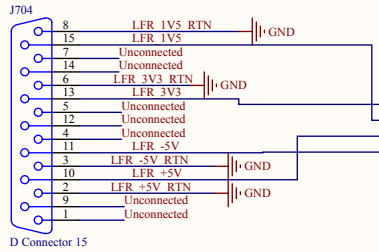
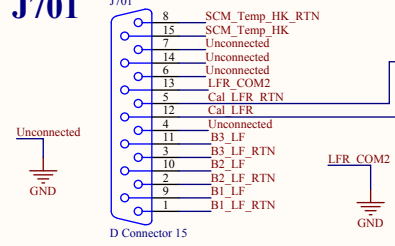


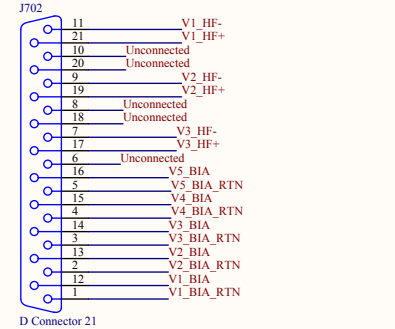
J704



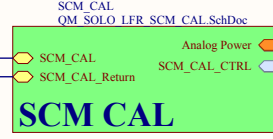
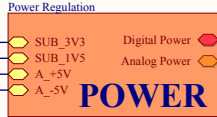
J701



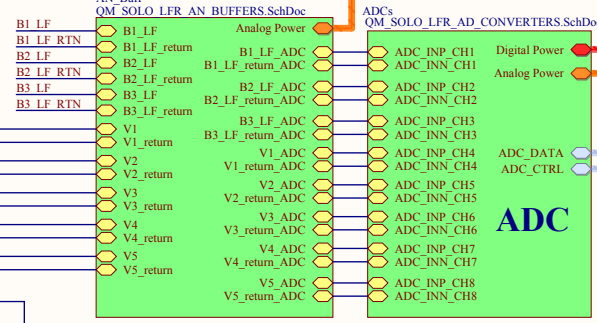
J702



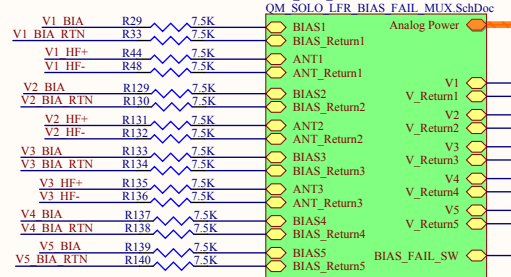
D Connector 21



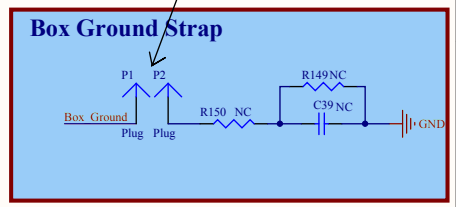
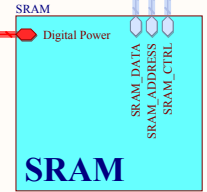
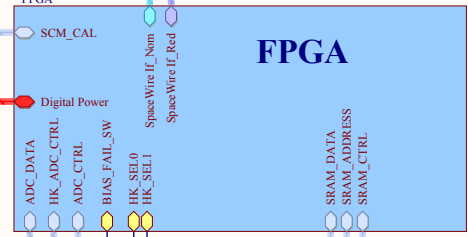
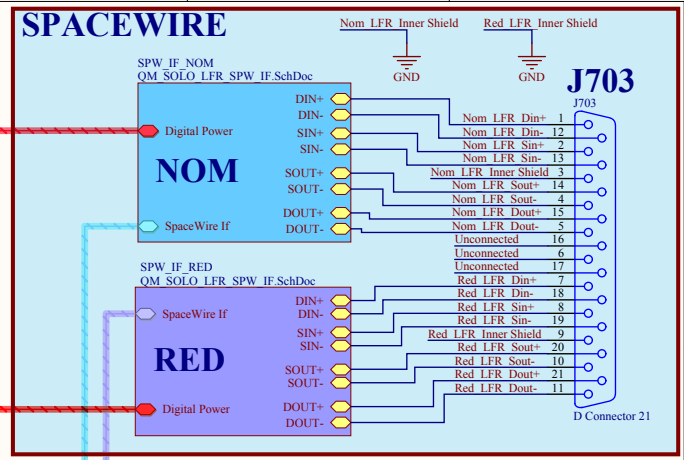
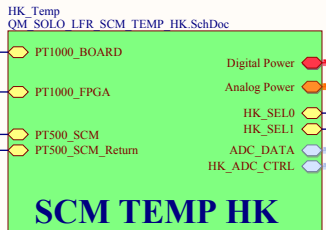
AN BUFFERS



BIAS FAIL MUX



BIAS FAIL SW



Need discussion with Vincent

CHANGELOG

| | | | |
|---------|---|----------|----------------|
| Title | LFR_QM_TOP | Author | Alexis Jeandet |
| Size | A3 | Number | LFR-172200-FM |
| Date | 16/05/2014 | Revision | 01.03 |
| Time | 13:19:37 | Sheet | 1 of 12 |
| Contact | alexis.jeandet@lpp.polytechnique.fr | | |
| File | F:\Missions\Satellites\SolarOrbiter\LFR\PCB\QM\QM_SOLO_LFR_TOP.SchDoc | | |



CHANGELOG

09/04/2014

- Moved analog input buffers resistors before the swithes.
- C21 (100nF cap @ SUB1.5V input) footprint changed to 0805.
- Connected SENS input for RHFL4913 to Vout.
- 2.5V analogic connected to sub 3.3V.
- added R/C Slow start on 2.5V RHFL4913.
- 1.8V MSK5822 VBias input moved from 5V to sub 3.3V.

14/04/2014

- Connected SCM cal and SPW shield to GND.
- Unconnected Pin are connected to Unconnected Net which is tied to GND.

15/04/2014

- Updated ground strap, it's now removable and the circuit is a R C//R.

22/04/2014

- Connected 3.3V regulator VBIAS input to sub 3.3V.
- Connected MSKs Latch input to GND.
- Connected RHFL4913 INH inputs to GND.
- Replaced DG419 with 54HC4053 for bais/ant mux.

24/04/2014

- Replaced EM SRAM with FM SRAM UT8ER1M32.

25/04/2014

- Replaced DG419 with 54HC4053 for HK mux.
- Replaced DG419 with 54HC4053 for SCM CAL mux.
- Replaced DAC reference with qualified one.

30/04/2014

- Replaced EM Oscillators with FM.
- Replaced EM HK DAC with FM.

05/05/2014


- Added SPW enable signal.
- Replaced LT1009 by RH1009.
- Replaced MSK 3.3V regulator by RHFL4913.
- Added filtering structures on +/-5V.
- Added RC reset circuit for FPGA.
- Changed 400k resistors on ADC bias to 2x200k.

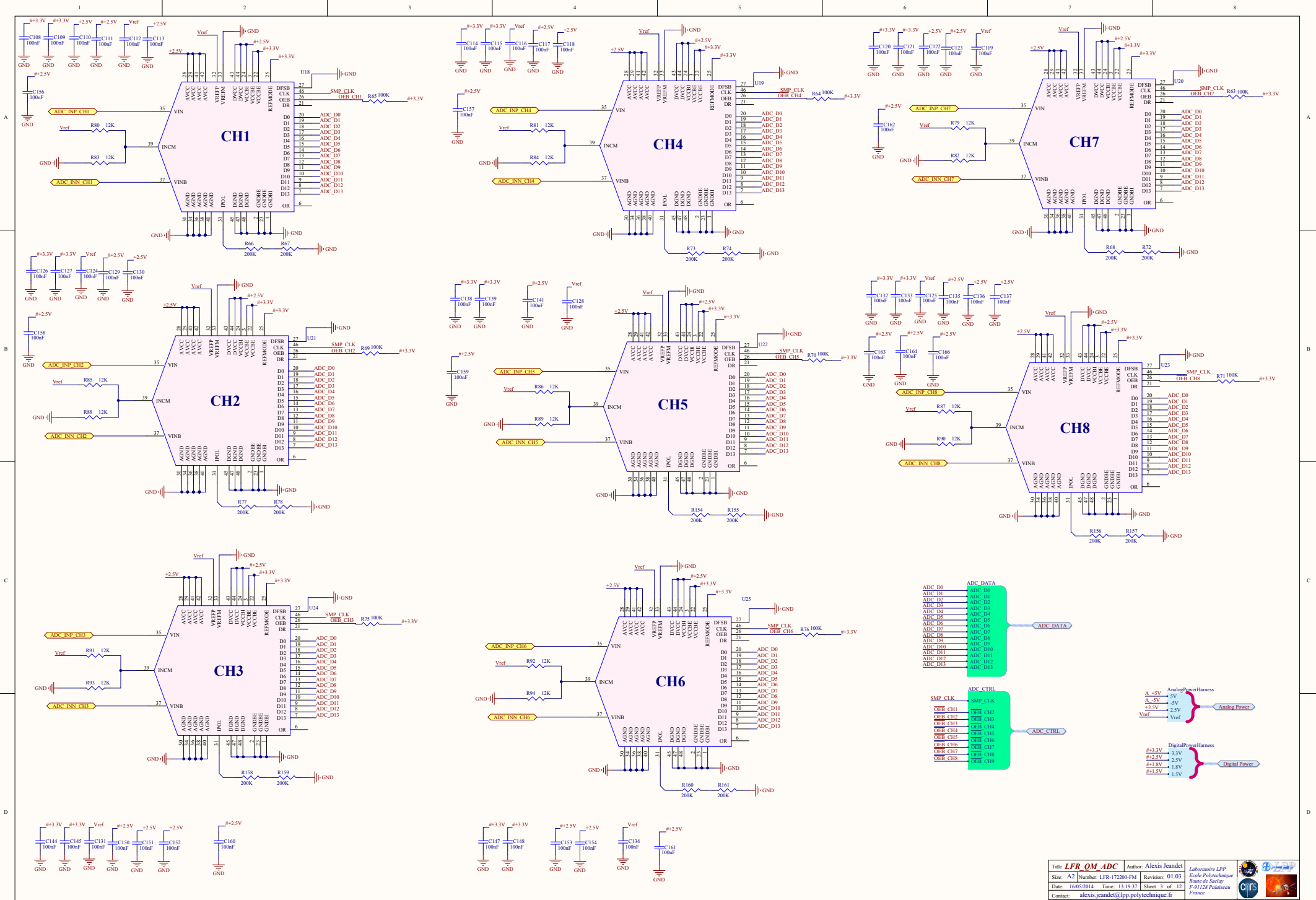
06/05/2014

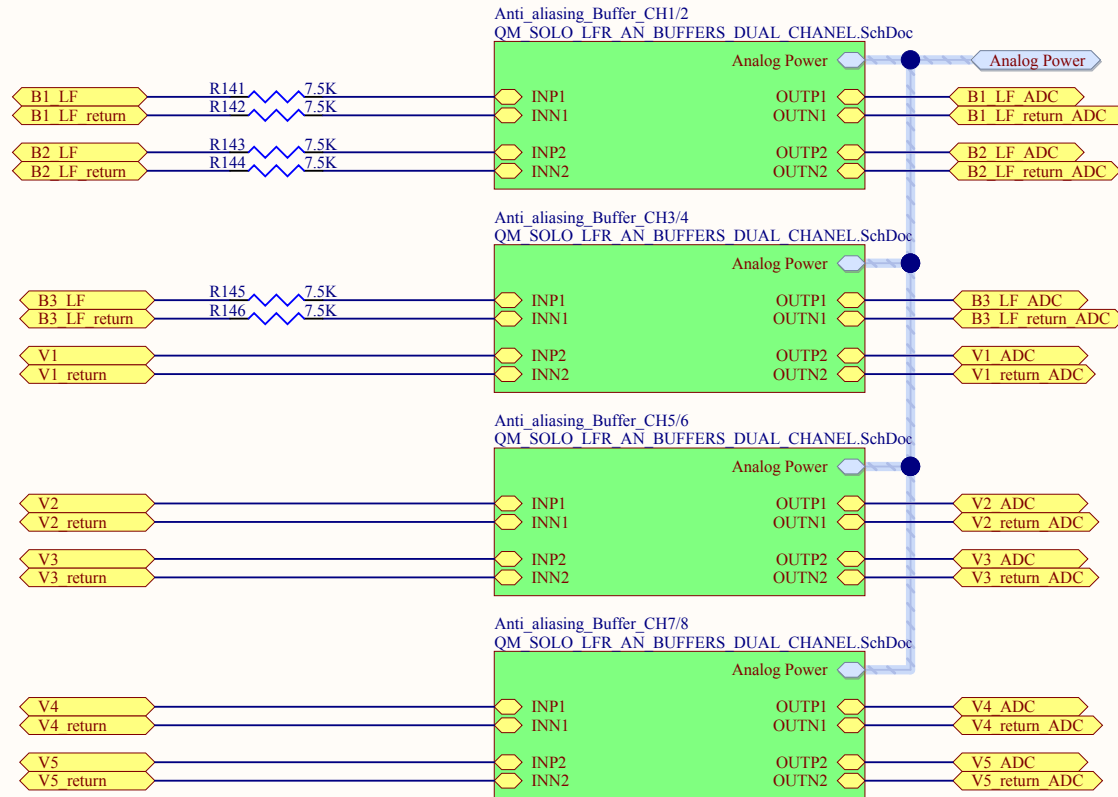
- Changed power input inductors from 100µH to 10µH.

