



Enclustra User Schematics

Mars EB1 Revision 2.5

Disclaimer

User schematics do not include proprietary Enclustra design elements, such as power supply circuits. These circuits use optimized designs which are extremely compact and remain proprietary to Enclustra. The user manual provides all necessary information to use the module and its interfaces.

User schematics are provided after purchase of Enclustra hardware, and may also be provided in certain cases before purchase, to assist in product evaluation.

No part of the schematics may be copied or modified without written permission from Enclustra.

Full schematics, including a full bill-of-materials, may be available through the purchase of a hardware licence for the product in question.

Please contact Enclustra Sales for more information.

Note: DNE = Do Not Equip (parts not equipped by default)

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Mars EB1 Base Board

Revision 2.5

Sheet 1: Cover

Sheet 2: Module Connector

Sheet 3: System Controller PLD

Sheet 4: USB Connectors

Sheet 5: USB Controller

Sheet 6: Mini Camera Link Interface 0

Sheet 7: Mini Camera Link Interface 1

Sheet 8: Oscillator / SD-Card / EEPROM / Flash

Sheet 9: Ethernet Interface / Battery / Reset

Sheet 10: HDMI Interface

Sheet 11: Anios/PMOD/JTAG/Control Connectors

Sheet 12: User Interface

Sheet 13: Power Input / Power Control

Sheet 14: Power 5V / 3.3V / 2.5V

Sheet 15: System Monitor

Sheet 16: Mechanics

D

D

Mars SO-DIMM Connector

C

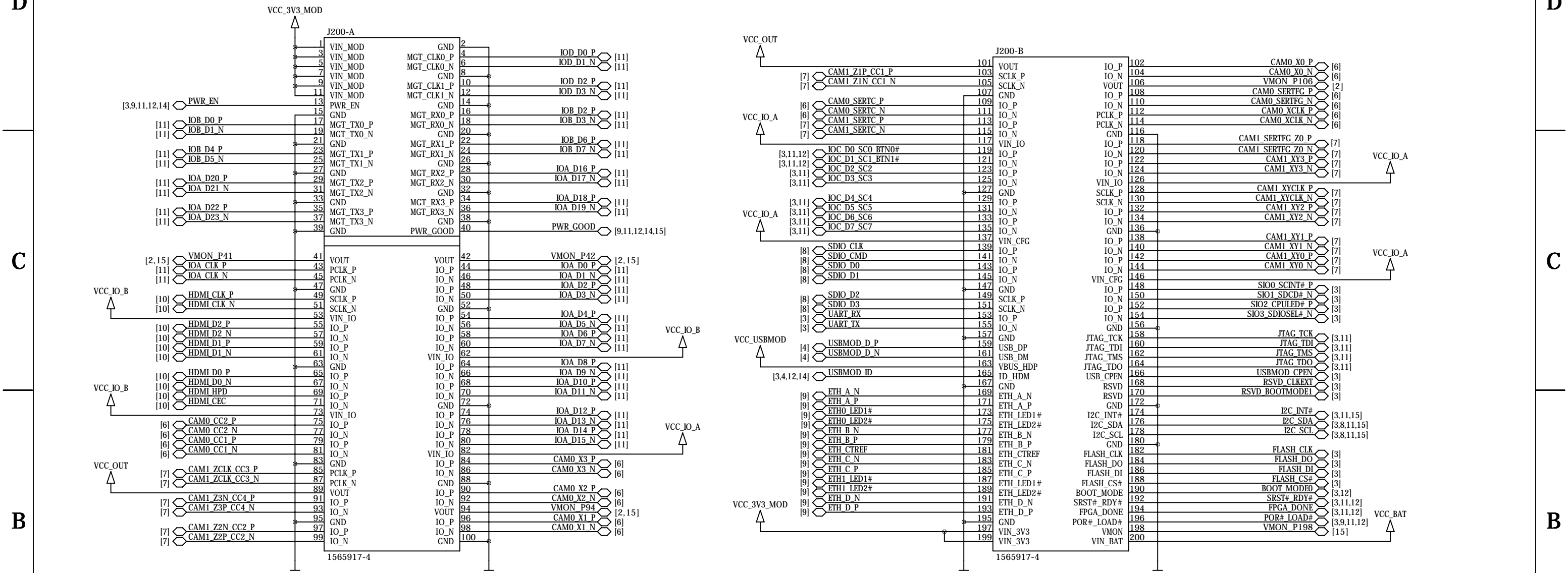
C

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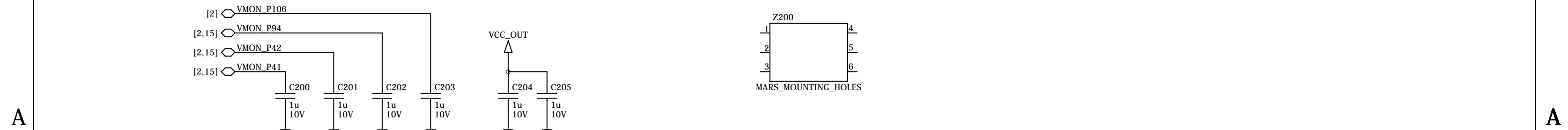
A

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Mars Decoupling

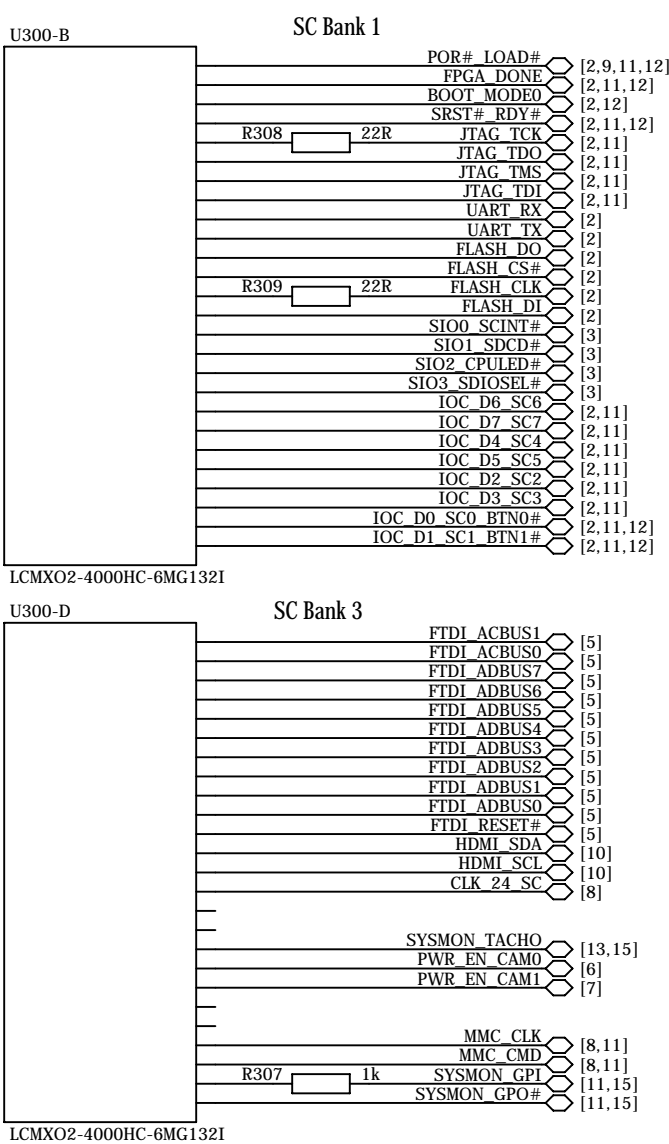
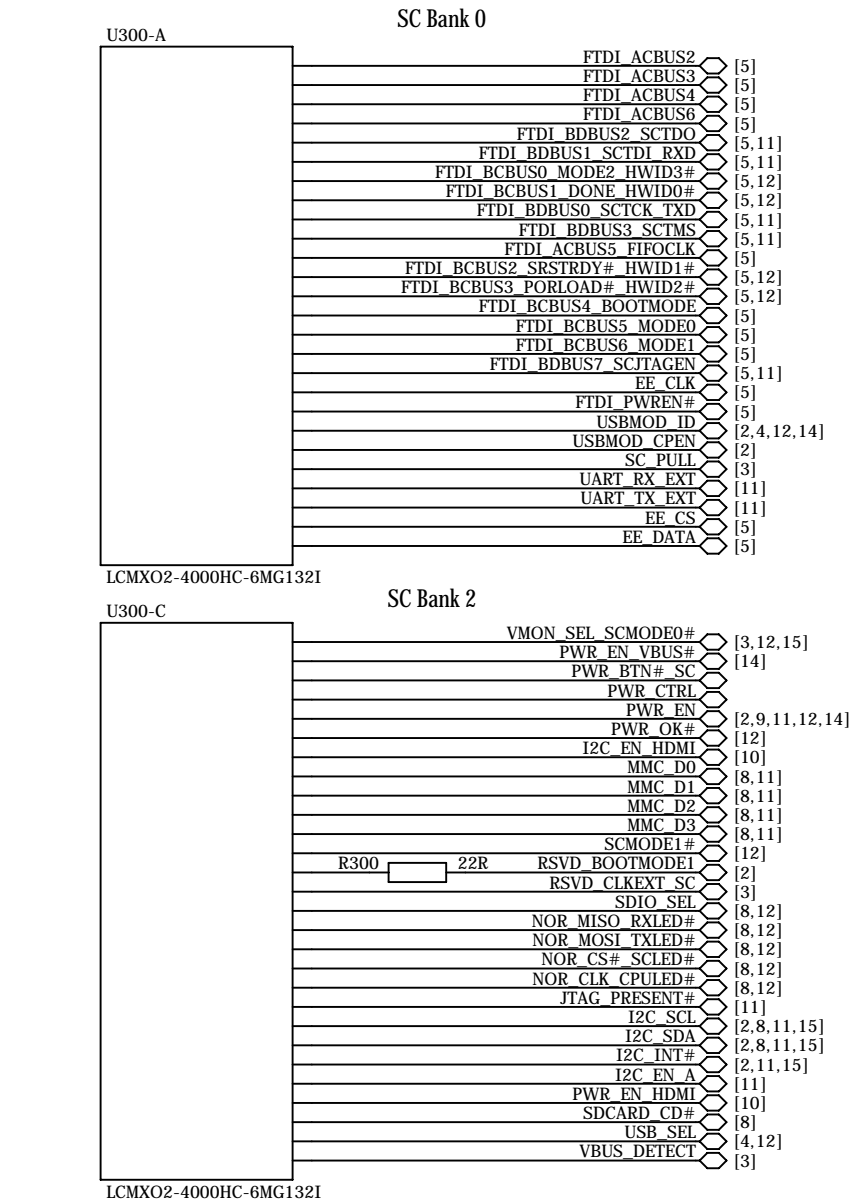
Mars Mounting Holes



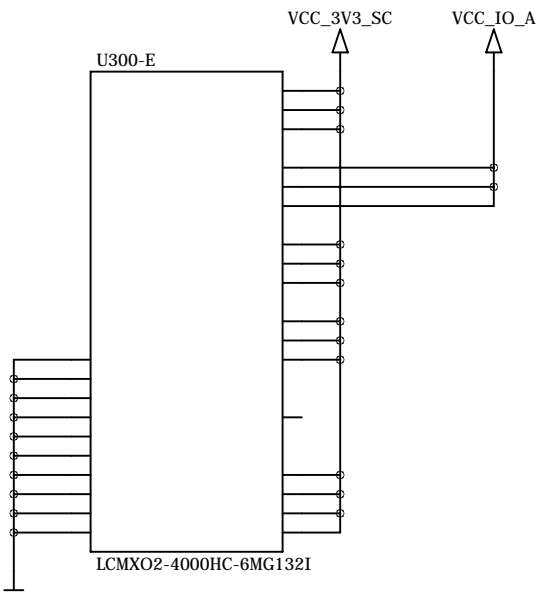
System Controller PLD

The SC pinout not included in user schematics.
Programming the system controller PLD with a user bitstream voids the board warranty.

