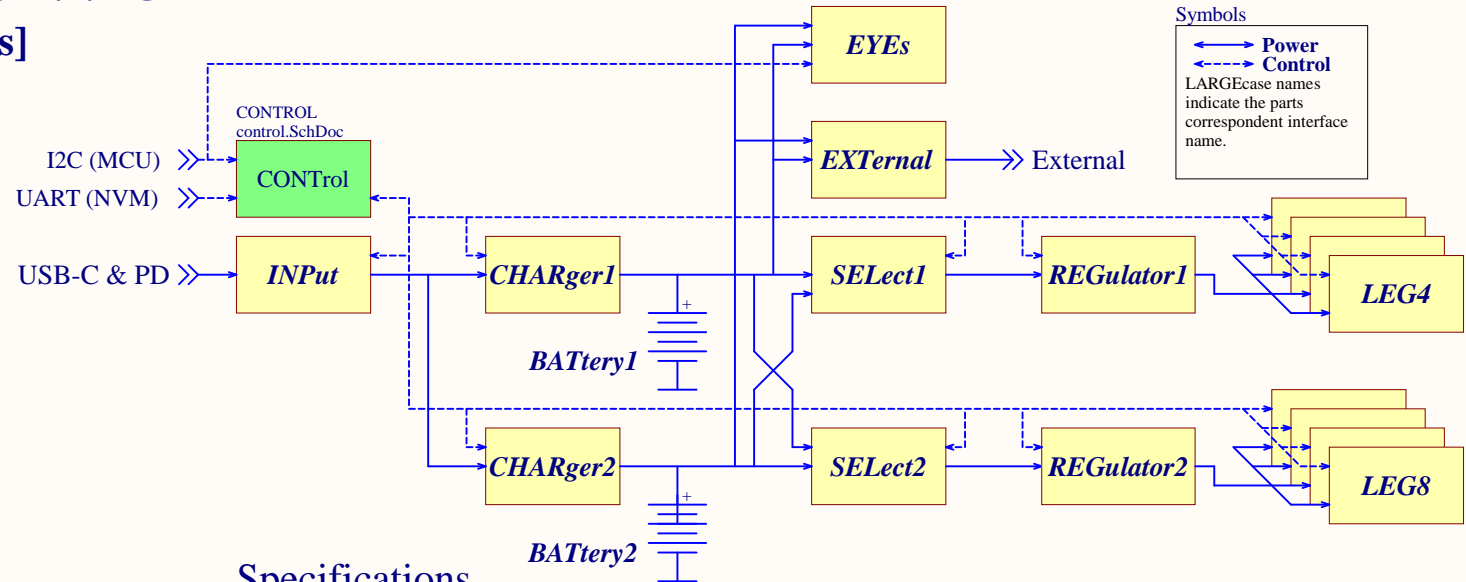


- s.1 - Cover
- s.2 - Control
- s.3 - Eye servos
- s.4 - Distribution
- s.5 - USB-C PD input
- s.6 - Charger
- s.7 - HS switches
- s.8 - GAN regulators
- s.9 - Leg group
- s.10 - Leg module
- s.11 - AUX power
- s.12 - EXT power

The power board has the following responsibilities:

