

Option 1	TS-7100-Z-SMN11I	NXP i.MX6UL 696MHz ARM A7, 512MB DDR3 RAM and 4GB eMMC, Cell Socket (-40 to 85C)
Option 2	TS-7100-Z-SMW12I	NXP i.MX6UL 696MHz ARM A7, 512MB DDR3 RAM and 4GB eMMC, Cell Socket, WiFi u.FL (-40 to 85C)
Option 3	TS-7100-Z-SXW22I	NXP i.MX6UL 696MHz ARM A7, 1GB DDR3 RAM and 16GB eMMC, Cell Socket, WiFi u.FL, Accel/Mag (-40 to 85C)

Optional Components/Features Summary

All Parts are Industrial Temp

WiFi/Bluetooth Option

w/ u.FL Antenna

Chip available on request

Included only on xxW12x, xxW22x Standard Options

ADD: K8 (u.FL antenna connector), U55
(alternate: Chip antenna)

Accel/Mag Option:

Included only on xxx22x Standard Option

ADD: U48, U49

Cell/Xbee Option

Included on ALL Standard Options

ADD: CN20, CN16A, U31

TS-SILO Option

Included on ALL Standard Options

ADD: C98, C99

1 GByte RAM Option

Included only on xxx22x Standard Option

REPLACE: U23 with 8Gbit Die

16 GByte eMMC Option

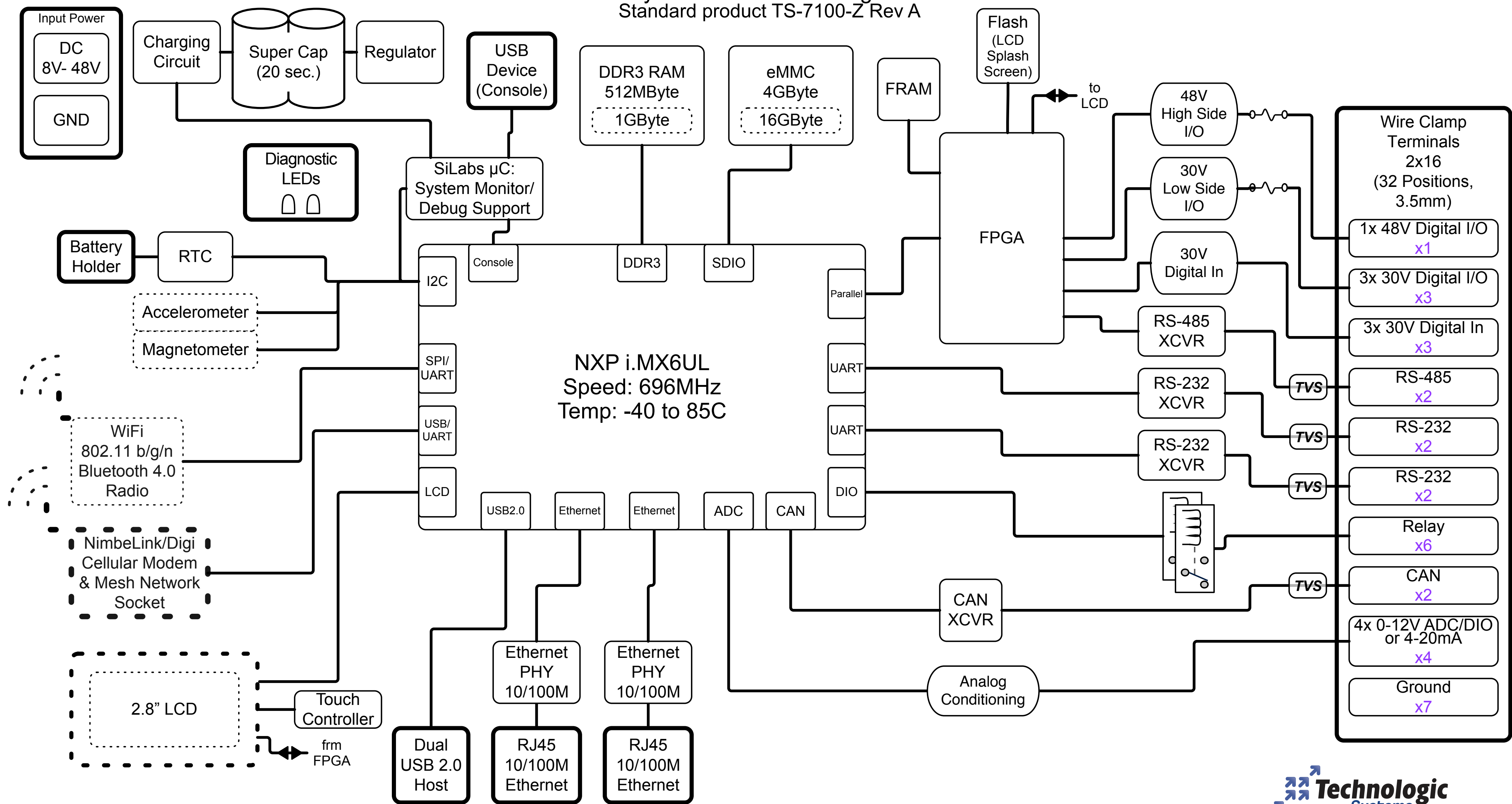
Included only on xxx22x Standard Option

REPLACE: U21 with 16Gbit Die

Web Schematic: Some proprietary information has been withheld.

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System Level Block Diagram Standard product TS-7100-Z Rev A



Number of Term. Pos. = x9 Connector = Optional Feature =



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UART2 and 5 = RS-232

UART3 = BlueTooth

UART4 = NimbeLink socket

UART7 = FPGA (not used)

Changes P1--> P2

Strap CPU IO to indicate Rev. P2? No

Do we need Gyro chip added? No

LCD back-light defaults ON -- OK ? Yes

SuperCap charge circuit updated (and inverter added)

Remove Push sw. (to make room for modem)

Add more FPGA pins to CN1 (for modem)

Add UART4 TXD and RXD to CN1 (for modem)

U40 (Touch screen controller) needs pin 9 tied to 3.3V

U12 plus/minus swapped (incorrect on P1)

IO board needs cut out in corner (bd outline wrong on P1)

Added more CPU Bd and IO Bd Res. straps

P1 had Fiducials too close to board edge

Transitioned 24MHz XTAL & L8 to new TSPN (Eliza)

Changes P2--> Rev.A

No Does Modem socket pin 14 need lower resistor ?

No Change RN30 B and C to be like 7820_A ?

✓ Q13 pin 5 needs PD

✓ UART2 and 5 going to wrong pos. on STC
Swap CN32 pins 3 and 7

✓ Change R139 to 6K

✓ Add trace from FPGA (M13) to uC (pin 31) for WD Feed
On FPGA, EN_CL_4 changed to ball "M14"

✓ Add Rev.A ID mechanism (GND FPGA ball G12)

✓ Change net names per Kris (for better documentation)
DIO_1 thru DIO_18 renamed

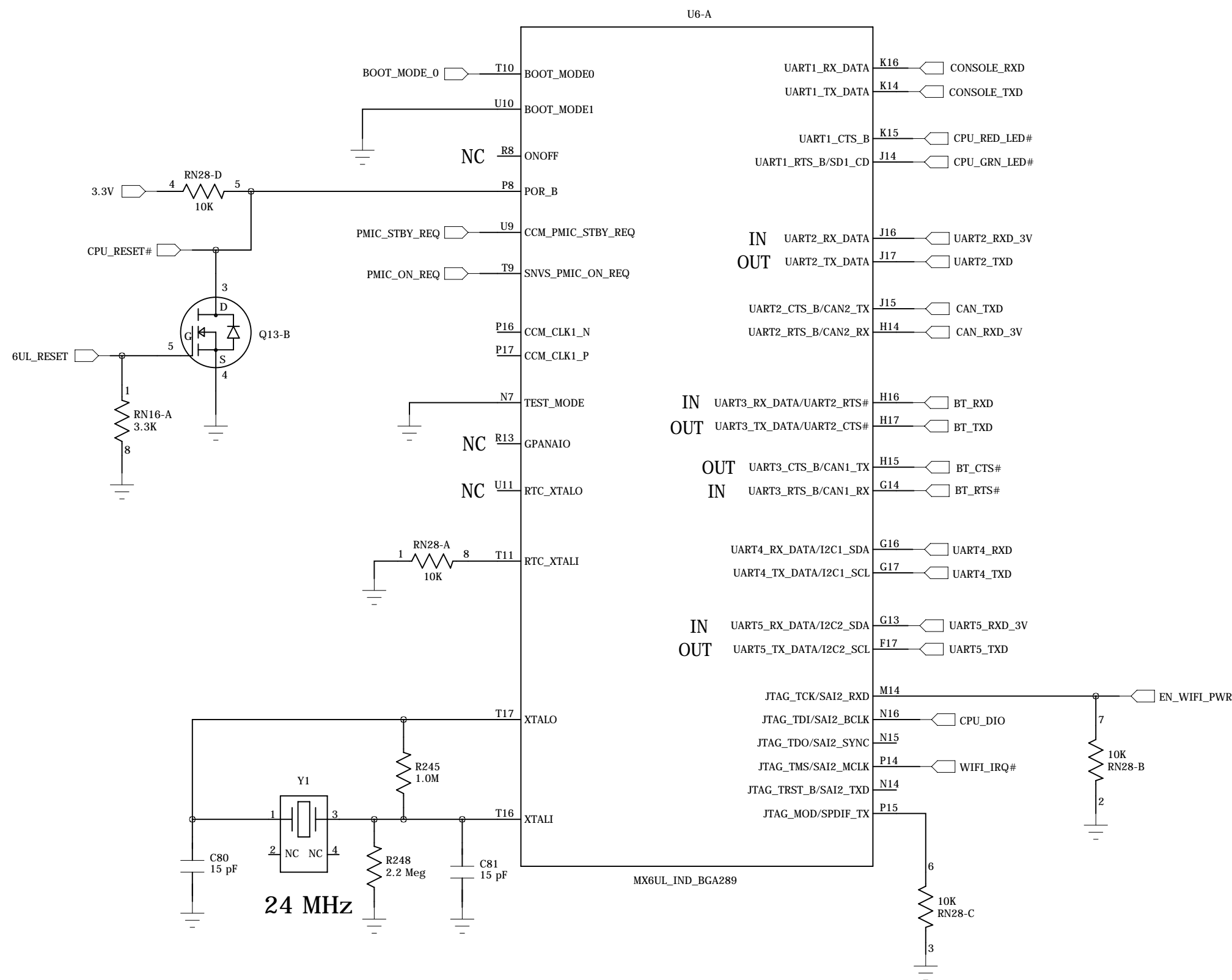
✓ Control ramp of eMMC_3.3V

✓ Add Gyro and Magnetometer

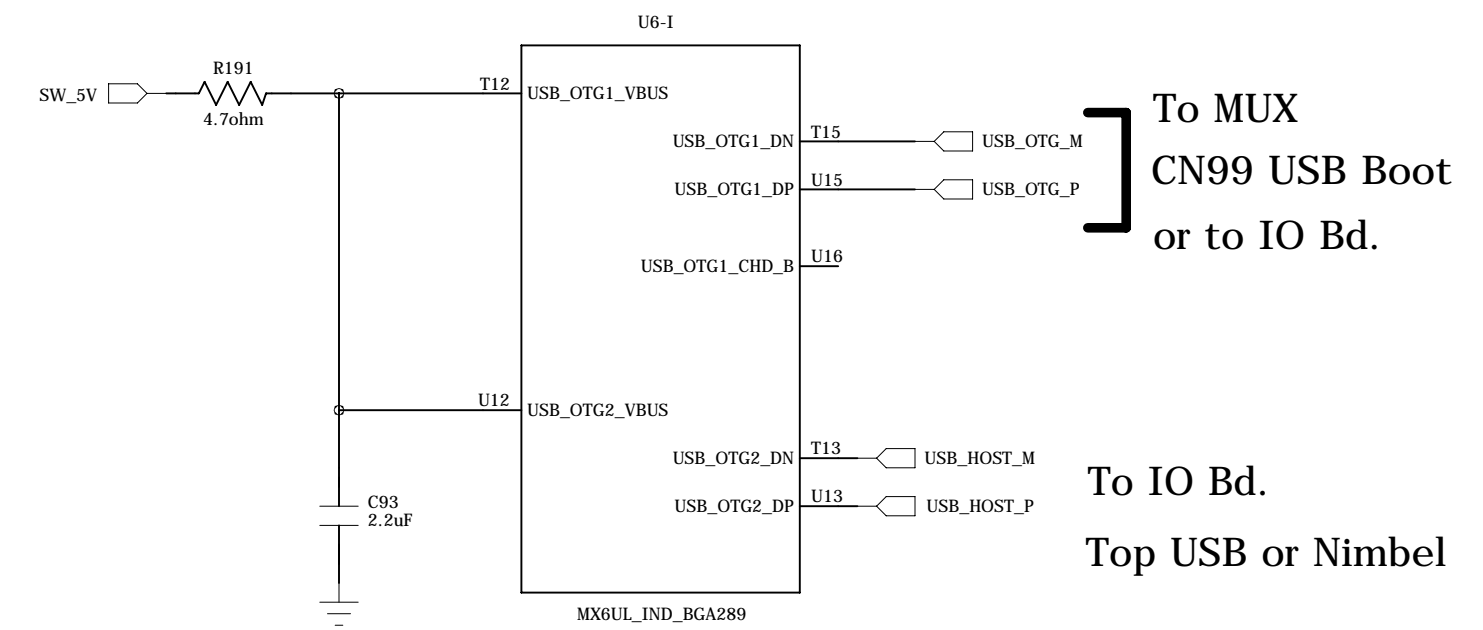
✓ Change RAM chip to 37-0007-0 (1.35V/1.5V)

