PCA

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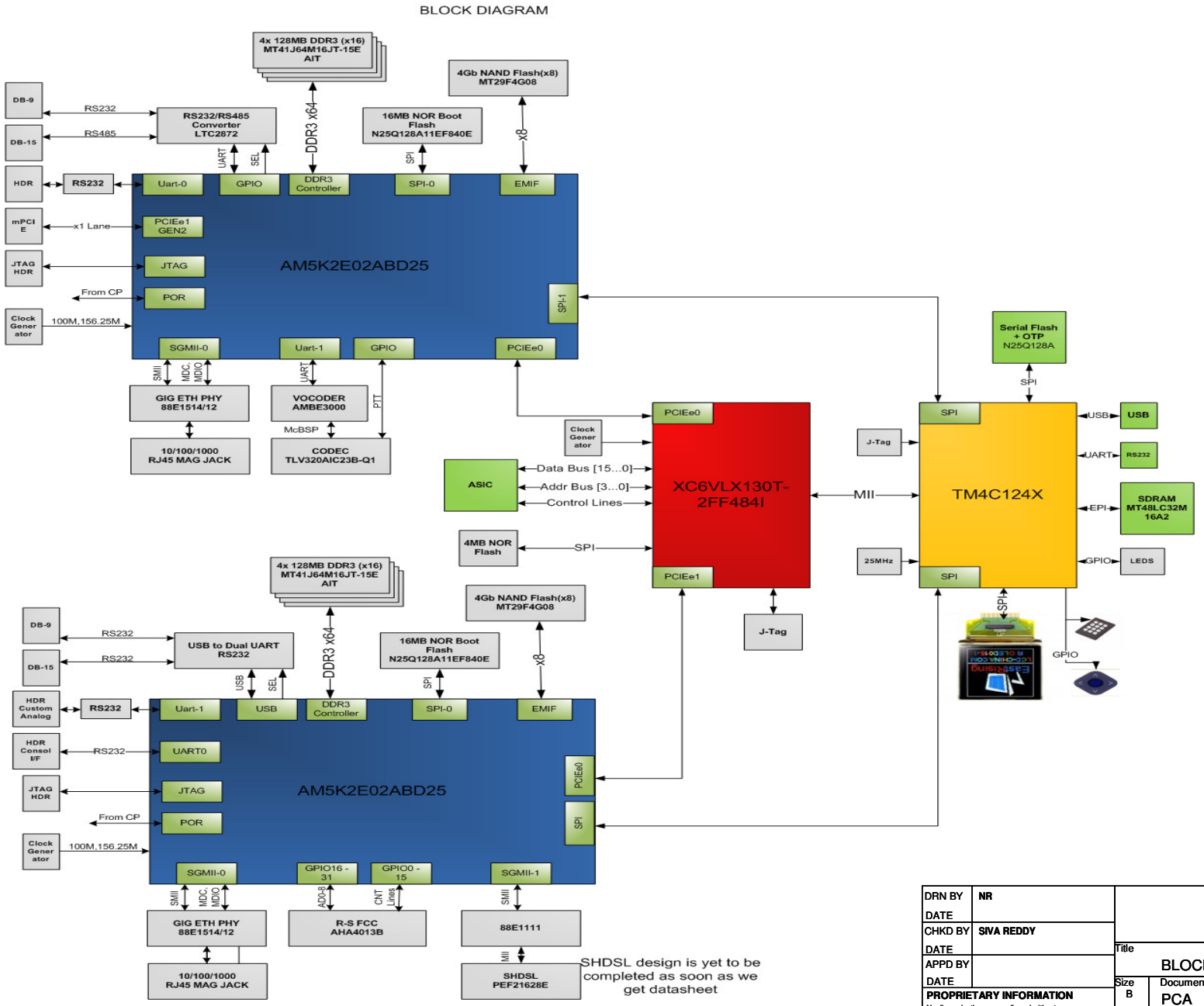
BLOCK DIAGRAM



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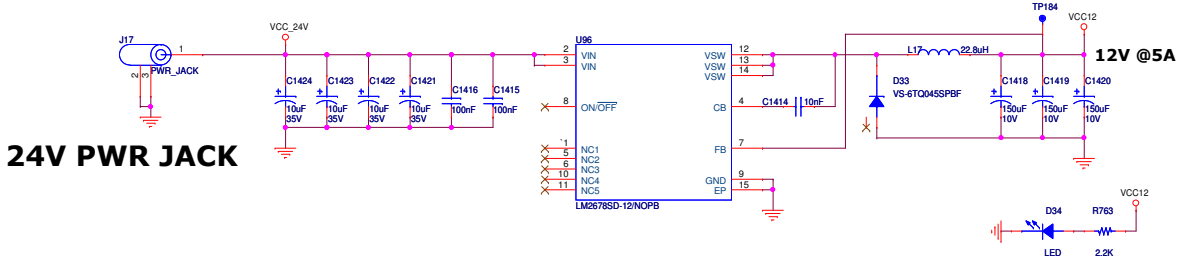
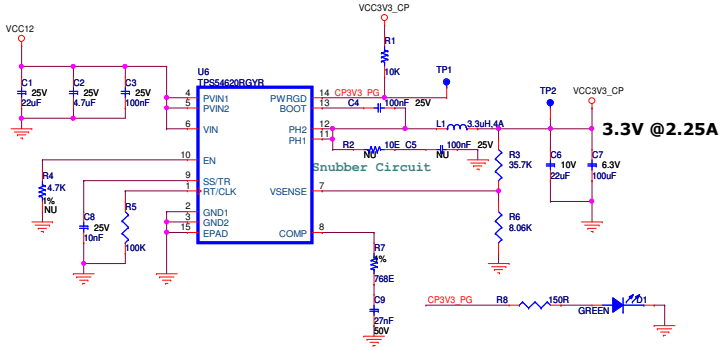
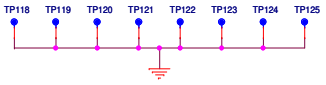
24V to 12V Generation



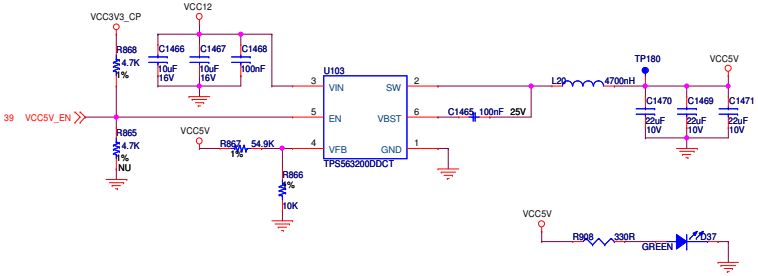
12V to 3.3V Generation for Controll Processor



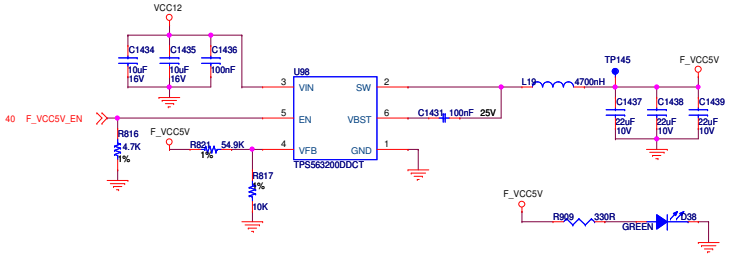


Distribute these TPs in board

12V to 5V Generation



12V to 5V Generation For ASIC



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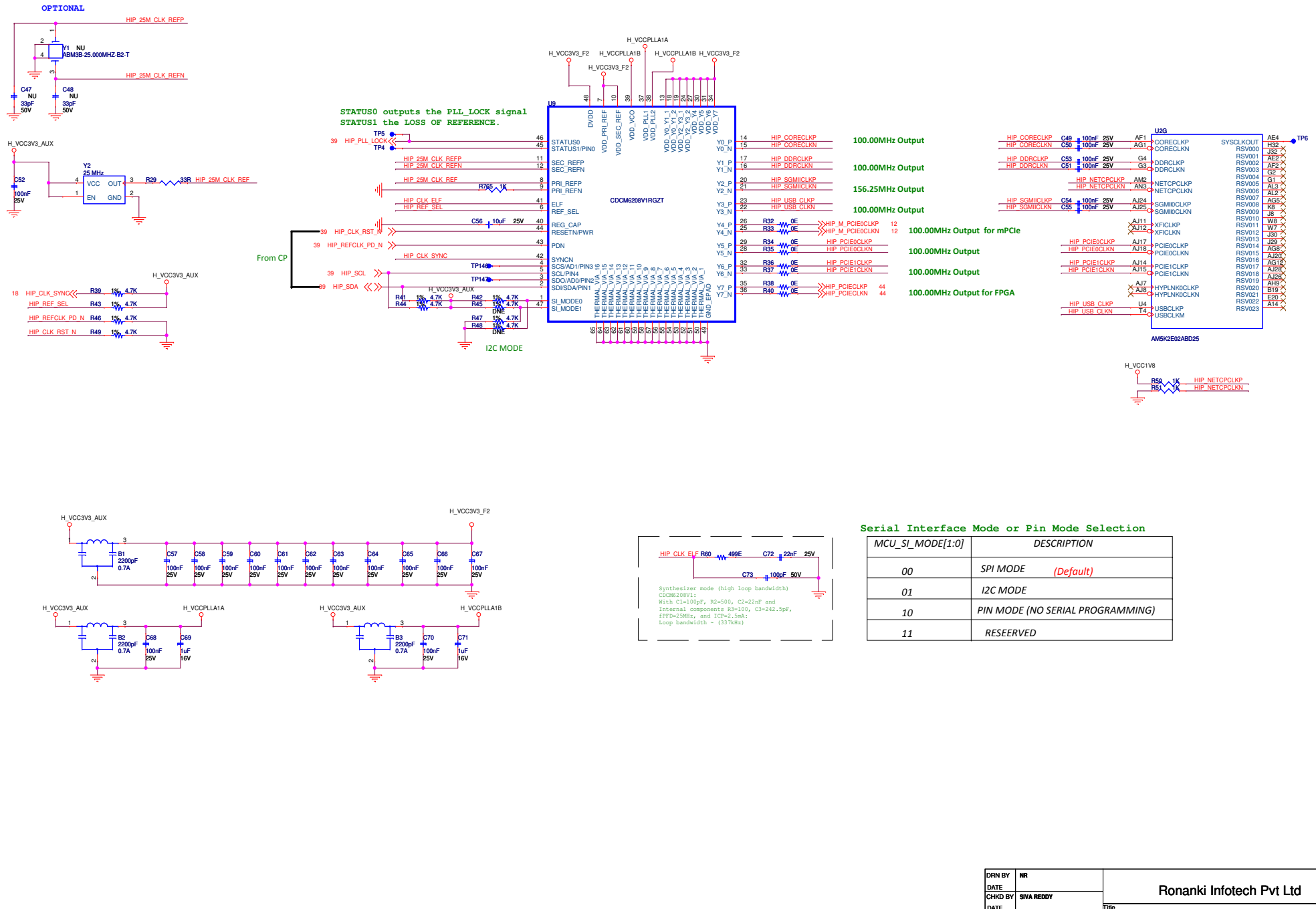
HIP CLOCK SOURCE



Serial Interface Mode or Pin Mode Selection

MCU_SI_MODE[1:0]	DESCRIPTION
00	SPI MODE (Default)
01	I2C MODE
10	PIN MODE (NO SERIAL PROGRAMMING)
11	RESEERVED

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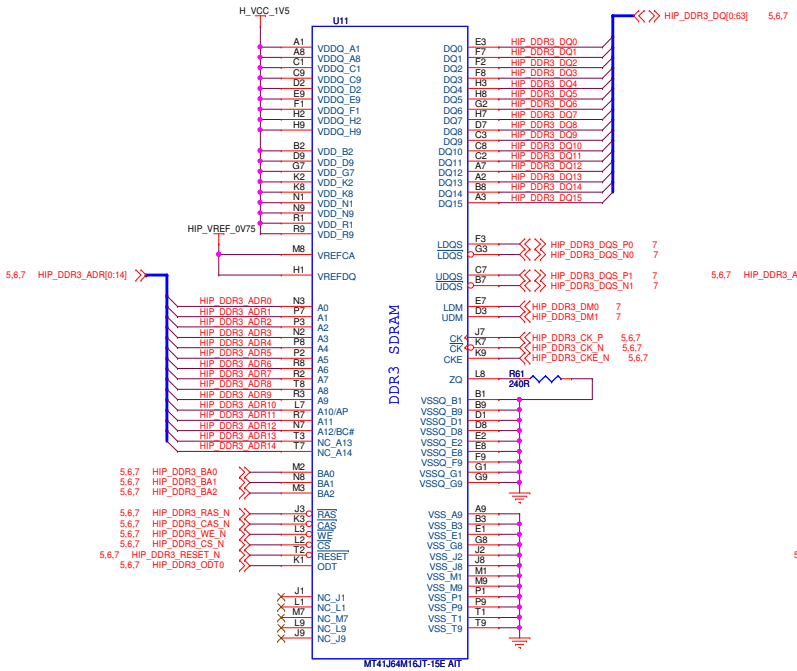
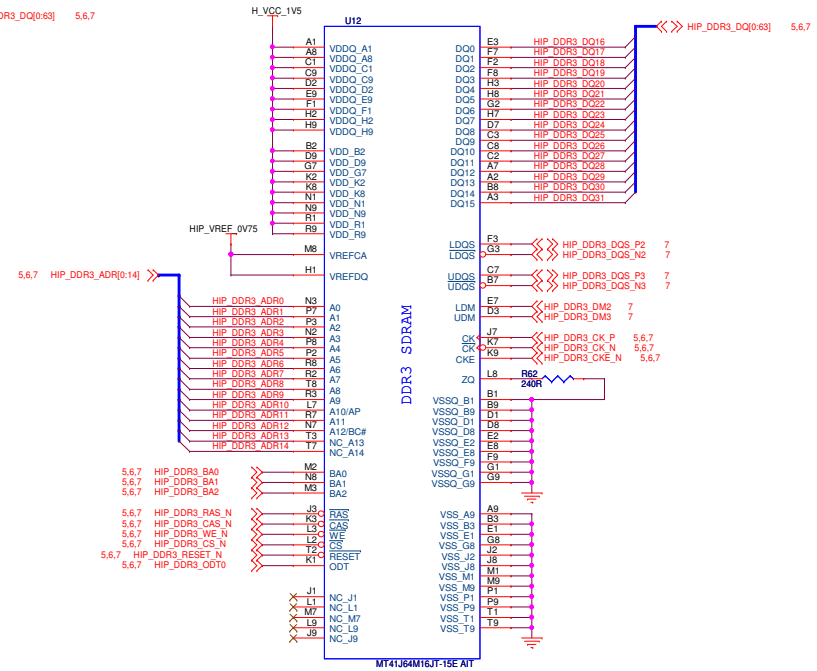
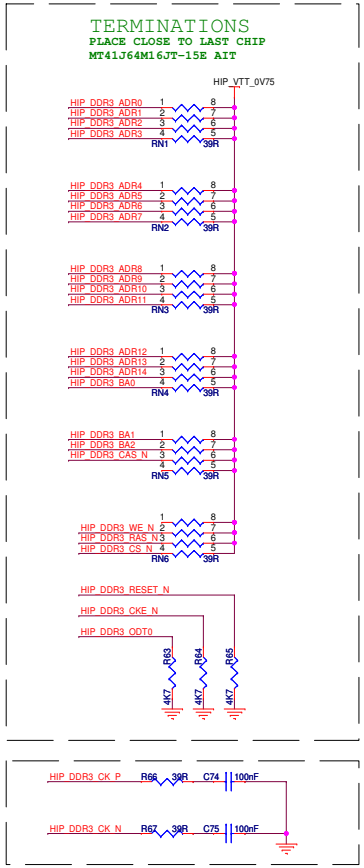
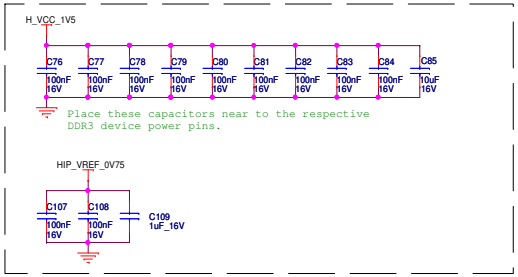
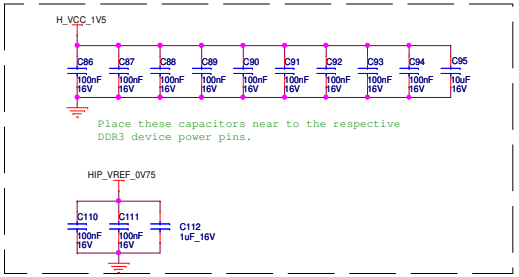
DDR3_MEMORY_HIP

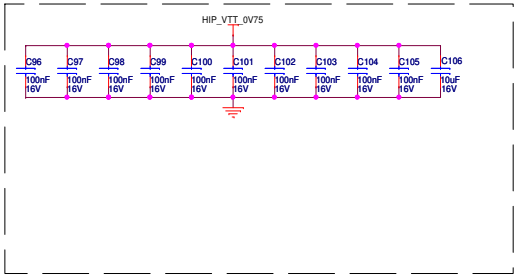












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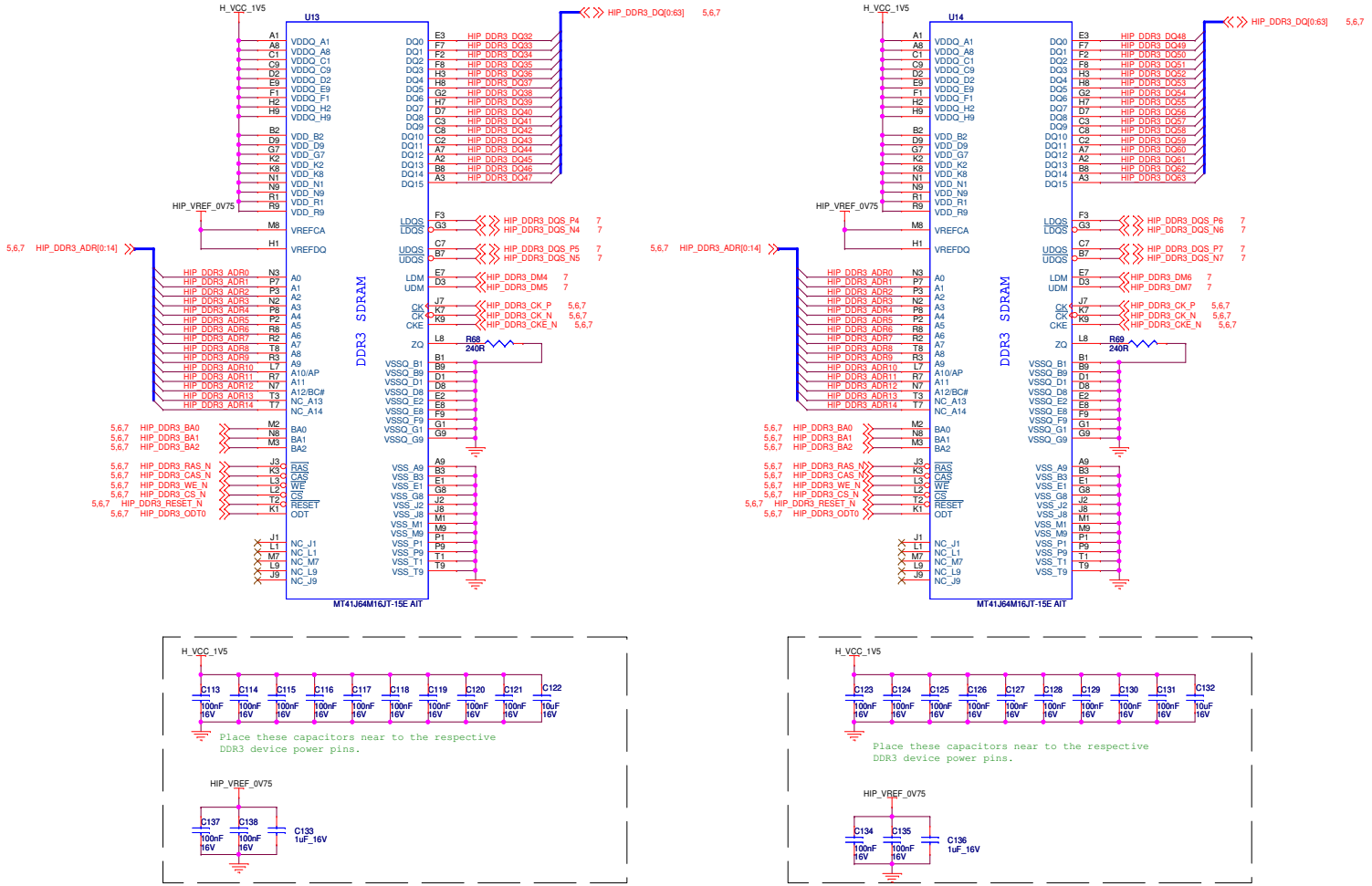
DDR3_MEMORY_HIP



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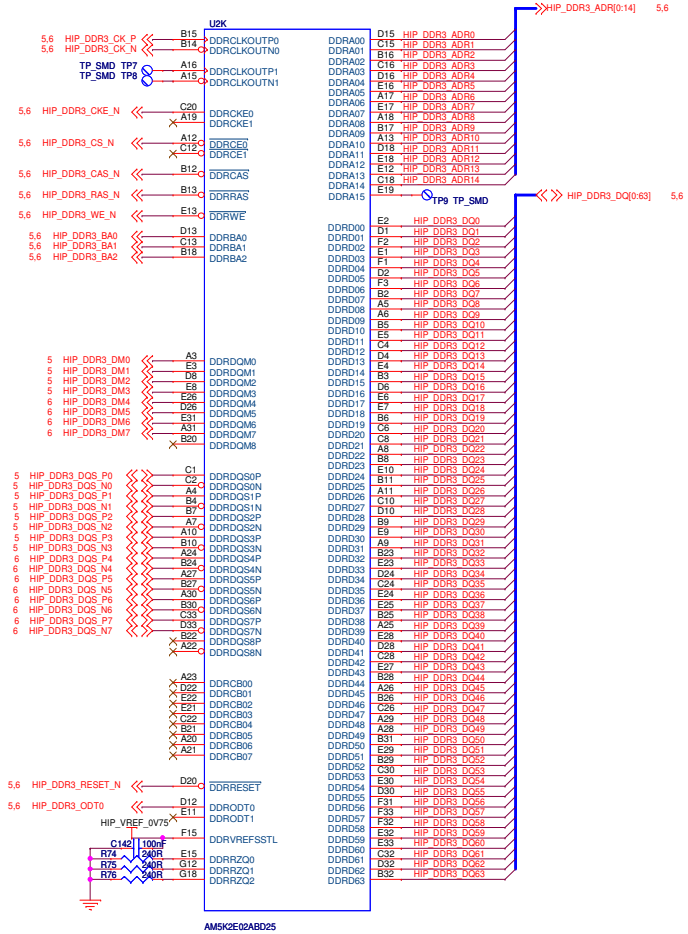
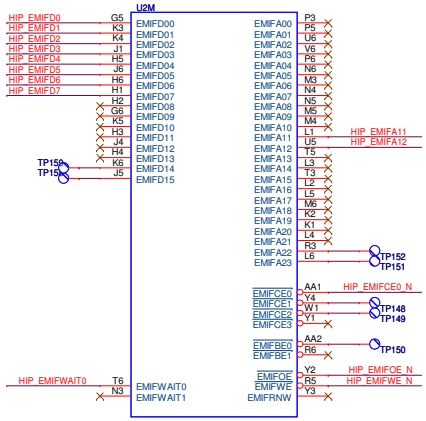
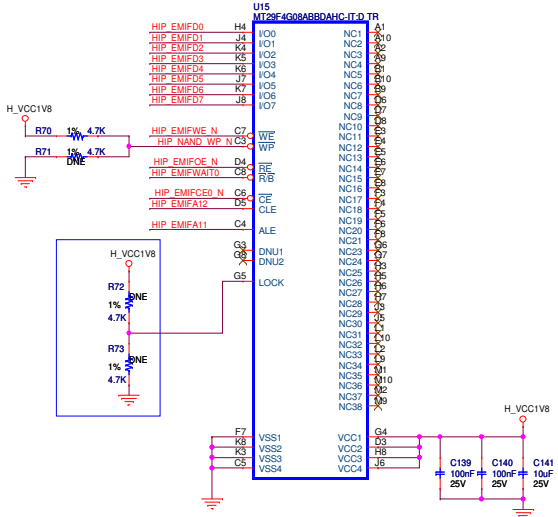
HIP DDR3 AND NAND INTERFACE





