ECE 298 Prototype Model Report

Lab Section:	001	**Team No:**	10	**Date:**	2024-12-03
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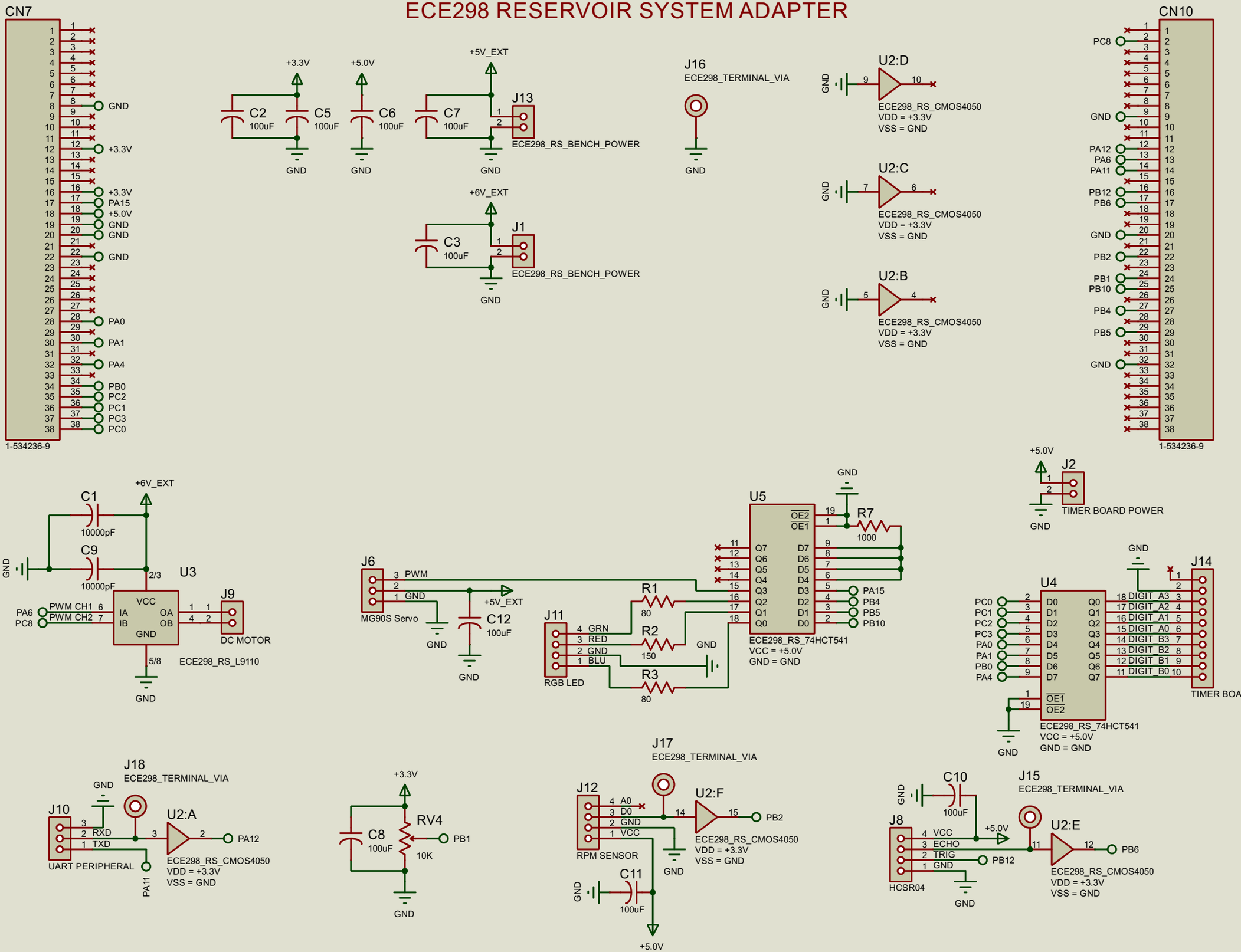
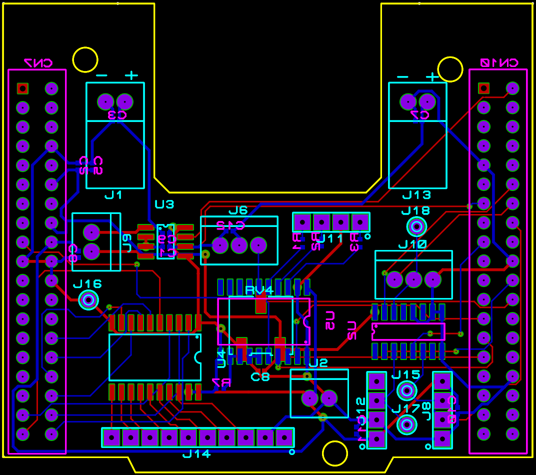
ECE298 RESERVOIR SYSTEM ADAPTER





J1
J13
U3
J6
J11
J18
J10
J16
RV4
U4
C8
U2
J15
J17
J12
J8
J14
− +
− +

NETLIST:

ISIS SCHEMATIC DESCRIPTION FORMAT 8.0

==========

Design: ECE298_RS_ADAPTER

Doc. no.: <NONE>

Revision: <NONE>

Author: <NONE>

Created: 2023-07-07

Modified: 2024-11-30

*PROPERTIES,0

*MODELDEFS,0

*PARTLIST,36

C1,ECE298_RS_CAP_0U1,10000pF,CODE="Digikey PCC103BQDKR-ND",EID=1E,PACKAGE=CAPC1005X55

C2,ECE298_RS_CAP_0U1,100uF,CODE="Digikey PCC103BQDKR-ND",EID=1F,PACKAGE=CAPC1005X55

C3,ECE298_RS_CAP_0U1,100uF,CODE="Digikey PCC103BQDKR-ND",EID=3,PACKAGE=CAPC1005X55

C5,ECE298_RS_CAP_0U1,100uF,CODE="Digikey PCC103BQDKR-ND",EID=4,PACKAGE=CAPC1005X55

C6,ECE298_RS_CAP_0U1,100uF,CODE="Digikey PCC103BQDKR-ND",EID=5,PACKAGE=CAPC1005X55

C7,ECE298_RS_CAP_0U1,100uF,CODE="Digikey PCC103BQDKR-ND",EID=E,PACKAGE=CAPC1005X55

C8,ECE298_RS_CAP_0U1,100uF,CODE="Digikey PCC103BQDKR-ND",EID=11,PACKAGE=CAPC1005X55

C9,ECE298_RS_CAP_0U1,10000pF,CODE="Digikey PCC103BQDKR-ND",EID=12,PACKAGE=CAPC1005X55

C10,ECE298_RS_CAP_0U1,100uF,CODE="Digikey PCC103BQDKR-ND",EID=13,PACKAGE=CAPC1005X55

C11,ECE298_RS_CAP_0U1,100uF,CODE="Digikey PCC103BQDKR-ND",EID=14,PACKAGE=CAPC1005X55

C12,ECE298_RS_CAP_0U1,100uF,CODE="Digikey PCC103BQDKR-ND",EID=15,PACKAGE=CAPC1005X55

CN7,1-534236-9,1-534236-9,CODE=1-534236-9,EID=25,PACKAGE=ECE298_REVTRANS38DIL-1,SUPPLIER=TE_CONNECTIVITY

CN10,1-534236-9,1-534236-9,CODE=1-534236-9,EID=29,PACKAGE=ECE298_REVTRANS38DIL-1,SUPPLIER=TE_CONNECTIVITY

J1,ECE298_RS_BENCH_POWER,ECE298_RS_BENCH_POWER,EID=1D,PACKAGE=SIL-100-02R

J2,ECE298_RS_2PINHDR,"TIMER BOARD POWER",EID=20,PACKAGE=SIL-100-02

J6,ECE298_RS_3PINHDR,"MG90S Servo",EID=6,PACKAGE=SIL-100-03

J8,ECE298_RS_4PINREC,HCSR04,EID=7,PACKAGE=CONN-SIL4

J9,ECE298_RS_2PINHDR,"DC MOTOR",EID=8,PACKAGE=SIL-100-02

J10,ECE298_RS_3PINHDR,"UART PERIPHERAL",EID=B,PACKAGE=SIL-100-03

J11,ECE298_RS_4PINREC,"RGB LED",EID=C,PACKAGE=CONN-SIL4

J12,ECE298_RS_4PINREC,"RPM SENSOR",EID=D,PACKAGE=CONN-SIL4

J13,ECE298_RS_BENCH_POWER,ECE298_RS_BENCH_POWER,EID=F,PACKAGE=SIL-100-02R

J14,ECE298_RS_10PINREC,"TIMER BOARD",EID=10,PACKAGE=CONN-SIL10

J15,ECE298_TERMINAL_VIA,ECE298_TERMINAL_VIA,EID=17,PACKAGE=PIN

J16,ECE298_TERMINAL_VIA,ECE298_TERMINAL_VIA,EID=18,PACKAGE=PIN

J17,ECE298_TERMINAL_VIA,ECE298_TERMINAL_VIA,EID=19,PACKAGE=PIN

J18,ECE298_TERMINAL_VIA,ECE298_TERMINAL_VIA,EID=1A,PACKAGE=PIN

R1,9C04021A1500JLHF3,80,CODE="Digikey 311-150JDKR-ND",EID=1,PACKAGE=RESC1005X40,PRIMTYPE=RESISTOR

R2,9C04021A1800JLHF3,150,CODE="Digikey 311-180JCT-ND",EID=2,PACKAGE=RESC1005X40,PRIMTYPE=RESISTOR

R3,9C04021A1500JLHF3,80,CODE="Digikey 311-150JDKR-ND",EID=24,PACKAGE=RESC1005X40,PRIMTYPE=RESISTOR

R7,9C04021A1500JLHF3,1000,CODE="Digikey 311-150JDKR-ND",EID=1B,PACKAGE=RESC1005X40,PRIMTYPE=RESISTOR

RV4,ECE298_RS_POT10K,10K,CODE="Digikey 3361P-103GLFDKR-ND",EID=9,PACKAGE=TRIM_3361P,STATE=5

U2,ECE298_RS_CMOS4050,ECE298_RS_CMOS4050,EID_A=21,EID_B=22,EID_C=23,EID_D=26,EID_E=27,EID_F=28,ITFMOD=CMOS,MODFILE=40BUF,PACKAGE=SO16,VDD=+3
.3V,VSS=GND

