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# MS-7366 Micro ATX

Version: 0A

**CPU:** Intel Pentium 4 Cedar Mill / Prescott , Pentium D Smithfield / Presler and Conroe / Kentsfield family processors in LGA775 Package.

## System Chipset:

**NVIDIA MCP73**

## On Board Device:

BIOS -- SPI Flash 8M  
 Azalia Codec -- ALC888  
 LPC Super I/O -- FINTEK F71882FG  
 LAN -- Realtek RTL8211BL-GR  
 CLOCK Gen -- Integrated in MCP73  
 1394 Controller -- VT6308P

## Main Memory:

Dual-channel DDR-II \* 2 (Max 4GB)

## Expansion Slots:

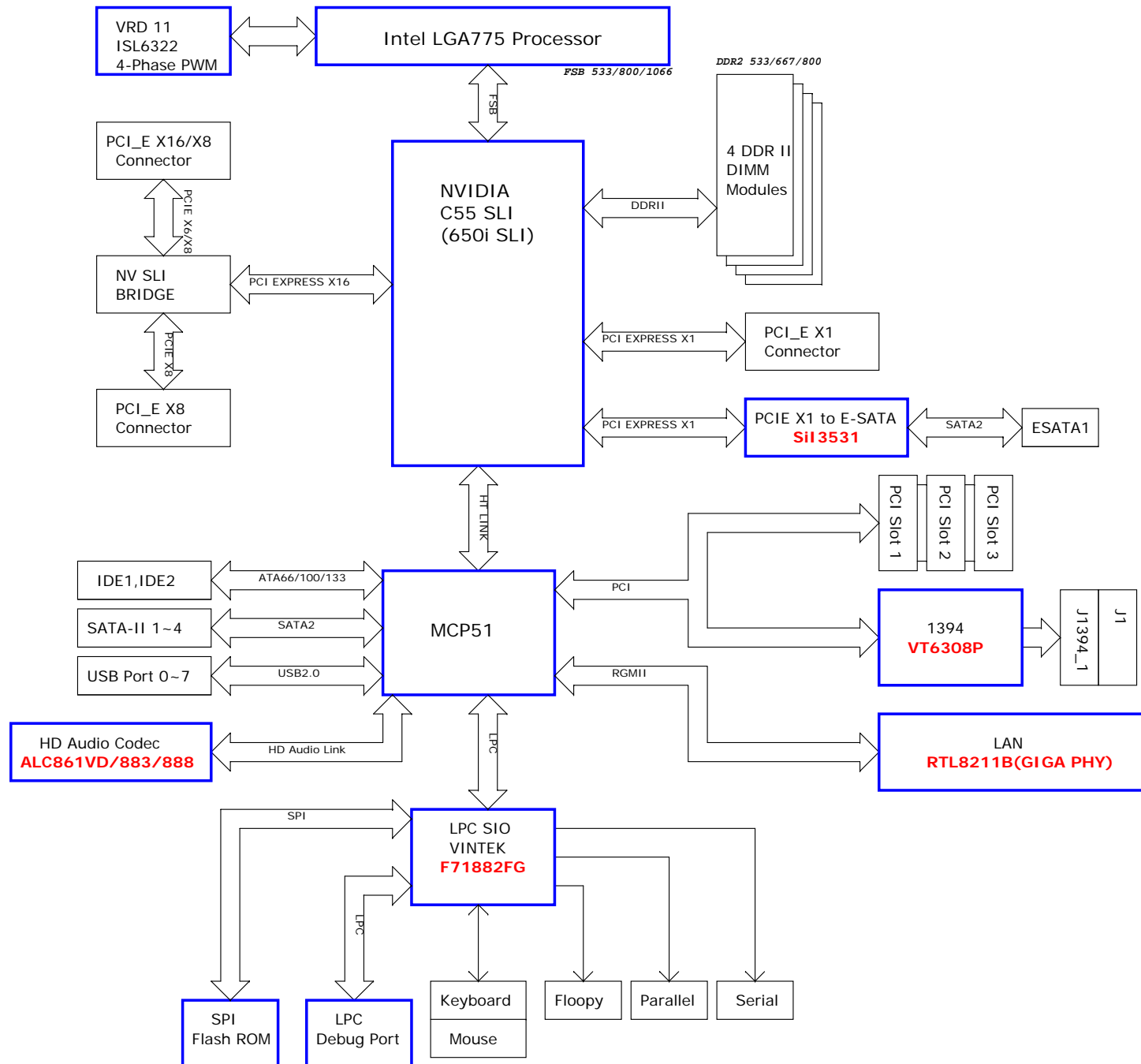
PCI EXPRESS X16 SLOT \*1  
 PCI EXPRESS X1 SLOT \* 1  
 PCI SLOT \* 2

## Intersil PWM:

Controller: Intersil ISL6322 (4 Phases)  
 Driver: Intersil ISL6612

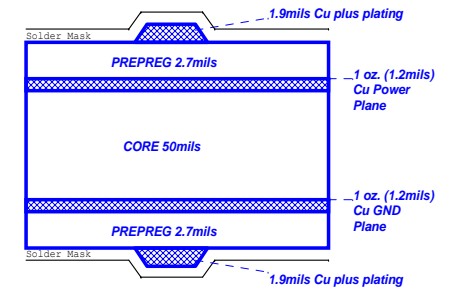
	Function	Orcad Configure	BOM
0A	MCP73PV/F71882FG/ALC888/RTL8211BL/VT6308	cfg-PV	601-7366-xx
M1/0A	MCP73PV/F71882FG/ALC888/RTL8211BL/VT6308	CFG-M1	

# Block Diagram



## Board Stack-up

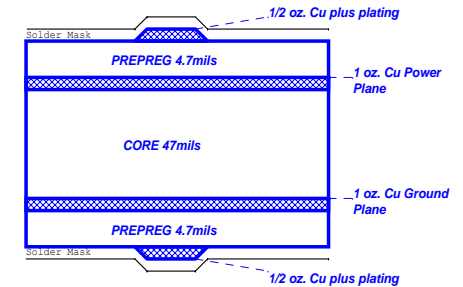
(1080 Prepreg Considerations)



Single End 50ohm Top/Bottom : 4mils  
 USB2.0 - 90ohm : 15/4.5/7.5/4.5/15  
 SATA - 95ohm : 15/4/8/4/15  
 LAN - 100ohm : 15/4/8/4/15  
 PCIE - 95ohm : 15/4/8/4/15  
 IEEE1394 - 110ohm : 15/4/9/4/15  
 IDE : 15/4/8/4/15