NAND FLASH



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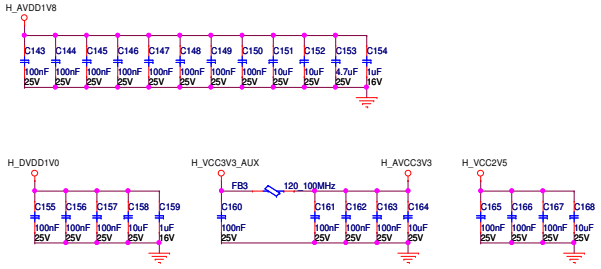
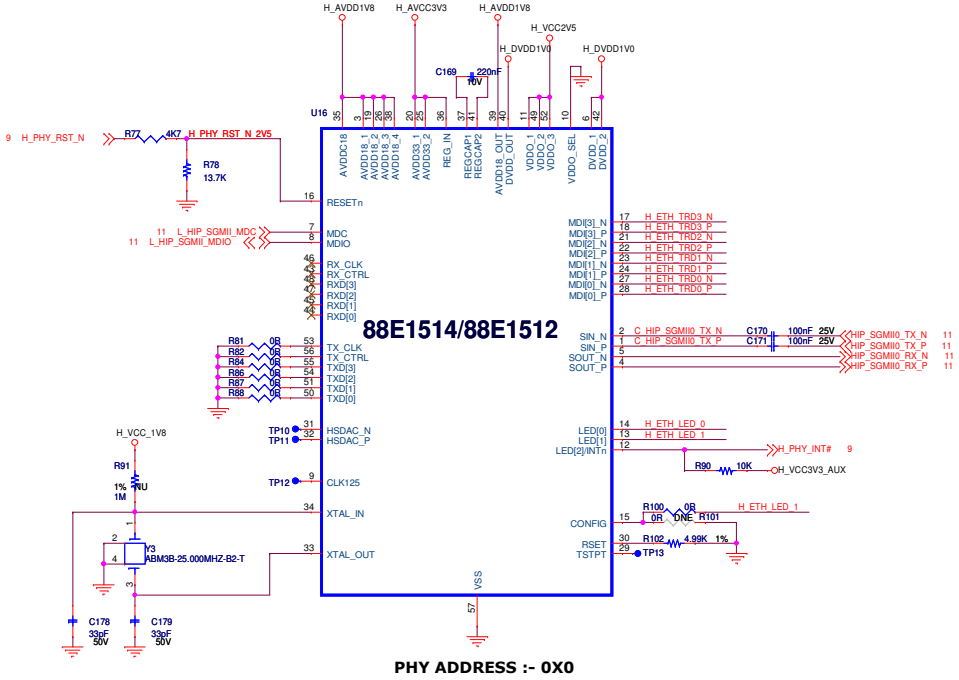


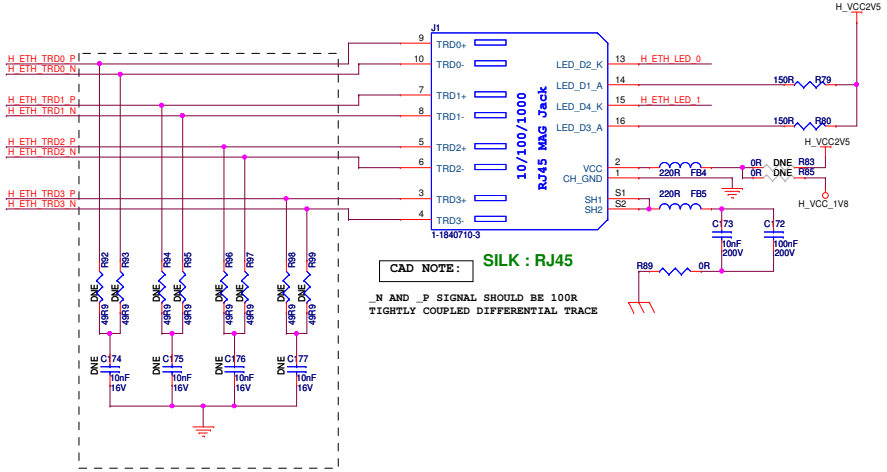
CONFIGURATION MAPPING

PIN	BIT 1,0
VSS	00
LED[0]	01
LED[1]	10
LED[2]	Unused
VDDO	11

PIN	CONFIG Bit1	CONFIG Bit0	Value Assignment
CONFIG	0	0	PHY Address[0] = 0 VDDO_LEVEL = 3.3V
CONFIG	1	1	PHY Address[0] = 1 VDDO_LEVEL = 3.3V
CONFIG	1	0	PHY Address[0] = 0 VDDO_LEVEL = 2.5V
CONFIG	0	1	PHY Address[0] = 1 VDDO_LEVEL = 2.5V



PHY ADDRESS :- 0X0



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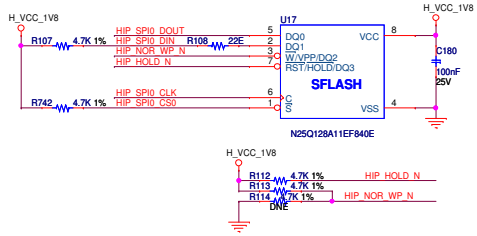
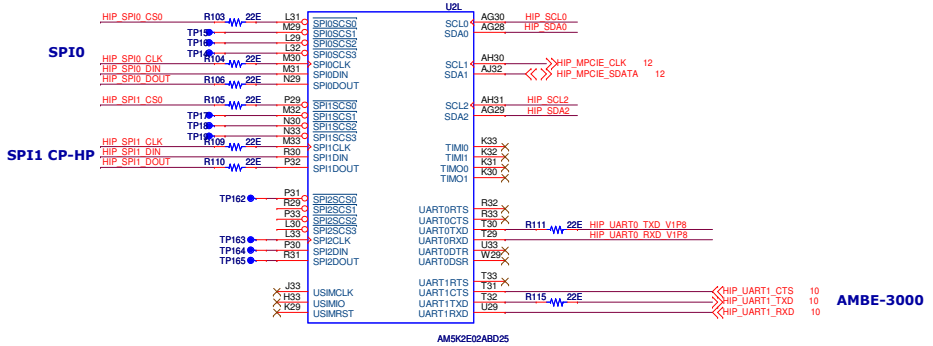
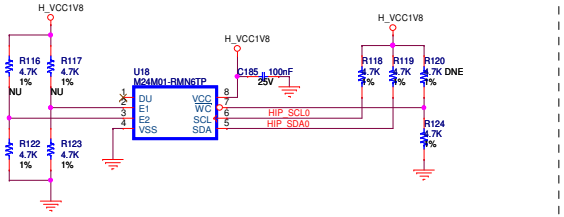
128Mb SPI NOR Flash



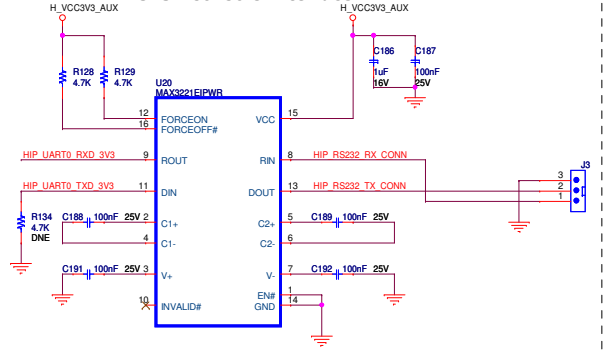
SPI0 / SPI1 CP-HP / AMBE-3000



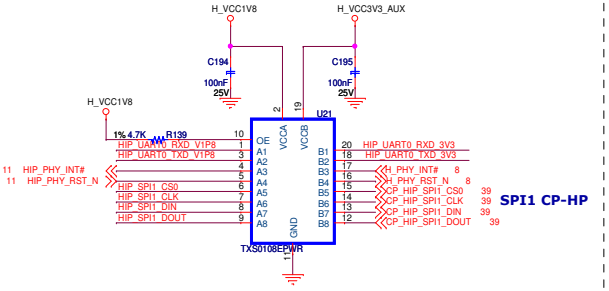
I2C EEPROM



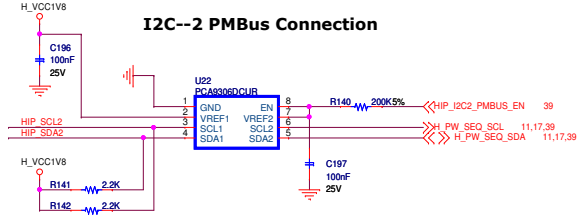
RS232 Console Interface

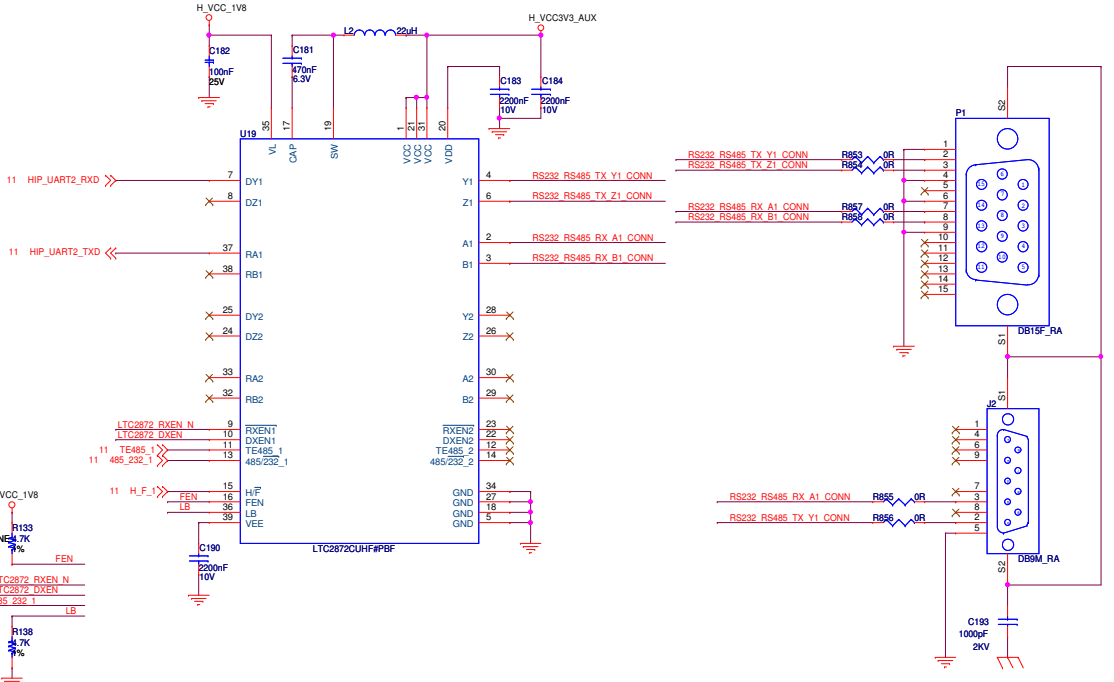


UART,SPI & MISC 1V8 to 3V3 CONVERTER



I2C--2 PMBus Connection





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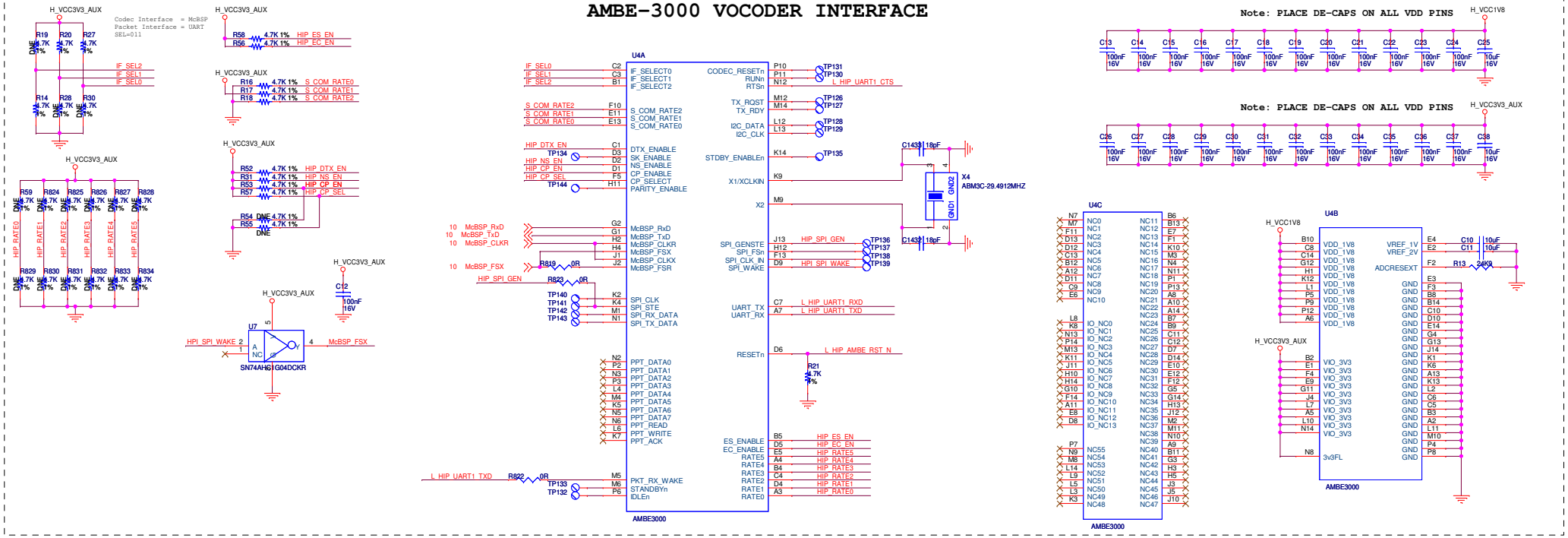
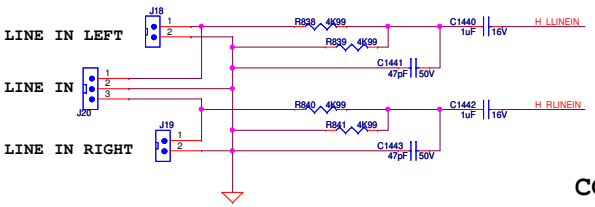
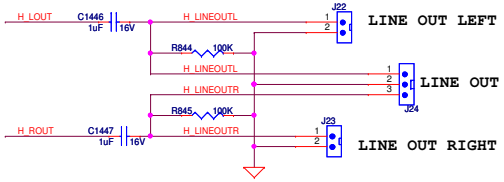
AMBE-3000 VOCODER INTERFACE



LINE IN

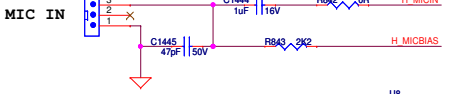


LINE OUT

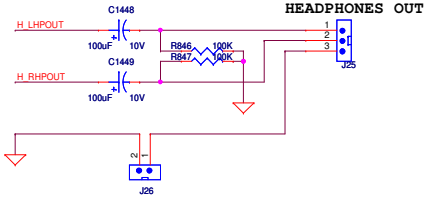


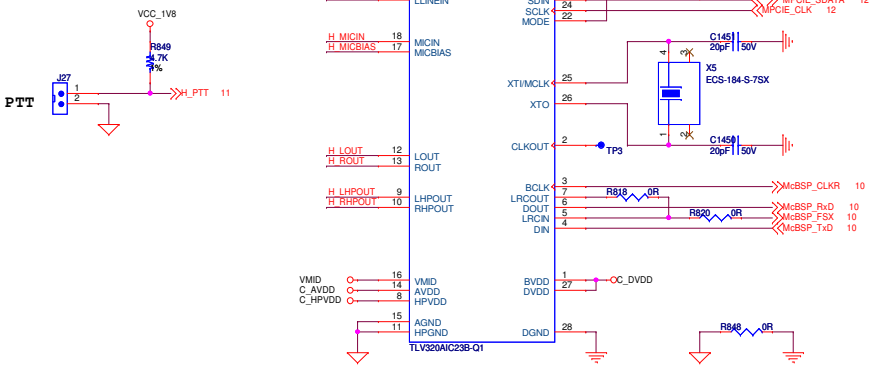
CODEC INTERFACE

MIC IN

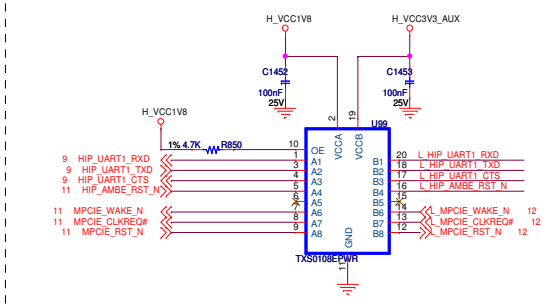


HEADPHONES OUT





1V8 to 3V3 CONVERTER



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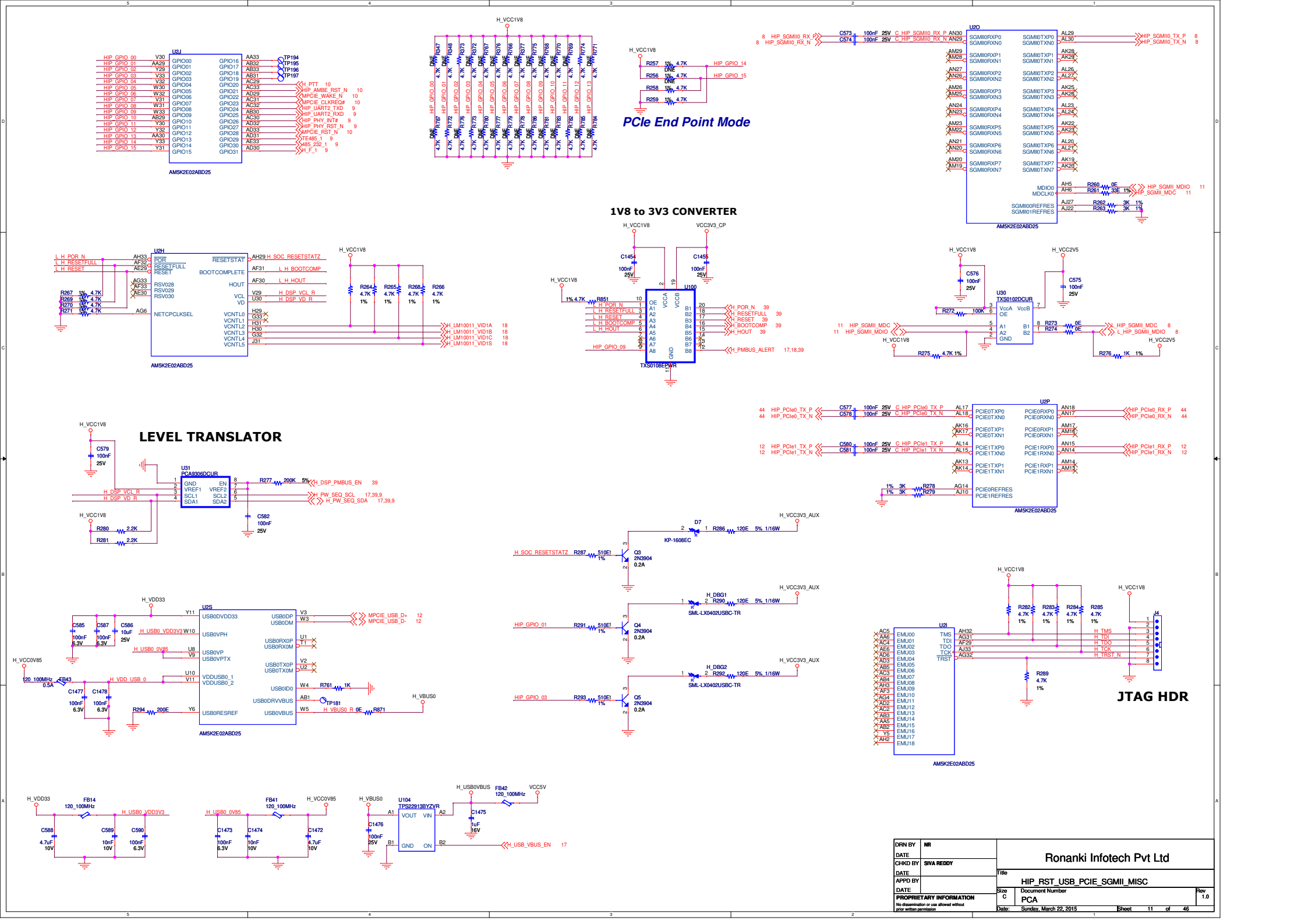
PCIe End Point Mode
1V8 to 3V3 CONVERTER
LEVEL TRANSLATOR
JTAG HDR
AM5K2E02ABD25
TXS0106EPWR
TXS0102DCUR
PCA9306DCUR
KP-1608EC
SML-LX0402USBC-TR
TPS22913BYZVR
Ronanki Infotech Pvt Ltd
HIP_RST_USB_PCIE_SGMII_MISC
PCA
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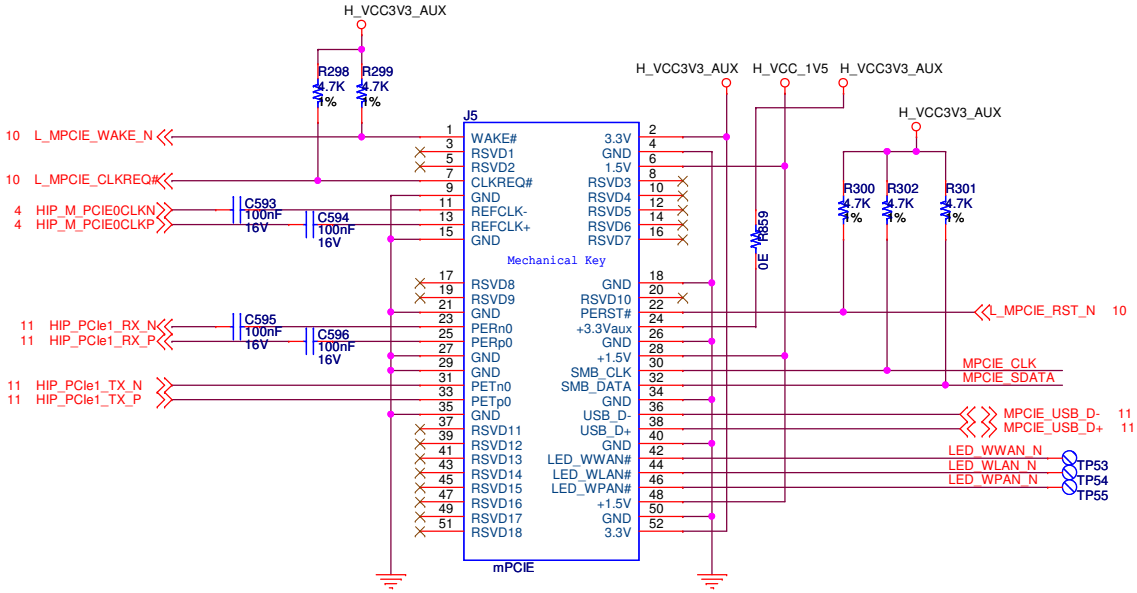
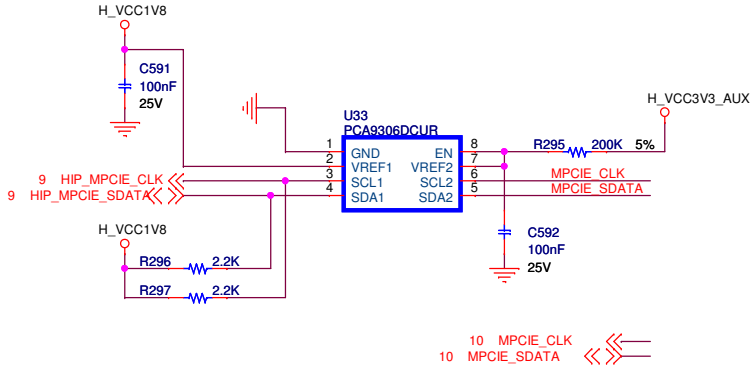
Mini PCIe INTERFACE





