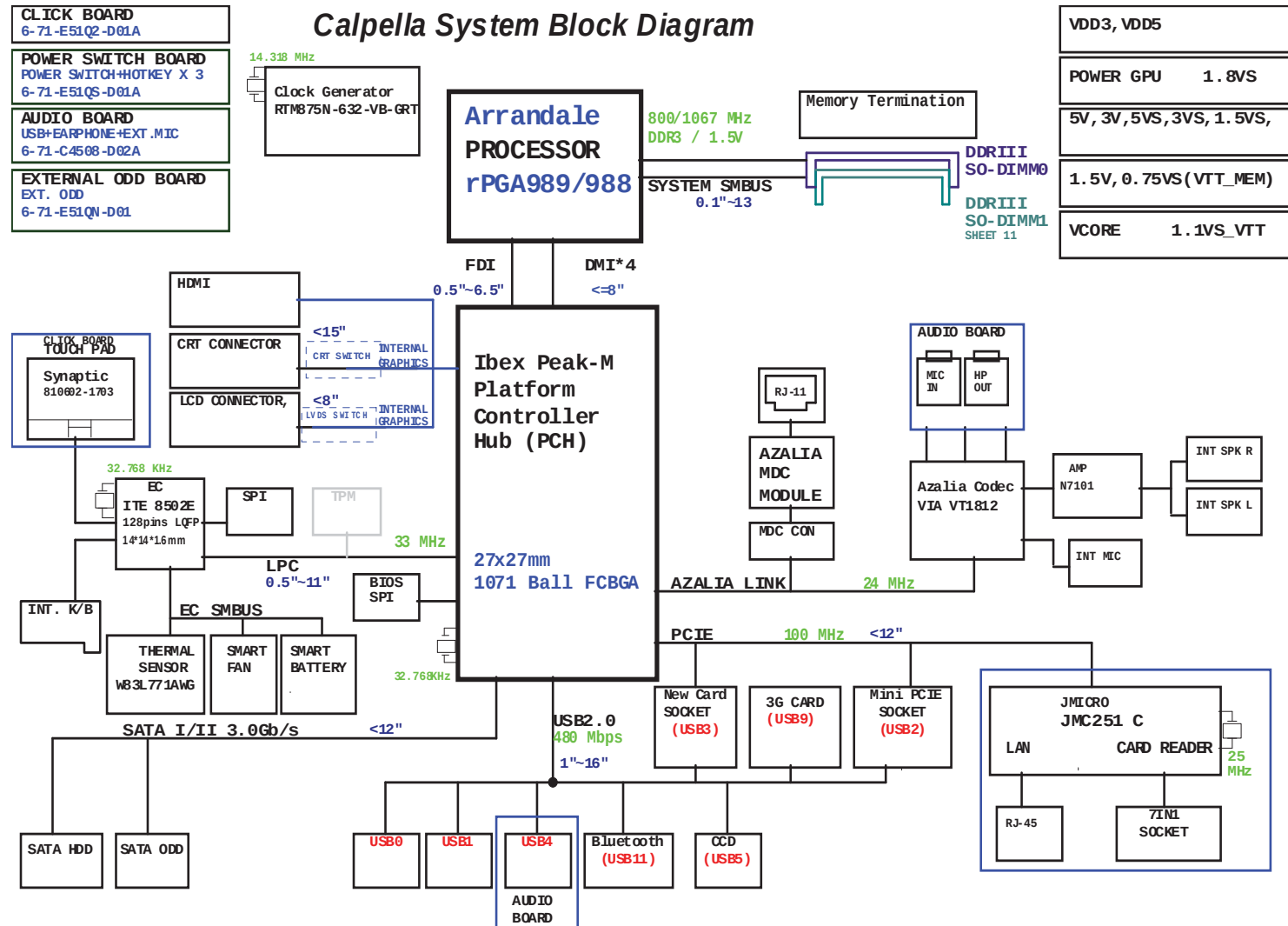


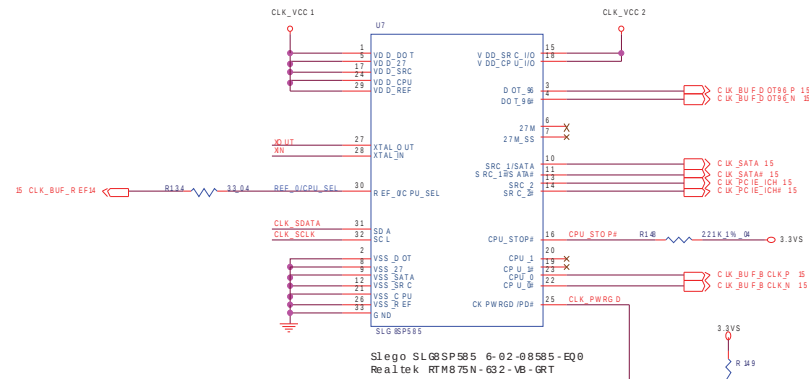
# System Block Diagram



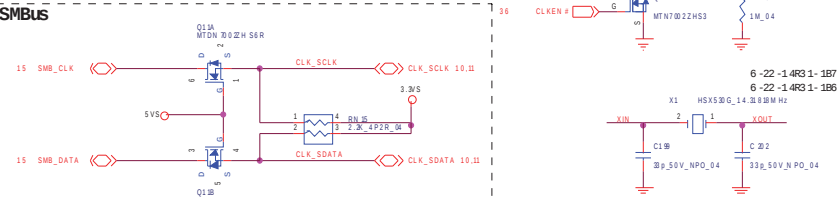
Sheet 1 of 42  
System Block  
Diagram

# Clock Generator

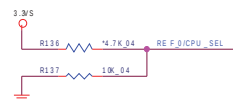
## CLOCK GENERATOR



### SMBus

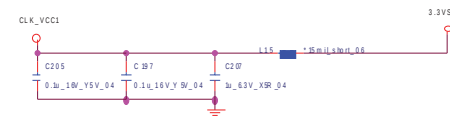


### CPU\_SEL\_During CK\_PEWGD Latch Pin1



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

## CLKGEN POWER



0.1uF near the every power pin



0.1uF near the every power pin

VDD\_I/O can be ranging from 1.05V to 3.3V

## EMI



9V5 10.0 2021.2627.3031.8.06  
9V5 9.4 10.1415.1618.1820.18.22.24.25.26.30.30.3034.05  
3.3V5 10.11.12.13.14.15.16.17.18.19.20.21.22.24.25.26.27.28.29.30.31.32.33  
1.1V5\_VTT 4.6.7.14.15.16.18.20.21.34.35.36

Sheet 2 of 42  
Clock Generator

## Schematic Diagrams

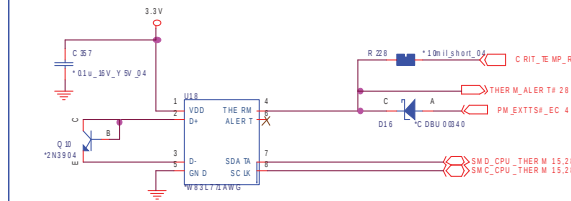
## CPU 1/7 (DMI, PEG, FDI)

PROCESSOR 1/7 ( DMI,PEG,FDI )

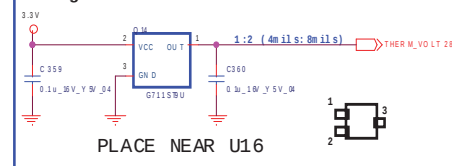
Sheet 3 of 42  
CPU 1/7  
(DMI, PEG, FDI)

If applies to Auburnlake and Clarkfield discrete graphics designs.  
If discrete graphic chip is used for Auburnlake, VAGX (GFX com) mill can be connected to GND if motherboard only supports discrete graphics and also in a common motherboard design if GFX VR is not stuffed. On the other hand, if the VR is stuffed, VAGX can be left floating in a common motherboard design (GFX VR keeps VAGX from floating).  
In addition, FDI.RXN[7:0] and FDI.RXP[7:0] can be left floating on the PCH.  
FDI.TX[7:0] and FDI.RX[7:0] can be left floating on the Auburnlake.  
The GFX IMON, FDI.FSWC[0], FDI.FSWC[1], FDI.LSWC[0], FDI.LSWC[1], and FDI.LINT signals should be tied to 90 Ohm (through 50 Ohm resistors) in the common motherboard design case. Please note that if these signals are left floating, there are no functional impacts but a small amount of power (~15 mW) maybe wasted. VAGX\_SENSE and VSPAG\_SENSE on Auburnlake can be left as no connect.  
DML\_REF\_SSELK and DML\_REF\_SSELK can be connected to GND on Auburnlake directly if motherboard only supports discrete graphics. In a common motherboard design, these pins are driven via RCH (even if graphics is disabled by BIOS) thus no external termination is required.

Thermal Sensor near U16



Analog Thermal Sensor



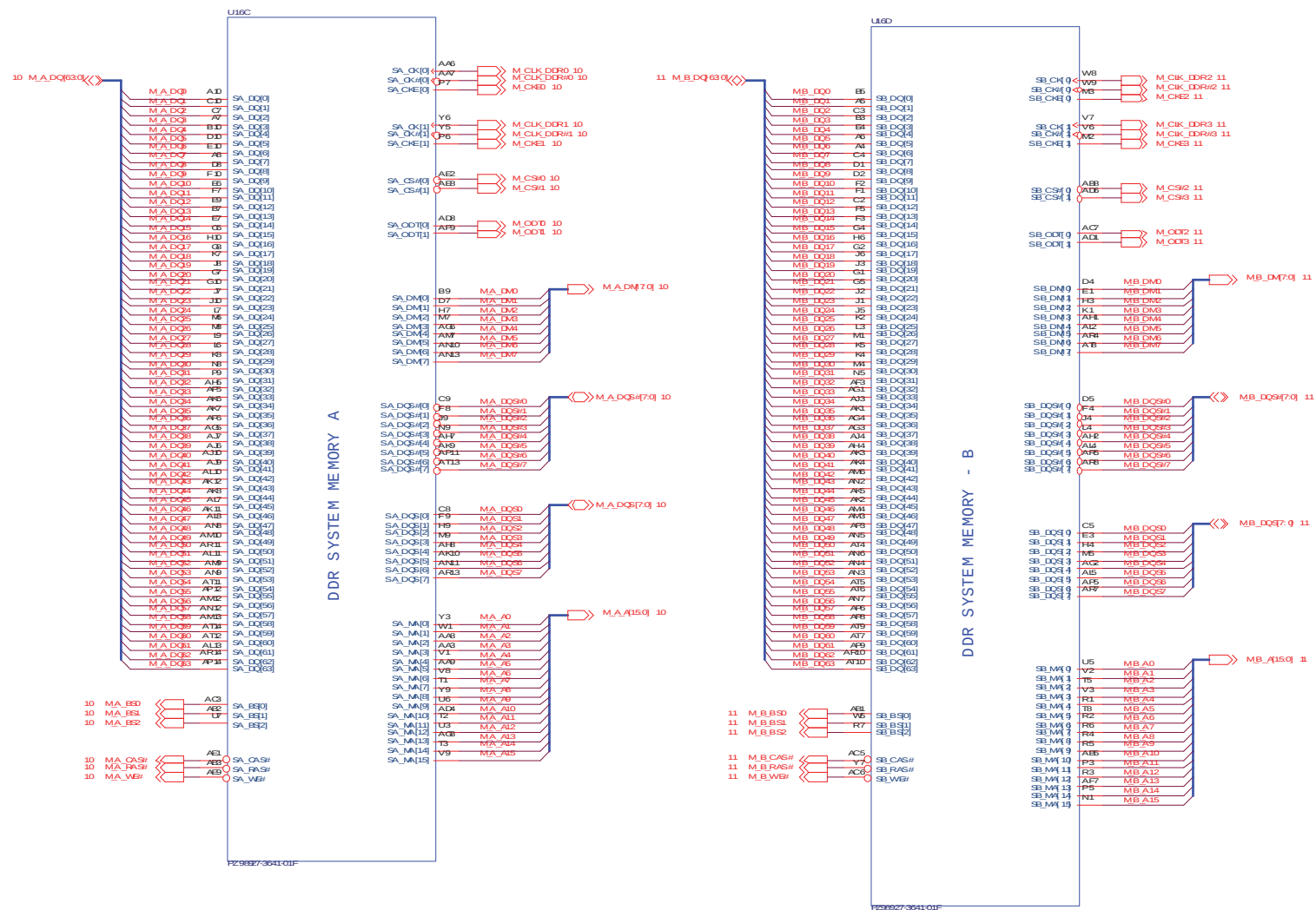
<http://hobi-elektronika.net>

PROCESSOR 2/7 ( CLK, MISC, JTAG )



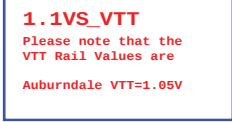
## CPU 3/7 (DDR3)

Sheet 5 of 42  
CPU 3/7  
(DDR3)



