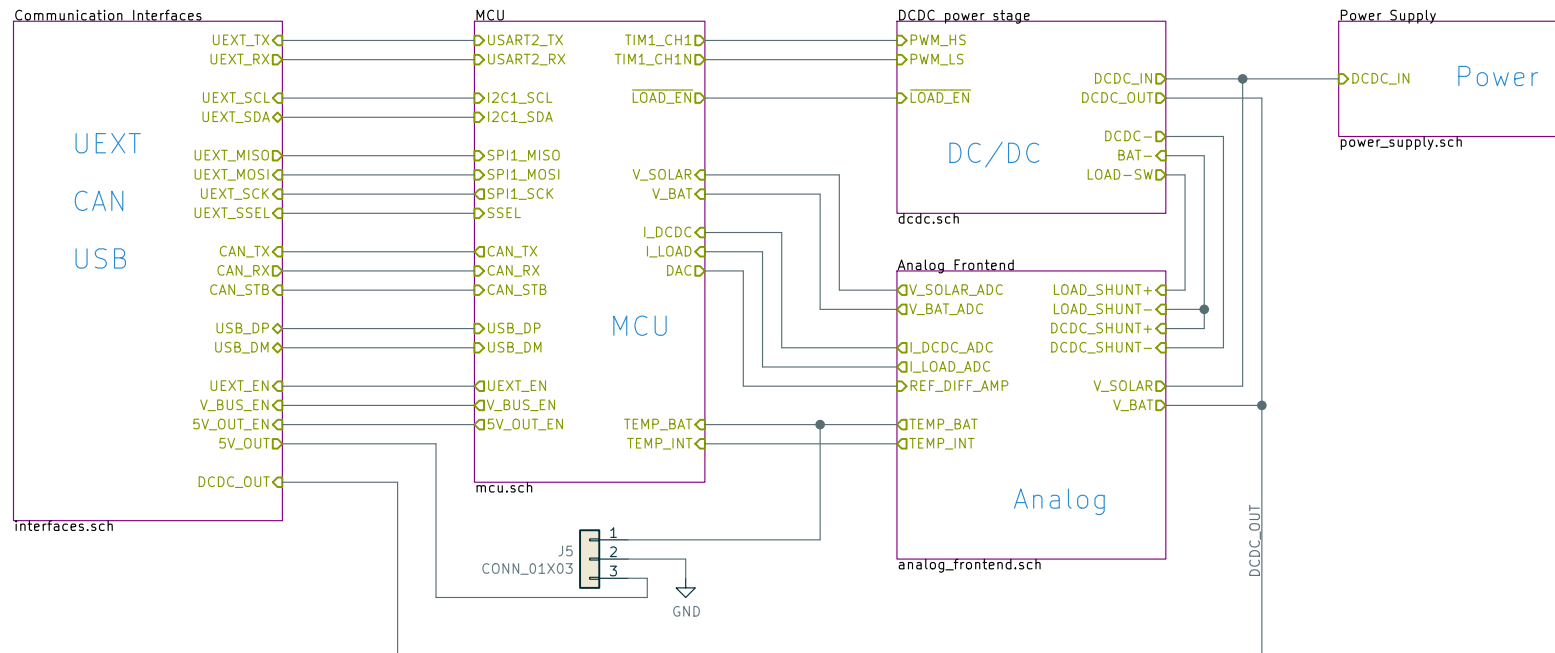


Libre Solar MPPT Charge Controller (20A)




