

REV.	DESCRIPTION	DATE	APPROVED
A-1	First revision	2024-05-01	J Johnson



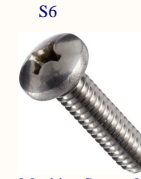
Standoff, Hex, 10mm, M2.5



Standoff, Hex, 10mm, M2.5

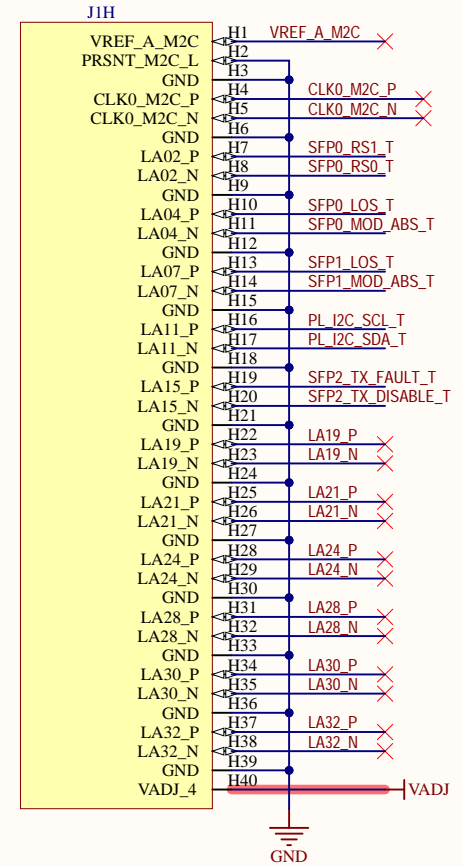
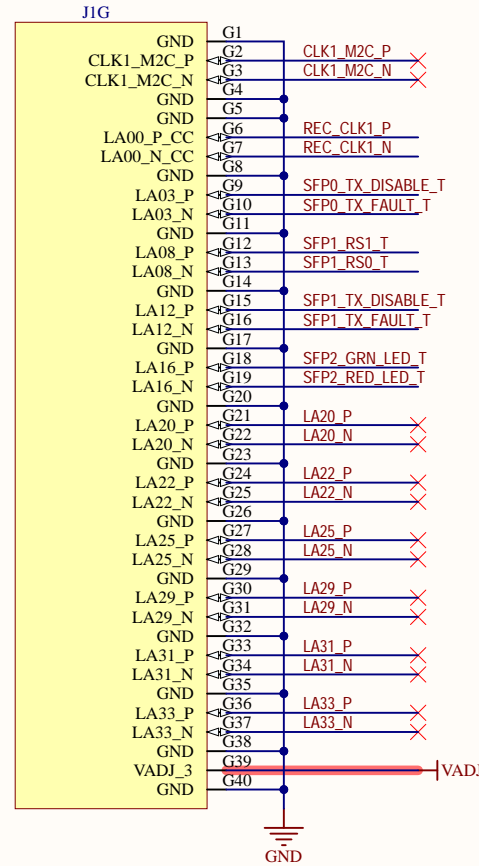
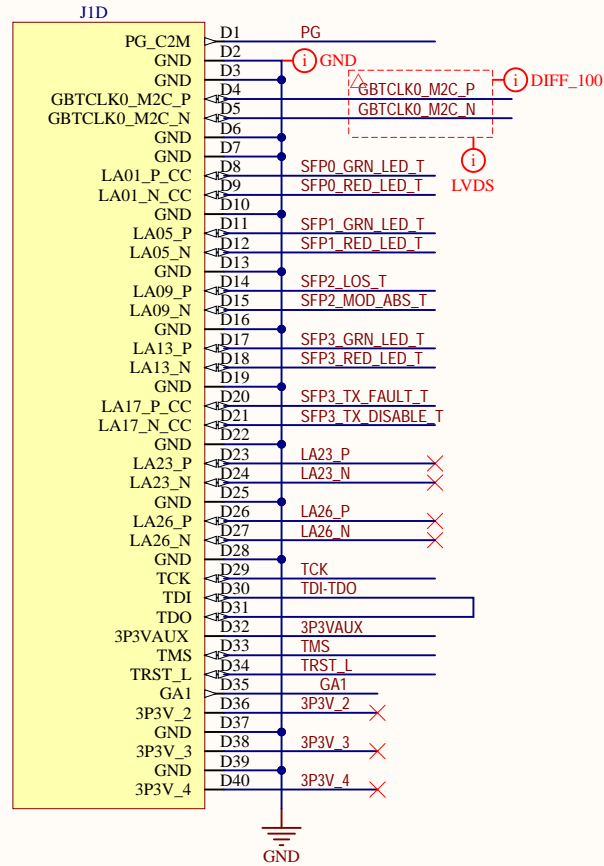
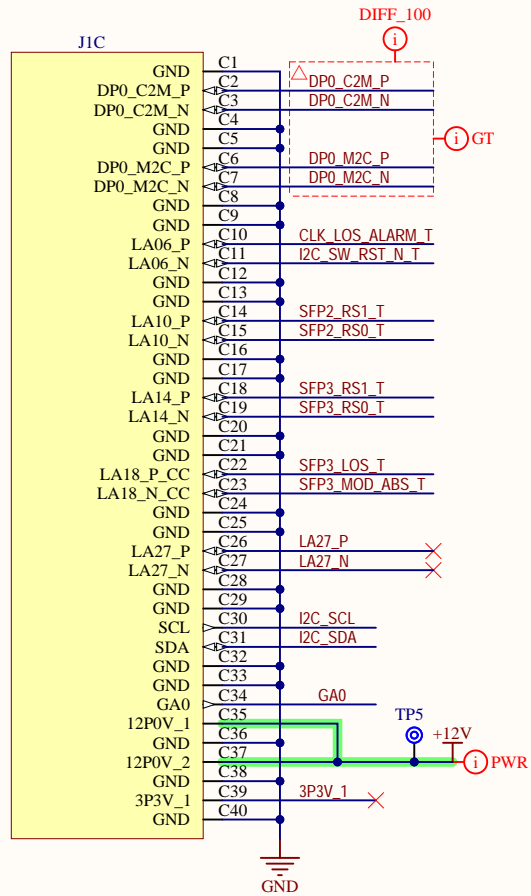