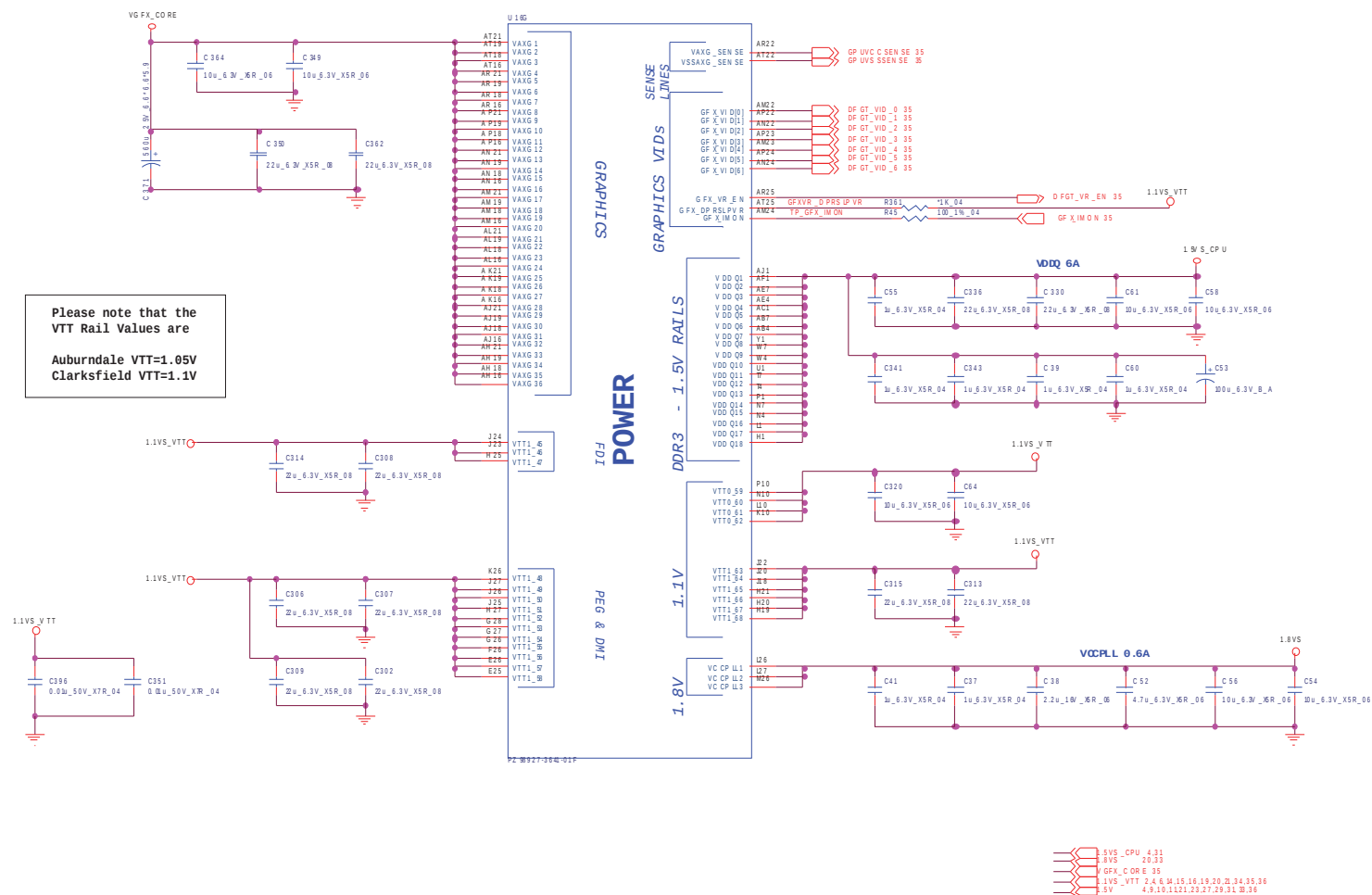
<http://hobi-elektronika.net>

PROCESSOR 4/7 ( POWER )



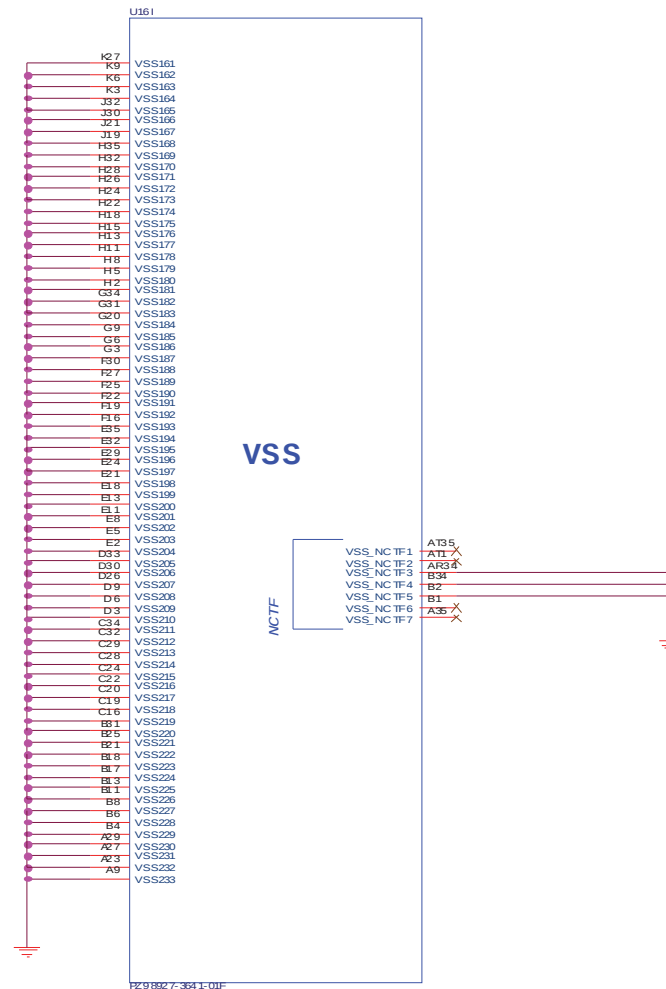
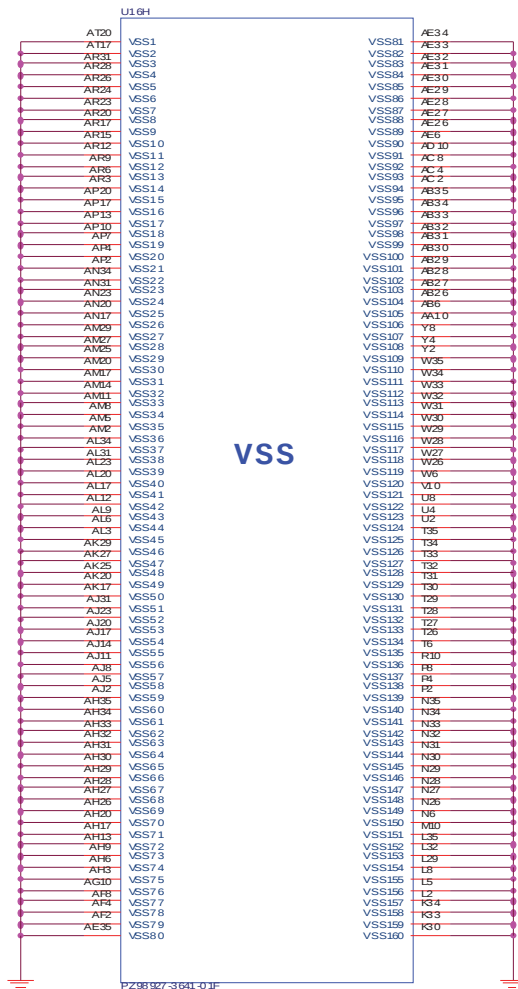
Sheet 6 of 42  
CPU 4/7  
(Power)

**PROCESSOR 5/7 ( GRAPHICS POWER )**



## CPU 6/7 (GND)

## PROCESSOR 6/7 ( GND )



Sheet 8 of 42  
CPU 6/7 (GND)

## Schematic Diagrams

## CPU 7/7 (RESERVED)

## PROCESSOR 7/7 ( RESERVED )

Sheet 9 of 42  
CPU 7/7  
(RESERVED)

| PCI-Express Configuration Select |                                          |
|----------------------------------|------------------------------------------|
| CFG0                             | 1 : Single PEG<br>0 : Bifurcation enable |

CFG0 R22 3.0K 04

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

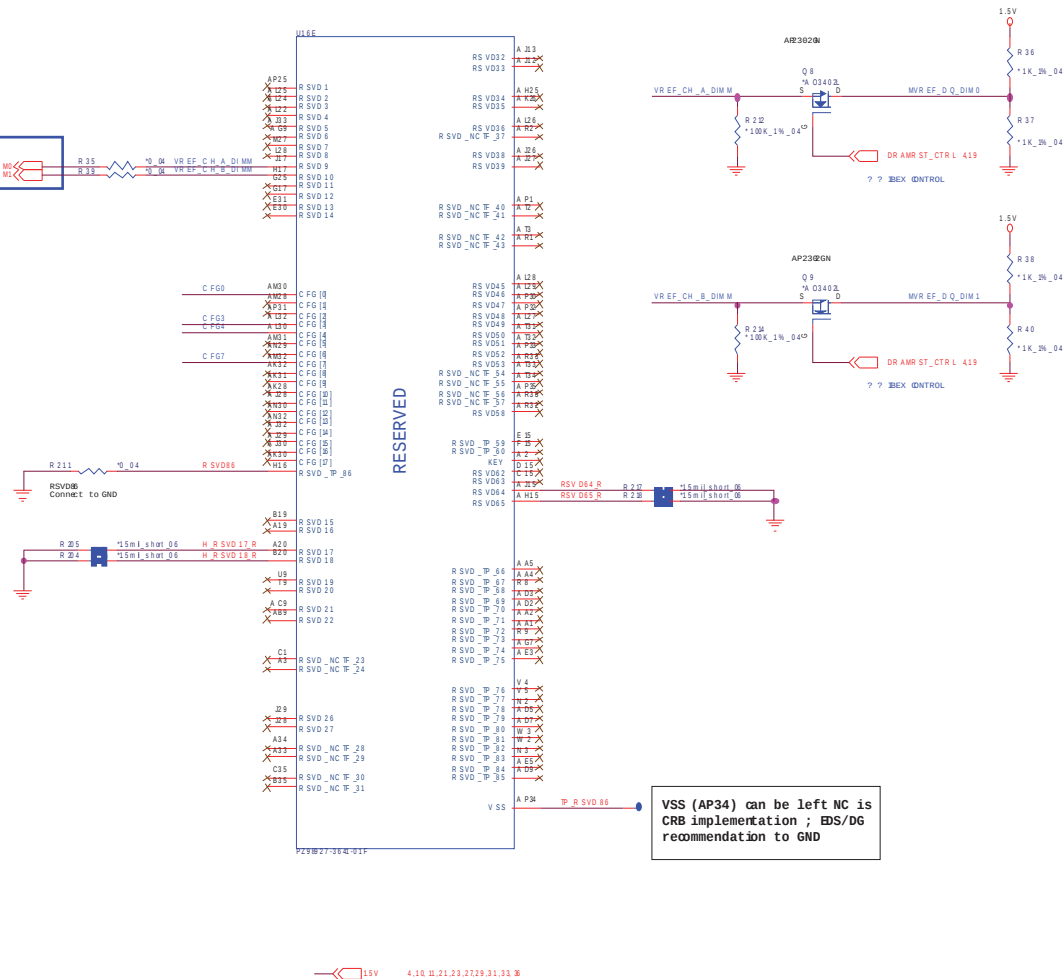
CFG3 R22 3.0K 04

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

CFG4 R22 3.0K 04

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

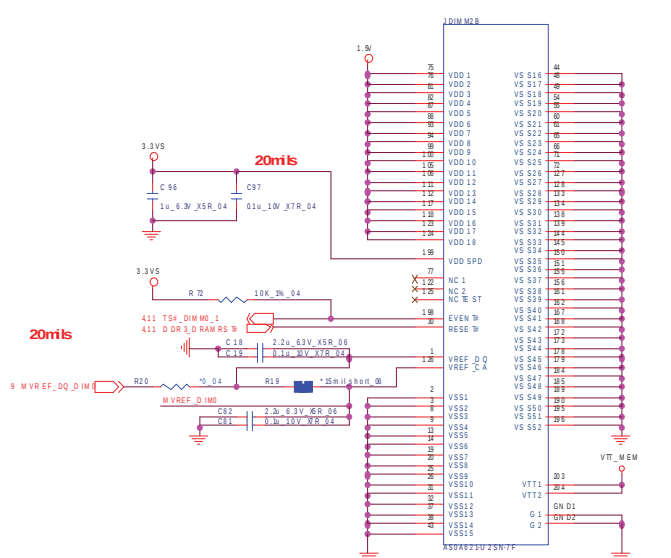
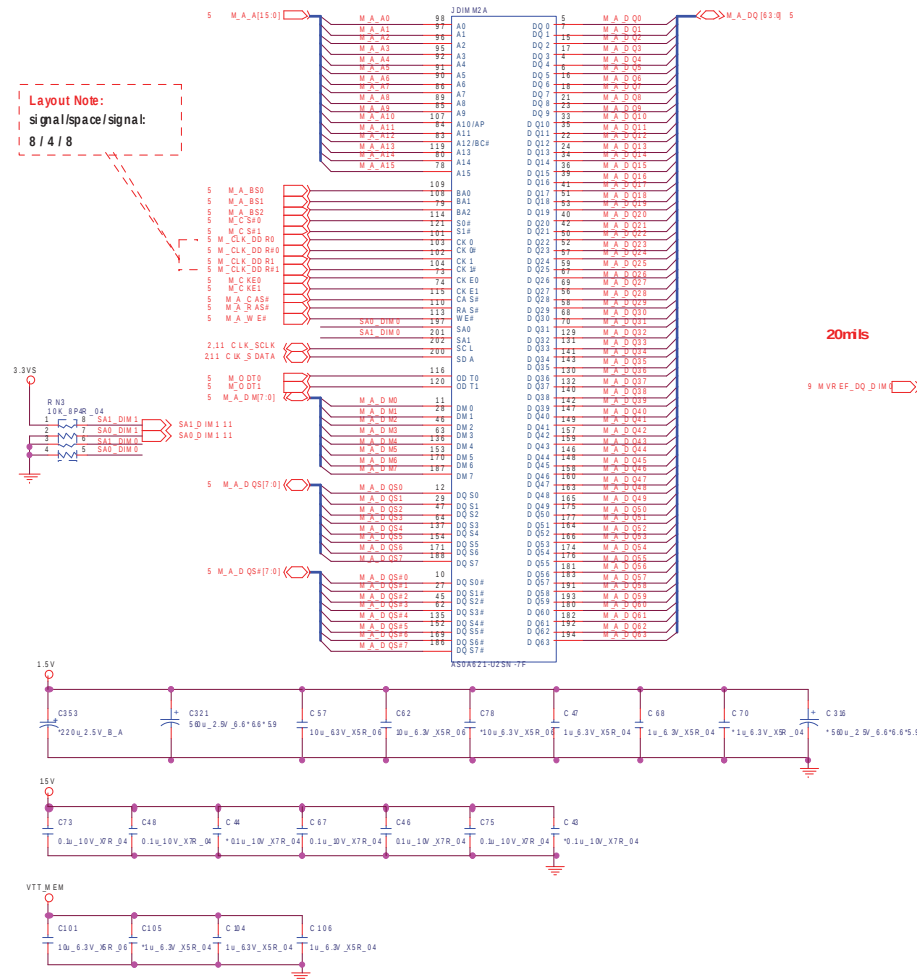
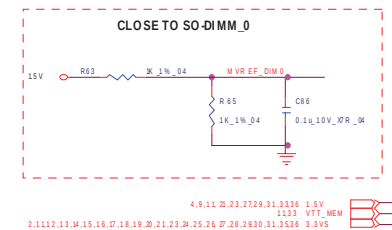
CFG7 R22 3.0K 04



