AM6442 PROCESSOR CARD

EPCB-6039-D-00

Schematics Drafted in : Allegro Design entry CIS 17.4

REV	Revision Notes	Designer	Reviewer	Date
A0-01	DRAFT RELEASE	Valiant	Valiant	07-04-2023

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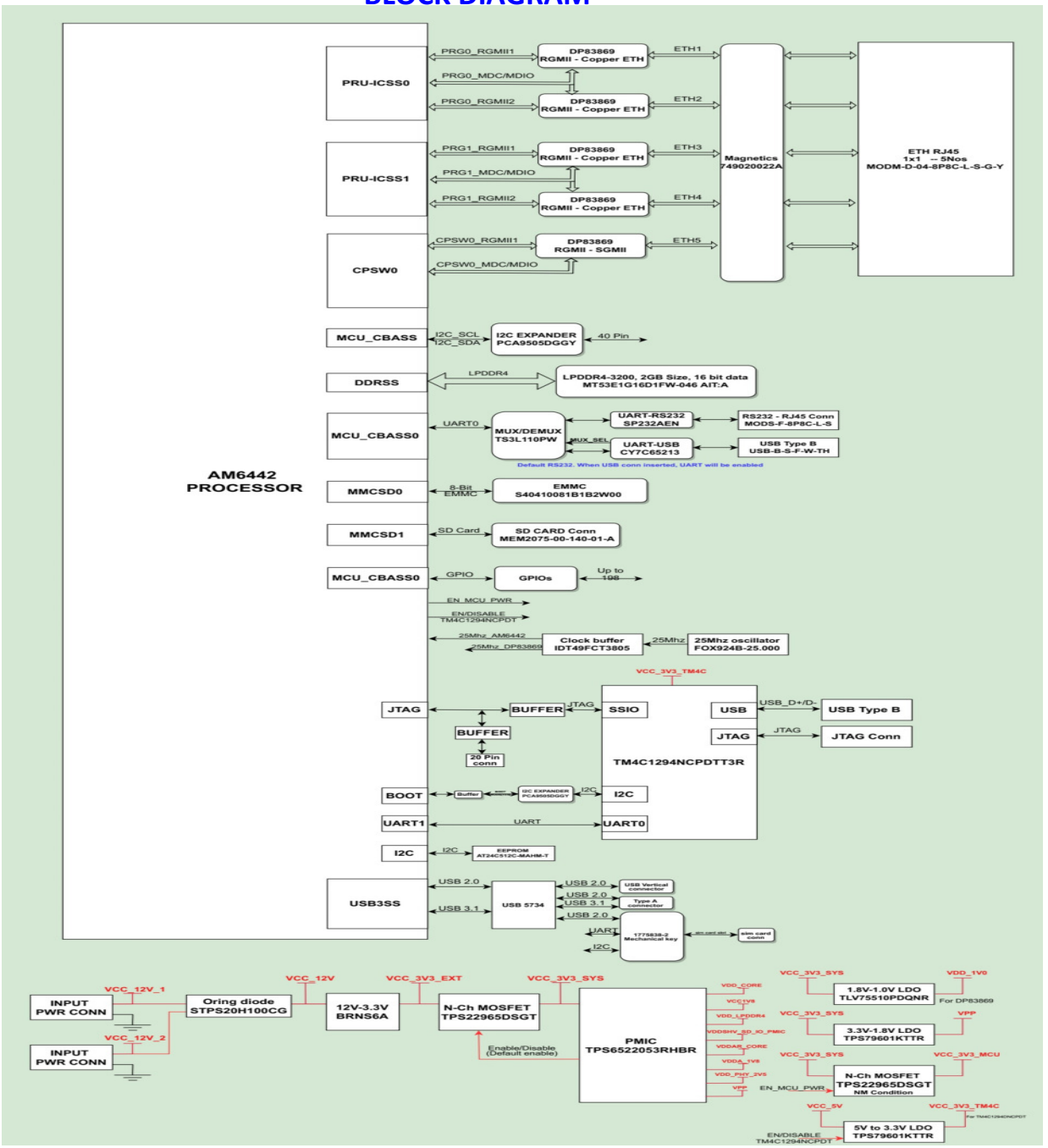
BLOCK DIAGRAM



AM6442 PROCESSOR CARD

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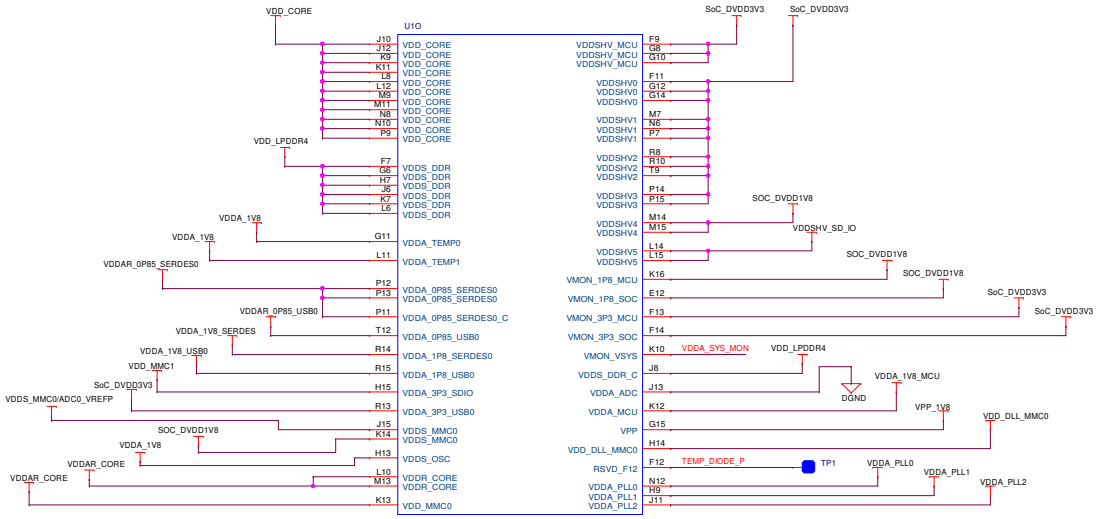
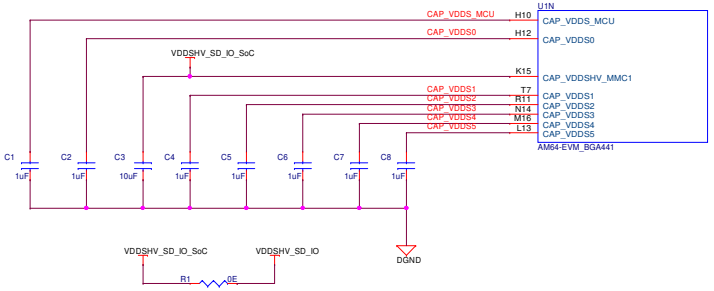
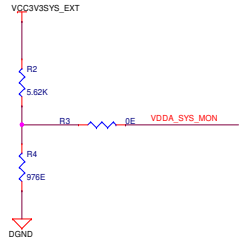
SOC POWER





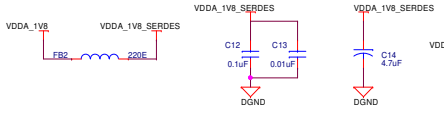
RESISTOR DIVIDER TBV

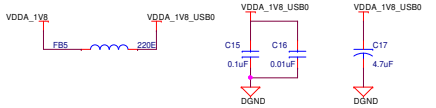


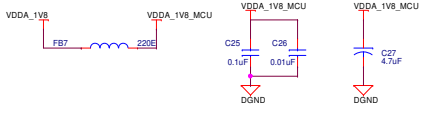
Vth : (0.45V+(+/-3% Tolerance))
Vth max: 0.4635
Vth min: 0.4365

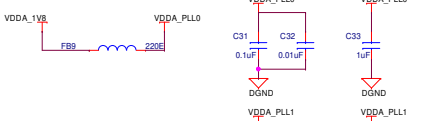
AM64x Recommended Operating Conditions:
Vmin: 3.135V
Vnom: 3.3V
Vmax: 3.465V

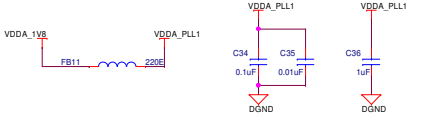
1.8V Analog SUPPLY



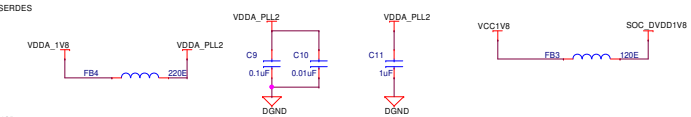


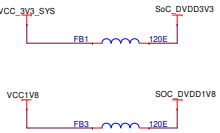




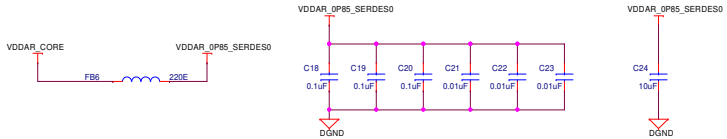


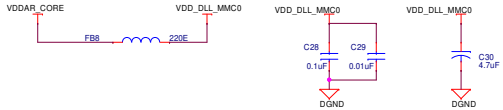
1.8V Analog SUPPLY





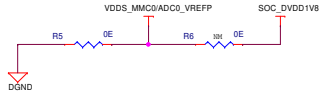
CORE SUPPLY





PG2.0 Changes

If SR1.0 is installed, mount R522 and make R521 as DNI
If SR2.0 is installed, mount R521 and make R522 as DNI



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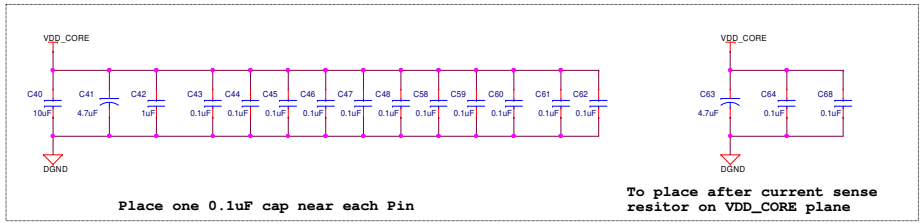
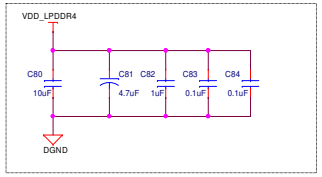
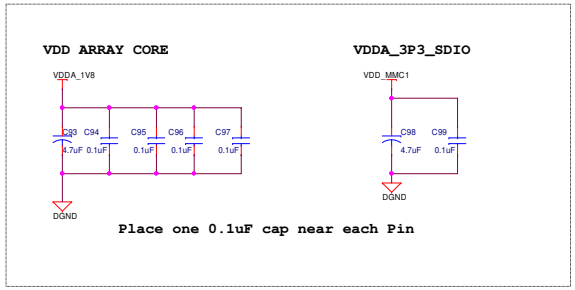
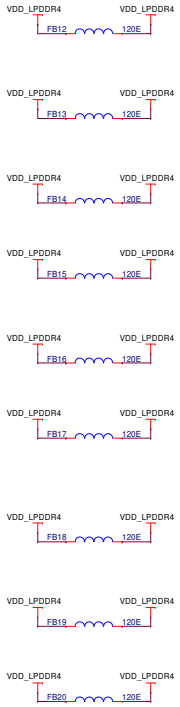
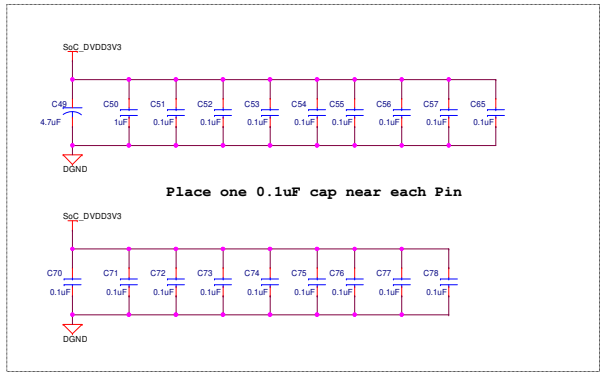
SOC POWER DECAPS

