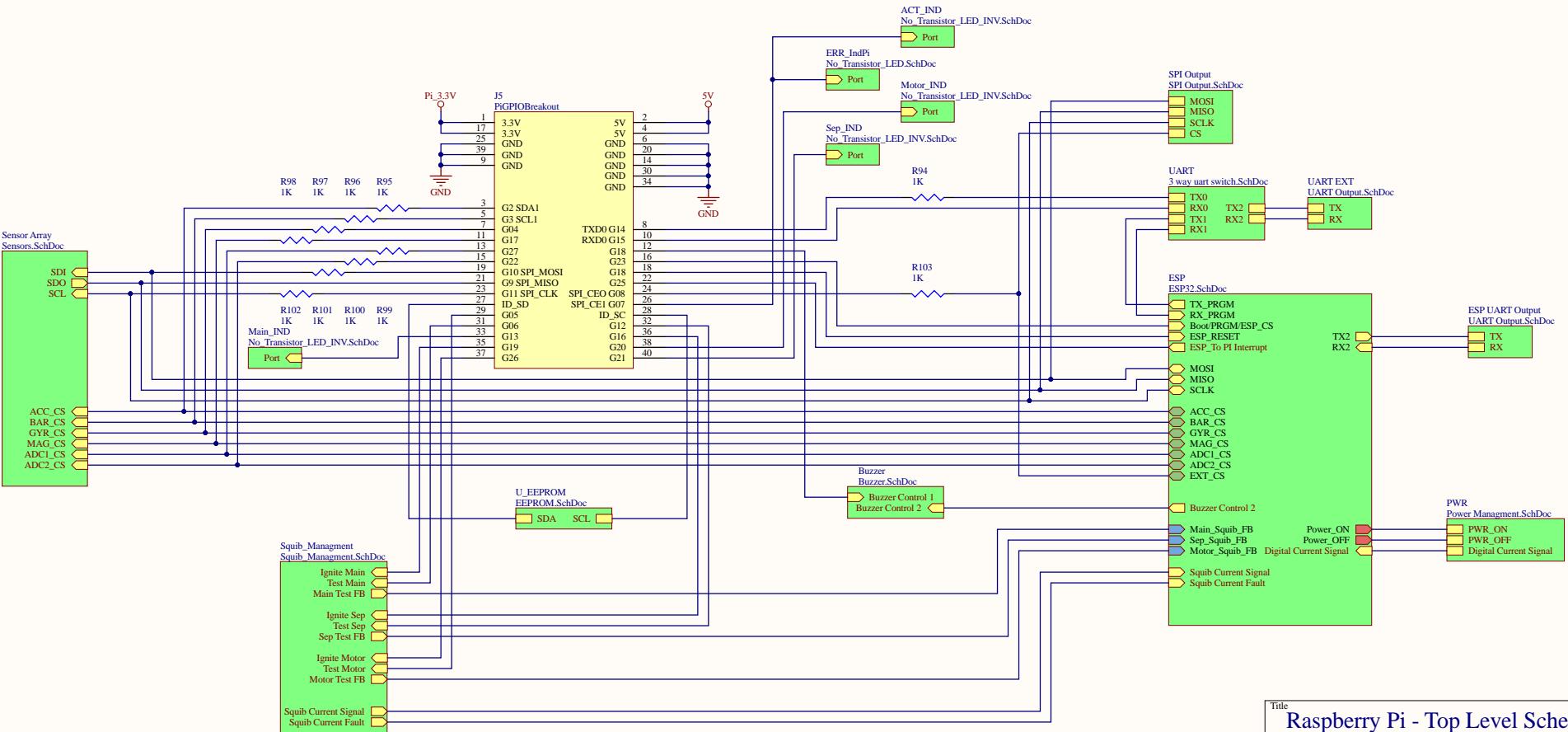




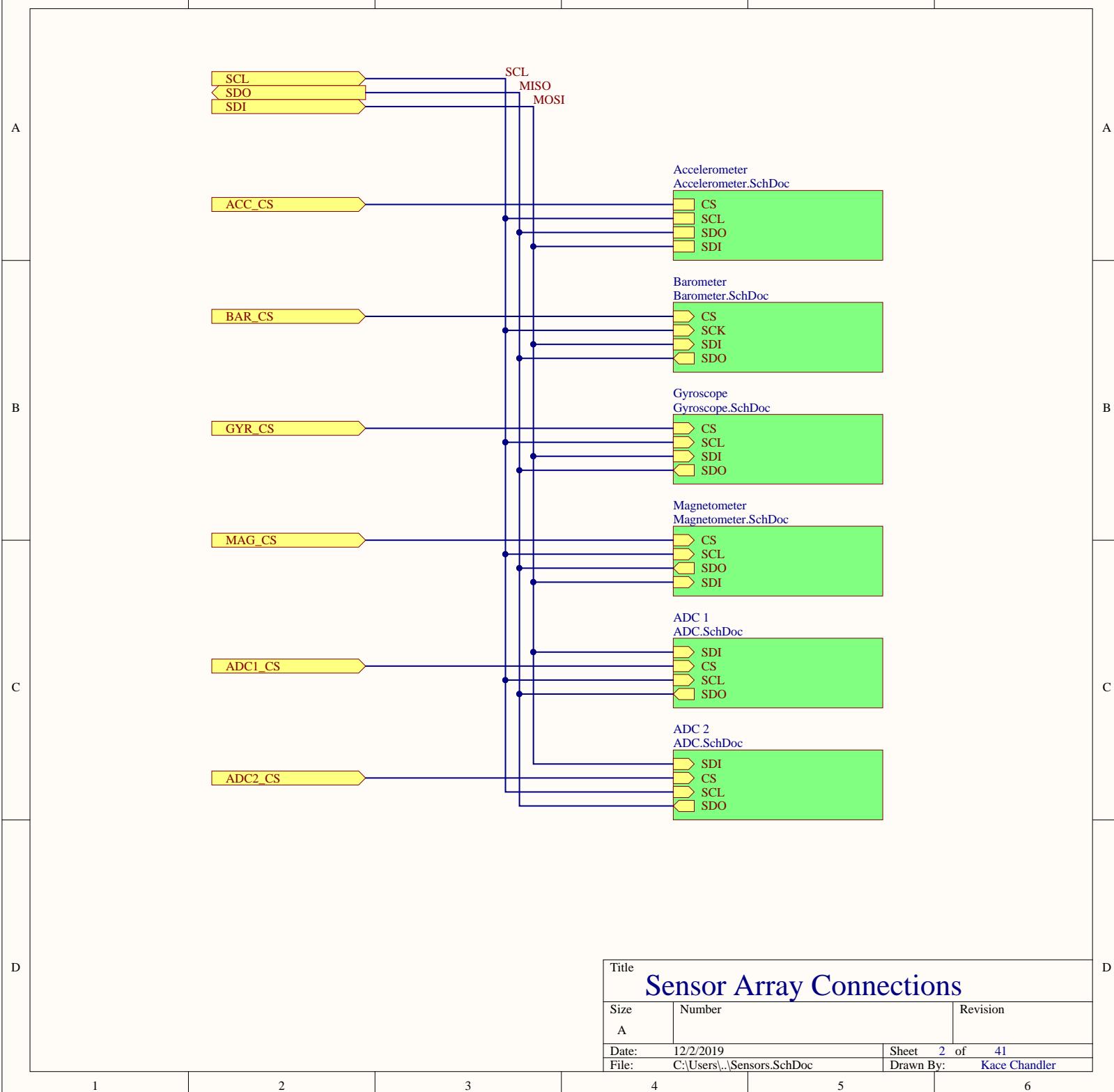
1 2 3 4 5 6



Title: Raspberry Pi - Top Level Schematic

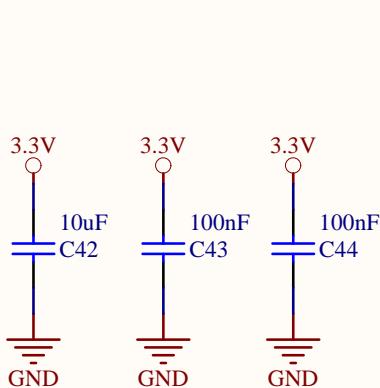
Size	Number	Revision
C		
Date: 12/2/2019	Sheet 1 of 41	Drawn By: Kace Chandler
File: C:\Users\...\Main.SchDoc		

1 2 3 4 5 6

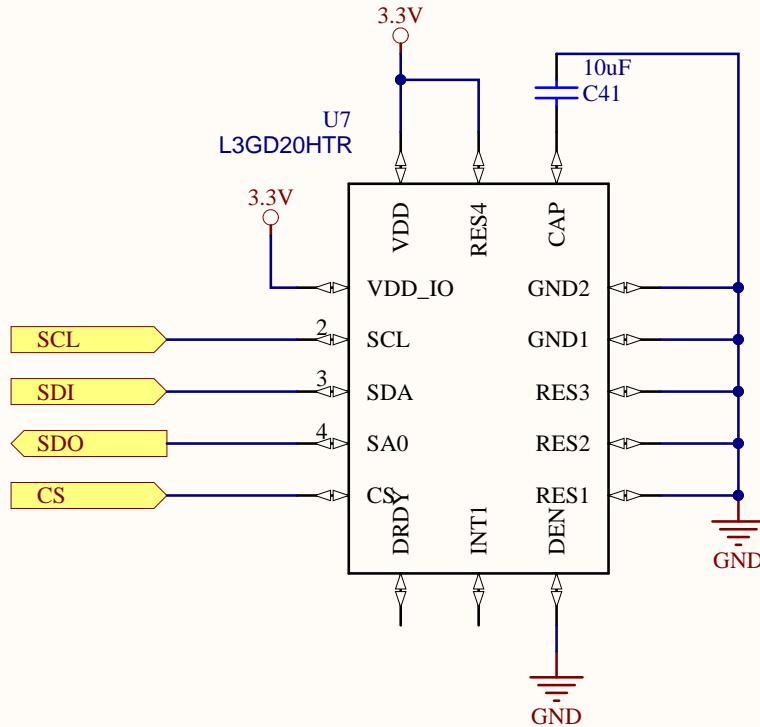


1 2 3 4 5 6

A



B



C

Title		
Gyroscope		
Size	Number	Revision
A		
Date:	12/2/2019	Sheet 3 of 41
File:	C:\Users\..\Gyroscope.SchDoc	Drawn By: Kace Chandler

1 2 3 4 5 6

1 2 3 4 5 6

A

B

C

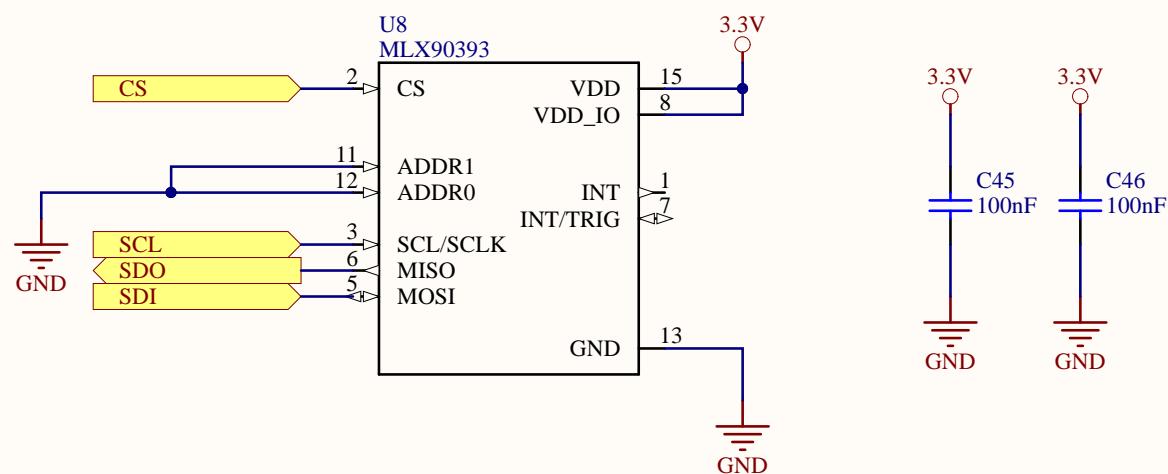
D

A

B

C

D



Title		
Size	Number	Revision
A		
Date: 12/2/2019	Sheet 4 of 41	Drawn By: Kace Chandler
File: C:\Users\..\Magnetometer.SchDoc		

1 2 3 4 5 6

1 2 3 4 5 6

A

B

C

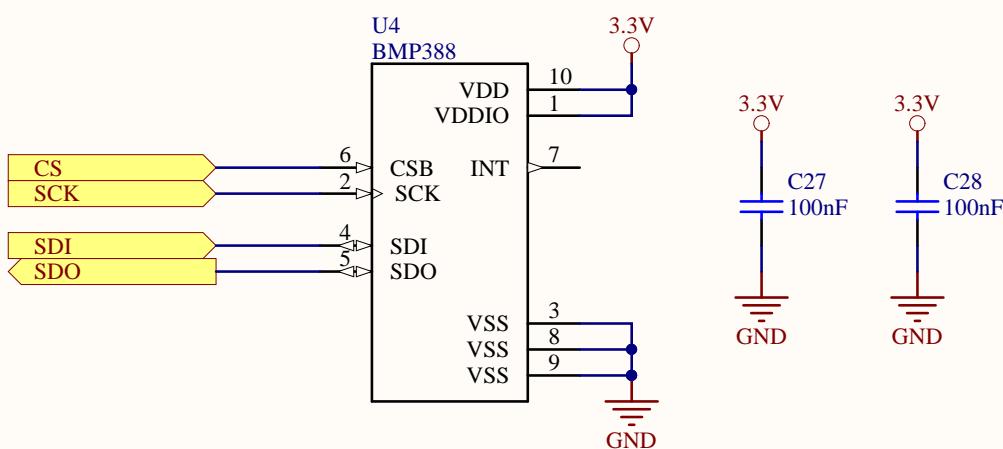
D

A

B

C

D



Title <b>Barometer</b>		
Size	Number	Revision
A		
Date: 12/2/2019	Sheet 5 of 41	Drawn By: Kace Chandler
File: C:\Users\.\Barometer.SchDoc		

1 2 3 4 5 6

A

A

B

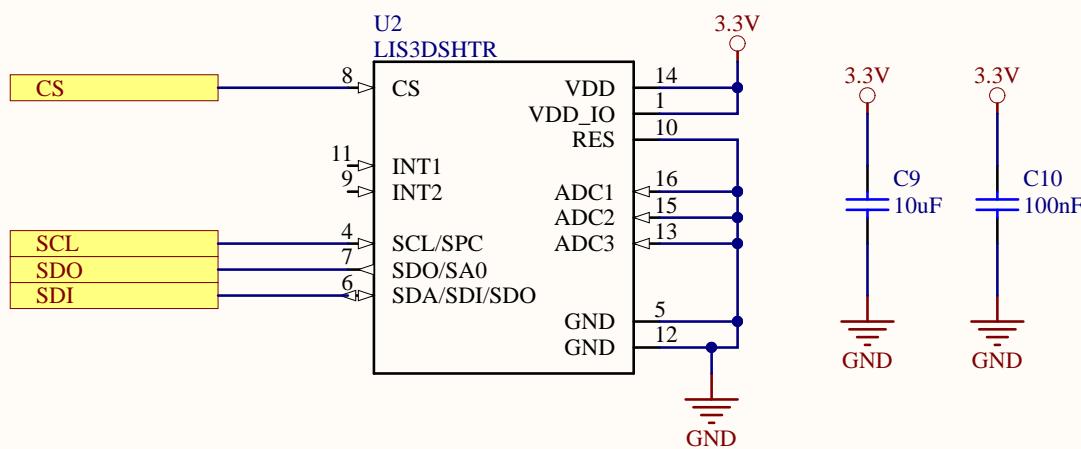
B

C

C

D

D



## Title

## Accelerometer

Size

A

Number

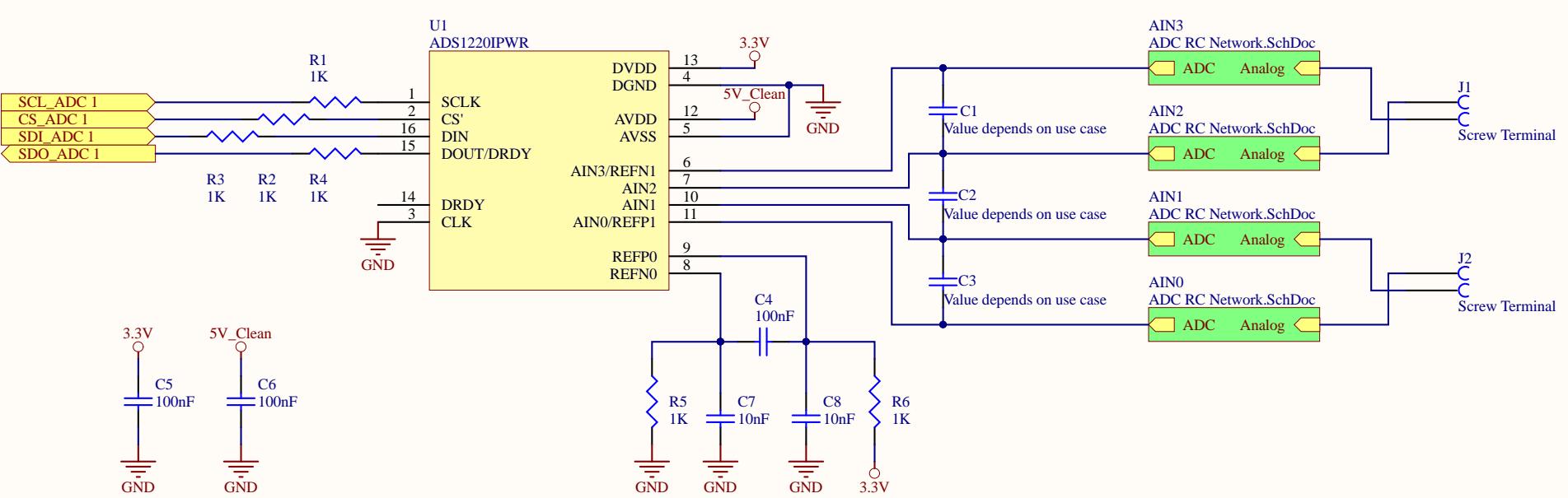
Revision

Date: 12/2/2019

Sheet 6 of 41

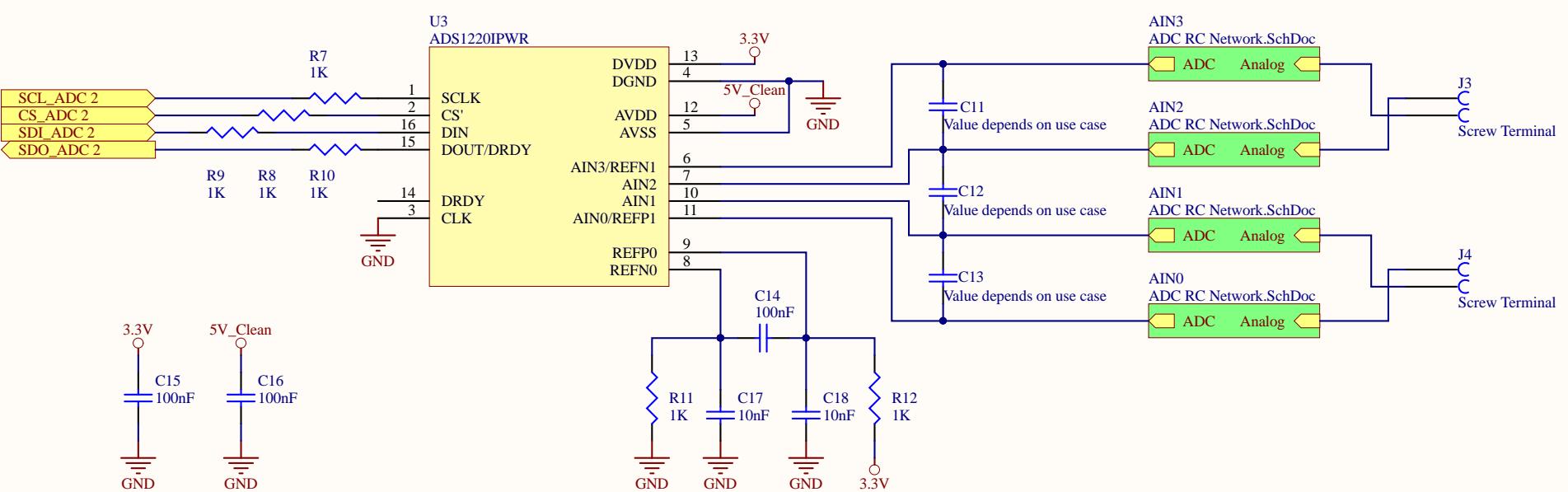
File: C:\Users\..\Accelerometer.SchDoc

Drawn By: Kace Chandler



Title		
Size	Number	Revision
A		
Date: 12/2/2019	Sheet 7.1 of 41	Drawn By: Kace Chandler
File: C:\Users\..\ADC.SchDoc		

1 2 3 4 5 6



Title		
Size	Number	Revision
A		
Date: 12/2/2019	Sheet 7.2 of 41	
File: C:\Users\..\ADC.SchDoc	Drawn By: Kace Chandler	

