

REV2 :
Thermocouple : alimentation 3V3 + level shifters SPI
I2C 5V seulement
USB C Alimentation
Libérer les broches 0 et 1 de l'Arduino pour l'UART
DAC80501 : Vref interne. Ajout gain boucle décharge pour compenser
Boucle de régulation charge
Current shunt monitors low side

-  H1
MountingHole
-  H2
MountingHole
-  H3
MountingHole
-  H4
MountingHole

Carte mémoire	Ampli. thermocouple 1	Ampli. thermocouple 2
SCK - 13	SCK - 13	SCK - 13
MOSI - 11	MISO - 12	MISO - 12
MISO - 12	CS - 10	CS - 7
CS - 5		

DAC Consignes charge
SCK – 13
MOSI – 12
CS – 6

12C

ADC @ 1000000[R/W]
DAC Consigne décharge @ 1001000[R/W]
RTC @ 1101000[R/W]
Contrôleur USB-C @ 0100010[R/W]

GPIO

Contrôle relais D9
Contrôle ventilateur D8
nFAULT contrôleur Bucks D3
Passage CC-CV A0
EN1 (PU) D2
EN2 (PU) A1
LED Charge A2
LED Décharge A3

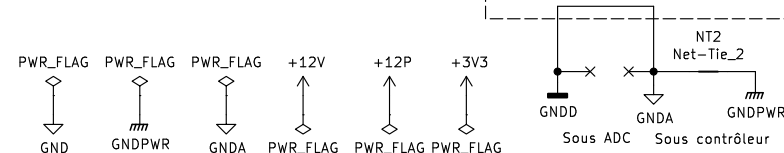
Charge : phases Buck

File: Charge_Phases.kicad_sch

Mesures charges

File: Charge_control.kicad_sch

Après le début du routage,
il y a trop de mélange dans les zones entre
Analog/Digital/Power