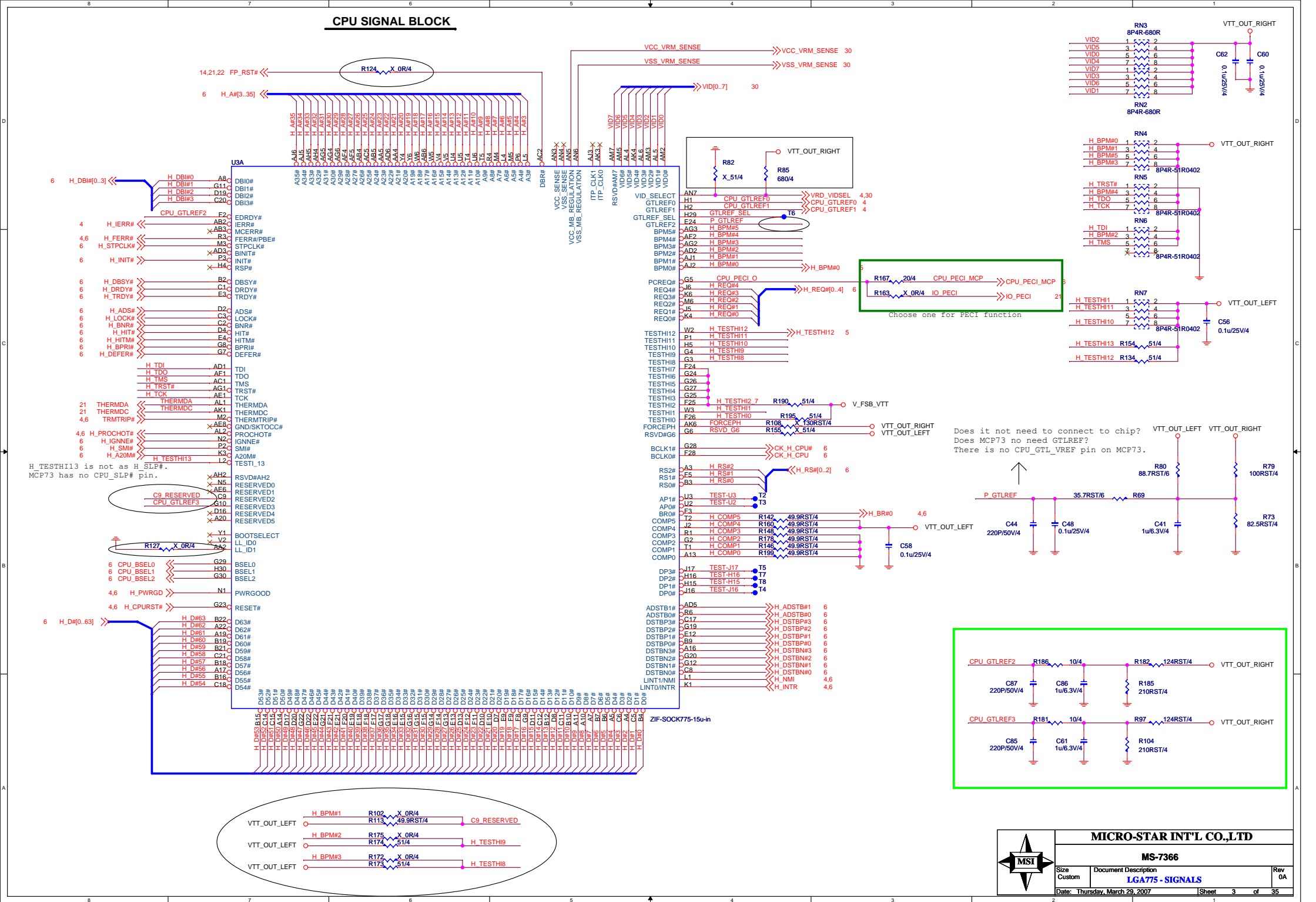
## Board Stack-up