1 2 3 4 5 6

1 2 3 4 5 6

A

A

B

B

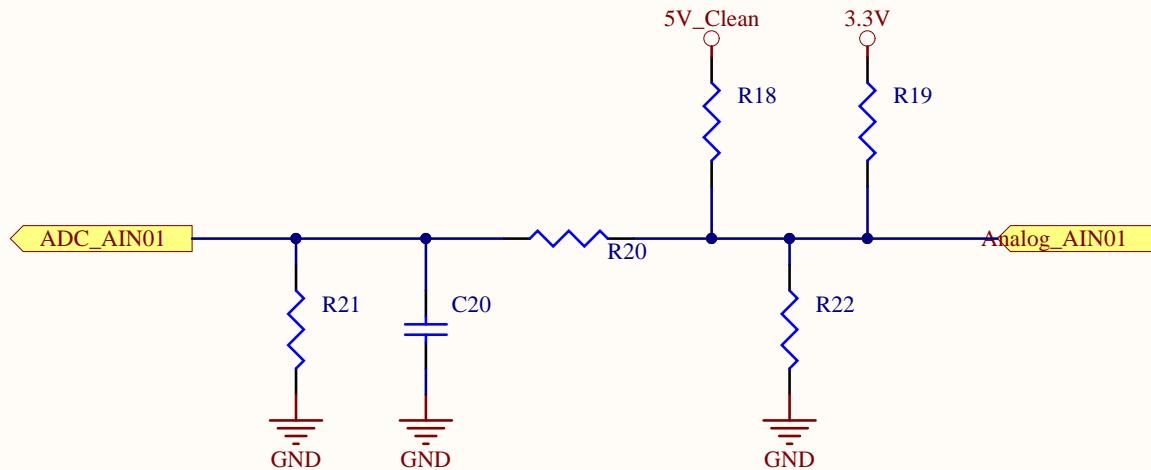
C

C

D

D

Component values all depend on use case  
Components will need to be omitted for any use case



Title

## ADC Input Network

Size	Number	Revision
A		
Date:	12/2/2019	Sheet 8.1df 41
File:	C:\Users\..\ADC RC Network.SchDoc	Drawn By: Kace Chandler

1 2 3 4 5 6

1	2	3	4	5	6
---	---	---	---	---	---

A

A

B

B

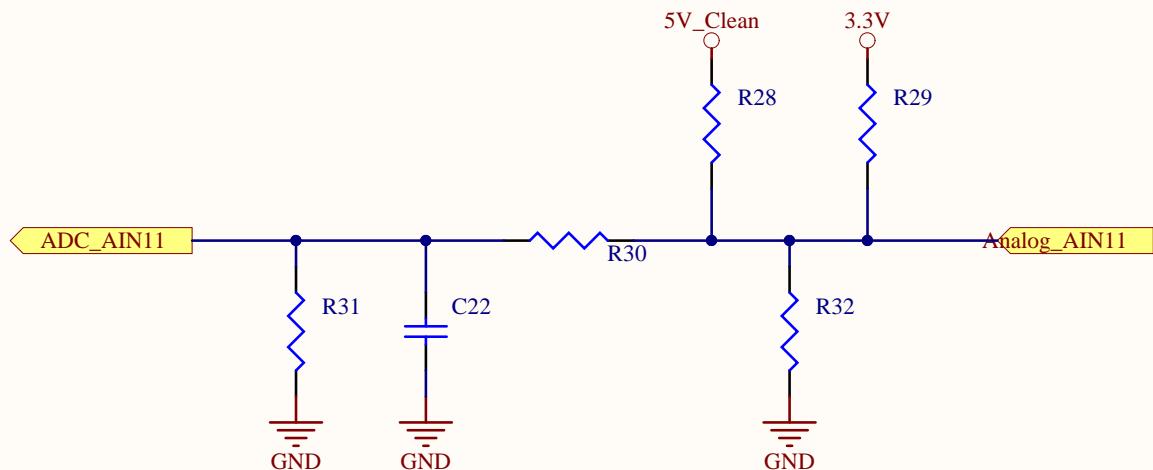
C

C

D

D

Component values all depend on use case  
Components will need to be omitted for any use case



Title <b>ADC Input Network</b>		
Size A	Number	Revision
Date: 12/2/2019	Sheet 8.1 of 41	
File: C:\Users\..\ADC RC Network.SchDoc	Drawn By:	Kace Chandler

1	2	3	4	5	6
---	---	---	---	---	---

1	2	3	4	5	6
---	---	---	---	---	---

A

A

B

B

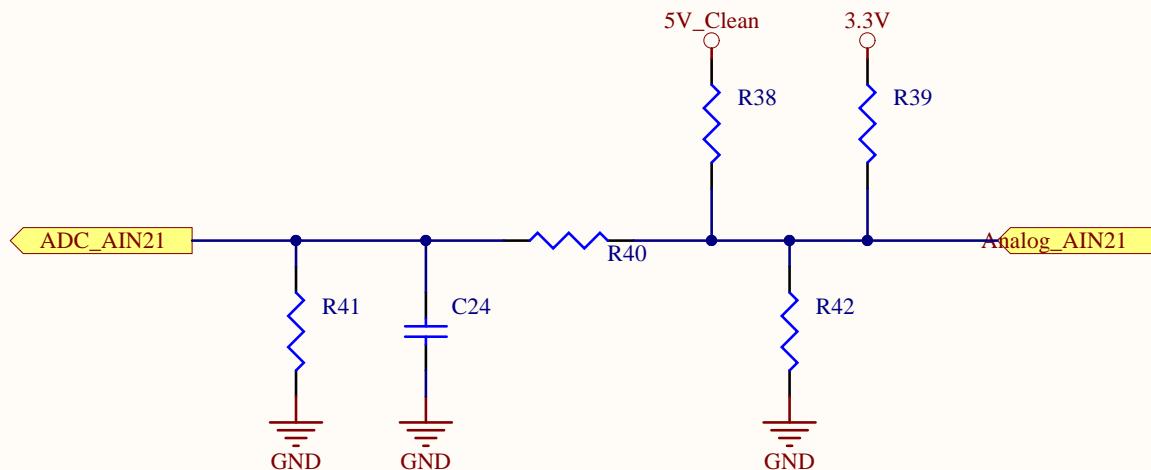
C

C

D

D

Component values all depend on use case  
Components will need to be omitted for any use case



Title

## ADC Input Network

Size	Number	Revision
A		
Date:	12/2/2019	Sheet 8.1 of 41
File:	C:\Users\..\ADC RC Network.SchDoc	Drawn By: Kace Chandler

1	2	3	4	5	6
---	---	---	---	---	---

1 2 3 4 5 6

A

A

B

B

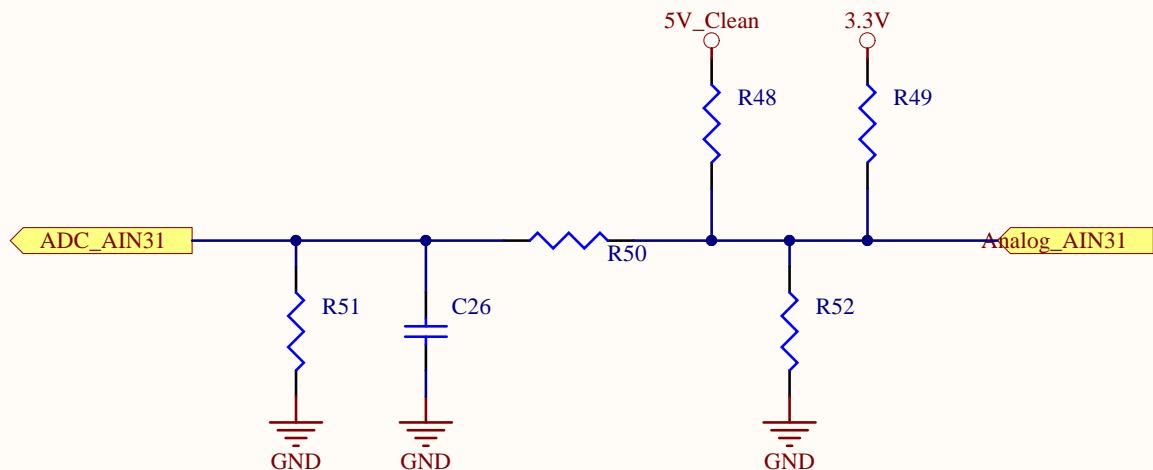
C

C

D

D

Component values all depend on use case  
Components will need to be omitted for any use case



Title

## ADC Input Network

Size

A

Number

Revision

Date: 12/2/2019

Sheet 8.1 of 41

File: C:\Users\...\ADC RC Network.SchDoc

Drawn By: Kace Chandler

1 2 3 4 5 6

1	2	3	4	5	6
---	---	---	---	---	---

A

A

B

B

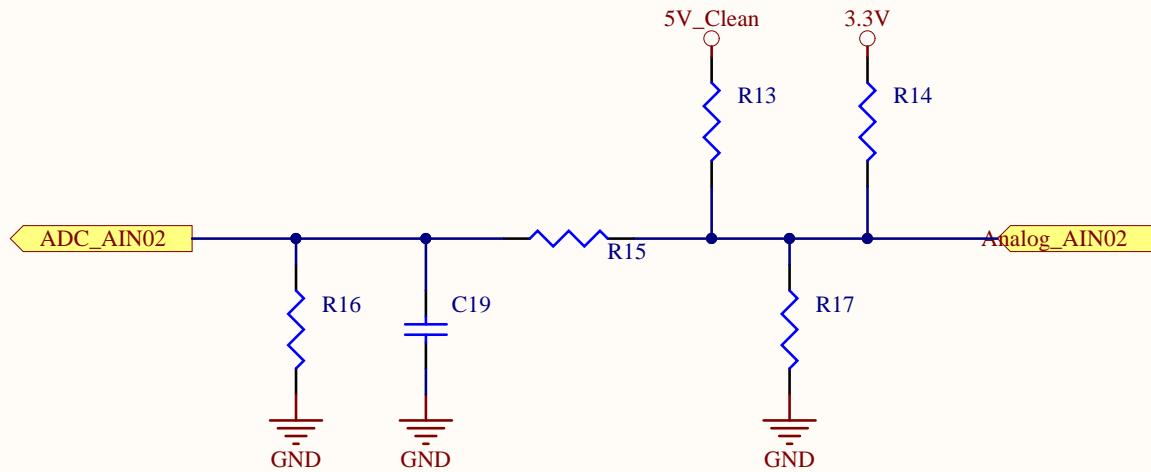
C

C

D

D

Component values all depend on use case  
Components will need to be omitted for any use case



Title <b>ADC Input Network</b>		
Size A	Number	Revision
Date: 12/2/2019	Sheet 8.2df	41
File: C:\Users\..\ADC RC Network.SchDoc	Drawn By:	Kace Chandler

1	2	3	4	5	6
---	---	---	---	---	---

1	2	3	4	5	6
---	---	---	---	---	---

A

A

B

B

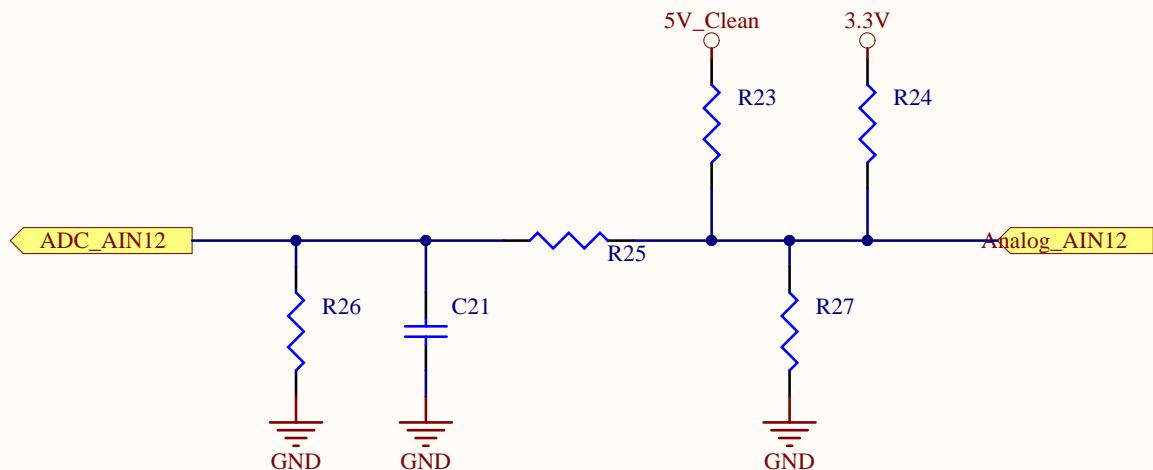
C

C

D

D

Component values all depend on use case  
Components will need to be omitted for any use case



Title <b>ADC Input Network</b>		
Size A	Number	Revision
Date: 12/2/2019	Sheet 8.20F	41
File: C:\Users\..\ADC RC Network.SchDoc	Drawn By:	Kace Chandler

1	2	3	4	5	6
---	---	---	---	---	---

1 2 3 4 5 6

A

A

B

B

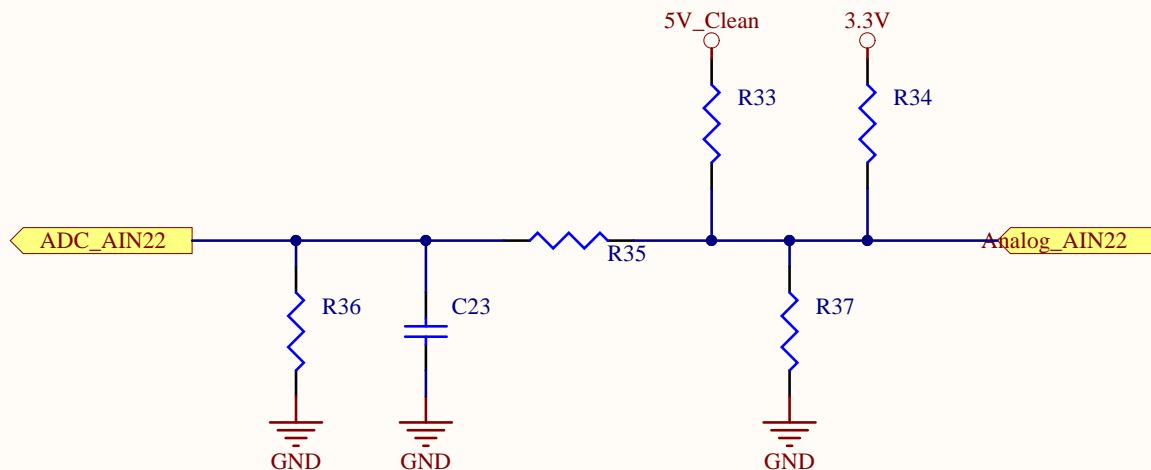
C

C

D

D

Component values all depend on use case  
Components will need to be omitted for any use case



Title

## ADC Input Network

Size	Number	Revision
A		
Date:	12/2/2019	Sheet 8.2 of 41
File:	C:\Users\..\ADC RC Network.SchDoc	Drawn By: Kace Chandler

1 2 3 4 5 6

1	2	3	4	5	6
---	---	---	---	---	---

A

A

B

B

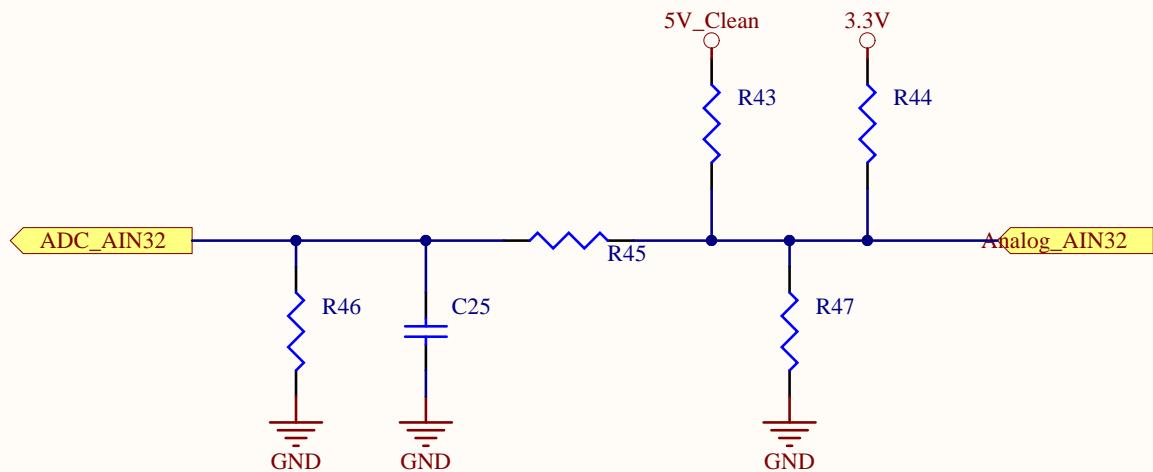
C

C

D

D

Component values all depend on use case  
Components will need to be omitted for any use case



Title <b>ADC Input Network</b>		
Size A	Number	Revision
Date: 12/2/2019	Sheet 8.2 of 41	
File: C:\Users\..\ADC RC Network.SchDoc	Drawn By:	Kace Chandler

1	2	3	4	5	6
---	---	---	---	---	---

1	2	3	4	5	6
---	---	---	---	---	---

A

A

B

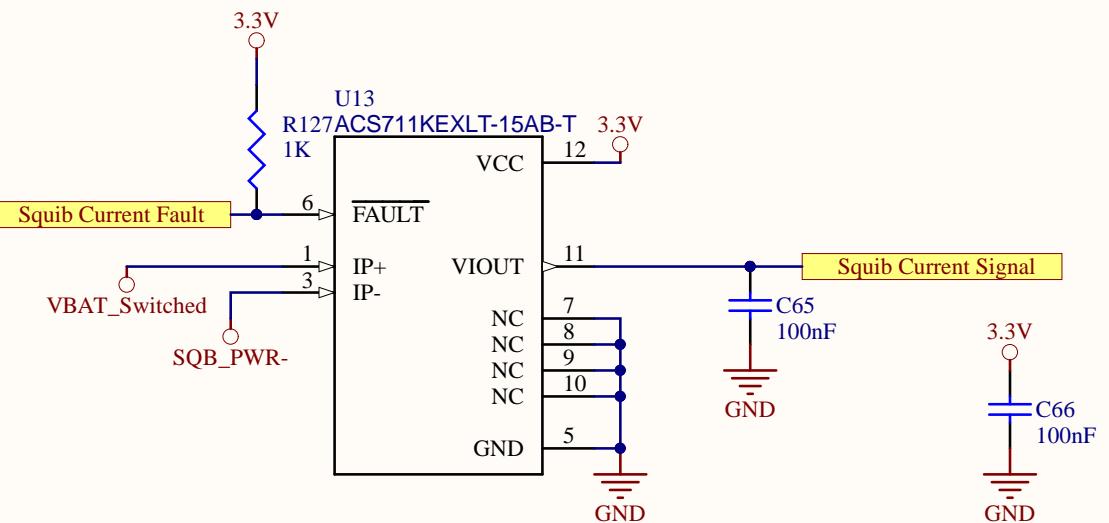
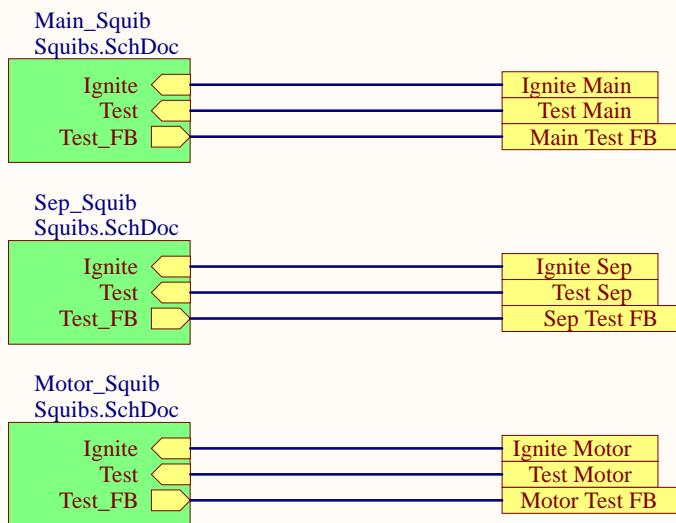
B

C

C

D

D



Title

# Squib Management

Size	Number	Revision
A		
Date:	12/2/2019	Sheet 9 of 41
File:	C:\Users\...\Squib_Managment.SchDoc	Drawn By: Kace Chandler

1	2	3	4	5	6
---	---	---	---	---	---

1 2 3 4 5 6

A

A

B

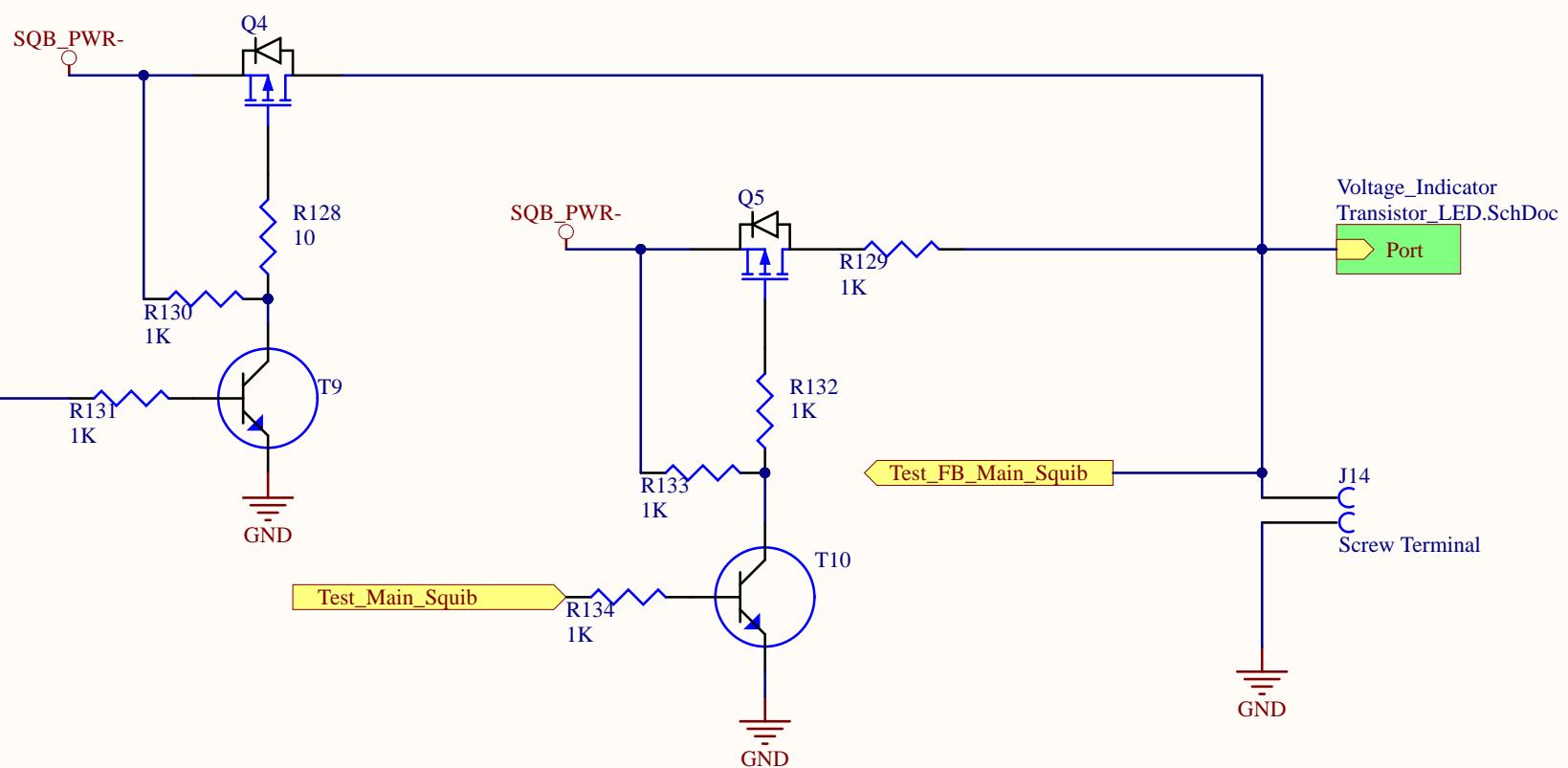
B

C

C

D

D



Title  
Single Squib Connection

Size	Number	Revision
A		
Date: 12/2/2019	Sheet 10.1 of 41	
File: C:\Users\...\Squibs.SchDoc	Drawn By: Kace Chandler	

