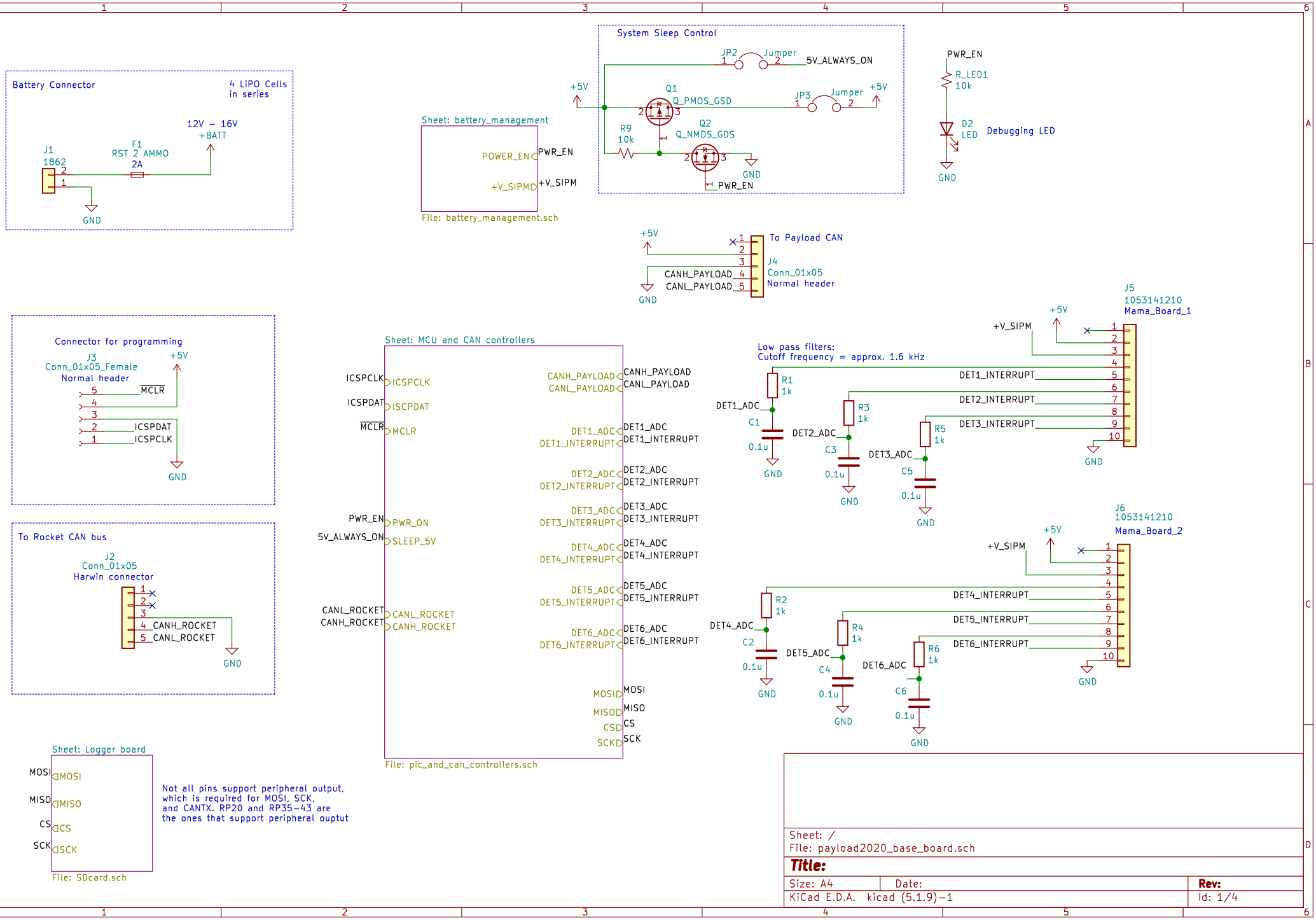
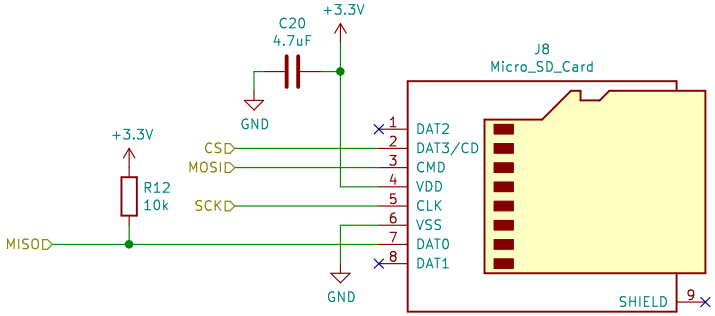
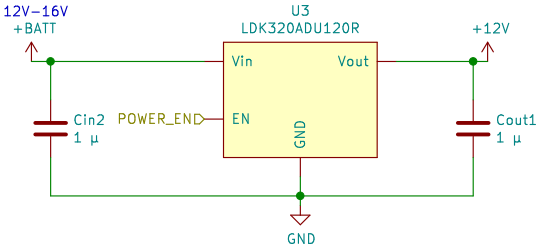

