

Revision History:

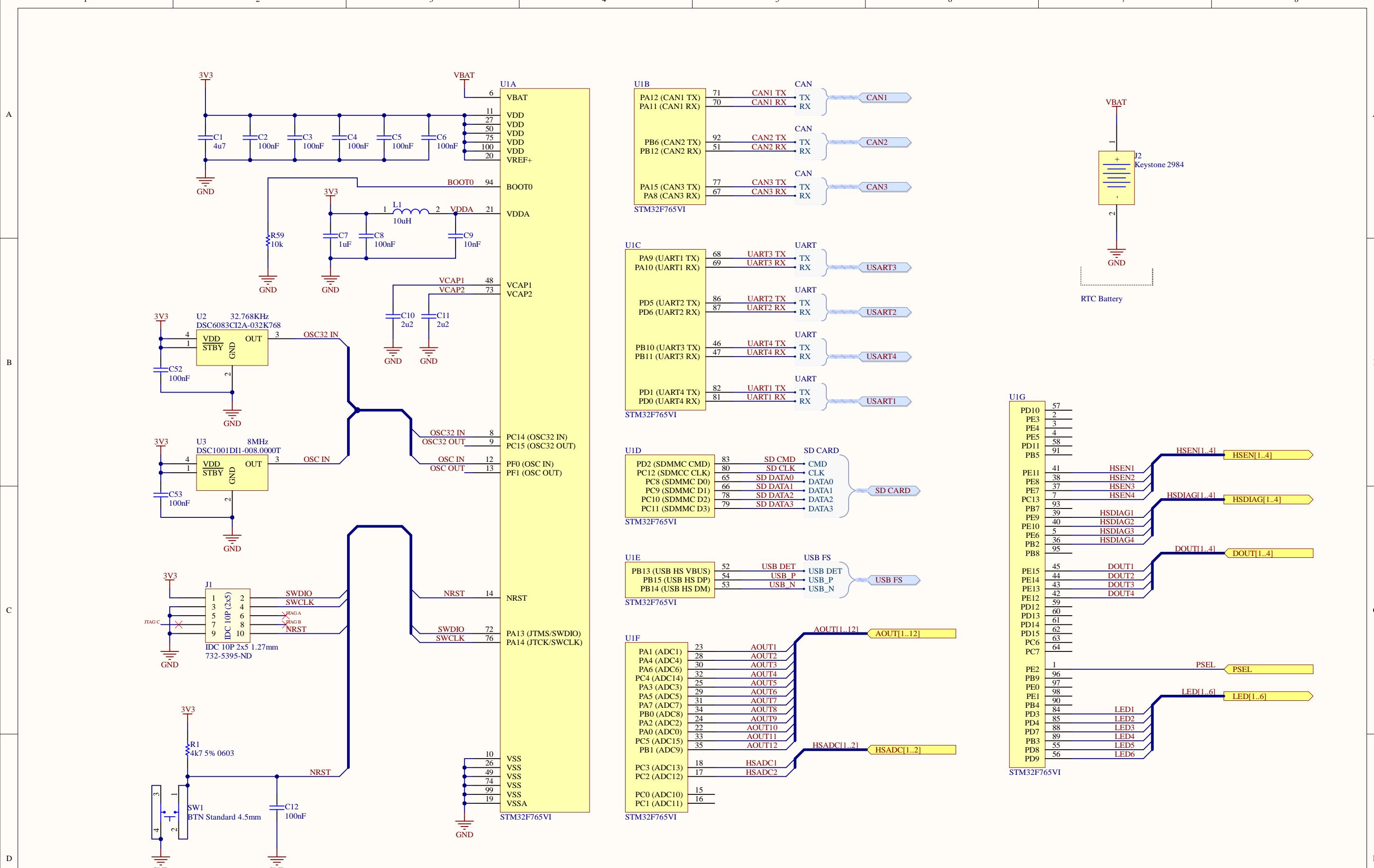
Rev	Date	Description

Sheet Title: Chassis Controller (Interim) 2020

Project: Chassis Controller (Interim) 2020

QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000
Australia





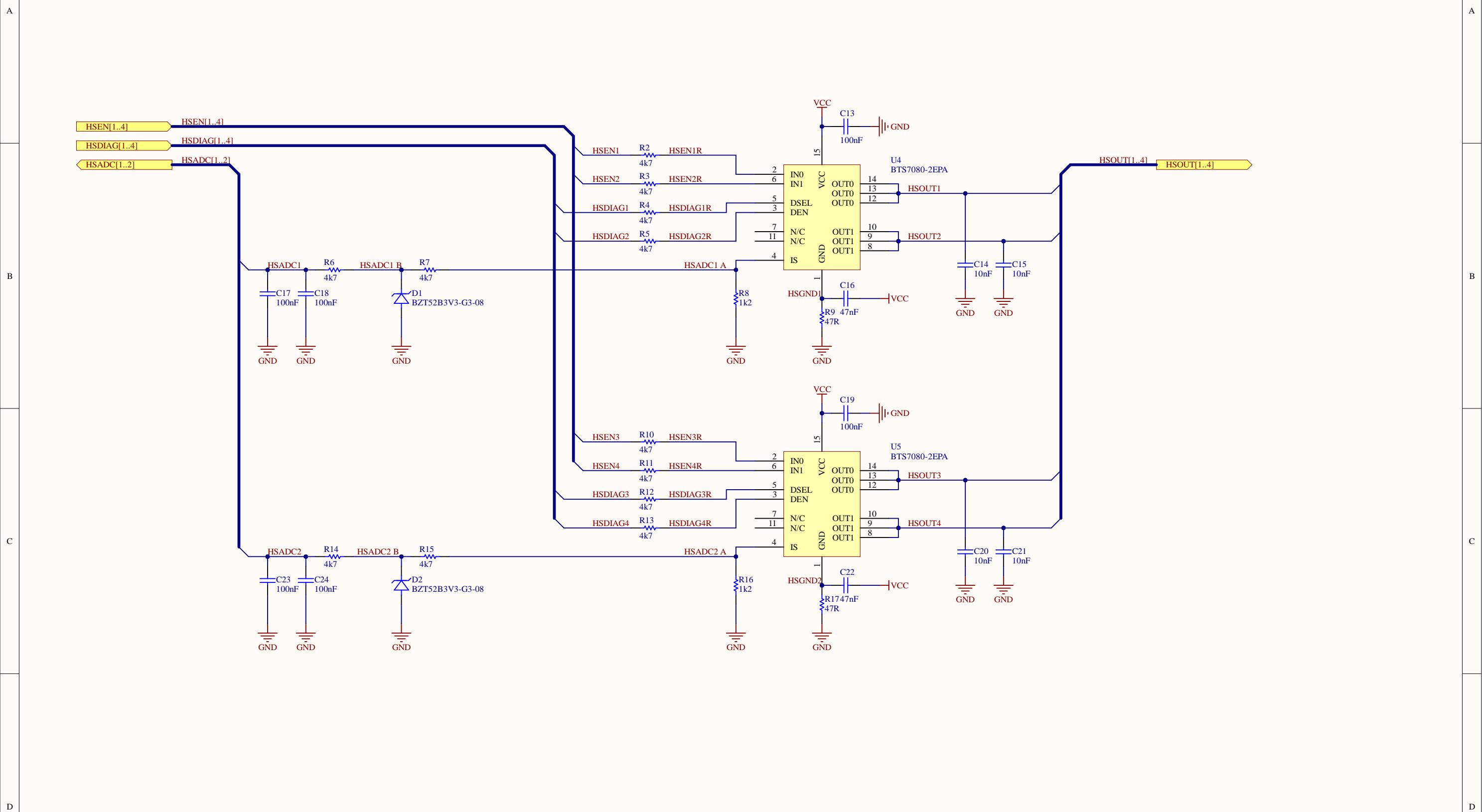
Revision History:

Rev	Date	Description

Sheet Title: Microcontroller (STM32F765VI)

Project: Chassis Controller (Interim) 2020

QUT Motorsport
O-120, Gardens PointVersion: *
2 George Street
Brisbane, QLD 4000Revision: *
Sheet 2 of 13
AustraliaDrawn By: Jonn Dillon
Print Date: 15/09/2020 Print Time: 6:32:14 PM File Name: CC-S01-V00-Microcontroller.SchDoc



Revision History:

Rev	Date	Description

Sheet Title: **High Side Outputs (BTS7080-2EPA)**Project: **Chassis Controller (Interim) 2020**

QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000



Size: A3 Number: 3

Version: *

Revision: *
Drawn By: Jonn Dillon Sheet 3 of 13 Australia

Print Date: 15/09/2020 Print Time: 6:32:14 PM File Name: CC-S02-V00-HighSideOutputs.SchDoc

