
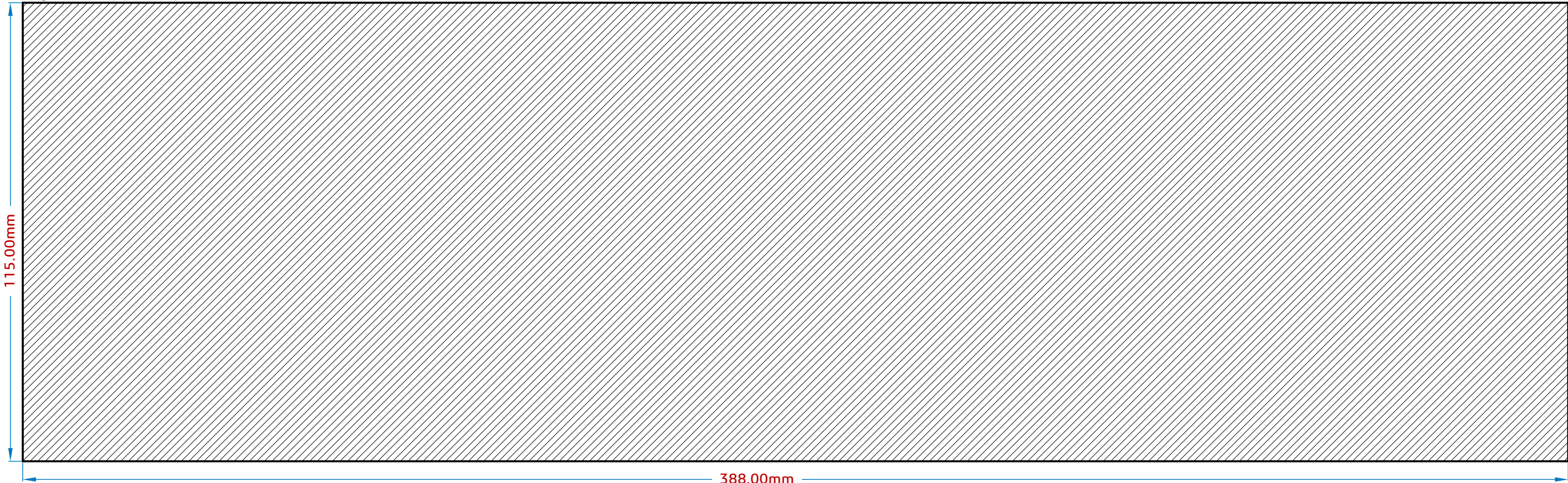


A		B		C		D		E		F		G		H		
SPECIFICATION REFERENCES										REVISIONS						
										ZONE	REV	DESCRIPTION			DATE	APPROVED
											A0	INITIAL RELEASE			06/23	JTU
											A1	Correction and improvement of the concept			01/24	JTU
											A2	Routing of the TOR led, J6 silkscreen, Power Management			11/24	JTU
1. Design - The printed wiring board shall conform to the Class 2 requirements of IPC-2221 and 2222A.										HDI MATERIAL REQUIREMENTS						
										27. Core Base Materials - No Requirement						
										28. HDI Dielectric Materials - No Requirement						
										29. Reinforcement Materials - No Requirement						
										MATERIAL AND PROCESSES						
										30. Surface Finish Material (Conductive) - Plating requirements: electroless nickel/immersion gold plating (ENIG) per IPC-4552, class 3.						
2. Performance - Performance requirements are in accordance with specification IPC-6012D, Class 2.										31. Surface Finish Material (Organic) - No Requirement						
										32. Via Protection Fill Material (Conductive) - No Requirement						
										33. Via Protection Fill Material (Organic) - No Requirement						
										34. Hole Basic Plating Material - Plated-through holes shall be copper plated 20µm minimum thick in accordance with IPC-6012D, class 2.						
										35. Hole Over-plate Material - No Requirement						
										36. Contact Finger/Rotary switch Plating Material - No Requirement						
3. Quality Control - Quality of printed boards shall meet the requirements of Class 2 of IPC-6012.										37. Solder Mask Liquid Photo imageable Material - Construction shall be solder mask over bare copper (SMOBC), liquid photoimageable (LPI). Apply to primary and secondary sides in accordance with IPC-SM-840 (type H). Use appropriate solder mask artwork for each side of board. - Solder mask thickness : 25µm min./130µm max. Solder mask material to be green in color.						
										38. Solder Mask Dry Film Material - No Requirement						
										39. Legend Ink Material - Legend shall be white, permanent, organic, non conductive UV or epoxy type. There shall be no silkscreen on any solderable component land.						
										40. Miscellaneous Material - No Requirement						
4. Material - Copper Clad Laminate shall conform to IPC-4101/128 (ANSI: FR4.0/128) - Solder mask requirements are in accordance with IPC-SM-840. - Manufacturer shall select materials to achieve a balanced construction and to meet the requirements specified herein, including dimensionnal requirements in stackup view (Require customer approval).										FLEXIBLE MATERIAL REQUIREMENTS						
