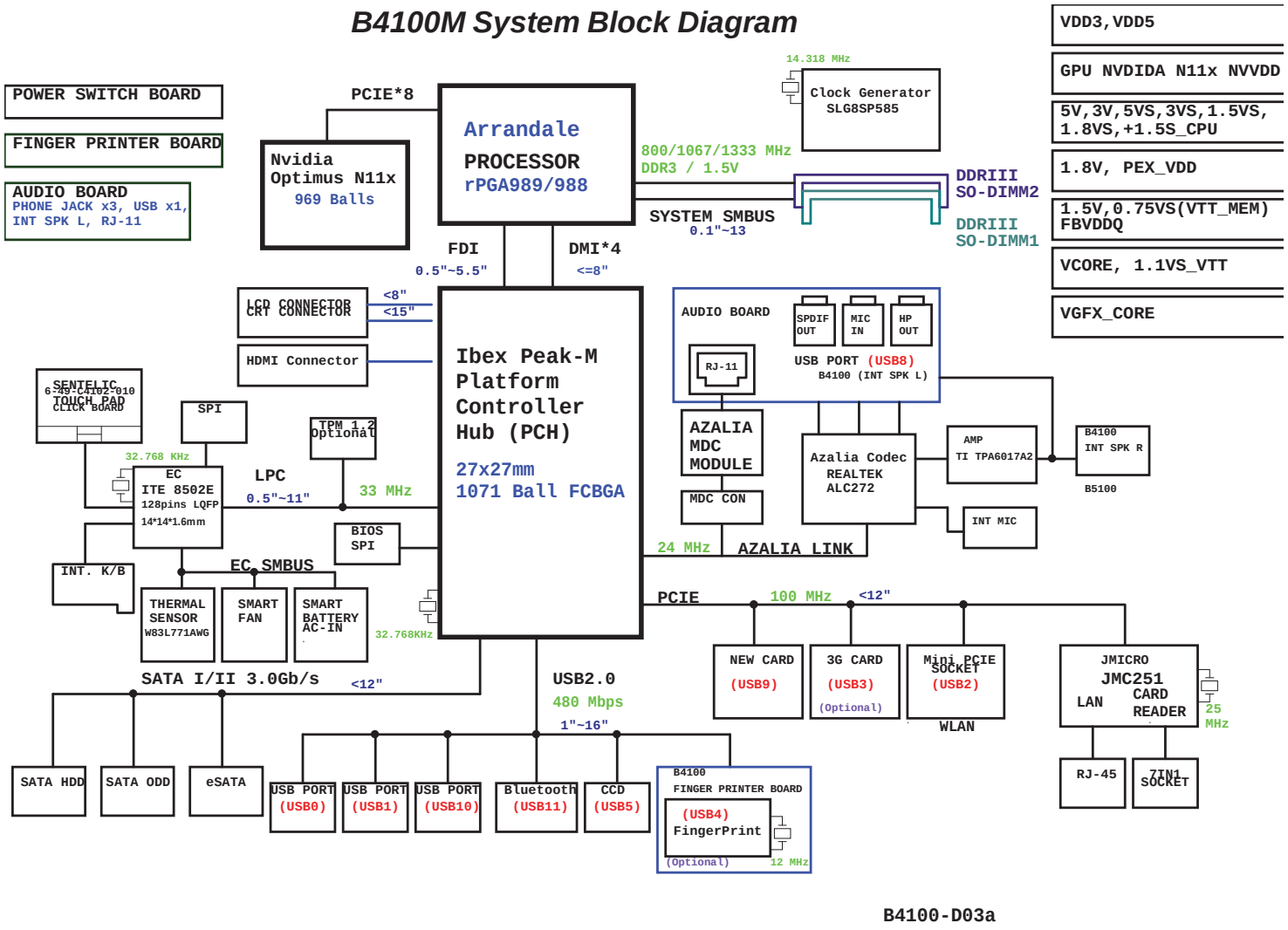
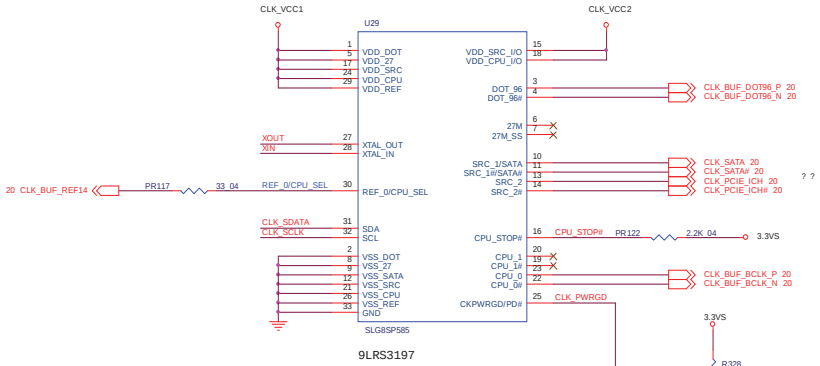
System Block Diagram

Sheet 1 of 49
System Block Diagram

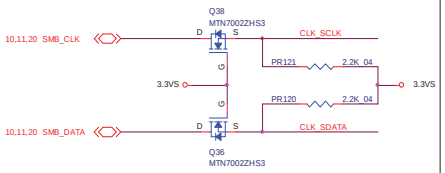


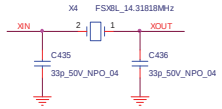
Clock Generator

CLOCK GENERATOR

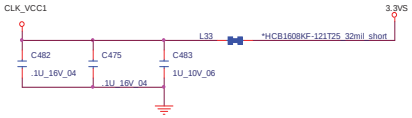


SMBus

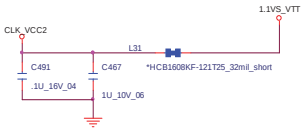




CLKGEN POWER



0.1uF near the every power pin



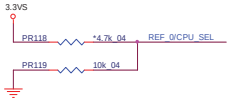
VDD_I/O can be ranging from 1.05V to 3.3V

0.1uF near the every power pin

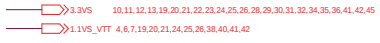
EMI

EMI Capactior

CPU_SEL_During CK_PEWGD Latch Pinl



PIN_30	CPU_0	CPU_1
0(default)	133MHz	133MHz
1(0.7V-1.5V)	100MHz	100MHz

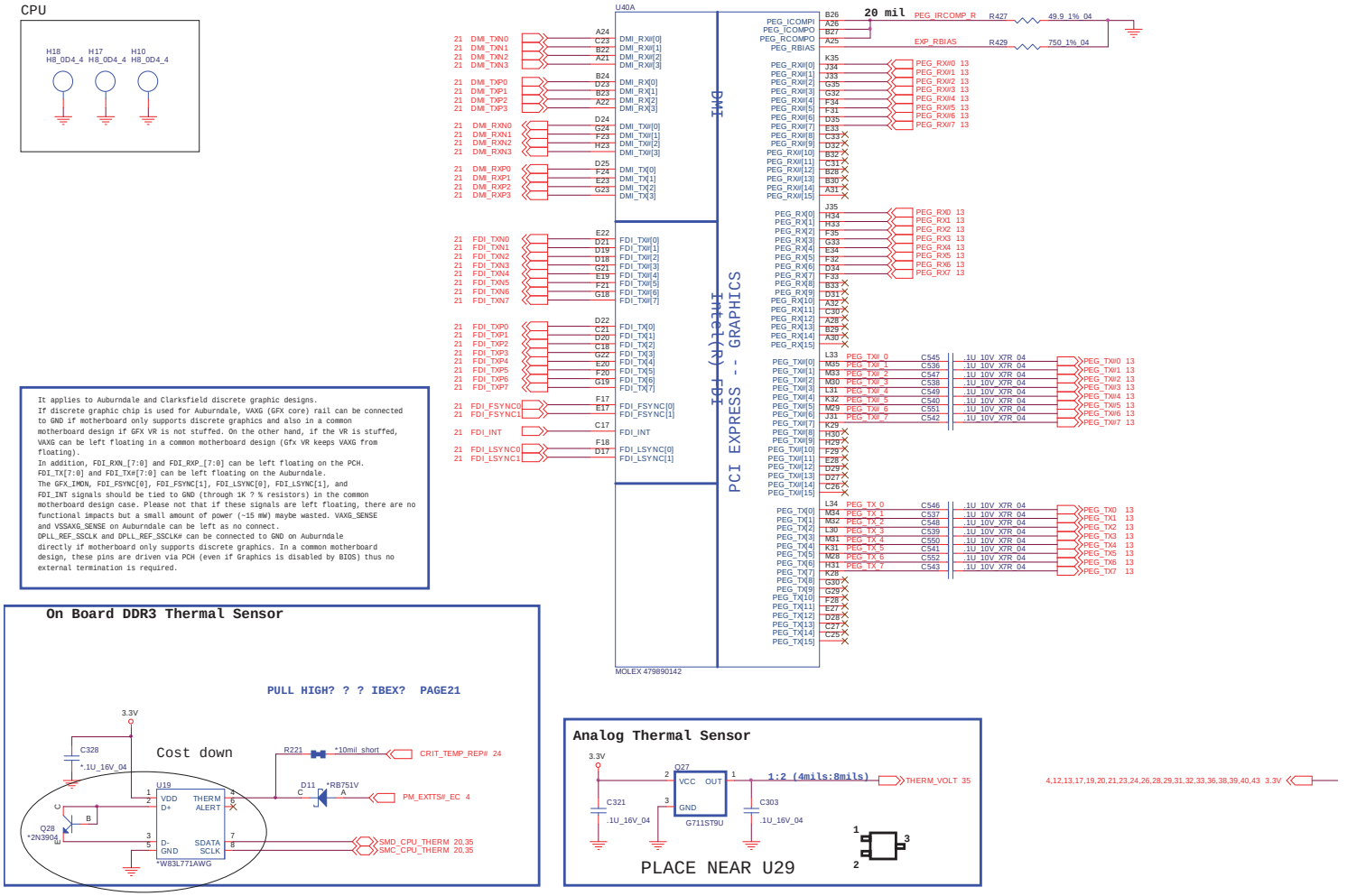


Sheet 2 of 49
Clock Generator

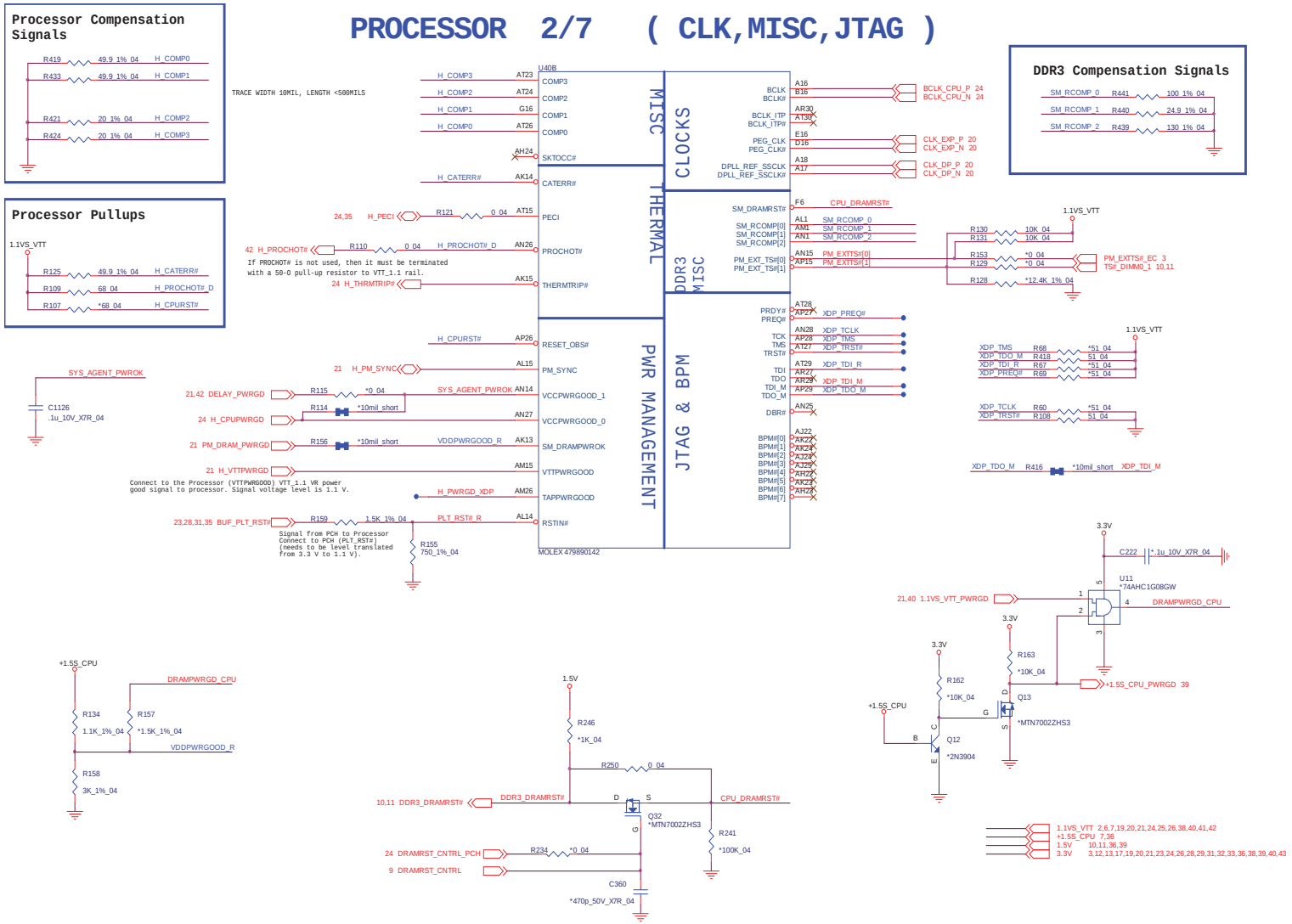
CPU 1/7 (DMI, PEG, FDI)

PROCESSOR 1/7 (DMI,PEG,FDI)

Sheet 3 of 49
CPU 1/7
(DMI, PEG, FDI)



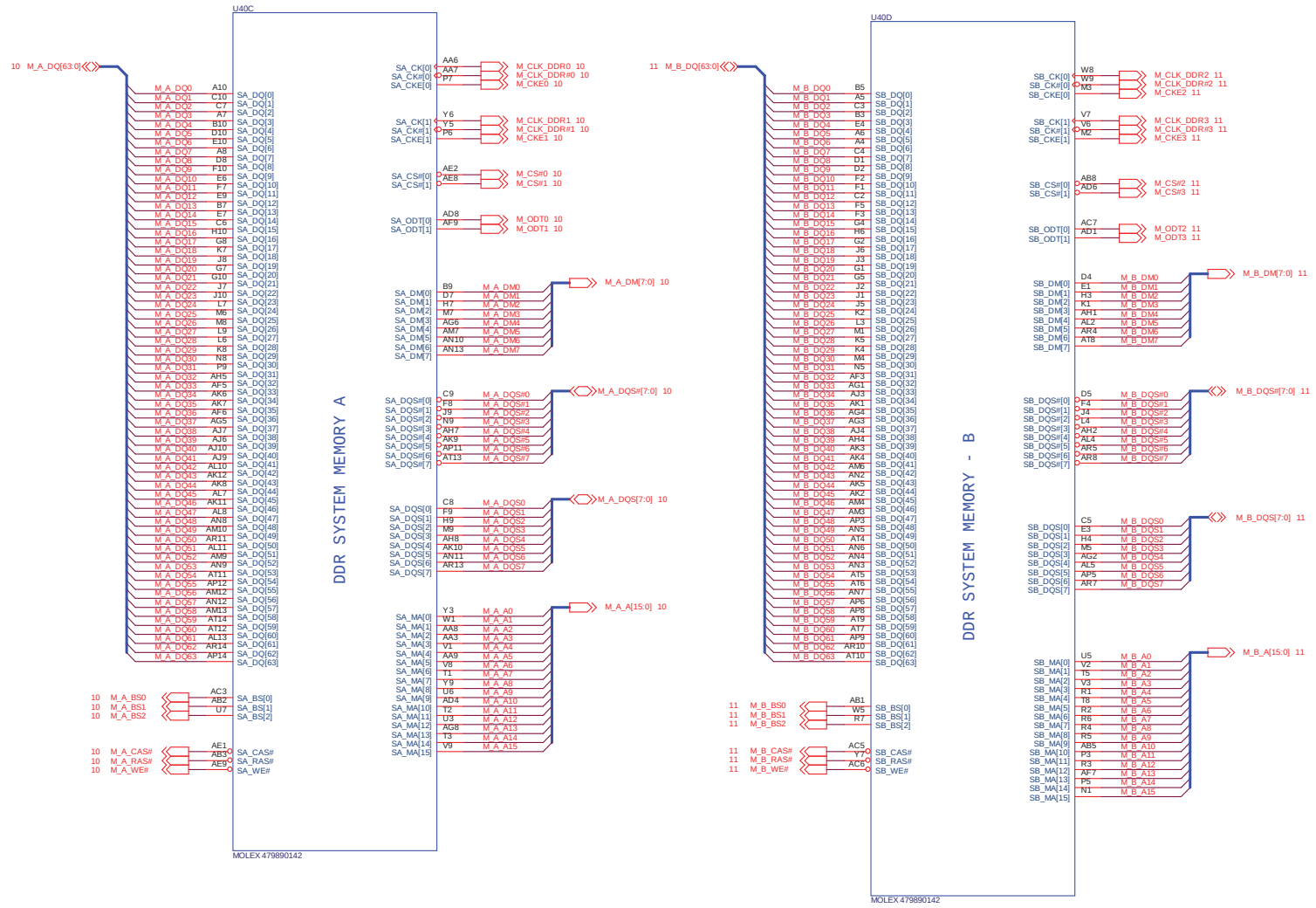
CPU 2/7 (CLK, MISC)



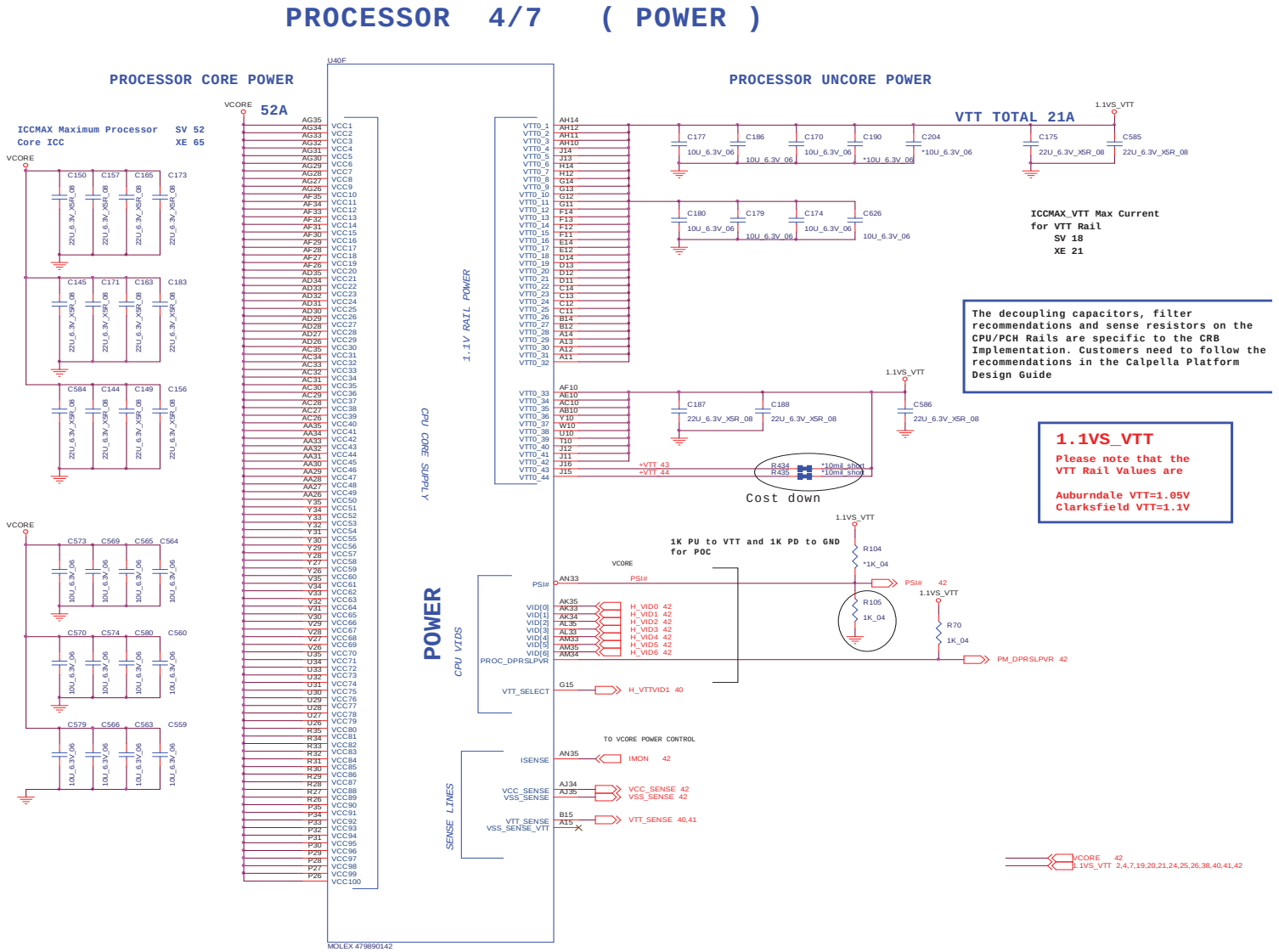
Sheet 4 of 49
CPU 2/7
(CLK, MISC)

CPU 3/7 (DDR3)

Sheet 5 of 49
CPU 3/7
(DDR3)



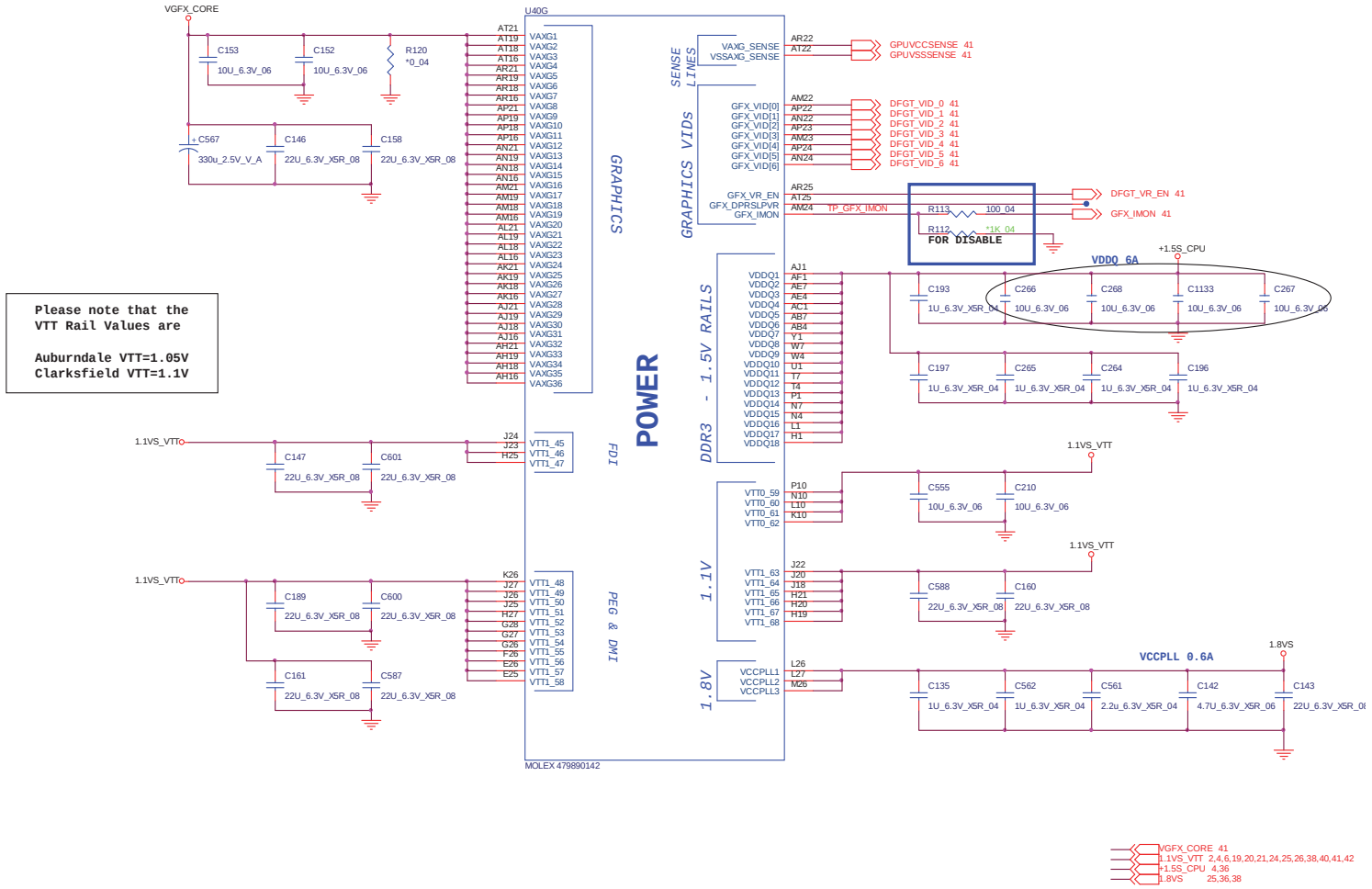
CPU 4/7 (Power)



