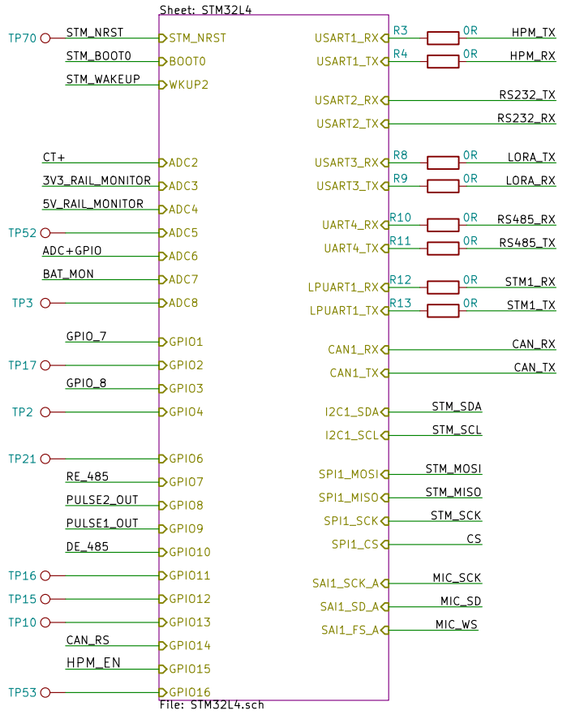
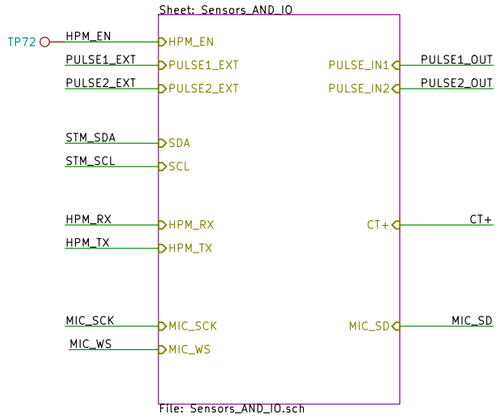
STM

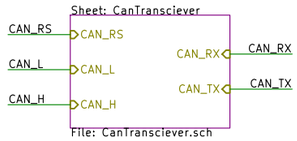


Sensors and IO



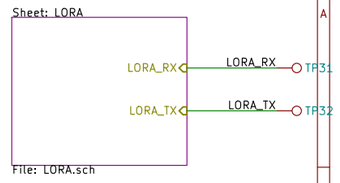
Communication

CAN Transciever

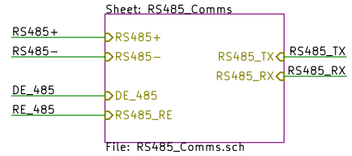


Note: Low power mode selected through RS

LORA

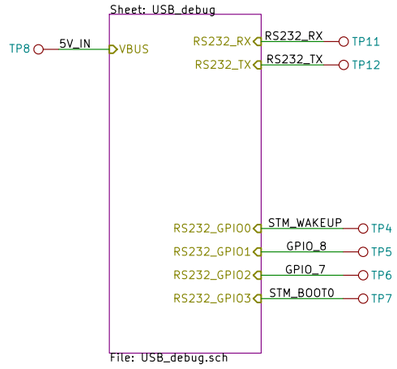


RS485 Transciever



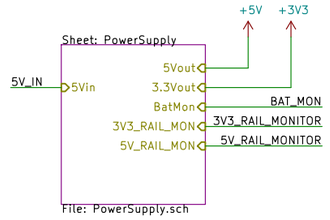
Note: Low power mode selected through DE along with RE