Sheet: /
File: open-lion-charger.kicad_sch

Title: *Open Lithium iOn charger*

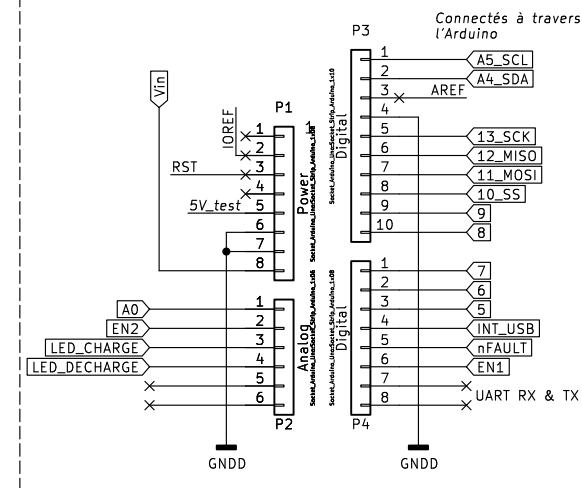
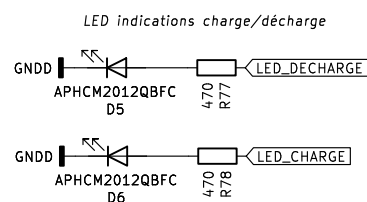
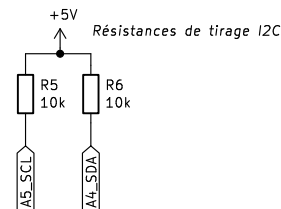
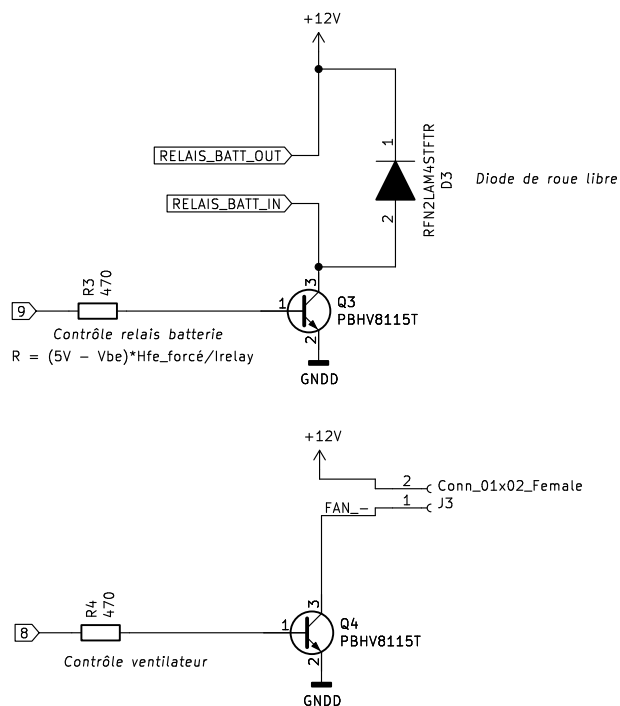
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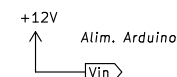
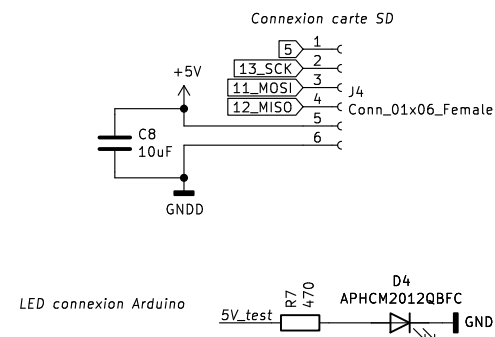
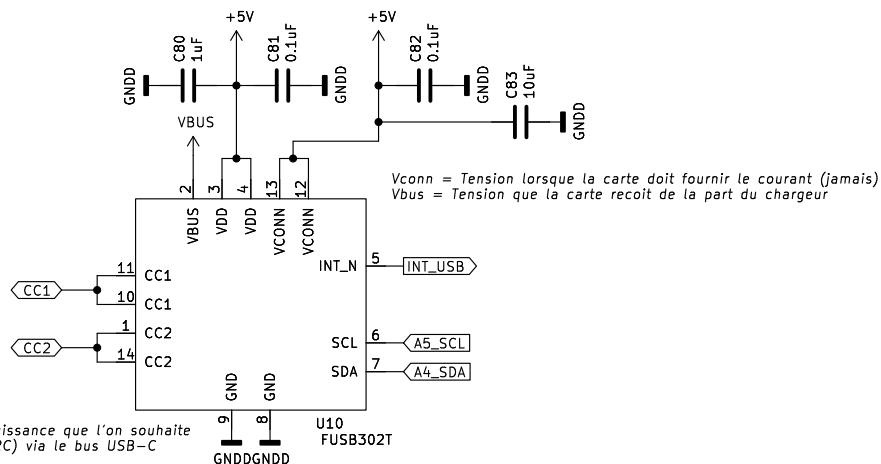
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Rev: B00

Id: 1/8



Contrôleur USB C



Sheet: /Arduino/
 File: Arduino.kicad_sch

Title:

