REV.	DESCRIPTION	DATE	APPROVED
B-1	Changed package of I2C translators	2026-02-03	J Johnson

S1

Standoff, Hex, 10mm, M2.5

S2

Standoff, Hex, 10mm, M2.5

S5

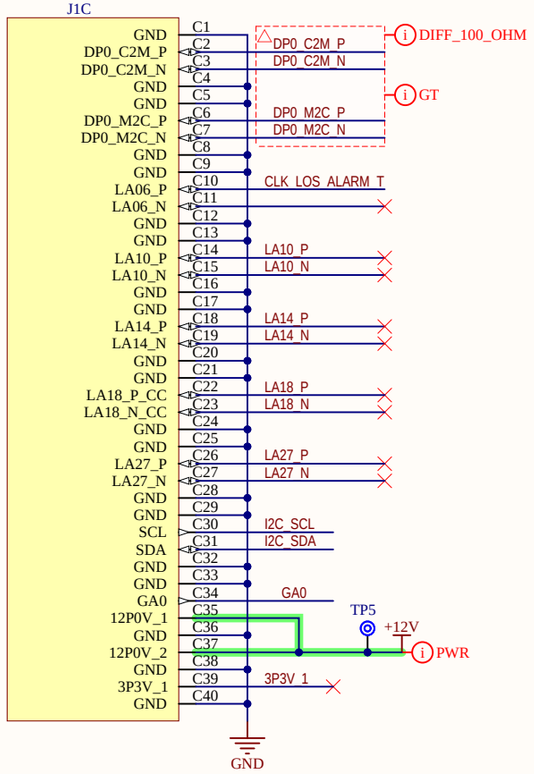
Machine Screw, M2.5 thread, 4mm length

S6

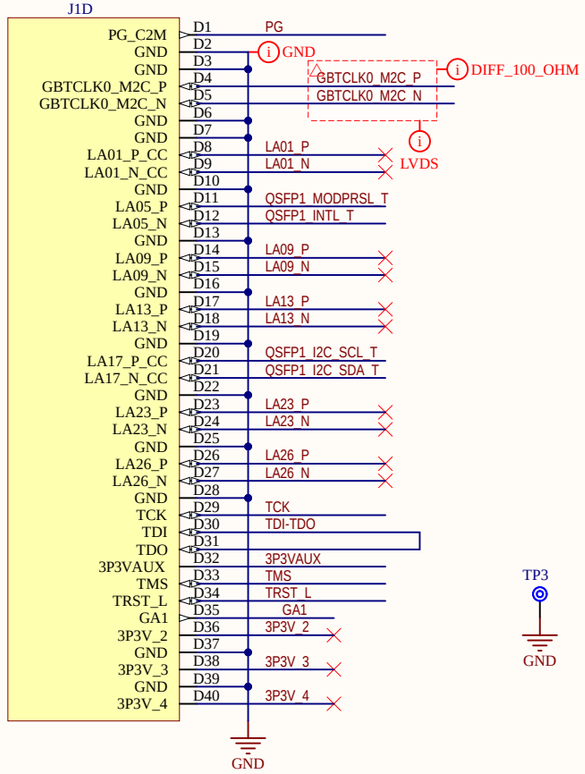
Machine Screw, M2.5 thread, 4mm length

FMC PINS COMMON WITH LPC

