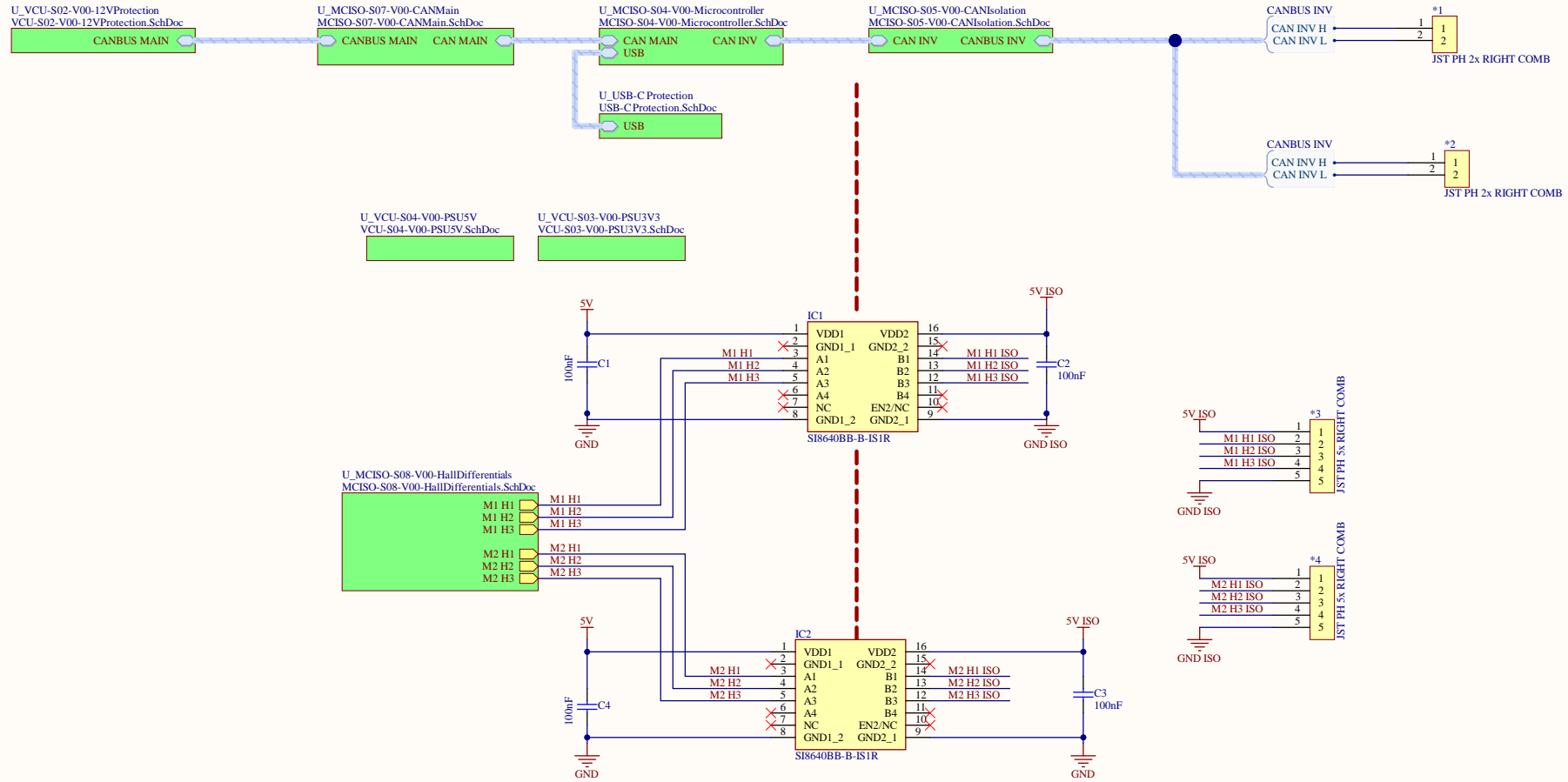


CAN ISOLATOR



Title		
Size A3	Number	Revision
Date:	2/10/2021	Sheet of
File:	C:\Users\j\MCISO-S01-V00-Master Sch	Drawn By:

