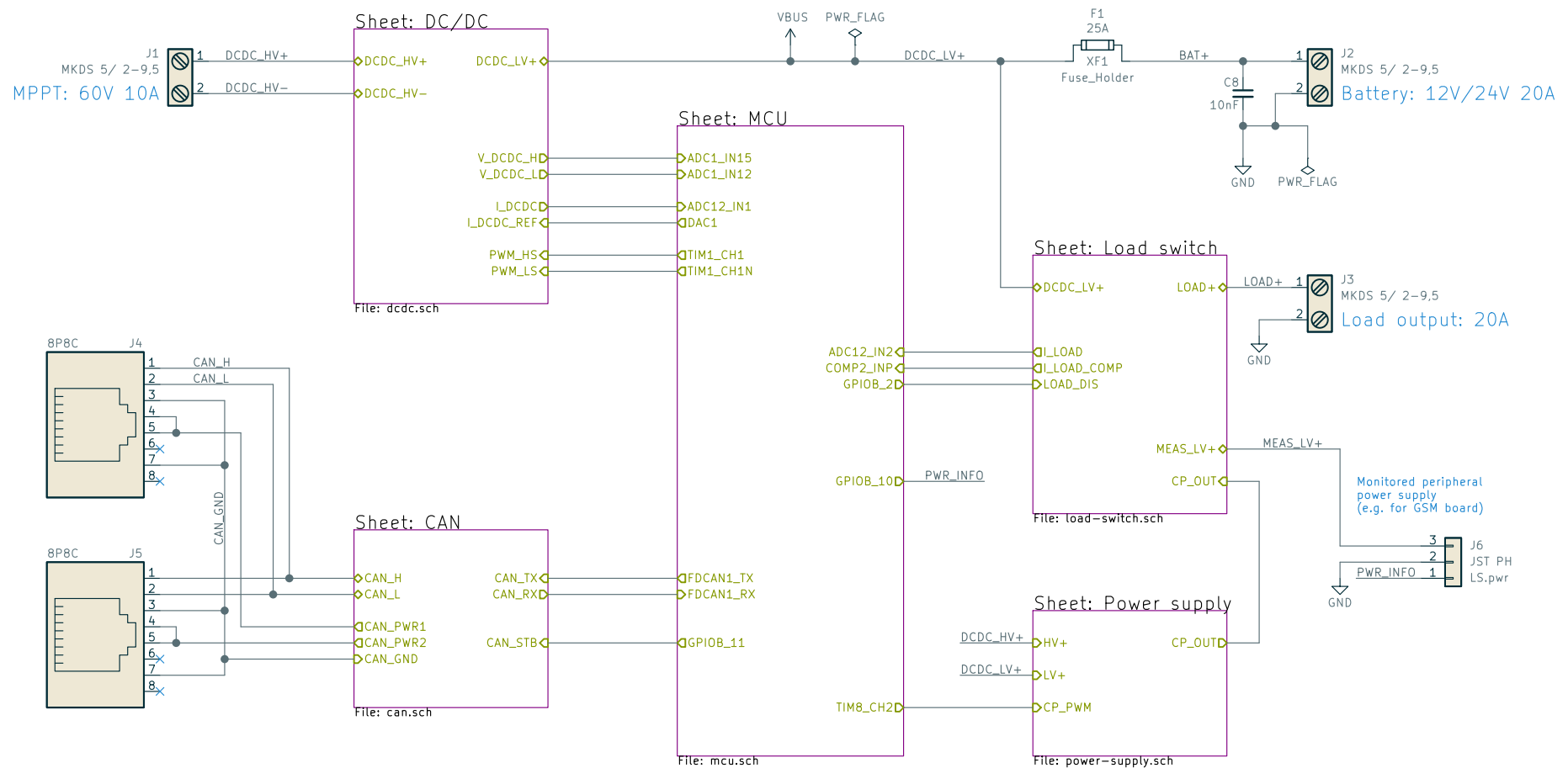


# MPPT charge controller with HS load switch and CAN



LIBRE\_SOLAR



OPEN\_HARDWARE



MPPT 2420 HC

Libre Solar Technologies GmbH  
Author: Martin Jäger

Website: <https://libre.solar>



Sheet: /  
File: mppt-2420-hc.sch

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Size: A4 Date: 2021-01-06

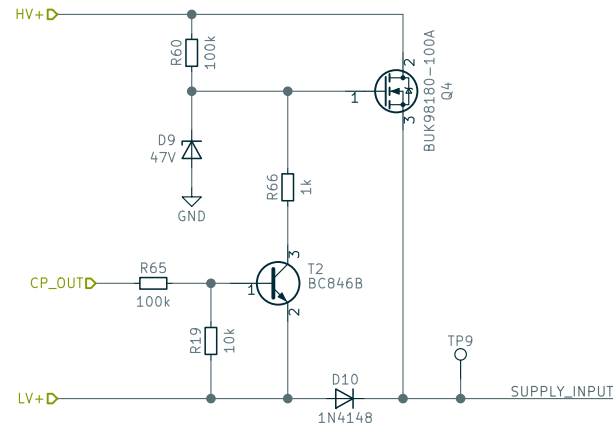
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Rev: 0.2.1

Page: 1/6