CPU Board

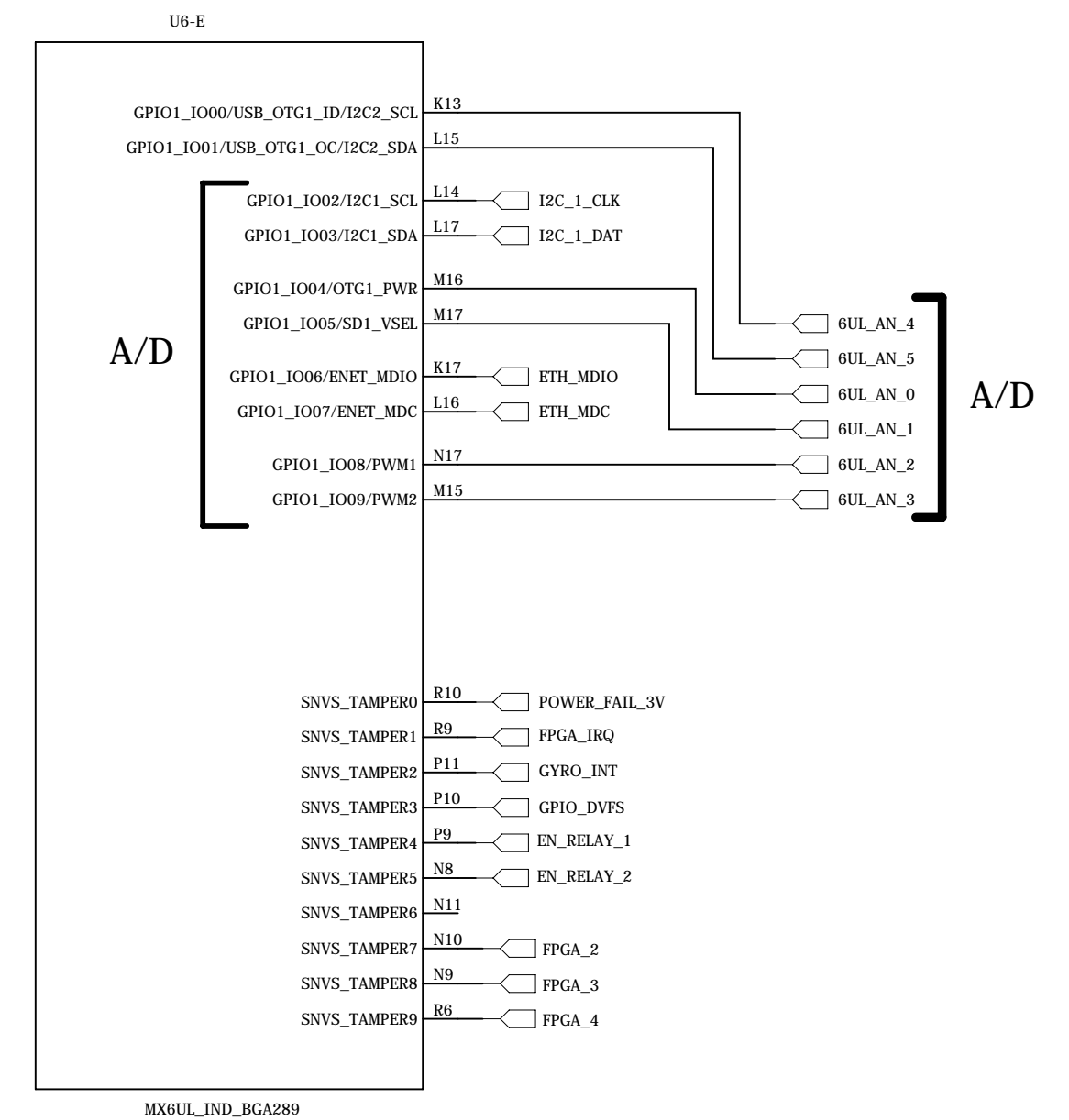
6UL UART and Control



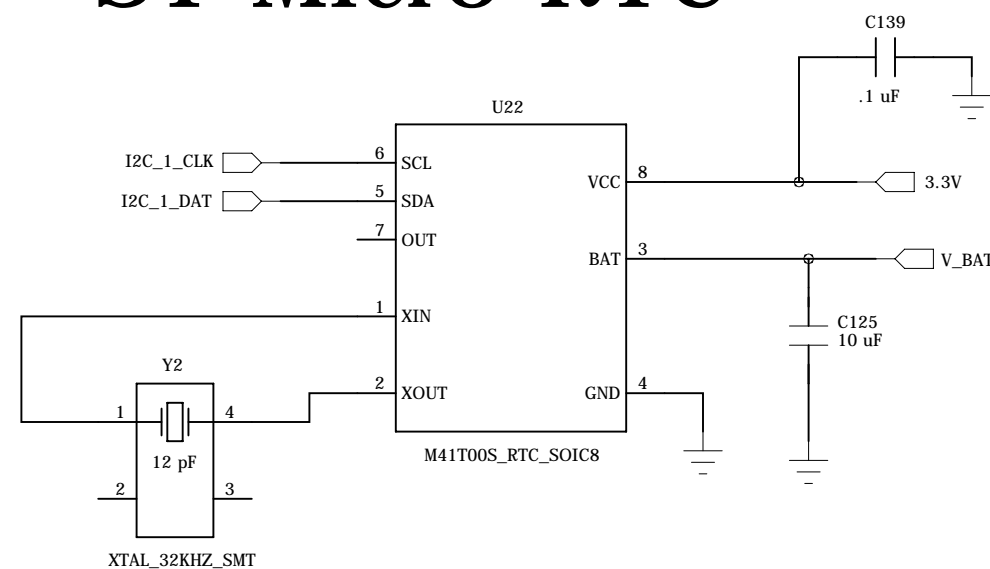
6UL USB Ports



6UL DIO



ST Micro RTC



UART2 and 5 = RS-232

UART3 = BlueTooth

UART4 = NimbeLink socket

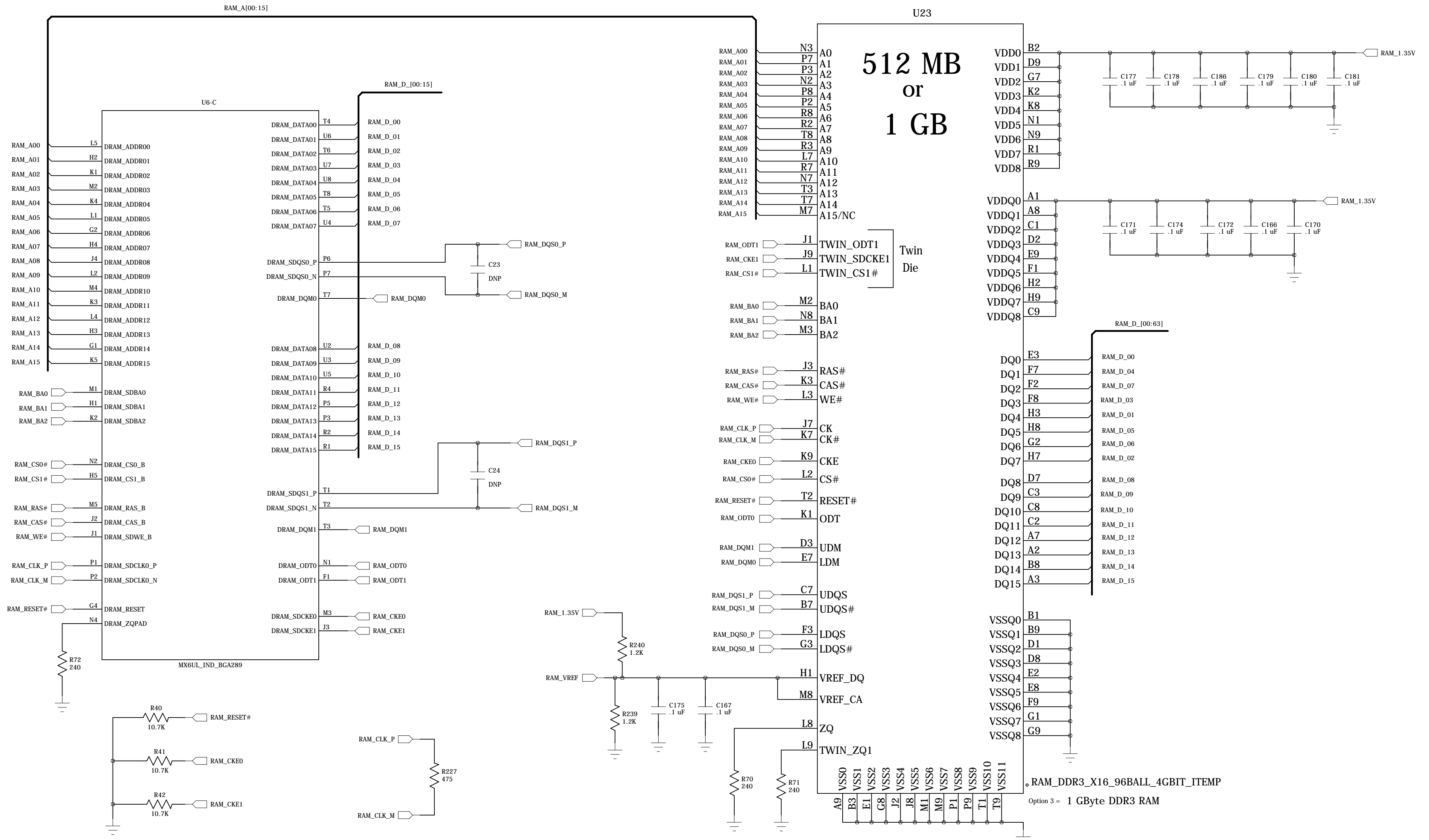
UART7 = FPGA

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CPU Board

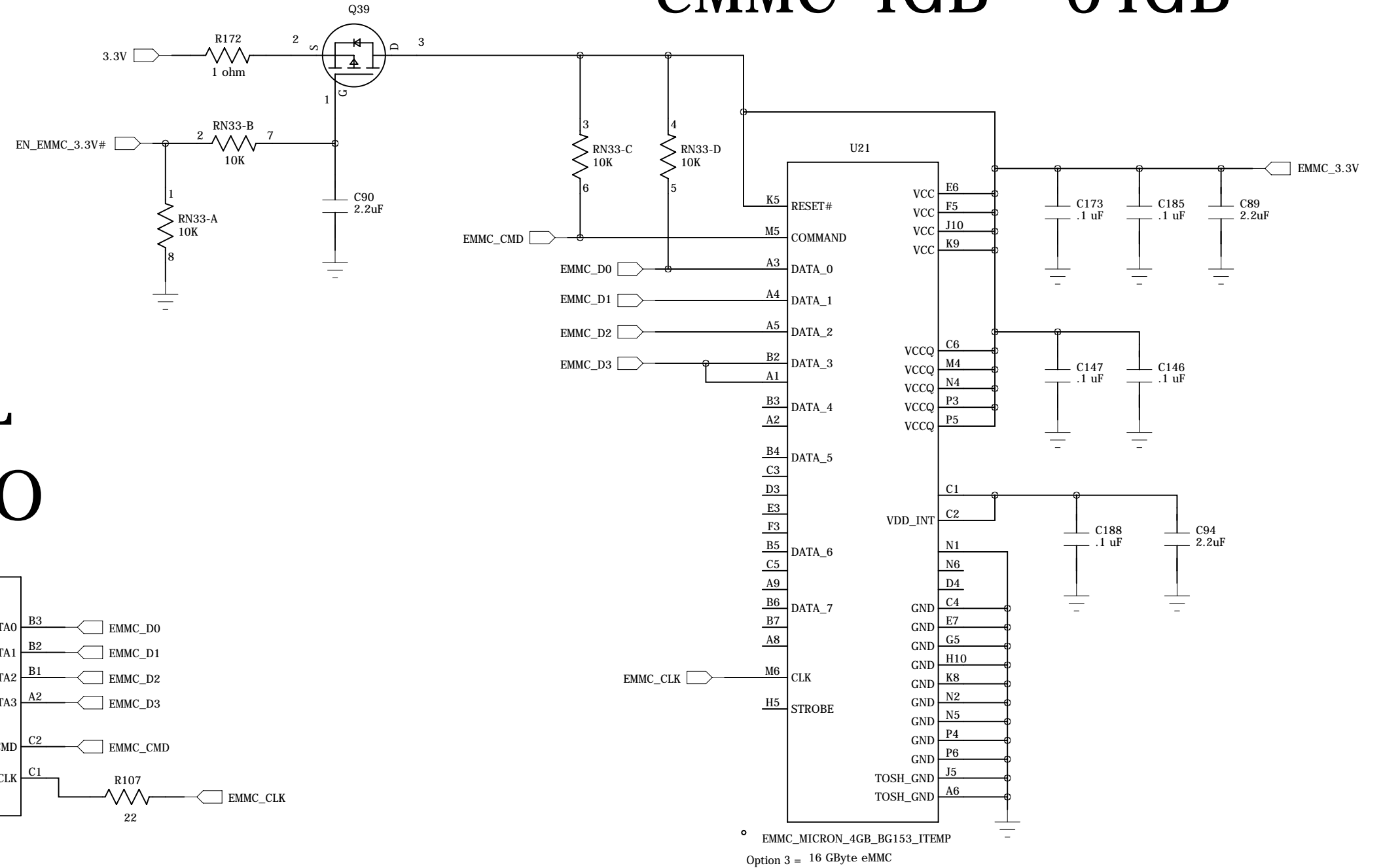
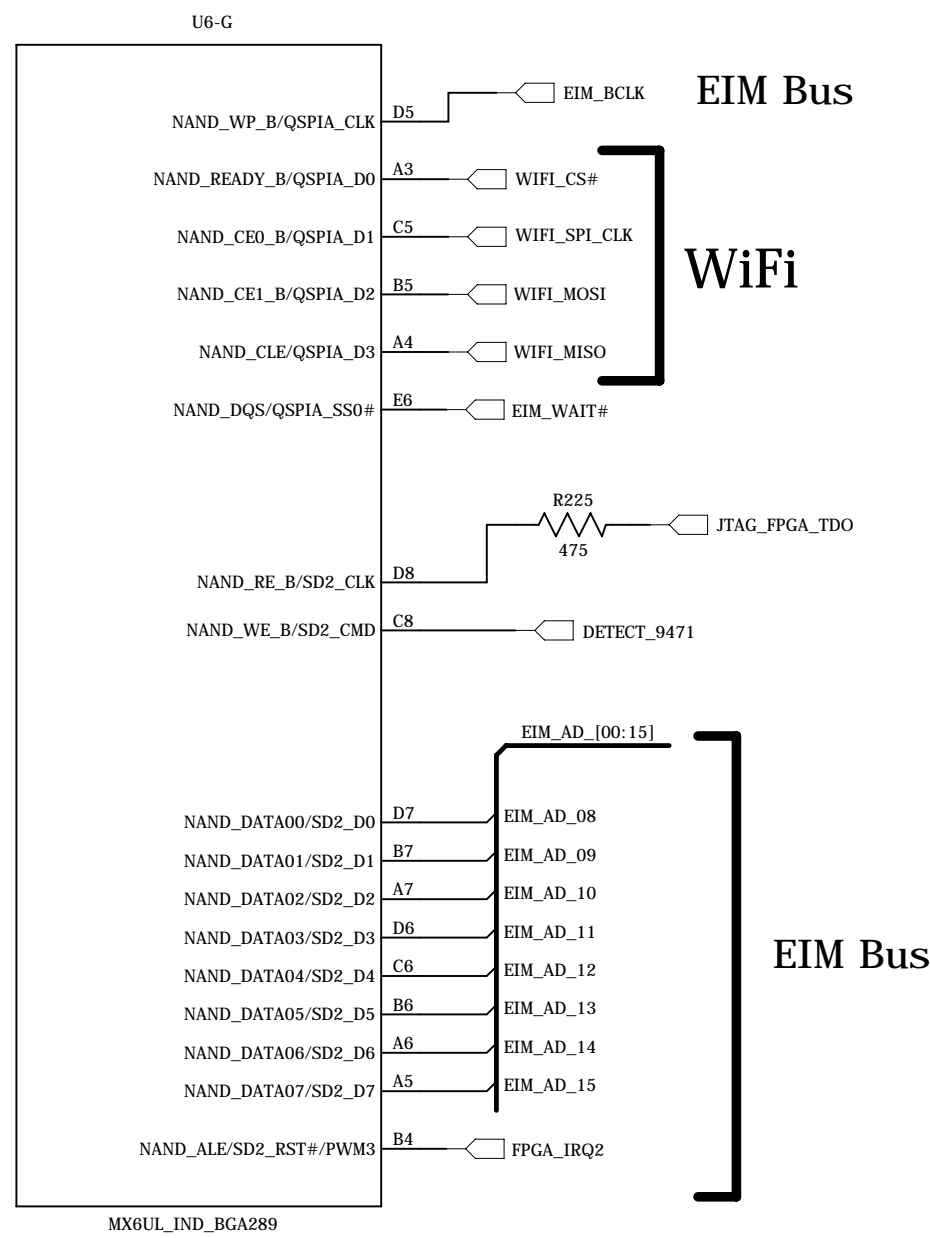
6UL RAM Interface

DDR3 RAM

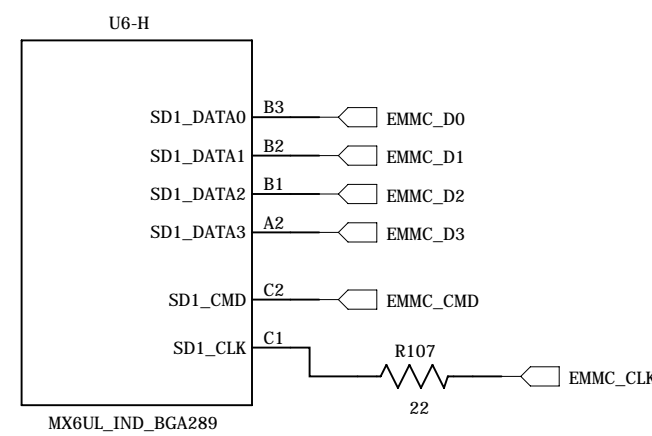


CPU Board

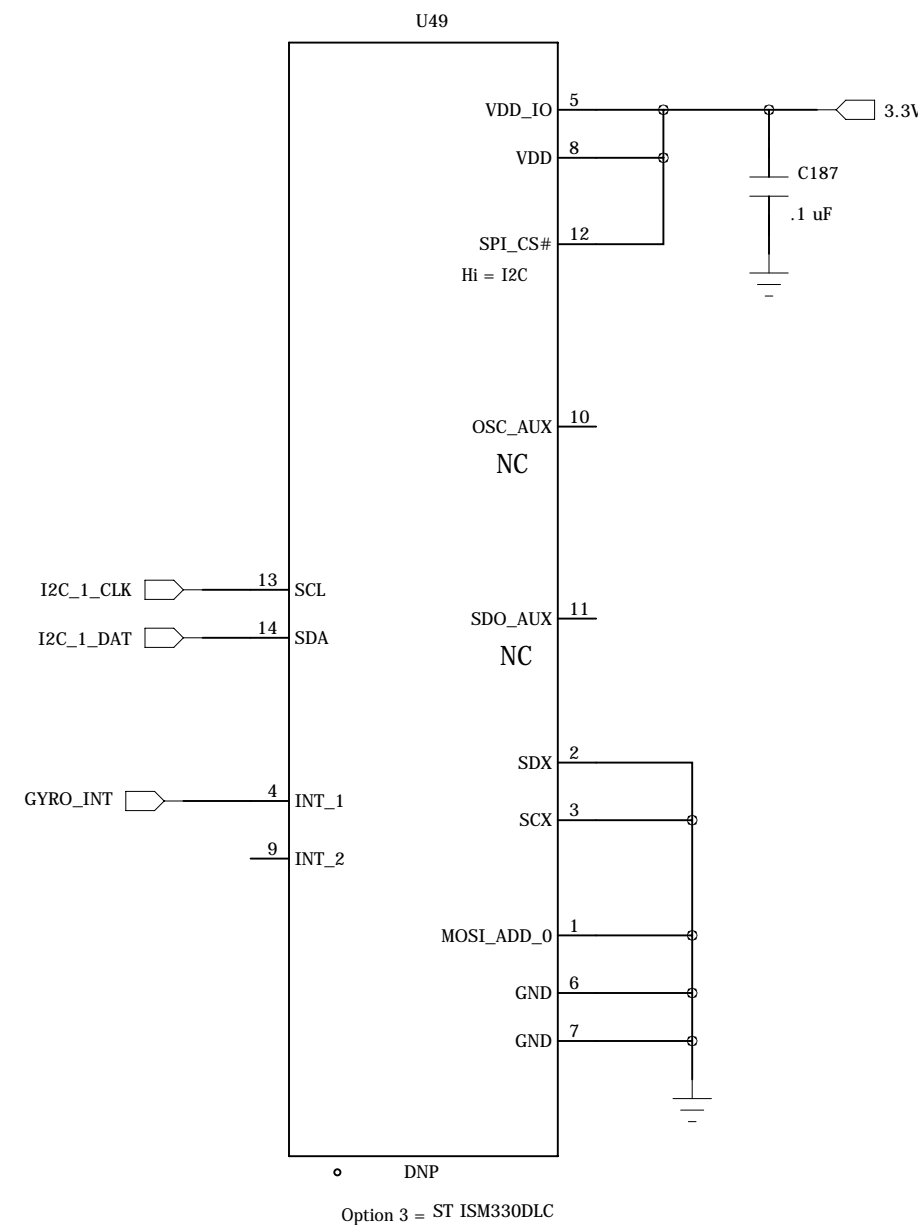
6UL EIM



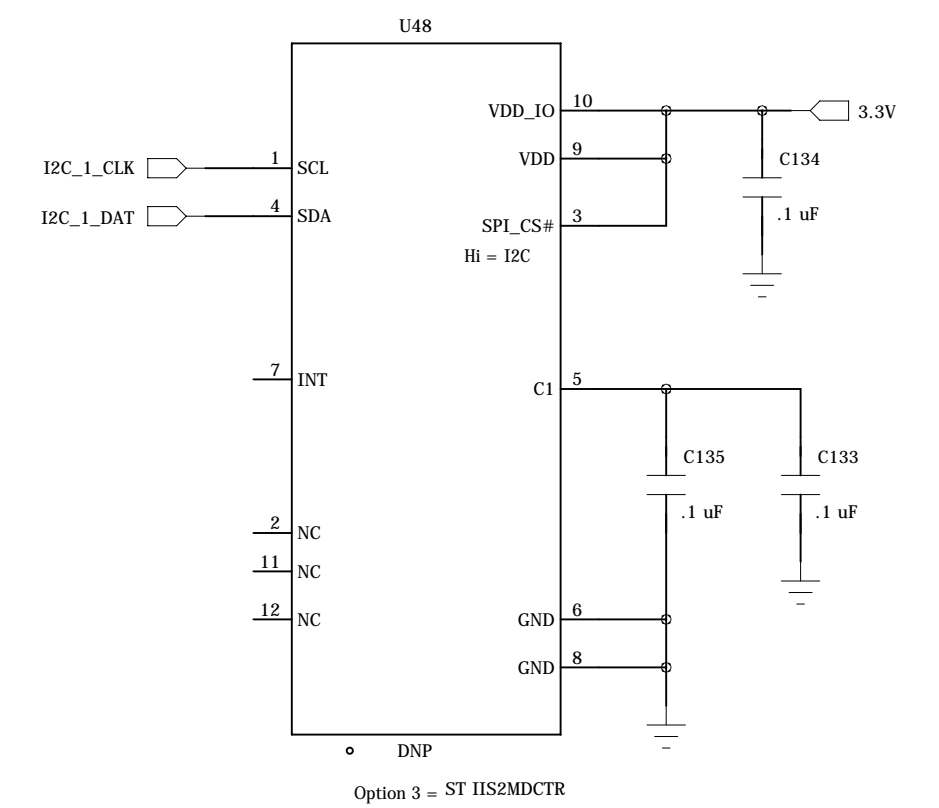
6UL SDIO



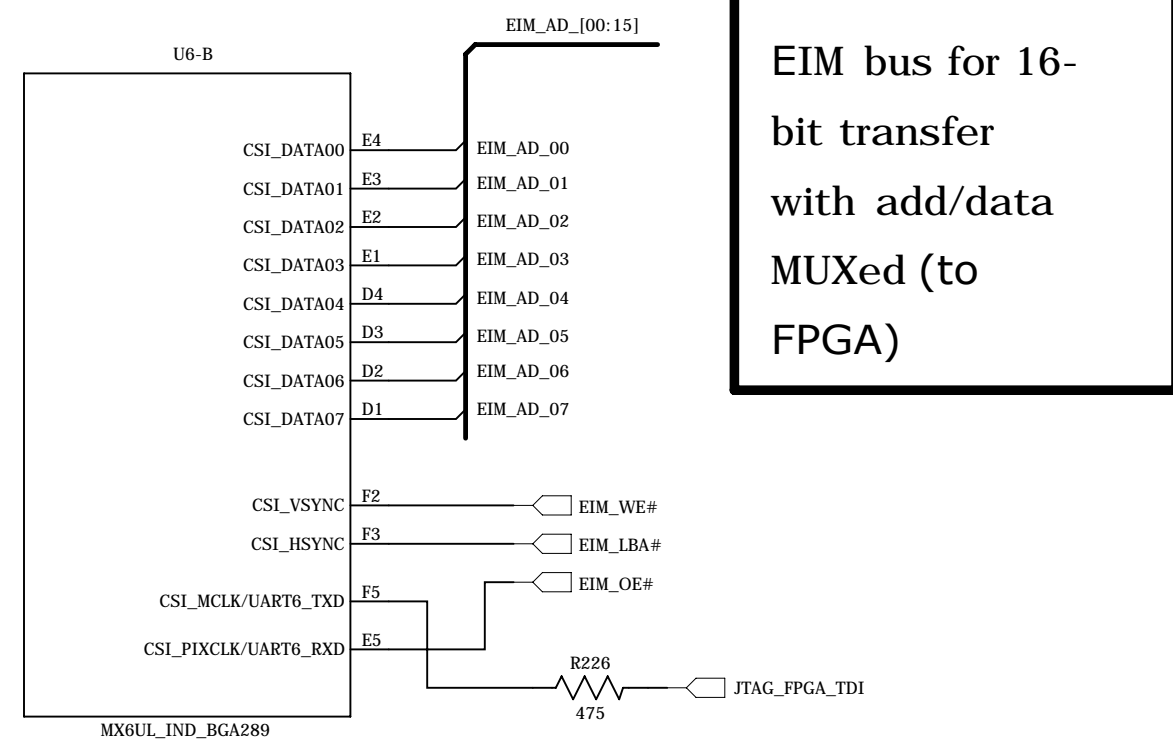
Gyro-Accelerometer



Magnetometer

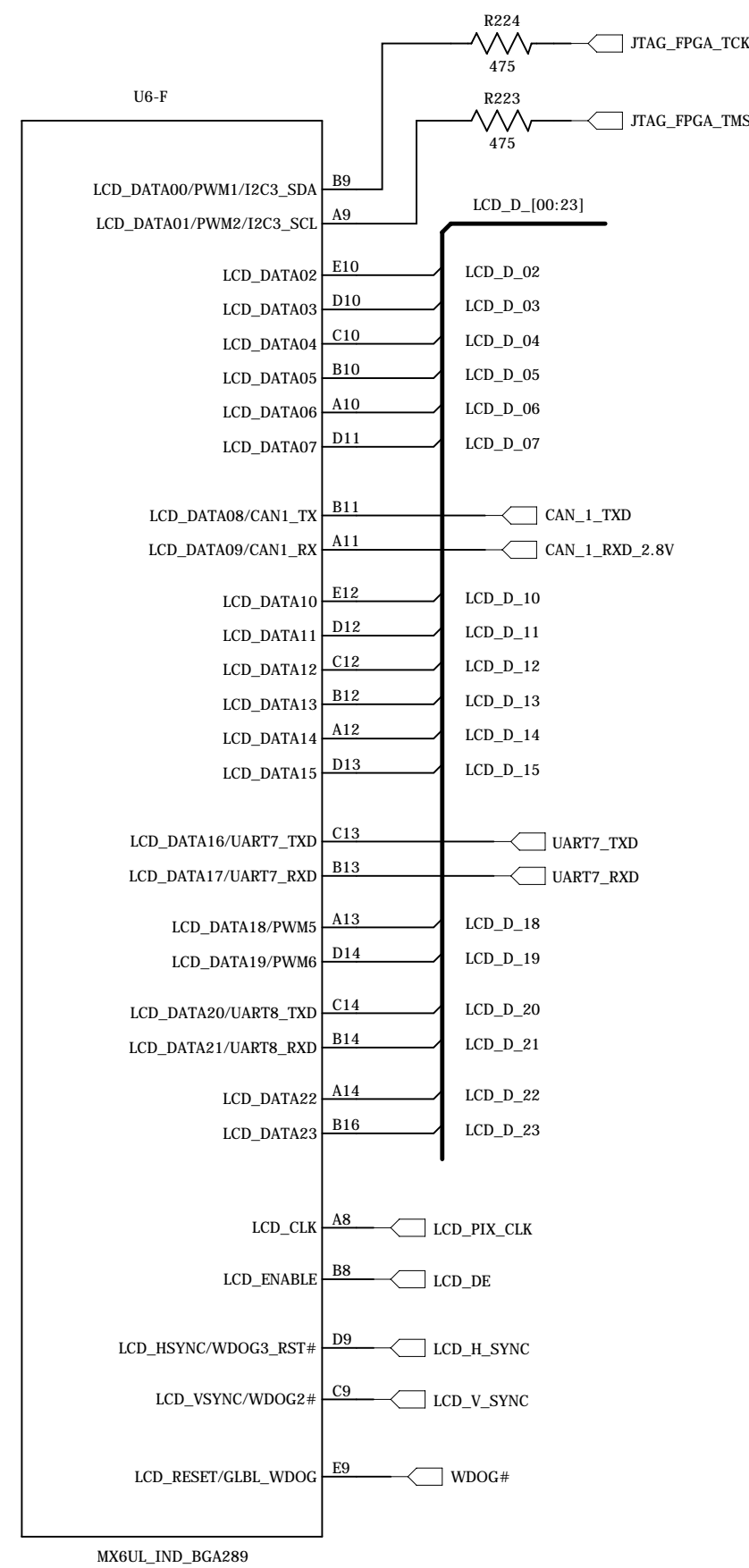


6UL EIM

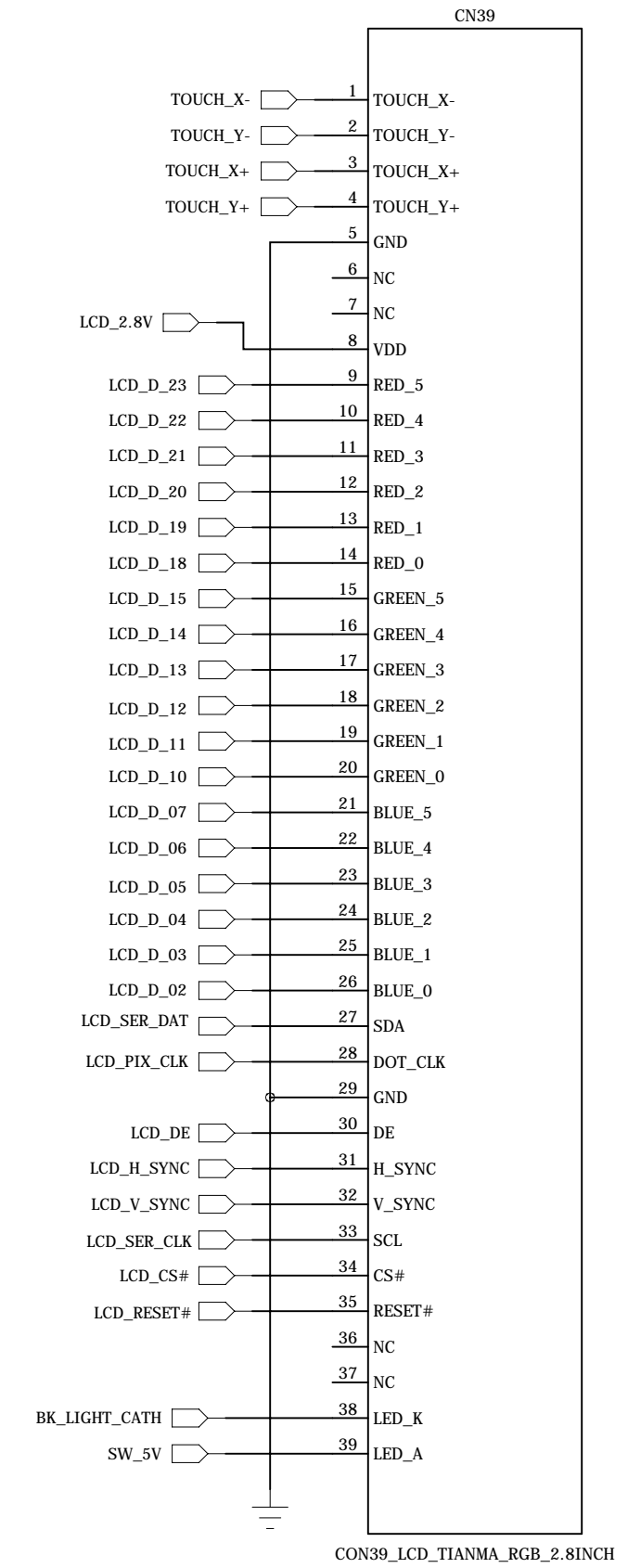
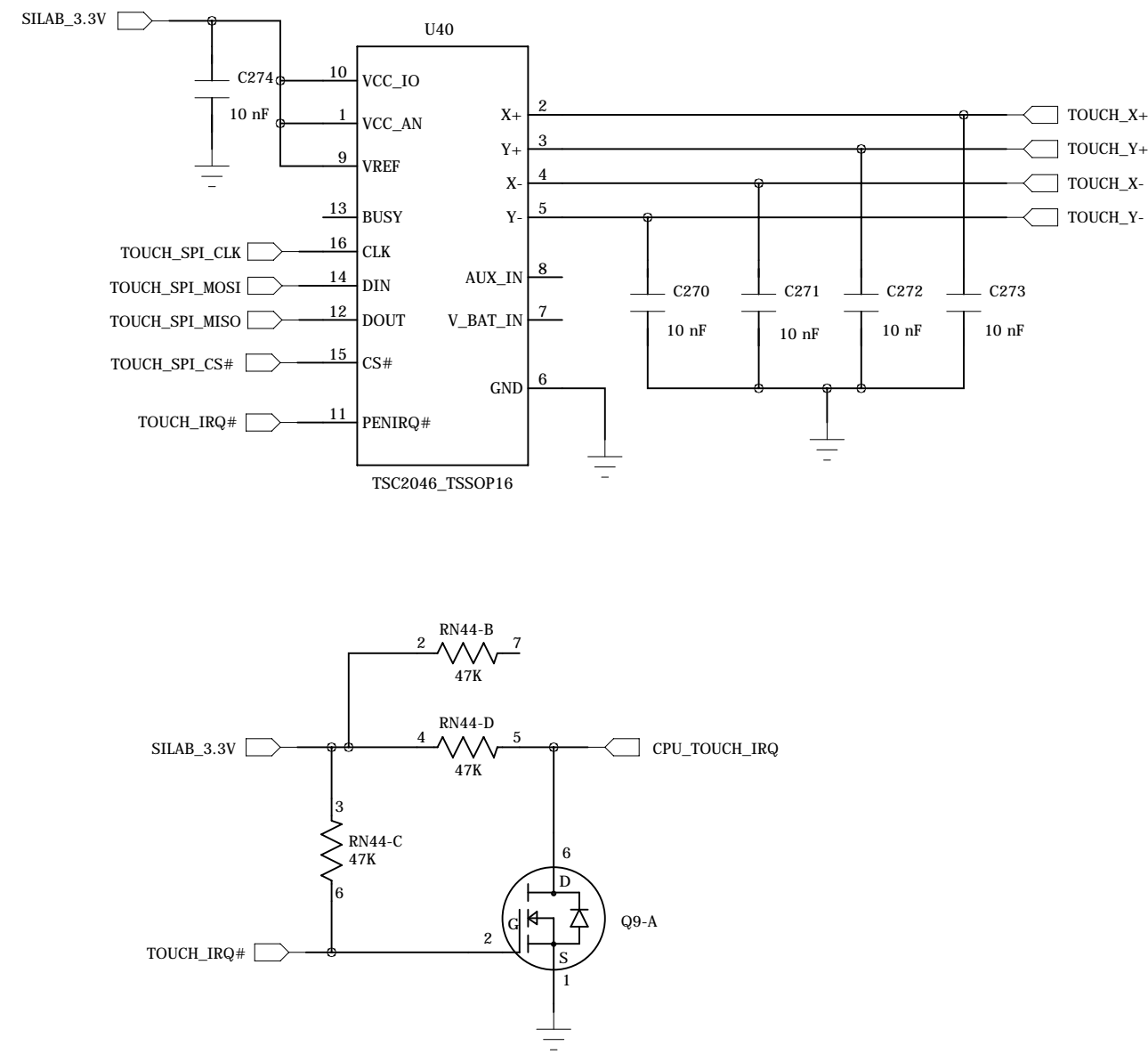


