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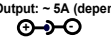
S32G-PROCEVB3-S

AC ADAPTER SPECIFICATIONS

DC Voltage Output: 12VDC
Current Output: ~ 5A (depending on application)
Polarity: 
Inner Diameter: 2.1mm
Outer Diameter: 5.5mm

THIS COLOR IS FOR SILK SCREEN TEXT

Automotive Product Group
6501 William Cannon Drive West
Austin, TX 78735-8598

Designer: Helen Xu	Drawing Title: S32G-PROCEVB3-S		
Drawn by: Helen Xu	Page Title: TITLE PAGE		
Approved: Ankur Kala	Size C	Document Number SCH-50784 PDF: SPF-50784	Rev A
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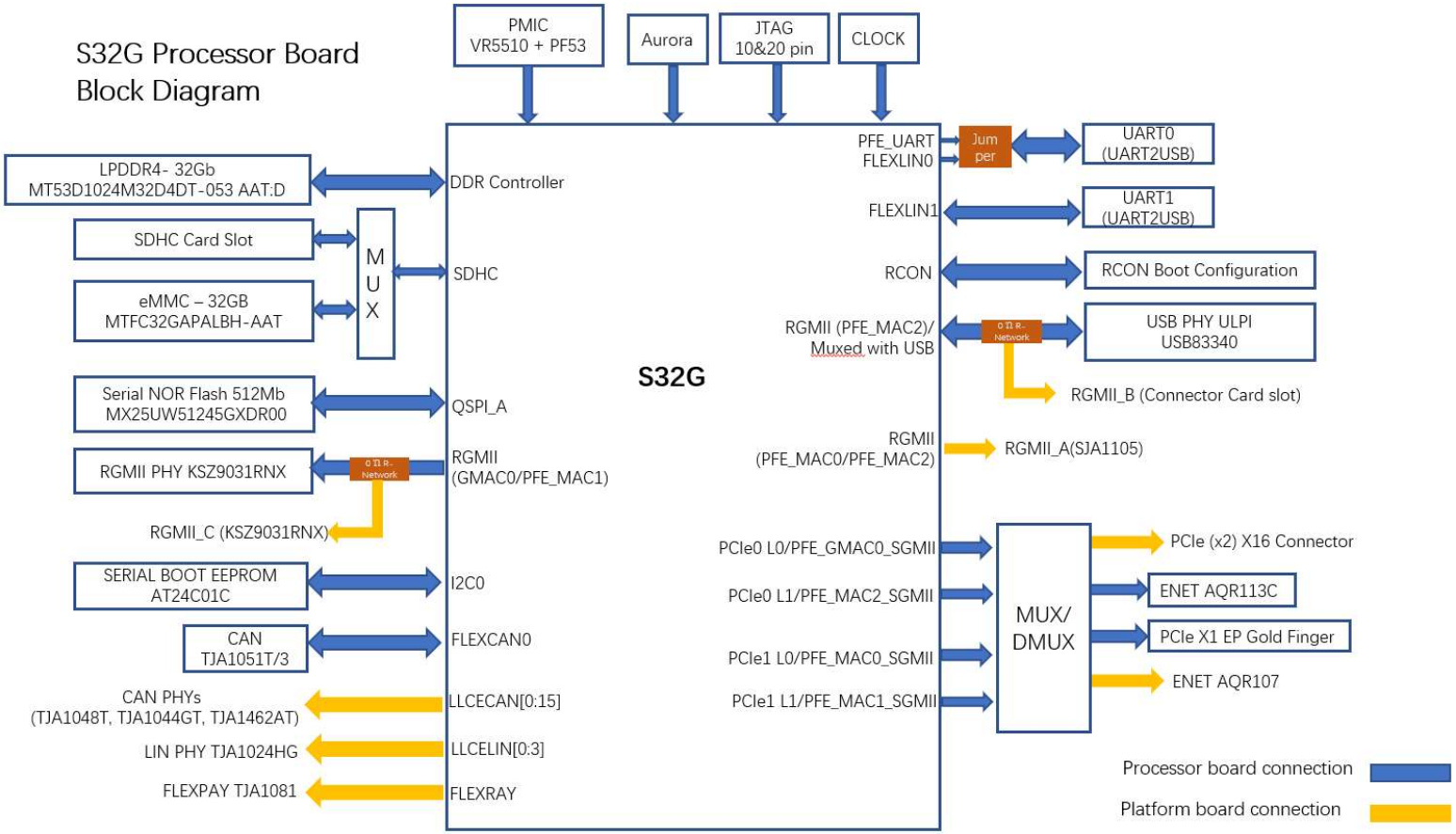
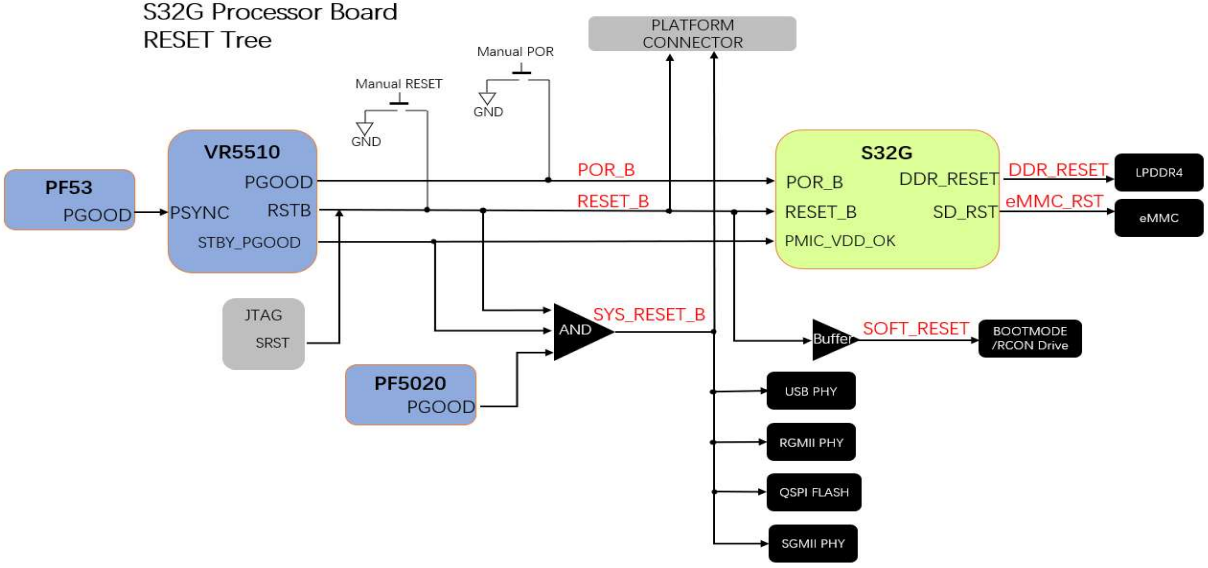
Revision History

Revision	Date	Description
X2	9 May, 2021	Draft Schematic
A	9 July, 2021	1. Change R143 from 22ohm to 0ohm based on PISI result 2. Remove R825 based on PISI result 3. Add R1278, R1279 to prevent PF53 damage in case no silicon in the socket 4. Change VR5510 BUCK1, BUCK2 feedback, PSYNC and VCOREMON option headers to 0ohm resistors so there will be no chance to users to damage VR5510 with wrong config 5. Move VDD_IO_GMAC0/1, VDD_IO_SDHC and eMMC Chip 1.8V supply from LDO2/BUCK1 to LDO1

S32G Processor Board Block Diagram



S32G Processor Board RESET Tree



Classification: Company Internal/Proprietary
Drawing Title: S32G-PROCEVB3-S
Page Title: BLOCK DIAGRAM
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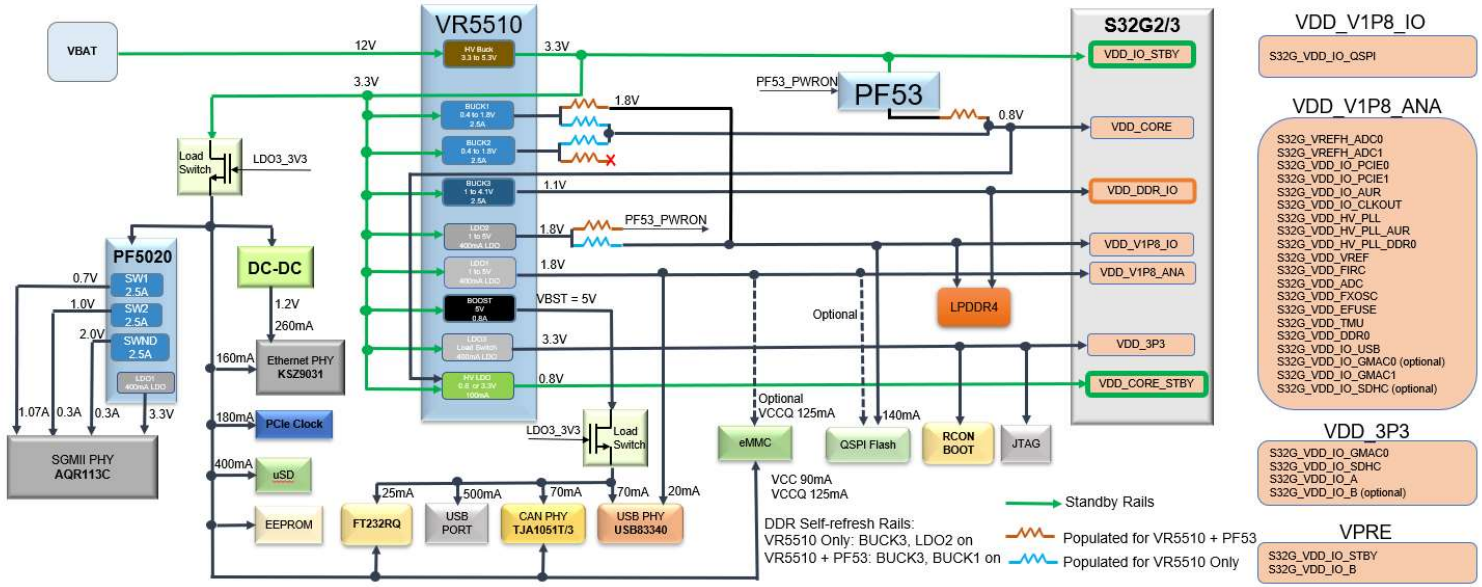
POWER TREE

S32G EVB3 - System Power Tree with VR5510 + PF53 (S32G2/G3 Compatible Design)