16/05/2014

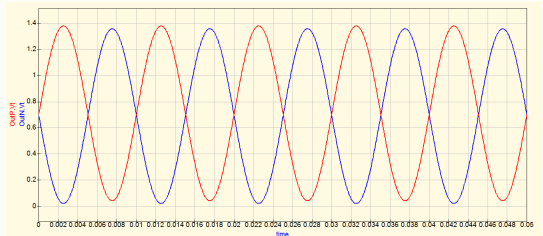
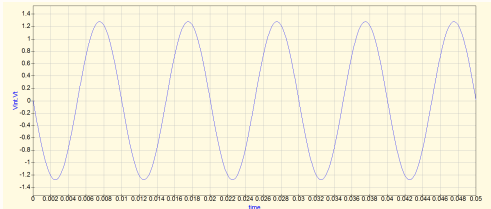
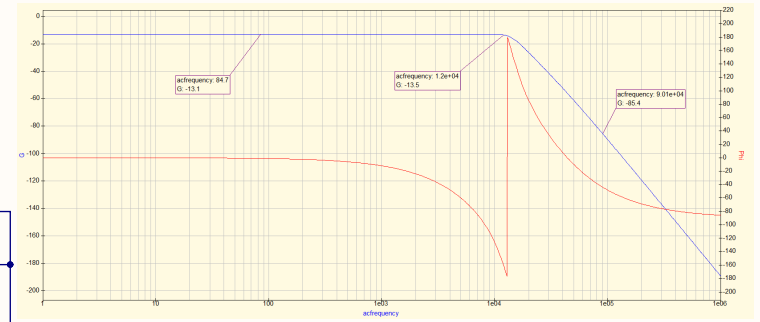
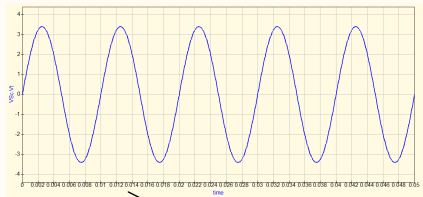
- Updated footprints from Vincent observations.

| | | | | | | |
|----------|--|---------|----------------|---|-----------|---------|
| Title | CHANGELOG | Author: | Alexis Jeandet |  | | |
| Size: | A4 | Number: | LFR-172200-FM | | Revision: | 01.03 |
| Date: | 16/05/2014 | Time: | 13:19:37 | | Sheet | 2 of 12 |
| Contact: | alexis.jeandet@lpp.polytechnique.fr | | | | | |
| File: | F:\Missions\Satellites\SolarOrbiter\LFR\PCB\QM\QM_CHANGELOG.SchDoc | | | | | |





| | | | | |
|--|-----------------------|------------------------|--|--|
| Title LFR_QM_AN | | Author: Alexis Jeandet | | |
| Size: A4 | Number: LFR-172200-FM | Revision: 01.03 | | |
| Date: 16/05/2014 | Time: 13:19:37 | Sheet 4 of 12 | | |
| Contact: alexis.jeandet@lpp.polytechnique.fr | | | | |
| File: F:\Missions\Satellites\SolarOrbiter\LFR\PCB\QM\QM_SOLO_LFR_AN_BUFFERS.SchDoc | | | | |



A

B

C

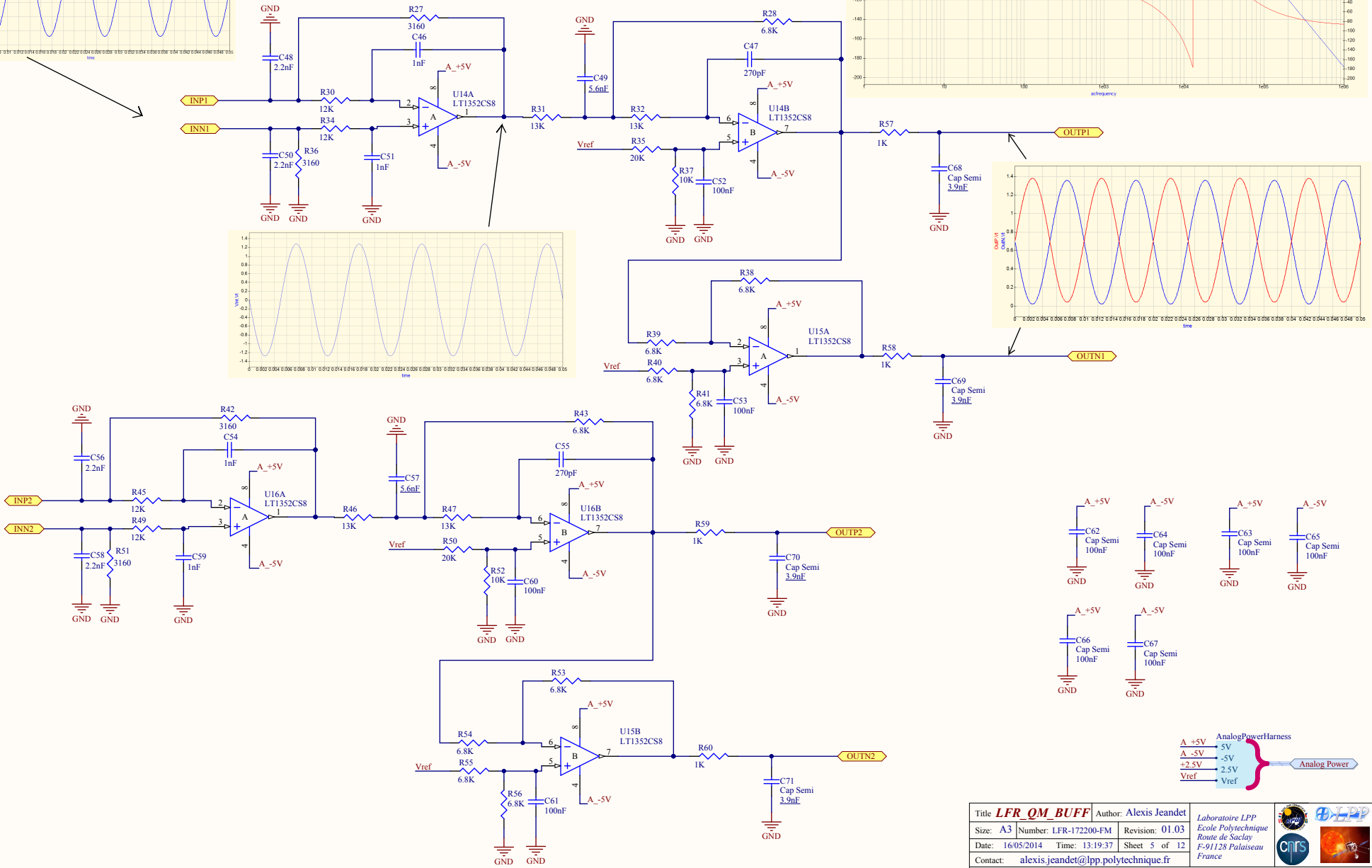
D

A

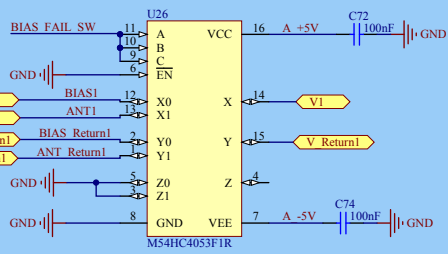
B

C

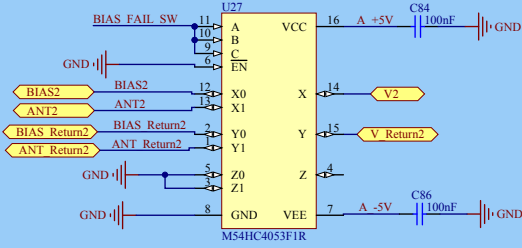
D



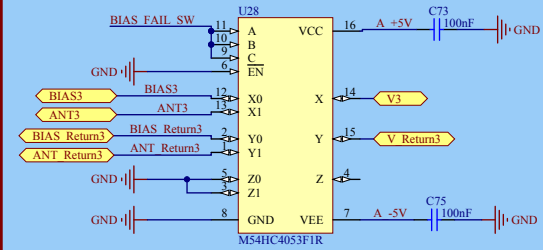
BIAS1/ANT1 Channel



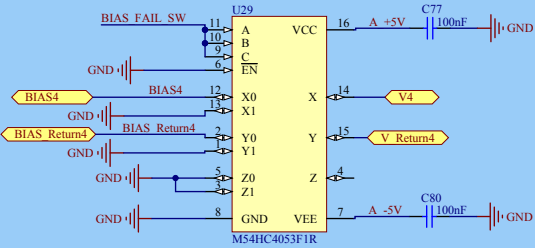
BIAS2/ANT2 Channel



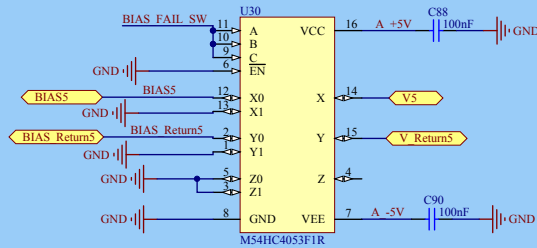
BIAS3/ANT3 Channel



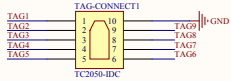
BIAS4 Channel



BIAS5 Channel



TAG-Probe

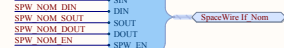


49.152MHz

QM&FM @50MHz BBM,DM&EM @100MHz



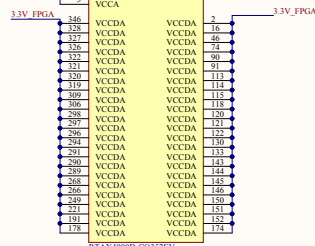
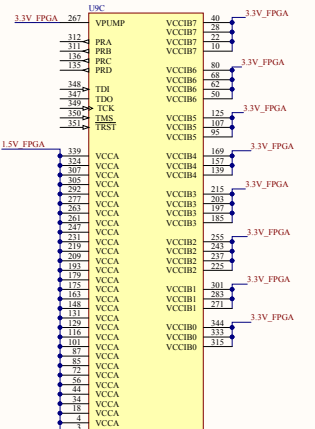
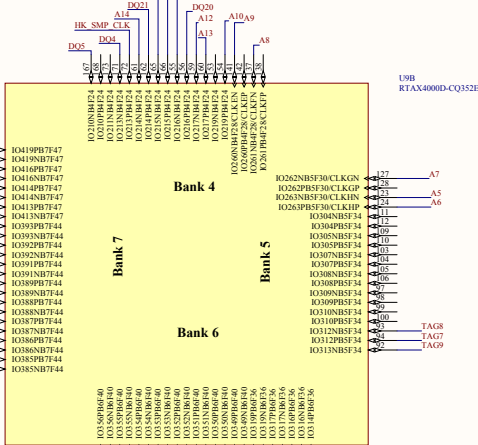
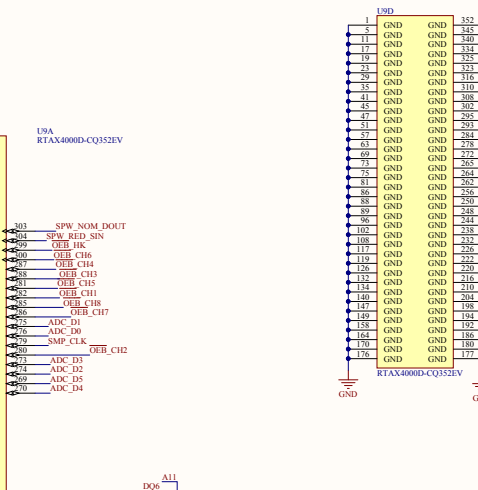
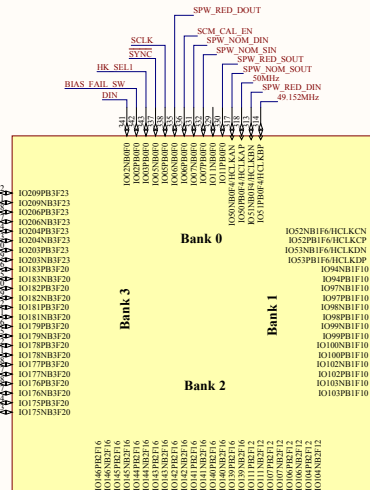
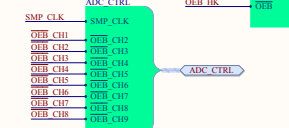
SPW Nominal Link



