

Schematic Diagrams for

Low Distortion Oscillator Design

Master Thesis in Music

submitted by

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Contents

1	Main Oscillator Loop	2
2	Operational Amplifier	14
3	Level Detector and Error Integrator	17
4	Multiplier	30

Chapter 1

Main Oscillator Loop

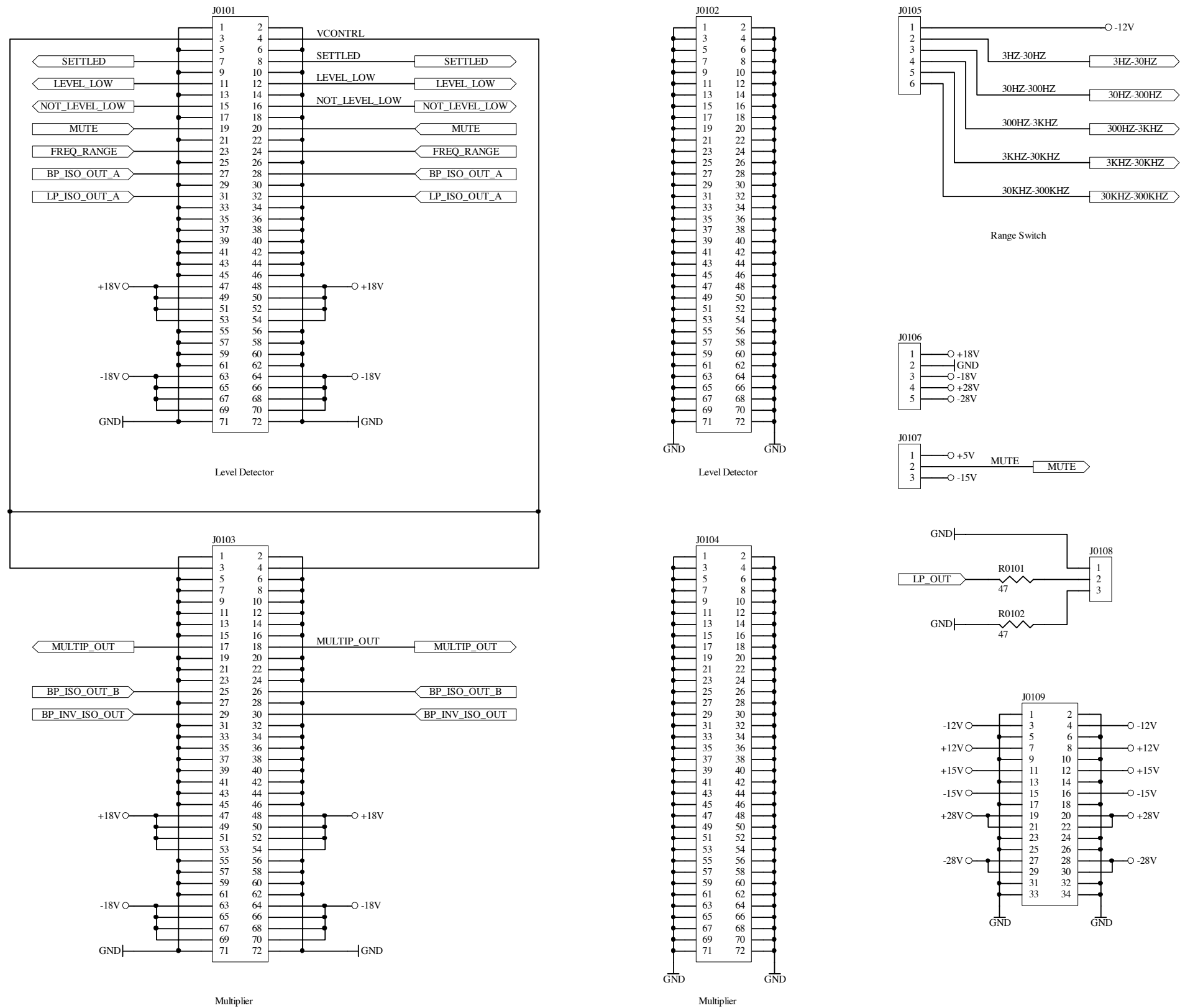


Figure 1.1: Input and output connections.

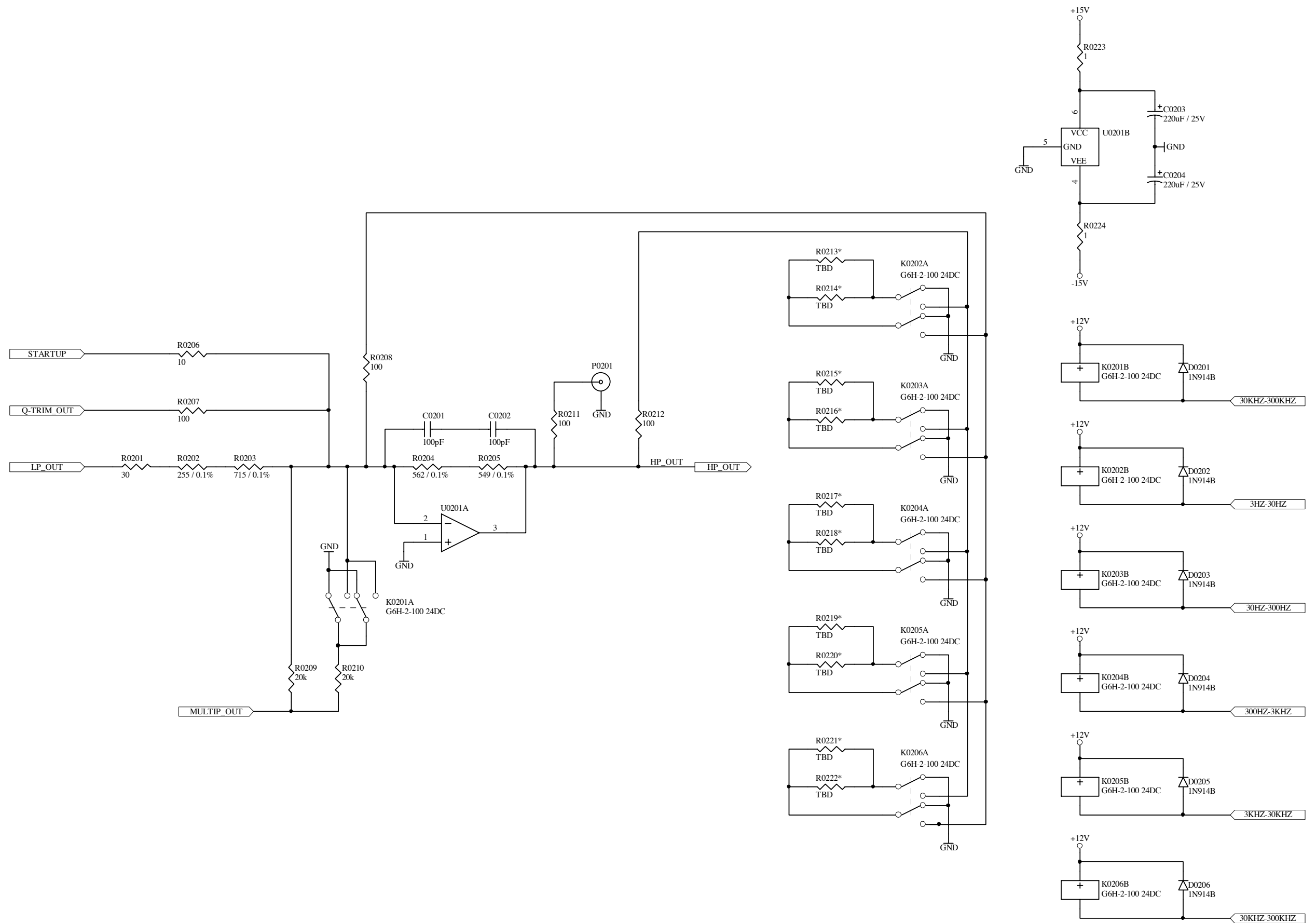


Figure 1.2: High pass amplifier.

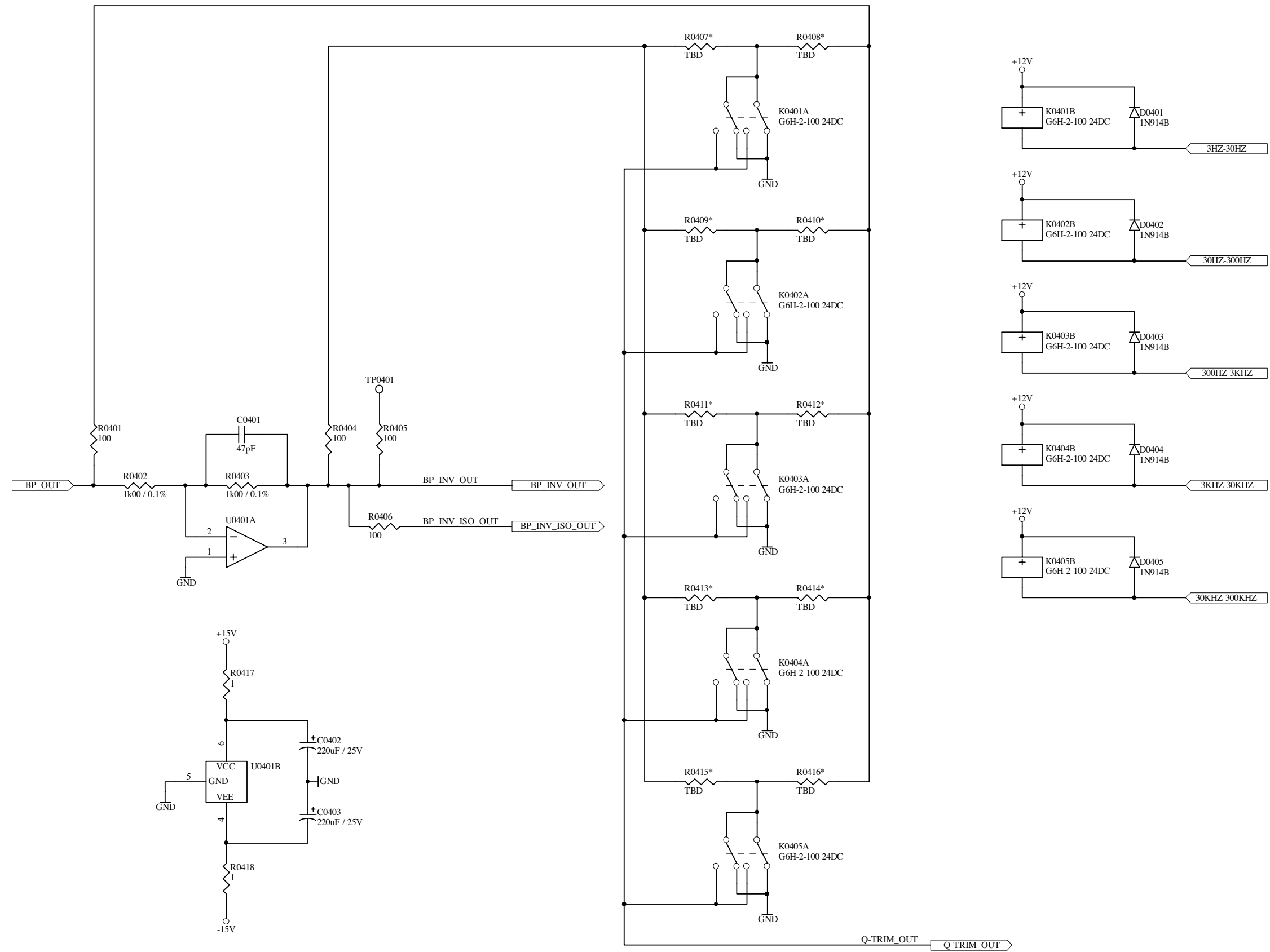


Figure 1.4: Band pass inverter amplifier.