J1C



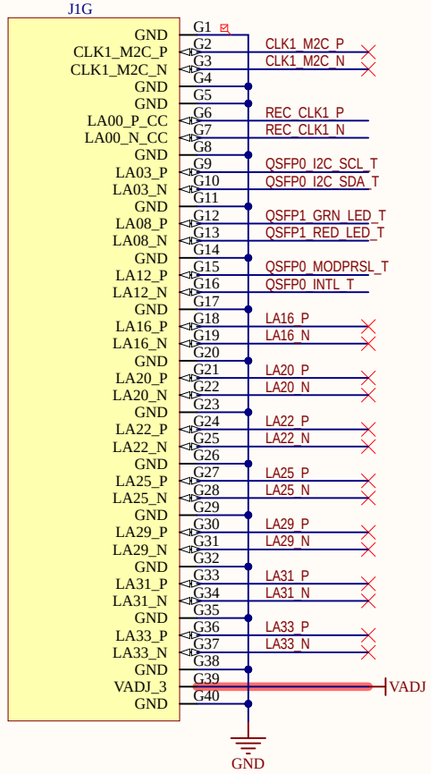
J1D



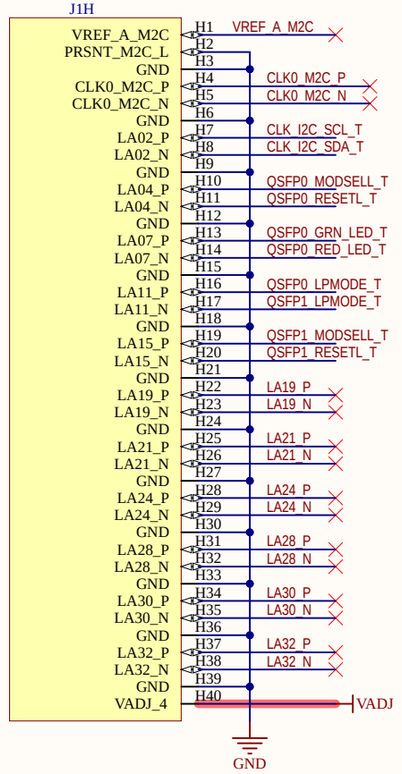
TP3

GND

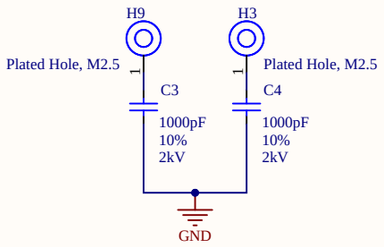
J1G



J1H

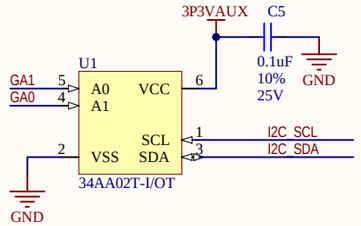


MOUNTING HOLES



FIDUCIALS

EEPROM



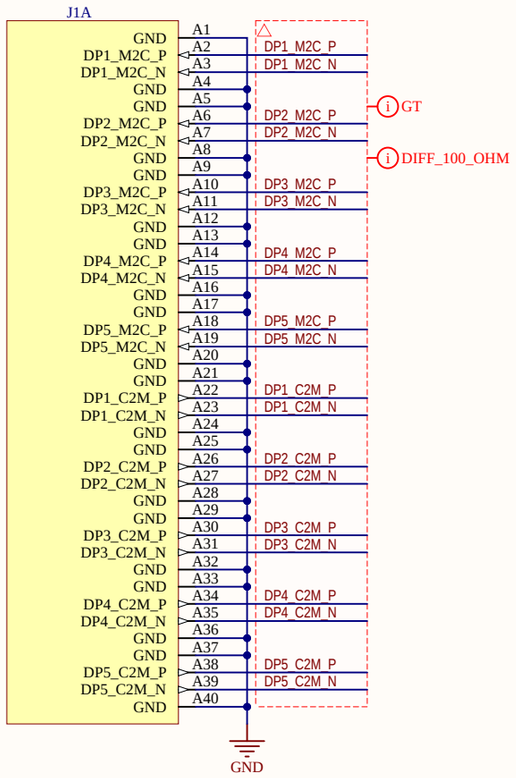
In accordance with the VITA 57.1 standard: GA0 goes to A1, GA1 goes to A0

