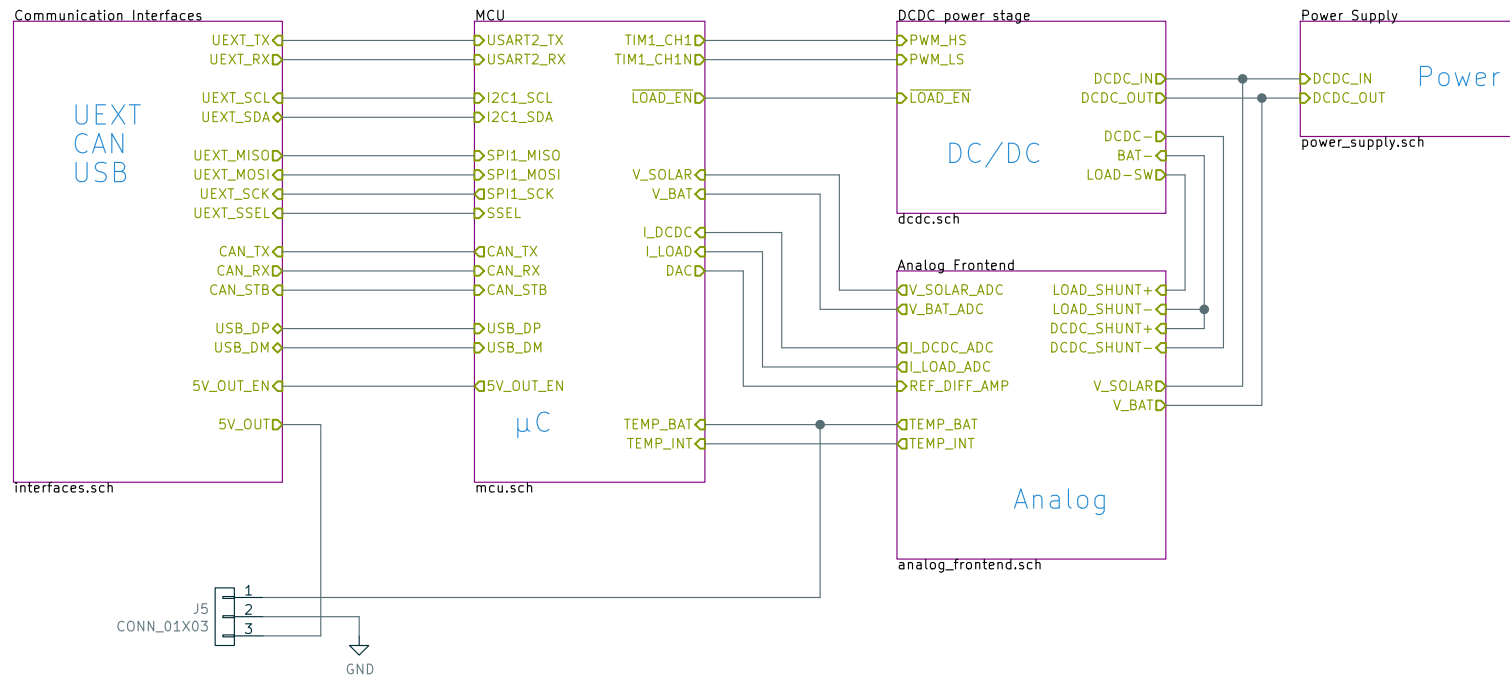


Libre Solar MPPT Charge Controller (20A)



Main Specification

- 20A max. charge current
- 55V max PV input
- 12V or 24V battery output
- External temperature sensor input
- 32bit ARM MCU (STM32F072)
- CAN communication interface RJ45 jacks or screw terminal
- Expandable via Olimex Universal Extension Connector (UEXT) featuring I2C, Serial and SPI interface (e.g. used for display, WIFI communication, etc.)
- DIN rail housing compatible (Phoenix Contact EH series)