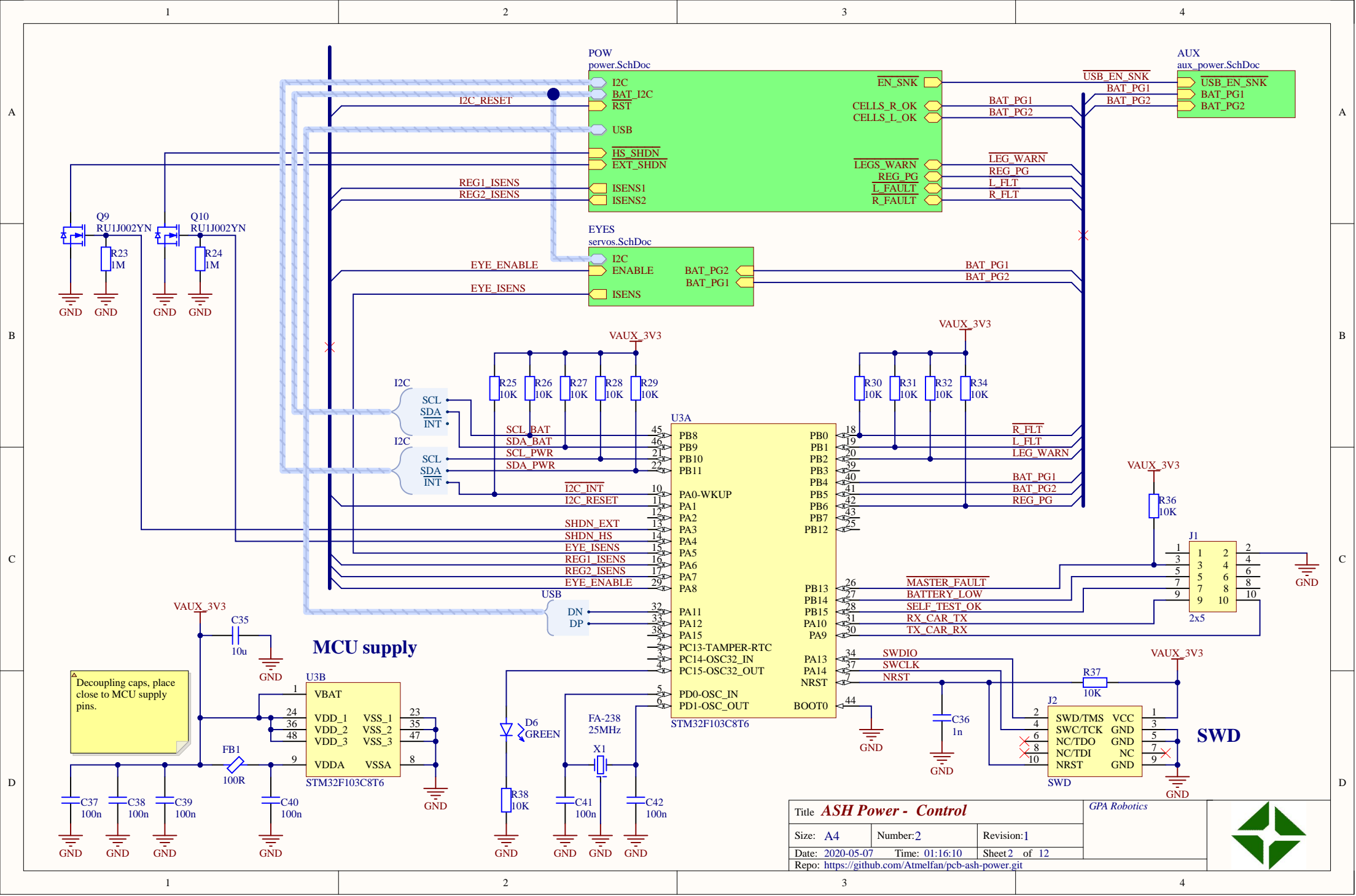
- * Regulate servo voltage from 2 or 3S Li-ion battery packs.
- * Measure voltage and current to servos.
- * Supply the main board with power (not regulated).
- * Provide soft-start functionality for servos.
- * Control power on/off to servos.
- * Protect batteries with UVLO and OVLO.