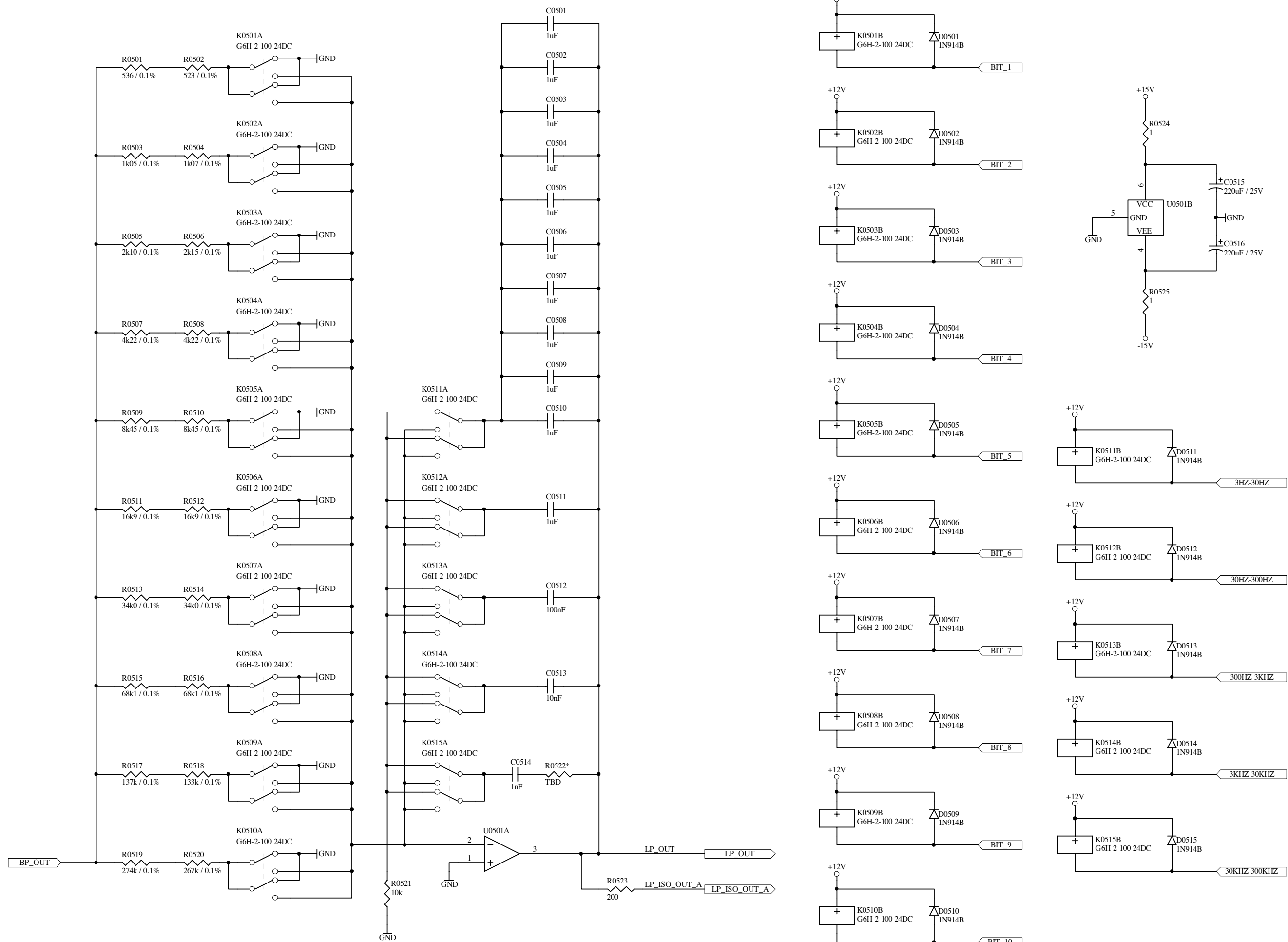


Figure 1.5: Second integrator stage (low pass output).

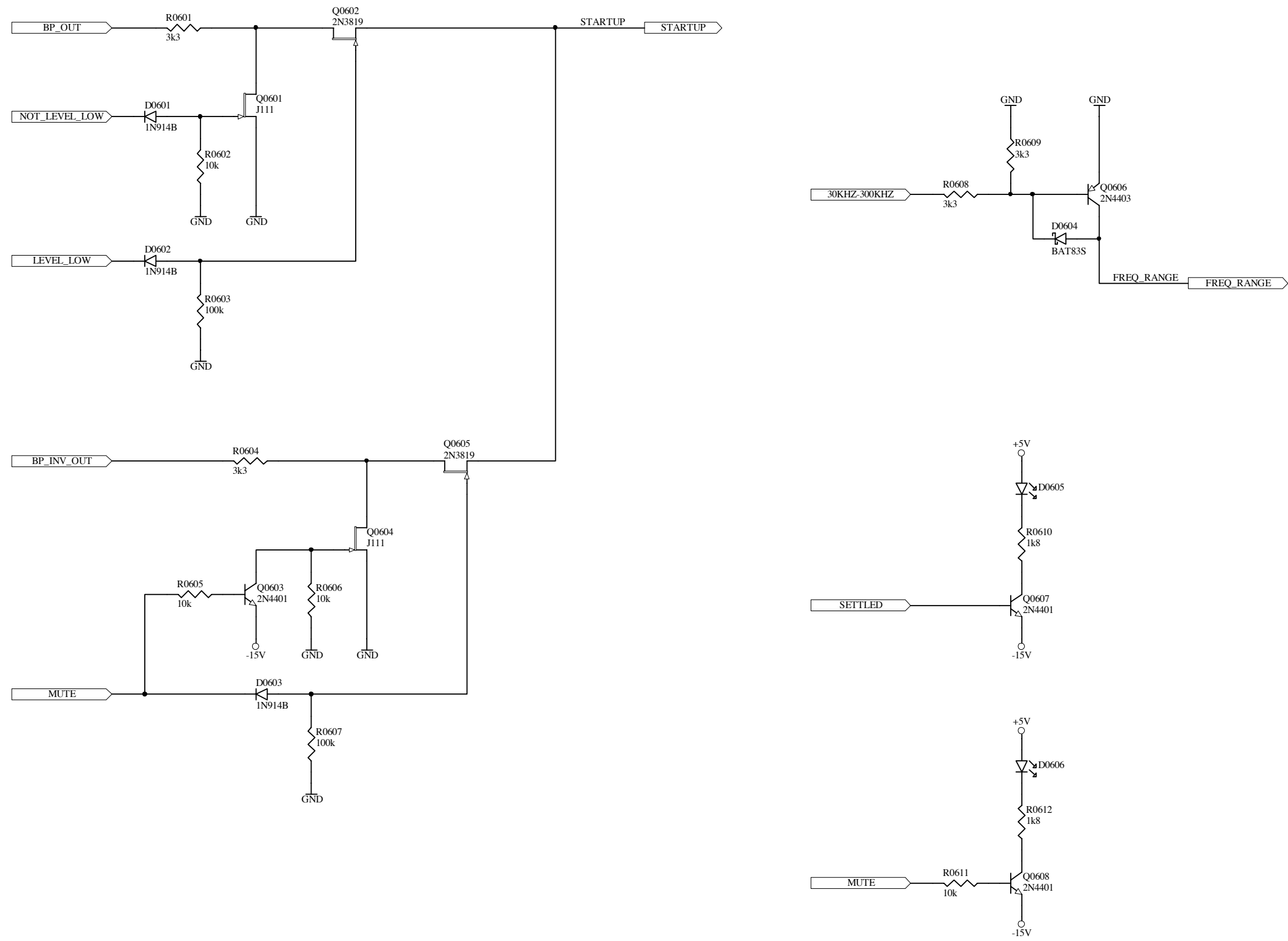


Figure 1.6: Startup and mute circuitry.

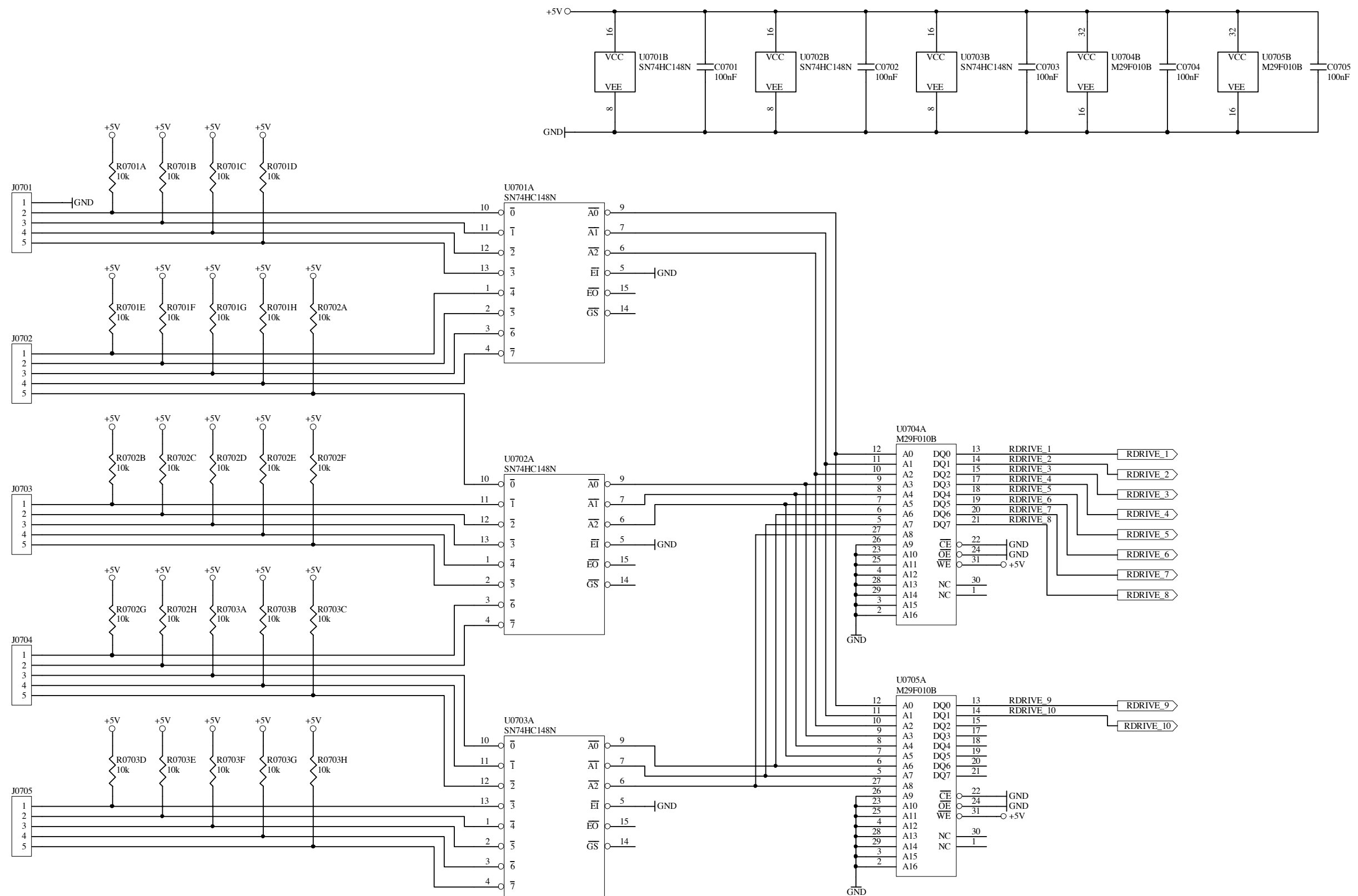


Figure 1.7: Frequency switching.