USB Debug

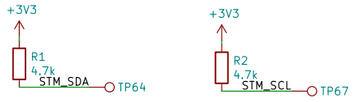


Easy access gnd pins for debug

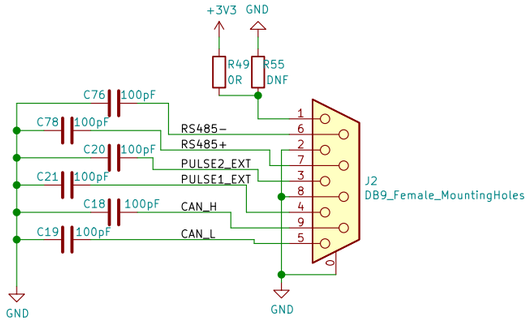
Power Supply and Battery



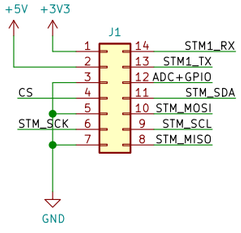
STM I2C Pullup



External Connector



Optional module



Fiducials

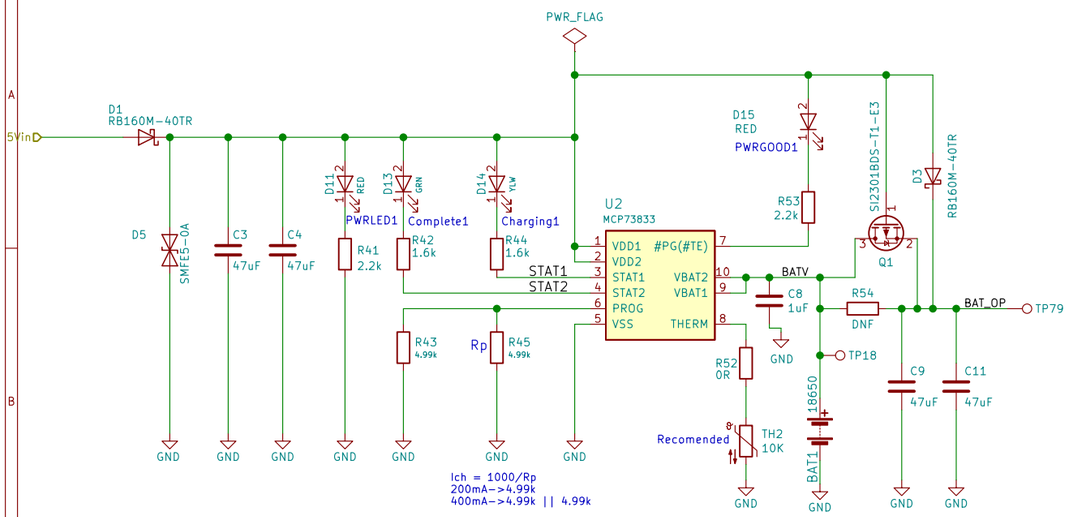
Part No: 304−010
Devtank LTD

Sheet: /
File: OSM_env01.sch

Title: Open Smart Monitor

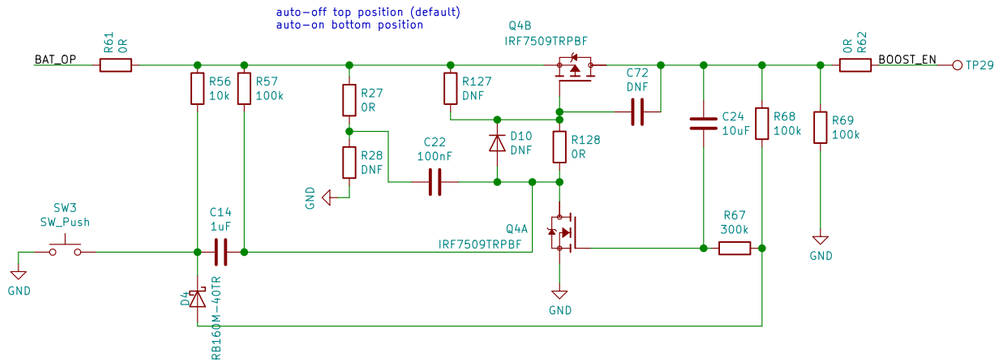
Size: A3	Date: 2021−09−29	**Rev: B**
KiCad E.D.A. kicad 5.1.5+dfsg1−2build2		Id: 1/9