SELECT PART BASED ON MECHANICAL CONSTRAINTS

Product Selector Right angle MOLEX
SMT with pegs0.80mm (.031") pitch

Part Number	Height mm (in.)
538-48338-0040	4.00 (.157)
538-48338-0052	5.20 (.220)
538-48338-0056	5.60 (.220)
538-48338-0057	5.75 (.226)
538-48338-0065	6.50 (.256)
538-48338-0068	6.80 (.268)
538-48338-0070	7.00 (.276)
538-48338-0075	7.50 (.295)
538-48338-0080	8.00 (.315)
538-48338-0085	8.50 (.335)
538-48338-0099	9.90 (.390)

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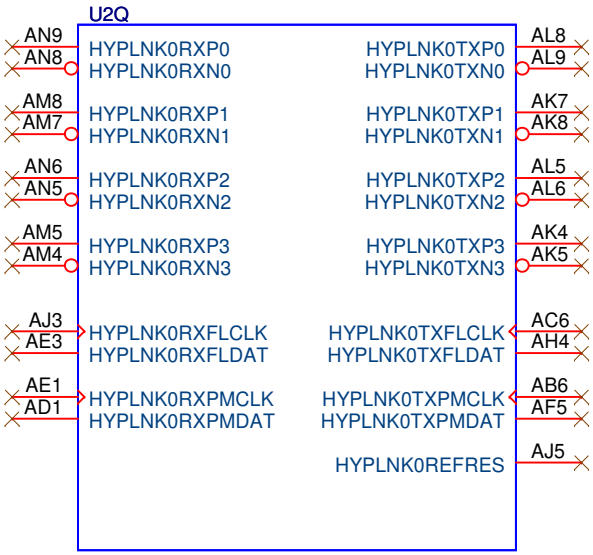
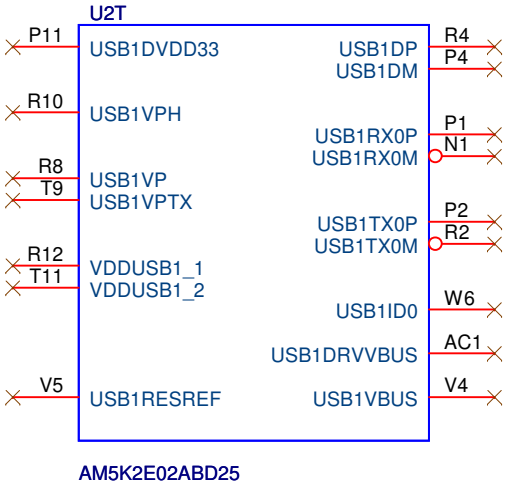
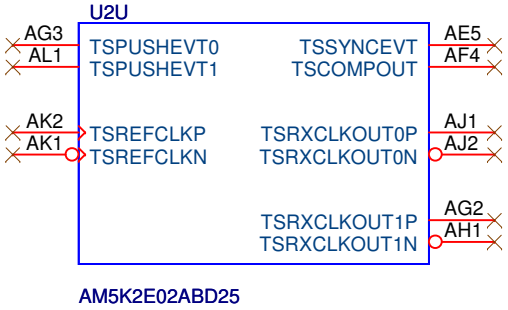
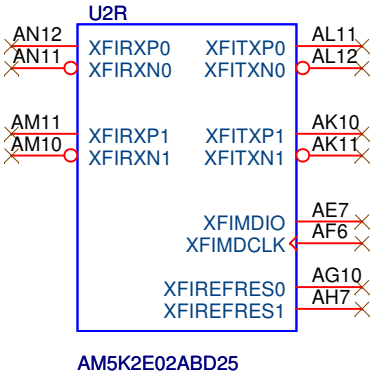
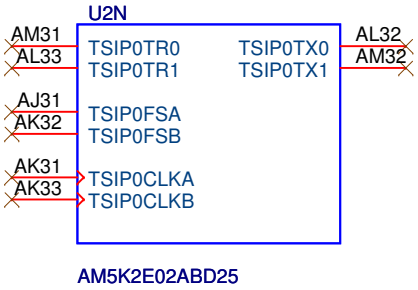
UNUSED











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Ronanki Infotech Pvt Ltd

Title: HIP_UNUSED

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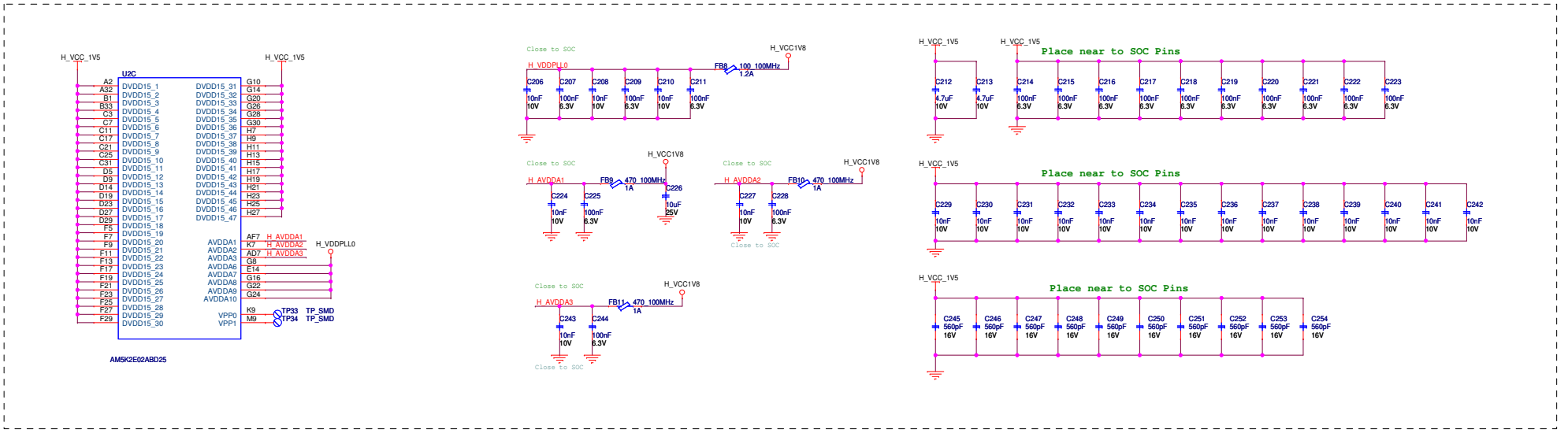

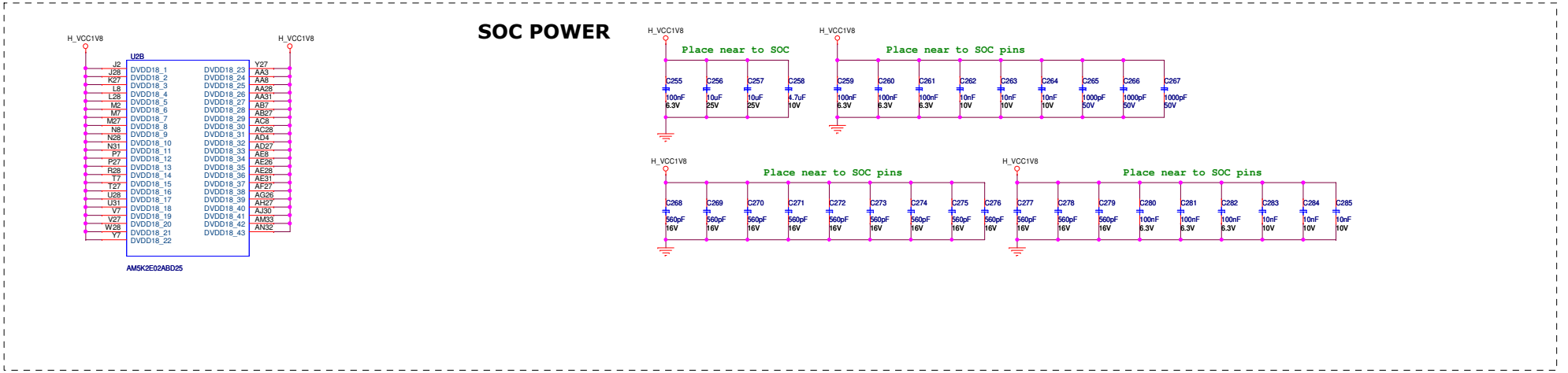

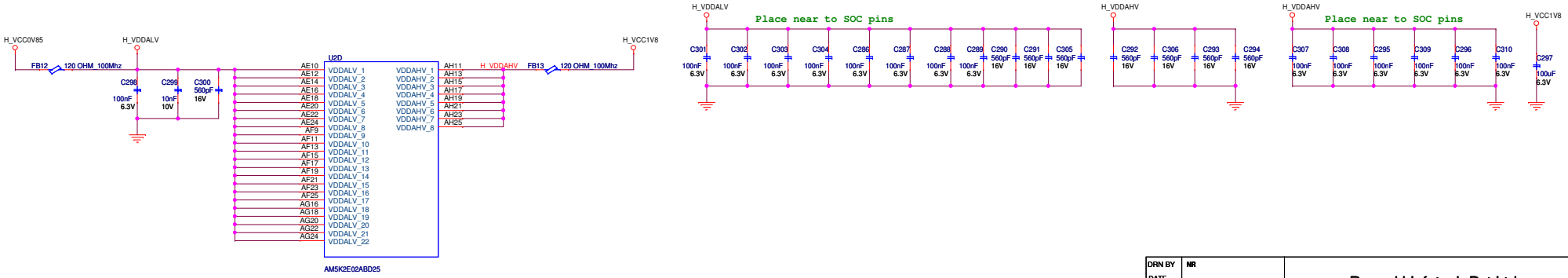

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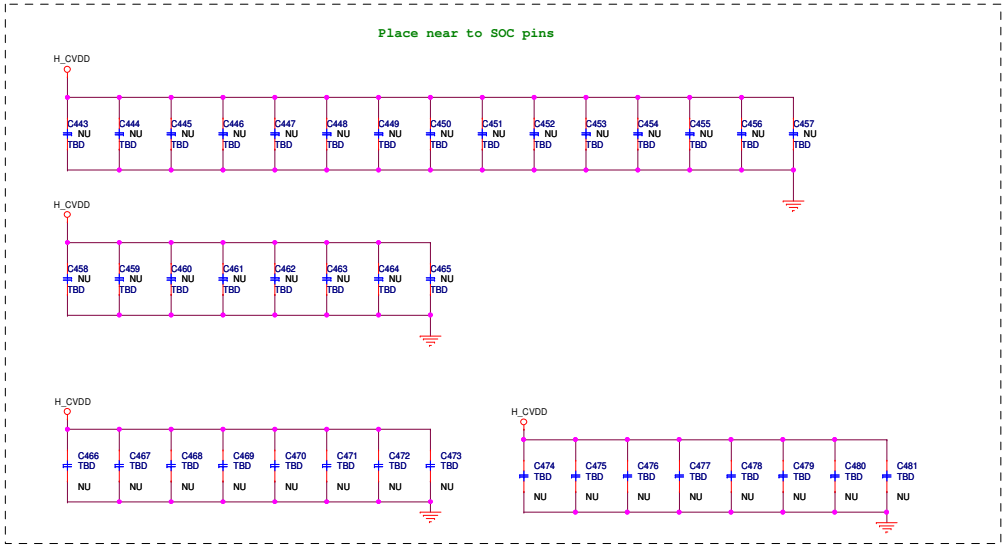
0.85V - 1.05V (CVDD) (Smart Reflex)

SOC POWER



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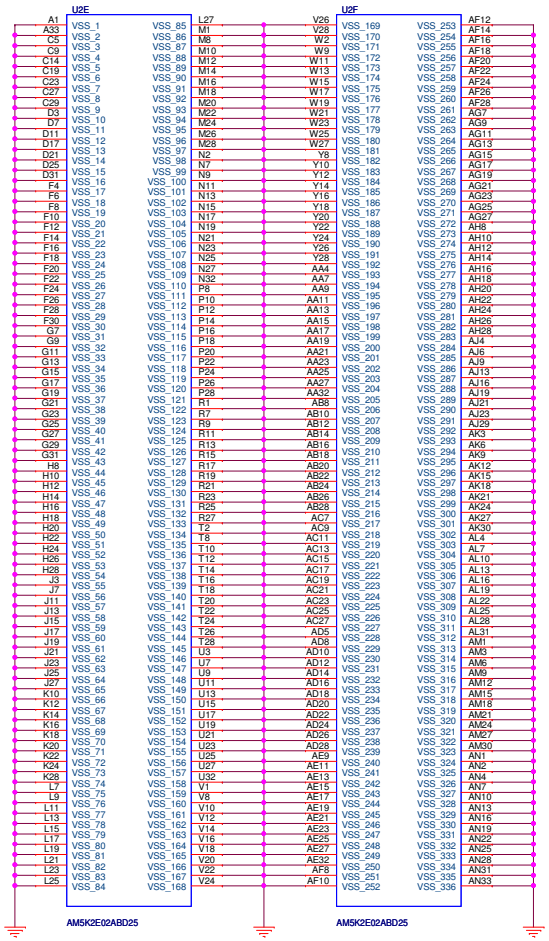

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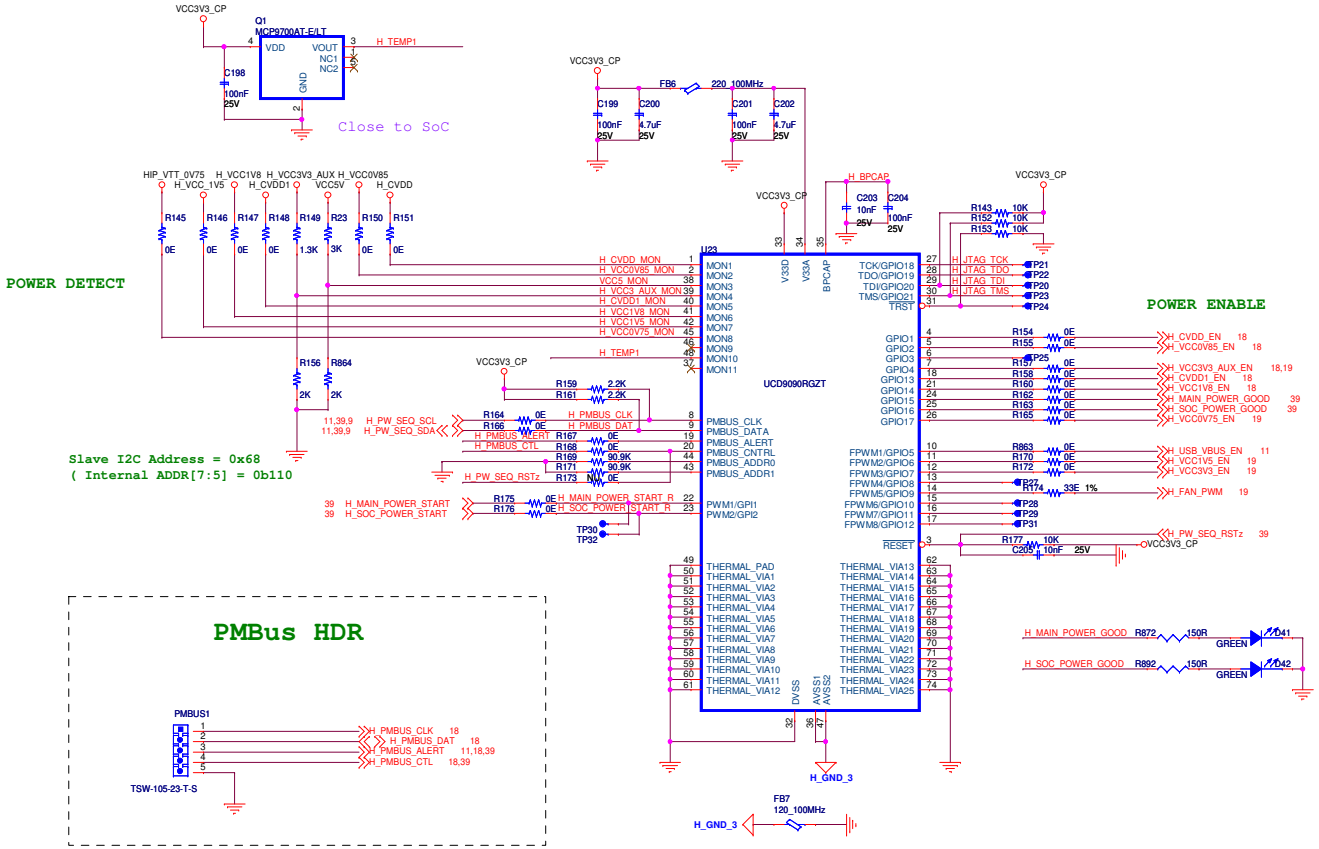
Power Sequencing (UCD9090)



PMBus Address Pins

PMBus Address	PMBus RESISTANCE (K ohm)
OPEN	--
11	200
10	154
9	118
8	90.9
7	69.8
6	53.6
5	41.2
4	31.6
SHORT	--

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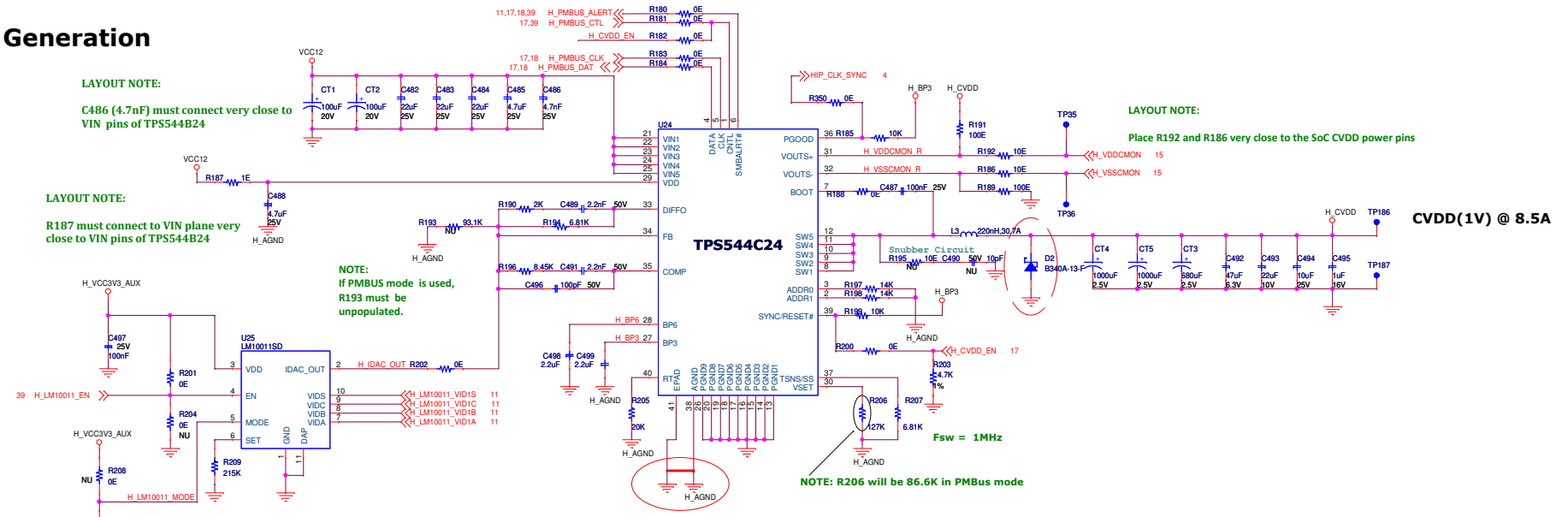
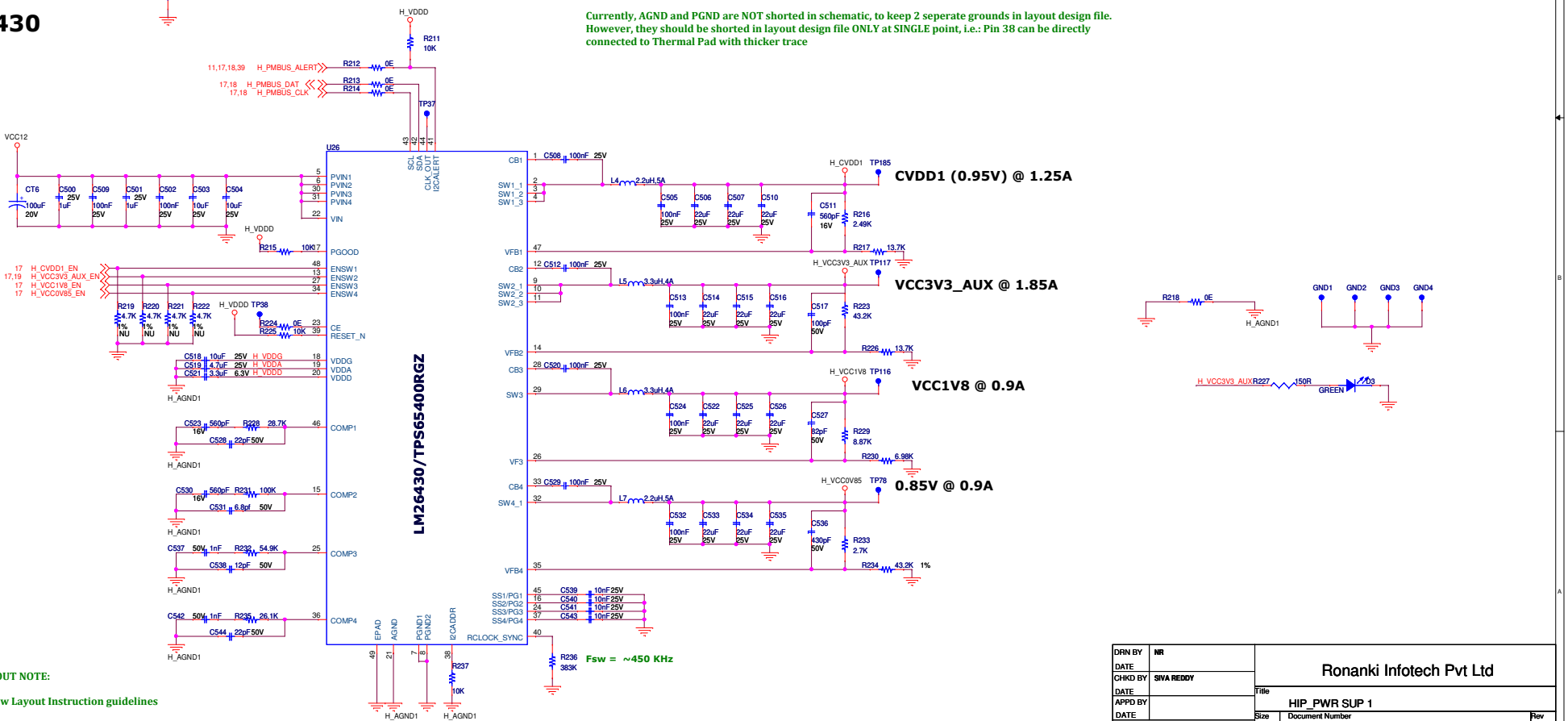
12V to CVDD Generation



