CrossLink-NX Evaluation Board

Rev - B

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02 - Block Diagram

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05 - Raspberry Pi and User I/O Interface (Bank6)

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Notes:
Resistors size 0402, tolerance 5%, unless otherwise specified.
Ferrite Beads size 0402 unless otherwise specified.
Capacitors >= 4.7uF size 0603 unless otherwise specified.
Capacitors < 4.7uF size 0402 unless otherwise specified.

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Title: Title page
Size: B
Project: CrossLink-NX Evaluation Board
Schematic Rev: 1.0
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Title

Block Diagram

Size	Project	Schematic Rev
B	**CrossLink-NX Evaluation Board**	1.0
		Board Rev B
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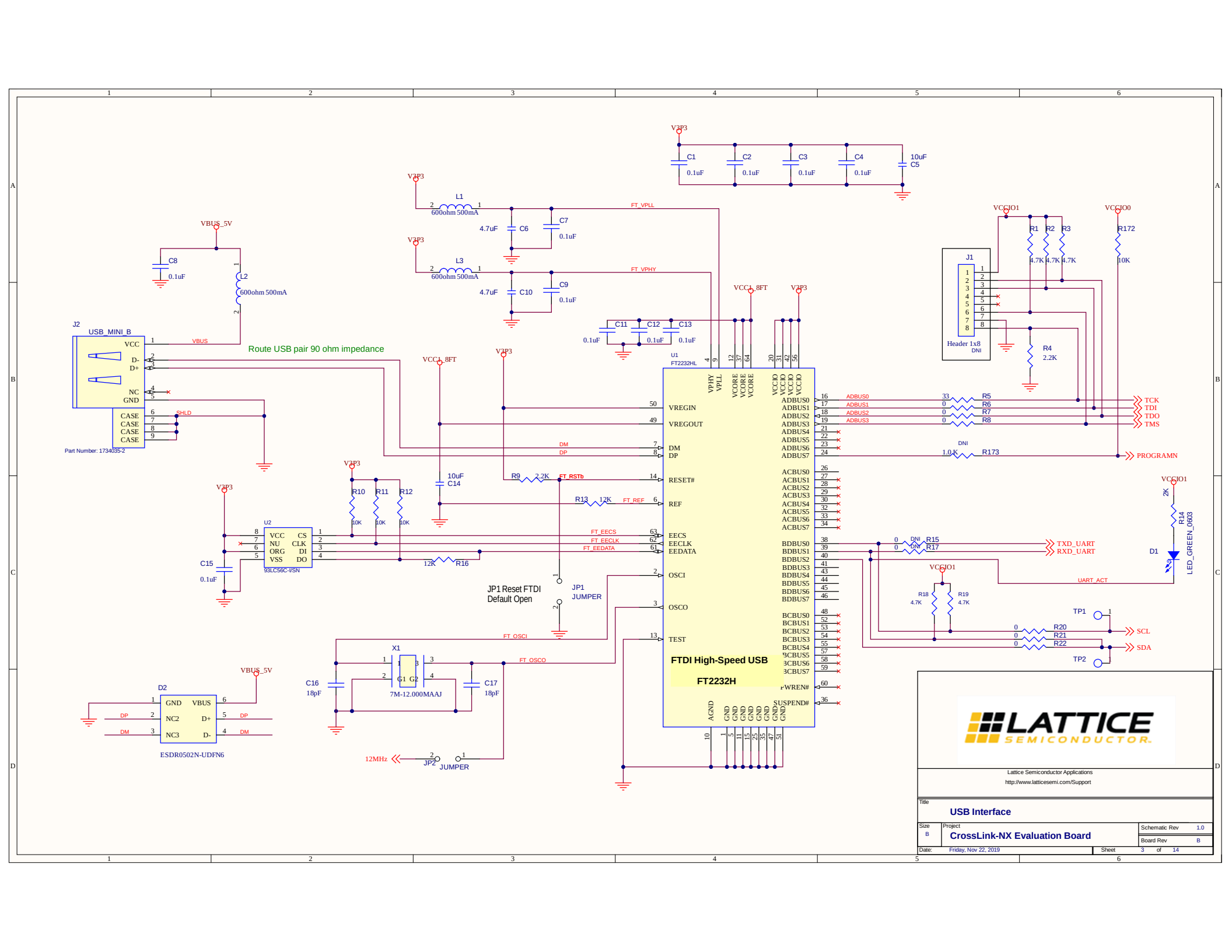
V3P3
C1
0.1uF
C2
0.1uF
C3
0.1uF
C4
0.1uF
10uF
C5
L1
600ohm 500mA
FT_VPLL
4.7uF
C6
C7
0.1uF
L3
600ohm 500mA
FT_VPHY
4.7uF
C10
C9
0.1uF
VBUS_5V
C8
0.1uF
L2
600ohm 500mA
J2
USB_MINI_B
VCC
D-
D+
NC
GND
CASE
CASE
CASE
CASE
VBUS
SHLD
Part Number: 1734035-2
Route USB pair 90 ohm impedance
VCC1_8FT
C11
0.1uF
C12
0.1uF
C13
0.1uF
U1
FT2232HL
VPHY
VPLL
VCORE
VCORE
VCORE
VCCIO
VCCIO
VCCIO
VCCIO
VREGIN
VREGOUT
DM
DP
RESET#
REF
EECS
EECLK
EEDATA
OSCI
OSCO
TEST
AGND
GND
SUSPEND#
PWREN#
ADBUS0
ADBUS1
ADBUS2
ADBUS3
ADBUS4
ADBUS5
ADBUS6
ADBUS7
ACBUS0
ACBUS1
ACBUS2
ACBUS3
ACBUS4
ACBUS5
ACBUS6
ACBUS7
BDBUS0
BDBUS1
BDBUS2
BDBUS3
BDBUS4
BDBUS5
BDBUS6
BDBUS7
BCBUS0
BCBUS1
BCBUS2
BCBUS3
BCBUS4
BCBUS5
BCBUS6
BCBUS7
FTDI High-Speed USB
FT2232H
VCCIO1
VCCIO0
R1
4.7K
R2
4.7K
R3
4.7K
R172
10K
J1
Header 1x8
DNI
R4
2.2K
ADBUS0
ADBUS1
ADBUS2
ADBUS3
R5
33
R6
0
R7
0
R8
0
TCK
TDI
TDO
TMS
DNI
1.0K
R173
PROGRAMN
V3P3
R10
10K
R11
10K
R12
10K
10uF
C14
R9
2.2K
FT_RSTb
R13
12K
FT_REF
U2
93LC56C-I/SN
VCC
NU
ORG
VSS
CS
CLK
DI
DO
FT_EECS
FT_EECLK
FT_EEDATA
C15
0.1uF
12K
R16
JP1 Reset FTDI
Default Open
JP1
JUMPER
FT_OSCI
FT_OSCO
X1
7M-12.000MAAJ
C16
18pF
C17
18pF
12MHz
JP2
JUMPER
VBUS_5V
D2
ESDR0502N-UDFN6
GND
VBUS
NC2
D+
NC3
D-
DP
DM
VCCIO1
2K
R14
D1
LED_GREEN_0603
R15
DNI
R17
0
TXD_UART
RXD_UART
UART_ACT
VCCIO1
R18
4.7K
R19
4.7K
TP1
R20
0
R21
0
R22
0
SCL
SDA
TP2
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Title
USB Interface
Size
B
Project
CrossLink-NX Evaluation Board
Schematic Rev
1.0
Board Rev
B
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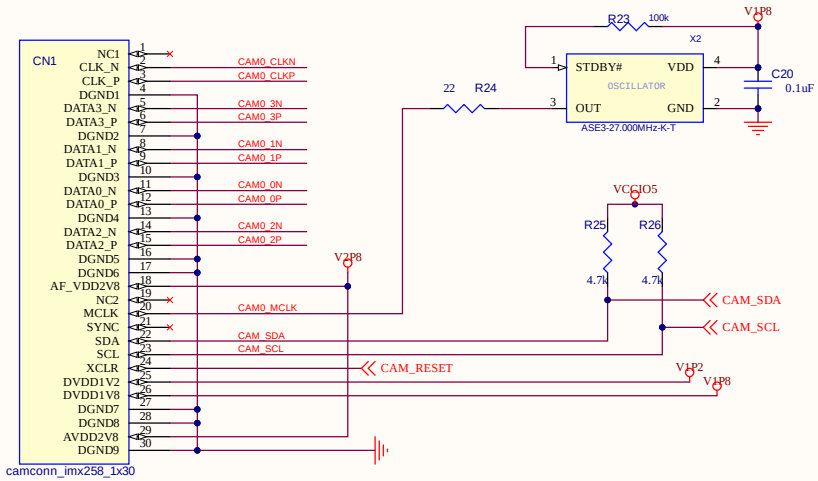
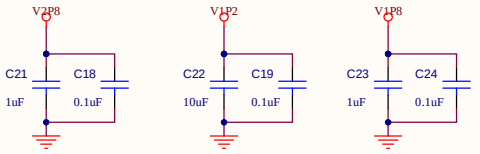
14