6UL LCD

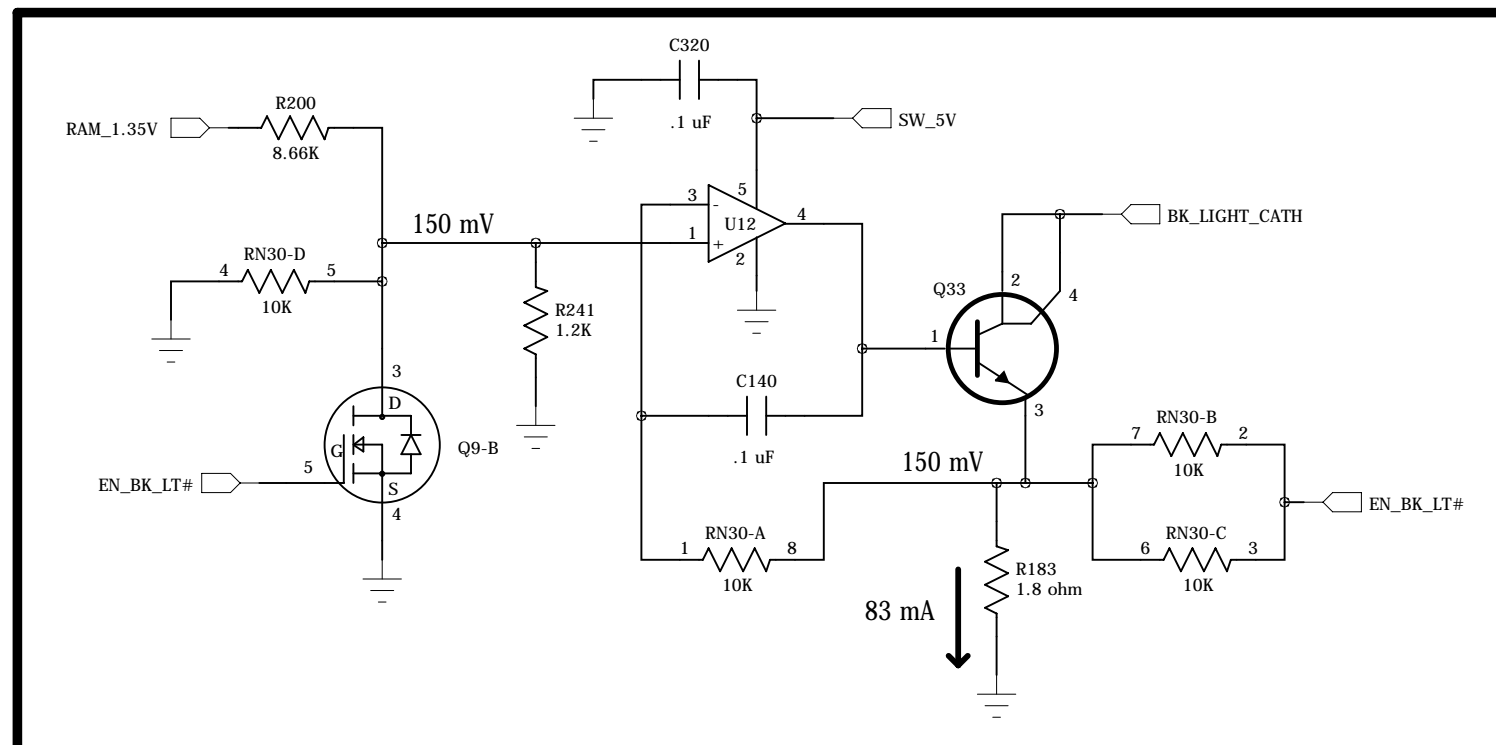
To 2.8 inch Tianma LCD



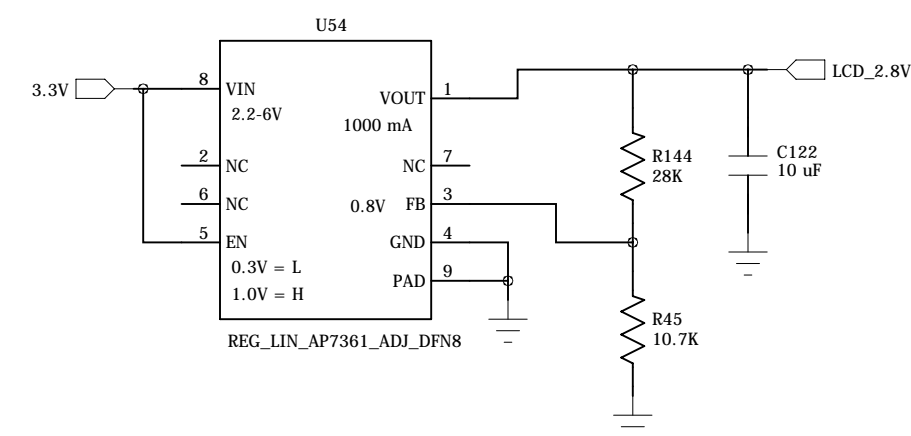
Resistive Touch Controller



2.8 inch LCD Back Light Driver



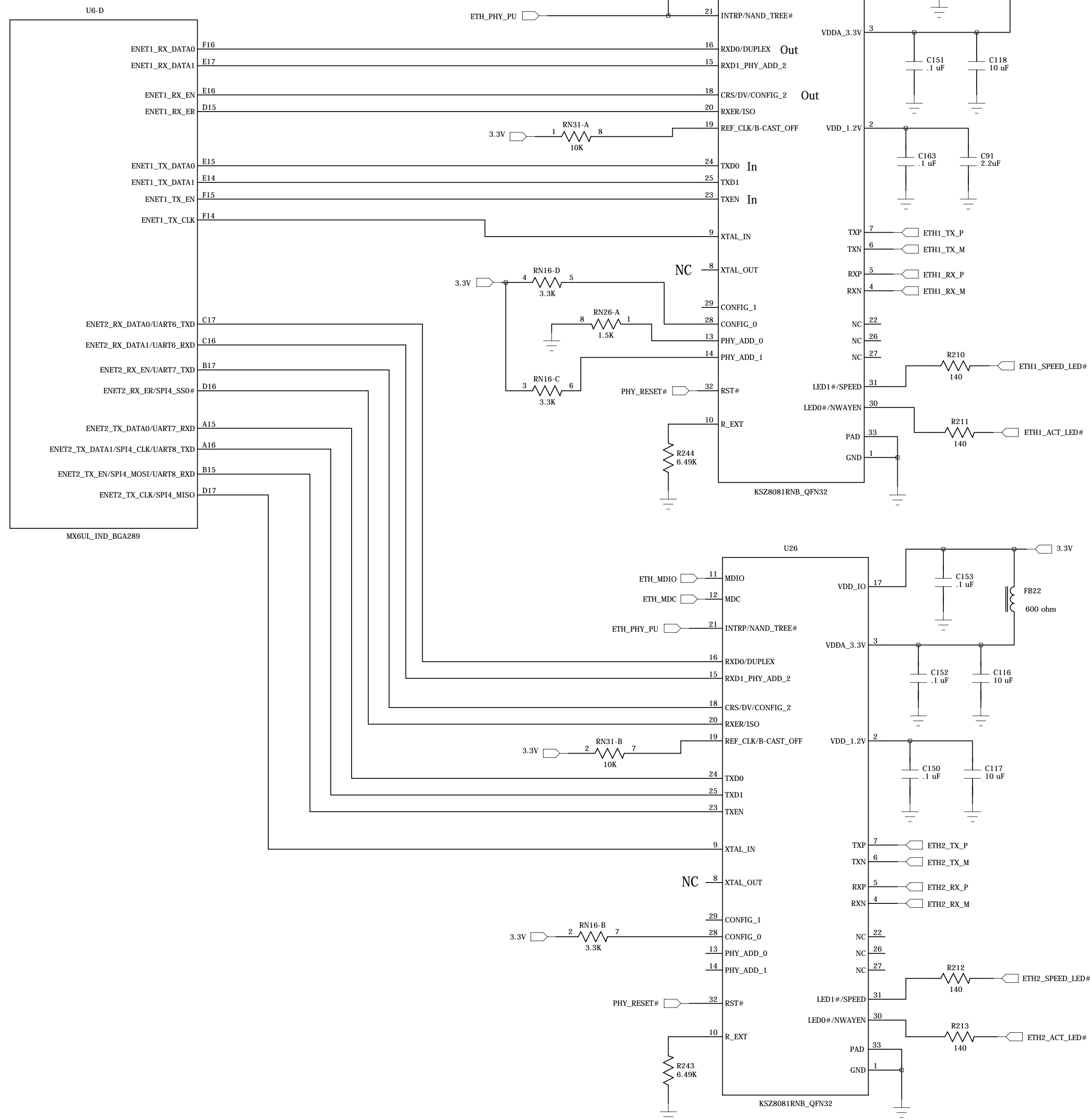
LCD 2.8V Reg.



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CPU Board

6UL Ethernet



CPU Board

CPU Core 1A Reg #2

SW_5V

==>

VDD_6UL_CORE

3.3V 2A Reg #1

SW_5V

==>

3.3V

Main 5V Power Sw.

5V_A

==>

SW_5V

RAM 1.35V 1A Reg #2

SW_5V

==>

RAM_1.35V

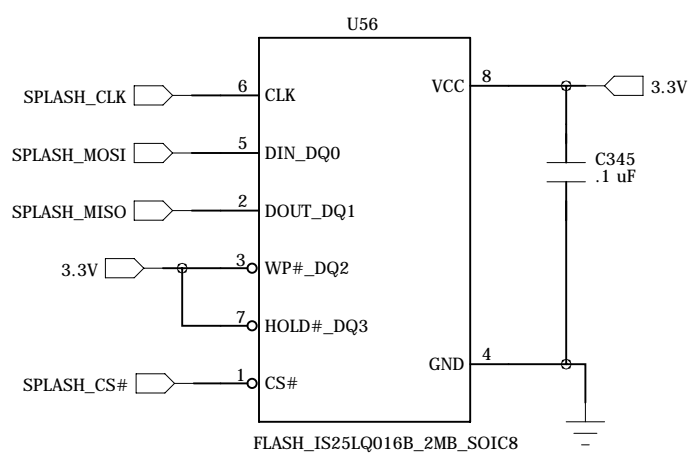
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CPU Board

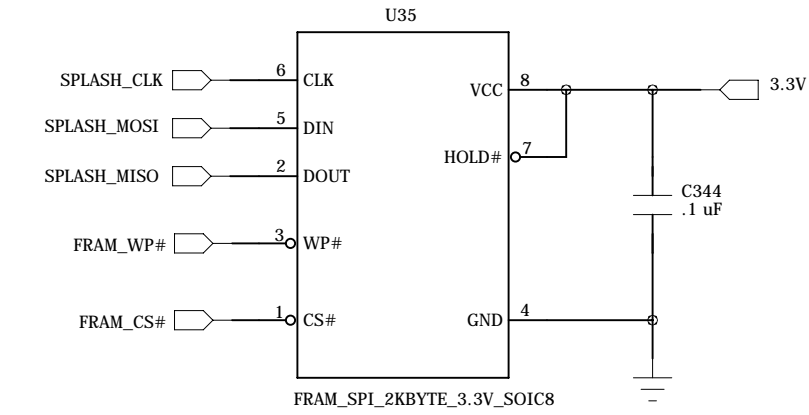
MACH XO2 FPGA

EN_PROG_SILAB should be tri-stated when off

Splash Screen Flash

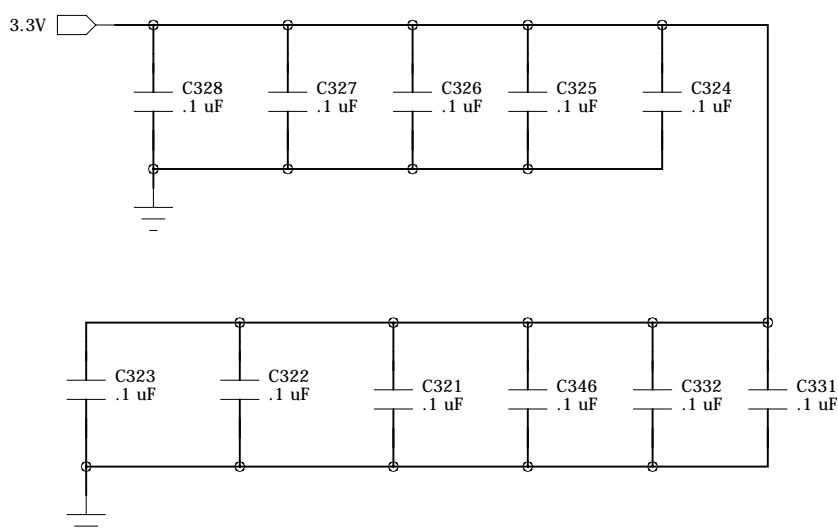


FRAM Memory



2K Bytes

Required for uBoot support of Boot Count

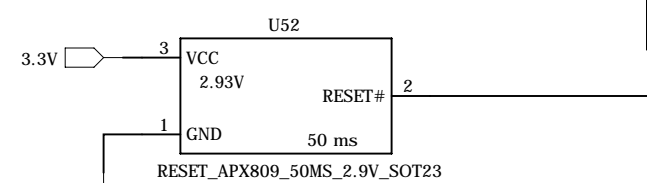


Bank 2 EIM Bus

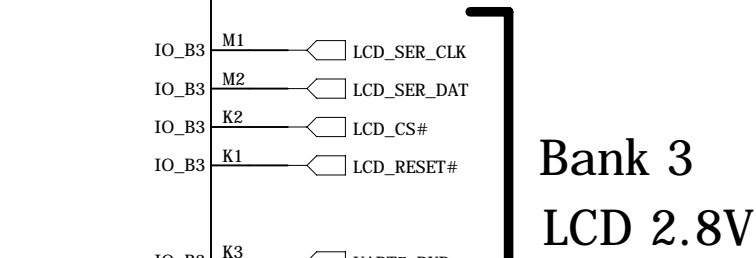
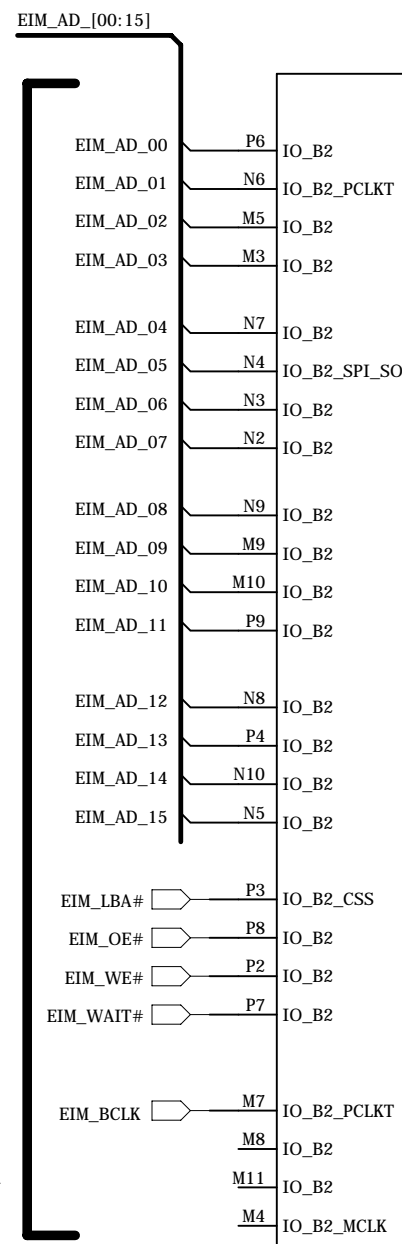
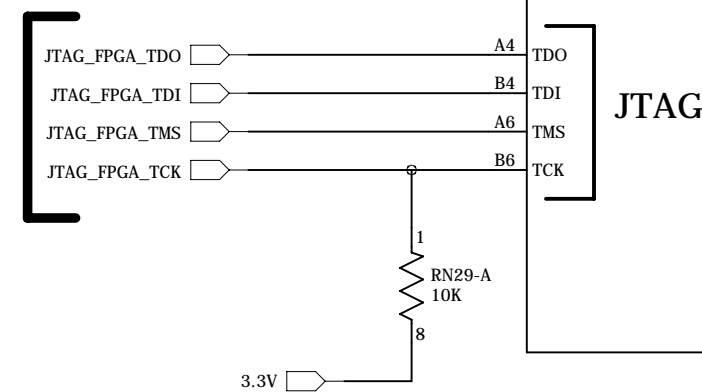
CLK must go to ball M7
49.5 MHz Clock

To CPU

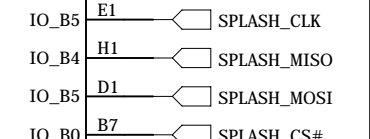
FPGA Reset



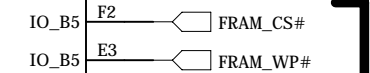
JTAG



SPI Flash



FRAM



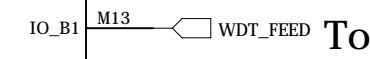
RS-485



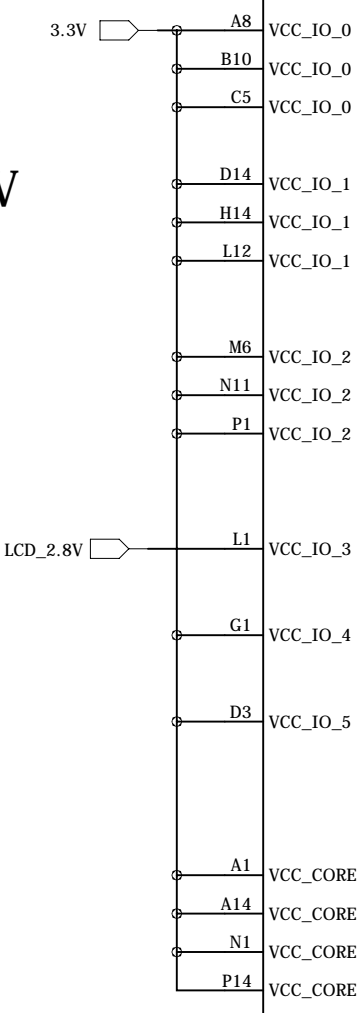
Analog Range



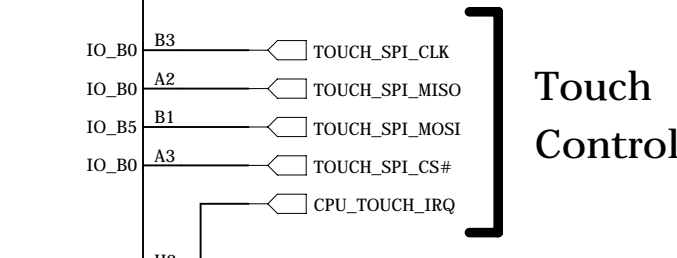
To Silab



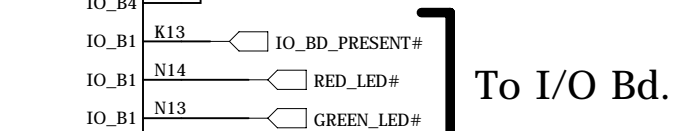
WiFi Module



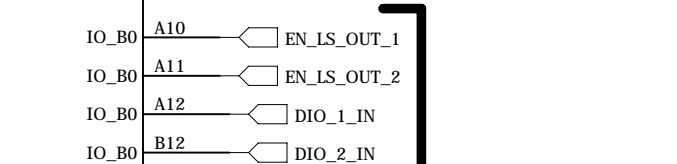
Rev.A ID



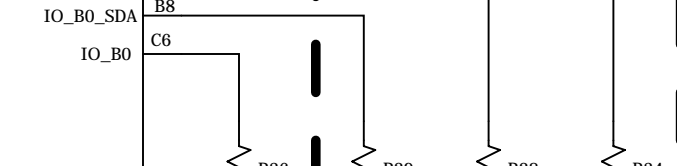
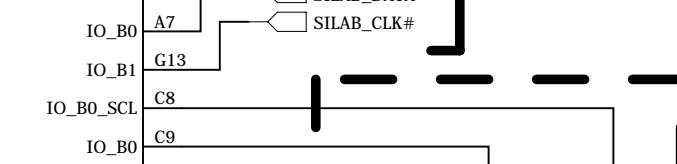
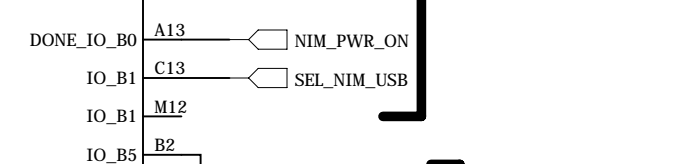
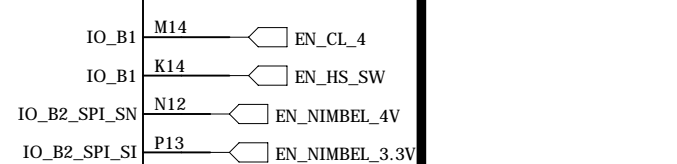
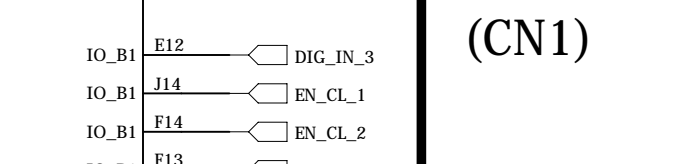
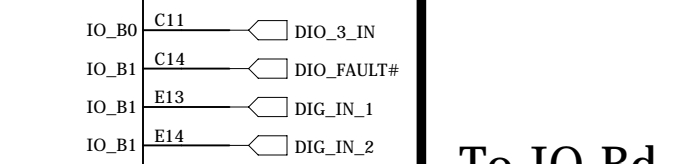
Touch Control



To I/O Bd.



