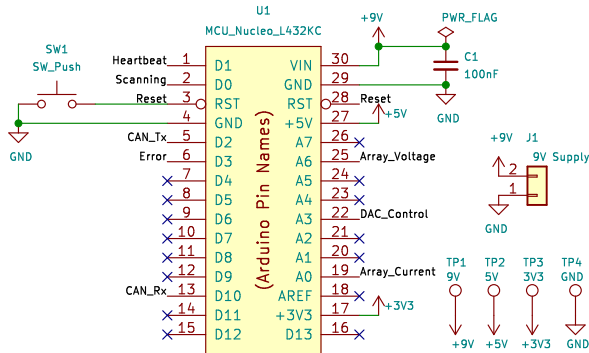


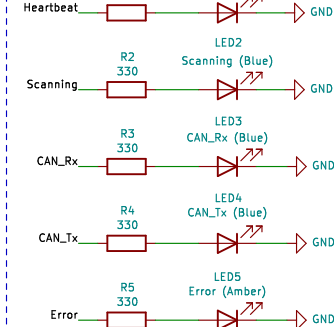
Nucleo Connections

Powered and controlled by USB through STLink UART.
Requires A7 (PA2) and A2 (PA3) to be reserved.



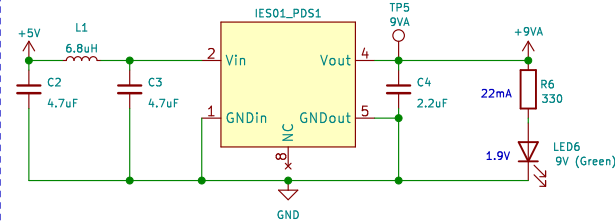
LEDs

Status LEDs for at-a-glance information.



DC-DC Converter

5V to 9V power feeding into MOSFET controller. IES0105S09, compatible with PDS1-S5-S9-M. $C_{out}=2.2\mu F(IES01)/4.7\mu F(PDS1)$. $I_{min}=12mA$. GND is tied across the isolated DC-DC converter to make it non isolated. This is because the sensor input to the STM32 needs to be relative to GND. This is probably overkill compared to a normal TI SEPIC converter but requires less external components.



Rev 1.1:

- Schematic:
 - Reannotated all component labels and reversed rescued schematic symbols.
 - Rearranged schematic and cleaned up component positioning.
 - Used ArrayLib for array-relevant schematic symbols.
 - Standardized components lists.
 - Added fuse to array input and swapped to a phoenix connector.
 - Updated indicator LEDs and added Reset button.
 - Standardized current sensor to match that of the MPPT's.
 - Merged voltage sensor up amp to the gate amplifier.
 - Added connector for 9V power supply, just in case.

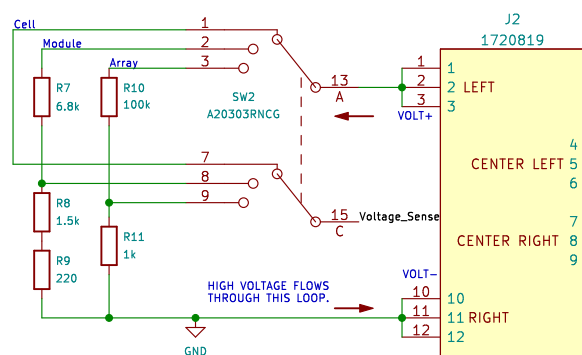
- Layout:
 - Shrunk layout by 35%.
 - Added no fill zones to shield analog, digital, and power sections.

Rev 1.2:

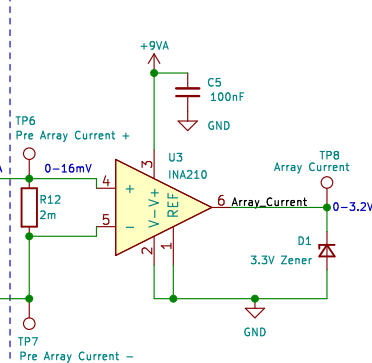
- Schematic:
 - BOM consolidation to JLCPCB components.
 - Removed RC filters since current draw caused voltage drift into ADC.
 - Changed voltage divider scaling and resistors. See design document.
 - Swapped out LT1215 for MAX40075 and fixed gain to 3x.
 - CAN_RX corrected to be pin D10, not D9.
 - Removed the RC filter to the input of the voltage sensor.
 - Removed extraneous diodes.

- Layout:
 - New layout design. All components are on the same side for easy assembly.
 - Back side is solely for testpoints.

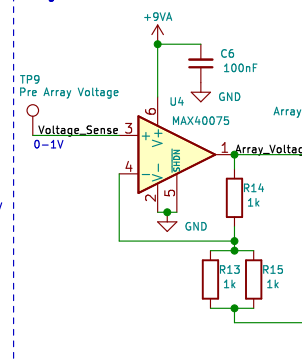
PV Controller



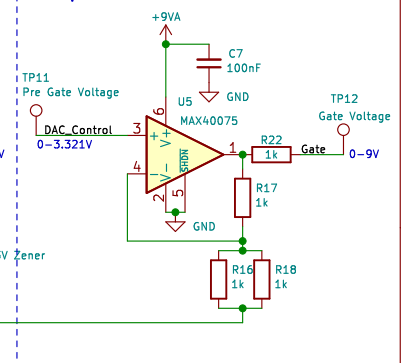
Current Sensor



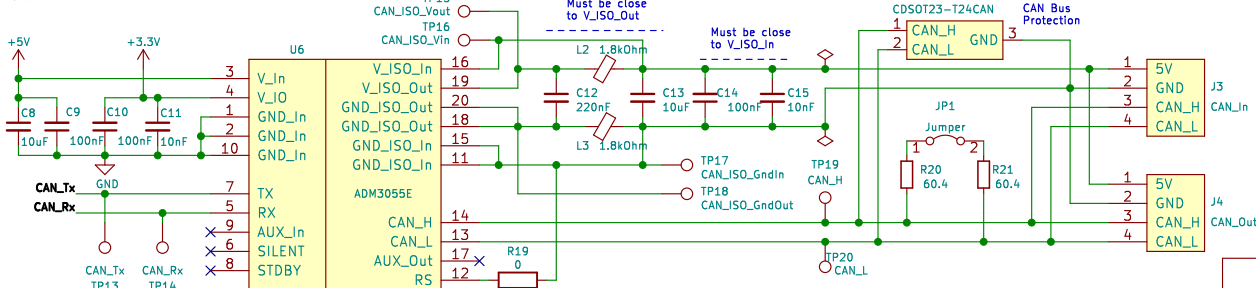
Voltage Sensor



Gate Amplifier



CAN



- H1 MountingHole
- H2 MountingHole
- H3 MountingHole

Youssef Elsherif
Gary Hallock
Matthew Yu

UT Solar Vehicles Team

Sheet: /
File: IV Curve Tracer.kicad_sch

Title: IV Curve Tracer

Size: A4 Date: 2022-02-11

KiCad E.D.A. kicad (6.0.1)

Rev: 1.2.0

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