										23. Core Base Material - No requirements.						
										24. Adhesive Material - No requirements.						
										25. Cover Layer Materials - No requirements.						
										26. Copper Film - No requirements.						
5. Restrictive Material ID - Use of restricted material as identified per IPC-1752. - Marking requirement shall meet J-STD-609.																
6. Electronic Data Formats - Data formats are in accordance with ODB++.																
7. Internal Company - No Requirement																
8. International - Test methods for solderability shal meet IEC 61328. - Solder material requirements shall meet 62190-3. - Board description format shall meet ISO 32001 STEP AP210.																
9. Unique - No Requirement																
QUALITY REQUIREMENTS																
10. Minimum Acceptability - Fabricate per IPC-6011, IPC-6012, and IPC-A-600 class 2. Latest version in effect.																
11. Workmanship Requirements - Rework and or repair of printed wiring boards shall conform to IPC-7721; and all repairs shall be documented in the records (add - and require customer approval). - Printed board workmanship shall meet IPC-A-600 class 2.																
12. Modification and Repair - Conductor repair shall be per IPC-7721 and are only permitted for conductor surface (Require customer approval)																
13. Coupon and Delivery Requirements - No requirement																
14. Process Control Reporting - No requirement																
15. Test Requirements - All boards shall be tested for opens and shorts per IPC-9252, Level B. - The test schedule defined in the contract shall be accomplished on all the product and a certificate of compliance shall be provided based on the serial number of the panel represented by the test sequences.																
16. Unique Requirements - No requirement																
GENERAL MATERIAL REQUIREMENTS																
17. Metallic Heat Sink Foil/Film - No requirement																
18. Non-Organic Materials - No requirement																
RIGID MATERIAL REQUIREMENTS																
19. Core Base Material - Material in accordance with IPC4101/128, laminate sheet, type GFN, Flame resistant (meeting UL94V0), Tg rating 150°C minimum - Laminate and Prepreg shall be per IPC-4101/128. Refer to layer stackup for copper foil weights.																
20. PrePreg Material - Laminate and Prepreg shall be per IPC-4101/128. Refer to layer stackup for copper foil weights.																
21. Reinforcement Materials - Reinforcement next to board surface shall be oven E glass, style 1080 per IPC-4412.																
22. Copper Foil - Copper foil shall be in accordance with IPC-4562.																