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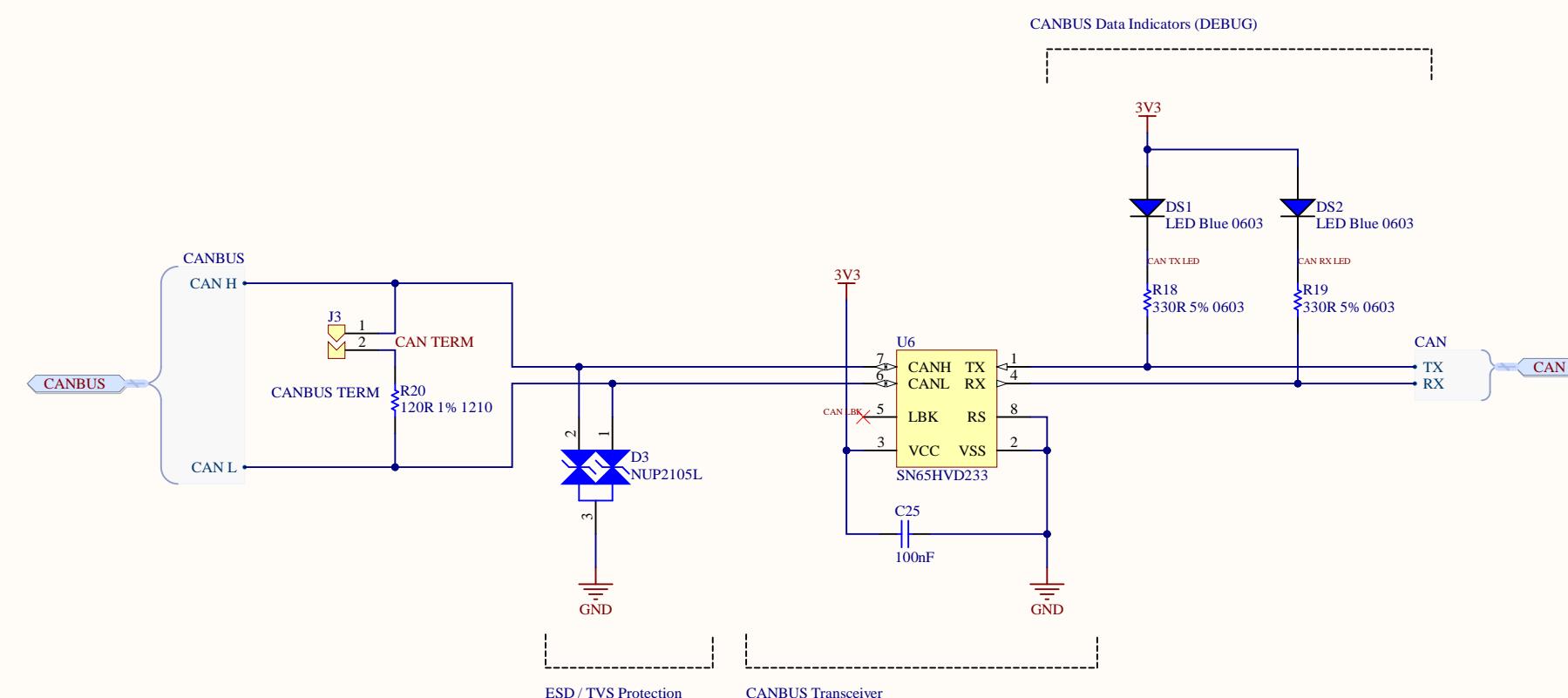
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Revision History:

Rev	Date	Description

Sheet Title: CANBUS (SN65HVD233)

Project: Chassis Controller (Interim) 2020

QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000
Australia

Size: A3 Number: 4

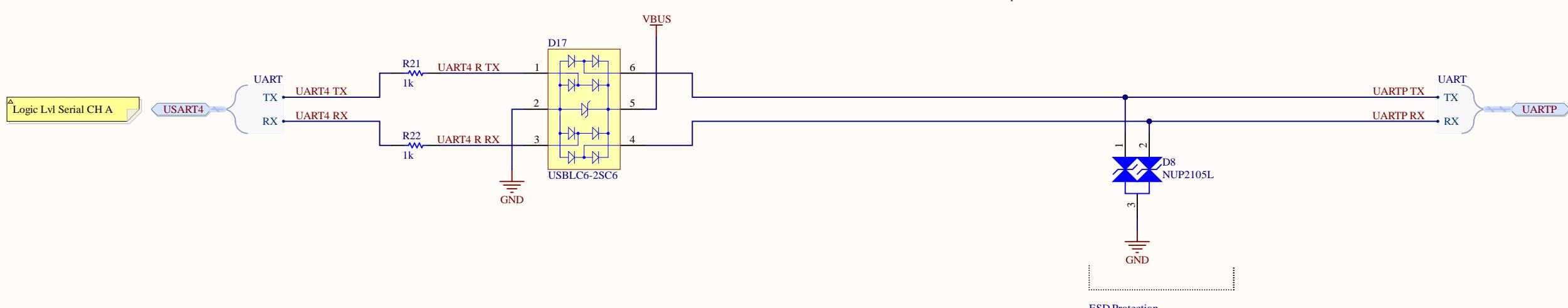
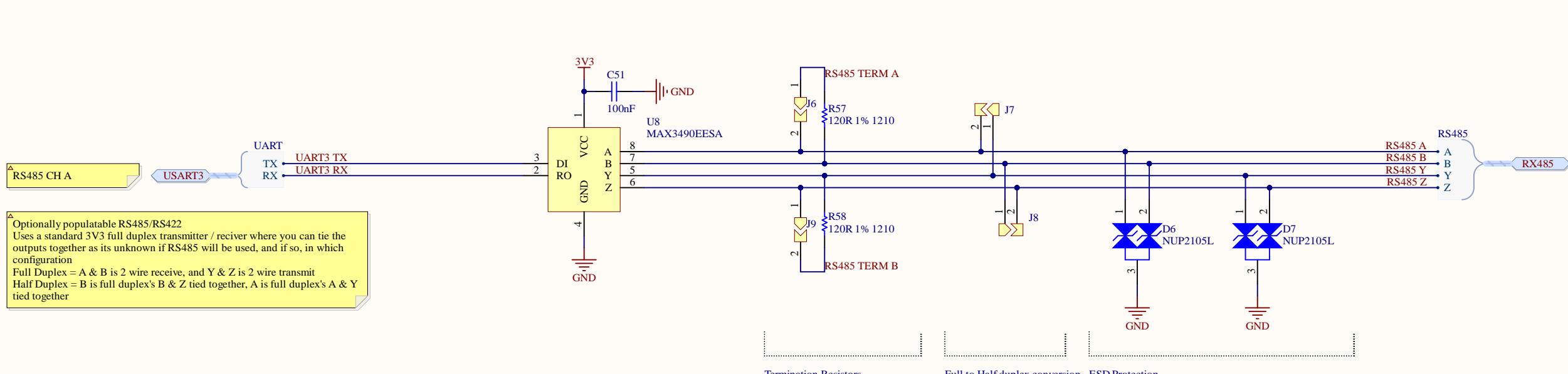
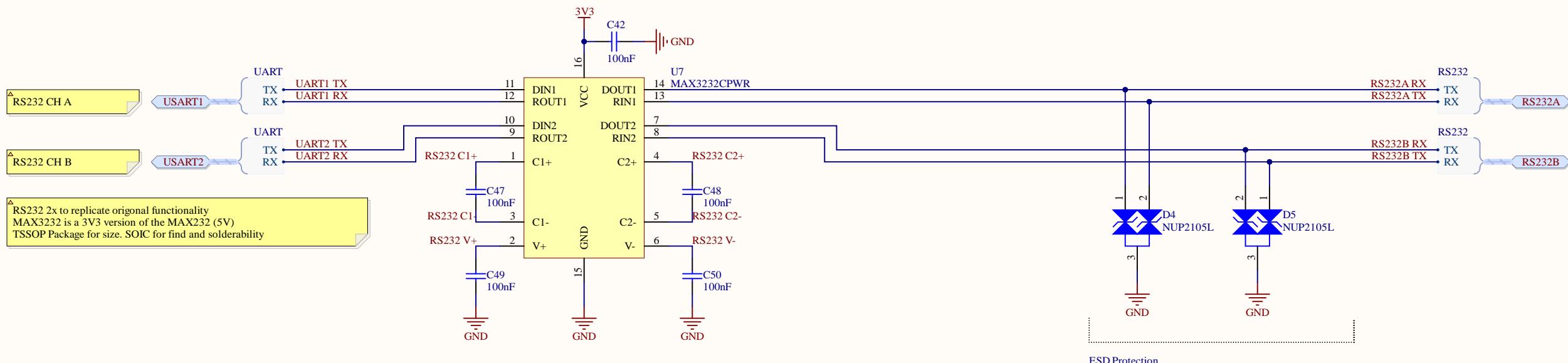
Version: *
Revision: *

