

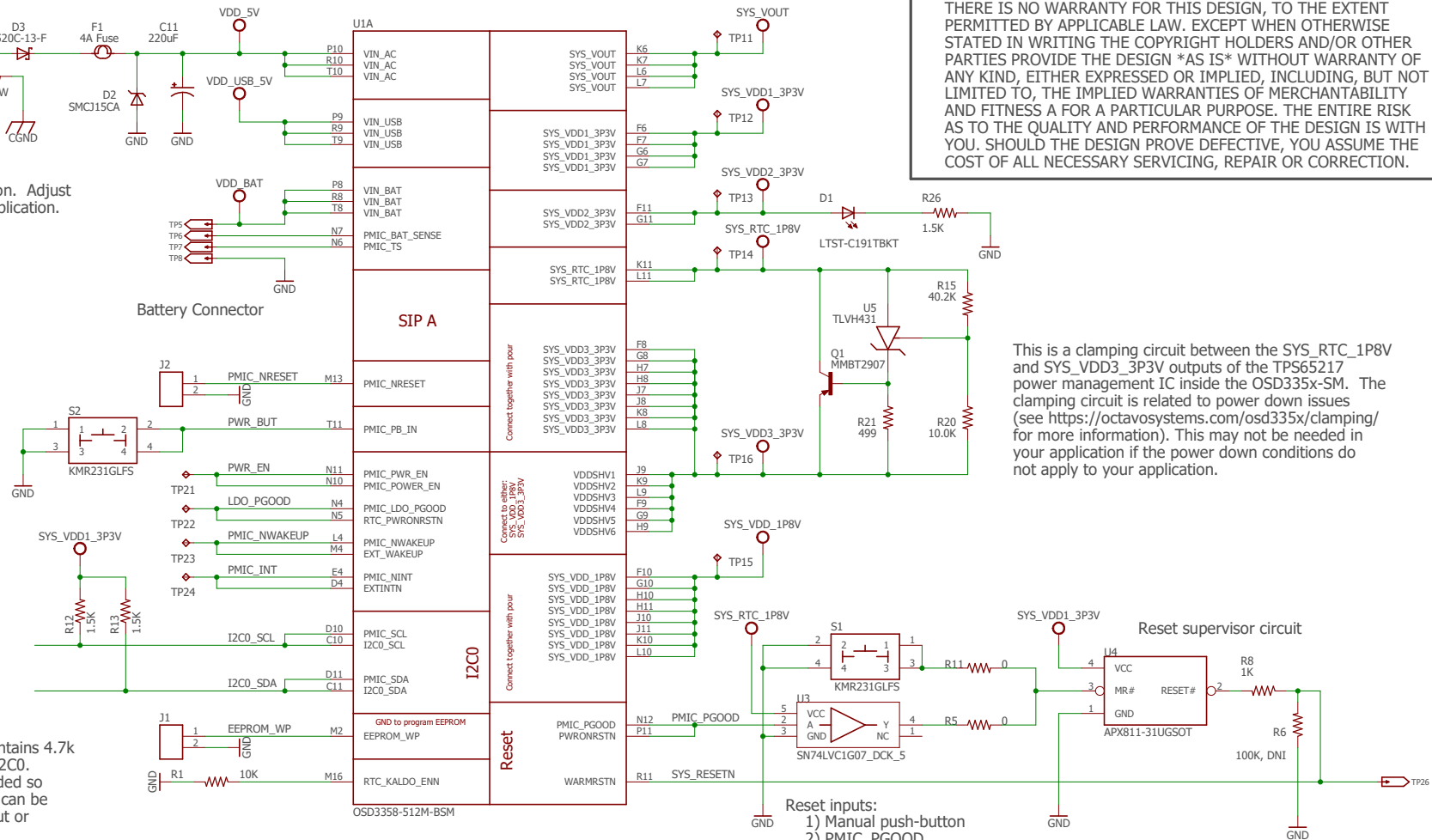
Power & Reset

Octavo Systems OSD335x-SM
Reference, Evaluation and Development (RED) Platform

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Power input protection. Adjust according to your application.



The OSD335x-SM contains 4.7k pull-up resistors on I2C0. External resistors added so that pull-up strength can be changed due to layout or other requirements.

TPS65217 I2C Address: 0x24
EEPROM I2C Address: 0x50

RTC_KALDO_ENN is grounded thru a 10K ohm resistor so that the internal RTC LDO is enabled and CAP_VDD_RTC does not need to be connected to VDD_CORE.

Reset inputs:
1) Manual push-button
2) PMIC_PG0OD

Reset supervisor MR# has internal pull up to SYS_VDD1_3P3V. Each reset input is effectively open drain and can only pull reset line low. Resistors added only for debug and are not necessary.

To Print: Use 8.5"x11" paper in landscape; 0.69 scaling factor.

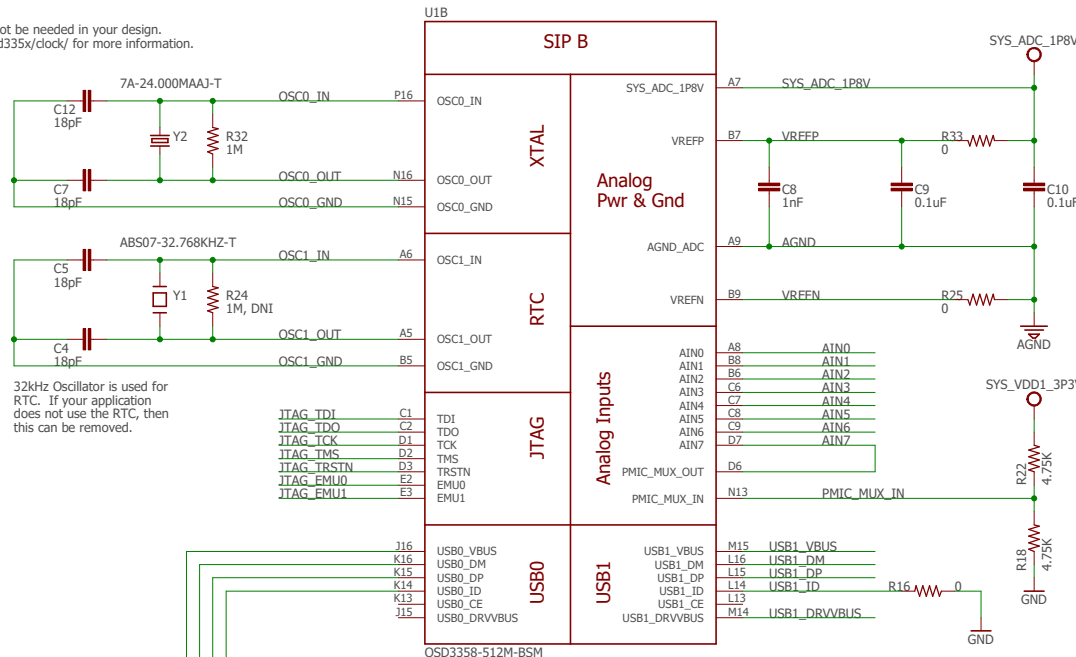


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Clocks, Analog & USB

The values for C7 and C12 can be calculated using information in FAQ: <https://octavosystems.com/faqs/design-oscillator-circuit-osd335x-family-devices/#more-3862>

Clock resistors R32 and R24 may not be needed in your design. See <https://octavosystems.com/osd335x/clock/> for more information.

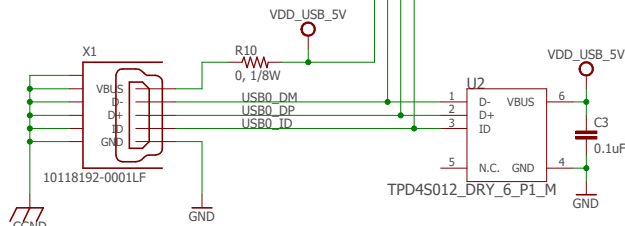


32kHz Oscillator is used for RTC. If your application does not use the RTC, then this can be removed.

JTAG_TDI
JTAG_TDO
JTAG_TCK
JTAG_TMS
JTAG_TRSTN
JTAG_EMU0
JTAG_EMU1

USBx_VBUS is a voltage sense input. It is NOT a power output pin. The USBx peripheral will be enabled only if a valid voltage ($>=4.4V$) is present on this pin. For more info see "USB Circuitry" article on www.octavosystems.com/app_notes

The 0 Ohm resistor (R10) on the VBUS input can be replaced with a ferrite bead for noise suppression or a solder bridge for cost reduction.



USB Client

Per the TPD4S012 datasheet, D-, D+ and ID have the same ESD circuitry. Therefore, to ease routing, D- and D+ have been swapped from the default mapping.

If the analog interface is not used, then VREFP and VREFN should be shorted to AGND.

SYS_ADC_1P8V and AGND_ADC are connected to SYS_VDD_1P8V and DGND, respectively, through ferrite beads inside the SiP. It is not necessary to connect these rails to anything else. However, bypass capacitors should be added to reduce noise, if needed for your application.

Maximum voltage for the analog inputs is 1.8V.

AIN7 currently monitors the PMIC voltages via the internal PMIC mux. See the 'Analog Multiplexer' section of the TPS65217 datasheet. For the internal PMIC voltages, there are dividers within the PMIC to keep the monitored voltages under 1.8V. However, PMIC_MUX_IN does not have any dividers and must be less than 1.8V. By default, PMIC_MUX_OUT is Hi-Z. The MUXCTRL register in the PMIC is used to select the PMIC_MUX_OUT voltage path.

SYS_VDD1_3P3V is a 3.3V output of the OSD3358-512M-BSM. A divide by 2 resistor divider is used to ensure that the PMIC_MUX_IN voltage does not exceed 1.8V. It is not necessary to monitor the TL5209 LDO output and this can be removed if desired.



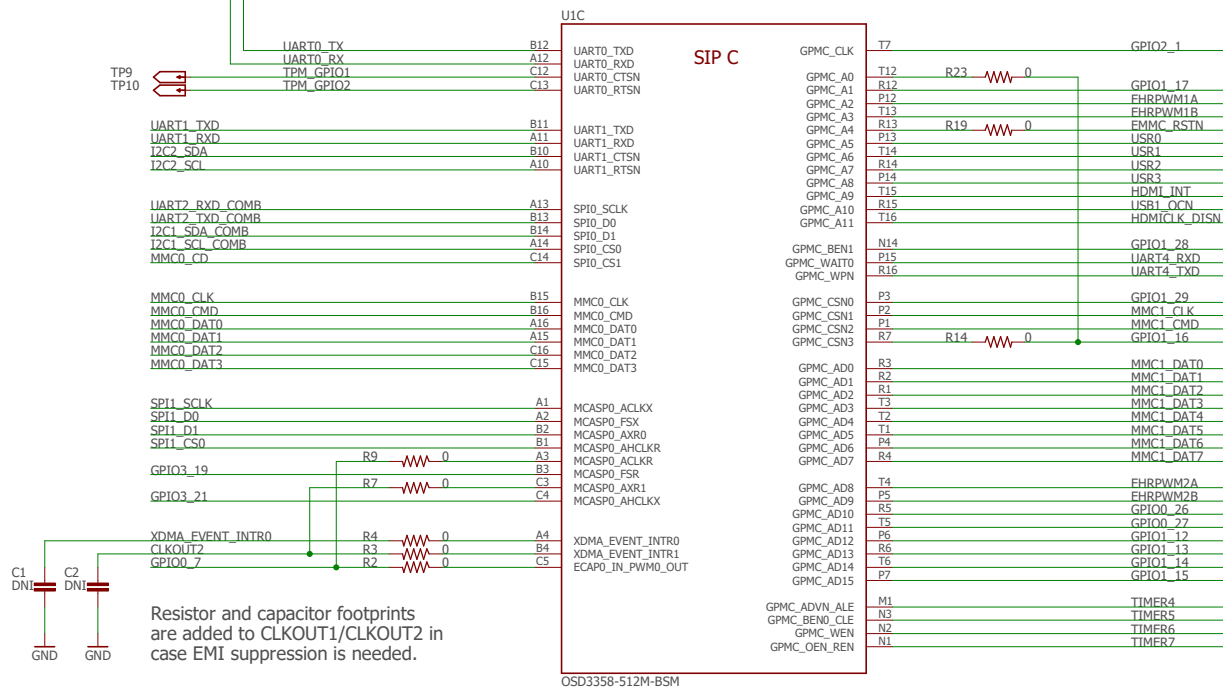
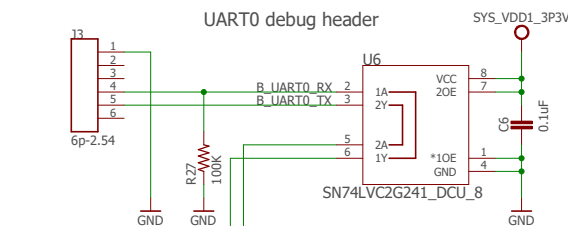
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SiP Interfaces

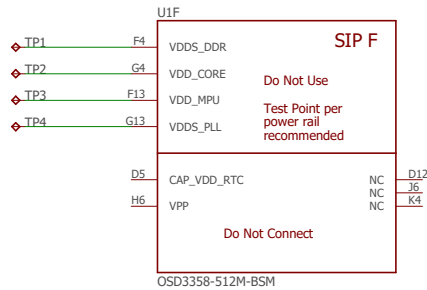
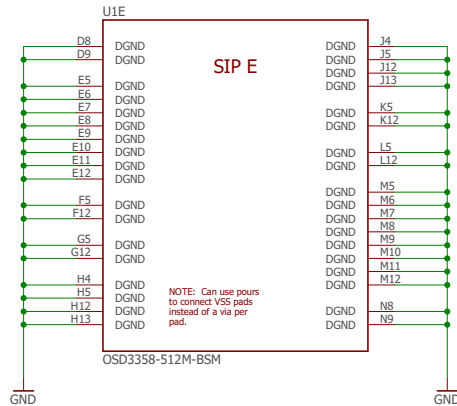


The eMMC_RSTN signal no longer uses an open-drain inverter to control the eMMC reset input (See OSD3358 SBC Reference Design). This was done to save cost given that there was no software infrastructure in place around them eMMC reset. To put the eMMC in reset the pin is now active low.

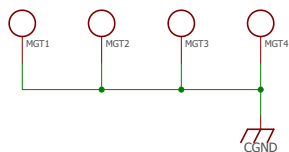
Nets like CLKOUT2, GPIO0_7 and GPIO1_16 are resistor muxed to increase the functionality of the Cape Headers. This is not needed if your application does not require Cape Header compatibility.



SiP GND & Misc



Mounting Holes



Mounting holes and other connector shields are part of a ground ring, CGND. This ring is connected to ground via a resistor on Page 1.

Fiducials



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A



C

D

E

E



A



C

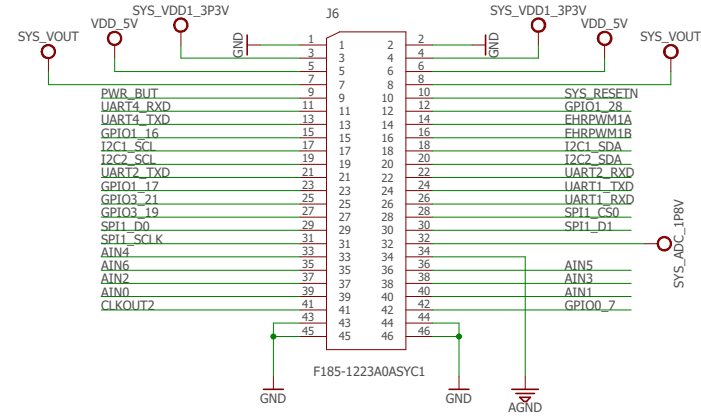
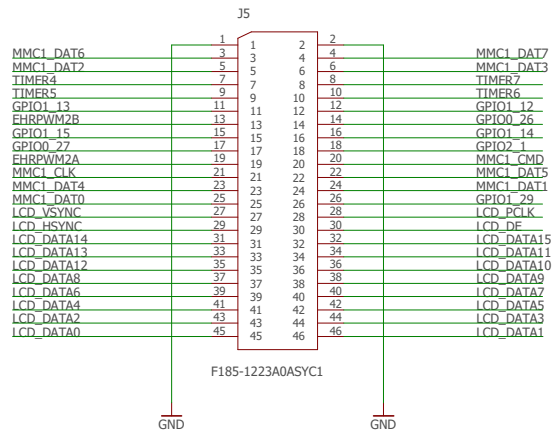


E

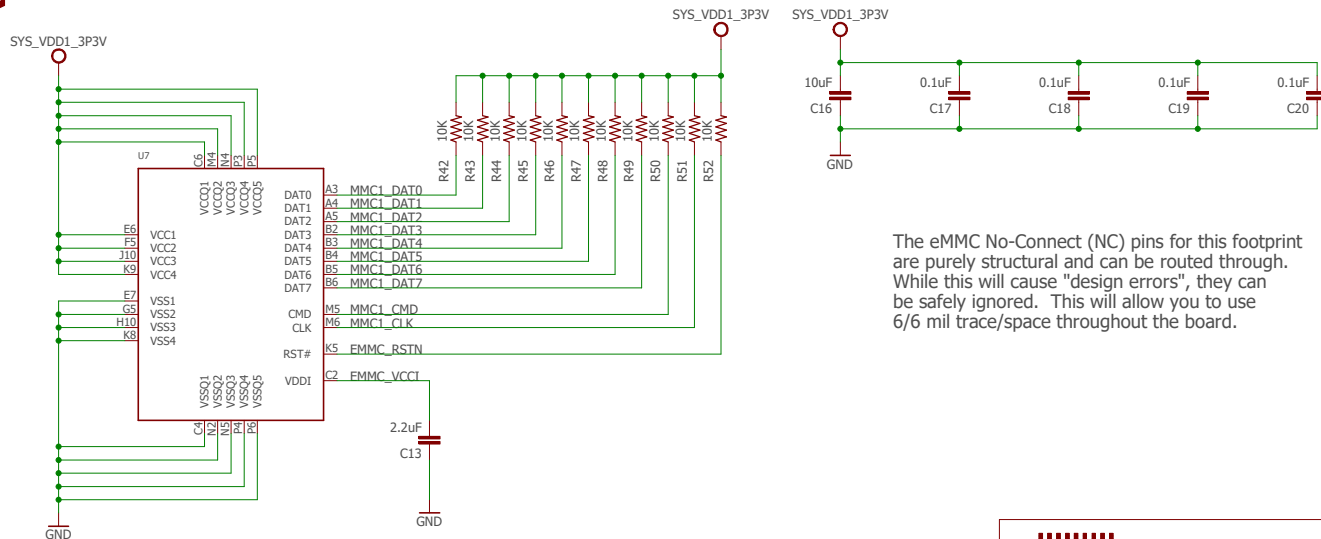


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Cape Headers



eMMC

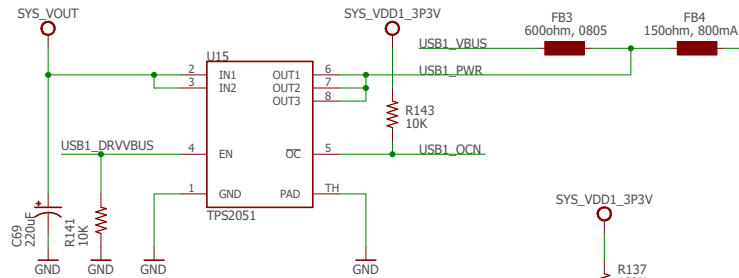


Rev 3 uses the 16GB SDIN8DE2-16G eMMC. Please choose an appropriate footprint compatible eMMC based on size and availability.



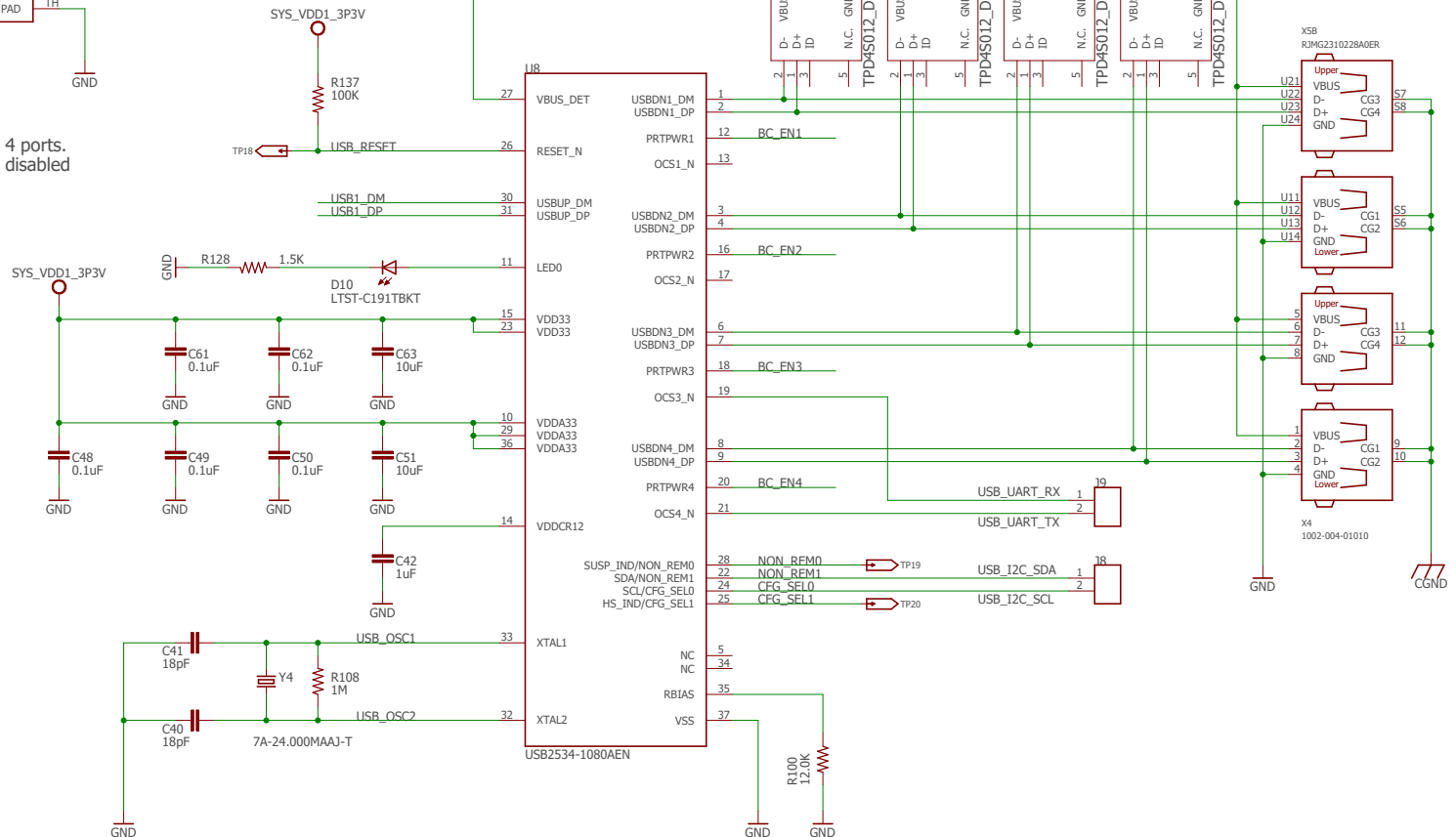
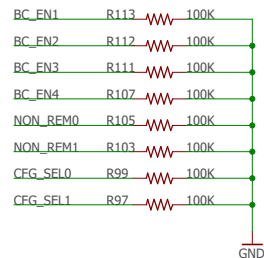
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4- Port USB Hub

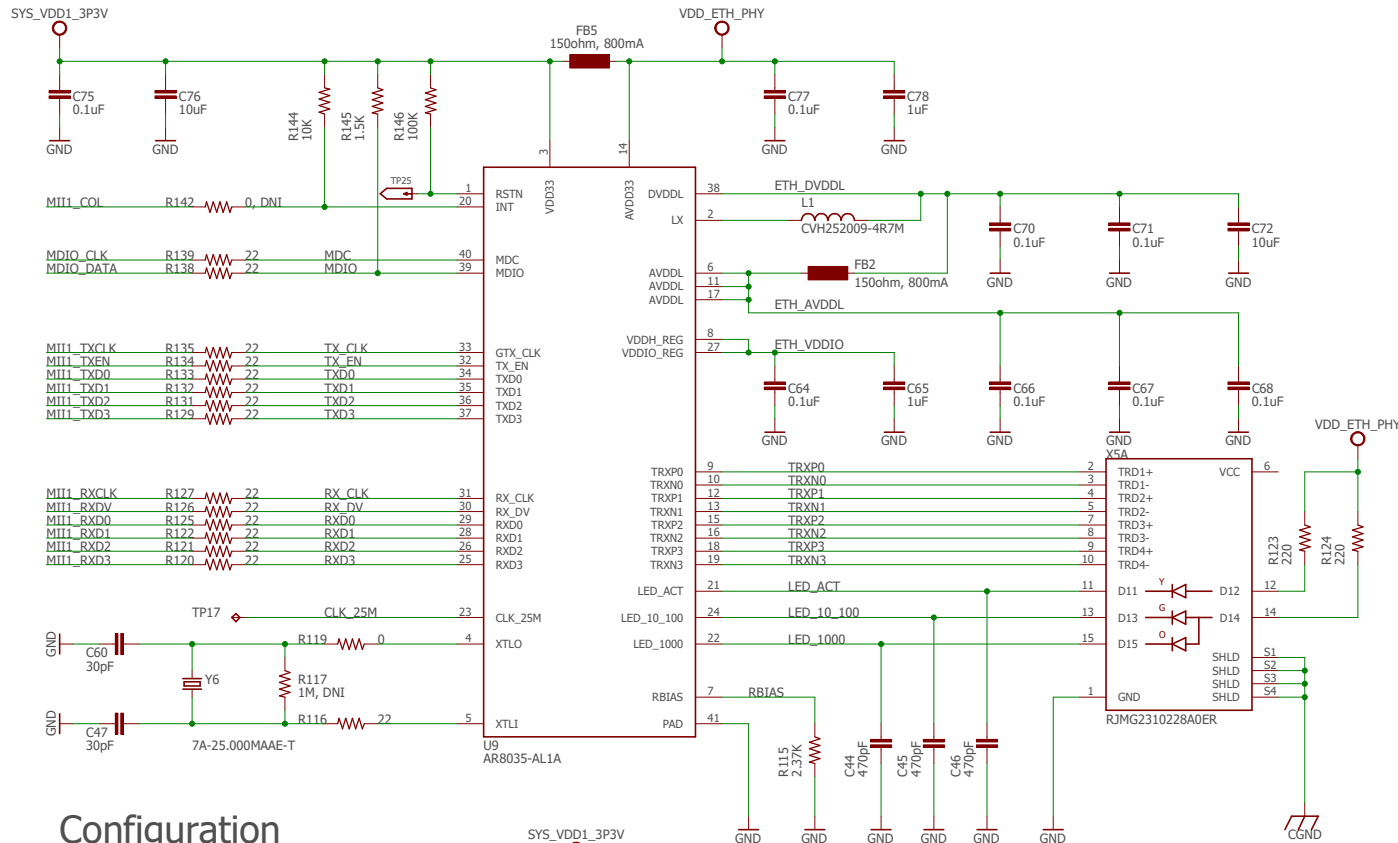


Only 500mA is supplied for all 4 ports.
Therefore, battery charging is disabled
for all ports.

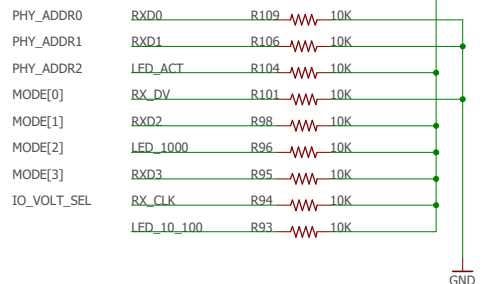
Configuration



Ethernet



Configuration



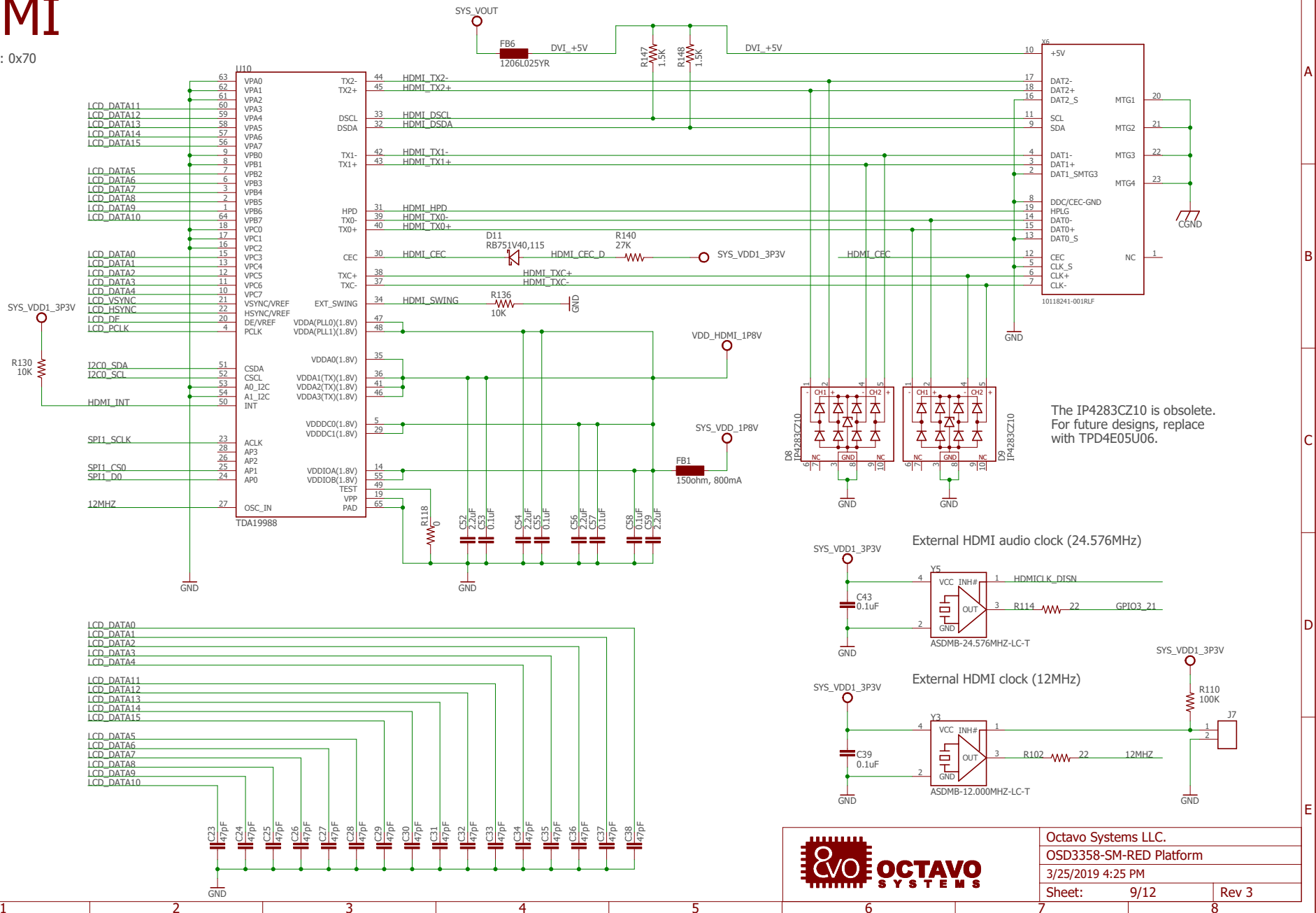
Ethernet Connector:
VCC pin is exposed but should be left floating
for proper connector operation.



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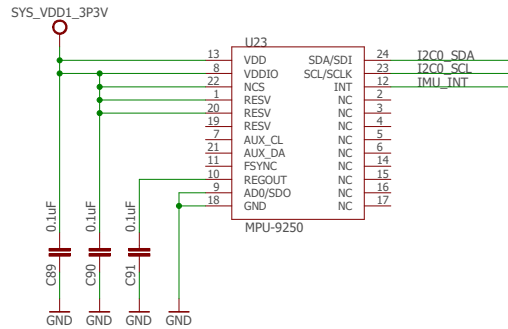
HDMI

I2C Address: 0x70



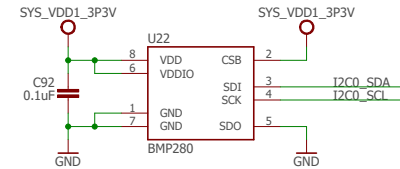
9-axis IMU

I2C Address: 0x68



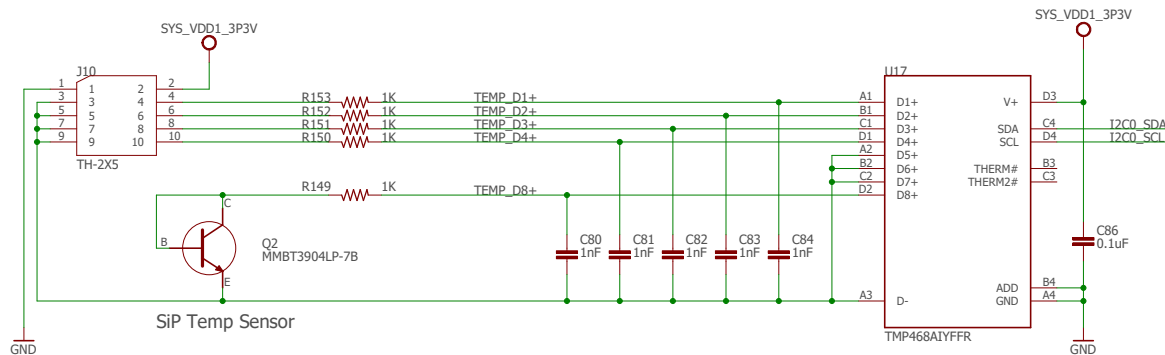
Barometer

I2C Address: 0x76



Temperature Sensor + Hub

I2C Address: 0x48



Due to routing constraints, D5+, D6+ and D7+ are not used.



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There are many footprint compatible (8-WSON) parts for the NOR flash if the listed part is not available.

SYS_VDD1_3P3V

R160
10K

R161
10K

C93
0.1uF

GND

U21

VCC C 6 SPI0_SCLK

DQ0 5 SPI0_D1(MOSTI)

DQ1 2 SPI0_D0(MISO)

CS# 1 SPI0_CS0

W#

HOLD#

VSS 4

PAD PAD

S25FL127S

R158
100K

GND

TP27

TP28

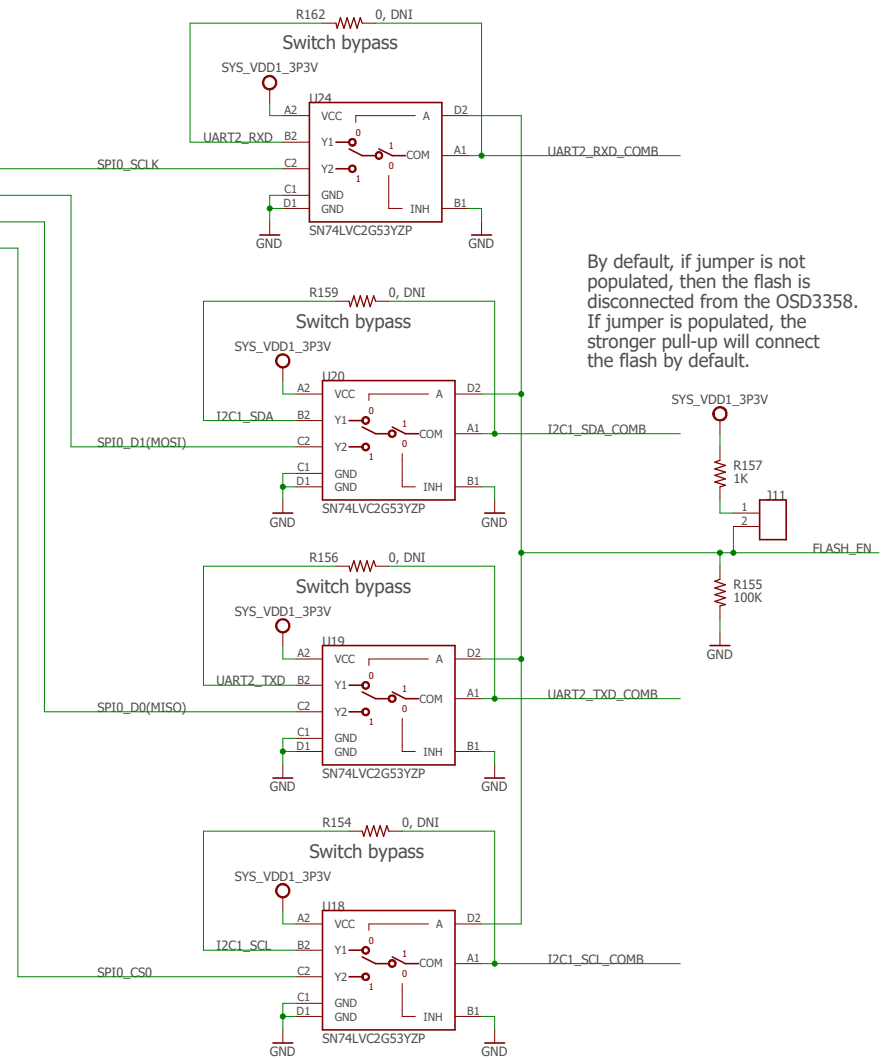
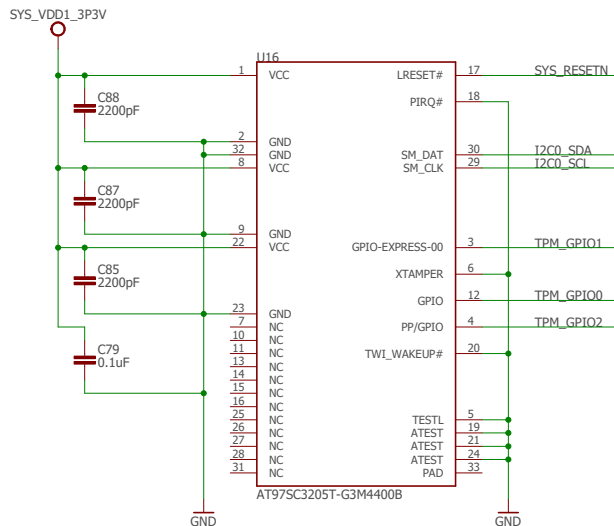
TP29

TP30

Population Options:

- 1) If using the flash, all switches should be populated.
- 2) If not using the flash, the switch bypass resistors can be populated to maintain cape compatibility.

I2C Address: 0x29



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Notes

Rev 3:

1) Initial Production Release.

2018/05/14 (schematic only update):

- 1) Added note to calculate capacitance for C7 and C21
- 2) Added complete part number of APX811

2018/11/15 (schematic only update):

- 1) Upated component values to match BOM / remove un-needed tolerances / voltages
- 2) Added notes on I2C0 pull-ups and TPD4S012

2019/03/25 (schematic only update):

- 1) Added notes on USBx_VBUS and eMMC reset
- 2) Added I2C addresses for all I2C components



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