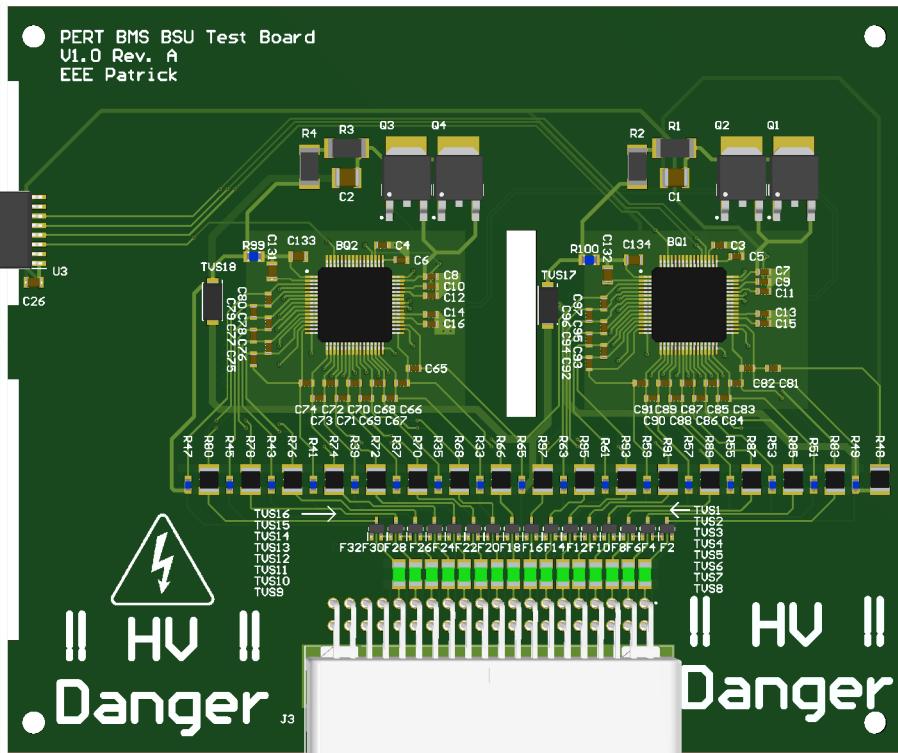
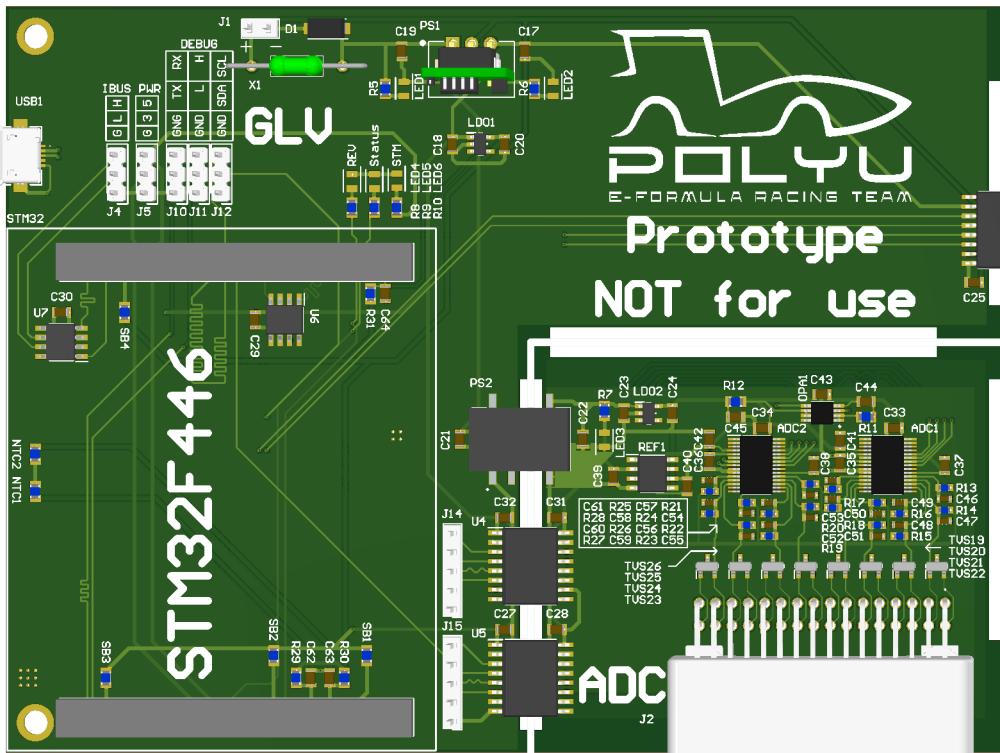


A

B

C

D



PERT BMS BSU Test Board

TESTING PROTOTYPE
NOT FOR USE



Project PERT BMS BSU Test Board				
Generation NA	Organization PERT	Sub Team EEE	Module PERT-BMS	
Ver. 1.0	Rev. A	Date 6/1/2024	Draw By EEE Patrick	Page 1 of 12

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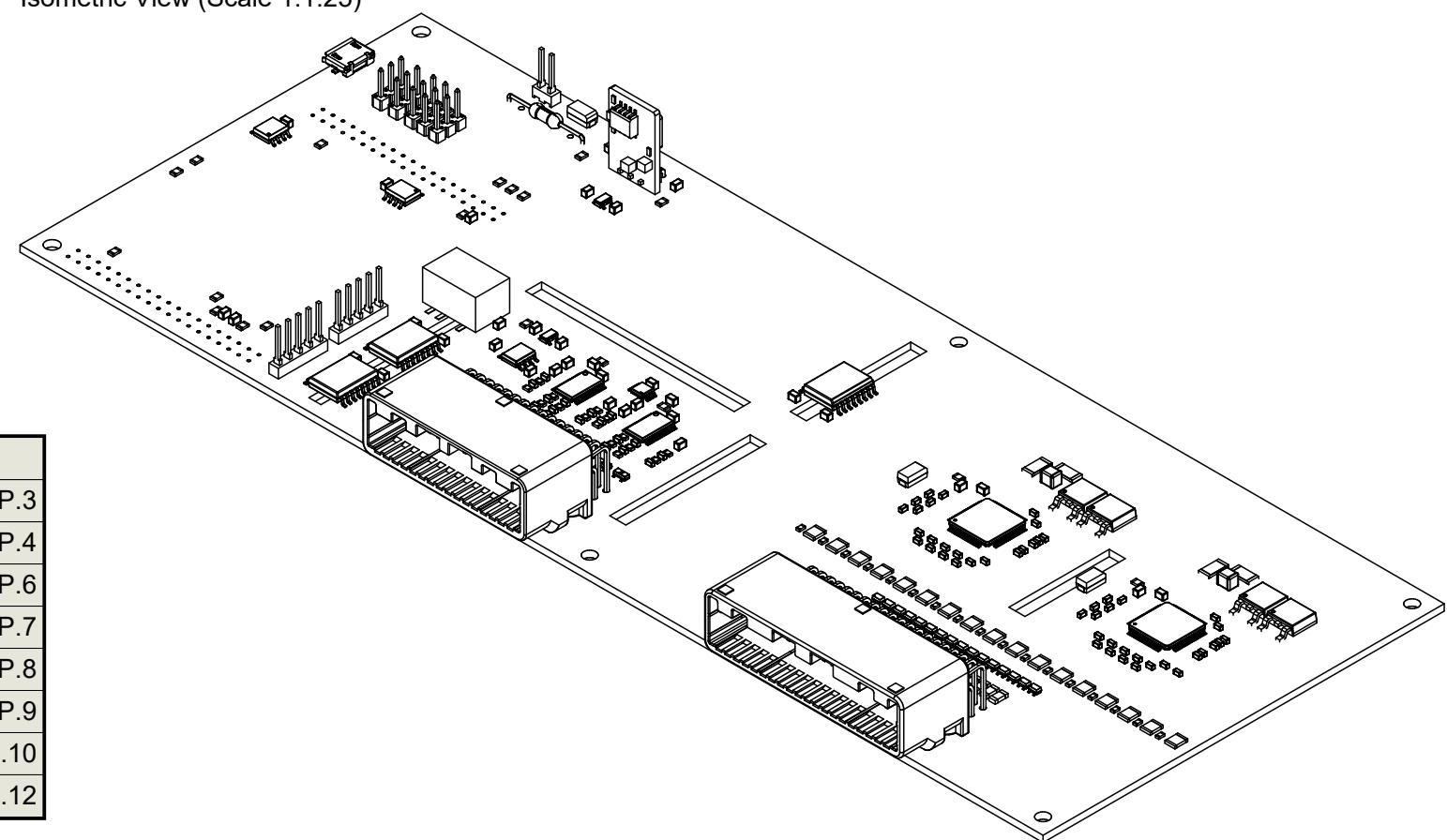
3

3

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4

Isometric View (Scale 1:1.25)



Content Table	
Introduction	P.3
Assembly View	P.4
Layer Stack	P.6
Board Layers	P.7
Drill View	P.8
Three Side View	P.9
BOM	P.10
Post Process Information	P.12