LM26430



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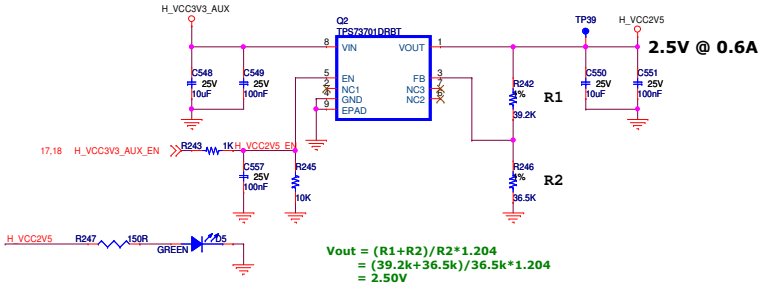
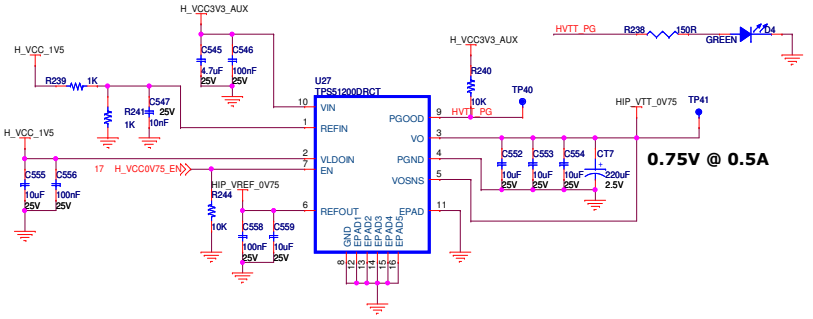
3.3V_AUX to 2.5V Generation



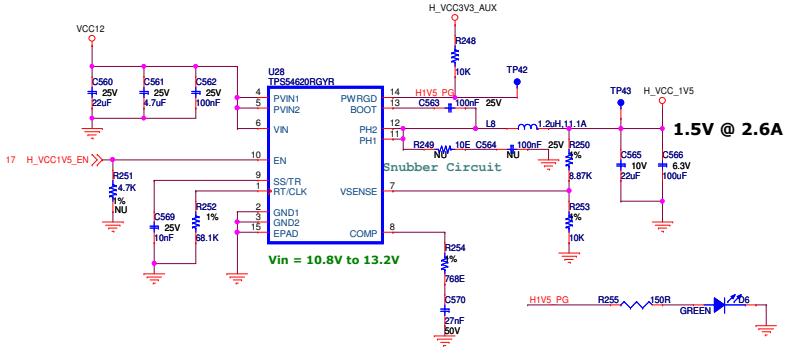
Vout = (R1+R2)/R2*1.204
= (39.2k+36.5k)/36.5k*1.204
= 2.50V

1.5V to 0.75V Generation



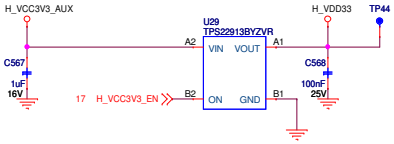
Place near DDR3 VTT Terminations

12V to 1.5V Generation



Vin = 10.8V to 13.2V

3V3_AUX to VDD33 Generation



VOUT = 0.8 * (R1/R2 + 1)
= 0.8 * (8.87/10 + 1)
= ~1.5V

Rrt=48000 * Fsw(kHz)^(-0.997) - 2
=48000 * 700^(-0.997) - 2
=~68 Kohms

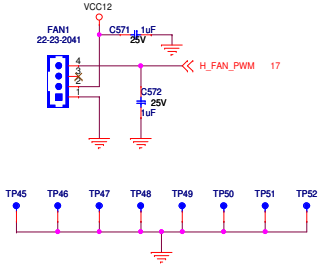
OUTPUT CAPACITOR CALCULATION
Cout= 2 * delta(Iout) / (Fsw*delta(Vout)
= 2 * 1 / (700kHz*0.125)
= ~38uF

REFERENCE CAPACITOR = 100uF

INDUCTOR CALCULATION
L= (Vin - Vout)/(Iout * Kind) *(Vout / (Vin * Fsw))
= (12 - 1.5)/(4.5 * 0.3) * (1.5 / (12 * 700KHz))
= 7.78 * 0.18u
= ~ 1.38uH

REFERENCE CAPACITOR = 1.2uH

DC FAN Connector for SOC



Distribute these TP in board

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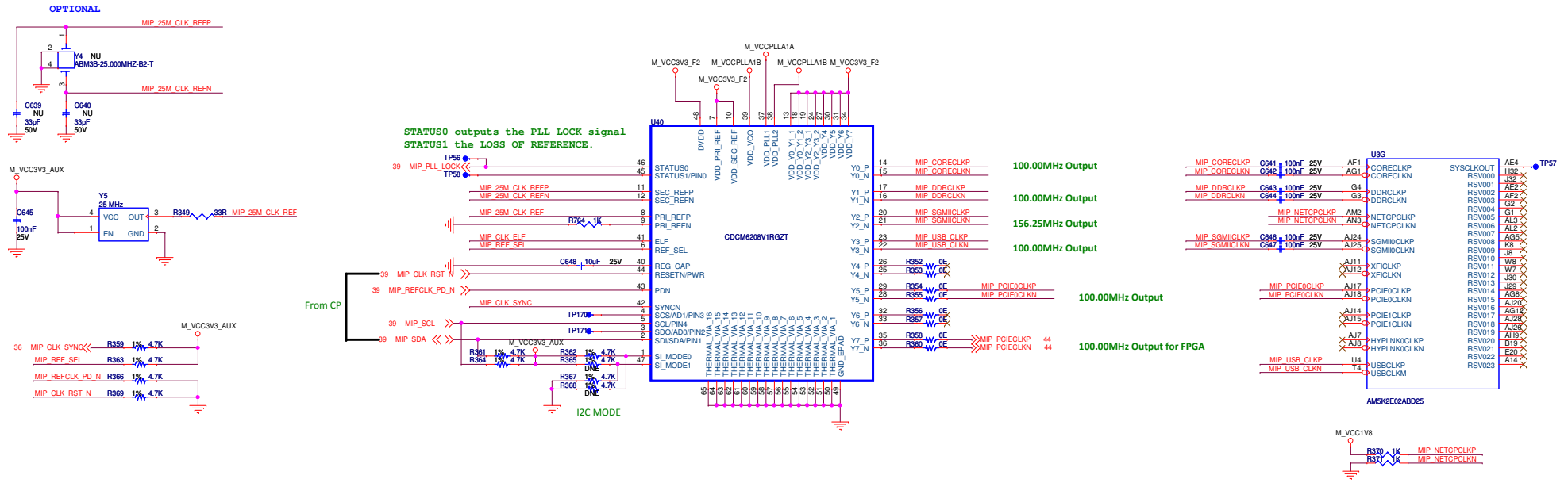
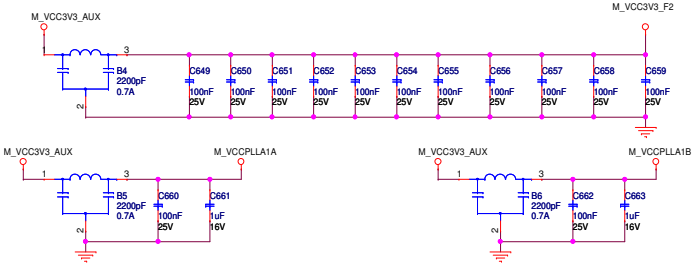
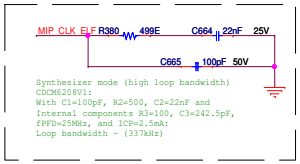
MIP CLOCK SOURCE







Serial Interface Mode or Pin Mode Selection

MCU_SI_MODE[1:0]	DESCRIPTION
00	SPI MODE (Default)
01	I2C MODE
10	PIN MODE (NO SERIAL PROGRAMMING)
11	RESEERVED

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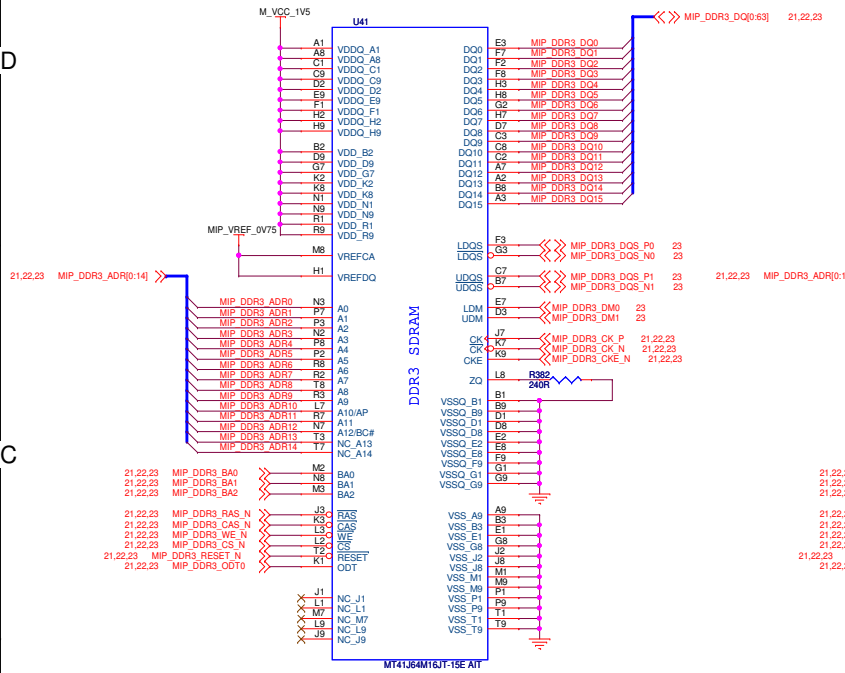
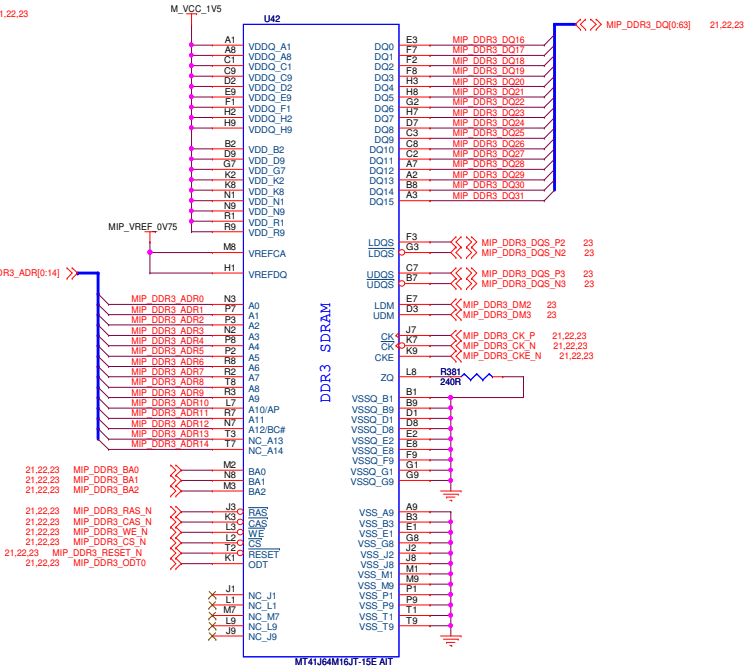
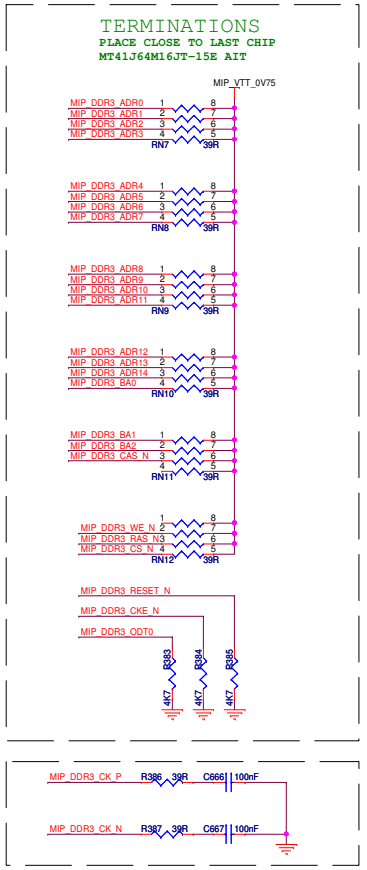
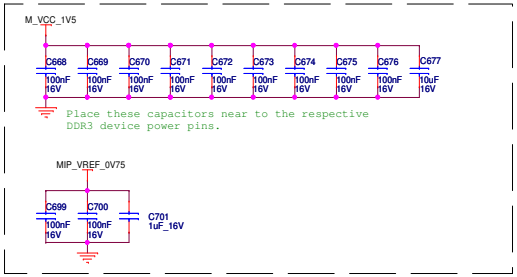
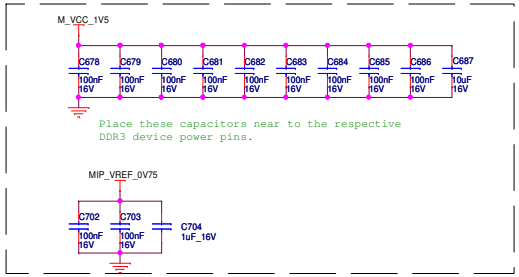
DDR3_MEMORY_MIP

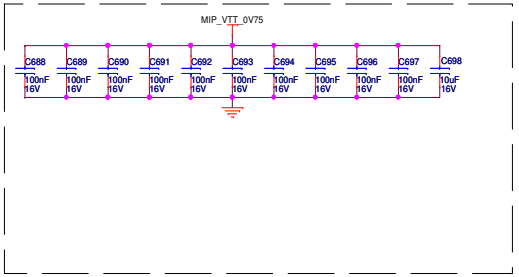












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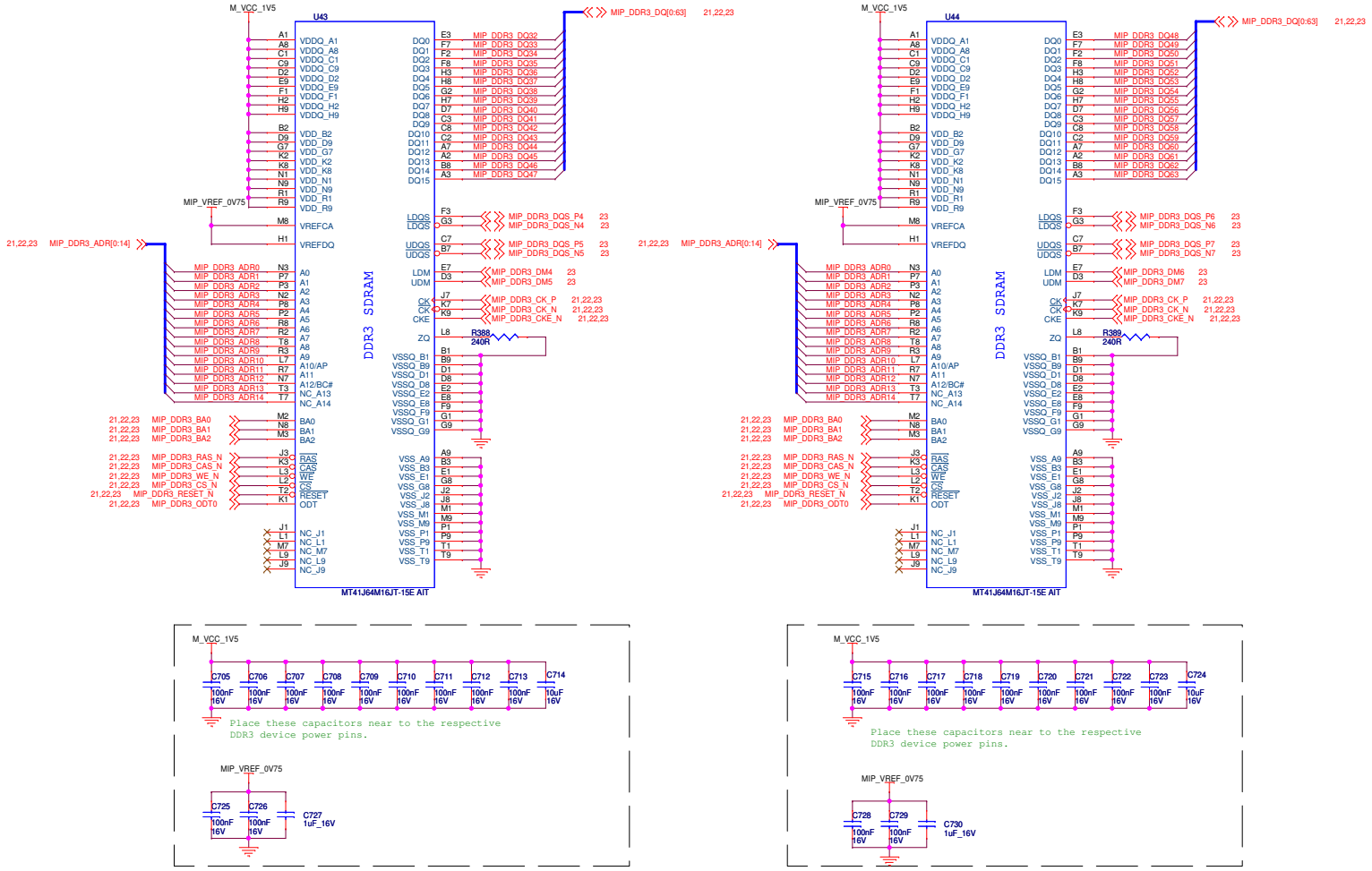
DDR3_MEMORY_MIP



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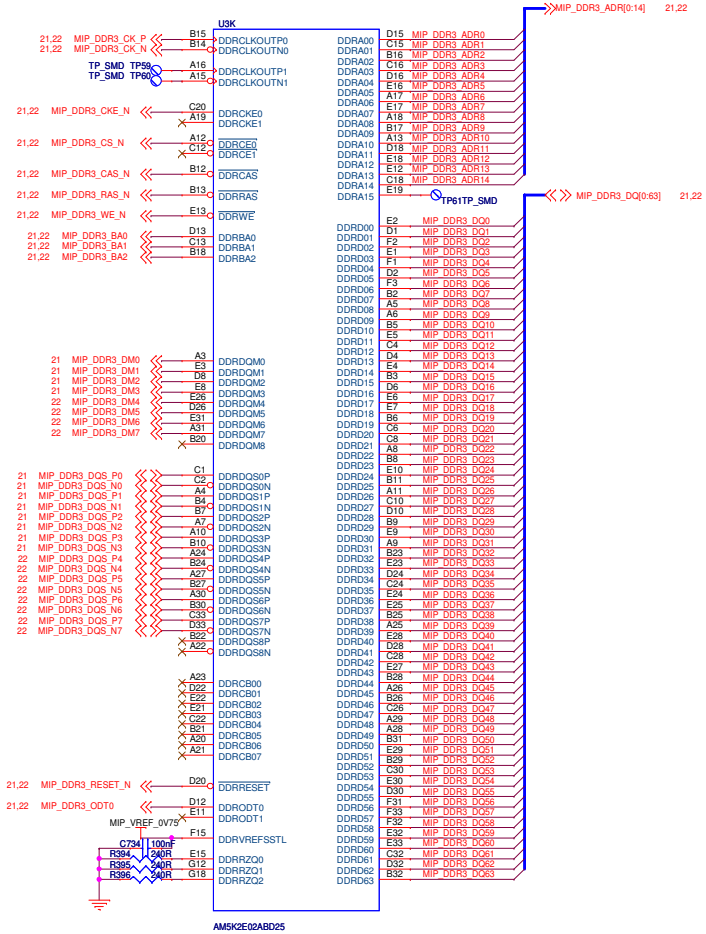
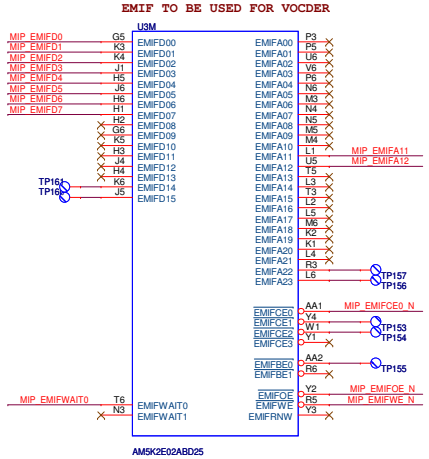
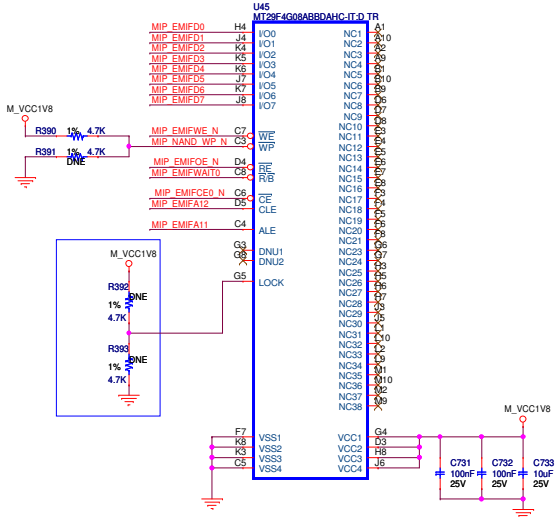
MIP DDR3 AND NAND INTERFACE



EMIF TO BE USED FOR VOCDER



NAND FLASH



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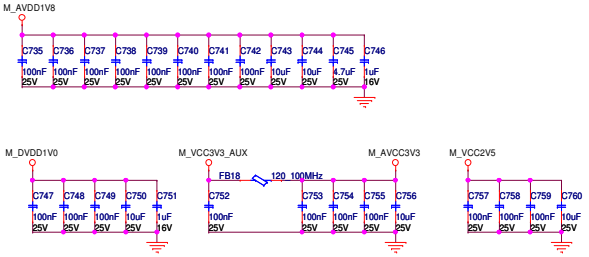
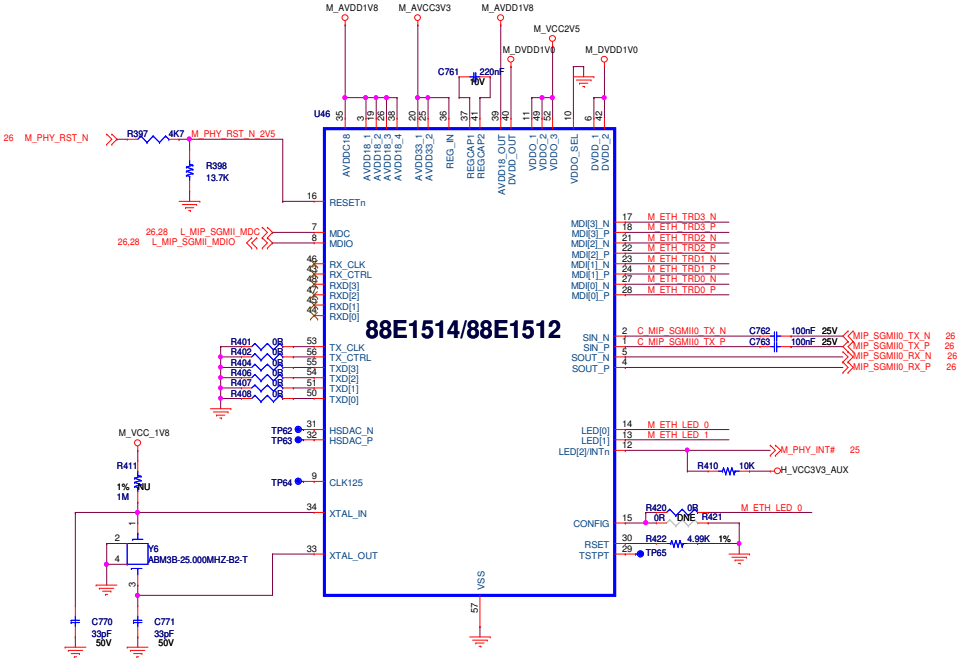


