Enclustra User Schematics

Mars PM3 Revision 5.2

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)

Mars PM3 Base Board

Revision 5.2

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Sheet 2: Mars Module Connector
Sheet 3: USB 3.0 Device Controller
Sheet 4: USB 3.0 Power / USB 2.0 UART
Sheet 5: USB Connectors
Sheet 6: USB 3.0 Peripherals / Multiplexers
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Sheet 9: System Monitor / EEPROM
Sheet 10: Mini HDMI / PCI Express / LVDS Connector
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Sheet 12: User Interface / Board Configuration
Sheet 13: Power Input / Battery / Fan
Sheet 14: Power 5V / 1.2V
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Sheet 16: Mechanics
Sheet 17: Assembly Variants

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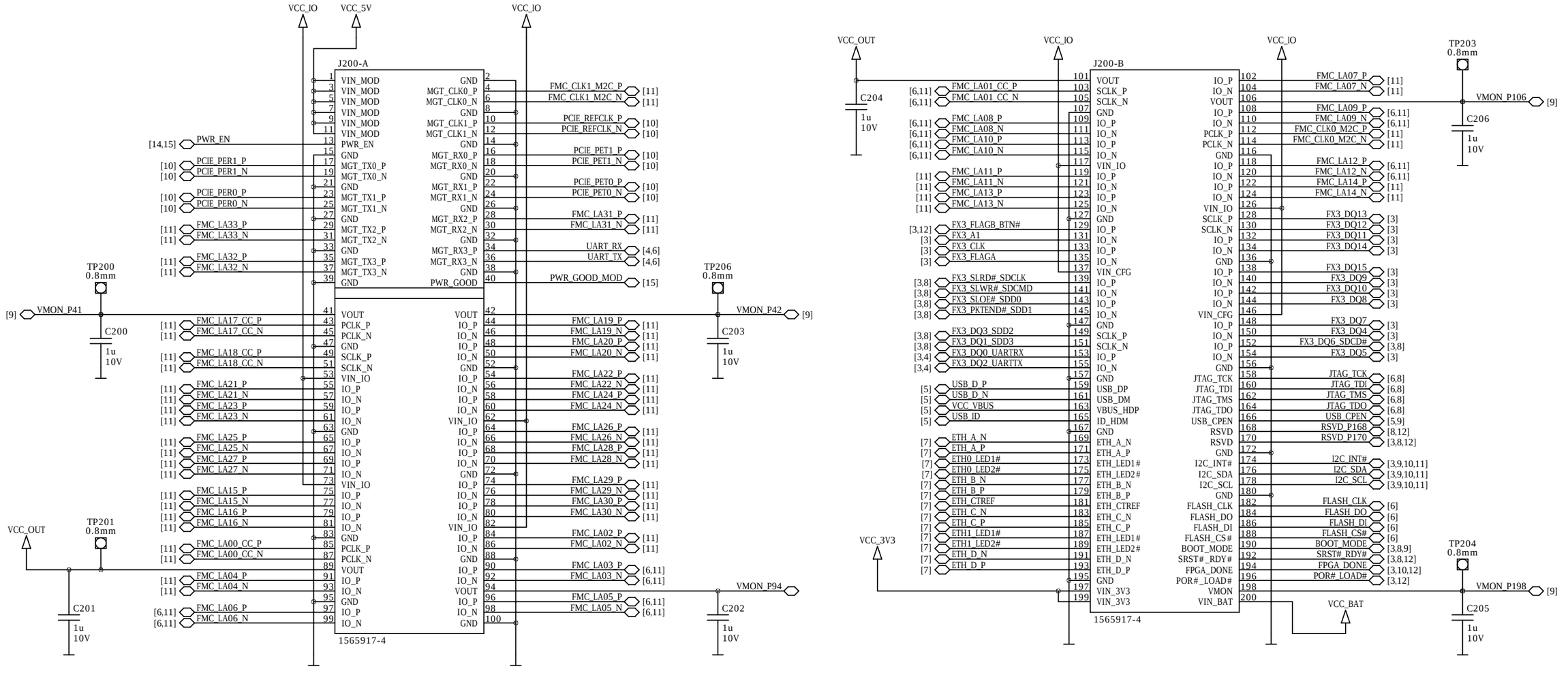
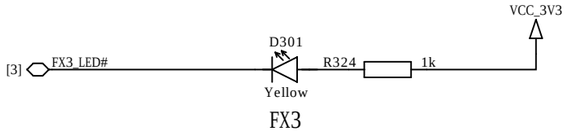
	Company	Enclustra FPGA Solutions	Project	Mars PM3	Project No	413	Designed	MHEI	Date 19 Mar 2020	Sheet/sheets 1 / 17

Mars SO-DIMM Connector

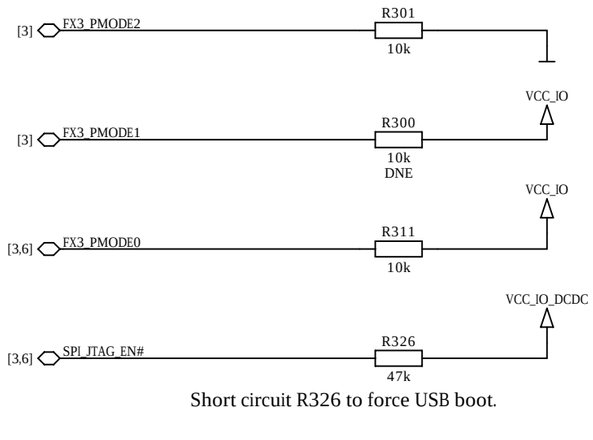


FX3 LED



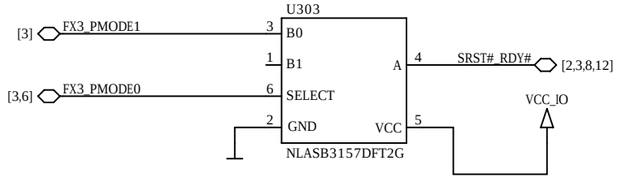
FX3 Boot Mode

SPI boot mode enabled with USB fall back

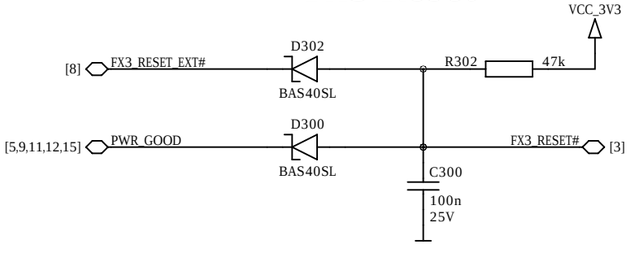


Short circuit R326 to force USB boot.

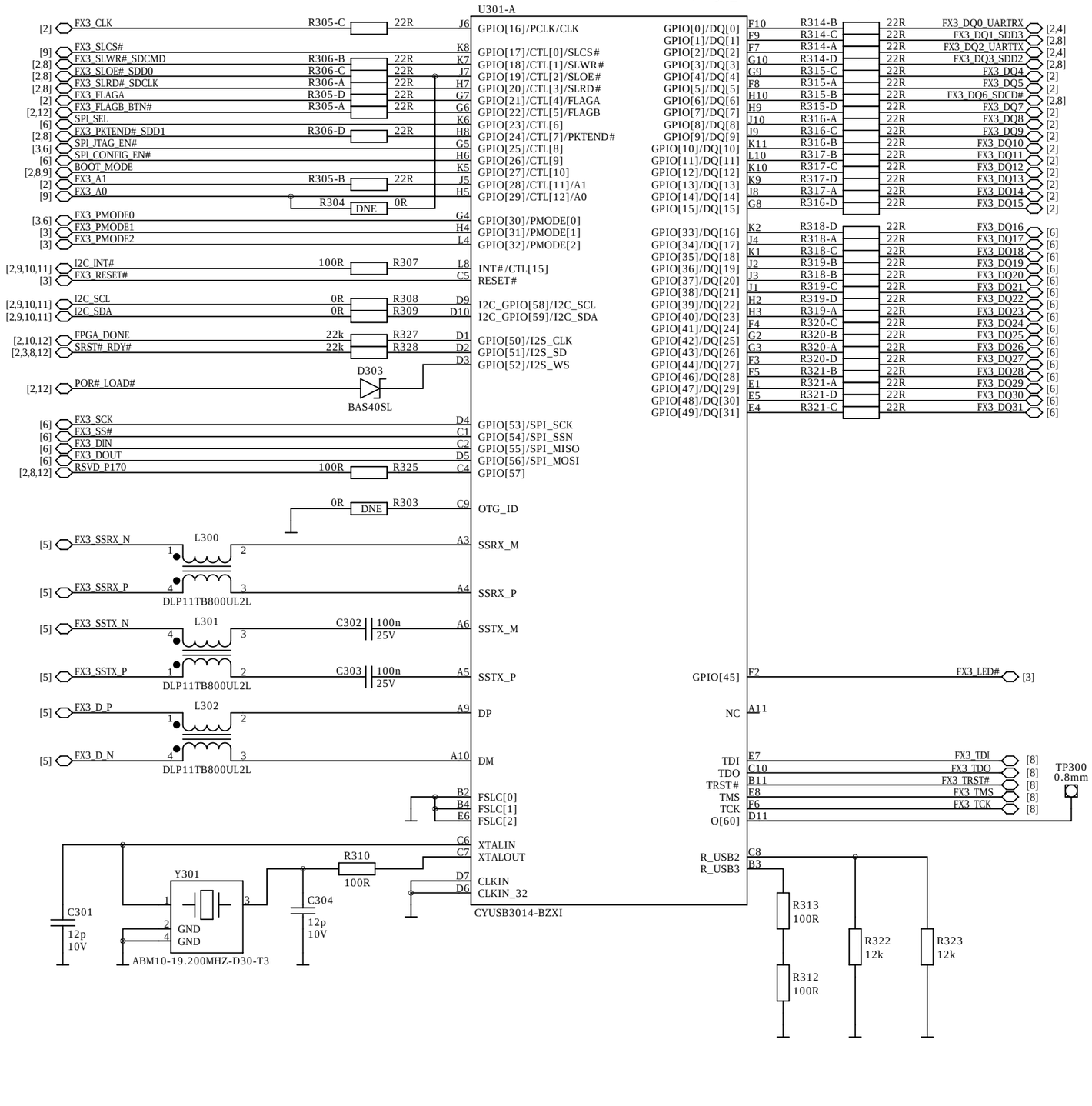
FX3 SRST Control



FX3 Reset



USB 3.0 Device Controller (Cypress FX3)



