

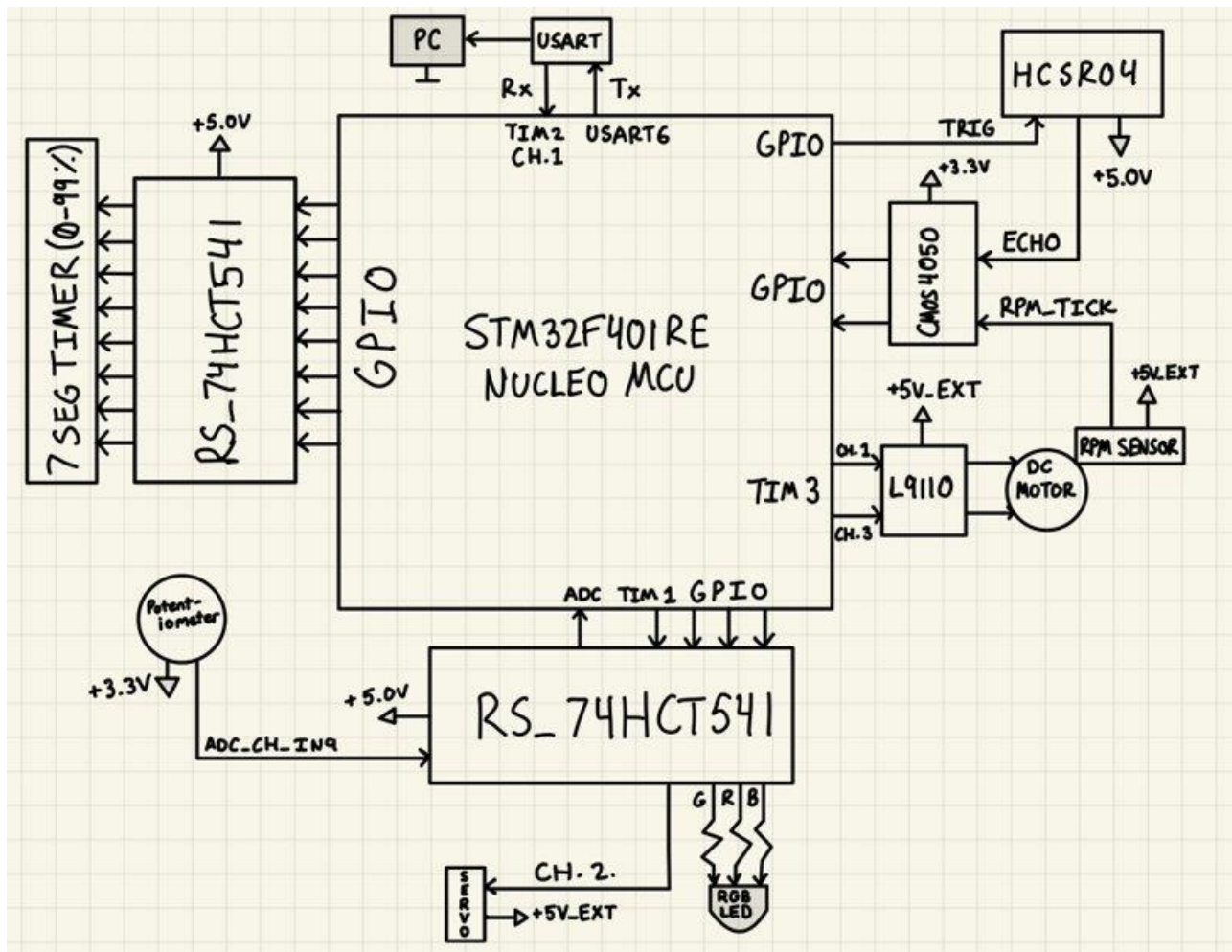
# **ECE 298 Embedded Project Report**

## **LS05, Team 4**