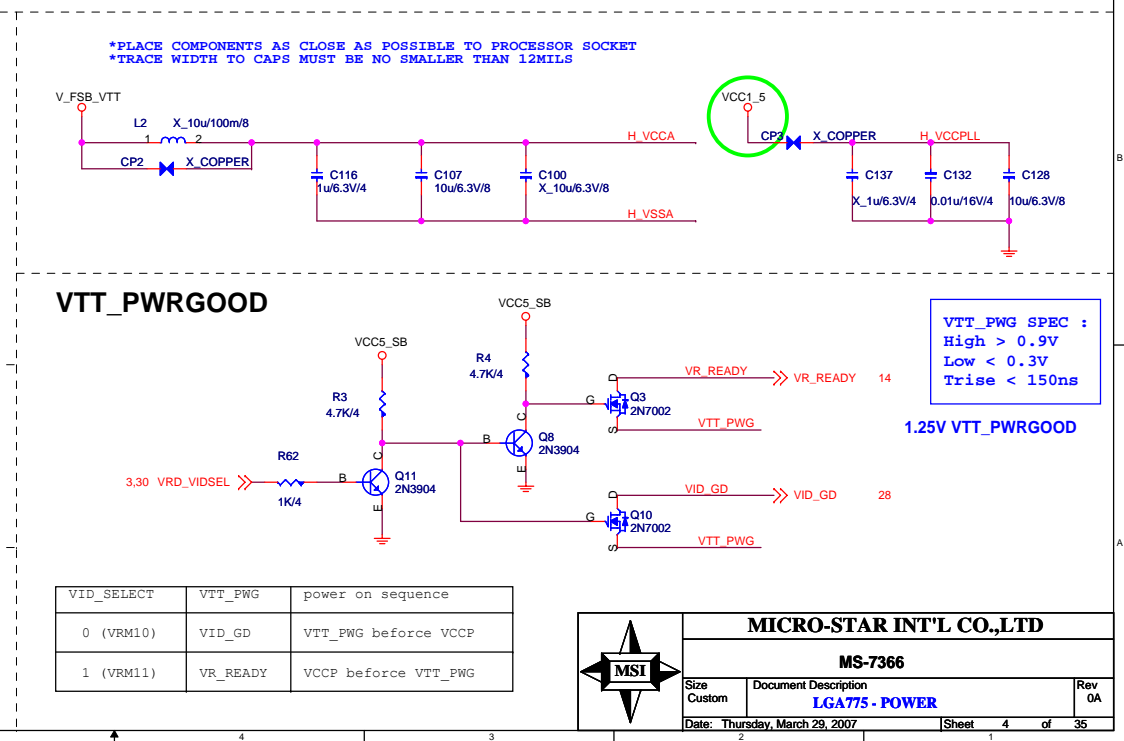
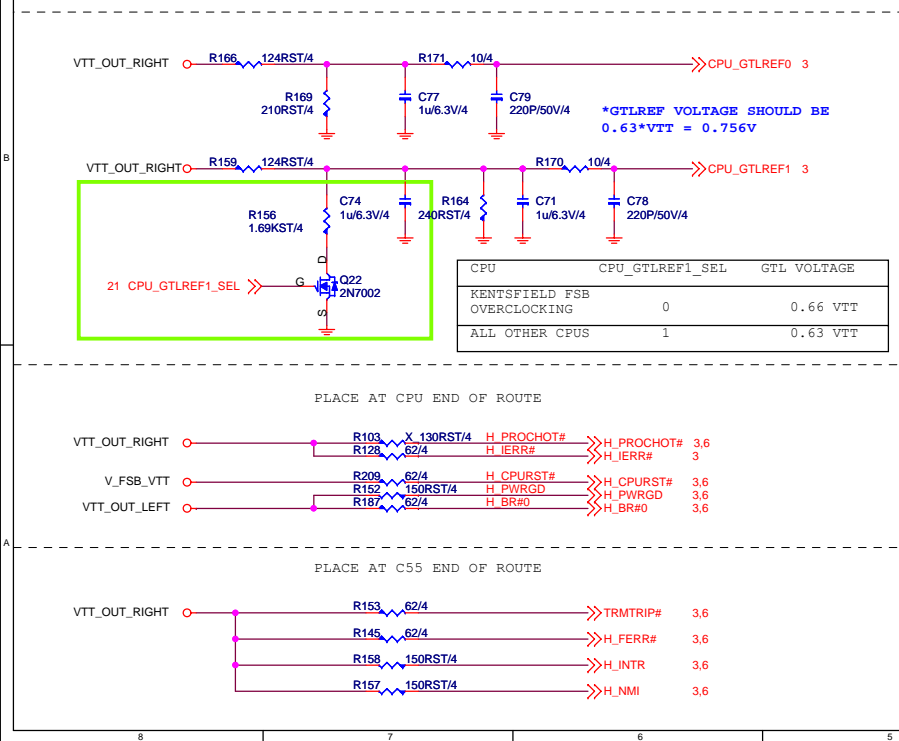