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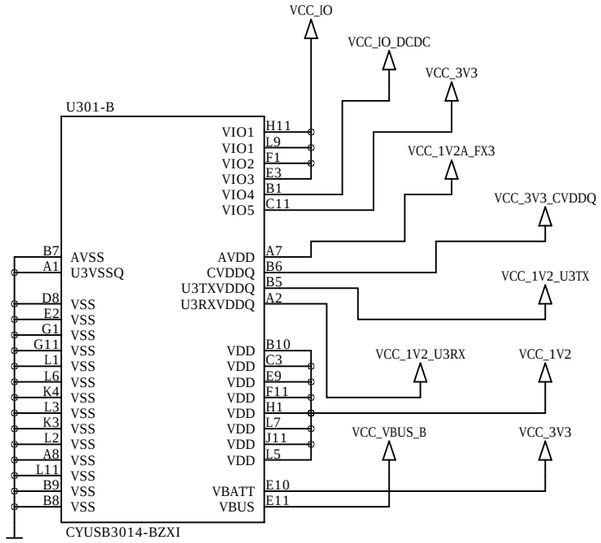
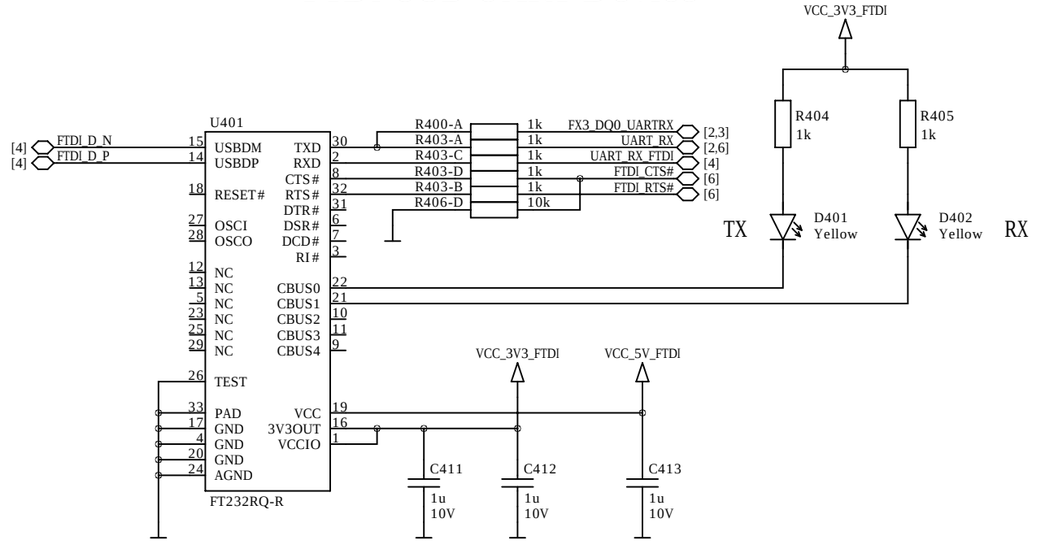
USB 3.0 Device Controller Power

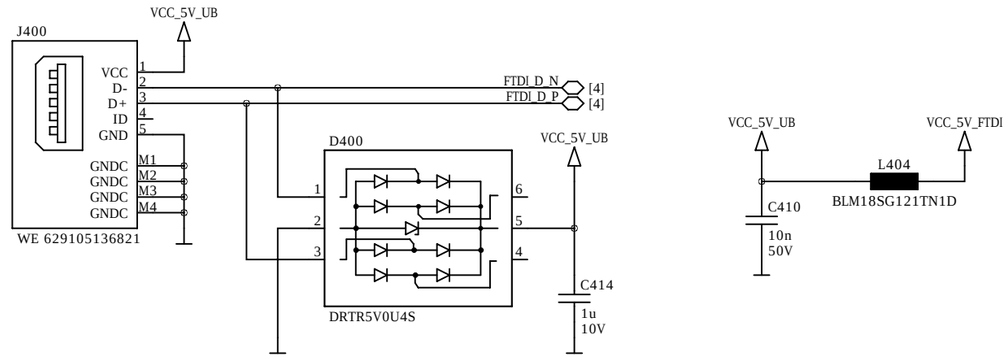


VIO1: GPIO[0..32], INT#
VIO2: GPIO[33..45]
VIO3: GPIO[46..52]
VIO4: GPIO[53..57] (SPI)
VIO5: GPIO[58..59] (I2C), JTAG

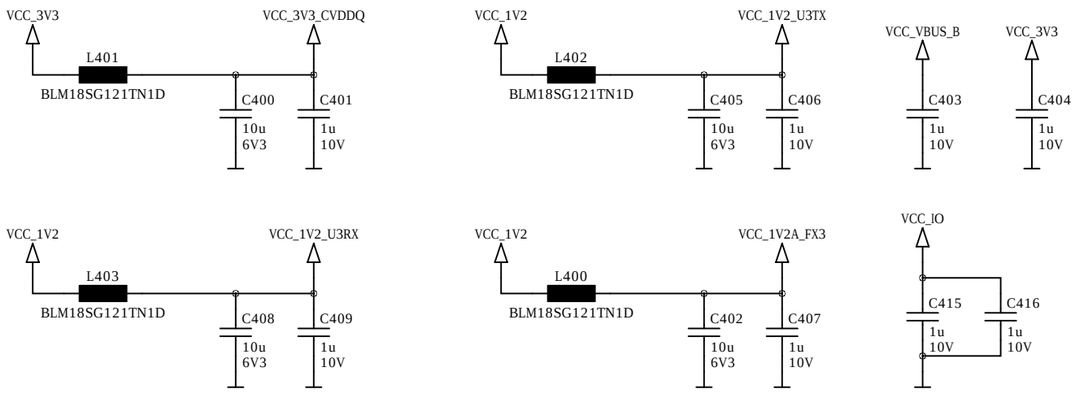
FTDI USB UART Device



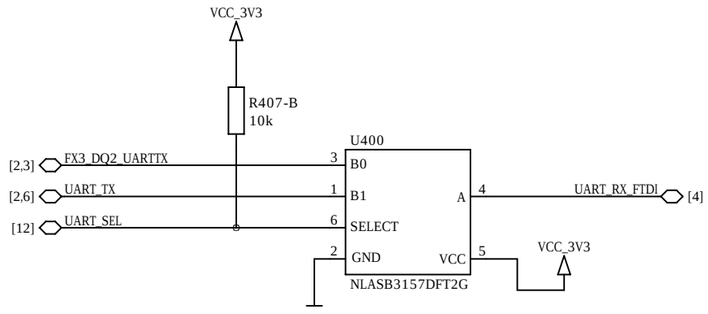
FTDI USB Connector

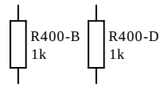


FX3 Power Filters



USB UART Multiplexer





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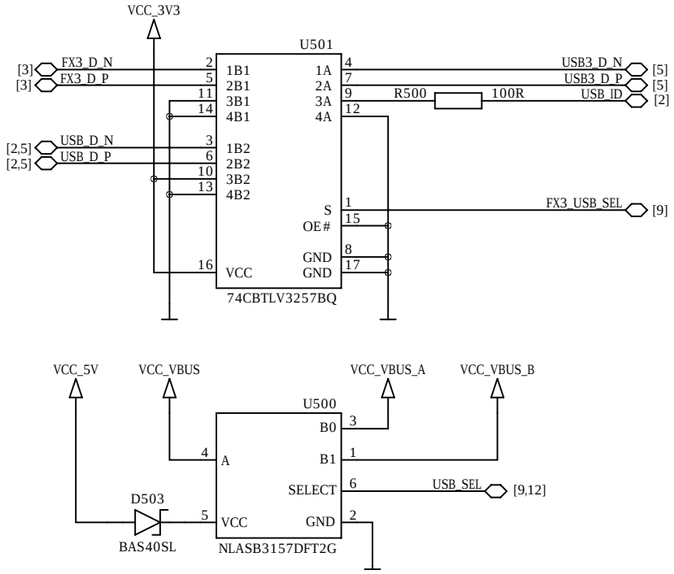
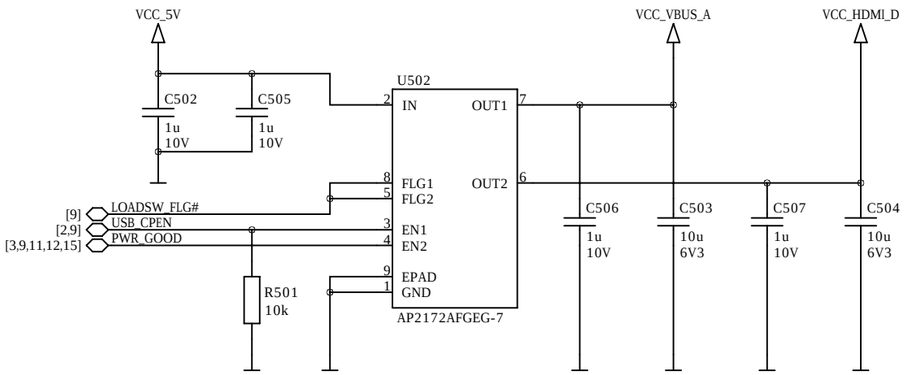
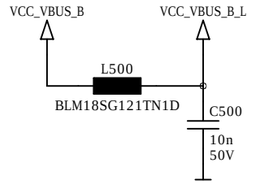
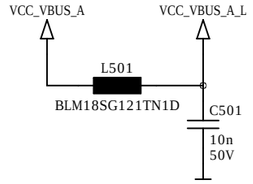
USB Multiplexer