Machine Screw, M2.5 thread, 4mm length

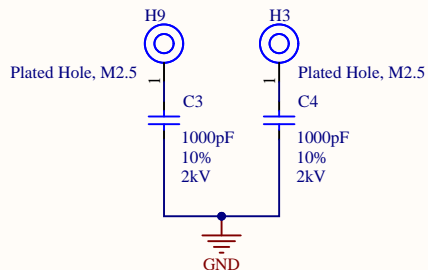


Machine Screw, M2.5 thread, 4mm length

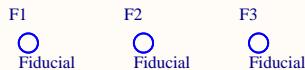
FMC PINS COMMON WITH LPC



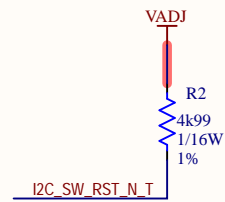
MOUNTING HOLES



FIDUCIALS

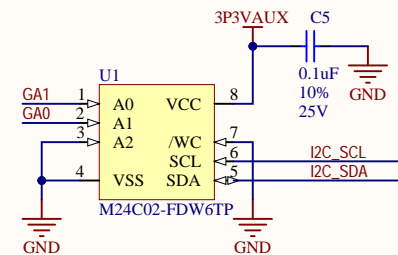


DEFAULTS



I2C Switch reset signal is pulled up in case the user has not connected this pin in the FPGA design.

EEPROM

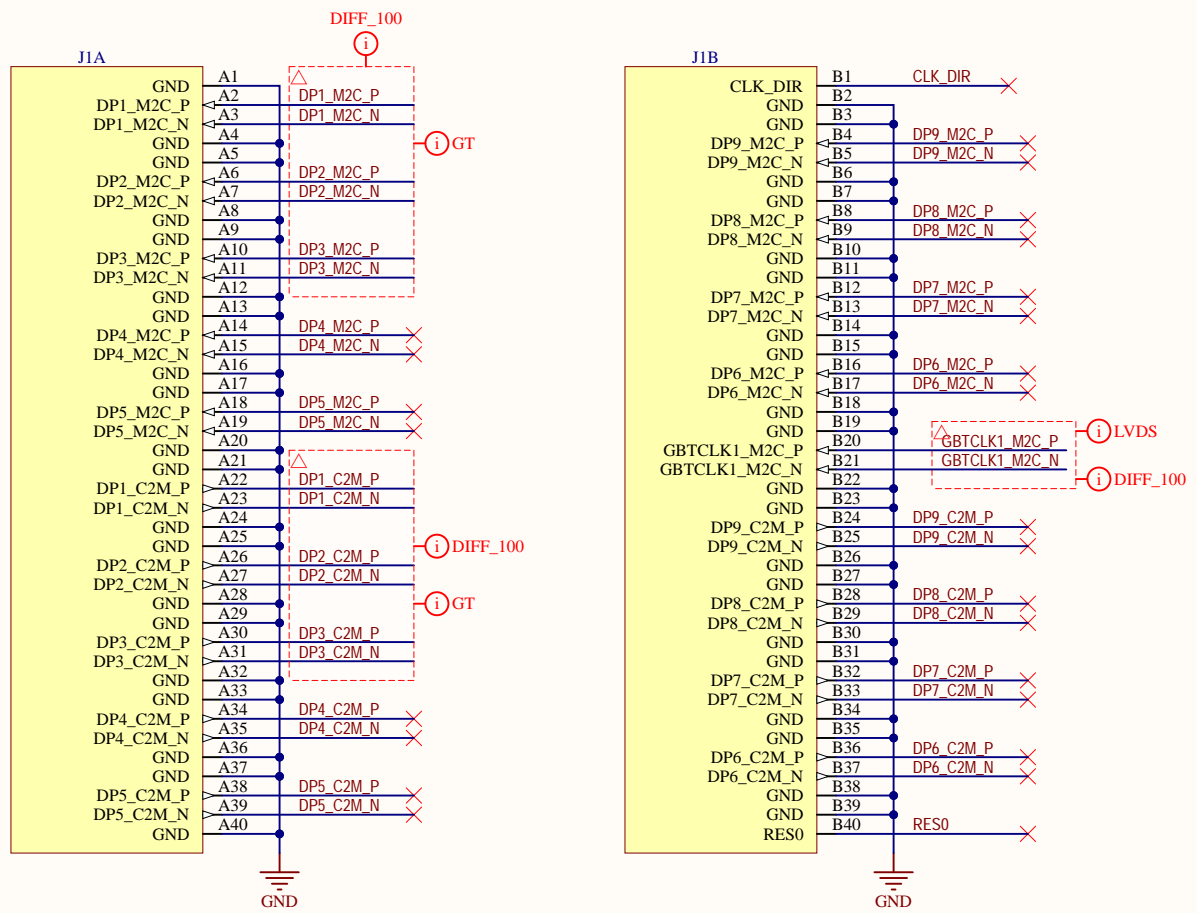


In accordance with the VITA 57.1 standard:
GA0 goes to A1, GA1 goes to A0

TITLE: Quad SFP28 FMC			
SHEET: LPC FMC			
CONFIG: Standard			
PROJECT: Ethernet FMC	DRAWN: J Johnson	DATE: 2024-05-01	
SIZE: B	SCH PIN: OP081-01-SCH.	REV: A-1	SHEET OF: 1 5

