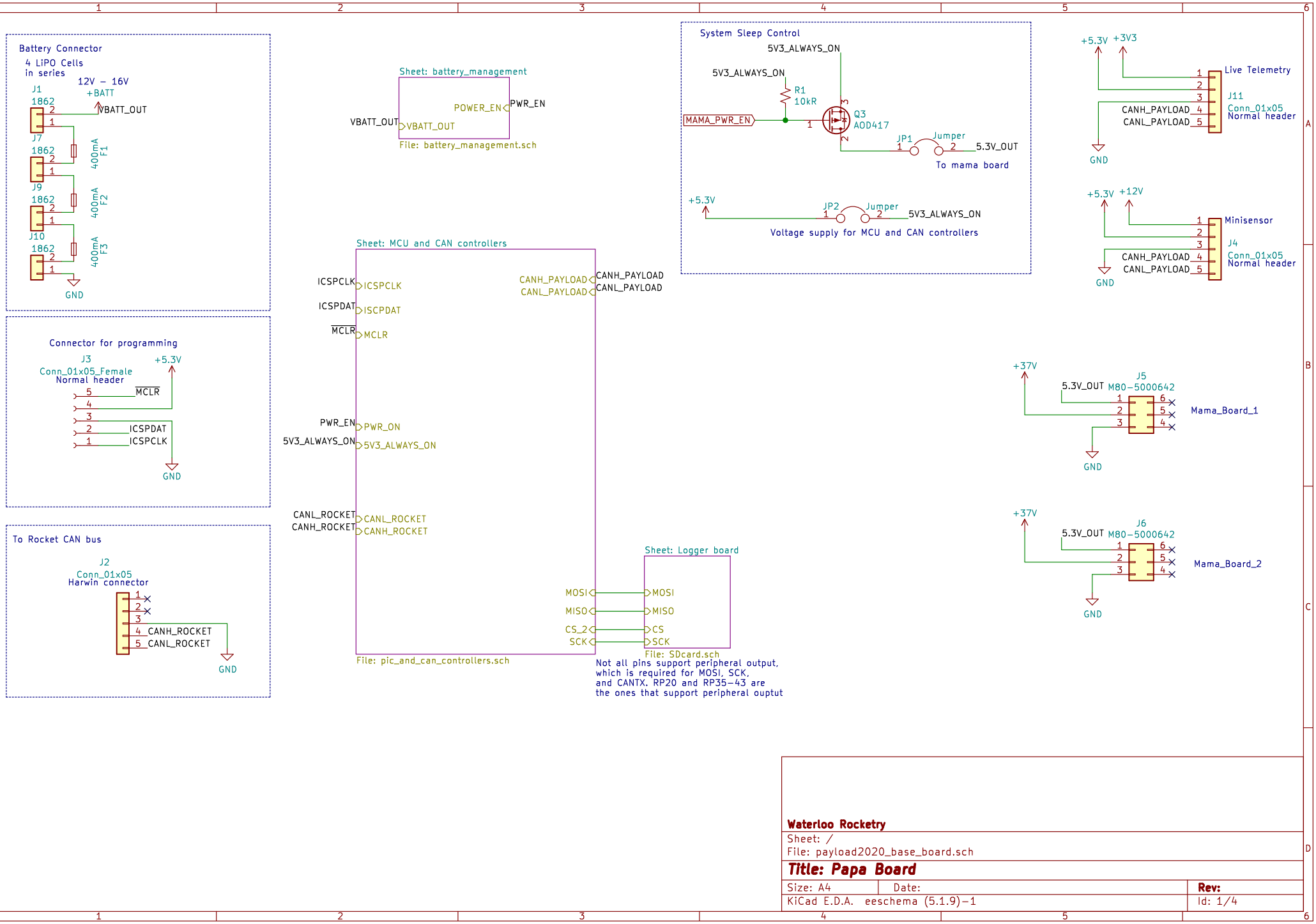
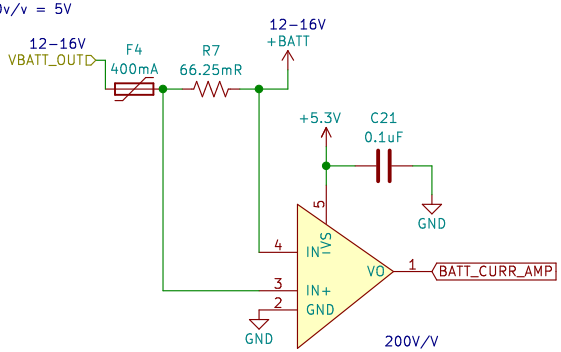
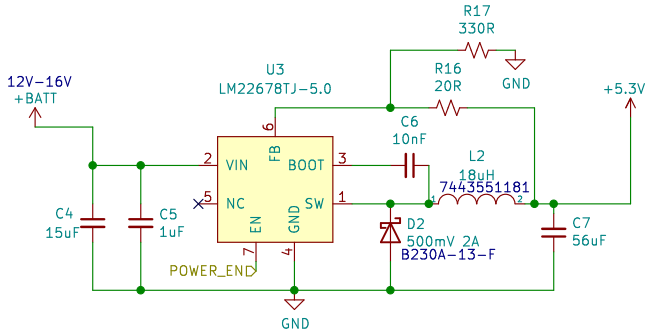