Battery Connector
4 LiPO Cells in series
12V – 16V
+BATT
J1
1862
F1
RST 2 AMMO
2A
GND
Sheet: battery_management
POWER_EN
PWR_EN
+V_SIPMD
+V_SIPM
File: battery_management.sch
System Sleep Control
JP2
Jumper
5V_ALWAYS_ON
+5V
Q1
Q_PMOS_GSD
JP3
Jumper
R9
10k
Q2
Q_NMOS_GDS
GND
PWR_EN
PWR_EN
R_LED1
10k
D2
LED
Debugging LED
GND
+5V
To Payload CAN
J4
Conn_01x05
Normal header
CANH_PAYLOAD
CANL_PAYLOAD
GND
Connector for programming
J3
Conn_01x05_Female
Normal header
+5V
MCLR
ICSPDAT
ICSPCLK
GND
To Rocket CAN bus
J2
Conn_01x05
Harwin connector
CANH_ROCKET
CANL_ROCKET
GND
Sheet: MCU and CAN controllers
ICSPCLK
ICSPDAT
MCLR
PWR_EN
PWR_ON
5V_ALWAYS_ON
SLEEP_5V
CANL_ROCKET
CANH_ROCKET
CANH_PAYLOAD
CANL_PAYLOAD
DET1_ADC
DET1_INTERRUPT
DET2_ADC
DET2_INTERRUPT
DET3_ADC
DET3_INTERRUPT
DET4_ADC
DET4_INTERRUPT
DET5_ADC
DET5_INTERRUPT
DET6_ADC
DET6_INTERRUPT
MOSI
MISO
CS
SCK
File: pic_and_can_controllers.sch
Low pass filters:
Cutoff frequency = approx. 1.6 kHz
R1
1k
C1
0.1u
R3
1k
C3
0.1u
R5
1k
C5
0.1u
DET1_ADC
DET2_ADC
DET3_ADC
GND
J5
1053141210
Mama_Board_1
+V_SIPM
DET1_INTERRUPT
DET2_INTERRUPT
DET3_INTERRUPT
R2
1k
C2
0.1u
R4
1k
C4
0.1u
R6
1k
C6
0.1u
DET4_ADC
DET5_ADC
DET6_ADC
J6
1053141210
Mama_Board_2
DET4_INTERRUPT
DET5_INTERRUPT
DET6_INTERRUPT
Sheet: Logger board
MOSI
MISO
CS
SCK
File: SDcard.sch
Not all pins support peripheral output, which is required for MOSI, SCK, and CANTX. RP20 and RP35–43 are the ones that support peripheral ouptut
Sheet: /
File: payload2020_base_board.sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (5.1.9)-1
Id: 1/4



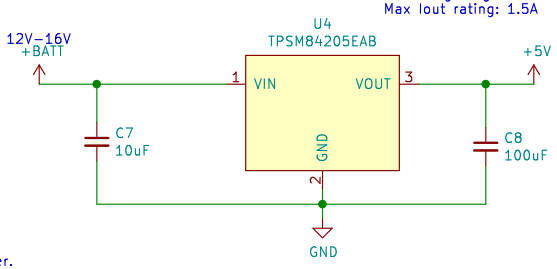
Sheet: /Logger board/		
File: SDcard.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (5.1.9)-1		Id: 2/4

1uF capacitors as per datasheet directly (no calculations)
LDK320ADU120R is a 12V fixed-voltage regulator.
Max Iout rating: 0.2A

