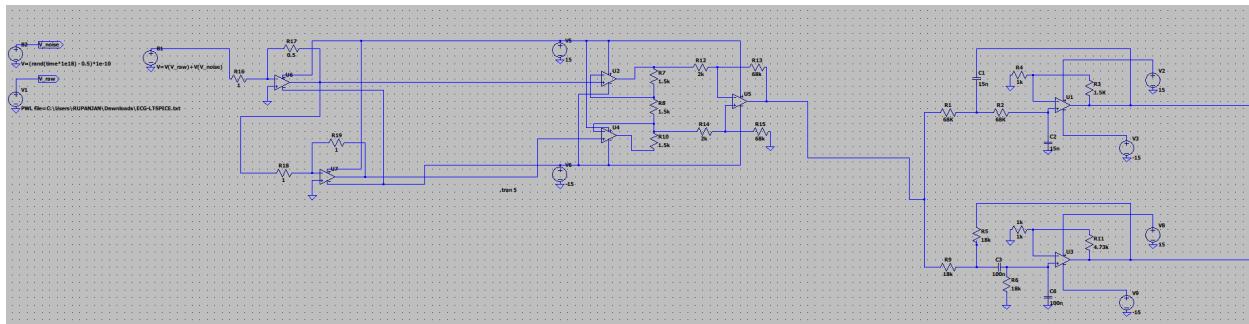


# EE322 - LTSpice simulation submission

Group - The Amplifiers

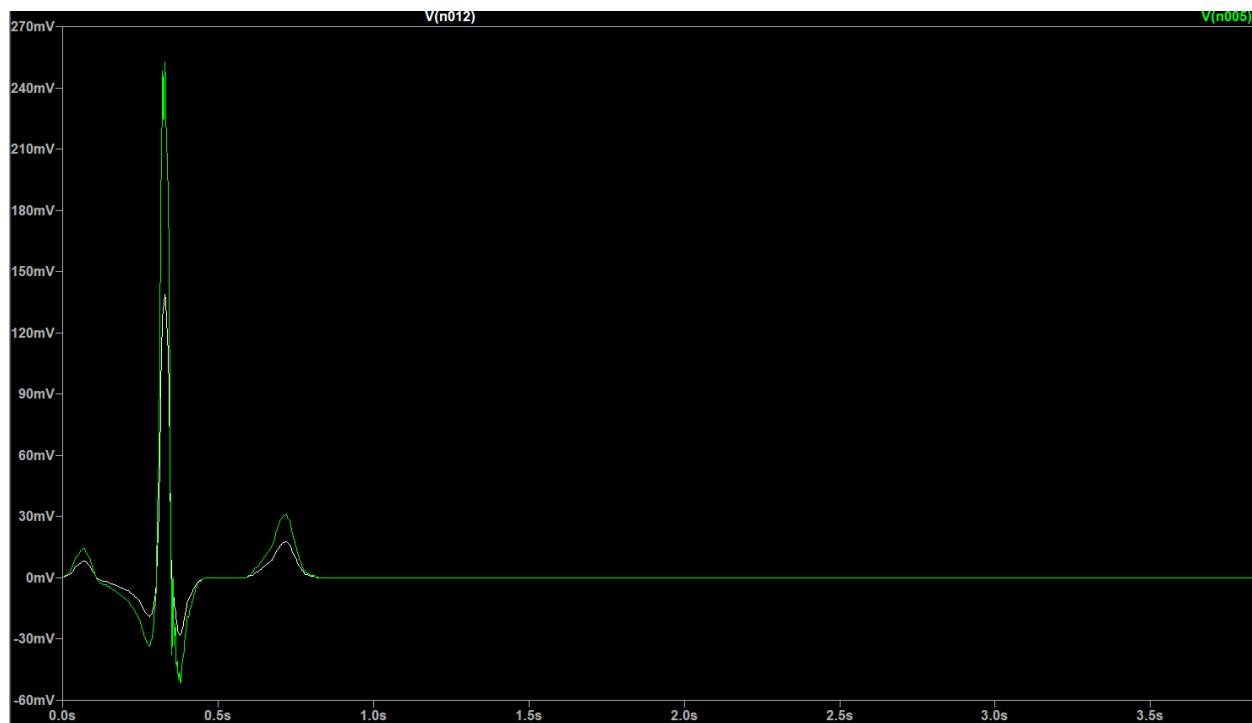
Bootla Sahasrith 23110064 , Rupanjan Ghosh 23110282 ,

Sonagiri Thoshith Kautilya 23110316



LTSpice Schematic(without notch filter)

Operations performed(white noise addition, instrumentation, low pass and band pass implementation)