Battery Connector
4 LiPO Cells
in series
12V – 16V
+BATT
J1
1862
VBATT_OUT
J7
J9
J10
400mA F1
400mA F2
400mA F3
GND
Connector for programming
J3
Conn_01x05_Female
Normal header
+5.3V
MCLR
ICSPDAT
ICSPCLK
GND
To Rocket CAN bus
J2
Conn_01x05
Harwin connector
CANH_ROCKET
CANL_ROCKET
GND
Sheet: battery_management
VBATT_OUT
POWER_EN
PWR_EN
File: battery_management.sch
Sheet: MCU and CAN controllers
ICSPCLK
ICSPDAT
MCLR
CANH_PAYLOAD
CANL_PAYLOAD
PWR_EN
PWR_ON
5V3_ALWAYS_ON
CANL_ROCKET
CANH_ROCKET
File: pic_and_can_controllers.sch
Sheet: Logger board
MOSI
MISO
CS_2
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
System Sleep Control
5V3_ALWAYS_ON
R1
10kR
MAMA_PWR_EN
Q3
AOD417
JP1
Jumper
5.3V_OUT
To mama board
JP2
Voltage supply for MCU and CAN controllers
+3V3
Live Telemetry
J11
Conn_01x05
Normal header
CANH_PAYLOAD
CANL_PAYLOAD
+12V
Minisensor
J4
J5
J6
+37V
M80-5000642
Mama_Board_1
Mama_Board_2
Waterloo Rocketry
Sheet: /
File: payload2020_base_board.sch
Title: Papa Board
Size: A4
Date:
Rev:
KiCad E.D.A. eeschema (5.1.9)-1
Id: 1/4

Main Power Supplies

66.25mR * I * 200v/v = 5V
Imax = 400mA

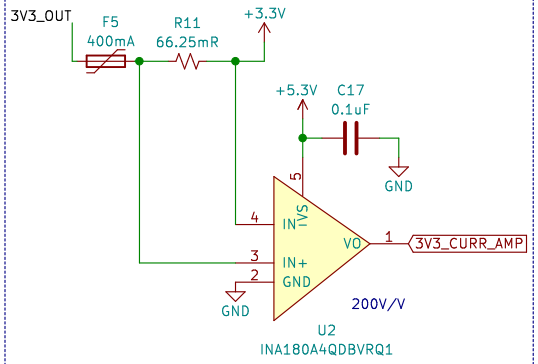


LM22678TJ-5.0/NOPB is a buck converter.
Iout: 1.5A
Values are taken from WEBENCH power designer
https://webench.ti.com/appinfo/webench/scripts/SDP.cgi?ID=68E5BFACDBC533EB
PDF version:
https://drive.google.com/file/d/13pYM-p7NzZnNQYZXknj9P6BV4uZ4R9wv/view?usp=sharing