- MK1 Mounting_Hole
- MK2 Mounting_Hole
- MK3 Mounting_Hole



Website: <http://libre.solar>

Author: Martin Jäger

Libre Solar

Sheet: /

File: MPPT_charger_20A.sch

Title: MPPT Charger 20A

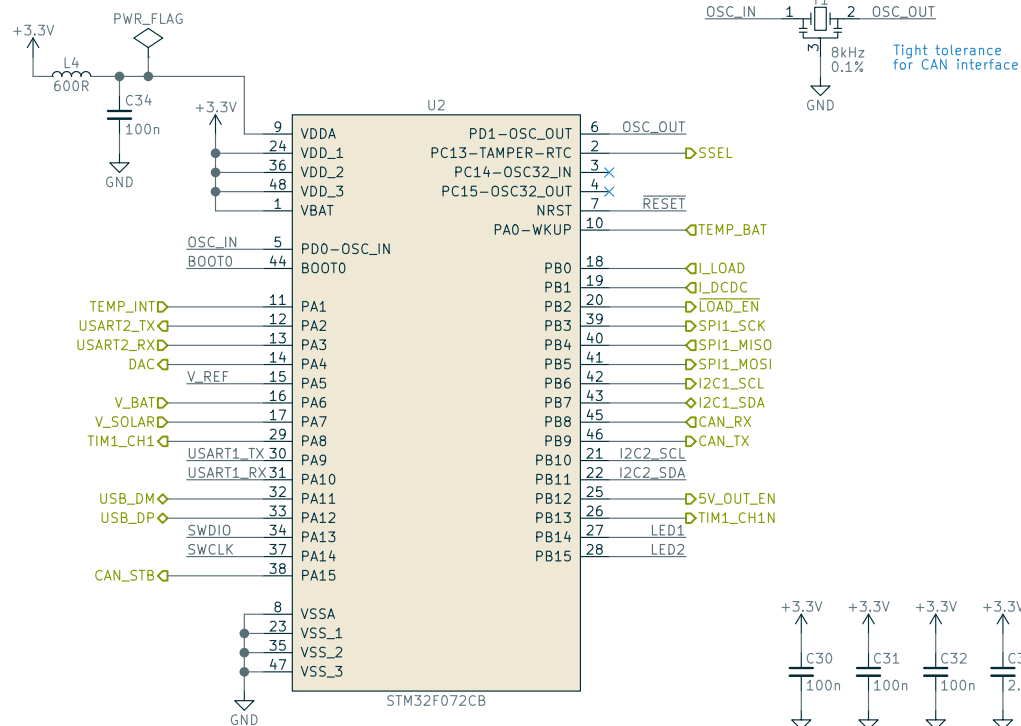
Size: A4 Date: 2017-03-06

KiCad E.D.A. kicad (2017-06-06 revision a18d72b5d)-makepkg

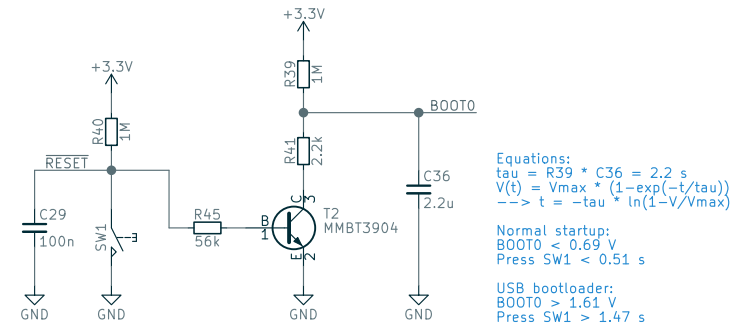
Rev: 0.7

Id: 1/6

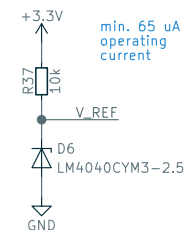
MCU STM32F072



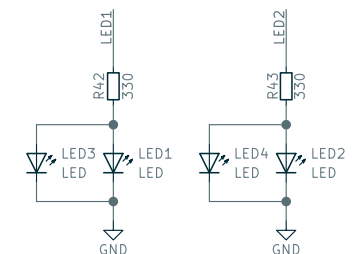
Reset and boot circuit



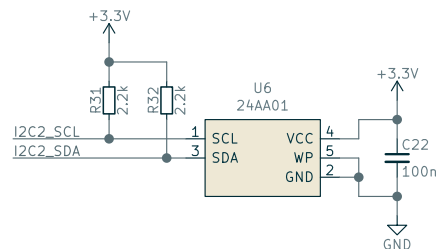
Voltage reference



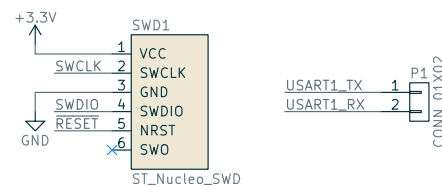
Status LEDs



EEPROM



STM Nucleo SWD and USART



Website: <http://libre.solar>

Author: Martin Jäger

Libre Solar

Sheet: /MCU/

File: mcu.sch

