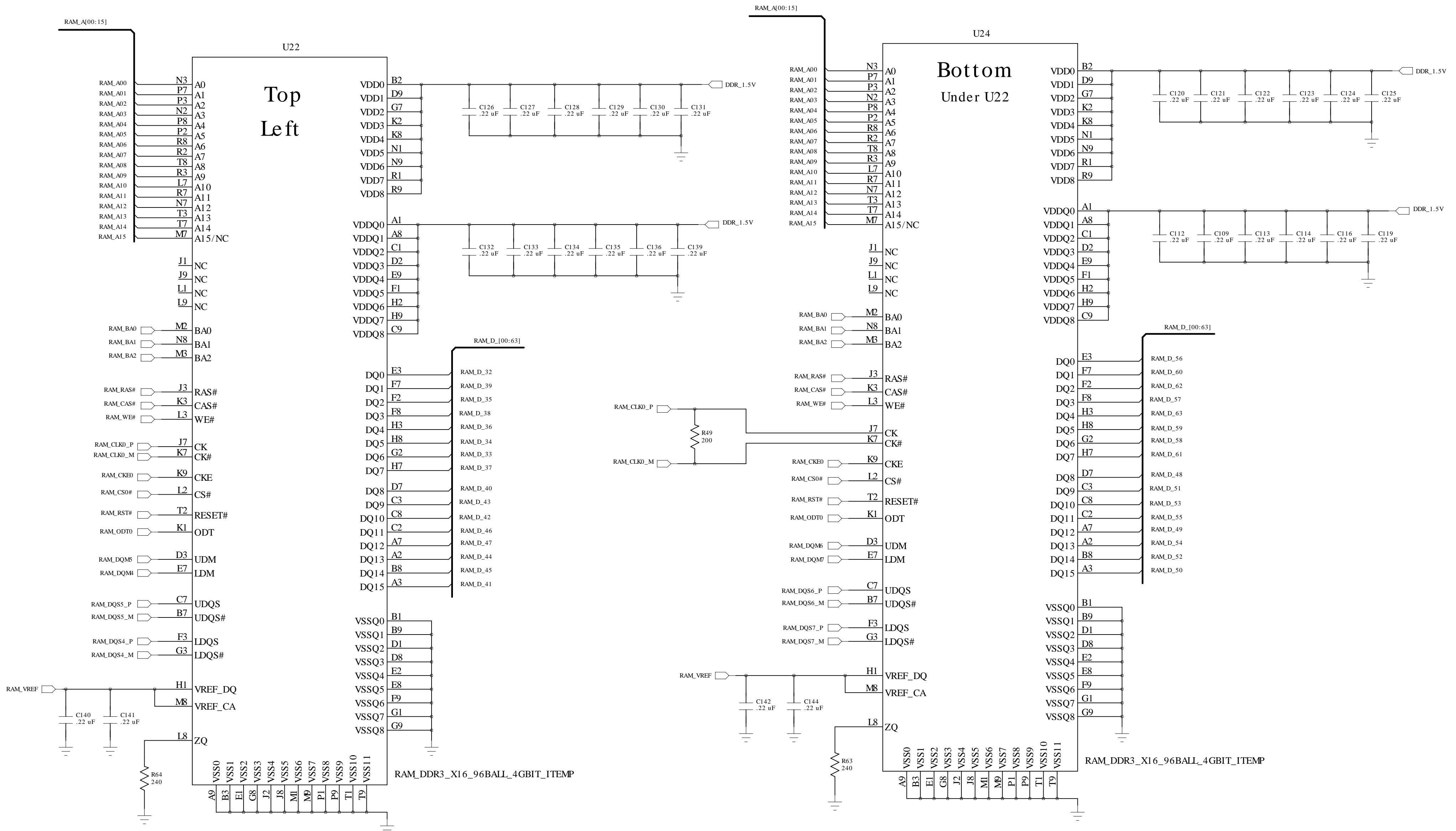


Technologic Systems		Date Feb. 21, 2015
Title: TS-7970 DDR3 RAM		
Rev: A	Designer	Sheet 4 of 27

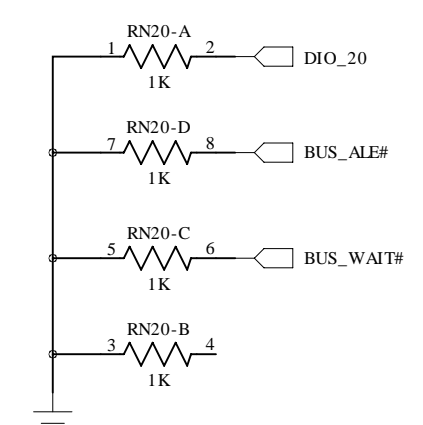
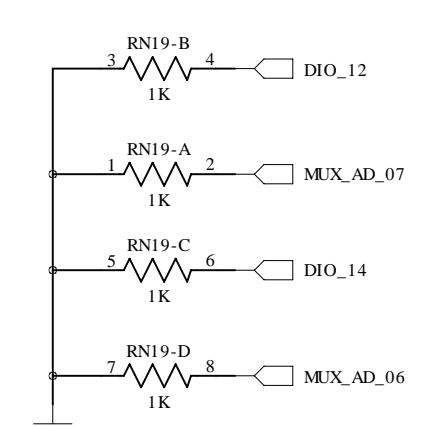
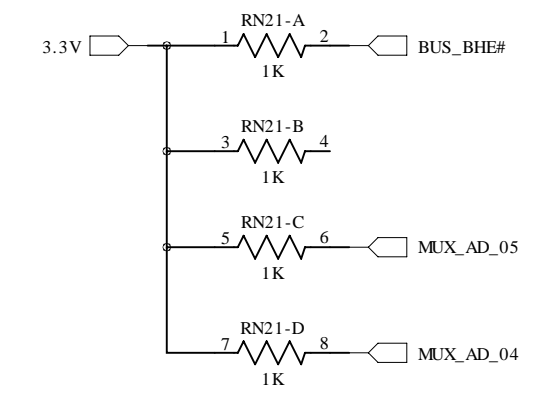
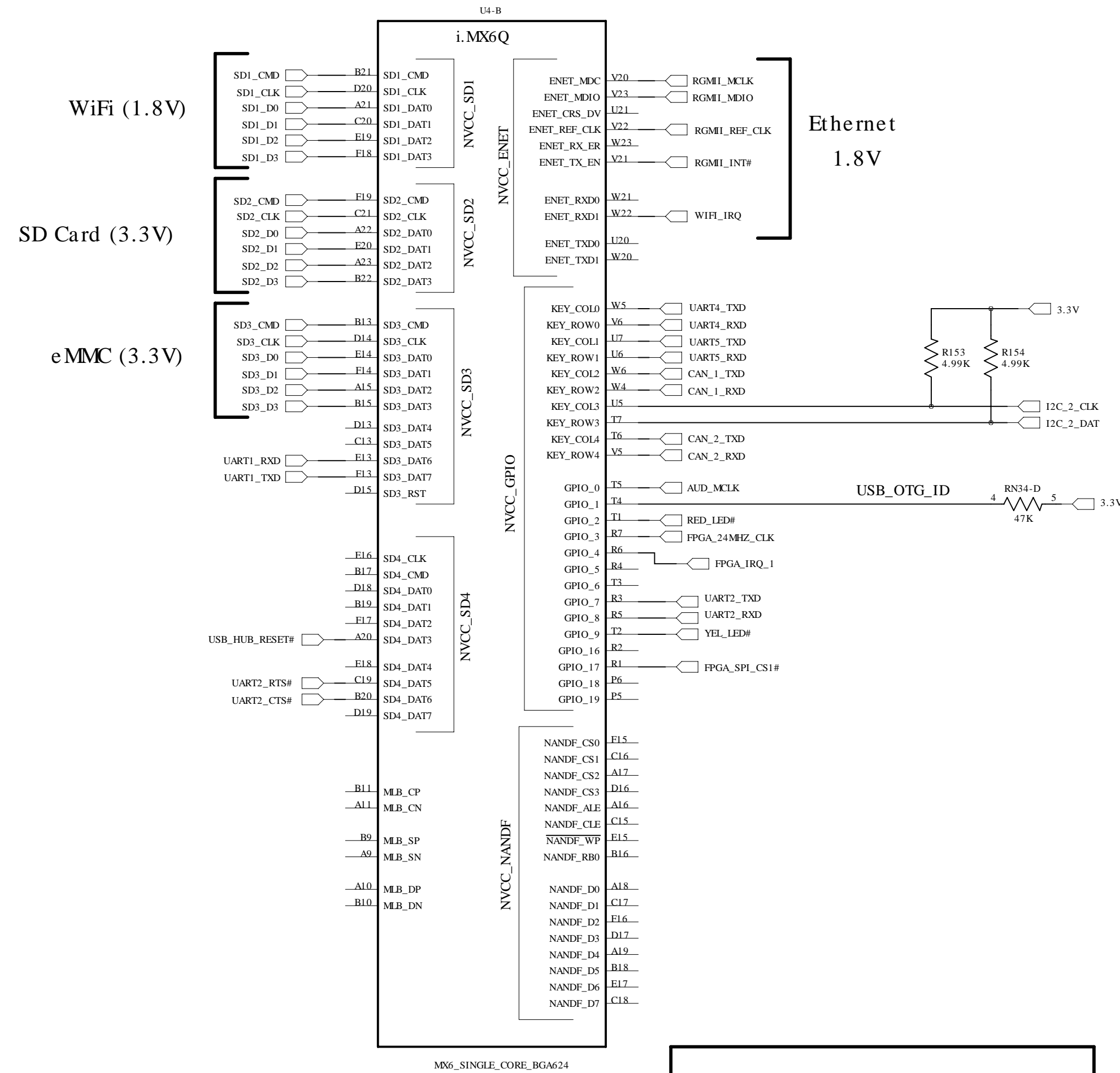
RAM Data bits 32-63

Not populated for Single Core CPU



SD, GPIO, NAND

Bias Res.