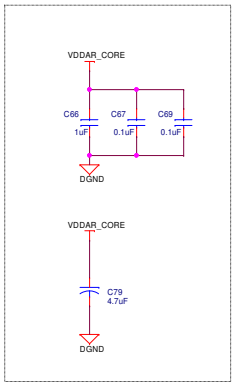


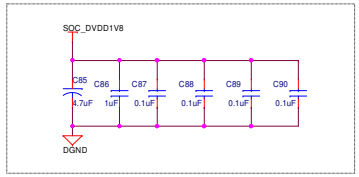


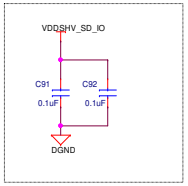






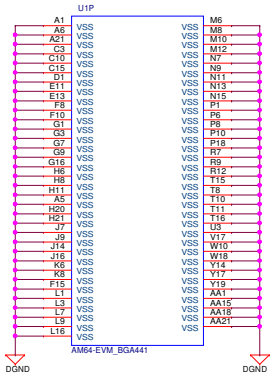






Place one 0.1uF cap near each Pin

SOC POWER - VSS



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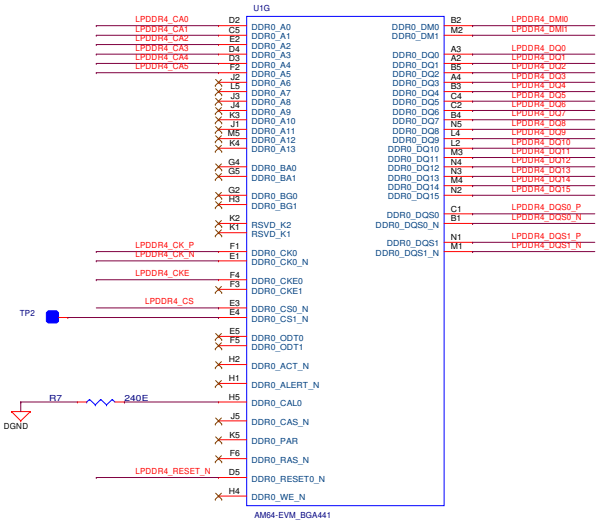
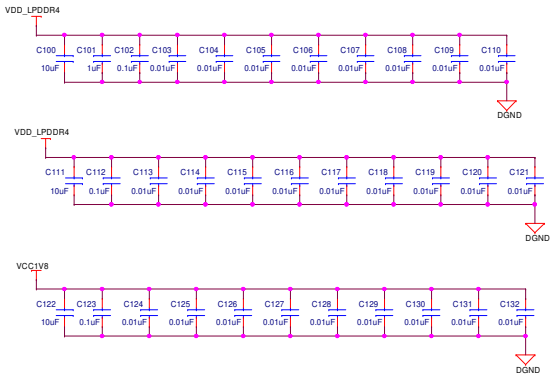
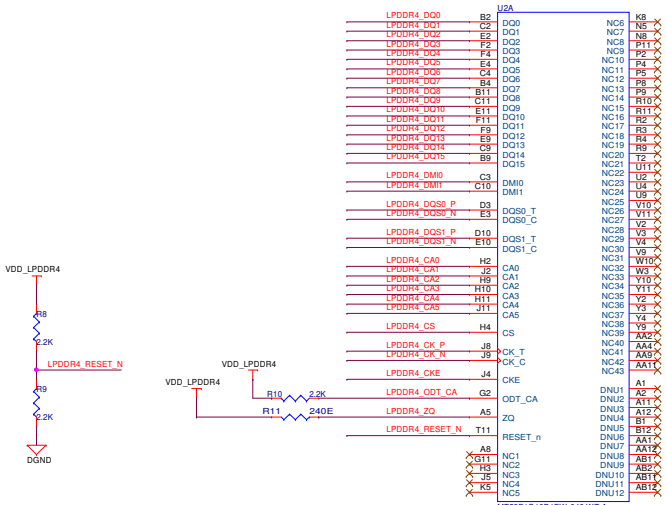
SOC LPDDR4 INTERFACE

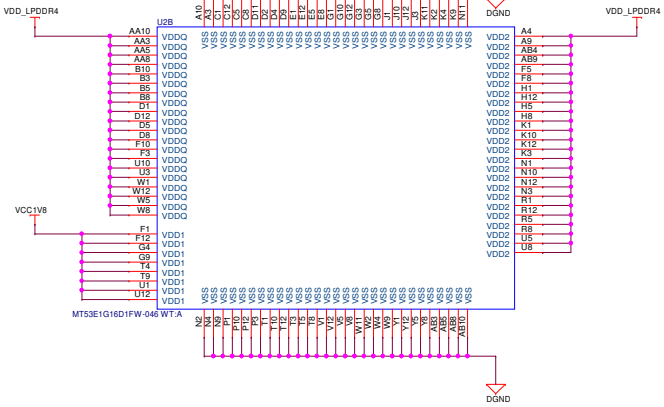


LPDDR4 POWER DECAPS



LPDDR4 DEVICE





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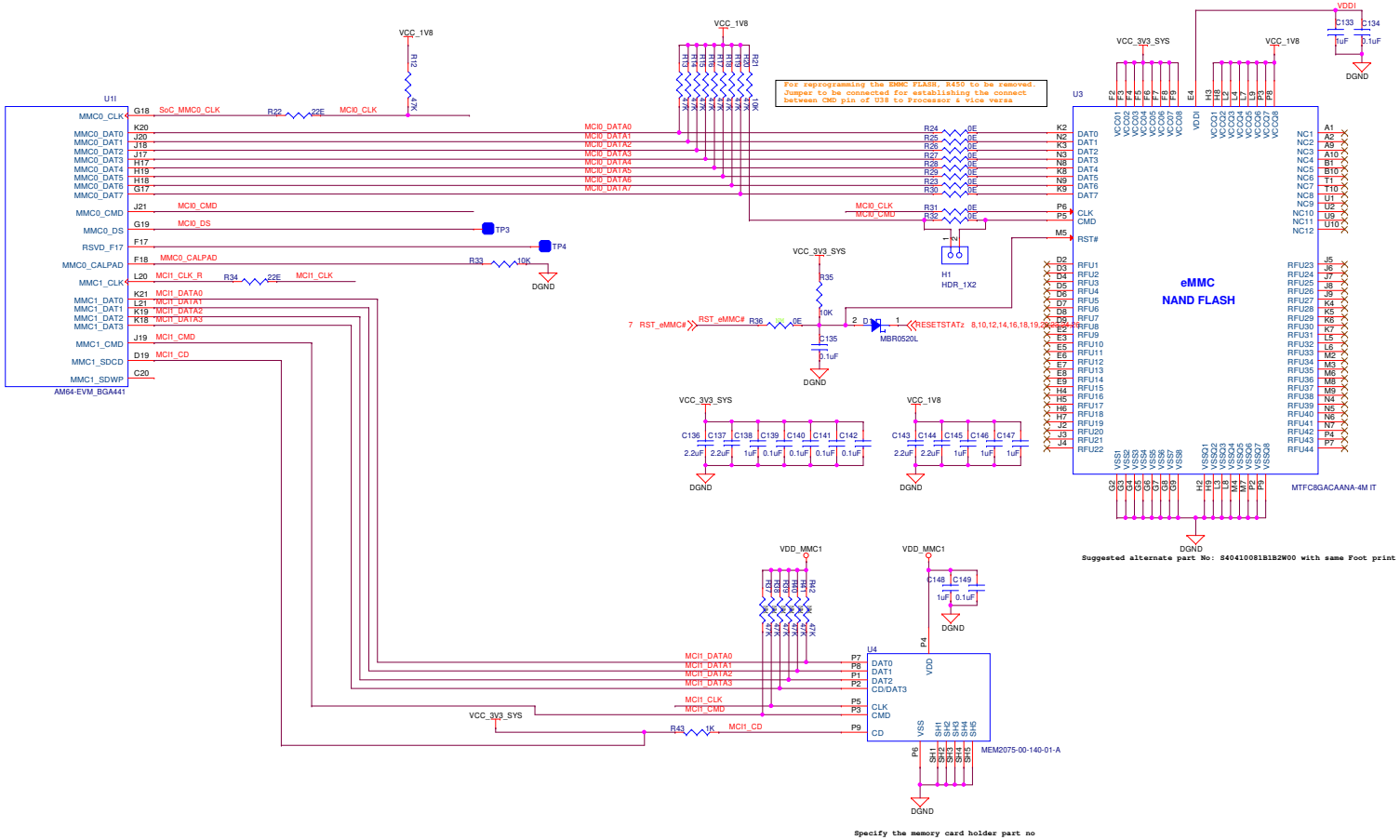
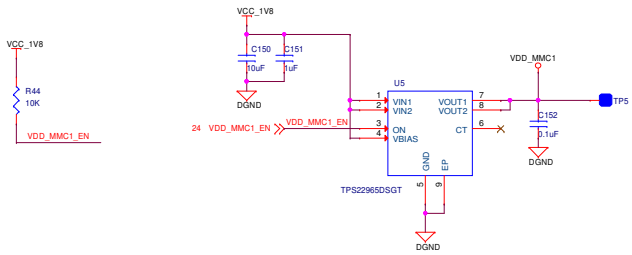


1.8V POWER SWITCH



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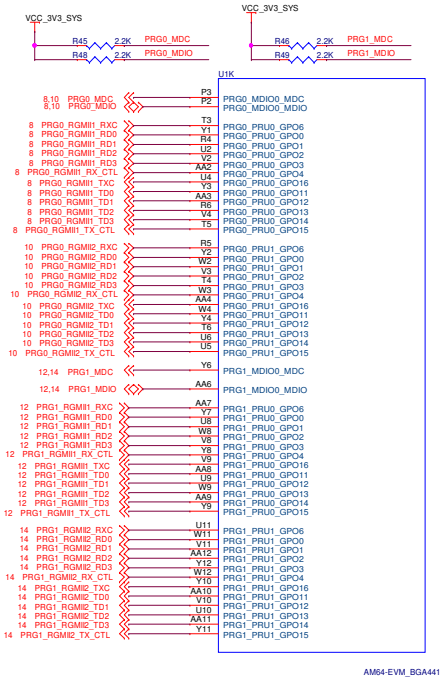
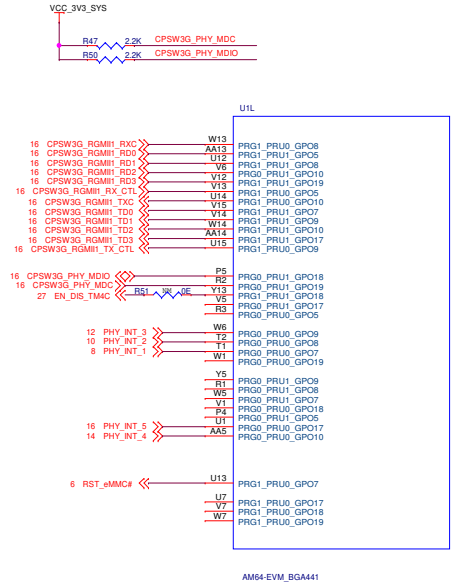
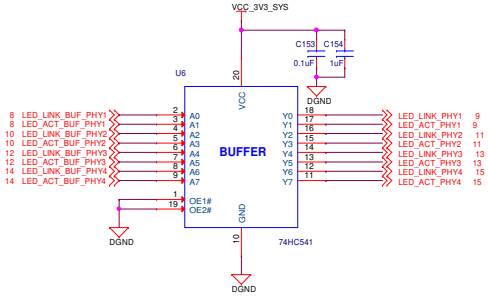
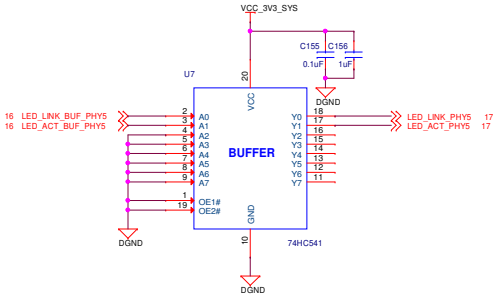
ETHERNET SECTION