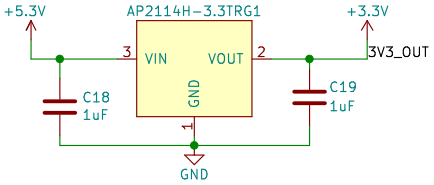


Logger Board Power Supplies

66.25mR * I * 200v/v = 5.3V
Imax = 400mA

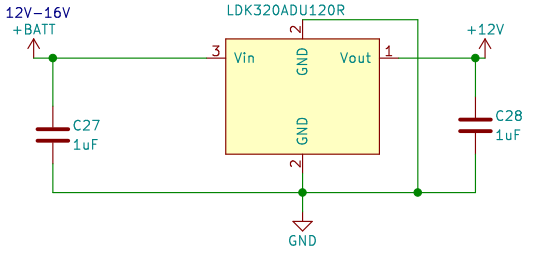


AP2114H-3.3TRG1 is a 3.3V LDO
Iout = 600mA

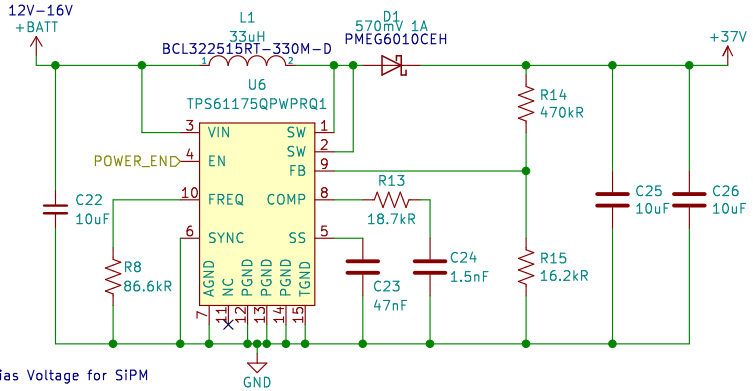


1uF capacitors as per datasheet directly (no calculations)
LDK320ADU120R is a 12V fixed-voltage regulator.
Max Iout rating: 0.2A

DNP - Do not place



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



Bias Voltage for SiPM

Sheet: /battery_management/
File: battery_management.sch

Title:

Size: A4	Date:	**Rev:**
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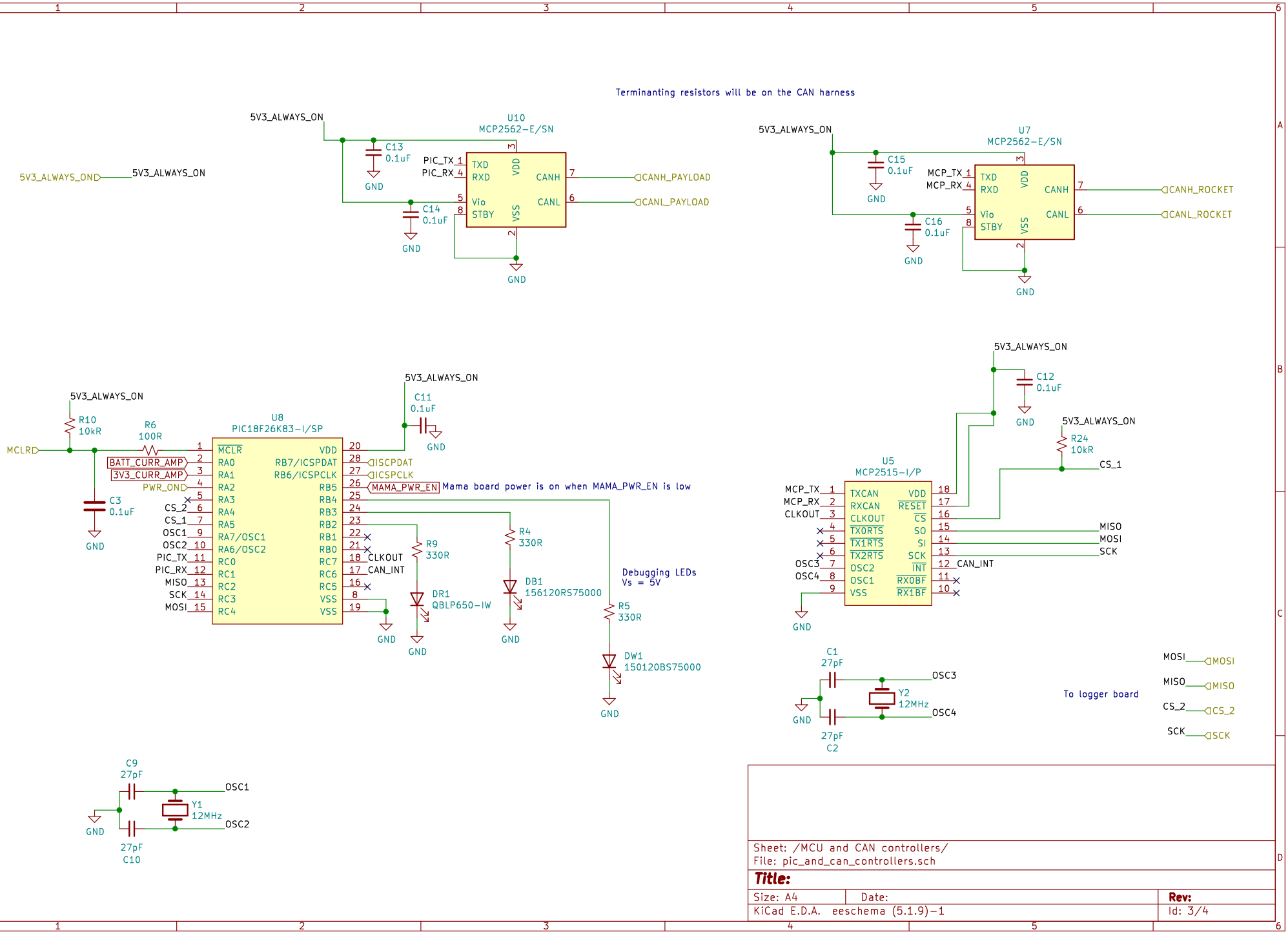
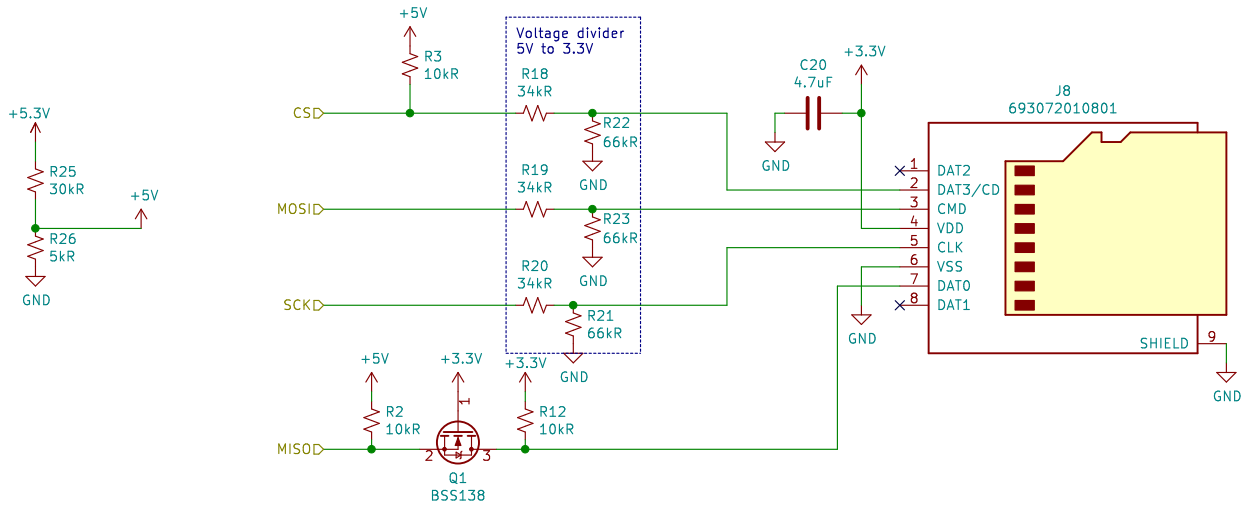