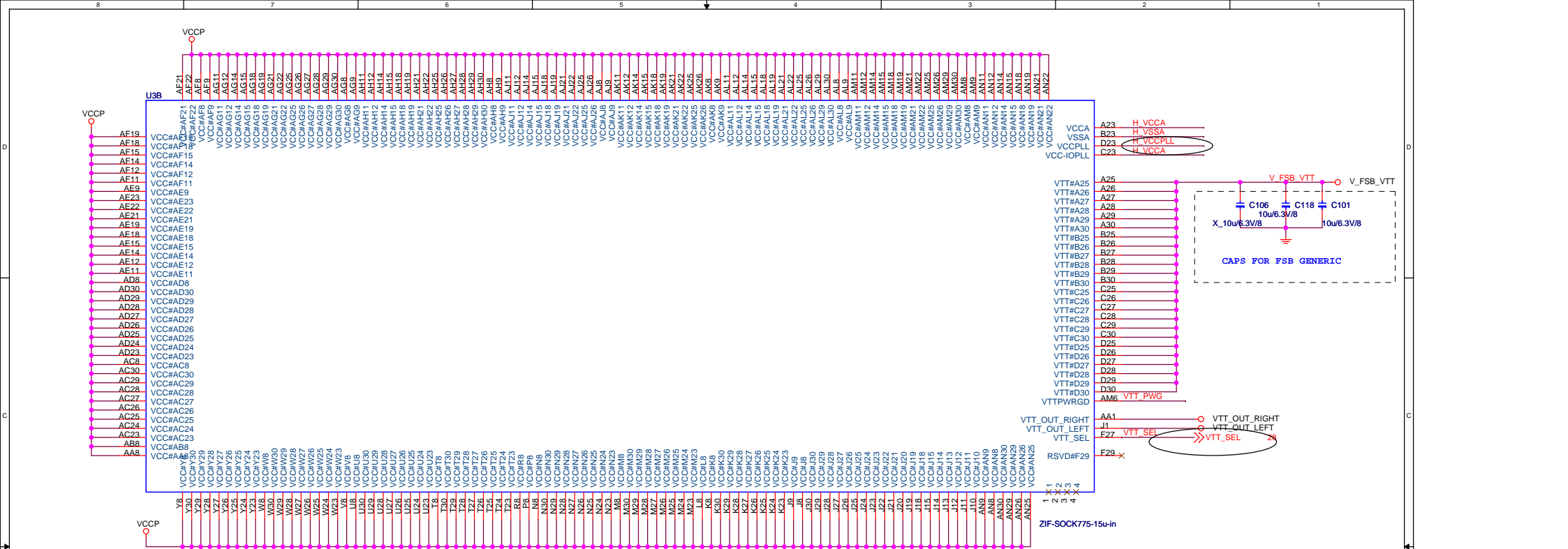
(2116 Prepreg Considerations)

