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Project/Equipment 3U ADC

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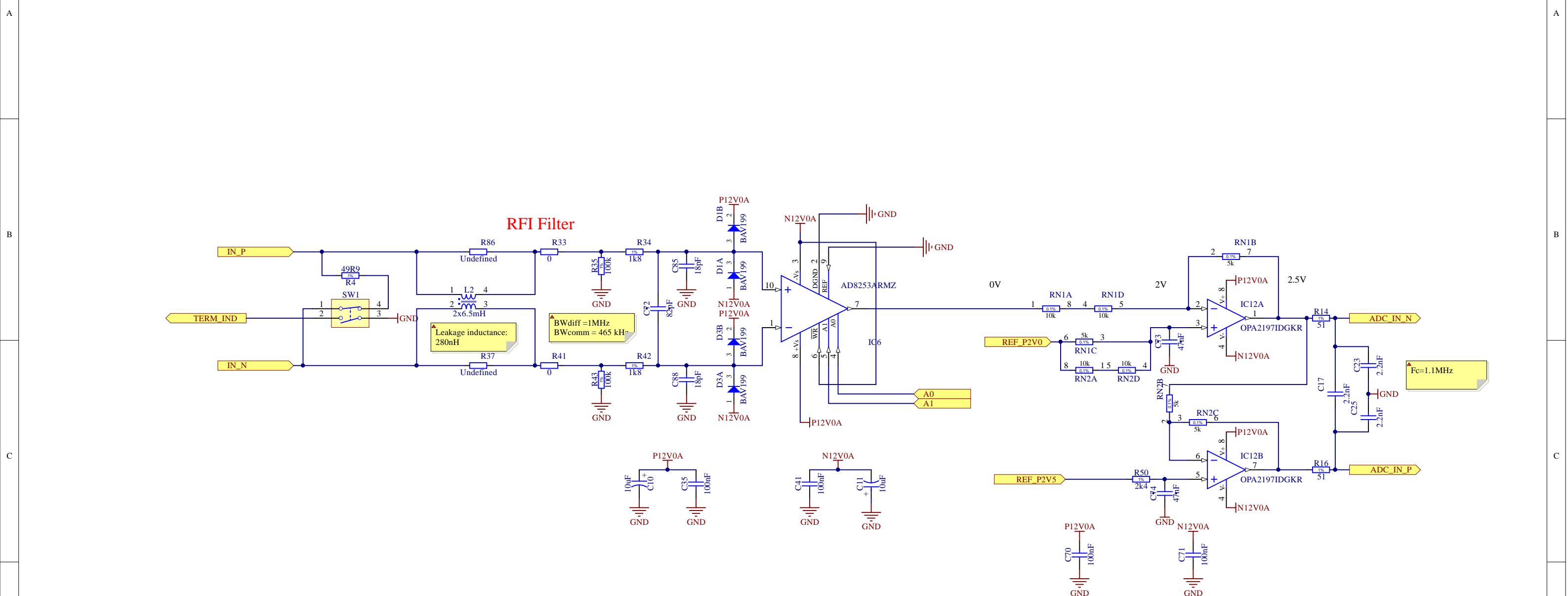
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SMTCA
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ADC + reference
v1.2

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Last Mod.	-	29.11.2017
File ADC_8CH.SchDoc	Print Date	30.11.2017 10:45:07
	Sheet	2 of 5
	Size	A3
	Rev	-

Warsaw University of Technology ISE
Nowowiejska 15/19

ARTIQ



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Project/Equipment 3U ADC

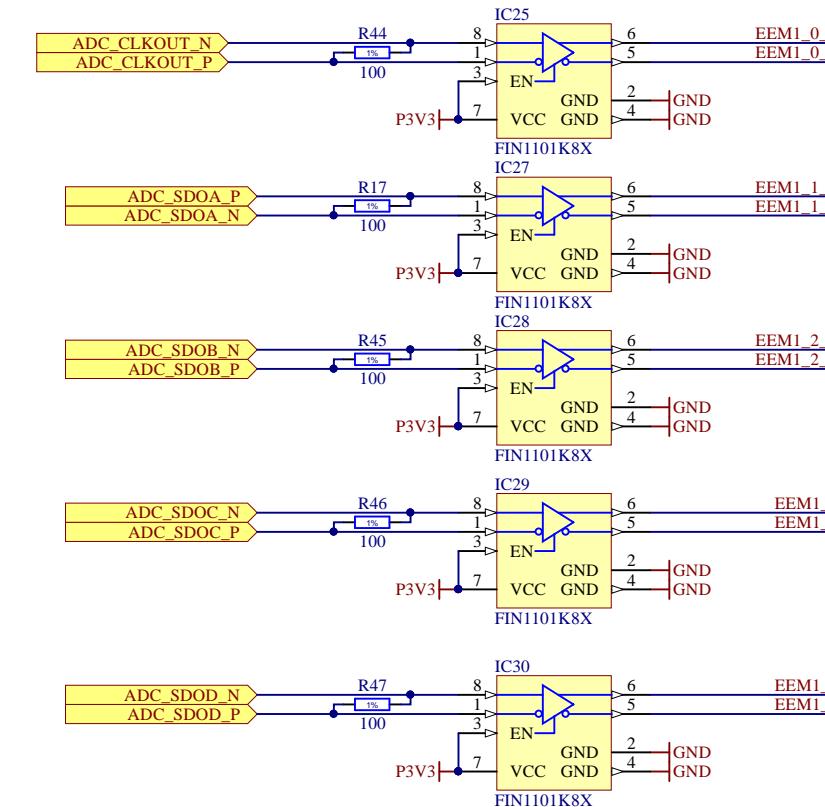
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Input chnnnel DPGA v1.2

