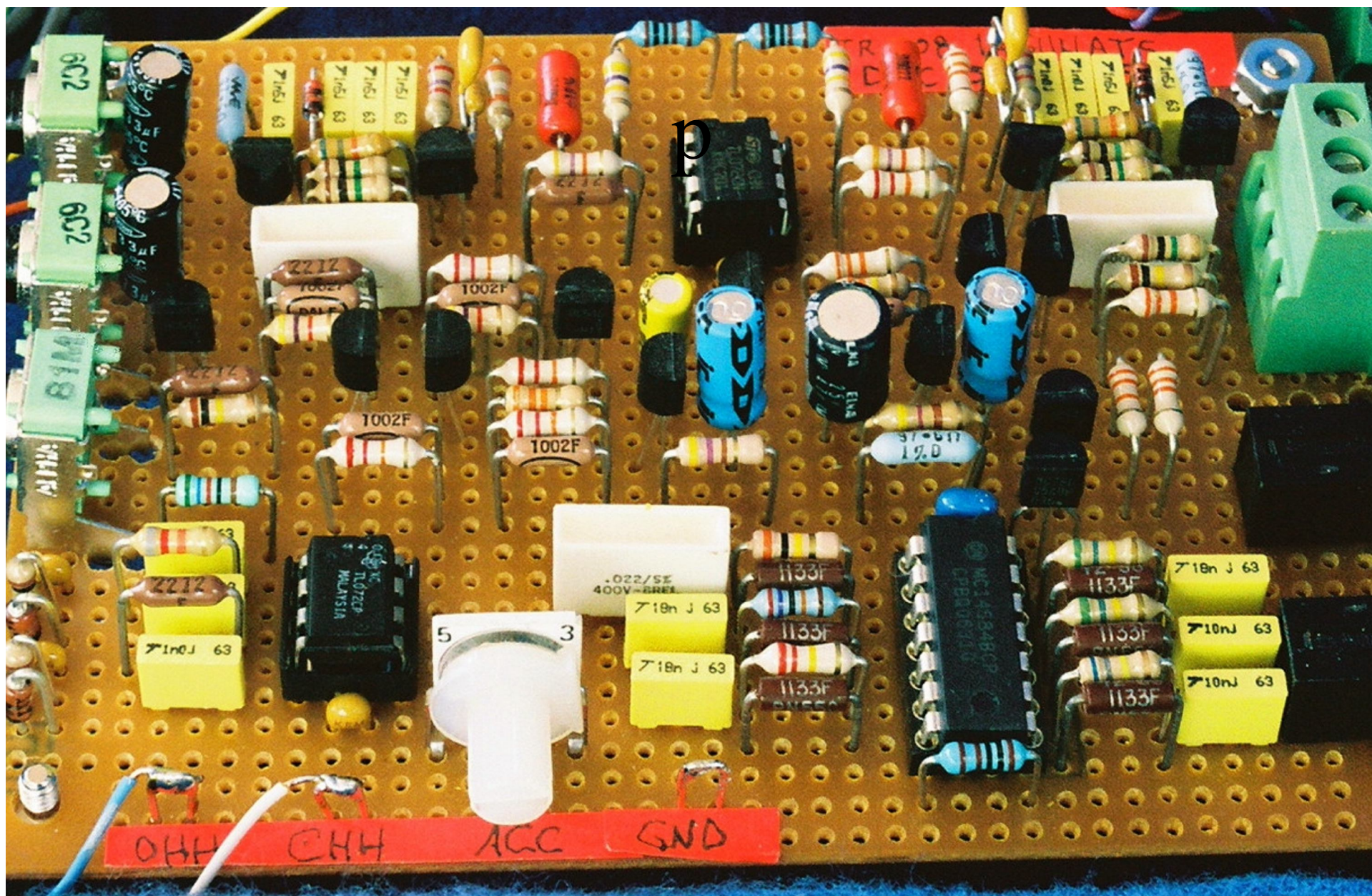




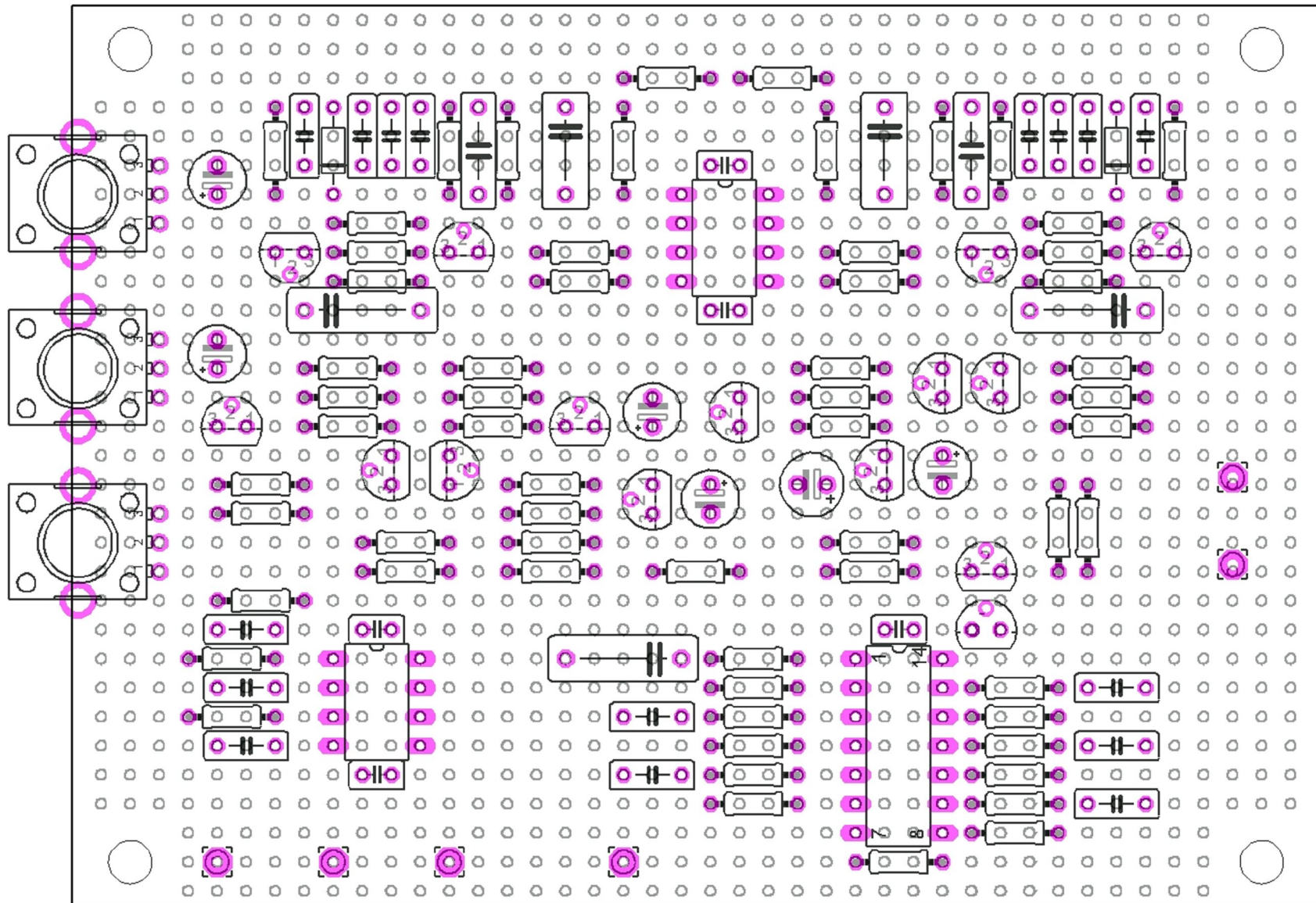
TR808 hihats  
 rev 0