Project PERT BMS BSU Test Board				
Generation	Organization	Sub Team	Module	
NA	PERT	EEE	PERT-BMS	
Ver. 1.0	Rev. A	Date 6/1/2024	Draw By EEE Patrick	Page 2 of 12

A

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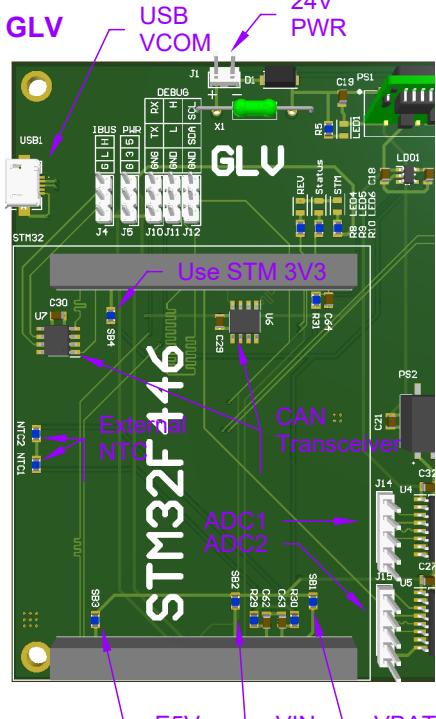
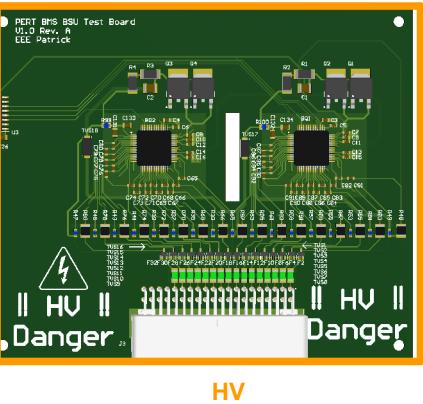
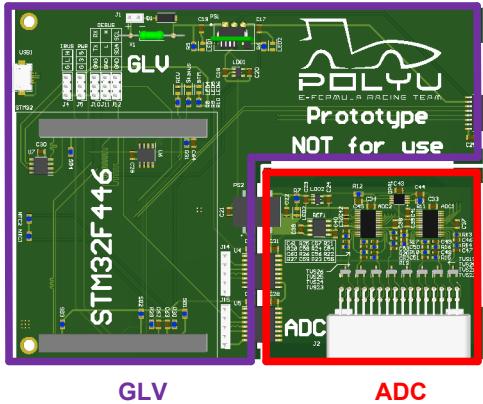
A

B

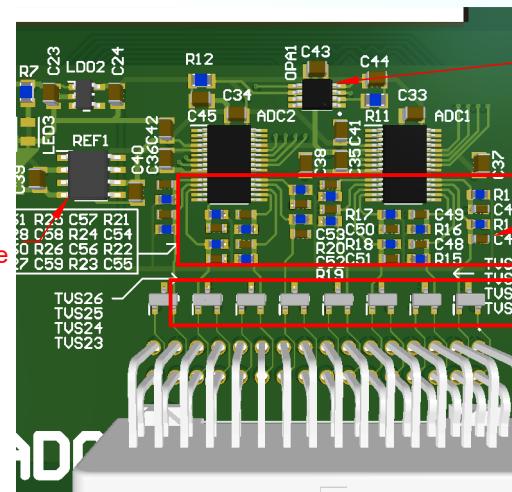
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D

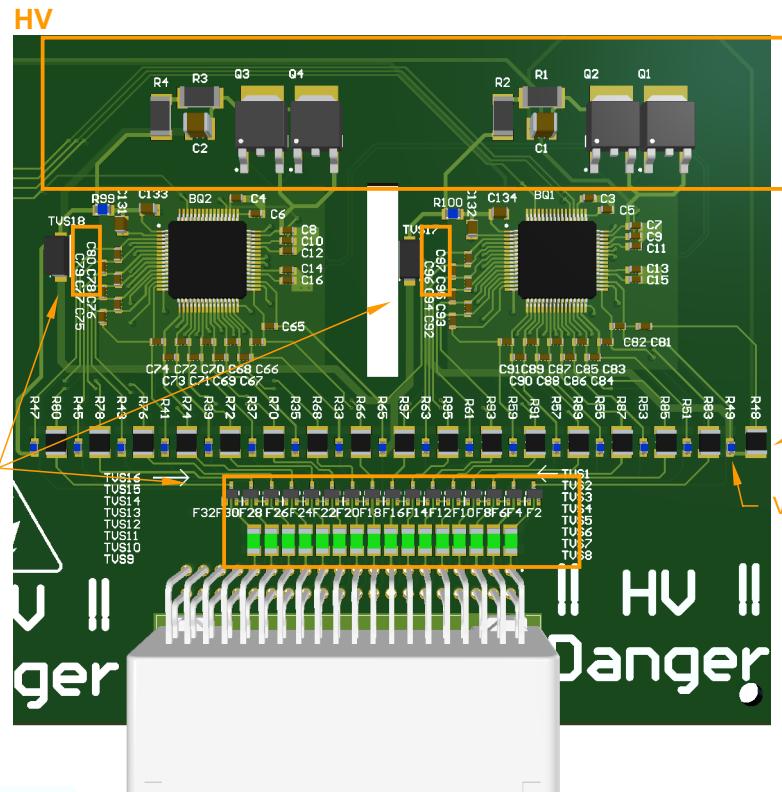
Realistic View



ADC Reference



ADC



C



Project

PERT BMS BSU Test Board

Generation NA

Organization PERT

Sub Team EEE

Module PERT-BMS

Ver. 1.0

Rev. A

Date 6/1/2024

Draw By EEE Patrick

Page 3 of 12

A

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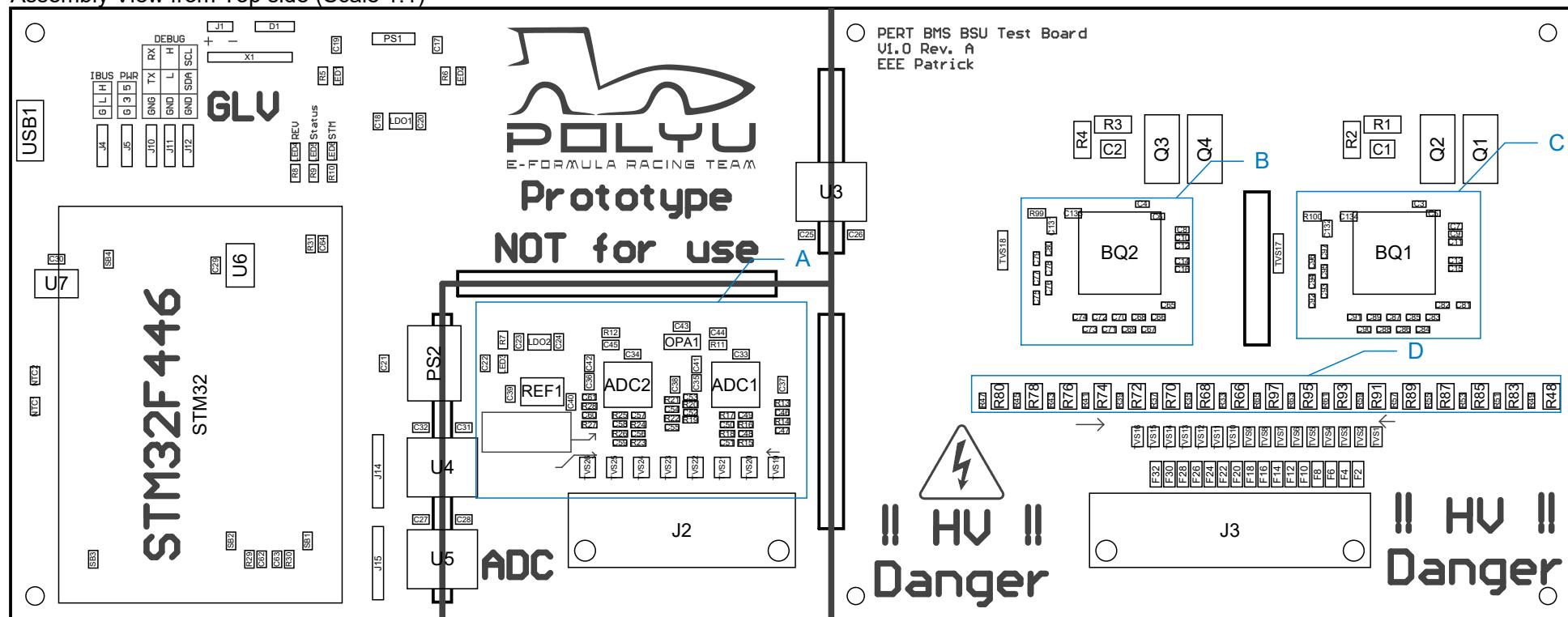
A