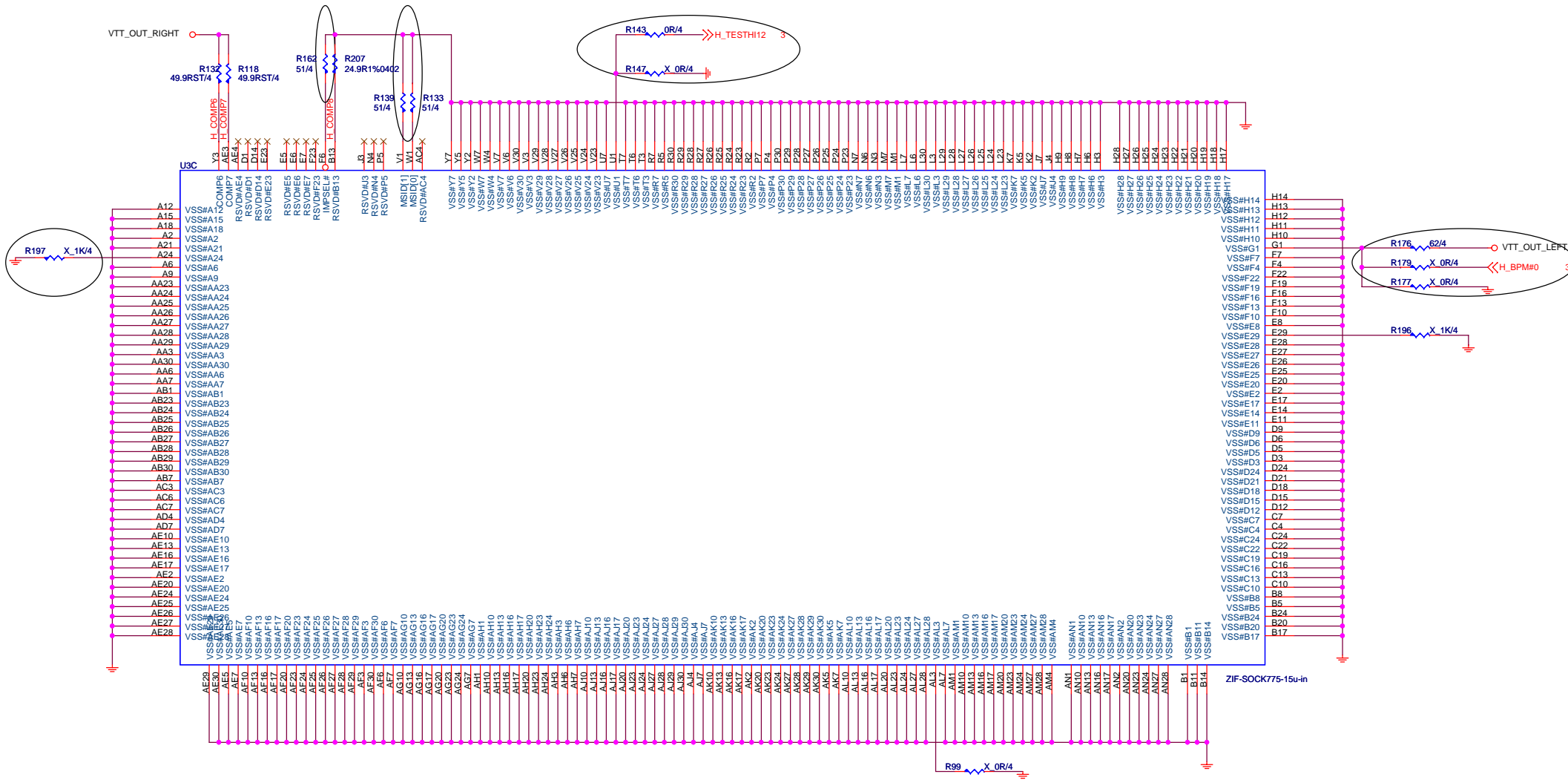


Single End 60ohm Top/Bottom : 5mils  
 IEEE1394 - 110ohm Top : 5/7/5  
 PCIE, LAN, SATA - 100ohm Top : 5/6/5  
 USB2.0 - 90ohm Top : 7.5/7.5/7.5