808hats 2  
 7/18/2009 07:56:54p  
 Sheet: 2/2



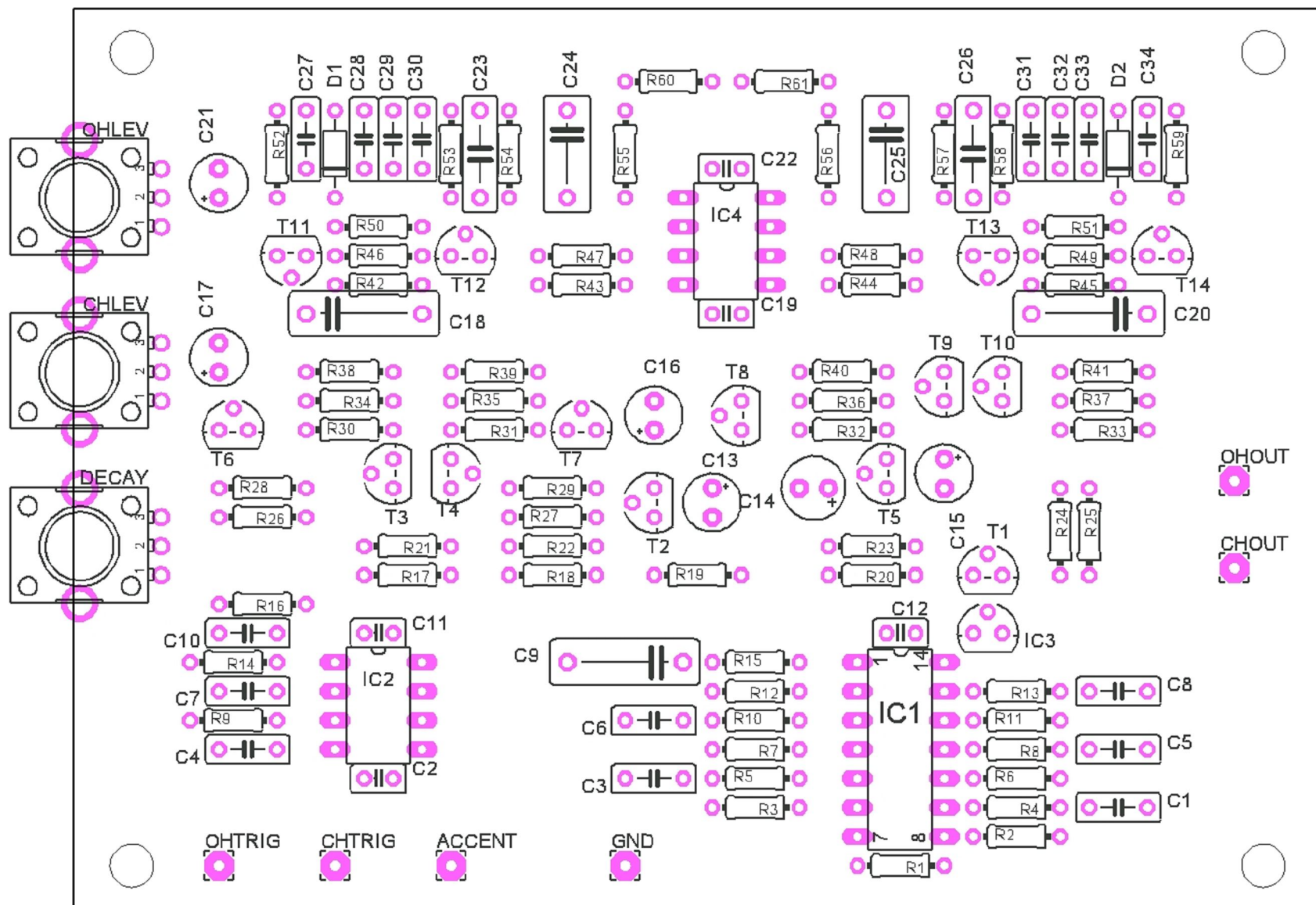






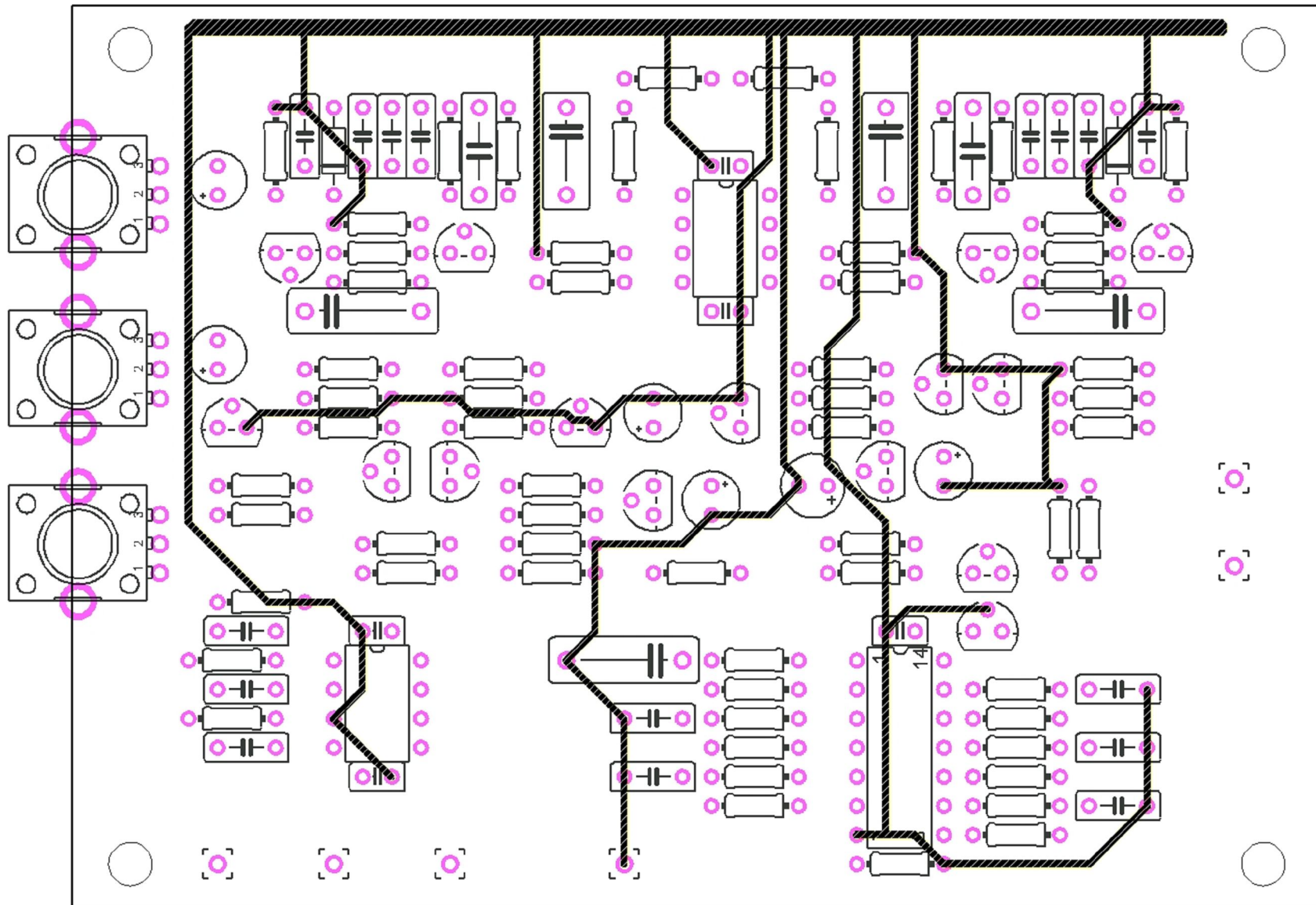