## DDR3 SO-DIMM\_0

## SO-DIMM A

CHANGE TO STANDARD

Sheet 10 of 42  
DDR3 SO-DIMM\_0

## SO - DIMM B

**Layout Note:**  
signal/space/signal:  
8 / 4 / 8

Layout Note:

SO-DIMM\_1 is placed farther from the GMCH than SO-DIMM\_0

CLOSE TO SO-DIMM 1

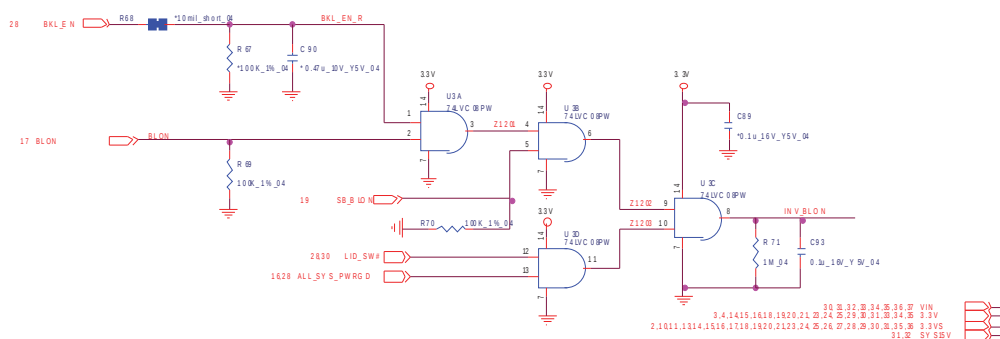
```

4,9,10,21,23,27,29,31,33,36 1.5V
10,33 VTT_MEM
3,24,25,26,27,28,29,30,31,35,36 3.3VS

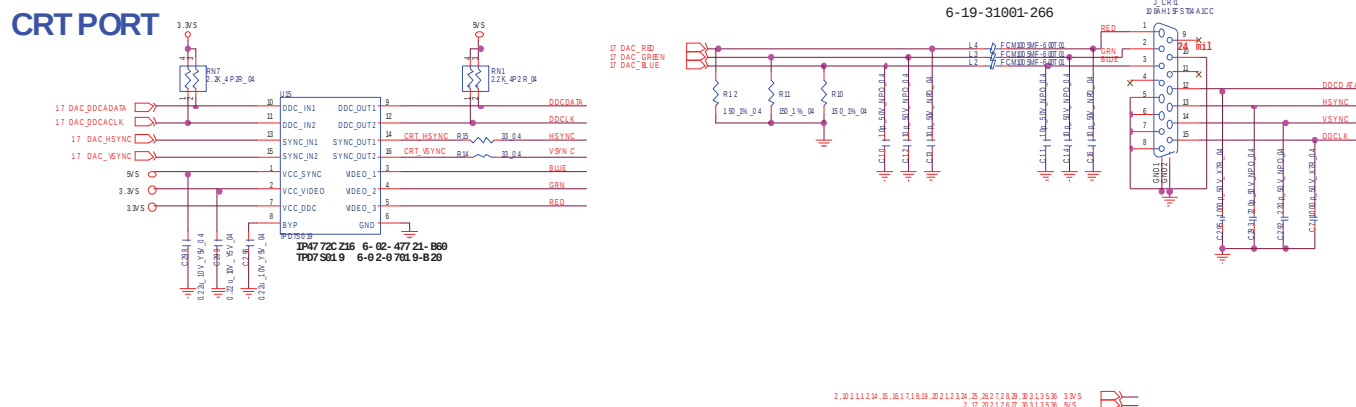
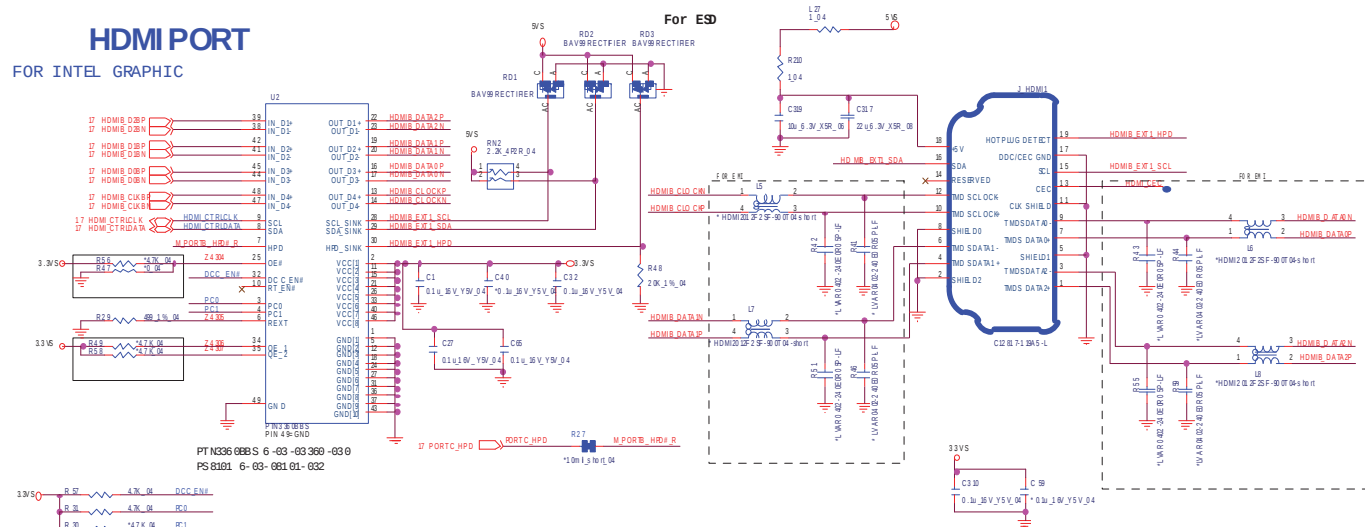
```

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## LVDS, Inverter B - 13



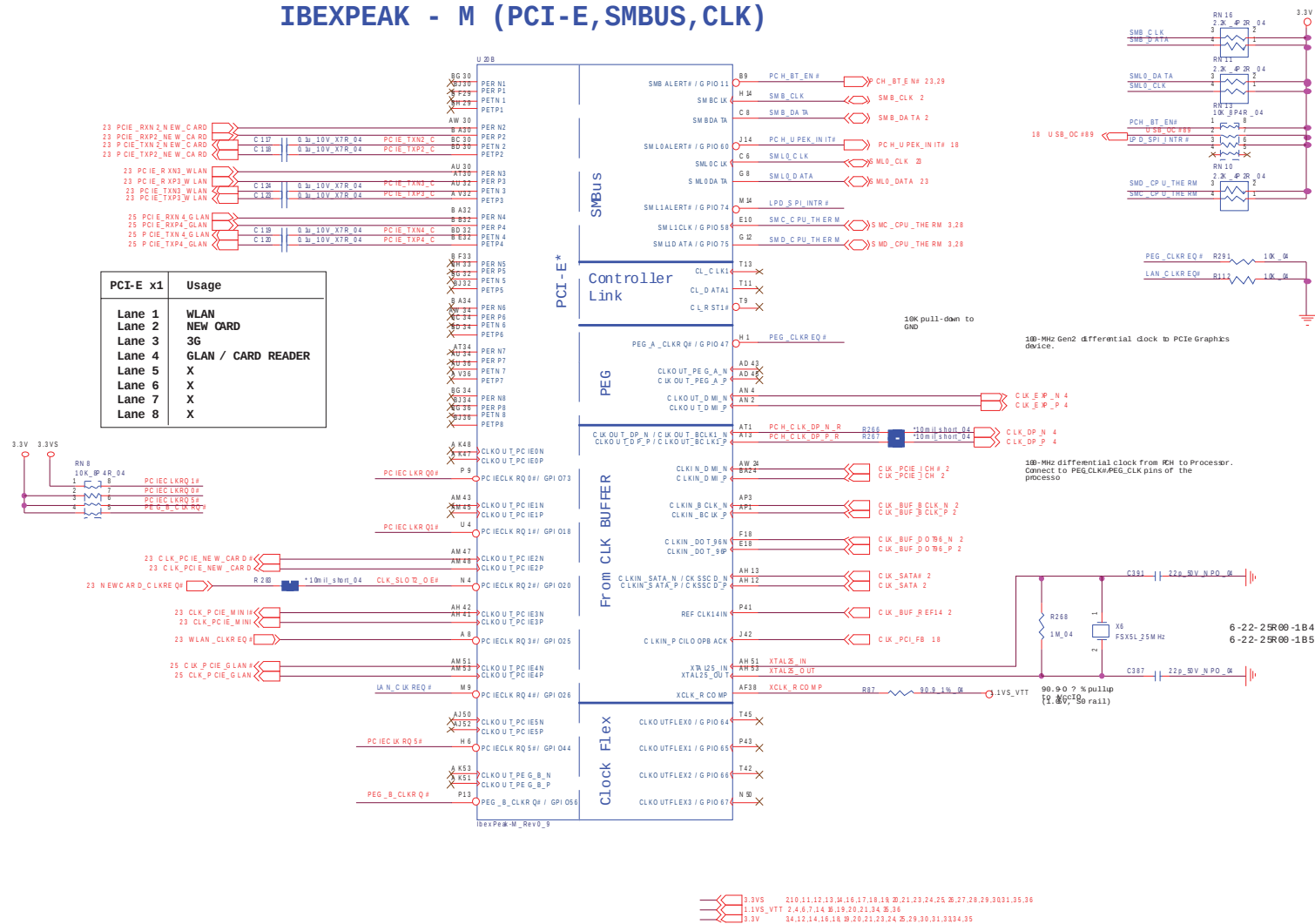
Sheet 13 of 42  
HDMI, CRT



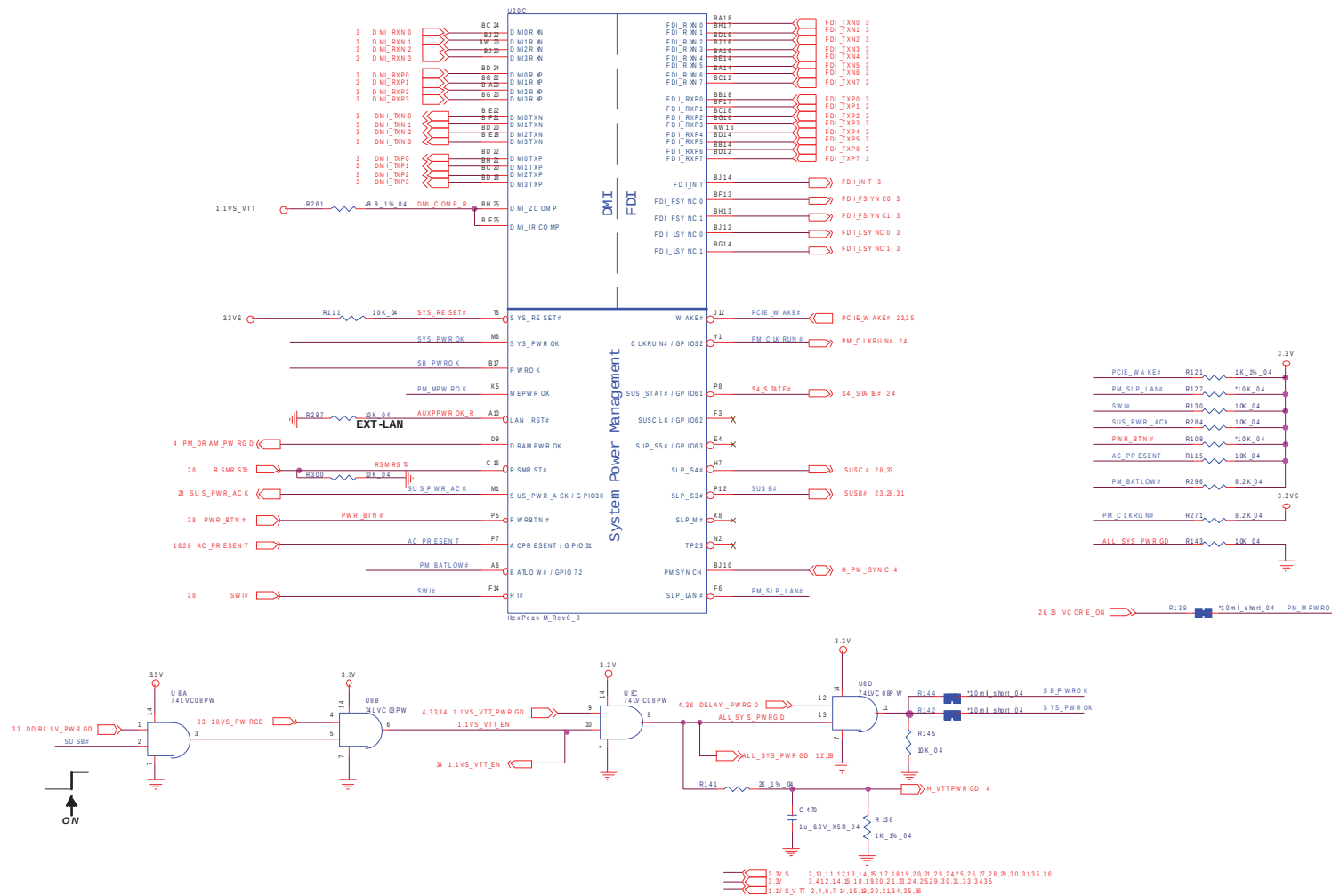
## IBEXPEAK - M (HDA, JTAG, SATA)