B

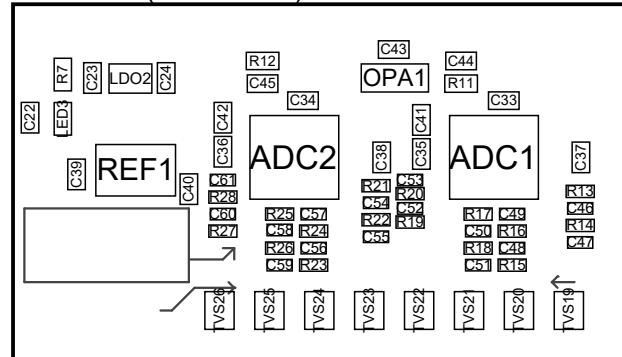
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D

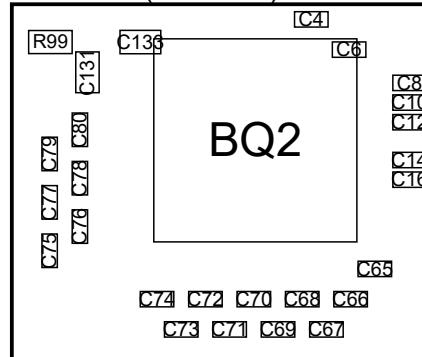
Assembly View from Top side (Scale 1:1)



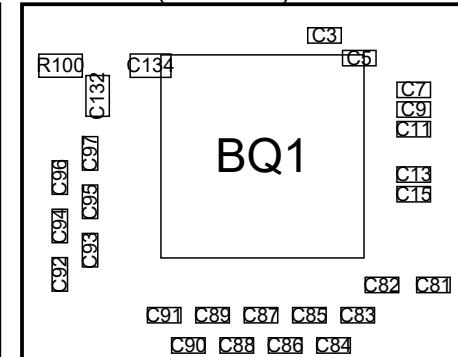
DETAIL A (Scale 1.5:1)



DETAIL B (Scale 2:1)



DETAIL C (Scale 2:1)



DETAIL D (Scale 1.5:1)



Project PERT BMS BSU Test Board			
Generation NA	Organization PERT	Sub Team EEE	Module PERT-BMS
Ver. 1.0	Rev. A	Date 6/1/2024	Draw By EEE Patrick
			Page 4 of 12

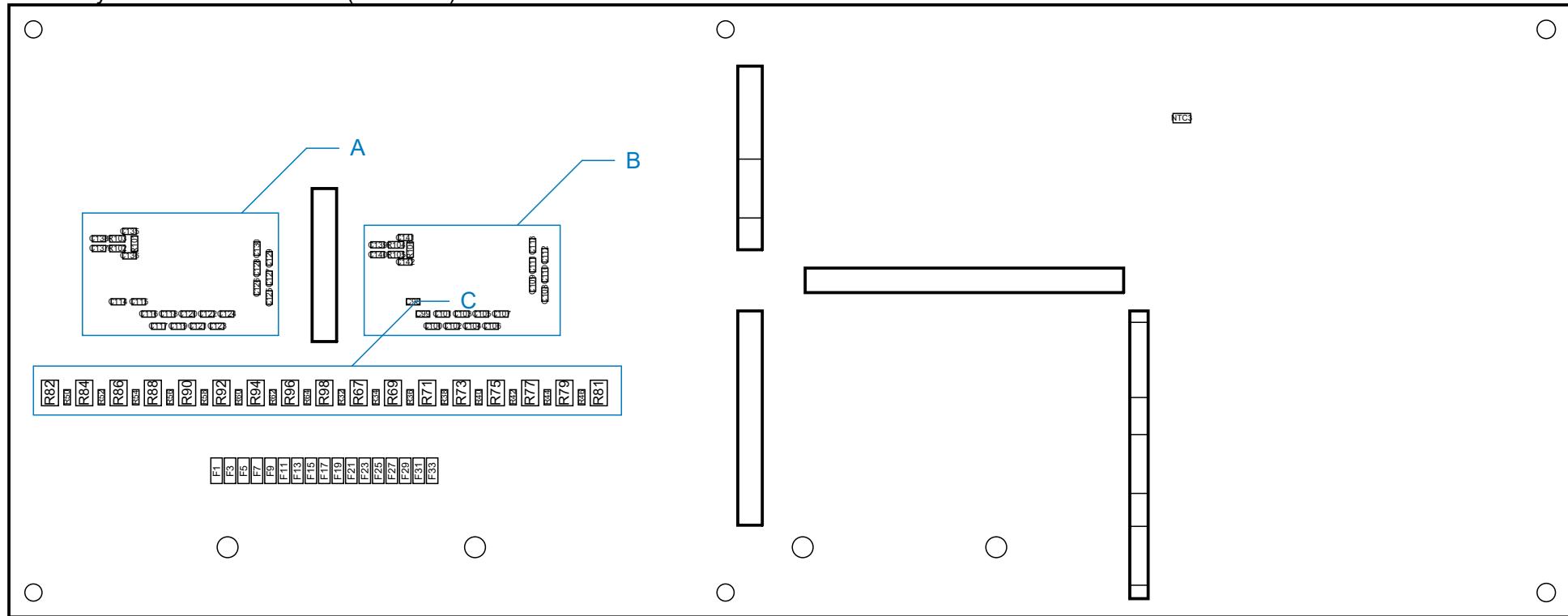
A

B

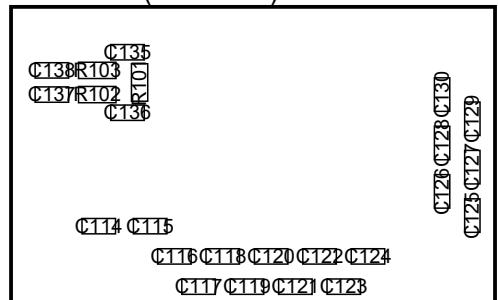
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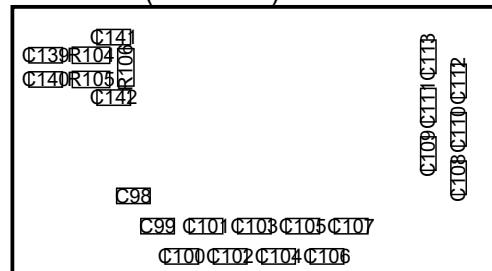
Assembly View from Bottom side (Scale 1:1)



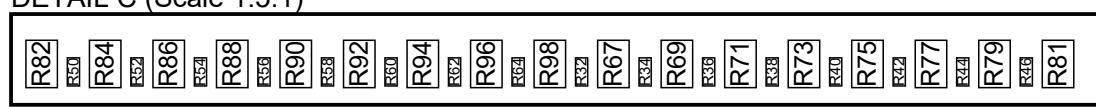
DETAIL A (Scale 2:1)



DETAIL B (Scale 2:1)



DETAIL C (Scale 1.5:1)



Project
PERT BMS BSU Test Board

Generation	Organization	Sub Team	Module
NA	PERT	EEE	PERT-BMS
Ver. 1.0	Rev. A	Date 6/1/2024	Draw By EEE Patrick
			Page 5 of 12

A

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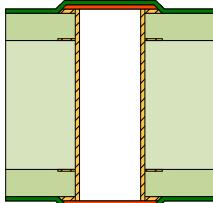
1

1

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
CF-004	Top Cu	0.04mm		Signal	GTL
Prepreg		0.21mm	PP-006	Dielectric	
CF-004	PWR	0.02mm		Signal	G1
Core		1.06mm	Core-025	Dielectric	
CF-004	GND	0.02mm		Signal	G2
Prepreg		0.21mm	PP-006	Dielectric	
CF-004	Bottom Cu	0.04mm		Signal	GBL
Surface Material	Bottom Solder	0.01mm	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO
Total thickness: 1.61mm					

Via Type Type 2B (Scale 16:1)



2

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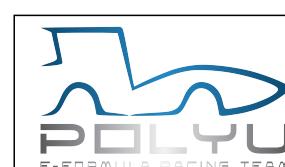
4

A

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C

D



Project PERT BMS BSU Test Board				
Generation NA	Organization PERT	Sub Team EEE	Module PERT-BMS	
Ver. 1.0	Rev. A	Date 6/1/2024	Draw By EEE Patrick	Page 6 of 12