DNP - Do not place

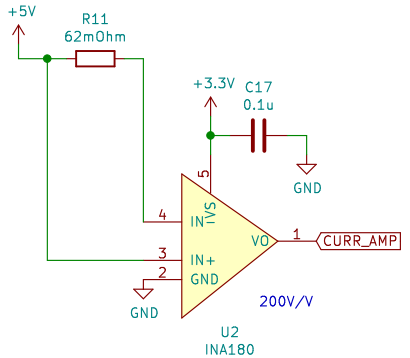


10uF and 100uF capacitors as per datasheet directly (no calculations)
TPSM84205 is a 5V fixed-voltage regulator.
Max Iout rating: 1.5A

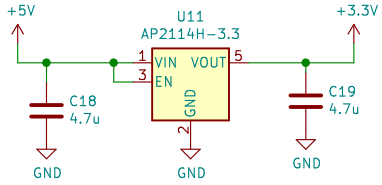


62mR * I * 200v/v = 3.3V
Imax = 266mA

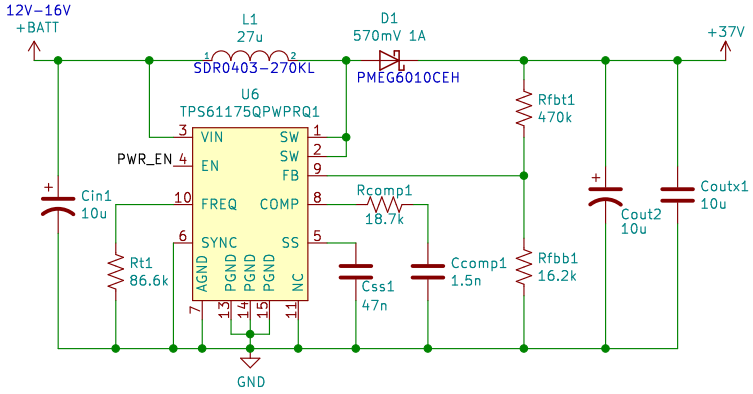
Logger Board Power Supplies



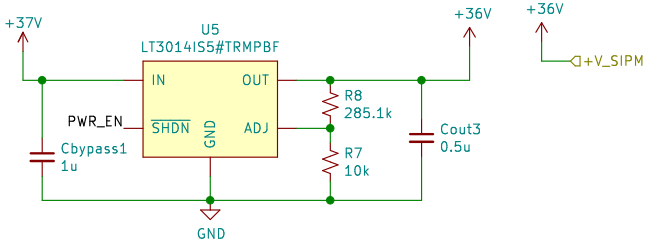
AP2114HA-3.3 is a 3.3V LDO
Iout = 600mA



TPS61175 is a boost converter.
Max Iout rating: 3A
Values are taken from WEBENCH power designer
https://webench.ti.com/appinfo/webench/scripts/SDP.cgi?ID=72ECE7EF0AA4EE07
PDF version:
https://drive.google.com/file/d/1ktwurgh3BjmDxpc3J00zTu8llix18m34/view?usp=sharing