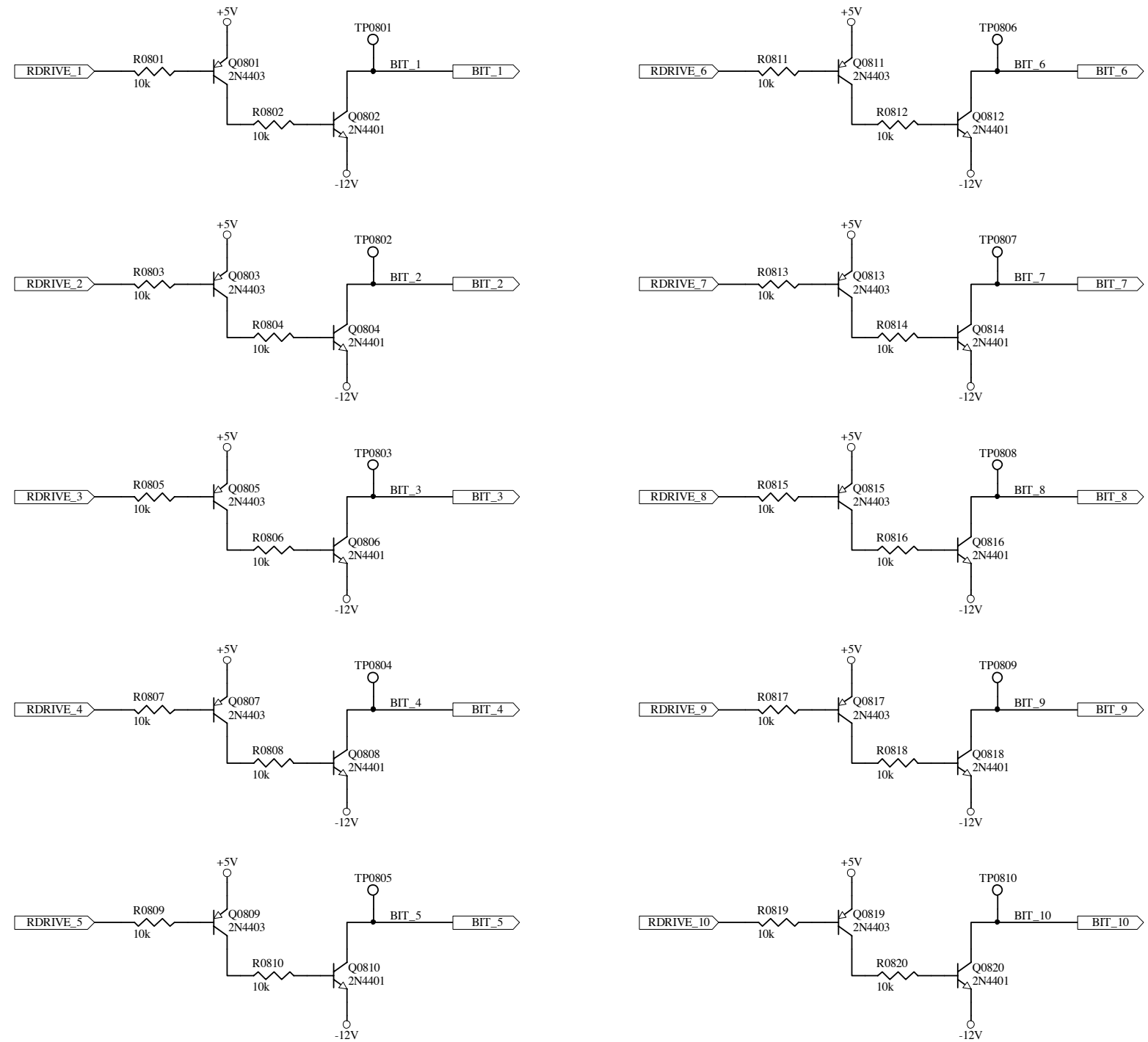


Figure 1.8: Relay drivers.

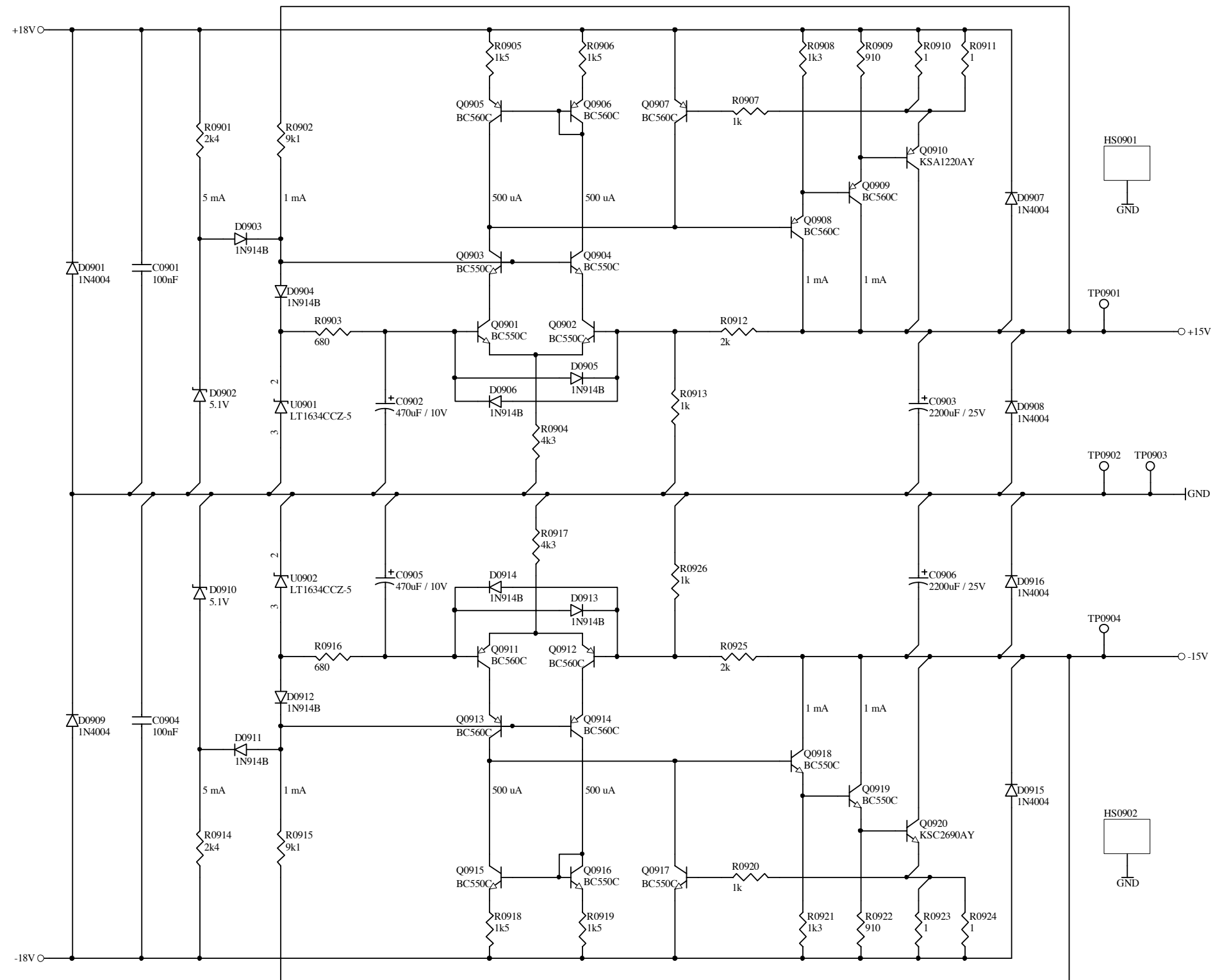


Figure 1.9: ± 15 V power supply.

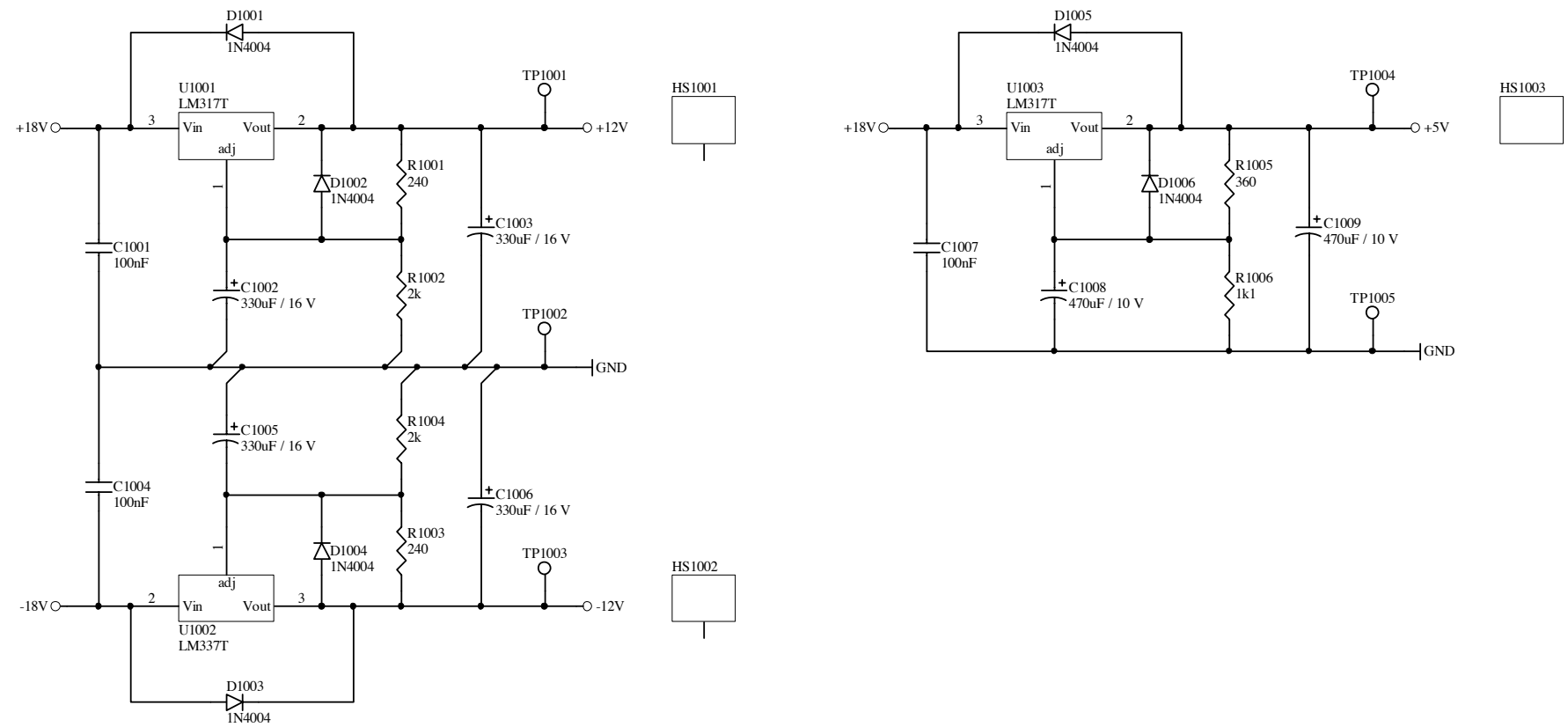


Figure 1.10: $\pm 12\text{ V}$ and $+5\text{ V}$ power supply.

