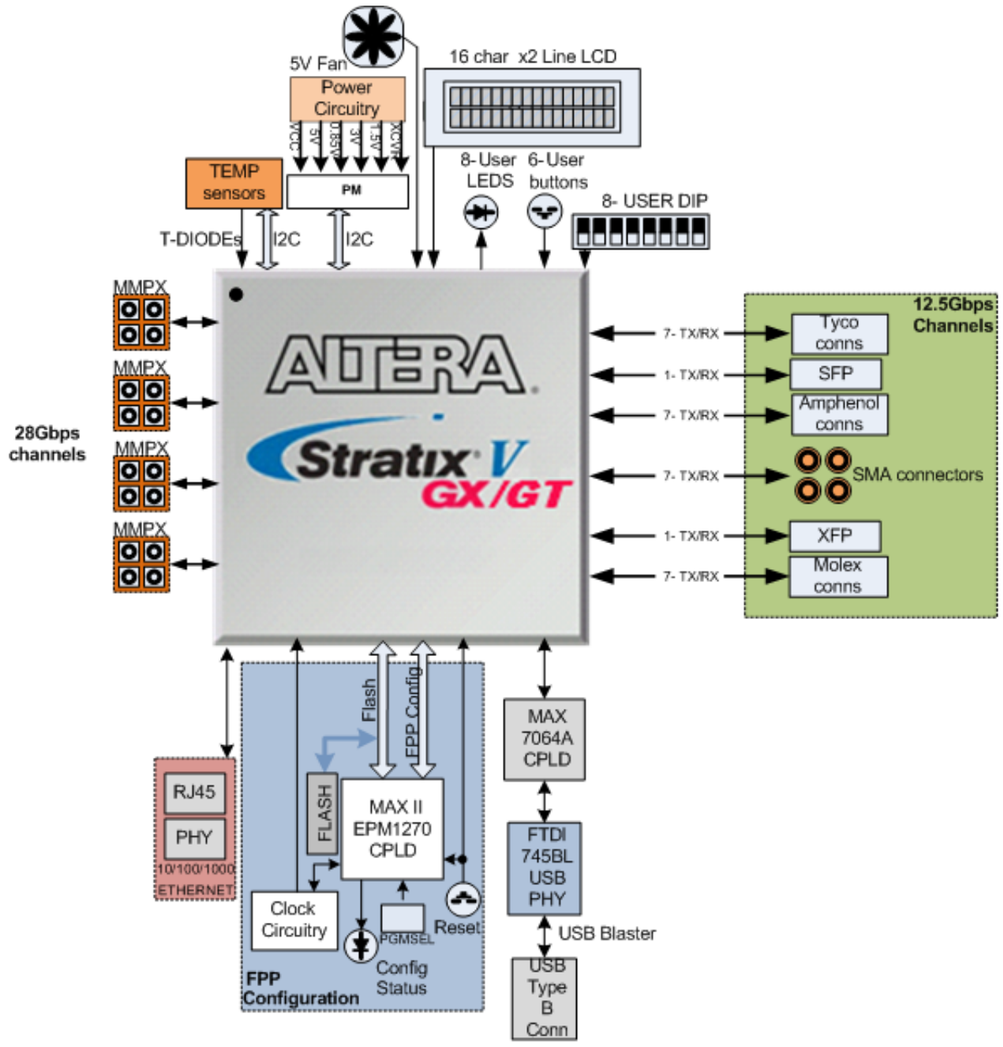

PAGE	DESCRIPTION
1	block diagram, revision history
2	power tree
3	power - DC-Input / 2.5V / 5V
4	power - S5GT_VCC
5	power - 3.3V / VCCA / VCCRT
6	power - 1.6V / Ethernet / XFP
7	power - XCVR - GTB
8	power - S5GT decoupling
9	power monitor - VCC / GTB
10	power monitor - GXB
11	temperature sense
12	USB blaster
13	MAX FPP configuration
14	flash
15	10/100 ethernet
16	switches / LEDs / LCD
17	amphenol backplane interface
18	tyco backplane interface
19	molex backplane interface
20	XFP interface
21	SMAs / SFP+ interface
22	clocks - core
23	clocks - ss / 50MHz
24	clocks - XCVR left blocks
25	clocks - XCVR right blocks
26	S5 configuration / JTAG
27	S5 bank 3
28	S5 bank 4
29	S5 bank 7
30	S5 bank 8
31	S5GX - block left 0-1
32	S5GX - block left 2-3
33	S5GT - block right 0-1
34	S5GT - block right 2-3
35	S5GT FPGA / XCVR power
36	S5GT - GND

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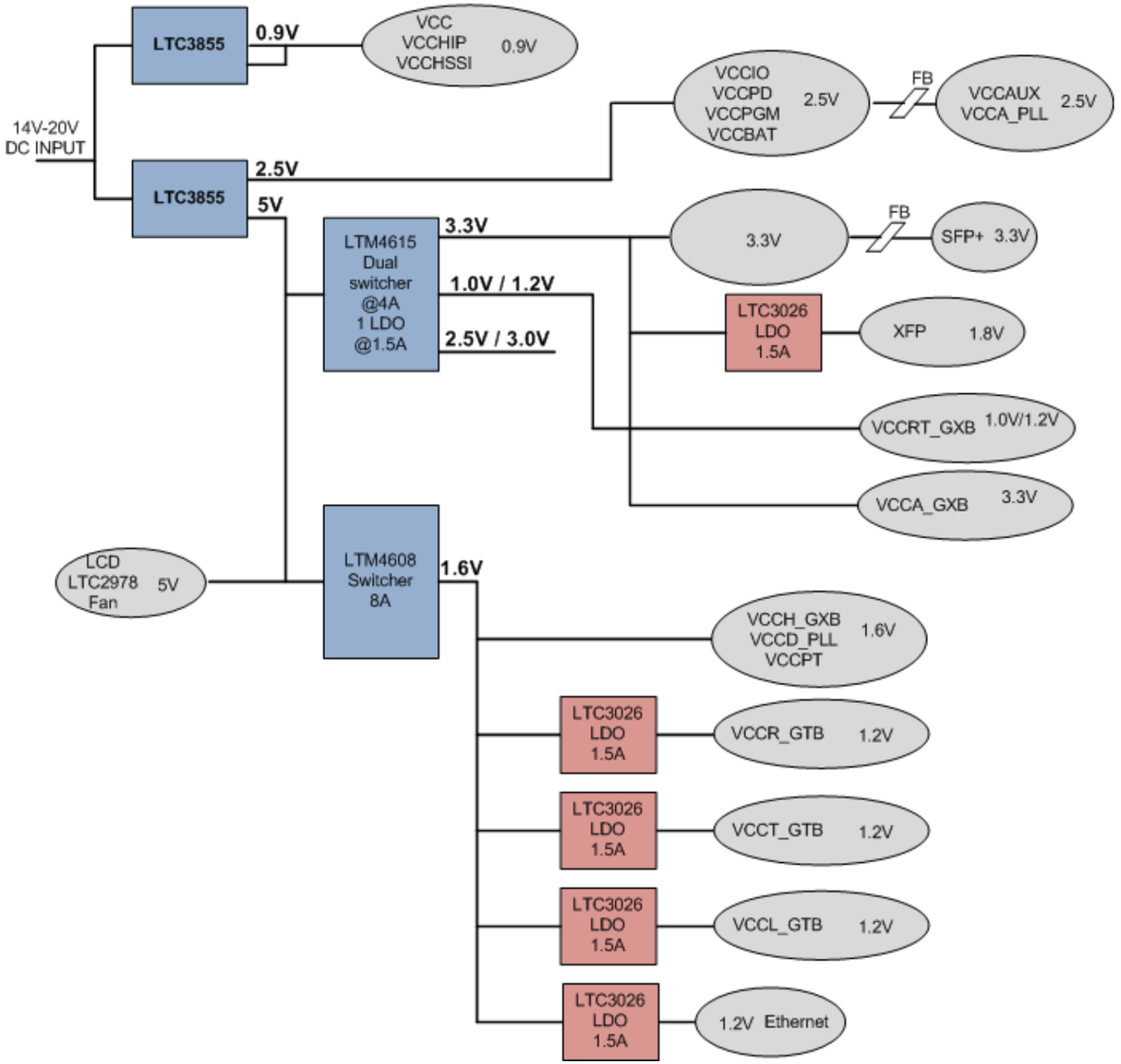
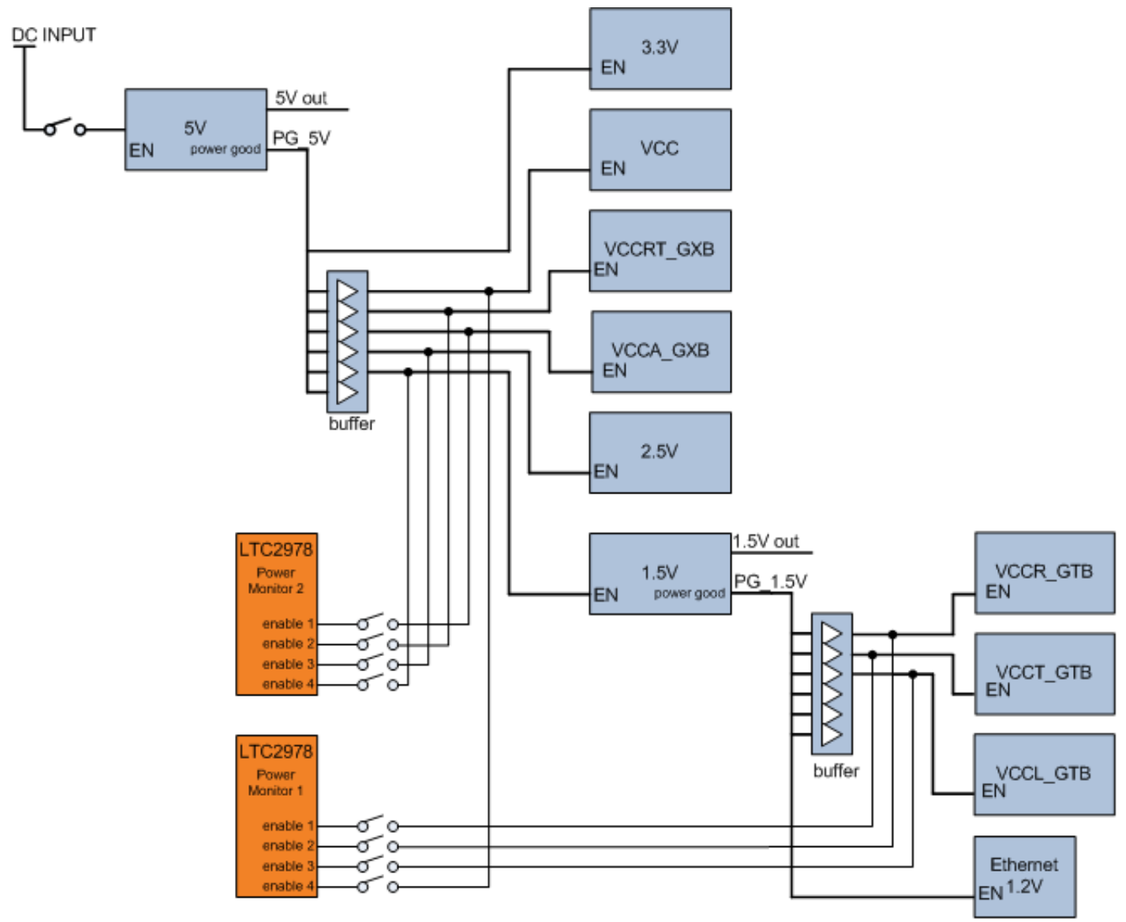
Power Tree / Power Sequence

Power Tree – ES Devices





Power Sequence

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PWR - DC-Input - 2.5V / 5V

14V-20V DC INPUT

J1 RAPC712X — D1 FM540 — DC_INPUT

DC_INPUT — R1 100K — SW1 EG2201A — R48 20K — GO

5V — R2 150 — D3 Blue_Led — power LED

J3 GND post

STDOF1 Standoff Hole
STDOF2 Standoff Hole
STDOF3 Standoff Hole
STDOF4 Standoff Hole
STDOF5 Standoff Hole
STDOF6 Standoff Hole

DC_INPUT — C1 150uF — C2 150uF

INTVCC_1 — C3 4.7uF

U1 LTC3855EUJ

26	VIN
25	INTVCC
24	EXTVCC
38	RUN1
37	ITEMP1
14	ILIM1
2	ITH1
1	TK/SS1
13	RUN2
36	ITEMP2
15	ILIM2
6	ITH2
7	TK/SS2
35	FREQ
34	MODE/PLLIN
33	PHSASMD
32	CLKOUT
4	SGND1
41	SGND2
28	PGND1
22	PGND2
18	NC
12	DIFFOUT
10	DIFFP
11	DIFFN
30	TG1
29	BOOST1
31	SW1
27	BG1
3	VFB1
39	SENSE1+
40	SENSE1-
16	PGOOD1
20	TG2
21	BOOST2
19	SW2
23	BG2
5	VFB2
8	SENSE2+
9	SENSE2-
17	PGOOD2

gnd-pad

EN_2p5V — R4 20K — R8 49.9K — R9 100K — R10 20K — R12 49.9K — R13 100K

GO — C8 1000pF — C9 1000pF — R11 169K — C135 220pF — C7 56pF — R129 23.2K — C12 22pF — C11 120pF — R16 47.5K

INTVCC_1 — D2 CMDSH-3 — C4 0.1uF — RJK0305DPB Q1 drain-tab — RJK0301DPB Q2 drain-tab

DC_INPUT — L1 0.68uH — 2p5V — R5 2.37K — C134 100uF — C5 330uF — C6 0.1uF — R6 57.6K

INTVCC_1 — D4 CMDSH-3 — C10 0.1uF — RJK0305DPB Q3 drain-tab — RJK0301DPB Q4 drain-tab

L2 1.2uH — R14 4.12K — C15 0.1uF — R17 113K — R15 110K — C13 100uF — C14 330uF — R18 15K — R3 47.5K — R7 15K — 5V

PWR_GOOD — PG_5V

2.5V

5V

EN_2p5V — EN_2p5V 10

PWR_GOOD — PWR_GOOD 4,5,6,7,13

PG_5V — PG_5V 5,10

ALTERA

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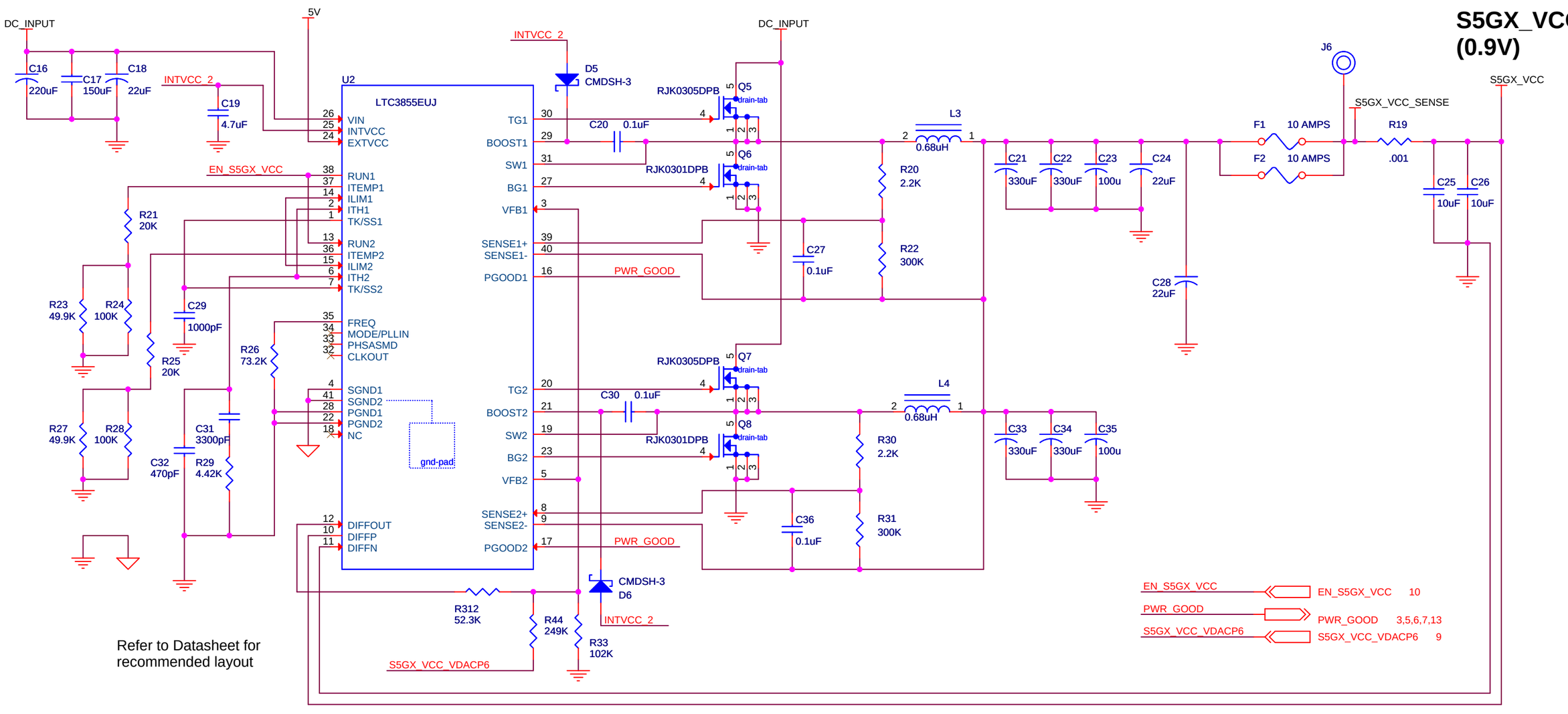
PWR S5GX - VCC

S5GX_VCC (0.9V)



Refer to Datasheet for recommended layout

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PWR S5GT - 3.3V
VCCA_GXB / VCCRT_GXB

U3

LTM4615EV

5V

C37 330uF
C38 330uF
C39 330uF
C40 10uF

PG_5V

EN_VCCRT_GXB

EN_VCCA_GXB

C329 DNI 2.2uf
C330 DNI 2.2uf

3p3V

3.3V

R202 10K
C41 100uF
C682 10uF

R34 1.58K
PG_3p3V

R35 15.4K
VCCRT_GXB_VDACP2

R37 9.53K
R38 60.4K

(SW2 Silkscreen Text)
SW2-1 open = 1.0V
SW2-1 close = 1.2V
SW2-2 open = 2.5V
SW2-2 close = 3.0V

SW2
TDA04H0SB1

PWR_GOOD

R39 768
R40 178

R42 1.78K
VCCA_GXB_VDACP0

C684 10uF

J9
VCCRT_GXB_SENSE
VCCRT_GXB
F6 5A
R36 .009
C42 100uF
C683 10uF

VCCRT_GXB
(1.0V/1.2V)

J12
VCCA_GXB_SENSE
VCCA_GXB
F7 2 AMPS
R41 .009
C43 10uF
FB6 120ohm; 800mA
F8 2 AMPS

VCCA_GXB
(2.5V/3.0V)

VCCA_GXB = 3.3V
Remove F7
Install Fuse at F8
VCCA_GXB = 2.5V/3.0V
Remove F8
Install Fuse at F7

EN_VCCRT_GXB — EN_VCCRT_GXB 10
EN_VCCA_GXB — EN_VCCA_GXB 10

VCCRT_GXB_VDACP2 — VCCRT_GXB_VDACP2 10
VCCA_GXB_VDACP0 — VCCA_GXB_VDACP0 10

PG_3p3V — PG_3p3V 6
PWR_GOOD — PWR_GOOD 3,4,6,7,13
PG_5V — PG_5V 3,10

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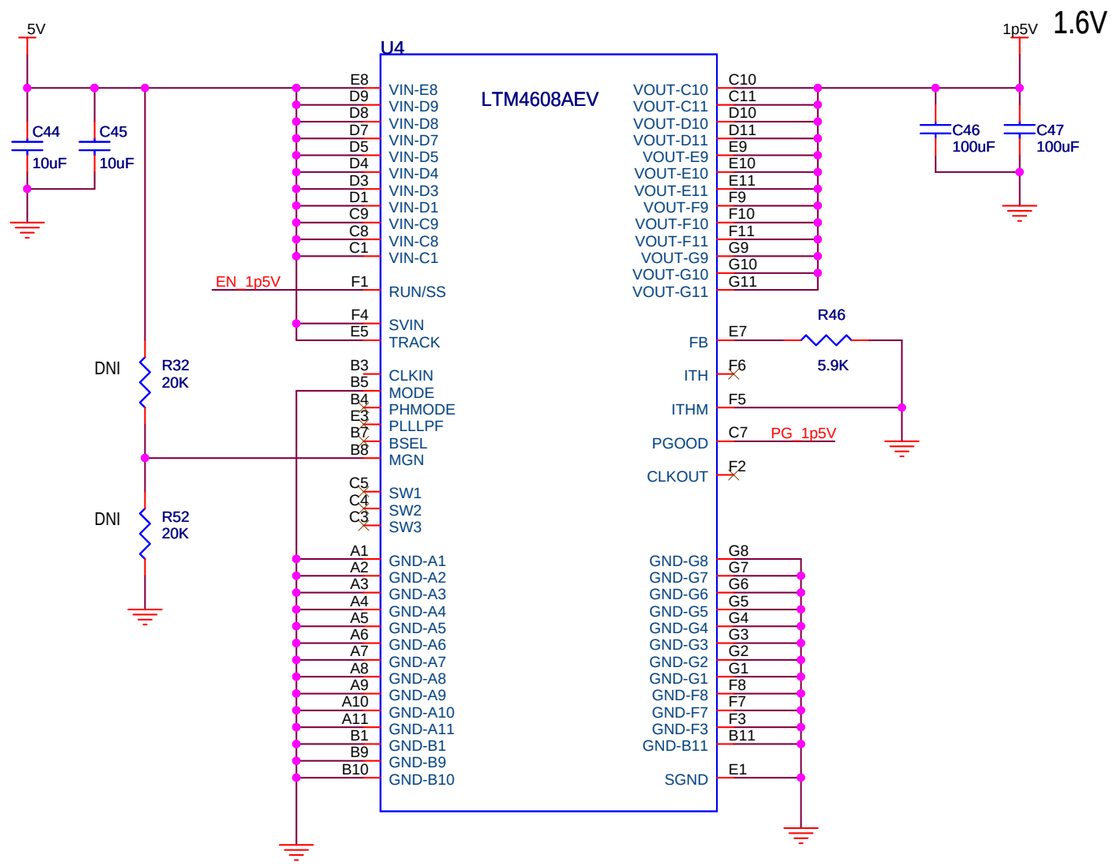
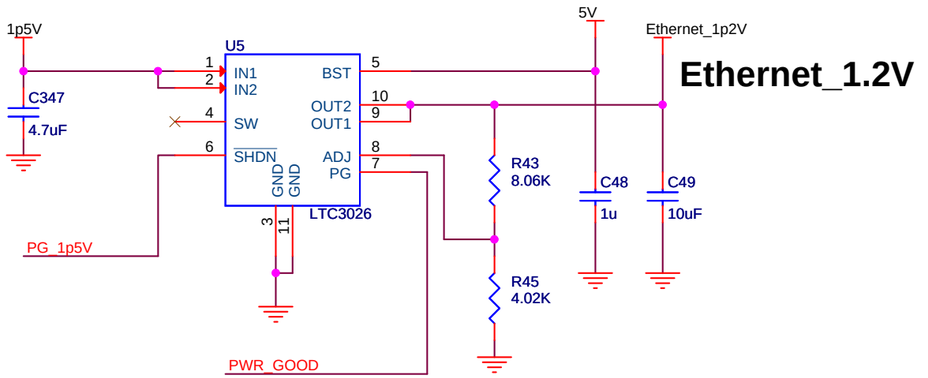
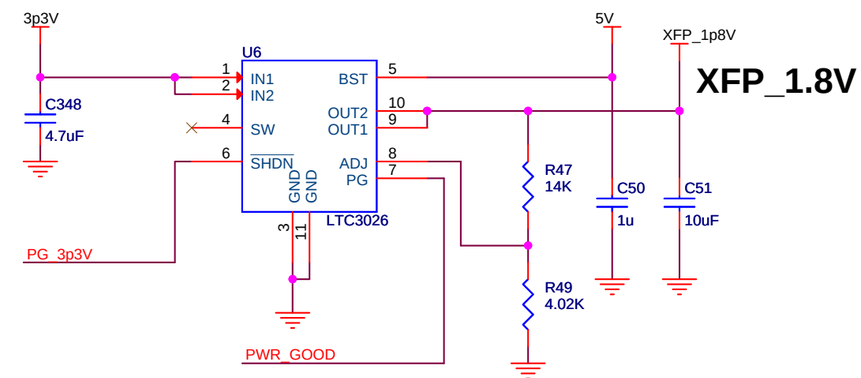
PWR S5GT - 1.6V (Ethernet / XFP)







PWR_GOOD → PWR_GOOD 3,4,5,7,13
PG_1p5V → PG_1p5V 10
PG_3p3V → PG_3p3V 5
EN_1p5V → EN_1p5V 10

ALTERA

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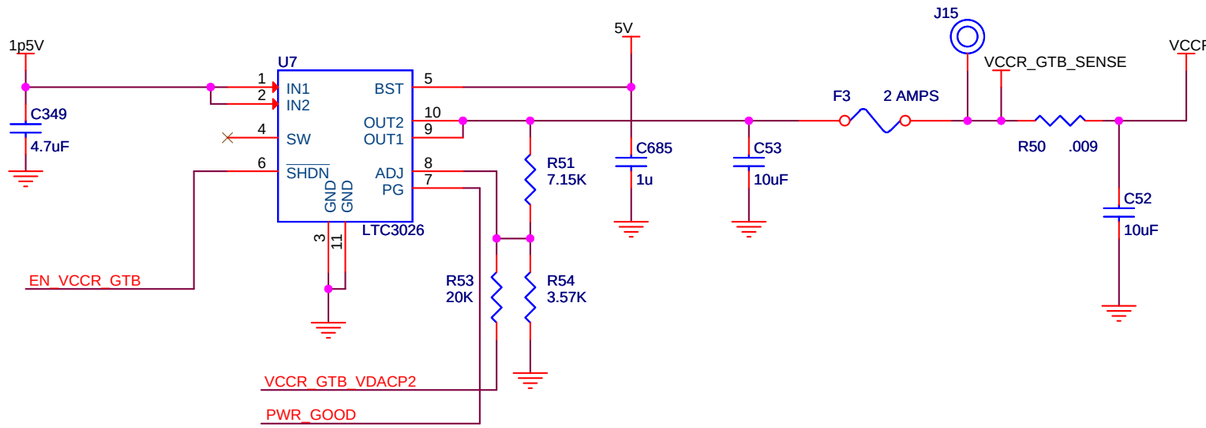
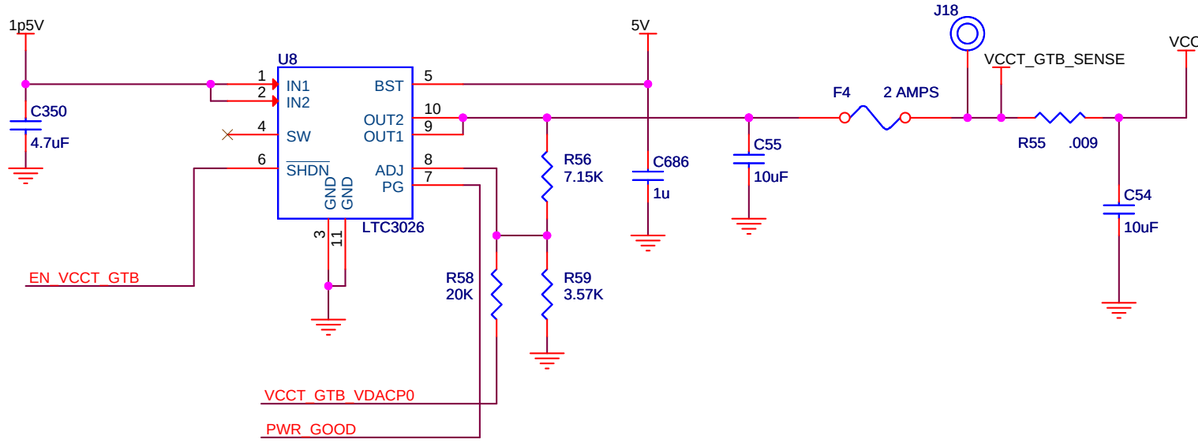
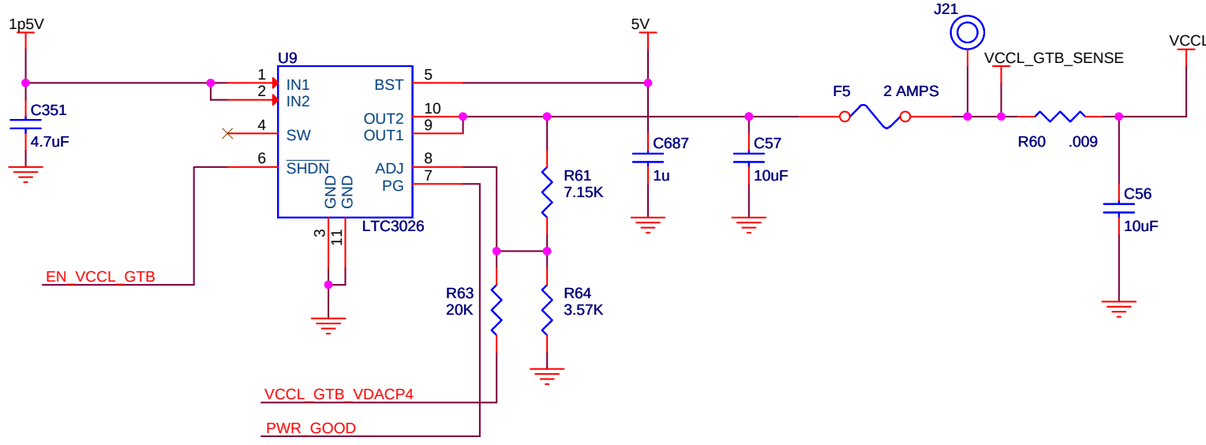
PWR XCVR - GTB



VCCR_GTB (1.2V)



VCCT_GTB (1.2V)



VCCL_GTB (1.2V)

PWR_GOOD → PWR_GOOD 3,4,5,6,13

EN_VCCR_GTB → EN_VCCR_GTB 10

EN_VCCT_GTB → EN_VCCT_GTB 10

EN_VCCL_GTB → EN_VCCL_GTB 10

VCCT_GTB_VDACP0 → VCCT_GTB_VDACP0 9

VCCR_GTB_VDACP2 → VCCR_GTB_VDACP2 9

VCCL_GTB_VDACP4 → VCCL_GTB_VDACP4 9

ALTERA®

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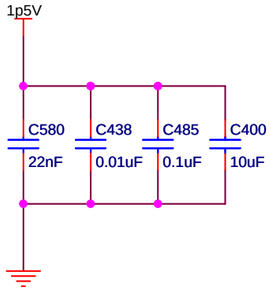
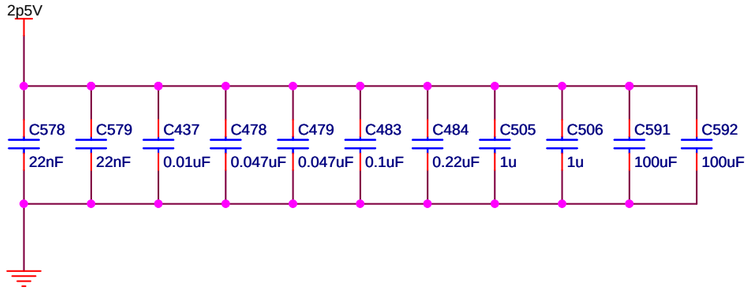
PWR S5GT - Decoupling

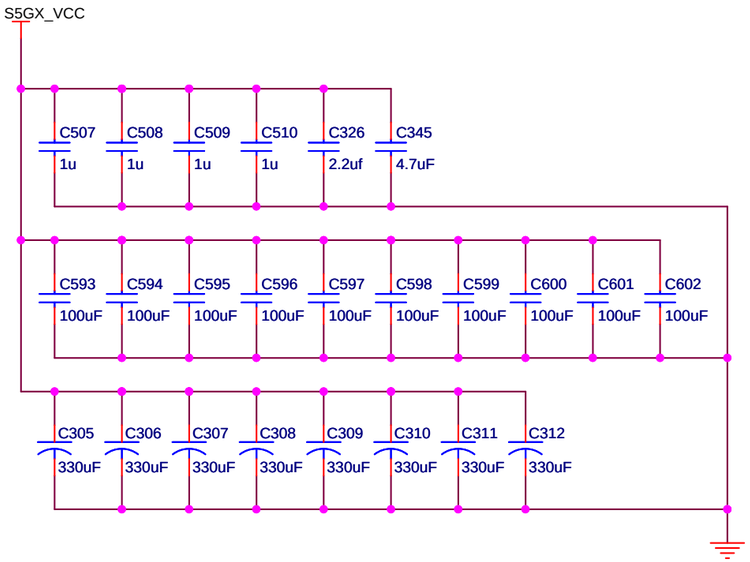
1.5V



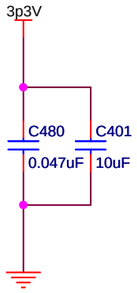
2.5V



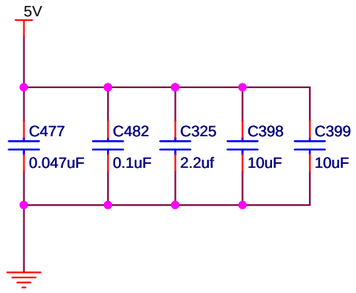
S5GX_VCC (0.85V)



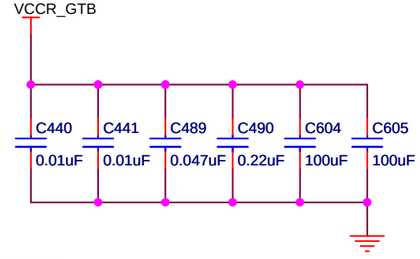
3.3V



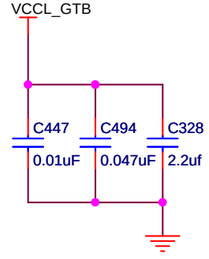
5V



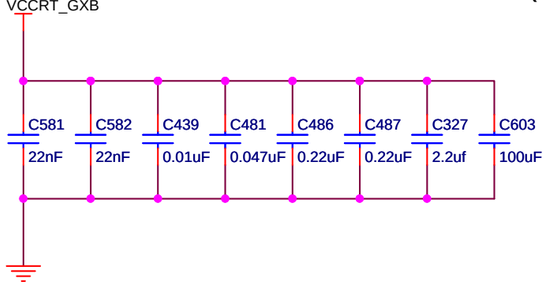
VCCR_GTB (1.0V)



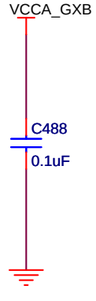
VCCL_GTB (1.0V)



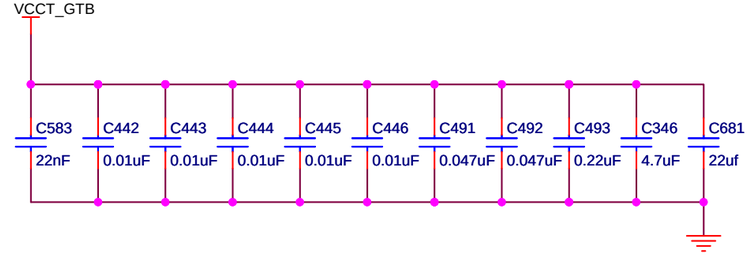
VCCRT_GXB (0.85V/1.0V)



VCCA_GXB (2.5V/3.0V)



VCCT_GTB (1.0V)



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Power Monitor 1 - VCC / GTB

Power Monitor 1 - VCC / GTB

S5GX_VCC
S5GX_VCC_SENSE
VCCL_GTB
VCCL_GTB_SENSE
VCCR_GTB
VCCR_GTB_SENSE
VCCT_GTB
VCCT_GTB_SENSE

R65 1K R66 1K C58 0.1uF C59 0.1uF
R67 1K R68 1K C60 0.1uF C61 0.1uF
R70 1K R71 1K C63 0.1uF C64 0.1uF
R72 1K R73 1K C66 0.1uF C67 0.1uF
R74 1K R69 1K C65 0.1uF C68 0.1uF
R75 1K R76 1K C69 0.1uF C70 0.1uF
R82 1K R83 1K C71 0.1uF C72 0.1uF
R84 1K R85 1K C73 0.1uF C74 0.1uF

these GND connections to each VSENSEMx pin needs to be placed close to a GND pin of the BGA!

5V

U10 LTC2978

14	VIN_SNS	VIN_EN	12
36	VSENSEP0	REFP	34
37	VSENSEM0	REFM	35
42	VSENSEP1	NC	13
43	VSENSEM1	VDACP0	39
46	VSENSEP2	VDACM0	38
47	VSENSEM2	VDACP1	40
48	VSENSEP3	VDACM1	41
49	VSENSEM3	VDACP2	44
52	VSENSEP4	VDACM2	45
53	VSENSEM4	VDACP3	50
62	VSENSEP5	VDACM3	51
63	VSENSEM5	VDACP4	55
64	VSENSEP6	VDACM4	54
1	VSENSEM6	VDACP5	56
2	VSENSEP7	VDACM5	57
3	VSENSEM7	VDACP6	59
		VDACM6	58
		VDACP7	60
		VDACM7	61
SCL_PM 28	SCL	VOUT_EN0	4
SDA_PM 27	SDA	VOUT_EN1	5
PM1_ASEL0 32	ASEL0	VOUT_EN2	6
PM1_ASEL1 33	ASEL1	VOUT_EN3	7
PM_CNTL0 30	CONTROL0	VOUT_EN4	8
PM_CNTL1 31	CONTROL1	VOUT_EN5	9
PM_RSTn 22	WDI/RESET	VOUT_EN6	10
		VOUT_EN7	11
PM1_FAULTB00 23	FAULTB00	ALERTB	29
PM1_FAULTB01 24	FAULTB01	PWRGD	20
PM1_FAULTB10 25	FAULTB10	VPWR	15
PM1_FAULTB11 26	FAULTB11	VDD25	18
PM_SHARE_CLK 21	SHARE_CLK	VDD33_OUT	16
		VDD33_IN	17
19	WP		
65	E-PAD		
	GND pad		

C62 0.1uf

VCCT_GTB_VDACP0
VCCR_GTB_VDACP2
VCCL_GTB_VDACP4
S5GX_VCC_VDACP6

EN_VCCT
EN_VCCR
EN_VCCL
EN_VCC

PM_ALERTB
PM_PWRGD

VDD33_1

C75 0.1uf C76 0.1uf C77 0.1uf

LTC2978
Address Select
PWRMON1 = 7'h5C

PM1_ASEL0
PM1_ASEL1

I2C Interface

J24 2x6HDR

1	1	2	SDA_PM
3	3	4	SCL_PM
5	5	6	PM_ALERTB
7	7	8	
9	9	10	
11	11	12	

PM_CNTL1

VDD33_1

R77 10K R78 10K R79 10K R80 10K R81 5.49K R204 10K R203 10K R297 10K R296 10K R298 10K

SDA_PM
SCL_PM
PM_RSTn
PM_PWRGD
PM_SHARE_CLK
PM_RSTn
PM1_FAULTB00
PM1_FAULTB01
PM1_FAULTB10
PM1_FAULTB11

SCL_PM	SCL_PM	10,13,29
SDA_PM	SDA_PM	10,13,29
PM_SHARE_CLK	PM_SHARE_CLK	10,13,29
PM_CNTL0	PM_CNTL0	10,13,29
PM_CNTL1	PM_CNTL1	10,13,29
PM_RSTn	PM_RSTn	10,13,29
PM_ALERTB	PM_ALERTB	10,13,29
PM_PWRGD	PM_PWRGD	10,13,29
PM1_FAULTB00	PM1_FAULTB00	13,29
PM1_FAULTB01	PM1_FAULTB01	13,29
PM1_FAULTB10	PM1_FAULTB10	13,29
PM1_FAULTB11	PM1_FAULTB11	13,29
EN_VCCT	EN_VCCT	10
EN_VCCR	EN_VCCR	10
EN_VCCL	EN_VCCL	10
EN_VCC	EN_VCC	10
VCCT_GTB_VDACP0	VCCT_GTB_VDACP0	7
VCCR_GTB_VDACP2	VCCR_GTB_VDACP2	7
VCCL_GTB_VDACP4	VCCL_GTB_VDACP4	7
S5GX_VCC_VDACP6	S5GX_VCC_VDACP6	4

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Power Monitor 2 - GXB

Power Monitor 2 - GXB

1P5V
2p5V
VCCRT_GXB
VCCRT_GXB_SENSE
VCCA_GXB
VCCA_GXB_SENSE

R86 1K R87 1K C78 0.1uF C79 0.1uF
R88 1K R89 1K C80 0.1uF C81 0.1uF
R90 1K R91 1K C83 0.1uF C88 0.1uF
R92 1K R94 1K C84 0.1uF C85 0.1uF
R93 1K R95 1K C86 0.1uF C87 0.1uF
R97 1K R98 1K C90 0.1uF C91 0.1uF

these GND connections to each VSENSEMx pin needs to be placed close to a GND pin of the BGA!

5V

U11 LTC2978

14	VIN_SNS	VIN_EN	12
36	VSENSEP0	REFP	34
37	VSENSEM0	REFM	35
42	VSENSEP1	NC	13
43	VSENSEM1		
46	VSENSEP2	VDACP0	39
47	VSENSEM2	VDACM0	38
48	VSENSEP3	VDACP1	40
49	VSENSEM3	VDACM1	41
52	VSENSEP4	VDACP2	44
53	VSENSEM4	VDACM2	45
62	VSENSEP5	VDACP3	50
63	VSENSEM5	VDACM3	51
64	VSENSEP6	VDACP4	55
1	VSENSEM6	VDACM4	54
2	VSENSEP7	VDACP5	56
3	VSENSEM7	VDACM5	57
		VDACP6	59
		VDACM6	58
		VDACP7	60
		VDACM7	61
28	SCL	VOUT_EN0	4
27	SDA	VOUT_EN1	5
32	ASEL0	VOUT_EN2	6
33	ASEL1	VOUT_EN3	7
30	CONTROL0	VOUT_EN4	8
31	CONTROL1	VOUT_EN5	9
22	WDI/RESET	VOUT_EN6	10
		VOUT_EN7	11
23	FAULTB00	ALERTB	29
24	FAULTB01	PWRGD	20
25	FAULTB10	VPWR	15
26	FAULTB11	VDD25	18
21	SHARE_CLK	VDD33_OUT	16
19	WP	VDD33_IN	17
65	E-PAD		

GND pad

SCL_PM
SDA_PM
PM2_ASEL0
PM2_ASEL1
PM_CNTL0
PM_CNTL1
PM_RSTn
PM2_FAULTB00
PM2_FAULTB01
PM2_FAULTB10
PM2_FAULTB11
PM_SHARE_CLK

C82 0.1uf
VCCA_GXB_VDACP0
VCCRT_GXB_VDACP2
EN_VCCA
EN_VCCRT
EN2p5V
EN1p5V
PM_ALERTB
PM_PWRGD
VDD33_2
C93 0.1uf C94 0.1uf C95 0.1uf

LTC2978
Address Select
PWRMON2 = 7'h5D
PM2_ASEL0
PM2_ASEL1

VDD33_2
R300 10K R303 10K R304 10K R301 10K
PM2_FAULTB00
PM2_FAULTB01
PM2_FAULTB10
PM2_FAULTB11

5V
R96 10K R130 10K
U37 74LS07
PG_5V
1A 1Y 2 EN_S5GX_VCC
2A 2Y 4 EN_VCCRT_GXB
3A 3Y 6 EN_VCCA_GXB
4A 4Y 8 EN_1p5V
5A 5Y 10 EN_2p5V
6A 6Y 12
VCC 14
GND 7

5V
R99 10K R270 10K
U38 74LS07
PG_1p5V
1A 1Y 2 EN_VCCR_GTB
2A 2Y 4 EN_VCCT_GTB
3A 3Y 6 EN_VCCL_GTB
4A 4Y 8
5A 5Y 10
6A 6Y 12
VCC 14
GND 7

5V
R100 10K R101 10K R160 10K R191 10K
SW3 TDA04H0SB1
EN_VCC 1 8 EN_S5GX_VCC
EN_VCCRT 2 7 EN_VCCRT_GXB
EN_VCCA 3 6 EN_VCCA_GXB
EN1p5V 4 5 EN_1p5V

5V
R268 10K R267 10K R269 10K R266 10K
SW7 TDA04H0SB1
EN2p5V 1 8 EN_2p5V
EN_VCCR 2 7 EN_VCCR_GTB
EN_VCCT 3 6 EN_VCCT_GTB
EN_VCCL 4 5 EN_VCCL_GTB

Sequence Enable - Switch 3

SW3-1 open = bypass PM control - S5GX_VCC
SW3-1 close = PM sequence enabled - S5GX_VCC
SW3-2 open = bypass PM control - VCCRT_GXB
SW3-2 close = PM sequence enabled - VCCRT_GXB
SW3-3 open = bypass PM control - VCCA_GXB
SW3-3 close = PM sequence enabled - VCCA_GXB
SW3-4 open = bypass PM control - 1p5V
SW3-4 close = PM sequence enabled - 1p5V

Sequence Enable - Switch 7

SW7-1 open = bypass PM control - 2p5V
SW7-1 close = PM sequence enabled - 2p5V
SW7-2 open = bypass PM control - VCCR_GTB
SW7-2 close = PM sequence enabled - VCCR_GTB
SW7-3 open = bypass PM control - VCCT_GTB
SW7-3 close = PM sequence enabled - VCCT_GTB
SW7-4 open = bypass PM control - VCCL_GTB
SW7-4 close = PM sequence enabled - VCCL_GTB

SCL_PM — SCL_PM 9,13,29
SDA_PM — SDA_PM 9,13,29
PM_SHARE_CLK — PM_SHARE_CLK 9,13,29
PM_CNTL0 — PM_CNTL0 9,13,29
PM_CNTL1 — PM_CNTL1 9,13,29
PM_RSTn — PM_RSTn 9,13,29
PM_ALERTB — PM_ALERTB 9,13,29
PM_PWRGD — PM_PWRGD 9,13,29
PM2_FAULTB00 — PM2_FAULTB00 13,29
PM2_FAULTB01 — PM2_FAULTB01 13,29
PM2_FAULTB10 — PM2_FAULTB10 13,29
PM2_FAULTB11 — PM2_FAULTB11 13,29

PG_5V — PG_5V 3,5
PG_1p5V — PG_1p5V 6
EN_S5GX_VCC — EN_S5GX_VCC 4
EN_VCCRT_GXB — EN_VCCRT_GXB 5
EN_VCCA_GXB — EN_VCCA_GXB 5
EN_1p5V — EN_1p5V 6
EN_2p5V — EN_2p5V 3
EN_VCCR_GTB — EN_VCCR_GTB 7
EN_VCCT_GTB — EN_VCCT_GTB 7
EN_VCCL_GTB — EN_VCCL_GTB 7
EN_VCC — EN_VCC 9
EN_VCCR — EN_VCCR 9
EN_VCCT — EN_VCCT 9
EN_VCCL — EN_VCCL 9
VCCA_GXB_VDACP0 — VCCA_GXB_VDACP0 5
VCCRT_GXB_VDACP2 — VCCRT_GXB_VDACP2 5

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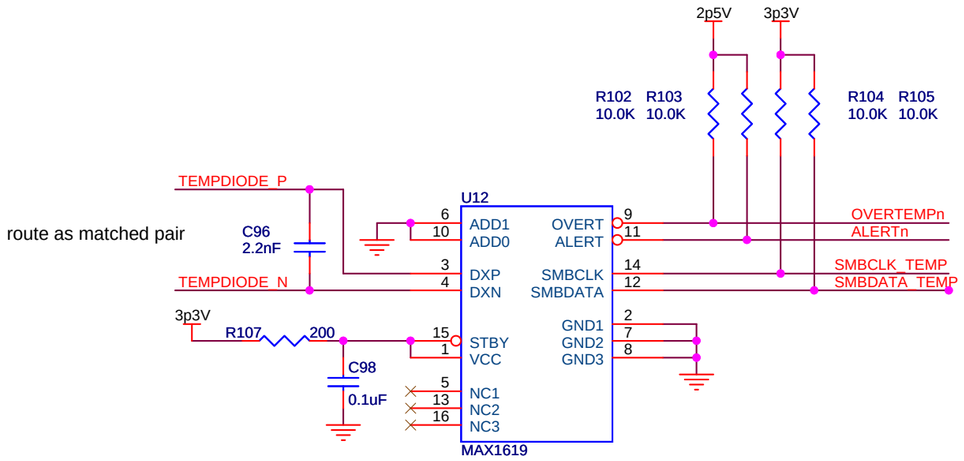
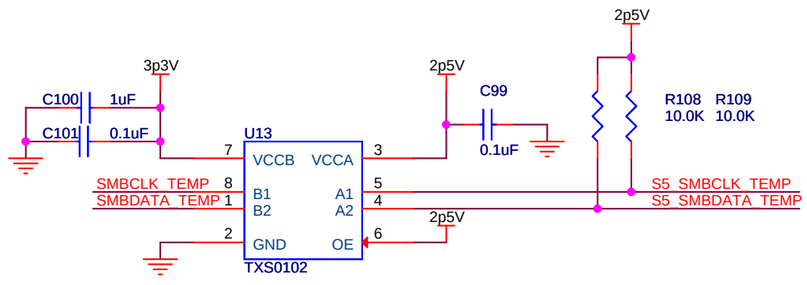
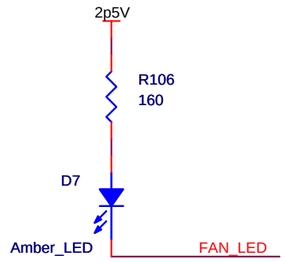
Temperature Measure



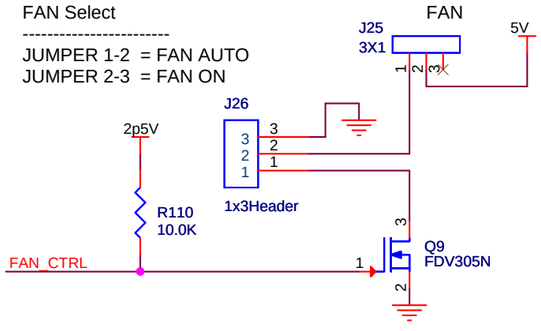
SLAVE ADDR = 0011000b = 18h

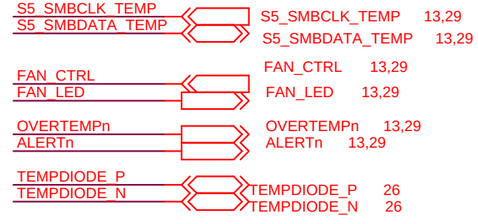




FAN Select

JUMPER 1-2 = FAN AUTO
JUMPER 2-3 = FAN ON





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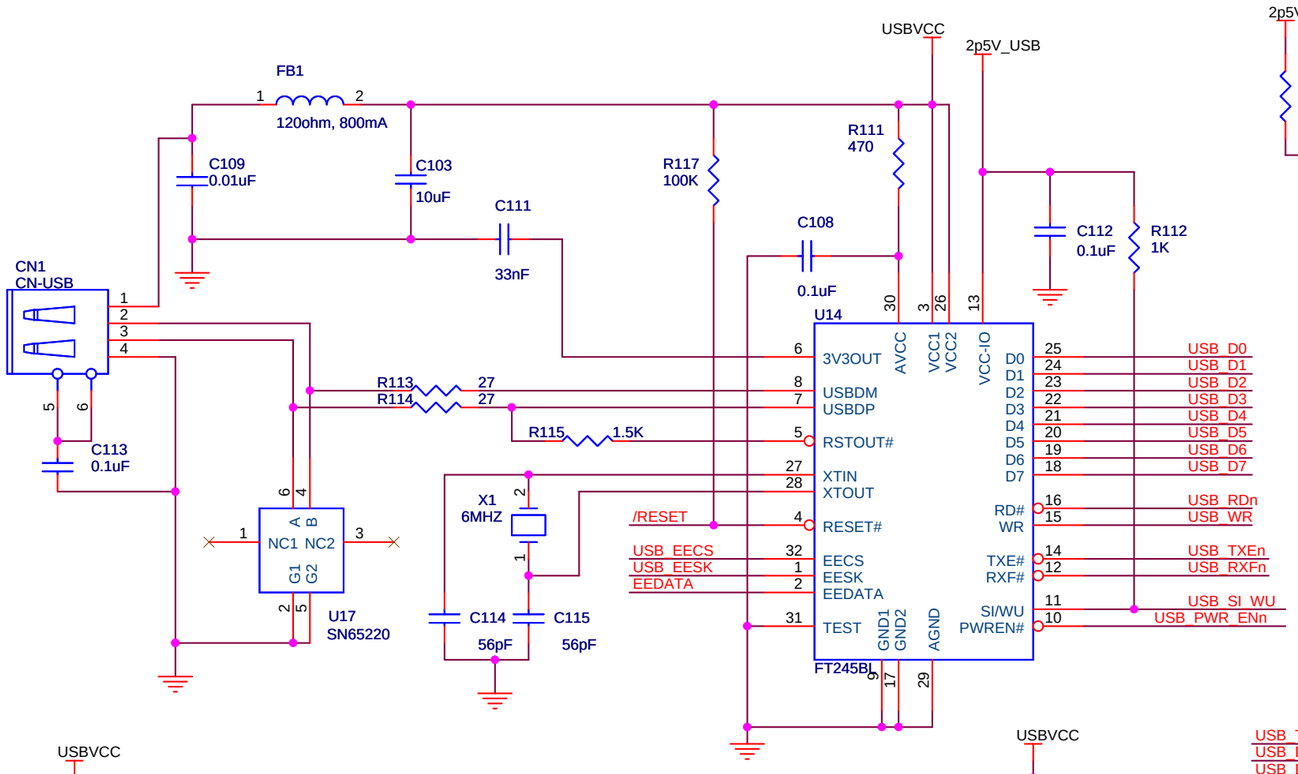
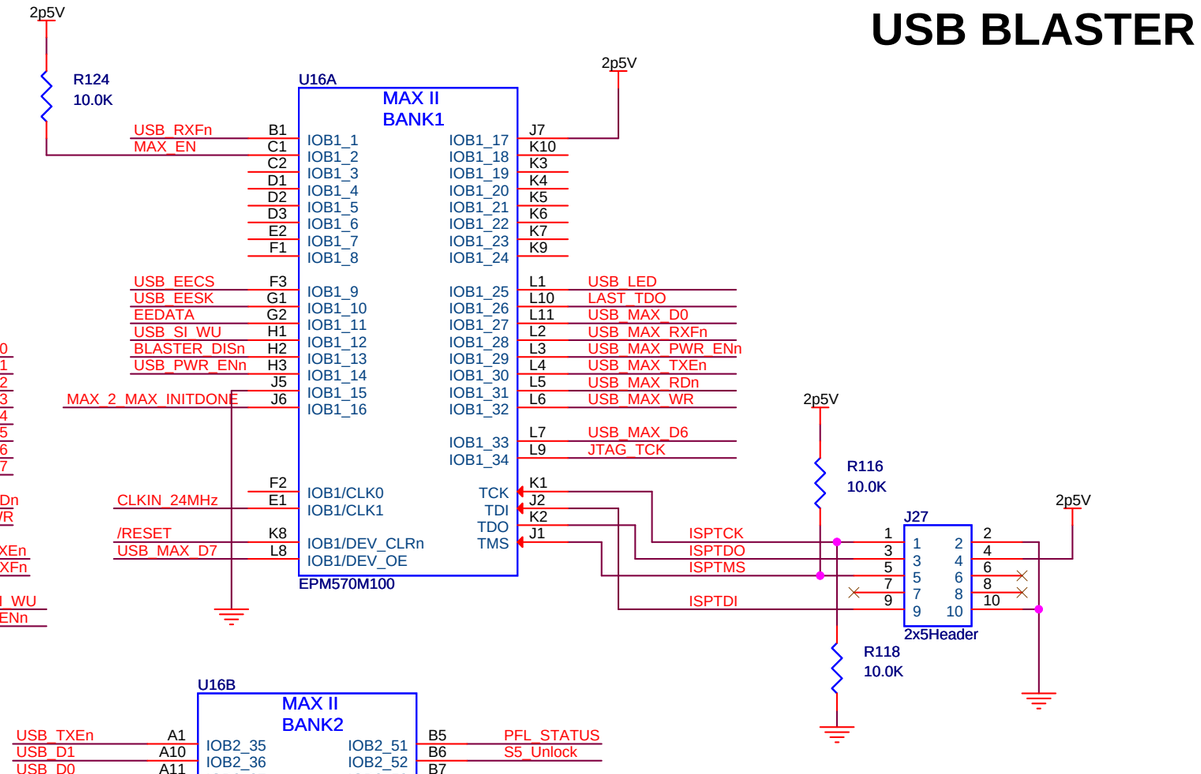
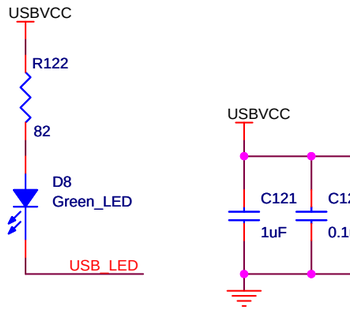
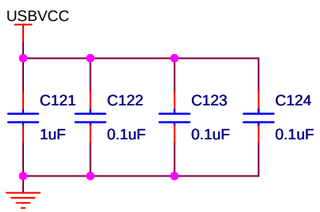
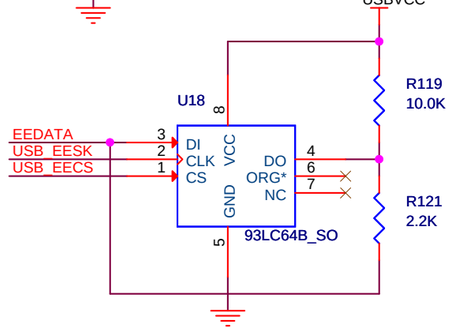
USB BLASTER

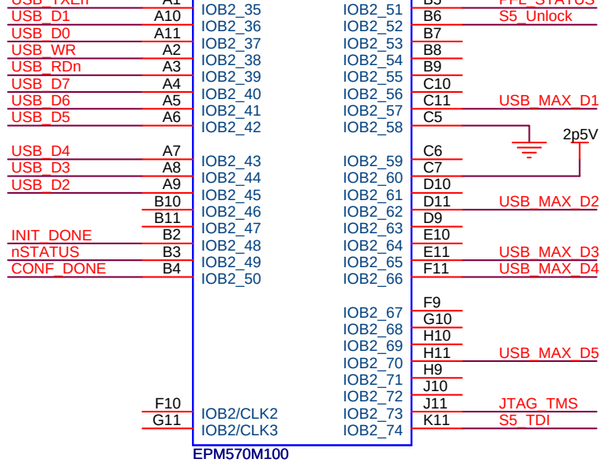


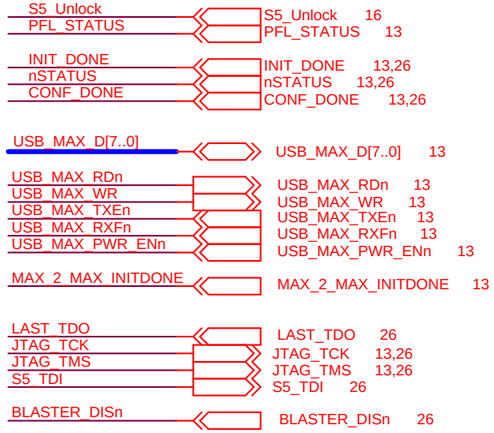


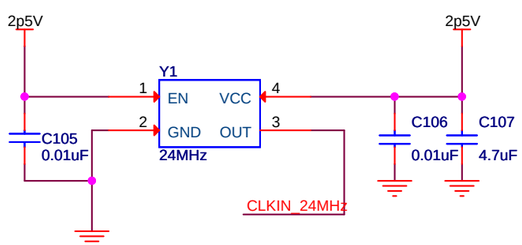


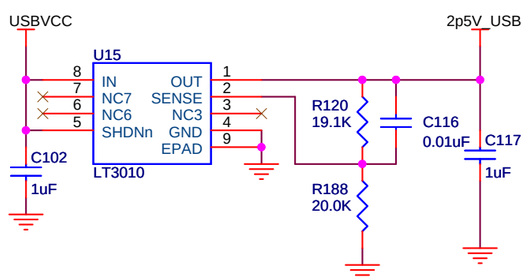


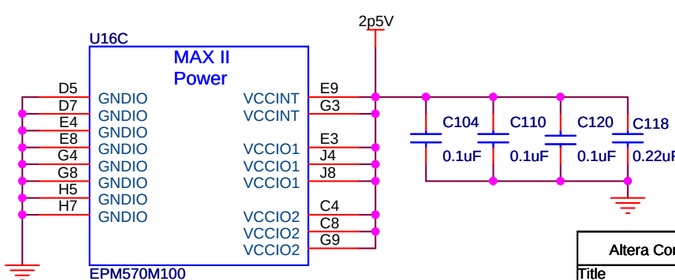












ALTERA

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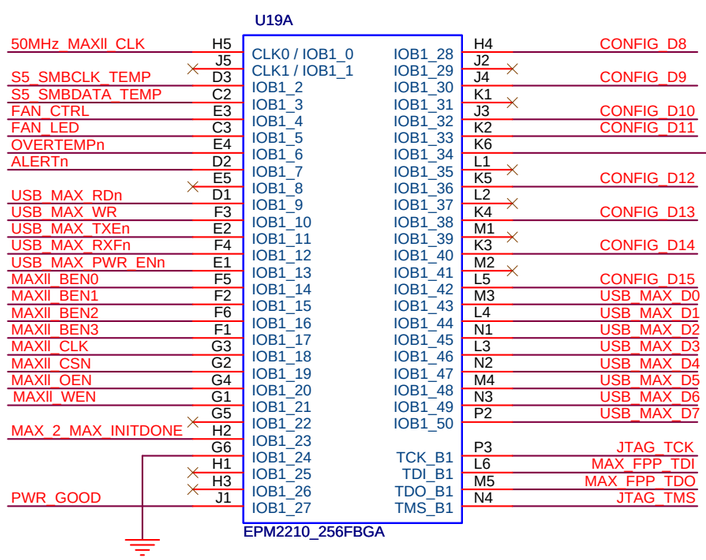
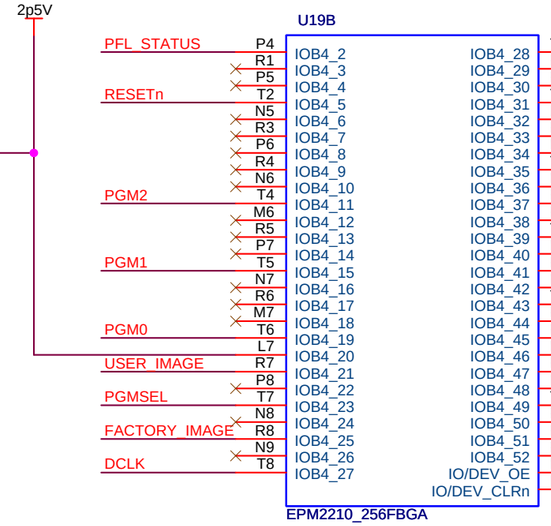
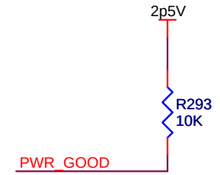
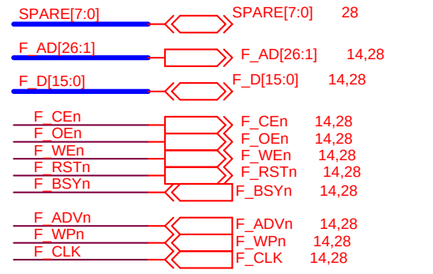
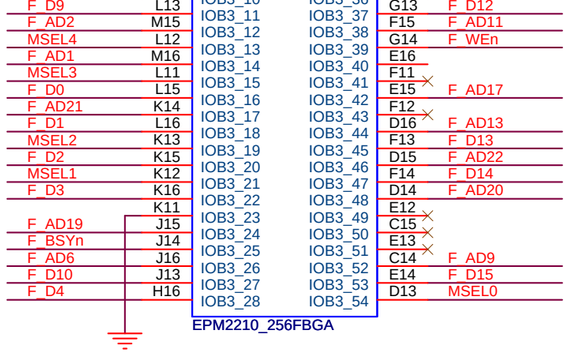
MAXII FPP CONFIGURATION

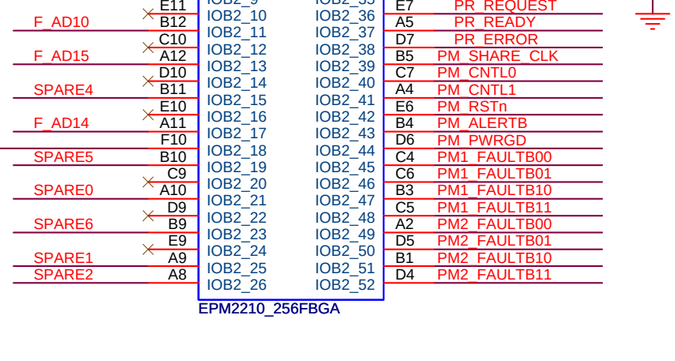


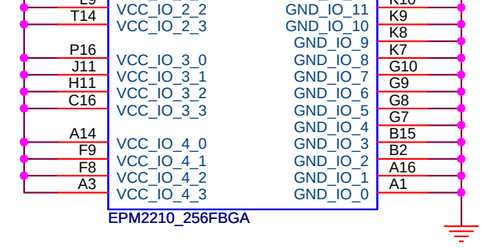


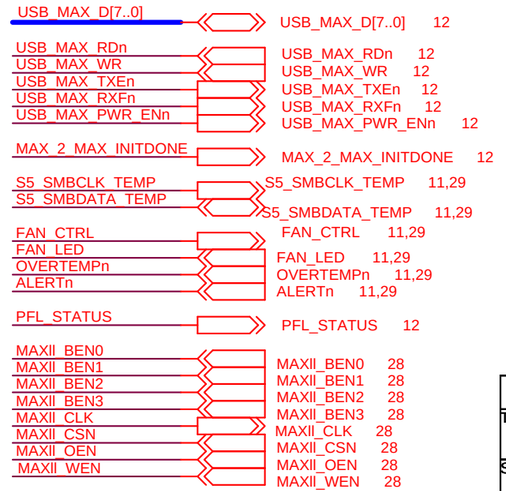


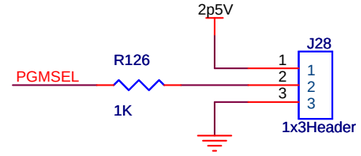


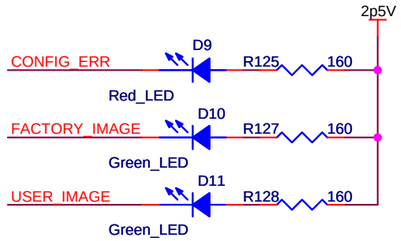


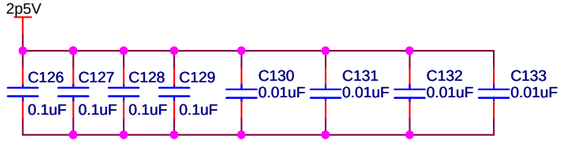












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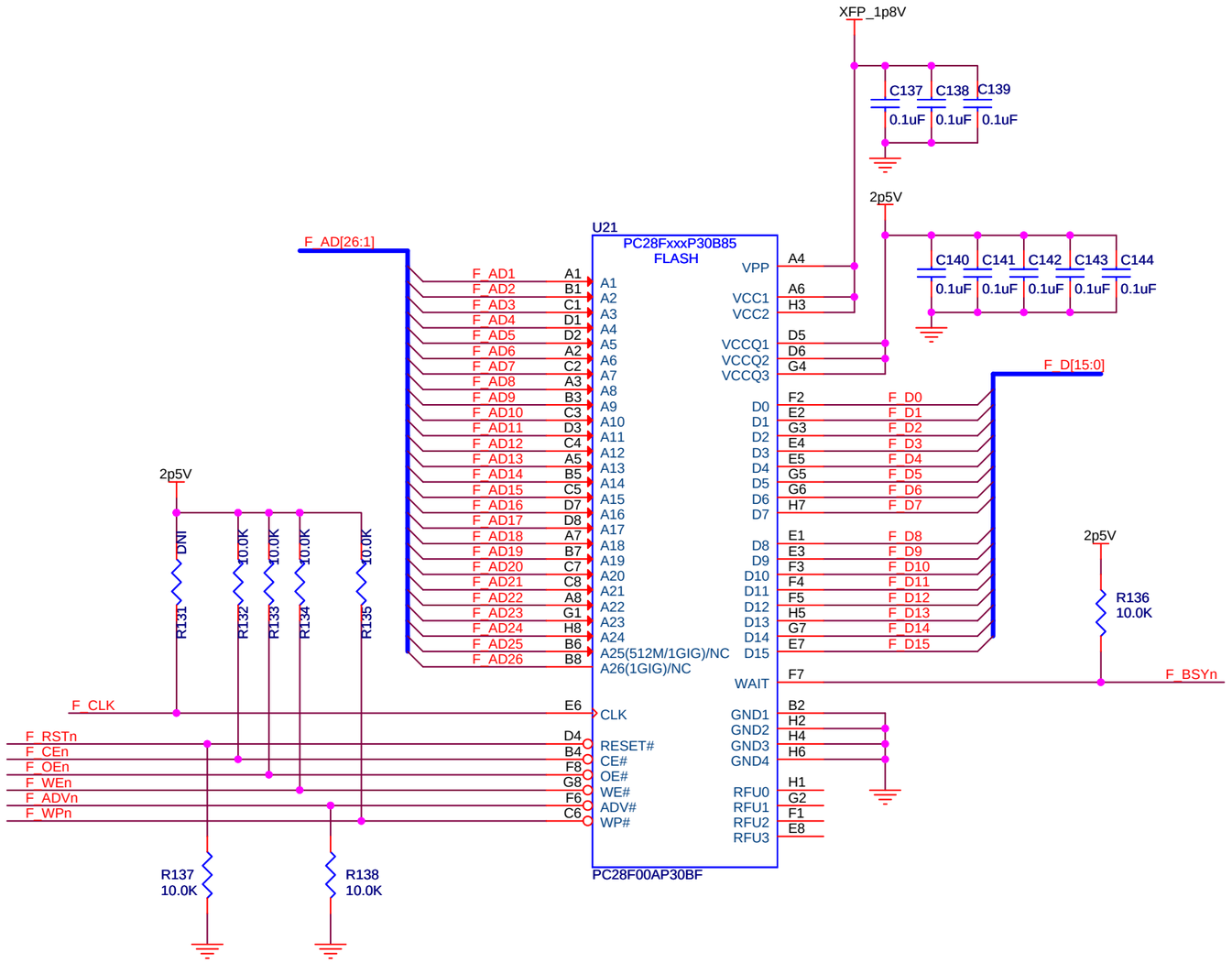
FLASH MEMORY



F_D[15:0] F_D[15:0] 13,28
F_AD[26:1] F_AD[26:1] 13,28
F_BSYn F_BSYn 13,28
F_CLK F_CLK 13,28
F_RSTn F_RSTn 13,28
F_CEn F_CEn 13,28
F_OEn F_OEn 13,28
F_WEn F_WEn 13,28
F_ADVn F_ADVn 13,28
F_WPn F_WPn 13,28

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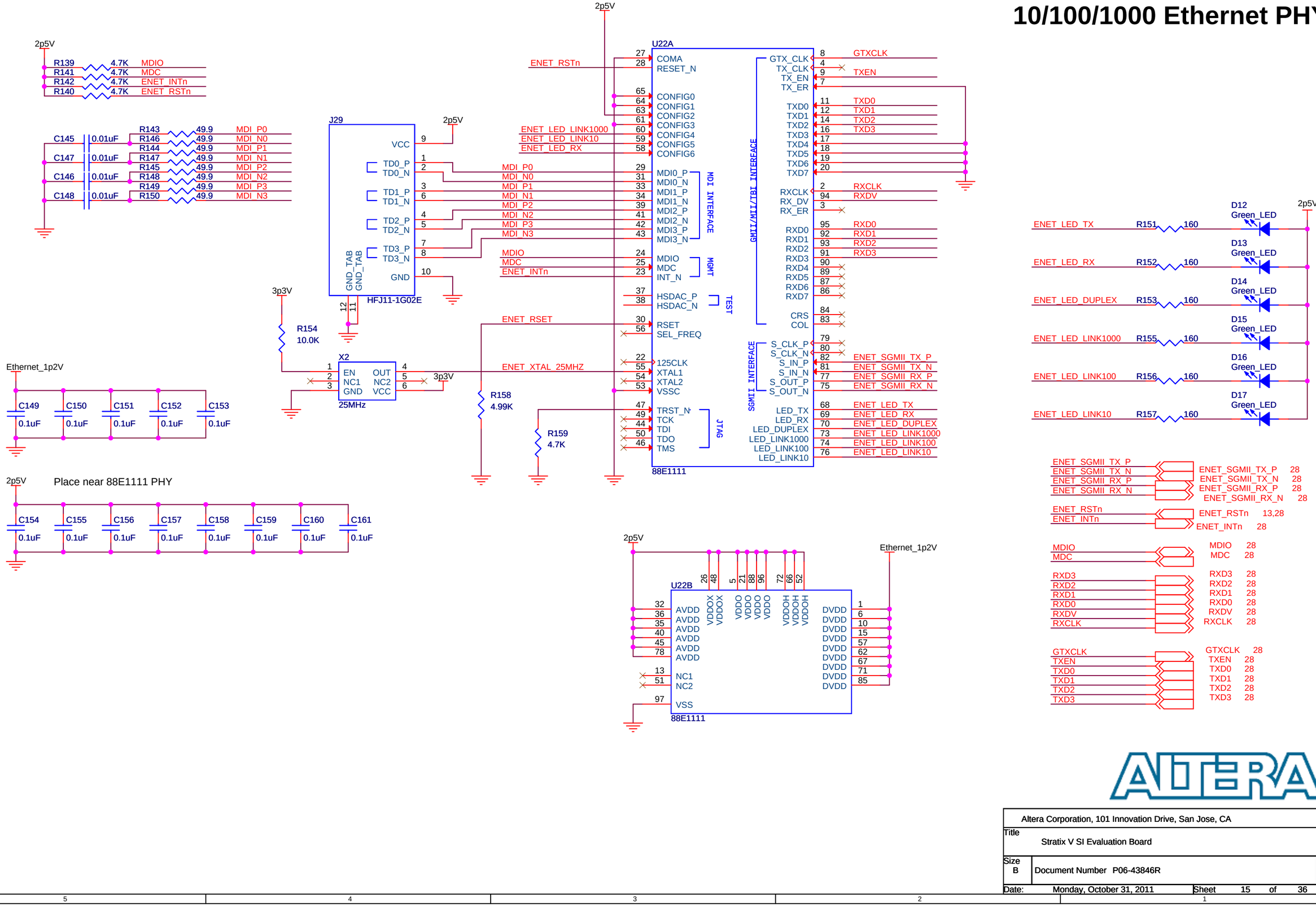
10/100/1000 Ethernet PHY



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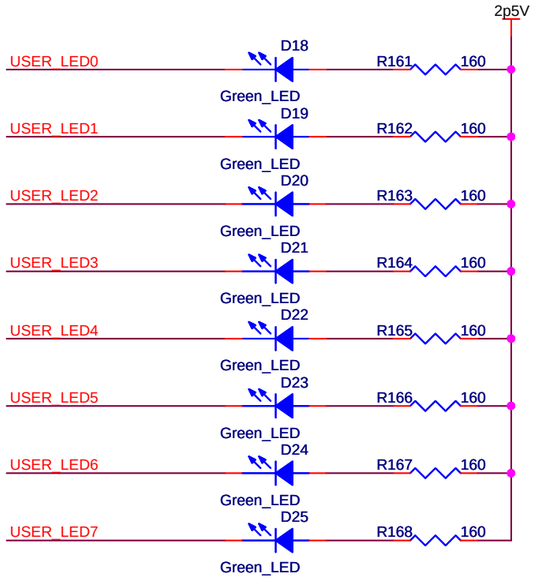
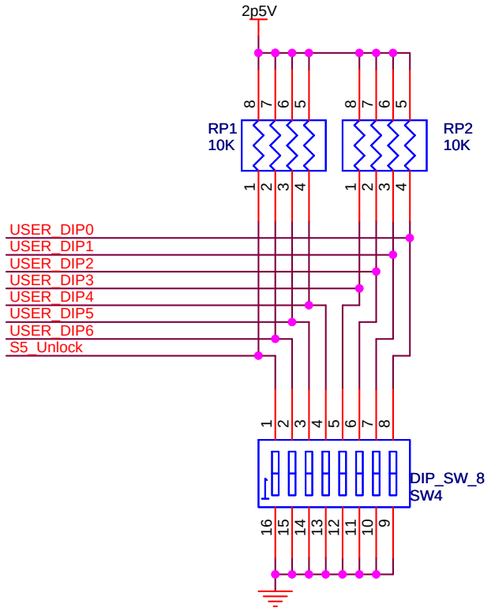
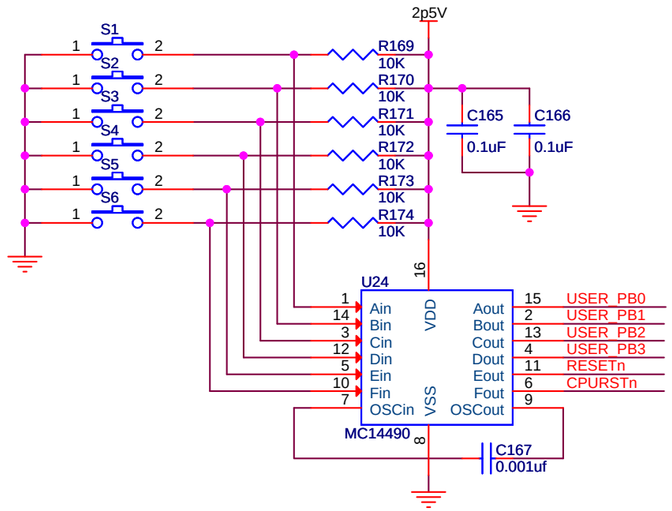
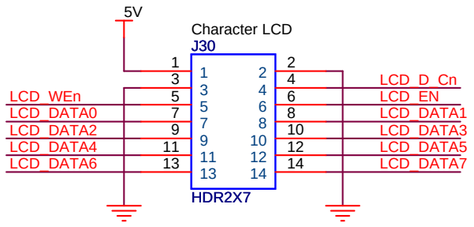
BUTTONS, SWITCHES, LEDS, LCD DISPLAY

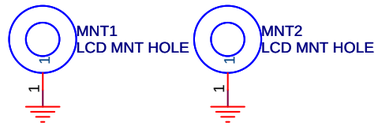


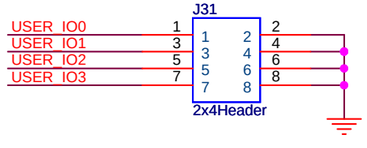


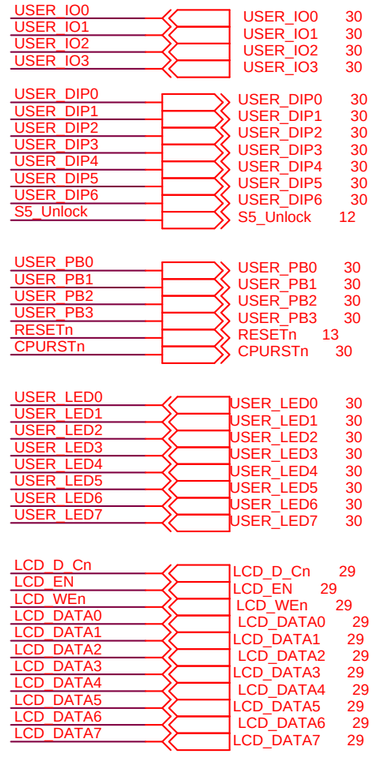




LCD DISPLAY HEADER







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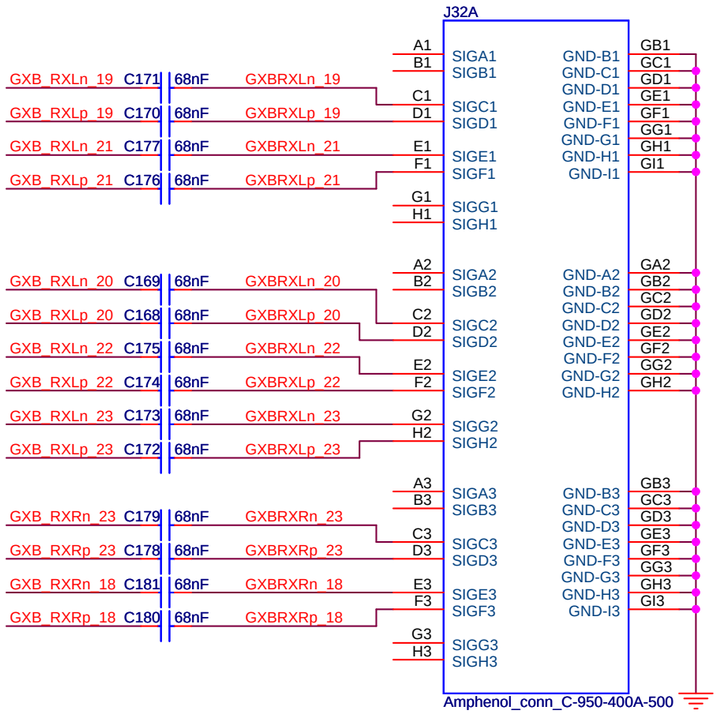
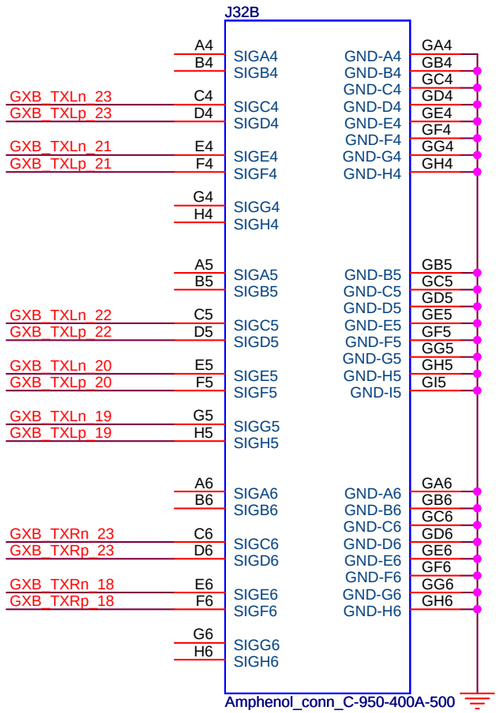
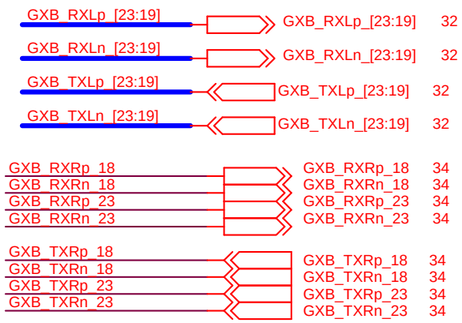
FCI / Amphenol Backplane Interface







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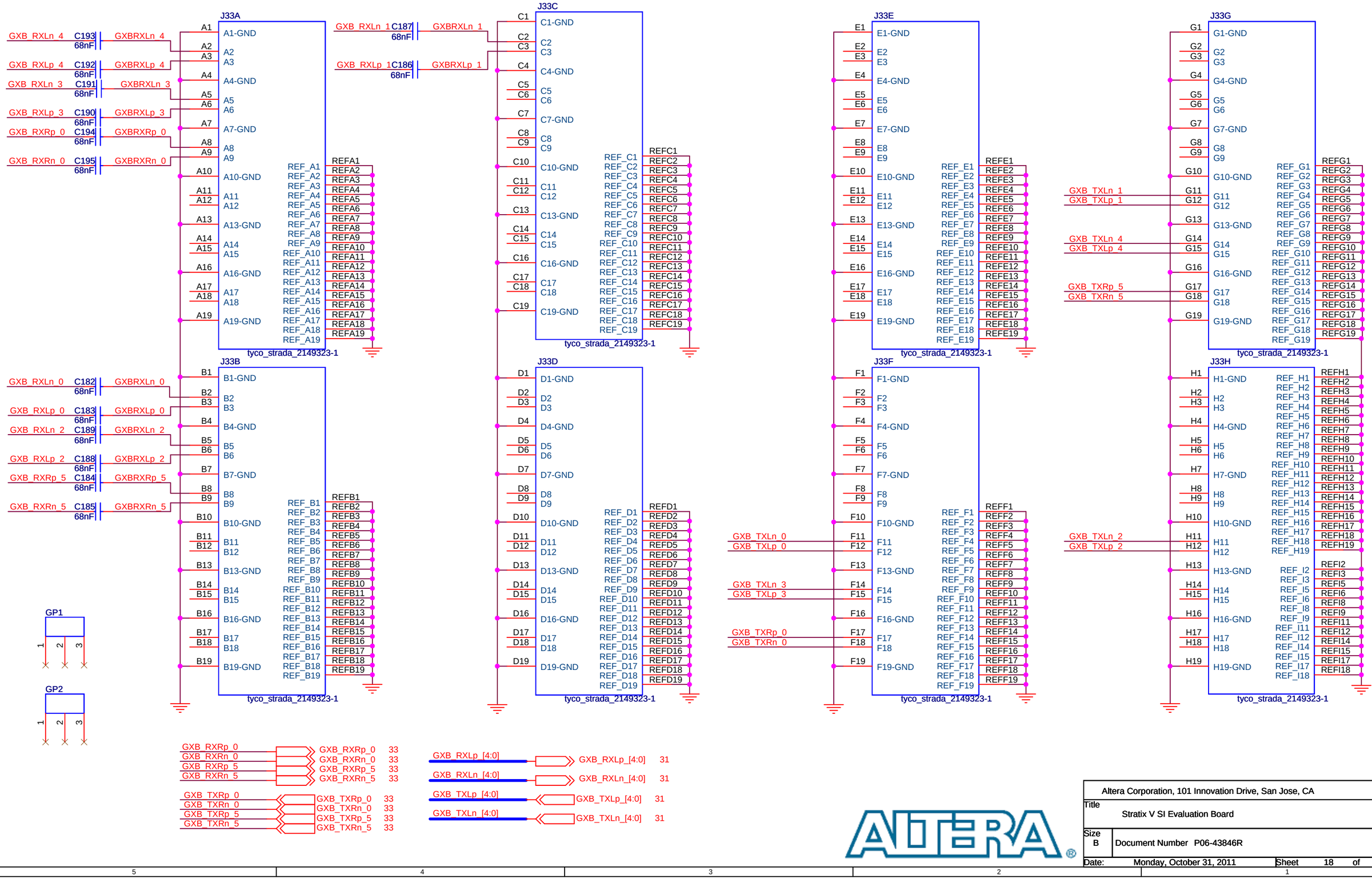
Tyco Backplane Interface



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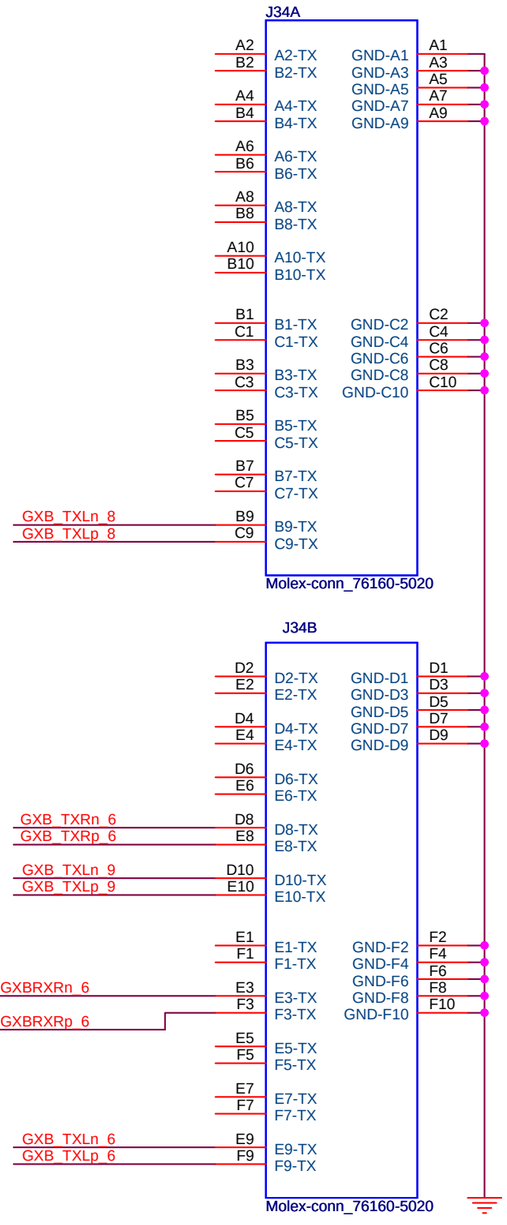
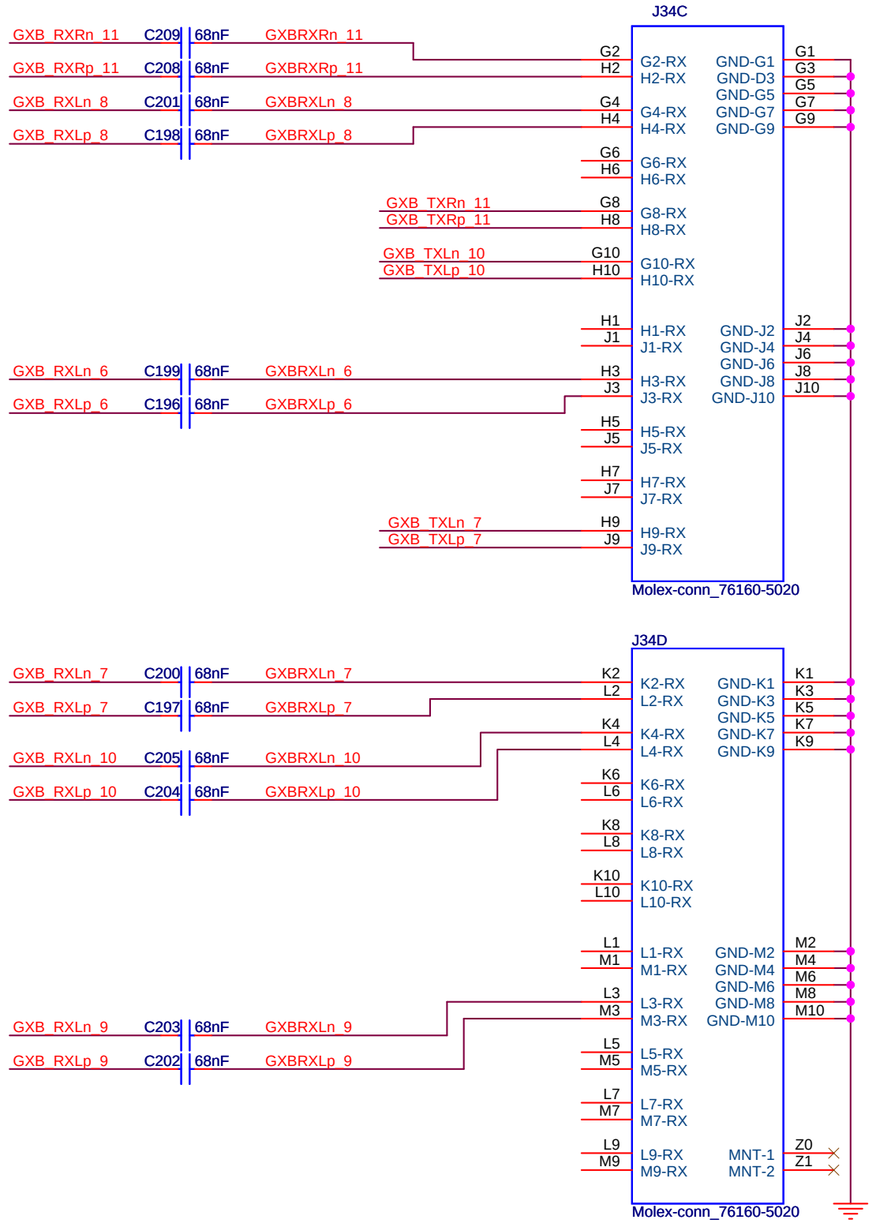
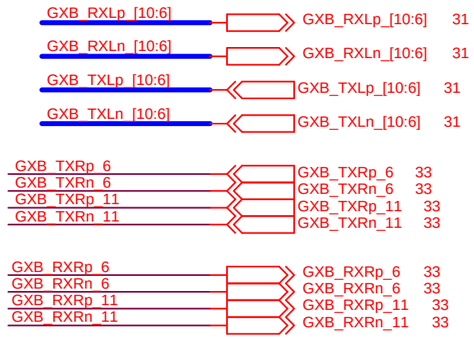
Molex Backplane Interface







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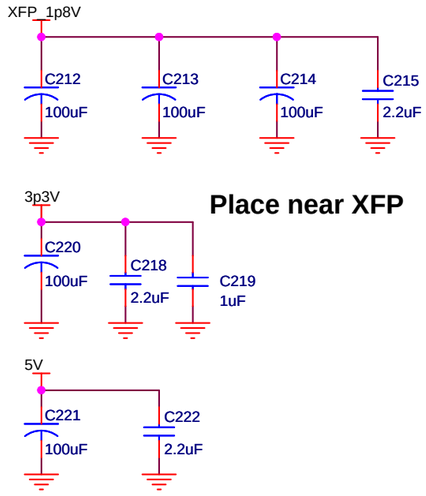
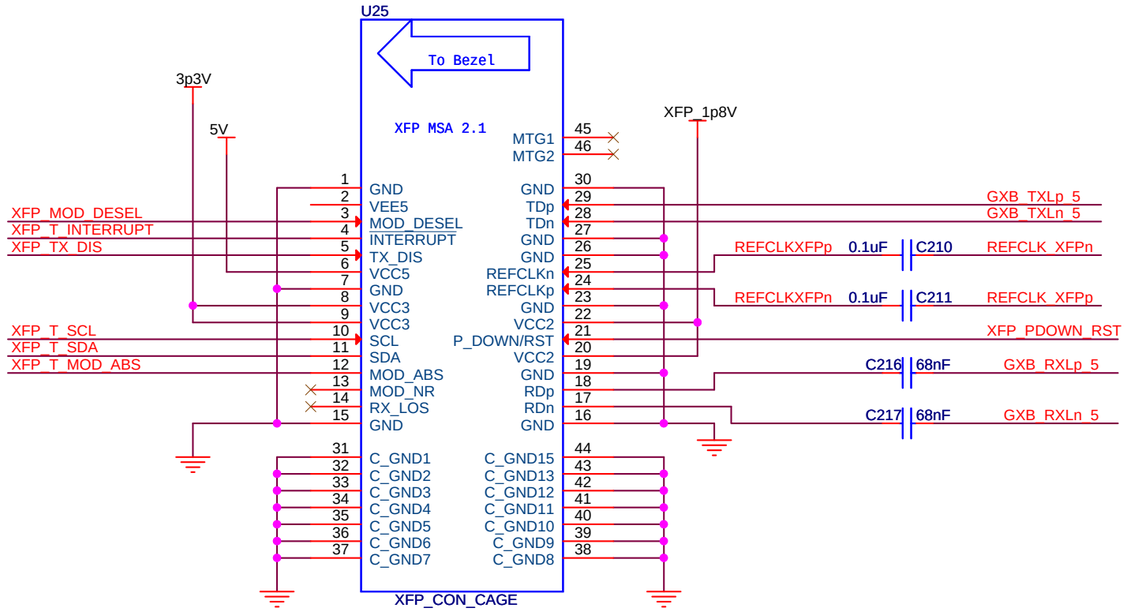
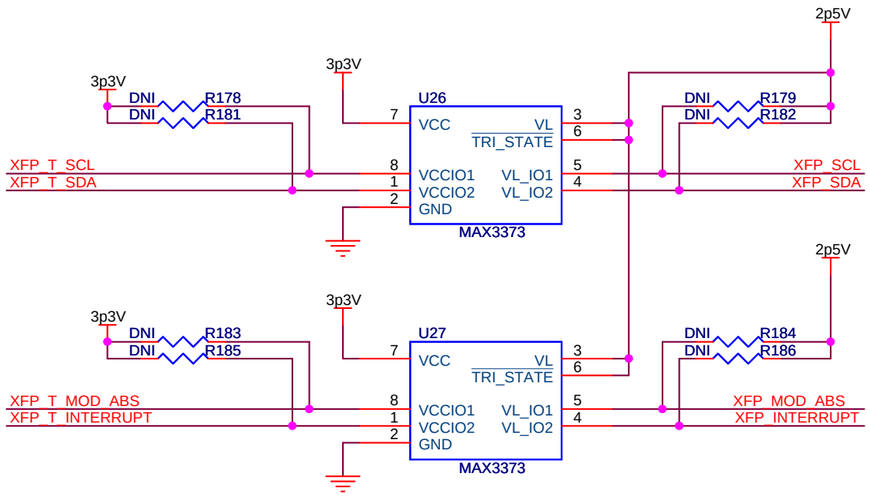
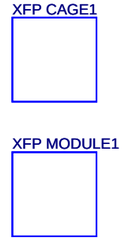
XFP Interface

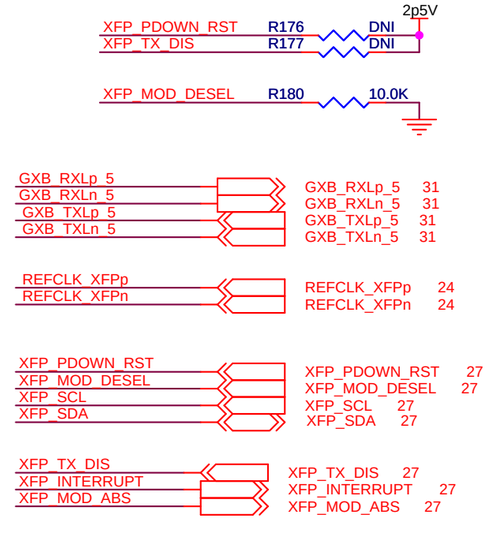


Place near XFP









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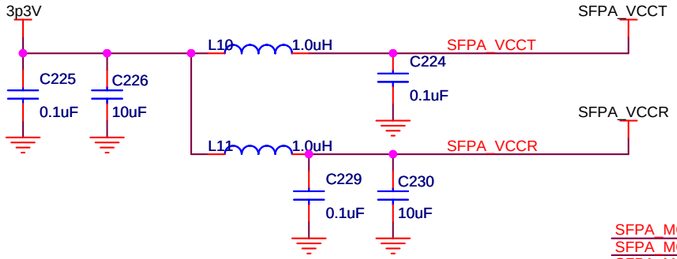
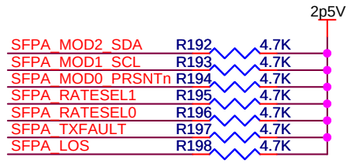
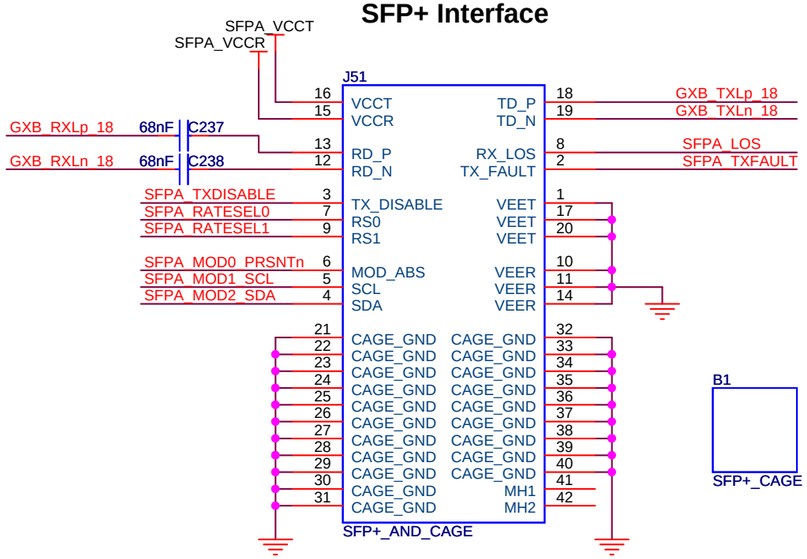
SMAs / SFP+ Interface





SFP+ Interface



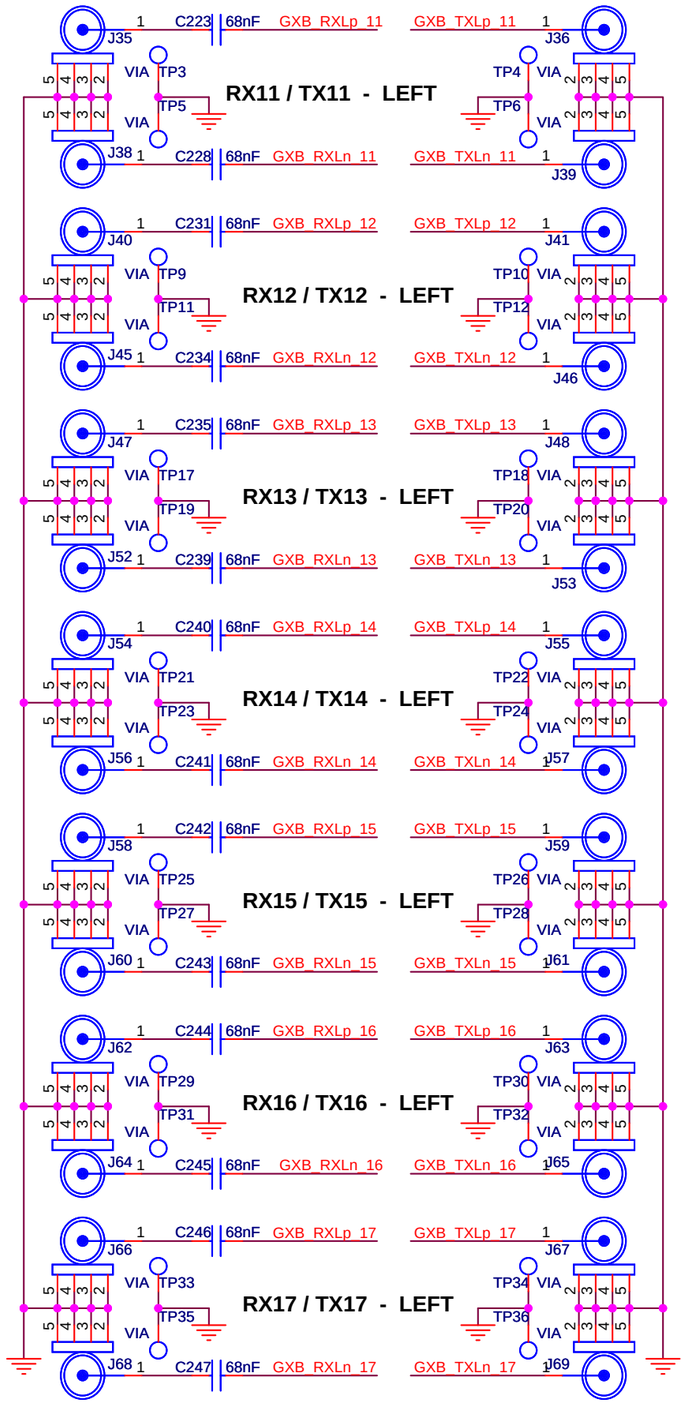
NOTE 1: 1uH ferrite bead should provide a real impedance of 220-ohms at 100MHz

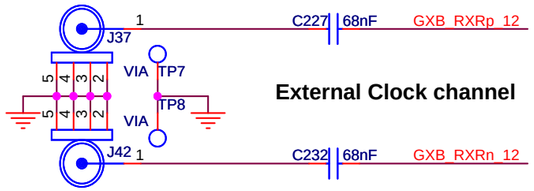
NOTE 2: Bypass Capacitors should be placed as close to the 20-pin connector as possible

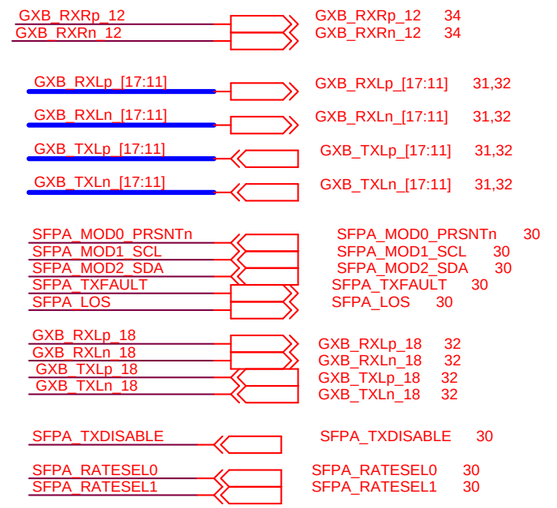
NOTE 3: Assuming that the Stratix V GX board shares a common 3.3 volt power plane that the open drain IO pins can be pulled-up on. This assumption is made to simplify such that the Tx_Fault and Rx_LOS signals do not need to be pulled-up by the Protocal IC (Stratix IV GX) as specified in the MultiSource Agreement (MSA).

NOTE 4: Assuming that the 100-ohm termination on the Stratix V GX device will be implemented via the on-chip termination circuit.

NOTE 5: Going to use the SPLC-20 SFP Optical SONET OC-48 transceiver, but not limited to this. Any MSA SFP complient transceiver should be able to be plugged in.







ALTERA

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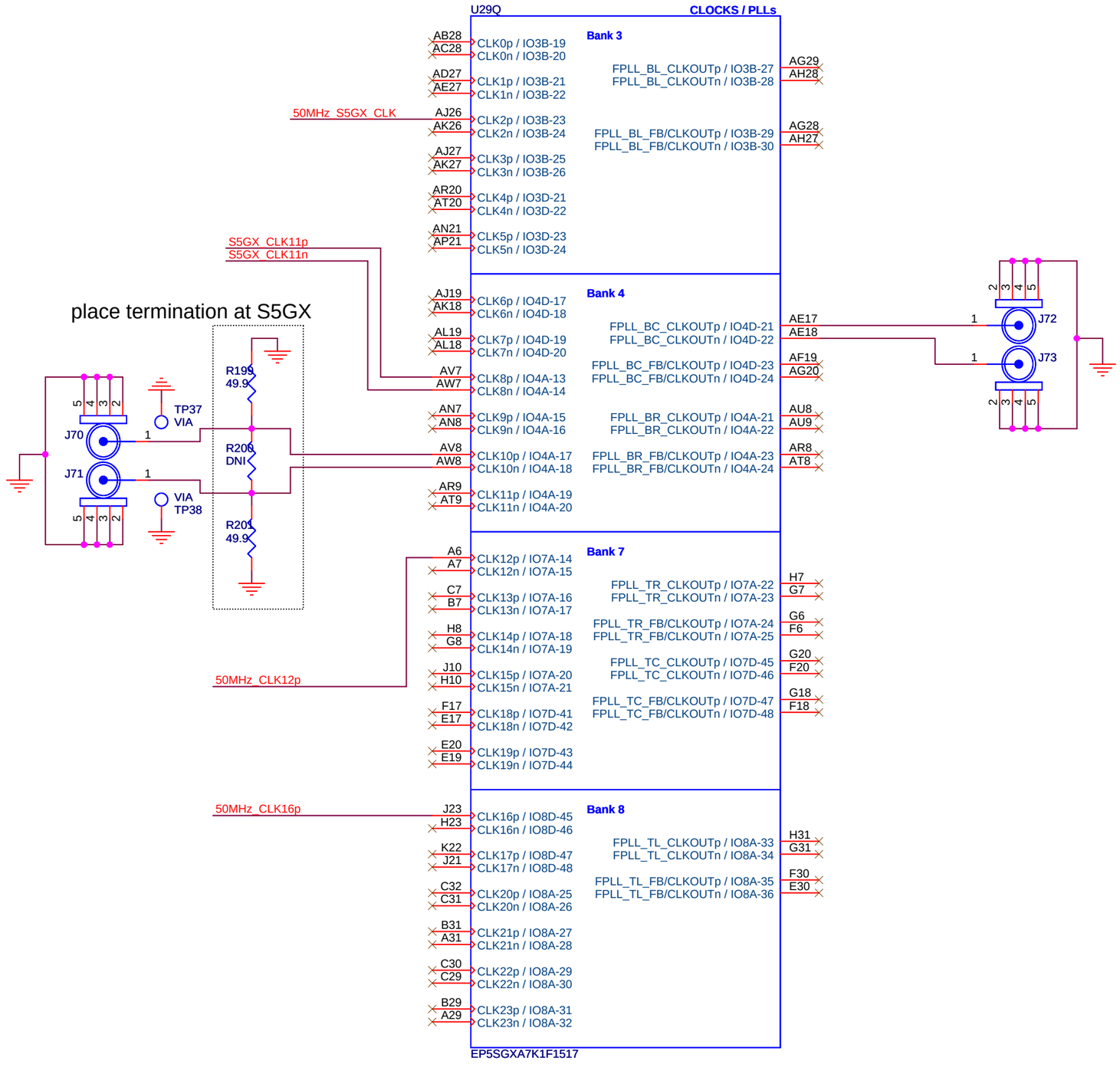
GLOBAL CLOCKS



50MHz_CLK12p → 50MHz_CLK12p 23

50MHz_CLK16p → 50MHz_CLK16p 23

50MHz_S5GX_CLK → 50MHz_S5GX_CLK 23

S5GX_CLK11p → S5GX_CLK11p 23

S5GX_CLK11n → S5GX_CLK11n 23

ALTERA®

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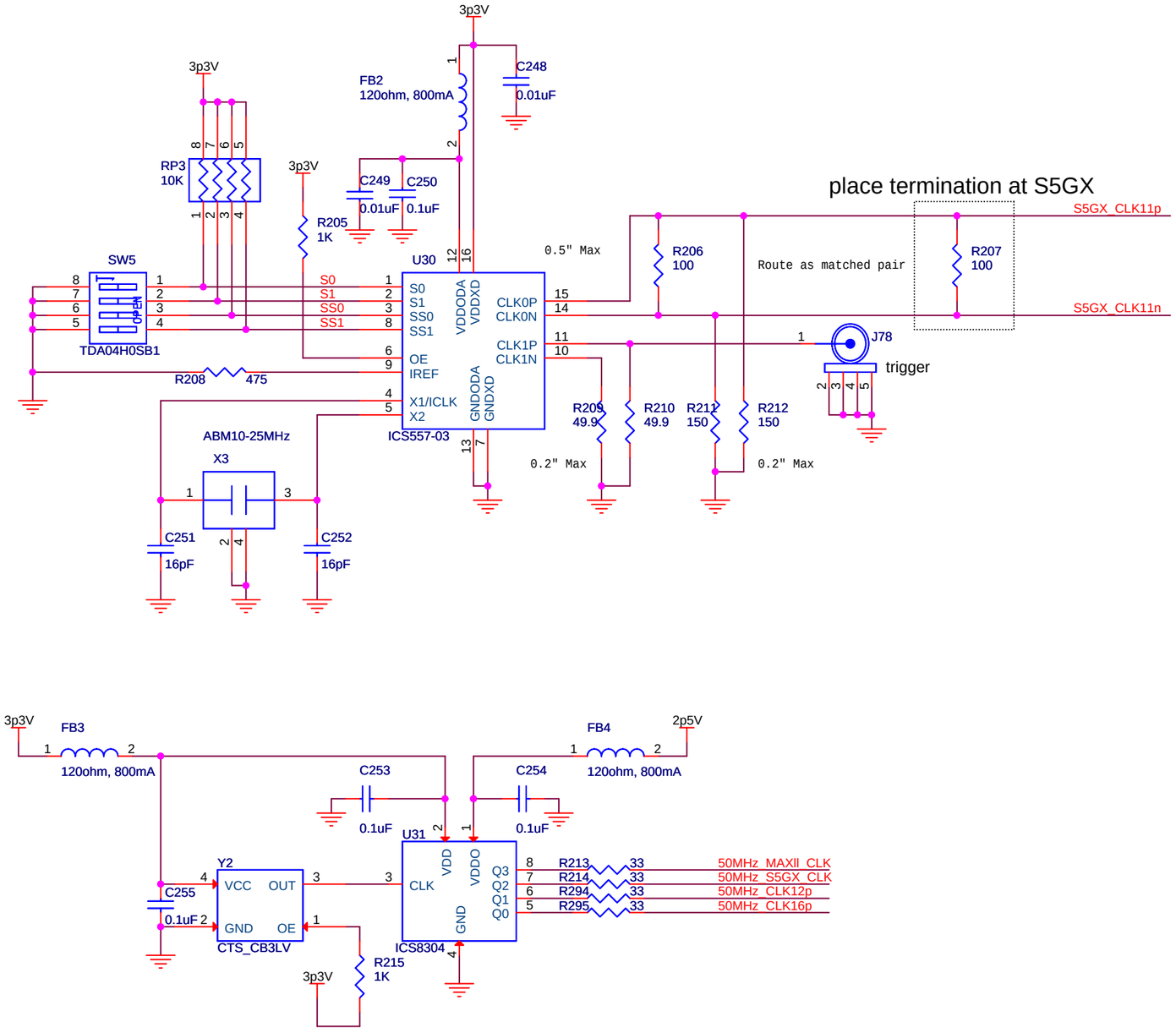
Spread Spectrum / 50MHz Clocks

Output Select Table 1(MHz)

S1	S0	CLK(1:0), $\overline{CLK(1:0)}$
0	0	25M
0	1	100M
1	0	125M
1	1	200M

Spread Selection Table 2

SS1	SS0	Spread %
0	0	Center ±0.25
0	1	Down -0.5
1	0	Down -0.75
1	1	No Spread



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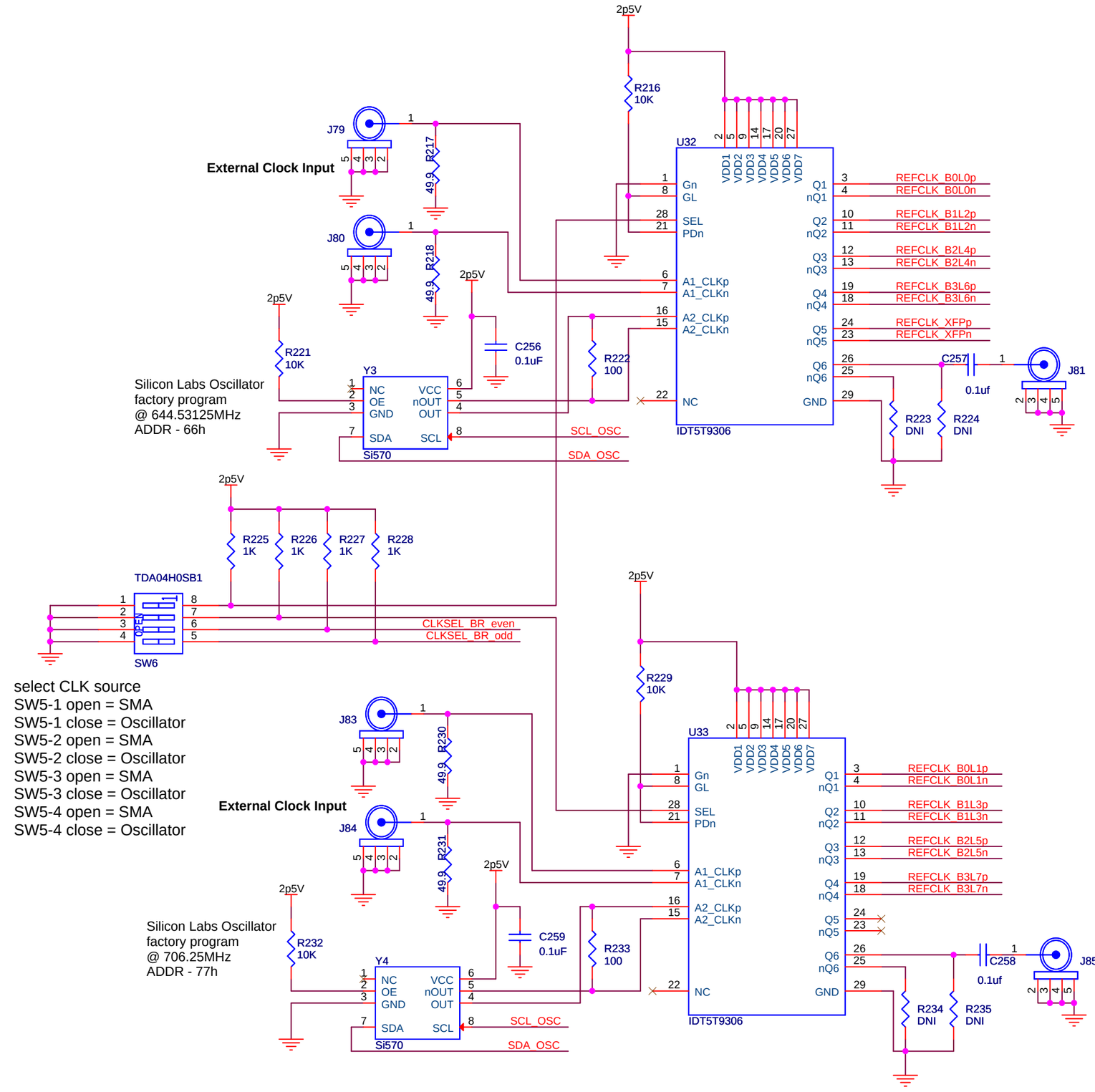
XCVR Clocks - Left Blocks



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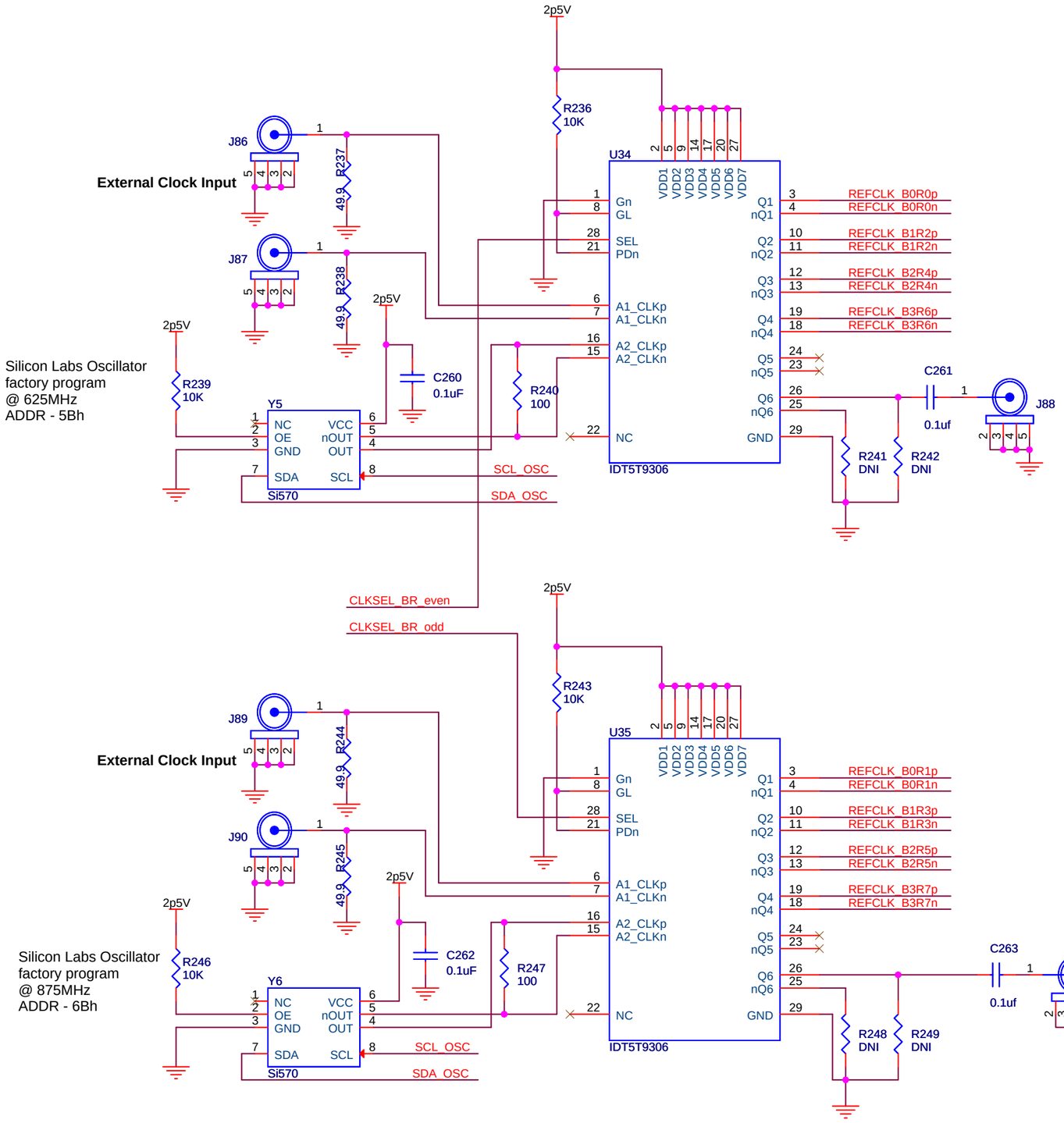
XCVR Clocks - Right Blocks



CLKSEL_BR_even — CLKSEL_BR_even 24
CLKSEL_BR_odd — CLKSEL_BR_odd 24

SCL_OSC — SCL_OSC 13,24
SDA_OSC — SDA_OSC 13,24

REFCLK_B0R0p — REFCLK_B0R0p 33
REFCLK_B0R0n — REFCLK_B0R0n 33
REFCLK_B1R2p — REFCLK_B1R2p 33
REFCLK_B1R2n — REFCLK_B1R2n 33
REFCLK_B2R4p — REFCLK_B2R4p 34
REFCLK_B2R4n — REFCLK_B2R4n 34
REFCLK_B3R6p — REFCLK_B3R6p 34
REFCLK_B3R6n — REFCLK_B3R6n 34

REFCLK_B0R1p — REFCLK_B0R1p 33
REFCLK_B0R1n — REFCLK_B0R1n 33
REFCLK_B1R3p — REFCLK_B1R3p 33
REFCLK_B1R3n — REFCLK_B1R3n 33
REFCLK_B2R5p — REFCLK_B2R5p 34
REFCLK_B2R5n — REFCLK_B2R5n 34
REFCLK_B3R7p — REFCLK_B3R7p 34
REFCLK_B3R7n — REFCLK_B3R7n 34

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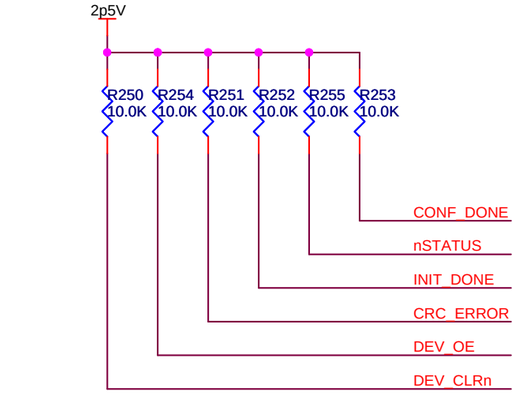
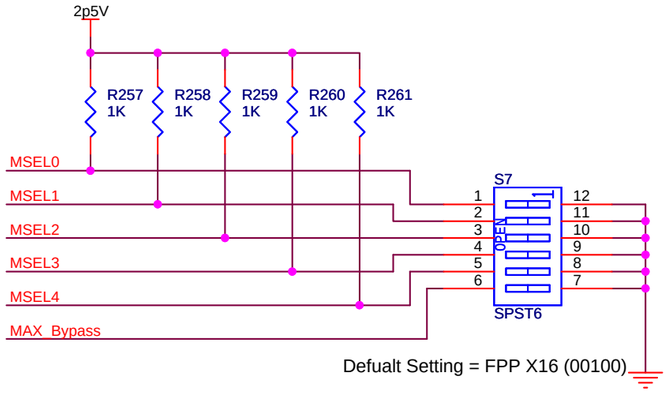
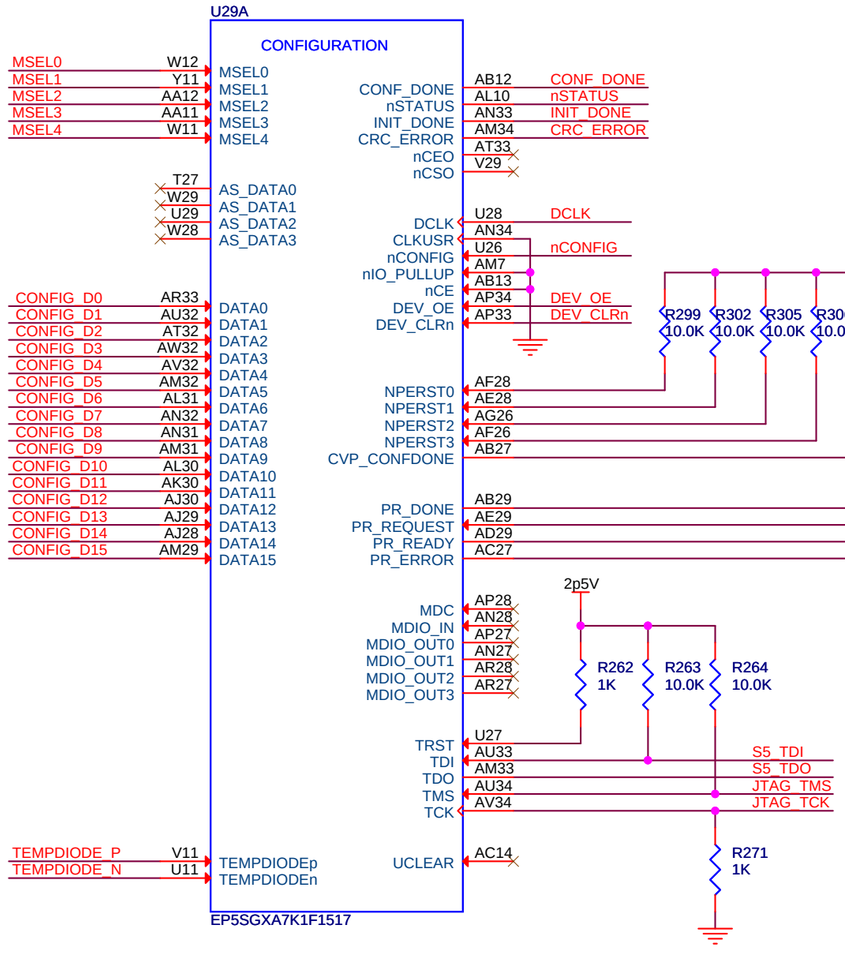
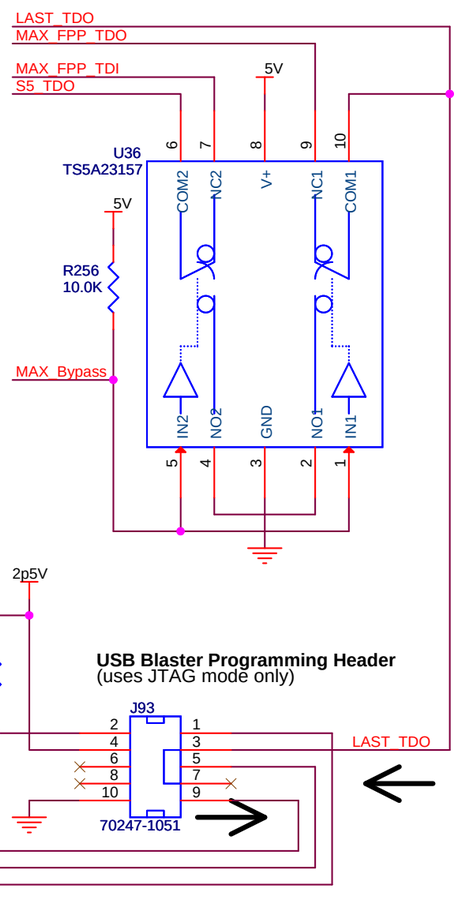
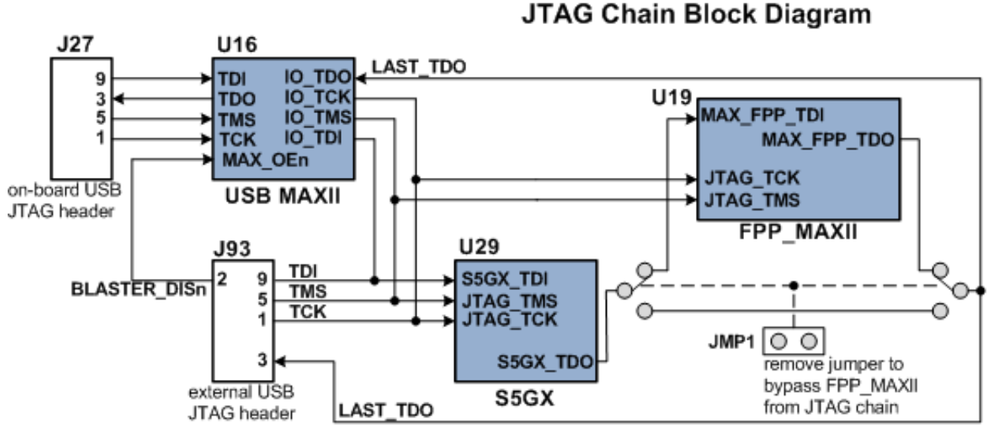
S5 Configuration / JTAG

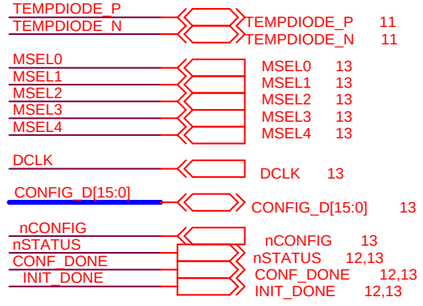


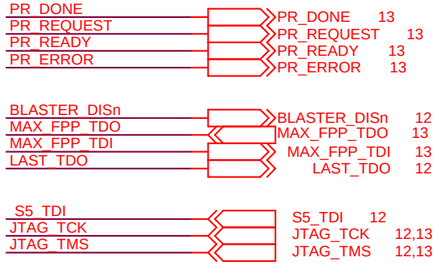












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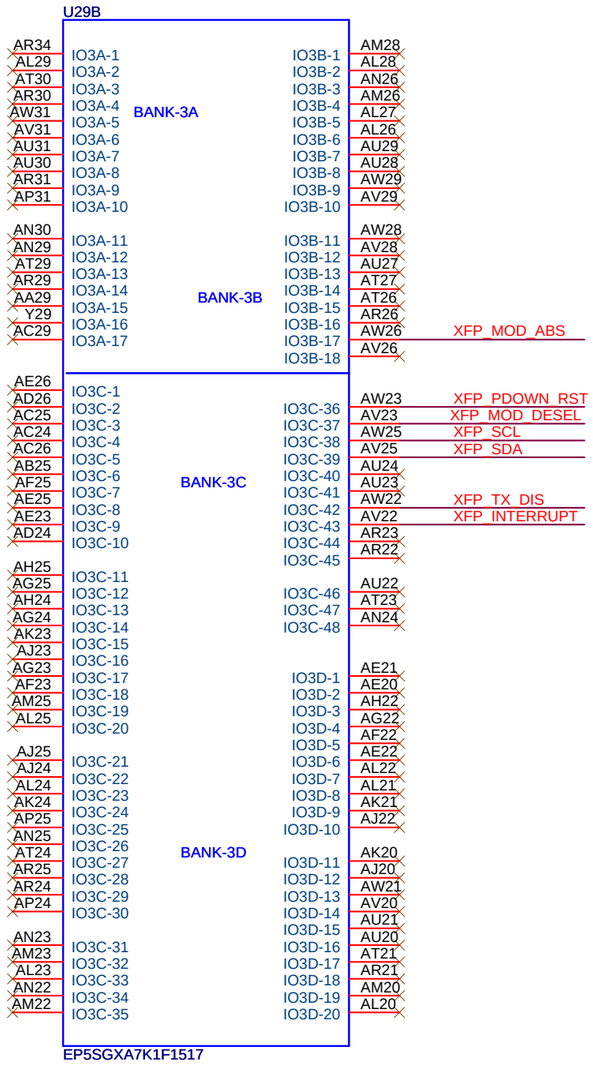
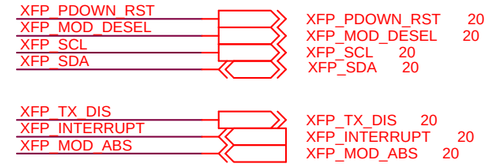
S5 Bank 3





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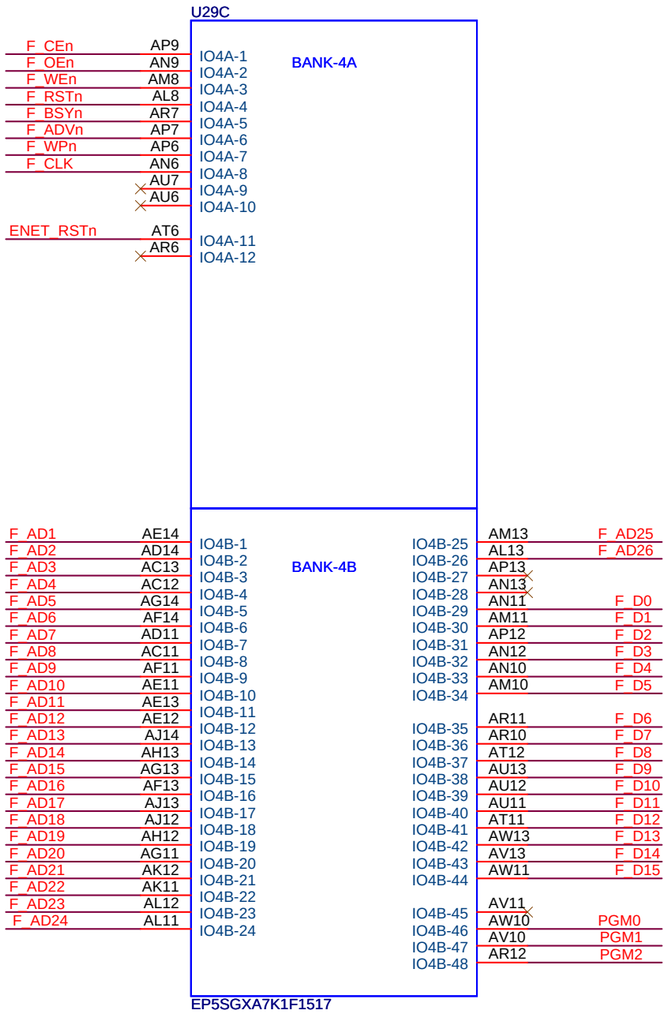
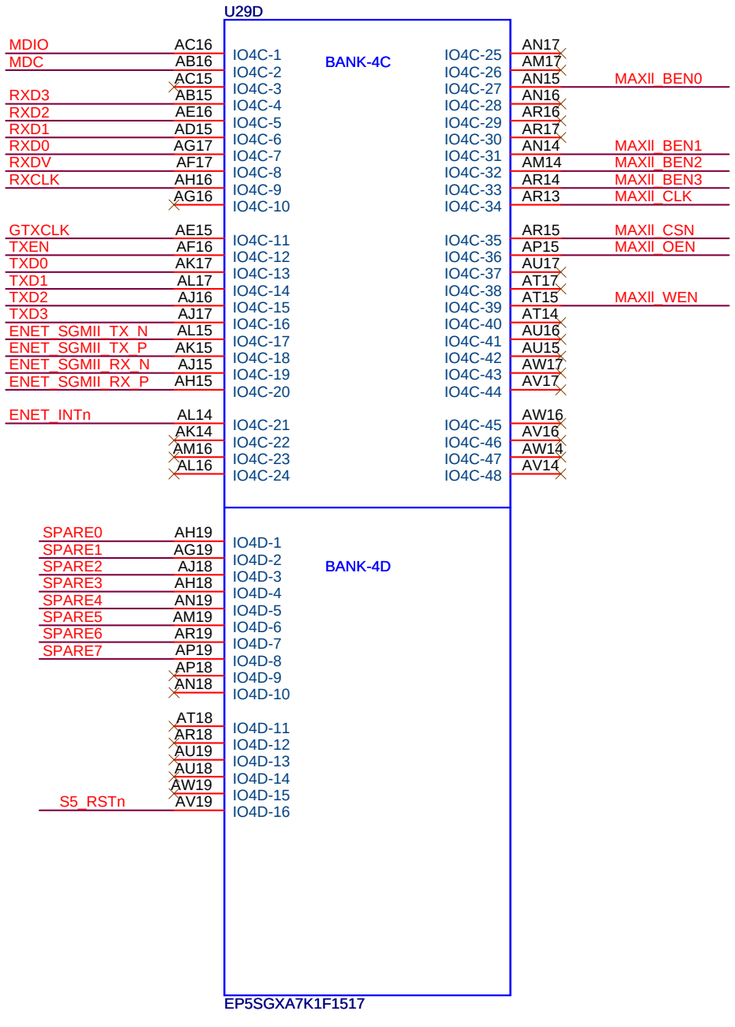
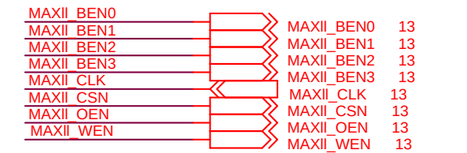
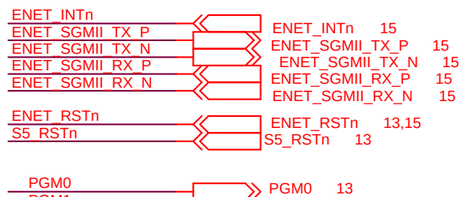
S5 Bank 4









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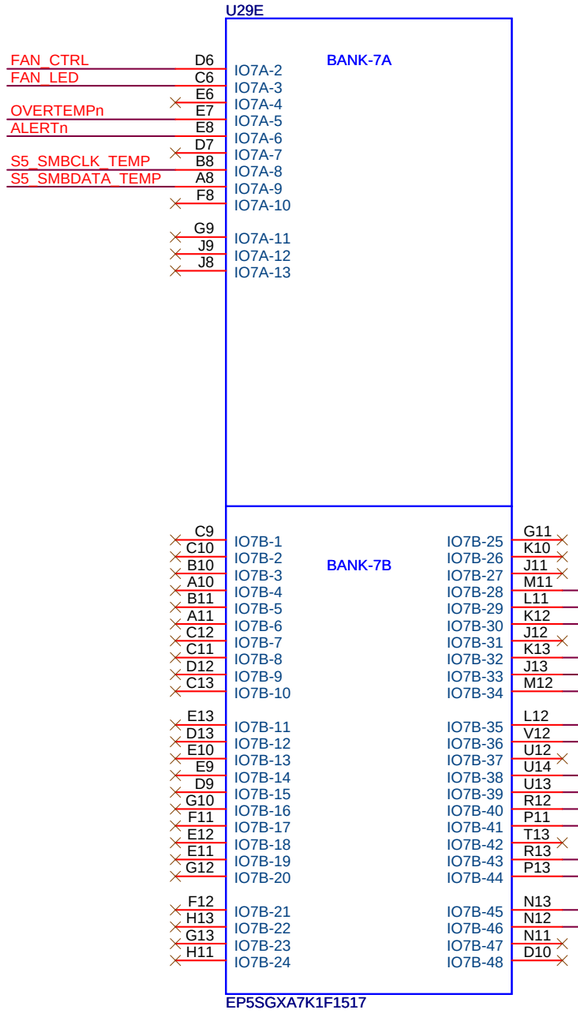
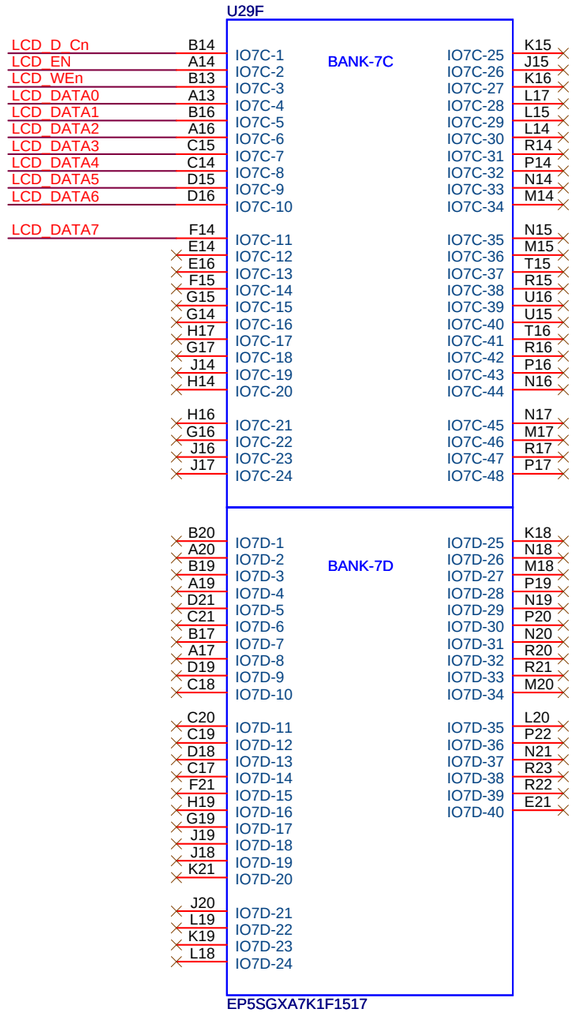
S5 Bank 7





FAN_CTRL — FAN_CTRL 11,13
FAN_LED — FAN_LED 11,13

OVERTEMPn — OVERTEMPn 11,13
ALERTn — ALERTn 11,13

S5_SMBCLK_TEMP — S5_SMBCLK_TEMP 11,13
S5_SMBDATA_TEMP — S5_SMBDATA_TEMP 11,13

SCL_PM — SCL_PM 9,10,13
SDA_PM — SDA_PM 9,10,13

PM_CNTL0 — PM_CNTL0 9,10,13
PM_CNTL1 — PM_CNTL1 9,10,13
PM_RSTn — PM_RSTn 9,10,13
PM_SHARE_CLK — PM_SHARE_CLK 9,10,13
PM_ALERTB — PM_ALERTB 9,10,13
PM_PWRGD — PM_PWRGD 9,10,13

PM1_FAULTB00 — PM1_FAULTB00 9,13
PM1_FAULTB01 — PM1_FAULTB01 9,13
PM1_FAULTB10 — PM1_FAULTB10 9,13
PM1_FAULTB11 — PM1_FAULTB11 9,13

PM2_FAULTB00 — PM2_FAULTB00 10,13
PM2_FAULTB01 — PM2_FAULTB01 10,13
PM2_FAULTB10 — PM2_FAULTB10 10,13
PM2_FAULTB11 — PM2_FAULTB11 10,13

LCD_D_Cn — LCD_D_Cn 16
LCD_EN — LCD_EN 16
LCD_WEn — LCD_WEn 16
LCD_DATA0 — LCD_DATA0 16
LCD_DATA1 — LCD_DATA1 16
LCD_DATA2 — LCD_DATA2 16
LCD_DATA3 — LCD_DATA3 16
LCD_DATA4 — LCD_DATA4 16
LCD_DATA5 — LCD_DATA5 16
LCD_DATA6 — LCD_DATA6 16
LCD_DATA7 — LCD_DATA7 16

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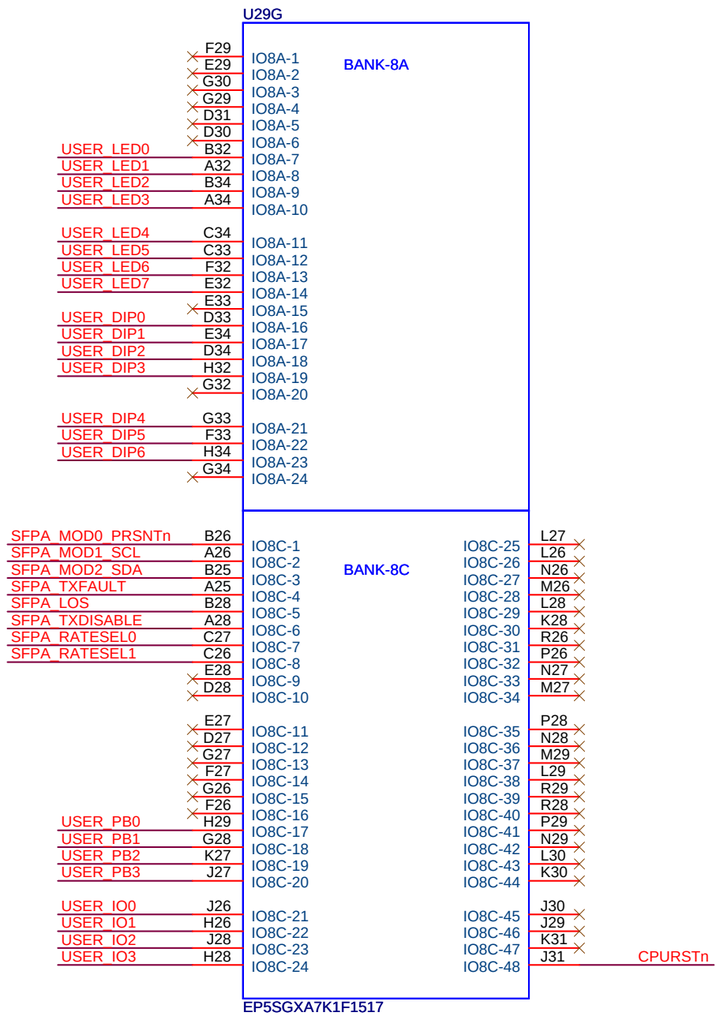
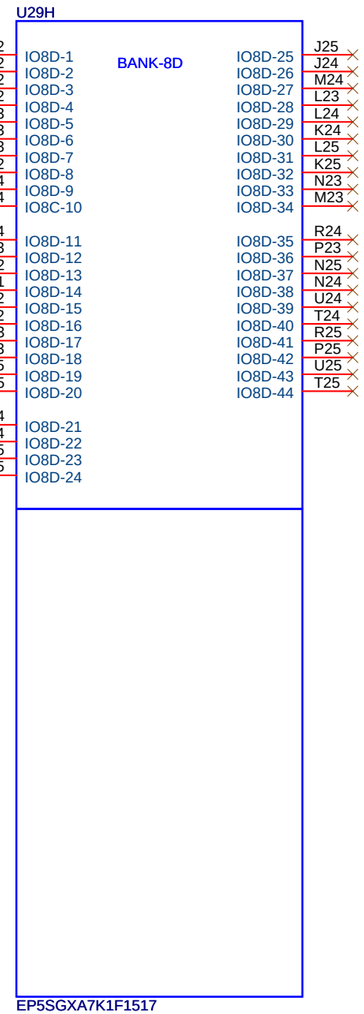
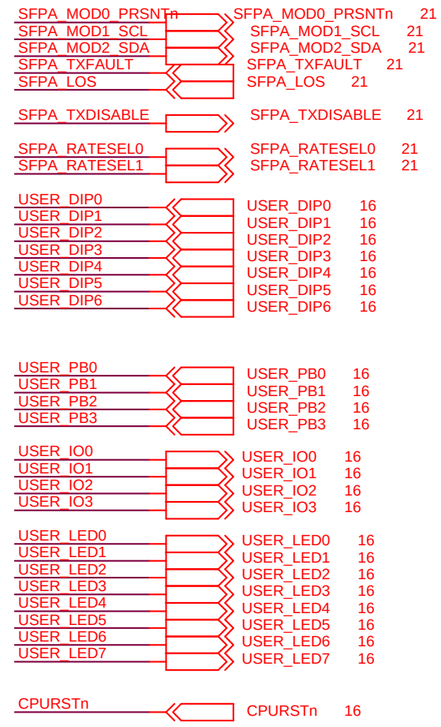
S5 Bank 8







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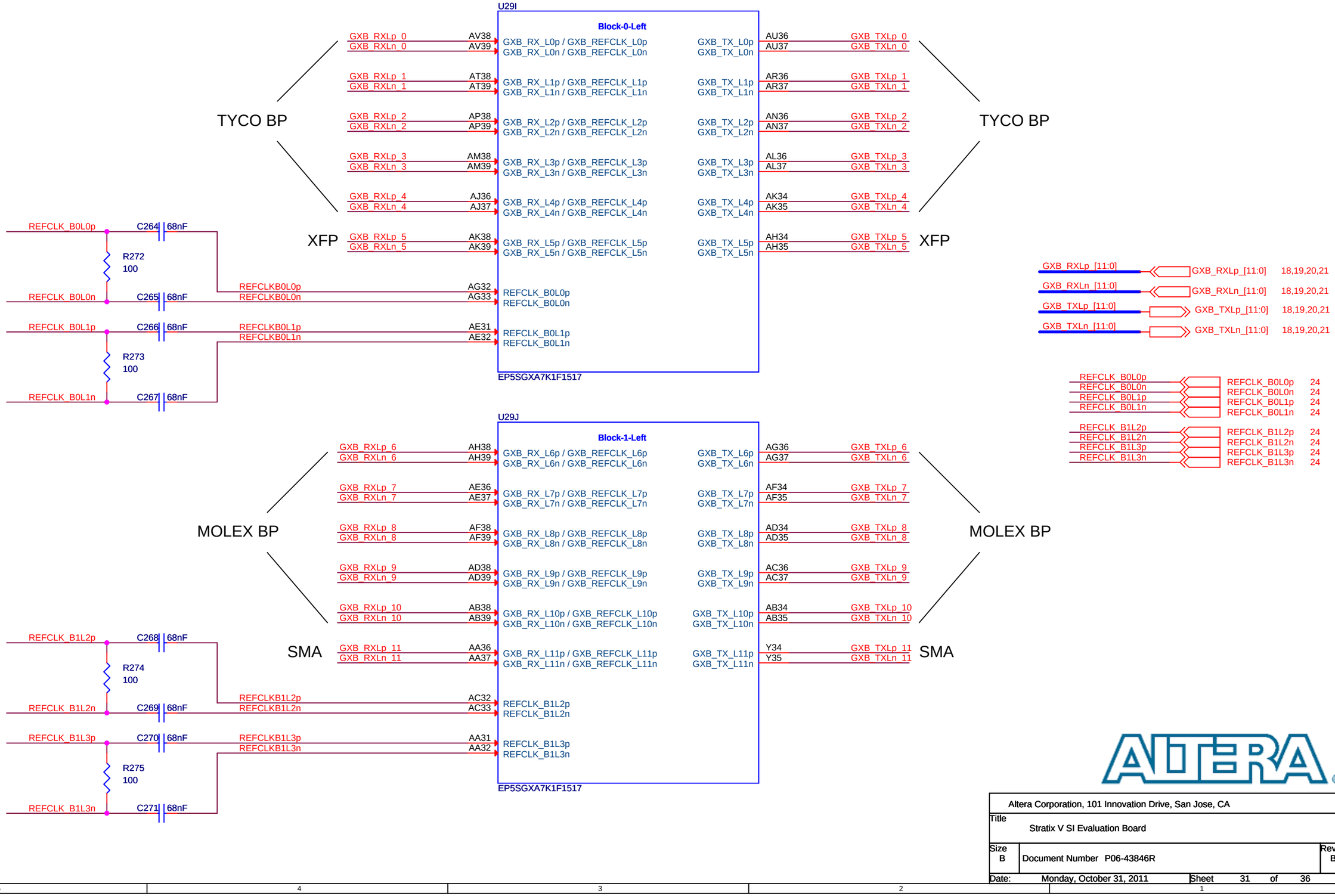
XCVR Left Blocks 0/1



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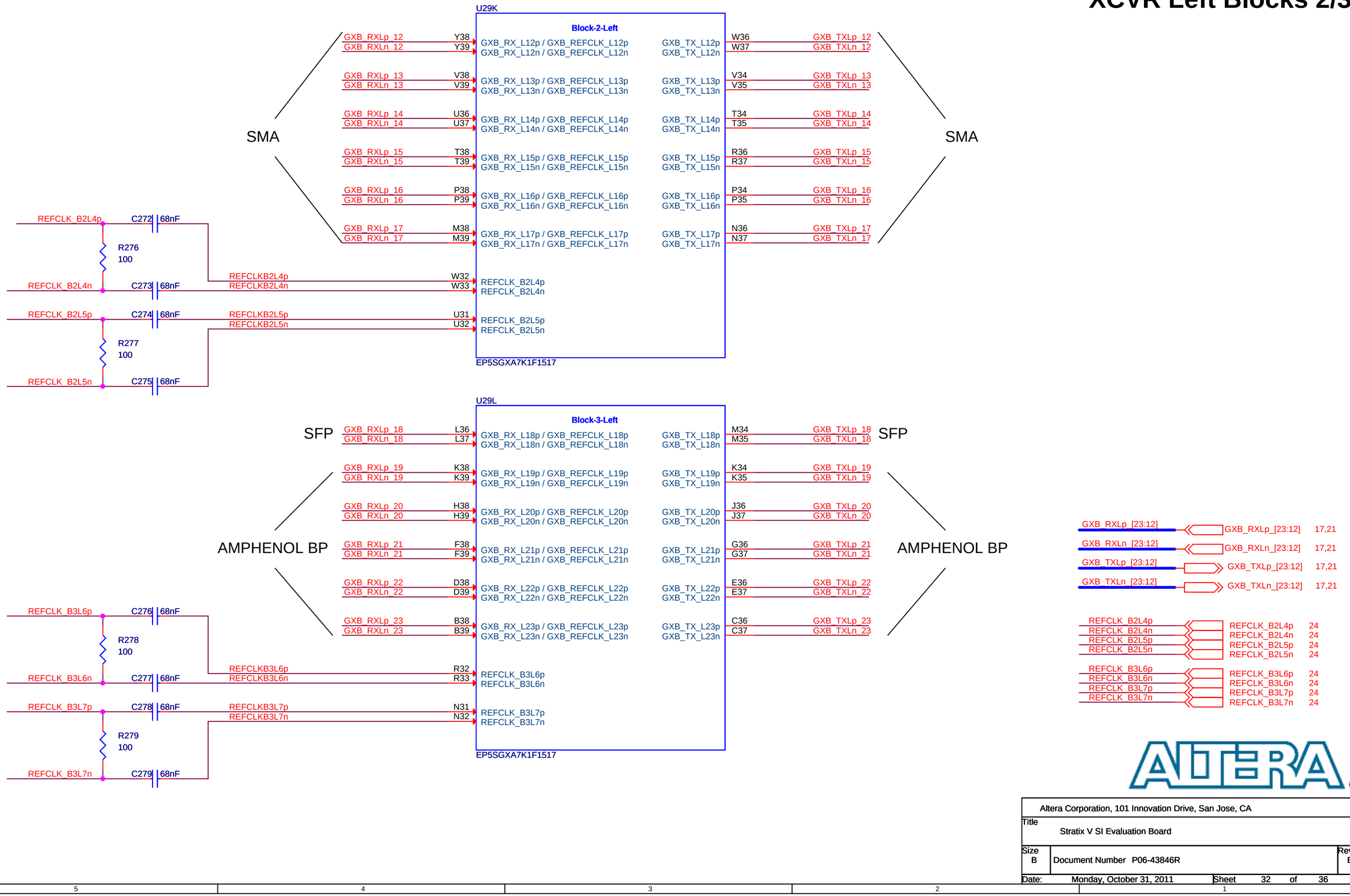
XCVR Left Blocks 2/3



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XCVR Right Blocks 0/1

U29M

Block-0-Right

TYCO BP

GXB_RXRp_0	AV2	GXB_RX_R0p / GXB_REFCLK_R0p	GXB_TX_R0p	AU4	GXB_TXRp_0
GXB_RXRn_0	AV1	GXB_RX_R0n / GXB_REFCLK_R0n	GXB_TX_R0n	AU3	GXB_TXRn_0
GXB_RXRp_5	AJ4	GXB_RX_R5p / GXB_REFCLK_R5p	GXB_TX_R5p	AH6	GXB_TXRp_5
GXB_RXRn_5	AJ3	GXB_RX_R5n / GXB_REFCLK_R5n	GXB_TX_R5n	AH5	GXB_TXRn_5
ATT_RXRp_0	AM2	ATT_RX_R0p	ATT_TX_R0p	AP2	ATT_TXRp_0
ATT_RXRn_0	AM1	ATT_RX_R0n	ATT_TX_R0n	AP1	ATT_TXRn_0
REFCLKB0R0p	AG8	REFCLK_B0R0p			
REFCLKB0R0n	AG7	REFCLK_B0R0n			
REFCLKB0R1p	AE9	REFCLK_B0R1p			
REFCLKB0R1n	AE8	REFCLK_B0R1n			

EP5SGXA7K1F1517

J94 2.4mm — C280 68nF — ATT_RXRp_0

J96 2.4mm — C281 68nF — ATT_RXRn_0

ATT_TXRp_0 — J95 2.4mm

ATT_TXRn_0 — J97 2.4mm

REFCLK_B0R0p — C282 68nF — R280 100 — REFCLKB0R0p

REFCLK_B0R0n — C283 68nF — REFCLKB0R0n

REFCLK_B0R1p — C284 68nF — R281 100 — REFCLKB0R1p

REFCLK_B0R1n — C285 68nF — REFCLKB0R1n

U29N

Block-1-Right

MOLEX BP

GXB_RXRp_6	AH2	GXB_RX_R6p / GXB_REFCLK_R6p	GXB_TX_R6p	AG4	GXB_TXRp_6
GXB_RXRn_6	AH1	GXB_RX_R6n / GXB_REFCLK_R6n	GXB_TX_R6n	AG3	GXB_TXRn_6
GXB_RXRp_11	AA4	GXB_RX_R11p / GXB_REFCLK_R11p	GXB_TX_R11p	Y6	GXB_TXRp_11
GXB_RXRn_11	AA3	GXB_RX_R11n / GXB_REFCLK_R11n	GXB_TX_R11n	Y5	GXB_TXRn_11
ATT_RXRp_1	AB2	ATT_RX_R1p	ATT_TX_R1p	AD2	ATT_TXRp_1
ATT_RXRn_1	AB1	ATT_RX_R1n	ATT_TX_R1n	AD1	ATT_TXRn_1
REFCLKB1R2p	AC8	REFCLK_B1R2p			
REFCLKB1R2n	AC7	REFCLK_B1R2n			
REFCLKB1R3p	AA9	REFCLK_B1R3p			
REFCLKB1R3n	AA8	REFCLK_B1R3n			

EP5SGXA7K1F1517

J98 2.4mm — C286 68nF — ATT_RXRp_1

J100 2.4mm — C287 68nF — ATT_RXRn_1

ATT_TXRp_1 — J99 2.4mm

ATT_TXRn_1 — J101 2.4mm

REFCLK_B1R2p — C288 68nF — R282 100 — REFCLKB1R2p

REFCLK_B1R2n — C289 68nF — REFCLKB1R2n

REFCLK_B1R3p — C290 68nF — R283 100 — REFCLKB1R3p

REFCLK_B1R3n — C291 68nF — REFCLKB1R3n

GXB_RXRp_0	GXB_RXRp_0	18	
GXB_RXRn_0	GXB_RXRn_0	18	
GXB_RXRp_5	GXB_RXRp_5	18	
GXB_RXRn_5	GXB_RXRn_5	18	
GXB_RXRp_6	GXB_RXRp_6	19	
GXB_RXRn_6	GXB_RXRn_6	19	
GXB_RXRp_11	GXB_RXRp_11	19	
GXB_RXRn_11	GXB_RXRn_11	19	
GXB_TXRp_0	GXB_TXRp_0	18	
GXB_TXRn_0	GXB_TXRn_0	18	
GXB_TXRp_5	GXB_TXRp_5	18	
GXB_TXRn_5	GXB_TXRn_5	18	
GXB_TXRp_6	GXB_TXRp_6	19	
GXB_TXRn_6	GXB_TXRn_6	19	
GXB_TXRp_11	GXB_TXRp_11	19	
GXB_TXRn_11	GXB_TXRn_11	19	
REFCLK_B0R0p	REFCLK_B0R0p	25	
REFCLK_B0R0n	REFCLK_B0R0n	25	
REFCLK_B0R1p	REFCLK_B0R1p	25	
REFCLK_B0R1n	REFCLK_B0R1n	25	
REFCLK_B1R2p	REFCLK_B1R2p	25	
REFCLK_B1R2n	REFCLK_B1R2n	25	
REFCLK_B1R3p	REFCLK_B1R3p	25	
REFCLK_B1R3n	REFCLK_B1R3n	25	

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XCVR Right Blocks 2/3

CLK IN

U29O

Block-2-Right

GXB_RXRp_12
GXB_RXRn_12
Y2
Y1
GXB_RX_R12p / GXB_REFCLK_R12p
GXB_RX_R12n / GXB_REFCLK_R12n
GXB_TX_R12p
GXB_TX_R12n
W4
W3

M2
M1
GXB_RX_R17p / GXB_REFCLK_R17p
GXB_RX_R17n / GXB_REFCLK_R17n
GXB_TX_R17p
GXB_TX_R17n
N4
N3

J102
2.4mm
C292 68nF
ATT_RXRp_2
ATT_RXRn_2
P2
P1
ATT_RX_R2p
ATT_RX_R2n
ATT_TX_R2p
ATT_TX_R2n
T2
T1
ATT_TXRp_2
ATT_TXRn_2
J103
2.4mm
2.4mm
J104
C293 68nF
2.4mm
J105

REFCLK_B2R4p
C294 68nF
R284
100
REFCLK_B2R4n
C295 68nF
REFCLKB2R4p
REFCLKB2R4n
W8
W7
REFCLK_B2R4p
REFCLK_B2R4n

REFCLK_B2R5p
C296 68nF
R285
100
REFCLK_B2R5n
C297 68nF
REFCLKB2R5p
REFCLKB2R5n
U9
U8
REFCLK_B2R5p
REFCLK_B2R5n

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ATT 8" Test Trace

J111
2.4mm
ATT_TSTp
J113
2.4mm
2.4mm
J110
ATT_TSTn
2.4mm
J112

U29P

Block-3-Right

GXB_RXRp_18
GXB_RXRn_18
L4
L3
GXB_RX_R18p / GXB_REFCLK_R18p
GXB_RX_R18n / GXB_REFCLK_R18n
GXB_TX_R18p
GXB_TX_R18n
M6
M5
GXB_TXRp_18
GXB_TXRn_18

GXB_RXRp_23
GXB_RXRn_23
B2
B1
GXB_RX_R23p / GXB_REFCLK_R23p
GXB_RX_R23n / GXB_REFCLK_R23n
GXB_TX_R23p
GXB_TX_R23n
C4
C3
GXB_TXRp_23
GXB_TXRn_23

AMPHENOL BP

J106
2.4mm
C298 68nF
ATT_RXRp_3
ATT_RXRn_3
F2
F1
ATT_RX_R3p
ATT_RX_R3n
ATT_TX_R3p
ATT_TX_R3n
H2
H1
ATT_TXRp_3
ATT_TXRn_3
J107
2.4mm
2.4mm
J108
C299 68nF
2.4mm
J109

AMPHENOL BP

REFCLK_B3R6p
C300 68nF
R286
100
REFCLK_B3R6n
C301 68nF
REFCLKB3R6p
REFCLKB3R6n
R8
R7
REFCLK_B3R6p
REFCLK_B3R6n

REFCLK_B3R7p
C302 68nF
R287
100
REFCLK_B3R7n
C303 68nF
REFCLKB3R7p
REFCLKB3R7n
N9
N8
REFCLK_B3R7p
REFCLK_B3R7n

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GXB_RXRp_12	GXB_RXRp_12	21
GXB_RXRn_12	GXB_RXRn_12	21
GXB_RXRp_18	GXB_RXRp_18	17
GXB_RXRn_18	GXB_RXRn_18	17
GXB_RXRp_23	GXB_RXRp_23	17
GXB_RXRn_23	GXB_RXRn_23	17
GXB_TXRp_18	GXB_TXRp_18	17
GXB_TXRn_18	GXB_TXRn_18	17
GXB_TXRp_23	GXB_TXRp_23	17
GXB_TXRn_23	GXB_TXRn_23	17
REFCLK_B2R4p	REFCLK_B2R4p	25
REFCLK_B2R4n	REFCLK_B2R4n	25
REFCLK_B2R5p	REFCLK_B2R5p	25
REFCLK_B2R5n	REFCLK_B2R5n	25
REFCLK_B3R6p	REFCLK_B3R6p	25
REFCLK_B3R6n	REFCLK_B3R6n	25
REFCLK_B3R7p	REFCLK_B3R7p	25
REFCLK_B3R7n	REFCLK_B3R7n	25

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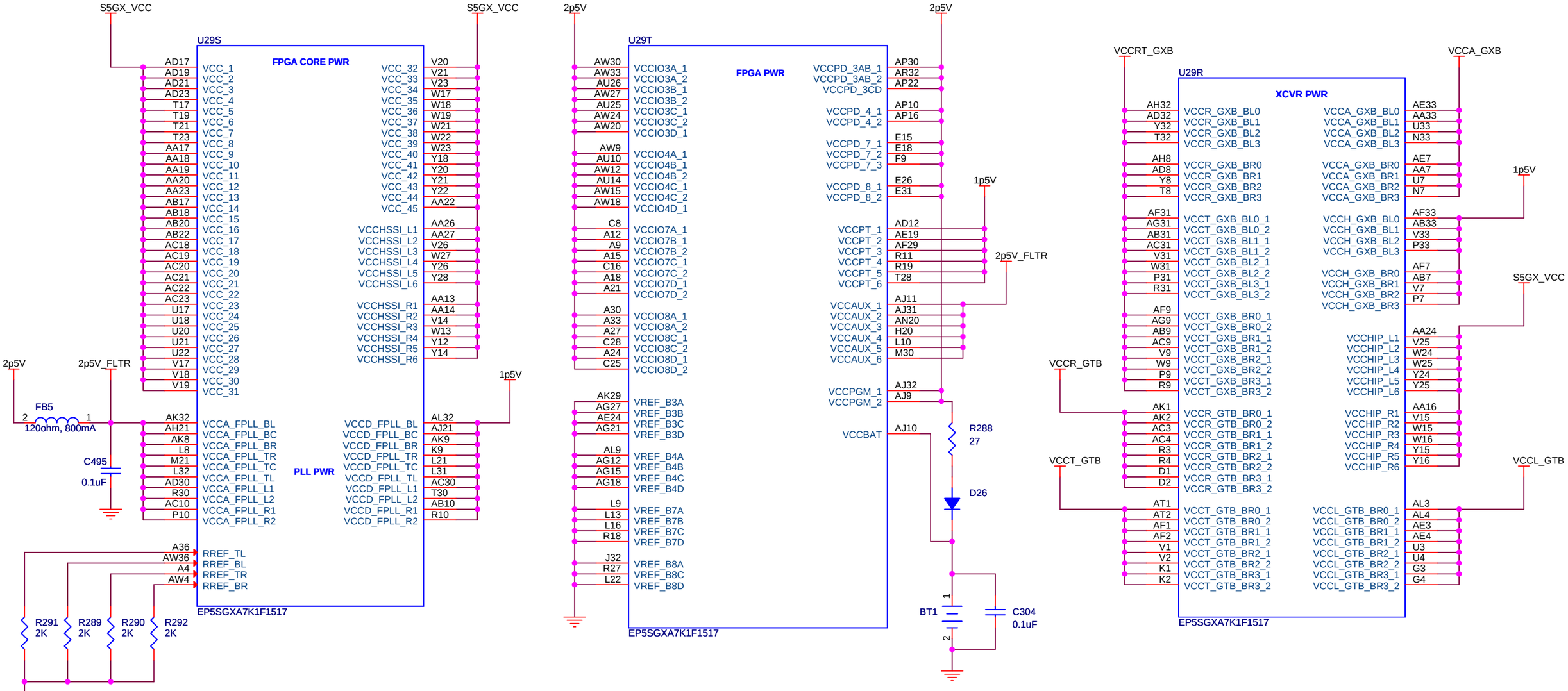
FPGA / XCVR Power



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GROUND

U29U

A35	GND1	GND	GND76	F35	AF4
A37	GND2		GND77	F36	AF8
A38	GND3		GND78	F37	AG1
AA34	GND4		GND79	G35	AG2
AA35	GND5		GND80	G38	AG5
AA38	GND6		GND81	G39	AG6
AA39	GND7		GND82	H35	AH3
AB32	GND8		GND83	H36	AH4
AB36	GND9		GND84	H37	AH7
AB37	GND10		GND85	J34	AH9
AC34	GND11		GND86	J35	AJ1
AC35	GND12		GND87	J38	AJ2
AC38	GND13		GND88	J39	AJ5
AC39	GND14		GND89	K36	AJ6
AD31	GND15		GND90	K37	AK3
AD33	GND16		GND91	L34	AK4
AD36	GND17		GND92	L35	AL1
AD37	GND18		GND93	L38	AL2
AE34	GND19		GND94	L39	AL5
AE35	GND20		GND95	M31	AL6
AE38	GND21		GND96	M36	AM3
AE39	GND22		GND97	M37	AM4
AF32	GND23		GND98	N34	AN1
AF36	GND24		GND99	N35	AN2
AF37	GND25		GND100	N38	AP3
AG34	GND26		GND101	N39	AP4
AG35	GND27		GND102	P32	AR1
AG38	GND28		GND103	P36	AR2
AG39	GND29		GND104	P37	AR5
AH31	GND30		GND105	R34	AT3
AH33	GND31		GND106	R35	AT4
AH36	GND32		GND107	R38	AT5
AH37	GND33		GND108	R39	AU1
AJ34	GND34		GND109	T31	AU2
AJ35	GND35		GND110	T33	AU5
AJ38	GND36		GND111	T36	AV3
AJ39	GND37		GND112	T37	AV4
AK36	GND38		GND113	U34	AV5
AK37	GND39		GND114	U35	AW2
AL34	GND40		GND115	U38	AW3
AL35	GND41		GND116	U39	B3
AL38	GND42		GND117	V32	B4
AL39	GND43		GND118	V36	B5
AM36	GND44		GND119	V37	C1
AM37	GND45		GND120	W34	C2
AN38	GND46		GND121	W35	C5
AN39	GND47		GND122	W38	D3
AP36	GND48		GND123	W39	D4
AP37	GND49		GND124	Y31	D5
AR35	GND50		GND125	Y33	E1
AR38	GND51		GND126	Y36	E2
AR39	GND52		GND127	Y37	E5
AT35	GND53		GND128	A2	F3
AT36	GND54		GND129	A3	F4
AT37	GND55		GND130	A5	F5
AU35	GND56		GND131	AA1	G1
AU38	GND57		GND132	AA2	G2
AU39	GND58		GND133	AA5	G5
AV35	GND59		GND134	AA6	H3
AV36	GND60		GND135	AB3	H4
AV37	GND61		GND136	AB4	H5
AW37	GND62		GND137	AB8	J1
AW38	GND63		GND138	AC1	J2
B35	GND64		GND139	AC2	J5
B36	GND65		GND140	AC5	J6
B37	GND66		GND141	AC6	K3
C35	GND67		GND142	AD3	K4
C38	GND68		GND143	AD4	L1
C39	GND69		GND144	AD7	L2
D35	GND70		GND145	AD9	L5
D36	GND71		GND146	AE1	L6
D37	GND72		GND147	AE2	M3
E35	GND73		GND148	AE5	M4
E38	GND74		GND149	AE6	M9
E39	GND75		GND150	AF3	N1

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U29V

GND151	GND	GND226	N2	AK13	
GND152		GND227	N5	AK16	
GND153		GND228	N6	AK19	
GND154		GND229	P3	AK22	
GND155		GND230	P4	AK25	
GND156		GND231	P8	AK28	
GND157		GND232	R1	AK31	
GND158		GND233	R2	AK33	
GND159		GND234	R5	AK7	
GND160		GND235	R6	AL33	
GND161		GND236	T3	AL7	
GND162		GND237	T4	AM12	
GND163		GND238	T7	AM15	
GND164		GND239	T9	AM18	
GND165		GND240	U1	AM21	
GND166		GND241	U2	AM24	
GND167		GND242	U5	AM27	
GND168		GND243	U6	AM30	
GND169		GND244	V3	AM35	
GND170		GND245	V4	AM5	
GND171		GND246	V8	AM6	
GND172		GND247	W1	AM9	
GND173		GND248	W2	AN35	
GND174		GND249	W5	AN5	
GND175		GND250	W6	AP11	
GND176		GND251	Y3	AP14	
GND177		GND252	Y4	AP17	
GND178		GND253	Y7	AP20	
GND179		GND254	Y9	AP23	
GND180		GND255	AA10	AP26	
GND181		GND256	AA15	AP29	
GND182		GND257	AA25	AP32	
GND183		GND258	AA28	AP35	
GND184		GND259	AA30	AP5	
GND185		GND260	AB11	AP8	
GND186		GND261	AB14	AT10	
GND187		GND262	AB19	AT13	
GND188		GND263	AB23	AT16	
GND189		GND264	AB24	AT19	
GND190		GND265	AB26	AT22	
GND191		GND266	AB30	AT25	
GND192		GND267	AC17	AT28	
GND193		GND268	AD10	AT31	
GND194		GND269	AD13	AT34	
GND195		GND270	AD16	AT7	
GND196		GND271	AD18	AV12	
GND197		GND272	AD20	AV15	
GND198		GND273	AD22	AV18	
GND199		GND274	AD25	AV21	
GND200		GND275	AD28	AV24	
GND201		GND276	AE10	AV27	
GND202		GND277	AE30	AV30	
GND203		GND278	AF10	AV33	
GND204		GND279	AF12	AV6	
GND205		GND280	AF15	AV9	
GND206		GND281	AF18	B12	
GND207		GND282	AF21	B15	
GND208		GND283	AF24	B18	
GND209		GND284	AF27	B21	
GND210		GND285	AF30	B24	
GND211		GND286	AG10	B27	
GND212		GND287	AG30	B30	
GND213		GND288	AH10	B33	
GND214		GND289	AH11	B6	
GND215		GND290	AH14	B9	
GND216		GND291	AH17	D11	
GND217		GND292	AH20	D14	
GND218		GND293	AH23	D17	
GND219		GND294	AH26	D20	
GND220		GND295	AH29	D23	
GND221		GND296	AH30	D26	
GND222		GND297	AJ33	D29	
GND223		GND298	AJ7	D32	
GND224		GND299	AJ8	D8	
GND225		GND300	AK10	F10	

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U29W

GND301	GND	GND376	F13		
GND302		GND377	F16		
GND303		GND378	F19		
GND304		GND379	F22		
GND305		GND380	F25		
GND306		GND381	F28		
GND307		GND382	F31		
GND308		GND383	F34		
GND309		GND384	F7		
GND310		GND385	H12		
GND311		GND386	H15		
GND312		GND387	H18		
GND313		GND388	H21		
GND314		GND389	H24		
GND315		GND390	H27		
GND316		GND391	H30		
GND317		GND392	H33		
GND318		GND393	H9		
GND319		GND394	J33		
GND320		GND395	J7		
GND321		GND386	K11		
GND322		GND397	K14		
GND323		GND398	K17		
GND324		GND399	K20		
GND325		GND400	K23		
GND326		GND401	K26		
GND327		GND402	K29		
GND328		GND403	K32		
GND329		GND404	K33		
GND330		GND405	K7		
GND331		GND406	K8		
GND332		GND407	L33		
GND333		GND408	L7		
GND334		GND409	M10		
GND335		GND410	M13		
GND336		GND411	M16		
GND337		GND412	M19		
GND338		GND413	M22		
GND339		GND414	M25		
GND340		GND415	M28		
GND341		GND416	M32		
GND342		GND417	M33		
GND343		GND418	M7		
GND344		GND419	M8		
GND345		GND420	N10		
GND346		GND421	N30		
GND347		GND422	P12		
GND348		GND423	P15		
GND349		GND424	P18		
GND350		GND425	P21		
GND351		GND426	P24		
GND352		GND427	P27		
GND353		GND428	P30		
GND354		GND429	T10		
GND355		GND430	T11		
GND356		GND431	T14		
GND357		GND432	T18		
GND358		GND433	T20		
GND359		GND434	T22		
GND360		GND435	T26		
GND361		GND436	T29		
GND362		GND437	U10		
GND363		GND438	U19		
GND364		GND439	U23		
GND365		GND440	U30		
GND366		GND441	V10		
GND367		GND442	V13		
GND368		GND443	V16		
GND369		GND444	V22		
GND370		GND445	V24		
GND371		GND446	V28		
GND372		GND447	V30		
GND373		GND448	W10		
GND374		GND449	W14		
GND375		GND450	W20		

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U29X

W26	GND451	GND	NC1	AB5	
W30	GND452		NC2	AB6	
Y10	GND453		NC3	AD5	
Y13	GND454		NC4	AD6	
Y17	GND455		NC5	AF5	
Y19	GND456		NC6	AF6	
Y23	GND457		NC7	AK5	
Y27	GND458		NC8	AK6	
Y30	GND459		NC9	AN3	
AB21	GND460		NC10	AN4	
T12	GND461		NC11	AR3	
			NC12	AR4	
			NC13	E3	
			NC14	E4	
			NC15	J3	
AW34	DNU1		NC16	J4	
AW35	DNU2		NC17	K5	
V27	DNU3		NC18	K6	
AF20	DNU4		NC19	P5	
AW5	DNU5		NC20	P6	
AW6	DNU6		NC21	T5	
H6	DNU7		NC22	T6	
N22	DNU8		NC23	V5	
AA21	DNU9		NC24	V6	

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