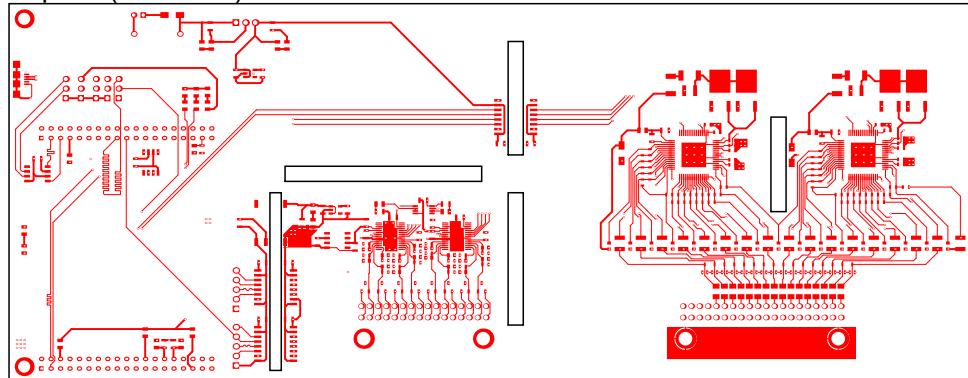
A

B

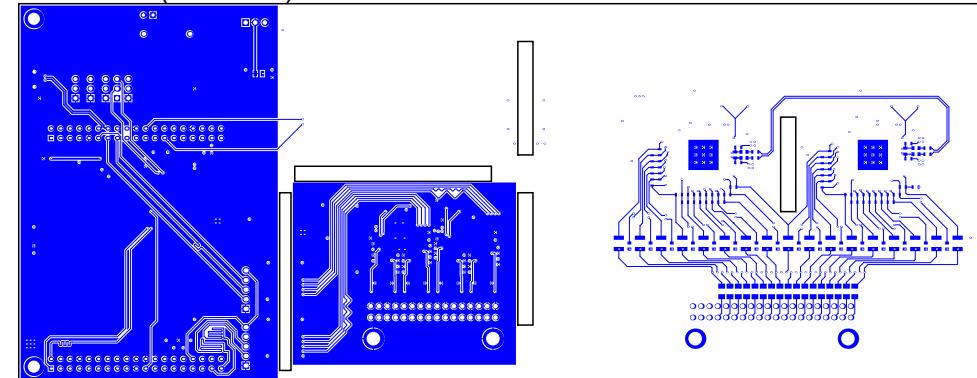
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D

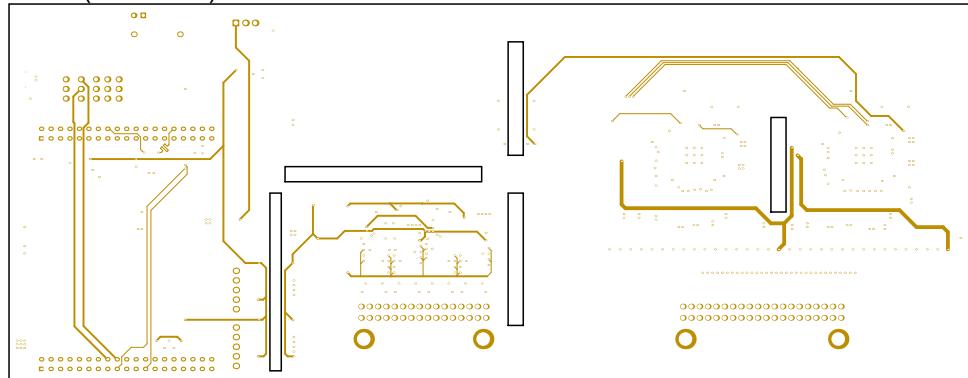
Top Cu (Scale 1:2)



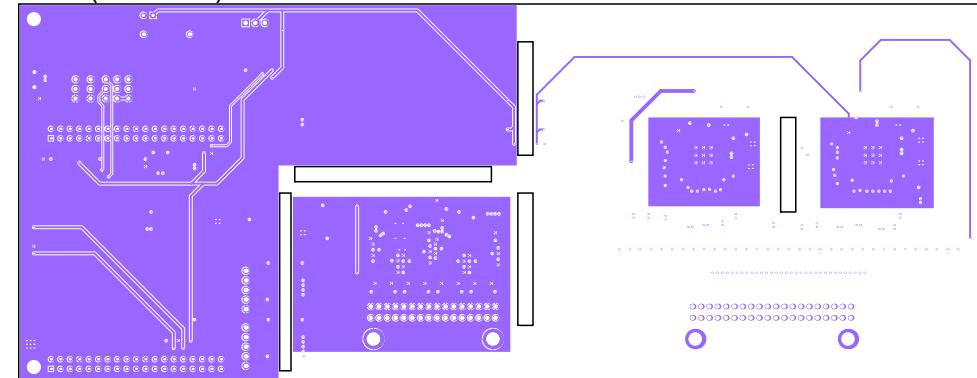
Bottom Cu (Scale 1:2)



PWR (Scale 1:2)



GND (Scale 1:2)



Project PERT BMS BSU Test Board				
Generation NA	Organization PERT	Sub Team EEE	Module PERT-BMS	
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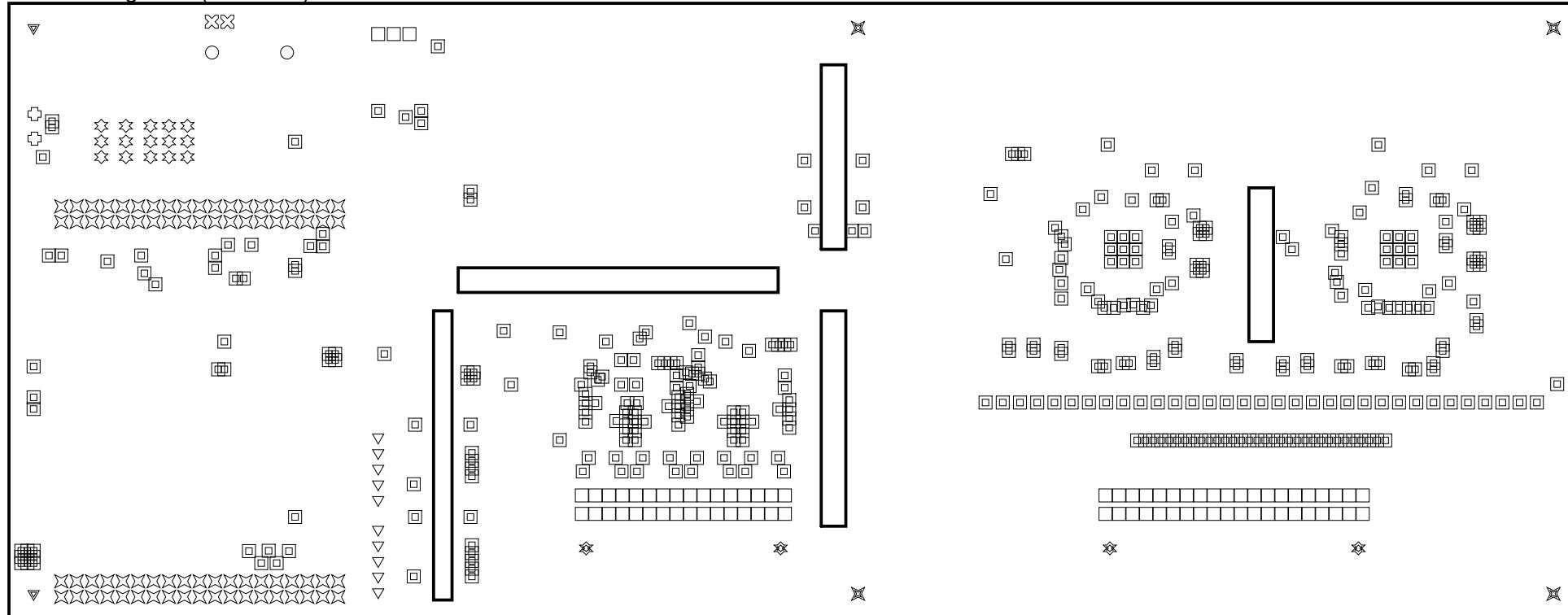
A

B

C

D

Drill Drawing View (Scale 1:1)



Drill Table

Symbol	Count	Hole Size	Plated	Hole Tolerance
□	377	0.30mm	Plated	
✚	2	0.55mm	Non-Plated	
✗	76	0.60mm	Plated	
☒	2	0.90mm	Plated	
○	2	1.01mm	Plated	
❖	15	1.10mm	Plated	
▽	10	1.15mm	Plated	
□	75	1.20mm	Plated	
✗	4	3.00mm	Non-Plated	
▽	2	3.20mm	Plated	
❖	4	3.60mm	Plated	
569 Total				



Project PERT BMS BSU Test Board			
Generation	Organization	Sub Team	Module
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A

