

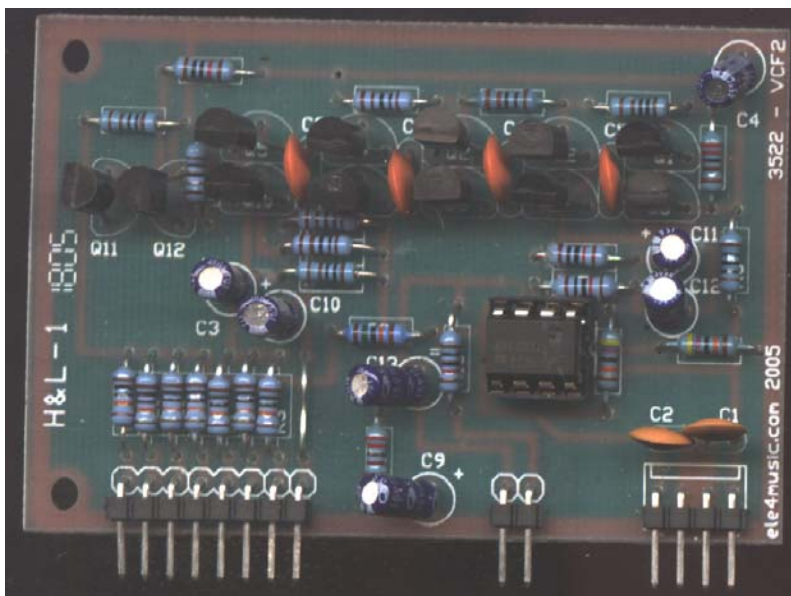
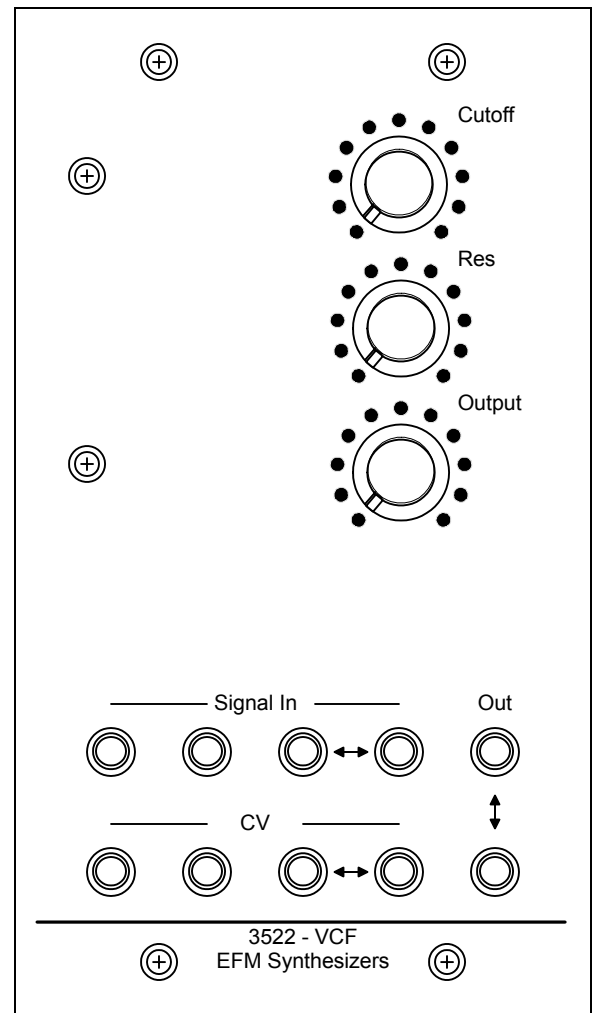
**2432 VCF voltage controlled filter**

The 2423 vcf is still my favorite filter after all this time. Classic transistor ladder.

Voltage applied to summing transistor Q11 is applied to the exponential transistor Q12. Q11 and R25 form a emitter follower providing exponential

