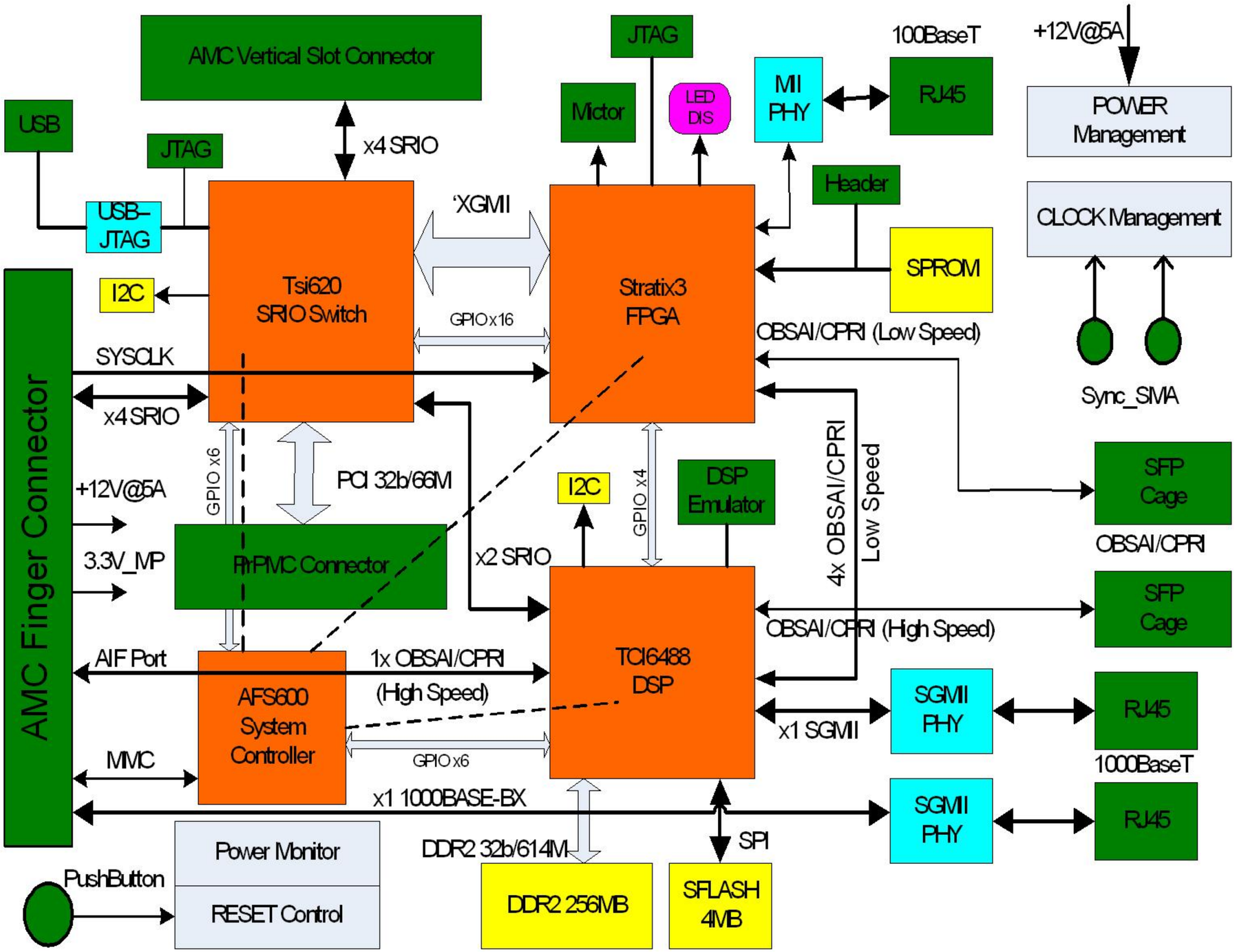
Tsi620 Evaluation Board Schematic

-Rev.1

Function Block Digram



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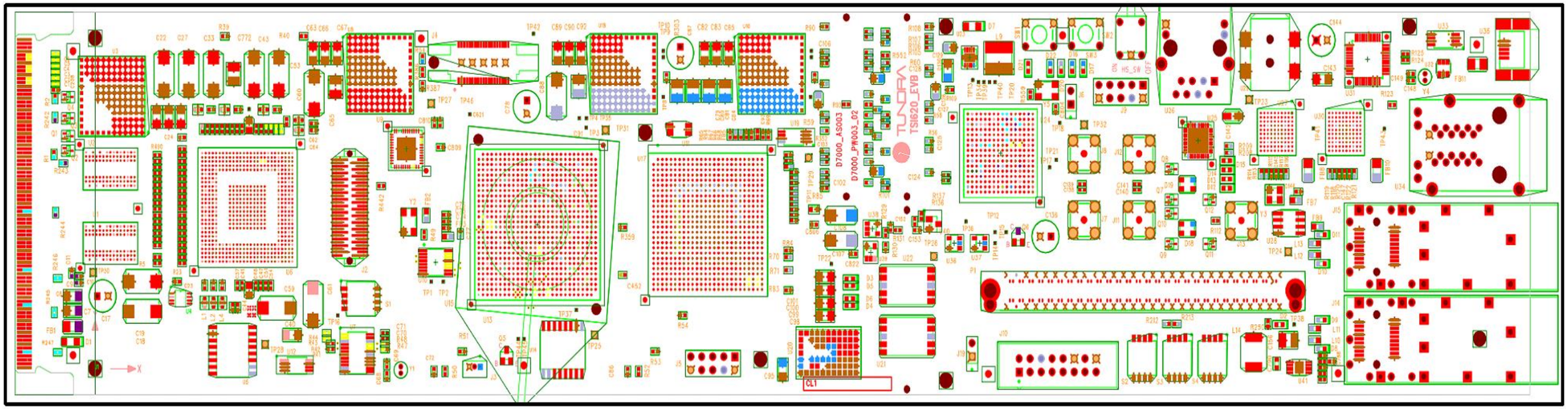
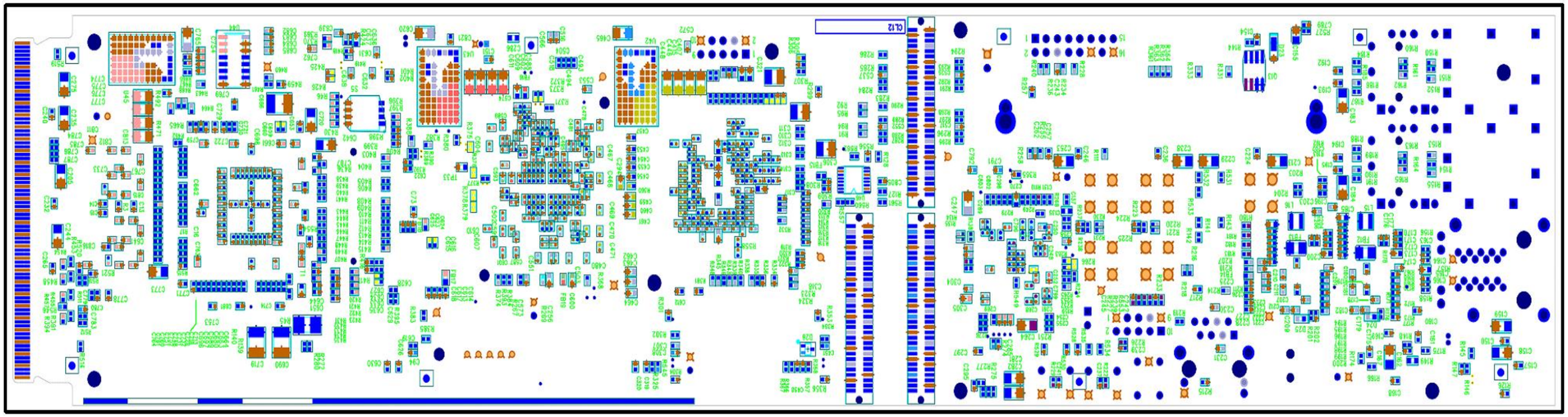
1. Function Block Diagram
2. Placement Illustration
3. AMC Connectors
4. Tsi620 - PCI I/F and sRIO Ports
5. PrPMC Module
6. Tsi620 - GPIO & MISC
7. Tsi620 - FPGA XGMII I/F
8. Tsi620 - Power & GND
9. Tsi620 - Decoupling
10. FPGA - AMC Clock, DSP GPIO, Frame Sync
11. FPGA - Tsi620 GPIO and LED Display
12. FPGA - RIO XGMII Interface
13. FPGA - Antenna Interface
14. FPGA - 100BaseT RJ45 & Configuration
15. FPGA - Power, GND, & Decoupling
16. DSP - AIF, sRIO, & SGMII Ports
17. DSP - DDR2 Memory Block
18. DSP - Configuration & Emulator
19. DSP - Power Supply & Decoupling
20. Antenna I/F SFP Connectors
21. AMC GigE SMGII PHY & RJ45
22. DSP GigE SGMII PHY & RJ45
23. USB I/F to Tsi620 JTAG
24. Clocking Distribution
25. Power - 5V & 3.3V
26. Power - FPGA 1.1V & DSP Core 1.1V
27. Power - 1.2V, 1.5V, 1.8V, & 2.5V
28. AFS600 - Digital Block
29. AFS600 - Analog Block
30. Power - 12Vin, Sequencing, Mangement Power

TUNDRA

TITLE : FUNCTION BLOCK DIAGRAM			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version: Rev 1	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:48	SHEET 1 OF 30		

Components Placement Illustration





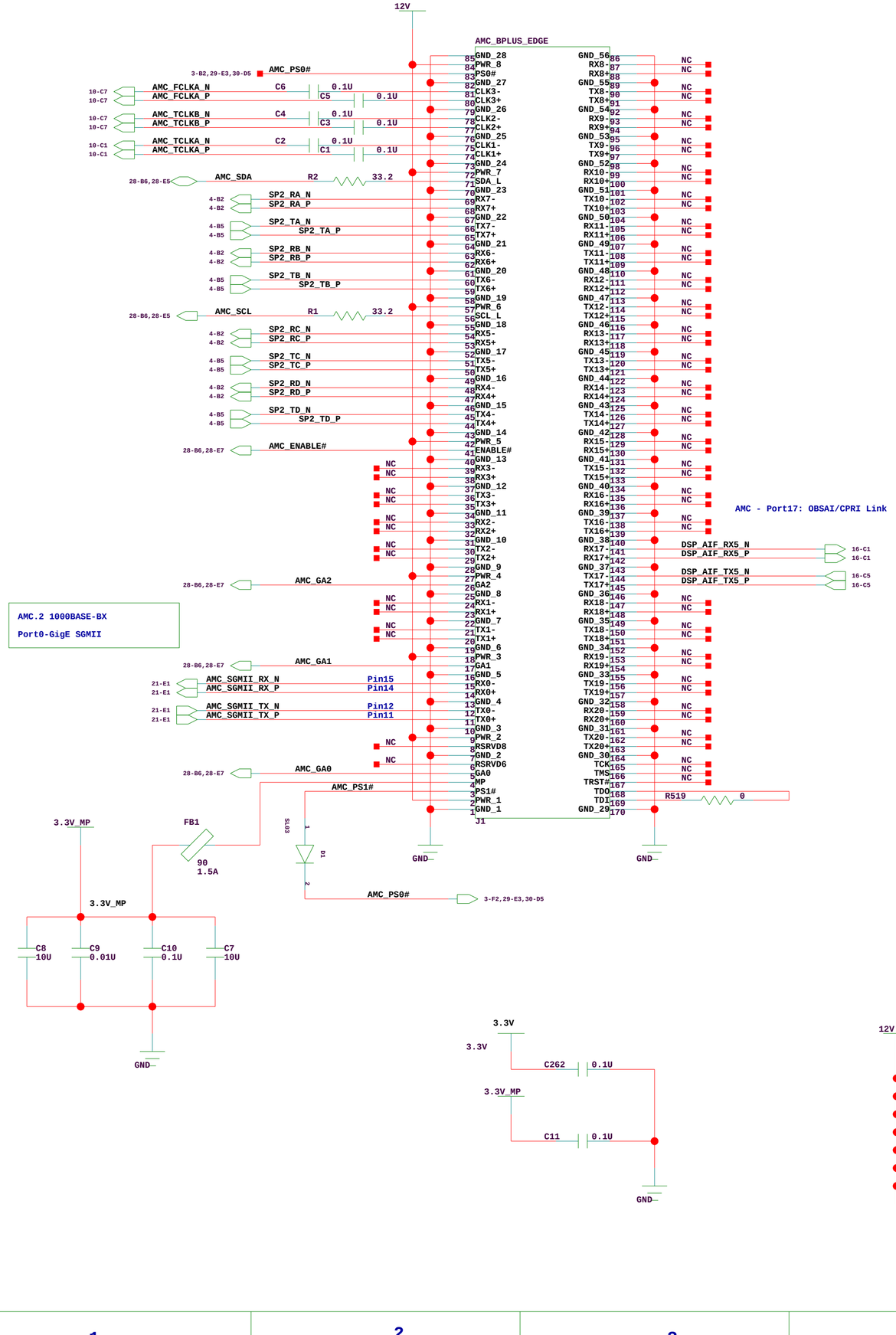
Revision Notes

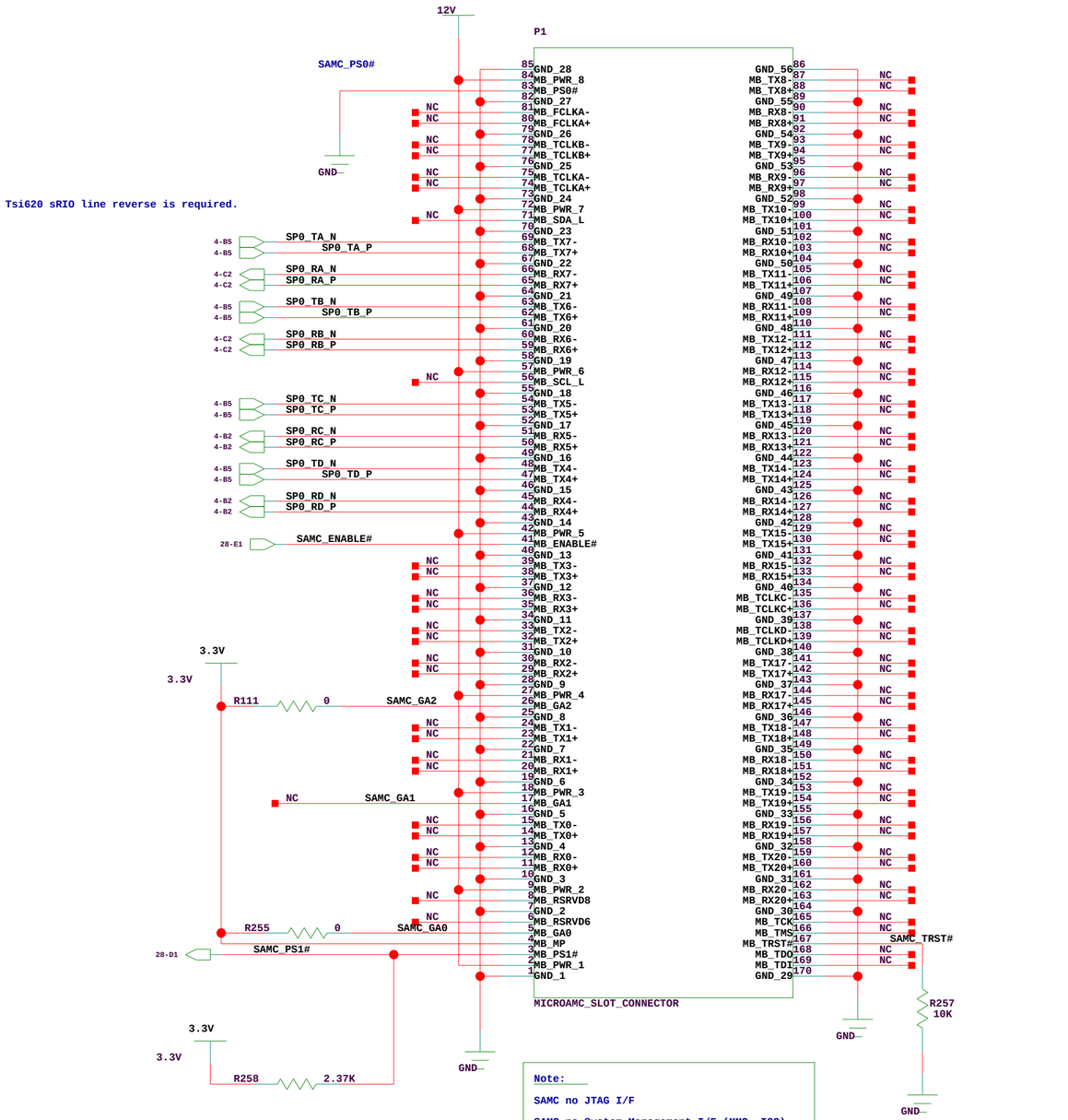
-April 2nd, 2009: final editing for the customer release.

TUNDRA

TITLE : PLACEMENT ILLUSTRATION			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version: Rev 1	DESIGNER : System Engineering
LAST MODIFIED DATE : 4-2-2009_14:17	SHEET 2 OF 30		

AMC Finger Connector and AMC Slot Connector





TUNDRA

TITLE : SRIO-AMC CONNECTIONS			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version: Rev 1	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:48	SHEET 3 OF 30		

Tsi620 - PCI Interface and sRIO Ports

PCI_ARBEN = 1
-Arbiter is enabled.
PCI_RSTDIR = 1
-PCI_RSTn is output

Keep PCI_RSTn in low before Tsi620 is powered up.

3.3V
3.3V
R555 1K
GND
3.3V
3.3V

R62 DNP
R352 8.2K
R59 8.2K
R349 8.2K
R56 8.2K
R58 8.2K
R57 8.2K
R61 8.2K
R347 8.2K
R64 8.2K
R338 8.2K

R350 8.2K
R348 8.2K
R345 8.2K
R60 8.2K
R337 8.2K
R339 8.2K
R343 8.2K
R63 8.2K
R55 8.2K

U17
TSI620_PCI
1 OF 6

PCI_CBE0 A7 PCI_CBE#[0]
PCI_CBE1 D9 PCI_CBE#[1]
PCI_CBE2 E11 PCI_CBE#[2]
PCI_CBE3 D13 PCI_CBE#[3]
PCI_ARBEN A20 PCI_ARBEN
PCI_GNT1 A17 PCI_GNT#[1]
PCI_GNT2 E17 PCI_GNT#[2]
PCI_GNT3 D18 PCI_GNT#[3]
PCI_GNT4 E18 PCI_GNT#[4]
PCI_REQ1 C17 PCI_REQ#[1]
PCI_REQ2 C16 PCI_REQ#[2]
PCI_REQ3 D16 PCI_REQ#[3]
PCI_REQ4 E16 PCI_REQ#[4]
B19 PCI_INTA#
NC A19 PCI_INTB#
NC C19 PCI_INTC#
NC E20 PCI_INTD#
PCI_HOLD_BOOT C21 PCI_HOLD_BOOT
PCI_M66EN E8 PCI_M66EN
C14 PCI_IDSEL
PCI_RSTDIR C20 PCI_RSTDIR
PCI_RST A18 PCI_RST#
PCI_SERR E9 PCI_SERR#
PCI_STOP A10 PCI_STOP#
PCI_TRDY C11 PCI_TRDY#
PCI_DEVSEL D10 PCI_DEVSEL#
PCI_FRAME A11 PCI_FRAME#
PCI_PAR B10 PCI_PAR
PCI_PERR E10 PCI_PERR#
PCI_PME A16 PCI_PME#
PCI_IRDY D12 PCI_IRDY#
B21 PCI_CLK
A21 PCI_CLKO[0]
B18 PCI_CLKO[1]
C18 PCI_CLKO[2]
D19 PCI_CLKO[3]
E19 PCI_CLKO[4]
D21 PCI_PLL_BYPASS

PCI_AD[0] A5 PCI_AD0
PCI_AD[1] D6 PCI_AD1
PCI_AD[2] B6 PCI_AD2
PCI_AD[3] E6 PCI_AD3
PCI_AD[4] A6 PCI_AD4
PCI_AD[5] C6 PCI_AD5
PCI_AD[6] B7 PCI_AD6
PCI_AD[7] C7 PCI_AD7
PCI_AD[8] C8 PCI_AD8
PCI_AD[9] E7 PCI_AD9
PCI_AD[10] A8 PCI_AD10
PCI_AD[11] C9 PCI_AD11
PCI_AD[12] B9 PCI_AD12
PCI_AD[13] C10 PCI_AD13
PCI_AD[14] A9 PCI_AD14
PCI_AD[15] B12 PCI_AD15
PCI_AD[16] E12 PCI_AD16
PCI_AD[17] A12 PCI_AD17
PCI_AD[18] E13 PCI_AD18
PCI_AD[19] B13 PCI_AD19
PCI_AD[20] C12 PCI_AD20
PCI_AD[21] A13 PCI_AD21
PCI_AD[22] C13 PCI_AD22
PCI_AD[23] A14 PCI_AD23
PCI_AD[24] E15 PCI_AD24
PCI_AD[25] B15 PCI_AD25
PCI_AD[26] E14 PCI_AD26
PCI_AD[27] A15 PCI_AD27
PCI_AD[28] C15 PCI_AD28
PCI_AD[29] B16 PCI_AD29
PCI_AD[30] D15 PCI_AD30
PCI_AD[31] PCI_AD31

PCI_AD[31:0] 4-D2,5-B4

TSI620

5-E3 5-C2 5-C3 5-E3
5-E3
5-C3 5-E1
5-C3
5-F3,5-F6 PCI_INTA
5-E6 5-C2,6-B6,28-D1 4-D7,5-B4 PCI_AD17
5-C2 5-C3 5-C3 5-C2 5-E2 5-E2 5-E2 5-C2 5-C2 5-E3

R346 100 PCI_RSTDIR

7-B5 TSI620_PCICLK_IN
7-B1 TSI620_PCICLK_OUT
R335 33.2

R65 49.9
R558 49.9
R81 49.9
R319 49.9
GND GND GND GND GND

U17
SRIO
2 OF 6

SP0_RA_P Y22
SP0_RA_N Y23
SP0_RB_P V23
SP0_RB_N V22
SP0_RC_P T22
SP0_RC_N T23
SP0_RD_P P23
SP0_RD_N P22
SP0_TA_P Y25
SP0_TA_N Y26
SP0_TB_P V25
SP0_TB_N V26
SP0_TC_P T26
SP0_TC_N T25
SP0_TD_P P26
SP0_TD_N P25

3-E5 SP0_RA_P C310 0.1U SP0_RA1_P
3-E5 SP0_RA_N C311 0.1U SP0_RA1_N
3-E5 SP0_RB_P C313 0.1U SP0_RB1_P
3-E5 SP0_RB_N C312 0.1U SP0_RB1_N
3-D5 SP0_RC_P C315 0.1U SP0_RC1_P
3-D5 SP0_RC_N C314 0.1U SP0_RC1_N
3-D5 SP0_RD_P C316 0.1U SP0_RD1_P
3-D5 SP0_RD_N C317 0.1U SP0_RD1_N

SP0_TA_P SP0_TA_P 3-E5
SP0_TA_N SP0_TA_N 3-E5
SP0_TB_P SP0_TB_P 3-E5
SP0_TB_N SP0_TB_N 3-E5
SP0_TC_P SP0_TC_P 3-D5
SP0_TC_N SP0_TC_N 3-D5
SP0_TD_P SP0_TD_P 3-D5
SP0_TD_N SP0_TD_N 3-D5

