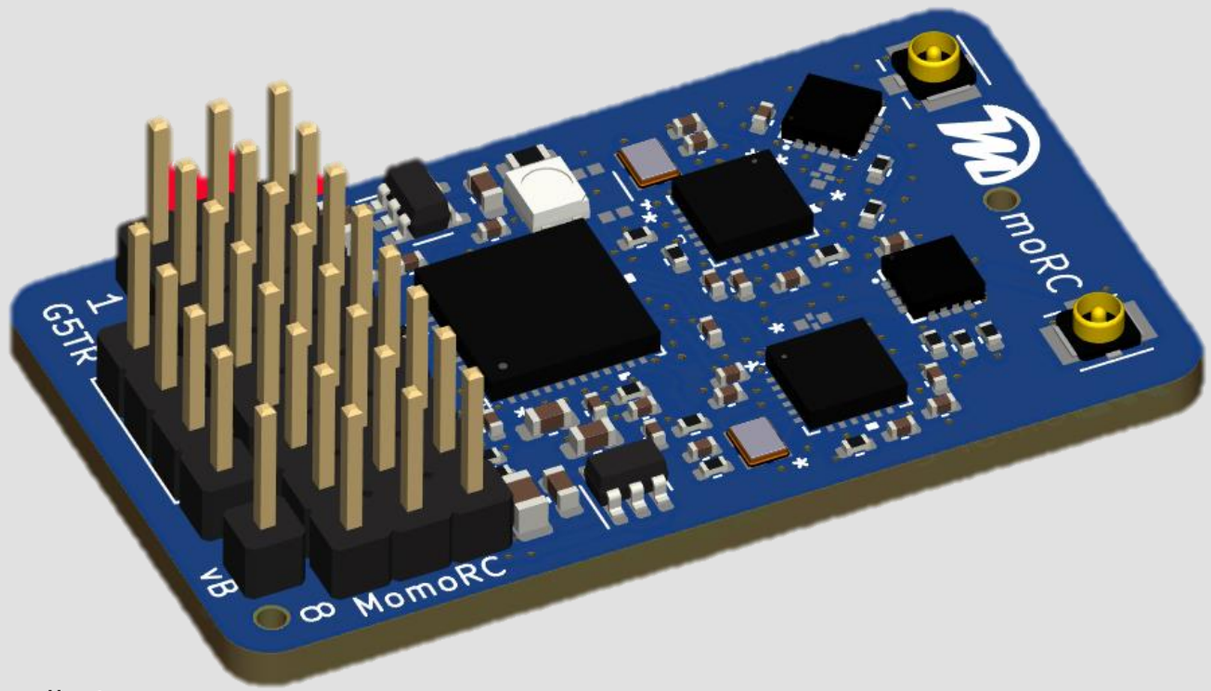
ELRS 2.4GHz RX MOMORX-1

ESP32 Pico D4, True Diversity, 8xPWM, vBAT
Open Source, no commercial product

Features

- ESP32-PICO-D4
- 5V (BEC) input
- True Diversity: dual SX1280 + RF filter + PA/LNA paths
- 8 PWM outputs
- Battery voltage monitoring input
- GRB led (WS2812)



Specification

- MCU: ESP32-PICO-D4
- LoRA Transceiver: SEMTECH SX1280
- RF filter: JOHANSON 2450FM07A0035T
- RF Frontend (PA/LNA): AT2401C