- * Integrated charger using external USB-C supply.
- * Provide an interface for both main board MCU(I2C and NVM(serial-SCPI).

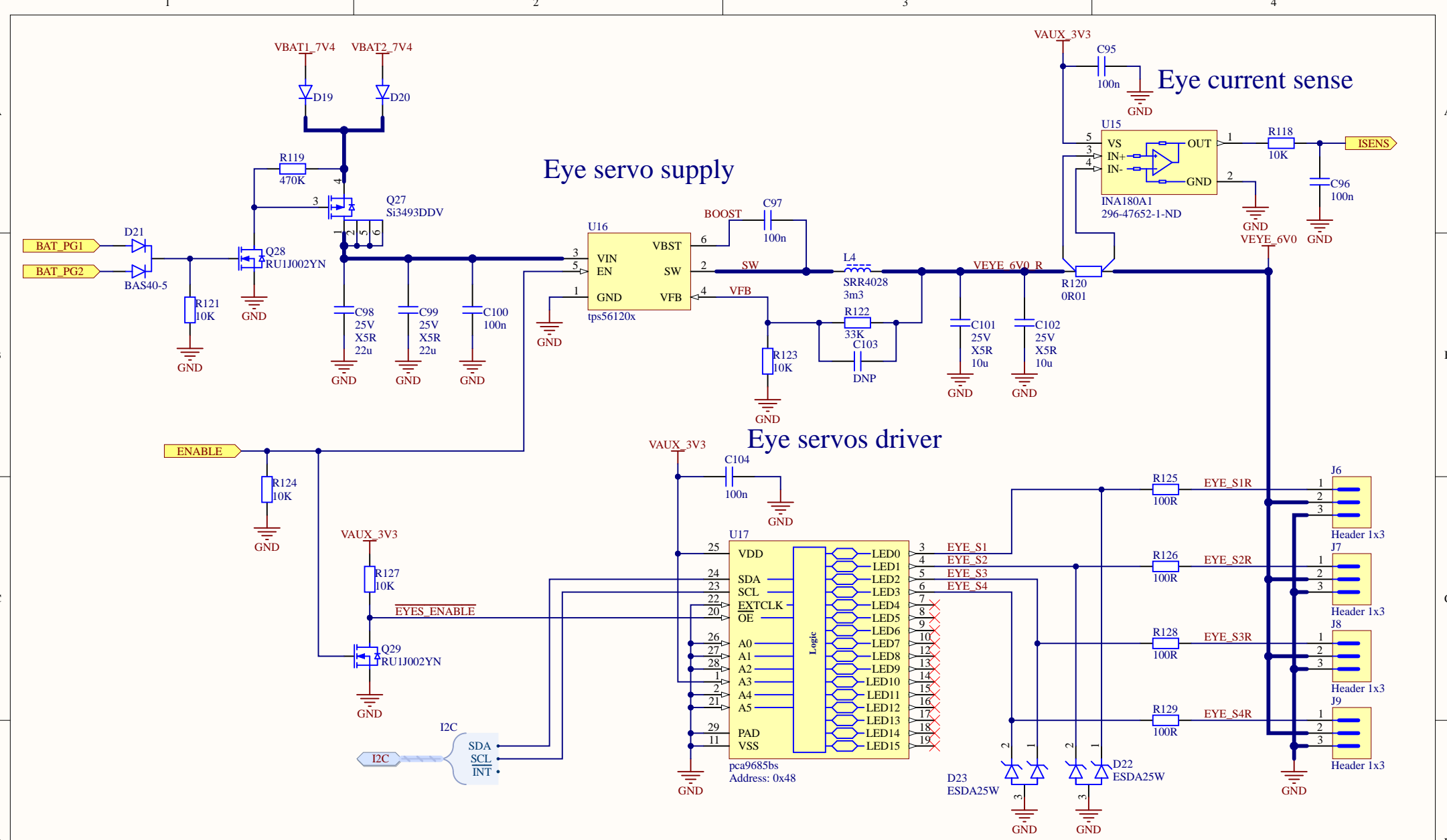
- * Serial interface
- * I2C control address:
 - CONTROL: 0x70
 - EYEs: 0x48
- * I2C slave addresses:
 - USB-PD: 0x28
 - Mux: 0x70 (1,2)
 - Charger: 0x6D
 - Leg-control: 0x60-0x63
 - Leg-isense: 0x70-0x73