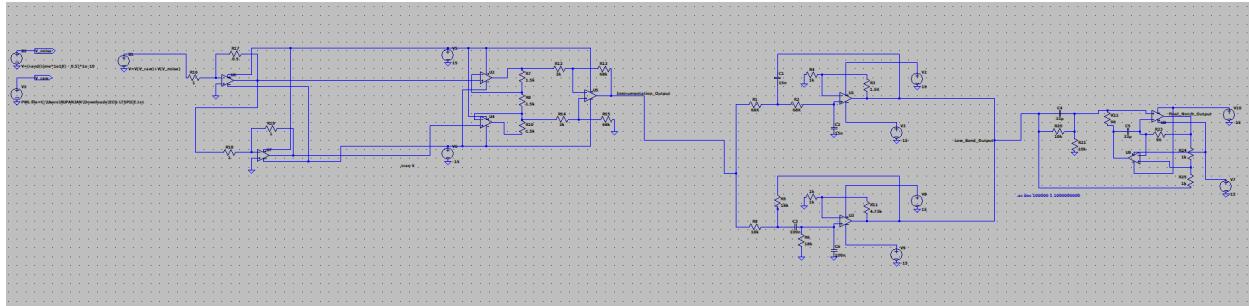


Green - Filtered Output

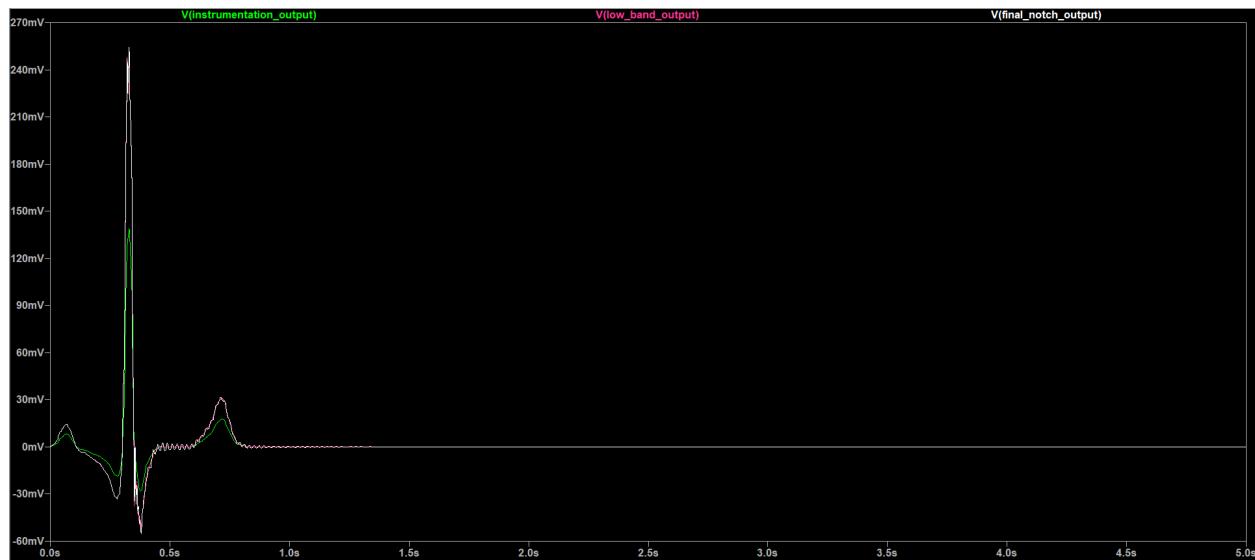
White - Raw Output

Observations:

- 1) Significantly Amplifies the very low amplitude signal
- 2) Attention is given to important regions such as the QRS, P and T complexes as in those regions even minor disruptions are captured which can be critical for diagnosis