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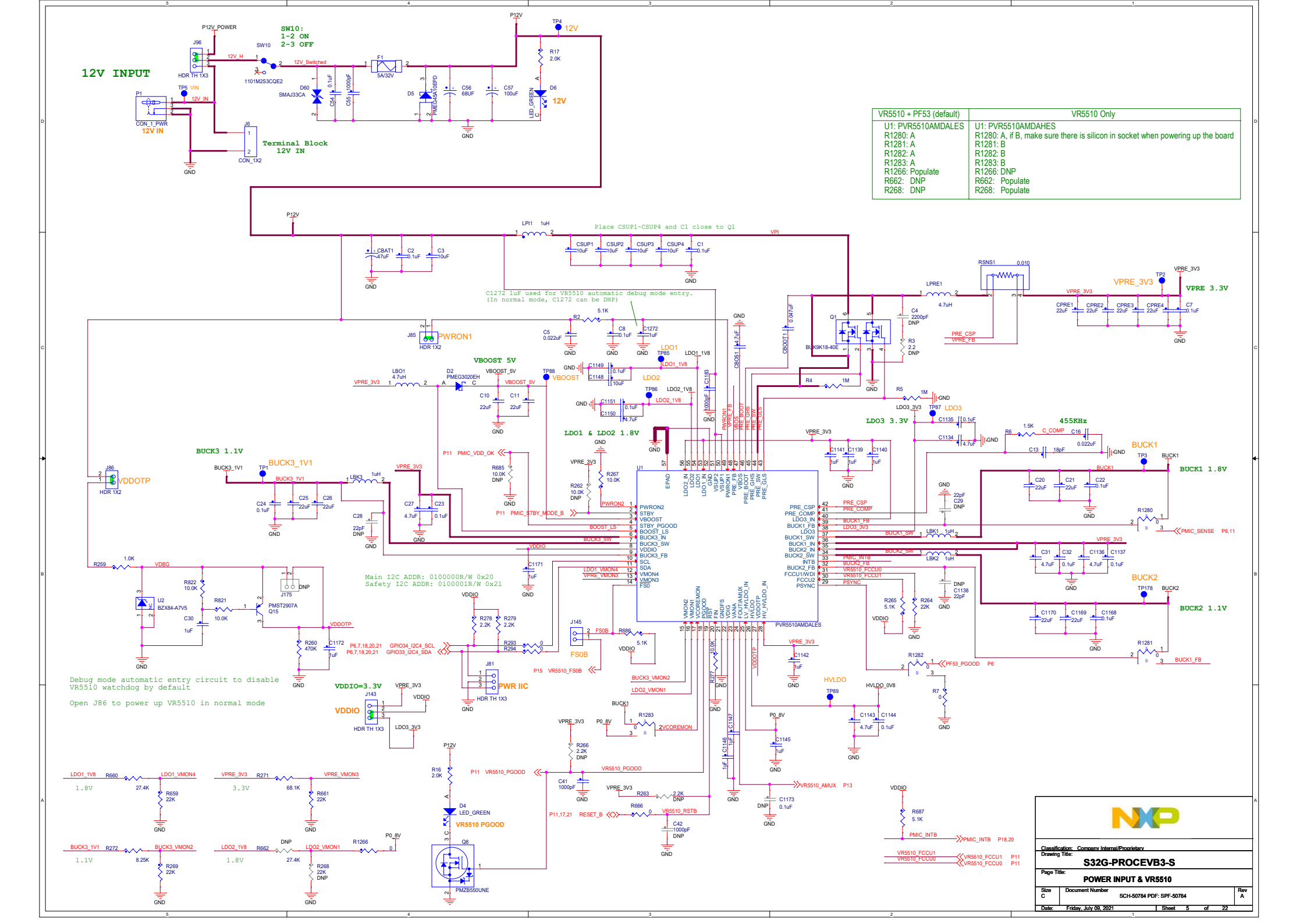
12V INPUT
SW10:
1-2 ON
2-3 OFF
Terminal Block
12V IN
VR5510 + PF53 (default)
U1: PVR5510AMDALES
R1280: A
R1281: A
R1282: A
R1283: A
R1266: Populate
R662: DNP
R268: DNP
VR5510 Only
U1: PVR5510AMDAHES
R1280: A, if B, make sure there is silicon in socket when powering up the board
R1281: B
R1282: B
R1283: B
R1266: DNP
R662: Populate
R268: Populate
Place CSUP1~CSUP4 and C1 close to Q1
C1272 1uF used for VR5510 automatic debug mode entry.
(In normal mode, C1272 can be DNP)
VBOOST 5V
LDO1 & LDO2 1.8V
LDO3 3.3V
455KHz
BUCK3 1.1V
BUCK1 1.8V
BUCK2 1.1V
VDDIO=3.3V
PWR IIC
Main I2C ADDR: 0100000R/W 0x20
Safety I2C ADDR: 0100001R/W 0x21
Debug mode automatic entry circuit to disable
VR5510 watchdog by default
Open J86 to power up VR5510 in normal mode
VR5510 PGOOD
PVR5510AMDALES
Classification: Company Internal/Proprietary
Drawing Title:
S32G-PROCEVB3-S
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POWER INPUT & VR5510
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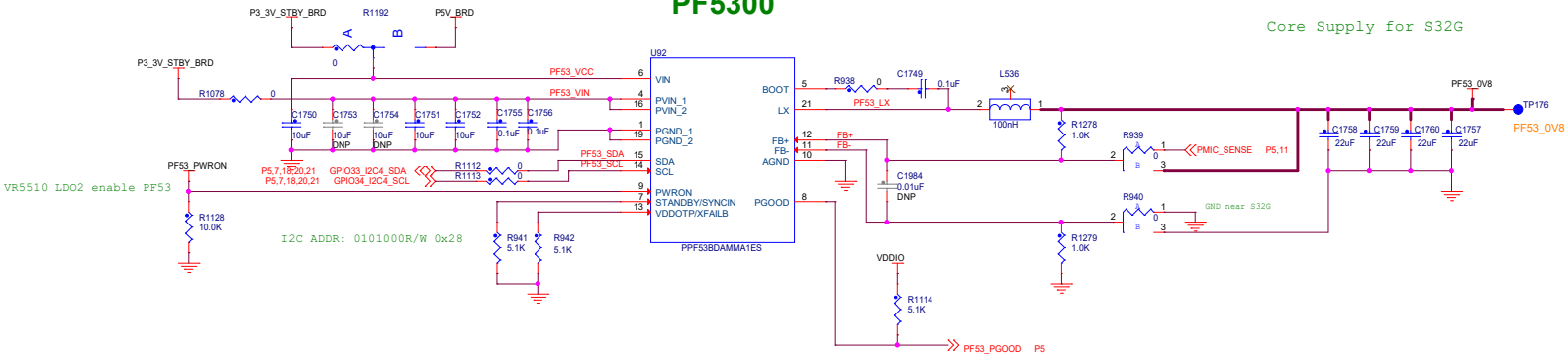
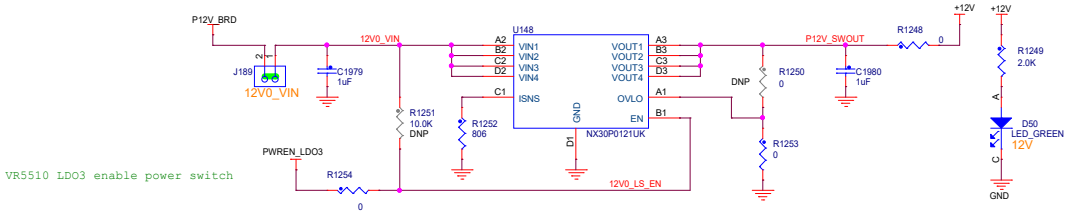
PF5300

0.8V@12A max

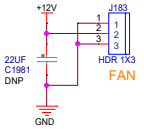
Core Supply for S32G



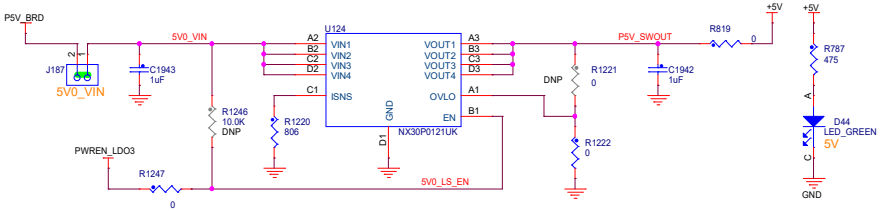
12.0V Load Switch



FAN PWR Connector

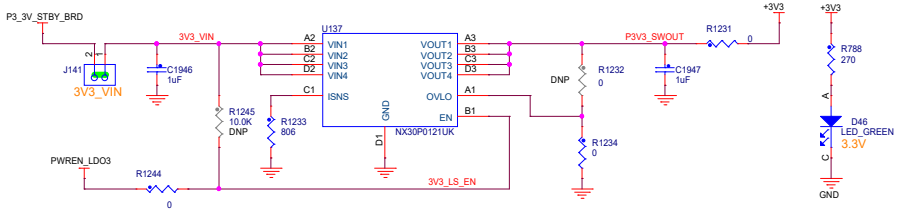


5.0V Load Switch



All load switches off in Standby Mode

3.3V Load Switch



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Drawing Title: S32G-PROCEVB3-S		
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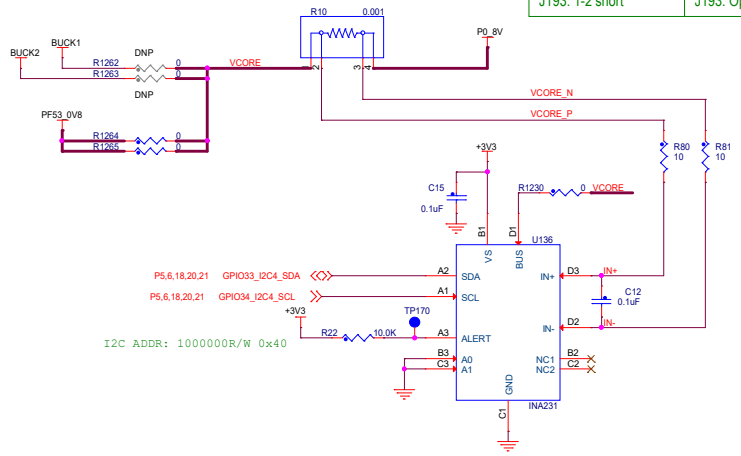
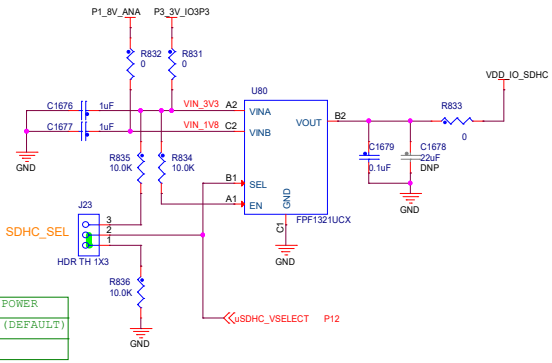
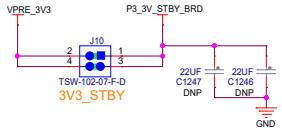
VR5510 + PF53 (default)	VR5510 Only
R1262: DNP R1263: DNP R1264: Populate R1265: Populate J11: 1-2 short J193: 1-2 short	R1262: Populate R1263: Populate R1264: DNP R1265: DNP J11: 2-3 short J193: Open

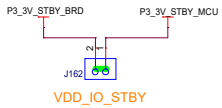


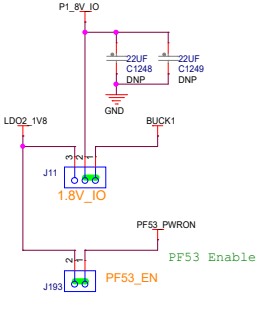
SDHC POWER SELECT

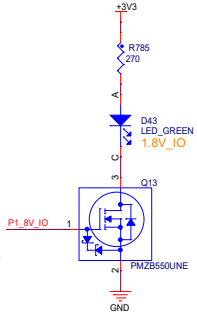


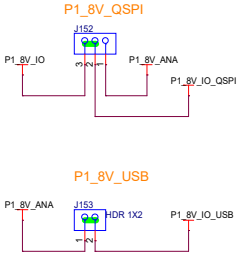
J23	SDHC POWER
SHORT 1-2	3.3V (DEFAULT)
SHORT 2-3	1.8V

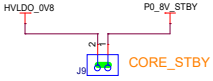


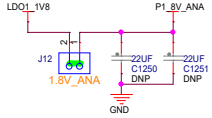


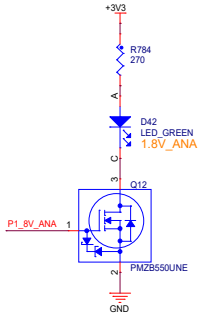


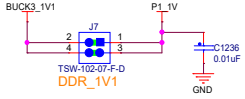


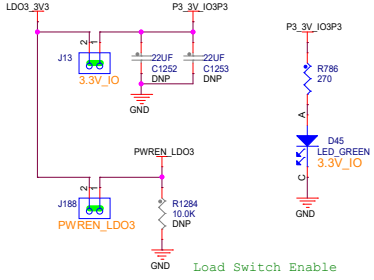


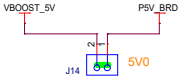


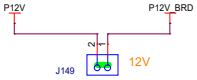












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Drawing Title: **S32G-PROCEVB3-S**