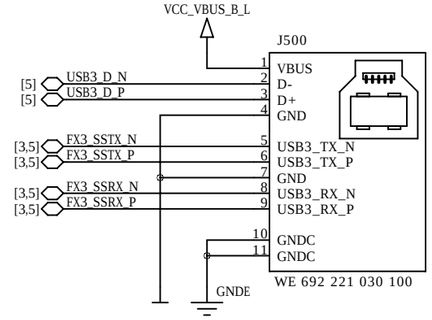
USB / HDMI Load Switch



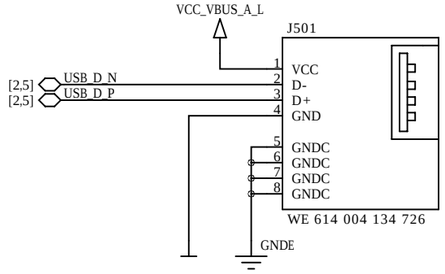




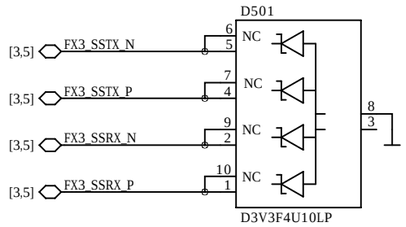
USB 3.0 Device Connector

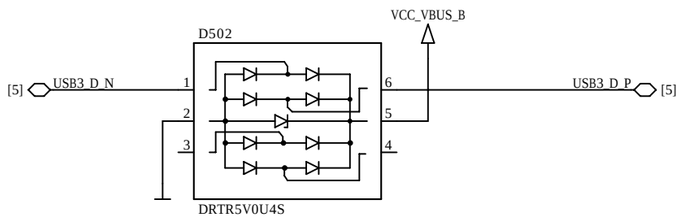


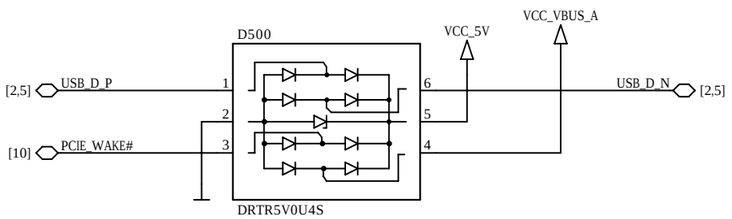
USB 2.0 Host Connector



ESD Protection







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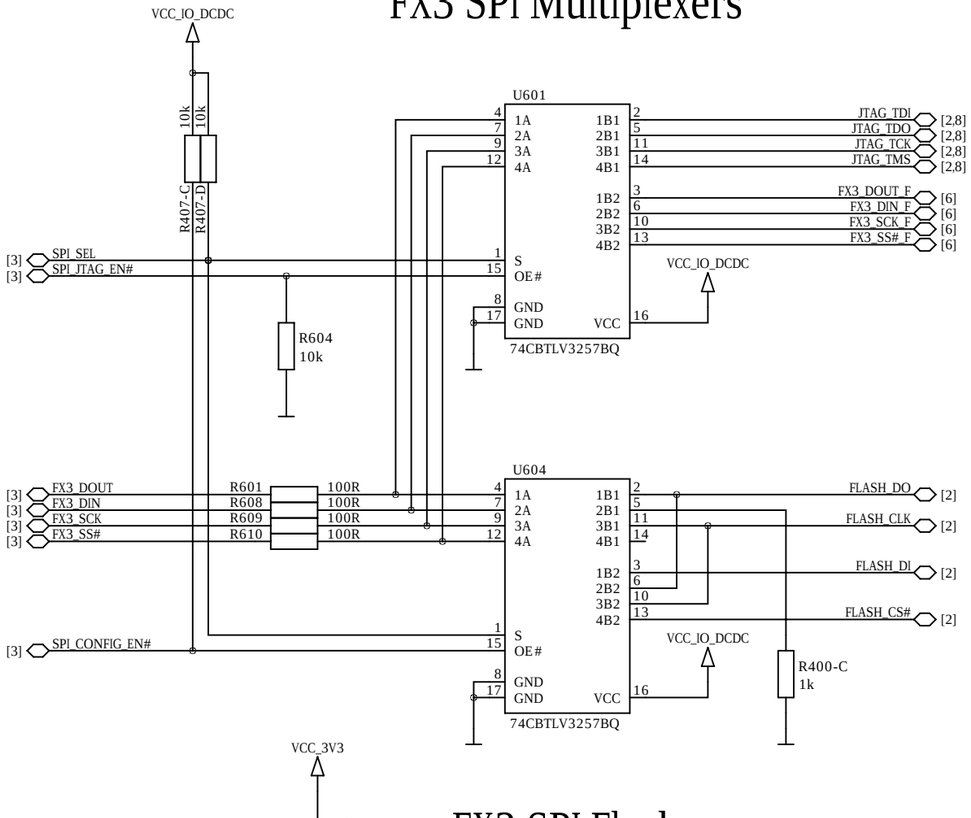
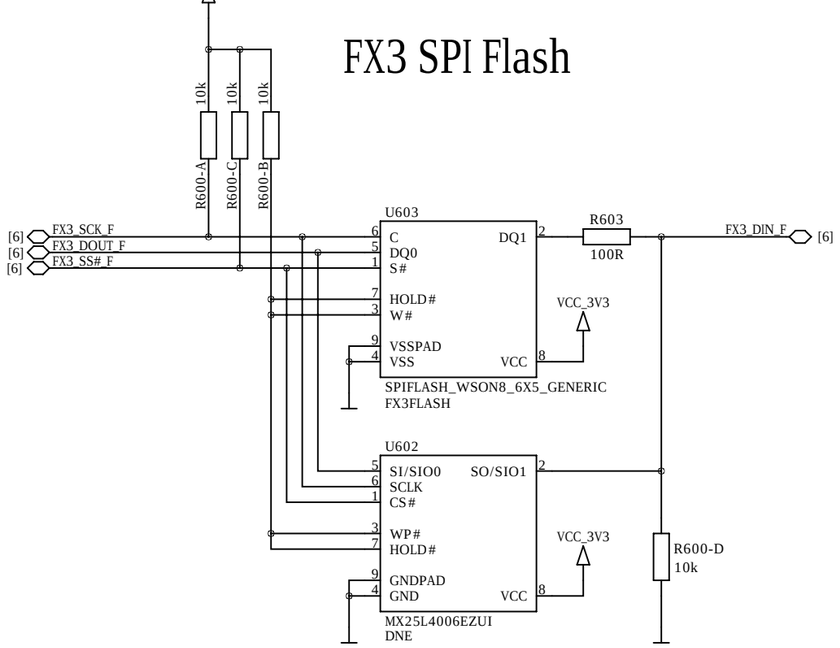
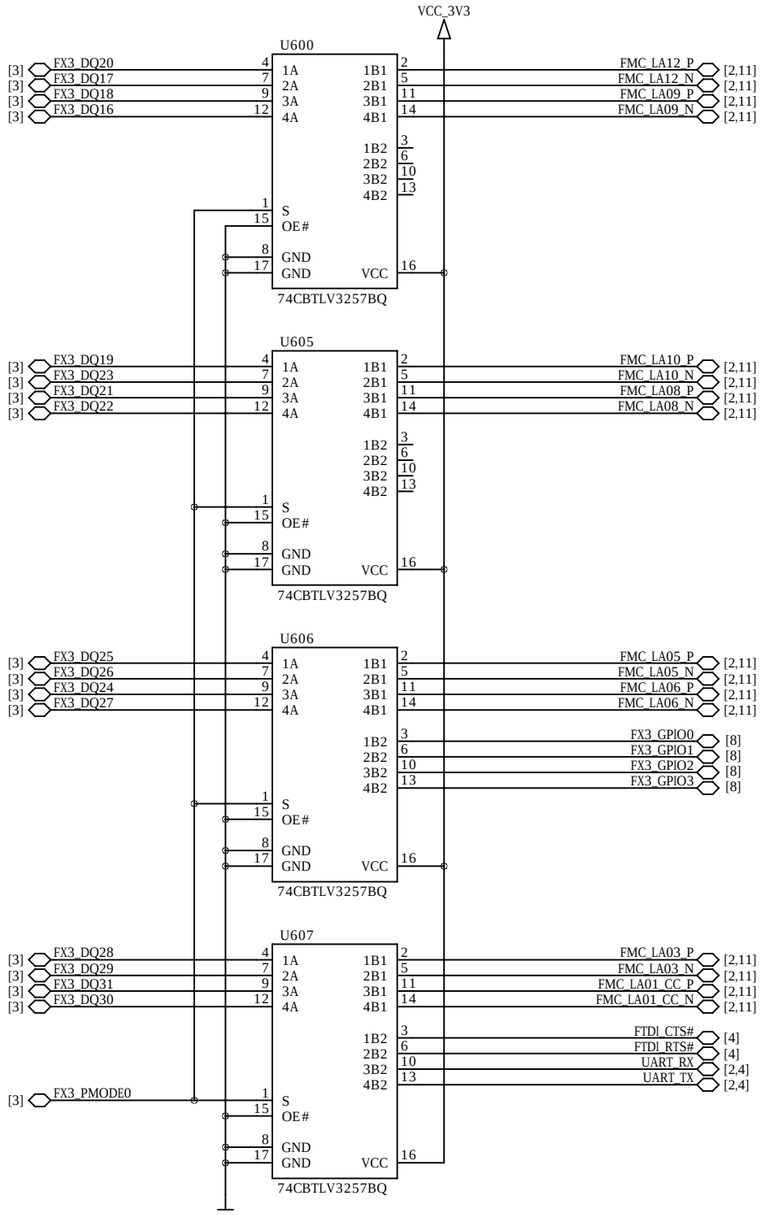
FX3 SPI Multiplexers