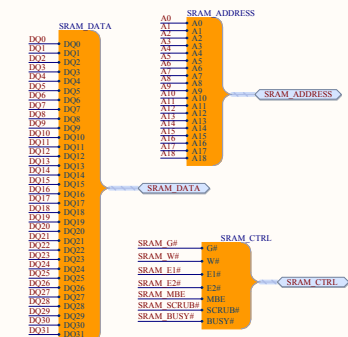
SPW Redundant Link



ADC IF



SRAM IF



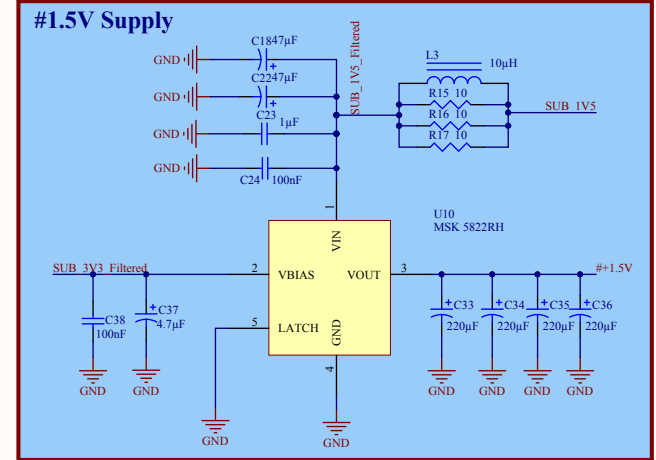
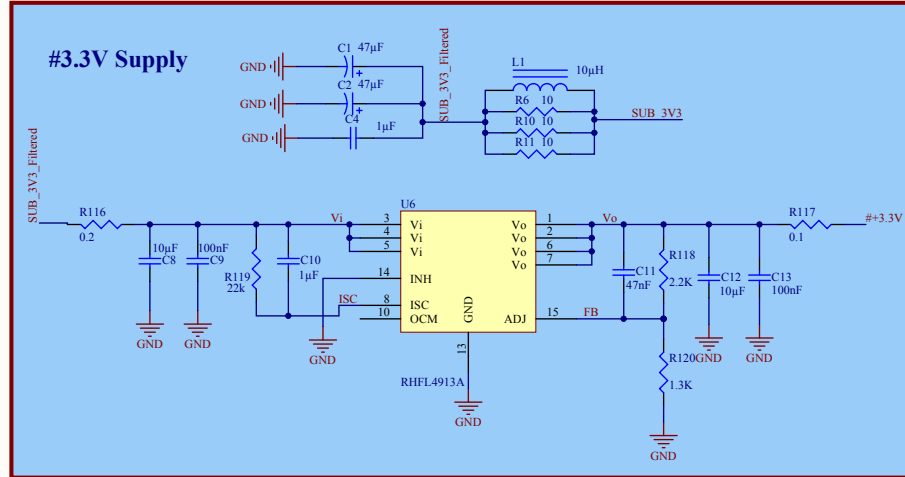
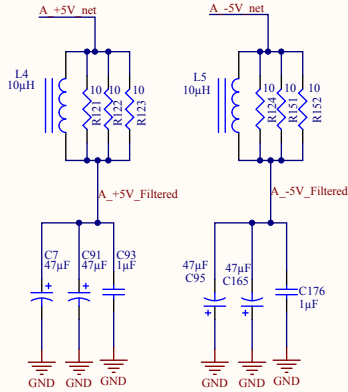
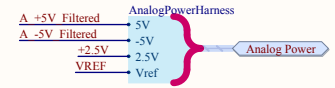
Characterization

Power-Up Characterization

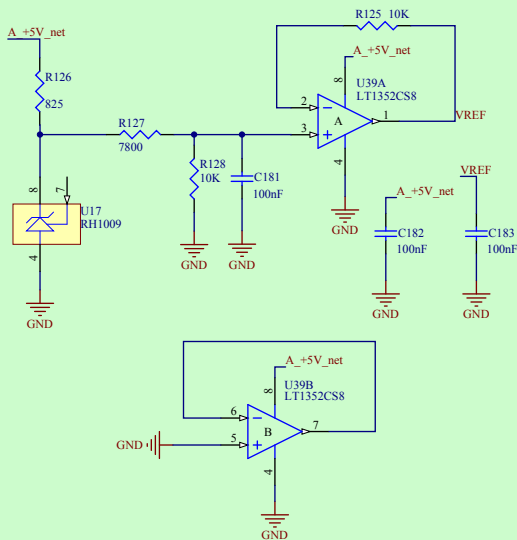
Power supplies for the RTAX-S/SL can power up in any sequence. Figure 1 and Figure 2 show the power-up characteristics for the different sequencing between VCCA (1.5 V) and VCCDA/VCCIBX (3.3 V). No significant transient current (>5 mA) is observed with either sequence.

Uses Rev H for MSK5822 and MSK5810 regulators documentation!

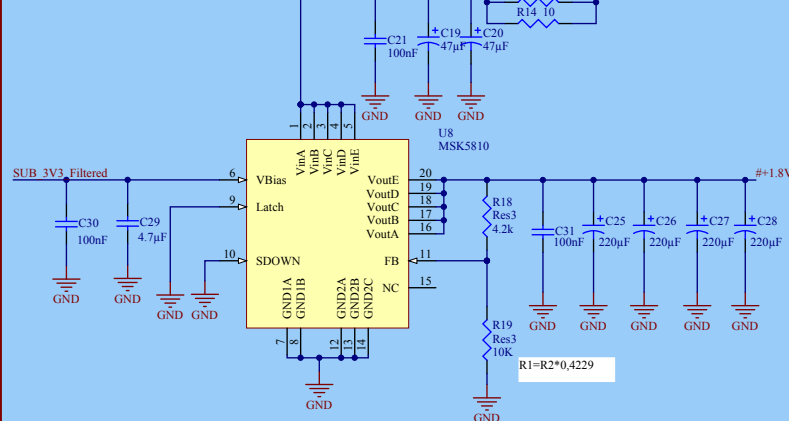
220uF => TAZ-H package
47uF => TAZ-H package
4.7uF => TAJ-B package



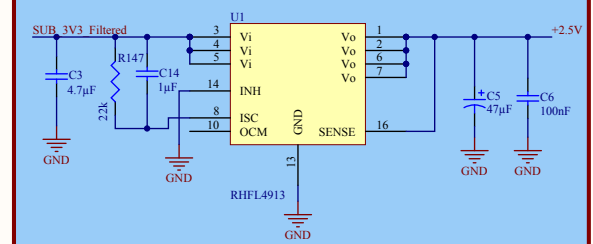
Reference Voltage 1.4V



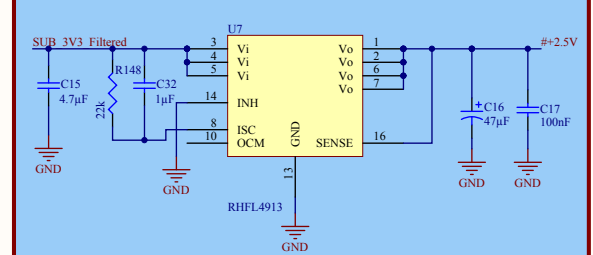
#1.8V Supply



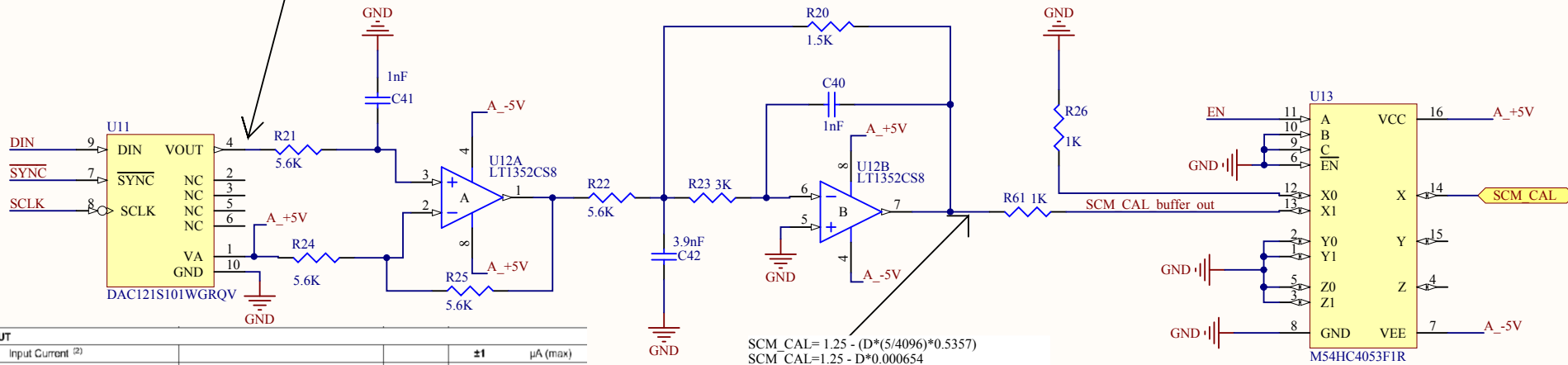
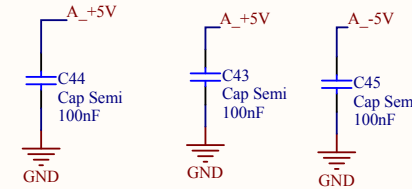
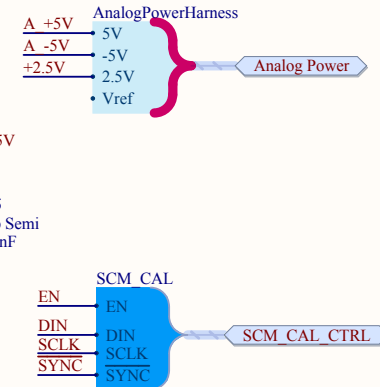
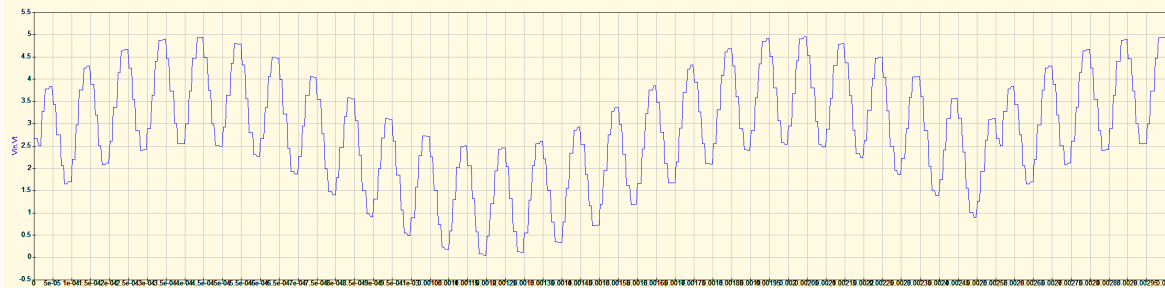
2.5V Supply



#2.5V Supply



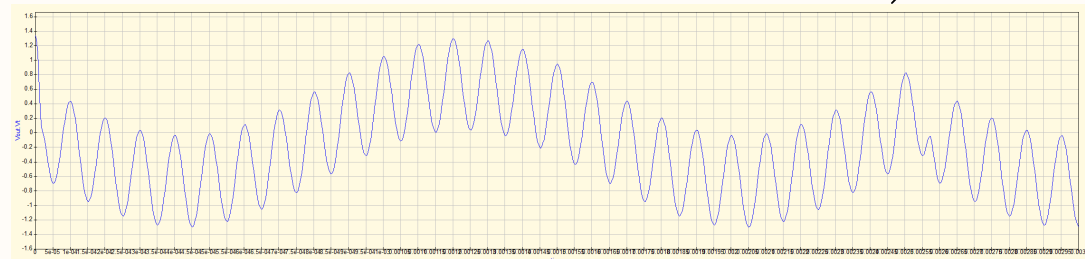
REQ-RPW-LFR-4706 LFR shall deliver a calibration signal to the SCM. This signal will be the sum of two sinus waves, at different frequencies $f_1 = 625$ Hz and $f_2 = 10$ kHz, with amplitudes of 500 mVpp, a sampling frequency of [TBD], a resolution of 8 bits and a duration of 4 s.
When not used, the calibration signal will be tied to ground (TBC) via an analog switch.