Drawn By: Jonn Dillon

Sheet 4 of 13

Print Date: 15/09/2020 Print Time: 6:32:15 PM

File Name: CC-S03-V00-CANBUS.SchDoc



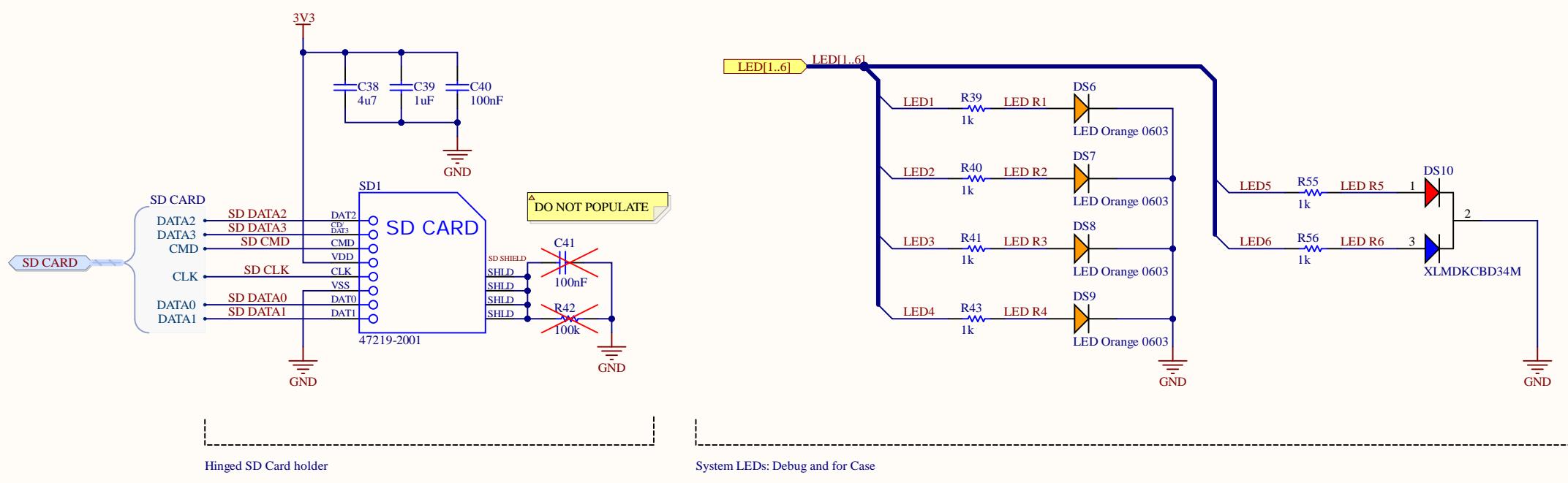
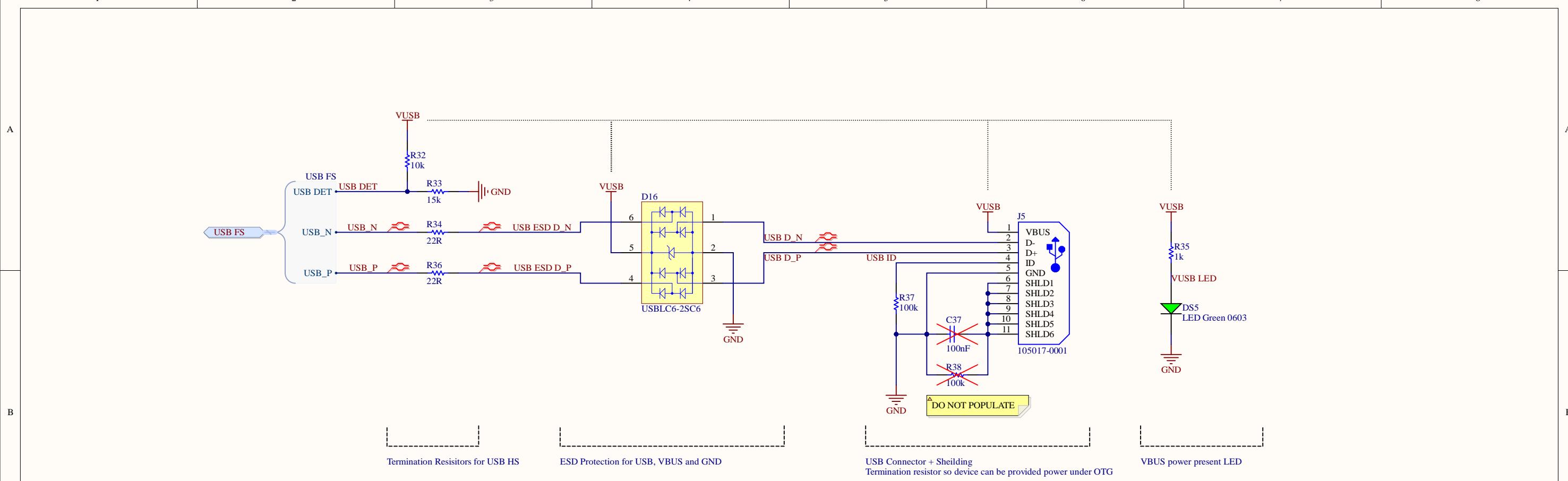
Revision History:

Rev	Date	Description

Sheet Title: **Serial Communications (RS232 x2, RS485, Serial)**Project: **Chassis Controller (Interim) 2020**QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000Size: **A3**Number: **5**Version:
*2 George Street
Brisbane, QLD 4000Revision: *****Drawn By: **Jonn Dillon**Sheet **5** of **13**

Australia

Print Date: **15/09/2020**Print Time: **6:32:15 PM**File Name: **CC-S04-V00-SerialComs.SchDoc**



Revision History:

Rev	Date	Description

Sheet Title: Microcontroller Peripherals (USB FS, SD Card, LEDs)

Project: Chassis Controller (Interim) 2020

QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000

Size: A3 Number: 6

Version: *

Revision: *

Drawn By: Jonn Dillon

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Australia

Print Date: 15/09/2020 Print Time: 6:32:15 PM File Name: CC-S05-V00-MicrocontrollerPeripherals.SchDoc

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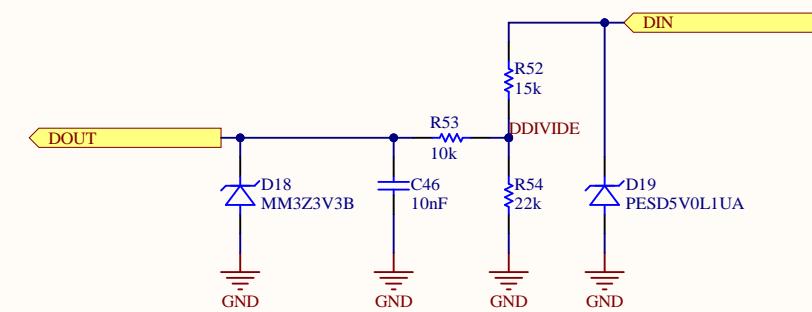
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Revision History:

Rev	Date	Description

Sheet Title: **Input Protection (Digital)**Project: **Chassis Controller (Interim) 2020**QUT Motorsport
O-120, Gardens Point

Size: A3

Number: 7

Version:

2 George Street
Brisbane, QLD 4000

Revision:

* Brisbane, QLD 4000

Drawn By: Jonn Dillon

Sheet

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Print Date: 15/09/2020 Print Time: 6:32:15 PM File Name: CC-S06-V00-DigitalIn.SchDoc

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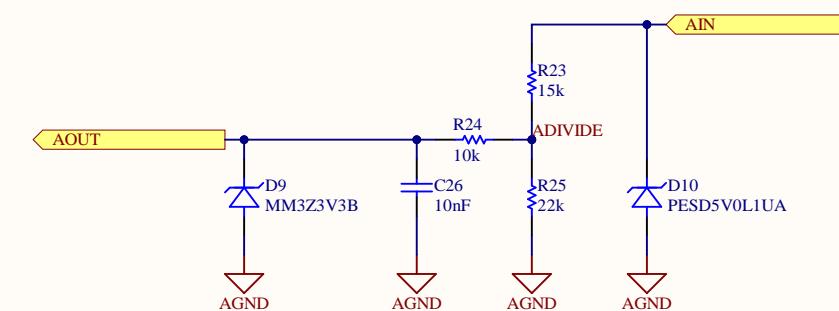
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Revision History:

Rev	Date	Description

Sheet Title: **Input Protection (Anagloue)**Project: **Chassis Controller (Interim) 2020**QUT Motorsport
O-120, Gardens Point

Size: A3 Number: 8

Version: *
Brisbane, QLD 4000

Revision: *

Drawn By: Jonn Dillon Sheet 8 of 13 Australia

Print Date: 15/09/2020 Print Time: 6:32:15 PM File Name: CC-S07-V00-AnalogIn.Sch|Doc