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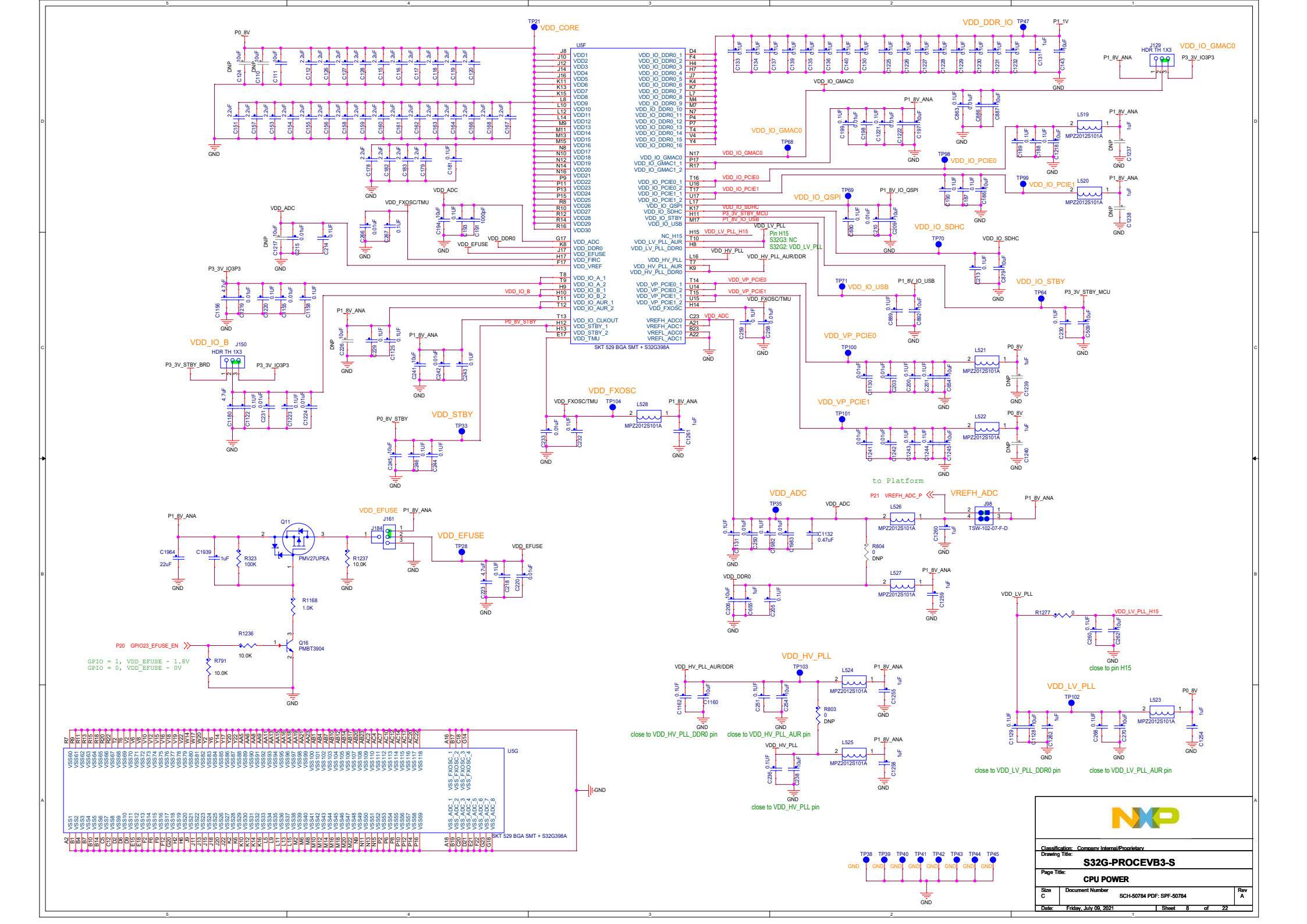
VDD_CORE
VDD_DDR_IO
VDD_IO_GMAC0
VDD_IO_PCIE0
VDD_IO_PCIE1
VDD_IO_QSPI
VDD_IO_SDHC
VDD_IO_STBY
VDD_IO_USB
VDD_VP_PCIE0
VDD_VP_PCIE1
VDD_FXOSC
VDD_STBY
VDD_ADC
VDD_EFUSE
VDD_HV_PLL
VDD_LV_PLL
VDD_IO_B
VREFH_ADC
to Platform
SKT 529 BGA SMT + S32G398A
GPIO = 1, VDD_EFUSE - 1.8V
GPIO = 0, VDD_EFUSE - 0V
close to pin H15
close to VDD_HV_PLL_DDR0 pin
close to VDD_HV_PLL_AUR pin
close to VDD_HV_PLL pin
close to VDD_LV_PLL_DDR0 pin
close to VDD_LV_PLL_AUR pin
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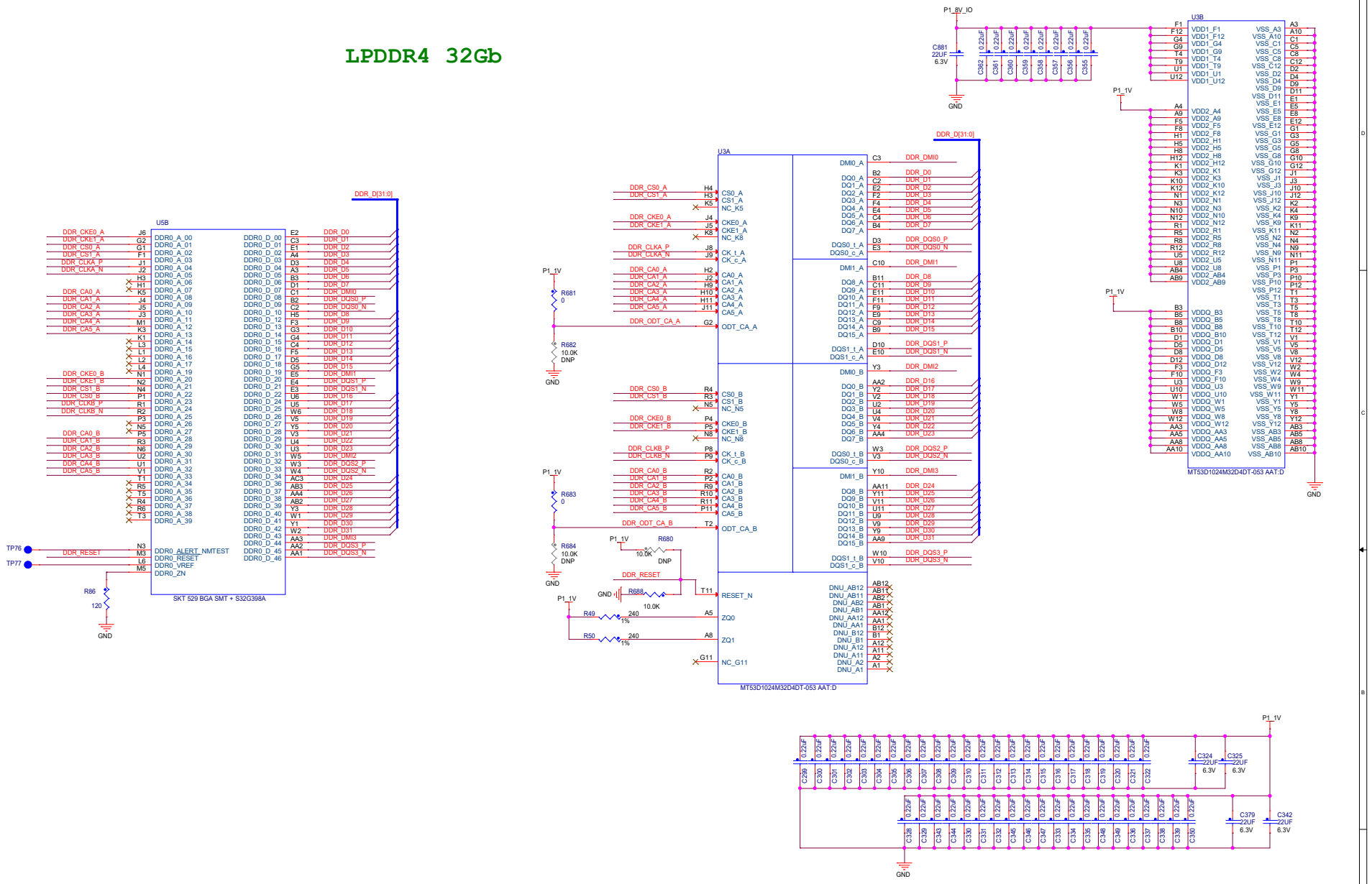
LPDDR4 32Gb