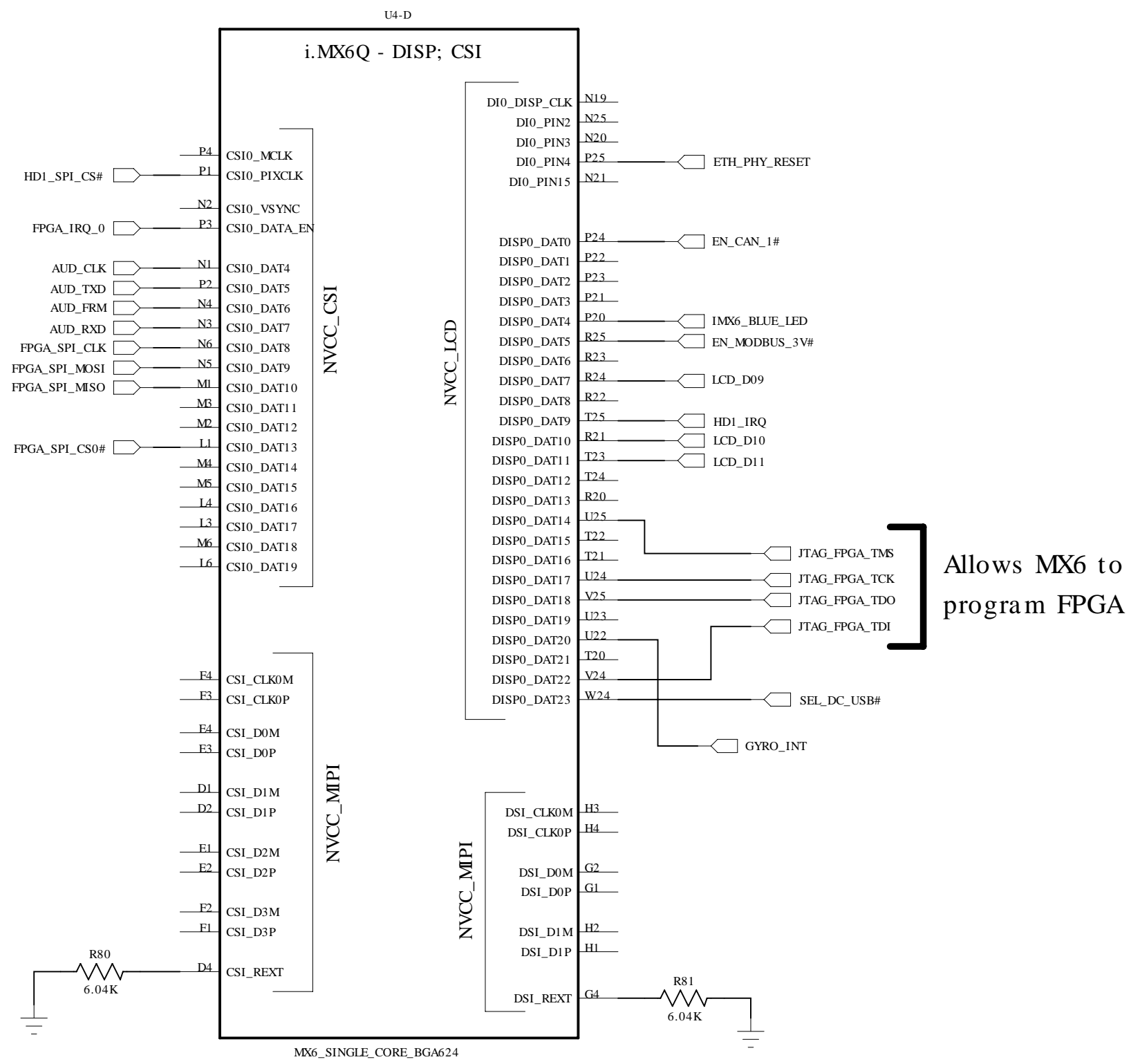


4 PWMtotal

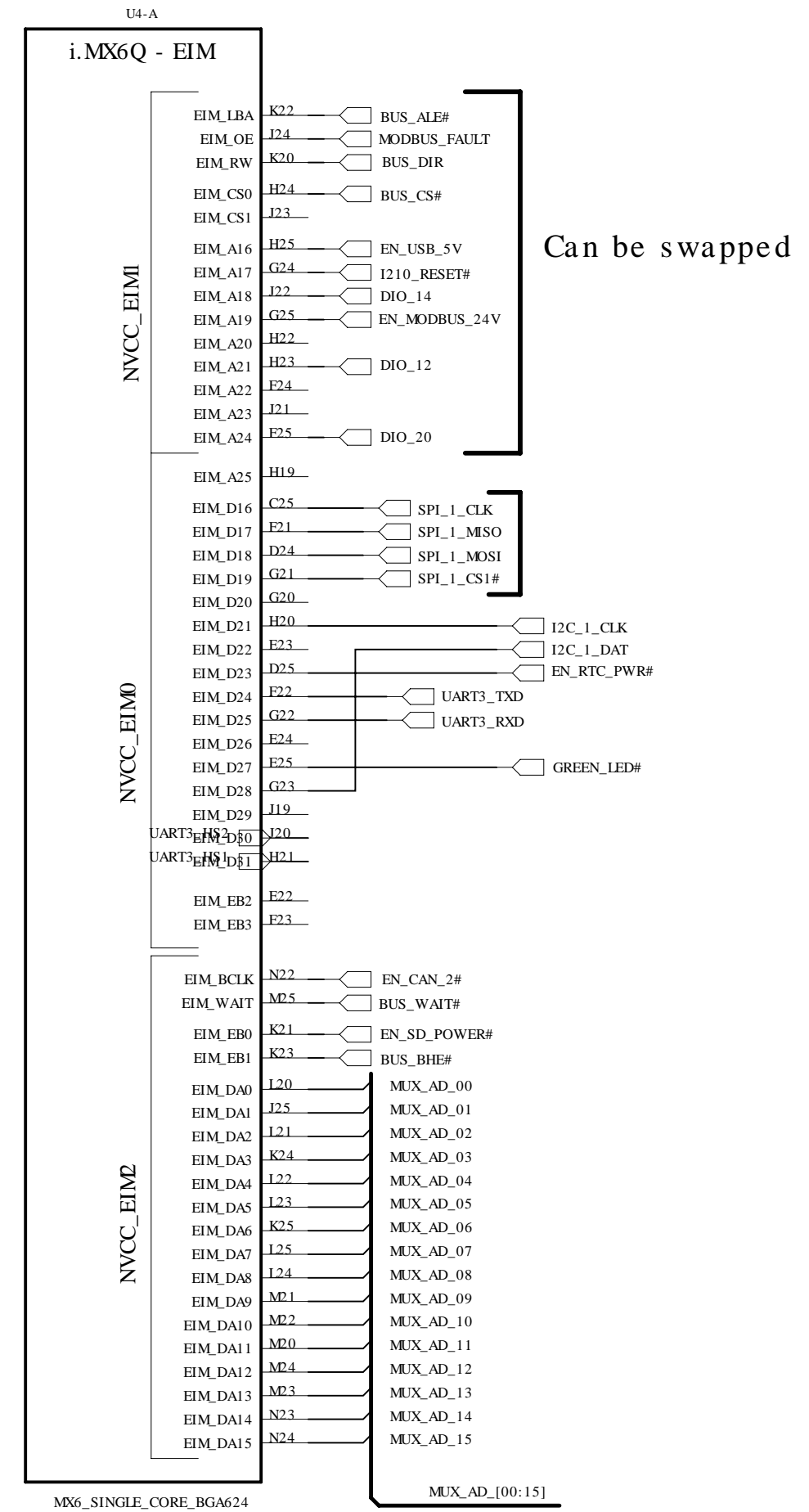
PWM on SD4_DAT 1 or 2
GPIO_1 and GPIO_9

TS-7970 changed CPU pins:
FPGA_SPI_CS#
FPGA_RESET#
UART4_CTS#

LCD

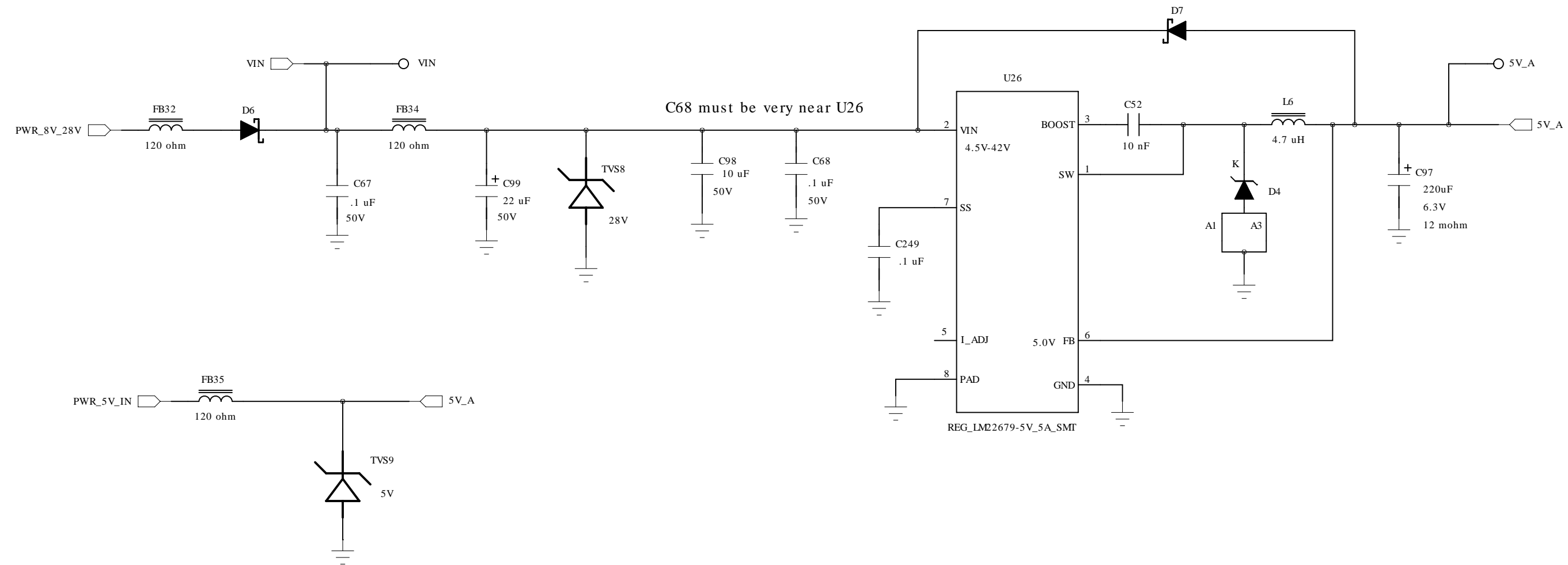


EIM

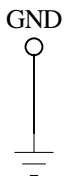


5V Power Supply (2500 mA)

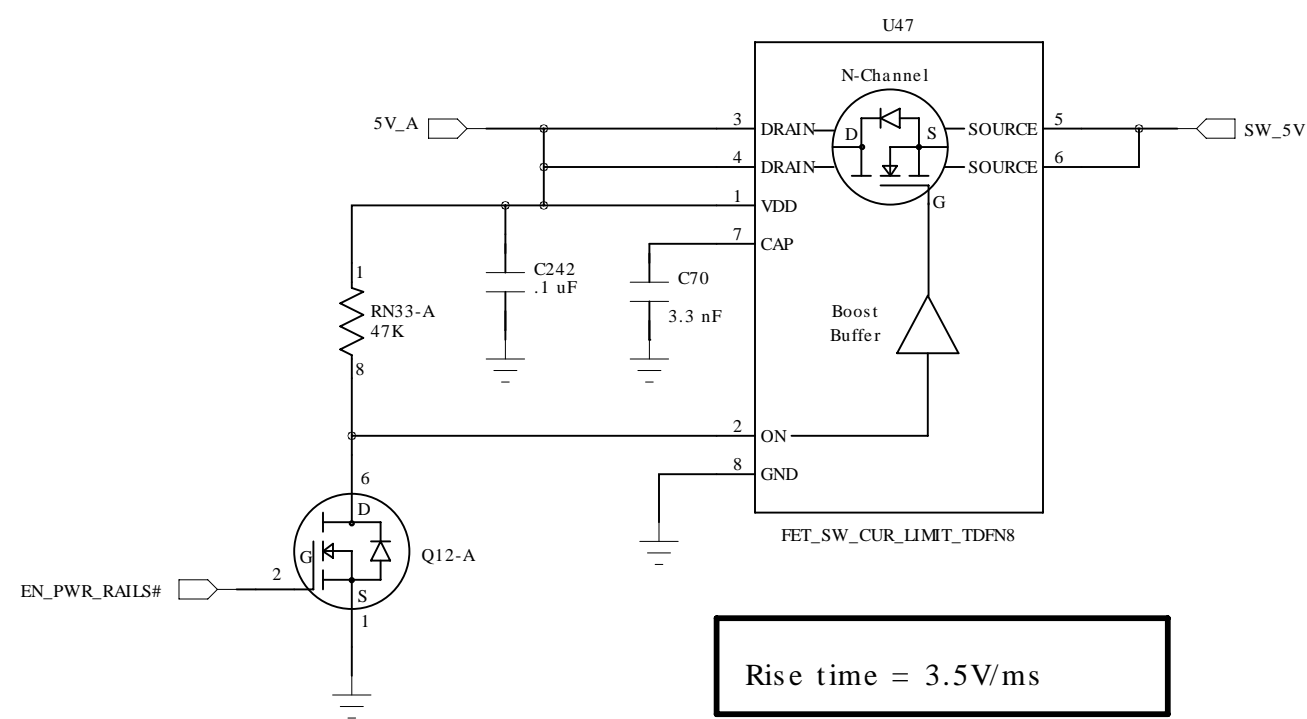
8-28 VDC
Power Input



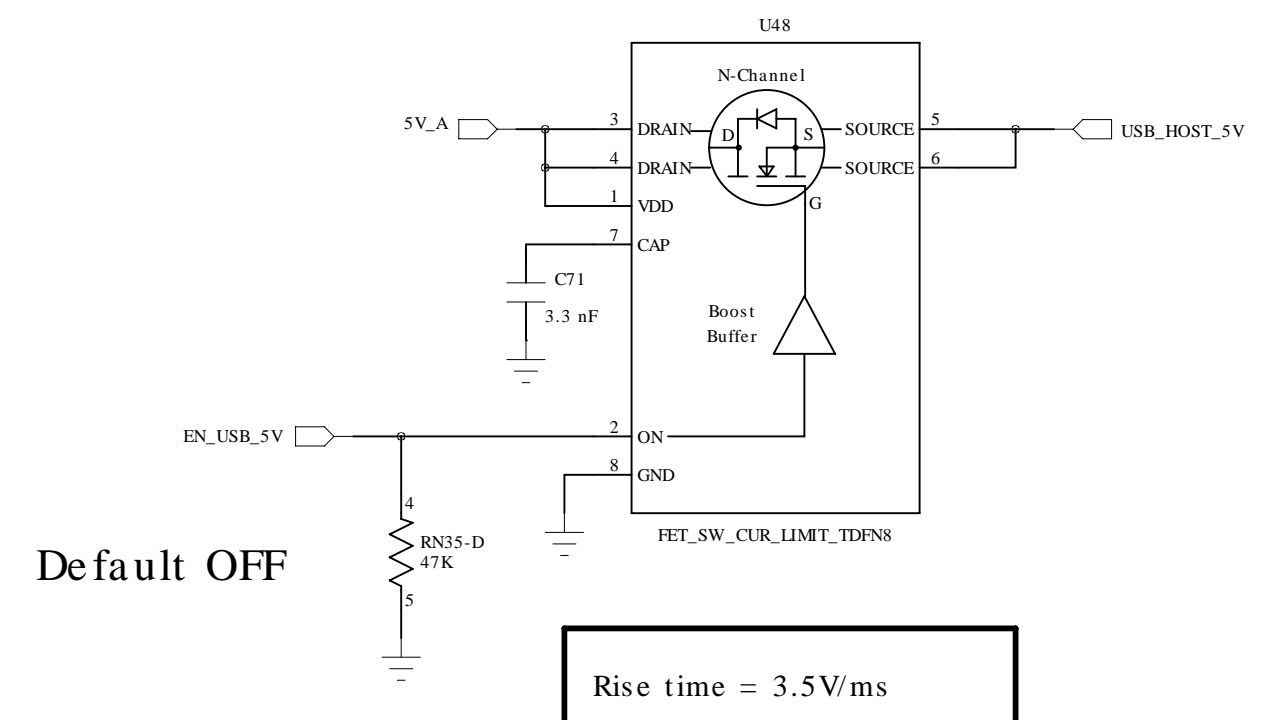
.063 hole



Main 5V Power Sw.



USB Sw. 5V

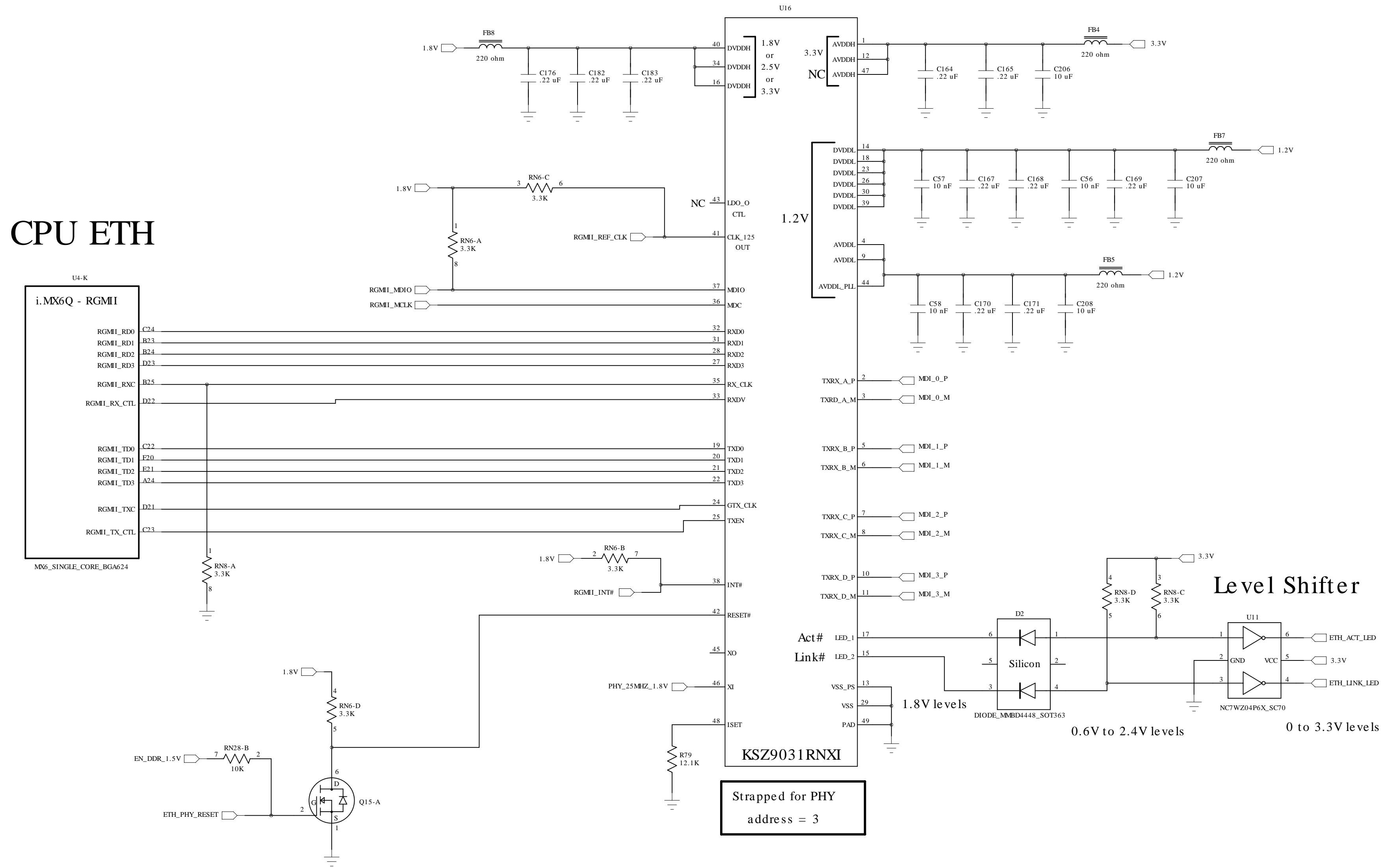


Technologic Systems		Date Feb. 21, 2015
Title: TS-7970 5V Reg and Pwr Switches		
Rev: A	Designer	Sheet 11 of 27