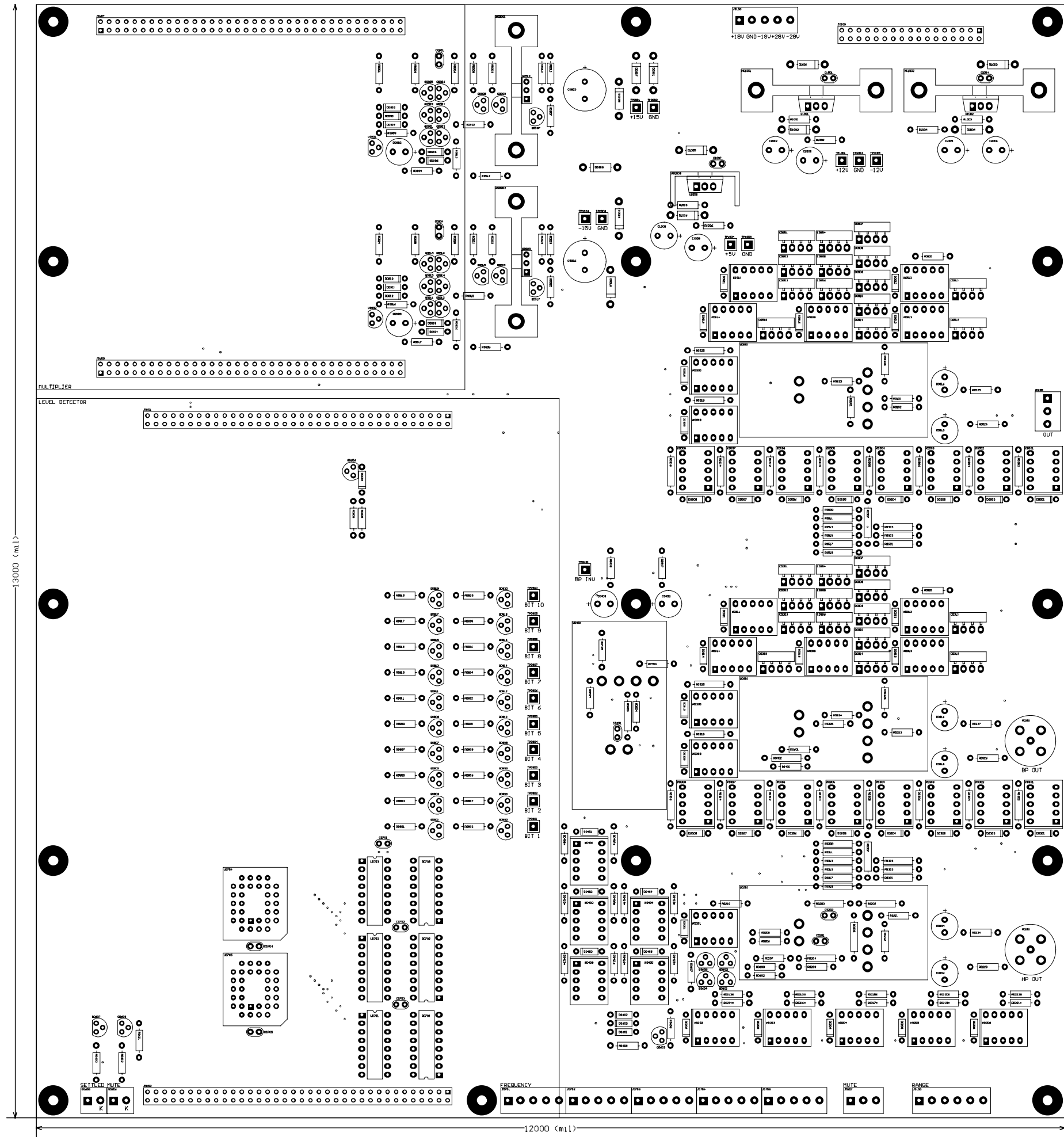


Figure 1.11: Overlay print, scaling approximately 78%.

Chapter 2

Operational Amplifier

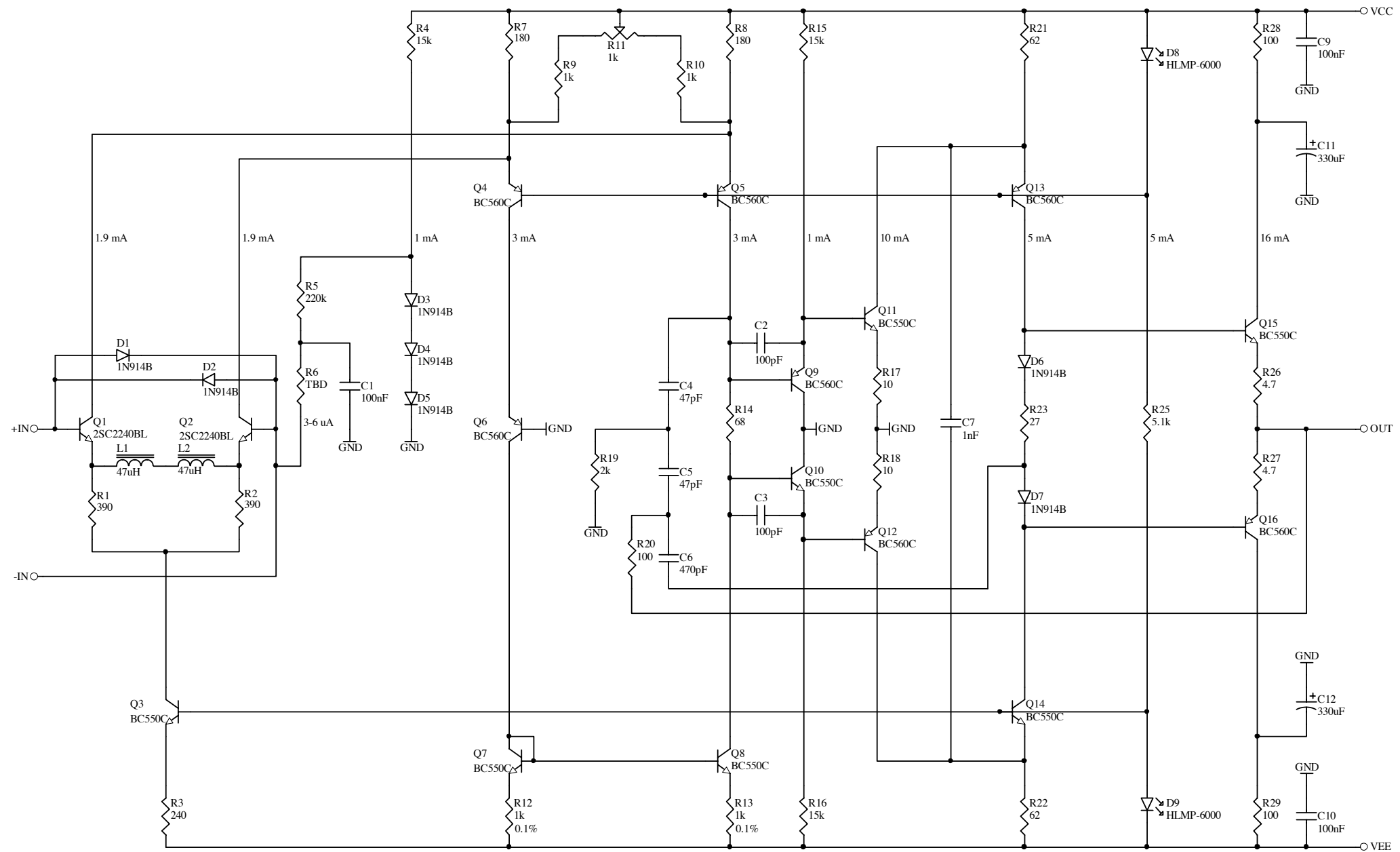


Figure 2.1: Discrete operational amplifier.

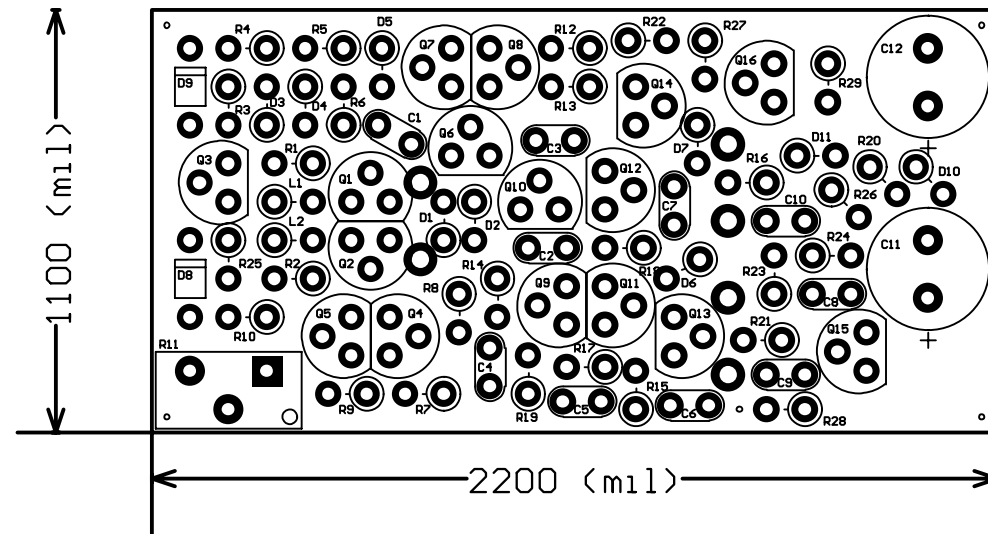


Figure 2.2: Overlay print, scaling 200 %.

Chapter 3

Level Detector and Error Integrator

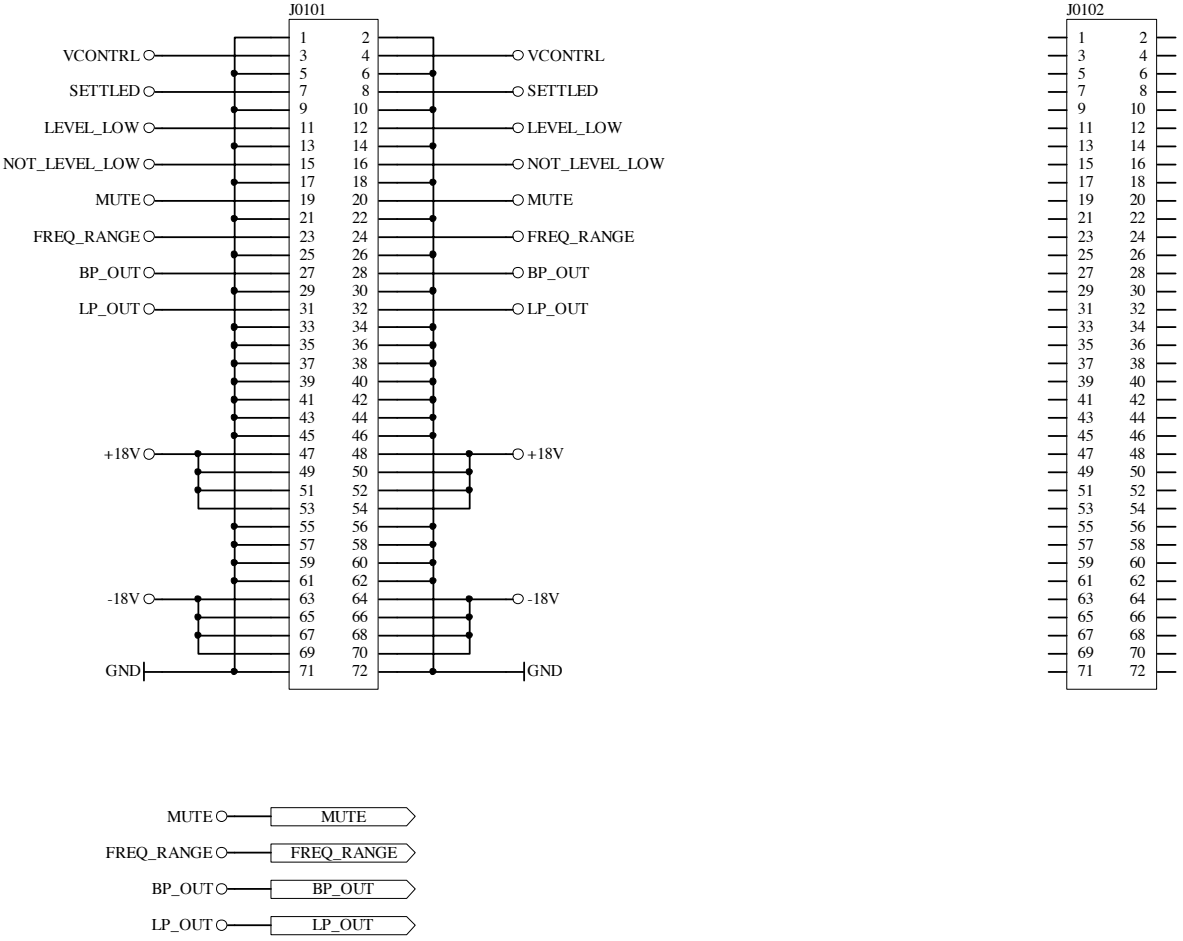


Figure 3.1: Input and output connections.