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

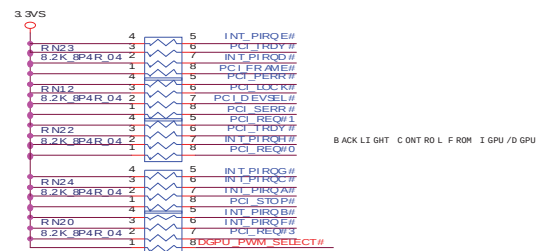
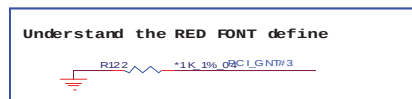
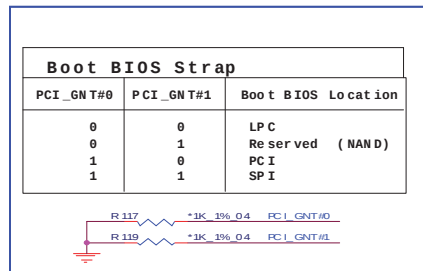


## IBEXPEAK - M (DMI, FDI, GPIO)

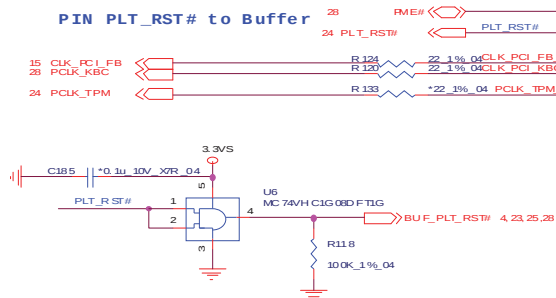




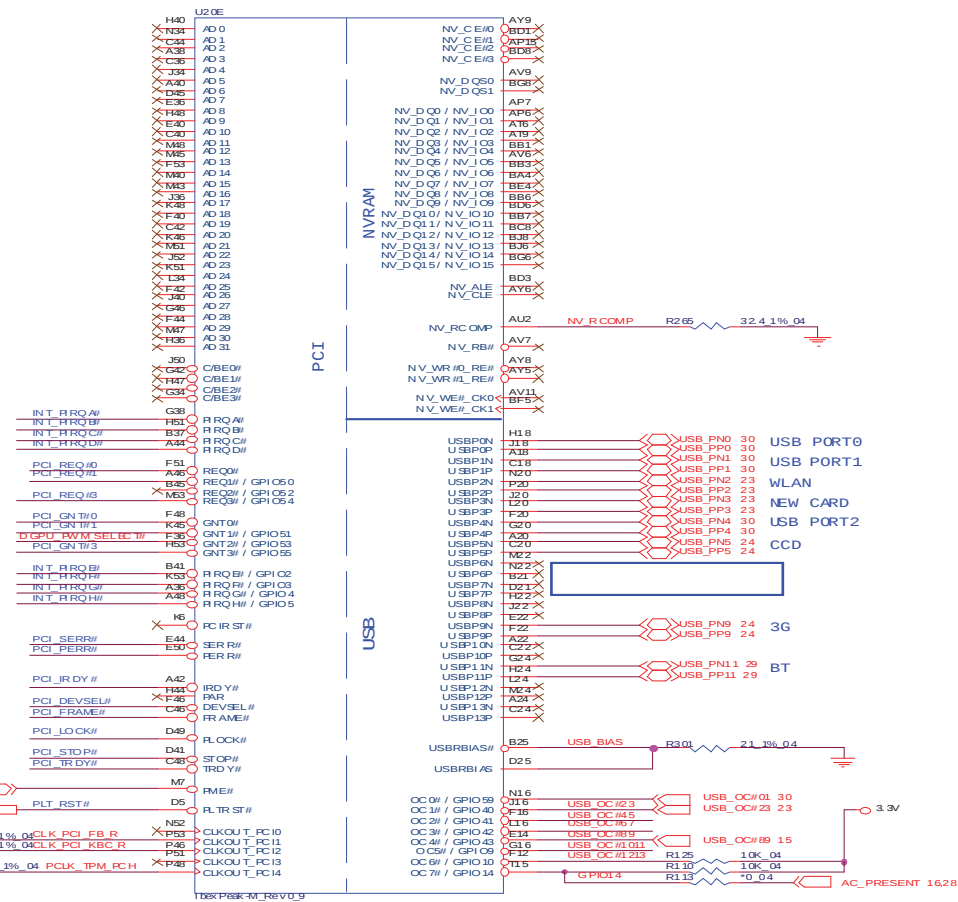
## IBEXPEAK - M 5/9



PIN PLT\_RST# to Buffer



## IBEXPEAK - M (PCI, USB, NVRAM)

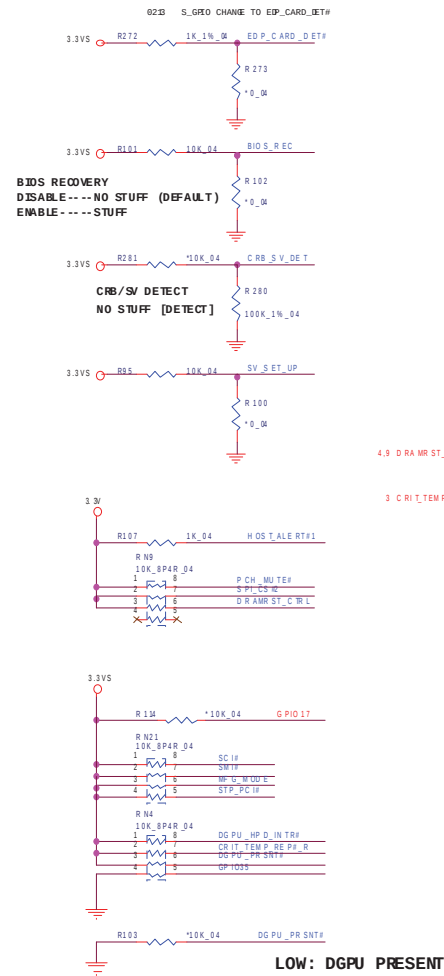
Sheet 18 of 42  
IBEXPEAK - M 5/9

## Schematic Diagrams

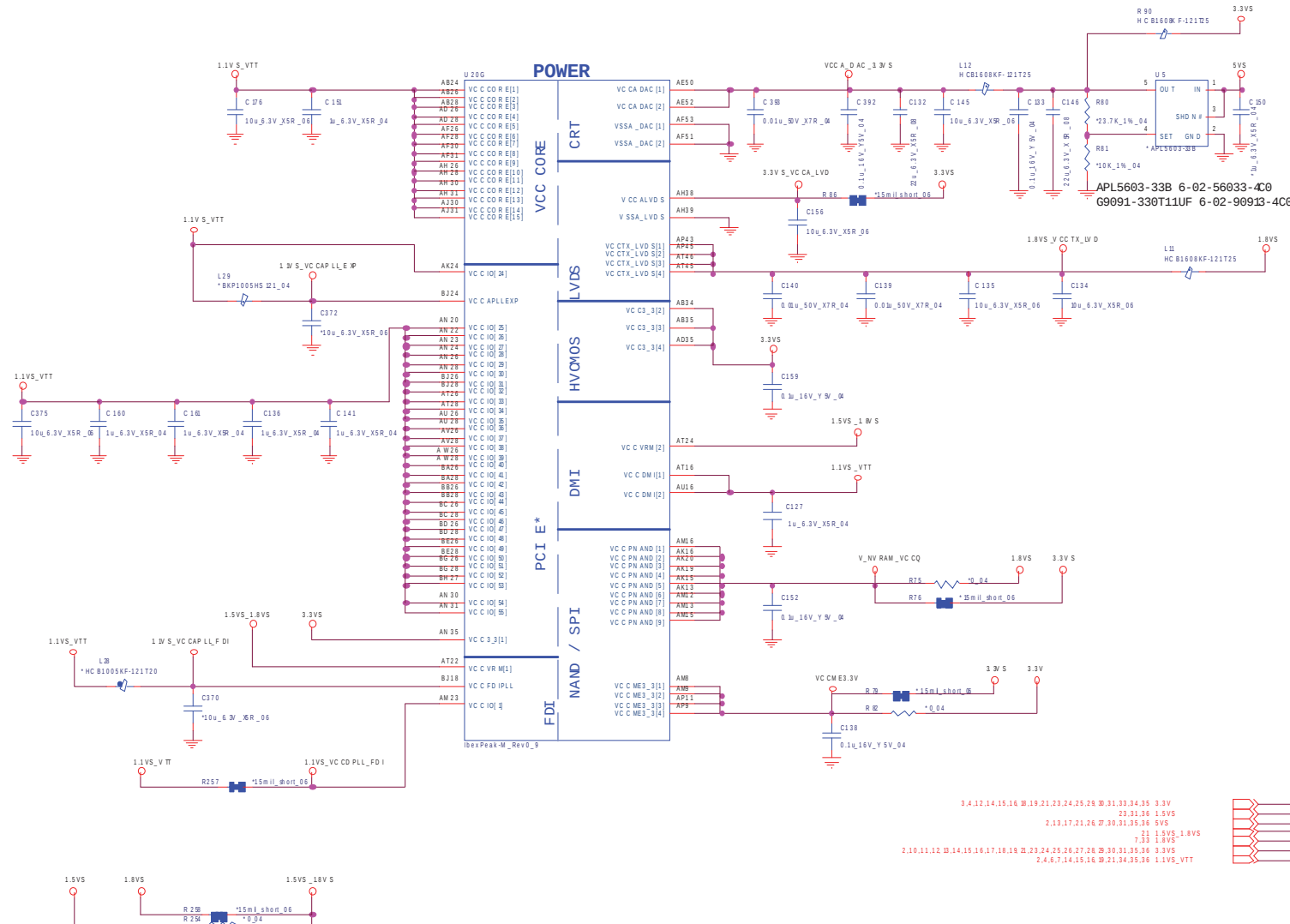
## IBEXPEAK - M 6/9

## IBEXPEAK - M (GPIO, VSS\_NCTF, RSVD)

Sheet 19 of 42  
IBEXPEAK - M 6/9

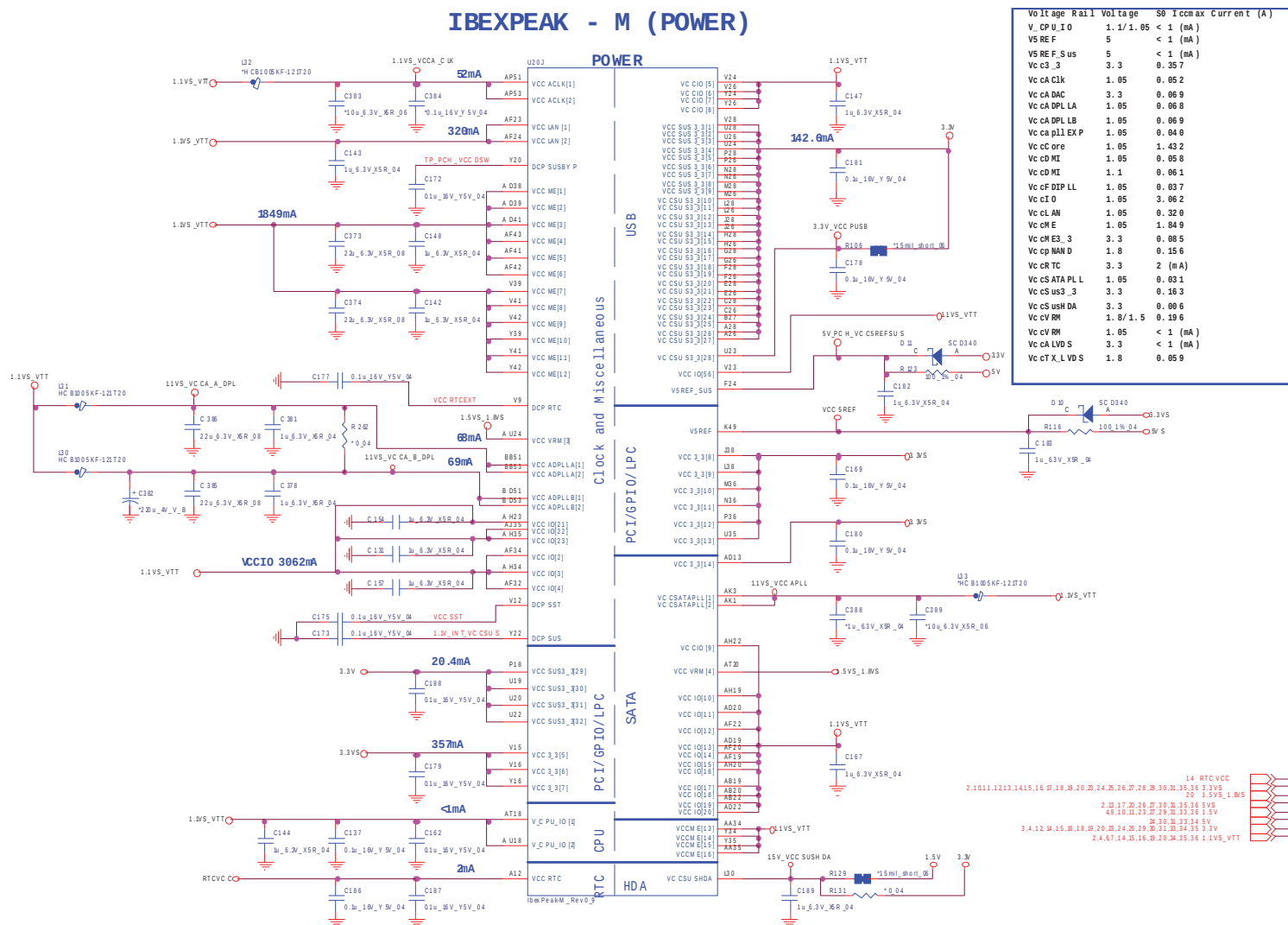


## IBEXPEAK - M (POWER)



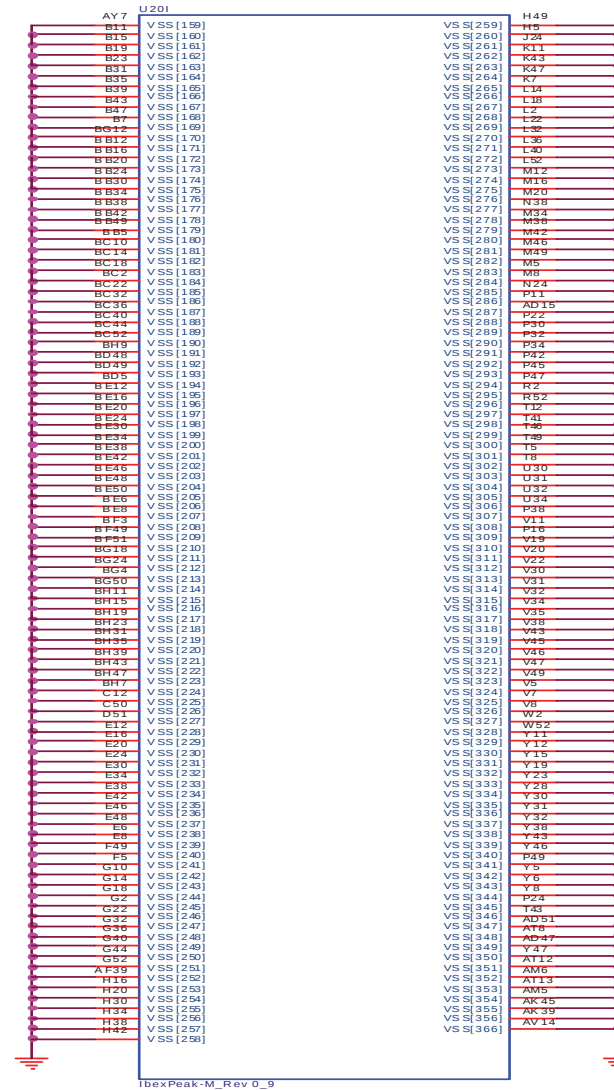
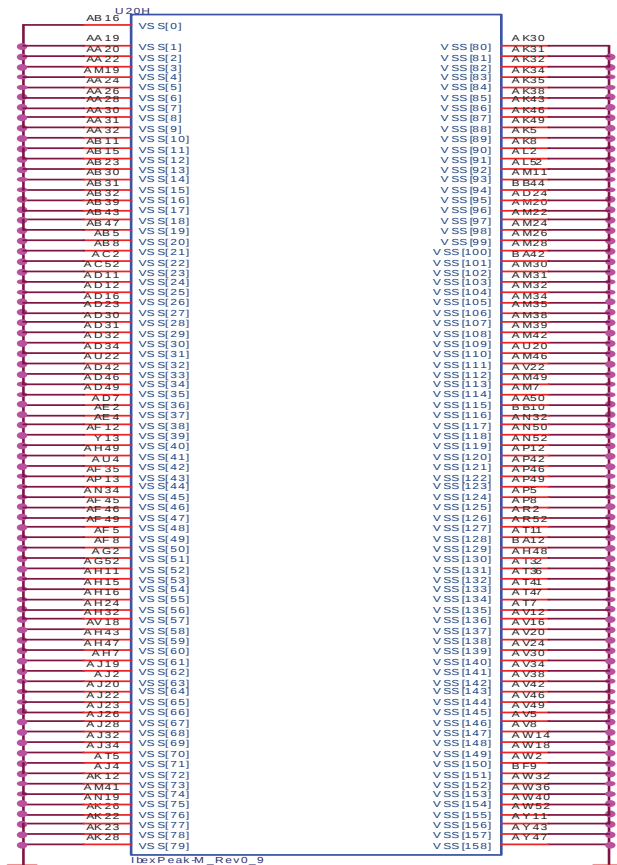