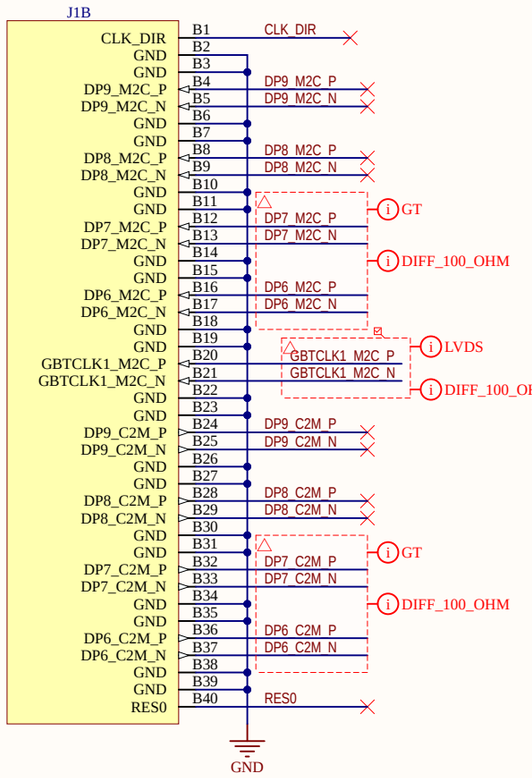
opsero ELECTRONIC DESIGN

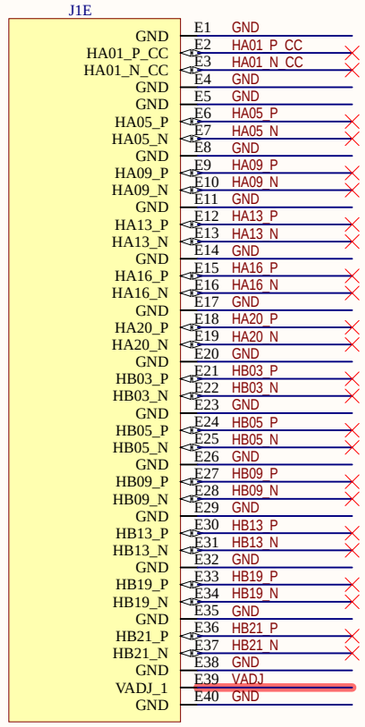
TITLE	2x QSFP28 FMC		
SHEET	LPC FMC		
CONFIG.	Standard		
PROJECT	Ethernet FMC	DRAWN J Johnson	DATE 2025-02-24
SIZE B	SCH P/N. OP120-01-SCH.	REV. B-1	SHEET 1 OF 5

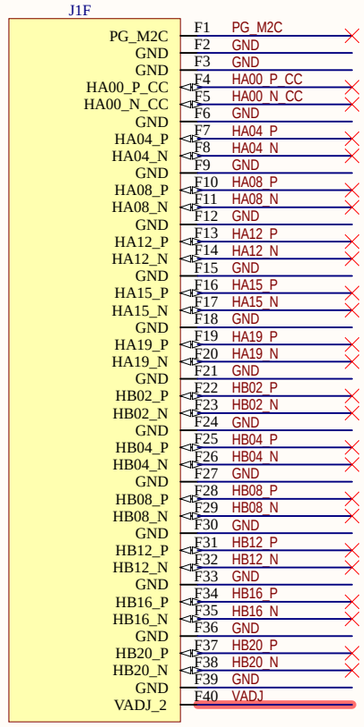
REV.	DESCRIPTION	DATE	APPROVED
B-1	Changed package of I2C translators	2026-02-03	J Johnson