## Supply rail selection

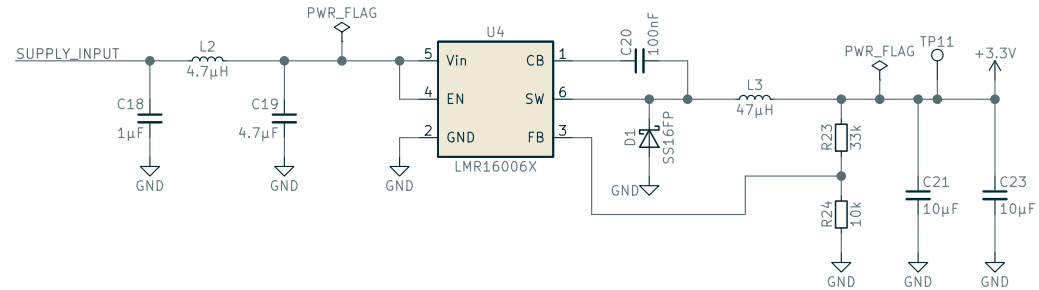


Some applications (e.g. Li-ion batteries) require an internal power supply from the high voltage side (e.g. solar panel input).

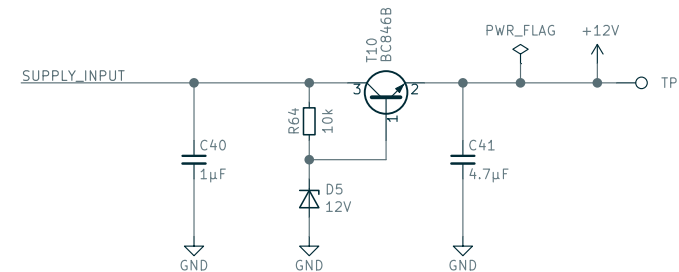
The source follower with Q4 limits the supply input below 60V.

T2 selects LV+ as supply to increase efficiency as soon as the charge pump is on.

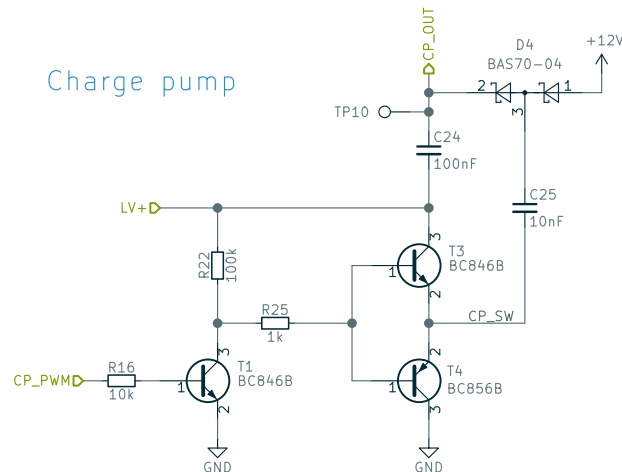
## HV/LV side to 3.3V (SMPS)



## 12V MOSFET driver supply voltage (emitter follower)



## Charge pump



If not stated otherwise, all MLCC 50V X7R

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

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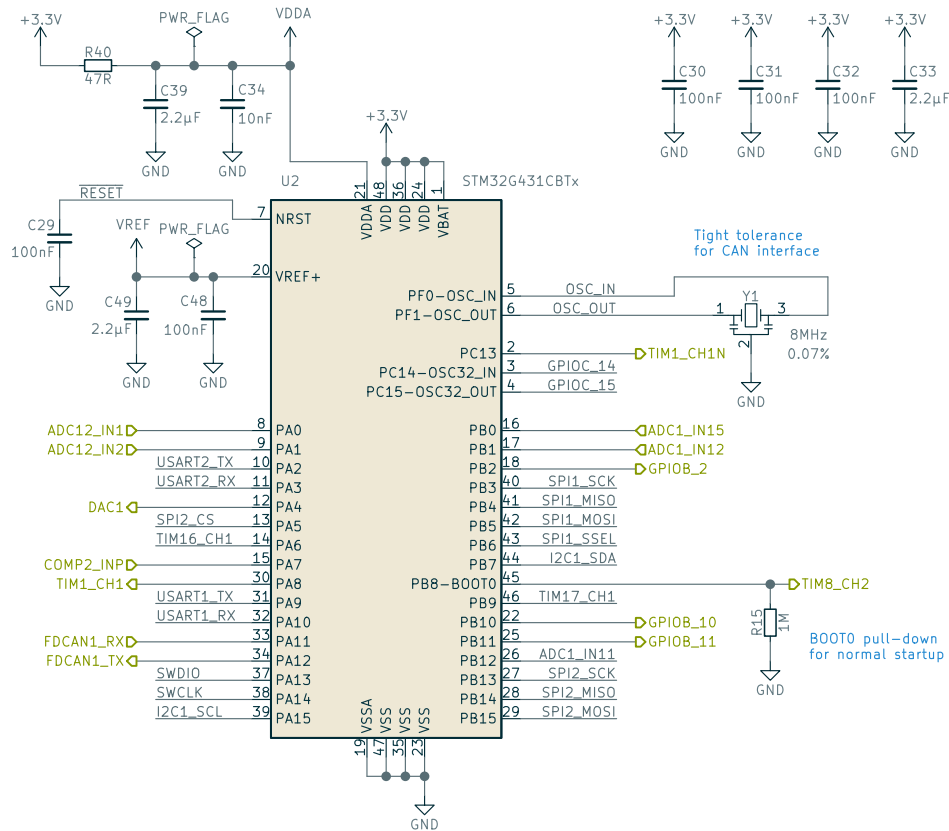
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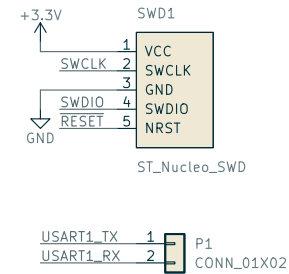
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Page: 3/6

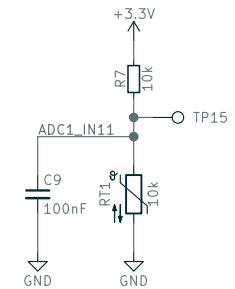
## MCU STM32G431



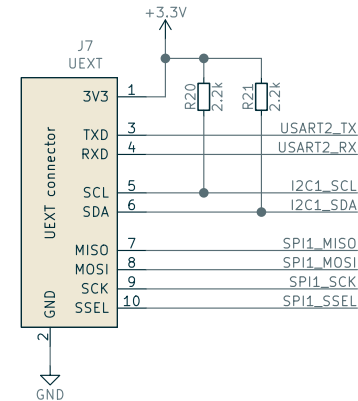
## STM Nucleo SWD and USART



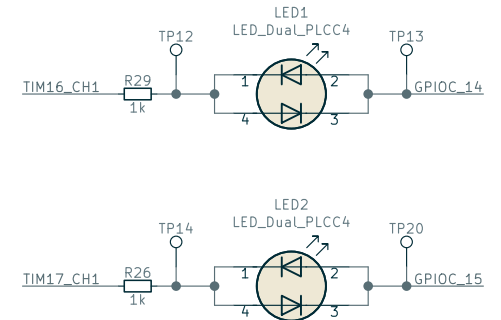
## Internal temperature



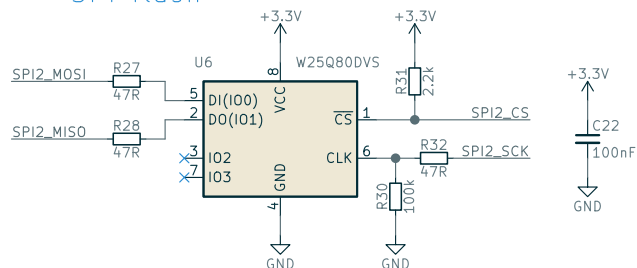
## UEXT



## Status LEDs



## SPI flash



If not stated otherwise, all MLCC 50V X7R

## MPPT 2420 HC

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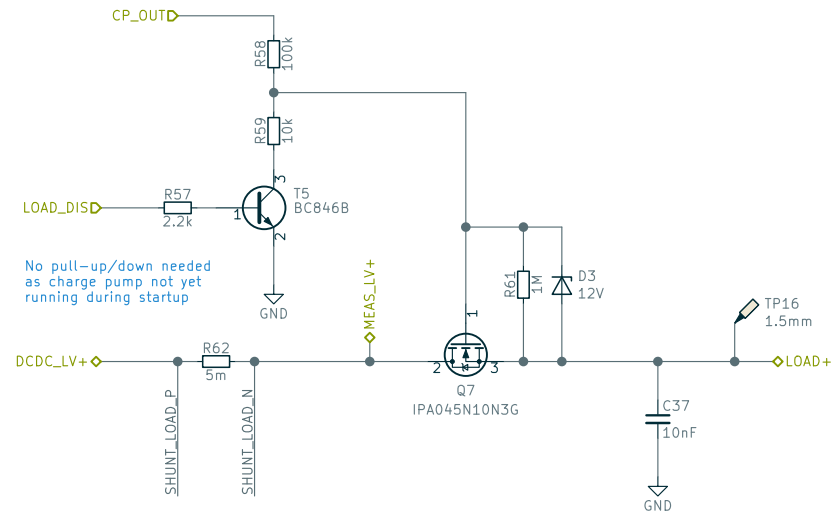
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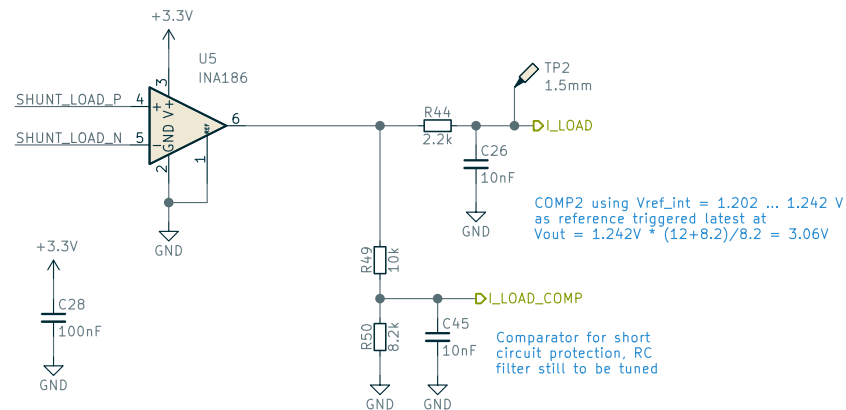
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Page: 4/6

## High-side load switch



## Load current monitoring



If not stated otherwise,  
all MLCC 50V X7R

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File: load-switch.sch

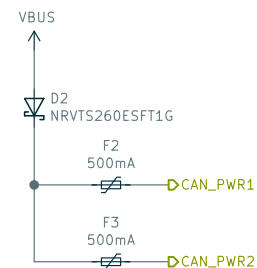
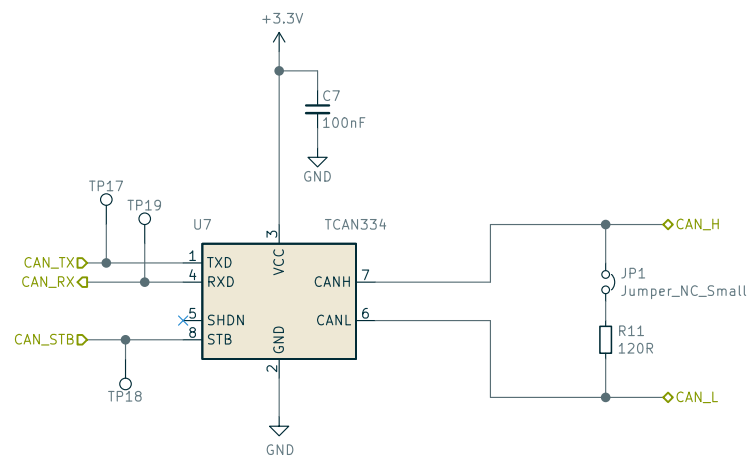
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Page: 5/6



CAN bus power supply  
 - 10V-32V  
 - 600 mA (like PoE)

Diodes necessary to prevent  
 separate GND loops.

Polyfuse to prevent  
 over-current in daisy-chained  
 bus with multiple sources and  
 sinks.

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