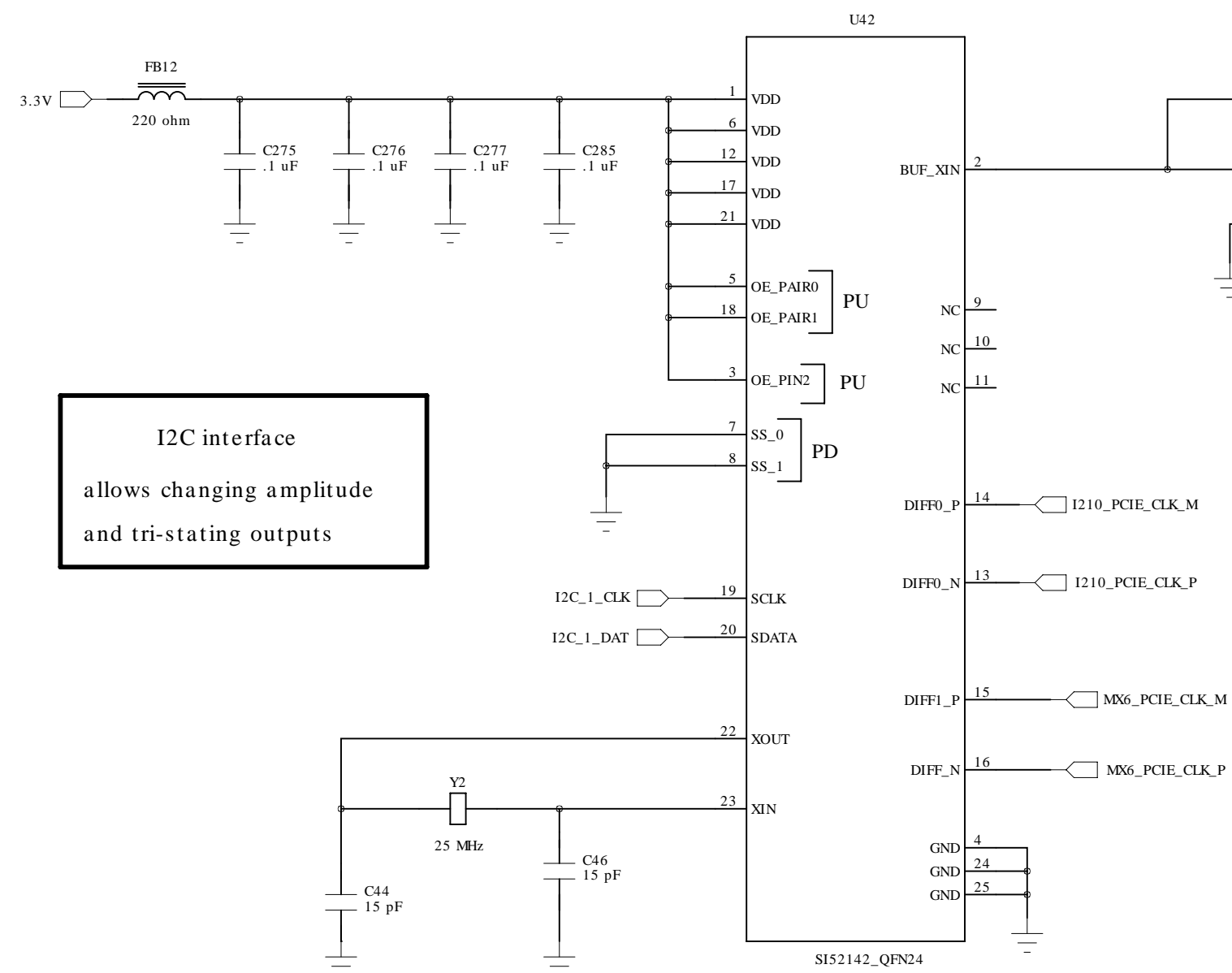
10/100/1000 Ethernet PHY

ETH PHY

CPU ETH



PCIe 100 MHz Clock Generator

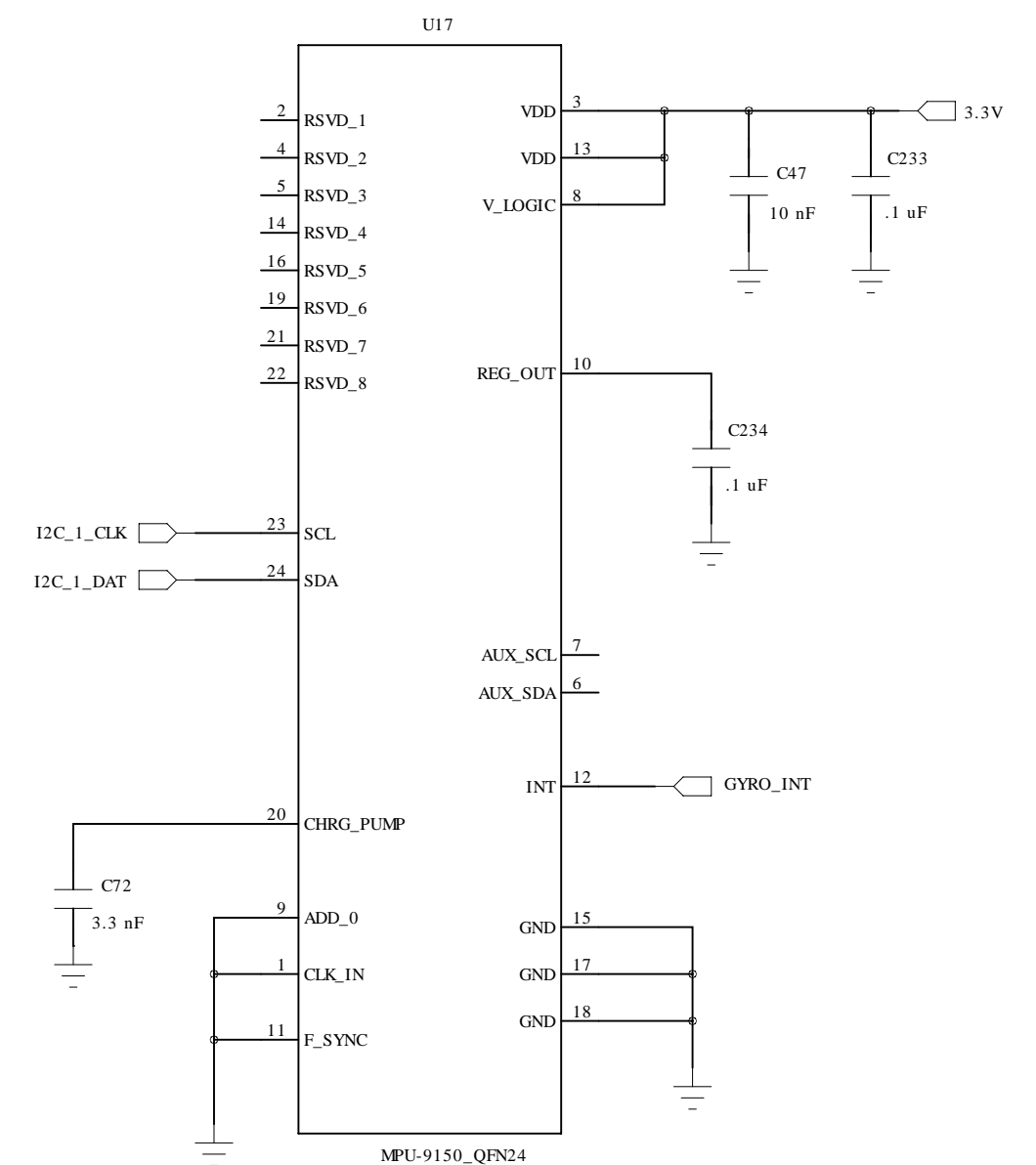


I2C interface
allows changing amplitude
and tri-stating outputs

Level Shifter

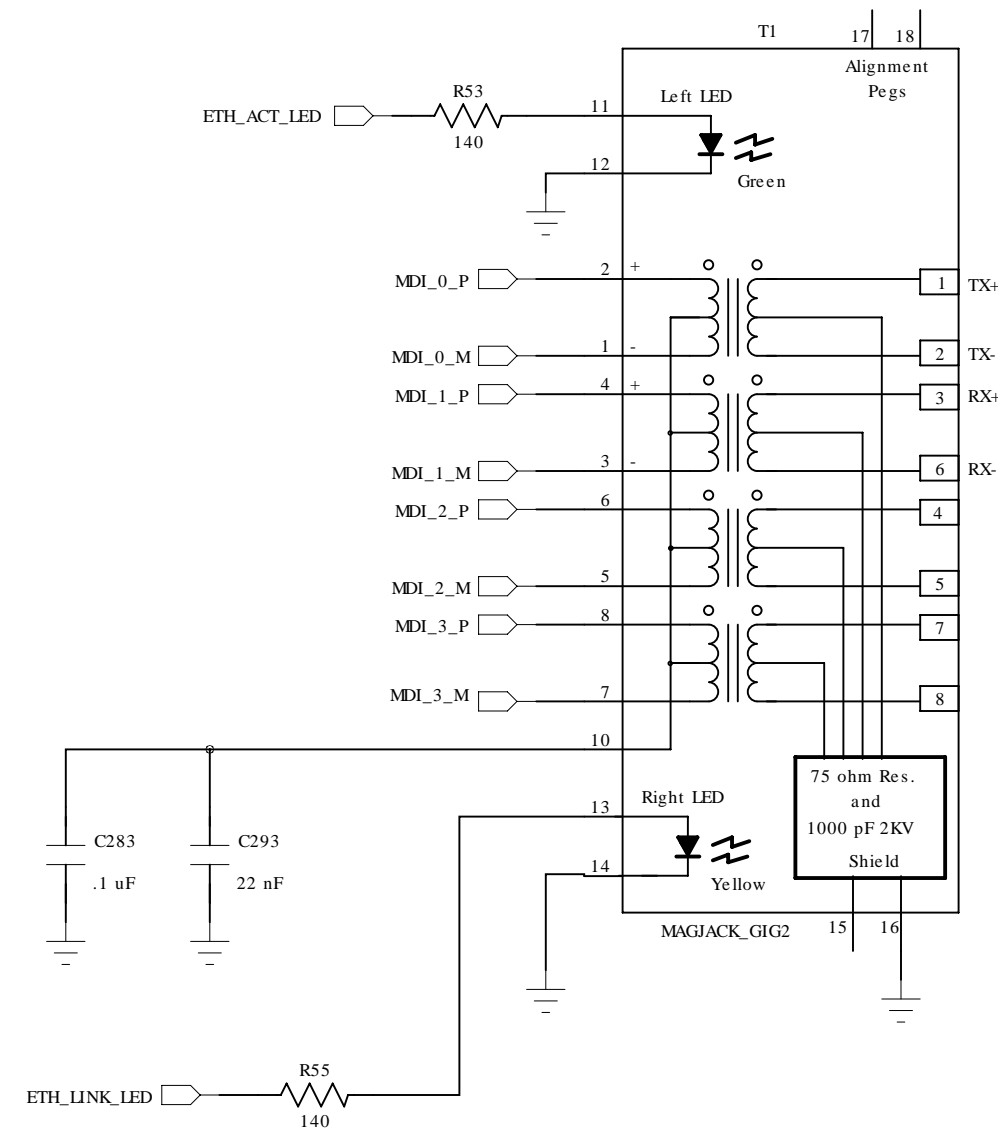
Phase does not matter

Gyro-Accelerometer

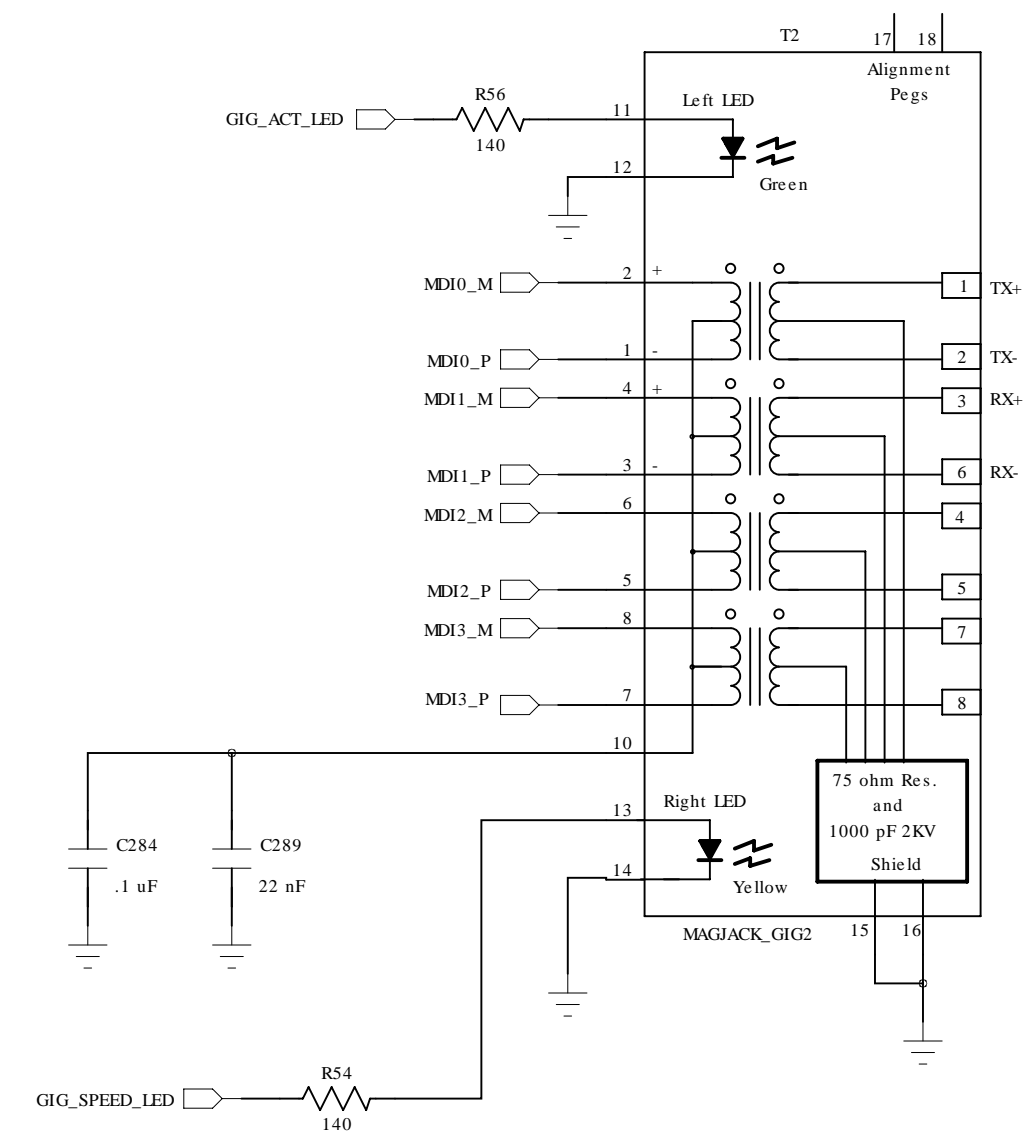


I2C address = Hex D6

CPU PHY Gig MagJack

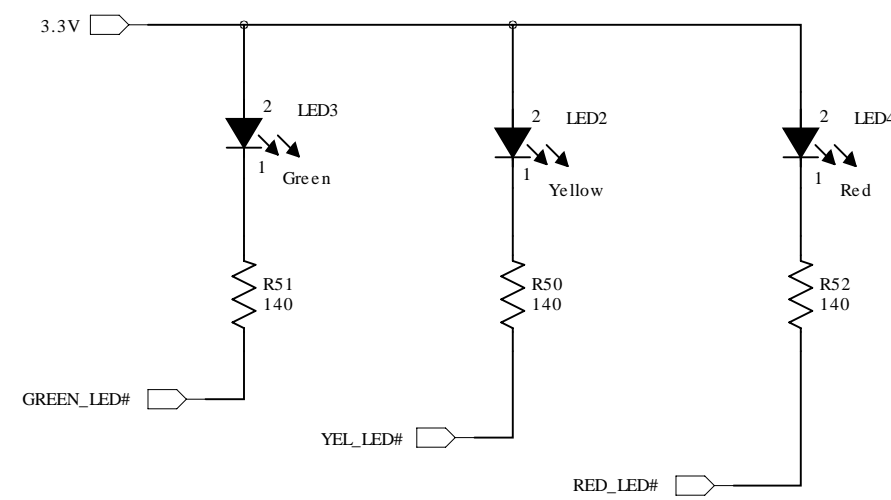


PCIe Ethernet Gig MagJack

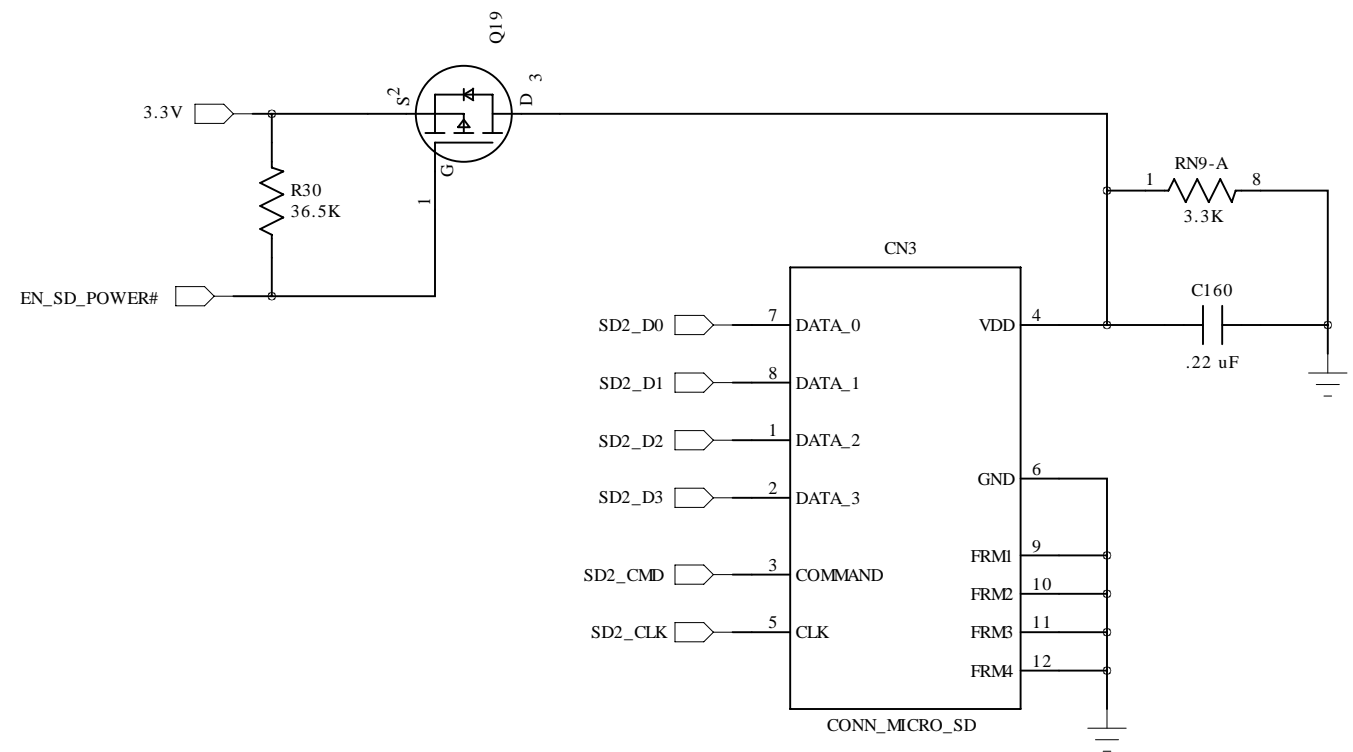


Swapped polarity of Ethernet pairs

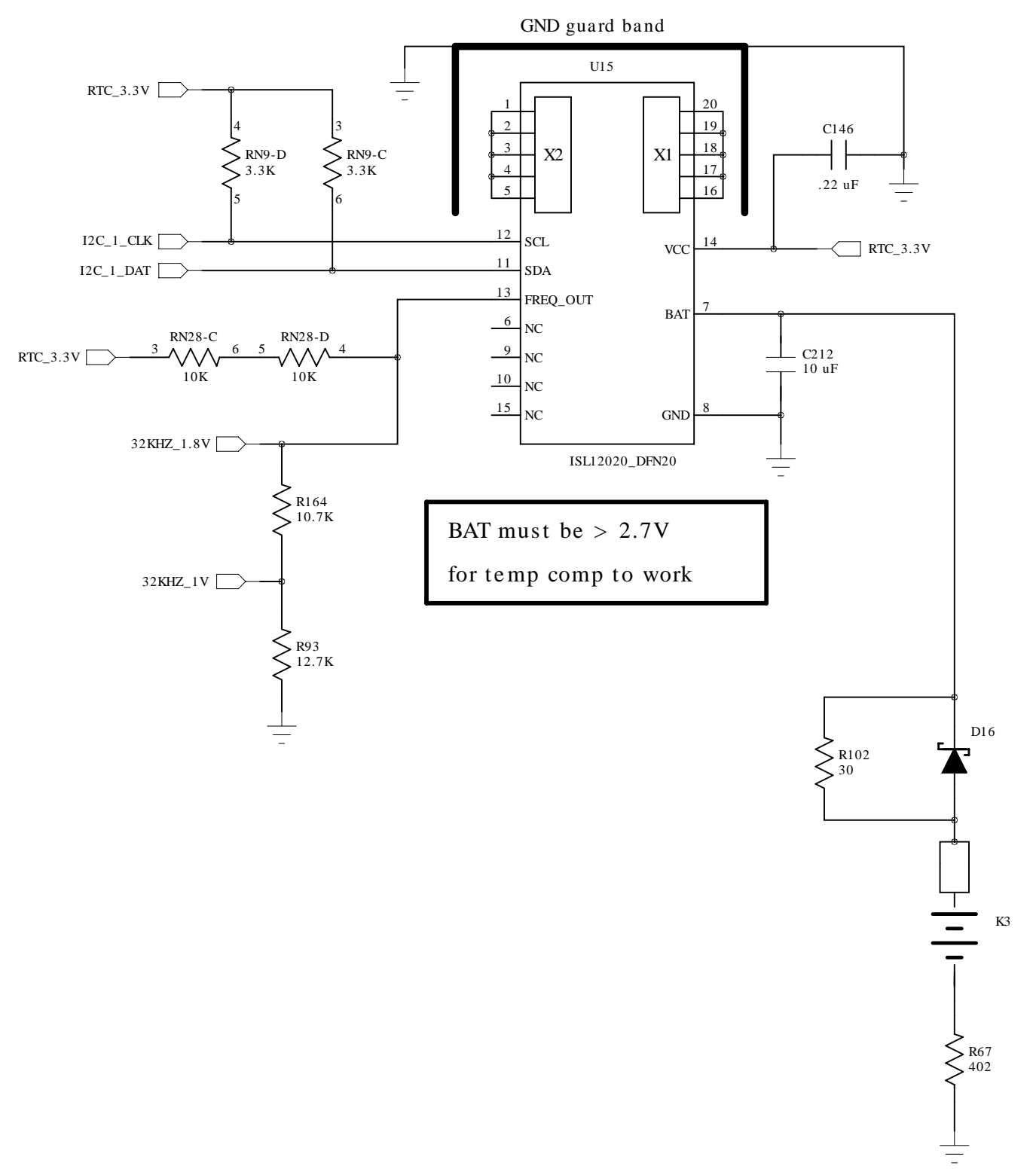
SMT RA LEDs



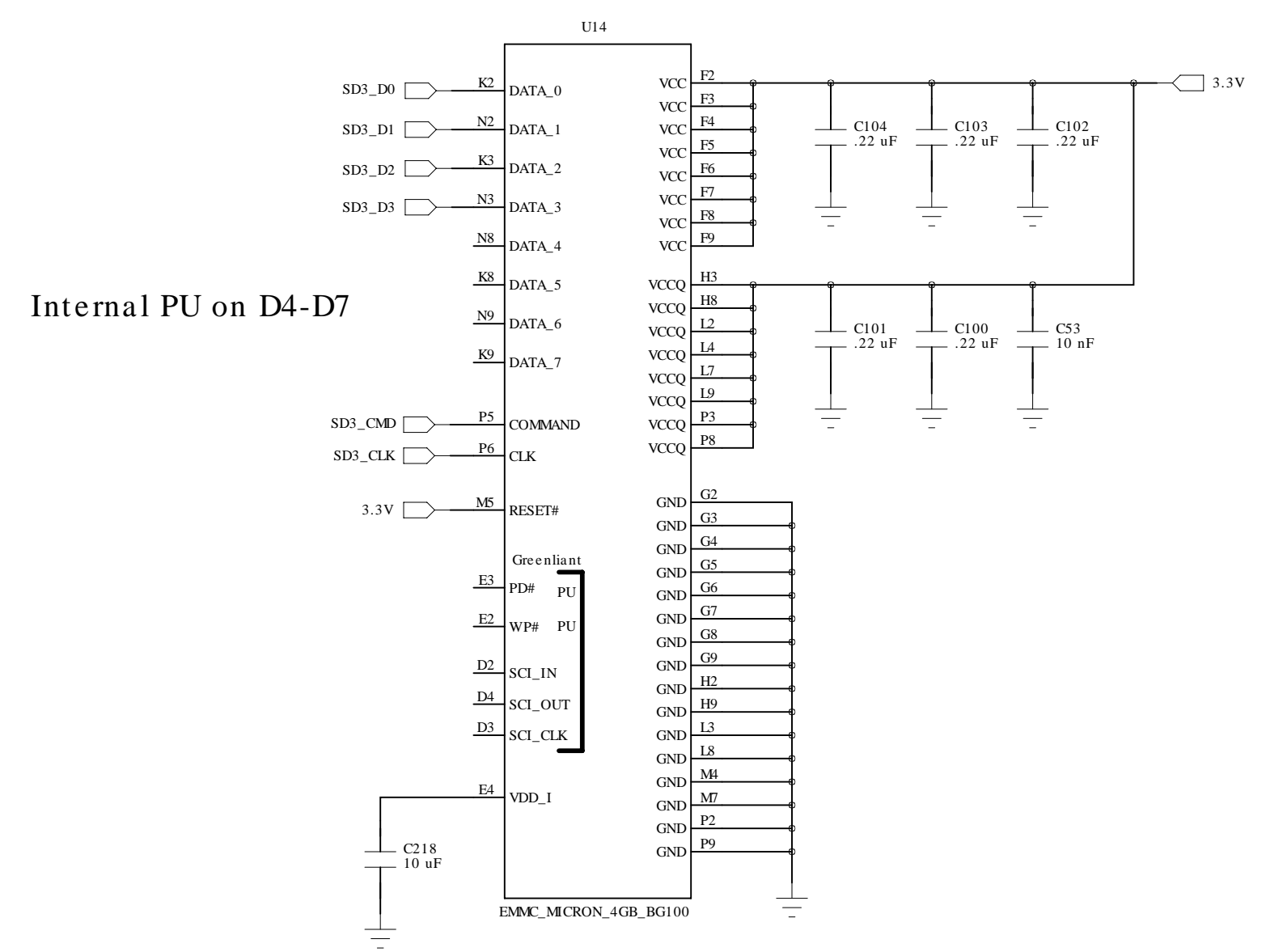
Micro SD Card Socket



Precision RTC and Temp. Sensor



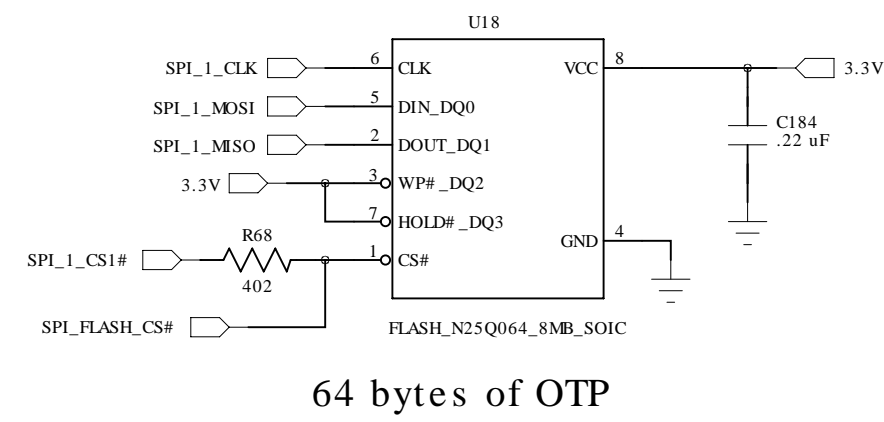
eMMC 4GB



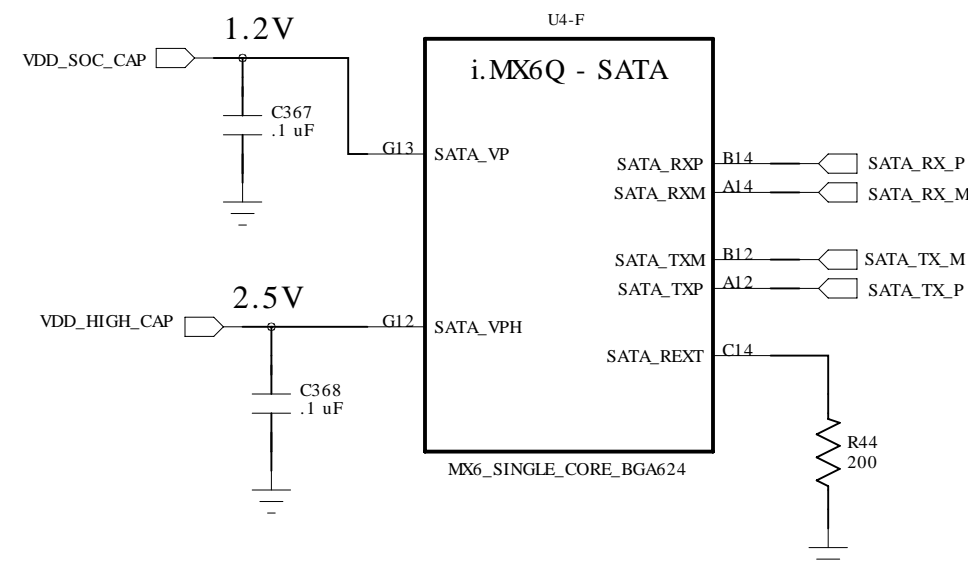
Internal PU on D4-D7

Technologic Systems	Date Feb. 21, 2015
Title: TS-7970 SD card, RTC, Temp.	
Rev: A	Designer
Sheet 16 of 27	

SPI Boot Flash



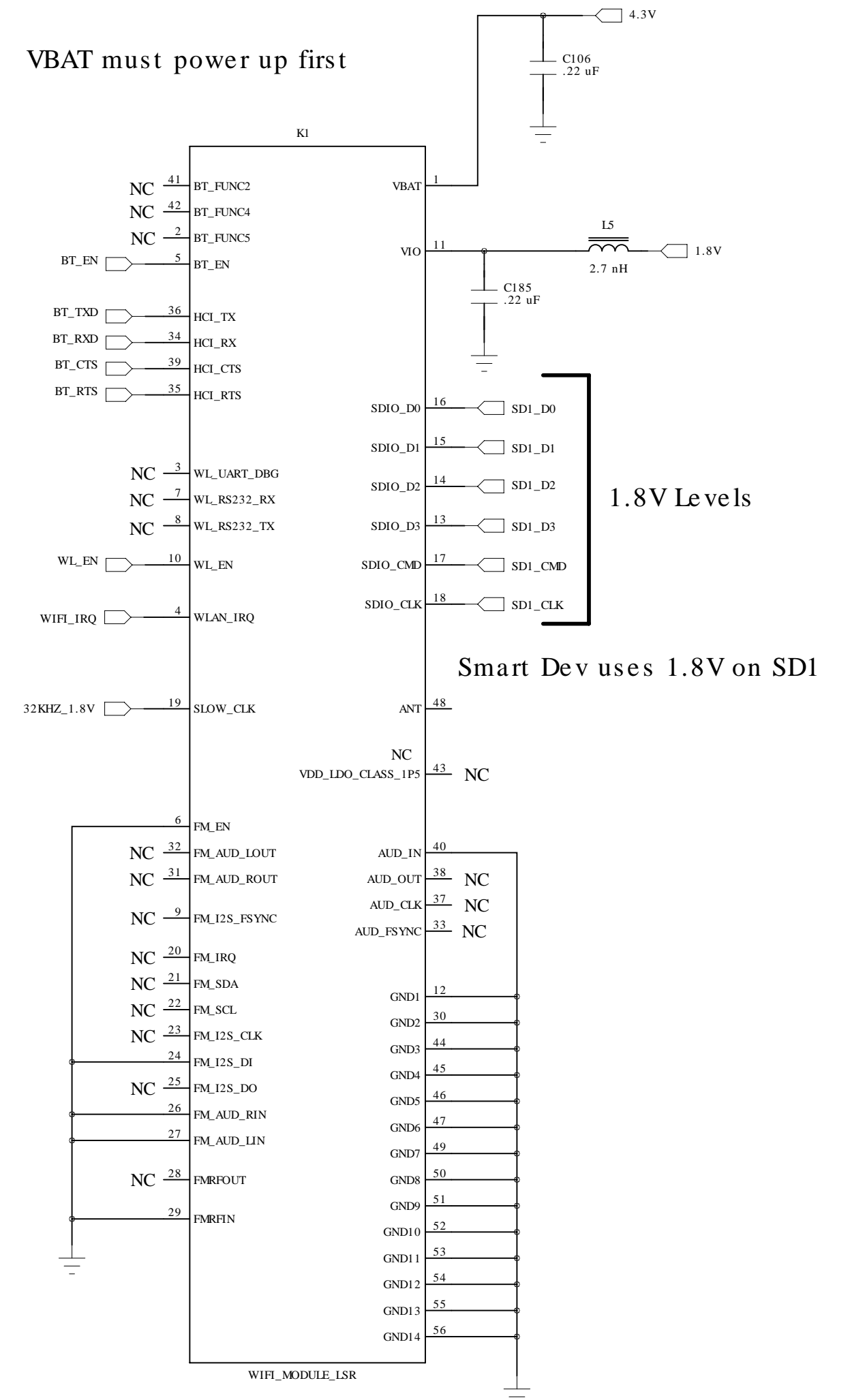
SATA



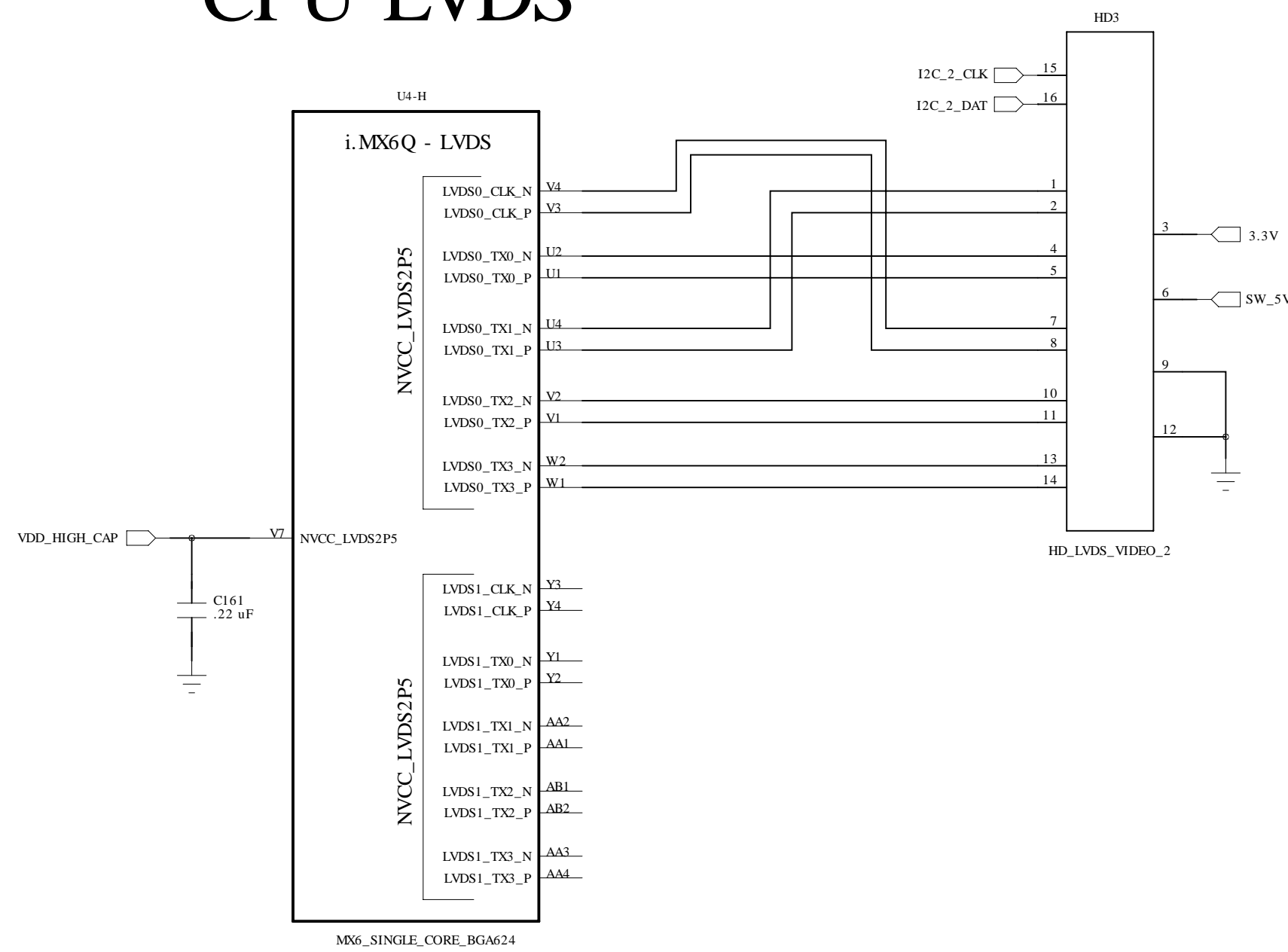
SATA can NOT have polarity swapped

SATA and PCIe Diff pairs do NOT have to be length matched

WiFi Radio

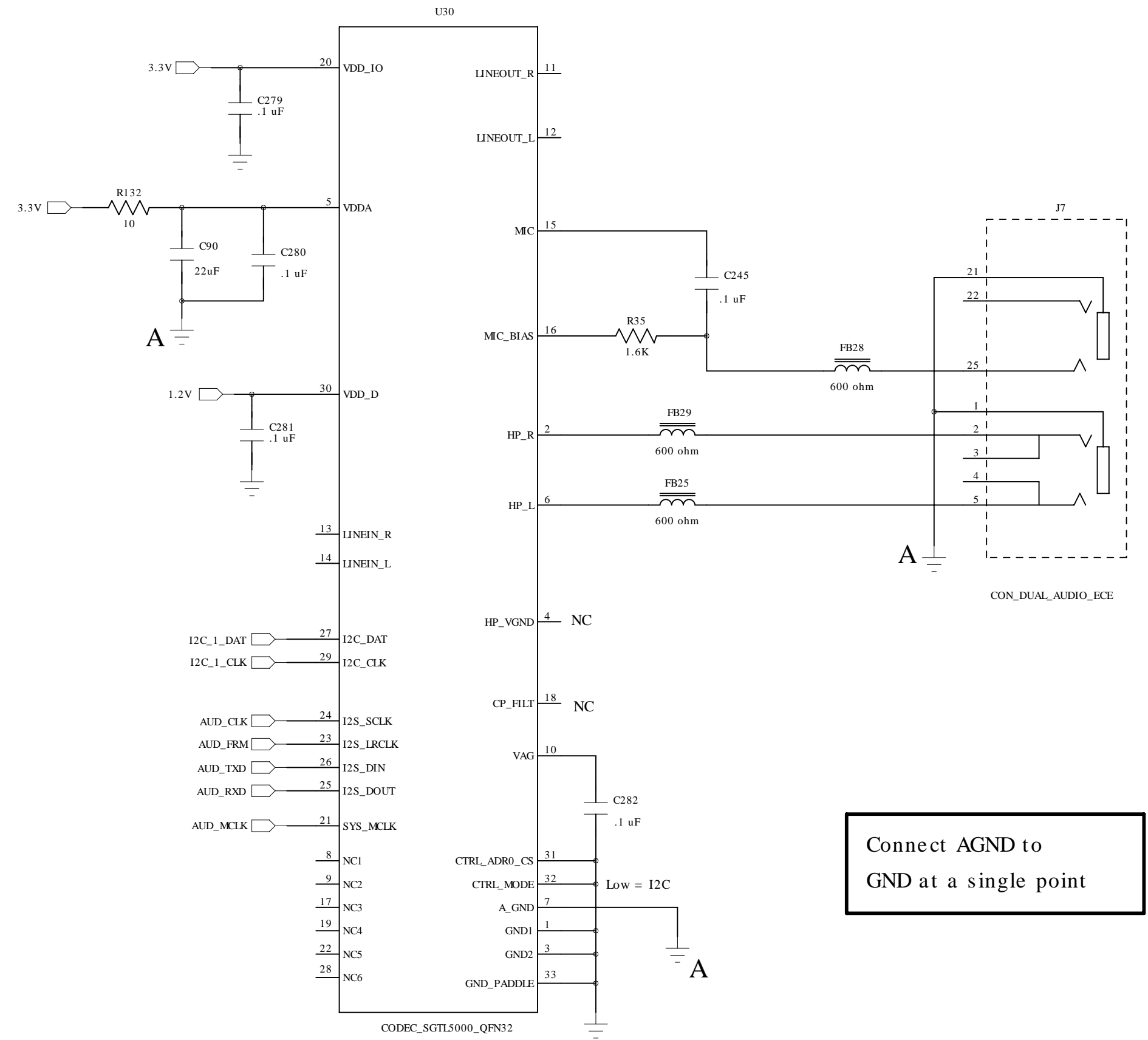


CPU LVDS



LVDS Header

Audio CODEC

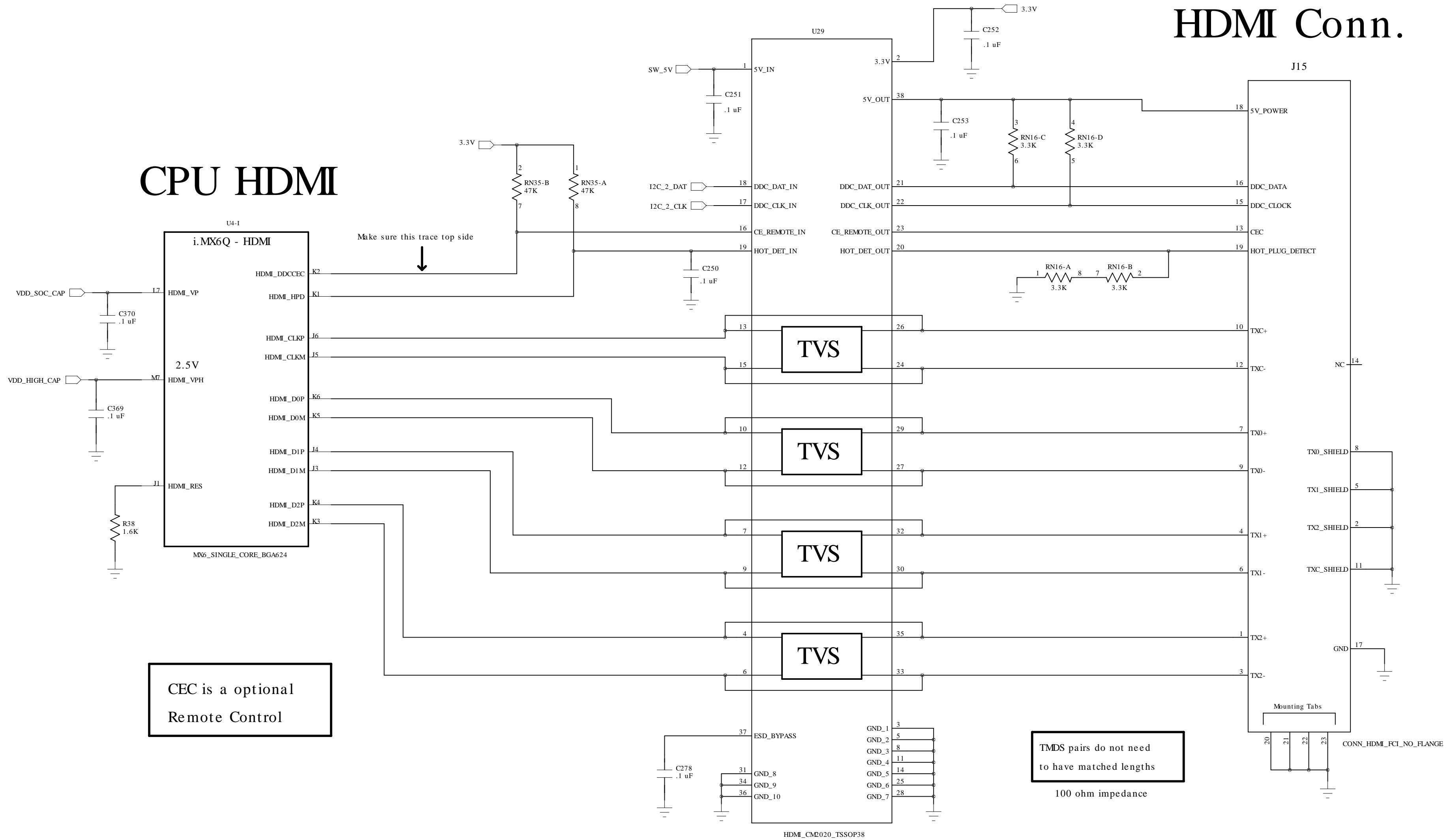


Connect AGND to GND at a single point

HDMI PHY

HDMI Conn.

CPU HDMI



CEC is a optional Remote Control

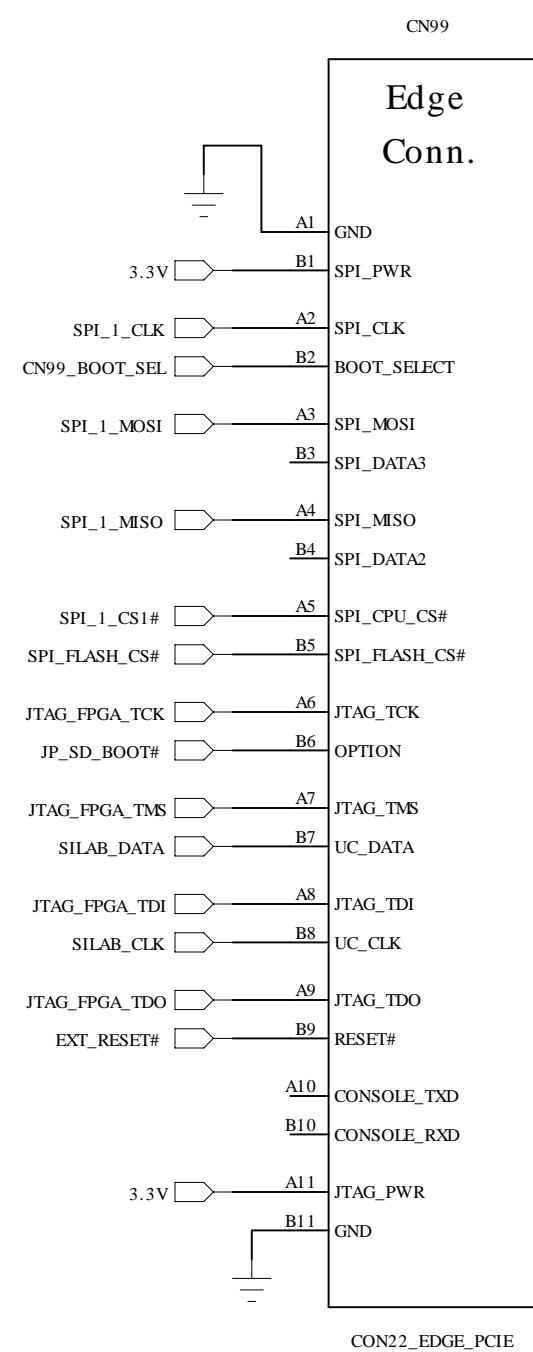
HDMI can not share I2C bus

TMDs pairs do not need to have matched lengths
100 ohm impedance

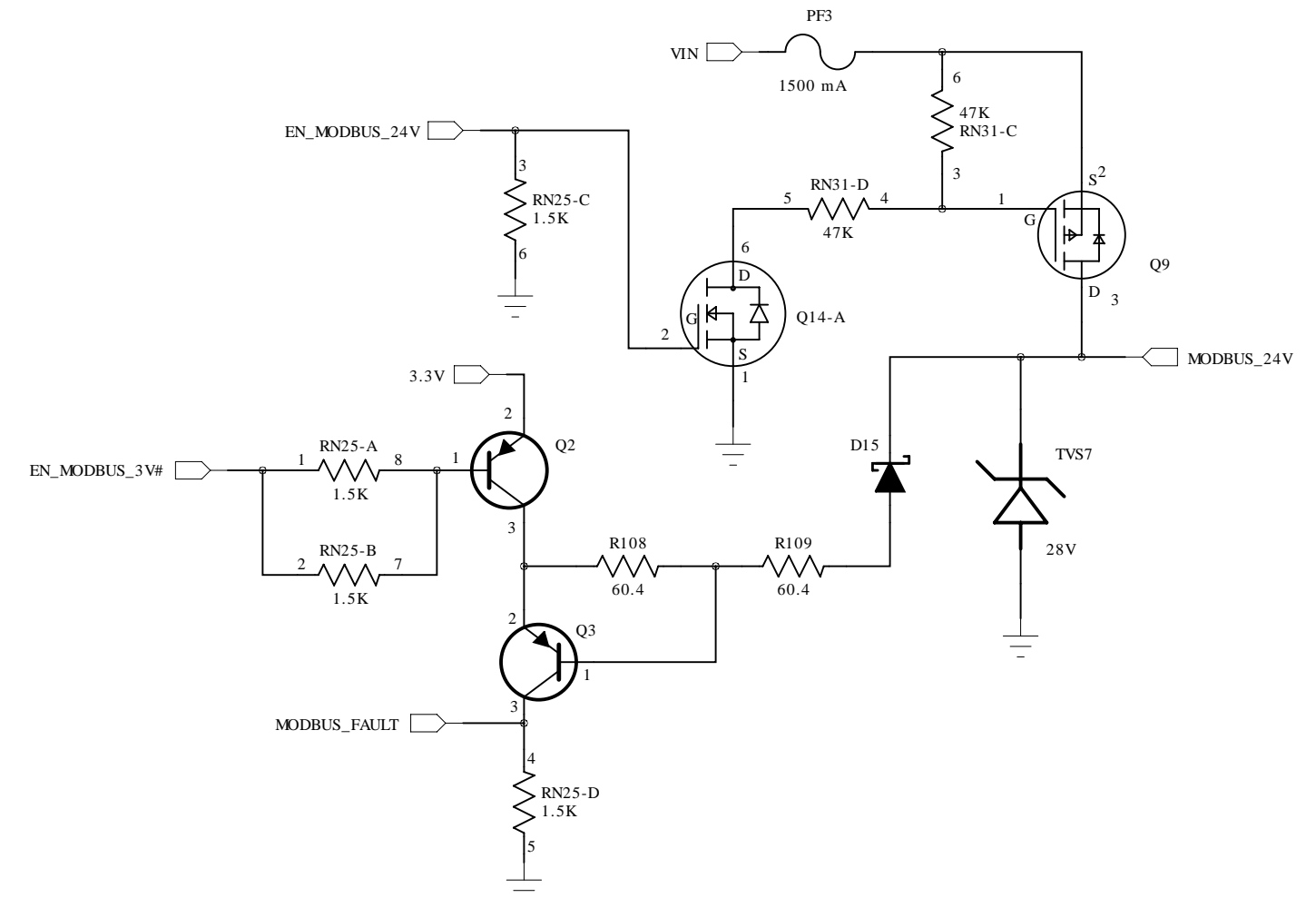
Not all HDMI Devices support 400 KHz I2C
100 KHz always OK

Mod Bus RS-485 and Edge Conn.

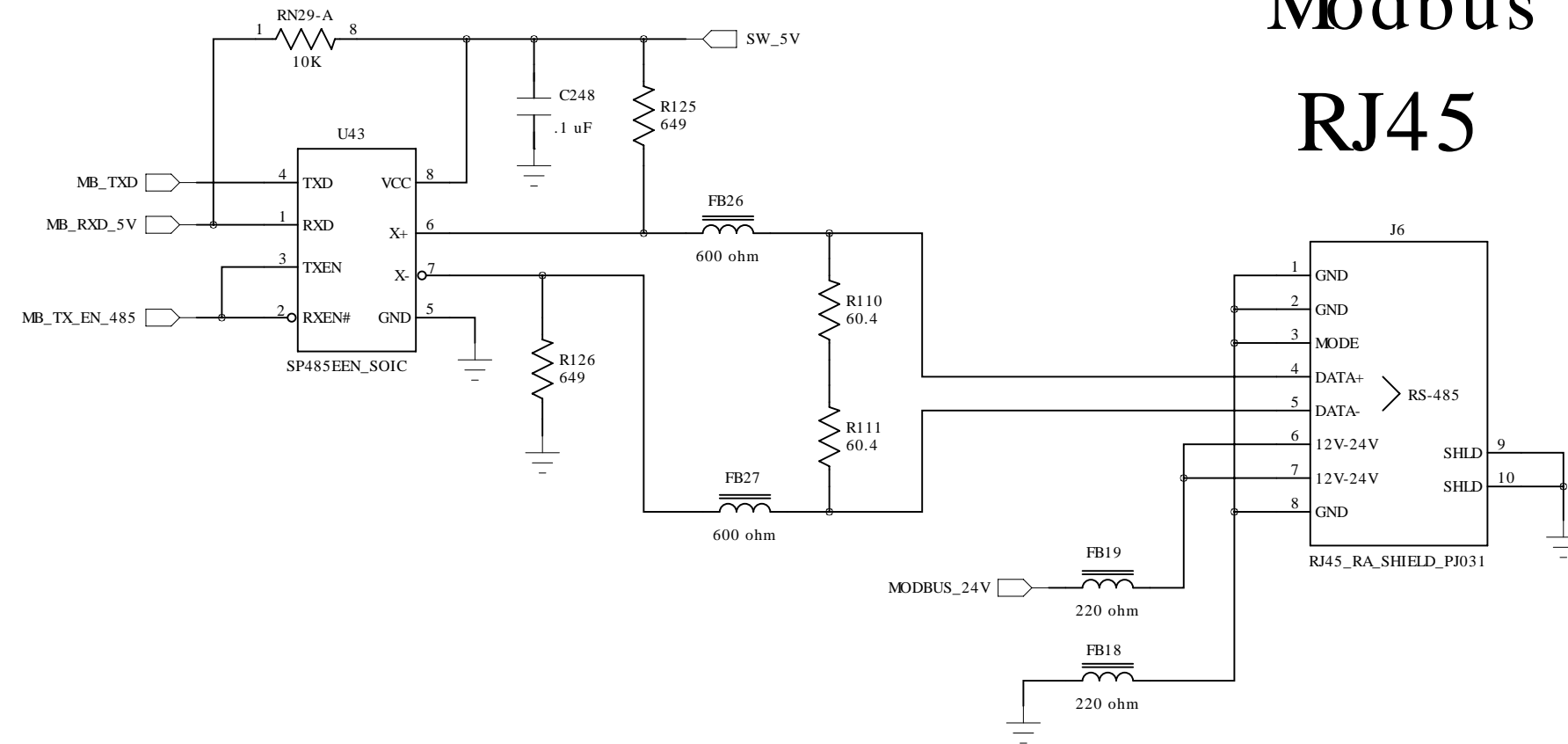
CN99 Programmer Edge Conn.



Modbus Power Switch



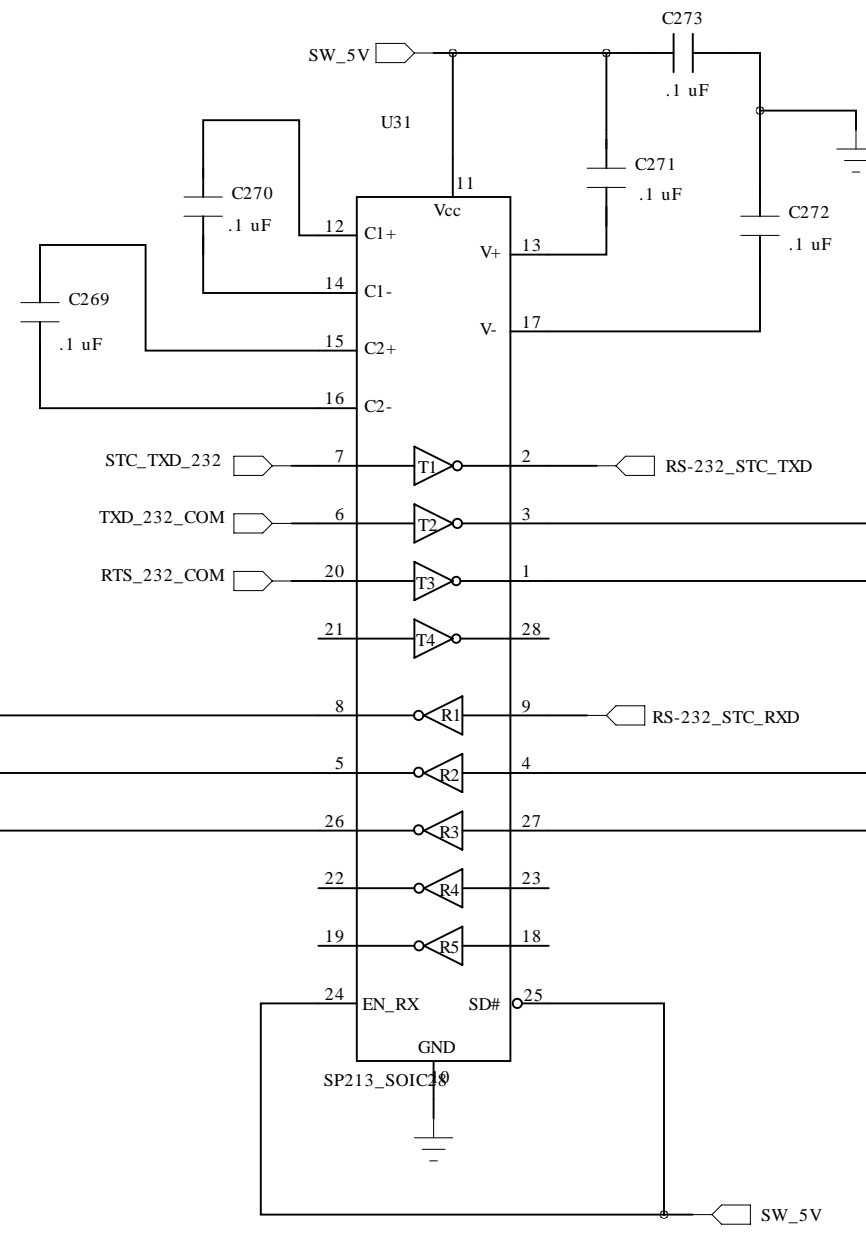
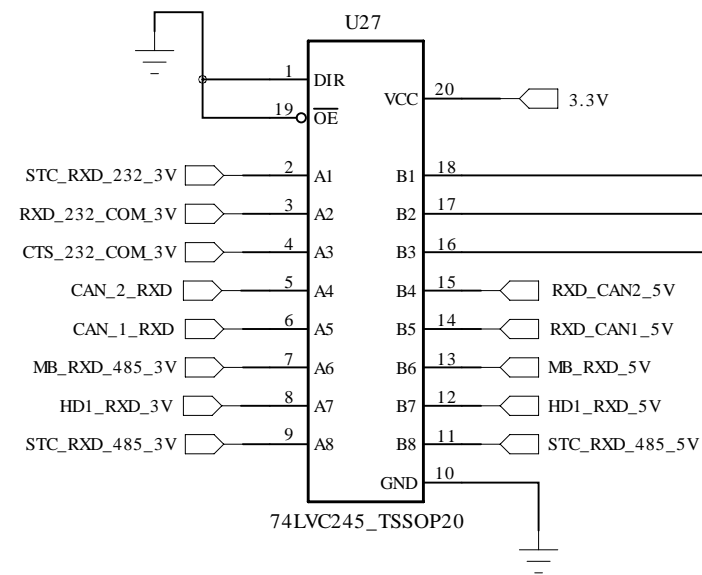
RS-485 Driver



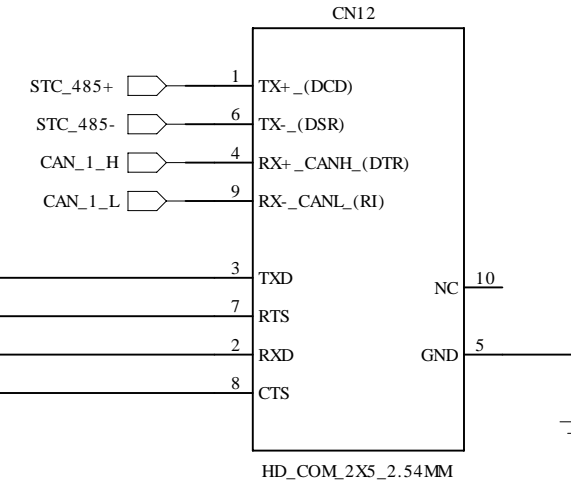
Modbus RJ45

RS-232 Transceiver

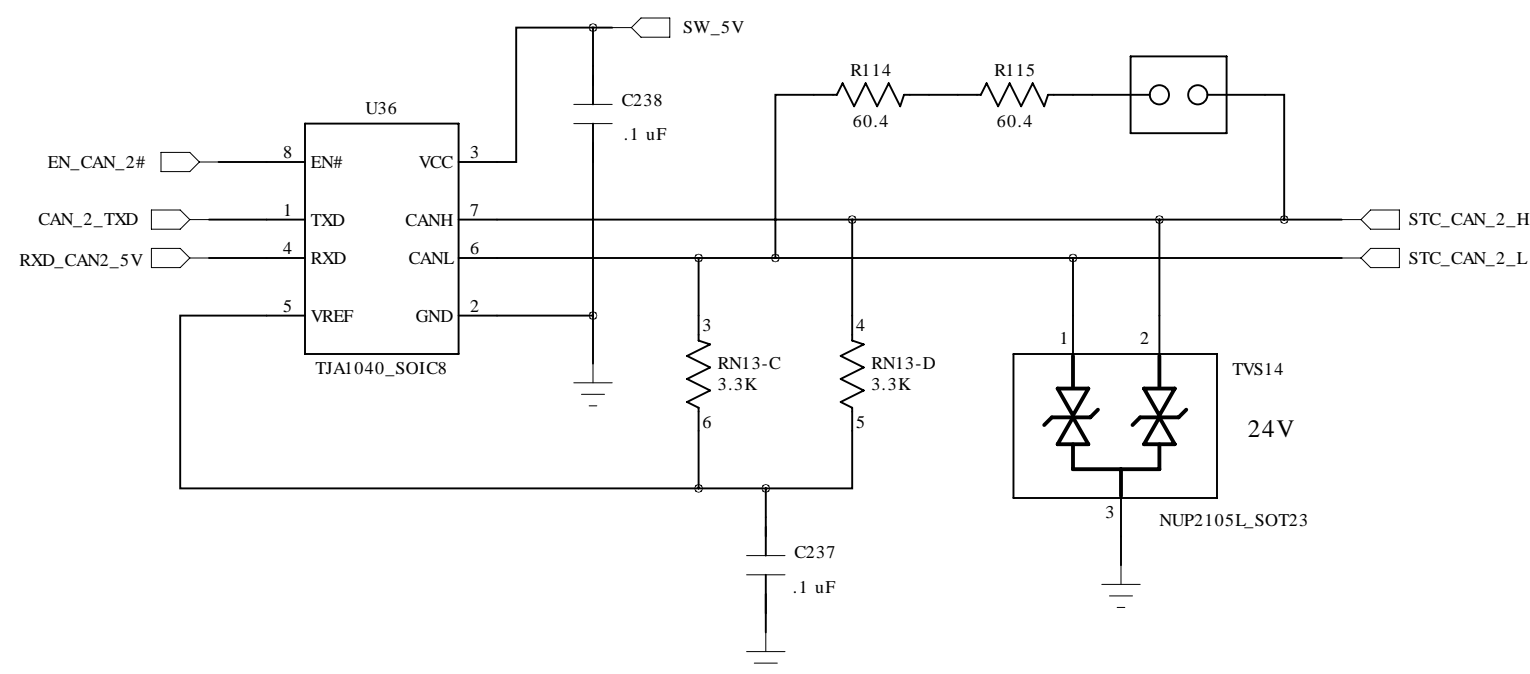
3.3V <-- 5V
Level shifter



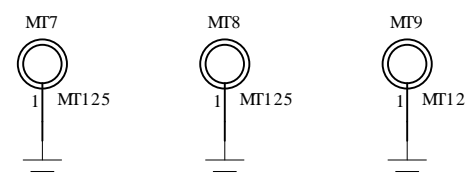
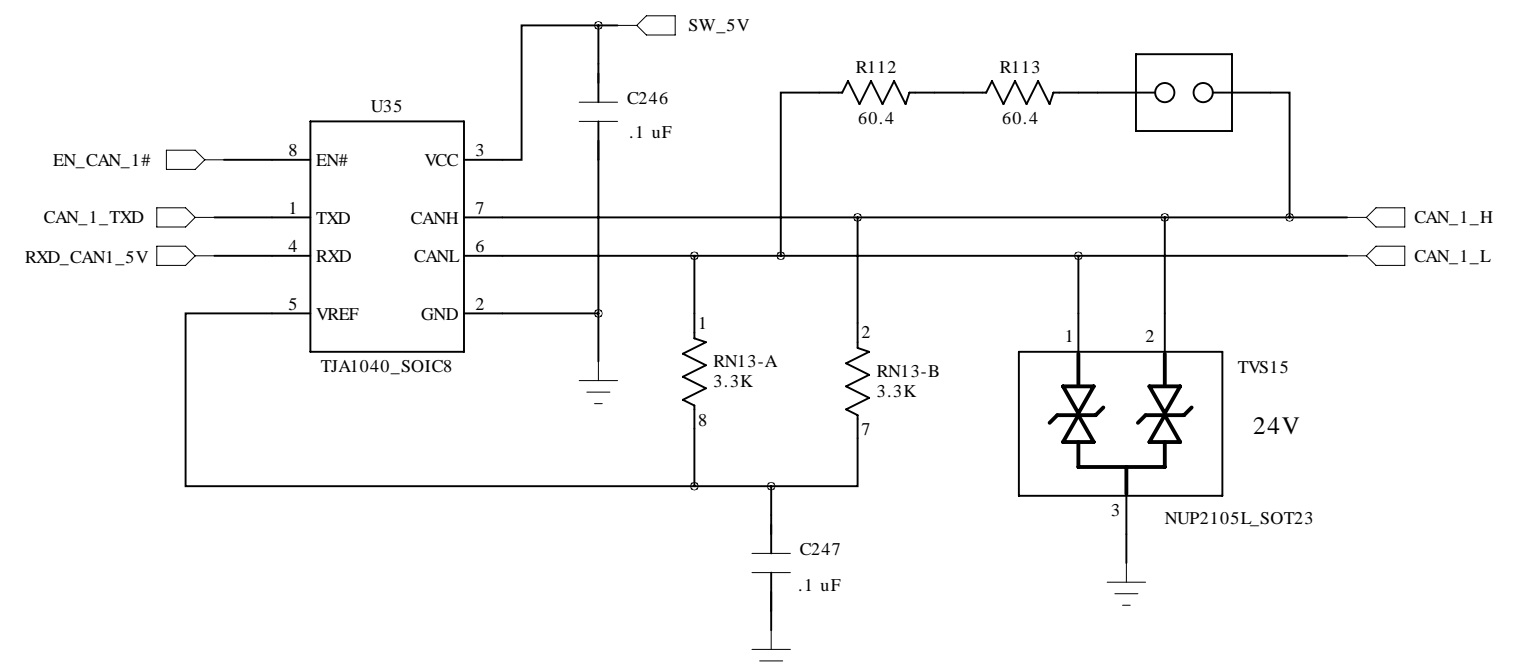
COM
Header



CAN2 Transceiver



CAN1 Transceiver

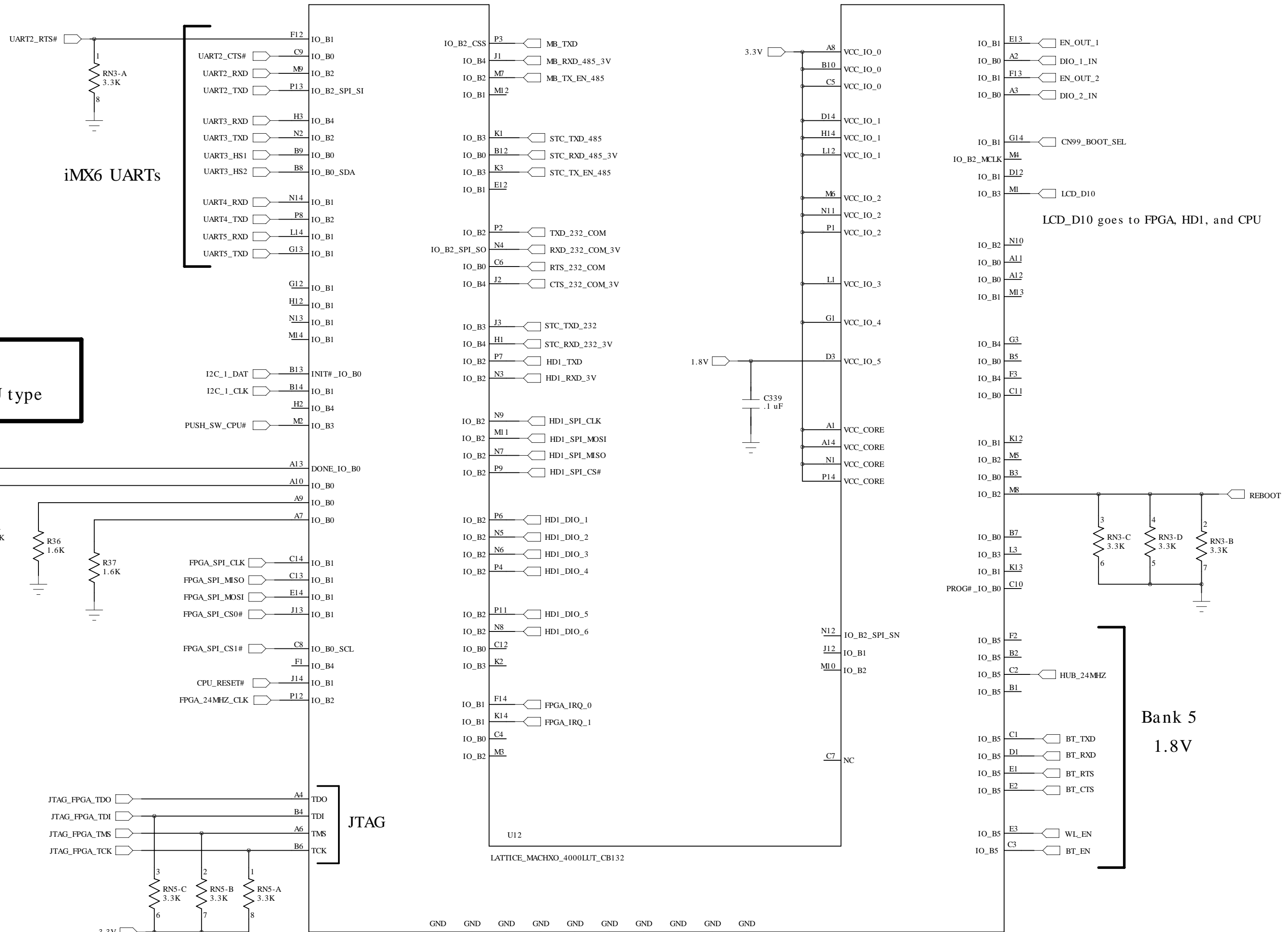


Technologic Systems	Date Feb. 21, 2015
Title: TS-7970 RS-232, CAN	
Rev: A	Designer
Sheet 22 of 27	

MACH XO2 FPGA

FPGA required for:

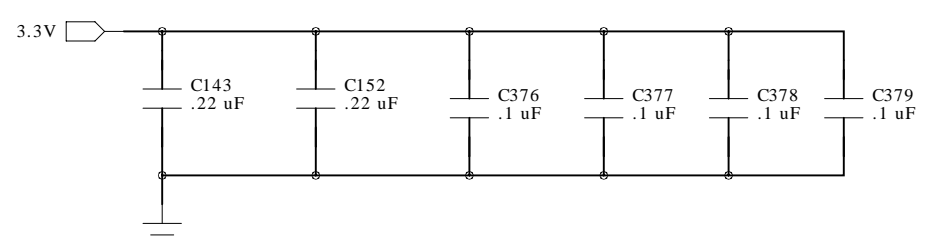
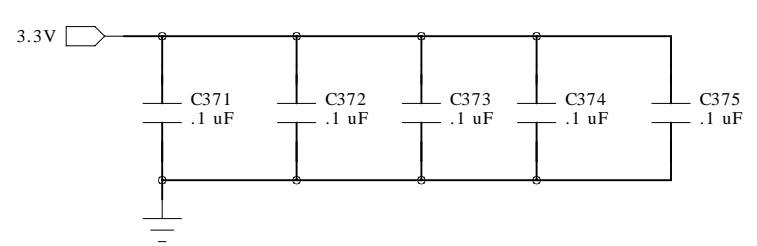
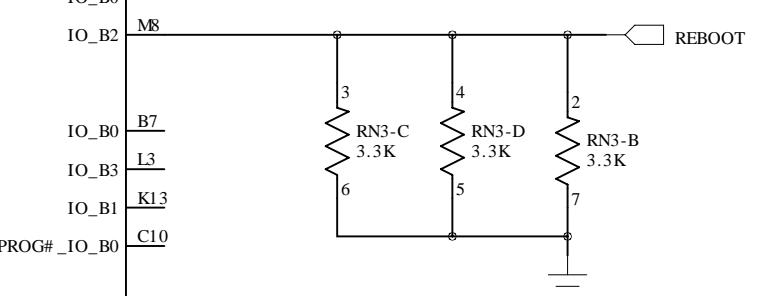
- Adds a MAX3100 UART via SPI
- Auto-485 for two UARTs
- Provides serial port MUXing
- Level shifting for Bluetooth
- "One-wire" DIO to STC



R36 and R37 indicate CPU type

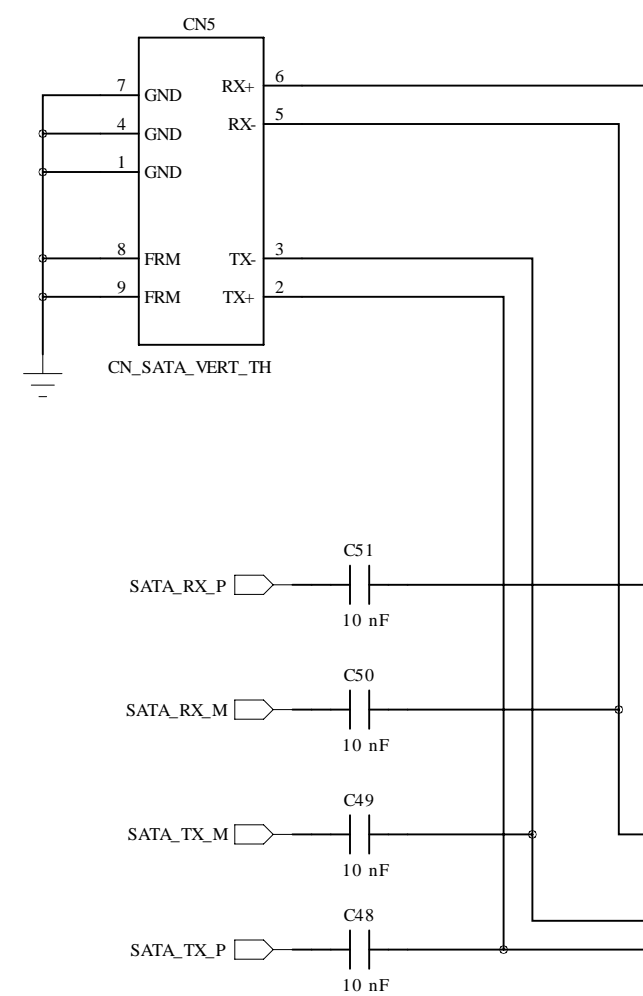
R34 pop when WiFi is

R39 pop for 512MB RAM



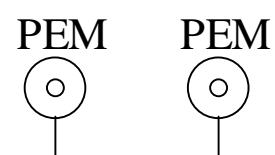
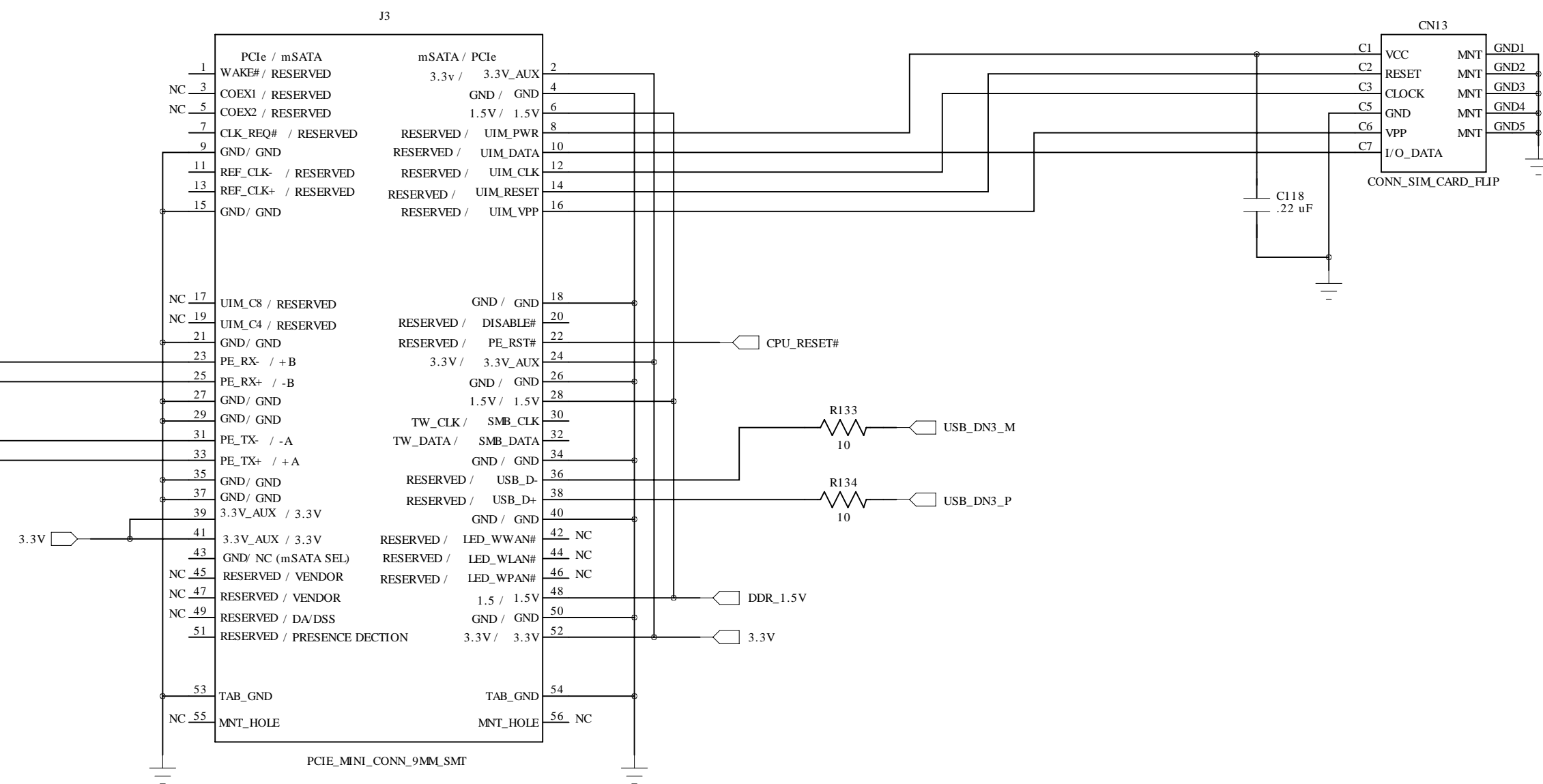
mSATA or Cellular Modem

SATA Port

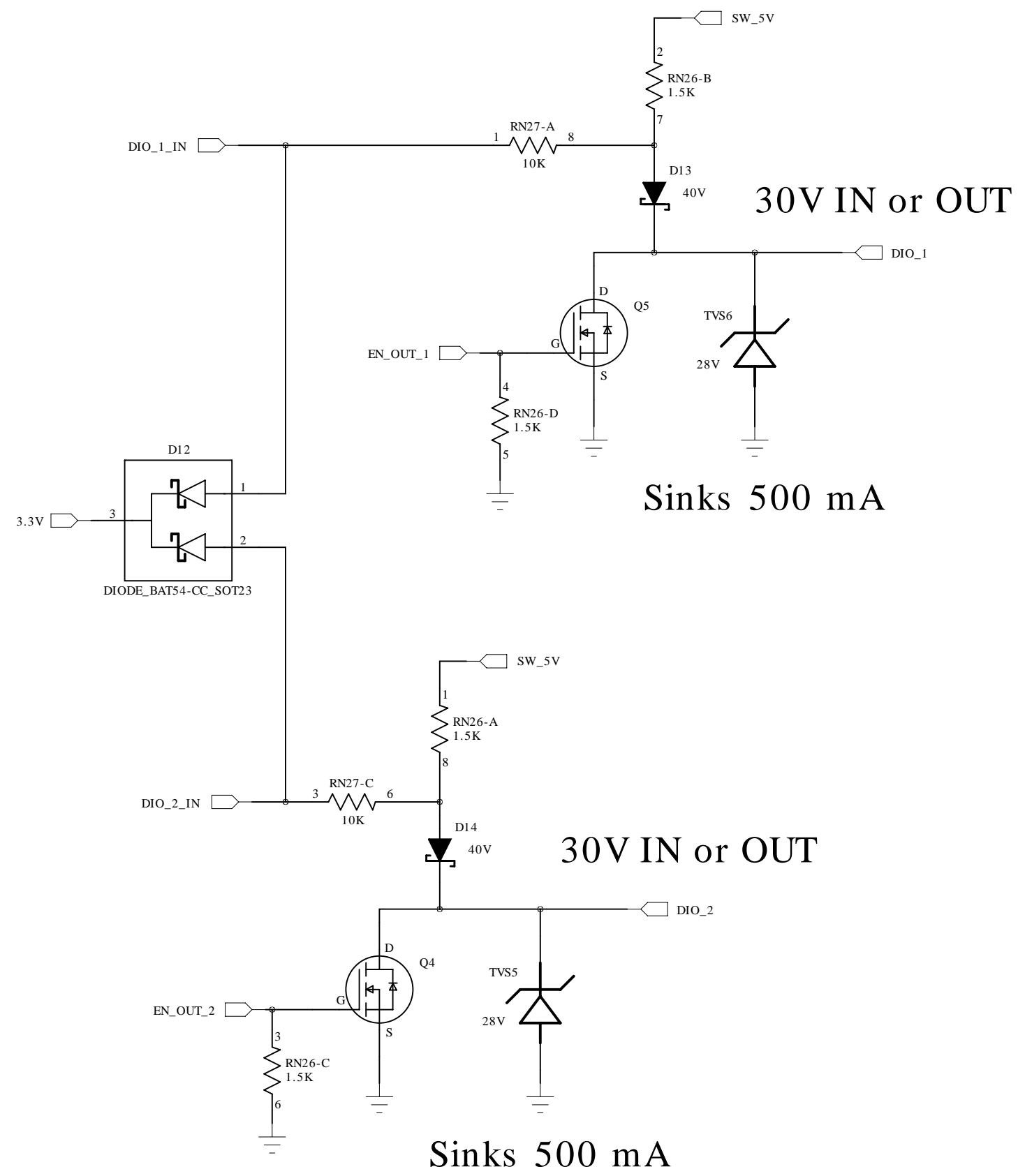


7mm Stack Height
to center of bd.

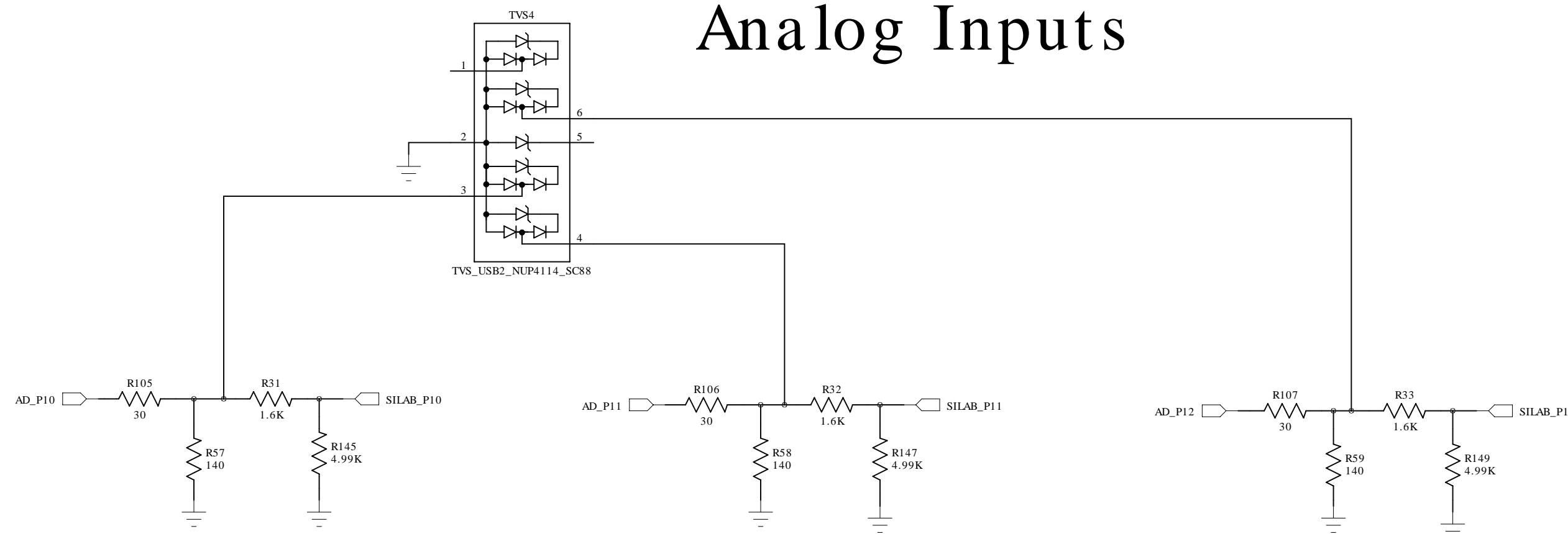
Mini PCIe SIM Card Connector



Two DIO



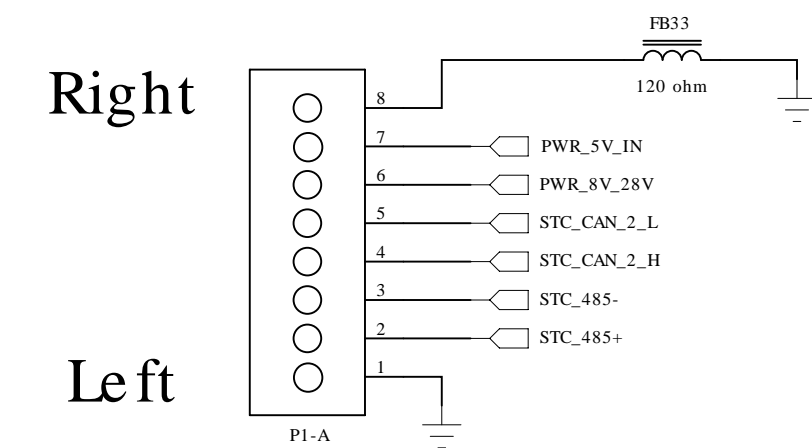
4 to 20 mA Analog Inputs



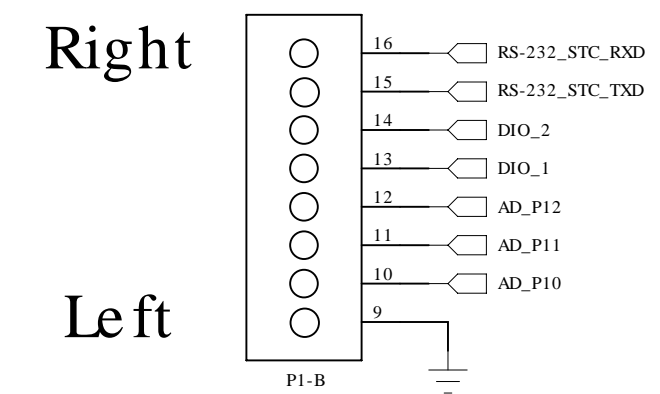
Screw Terminals

2 Rows x 8

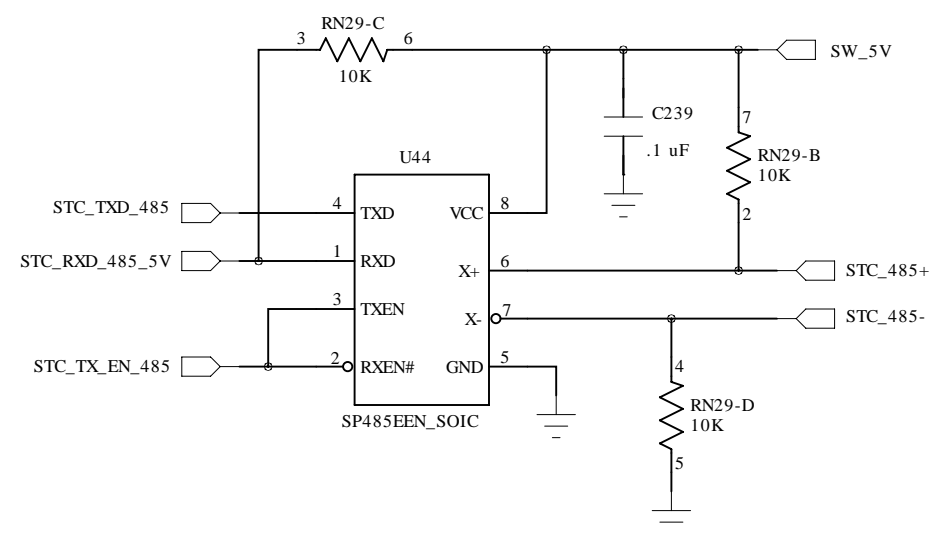
Top Row



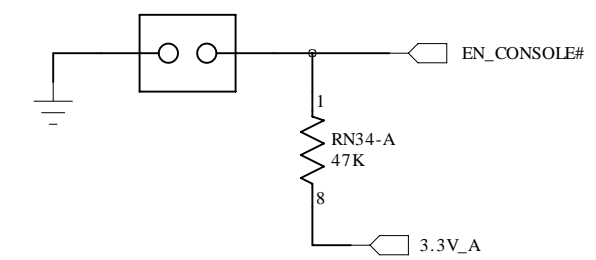
Bottom Row



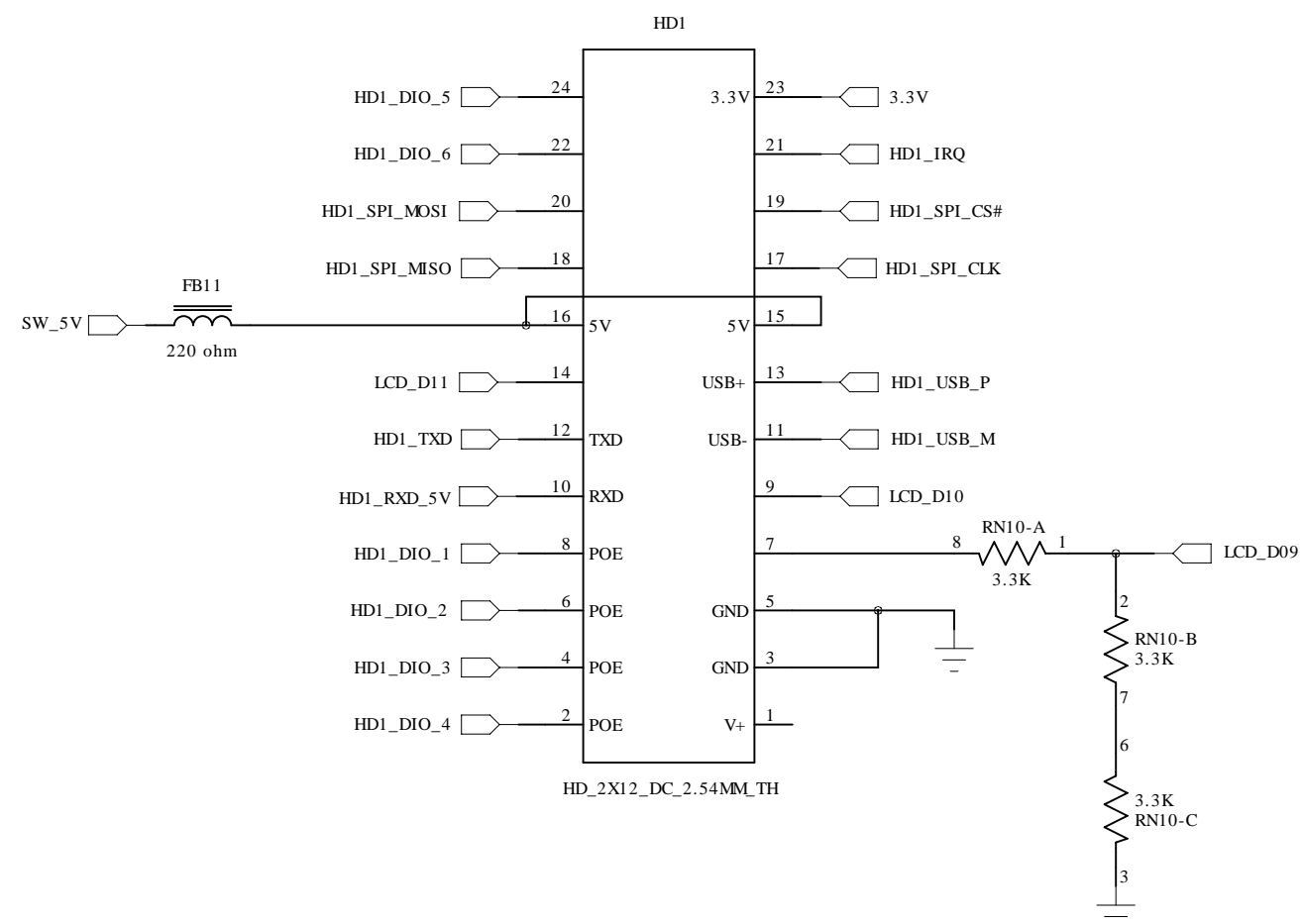
STC RS-485 Driver



Enable USB Console



Daughter Card Interface HD1



Daughter Card Interface HD2

