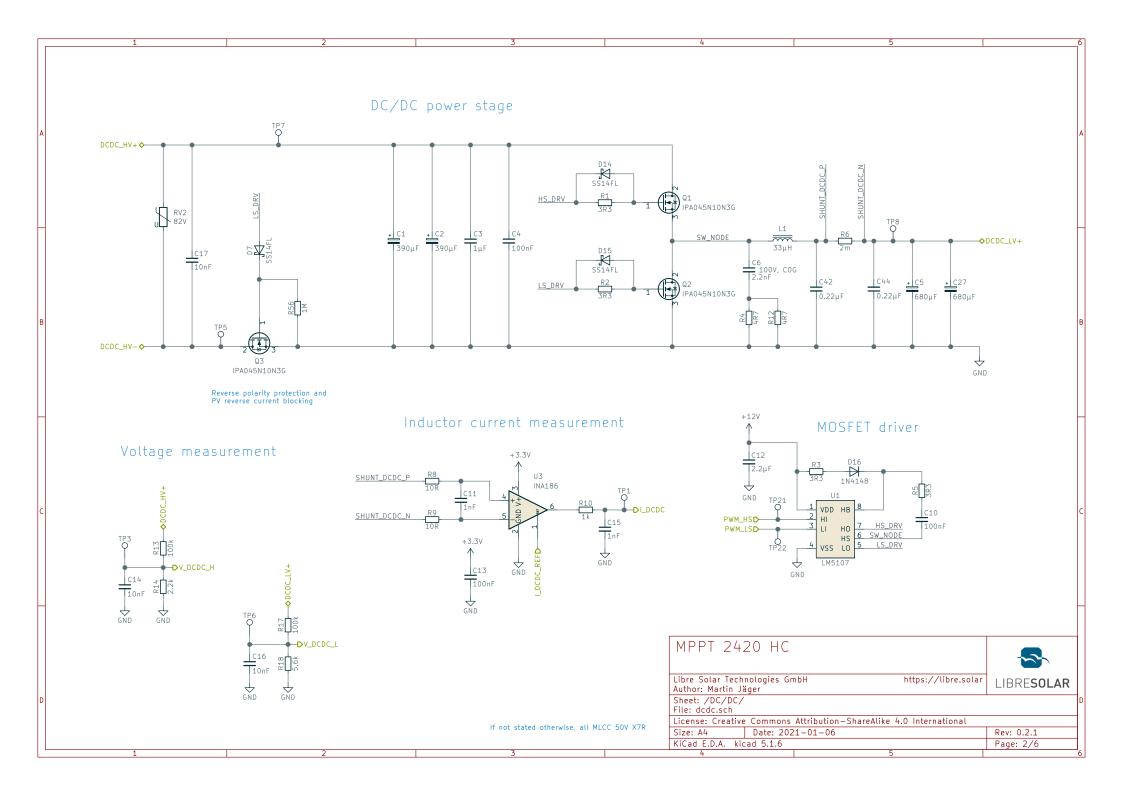
MPPT charge controller with HS load switch and CAN F1 25A VBUS PWR_FLAG Sheet: DC/DC J2 MKDS 5/ 2-9.5 OCDC_HV+ DCDC_LV+ Fuse_Holder MPPT: 60V 10A ♥ Ø Battery: 12V/24V 20A DCDC_HV-Sheet: MCU V_DCDC_HD ADC1_IN15 V_DCDC_LD DADC1 IN12 I_DCDCD DADC12_IN1 I_DCDC_REF DAC1 Sheet: Load switch aTIM1_CH1 PWM_HSC PWM_LS< TIM1_CH1N LOAD+ 1 J3 MKDS 5/ 2-9,5 OCDC_LV+ File: dcdc.sch Load output: 20A dI_LOAD ADC12_IN2 CAN_H I_LOAD_COMP COMP2_INP CAN L GPIOB_2D LOAD_DIS MEAS_LV+ MEAS_LV+ GPIOB_10D PWR_INFO CP_OUT Monitored peripheral power supply (e.g. for GSM board) File: load-switch.sch Sheet: CAN CAN_H CAN_TX< TFDCAN1_TX CAN_L CAN_RXD FDCAN1_RX Sheet: Power supply CAN_PWR1 DCDC_HV+ CP_OUTD CAN_PWR2 CAN_STB C GPIOB_11 CAN GND DCDC_LV+ CP_PWM TIM8_CH2C File: can.sch File: mcu.sch File: power-supply.sch MPPT 2420 HC O FID1 O FID3 Libre Solar Technologies GmbH Website: https://libre.solar LIBRE**SOLAR** Author: Martin Jäger Sheet: / File: mppt-2420-hc.sch License: Creative Commons Attribution-ShareAlike 4.0 International Size: A4 Date: 2021-01-06 Rev: 0.2.1 KiCad E.D.A. kicad 5.1.6 Page: 1/6



Supply rail selection

HV/LV side to 3.3V (SMPS)

ΕN

GND

LMR16006X

СВ

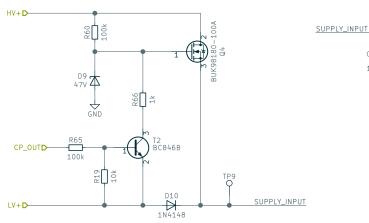
SW

C19

GND

C18

GND



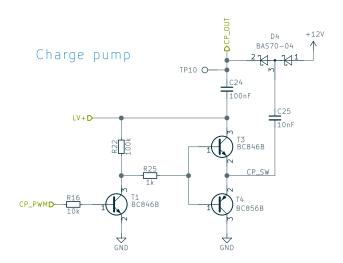
LV+D

1N4148

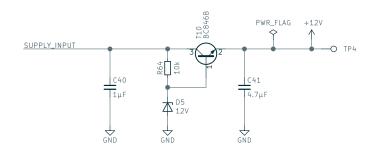
Some applications (e.g. Li-ion batteries) require an internal power supply from the high voltage side (e.g. solar panel input).

The source follower with Q4 limits the supply input below 60V.

 $\ensuremath{\mathsf{T2}}$ selects LV+ as supply to increase efficiency as soon as the charge pump is on.



12V MOSFET driver supply voltage (emitter follower)



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MPPT 2420 HC

Libre Solar Technologies GmbH Author: Martin Jäger

Sheet: /Power supply/
File: power-supply.sch

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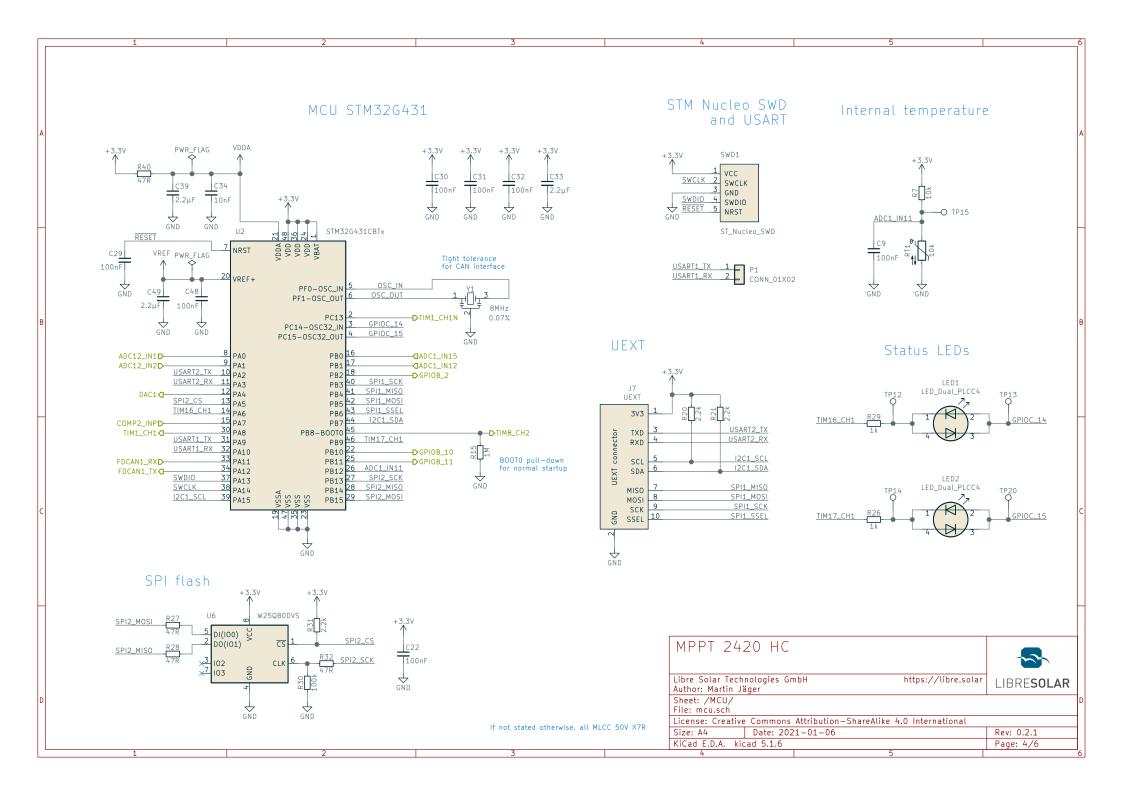
PWR_FLAG TP11

GND

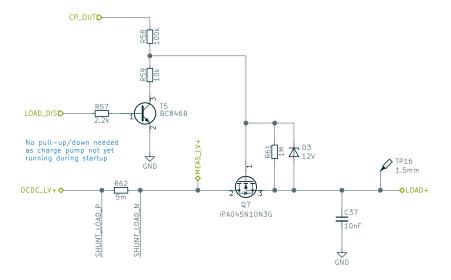
GND

GND

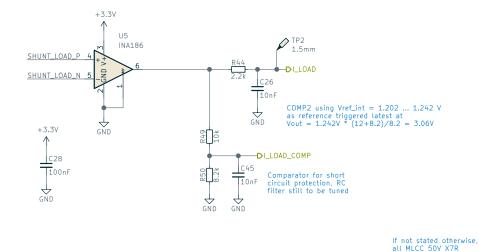
If not stated otherwise, all MLCC 50V X7R



High-side load switch



Load current monitoring



MPPT 2420 HC

Libre Solar Technologies GmbH
Author: Martin Jäger

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File: load-switch.sch
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