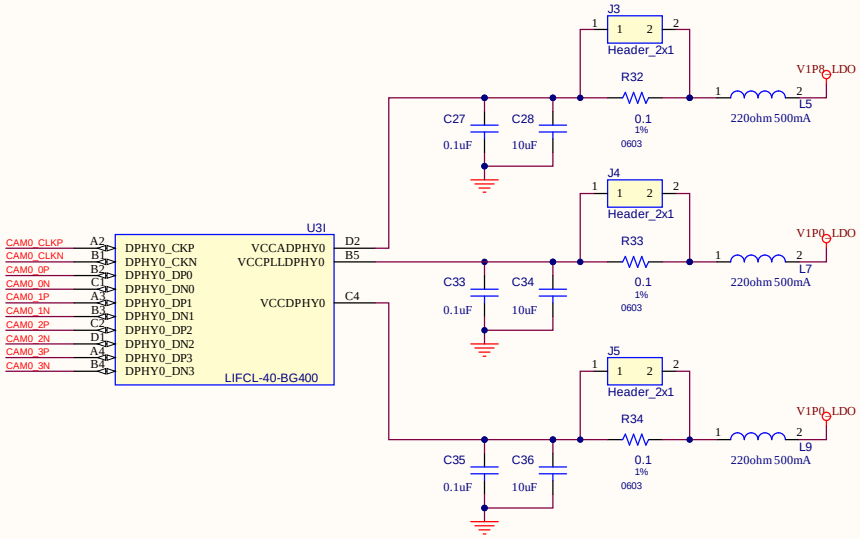
Keep LEDs away from Camera

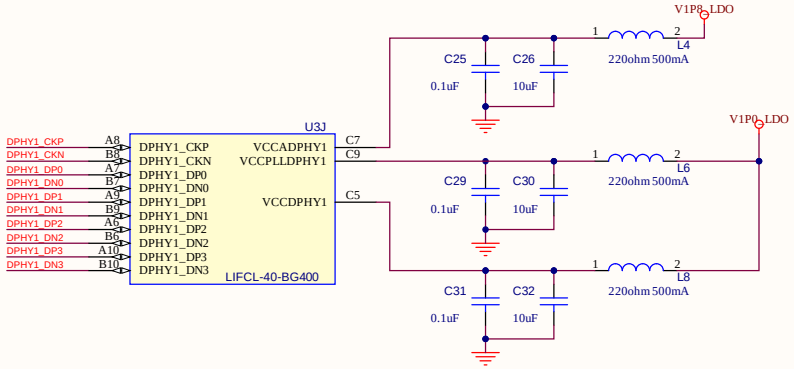


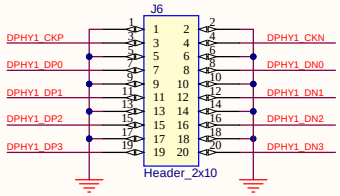
LVDS RX Termination Resistors

NOTE: Place close to FPGA

NOTE:
1. Match length within pair <= 0.1mm, match length between pairs <=1.0mm.
2. Differential impedance should be 100 ohms and 50 ohms as a single ended signal
3. All the power rails should be capable of carrying 1A current