1 2 3 4 5 6

1 2 3 4 5 6

A

A

B

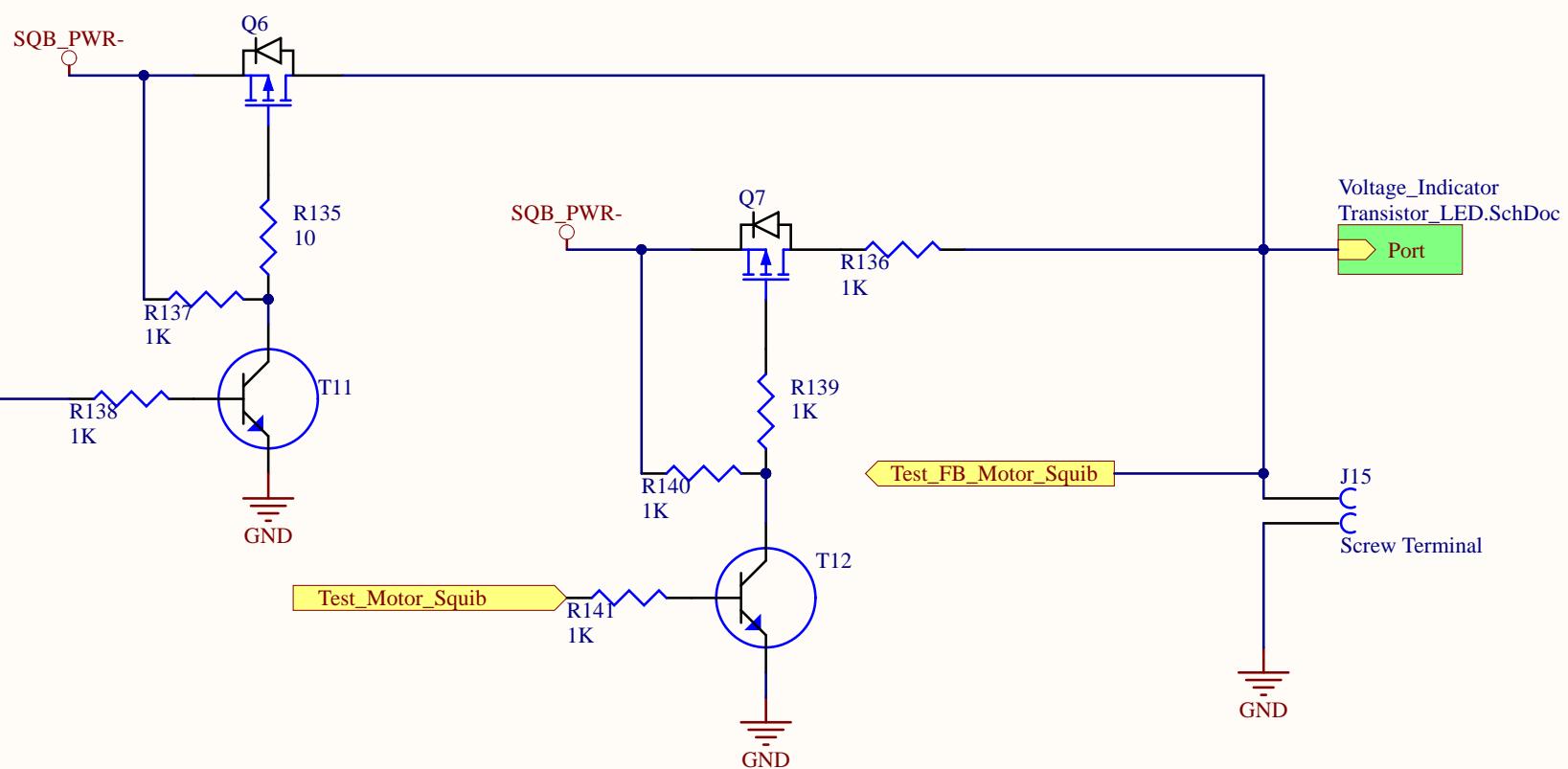
B

C

C

D

D



Title **Single Squib Connection**

Size	Number	Revision
A		
Date:	12/2/2019	Sheet 10.2 of 41
File:	C:\Users\...\Squibs.SchDoc	Drawn By: Kace Chandler

1 2 3 4 5 6

1 2 3 4 5 6

A

A

B

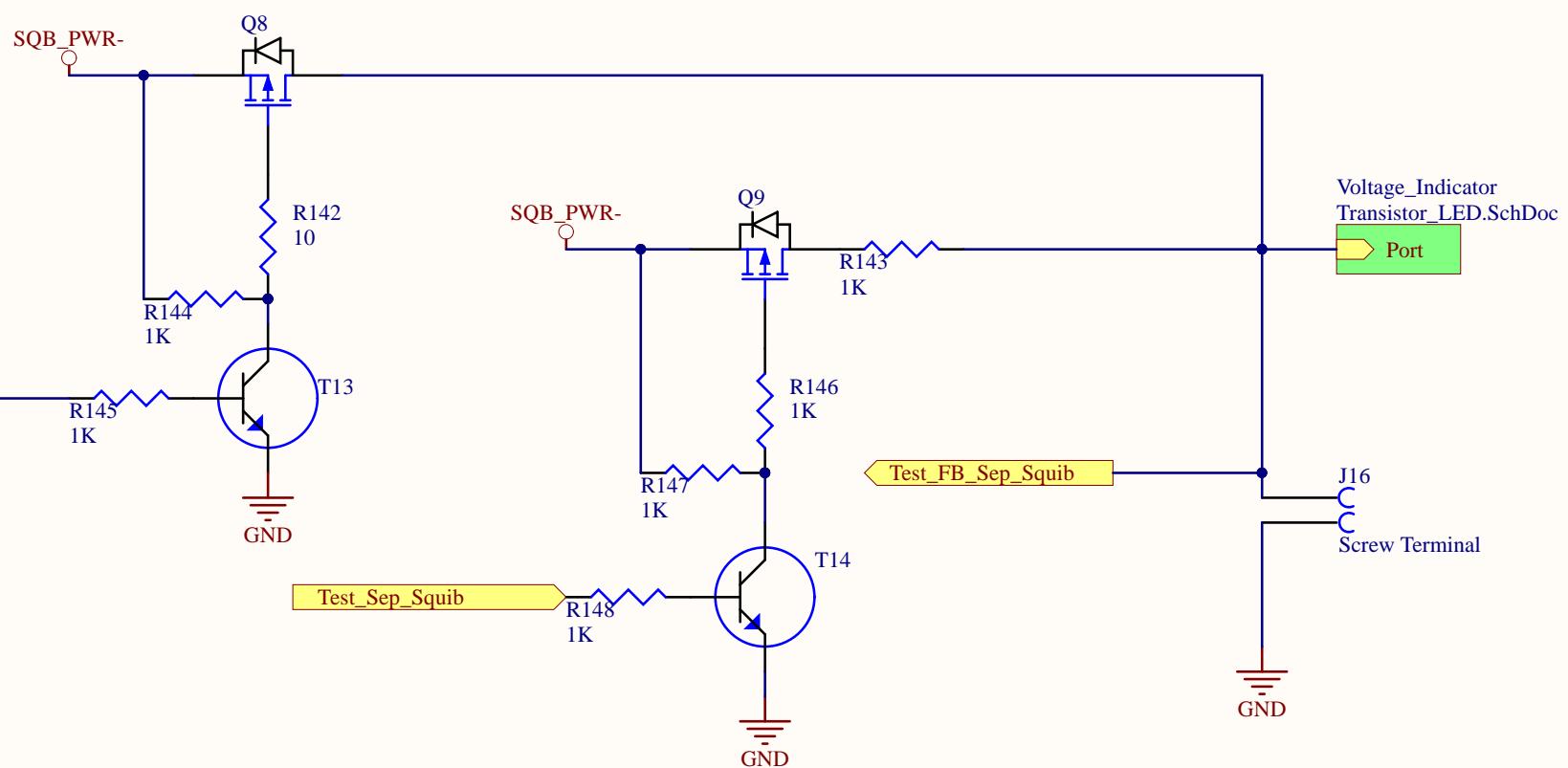
B

C

C

D

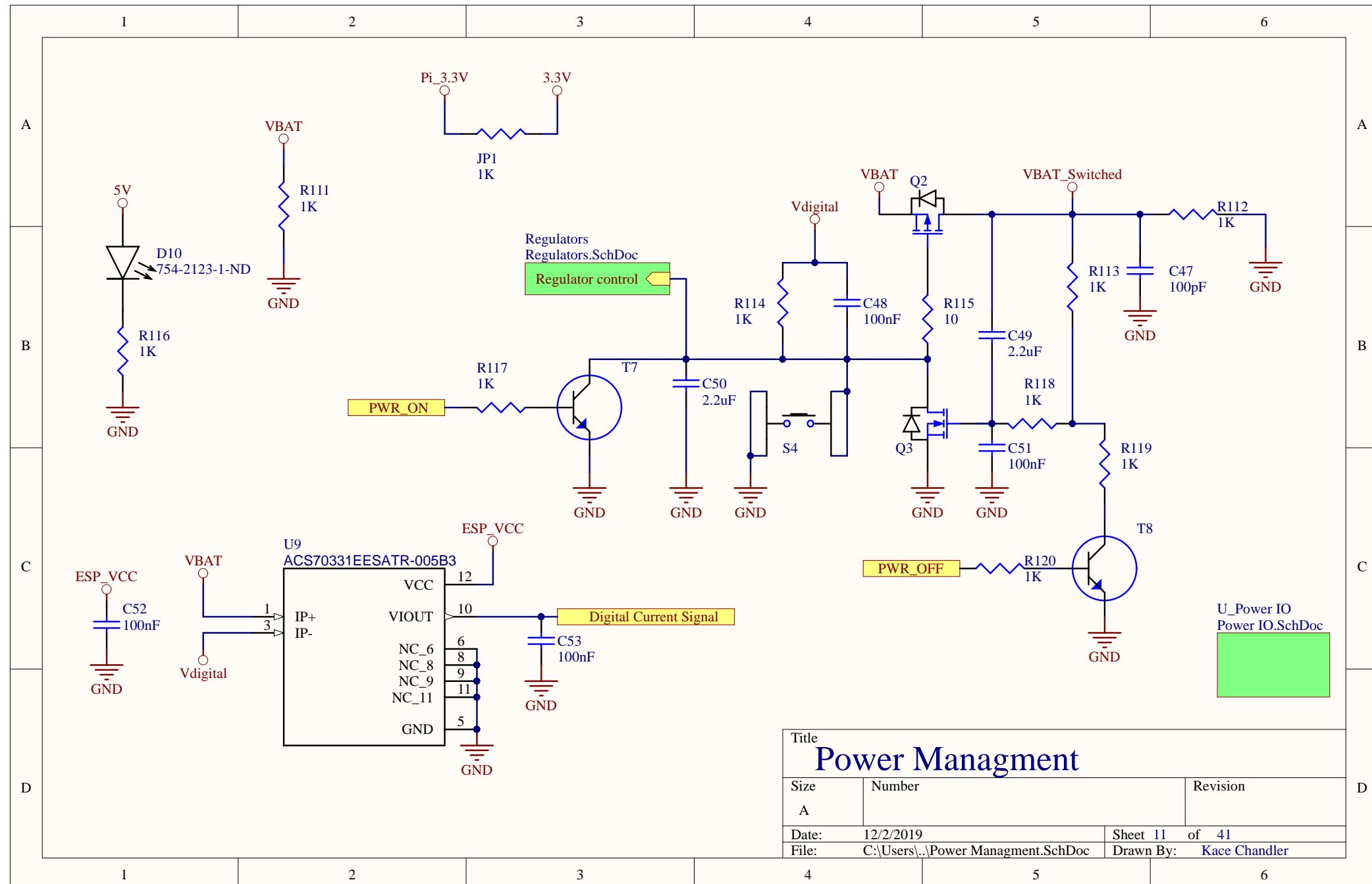
D



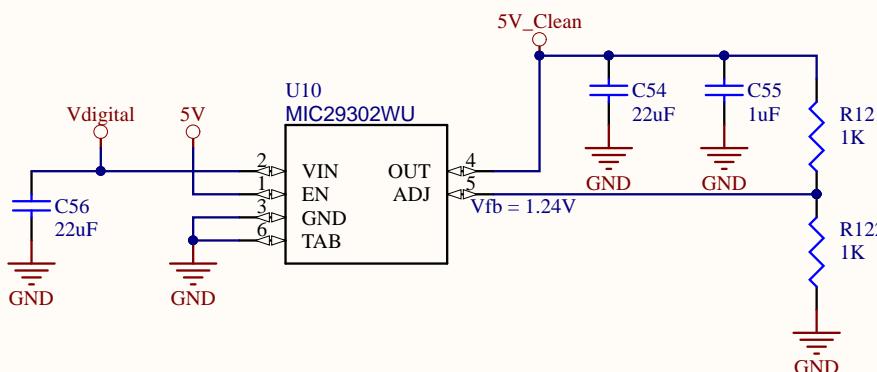
Title **Single Squib Connection**

Size	Number	Revision
A		
Date:	12/2/2019	Sheet 10.3 of 41
File:	C:\Users\...\Squibs.SchDoc	Drawn By: Kace Chandler

1 2 3 4 5 6

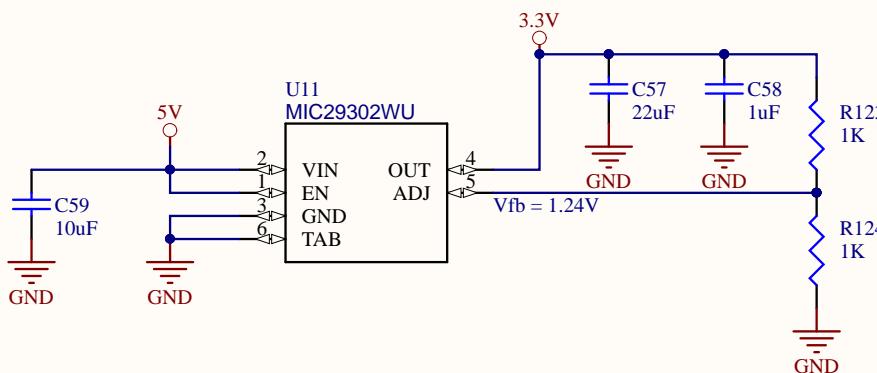


A



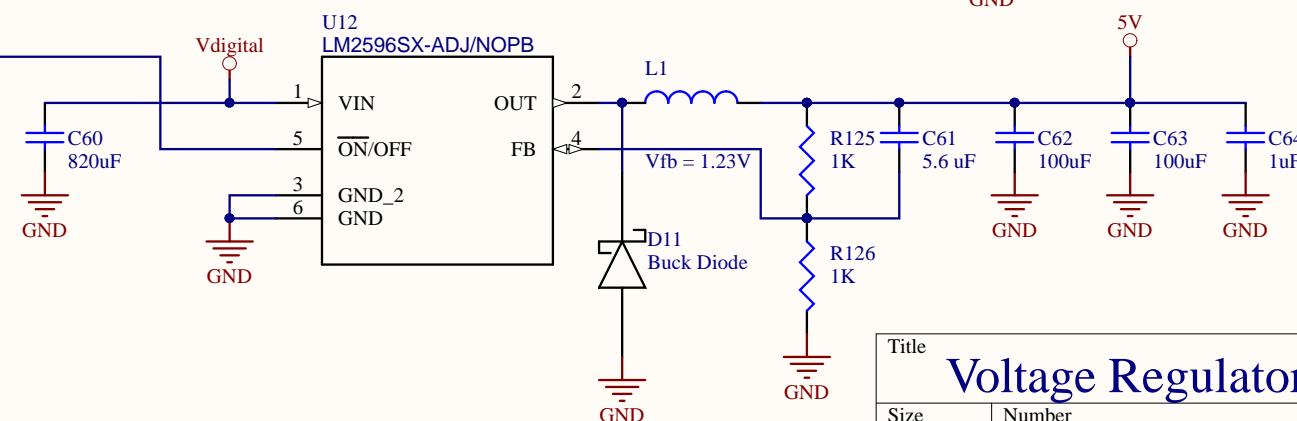
A

B



B

C



C

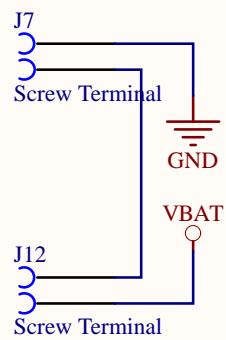
D

## Title: Voltage Regulators

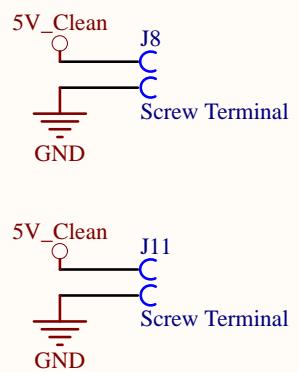
Size	Number	Revision
A2		
Date:	12/2/2019	Sheet 12 of 41
File:	C:\Users\.\Regulators.SchDoc	Drawn By: Kace Chandler

1	2	3	4	5	6
---	---	---	---	---	---

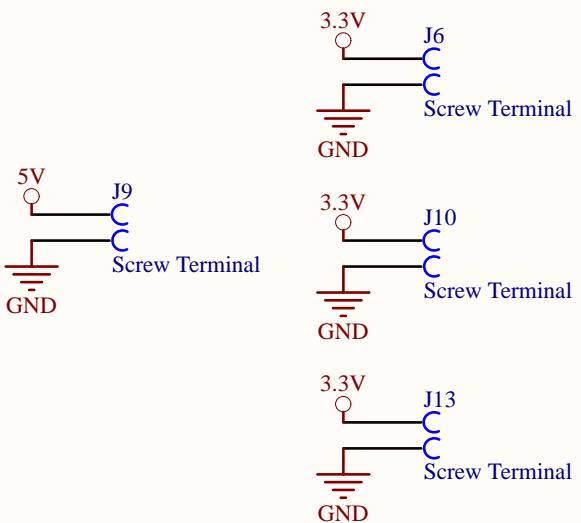
A



B



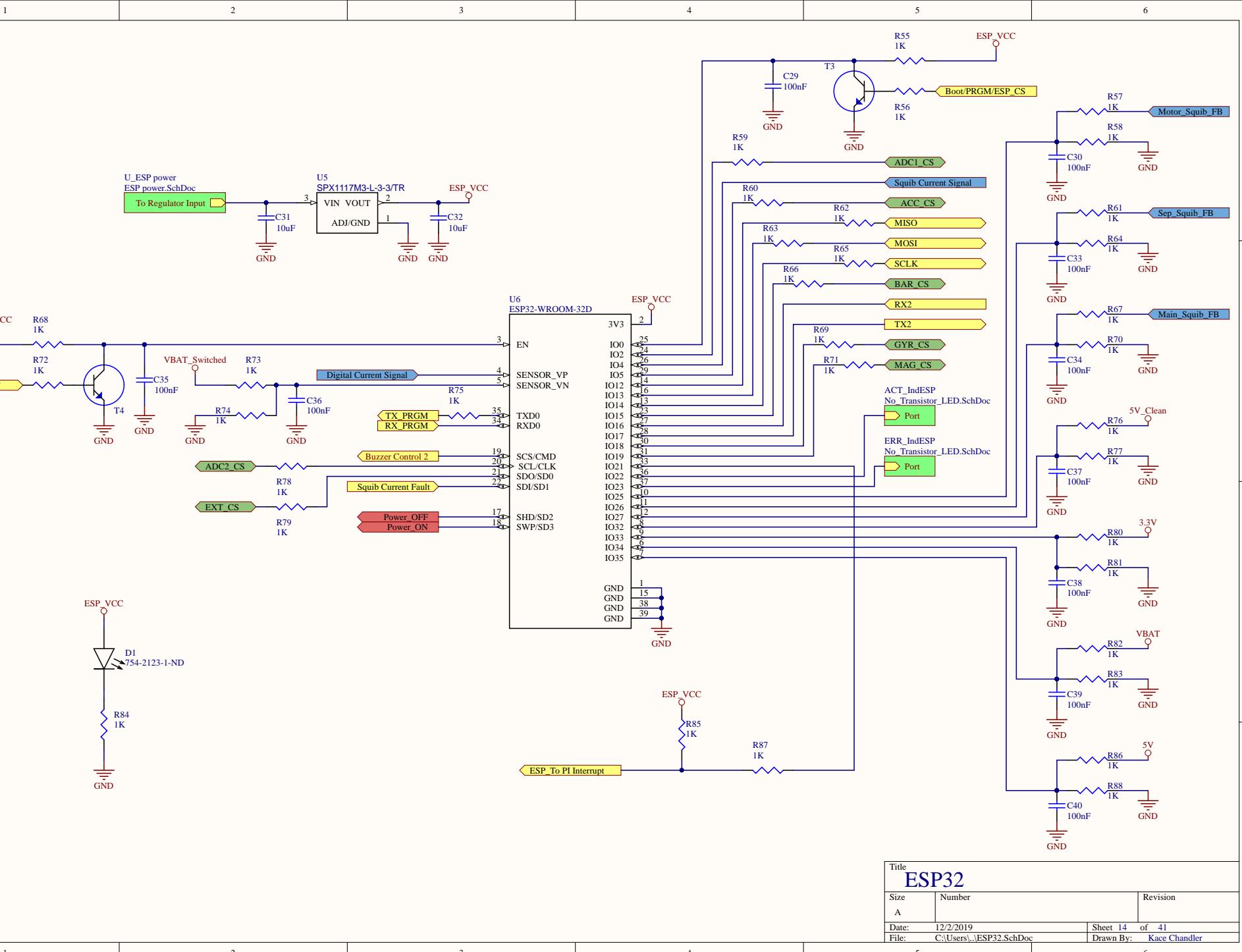
C



D

Title <b>Power Input/Output</b>		
Size A2	Number	Revision
Date: 12/2/2019	Sheet 13 of 41	
File: C:\Users\..\Power IO.SchDoc	Drawn By: Kace Chandler	