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HPC FMC PINS



J1E		E1		GND	
HA01_P_CC	E2	HA01_P_CC	×		
HA01_N_CC	E3	HA01_N_CC	×		
GND	E4	GND	×		
GND	E5	GND	×		
HA05_P	E6	HA05_P	×		
HA05_N	E7	HA05_N	×		
GND	E8	GND	×		
HA09_P	E9	HA09_P	×		
HA09_N	E10	HA09_N	×		
GND	E11	GND	×		
HA13_P	E12	HA13_P	×		
HA13_N	E13	HA13_N	×		
GND	E14	GND	×		
HA16_P	E15	HA16_P	×		
HA16_N	E16	HA16_N	×		
GND	E17	GND	×		
HA20_P	E18	HA20_P	×		
HA20_N	E19	HA20_N	×		
GND	E20	GND	×		
HB03_P	E21	HB03_P	×		
HB03_N	E22	HB03_N	×		
GND	E23	GND	×		
HB05_P	E24	HB05_P	×		
HB05_N	E25	HB05_N	×		
GND	E26	GND	×		
HB09_P	E27	HB09_P	×		
HB09_N	E28	HB09_N	×		
GND	E29	GND	×		
HB13_P	E30	HB13_P	×		
HB13_N	E31	HB13_N	×		
GND	E32	GND	×		
HB19_P	E33	HB19_P	×		
HB19_N	E34	HB19_N	×		
GND	E35	GND	×		
HB21_P	E36	HB21_P	×		
HB21_N	E37	HB21_N	×		
GND	E38	GND	×		
VADJ_1	E39	VADJ_1	×		
GND	E40	GND	×		

J1F		F1		PG_M2C	
PG_M2C	F2	GND	×		
GND	F3	GND	×		
GND	F4	HA00_P_CC	×		
HA00_P_CC	F5	HA00_N_CC	×		
HA00_N_CC	F6	GND	×		
GND	F7	HA04_P	×		
HA04_P	F8	HA04_N	×		
HA04_N	F9	GND	×		
GND	F10	HA08_P	×		
HA08_P	F11	HA08_N	×		
HA08_N	F12	GND	×		
GND	F13	HA12_P	×		
HA12_P	F14	HA12_N	×		
HA12_N	F15	GND	×		
GND	F16	HA15_P	×		
HA15_P	F17	HA15_N	×		
HA15_N	F18	GND	×		
GND	F19	HA19_P	×		
HA19_P	F20	HA19_N	×		
HA19_N	F21	GND	×		
GND	F22	HB02_P	×		
HB02_P	F23	HB02_N	×		
HB02_N	F24	GND	×		
GND	F25	HB04_P	×		
HB04_P	F26	HB04_N	×		
HB04_N	F27	GND	×		
GND	F28	HB08_P	×		
HB08_P	F29	HB08_N	×		
HB08_N	F30	GND	×		
GND	F31	HB12_P	×		
HB12_P	F32	HB12_N	×		
HB12_N	F33	GND	×		
GND	F34	HB16_P	×		
HB16_P	F35	HB16_N	×		
HB16_N	F36	GND	×		
GND	F37	HB20_P	×		
HB20_P	F38	HB20_N	×		
HB20_N	F39	GND	×		
GND	F40	VADJ_2	×		

J1I		J1		GND	
CLK3_BIDIR_P	J2	CLK3_BIDIR_P	×		
CLK3_BIDIR_N	J3	CLK3_BIDIR_N	×		
GND	J4	GND	×		
GND	J5	GND	×		
GND	J6	HA03_P	×		
HA03_P	J7	HA03_N	×		
HA03_N	J8	GND	×		
GND	J9	HA07_P	×		
HA07_P	J10	HA07_N	×		
HA07_N	J11	GND	×		
GND	J12	HA11_P	×		
HA11_P	J13	HA11_N	×		
HA11_N	J14	GND	×		
GND	J15	HA14_P	×		
HA14_P	J16	HA14_N	×		
HA14_N	J17	GND	×		
GND	J18	HA18_P	×		
HA18_P	J19	HA18_N	×		
HA18_N	J20	GND	×		
GND	J21	HA22_P	×		
HA22_P	J22	HA22_N	×		
HA22_N	J23	GND	×		
GND	J24	HB01_P	×		
HB01_P	J25	HB01_N	×		
HB01_N	J26	GND	×		
GND	J27	HB07_P	×		
HB07_P	J28	HB07_N	×		
HB07_N	J29	GND	×		
GND	J30	HB11_P	×		
HB11_P	J31	HB11_N	×		
HB11_N	J32	GND	×		
GND	J33	HB15_P	×		
HB15_P	J34	HB15_N	×		
HB15_N	J35	GND	×		
GND	J36	HB18_P	×		
HB18_P	J37	HB18_N	×		
HB18_N	J38	GND	×		
GND	J39	VIO_B_M2C_1	×		
VIO_B_M2C_1	J40	GND	×		

J1J		K1		VREF_B_M2C	
VREF_B_M2C	K2	GND	×		
GND	K3	GND	×		
GND	K4	CLK2_BDIR_P	×		
CLK2_BDIR_P	K5	CLK2_BDIR_N	×		
CLK2_BDIR_N	K6	GND	×		
GND	K7	HA02_P	×		
HA02_P	K8	HA02_N	×		
HA02_N	K9	GND	×		
GND	K10	HA06_P	×		
HA06_P	K11	HA06_N	×		
HA06_N	K12	GND	×		
GND	K13	HA10_P	×		
HA10_P	K14	HA10_N	×		
HA10_N	K15	GND	×		
GND	K16	HA17_P_CC	×		
HA17_P_CC	K17	HA17_N_CC	×		
HA17_N_CC	K18	GND	×		
GND	K19	HA21_P	×		
HA21_P	K20	HA21_N	×		
HA21_N	K21	GND	×		
GND	K22	HA23_P	×		
HA23_P	K23	HA23_N	×		
HA23_N	K24	GND	×		
GND	K25	HB00_P_CC	×		
HB00_P_CC	K26	HB00_N_CC	×		
HB00_N_CC	K27	GND	×		
GND	K28	HB06_P_CC	×		
HB06_P_CC	K29	HB06_N_CC	×		
HB06_N_CC	K30	GND	×		
GND	K31	HB10_P	×		
HB10_P	K32	HB10_N	×		
HB10_N	K33	GND	×		
GND	K34	HB14_P	×		
HB14_P	K35	HB14_N	×		
HB14_N	K36	GND	×		
GND	K37	HB17_P_CC	×		
HB17_P_CC	K38	HB17_N_CC	×		
HB17_N_CC	K39	GND	×		
GND	K40	VIO_B_M2C_2	×		