## B.Schematic Diagrams

Sheet 21 of 42  
IBEXPEAK - M 8/9



## IBEXPEAK - M 9/9

## IBEXPEAK - M (GND)

Sheet 22 of 42  
IBEXPEAK - M 9/9

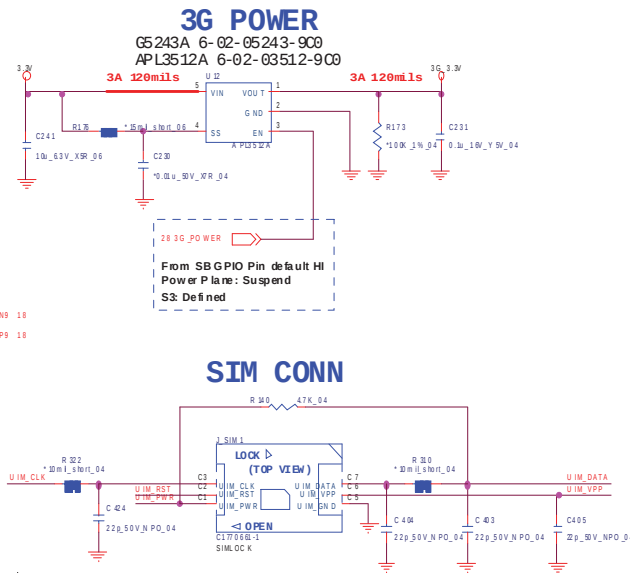
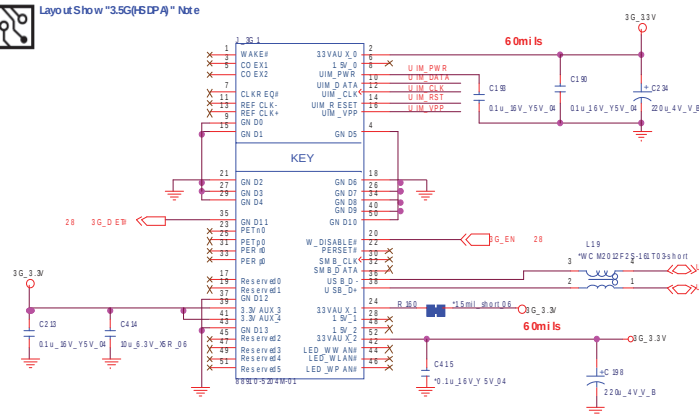


## 3G, CCD, TPM

## MINI CARD 3G(Port 6)



Layout Show "3G(Port 6)" Note

Sheet 24 of 42  
3G, CCD, TPM

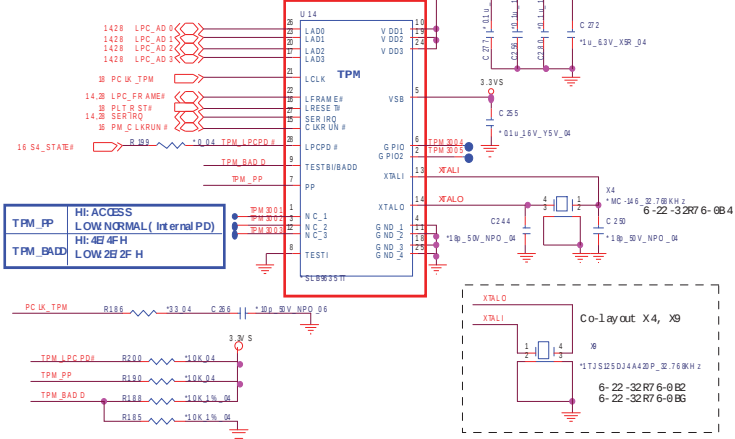
B.Schematic Diagrams

## TPM 1.2

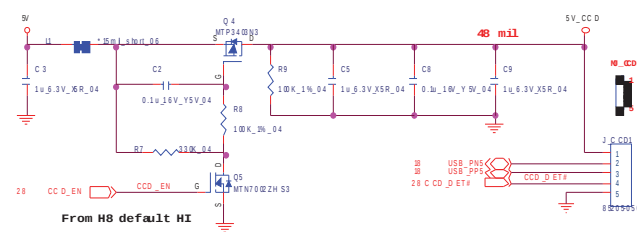
Assest before entering S3

LPC reset timing:

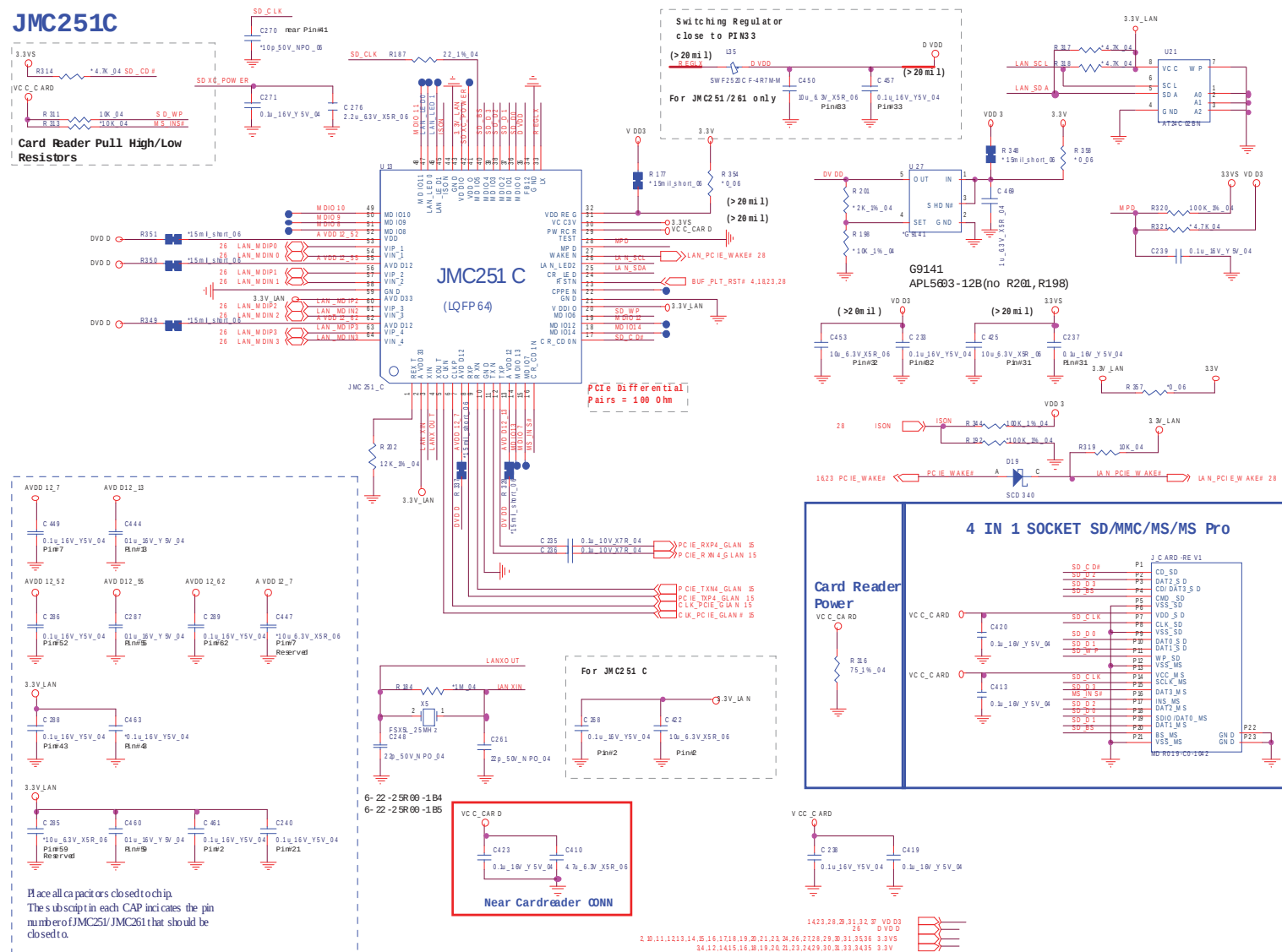
LPCPD# inactive to LRS7# inactive 32-96us



## CCD



## Card Reader/LAN JMB251C



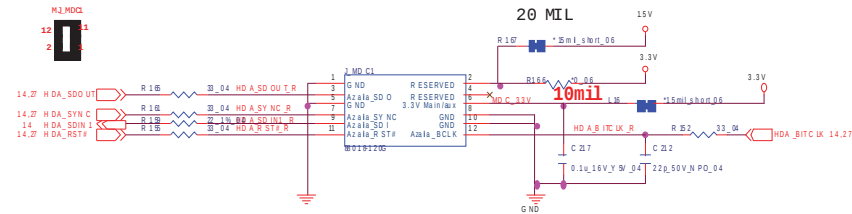
[illegible]



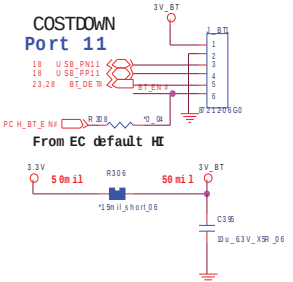
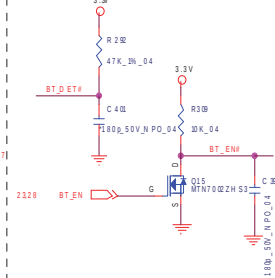
[illegible]