1	2	3	4	5	6
---	---	---	---	---	---



Title		
Size	Number	Revision
A		
Date: 12/2/2019	Sheet 14 of 41	Drawn By: Kace Chandler
File: C:\Users...\ESP32.SchDoc		

1 2 3 4 5 6

A

A

B

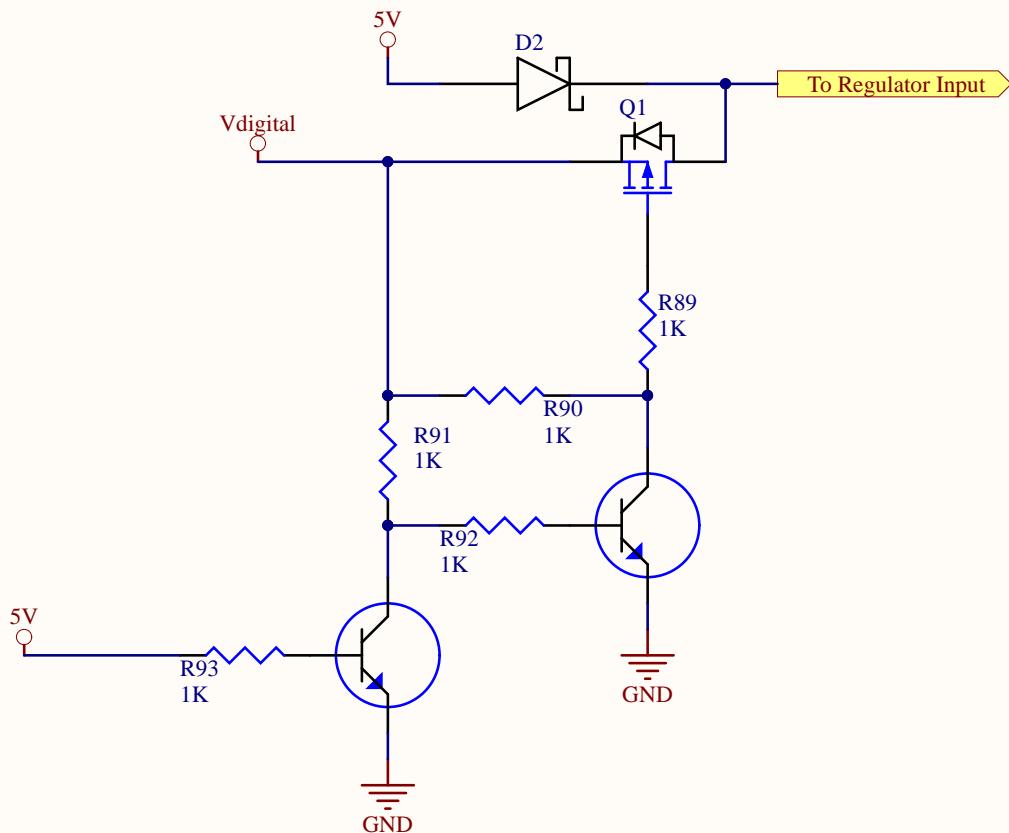
B

C

C

D

D



Title ESP Power Management		
Size A	Number	Revision
Date: 12/2/2019	Sheet 15 of 41	
File: C:\Users\..\ESP power.SchDoc	Drawn By: Kace Chandler	

1 2 3 4 5 6

A

A

B

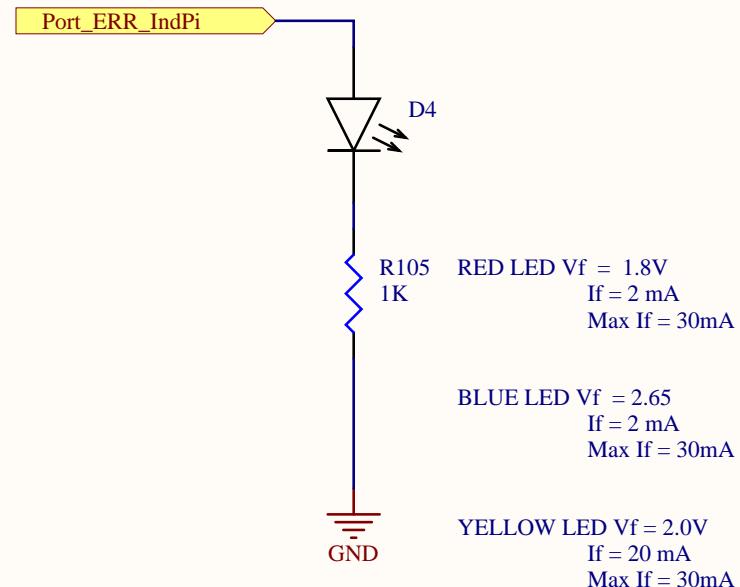
B

C

C

D

D



## Title

**LED**

Size

A

Number

Revision

Date: 12/2/2019

Sheet 16 of 41

File: C:\Users\..\No\_Transistor\_LED.SchDoc Drawn By: Kace Chandler

A

A

B

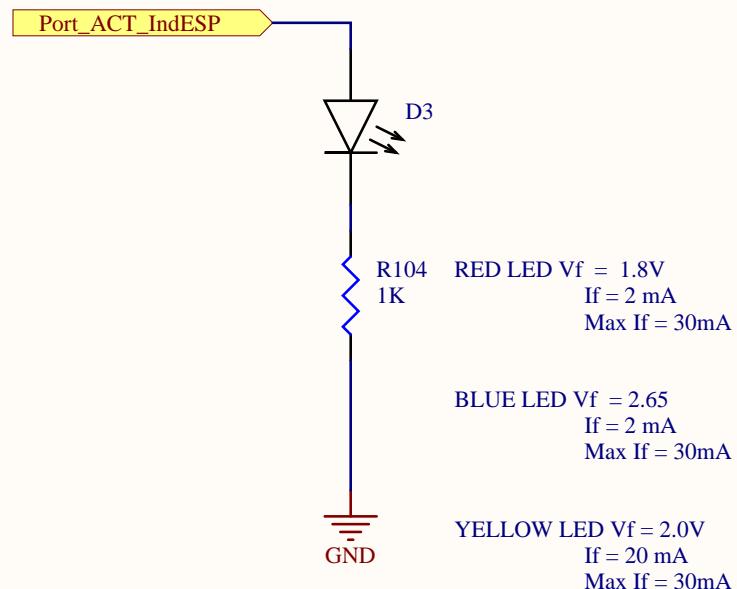
B

C

C

D

D



## Title

**LED**

Size

A

Number

Revision

Date: 12/2/2019

Sheet 16.1 of 41

File: C:\Users\..\No\_Transistor\_LED.SchDoc Drawn By: Kace Chandler

A

A

B

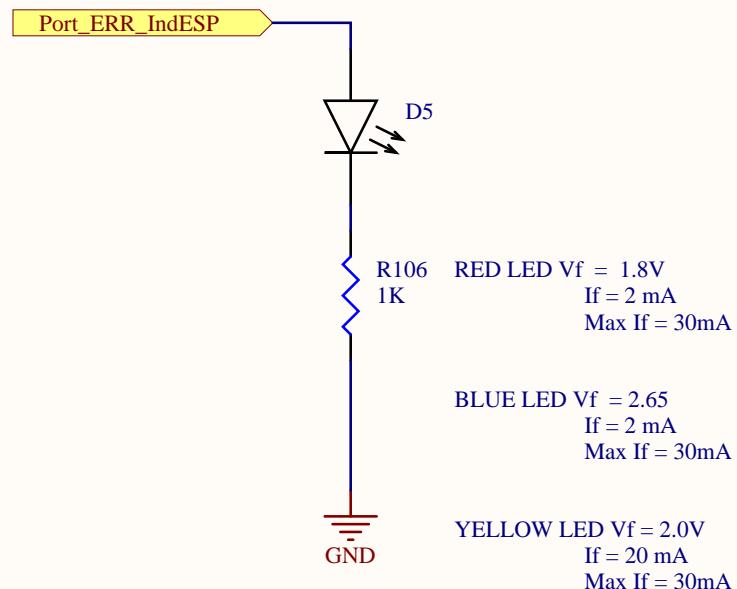
B

C

C

D

D



## Title

**LED**

Size

A

Number

Revision

Date: 12/2/2019

Sheet 16.2 of 41

File: C:\Users\..\No\_Transistor\_LED.SchDoc Drawn By: Kace Chandler

1 2 3 4 5 6

A

A

B

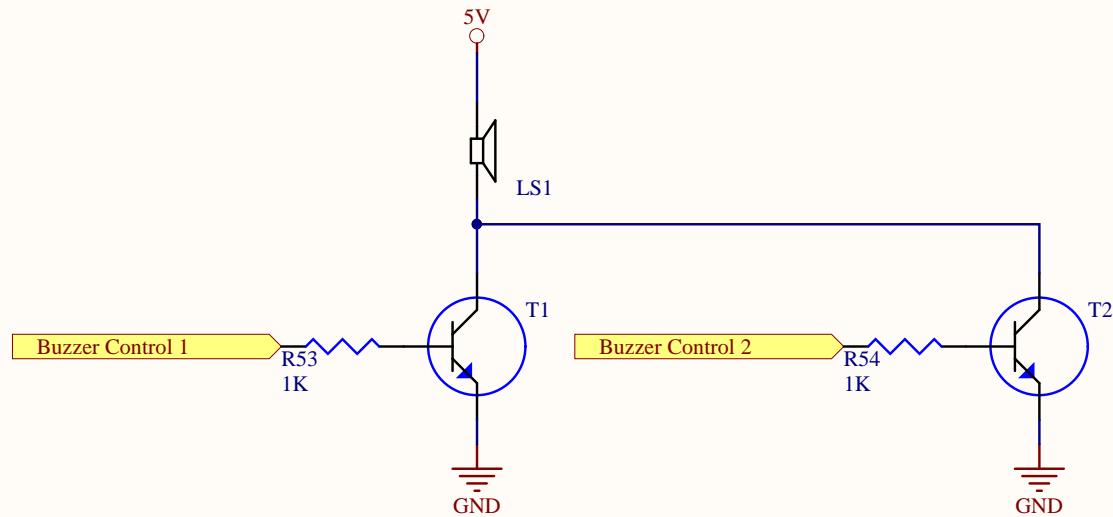
B

C

C

D

D



Title

# Buzzer

Size	Number	Revision
A		
Date:	12/2/2019	Sheet 17 of 41
File:	C:\Users\...\Buzzer.SchDoc	Drawn By: Kace Chandler

1 2 3 4 5 6

A

A

B

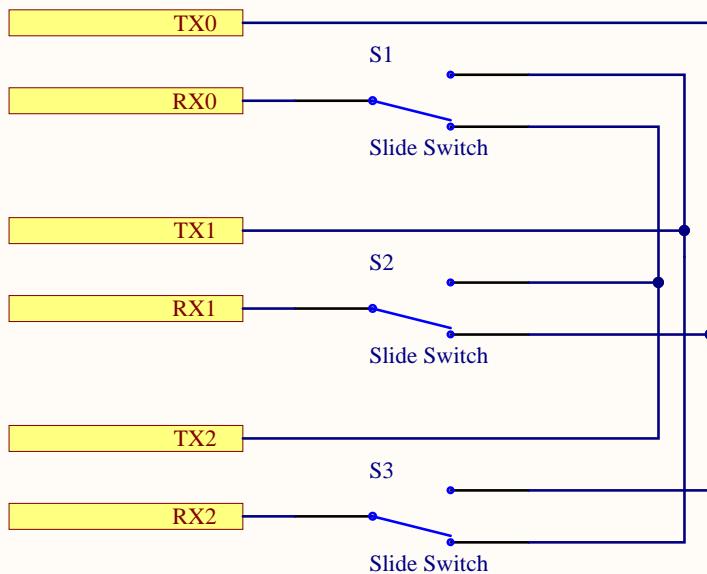
B

C

C

D

D



## Title

**UART Switching**

Size

A

Number

Revision

Date: 12/2/2019

Sheet 18 of 41

File: C:\Users\...\3 way uart switch.SchDoc

Drawn By: Kace Chandler

1 2 3 4 5 6

A

A

B

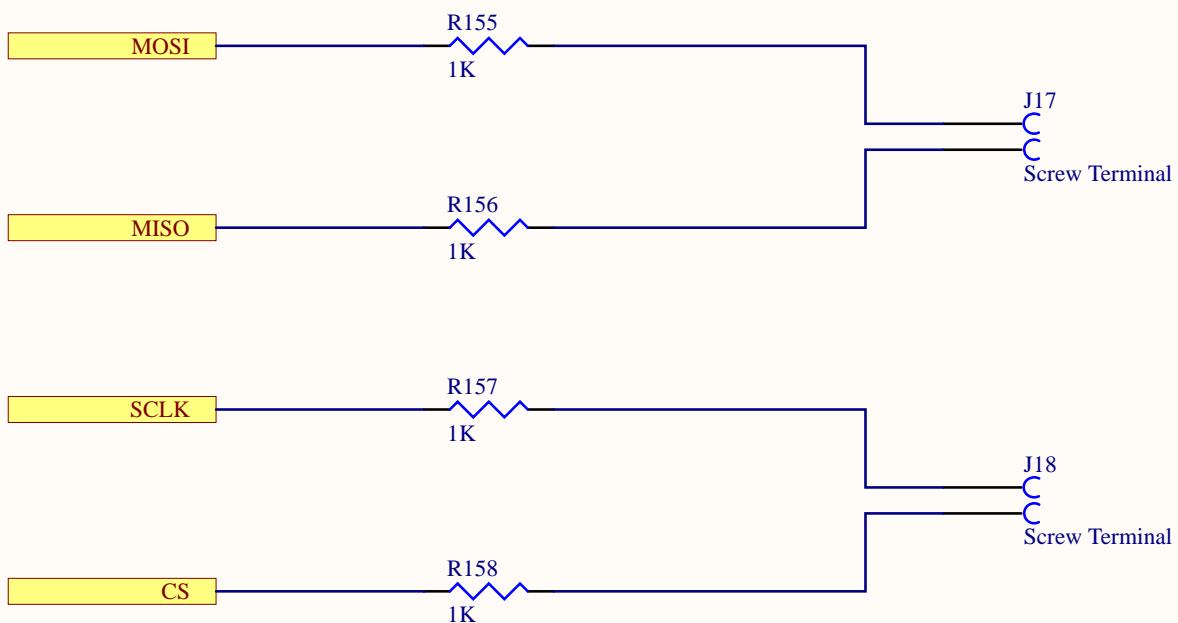
B

C

C

D

D



Title

## SPI Output

Size

A

Number

Revision

Date: 12/2/2019

Sheet 19 of 41

File: C:\Users\...\SPI Output.SchDoc

Drawn By: Kace Chandler

1 2 3 4 5 6

1 2 3 4 5 6

A

A

B

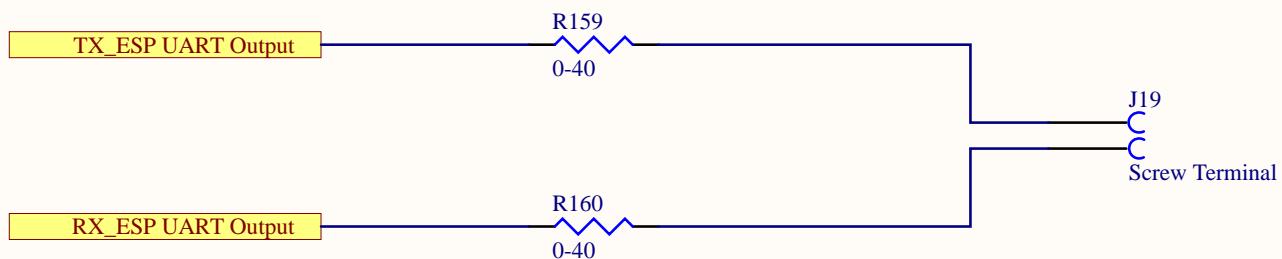
B

C

C

D

D



Title		
UART Output		
Size	Number	Revision
A		
Date:	12/2/2019	Sheet 20.1 of 41
File:	C:\Users\.\UART Output.SchDoc	Drawn By: Kace Chandler

1 2 3 4 5 6

1	2	3	4	5	6
---	---	---	---	---	---

A

A

B

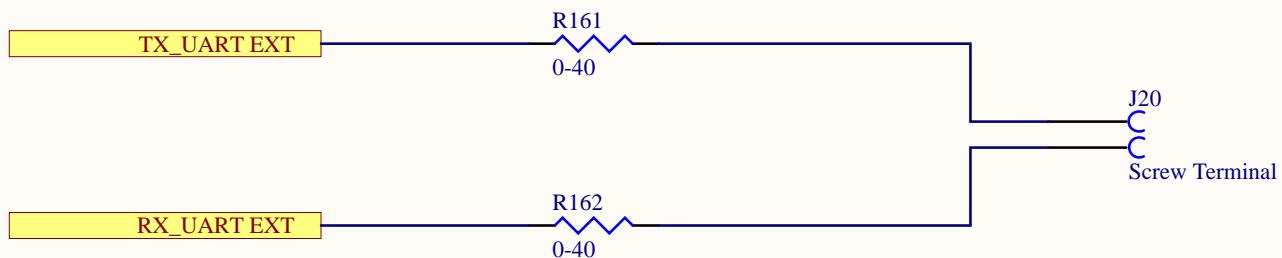
B

C

C

D

D



Title		
Size	Number	Revision
A		
Date: 12/2/2019	Sheet 20.2 of 41	File: C:\Users\.\UART Output.SchDoc Drawn By: Kace Chandler

1	2	3	4	5	6
---	---	---	---	---	---

A

A

B

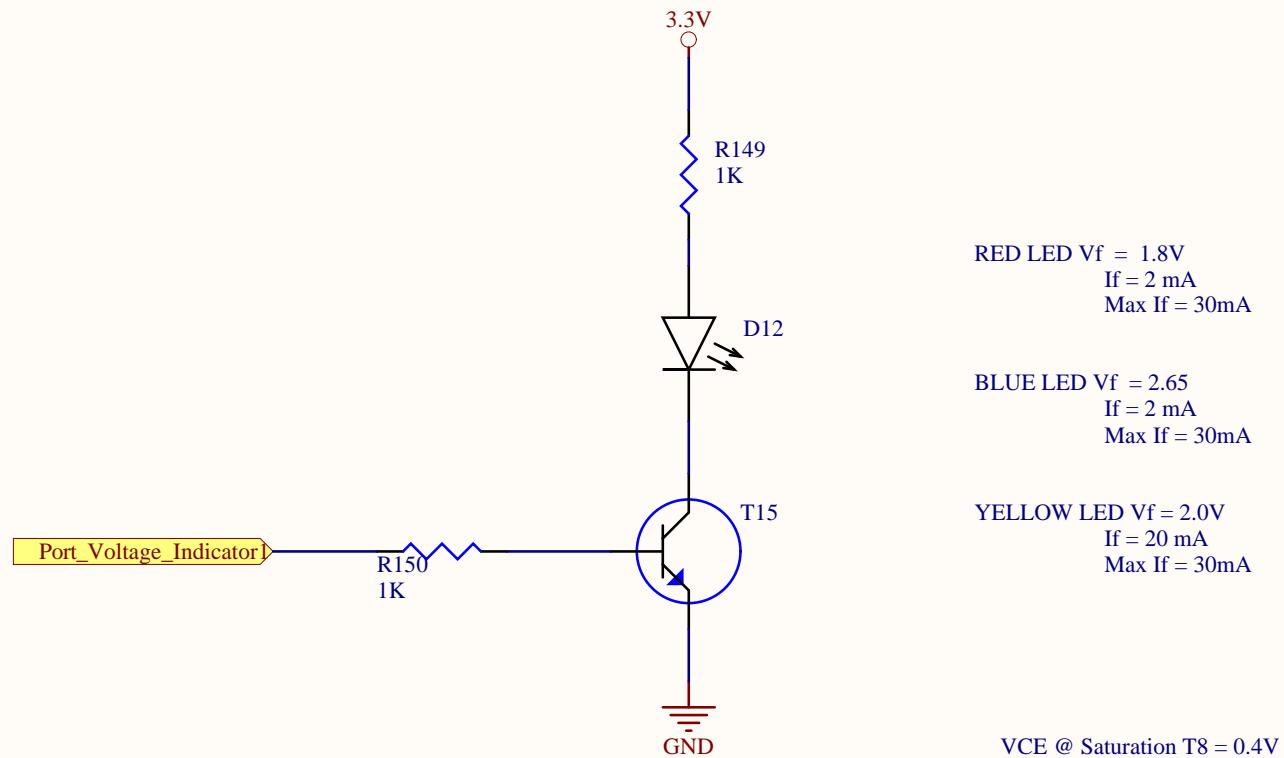
B

C

C

D

D



Title		
Size	Number	Revision
A		
Date:	12/2/2019	Sheet 21.1.1 of 41
File:	C:\Users\.\Transistor_LED.SchDoc	Drawn By: Kace Chandler