Main Specifications

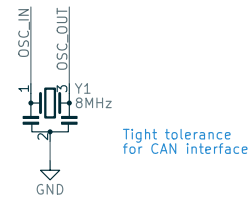
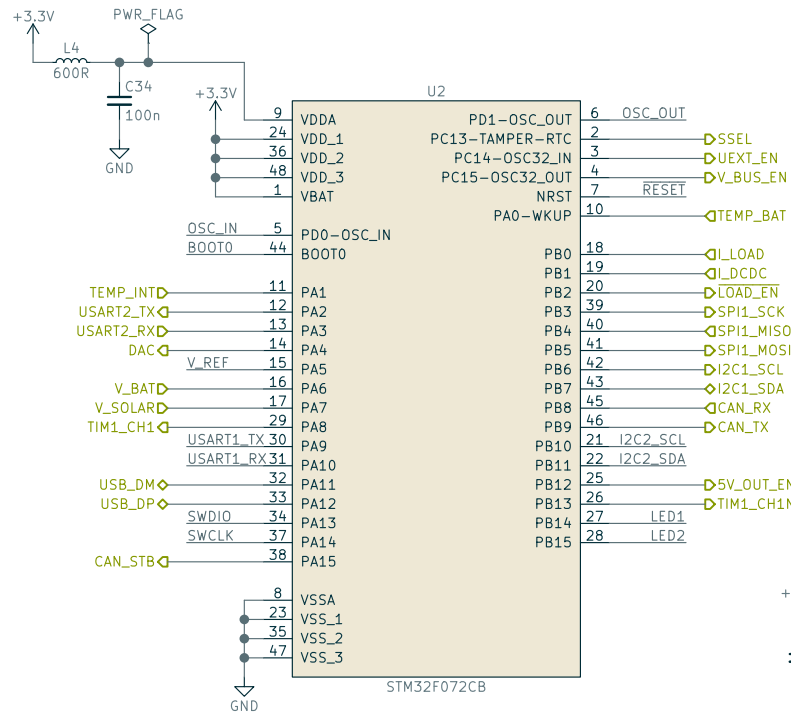
- 12V or 24V battery voltage
- 20A max. charge current
- 55V max. solar input
- External temperature sensor input
- 32bit ARM MCU (STM32F072)
- CAN communication interface RJ45 jacks incl. bus power supply
- Expandable via Olimex Universal Extension Connector (UEXT) featuring I2C, Serial and SPI interface (e.g. used for display, WIFI communication, etc.)
- Prepared for Hammond Mfg. 1591XXCFL enclosure (light pipe of 30.5 mm length should be used for SMD LEDs, e.g. Bivar PLP2-1200)

- MK1 Mounting_Hole
- MK2 Mounting_Hole
- MK3 Mounting_Hole

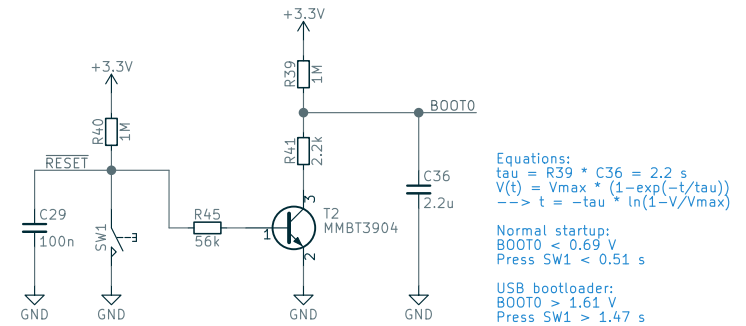


MPPT Charger 20A		 LIBRESOLAR
Libre Solar Website: http://libre.solar		
Sheet: / File: MPPT_charger_20A.sch		
Author: Martin Jäger		
Size: A4	Date: 2018-01-18	Rev: 0.10
KiCad E.D.A. kicad (2017-11-18 revision ff5ee05de)-makepkg		Page: 1/6