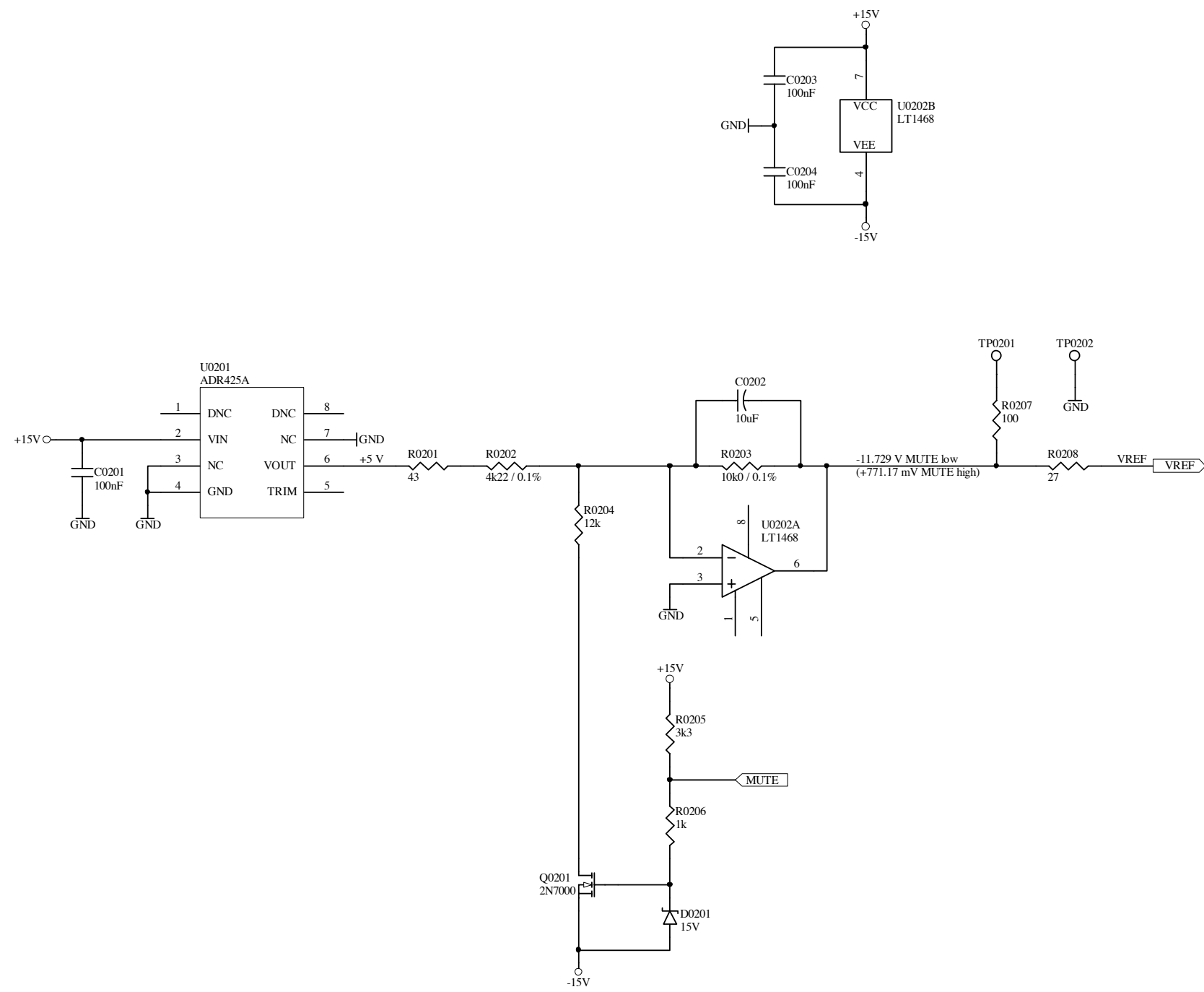


Figure 3.2: Voltage reference.

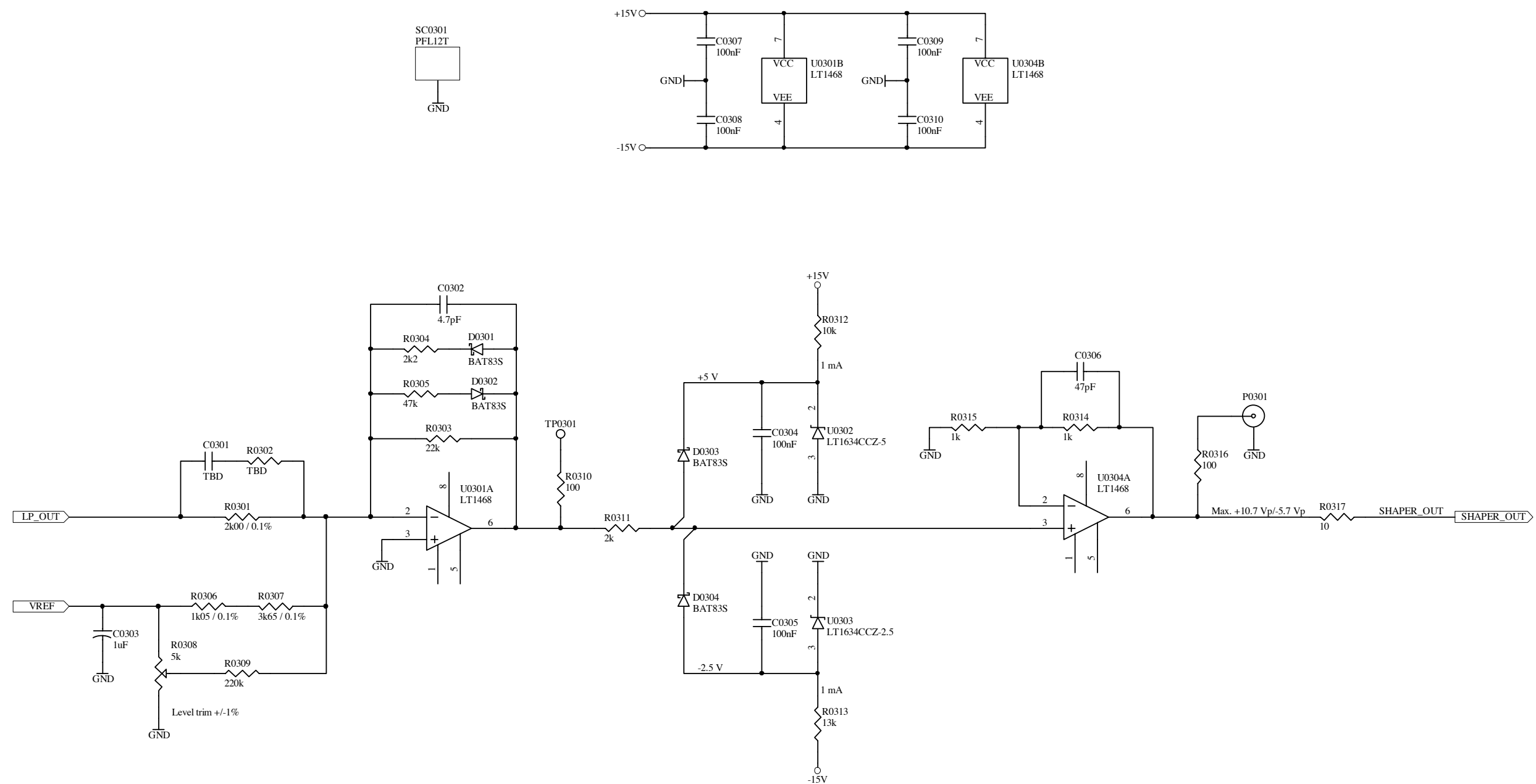


Figure 3.3: Reference voltage subtraction and waveform shaper.

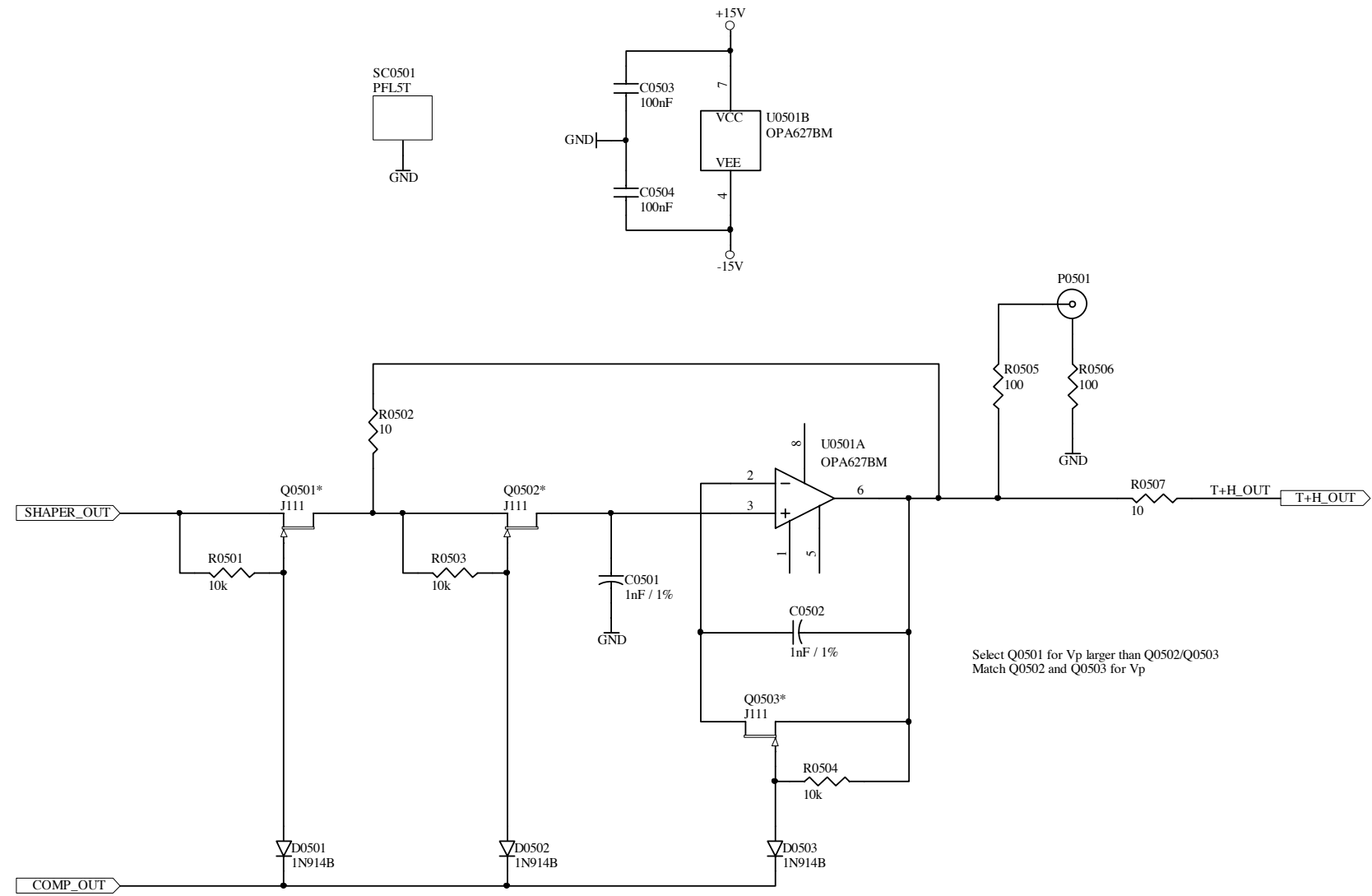


Figure 3.5: Track-and-hold amplifier.

