

A

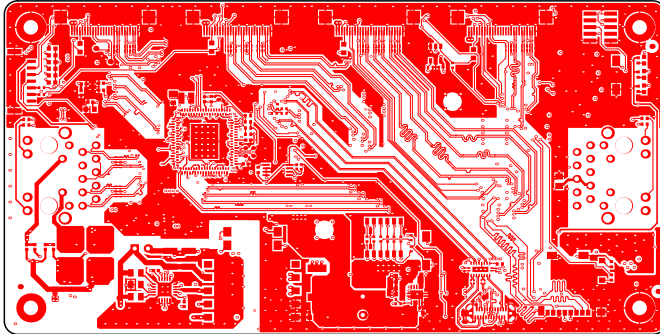
B

C

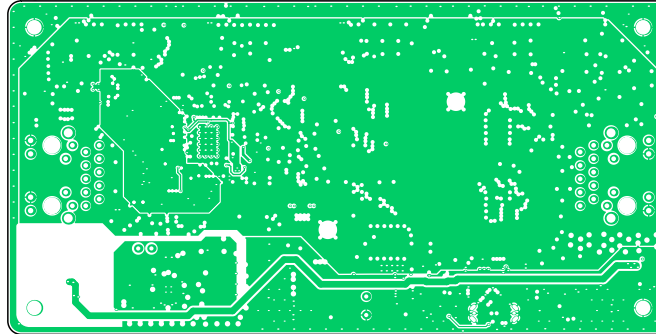
D

E

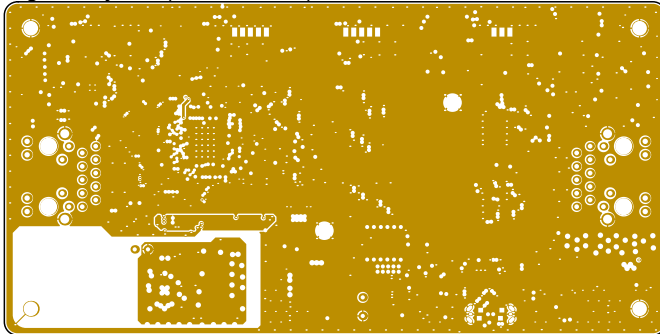
Top Copper (Scale 1:1.43)



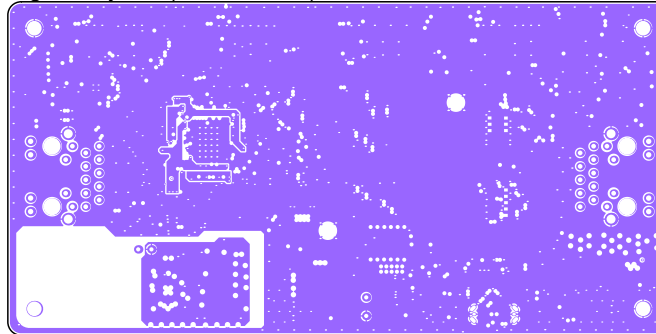
Signal Layer 3 (Scale 1:1.43)



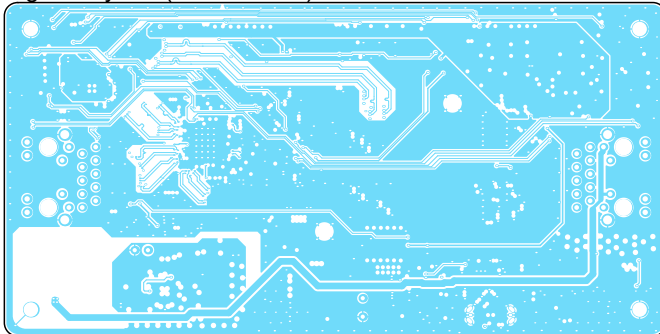
Signal Layer 1 (Scale 1:1.43)



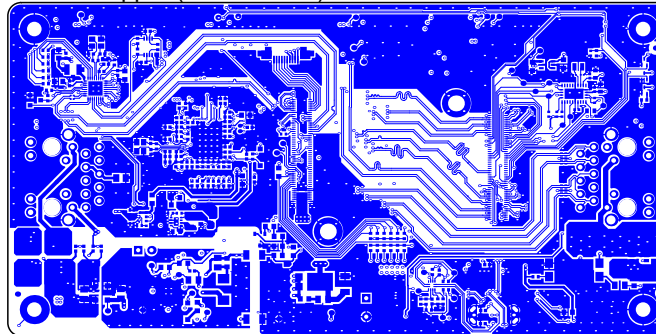
Signal Layer 4 (Scale 1:1.43)



Signal Layer 2 (Scale 1:1.43)