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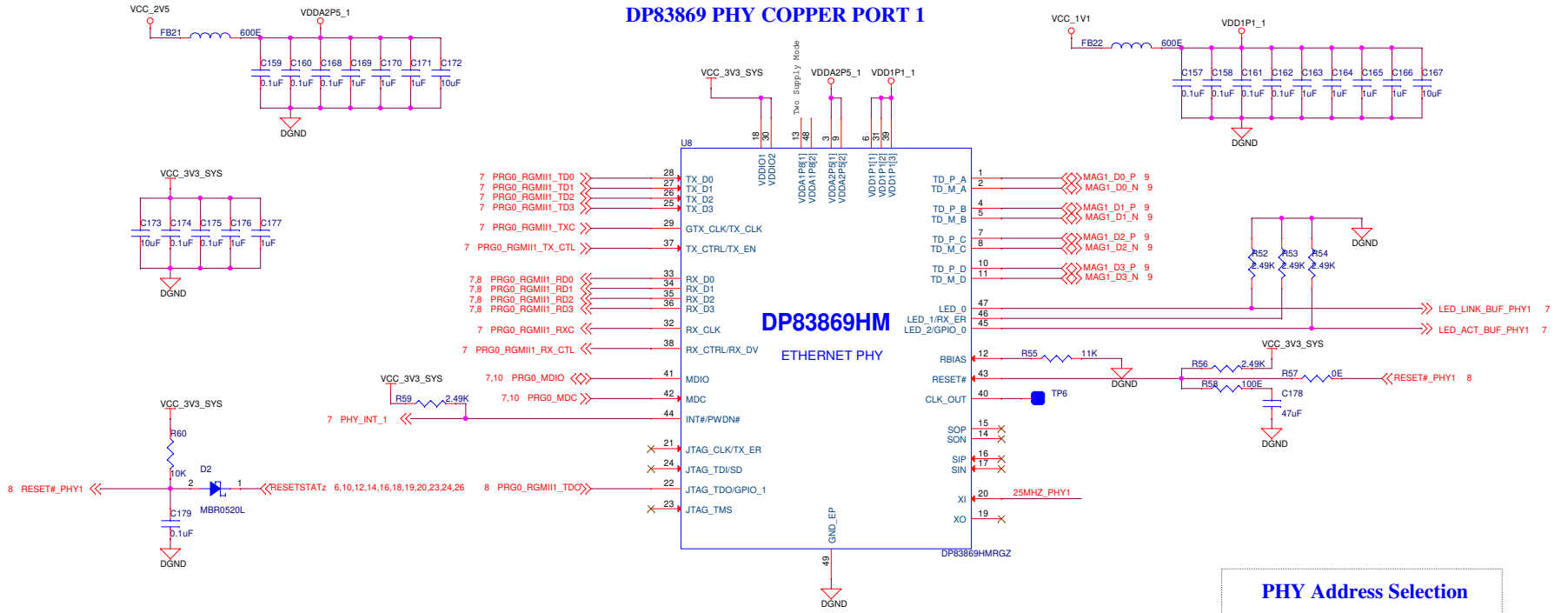
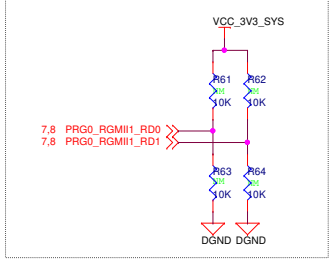
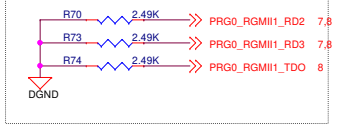
DP83869 PHY COPPER PORT 1



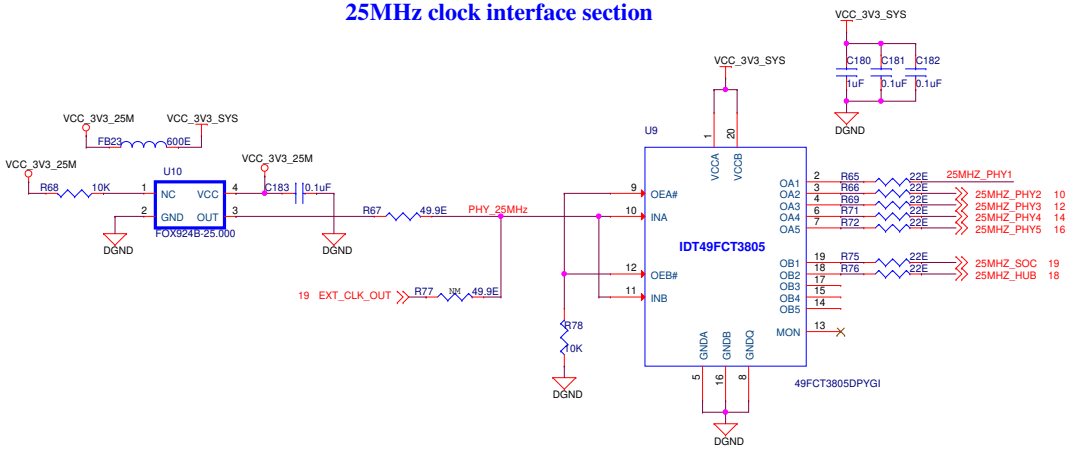
PHY Address Selection



Functional mode selection



25MHz clock interface section



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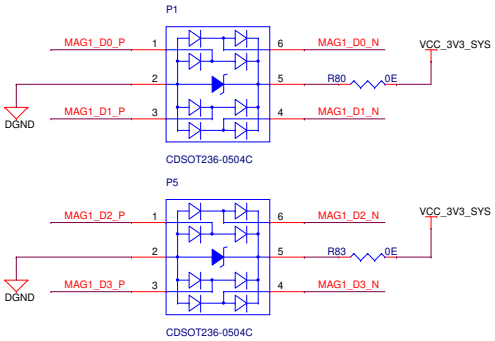
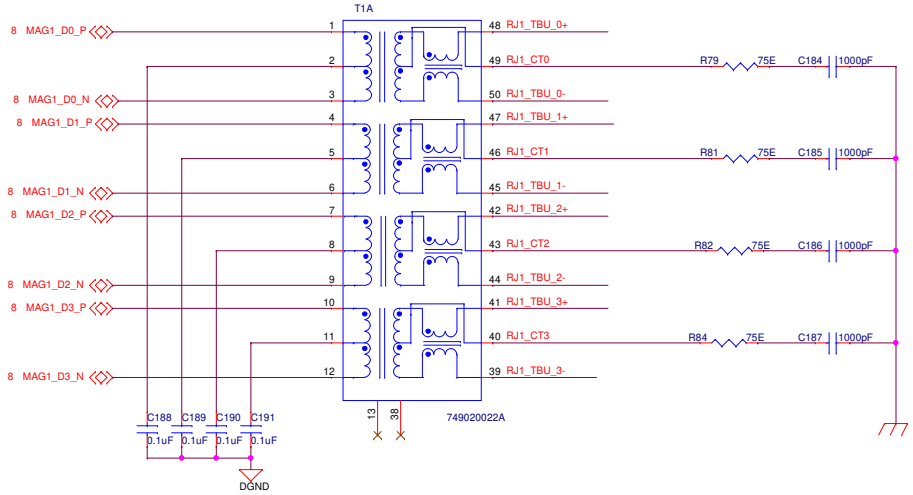
PORT 1 ETH CONNECTOR SECTION

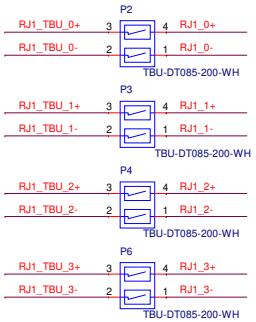
TVS PROTECTION



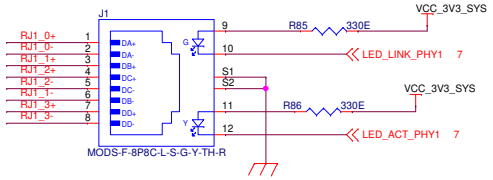
MAGNETICS



TBU PROTECTION



PORT 1



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DP83869 PHY COPPER PORT 2

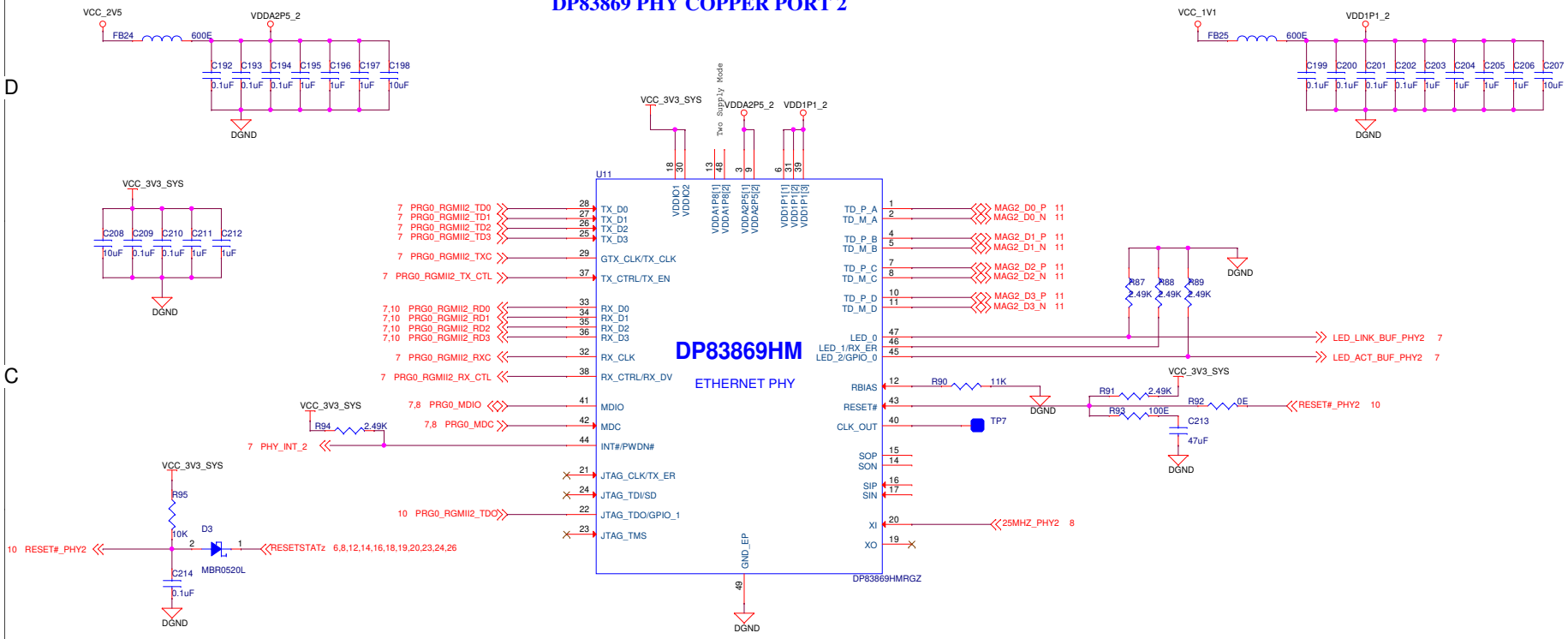
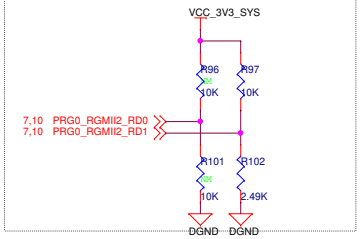


Table 12. Functional Mode Strap Table

PIN NAME	STRAP NAME	PIN #	DEFAULT	OPMODE_2	OPMODE_1	OPMODE_0	FUNCTIONAL MODES
JTAG_TDO/GPIO_1	OPMODE_0	22	0	0	0	0	RGMII to Copper(1000Base-T/100Base-TX/10Base-Te)
				0	0	1	RGMII to 1000Base-X
RX_D3	OPMODE_1	36	0	0	1	0	RGMII to 100Base-FX
				0	1	1	RGMII-SGMII Bridge Mode
RX_D2	OPMODE_2	35	0	1	0	0	1000Base-T to 1000Base-X
				1	0	1	100Base-T to 100Base-FX
				1	1	0	SGMII to Copper(1000Base-T/100Base-TX/10Base-Te)
				1	1	1	JTAG for boundary scan