Title: MPPT Charger 20A

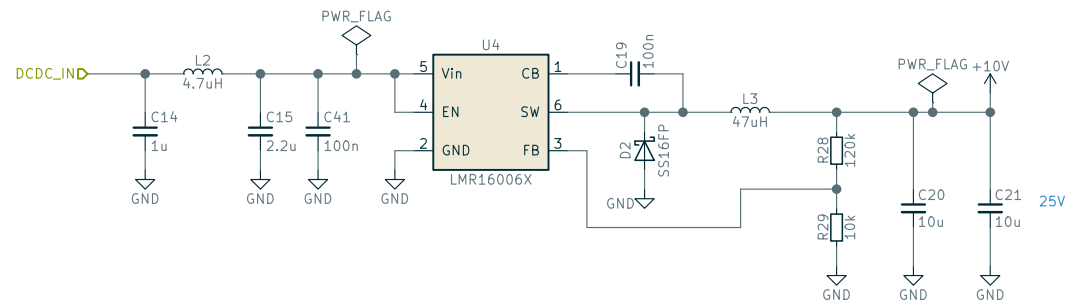
Size: A4 Date: 2017-03-06

KiCad E.D.A. kicad (2017-06-06 revision a18d72b5d)-makepkg

Rev: 0.7

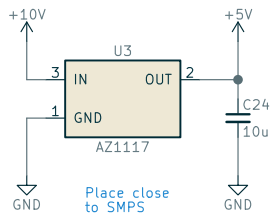
Id: 3/6

Solar/Battery to 10V (SMPS)

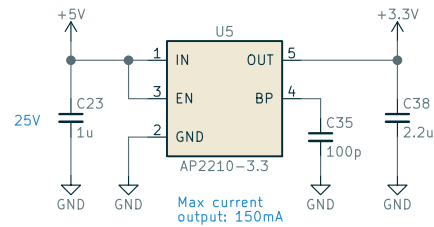


DCDC_IN chosen as input
in to stay alive if solar
goes down for boost mode
operation (battery on high side)

10V to 5V (LDO)



5V to 3.3V (LDO)



Website: <http://libre.solar>

Author: Martin Jäger

Libre Solar

Sheet: /Power Supply/

File: power_supply.sch

Title: MPPT Charger 20A

Size: A4

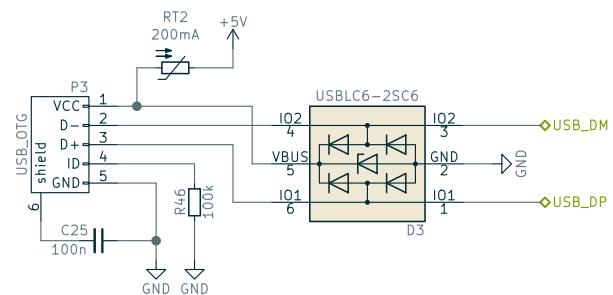
Date: 2017-08-06

Rev: 0.8

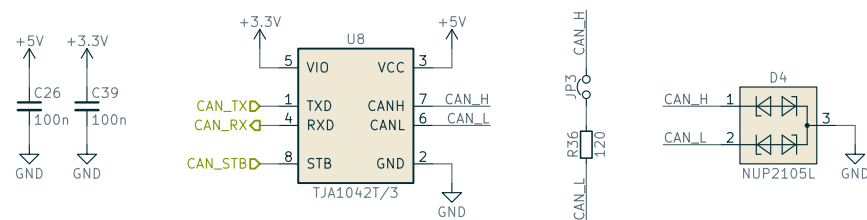
KiCad E.D.A. kicad (2017-06-06 revision a18d72b5d)-makepkg

Id: 4/6

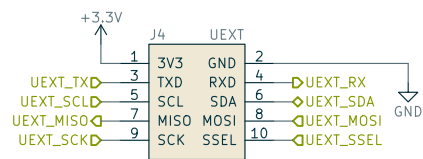
USB connector



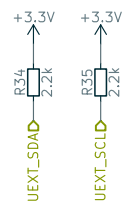
CAN interface



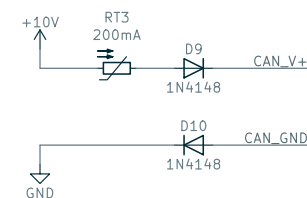
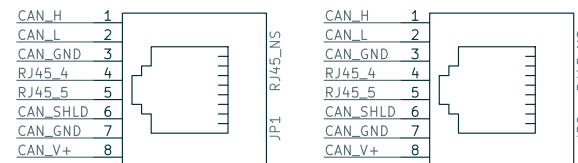
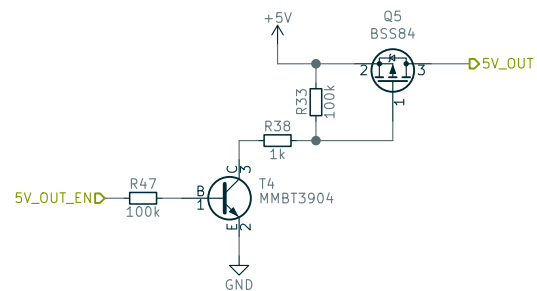
Extension connector



I2C pull-ups



5V signal output



Website: <http://libre.solar>

Author: Martin Jäger

Libre Solar

Sheet: /Communication Interfaces/

File: interfaces.sch

Title: MPPT Charger 20A

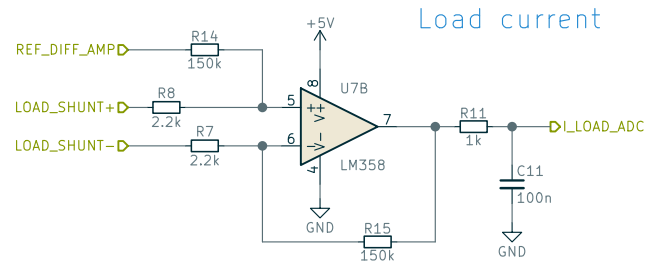
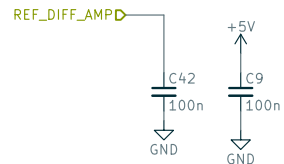
Size: A4 Date: 2017-03-06

KiCad E.D.A. kicad (2017-06-06 revision a18d72b5d)-makepkg

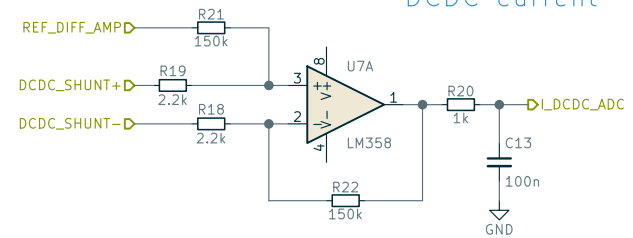
Rev: 0.7

Id: 5/6

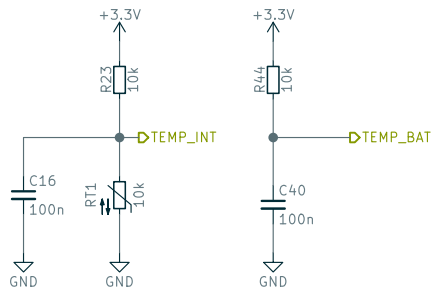
Diff. amp. reference
defined by DAC pin
instead of GND: variable
zero current set point



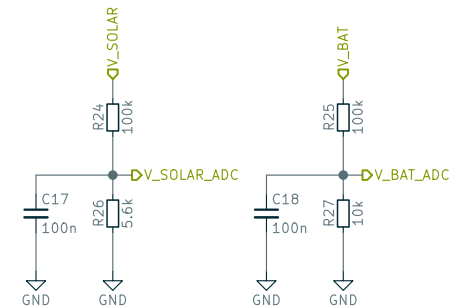
DCDC current



Temperature (ext./int.)



Solar and battery voltage



Website: <http://libre.solar>

Author: Martin Jäger

Libre Solar

Sheet: /Analog Frontend/

File: analog_frontend.sch

Title: MPPT Charger 20A

Size: A4 Date: 2017-03-06

KiCad E.D.A. kicad (2017-06-06 revision a18d72b5d)-makepkg

Rev: 0.7

Id: 6/6

If not stated otherwise, all MLCC 50V X7R