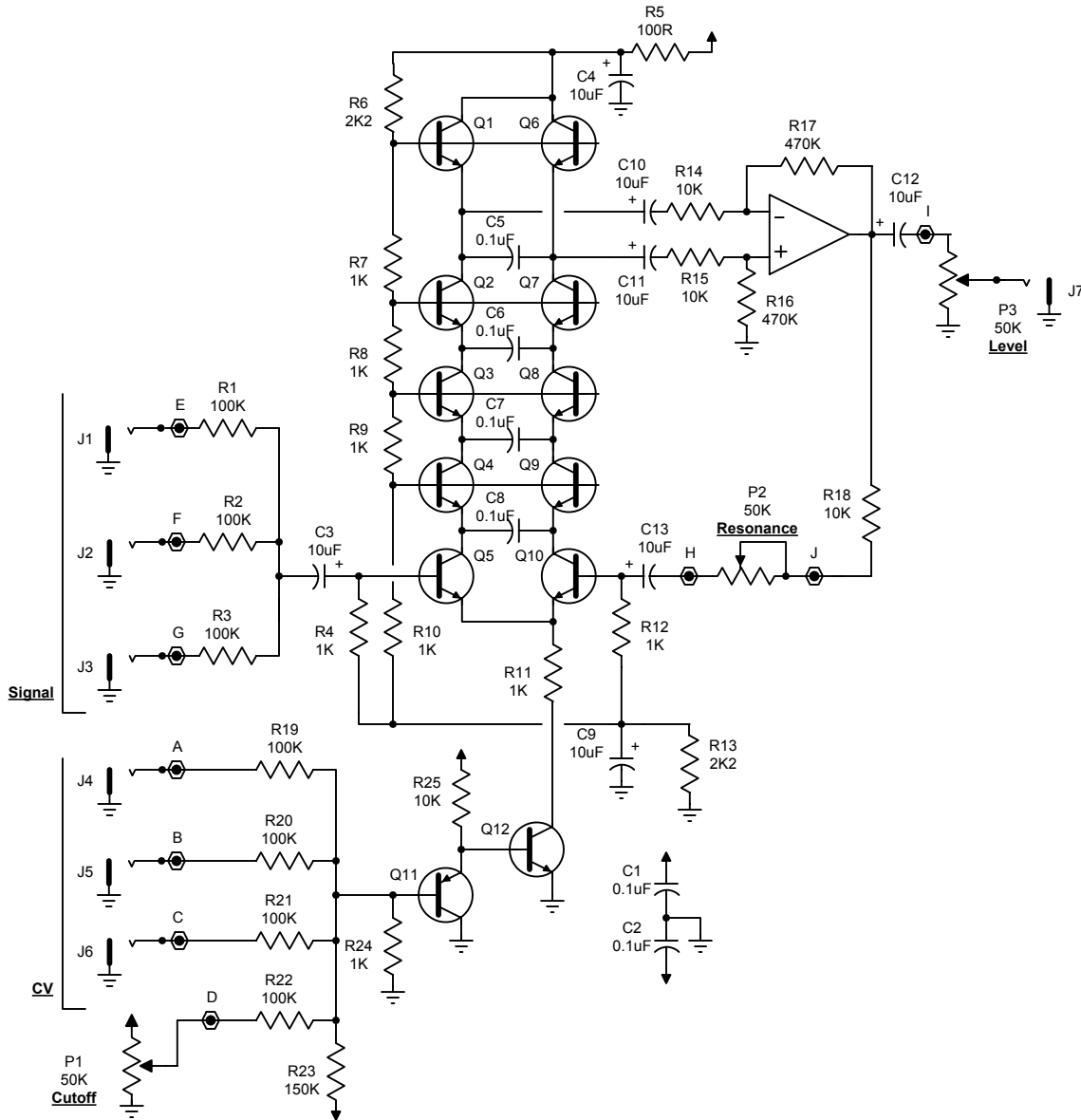
changes due to temperature variations. The voltage applied to the base of the exponential-transistor causes a exponential collector current sink that's applied to the transistor ladder through R11. The ladder transistors are biased at increasingly positive potentials by the voltage divider string R6-10 and R13.

The bottom pair of transistors split the current supplied by R11 into equal parts when there is no audio on the base of the Q5 transistor. When audio is present, both left and right sides of the ladder are modulated inversely.



As current flow increases the collector impedance of the ladder transistors is decreased providing a higher cutoff frequency by way of the effective collector load and C5-C8. The top two transistors form current to voltage converters that provide a voltage that's the log of the ladder current to reverse the non-linear effect audio signals cause on current within the ladder.

This inverse modulation on the ladder causes a push-pull voltage to develop at the top of the ladder. These voltages are applied to differencing and level shifting amplifier U1. The resonance signal must be dynamically coupled through C13 because the bias levels between the ladder and output amplifier are different.



**Small Kit**

- PCB
- C1,2,5,6,7,8
- C3,4,9,10,11,12,13
- R1,2,3,19,20,21,22
- R4,7,8,9,10,11,12, 24
- R5
- R6,13
- R14,15,18,25
- R16,17
- R23
- Q1,2,3,4,5,6,7,8,9,10,12
- Q12
- U1

- PC Board 1
- 0.1uF Ceramic 6
- 10uF Ele 7
- 100K 7
- 1K 8
- 100 1
- 2K2 2
- 10K 4
- 470K 2
- 150K 1
- 2N3904 11
- 2N3906 1
- LF351/TLO71 1

**Full Kit**

- P1,2,3 3
- 50K Pot 3
- Knob 10
- Jack 1/8" 2
- L Bracket w/hardware 1
- Header 1
- Panel 1
- Overlay 1

**Errors**

There are three errors on the silk screen.

- C11,12 are reversed (+) is on the wrong side
- C13 has an equal sign (=) instead of a (+)... At least it's on the correct side.....

