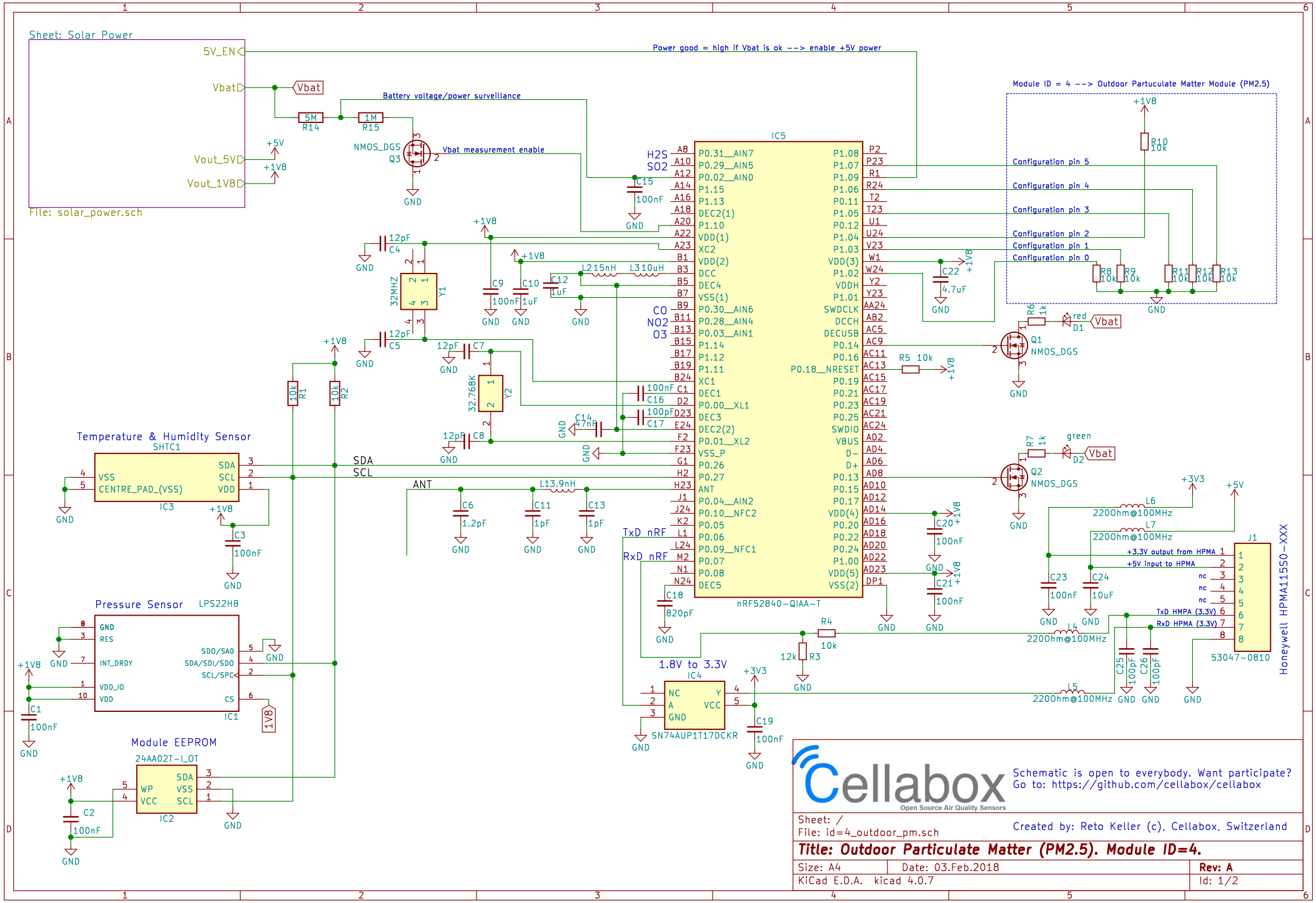
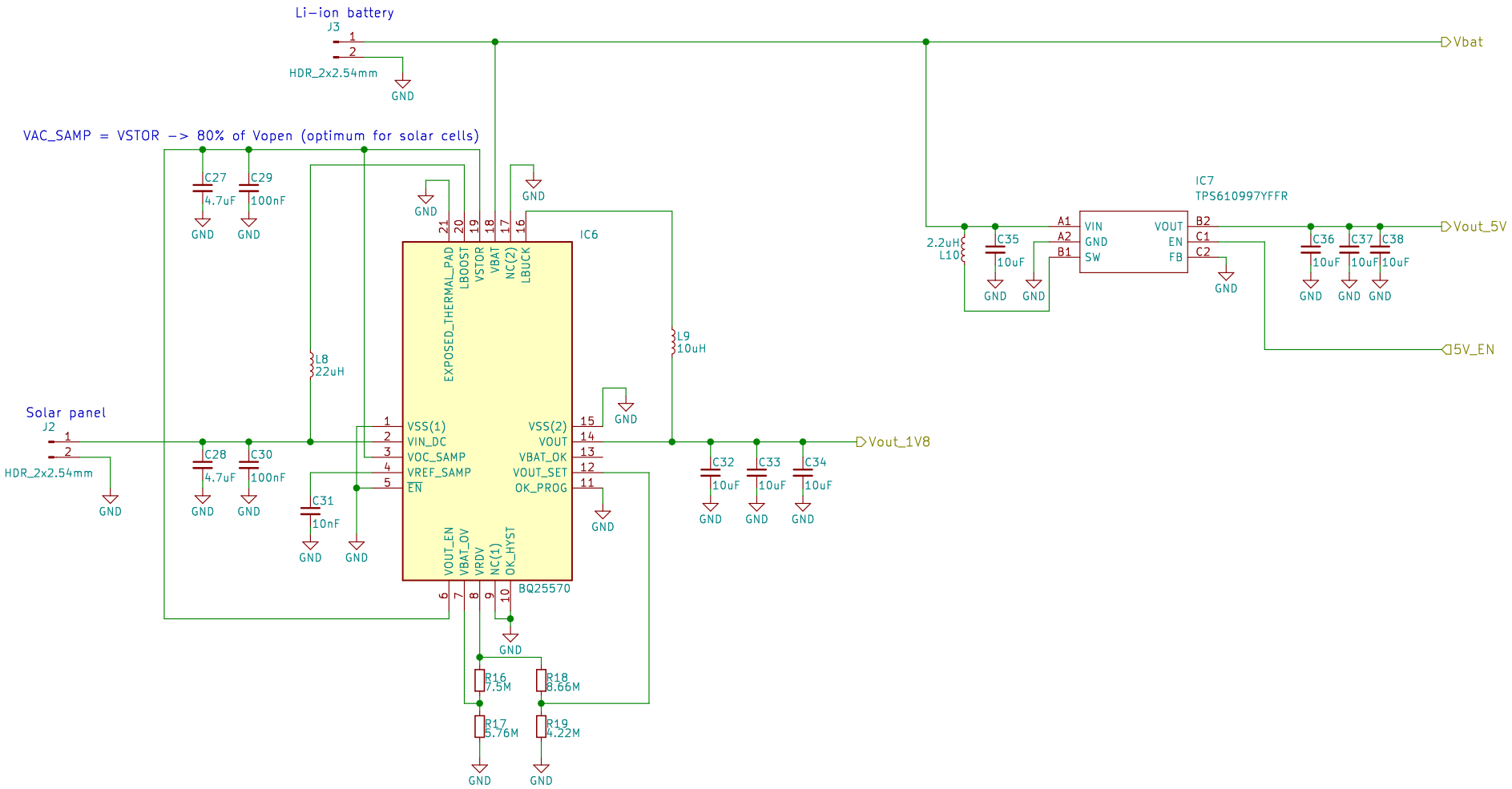