Terminanting resistors will be on the CAN harness
5V3_ALWAYS_ON
5V3_ALWAYS_ON
U10
MCP2562-E/SN
C13
0.1uF
GND
PIC_TX
PIC_RX
TXD
RXD
Vio
STBY
VDD
VSS
CANH
CANL
C14
0.1uF
GND
CANH_PAYLOAD
CANL_PAYLOAD
GND
5V3_ALWAYS_ON
U7
MCP2562-E/SN
C15
0.1uF
GND
MCP_TX
MCP_RX
CANH_ROCKET
CANL_ROCKET
C16
0.1uF
GND
GND
5V3_ALWAYS_ON
C11
0.1uF
GND
5V3_ALWAYS_ON
R10
10kR
R6
100R
MCLR
U8
PIC18F26K83-I/SP
BATT_CURR_AMP
3V3_CURR_AMP
PWR_ON
CS_2
CS_1
OSC1
OSC2
PIC_TX
PIC_RX
MISO
SCK
MOSI
ISCPDAT
ICSPCLK
MAMA_PWR_EN
Mama board power is on when MAMA_PWR_EN is low
CLKOUT
CAN_INT
C3
0.1uF
GND
R9
330R
DR1
QBLP650-IW
GND
R4
330R
DB1
156120RS75000
GND
Debugging LEDs
Vs = 5V
R5
330R
DW1
150120BS75000
GND
5V3_ALWAYS_ON
C12
0.1uF
GND
5V3_ALWAYS_ON
R24
10kR
CS_1
U5
MCP2515-I/P
MCP_TX
MCP_RX
CLKOUT
OSC3
OSC4
TXCAN
RXCAN
CLKOUT
TX0RTS
TX1RTS
TX2RTS
OSC2
OSC1
VSS
VDD
RESET
CS
SO
SI
SCK
INT
RX0BF
RX1BF
MISO
MOSI
SCK
CAN_INT
GND
C1
27pF
OSC3
Y2
12MHz
OSC4
GND
27pF
C2
To logger board
MOSI
MISO
CS_2
SCK
MOSI
MISO
CS_2
SCK
C9
27pF
OSC1
Y1
12MHz
OSC2
GND
27pF
C10
Sheet: /MCU and CAN controllers/
File: pic_and_can_controllers.sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. eeschema (5.1.9)-1
Id: 3/4



Sheet: /Logger board/
File: SDcard.sch

Title:

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