Opsero
ELECTRONIC DESIGN

TITLE: Quad SFP28 FMC
SHEET: HPC FMC
CONFIG: Standard

PROJECT: Ethernet FMC	DRAWN: J Johnson	DATE: 2024-05-01
SIZE: B	SCH PIN: OP081-01-SCH.	REV. A-1 SHEET OF 2

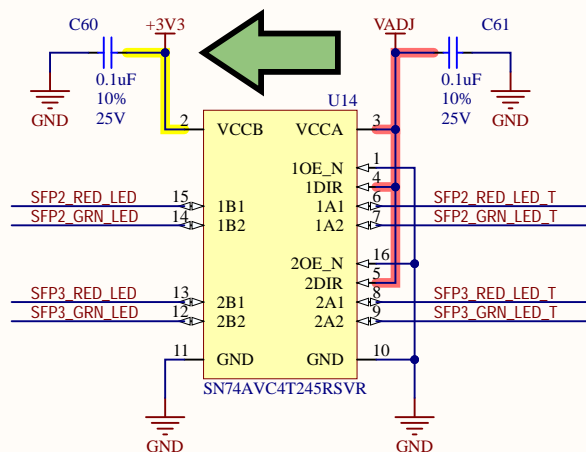
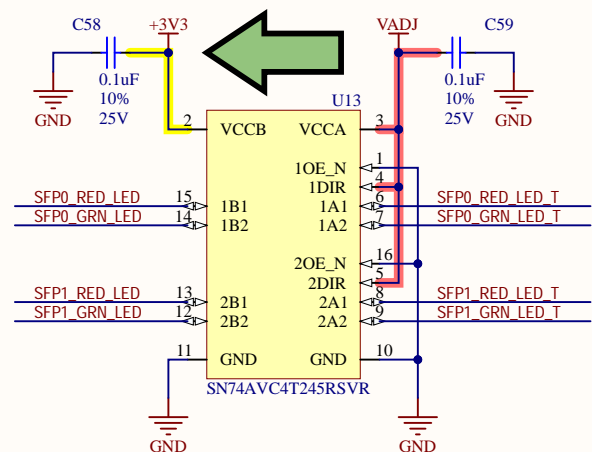
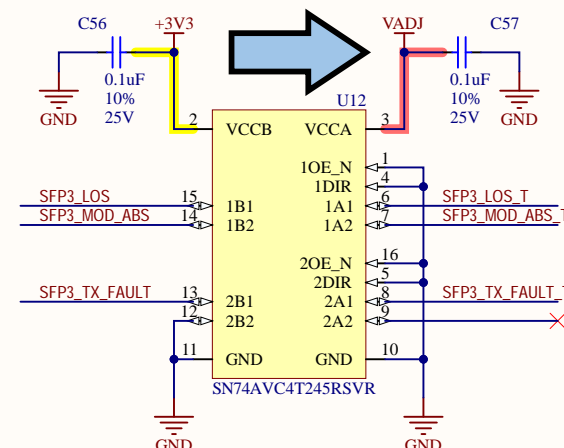
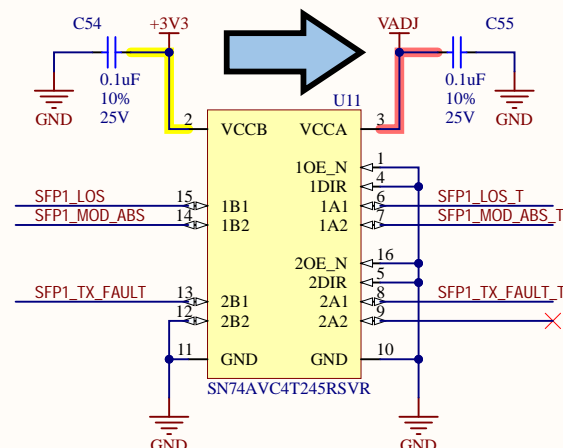