PHY Address Selection



Functional mode selection

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VALIANT COMMUNICATIONS

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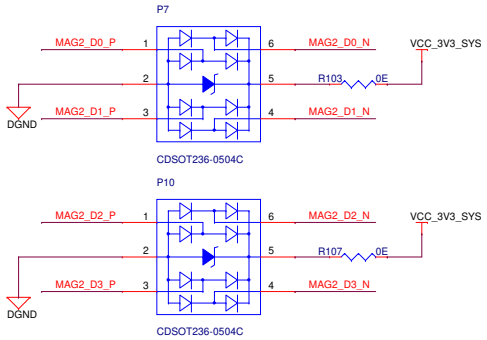
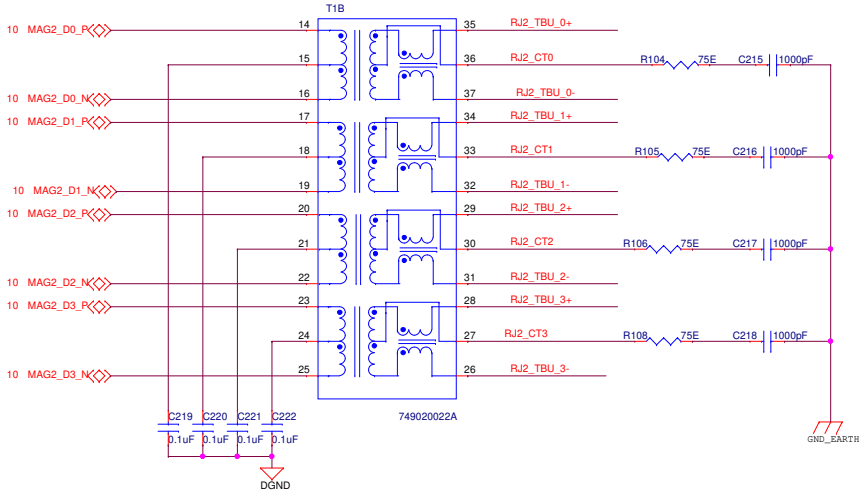
PORT 2 ETH CONNECTOR SECTION

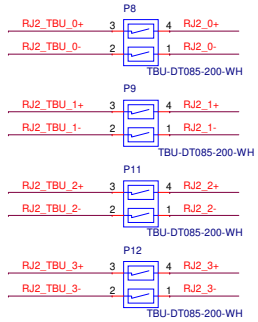
TVS PROTECTION



MAGNETICS



TBU PROTECTION



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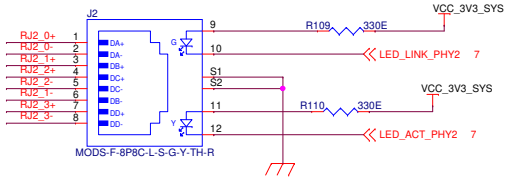

AM6442 PROCESSOR CARD

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DP83869 PHY COPPER PORT 3

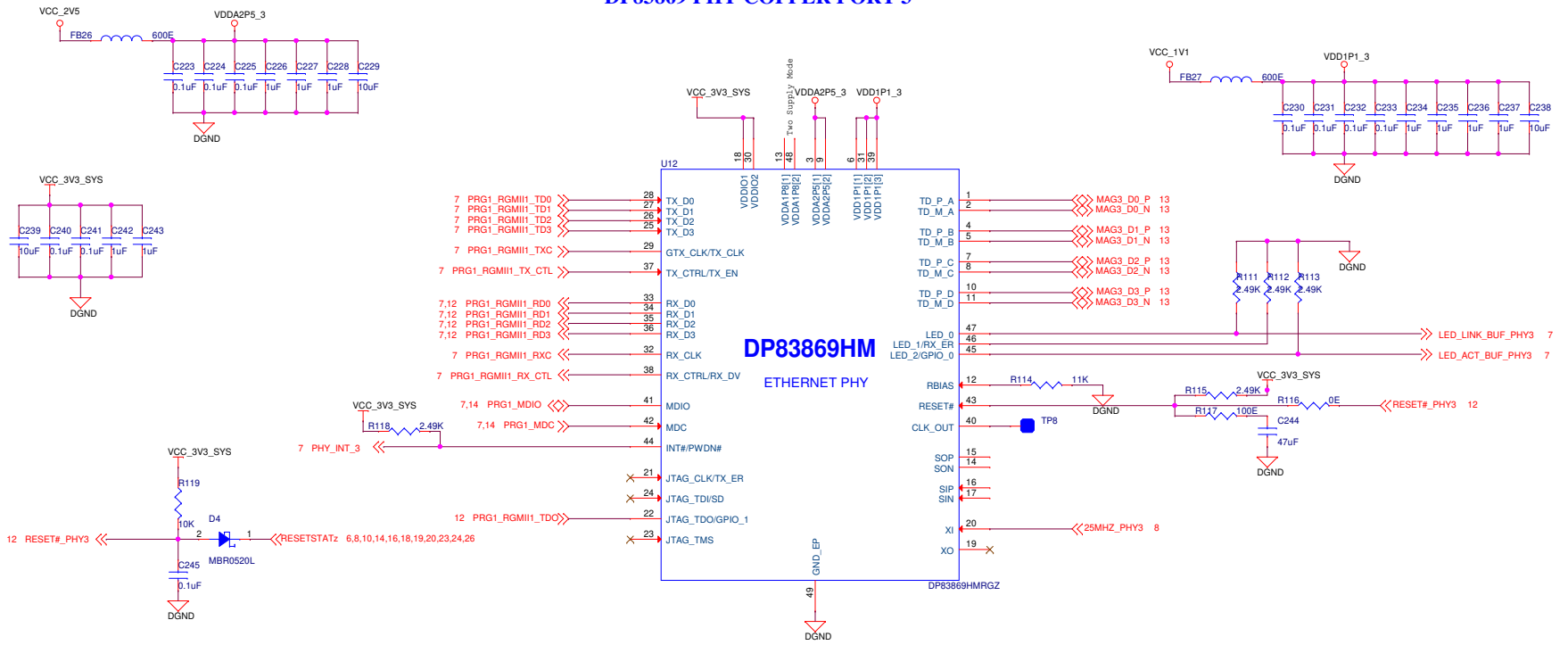
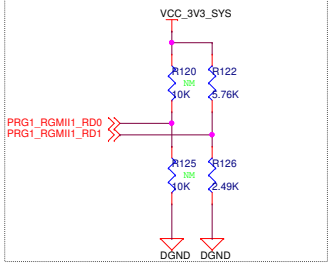


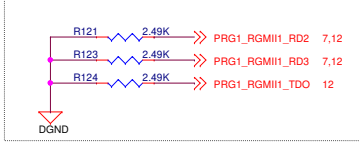
Table 12. Functional Mode Strap Table

PIN NAME	STRAP NAME	PIN #	DEFAULT	OPMODE_2	OPMODE_1	OPMODE_0	FUNCTIONAL MODES
JTAG_TDO/GPIO_1	OPMODE_0	22	0	0	0	0	RGMII to Copper(1000Base-T/100Base-TX/10Base-Te)
				0	0	1	RGMII to 1000Base-X
RX_D3	OPMODE_1	36	0	0	1	0	RGMII to 100Base-FX
				0	1	1	RGMII-SGMII Bridge Mode
RX_D2	OPMODE_2	35	0	1	0	0	1000Base-T to 1000Base-X
				1	0	1	100Base-T to 100Base-FX
				1	1	0	SGMII to Copper(1000Base-T/100Base-TX/10Base-Te)
				1	1	1	JTAG for boundary scan

PHY Address Selection



Functional mode selection



AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	A3	Title : DP83869_PHY_COPPER_PORT 3
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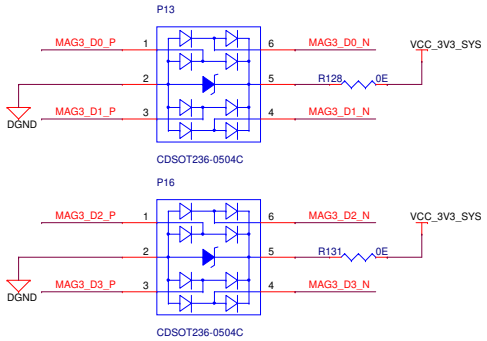
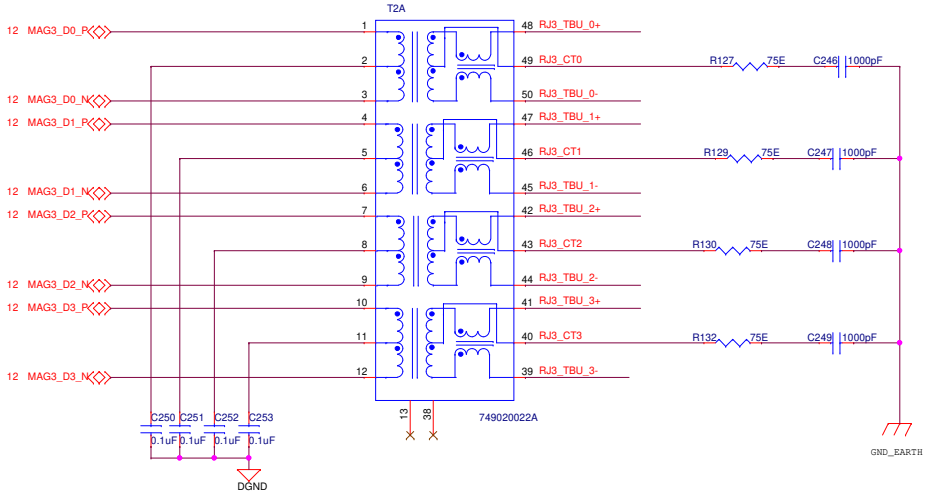
PORT 3 ETH CONNECTOR SECTION

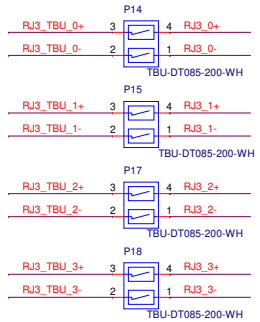
TVS PROTECTION



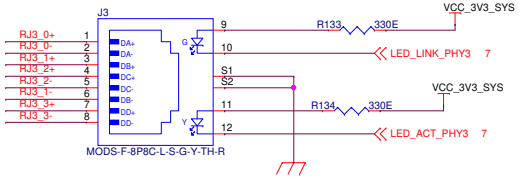
MAGNETICS



TBU PROTECTION



PORT 3



AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	A3	Title : MAGNETICS&CONN_COPPER 3
	Asy No : AM6442 PROCESSOR CARD	Rev: A1
	Sheet 13 of 27	