Sheet: Solar Power
5V_EN
Vbat
Vout_5V
Vout_1V8
File: solar_power.sch
Power good = high if Vbat is ok --> enable +5V power
Battery voltage/power surveillance
Vbat measurement enable
Module ID = 4 --> Outdoor Particulate Matter Module (PM2.5)
Configuration pin 5
Configuration pin 4
Configuration pin 3
Configuration pin 2
Configuration pin 1
Configuration pin 0
IC5
nRF52840-QIAA-T
Temperature & Humidity Sensor
SHTC1
IC3
Pressure Sensor
LPS22HB
IC1
Module EEPROM
24AA02T-I_OT
IC2
1.8V to 3.3V
IC4
SN74AUP1T17DCKR
SDA
SCL
ANT
TxD nRF
RxD nRF
Honeywell HPMA115S0-XXX
53047-0810
+3.3V output from HPMA
+5V input to HPMA
TxD HMPA (3.3V)
RxD HPMA (3.3V)
Cellabox
Open Source Air Quality Sensors
Schematic is open to everybody. Want participate?
Go to: https://github.com/cellabox/cellabox
Sheet: /
File: id=4_outdoor_pm.sch
Created by: Reto Keller (c), Cellabox, Switzerland
Title: Outdoor Particulate Matter (PM2.5). Module ID=4.
Size: A4
Date: 03.Feb.2018
Rev: A
KiCad E.D.A. kicad 4.0.7
Id: 1/2

- VIN_DC = 0.1...VBAT_OV (in order to get maximum out of MPPT: 0.5...4V, PIN<400mW)
- VBAT_OV = 4.2V (externally programmable, RSUMOV=ROV1+ROV2=13MOhm, ROV1=3/2*13MOhm*1.21V/4.2V=5.76MOhm, ROV2=13MOhm-5.62MOhm=7.5MOhm)
- Vbat surveillance is done by FW (e.g. determine if Vbat is ok or not)
- VBAT_UV = 2.0V → bq25570 internally set (1.91...2.0V), when VSTOR < VBAT_UV buck is disabled!
- VOUT = 1.8V (externally programmable, RSUMOUT=ROUT1+ROUT2≈13MOhm, VOUT=VBIAS*(ROUT2+ROUT1)/ROUT1, ROUT1=1.21V/2.7V*13MOhm=4.22MOhm, ROUT2=13MOhm-4.22MOhm=8.66MOhm)



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Sheet: /Solar Power/
File: solar_power.sch

Created by: Reto Keller (c), Cellabox, Switzerland

Title: Outdoor Particulate Matter (PM2.5). Module ID=4.

Size: A4	Date: 10.Feb.2018	**Rev: A**
KiCad E.D.A. kicad 4.0.7		Id: 2/2