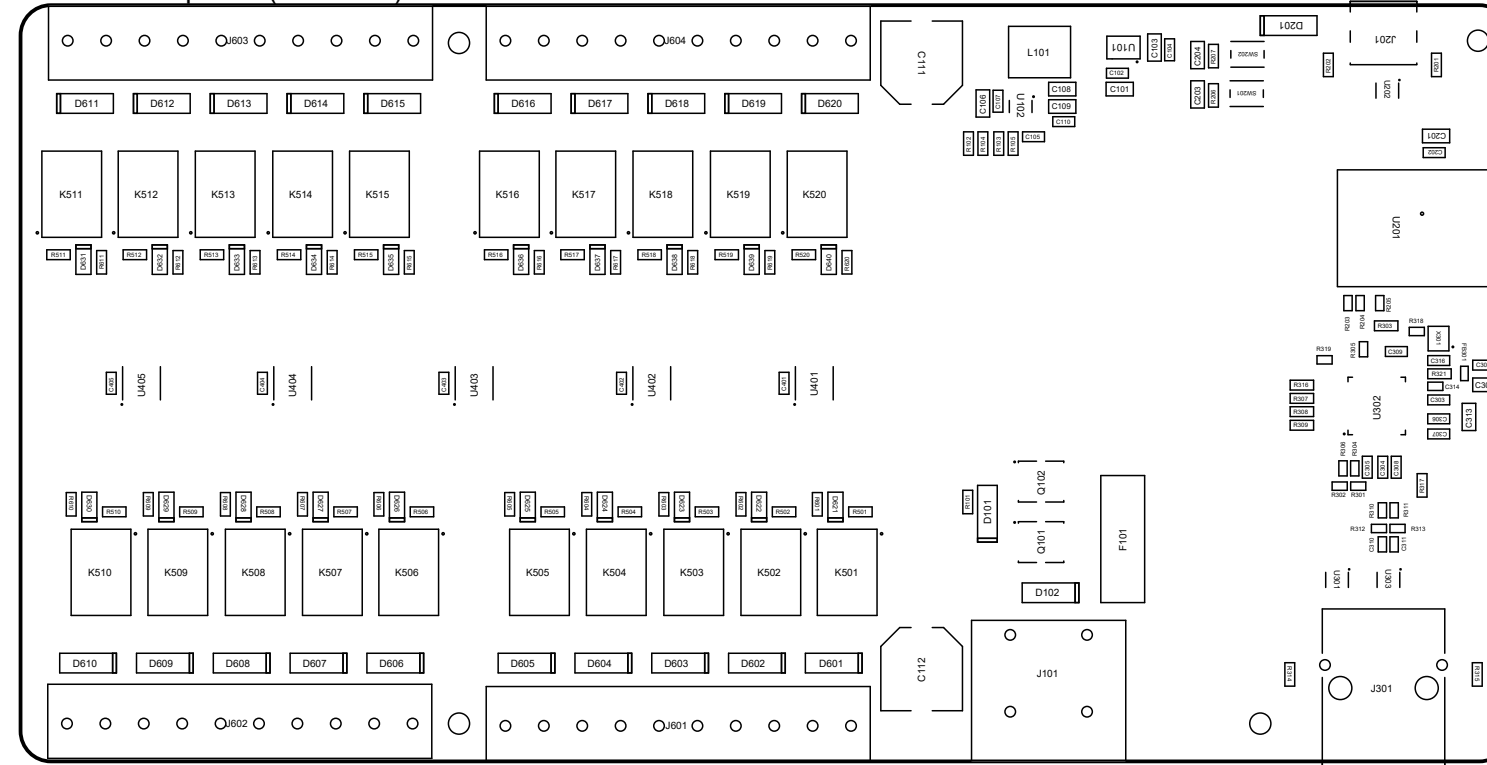
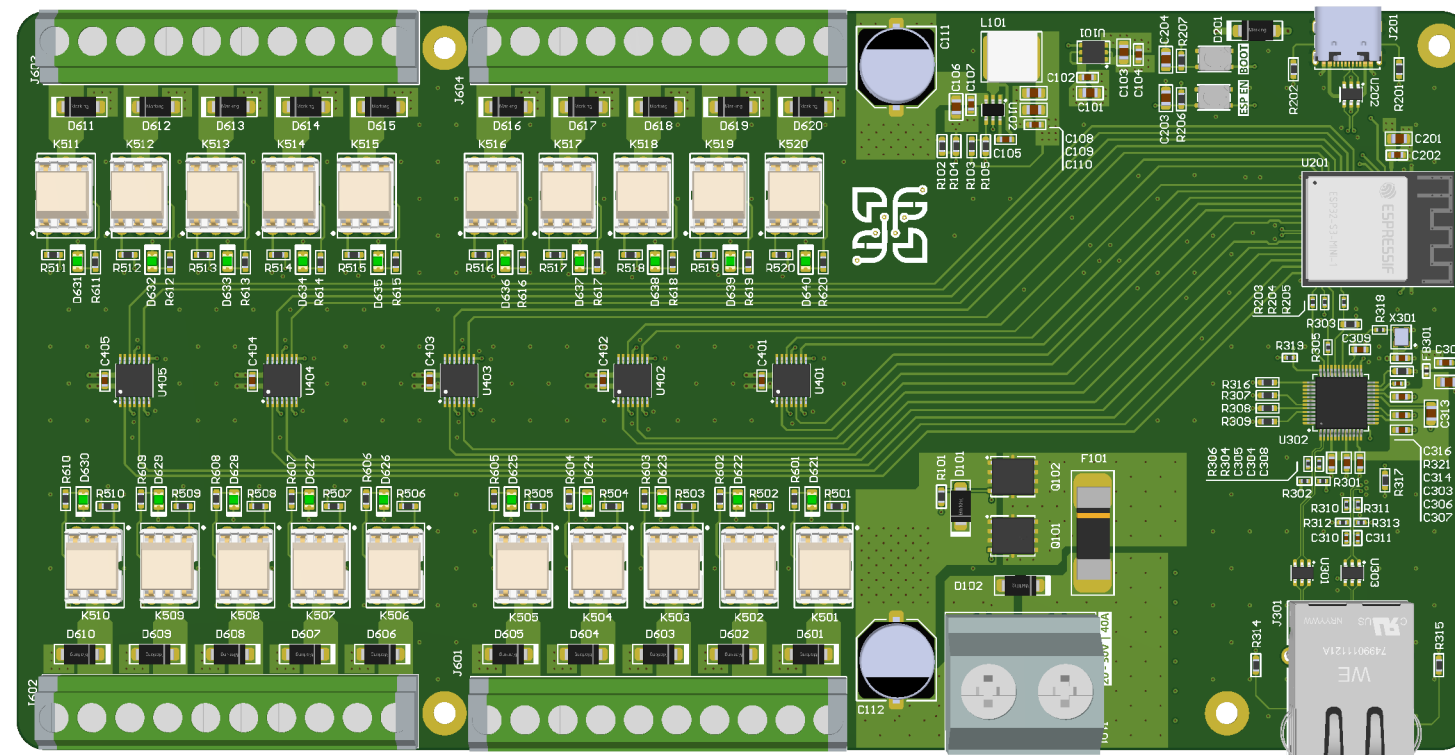