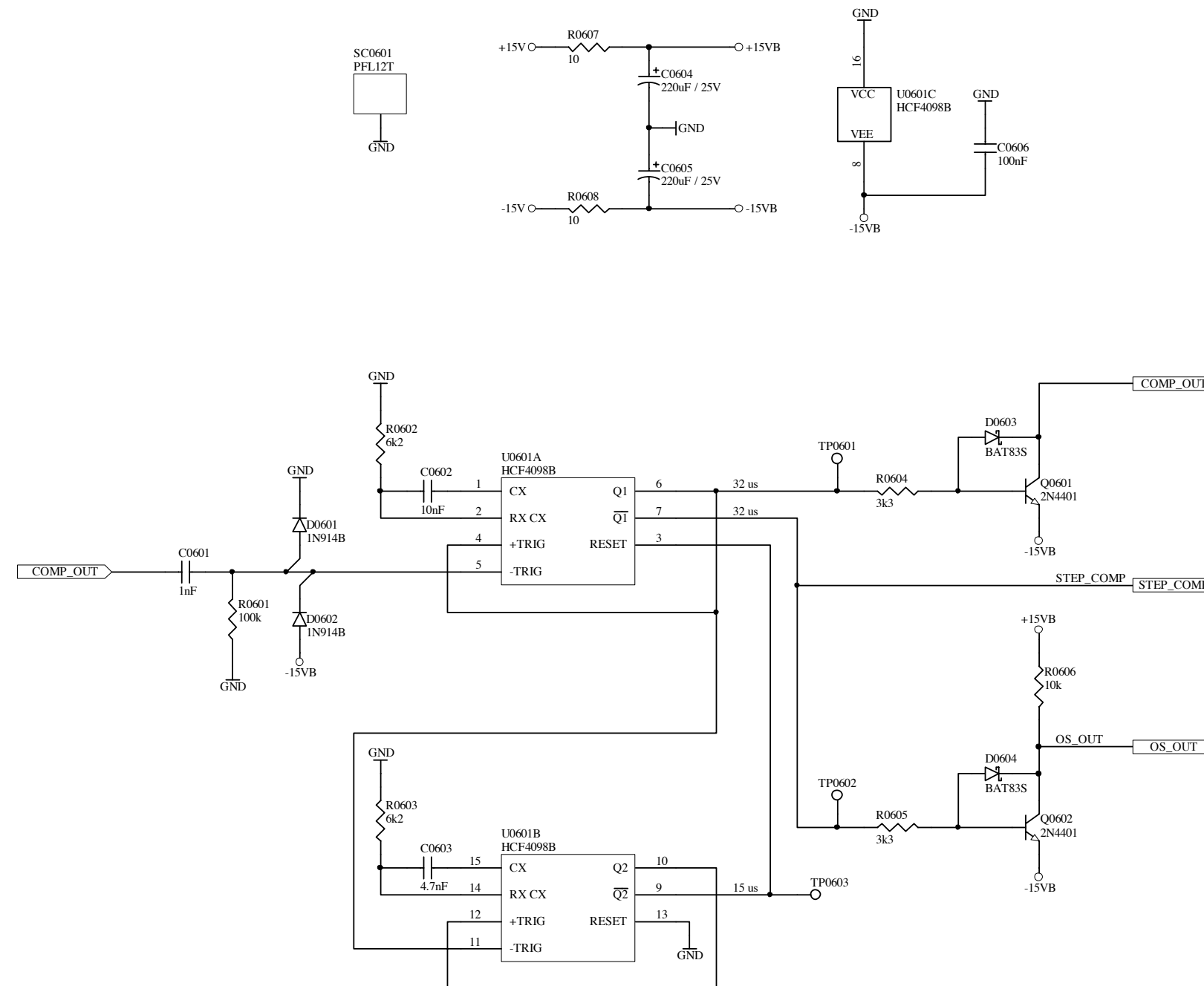


Figure 3.6: One-shot circuit.

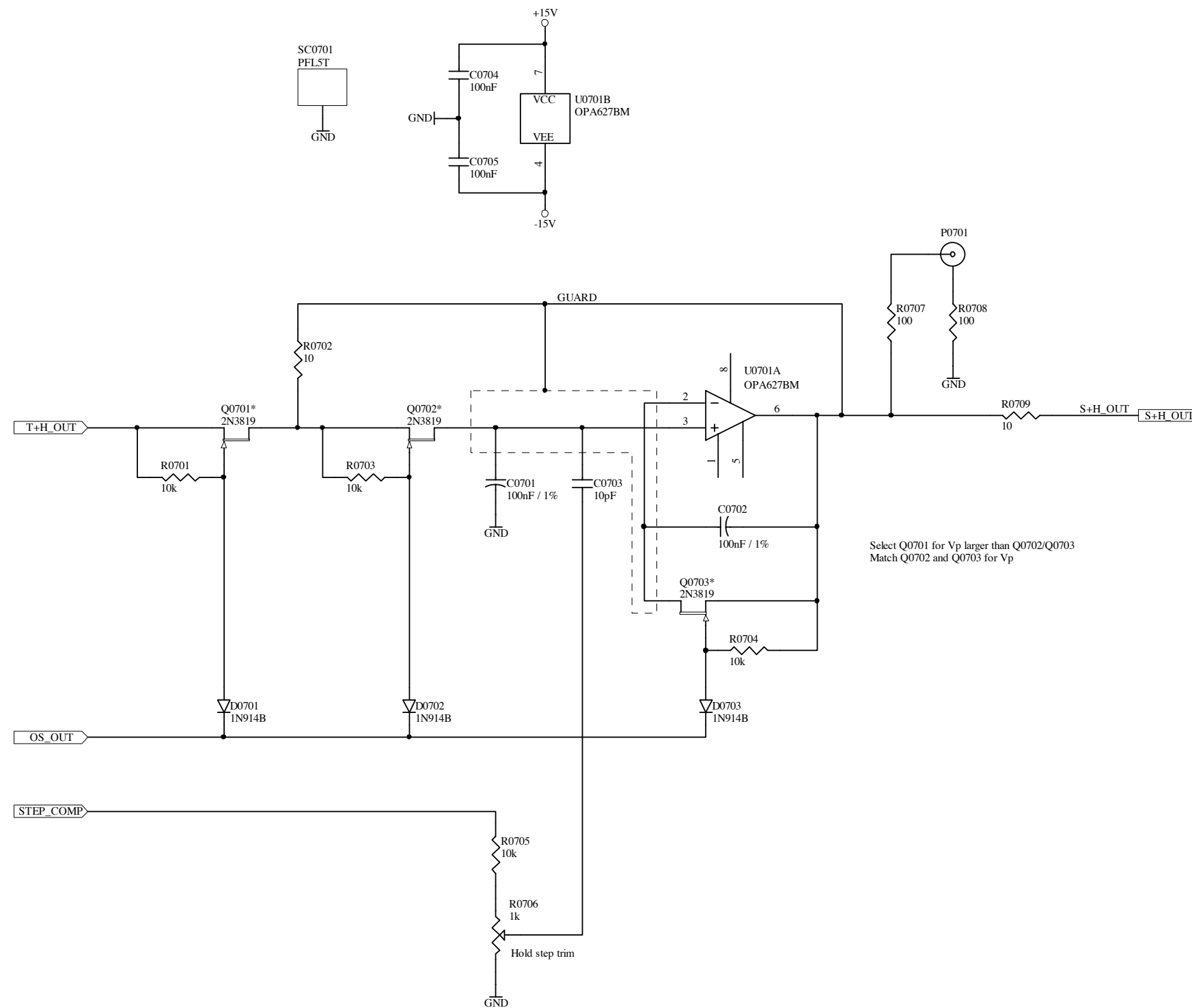


Figure 3.7: Sample-and-hold amplifier.

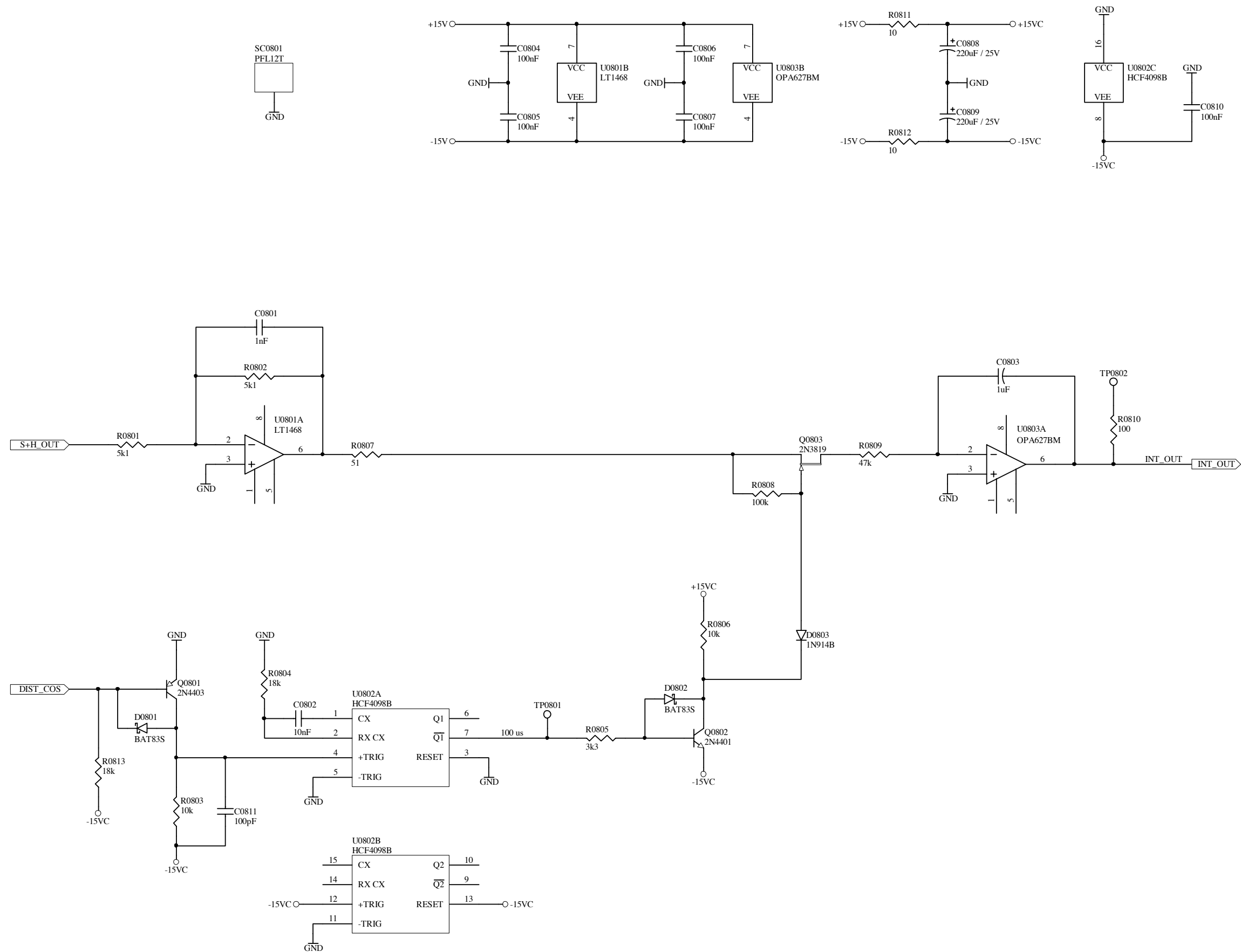


Figure 3.8: Error integrator. R0813 and C0811 are not shown on the overlay print.

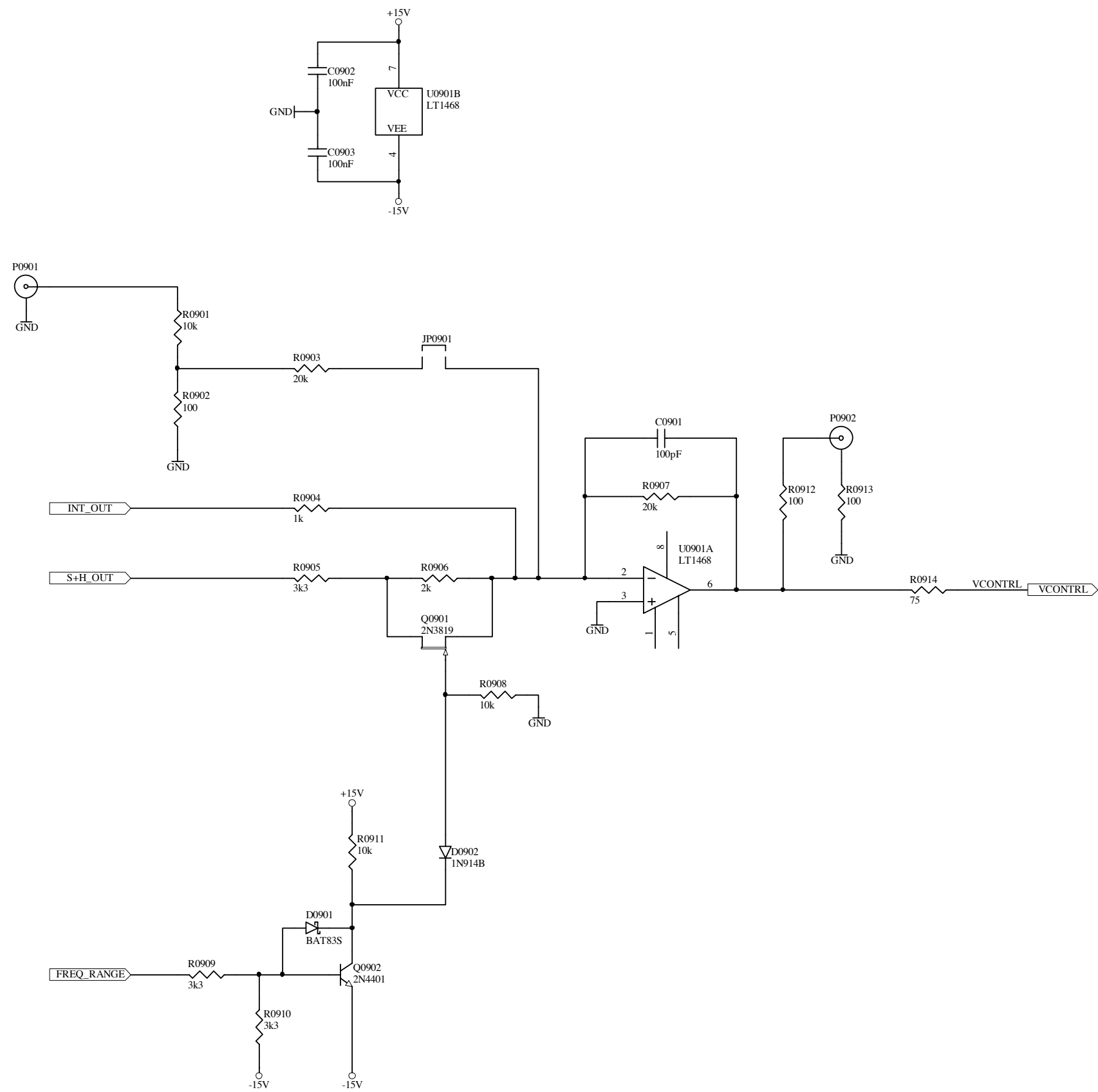


Figure 3.9: Summing amplifier.

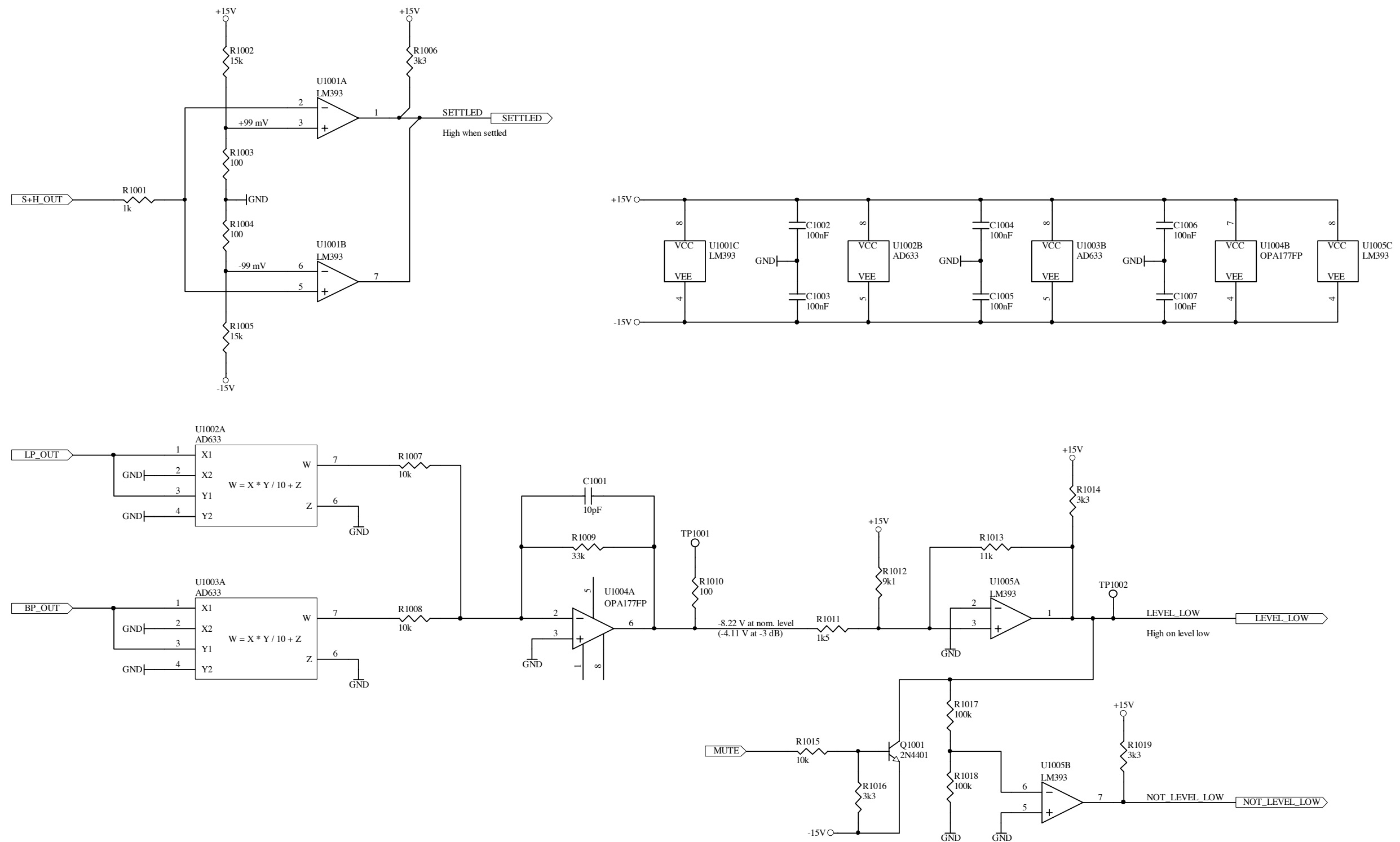


Figure 3.10: Settling indicator and startup circuit.

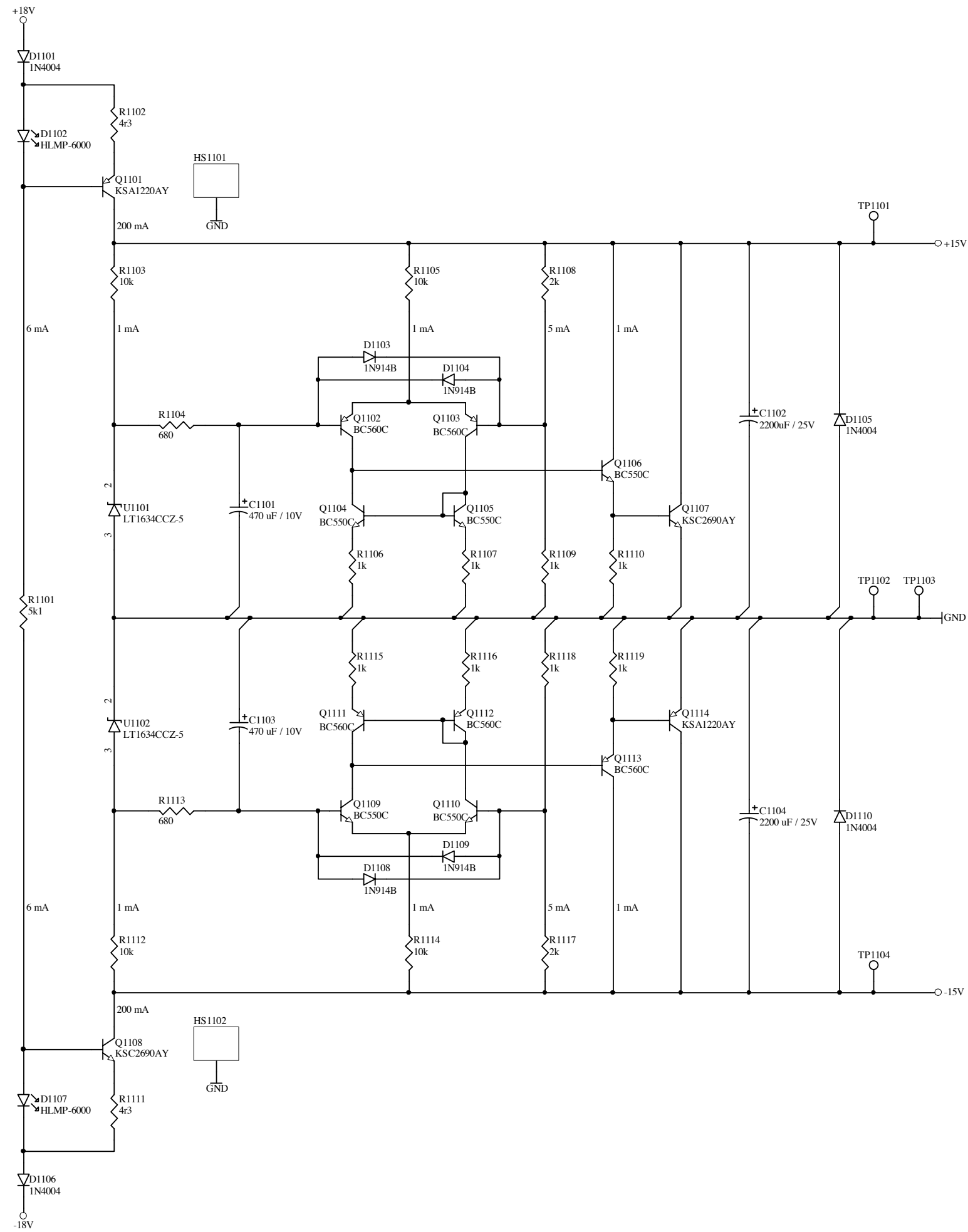


Figure 3.11: Shunt voltage regulators.

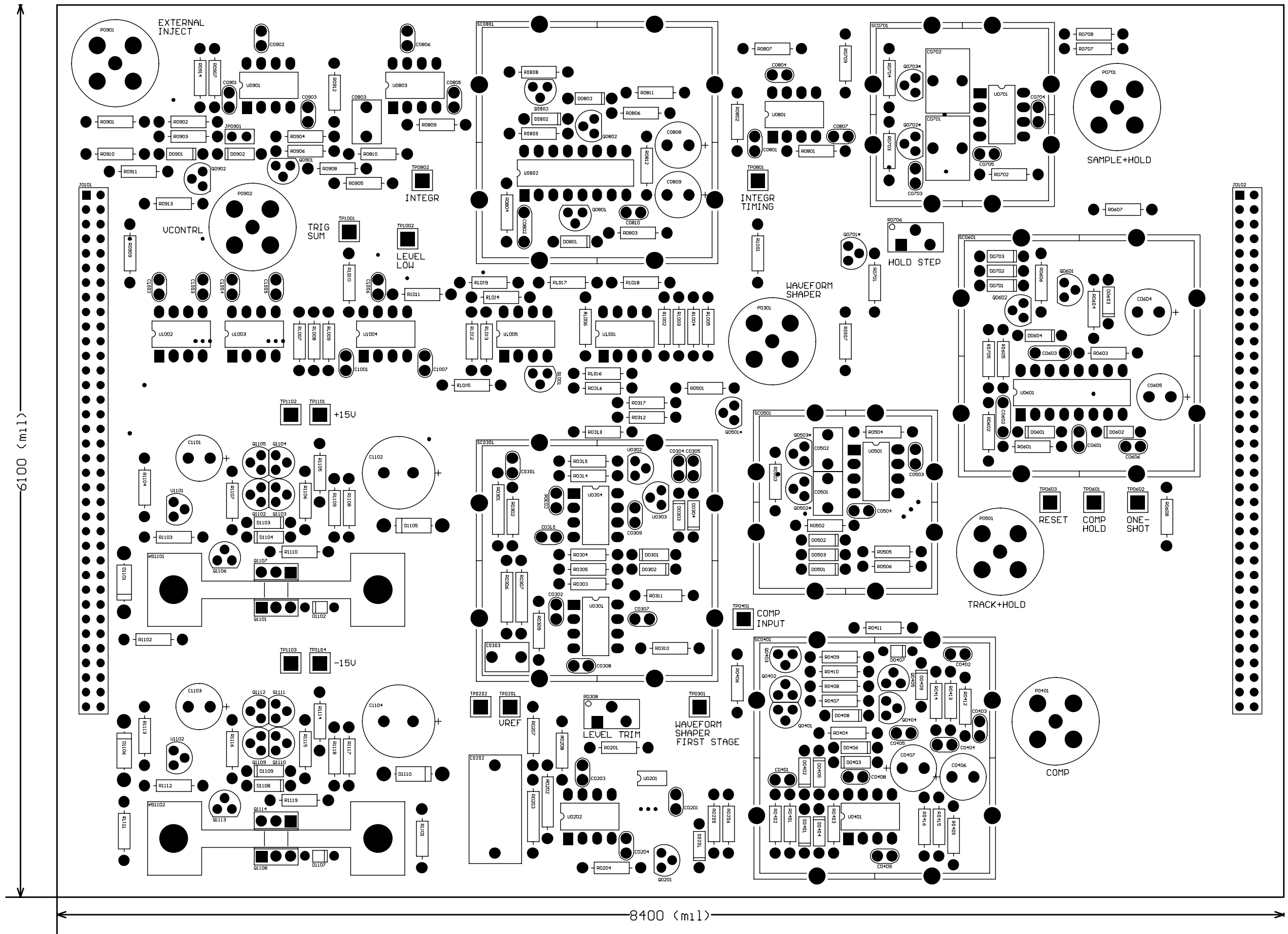


Figure 3.12: Overlay print, scaling 150 %.