U3,ECE298_RS_L9110,ECE298_RS_L9110,EID=A,ITFMOD=TTL,PACKAGE=SO8

U4,ECE298_RS_74HCT541,ECE298_RS_74HCT541,EID=16,GND=GND,PACKAGE=SO20W,PINSWAP="1,19",VCC=+5.0V

U5,ECE298_RS_74HCT541,ECE298_RS_74HCT541,EID=1C,GND=GND,PACKAGE=SO20W,PINSWAP="1,19",VCC=+5.0V

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GRN,3,CLASS=SIGNAL

GRN,LBL

R1,PS,1

J11,PS,4

GRN_5V,3,CLASS=SIGNAL

GRN_5V,LBL

R1,PS,2
U5,TS,16

RED,3,CLASS=SIGNAL
RED,LBL
R2,PS,1
J11,PS,3

RED_5V,3,CLASS=SIGNAL
RED_5V,LBL
R2,PS,2
U5,TS,17

PWM,3,CLASS=SIGNAL
PWM,LBL
J6,PS,3
U5,TS,15

ECHO,4,CLASS=SIGNAL
ECHO,LBL
J8,PS,3
J15,PS,1
U2,IP,11

OA,3,CLASS=POWER
OA,LBL
J9,PS,1
U3,OP,1

OB,3,CLASS=POWER
OB,LBL
J9,PS,2
U3,OP,4

RXD,4,CLASS=SIGNAL
RXD,LBL
J10,PS,2
U2,IP,3
J18,PS,1

BLU,3,CLASS=SIGNAL
BLU,LBL
J11,PS,1
R3,PS,1

D0,4,CLASS=SIGNAL
D0,LBL
J12,PS,3
J17,PS,1
U2,IP,14

DIGIT_A3,3,CLASS=SIGNAL
DIGIT_A3,LBL
U4,TS,18
J14,PS,3

DIGIT_A2,3,CLASS=SIGNAL
DIGIT_A2,LBL
U4,TS,17
J14,PS,4

DIGIT_A1,3,CLASS=SIGNAL

DIGIT_A1,LBL
U4,TS,16
J14,PS,5

DIGIT_A0,3,CLASS=SIGNAL
DIGIT_A0,LBL
U4,TS,15
J14,PS,6

DIGIT_B3,3,CLASS=SIGNAL
DIGIT_B3,LBL
U4,TS,14
J14,PS,7

DIGIT_B2,3,CLASS=SIGNAL
DIGIT_B2,LBL
U4,TS,13
J14,PS,8

DIGIT_B1,3,CLASS=SIGNAL
DIGIT_B1,LBL
U4,TS,12
J14,PS,9

DIGIT_B0,3,CLASS=SIGNAL
DIGIT_B0,LBL
U4,TS,11
J14,PS,10

DRAIN,6,CLASS=POWER
DRAIN,LBL
R7,PS,1
U5,IP,6
U5,IP,7
U5,IP,8
U5,IP,9

BLU_5V,3,CLASS=SIGNAL
BLU_5V,LBL
U5,TS,18
R3,PS,2

PA0,3,CLASS=SIGNAL
PA0,GT
CN7,PS,28
U4,IP,6

PA1,3,CLASS=SIGNAL
PA1,GT
CN7,PS,30
U4,IP,7

PA4,3,CLASS=SIGNAL
PA4,GT
CN7,PS,32
U4,IP,9

PB0,3,CLASS=SIGNAL
PB0,GT
CN7,PS,34
U4,IP,8

PC2,3,CLASS=SIGNAL
PC2,GT
CN7,PS,35
U4,IP,4

PC1,3,CLASS=SIGNAL
PC1,GT
CN7,PS,36
U4,IP,3

PC3,3,CLASS=SIGNAL
PC3,GT
CN7,PS,37
U4,IP,5

PC0,3,CLASS=SIGNAL
PC0,GT
CN7,PS,38
U4,IP,2

PA12,3,CLASS=SIGNAL
PA12,GT
CN10,PS,12
U2,OP,2

PA6,4,CLASS=SIGNAL
PA6,GT
PWM CH1,LBL
CN10,PS,13
U3,IP,6

PA11,4,CLASS=SIGNAL
PA11,GT
TXD,LBL
CN10,PS,14
J10,PS,1

PB12,4,CLASS=SIGNAL
PB12,GT
TRIG,LBL
CN10,PS,16
J8,PS,2

PC8,4,CLASS=SIGNAL
PC8,GT
PWM CH2,LBL
CN10,PS,2
U3,IP,7

PB1,3,CLASS=SIGNAL
PB1,GT
CN10,PS,24
RV4,PS,3

PB10,3,CLASS=SIGNAL
PB10,GT
CN10,PS,25
U5,IP,2

PB4,3,CLASS=SIGNAL
PB4,GT
CN10,PS,27

U5,IP,4

PB5,3,CLASS=SIGNAL
PB5,GT
CN10,PS,29
U5,IP,3

PA15,3,CLASS=SIGNAL
PA15,GT
CN7,PS,17
U5,IP,5

PB2,3,CLASS=SIGNAL
PB2,GT
U2,OP,15
CN10,PS,22

PB6,3,CLASS=SIGNAL
PB6,GT
U2,OP,12
CN10,PS,17

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J14,PS,1
U2,PS,13
U2,PS,16
U2,OP,6
U2,OP,4
CN10,PS,31
U2,OP,10
CN10,PS,15
CN10,PS,37
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CN10,PS,1
CN7,PS,1
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CN7,PS,21
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CN7,PS,14
CN10,PS,8
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CN10,PS,10

CN7,PS,9
CN7,PS,7
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CN7,PS,4
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CN7,PS,29
CN7,PS,27
CN7,PS,26
CN7,PS,25
CN7,PS,24
CN7,PS,11
CN7,PS,10
U5,TS,14
U5,TS,13
U5,TS,12
U5,TS,11
J12,PS,4