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Drawing Title: S32G-PROCEVB3-S			
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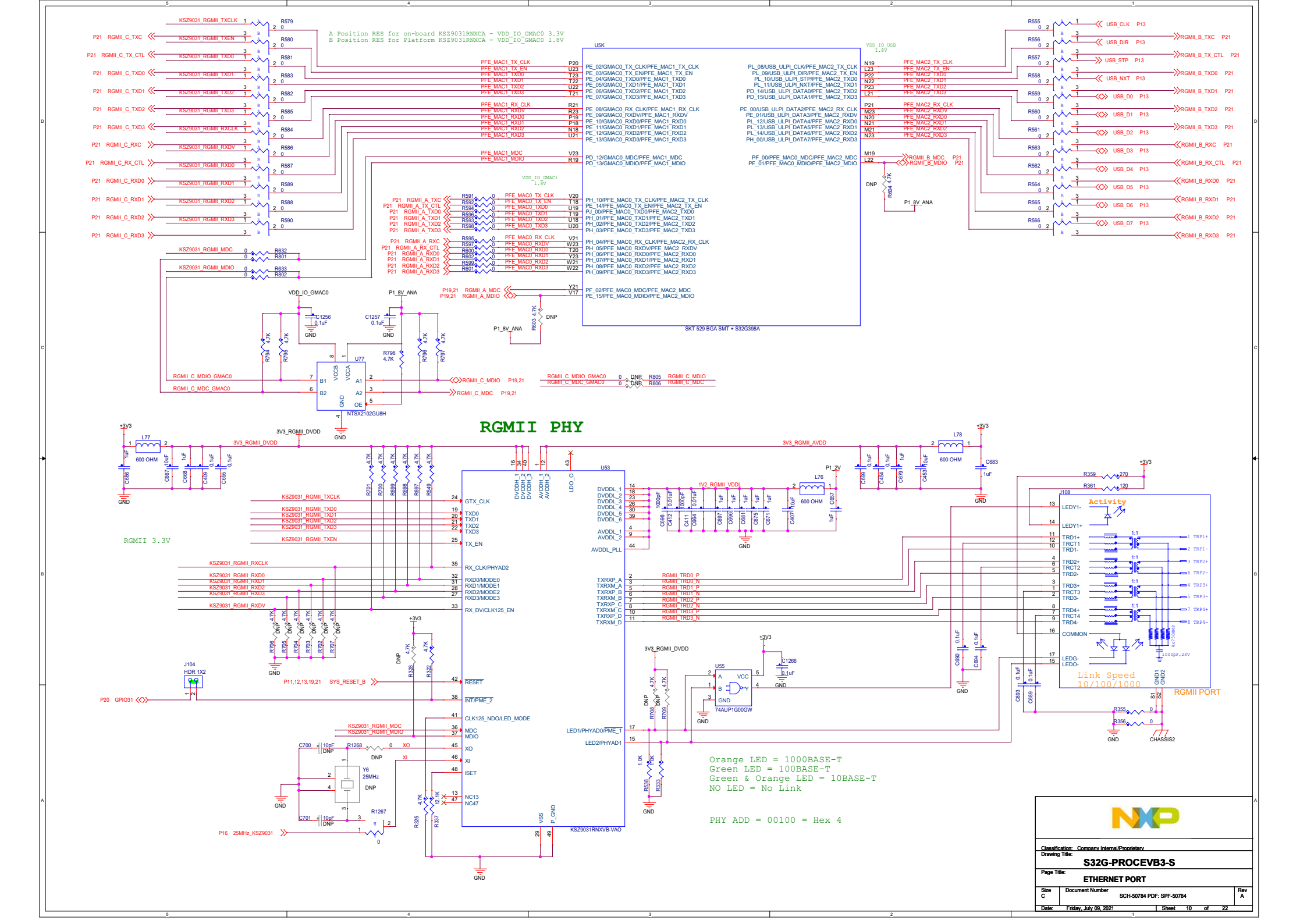
A Position RES for on-board KSZ9031RNXCA - VDD_IO_GMAC0 3.3V
B Position RES for Platform KSZ9031RNXCA - VDD_IO_GMAC0 1.8V
U5K
SKT 529 BGA SMT + S32G398A
RGMII PHY
U53
KSZ9031RNXVB-VAO
RGMII 3.3V
Orange LED = 1000BASE-T
Green LED = 100BASE-T
Green & Orange LED = 10BASE-T
NO LED = No Link
PHY ADD = 00100 = Hex 4
Activity
Link Speed
10/100/1000
RGMII PORT
S32G-PROCEVB3-S
ETHERNET PORT
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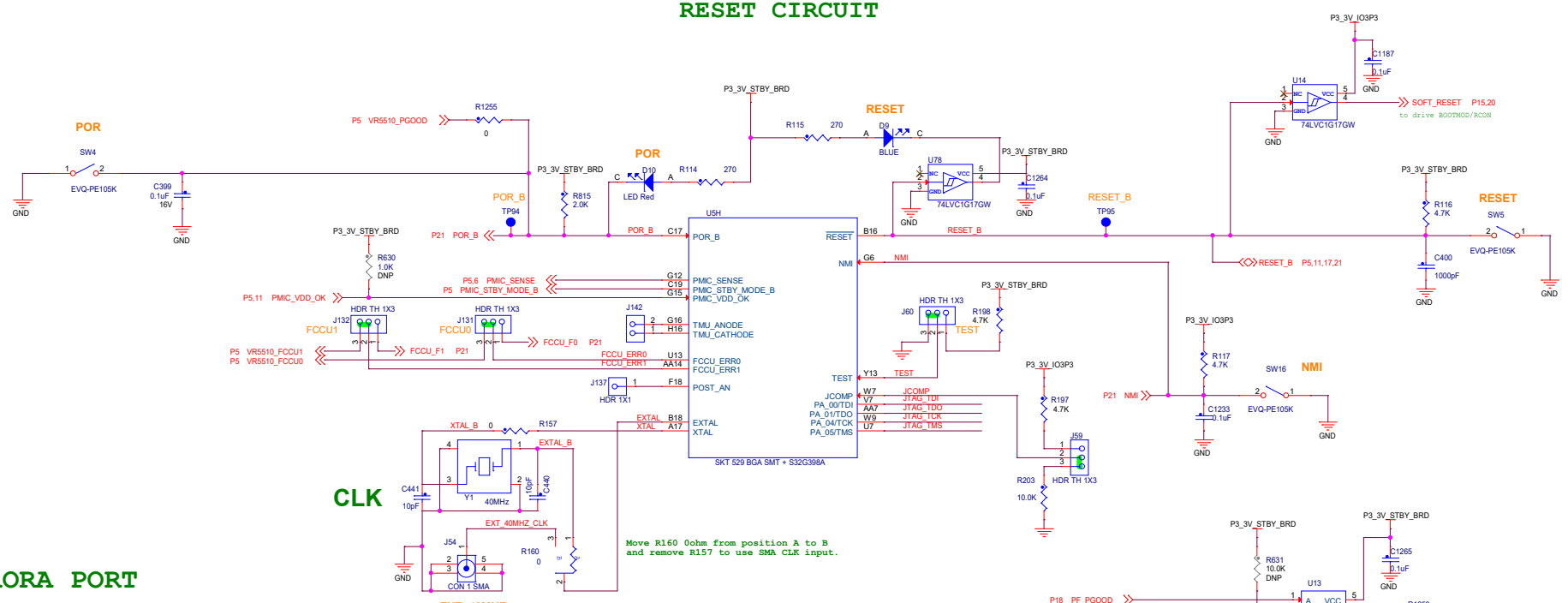
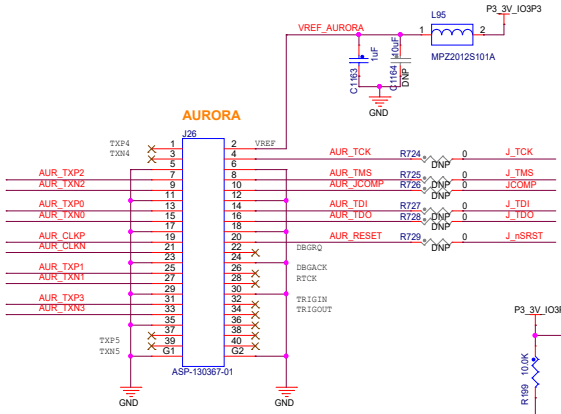
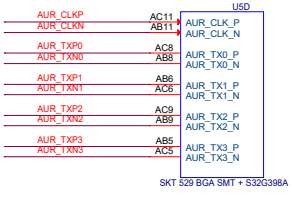
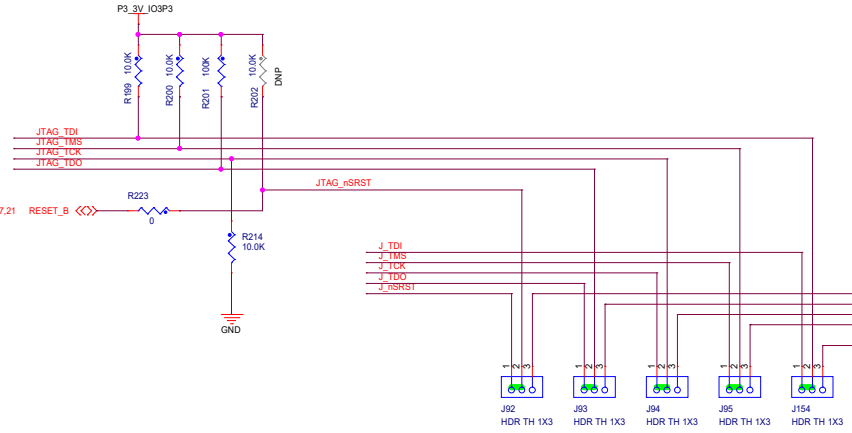
RESET CIRCUIT