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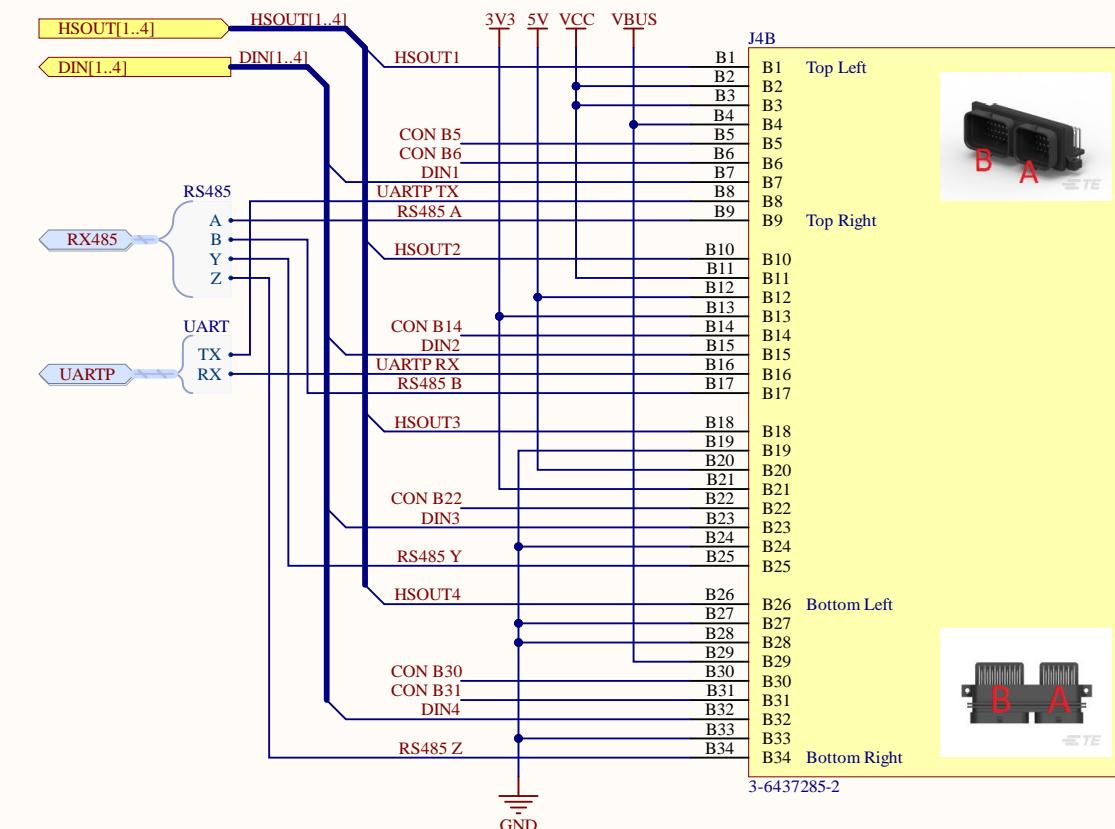
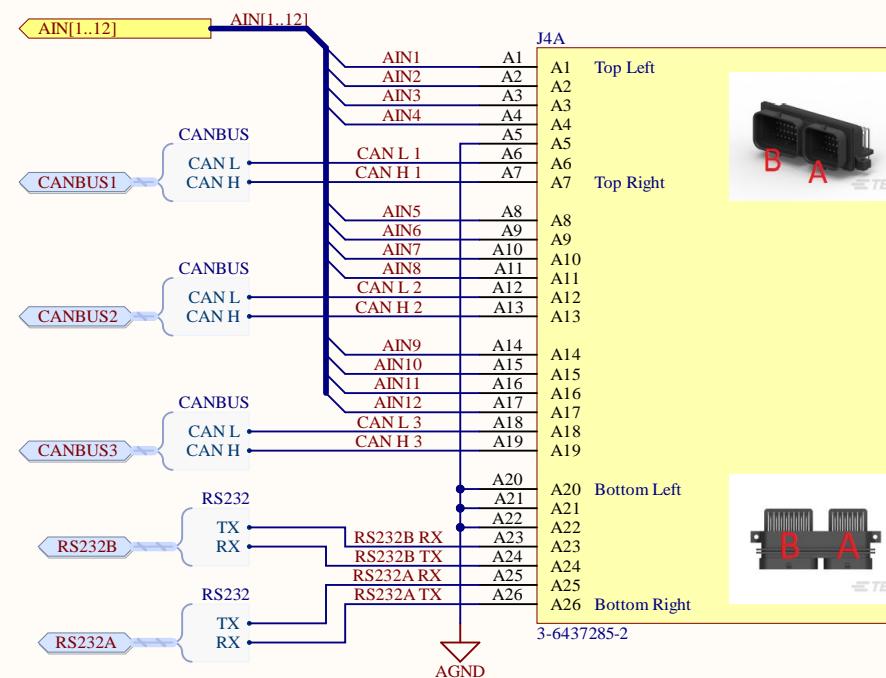
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Revision History:

Rev	Date	Description

Sheet Title: Connector (Superseal 1.0, 60 Pin, Right Angle)

Project: Chassis Controller (Interim) 2020

QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000

Size: A3 Number: 9

Version:

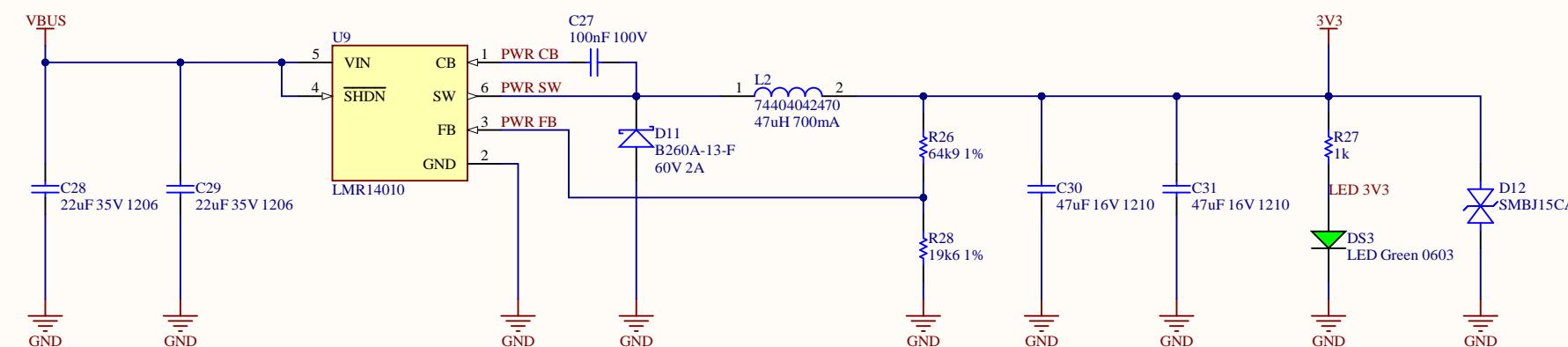
Revision: *
Drawn By: Jonn Dillon
Sheet 9 of 13
Print Date: 15/09/2020 Print Time: 6:32:16 PM File Name: CC-S08-V00-Connector.SchDoc

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Revision History:

Rev	Date	Description

Sheet Title: Power Supply (9-25V to 3v3 @ 0.1-0.3A)

Project: Chassis Controller (Interim) 2020

QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000

Size: A3 Number: 10

Version: 01
Revision: 01

Drawn By: Jonn Dillon

Sheet 10 of 13 Australia

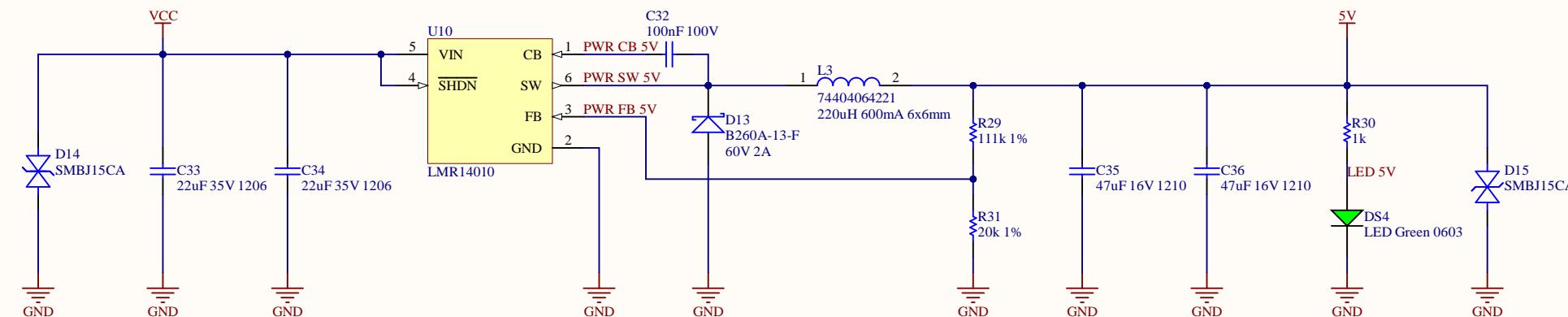
Print Date: 15/09/2020 Print Time: 6:32:16 PM File Name: CC-S09-V00-PSU-3V3.SchDoc

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Revision History:

Rev	Date	Description

Sheet Title: Power Supply (9-25V to 5V @ 0.1-0.3A)