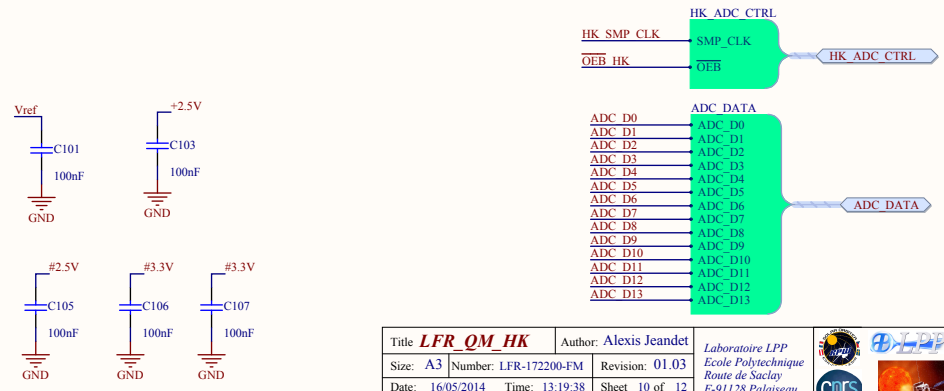
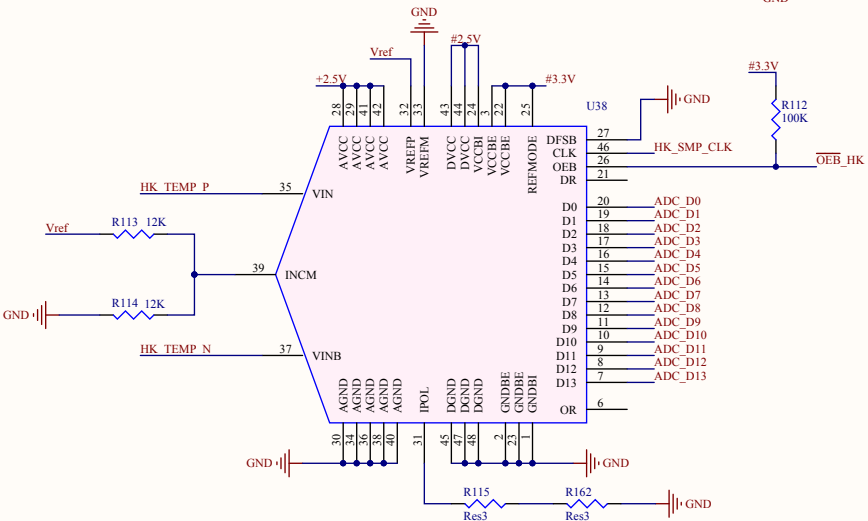
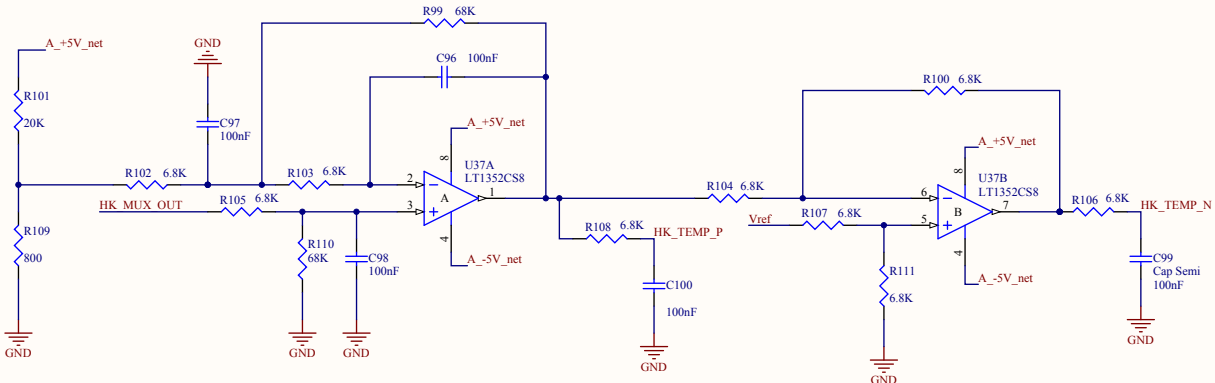
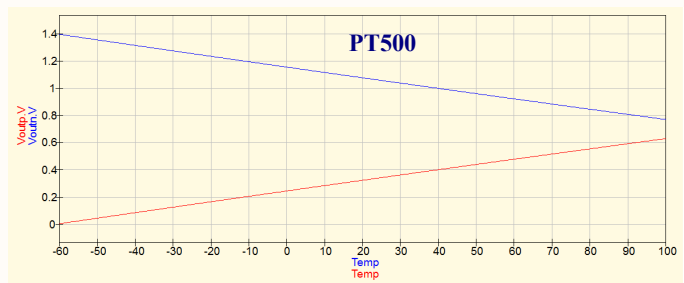
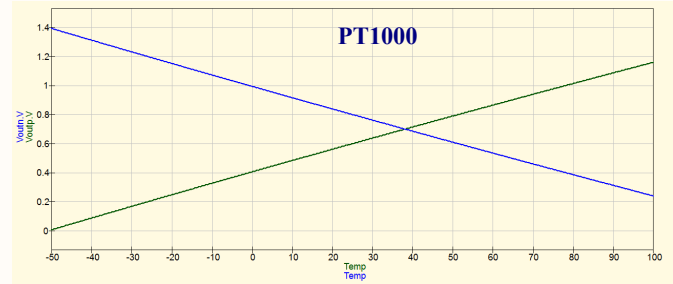
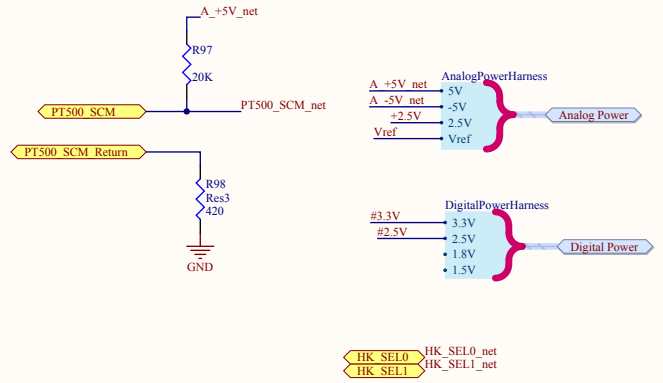
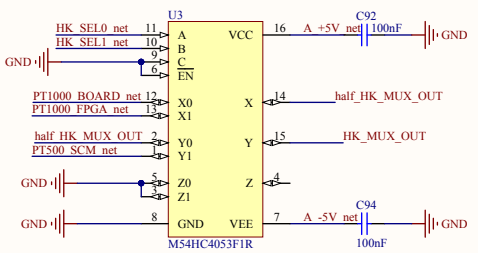
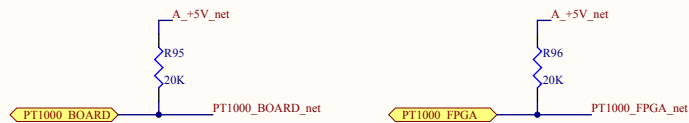


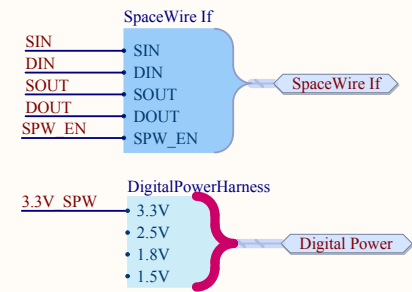
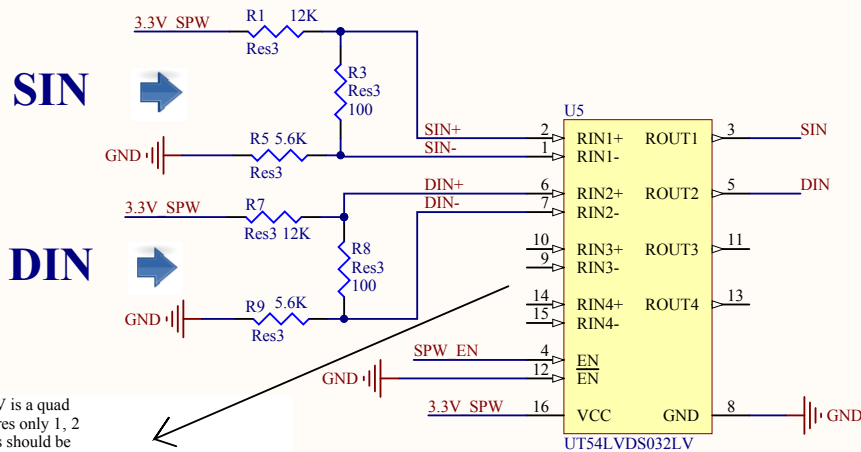
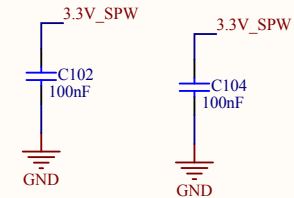
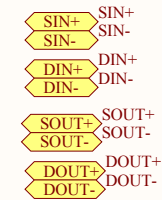
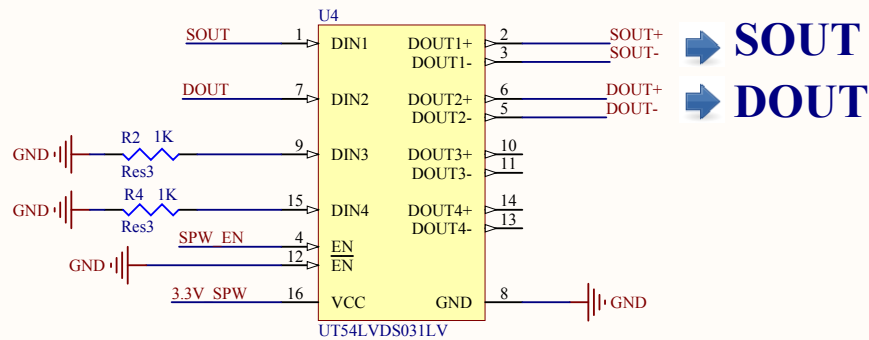
$$SCM_CAL = 1.25 - (D * (5/4096) * 0.5357)$$

$$SCM_CAL = 1.25 - D * 0.000654$$

| LOGIC INPUT | | | |
|-------------|-----------------------------------|--------------------------|----------------------------|
| I_{IN} | Input Current ⁽²⁾ | | ± 1 μ A (max) |
| V_L | Input Low Voltage ⁽²⁾ | $V_A = 5V$ $V_A = 3V$ | 0.8 V (max) 0.5 V (max) |
| V_{HI} | Input High Voltage ⁽²⁾ | $V_A = 5V$ $V_A = 3V$ | 2.4 V (min) 2.1 V (min) |
| C_{IN} | Input Capacitance ⁽²⁾ | | 3 pF (max) |





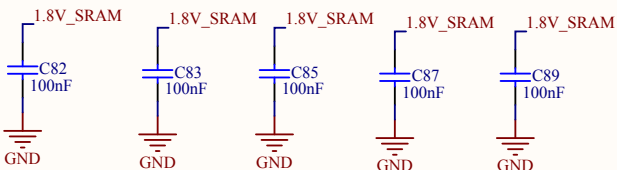
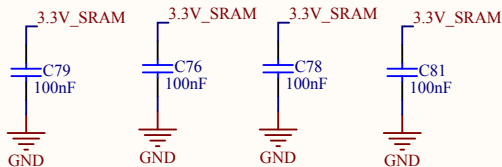
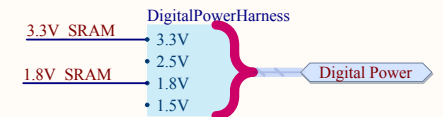
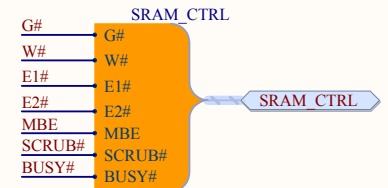
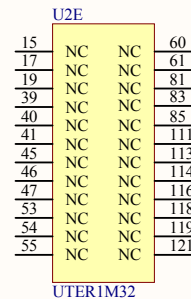
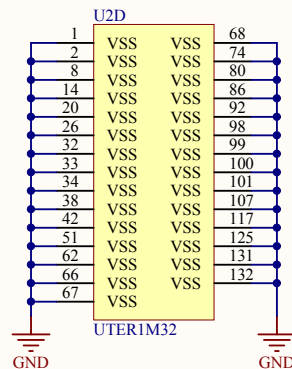
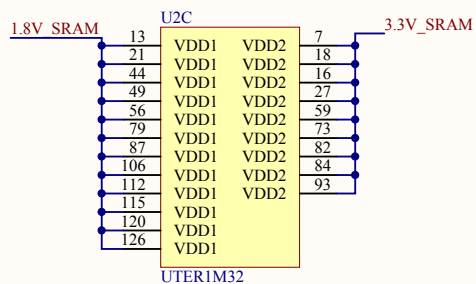
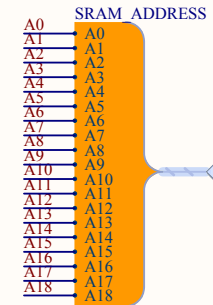
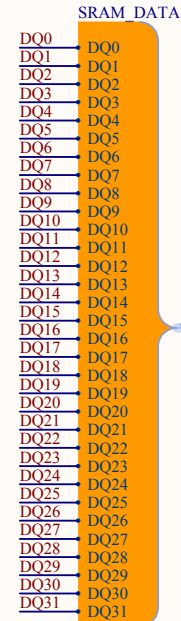
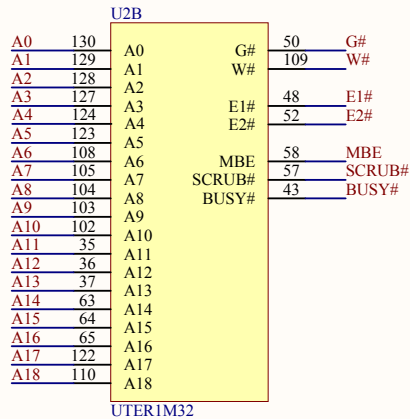
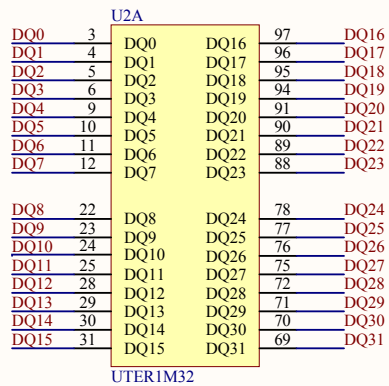


1. Open Input Pins. The UT54LVDS032LV is a quad receiver device, and if an application requires only 1, 2 or 3 receivers, the unused channel(s) inputs should be left OPEN. Do not tie unused receiver inputs to ground or any other voltages. The input is biased by internal high value pull up and pull down resistors to set the output to a HIGH state. This internal circuitry will guarantee a HIGH, stable output state for open inputs.

cf : <http://www.aeroflex.com/ams/pagesproduct/datasheets/LVDSReceiver3v.pdf>

| | | | |
|--|-----------------------|------------------------|--|
| Title LFR_QM_SPW | | Author: Alexis Jeandet | |
| Size: A4 | Number: LFR-172200-FM | Revision: 01.03 | |
| Date: 16/05/2014 | Time: 13:19:39 | Sheet 11 of 12 | |
| Contact: alexis.jeandet@lpp.polytechnique.fr | | | |
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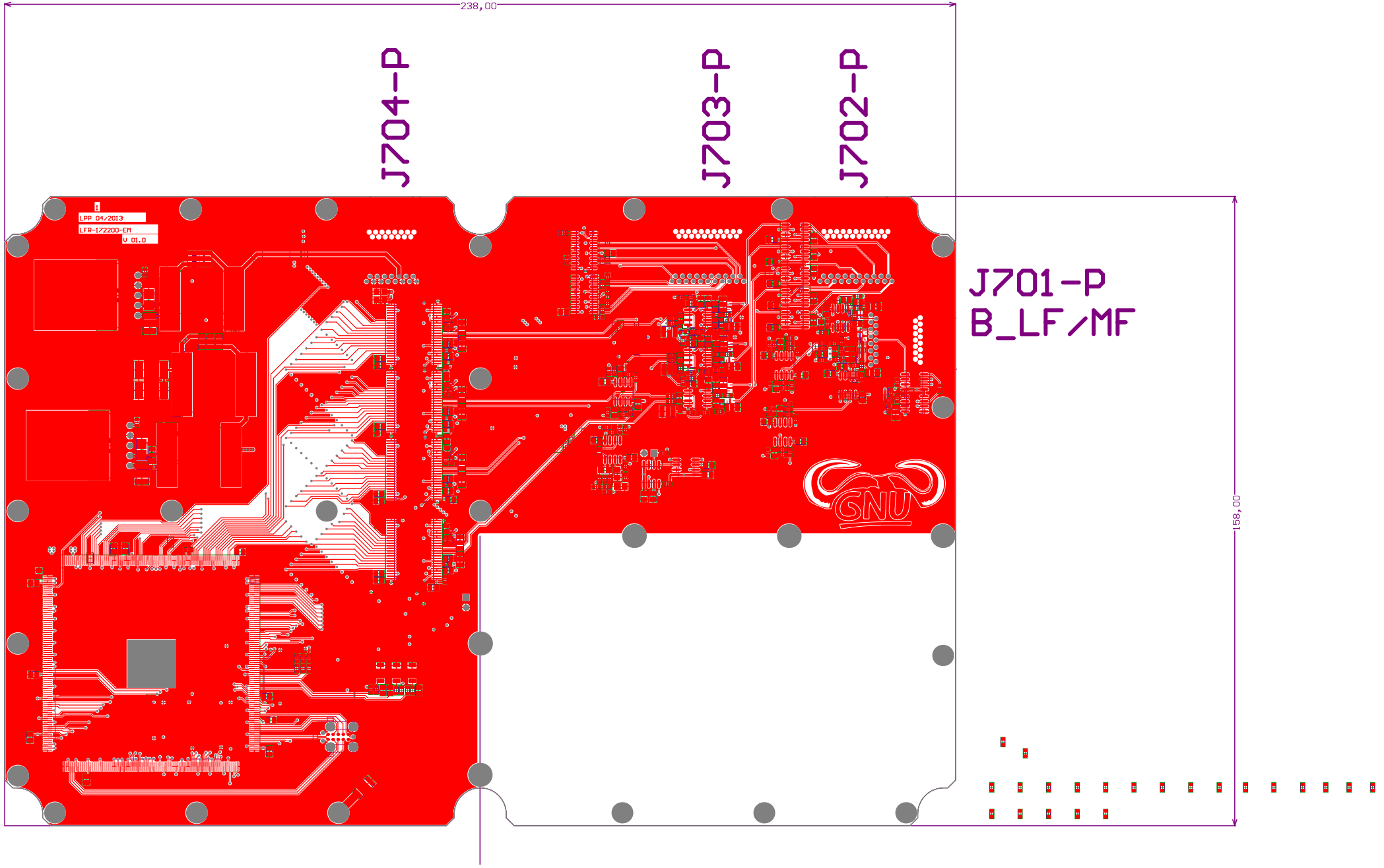
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| Title | LFR_QM_SRAM | Author: | Alexis Jeandet |
| Size: | A4 | Number: | LFR-172200-FM |
| Date: | 16/05/2014 | Time: | 13:19:39 |
| Contact: | alexis.jeandet@lpp.polytechnique.fr | | |
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Revised: 01.03

Sheet 12 of 12

Laboratoire LPP
Ecole Polytechnique
Route de Saclay
F-91128 Palaiseau
France





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J704-P

J703-P

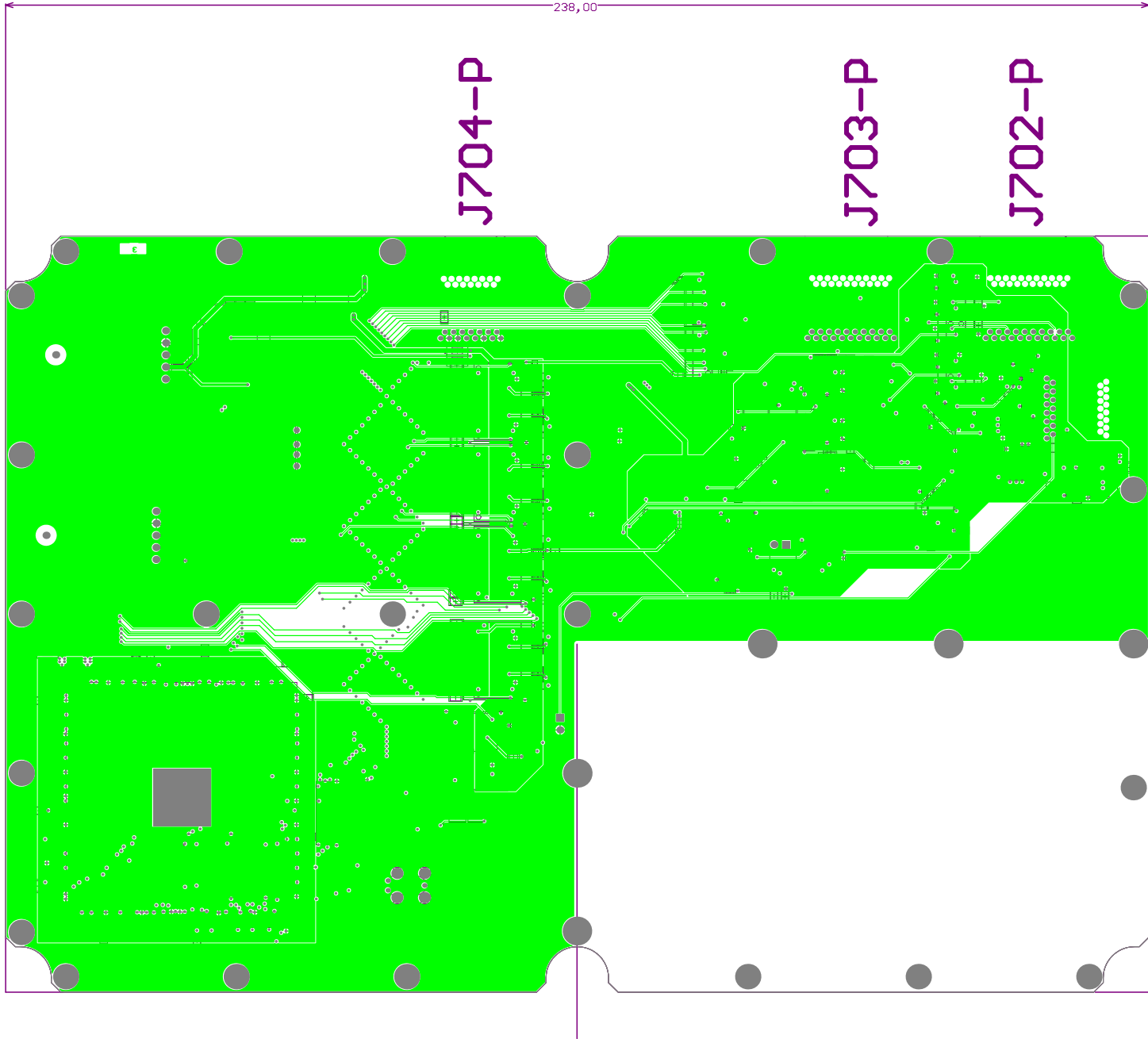
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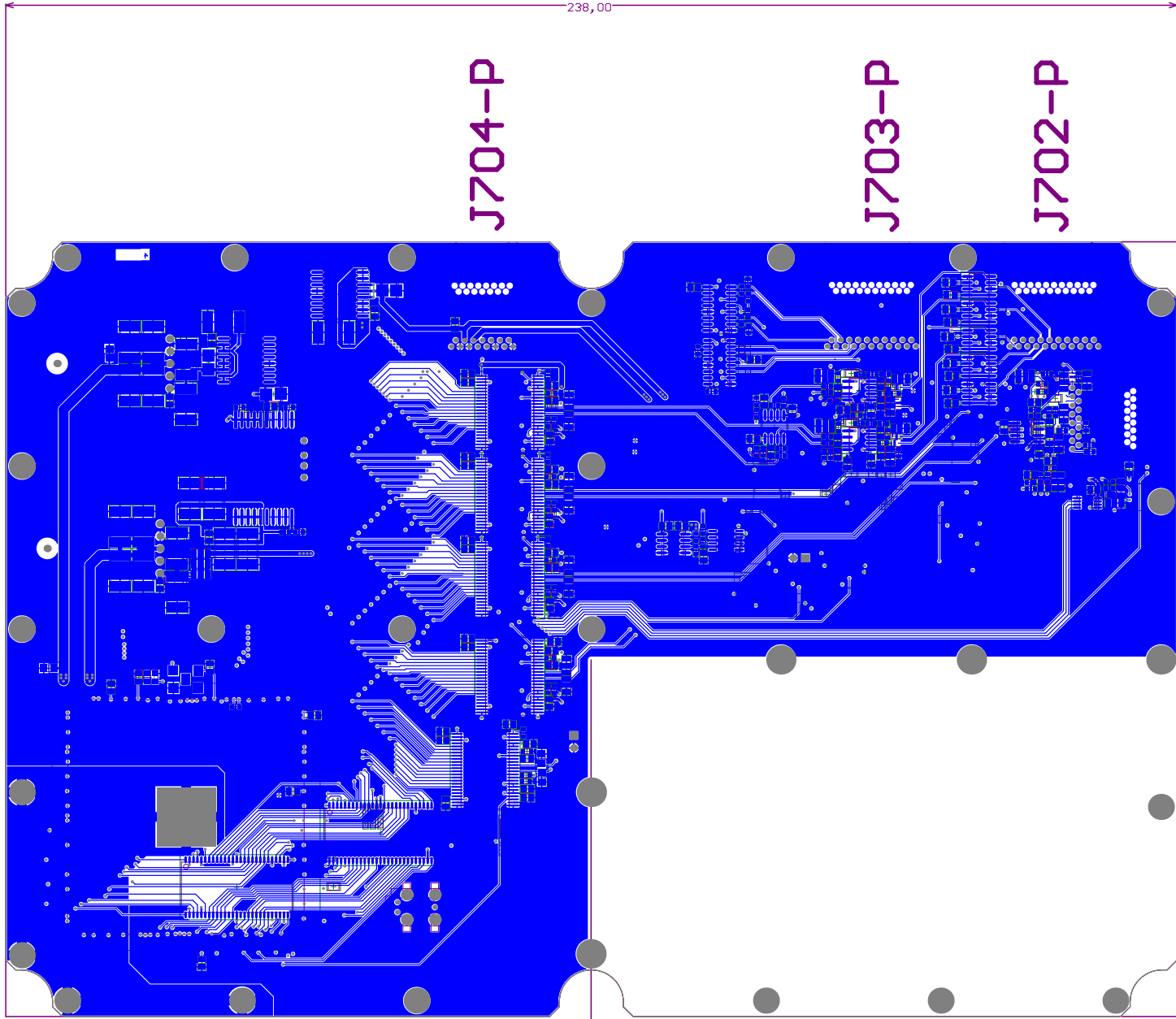




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B_LF/MF

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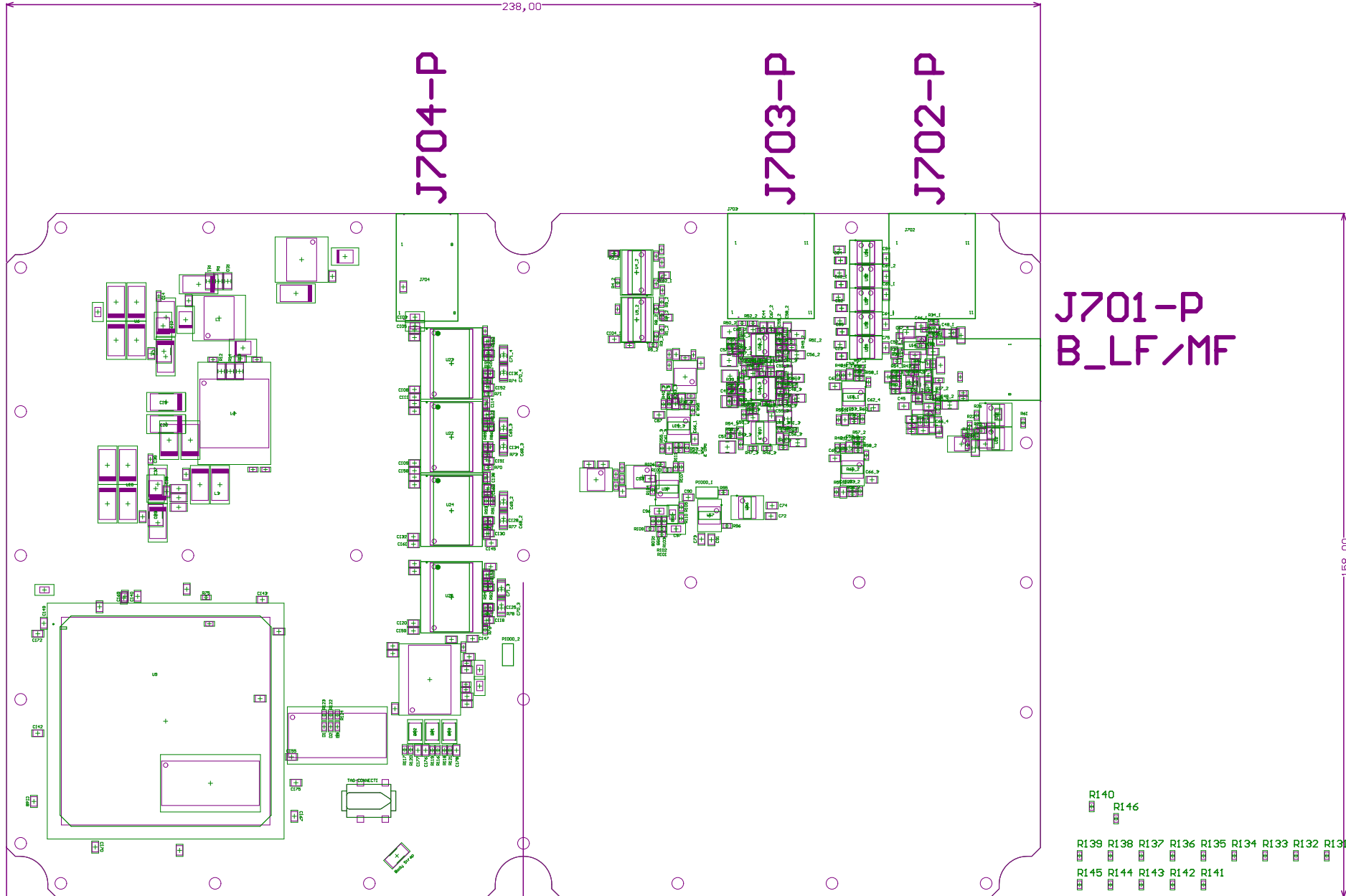
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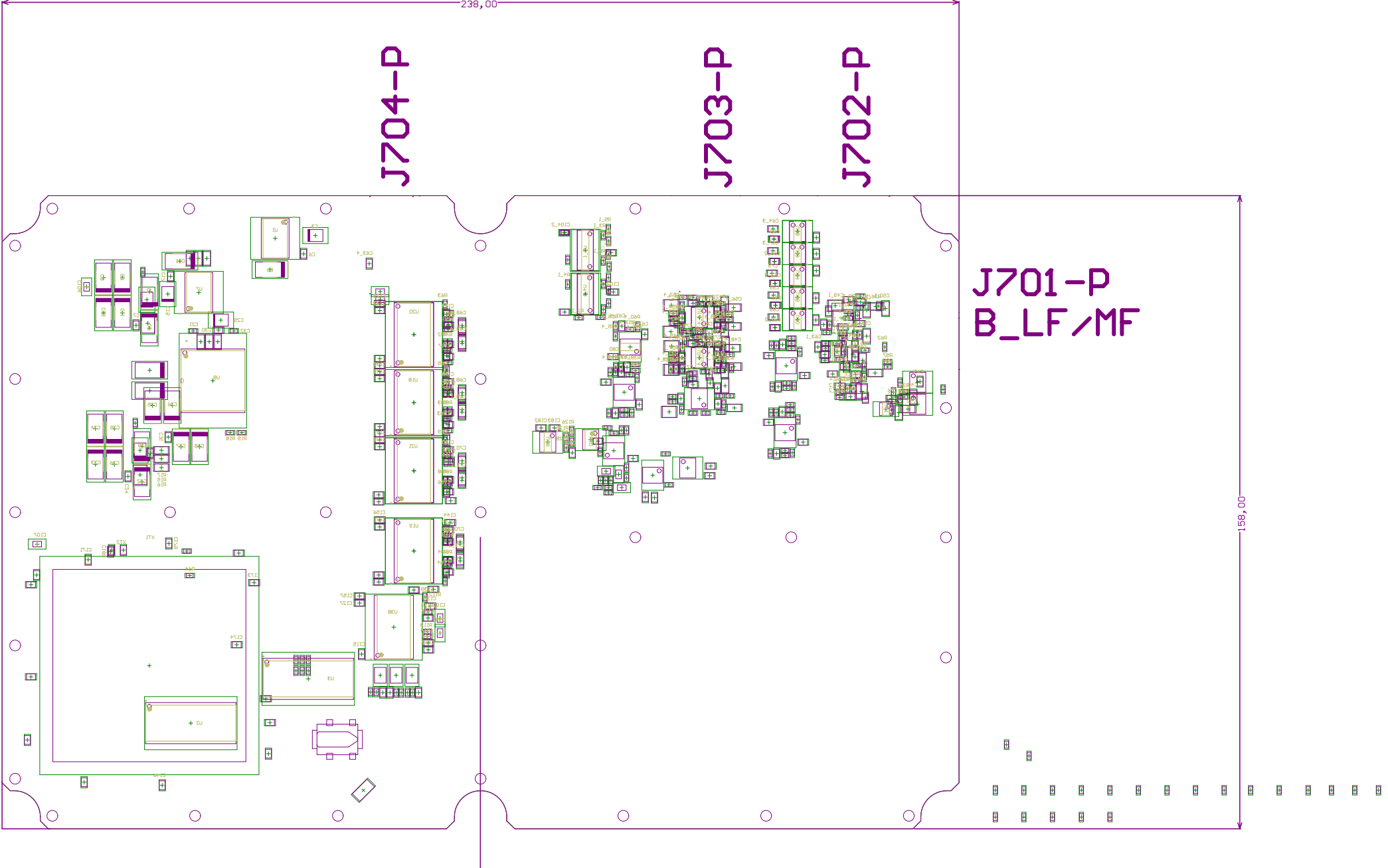
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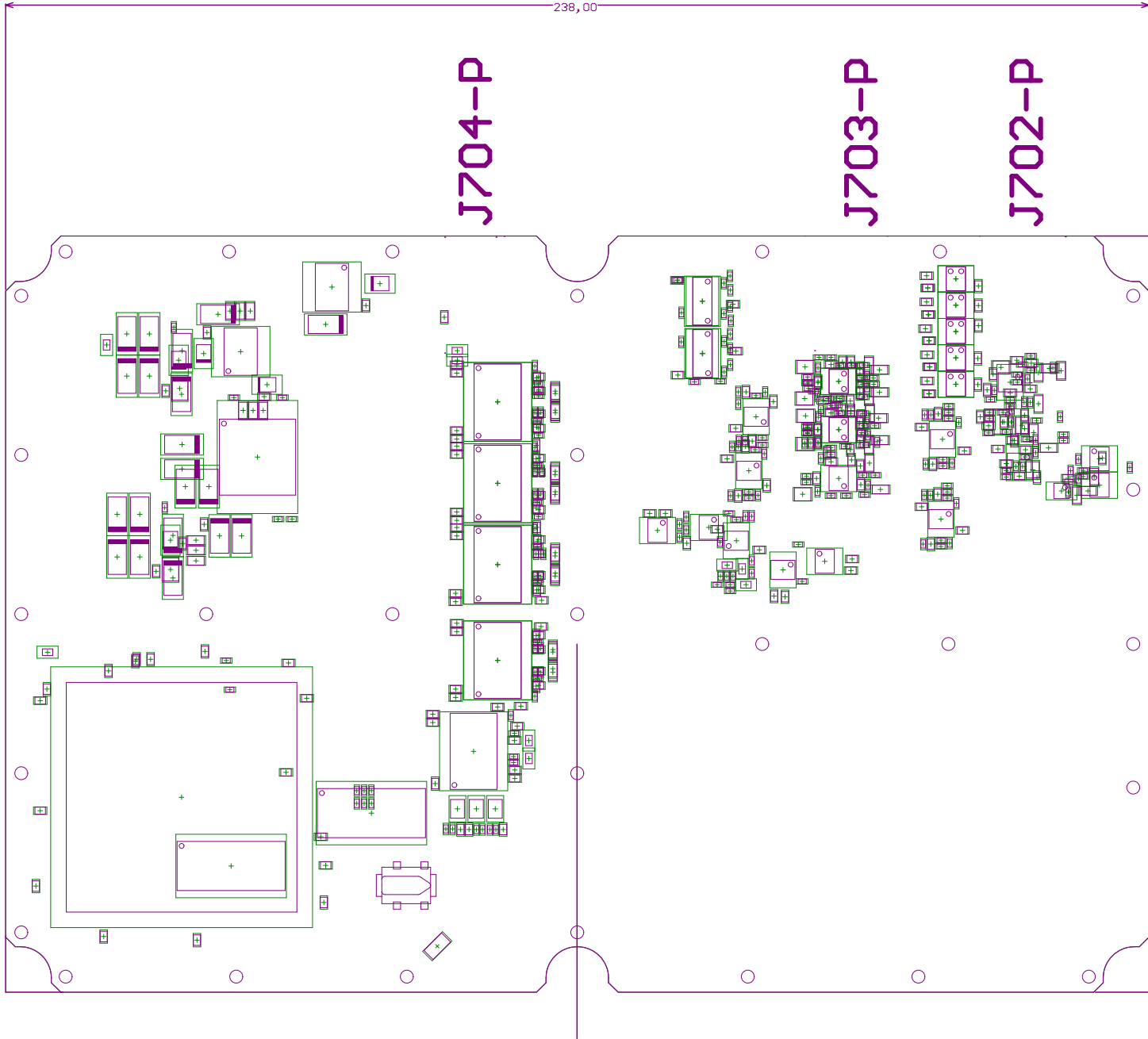
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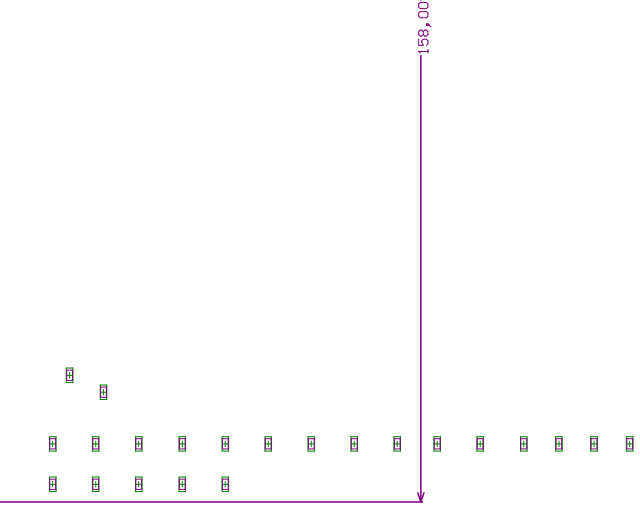
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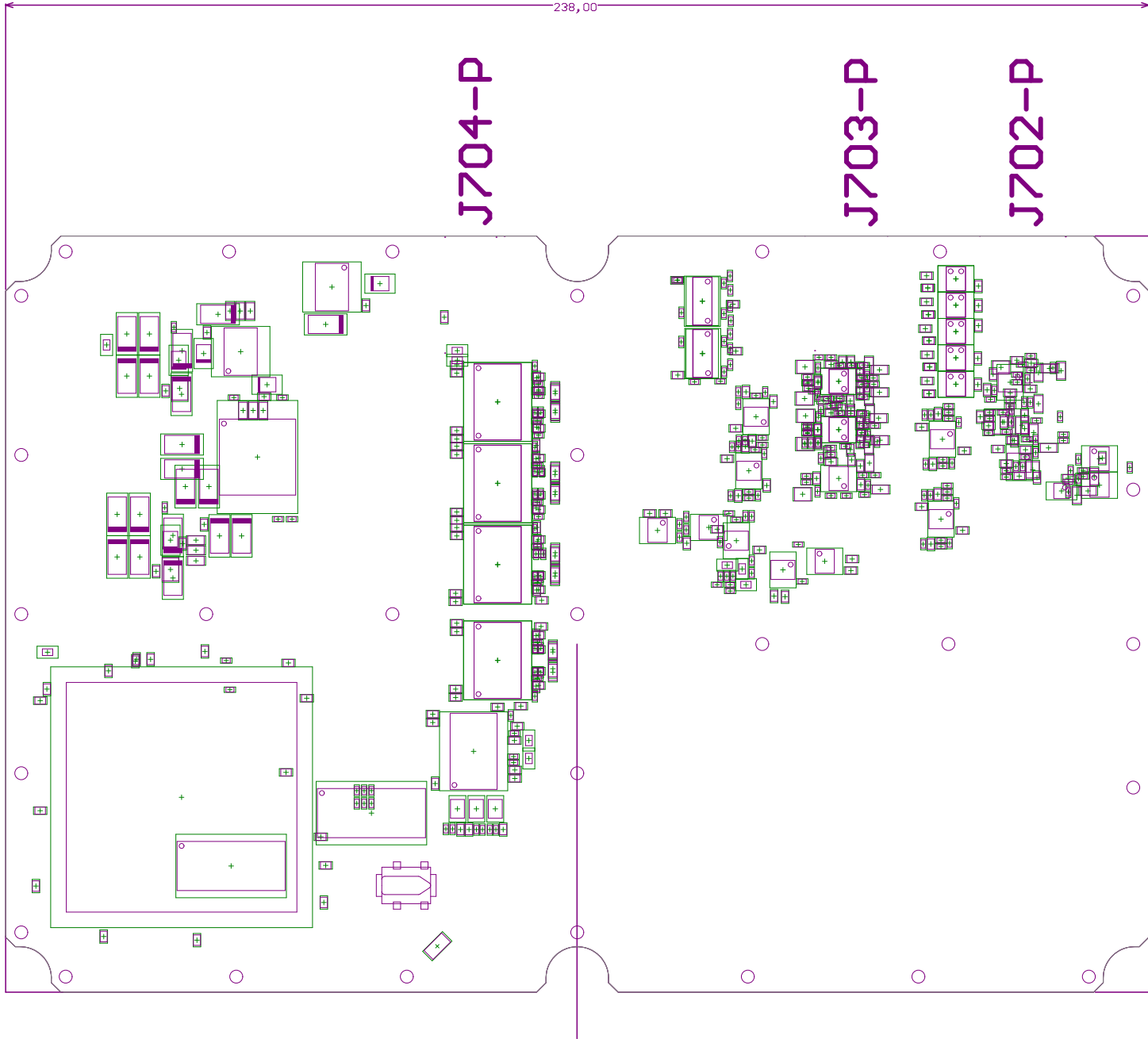
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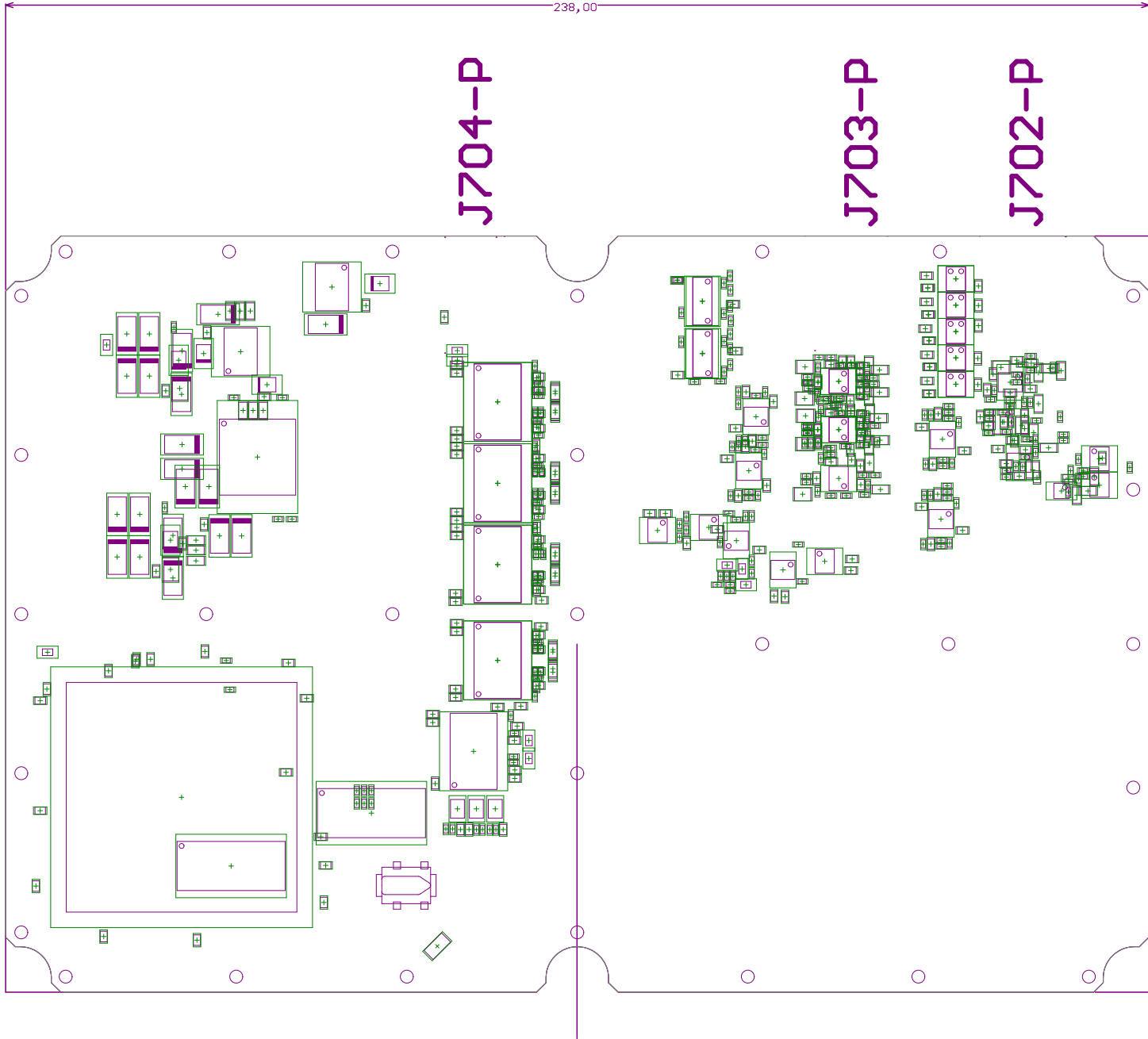
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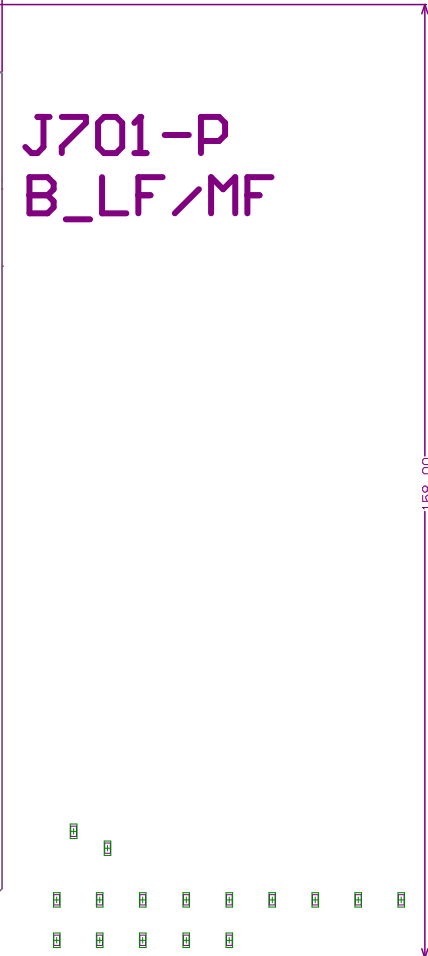


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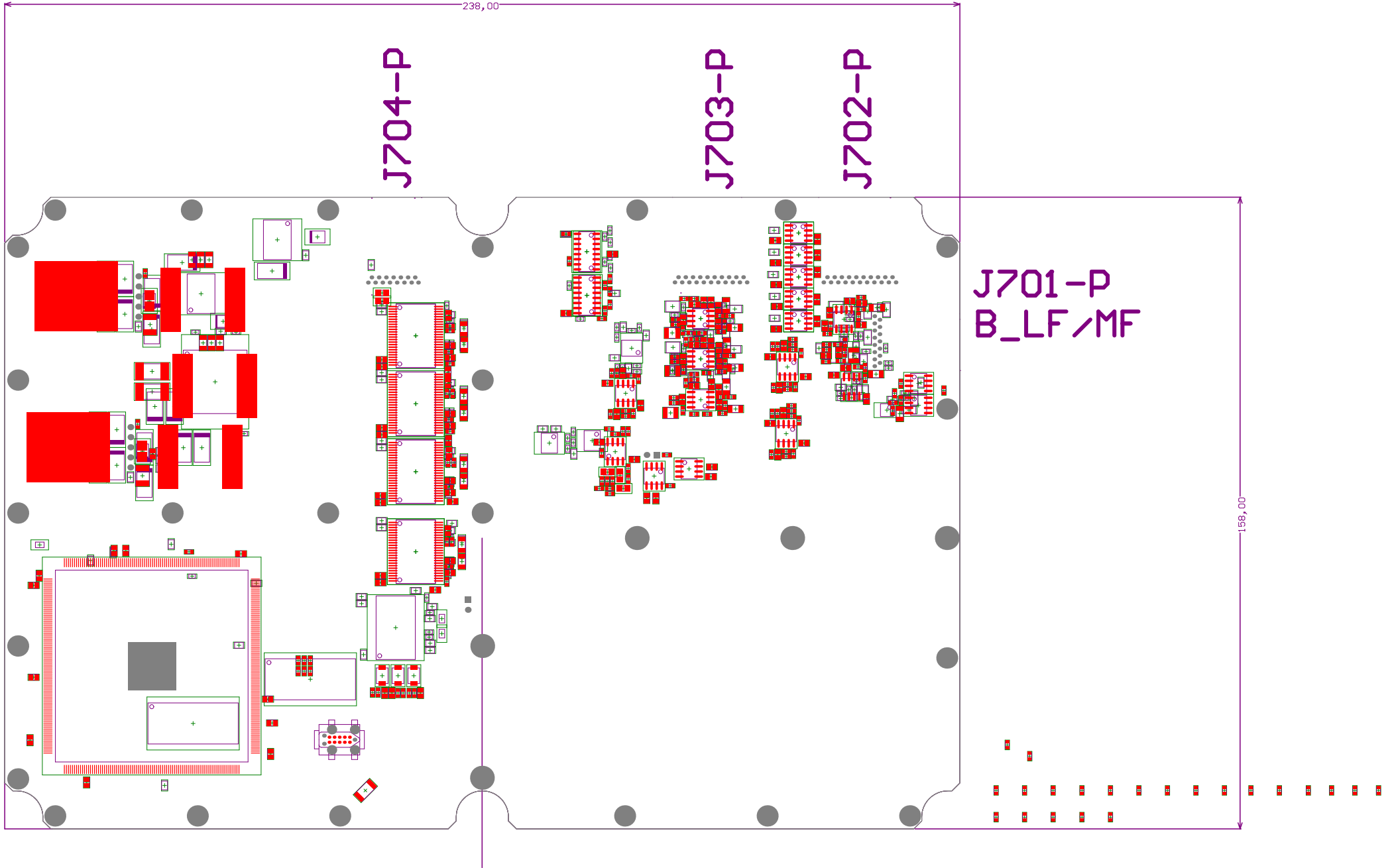
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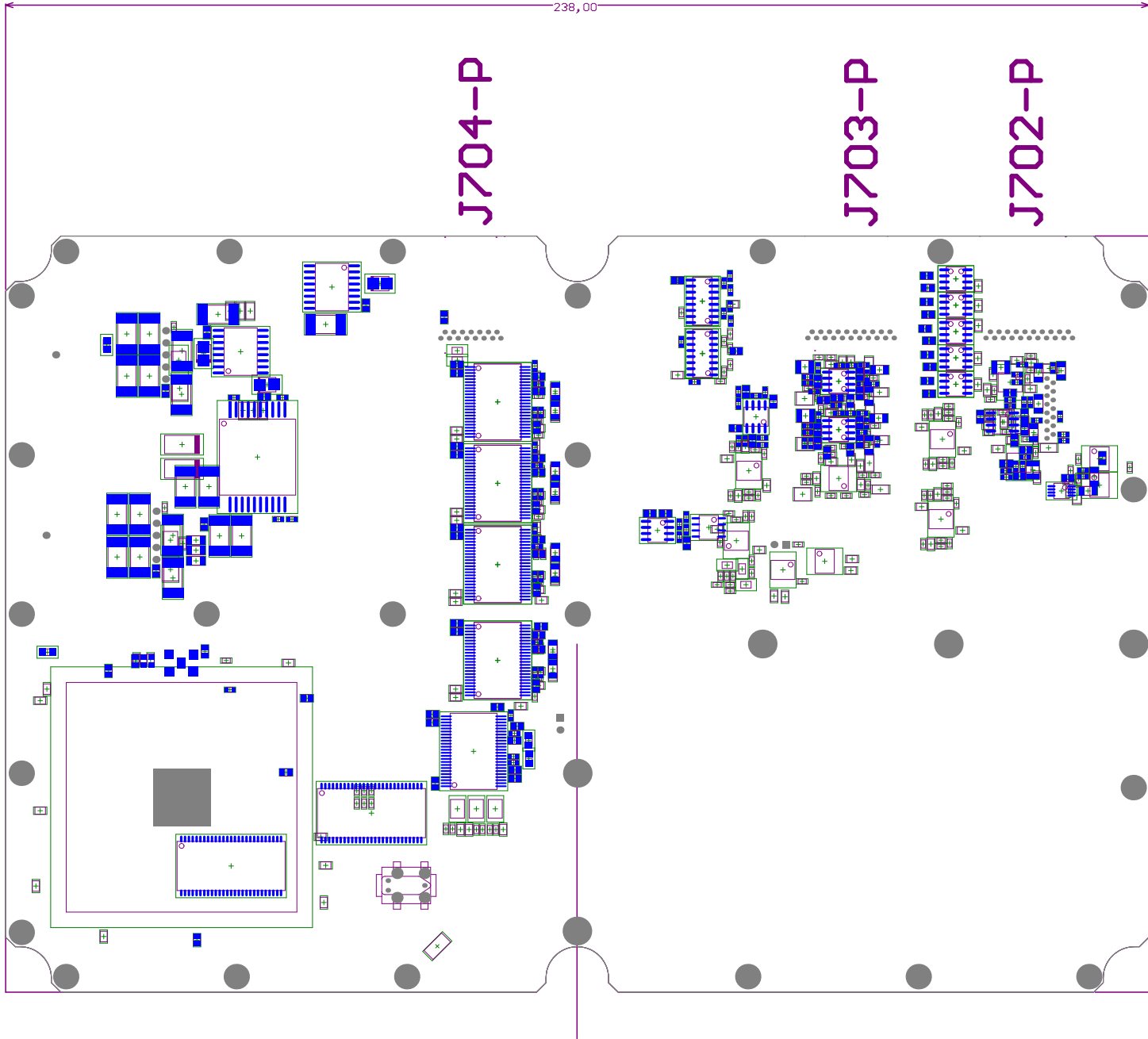
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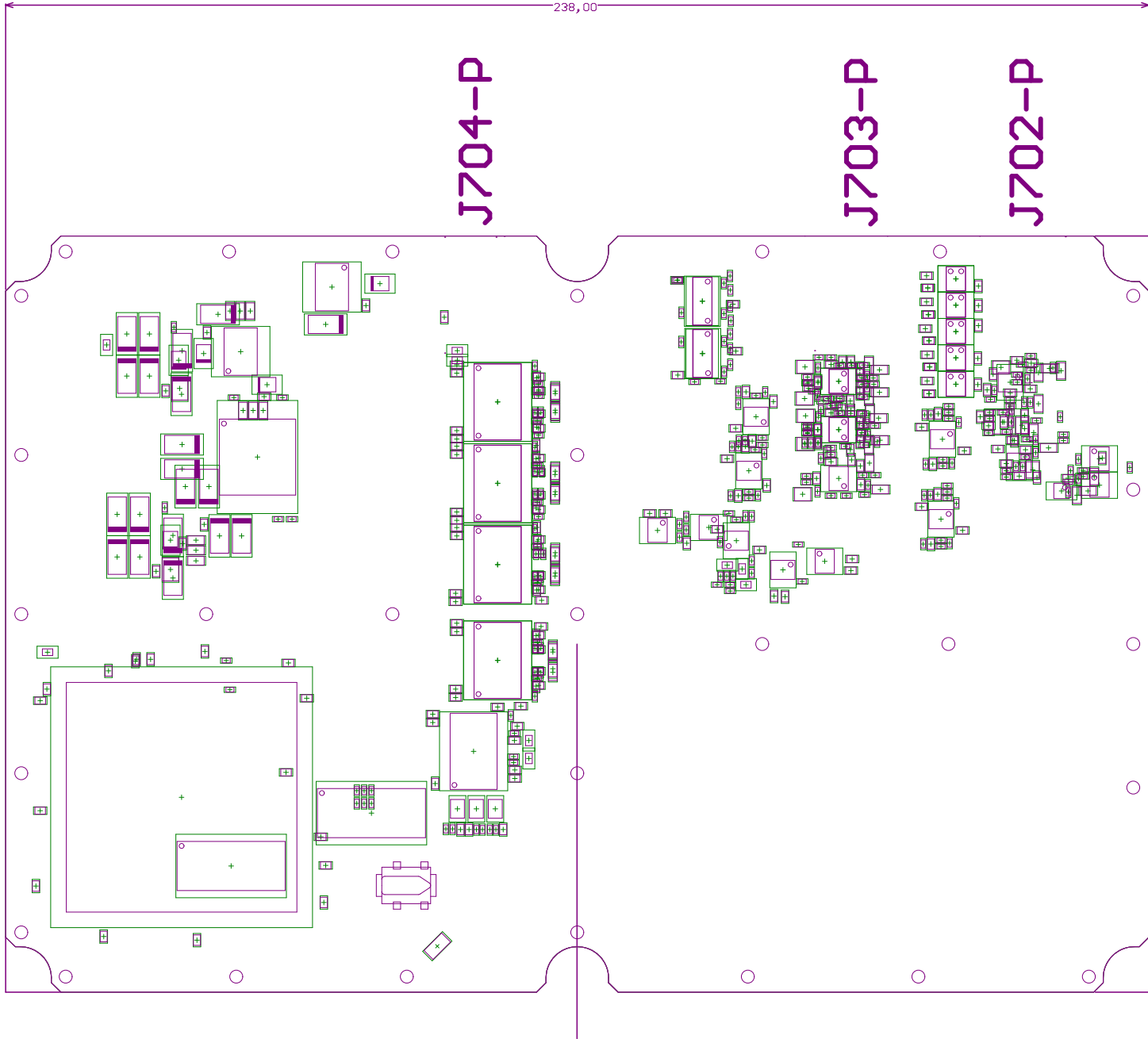
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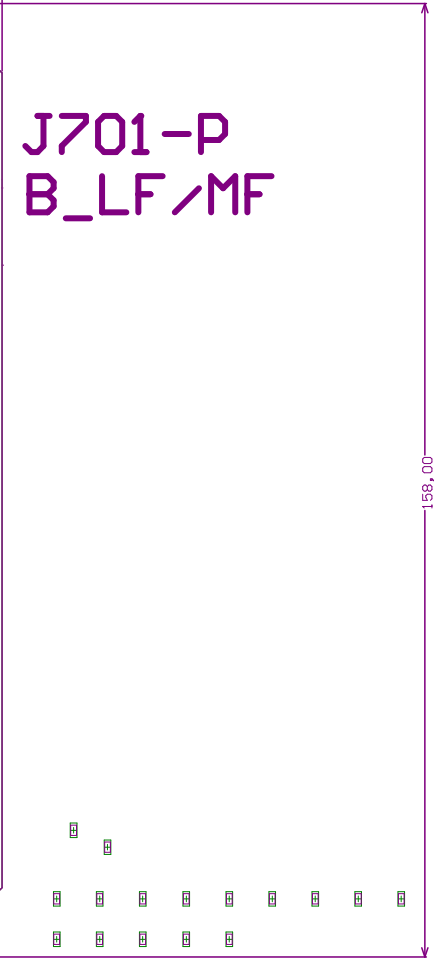


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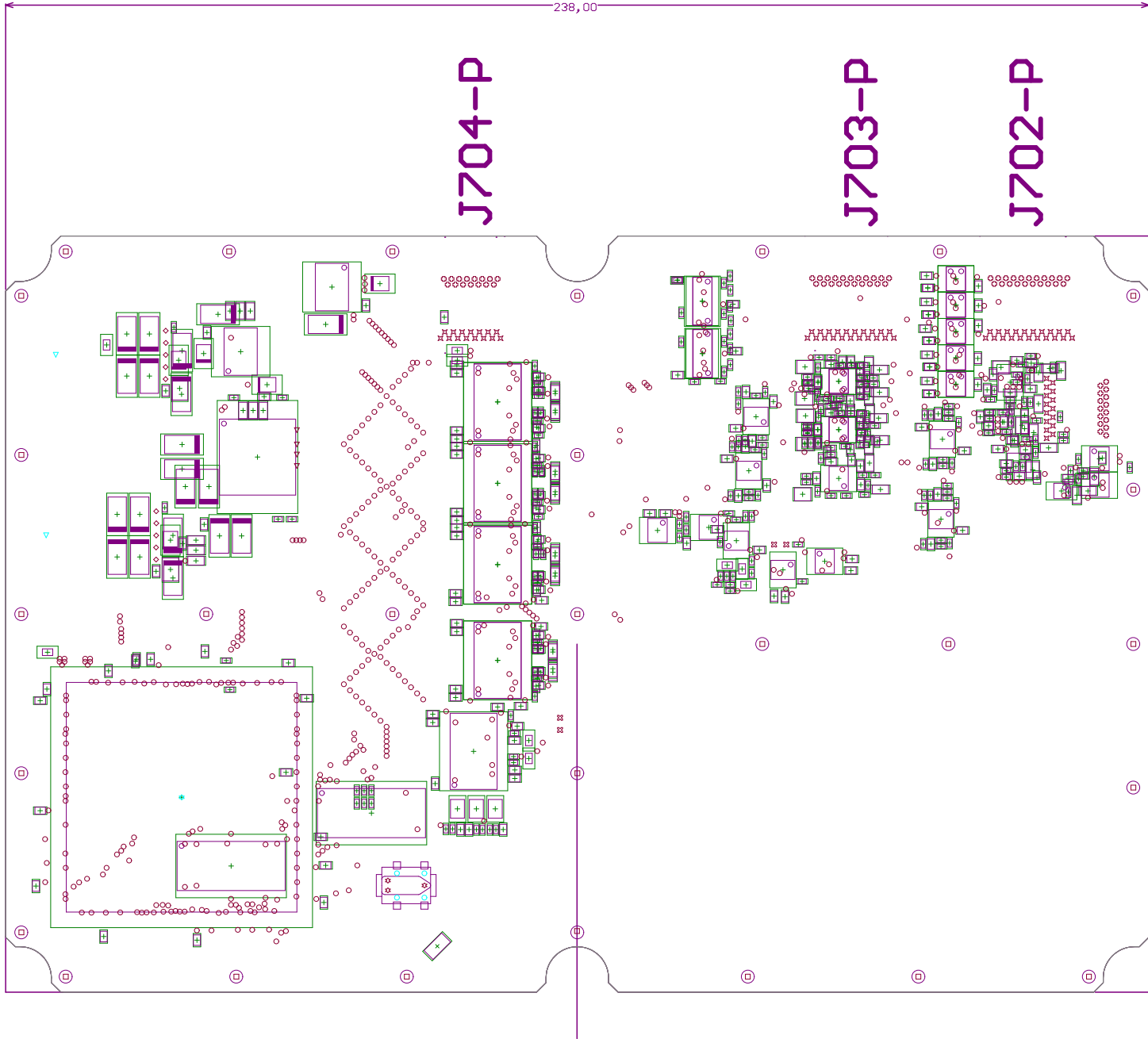
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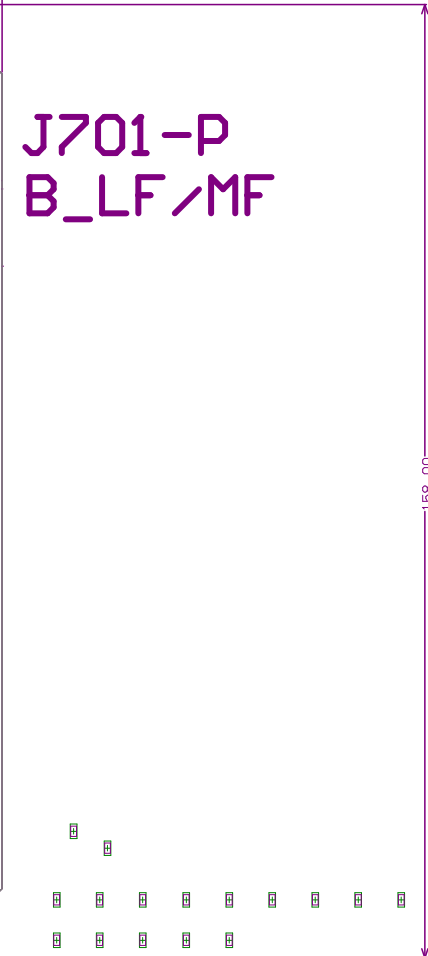


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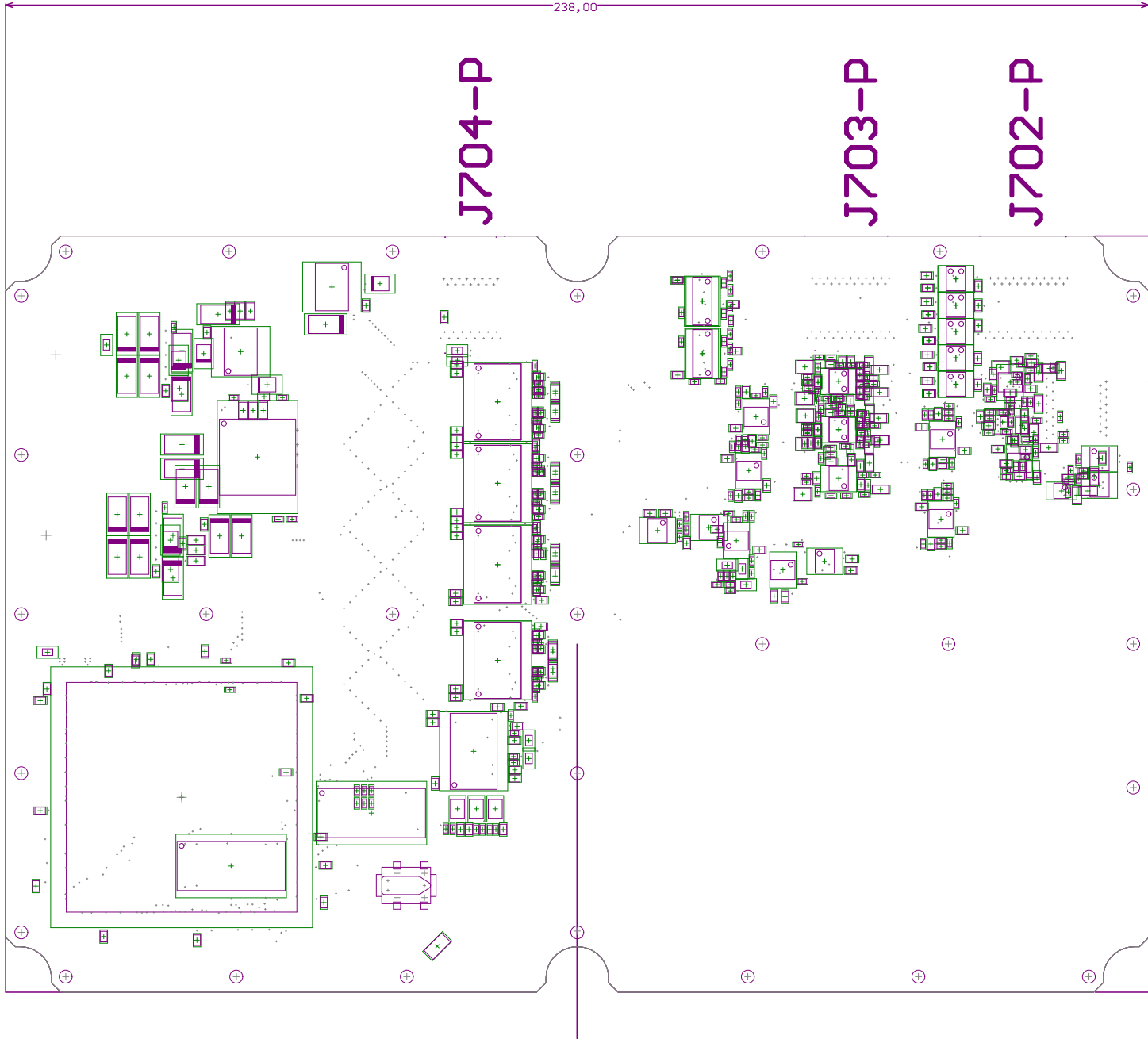
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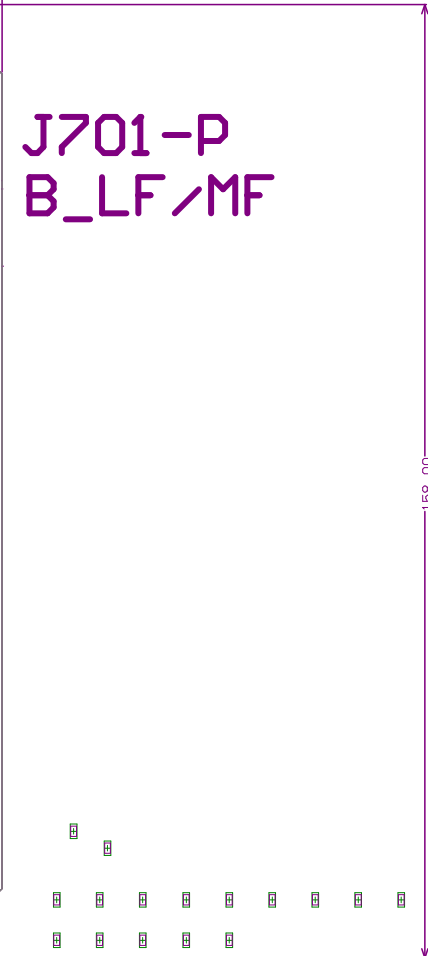
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