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF CEA. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF CEA IS PROHIBITED.		UNLESS OTHERWISE SPECIFIED DIMENSIONS AND TOLERANCE ARE IN MM AND APPLY TO THE FINISHED PART			DRAWN	DATE	 CEA/DAM/DIF/DASE/STMG/LCDS Bruyères le chatel 91297 ARPAJON		
					J. TUPINIER	15/11/2024			
		TOLERANCE ON:			DESIGNER	DATE			
		2 PLACE DEC	3 PLACE DEC	ANGELS	J. TUPINIER	15/11/2024	Master Drawing - Giroux_MotherBoard		
					CHECKER	DATE			
			PE. BUTHIER	15/11/2024	SIZE A3	CAGE CODE	DWG NO.	REV. A2	
			QA	DATE					
			PROV. ENG.	DATE					
						SCALE 1:1		SHEET 1 OF 7	

	A	B	C	D	E	F	G	H					
PROCESSING REQUIREMENTS 41. Marking - Board fabricator shall apply date code, I.D. and UL marking to primary side or secondary side. 42. Thieving - No thieving. 43. Non-funtionnal Pads - Manufacturer shall not remove non-functional pads. 44. Teardropping - No teardrops				62. Miscellaneous - All artwork or electronic data may be adjusted by the PCB fabricator to compensate for manufacturing process tolerances - Surface Mount Pad plating shall be flat to a maximum of 13µm above the board surface in accordance with IPC-2222, Level B. - Millimeters (mm) are controlling dimensions for drawing and supplied data.									
END PRODUCT PHYSICAL DESCRIPTION 45. Hole from/to descriptions - Drill boards using drill data, drill pattern and hole schedule. hole locations may vary within 0.20mm max. about true position. (Minimum hole location tolerance, IPC-2221, Level B) 46. HDI Layer Structure - No requirement 47. Edge Definition Requirements - No requirement 48. Board from Panel Excising - Low stress (mouse bite) breakaway shall be in accordance with IPC-2222A. 49. Board X out Allowance - No requirement 50. Via Fill or Tenting Strategy - No requirement 51. Etchback and Desmear Requirements - Positive etchback of plated through hole shall be 5µm to 80µm with a preferred depth of 13µm (IPC-6012). 52. Flexing (to install or continous) - No requirement				EMBEDDED COMPONENT REQUIREMENTS 63. Formed Components - No requirement 64. Inserted Components - No requirement					UNIQUE CUSTOMER REQUIREMENTS 78. Contract - No requirement. 79. Delivery schedule - No requirement. 80. Contact indentification - No requirement. 81. Purchase order number - No requirement. 82. Long term arrangement - No requirement.				
TOLERANCE VARIATION DETAILS 53. Printed Board Peripheral - Tolerance of profiles, cutouts, notches and keying slots, as machined : 0.2mm according to IPC-2222A, Level B. - Remove all burrs and break sharp edges 0.4mm maximum. 54. Printed Board Thickness - Thickness : 1.73mm +/-10% (finished) in accordance with IPC-2222A, level B. 55. Printed Board Bow and Twist - Bow and twist shall not exceed 0.75% in accordance with IPC-TM-650, method 2.4.22. 56. Hole/Feature Location - No overlap permitted - Drill boards using drill data, drill pattern and hole schedule. hole locations may vary within 0.2mm max. about true position. (Minimum hole location tolerance, IPC-2221, Level B) 57. Hole/Feature Size - Minimum annular ring : 50µm according to IPC-2221. - Hole/Land fabrication allowance : 0.4mm according to IPC-2221, Level A. 58. Dielectric Separation - The minimum electric spacing shall be 90µm on the rigid dielectric in accordance with IPC-6012. 59. Electric Variation - No requirement				ELECTRICAL TEST REQUIREMENTS 65. Open and short testing (continuity) - Bare Board Electrical Test: Bare boards shall be electrically test using CAD generated net list data. This information to supplied in IPC-D-356 format. Electrical testing shall follow the guidelines established by IPC-ET-652, guidelines and requirements for electrical test of unpopulated printed boards. 66. Maximum rated Voltage - The test voltage shall be 10 volts minimum applied between each pair of nets under test. 67. Conductor impedance Testing - No requirement. 68. Dielectric wistanding voltage - No requirement 69. Highly accelerated Stress Testing - No requirement. 70. Burn in Requirements - No requirement. 71. Cleanliness Testing - No requirement. 72. Environmental Screening Tests - No requirement. 73. Thermal stress testing - No requirement.									
				PACKAGING DESCRIPTIONS 74. Dry environmental packaging - No requirement. 75. Moisture barrier techniques - All printed boards shall be properly dried and when the drying process is complete packaged in moisture proof material. Desiccators and moisture label should be added when appropriate. 76. Labeling and container marking - Shipping containers shall be moisture proof and shall be appropriately labeled as to what precaution need to be observed when opening containers as well as and handling requirements. 77. Bar Code Requirements - No requirement.									
				</									