Bottom Copper (Scale 1:1.43)

**FABRICATION NOTES:**

Fabricate per IPC-6011 & IPC-6012 CLASS 2
Inspect per IPC-A-600 CLASS 2
Test per IPC-TM-650

- * PCB has 6 copper layers
- * Copper thicknesses are finished and include base foil plus Cu plating on plated layers.
- * PCB thickness: 63mil +/- 3mil
- * Min. trace width/clearance: 4/4mil
- * Min. hole drill/ring: 8mil/16mil
- * All vias-in-pad shall be plugged and plated over (VIPPO)
- * Soldermask gang relief is allowed for pads in same footprint, if footprint is NSMD.
- * Silkscreen, non-conductive epoxy ink, color: white
- * Remove silkscreen as needed to prevent ink on any exposed copper
- * Surface finish: ENIG
- * Hole dimensions are finished size, +/-3mil
- * Linear board dimension tolerance: +/-10mil
- * Bow, twist, warp not to exceed 0.75% of greatest diagonal span
- * PCB shall be UL Recognized printed wiring board (ZPMV2), minimum flammability rating 94V-0
- * PCB shall be marked with fabricator company or trade name, UL mark, and date code using legend ink on secondary side
- * All PCBs shall be electrically tested for opens and shorts per gerber. Test marking shall be marked on second side.

Fabricator shall panelize the PCB using mouse bites and tab routing. V-scoring not allowed.

Controlled impedance differential pairs shall be within +/-10% of target impedance. See sheets below for more detail.

Title: **NG2093**

Number:

Revision: R1M0
E1

Date: 28/06/2023

Sheet: 1 of 4

Drawn by: Nejc Gostincar

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A

B

C

D

E

A

B

C

D

E

Layer Stack Legend

Layer	Thickness	Type	Gerber	Df	Dk
Top Overlay		Legend	GTO		
Top Mask	0.59mil(0.015mm)	Solder Mask	GTS		3,8
Top Copper	1.38mil(0.035mm)	Signal	GTL		
	3.43mil(0.087mm)	Dielectric			4,05
Signal Layer 1	1.38mil(0.035mm)	Signal	G1		
	21.65mil(0.550mm)	Dielectric			4,5
Signal Layer 2	1.38mil(0.035mm)	Signal	G2		
	4.84mil(0.123mm)	Dielectric			4,25
Signal Layer 3	0.69mil(0.018mm)	Signal	G3		
	21.65mil(0.550mm)	Dielectric			4,5
Signal Layer 4	0.69mil(0.018mm)	Signal	G4		
	3.70mil(0.094mm)	Dielectric			4,05
Bottom Copper	1.38mil(0.035mm)	Signal	GBL		
Bottom Mask	0.59mil(0.015mm)	Solder Mask	GBS		3,8
Bottom Overlay		Legend	GBO		

Total thickness: 63.35mil(1.609mm)

Drill Table

Symbol	Count	Hole Size	Plated	Hole Tolerance
⊙	51	4.02mil(0.102mm)	Plated	
✱	106	7.87mil(0.200mm)	Plated	
⊠	150	8.00mil(0.203mm)	Plated	
▽	835	10.00mil(0.254mm)	Plated	
✱	2	19.69mil(0.500mm)	Plated	
⊕	4	27.56mil(0.700mm)	Plated	
✱	4	31.50mil(0.800mm)	Plated	
✱	28	35.43mil(0.900mm)	Plated	
✱	8	40.16mil(1.020mm)	Plated	
○	4	66.93mil(1.700mm)	Plated	
□	4	108.27mil(2.750mm)	Plated	
◇	2	118.11mil(3.000mm)	Plated	
☆	4	125.98mil(3.200mm)	Non-Plated	+/-0.00mil(0.000)
	1202 Total			

Title: **NG2093**

Number:

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Sheet: 2 of 4

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A

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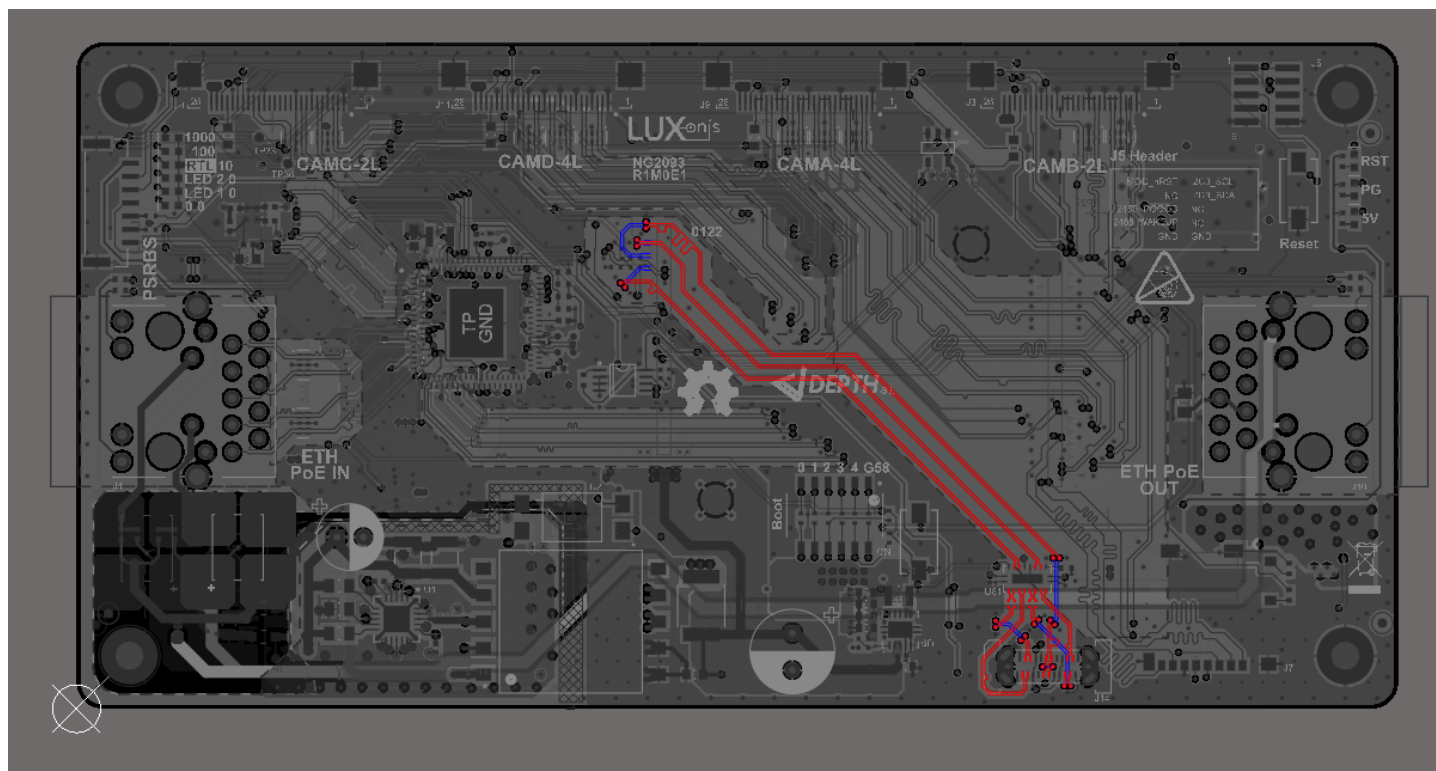
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D

E

E

USB differential pairs



Transmission Line Structure Table

Target Impedance	Calculated Impedance	Trace layer	Lower Trace Width	Upper Trace Width	Gap	Reference layers
100	100.66	Top Copper	4.7mil(0.120mm)	4.7mil(0.120mm)	9.8mil(0.250mm)	Signal Layer 1
90	89.81	Top Copper	4.9mil(0.125mm)	4.9mil(0.125mm)	5.1mil(0.130mm)	Signal Layer 1
100	100.43	Signal Layer 2	4.5mil(0.115mm)	4.5mil(0.114mm)	13.8mil(0.350mm)	Signal Layer 1,Signal Layer 3
90	95.33	Signal Layer 2	5.2mil(0.131mm)	5.2mil(0.131mm)	13.8mil(0.350mm)	Signal Layer 1,Signal Layer 3
100	99.97	Bottom Copper	5.1mil(0.130mm)	5.1mil(0.130mm)	9.3mil(0.236mm)	Signal Layer 4
90	90.88	Bottom Copper	5.1mil(0.130mm)	5.1mil(0.130mm)	5.1mil(0.130mm)	Signal Layer 4

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E

Target Impedance	Calculated Impedance	Trace layer	Lower Trace Width	Upper Trace Width	Gap	Reference layers
100	100.66	Top Copper	4.7mil(0.120mm)	4.7mil(0.120mm)	9.8mil(0.250mm)	Signal Layer 1
100	100.43	Signal Layer 2	4.5mil(0.115mm)	4.5mil(0.114mm)	13.8mil(0.350mm)	Signal Layer 1,Signal Layer 3
100	99.97	Bottom Copper	5.1mil(0.130mm)	5.1mil(0.130mm)	9.3mil(0.236mm)	Signal Layer 4

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