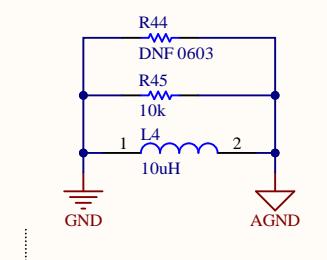
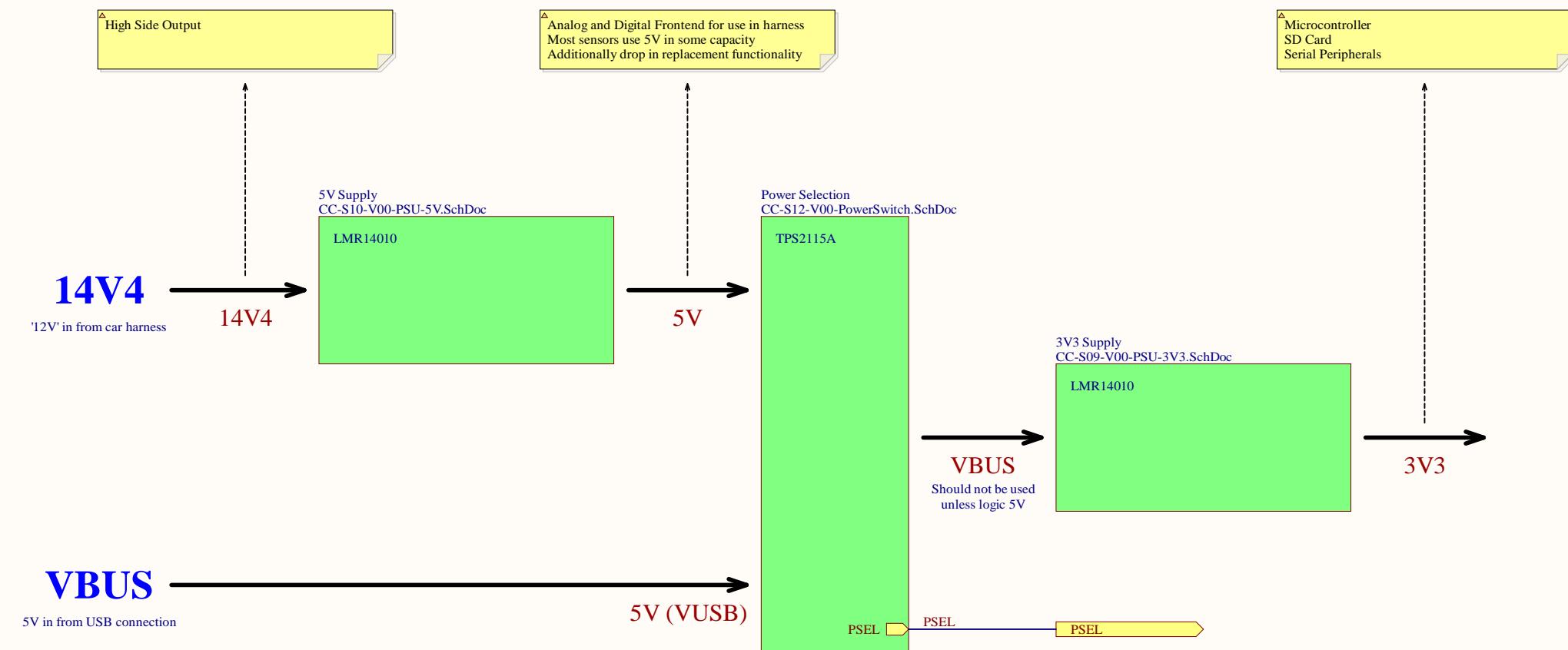
Project: Chassis Controller (Interim) 2020

QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000

Size: A3 Number: 11 Version: 01

Revision: 01 Drawn By: Jonn Dillon Sheet 11 of 13 Australia

Print Date: 15/09/2020 Print Time: 6:32:16 PM File Name: CC-S10-V00-PSU-5V.SchDoc



Analog Ground Connection

Revision History:

Rev	Date	Description

Sheet Title: **CC Power System (VCC, USB to 5V, VBUS, 3V3)**Project: **Chassis Controller (Interim) 2020**QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000Size: **A3** Number: **12** Version: *****Revision: ***** Drawn By: **Jonn Dillon** Sheet **12 of 13** AustraliaPrint Date: **15/09/2020** Print Time: **6:32:16 PM** File Name: **CC-S11-V00-Power.SchDoc**

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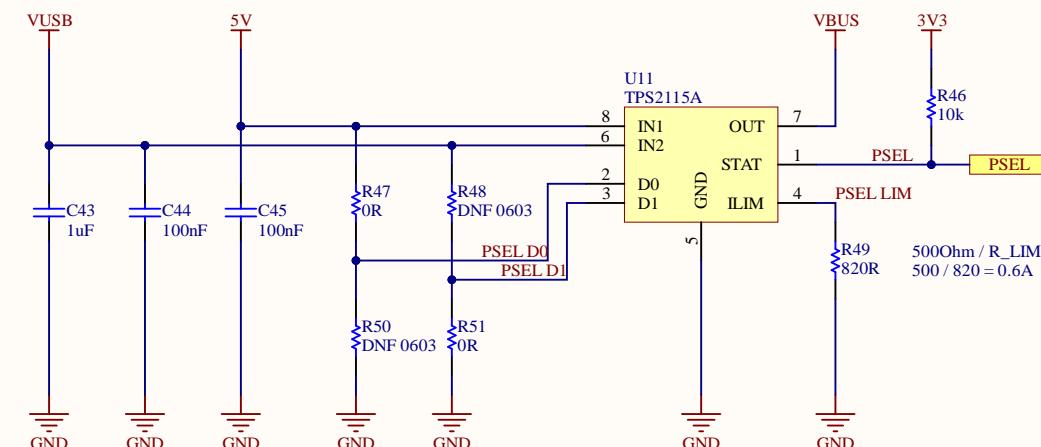
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**Table 1. Truth Table**

D1	D0	V _{I(IN2)} > V _{I(IN1)} ⁽¹⁾	STAT	OUT ⁽²⁾
0	0	X	Hi-Z	IN2
0	1	No	0	IN1
0	1	Yes	Hi-Z	IN2
1	0	X	0	IN1
1	1	X	0	Hi-Z

(1) X = don't care

(2) The undervoltage lockout circuit causes the output OUT to go Hi-Z if the selected power supply does not exceed the IN1 or IN2 UVLO, or if neither of the supplies exceeds the internal V_{DD} UVLO.**Revision History:**

Rev	Date	Description

Sheet Title: Power Switch (5V or USB to VBUS)Project: **Chassis Controller (Interim) 2020**QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000