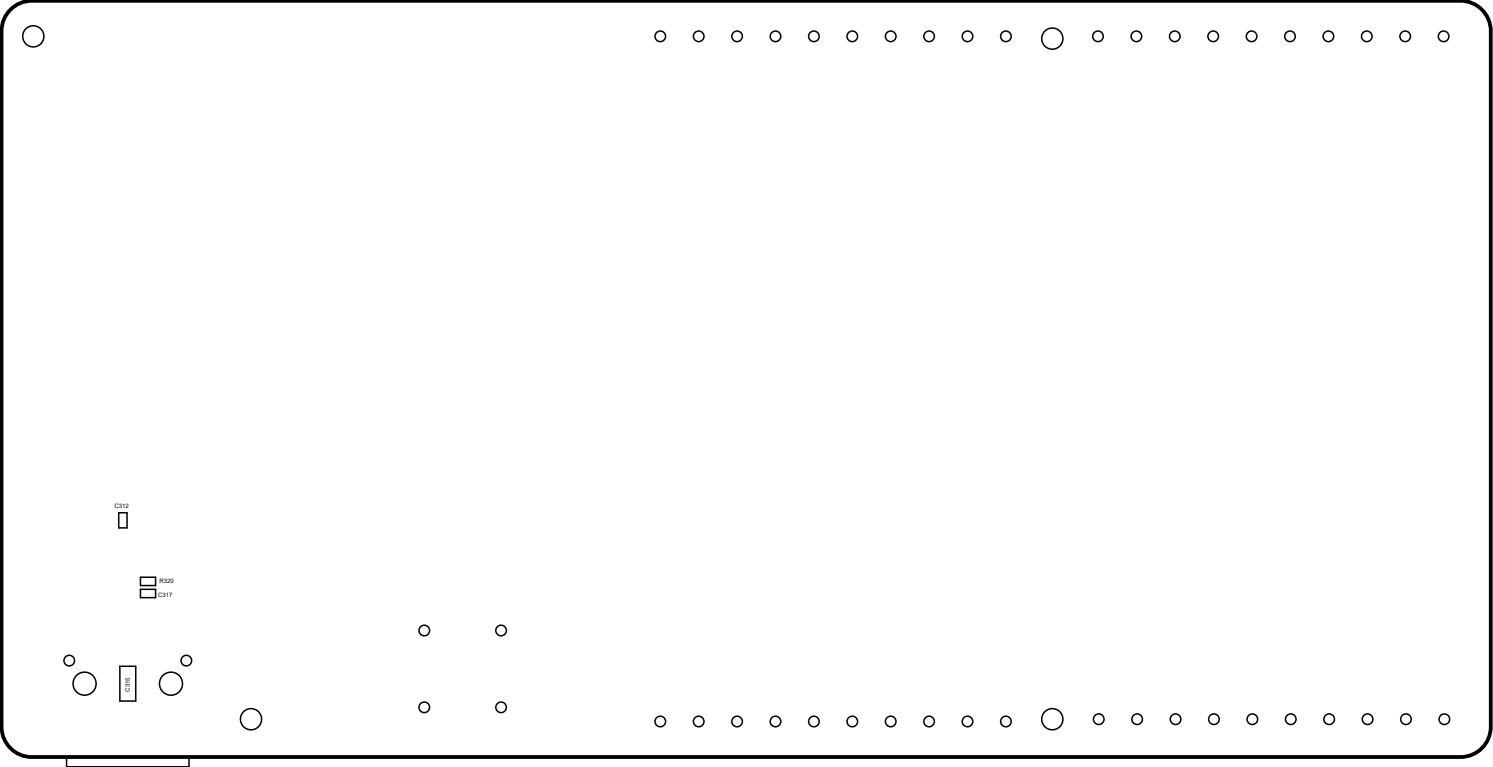
View from Top side (Scale 1:1)