SP2_RA_P AB15
SP2_RA_N AC15
SP2_RB_P AB17
SP2_RB_N AC17
SP2_RC_P AC19
SP2_RC_N AB19
SP2_RD_P AB21
SP2_RD_N AC21
SP2_TA_P AE15
SP2_TA_N AF15
SP2_TB_P AF17
SP2_TB_N AE17
SP2_TC_P AE19
SP2_TC_N AF19
SP2_TD_P AE21
SP2_TD_N AF21

3-E2 SP2_RA_P C393 0.1U SP2_RA1_P
3-E2 SP2_RA_N C381 0.1U SP2_RA1_N
3-E2 SP2_RB_P C363 0.1U SP2_RB1_P
3-E2 SP2_RB_N C356 0.1U SP2_RB1_N
3-E2 SP2_RC_P C355 0.1U SP2_RC1_P
3-E2 SP2_RC_N C340 0.1U SP2_RC1_N
3-D2 SP2_RD_P C326 0.1U SP2_RD1_P
3-D2 SP2_RD_N C334 0.1U SP2_RD1_N

SP2_TA_P SP2_TA_P 3-E2
SP2_TA_N SP2_TA_N 3-E2
SP2_TB_P SP2_TB_P 3-E2
SP2_TB_N SP2_TB_N 3-E2
SP2_TC_P SP2_TC_P 3-D2
SP2_TC_N SP2_TC_N 3-D2
SP2_TD_P SP2_TD_P 3-D2
SP2_TD_N SP2_TD_N 3-D2

NC AB11 SP4_RC_P
NC AC11 SP4_RC_N
NC AB13 SP4_RD_P
NC AC13 SP4_RD_N

SP4_RA_P AB7
SP4_RA_N AC7
SP4_RB_P AC9
SP4_RB_N AB9
SP4_TA_P AE7
SP4_TA_N AF7
SP4_TB_P AF9
SP4_TB_N AE9
SP4_TC_P AE11
SP4_TC_N AF11
SP4_TD_P AE13
SP4_TD_N AF13

16-E5 DSP_SRIO_TX0_P C401 0.1U SP4_RA1_P
16-E5 DSP_SRIO_TX0_N C392 0.1U SP4_RA1_N
16-E5 DSP_SRIO_TX1_P C394 0.1U SP4_RB1_P
16-D5 DSP_SRIO_TX1_N C402 0.1U SP4_RB1_N

DSP_SRIO_RX0_P 16-E1
DSP_SRIO_RX0_N 16-E1
DSP_SRIO_RX1_P 16-E1
DSP_SRIO_RX1_N 16-D1
NC
NC
NC
NC

TSI620

TUNDRA

TITLE : TSI620 PCI I/F & SRIO PORTS

SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02	Rev 0	System Engineering

LAST MODIFIED DATE : 3-30-2009_16:48

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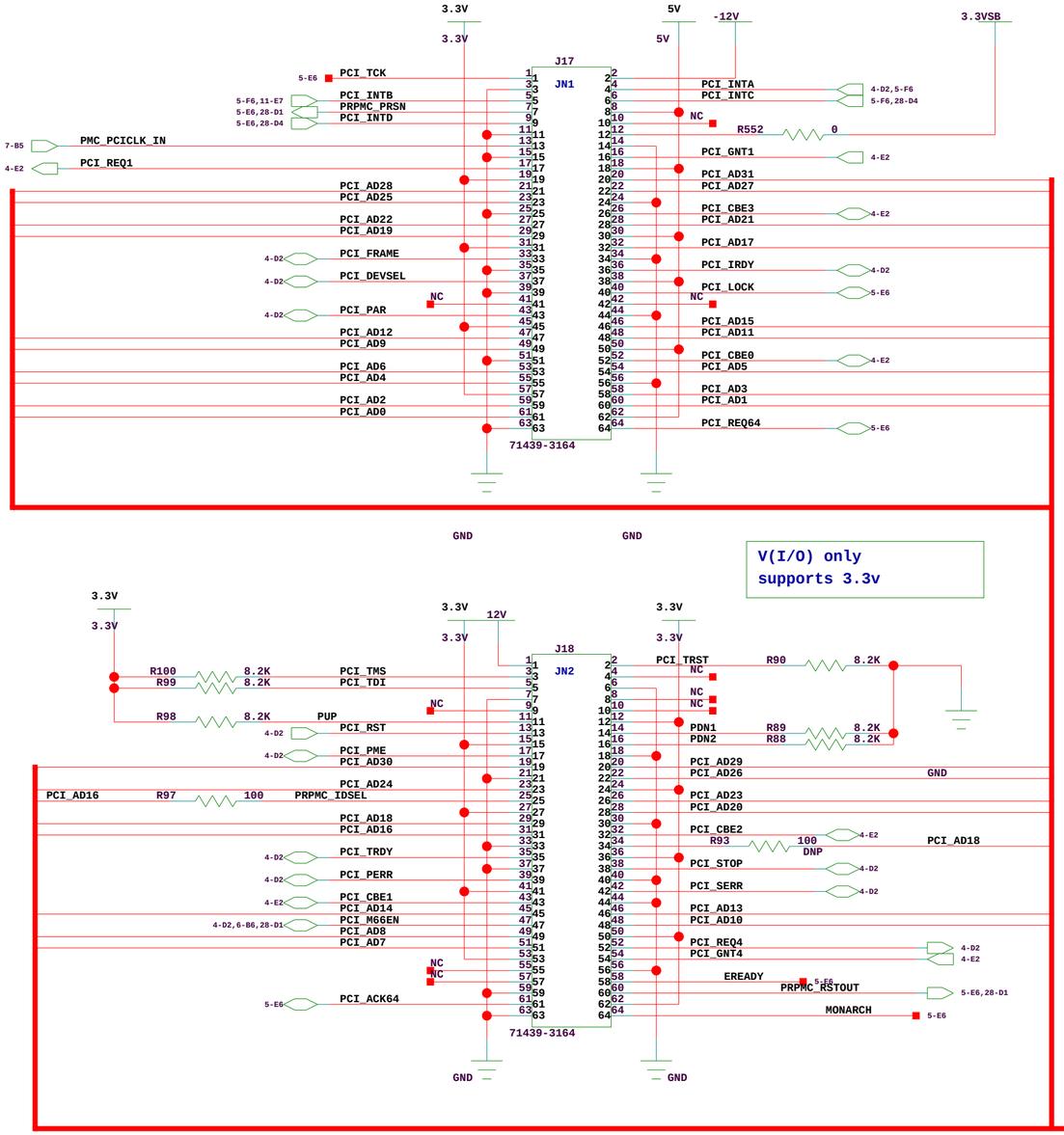
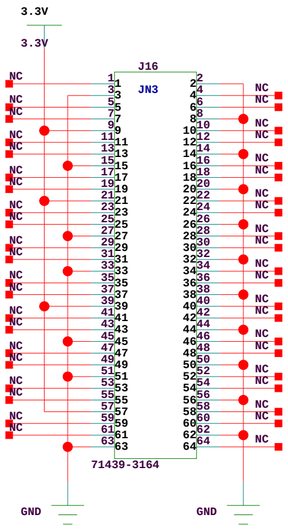
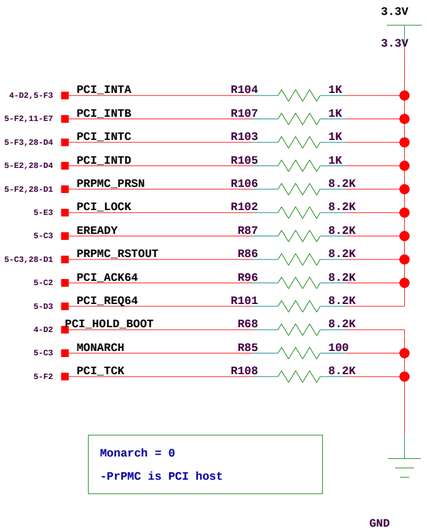
PrPMC Module

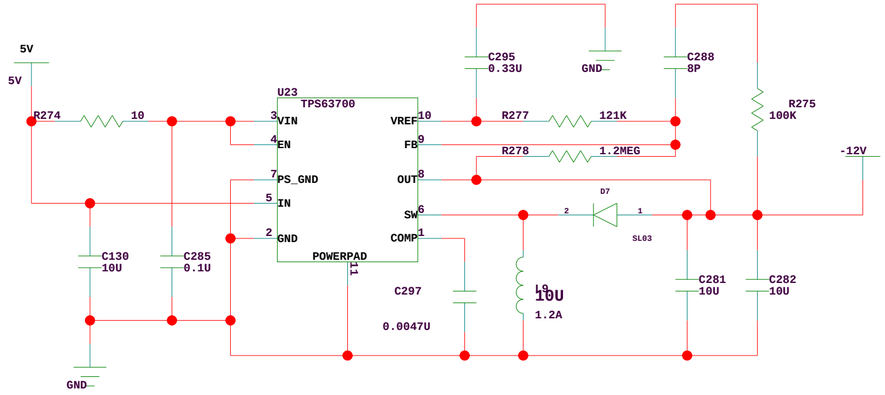


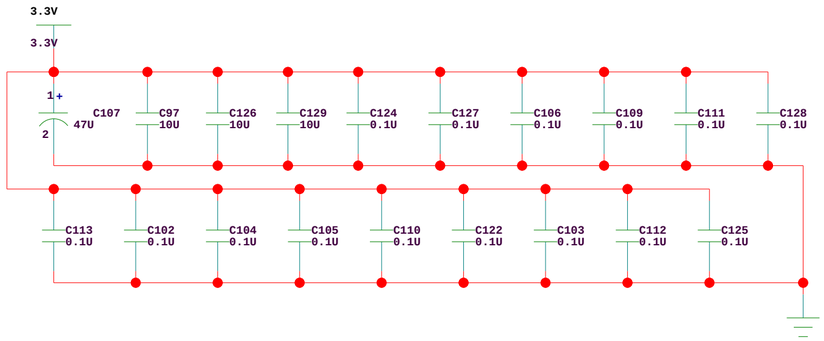


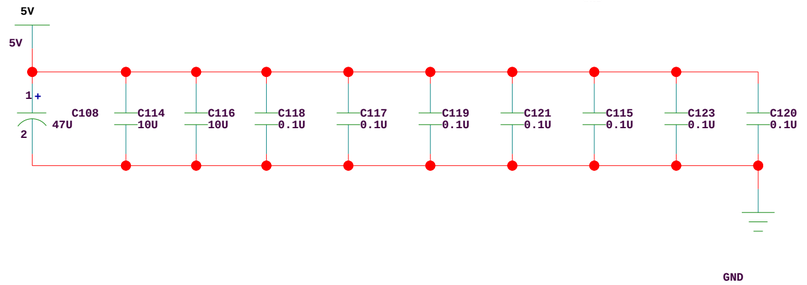


PrPMC Interrupt Assignment:

- -INTA: Tsi620 PCI Interrupt
- -INTB: FPGA Interrupt
- -INTC: System Controller (AFS600) Interrupt
- -INTD: DSP GPIO11 Interrupt







TUNDRA

TITLE : PRPMC MODULE

SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02		System Engineering

LAST MODIFIED DATE : 3-30-2009_16:48

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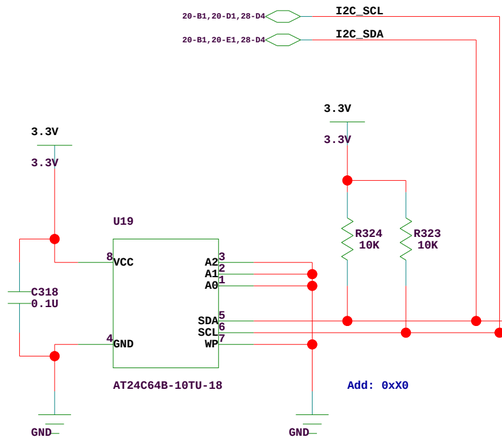
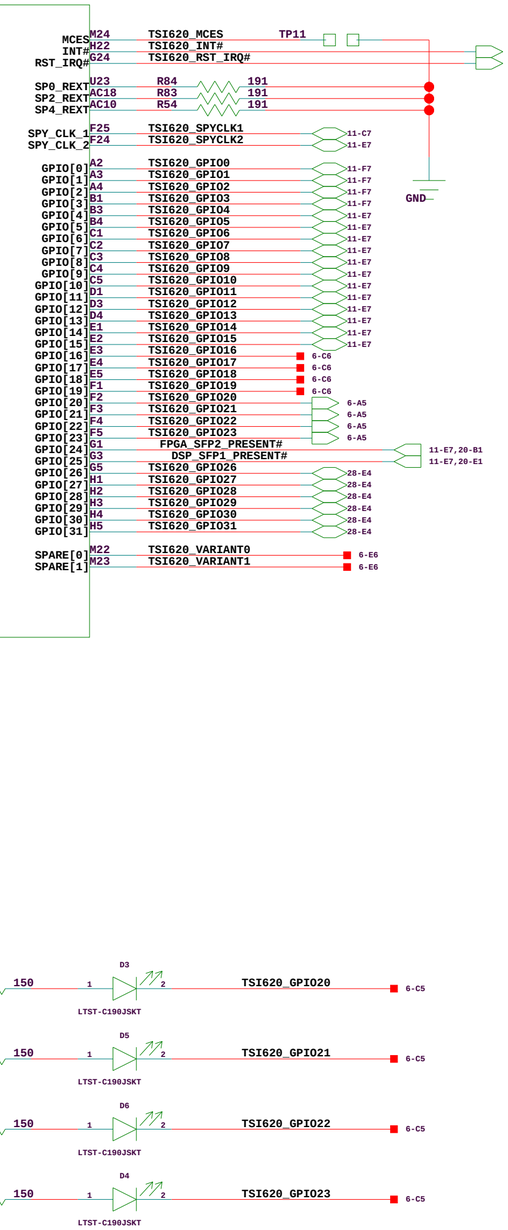
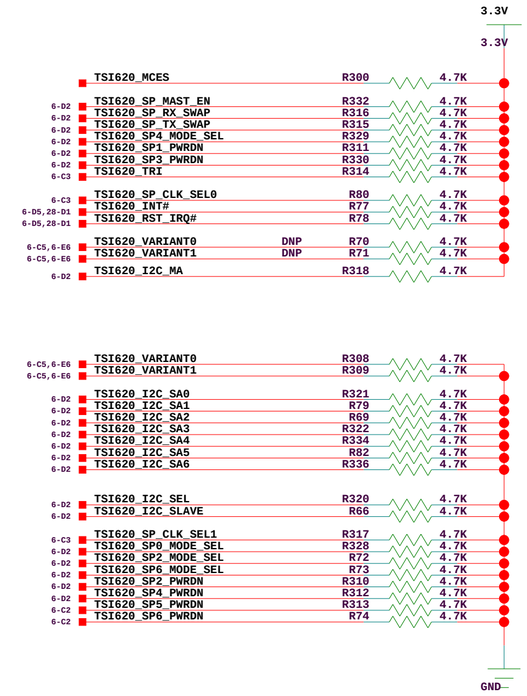
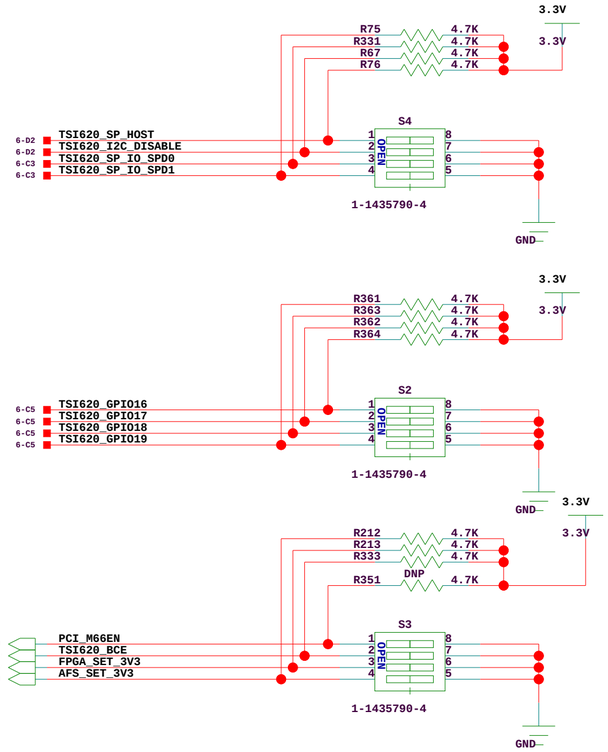
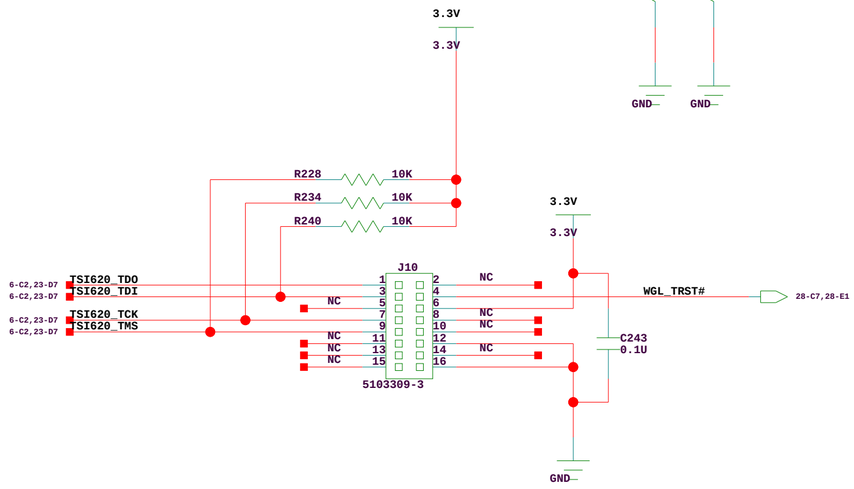
Tsi620 - I2C, GPIO, and MISC









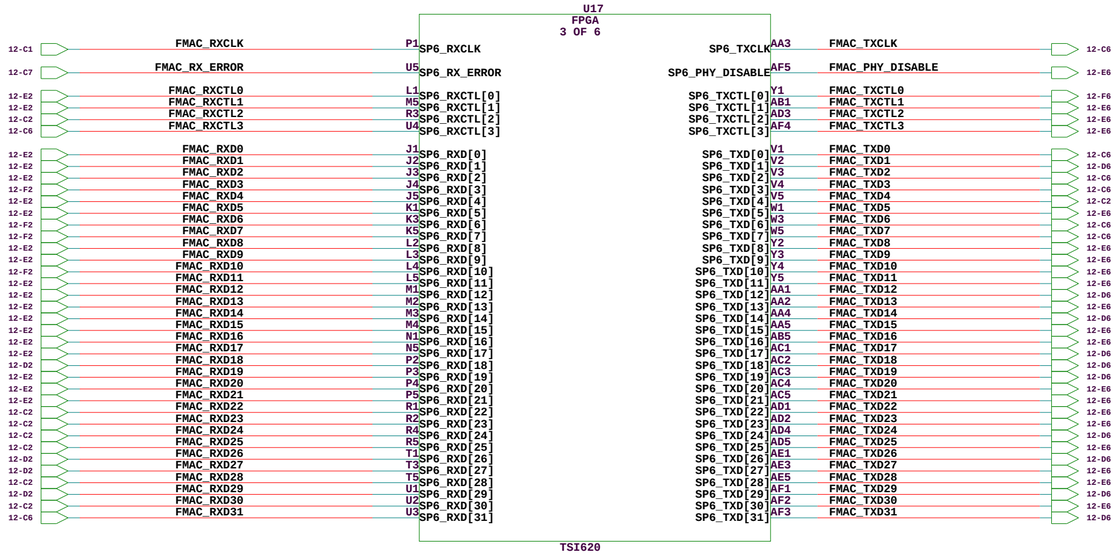


Tsi620 JTAG header only active when USB_RST# is low.

TUNDRA

TITLE : TSI620 GPIO & MISC			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version: Rev 0	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:48		SHEET 6 OF 30	

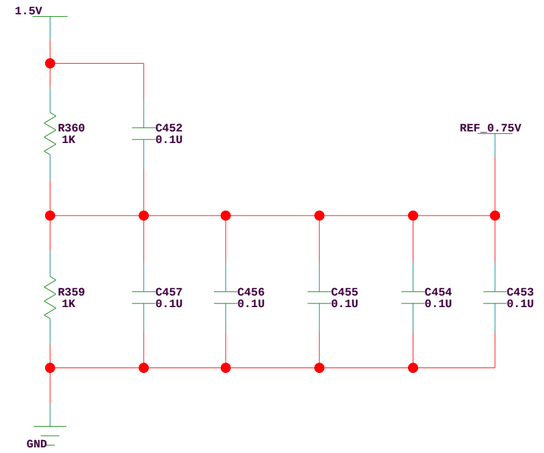
Tsi620 - FPGA XGMII Interface and PCI Clocking

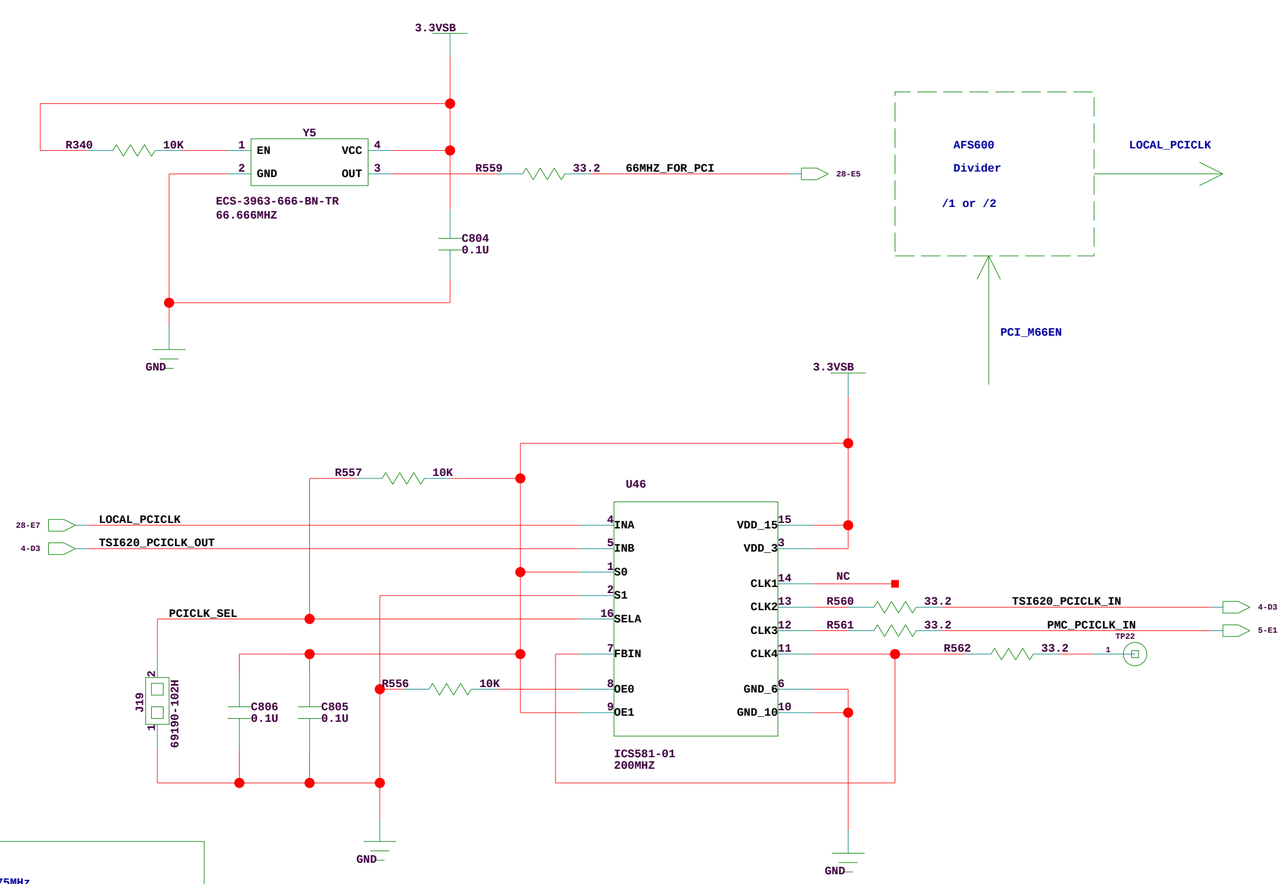


Notes:

1) Tsi620 drives HSTL-15 Class-I output which is terminated on FPGA with parallel ODT.

2) Tsi620 recieves HSTL-15 Class-II from FPGA with source series ODT.





Notes:

[1] S[1:0] = 01 : 19/75MHz

[2] Jumper J19 OFF: Select INA

TUNDRA

TITLE :

TSI620 FPGA I/F & PCI_CLK

SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02	Rev 0	System Engineering

LAST MODIFIED DATE :

3-30-2009_16:48

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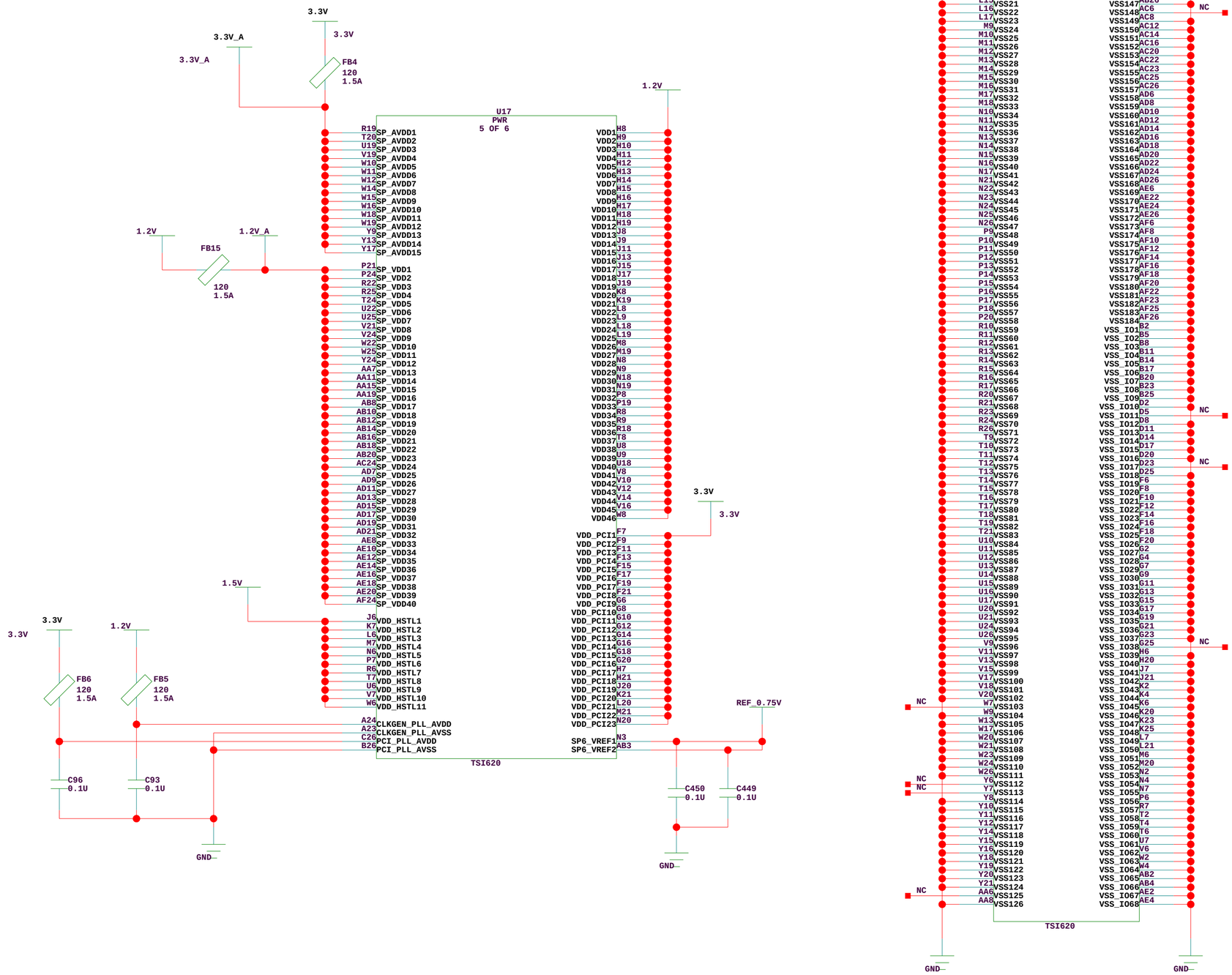
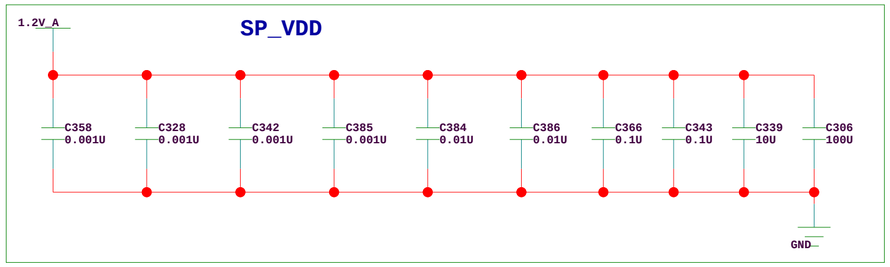
Tsi620 - Power and GND

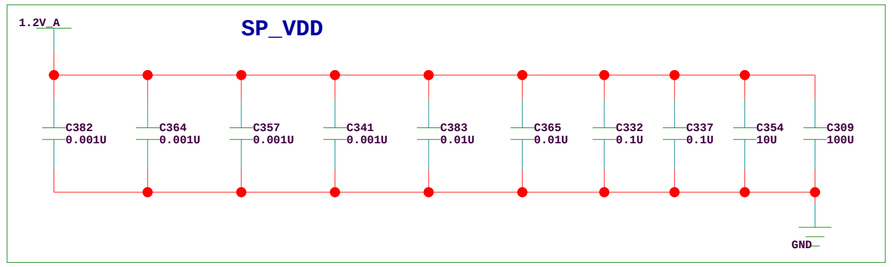


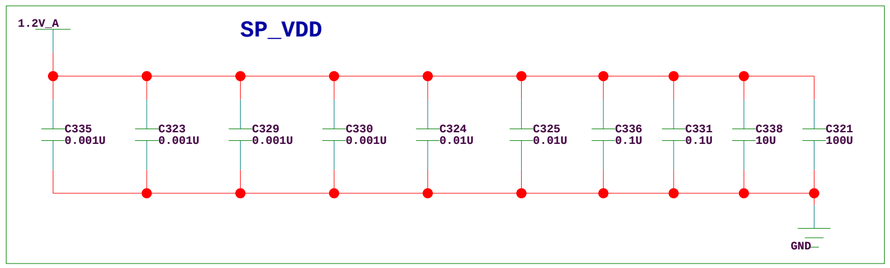
TUNDRA

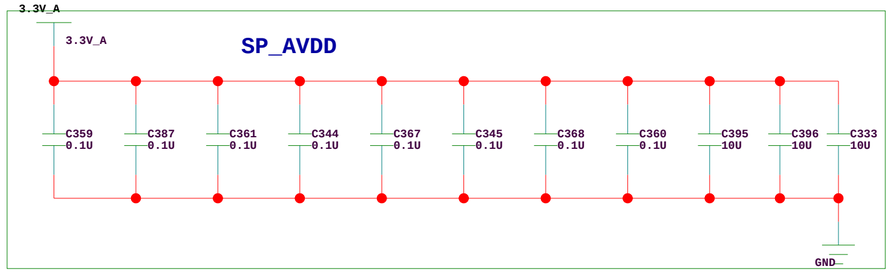
TITLE : TSI620 - POWER & GND			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version: Rev 0	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:48		SHEET 8 OF 30	

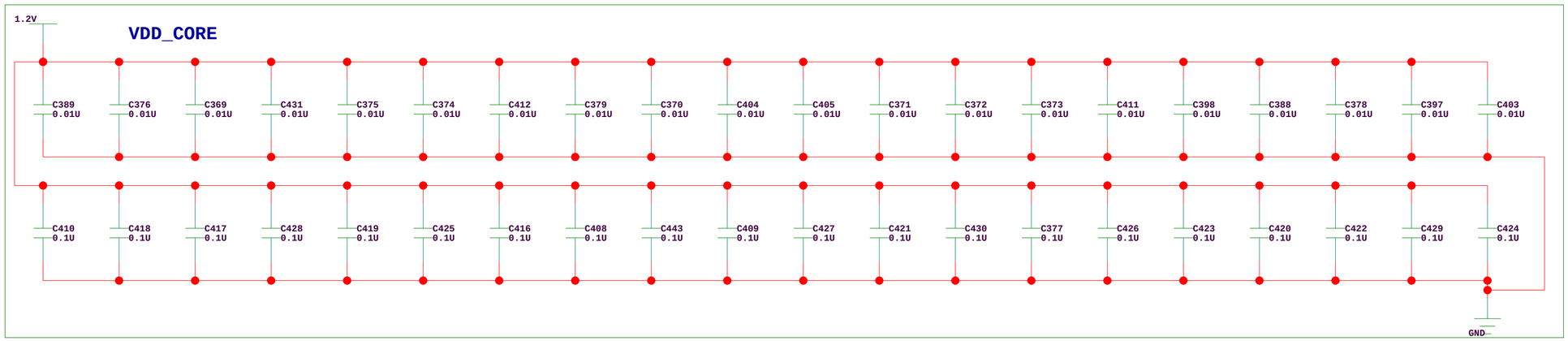
Tsi620 - Decoupling

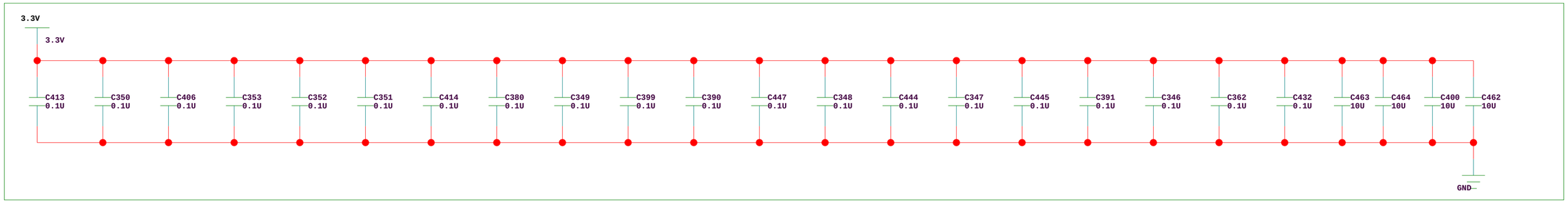


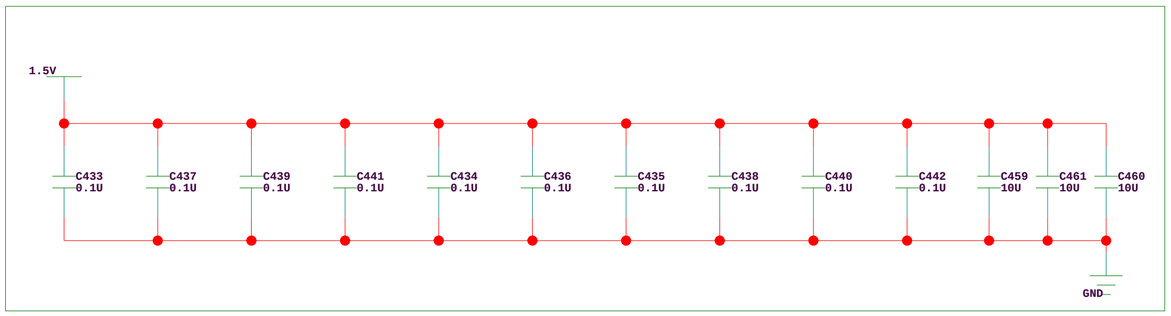












TUNDRA

TITLE :

TSI620 DECOUPLING

SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02	Rev 0	System Engineering

LAST MODIFIED DATE : 3-30-2009_16:48

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FPGA: DSP GPIO, AMC Clock, DSP Frame Sync - Top Bank (1.8V, 2.5V, 3.3V)

U13

TOP BANK

1 OF 6

EP3SL150-F780

DSP McBSP Port0

DSP_NMI[0:2] is active HIGH!

LVDS

AMC System Sync Clock LVDS

TP2 TP1 TP33

DSP_CLKS0 DSP_TIMEIN0 DSP_TIMEOUT0 FPGA_GPIO0 FPGA_GPIO1 DSP_CLKR0 DSP_DR0 DSP_FSR0 DSP_CLKX0 DSP_DX0 DSP_FSX0 DSP_GPIO12 DSP_GPIO13 DSP_GPIO14 DSP_GPIO15 DSP_FSCLKOUT DSP_FSYNC_CLK DSP_FSYNC_PULSE DSP_TRTCLK DSP_TRTSYNC FPGA_SET_1V8 DSP_NMI0 DSP_NMI1 DSP_NMI2

AFS_LVDS_OUT_P AFS_LVDS_OUT_N AMC_TCLKA_P AMC_TCLKA_N

R377 100 R376 100

MICTOR_D0 MICTOR_D1 MICTOR_D2 MICTOR_D3 MICTOR_D4 MICTOR_D5 MICTOR_D6 MICTOR_D7 MICTOR_D8 MICTOR_D9 MICTOR_D10 MICTOR_D11 MICTOR_D12 MICTOR_D13 MICTOR_D14 MICTOR_D15 MICTOR_D16 MICTOR_D17 MICTOR_D18 MICTOR_D19 MICTOR_D20 MICTOR_D21 MICTOR_D22 MICTOR_D23 MICTOR_D24 MICTOR_D25 MICTOR_D26 MICTOR_D27 MICTOR_D28 MICTOR_D29

30M72_LVDS_AMC_P 30M72_LVDS_AMC_N

AMC_TCLKB_P AMC_TCLKB_N AMC_FCLKA_P AMC_FCLKA_N

R378 100 R379 100

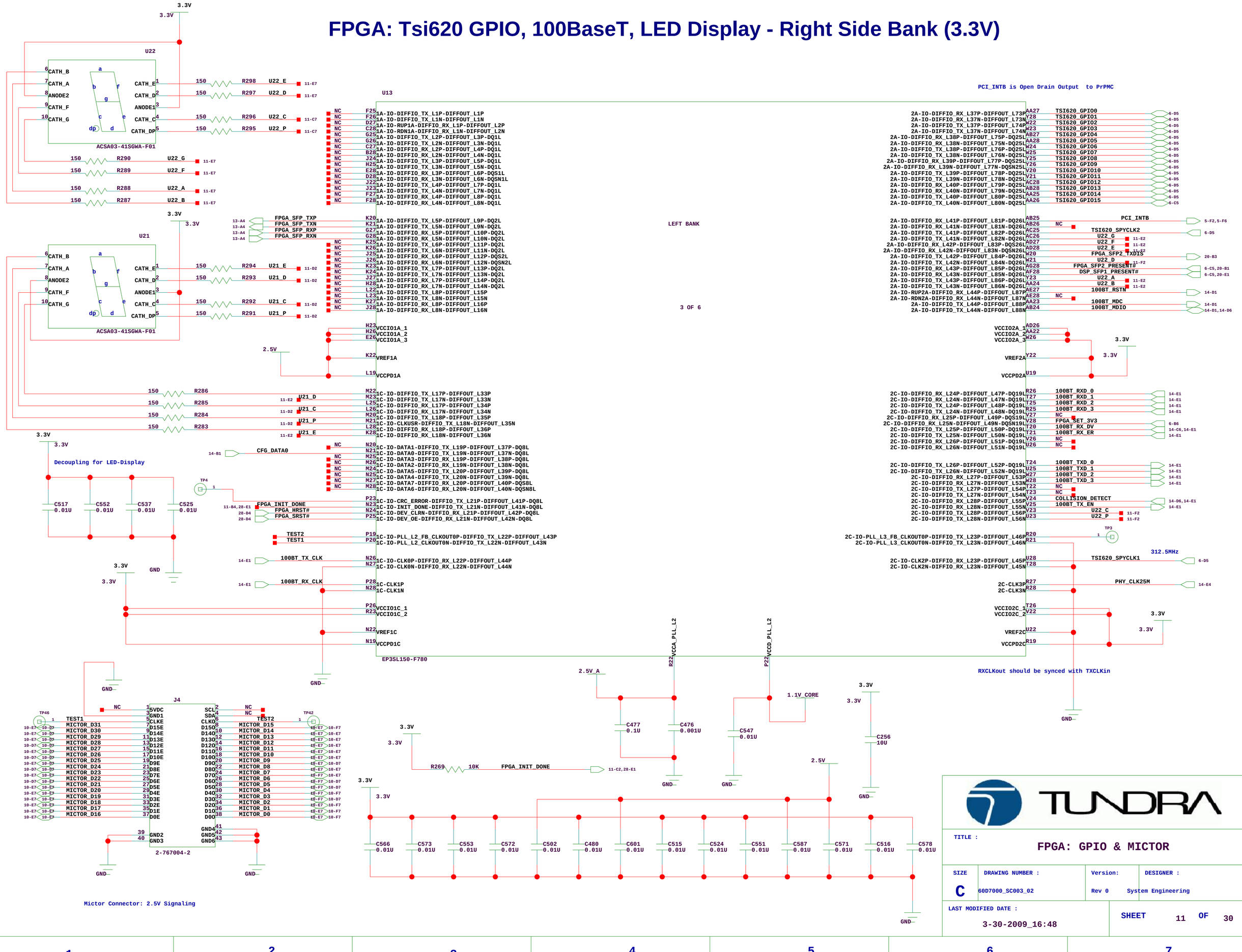
1.8V 2.5V 2.5V_A 1.1V_CORE GND

C604 0.01U C592 0.01U C591 0.01U C603 0.01U C590 0.01U C482 0.01U C577 0.01U C536 0.01U C483 0.01U C582 0.01U C589 0.01U C575 0.01U C576 0.01U C583 0.01U C535 0.1U C534 0.001U C488 0.01U C607 0.01U C610 0.01U C599 0.01U C472 0.01U

TITLE : FPGA: AMC CLK & FRAME SYNC			
SIZE C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:48		SHEET 10 OF 30	

FPGA: Tsi620 GPIO, 100BaseT, LED Display - Right Side Bank (3.3V)

U22
ACSA03-41SGWA-F01
U21
ACSA03-41SGWA-F01
Decoupling for LED-Display
U13
LEFT BANK
3 OF 6
PCI_INTB is Open Drain Output to PrPMC
EP3SL150-F780
RXCLKout should be synced with TXCLKin
Mictor Connector: 2.5V Signaling



TUNDRA

TITLE :

FPGA: GPIO & MICTOR

SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02	Rev 0	System Engineering

LAST MODIFIED DATE : 3-30-2009_16:48

SHEET 11 OF 30

FPGA: RIO-XGMII Interface - Bottom Bank (1.5V HSTL)

FPGA driving RX as HSTL-15 Class-II with 25ohm source serial termination

U13

BOTTOM BANK

2 OF 6

EP3SL150-F780

7-E1	FMAC_RXD3	AH27 3A-IO-DIFFOUT_B1P-DQ1B
7-E1	FMAC_RXD7	AF26 3A-IO-DIFFOUT_B1N-DQ1B
7-E1	FMAC_RXD6	AG25 3A-IO-RUP3A-DIFFIO_RX_B1P-DIFFOUT_B2P-DQ1B
7-E1	FMAC_RXD10	AH25 3A-IO-RDN3A-DIFFIO_RX_B1N-DIFFOUT_B2N-DQ1B
7-E1	FMAC_RXD11	AH26 3A-IO-DIFFOUT_B3P-DQ1B
7-E1	FMAC_RXD4	AG27 3A-IO-DIFFOUT_B3N-DQ1B
7-E1	FMAC_RXD1	AD22 3A-IO-DIFFIO_RX_B2P-DIFFOUT_B4P-DQS1B
7-E1	FMAC_RXD14	AE22 3A-IO-DIFFIO_RX_B2N-DIFFOUT_B4N-DQSN1B
7-E1	FMAC_RXD5	AB21 3A-IO-DIFFOUT_B5P-DQ1B
7-E1	FMAC_RXD12	AB20 3A-IO-DIFFOUT_B5N-DQ1B
7-E1	FMAC_RXCTL0	AC21 3A-IO-DIFFIO_RX_B3P-DIFFOUT_B6P-DQ1B
	NC	AD21 3A-IO-DIFFIO_RX_B3N-DIFFOUT_B6N-DQ1B
	NC	AE23 3A-IO-DIFFOUT_B7P-DQ2B
7-E1	FMAC_RXD2	AD24 3A-IO-DIFFOUT_B7N-DQ2B
7-E1	FMAC_RXD9	AE24 3A-IO-DIFFIO_RX_B4P-DIFFOUT_B8P-DQ2B
7-E1	FMAC_RXCTL1	AF24 3A-IO-DIFFIO_RX_B4N-DIFFOUT_B8N-DQ2B
7-E1	FMAC_RXD0	AG24 3A-IO-DIFFOUT_B9P-DQ2B
	NC	AF23 3A-IO-DIFFOUT_B9N-DQ2B
	NC	AH23 3A-IO-DIFFIO_RX_B5P-DIFFOUT_B10P-DQS2B
7-E1	FMAC_RXD15	AH24 3A-IO-DIFFIO_RX_B5N-DIFFOUT_B10N-DQSN2B
7-D1	FMAC_RXD20	AH21 3A-IO-DIFFOUT_B11P-DQ2B
7-D1	FMAC_RXD19	AH20 3A-IO-DIFFOUT_B11N-DQ2B
7-E1	FMAC_RXD17	AG22 3A-IO-DIFFIO_RX_B6P-DIFFOUT_B12P-DQ2B
	NC	AH22 3A-IO-DIFFIO_RX_B6N-DIFFOUT_B12N-DQ2B
7-D1	FMAC_RXD21	AG21 3A-IO-DIFFOUT_B13P-DQ3B
	NC	AC20 3A-IO-DIFFOUT_B13N-DQ3B
7-E1	FMAC_RXD13	AE21 3A-IO-DIFFIO_RX_B7P-DIFFOUT_B14P-DQ3B
7-E1	FMAC_RXD8	AF21 3A-IO-DIFFIO_RX_B7N-DIFFOUT_B14N-DQ3B
7-E1	FMAC_RXD16	AE20 3A-IO-DIFFOUT_B15P-DQ3B
	NC	AF20 3A-IO-DIFFOUT_B15N-DQ3B
	NC	AC19 3A-IO-DIFFIO_RX_B8P-DIFFOUT_B16P-DQS3B
7-D1	FMAC_RXD29	AD19 3A-IO-DIFFIO_RX_B8N-DIFFOUT_B16N-DQSN3B
	NC	AA19 3A-IO-DIFFOUT_B17P-DQ3B
	NC	AB19 3A-IO-DIFFOUT_B17N-DQ3B
	NC	AD18 3A-IO-DIFFIO_RX_B9P-DIFFOUT_B18P-DQ3B
7-D1	FMAC_RXD27	AE19 3A-IO-DIFFIO_RX_B9N-DIFFOUT_B18N-DQ3B
	NC	AA18 3A-IO-DIFFOUT_B19P
	NC	Y18 3A-IO-DIFFOUT_B19N
	NC	Y17 3A-IO-DIFFIO_RX_B10P-DIFFOUT_B20P
	NC	Y16 3A-IO-DIFFIO_RX_B10N-DIFFOUT_B20N
	1.5V	AC22 VCCIO3A_1
		AF22 VCCIO3A_2
		AF25 VCCIO3A_3
		AC18 VCCIO3A_4
	REF_0.75V	
	2.5V	
		AB18 VREF3A
		W17 VCCPD3A
7-E1	FMAC_RXD18	AG19 3C-IO-DIFFOUT_B33P-DQ11B
7-D1	FMAC_RXD26	AF19 3C-IO-DIFFOUT_B33N-DQ11B
7-D1	FMAC_RXD23	AG18 3C-IO-DIFFIO_RX_B17P-DIFFOUT_B34P-DQ11B
7-D1	FMAC_RXD25	AH19 3C-IO-DIFFIO_RX_B17N-DIFFOUT_B34N-DQ11B
7-E1	FMAC_RXCTL2	AH18 3C-IO-DIFFOUT_B35P-DQ11B
7-D1	FMAC_RXD22	AH17 3C-IO-DIFFOUT_B35N-DQ11B
7-D1	FMAC_RXD30	AE18 3C-IO-DIFFIO_RX_B18P-DIFFOUT_B36P-DQS11B
7-D1	FMAC_RXD24	AF17 3C-IO-DIFFIO_RX_B18N-DIFFOUT_B36N-DQSN11B
	NC	AD16 3C-IO-DIFFOUT_B37P-DQ11B
	NC	AE16 3C-IO-DIFFOUT_B37N-DQ11B
	NC	AE17 3C-IO-DIFFIO_RX_B19P-DIFFOUT_B38P-DQ11B
7-D1	FMAC_RXD28	AF16 3C-IO-DIFFIO_RX_B19N-DIFFOUT_B38N-DQ11B
	NC	AB17 3C-IO-PLL_B1_CLKOUT3-DIFFOUT_B43P
	NC	AC17 3C-IO-PLL_B1_CLKOUT4-DIFFOUT_B43N
	NC	AB16 3C-IO-DIFFIO_RX_B22P-DIFFOUT_B44P
	NC	AC16 3C-IO-DIFFIO_RX_B22N-DIFFOUT_B44N
	NC	Y15 3C-IO-PLL_B1_CLKOUT0P-DIFFOUT_B45P
	NC	AA15 3C-IO-PLL_B1_CLKOUT0N-DIFFOUT_B45N
7-F1	FMAC_RXCLK	AG16 3C-IO-PLL_B1_FBP/CLKOUT1-DIFFIO_RX_B23P-DIFFOUT_B46P
7-E4	FMAC_TXD4	AH16 3C-IO-PLL_B1_FBN/CLKOUT2-DIFFIO_RX_B23N-DIFFOUT_B46N
TP37	1	AG15 3C-IO-CLK5P-DIFFOUT_B47P
		AH15 3C-IO-CLK5N-DIFFOUT_B47N
TP35	1	AE15 3C-IO-CLK4P-DIFFIO_RX_B24P-DIFFOUT_B48P
		AF15 3C-IO-CLK4N-DIFFIO_RX_B24N-DIFFOUT_B48N
	1.5V	AB14 VCC_CLKIN3C
	REF_0.75V	AC15 VCCIO3C_1
		AF18 VCCIO3C_2
	2.5V	AA16 VREF3C
		W15 VCCPD3C
		AC14 VCCA_PLL_B1
		AB15 VCCD_PLL_B1
4A-IO-DIFFIO_RX_B39P-DIFFOUT_B77P		AB11 NC
4A-IO-DIFFIO_RX_B39N-DIFFOUT_B77N		AC10 FMAC_TXCTL0 7-E4
4A-IO-DIFFOUT_B78P		Y10 NC
4A-IO-DIFFOUT_B78N		Y11 NC
4A-IO-DIFFIO_RX_B40P-DIFFOUT_B79P-DQ24B		AG9 FMAC_TXD11 7-E4
4A-IO-DIFFIO_RX_B40N-DIFFOUT_B79N-DQ24B		AH8 FMAC_TXD15 7-E4
4A-IO-DIFFOUT_B80P-DQ24B		AE10 FMAC_TXD5 7-E4
4A-IO-DIFFOUT_B80N-DQ24B		AH9 FMAC_TXD10 7-E4
4A-IO-DIFFIO_RX_B41P-DIFFOUT_B81P-DQS24B		AE9 FMAC_TXCTL1 7-E4
4A-IO-DIFFIO_RX_B41N-DIFFOUT_B81N-DQSN24B		AF9 NC
4A-IO-DIFFOUT_B82P-DQ24B		AF8 FMAC_TXD16 7-E4
4A-IO-DIFFOUT_B82N-DQ24B		AE8 FMAC_TXD13 7-E4
4A-IO-DIFFIO_RX_B42P-DIFFOUT_B83P-DQ24B		AG7 FMAC_TXD21 7-D4
4A-IO-DIFFIO_RX_B42N-DIFFOUT_B83N-DQ24B		AH7 FMAC_TXD20 7-D4
4A-IO-DIFFOUT_B84P-DQ24B		AG6 FMAC_TXD25 7-D4
4A-IO-DIFFOUT_B84N-DQ24B		AH6 FMAC_TXCTL2 7-E4
4A-IO-DIFFIO_RX_B43P-DIFFOUT_B85P-DQ25B		AG4 FMAC_TXD30 7-D4
4A-IO-DIFFIO_RX_B43N-DIFFOUT_B85N-DQ25B		AH3 FMAC_TXD28 7-D4
4A-IO-DIFFOUT_B86P-DQ25B		AH4 FMAC_TXD27 7-D4
4A-IO-DIFFOUT_B86N-DQ25B		AH5 FMAC_TXD22 7-D4
4A-IO-DIFFIO_RX_B44P-DIFFOUT_B87P-DQS25B		AG3 FMAC_TXCTL3 7-E4
4A-IO-DIFFIO_RX_B44N-DIFFOUT_B87N-DQSN25B		AH2 FMAC_PHY_DISABLE 7-E4
4A-IO-DIFFOUT_B88P-DQ25B		AD9 NC
4A-IO-DIFFOUT_B88N-DQ25B		AC9 FMAC_TXD9 7-E4
4A-IO-DIFFIO_RX_B45P-DIFFOUT_B89P-DQ25B		AA9 FMAC_TXD8 7-E4
4A-IO-DIFFIO_RX_B45N-DIFFOUT_B89N-DQ25B		AB9 NC
4A-IO-DIFFOUT_B90P-DQ25B		Y9 NC
4A-IO-DIFFOUT_B90N-DQ25B		AA10 NC
4A-IO-DIFFIO_RX_B46P-DIFFOUT_B91P-DQ26B		AE6 FMAC_TXD23 7-D4
4A-IO-DIFFIO_RX_B46N-DIFFOUT_B91N-DQ26B		AF6 FMAC_TXD18 7-E4
4A-IO-DIFFOUT_B92P-DQ26B		AE4 FMAC_TXD31 7-D4
4A-IO-DIFFOUT_B92N-DQ26B		AE7 FMAC_TXD19 7-D4
4A-IO-DIFFIO_RX_B47P-DIFFOUT_B93P-DQS26B		AE5 FMAC_TXD29 7-D4
4A-IO-DIFFIO_RX_B47N-DIFFOUT_B93N-DQSN26B		AF5 FMAC_TXD26 7-D4
4A-IO-DIFFOUT_B94P-DQ26B		AB8 FMAC_TXD12 7-E4
4A-IO-DIFFOUT_B94N-DQ26B		AC8 FMAC_TXD14 7-E4
4A-IO-RUP4A-DIFFIO_RX_B48P-DIFFOUT_B95P-DQ26B		AC7 R550 49.9
4A-IO-RDN4A-DIFFIO_RX_B48N-DIFFOUT_B95N-DQ26B		AD7 R551 49.9
4A-IO-DIFFOUT_B96P-DQ26B		AB7 FMAC_TXD17 7-E4
4A-IO-DIFFOUT_B96N-DQ26B		AD6 FMAC_TXD24 7-D4
	1.5V	AD10 VCCIO4A_1
		AF4 VCCIO4A_2
		AF7 VCCIO4A_3
		AC6 VCCIO4A_4
	REF_0.75V	
	2.5V	
		AB10 VREF4A
		W11 VCCPD4A
4C-IO-DIFFIO_RX_B28P-DIFFOUT_B55P		AG12 NC
4C-IO-DIFFIO_RX_B28N-DIFFOUT_B55N		AH13 FMAC_TXD1 7-E4
4C-IO-DIFFOUT_B56P		Y13 NC
4C-IO-DIFFOUT_B56N		Y14 NC
4C-IO-DIFFIO_RX_B29P-DIFFOUT_B57P		AD13 FMAC_TXD2 7-E4
4C-IO-DIFFIO_RX_B29N-DIFFOUT_B57N		AE13 FMAC_TXD0 7-E4
4C-IO-DIFFOUT_B58P		AA13 NC
4C-IO-DIFFOUT_B58N		AB13 NC
4C-IO-DIFFIO_RX_B30P-DIFFOUT_B59P-DQ16B		AG10 NC
4C-IO-DIFFIO_RX_B30N-DIFFOUT_B59N-DQ16B		AH10 NC
4C-IO-DIFFOUT_B60P-DQ16B		AH11 NC
4C-IO-DIFFOUT_B60N-DQ16B		AH12 FMAC_TXD6 7-E4
4C-IO-DIFFIO_RX_B31P-DIFFOUT_B61P-DQS16B		AF10 NC
4C-IO-DIFFIO_RX_B31N-DIFFOUT_B61N-DQSN16B		AF11 NC
4C-IO-DIFFOUT_B62P-DQ16B		AF12 NC
4C-IO-DIFFOUT_B62N-DQ16B		AC12 NC
4C-IO-DIFFIO_RX_B32P-DIFFOUT_B63P-DQ16B		AD12 NC
4C-IO-DIFFIO_RX_B32N-DIFFOUT_B63N-DQ16B		AE12 FMAC_RX_ERROR 7-E1
4C-IO-DIFFOUT_B64P-DQ16B		AC11 FMAC_RXCTL3 7-E1
4C-IO-DIFFOUT_B64N-DQ16B		AE11 FMAC_RXD31 7-D1
4C-IO-CLK6P-DIFFIO_RX_B25P-DIFFOUT_B49P		AE14 FMAC_TXD3 7-E4
4C-IO-CLK6N-DIFFIO_RX_B25N-DIFFOUT_B49N		AF14 FMAC_TXD7 7-E4
4C-IO-CLK7P-DIFFOUT_B50P		AG13 156.25MHz - HSTL-1.5v FMAC_TXCLK 7-F4
4C-IO-CLK7N-DIFFOUT_B50N		AH14
	1.5V	AC13 VCC_CLKIN4C
	REF_0.75V	AB12 VCCIO4C_1
		AF13 VCCIO4C_2
	2.5V	AA12 VREF4C
		W13 VCCPD4C

C485 0.01U, C484 0.01U — REF_0.75V — GND

C556 0.01U, C538 0.01U, C555 0.01U, C540 0.01U, C473 0.01U, C486 0.01U — 2.5V — GND

C474 0.01U, C492 0.01U, C471 0.01U, C468 0.01U, C469 0.01U, C487 0.01U, C475 0.01U, C466 0.01U, C294 10U — 1.5V — GND

C527 0.1U, C528 0.001U — 2.5V_A — GND

C549 0.01U — 1.1V_CORE — GND

C489 0.01U, C470 0.01U, C490 0.01U, C467 0.01U — 1.5V — GND

C498 0.01U, C491 0.01U — REF_0.75V — GND

1.5V — GND

TUNDRA

TITLE :

FPGA: RIO-XGMII INTERFACE

SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02		System Engineering

LAST MODIFIED DATE : 3-30-2009_16:48

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FPGA: Atenna Interface - Left Bank (2.5V)

Note: FPGA LVDS external DC bias for AC coupling.

Vbias = 1.2V

1.8V
4.99K R262
4.99K R260
4.99K R259
4.99K R256
GND
13-C1,16-D5 DSP_AIF_TX1_P — R536 10K
13-C1,16-D5 DSP_AIF_TX1_N — R537 10K
13-D7,16-D5 DSP_AIF_TX2_P — R538 10K
13-D7,16-D5 DSP_AIF_TX2_N — R539 10K

1.8V
4.99K R273
4.99K R271
4.99K R270
4.99K R264
GND
13-C7,16-D5 DSP_AIF_TX3_P — R540 10K
13-C7,16-D5 DSP_AIF_TX3_N — R541 10K
13-C7,16-D5 DSP_AIF_TX4_P — R543 10K
13-C7,16-C5 DSP_AIF_TX4_N — R542 10K

U13

20-C7 SMT_DIFFIN1_P — AC4 5A-IO-DIFFIO_TX_R1P-DIFFOUT_R1P
20-B7 SMT_DIFFIN1_N — AC3 5A-IO-DIFFIO_TX_R1N-DIFFOUT_R1N
20-E7 SMT_DIFFIN0_P — AE2 5A-IO-RUP5A-DIFFIO_RX_R1P-DIFFOUT_R2P
20-E7 SMT_DIFFIN0_N — AF1 5A-IO-RDN5A-DIFFIO_RX_R1N-DIFFOUT_R2N
NC AB4 5A-IO-DIFFIO_TX_R2P-DIFFOUT_R3P-DQ1R
NC AB3 5A-IO-DIFFIO_TX_R2N-DIFFOUT_R3N-DQ1R
NC AF2 5A-IO-DIFFIO_RX_R2P-DIFFOUT_R4P-DQ1R
NC AG1 5A-IO-DIFFIO_RX_R2N-DIFFOUT_R4N-DQ1R
NC Y7 5A-IO-DIFFIO_RX_R3P-DIFFOUT_R5P-DQ1R
NC Y6 5A-IO-DIFFIO_TX_R3N-DIFFOUT_R5N-DQ1R
NC AD1 5A-IO-DIFFIO_RX_R3P-DIFFOUT_R6P-DQS1R
NC AE1 5A-IO-DIFFIO_RX_R3N-DIFFOUT_R6N-DQSN1R
NC Y5 5A-IO-DIFFIO_TX_R4P-DIFFOUT_R7P-DQ1R
NC AA4 5A-IO-DIFFIO_TX_R4N-DIFFOUT_R7N-DQ1R
AC2 5A-IO-DIFFIO_RX_R4P-DIFFOUT_R8P-DQ1R
AC1 5A-IO-DIFFIO_RX_R4N-DIFFOUT_R8N-DQ1R

TP44 1
TP45 1

NC Y4 5A-IO-DIFFIO_TX_R5P-DIFFOUT_R9P-DQ2R
NC Y3 5A-IO-DIFFIO_TX_R5N-DIFFOUT_R9N-DQ2R
NC AB2 5A-IO-DIFFIO_RX_R5P-DIFFOUT_R10P-DQ2R
NC AB1 5A-IO-DIFFIO_RX_R5N-DIFFOUT_R10N-DQ2R
NC W9 5A-IO-DIFFIO_TX_R6P-DIFFOUT_R11P-DQ2R
NC W8 5A-IO-DIFFIO_TX_R6N-DIFFOUT_R11N-DQ2R
NC Y2 5A-IO-DIFFIO_RX_R6P-DIFFOUT_R12P-DQS2R
NC AA1 5A-IO-DIFFIO_RX_R6N-DIFFOUT_R12N-DQSN2R
NC W6 5A-IO-DIFFIO_TX_R7P-DIFFOUT_R13P-DQ2R
NC W5 5A-IO-DIFFIO_TX_R7N-DIFFOUT_R13N-DQ2R
NC W2 5A-IO-DIFFIO_RX_R7P-DIFFOUT_R14P-DQ2R
NC Y1 5A-IO-DIFFIO_RX_R7N-DIFFOUT_R14N-DQ2R
NC V7 5A-IO-DIFFIO_TX_R8P-DIFFOUT_R15P
NC V6 5A-IO-DIFFIO_TX_R8N-DIFFOUT_R15N
NC W4 5A-IO-DIFFIO_RX_R8P-DIFFOUT_R16P
NC W3 5A-IO-DIFFIO_RX_R8N-DIFFOUT_R16N

2.5V
AD3 VCCIO5A_1
AA3 VCCIO5A_2
AA7 VCCIO5A_3
W7 VREF5A
V10 VCCPD5A

NC U7 5C-IO-DIFFIO_TX_R17P-DIFFOUT_R33P
NC U6 5C-IO-DIFFIO_TX_R17N-DIFFOUT_R33N
NC V4 5C-IO-DIFFIO_RX_R17P-DIFFOUT_R34P
NC V3 5C-IO-DIFFIO_RX_R17N-DIFFOUT_R34N
NC U9 5C-IO-DIFFIO_TX_R18P-DIFFOUT_R35P
NC U8 5C-IO-DIFFIO_TX_R18N-DIFFOUT_R35N
NC V1 5C-IO-DIFFIO_RX_R18P-DIFFOUT_R36P
NC W1 5C-IO-DIFFIO_RX_R18N-DIFFOUT_R36N
NC U5 5C-IO-DIFFIO_TX_R19P-DIFFOUT_R37P-DQ8R
NC T4 5C-IO-DIFFIO_TX_R19N-DIFFOUT_R37N-DQ8R

NC U4 5C-IO-DIFFIO_RX_R19P-DIFFOUT_R38P-DQ8R
NC U3 5C-IO-DIFFIO_RX_R19N-DIFFOUT_R38N-DQ8R
NC T9 5C-IO-DIFFIO_TX_R20P-DIFFOUT_R39P-DQ8R
NC T8 5C-IO-DIFFIO_TX_R20N-DIFFOUT_R39N-DQ8R
NC T3 5C-IO-DIFFIO_RX_R20P-DIFFOUT_R40P-DQS8R
NC T2 5C-IO-DIFFIO_RX_R20N-DIFFOUT_R40N-DQSN8R
R6 5C-IO-DIFFIO_TX_R21P-DIFFOUT_R41P-DQ8R
T6 5C-IO-DIFFIO_TX_R21N-DIFFOUT_R41N-DQ8R
T5 5C-IO-DIFFIO_RX_R21P-DIFFOUT_R42P-DQ8R
R4 5C-IO-DIFFIO_RX_R21N-DIFFOUT_R42N-DQ8R

16-D1 DSP_AIF_RX1_P
16-D1 DSP_AIF_RX1_N
13-F4,16-D5 DSP_AIF_TX1_P
13-F4,16-D5 DSP_AIF_TX1_N

28-E4 FPGA_CLKOUT_P — R10 5C-IO-PLL_R3_FB_CLKOUT0P-DIFFIO_TX_R22P-DIFFOUT_R43P
28-E4 FPGA_CLKOUT_N — R9 5C-IO-PLL_R3_CLKOUT0N-DIFFIO_TX_R22N-DIFFOUT_R43N

R371 100
R1 5C-CLK8P
T1 5C-CLK8N
CLK8(p,n) has NO 100ohm On-chip differential termination

24-B4 FPGA_SYSCLK_P — U2 5C-IO-CLK9P-DIFFIO_RX_R22P-DIFFOUT_R44P
24-B4 FPGA_SYSCLK_N — U1 5C-IO-CLK9N-DIFFIO_RX_R22N-DIFFOUT_R44N

R3 VCCIO5C_1
P6 VCCIO5C_2
2.5V
T7 VREF5C
T10 VCCPD5C
GND

EP3SL150-F780

RIGHT BANK

4 OF 6

6A-IO-DIFFIO_RX_R37P-DIFFOUT_R73P H2 NC
6A-IO-DIFFIO_RX_R37N-DIFFOUT_R73N J1 NC
6A-IO-DIFFIO_TX_R37P-DIFFOUT_R74P K7 30M72_LVDS_FPGA_P — 24-D1
6A-IO-DIFFIO_TX_R37N-DIFFOUT_R74N K6 30M72_LVDS_FPGA_N — 24-D1
6A-IO-DIFFIO_RX_R38P-DIFFOUT_R75P-DQ25R G2 NC
6A-IO-DIFFIO_RX_R38N-DIFFOUT_R75N-DQ25R H1 NC
6A-IO-DIFFIO_TX_R38P-DIFFOUT_R76P-DQ25R K5 NC
6A-IO-DIFFIO_TX_R38N-DIFFOUT_R76N-DQ25R K4 NC
6A-IO-DIFFIO_RX_R39P-DIFFOUT_R77P-DQS25R F1 NC
6A-IO-DIFFIO_RX_R39N-DIFFOUT_R77N-DQSN25R G1 NC
6A-IO-DIFFIO_TX_R39P-DIFFOUT_R78P-DQ25R J4 NC
6A-IO-DIFFIO_TX_R39N-DIFFOUT_R78N-DQ25R J3 NC
6A-IO-DIFFIO_RX_R40P-DIFFOUT_R79P-DQ25R E2 NC
6A-IO-DIFFIO_RX_R40N-DIFFOUT_R79N-DQ25R E1 NC
6A-IO-DIFFIO_TX_R40P-DIFFOUT_R80P-DQ25R L9 DSP_FBURST_P — 16-C2
6A-IO-DIFFIO_TX_R40N-DIFFOUT_R80N-DQ25R L8 DSP_FBURST_N — 16-C2

6A-IO-DIFFIO_RX_R41P-DIFFOUT_R81P-DQ26R H4 NC
6A-IO-DIFFIO_RX_R41N-DIFFOUT_R81N-DQ26R H3 NC
6A-IO-DIFFIO_TX_R41P-DIFFOUT_R82P-DQ26R K9 NC
6A-IO-DIFFIO_TX_R41N-DIFFOUT_R82N-DQ26R K8 NC
6A-IO-DIFFIO_RX_R42P-DIFFOUT_R83P-DQS26R D2 NC
6A-IO-DIFFIO_RX_R42N-DIFFOUT_R83N-DQSN26R D1 NC
6A-IO-DIFFIO_TX_R42P-DIFFOUT_R84P-DQ26R J6 NC
6A-IO-DIFFIO_TX_R42N-DIFFOUT_R84N-DQ26R H5 NC
6A-IO-DIFFIO_RX_R43P-DIFFOUT_R85P-DQ26R F4 NC
6A-IO-DIFFIO_RX_R43N-DIFFOUT_R85N-DQ26R F3 NC
6A-IO-DIFFIO_TX_R43P-DIFFOUT_R86P-DQ26R G4 NC
6A-IO-DIFFIO_TX_R43N-DIFFOUT_R86N-DQ26R G3 NC
6A-IO-RUP6A-DIFFIO_RX_R44P-DIFFOUT_R87P B1 NC
6A-IO-RDN6A-DIFFIO_RX_R44N-DIFFOUT_R87N C1 NC
6A-IO-DIFFIO_TX_R44P-DIFFOUT_R88P H6 NC
6A-IO-DIFFIO_TX_R44N-DIFFOUT_R88N G5 NC

2.5V
VCCIO6A_1 K3
VCCIO6A_2 H7
VCCIO6A_3 E3
VREF6A J7
VCCPD6A M10

6C-IO-DIFFIO_RX_R24P-DIFFOUT_R47P-DQ19R N4 DSP_AIF_TX2_P — 13-F4,16-D5
6C-IO-DIFFIO_RX_R24N-DIFFOUT_R47N-DQ19R P4 DSP_AIF_TX2_N — 13-F4,16-D5
6C-IO-DIFFIO_TX_R24P-DIFFOUT_R48P-DQ19R N7 DSP_AIF_RX2_P — 16-D1
6C-IO-DIFFIO_TX_R24N-DIFFOUT_R48N-DQ19R N6 DSP_AIF_RX2_N — 16-D1
6C-IO-DIFFIO_RX_R25P-DIFFOUT_R49P-DQS19R P3 NC
6C-IO-DIFFIO_RX_R25N-DIFFOUT_R49N-DQSN19R N2 NC
6C-IO-DIFFIO_TX_R25P-DIFFOUT_R50P-DQ19R N5 NC
6C-IO-DIFFIO_TX_R25N-DIFFOUT_R50N-DQ19R M4 NC
6C-IO-DIFFIO_RX_R26P-DIFFOUT_R51P-DQ19R L2 DSP_AIF_TX3_P — 13-F6,16-D5
6C-IO-DIFFIO_RX_R26N-DIFFOUT_R51N-DQ19R L1 DSP_AIF_TX3_N — 13-F6,16-D5

6C-IO-DIFFIO_TX_R26P-DIFFOUT_R52P-DQ19R N9 DSP_AIF_RX3_P — 16-D1
6C-IO-DIFFIO_TX_R26N-DIFFOUT_R52N-DQ19R N8 DSP_AIF_RX3_N — 16-D1
6C-IO-DIFFIO_RX_R27P-DIFFOUT_R53P L3 NC
6C-IO-DIFFIO_RX_R27N-DIFFOUT_R53N M3 NC
6C-IO-DIFFIO_TX_R27P-DIFFOUT_R54P L5 NC
6C-IO-DIFFIO_TX_R27N-DIFFOUT_R54N L4 NC
6C-IO-DIFFIO_RX_R28P-DIFFOUT_R55P K2 DSP_AIF_TX4_P — 13-F6,16-D5
6C-IO-DIFFIO_RX_R28N-DIFFOUT_R55N K1 DSP_AIF_TX4_N — 13-F6,16-C5
6C-IO-DIFFIO_TX_R28P-DIFFOUT_R56P L6 DSP_AIF_RX4_P — 16-D1
6C-IO-DIFFIO_TX_R28N-DIFFOUT_R56N M6 DSP_AIF_RX4_N — 16-C1

1.1V_CORE
6C-IO-PLL_R2_FB_CLKOUT0P-DIFFIO_TX_R23P-DIFFOUT_R46P P9 NC — R373 49.9
6C-IO-PLL_R2_CLKOUT0N-DIFFIO_TX_R23N-DIFFOUT_R46N P8 NC — R372 49.9

6C-CLK10P P2 — FPGA_AIFCLKP — 24-E7
6C-CLK10N P1 — FPGA_AIFCLKN — 24-E7

6C-IO-CLK11P-DIFFIO_RX_R23P-DIFFOUT_R45P M1 30M72_LVDS_OUTN — 24-D7
6C-IO-CLK11N-DIFFIO_RX_R23N-DIFFOUT_R45N N1 30M72_LVDS_OUTP — 24-D7

AIF_CLK_REF for PLL_R2

VCCIO6C_1 L7
VCCIO6C_2 N3
2.5V
VREF6C M7
VCCPD6C P10
GND

R7 VCCA_PLL_R2
P7 VCCD_PLL_R2

SGMII_CLK_REF (LVDS) for PLL_R3

LVPECL DC coupling - 156.25MHz

2.5V
C554 0.1U
C478 0.1U
C519 0.1U
C481 0.1U
C581 0.1U
C526 0.1U
C505 0.1U
C479 0.1U
GND

C567 0.1U
C500 0.1U
C499 2.2U
C496 2.2U
C497 2.2U
C568 0.1U
C569 0.1U
C570 0.1U

2.5V_A
C596 0.1U
C595 0.001U
GND

1.1V_CORE
C539 0.01U
C580 0.01U
GND

20-B3 SFP_AIF_TX_P — C504 0.01U — FPGA_SFP_TXP — 11-E2
20-B3 SFP_AIF_TX_N — C518 0.01U — FPGA_SFP_TXN — 11-E2

20-B5 SFP_AIF_RX_P — C493 0.01U — FPGA_SFP_RXP — 11-E2
20-B5 SFP_AIF_RX_N — C494 0.01U — FPGA_SFP_RXN — 11-E2

TUNDRA

TITLE : FPGA: AIF & SGMII

SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02		System Engineering

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FPGA: Configuration & 100BaseT RJ45

EMAC-MII Interface

U25

11-C2 100BT_RX_CLK 31 RX_CLK
11-D7,14-C6 100BT_RX_DV 32 RX_DV/MII_MODE
11-D7 100BT_RX_ER 34 RX_ER/MDIX_EN
11-C7,14-D6 COLLISION_DETECT 35 COL/PHYAD0
11-D7 100BT_RXD_0 36 RXD_0/PHYAD1
11-D7 100BT_RXD_1 37 RXD_1/PHYAD2
11-D7 100BT_RXD_2 38 RXD_2/PHYAD3
11-D7 100BT_RXD_3 39 RXD_3/PHYAD4
11-C2 100BT_TX_CLK 2 TX_CLK
11-C7 100BT_TX_EN 3 TX_EN
11-C7 100BT_TXD_0 4 TXD_0
11-C7 100BT_TXD_1 5 TXD_1
11-C7 100BT_TXD_2 6 TXD_2
11-C7 100BT_TXD_3 7 TXD_3
14-C6,14-E6 RX_DETECT 33 CRS/CRS_DV/LED_CFG
11-D7 100BT_MDC 25 MDC
11-D7,14-D6 100BT_MDIO 24 MDIO
11-E7 100BT_RSTN 23 RESET_N
24-C7 25M_3V3_C 28 X1
NC 27 X2

LED_LINK/AN0 22 AN0_MODE
25MHZ_OUT 21 PHY_CLK25M → 11-C7
TD+ 15
TD- 14
RD+ 12
RD- 11
PFBOUT 19
PFBIN1 16
PFBIN2 30
RBIAS 20 R211 4.87K
RESERVED_1 8 NC
RESERVED_2 9 NC
RESERVED_3 10 NC
AVDD33 18
IOVDD33_1 1
IOVDD33_2 26
IOGND 40
DGND 29
AGND_1 13
AGND_2 17
DAP_GND 41

DP83848M

14-C6 → AN0_MODE
PHY_CLK25M
C225 0.1U FB14 220 0.7A
C226 0.1U
C227 0.1U
C142 1+ 10U 2
C228 0.1U
C222 0.1U
C221 0.1U
C223 0.1U
C233 0.1U
C234 0.1U
R207 49.9
R208 49.9
R209 49.9
R210 49.9

3.3V
GND

U26

D1 LED1_A
D2 LED1_C
D3 LED2_A
D4 LED2_C
14-C6,14-D1 RX_DETECT
Green 250 Ohm
Yellow 250 Ohm

RJ45
10/100Base-T

1 TDP
3 TCT
2 TDN
5 RDP
4 RCT
6 RDN
MX0+ J1
MX0- J2
MX1+ J3
MX1- J6
MX2+ J4
MX2- J5
MX3+ J7
MX3- J8
75R
1000pF-2KV
8 GND
7 NC
S1 SHLD1
S2 SHLD2
5-6605786-1
C231 0.1U
C230 0.1U
R219 0
CGND

R214 2K 100BT_MDIO → 11-D7,14-D1
R216 2K COLLISION_DETECT → 11-C7,14-E1
R218 2K AN0_MODE → 14-F4
R217 2K 100BT_RX_DV → 11-D7,14-E1
R215 2K RX_DETECT → 14-D1,14-E6

Notes:
-PHY Addr = 00001b
-10/100BaseT Half/Full-Duplex
-MII Mode
-LED Link/Activity

C565 0.1U
C579 0.1U
C550 0.1U

U13

AE26 CONF_DONE
AC5 DCLK
AA6 ASDO
W19 NCONFIG
AD25 NSTATUS
Y20 NCE
NC AB5 NCEO
AD4 NCSO
AE3 NIO_PULLUP
NC P15 DNU
14-A4 PORSEL AB23 PORSEL
14-A5 MSEL0 H8 MSEL0
14-A5 MSEL1 J9 MSEL1
67 MSEL2

CONFIG & MISC
6 OF 6

VCCPGM_1 AA21
VCCPGM_2 Y8
NC_1 AE25 NC
NC_2 V9 NC
NC_3 U20 NC
NC_4 M9 NC
NC_5 L20 NC
NC_6 K10 NC
NC_7 J21 NC
NC_8 E4 NC
NC_9 W10 NC
NC_10 AB22 NC
NC_11 E25 NC

TDI F24 AFS_TDO → 29-A1,29-B4
TDO G24 R267 22.1 FPGA_TDO → 29-A4,29-B5
TCK C26 AFS_TCK → 29-A1,29-A4
TMS H22 AFS_TMS → 29-A1,29-A4
TRST D26 R374 10K
TEMPDIODEP D3 FPGA_TEMP_P → 29-F4
TEMPDIODEN D4 FPGA_TEMP_N → 29-F4

EP3SL150-F780

NSTATUS → 28-D1
CONFIG_DONE → 28-D1
R342 10K
R344 10K
R368 10K
R341 10K

U14

EPCS64SI16N

1 VCC_1
2 VCC_2
NC 3 NC_1
NC 4 NC_2
NC 5 NC_3
NC 6 NC_4
7 NCS
8 DATA
16 DCLK
15 ASDI
NC 14 NC_5
NC 13 NC_6
NC 12 NC_7
NC 11 NC_8
10 GND
9 VCC_3

3.3VLVCMOS
11-D2 CFG_DATA0
28-D4 NCONFIG

J5
67997-110H

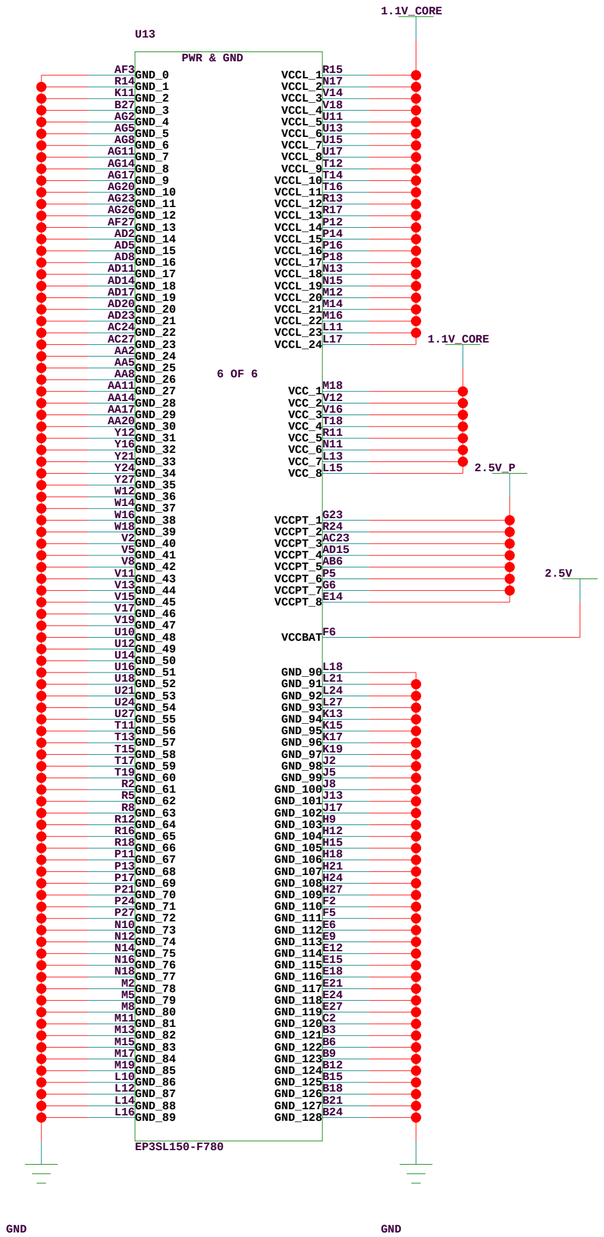
C501 0.1U
C503 0.1U
C514 0.1U
C533 0.1U

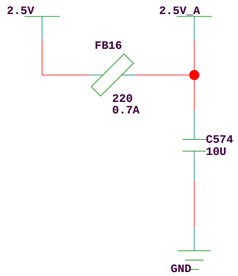
R544 10K
14-B3 PORSEL
R548 22.1

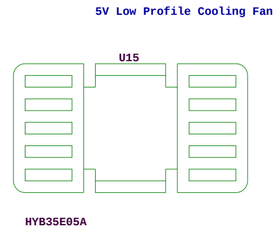
2.5V
14-B3 MSEL0 R563 22.1
14-B3 MSEL1 R564 22.1

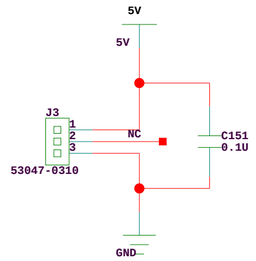
TITLE : FPGA: CONFIG & RJ45			
SIZE C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47		SHEET 14 OF 30	

FPGA: Power, Ground, and Decoupling





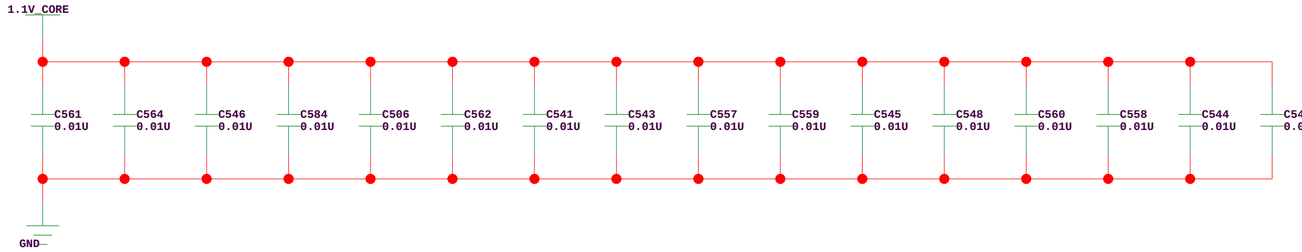


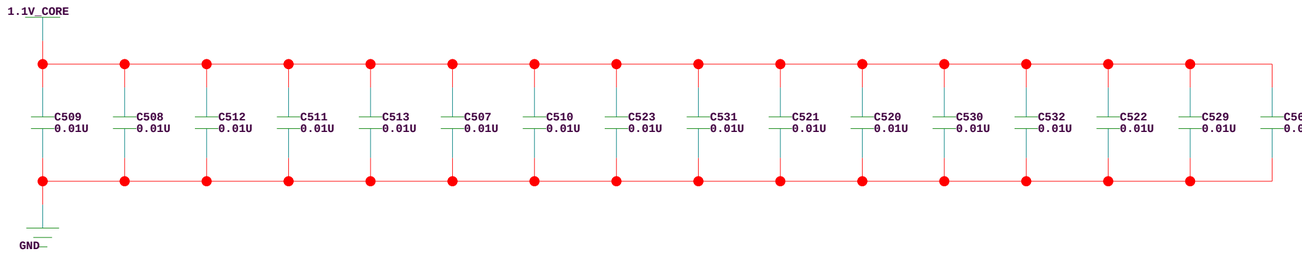


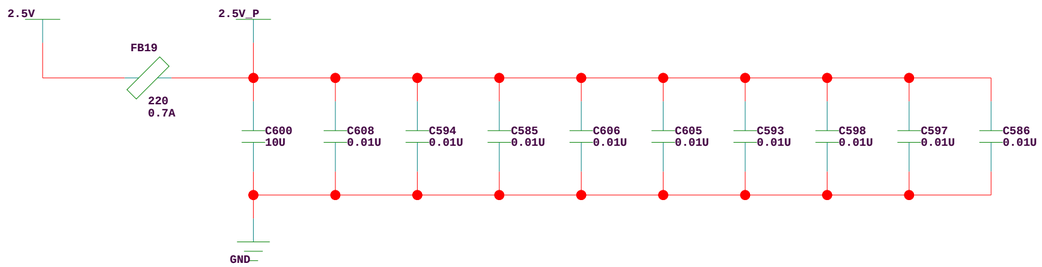
Notes:

2.5V_A is the filtered 2.5V supply to VCCA_PLL of FPGA

2.5V_P is the filtered 2.5V supply to VCCPT of FPGA







TUNDRA

TITLE : FPGA: POWER & GROUND

SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02		System Engineering

LAST MODIFIED DATE : 3-30-2009_16:47

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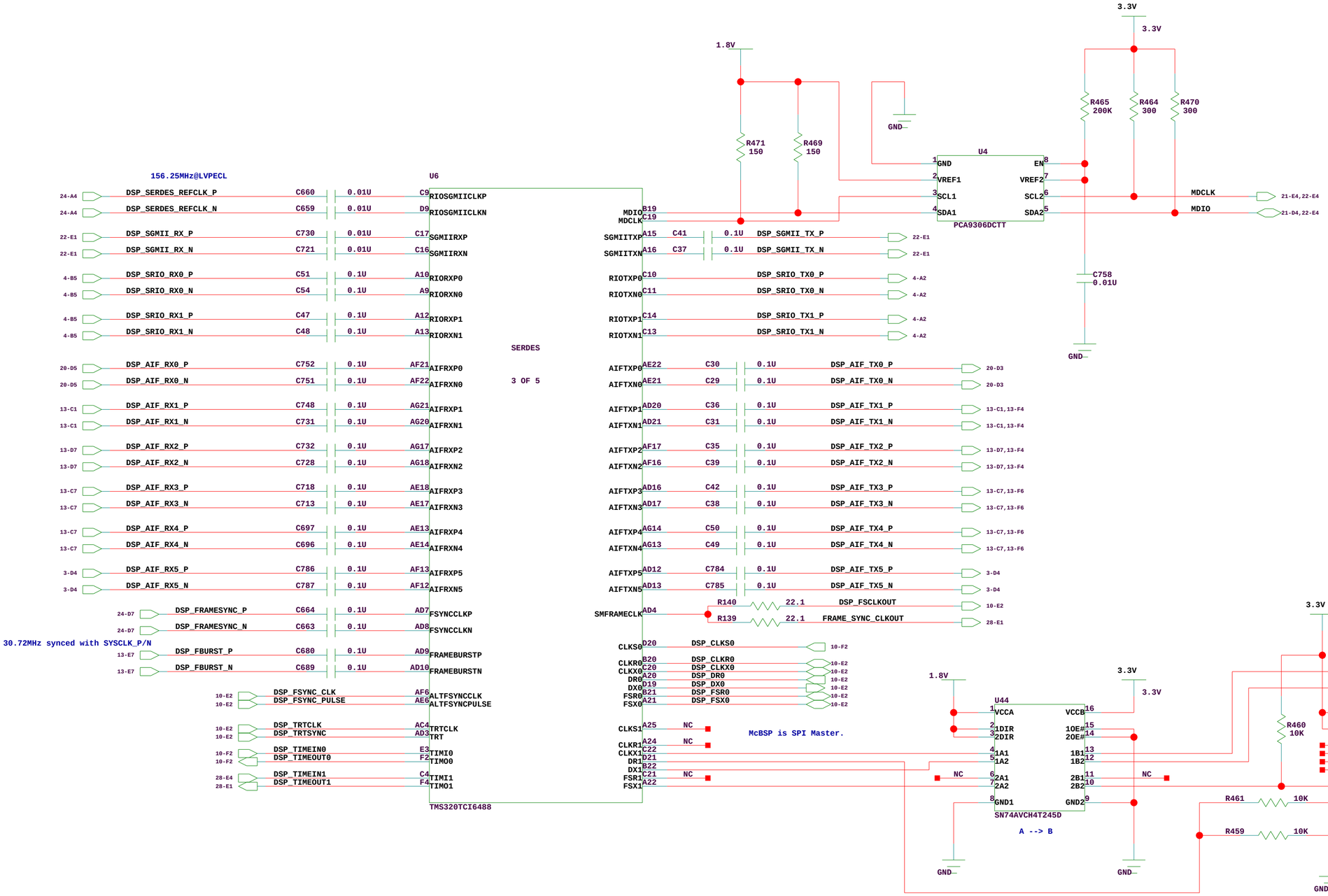
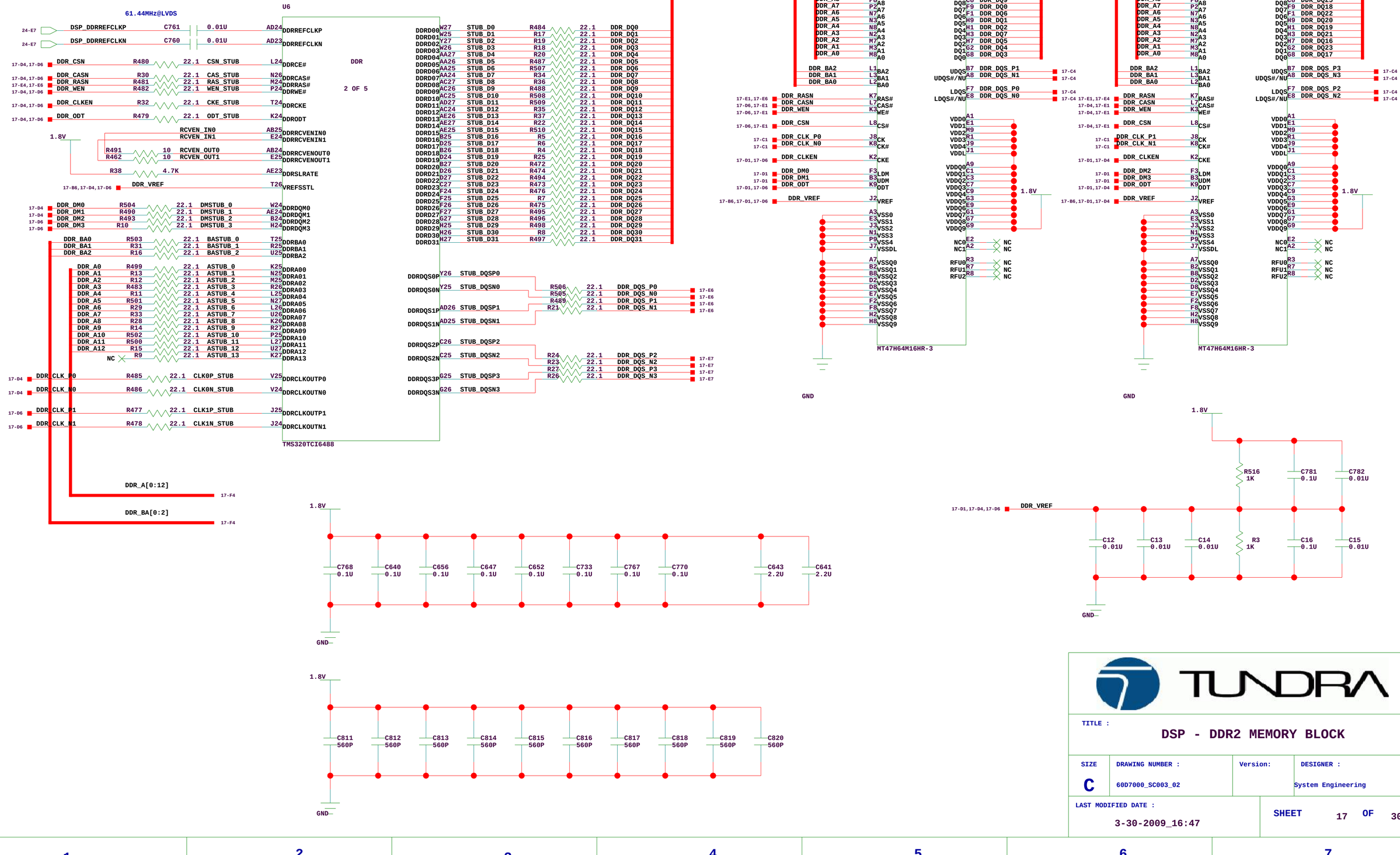
DSP - SERDES Section: AIF, SGMII, sRIO, and S-Flash



TITLE : DSP - SERDES SECTION			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47	SHEET 16 OF 30		

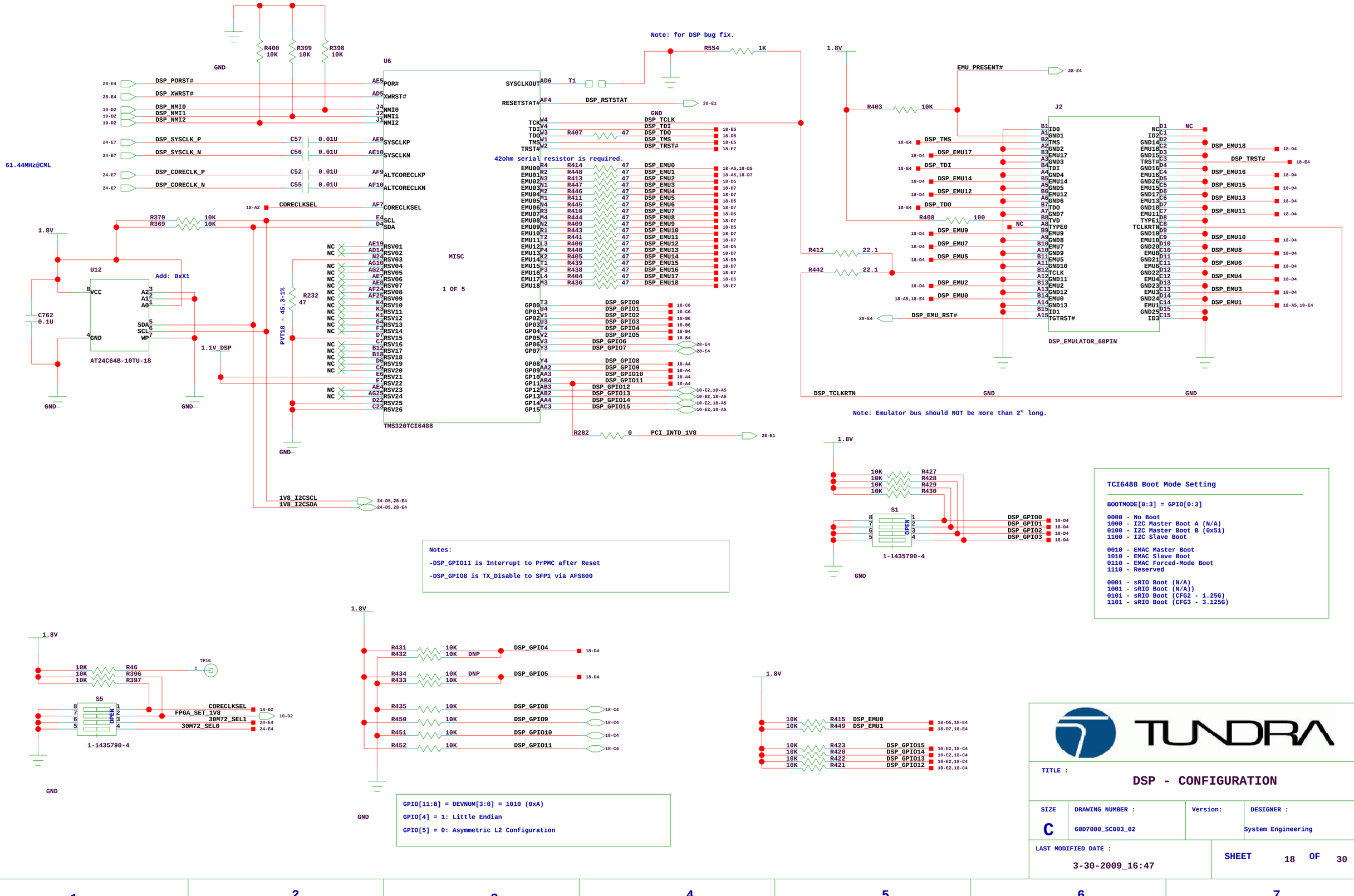
DSP - DDR2 Memory Block



TUNDRA

TITLE : DSP - DDR2 MEMORY BLOCK			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47	SHEET 17 OF 30		

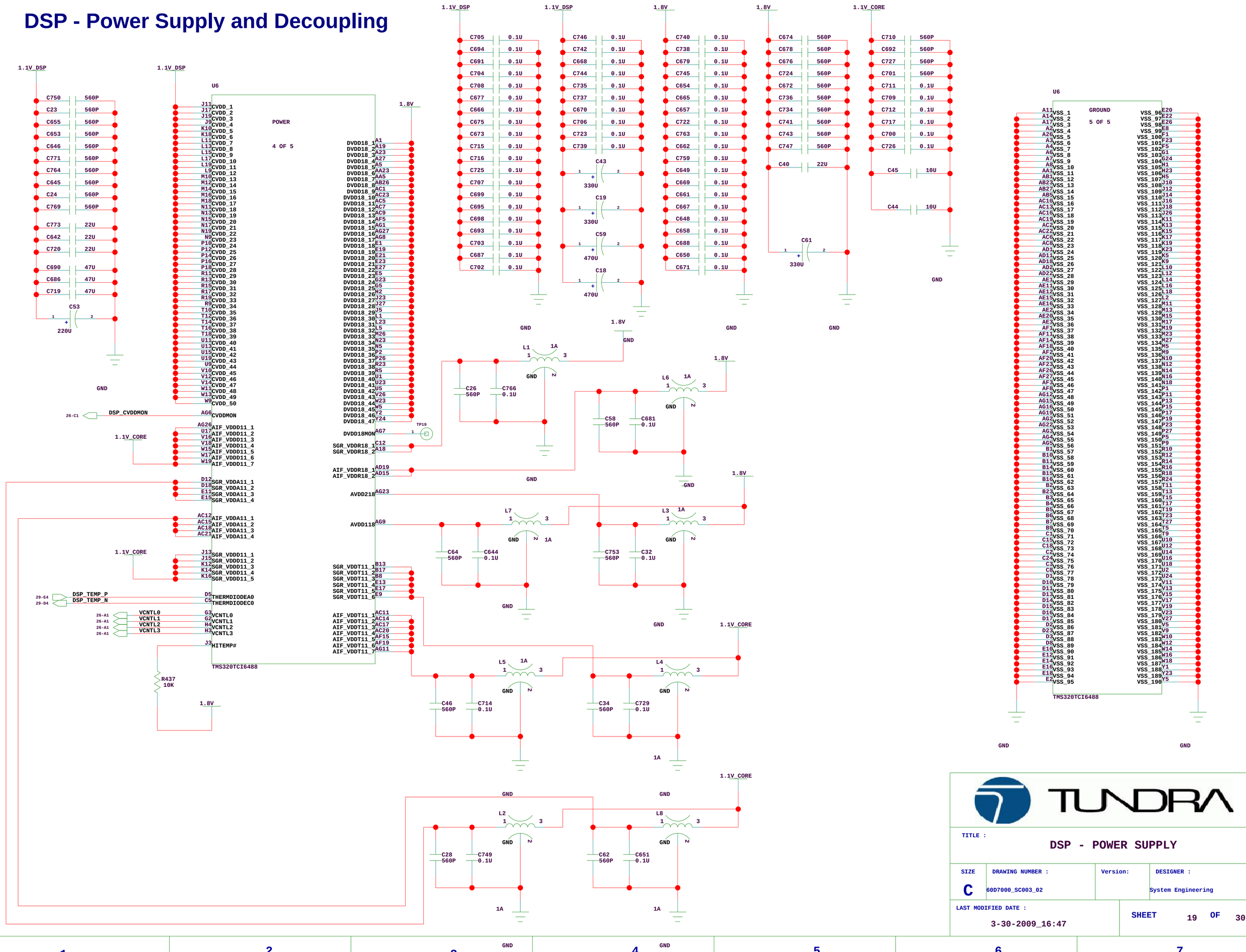
DSP - Emulator, GPIO, and Configuration



TUNDRA

TITLE : DSP - CONFIGURATION			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47	SHEET 18 OF 30		

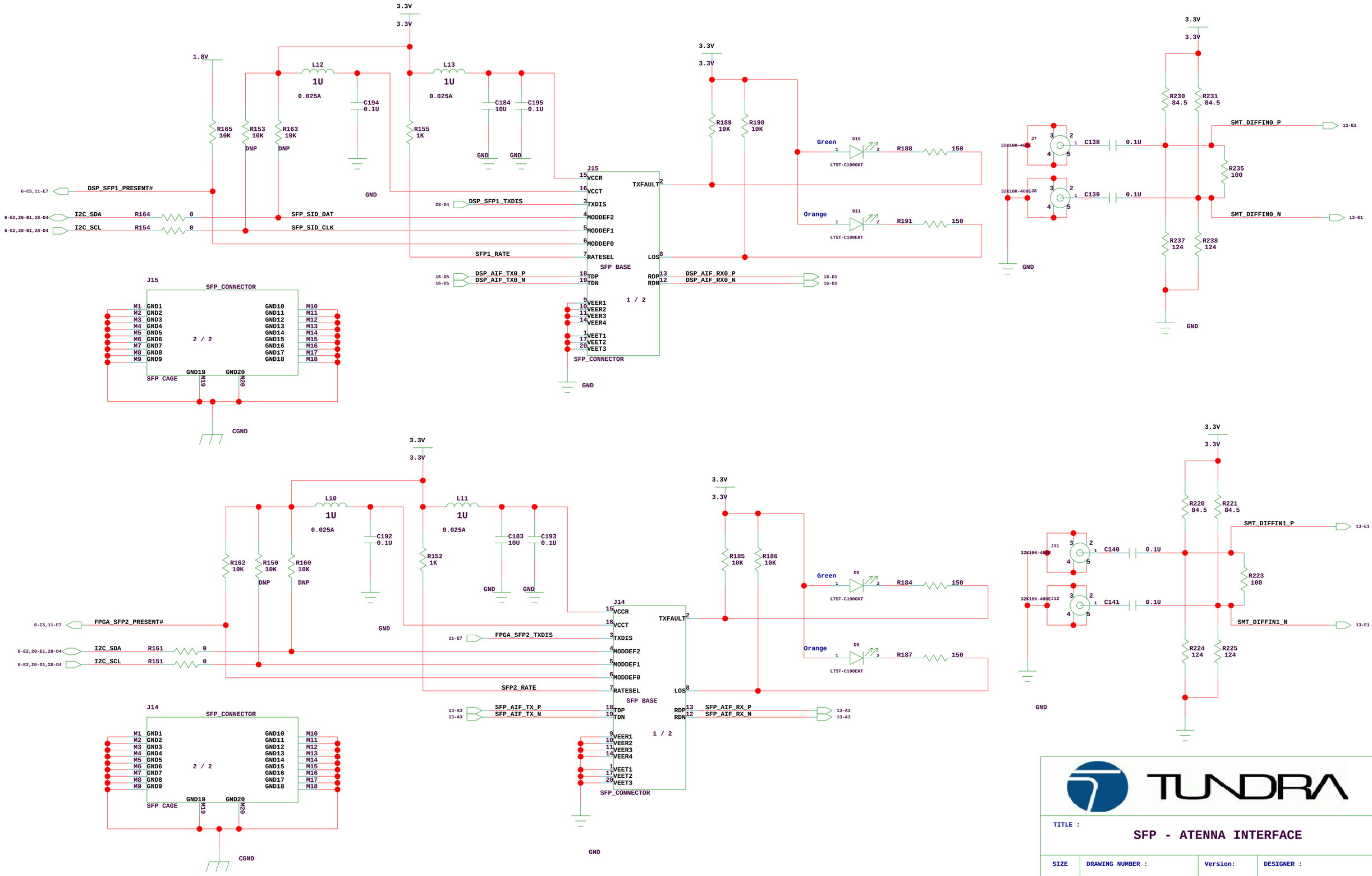
DSP - Power Supply and Decoupling



TUNDRA

TITLE : DSP - POWER SUPPLY			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47	SHEET 19 OF 30		

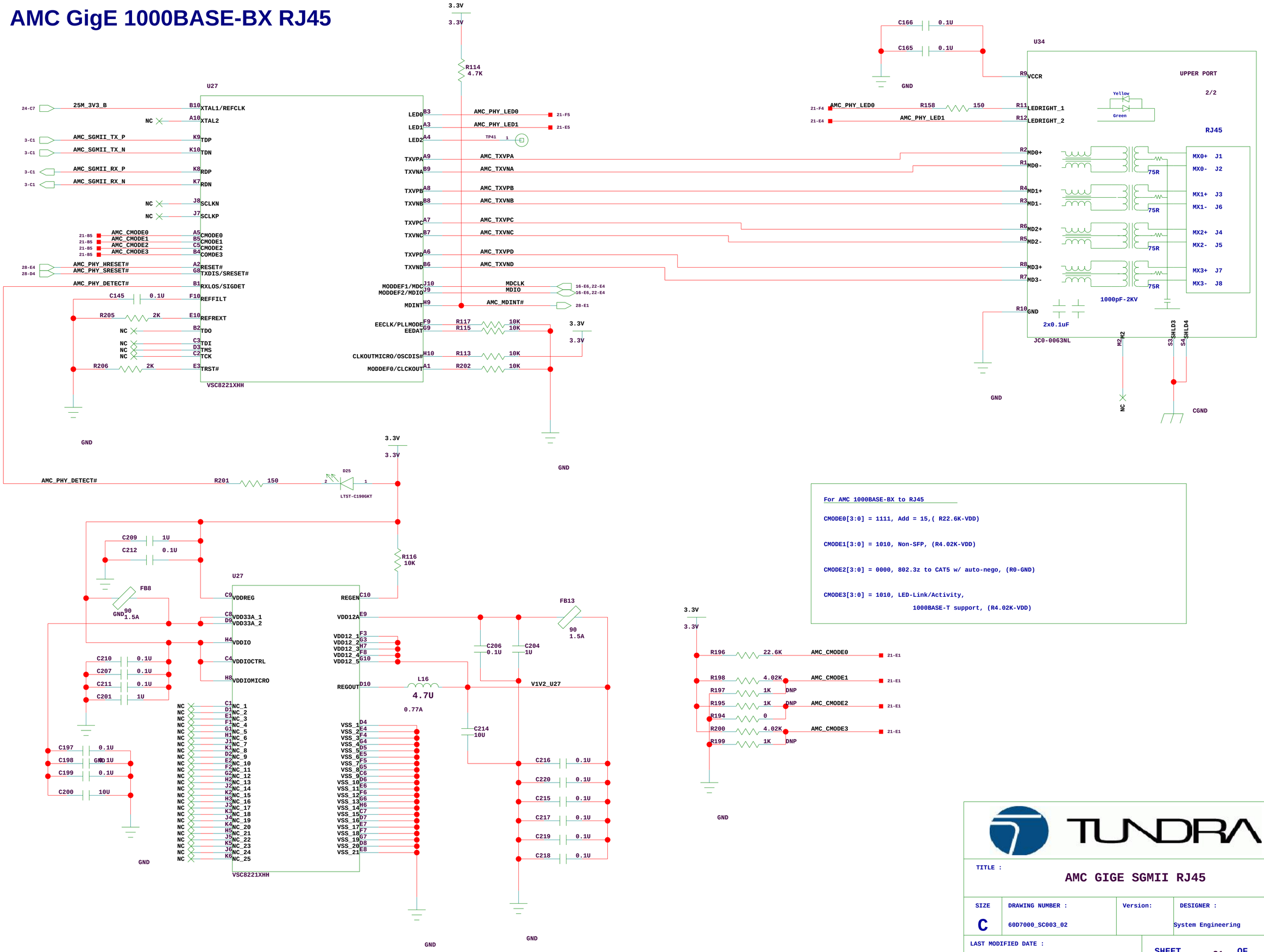
SFP Antenna Interface Connectors



TUNDRA

TITLE : SFP - ATENNA INTERFACE			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47		SHEET 20 OF 30	

AMC GigE 1000BASE-BX RJ45



For AMC 1000BASE-BX to RJ45

CMODE0[3:0] = 1111, Add = 15,(R22.6K-VDD)

CMODE1[3:0] = 1010, Non-SFP, (R4.02K-VDD)

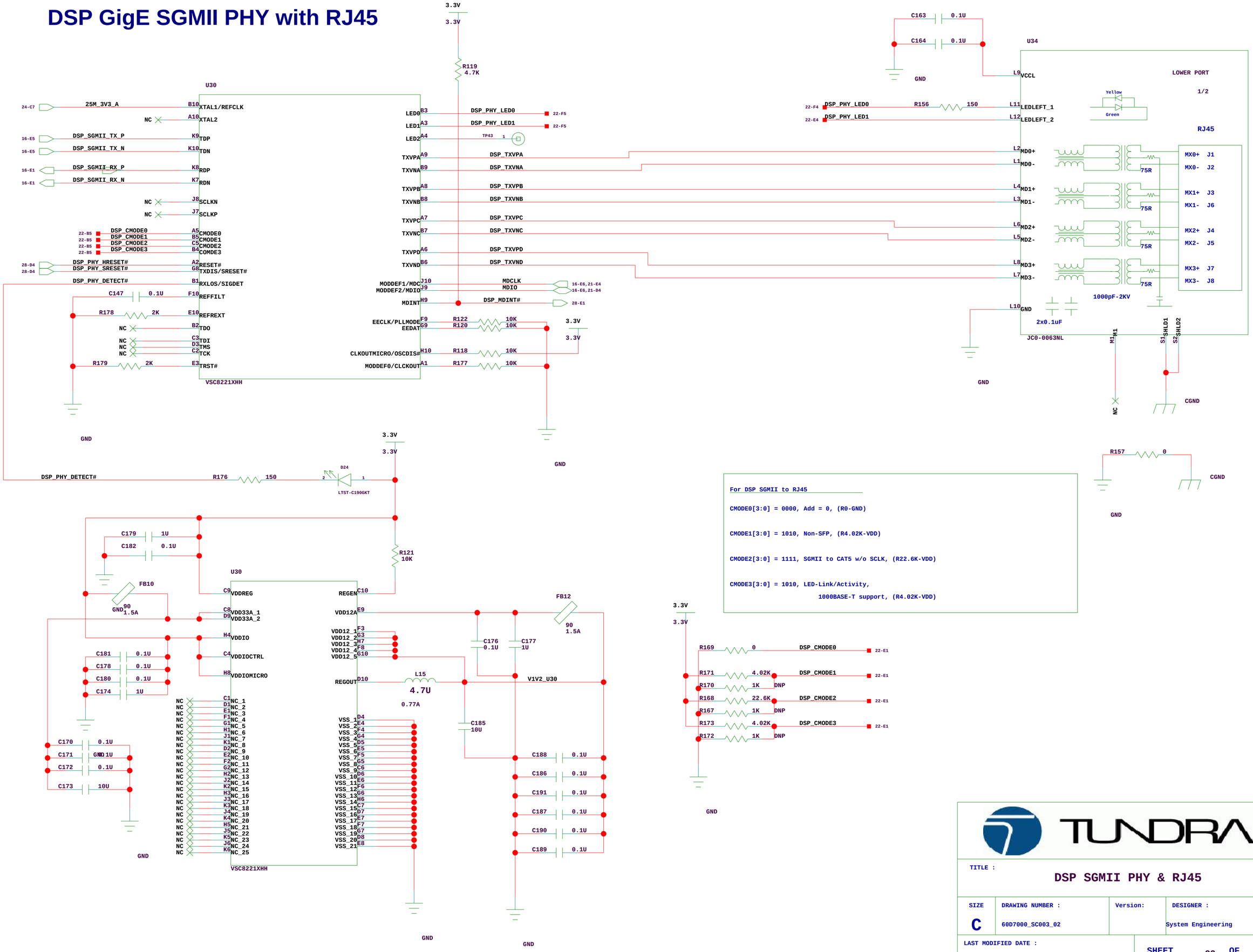
CMODE2[3:0] = 0000, 802.3z to CAT5 w/ auto-nego, (R0-GND)

CMODE3[3:0] = 1010, LED-Link/Activity,
1000BASE-T support, (R4.02K-VDD)

TUNDRA

TITLE : AMC GIGE SGMII RJ45			
SIZE C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47	SHEET 21 OF 30		

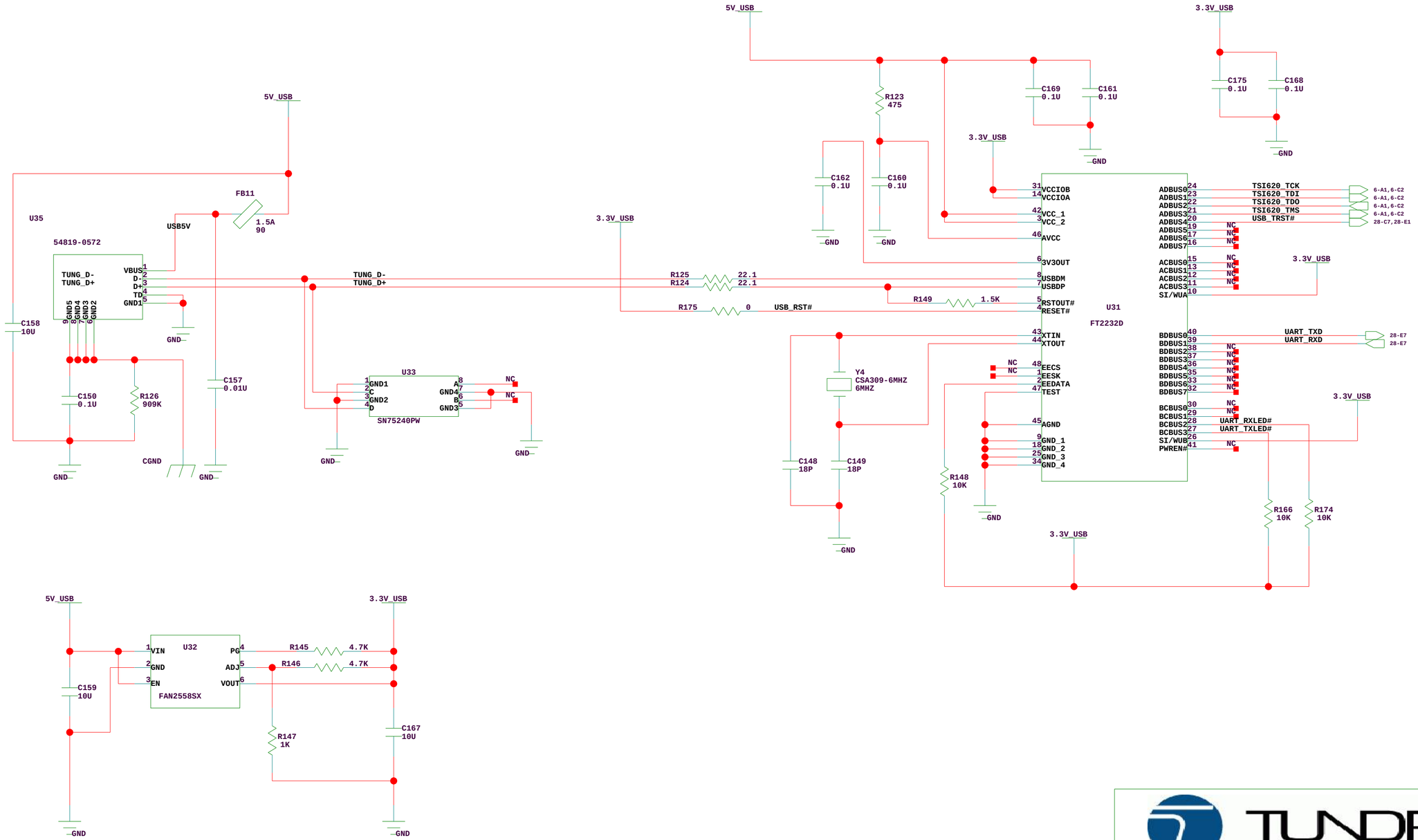
DSP GigE SGMII PHY with RJ45



TUNDRA

TITLE : DSP SGMII PHY & RJ45			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47	SHEET 22 OF 30		

Tsi620 JTAG to USB



TITLE : USB TO TSI620 JTAG			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version: Rev 0	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47	SHEET 23 OF 30		

Clocking Distribution Block

NOTES:

1) 61.44MHz is Default Output
2) Y[0:4] Output is 61.44MHz
3) Y[5:9] Output is 30.72MHz
4) Y[5:9] Output Divider is 2 Changed by I2C

Table 3. Clock Input Function Table

Inputs		Outputs	
SEL1	SEL0	Q	nQ
0	0	PCLK0	nPCLK0
0	1	PCLK1	nPCLK1
1	0	PCLK2	nPCLK2
1	1	PCLK3	nPCLK3

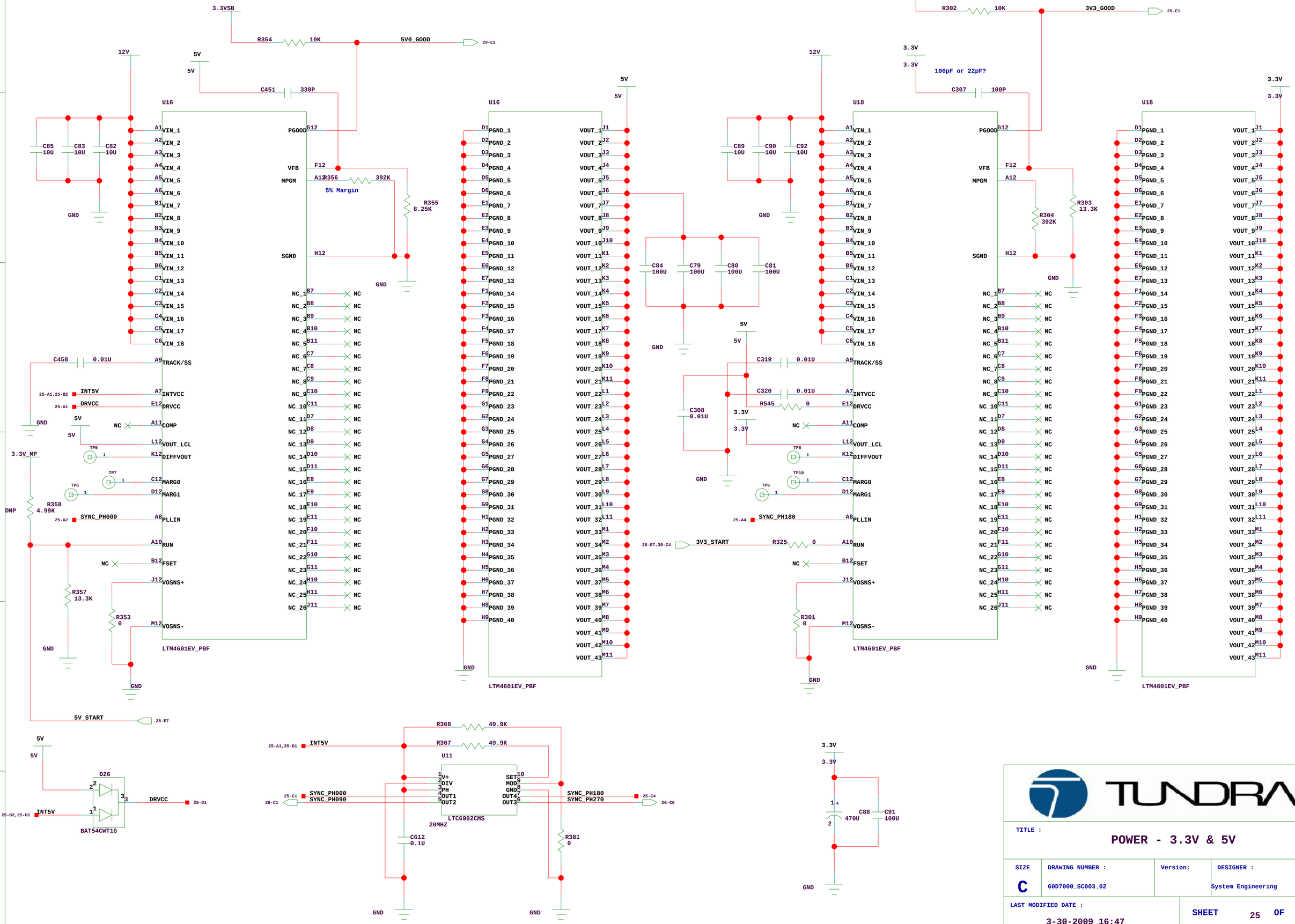
Notes:

Pull-up, Fout = 125MHz

Pull-down, Fout = 156.25MHz

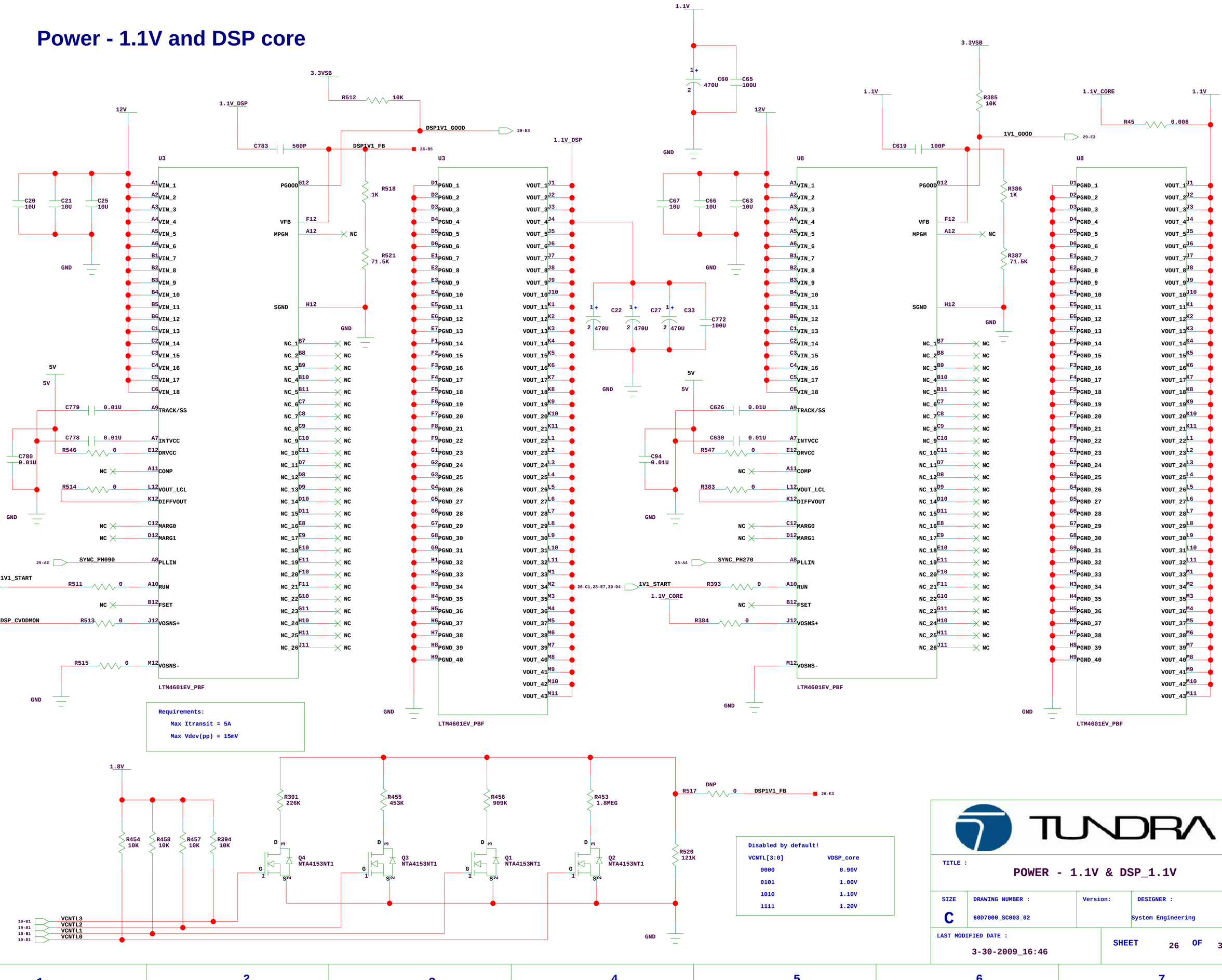
TITLE :	CLOCK DISTRIBUTION
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02
Version: Rev 1	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47	SHEET 24 OF 30

Power - 5V and 3.3V



TITLE : POWER - 3.3V & 5V			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:47		SHEET 25 OF 30	

Power - 1.1V and DSP core



TUNDRA

TITLE :

POWER - 1.1V & DSP_1.1V

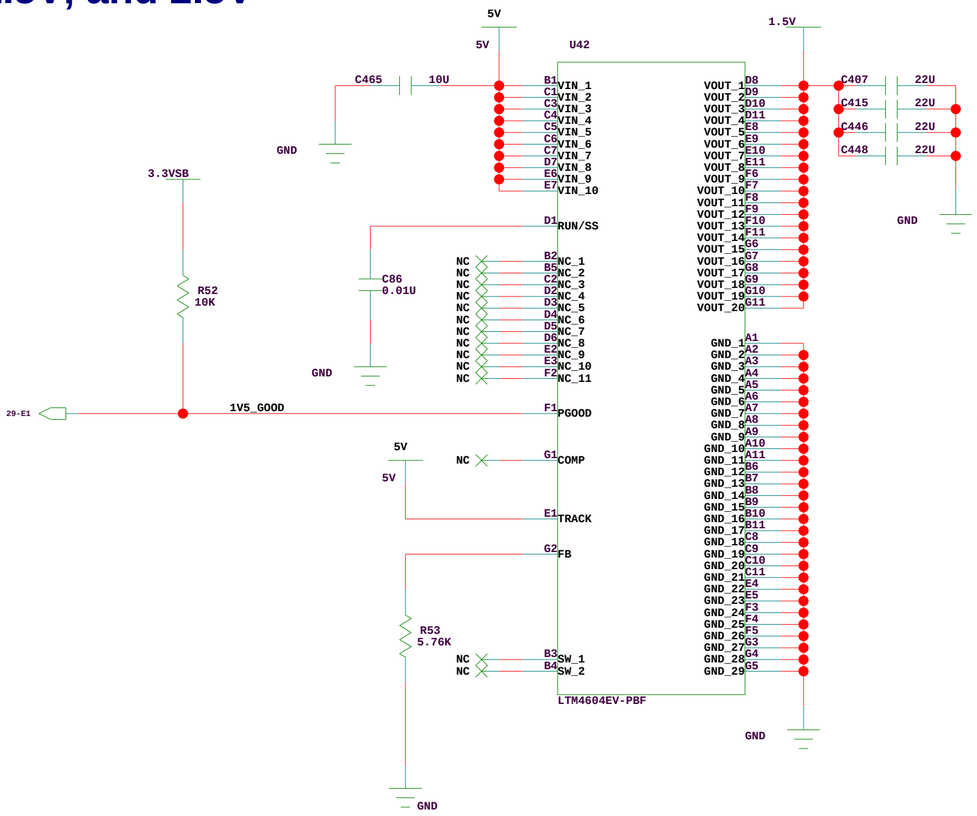
SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02		System Engineering

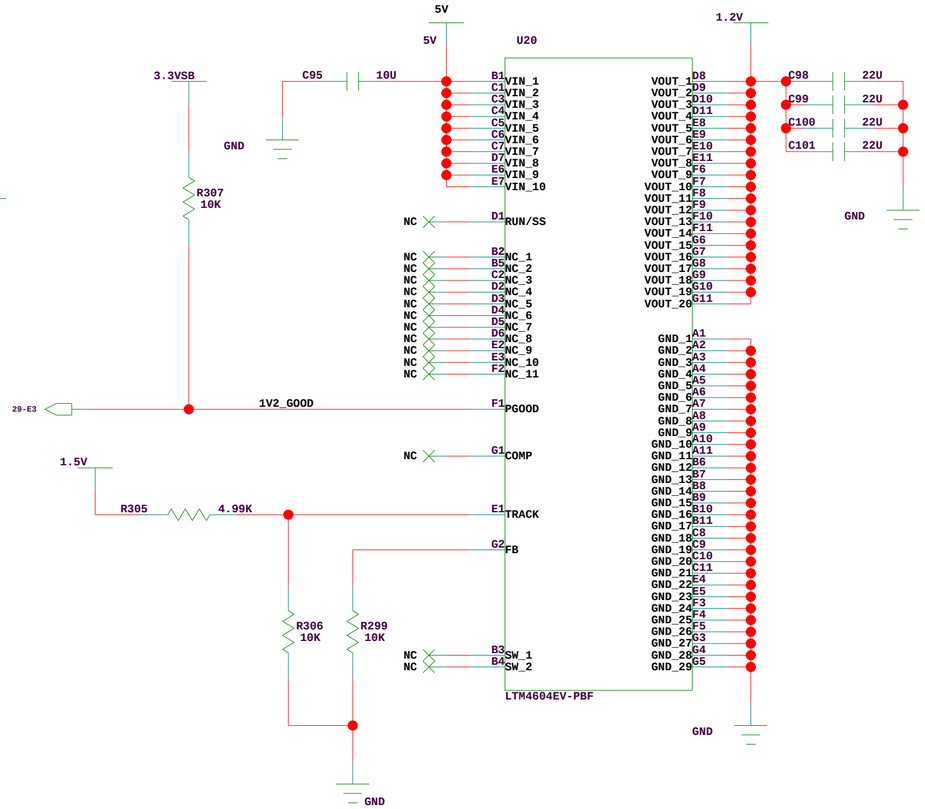
LAST MODIFIED DATE :

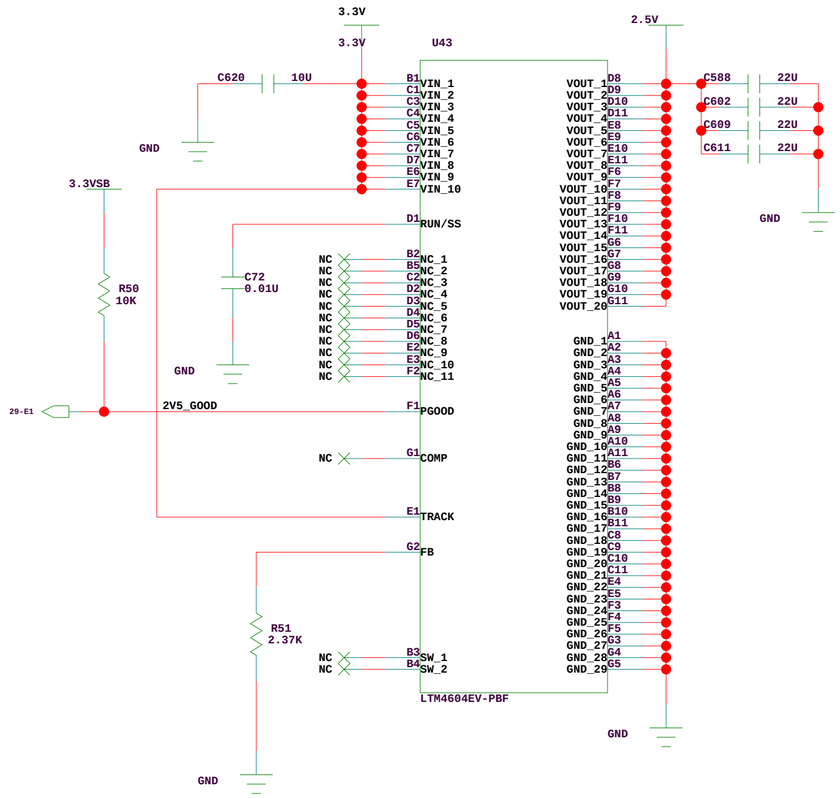
3-30-2009_16:46

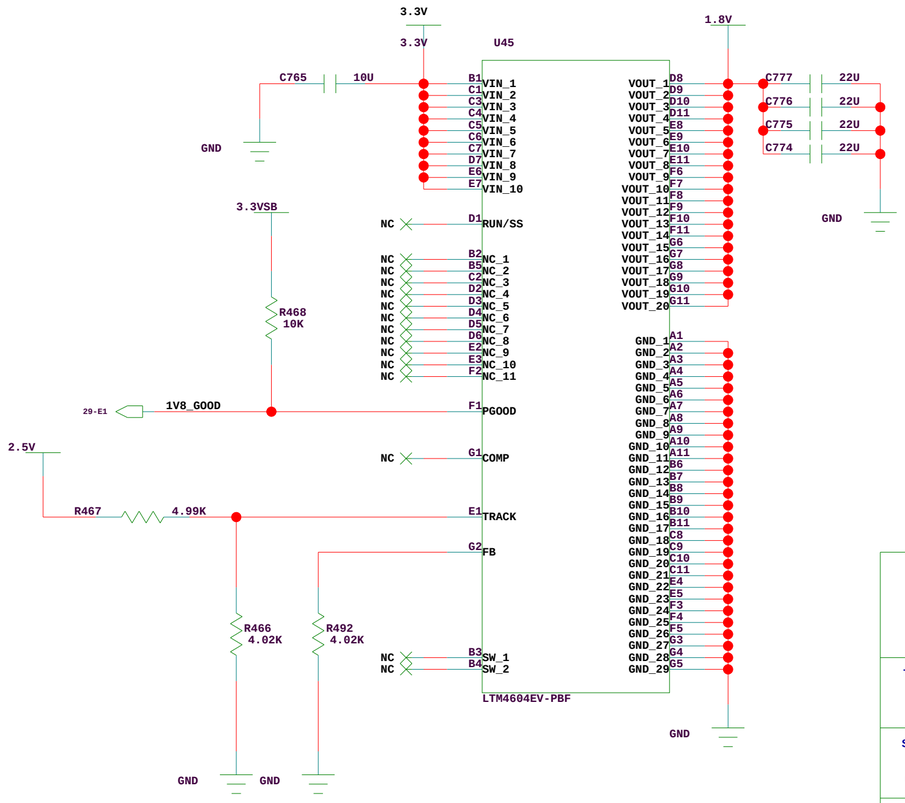
SHEET 26 OF 30

Power - 1.8V, 1.2V, 1.5V, and 2.5V









TUNDRA

TITLE : POWER - OTHERS			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version:	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:46		SHEET 27 OF 30	

System Controller: Digital Block

Bank0 - 1.8V (LVCMOS18)

Bank4 - 3.3V (LVPECL, LVTTL)

U24

DSP_RSTSTAT — GAA1/IO01PDB0V0
PCI_INTD_1V8 — GAA0/IO01NDB0V0
FRAME_SYNC_CLKOUT — GAB1/IO02PPB0V0
PHY_MDINT# — GAB0/IO02NPB0V0
PLL_LOCK — GAC1/IO03PDB0V0
DSP_TIMEOUT1 — GAC0/IO03NDB0V0
156M25_LVPECL_P — GEA1/IO61PDB4V0
156M25_LVPECL_N — GEA0/IO61NDB4V0
USB_TRST# — GEB1/IO62PDB4V0
FPGA_INIT_DONE — GEB0/IO62NDB4V0
25M_3V3_D — GEC1/IO63PDB4V0
WGL_TRST# — GEC0/IO63NDB4V0
DSP_MDINT# — GFA1/IO70PDB4V0
AMC_MDINT# — GFA0/IO70NDB4V0
AFS_SET_3V3 — GFB1/IO71PDB4V0
SAMC_ENABLE# — GFB0/IO71NDB4V0
SAMC_PS1# — GFC1/IO72PDB4V0
PCI_M66EN — GFC0/IO72NDB4V0

BANK0 & BANK4

TSI620_INT# — IO82PSB4V0

EXT_CLKIN — GAC2/IO83PPB4V0
TSI620_RST_IRQ# — IO83NPB4V0
PRPMC_PRSN — GAB2/IO84PDB4V0
PRPMC_RSTOUT — IO84NDB4V0
NSTATUS — GAA2/IO85PDB4V0
CONFIG_DONE — IO85NDB4V0

2 / 5

M1AFS600-FGG256

IO00PDB0V0 — DSP_PORST# — 18-E1
IO00NDB0V0 — DSP_XWRST# — 18-E1
IO04PPB0V0 — DSP_GPIO6 — 18-D4
IO04NPB0V0 — DSP_GPIO7 — 18-D4
IO06PDB0V0
IO06NDB0V0
IO08PDB0V1 — FPGA_GPIO0 — 10-F2
IO08NDB0V1 — FPGA_GPIO1 — 10-E2
IO10PDB0V1 — 1V8_I2CSCL — 18-C2,24-D5
IO10NDB0V1 — 1V8_I2CSDA — 18-C2,24-D5
IO12PDB0V1 — DSP_TIMEIN1 — 16-B2
IO12NDB0V1 — EMU_PRESENT# — 18-E6
IO14PDB0V1 — DSP_EMU_RST# — 18-D5
IO14NDB0V1

IO65PDB4V0 — TSI620_GPIO26 — 6-C5
IO65NDB4V0 — TSI620_GPIO27 — 6-C5
IO67PPB4V0 — TSI620_GPIO28 — 6-C5
IO67NPB4V0 — TSI620_GPIO29 — 6-C5
IO76PDB4V0 — TSI620_GPIO30 — 6-C5
IO76NDB4V0 — TSI620_GPIO31 — 6-C5
IO79PDB4V0 — AMC_PHY_HRESET# — 21-E1
IO79NDB4V0 — AMC_PHY_SRESET# — 21-E1
IO81PDB4V0 — NCONFIG — 14-B1
IO81NDB4V0 — PWR_RST_HI — 24-B2
GEA2/IO58PPB4V0 — PCI_INTD — 5-E2,5-E6
IO58NPB4V0 — PCI_INTC — 5-F3,5-F6
GEB2/IO59PDB4V0 — I2C_SDA — 6-E2,20-B1,20-E1
IO59NDB4V0 — I2C_SCL — 6-E2,20-B1,20-D1
GEC2/IO60PDB4V0 — TSI620_BLK_RST# — 6-C2
IO60NDB4V0 — TSI620_TRST — 6-C2
GFC2/IO73PDB4V0 — TSI620_CHIP_RST# — 6-C2
IO73NDB4V0 — DSP_SFP1_TXDIS — 20-E3
GFB2/IO74PPB4V0 — DSP_PHY_HRESET# — 22-E1
IO74NPB4V0 — DSP_PHY_SRESET# — 22-E1
GFA2/IO75PDB4V0 — FPGA_HRST# — 11-C2
IO75NDB4V0 — FPGA_SRST# — 11-C2

TP34 TP40 TP39 TP20

Bank1 - 3.3V_MP (HotSwap support)

Bank2 - 2.5V (LVDS, LVCMOS25)

U24

BANK1 & BANK2
3 / 5

TP18
28-C2 SYS_RESET#
7-C3 66MHZ_FOR_PCI
28-C2 ACT#
3-E1,28-B6 AMC_SCL
3-E1,28-B6 AMC_SDA

R261 100
13-C1 FPGA_CLKOUT_P
13-C1 FPGA_CLKOUT_N

3.3V_USB
TP17
R566 3.3K
For USB Present indicator
10K R565
GND

TP21

B13 GBA1/IO28PDB1V1
A13 GBA0/IO28NDB1V1
E11 GBB1/IO27PDB1V1
D11 GBB0/IO27NDB1V1
C13 GBC1/IO26PPB1V1
B12 GBC0/IO26NPB1V1

NC H13 GCA1/IO45PDB2V0
NC H14 GCA0/IO45NDB2V0
G13 GCC1/IO43PDB2V0
G11 GCC0/IO43NDB2V0
NC H16 GCB1/IO44PDB2V0
NC H15 GCB0/IO44NDB2V0
NC K16 GDB1/IO53PPB2V0
NC J12 GDB0/IO53NPB2V0
NC J14 GDC1/IO52PPB2V0
NC J16 GDC0/IO52NPB2V0
J13 GDA1/IO54PDB2V0
K13 GDA0/IO54NDB2V0
NC K14 GDA2/IO55PPB2V0
NC L16 IO55NPB2V0
NC L15 GDB2/IO56PPB2V0
NC J11 IO56NPB2V0
NC K11 GDC2/IO57PPB2V0
NC L14 IO57NPB2V0
J15 IO51NSB2V0

M1AFS600-FGG256

TP13
C8 5V_START — 25-B1
C9 AMC_ENABLE# — 3-D2,28-B6
B9 1V1_START — 26-C1,26-C4,30-D4
B8 3V3_START — 25-C4,30-C4
F9 HOTSWAP_SWITCH — 28-B6
E9 R549 33.2 LOCAL_PCICLK — 7-B1
A10 AMC_GA0 — 3-C2,28-B6
A9 AMC_GA1 — 3-C2,28-B6
D10 AMC_GA2 — 3-D2,28-B6
F10 GA_PULLUP — 28-C7
B11 UART_TXD — 23-D7
A11 UART_RXD — 23-D7
C11 LED_GREEN — 30-A4
C10 LED_RED — 30-A4
B14 LED_YELLOW — 30-A4
A14 LED_BLUE — 30-A4

F12 LED_RED2 — 30-E5
F11 LED_RED1 — 30-E3
H12 LED_GREEN2 — 30-E5
H11 LED_GREEN1 — 30-E3

E12 IO33PSB2V0 NC — LVCMOS25

D13 LED_BLUE1 — 30-E3
D14 LED_BLUE2 — 30-E5
D15 NC
D16 NC
E15 NC
E14 NC
G16 R265 165 EXT_LVDS_CLK_P — R266 140 — 24-D1
G14 R263 165 EXT_LVDS_CLK_N — 24-D1
F14 NC
F13 NC
F15 R253 165 AFS_LVDS_OUT_P — R254 140 — 10-C1
F16 R252 165 AFS_LVDS_OUT_N — 10-C1

IO16PDB1V0
IO16NDB1V0
IO18PDB1V0
IO18NDB1V0
IO20PDB1V0
IO20NDB1V0
IO22PDB1V0
IO22NDB1V0
IO23PDB1V1
IO23NDB1V1
IO24PDB1V1
IO24NDB1V1
IO25PDB1V1
IO25NDB1V1
IO29PDB1V1
IO29NDB1V1
IO36PDB2V0
IO36NDB2V0
IO47PDB2V0
IO47NDB2V0
GBA2/IO30PDB2V0
IO30NDB2V0
GBB2/IO31PDB2V0
IO31NDB2V0
GBC2/IO32PDB2V0
IO32NDB2V0
GCC2/IO41PPB2V0
IO41NPB2V0
GCA2/IO39PDB2V0
IO39NDB2V0
GCB2/IO40PDB2V0
IO40NDB2V0

PCI_INTC (OpenDrain) is AFS600 Interrupt to PrPMC

PCI_INTD(OpenDrain) is DSP Interrupt to PrPMC

C241 0.1U — ACT# — 28-E5
SW1 EVQPAC07K
3.3V_MP
R229 10K
R222 10K
C237 0.1U
R226 10K
SW3 EVQPAC07K
SYS_RESET# — 28-E5
GND

C239 0.1U
SW2 GT11MABE
M14
M25
NC
HOTSWAP_SWITCH — 28-E7
GND CGND

3.3V
3.3V
R134 84.5
R136 124
LVPECL Termination
Vcom = 2.0V
R138 100
R135 84.5
R137 124
156M25_LVPECL_P — 24-B4,28-E1
156M25_LVPECL_N — 24-B4,28-E1
GND

32K10K-400E
J13
R112 0 EXT_CLKIN — 28-D1
GND

3.3V
3.3V
10K R159 USB_TRST# — 23-D7,28-E1
10K R236 WGL_TRST# — 6-A3,28-E1

3.3V_MP
GA_PULLUP — 28-E7
R242 33K
R243 33K
R244 10K
R247 3.3K
R245 3.3K
R246 3.3K
3-E1,28-E5 AMC_SDA
3-E1,28-E5 AMC_SCL
3-D2,28-E7 AMC_ENABLE#
3-C2,28-E7 AMC_GA0
3-C2,28-E7 AMC_GA1
3-D2,28-E7 AMC_GA2

Notes:

AMC Mode - Hot Swap Switch

Standalone - Power-ON/OFF Switch

TUNDRA

TITLE :

AFS600 - DIGITAL BLOCK

SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02	Rev 1	System Engineering

LAST MODIFIED DATE : 3-30-2009_16:46

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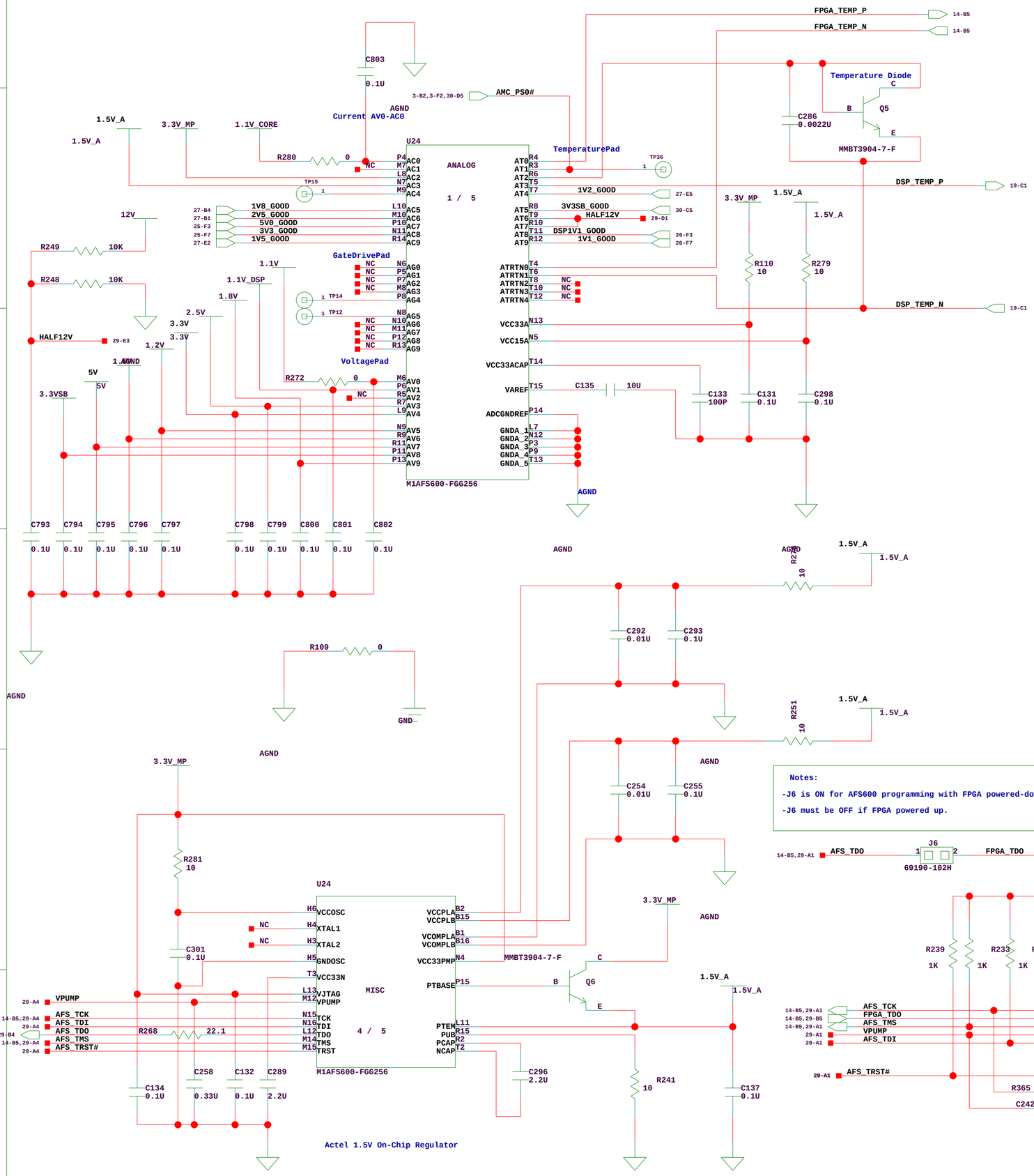
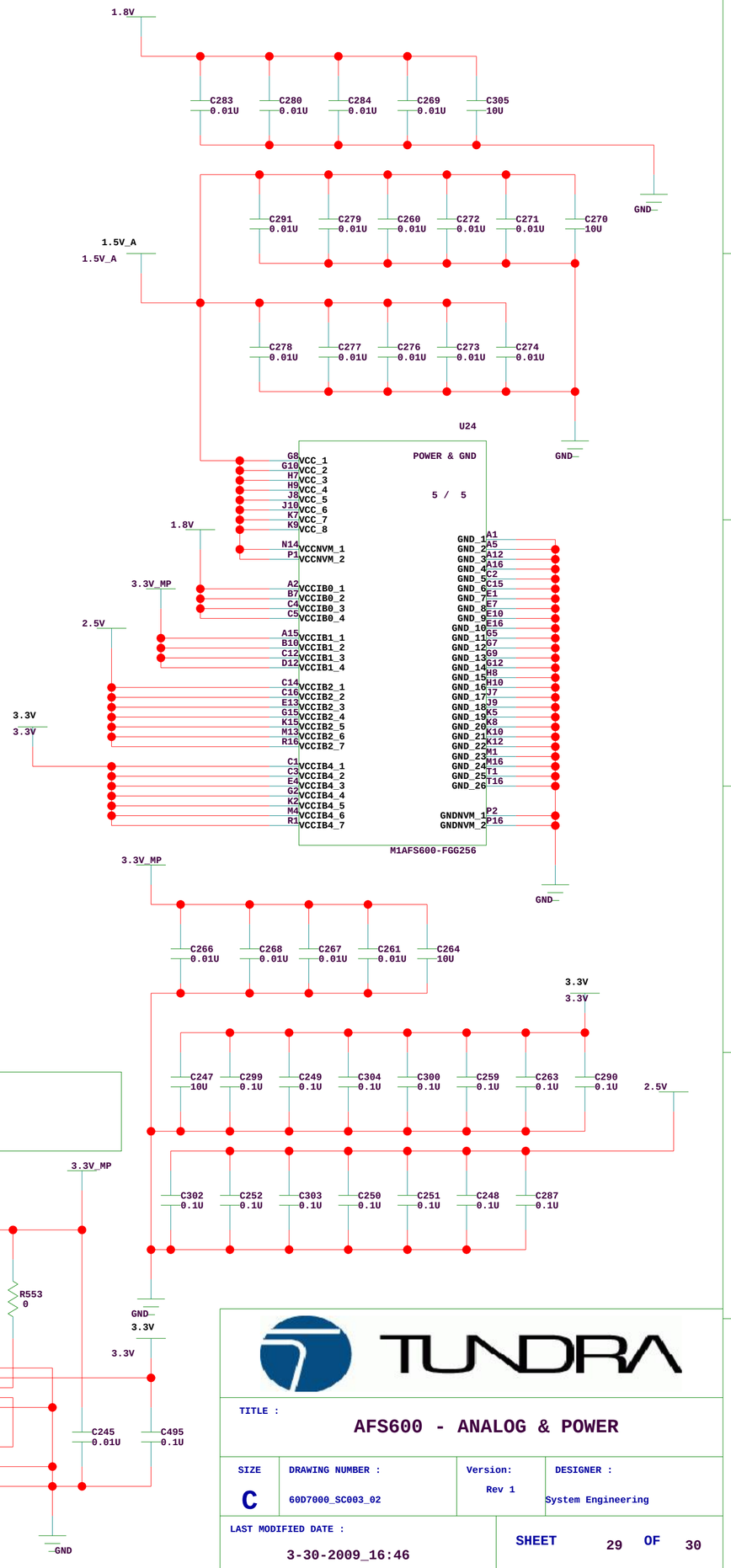
System Controller: Analog, MISC, and Power



Notes:

-J6 is ON for AFS600 programming with FPGA powered-down

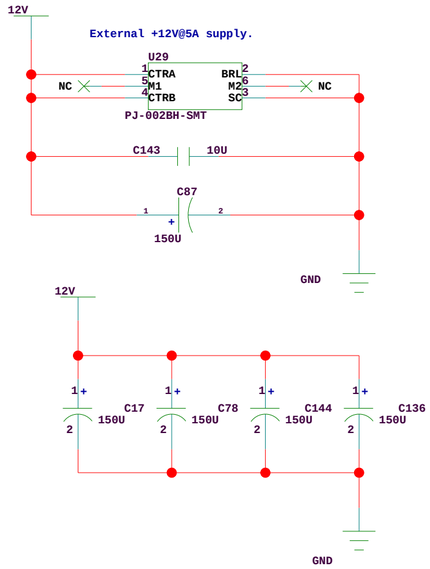
-J6 must be OFF if FPGA powered up.

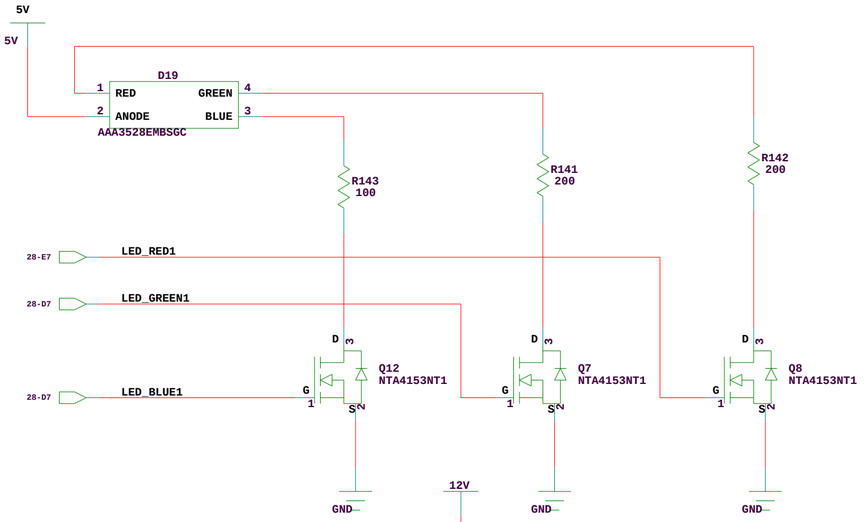


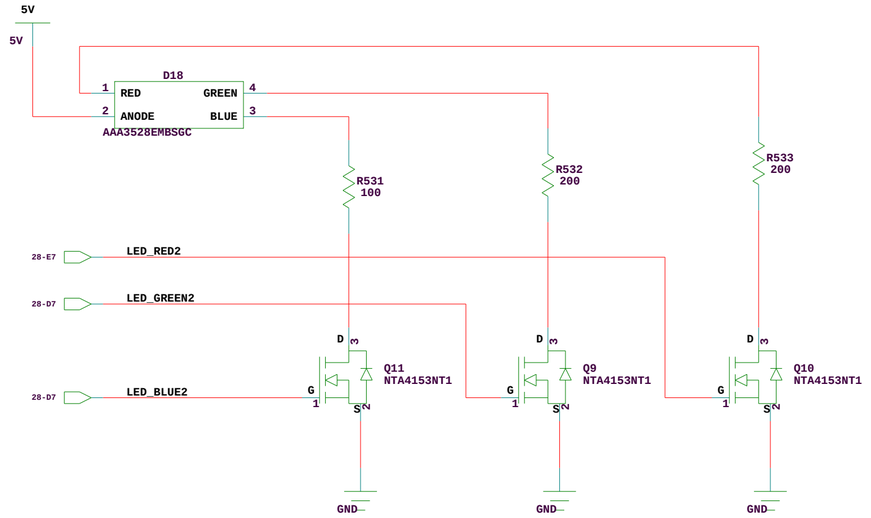
TUNDRA

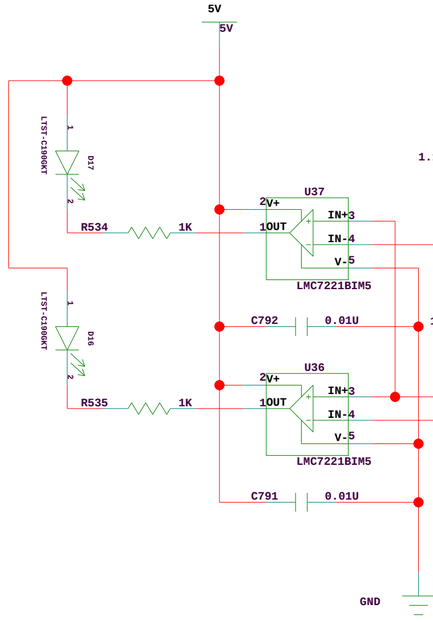
TITLE : AFS600 - ANALOG & POWER			
SIZE: C	DRAWING NUMBER : 60D7000_SC003_02	Version: Rev 1	DESIGNER : System Engineering
LAST MODIFIED DATE : 3-30-2009_16:46	SHEET 29 OF 30		

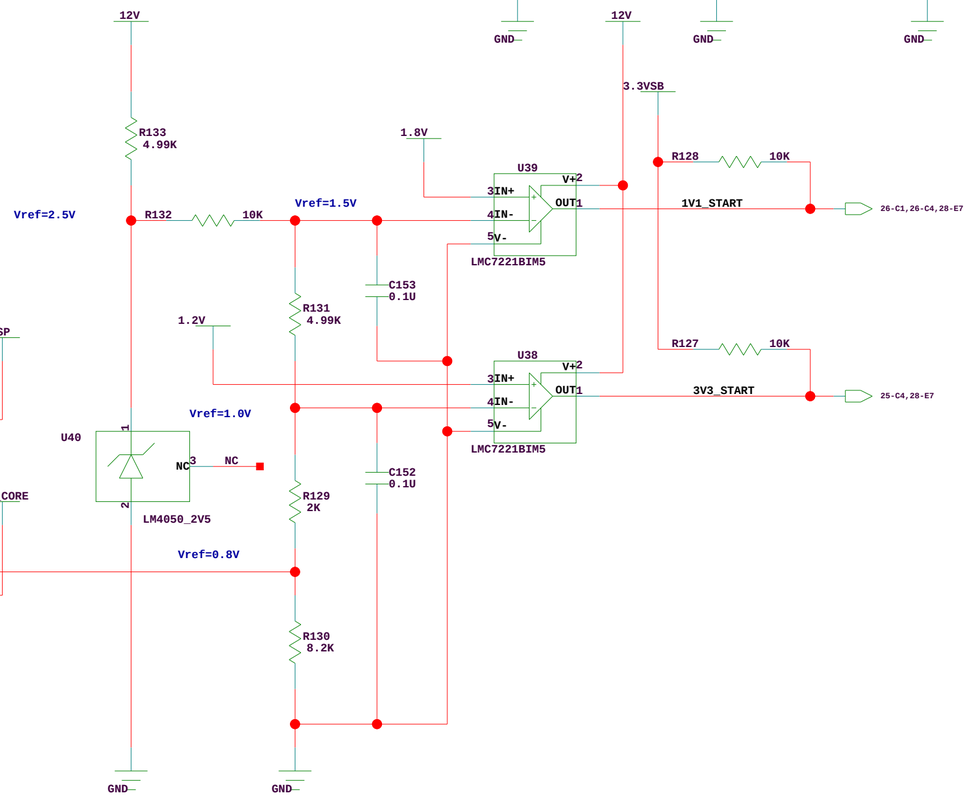
Sequencing Control, LEDs, and Management Power

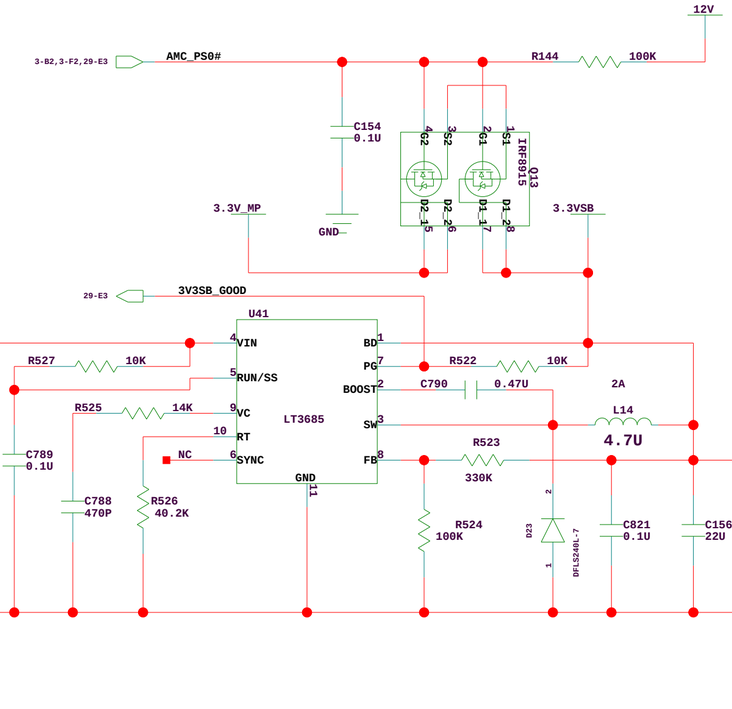


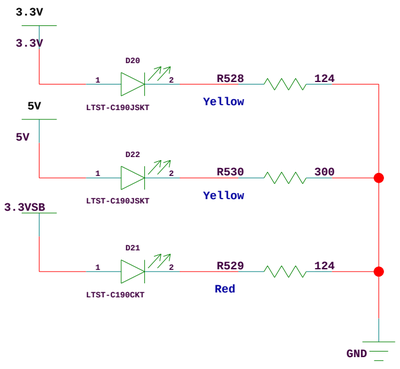


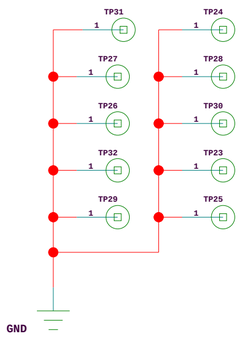


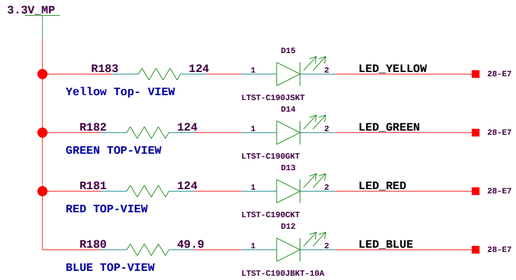


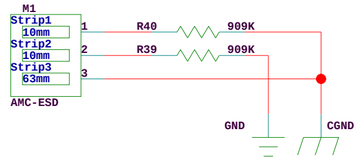












TUNDRA

TITLE :

SEQUENCING & LEDS

SIZE	DRAWING NUMBER :	Version:	DESIGNER :
C	60D7000_SC003_02	Rev 1	System Engineering

LAST MODIFIED DATE : 3-30-2009_16:46

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