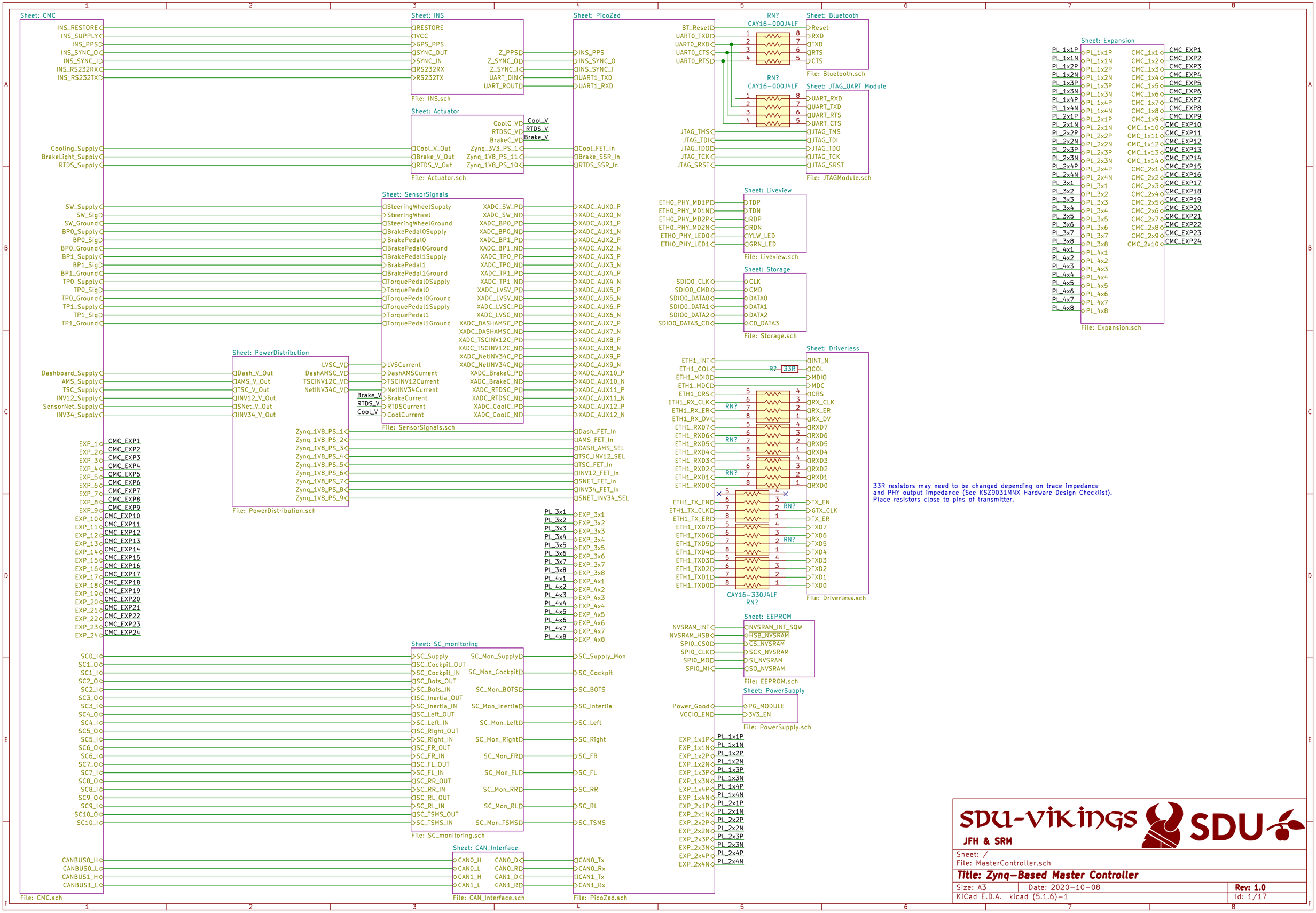
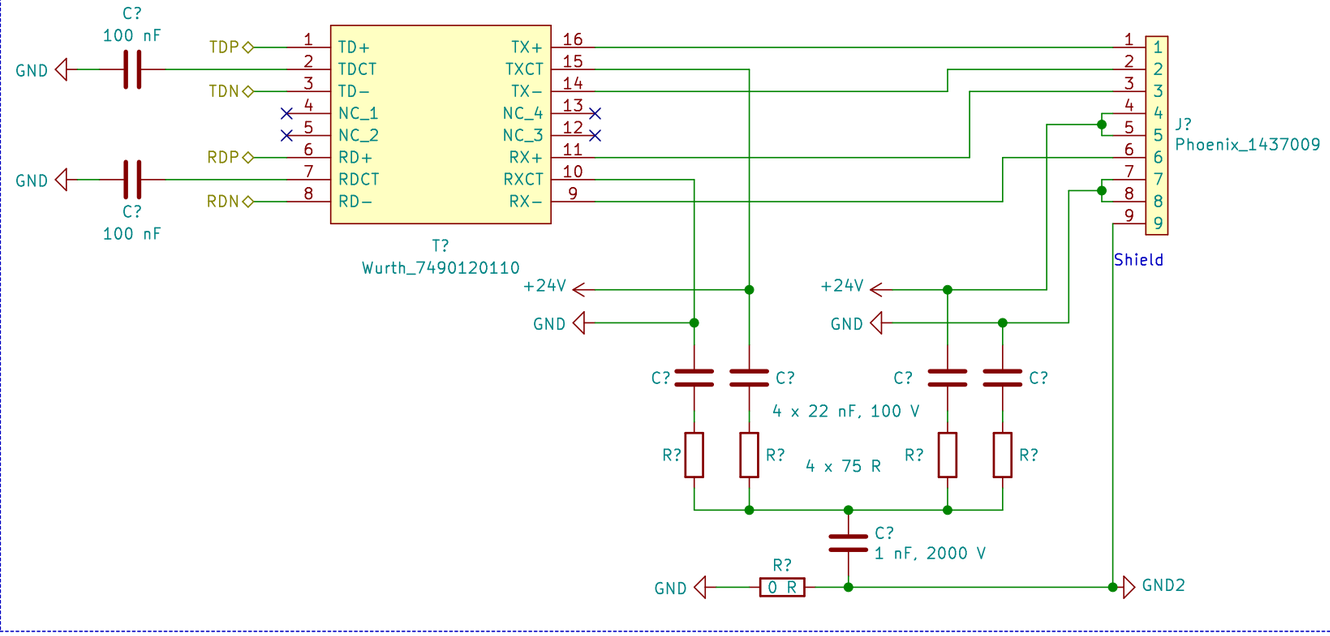
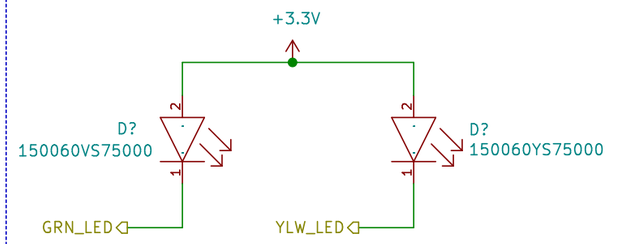