- 1 - NC
- 2 - GND
- 3 - \MASTER_FAULT
- 4 - NC
- 5 - \BATTERY_LOW
- 6 - NC
- 7 - SELF_TEST_OK
- 8 - NC
- 9 - RX (Carrier TX)
- 10 - TX (Carrier RX)

1 - SCL
2 - GND
3 - GND
4 - SDA
5 - VS
6 - VS





Title **ASH Power - Eye servos**

GPA Robotics

Size: **A4**

Number: **3**

Revision: **1**

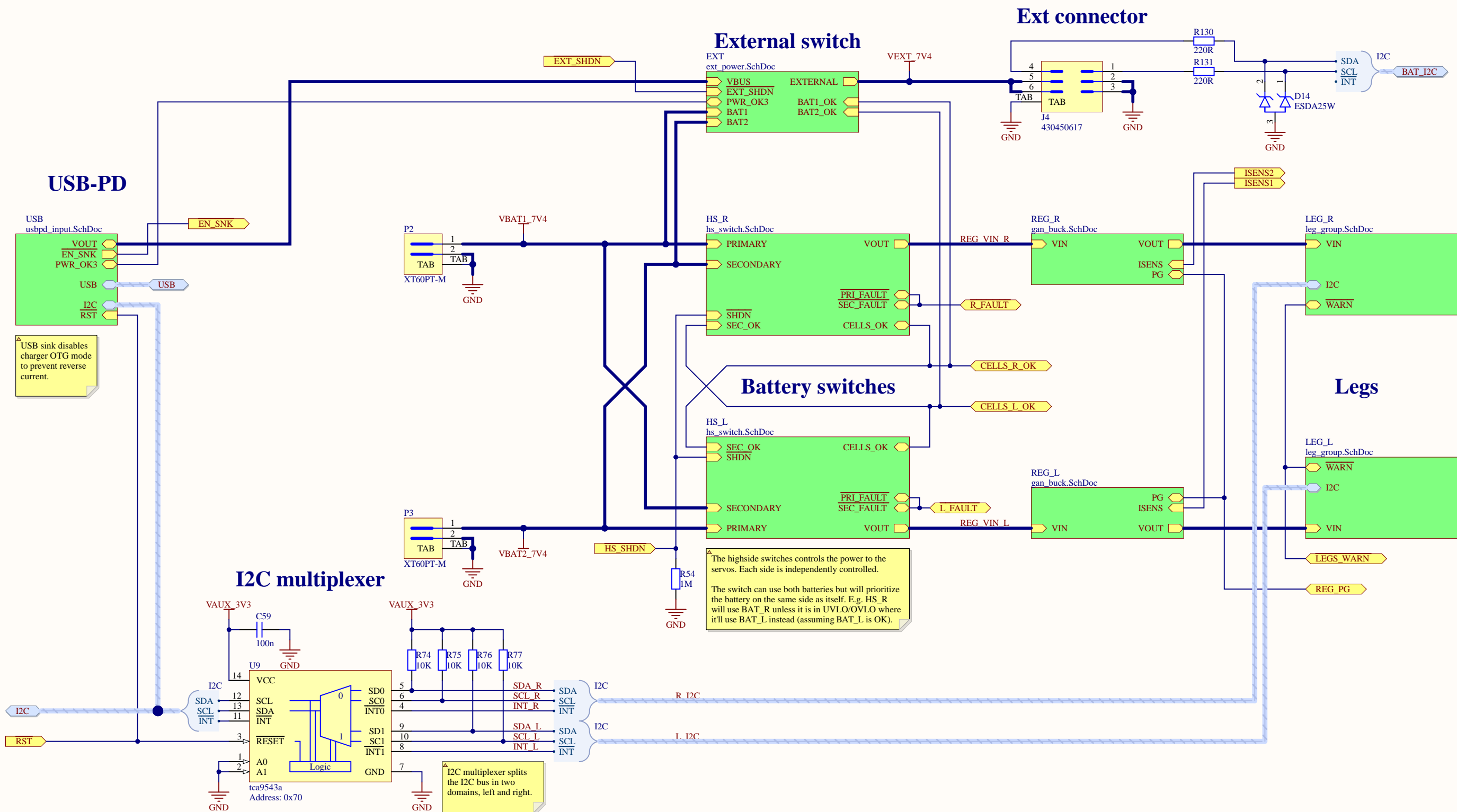
Date: **2020-05-07**

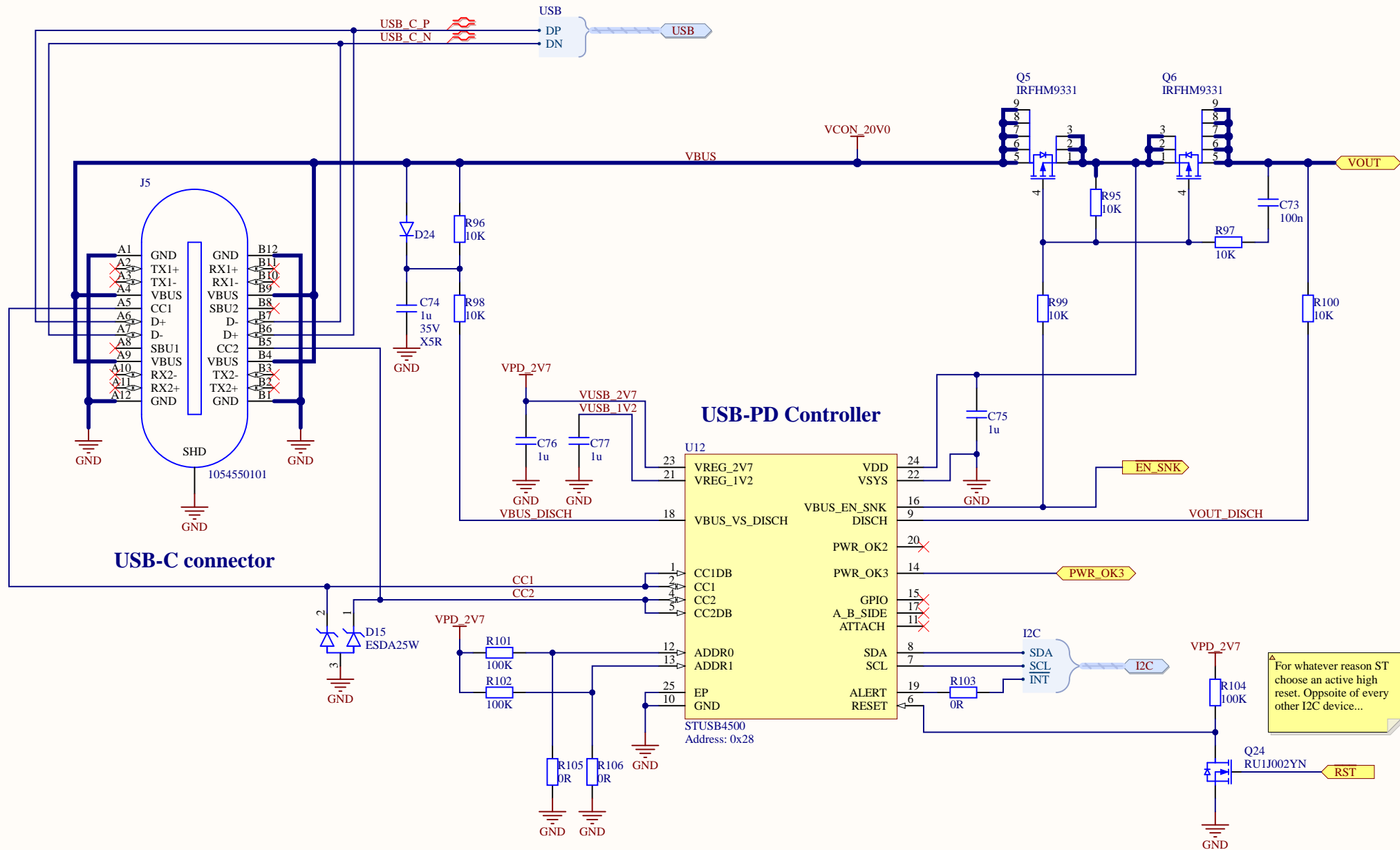
Time: **01:16:10**

Sheet **3** of **12**

Repo: <https://github.com/Atmelfan/pcb-ash-power.git>







Title **ASH Power - USB-PD**

GPA Robotics

Size: **A4**

Number: **5**

Revision: **1**

Date: **2020-05-07**

Time: **01:16:10**