A

B

C

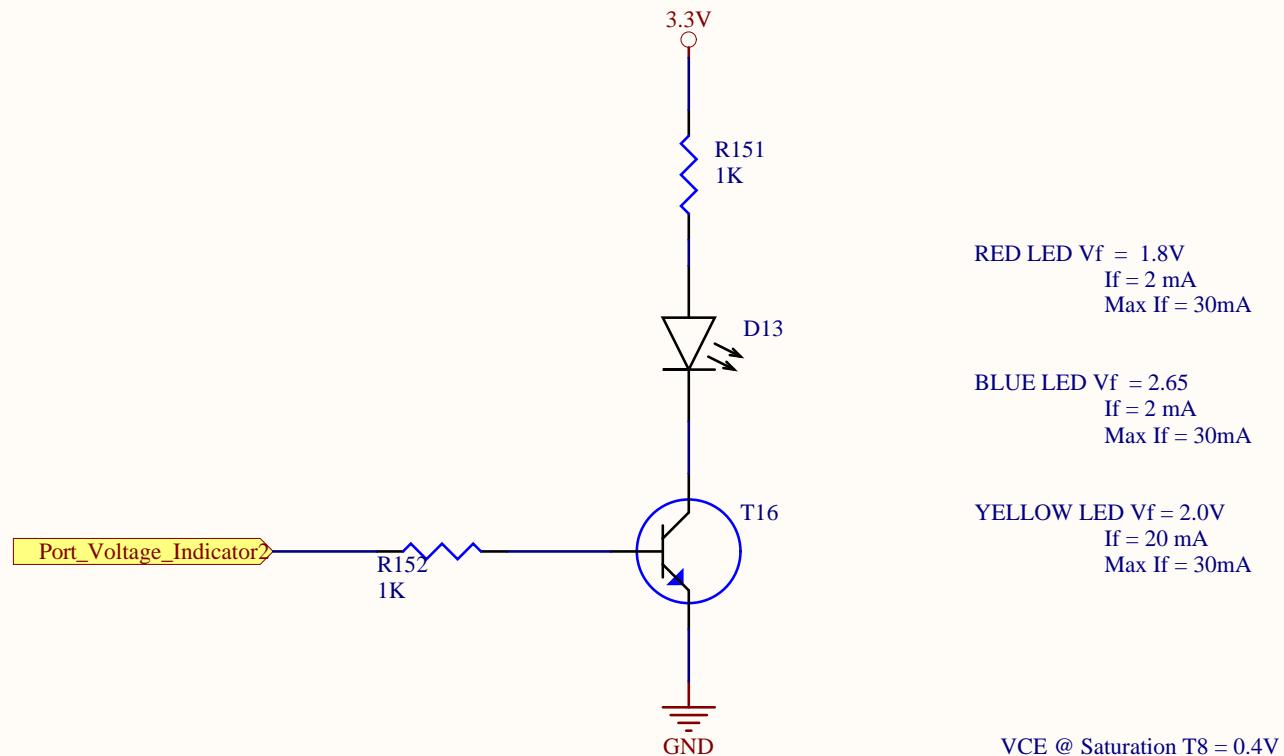
D

A

B

C

D



Title		
Size	Number	Revision
A		
Date:	12/2/2019	Sheet 21.2.lof 41
File:	C:\Users\.\Transistor_LED.SchDoc	Drawn By: Kace Chandler

A

A

B

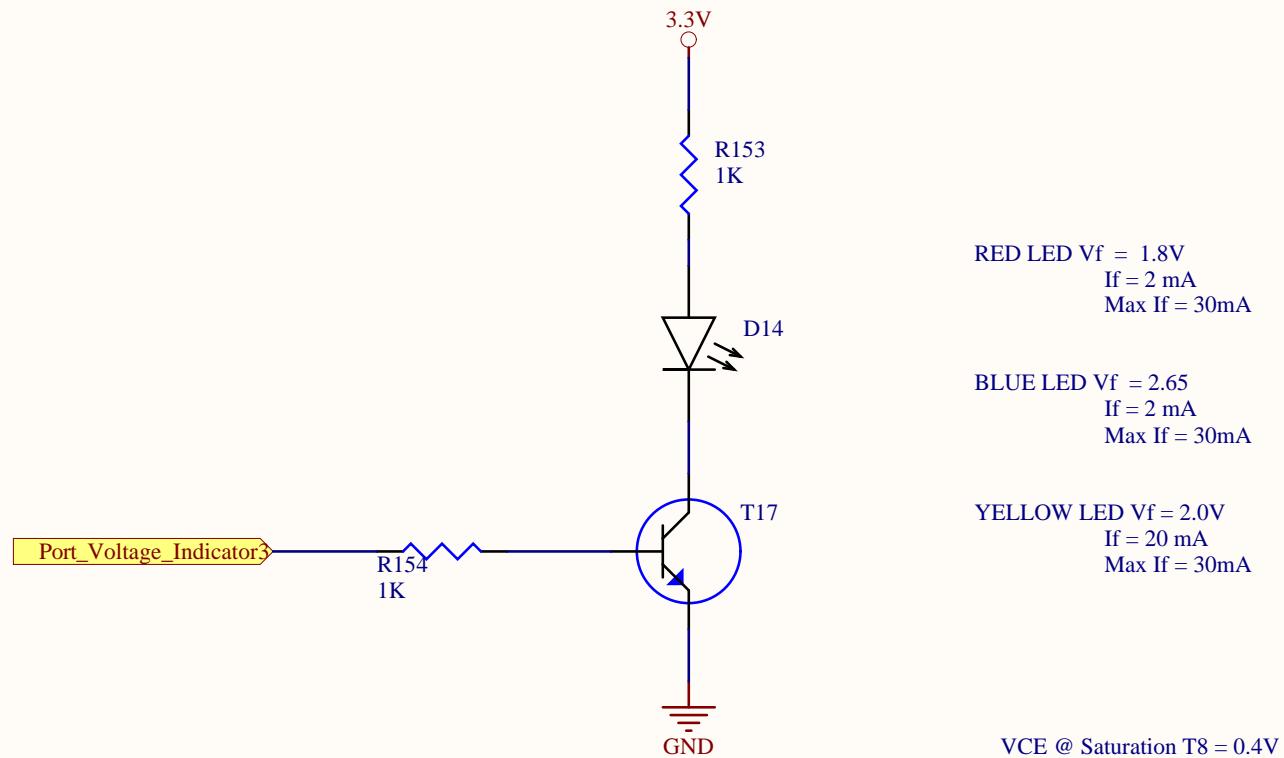
B

C

C

D

D



Title		
Size	Number	Revision
A		
Date:	12/2/2019	Sheet 21.3.1 of 41
File:	C:\Users\.\Transistor_LED.SchDoc	Drawn By: Kace Chandler

1

2

3

4

5

6

A

B

C

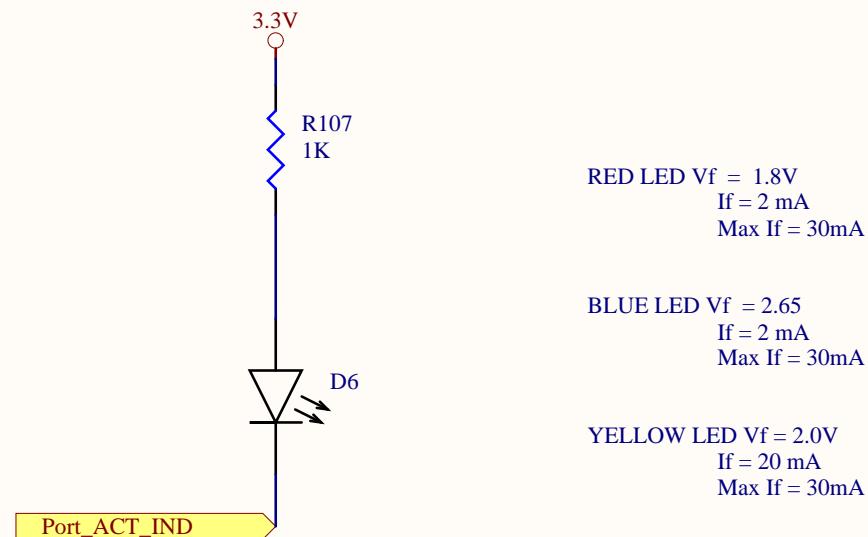
D

A

B

C

D



Title <b>Inverted LED</b>		
Size A	Number	Revision
Date: 12/2/2019	Sheet 22.1 of 41	
File: C:\Users\..\No_Transistor_LED_INV.Sch	Drawn By: Kace Chandler	

1

2

3

4

5

6

1	2	3	4	5	6
---	---	---	---	---	---

A

B

C

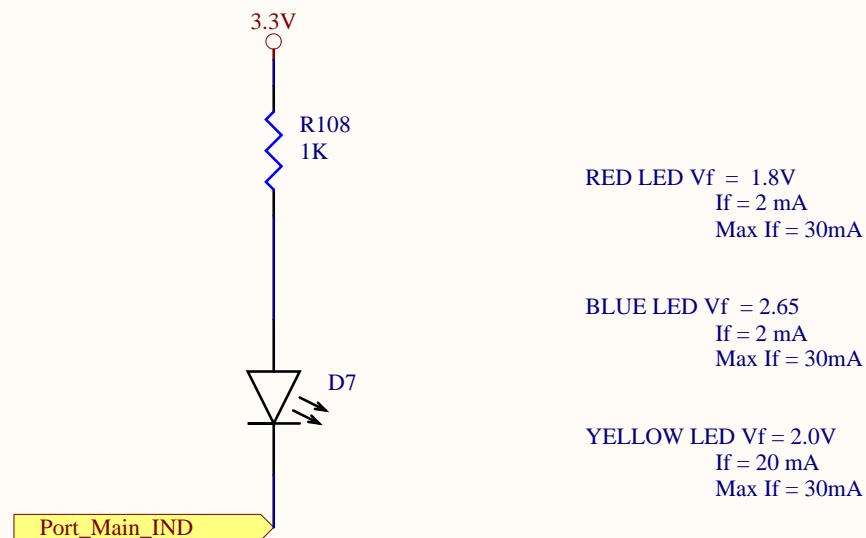
D

A

B

C

D



Title <b>Inverted LED</b>		
Size A	Number	Revision
Date: 12/2/2019	Sheet 22.2 of 41	
File: C:\Users\..\No_Transistor_LED_INV.Sch	Drawn By: Kace Chandler	

1	2	3	4	5	6
---	---	---	---	---	---

1	2	3	4	5	6
---	---	---	---	---	---

A

B

C

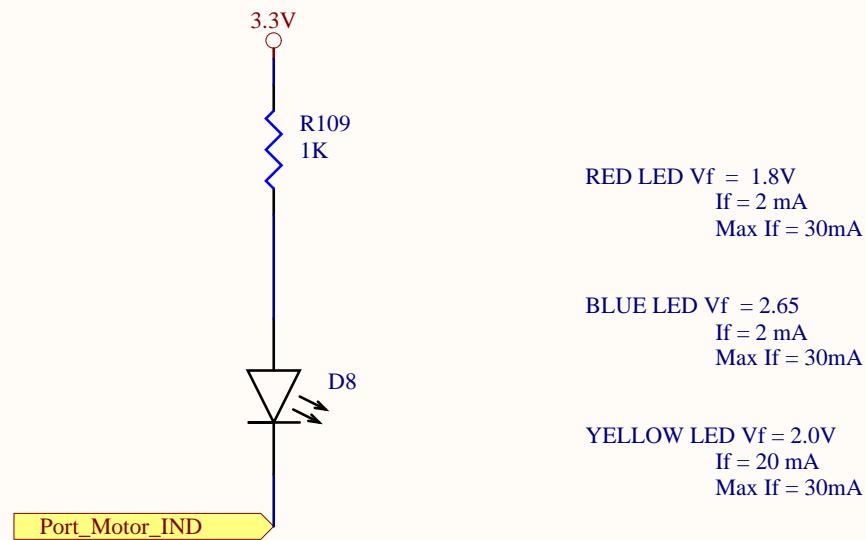
D

A

B

C

D



Title <b>Inverted LED</b>		
Size	Number	Revision
A		
Date:	12/2/2019	Sheet 22.3 of 41
File:	C:\Users\..\No_Transistor_LED_INV.Sch	Drawn By: Kace Chandler

1	2	3	4	5	6
---	---	---	---	---	---

1	2	3	4	5	6
---	---	---	---	---	---

A

B

C

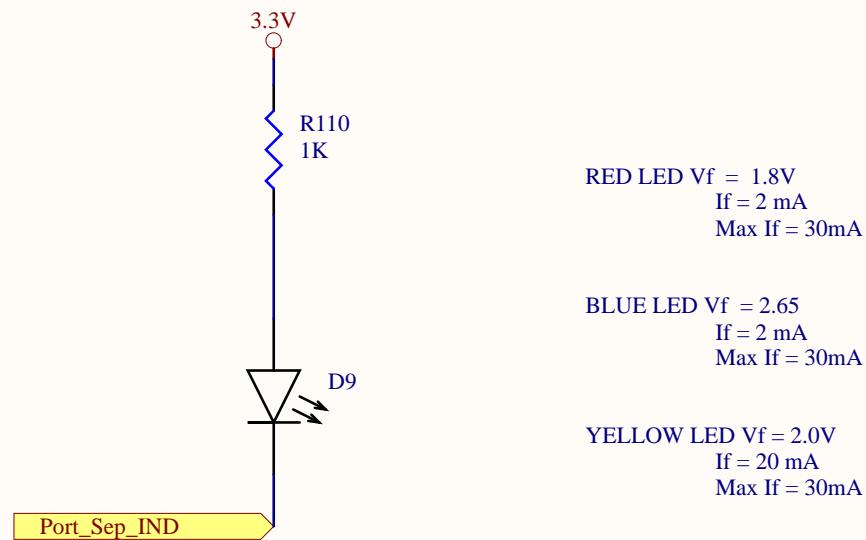
D

A

B

C

D



Title <b>Inverted LED</b>		
Size A	Number	Revision
Date:	12/2/2019	Sheet 22.4 of 41
File:	C:\Users\..\No_Transistor_LED_INV.Sch	Drawn By: Kace Chandler

1	2	3	4	5	6
---	---	---	---	---	---

1 2 3 4 5 6

A

B

C

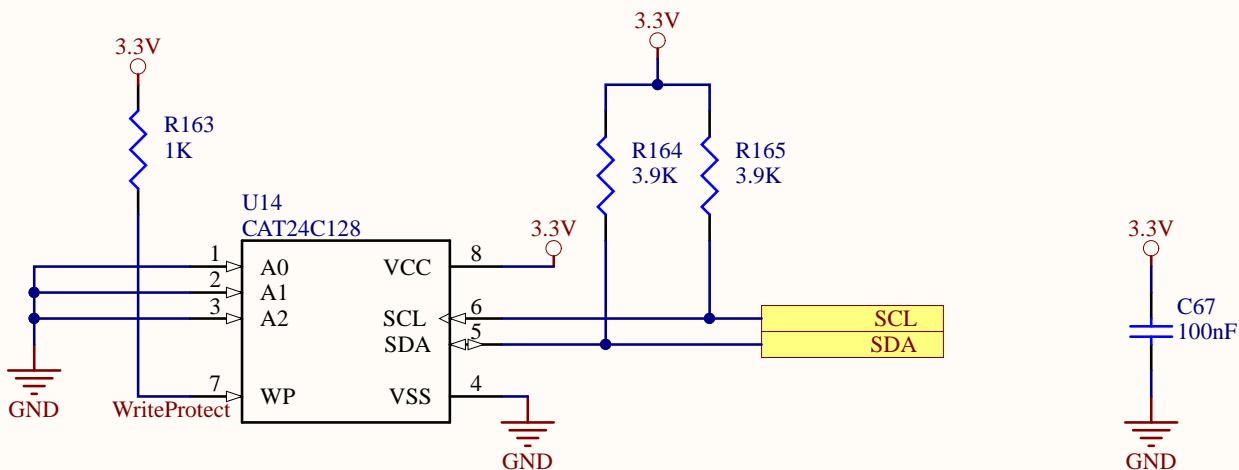
D

A

B

C

D



Title

# Raspberry Pi EEPROM

Size	Number	Revision
A2		
Date:	12/2/2019	Sheet * of 41
File:	C:\Users\...\EEPROM.SchDoc	Drawn By: Kace Chandler

1 2 3 4 5 6

ESP  
ERR  
ACT  
PWR

TX RX

BYU-Idaho Rocket Dynamics  
Designed By Kace Chandler  
github.com/byui-rocket-dynamics

IP

TEAM

No.