FX3 SPI Flash



FX3 DQ Multiplexers



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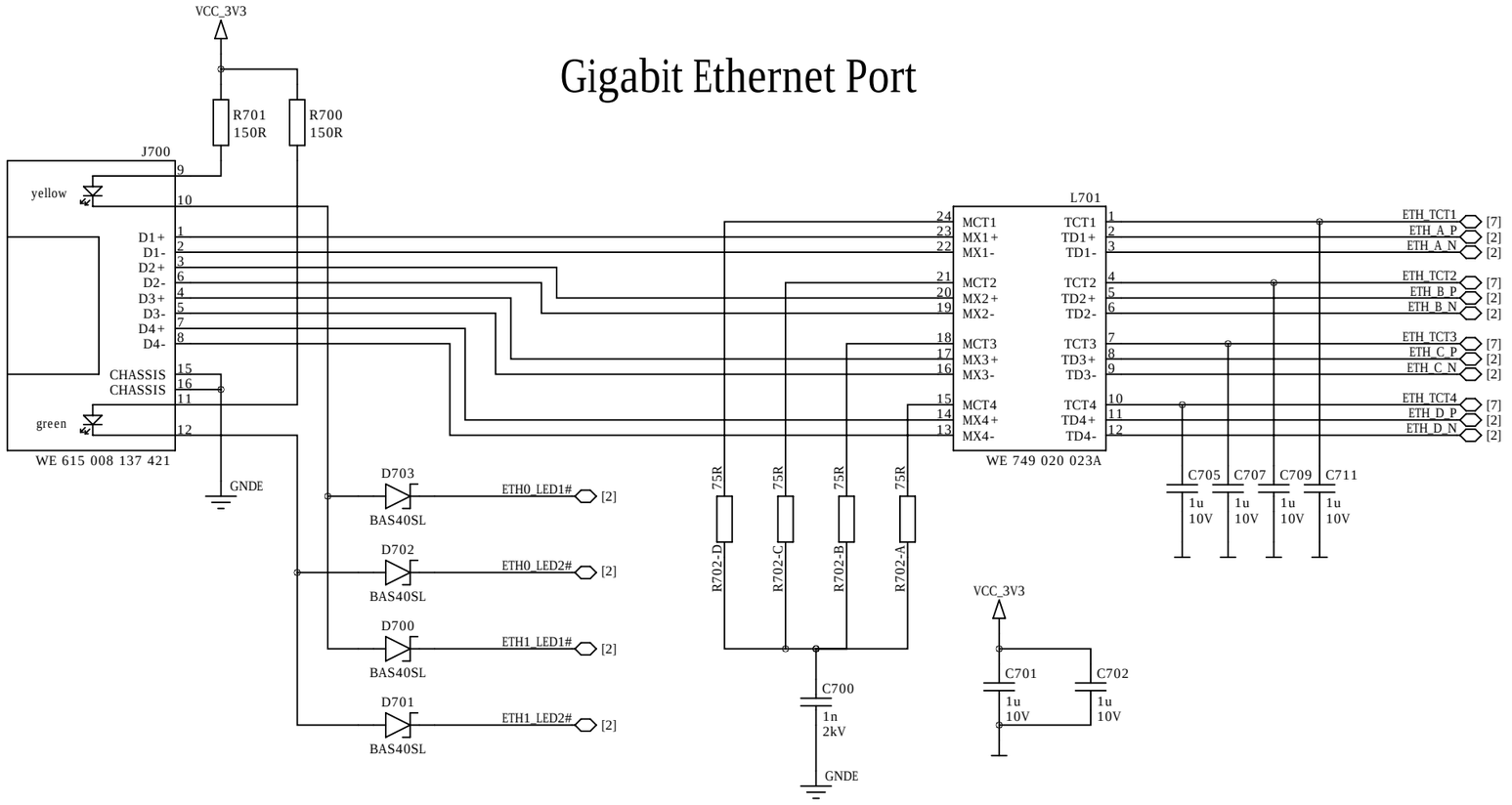
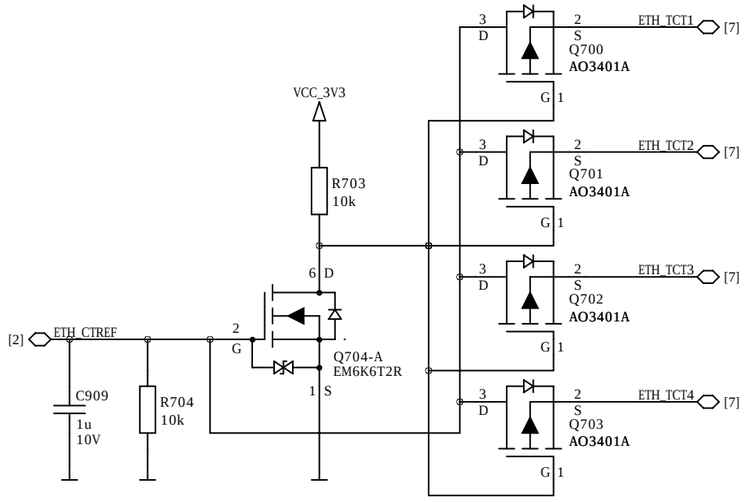
Gigabit Ethernet Port



Magnetics Center Tap



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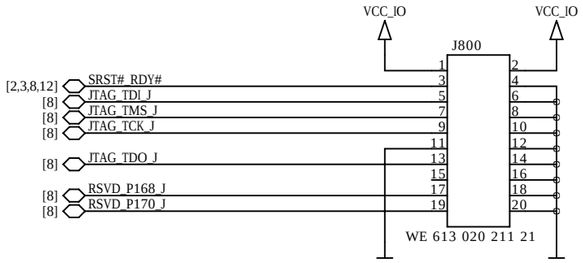
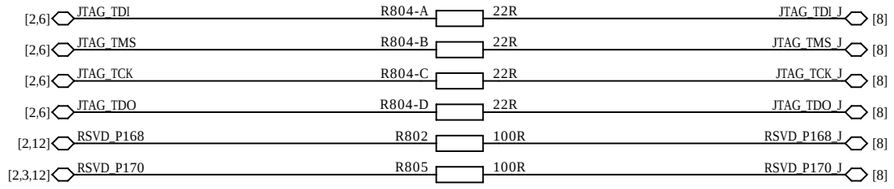
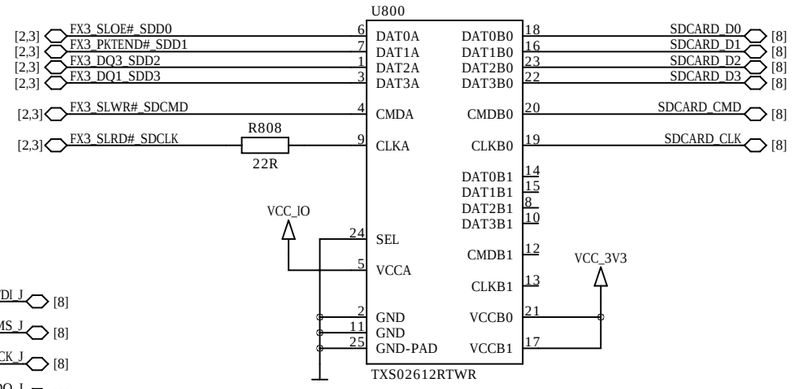
FPGA JTAG Connector

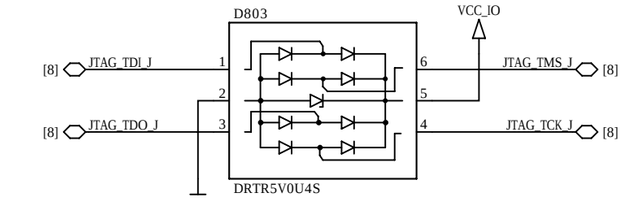


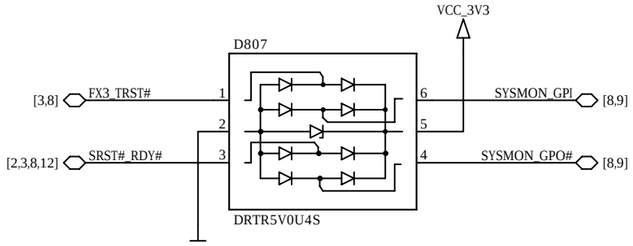


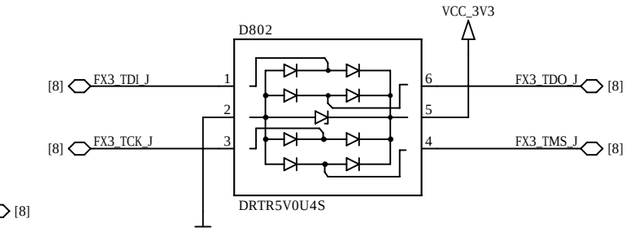
SD-Card Level Shifter

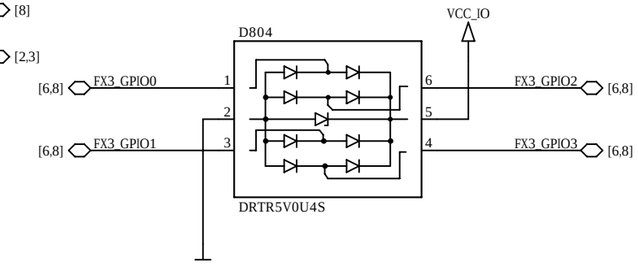


ESD Protection

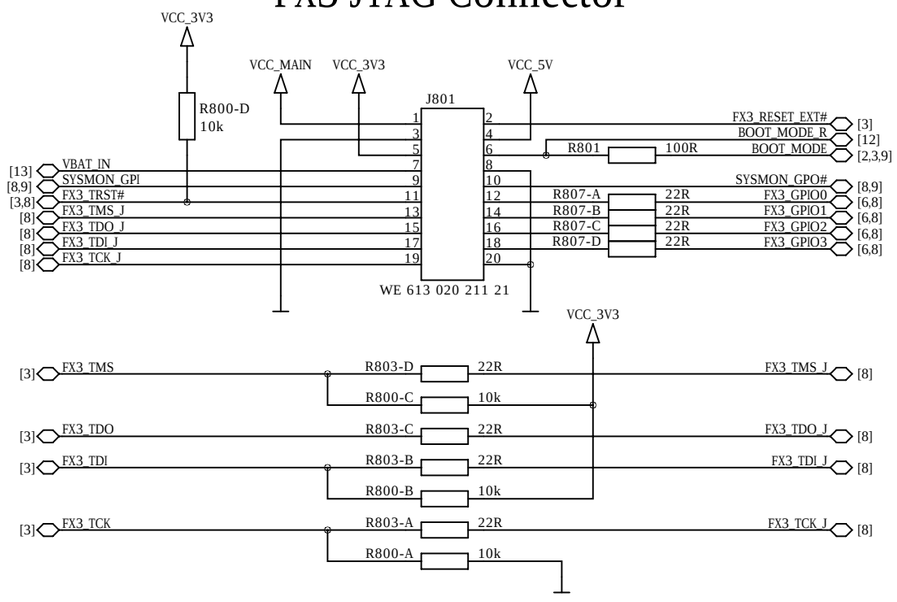




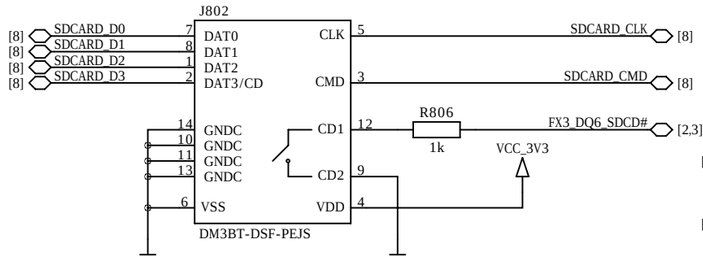




FX3 JTAG Connector

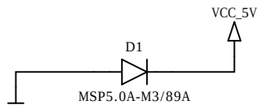


Micro SD-Card Holder



TVS Diode

Diode is assembled between J801 Pin 3&4 (Patch)