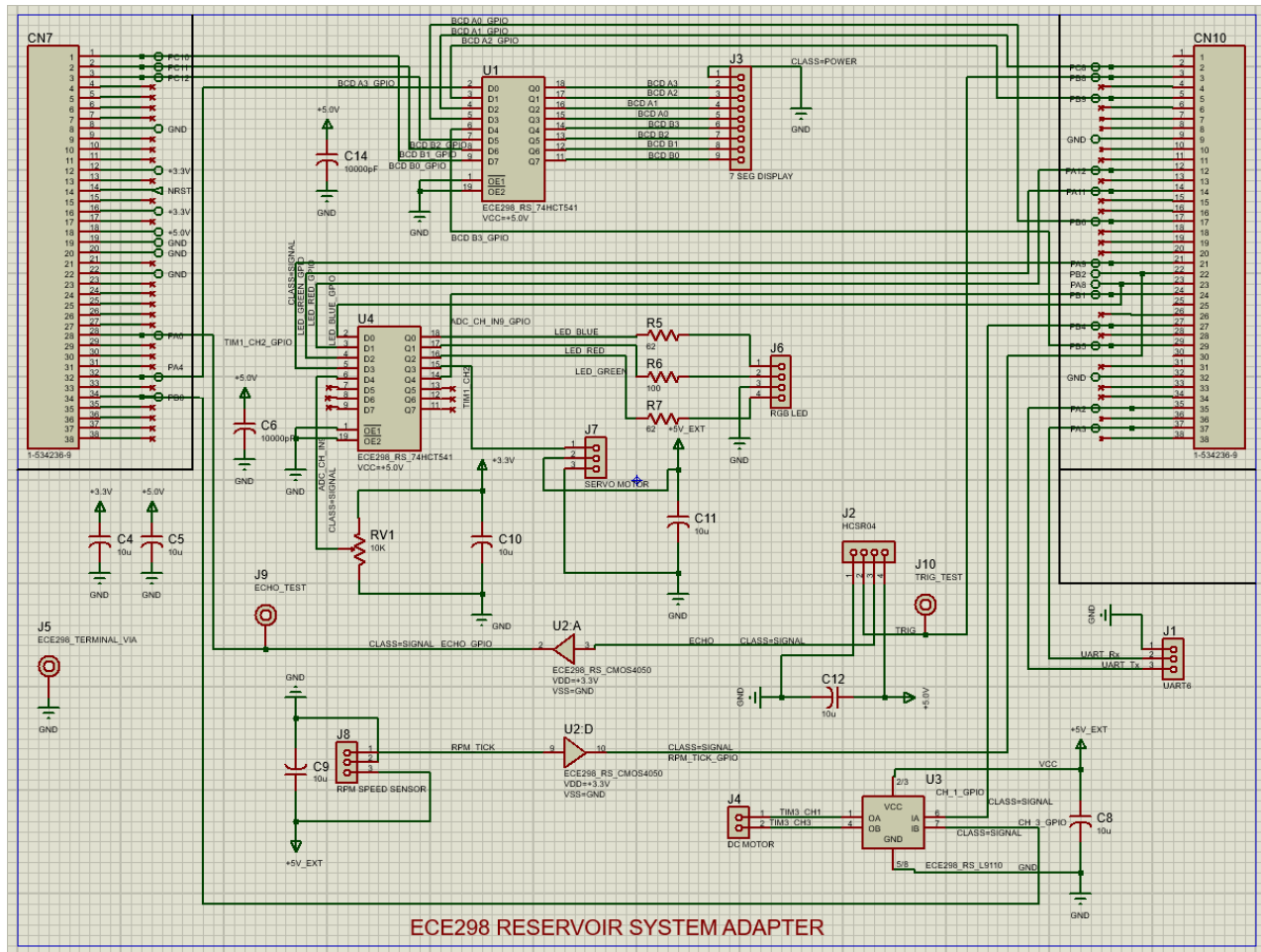
Jakob Untch

Aditya Chaudhary

Simple System Block Diagram:



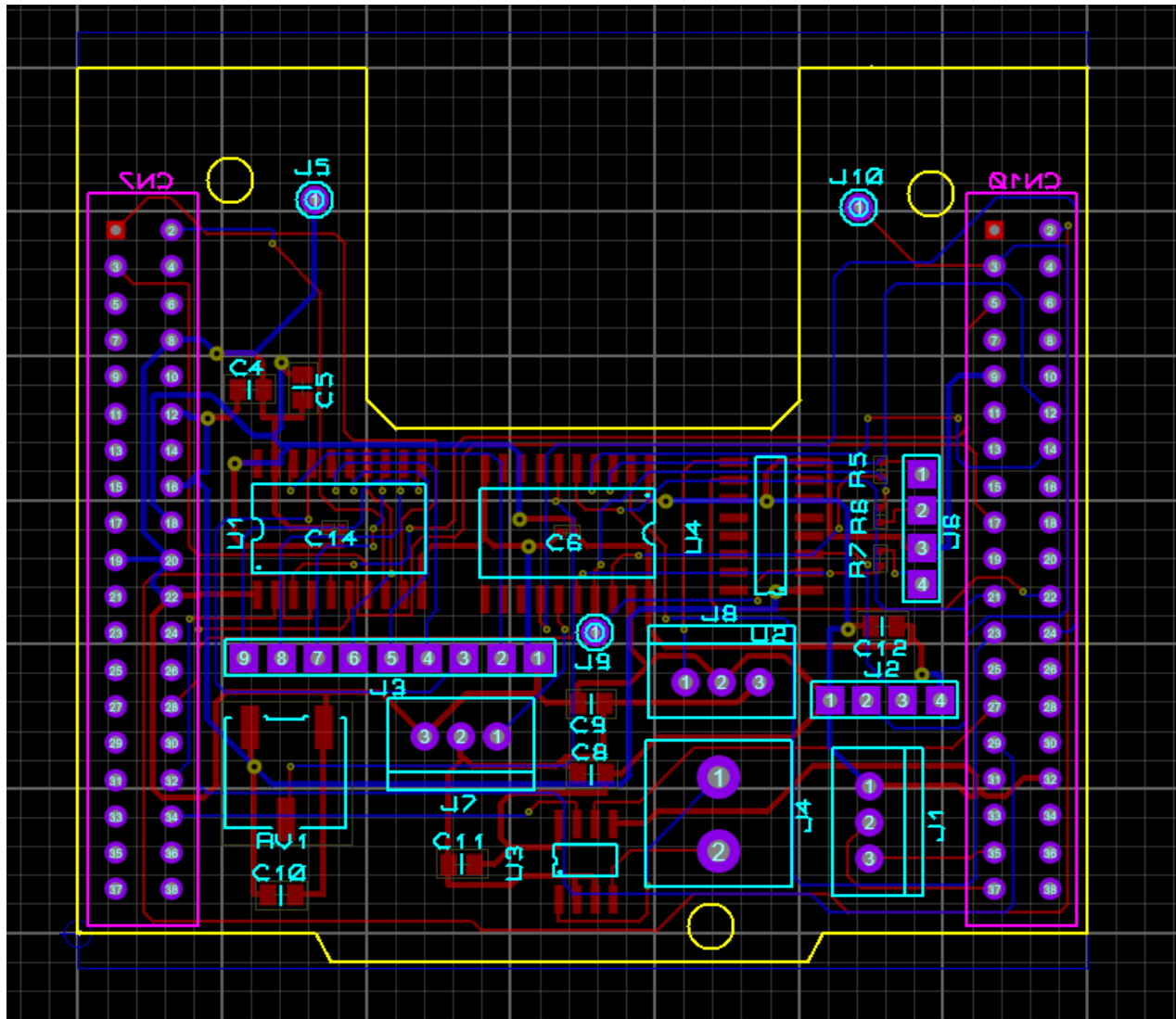
## Prototype Schematic:



Schematic Netlist:

[ECE298\\_RS\\_Adapter.TXT](#)

Proteus PCB Layout:

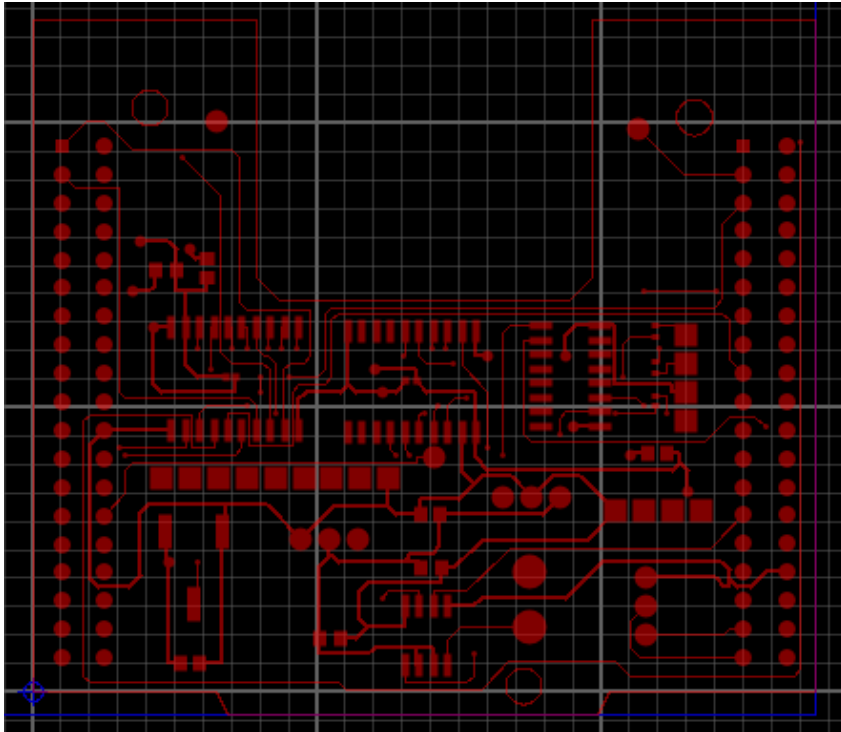


## Pre-Production Check (PPC) Report:

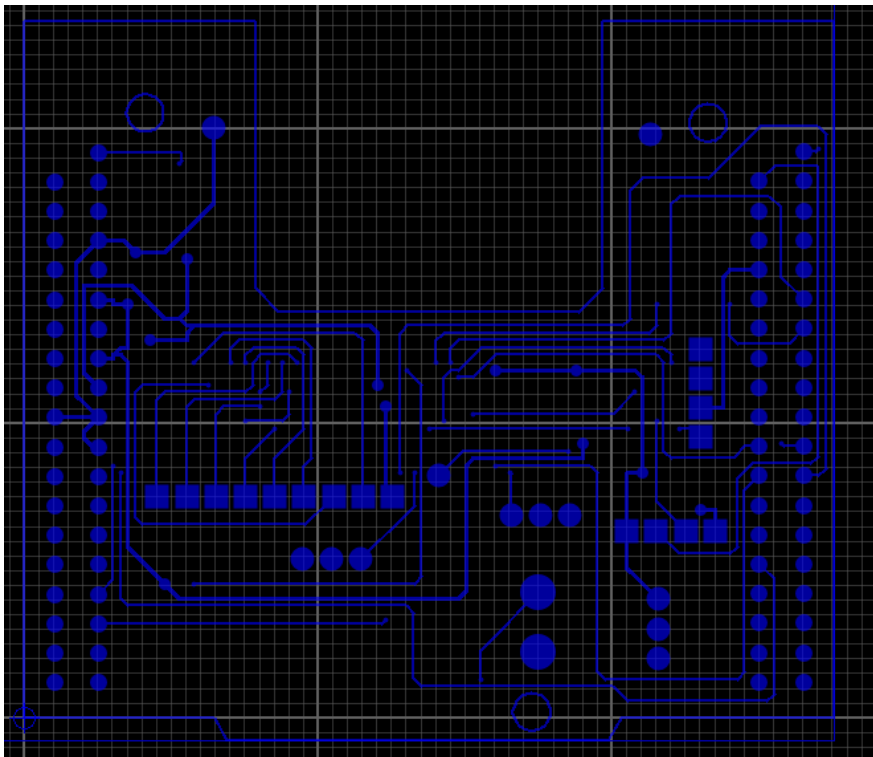
```
Pre-production check start.
File: N:\ECE298\Lab_B4\ECE298_RS_Adapter.pdsprj
Date: November 30, 2023, 2:03:34 PM
TEST: Connectivity.
PASS: Connectivity valid.
TEST: Object validity.
PASS: Objects valid.
TEST: DRC valid.
PASS: No DRC errors.
TEST: Zone overlap.
Imaging Copper Layer TOP
Imaging Copper Layer I1
Imaging Copper Layer I2
Imaging Copper Layer I3
Imaging Copper Layer I4
Imaging Copper Layer I5
Imaging Copper Layer I6
Imaging Copper Layer I7
Imaging Copper Layer I8
Imaging Copper Layer I9
Imaging Copper Layer I10
Imaging Copper Layer I11
Imaging Copper Layer I12
Imaging Copper Layer I13
Imaging Copper Layer I14
Imaging Copper Layer BOT
Processing images
PASS: No overlap detected.
TEST: Duplicate part IDs.
PASS: All part IDs are unique.
TEST: Unplaced components.
PASS: All components placed.
TEST: Board edge.
PASS: Board edge complete.
TEST: Components outside board edge.
PASS: Components within board edge.
TEST: General object validation tests.
PASS: Components within board edge.
TEST: General object validation tests.
PASS: General validation.
TEST: Length matched routes.
PASS: Length matched routes.
TEST: Differential Pairs.
PASS: Differential Pairs.
TEST: Layer Stackup and Drill Sets.
PASS: Layer stackup valid.
TEST: Validate vias.
PASS: Via validation.
TEST: stitching-vias connectivity.
PASS: Stitching vias.
TEST: Validate traces.
This may take a while on larger boards.
PASS: Trace validation.
TEST: DRC room rules.
PASS: DRC room rules.
TEST: Via overlaps and drill ranges.
PASS: Via overlaps and drill ranges.
Pre-production check end:
0 errors, 0 failed, 0 warnings, 17 passed.
```

Gerber Snips:

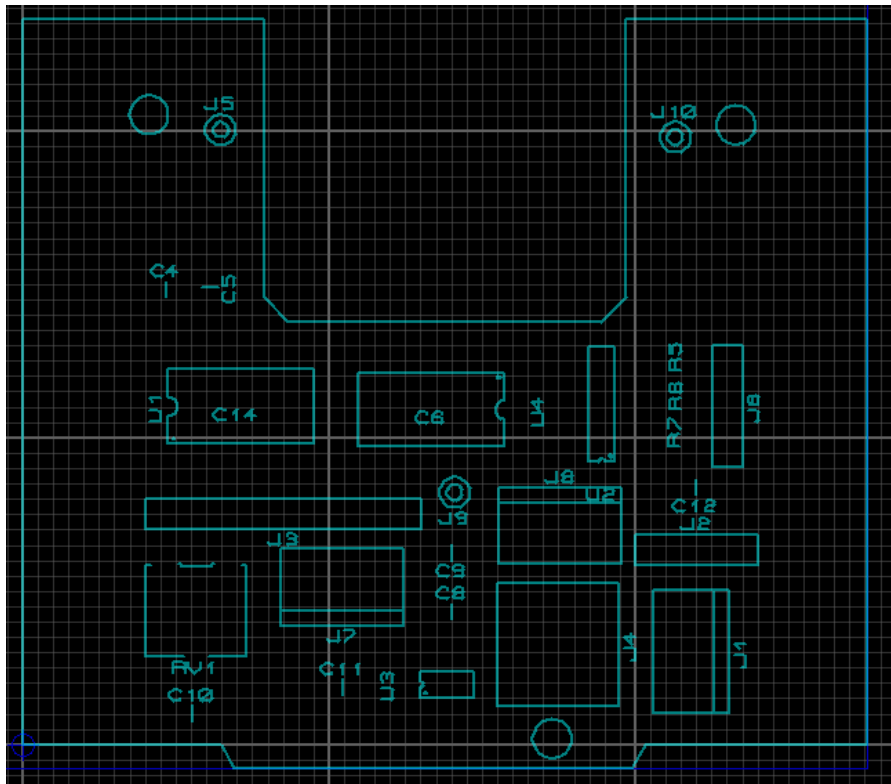
- Top Copper



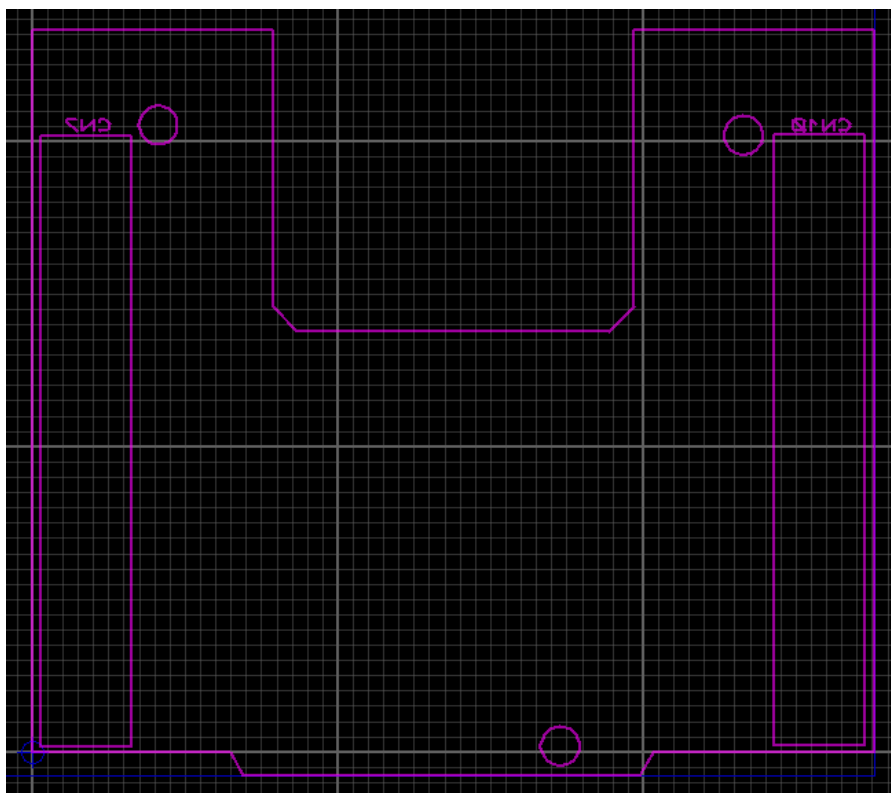
- Bottom Copper



- Top Silk

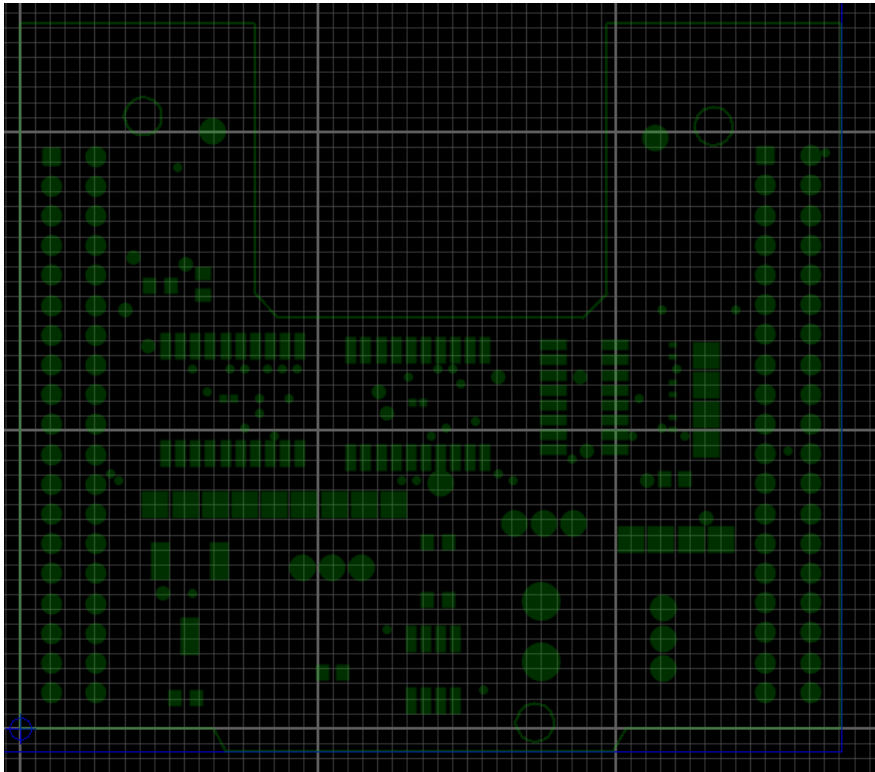


- Bottom Silk





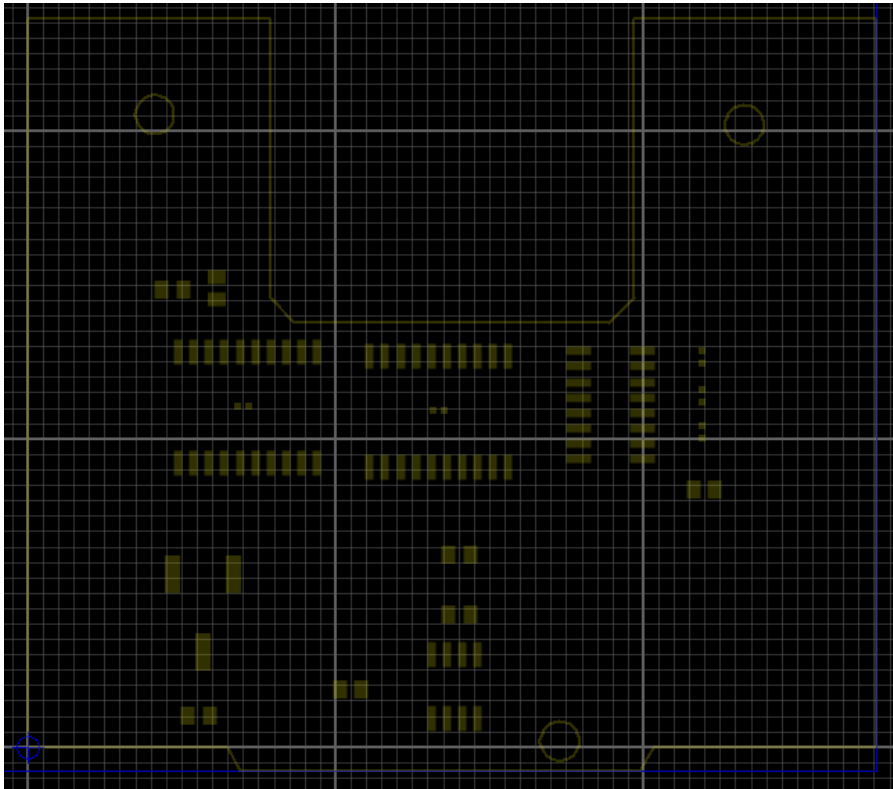
- Top Resist



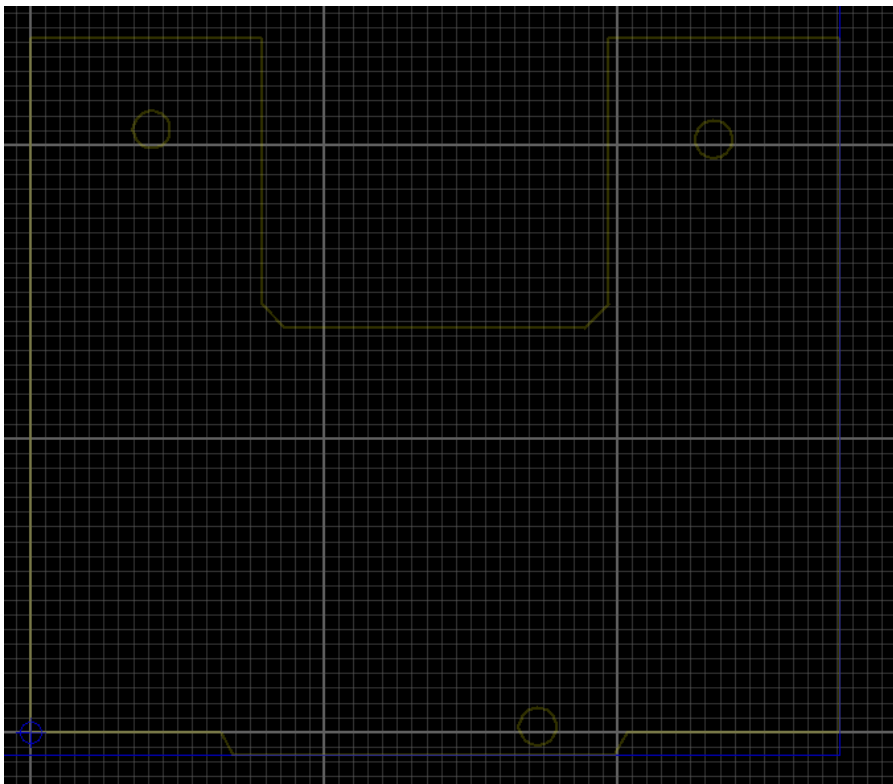
- Bottom Resist



- Top Paste

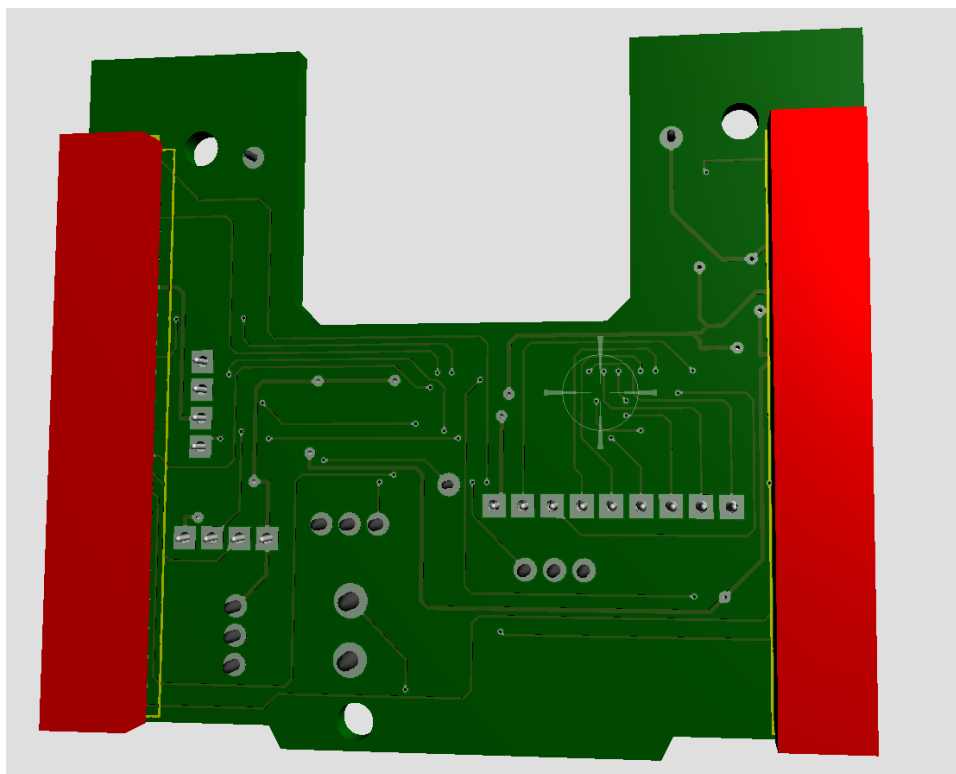
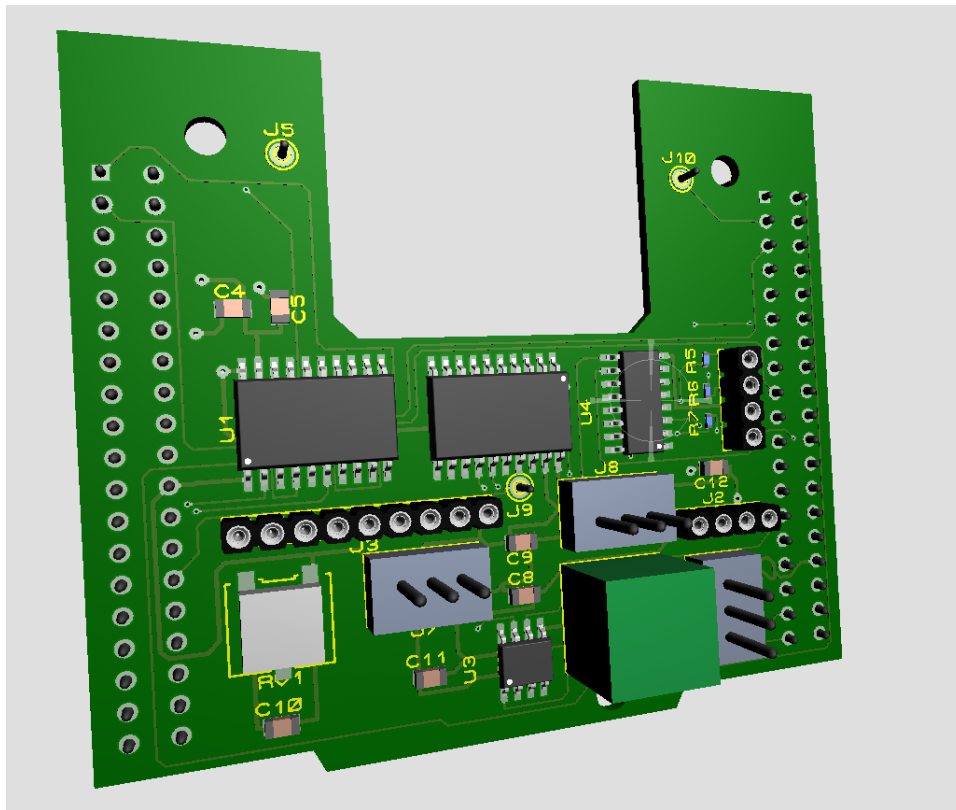


- Bottom Paste





### 3D PCB Assembly:



Bill of Materials:

**Bill Of Materials for ECE298\_RS\_ADAPTER**

**Design Title** ECE298\_RS\_ADAPTER  
**Author**  
**Document Number**  
**Revision**  
**Design Created** July 7, 2023  
**Design Last Modified** November 30, 2023  
**Total Parts In Design** 29

**9 Capacitors**

| <u>Quantity</u> | <u>References</u> | <u>Value</u> |
|-----------------|-------------------|--------------|
| 7               | C4-C5,C8-C12      | 10u          |
| 2               | C6,C14            | 10000pF      |

Sub-totals:

**3 Resistors**

| <u>Quantity</u> | <u>References</u> | <u>Value</u> |
|-----------------|-------------------|--------------|
| 2               | R5,R7             | 62           |
| 1               | R6                | 100          |

Sub-totals:

**4 Integrated Circuits**

| <u>Quantity</u> | <u>References</u> | <u>Value</u>       |
|-----------------|-------------------|--------------------|
| 2               | U1,U4             | ECE298_RS_74HCT541 |
| 1               | U2                | ECE298_RS_CMOS4050 |
| 1               | U3                | ECE298_RS_L9110    |

Sub-totals:

**13 Miscellaneous**

| <u>Quantity</u> | <u>References</u> | <u>Value</u>        |
|-----------------|-------------------|---------------------|
| 2               | CN7,CN10          | 1-534236-9          |
| 1               | J1                | UART6               |
| 1               | J2                | HCSR04              |
| 1               | J3                | 7 SEG DISPLAY       |
| 1               | J4                | DC MOTOR            |
| 1               | J5                | ECE298_TERMINAL_VIA |
| 1               | J6                | RGB LED             |
| 1               | J7                | SERVO MOTOR         |
| 1               | J8                | RPM SPEED SENSOR    |
| 1               | J9                | ECHO_TEST           |
| 1               | J10               | TRIG_TEST           |
| 1               | RV1               | 10K                 |

Sub-totals:

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Totals:

November 30, 2023 2:04:46 PM