To IO Bd. (CN1)



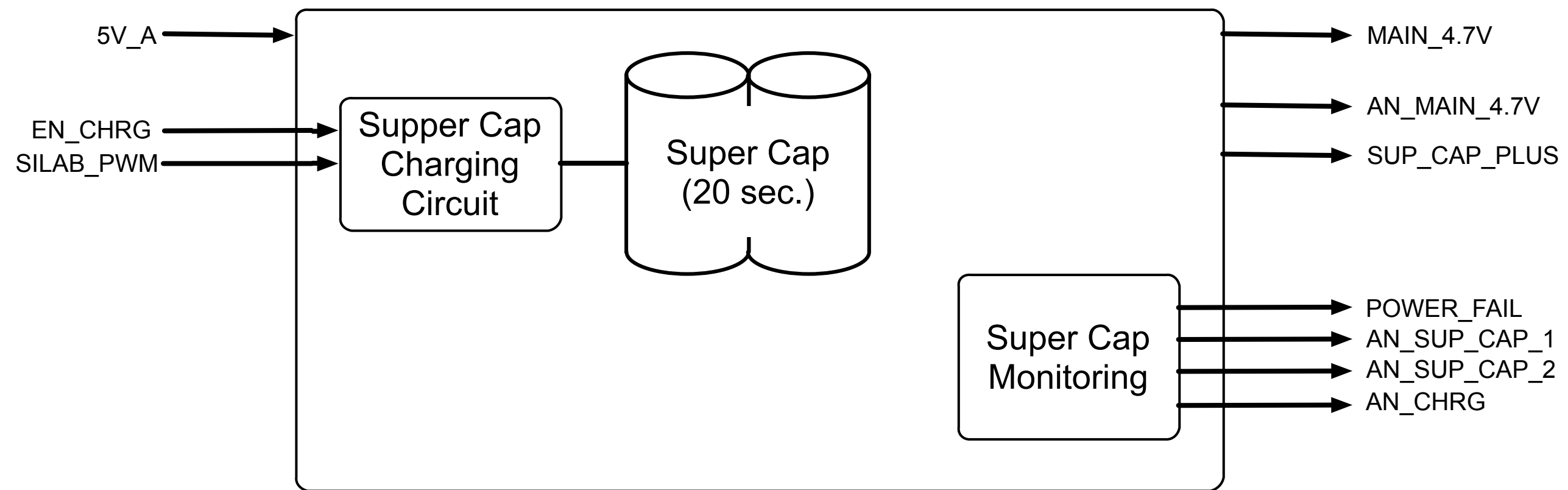
POP = 1G RAM

RAM Resistor Strap

CPU Board Resistor Straps

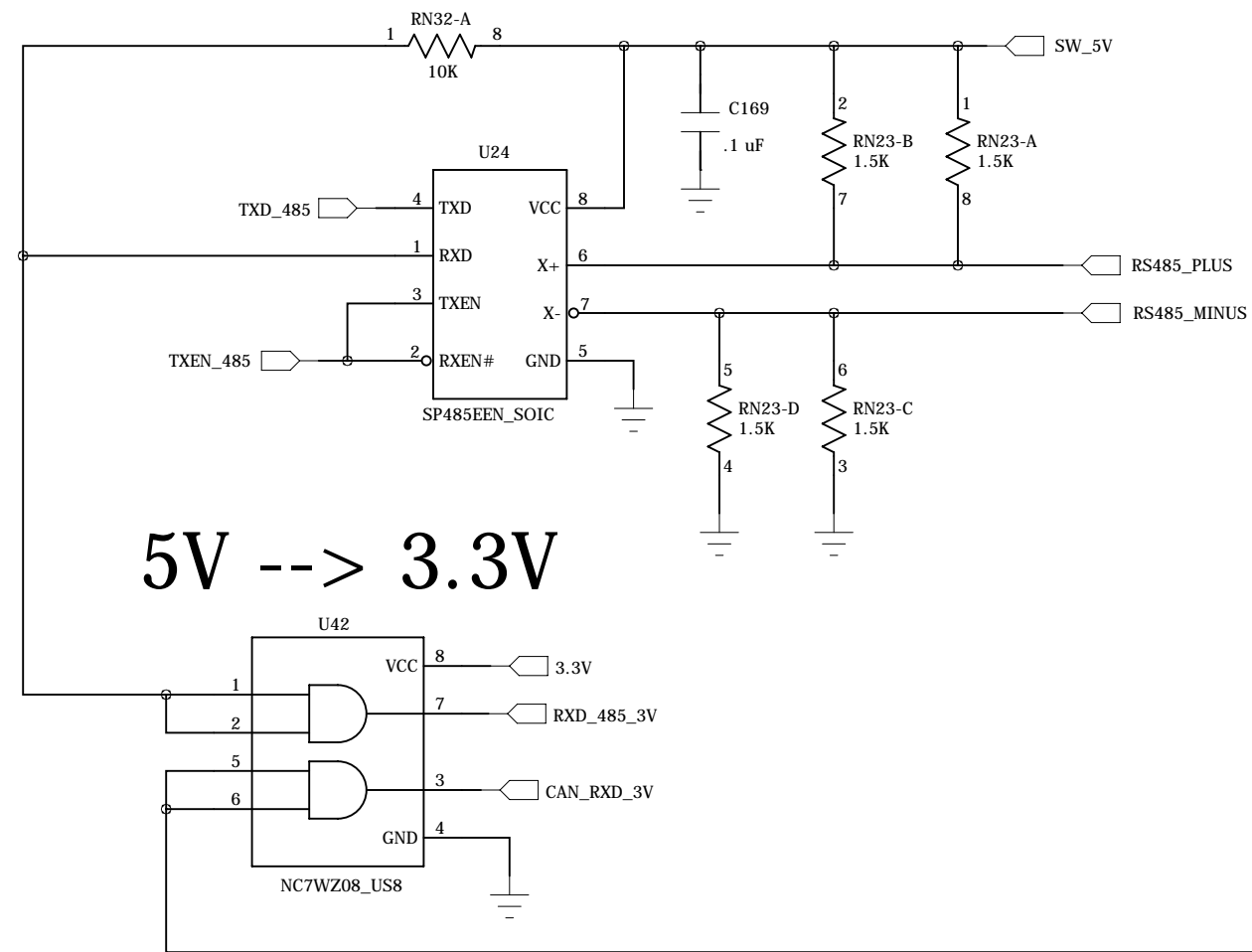
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CPU Board - Super Cap Charger

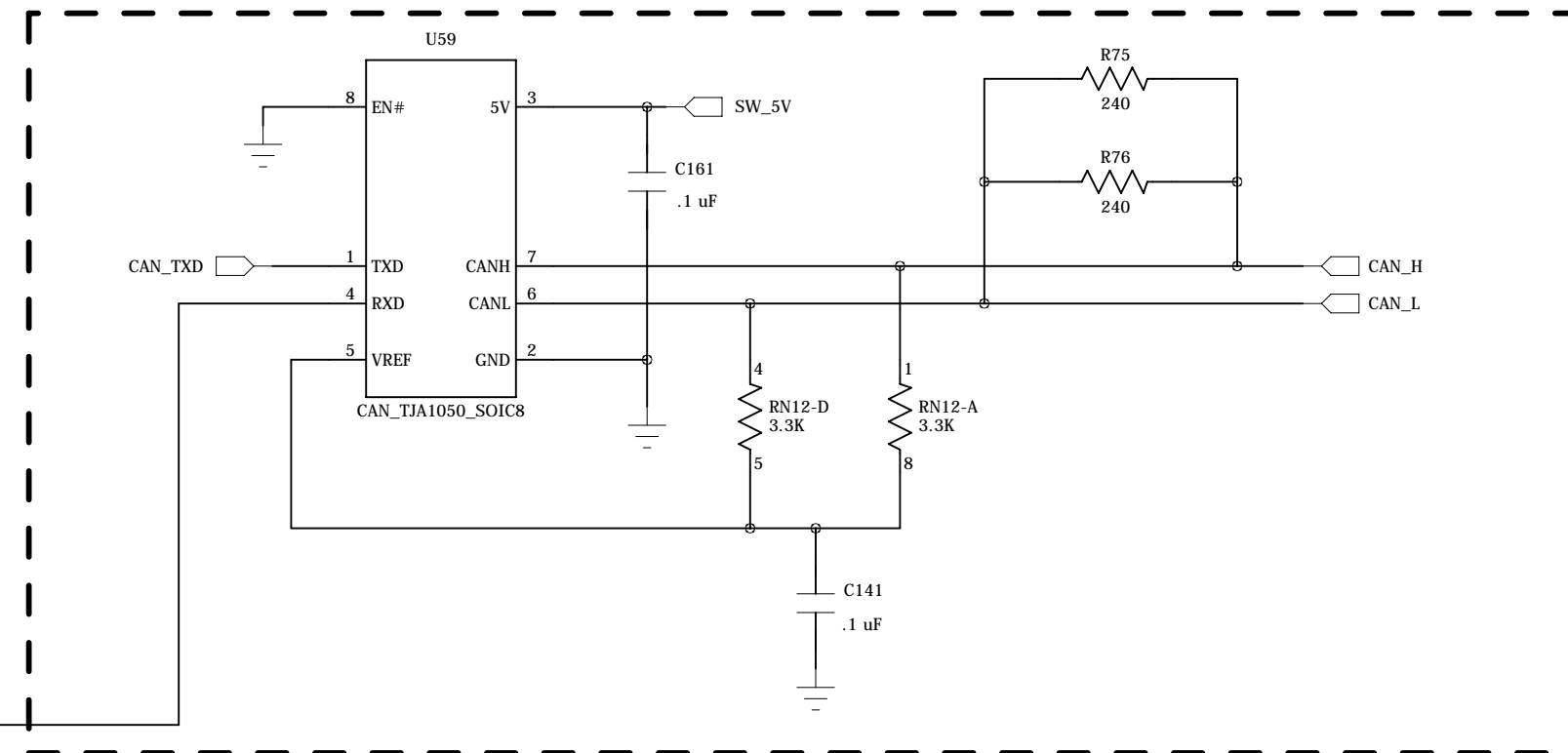


CPU Board

RS-485 Driver

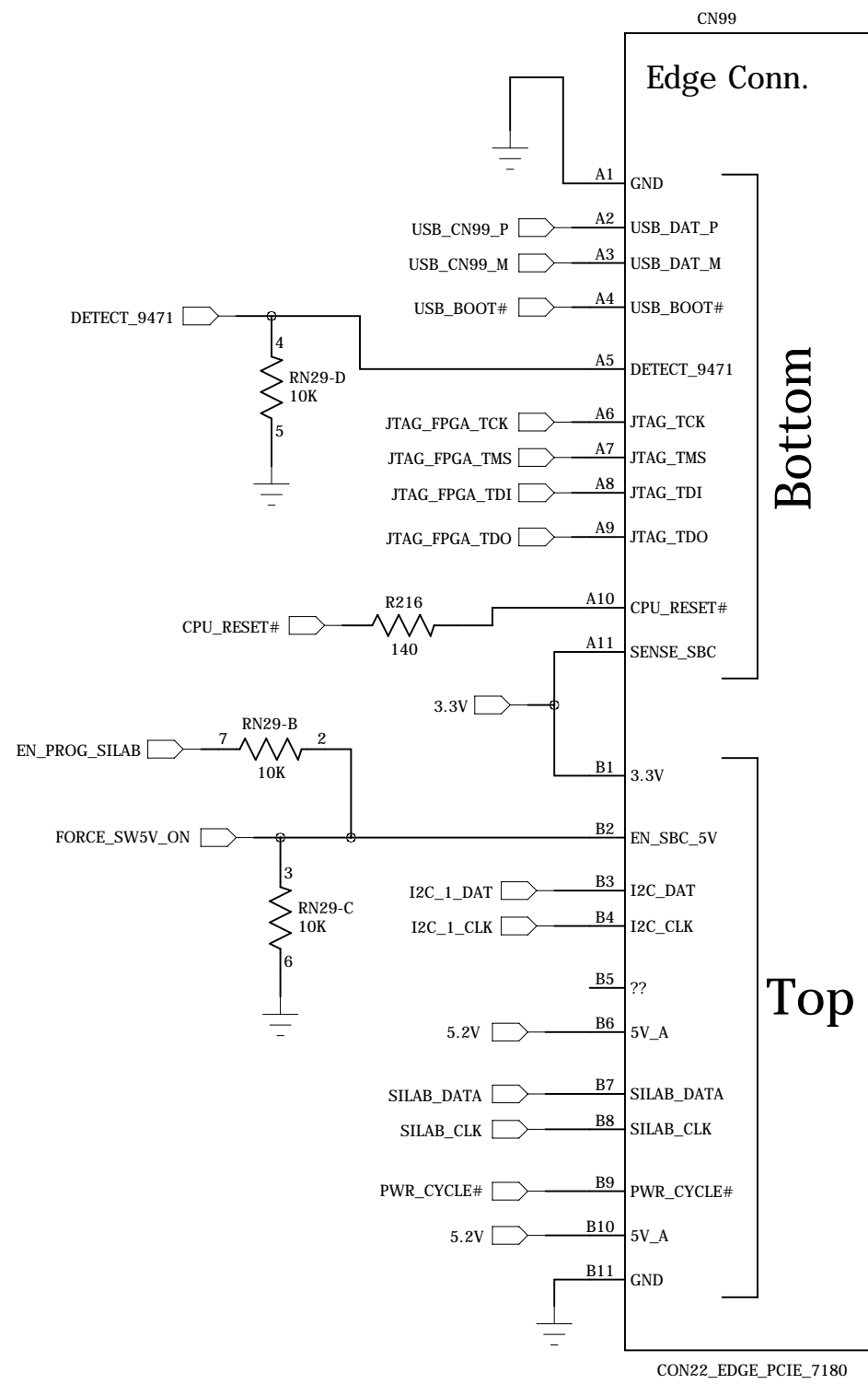


CAN Transceiver

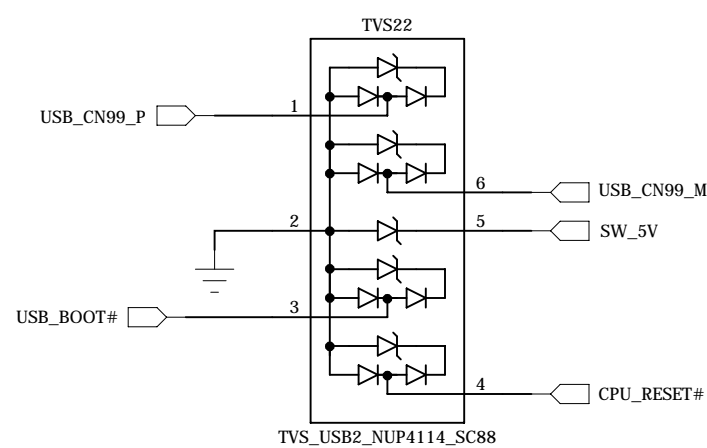


CPU Board

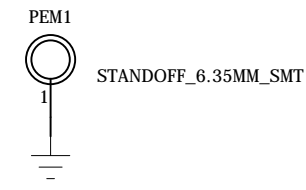
Factory Programing Interface



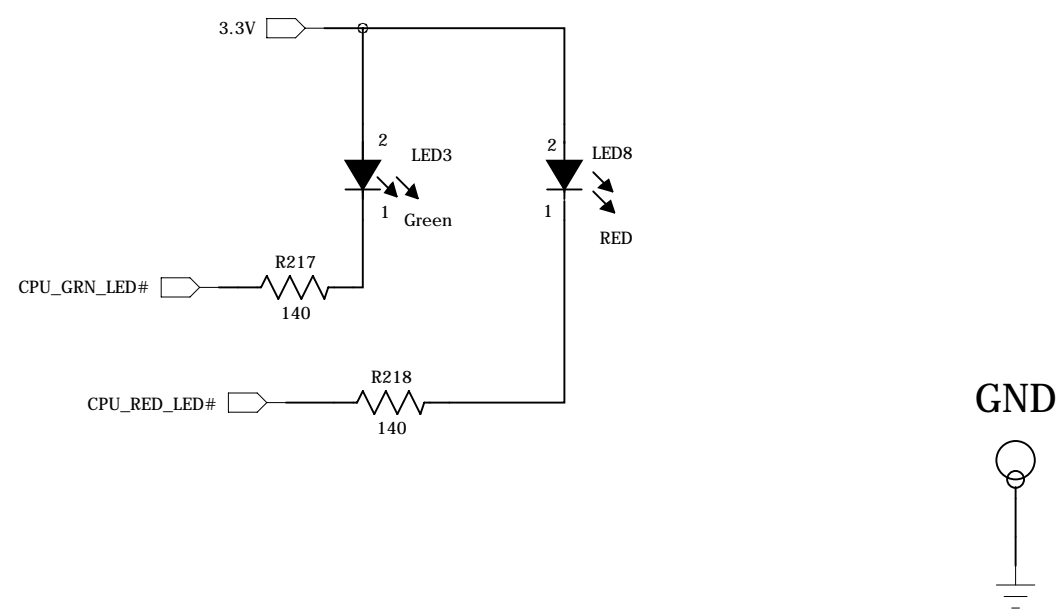
CN99 TVS



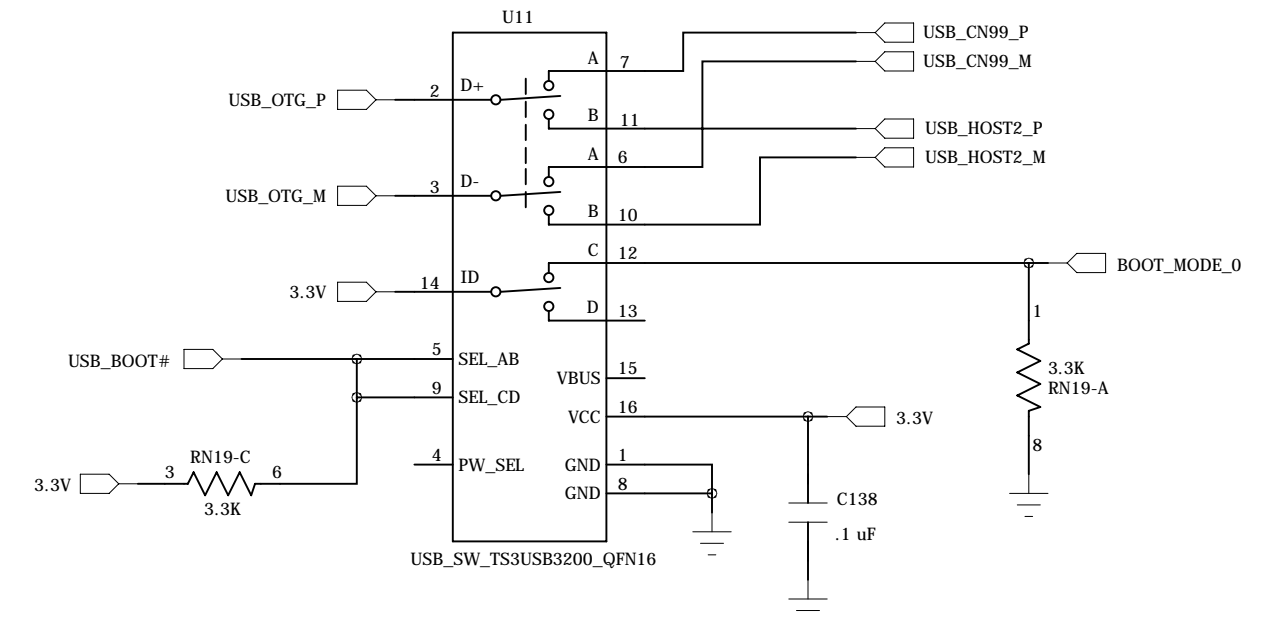
6.35mm Stand_off



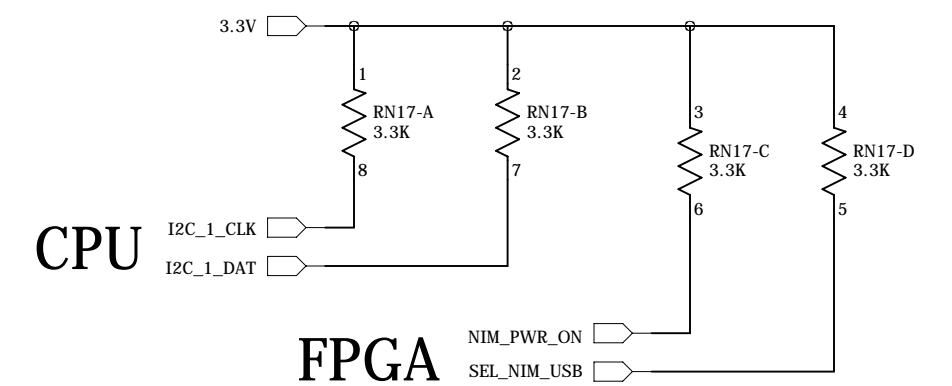
CPU LEDs



6UL USB OTG MUX To I/O Bd. or CN99



I2C PU Res.

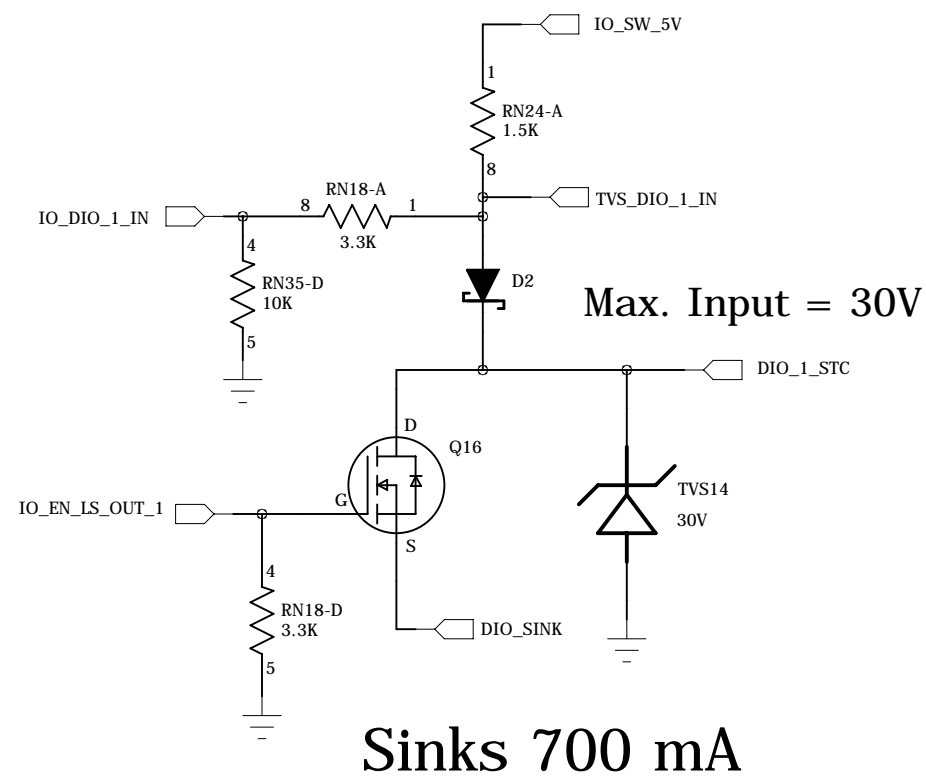


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IO Board

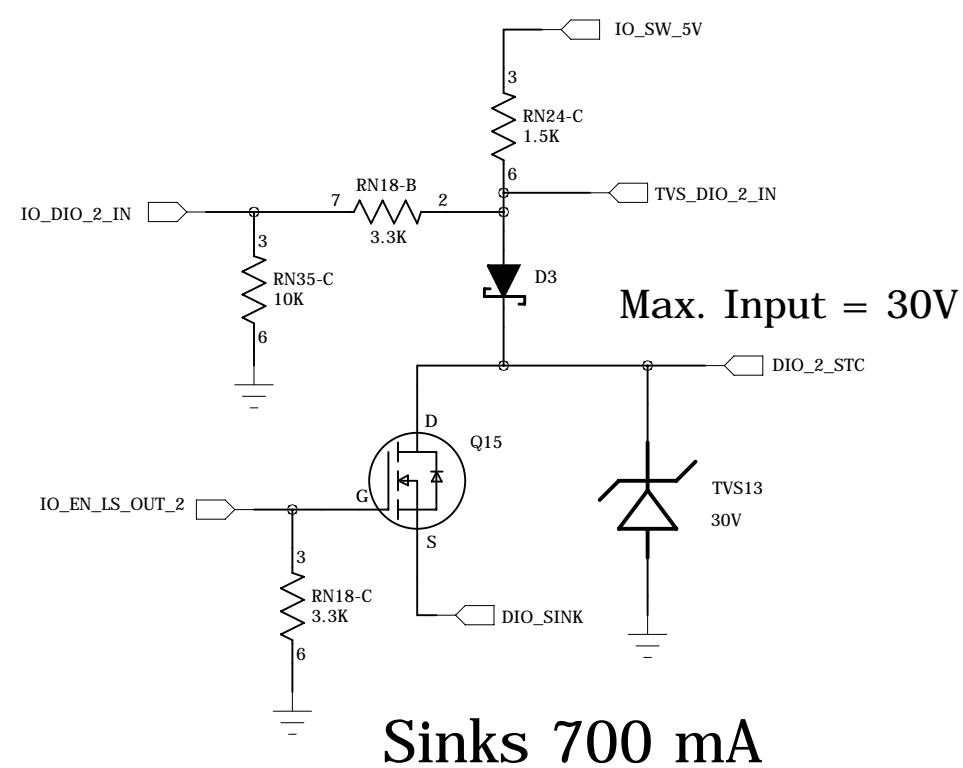
3 Dig Inputs or Outputs

Dig_IO_1

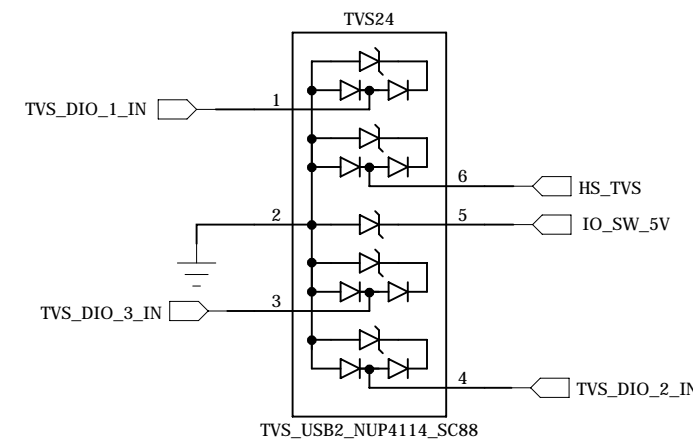


**Circuit Breaker
Trips at 1000 mA**

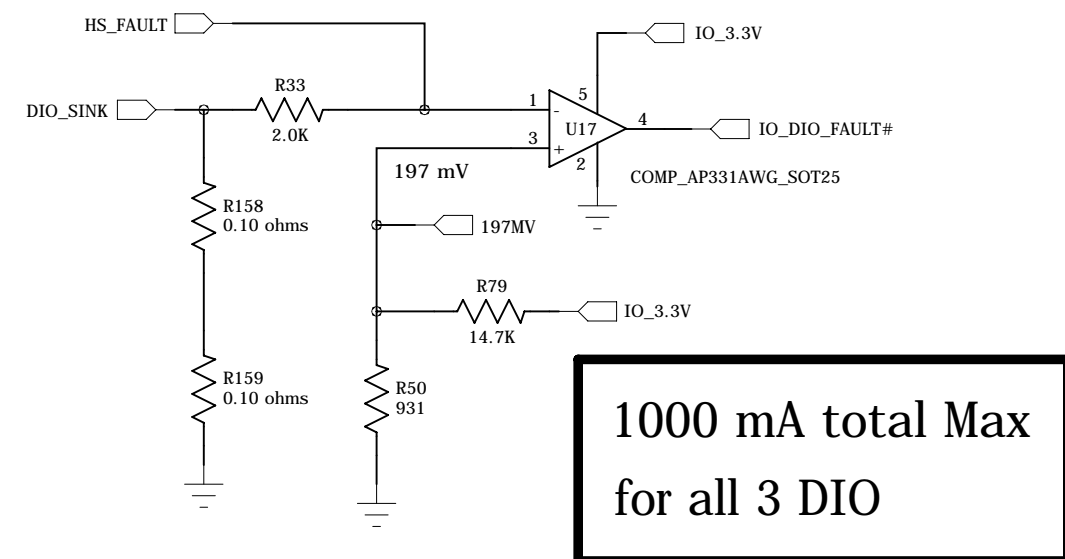
Dig_IO_2



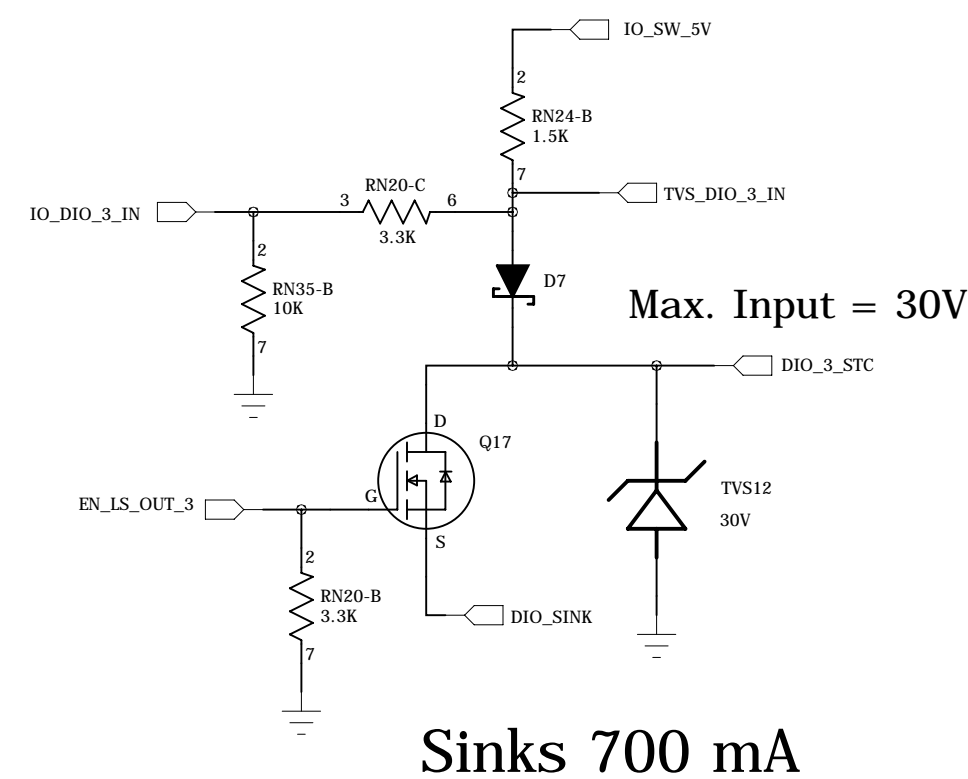
Dig IO TVS



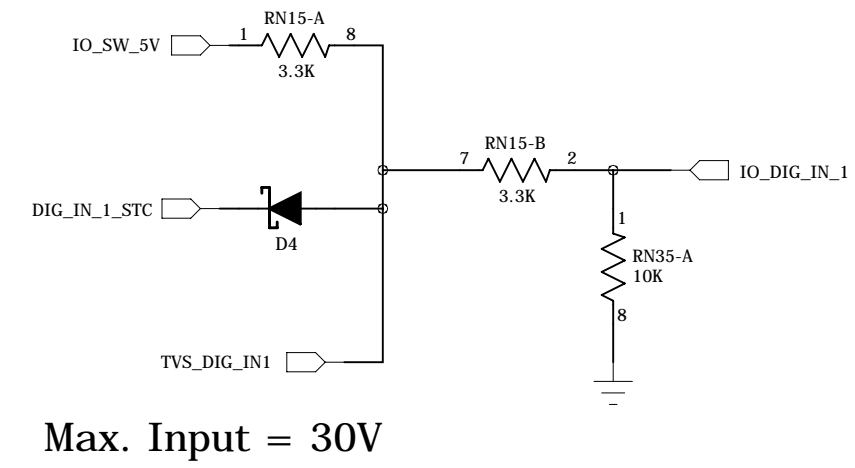
Over Current Breaker



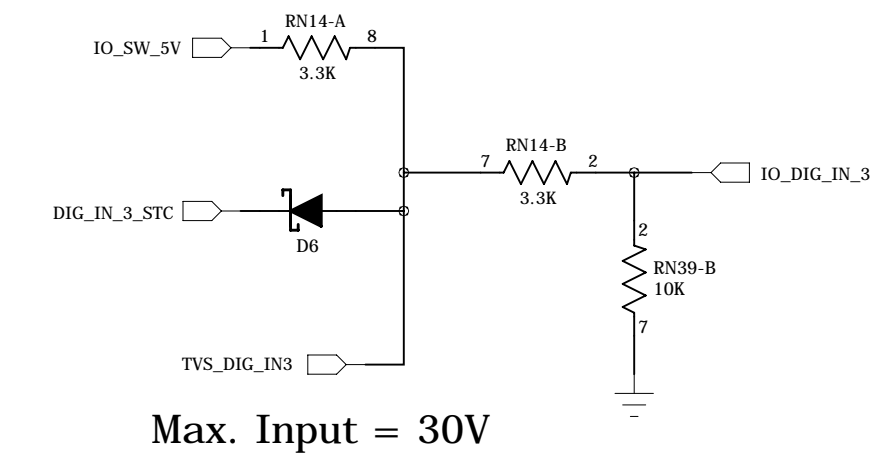
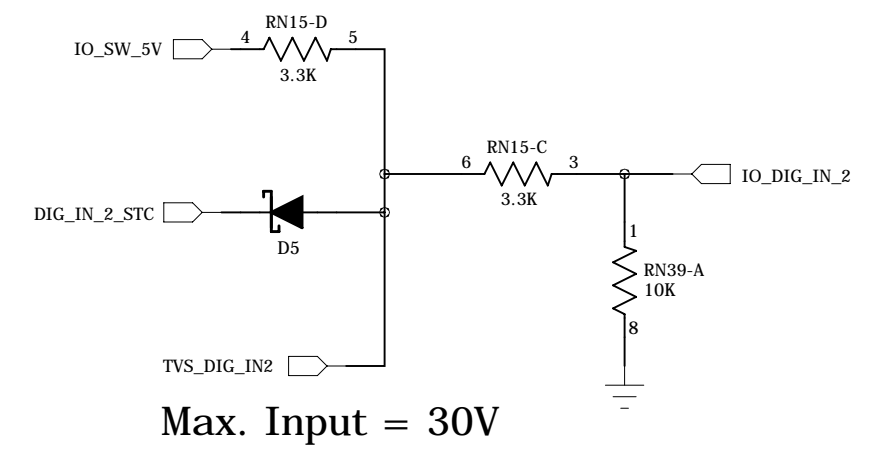
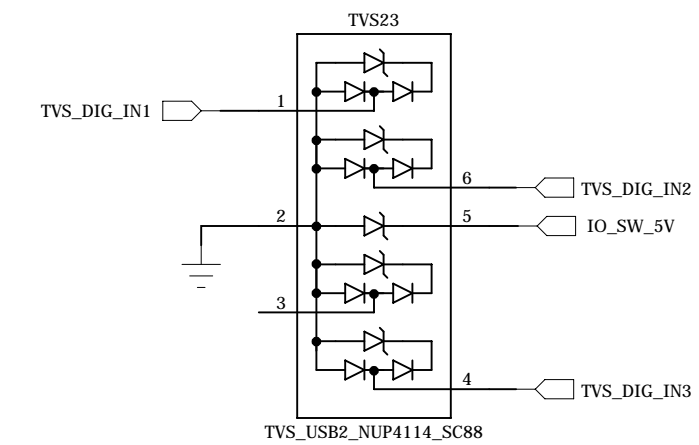
Dig_IO_3



3 Dig Inputs



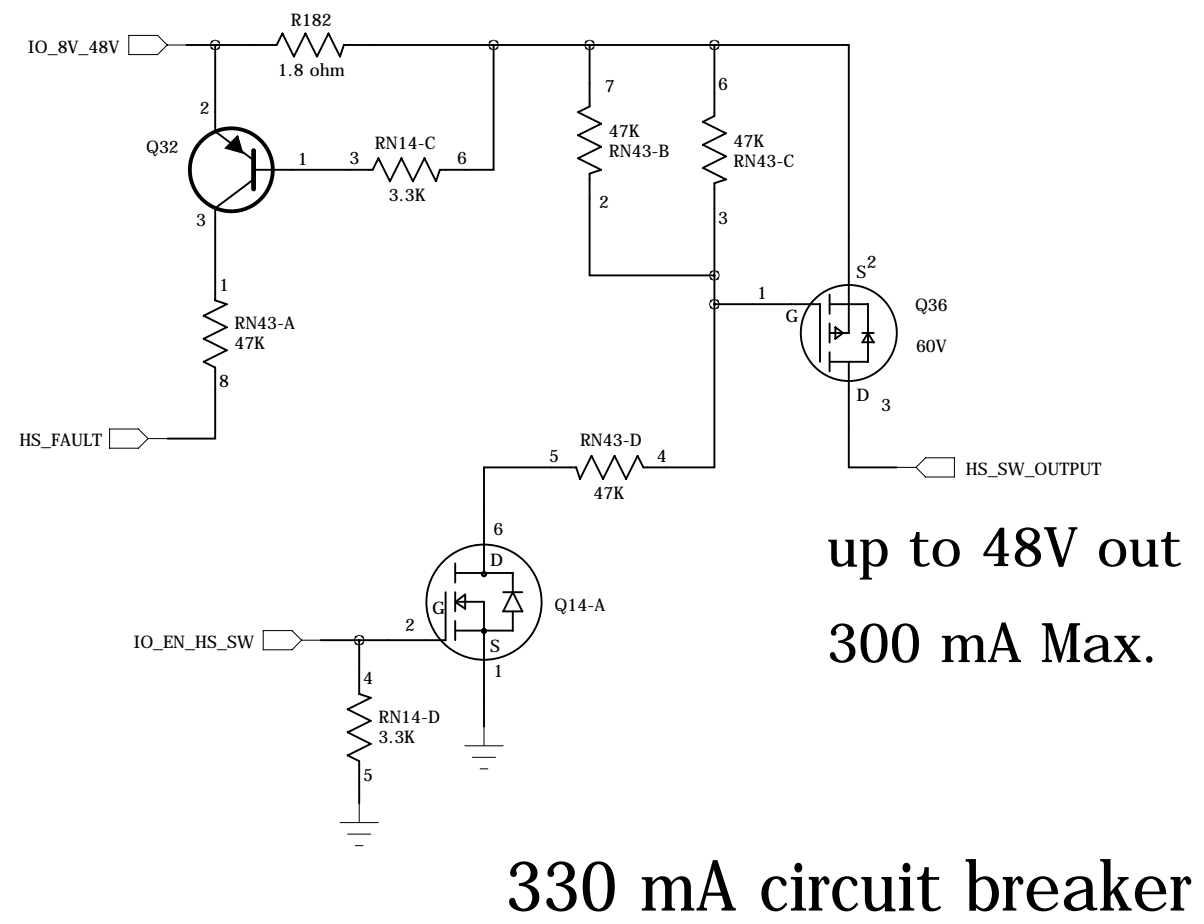
Dig IN TVS



CPU and IO Board

IO Bd.

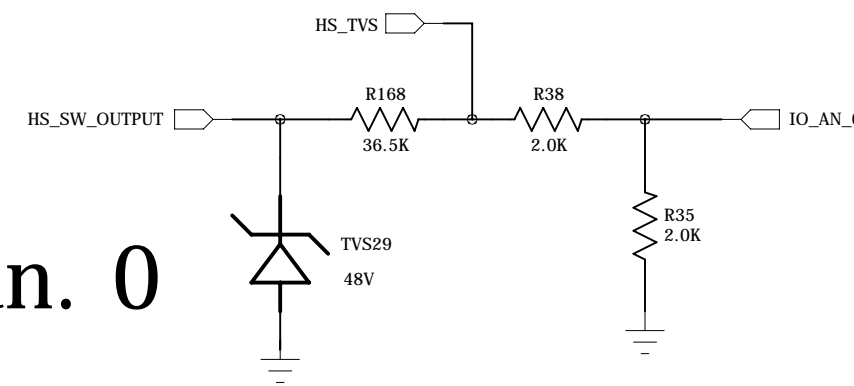
High-Side Switch Output



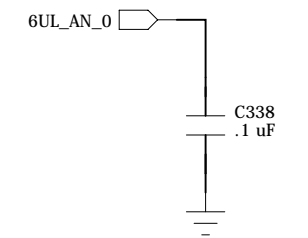
IO Bd.

0-50V analog Input
or HS Output

An. Chan. 0

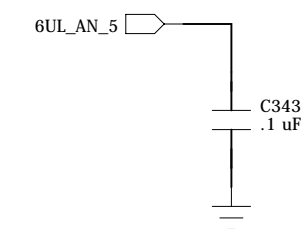


CPU Bd.

