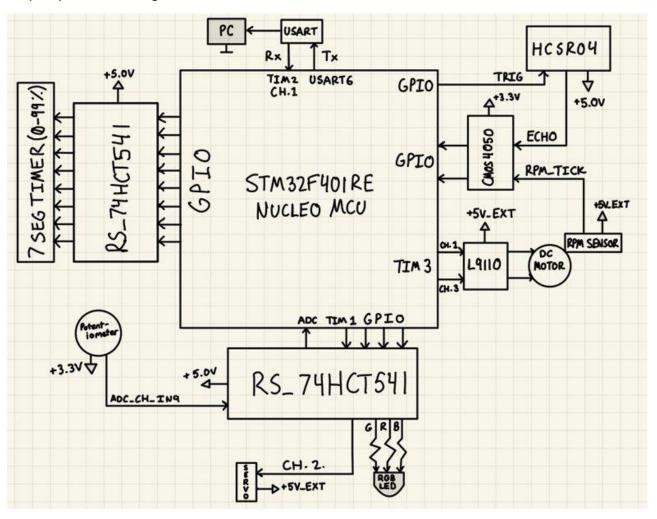
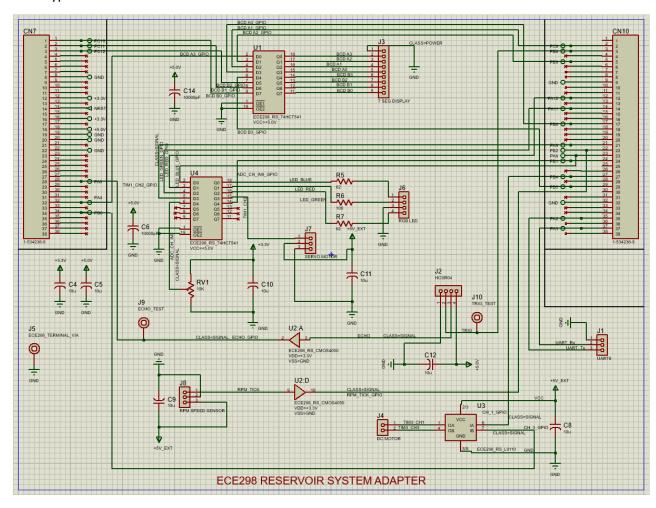
ECE 298 Embedded Project Report LS05, Team 4

Jakob Untch Aditya Chaudhary

Simple System Block Diagram:



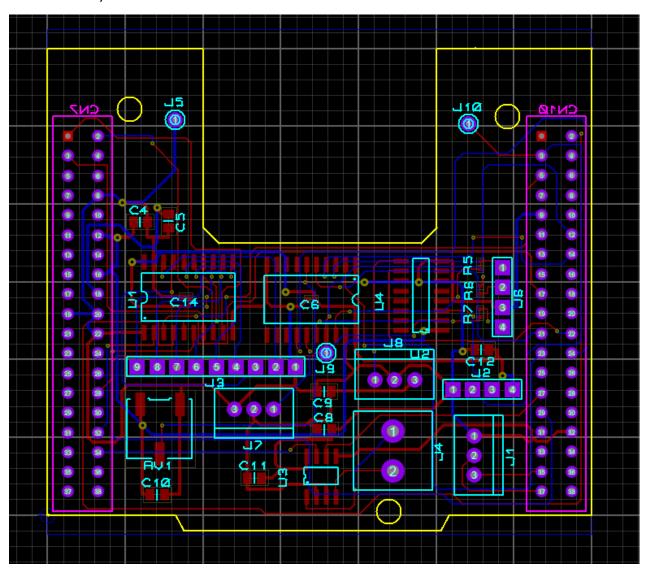
Prototype Schematic:



Schematic Netlist:

ECE298 RS Adapter.TXT

Proteus PCB Layout:

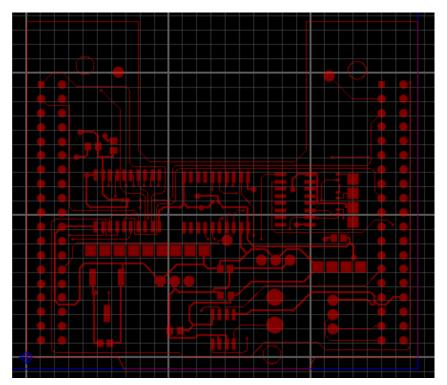


Pre-Production Check (PPC) Report:

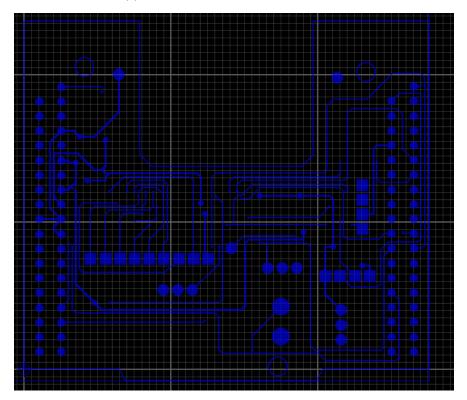
```
Pre-production check start.
File: N:\ECE298\Lab_B4\ECE298_RS_Adapter.pdsprj
Date: November 30, 2023, 2:03:34 PM
TEST: Connectivity.
PASS: Connectivity valid.
TEST: Object validity.
PASS: Objects valid.
TEST: DRC valid.
PASS: No DRC errors.
TEST: Zone overlap.
 Imaging Copper Layer TOP
Imaging Copper 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
 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.
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:

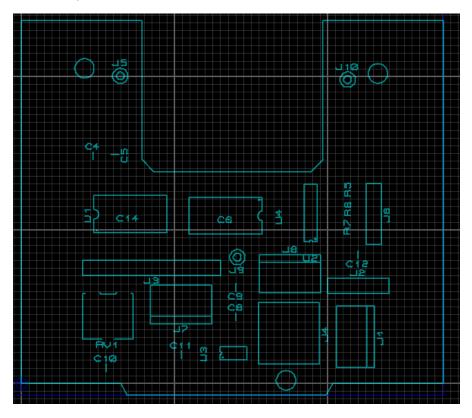
• Top Copper



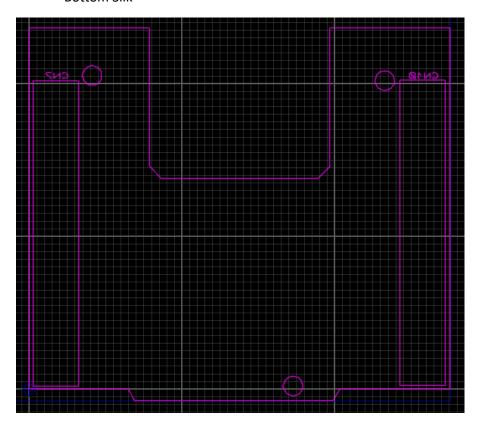
• Bottom Copper



• Top Silk



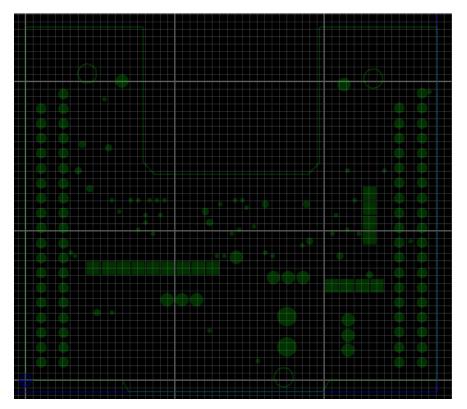
Bottom Silk



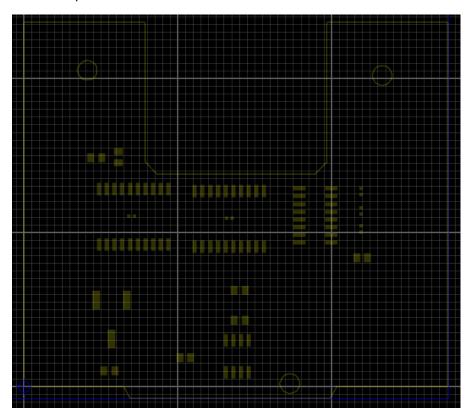
• Top Resist



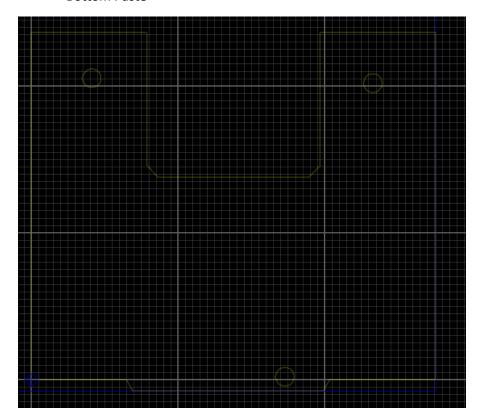
Bottom Resist



• Top Paste



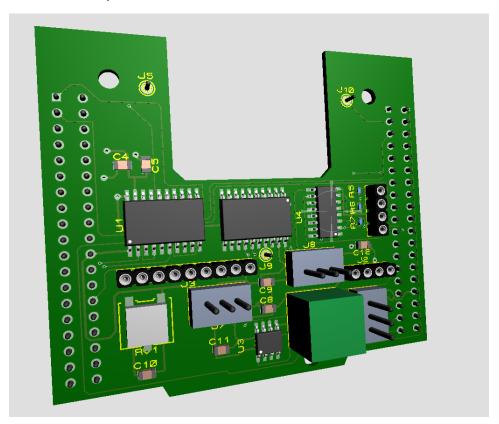
Bottom Paste

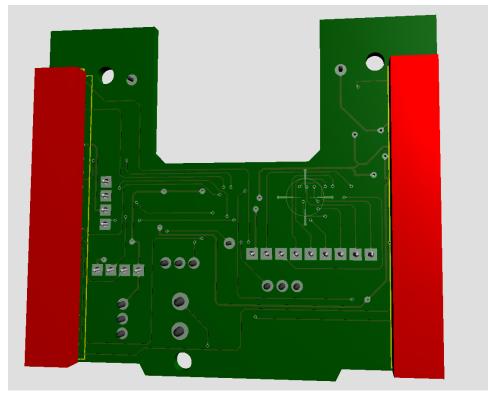


Pick and Place File:

4	Α	В	С	D	E	F	G	Н
	Part ID	Value	Package	Stock Code	Layer	Rotation	X	Υ
2	CN7	1-534236-9	ECE298_REVTRANS38DIL-1	1-534236-9	BOT	0	177.362	1019.69
	CN10	1-534236-9	ECE298_REVTRANS38DIL-1	1-534236-9	BOT	0	2577.36	1021.26
	U1	ECE298_RS_74HCT541	SO20W		TOP	90	712.795	1102.68
	J3	7 SEG DISPLAY	CONN-SIL9		TOP	180	852.756	752.362
	U4	ECE298_RS_74HCT541	SO20W		TOP	270	1335.04	1090.94
	J1	UART6	SIL-100-03		TOP	-90	2158.27	302.362
	J4	DC MOTOR	TBLOCK-I2		TOP	270	1748.43	325.984
	RV1	10K	TRIM_3361P	Digikey 3361P-103GLFDKR-ND	TOP	180	567.323	435.433
)	J7	SERVO MOTOR	SIL-100-03		TOP	180	1044.49	538.189
	J8	RPM SPEED SENSOR	SIL-100-03		TOP	0	1756.69	687.008
2	J5	ECE298_TERMINAL_VIA	PIN		TOP	0	645.669	2003.94
3	J9	ECHO_TEST	PIN		TOP	180	1409.45	822.835
ı	U3	ECE298 RS L9110	SO8		TOP	90	1384.84	196.713
5	U2	ECE298 RS CMOS4050	SO16		TOP	180	1891.34	1110.63
,	J2	HCSR04	CONN-SIL4		TOP	0	2200.79	635.039
7	J6	RGB LED	CONN-SIL4		TOP	270	2301.57	1103.15
3	C4	10u	CAPC2012X100	Digikey PCC2182TR-ND	TOP	0	468.504	1484.25
,	C5	10u	CAPC2012X100	Digikey PCC2182TR-ND	TOP	270	612.598	1488.58
)	C8	10u	CAPC2012X100	Digikey PCC2182TR-ND	TOP	0	1401.57	433.071
	C9	10u	CAPC2012X100	Digikey PCC2182TR-ND	TOP	180	1400	625.984
2	C10	10u	CAPC2012X100	Digikey PCC2182TR-ND	TOP	0	553.543	103.15
3	C11	10u	CAPC2012X100	Digikey PCC2182TR-ND	TOP	0	1047.24	188.976
ı	C12	10u	CAPC2012X100	Digikey PCC2182TR-ND	TOP	180	2196.85	838.583
5	R5	62	RESC1005X40	Digikey 311-150JDKR-ND	TOP	90	2190.55	1265.75
,	R6	100	RESC1005X40	Digikey 311-150JDKR-ND	TOP	270	2188.98	1141.73
	R7	62	RESC1005X40	Digikey 311-150JDKR-ND	TOP	90	2188.98	1023.62
3	C6	10000pF	CAPC1005X55	Digikey PCC103BQDKR-ND	TOP	180	1332.68	1094.49
,	C14	10000pF	CAPC1005X55	Digikey PCC103BQDKR-ND	TOP	180	698.819	1106.3
)	J10	TRIG TEST	PIN		TOP	0	2129.92	1980.31

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						
Quantity 7	References C4-C5,C8-C12	<u>Value</u> 10u				
2	C6,C14	10000pF				
Sub-totals:						
3 Resistors						
Quantity 2	References R5,R7	Value 62				
1	R6	100				
Sub-totals:						
4 Integrated Circuits						
Quantity	References	<u>Value</u>				
2	U1,U4	ECE298_RS_74HCT541				
1	U2	ECE298_RS_CMOS4050				
1	U3	ECE298_RS_L9110				
Sub-totals:						
13 Miscellaneous						
Quantity 2	References CN7,CN10	<u>Value</u> 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:						

Totals: