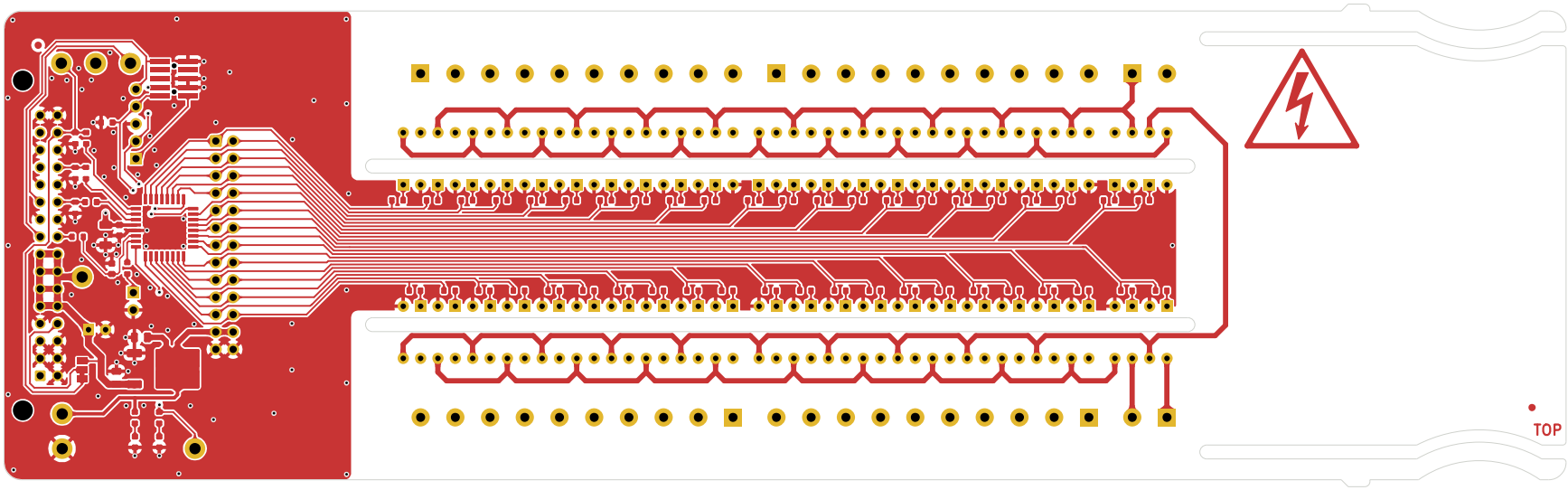
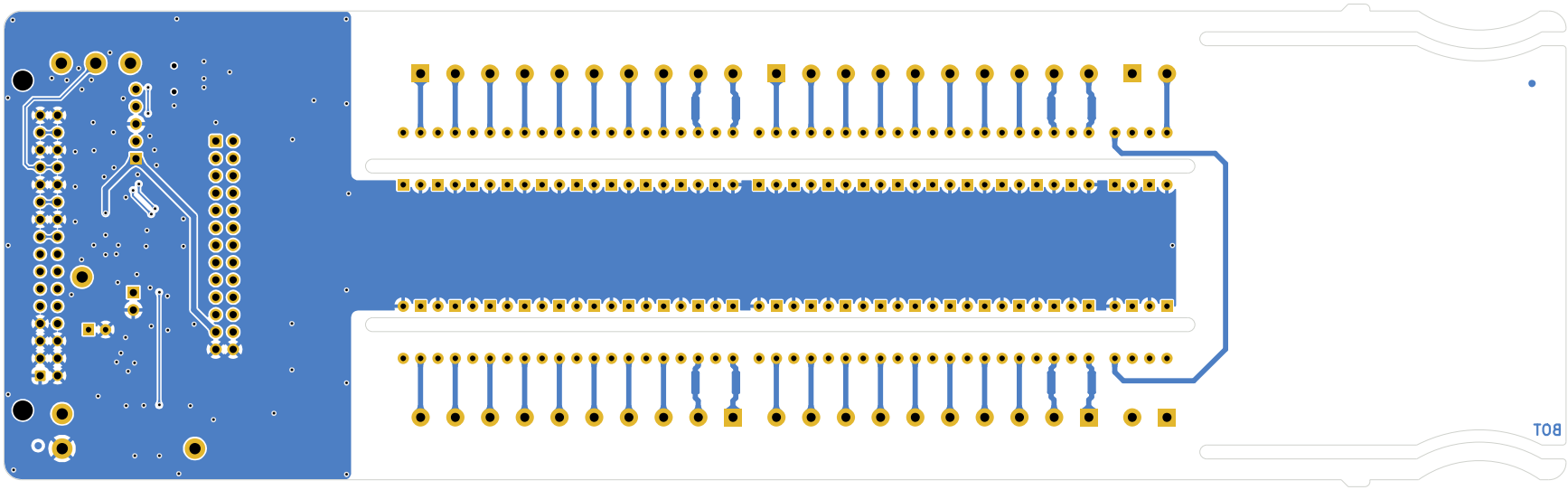


Modified by MR-DOS (modification of barriers according to standards, rerouted)
Modified by hb020 (mechanical improvements, smaller uC)

Sheet:
File: main.kicad_pcb

Title: Keithley SCAN-2000-20 SSR

Size: A4	Date: 2024-10-22	**Rev: 1.2.2**
KiCad E.D.A. 8.0.6		Id: 1/1



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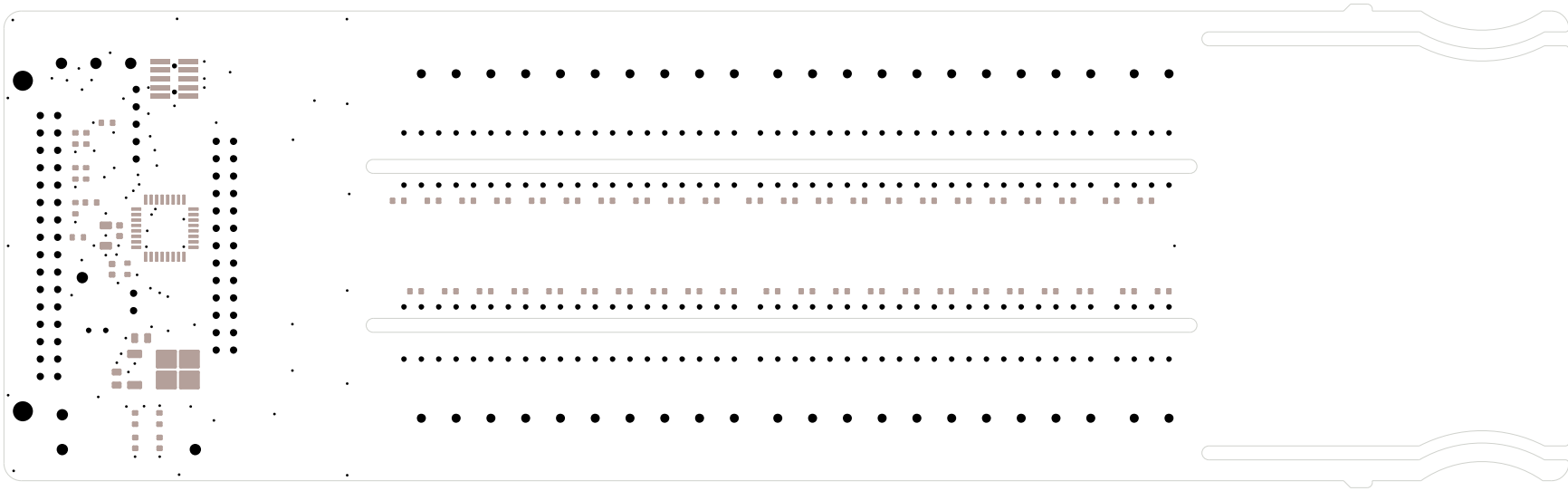