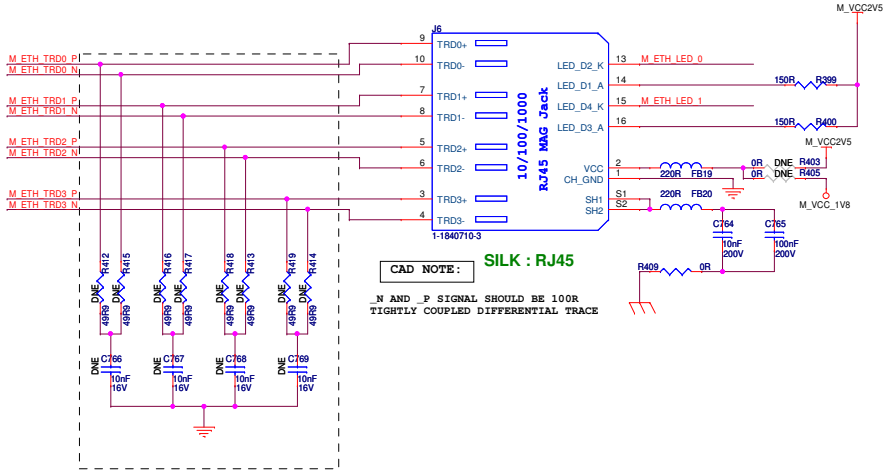
CONFIGURATION MAPPING

PIN	BIT 1,0
VSS	00
LED[0]	01
LED[1]	10
LED[2]	Unused
VDDO	11

PIN	CONFIG Bit1	CONFIG Bit0	Value Assignment
CONFIG	0	0	PHY Address[0] = 0 VDDO_LEVEL = 3.3V
CONFIG	1	1	PHY Address[0] = 1 VDDO_LEVEL = 3.3V
CONFIG	1	0	PHY Address[0] = 0 VDDO_LEVEL = 2.5V
CONFIG	0	1	PHY Address[0] = 1 VDDO_LEVEL = 2.5V



PHY ADDRESS :- 0X1



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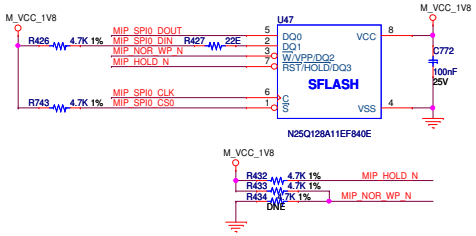
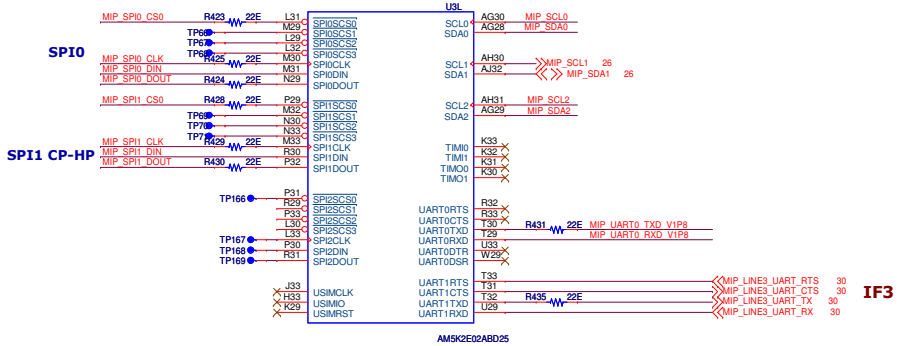
128Mb SPI NOR Flash

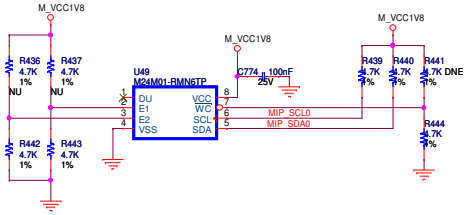


SPI0 / SPI1 CP-HP

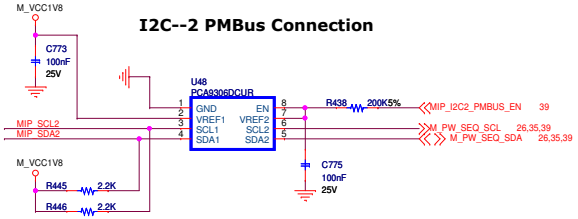


IF3

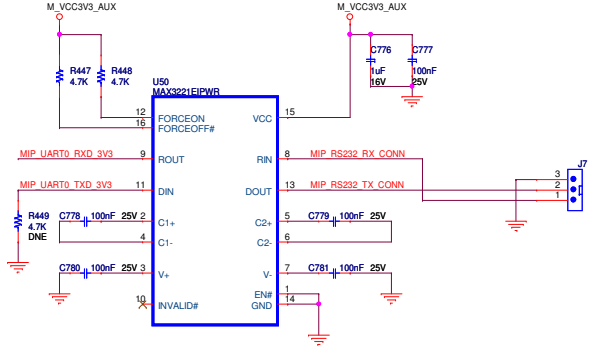
I2C EEPROM



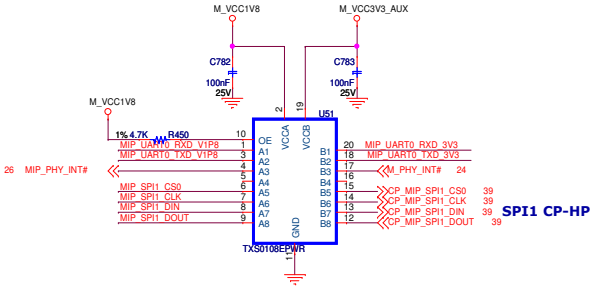
I2C--2 PMBus Connection



RS232 Console Interface



UART 1V8 to 3V3 CONVERTER



SPI1 CP-HP

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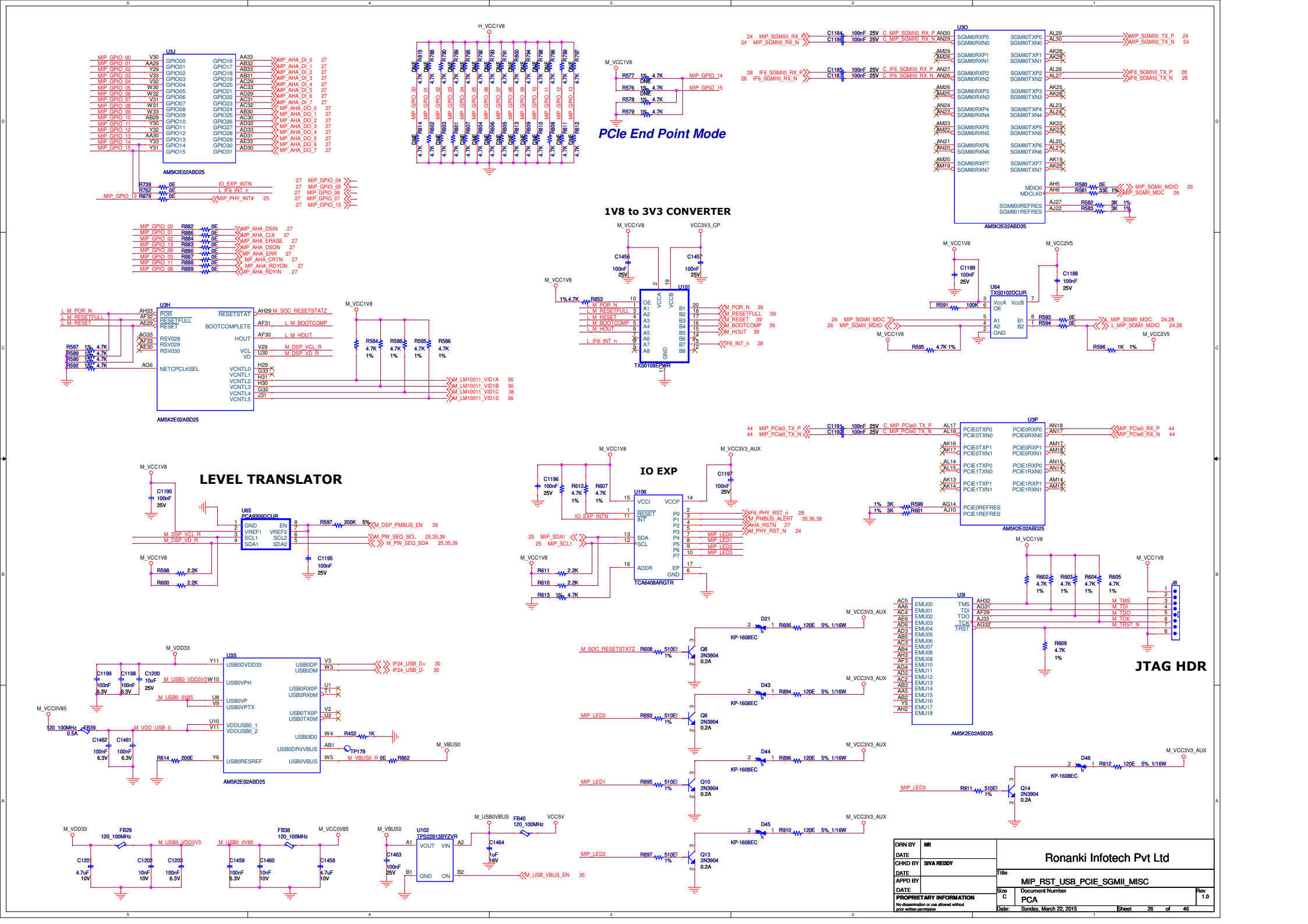
PCIe End Point Mode
1V8 to 3V3 CONVERTER
LEVEL TRANSLATOR
IO EXP
JTAG HDR
U3J
AM5K2E02ABD25
U3O
U3H
U3P
U3I
U3S
U65
PCA9306DCUR
U106
TCA6408ARGTR
U101
TXS0108EPWR
U64
TXS0102DCUR
U102
TPS22913BYZVR
KP-1608EC
2N3904
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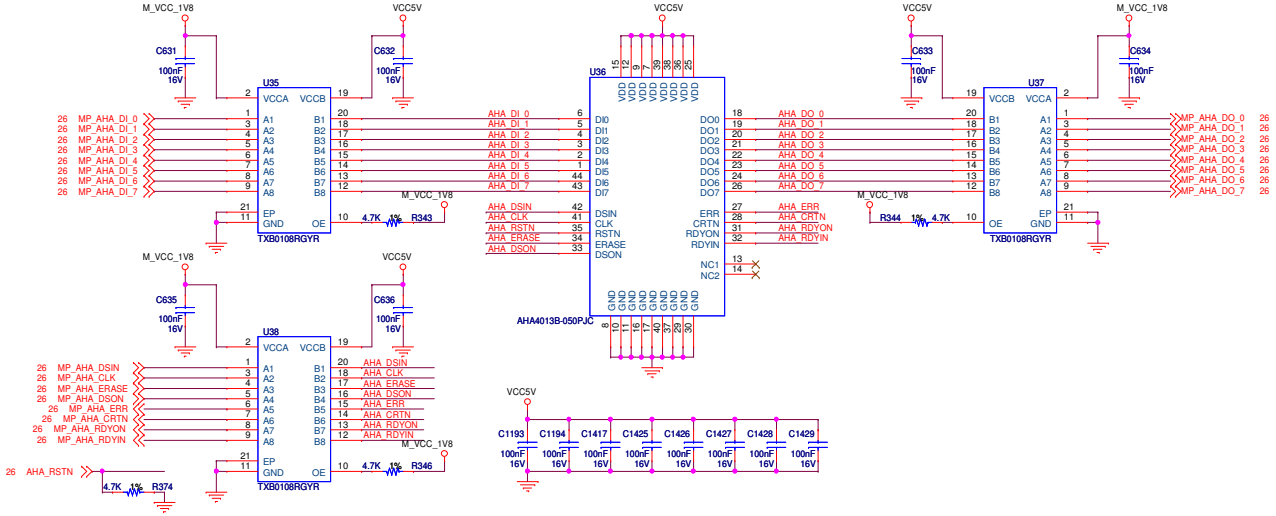
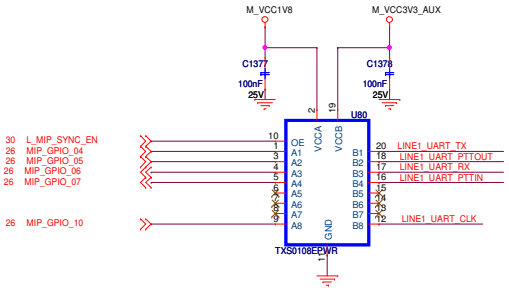
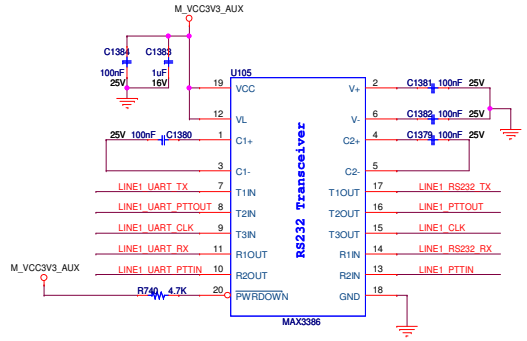
AHA4013B INTERFACE



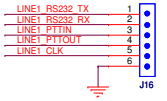
SYNC I/F-1 FOR RADIO 1

UART 1V8 to 3V3 CONVERTER





SYNC I/F-1 FOR RADIO 1



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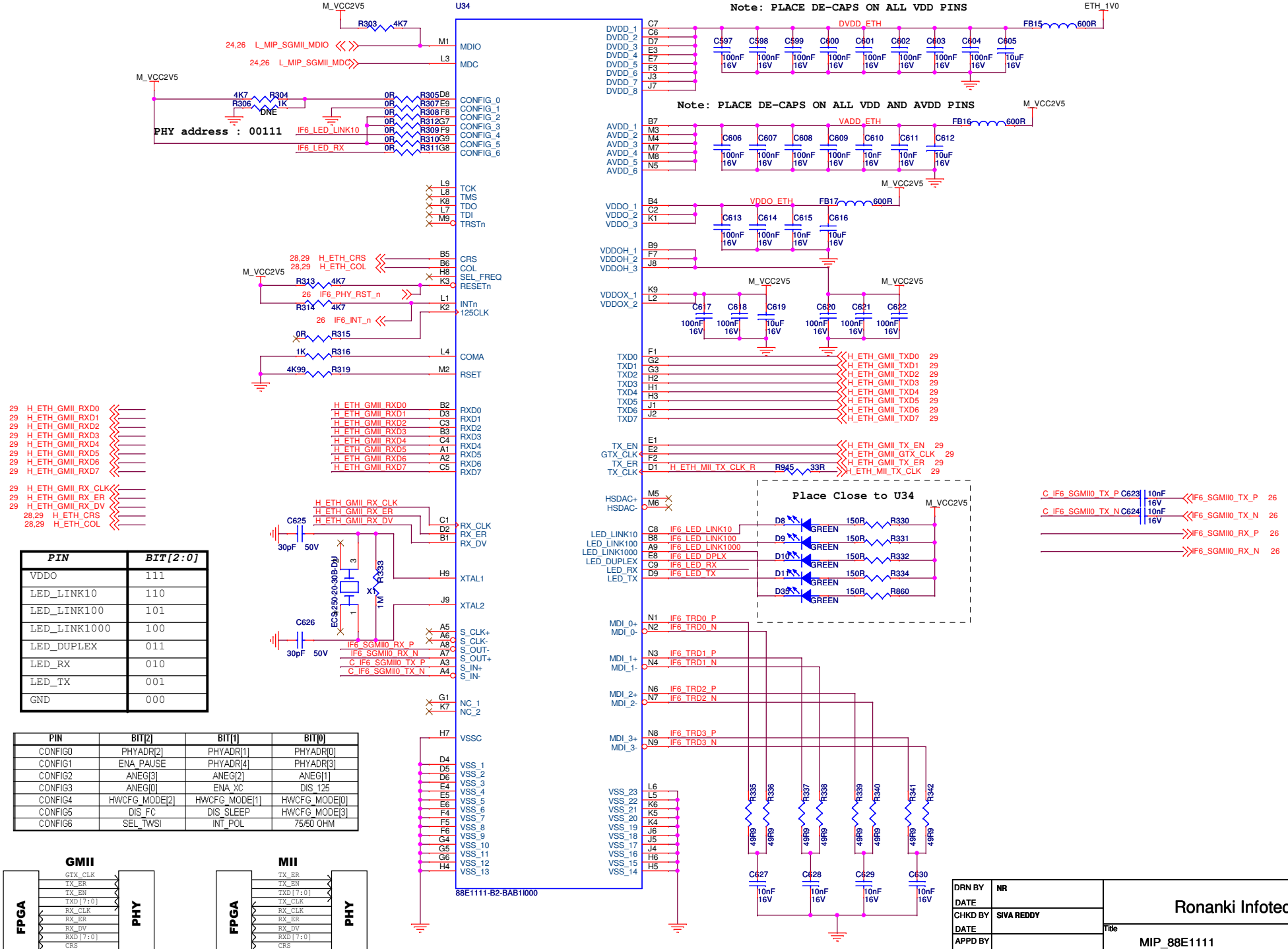
MII TO SGMII INTERFACE



PIN	BIT[2:0]
VDDO	111
LED_LINK10	110
LED_LINK100	101
LED_LINK1000	100
LED_DUPLEX	011
LED_RX	010
LED_TX	001
GND	000

PIN	BIT[2]	BIT[1]	BIT[0]
CONFIG0	PHYADR[2]	PHYADR[1]	PHYADR[0]
CONFIG1	ENA_PAUSE	PHYADR[4]	PHYADR[3]
CONFIG2	ANEG[3]	ANEG[2]	ANEG[1]
CONFIG3	ANEG[0]	ENA_XC	DIS_125
CONFIG4	HWCFG_MODE[2]	HWCFG_MODE[1]	HWCFG_MODE[0]
CONFIG5	DIS_FC	DIS_SLEEP	HWCFG_MODE[3]
CONFIG6	SEL_TWSI	INT_POL	75/50 OHM

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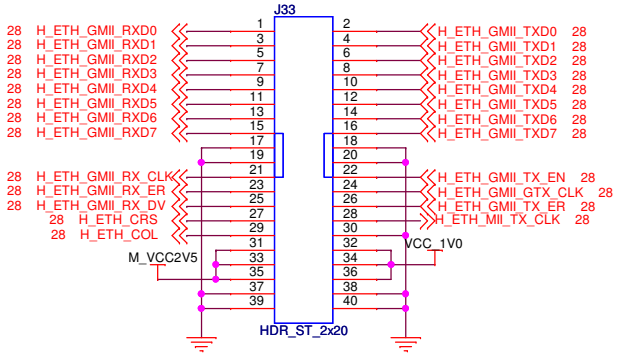
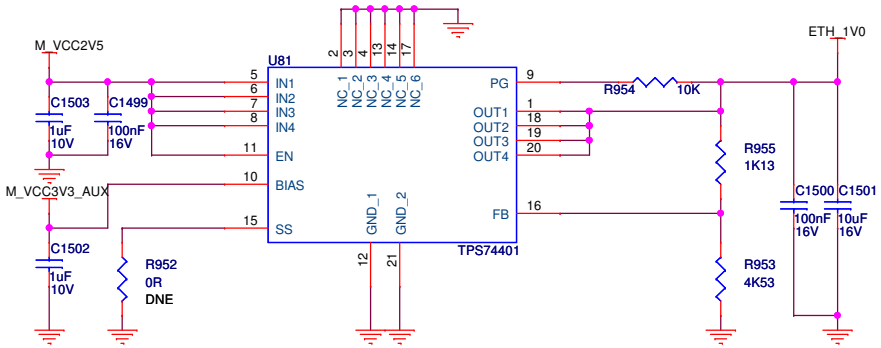
SHDSL HEADER INTERFACE



1V0 GENERATION FOR 88E1111



Vout=0.8X(1+R1/R2)

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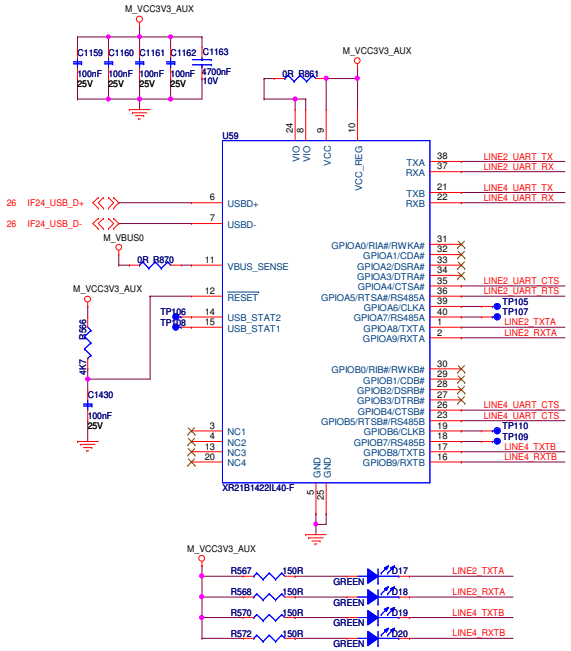
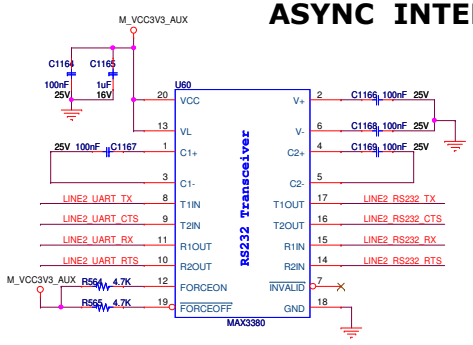
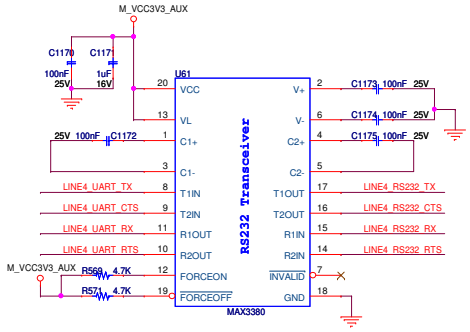
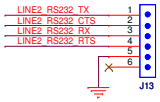
ASYNC INTERFACE