Size: A3 Number: 13

Version: * Revision: *

Drawn By: Jonn Dillon

Sheet 13 of 13

Australia

Print Date: 15/09/2020 Print Time: 6:32:16 PM

File Name: CC-S12-V00-PowerSwitch.SchDoc

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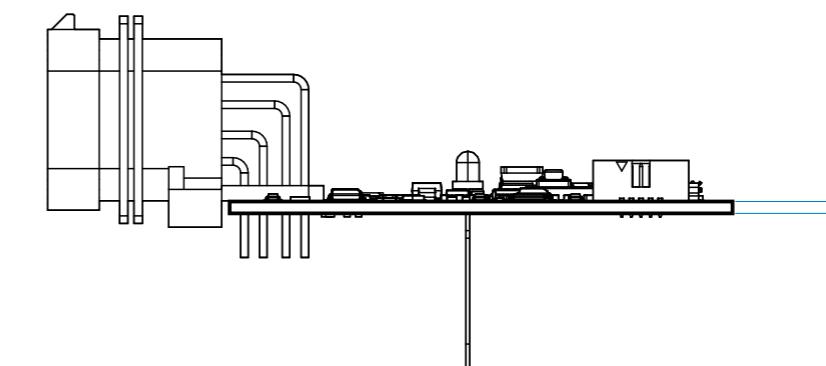
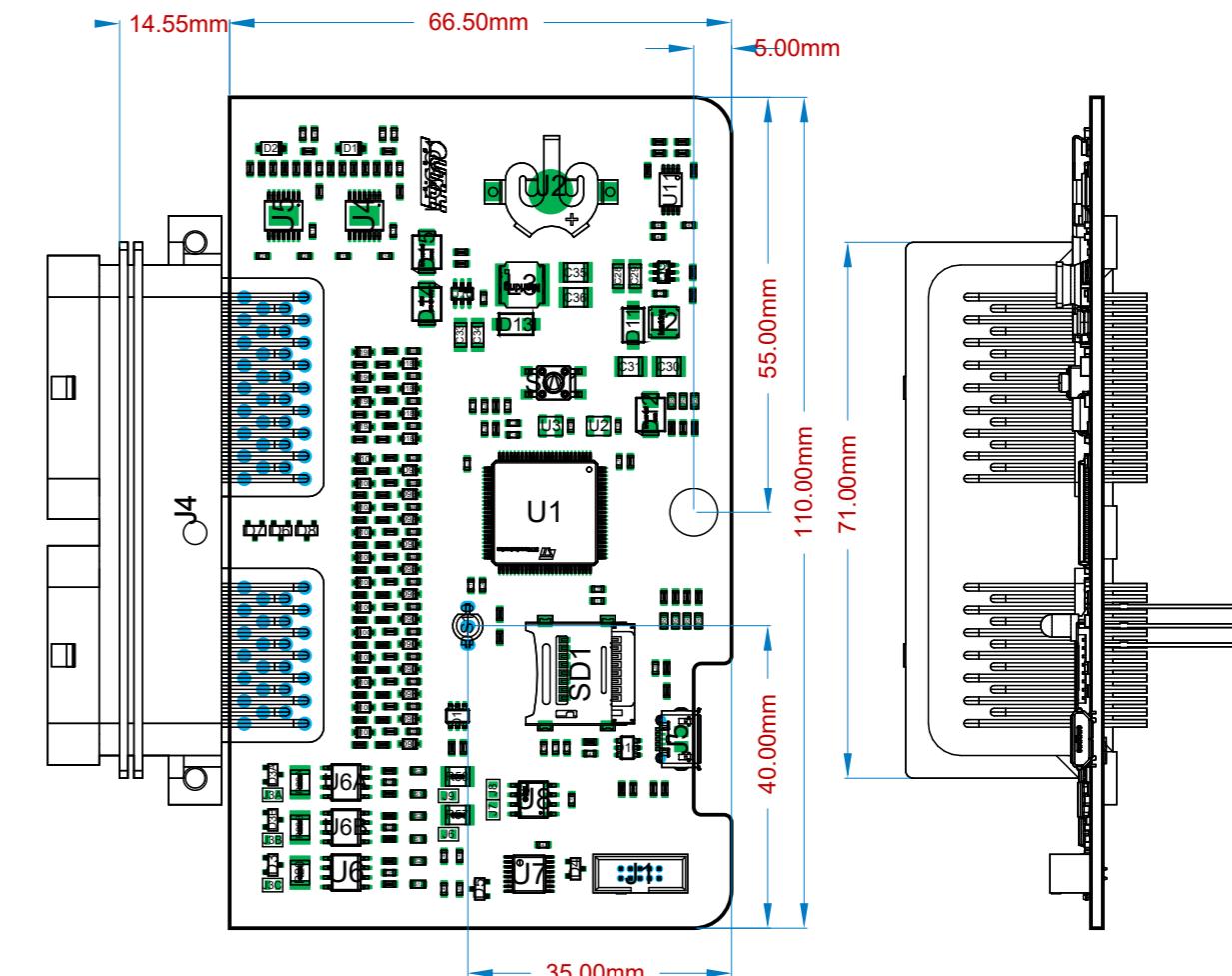
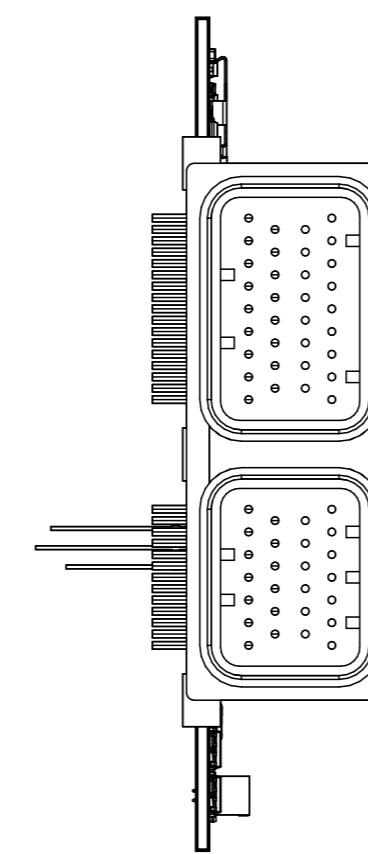
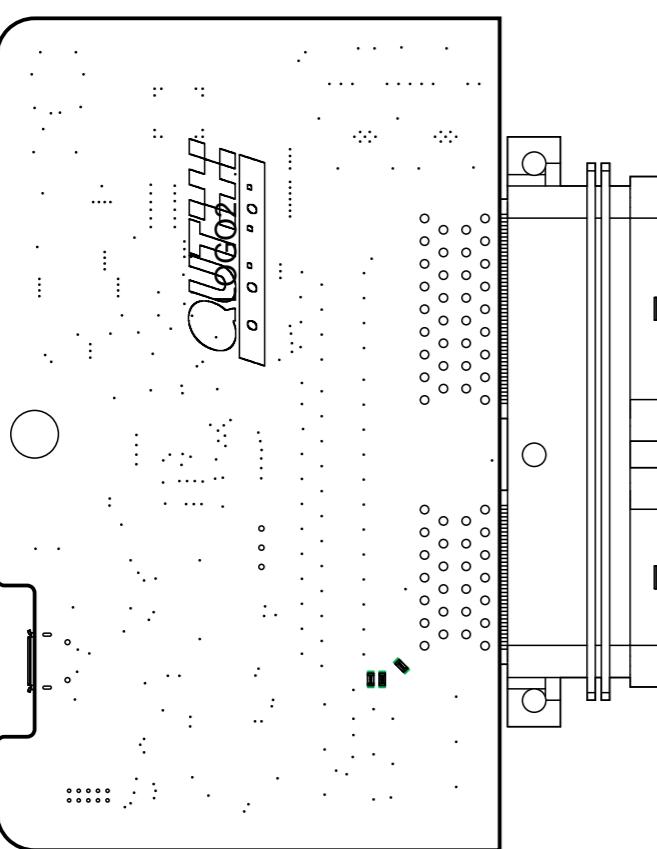
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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES:		FINISH:			DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING		REVISION
DRAW	NAME	SIGNATURE	DATA					
CHK'D						TITLE:		
APPV'D								
MFG						DWG NO.		
QA								
						SCALE 1:1		
						SHEET 1 OF 4		

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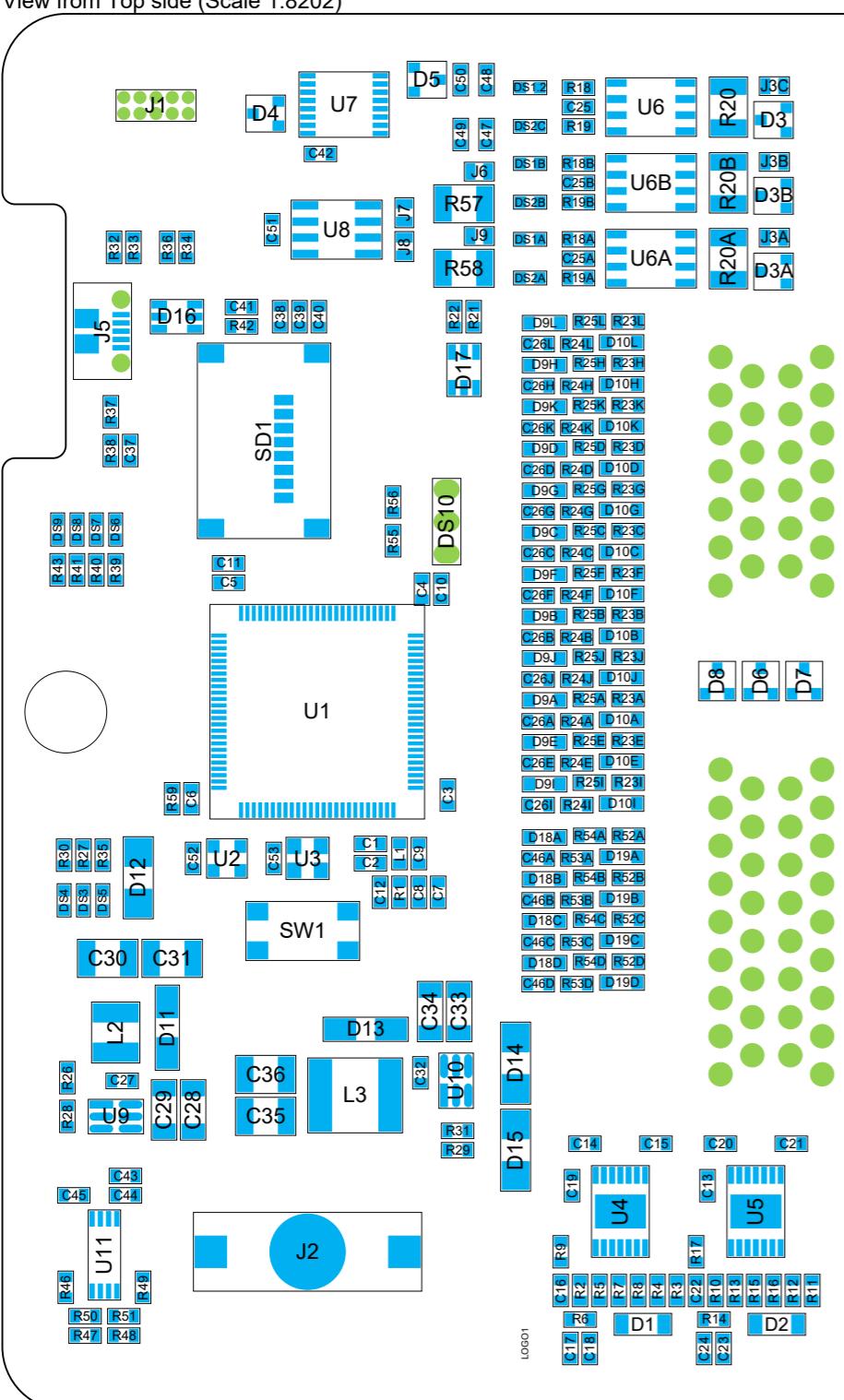
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View from Top side (Scale 1.8202)