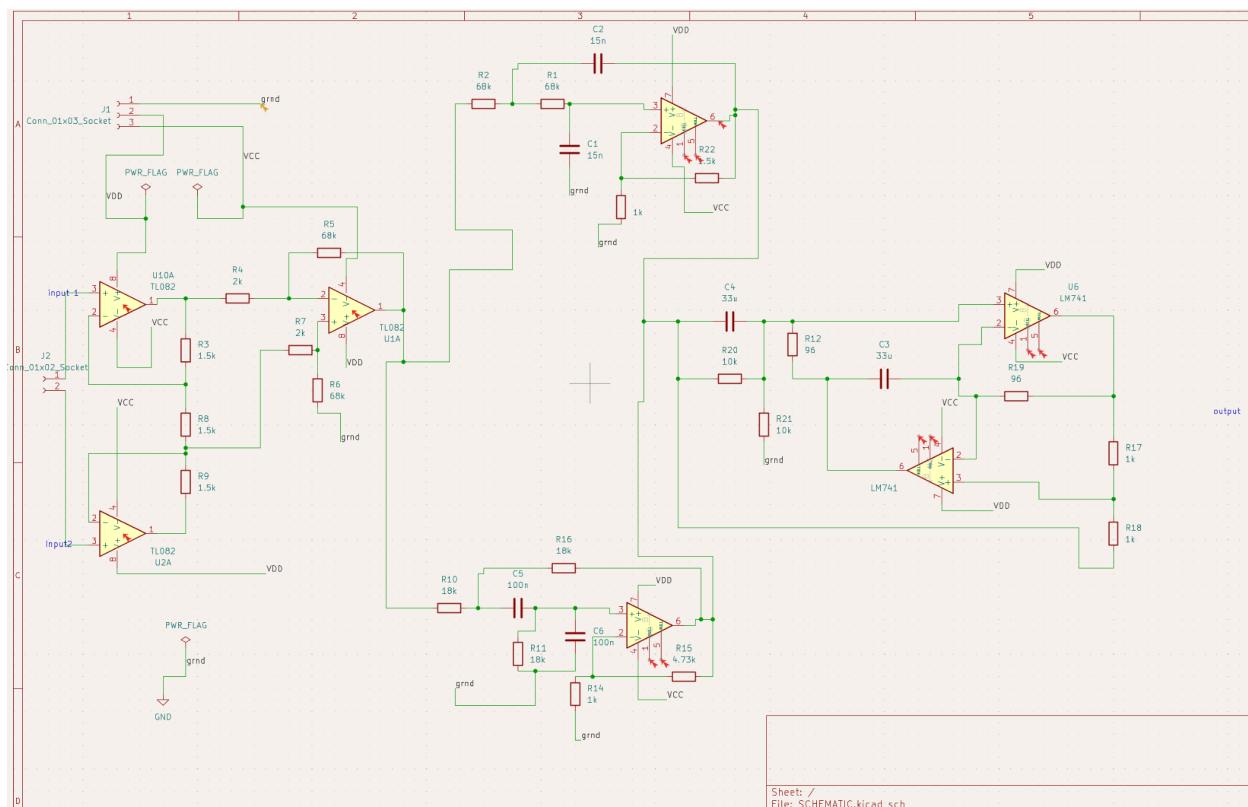


Spice Design with Notch Filter