+3.3V,8,CLASS=POWER
+3.3V,PR
U2,PP,1
CN7,PS,16
CN7,PS,12
C8,PS,1
RV4,PS,2
C5,PS,1
C2,PS,1

+5.0V,11,CLASS=POWER
+5.0V,PR
VCC,LBL
CN7,PS,18
J2,PS,1
U5,PP,20
U4,PP,20
J12,PS,1
C11,PS,1
J8,PS,4
C10,PS,1
C6,PS,1

+5V_EXT,5,CLASS=POWER
+5V_EXT,PR
J13,PS,1
C7,PS,1
J6,PS,2
C12,PS,1

+6V_EXT,7,CLASS=POWER
+6V_EXT,PR
U3,PP,2
U3,PP,3
C9,PS,1
C1,PS,1
J1,PS,1
C3,PS,1

GND,43,CLASS=POWER
GND,PR
J14,PS,2

U2,PP,8
U2,IP,7
U2,IP,5
U2,IP,9
CN10,PS,9
CN10,PS,32
CN10,PS,20
CN7,PS,8
CN7,PS,22
CN7,PS,20
CN7,PS,19
J2,PS,2
U5,PP,10
J16,PS,1
U4,PP,10
C12,PS,2
U5,IP,19
U5,IP,1
R7,PS,2
C11,PS,2
C10,PS,2
C9,PS,2
C1,PS,2
U4,IP,1
U4,IP,19
J13,PS,2
C7,PS,2
J12,PS,2
J11,PS,2
J10,PS,3
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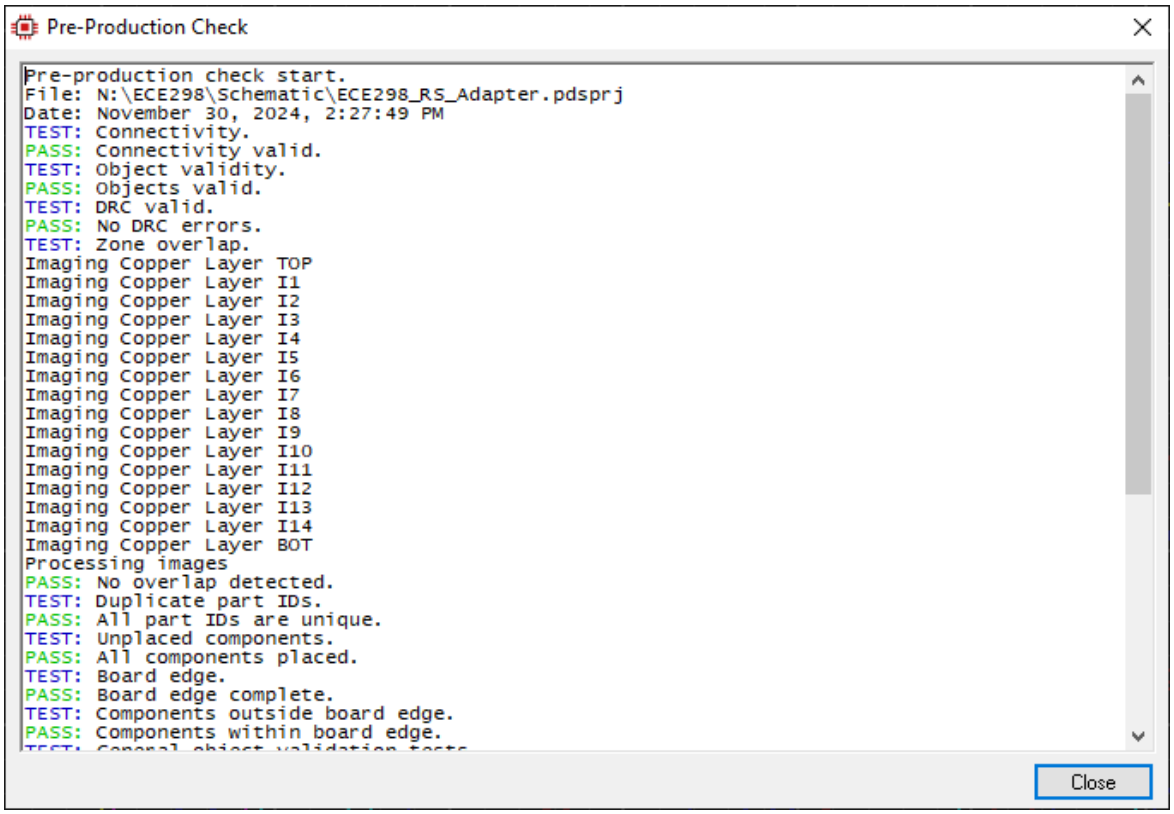
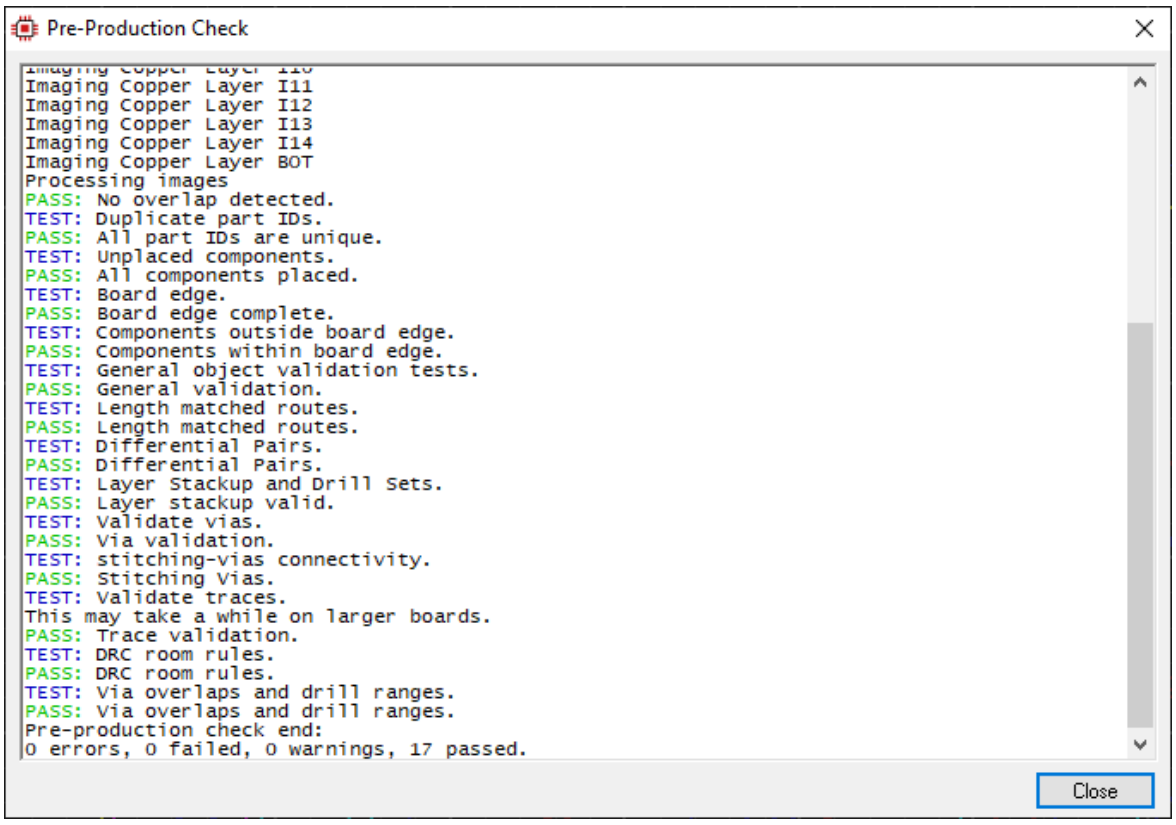
C2,PS,2
C3,PS,2
J1,PS,2

