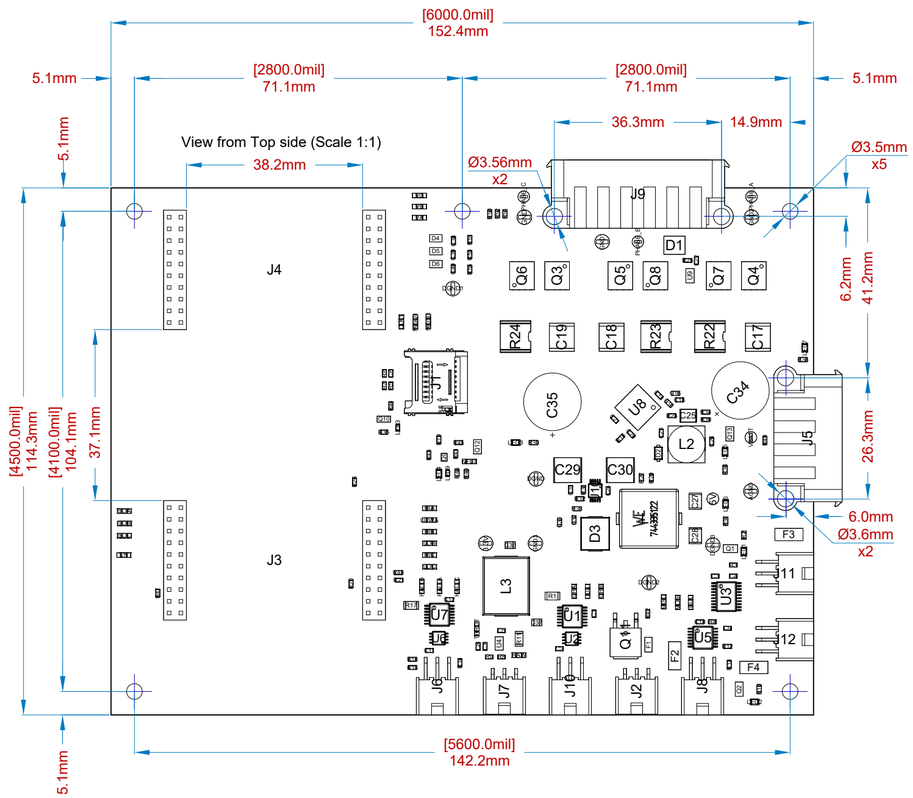
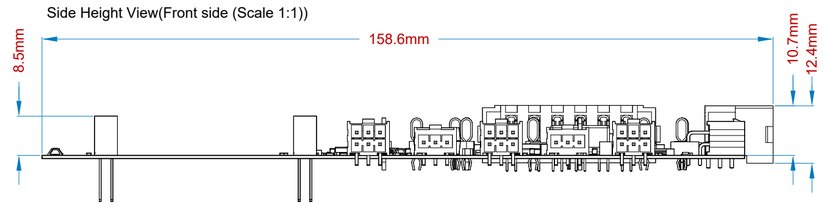
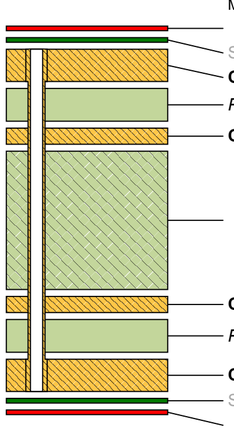




Layer Stack Legend



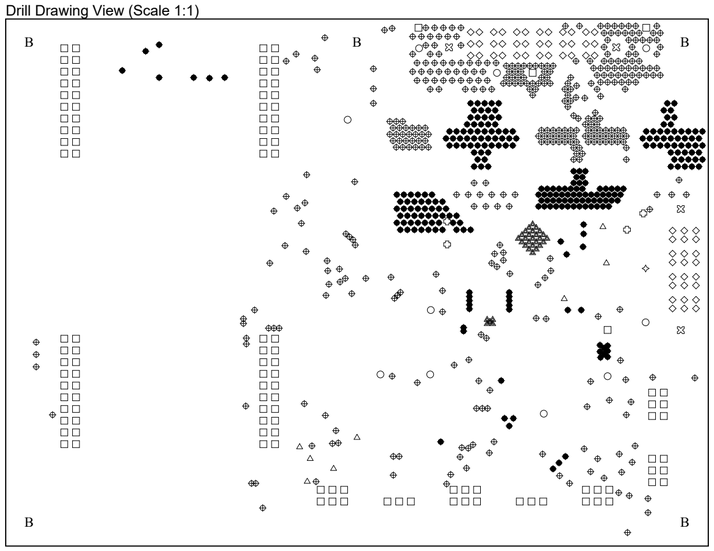
Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Overlay			Legend	GTO
Surface Material	Top Solder	0.01mm	Solder Resist	Solder Mask	GTS
CF-005	**Top Layer**	**0.07mm**		**Signal**	**GTL**
Prepreg		*0.07mm*	*PP-006*	*Dielectric*	
CF-004	**GND**	**0.03mm**		**Signal**	**G1**
		0.32mm	*FR-4*	*Dielectric*	
CF-004	**Power**	**0.03mm**		**Signal**	**G2**
Prepreg		*0.07mm*	*PP-006*	*Dielectric*	
CF-005	**Bottom Layer**	**0.07mm**		**Signal**	**GBL**
Surface Material	Bottom Solder	0.01mm	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO

Total thickness: 0.69mm

Drill Table

Symbol	Count	Hole Size	Plated	Hole Tolerance
▲	30	0.2mm	Plated	None
⊕	393	0.3mm	Plated	None
●	262	0.5mm	Plated	None
△	8	0.7mm	Plated	None
⌬	4	0.8mm	Plated	None
✧	1	1.0mm	Plated	None
□	120	1.0mm	Plated	None
◇	60	1.0mm	Plated	None
○	10	1.6mm	Plated	None
B	5	3.5mm	Non-Plated	None
⊠	4	3.6mm	Non-Plated	None
	897 Total			

Drill Drawing View (Scale 1:1)



Bill Of Materials

Line #	Designator	Comment	Quantity
1	3.3V	5013	1
2	5V	5004	1
3	C1, C2, C3, C4, C5, C6, C9, C10, C11, C12, C21, C22, C23, C24, C31	0.1uF	15
4	C7	3.9nF	1
5	C8	39nF	1
6	C13, C20	1uF	2
7	C14	47nF	1
8	C15	10uF	1
9	C16	0.1uF	1
10	C17, C18, C19	10uF	3
11	C25	2.2uF	1
12	C26	10uF	1
13	C27, C28	100uF	2
14	C29, C30	10uF	2
15	C32	4700pf	1
16	C33	270pf	1
17	C34, C35	390uF	2
18	C36, C37	22uF	2
19	C38, C39, C40	47nF	3
20	CHA, CHB, CLK, CLK1, EN, FLT, HALLA, HALLB, HALLC, HIA, HIB, HIC, IDX, LOB, LOC, LOWA, MISO, MISO1, MOSI, MOSI1, SOA, SOB, SOC, THROTTLE, THROTTLE_RAW, VA, VB, VC	5015	28
21	D1	1SMB5936BT3G	1
22	D2	PMEG6010CEH,115	1
23	D3	B3100-13-F	1
24	D4, D5, D6	MMSZ5226BT1G	3
25	DGND, DGND1, DGND2, DGND3, GND, GND1, GND2, GND3, TP47_GND	5011	9
26	F1	1.5A	1
27	F2, F3, F4	0451.500MRL	3
28	J1	693072010801	1
29	J2, J7	IPL1-103-01-L-S-RA-K	2
30	J3, J4	LuanchPad 40 Pin	2
31	J5	MPT-04-01-01-L-RA-SD	1
32	J6, J8, J10, J11, J12	IPL1-103-01-XXX-D-RA	5
33	J9	MPT-06-01-01-L-RA-SD	1
34	L1	22uH	1
35	L2	33uH	1
36	L3	120uH	1
37	LED1, LED2, LED4, LED5, LED6, LED7, LED8	150080GS75000	7
38	LED3, LED9	150060VS75000	2
39	PHASE_A, PHASE_B, PHASE_C	5002	3
40	Q1, Q2, Q12, Q13	DMN1019USN-7	4
41	Q3, Q4, Q5, Q6, Q7, Q8	BSC027N06LS5ATMA1	6
42	Q9	NX3008CBKV,115	1
43	Q10	NTR4101PT1G	1
44	Q11	FQD9N25TM_F080	1
45	R1, R11, R17	0	3
46	R2, R10, R36, R37, R39, R40	91	6
47	R3, R13, R41, R43, R44, R45	100	6
48	R4, R5, R12, R14, R15, R16, R18, R19, R20, R21, R26, R42, R47, R48	10k	14
49	R6, R7, R28	100k	3
50	R8	19.1K	1
51	R9	536k	1
52	R22, R23, R24	2m	3
53	R25	470	1
54	R27	53.6k	1
55	R29	10K	1
56	R30, R49	28k	2
57	R31	412k	1
58	R32	10k	1
59	R33	12.7k	1
60	R34	8.45k	1
61	R35, R46	41	2
62	R38	430	1
63	R50, R52, R54	97.6k	3
64	R51, R53, R55	4.99K	3
65	TP46_VBATT	5003	1
66	U1, U7	SN74LV4T125PWR	2
67	U2, U6	SN74LVC3G17DCTR	2
68	U3	TXS0108EPWR	1
69	U4	LTC6240CS5	1
70	U5	TXB0104PWR	1
71	U8	DRV8323RSRGZR	1
72	U9	TC77-5.0MCTTR	1
73	U10	TPS54260DGQR	1

This BOM is for reference only. For assembly and manufcaturing please see BOM sent with this drawing

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PROPRIETARY AND CONFIDENTIAL

NEXT ASSY | USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL±
ANGULAR: MACH± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	C Mabon	1/27/2020
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

University of Ottawa Electric Racing Team

TITLE

BLDC Controller V4 (2020 Competition year)

SIZE | DWG. NO. 2020

SCALE: 1:1 | WEIGHT: | SHEET 1 OF 1