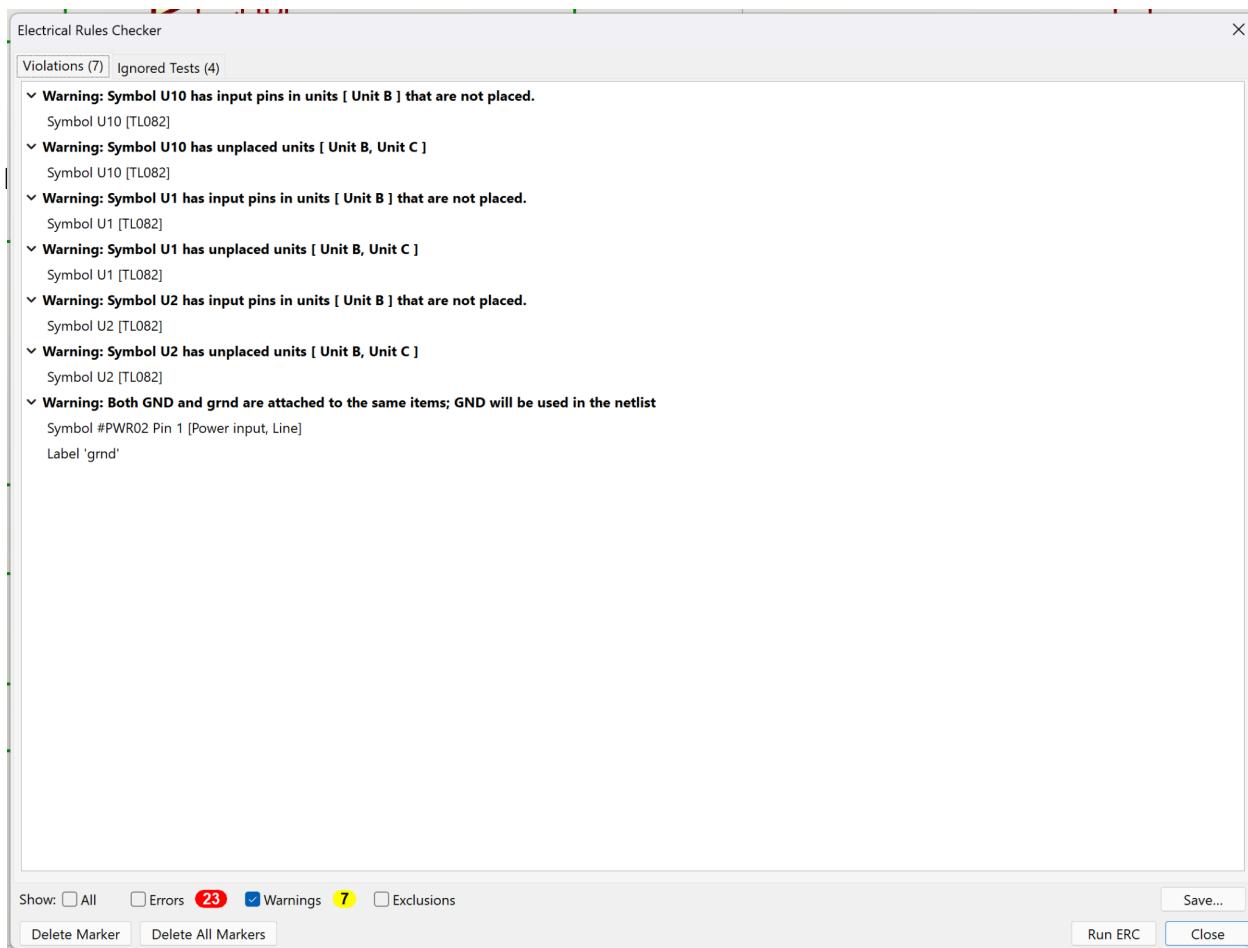


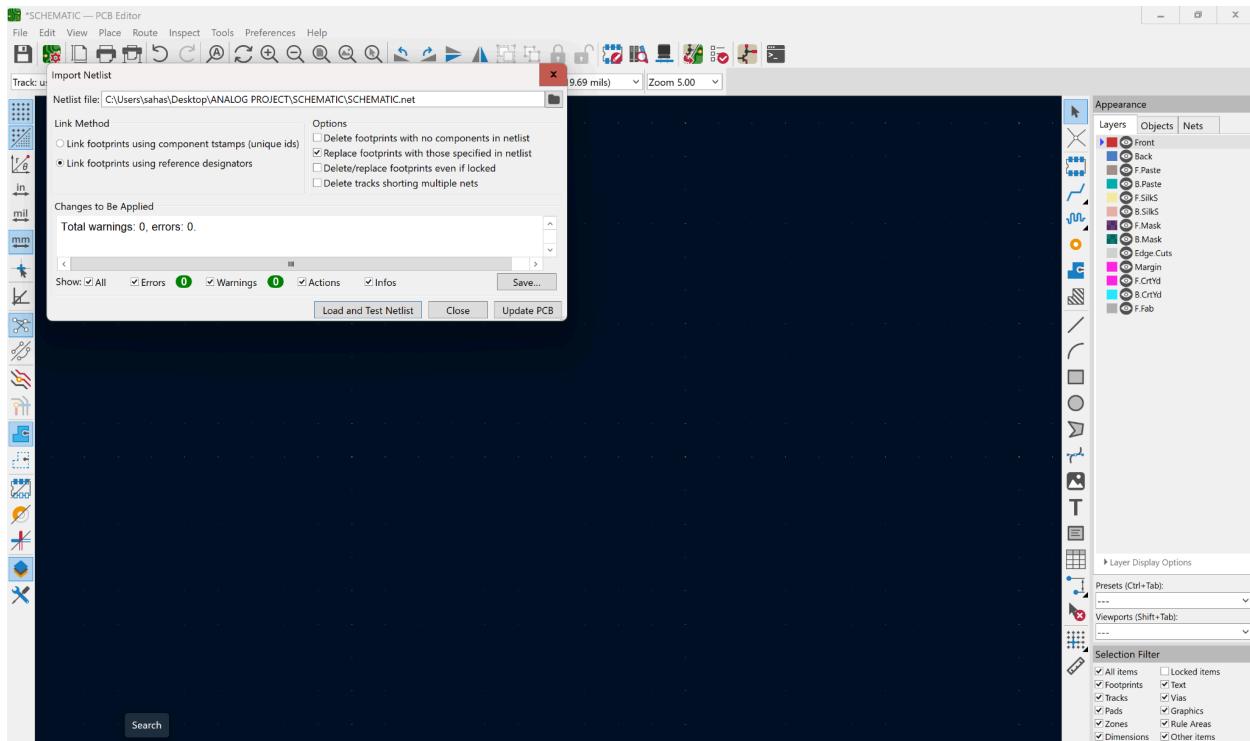
Final Output

## SCHEMATIC:

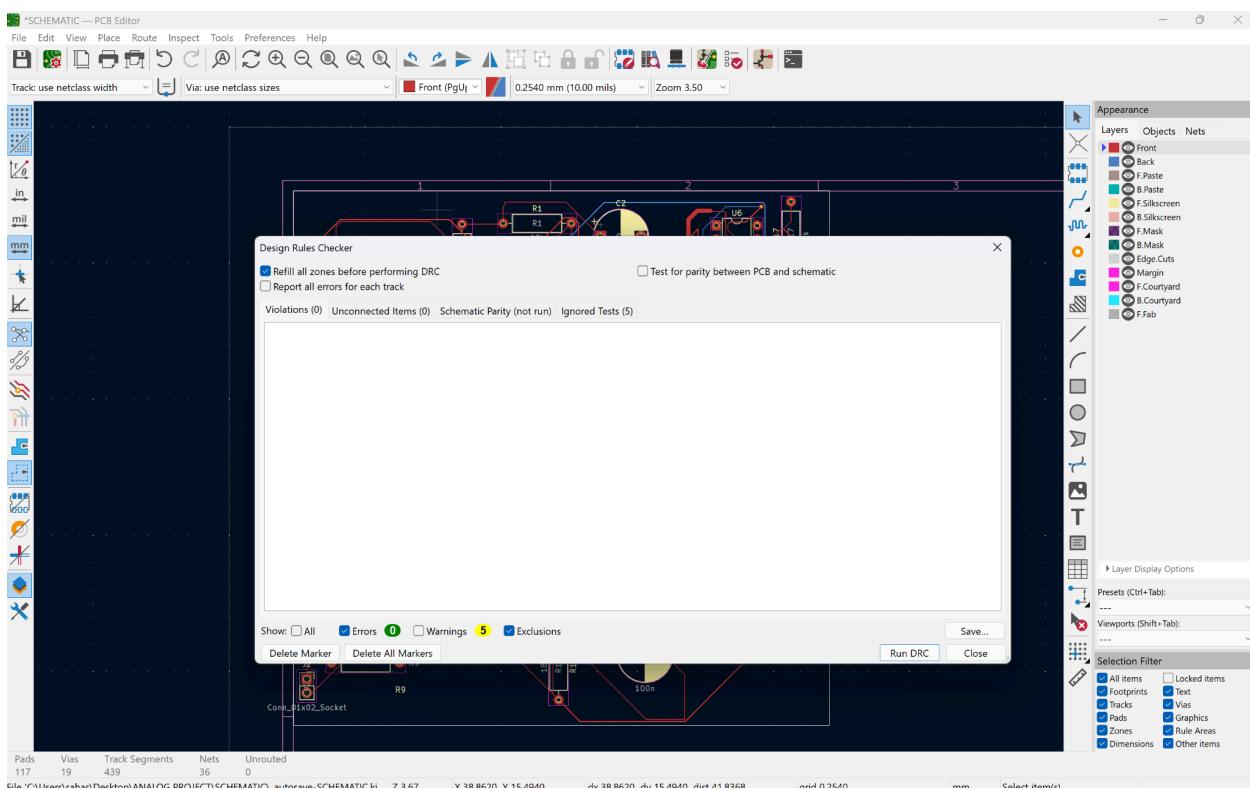


## ERC error screenshot

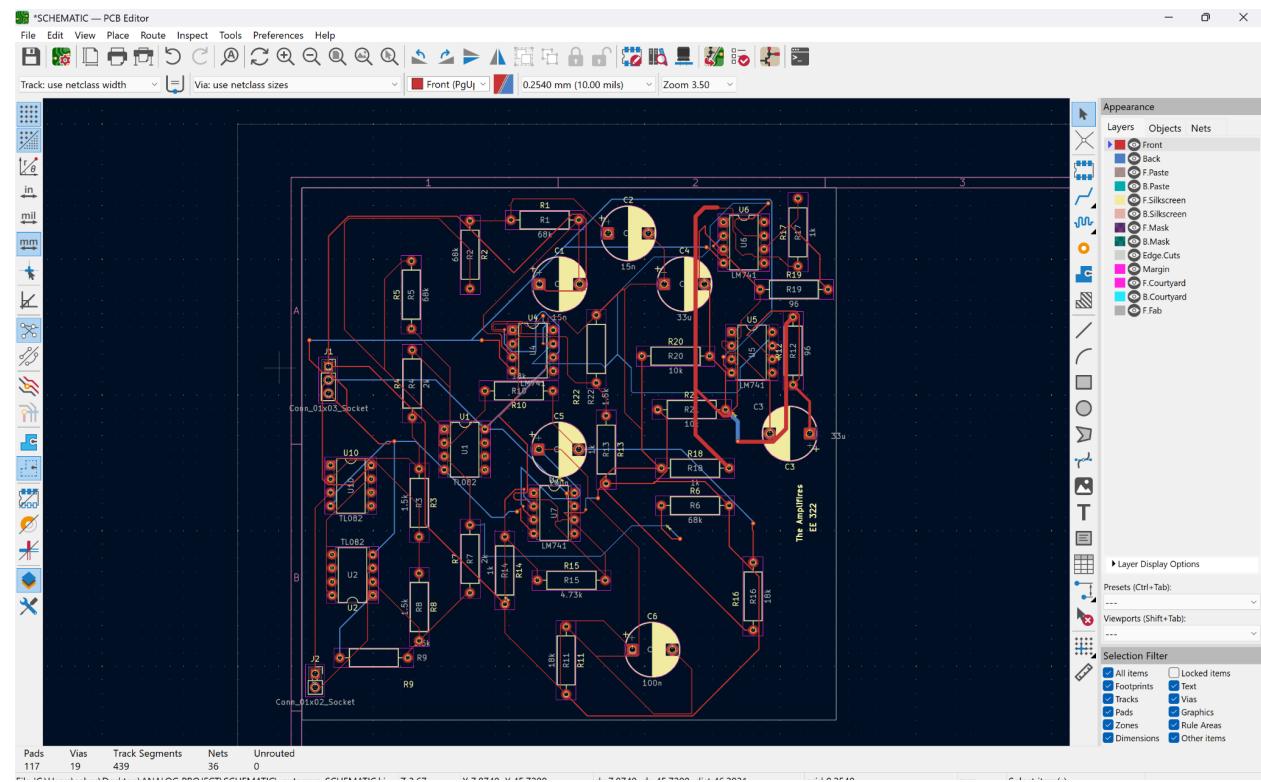