Chapter 4

Multiplier

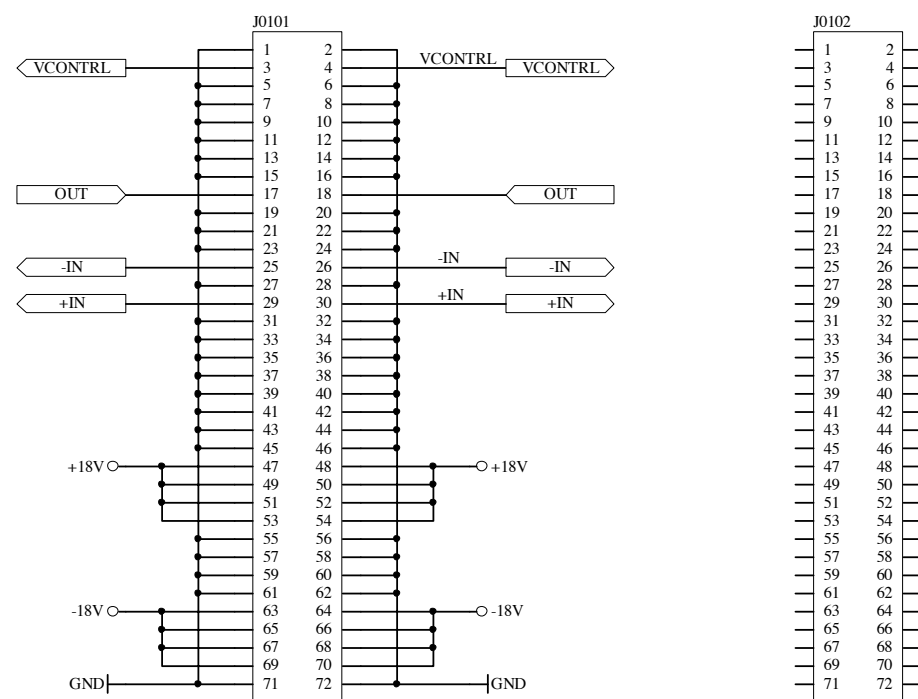


Figure 4.1: Input and output connections.

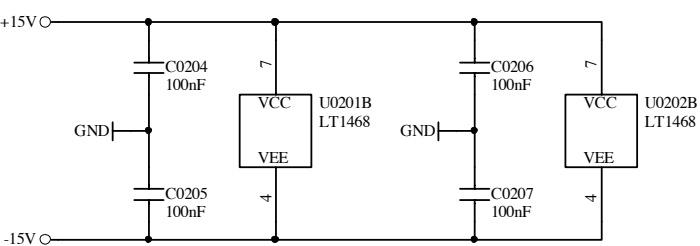


Figure 4.2: Voltage-to-current converters.

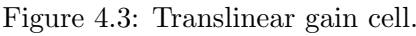


Figure 4.3: Translinear gain cell.

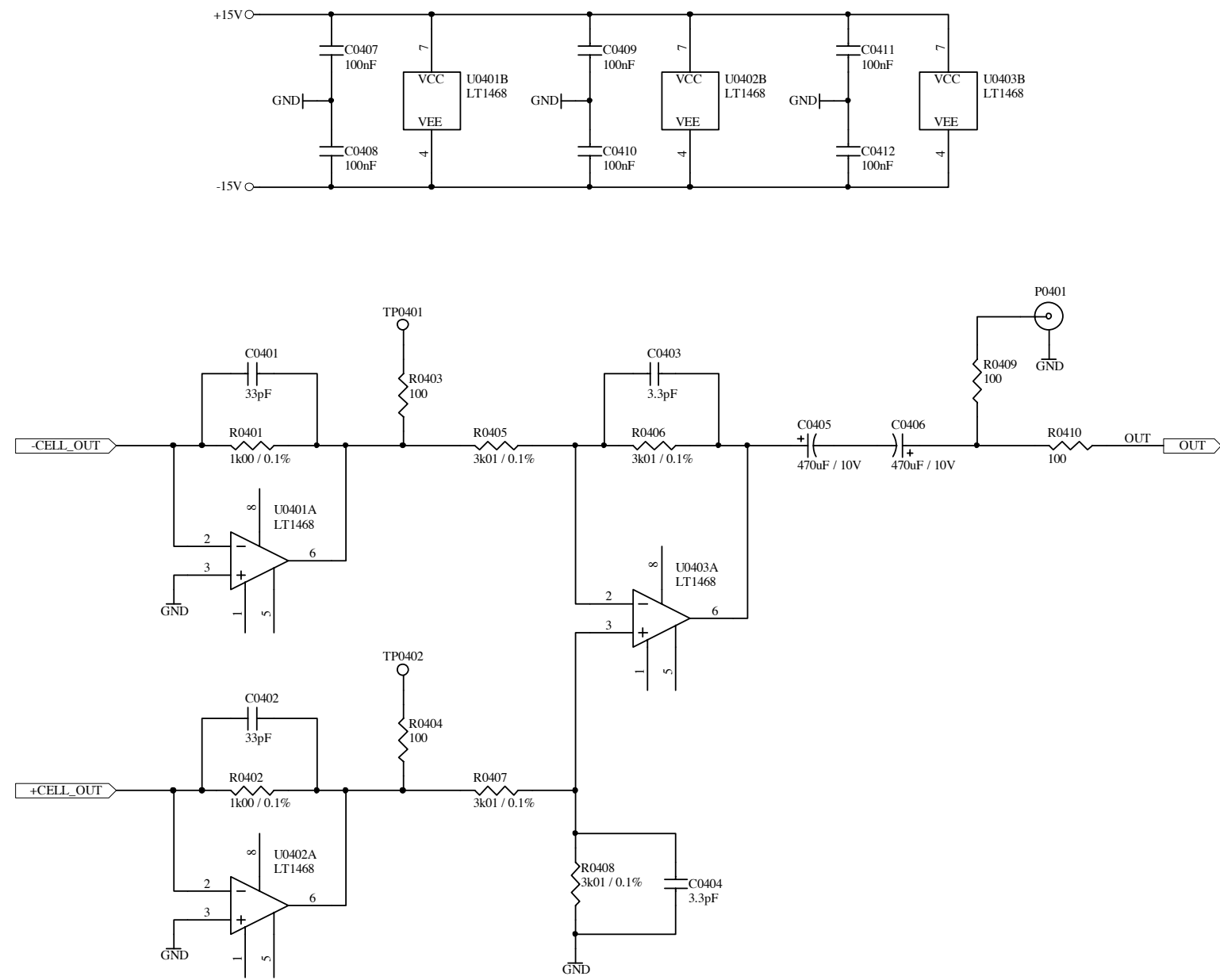


Figure 4.4: Current-to-voltage converters.

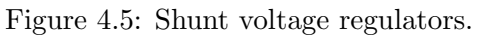


Figure 4.5: Shunt voltage regulators.

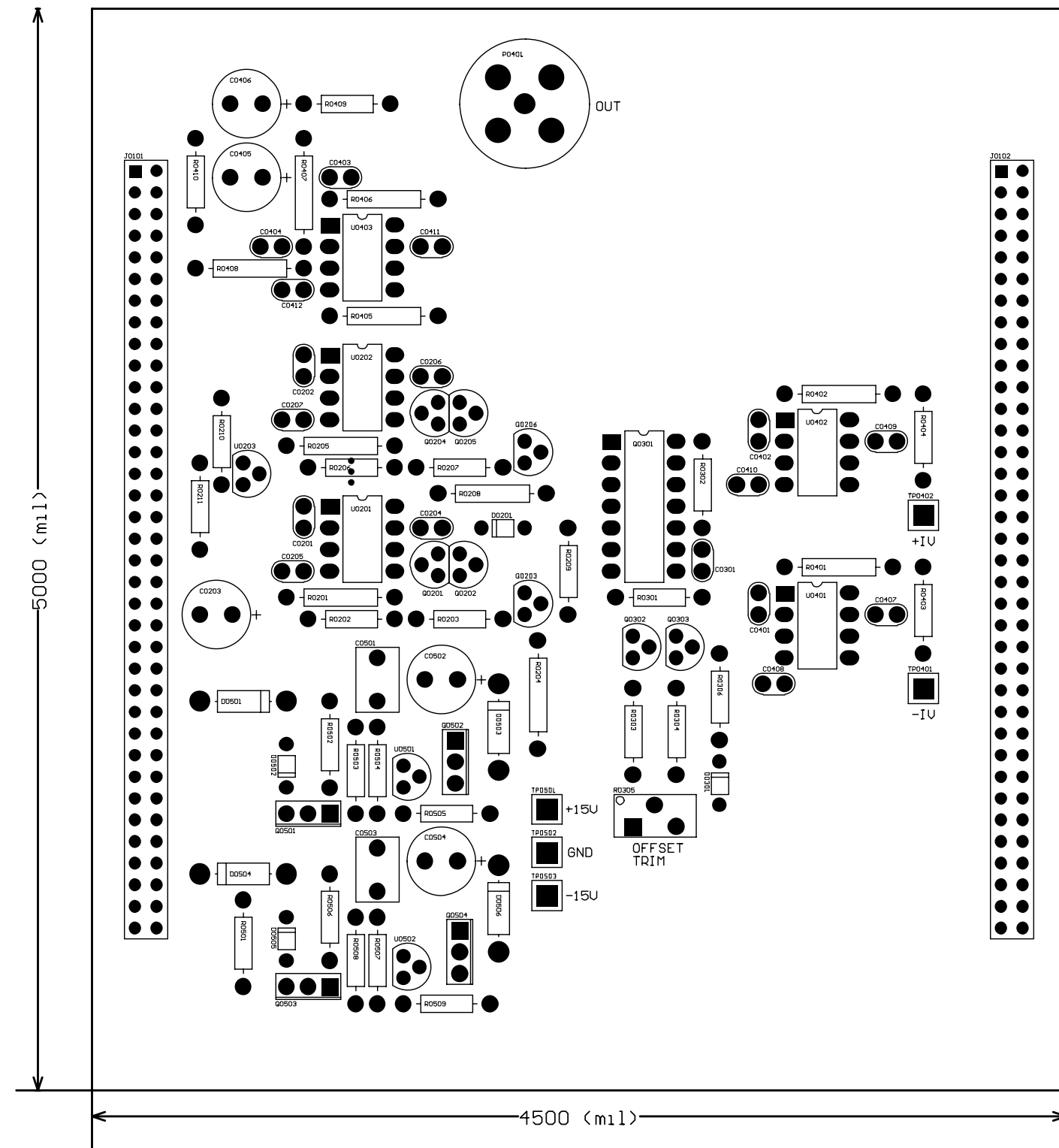


Figure 4.6: Overlay print, scaling 150 %.