placement





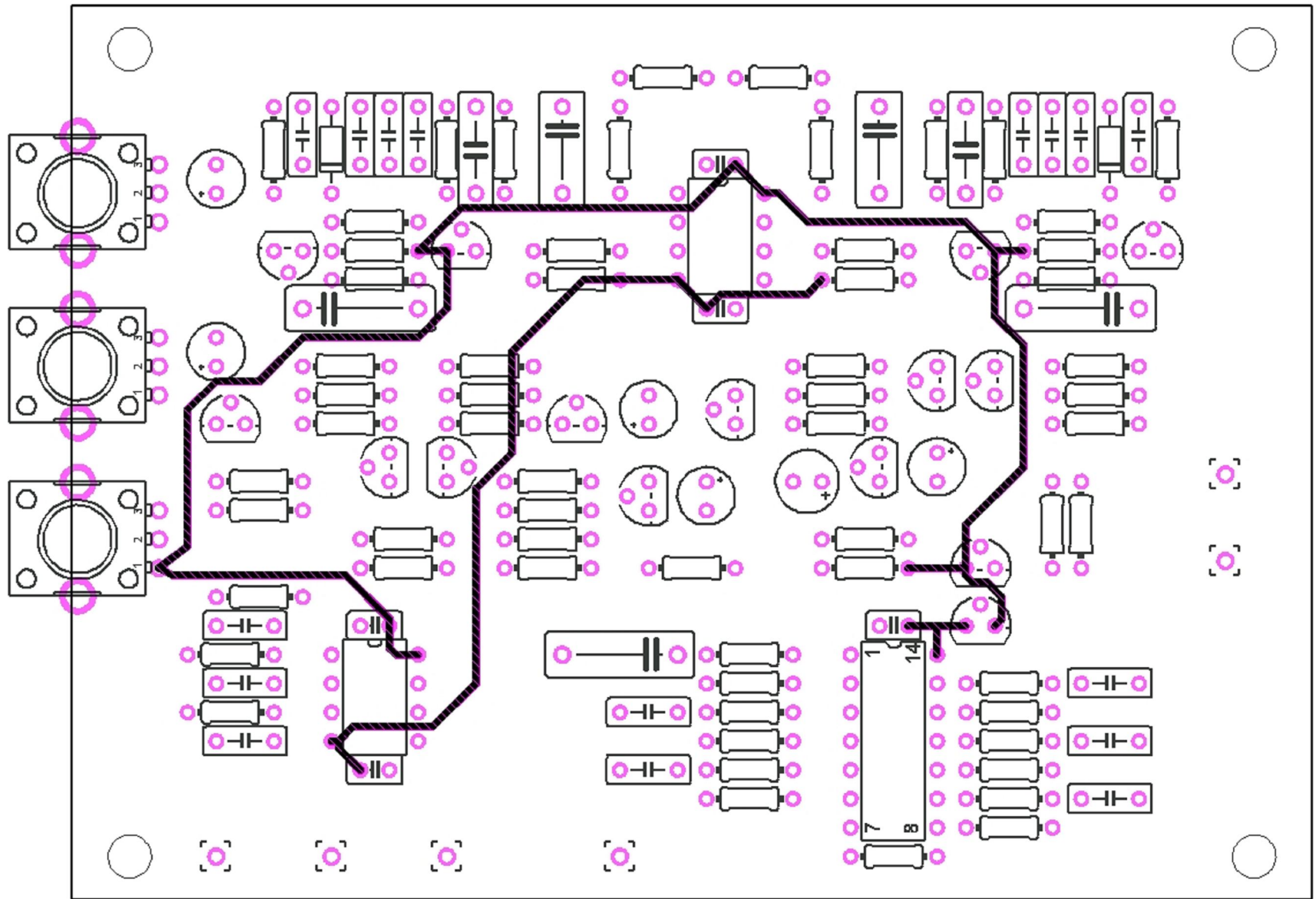
names



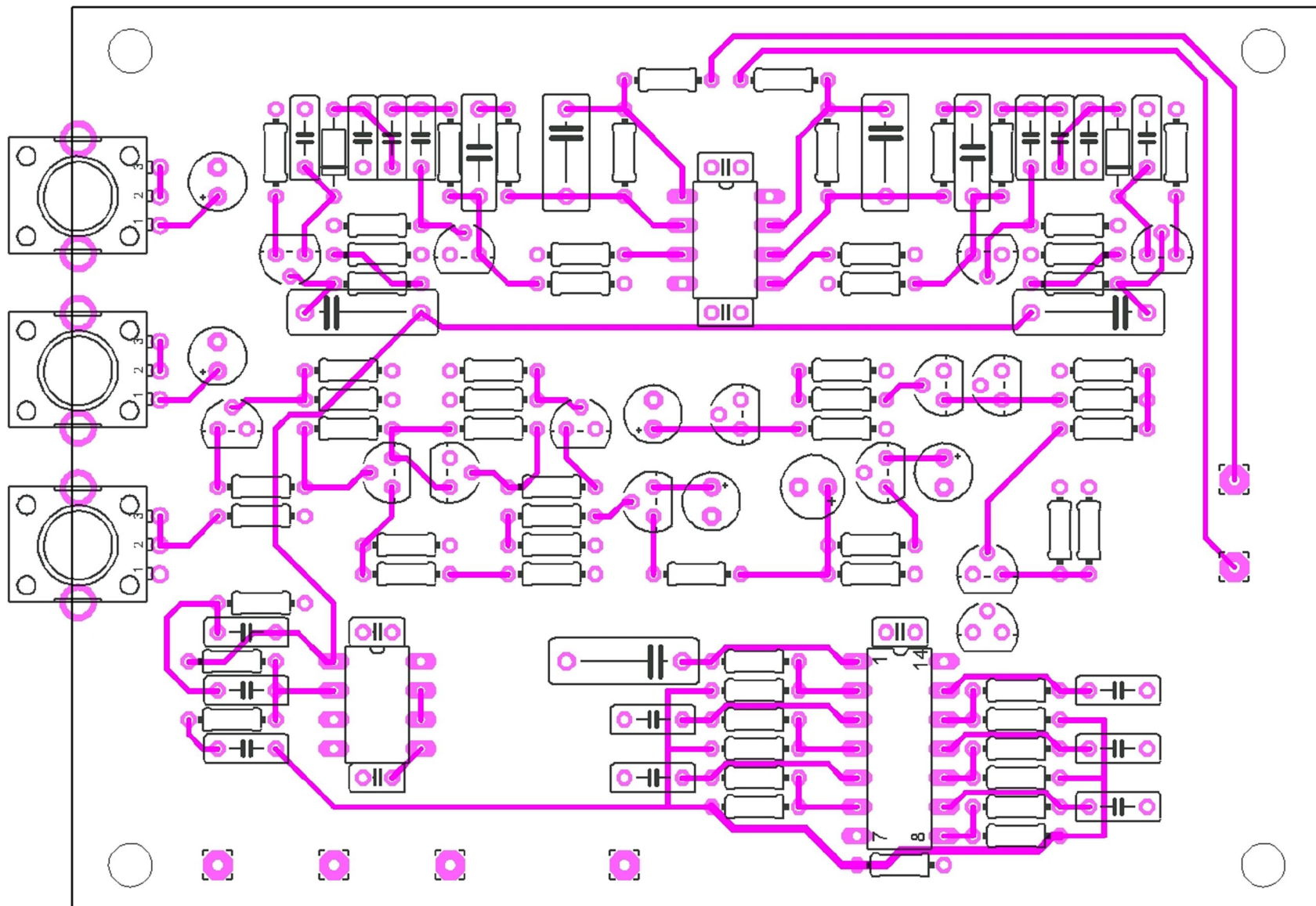