Sheet 6 of 49
CPU 4/7
(Power)

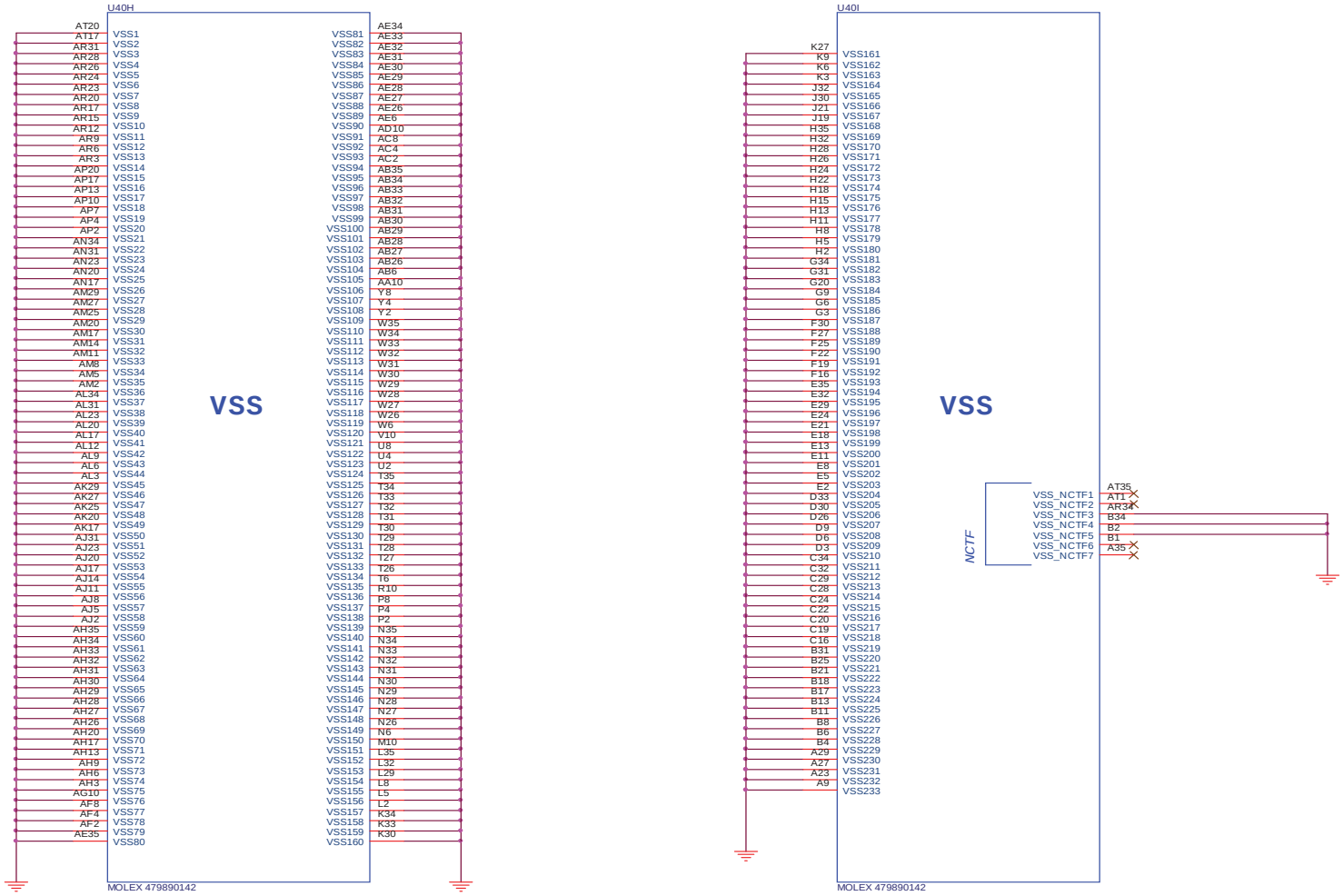
CPU 5/7 (VGFX Power)

Sheet 7 of 49
CPU 5/7
(VGFX Power)



CPU 6/7 (GND)

PROCESSOR 6/7 (GND)



Sheet 8 of 49
CPU 6/7 (GND)

CPU 7/7 (RESERVED)

Sheet 9 of 49
CPU 7/7
(RESERVED)

PCI-Express Configuration Select	
CFG0	1 : Single PEG 0 : Bifurcation enable

CFG0 R106 *3.01k_04

CFG3 - PCI-Express Static Lane Reversal	
CFG3	1 : Normal Operation 0 : Lane Numbers Reversed 15 -> 0, 14 -> 1, ...

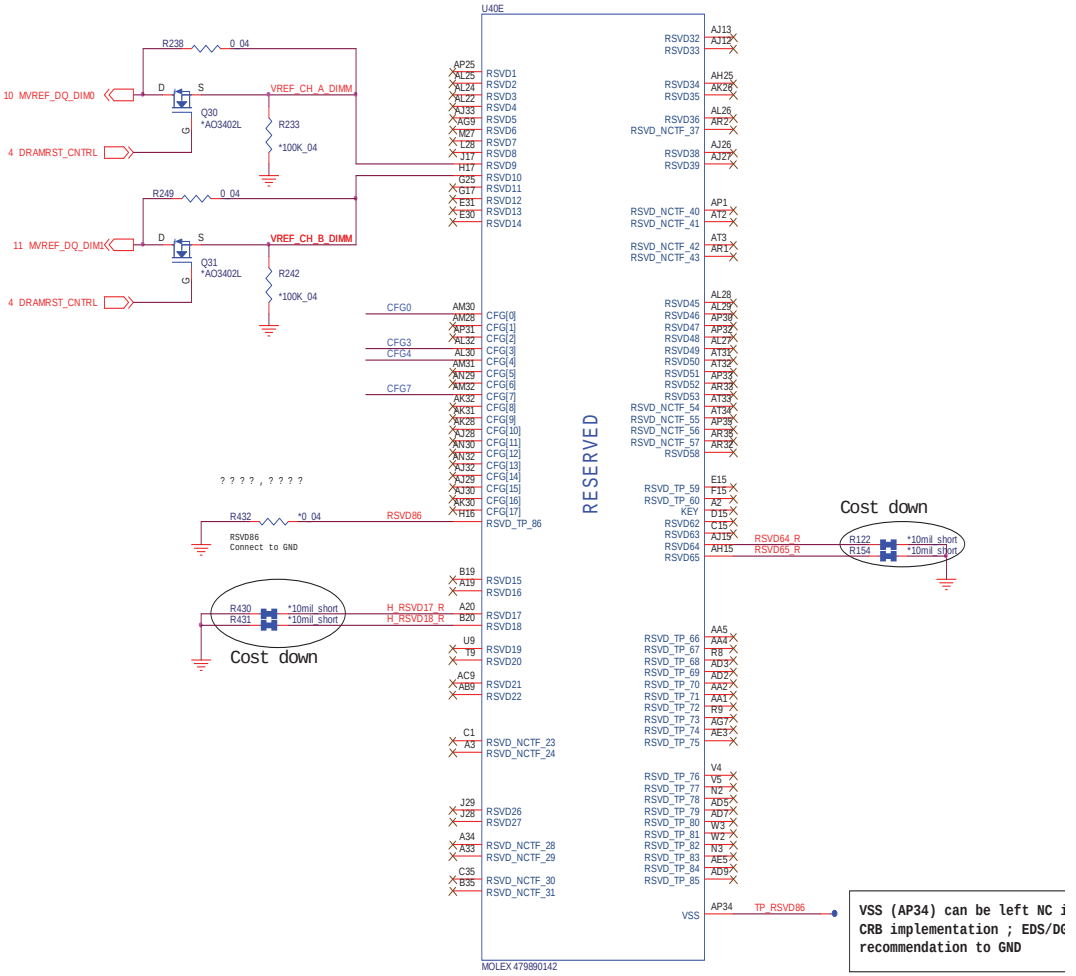
CFG3 R61 *3.01k_04

CFG4 - Display Port Presence	
CFG4	1 : Disabled; No physical Display Port attached to Embedded Display Port 0 : Enabled; An external Display Port device is connected to the Embedded isplay Port

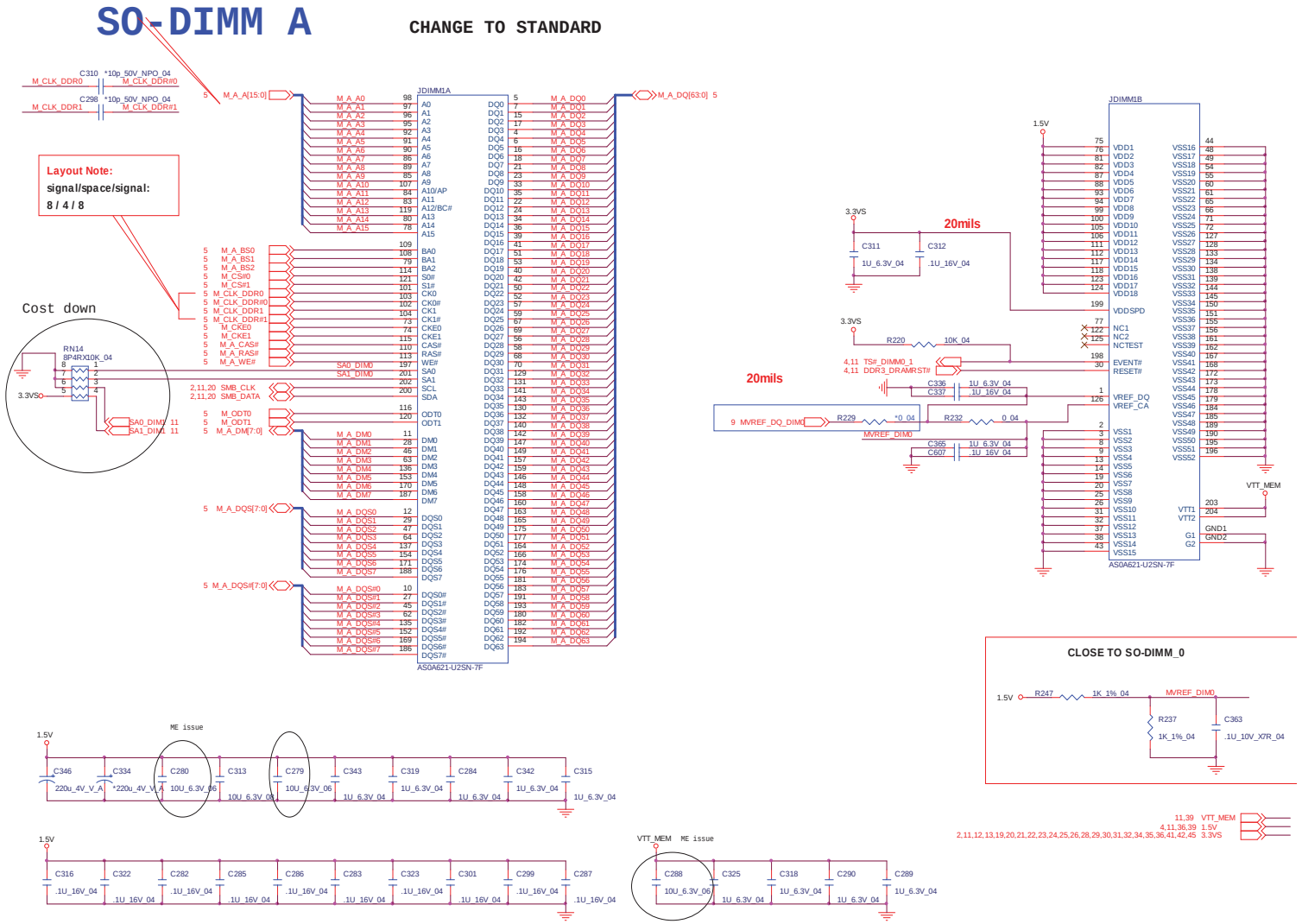
CFG4 R102 *3.01k_04

CFG7 R62 *3.01k_04

CFG7
Clarksfield (only for early samples pre-ES1) - Connect to GND with 3.01K Ohm/5% resistor