Sheet: CMC
INS_RESTORE
INS_SUPPLY
INS_PPS
INS_SYNC_O
INS_SYNC_I
INS_RS232RX
INS_RS232TX
Cooling_Supply
BrakeLight_Supply
RTDS_Supply
SW_Supply
SW_Sig
SW_Ground
BP0_Supply
BP0_Sig
BP0_Ground
BP1_Supply
BP1_Sig
BP1_Ground
TP0_Supply
TP0_Sig
TP0_Ground
TP1_Supply
TP1_Sig
TP1_Ground
Dashboard_Supply
AMS_Supply
TSC_Supply
INV12_Supply
SensorNet_Supply
INV34_Supply
EXP_1
EXP_2
EXP_3
EXP_4
EXP_5
EXP_6
EXP_7
EXP_8
EXP_9
EXP_10
EXP_11
EXP_12
EXP_13
EXP_14
EXP_15
EXP_16
EXP_17
EXP_18
EXP_19
EXP_20
EXP_21
EXP_22
EXP_23
EXP_24
SC0_I
SC1_O
SC1_I
SC2_O
SC2_I
SC3_O
SC3_I
SC4_O
SC4_I
SC5_O
SC5_I
SC6_O
SC6_I
SC7_O
SC7_I
SC8_O
SC8_I
SC9_O
SC9_I
SC10_O
SC10_I
CANBUS0_H
CANBUS0_L
CANBUS1_H
CANBUS1_L
File: CMC.sch
Sheet: INS
RESTORE
VCC
GPS_PPS
SYNC_OUT
SYNC_IN
RS232RX
RS232TX
Z_PPS
Z_SYNC_O
Z_SYNC_I
UART_DIN
UART_ROUT
File: INS.sch
Sheet: Actuator
CoolC_VD
RTDSC_VD
BrakeC_VD
Cool_V
RTDS_V
Brake_V
Cool_V_Out
Brake_V_Out
RTDS_V_Out
Zynq_3V3_PS_1
Zynq_1V8_PS_11
Zynq_1V8_PS_10
File: Actuator.sch
Sheet: SensorSignals
SteeringWheelSupply
SteeringWheel
SteeringWheelGround
BrakePedal0Supply
BrakePedal0
BrakePedal0Ground
BrakePedal1Supply
BrakePedal1
BrakePedal1Ground
TorquePedal0Supply
TorquePedal0
TorquePedal0Ground
TorquePedal1Supply
TorquePedal1
TorquePedal1Ground
XADC_SW_PD
XADC_SW_ND
XADC_BP0_PD
XADC_BP0_ND
XADC_BP1_PD
XADC_BP1_ND
XADC_TP0_PD
XADC_TP0_ND
XADC_TP1_PD
XADC_TP1_ND
XADC_LVSV_PD
XADC_LVSV_ND
XADC_LVSC_PD
XADC_LVSC_ND
XADC_DASHAMSC_PD
XADC_DASHAMSC_ND
XADC_TSCINV12C_PD
XADC_TSCINV12C_ND
XADC_NetINV34C_PD
XADC_NetINV34C_ND
XADC_BrakeC_PD
XADC_BrakeC_ND
XADC_RTDSC_PD
XADC_RTDSC_ND
XADC_CoolC_PD
XADC_CoolC_ND
File: SensorSignals.sch
Sheet: PowerDistribution
Dash_V_Out
AMS_V_Out
TSC_V_Out
INV12_V_Out
SNet_V_Out
INV34_V_Out
LVSC_VD
DashAMSC_VD
TSCINV12C_VD
NetINV34C_VD
LVSCurrent
DashAMSCurrent
TSCINV12Current
NetINV34Current
BrakeCurrent
RTDSCurrent
CoolCurrent
File: PowerDistribution.sch
Sheet: PicoZed
INS_PPS
INS_SYNC_O
INS_SYNC_I
UART1_TXD
UART1_RXD
Cool_FET_In
Brake_SSR_In
RTDS_SSR_In
Zynq_1V8_PS_1
Zynq_1V8_PS_2
Zynq_1V8_PS_3
Zynq_1V8_PS_4
Zynq_1V8_PS_5
Zynq_1V8_PS_6
Zynq_1V8_PS_7
Zynq_1V8_PS_8
Zynq_1V8_PS_9
Dash_FET_In
AMS_FET_In
DASH_AMS_SEL
TSC_INV12_SEL
TSC_FET_In
INV12_FET_In
SNET_FET_In
INV34_FET_In
SNET_INV34_SEL
PL_3x1
PL_3x2
PL_3x3
PL_3x4
PL_3x5
PL_3x6
PL_3x7
PL_3x8
PL_4x1
PL_4x2
PL_4x3
PL_4x4
PL_4x5
PL_4x6
PL_4x7
PL_4x8
EXP_3x1
EXP_3x2
EXP_3x3
EXP_3x4
EXP_3x5
EXP_3x6
EXP_3x7
EXP_3x8
EXP_4x1
EXP_4x2
EXP_4x3
EXP_4x4
EXP_4x5
EXP_4x6
EXP_4x7
EXP_4x8
Sheet: SC_monitoring
SC_Supply
SC_Cockpit_OUT
SC_Cockpit_IN
SC_Bots_OUT
SC_Bots_IN
SC_Inertia_OUT
SC_Inertia_IN
SC_Left_OUT
SC_Left_IN
SC_Right_OUT
SC_Right_IN
SC_FR_OUT
SC_FR_IN
SC_FL_OUT
SC_FL_IN
SC_RR_OUT
SC_RR_IN
SC_RL_OUT
SC_RL_IN
SC_TSMS_OUT
SC_TSMS_IN
SC_Mon_Supply
SC_Mon_Cockpit
SC_Mon_BOTS
SC_Mon_Inertia
SC_Mon_Left
SC_Mon_Right
SC_Mon_FR
SC_Mon_FL
SC_Mon_RR
SC_Mon_RL
SC_Mon_TSMS
SC_Supply_Mon
SC_Cockpit
SC_BOTS
SC_Intertia
SC_Left
SC_Right
SC_FR
SC_FL
SC_RR
SC_RL
SC_TSMS
File: SC_monitoring.sch
Sheet: CAN_Interface
CAN0_H
CAN0_L
CAN1_H
CAN1_L
CAN0_D
CAN0_R
CAN1_D
CAN1_R
CAN0_Tx
CAN0_Rx
CAN1_Tx
CAN1_Rx
File: CAN_Interface.sch
File: PicoZed.sch
RN?
CAY16-000J4LF
BT_Reset
UART0_TXD
UART0_RXD
UART0_CTS
UART0_RTS
Sheet: Bluetooth
Reset
RXD
TXD
RTS
CTS
File: Bluetooth.sch
RN?
CAY16-000J4LF
Sheet: JTAG_UART Module
UART_RXD
UART_TXD
UART_RTS
UART_CTS
JTAG_TMS
JTAG_TDI
JTAG_TDO
JTAG_TCK
JTAG_SRST
File: JTAGModule.sch
Sheet: Liveview
ETH0_PHY_MD1P
ETH0_PHY_MD1N
ETH0_PHY_MD2P
ETH0_PHY_MD2N
ETH0_PHY_LED0
ETH0_PHY_LED1
TDP
TDN
RDP
RDN
YLW_LED
GRN_LED
File: Liveview.sch
Sheet: Storage
SDIO0_CLK
SDIO0_CMD
SDIO0_DATA0
SDIO0_DATA1
SDIO0_DATA2
SDIO0_DATA3_CD
CLK
CMD
DATA0
DATA1
DATA2
CD_DATA3
File: Storage.sch
Sheet: Driverless
ETH1_INT
ETH1_COL
ETH1_MDIO
ETH1_MDC
ETH1_CRS
ETH1_RX_CLK
ETH1_RX_ER
ETH1_RX_DV
ETH1_RXD7
ETH1_RXD6
ETH1_RXD5
ETH1_RXD4
ETH1_RXD3
ETH1_RXD2
ETH1_RXD1
ETH1_RXD0
ETH1_TX_EN
ETH1_TX_CLK
ETH1_TX_ER
ETH1_TXD7
ETH1_TXD6
ETH1_TXD5
ETH1_TXD4
ETH1_TXD3
ETH1_TXD2
ETH1_TXD1
ETH1_TXD0
R? 33R
RN?
CAY16-330J4LF
INT_N
COL
MDIO
MDC
CRS
RX_CLK
RX_ER
RX_DV
RXD7
RXD6
RXD5
RXD4
RXD3
RXD2
RXD1
RXD0
TX_EN
GTX_CLK
TX_ER
TXD7
TXD6
TXD5
TXD4
TXD3
TXD2
TXD1
TXD0
File: Driverless.sch
33R resistors may need to be changed depending on trace impedance
and PHY output impedance (See KSZ9031MNX Hardware Design Checklist).
Place resistors close to pins of transmitter.
Sheet: EEPROM
NVSRAM_INT
NVSRAM_HSB
SPI0_CS0
SPI0_CLK
SPI0_MO
SPI0_MI
NVSRAM_INT_SQW
HSB_NVSRAM
CS_NVSRAM
SCK_NVSRAM
SI_NVSRAM
SO_NVSRAM
File: EEPROM.sch
Sheet: PowerSupply
Power_Good
VCCIO_EN
PG_MODULE
3V3_EN
File: PowerSupply.sch
EXP_1x1P
EXP_1x1N
EXP_1x2P
EXP_1x2N
EXP_1x3P
EXP_1x3N
EXP_1x4P
EXP_1x4N
EXP_2x1P
EXP_2x1N
EXP_2x2P
EXP_2x2N
EXP_2x3P
EXP_2x3N
EXP_2x4P
EXP_2x4N
PL_1x1P
PL_1x1N
PL_1x2P
PL_1x2N
PL_1x3P
PL_1x3N
PL_1x4P
PL_1x4N
PL_2x1P
PL_2x1N
PL_2x2P
PL_2x2N
PL_2x3P
PL_2x3N
PL_2x4P
PL_2x4N
Sheet: Expansion
PL_1x1P
PL_1x1N
PL_1x2P
PL_1x2N
PL_1x3P
PL_1x3N
PL_1x4P
PL_1x4N
PL_2x1P
PL_2x1N
PL_2x2P
PL_2x2N
PL_2x3P
PL_2x3N
PL_2x4P
PL_2x4N
PL_3x1
PL_3x2
PL_3x3
PL_3x4
PL_3x5
PL_3x6
PL_3x7
PL_3x8
PL_4x1
PL_4x2
PL_4x3
PL_4x4
PL_4x5
PL_4x6
PL_4x7
PL_4x8
CMC_1x1
CMC_1x2
CMC_1x3
CMC_1x4
CMC_1x5
CMC_1x6
CMC_1x7
CMC_1x8
CMC_1x9
CMC_1x10
CMC_1x11
CMC_1x12
CMC_1x13
CMC_1x14
CMC_2x1
CMC_2x2
CMC_2x3
CMC_2x4
CMC_2x5
CMC_2x6
CMC_2x7
CMC_2x8
CMC_2x9
CMC_2x10
CMC_EXP1
CMC_EXP2
CMC_EXP3
CMC_EXP4
CMC_EXP5
CMC_EXP6
CMC_EXP7
CMC_EXP8
CMC_EXP9
CMC_EXP10
CMC_EXP11
CMC_EXP12
CMC_EXP13
CMC_EXP14
CMC_EXP15
CMC_EXP16
CMC_EXP17
CMC_EXP18
CMC_EXP19
CMC_EXP20
CMC_EXP21
CMC_EXP22
CMC_EXP23
CMC_EXP24
File: Expansion.sch
SDU-VIKINGS
JFH & SRM
SDU
Sheet: /
File: MasterController.sch
Title: Zynq-Based Master Controller
Size: A3
Date: 2020-10-08
Rev: 1.0
KiCad E.D.A. kicad (5.1.6)-1
Id: 1/17

Ethernet magnetics, Bob Smith termination, and M12 connector



Power and activity LEDs



Current limited by PicoZed.

All differential routes must be same length on PCB.
Differential Impedance matching: 100 Ω
Do not put ground under the magnetics IC.

SDU-VIKINGS SDU

JFH & SRM

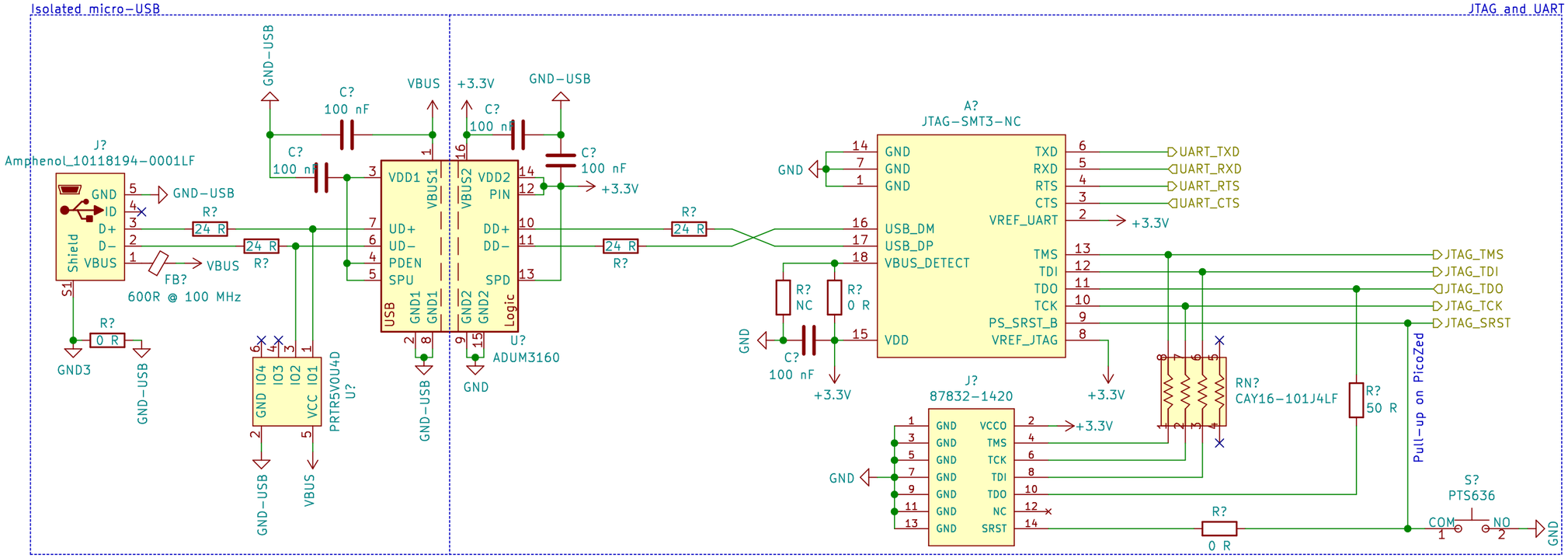
Sheet: /Liveview/
File: Liveview.sch

Title: Zynq-Based Master Controller

Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 2/17

Isolated micro-USB

JTAG and UART



Differential pairs must be same length on PCB.
Differential impedance matching: 90 Ω

SDU-VIKINGS

JFH & SRM

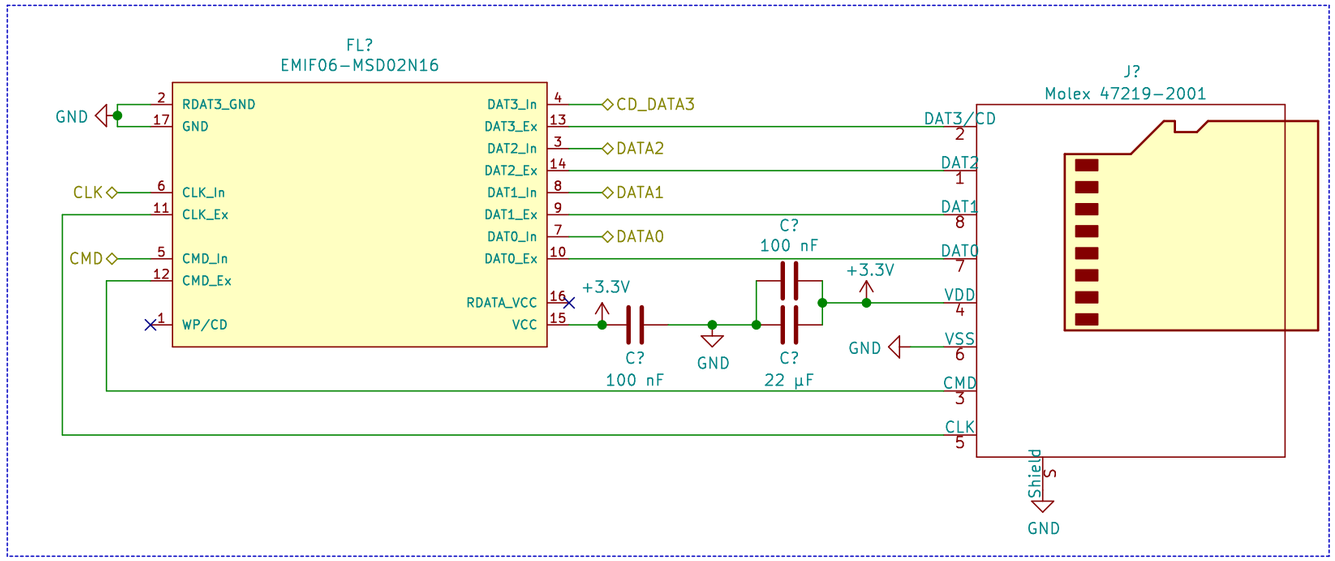
SDU

Sheet: /JTAG_UART Module/
File: JTAGModule.sch

Title: Zynq-Based Master Controller

Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 3/17

EMI Filter, ESD Protection, and SD Card Connector



All switching inputs must be same length on PCB.
Impedance matching: 50 Ω
Place filter IC close to connector.

SDU-VIKINGS

JFH & SRM

SDU

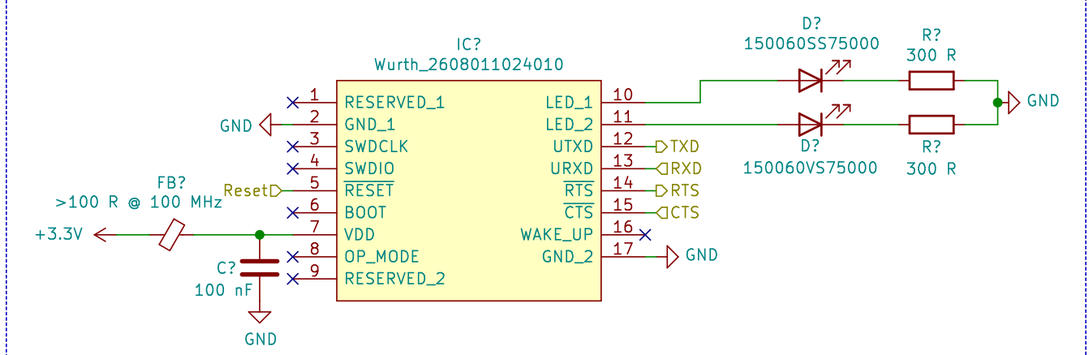
Sheet: /Storage/ File: Storage.sch		
Title: Zynq-Based Master Controller		
Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 4/17

150060VS75000 (Green LED):
Vf = 2 V (typ)
If = 5 mA
R = (3.3 V − 2 V) / 5 mA = 260 Ω

150060SS75000 (Red LED):
Vf = 1.9 V (typ)
If = 5 mA
R = (3.3 V − 1.9 V) / 5 mA = 280 Ω

Both rounded up to 300 Ω.

Bluetooth Module

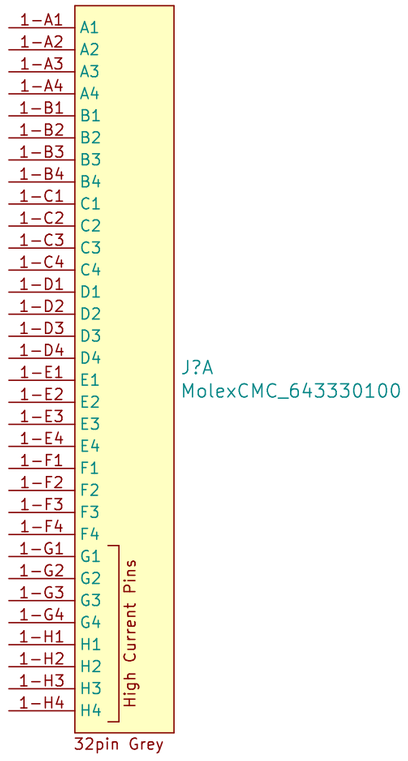


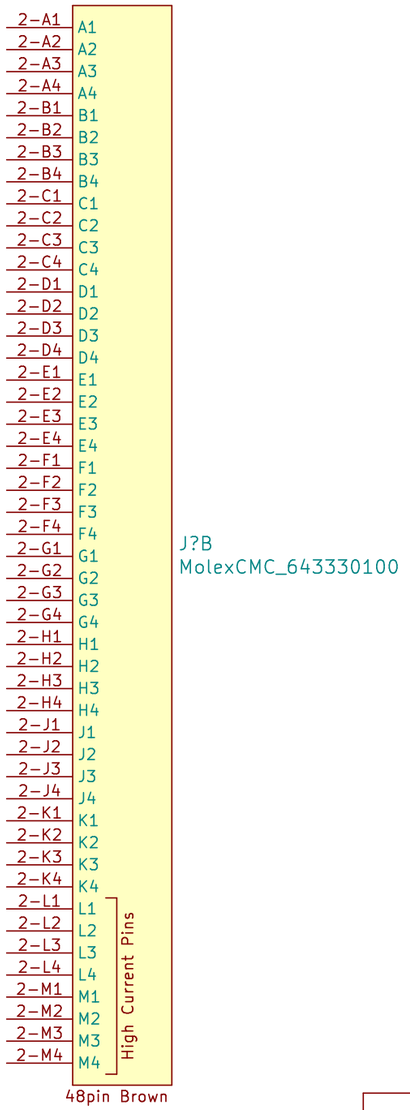
Do not put ground under the antenna.
Place antenna at edge of PCB.

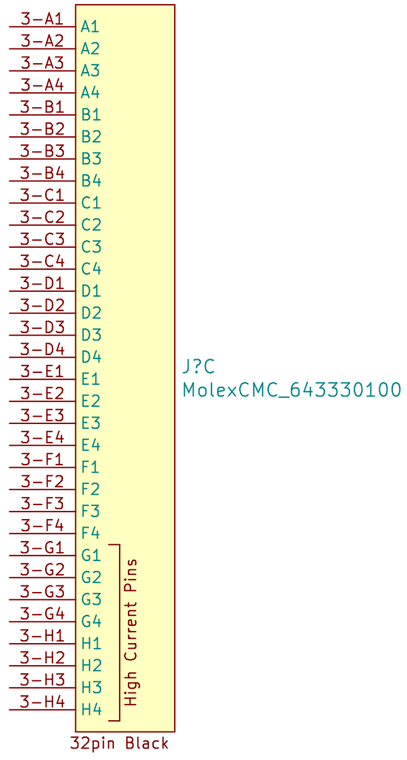
SDU-VIKINGS SDU

JFH & SRM

Sheet: /Bluetooth/		
File: Bluetooth.sch		
Title: Zynq−Based Master Controller		
Size: A4	Date: 2020−10−08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)−1		Id: 5/17







SDU-VIKINGS SDU

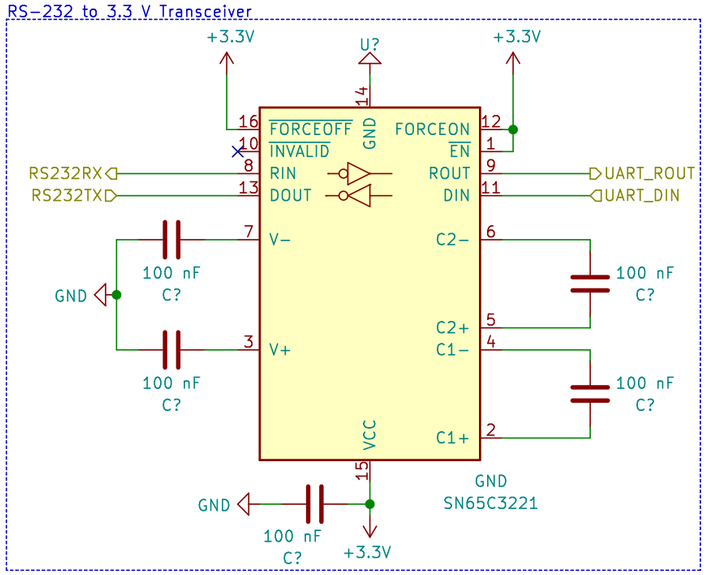
JFH & SRM

Sheet: /CMC/
File: CMC.sch

Title: Zynq-Based Master Controller

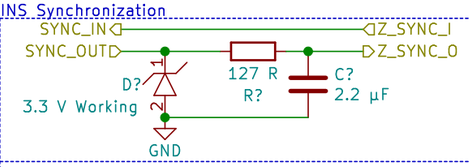
Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 6/17

RS-232 to 3.3 V Transceiver

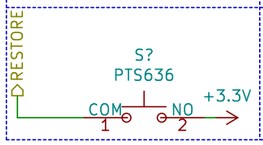


INS Supply

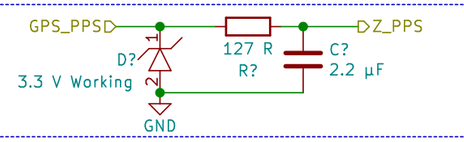
INS Synchronization



RC filter:
f_c = 570 Hz



Reset Switch



INS GPS Pulse-Per-Second

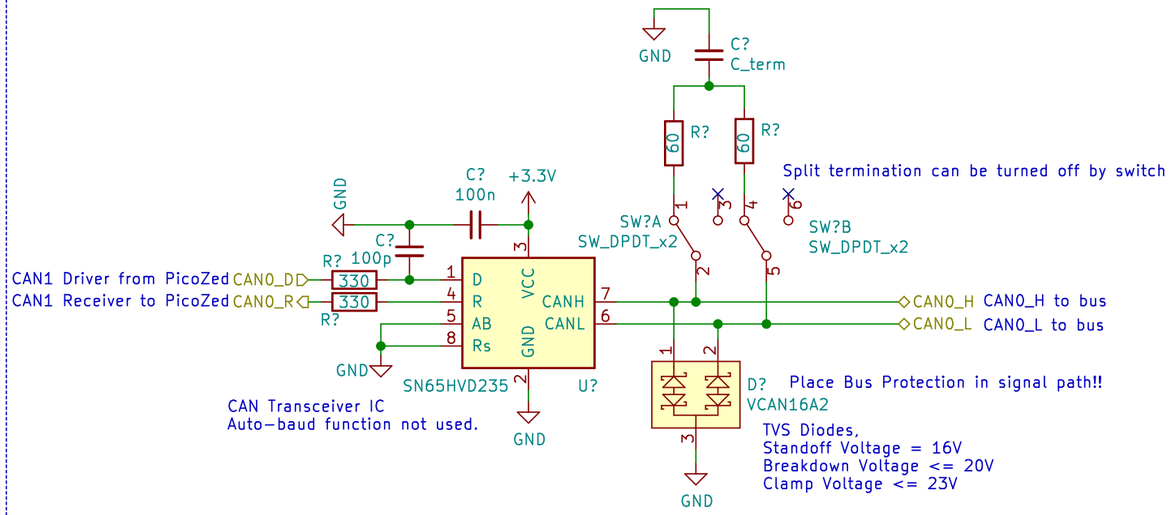
SDU-VIKINGS

JFH & SRM

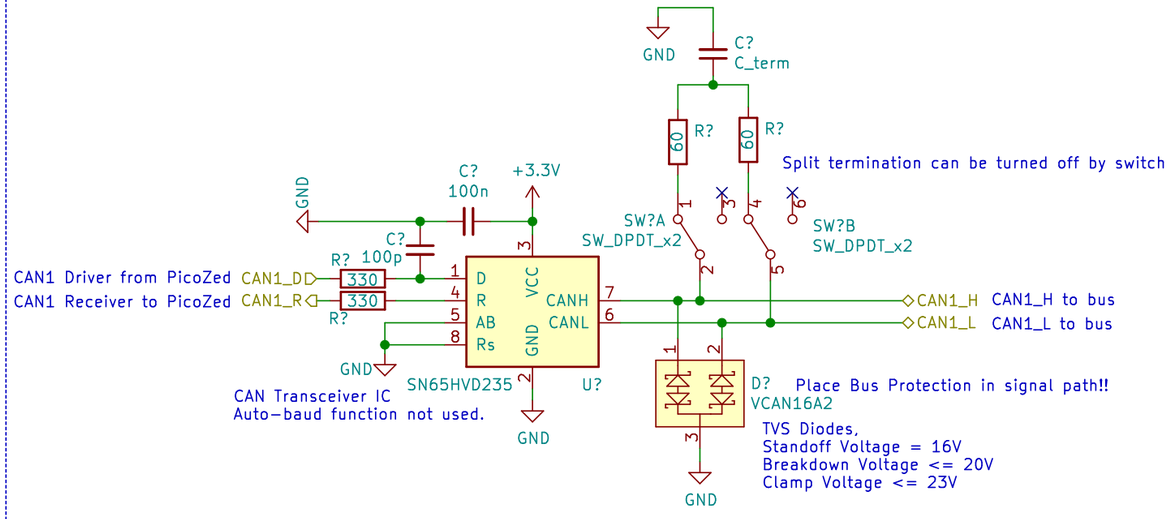
SDU

Sheet: /INS/		
File: INS.sch		
Title: Zynq-Based Master Controller		
Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 7/17

CAN0 Interface Circuit



CAN1 Interface Circuit



SDU-VIKINGS SDU

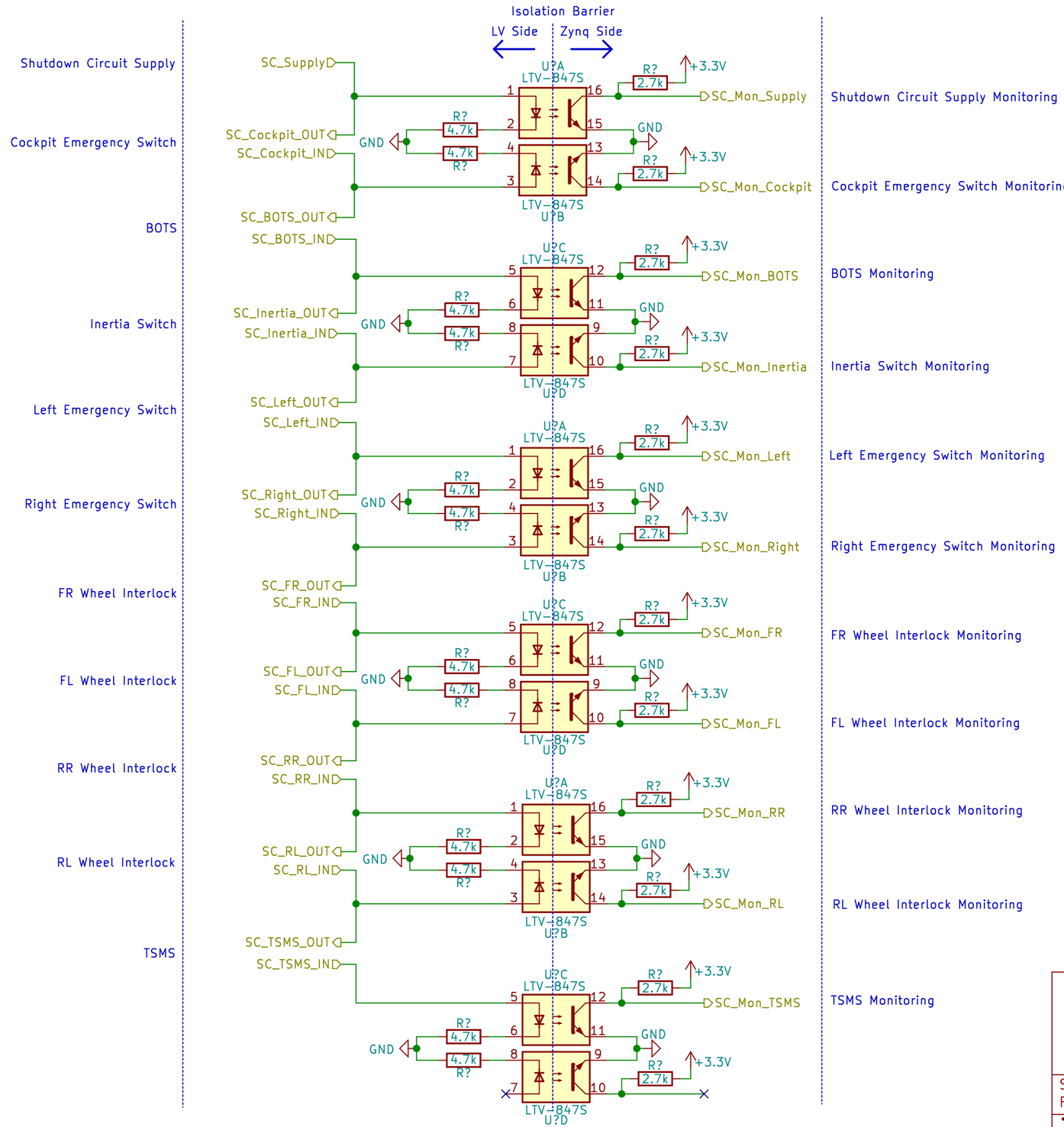
JFH & SRM

Sheet: /CAN_Interface/
File: CAN_Interface.sch

Title: Zynq-Based Master Controller

Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 8/17

Shutdown Circuit Monitoring



SDU-VIKINGS

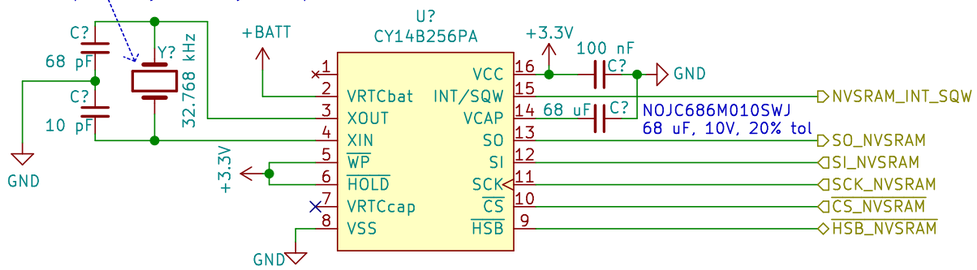
JFH & SRM

SDU

Sheet: /SC_monitoring/		
File: SC_monitoring.sch		
Title: Zynq-Based Master Controller		
Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 9/17

NVSRAM – Infinite Access SRAM and 1M stores to NVSRAM

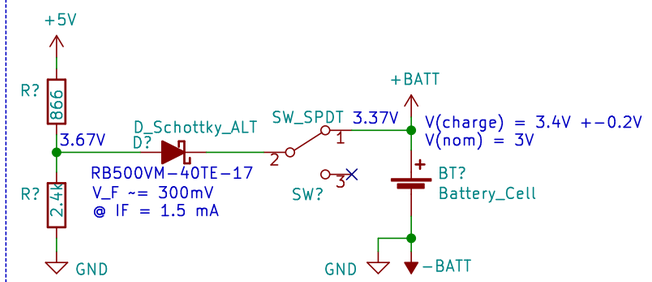
FK161EIHM0.032768
12.5 pF Load Cap.
−0.04 PPM freq. stability Battery Backup for RTC



Interrupt: Programmable to drives output at interrupt
Square Wave: Drives programmable Square Wave
Calibration Output: Drives ~512 Hz Square used for calibration

SPI OUT
SPI IN
SPI CLOCK
SPI CHIP SELECT, ACTIVE−LOW
SPI Hardware Store Busy. Indicates busy status of nvSRAM
When driven LOW starts Hardware STORE

Battery Charging Circuit



SDU-VIKINGS
JFH & SRM

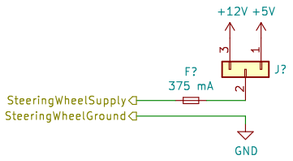
SDU

Sheet: /EEPROM/
File: EEPROM.sch

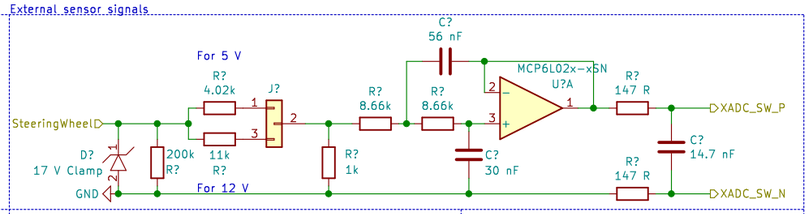
Title: Zynq−Based Master Controller

Size: A4	Date: 2020−10−08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)−1		Id: 10/17

External sensor supplies



External sensor signals

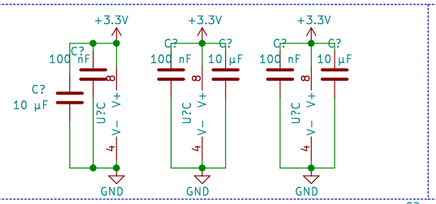


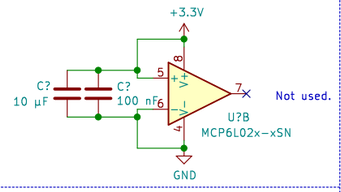
Max voltage: 12 V or 5 V
R_series = R_shunt * 4 or *11
R_shunt = 1000
R_series1 = 4020 (real)
R_series2 = 11000 (real)

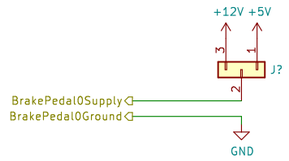
Sallen-Key filter:
Designed using ST's eDesignSuite.
Butterworth, f_c = 450 Hz
t_s = 5 ms

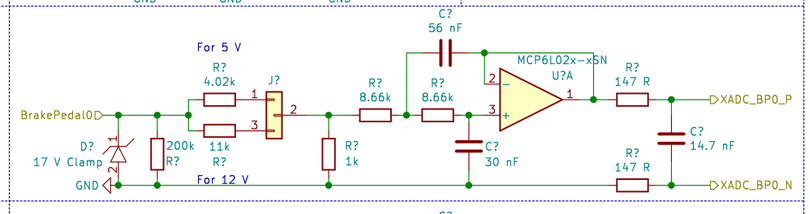
RC filter:
f_c = 36.8 kHz
t_s: 38.9 µs

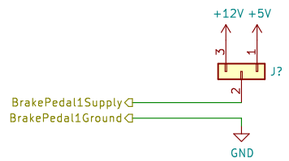
Fused IC

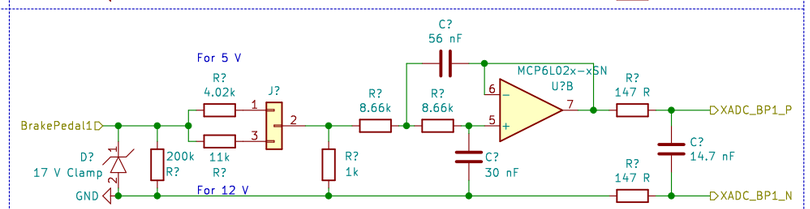












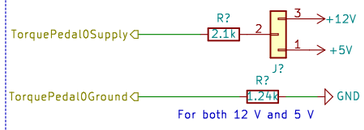
TP0 = 15% - 75%
TP1 = 25% - 85%
Potentiometer = 5k +-20%

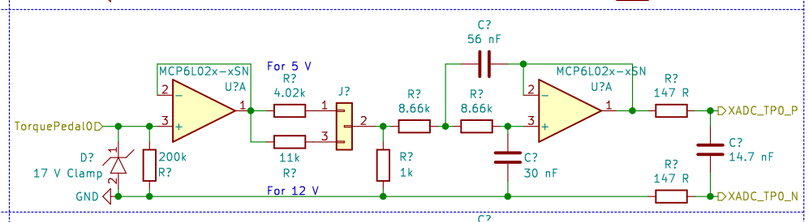
5V TP0:
1.24k & 2.1k (low/high)
== 0.74 - 3.74

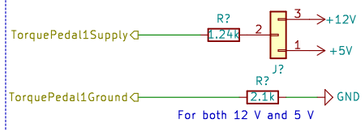
5V TP1:
2.1k & 1.24k (low/high)
== 1.26 - 4.26

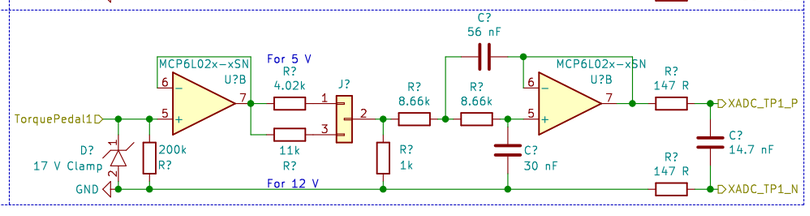
12V TP0:
1.24k & 2.1k (low/high)
== 1.78 - 8.98

12V TP1:
2.1k & 1.24k (low/high)
== 3.02 - 10.22



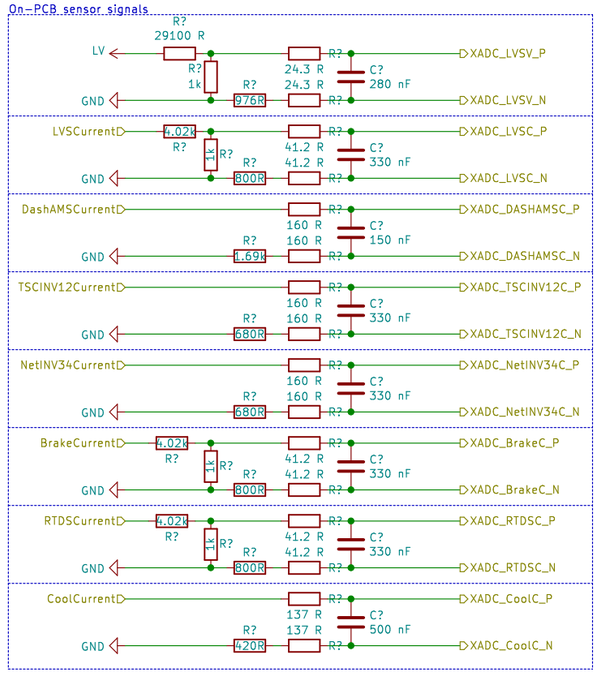






High = Vcc * (5k + R_low) / (5k + R_low + R_high)
Low = Vcc * R_low / (5k + R_low + R_high)

On-PCB sensor signals



Calculation steps

Voltage divider:
R_series = (V_max - 1) * R_shunt
Pick R_shunt and calculate R_series; real values
Calculate R_parallel (R_series || R_shunt)

f_s = 100 Hz ---> t_samp = 10 ms

Pick capacitor for anti-aliasing, C_AA
R_AA = (t_samp / 2) / (2 * 9.01 * C_AA) - R_parallel

Resulting t_s will be around 5 ms, cut-off frequency around 285 Hz.