B

C

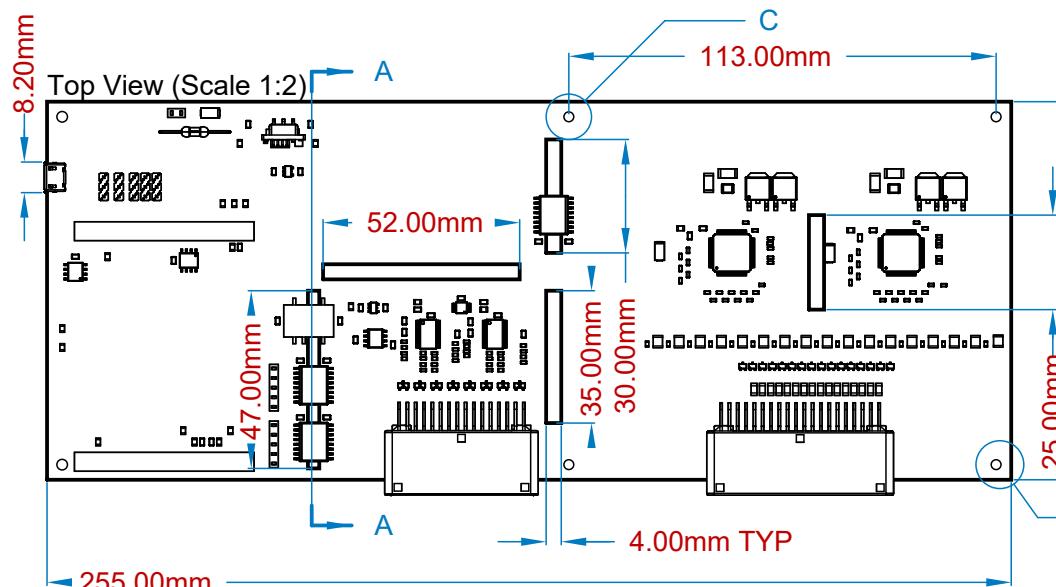
D

A

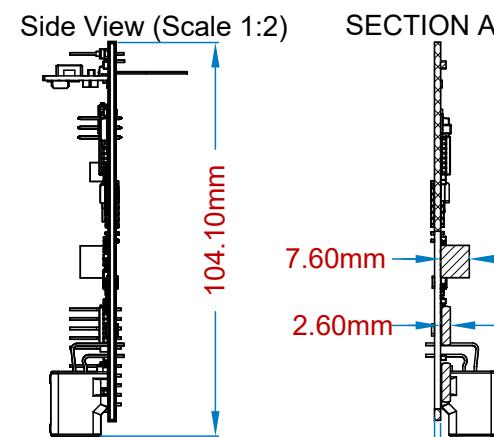
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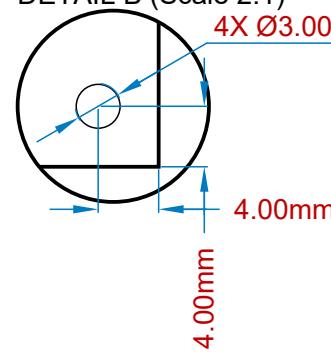


Side View (Scale 1:2)

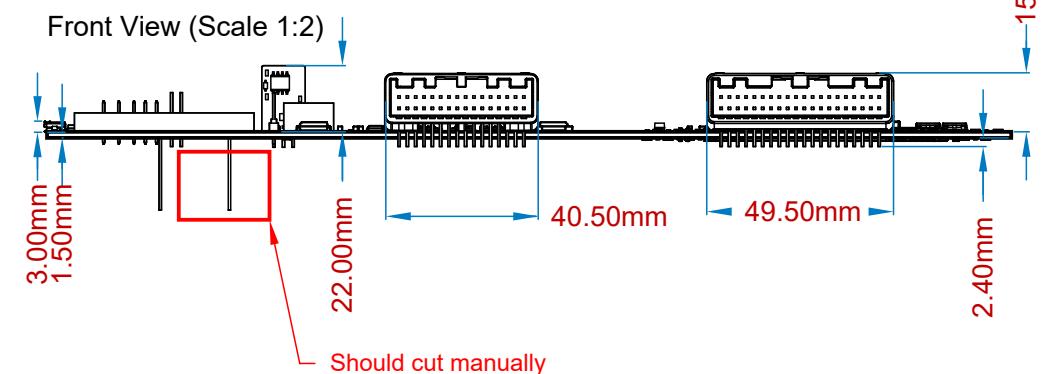
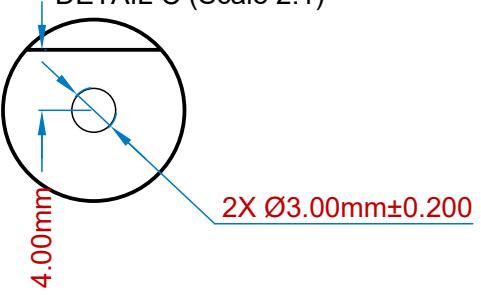


SECTION A-A (Scale 1:2)

DETAIL B (Scale 2:1)



DETAIL C (Scale 2:1)



Should cut manually



Project PERT BMS BSU Test Board				
Generation NA	Organization PERT	Sub Team EEE	Module PERT-BMS	
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Bill Of Materials (Top)

Designator	Name	Manufacturer_Part_Number	Quantity
ADC1, ADC2	ADS7951QDBTRQ1	ADS7951QDBTRQ1	2
BQ1, BQ2	BQ79616PAPR	BQ79616PAPR	2
C1, C2	220n		2
C3, C4, C13, C14, C15, C16	1u		6
C5, C6	2.2u		2
C7, C8, C11, C12	0.1u		4
C9, C10	4.7u		2
C17, C40	22u		2
C18, C20, C21, C23, C24, C33, C34, C35, C36, C37, C38, C39	1u		12
C19, C22, C41, C42, C43	10u		5
C25, C26, C27, C28, C29, C30, C31, C32	100n		8
C44, C45, C62, C63, C64	150p		5
C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61	150p		16
C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97	470n		33
C131, C132	470n		2
C133, C134	10n		2
D1	824500241	824500241	1
F2, F4, F6, F8, F10, F12, F14, F16, F18, F20, F22, F24, F26, F28, F30, F32	C1Q_1	C1Q 1	16
J1	Header 1x2		1
J2	1318745-2	1318745-2	1
J3	1318384-2	1318384-2	1
J4, J5, J10, J11, J12	Header 1x3	G800LR305018EU	5
J14, J15	Header 1x5	87224-5	2
LDO1, LDO2	TLV75533PDBVR	TLV75533PDBVR	2
LED1, LED2, LED3, LED4, LED6	RED		5
LED5	GREEN		1
NTC1, NTC2	NTCS0805E3104JXT	NTCS0805E3104JXT	2
OPA1	OPA2192IDGKT	OPA2192IDGKT	1

Bill Of Materials (Top)

Designator	Name	Manufacturer_Part_Number	Quantity
PS1	VXO7805-1000		1
PS2	PDSE1-S24-S5-M		1
Q1, Q2, Q3, Q4	ZXTN4004KTC	ZXTN4004KTC	4
R1, R3	200		2
R2, R4	100		2
R5	20k		1
R6, R7, R8, R9, R10	200		5
R11, R12	100		2
R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28	100k		16
R29, R30, R31	100k		3
R33, R35, R37, R39, R41, R43, R45, R47, R49, R51, R53, R55, R57, R59, R61, R63, R65	100		17
R48	0		1
R66, R68, R70, R72, R74, R76, R78, R80, R83, R85, R87, R89, R91, R93, R95, R97	10		16
R99, R100	30		2
REF1	REF5025AIDR	REF5025AIDR	1
SB1, SB2, SB3, SB4	0		4
TVS1, TVS2, TVS3, TVS4, TVS5, TVS6, TVS7, TVS8, TVS9, TVS10, TVS11, TVS12, TVS13, TVS14, TVS15, TVS16	ESDA041-2W3Y	ESDA041-2W3Y	16
TVS17, TVS18	SMAJ75A	SMAJ75A	2
TVS19, TVS20, TVS21, TVS22, TVS23, TVS24, TVS25, TVS26	PESD5V0U2BT_215	PESD5V0U2BT,215	8
U3, U4, U5	ISO7741FBDW	ISO7741FBDW	3
U6, U7	TJA1050T_CM_118	TJA1050T/CM,118	2
USB1	UJ2-MIBH-G-SMT-TR	UJ2-MIBH-G-SMT-TR	1
X1	Littelfuse 0251.500		1



Project PERT BMS BSU Test Board				
Generation NA	Organization PERT	Sub Team EEE	Module PERT-BMS	
Ver. 1.0	Rev. A	Date 6/1/2024	Draw By EEE Patrick	Page 10 of 12

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Bill Of Materials (Bottom)

Designator	Name	Manufacturer_Part_Number	Quantity
C98, C99, C100, C101, C102, C103, C104, C105, C106, C107, C108, C109, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C130	470n		33
C135, C136, C141, C142	220p		4
C137, C138, C139, C140	2.2n		4
F1, F3, F5, F7, F9, F11, F13, F15, F17, F19, F21, F23, F25, F27, F29, F31, F33	C1Q_1	C1Q 1	17
NTC3	NTCS0805E3104JXT	NTCS0805E3104JXT	1
R32, R34, R36, R38, R40, R42, R44, R46, R50, R52, R54, R56, R58, R60, R62, R64	100		16
R67, R69, R71, R73, R75, R77, R79, R81, R82, R84, R86, R88, R90, R92, R94, R96, R98	10		17
R101, R106	1k		2
R102, R103, R104, R105	51		4