R74 R73 R83 R82  
R88 R86 R77 R76  
R81 R80 R57 R58  
R61 R64 R67 R70

L1

V2.3

POWER  
7-18V

PWR ACT ERR

PI ON

C60

RX TX

EXT

UART EXT

ESP

PI

3V3

5V

3V3

5V

5V

JLC JLC JLC JLC

SCK MISO CS

EEPROM Write Protect

5V

MAG

C46

AO

A1

A2

A3

3V3

C47

U13

ACC

MOTOR

SEP

MAIN

D1

R8

R63

D7

C41

C42

C43

C44

C27

C10

U4

BAR

U7

GYR

U1

PI

A4

A5

A6

A7

5V

C4

C65

U11

LIN

3V3

V3

U12

BUCK

5V

U9

PI

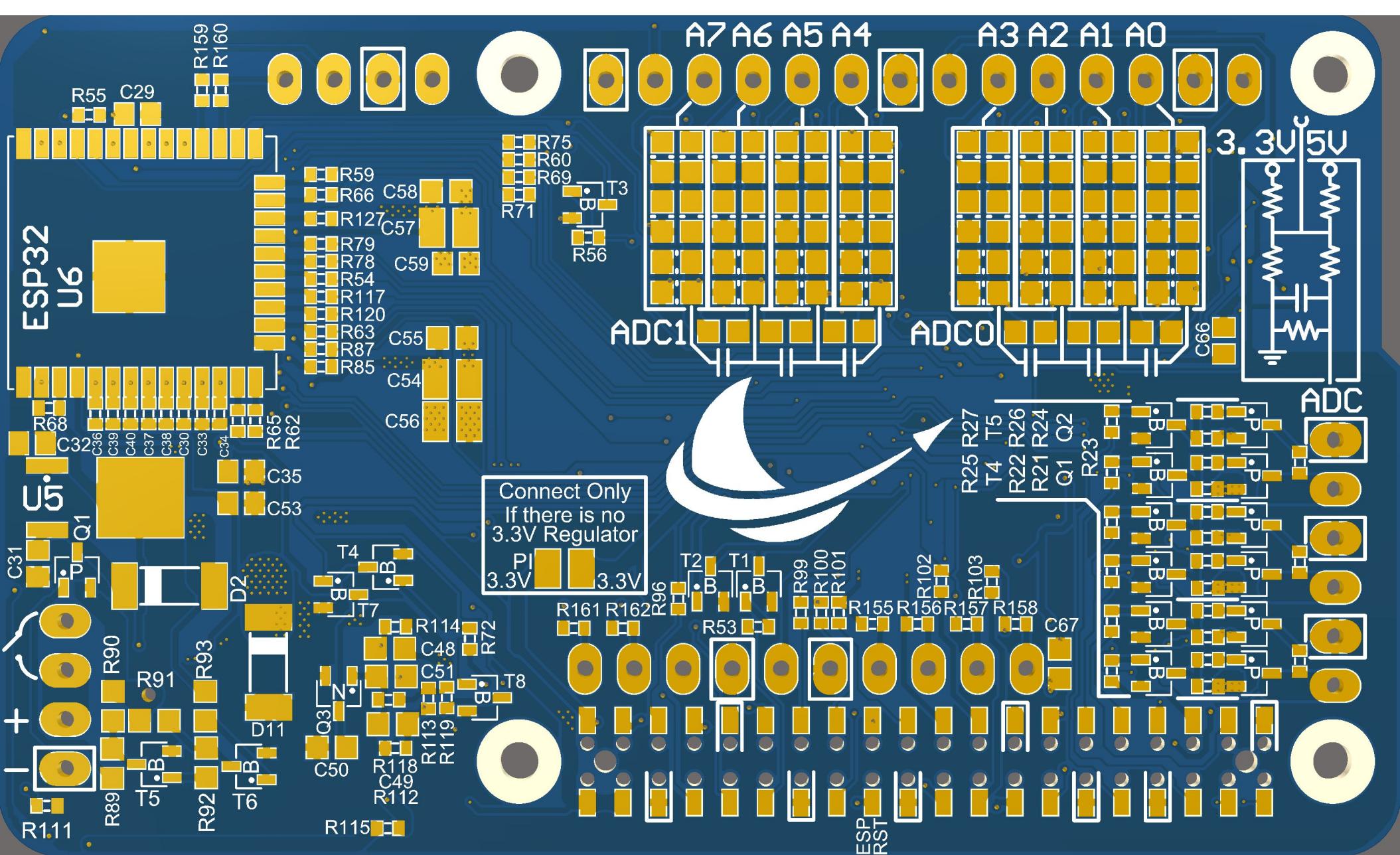
ON

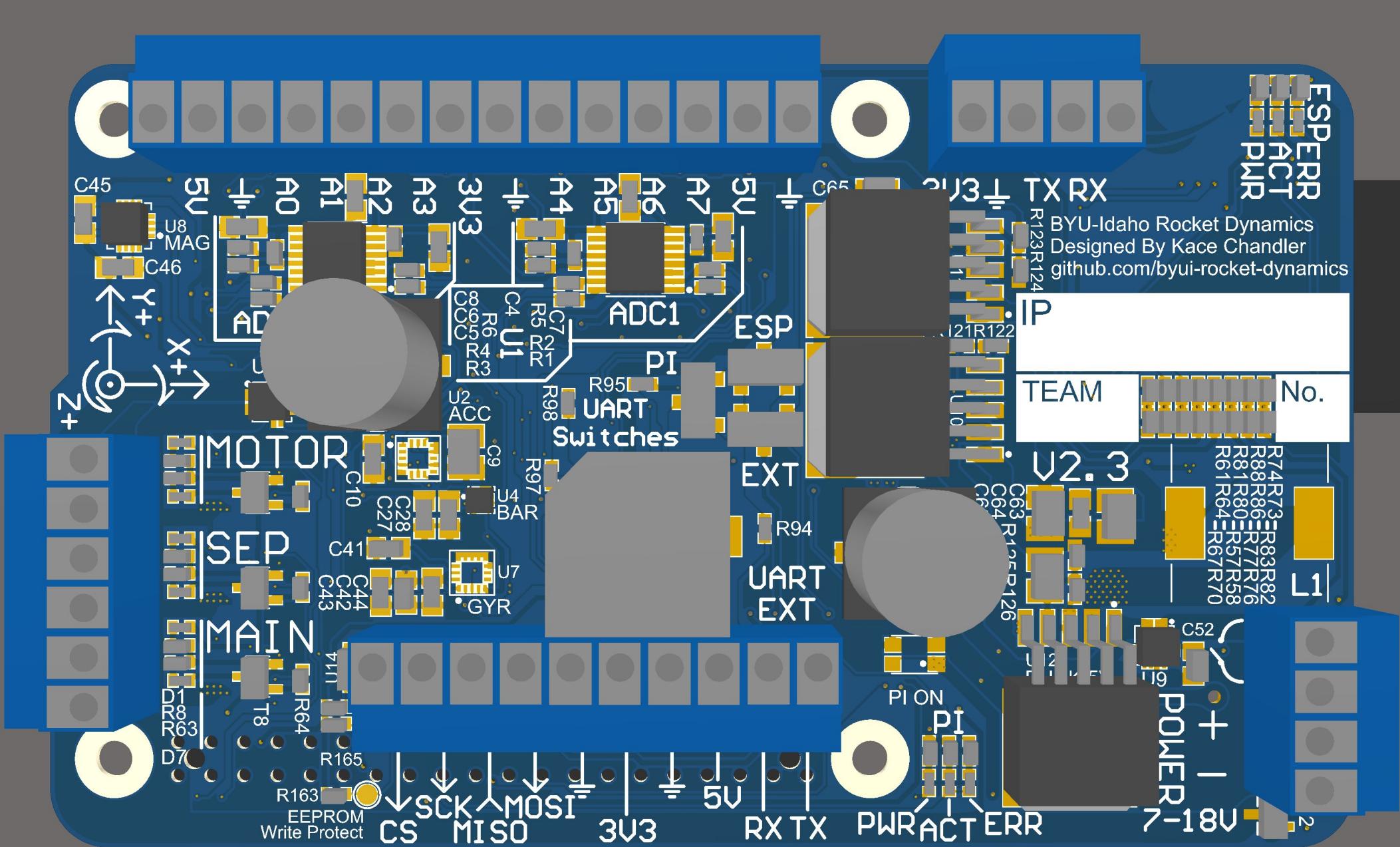
PWR

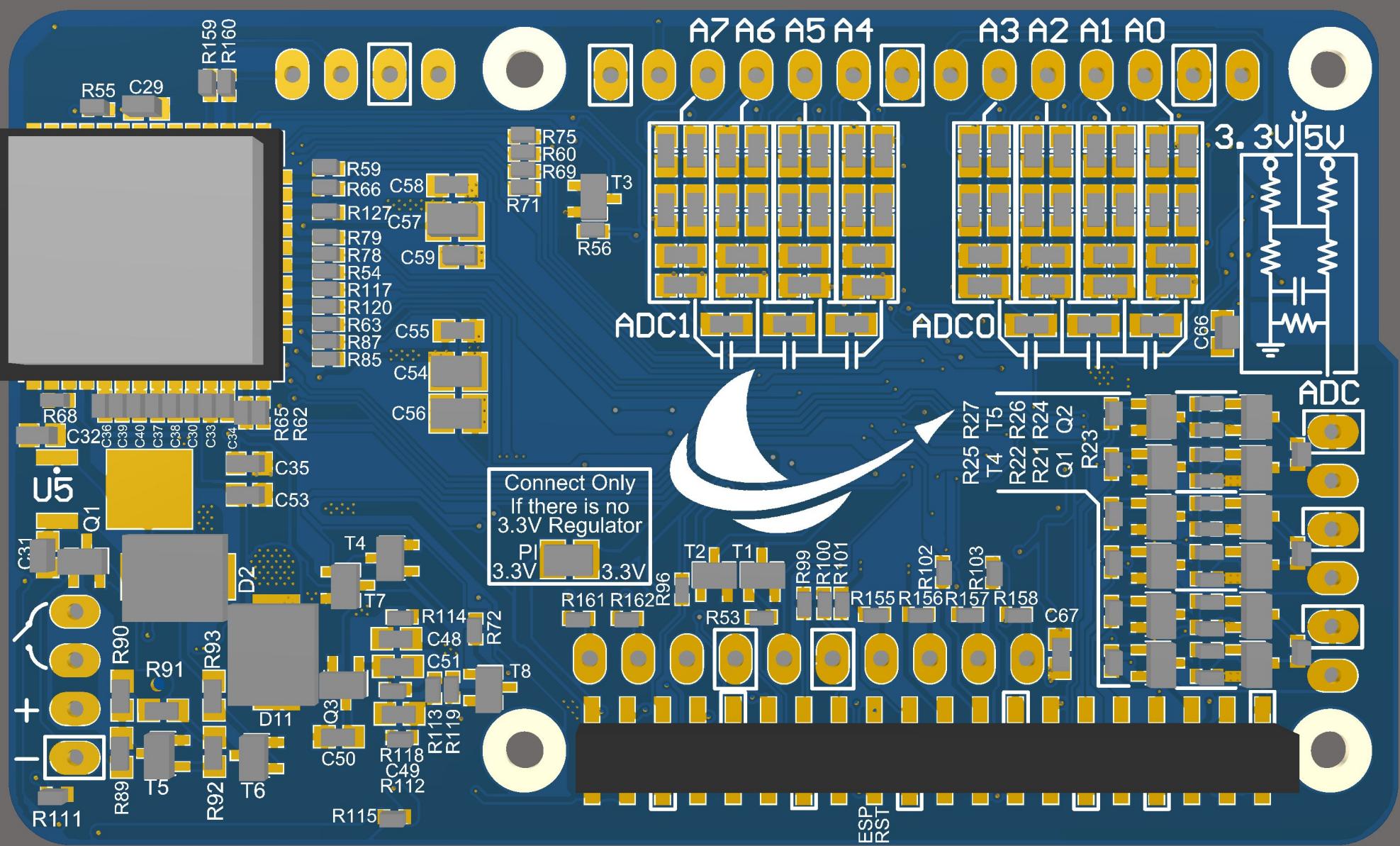
ACT

ERR

Q2







**ESPERR  
ACT  
PWR**

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No.