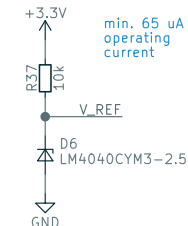
MCU STM32F072



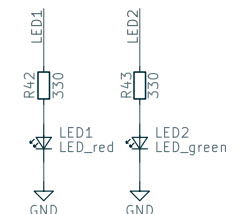
Reset and boot circuit



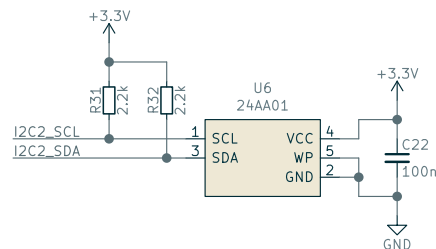
Voltage reference



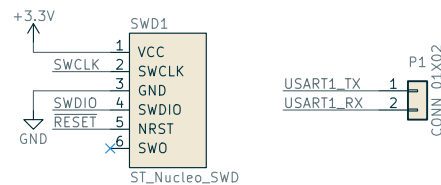
Status LEDs



EEPROM



STM Nucleo SWD and USART



If not stated otherwise, all MLCC 50V X7R

MPPT Charger 20A

Libre Solar
 Website: <http://libre.solar>
 Sheet: /MCU/
 File: mcu.sch

Author: Martin Jäger

Size: A4 Date: 2018-01-18

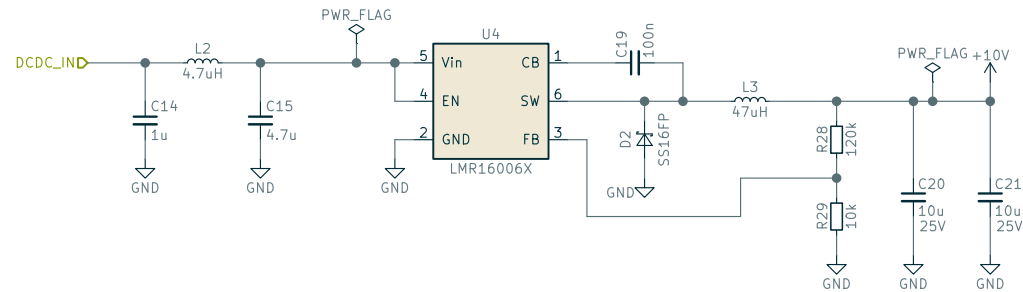
KiCad E.D.A. kicad (2017-11-18 revision ff5ee05de)-makepkg



Rev: 0.10

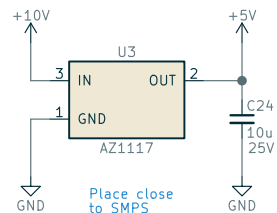
Page: 3/6

Solar/Battery to 10V (SMPS)



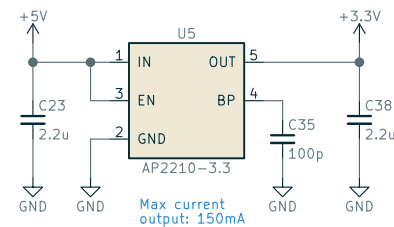
DCDC_IN chosen as input
in to stay alive if solar
goes down for boost mode
operation (battery on high side)

10V to 5V (LDO)




Place close
to SMPS

5V to 3.3V (LDO)

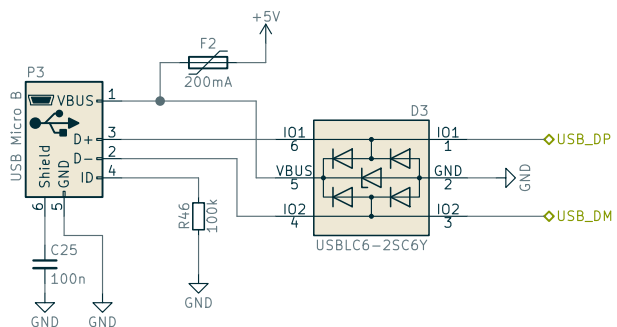


Max current
output: 150mA

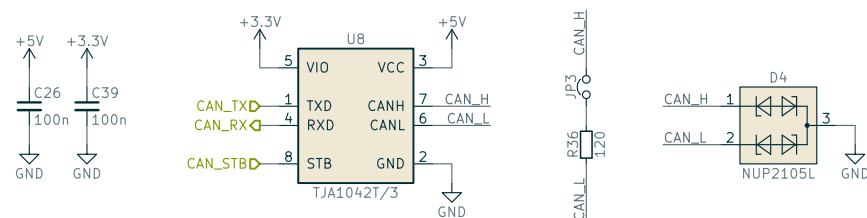
MPPT Charger 20A		 LIBRESOLAR
Libre Solar Website: http://libre.solar		
Sheet: /Power Supply/ File: power_supply.sch		
Author: Martin Jäger		
Size: A4	Date: 2018-01-18	Rev: 0.10
KiCad E.D.A. kicad (2017-11-18 revision ff5ee05de)-makepkg		Page: 4/6