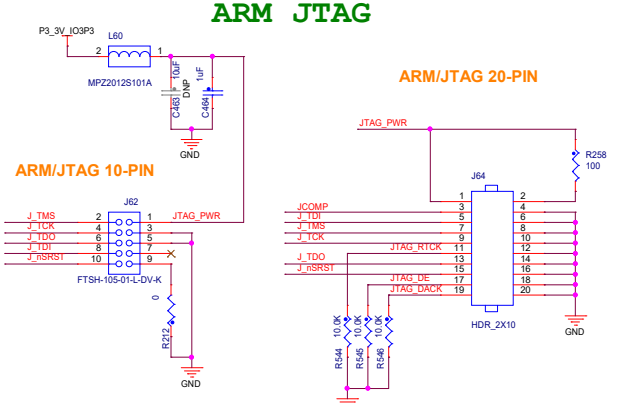
AURORA PORT

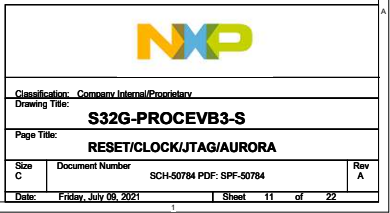




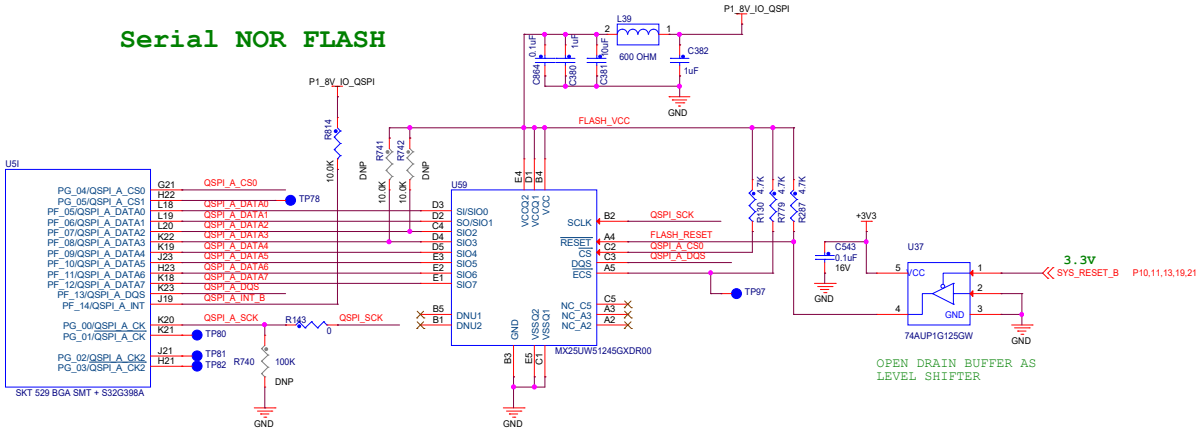


ARM JTAG

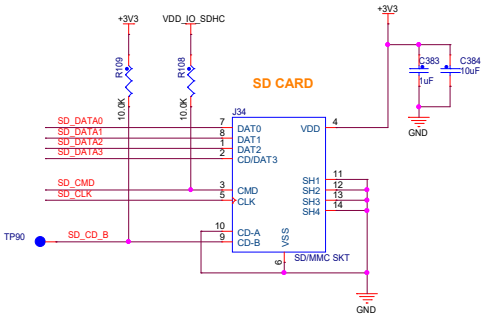




Serial NOR FLASH

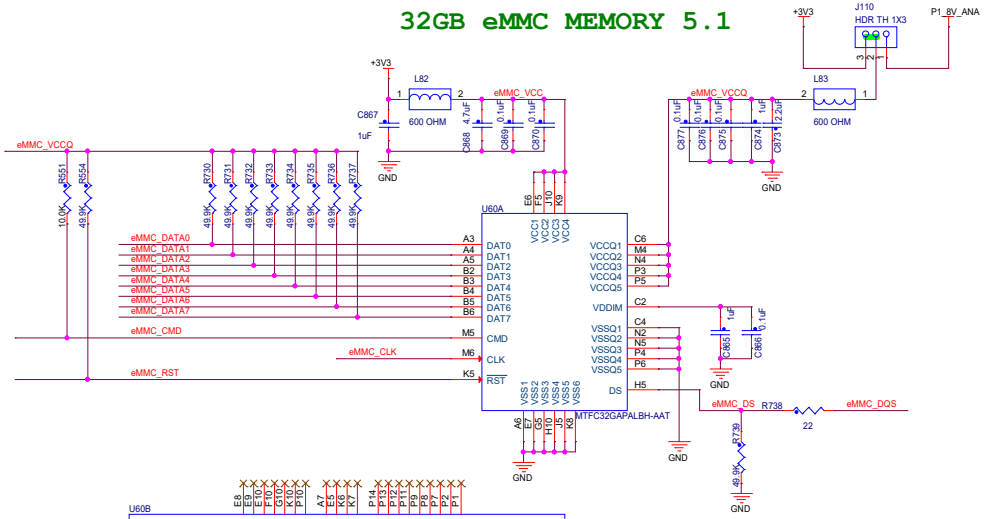


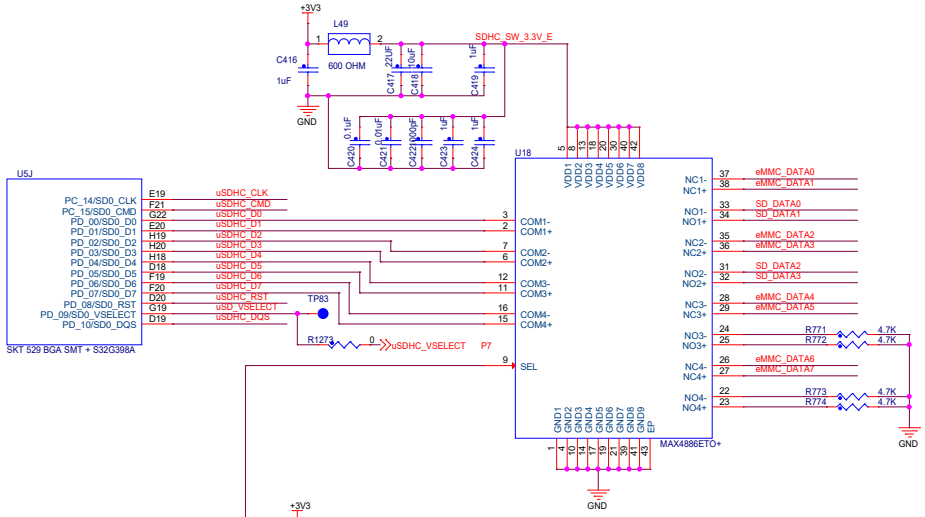
R740~R742 are for Micron compatible flash

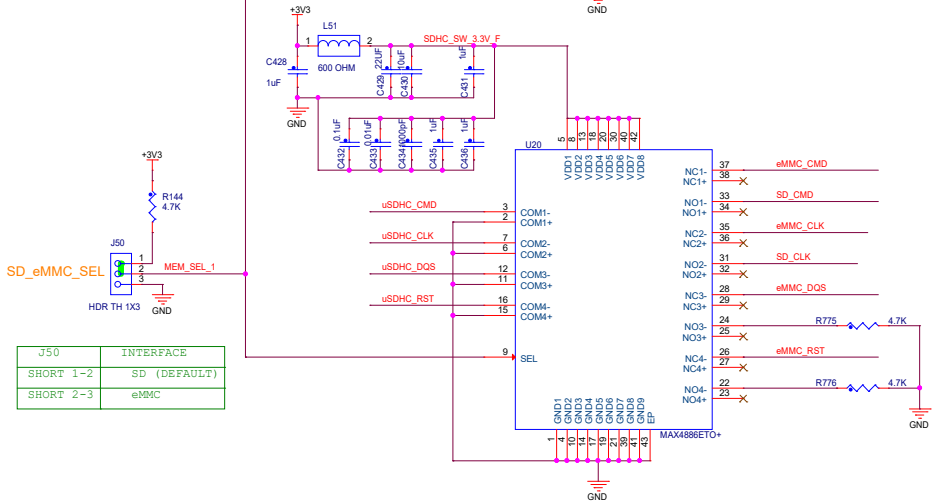


MICRO SD CARD SOCKET

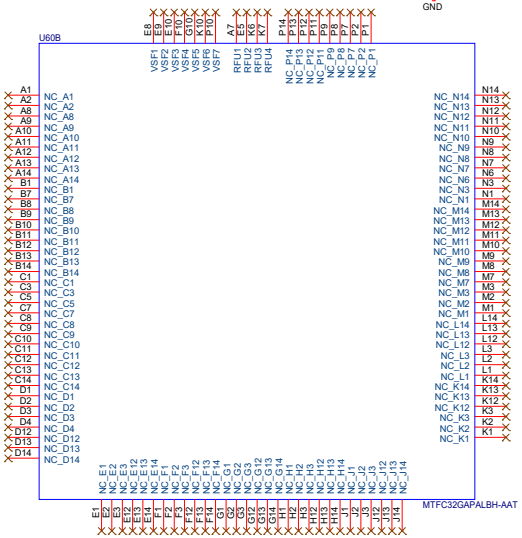
32GB eMMC MEMORY 5.1







J50	INTERFACE
SHORT 1-2	SD (DEFAULT)
SHORT 2-3	eMMC



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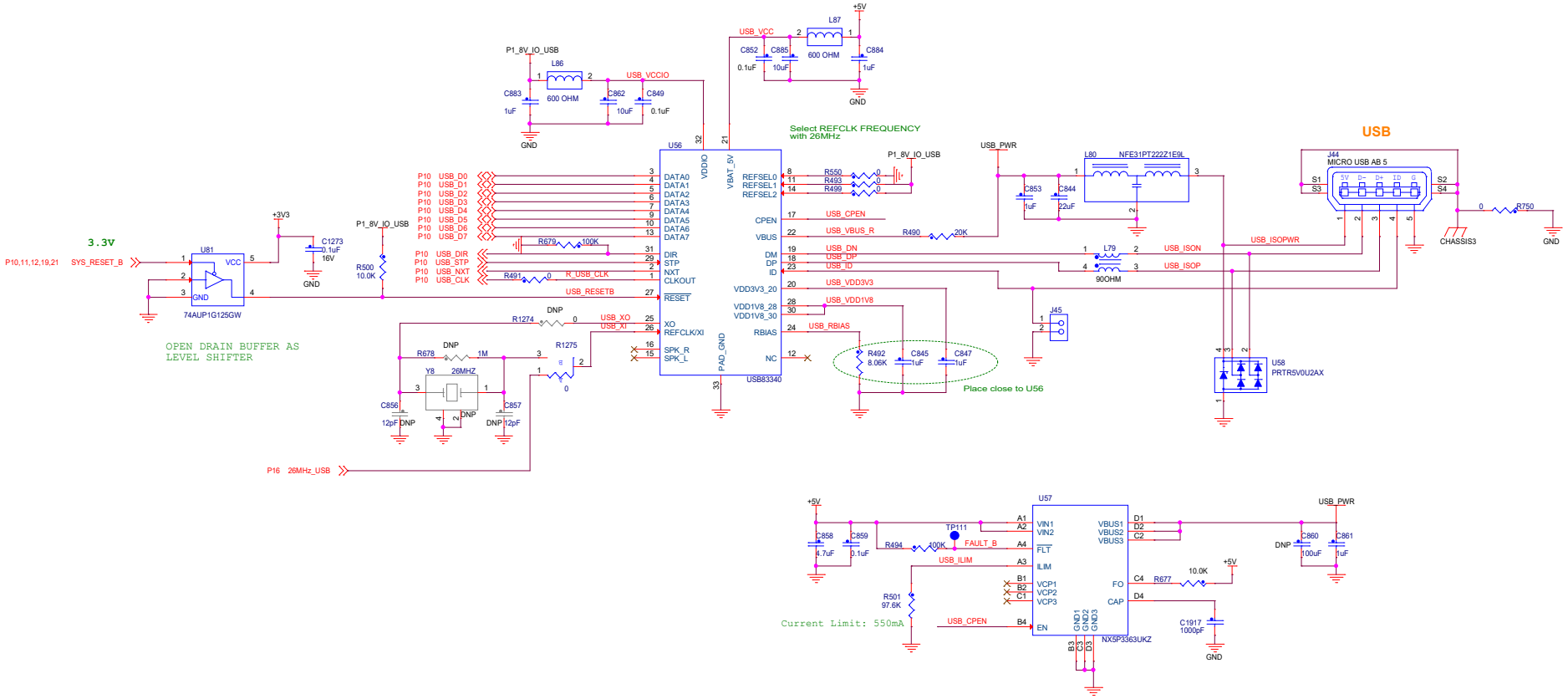
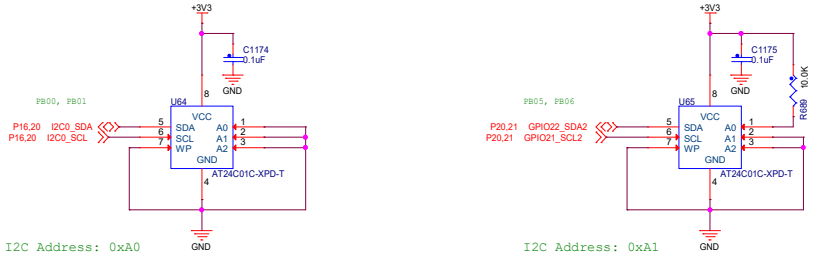
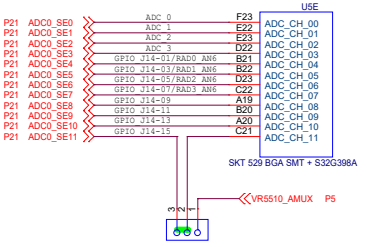
ULPI USB