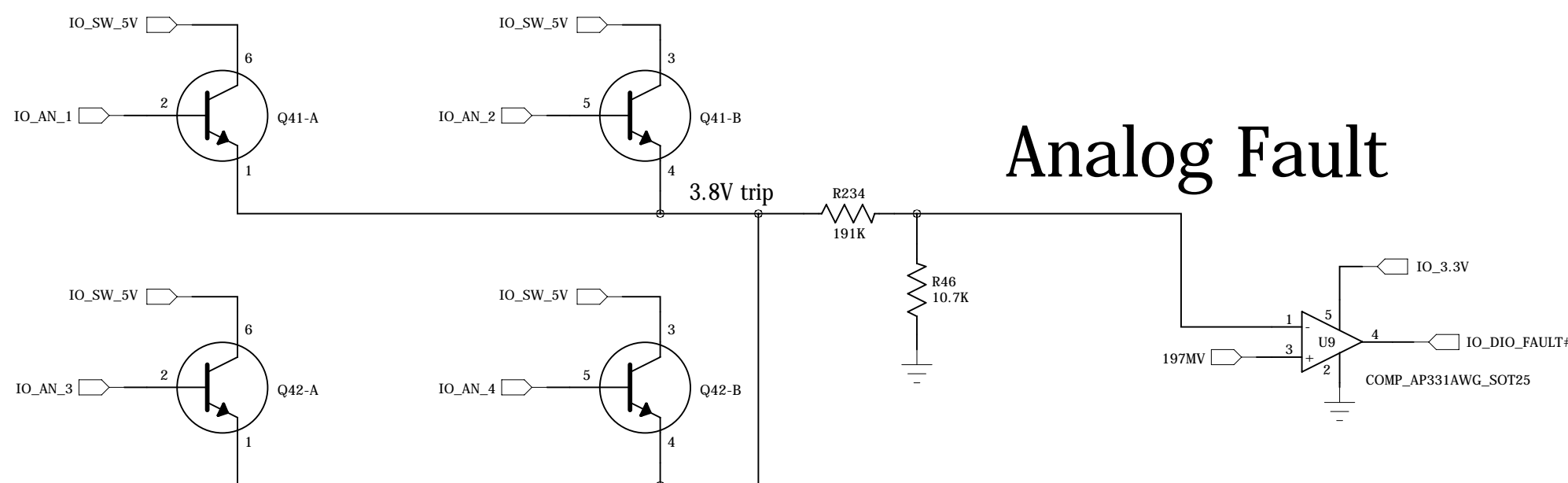
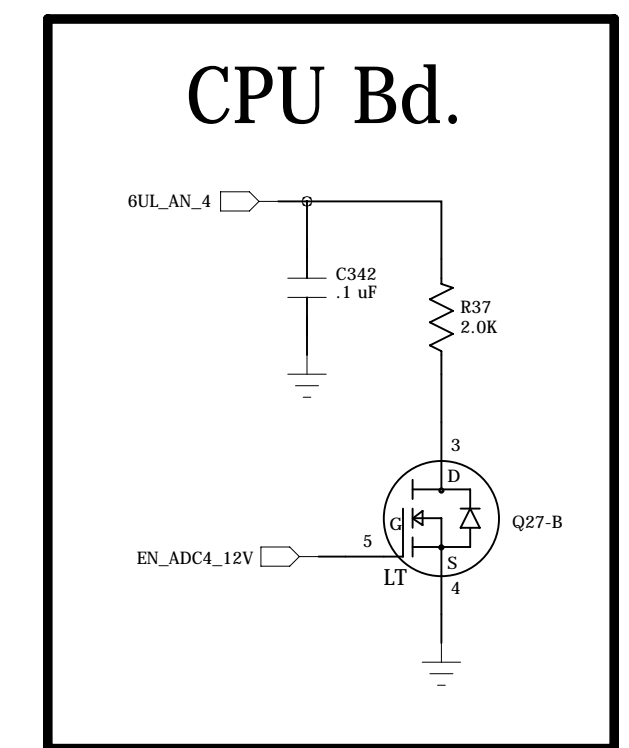
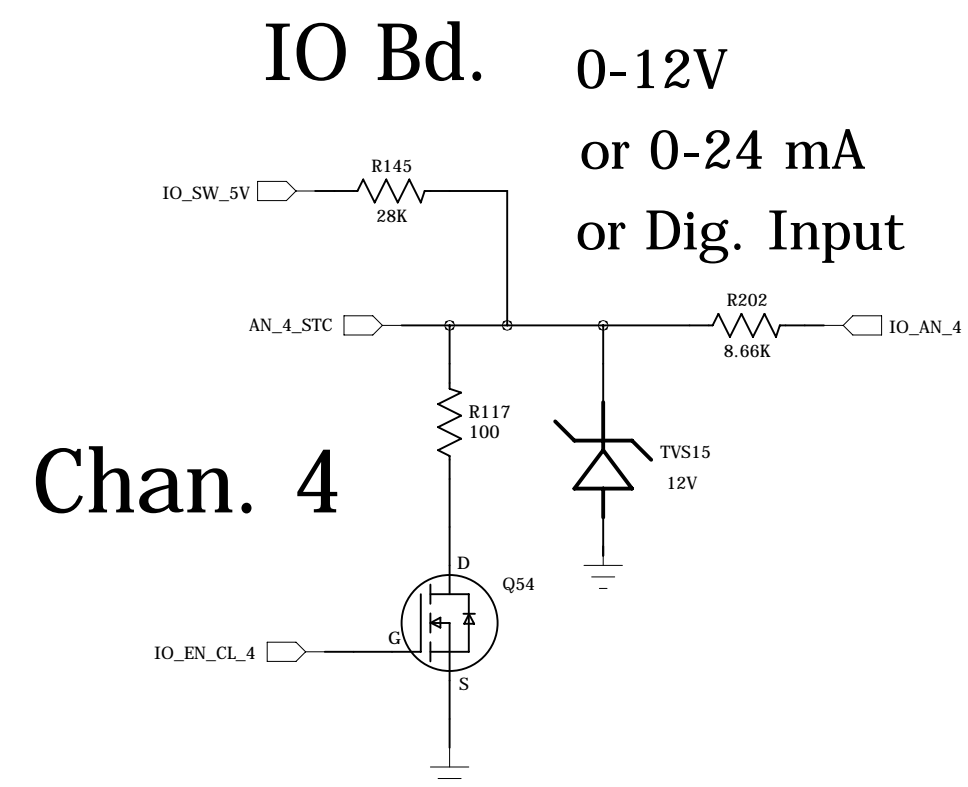
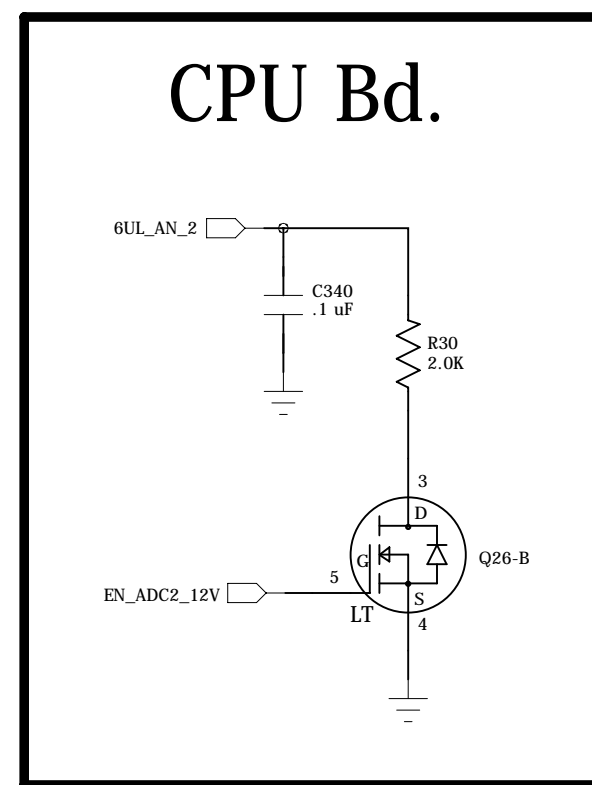
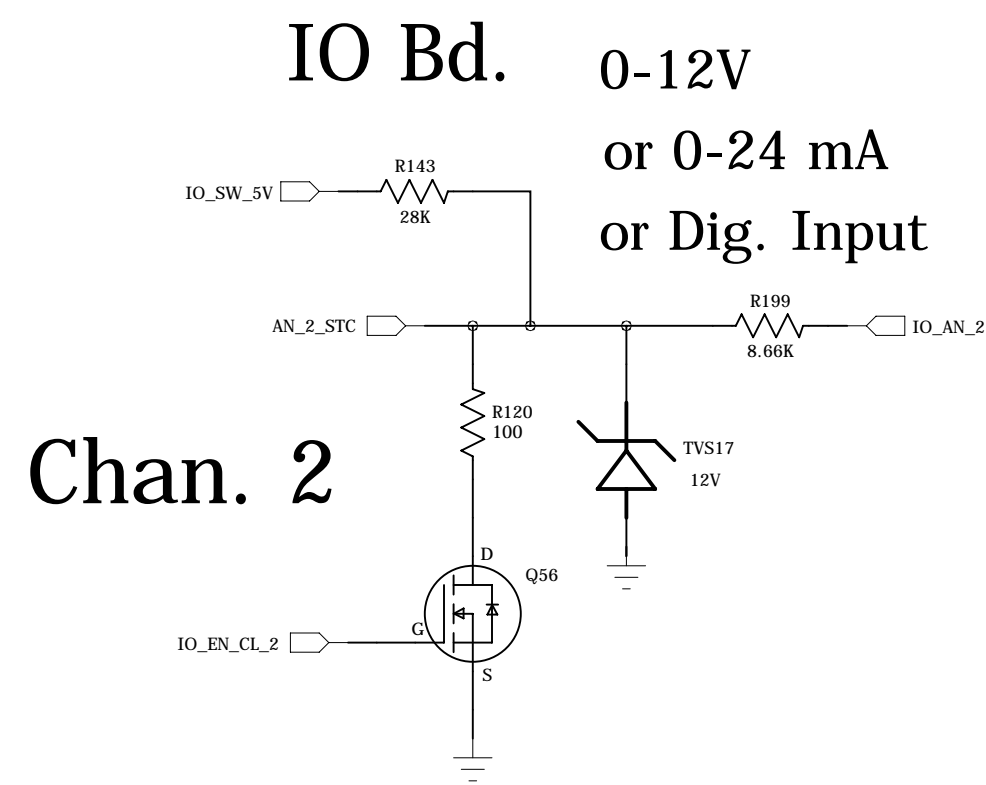
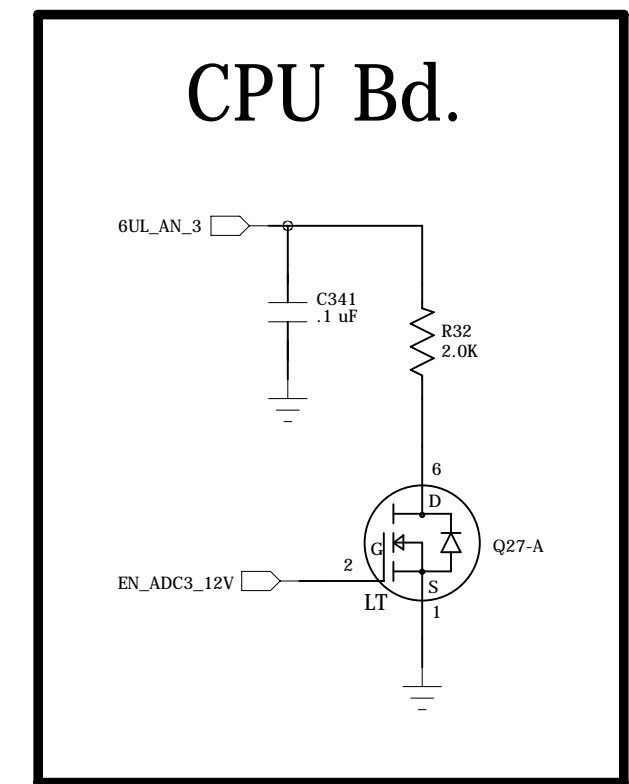
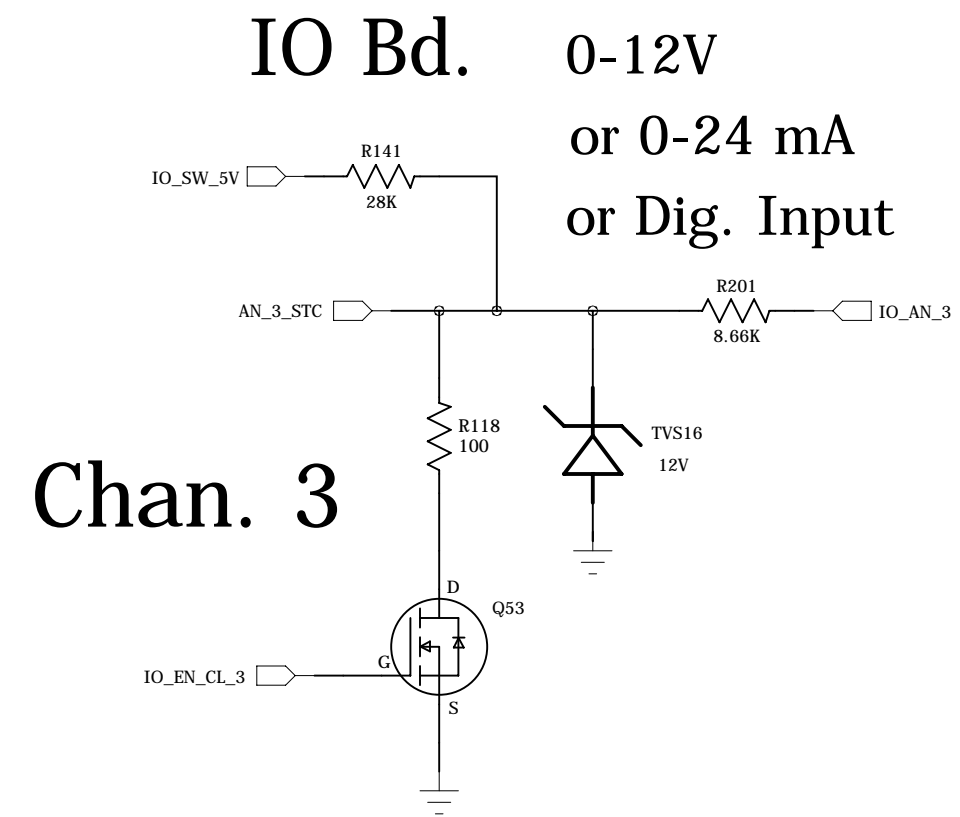
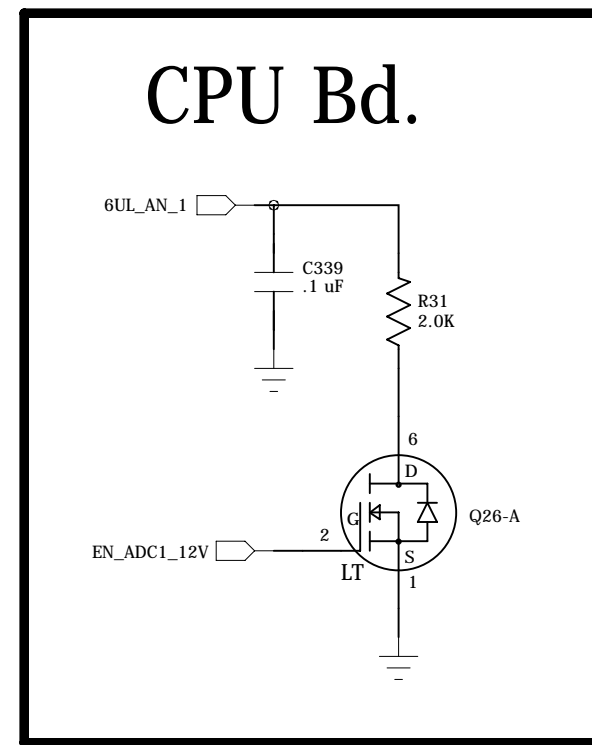
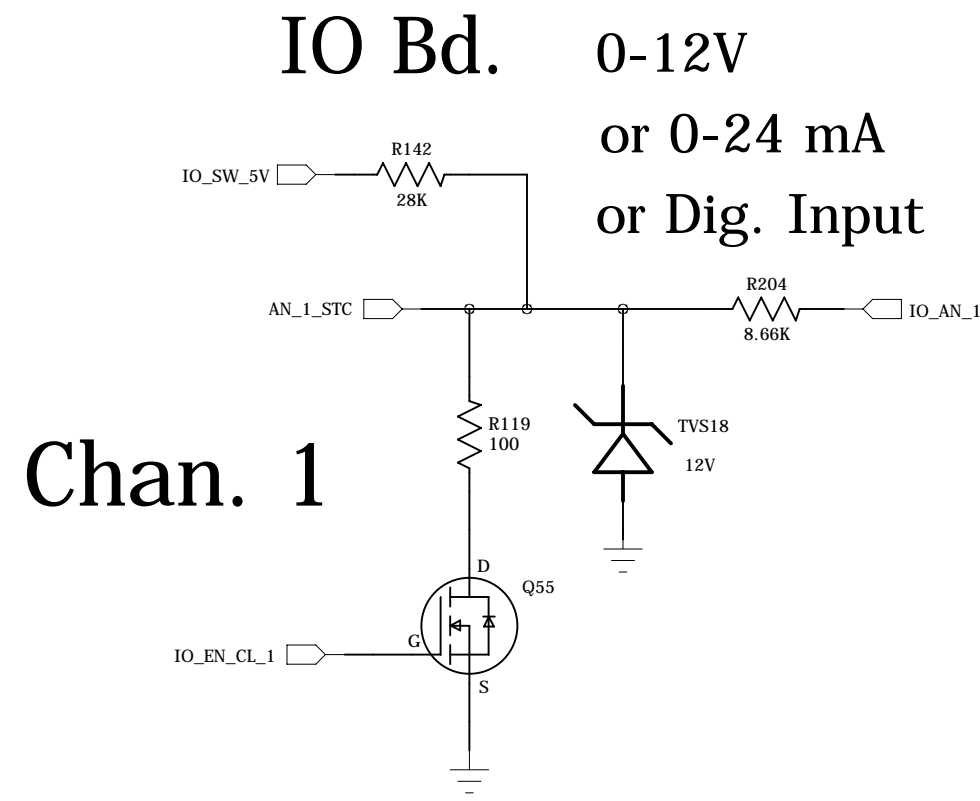


CPU Bd.

Analog Chan.5

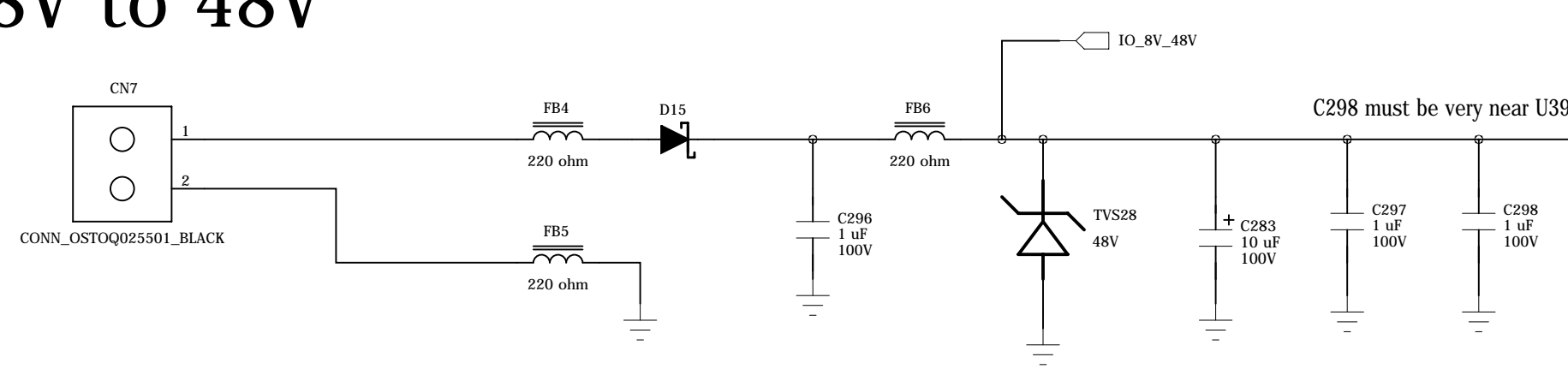


Analog - Parts on both CPU and IO boards

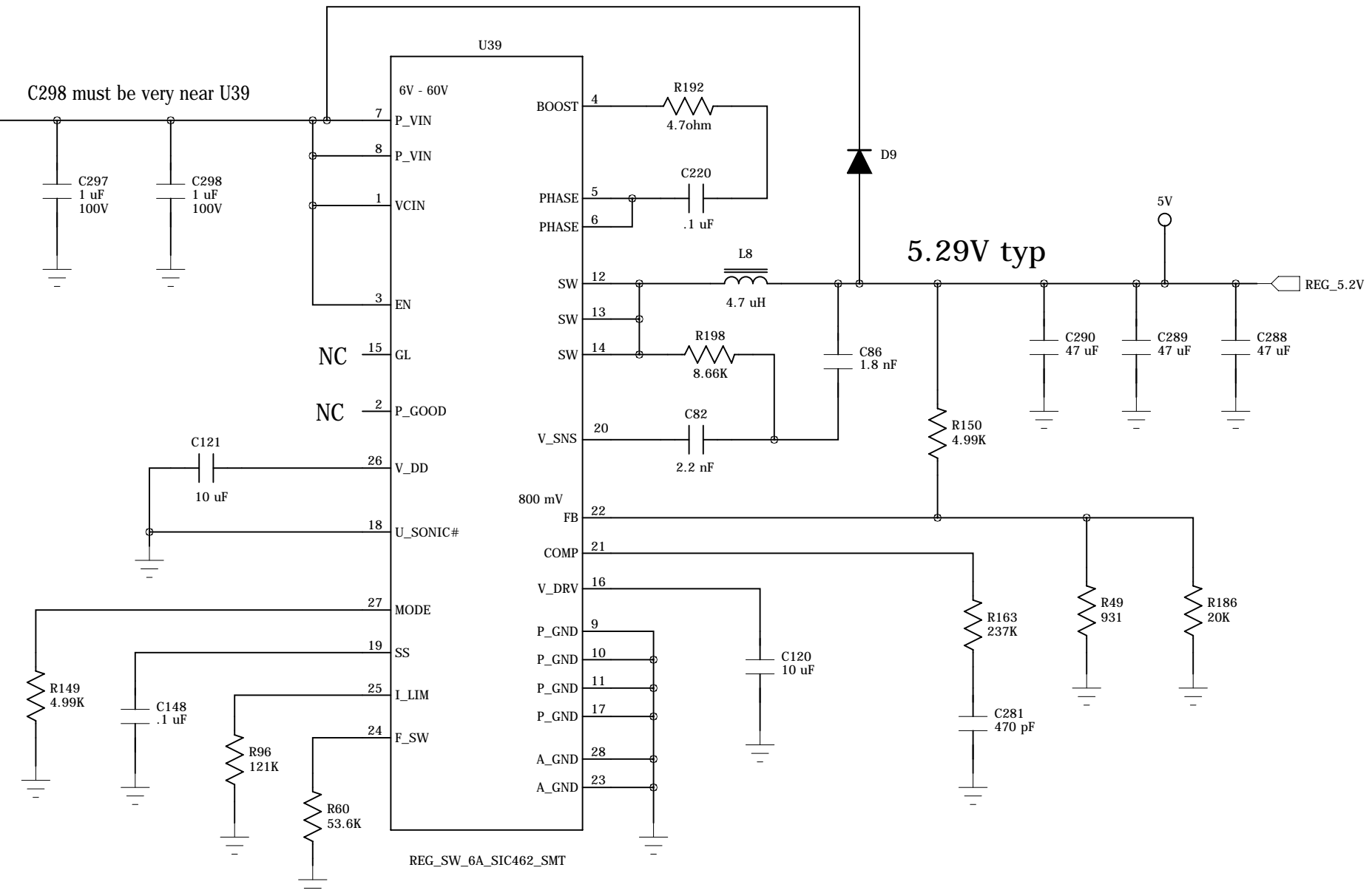


I/O Board

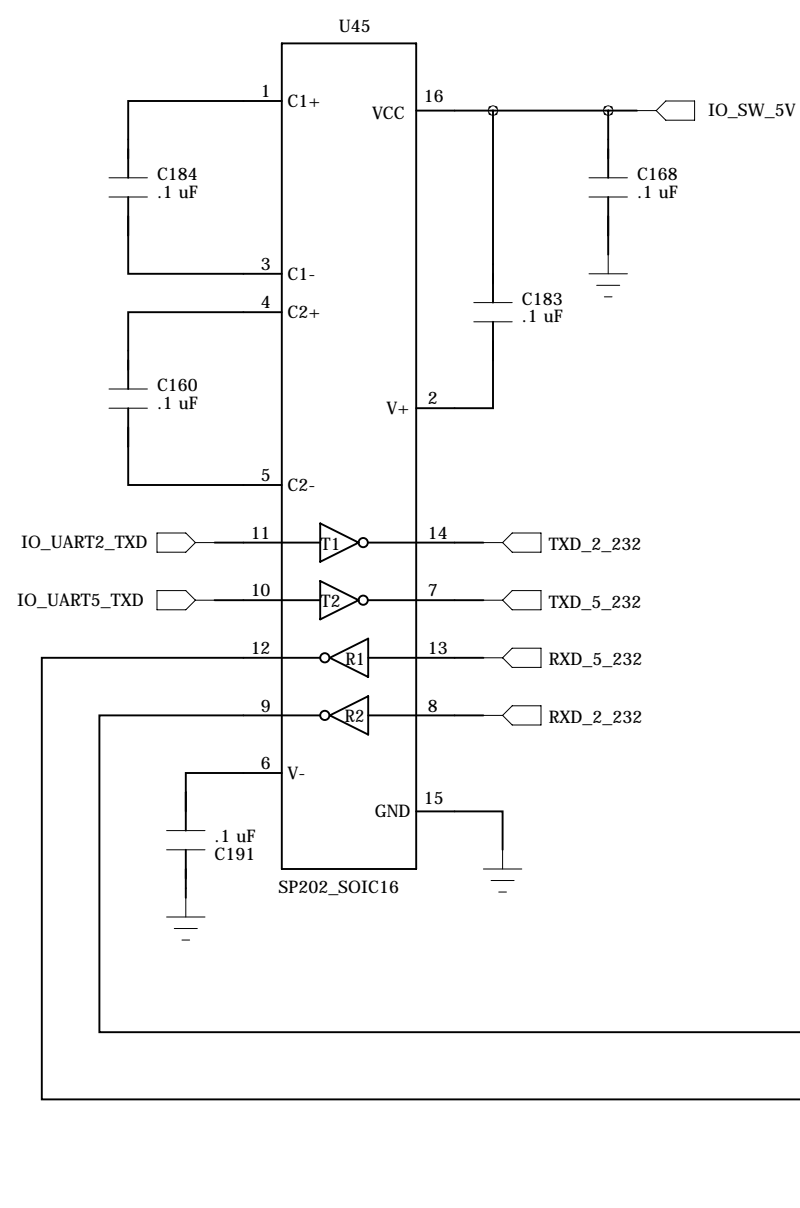
Power Input 8V to 48V



5V Reg. 4A

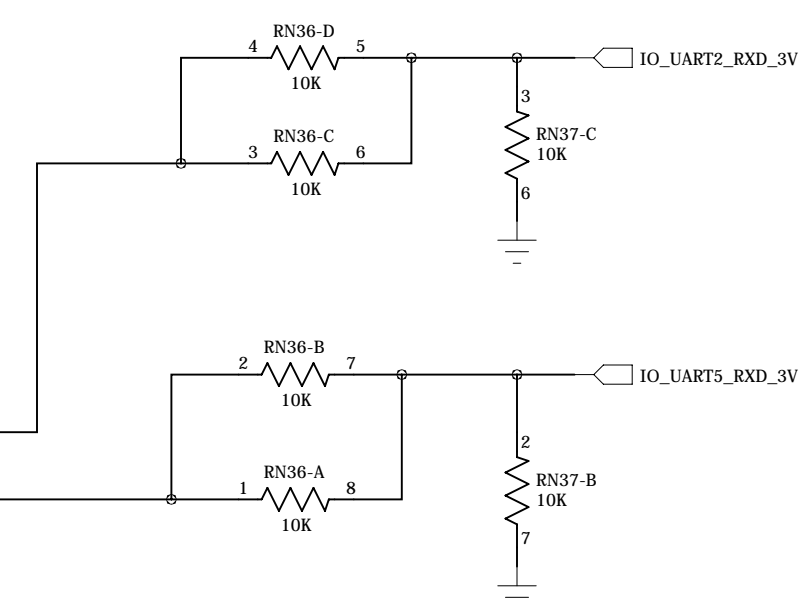


RS-232 Transceiver

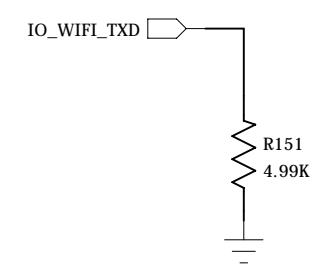


RS-232 Level Shifter

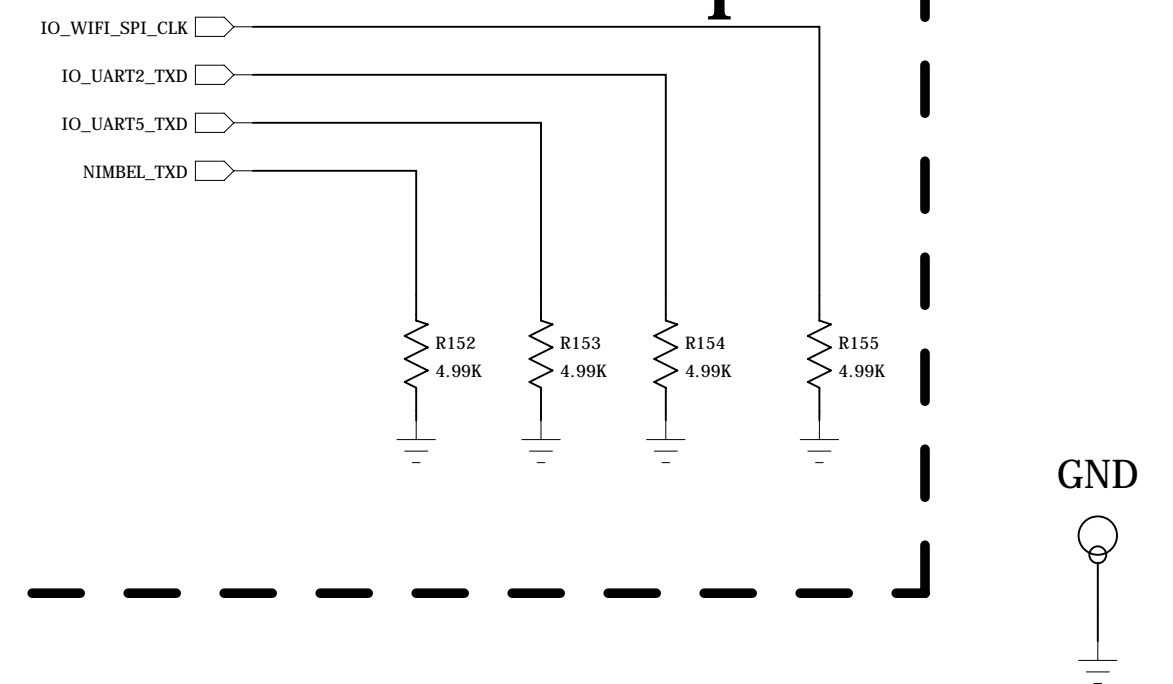
5V --> 3.3V



IO Board Model Resistor Straps



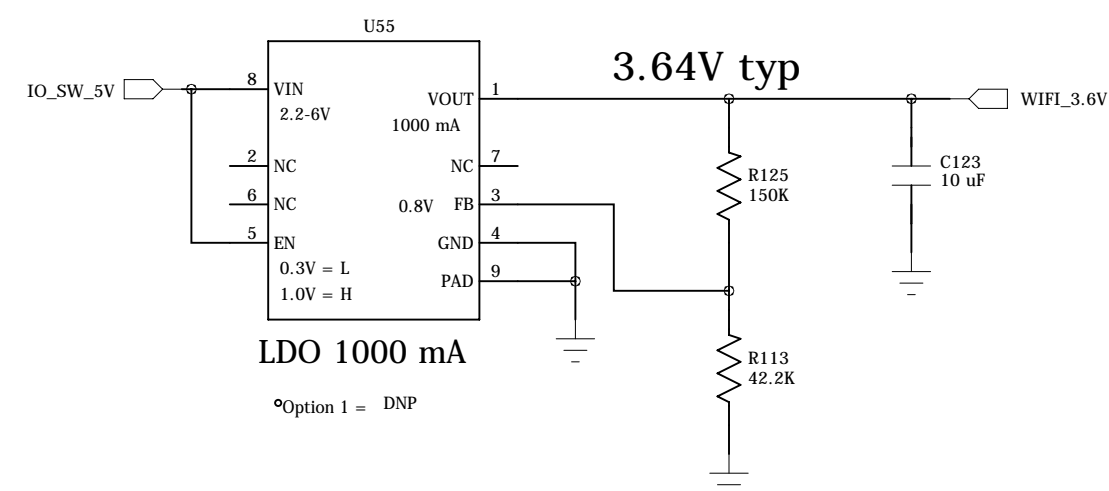
IO Board Options Resistor Straps



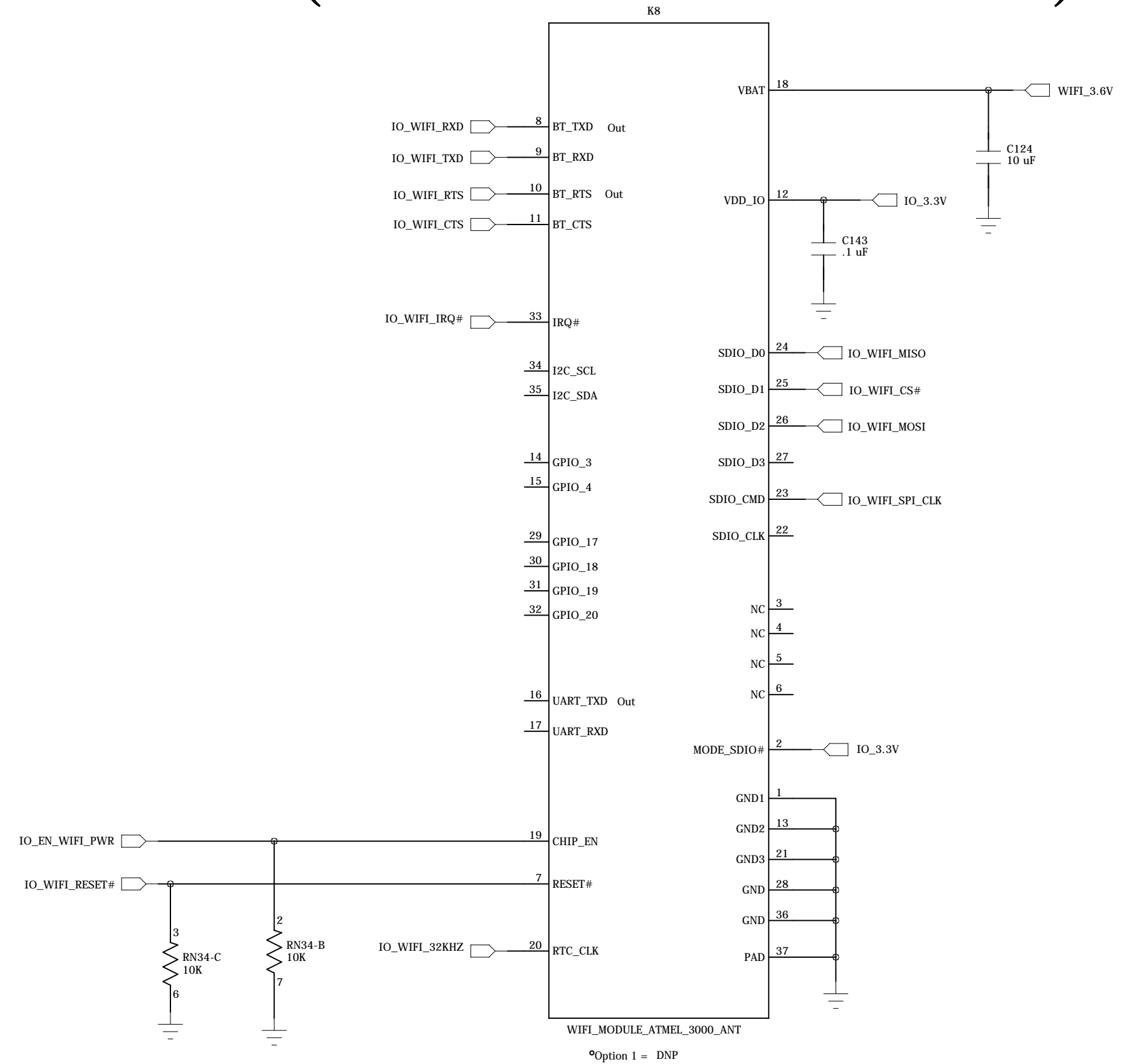
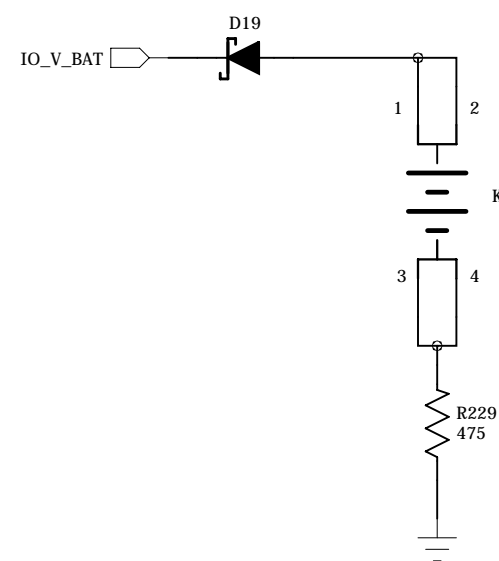
I/O Board

WiFi / Bluetooth Radio Module (u.FL Antenna Connector)

WiFi 3.6V Reg.



RTC Battery Holder

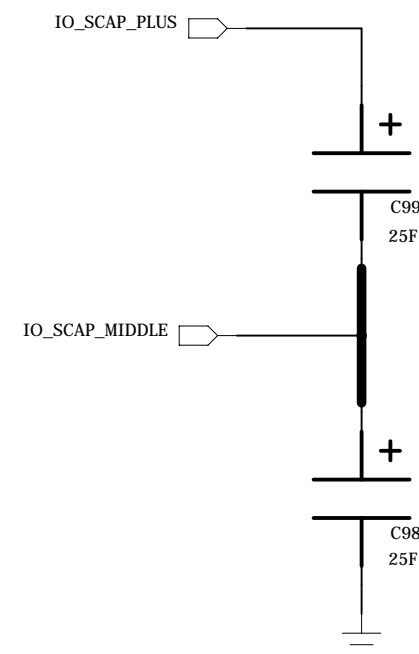
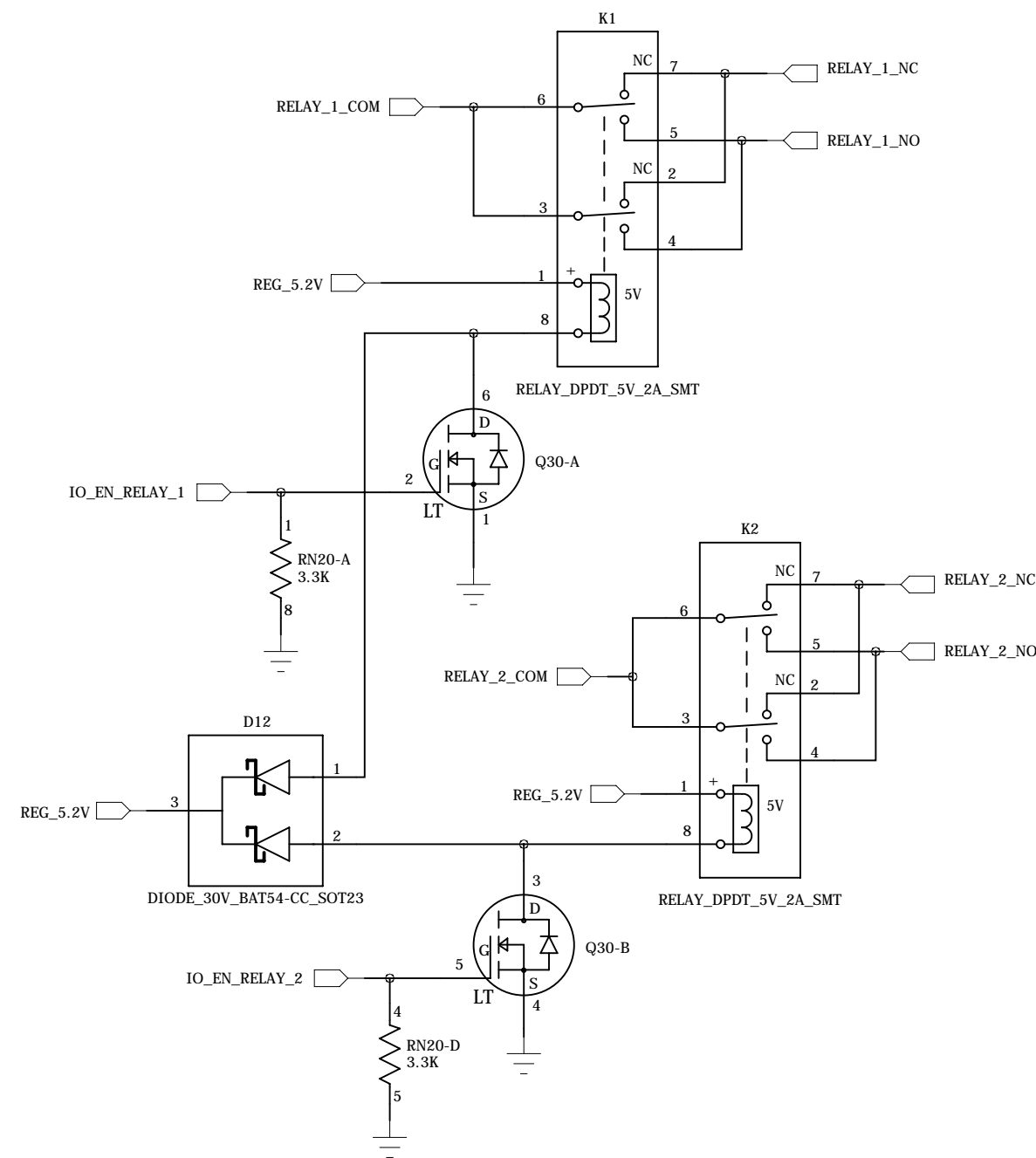


I/O Board

Relays

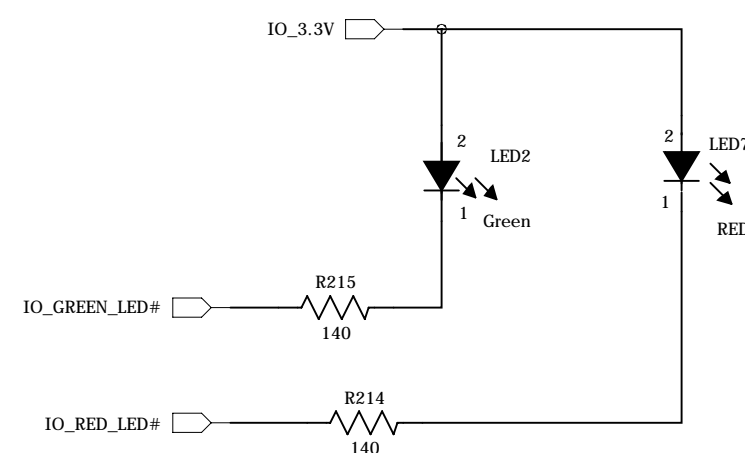
3A max load

250 VAC or 200 VDC Max

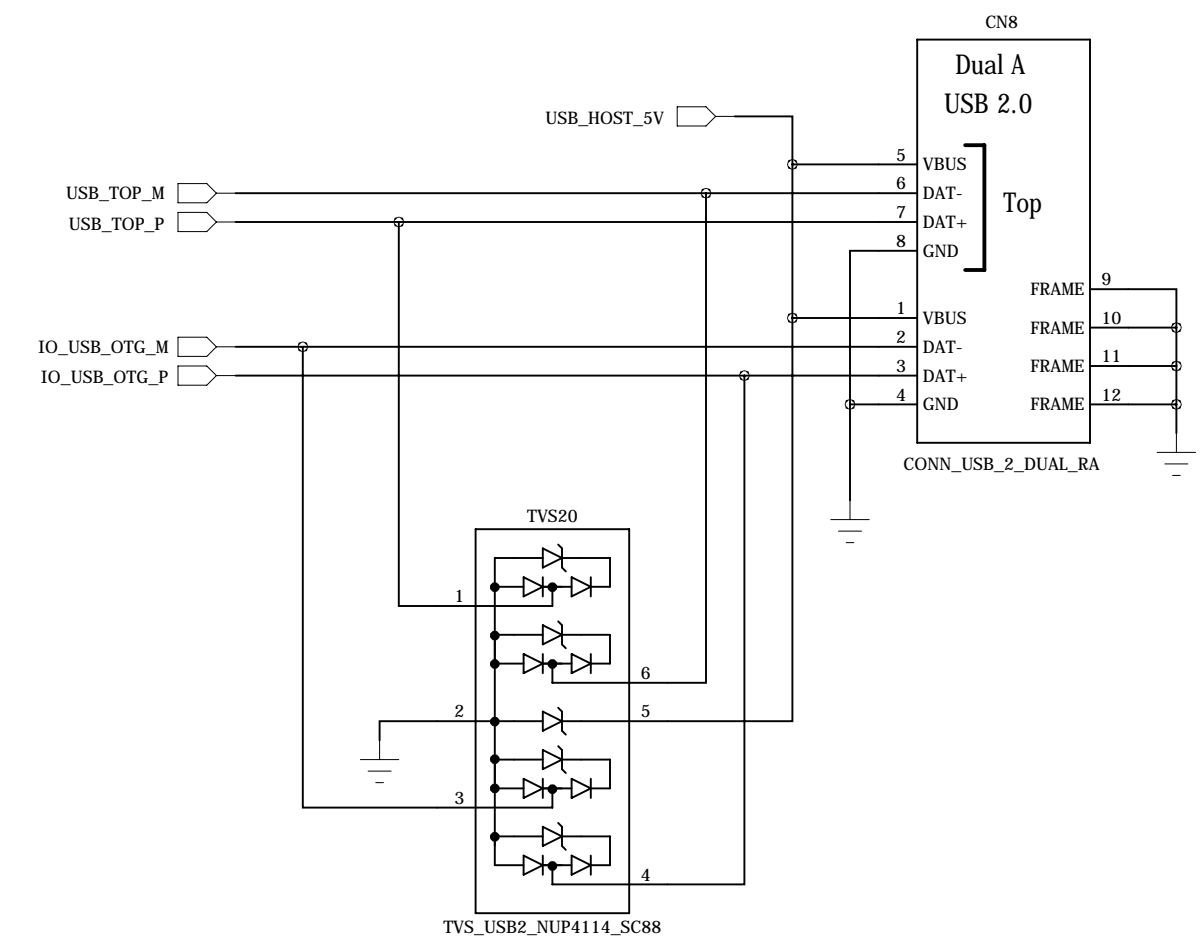


2 x 25F
Super Caps

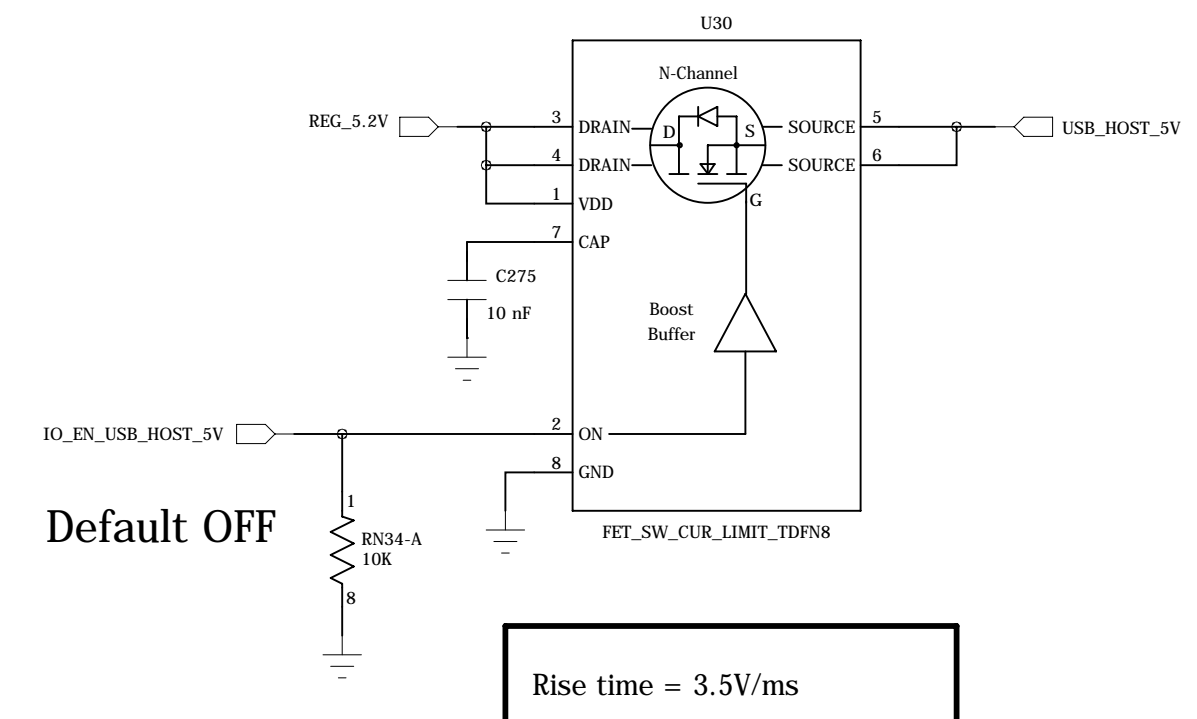
IO LEDs



Dual Host USB

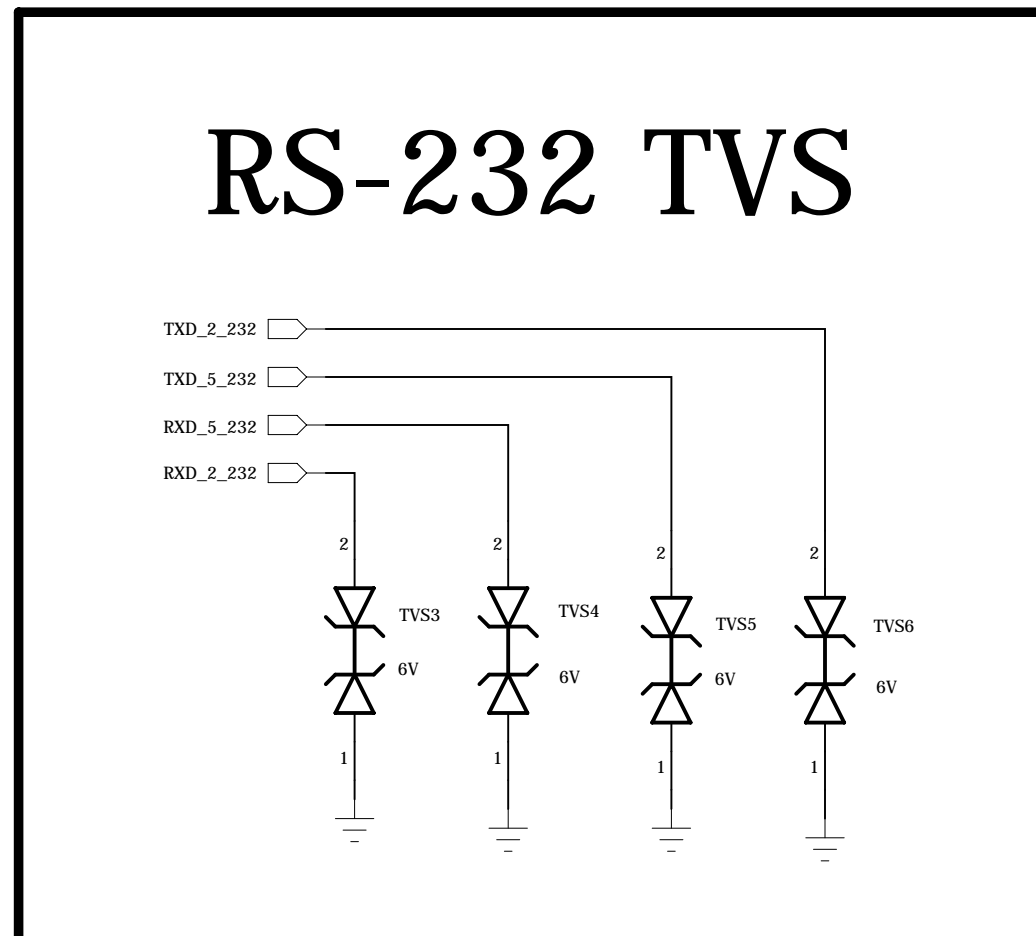
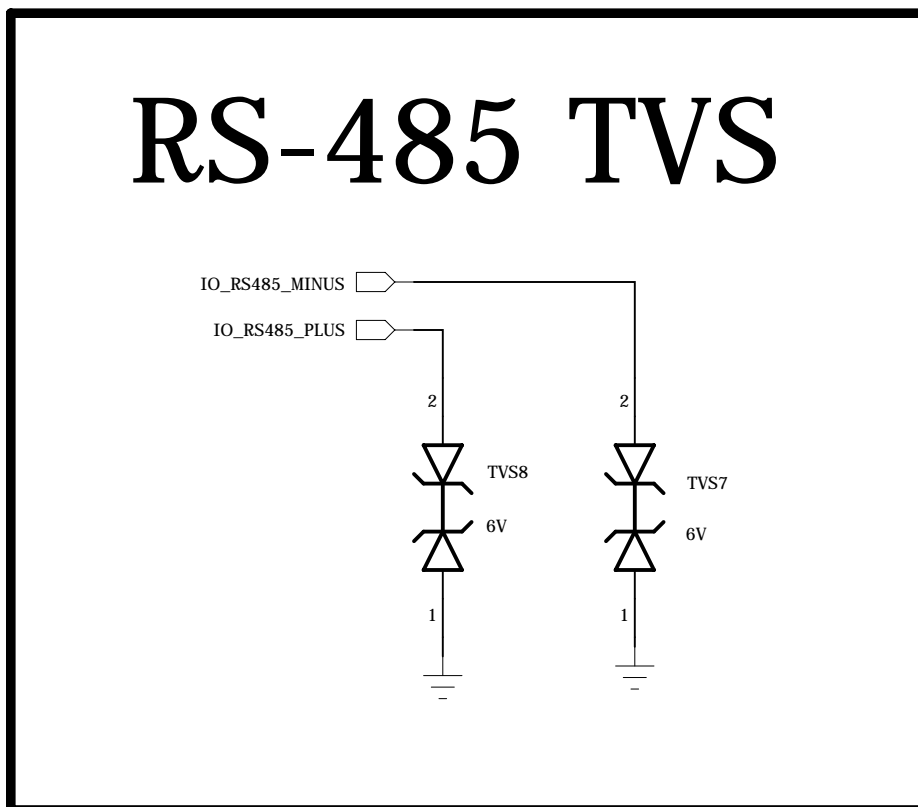
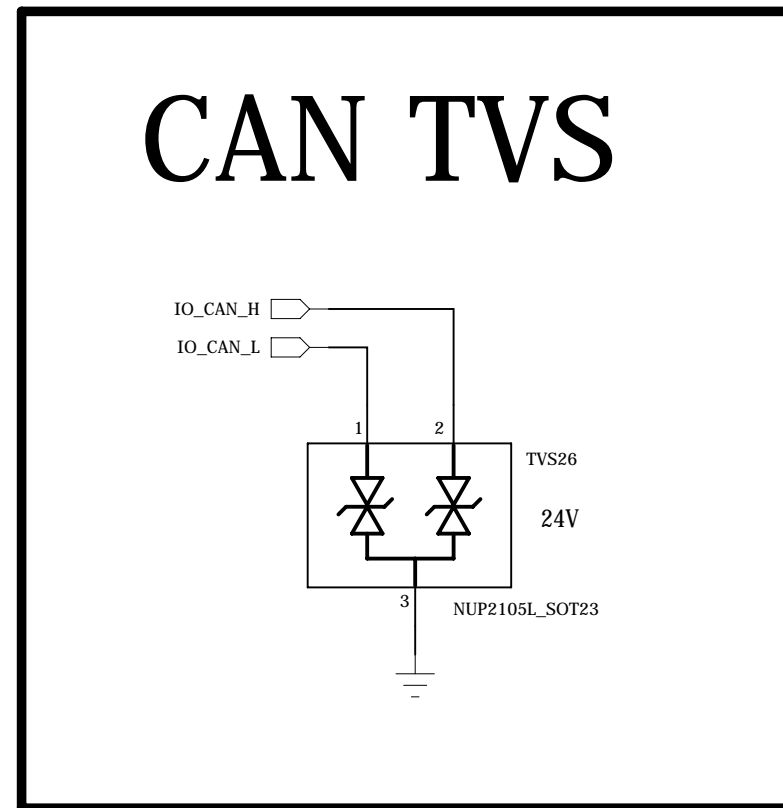
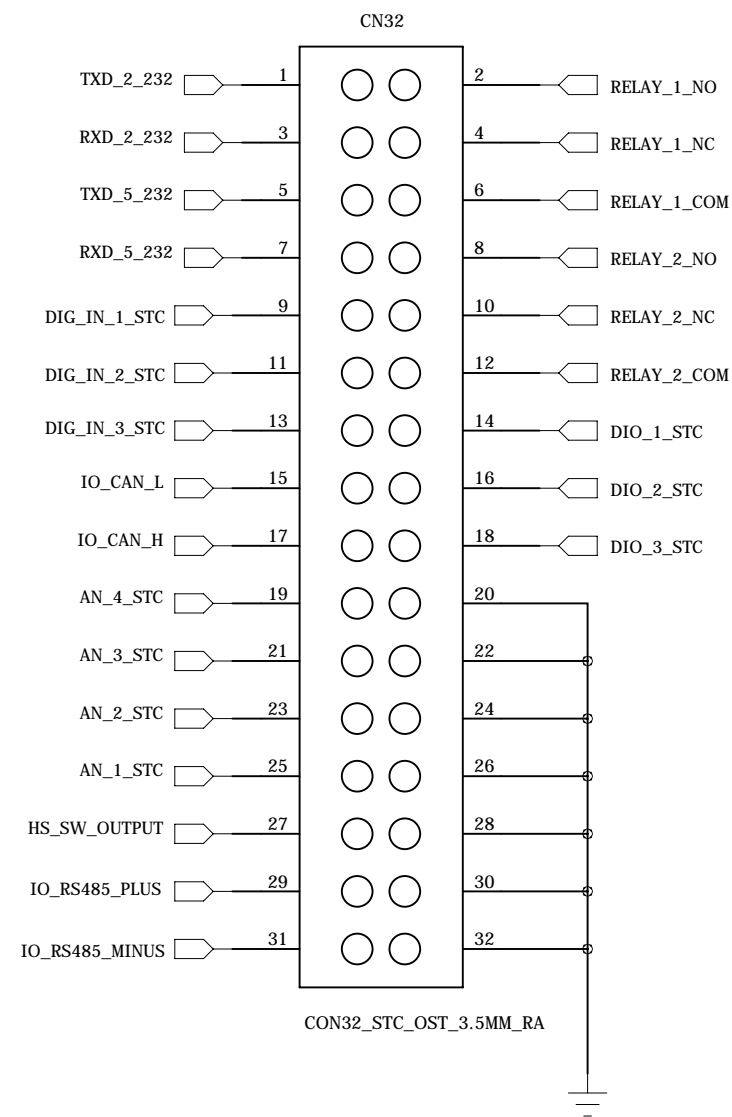


USB Sw. 5V

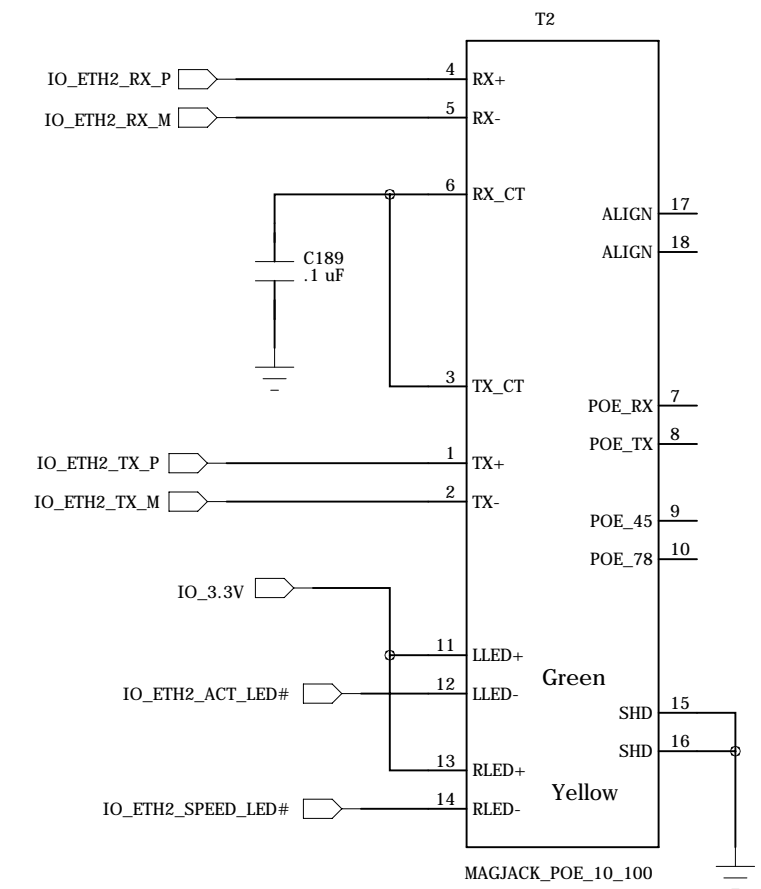


I/O Board

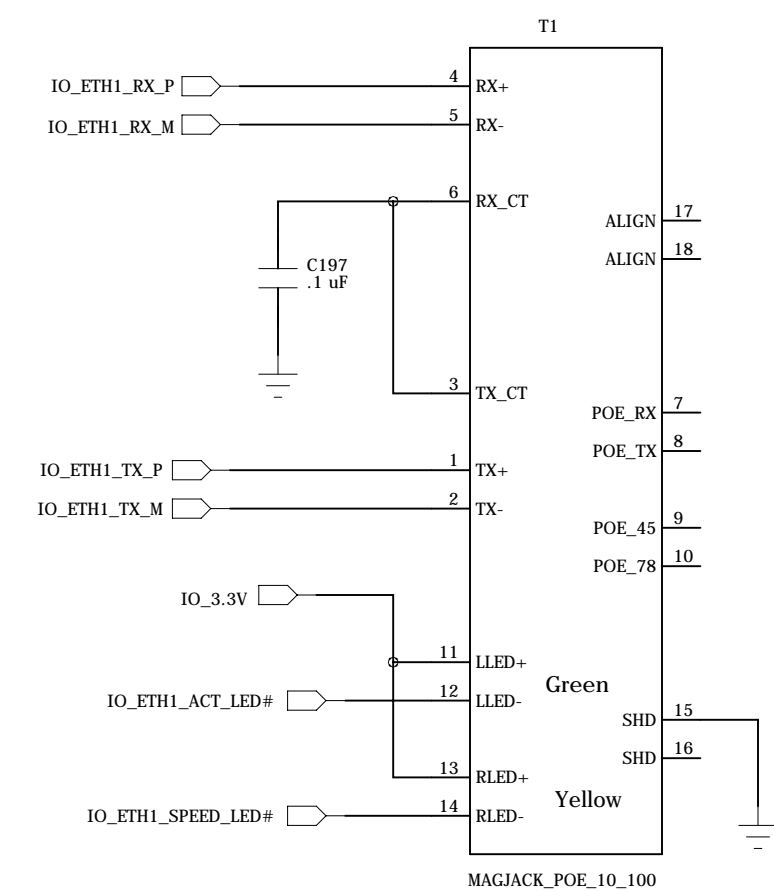
2x16 STC



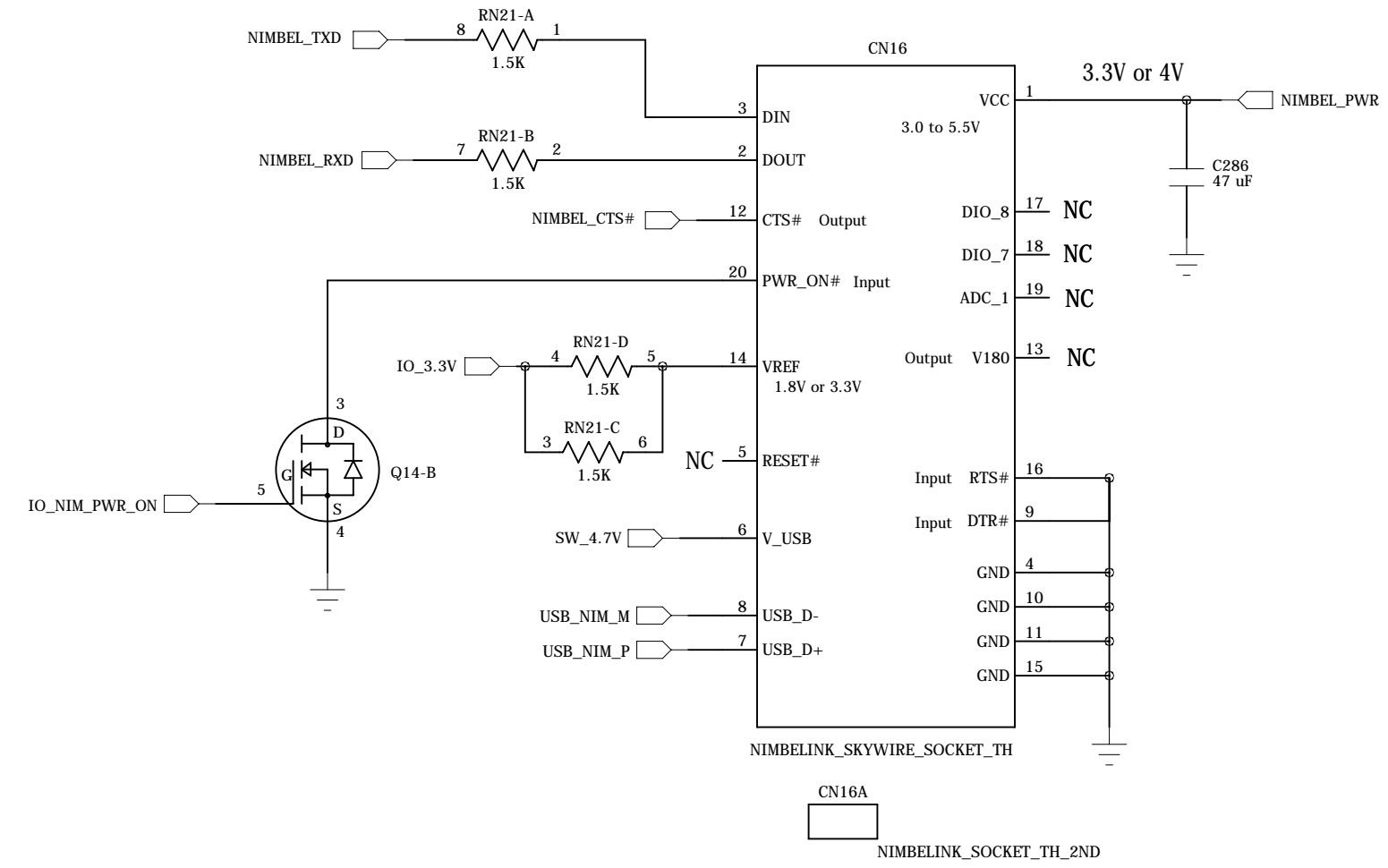
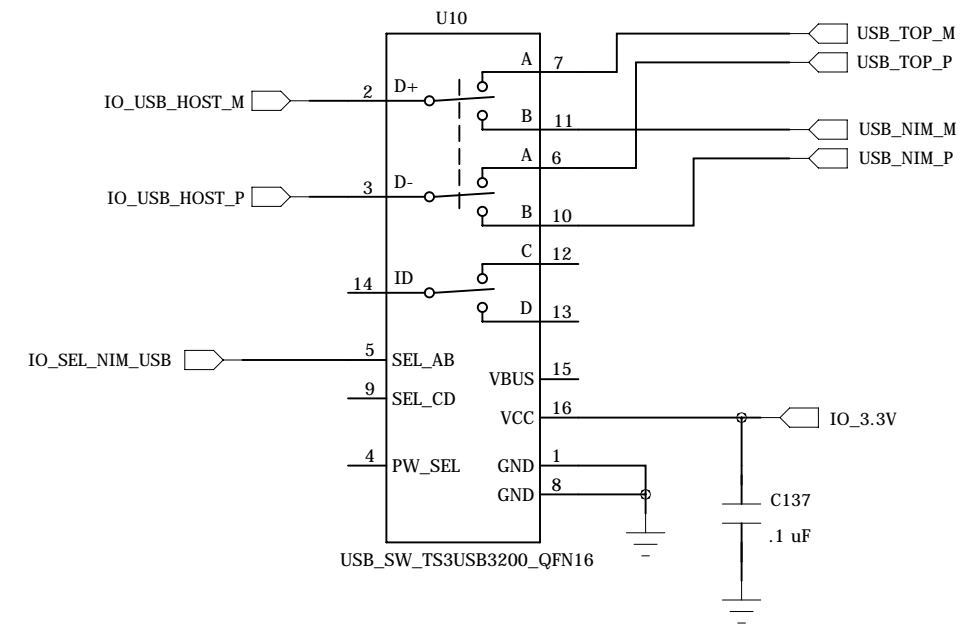
10/100 MagJack



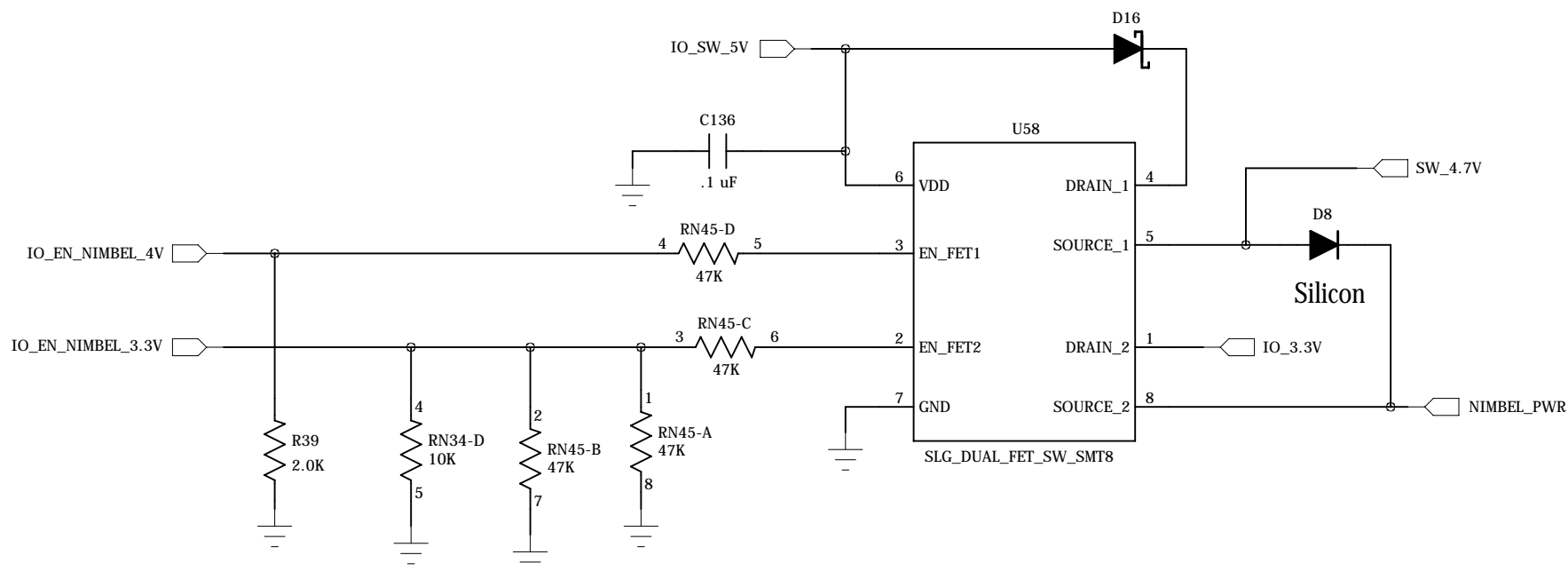
10/100 MagJack



NimbeLink Modem Socket



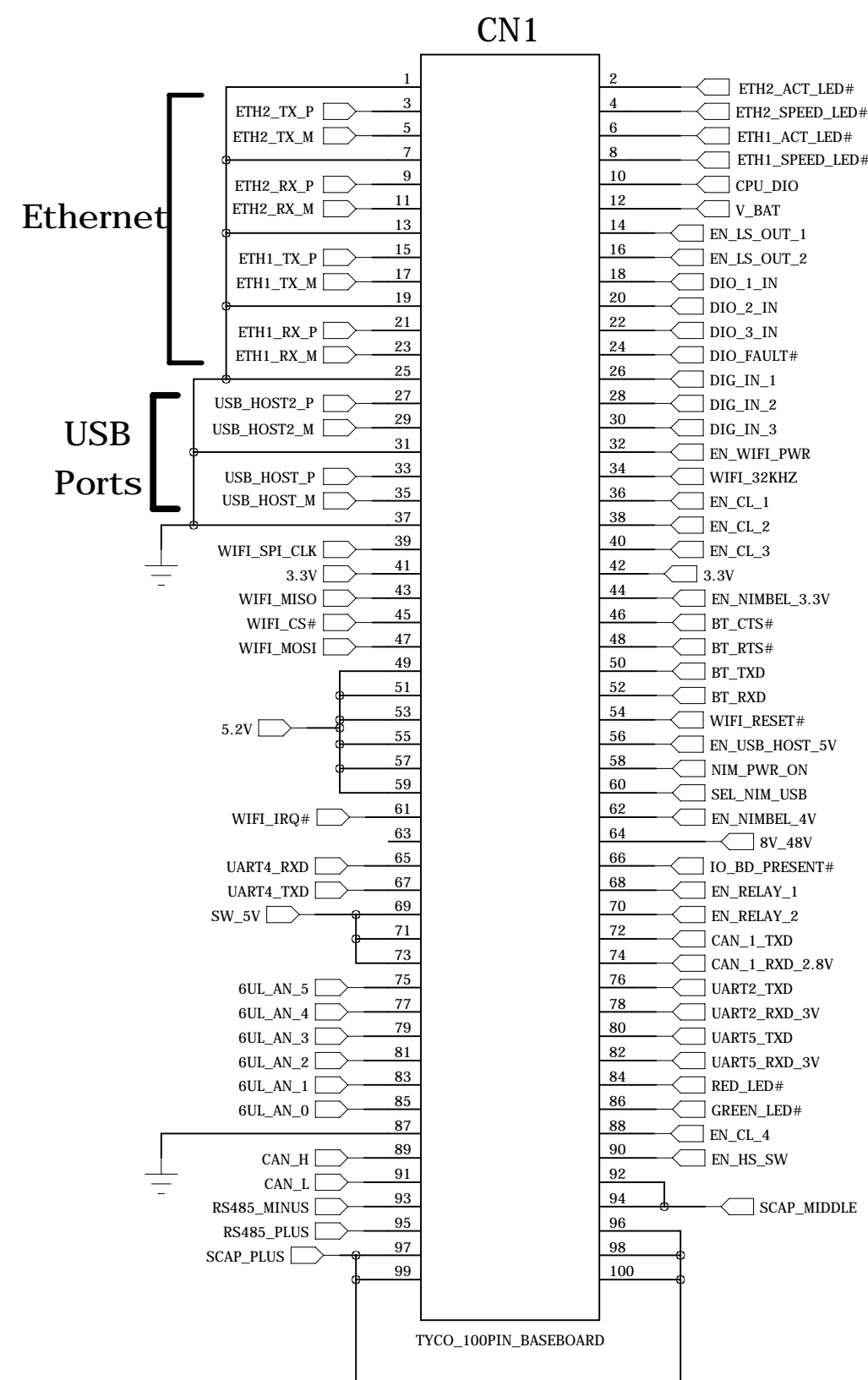
NimbeLink Switched Power



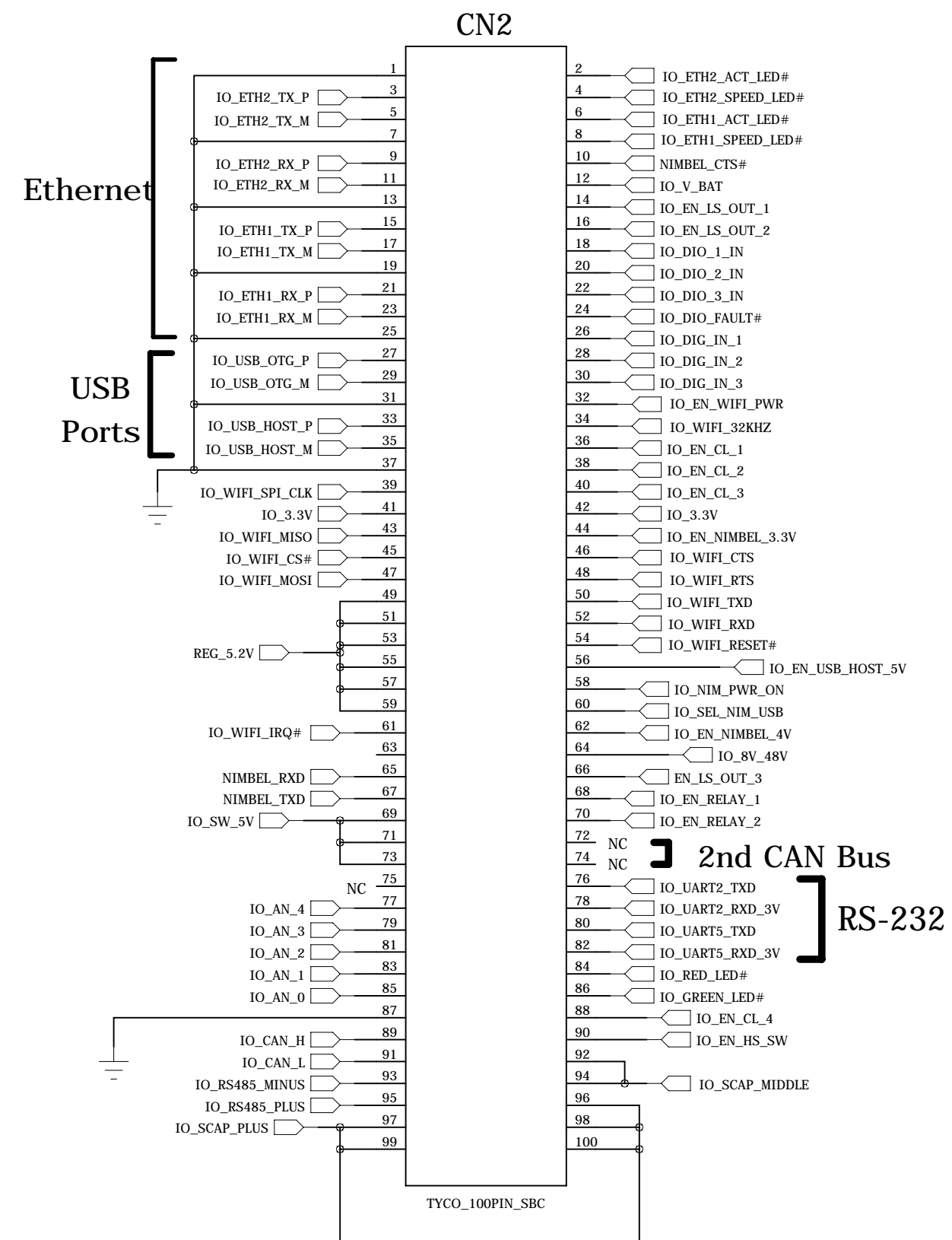
CN1 is on CPU board

CN2 is on IO board

CPU Bd.



IO Bd.



CPU Bd.	IO Bd.
DIO_1	EN_LS_OUT_1
DIO_2	EN_LS_OUT_2
DIO_3	DIO_1_IN
DIO_4	DIO_2_IN
DIO_5	DIO_3_IN
DIO_6	DIO_Fault#
DIO_7	DIG_IN_1
DIO_8	DIG_IN_2
DIO_9	DIG_IN_3

CPU Bd.	IO Bd.
DIO_10	EN_CL_1
DIO_11	EN_CL_2
DIO_12	EN_CL_3
DIO_13	EN_CL_4
DIO_14	EN_HS_SW
DIO_15	EN_NIMBEL_4V
DIO_16	EN_NIM_3.3V
DIO_17	NIM_PWR_ON
DIO_18	SEL_NIM_USB
IO_BD_PRESENT#	EN_LS_SW_3

UART2 and 5 = RS-232
 UART3 = BlueTooth
 UART4 = NimbeLink socket