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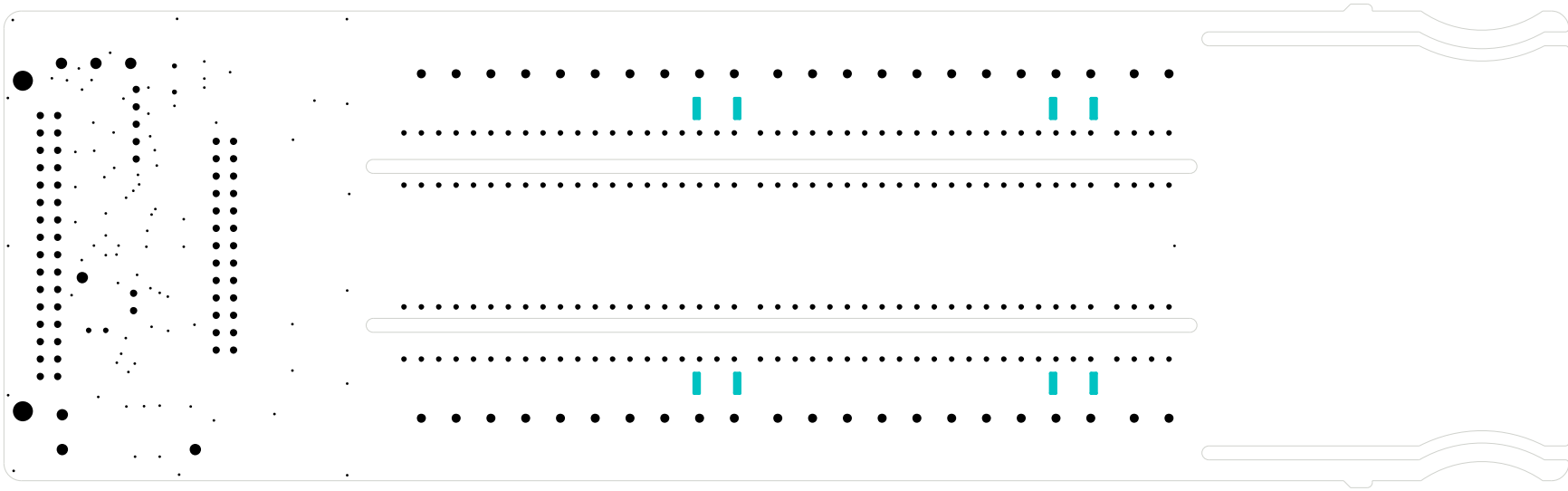

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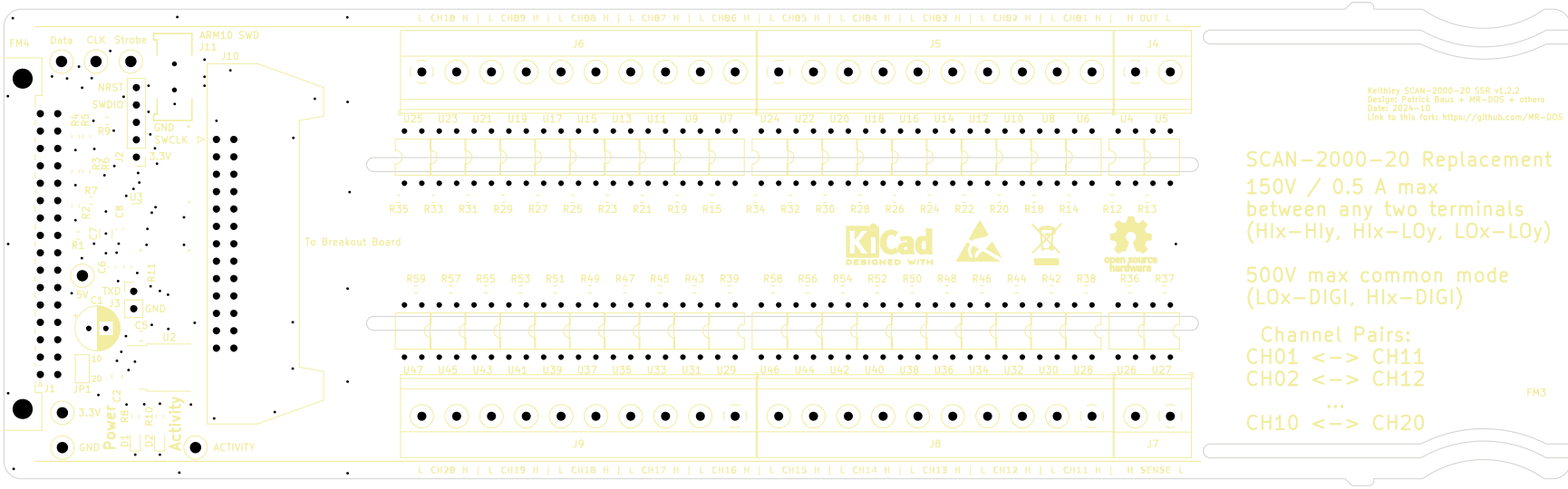