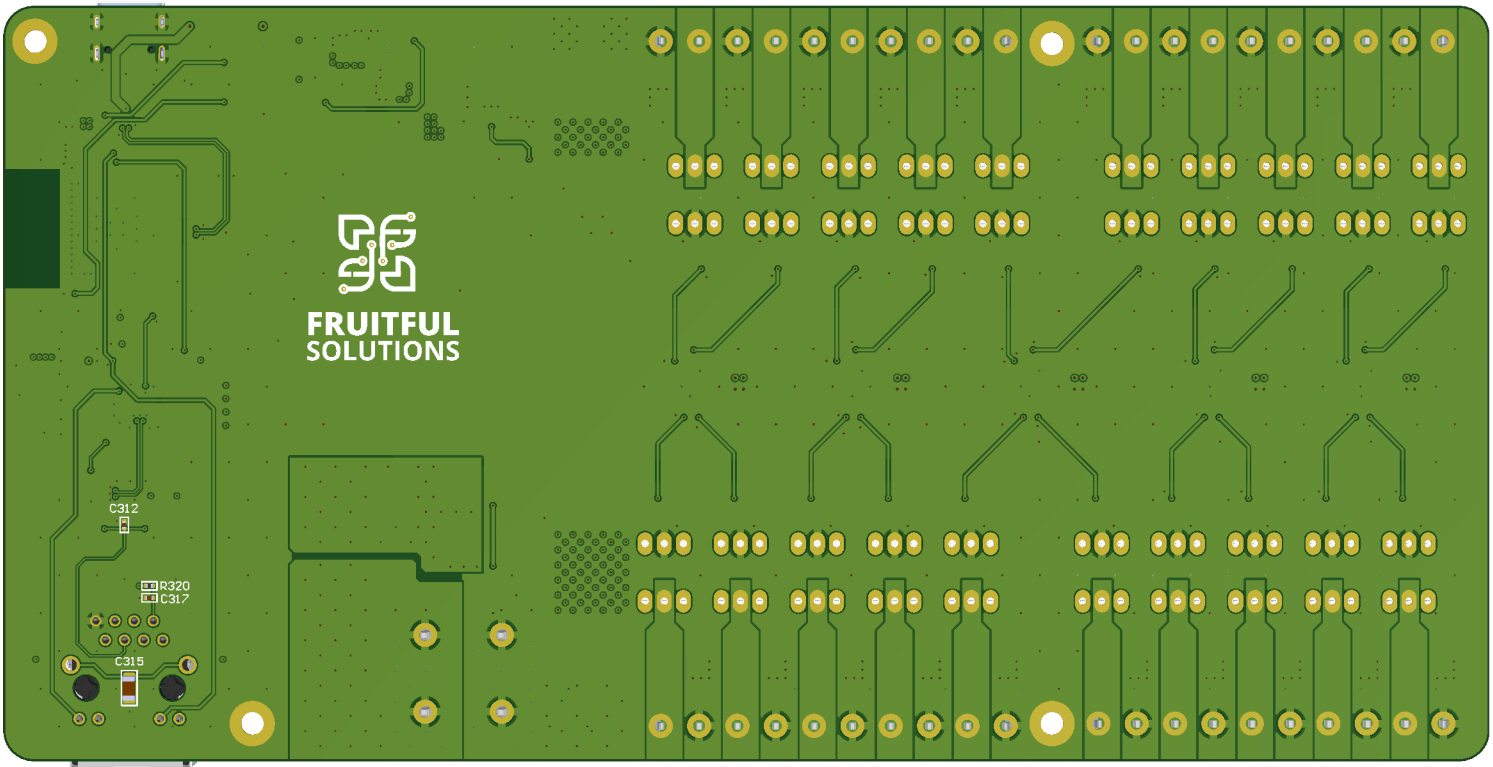
## Realistic View

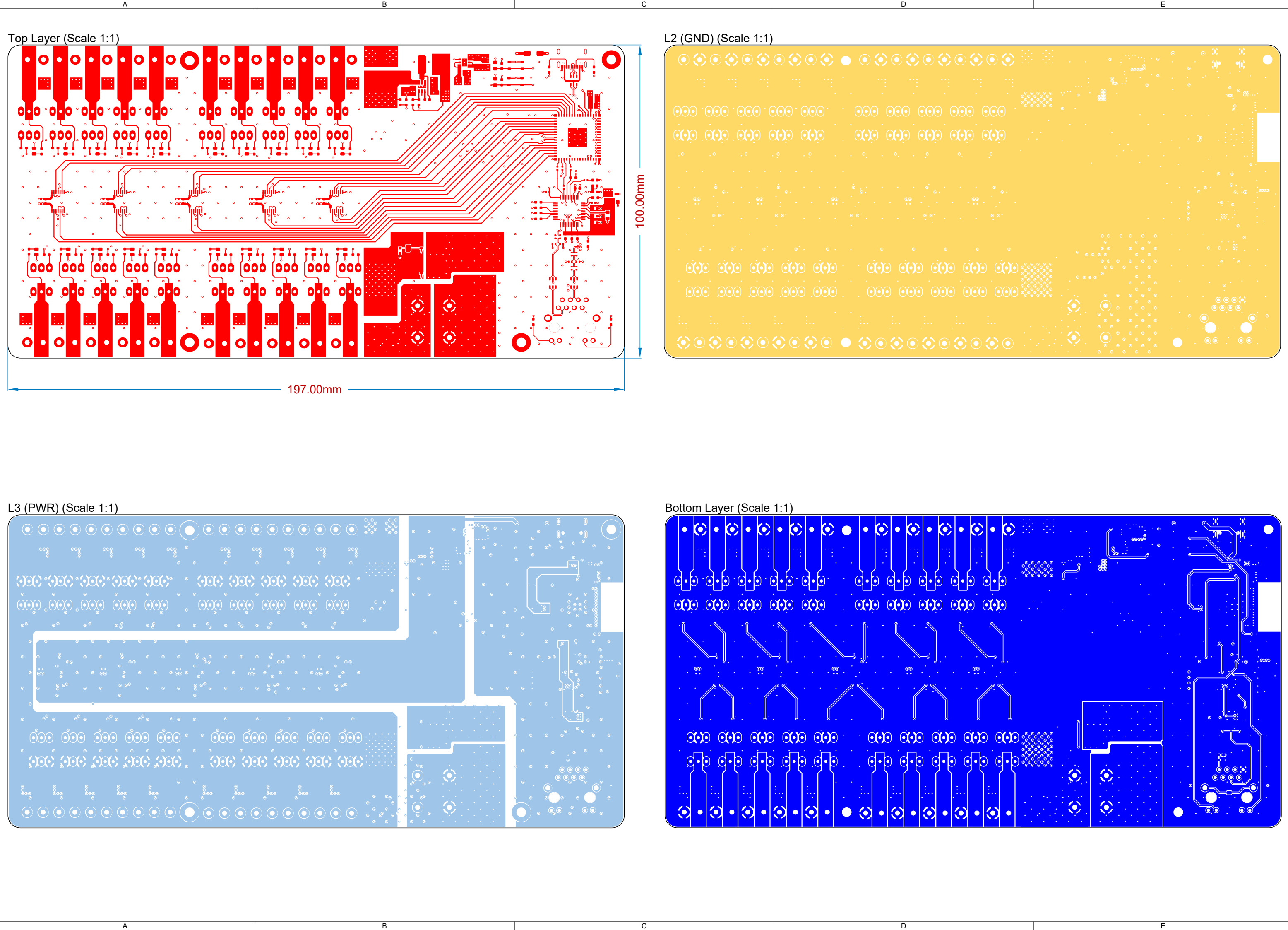


View from Bottom side (Scale 1:1)



Realistic View





Drill Table

Symbol	Count	Hole Size	Plated	Hole Tolerance
□	855	0.30mm	Plated	
▽	21	0.40mm	Plated	
◎	2	0.50mm	Plated	
⊗	4	0.60mm	Plated	
☆	2	0.65mm	Non-Plated	
○	132	1.00mm	Plated	
☆	46	1.60mm	Plated	
⊗	4	3.00mm	Plated	
▽	2	3.25mm	Non-Plated	
1068 Total				