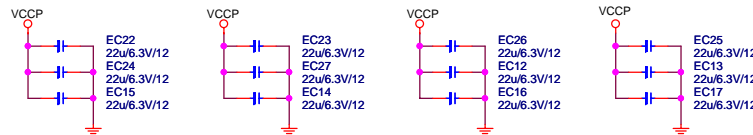
### CPU SIGNAL BLOCK



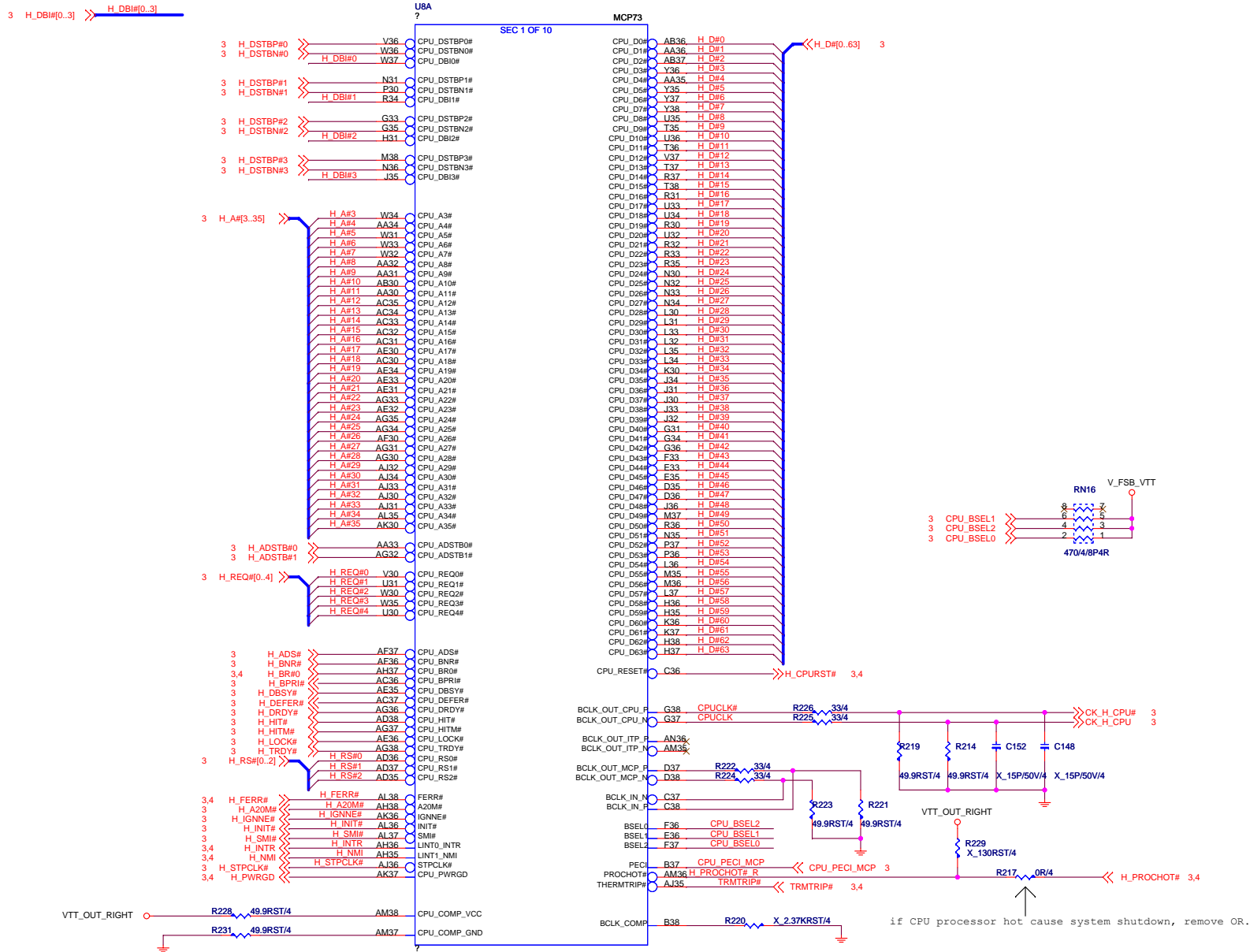




### CPU DECOUPLING CAPACITORS



Place these caps within socket cavity



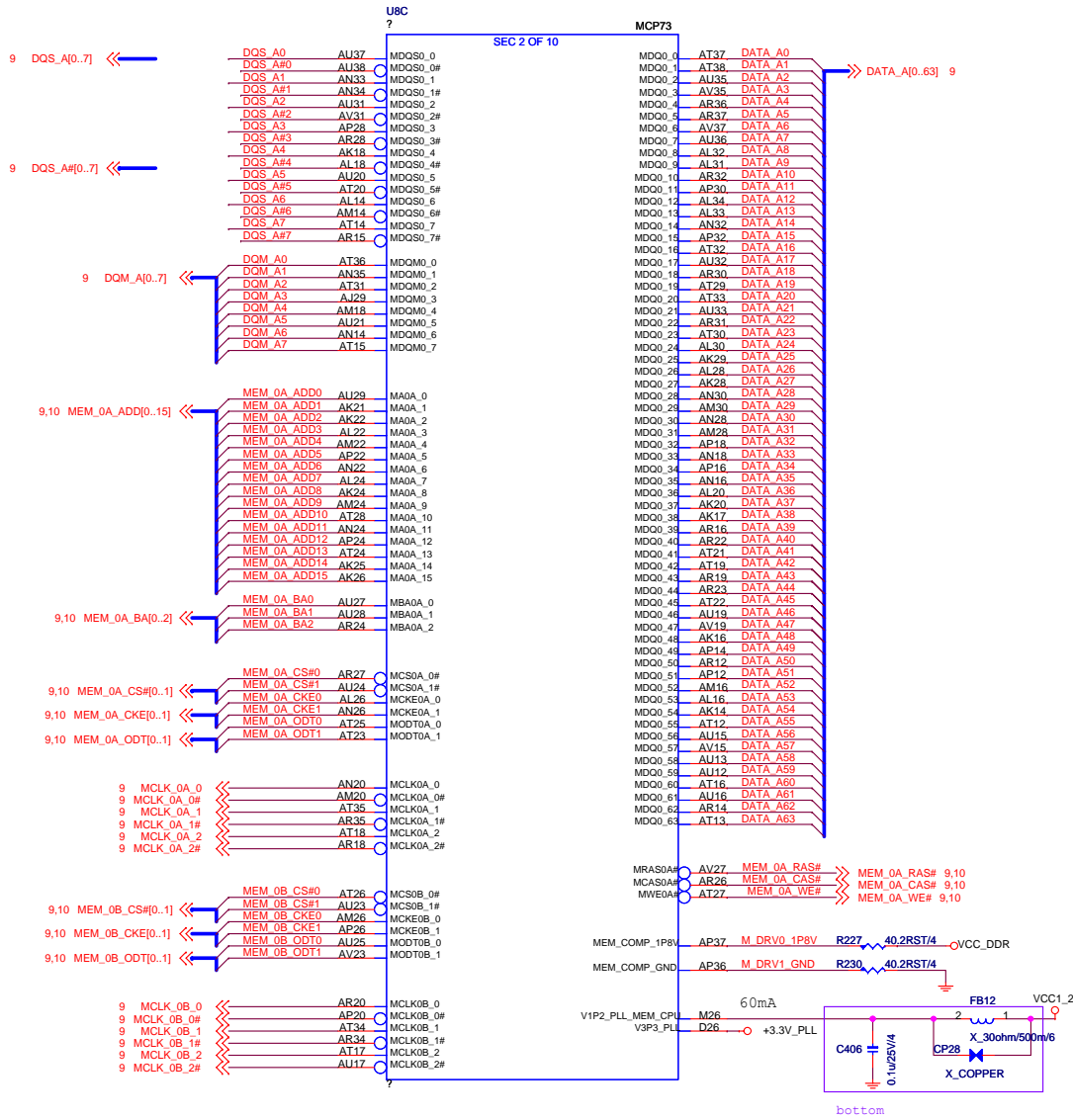


DATA 0

DIMM 1 ADDR 0A / CNTL 0A

DIMM 2 ADDR 0B / CNTL 0B