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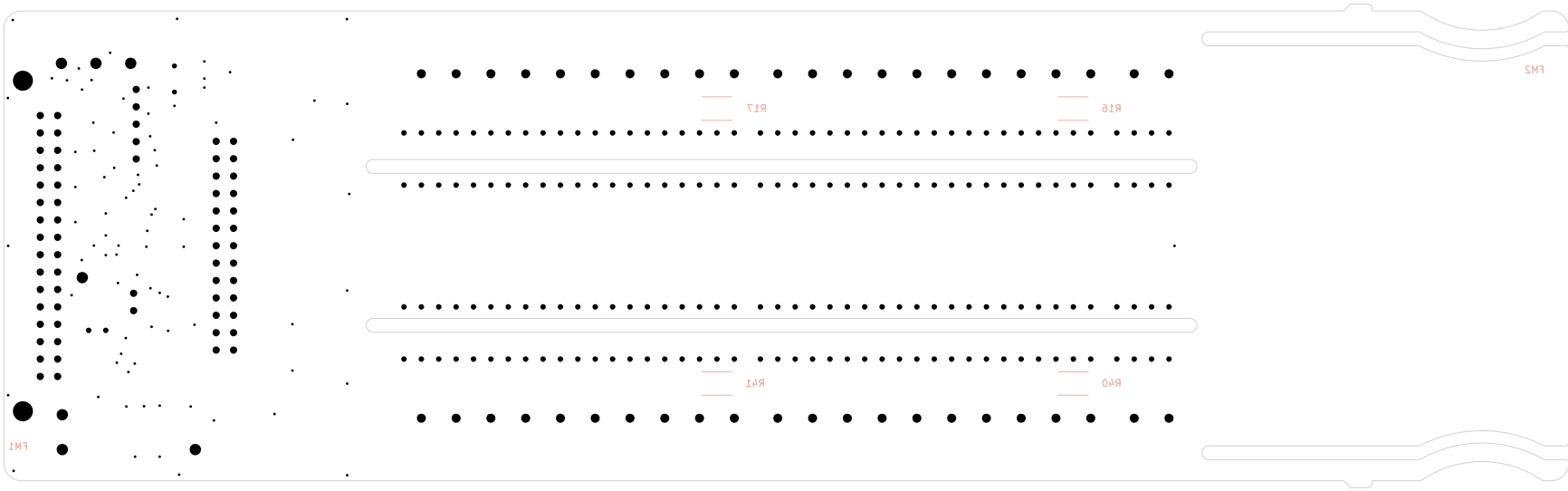

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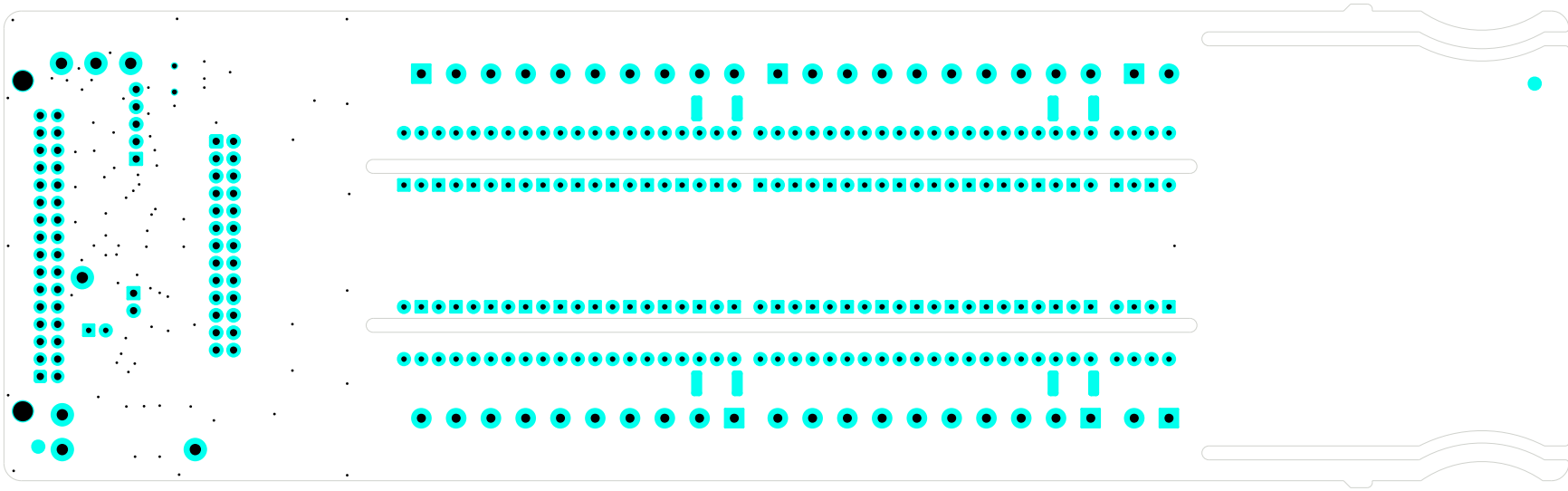