Sheet **5** of **12**

Repo: <https://github.com/Atmelfan/pcb-ash-power.git>



A

B

C

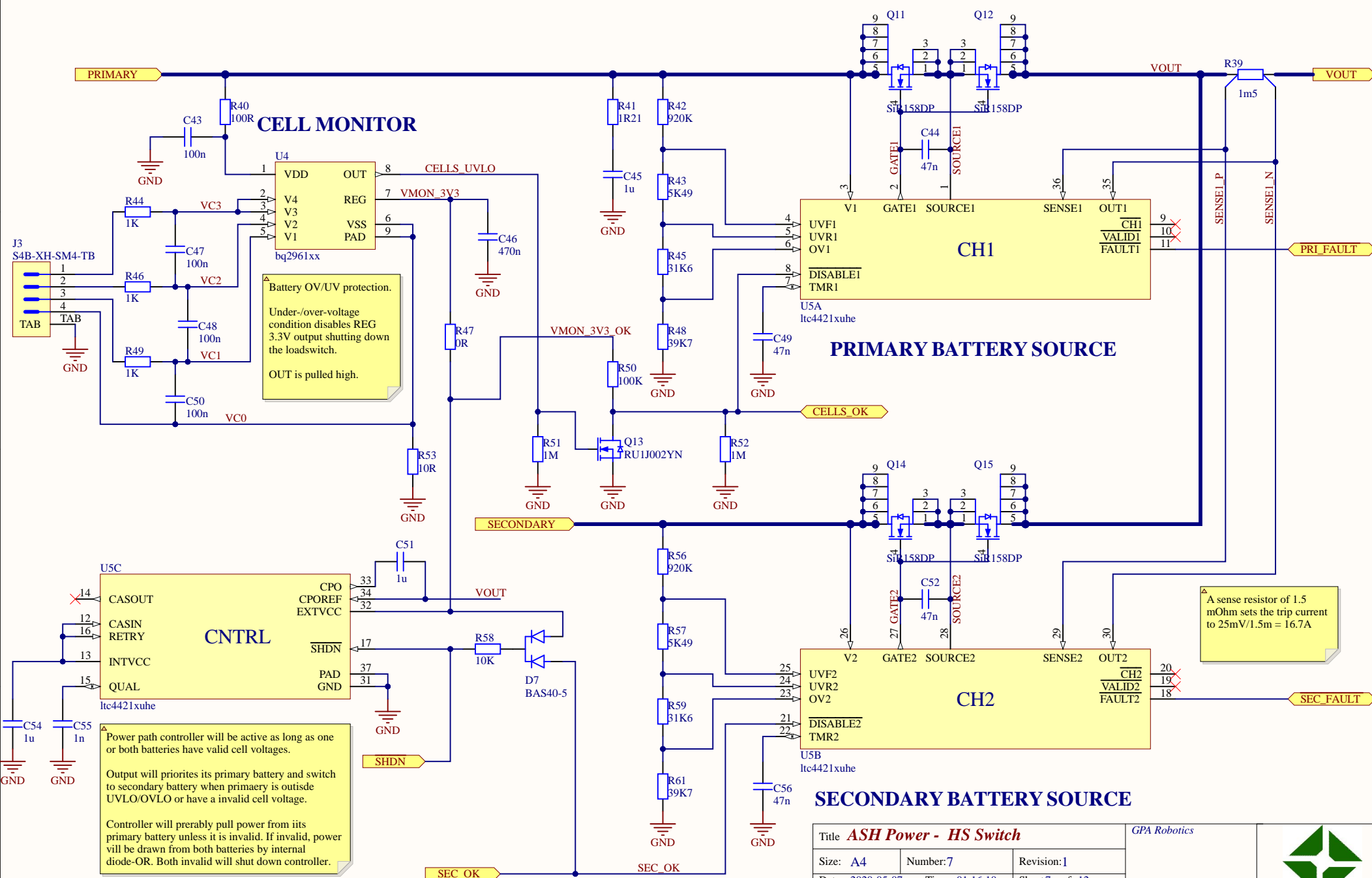
D

A

B

C

D

Title **ASH Power - HS Switch**

GPA Robotics

Size: A4

Number: 7

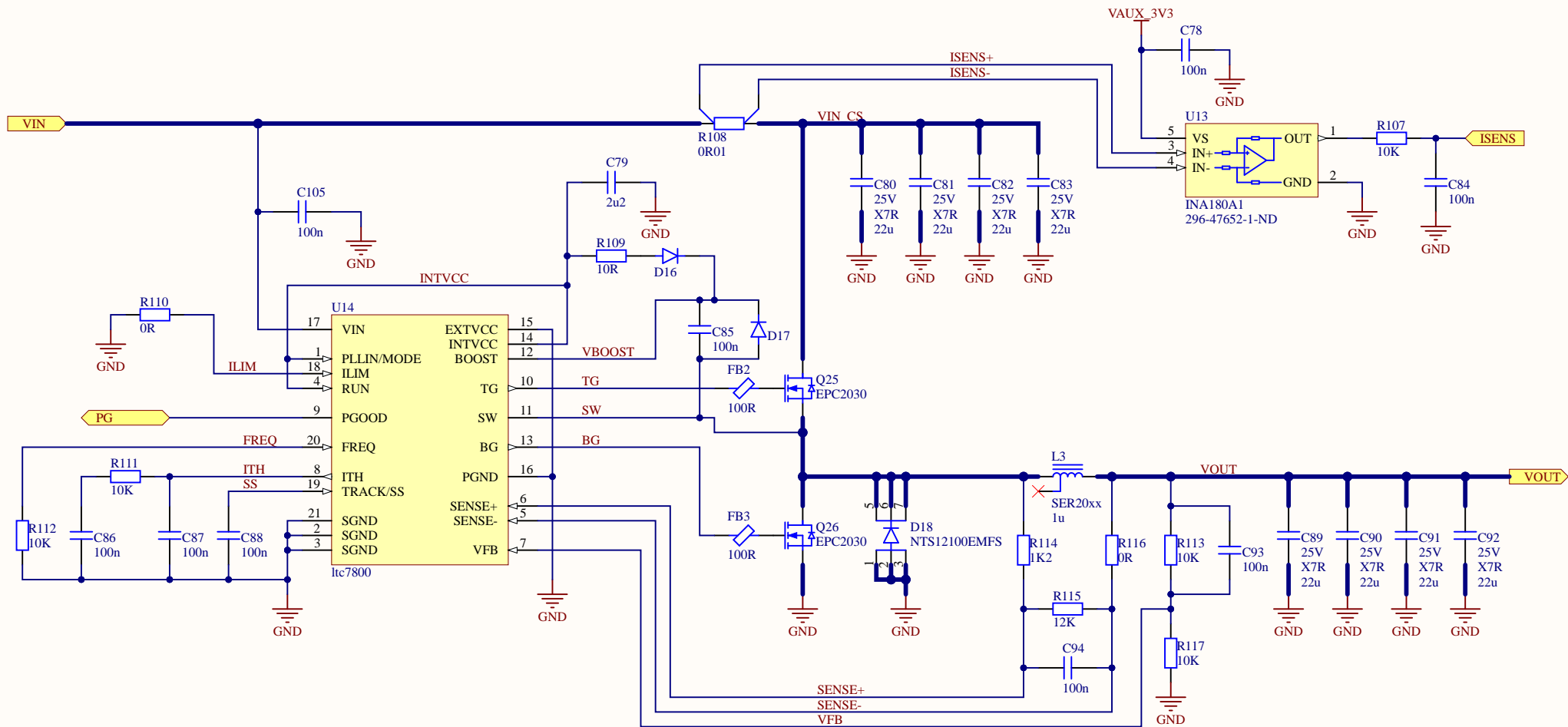
Revision: 1

Date: 2020-05-07

Time: 01:16:10

Sheet 7 of 12

Repo: <https://github.com/Atmelfan/pcb-ash-power.git>



Title **ASH Power - GaN Step-down**

GPA Robotics

Size: **A4**

Number: **8**

Revision: **1**

Date: **2020-05-07**

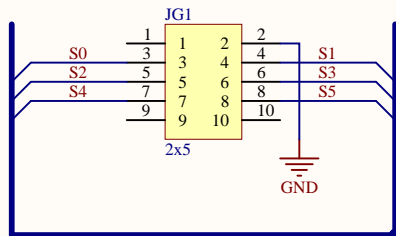
Time: **01:16:10**

Sheet **8** of **12**

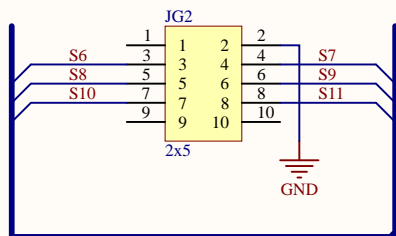