DDR3 SO-DIMM_0



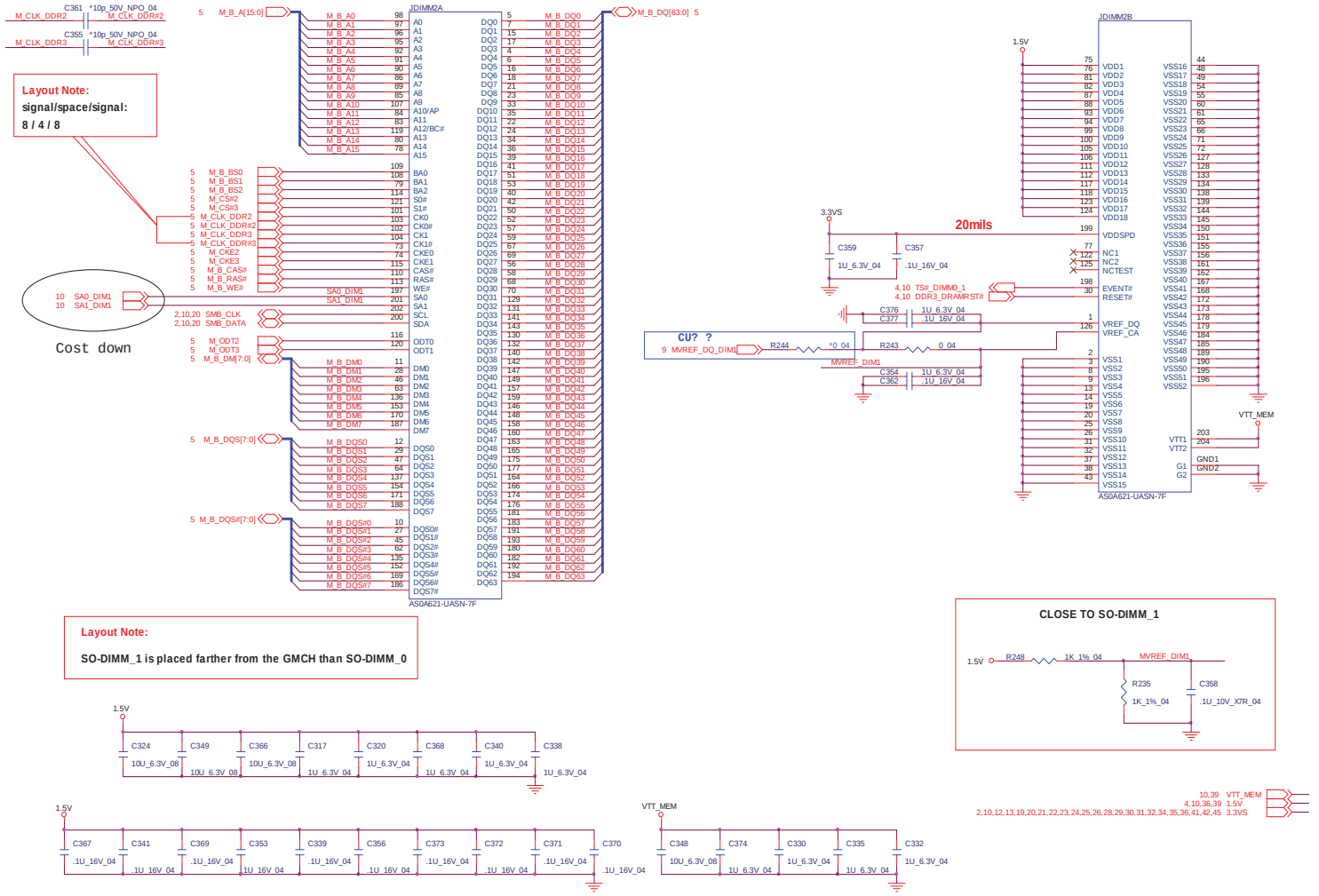
Sheet 10 of 49
DDR3 SO-DIMM_0

Sheet 11 of 49
DDR3 SO-DIMM_1

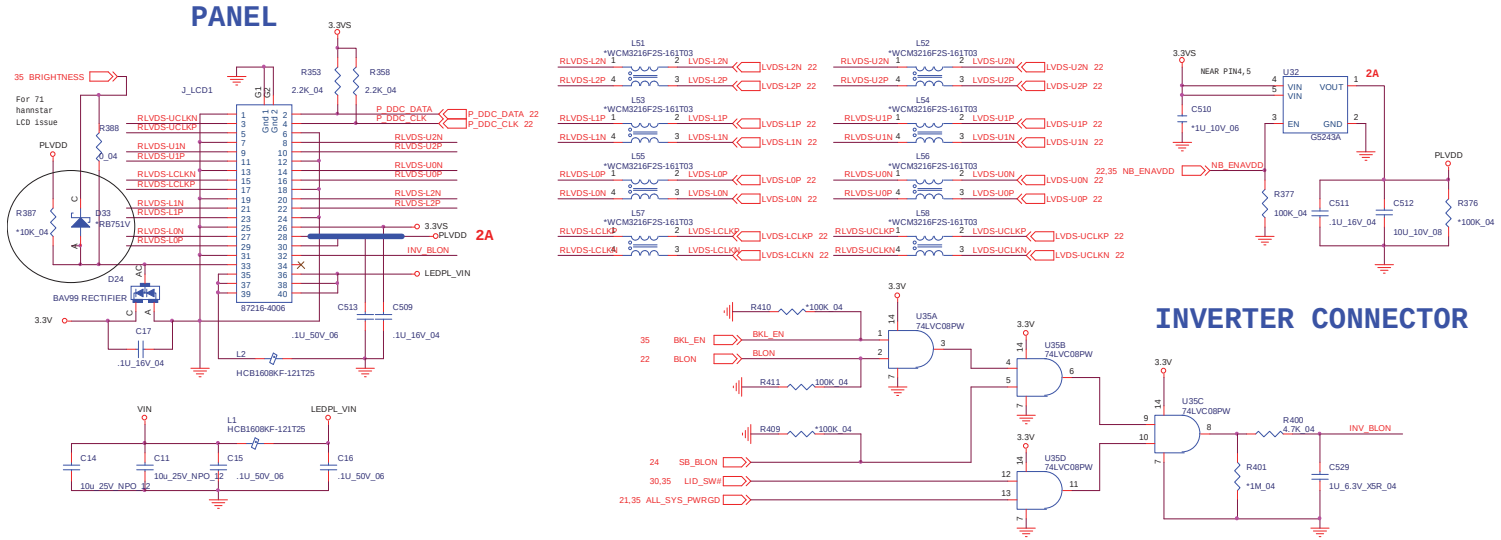
DDR3 SO-DIMM_1

SO-DIMM B

CHANGE TO STANDARD



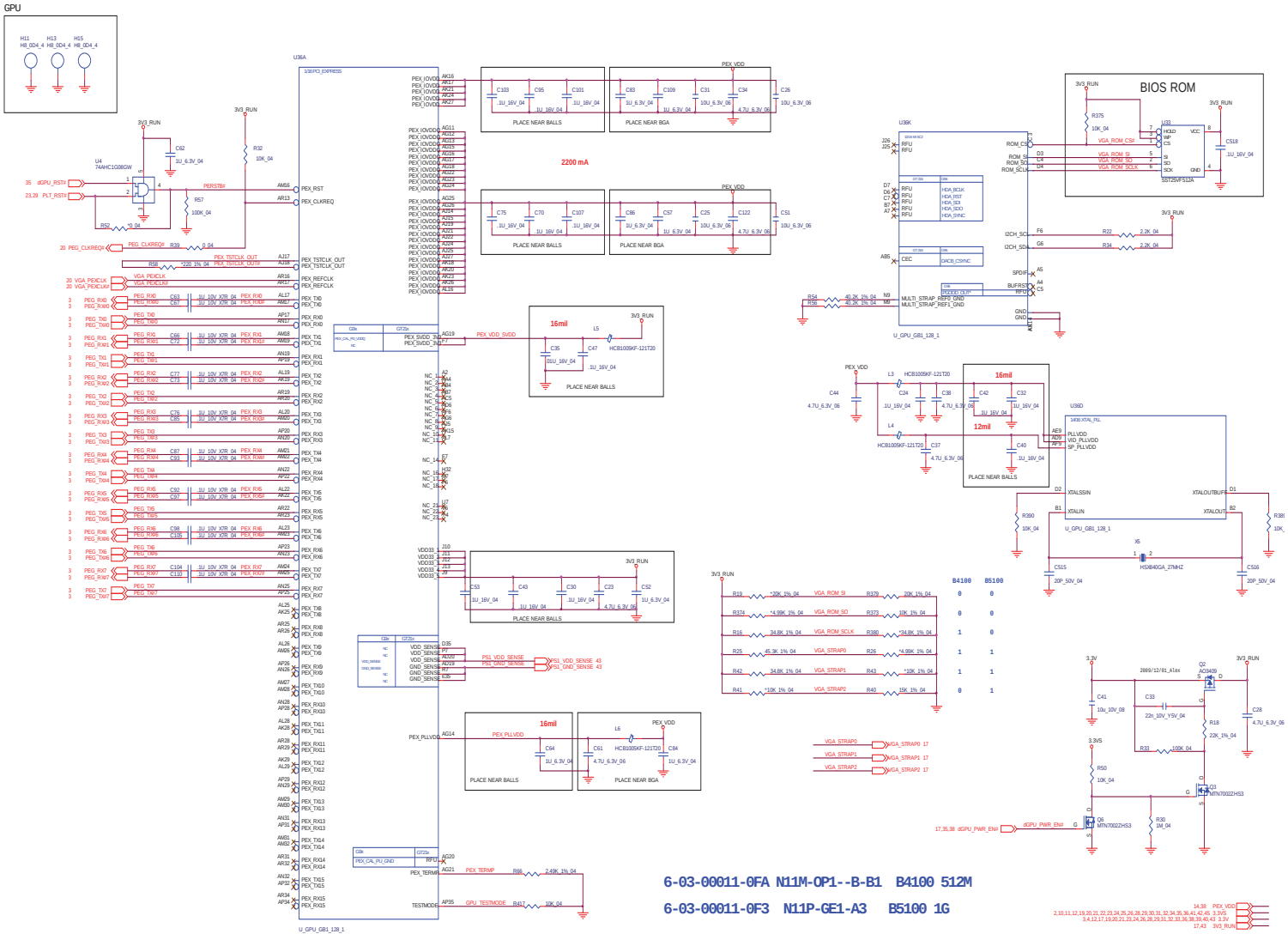
Panel, Inverter, CRT



Sheet 12 of 49
Panel, Inverter, CRT

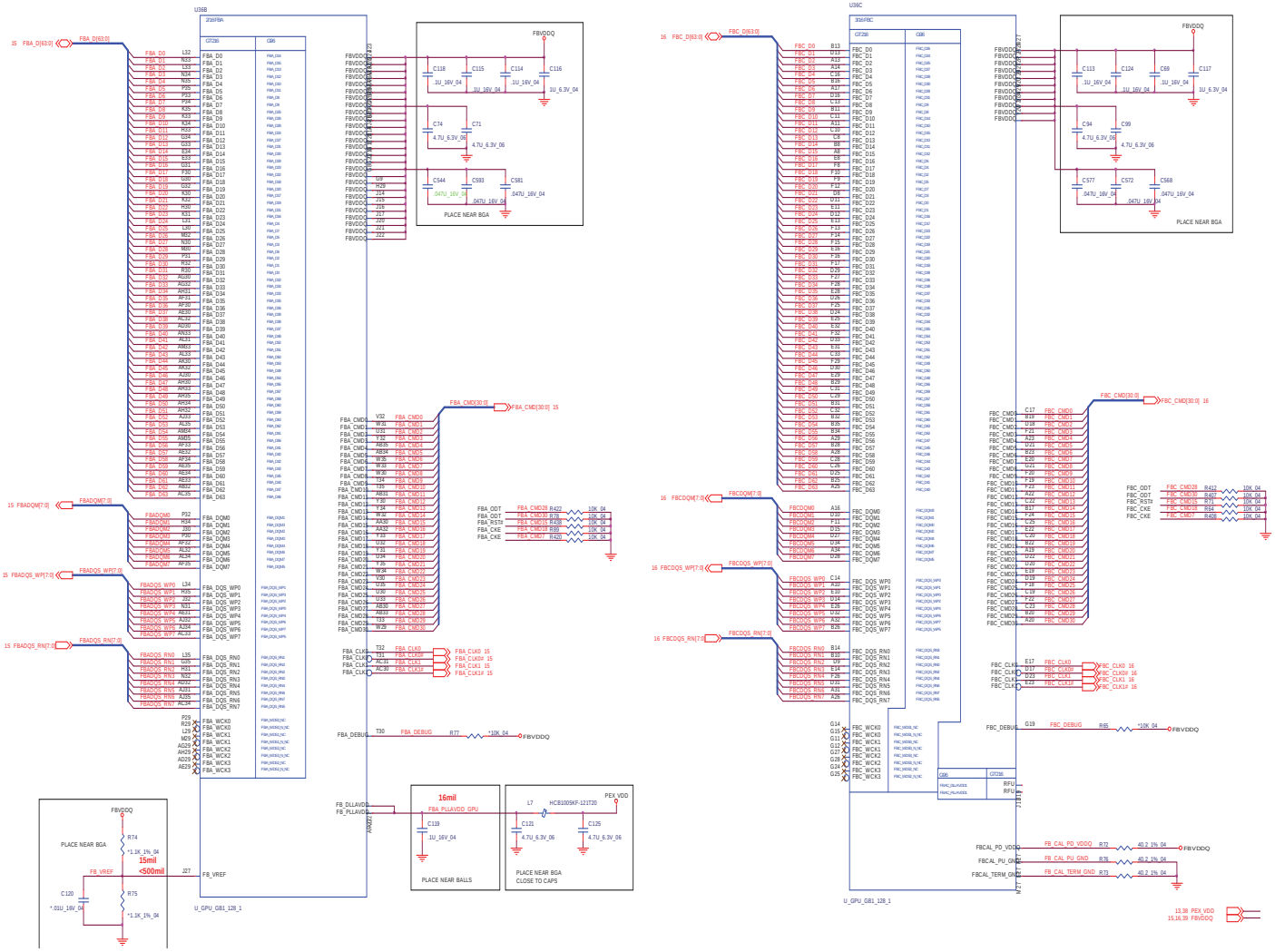
VGA PCI-E Interface

Sheet 13 of 49
VGA PCI-E Interface



VGA Frame Buffer Interface

Frame Buffer Interface

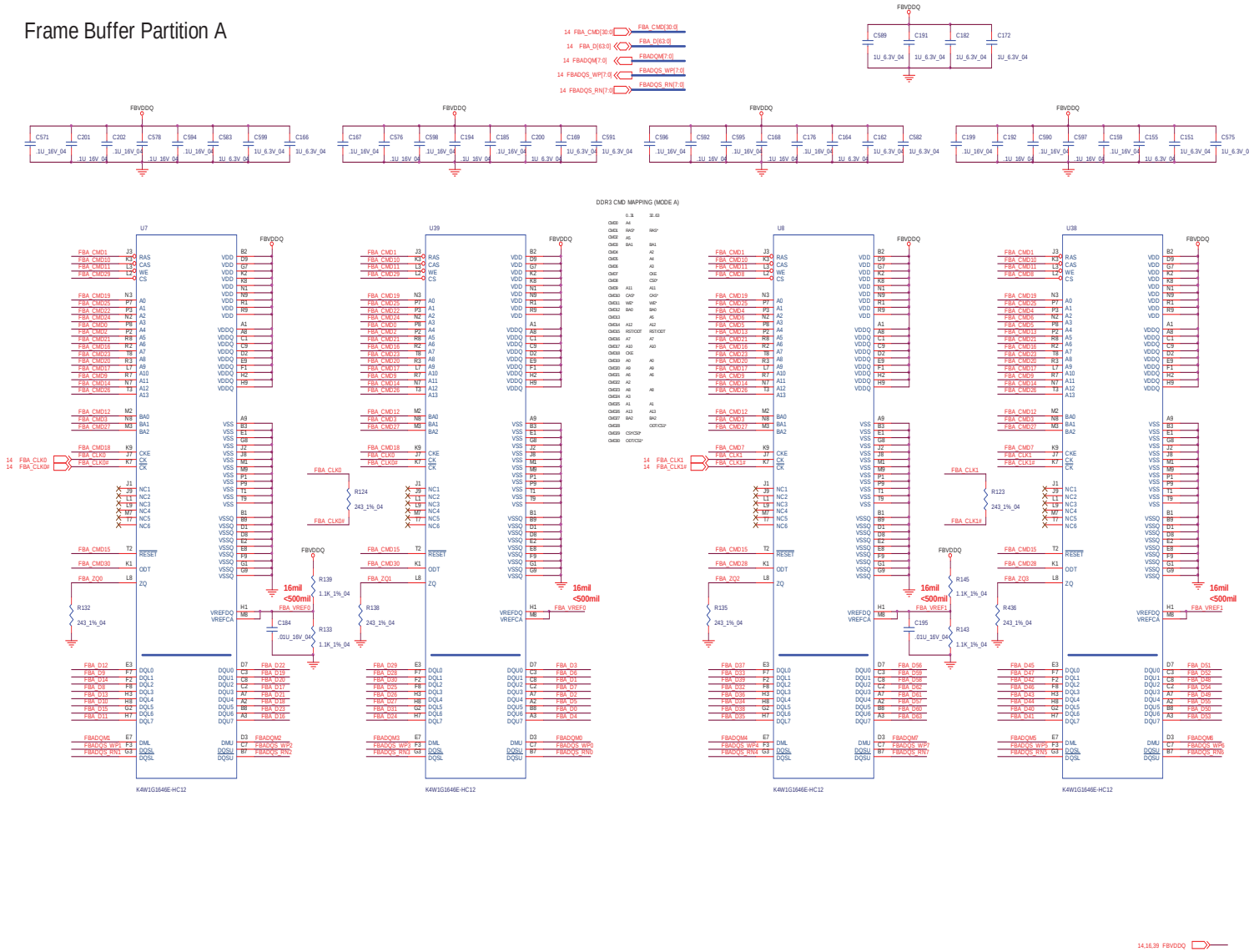


Sheet 14 of 49
VGA Frame Buffer Interface

VGA Frame Buffer A

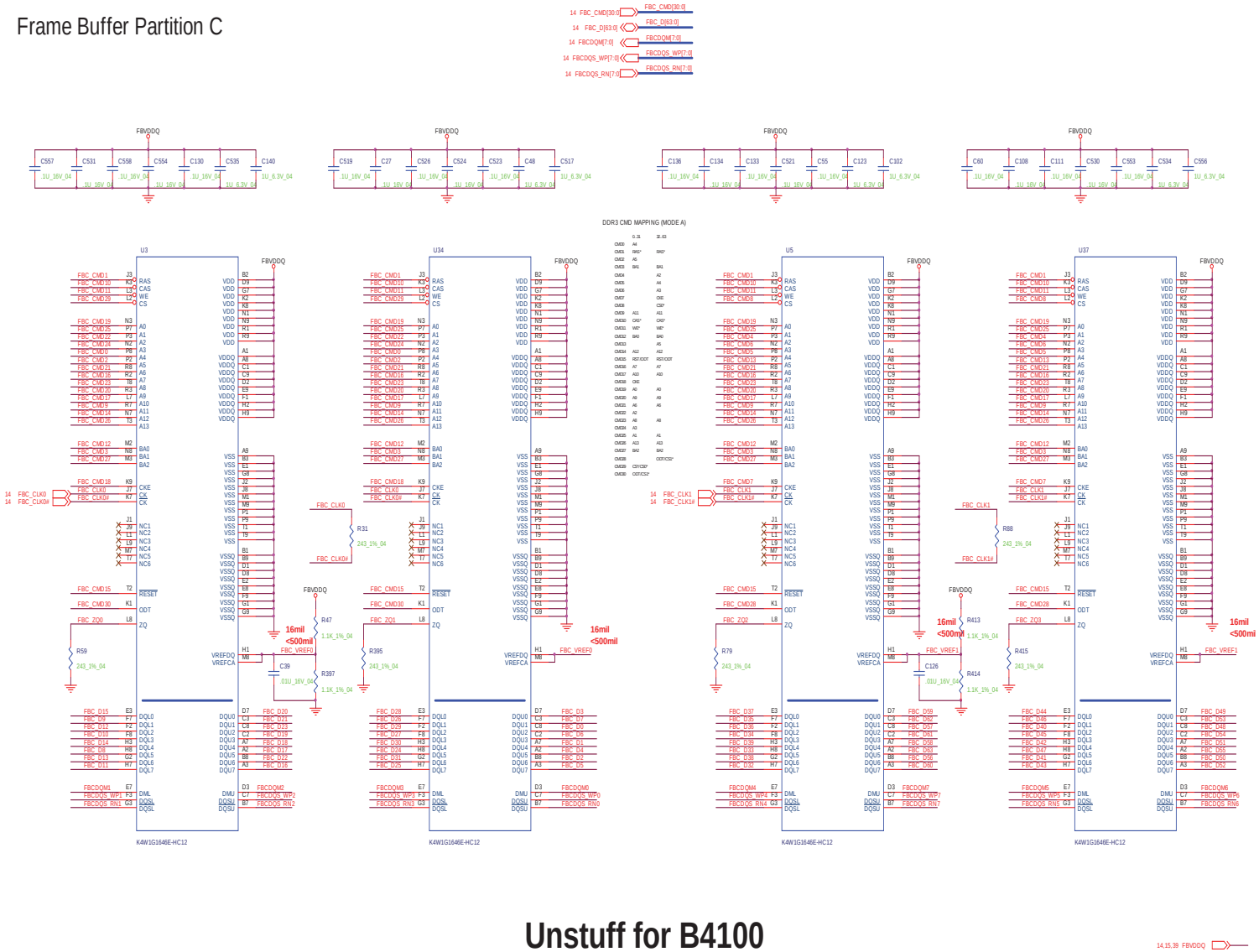
Sheet 15 of 49
VGA Frame Buffer A

Frame Buffer Partition A



VGA Frame Buffer C

Frame Buffer Partition C



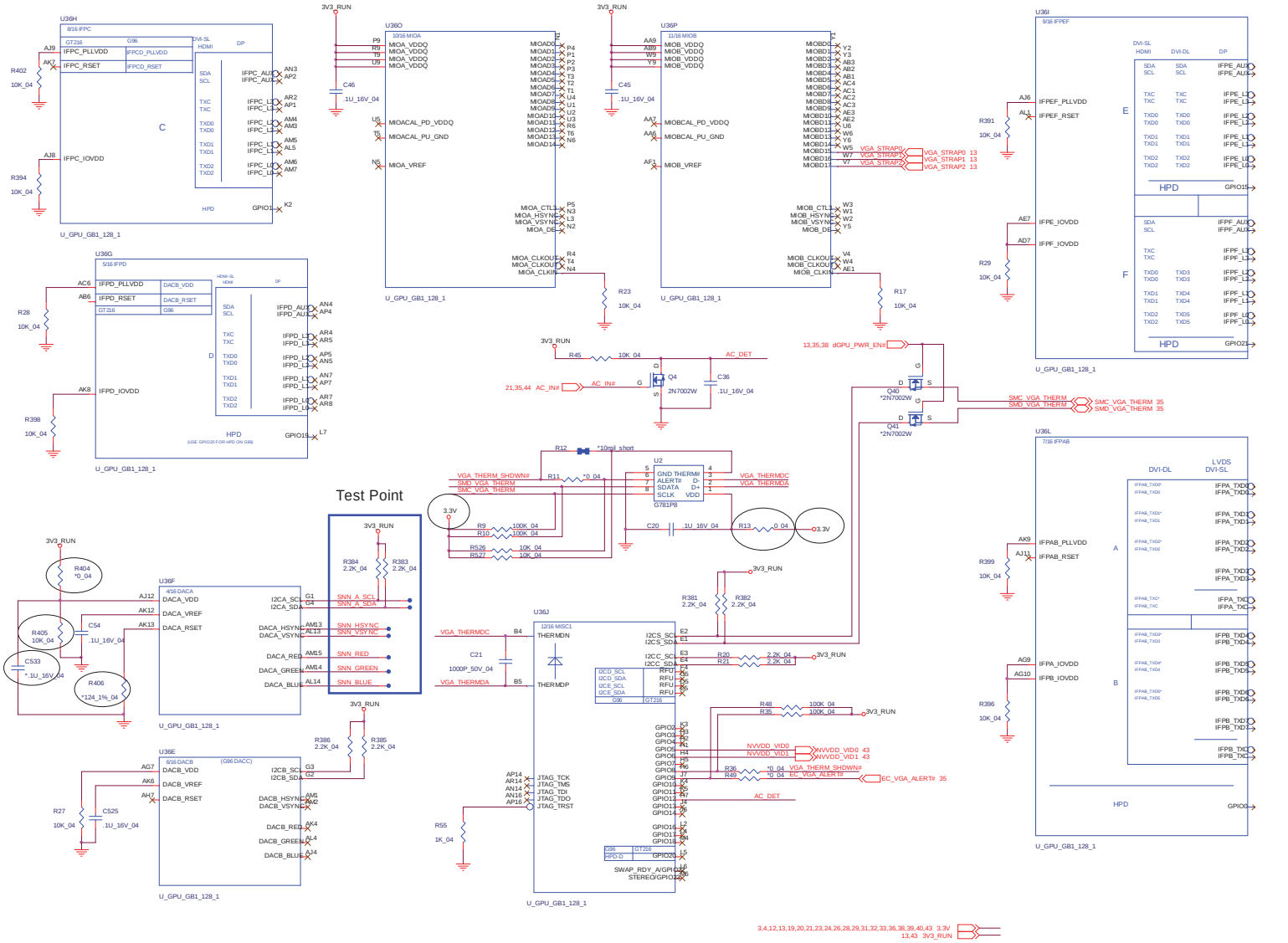
Sheet 16 of 49
VGA Frame Buffer
C

B.Schematic Diagrams

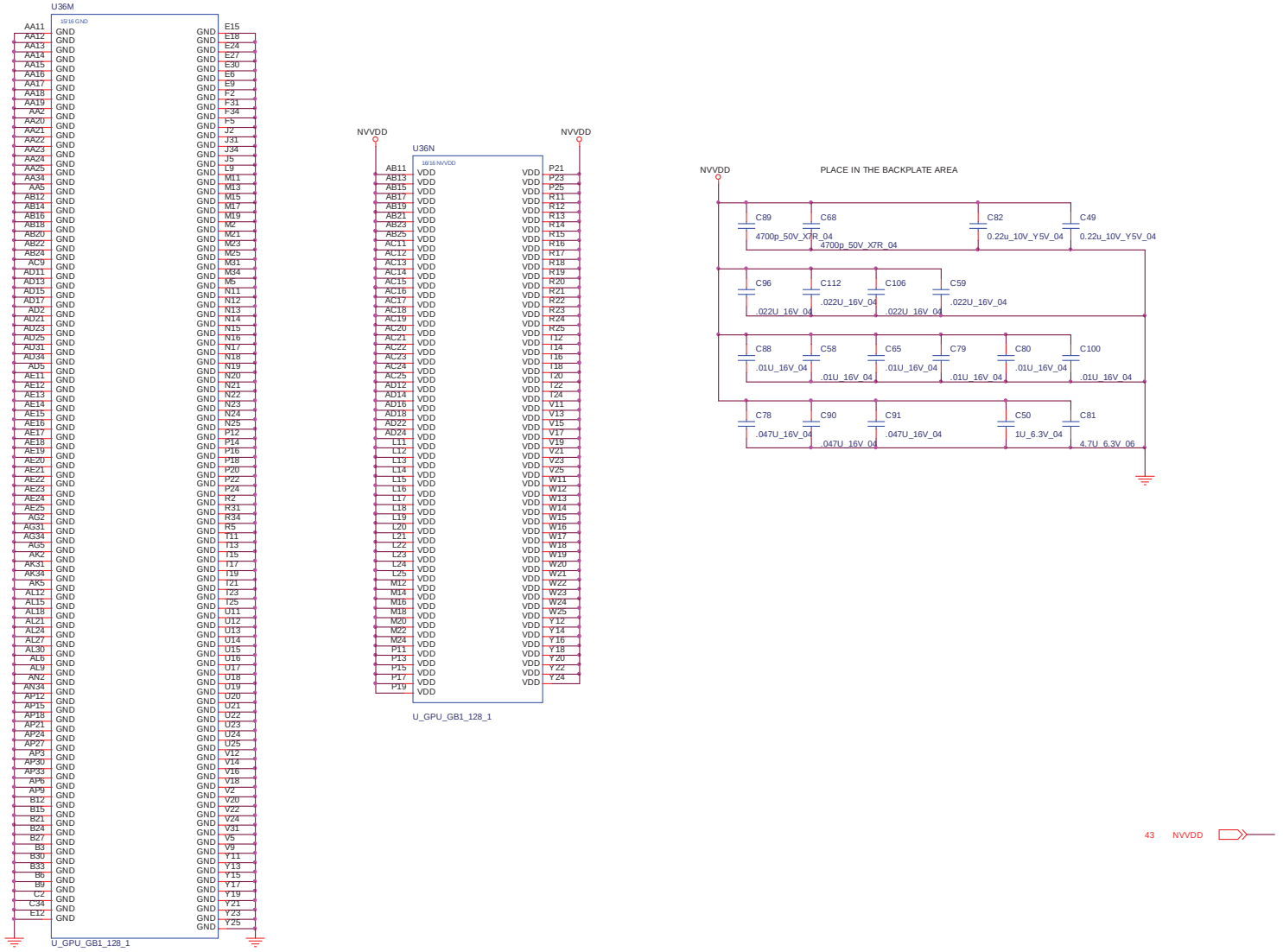
Unstuff for B4100

VGA I/O

Sheet 17 of 49
VGA I/O



VGA NVVDD Cecoupling



Sheet 18 of 49
VGA NVVDD
Cecoupling

IBEXPEAK- M 1/9

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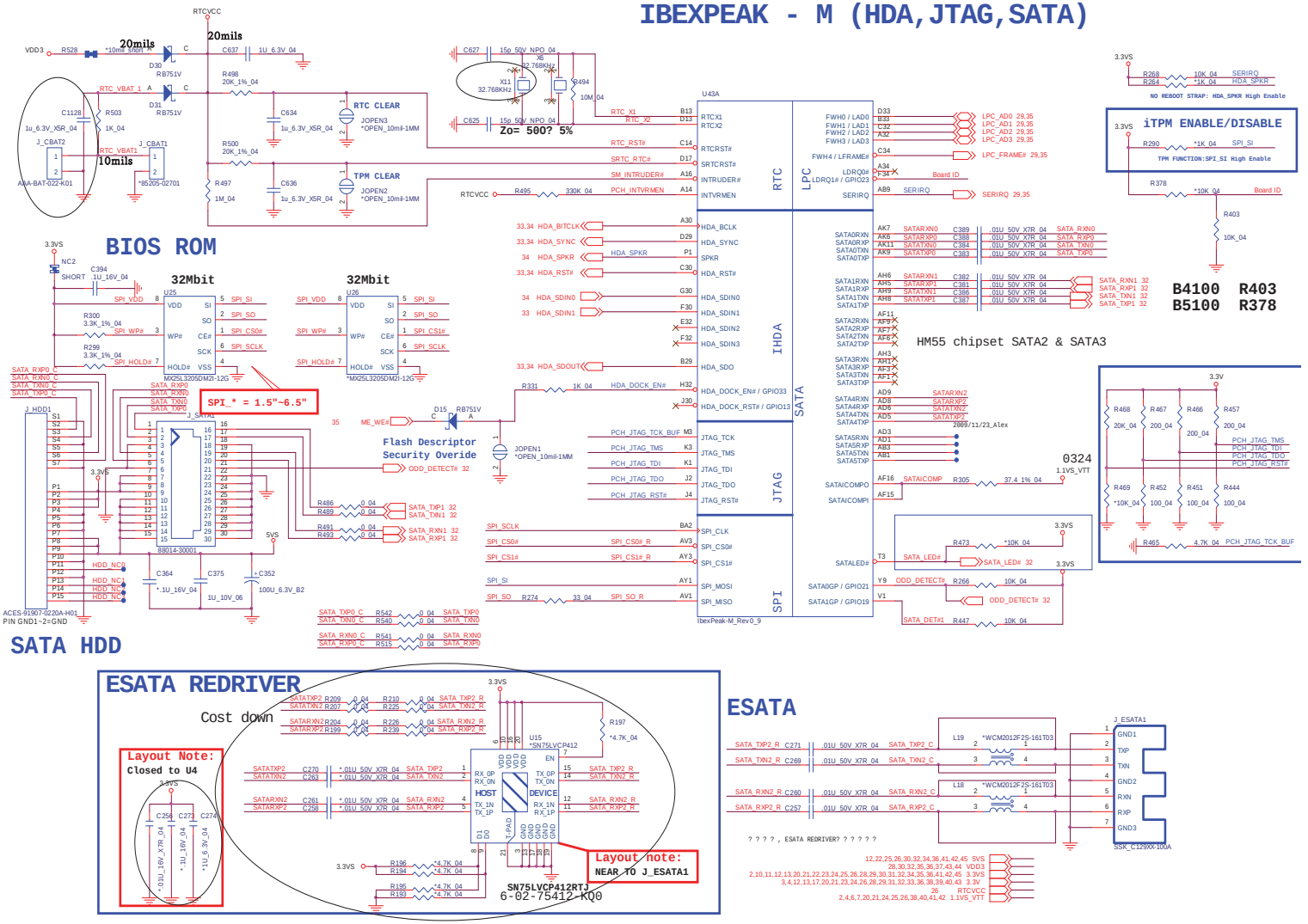
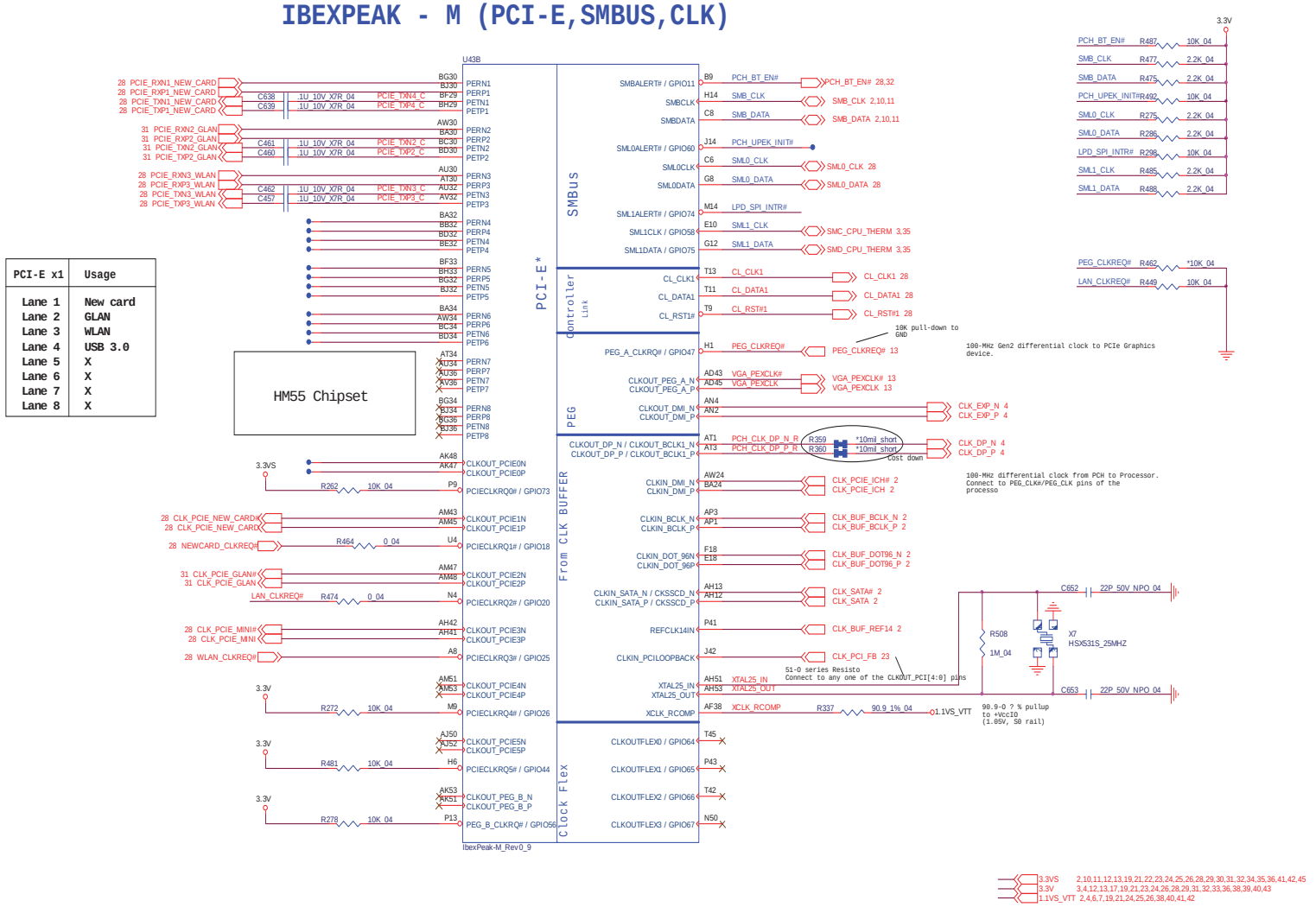
IBEXPEAK - M 1/9