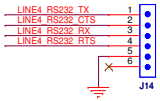




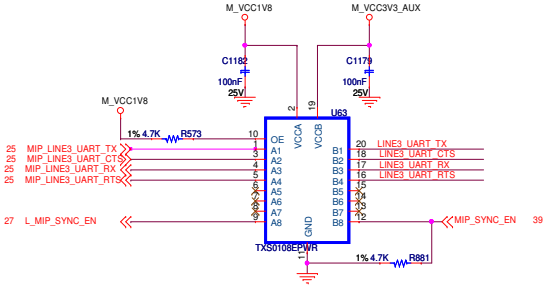
ASYNC I/F-2 FOR RADIO 1

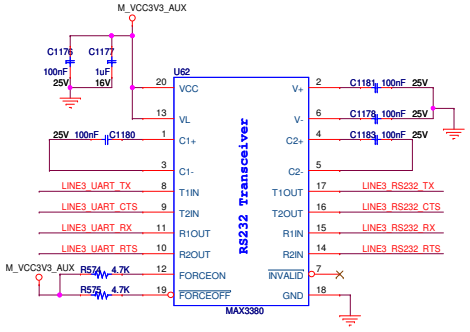


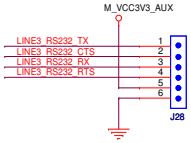
ASYNC I/F-4 FOR RADIO 2



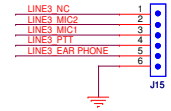
UART 1V8 to 3V3 CONVERTER







ASYNC I/F-3 FOR RADIO 1



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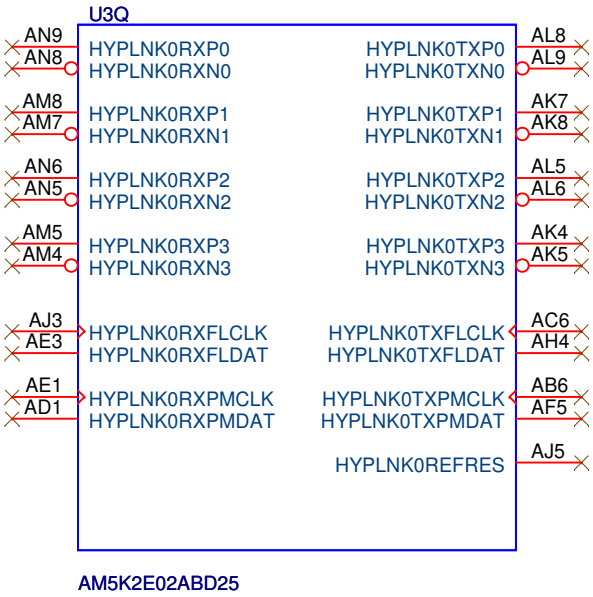
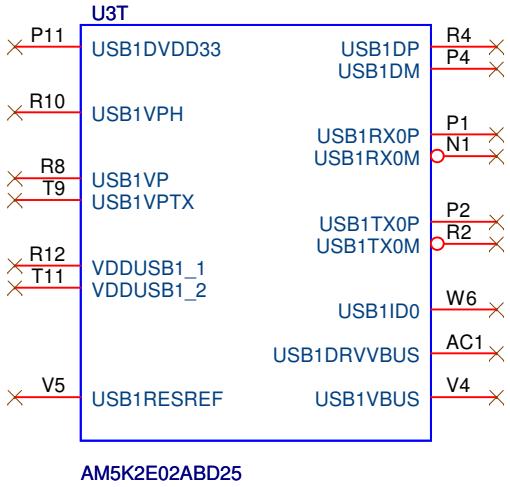
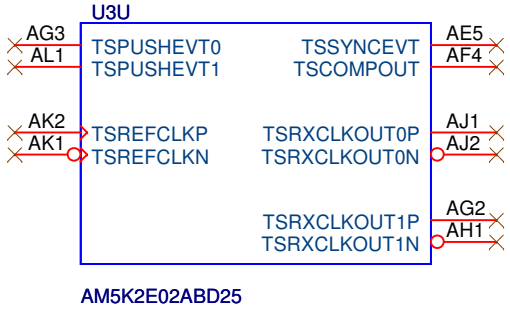
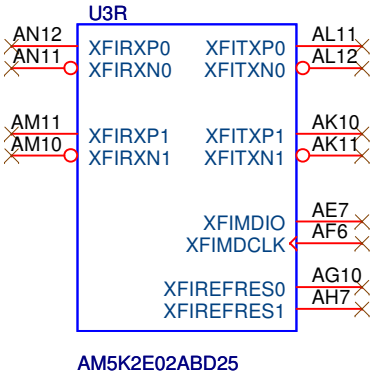
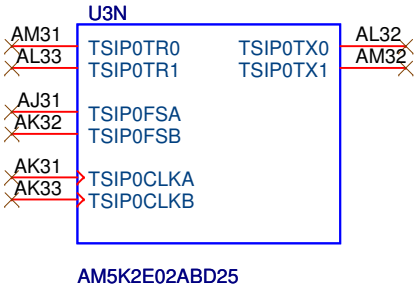
UNUSED











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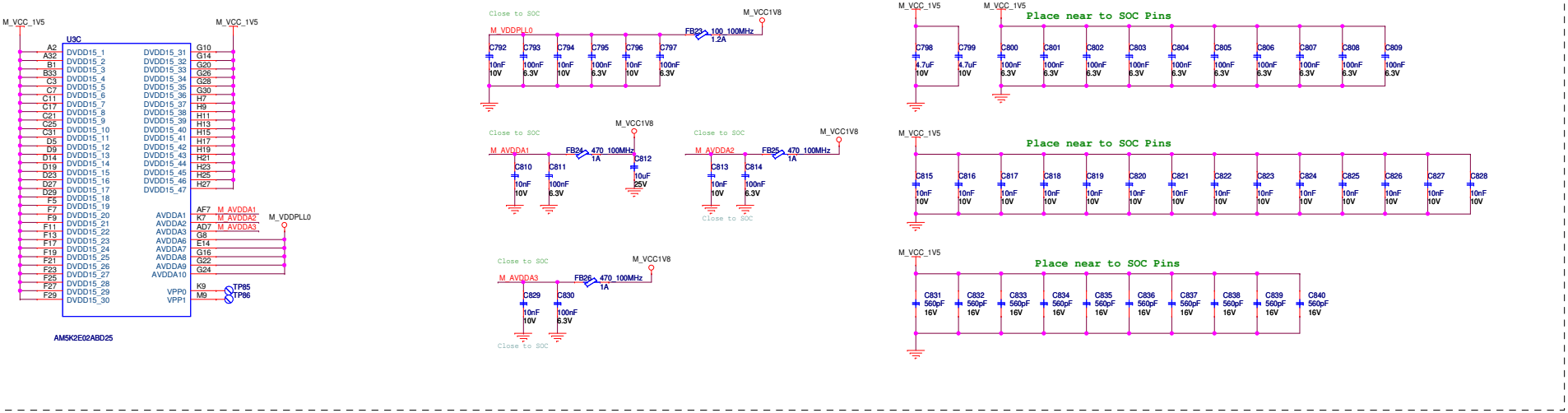
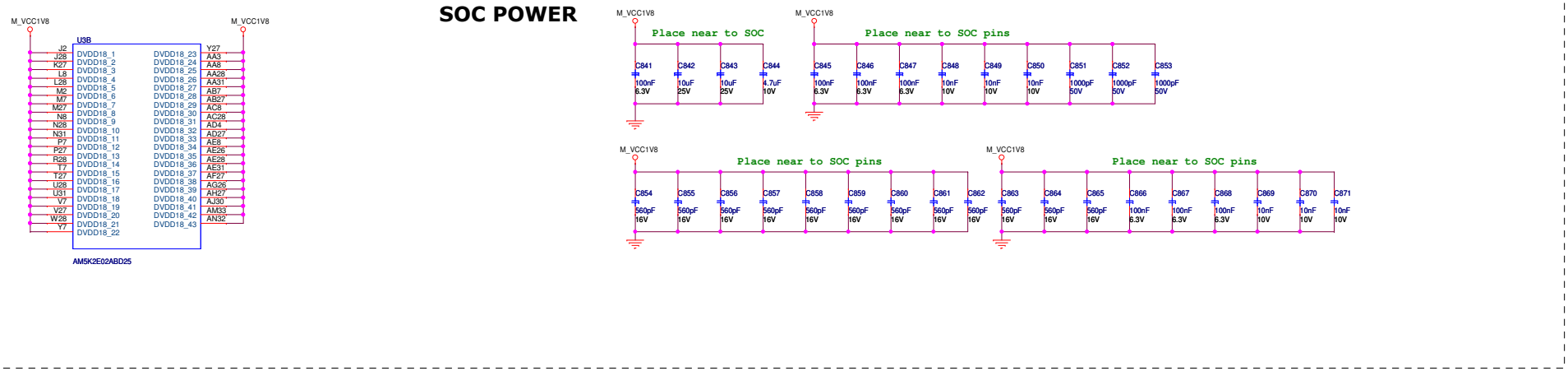
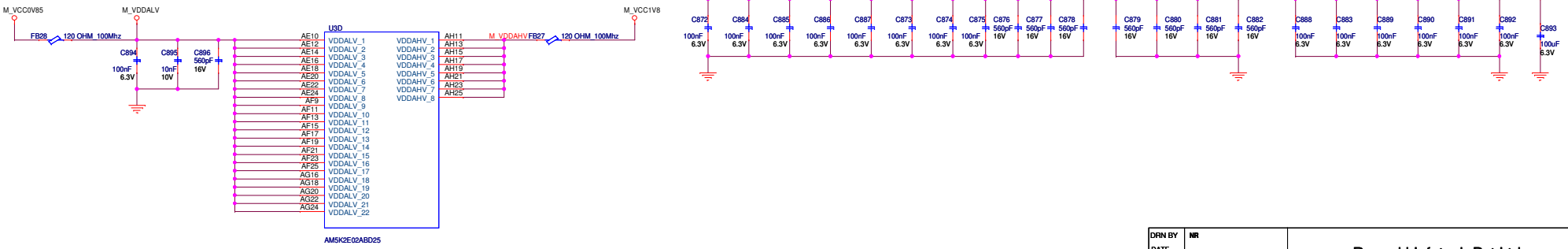
SOC POWER







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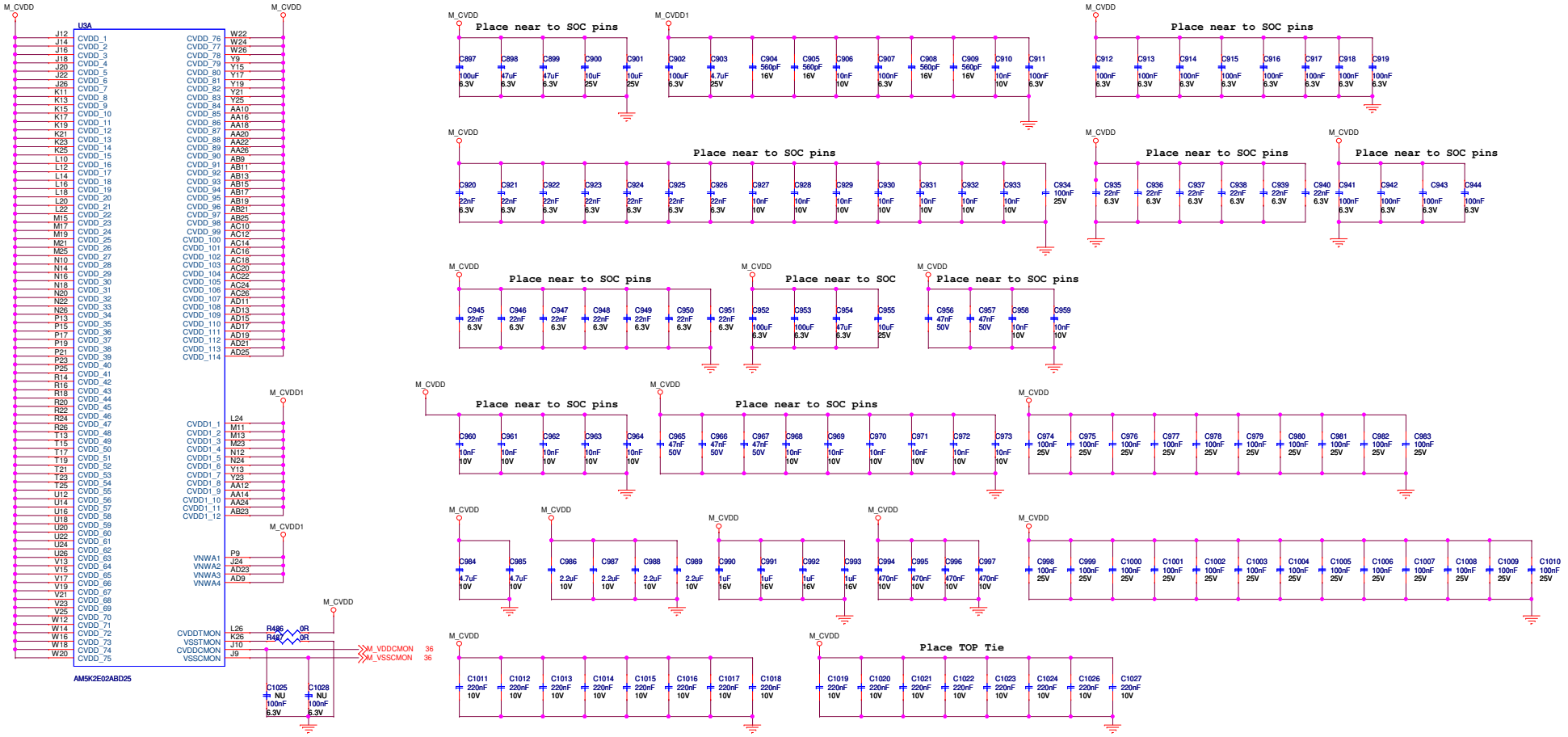
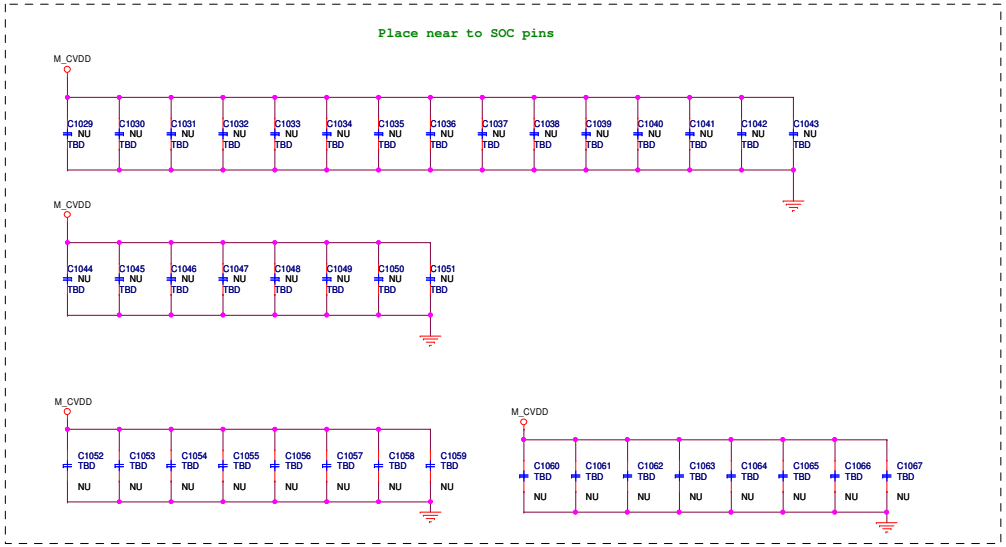
0.85V - 1.05V (CVDD) (Smart Reflex)

SOC POWER





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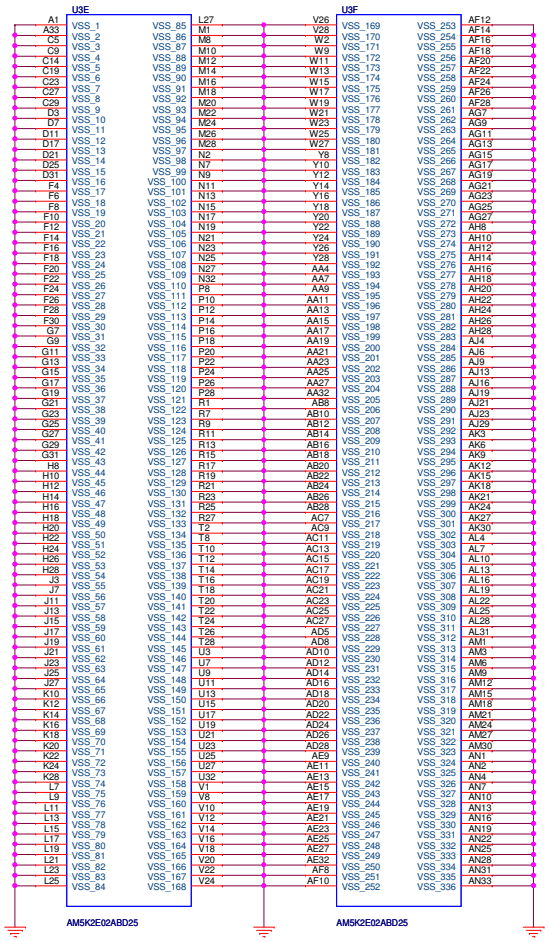

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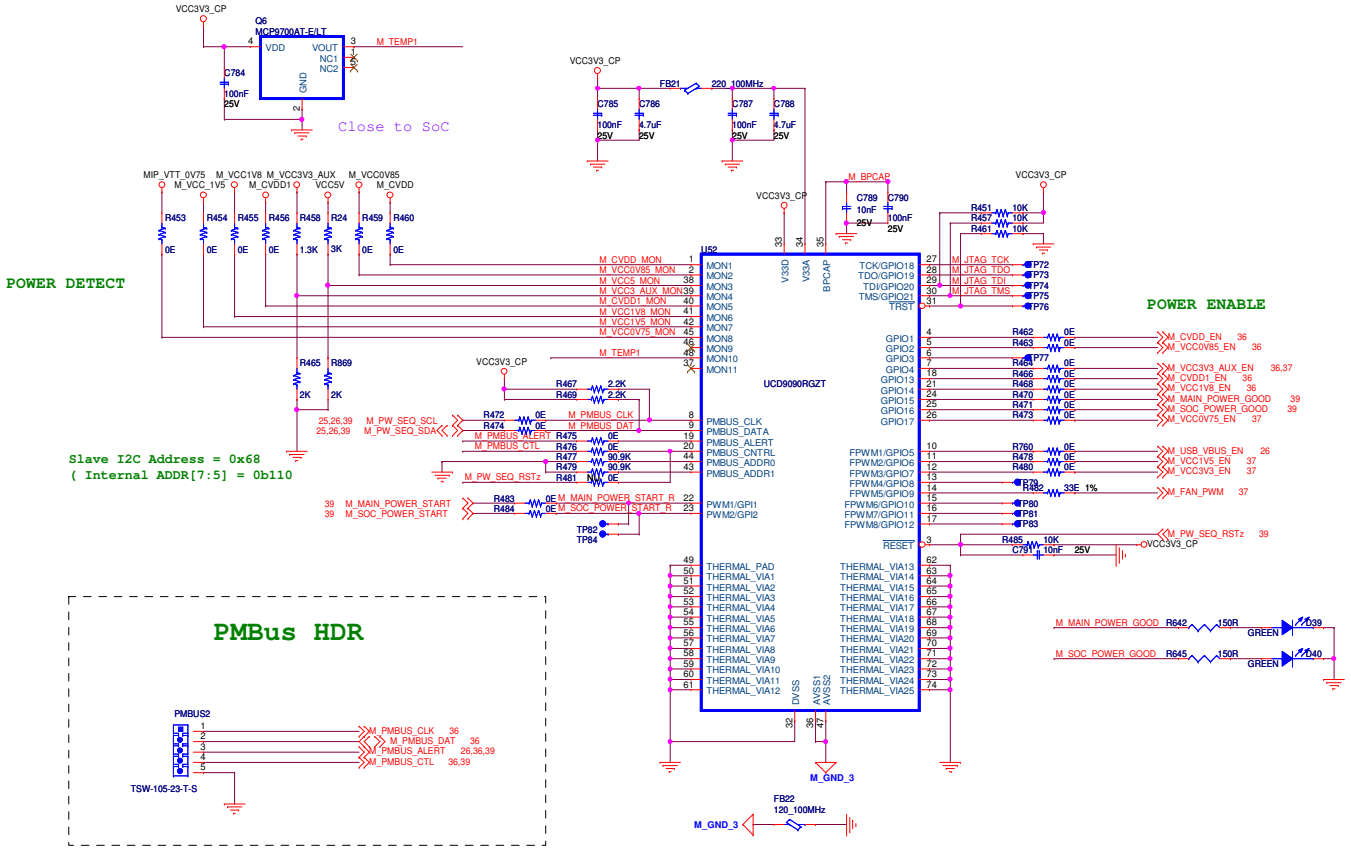
Power Sequencing (UCD9090)



PMBus Address Pins

PMBus Address	PMBus RESISTANCE (K ohm)
OPEN	--
11	200
10	154
9	118
8	90.9
7	69.8
6	53.6
5	41.2
4	31.6
SHORT	--

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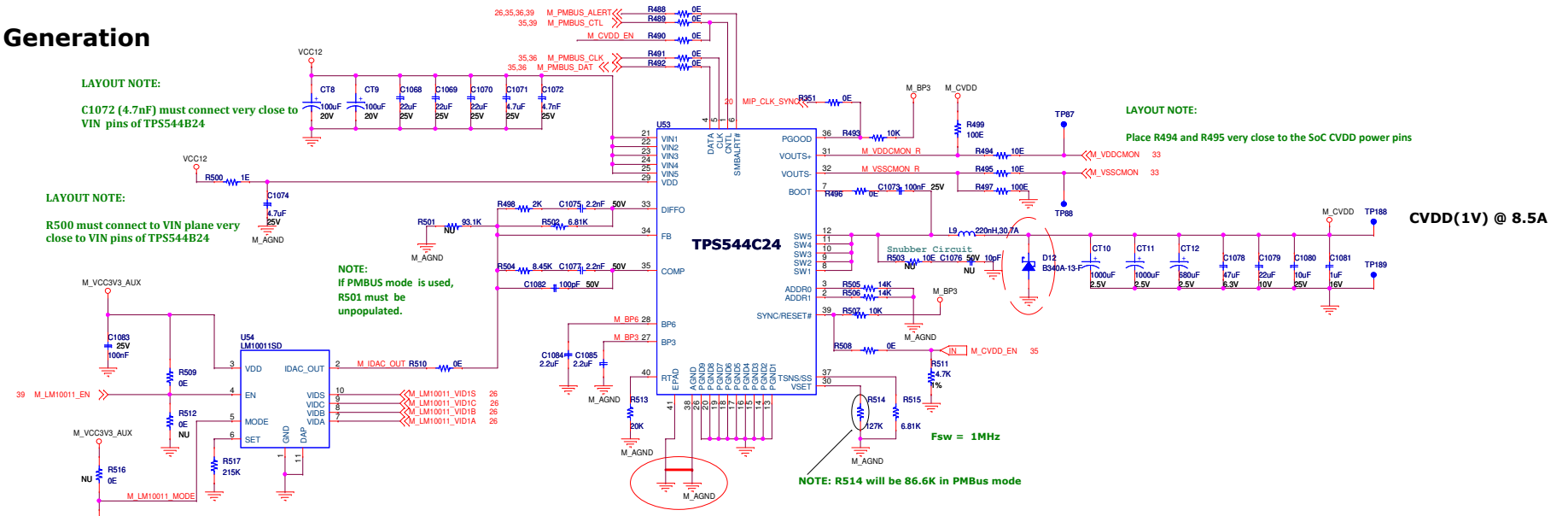
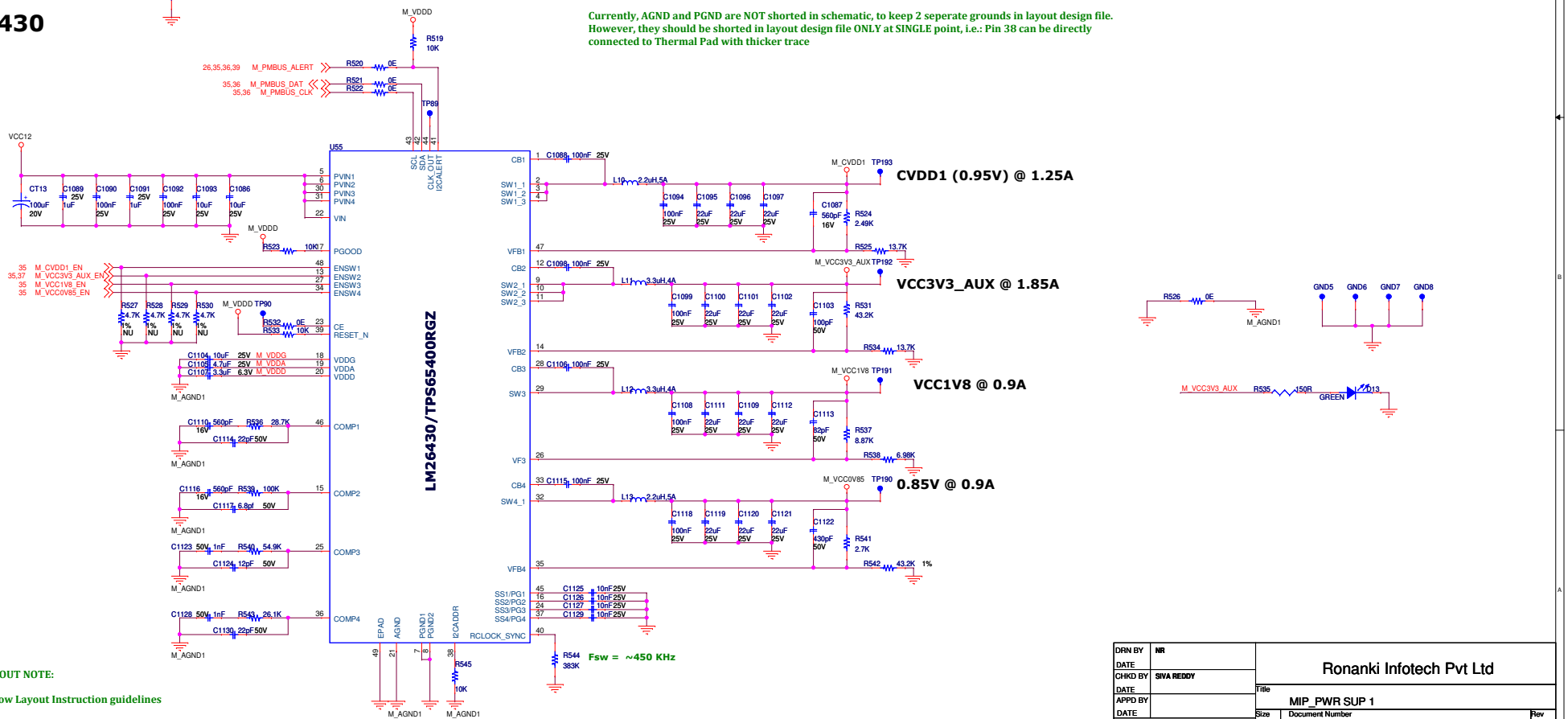
12V to CVDD Generation