A

B

C

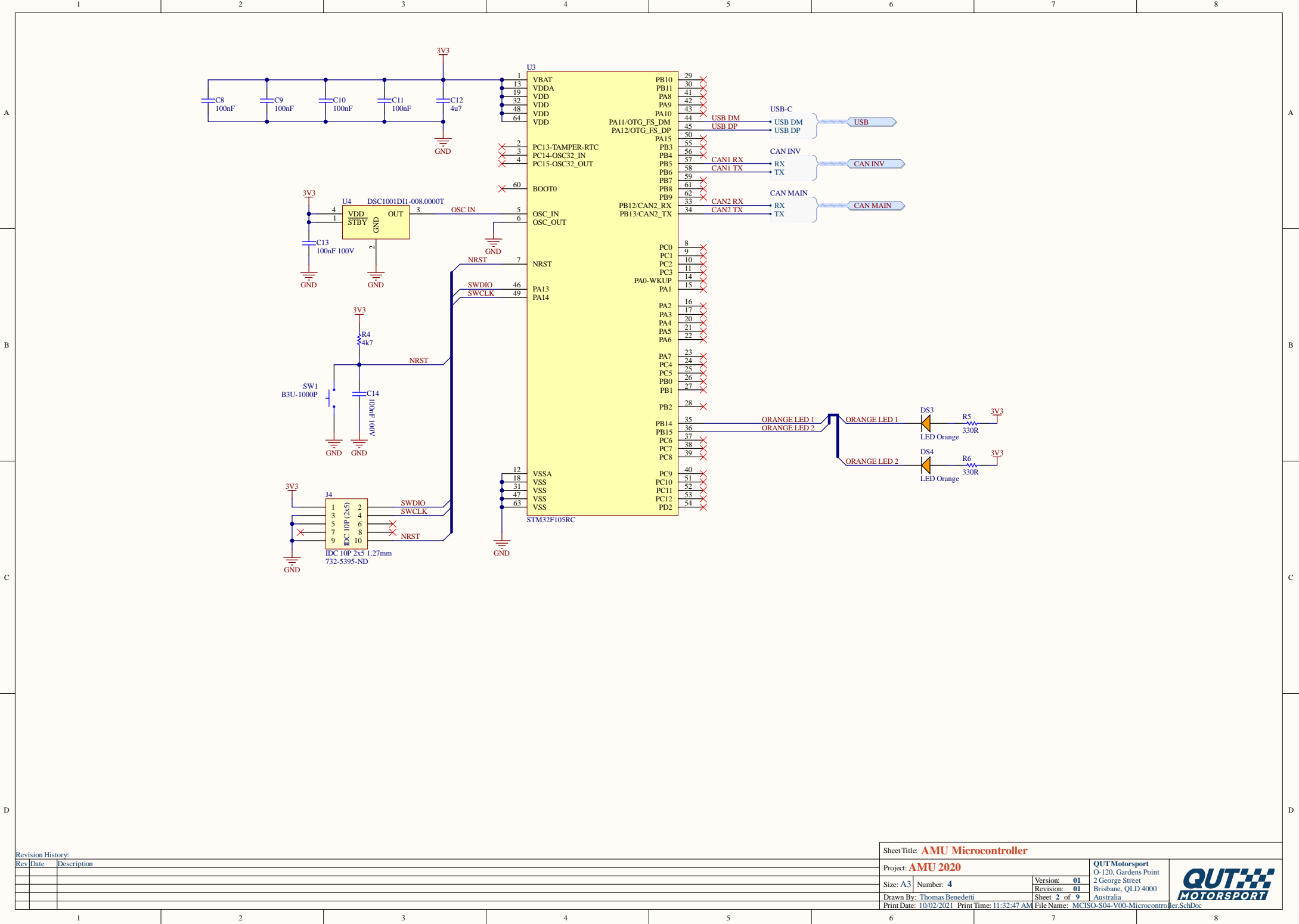
D

A

B

C

D



Revision History:

Rev	Date	Description

Sheet Title: **AMU Microcontroller**

Project: **AMU 2020**

Size: A3 Number: **4**

Drawn By: Thomas Benedetti

Print Date: 10/02/2021 Print Time: 11:32:47 AM File Name: MCISO-S04-V00-Microcontroller.SchDoc

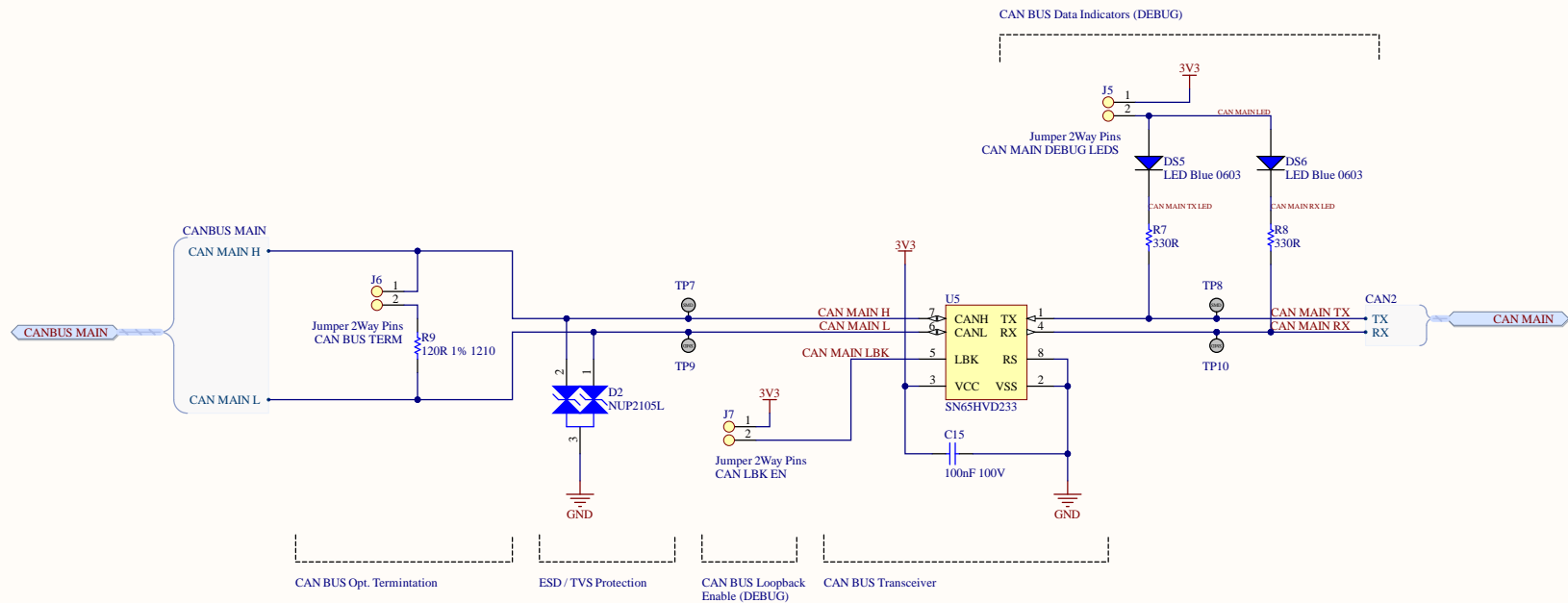
Version: **01**

Revision: **01**

Sheet **2** of **9**

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





Revision History:

Rev	Date	Description

Sheet Title: **Isolated CANBUS2 3V3**

Project: **AMU 2020 (Sourced from BMS 2020)**

Size: A3 Number: **5**

Drawn By: Jonn Dillon

Print Date: 10/02/2021 Print Time: 11:32:48 AM

Version: **01**

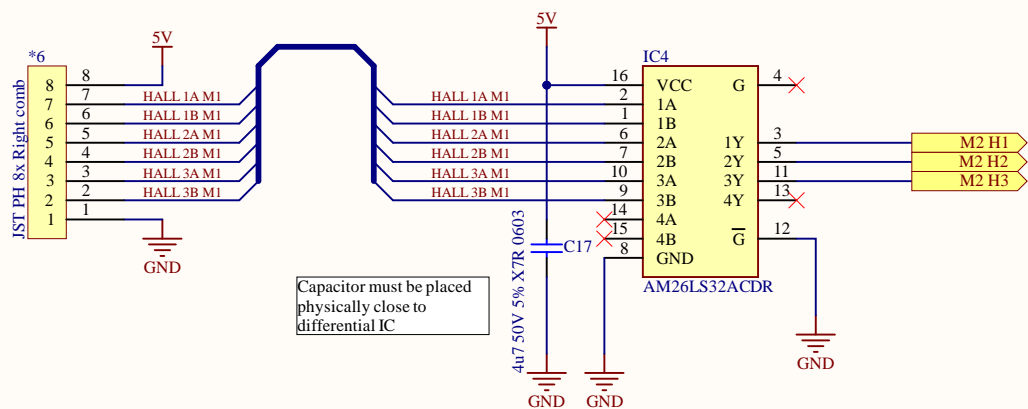
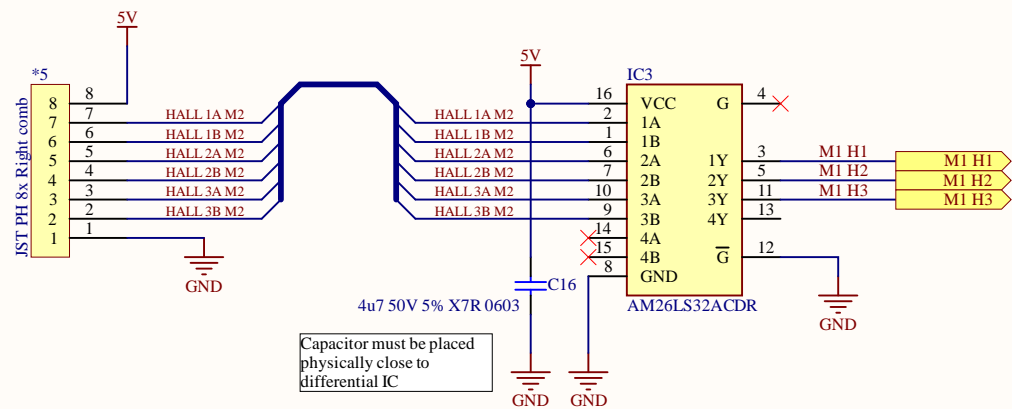
Revision: **01**