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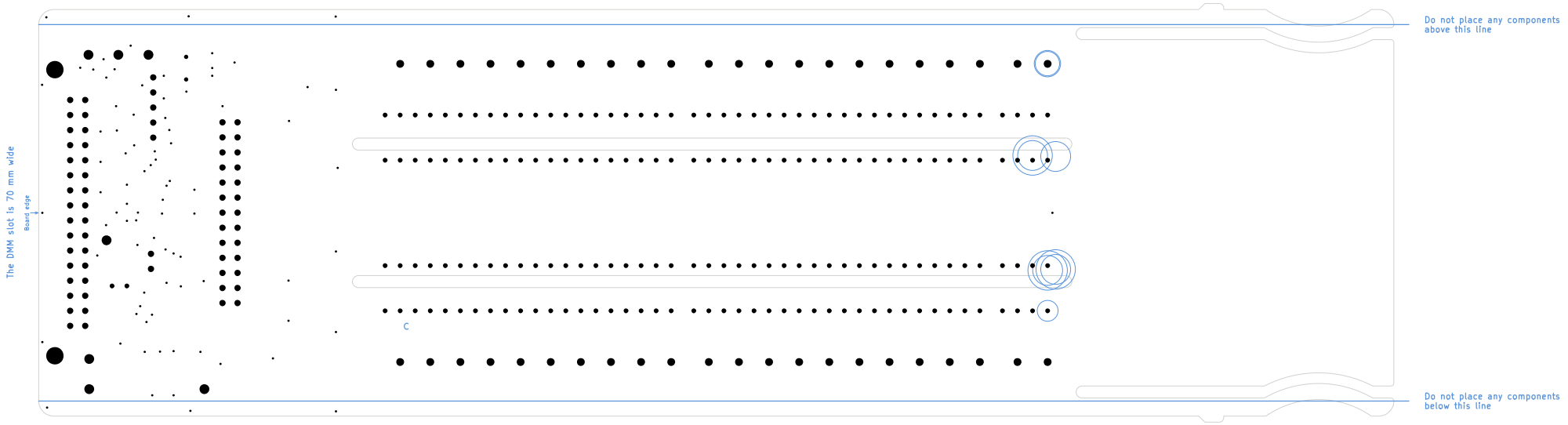
Room vertically above PCB = 15mm



Barriers design:
A) Digital – LO: 500V peak, functional insulation (2.5 mm AC, 2 mm CD)
    AC General: IPC-2221B external: 2.5 mm
    AC: UL796 + UL60950-1: 1.6 mm
    CD: UL60950-1 PD 1 MG I: 2 mm
B) HI – LO: 160V peak, functional insulation (1.25 mm AC, 0.75 mm CD)
    AC General: IPC-2221B external: 1.25 mm (violated, rating reduced to 150 V)
    AC: UL796 + UL60950-1: 0.625 mm
    CD: UL60950-1 PD 1 MG I: 0.75 mm
C) HI – digital: 660V peak, functional insulation (3.3 mm AC, 2.5 mm CD)
    AC General: IPC-2221B external: 3.3 mm
    AC: UL796 + UL60950-1: 1.75 mm
    CD: UL60950-1 PD 1 MG I: 2.5 mm

Due to violation of barrier B (TLP3558A pins too close), rating of the card was lowered to 150 V.