Li_Ion Battery Charge Controller

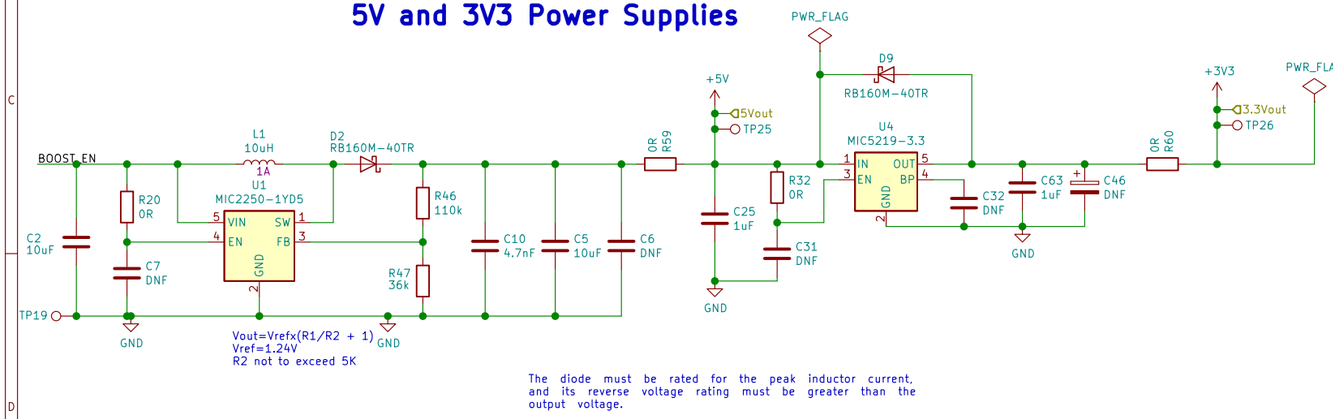


Led calcs
d11 and d15 = ((5-0.5v schottky assumed)-2v assumed)/2200=1.13mA
d11 and d15 = ((5-0.5v schottky assumed)-2v assumed)/1600=1.56mA

Latched powerbutton Circuit

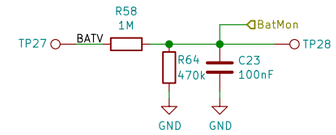


5V and 3V3 Power Supplies



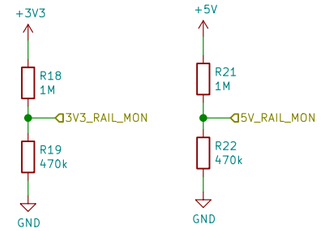
The diode must be rated for the peak inductor current, and its reverse voltage rating must be greater than the output voltage.