GND

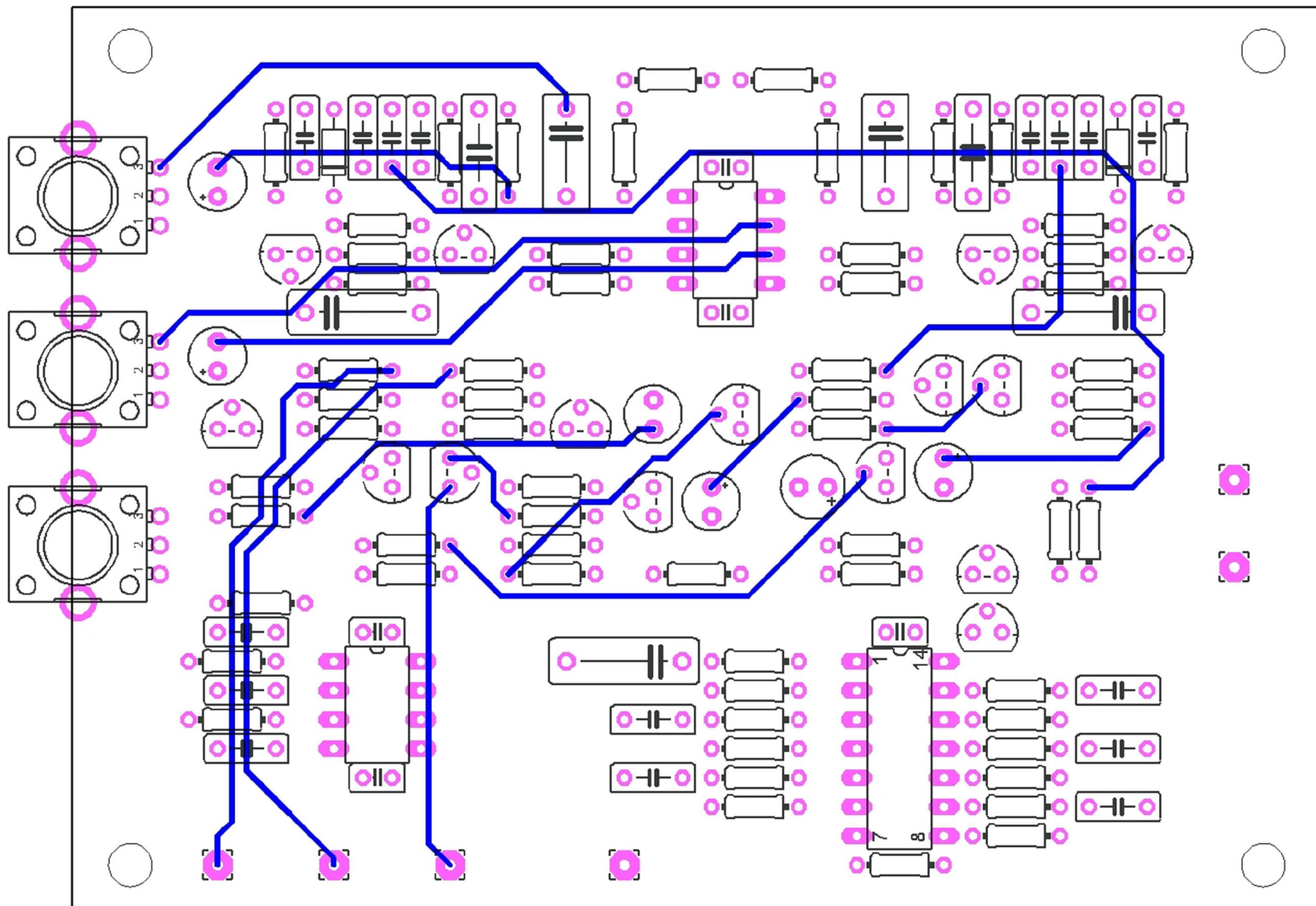




PWR



route1



route2



## PART LIST :

### Transistors:

9x 2SC945(P) NPN  
5x 2SA733 (P) PNP

1x TL072 Dual OP-AMP

2x 1N4148 Diode

### Electrolytic Caps:

2x 0,47 $\mu$ f/50v  
1x 10 $\mu$ f/16v  
2x 33 $\mu$ f/6,3v  
2x 47 $\mu$ f/16v (PWR bypass)  
1x 47 $\mu$ f/16v