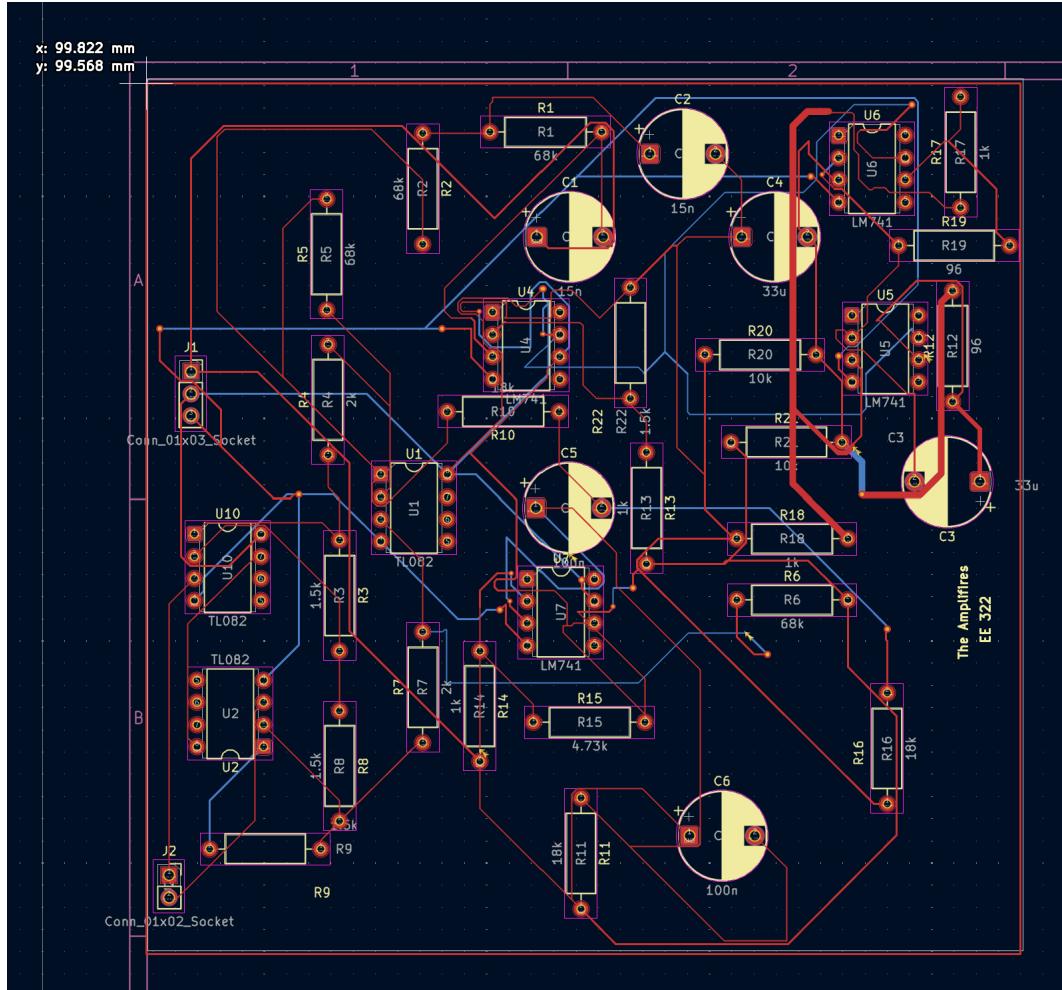
## DRC error screenshot