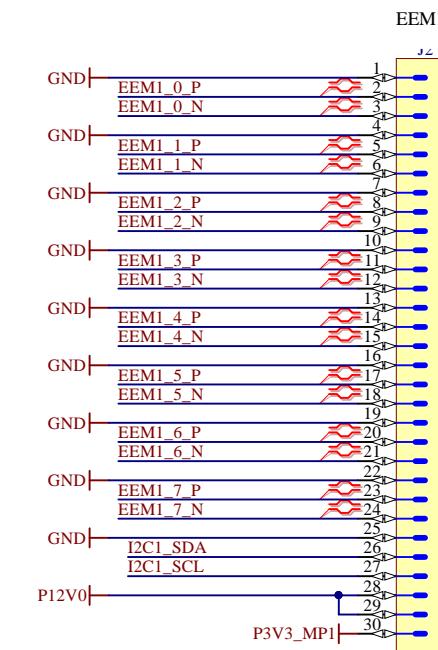
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A



EEM connector: IO are LVDS, I2C is 3V3 LVC MOS, P3V3_MP up to 20mA, P12V up to 1A

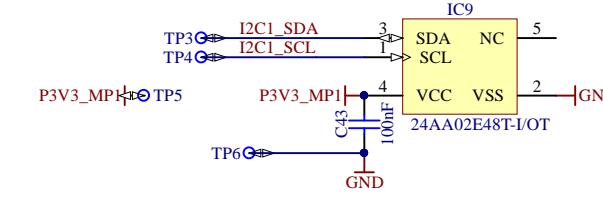
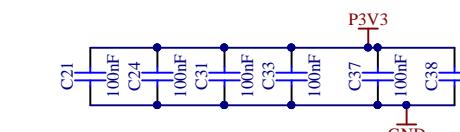


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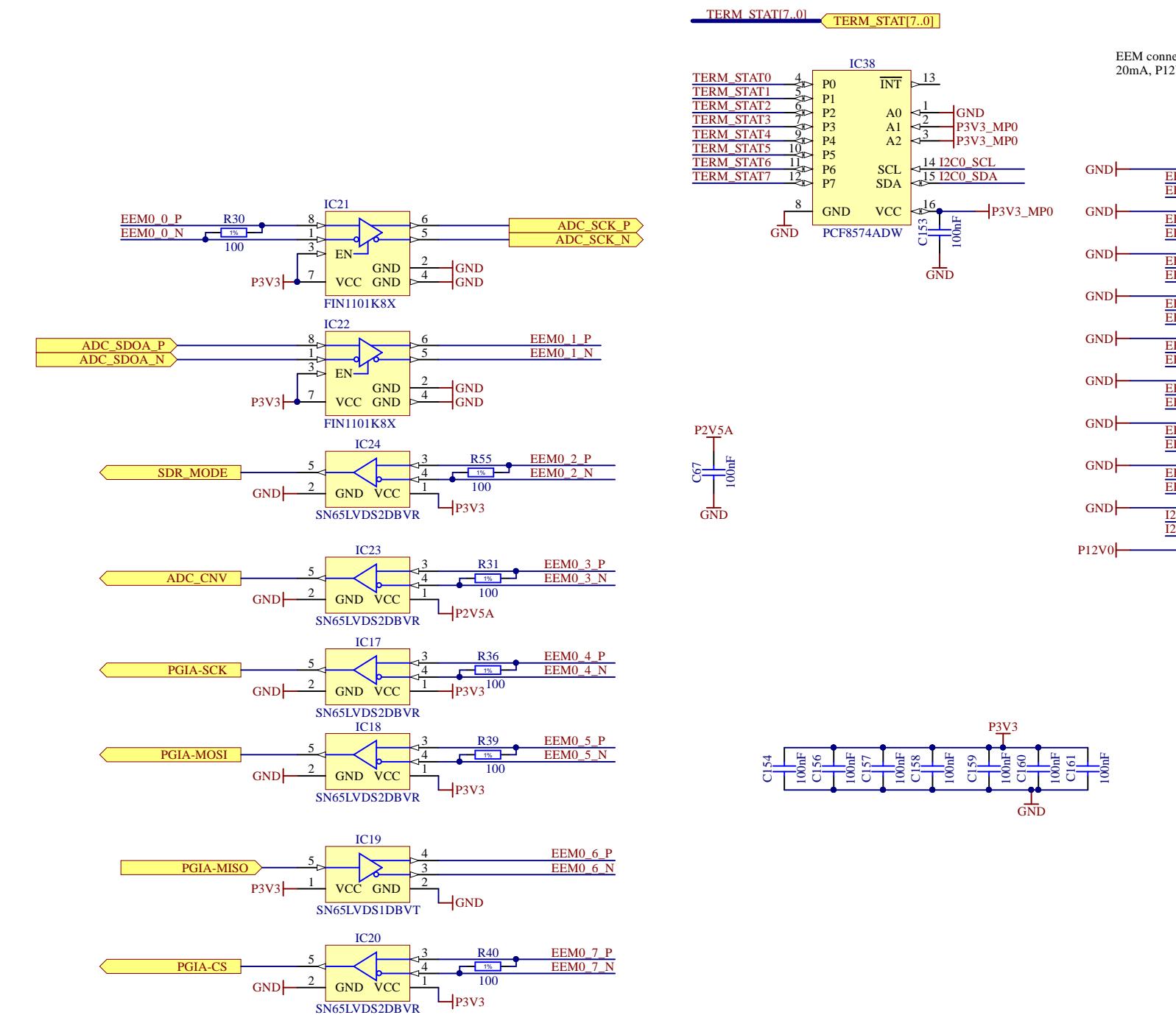
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	Warsaw University of Technology ISE Nowowiejska 15/19	Size A3 Rev -

LVDS Interface I2C logic v1.2

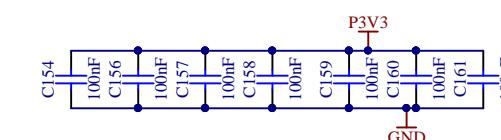
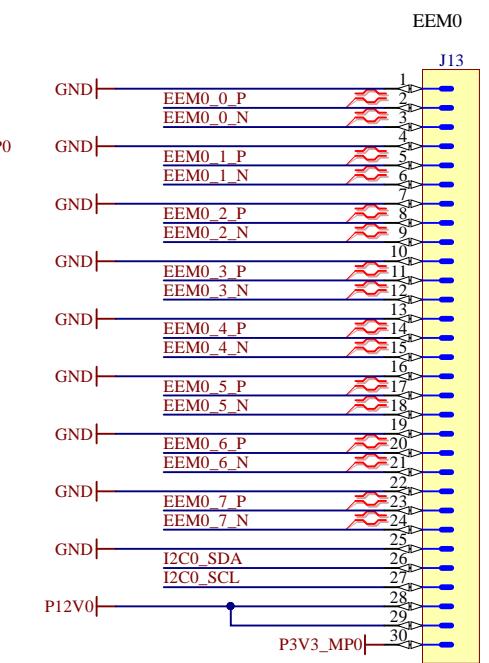
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A



EEM connector: IO are LVDS, I2C is 3V3 LVCMOS, P3V3_MP up to 20mA, P12V up to 1A



Project/Equipment 3U ADC

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LVDS Interface I2C logic v1.2

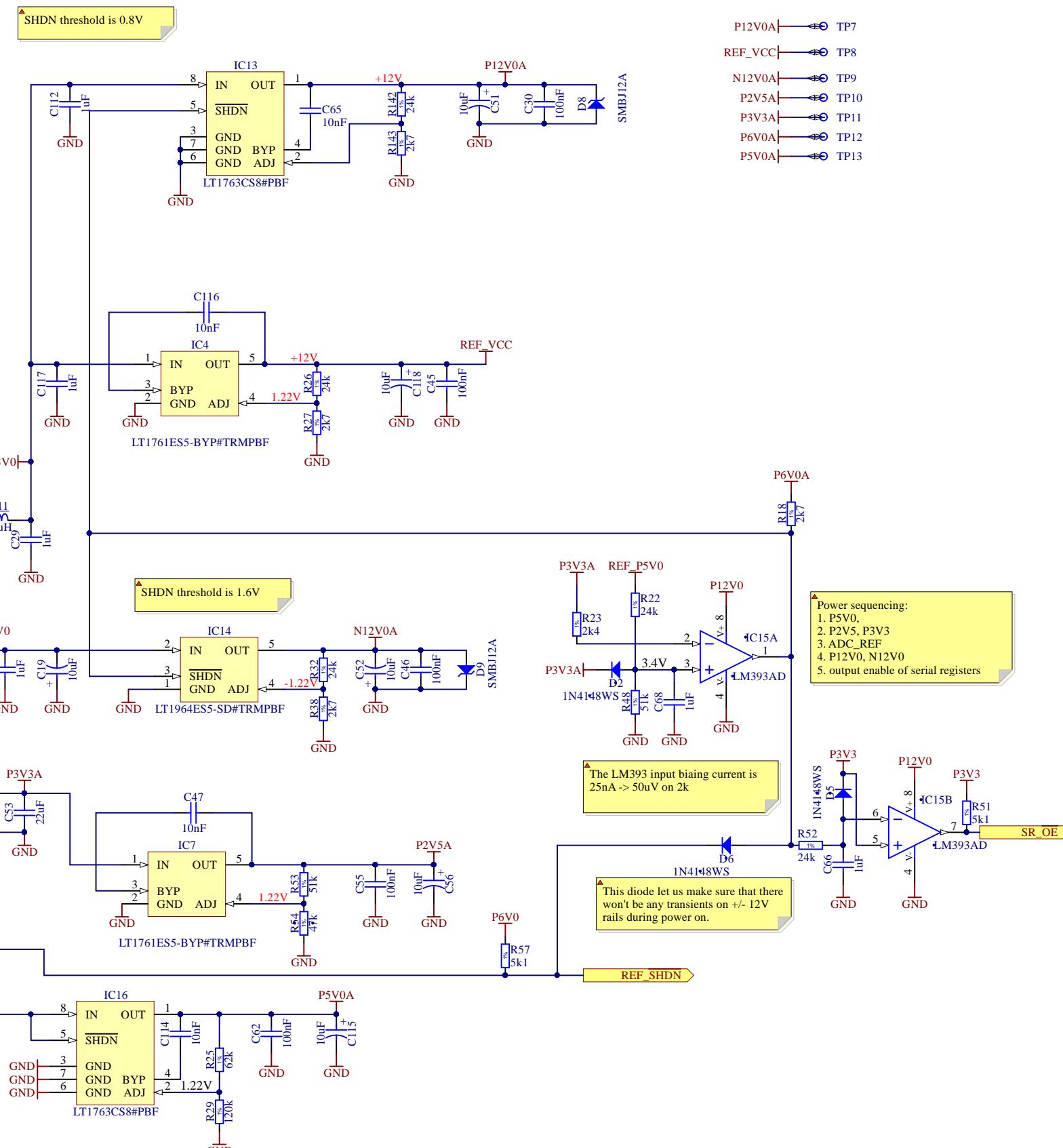
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Power budget (max ratings):	
P2V5 LTC2320 RAIL POWER	38 $38\text{mA} \times 2.5 = 0.095\text{W}$
P3V3: SN65LVDS20DRFT SN65LVDS2DBVR SN65LVDS1DBVT LEDs RAIL POWER	7*13.5=94.5 5*8=40 8 8*5=40 $183\text{mA} \times 3.3 = 0.603\text{W}$
P5V0 LTC2320 RAIL POWER	60 $60 \times 5 = 0.3\text{W}$
P12V0 AD8253ARMZ OPA2197 AD8253 load (10V/20k) OPA2197 load (500k:0.3V/50R) RAIL POWER	8*4mA=32mA 8*2mA=16mA 8*0.5mA=4mA 8*4mA=32mA $84 \times 12 = 1\text{W}$
N12V0 AD8253ARMZ OPA2197 OPA2197 load (500k:0.3V/50R) RAIL POWER	8*4mA=32mA 8*2mA=16mA 8*4mA=32mA $84 \times 12 = 1\text{W}$
DC/DC converter losses TPS62175:3.3 eff .95 TPS62175:6 eff .95 CC6-1212DF-E:13V eff 70% CC6-1212DF-E:-13V eff 70%	$0.05 * (0.18 + 0.038) * 2.5 + 26e-6 * 12 = 0.022\text{W}$ $0.05 * 0.06 * 6 + 26e-6 * 12 = 0.018\text{W}$ $0.3 * 13 * 0.084 = 0.33\text{W}$ $0.3 * 13 * 0.084 = 0.33\text{W}$
LDO losses 6V->5V 13V->12V -13V->-12V 3.3V -> 2.5V	$0.06 * 1\text{V} = 60\text{mW}$ 84mW 84mW $(3.3-2.5) * 38 = 30\text{mW}$
Total power from 12V rail	12V 4.16W
Total current from 12V rail	0.35A



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Project/Equipment 3U ADC

Power Supply converters + LDOs v1.2

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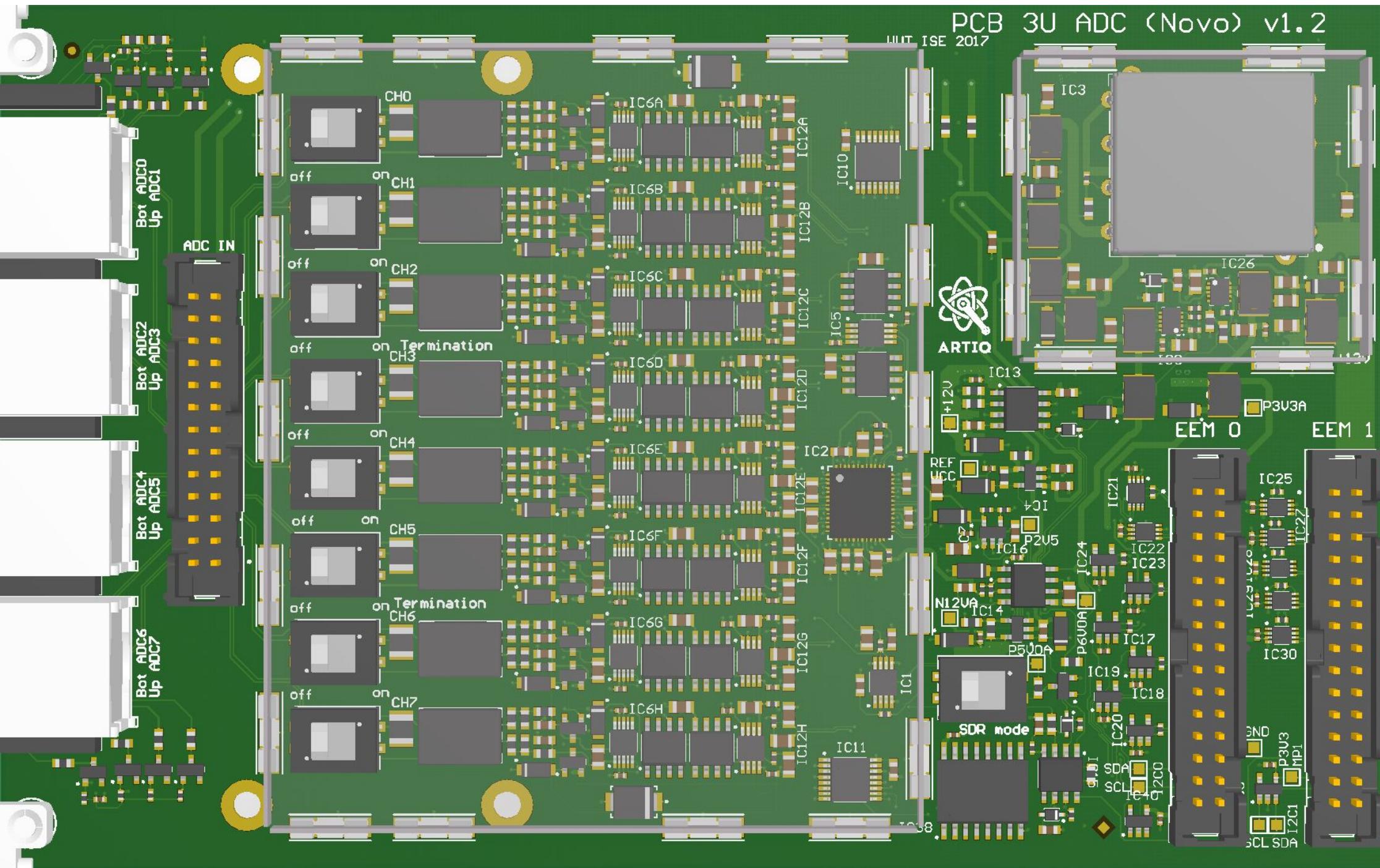
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Size A3 Rev -