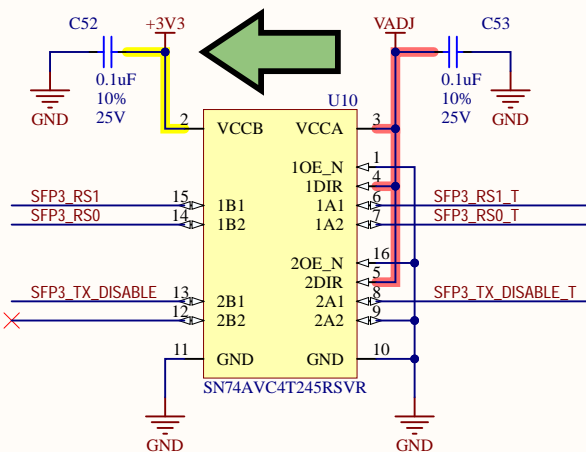
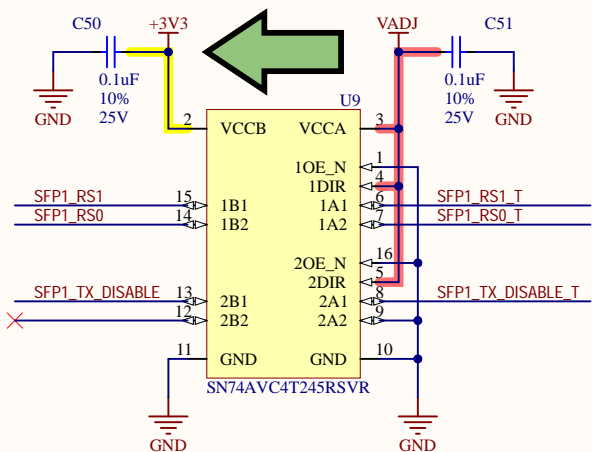
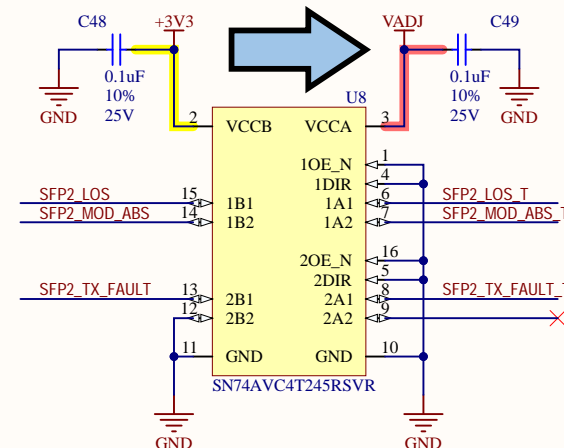
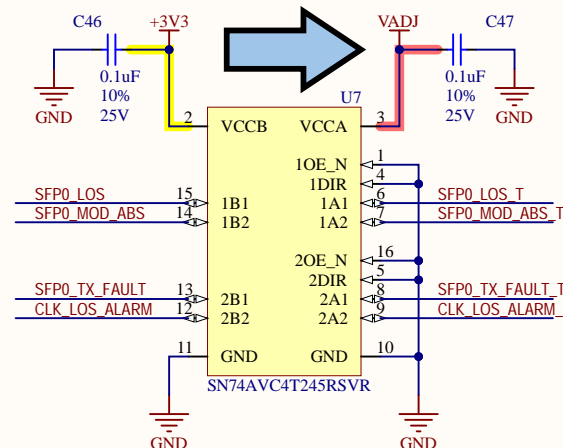
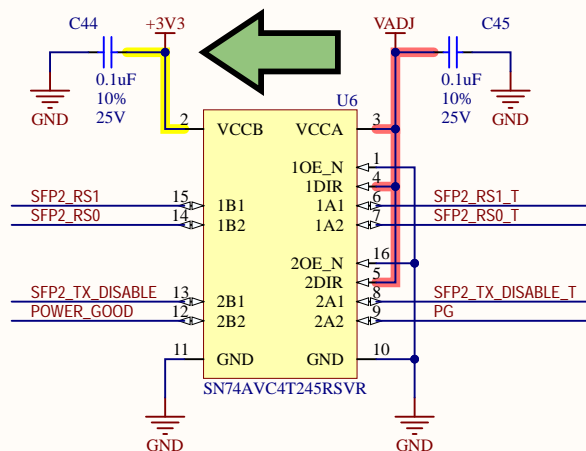
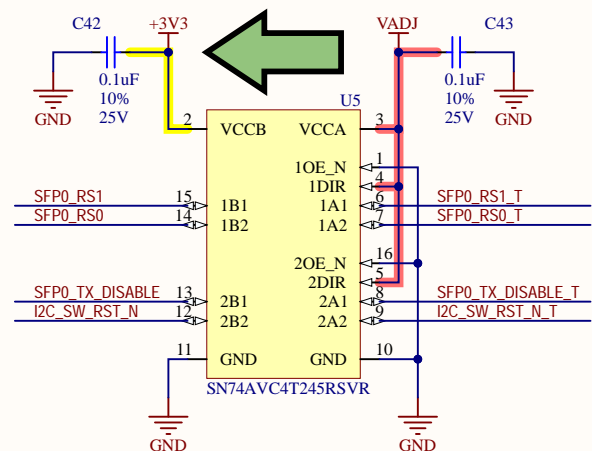
REV.	DESCRIPTION	DATE	APPROVED
A-1	First revision	2024-05-01	J Johnson