2

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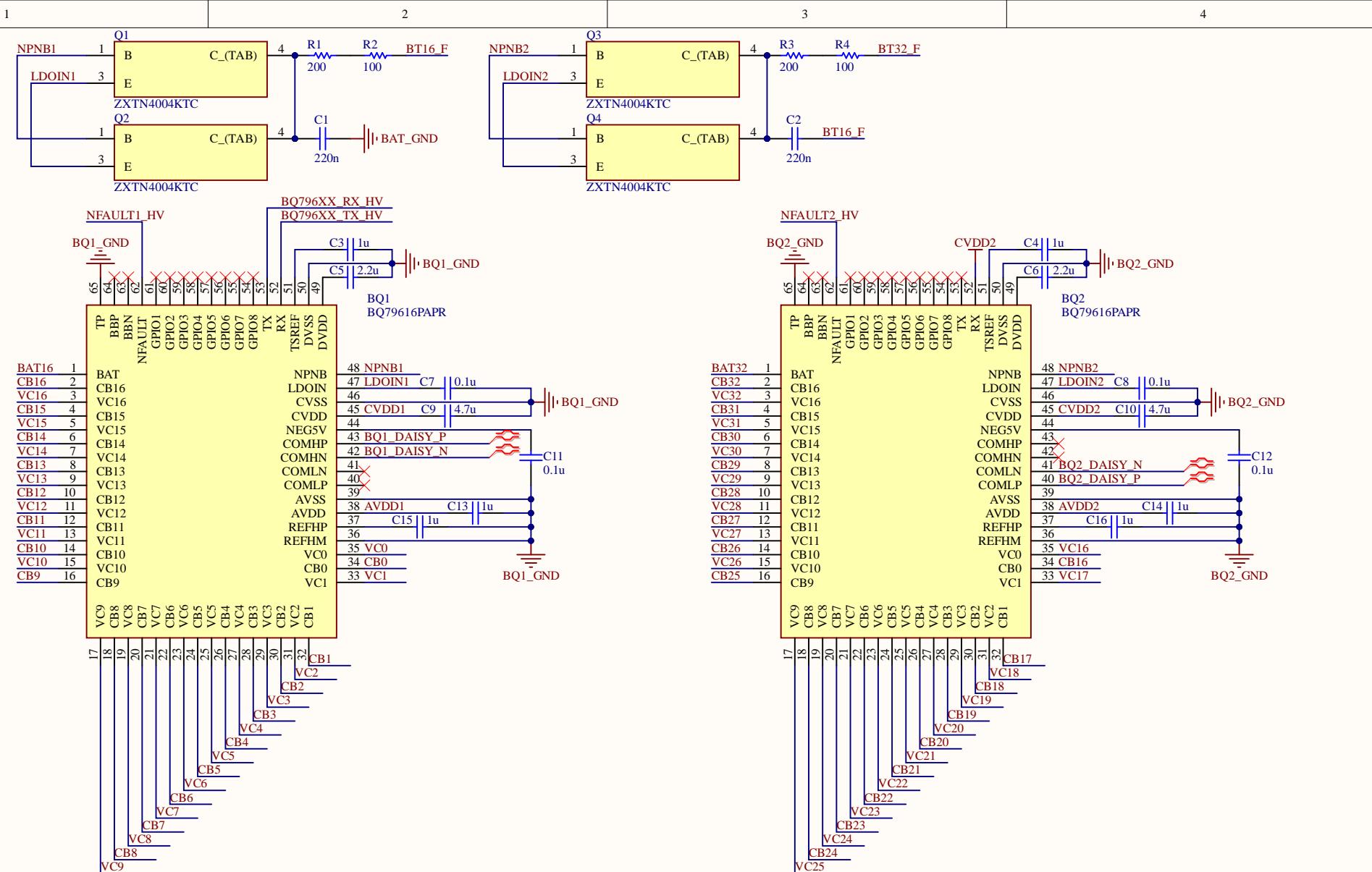
Project PERT BMS BSU Test Board				
Generation NA	Organization PERT	Sub Team EEE	Module PERT-BMS	
Ver. 1.0	Rev. A	Date 6/1/2024	Draw By EEE Patrick	Page 11 of 12

The PCB should always have a bottom cover rigidly mounted that made by Insulation material that have minimum 3mm thick and comply at least UL94 V-0, i.e. PC ,FR4 or Normex.

The PCB must apply at least 2 layers of Conformal Coating before used. Each layer of coating must sit and wait for minimum of 24 hours till it's dry out. Mask all the connector before apply the coating.



Project PERT BMS BSU Test Board				
Generation		Organization	Sub Team	Module
Ver.	Rev.	Date	Draw By	Page
1.0	A	6/1/2024	EEE Patrick	12 of 12

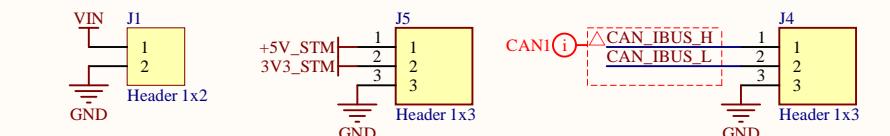
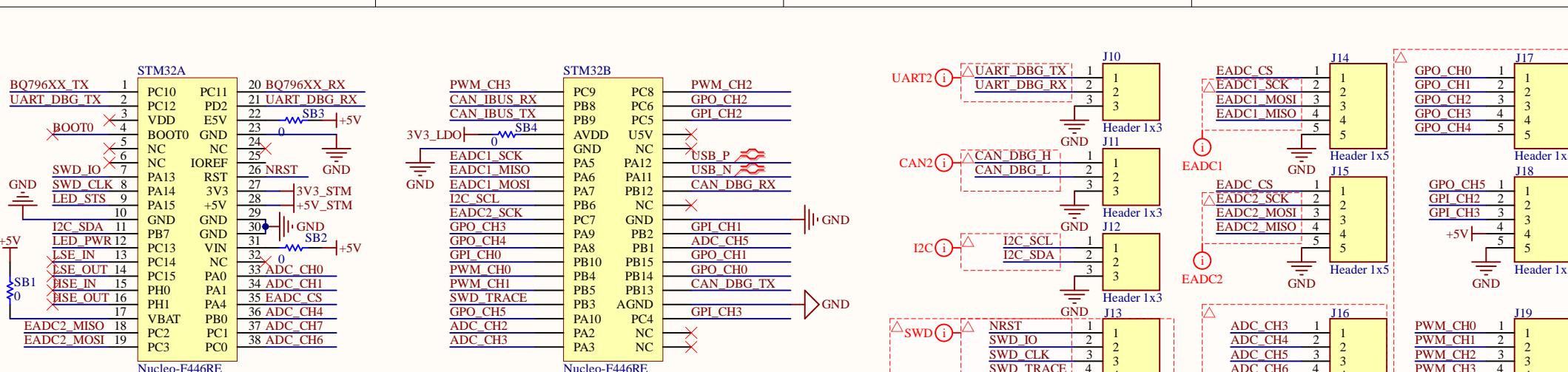


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PERT BMS BSU Test Board - BQ796XX

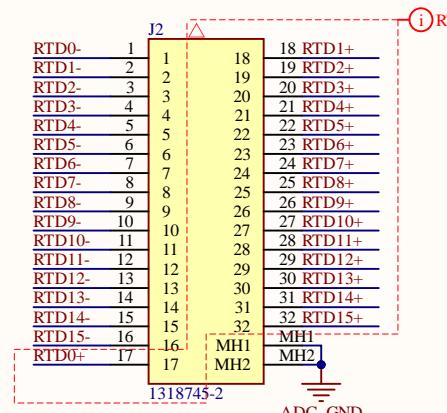
Generation	Organization	Sub Team	Module	Ver.	Rev.
NA	PERT	EEE	PERT-BMS	1.0	A

Date 6/1/2024

Draw By EEE Patrick

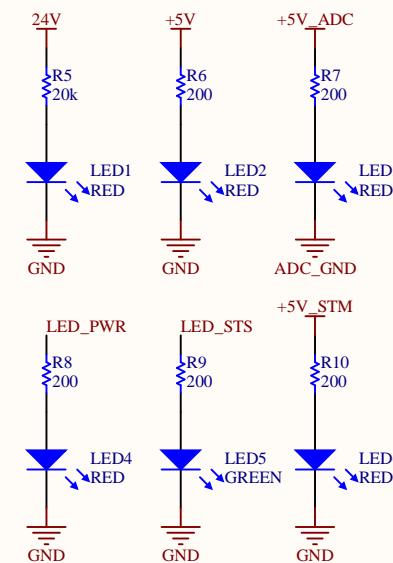
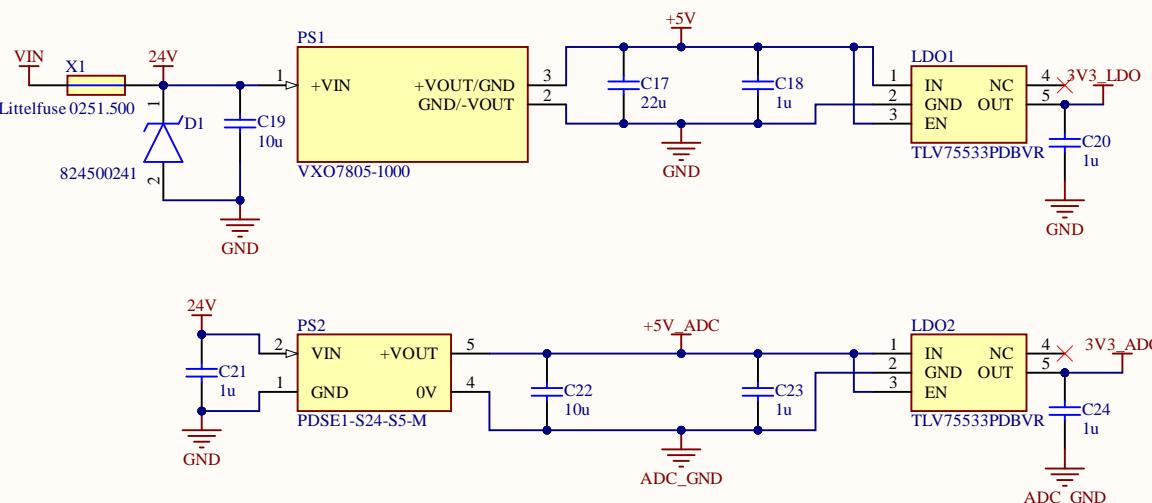