R74 R73 R83 R82  
R88 R86 R77 R76  
R81 R80 R57 R58  
R61 R64 R67 R70

1  
C52  
+  
-  
POWER  
7-18V

**3V3 TX RX**

U11 U12 U13 U14  
R123 R124  
R121 R122  
LIN3V3 LIN5V

IP

TEAM

C60

PI ON

PI

PWR ACT

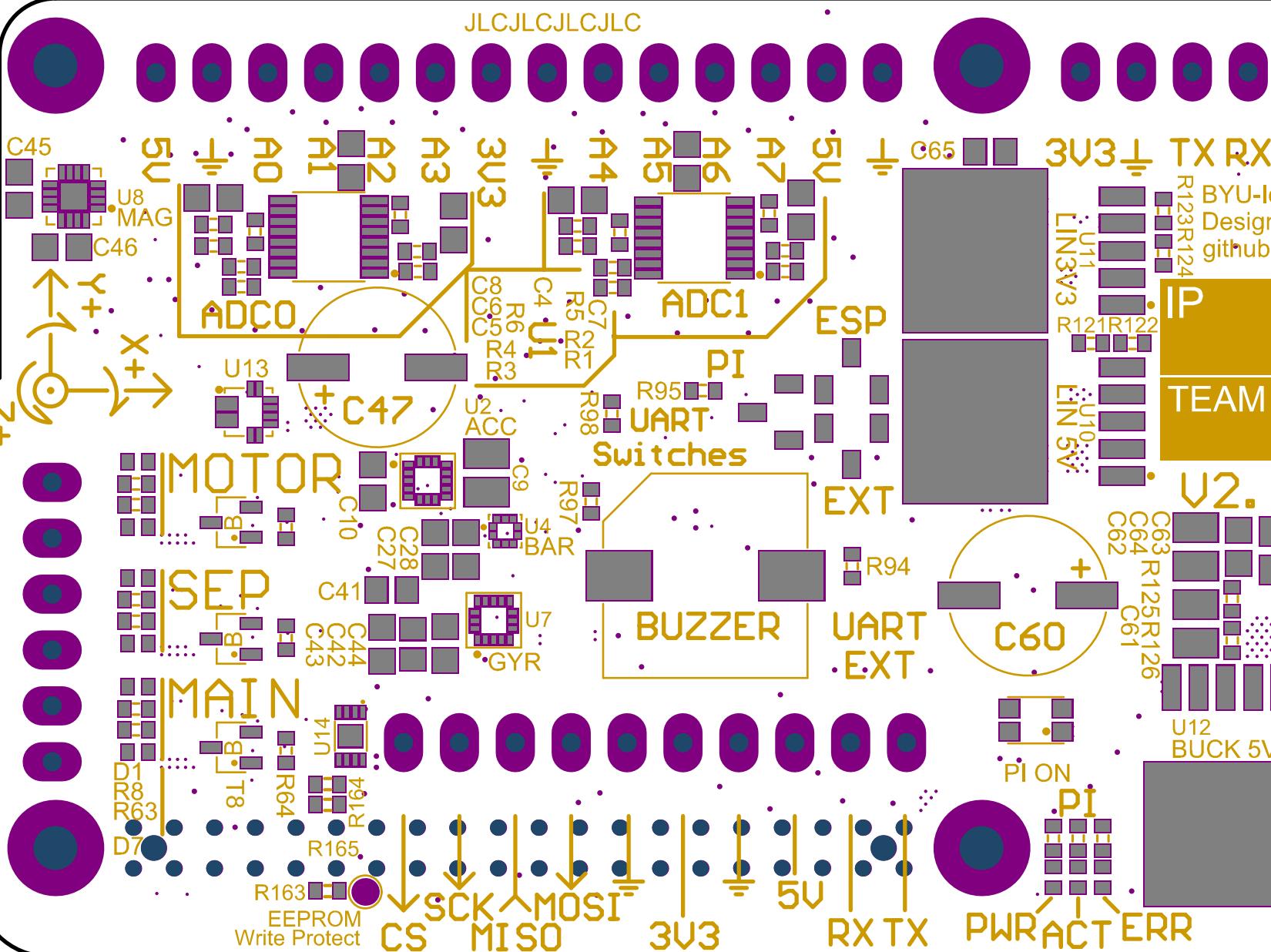
ERR

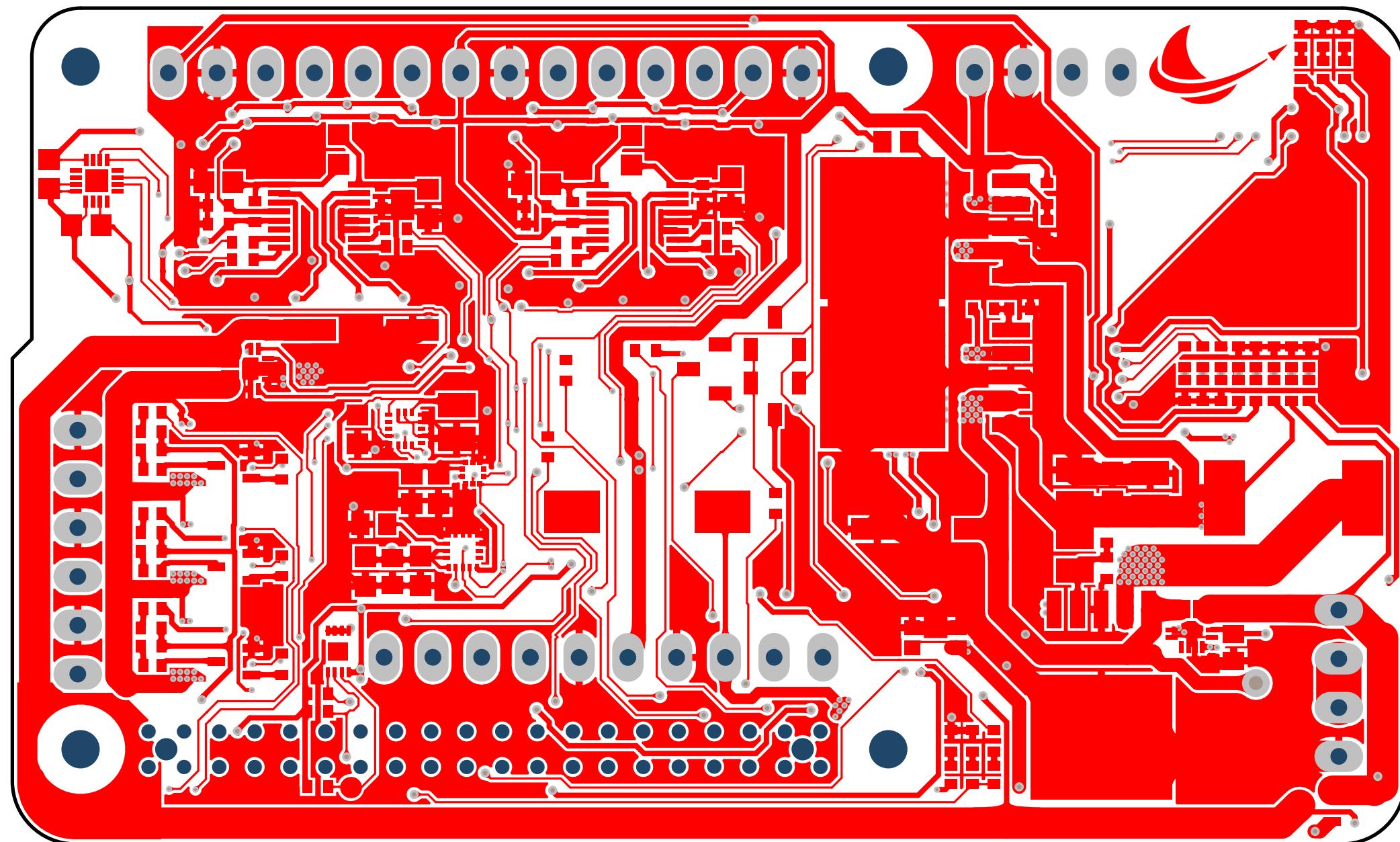
**ESP**

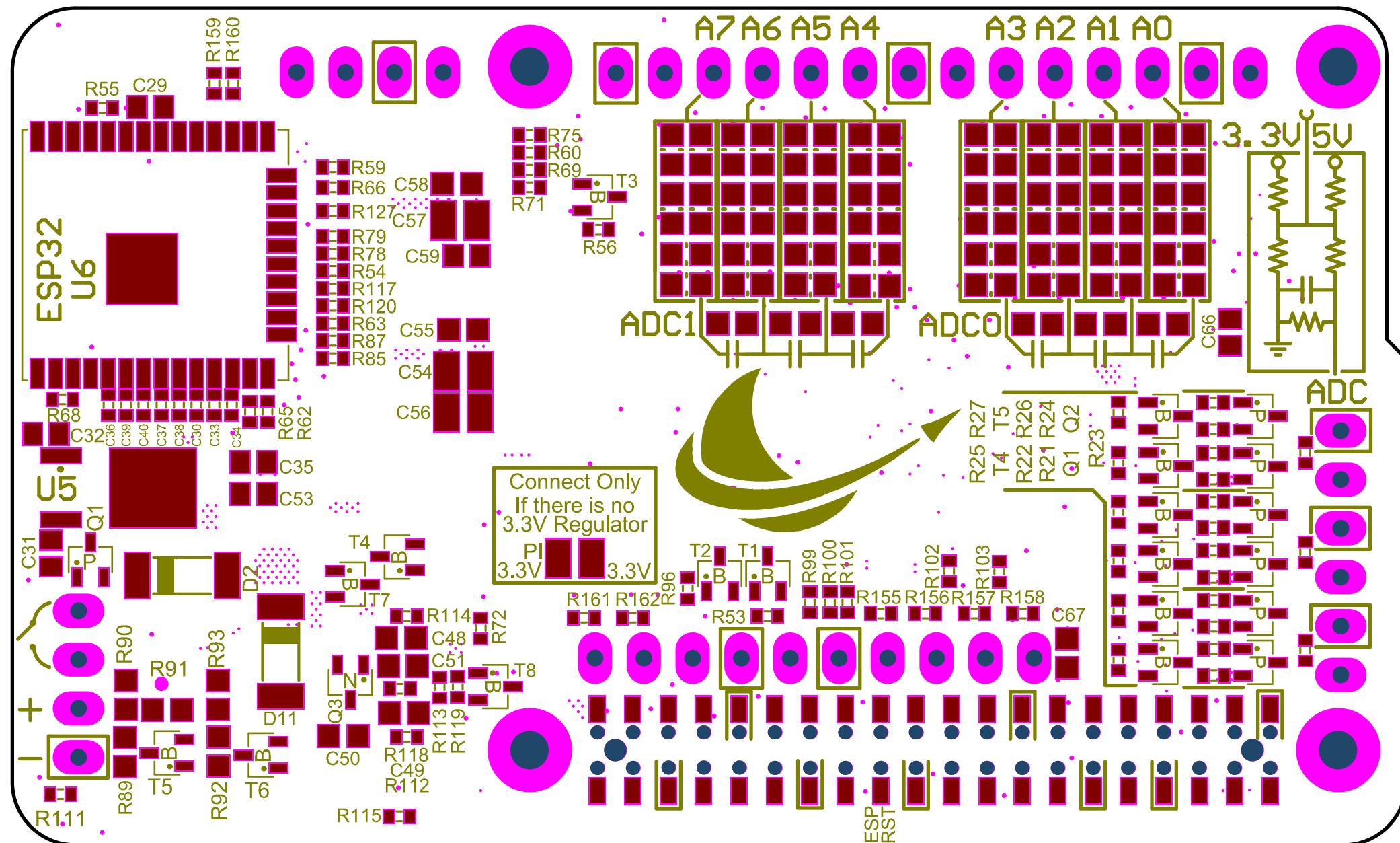
UART  
EXT

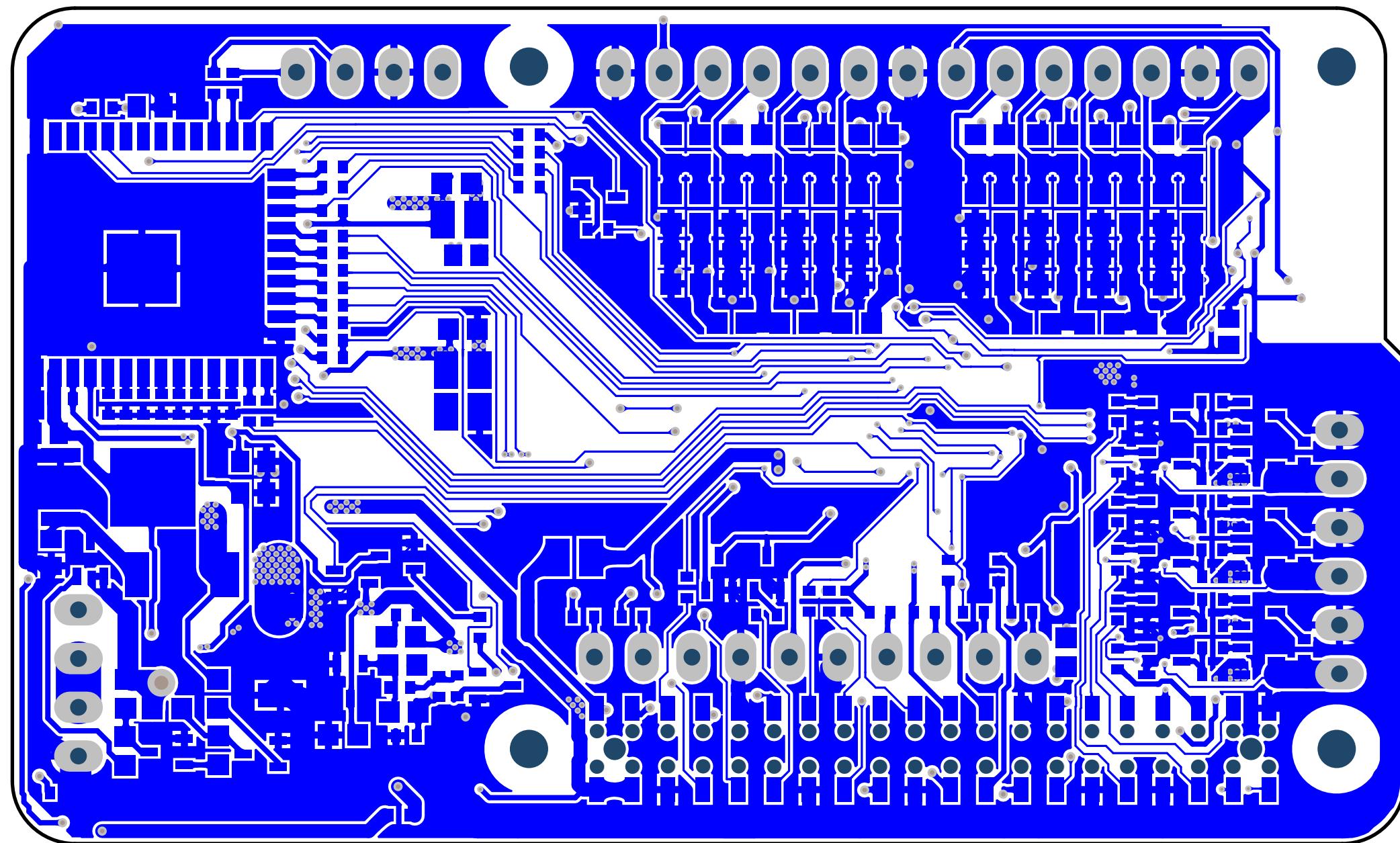
RX TX

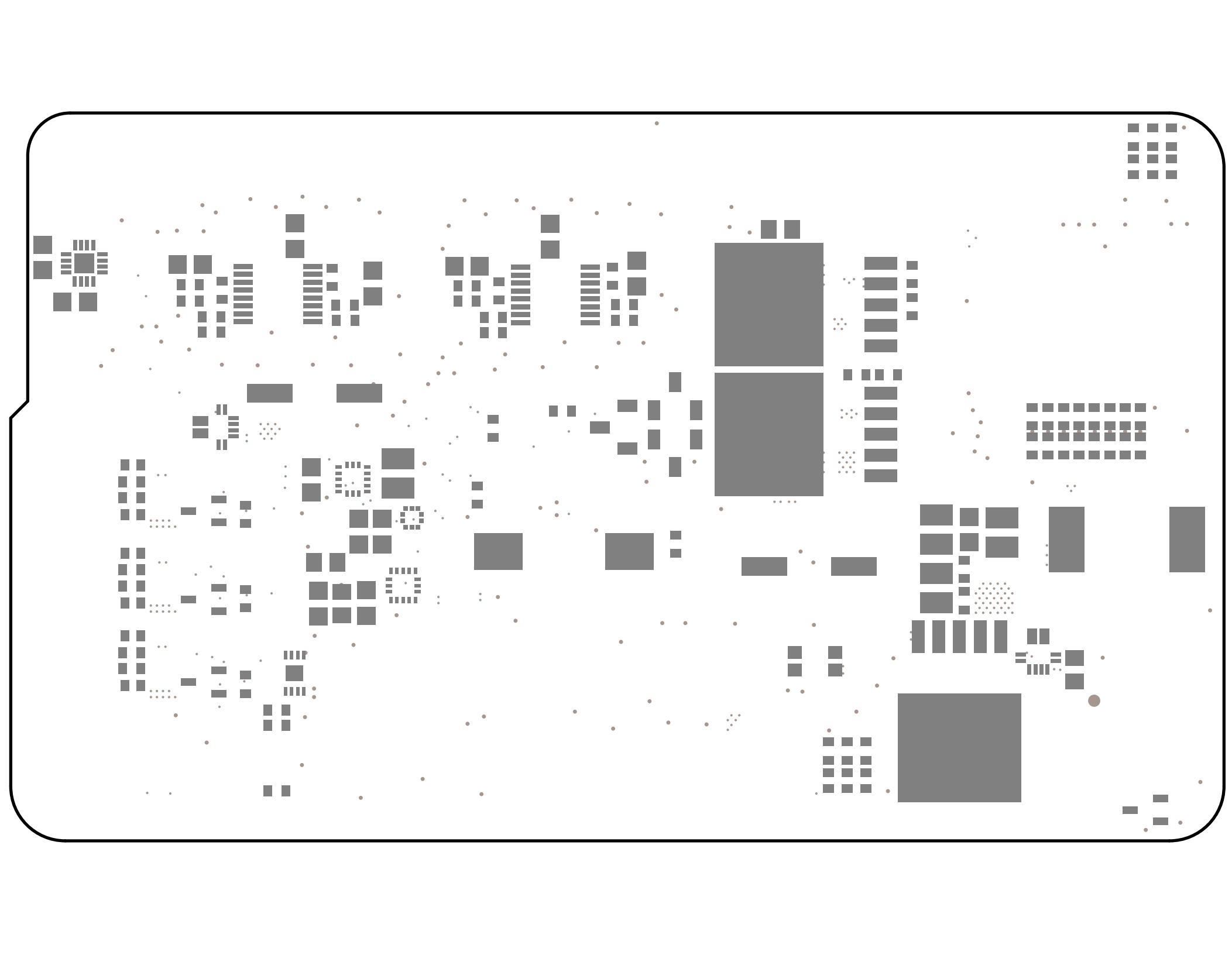
JLC JLC JLC JLC

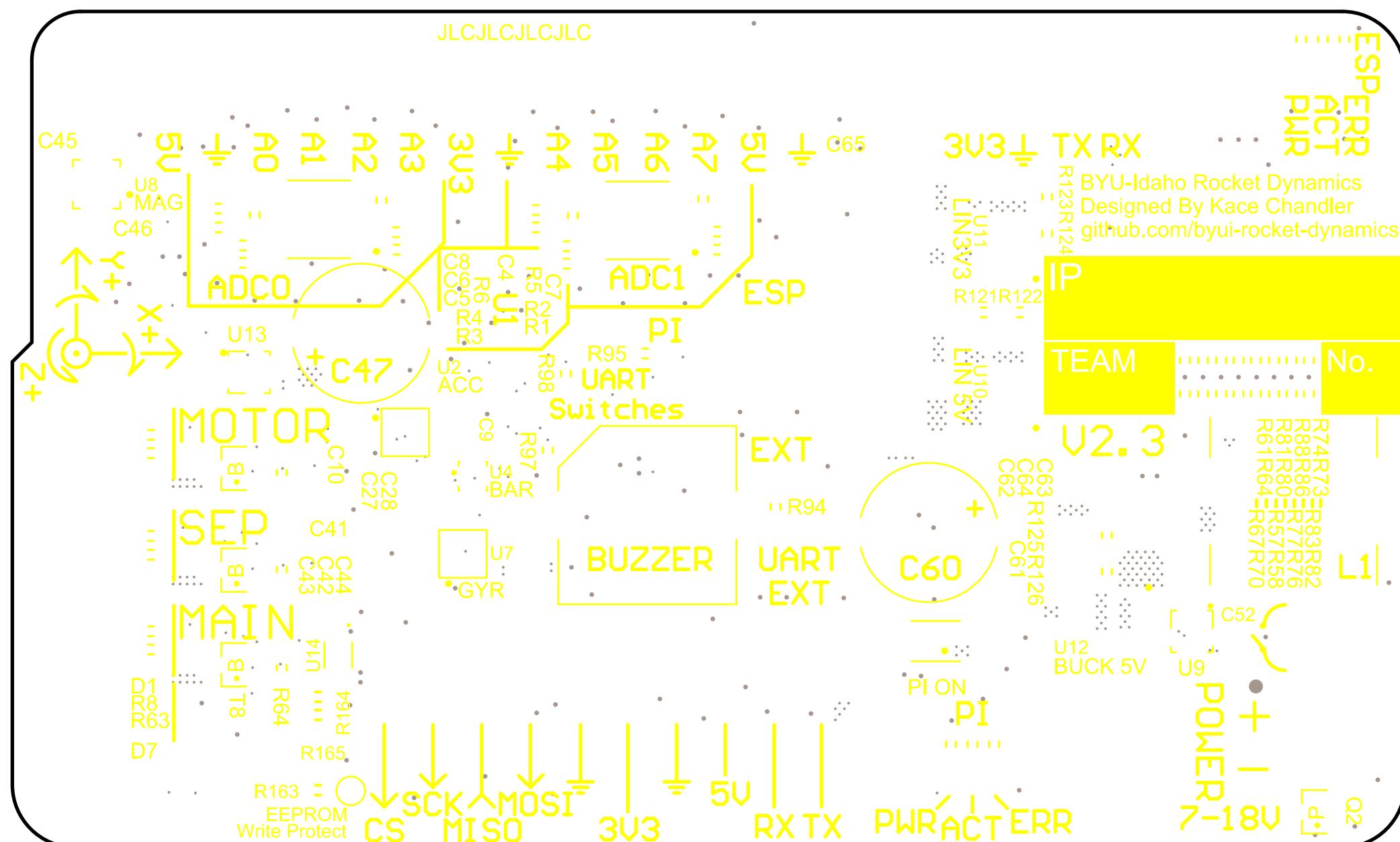


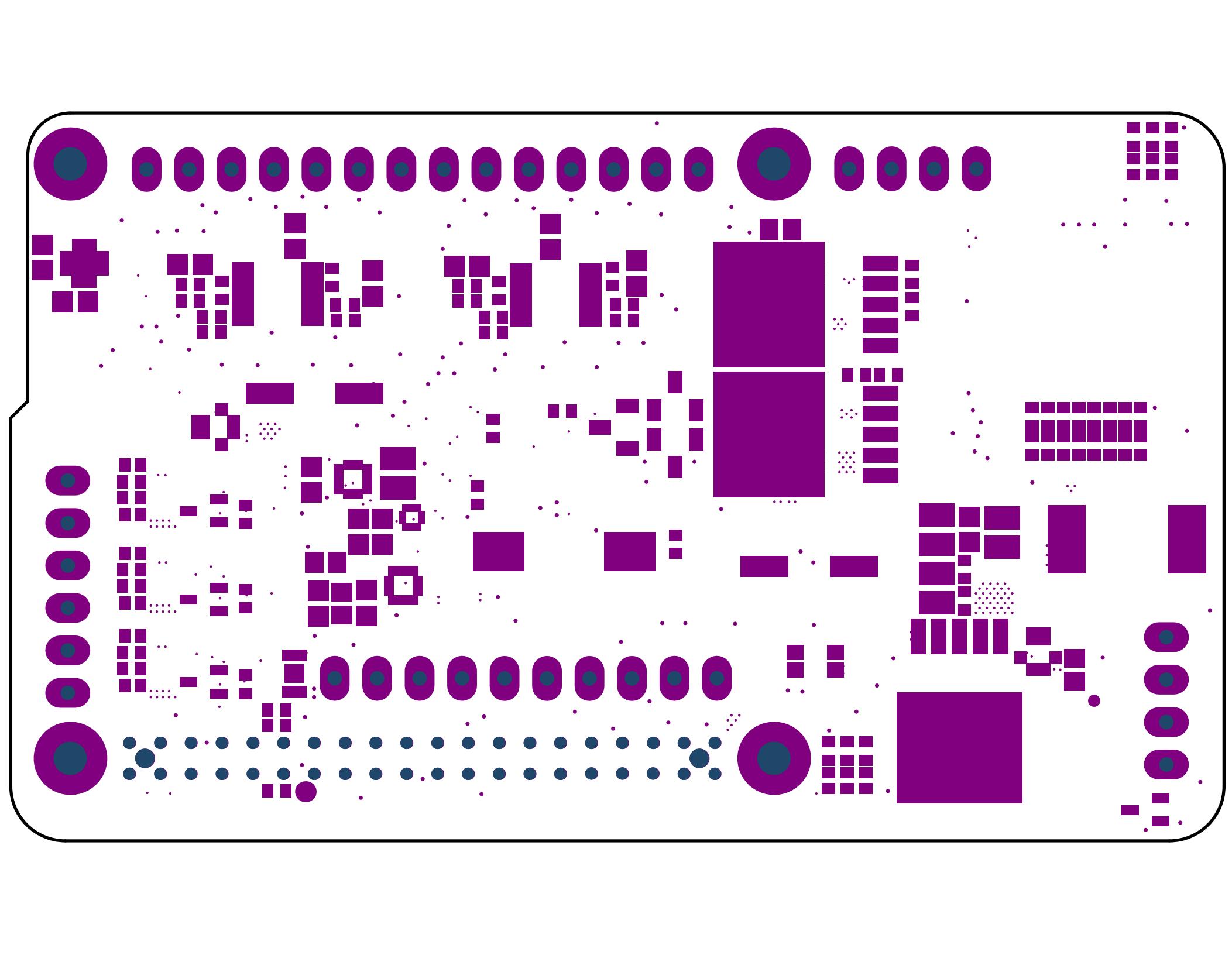


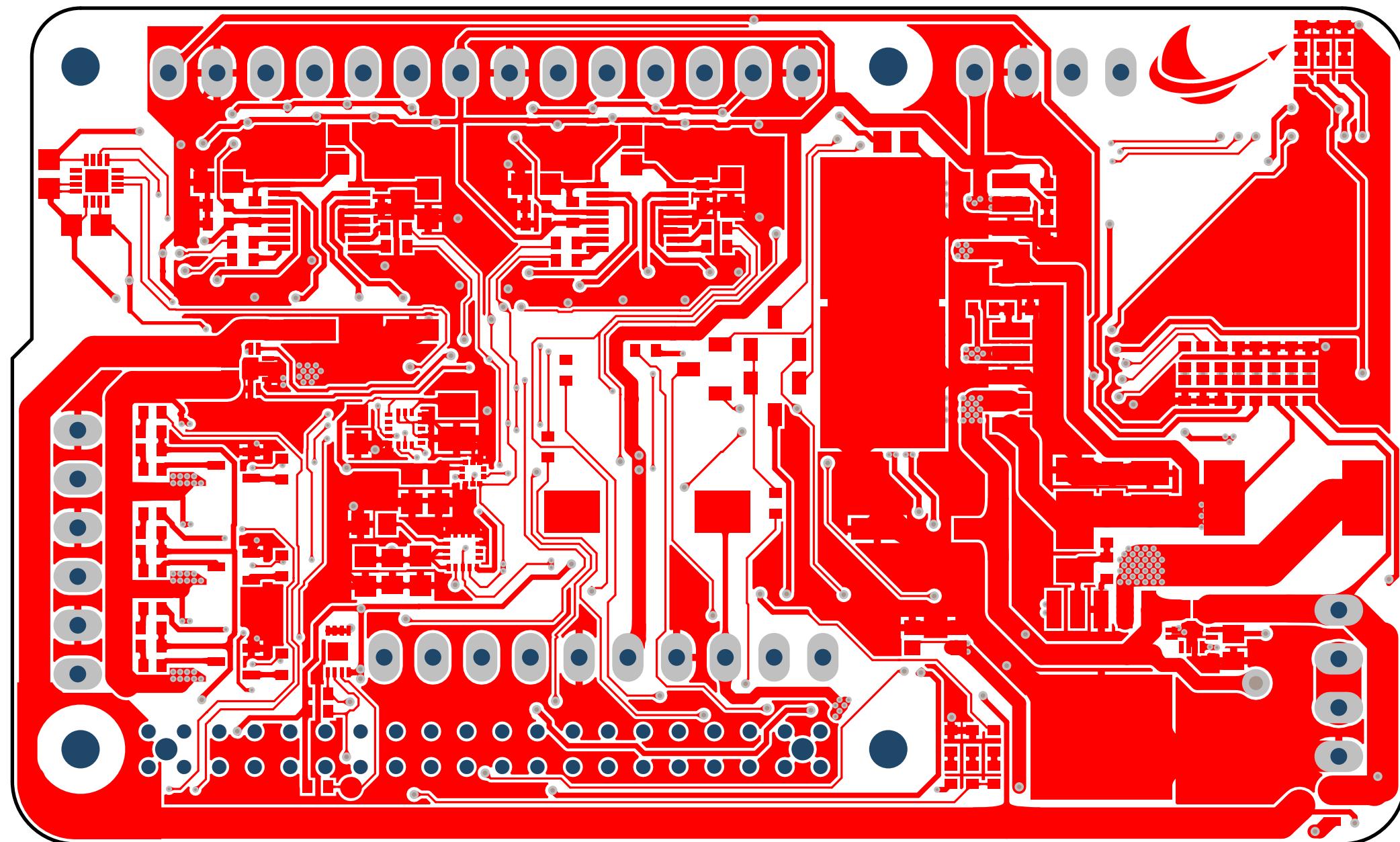


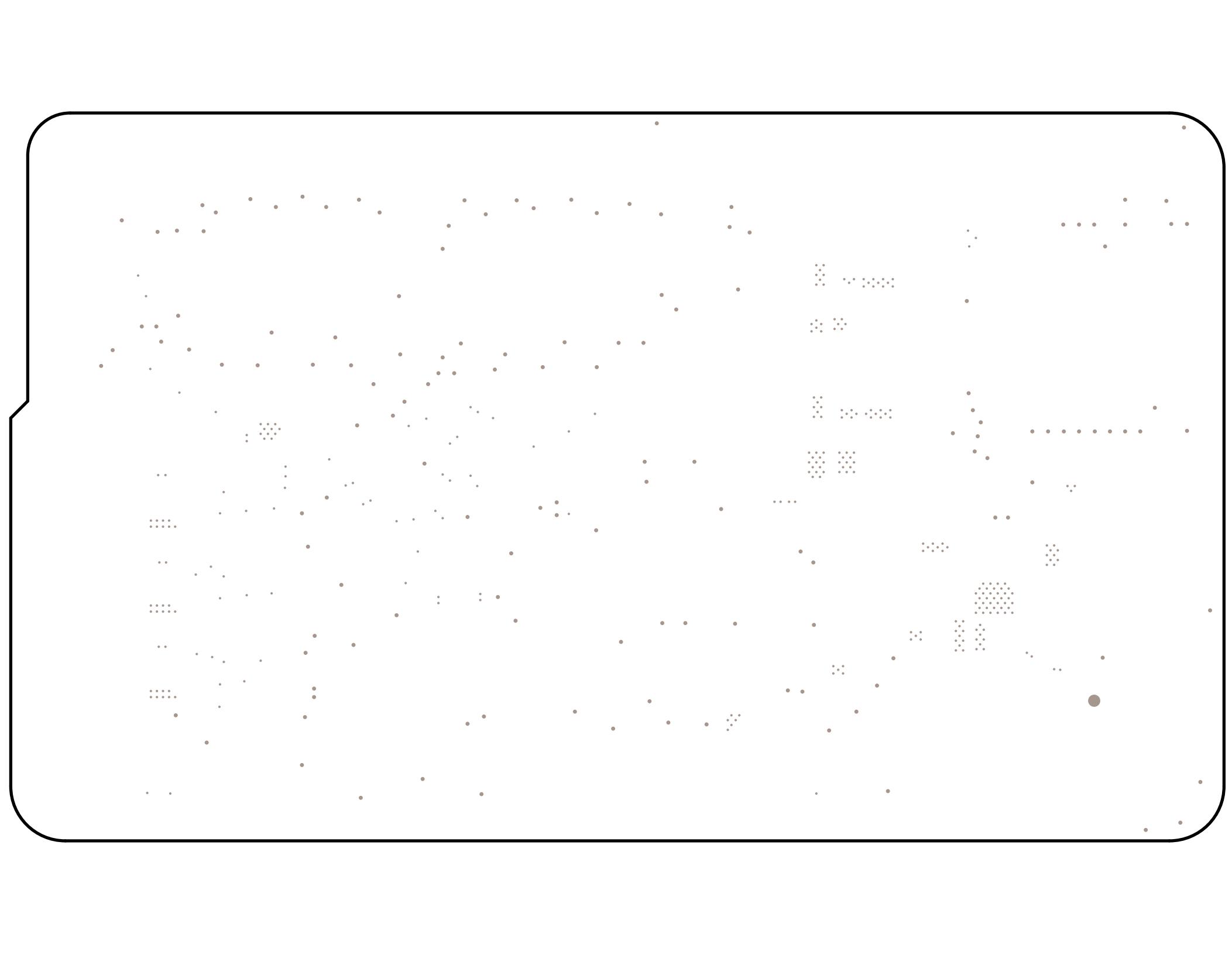


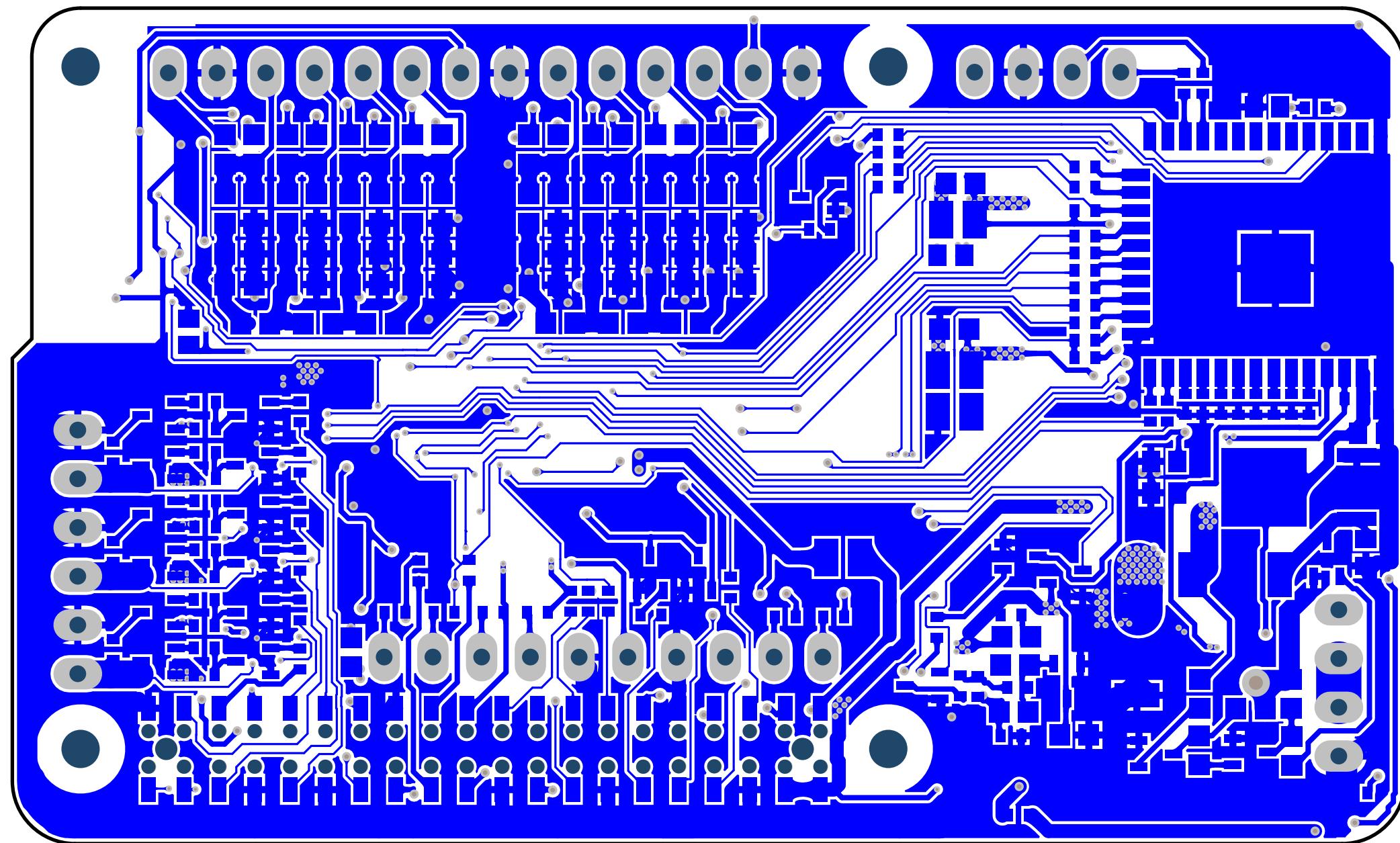


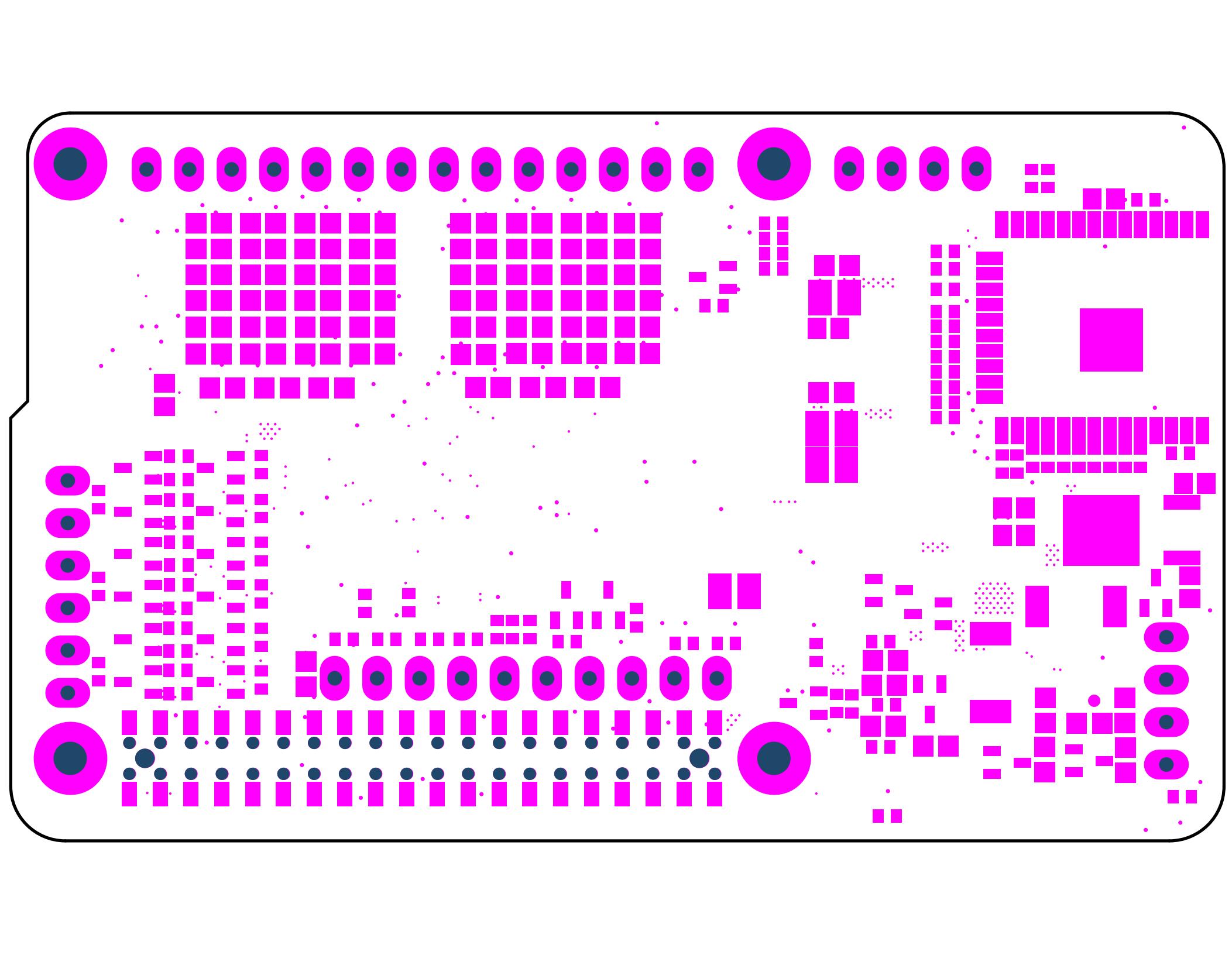


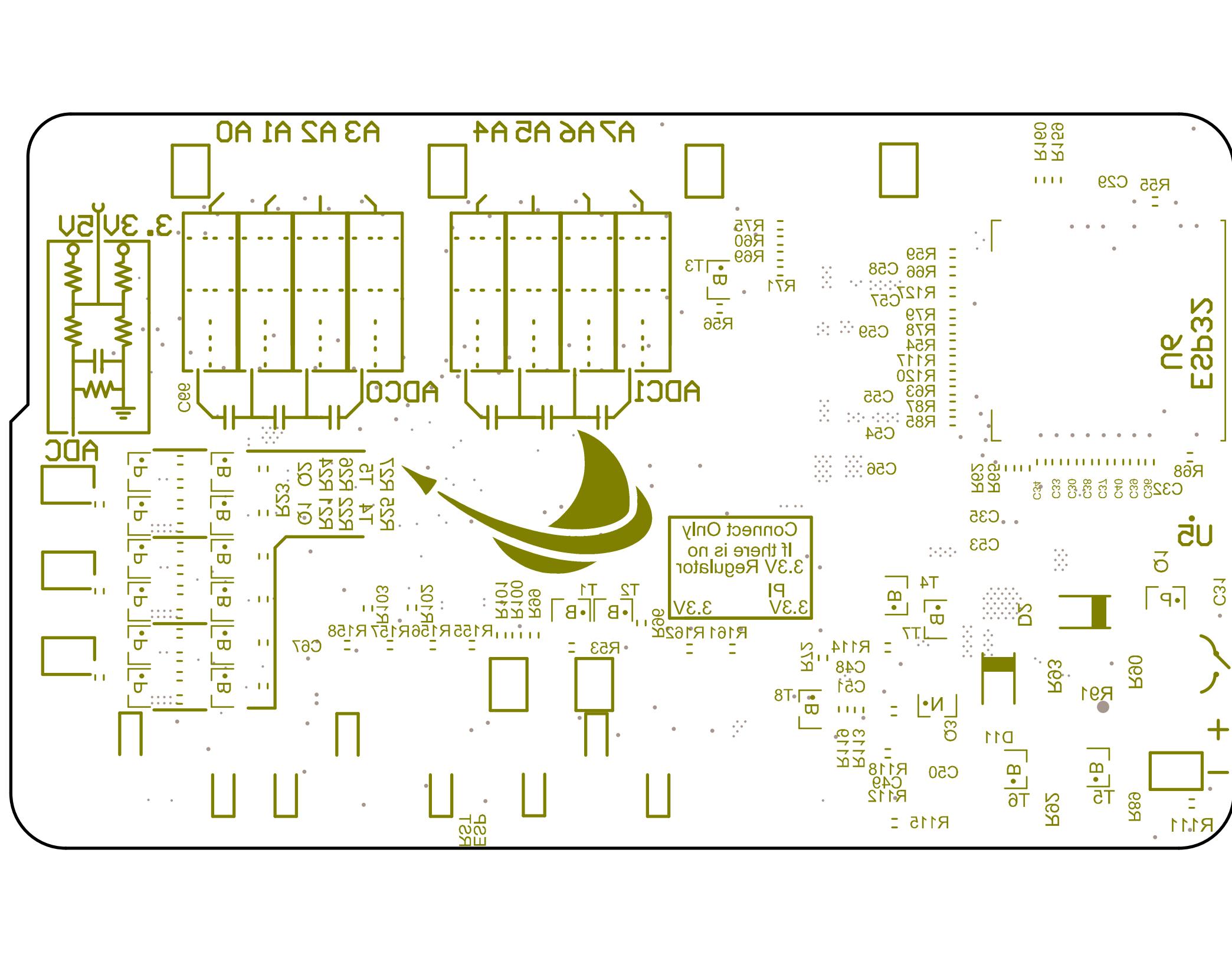


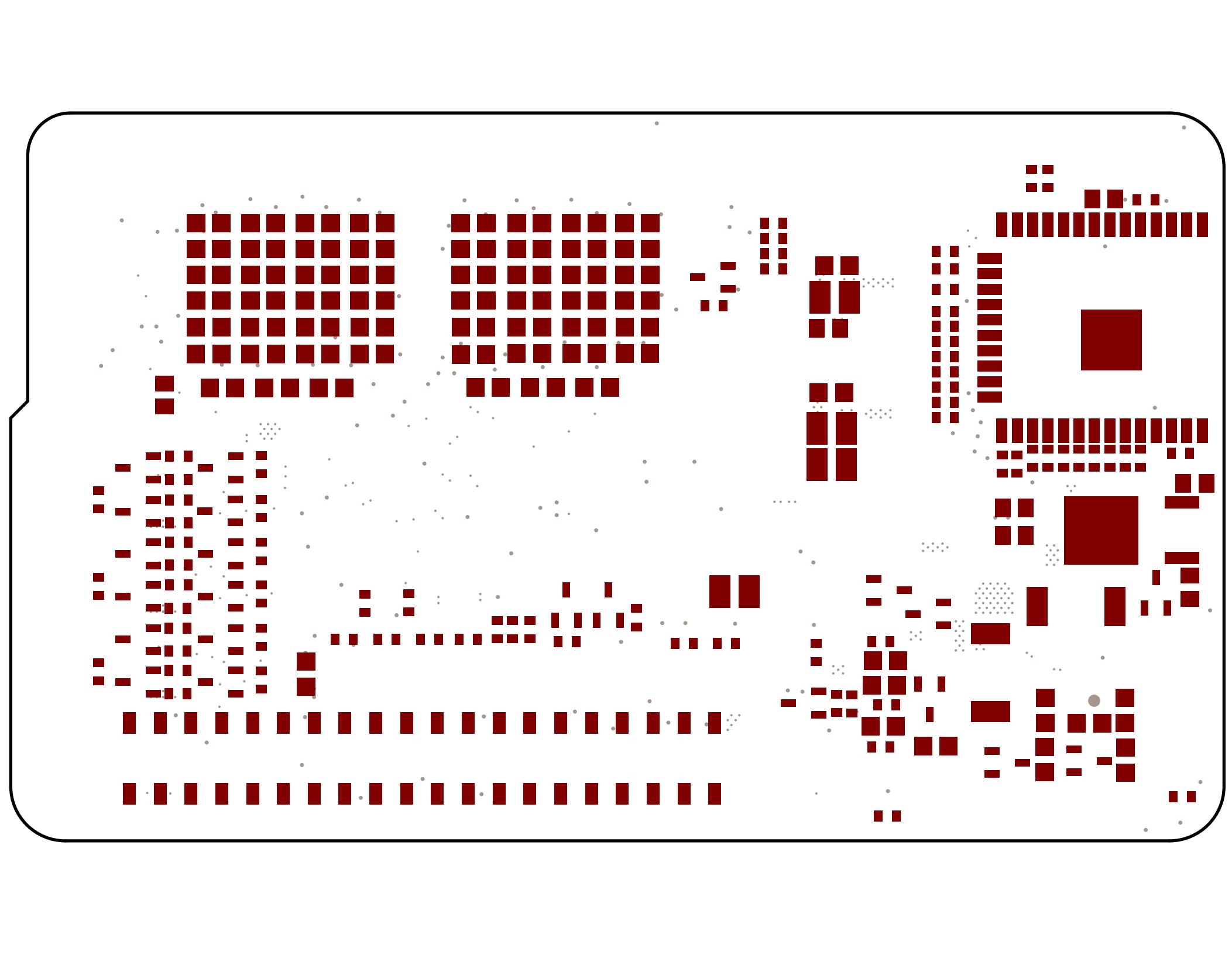




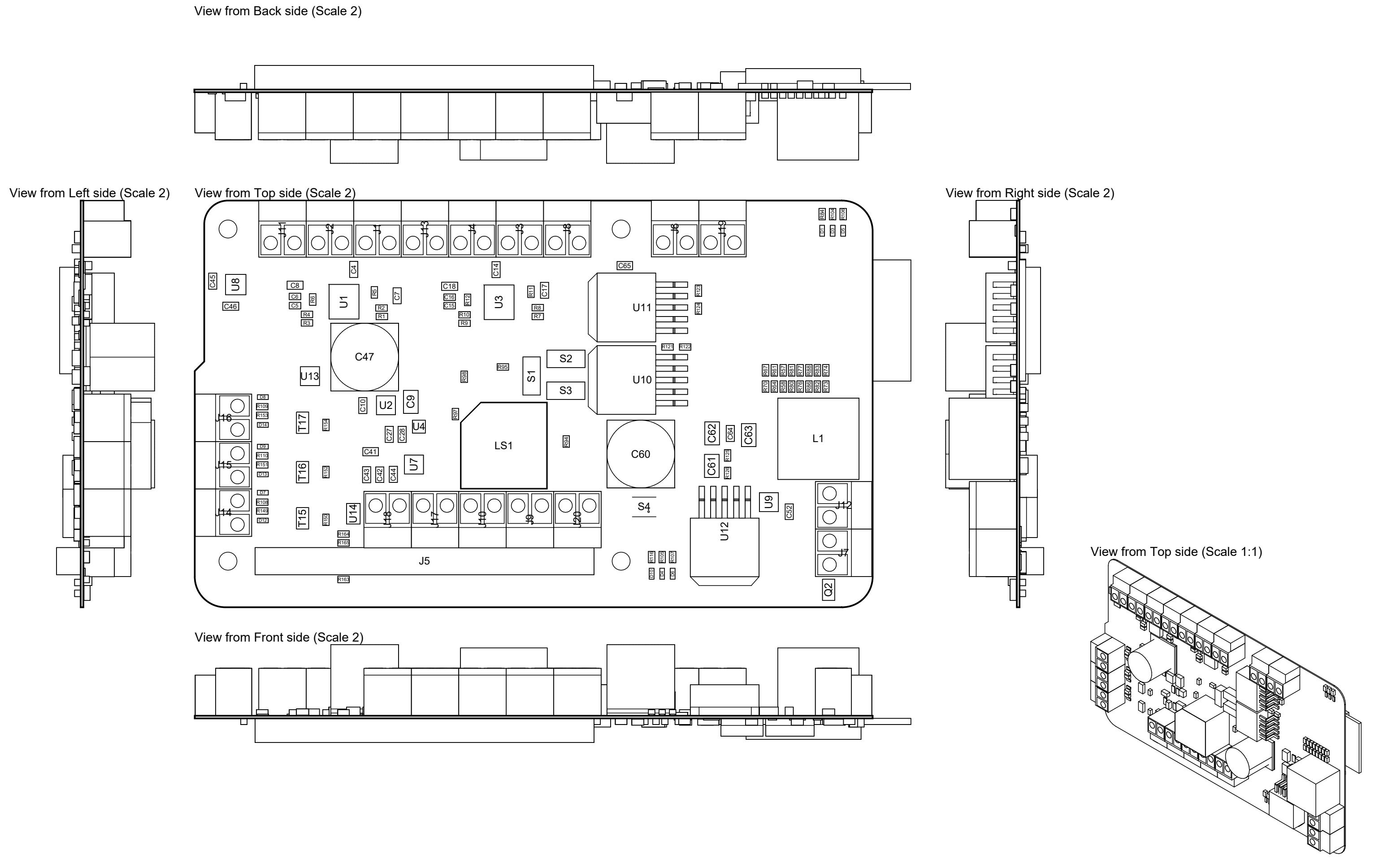


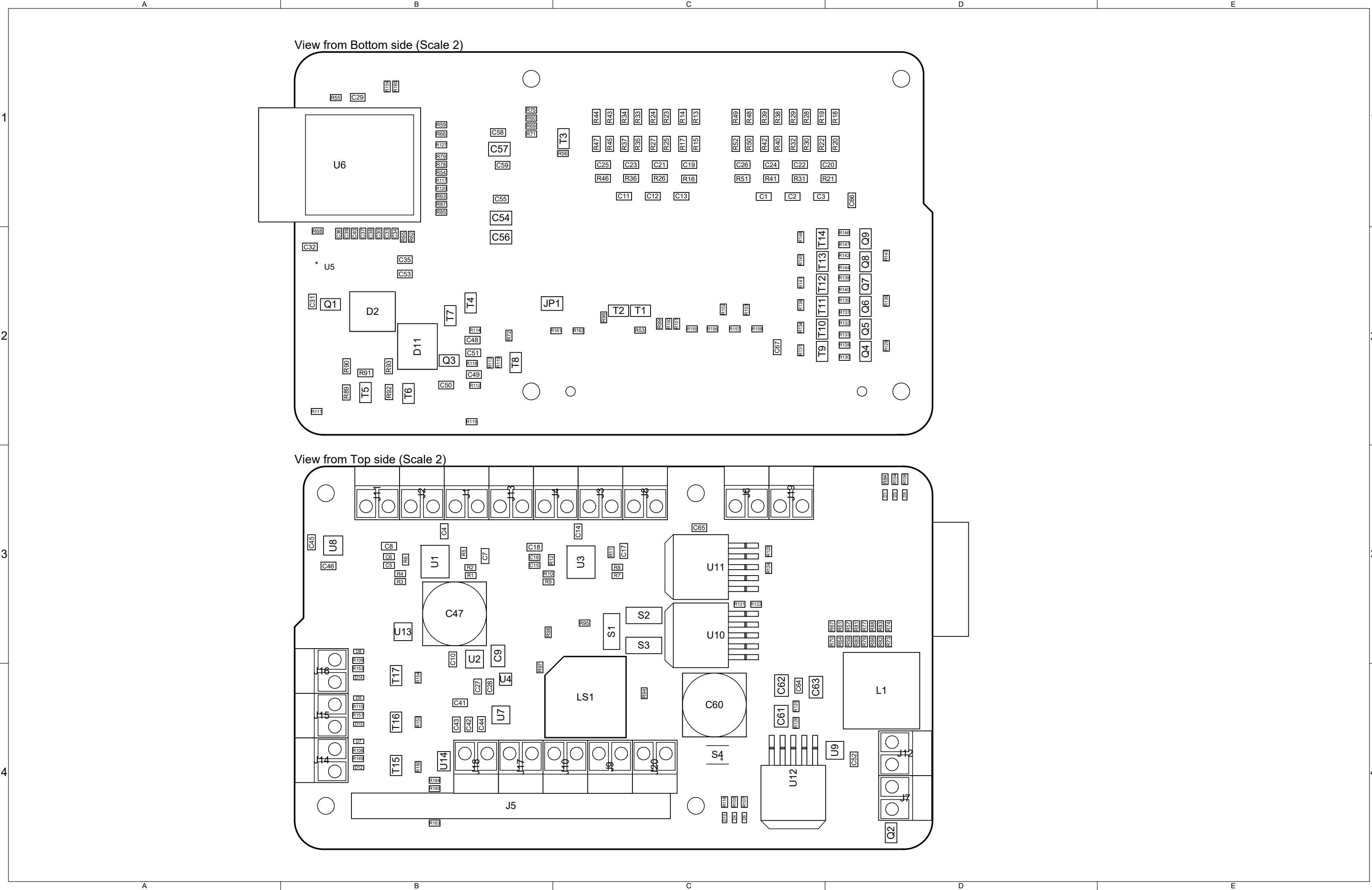






A	B	C	D	E
<b>Bill Of Materials</b>				
	Designator	Name	Quantity	Value
1	C1, C2, C3, C11, C12, C13, C19, C20, C21, C22, C23, C24, C25, C26	Cap	14	Value depends on use case
	C4, C5, C6, C10, C14, C15, C16, C27, C28, C29, C35, C45, C46, C67	Cap	14	100nF
	C7, C8, C17, C18	Cap	4	10nF
	C9, C41	Cap	2	10uF
1	C30, C33, C34, C36, C37, C38, C39, C40, C48, C51, C52, C53, C65, C66	Cap	14	100nF
	C31, C32, C59	Cap	3	10uF
	C42	Cap	1	10uF
	C43	Cap	1	100nF
	C44	Cap	1	100nF