VOLTAGE TRANSLATION

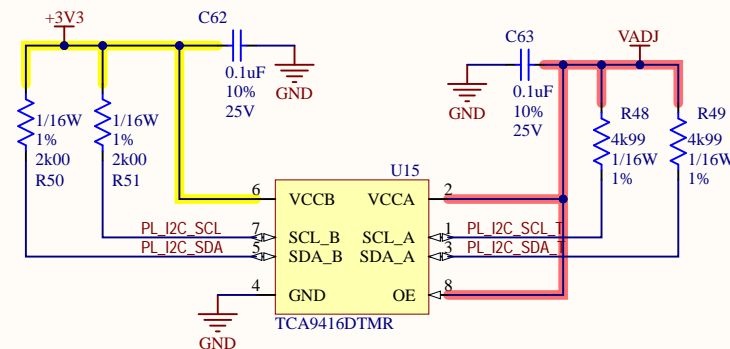
DIR	SIGNAL
INPUT	FLOW
LOW	B -> A
HIGH	A -> B

VADJ to 3V3 I/Os

3V3 to VADJ I/Os



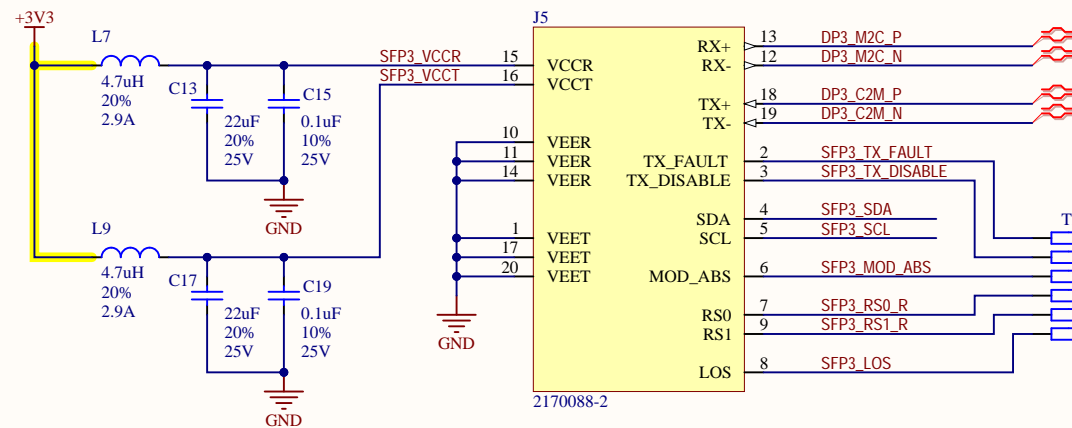
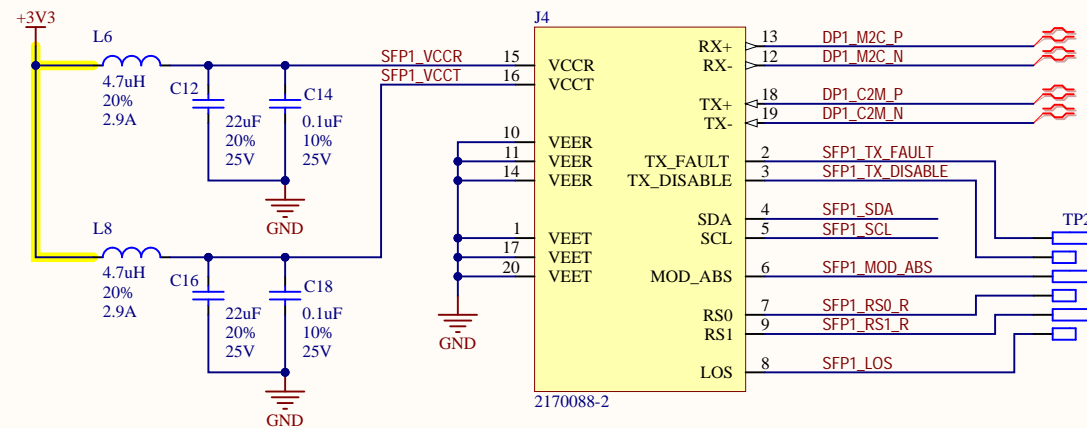
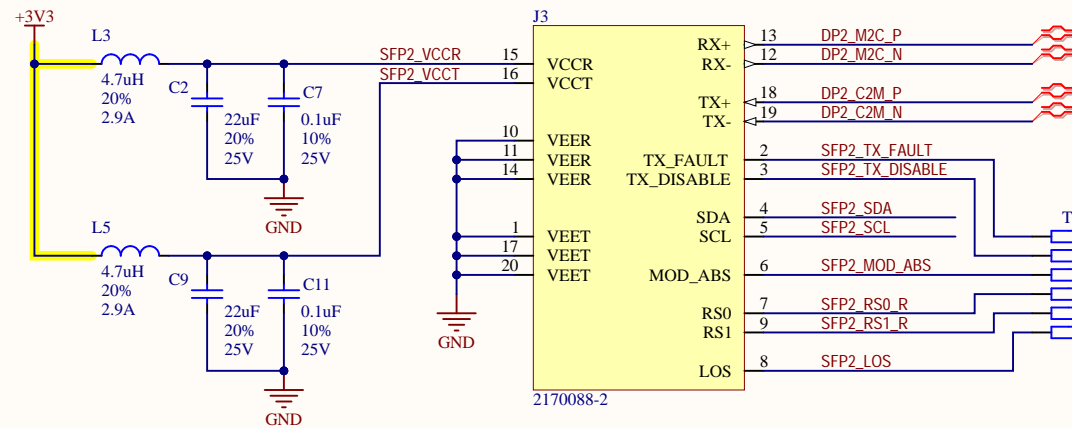
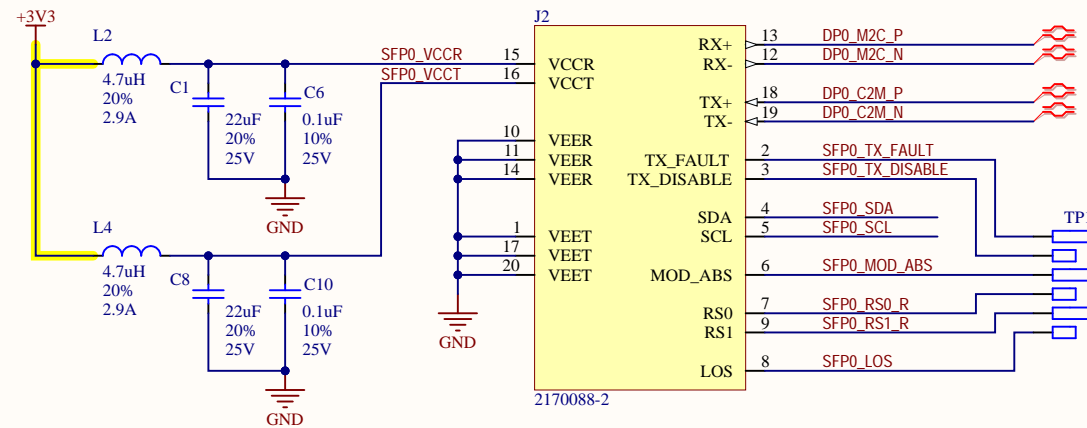
I2C VOLTAGE TRANSLATION



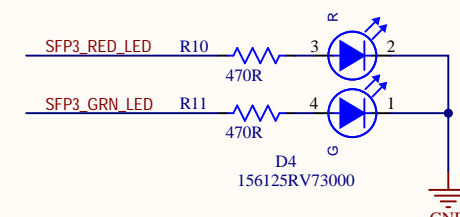
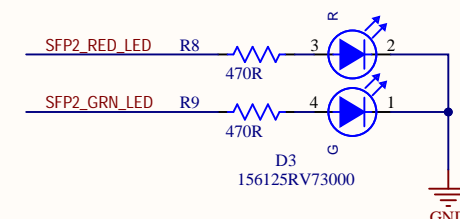
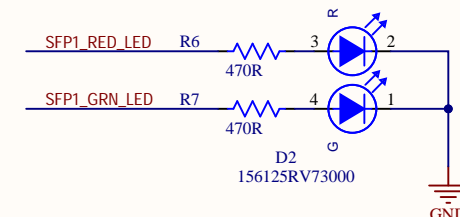
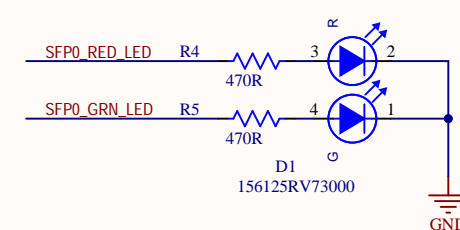
TITLE		Quad SFP28 FMC	
SHEET		Voltage Translation	
CONFIG.		Standard	
PROJECT	Ethernet FMC	DRAWN	J Johnson
		DATE	2024-05-01
SIZE	SCH PIN.	REV.	A-1
B	OP081-01-SCH.	SHEET OF	3 5