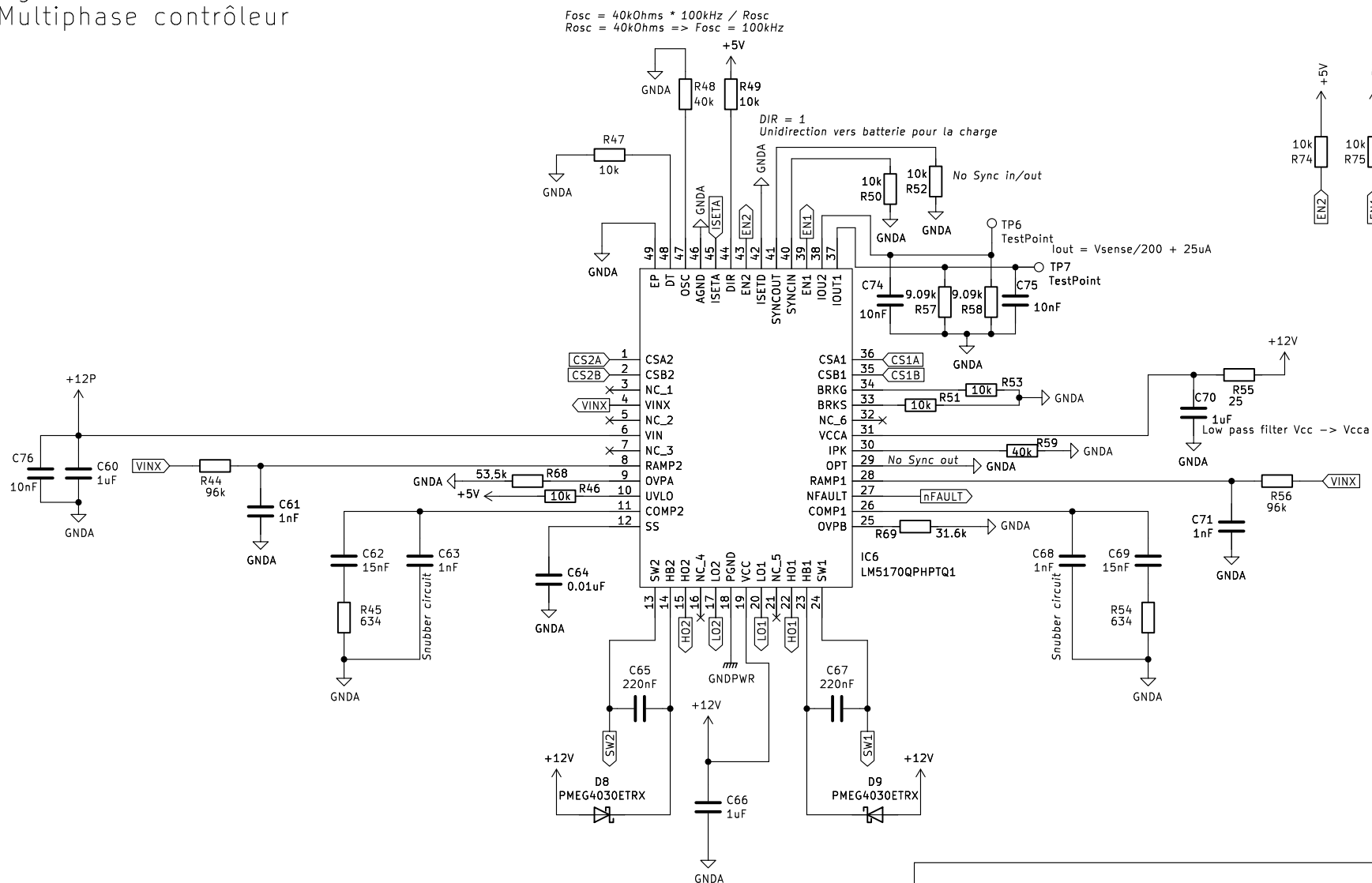
Size: A4 Date:

KiCad E.D.A. 8.0.3

Rev:

Id: 2/8

Charge = Buck
Multiphase contrôleur



Sheet: /Charge/
File: Charge.kicad_sch

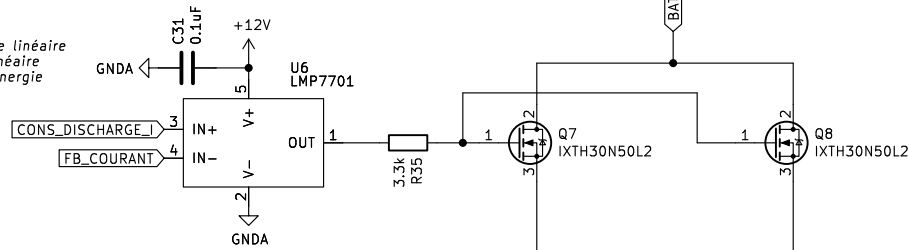
Title:

Size: A4	Date:
KiCad E.D.A. 8.0.3	

Rev:
Id: 3/8

Décharge = MOSFET zone linéaire

MOSFET en zone linéaire
= résistance linéaire
= dissipation énergie

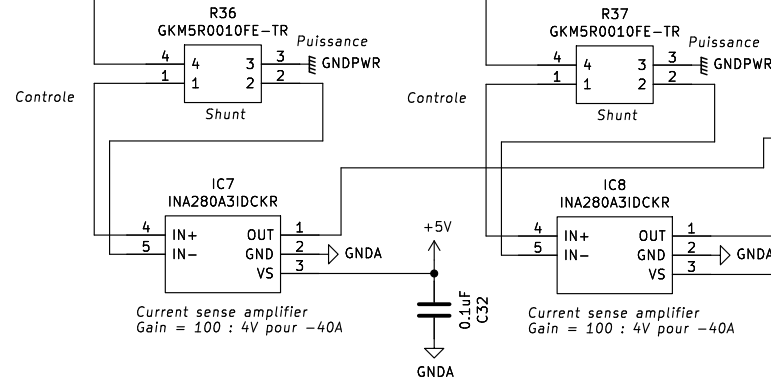


Shunts courant décharge

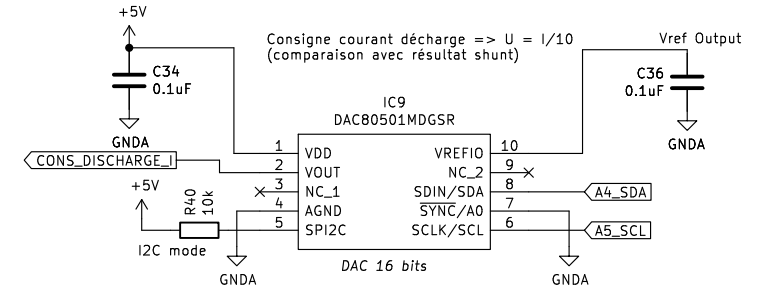
$$\text{Equation}$$

$$U_{\text{shunt}} = I * R_{\text{shunt}} * \text{Gain}$$

$$= I * 0.001 * 100 = I/10$$



Deux résistances de source pour meilleur partage du courant



Consigne courant décharge => U = I/10
(comparaison avec résultat shunt)

IC9
DAC80501MDGSR
DAC 16 bits

Montage non inverseur sommateur
Gain = (2,5) 5
But : I = 4*Vconsigne
Gain doublé pour compenser le Vdac_max = 2.5V

Sheet: /Discharge/
File: Discharge.kicad_sch

Title:

Size: A4

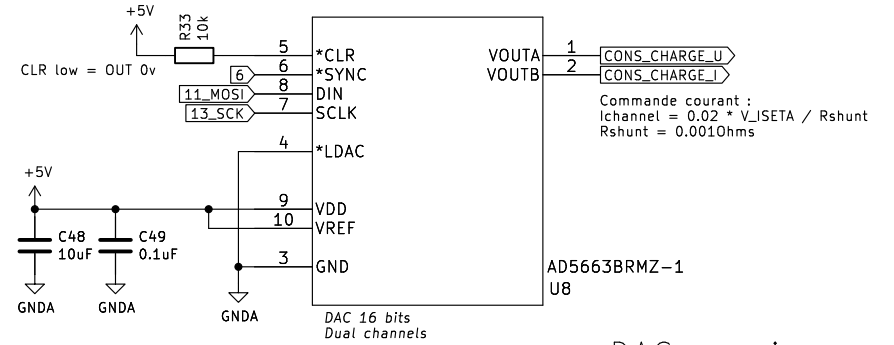
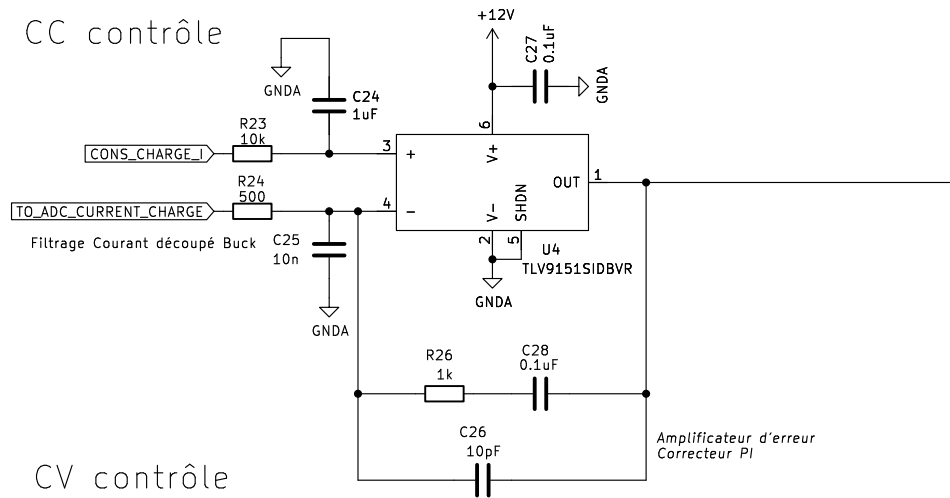
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Date:

Rev:

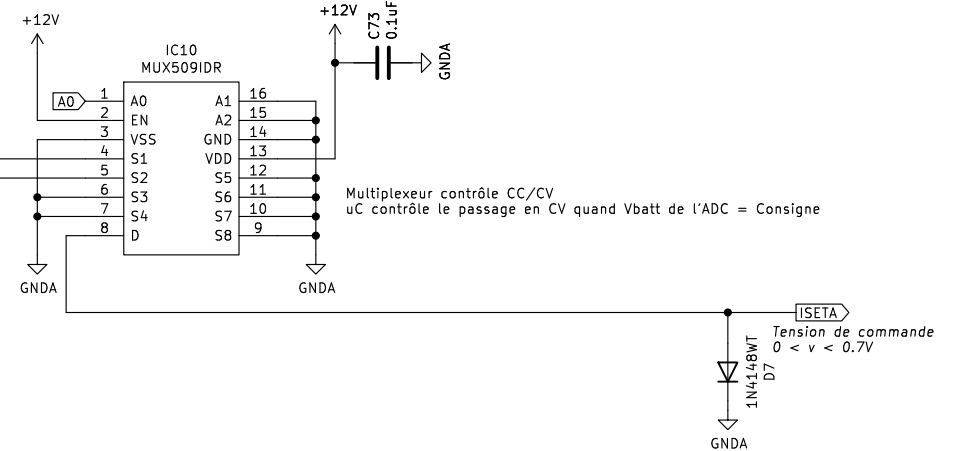
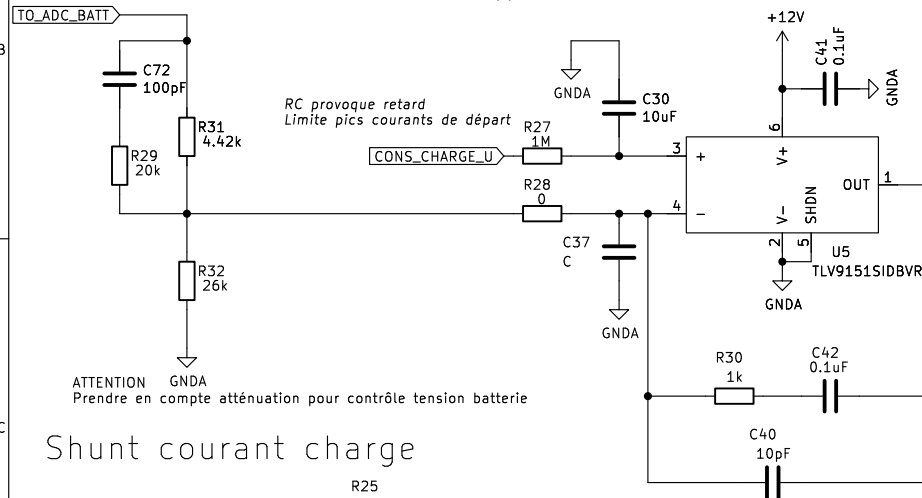
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CC contrôle