J3	
BT1	1
BT3	2
BT5	3
BT7	4
BT9	5
BT11	6
BT13	7
BT15	8
BT17	9
BT19	10
BT21	11
BT23	12
BT25	13
BT27	14
BT29	15
BT31	16
	17
	18
	19
	20
BT0	21
	22
	23
	24
	25
	26
	27
	28
	29
	30
	31
	32
	33
	34
	35
	36
	37
	38
	39
	40
	MH1
	MH2



PERT BMS BSU Test Board - Connector						
Generation	Organization	Sub Team	Module		Ver.	Rev.
NA	PERT	EEE	PERT-BMS		1.0	A
Date	6/1/2024			Draw By	EEE Patrick	

A



B

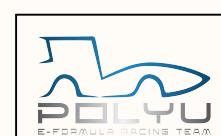
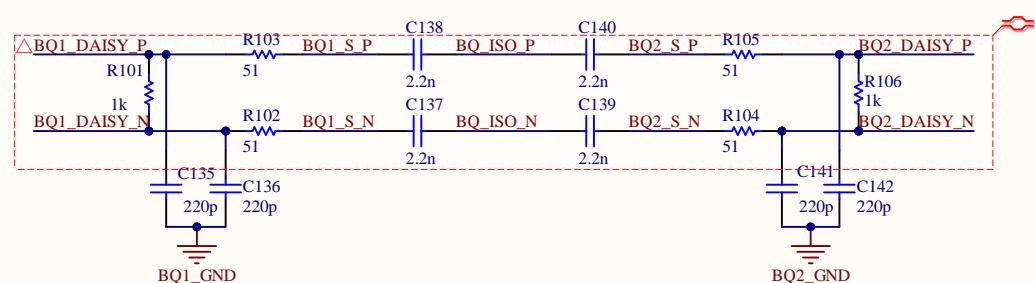
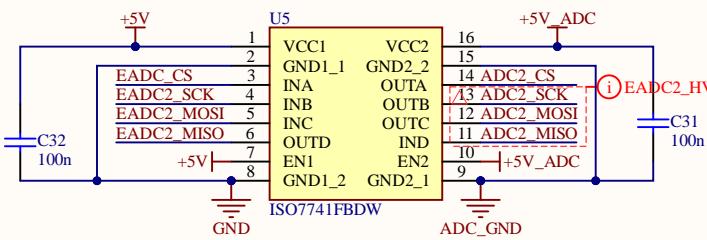
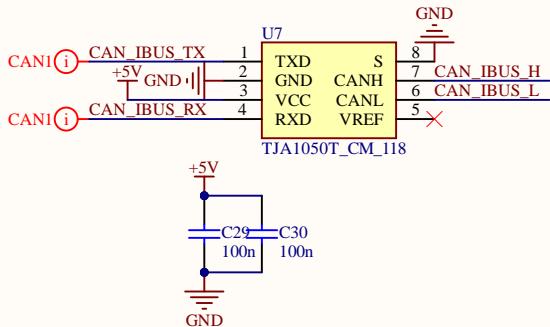
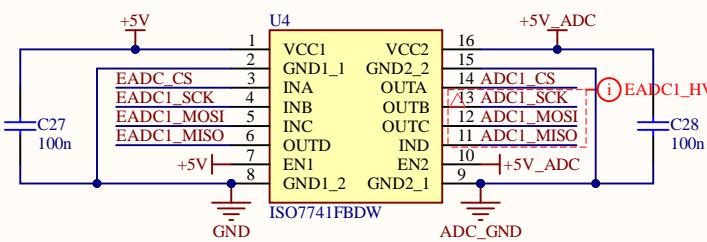
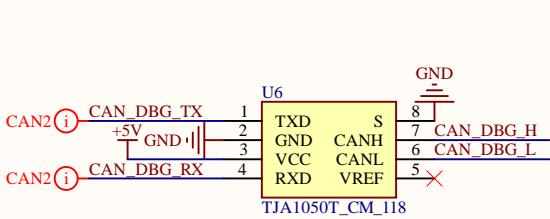
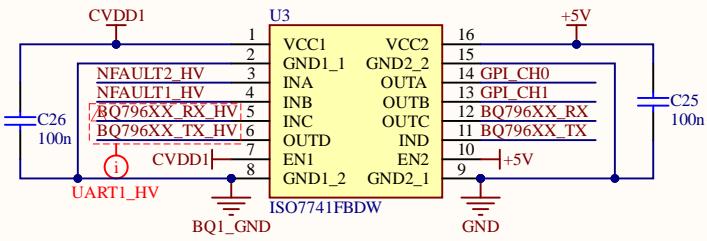
C

D

Title
PERT BMS BSU Test Board - Power

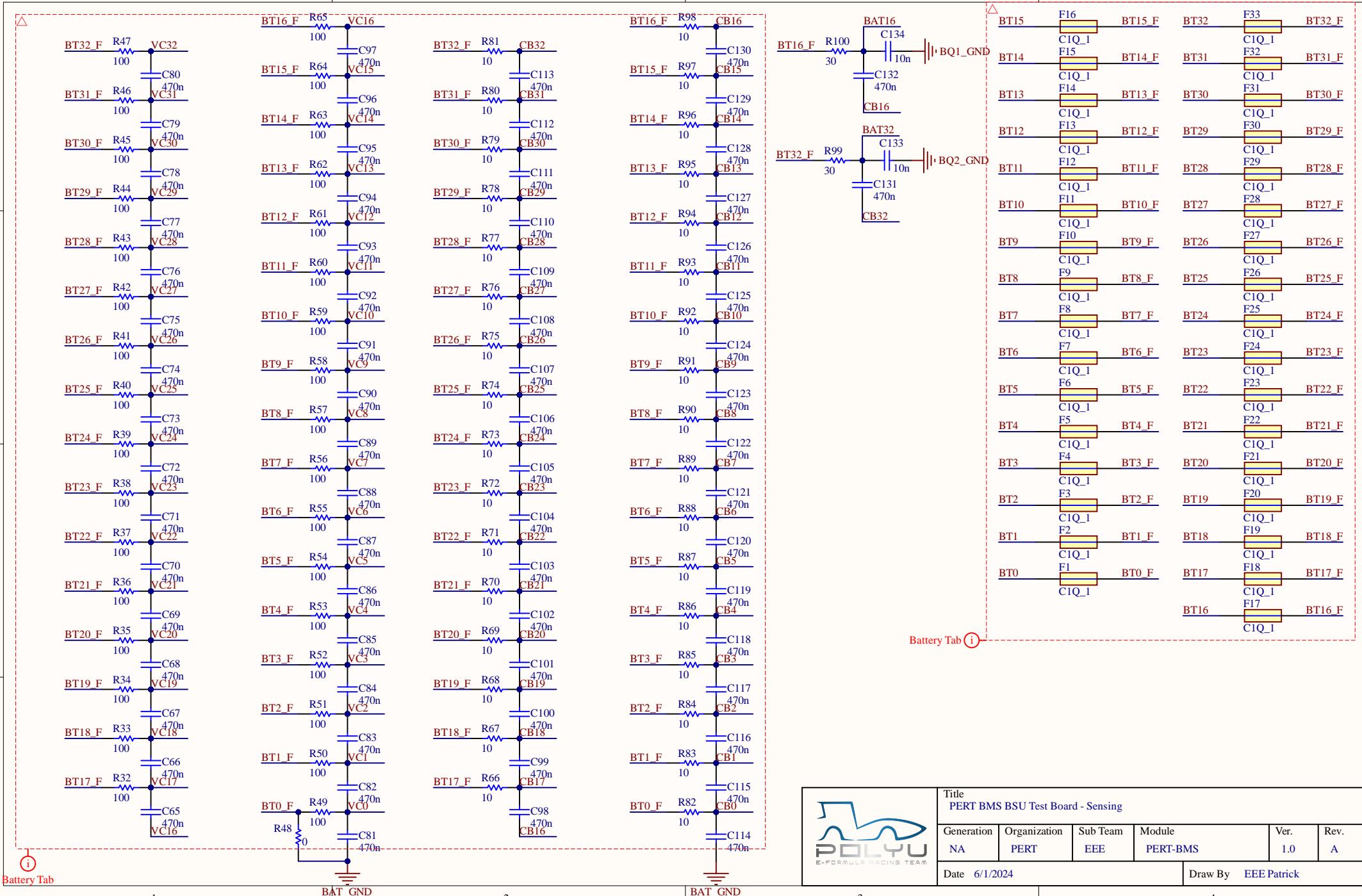


Generation NA	Organization PERT	Sub Team EEE	Module PERT-BMS	Ver. 1.0	Rev. A
Date 6/1/2024					Draw By EEE Patrick