Place filters close to JX headers.

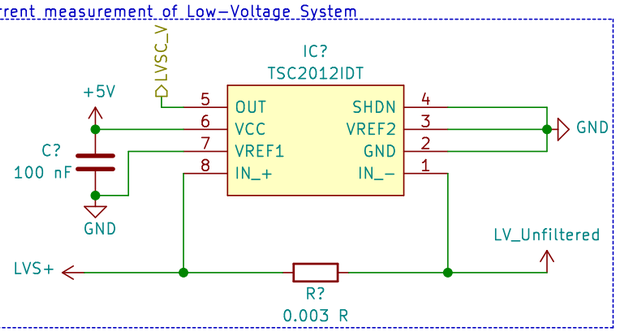
SDU-VIKINGS SDU
JFH & SRM

Sheet: /SensorSignals/
File: SensorSignals.sch

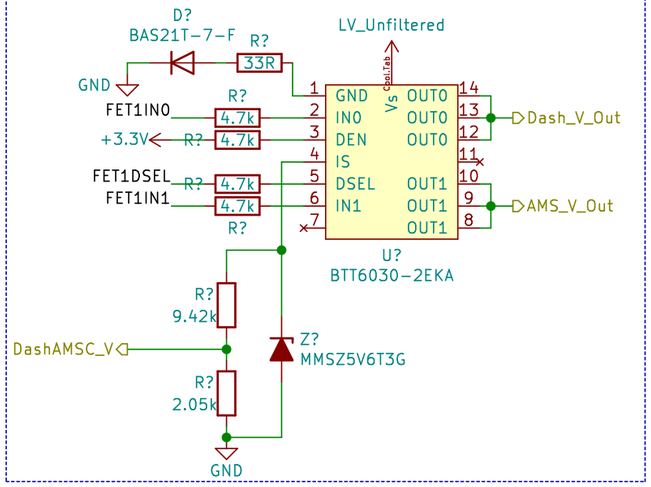
Title: Zynq-Based Master Controller

Size: A3	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 11/17

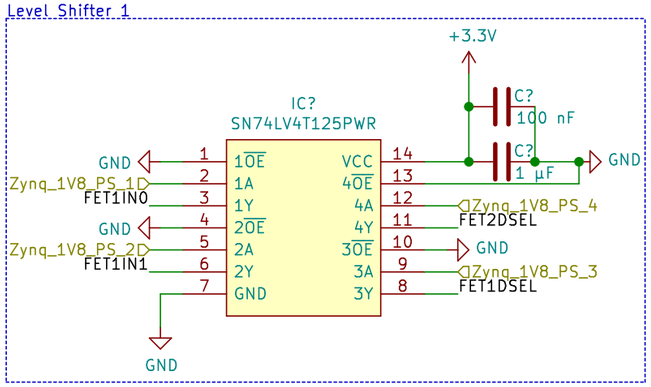
Current measurement of Low-Voltage System



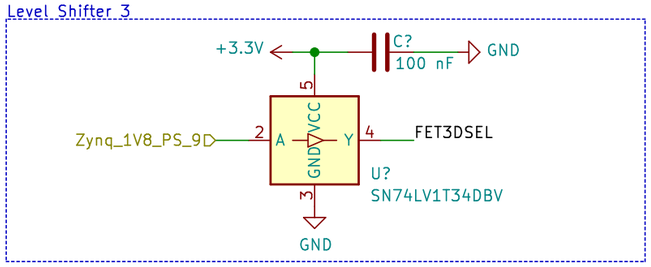
PROFET 1: Dashboard and Accumulator Management System (max. 1 A)



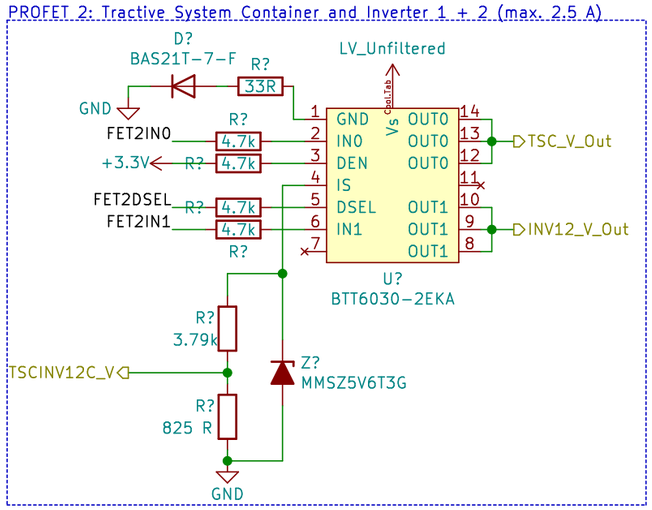
Level Shifter 1



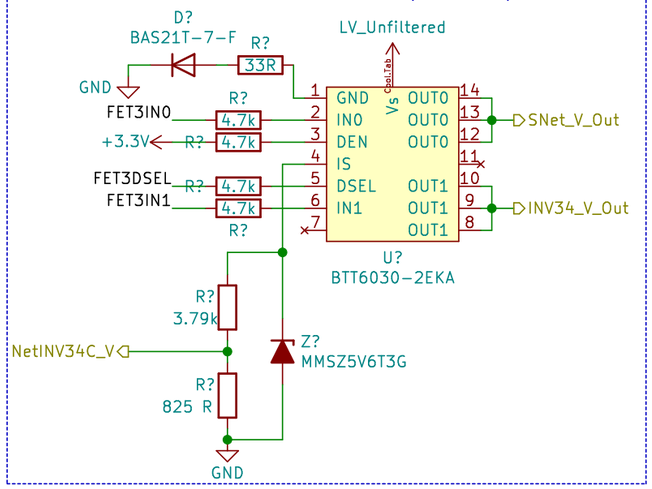
Level Shifter 3



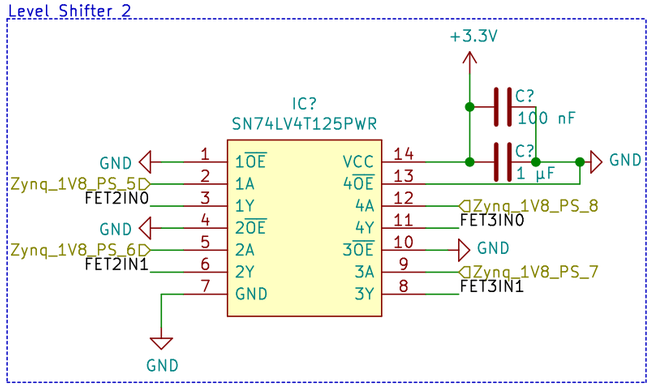
PROFET 2: Tractive System Container and Inverter 1 + 2 (max. 2.5 A)



PROFET 3: Sensor Network and Inverter 3 + 4 (max. 2.5 A)



Level Shifter 2



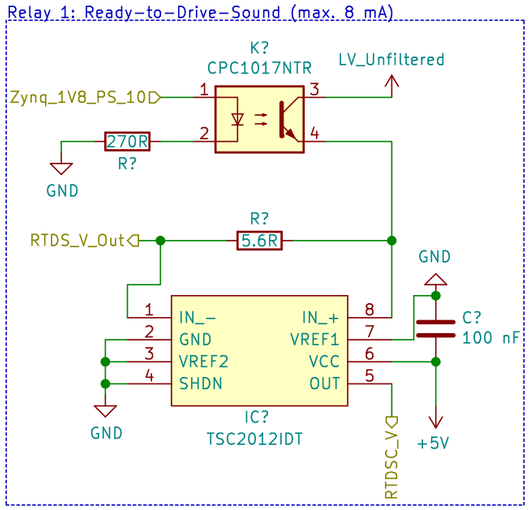
SDU-VIKINGS

JFH & SRM

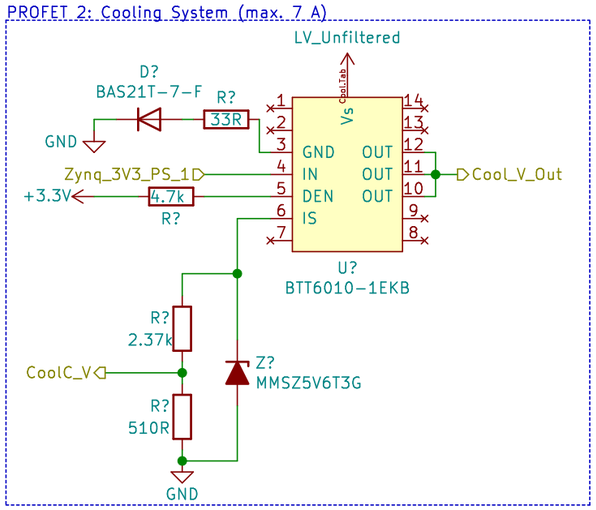
SDU

Sheet: /PowerDistribution/		
File: PowerDistribution.sch		
Title: Zynq-Based Master Controller		
Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 12/17

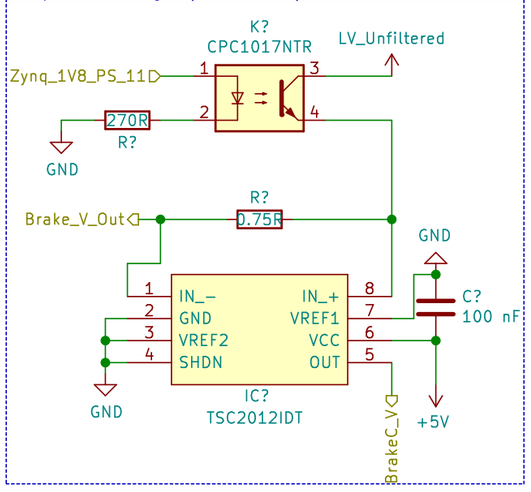
Relay 1: Ready-to-Drive-Sound (max. 8 mA)



PROFET 2: Cooling System (max. 7 A)



Relay 2: Brake Light (max. 60 mA)



V_F max: 1.4 V
I_F min: 1 mA

V_R = 1.8 - 1.4 = 0.4 V
R_min = 0.4 / 0.0015 = 270 R

SDU-VIKINGS

JFH & SRM

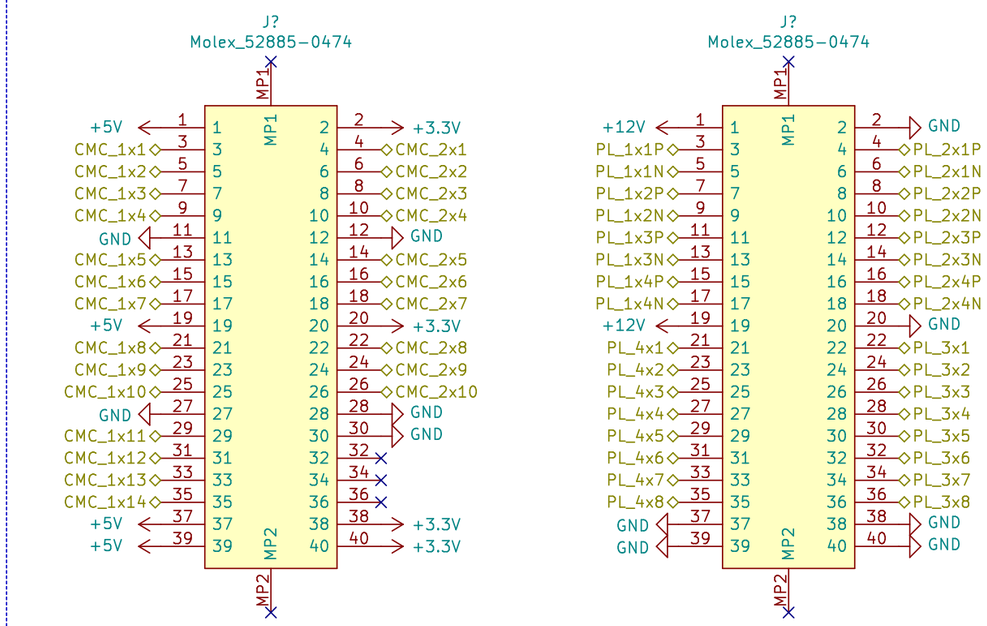
SDU

Sheet: /Actuator/		
File: Actuator.sch		
Title: Zynq-Based Master Controller		
Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 13/17

All Zynq connections with same denomination should have same length.
P/N pairs should be differentially routed.
100 Ohm differential impedance
50 Ohm single-ended impedance

CMC connections
Not high-speed.

Expansion Headers



Receptacles:
Molex SlimStack 52885-0474
40 pins, 0.635mm pitch, 100 V, 0.5 A

24 total CMC
32 total Zynq

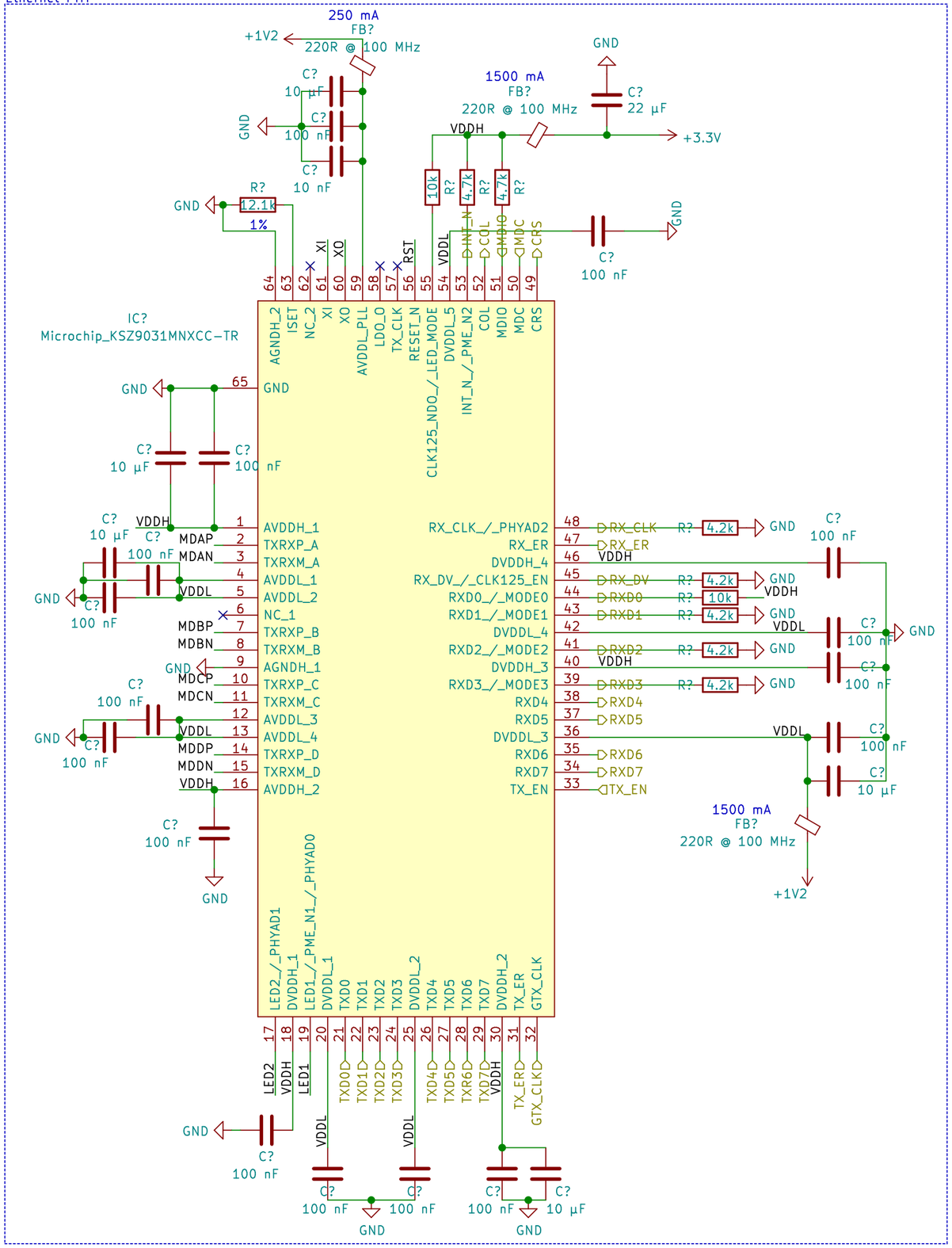
SDU-VIKINGS SDU

JFH & SRM

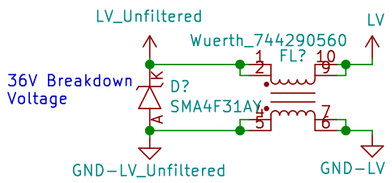
Sheet: /Expansion/
File: Expansion.sch

Title: Zynq-Based Master Controller

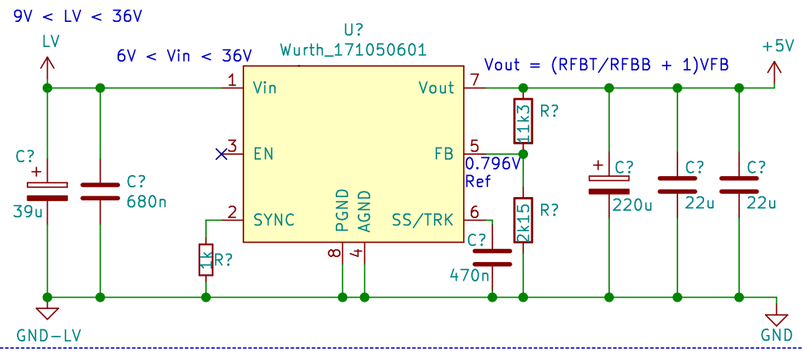
Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 14/17


Ethernet PHY
250 mA
FB?
+1V2
220R @ 100 MHz
C?
10 µF
C?
100 nF
C?
10 nF
GND
R?
12.1k
1%
1500 mA
FB?
220R @ 100 MHz
VDDH
C?
22 µF
+3.3V
10k
4.7k
4.7k
C?
100 nF
IC?
Microchip_KSZ9031MNXCC-TR
AGNDH_2
ISET
NC_2
XI
XO
AVDDL_PLL
LDO_O
TX_CLK
RESET_N
CLK125_NDO_/_LED_MODE
DVDDL_5
INT_N_/_PME_N2
COL
MDIO
MDC
CRS
AVDDH_1
TXRXP_A
TXRXM_A
AVDDL_1
AVDDL_2
NC_1
TXRXP_B
TXRXM_B
AGNDH_1
TXRXP_C
TXRXM_C
AVDDL_3
AVDDL_4
TXRXP_D
TXRXM_D
AVDDH_2
MDAP
MDAN
MDBP
MDBN
MDCP
MDCN
MDDP
MDDN
VDDL
VDDH
RX_CLK_/_PHYAD2
RX_ER
DVDDH_4
RX_DV_/_CLK125_EN
RXD0_/_MODE0
RXD1_/_MODE1
DVDDL_4
RXD2_/_MODE2
DVDDH_3
RXD3_/_MODE3
RXD4
RXD5
DVDDL_3
RXD6
RXD7
TX_EN
1500 mA
FB?
220R @ 100 MHz
LED2_/_PHYAD1
DVDDH_1
LED1_/_PME_N1_/_PHYAD0
DVDDL_1
TXD0
TXD1
TXD2
TXD3
DVDDL_2
TXD4
TXD5
TXD6
TXD7
DVDDH_2
TX_ER
GTX_CLK
LED2
LED1
GTX_CLKD
25 MHz Crystal
ECS-250-18-33B-CKY-TR
Y?
22 pF
XO
XI
Reset Circuit
D?
1N4148W
RST
10k
Power and activity LEDs
+3.3V
274R
LED2
LED1
4.2k
Green LED:
Vf = 2 V (typ)
If = 5 mA
R = (3.3 V – 2 V) / 5 mA = 260 Ω
Yellow LED:
Vf = 2 V (typ)
If = 5 mA
R = (3.3 V – 2 V) / 5 mA = 260 Ω
Both rounded up to 274 Ω
Ethernet magnetics, Bob Smith termination, and M12 connector
T?
Wurth_749020111A
D1+
D1–
CD1
CD2
D2+
D2–
D3+
D3–
CD3
CD4
D4+
D4–
X1+
X1–
CX1
CX2
X2+
X2–
X3+
X3–
CX3
CX4
X4+
X4–
75 R
4 x 100 nF
J?
Phoenix_1437009
Shield
0 R
1 nF, 2000 V
GND1
1.2 V Core Supply
U?
MIC33050-4YHL
EN
SNS
VIN
EP
CFF
OUT
SW
AGND
PGND
560 pF
22 µF
1 µF
+1V2
All high-speed routes must be same length on PCB.
Differential Impedance matching: 100 Ω
Do not put ground under data routes, the magnetics IC, or M12 connector.
SDU-VIKINGS
JFH & SRM
SDU
Sheet: /Driverless/
File: Driverless.sch
Title: Zynq-Based Master Controller
Size: A4
Date: 2020-10-08
Rev: 1.0
KiCad E.D.A. kicad (5.1.6)-1
Id: 15/17