## Schematic Diagrams

## LED, MDC, BT

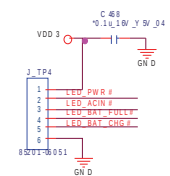
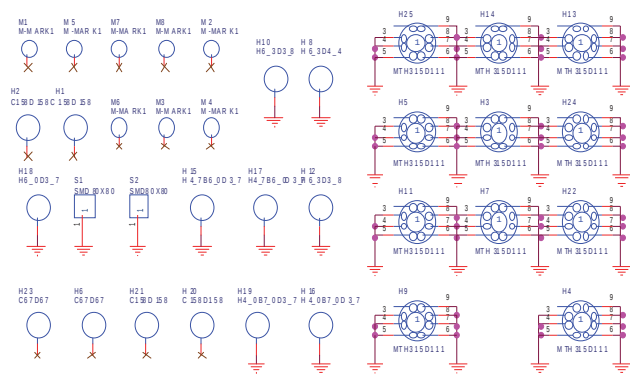
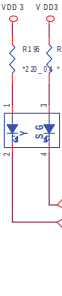
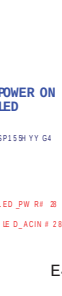
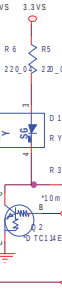
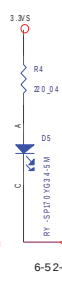
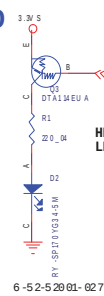


## Bluetooth(Port8)



Sheet 29 of 42  
LED, MDC, BT

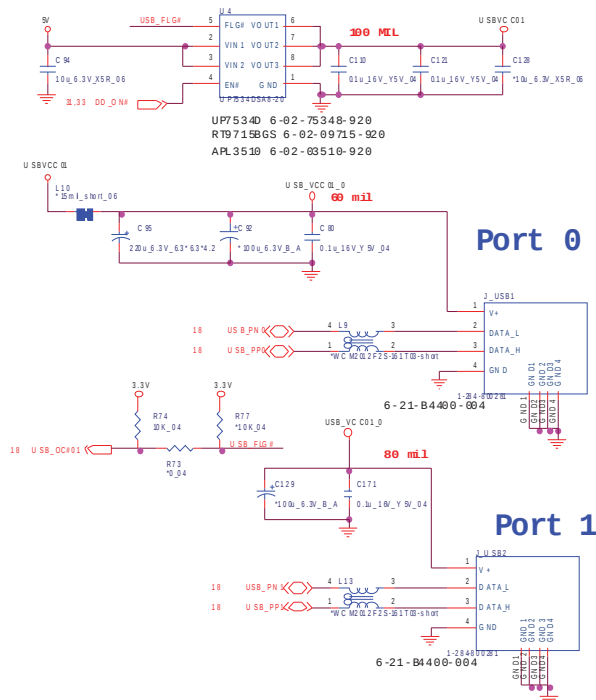
## LED



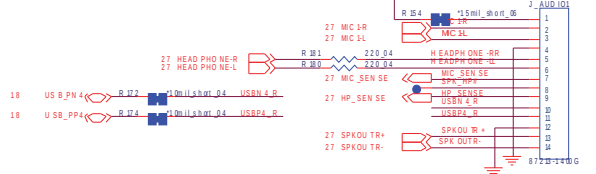
<http://hobi-elektronika.net>

# USB, Fan, TP, Multi-Conn

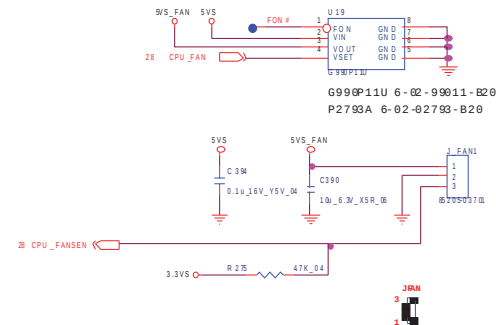
## USB PORT\*2(Port 0,Port1)



## Audio/B CONN.(Port 2) FOR AUDIO BOARD

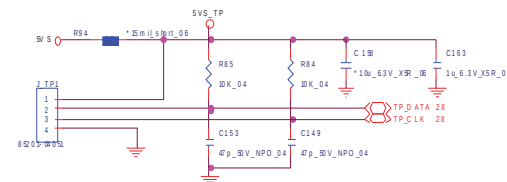


## FAN CONTROL



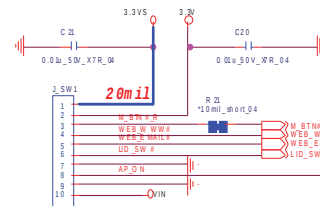
## CLICK CONN

## FOR CLICK BOARD

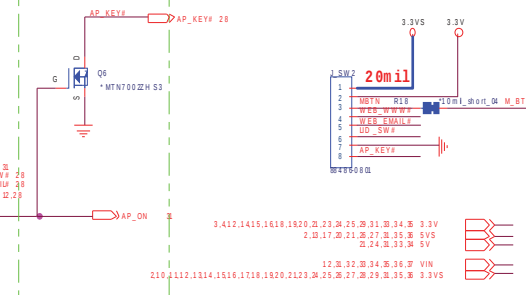


## POWER SWITCH CONN.

## FOR POWER SWITCH BOARD



## CLOSE TO J\_SW1

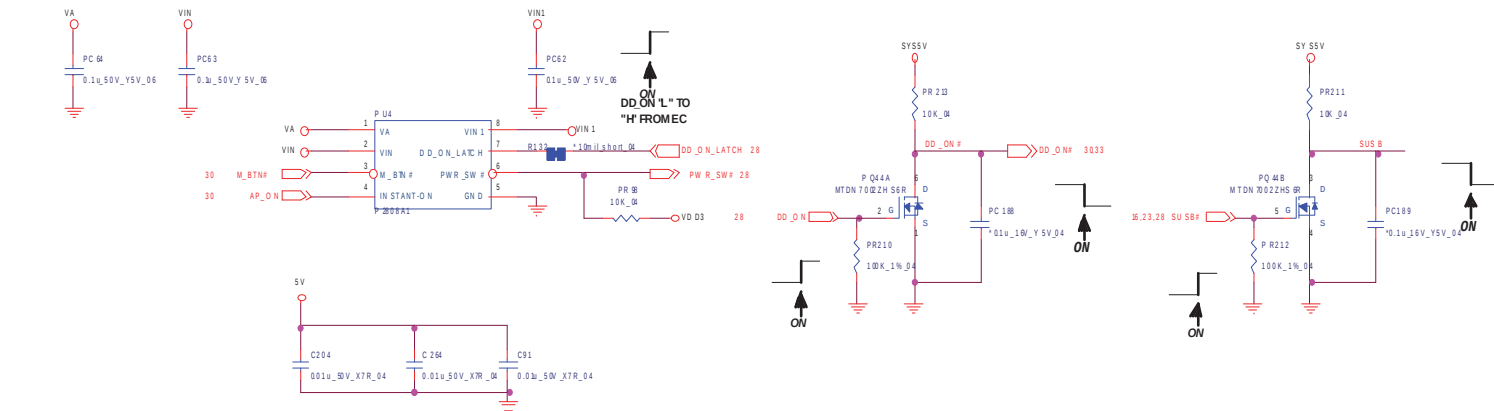


If system has APON function, uses J\_Sw1  
If system has no APON function, uses J\_Sw2

Sheet 30 of 42  
USB, Fan, TP,  
Multi-Conn

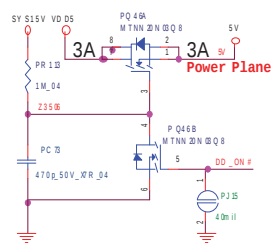
## Schematic Diagrams

## 5VS, 3VS, 1.5VS

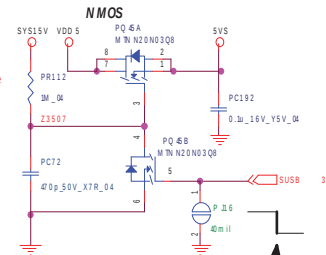


Sheet 31 of 42  
5VS, 3VS, 1.5VS

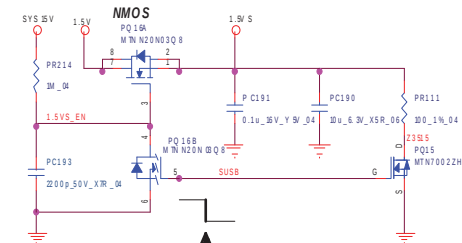
## 5V



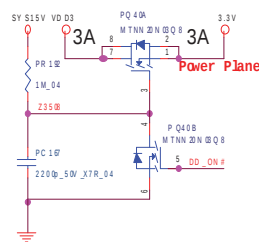
## 5VS



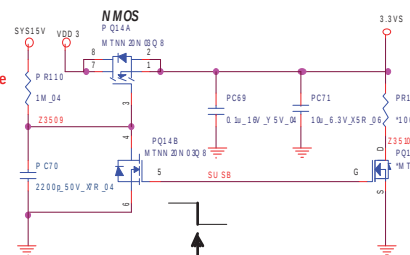
## 1.5VS



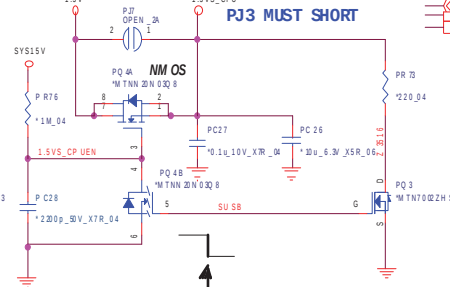
## 3.3V



## 3.3VS



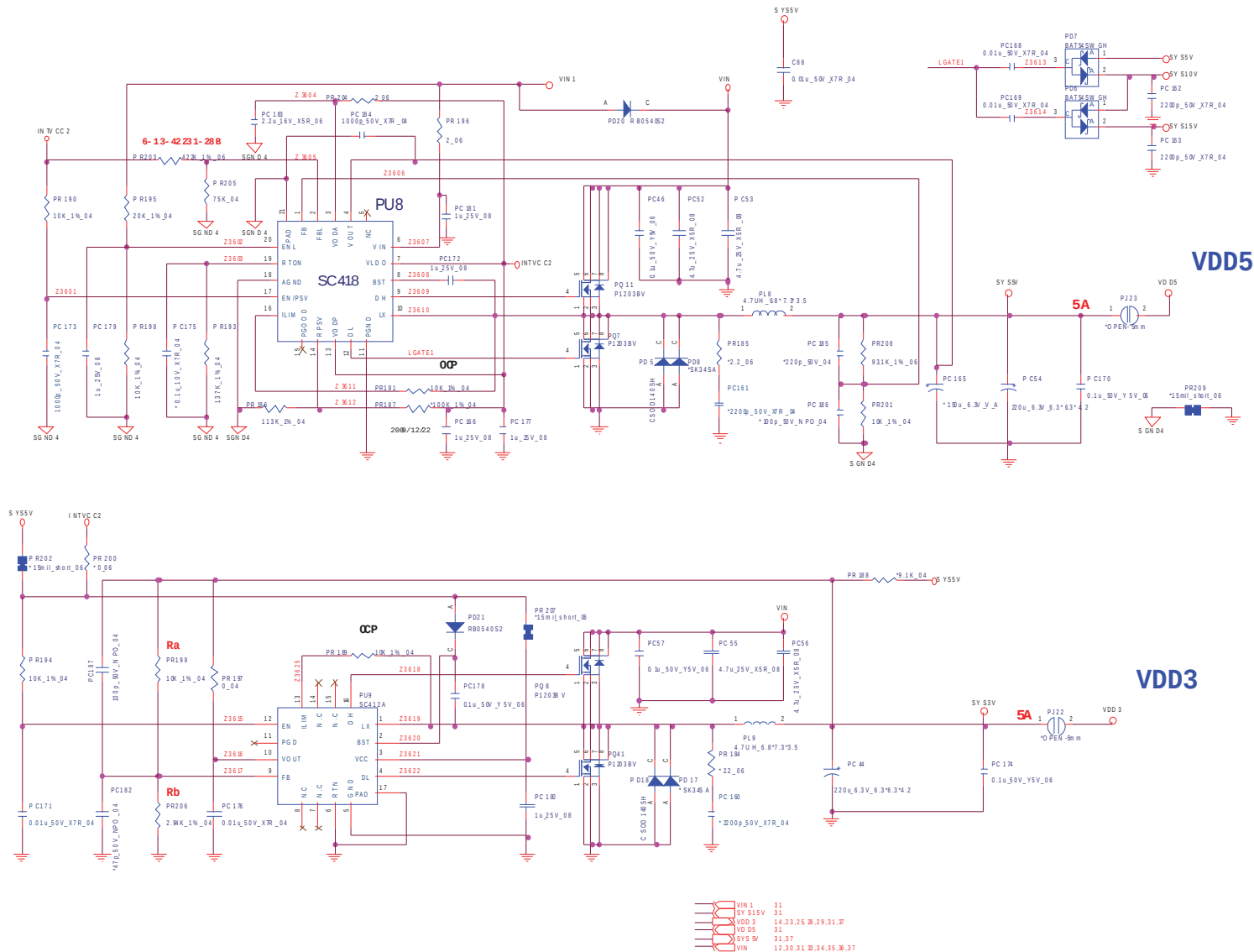
## 1.5VS\_CPU



|           |                                                                  |
|-----------|------------------------------------------------------------------|
| VA        | 37                                                               |
| 1.5VS_CPU | 4,7                                                              |
| 1.5V      | 4,5,10,11,21,23,27,29,30,36                                      |
| 1.5VS     | 20,23,36                                                         |
| SY55V     | 32,37                                                            |
| 5V        | 21,24,30,33,34                                                   |
| 3.3V      | 9,4,12,14,15,16,18,19,20,21,23,24,25,26,30,33,34,35              |
| VIN1      | 32                                                               |
| VDD5      | 12,30,32,33,34,35,36,37                                          |
| VDD3      | 12,23,25,26,28,32,37                                             |
| 3.3VS     | 2,10,11,12,13,14,15,16,17,18,19,20,21,22,24,25,27,28,29,30,36,36 |
| SY515V    | 32                                                               |
| 5VS       | 2,13,17,20,21,26,27,30,35,36                                     |