Sheet **4** of **9**

File Name: MCISO-S07-V00-CANMain.SchDoc

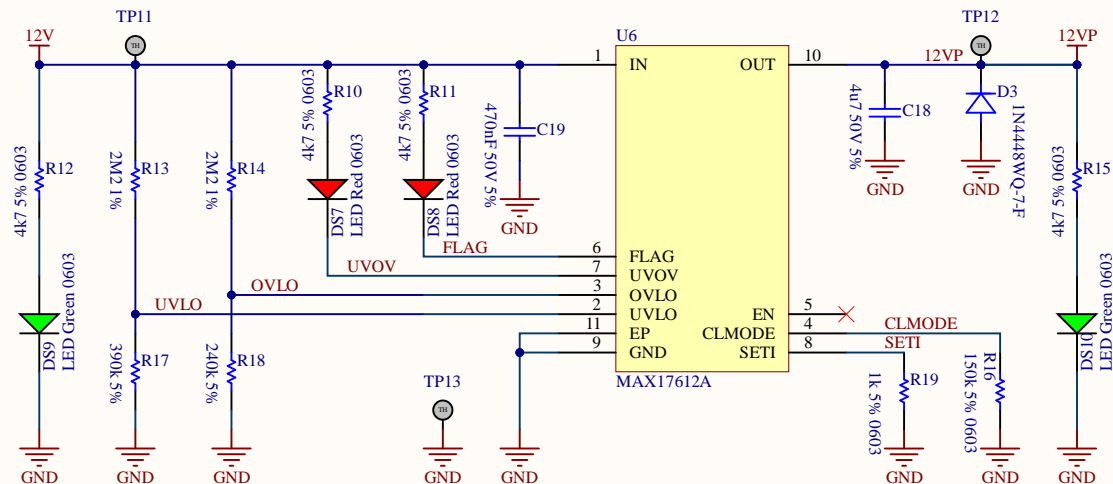
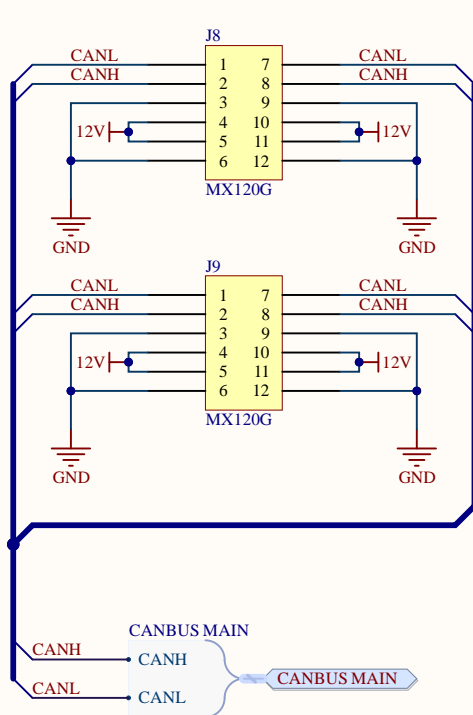
QUT Motorsport
O-120, Gardens Point
2 George Street
Brisbane, QLD 4000
Australia





Title		
Size A4	Number	Revision
Date: 2/10/2021	Sheet of	
File: C:\Users\...\MCISO-S08-V00-HallDifferen...	Data Sheet Doc	

- UVLO - Under Voltage Lockout set to 10V by 390k (Datasheet)
 - OVLO - Over Voltage Lockout set to 15V by 240k (Datasheet)
 - SETI: Set current limit. From datasheet, SETI resistor is set to 1k to limit current to maximum 250mA output for device



DS1: FLAG Fault indicator. FLAG goes low, lighting DS1 when:
 • Overcurrent duration exceeds the blanking time.
 • Reverse current is detected (MAX17612A only).
 • Thermal shutdown is active.
 • RSETI is less than 1k Ω (max)

DS2: UVOV Fault indicator. UVOV goes low, lighting DS2 when:
 • Input voltage falls below UVLO threshold.
 • Input voltage rises above OVLO threshold.

Need 150k resistor from CLMODE to GND to prevent auto-retry. Will require IC to be power cycled

Status LEDs on protected and non-protected size for visual indication that board has power

Title		
Size	Number	Revision
A4		
Date:	2/10/2021	Sheet of
File:	C:\Users\...\VCU-S02-V00-12VProtection_SchDoc	By:

A

B

C

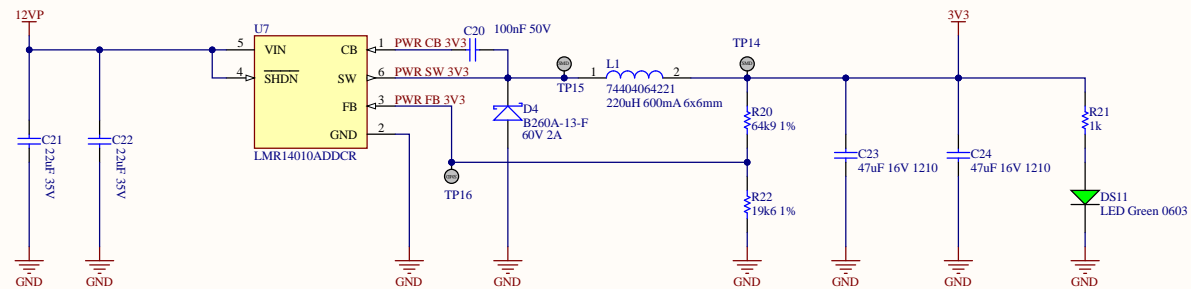
D

A

B

C

D



A

B

C

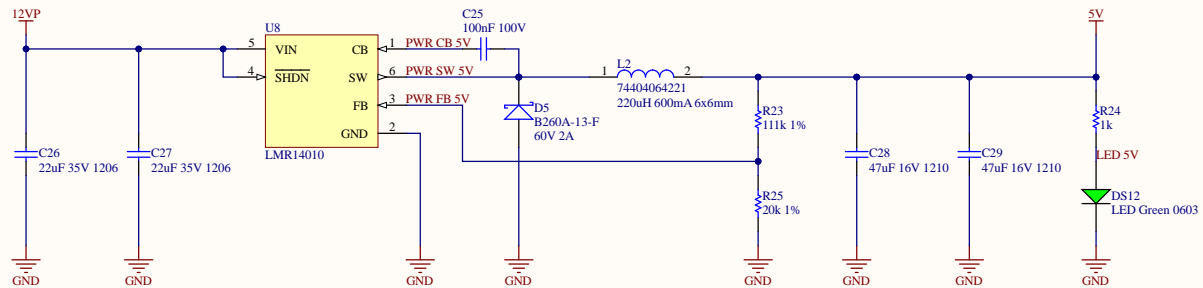
D

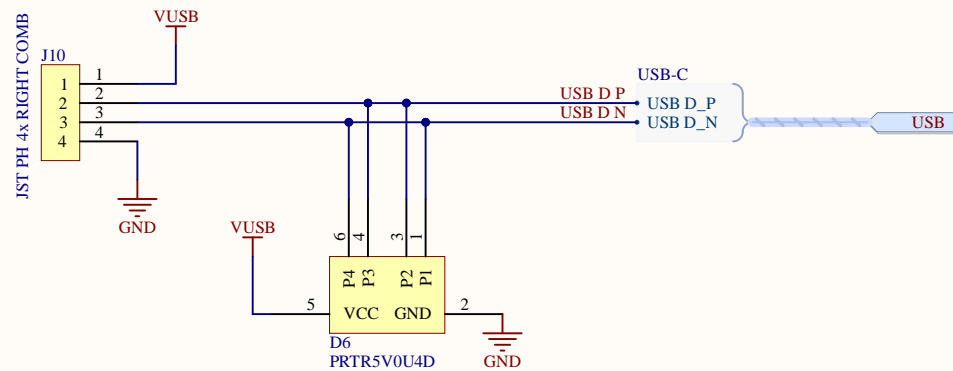
A

B

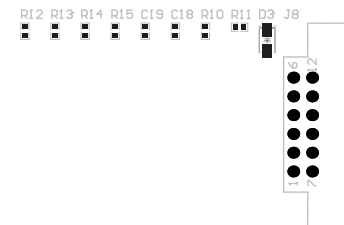
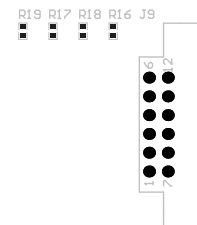
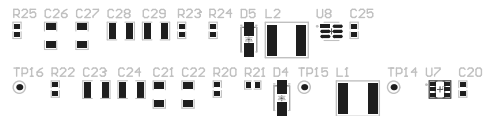
C

D





Title		
Size	Number	Revision
A4		
Date:	2/10/2021	Sheet of
File:	C:\Users\...\USB-C Protection.SchDoc	Drawn By:



Comment	Description	Designator	Footprint	Libref	Quantity
JST PH 2x RIGHT COMB		*1, *2	JST PH 2x RIGHT COMB	JST PH 2x RIGHT COMB	2
JST PH 5x RIGHT COMB		*3, *4	JST PH 5x RIGHT COMB	JST PH 5x RIGHT COMB	2
JST PH 8x RIGHT comb		*5, *6	JST PH 8x RIGHT SMD	JST PH 8x Right comb	2
100nf	Capacitor, Ceramic, SMD, 100nf, 50V, 5%, X7R, 0603	C1, C3, C5, C6, C7, C8, C9, C10, C11	Cap_Ceramic_0603	100nf 50V 5% X7R 0603	9
100nf	Capacitor, Ceramic, SMD, 100nf, 50V, 5%, X7R, 0603	C2, C4	Cap_Ceramic_0603	100nf 50V 5% X7R 0603	2
4u7	Capacitor, Ceramic, SMD, 4u7, 50V, 5%, X7R, 0603	C12	Cap_Ceramic_0603	4u7 50V 5% X7R 0603	1
100nf 100V	Capacitor, Ceramic, SMD, 100nf, 100V, 5%, X7R, 0603	C13, C14, C15, C25	Cap_Ceramic_0603	100nf 100V 5% X7R 0603	4
4u7 50V 5% X7R 0603	Capacitor, Ceramic, SMD, 4u7, 50V, 5%, X7R, 0603	C16, C17	Cap_Ceramic_0603	4u7 50V 5% X7R 0603	2
4u7 50V 5%	Capacitor, Ceramic, SMD, 4u7, 50V, 5%, X7R, 0603	C18	Cap_Ceramic_0603	4u7 50V 5% X7R 0603	1
470nf 50V 5%	Capacitor, Ceramic, SMD, 470nf, 50V, 5%, X7R, 0603	C19	Cap_Ceramic_0603	470nf 50V 5% X7R 0603	1
100nf 50V	Capacitor, Ceramic, SMD, 100nf, 50V, 5%, X7R, 0603	C20	Cap_Ceramic_0603	100nf 50V 5% X7R 0603	1
22uf 35V	22uf ±20% 35V Ceramic Capacitor XSR 1206 (3216 Metric)	C21, C22	Cap_Ceramic_1206	22uf 35V 20% XSR 1206	2
47uf 16V 1210	Capacitor, Ceramic, SMD, 47uf, 16V, 5%, X7R, 1210	C23, C24, C28, C29	Cap_Ceramic_1210	47uf 16V 10% X7R 1210	4
22uf 35V 1206	Capacitor, Ceramic, SMD, 22uf, 35V, 10%, X7R, 1206	C26, C27	Cap_Ceramic_1206	22uf 35V 10% X7R 1206	2
NUP2105L	NUP2105L	D1, D2	NUP2105L	NUP2105L	2
1N4448WQ-7-F	Diode, SMD, 75V, 5%, 250mA, SOD123	D3	SMA	1N4448WQ-7-F	1
B260A-13-F	Diode, Schottky Barrier Rectifier, 60 V, 2 A, B260A-13-F	D4, D5	SMA	B260A-13-F	2
PRTR5V0U4D	Clamp type Two Diode Surface Mount 6-TSOP	D6	SC-47	PRTR5V0U4D	1
LED Blue 0603		D51, D52, D55, D56	LED BLUE 0603	LED BLUE 0603	4
LED Orange		D53, D54	LED ORANGE 0603	LED ORANGE 0603	2
LED Red 0603		D57, D58	LED RED 0603	LED Red 0603	2
LED Green 0603		D59, D510, D511, D512	LED GREEN 0603	LED Green 0603	4
SI8640BB-B-IS1R	Integrated Circuit	IC1, IC2	SOIC127P600K175-16N	SI8640BB-B-IS1R	2
AM26LS32ACDR	Integrated Circuit	IC3, IC4	SOIC127P600K175-16N	AM26LS32ACDR	2
Jumper 2Way Pins	Jumper 2Way Side Pins	J1, J2, J3, J5, J6, J7	Jumper_2Way_Pin	Jumper 2Way Side Pins	6
