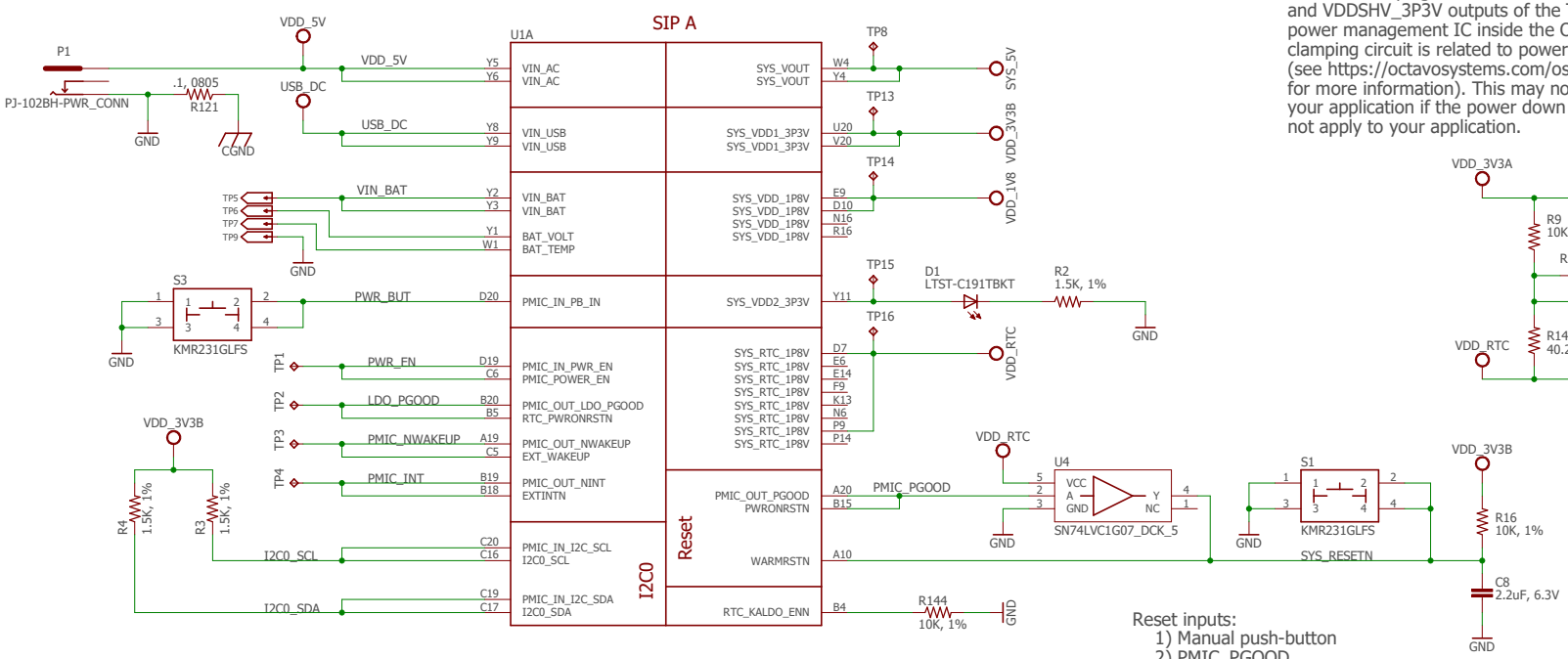
Power & Reset

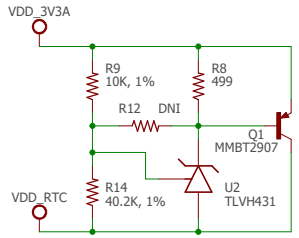
Octavo Systems OSD3358-BAS SBC Reference Design

(c) Copyright, Octavo Systems LLC, 2016-19
All Rights Reserved.

THERE IS NO WARRANTY FOR THIS DESIGN, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE DESIGN *AS IS* WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS A FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE DESIGN IS WITH YOU. SHOULD THE DESIGN PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

No power input protection. Adjust according to your application.





This is a clamping circuit between the SYS_RTC_1P8V and VDDSHV_3P3V outputs of the TPS65217 power management IC inside the OSD335x-SM. The clamping circuit is related to power down issues (see https://octavosystems.com/osd335x/clamping/ for more information). This may not be needed in your application if the power down conditions do not apply to your application.

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

TPS65217 I2C Address: 0x24

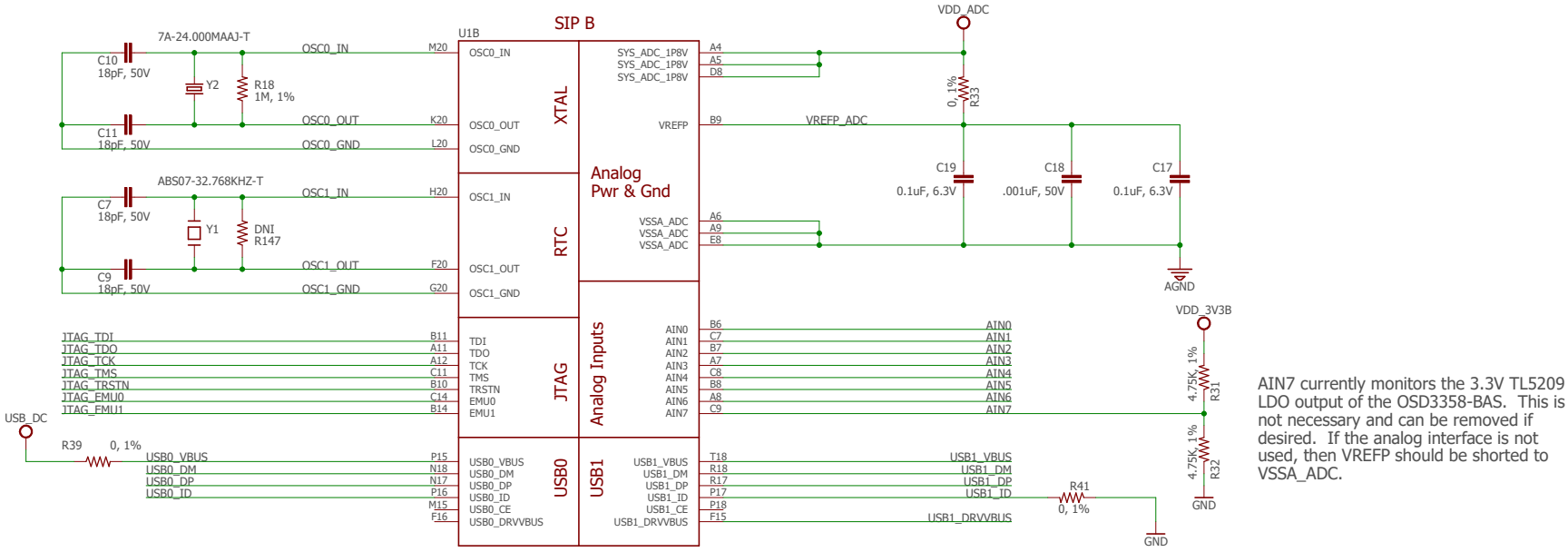
RTC_KALDO_ENN is grounded thru a 10K ohm resistor so that the internal RTC LDO is enabled and CAP_VDD_RTC does not need to be connected to VDD_CORE.

Reset inputs:
1) Manual push-button
2) PMIC_PGOOD
Each reset input is effectively open drain and can only pull reset line low.

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

Octavo Systems LLC.	
OSD3358-BAS SBC Ref Design	
3/25/2019 3:49 PM	
Sheet: 1/9	Rev A2

Clocks & Reset

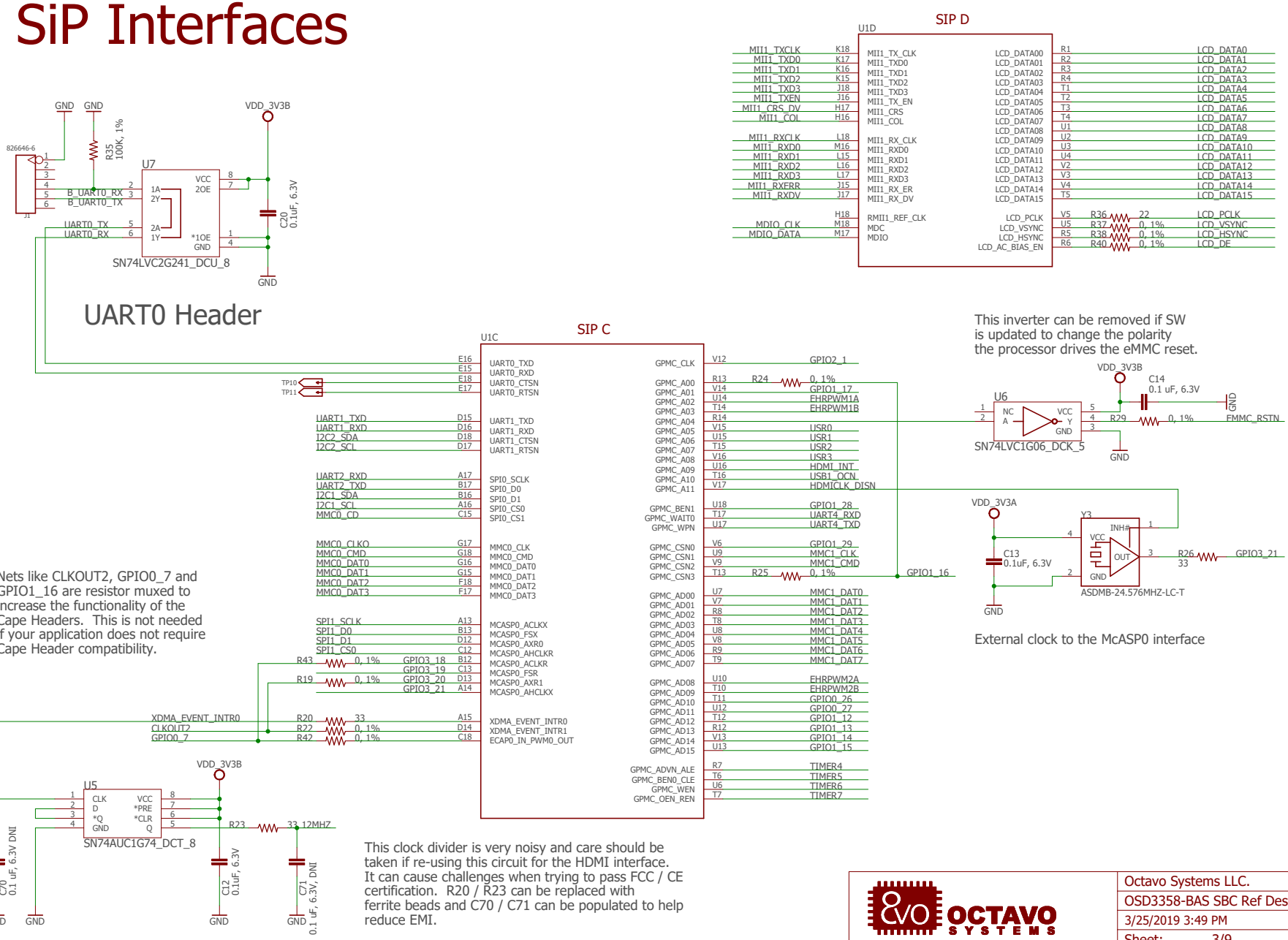


USBx_VBUS is a voltage sense input. It is NOT a power output pin. The USBx peripheral will be enabled only if a valid voltage (>=4.4V) is present on this pin. For more info see "USB Circuitry" article on www.octavosystems.com/app_notes

AIN7 currently monitors the 3.3V TL5209 LDO output of the OSD3358-BAS. This is not necessary and can be removed if desired. If the analog interface is not used, then VREFP should be shorted to VSSA_ADC.

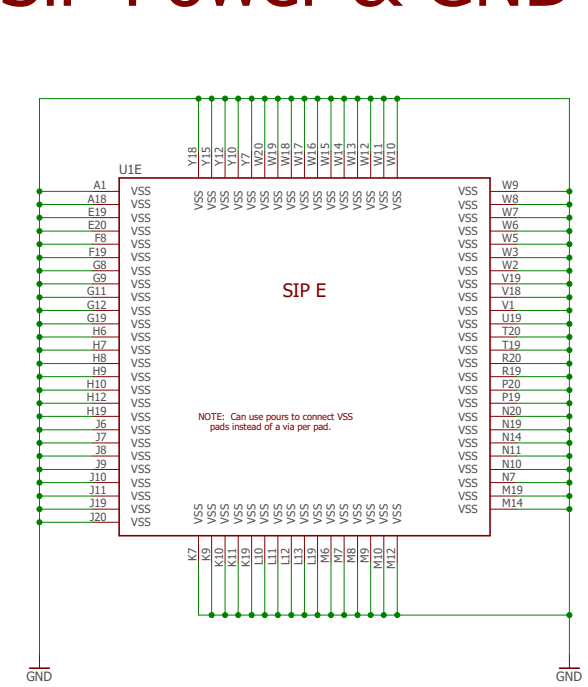
Octavo Systems LLC.	
OSD3358-BAS SBC Ref Design	
3/25/2019 3:49 PM	
Sheet: 2/9	Rev A2

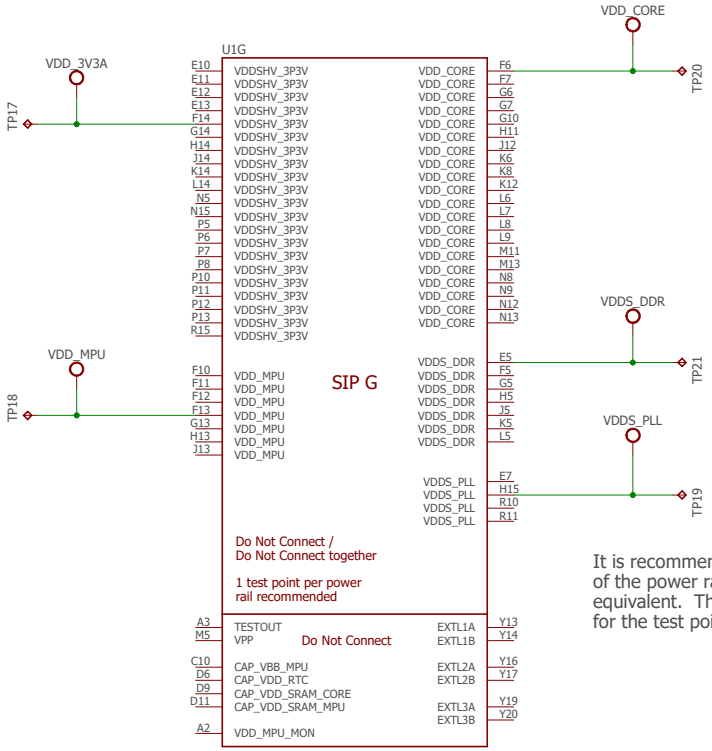
SiP Interfaces

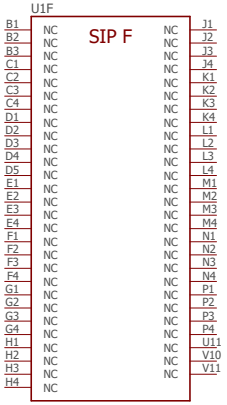


Octavo Systems LLC.	
OSD3358-BAS SBC Ref Design	
3/25/2019 3:49 PM	
Sheet: 3/9	Rev A2

SiP Power & GND

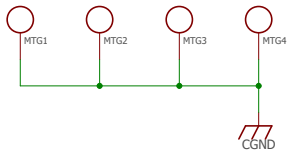






It is recommended to have a test point for each of the power rails. Each pin of a power rail is equivalent. Therefore, please choose the pin for the test point that makes routing easiest.

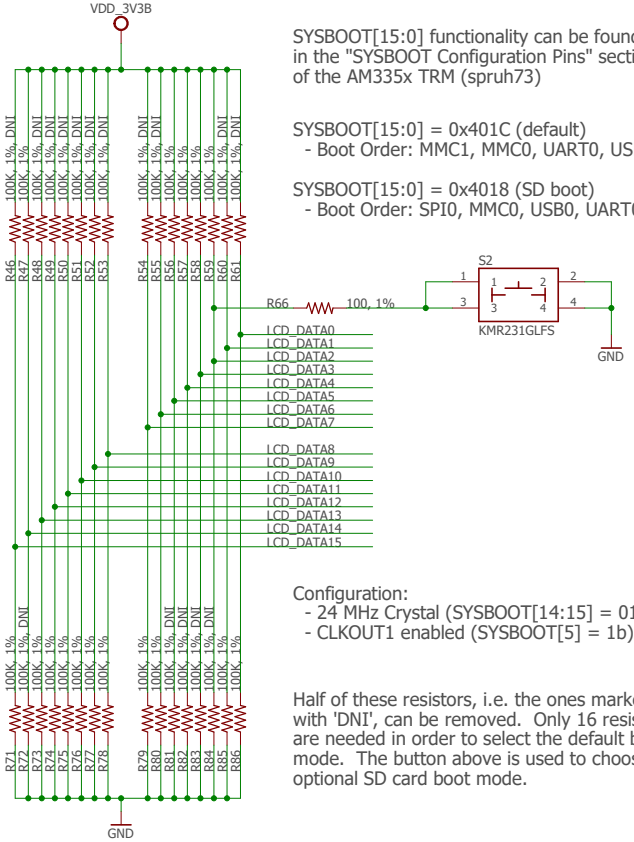
Mounting Holes



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

Octavo Systems LLC.	
OSD3358-BAS SBC Ref Design	
3/25/2019 3:49 PM	
Sheet: 4/9	Rev A2

Boot configuration



SYSBOOT[15:0] functionality can be found in the "SYSBOOT Configuration Pins" section of the AM335x TRM (spruh73)

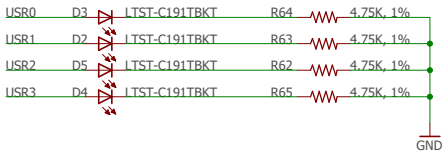
SYSBOOT[15:0] = 0x401C (default)
- Boot Order: MMC1, MMC0, UART0, USB0

SYSBOOT[15:0] = 0x4018 (SD boot)
- Boot Order: SPI0, MMC0, USB0, UART0

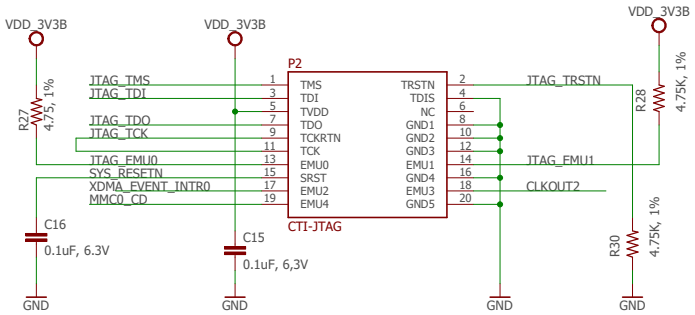
Configuration:
- 24 MHz Crystal (SYSBOOT[14:15] = 01b)
- CLKOUT1 enabled (SYSBOOT[5] = 1b)

Half of these resistors, i.e. the ones marked with 'DNI', can be removed. Only 16 resistors are needed in order to select the default boot mode. The button above is used to choose an optional SD card boot mode.

User LEDs



JTAG Header

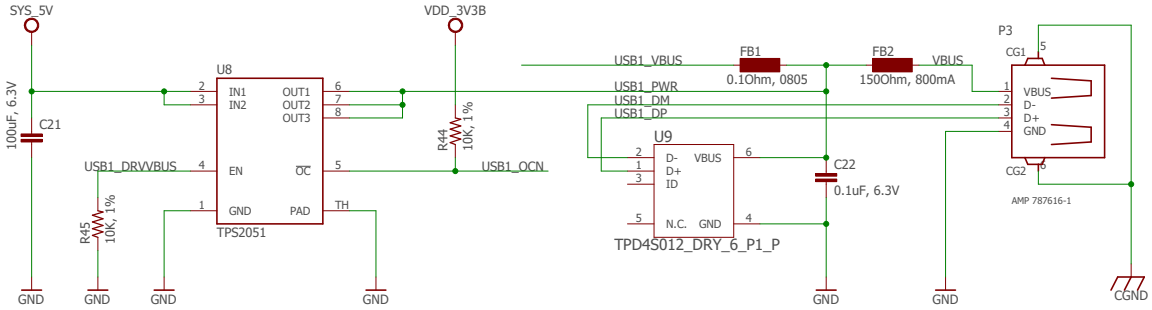


Only connect EMU2, EMU3 and EMU4 if you plan to use advanced JTAG features (HS-RTDX, Core Trace, System Trace, etc) of higher end debuggers:

- http://processors.wiki.ti.com/index.php/JTAG_Connectors
- http://processors.wiki.ti.com/index.php/XDS_Target_Connection_Guide

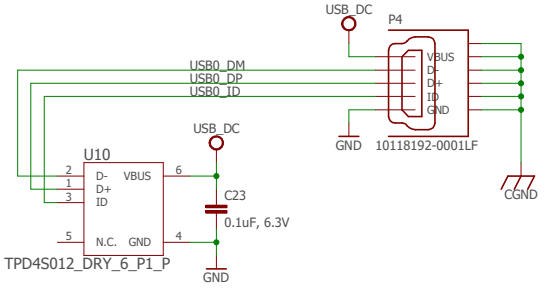
OCTAVO SYSTEMS	Octavo Systems LLC.
	OSD3358-BAS SBC Ref Design
	3/25/2019 3:49 PM
	Sheet: 5/9 Rev A2

USB Host



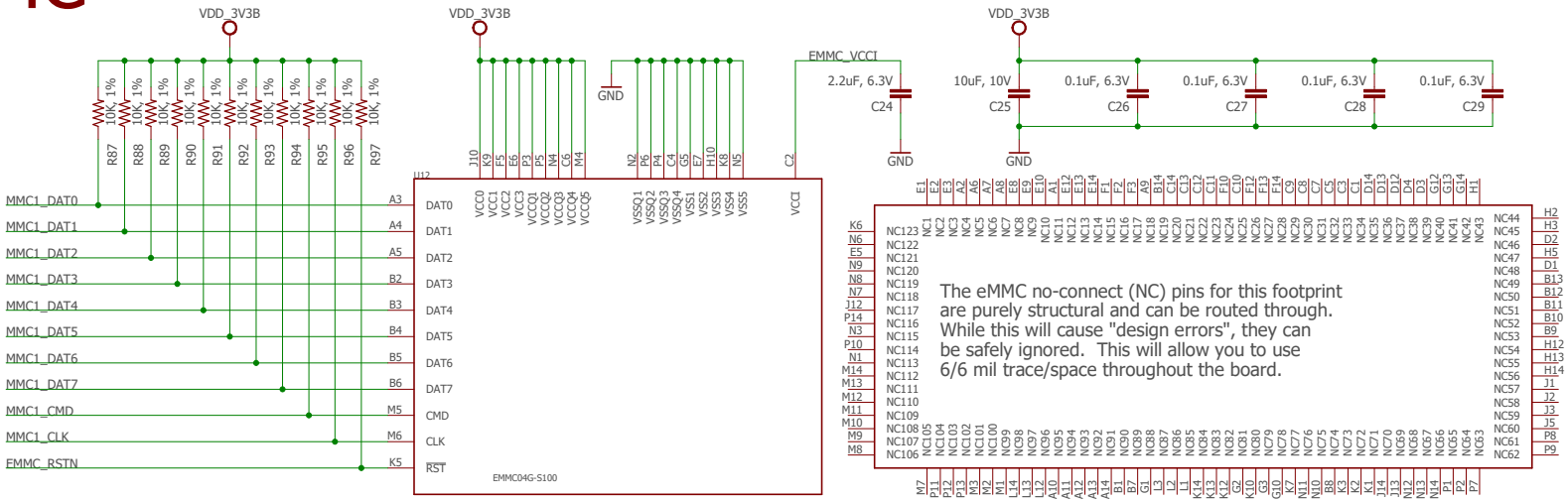
500mA current limiting switch

USB Client



In the TPD4S012, the D-, D+ and ID pins have equivalent ESD circuits and can be used interchangably in order to make routing easier. See http://www.ti.com/lit/gpn/tpd4s012

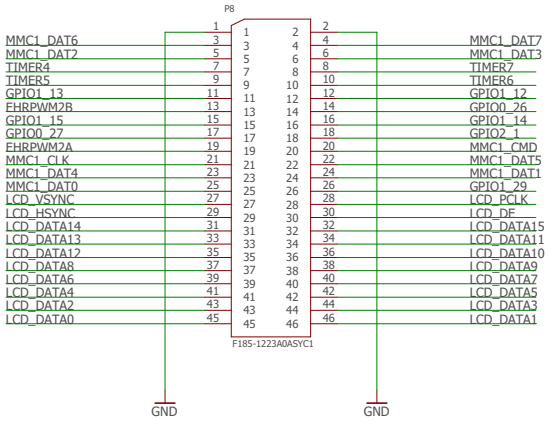
eMMC

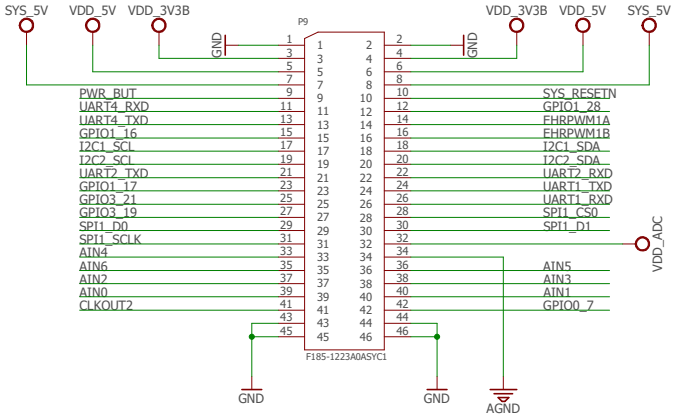


This design uses the 16GB SDIN8DE2-16G eMMC. Please choose an appropriate footprint compatible eMMC based on size and availability.

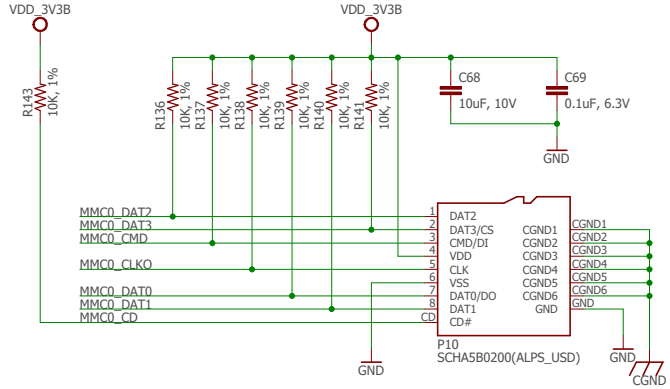
Octavo Systems LLC.	
OSD3358-BAS SBC Ref Design	
3/25/2019 3:49 PM	
Sheet: 6/9	Rev A2

Cape Headers





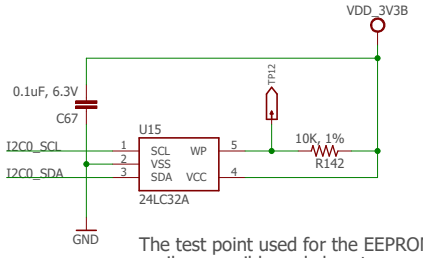
Micro SD card slot



The SCHA5B0200 is obsolete. For future designs, replace with DM3BT-DSF-PEJS or equivalent part.

EEPROM

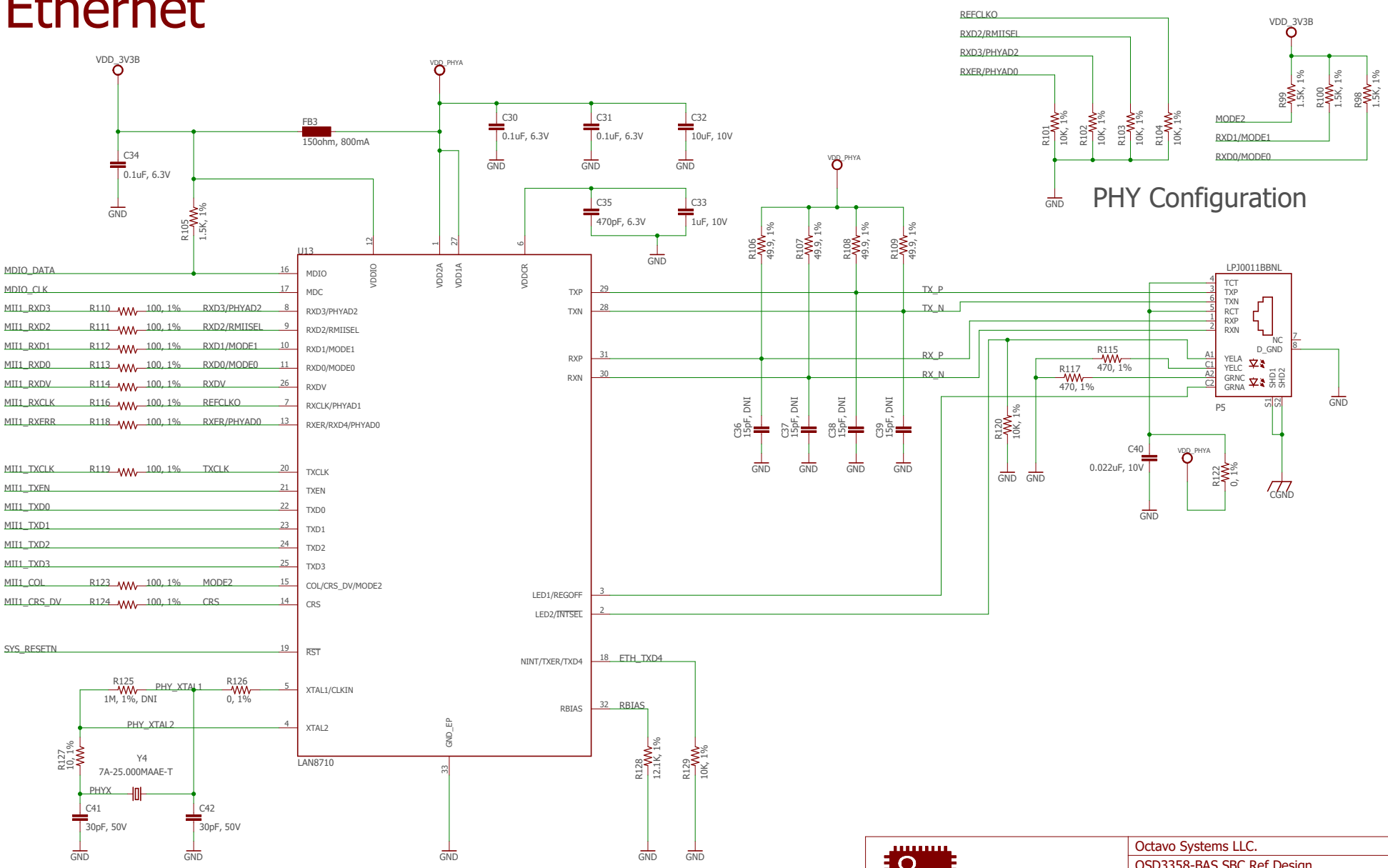
I2C Address: 0x50



The test point used for the EEPROM-WP should be easily accessible and close to a ground pin. It is recommended to use a thru-hole test point so that it is easy to ground in order to program the EEPROM.

OCTAVO SYSTEMS	Octavo Systems LLC.	
	OSD3358-BAS SBC Ref Design	
	3/25/2019 3:49 PM	
	Sheet: 7/9	Rev A2

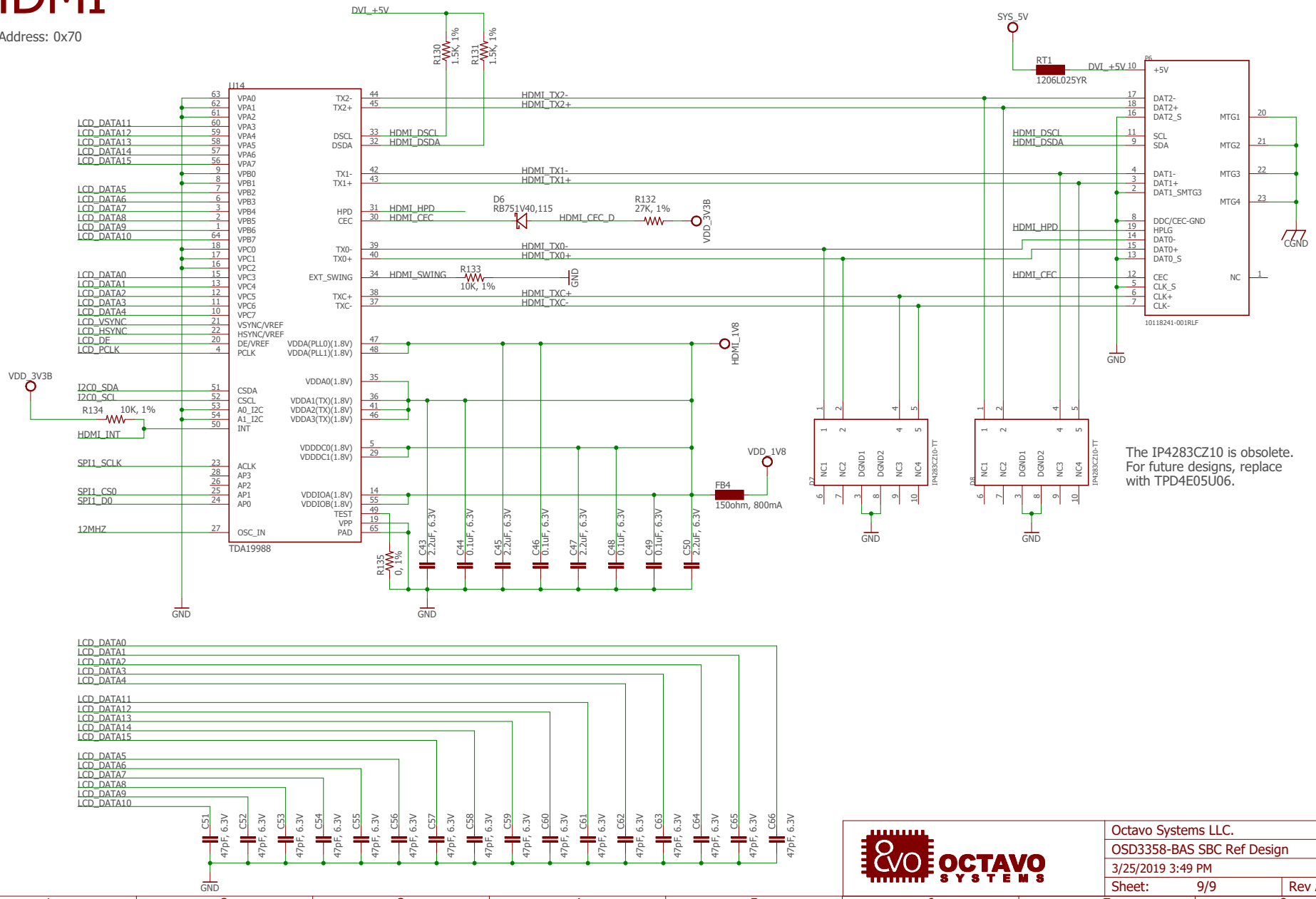
Ethernet



Octavo Systems LLC.	
OSD3358-BAS SBC Ref Design	
3/25/2019 3:49 PM	
Sheet: 8/9	Rev A2

HDMI

I2C Address: 0x70



Octavo Systems LLC.	
OSD3358-BAS SBC Ref Design	
3/25/2019 3:49 PM	
Sheet: 9/9	Rev A2