FABRICATION NOTES

Board Name: Controller A20

Rev: A

1. FABRICATE PER IPC-6012A CLASS 2.

2. FOR BOARD THICKNESS AND IMPEDANCE DETAILS REFER STACKUP DOCUMENT.

3. PRINTED WIRING BOARD SHALL COMPLY WITH REQUIREMENTS OF ANSI/J-STD-003.

4. SURFACE FINISH: LeadFree HASL

5. SOLDERMASK ON BOTH SIDES OF THE BOARD SHALL BE LPI, COLOR GREEN

6. SILK SCREEN LEGEND TO BE APPLIED PER LAYER STACKUP USING WHITE NON-CONDUCTIVE EPOXY INK.

7. THIS PRINTED WIRING BOARD IS DESIGNED WITH A MINIMUM CONDUCTOR WIDTH AND SPACING OF 0.16MM & 0.17MM.

8. THIS PRINTED WIRING BOARD IS DESIGNED WITH A MINIMUM VIA HOLE AND VIA PAD OF 0.3MM & 0.6MM.

9. ALL VIAS ARE TENTED ON BOTH SIDES UNLESS SOLDERMASK OPENED IN GERBER.

10. SOLDER MASK OPENING IS KEPT SAME SIZE AS PAD (1:1) FOR ALL COMPONENTS

11. VENDOR SHOULD FOLLOW ROHS COMPLIANT PROCESS AND Pb FREE FOR MANUFACTURING

12. TRACE WIDTH SHOULD BE ACCURATELY ETCHED. MAX TOLERANCE +/- 1 0.0254MM

13. ALL DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED.

14. FLATNESS REQUIREMENTS:

A. BOW AND TWIST OF ASSEMBLY SUB-PANEL OR SINGULATED PWB SHALL NOT EXCEED 0.7% OF LONGEST SIDE

B. TEST IN ACCORDANCE WITH THE CURRENT REVISION OF IPC-TM-650 2.4.22

15. PCB MATERIAL REQUIREMENTS:

A. FLAMMABILITY RATING MUST MEET OR EXCEED UL94V-0 REQUIREMENTS. PCB MUST BEAR THE UL94V-0 REGISTERED MATERIAL ID NUMBER.

B. Tg 135 C OR EQUIVALENT.

C. EQUIVALENT MATERIAL SHALL BE RoHS COMPLIANT, HALOGEN FREE AND APPROVED BY ABC-Corp.

16. LAYER TO LAYER REGISTRATION SHALL BE WITHIN +/- 0.0508MM

17. IMPEDANCE CONTROL REQUIREMENTS (ALL TOLERANCES +/- 10%):

A. ALL 0.23 MM WIDE SINGLE-END TRACES ON LAYER 1 (TOP LAYER) SHALL BE 50 OHMS.

B. ALL 0.2 MM WIDE/0.17 MM SPACE PAIRS ON LAYER 1 (TOP LAYER) and LAYER 4 (BOTTOM LAYER) SHALL BE 90 OHMS.

C. ALL 0.16 MM WIDE/0.17 MM SPACE PAIRS ON LAYER 1 (TOP LAYER) and LAYER 4 (BOTTOM LAYER) SHALL BE 100 OHMS.

D. VENDOR MAY ADJUST DESIGN GEOMETRIES UP TO +/-20% TO ACHIEVE

Layer Stack Legend

Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Overlay			Legend	GTO
Surface Material	Top Solder	0.025mm	SM-001	Solder Mask	GTS
PbSn	Top Surface Finish	0.020mm		Surface Finish	
CF-004	Top Layer	0.035mm		Signal	GTL
Prepreg		0.084mm	PP-017	Dielectric	
Prepreg		0.054mm	PP-006	Dielectric	
CF-004	L2 (GND)	0.070mm		Signal	G1
Core		0.960mm	Core-039	Dielectric	
CF-004	L3 (PWR)	0.070mm		Signal	G2
Prepreg		0.054mm	PP-006	Dielectric	
Prepreg		0.084mm	PP-017	Dielectric	
CF-004	Bottom Layer	0.035mm		Signal	GBL
PbSn	Bottom Surface Finish	0.020mm		Surface Finish	
Surface Material	Bottom Solder	0.025mm	SM-001	Solder Mask	GBS
	Bottom Overlay			Legend	GBO
Total thickness: 1.536mm					

ASSEMBLY NOTES

Board Name: Controller A20

Rev: A

1. Assemble in accordance with IPC-A-610, current revision, Class 2.

2. Solder electrical connections per latest revision of IPC J-STD-001.

3. This assembly contains ESD sensitive components. Handle per ANSI/ESD S20.20.

4. RoHS compliance required: Yes.

5. Mark with current assembly revision.

6. Mount components with polarity and orientation as shown on component designators/silkscreen.

7. Don't trim any connector leads