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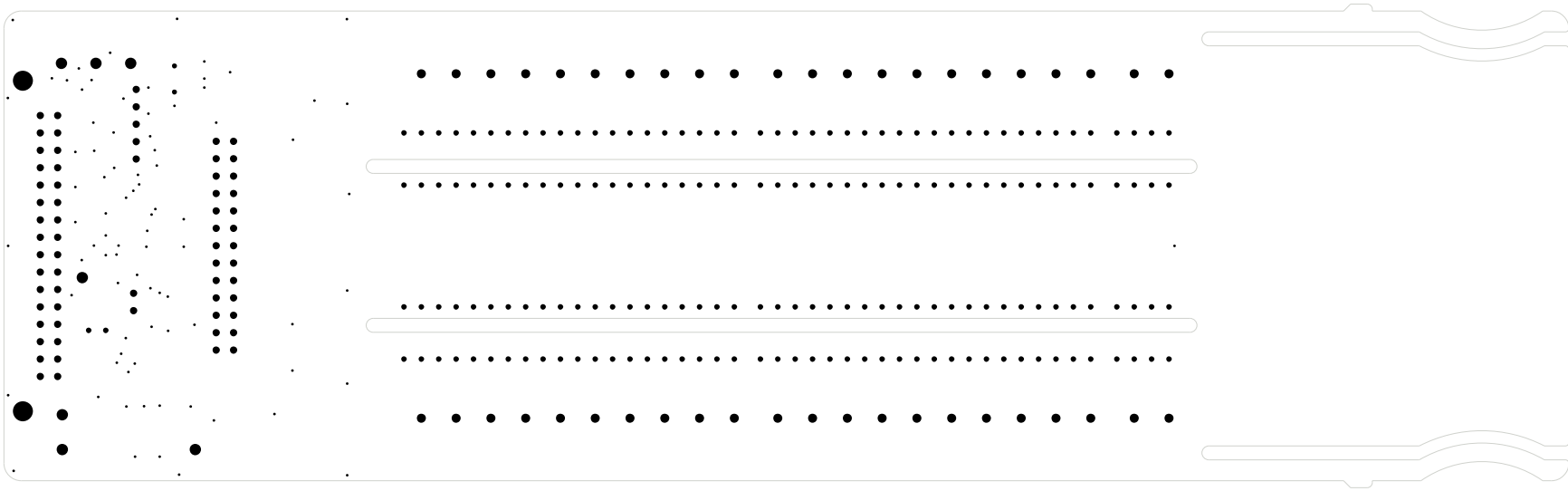

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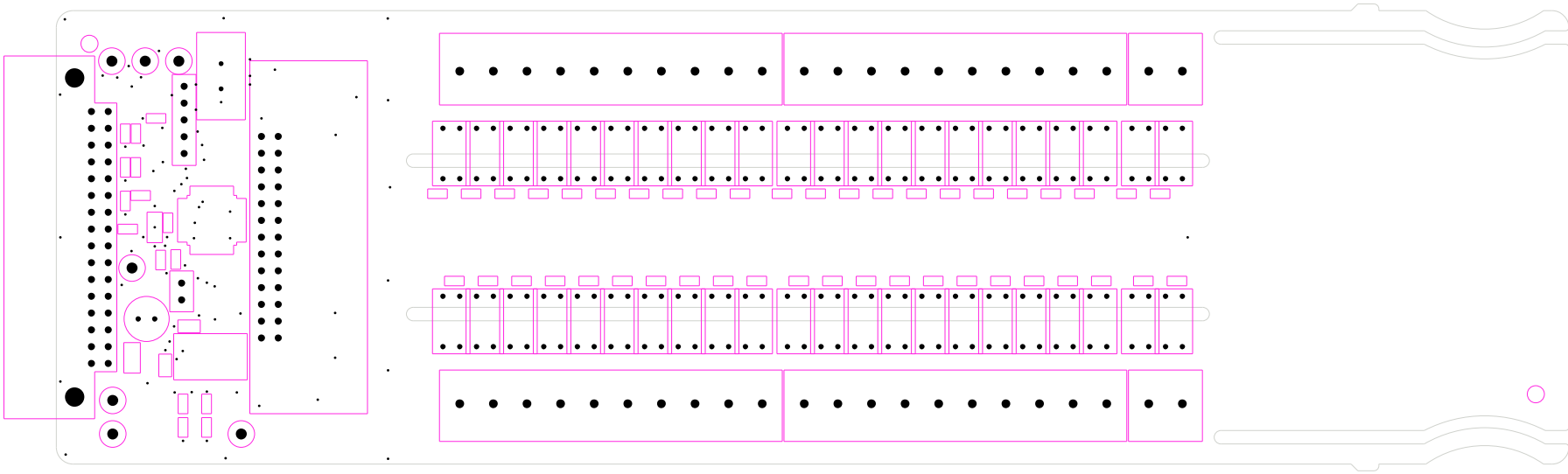