IBEXPEAK - M 2/9

IBEXPEAK - M (PCI-E,SMBUS,CLK)



PCI-E x1	Usage
Lane 1	New card
Lane 2	GLAN
Lane 3	WLAN
Lane 4	USB 3.0
Lane 5	X
Lane 6	X
Lane 7	X
Lane 8	X

Sheet 20 of 49
IBEXPEAK - M 2/9

B.Schematic Diagrams

IBEXPEAK - M 3/9

IBEXPEAK - M (DMI,FDI,GPIO)

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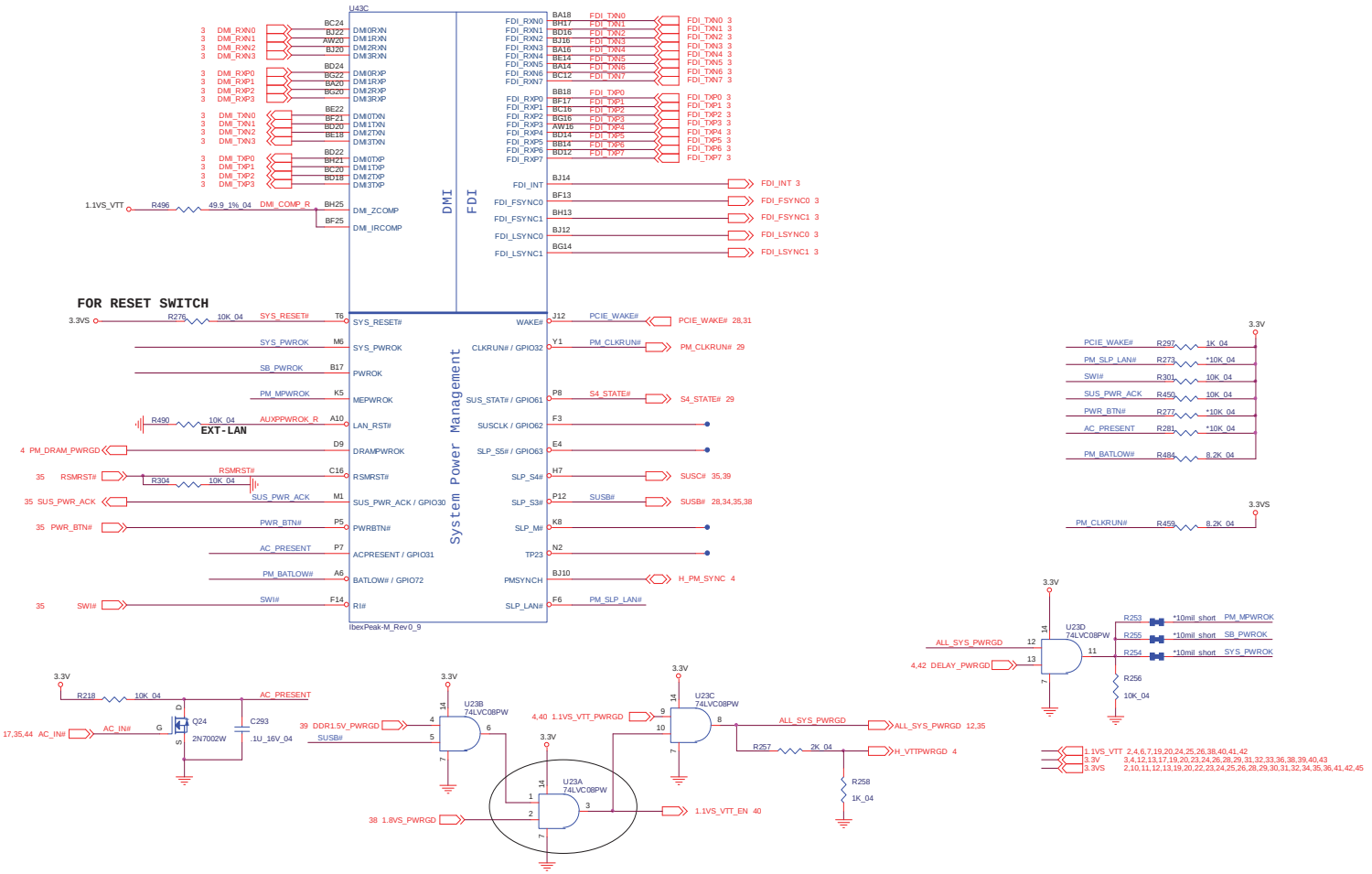
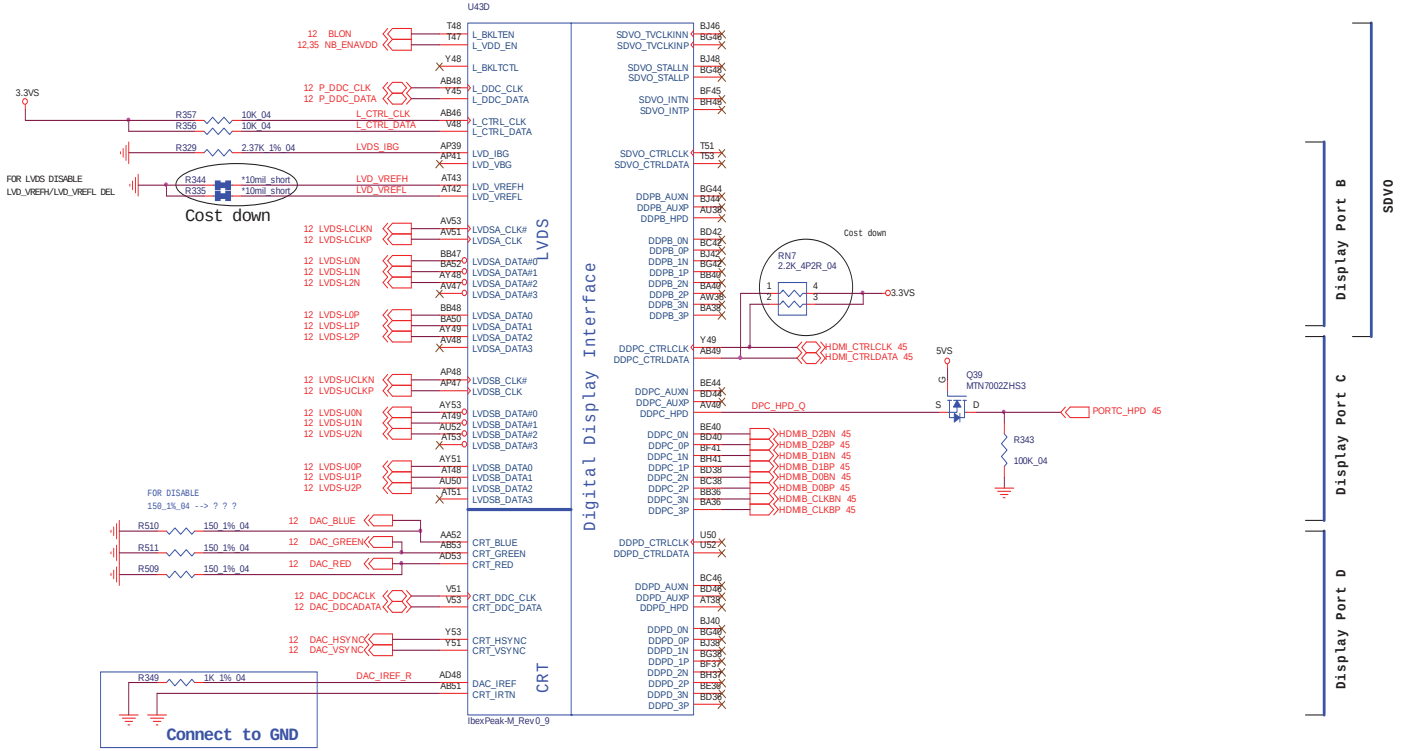
IBEXPEAK - M 3/9



IBEXPEAK - M 4/9

IBEXPEAK - M (LVDS,DDI)



Sheet 22 of 49
IBEXPEAK - M 4/9

IBEXPEAK - M 5/9

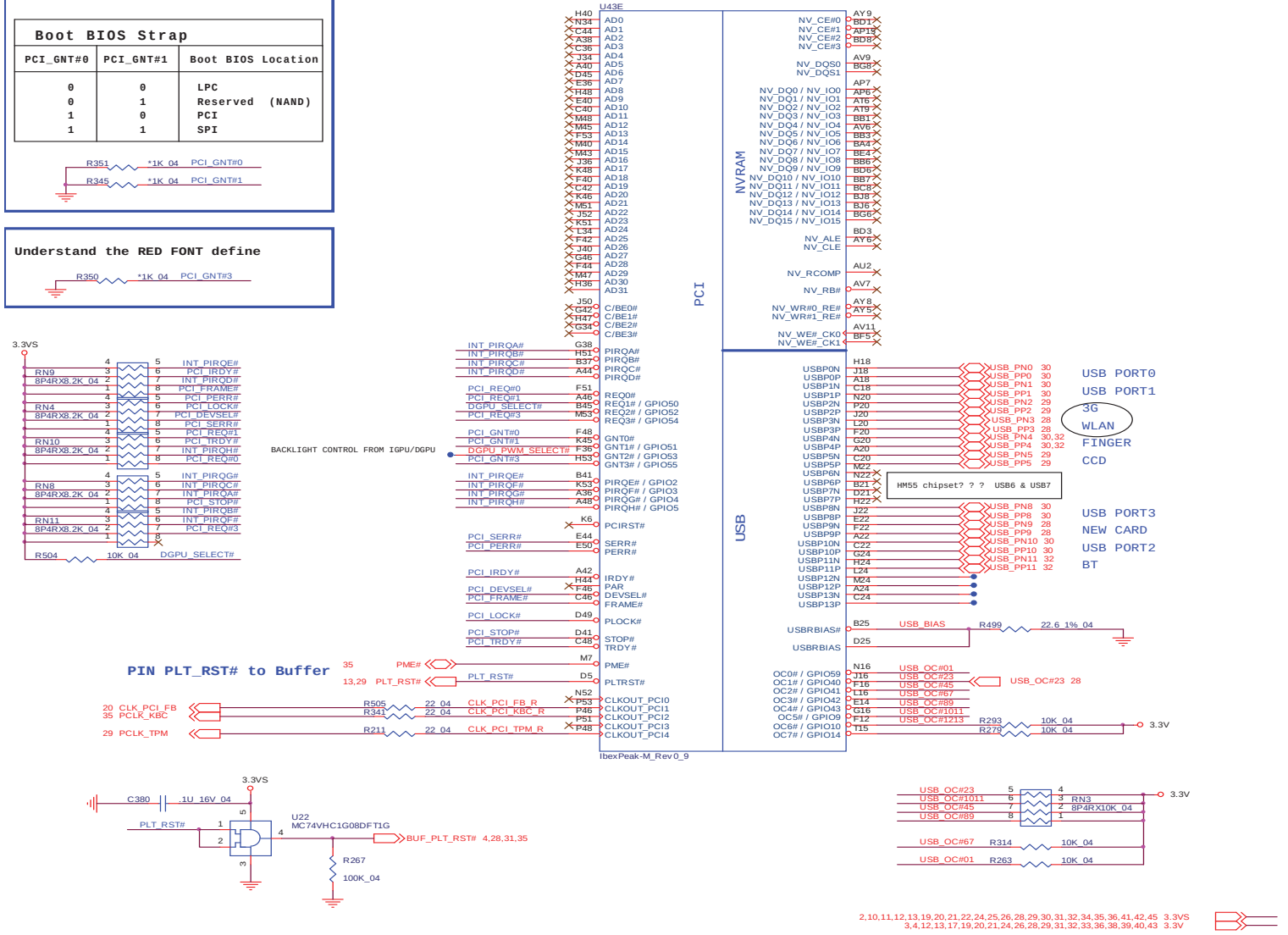
Sheet 23 of 49
IBEXPEAK - M 5/9

Boot BIOS Strap		
PCI_GNT#0	PCI_GNT#1	Boot BIOS Location
0	0	LPC
0	1	Reserved (NAND)
1	0	PCI
1	1	SPI

R351 *1K_04 PCI_GNT#0
R345 *1K_04 PCI_GNT#1

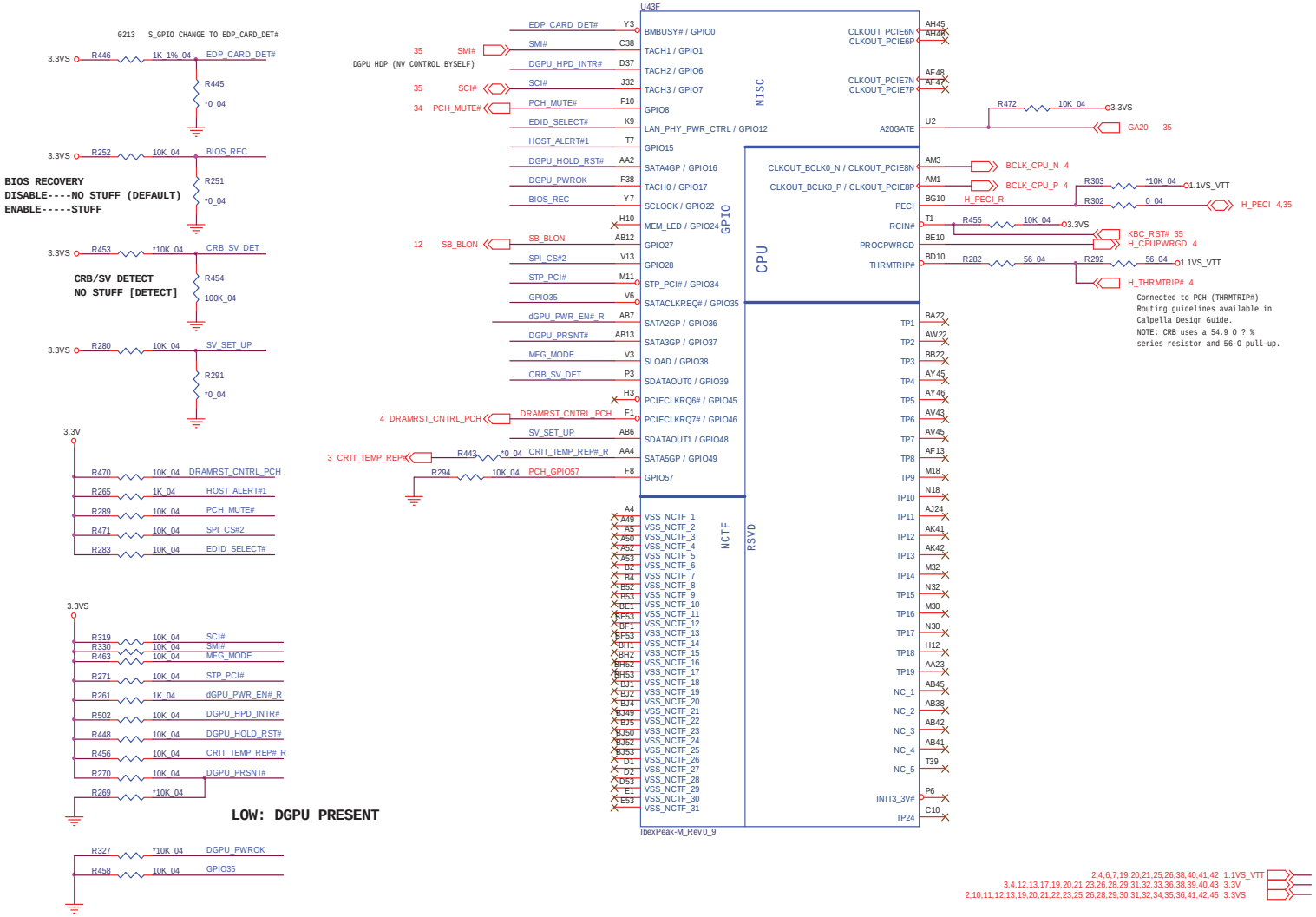
Understand the RED FONT define

R350 *1K_04 PCI_GNT#3



IBEXPEAK - M 6/9

IBEXPEAK - M (GPIO,VSS_NCTF,RSVD)

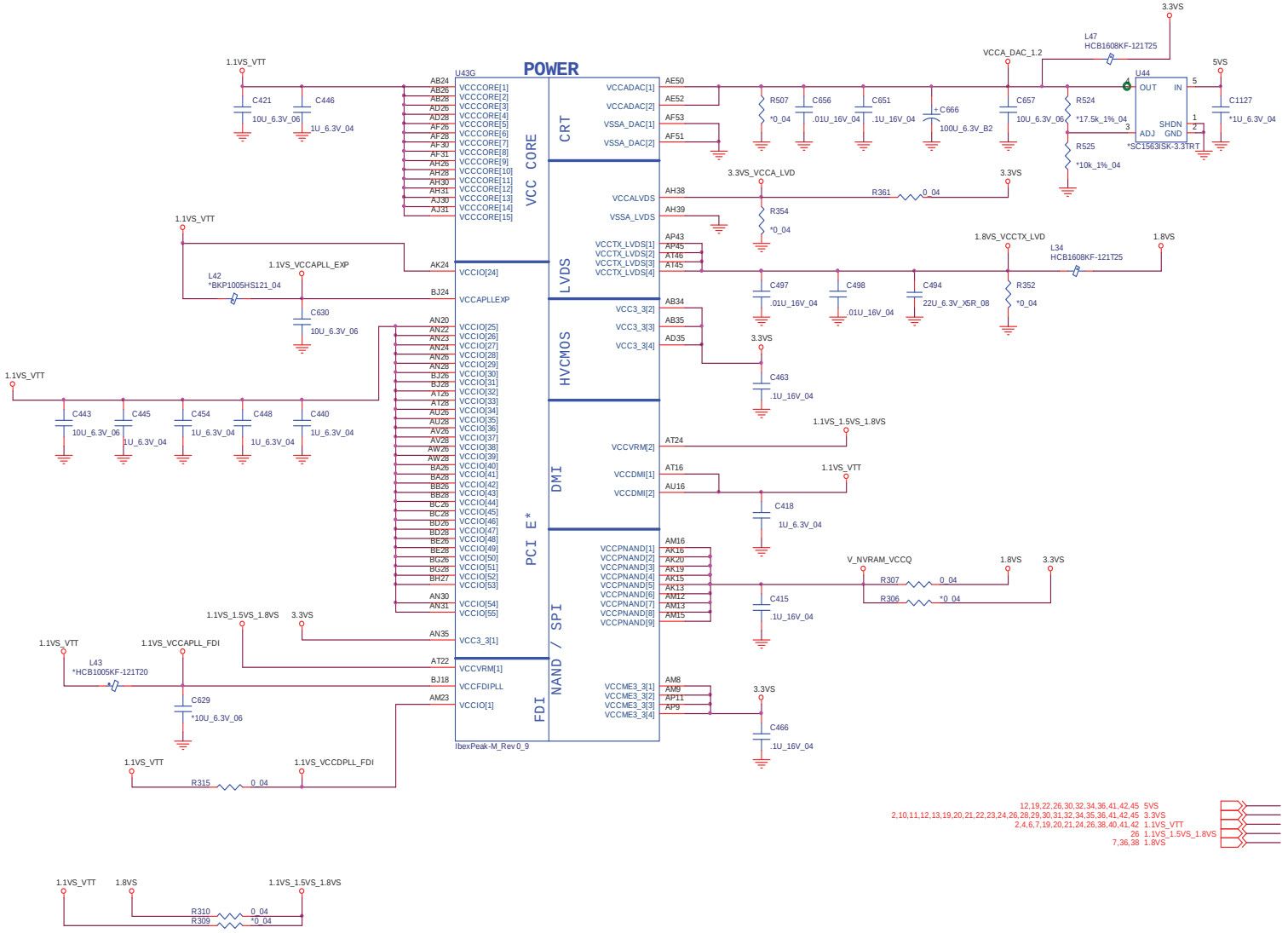


Sheet 24 of 49
IBEXPEAK - M 6/9

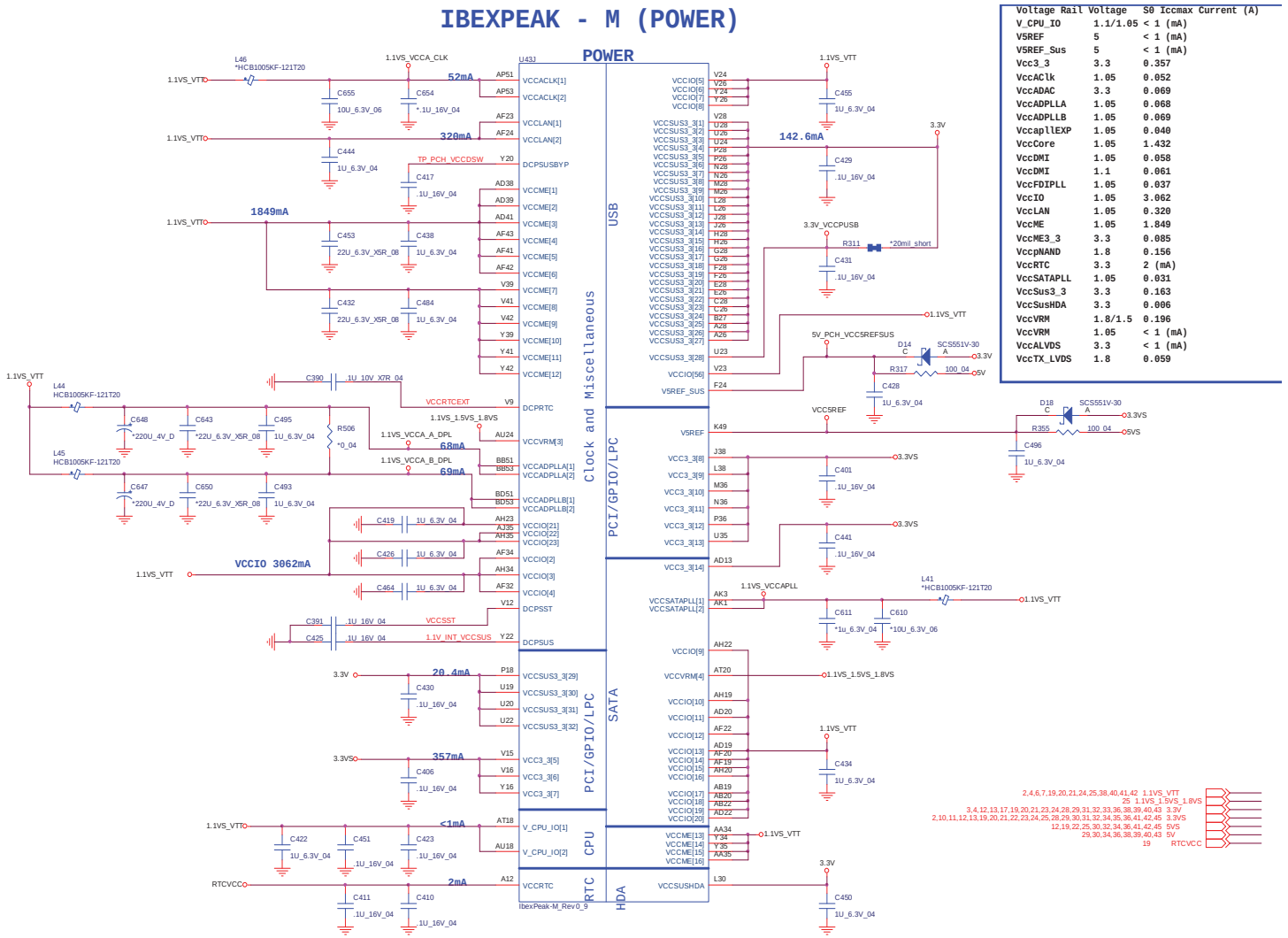
IBEXPEAK - M 7/9

Sheet 25 of 49
IBEXPEAK - M 7/9

IBEXPEAK - M (POWER)