LM26430



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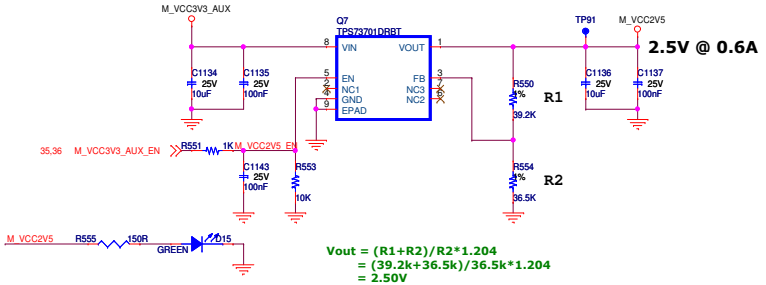
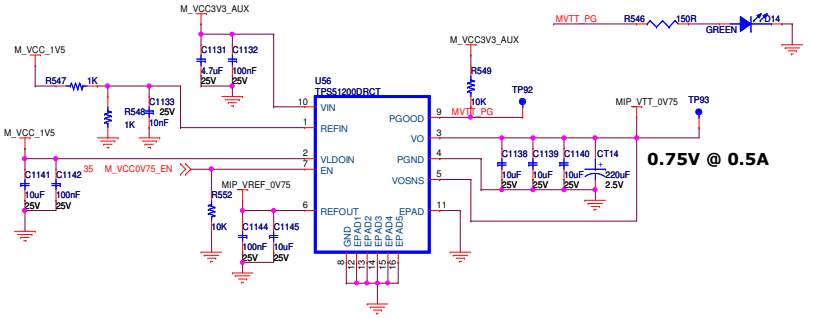
3.3V_AUX to 2.5V Generation

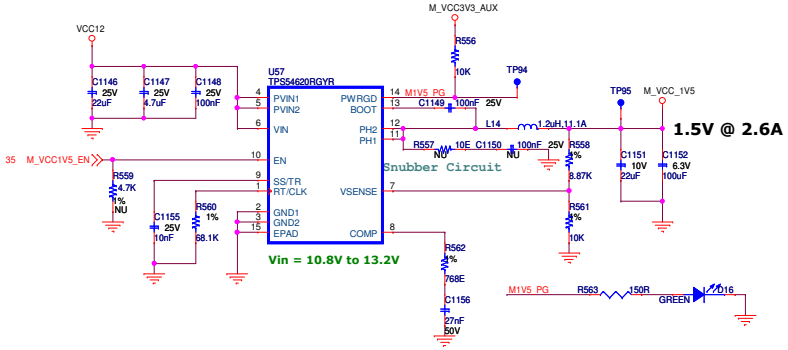


1.5V to 0.75V Generation

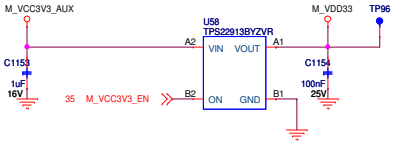


Place near DDR3 VTT Terminations

12V to 1.5V Generation



3V3_AUX to VDD33 Generation



VOUT = 0.8 * (R1/R2 + 1)
= 0.8 * (8.87/10 + 1)
= ~1.5V

Rrt=48000 * Fsw(kHz)^(-0.997) - 2
=48000 * 700^(-0.997) - 2
=~68 Kohms

OUTPUT CAPACITOR CALCULATION
Cout= 2 * delta(Iout) / (Fsw*delta(Vout)
= 2 * 1 / (700kHz*0.125)
= ~38uF

REFERENCE CAPACITOR = 100uF

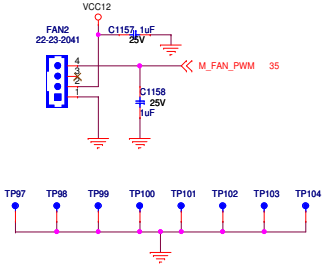
INDUCTOR CALCULATION
L= (Vin - Vout)/(Iout * Kind) *(Vout / (Vin * Fsw))
= (12 - 1.5)/(4.5 * 0.3) * (1.5 / (12 * 700KHz))
= 7.78 * 0.18u
= ~ 1.38uH

REFERENCE CAPACITOR = 1.2uH

chk pwr req for ambe3000 if any other

24 to 12v?

DC FAN Connector for SOC



Distribute these TP in board

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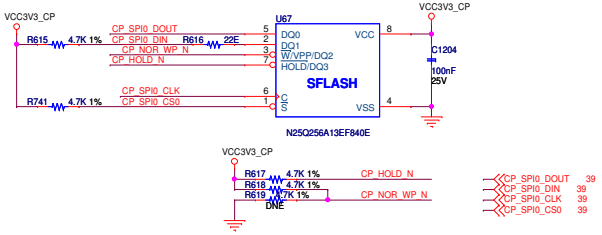
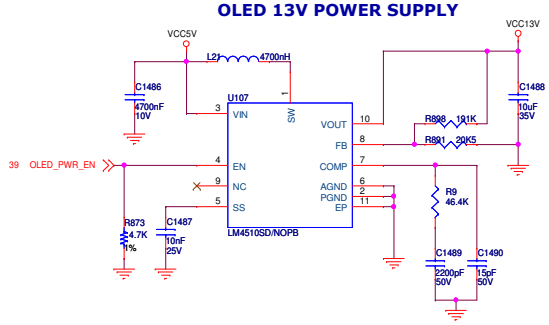
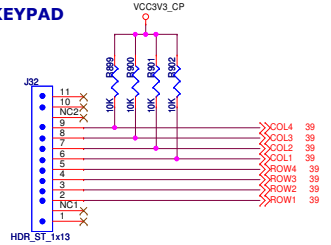
128Mb SPI NOR Flash



OLED 13V POWER SUPPLY

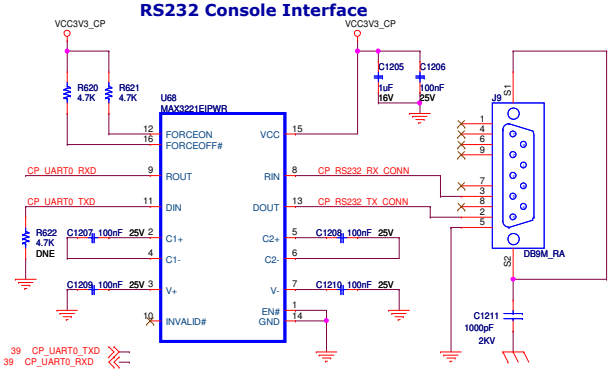


4X4 KEYPAD

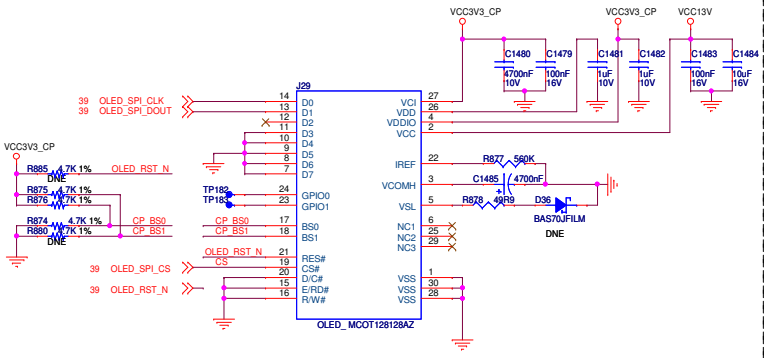


CAD :REFER DATASHEET FOR ACTUAL MECHANICAL CONSTRAINTS

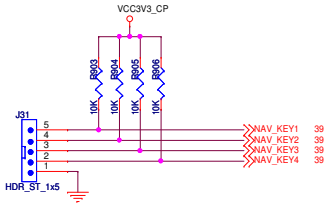
RS232 Console Interface



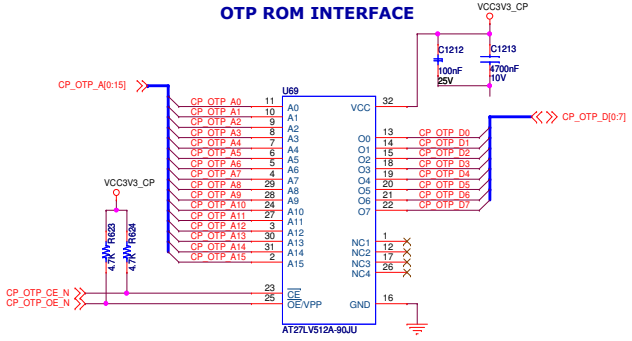
OLED INTERFACE



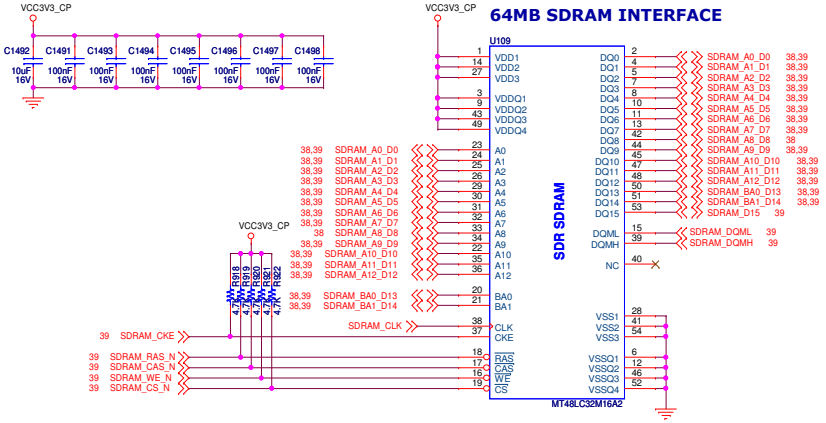
NAVIGATION KEYPAD



OTP ROM INTERFACE



64MB SDRAM INTERFACE



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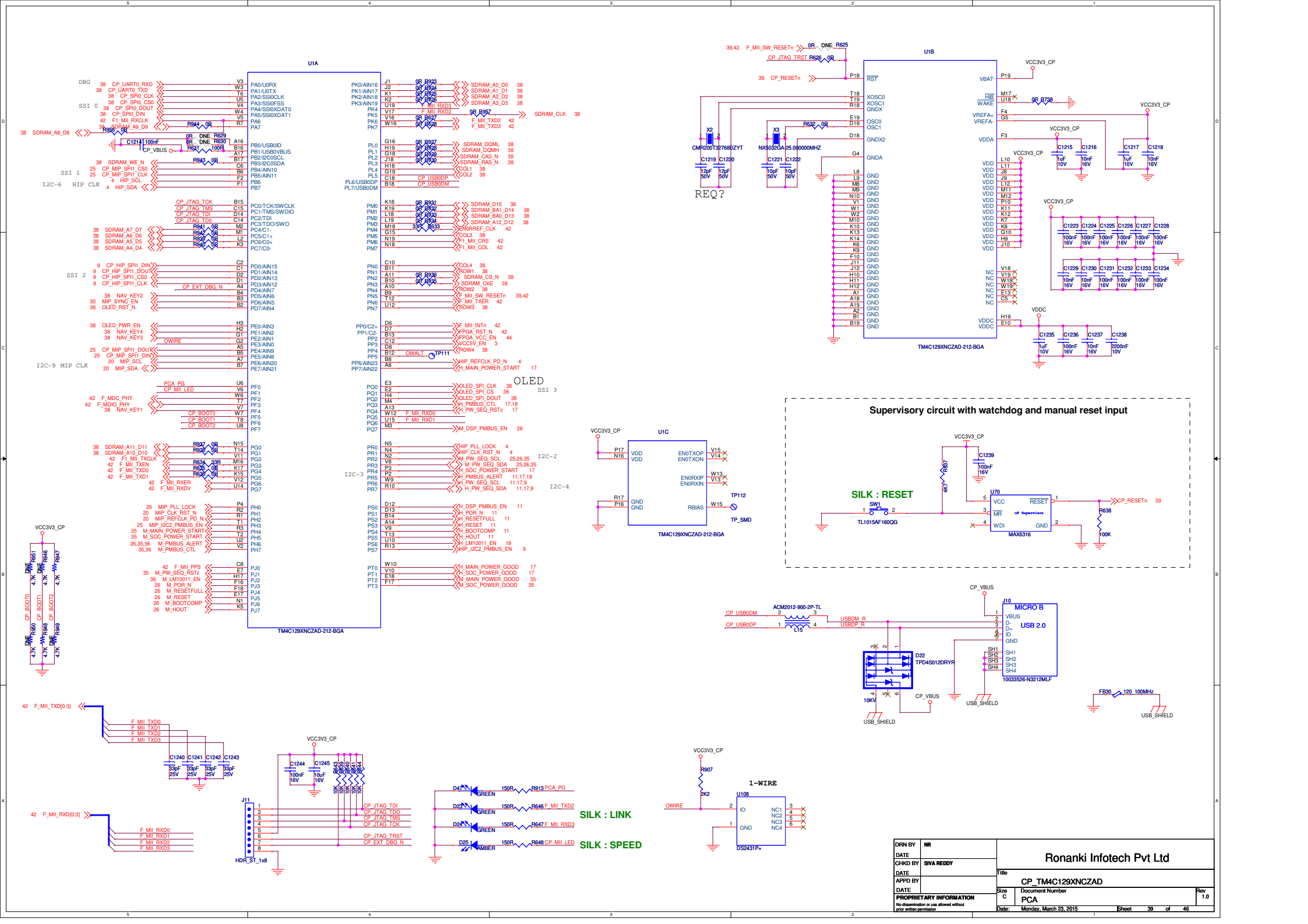
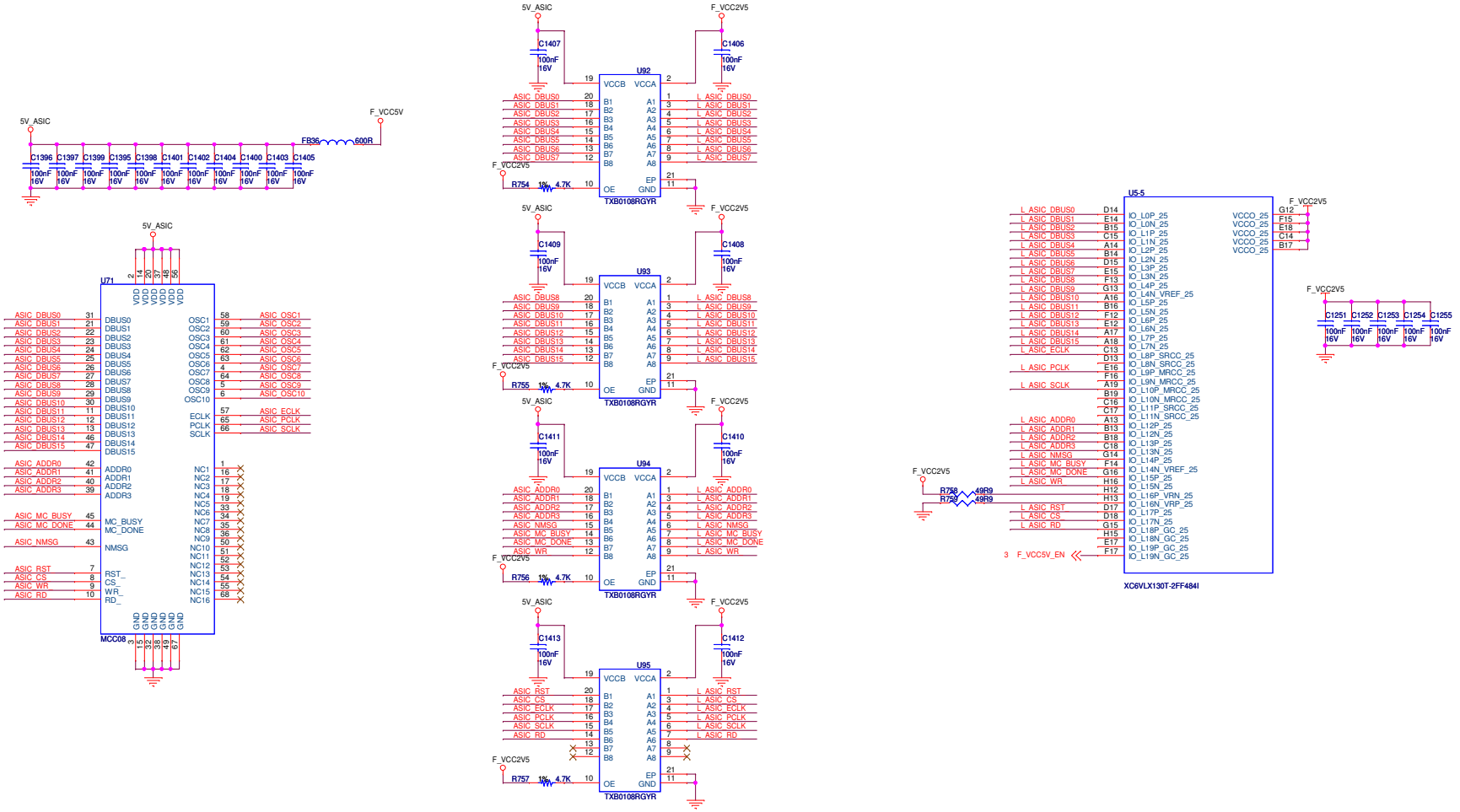
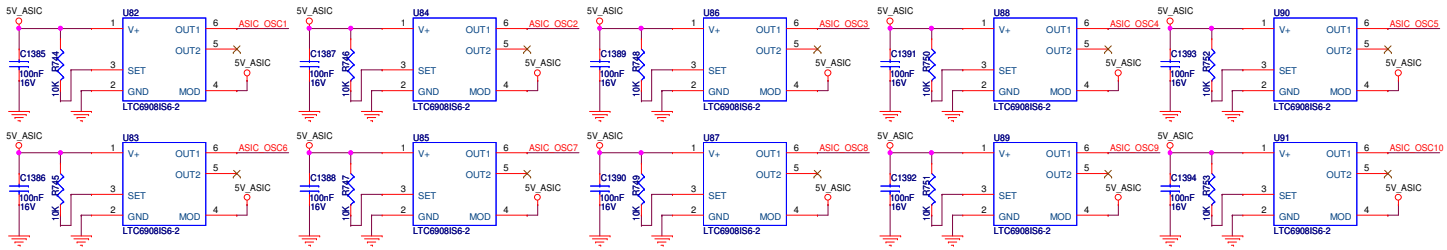

U1A
TM4C129XNCZAD-212-BGA
U1B
TM4C129XNCZAD-212-BGA
U1C
TM4C129XNCZAD-212-BGA
REQ?
OLED
SSI 3
SILK : RESET
SILK : LINK
SILK : SPEED
Supervisory circuit with watchdog and manual reset input
1-WIRE
MICRO B
USB 2.0
Ronanki Infotech Pvt Ltd
CP_TM4C129XNCZAD
PCA
Monday, March 23, 2015

ASIC INTERFACE





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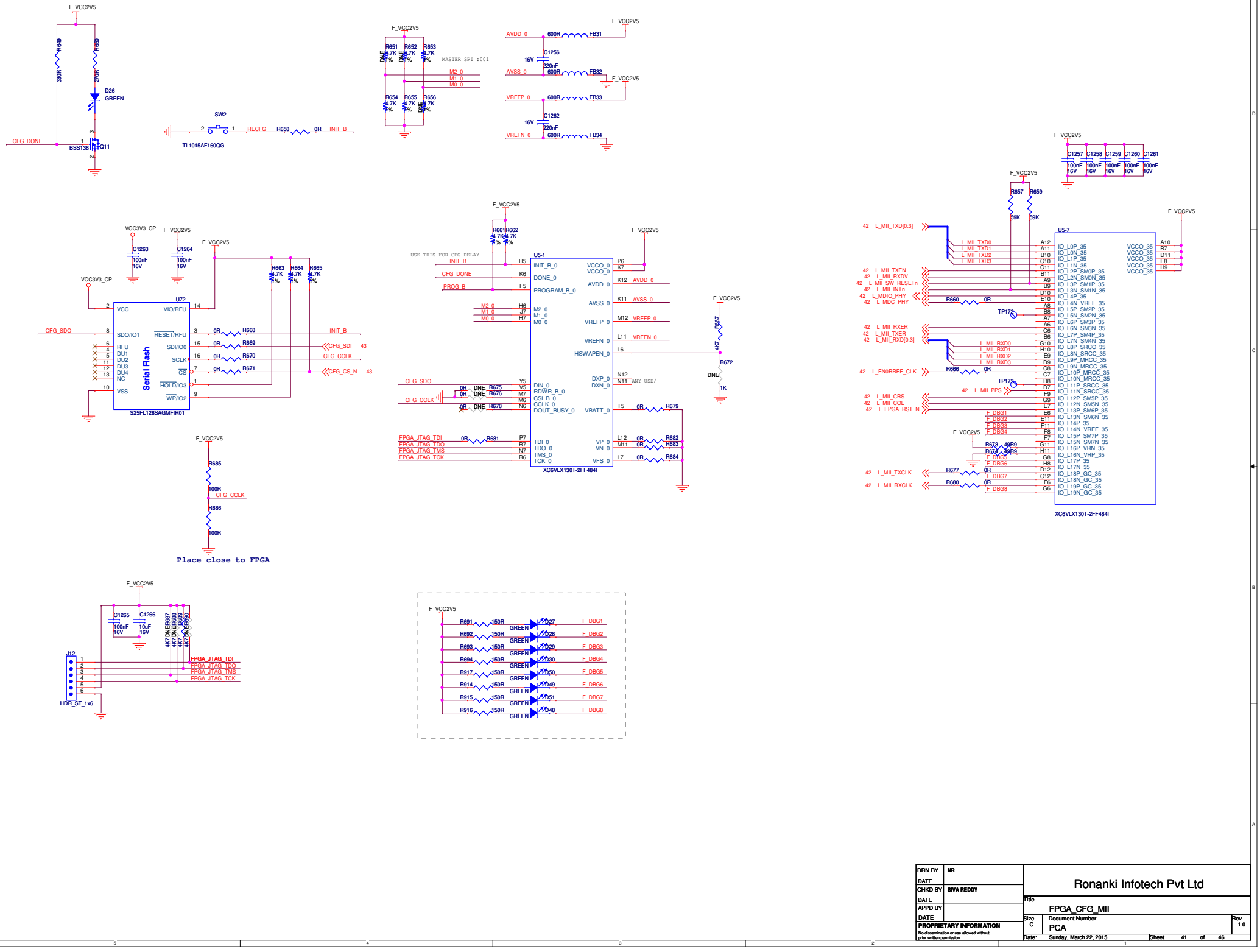