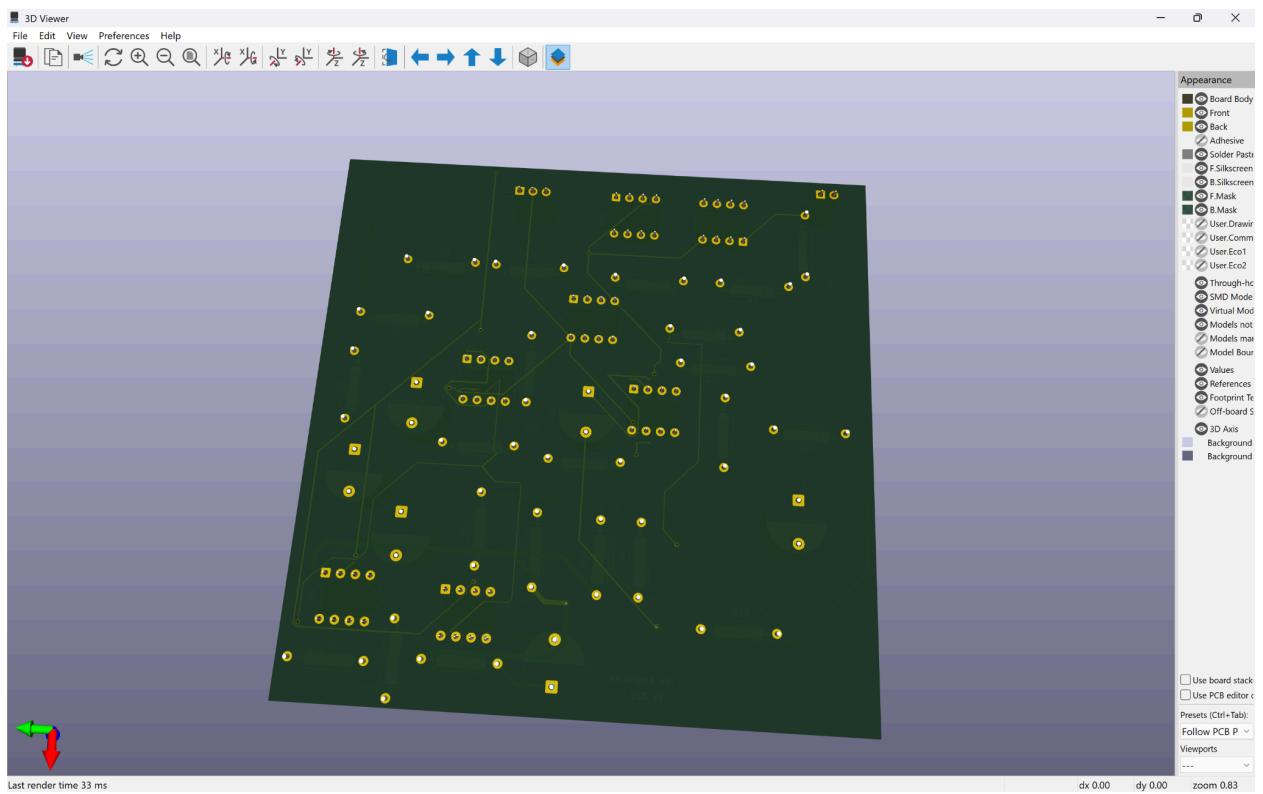
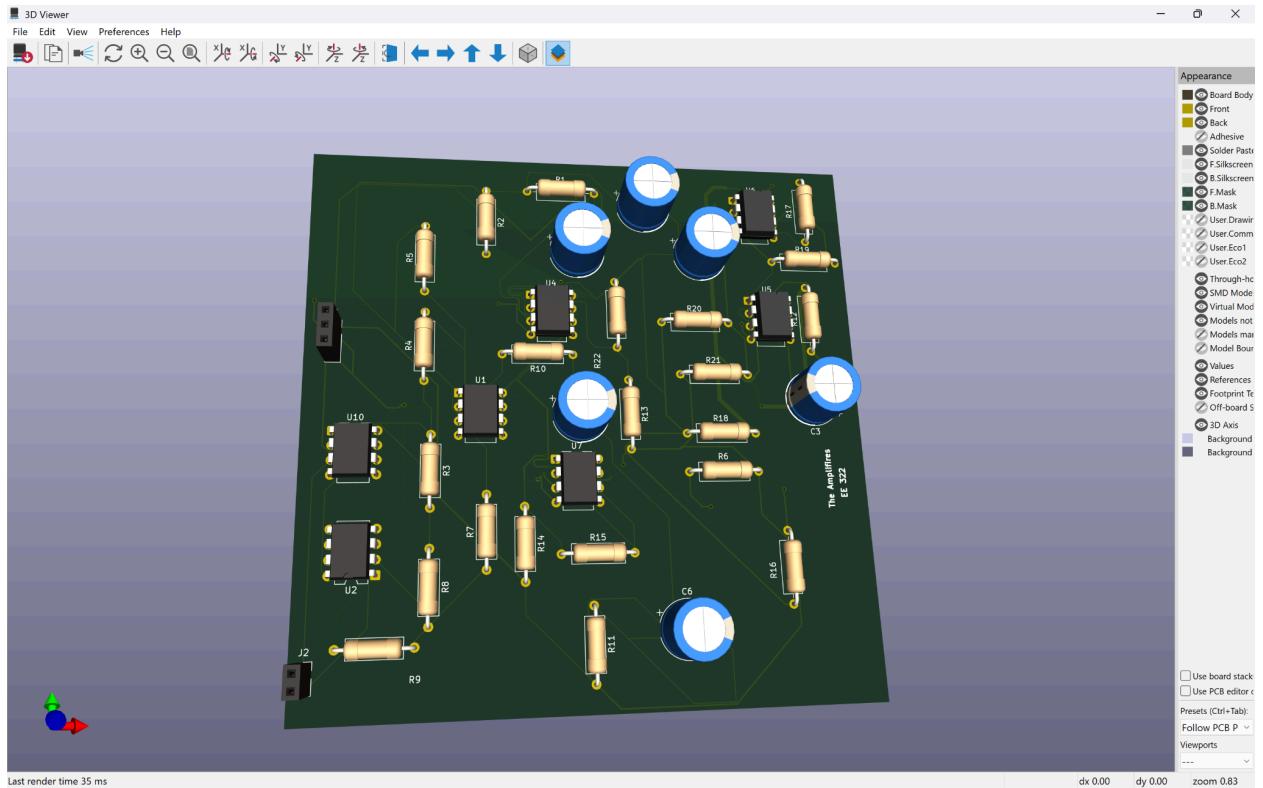
## PCB LAYOUT