IBEXPEAK - M 8/9

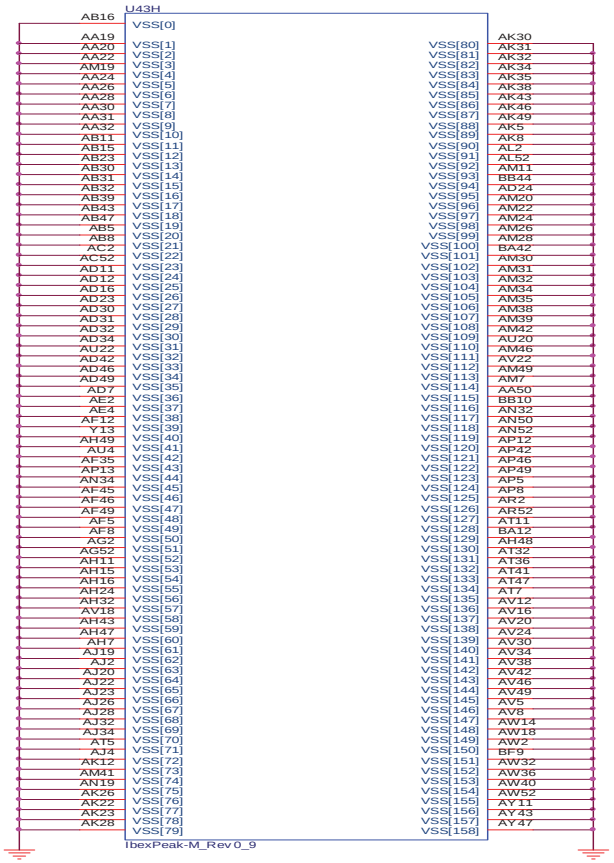


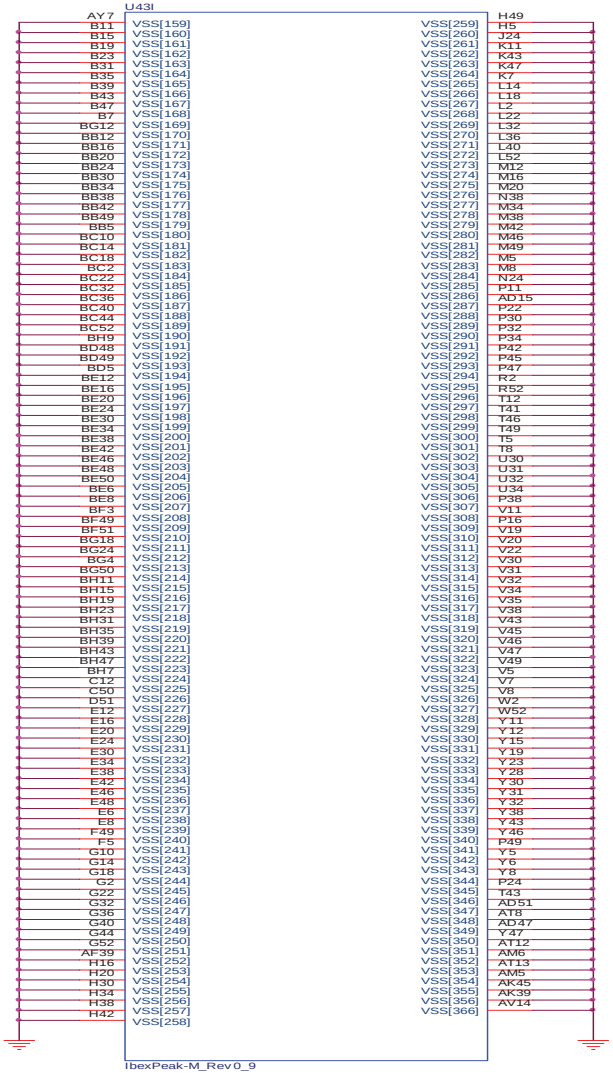
Voltage Rail	Voltage	S0 Iccmax Current (A)
V_CPU_IO	1.1/1.05	< 1 (mA)
V5REF	5	< 1 (mA)
V5REF_Sus	5	< 1 (mA)
Vcc3_3	3.3	0.357
VccAClk	1.05	0.052
VccADAC	3.3	0.069
VccADPLLA	1.05	0.068
VccADPLLB	1.05	0.069
VccapllEXP	1.05	0.040
VccCore	1.05	1.432
VccDMI	1.05	0.058
VccDMI	1.1	0.061
VccFDIPLL	1.05	0.037
VccIO	1.05	3.062
VccLAN	1.05	0.320
VccME	1.05	1.849
VccME3_3	3.3	0.085
VccpNAND	1.8	0.156
VccRTC	3.3	2 (mA)
VccSATAPLL	1.05	0.031
VccSus3_3	3.3	0.163
VccSusHDA	3.3	0.006
VccVRM	1.8/1.5	0.196
VccVRM	1.05	< 1 (mA)
VccALVDS	3.3	< 1 (mA)
VccTX_LVDS	1.8	0.059

IBEXPEAK - M 9/9

Sheet 27 of 49
IBEXPEAK - M 9/9

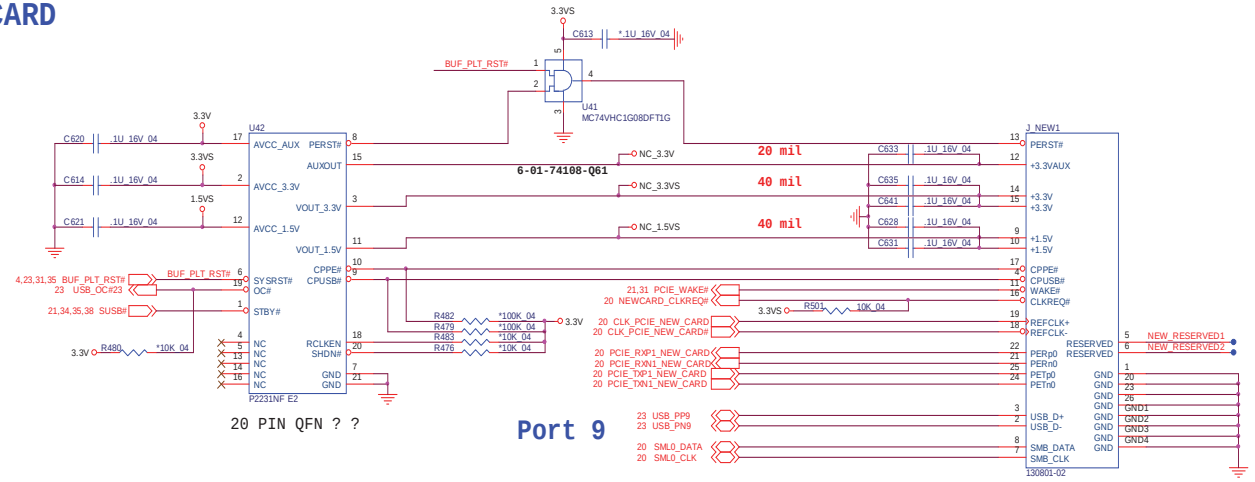
IBEXPEAK - M (GND)



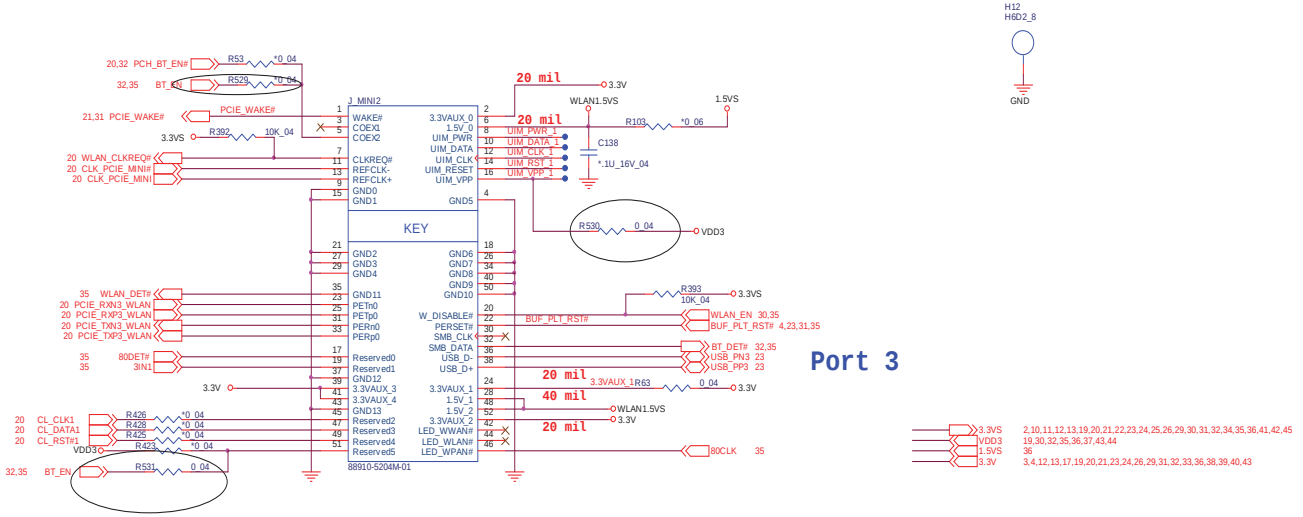


New Card, Mini PCIE

NEW CARD



MINI CARD

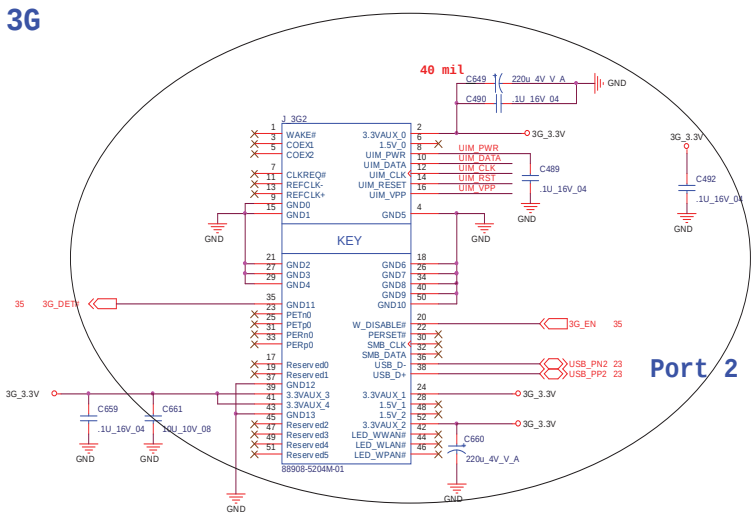


Sheet 28 of 49
New Card, Mini PCIE

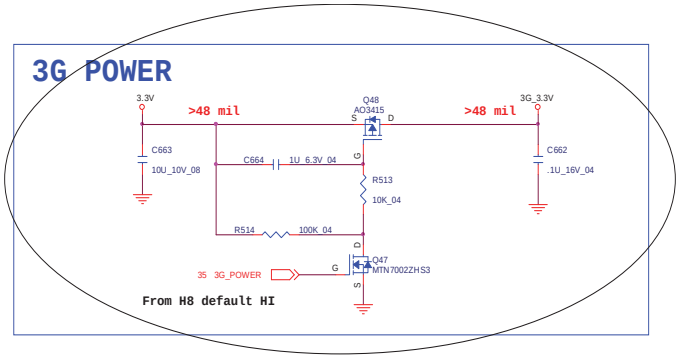
3G, CCD, TPM

Sheet 29 of 49
3G, CCD, TPM

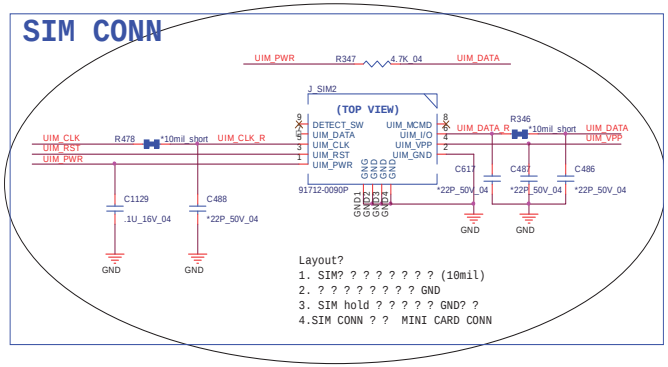
3G



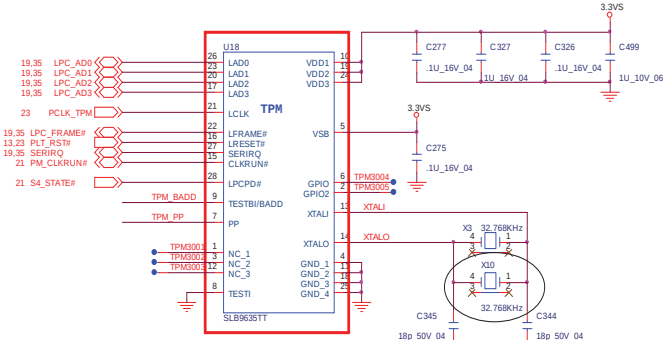
3G POWER



SIM CONN

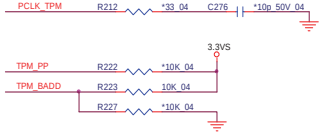


TPM 1.2

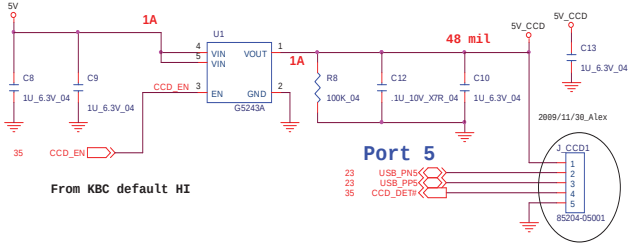


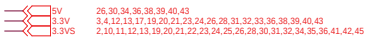
Asserted before entering S3
LPC reset timing:
LPCPD# inactive to LRST# inactive 32~96us