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# Power 3.3V/5V



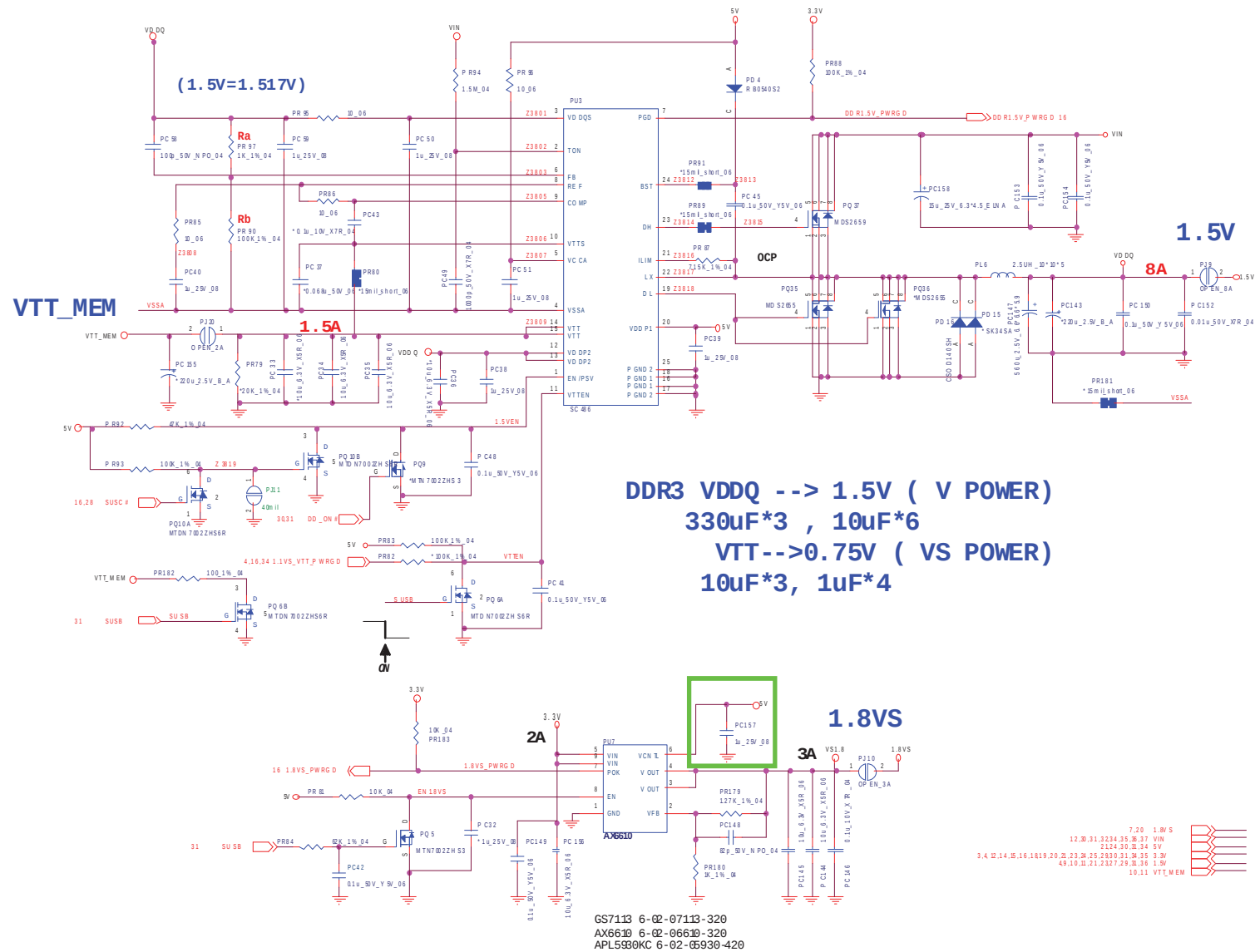
Sheet 32 of 42  
Power 3.3V/5V

<http://hobi-elektronika.net>

## Schematic Diagrams

## Power 1.5V/0.75V, 1.8VS

Sheet 33 of 42  
Power 1.5V/0.75V,  
1.8VS



<http://hobi-elektronika.net>

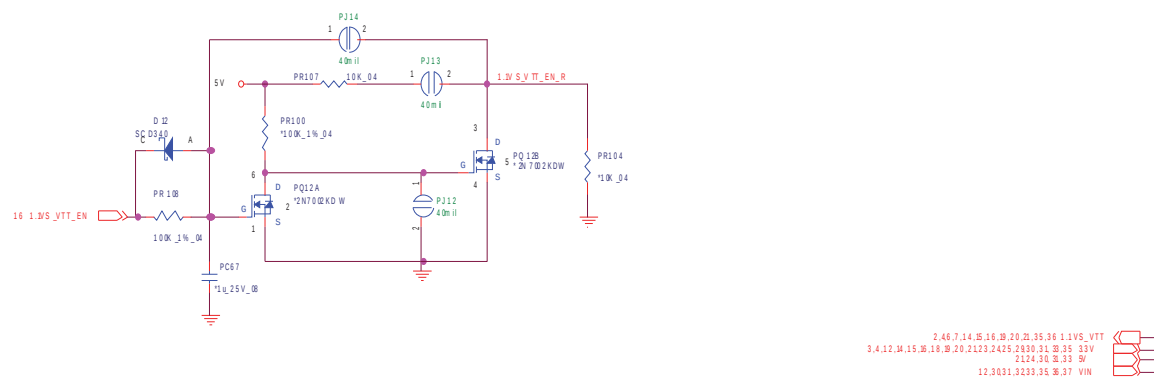
1.1VS\_VTT = 0.75 X (1 + PR101 / PR102)

1.1VS\_VTT

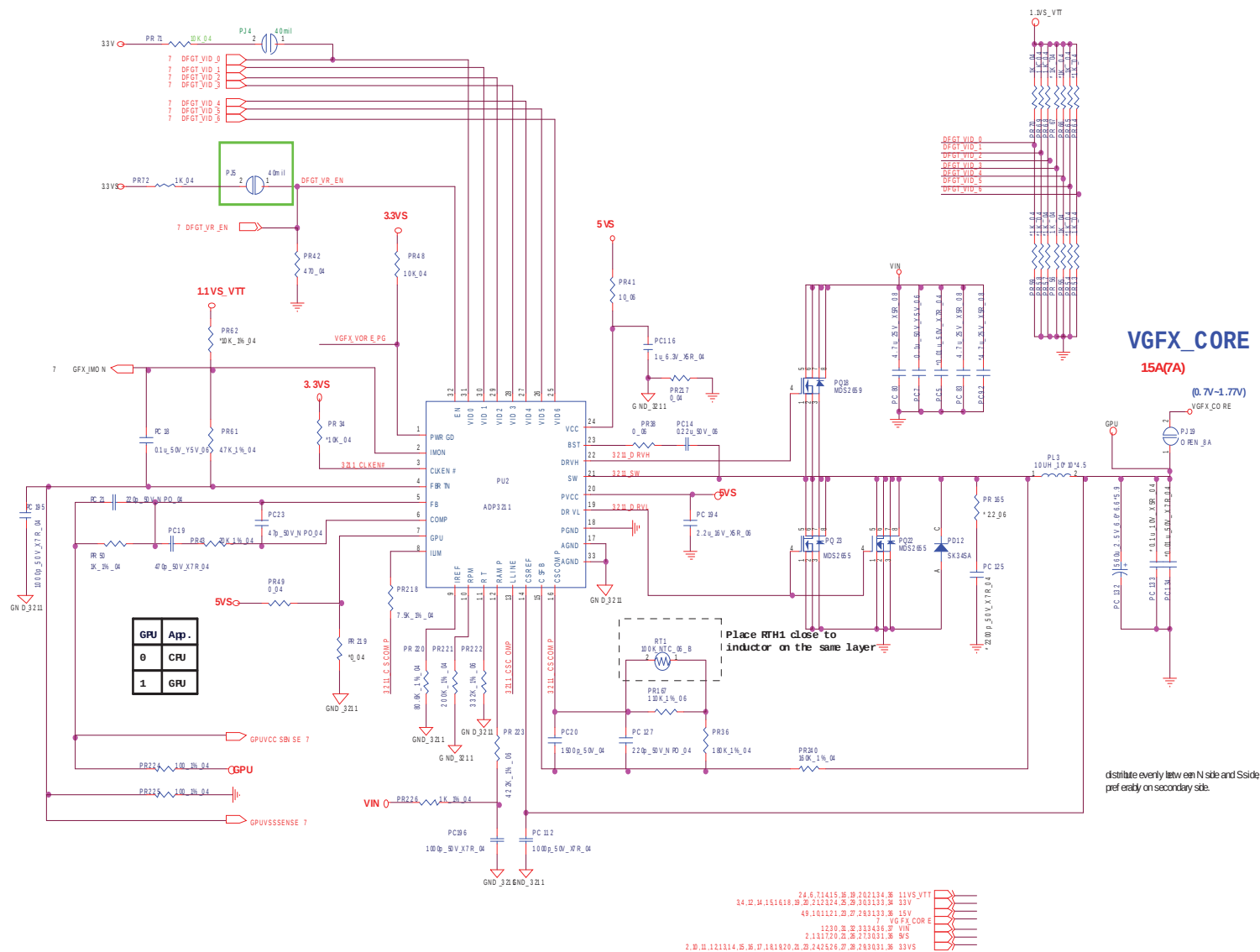
25A(1.5A)

1.1VS\_VTT = 1.067V

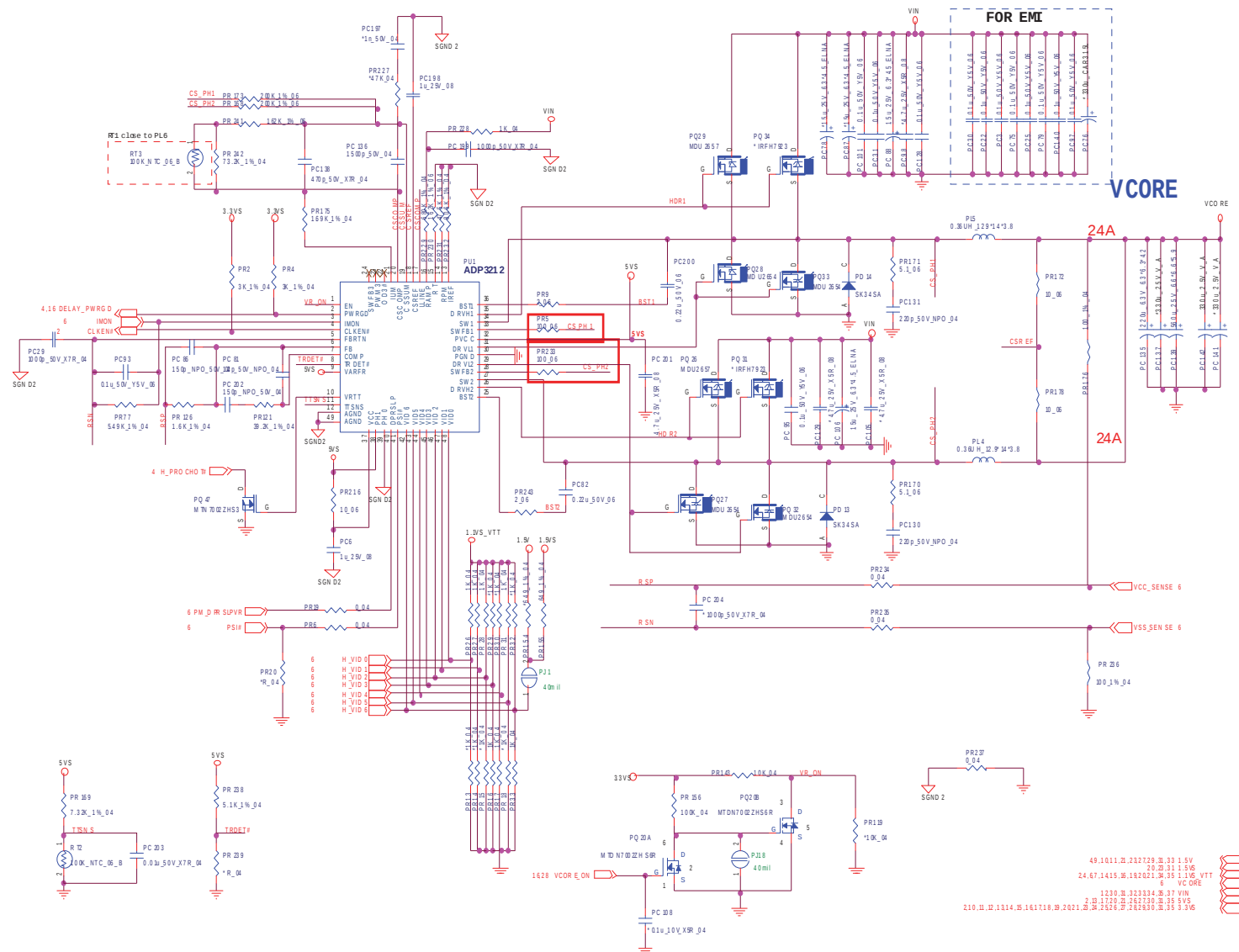
## B.Schematic Diagrams



Sheet 35 of 42  
Power VGFX\_Core



## V-Core B - 37

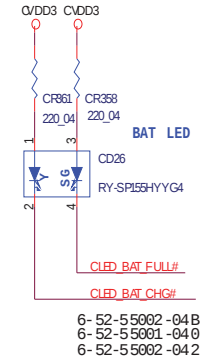
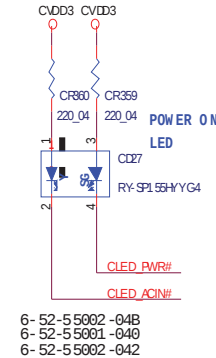
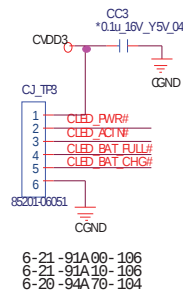
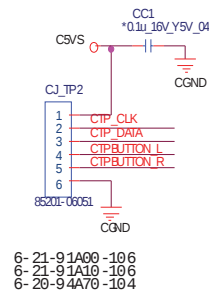
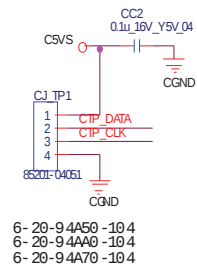