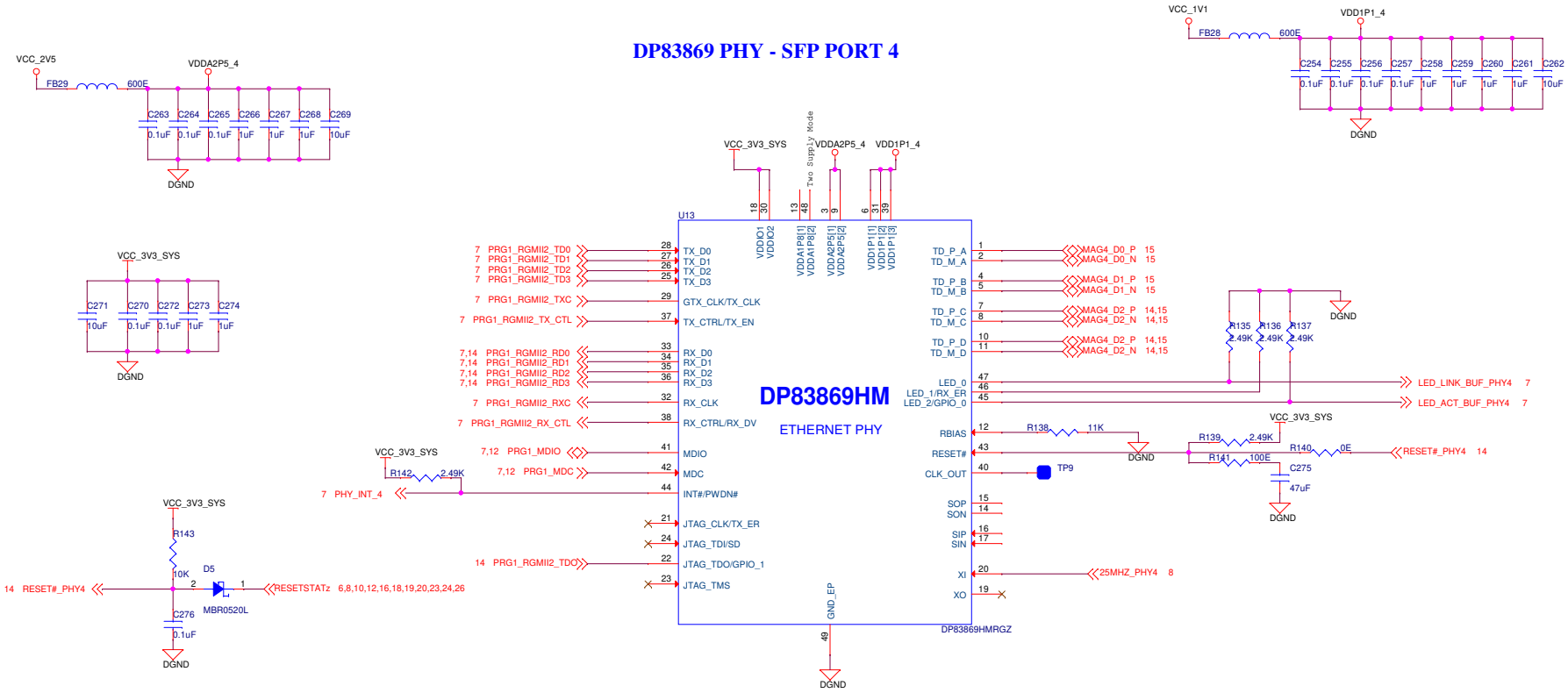
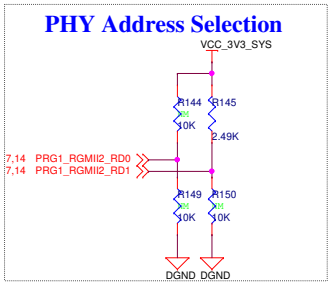
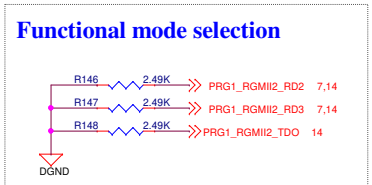


Table 12. Functional Mode Strap Table

PIN NAME	STRAP NAME	PIN #	DEFAULT	OPMODE_2	OPMODE_1	OPMODE_0	FUNCTIONAL MODES
JTAG_TDO/GPIO_1	OPMODE_0	22	0	0	0	0	RGMII to Copper(1000Base-T/100Base-TX/10Base-Te)
				0	0	1	RGMII to 1000Base-X
RX_D3	OPMODE_1	36	0	0	1	0	RGMII to 100Base-FX
				0	1	1	RGMII-SGMII Bridge Mode
RX_D2	OPMODE_2	35	0	1	0	0	1000Base-T to 1000Base-X
				1	0	1	100Base-T to 100Base-FX
				1	1	0	SGMII to Copper(1000Base-T/100Base-TX/10Base-Te)
				1	1	1	JTAG for boundary scan





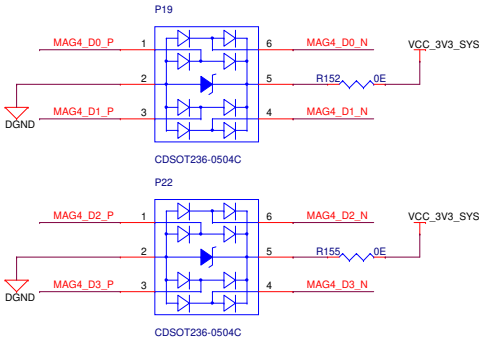
AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS

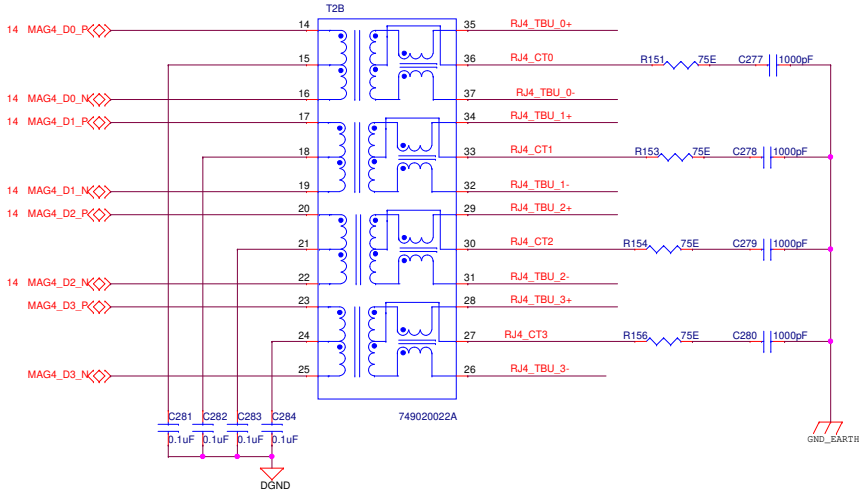
A3	Title : DP83869_SFP PORT 4	
Asy No : AM6442 PROCESSOR CARD		Rev: A1
	Sheet 14 of 27	

ETHERNET RJ45 MAGNETICS & CONNECTOR INTERFACE 4

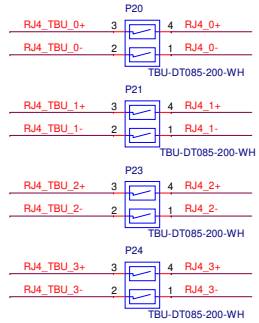
TVS PROTECTION



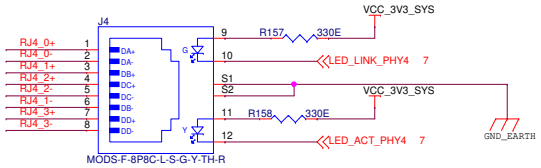
MAGNETICS



TBU PROTECTION



PORT4 COPPER PORT



AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	A3	Title : MAGNETICS&CONN_COPPER 4
	Asy No : AM6442 PROCESSOR CARD	Rev: A1
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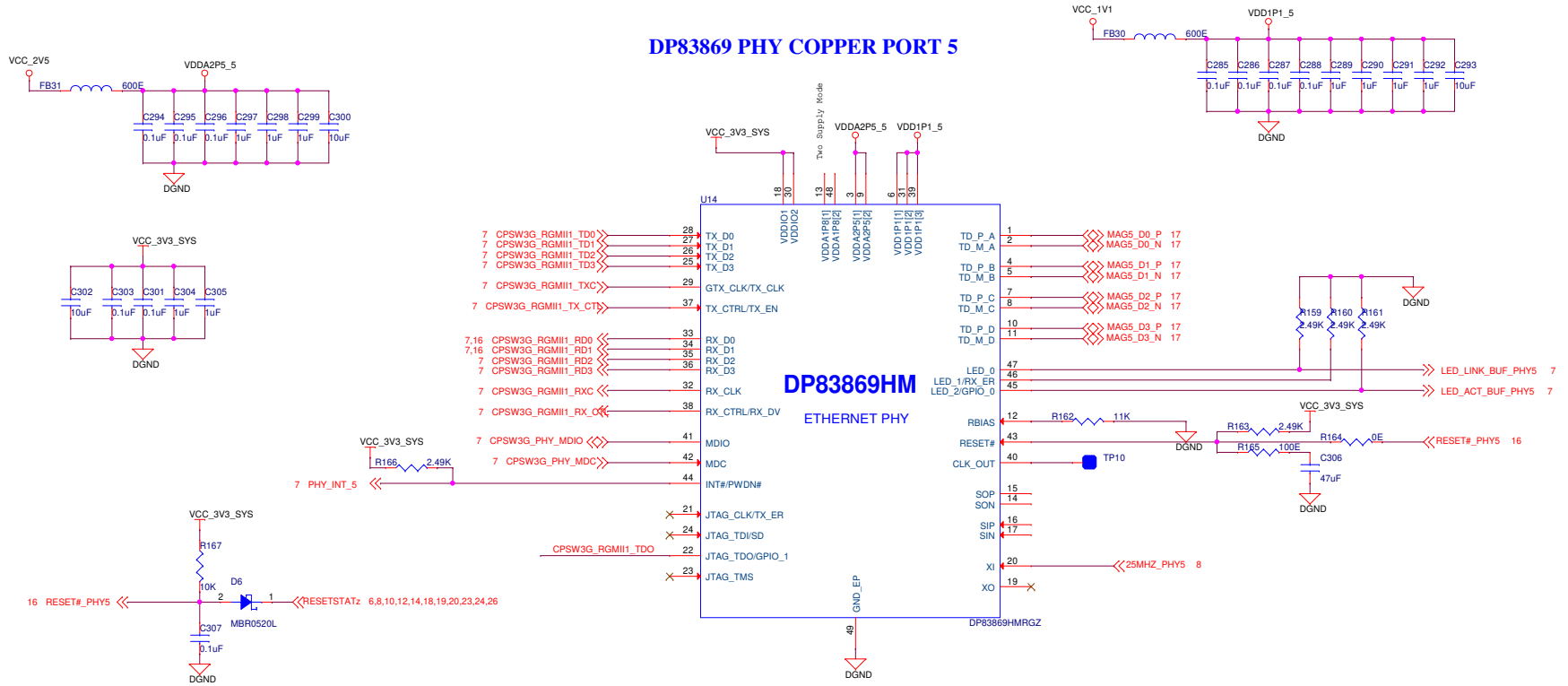
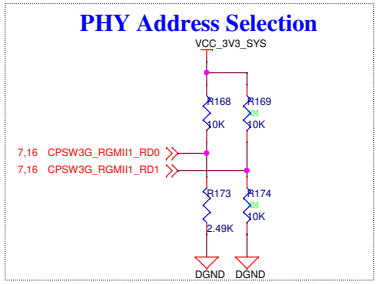
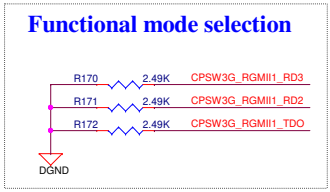


Table 12. Functional Mode Strap Table

PIN NAME	STRAP NAME	PIN #	DEFAULT	OPMODE_2	OPMODE_1	OPMODE_0	FUNCTIONAL MODES
JTAG_TDO/GPIO_1	OPMODE_0	22	0	0	0	0	RGMII to Copper(1000Base-T/100Base-TX/10Base-Te)
				0	0	1	RGMII to 1000Base-X
RX_D3	OPMODE_1	36	0	0	1	0	RGMII to 100Base-FX
				0	1	1	RGMII-SGMII Bridge Mode
RX_D2	OPMODE_2	35	0	1	0	0	1000Base-T to 1000Base-X
				1	0	1	100Base-T to 100Base-FX
				1	1	0	SGMII to Copper(1000Base-T/100Base-TX/10Base-Te)
				1	1	1	JTAG for boundary scan





AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS

A3	Title : DP83869_SFP PORT 5	
Asy No : AM6442 PROCESSOR CARD		Rev: A1
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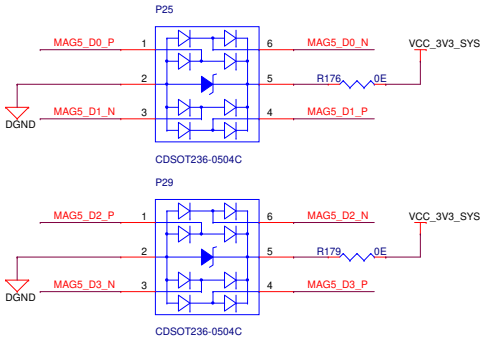
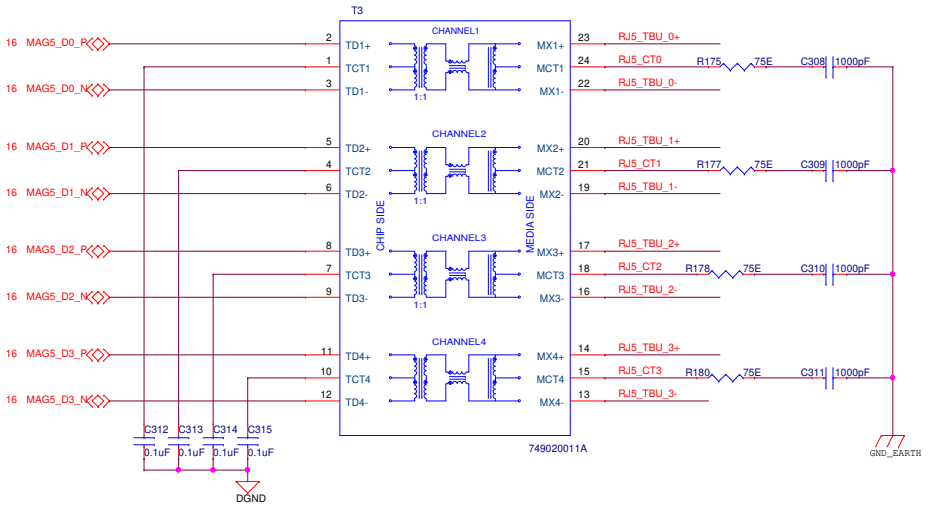
PORT 5 ETH CONNECTOR SECTION