SERIAL BOOT EEPROM



ADC Connection



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Drawing Title:	S32G-PROCEVB3-S
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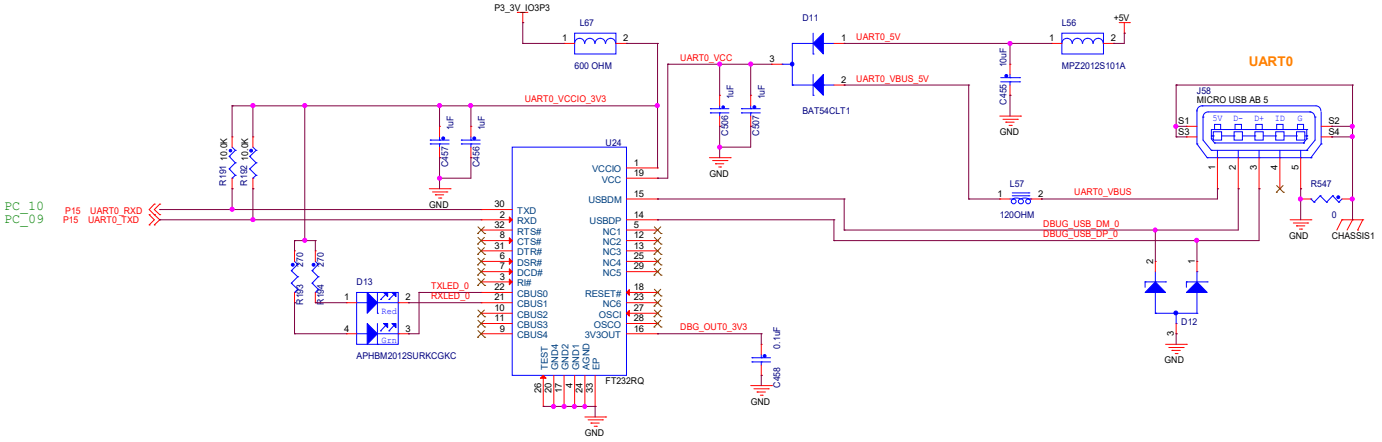
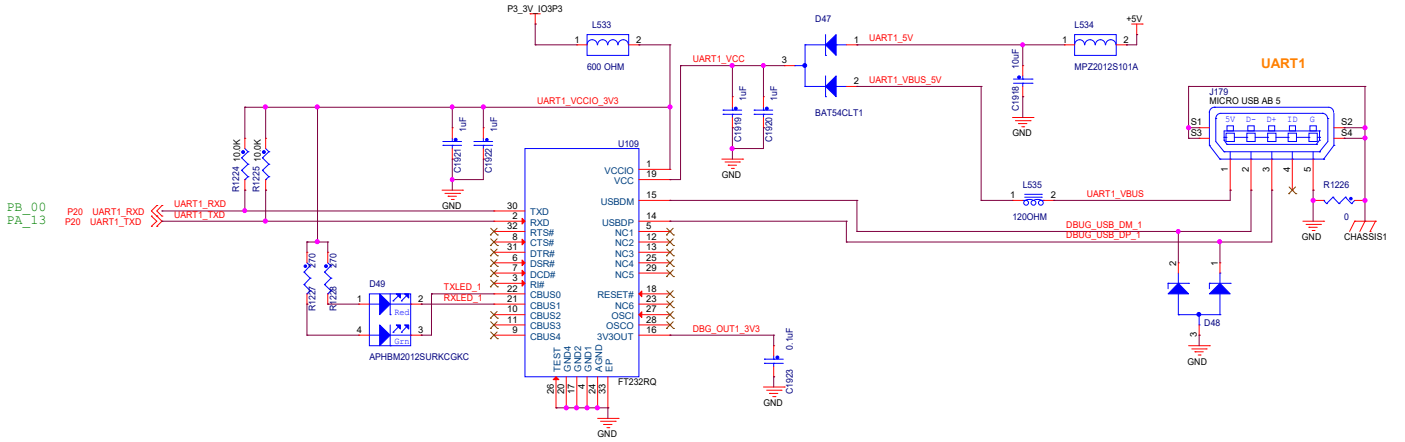
UART TO USB CONVERSION





Classification: Company Internal/Proprietary		
Drawing Title: S32G-PROCEVB3-S		
Page Title: UART		
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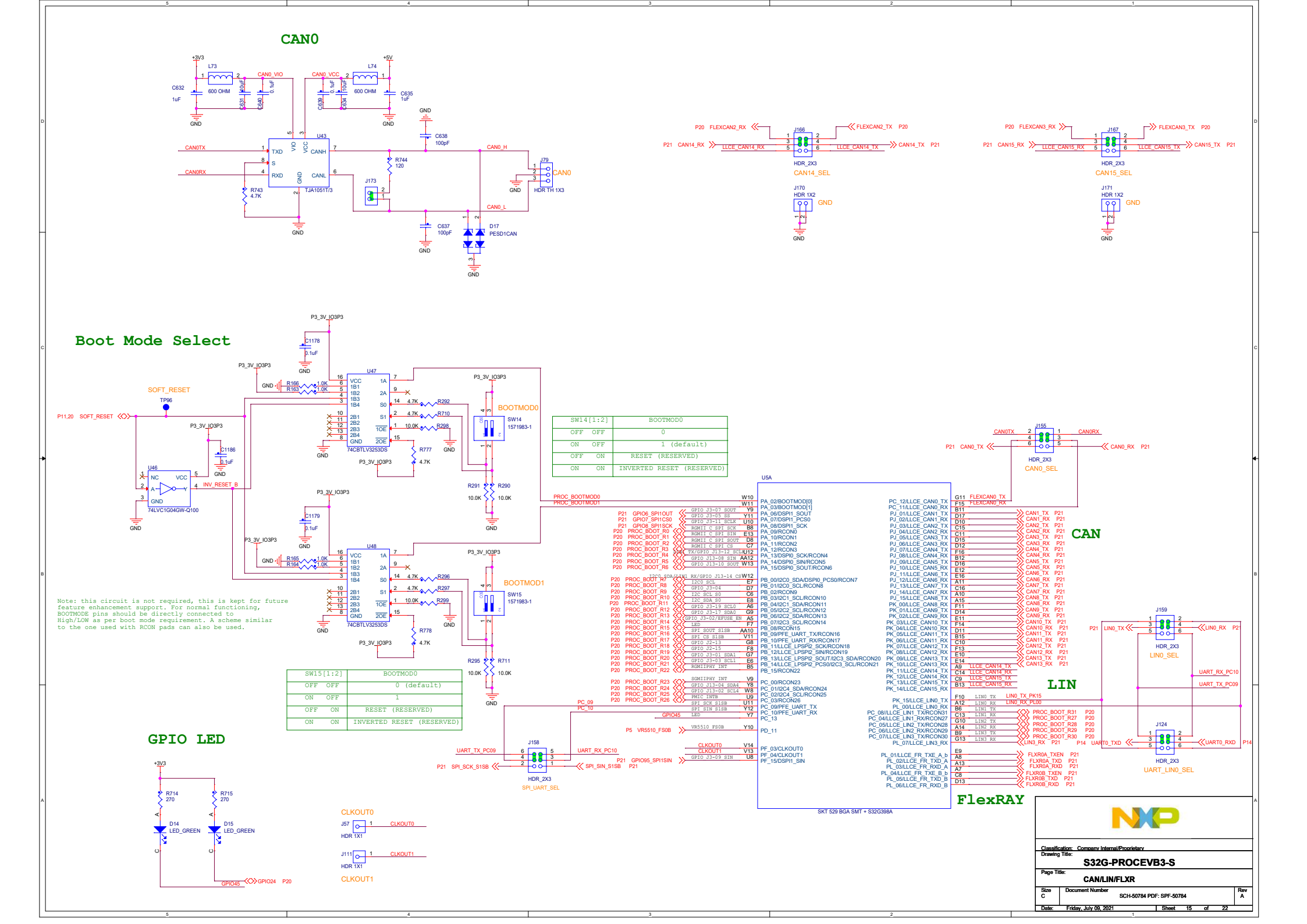
CAN0
Boot Mode Select
GPIO LED
CAN
LIN
FlexRAY
SOFT_RESET
BOOTMOD0
BOOTMOD1
CAN0_SEL
CAN14_SEL
CAN15_SEL
LIN0_SEL
UART_LIN0_SEL
SPI_UART_SEL
CLKOUT0
CLKOUT1
SW14[1:2] BOOTMOD0
OFF OFF 0
ON OFF 1 (default)
OFF ON RESET (RESERVED)
ON ON INVERTED RESET (RESERVED)
SW15[1:2] BOOTMOD0
OFF OFF 0 (default)
ON OFF 1
OFF ON RESET (RESERVED)
ON ON INVERTED RESET (RESERVED)
Note: this circuit is not required, this is kept for future feature enhancement support. For normal functioning, BOOTMODE pins should be directly connected to High/LOW as per boot mode requirement. A scheme similar to the one used with RCON pads can also be used.
SKT 529 BGA SMT + S32G398A
Classification: Company Internal/Proprietary
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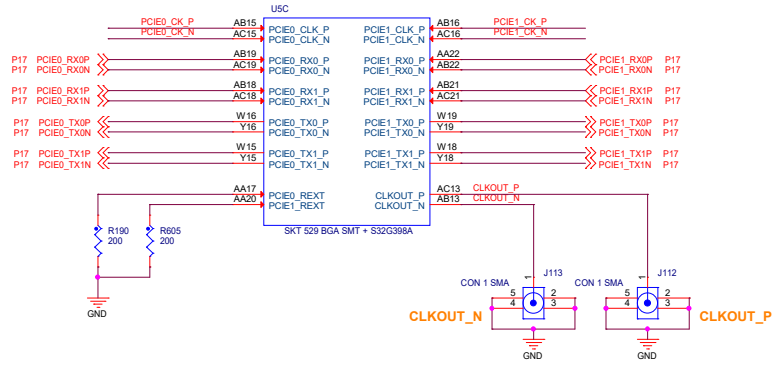
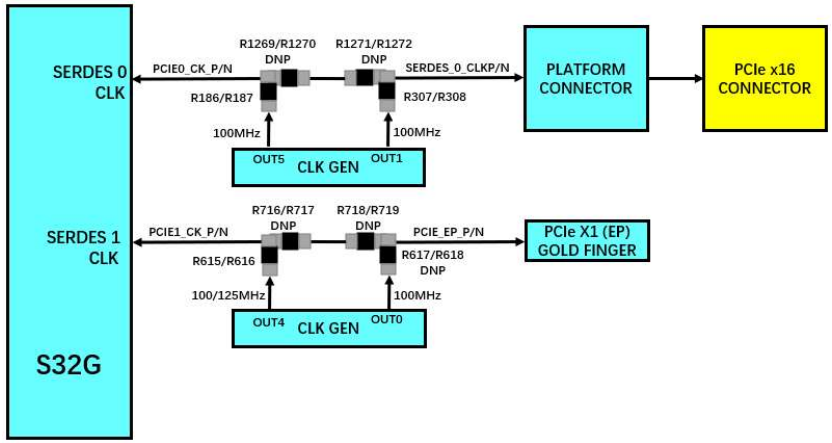
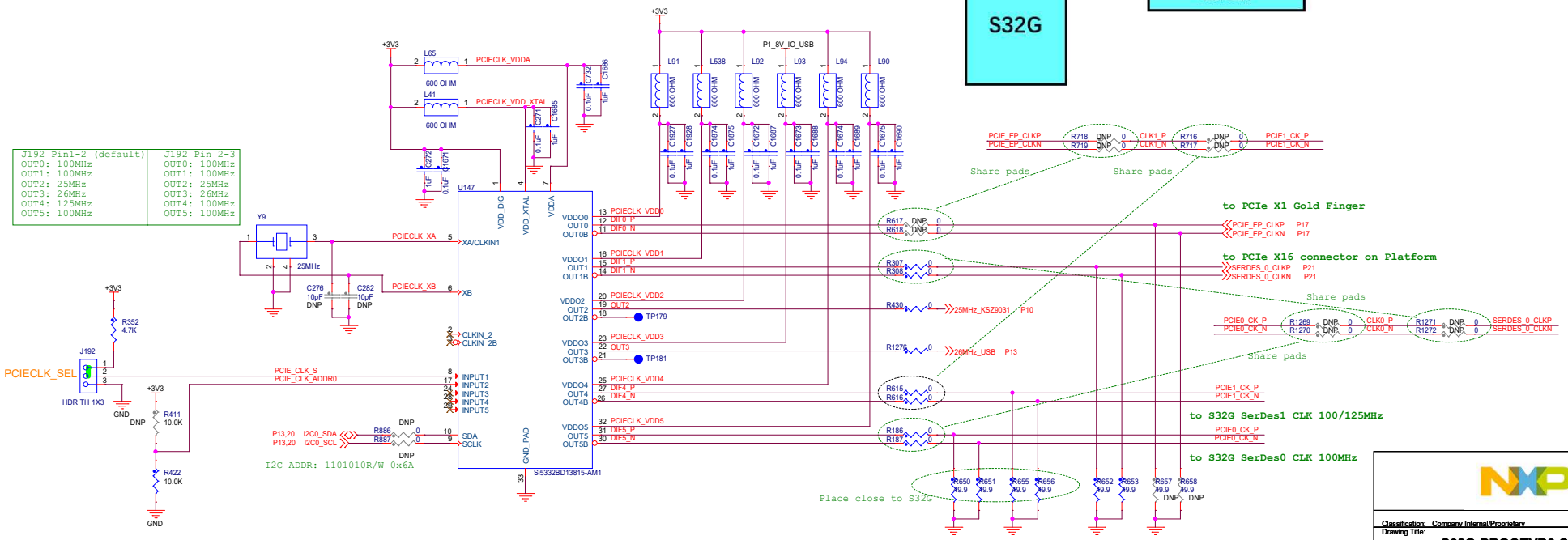
SerDes Lanes