Region View (Scale 1:1)



Rigid

Layer	Material	Thickness	Dielectric Material	Type	Gerber
Top Overlay				Legend	GTO
Top Solder	Surface Material	0.042mm	Solder Resist	Solder Mask	GTS
Top Surface Finish	Nickel, Gold	0.004mm		Surface Finish	
Primary Side	Copper	0.135mm	(End thickness)	Signal	GTL
	Prepreg	1.370mm	FR-4.0 IPC4101/128	Dielectric	
Secondary Side	Copper	0.135mm	(End thickness)	Signal	GBL
Bottom Surface Finish	Nickel, Gold	0.004mm		Surface Finish	
Bottom Solder	Surface Material	0.042mm	Solder Resist	Solder Mask	GBS
Bottom Overlay				Legend	GBO
Total thickness: 1.732mm					

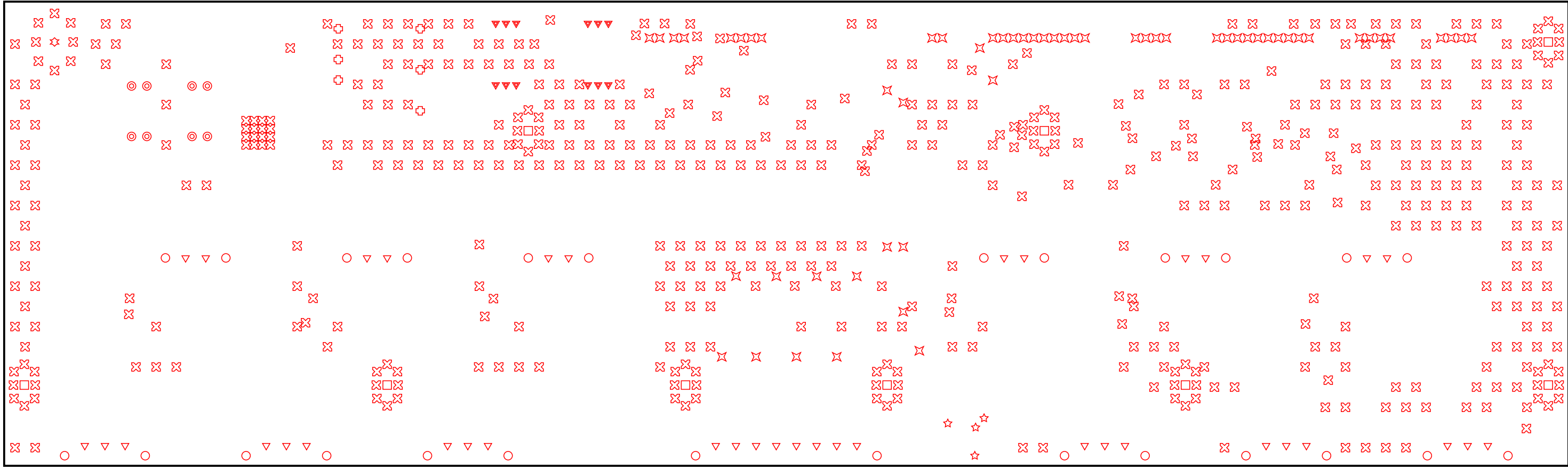
Cross sectional Description

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					DESIGNER J. TUPINIER	DATE 15/11/2024				
		TOLERANCE ON:			CHECKER PE. BUTHIER	DATE 15/11/2024	Master Drawing - Giroux_MotherBoard			
		2 PLACE DEC	3 PLACE DEC	ANGELS						
		MATL			QA	DATE	SIZE A3	CAGE CODE	DWG NO.	REV. A2
NEXT ASSY	USED ON	HARD	CASE							
APPLICATION		SURF			PROV. ENG.	DATE	SCALE 1:1		SHEET	3 OF 7