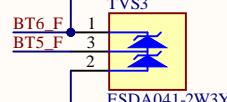
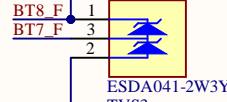
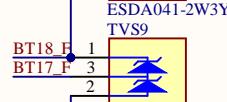
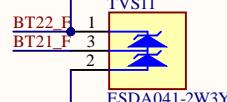
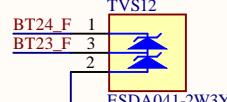
Title
PERT BMS BSU Test Board - Communication

Generation	Organization	Sub Team	Module	Ver.	Rev.
NA	PERT	EEE	PERT-BMS	1.0	A
Date 6/1/2024					Draw By EEE Patrick

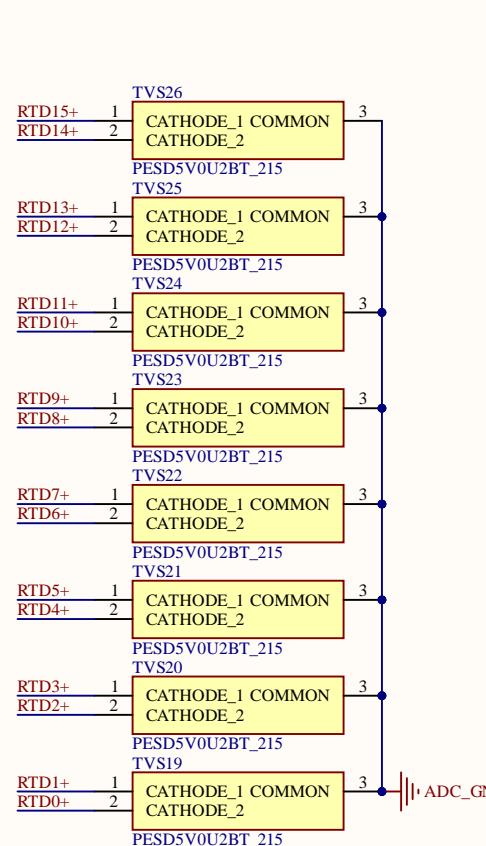


A

A



1



Title
PERT BMS BSU Test Board - ESD

Generation	Organization	Sub Team	Module	Ver.	Rev.
NA	PERT	EEE	PERT-BMS	1.0	A

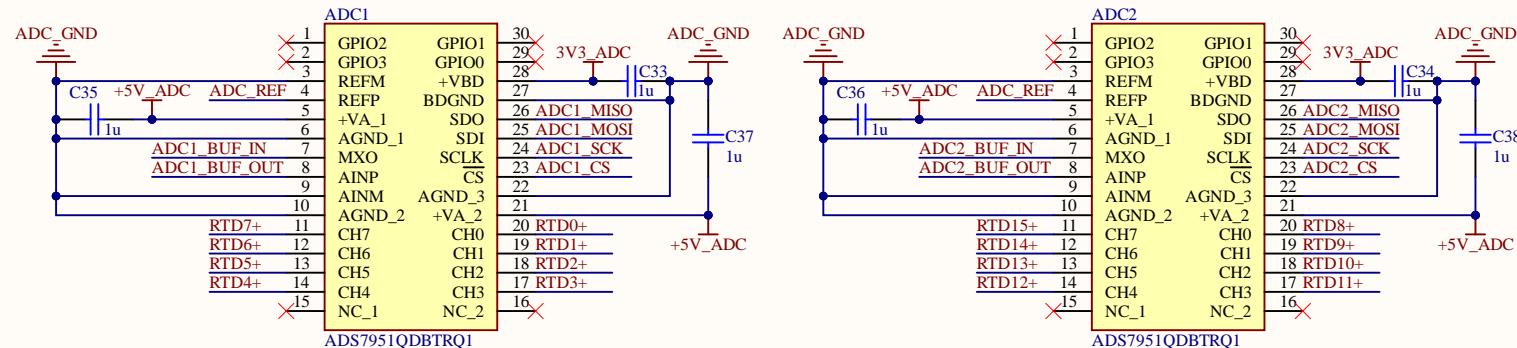
Date 6/1/2024

Draw By EEE Patrick

3

4

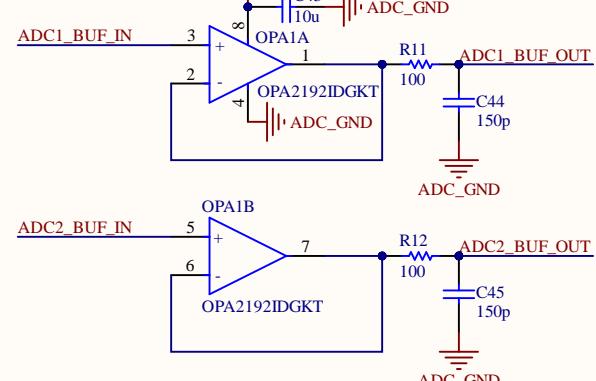
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B

+5V_ADC

C

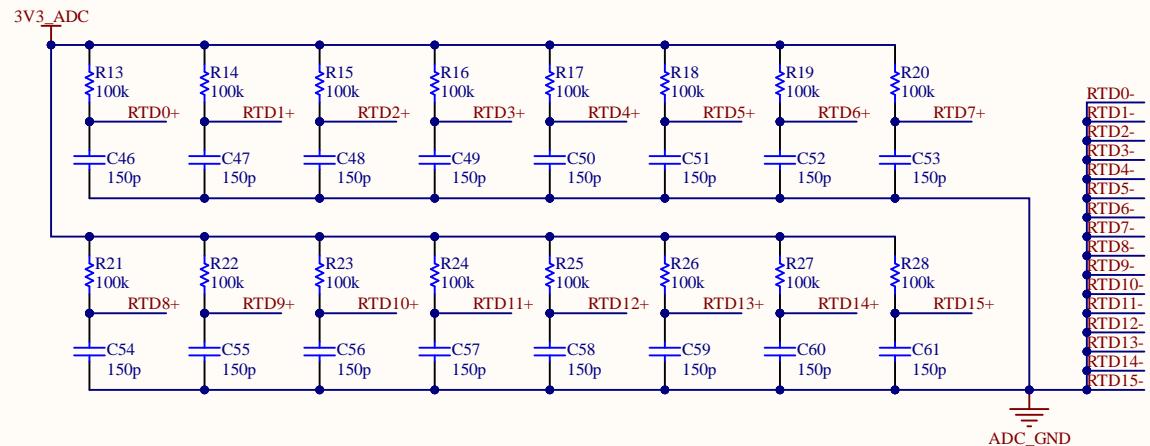


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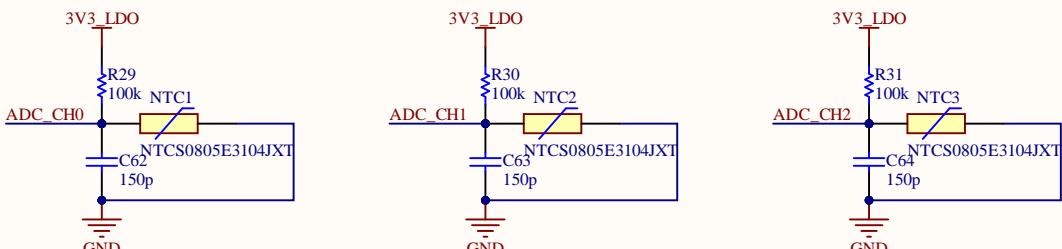


Title
PERT BMS BSU Test Board - ADC

Generation	Organization	Sub Team	Module	Ver.	Rev.
NA	PERT	EEE	PERT-BMS	1.0	A
Date 6/1/2024					Draw By EEE Patrick



RTD0-, RTD1-, RTD2-, RTD3-, RTD4-, RTD5-, RTD6-, RTD7-, RTD8-, RTD9-, RTD10-, RTD11-, RTD12-, RTD13-, RTD14-, RTD15-



Title
PERT BMS BSU Test Board - RTD

Generation	Organization	Sub Team	Module	Ver.	Rev.
NA	PERT	EEE	PERT-BMS	1.0	A
Date 6/1/2024					Draw By EEE Patrick