Battery Voltage Monitor

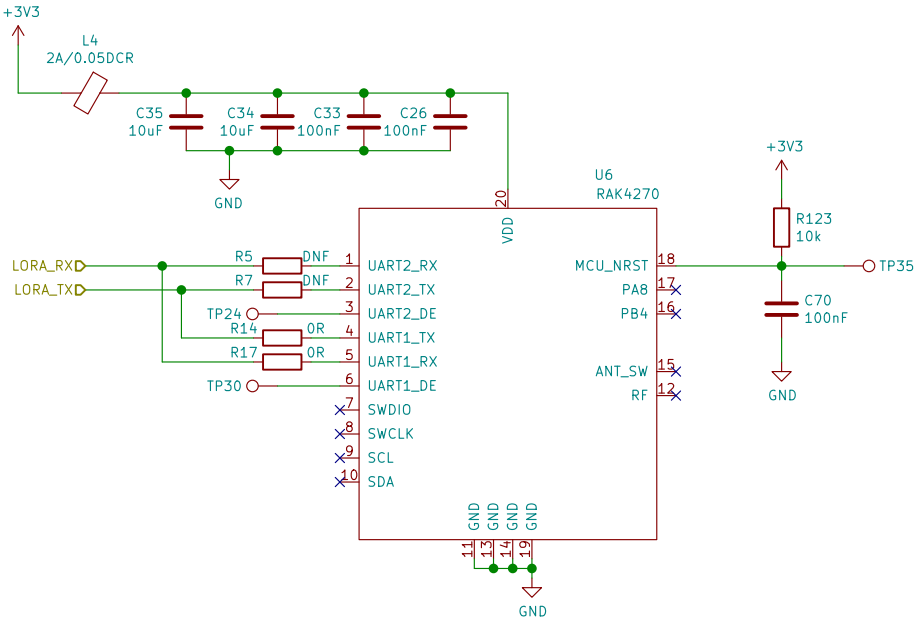


divider ratio=47/147=31.97
5/1024=1adc=4.88mm
(4.2/4.88m)*0.3197=275.15adc=fully charged and above

Voltage Rail Monitor



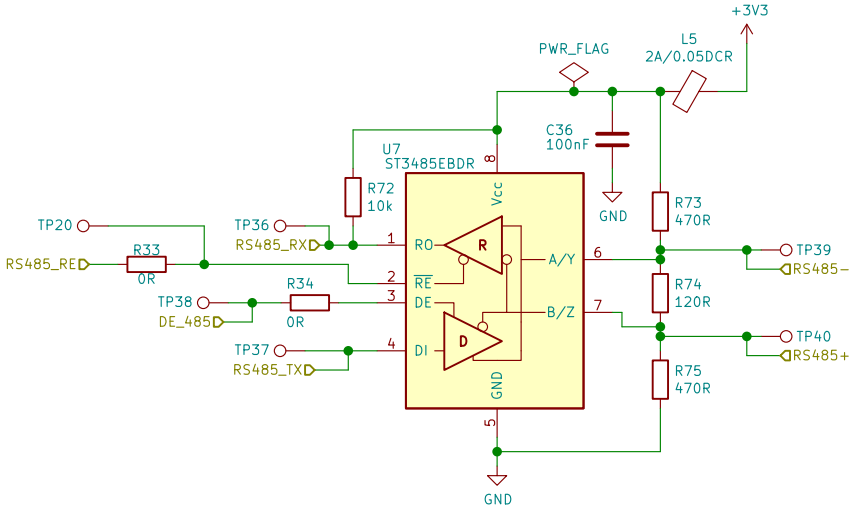
Part No: 304-010
Devtank LTD
Sheet: /PowerSupply/
File: PowerSupply.sch
Title: Open Smart Monitor
Size: A3 | Date: 2021-09-29 | **Rev: B**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2 | Id: 2/9