Power

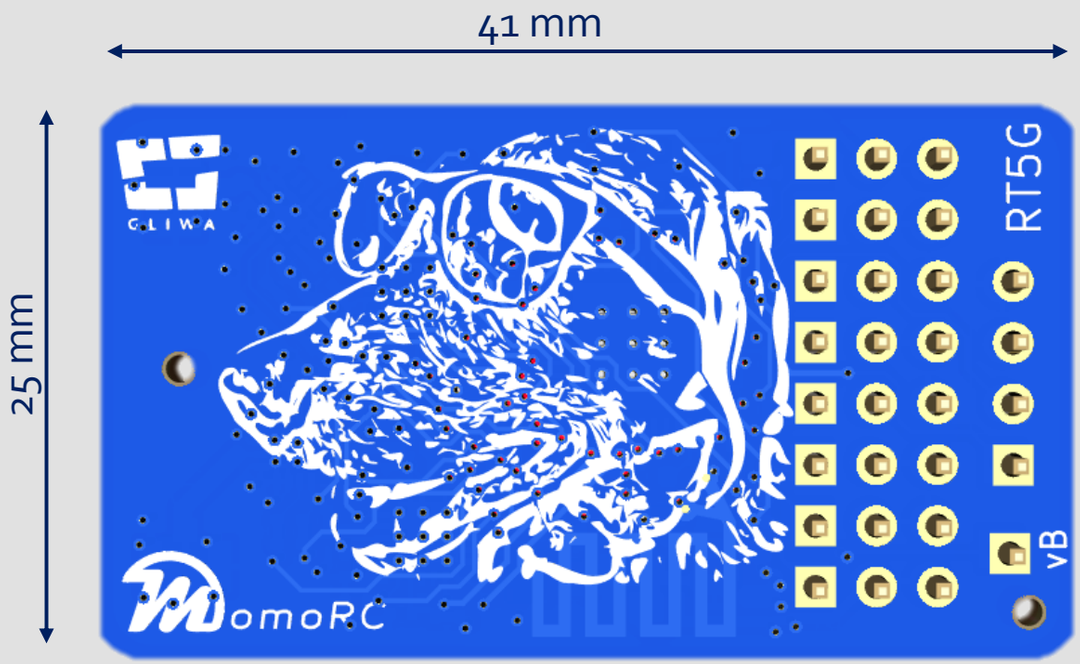
- Input voltage: 4-20V (from BEC or MomoRC Flight Controller)
  !!! Attention if servos are connected, due to input voltage sharing !!!
- 2x LDO: 3.3V 600mA
- Battery Voltage sensing: 2K:12K

Firmware

- ELRS 3.x, Unified Target with dedicated pin assignment

Physical

- Dimensions: 41 x 23 x 5 mm
- Weight: 3g (without PWM connectors and antennas)



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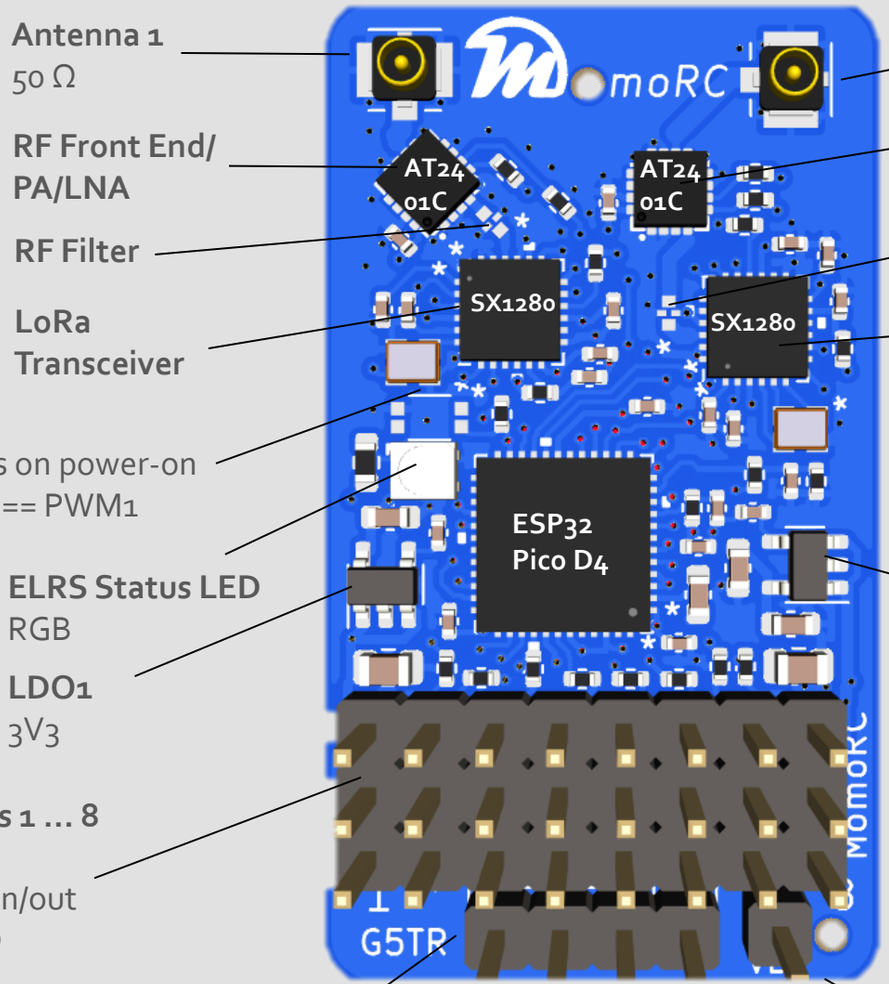
Layout