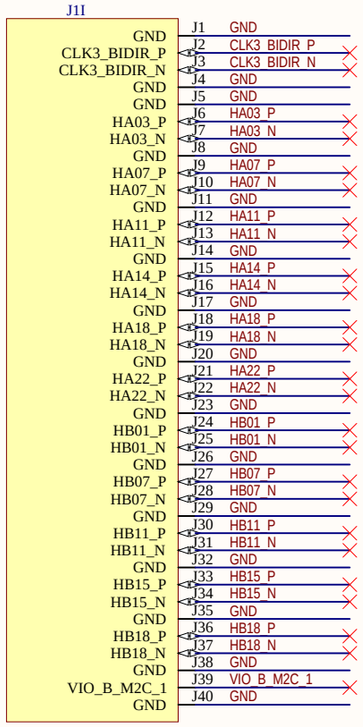
HPC FMC PINS

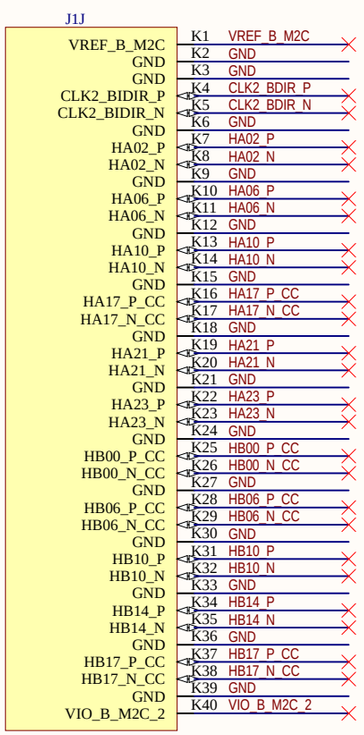












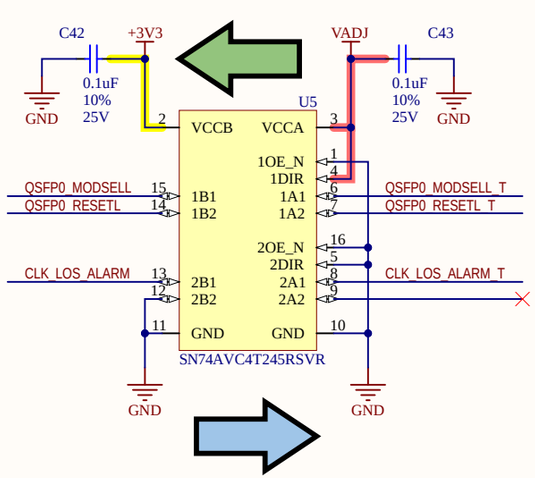
opsero ELECTRONIC DESIGN

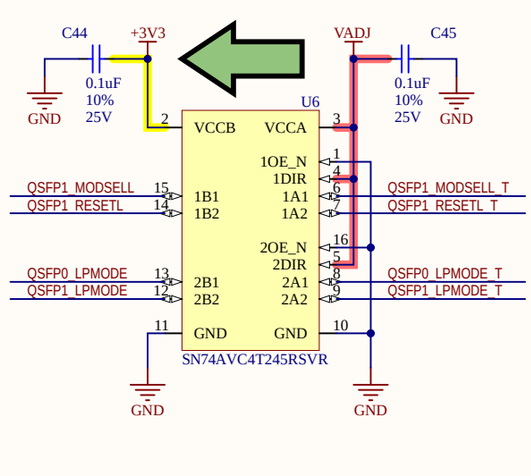
TITLE	2x QSFP28 FMC
SHEET	HPC FMC
CONFIG.	Standard
PROJECT	Ethernet FMC
DRAWN	J Johnson
DATE	2025-02-24
SIZE	B
SCH P/N.	OP120-01-SCH.
REV.	B-1
SHEET OF	2 5

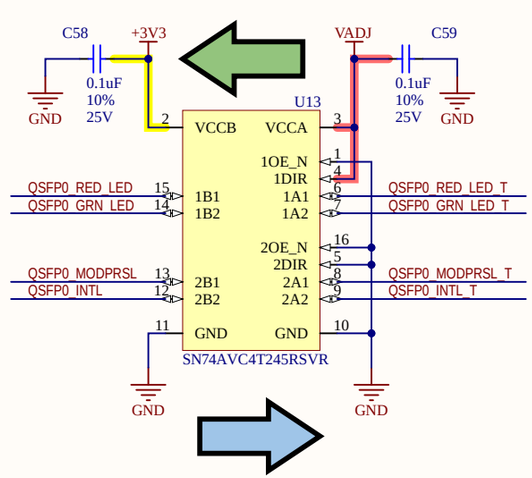
REV.	DESCRIPTION	DATE	APPROVED
B-1	Changed package of I2C translators	2026-02-03	J Johnson

