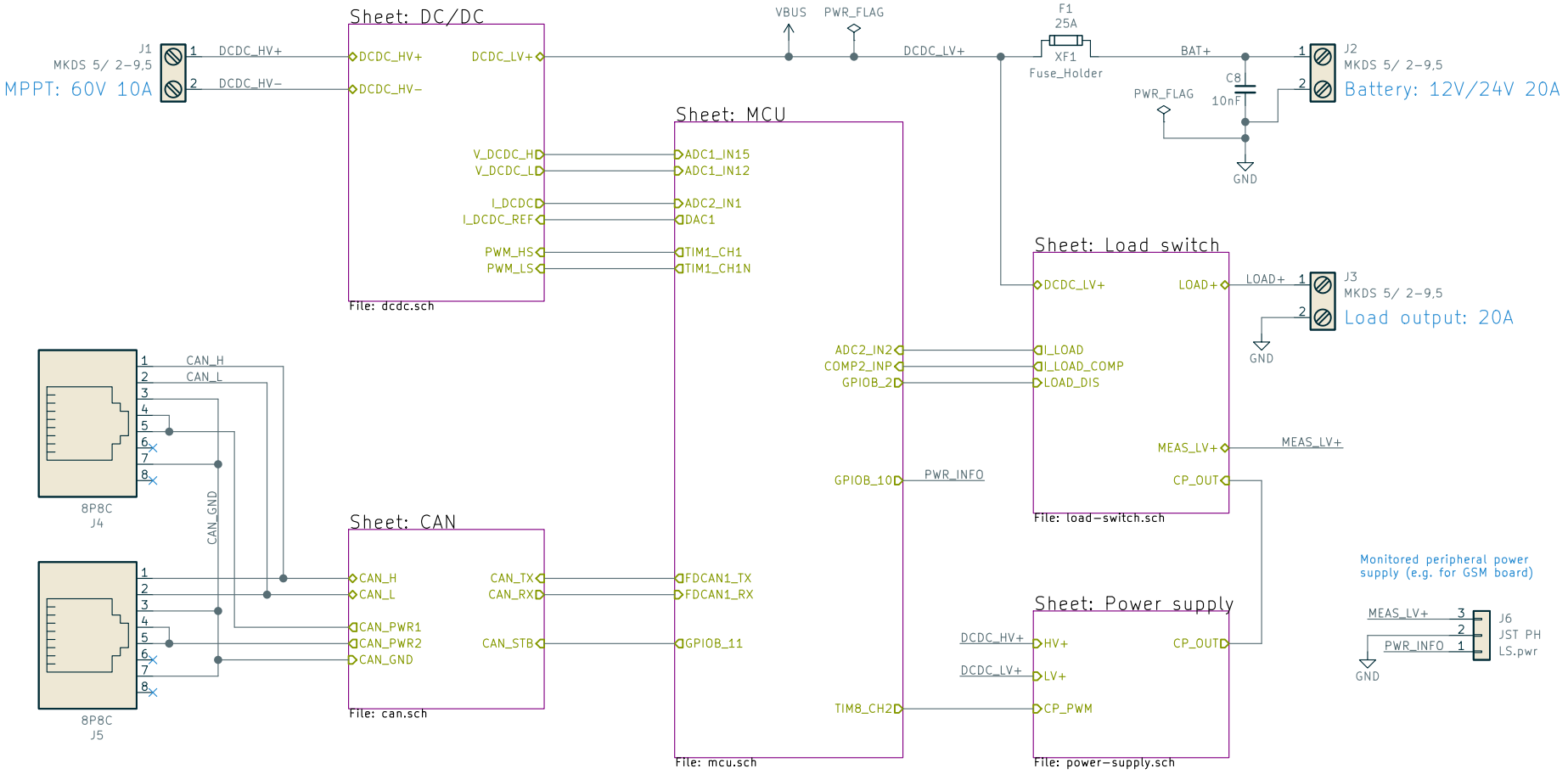
MPPT charge controller with high-side load switch