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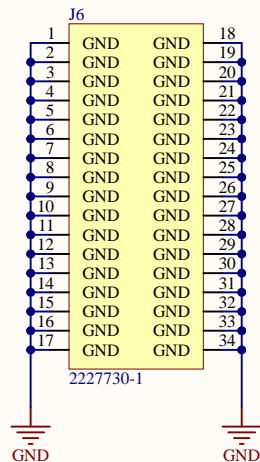
zSFP+ CONNECTORS



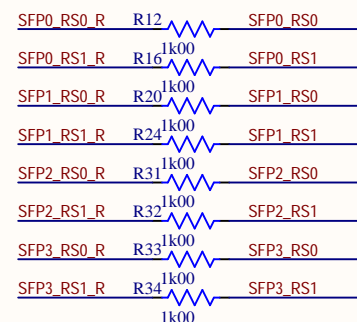
SFP LEDS



QUAD zSFP+ CAGE



SFP RATE SELECT



SFP OUTPUT PULL-UPS

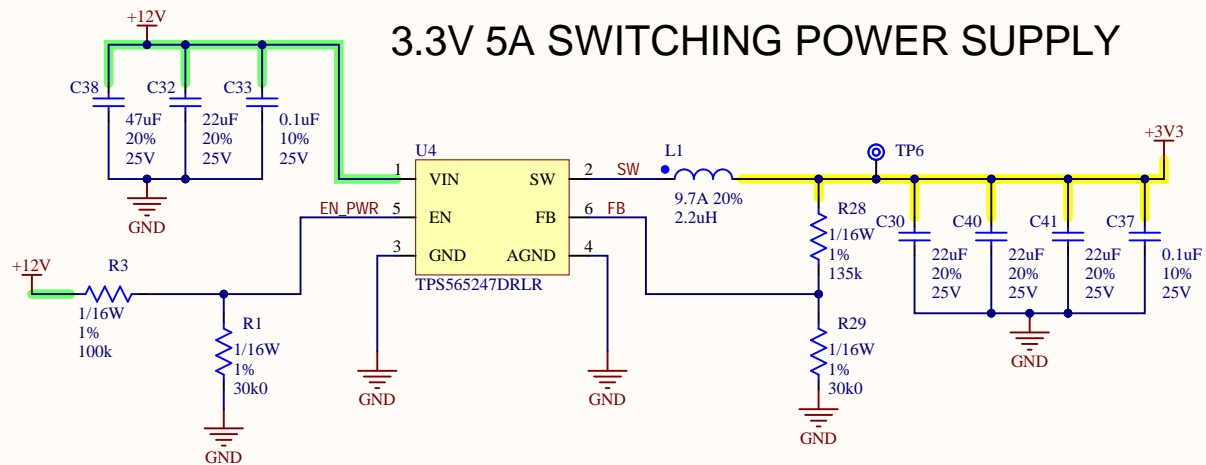


We pull up to 3.3V and then translate to VADJ (rather than just pulling up to VADJ) because some SFP modules specify a minimum pull-up voltage that is greater than 1.5V (ie. greater than the max VADJ of the Versal boards).

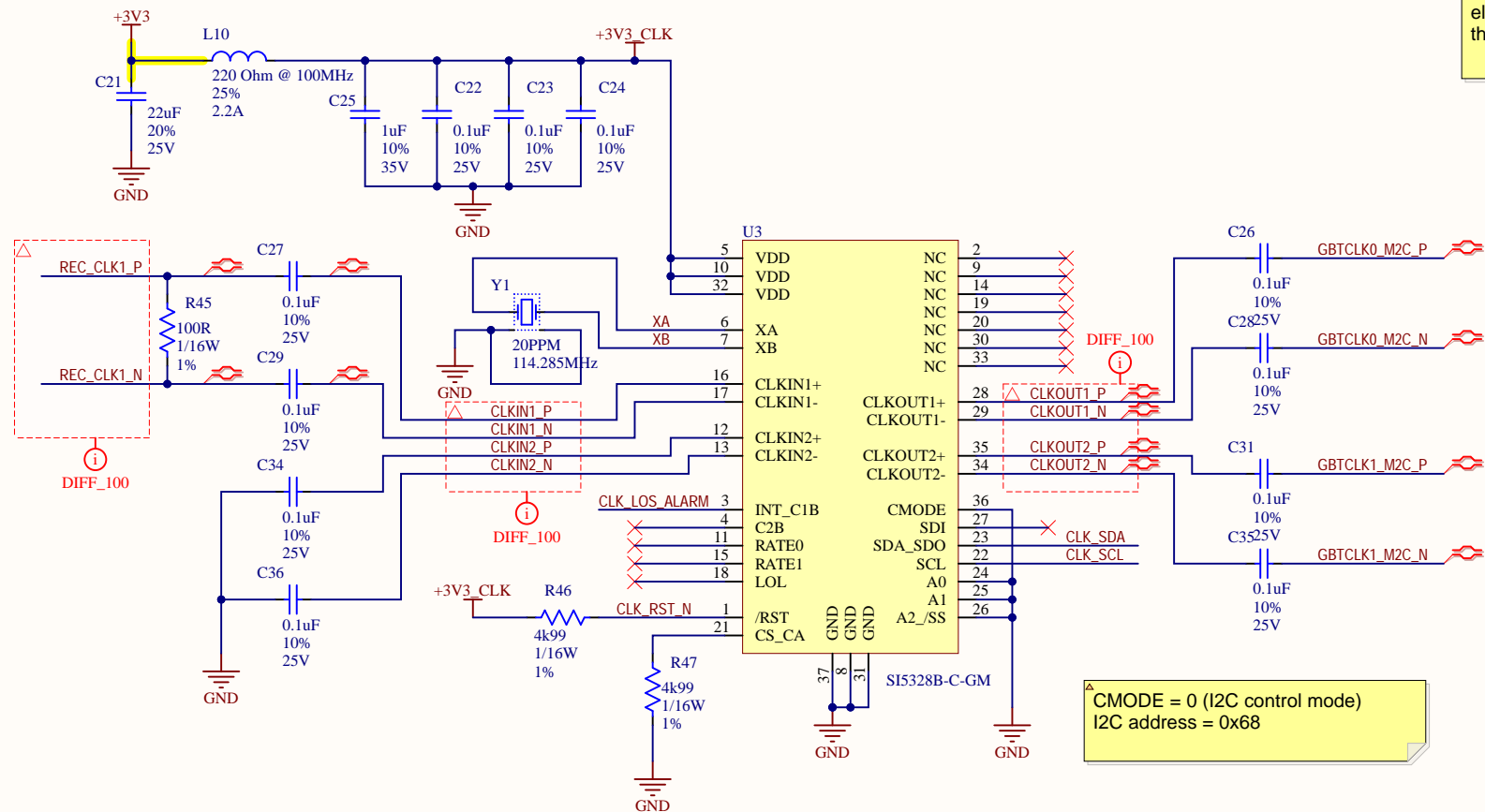
TITLE Quad SFP28 FMC			
SHEET 4x zSFP+ Cage			
CONFIG. Standard			
PROJECT Ethernet FMC	DRAWN J Johnson	DATE 2024-05-01	
SIZE B	SCH PIN. OP081-01-SCH.	REV. A-1	SHEET 4 OF 5