## DIMM 0A



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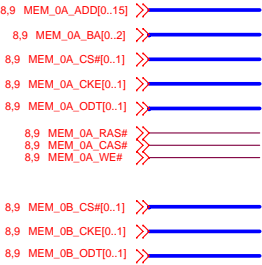
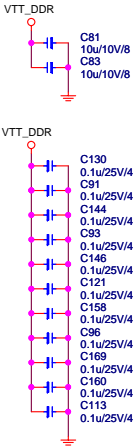
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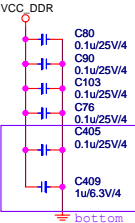
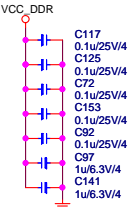
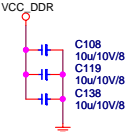
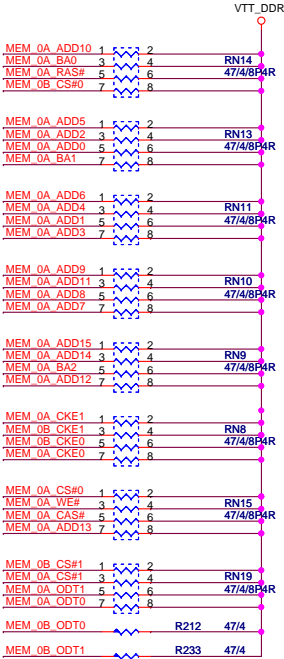