CLOCK

J192 Pin1-2 (default)	J192 Pin 2-3
OUT0: 100MHz	OUT0: 100MHz
OUT1: 100MHz	OUT1: 100MHz
OUT2: 25MHz	OUT2: 25MHz
OUT3: 26MHz	OUT3: 26MHz
OUT4: 125MHz	OUT4: 100MHz
OUT5: 100MHz	OUT5: 100MHz



Classification: Company Internal/Proprietary
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SW17[0:1]	SD0 Mode	SD0_L0	SD0_L1	SD0 Reference Clock	SD1 Mode	SD1_L0	SD1_L1	SD1 Reference Clock
00	PCIe only	PCIe X2 (P:PCIe X16 CON)	PCIe X2 (P:PCIe X16 CON)	100MHz	PCIe/SGMII	PCIe X1 (D: PCIe X1 Gold Finger)	SGMII 1G (P: AQR107, PFE_MAC1)	100MHz
01 (default)	PCIe only	PCIe X2 (P:PCIe X16 CON)	PCIe X2 (P:PCIe X16 CON)	100MHz	SGMII only	SGMII 1G/2.5G (D: AQR113C, PFE_MAC0)	SGMII 1G/2.5G (P: AQR107, PFE_MAC1)	100/125MHz
10	PCIe/SGMII	PCIe X1 (D: PCIe X1 Gold Finger)	SGMII 1G (P: AQR107, PFE_MAC2)	100MHz				
11	SGMII only	SGMII 1G (D: AQR113C, GMAC0)	SGMII 1G (P: AQR107, PFE_MAC2)	100MHz				

P: Platform Board
D: Processor Board

SerDes SWITCH

SERDES_SEL
SW17
1571983-1
R1241 4.7K
R1242 4.7K
R1239 10.0K
R1240 10.0K
SD_SEL0
SD_SEL1

U74 CBTL02043A
to PCIe X16 on Platform
SEL = LOW, A <--> B
SEL = HIGH, A <--> C

U146 74LVC1G04GW-Q100
SD_SEL1_INV

U145 74LVC1G04GW-Q100
SD_SEL0_INV

U141 CBTL02043A
to AQR107 on Platform

U140 CBTL02043A
SD_MUX_TXN
SD_MUX_TXP

U143 CBTL02043A
to PCIe X1 Gold Finger
to AQR113C

U142 CBTL02043A
SD_MUX_RXP
SD_MUX_RXN

U144 CBTL02043A
to AQR113C
to PCIe X1 Gold Finger

U138 CBTL02043A
to PCIe X16 on Platform

U139 CBTL02043A
to AQR107 on Platform

PCIe X1 EP GOLD Finger

U50 CON_PCI EDGE_36
12V_PCIE_X1
3V3_PCIE_X1
PRSNT1
PRSNT2
PCIE_RST
PCIE_RXP
PCIE_RXN
PCIE_TXP
PCIE_TXN
PCIE_EP_CLKP
PCIE_EP_CLKN
RESET_B

U79 74AUP1G125GW

J147
J148

Drawing Title: S32G-PROCEVB3-S

Page Title: SERDES SWITCH

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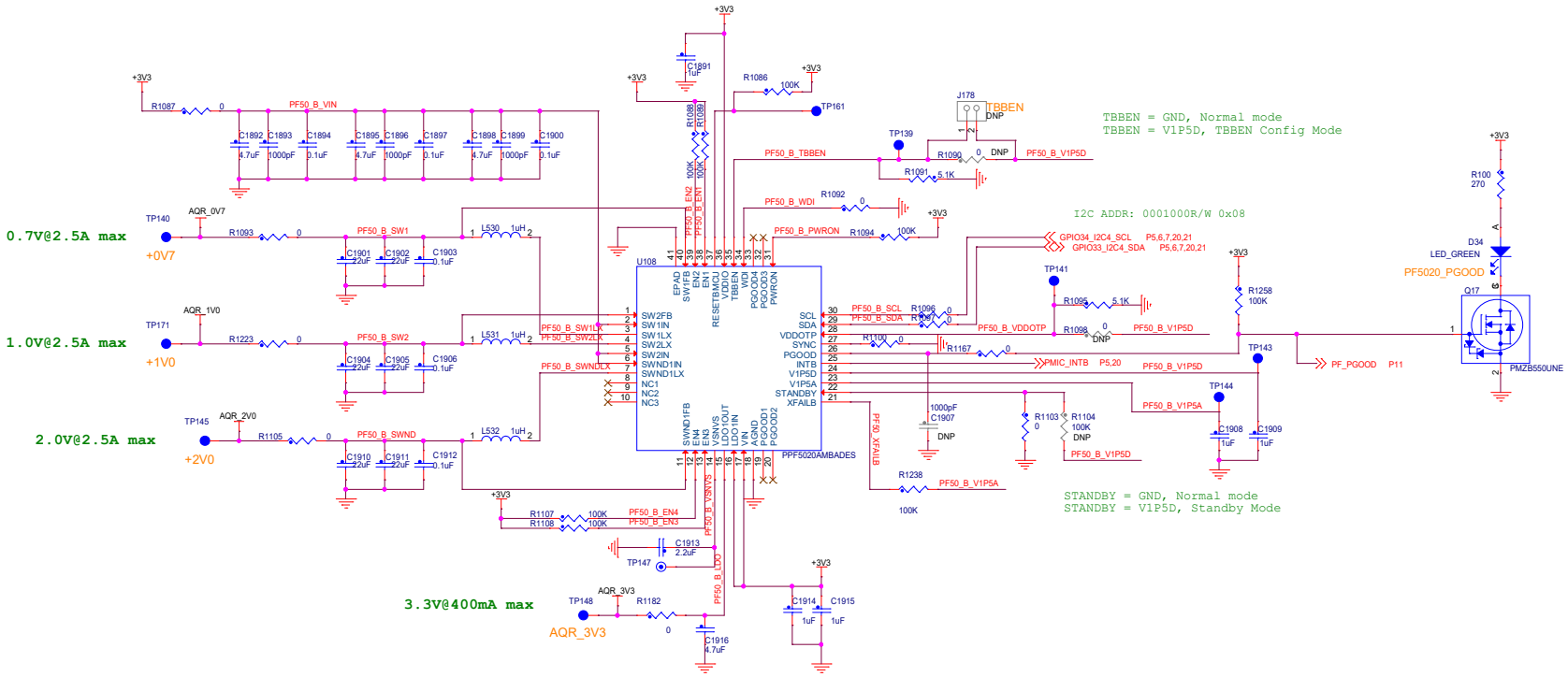
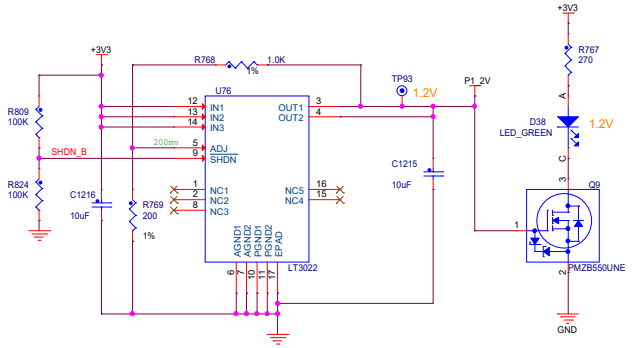
AQR113C Power Supply



RGMII PHY KSZ9031 1.2V Supply



Classification: Company Internal/Proprietary		
Drawing Title: S32G-PROCEVB3-S		
Page Title: AQR113C POWER SUPPLY		
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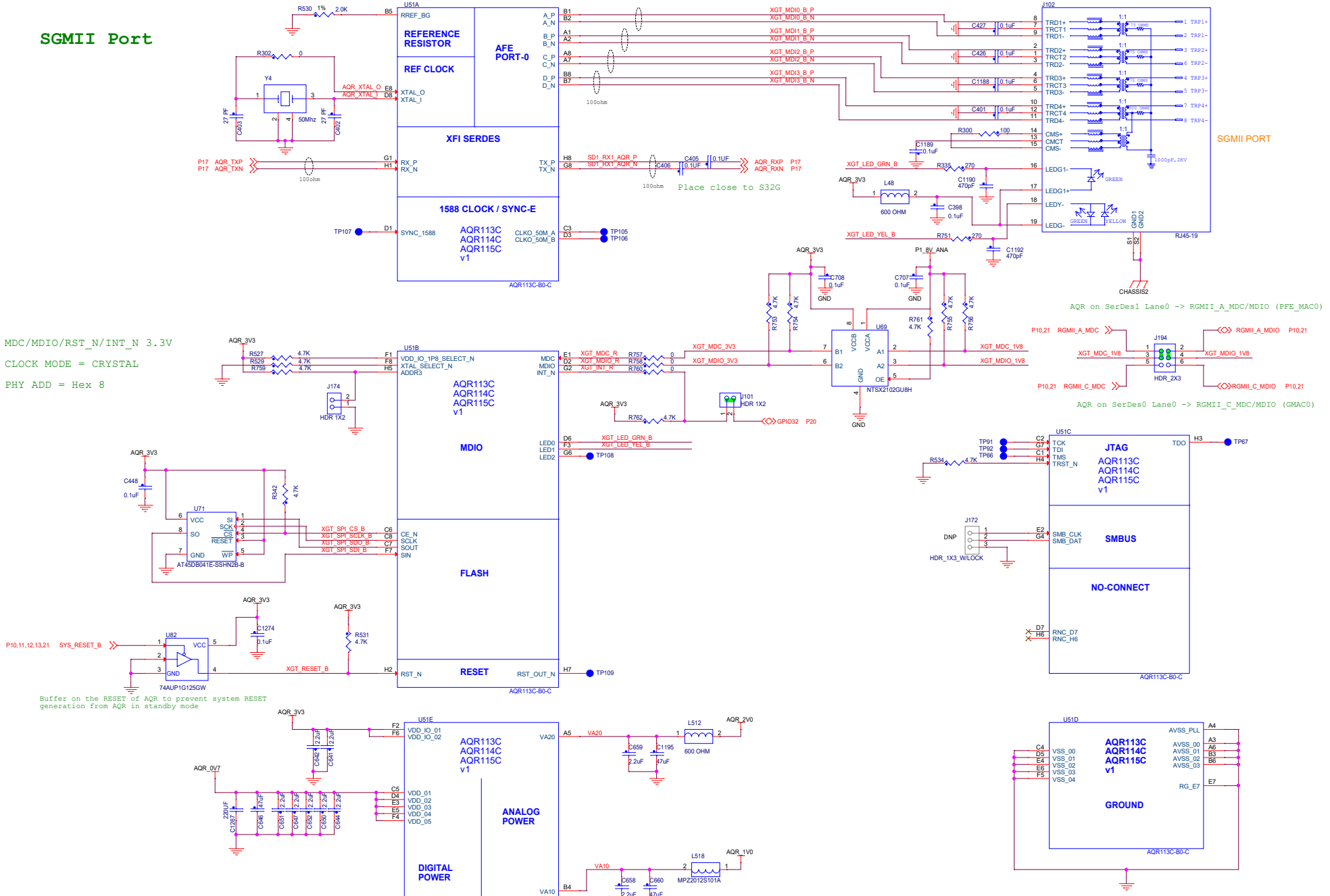
SGMII Port