IDC TOP 2x5 1.27mm	IDC TOP 2x5 1.27mm	J4	IDC 1.27MM TOP	IDC TOP 2x5 1.27mm	1
MX120G	MX120G with standard connector layout	J8, J9	MX120G	MX120G	2
JST PH 4x RIGHT COMB		J10	JST PH 4x RIGHT COMB	JST PH 4x RIGHT COMB	1
74404064221	FIXED IND 220uH 660mA 850mOhm	L1, L2	Inductor_6x6mm	74404064221	2
330R	Resistor, SMD, 330R, 0.1W, 5%, 0603	R1, R2, R5, R6, R7, R8	Res_ThinFilm_0603	330R 5% 0603	6
120R 1% 1210	Resistor, SMD, 120R, 0.25W, 1%, 1210	R3, R9	Res_ThinFilm_1210	120R 1% 1210	2
4k7	Resistor, SMD, 4k7, 0.1W, 5%, 0603	R4	Res_ThinFilm_0603	4k7 5% 0603	1
4k7 5% 0603	Resistor, SMD, 4k7, 0.1W, 5%, 0603	R10, R11, R12, R15	Res_ThinFilm_0603	4k7 5% 0603	4
2M2 1%	Resistor, SMD, 2M2, 0.125W, 1%, 0603	R13, R14	Res_ThinFilm_0603	2M2 1% 0603	2
150k 5% 0603	Resistor, SMD, 150k, 0.1W, 5%, 0603	R16	Res_ThinFilm_0603	150k 5%, 0603	1
390k 5%	Resistor, SMD, 390k, 0.1W, 5%, 0603	R17	Res_ThinFilm_0603	390k 5% 0603	1
240k 5%	Resistor, SMD, 240k, 0.1W, 5%, 0603	R18	Res_ThinFilm_0603	240k 5% 0603	1
1k 5% 0603	Resistor, SMD, 1k, 0.1W, 5%, 0603	R19	Res_ThinFilm_0603	1k 5% 0603	1
64k9 1%	Resistor, SMD, 64k9, 0.1W, 5%, 0603	R20	Res_ThinFilm_0603	64k9 1% 0603	1
1k	Resistor, SMD, 1k, 0.1W, 5%, 0603	R21, R24	Res_ThinFilm_0603	1k 5% 0603	2
19k6 1%	Resistor, SMD, 19k6, 0.1W, 5%, 0603	R22	Res_ThinFilm_0603	19k6 1% 0603	1
111k 1%	Resistor, SMD, 111k, 0.1W, 5%, 0603	R23	Res_ThinFilm_0603	111k 1% 0603	1
20k 1%	Resistor, SMD, 20k, 0.1W, 1%, 0603	R25	Res_ThinFilm_0603	20k 1% 0603	1
B3U-1000P	Omron B3U-1000P Ultra Miniature Switch	SW1	BTN B3U-1000P	BTN B3U-1000P	1
TestPoint_SMD		TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP14, TP15, TP16	TestPointsSMD	TestPoint_SMD	13
TestPoint		TP11, TP12, TP13	TestPoint	TestPoint	3
SN65LBC85	SN65LBC85	U1	SN65LBC85	SN65LBC85	1
SN65HVD233	SN65HVD233	U2, U5	SN65HVD233DR	SN65HVD233	2
STM32F105RC	ARM® Cortex®-M3 STM32F1 Microcontroller IC 32 bit 72MHz 256KB (256K x 8) FLASH 64-LQFP (129 I/O)	U3	STM32F105RC	STM32F105RC	1
DSC1001D11-008.00001	on 8MHz NO (Standard) CMOS Oscillator 1.8 - 3.3V Standby (Power Down) 4-SMD, No Lead	U4	DSC1001D11-008.00001C1-ND	DSC1001D11-008.00001	1
MAX17612A	4.5V to 60V, 250mA Current-Limiter with OV, UV, and Reverse Protection	U6	10-Pin TDFN EP	MAX17612A	1
LMR1401A0DDCR	IC REG BUCK ADJ 1A 150123-6	U7	FP-DDC0006A-MFG	CMP-04918-000056-1	1
LMR14010		U8	LMR14010	LMR14010	1