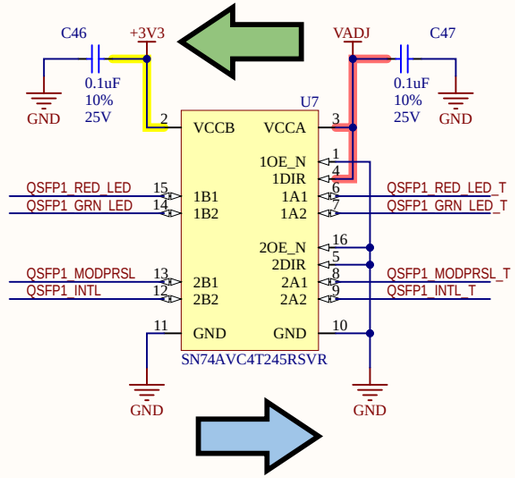
DIR	SIGNAL
INPUT	FLOW
LOW	B -> A
HIGH	A -> B

VOLTAGE TRANSLATION

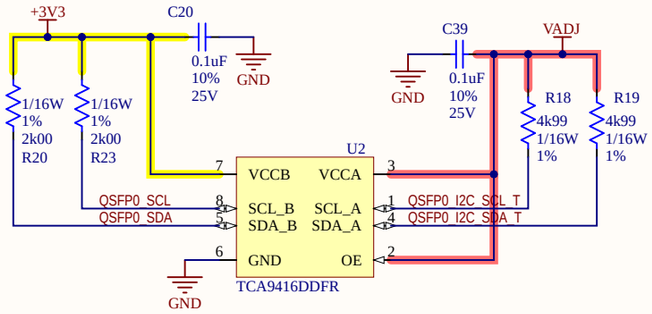


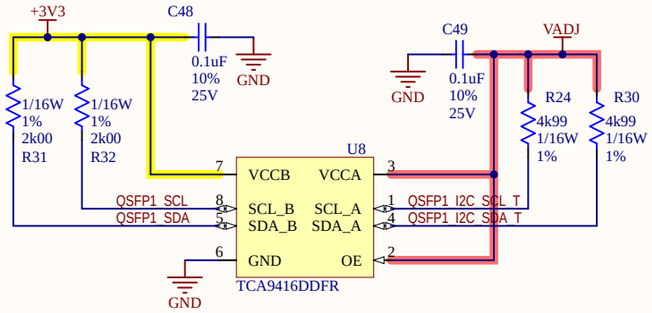


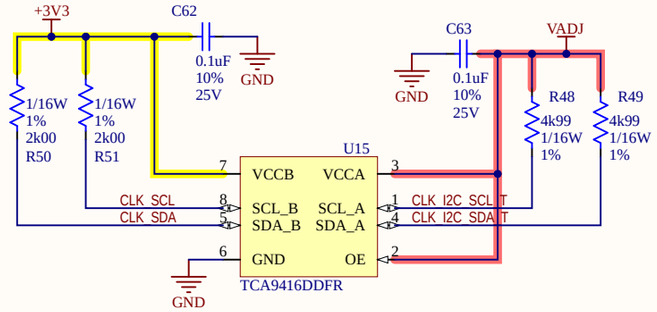




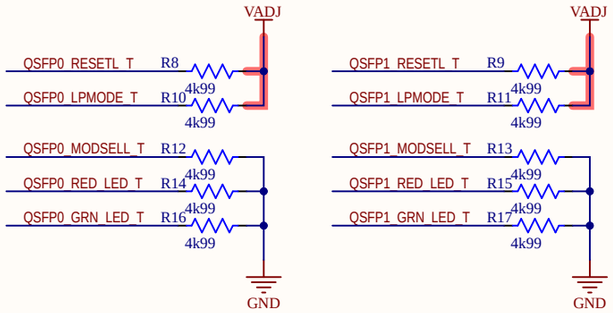
I2C VOLTAGE TRANSLATION







DEFAULTS



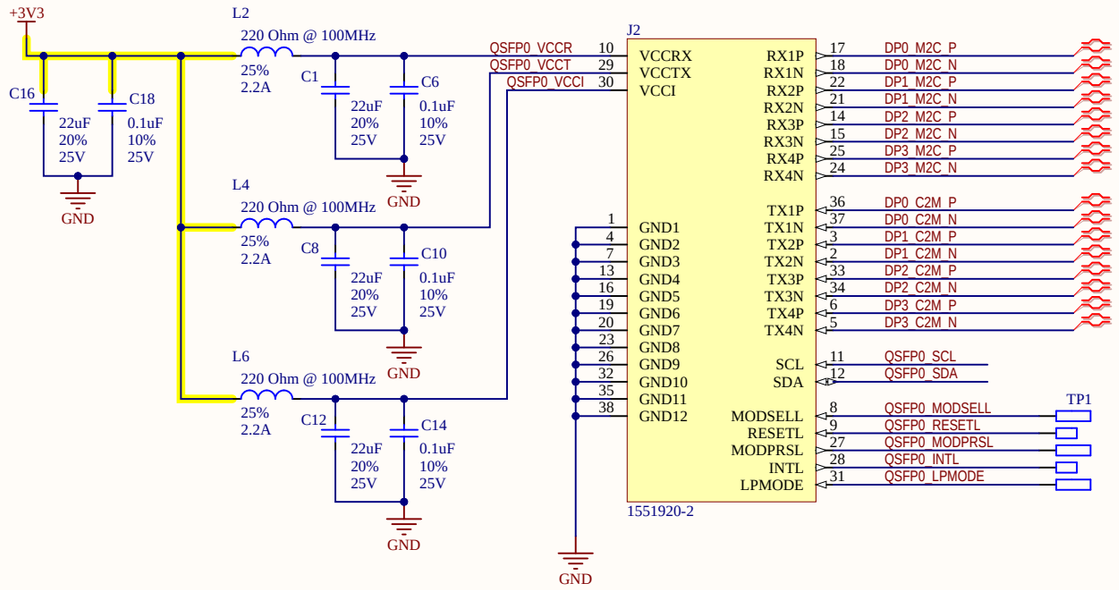
QSFP inputs are pulled to default levels in case the FMC pins have not been connected in the FPGA design.