	C47	Cap	1	100pF
	C49, C50	Cap	2	2.2uF
	C54, C56, C57	Cap	3	22uF
	C55, C58, C64	Cap	3	1uF
	C60	Cap	1	820uF
2	C61	Cap	1	5.6 uF
	C62, C63	Cap	2	100uF
	D1, D3, D4, D5, D6, D7, D8, D9, D10	LED_R	9	
	D2, D11	Buck Diode	2	
2	D12, D13, D14	LED_B	3	
	J1, J2, J3, J4, J6, J7, J8, J9, J10, J11, J12, J13, J14, J15, J16, J17, J18, J19, J20	Screw Terminal	19	
	J5	PiGPIOBreakout	1	
	JP1, R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R129, R130, R131, R132, R133, R134, R136, R137, R138, R139, R140, R141, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R163	Res3	116	1K
	L1	7447709330	1	
	LS1	CT-1205C-SMT	1	
	Q1, Q2, Q4, Q5, Q6, Q7, Q8, Q9	P-Channel	8	
	Q3	N-Channel	1	
3	R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52	Res3	40	Value depends on use case
	R115, R128, R135, R142	Res3	4	10
	R159, R160, R161, R162	Res3	4	0-40
	R164, R165	Res3	2	3.9K
	S1, S2, S3	Slide Switch	3	
	S4	434153017835	1	
	T1, T2, T3, T4, T5, T6, T7, T8, T9, T10, T11, T12, T13, T14, T15, T16, T17	MMBT2222ALT1	17	
	U1, U3	Analog to Digital Converter	2	
	U2	LIS3DSHTR	1	
	U4	BMP388	1	
	U5	3.3V Regulator	1	
4	U6	ESP32-WROOM-32D	1	
	U7	L3GD20H	1	
	U8	MLX90393	1	
	U9	AC570331EESATR-005B3	1	
	U10, U11	Linear Regulator	2	
	U12	LM2596SX-ADJ/NOPB	1	
	U13	ACS711KEXLT-15AB-T	1	
	U14	CAT24C128	1	





A

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View from Top side (Scale 2)