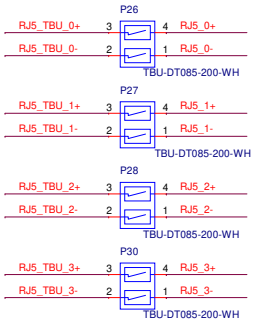
TVS PROTECTION



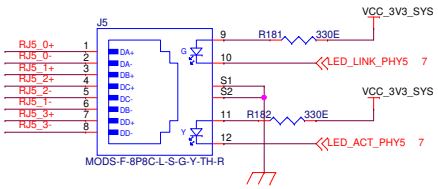
MAGNETICS



TBU PROTECTION



PORT5 COPPER PORT



AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	A3	Title : MAGNETICS&CONN_COPPER 5
	Asy No : AM6442 PROCESSOR CARD	Rev: A1
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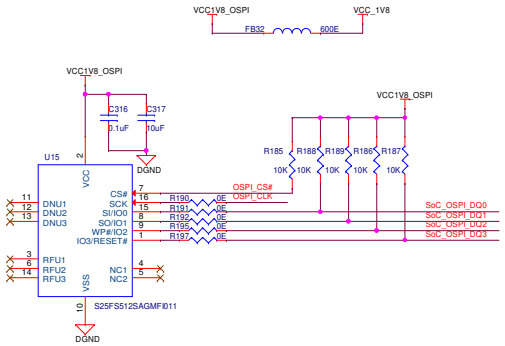
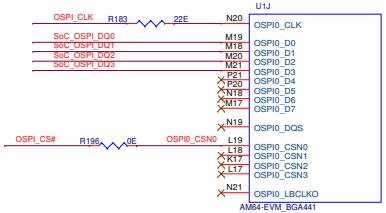
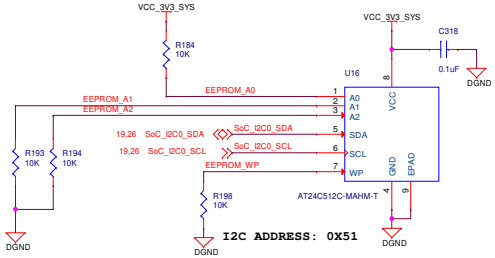
OSPI FLASH



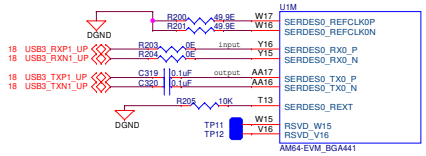
SOC OSPI INTERFACE

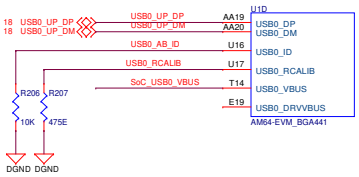


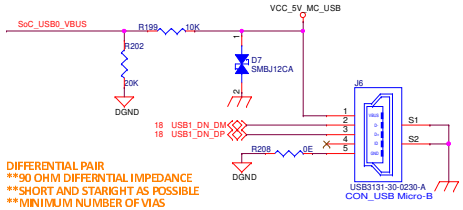
BOARD ID EEPROM

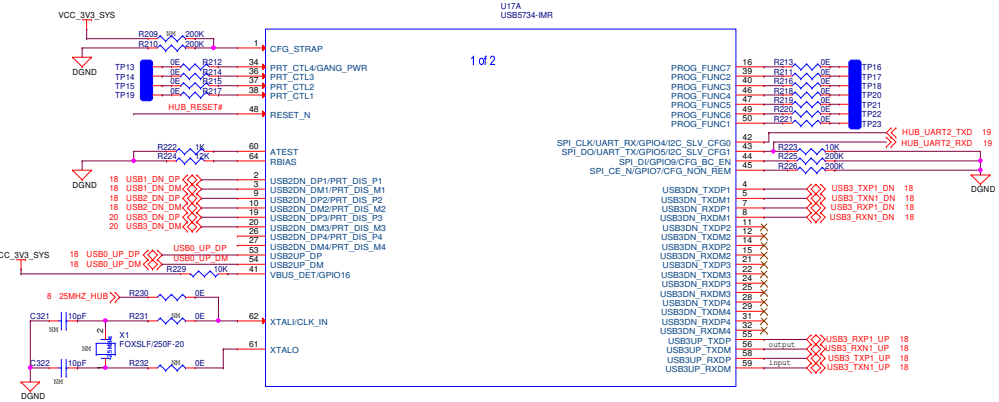


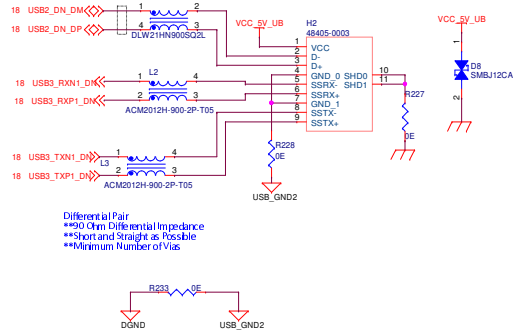
USB 2.0 INTERFACE

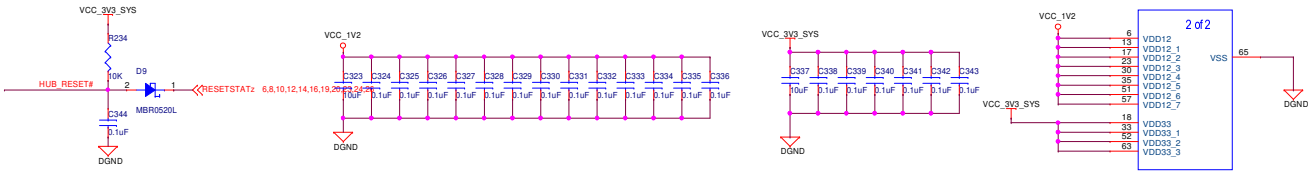












AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	C	Title : OSPI INTERFACE
	Asy No : AM6442 PROCESSOR CARD	Rev: A1
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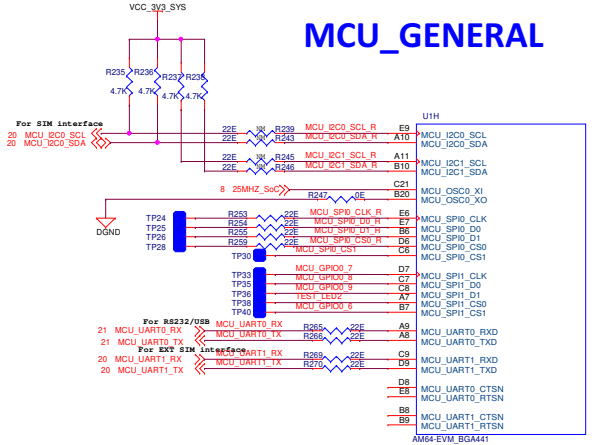
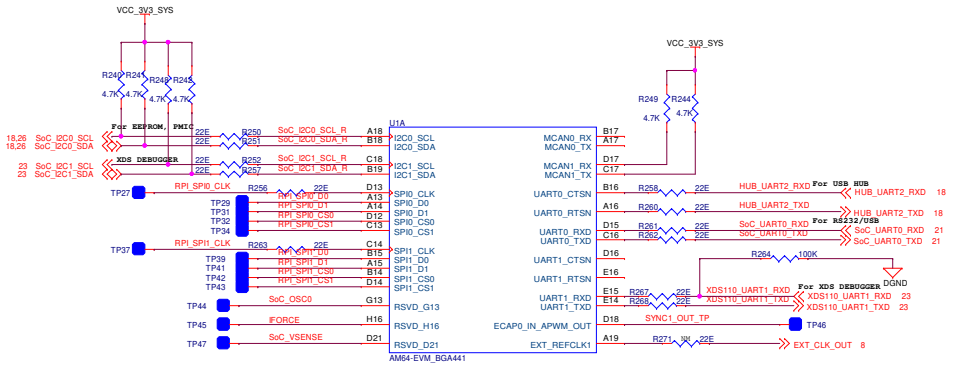
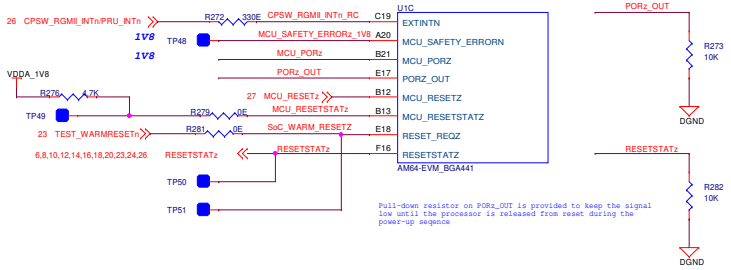
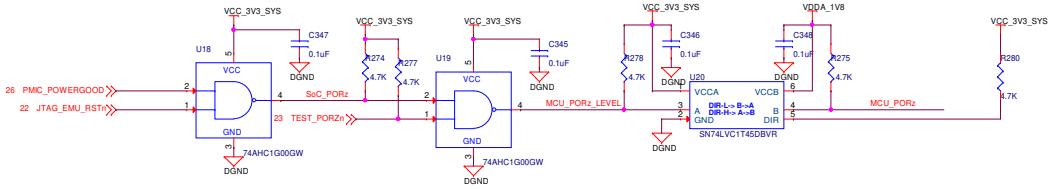
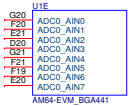






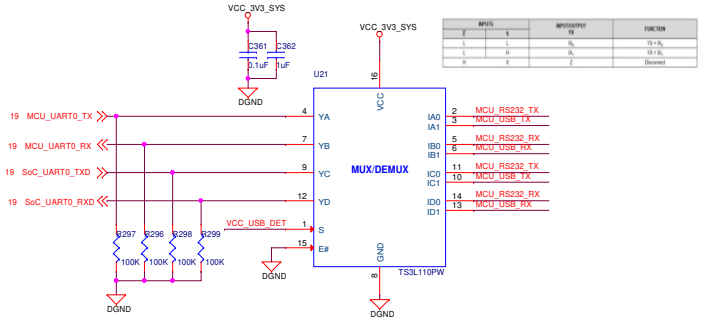




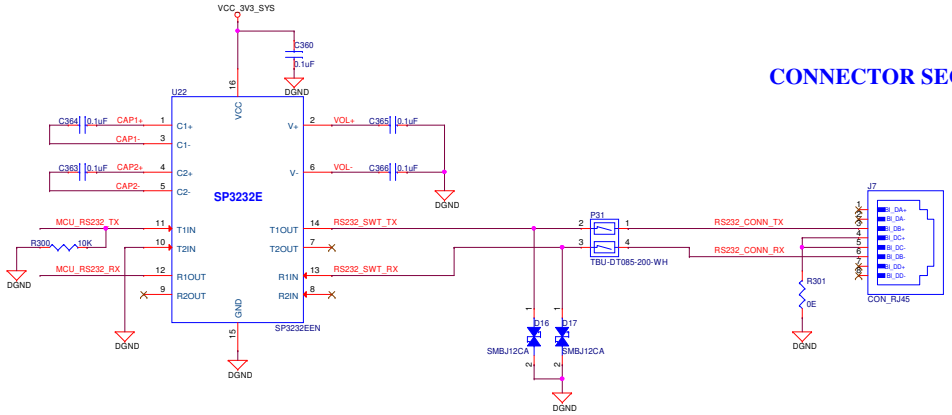
AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	C	Title : SoC MAIN AND MCU DOMAIN
	Asy No : AM6442 PROCESSOR CARD	Rev: A1
	Sheet 19 of 27	