Part No: 304-010
Devtank LTD
Sheet: /LORA/
File: LORA.sch

Title: Open Smart Monitor

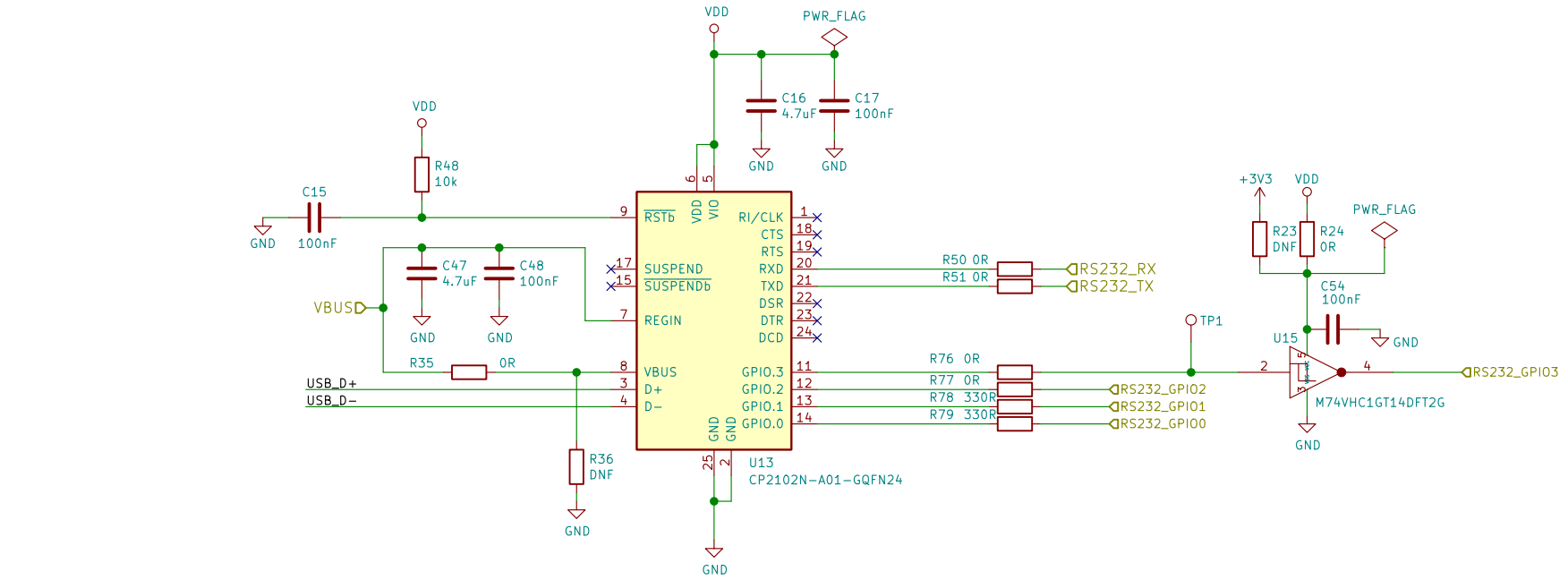
Size: A4	Date: 2021-09-29	**Rev: B**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 3/9

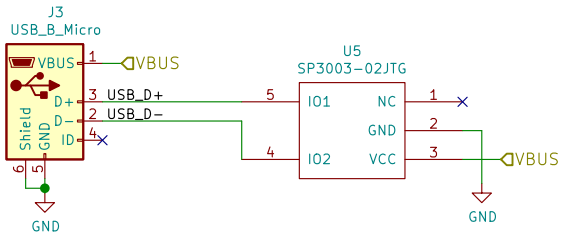


Part No: 304-010
Devtank LTD
Sheet: /RS485_Comms/
File: RS485_Comms.sch

Title: Open Smart Monitor

Size: A4	Date: 2021-09-29	**Rev: B**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 4/9

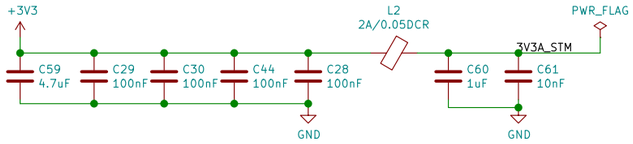


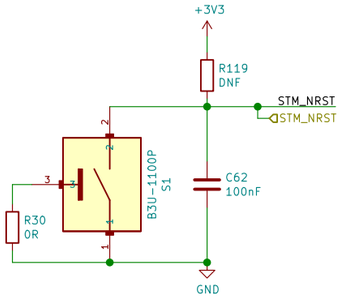


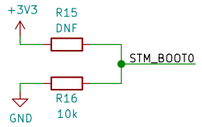
Part No: 304-010
Devtank LTD
Sheet: /USB_debug/
File: USB_debug.sch

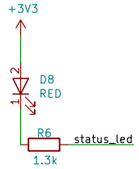
Title: Open Smart Monitor

Size: A4	Date: 2021-09-29	**Rev: B**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 5/9