PCB 3U ADC (Novo) v1.2

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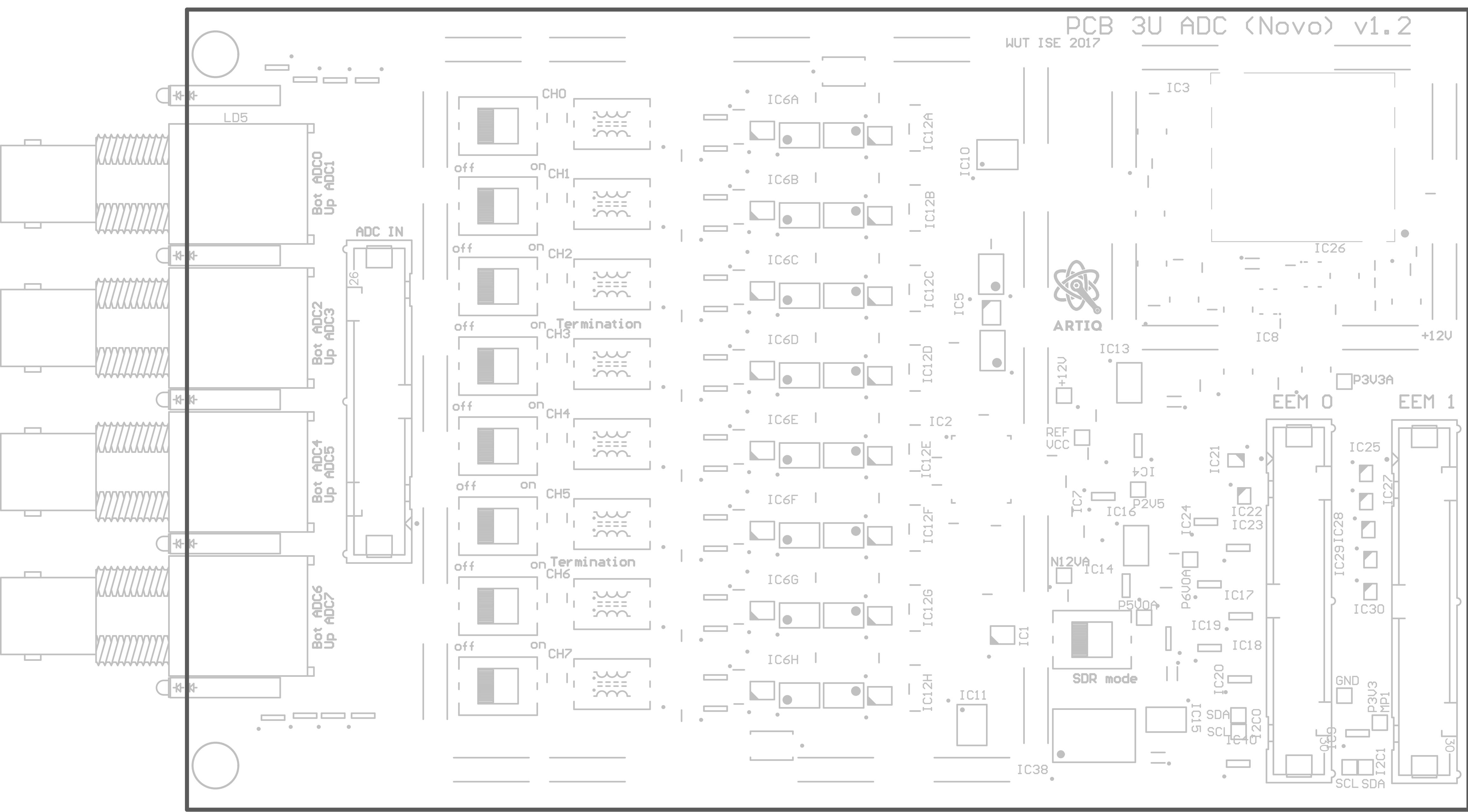