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APPD BY		Size C	Document Number PCA
DATE			Rev 1.0
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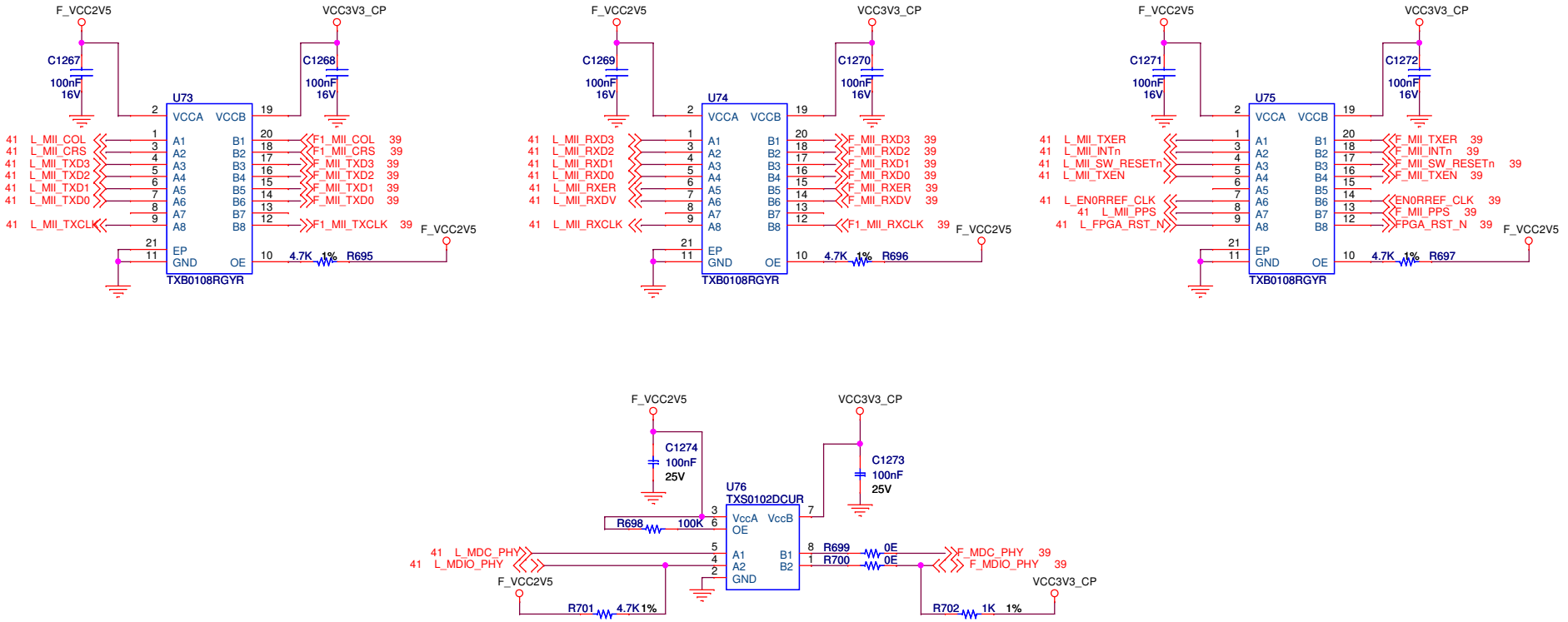

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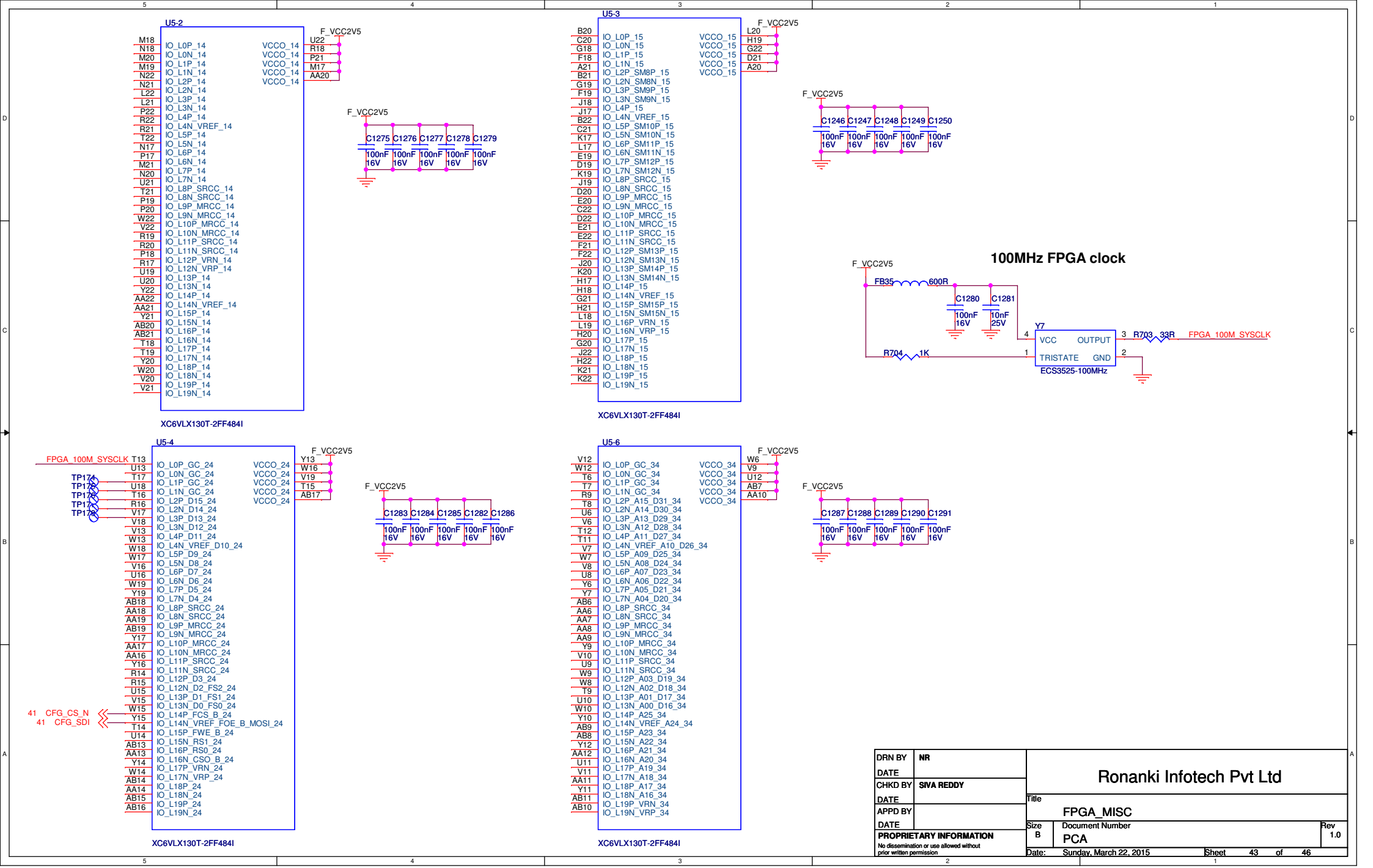
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IO_L0P_14 IO_L0N_14 IO_L1P_14 IO_L1N_14 IO_L2P_14 IO_L2N_14 IO_L3P_14 IO_L3N_14 IO_L4P_14 IO_L4N_VREF_14 IO_L5P_14 IO_L5N_14 IO_L6P_14 IO_L6N_14 IO_L7P_14 IO_L7N_14 IO_L8P_SRCC_14 IO_L8N_SRCC_14 IO_L9P_MRCC_14 IO_L9N_MRCC_14 IO_L10P_MRCC_14 IO_L10N_MRCC_14 IO_L11P_SRCC_14 IO_L11N_SRCC_14 IO_L12P_VRN_14 IO_L12N_VRP_14 IO_L13P_14 IO_L13N_14 IO_L14P_14 IO_L14N_VREF_14 IO_L15P_14 IO_L15N_14 IO_L16P_14 IO_L16N_14 IO_L17P_14 IO_L17N_14 IO_L18P_14 IO_L18N_14 IO_L19P_14 IO_L19N_14
VCCO_14 VCCO_14 VCCO_14 VCCO_14 VCCO_14
F_VCC2V5
U22 R18 P21 M17 AA20
C1275 C1276 C1277 C1278 C1279
100nF 16V
XC6VLX130T-2FF484I
U5-3
B20 C20 G18 F18 A21 B21 G19 F19 J18 J17 B22 C21 K17 L17 E19 D19 K19 J19 D20 E20 C22 D22 E21 E22 F21 F22 J20 K20 H17 H18 G21 H21 L18 L19 H20 G20 J22 H22 K21 K22
IO_L0P_15 IO_L0N_15 IO_L1P_15 IO_L1N_15 IO_L2P_SM8P_15 IO_L2N_SM8N_15 IO_L3P_SM9P_15 IO_L3N_SM9N_15 IO_L4P_15 IO_L4N_VREF_15 IO_L5P_SM10P_15 IO_L5N_SM10N_15 IO_L6P_SM11P_15 IO_L6N_SM11N_15 IO_L7P_SM12P_15 IO_L7N_SM12N_15 IO_L8P_SRCC_15 IO_L8N_SRCC_15 IO_L9P_MRCC_15 IO_L9N_MRCC_15 IO_L10P_MRCC_15 IO_L10N_MRCC_15 IO_L11P_SRCC_15 IO_L11N_SRCC_15 IO_L12P_SM13P_15 IO_L12N_SM13N_15 IO_L13P_SM14P_15 IO_L13N_SM14N_15 IO_L14P_15 IO_L14N_VREF_15 IO_L15P_SM15P_15 IO_L15N_SM15N_15 IO_L16P_VRN_15 IO_L16N_VRP_15 IO_L17P_15 IO_L17N_15 IO_L18P_15 IO_L18N_15 IO_L19P_15 IO_L19N_15
VCCO_15 VCCO_15 VCCO_15 VCCO_15 VCCO_15
F_VCC2V5
L20 H19 G22 D21 A20
C1246 C1247 C1248 C1249 C1250
100nF 16V
XC6VLX130T-2FF484I
100MHz FPGA clock
F_VCC2V5
FB35 600R
C1280 100nF 16V
C1281 10nF 25V
Y7
VCC OUTPUT TRISTATE GND
ECS3525-100MHz
R703 33R
FPGA_100M_SYSCLK
R704 1K
U5-4
FPGA_100M_SYSCLK T13
U13 T17 U18 T16 R16 V17 V18 V13 W13 W18 W17 V16 U16 W19 Y19 AB18 AA18 AA19 AB19 Y17 AA17 AA16 Y16 R14 R15 U15 V15 W15 Y15 T14 U14 AB13 AA13 Y14 W14 AB14 AA14 AB15 AB16
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VCCO_24 VCCO_24 VCCO_24 VCCO_24 VCCO_24
TP174 TP175 TP176 TP177 TP178
41 CFG_CS_N
41 CFG_SDI
F_VCC2V5
Y13 W16 V19 T15 AB17
C1283 C1284 C1285 C1282 C1286
100nF 16V
XC6VLX130T-2FF484I
U5-6
V12 W12 T6 T7 R9 T8 U6 V6 T12 T11 V7 W7 V8 U8 Y6 Y7 AB6 AA6 AA7 AA8 AA9 Y9 V10 U9 W9 W8 T9 U10 W10 Y10 AB9 AB8 Y12 AA12 U11 V11 AA11 Y11 AB11 AB10
IO_L0P_GC_34 IO_L0N_GC_34 IO_L1P_GC_34 IO_L1N_GC_34 IO_L2P_A15_D31_34 IO_L2N_A14_D30_34 IO_L3P_A13_D29_34 IO_L3N_A12_D28_34 IO_L4P_A11_D27_34 IO_L4N_VREF_A10_D26_34 IO_L5P_A09_D25_34 IO_L5N_A08_D24_34 IO_L6P_A07_D23_34 IO_L6N_A06_D22_34 IO_L7P_A05_D21_34 IO_L7N_A04_D20_34 IO_L8P_SRCC_34 IO_L8N_SRCC_34 IO_L9P_MRCC_34 IO_L9N_MRCC_34 IO_L10P_MRCC_34 IO_L10N_MRCC_34 IO_L11P_SRCC_34 IO_L11N_SRCC_34 IO_L12P_A03_D19_34 IO_L12N_A02_D18_34 IO_L13P_A01_D17_34 IO_L13N_A00_D16_34 IO_L14P_A25_34 IO_L14N_VREF_A24_34 IO_L15P_A23_34 IO_L15N_A22_34 IO_L16P_A21_34 IO_L16N_A20_34 IO_L17P_A19_34 IO_L17N_A18_34 IO_L18P_A17_34 IO_L18N_A16_34 IO_L19P_VRN_34 IO_L19N_VRP_34
VCCO_34 VCCO_34 VCCO_34 VCCO_34 VCCO_34
F_VCC2V5
W6 V9 U12 AB7 AA10
C1287 C1288 C1289 C1290 C1291
100nF 16V
XC6VLX130T-2FF484I
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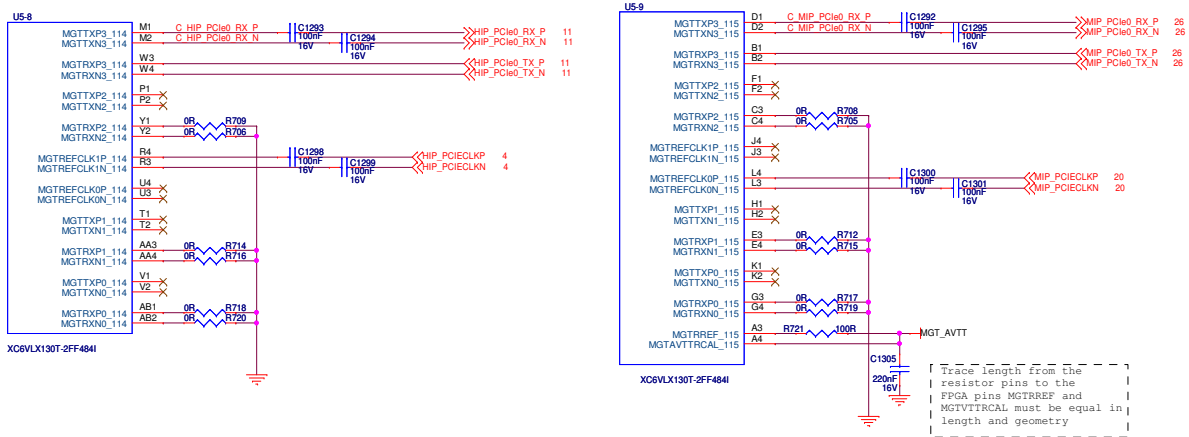
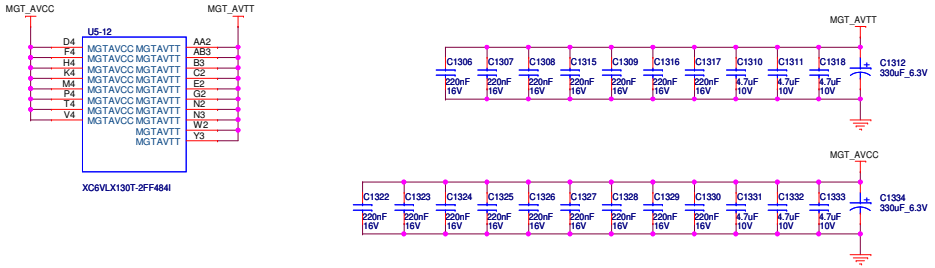
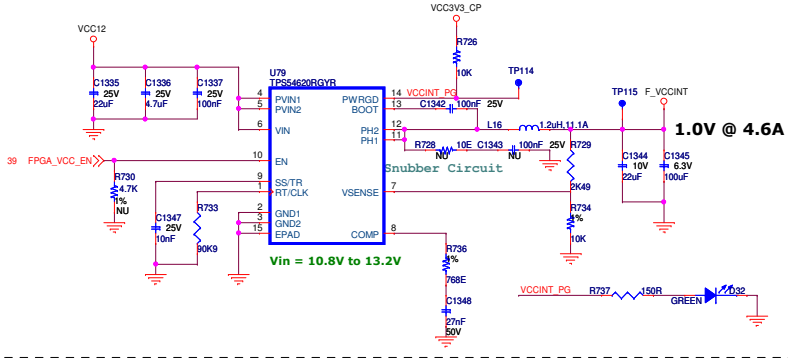
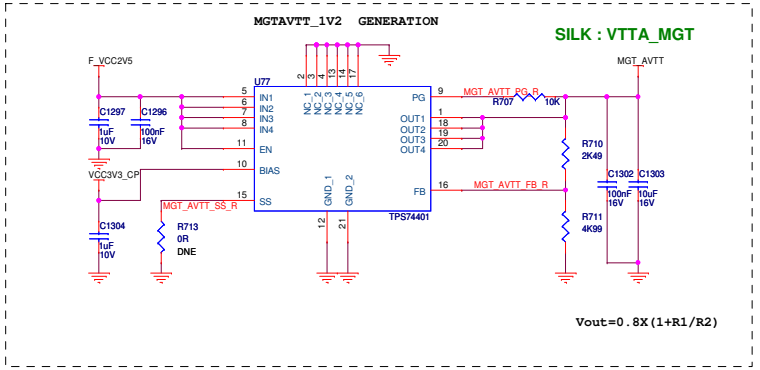
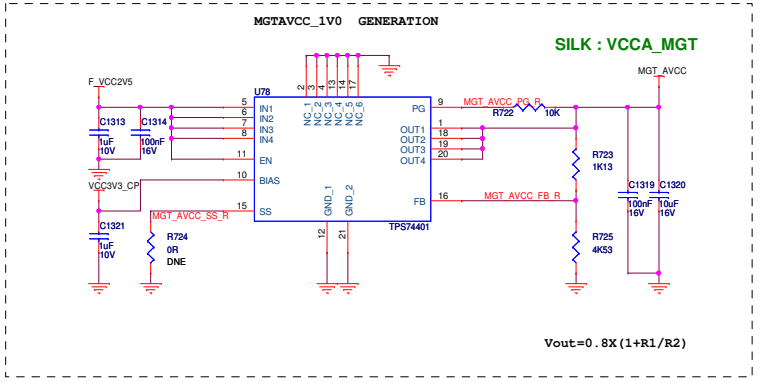




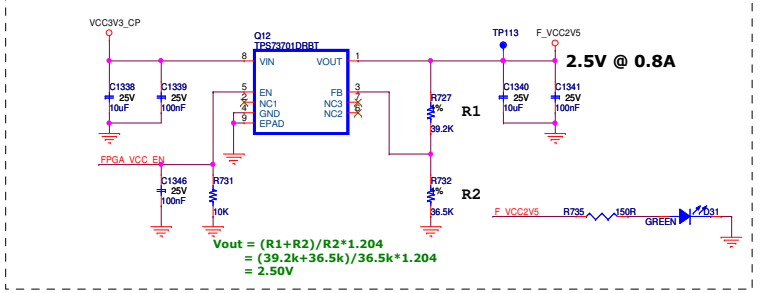
12V to 1.0V Generation







3.3V_CP to 2.5V Generation



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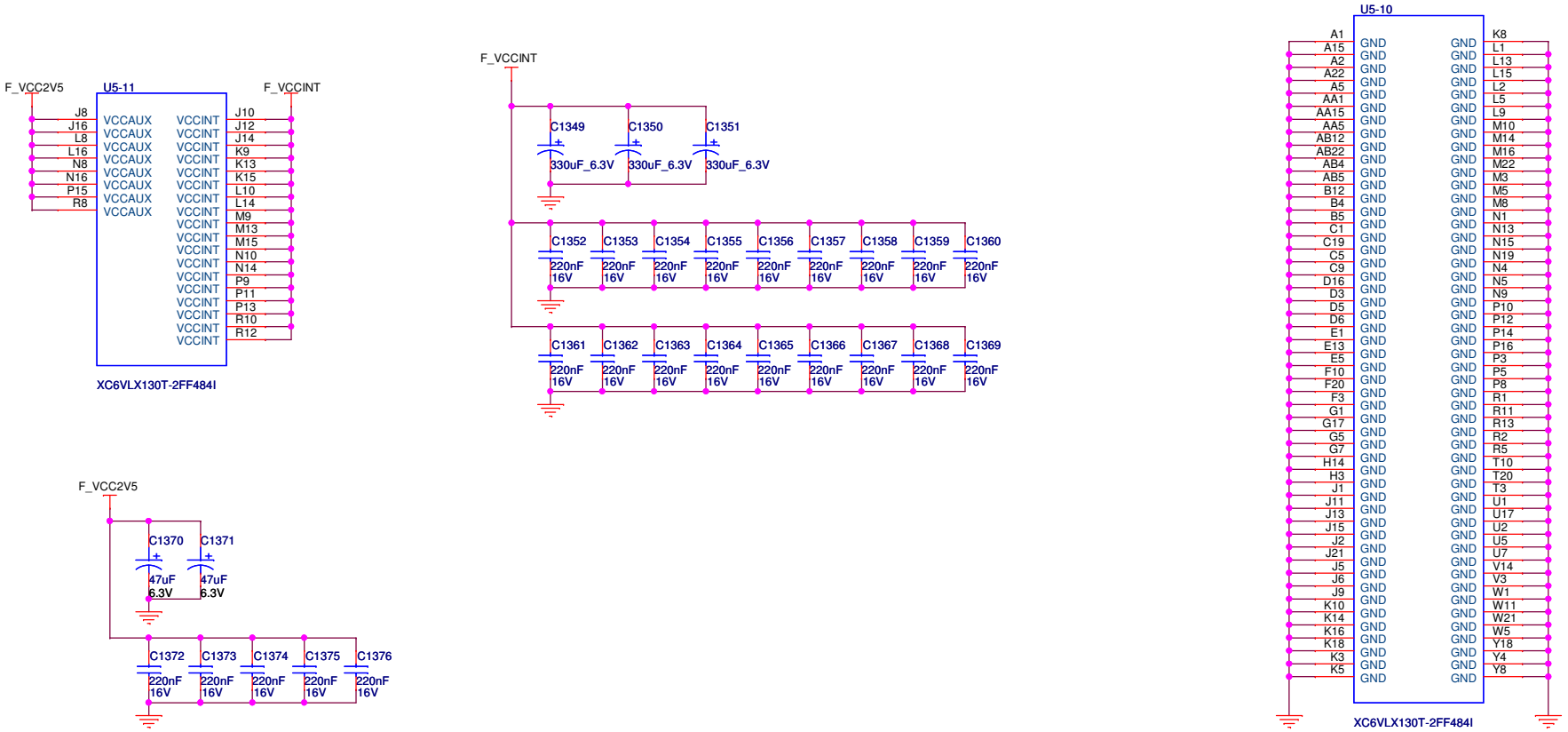

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