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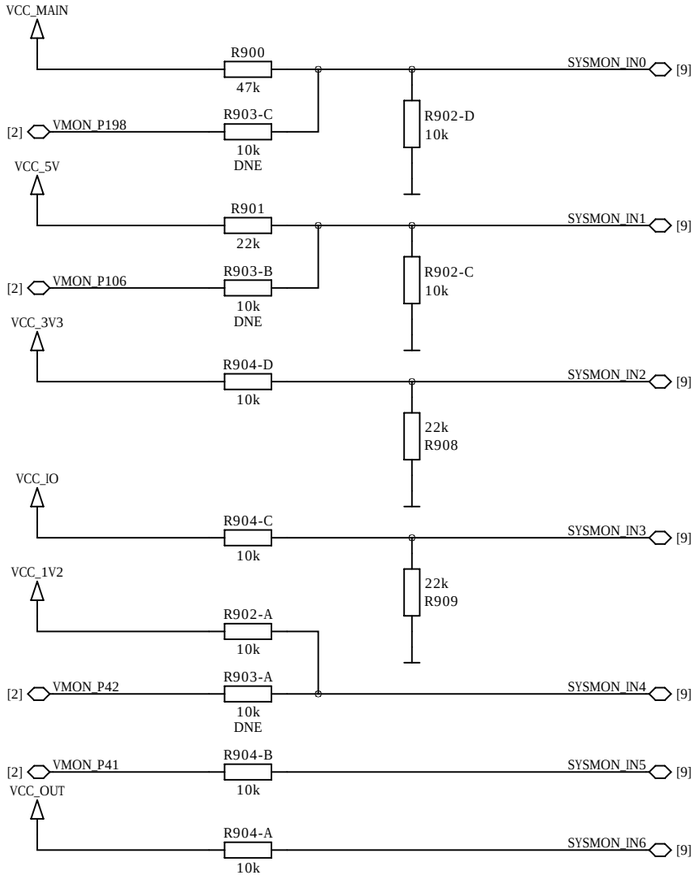
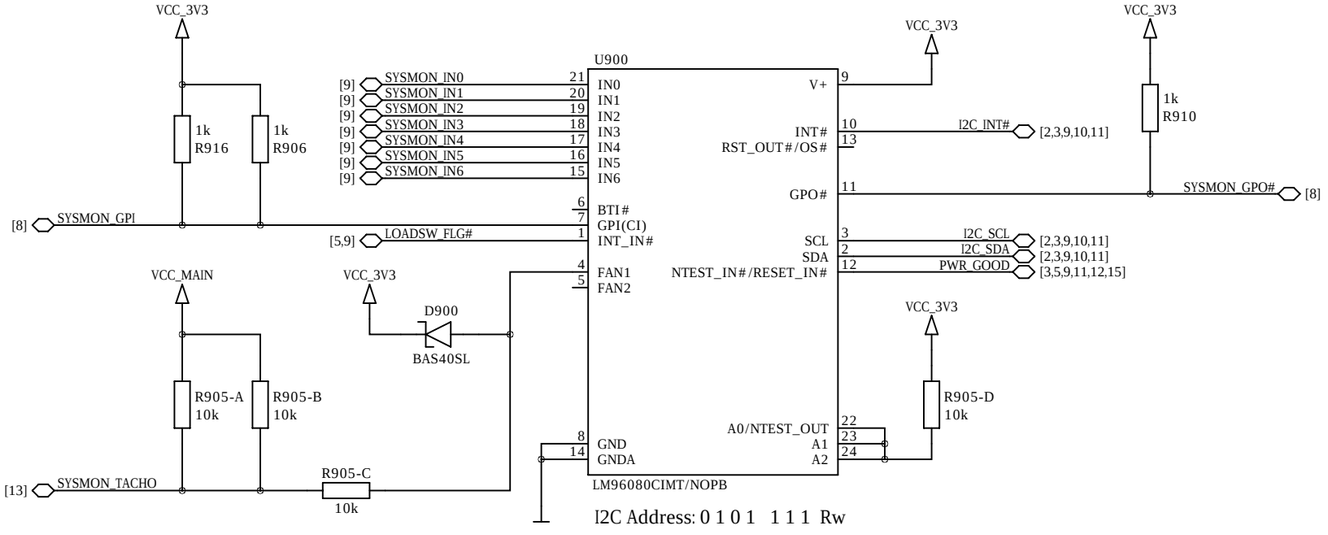
System Monitor





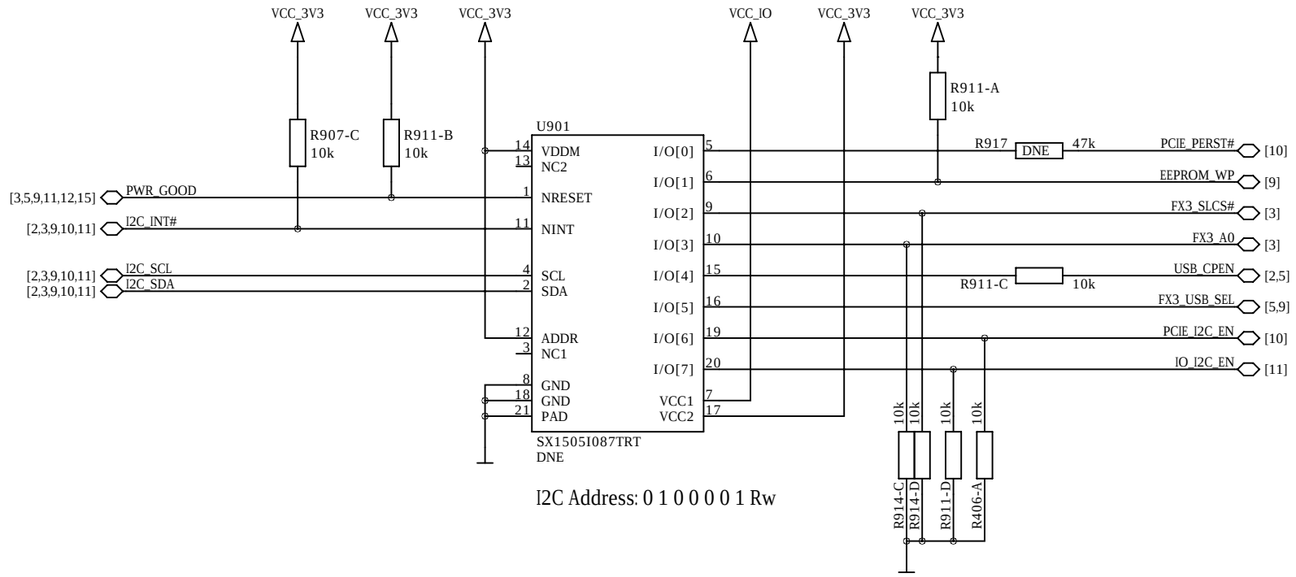
I2C Address: 0 1 0 1 1 1 1 Rw

I2C GPIO Expander

I2C Expander is End-of-Life and not equipped.

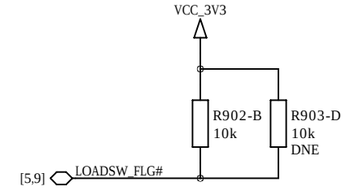
FX3 cannot be used as an I2C slave anymore due to the pull-down resistors on FX3_SLCS# and FX3_A0.

For information about handling of signals EEPROM_WP, PCIE_I2C_EN and IO_I2C_EN refer to patch specification.

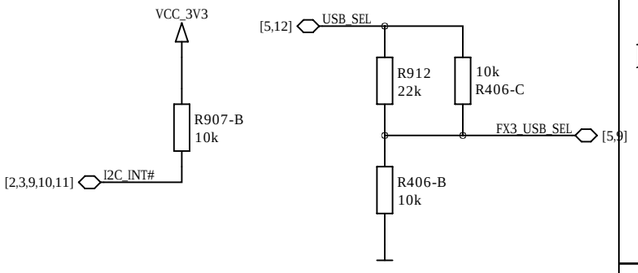


I2C Address: 0 1 0 0 0 0 1 Rw

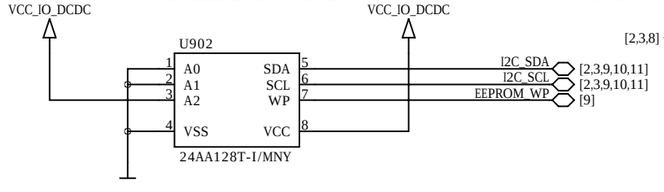
Reserved Resistors



Pull Resistors

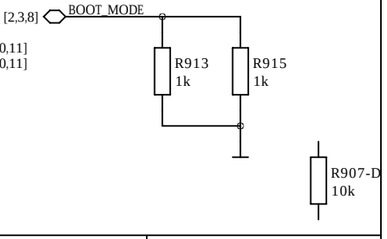


User EEPROM



I2C Address: 1 0 1 0 1 0 0 Rw

FPGA Mode Pulldown



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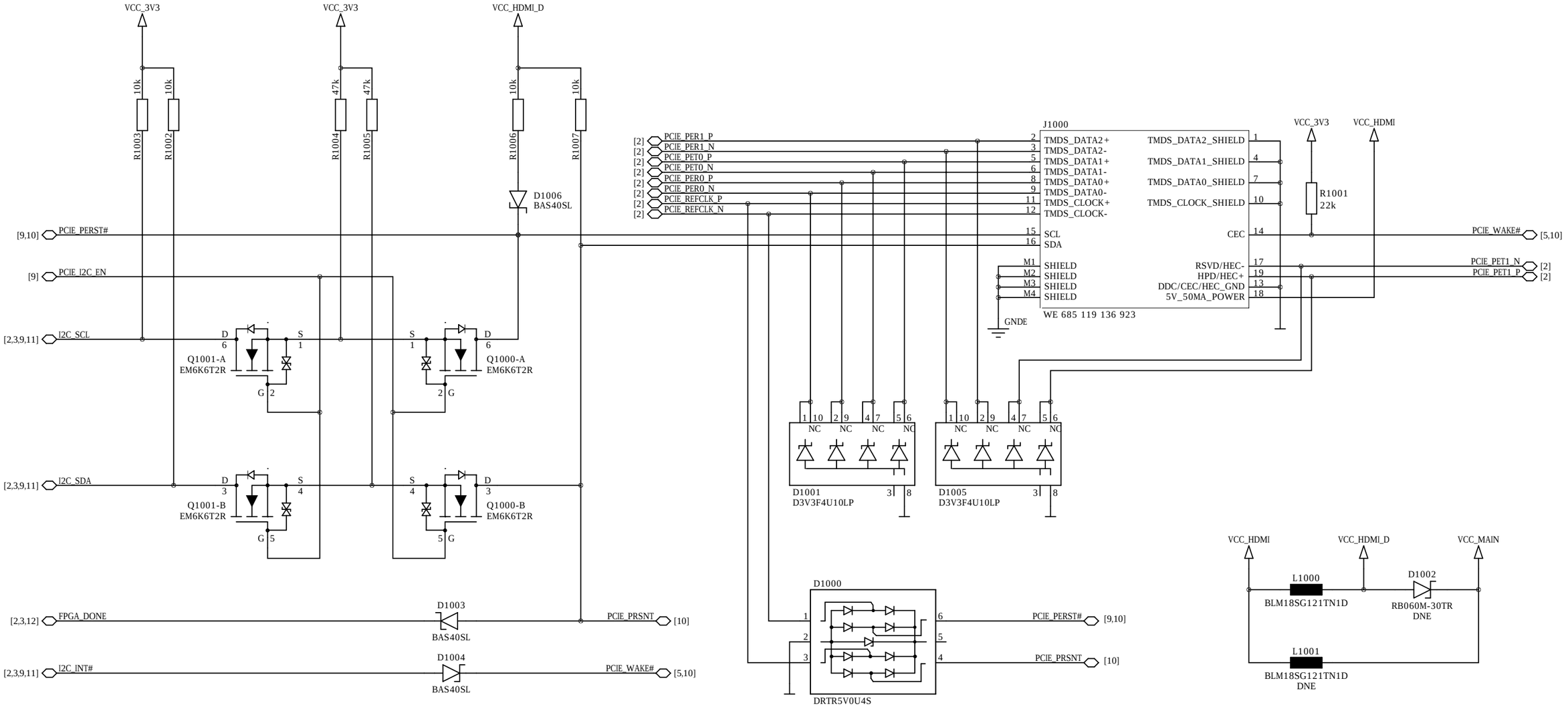
	Company Enclustra FPGA Solutions	Project Mars PM3	Project No 413	Designed MHEI	Date 19 Mar 2020	Sheet/sheets 9 / 17	

Mini HDMI / PCI Express / LVDS Connector



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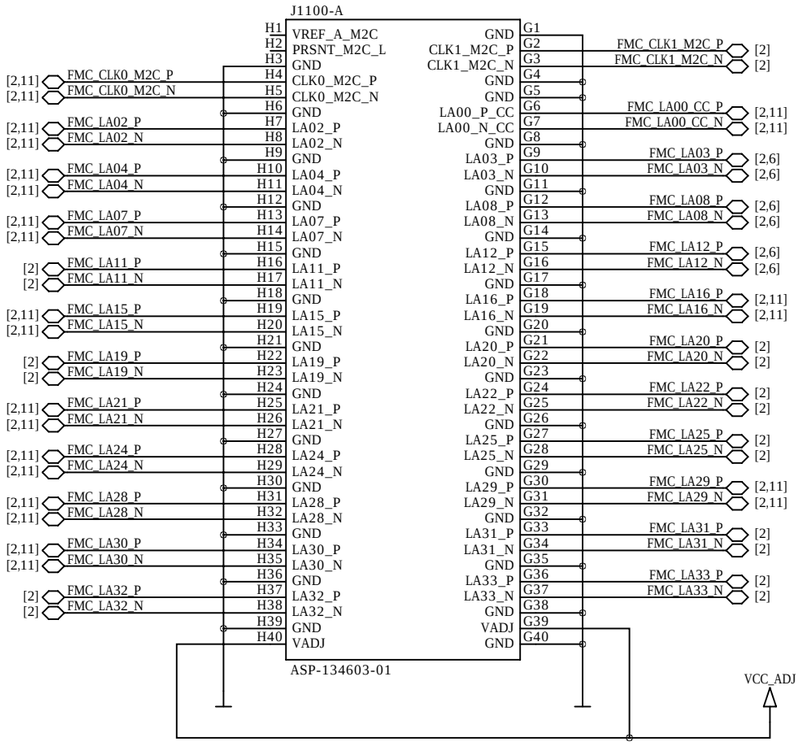
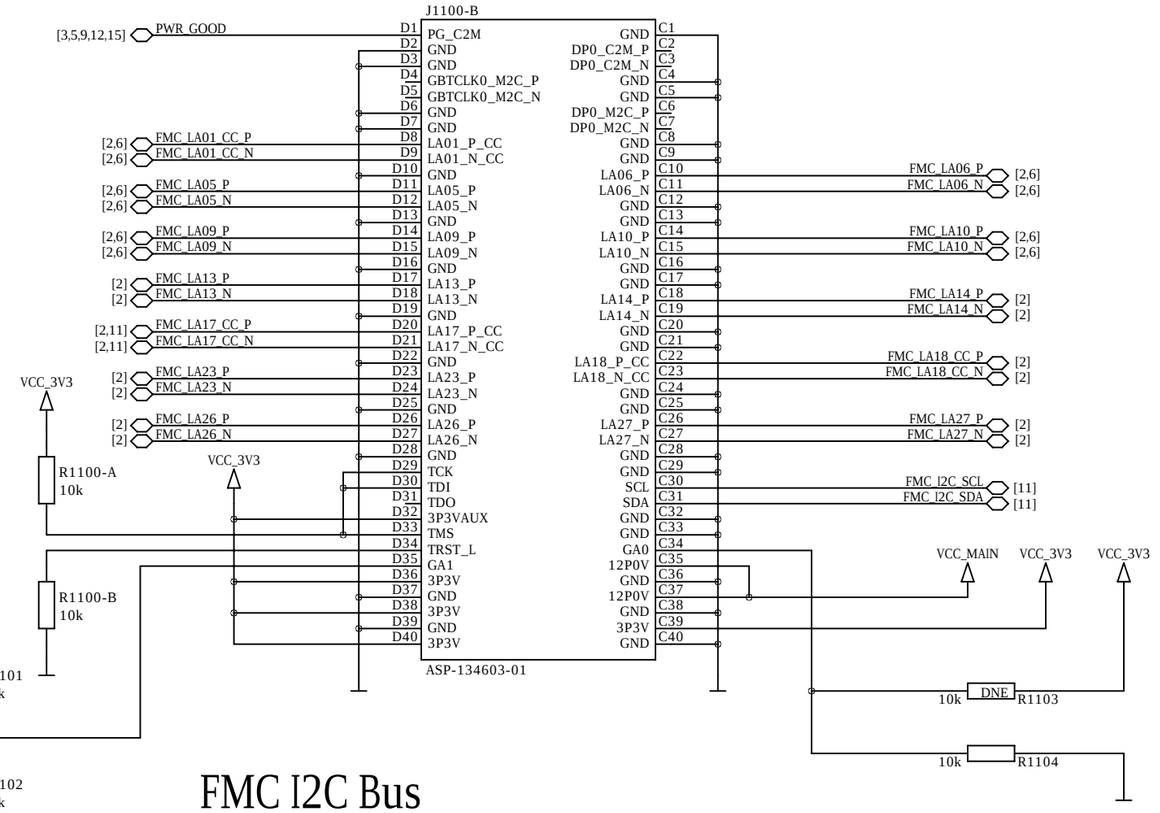
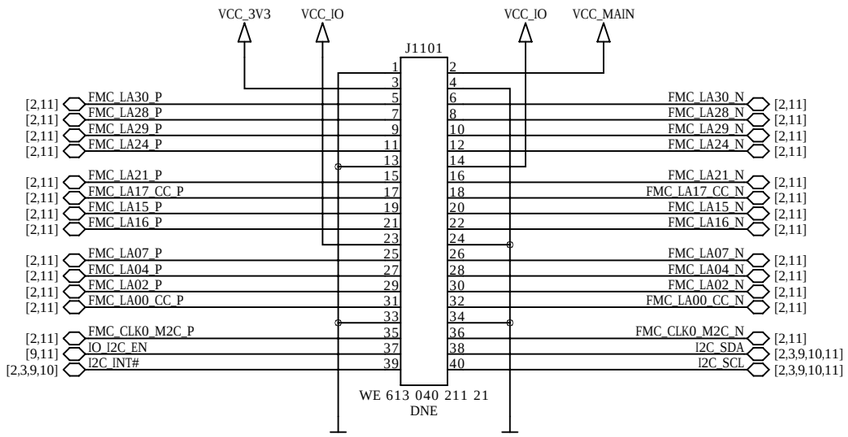
FMC LPC Connector

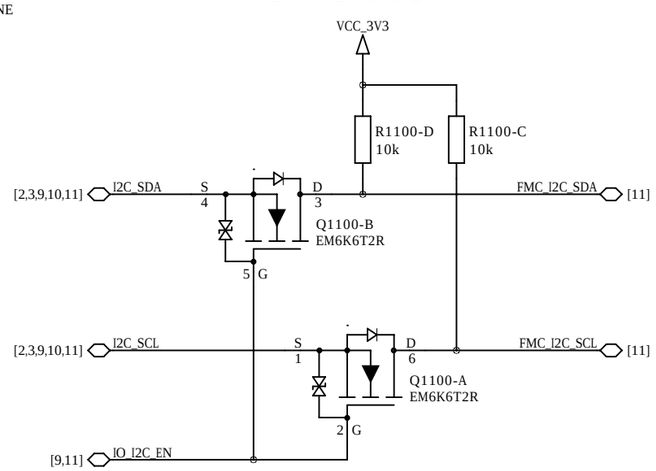




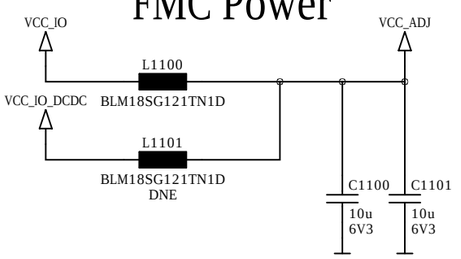
IO Connector



FMC I2C Bus



FMC Power



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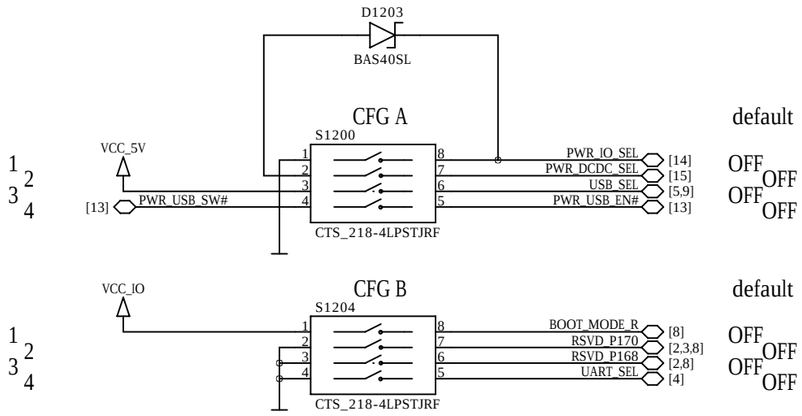
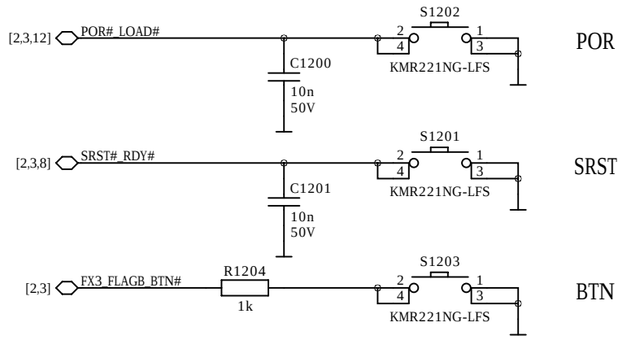
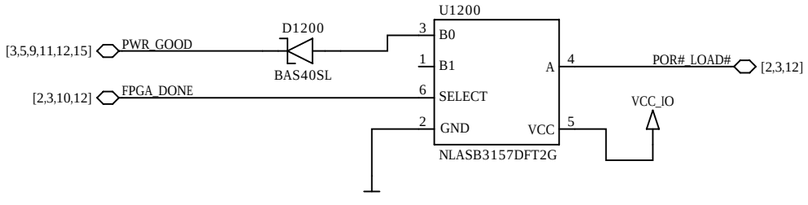
Board Configuration



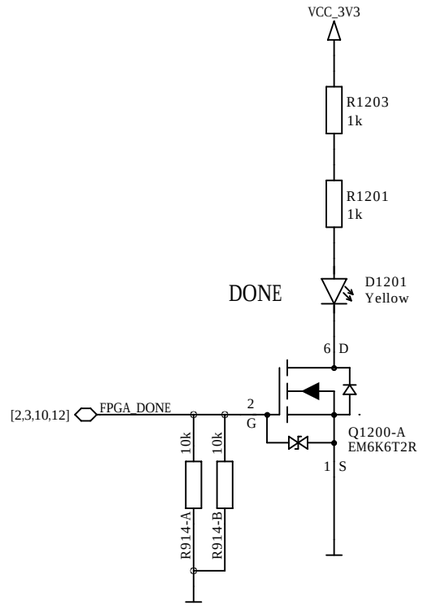
Buttons

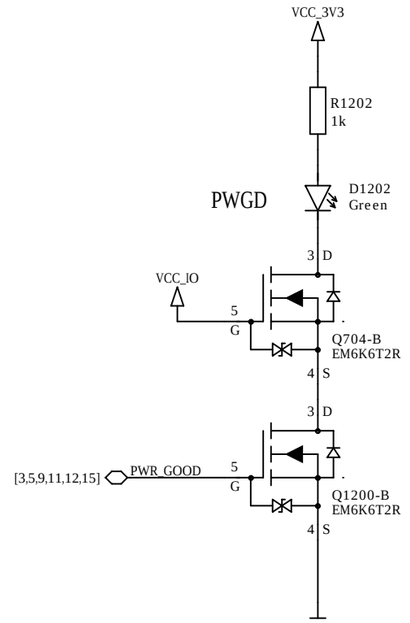


Reset Circuit



Status LEDs





IO Voltage Selection

Check the module documentation for the supported IO voltage range.
Select the correct IO voltage before powering the board.

CFG A1	CFG A2	VCC_IO	VCC_IO_DCDC
OFF default	OFF default	VCC_OUT 1.8V support	2.5V
OFF	ON	VCC_OUT 1.8V support	2.5V
ON	OFF	2.5V	2.5V
ON	ON	3.3V	3.3V

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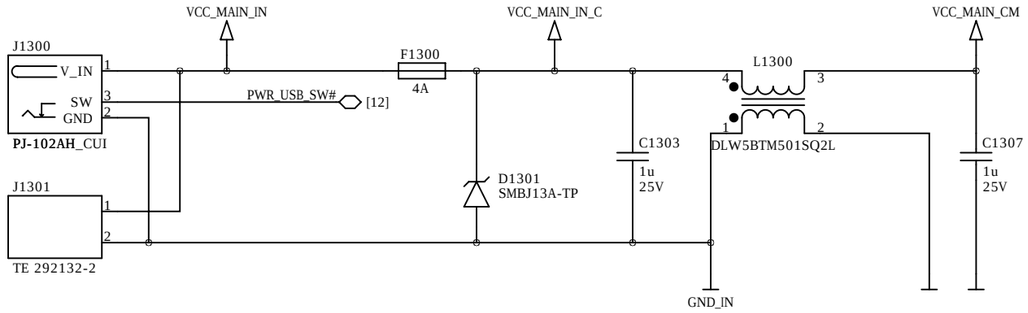
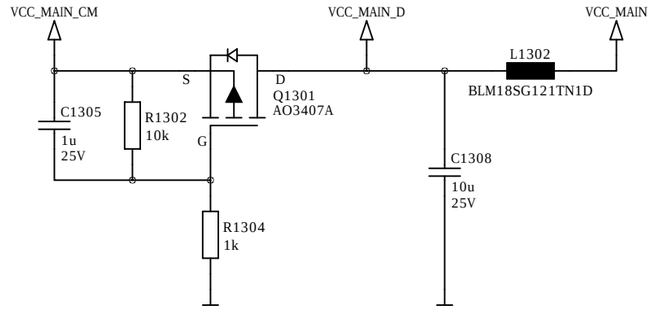
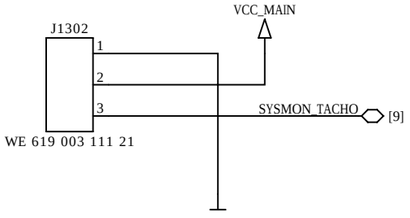
12V DC Power Input



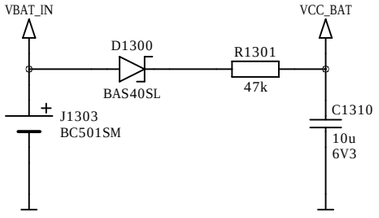
Main Power Soft Start



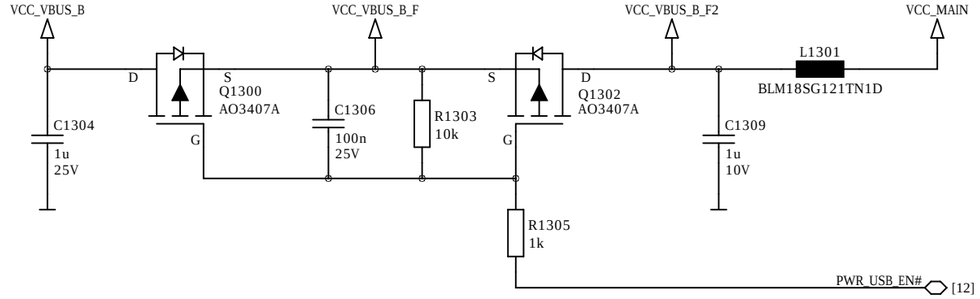
Fan Connector



Battery Holder



USB Power Soft Start



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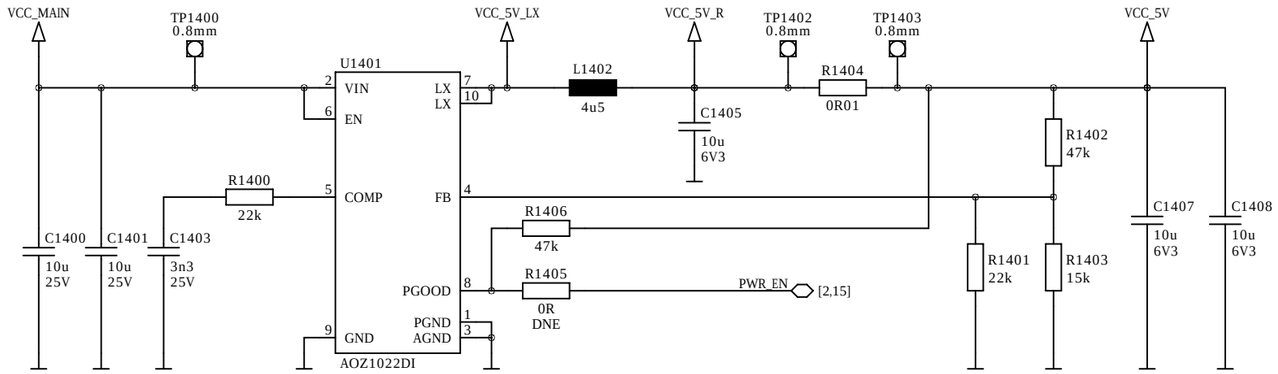
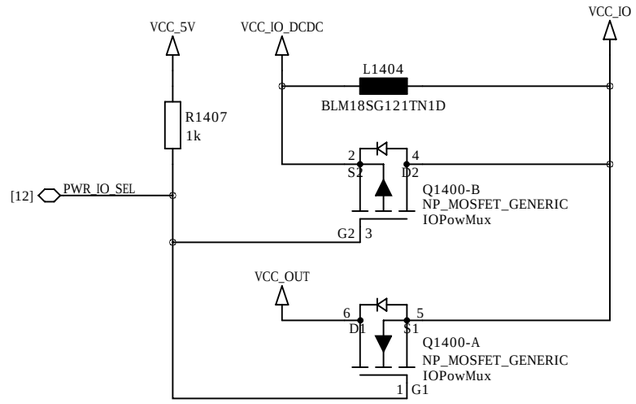
DC/DC Converter 5V 3A 5%

FS = 500kHz Vfb = 0.8V

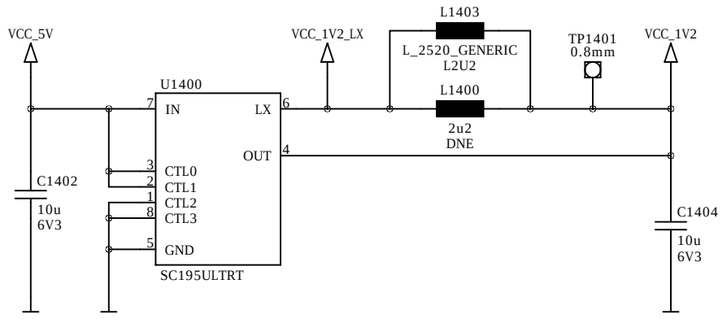


IO Power Mux



DC/DC Converter 1.2V 0.5A 5%

FS = 3.5MHz



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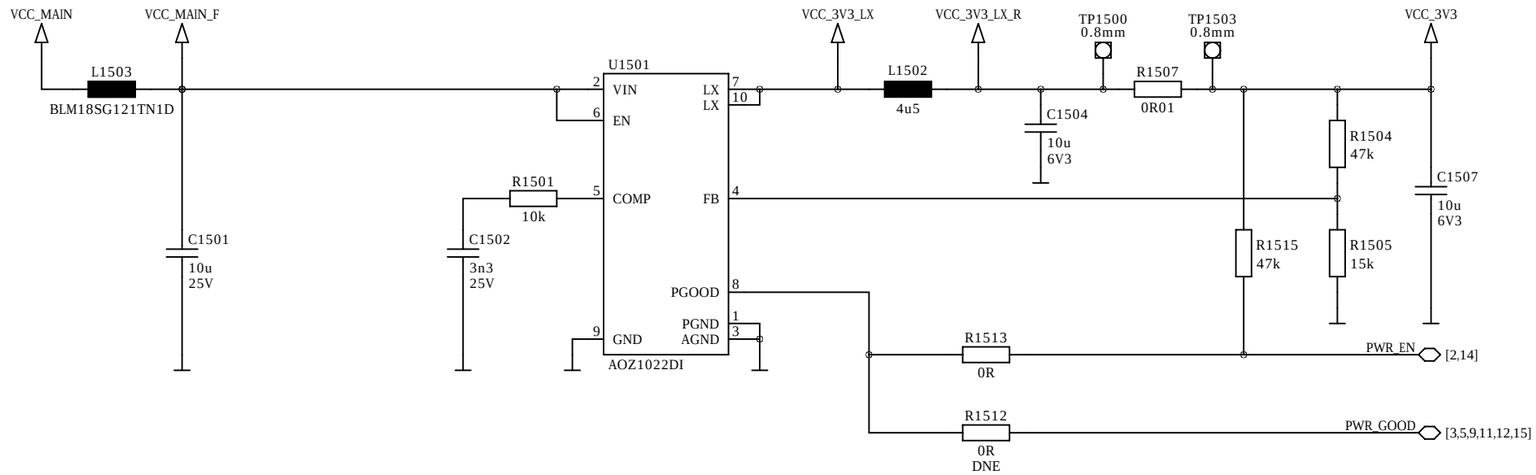
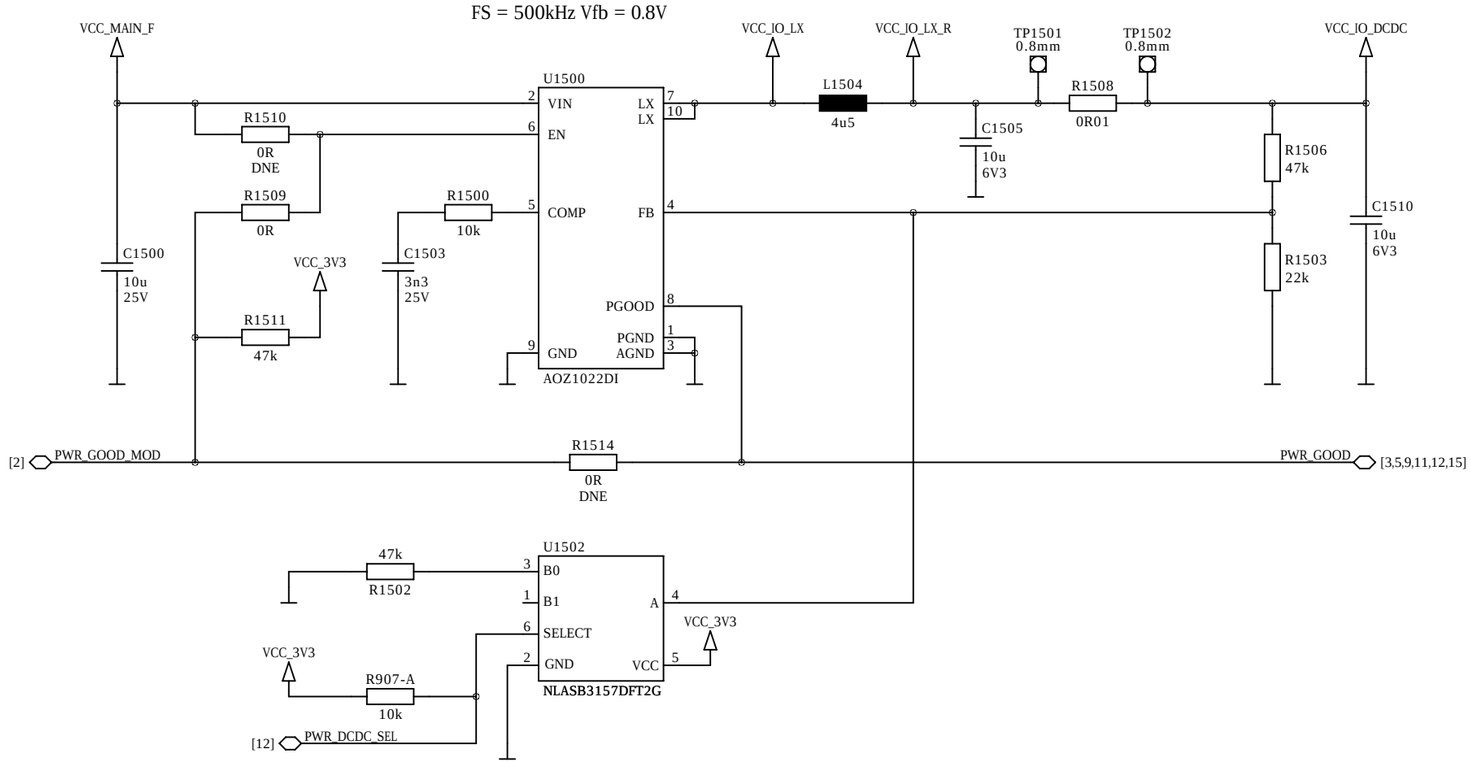
DC/DC Converter 3.3V 3A 5%

FS = 500kHz Vfb = 0.8V

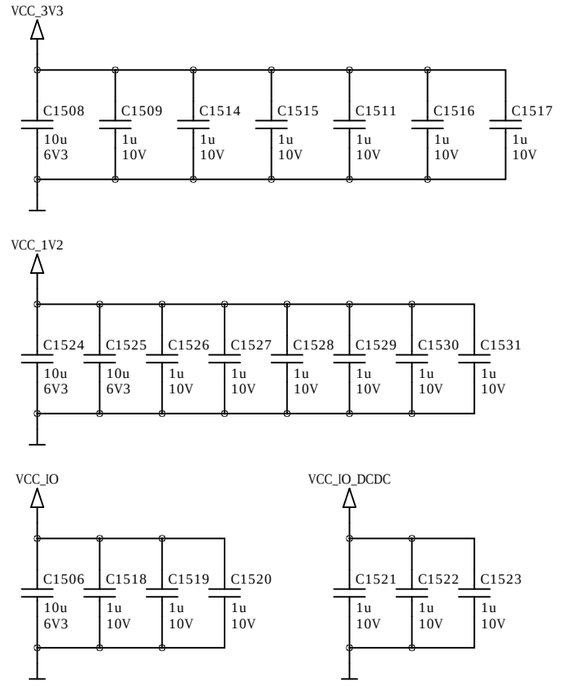


DC/DC Converter 3.3V/2.5V 3A 5%

FS = 500kHz Vfb = 0.8V



Power Decoupling



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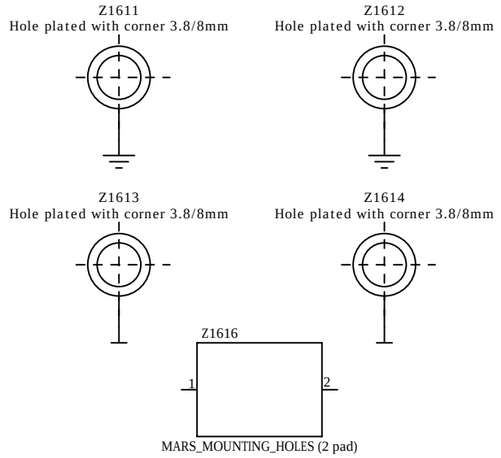
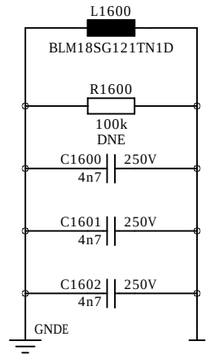
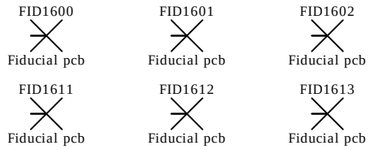
Board Mounting Holes



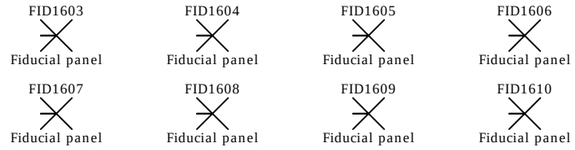
Chassis Ground



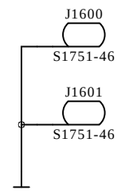
Fiducials



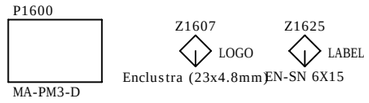
Panel Fiducials



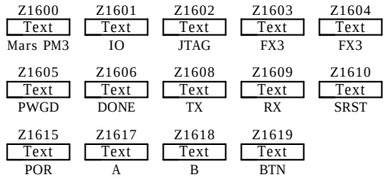
Ground Test Points



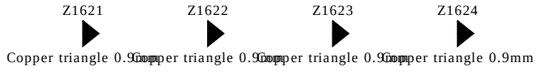
PCB



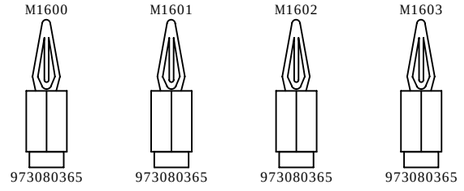
Text



Connector Pin-1 Marking



Board Spacers



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Component Variants

FX3FLASH	L2U2	IOPowMux
Part U603A MX25V1635FZNI EN101997	Part L1403A 2u2 EN101850	Part Q1400A DMC2038LVT EN100503
Part U603B AT25SF161-MHD-T EN101939	Part L1403B 2u2 EN101849	Part Q1400B DMG6602SVTQ-7 EN102244
Part U603C IS25LP016D-JKLE EN101998		

Assembly Variants

Assembly Variant	FX3FLASH	L2U2	IOPowMux
Variant EN102243:0 MA-PM3-W-R5.2	Option EN102243:1 FX3FLASH EN101997	Option EN102243:2 L2U2 EN101850	Option EN102243:3 IOPowMux DNE

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