REV.	DESCRIPTION	DATE	APPROVED
A-1	First revision	2024-05-01	J Johnson

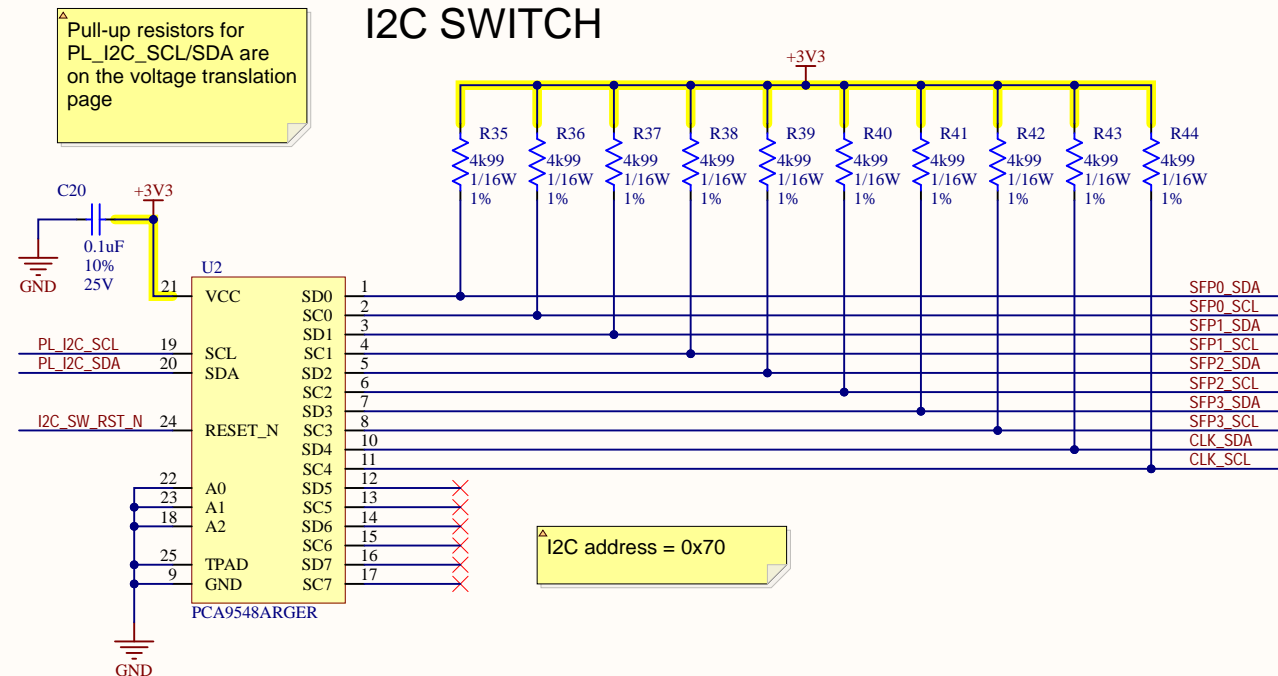
3.3V 5A SWITCHING POWER SUPPLY



JITTER-ATTENUATING CLOCK MULTIPLIER



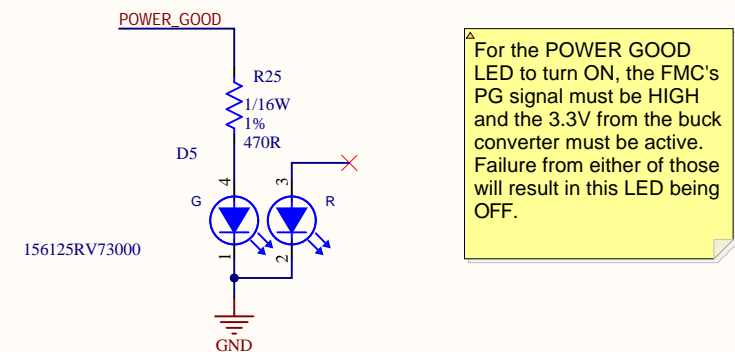
I2C SWITCH



I2C address = 0x70

Thermal pad has no electrical connection in the IC

POWER GOOD LED



For the POWER GOOD LED to turn ON, the FMC's PG signal must be HIGH and the 3.3V from the buck converter must be active. Failure from either of those will result in this LED being OFF.

CMODE = 0 (I2C control mode)
I2C address = 0x68

TITLE Quad SFP28 FMC	
SHEET Power, Clocks and I2C Switch	
CONFIG. Standard	
PROJECT Ethernet FMC	DATE 2024-05-01
DRAWN J Johnson	REV. A-1
SIZE B	SCH PIN. OP081-01-SCH.
	SHEET OF 5