Pre-Production Check:





Part ID	Value	Package	Stock Code	Layer	Rotation	X	
CN7	1-534236-9	ECE298_REV	1-534236-9	BOT	0	177.362	
CN10	1-534236-9	ECE298_REV	1-534236-9	BOT	0	2577.36	
J14	TIMER BOARI	CONN-SIL10		TOP	180	1014.57	
J1	ECE298_RS_	SIL-100-02R		TOP	180	583.858	
J6	MG90S Servo	SIL-100-03		TOP	0	1229.72	
J9	DC MOTOR	SIL-100-02		TOP	270	460.63	
J11	RGB LED	CONN-SIL4		TOP	180	1708.46	
J10	UART PERIPH	SIL-100-03		TOP	0	2137.8	
J8	HCSR04	CONN-SIL4		TOP	90	2287.4	
J2	TIMER BOARI	SIL-100-02		TOP	0	1646.85	
J12	RPM SENSOF	CONN-SIL4		TOP	90	1944.88	
J13	ECE298_RS_	SIL-100-02R		TOP	180	2158.66	
RV4	10K	TRIM_3361P	Digikey 3361	TOP	0	1342.52	
U2	ECE298_RS_	SO16		BOT	90	2110.24	
U5	ECE298_RS_	SO20W		BOT	270	1357.28	
R1	80	RESC1005X4	Digikey 311-1	BOT	90	1559.06	
R2	150	RESC1005X4	Digikey 311-1	BOT	90	1657.48	
R3	80	RESC1005X4	Digikey 311-1	BOT	90	1858.27	
U4	ECE298_RS_	SO20W		TOP	-90	791.339	
U3	ECE298_RS_	SO8		TOP	0	846.457	
C1	10000pF	CAPC1005X5	Digikey PCC1	BOT	180	848.425	
C9	10000pF	CAPC1005X5	Digikey PCC1	BOT	180	848.425	
C2	100uF	CAPC1005X5	Digikey PCC1	BOT	-90	389.764	
C5	100uF	CAPC1005X5	Digikey PCC1	BOT	-90	464.567	
C6	100uF	CAPC1005X5	Digikey PCC1	BOT	90	393.701	
C7	100uF	CAPC1005X5	Digikey PCC1	BOT	0	2163.39	
C3	100uF	CAPC1005X5	Digikey PCC1	BOT	0	588.583	
R7	1000	RESC1005X4	Digikey 311-1	BOT	0	1129.92	
C8	100uF	CAPC1005X5	Digikey PCC1	TOP	180	1344.49	
C10	100uF	CAPC1005X5	Digikey PCC1	BOT	90	2366.14	
C11	100uF	CAPC1005X5	Digikey PCC1	BOT	270	1838.58	
J15	ECE298_TER	PIN		TOP	0	2102.36	
J17	ECE298_TER	PIN		TOP	0	2102.36	
J18	ECE298_TER	PIN		TOP	0	2153.54	
J16	ECE298_TER	PIN		TOP	0	444.882	
C12	100uF	CAPC1005X5	Digikey PCC1	BOT	0	1179.13	

Y
1019.69
1021.26
102.362
1850.39
1103.46
1120.87
1223.31
925.197
245.276
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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, 2024
Total Parts In Design	36

11 Capacitors

Quantity	References	Value
2	C1,C9	10000pF
9	C2-C3,C5-C8,C10-C12	100uF

Sub-totals:

4 Resistors

Quantity	References	Value
2	R1,R3	80
1	R2	150
1	R7	1000

Sub-totals:

4 Integrated Circuits

Quantity	References	Value
1	U2	ECE298_RS_CMOS4050
1	U3	ECE298_RS_L9110
2	U4-U5	ECE298_RS_74HCT541

Sub-totals:

17 Miscellaneous

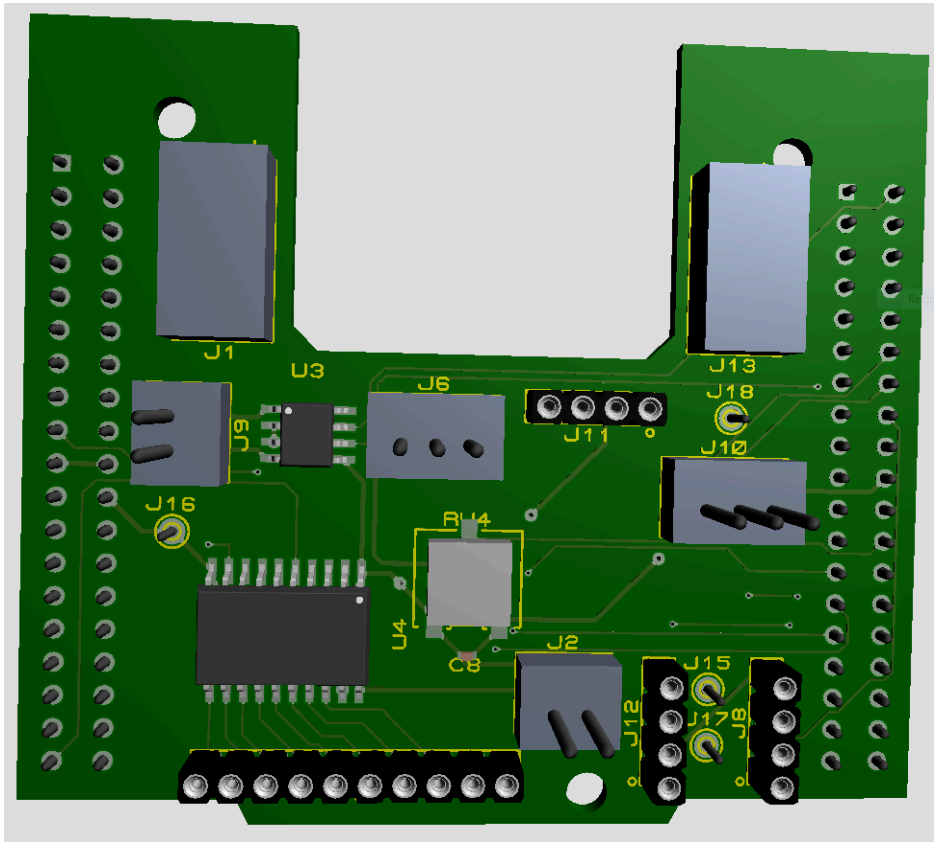
Quantity	References	Value
2	CN7,CN10	1-534236-9
2	J1,J13	ECE298_RS_BENCH_POWER
1	J2	TIMER BOARD POWER
1	J6	MG90S Servo
1	J8	HCSR04
1	J9	DC MOTOR
1	J10	UART PERIPHERAL
1	J11	RGB LED
1	J12	RPM SENSOR
1	J14	TIMER BOARD
4	J15-J18	ECE298_TERMINAL_VIA
1	RV4	10K

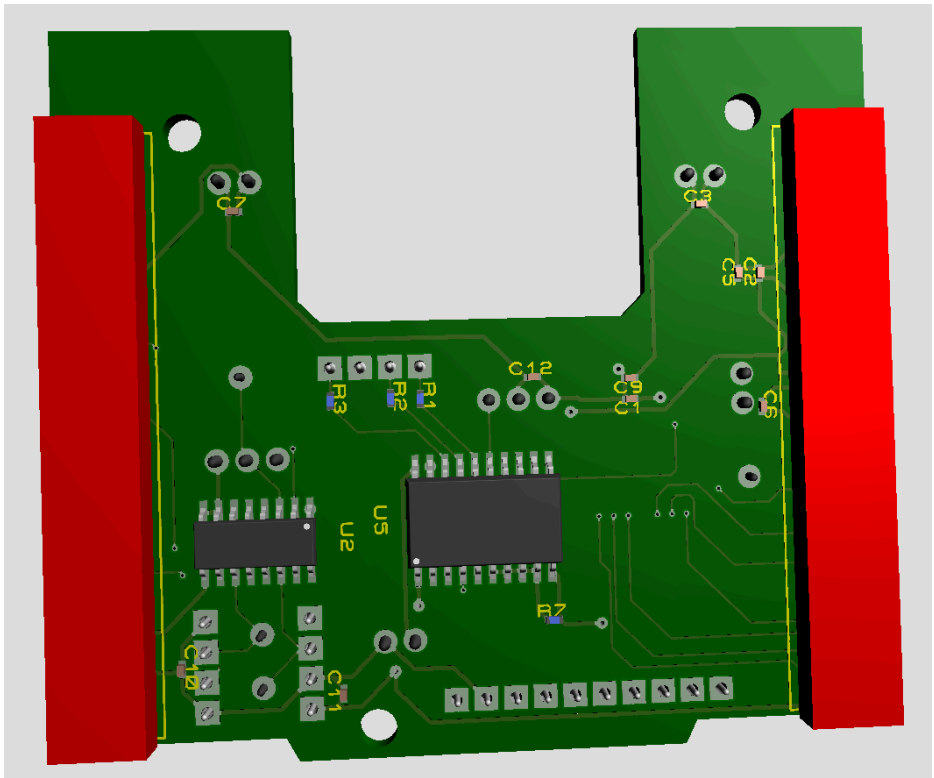
Sub-totals:

Totals:

November 30, 2024 2:31:16 PM

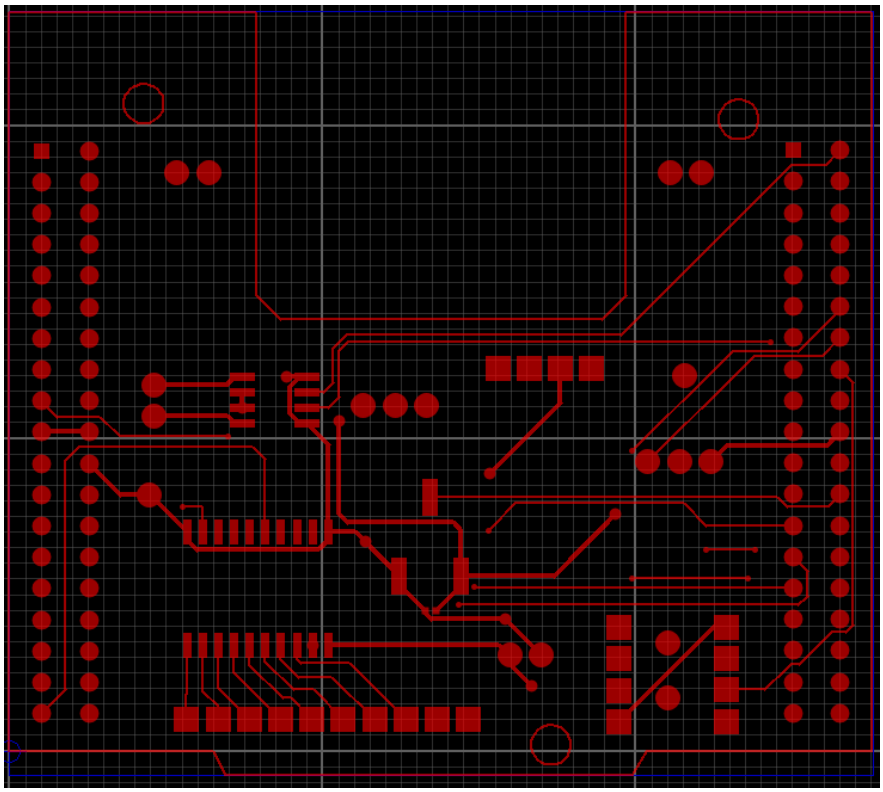
3D Views of Top and Bottom PCB Assembly:

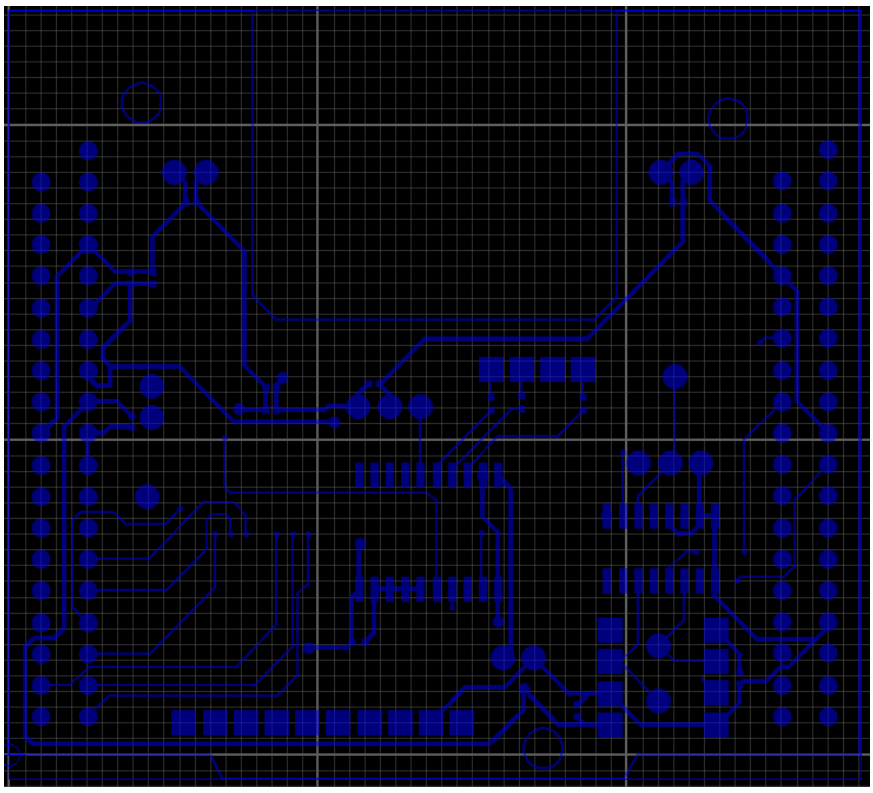




Gerber Layers:

Copper:





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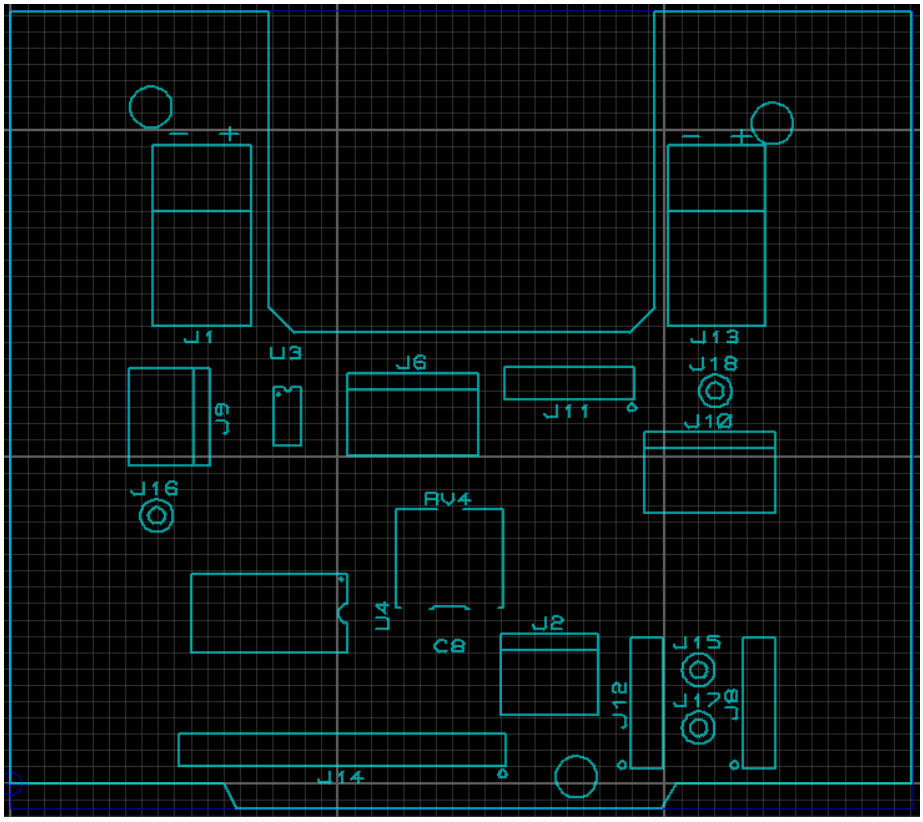