opsero ELECTRONIC DESIGN

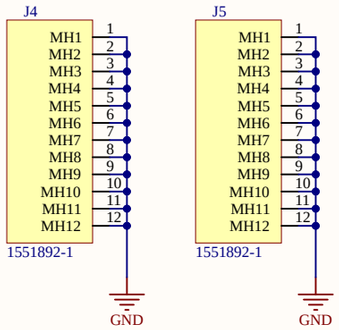
TITLE	2x QSFP28 FMC		
SHEET	Voltage Translation		
CONFIG.	Standard		
PROJECT	Ethernet FMC	DRAWN J Johnson	DATE 2025-02-24
SIZE B	SCH P/N. OP120-01-SCH.	REV. B-1	SHEET 3 OF 5

REV.	DESCRIPTION	DATE	APPROVED
B-1	Changed package of I2C translators	2026-02-03	J Johnson

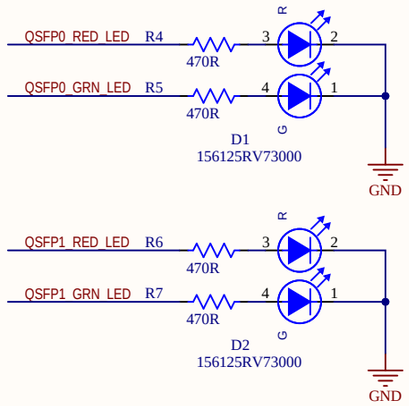
QSFP28 CONNECTORS



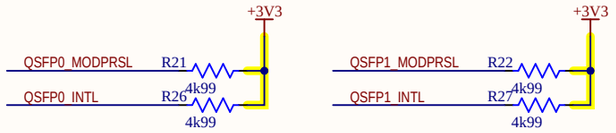
QSFP28 CAGES



QSFP LEDS



QSFP OUTPUT PULL-UPS



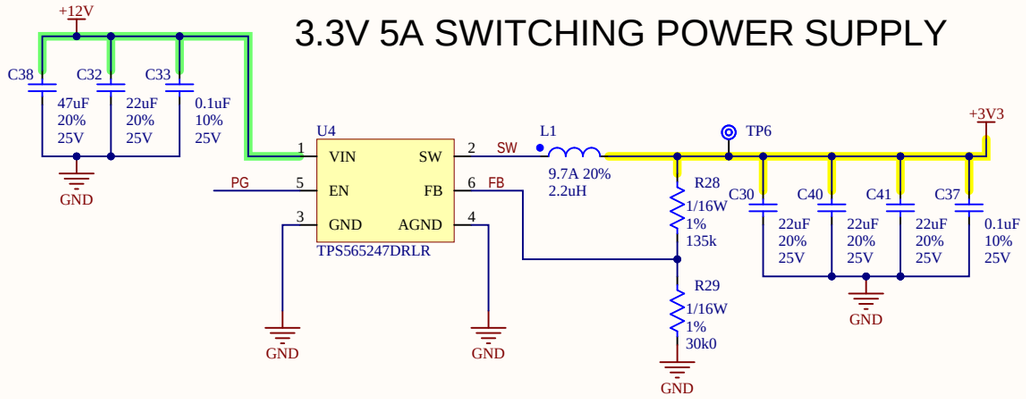
We pull up to 3.3V and then translate to VADJ (rather than just pulling up to VADJ) because some QSFP modules specify a minimum pull-up voltage that is greater than 1.5V (ie. greater than the max VADJ of the Versal boards).