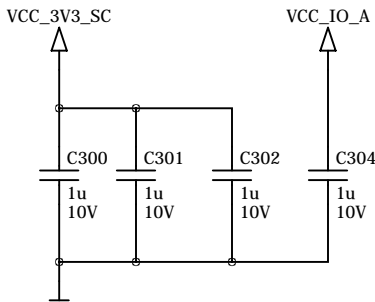
I2C Address: 0 0 0 1 1 0 1 Rw



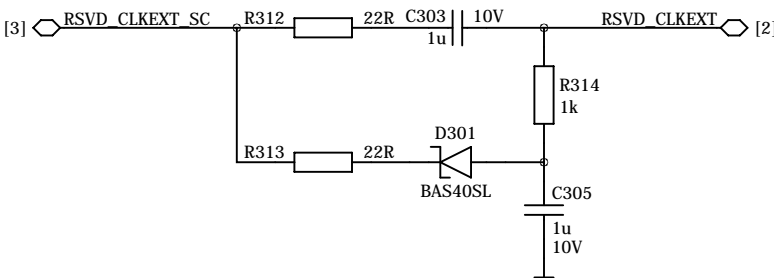
SC Power



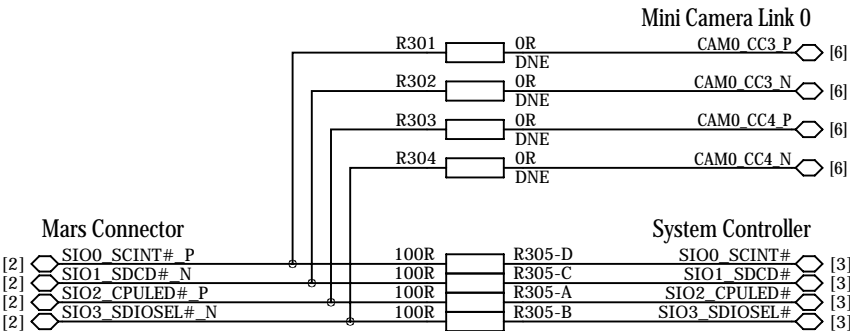
SC Decoupling



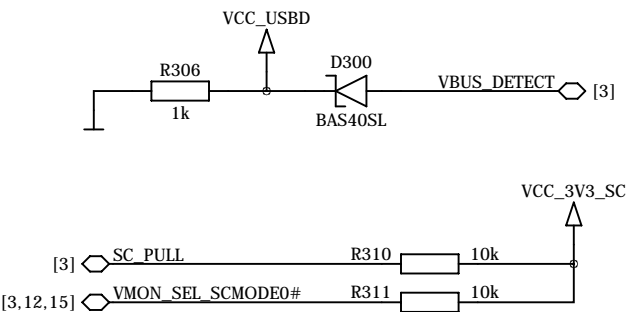
Synchronous Module Clock



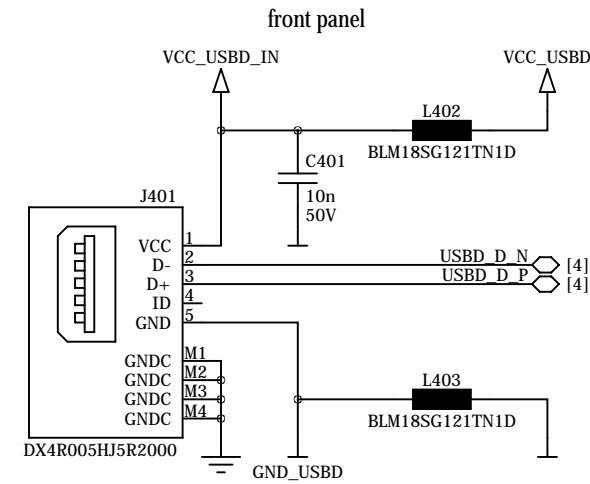
SIO Function Select



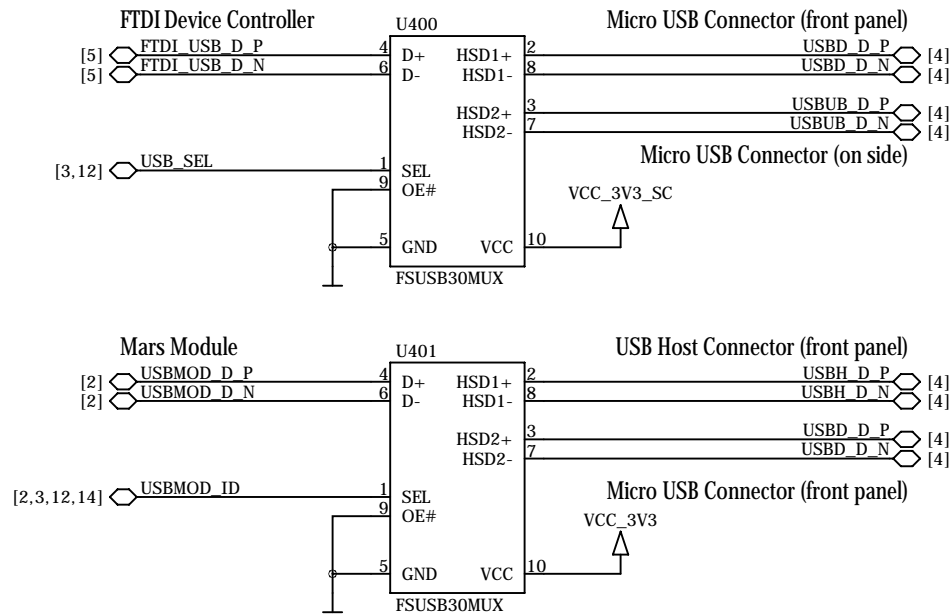
USB VBUS Detection



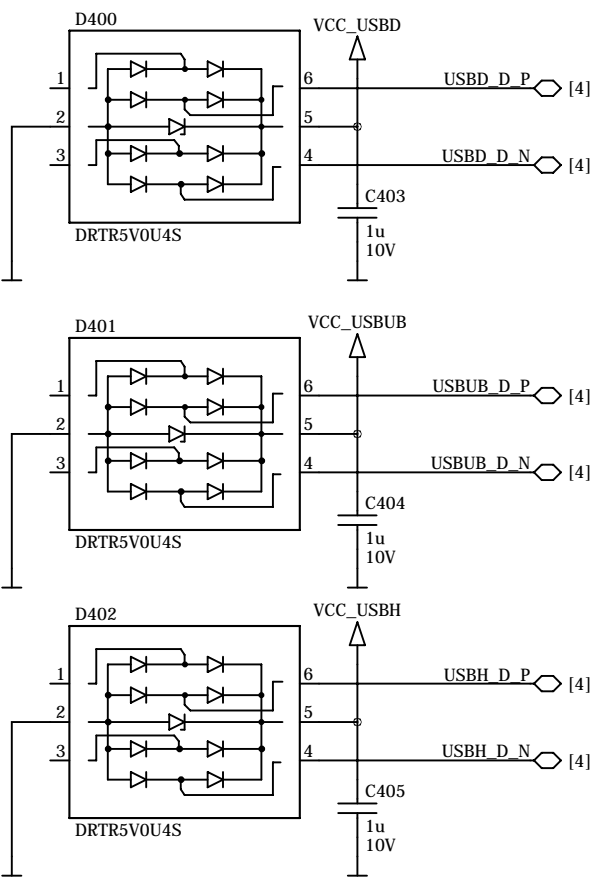
Micro USB 2.0 Device Connector



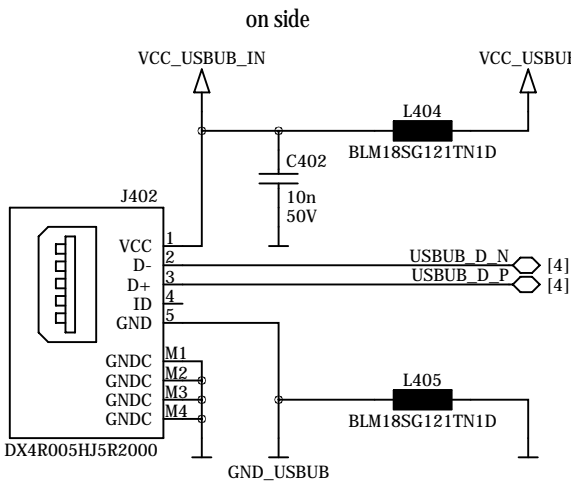
USB Multiplexers



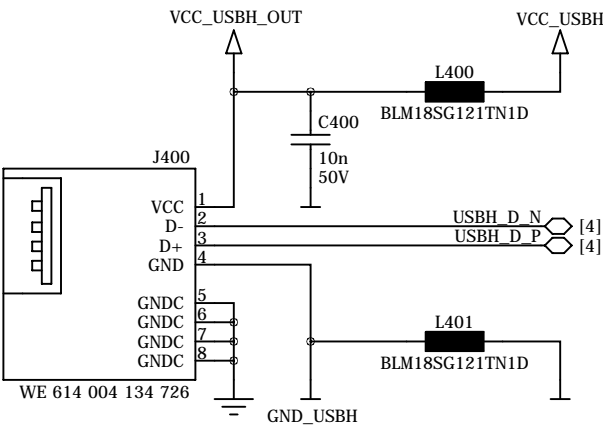
USB ESD Protection



Micro USB 2.0 Device Connector



USB 2.0 Host Connector



D

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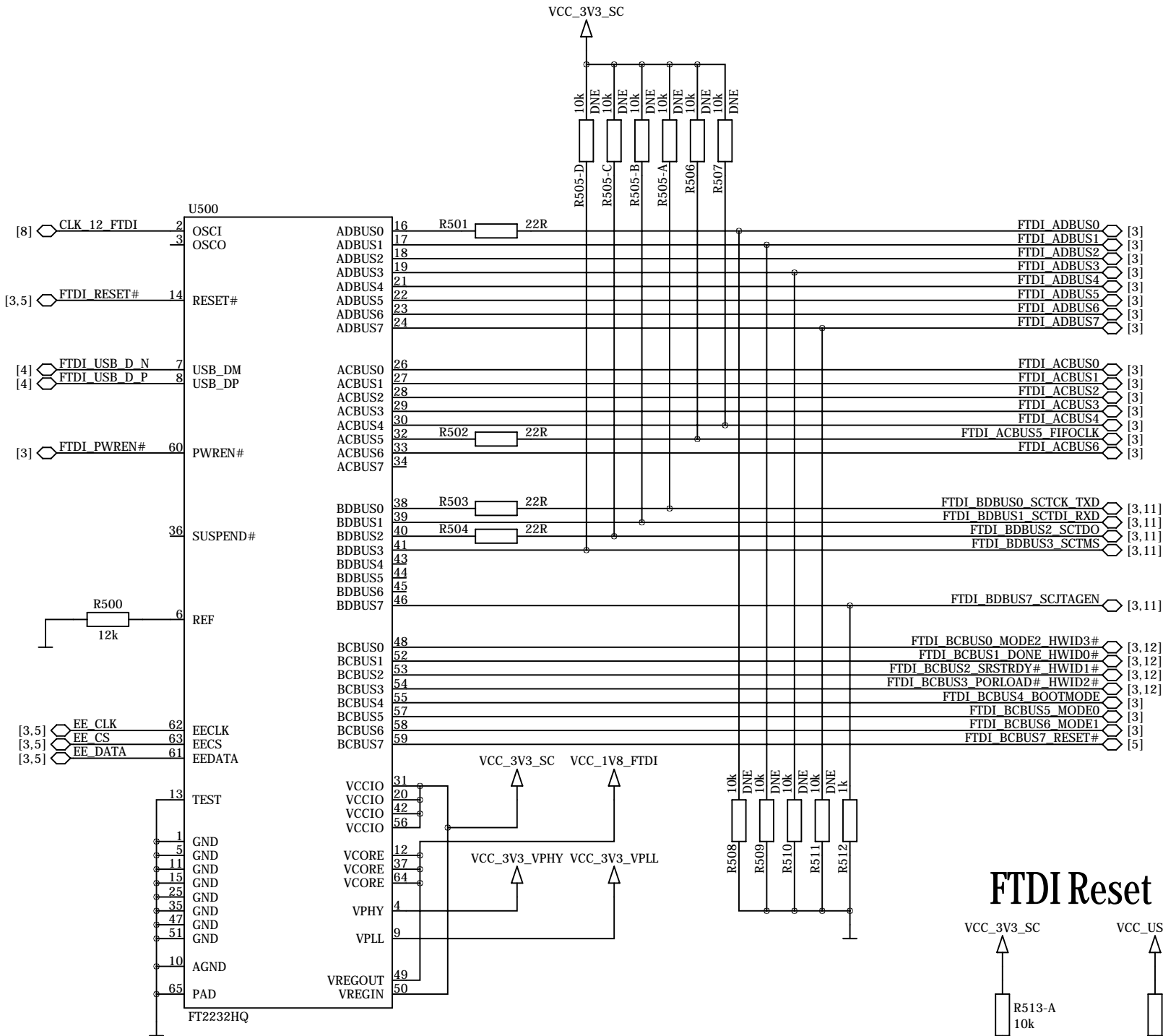
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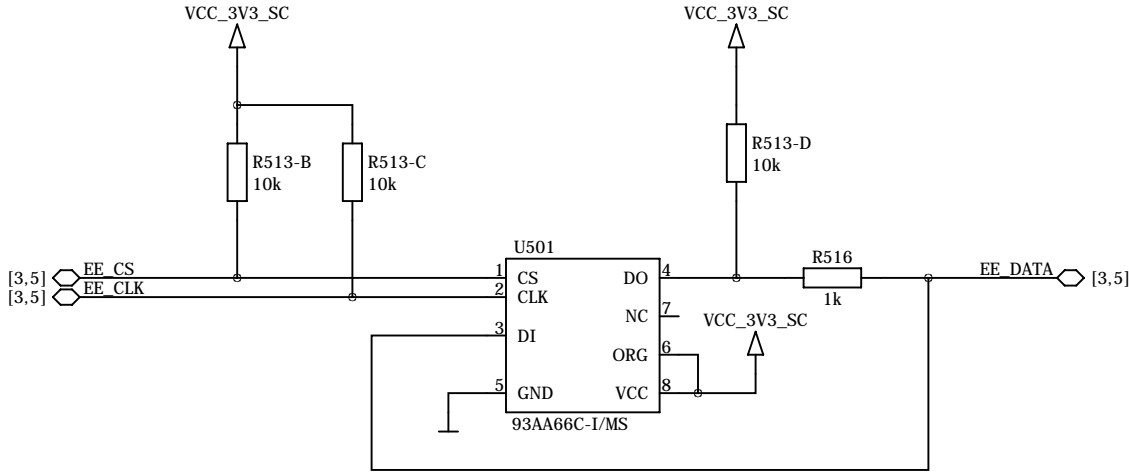
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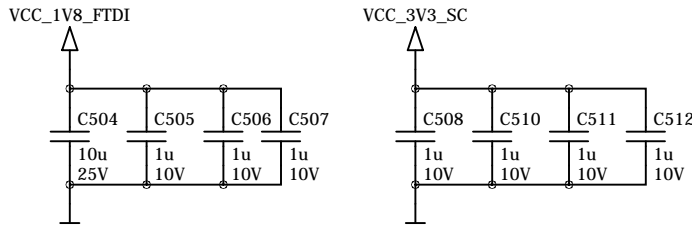
FTDI USB 2.0 Device Controller



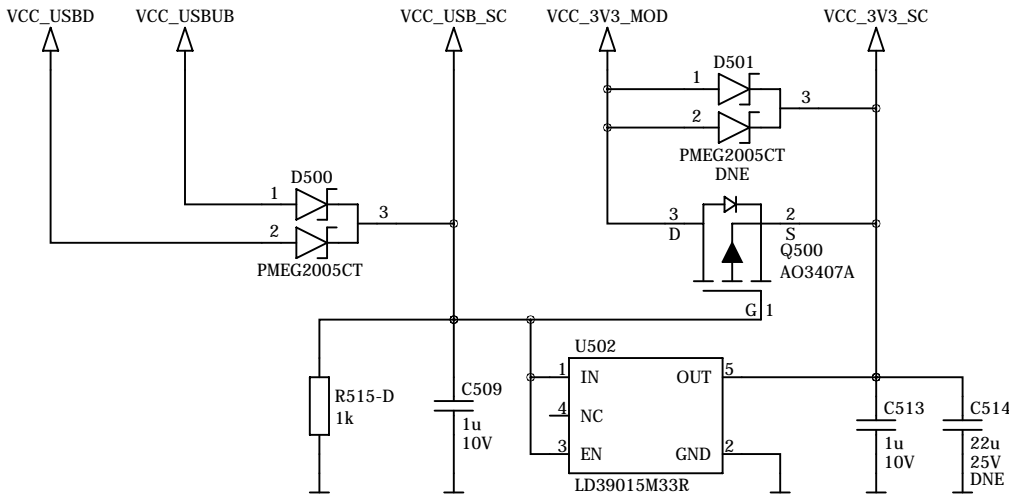
FTDI EEPROM



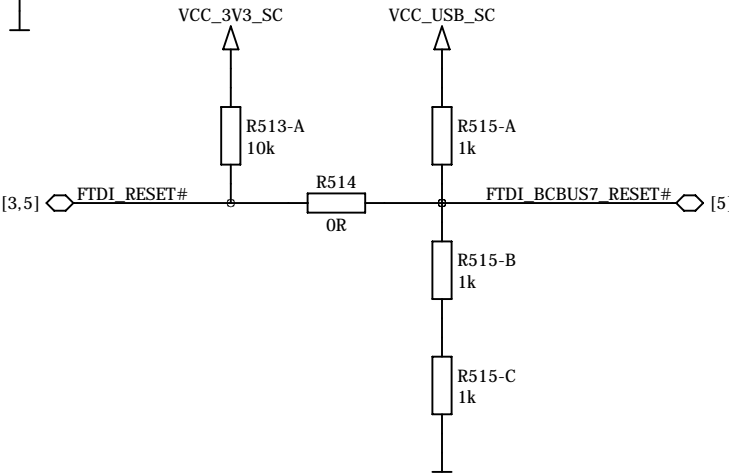
FTDI Decoupling



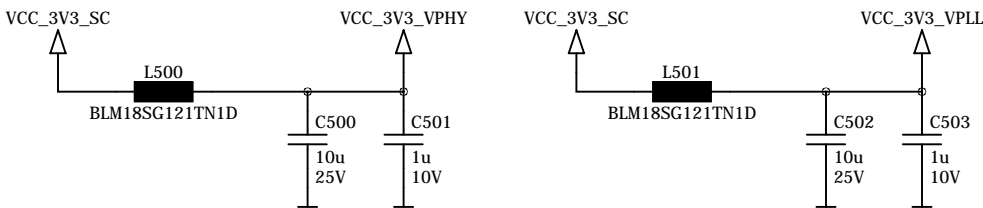
LDO 5V to 3.3V 0.15A



FTDI Reset



FTDI Power Filters



D

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C

C

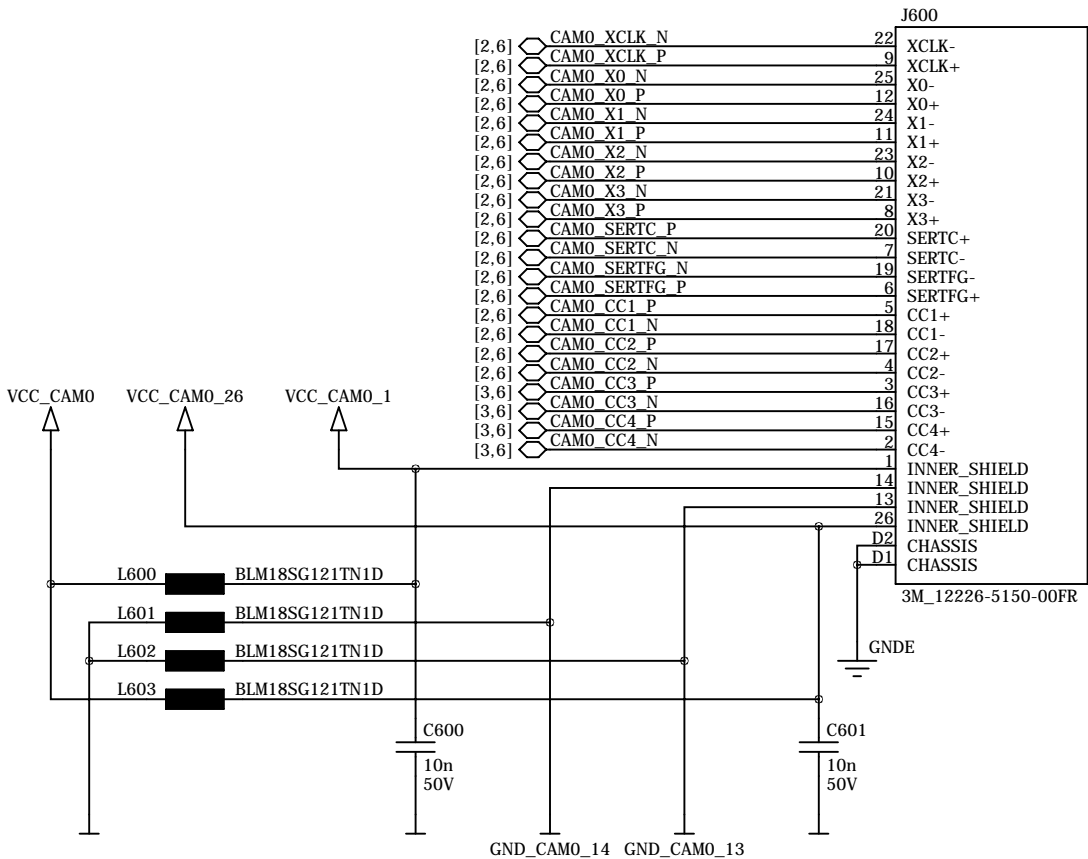
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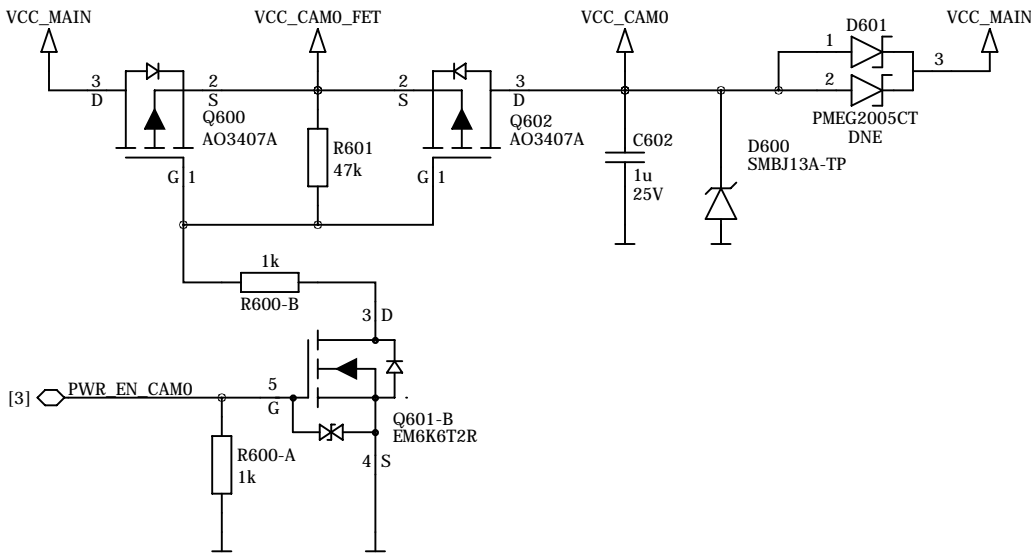
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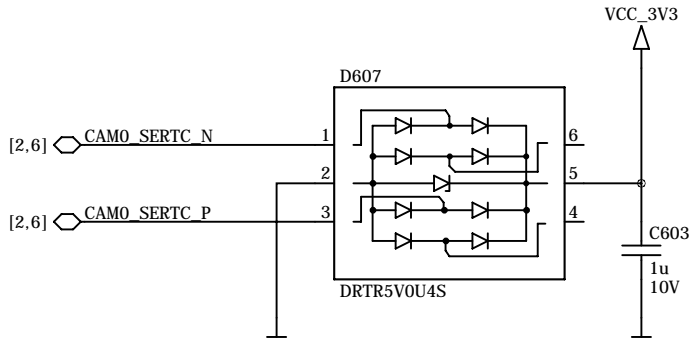
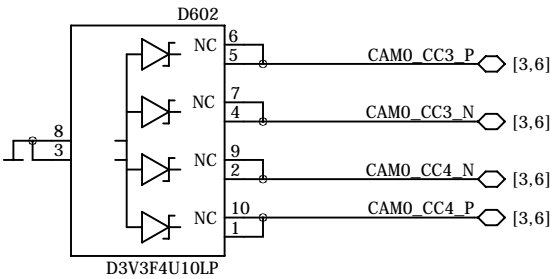
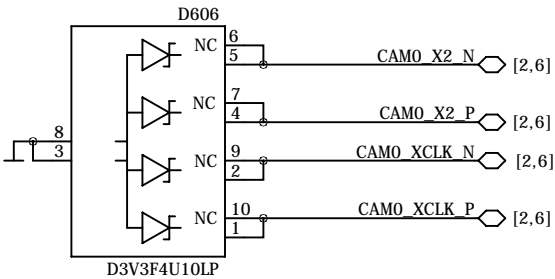
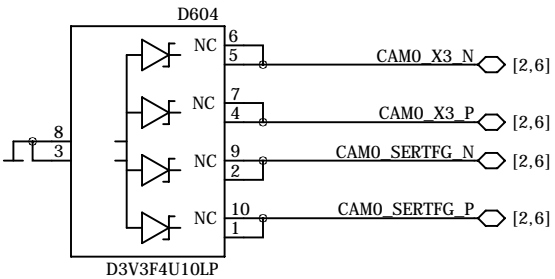
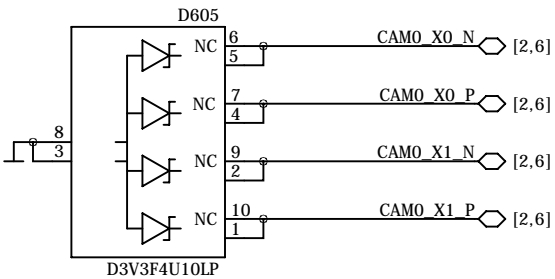
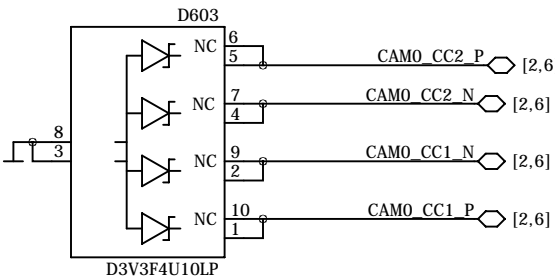
Mini Camera Link Interface 0



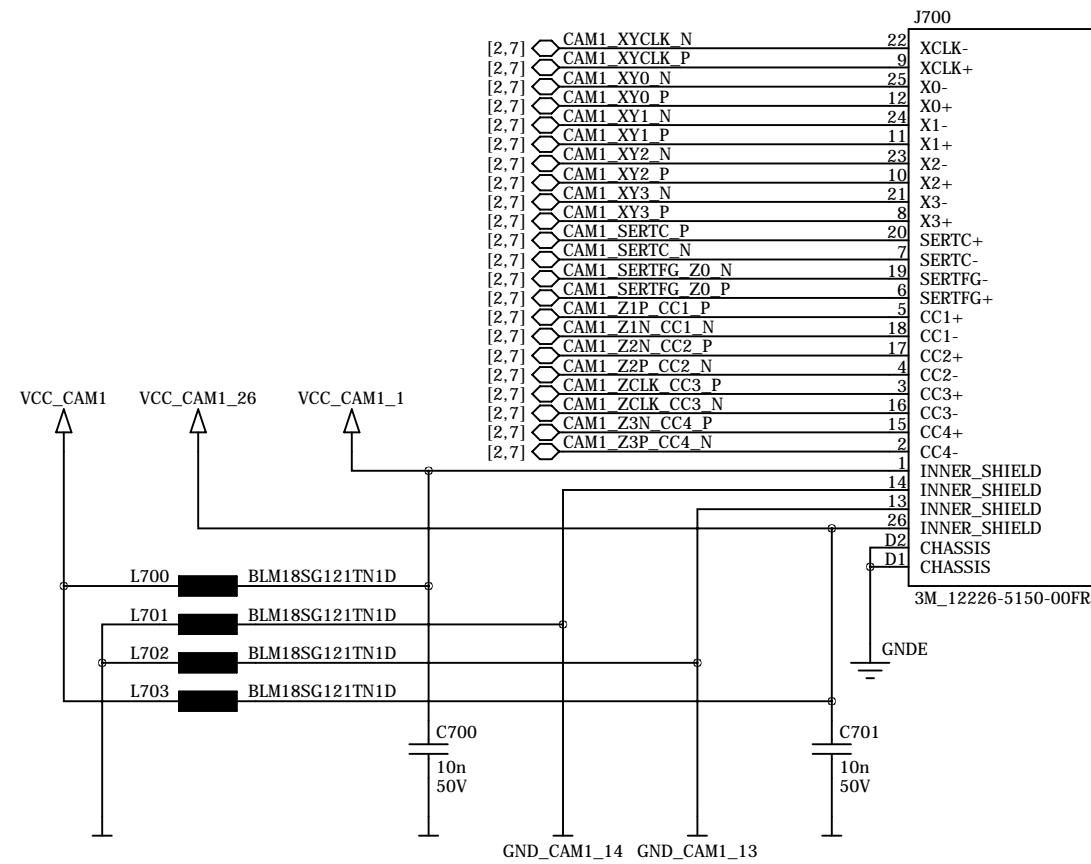
Camera Link Power



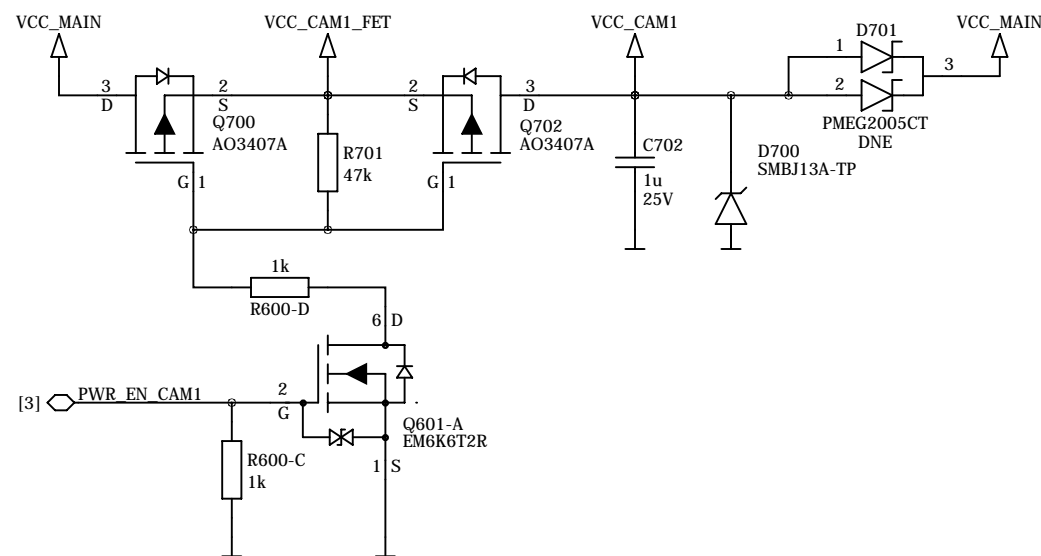
Camera Link ESD Protection



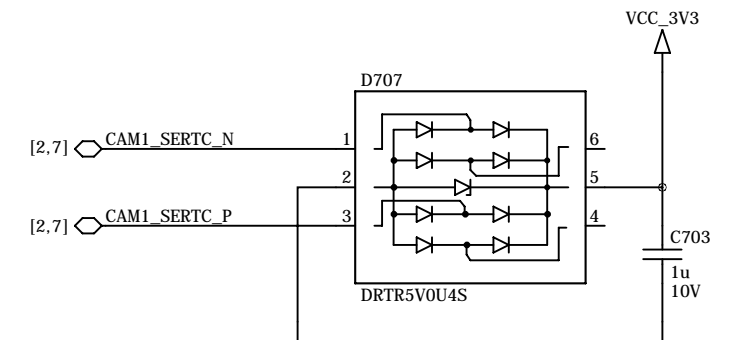
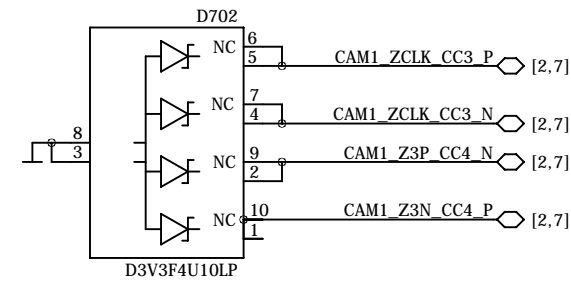
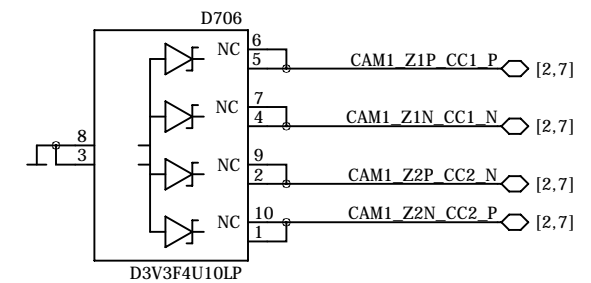
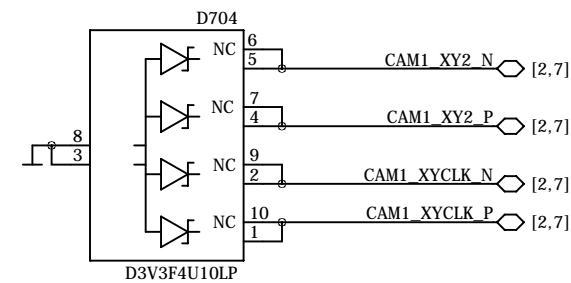
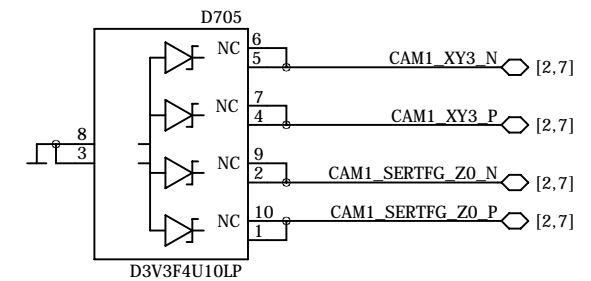
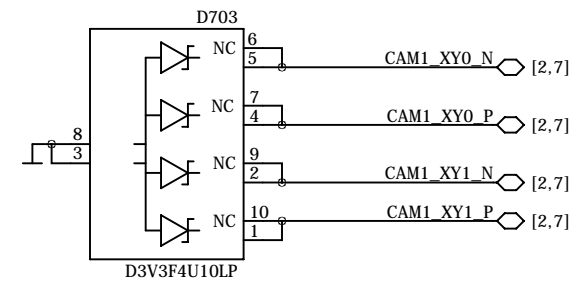
Mini Camera Link Interface 1



Camera Link Power



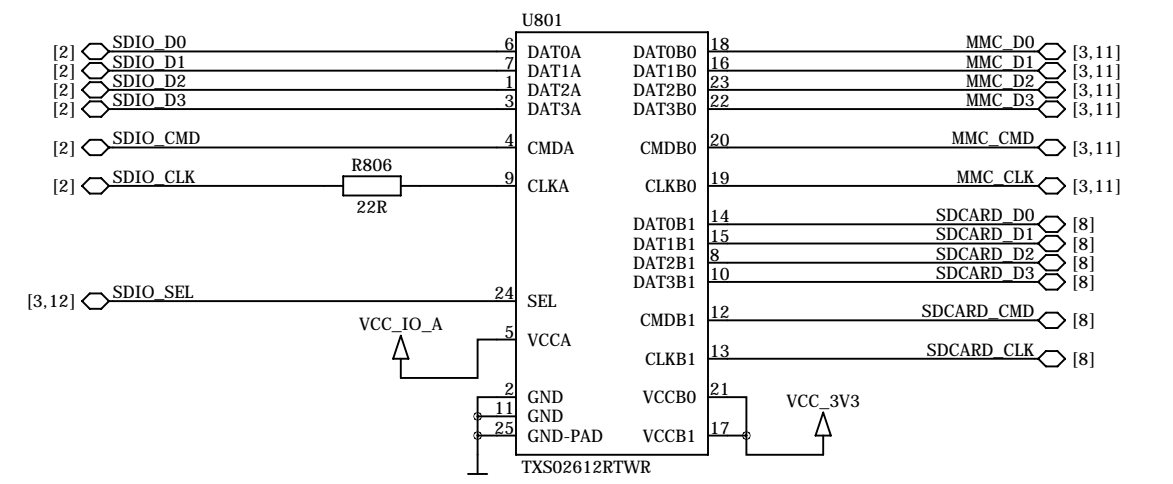
Camera Link ESD Protection



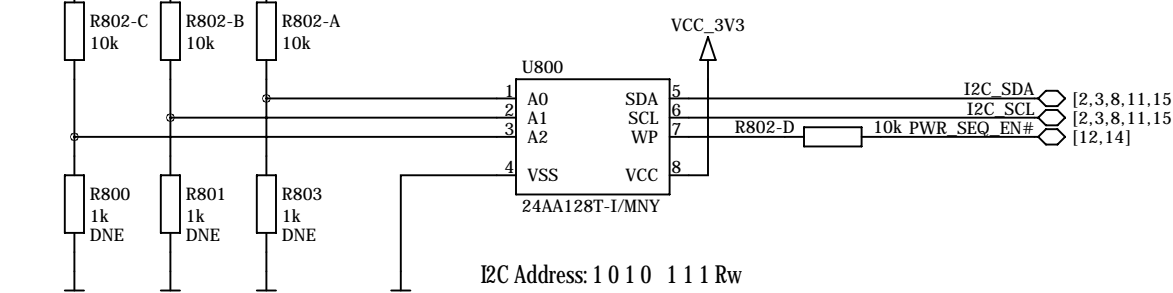
D

D

SDIO Level Shifter

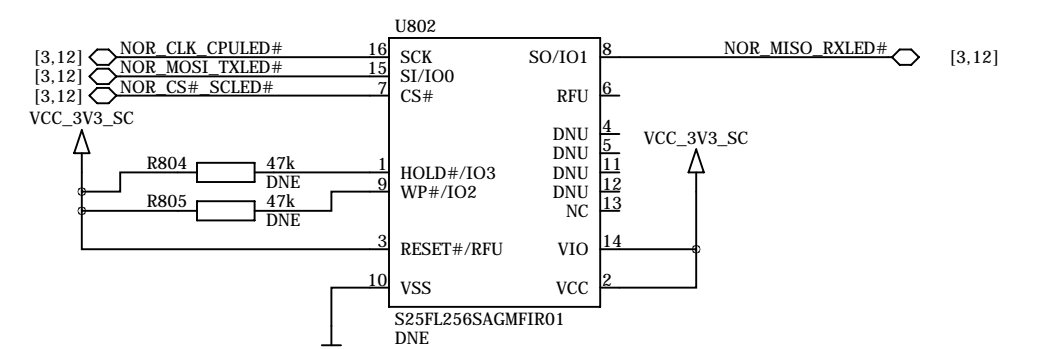


User EEPROM

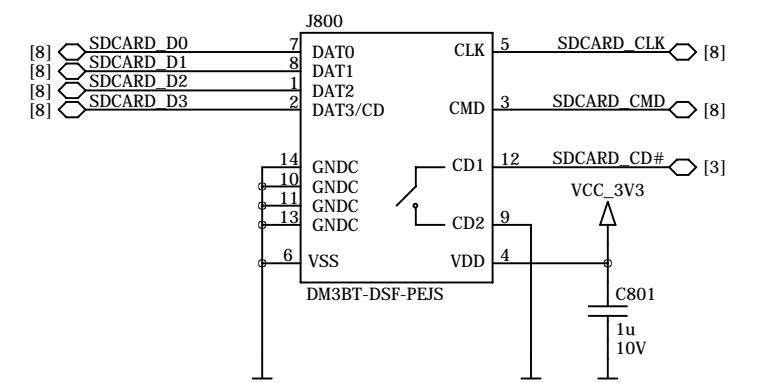


SPI NOR Flash

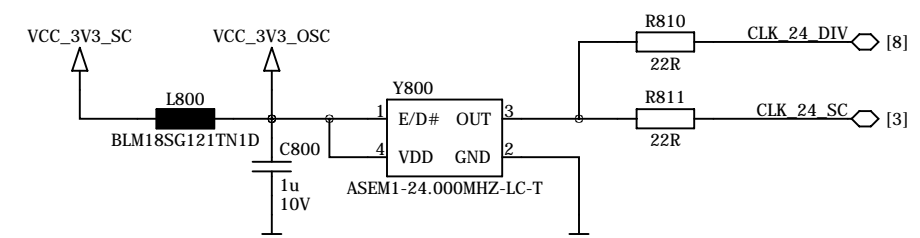
optional
pin compatible with Altera EPCS/EPCQ and Micron N25Q series



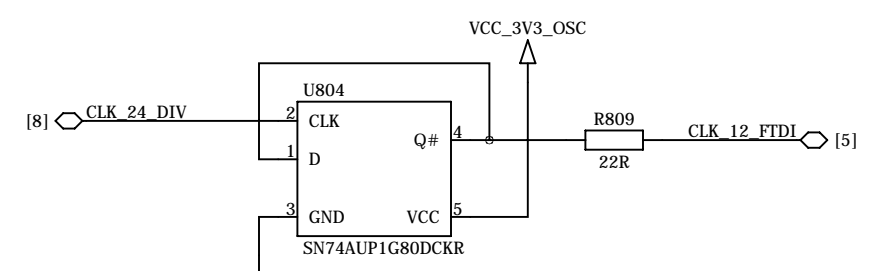
Micro SD-Card



Oscillator

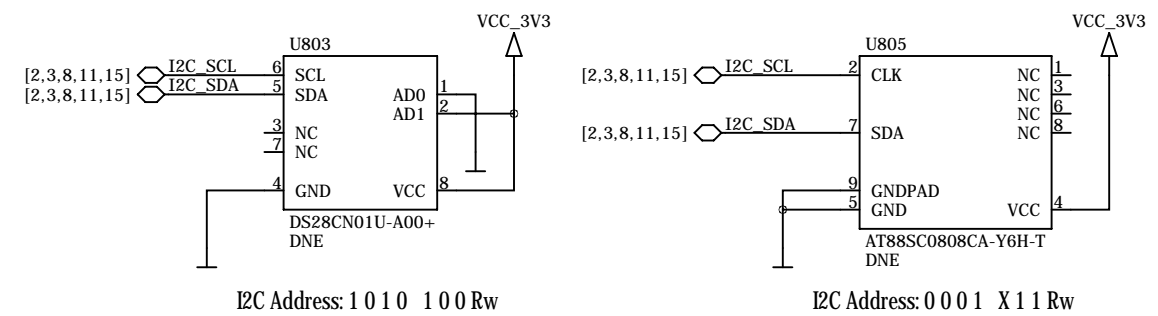


Clock Divider



Secure EEPROMs

for Enclustra use only



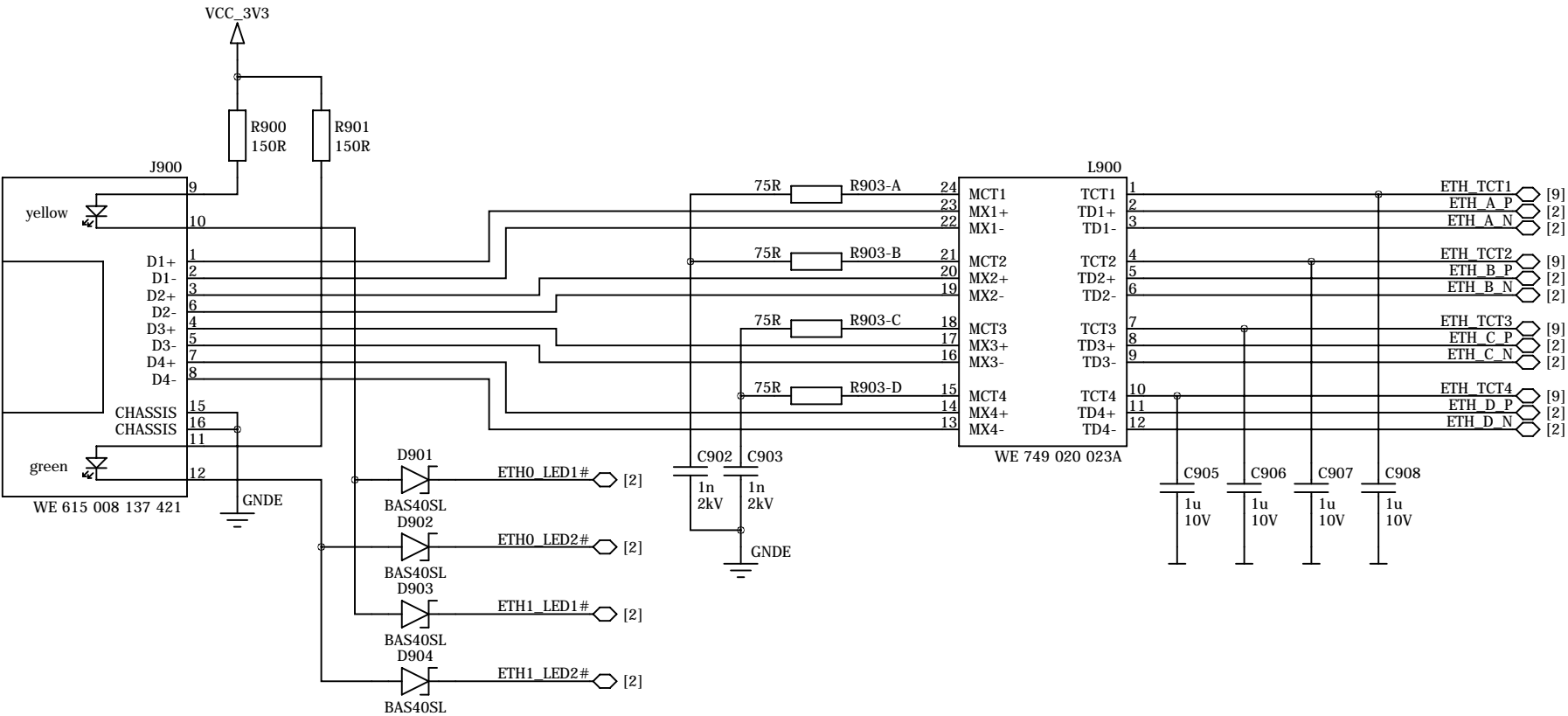
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B

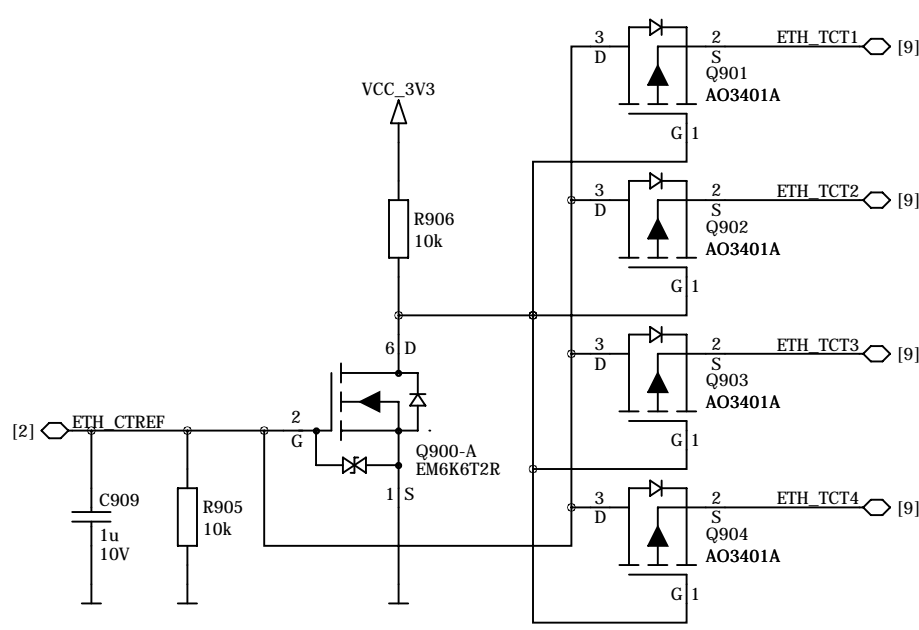
A

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Gigabit Ethernet Interface

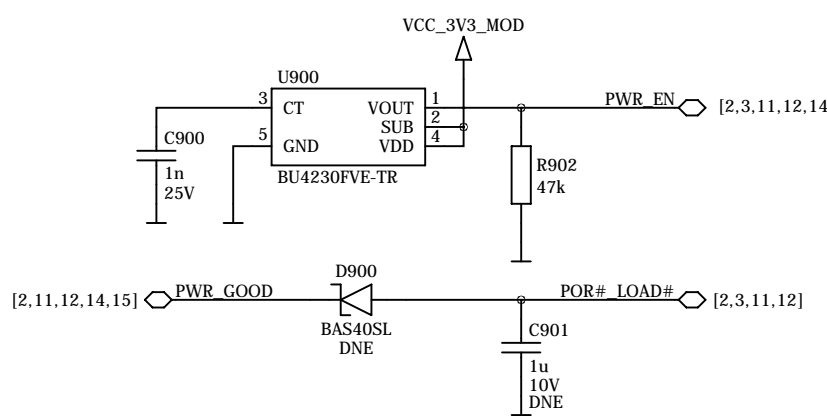


Magnetics Center Tap



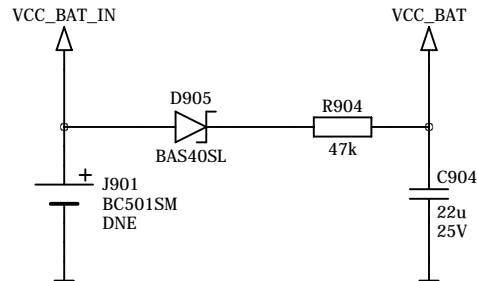
Reset Circuit

D900, C901 only needed when not using System Controller.



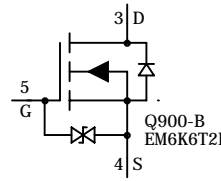
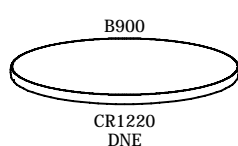
Battery Holder

optional

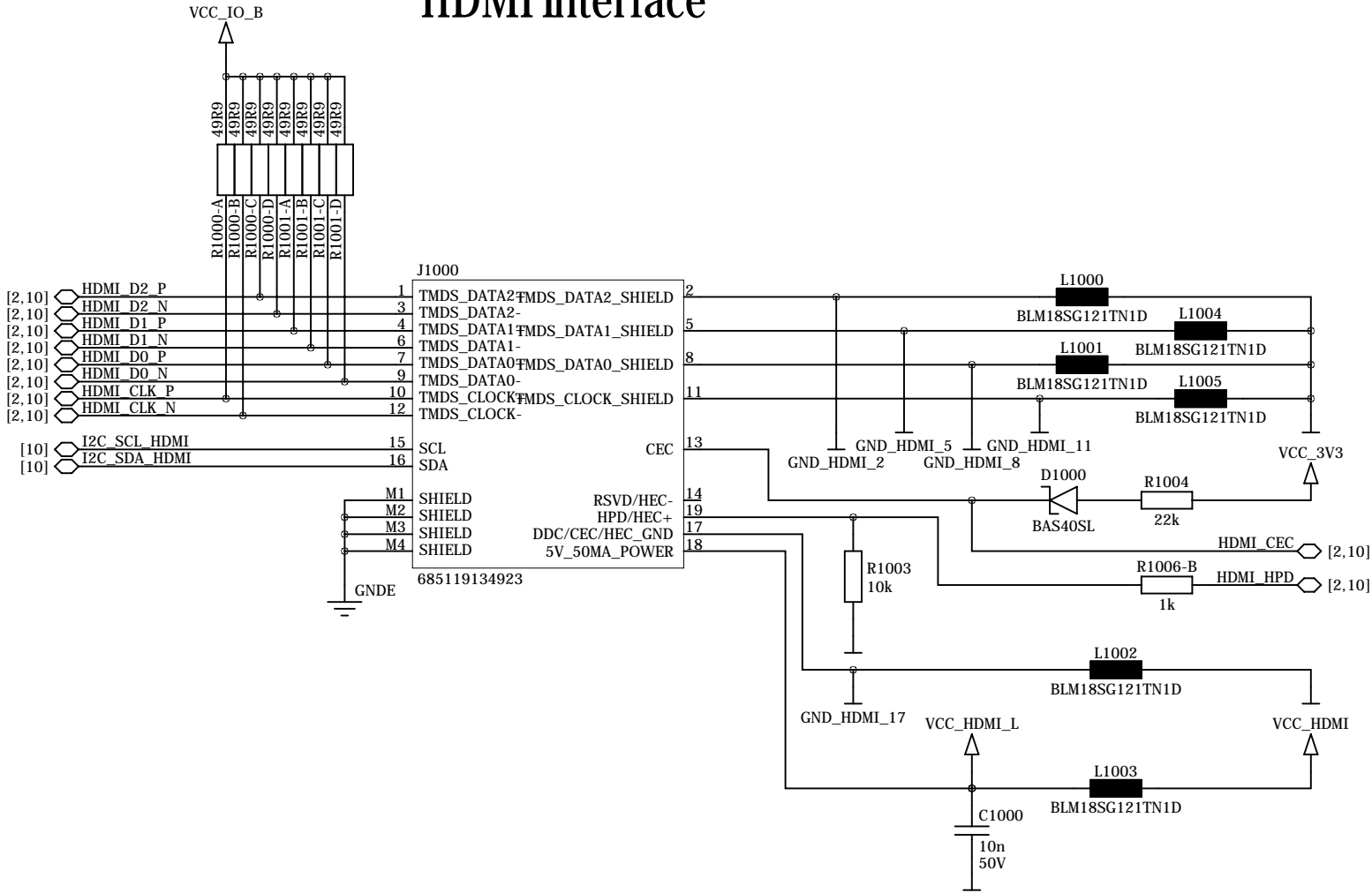


Battery

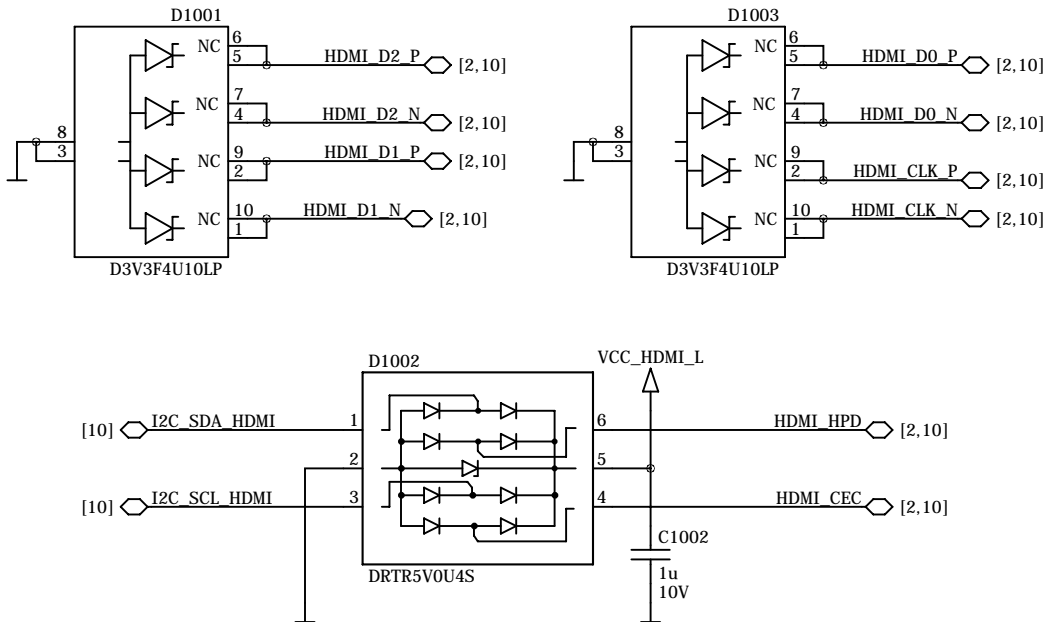
optional



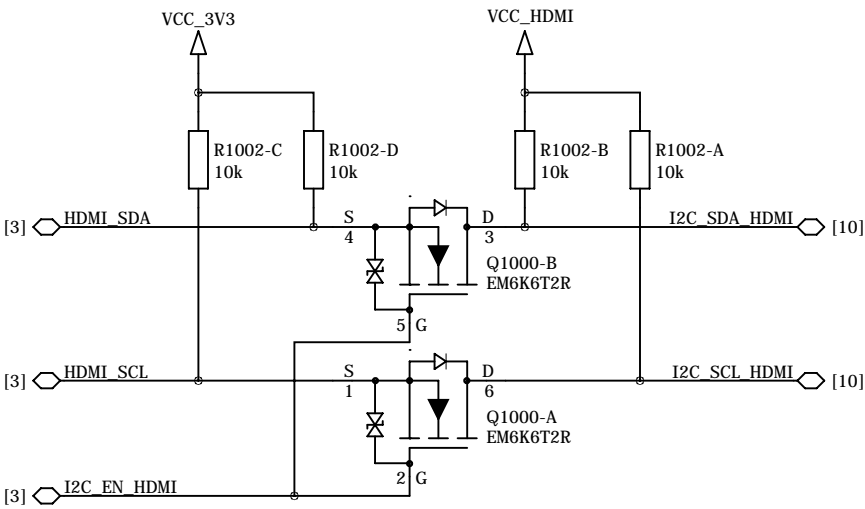
HDMI Interface



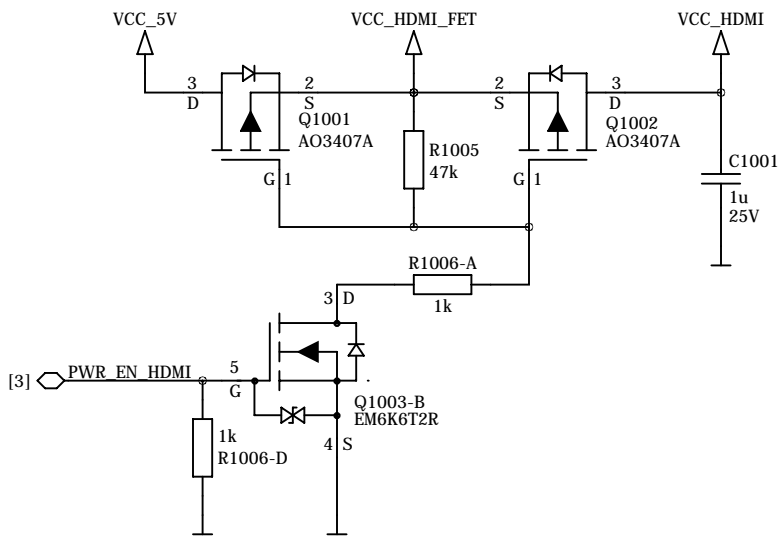
HDMI ESD Protection



HDMI I2C Bus

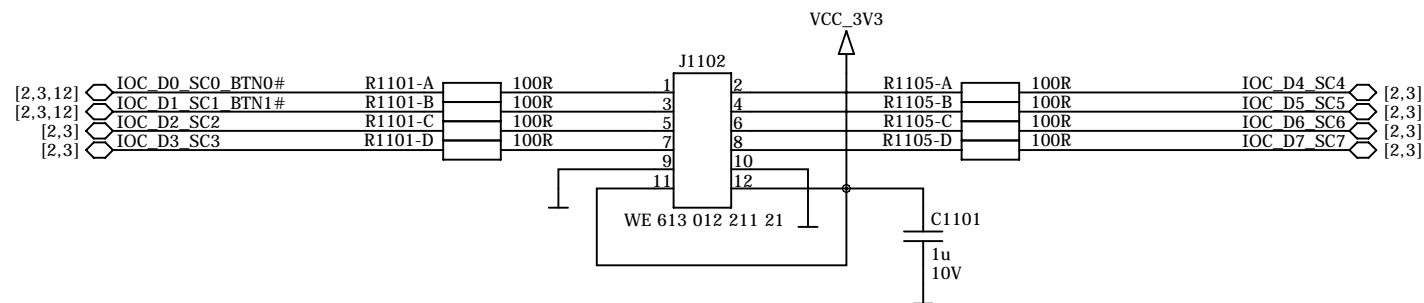


HDMI Power Switch

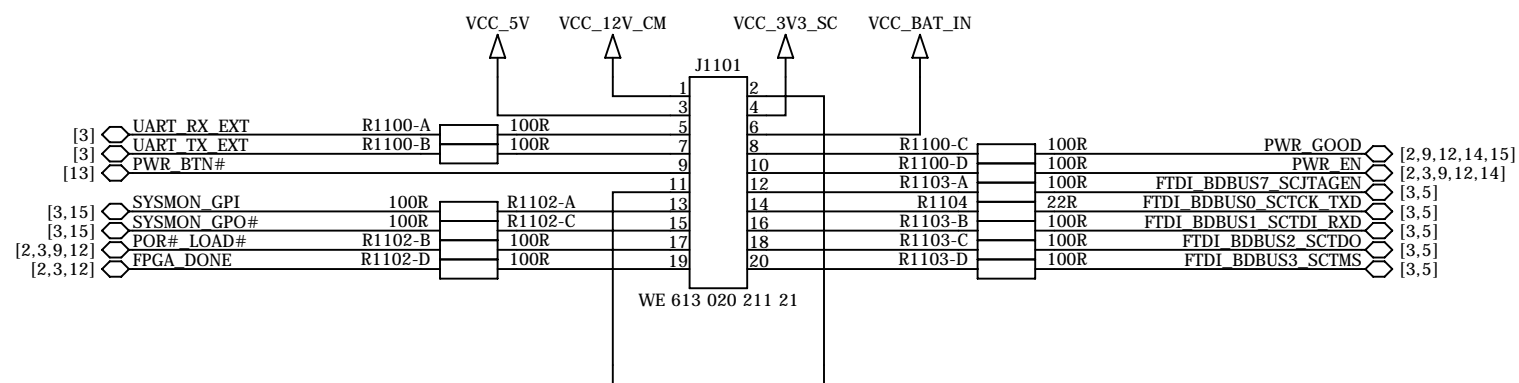


PMOD IO Connector C

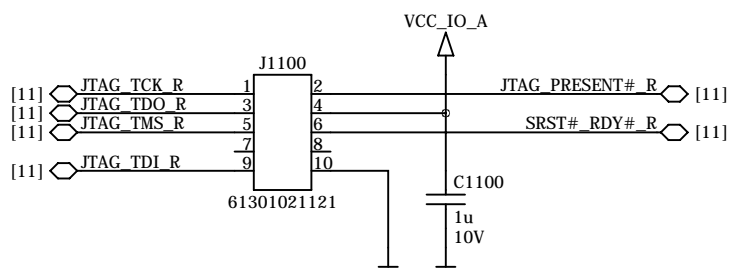
This connector is Digilent Pmod™ Compatible when VCC_IO_A is 3.3V.



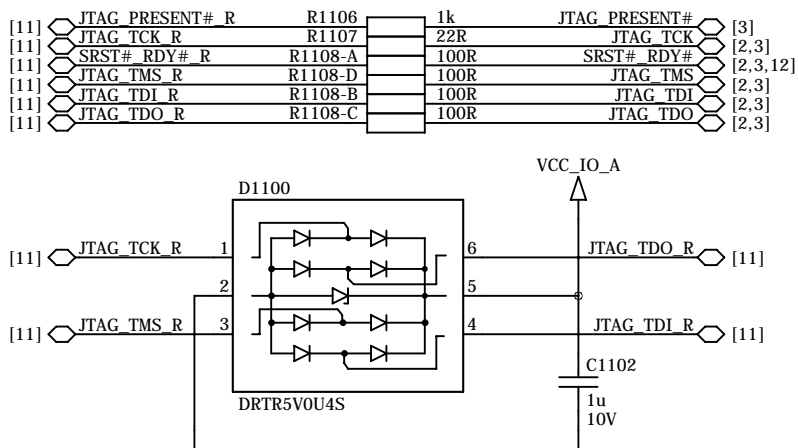
Control Connector



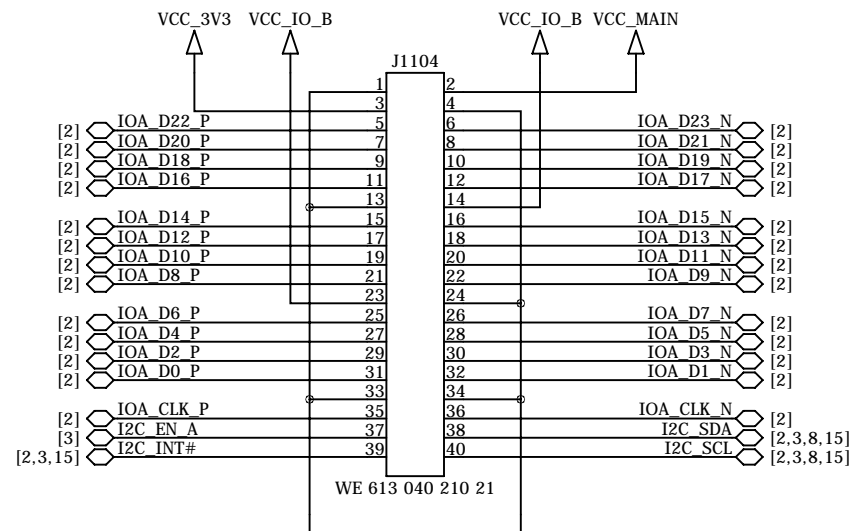
JTAG Connector



JTAG ESD Protection

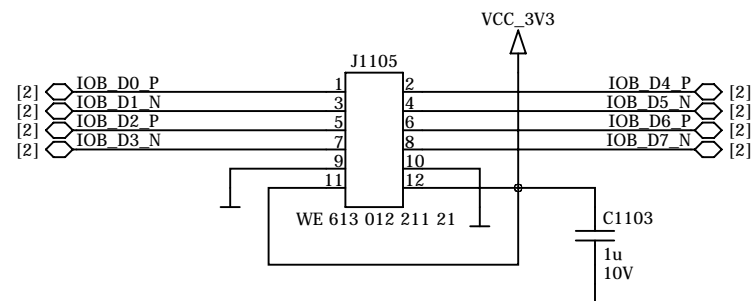


Anios IO Connector A

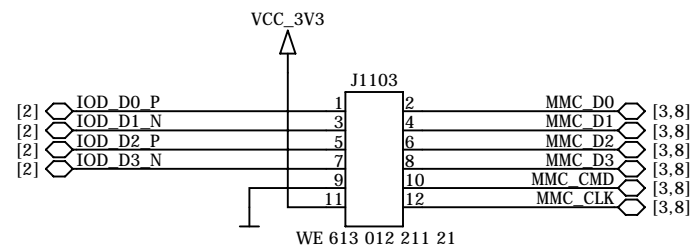


PMOD IO Connector B

This connector is Digilent Pmod™ Compatible when VCC_IO_B is 3.3V.



IO Connector D



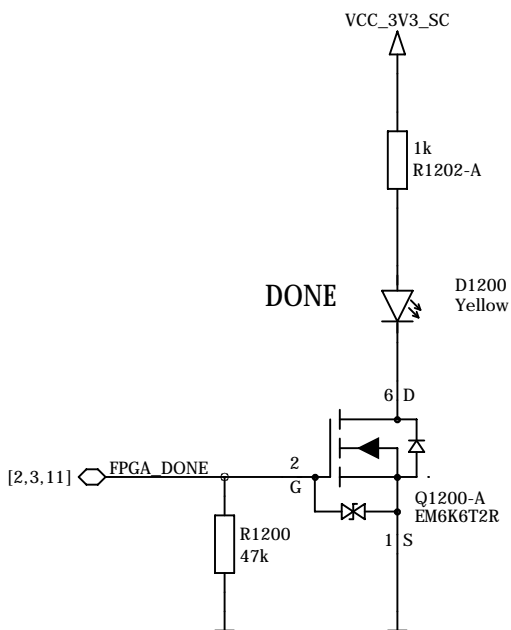
D

C

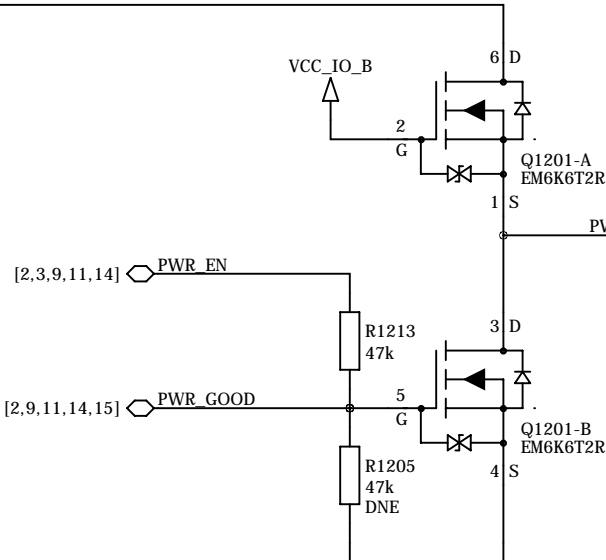
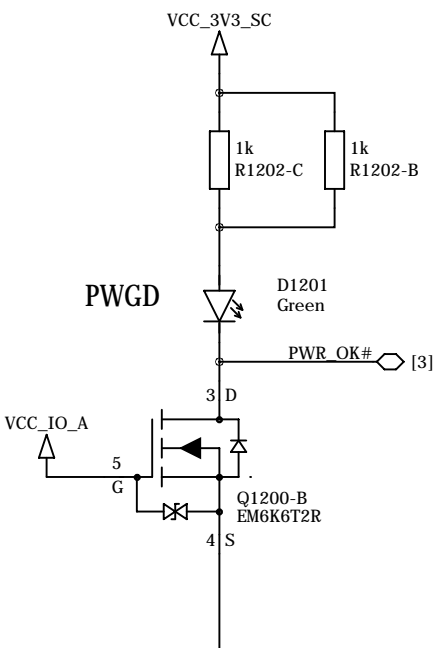
B

A

Done LED



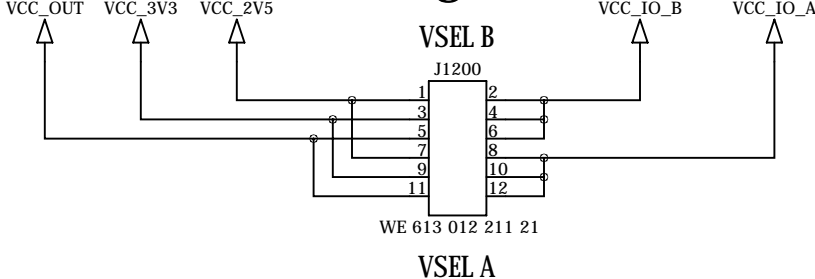
Power Good LED



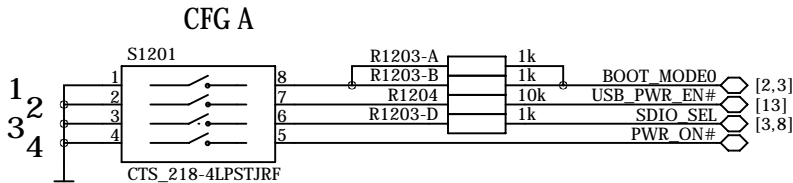
System Controller LEDs



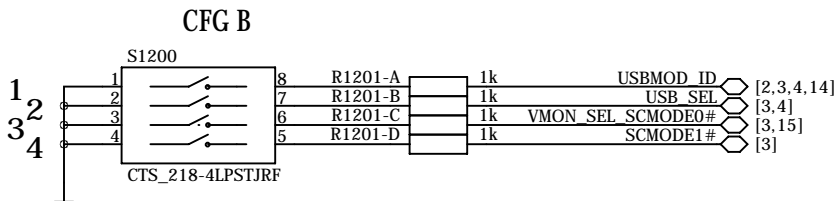
IO Voltage Select



Board Configuration

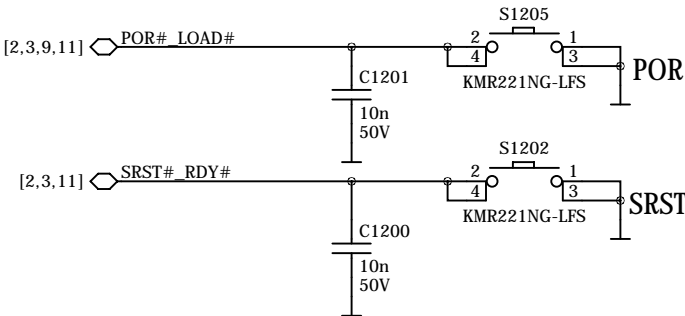


Default: 1 closed, 2-3 open, 4 closed

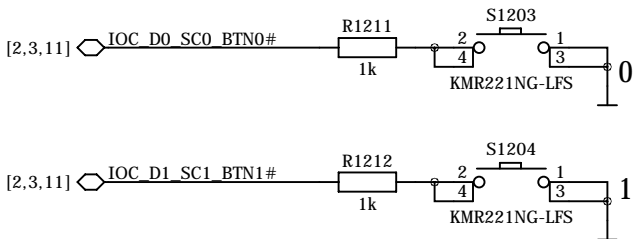


Default: 1 closed, 2-4 open

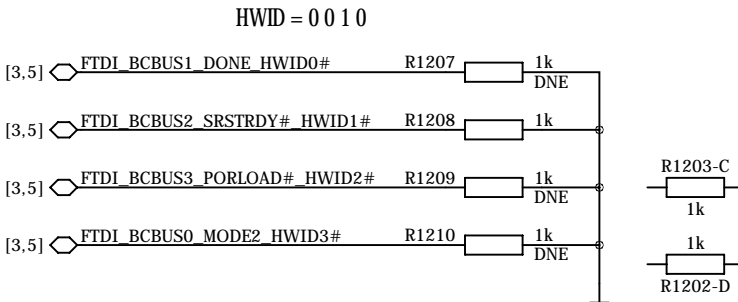
Reset Buttons



User Buttons

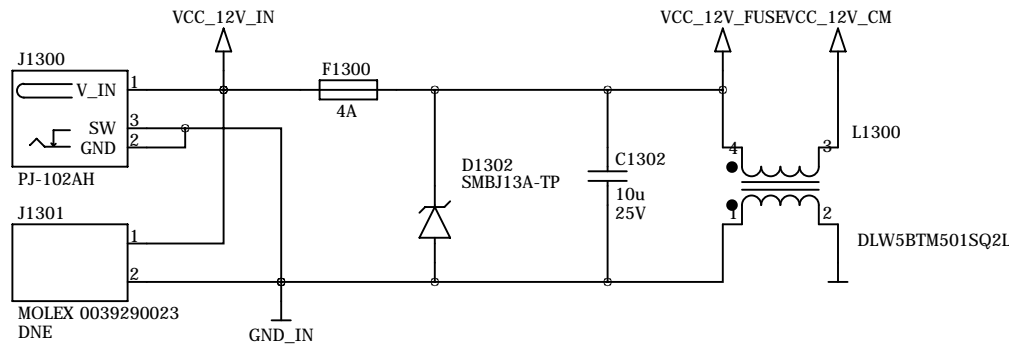


Hardware Identification



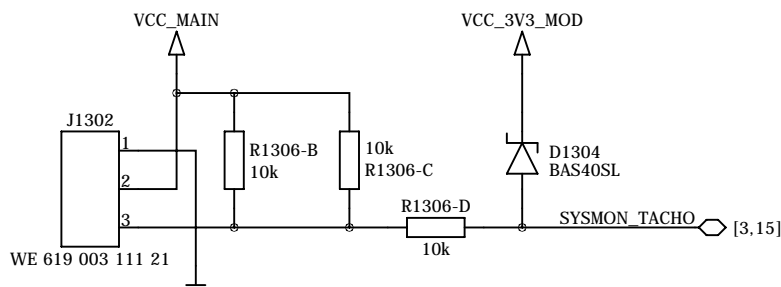
External Power Input

12V 2.5A

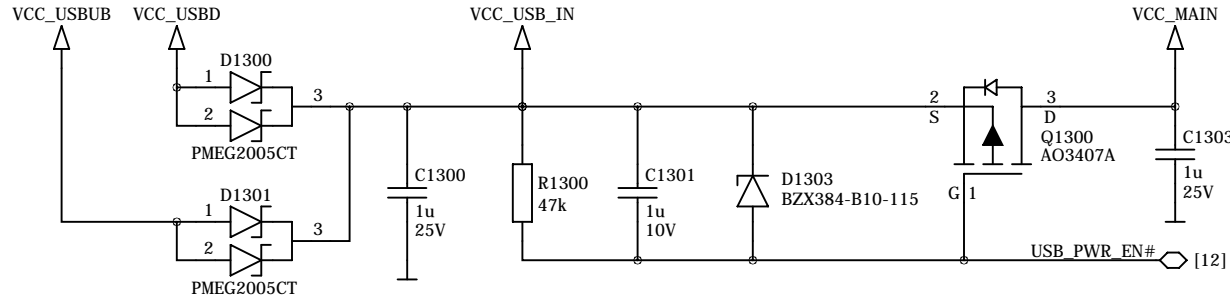


Fan / Power Input Connector

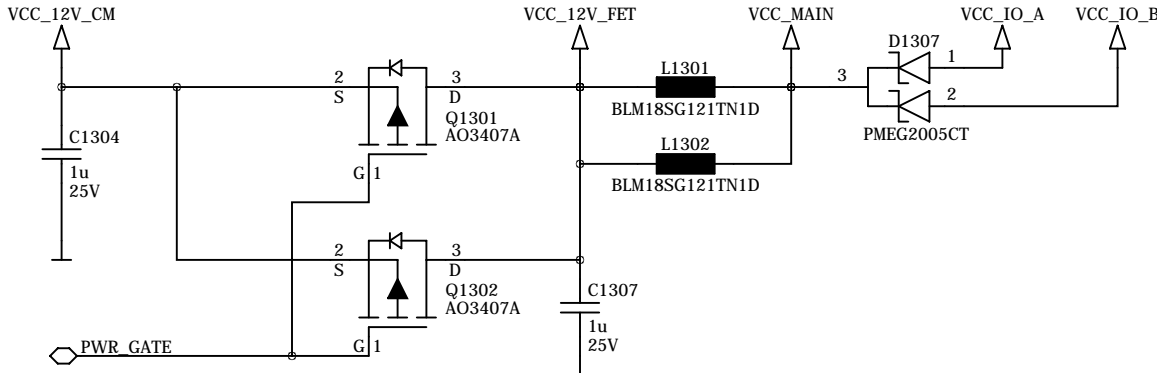
internal power input 12V 3A



USB Power Input Control

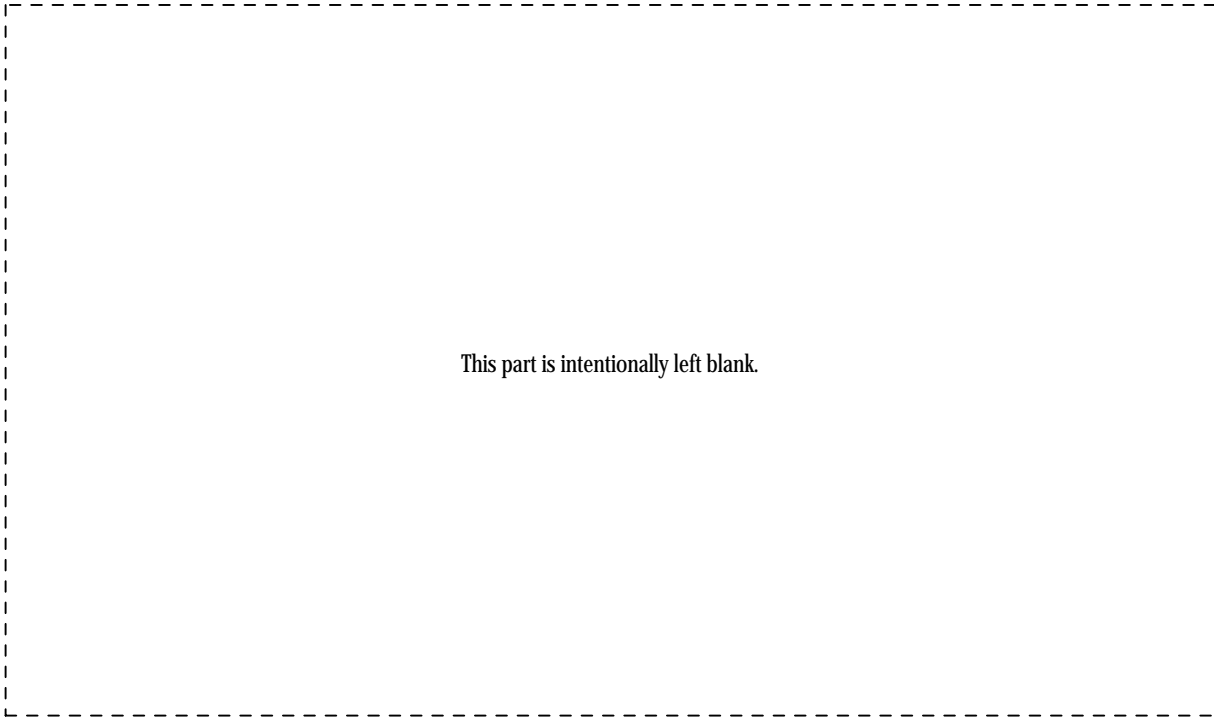


Power Input Control



Power Switch Control

not included in user schematics



This part is intentionally left blank.

Power Button

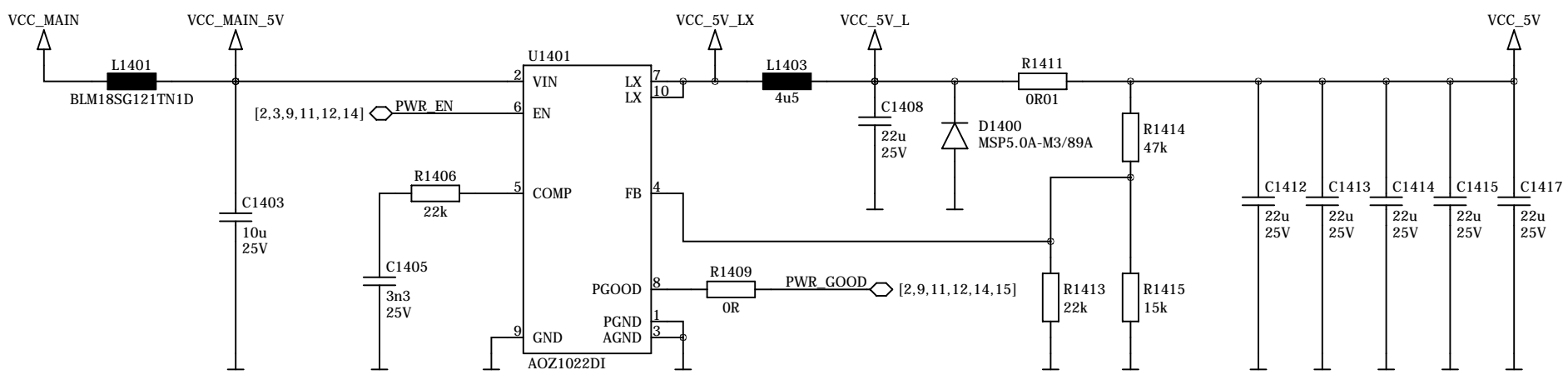


D

D

Step-Down Converter 12V to 5V 3A

Vfb = 0.8V fs = 500kHz



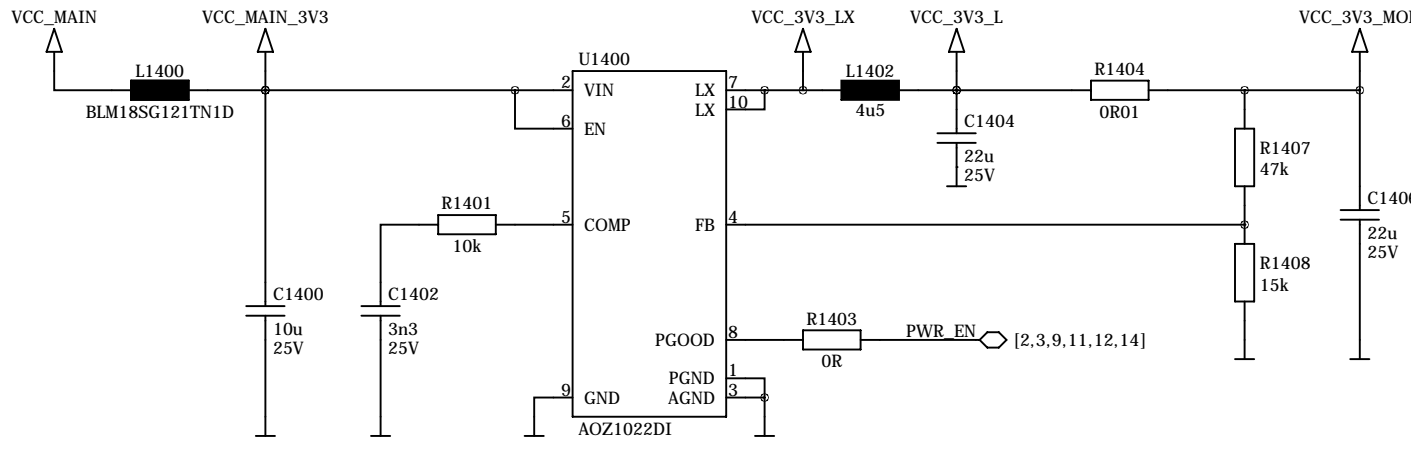
Do not touch feedback and compensation networks during operation!

C

C

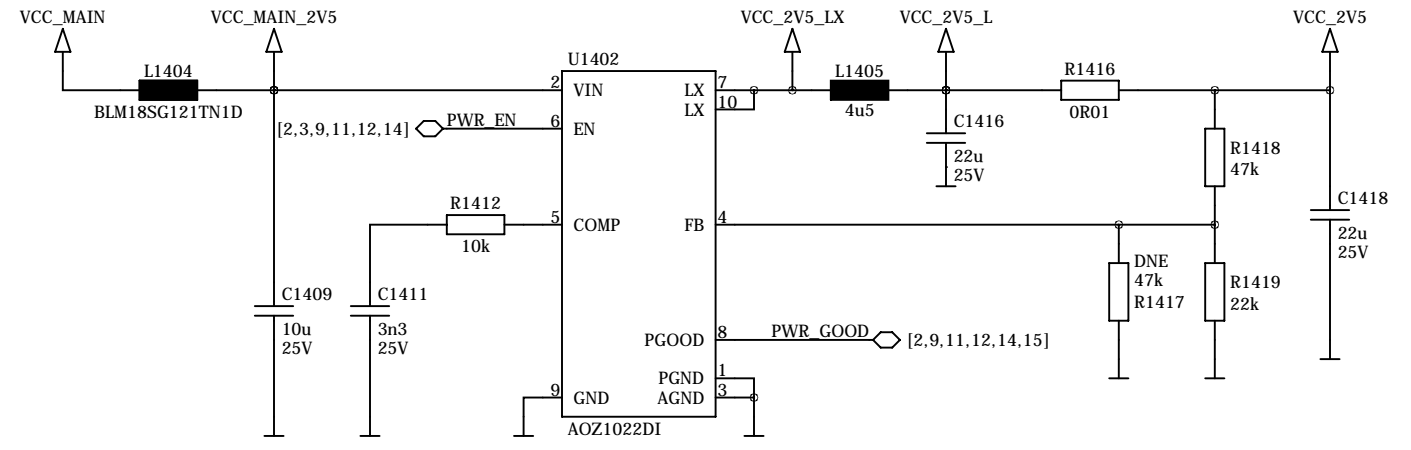
Step-Down Converter 12V to 3.3V 3A

Vfb = 0.8V fs = 500kHz



Step-Down Converter 12V to 2.5V 3A

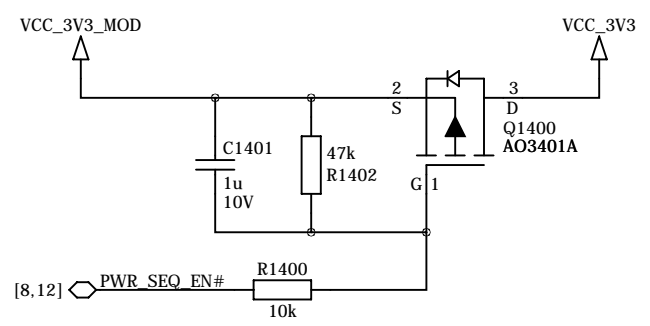
Vfb = 0.8V fs = 500kHz



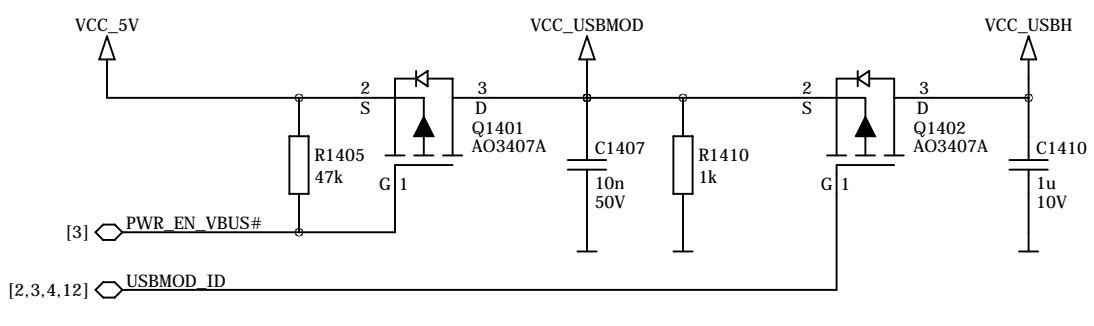
B

B

Power Sequencing



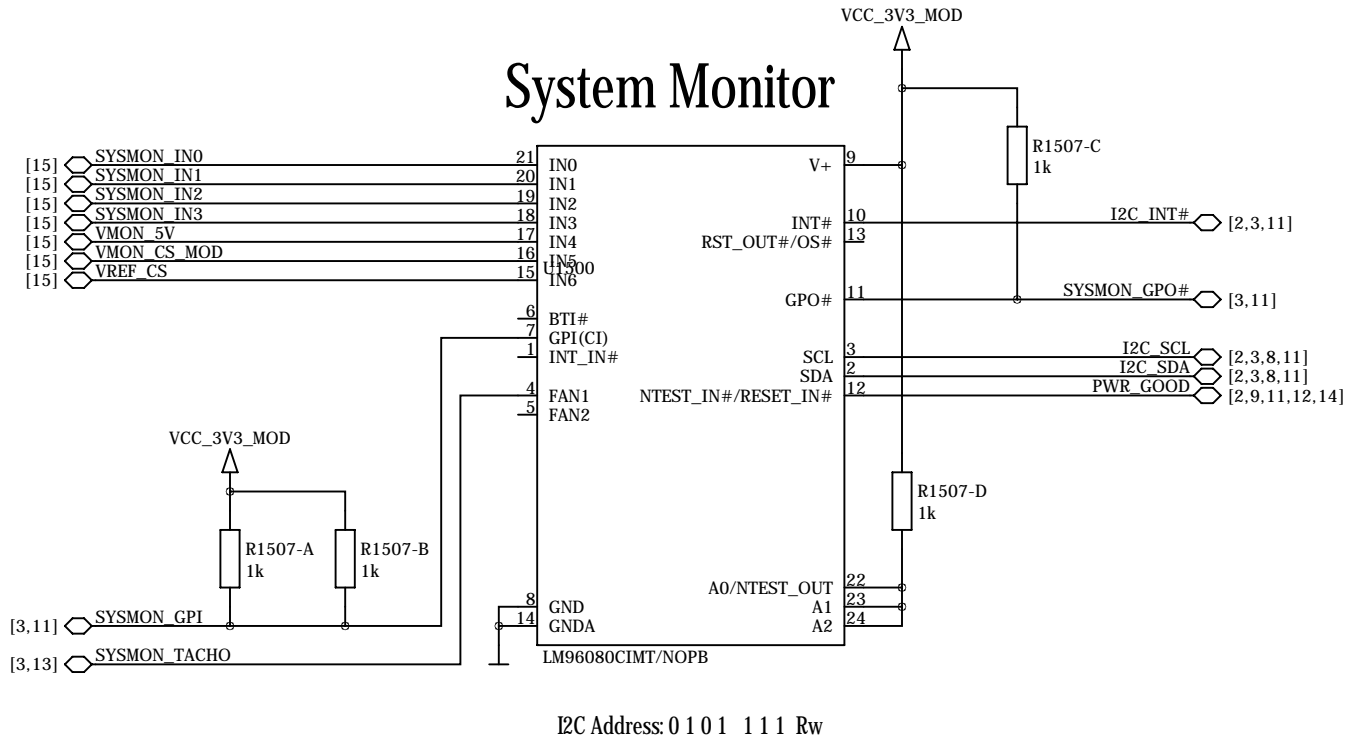
USB VBUS Control



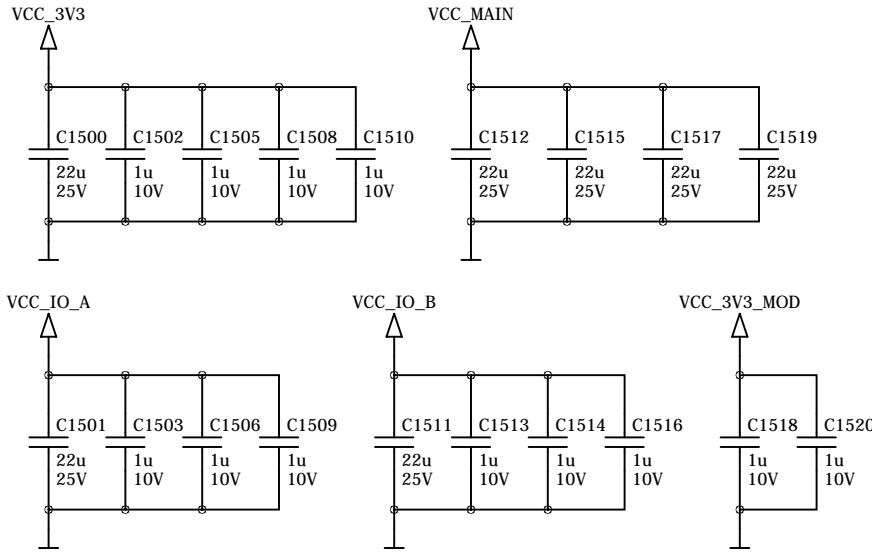
A

A

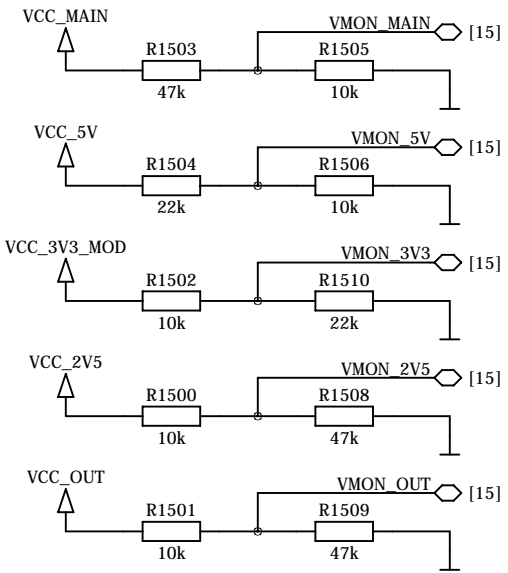
System Monitor



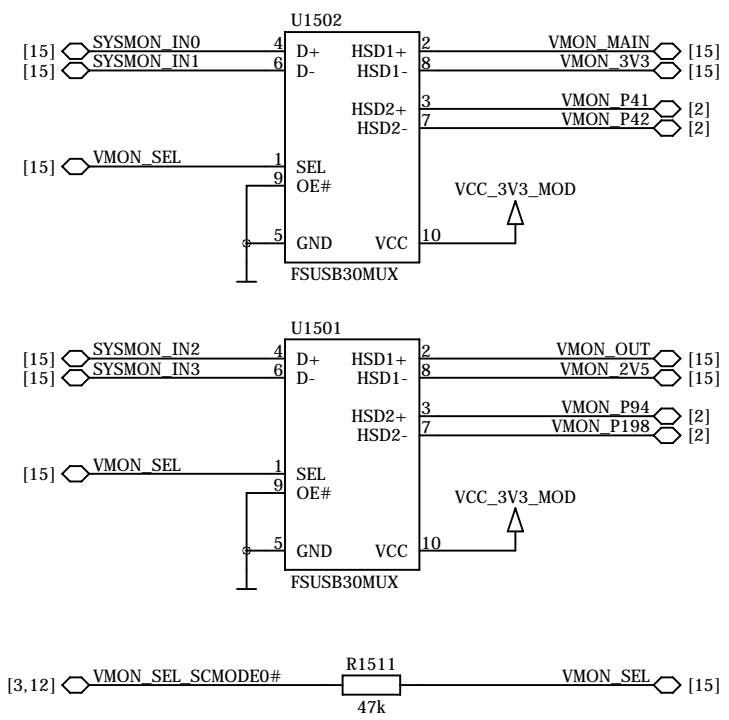
Power Decoupling



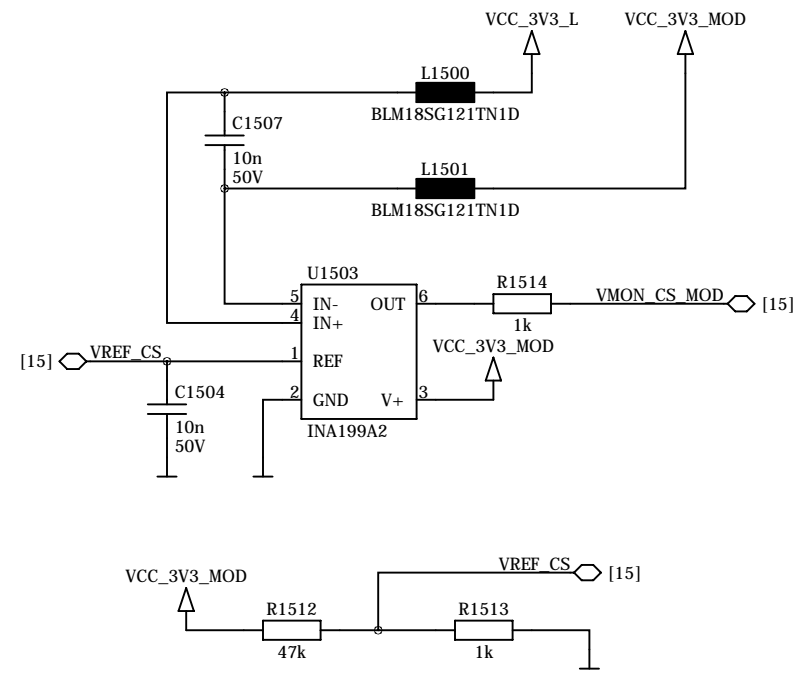
Voltage Sense



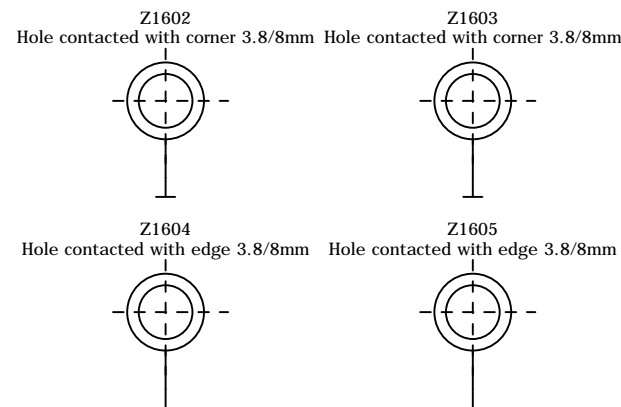
System Monitor Multiplexers



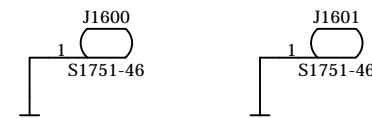
Current Sense



Board Mounting Holes M3

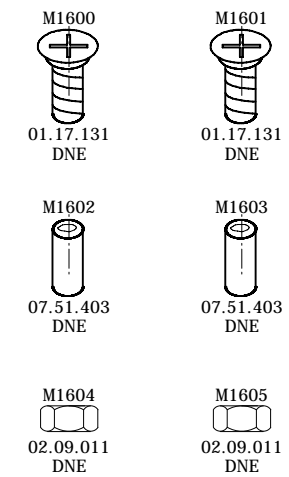


Ground Test Points

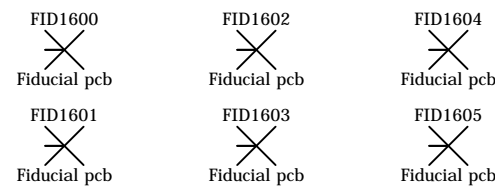


Module Screw Mounting

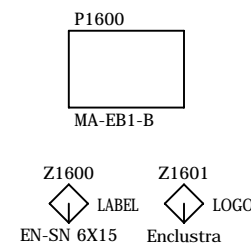
optional



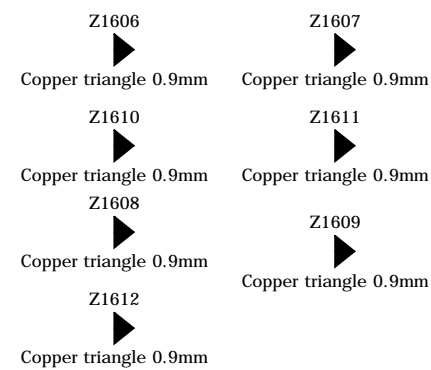
Fiducials



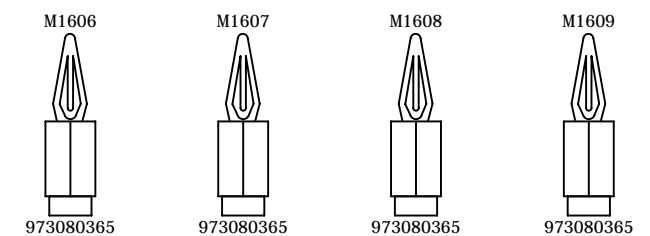
PCB



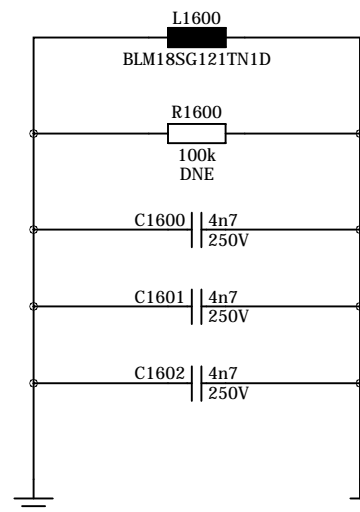
Connector Pin-1 Marking



Board Spacers



Chassis Ground



Assembly Variant