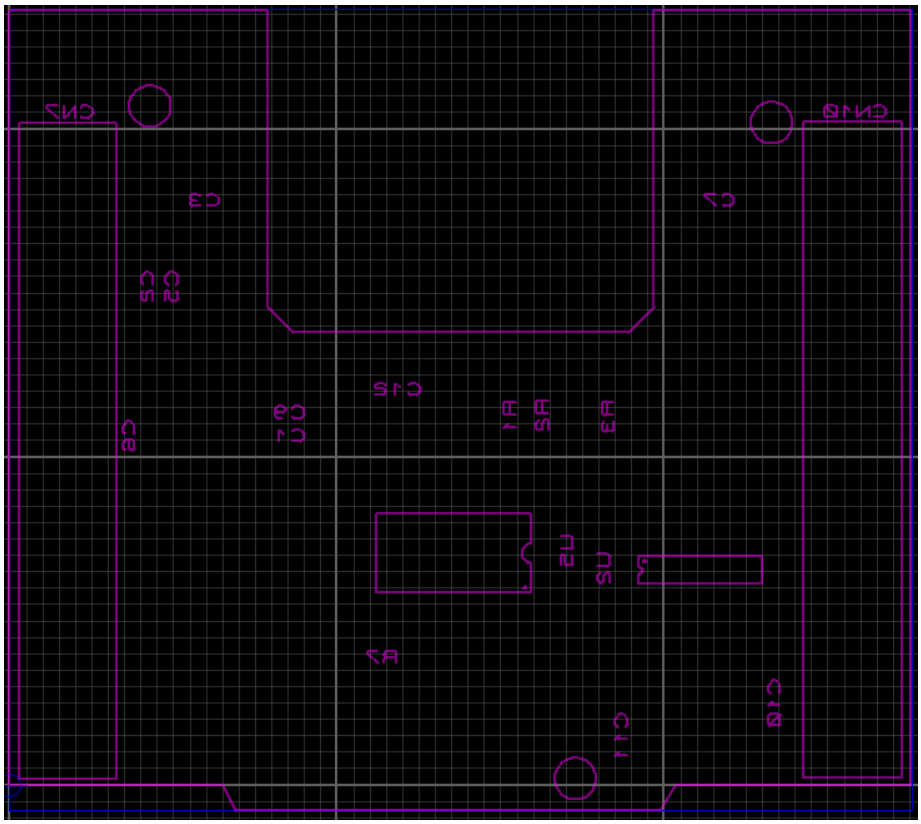

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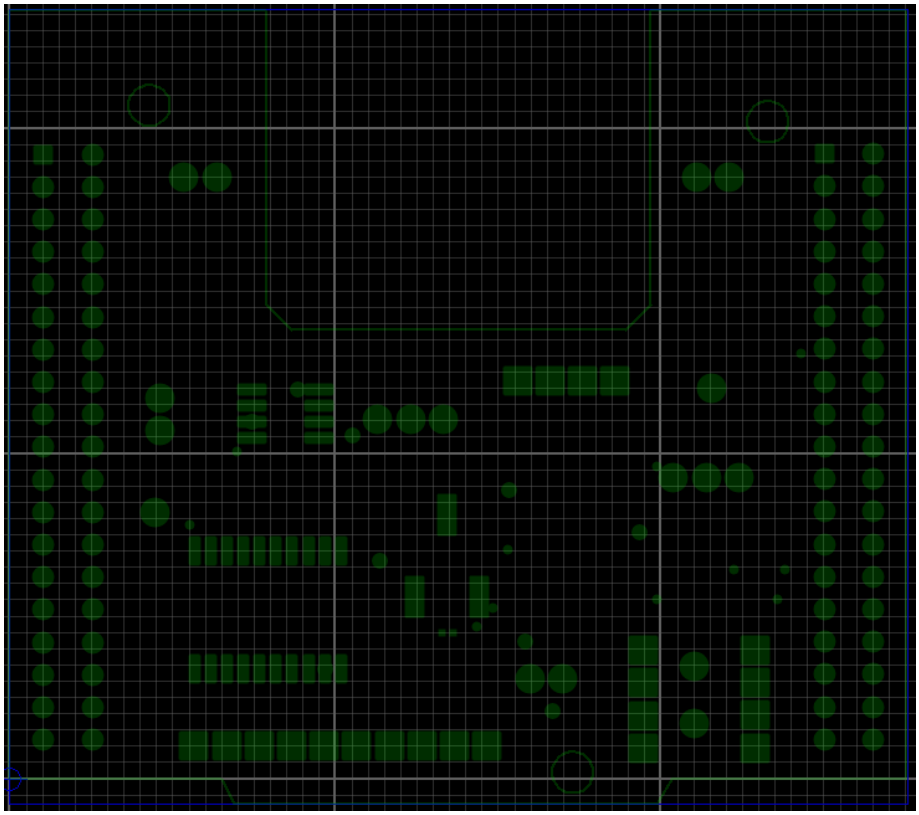

Paste Layer: