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Revisions

Rev	Change Description	Date	Approved
X1	1. Changes made as per TRD (Reference Design-27514) 2. Added a Filter Bead L209 to VSS_LV_NEXUS. Initial PPL Release	15 Mar 13	Barbara
X2	1. Pin conflicting nets PTC10, PTC13, PTC14, PTE14 moved to J201A.72, J201A.74, J201A.76, J201A.78 pins respectively. 2. PTC2 connection is moved from J201A.23 to J201A.20 3. Removed PTI7 Connection from J201A.92 4. Added Resistor 4.99K on the ENET_MDIO signal. A070 Release	20 Mar 13	Barbara
X3	1. Added a zero ohm resistor on PTC12 net connection to J201A.47 2. Removed the L209 Filter bead and U1.K16 is connected to GND.	27 Mar 13	Barbara
X4	1. Net name 'SBC_CS' is changed to 'SBC_CS_B'.	04 Apr 13	Barbara
A	A085 Release	05 Apr 13	Barbara
AX1	1. Resistor R15-249K changed to 24.9K(470-30990) 2. Resistor R19-80.6K changed to 8.06K(470-30936) 3. Resistor R16 -2.15K changed to 510(470-80725) 4. Resistor R20 -82.5K changed to 18K(470-30974) 5. Cap C18 -56PF changed to 680PF(150-79131) 6. Cap C20-100PF changed to 150PF(150-77532) 7. Cap C24-10uF changed to 22uF(150-77933) 8. Diode D10 and resistor R13 marked as DNP. 9. R14 -200K changed to 11K(470-30951). 10. Added 1x2 HDR (J27) and 10K pullup resistor (R25) on the SBC_FS1 to V_PRE. 11. SBC_IO3 pulled up to SB_VCORE and the pull down option removed. 12. J25 HDR2x3 (211-75026-00) repalced by R26 & R27 - 4.99K(470-30913) to DNP 13. Cap C17-22UF changed to 4.7UF(150-30266) 14. Cap C252 -22UF changed to 4.7UF(150-30266) 15. Cap C11-4.7UF changed to 1.0UF(150-77475) 16. SW4(510-75084) added for SBC_IO0	18 Sep 14	Fraser Jamaal
AX2	1. SW4 part (510-75084) changed to (510-75093) 2. R280-4.7K(470-30913), C262-0.1uf(150-75142) connected to Pin 2 of SW4 3. R282-24.9K&R283-8.06K connected to J9 Pin 3 4. J25 1x2H(210-75439)added across the R236-511k(470-31141)and SBC_IO1. 5. D19-(9480-75144), J28-2x2H(211-75268) Q3-(480-78185) added on V_PRE circuitry.	24 Sep 14	Fraser Jamaal
AX3	1. Resistor R250-511K changed to 10K(470-75416) 2. Resistor R236-511K changed to 100K(470-75597) 3. R245, R238, R248-511K(470-31141) are changed to 100K(470-75597). 4. Resistor R246-511K(470-31141) removed. 5. Resistor R240, R239, R252, R249, R237, R247-4.99K(470-30913)are removed.	25 Sep 14	Fraser Jamaal
AX4	1. Removed the pull up resistors on the Power SBC's select pin (U2.31) and replaced two pull down resistors(49.9K 4.9K) by a single pull down resitor (5.1K ohm). 2. 250pF capacitors C5, C6, C259 & C260 changed to 220pF capacitor as the 250pF capacitor was obsoleted. A070 Release	08 Oct 14	Fraser Jamaal
B	Revision-B A085 Release	14 Oct 14	Fraser Jamaal
B1	U2, replace 315-79478 with 315-80391	05 Mar 15	DK
C	Revision-C A085 Release 1. U2 is changed to 315-80572 (FS6522LAE); 2. Y200 is change to 230-75398 (ECS-3953C-080B) 3. L3 is change to 180-78059 (ACM90V-701-2PL-TL) 4. R20 is change to 470-81693	30 Jul 18	Dennis Zeng
C1	Add jumper setting table (see page 3)	24 Oct 18	J. Q.

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Drawn by: Velmurugan	Page Title: Title Page		
Approved: Fraser Jamaal	Size C	Document Number SCH-27887; SPF-27887	Rev C1
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1. Unless Otherwise Specified:
 All resistors are in ohms, 5%, 1/8 Watt
 All capacitors are in uF, 20%, 50V
 All voltages are DC
 All polarized capacitors are aluminum electrolytic

2. Interrupted lines coded with the same letter or letter combinations are electrically connected.

3. Device type number is for reference only. The number varies with the manufacturer.

4. Special signal usage:
 _B Denotes - Active-Low Signal
 <> or [] Denotes - Vectored Signals

Power & Ground Nets

MOTHER BOARD SUPPLIED POWER

1.25V_MB_SR	1.25V	
3.3V_MB_SR	3.3V	
5V_MB_SR	5V	From the MB switching regulator - only used to provide power back to the MB I/O circuits
5V_MB_LR	5V	From the MB linear regulator - used for 3.3V on the daughter card

POWER TO THE MOTHER BOARD

VDD_HV_IO_MAIN	3.3V	Power to the MotherBoard Transceivers
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EXTERNALLY SUPPLIED POWER

EXT_PWR	12V	External power supplied through the barrel connector to the System Basis Chip (SBC) - MC33907
EXT_PWR_SW	12V	EXT_PWR out of the power switch - used by the SBC to detect input power
VSUP	12V	EXT_PWR_SW after the reverse voltage protection diode
1.25V_DC_LR	1.25V	External power into pin 1 of the terminal block
3.3V_DC_LR	3.3V	External power into pin 2 of the terminal block
5V_DC_LR	5V	External power into pin 3 of the terminal block

SYSTEM BASIS CHIP (SBC) POWER NETS

VSUP12	12V	Power into the pre-regulator switching regulator in the SBC
V_PRE	6.5V	Power out of the pre-regulator switching regulator in the SBC
SB_VCORE	3.3V	Power out of the core switching regulator in the SBC
SB_VAUX	3.3V	Power out of the VAUX linear regulator in the SBC
SB_VCCA	3.3V	Power out of the VCCA linear regulator in the SBC
VCAN	5V	Power out of the CAN linear regulator in the SBC

POWER TO THE MCU

VDD_LV_CORE	1.25V	Power to the core logic on the MCU
VDD_LV_EXT	1.25V	Power derived from VDD_HV_PMU and regulated by the MCU through an external transistor
VDD_LV_PLL	1.25V	Power to the pll circuit on the MCU
VDD_HV_PMU	3.3V	Power to the pmu circuit on the MCU
VDD_HV_IO	3.3V	Power to the I/O circuits on the MCU
VDD_HV_OSC0	3.3V	Power to the oscillator circuit on the MCU
VDD_HV_FLA0	3.3V	Power to the flash memory circuit on the MCU
VDD_HV_ADV0/1	3.3V	Power to the ADC circuit on the MCU
VDD_HV_ADR0	3.3V	Reference voltage to the ADC0 circuit on the MCU
VDD_HV_ADR1	3.3V	Reference voltage to the ADC1 circuit on the MCU
VDD_LV_NEXUS	1.25V	Power to the NEXUS circuit on the MCU
VDD_LV_LFAST	1.25V	Power to the LFAST circuit on the MCU

GROUND NETS

GND	0V	
VSS_PLL	0V	Filtered ground for the on chip PLL circuit
VSS_OSC	0V	Filtered ground for the on chip oscillator circuit
VSSA	0V	Filtered ground for the on chip ADC circuits
VSS_LFAST	0V	Filtered ground for the on chip LFAST circuit



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REF DES	JUMPER(DEFAULT)	PAGE NAME
J6	2-3	04 MPC5744 MCU PART1
J20,J21,J22,J23,J24,J3,J2,J18	3-4	04 MPC5744 MCU PART1
J7	1-2, 3-4, 5-6	05 MPC5744 MCU PART2
J13	1-2	05 MPC5744 MCU PART2
J28	1-2, 3-4	06 Power, RST, LIN, CAN, SIPI
J15,J27	1-2	06 Power, RST, LIN, CAN, SIPI
J8	1-3, 2-4	06 Power, RST, LIN, CAN, SIPI
J19,J17	2-3, 5-6, 8-9, 11-12	06 Power, RST, LIN, CAN, SIPI
J9	3-4	06 Power, RST, LIN, CAN, SIPI
J1,J25	NONE	06 Power, RST, LIN, CAN, SIPI
J14	2-3	08 MB Connections

REF DES	ASSY_OPT	PAGE NAME
C247,R274,TP2	DNP	04 MPC5744 MCU PART1
JP200,JP204,JP201,JP203	DNP	05 MPC5744 MCU PART2
D10,R21,R13	DNP	06 Power, RST, LIN, CAN, SIPI
C260,C259	DNP	07 JTAG & NEXUS
R276	DNP	08 MB Connections

REF DES	SWITCH(DEFAULT)	PAGE NAME
SW4	A	06 Power, RST, LIN, CAN, SIPI
SW3	OFF	06 Power, RST, LIN, CAN, SIPI

Sheet 4

MPC5744P MCU - part 1 of 2
 Power Selector for VDD_LV_CORE
 Power Selector for VDD_HV_PMU
 Power Selector for VDD_HV_IO
 Power Selector for VDD_HV_OSC0
 Power Selector for VDD_HV_FLA0
 Power Selector for VDD_HV_ADV0/1
 Power Selector for VDD_HV_ADR0
 Power Selector for VDD_HV_ADR1
 VSS_OSC, VSSA filters

Sheet 6

External Power Jack
 External Power Switch & LED
 External Power Terminal Block
 Terminal Block Power LEDs
 SBC Power Supply
 Vcca/Vaux Voltage Sel Header
 SBC I/O & MCU FCCU_F0,1 Header
 SBC Power LEDs (V_PRE, VCCA,
 VAUX, VCAN, VCORE)
 SBC FS0 and FS1 LEDs
 CAN, LIN, and SIPI Interface
 RESET & POR Push Buttons & LEDs
 SIPI, CAN, & LIN Source Headers

Sheet 5

MPC5744P MCU part 2 of 2
 MC_RGM Boot Selector
 40 MHz XTAL
 8 MHz Crystal Oscillator
 SMA for External Clock
 VSS_PLL, VSS_LFAST filters

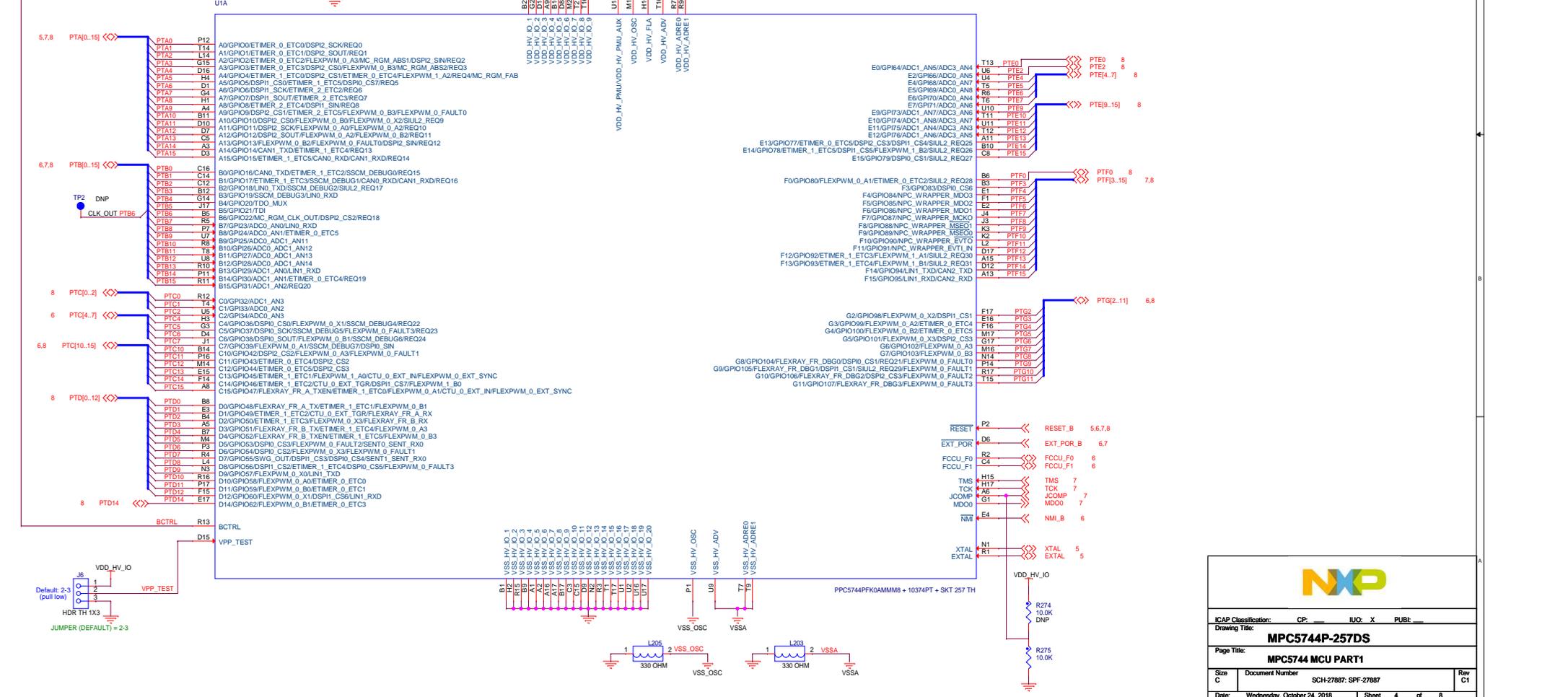
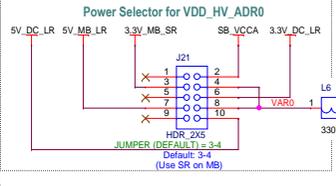
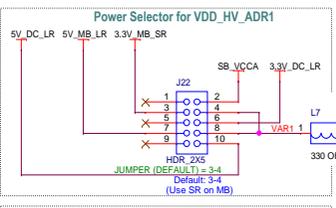
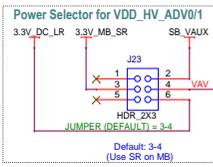
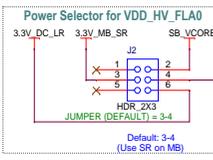
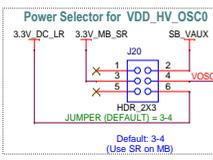
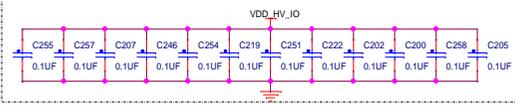
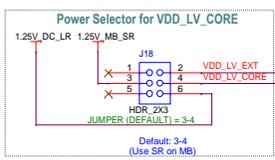
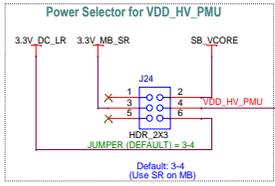
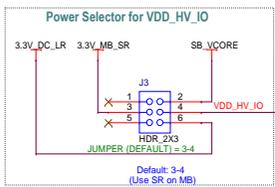
Sheet 7

Nexus Connector
 JTAG Connector
 AURORA Connector

Sheet 8

Motherboard Connectors





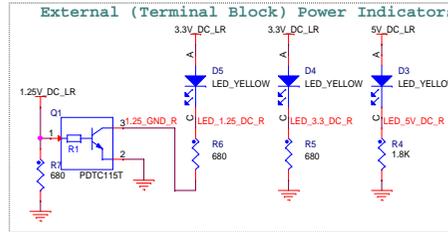
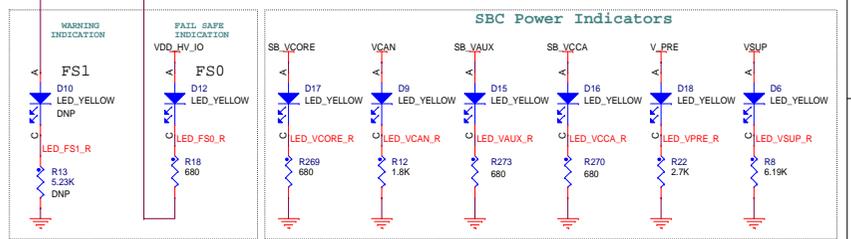
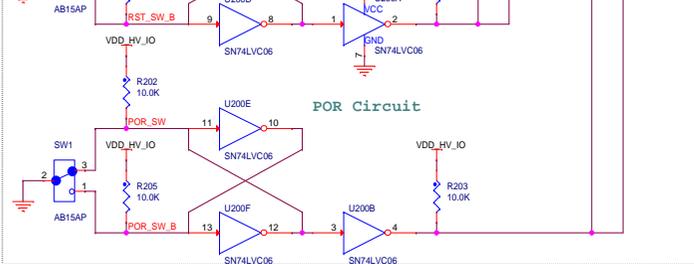
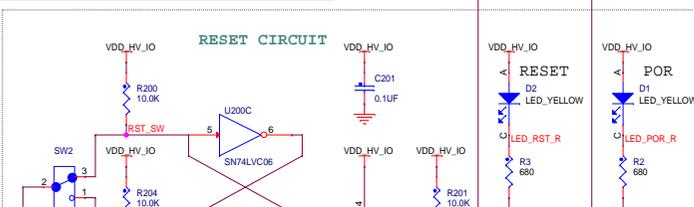
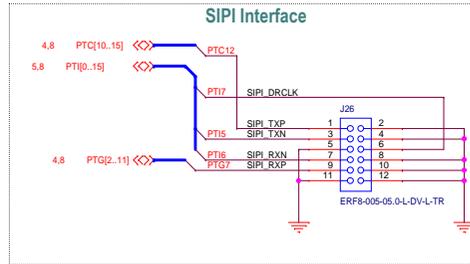
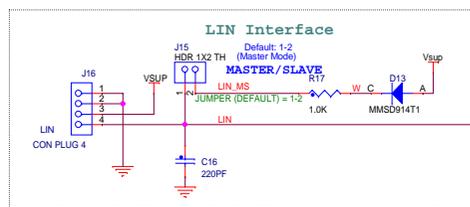
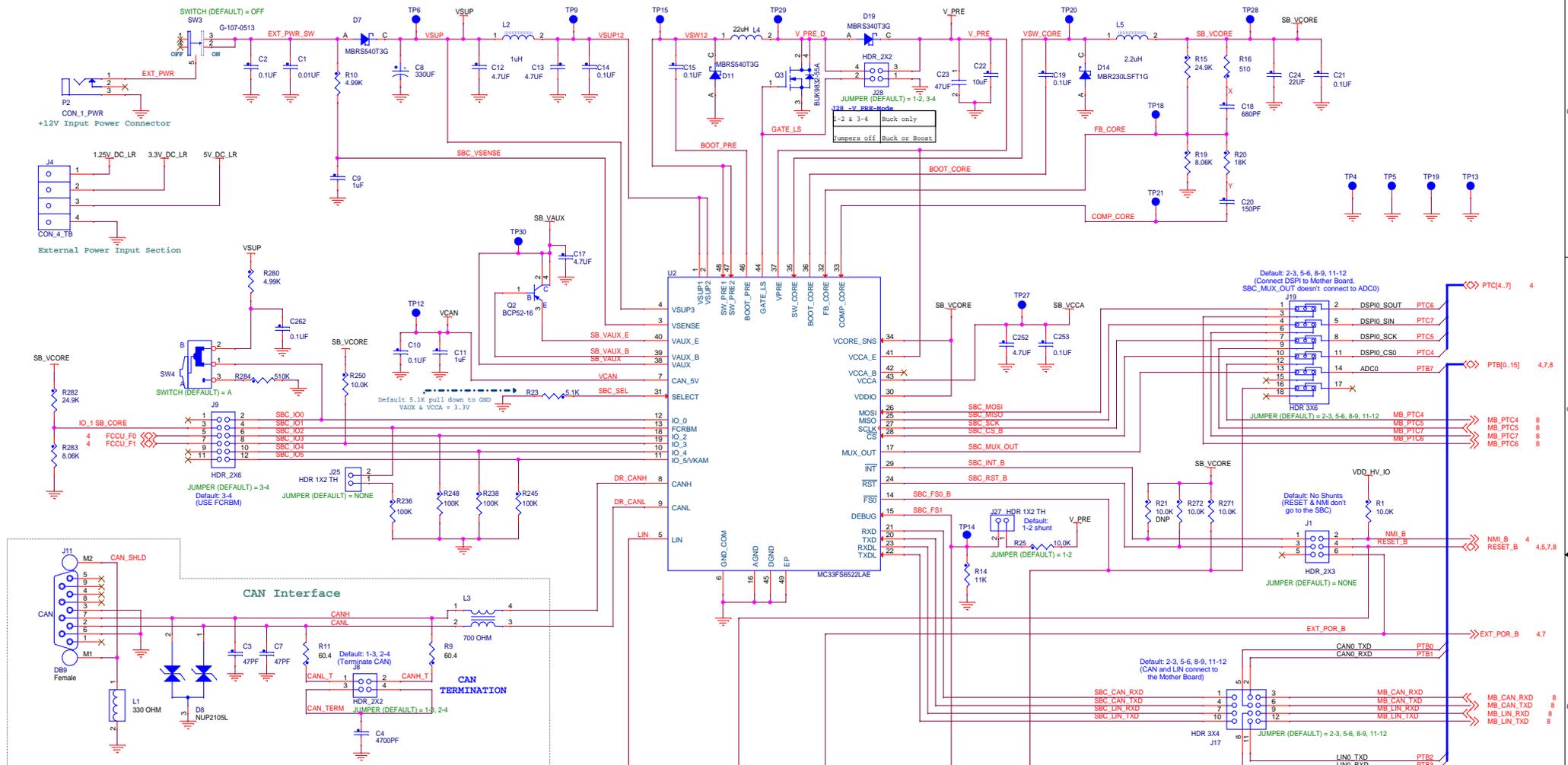
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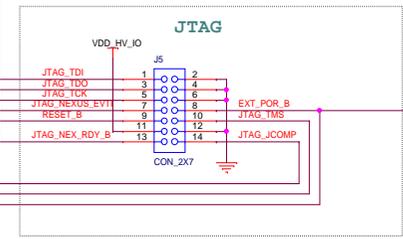
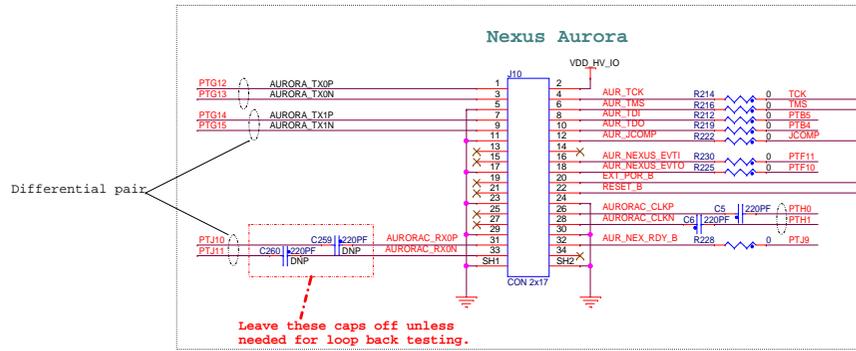
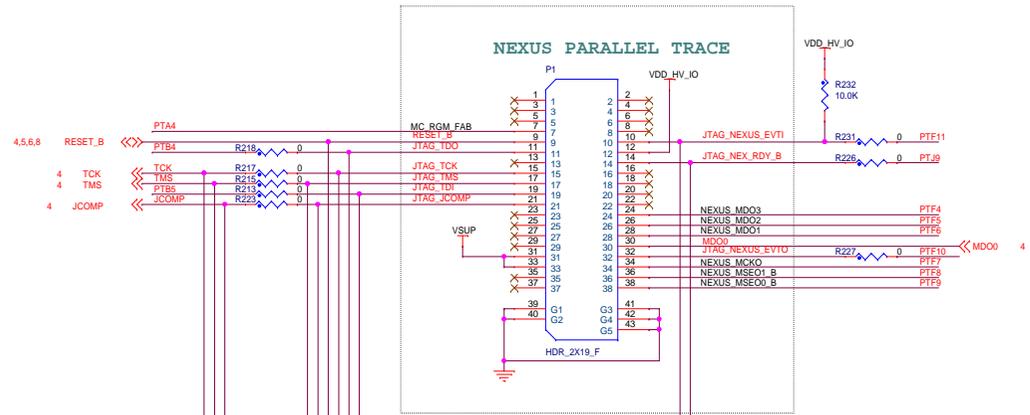
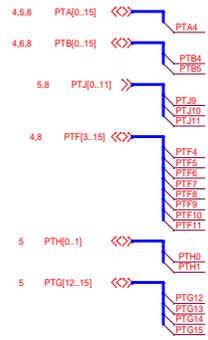
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Differential pair

Leave these caps off unless needed for loop back testing.

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