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Title	Camera Interface (DPHYs)		
Size B	Project CrossLink-NX Evaluation Board	Schematic Rev	1.0
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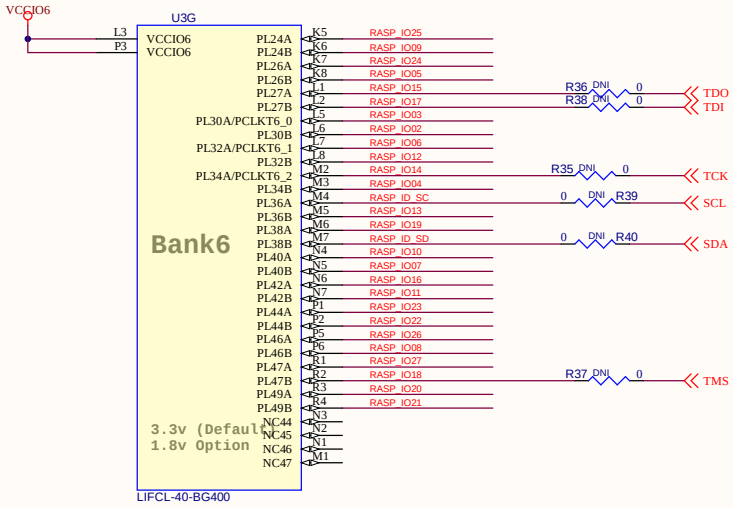
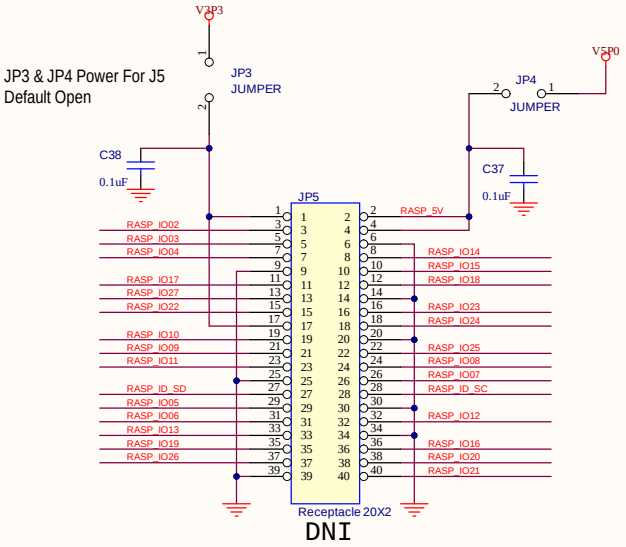
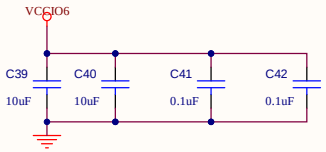
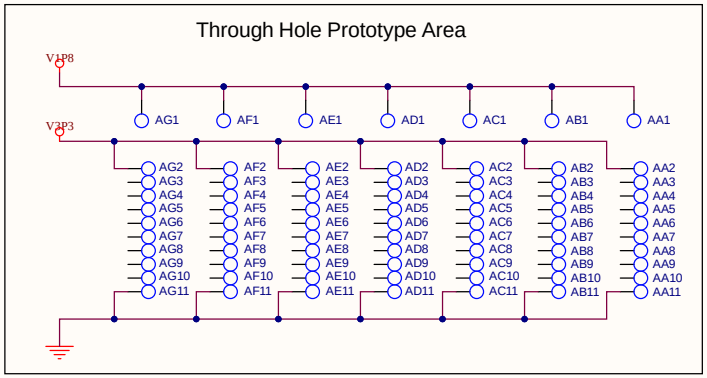
Raspberry PI and User I/O Connector







Layout:
SS: Put box around Prototype Area
SS: Row and Column Letters/Numbers
Close to FMC-LPC and JP5



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Title	Raspberry Pi and User I/O Interface	
Size B	Project: CrossLink-NX Evaluation Board	Schematic Rev 1.0
		Board Rev B
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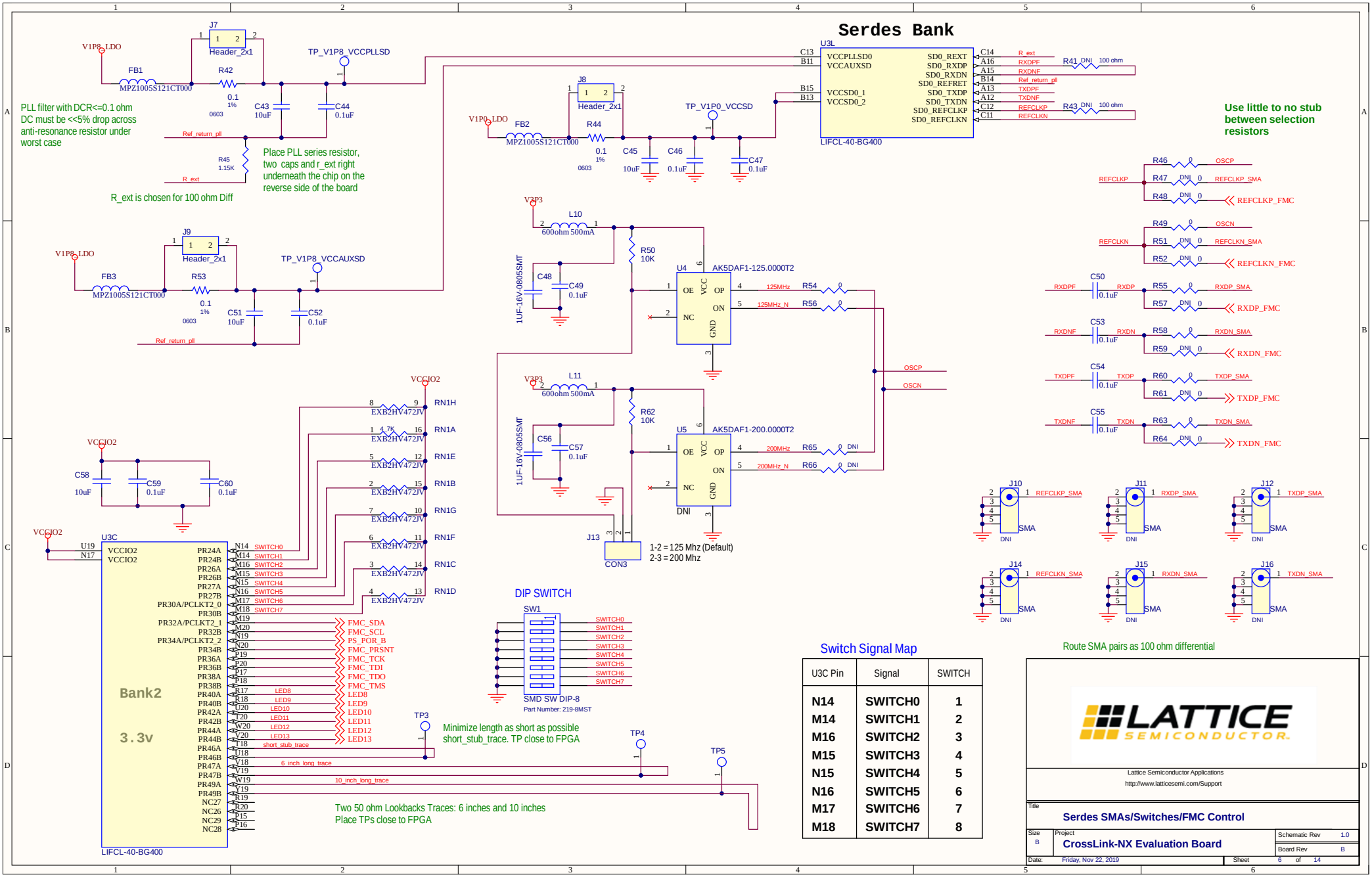
Serdes Bank