### Caps:

2x 220p  
2x 470p  
2x 1n  
6x 1,5n  
2x 22n

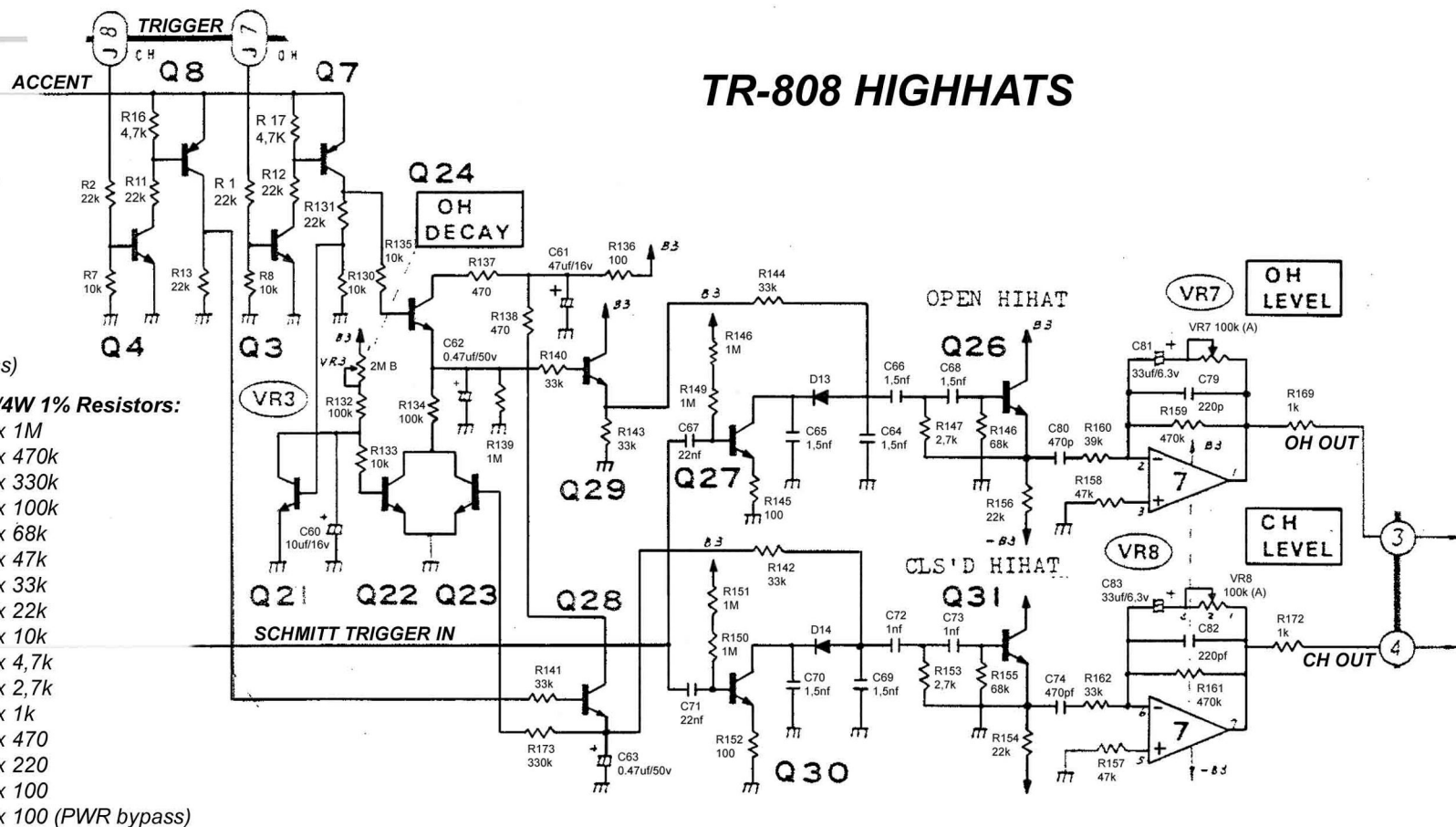
### Potentiometers:

1x 2,2M Lin  
2x 100k Log  
2x 22k Log  
2x Switch on/on

### 1/4W 1% Resistors:

5x 1M  
2x 470k  
1x 330k  
2x 100k  
2x 68k  
2x 47k  
7x 33k  
8x 22k  
5x 10k  
2x 4,7k  
2x 2,7k  
2x 1k  
2x 470  
1x 220  
3x 100  
2x 100 (PWR bypass)