MUX FOR SELECTING PROGRAMMER / SWITCH

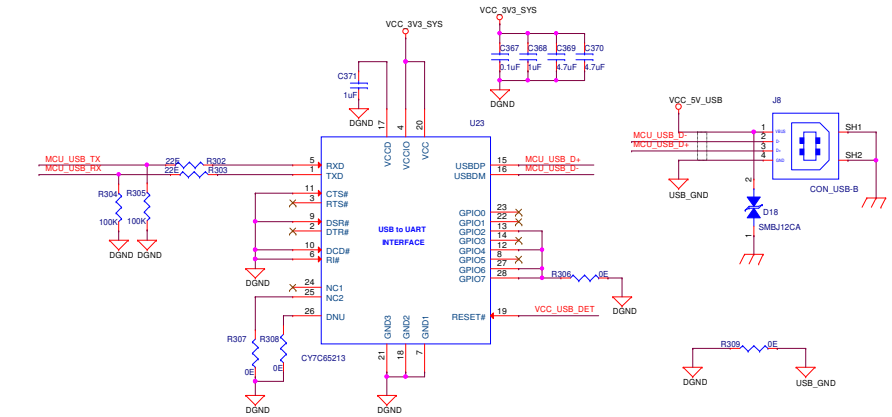


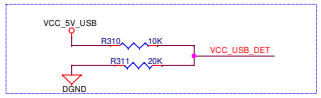
RS232 Transceiver

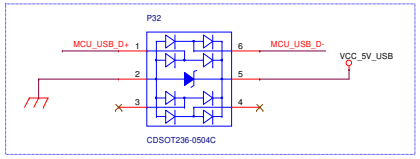


CONNECTOR SECTION

UART-USB TRANSCEIVER







AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	C	Title : MUX _RS232_USB
	Asy No : AM6442 PROCESSOR CARD	Rev: A1
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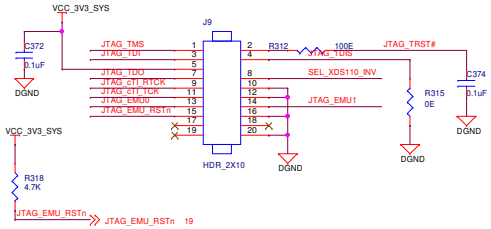
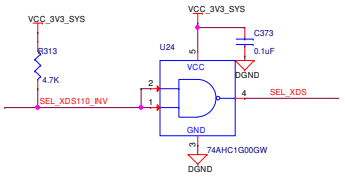
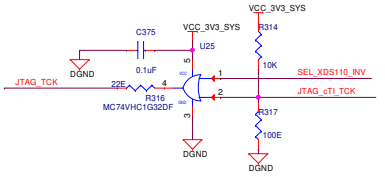
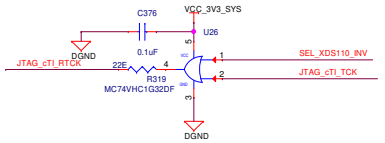
JTAG 20 PIN cTI CONNECTOR



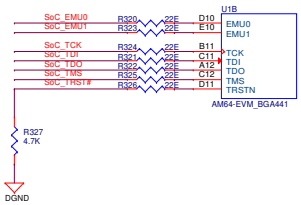


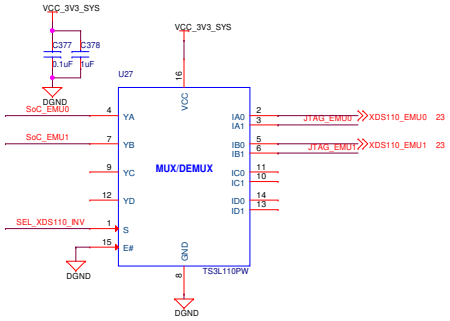
JTAG CLOCK BUFFER

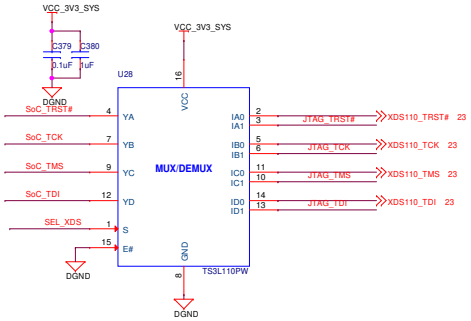


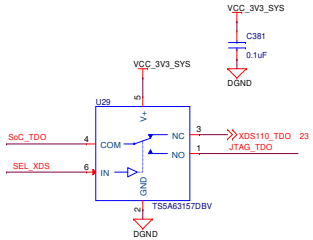


JTAG SoC SECTION









AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	C	Title : JTAG 20 PIN cTI CONNECTOR
	Asy No : AM6442 PROCESSOR CARD	Rev: A1
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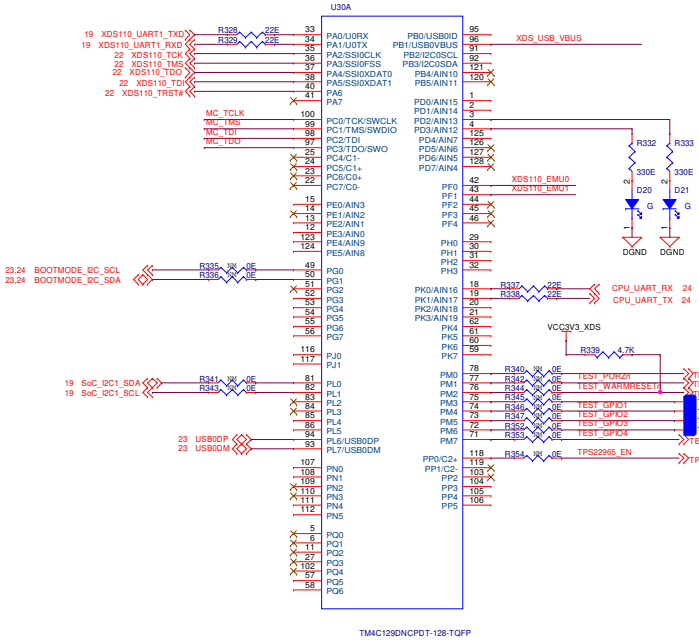
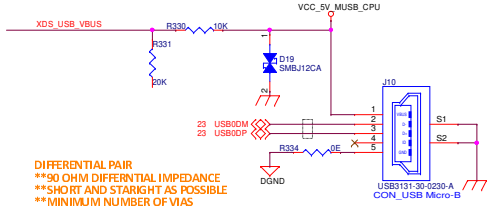
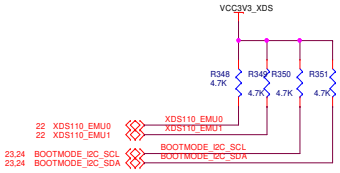
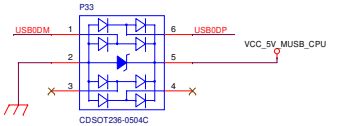
XDS110 DEBUGGER

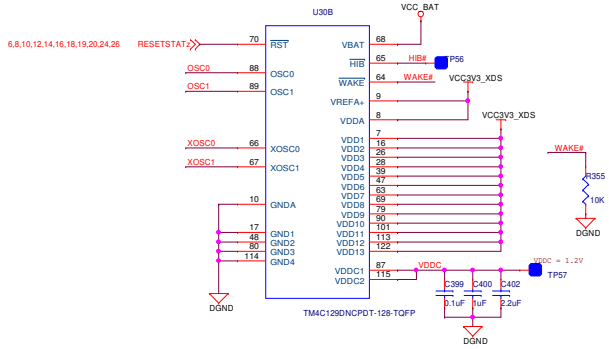




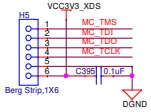


PROTECTION FOR USB-MICRO-B CONNECTOR

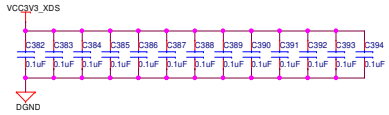




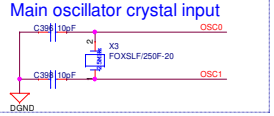
JTAG Connector



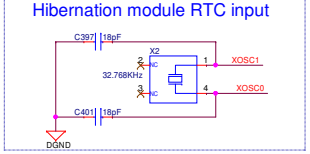
Decoupling Capacitors (MCU)

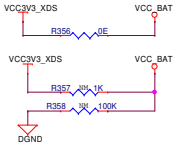


Main oscillator crystal input



Hibernation module RTC input





AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	C	Title : XDS110 DEBUGGER
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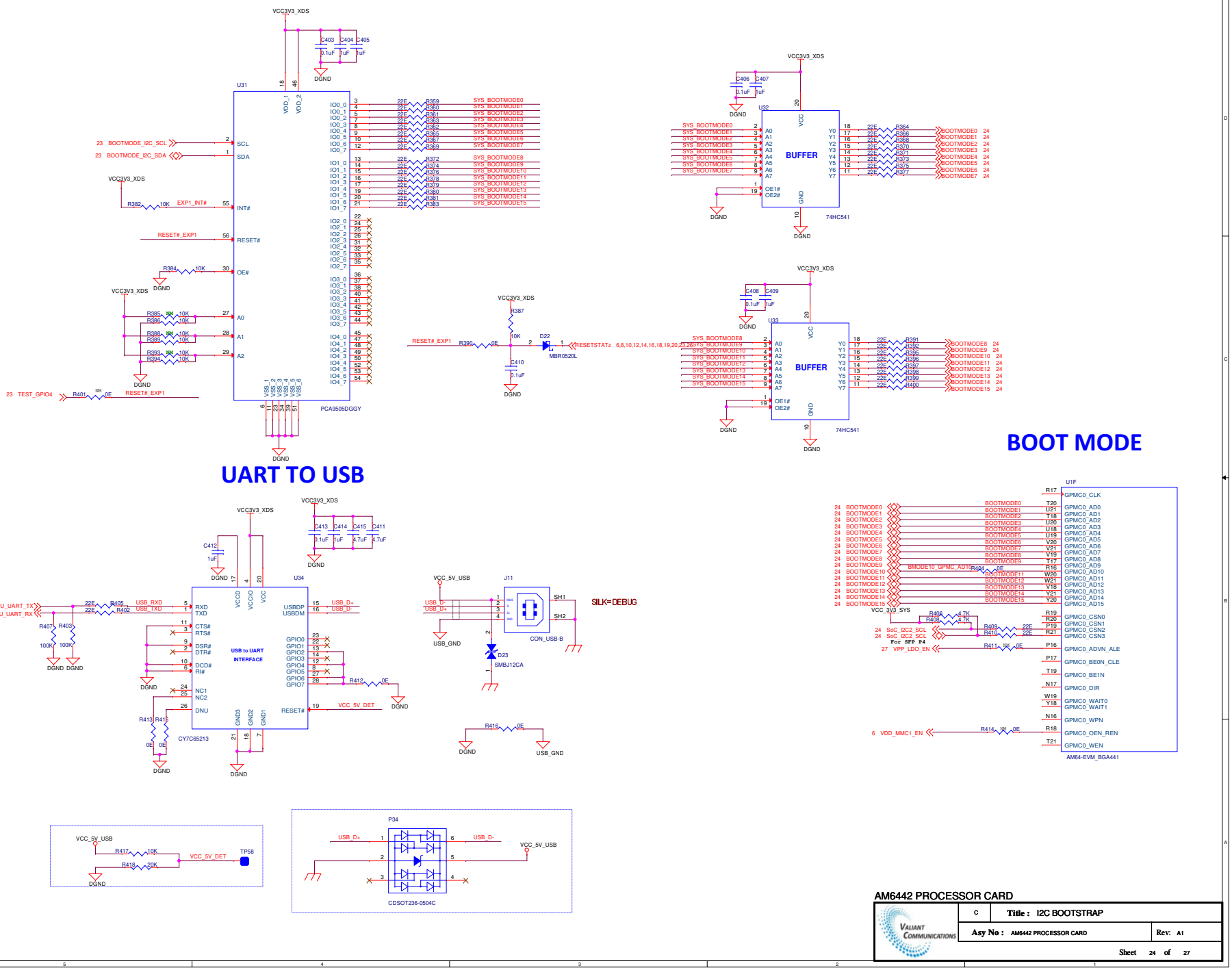
UART TO USB
BOOT MODE
SILK=DEBUG
U31
PCA9505DGGY
U32
U33
BUFFER
74HC541
U34
USB to UART INTERFACE
CY7C65213
U1F
AM64-EVM_BGA441
J11
CON_USB-B
P34
CDSOT236-0504C
TP58
AM6442 PROCESSOR CARD
Title : I2C BOOTSTRAP
Asy No : AM6442 PROCESSOR CARD
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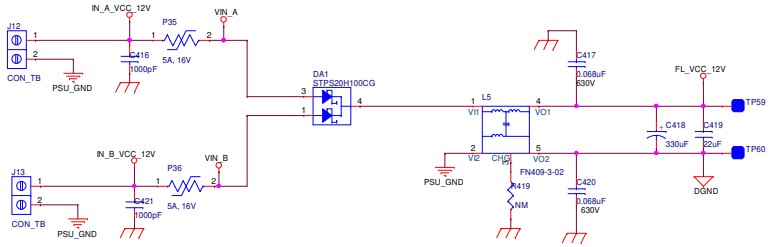
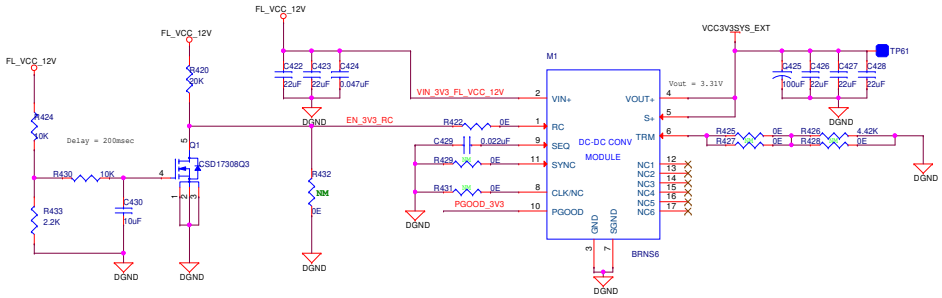
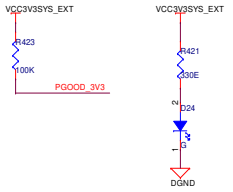
POWER INTERFACE 1