Classification: Company Internal/Proprietary

Drawing Title: **S32G-PROCEVB3-S**

Page Title: **AQR113C SGMII PHY**

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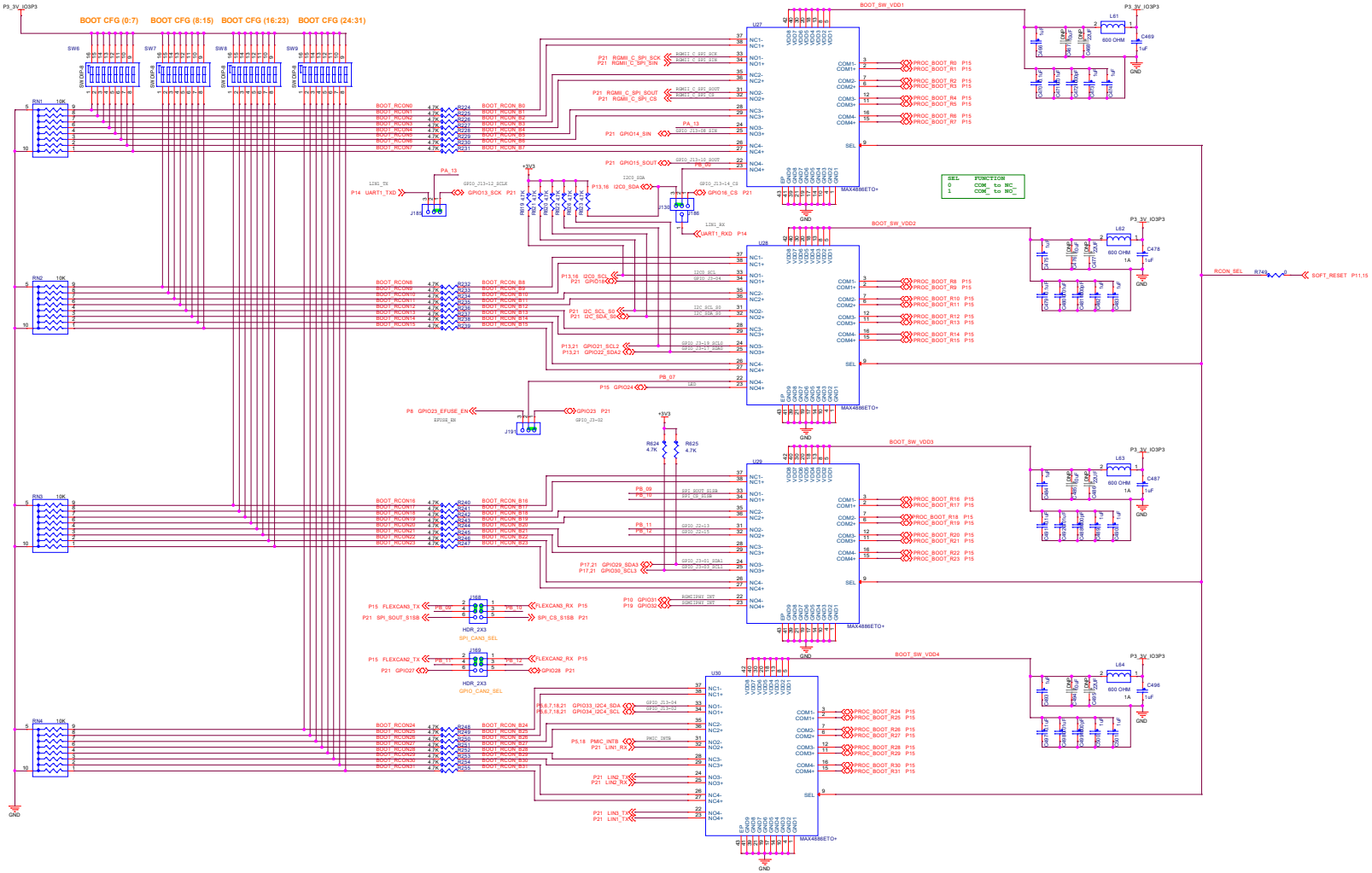
SW6~SW9 Default Setting

	1	2	3	4	5	6	7	8
SW6	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
SW7	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SW8	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SW9	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

RCON Boot Selection



Classification: Company Internal/Proprietary	
Drawing Title:	S32G-PROCEVB3-S
Page Title:	RCON BOOT SELECT
Size: D	Document Number: SCH-50784 PDF: SPF-50784 Rev: A
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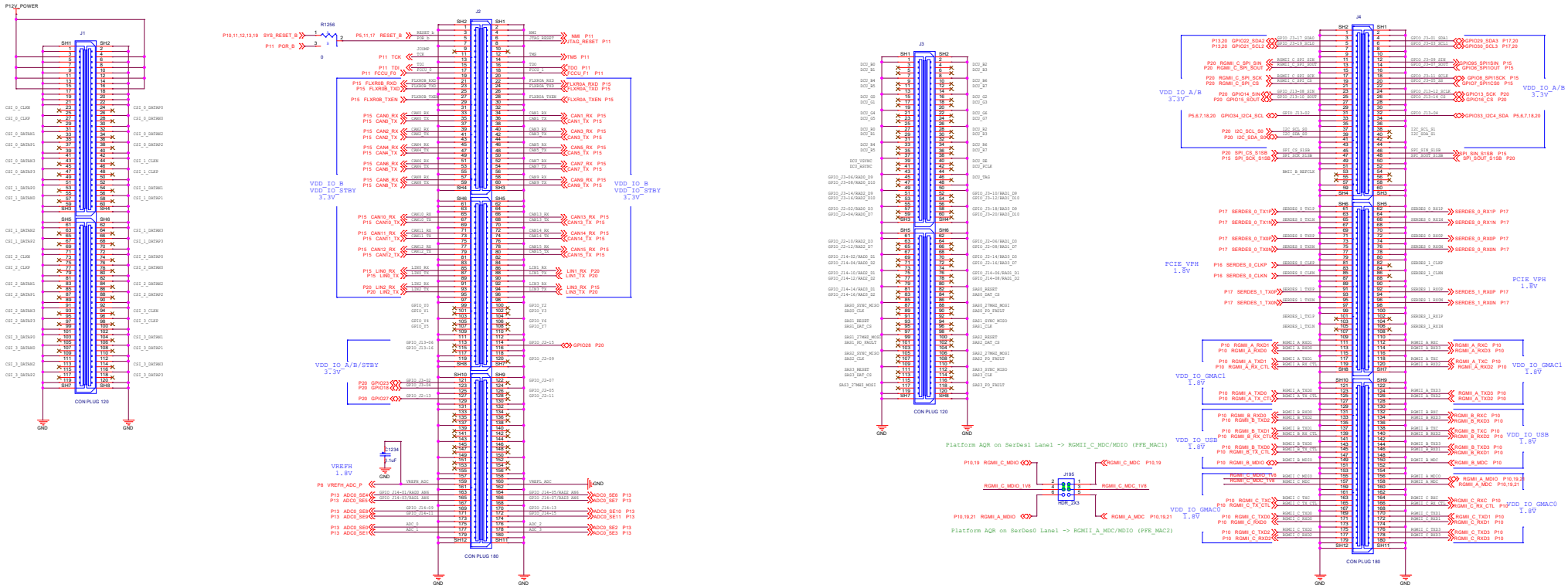
Connectors for Platform



NXP

Classification: Company Internal/Proprietary

Drawing Title: **S32G-PROCEVB3-S**

Page Title: **INTERCONNECTOR**

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Default Jumper setting

REF DES	JUMPER(DEFAULT)	PAGE NAME
J86,J96,J85	1-2	05 POWER INPUT & VR5510
J143	2-3	05 POWER INPUT & VR5510
R1283,R1282,R1280,R1281	A	05 POWER INPUT & VR5510
J189,J141,J187	1-2	06 PF53 & LOAD SWITCH
R939,R940,R1192	A	06 PF53 & LOAD SWITCH
J7,J10	1-2, 3-4	07 POWER JUMPERS
J23,J153,J12,J14,J188,J162, J13,J9,J193,J11,J149	1-2	07 POWER JUMPERS
J152	2-3	07 POWER JUMPERS
J98	1-2, 3-4	08 CPU POWER
J161	1-2	08 CPU POWER
J129,J150	2-3	08 CPU POWER
J104	1-2	10 ETHERNET PORT
R1267,R557,R566,R590,R564, R560,R563,R559,R580,R556, R581,R579,R587,R565,R561, R585,R562,R584,R588,R589, R558,R582,R583,R586,R555	A	10 ETHERNET PORT
J154,J94,J95,J92,J93	1-2	11 RESET/CLOCK/JTAG/AURORA
J131,J132,J60,J59	2-3	11 RESET/CLOCK/JTAG/AURORA
R160	A	11 RESET/CLOCK/JTAG/AURORA
J50	1-2	12 FLASH/eMMC/SD
J110	2-3	12 FLASH/eMMC/SD
J144	2-3	13 USB/ADC/EEPROM
R1275	A	13 USB/ADC/EEPROM
J173	1-2	15 CAN/LIN/FLXR
J155,J167,J166,J159,J124	1-3, 2-4	15 CAN/LIN/FLXR
J158	3-5, 4-6	15 CAN/LIN/FLXR
J192	1-2	16 SERDES/CLOCK
J101	1-2	19 AQR113C SGMII PHY
J194	1-3, 2-4	19 AQR113C SGMII PHY
J191,J185	1-2	20 BOOT SELECT
J168,J169	1-3, 2-4	20 BOOT SELECT
J130	2-3	20 BOOT SELECT
J195	1-3, 2-4	21 INTERCONNECTOR
R1256	A	21 INTERCONNECTOR

Default Switch setting

REF DES	SWITCH(DEFAULT)	PAGE NAME
SW10	2-3 OFF	05 POWER INPUT & VR5510
SW15	1-OFF, 2-OFF	15 CAN/LIN/FLXR
SW14	1-ON, 2-OFF	15 CAN/LIN/FLXR
SW17	1: OFF 2: ON	17 SERDES SWITCH
SW9,SW8,SW7	1-OFF,2-OFF,3-OFF,4-OFF, 5-OFF,6-OFF,7-OFF,8-OFF	20 BOOT SELECT
SW6	1-OFF,2-OFF,3-OFF,4-OFF, 5-OFF,6-OFF,7-ON,8-OFF	20 BOOT SELECT

Classification: Company Internal/Proprietary

Drawing Title: S32G-PROCEVB3-S

Page Title: DEFAULT JUMPER SETTING

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