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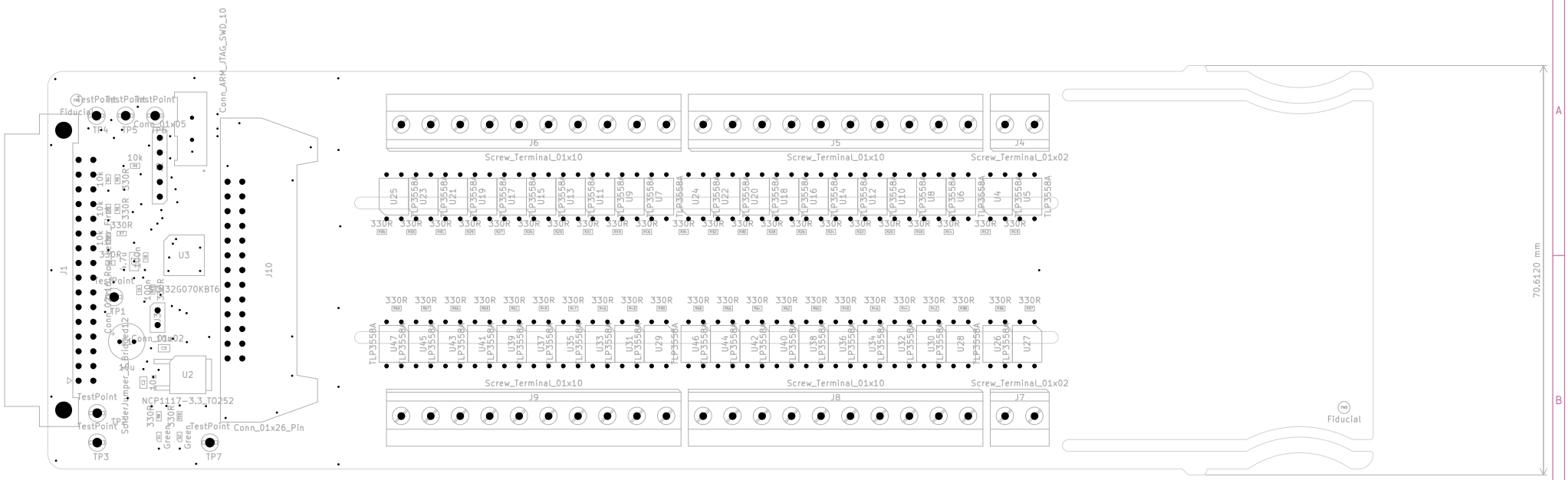

PCB Manufacturing Instructions:
- Panel thickness: Approximate
- Copper thickness on outer layers: Minimum final after plating
- Insulation material: Recommended
- Insulation material thickness: Recommended
- Insulation material dielectric constant: Approximate
- Flammability: Use only UL94 V-0 materials

Assembly Instructions:
- Clean to meet IPC J-STD-001E, Class 2 after assembly

Testing Instructions:
- Connect all HI and LO terminals together, test against digital GND at 2000 V for 60 s
- Connect all HI terminals together and all LO terminals together, test between them at 160 V for 60 s

BOARD CHARACTERISTICS

Copper Layer Count:	2	Board Thickness:	1.5900 mm
Board overall dimensions:	228.6000 mm x 70.6120 mm		
Min track/spacing:	0.2000 mm / 0.2500 mm	Min hole diameter:	0.2000 mm
Copper Finish:	HAL SnPb	Impedance Control:	No
Castellated pads:	No	Plated Board Edge:	No
Edge card connectors:	No		

Layer Name	Type	Material	Thickness (mm)	Color	Epsilon R	Loss Tangent
F.Silkscreen	Top Silk Screen	Not specified	0 mm	White	1	0
F.Paste	Top Solder Paste		0 mm		1	0
F.Mask	Top Solder Mask	Not specified	0.01 mm	Green	3.3	0
F.Cu	copper		0.035 mm		1	0
Dielectric 1	core	FR4	1.5 mm	FR4 natural	4.5	0.02
B.Cu	copper		0.035 mm		1	0
B.Mask	Bottom Solder Mask	Not specified	0.01 mm	Green	3.3	0
B.Paste	Bottom Solder Paste		0 mm		1	0
B.Silkscreen	Bottom Silk Screen	Not specified	0 mm	White	1	0

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