TPM_PP	HI: ACCESS LOW: NORMAL (Internal PD)
TPM_BADD	HI: 4E/ 4F H LOW: 2E/ 2F H

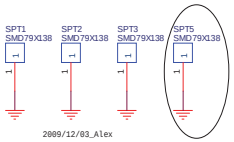


CCD

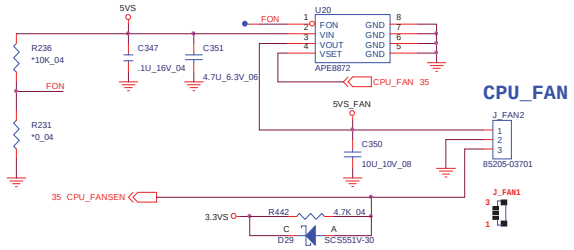




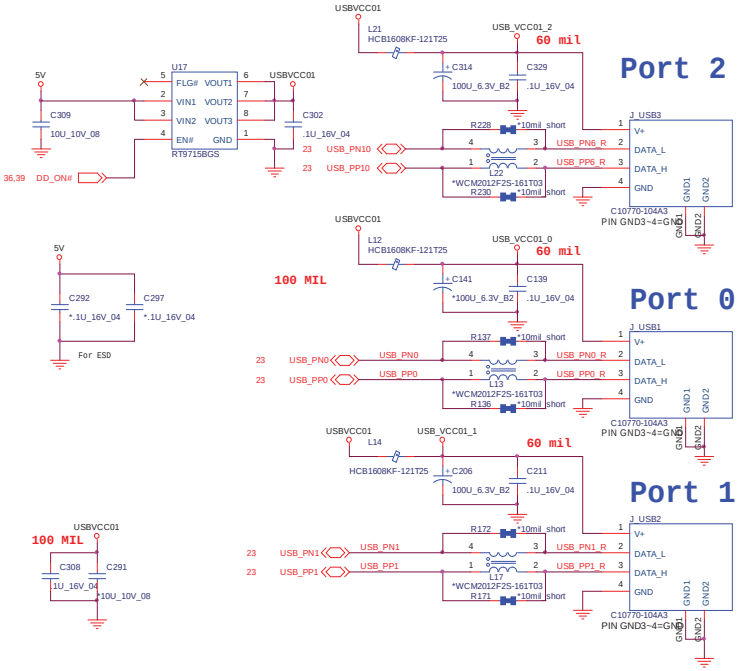
USB, Fan, TP, FP, Multi-Conn



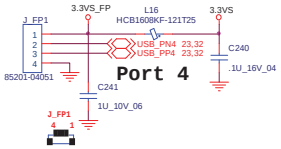
CPU FAN CONTROL



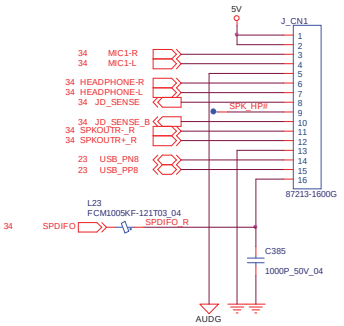
USB PORT



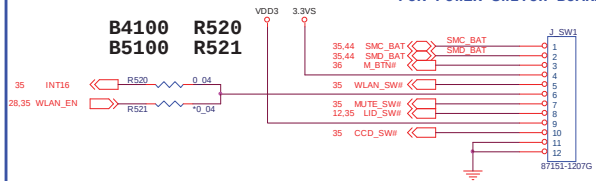
FP CONN

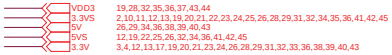


FOR PHONE JACK BOARD



FOR POWER SWITCH BOARD

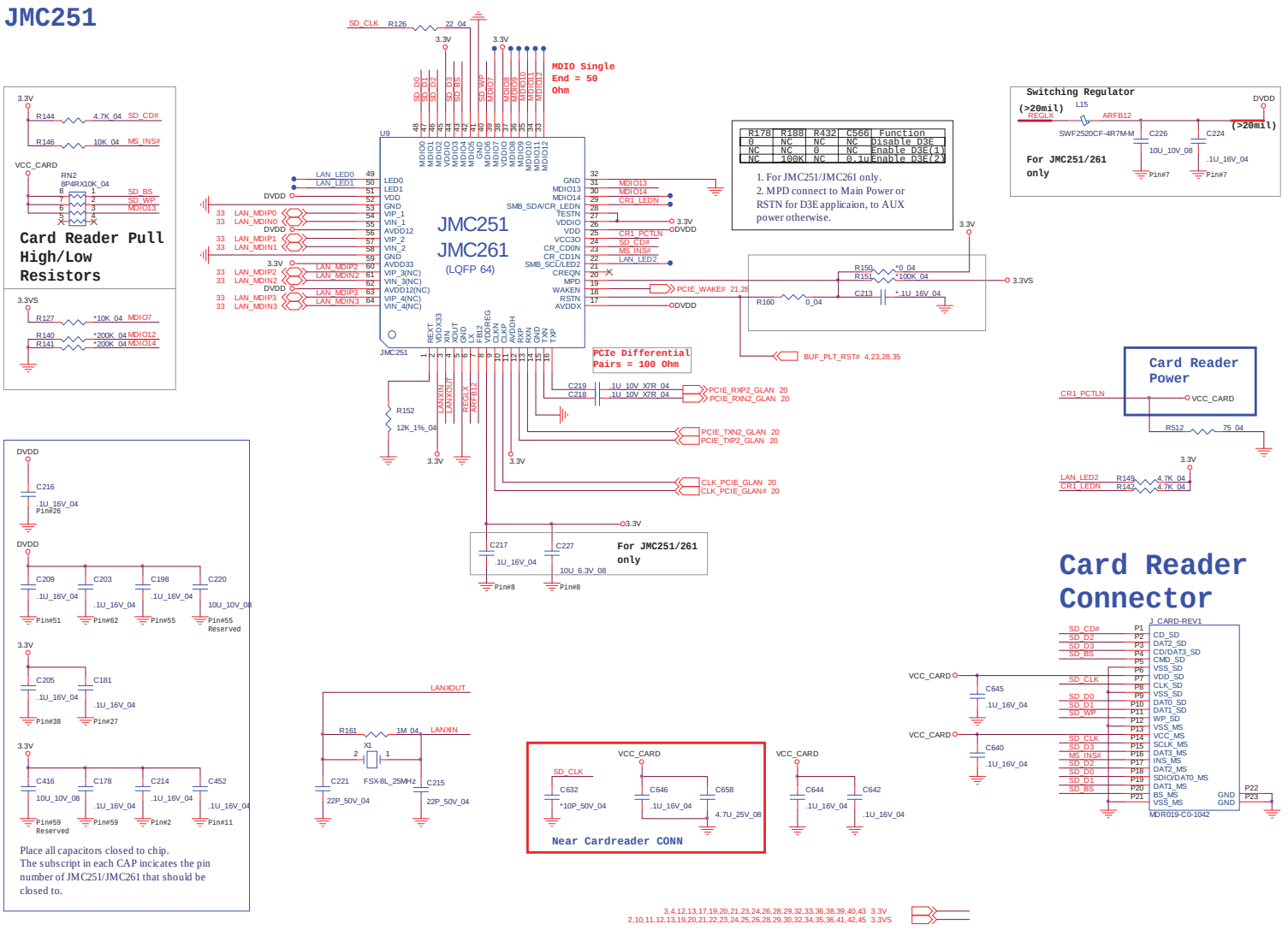




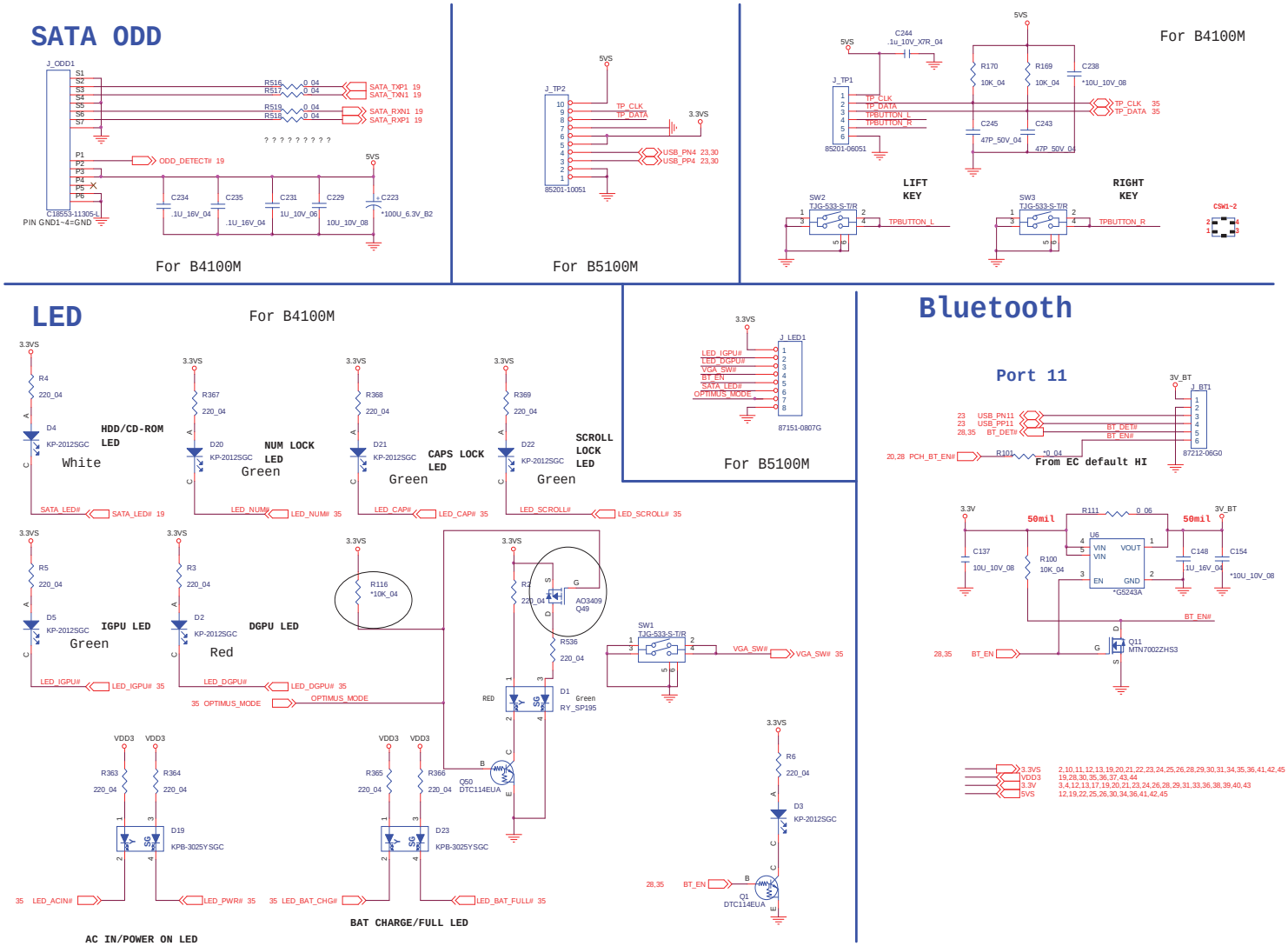
Sheet 30 of 49
USB, Fan, TP, FP, Multi-Conn

JMC 251 Card Reader

Sheet 31 of 49
JMC 251 Card Reader



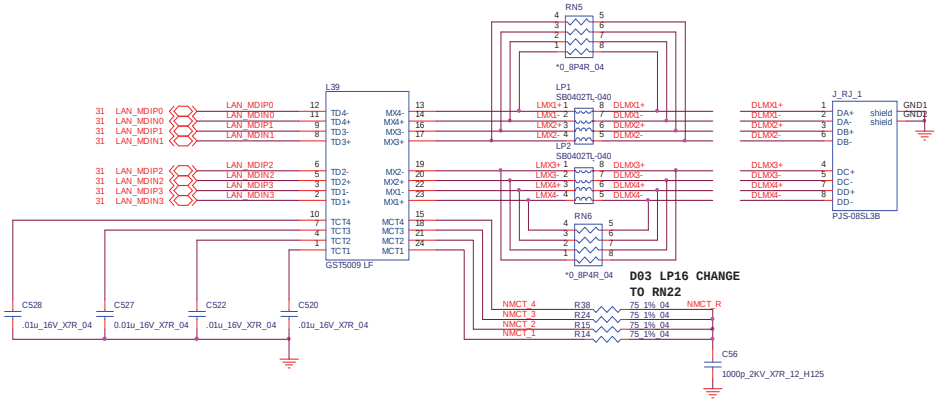
SATA ODD, LED, Hotkey, LID SW

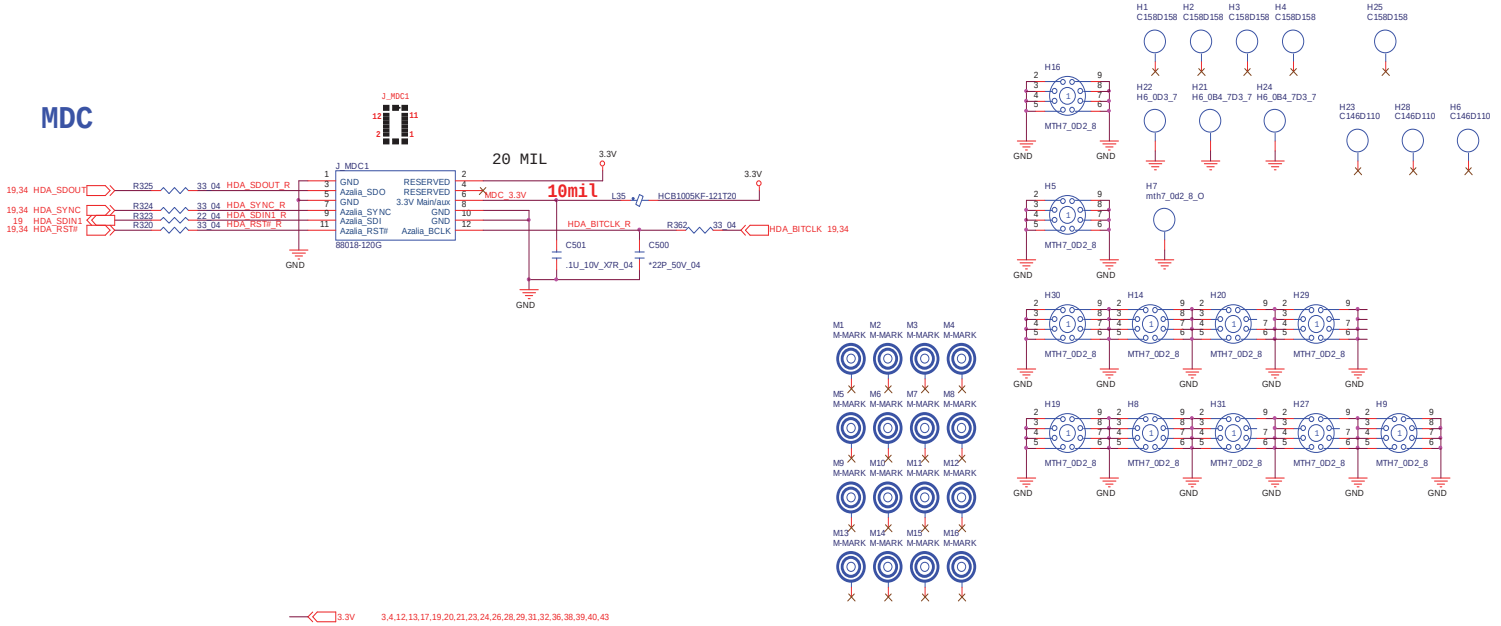


Sheet 32 of 49
SATA ODD, LED, Hotkey, LID SW

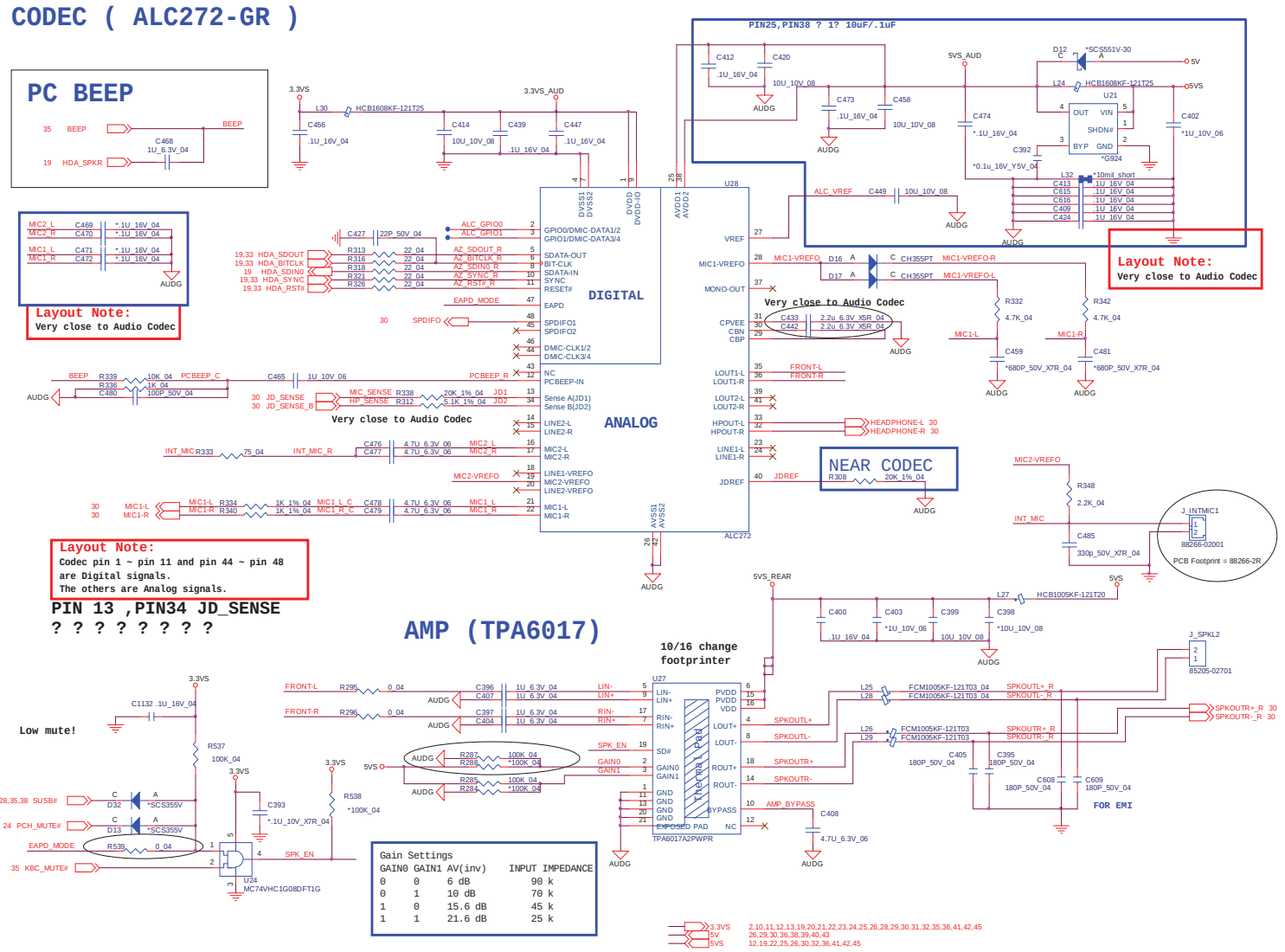
RJ45, Modem

Sheet 33 of 49
RJ45, Modem





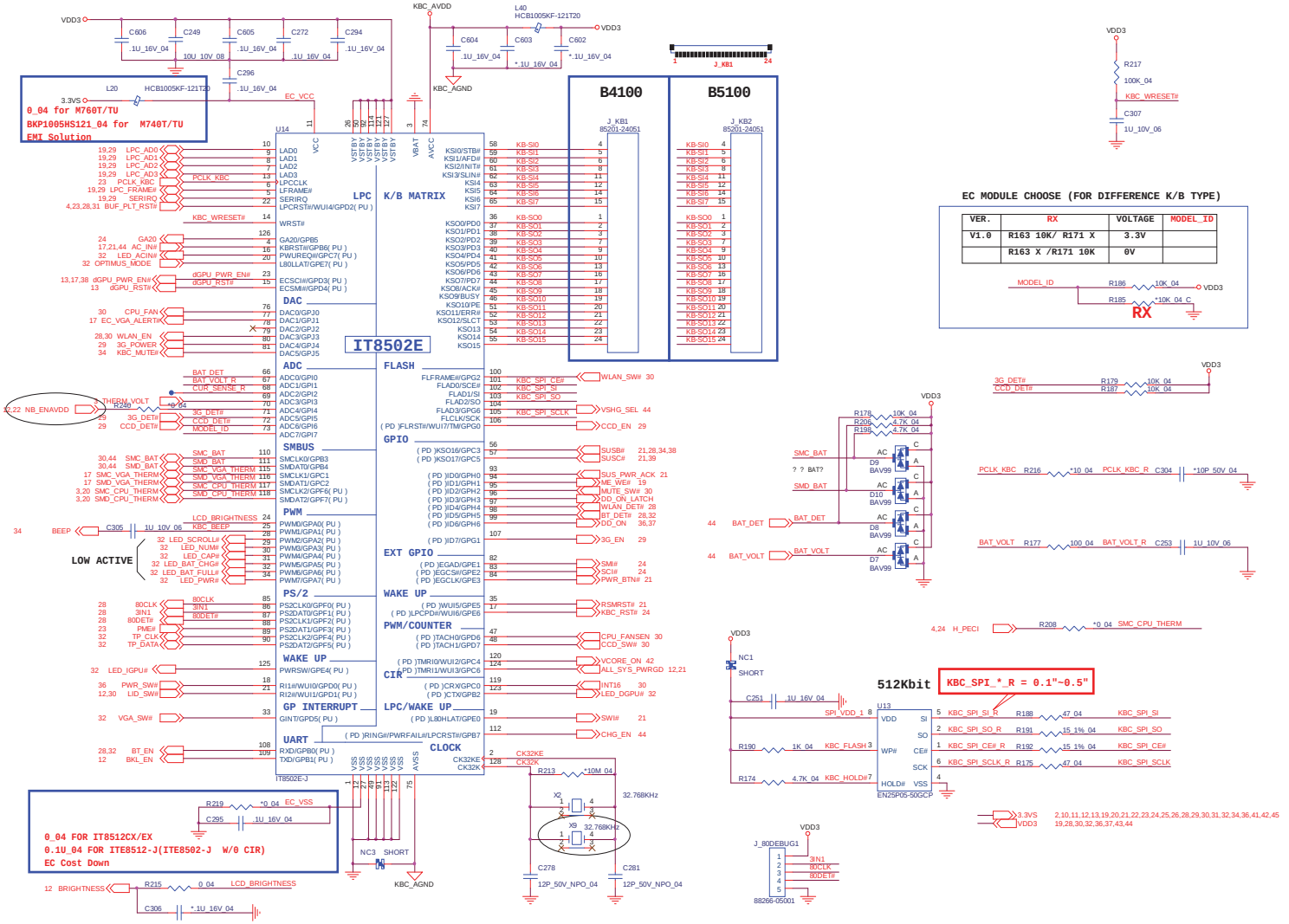
Audio Codec ALC272



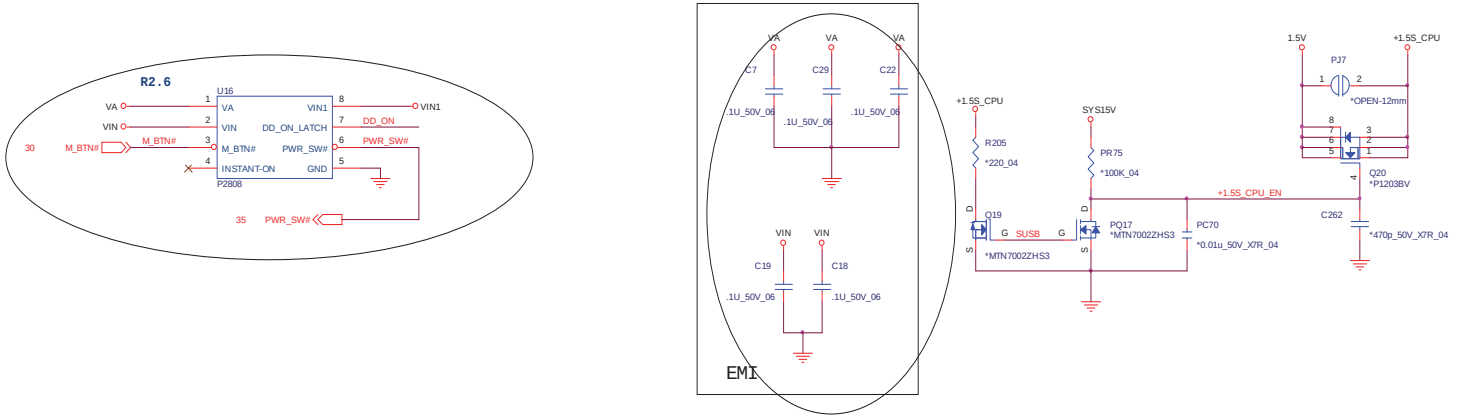
Sheet 34 of 49
Audio Codec
ALC272

KBC-ITE IT8502E

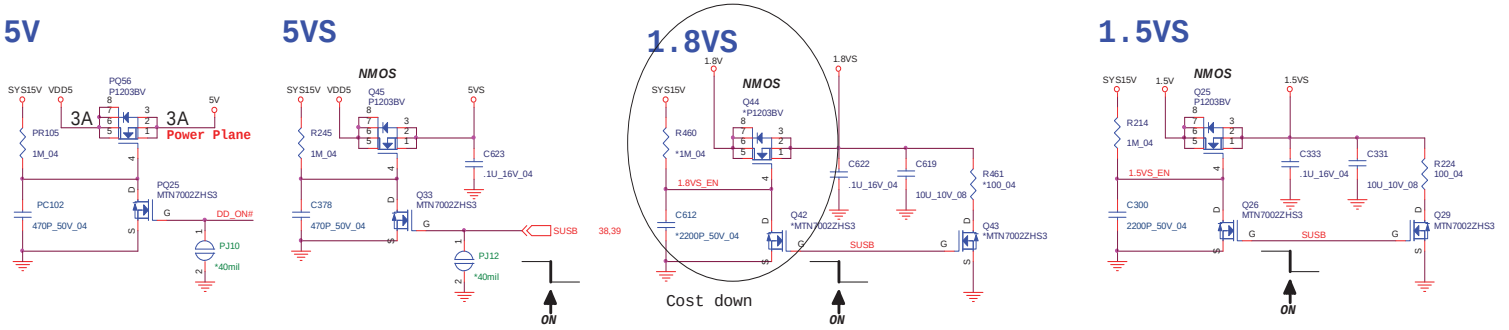
Sheet 35 of 49
KBC-ITE IT8502E



5VS, 3.3VS, 1.5VS, VIN1

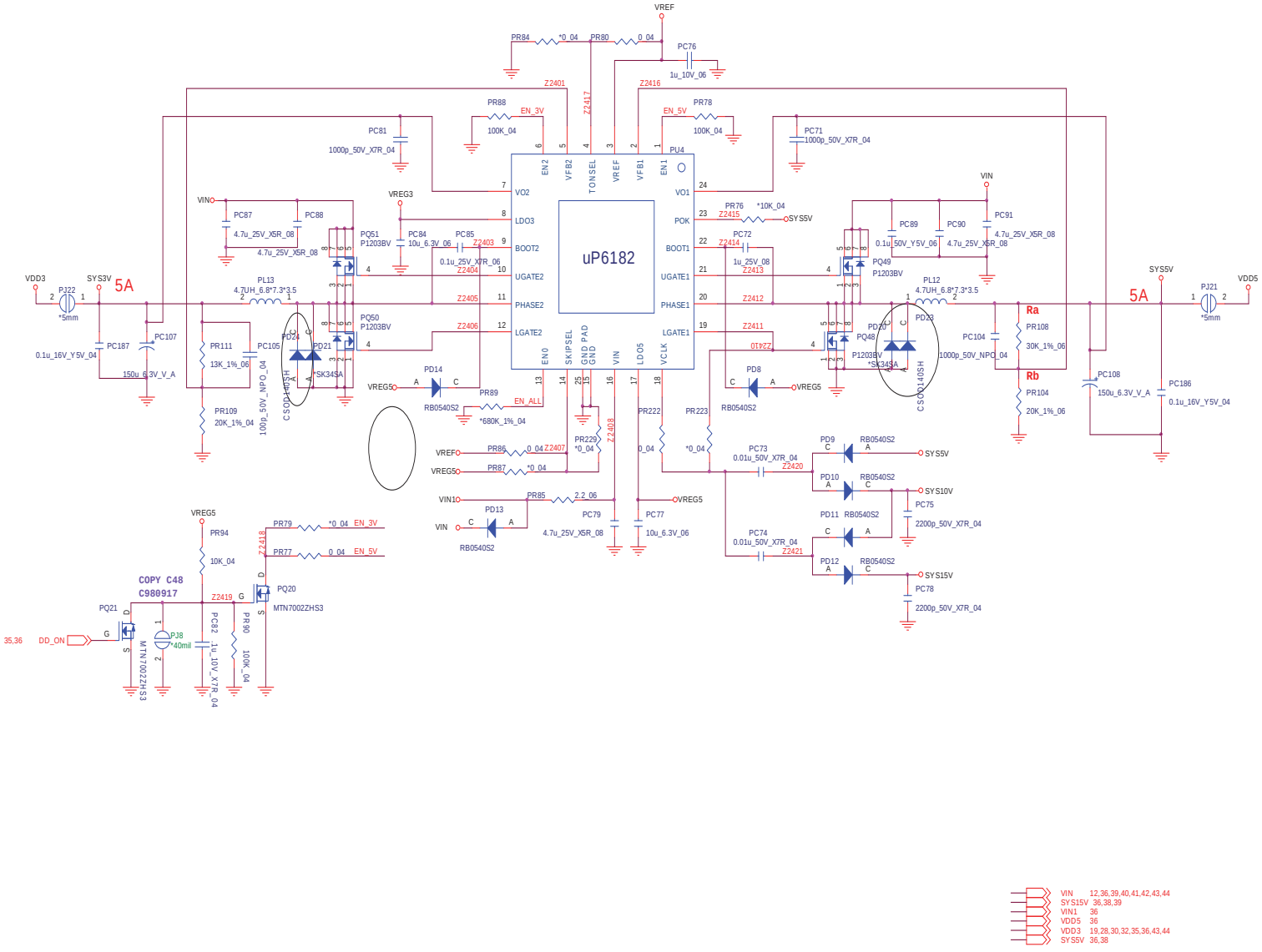


Sheet 36 of 49
5VS, 3.3VS, 1.5VS, VIN1

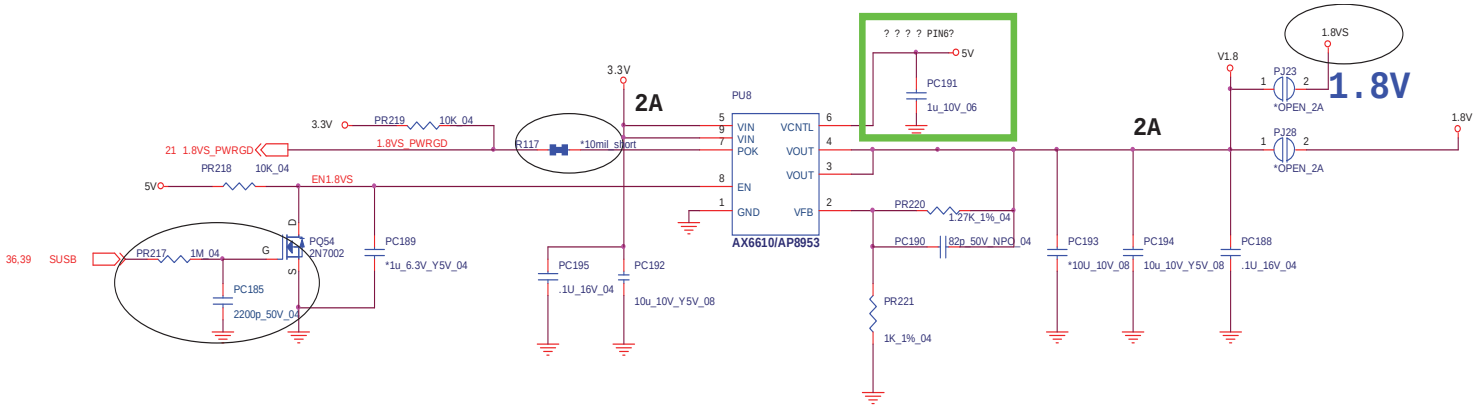


VDD3, VDD5

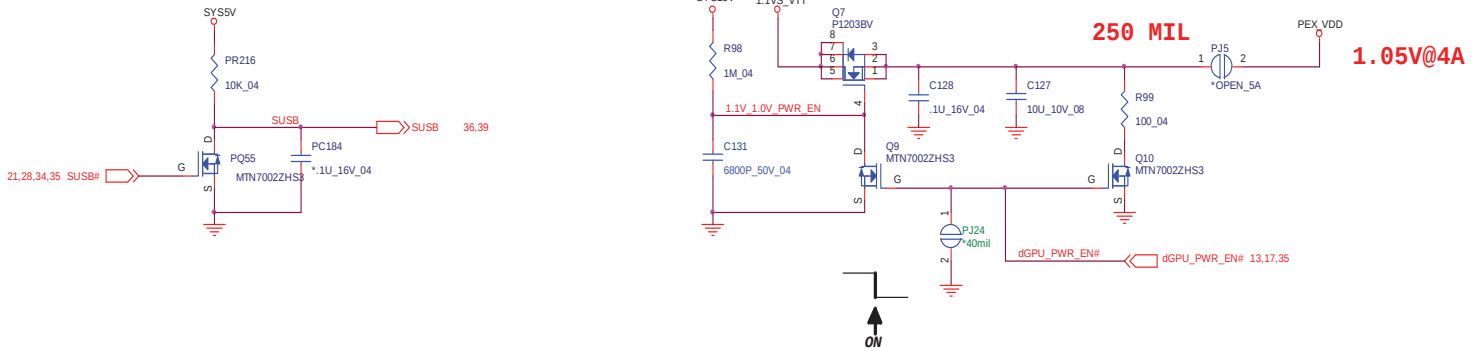
Sheet 37 of 49
VDD3, VDD5



Power 1.8V, PEX_VDD



Sheet 38 of 49
Power 1.8V,
PEX_VDD



3,4,12,13,17,19,20,21,23,24,26,28,29,31,32,33,36,39,40,43 3.3V
36,37,39 SYS15V
36,37 SYS5V
12,36,37,39,40,41,42,43,44 VIN
13,14 PEX_VDD
2,4,6,7,19,20,21,24,25,26,40,41,42 1.1VS_VTT
26,29,30,34,36,39,40,43 5V
36 1.8V
7,25,36 1.8VS

Power 1.5V/0.75V

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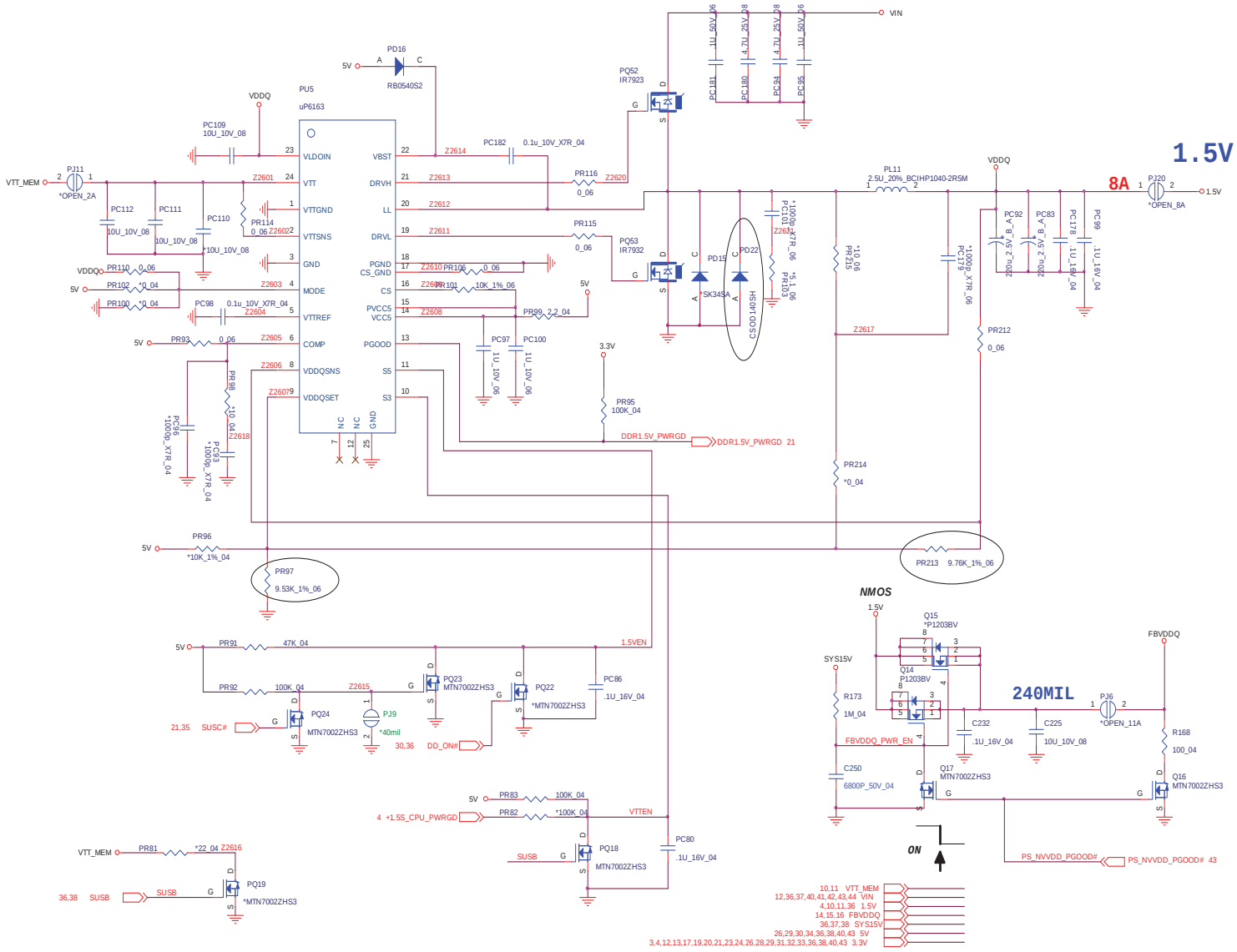
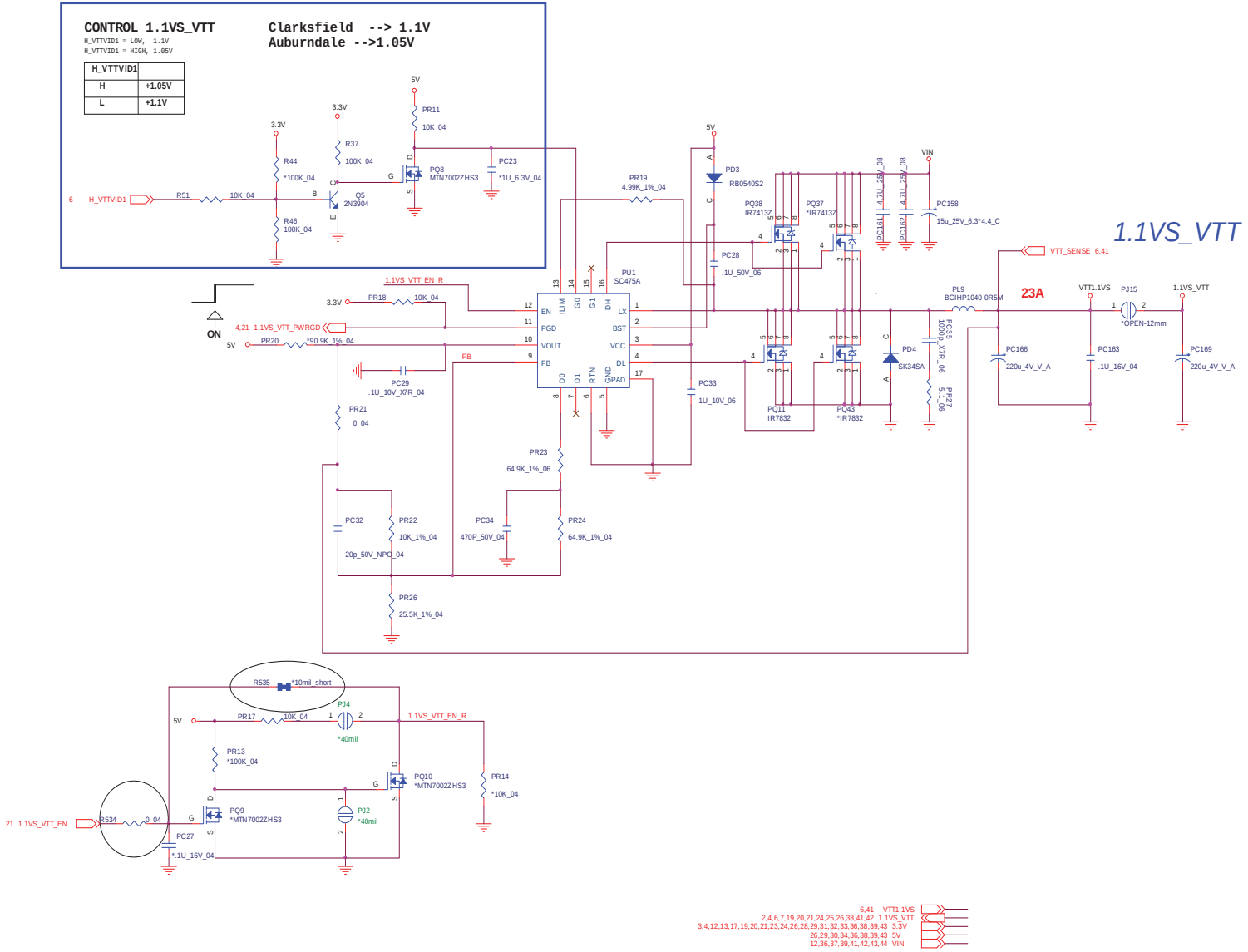
Power 1.5V/0.75V



Power 1.1VS_VTT



Sheet 40 of 49
Power 1.1VS_VTT

Power VGFX_Core

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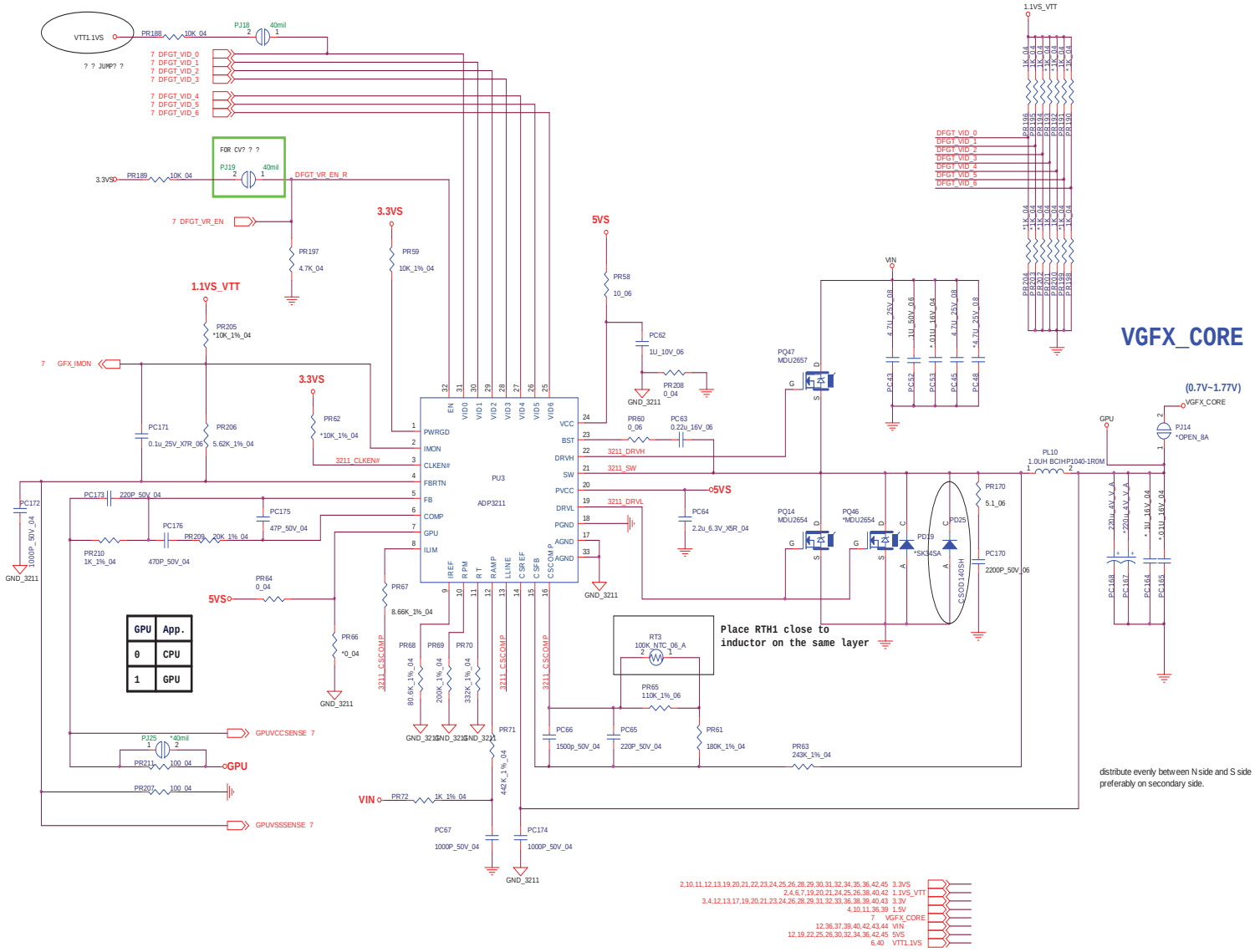
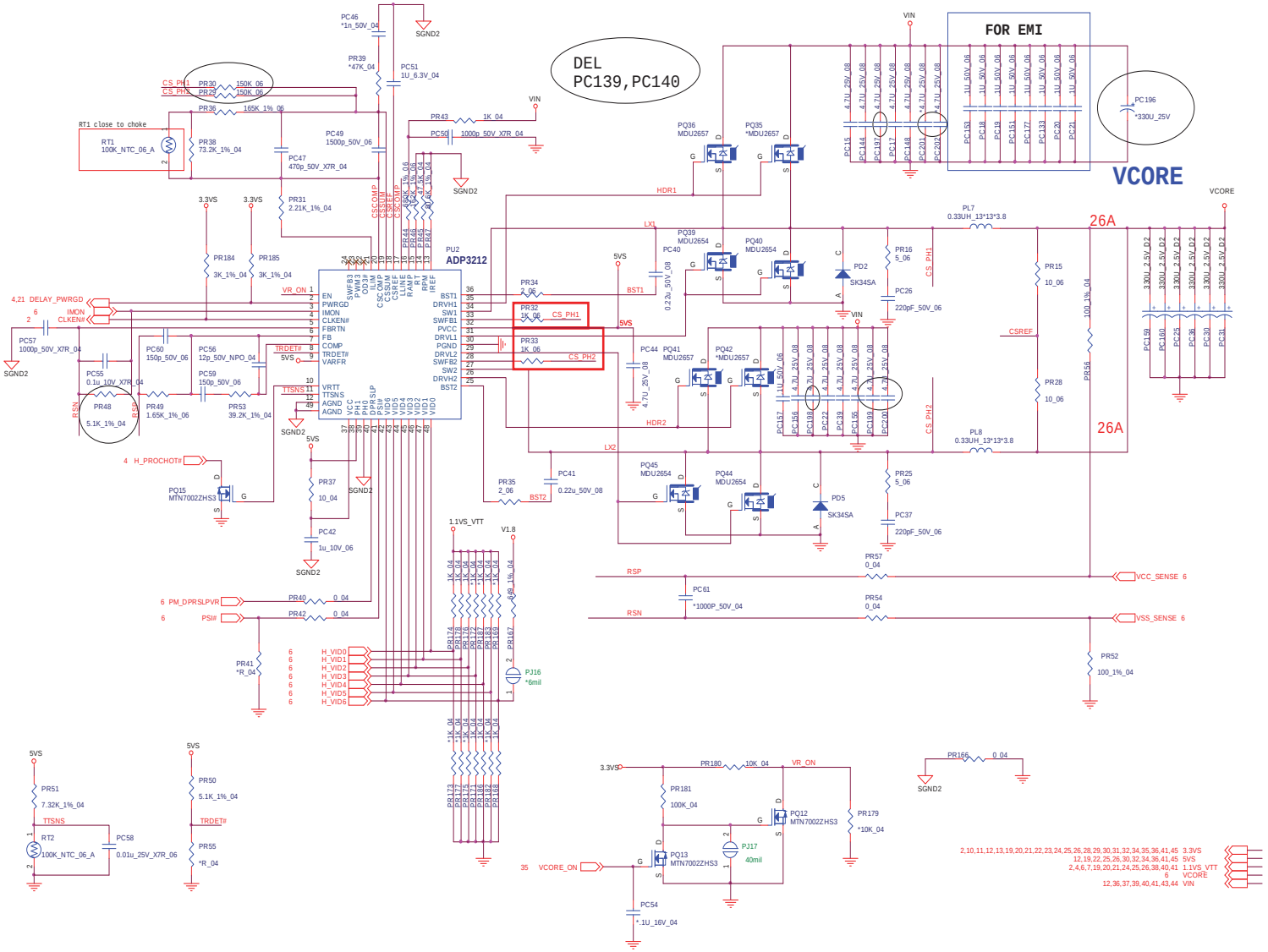
Power VGFX_Core



V-Core



Sheet 42 of 49
V-Core

Power VGA NVVDD

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Power VGA NVVDD

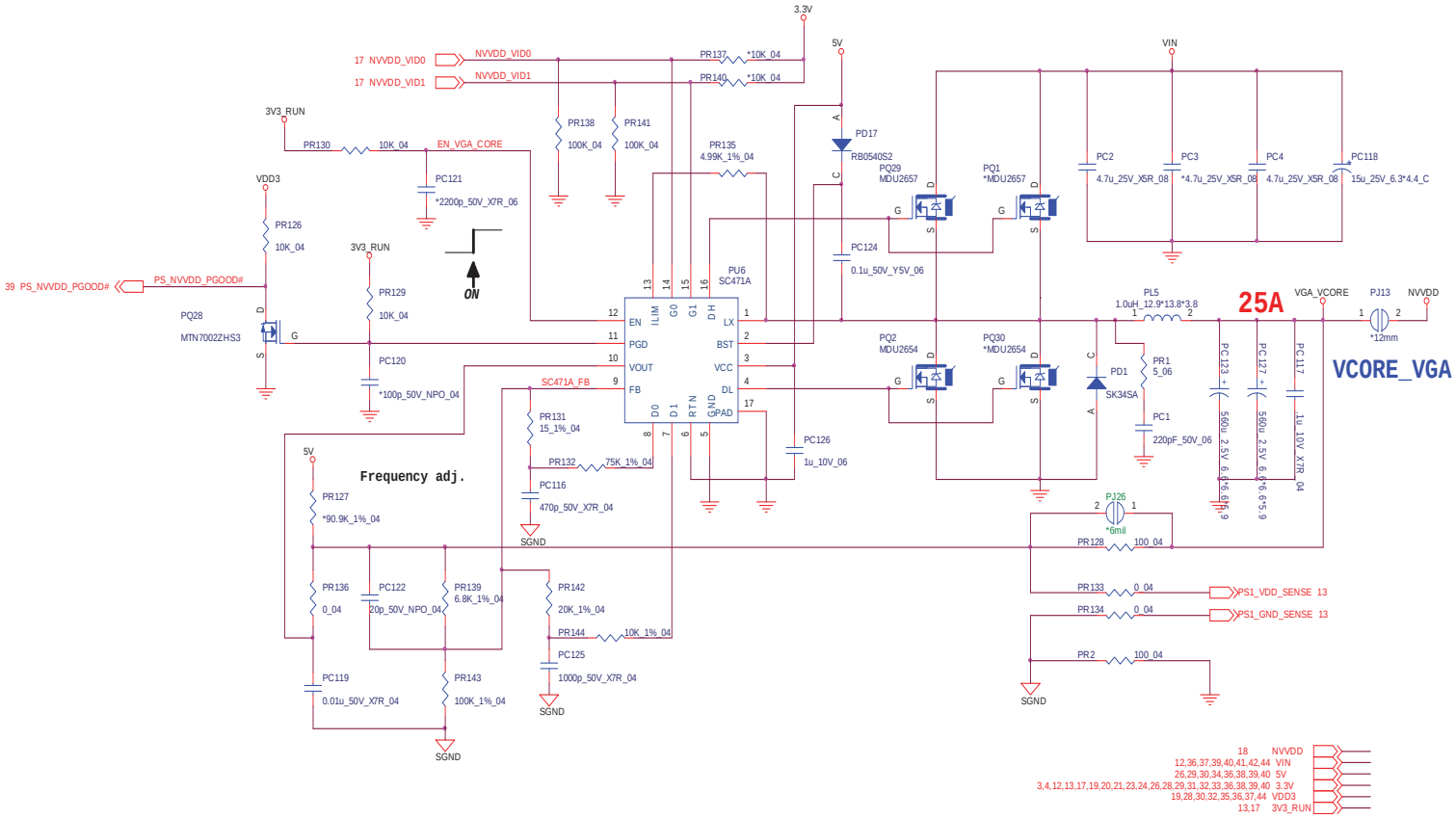
NVIDIA N11P-GE1

	0.95V	0.90V	0.85V	0.80V
GPIO5_NVVDD_VID0	0	1	0	1
GPIO6_NVVDD_VID1	0	0	1	1

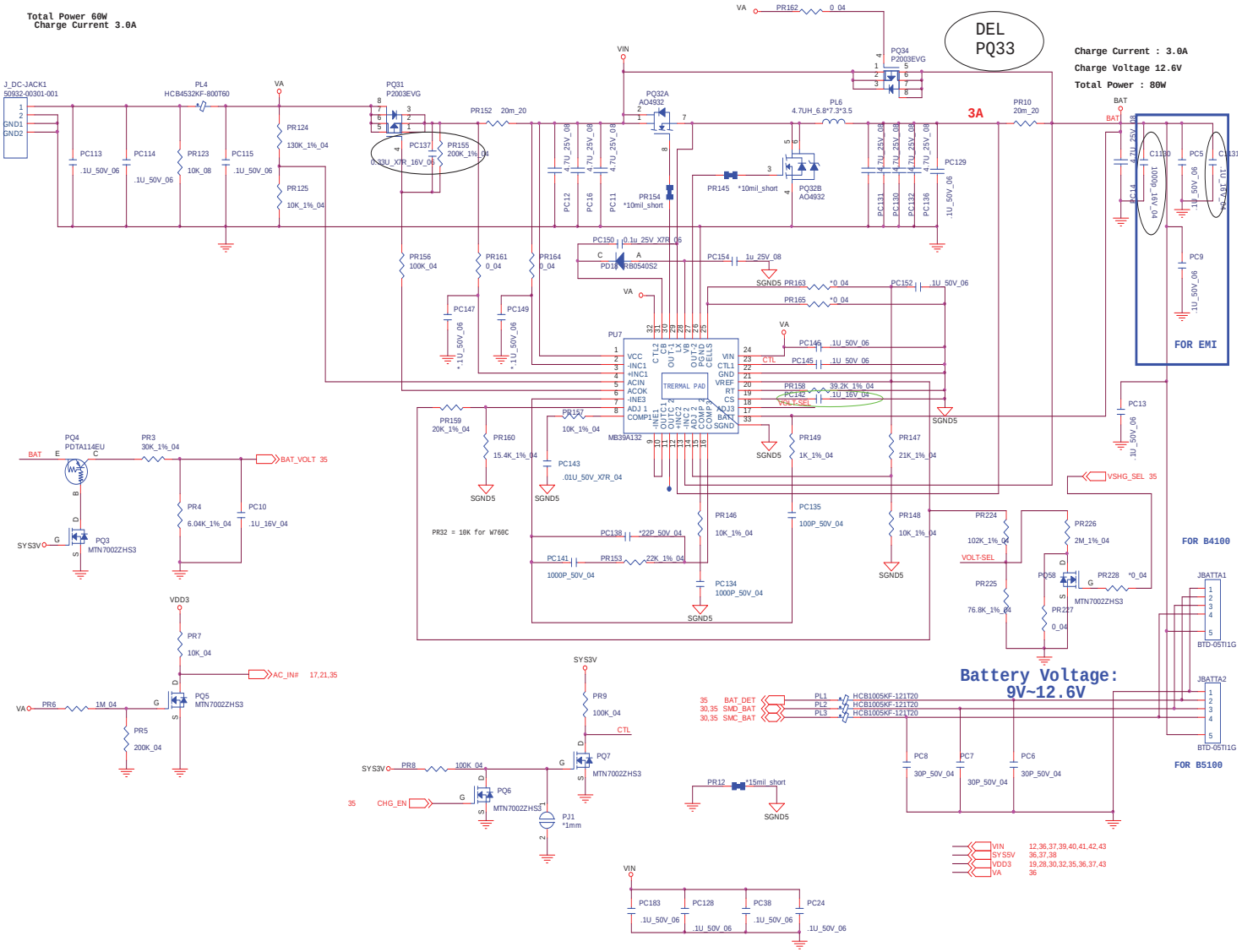
NVIDIA N11M-OP1

	1.03V	0.95V	0.85V	0.80V
GPIO5_NVVDD_VID0	0	1	0	1
GPIO6_NVVDD_VID1	0	0	1	1

	PR131	PR132	PR139	PR142	PR143	PR144
B4100 N11M-OP1	15K_1%	75K_1%	6.8K_1%	20K_1%	100K_1%	10K_1%
B5100 N11P-GE1	10K_1%	20K_1%	2K_1%	4.99K_1%	30K_1%	10K_1%



AC_IN, Charger



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AC_IN, Charger

HDMI

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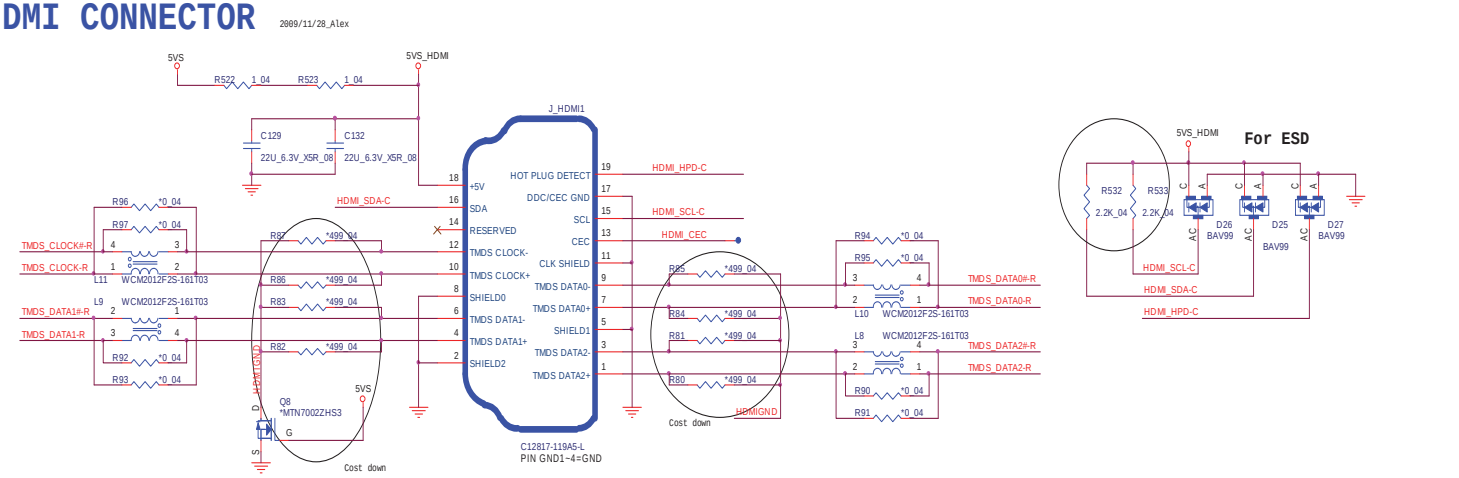
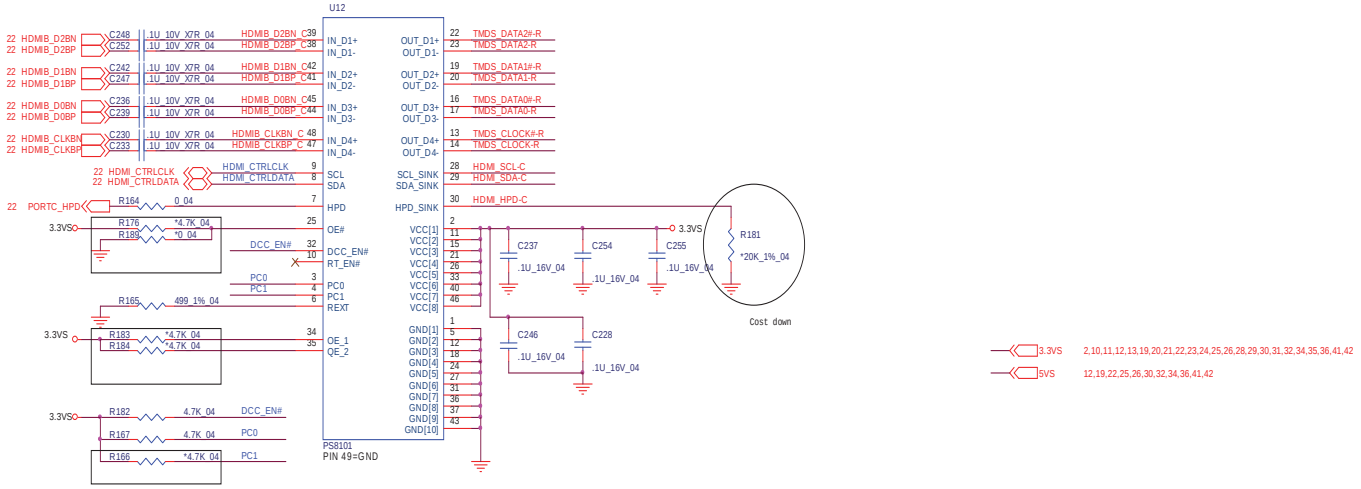
HDMI

HDMI CONNECTOR

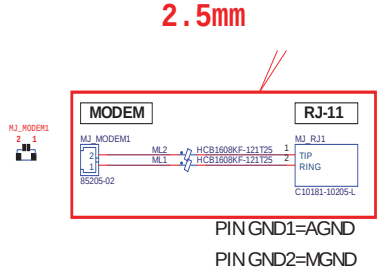


FOR INTEL GRAPHIC

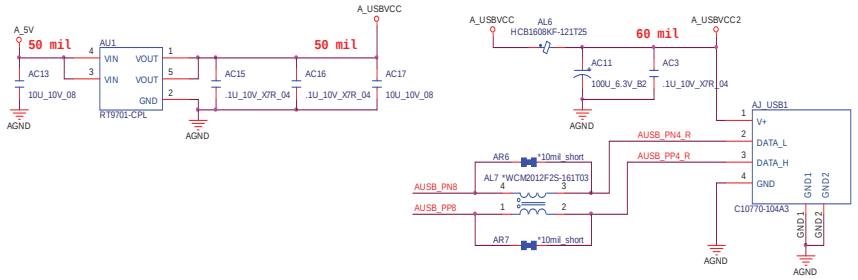


Audio Board

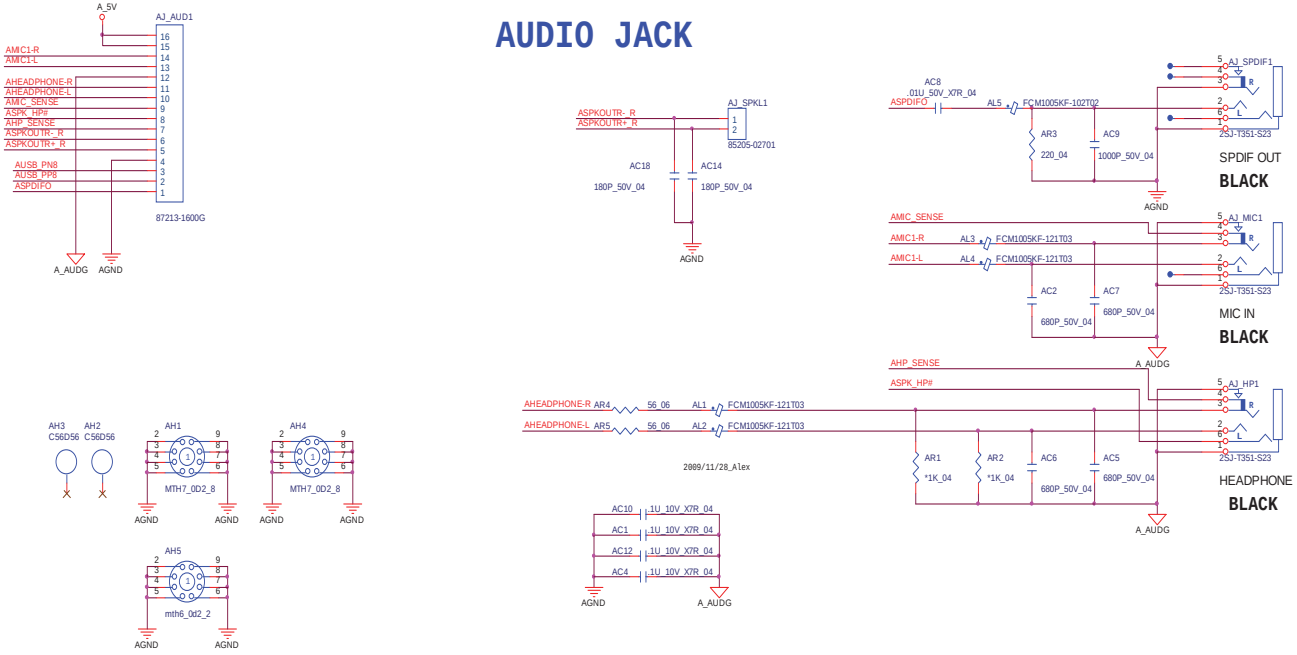
RJ-11



USB PORT



AUDIO JACK



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Audio Board

B4100 Fingerprint Board

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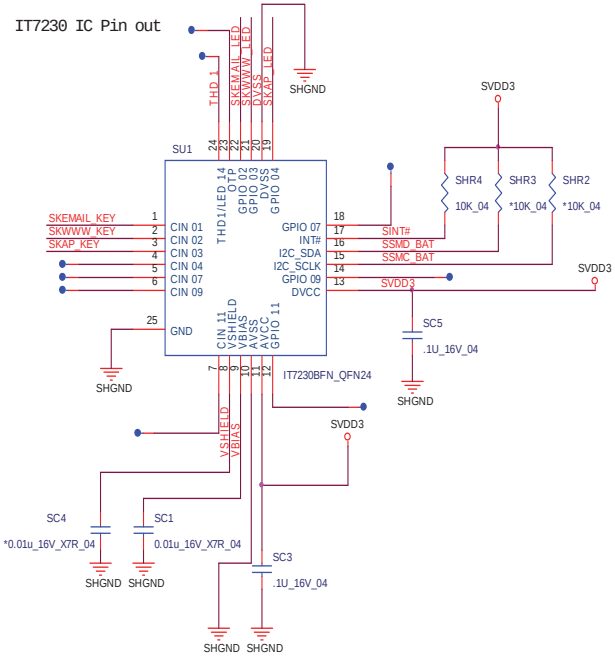
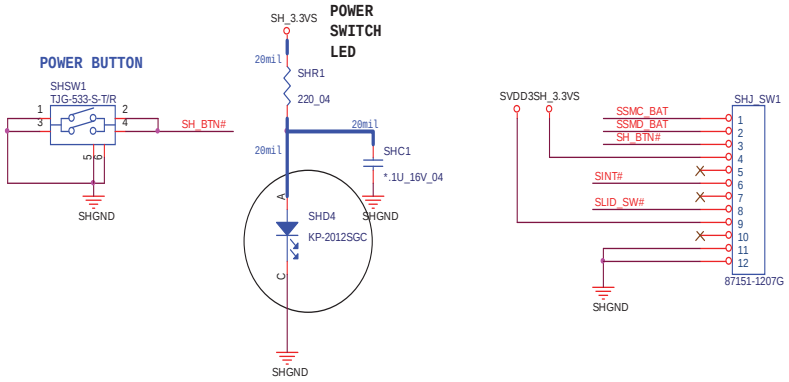
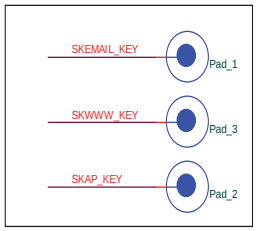
B4100 Fingerprint Board

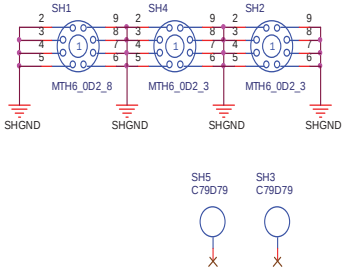
B4100 Power Switch Board

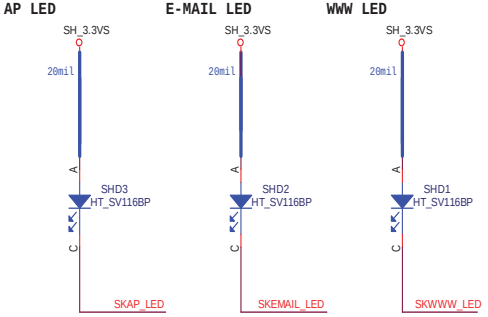
POWER SW & POWER LED



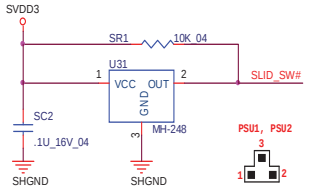








B4100M ONLY



LID SWITCH IC

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B4100 Power
Switch Board

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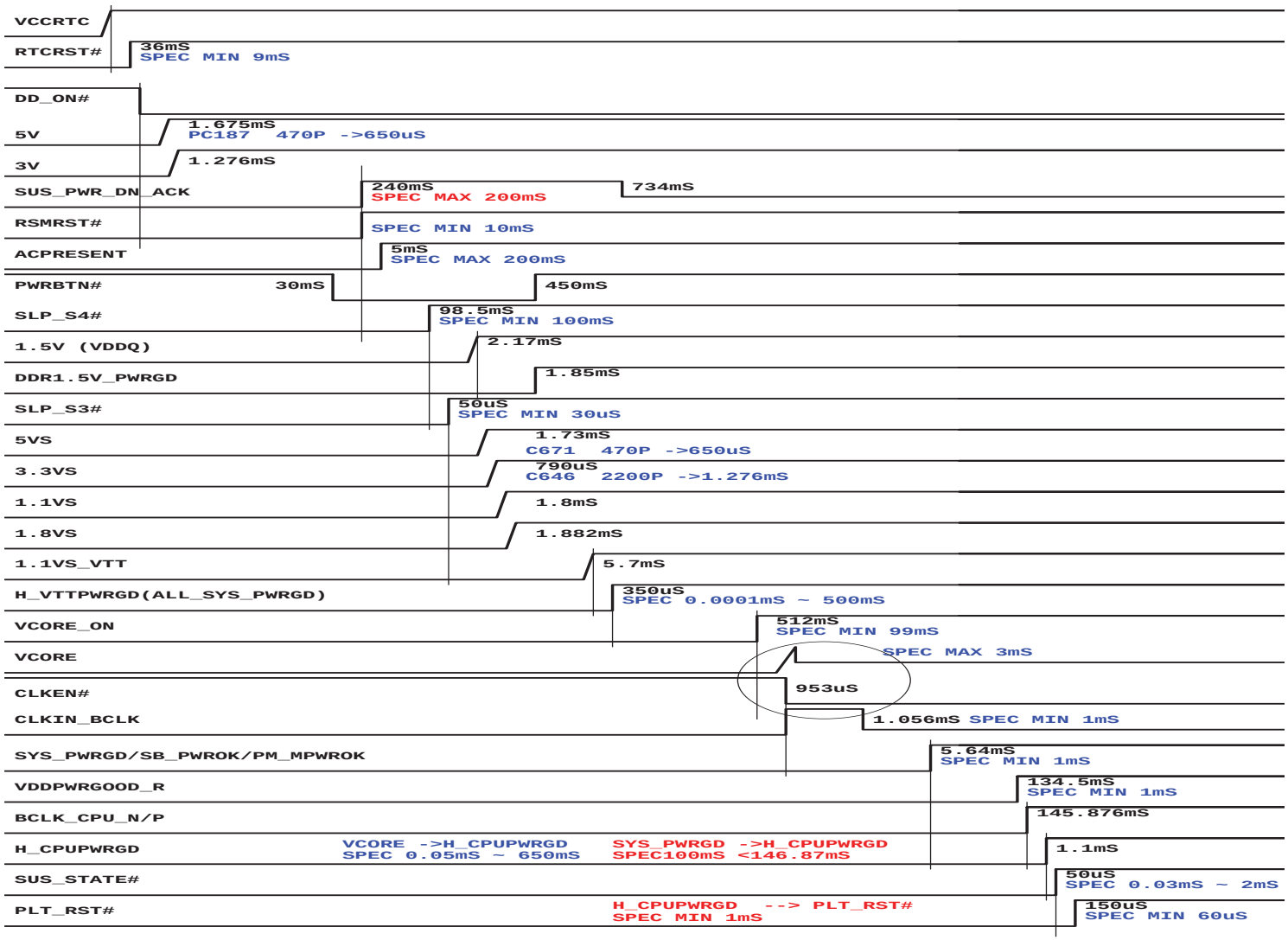
Sequence

Sequence

B 4 1 0 0 D 0 1 P O W E R S E Q U E N C E



Appendix C:Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS you must:

- Download the BIOS update from the web site.
- Unzip the files onto a bootable CD/DVD/USB Flash Drive.
- Reboot your computer from an external CD/DVD/USB Flash Drive.
- Use the flash tools to update the flash BIOS using the commands indicated below.
- Restart the computer booting from the HDD and press **F2** at startup enter the BIOS.
- Load setup defaults from the BIOS and save the default settings and exit the BIOS to restart the computer.
- After rebooting the computer you may restart the computer again and make any required changes to the default BIOS settings.

Download the BIOS

1. Go to **www.clevo.com.tw** and point to **E-Services** and click **E-Channel**.
2. Use your user ID and password to access the appropriate download area (BIOS), and download the latest BIOS files (the BIOS file will be contained in a batch file that may be run directly once unzipped) for your computer model (**see sidebar for important information on BIOS versions**).

Unzip the downloaded files to a bootable CD/DVD/ or USB Flash drive

1. Insert a bootable CD/DVD/USB flash drive into the CD/DVD drive/USB port of the computer containing the downloaded files.
2. Use a tool such as Winzip or Winrar to unzip all the BIOS files and refresh tools to your bootable CD/DVD/USB flash drive (you may need to create a bootable CD/DVD with the files using a 3rd party software).

Set the computer to boot from the external drive

1. With the bootable CD/DVD/USB flash drive containing the BIOS files in your CD/DVD drive/USB port, restart the computer and press **F2** (in most cases) to enter the BIOS.
2. Use the arrow keys to highlight the **Boot** menu.
3. Use the "+" and "-" keys to move boot devices up and down the priority order.
4. Make sure that the CD/DVD drive/USB flash drive is set first in the boot priority of the BIOS.
5. Press **F10** to save any changes you have made and exit the BIOS to restart the computer.

BIOS Version

Make sure you download the latest correct version of the BIOS appropriate for the computer model you are working on.

You should only download BIOS versions that are V1.01.XX or higher as appropriate for your computer model.

Note that BIOS versions are not backward compatible and therefore **you may not downgrade your BIOS to an older version** after upgrading to a later version (e.g if you upgrade a BIOS to ver 1.01.05, you **MAY NOT** then go back and flash the BIOS to ver 1.01.04).

Use the flash tools to update the BIOS

1. Make sure you are not loading any memory management programs such as HIMEM by holding the **F8** key as you see the message "**Starting MS-DOS**". You will then be prompted to give "**Y**" or "**N**" responses to the programs being loaded by DOS. Choose "N" for any memory management programs.
2. You should now be at the DOS prompt e.g: DISK **C**:\> (C is the designated drive letter for the CD/DVD drive/USB flash drive).
3. **Type the following command** at the DOS prompt:

   C:\> Flash.bat

4. The utility will then proceed to flash the BIOS.
5. You should then be prompted to press any key to restart the system or turn the power off, and then on again but make sure you remove the CD/DVD/USB flash drive from the CD/DVD drive/USB port before the computer restarts.

Restart the computer (booting from the HDD)

1. With the CD/DVD/USB flash drive removed from the CD/DVD drive/USB port the computer should restart from the HDD.
2. Press **F2** as the computer restarts to enter the BIOS.
3. Use the arrow keys to highlight the **Exit** menu.
4. Select **Load Setup Defaults** (or press **F9**) and select "**Yes**" to confirm the selection.
5. Press **F10** to save any changes you have made and exit the BIOS to restart the computer.

Your computer is now running normally with the updated BIOS

You may now enter the BIOS and make any changes you require to the default settings.