Switch Signal Map

U3C Pin	Signal	SWITCH
N14	SWITCH0	1
M14	SWITCH1	2
M16	SWITCH2	3
M15	SWITCH3	4
N15	SWITCH4	5
N16	SWITCH5	6
M17	SWITCH6	7
M18	SWITCH7	8

Route SMA pairs as 100 ohm differential

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Title	Serdes SMAs/Switches/FMC Control	
Size B	Project: CrossLink-NX Evaluation Board	Schematic Rev 1.0
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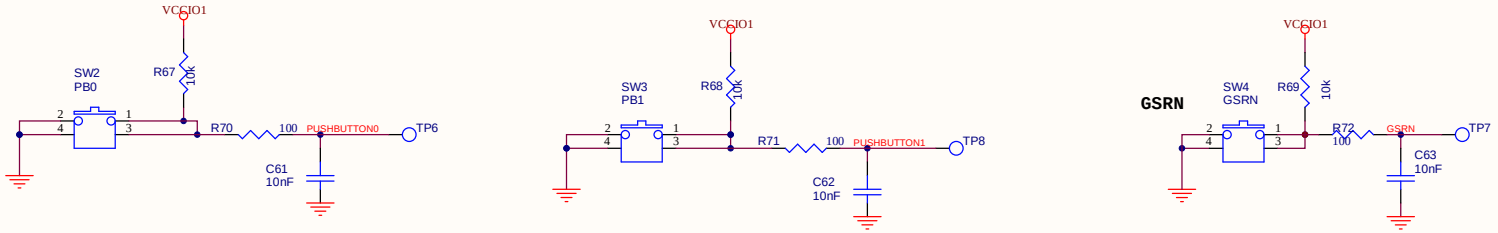
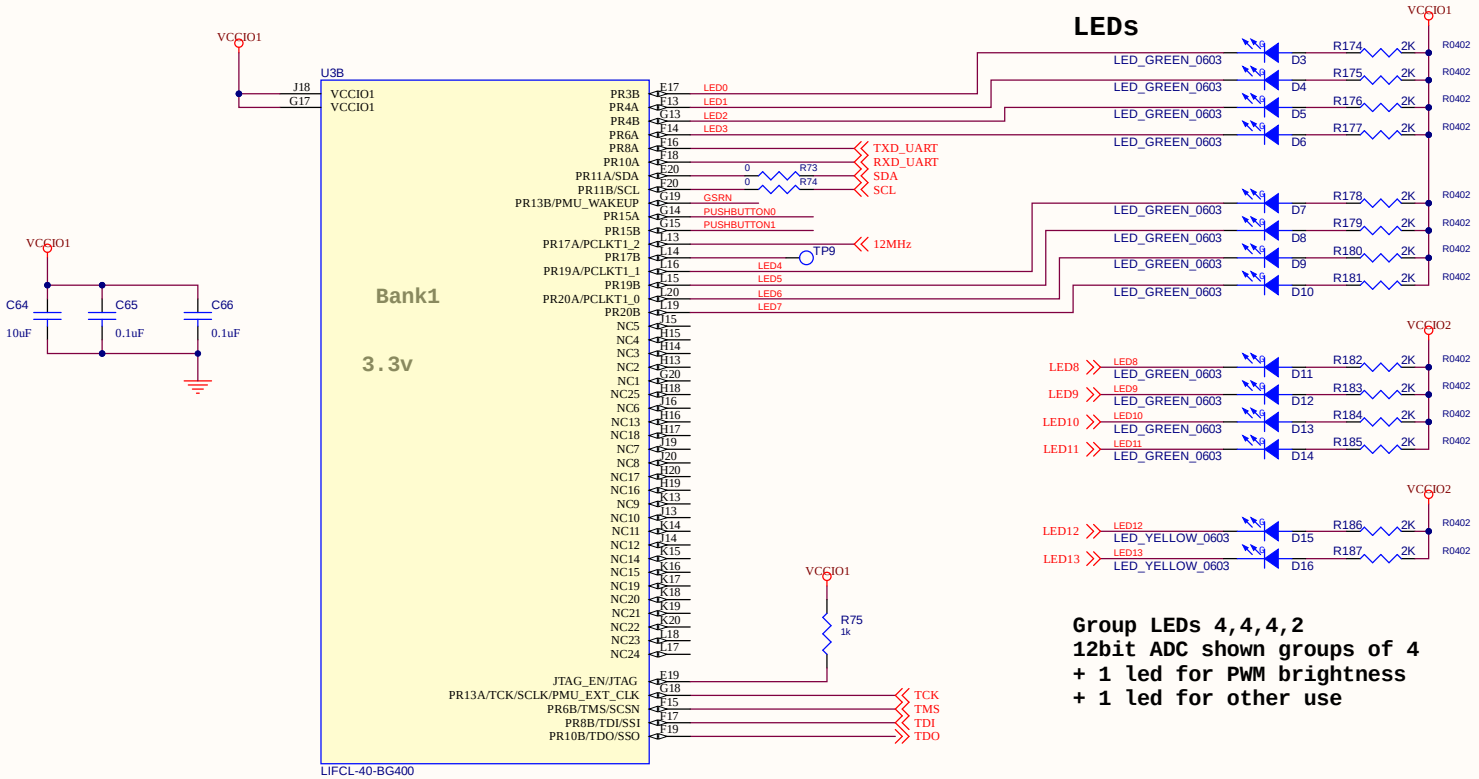


LEDs Signal Map

U3B pin	Signal	LED
E17	LED0	D3
F13	LED1	D4
G13	LED2	D5
F14	LED3	D6
L16	LED4	D7
L15	LED5	D8
L20	LED6	D9
L19	LED7	D10
U3C pin	**Signal**	**LED**
R17	LED8	D11
R18	LED9	D12
U20	LED10	D13
T20	LED11	D14
W20	LED12	D15
V20	LED13	D16



Group LEDs 4,4,4,2
12bit ADC shown groups of 4
+ 1 led for PWM brightness
+ 1 led for other use

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Title	I2C LEDs And Push Buttons		
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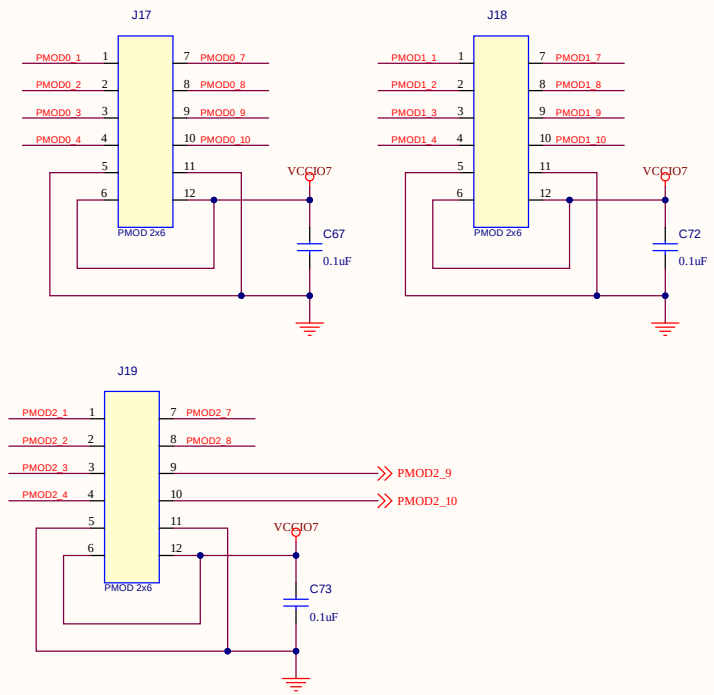
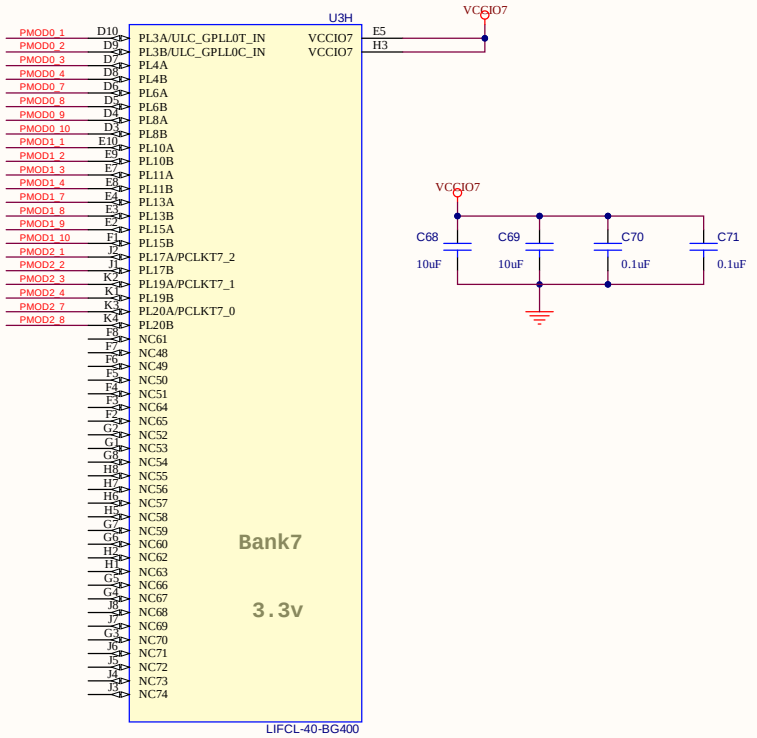
J17, J18 and J19 All Right-Angle PMOD connectors



PMOD2 unavailable when Bank0 / Flash set to 1.8V



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Title: PMODs		
Size: B	Project: CrossLink-NX Evaluation Board	Schematic Rev: 1.0
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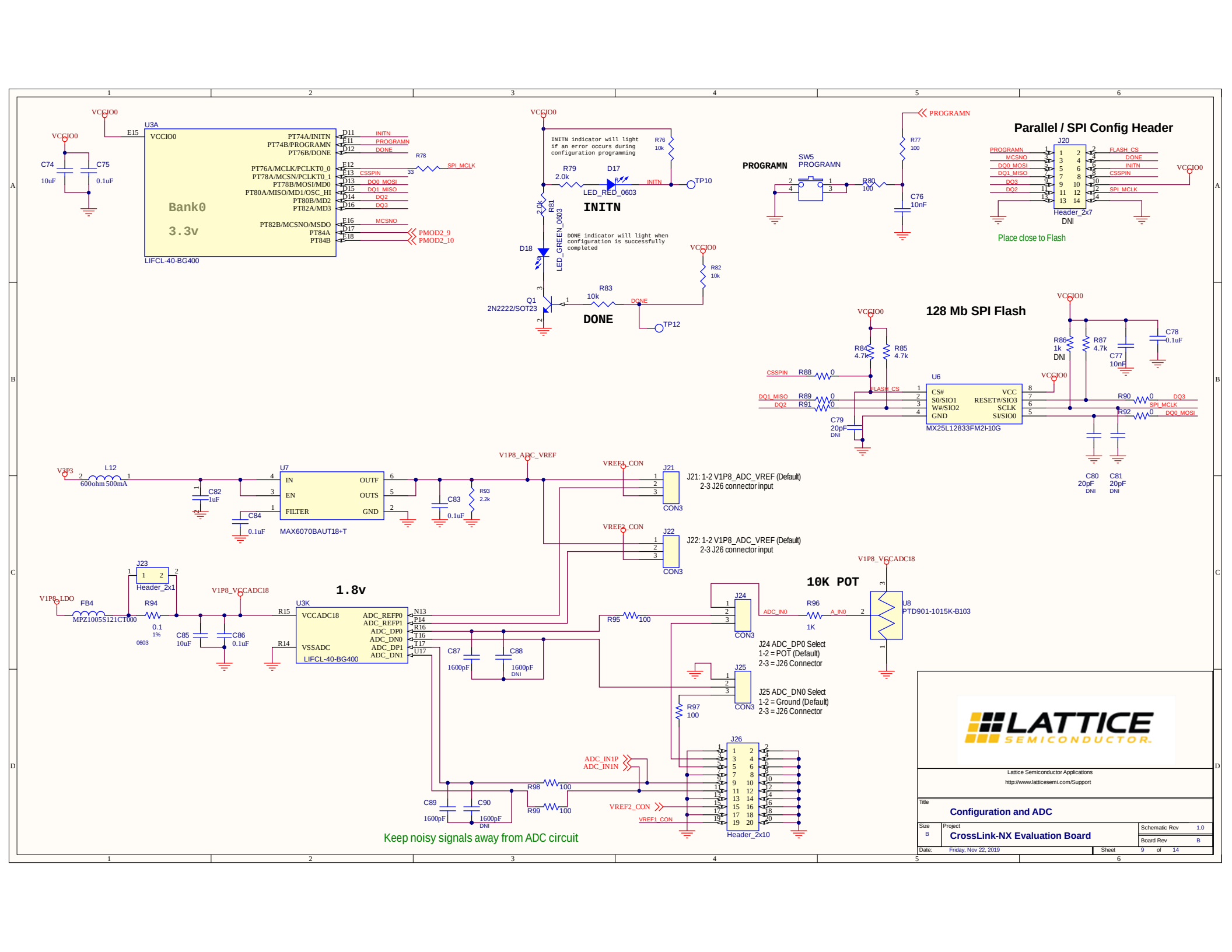
Parallel / SPI Config Header
Place close to Flash
INITN
DONE
PROGRAMN
128 Mb SPI Flash
MX25L12833FM2I-10G
1.8v
10K POT
J21: 1-2 V1P8_ADC_VREF (Default)
2-3 J26 connector input
J22: 1-2 V1P8_ADC_VREF (Default)
2-3 J26 connector input
J24 ADC_DP0 Select
1-2 = POT (Default)
2-3 = J26 Connector
J25 ADC_DN0 Select
1-2 = Ground (Default)
2-3 = J26 Connector
Keep noisy signals away from ADC circuit
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Configuration and ADC
CrossLink-NX Evaluation Board
Schematic Rev 1.0
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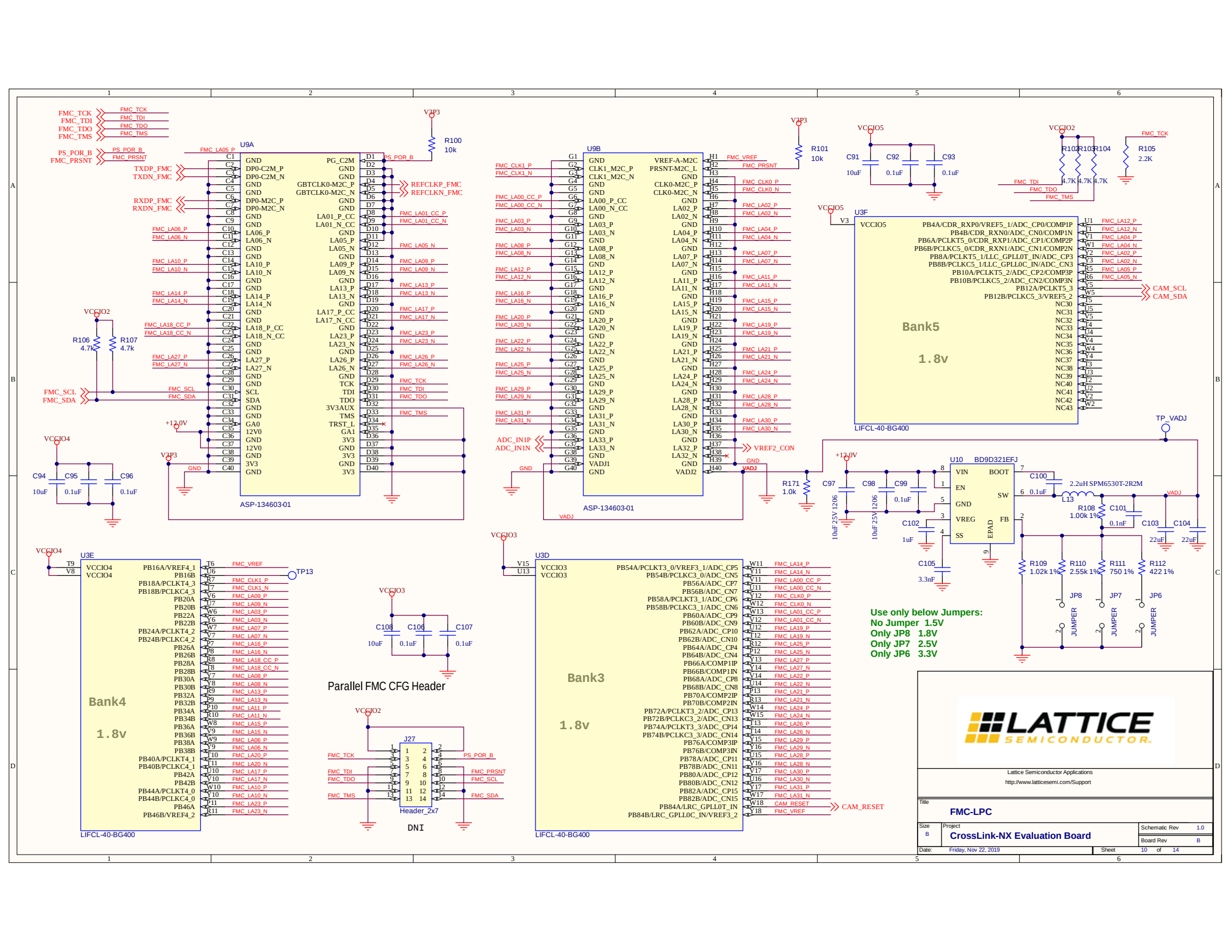
U9A
ASP-134603-01
U9B
ASP-134603-01
U3F
Bank5
1.8v
LIFCL-40-BG400
U10 BD9D321EFJ
U3E
Bank4
1.8v
LIFCL-40-BG400
U3D
Bank3
1.8v
LIFCL-40-BG400
Parallel FMC CFG Header
DNI
Header_2x7
Use only below Jumpers:
No Jumper 1.5V
Only JP8 1.8V
Only JP7 2.5V
Only JP6 3.3V
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FMC-LPC
CrossLink-NX Evaluation Board
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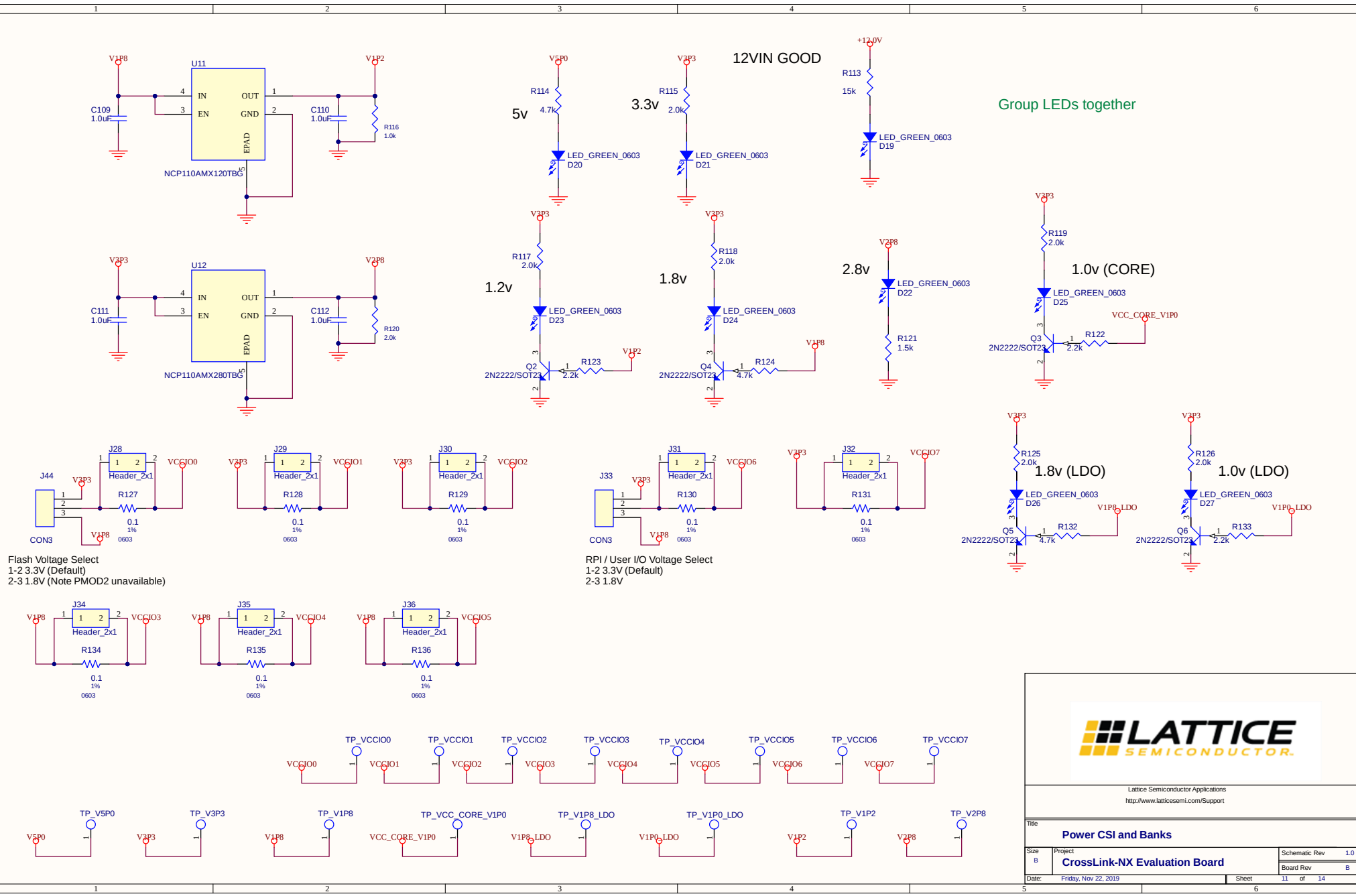
U11
NCP110AMX120TBG
C109 1.0uF
C110 1.0uF
R116 1.0k
U12
NCP110AMX280TBG
C111 1.0uF
C112 1.0uF
R120 2.0k
5v
R114 4.7k
LED_GREEN_0603 D20
3.3v
R115 2.0k
LED_GREEN_0603 D21
12VIN GOOD
R113 15k
LED_GREEN_0603 D19
Group LEDs together
1.2v
R117 2.0k
LED_GREEN_0603 D23
Q2 2N2222/SOT23
R123 2.2k
1.8v
R118 2.0k
LED_GREEN_0603 D24
Q4 2N2222/SOT23
R124 4.7k
2.8v
LED_GREEN_0603 D22
R121 1.5k
1.0v (CORE)
R119 2.0k
LED_GREEN_0603 D25
Q3 2N2222/SOT23
R122 2.2k
VCC_CORE_V1P0
J28 Header_2x1
J29 Header_2x1
J30 Header_2x1
J44 CON3
R127 0.1 1% 0603
R128 0.1 1% 0603
R129 0.1 1% 0603
Flash Voltage Select
1-2 3.3V (Default)
2-3 1.8V (Note PMOD2 unavailable)
J31 Header_2x1
J32 Header_2x1
J33 CON3
R130 0.1 1% 0603
R131 0.1 1% 0603
RPI / User I/O Voltage Select
1-2 3.3V (Default)
2-3 1.8V
1.8v (LDO)
R125 2.0k
LED_GREEN_0603 D26
Q5 2N2222/SOT23
R132 4.7k
1.0v (LDO)
R126 2.0k
LED_GREEN_0603 D27
Q6 2N2222/SOT23
R133 2.2k
J34 Header_2x1
J35 Header_2x1
J36 Header_2x1
R134 0.1 1% 0603
R135 0.1 1% 0603
R136 0.1 1% 0603
TP_VCCIO0
TP_VCCIO1
TP_VCCIO2
TP_VCCIO3
TP_VCCIO4
TP_VCCIO5
TP_VCCIO6
TP_VCCIO7
TP_V5P0
TP_V3P3
TP_V1P8
TP_VCC_CORE_V1P0
TP_V1P8_LDO
TP_V1P0_LDO
TP_V1P2
TP_V2P8
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Title
Power CSI and Banks
Size B
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CrossLink-NX Evaluation Board
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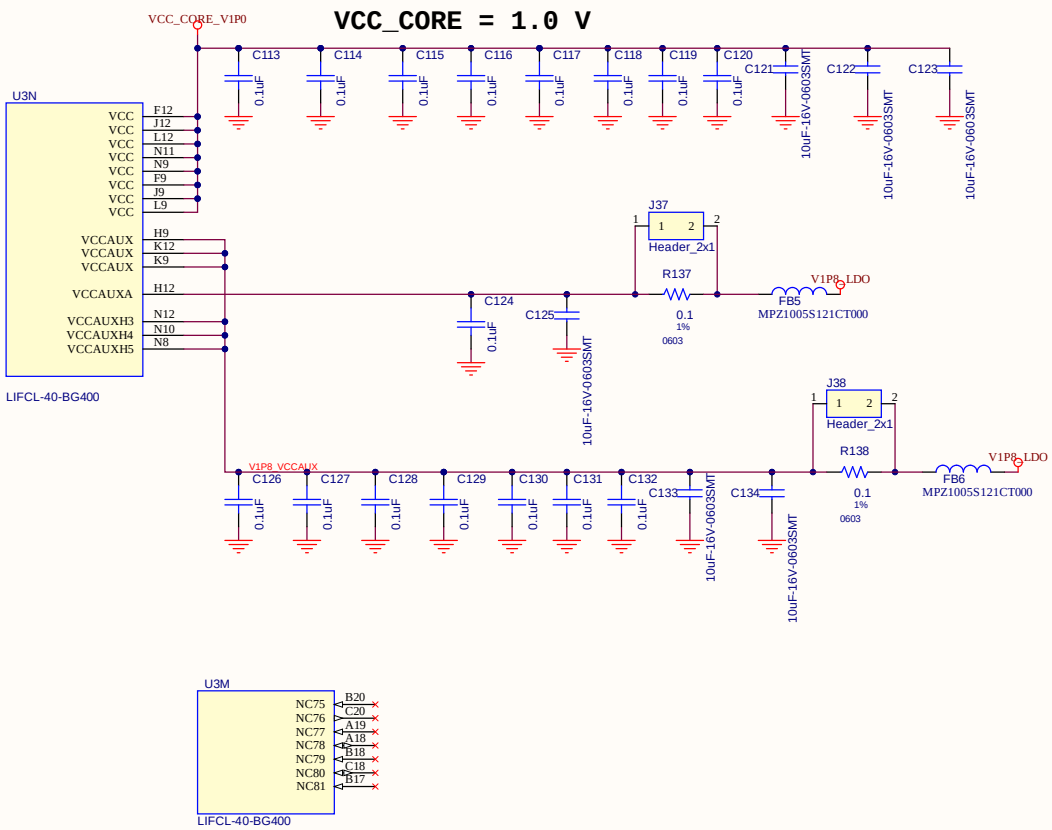

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Title: Power Decoupling		
Size: B	Project: CrossLink-NX Evaluation Board	Schematic Rev: 1.0
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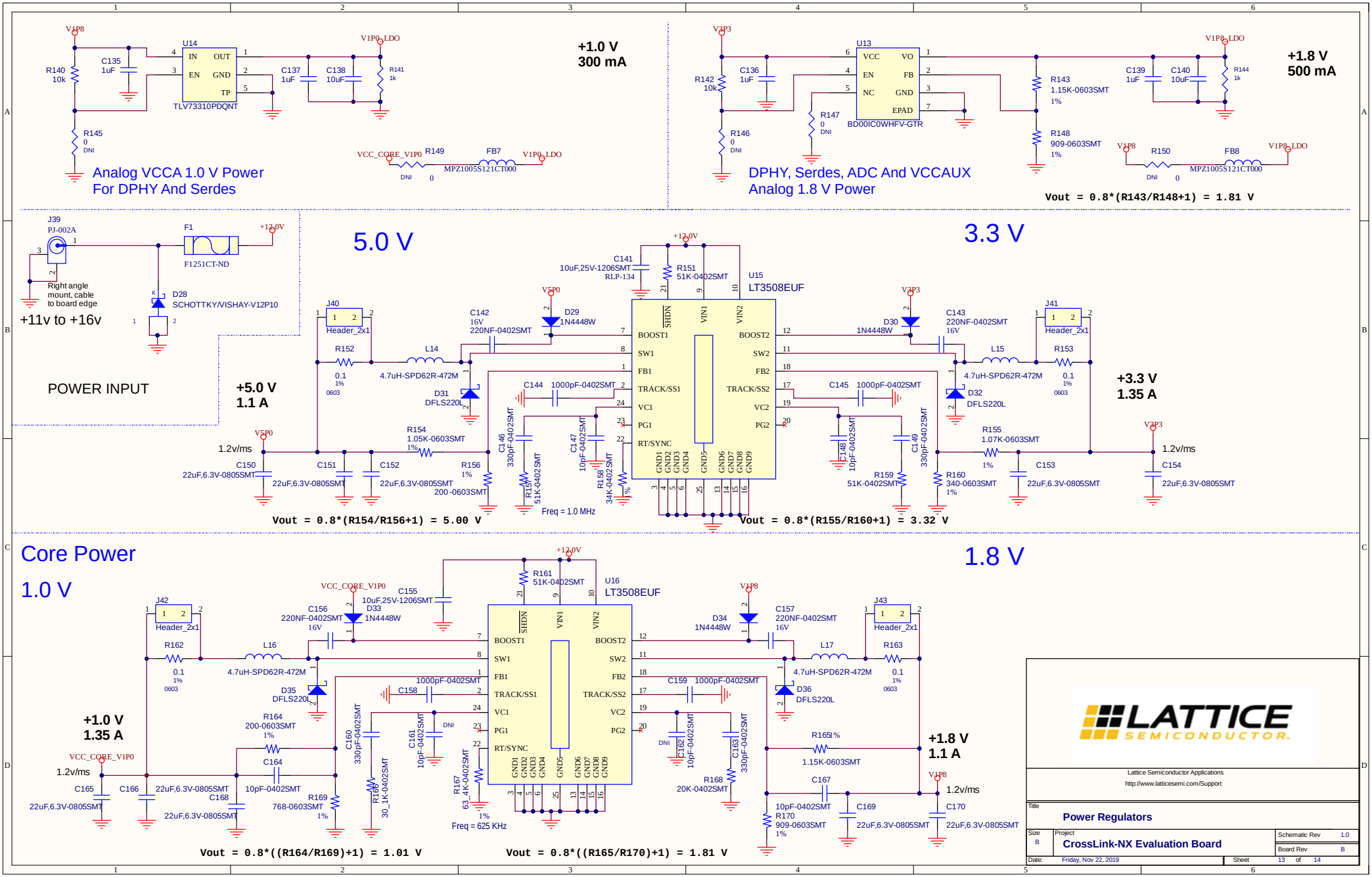
+1.0 V
300 mA
Analog VCCA 1.0 V Power
For DPHY And Serdes
TLV73310PDQNT
+1.8 V
500 mA
DPHY, Serdes, ADC And VCCAUX
Analog 1.8 V Power
BD00IC0WHFV-GTR
Vout = 0.8*(R143/R148+1) = 1.81 V
POWER INPUT
+11v to +16v
Right angle
mount, cable
to board edge
F1251CT-ND
SCHOTTKY/VISHAY-V12P10
5.0 V
+5.0 V
1.1 A
3.3 V
+3.3 V
1.35 A
LT3508EUF
Freq = 1.0 MHz
Vout = 0.8*(R154/R156+1) = 5.00 V
Vout = 0.8*(R155/R160+1) = 3.32 V
Core Power
1.0 V
+1.0 V
1.35 A
1.8 V
+1.8 V
1.1 A
Freq = 625 KHz
Vout = 0.8*((R164/R169)+1) = 1.01 V
Vout = 0.8*((R165/R170)+1) = 1.81 V
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Power Regulators
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Title

Power Block Diagram

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