LOGO1 LIBRE_SOLAR

LOGO2 OPEN_HARDWARE

FID1 Fiducial

FID2 Fiducial

MK1 Mounting_Hole

MK2 Mounting_Hole

MK3 Mounting_Hole

MK4 Mounting_Hole

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Sheet: / File: mppt-2420-hc.sch		
Author: Martin Jäger		
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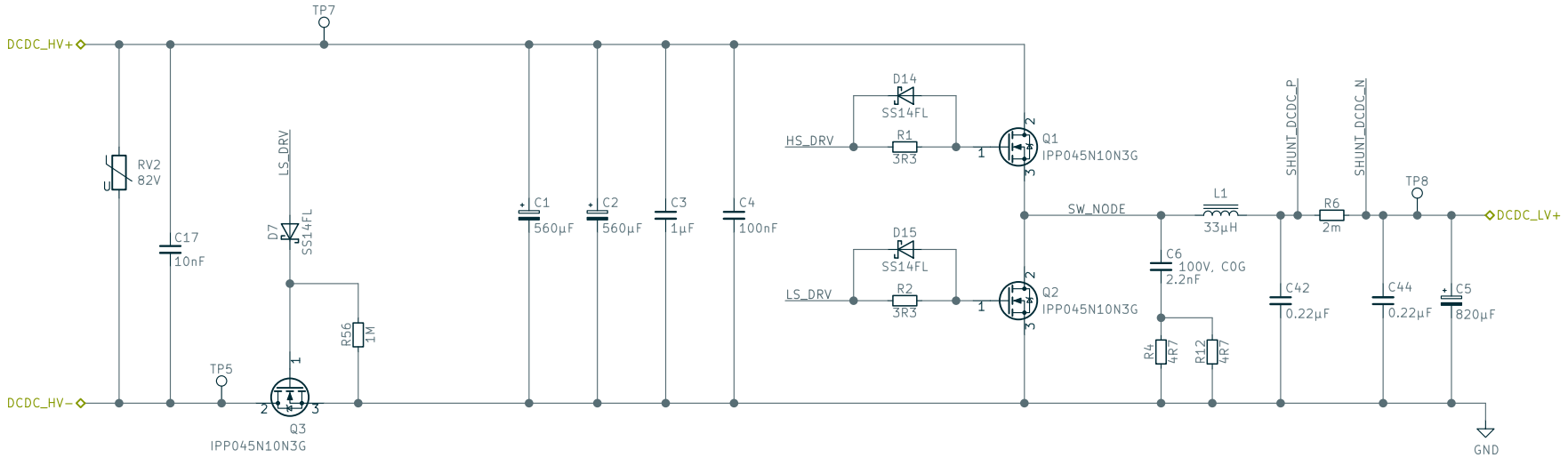
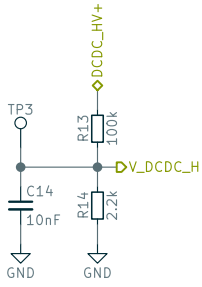
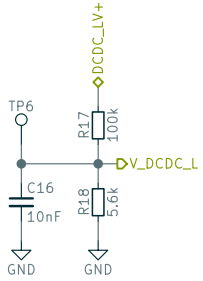
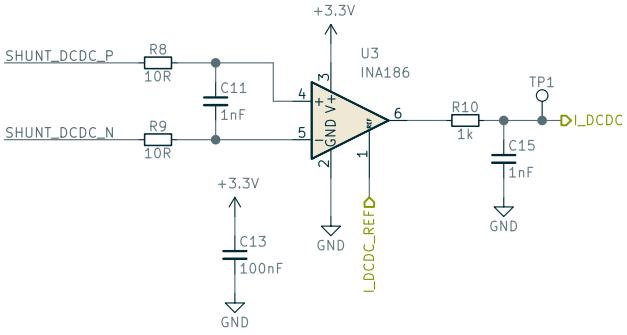
DC/DC power stage



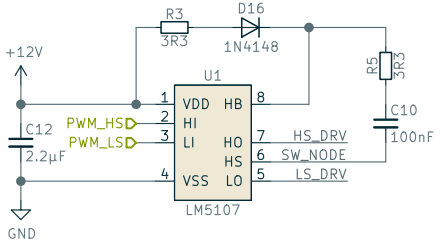
Reverse polarity protection and
PV reverse current blocking







MOSFET driver



If not stated otherwise, all MLCC 50V X7R

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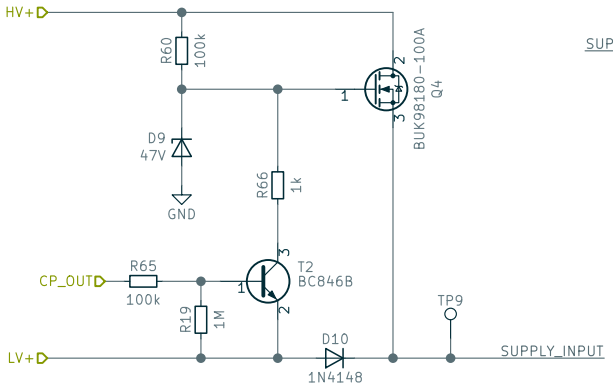
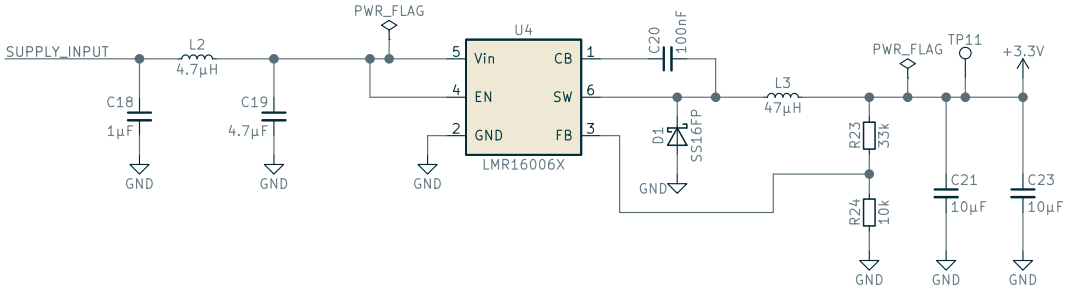
Supply rail selection



HV/LV side to 3.3V (SMPS)

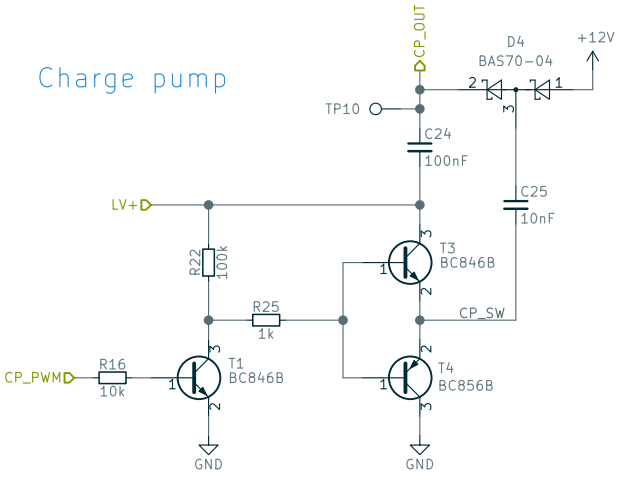


Some applications (e.g. Li-ion batteries) require an internal power supply from the high voltage side (e.g. solar panel input).

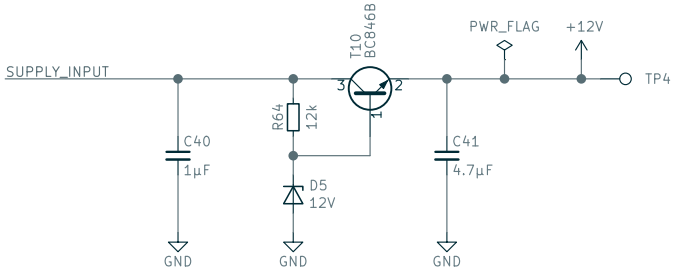
The source follower with Q4 limits the supply input below 60V.

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

Charge pump



12V MOSFET driver supply voltage (emitter follower)



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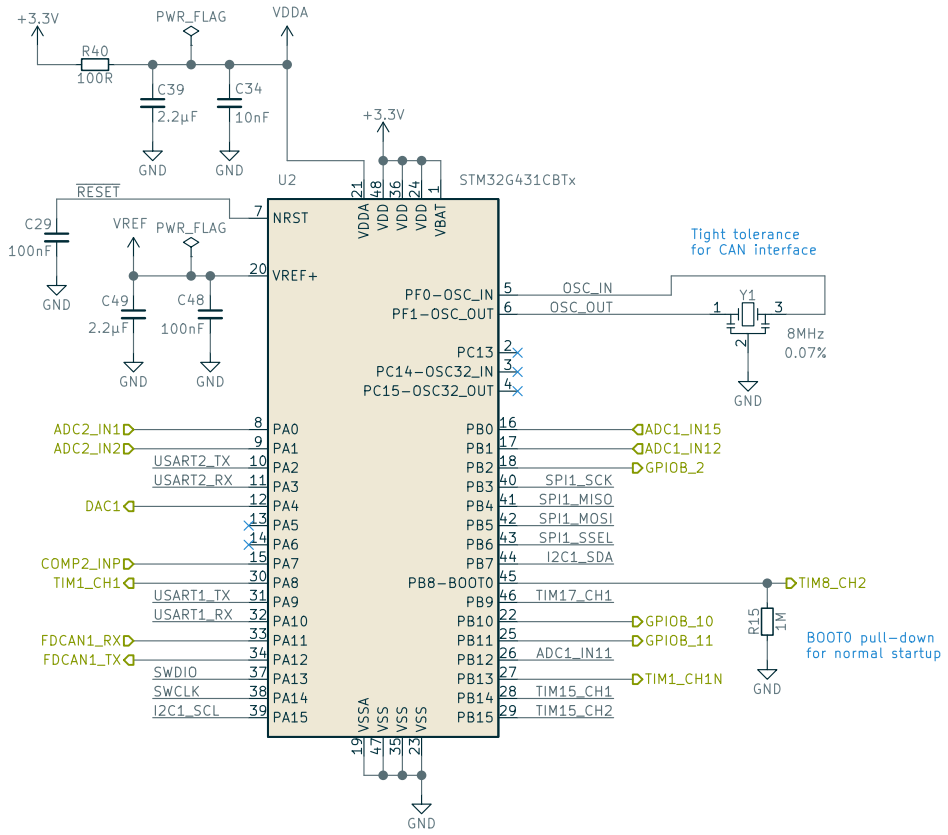

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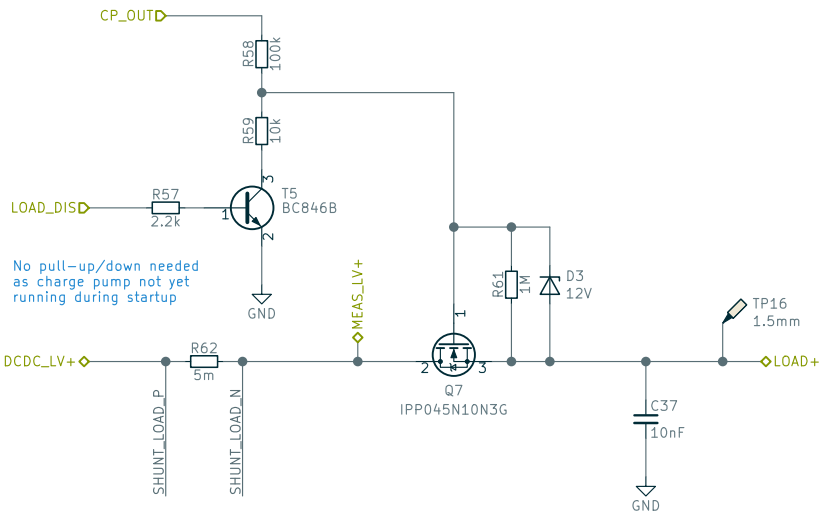
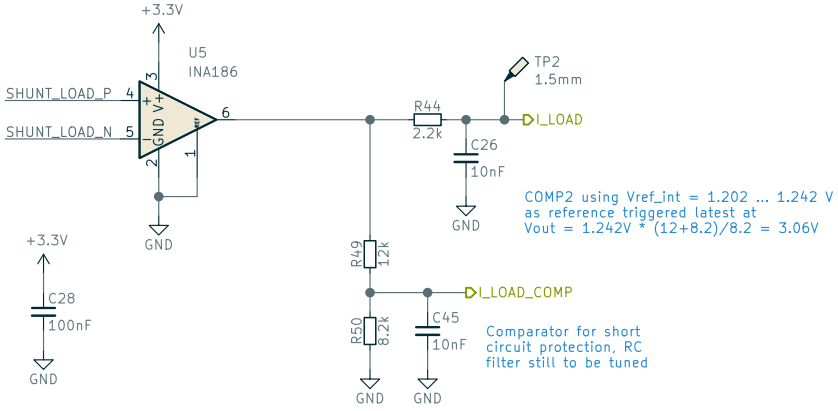
High-side load switch



Load current monitoring



If not stated otherwise,
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Sheet: /Load switch/ File: load-switch.sch		
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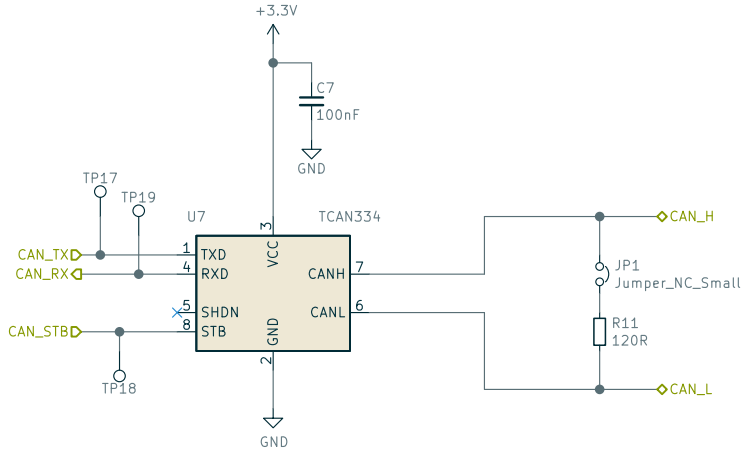

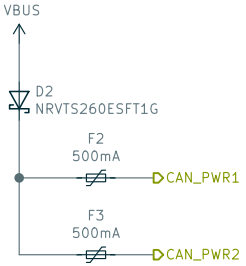

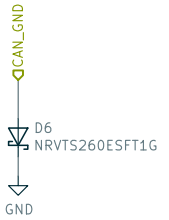

CAN bus power supply
- 10V–32V
- 600 mA (like PoE)

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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