Bill Of Materials

Line #	Designator	Comment	Quantity
1	C1, C38	4u7	2
2	C2, C3, C4, C5, C6, C8, C12, C13, C17, C18, C19, C23, C24, C25A, C25B, C25C, C37, C40, C41, C42, C44, C45, C47, C48, C49, C50, C51, C52, C53	100nF	29
3	C7, C39, C43	1uF	3
4	C9, C14, C15, C20, C21, C26A, C26B, C26C, C26D, C26E, C26F, C26G, C26H, C26I, C26J, C26K, C26L, C46A, C46B, C46C, C46D	10nF	21
5	C10, C11	2u2	2
6	C16, C22	47nF	2
7	C27, C32	100nF 100V	2
8	C28, C29, C33, C34	22uF 35V 1206	4
9	C30, C31, C35, C36	47uF 16V 1210	4
10	D1, D2	BZT52B3V3-G3-08	2
11	D3A, D3B, D3C, D4, D5, D6, D7, D8	NUP2105L	8
12	D9A, D9B, D9C, D9D, D9E, D9F, D9G, D9H, D9I, D9J, D9K, D9L, D18A, D18B, D18C, D18D	MM3Z3V3B	16
13	D10A, D10B, D10C, D10D, D10E, D10F, D10G, D10H, D10I, D10J, D10K, D10L, D19A, D19B, D19C, D19D	PESD5V0L1UA	16
14	D11, D13	B260A-13-F	2
15	D12, D14, D15	SMBJ15CA	3
16	D16, D17	USBLC6-2SC6	2
17	DS1A, DS1B, DS1C, DS2A, DS2B, DS2C	LED Blue 0603	6
18	DS3, DS4, DS5	LED Green 0603	3
19	DS6, DS7, DS8, DS9	LED Orange 0603	4
20	DS10	XLMDK CBD34M	1
21	J1	IDC 10P 2x5 1.27mm	1
22	J2	Keystone 2984	1
23	J3A, J3B, J3C, J7, J8	Jumper 2Way Solderable	5
24	J4	3-6437285-2	1
25	J5	105017-0001	1
26	J6, J9	Jumper 2Way Solderable	2
27	L1, L4	10uH	2
28	L2	74404042470	1
29	L3	74404064221	1
30	LOGO1	10mm Wide QUTMS Logo	1

Bill Of Materials

Line #	Designator	Comment	Quantity
31	LOGO2	30mm Wide QUTMS Logo	1
32	R1	4k7 5% 0603	1
33	R2, R3, R4, R5, R6, R7, R10, R11, R12, R13, R14, R15	4k7	12
34	R8, R16	1k2	2
35	R9, R17	47R	2
36	R18A, R18B, R18C, R19A, R19B, R19C	330R 5% 0603	6
37	R20A, R20B, R20C, R57, R58	120R 1% 1210	5
38	R21, R22, R27, R30, R35, R39, R40, R41, R43, R55, R56	1k	11
39	R23A, R23B, R23C, R23D, R23E, R23F, R23G, R23H, R23I, R23J, R23K, R23L, R33, R52A, R52B, R52C, R52D	15k	17
40	R24A, R24B, R24C, R24D, R24E, R24F, R24G, R24H, R24I, R24J, R24K, R24L, R32, R45, R46, R53A, R53B, R53C, R53D, R59	10k	20
41	R25A, R25B, R25C, R25D, R25E, R25F, R25G, R25H, R25I, R25J, R25K, R25L, R54A, R54B, R54C, R54D	22k	16
42	R26	64k9 1%	1
43	R28	19k6 1%	1
44	R29	111k 1%	1
45	R31	20k 1%	1
46	R34, R36	22R	2
47	R37, R38, R42	100k	3
48	R44, R48, R50	DNF 0603	3
49	R47, R51	0R	2
50	R49	820R	1
51	SD1	47219-2001	1
52	SW1	BTN Standard 4.5mm	1
53	U1	STM32F765VI	1
54	U2	DSC6083CI2A-032K768	1
55	U3	DSC1001D1-008.0000T	1
56	U4, U5	BTS7080-2EPA	2
57	U6A, U6B, U6C	SN65HVD233	3
58	U7	MAX3232CPWR	1
59	U8	MAX3490EEASA	1
60	U9, U10	LMR14010	2
61	U11	TPS2115A	1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES:		FINISH:			DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING		REVISION
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APPV'D								
MFG								
QA						MATERIAL:		DWG NO.
						WEIGHT:		SCALE 1:1
								SHEET 2 OF 4
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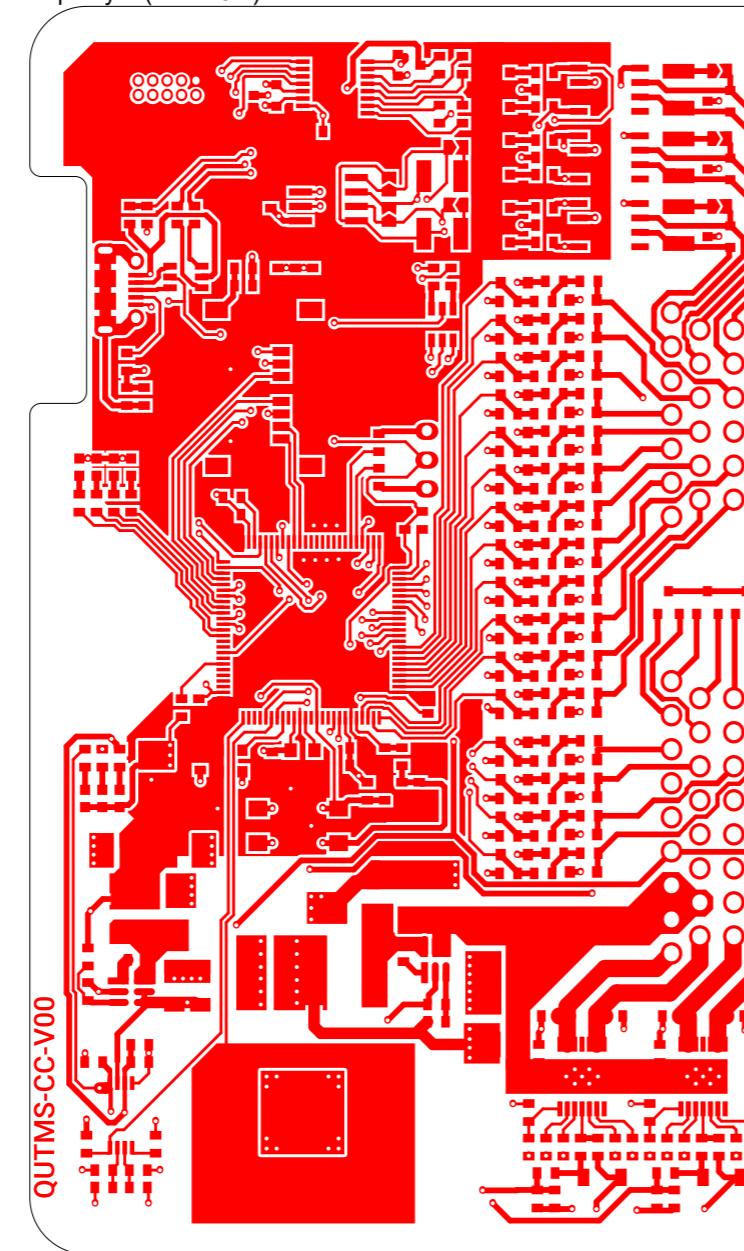
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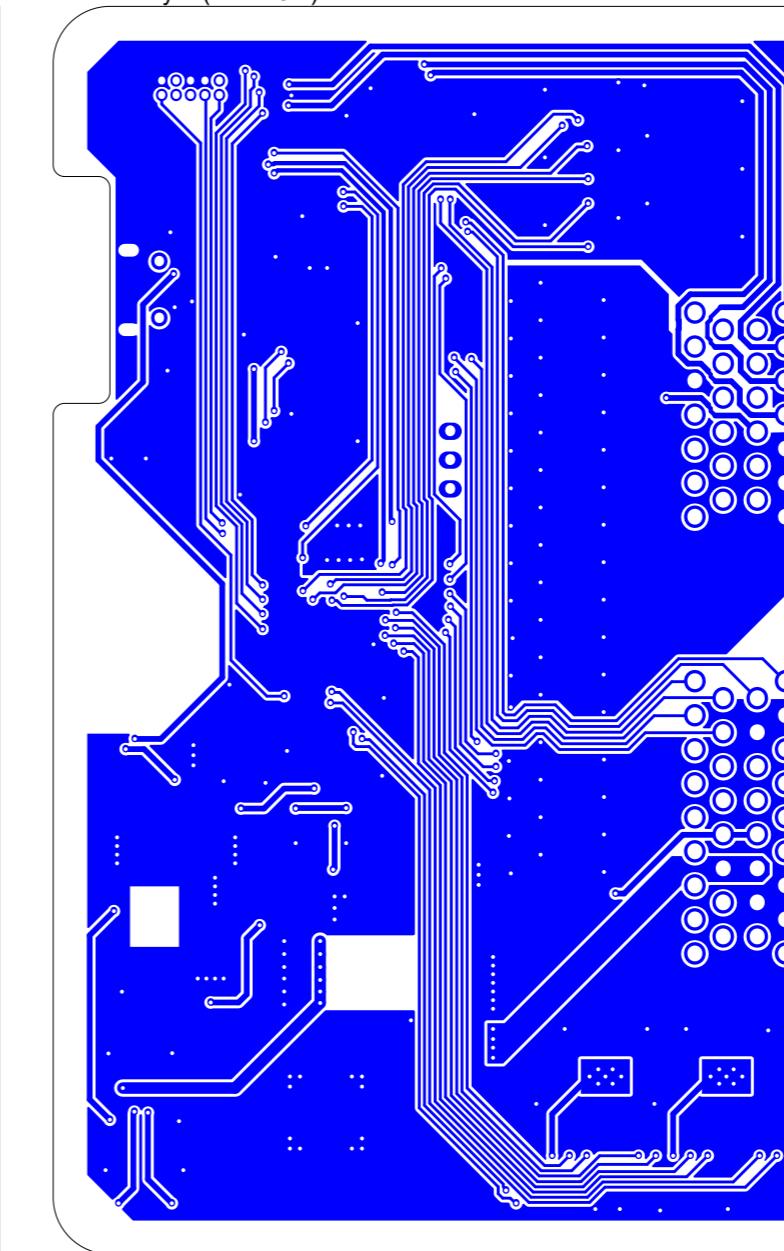
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Top Layer (Scale 3:2)



Bottom Layer (Scale 3:2)



Layer Stack Legend

Material	Layer	Thickness	Dielectric Material	Type	Gerber
Top Overlay				Legend	GTO
Surface Material	Top Solder	0.01mm	Solder Resist	Solder Mask	GTS
Copper	Top Layer	0.04mm		Signal	GTL
Core					
		1.50mm	Core-043	Dielectric	
Copper	Bottom Layer	0.04mm		Signal	GBL
Surface Material	Bottom Solder	0.01mm	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO
Total thickness: 1.59mm					

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES:		FINISH:	DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION
DRAW	NAME	SIGNATURE	DATA		
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APPV'D					
MFG					
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			WEIGHT:	SCALE 1:1	
					SHEET 3 OF 4

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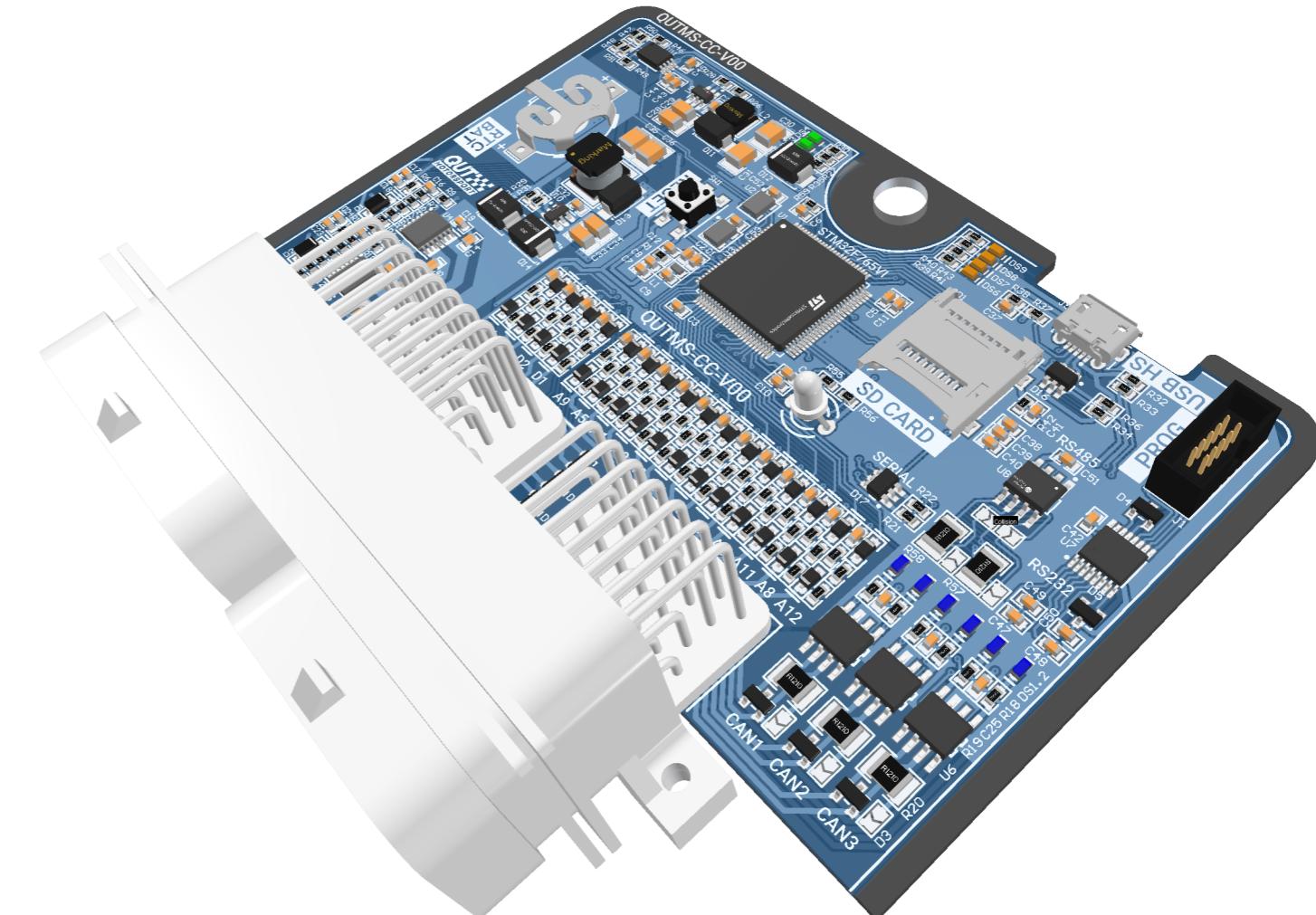
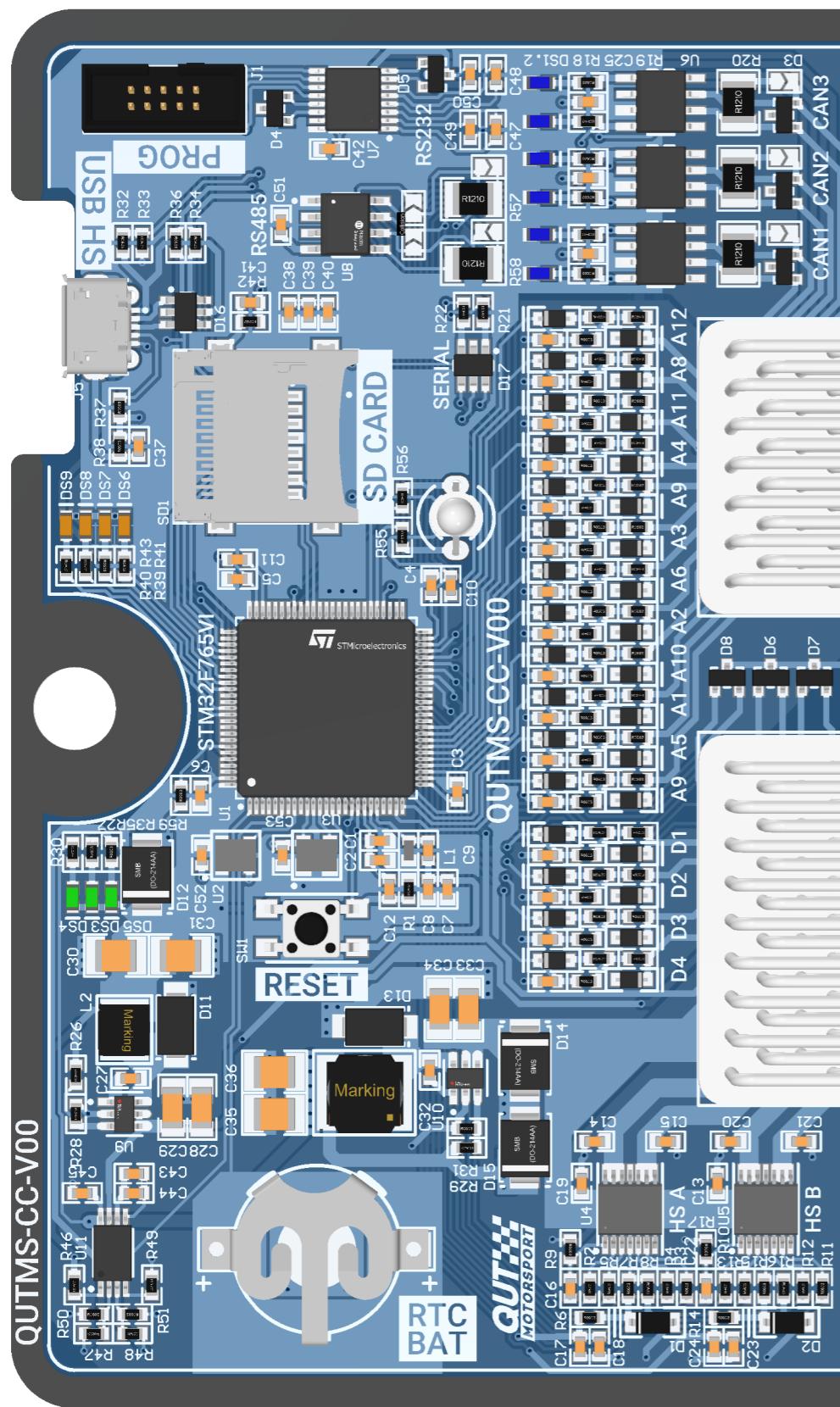
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			WEIGHT:			SCALE 1:1	SHEET 4 OF 4		