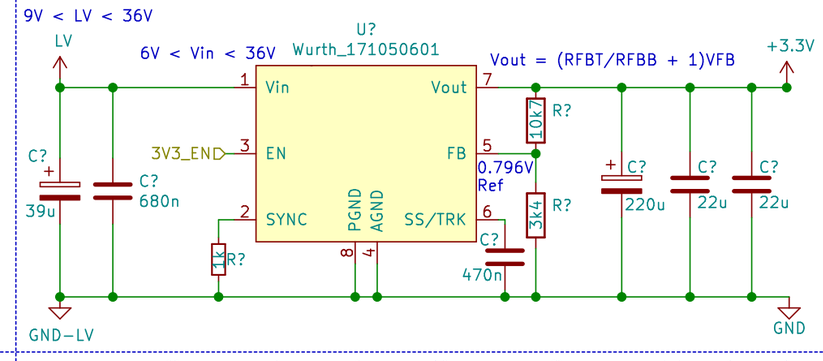
Common-Mode Choke for filtering LV Battery Supply



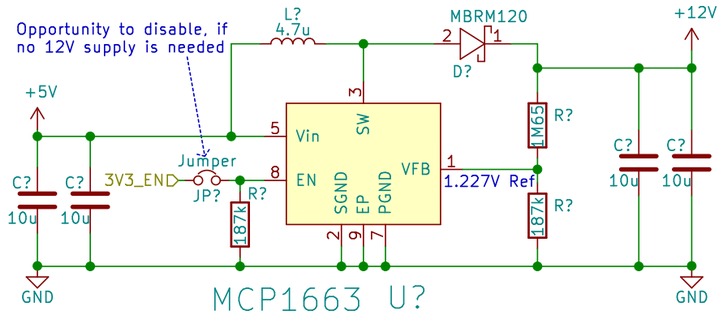
5V Supply - up to 25W output (at 5A)



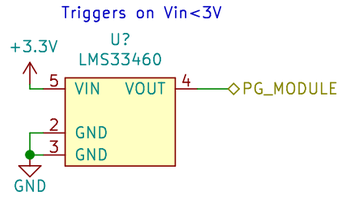
3V3 Supply - up to 16.8W output (at 5A)



12V Supply - Boost Converter from 5V supply



Voltage Supervisor for "Power Good" Monitoring

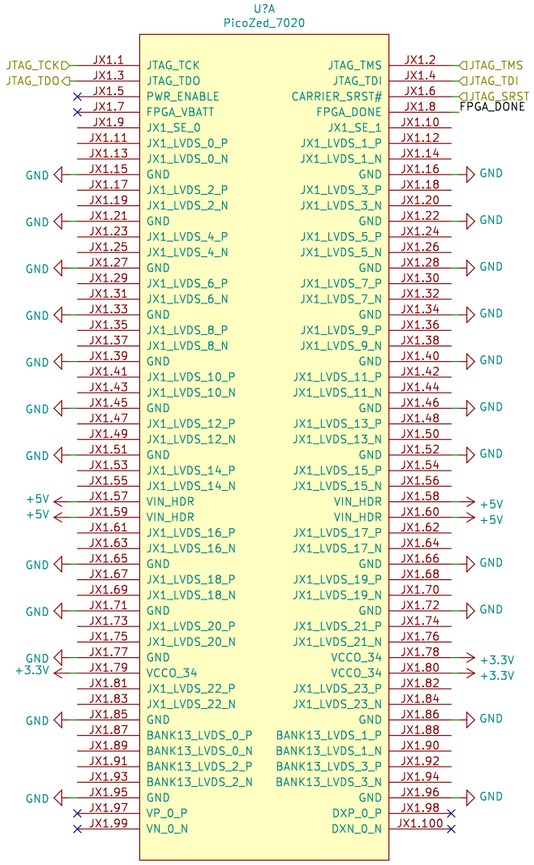


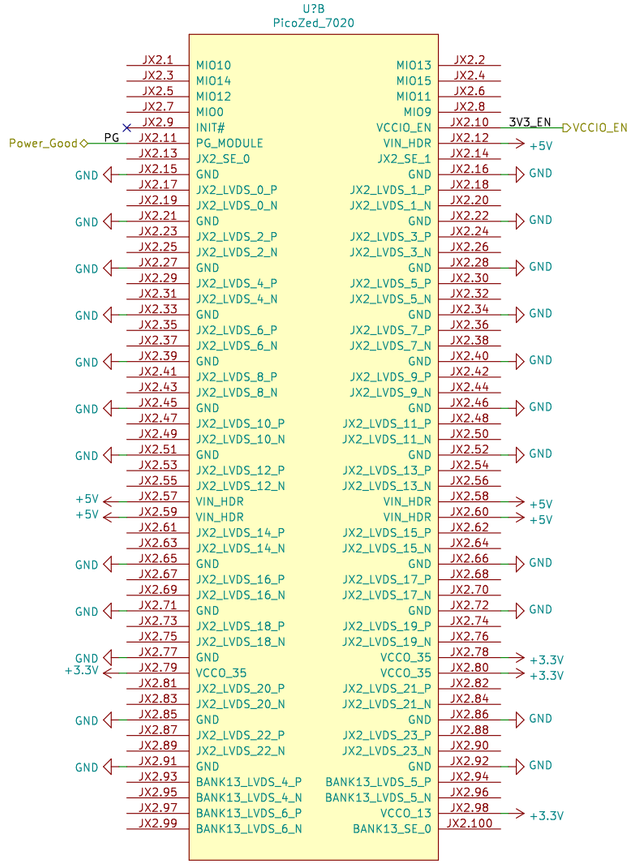
SDU-VIKINGS

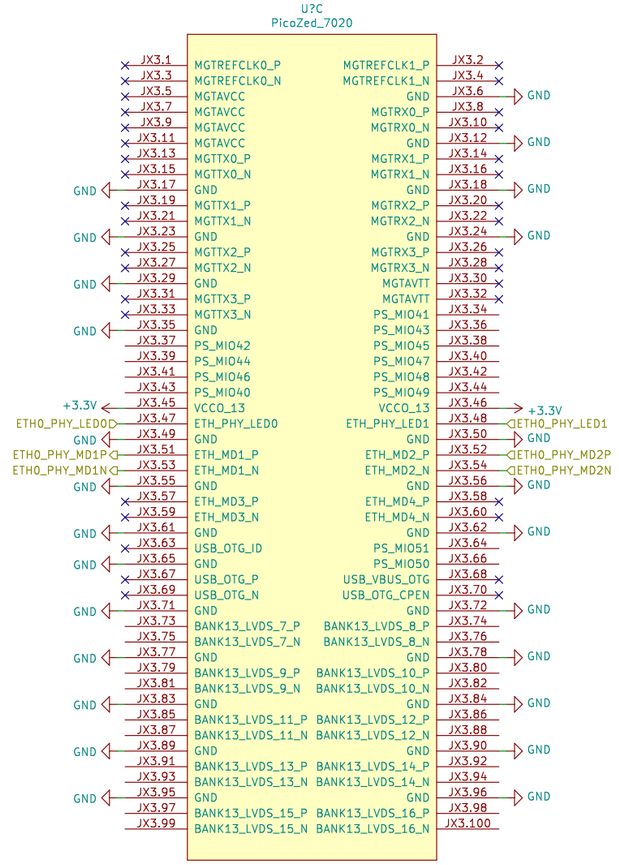
JFH & SRM

SDU

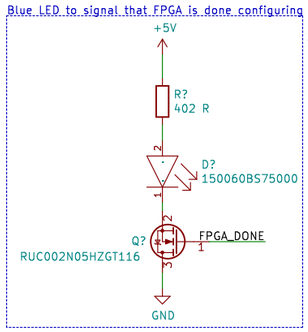
Sheet: /PowerSupply/		
File: PowerSupply.sch		
Title: Zynq-Based Master Controller		
Size: A4	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 16/17





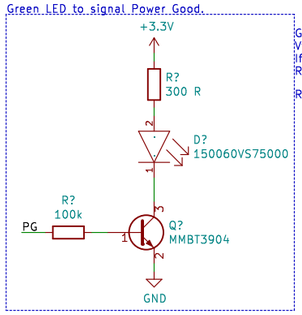


TO-DO: Add user LEDs (driven by PL).



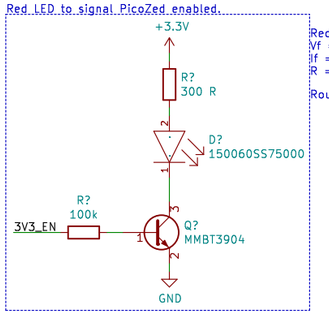
Blue LED:
Vf = 3.2 V (typ)
If = 5 mA
R = (5 V - 3.2 V) / 5 mA = 360 Ω

Rounded up to 402 Ω



Green LED:
Vf = 2.0 V (typ)
If = 5 mA
R = (3.3 V - 2.0 V) / 5 mA = 260 Ω

Rounded up to 300 Ω



Red LED:
Vf = 1.9 V (typ)
If = 5 mA
R = (3.3 V - 1.9 V) / 5 mA = 280 Ω

Rounded up to 300 Ω

SDU-VIKINGS SDU

JFH & SRM

Sheet: /PicoZed/
File: PicoZed.sch

Title: Zynq-Based Master Controller

Size: A3	Date: 2020-10-08	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.6)-1		Id: 17/17