opsero ELECTRONIC DESIGN

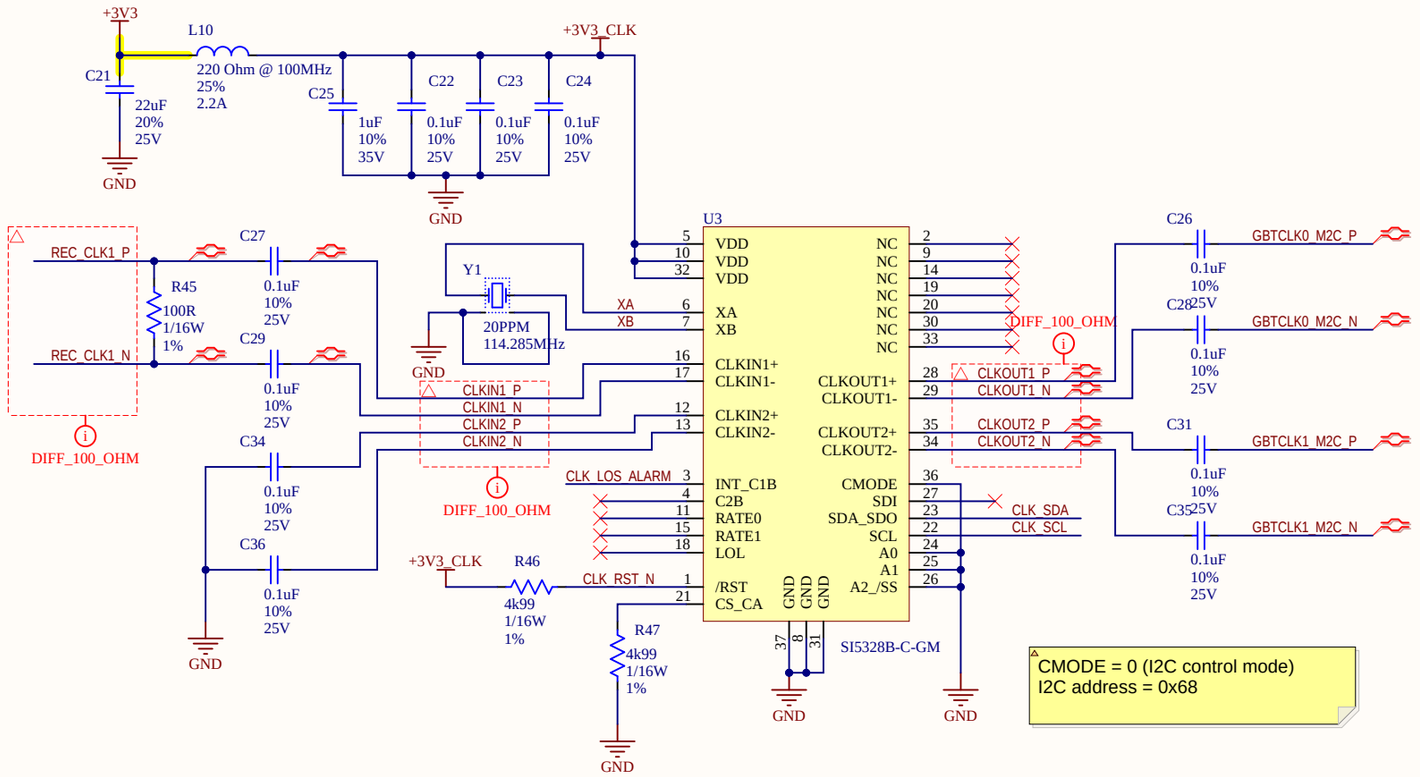
TITLE	2x QSFP28 FMC
SHEET	2x QSFP28 Cages
CONFIG.	Standard
PROJECT	Ethernet FMC
DRAWN	J Johnson
DATE	2025-02-24
SIZE	B
SCH P/N.	OP120-01-SCH.
REV.	B-1
SHEET OF	4 5

REV.	DESCRIPTION	DATE	APPROVED
B-1	Changed package of I2C translators	2026-02-03	J Johnson

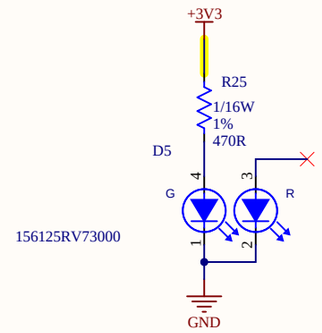
3.3V 5A SWITCHING POWER SUPPLY



JITTER-ATTENUATING CLOCK MULTIPLIER



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.

opsero ELECTRONIC DESIGN

TITLE	2x QSFP28 FMC		
SHEET	Power, Clocks and I2C Switch		
CONFIG.	Standard		
PROJECT	Ethernet FMC	DRAWN J Johnson	DATE 2025-02-24
SIZE B	SCH P/N. OP120-01-SCH.	REV. B-1	SHEET 5 OF 5