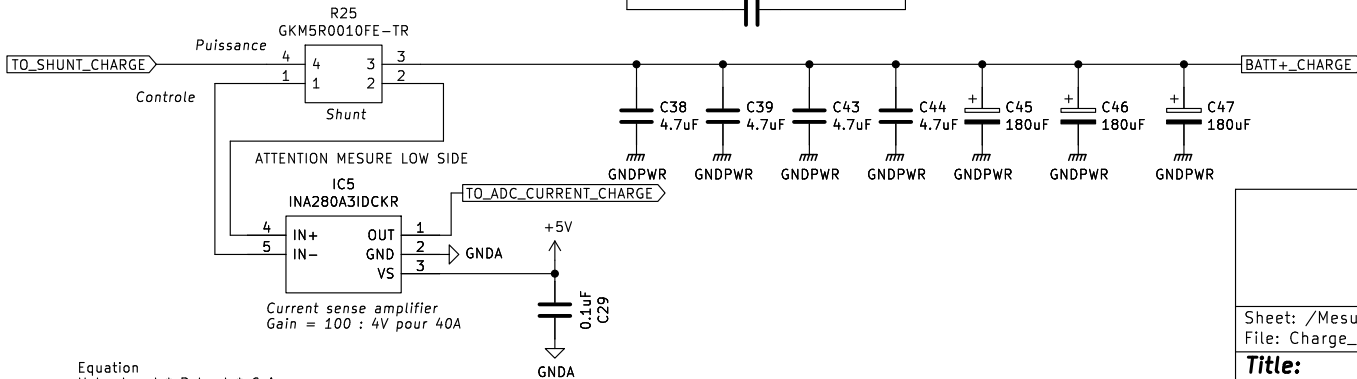


DAC consignes

CV contrôle



Shunt courant charge



Equation
Ushunt = I * Rshunt * Gain
= I * 0.001 * 100 = I/10

Sheet: /Mesures charges/
File: Charge_control.kicad_sch

Title:

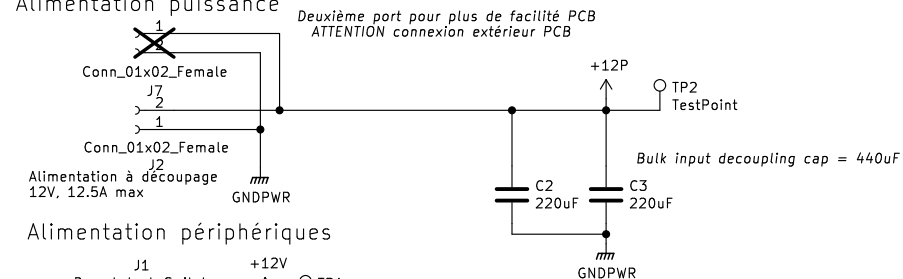
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KiCad E.D.A. 8.0.3

Date:

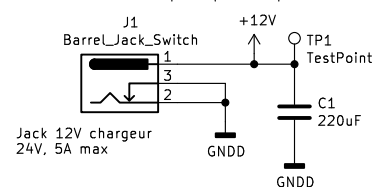
Rev:
Id: 7/8

Entrée alimentation 12V

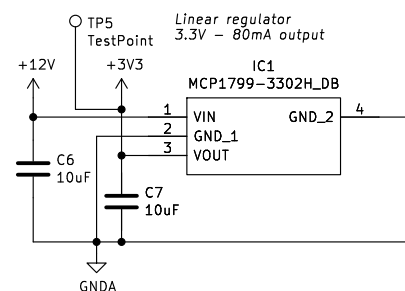
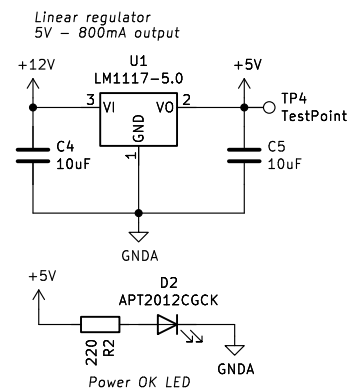
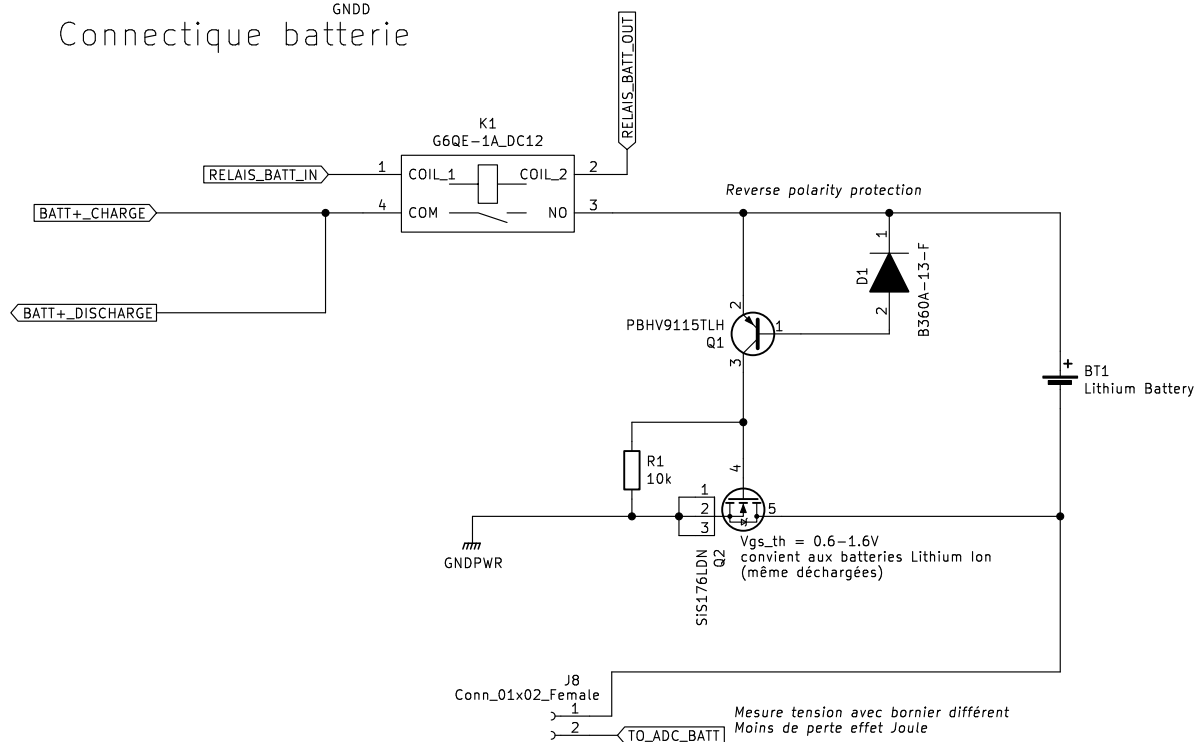
Alimentation puissance



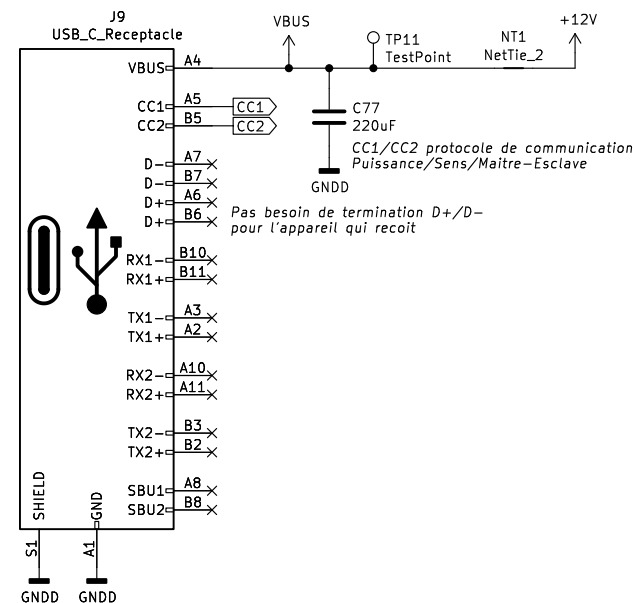
Alimentation périphériques



Connectique batterie



Possibilité d'alimenter la carte avec une seule alimentation USB-C



Sheet: /Power/
File: Power.kicad_sch

Title:

Size: A4

Date:

KiCad E.D.A. 8.0.3

Rev:

Id: 8/8