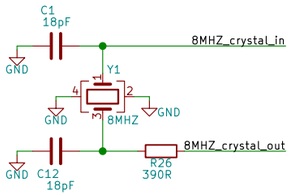


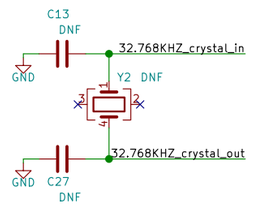


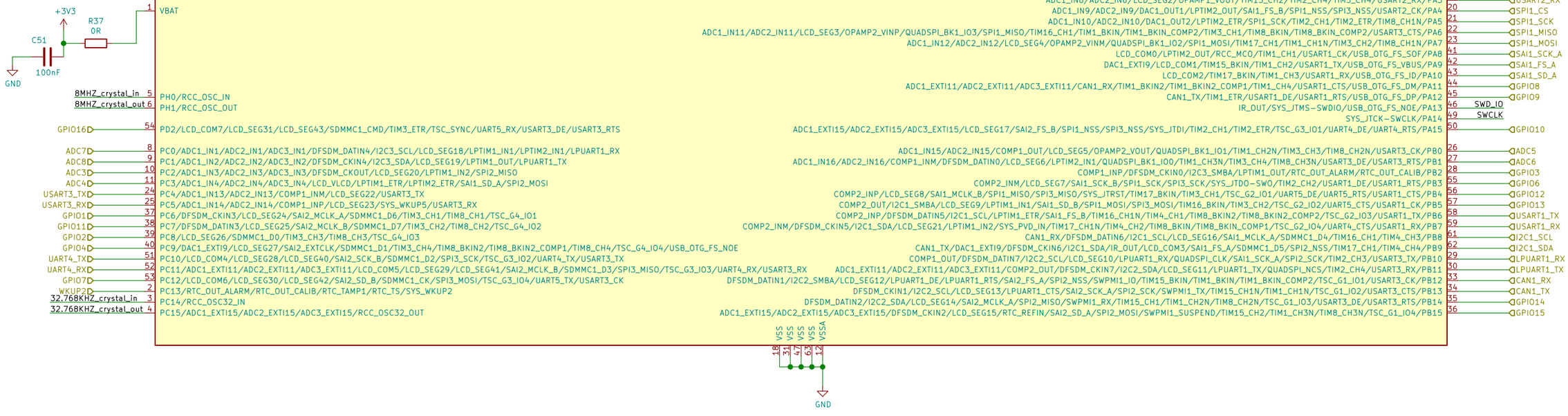




I=vs-vf/R
3.3-2/1.3k=1mA

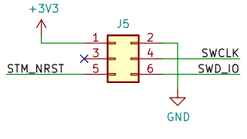






Note: For comfirmation of pin functions refer to datasheet. Symbol may not be correct
- wkup pins 2,14,16,25
-pa13, pa15, pb4 avoid as after reset internal pull up and pull down activated

SWD Programming Header

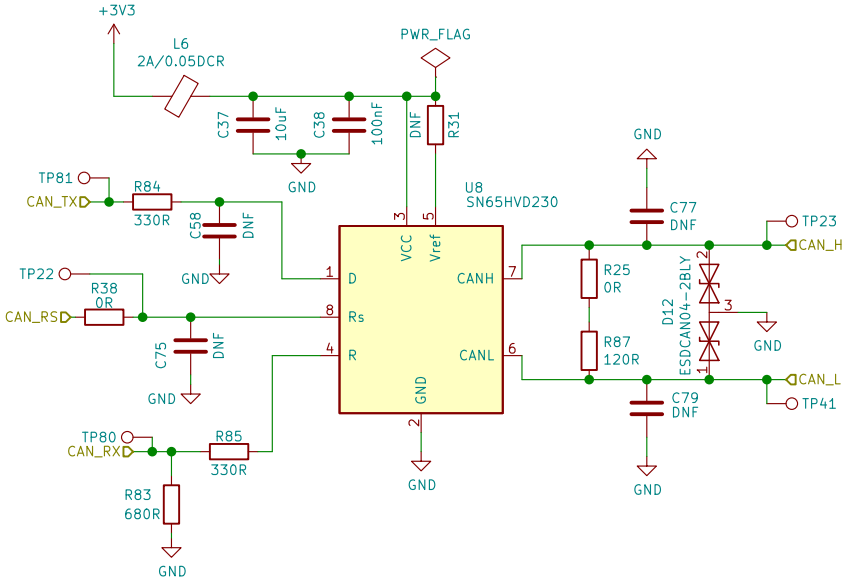


Part No: 304-010
Devtank LTD

Sheet: /STM32L4/
File: STM32L4.sch

Title: Open Smart Monitor

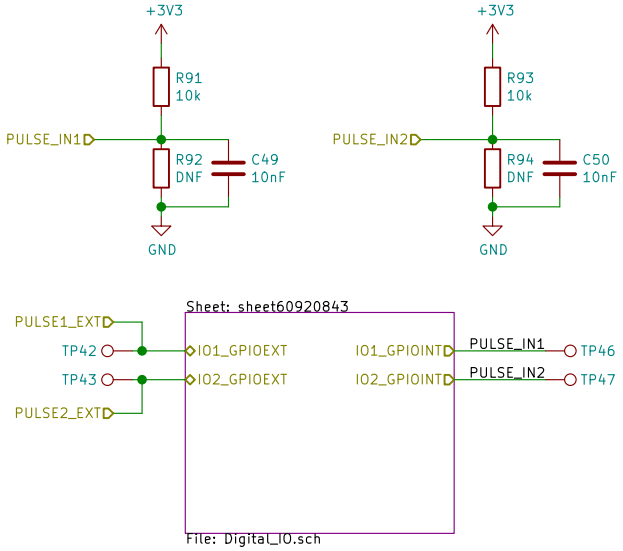
Size: A3 | Date: 2021-09-29 | **Rev: B**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2 | Id: 6/9



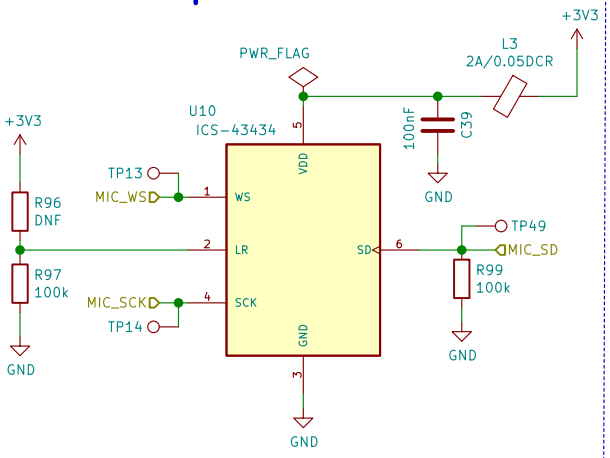
Note: C58 and 75 are filtering caps

Part No: 304-010		
Devtank LTD		
Sheet: /CanTransciever/		
File: CanTransciever.sch		
Title: Open Smart Monitor		
Size: A4	Date: 2021-09-29	**Rev: B**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 7/9

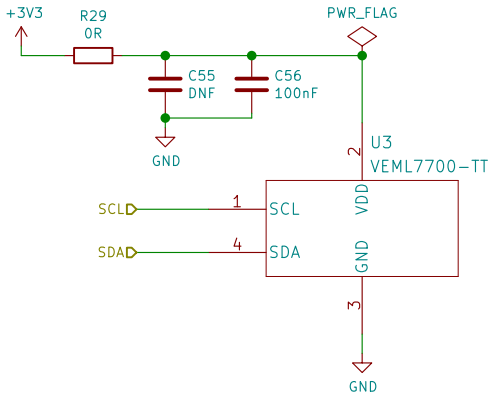
Pulse Inputs



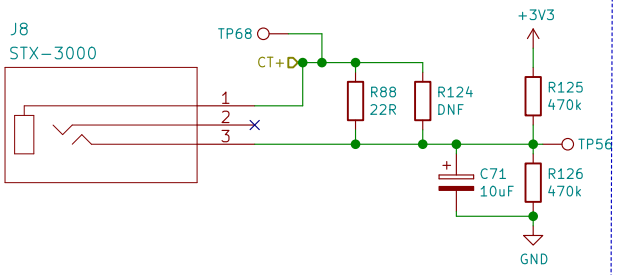
Microphone module



Light Sensor

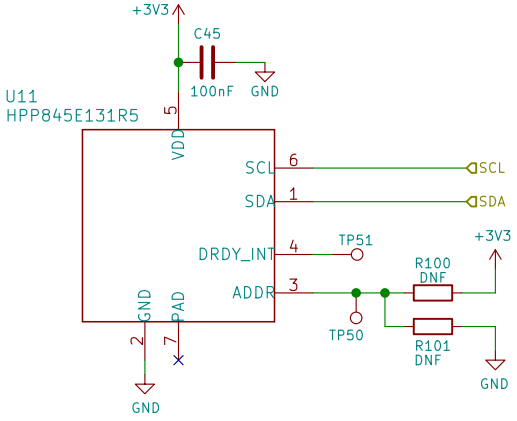


CT Clamp



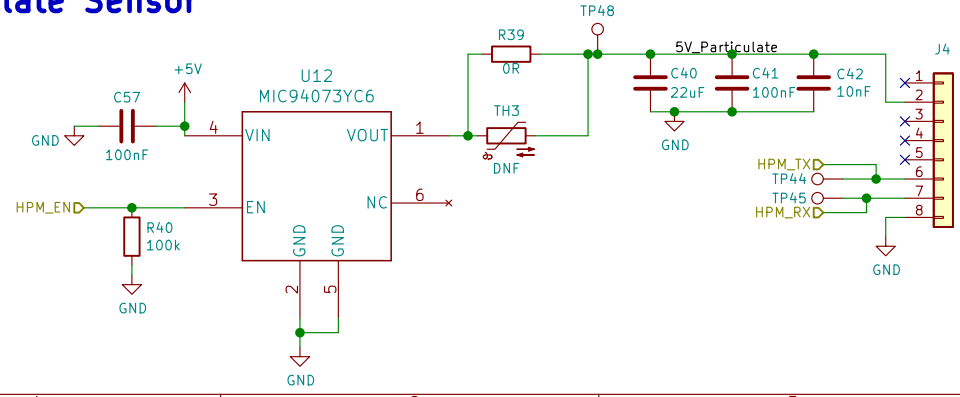
bypass capacitor few hundred ohms
https://learn.openenergymonitor.org/electricity-monitoring/ct-sensors/interface-with-arduino

Temp and Humidity



Note: Can use HDC1080/2080. For HTU21D leave pad 3,4. For all devices leave ep pin 7 unconnecte

Particulate Sensor



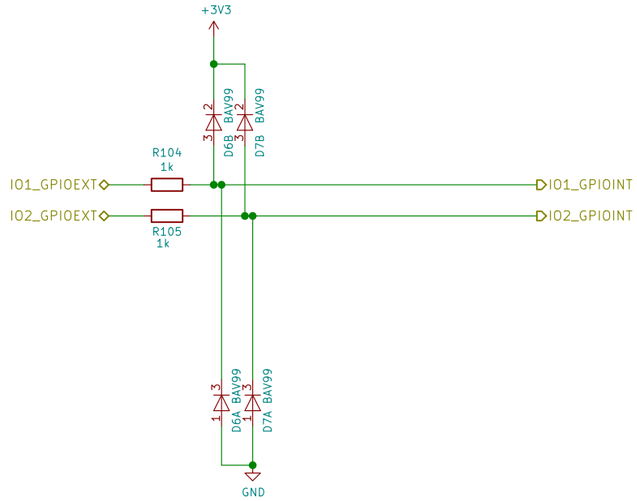
Part No: 304-010
Devtank LTD
Sheet: /Sensors_AND_IO/
File: Sensors_AND_IO.sch

Title: Open Smart Monitor

Size: A4	Date: 2021-09-29	**Rev: B**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 8/9

3V3 BI-DIRECTIONAL IO (5V TOLERANT)

Max 3mA per GPIO



Part No: 304-010
Devtank LTD

Sheet: /Sensors_AND_IO/sheet60920843/
File: Digital_IO.sch

Title: Open Smart Monitor

Size: A3	Date: 2021-09-29	**Rev: B**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 9/9