Drill Table

Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Via / Pad	Pad Shape	Template	Description
✂	534	0.60mm	Plated	Round	Primary Side - Secondary Side	(Mixed)	(Mixed)	(Mixed)	(Mixed)
▼	12	0.80mm	Plated	Round	Primary Side - Secondary Side	Pad	(Mixed)	(Mixed)	
✂	58	0.90mm	Plated	Round	Primary Side - Secondary Side	(Mixed)	(Mixed)	(Mixed)	(Mixed)
☆	4	1.00mm	Plated	Slot	Primary Side - Secondary Side	Pad	(Mixed)	(Mixed)	
⊕	6	1.20mm	Plated	Round	Primary Side - Secondary Side	Pad	(Mixed)	(Mixed)	
▼	38	1.40mm	Plated	Round	Primary Side - Secondary Side	Pad	(Mixed)	(Mixed)	
◎	8	1.60mm	Plated	Round	Primary Side - Secondary Side	Pad	(Mixed)	(Mixed)	
○	26	2.40mm	Non-Plated	Round	Primary Side - Secondary Side	Pad	Rounded	c100hn240m240p0	
□	9	3.60mm	Plated	Slot	Primary Side - Secondary Side	Pad	Rounded Rectangular	r1210_720h360_850r360p0	
☆	1	6.50mm	Plated	Slot	Primary Side - Secondary Side	Pad	Rounded Rectangular	r1690_1200h650_1140r600p0	
	696 Total								

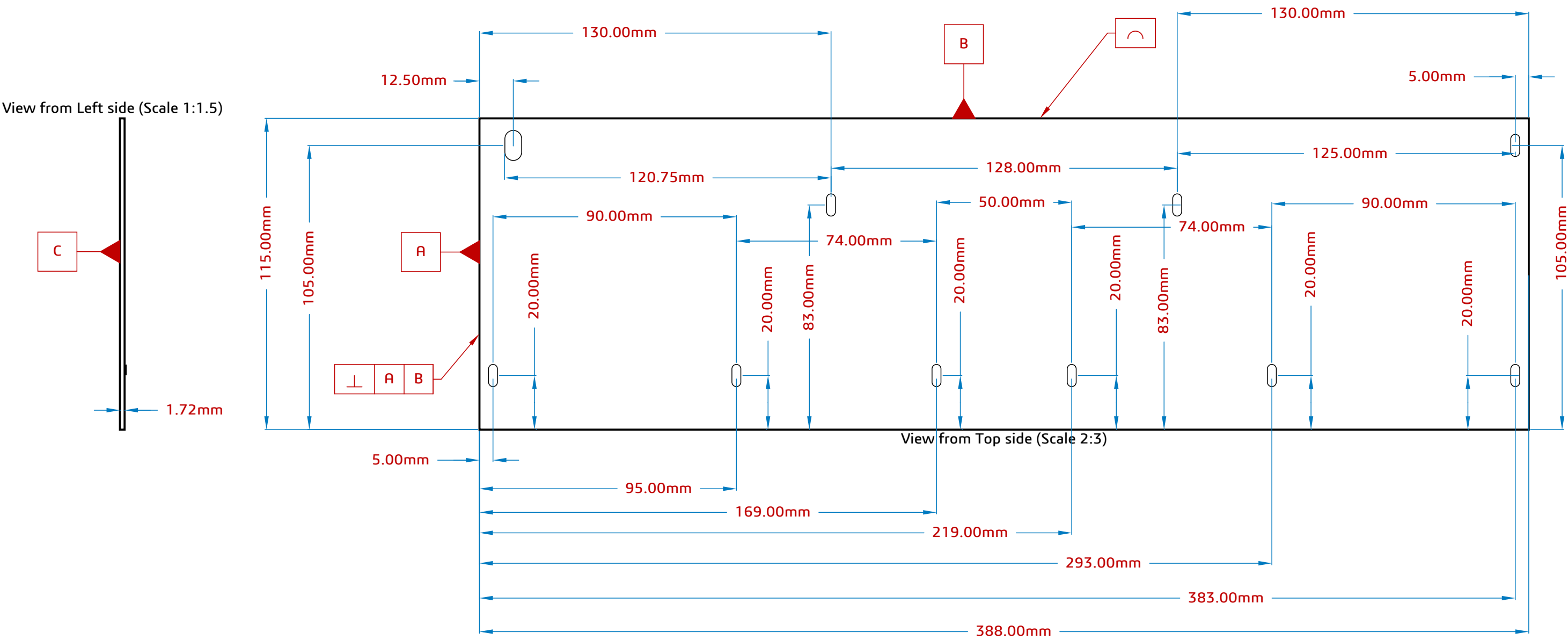
Drill Drawing View (Scale 1:1)