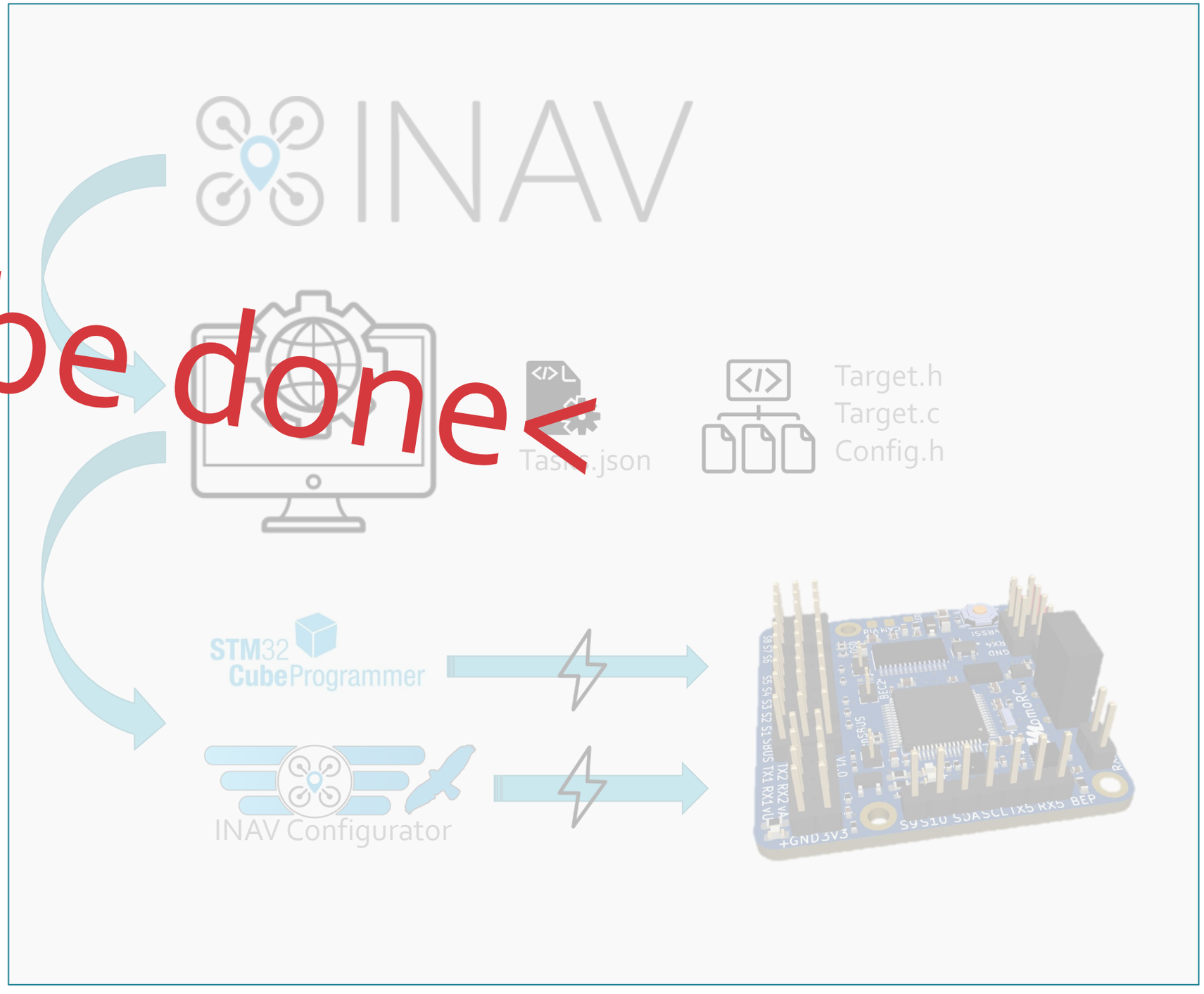


FLIGHT CONTROLLER MOMOFC-1

STM32F405RGT6, BMI088, HMC5883L, DPS310, OSD, 5x UARTs, 1x I2C, 10x PWM,
Dual BEC support, 2~5S LiPo