Repo: <https://github.com/Atmelfan/pcb-ash-power.git>



Front pair

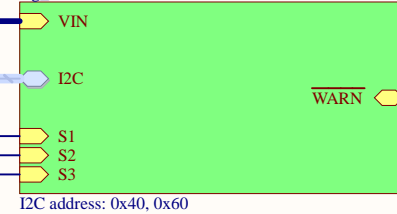


Back pair



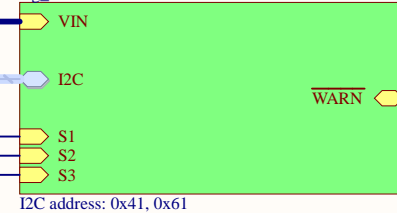
LEG1

leg_module.SchDoc



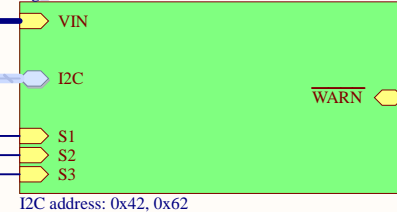
LEG2

leg_module.SchDoc



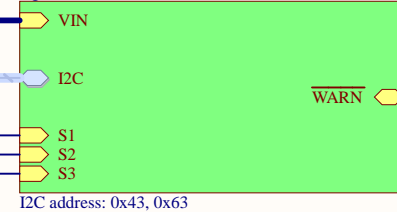
LEG3

leg_module.SchDoc



LEG4

leg_module.SchDoc



The board has two leg groups, right and left. Each group consists of four legs which is further divided into two pairs, front and back. Each pair has a input PWM signal connector (JG1 and JG2).

Each leg has its own independent step-down converter and power monitor (for each of the legs three servos).

Title **ASH Power - Leg group**

GPA Robotics

Size: A4

Number: 9

Revision: 1

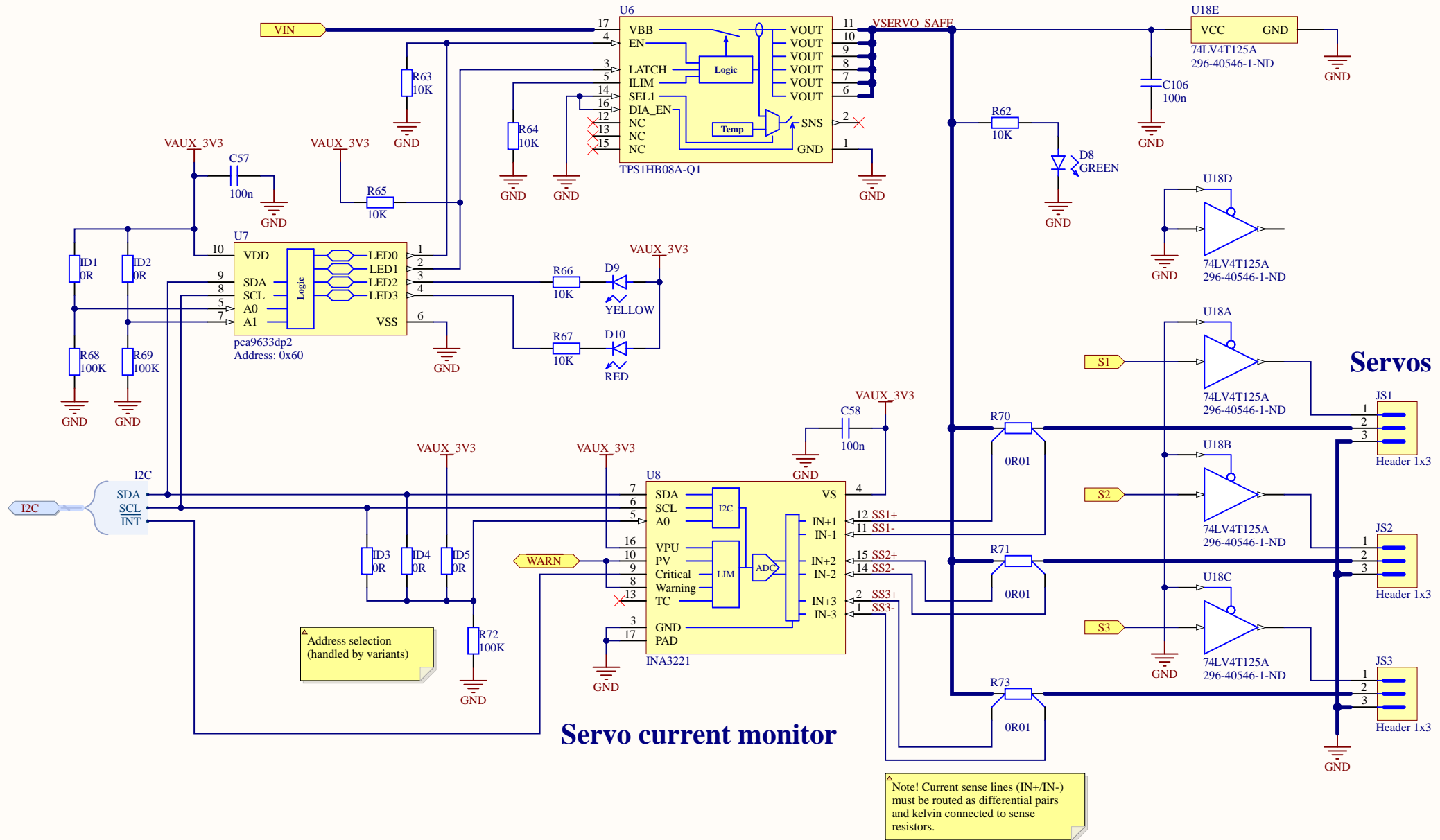
Date: 2020-05-07

Time: 01:16:11

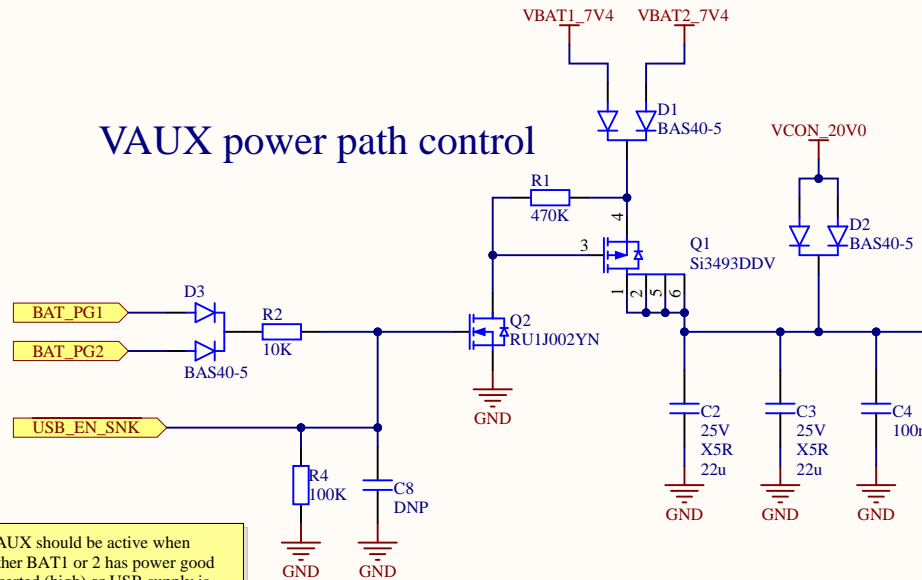
Sheet 9 of 12

Repo: <https://github.com/Atmelfan/pcb-ash-power.git>

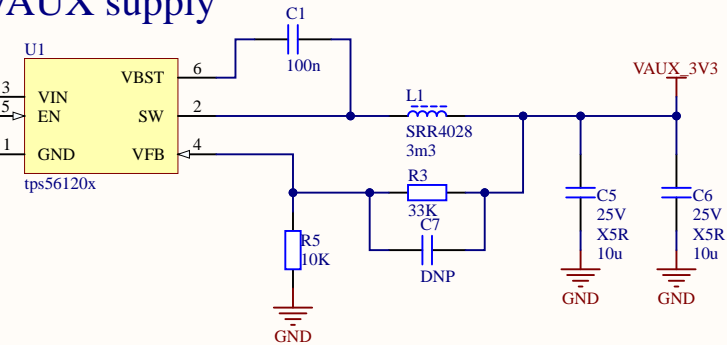




VAUX power path control



VAUX supply



VAUX supplies the control circuitry of the power board.