## Length and Width



## 3D Render



## Gerber Files uploaded on the Lions Circuit Portal:

The screenshot shows the LionCircuits portal interface. On the left, there's a sidebar with 'My Account' (My Account, Business Account), 'Orders' (My Projects, My Cart, Buy Components), and 'Resources' (Capabilities, FAQs, User Guides, About LionCircuits). Social media icons for LinkedIn, Instagram, Facebook, YouTube, and Email are also present. The main area shows a project named 'analog\_ecg\_update...' with PID 186284. It's currently at step 1: Fabrication. A red banner says 'Create a Billing Account to start placing orders.' Below it, various parameters are set: Layers (2), PCB Qty (5), Board Dimension (X = 99.9500MM, Y = 99.6900MM), Discrete Design (1), Board Type (Single PCB selected), PCB Thickness (1.6 mm selected), Copper Thickness (1 oz (35 um) selected), PCB Finish (HASL Finish selected), and Mask Color (Green selected). To the right, 'Charge Details' show a Fabrication Price of ₹1608, a 'Price Estimate' of ₹321.60 x 5, and a 'Build Time' of 5-6 Days. Buttons for 'Apply Coupon' and 'Quote' are also visible.

## Instrumentation amplifier lab demonstration

[https://iitgnacin-my.sharepoint.com/:f/g/personal/23110064\\_iitgn\\_ac\\_in/EI-N\\_NPcWqRAvyx8hxCnB90BboAZx1keOxQ6lq6l21xUjQ?e=ts3OXK](https://iitgnacin-my.sharepoint.com/:f/g/personal/23110064_iitgn_ac_in/EI-N_NPcWqRAvyx8hxCnB90BboAZx1keOxQ6lq6l21xUjQ?e=ts3OXK)