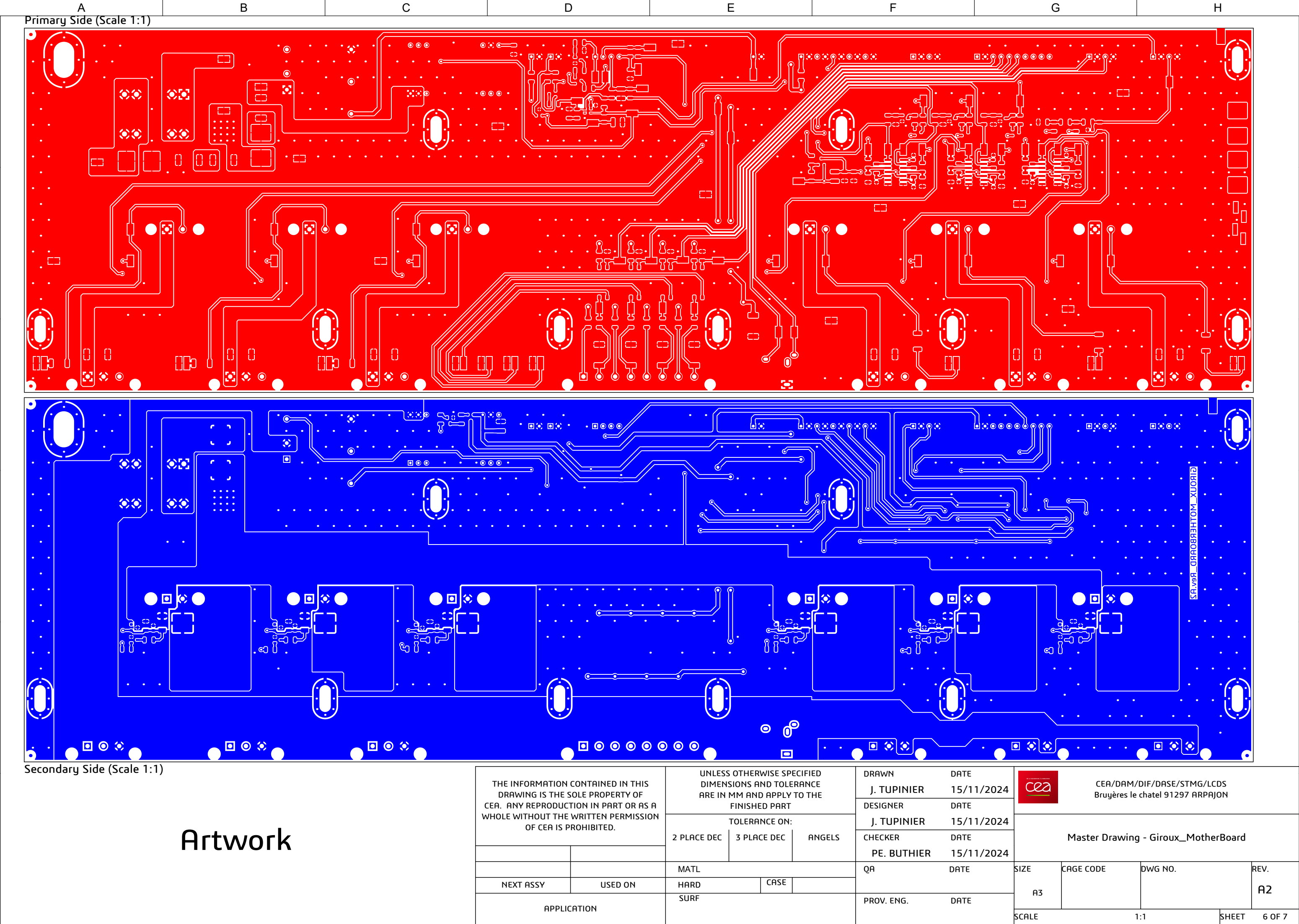
Hole Schedule

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APPLICATION								SCALE 1:1		SHEET 4 OF 7

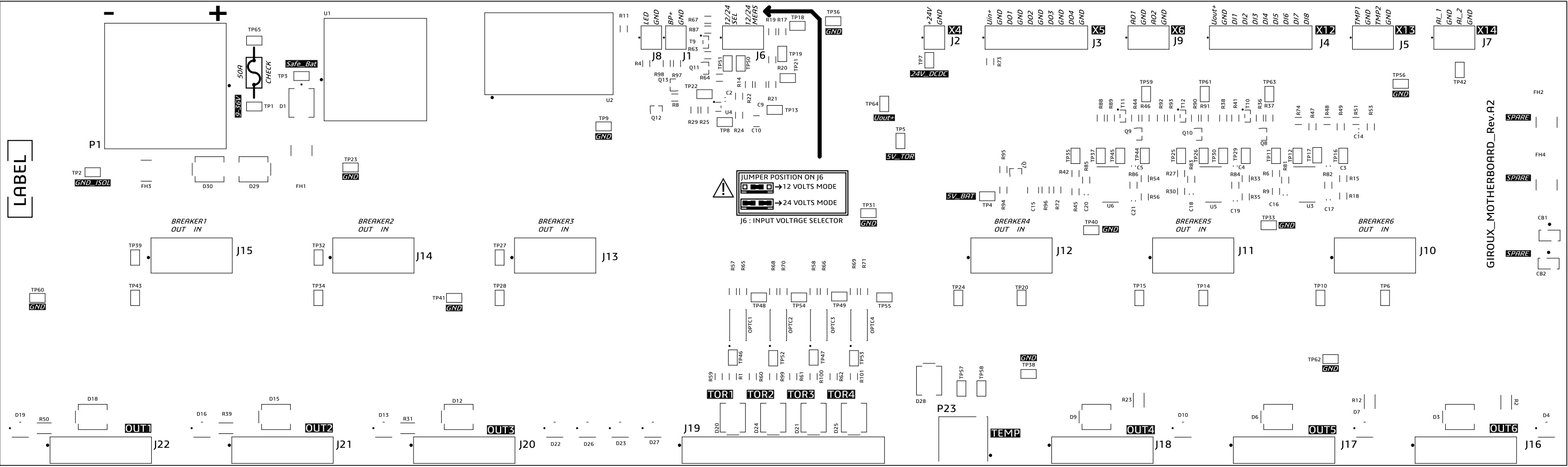
Board Outline Dimensioning Details



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NEXT ASSY	USED ON	HARD	CASE				A3			A2		
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Top Overlay (Scale 1:1)



Bottom Overlay (Scale 1:1)

Bottom Overlay (Scale 1:1)

Silkscreen

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