VAUX should be active when either BAT1 or 2 has power good asserted (high) or USB supply is available.

If USB supply is available (5-20V) batteries should not be used for VAUX (even if VBATn > VBUS).

Title **ASH Power - AUX supply**

GPA Robotics

Size: **A4**

Number: **11**

Revision: **1**

Date: **2020-05-07**

Time: **01:16:11**

Sheet **11** of **12**

Repo: <https://github.com/Atmelfan/pcb-ash-power.git>



A

B

C

D

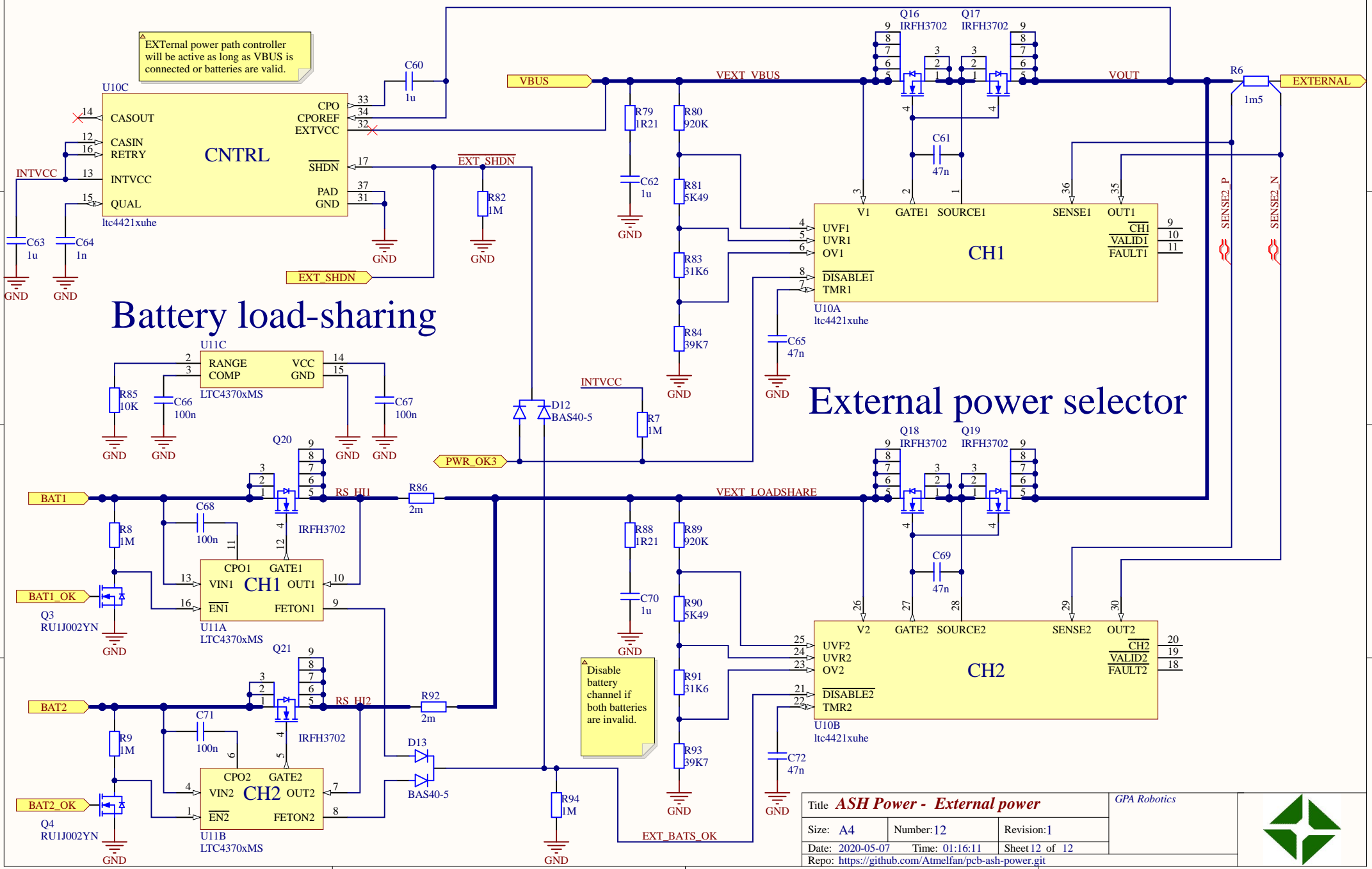
A

B

C

D

EXTERNAL power path controller
will be active as long as VBUS is
connected or batteries are valid.



Title **ASH Power - External power**

GPA Robotics

Size: A4

Number: 12

Revision: 1

Date: 2020-05-07

Time: 01:16:11

Sheet 12 of 12

Repo: <https://github.com/Atmelfan/pcb-ash-power.git>