>to be done<

Software Documentation



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ELRSConfig

Unified Target
10.0.0.1/hardware.html:

```
   "serial_rx":     3,
   "serial_tx":     1,

   "radio_miso":   33,
   "radio_mosi":   32,
   "radio_rst":    26,
   "radio_sck":    25,

   "radio_busy":   36,
   "radio_dio1":   37,
   "radio_nss":    27,

   "radio_busy_2": 39,
   "radio_dio1_2": 34,
   "radio_nss_2":  13,

   "power_rxen":   10,
   "power_txen":   14,
   "power_rxen_2":  9,
   "power_txen_2": 15,

   "power_min":       0,
   "power_high":      0,
   "power_max":       0,
   "power_default":   0,
   "power_control":   0,
   "power_values": [-10,-6,-3,1],

   "pwm_outputs":  [0,1,3,21,19,5,2,18],

   "vbat":                35,
   "vbat_offset":       <12>,
   "vbat_scale":        <410>,

   "led_rgb":             22,
   "led_rgb_isgrb":     true,
   "ledidx_rgb_status":  [0],
   "ledidx_rgb_boot":    [0]
```

Battery Voltage:
ELRS scale <tbd> [2K:12K]
vB: max 3.4V, ADC1/CHN7), DC 8~25V (2S~5S), [2K:12K]

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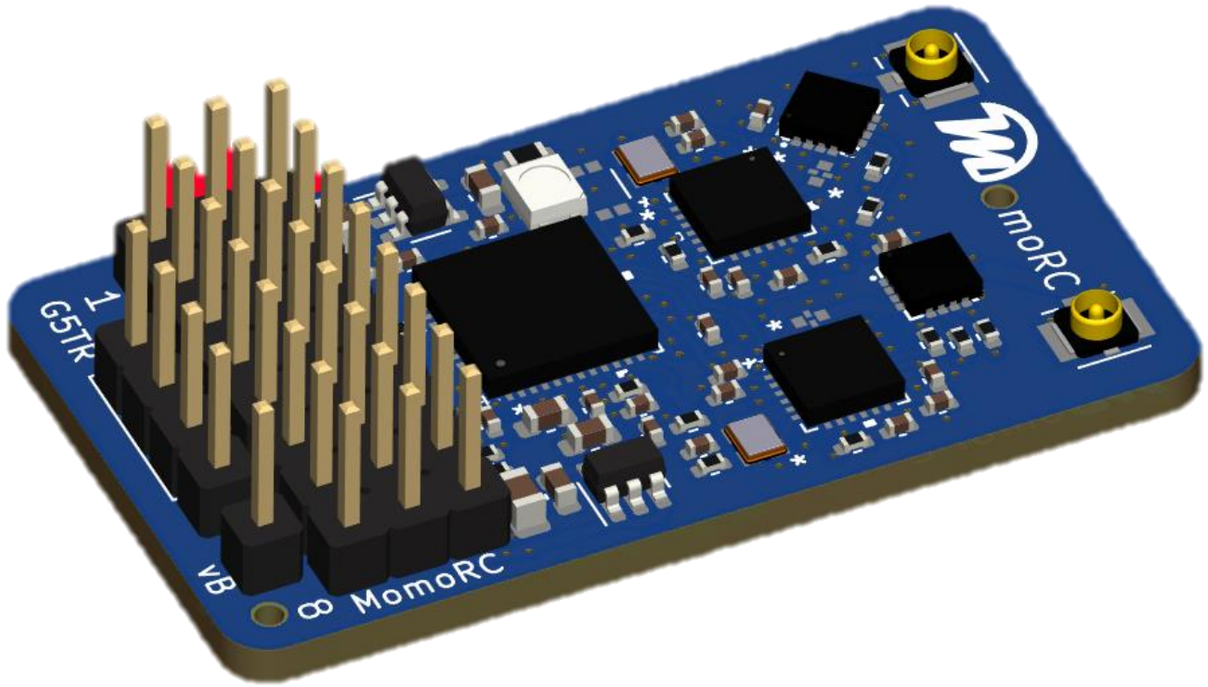
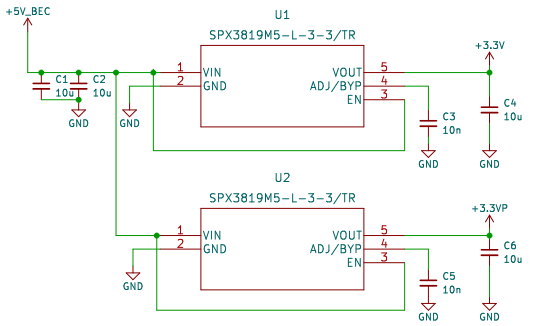
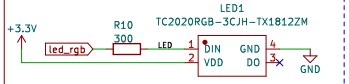
Hardware Documentation



Power Circuitry

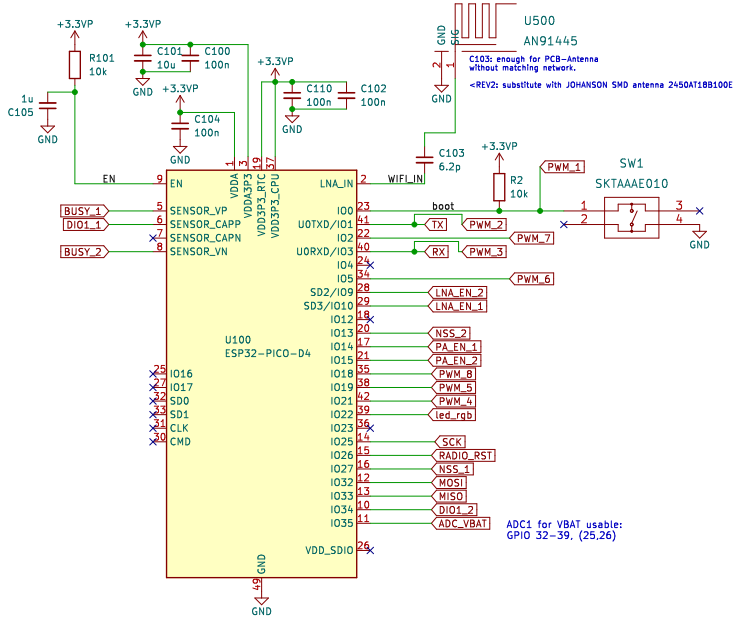


RGB LED



<REF2 tbd: include barometer SPL06>

ESP32 Pico D4




```
myPWMs (I/O val): 0,1,3,21 ,19 ,5,2, 18

  "serial_rx": 3,
  "serial_tx": 1,

  "radio_miso": 33,
  "radio_mosi": 32,
  "radio_rst": 26,
  "radio_sck": 25,

  "radio_busy": 36,
  "radio_dio1": 37,
  "radio_nss": 27,

  "radio_busy_2": 39,
  "radio_dio1_2": 34,
  "radio_nss_2": 13,

  "power_rxen": 10,
  "power_txen": 14,
  "power_rxen_2": 9,
  "power_txen_2": 15,

  "power_min": 0,
  "power_high": 0,
  "power_max": 0,
  "power_default": 0,
  "power_control": 0,
  "power_values": [-10,-6,-3,1],

  "pwm_outputs": [0,1,3,42 ,38,5,2,18],

  "vbat": 35,
  "vbat_offset": 12,
  "vbat_scale": 410,

  "led_rgb": 22,
  "led_rgb_isgrb": true,
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  "ledidx_rgb_boot": [0]
```
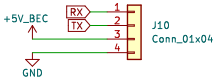
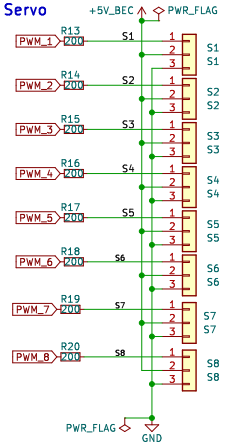
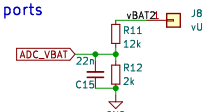

CRSF/Serial/Uin



Servo



ADC ports



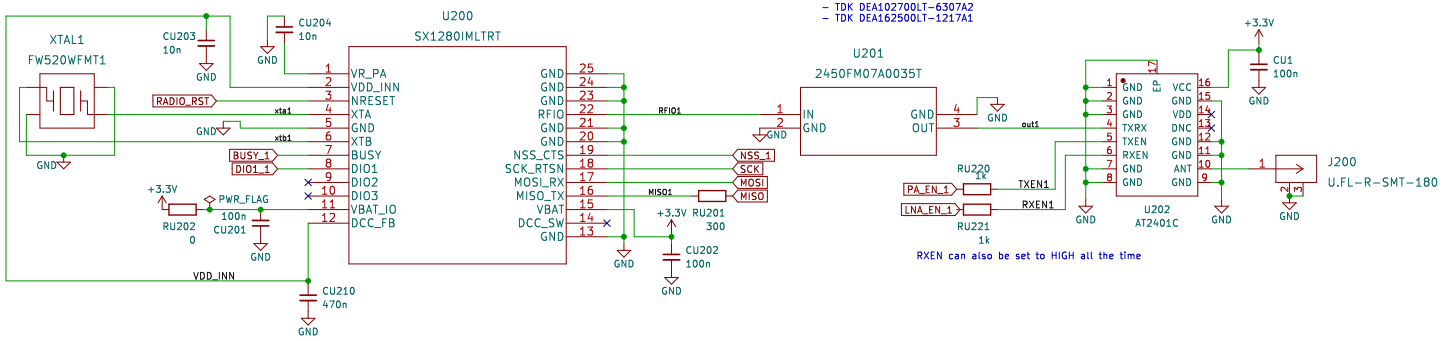
ADC Chn1: VBAT: Battery Voltage Sensor
2K:12K (ELRS scale <tbd>-->0-30V)

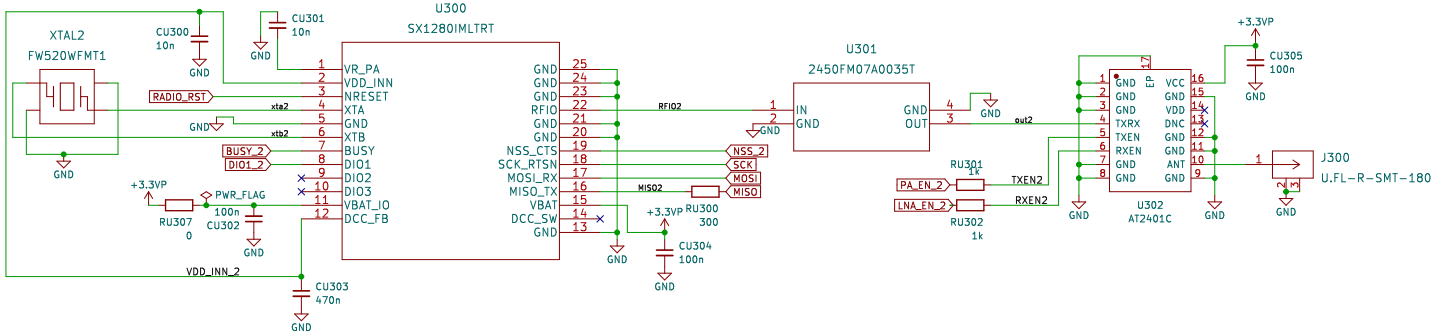
ADC1 for VBAT usable:
GPIO 32-39, (25,26)

TH1
JLCPCB_tooling_hole
Tooling Hole

TH2
JLCPCB_tooling_hole
Tooling Hole

LOGO1
MOMO_Logo
Momo footprints ~~Library~~:Momo_Lilli medium
LOGO





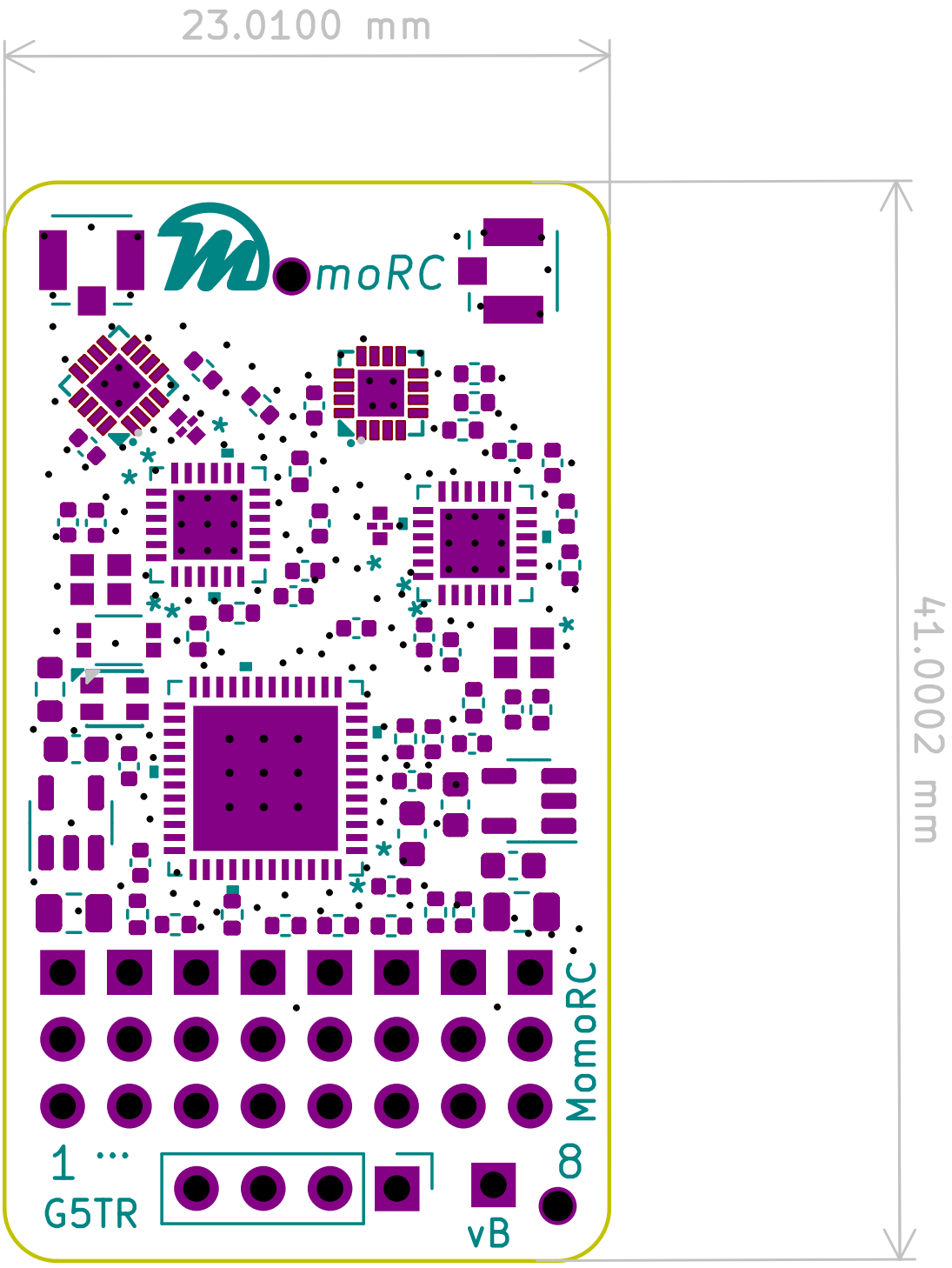
MomoRC

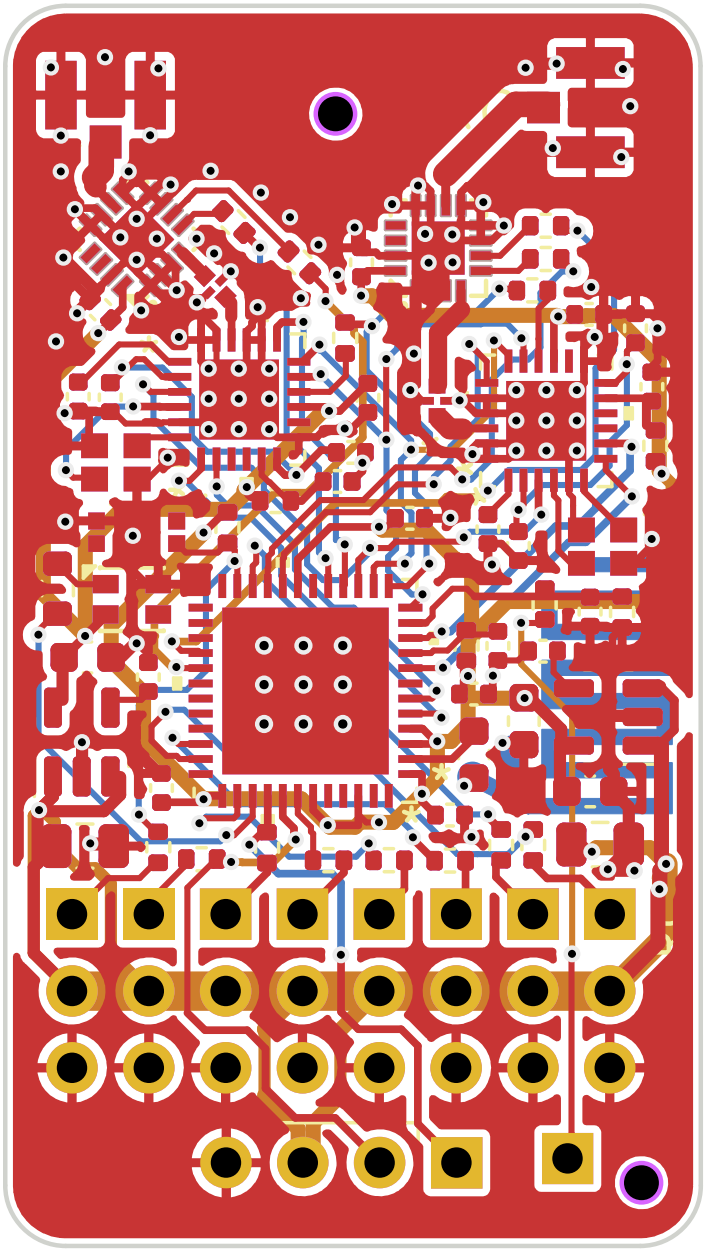
Sheet: /