If not stated otherwise, all MLCC 50V X7R

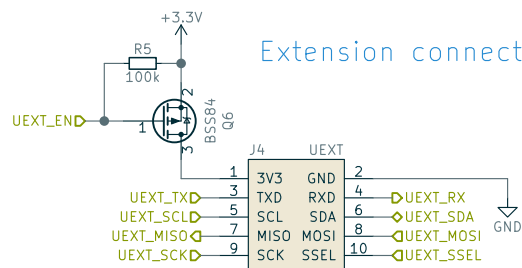
USB connector



CAN interface



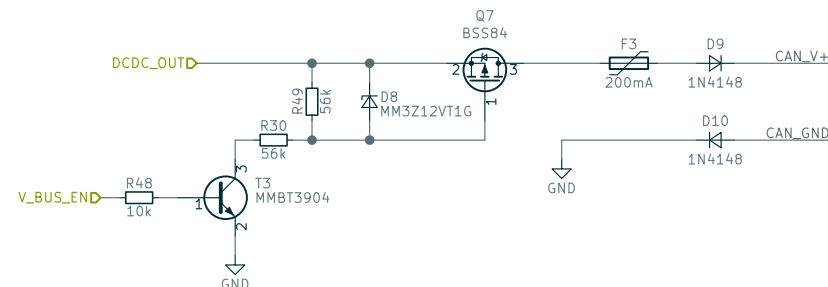
Extension connector



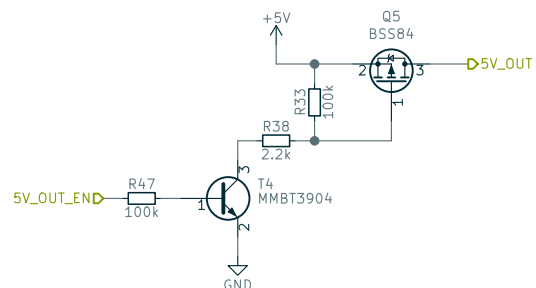
I2C pull-ups



Bus power supply



5V signal output



MPPT Charger 20A



LIBRESOLAR

Website: <http://libre.solar>

Sheet: /Communication Interfaces/
File: interfaces.sch

Author: Martin Jäger

Size: A4 Date: 2018-01-18

Rev: 0.10

KiCad E.D.A. kicad (2017-11-18 revision ff5ee05de)-makepkg

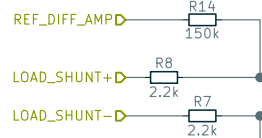
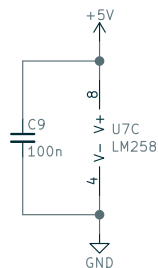
Page: 5/6

If not stated otherwise, all MLCC 50V X7R

QREF_DIFF_AMP



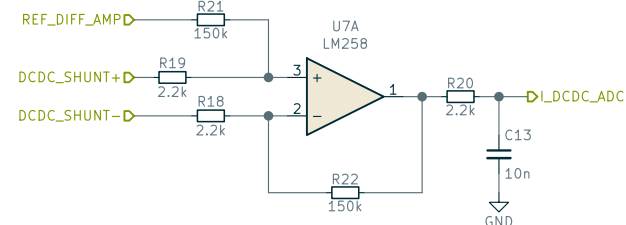
Diff. amp. reference
defined by DAC pin
instead of GND: variable
zero current set point



Load current

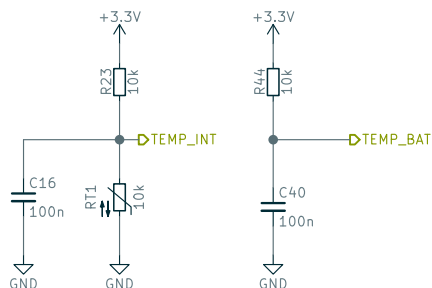
I_LOAD_ADC

DCDC current

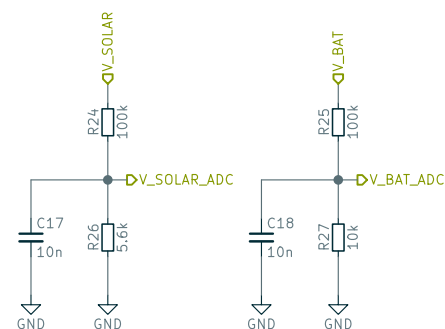


I_DCDC_ADC

Temperature (ext./int.)



Solar and battery voltage



MPPT Charger 20A

Libre Solar
Website: <http://libre.solar>
Sheet: /Analog Frontend/
File: analog_frontend.sch

Author: Martin Jäger

Size: A4 Date: 2018-01-18

KiCad E.D.A. kicad (2017-11-18 revision ff5ee05de)-makepkg

LIBRESOLAR

Rev: 0.10

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If not stated otherwise, all MLCC 50V X7R