## TR-808 HIGHHATS



original

## SCHMITT TRIGGER

1x 2SC945 (P) NPN Transistor  
1x MOS4584 Hex Schmitt Trigger

Electrolytic Caps:  
1x 100 $\mu$ /6,3v

Caps:  
2x 10n  
3x 18p  
1x 22n

Potentiometers:  
2x 220k lin

1/4W 1% Resistors:  
1x 680k  
2x 560k  
1x 220k  
1x 150k  
6x 120k  
2x 33k  
1x 10k  
1x 5,6k  
2x 2,2k

## NOISE GENERATOR

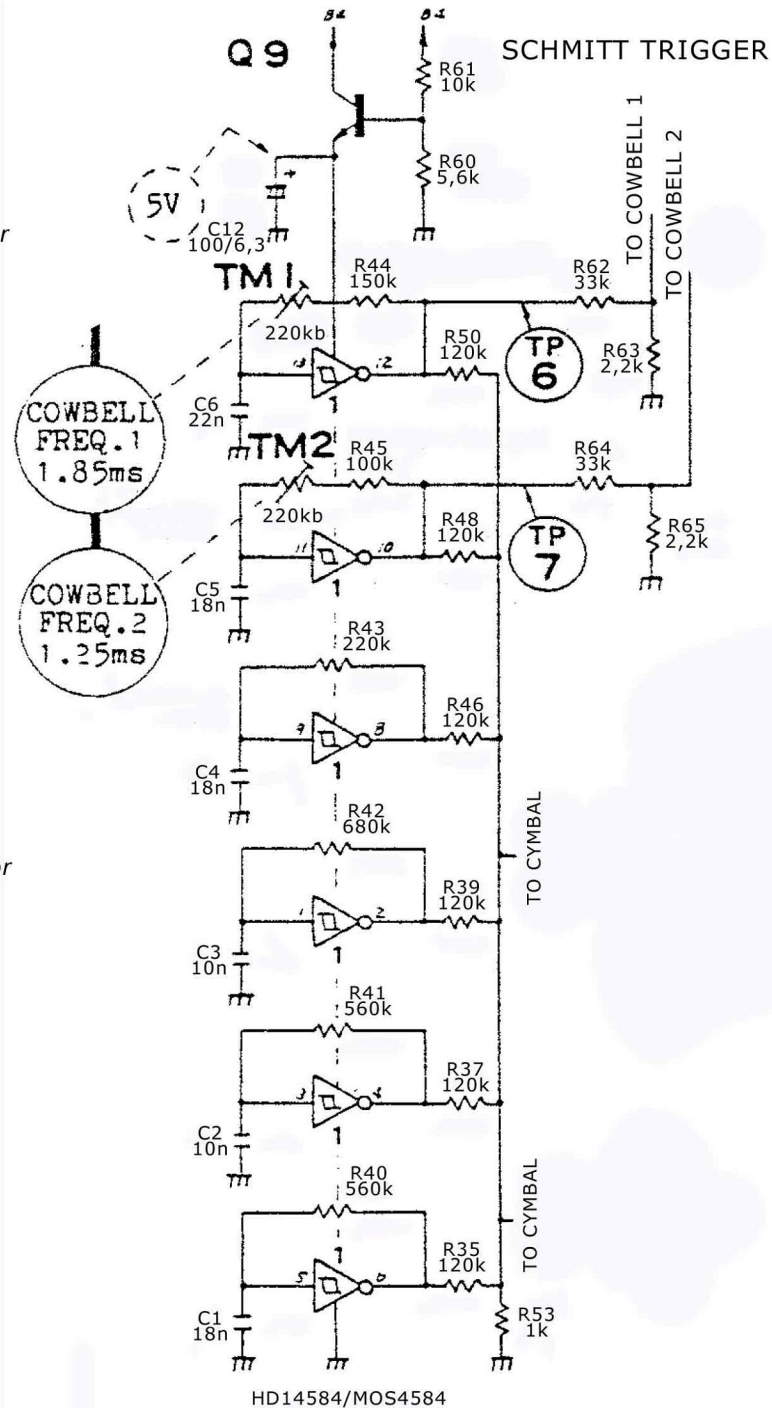
1x 2SC828 (RNZ) NPN Transistor  
1x TL072 Dual OP-AMP

Electrolytic Caps:  
2x 47 $\mu$ /16v (PSU)  
1x 47 $\mu$ /16v  
1x 1 $\mu$ /50v

Caps:  
1x 18p  
1x 22n  
1x 39n

Potentiometer:  
1x 22k Lin

1/4W 1% Resistors:  
2x 1M  
1x 330k  
1x 300k  
2x 22k  
1x 4,7k  
1x 100  
2x 100 (PSU)



original