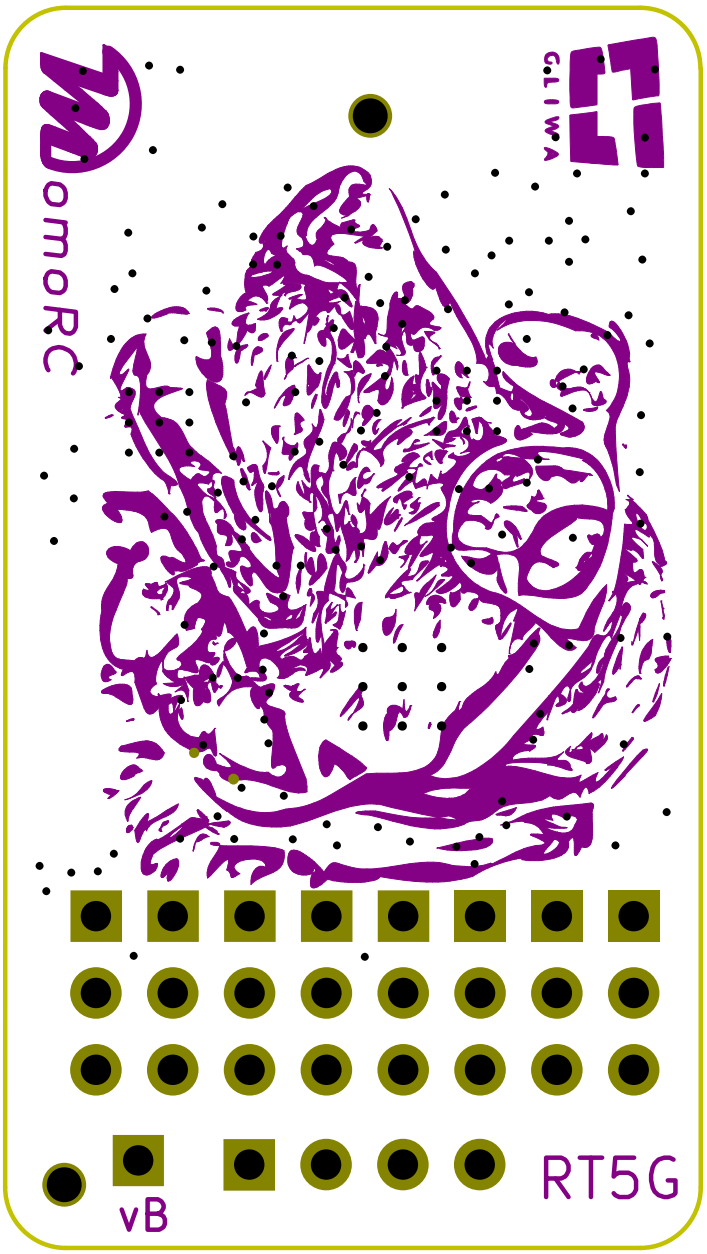
File: 03_KiCAD ELRS MomoRC.kicad_sch

Title: ELRS StackUp

Size: A3	Date: 2022-09-04	**Rev: 0.1**
KiCad E.D.A. kicad (6.0.7)		Id: 1/1


23.0100 mm
41.0002 mm
MomoRC
MomoRC
1
8
G5TR
vB




MomoRC
GLIWA
vB
RT5G