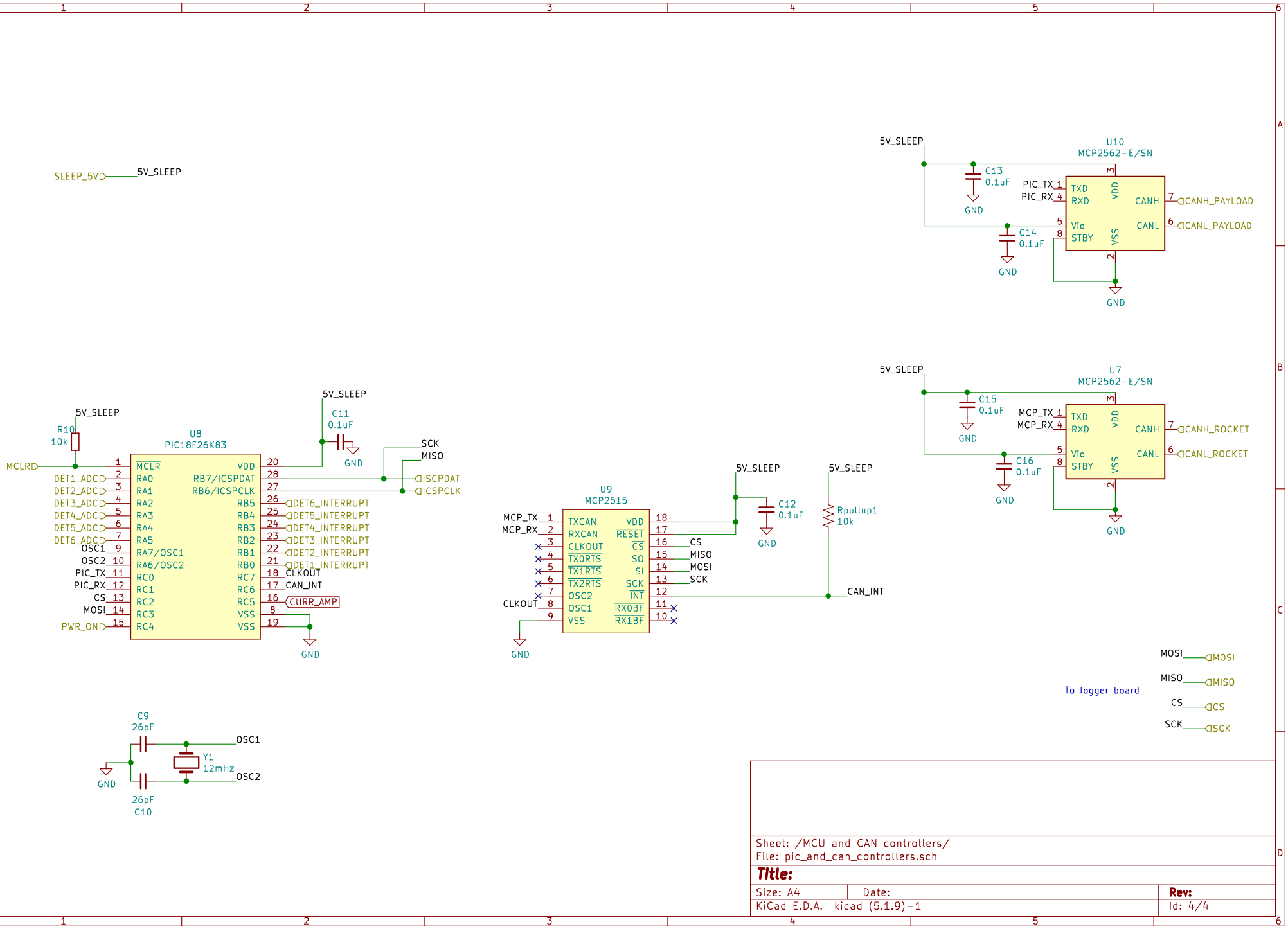
LT3014IS5#TRMPBF is a low dropout regulator.
Vo = 1.22(1+R8/R7)
Iout = 0.02A



Sheet: /battery_management/
File: battery_management.sch

Title:

Size: A4 | Date: | **Rev:**
KiCad E.D.A. kicad (5.1.9)-1 | Id: 3/4


SLEEP_5VD
5V_SLEEP
U10
MCP2562-E/SN
C13
0.1uF
C14
0.1uF
PIC_TX
PIC_RX
TXD
RXD
Vio
STBY
VDD
VSS
CANH
CANL
CANH_PAYLOAD
CANL_PAYLOAD
GND
U7
MCP2562-E/SN
C15
0.1uF
C16
0.1uF
MCP_TX
MCP_RX
CANH_ROCKET
CANL_ROCKET
U8
PIC18F26K83
R10
10k
C11
0.1uF
MCLR
DET1_ADC
DET2_ADC
DET3_ADC
DET4_ADC
DET5_ADC
DET6_ADC
OSC1
OSC2
PIC_TX
PIC_RX
CS
MOSI
PWR_ON
RA0
RA1
RA2
RA3
RA4
RA5
RA7/OSC1
RA6/OSC2
RC0
RC1
RC2
RC3
RC4
RB7/ICSPDAT
RB6/ICSPCLK
RB5
RB4
RB3
RB2
RB1
RB0
RC7
RC6
RC5
VDD
VSS
SCK
MISO
ISCPDAT
ICSPCLK
DET6_INTERRUPT
DET5_INTERRUPT
DET4_INTERRUPT
DET3_INTERRUPT
DET2_INTERRUPT
DET1_INTERRUPT
CLKOUT
CAN_INT
CURR_AMP
U9
MCP2515
TXCAN
RXCAN
CLKOUT
TX0RTS
TX1RTS
TX2RTS
OSC2
OSC1
VSS
VDD
RESET
CS
SO
SI
SCK
INT
RX0BF
RX1BF
C12
0.1uF
Rpullup1
10k
C9
26pF
C10
26pF
Y1
12mHz
OSC1
OSC2
MOSI
MISO
CS
SCK
To logger board
Sheet: /MCU and CAN controllers/
File: pic_and_can_controllers.sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (5.1.9)-1
Id: 4/4