## CHARGER

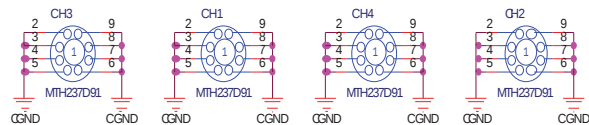
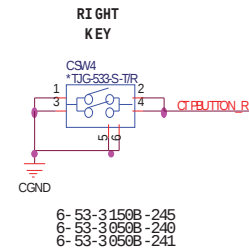
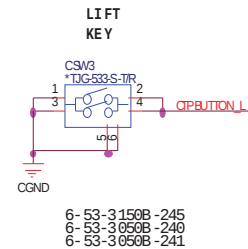
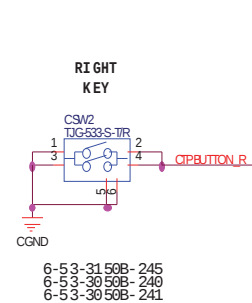
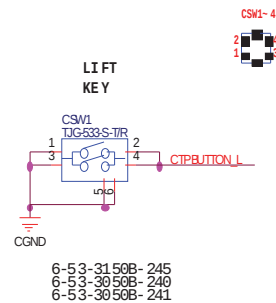
[illegible]

# Click Board

## CLICK BOARD



E5120Q



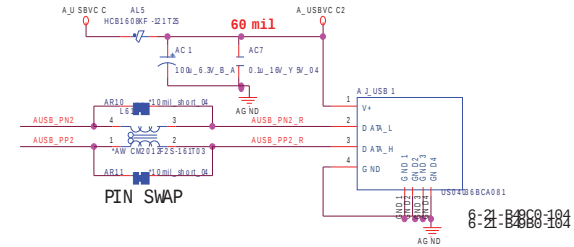
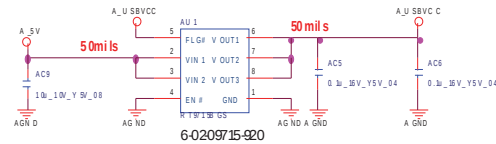
<http://hobi-elektronika.net>

Sheet 38 of 42  
Click Board

## Schematic Diagrams

# Audio Board/USB

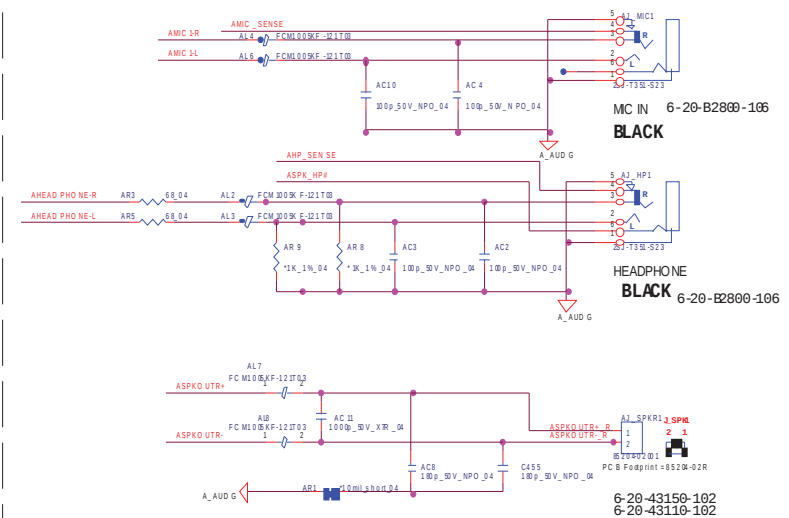
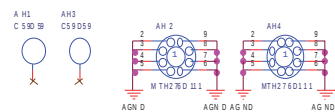
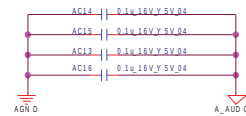
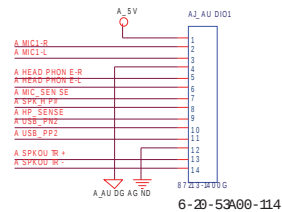
## USB PORT



## TO M/B

## AUDIO JACK

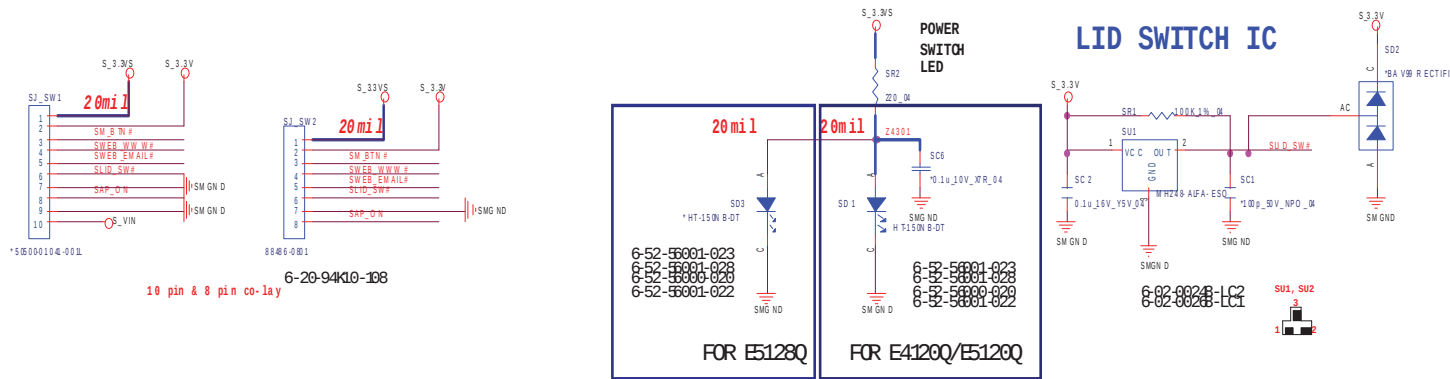
Sheet 39 of 42  
Audio Board/USB



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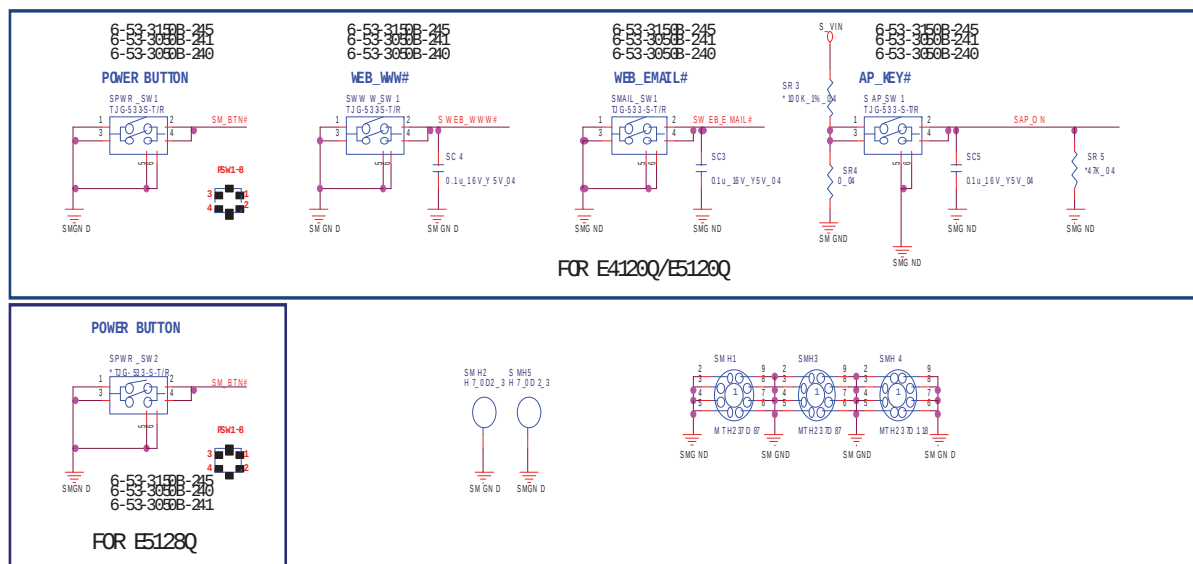
# Power Switch & LED Board

## POWER SW & LED & HOT KEY



Sheet 40 of 42  
Power Switch &  
LED Board

## HOT KEY

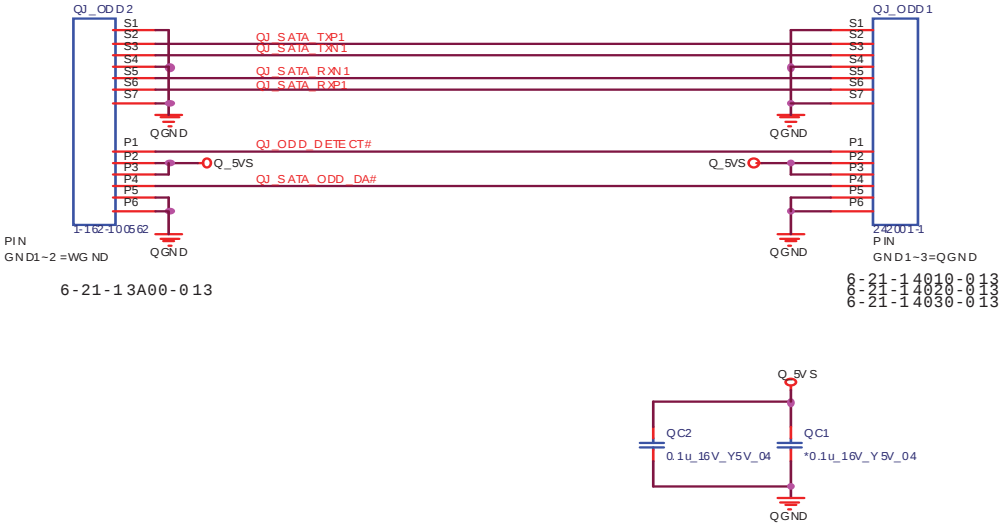


<http://hobi-elektronika.net>

# External ODD Board

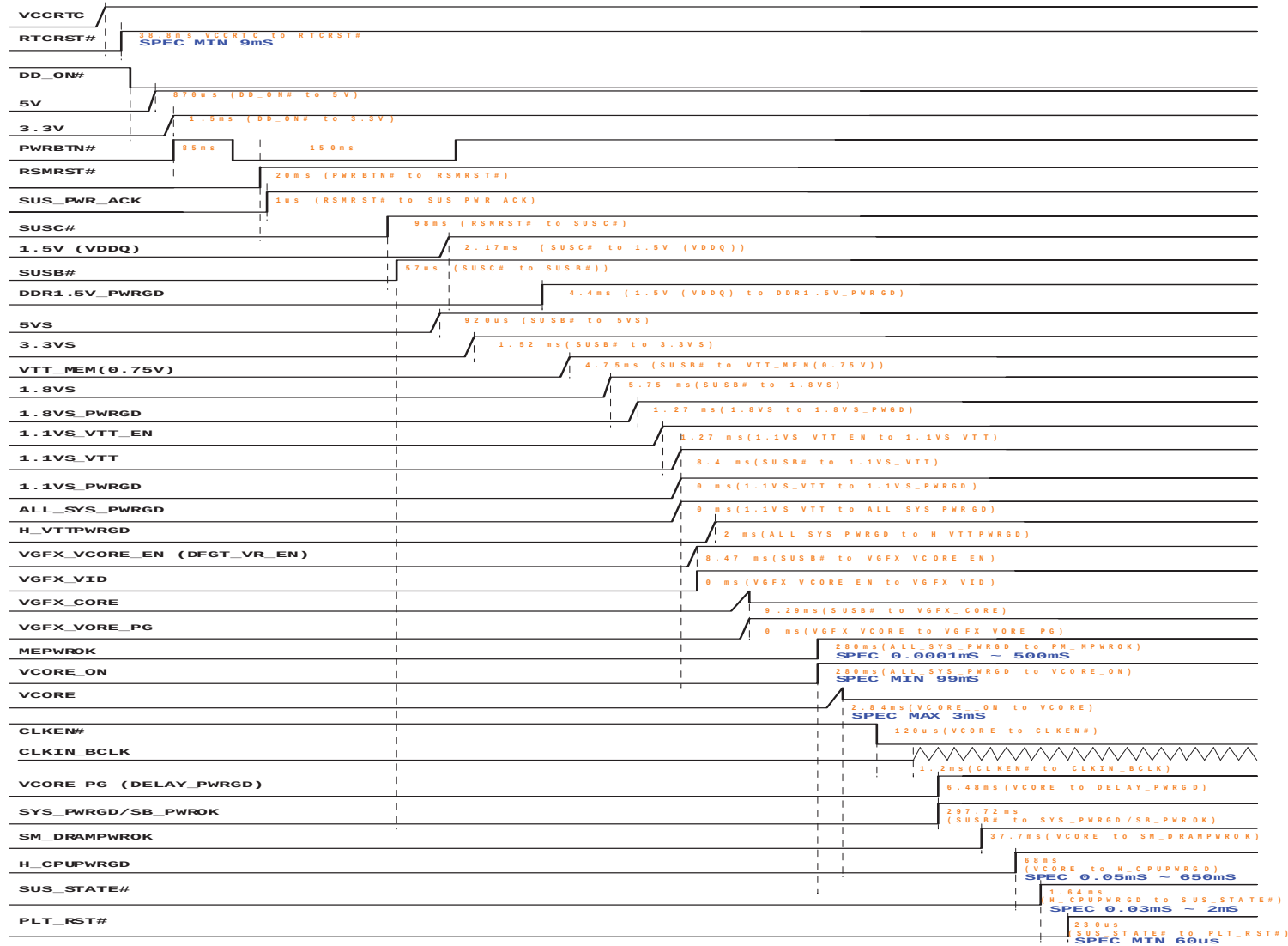
## ODD BOARD FOR E5120Q

Sheet 41 of 42  
External ODD  
Board



## Sequence

## E5120Q D02 POWER SEQUENCE


<http://hobi-elektronika.net>
Sheet 42 of 42  
Sequence



# 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](http://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.

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### 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).

## BIOS Update

### 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.