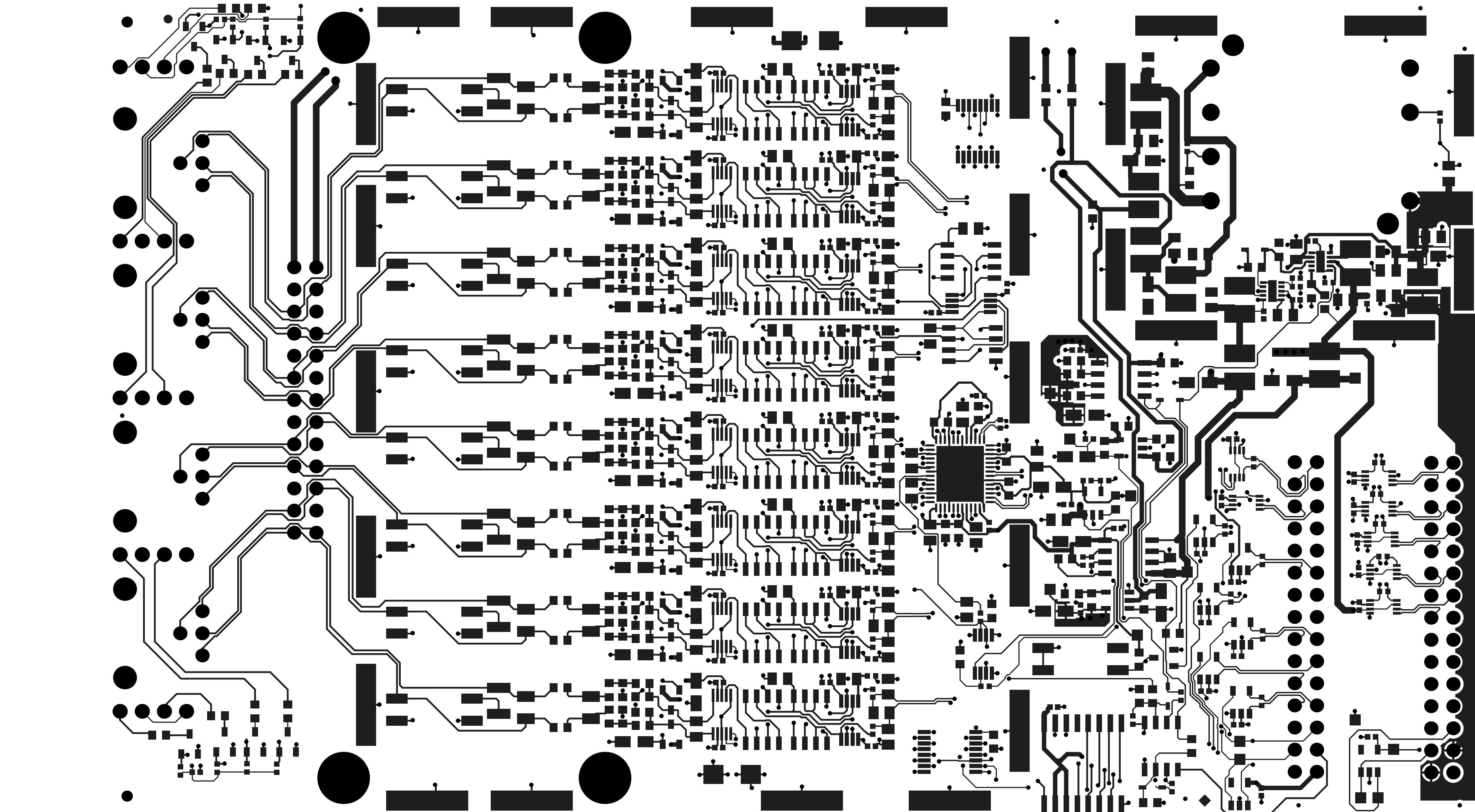


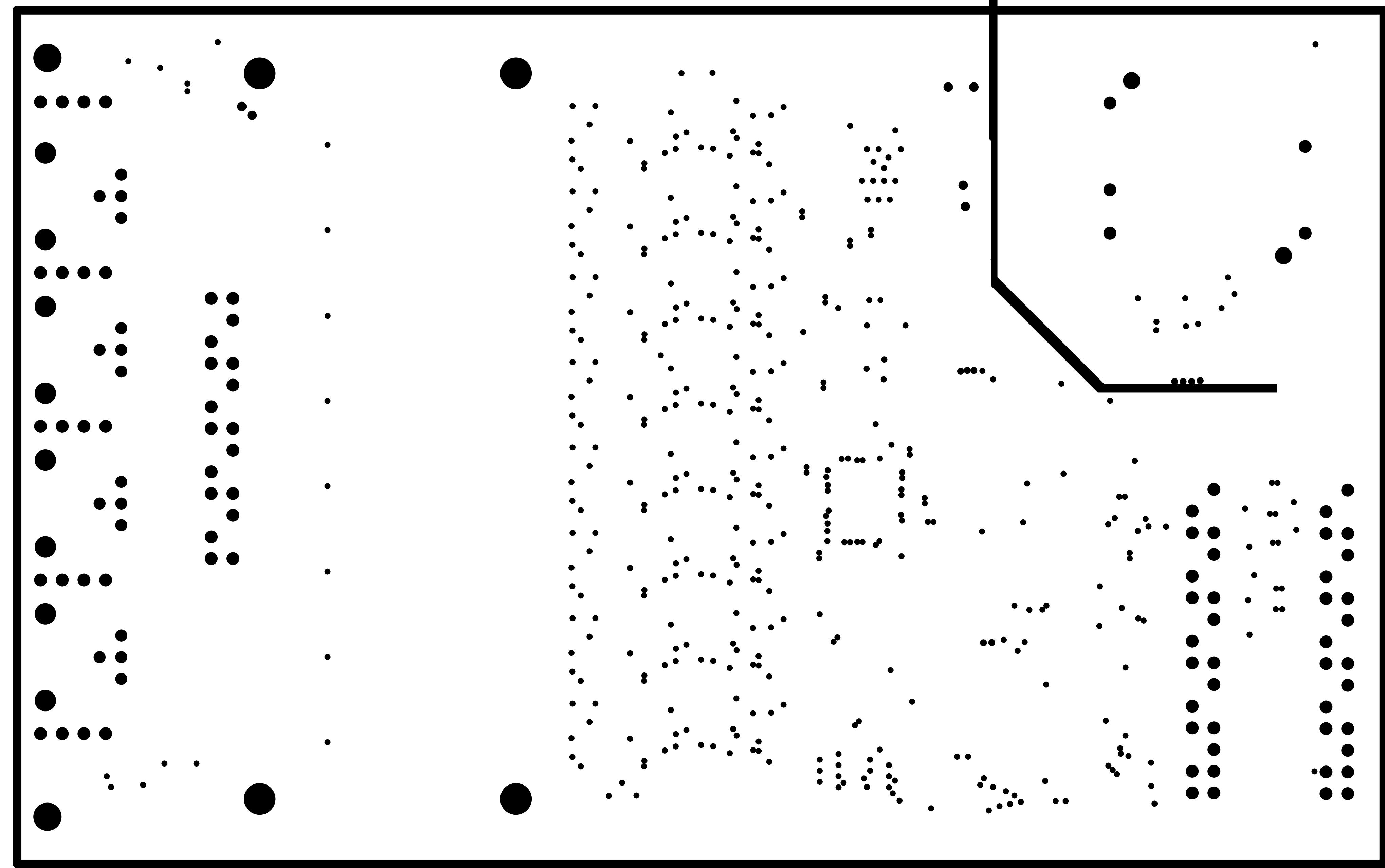
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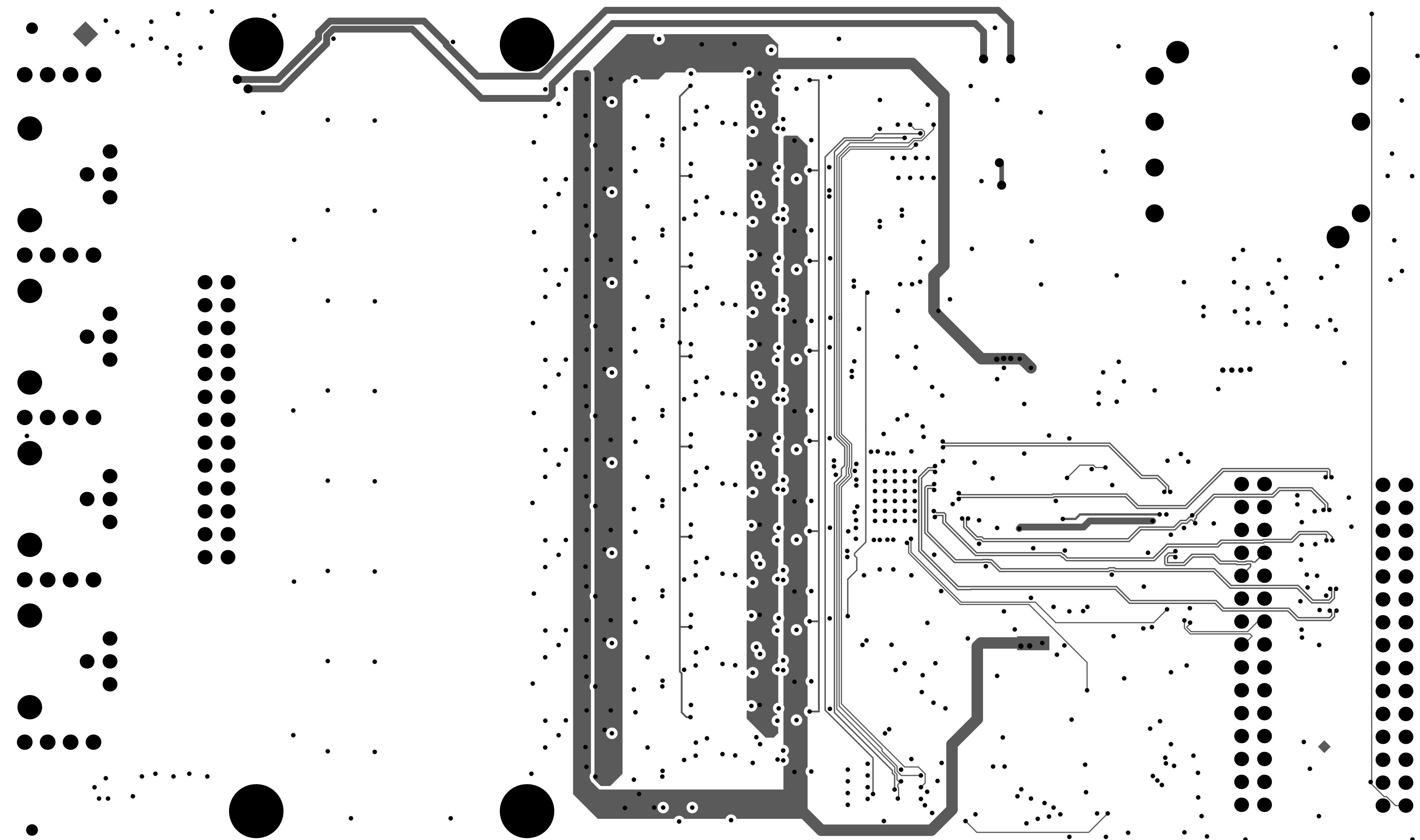
PCB 3U ADC (Novo) v1.2

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PCB 3U ADC (Novo) v1.5

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