12V T0 3.3V SUPPLY



3.3V STATUS LED



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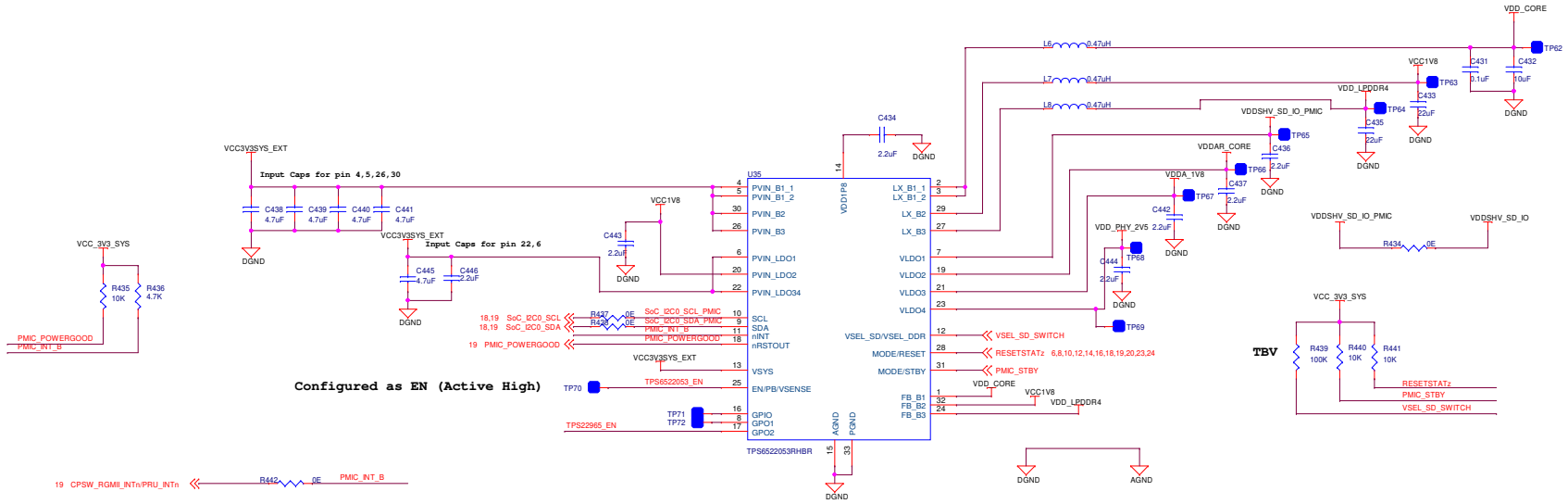
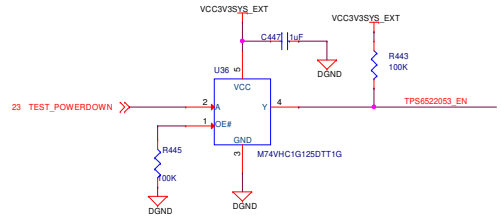
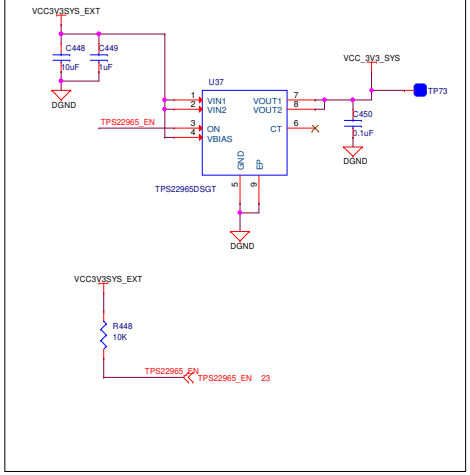
TPS6522053 PMIC



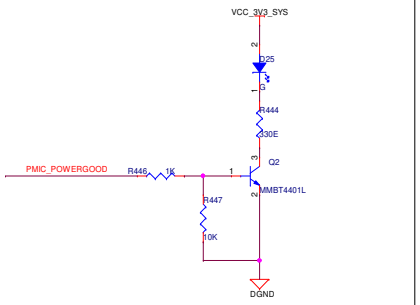
ON/OFF LOGIC



3V3 POWER SWITCH



POWER INDICATION LED



AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	C	Title : POWER SECTION 2 - PMIC
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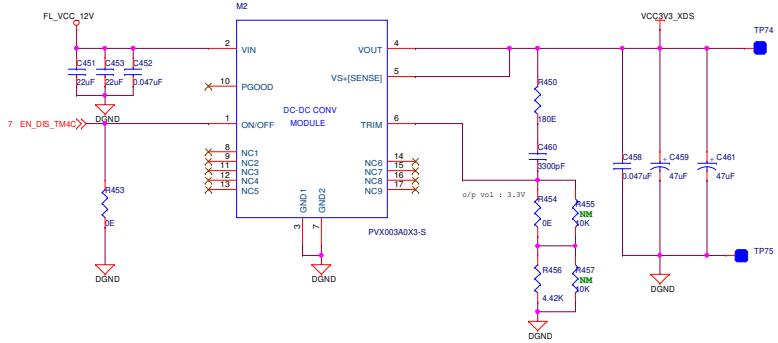
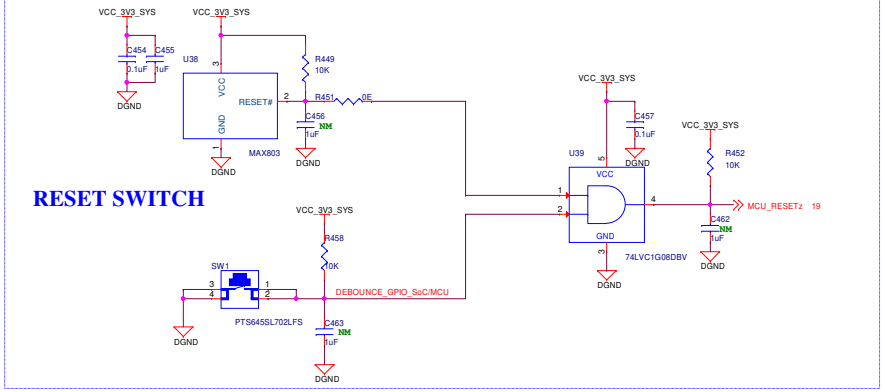
12V TO 3.3V

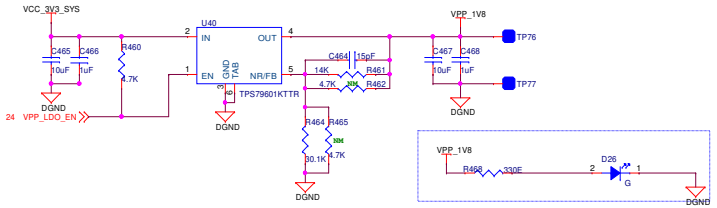


VOLTAGE SUPERVISOR

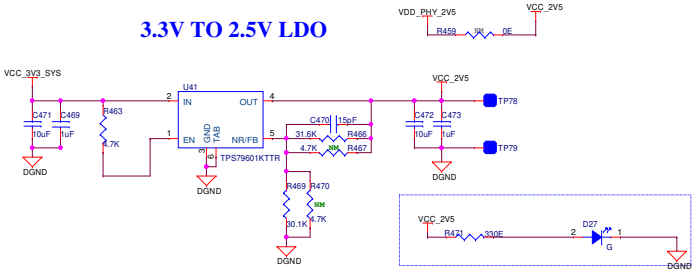


RESET SWITCH

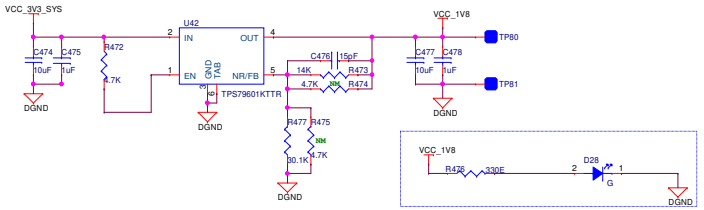
3.3V TO 1.8V LDO (VPP)



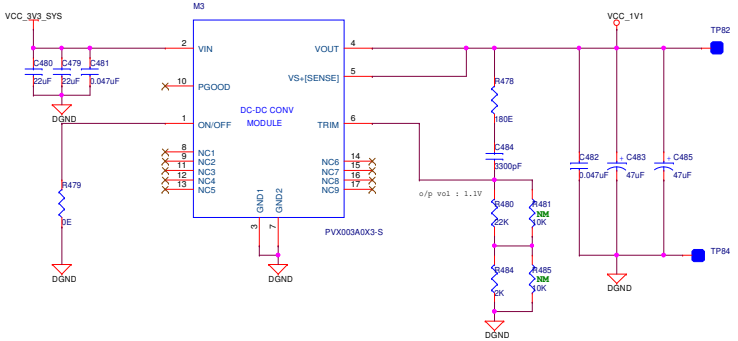
3.3V TO 2.5V LDO



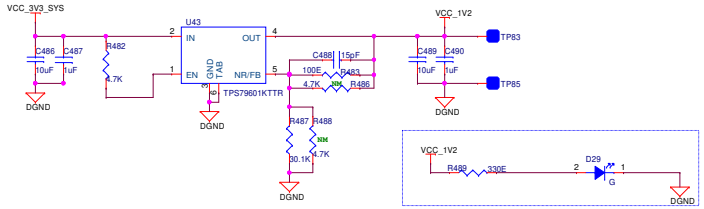
3.3V TO 1.8V LDO



3.3V T0 1.1V SUPPLY



3.3V TO 1.2V LDO



AM6442 PROCESSOR CARD

VALIANT COMMUNICATIONS	C	Title : POWER SECTION 3
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