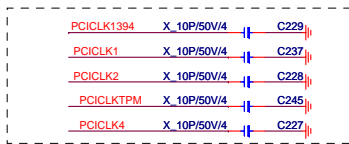
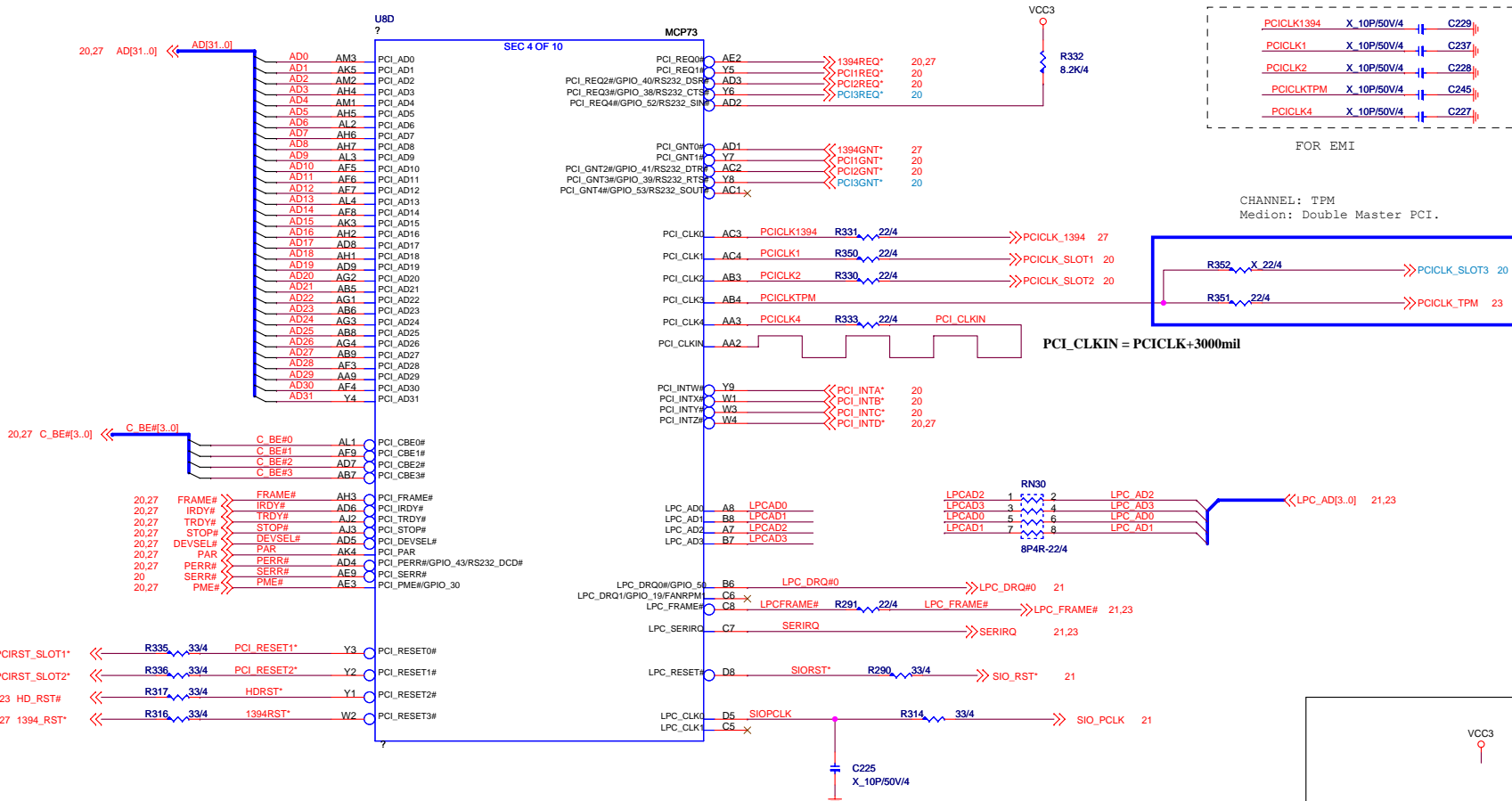
CHANNEL A VTT\_DDR DECOUPLING CAPS



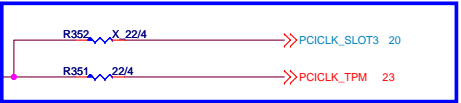
CHANNEL A ----- 0A , 0B



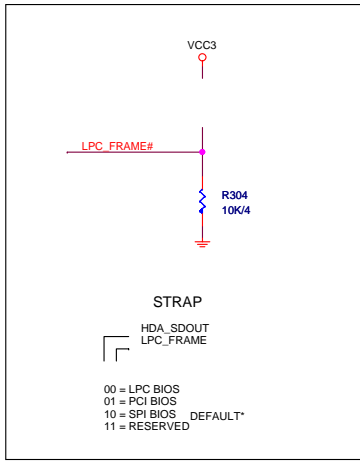
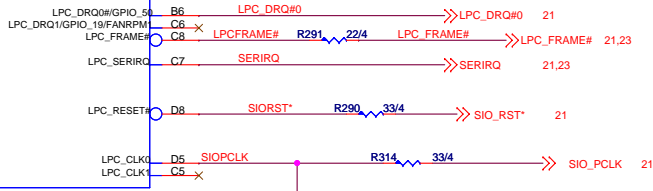
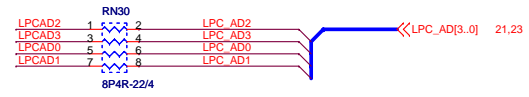
公板上0.1u X5, 1uX3, 10uX3  
兩根再x2



FOR EMI  
CHANNEL: TPM  
Medion: Double Master PCI.

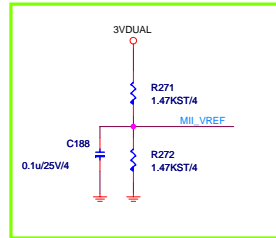
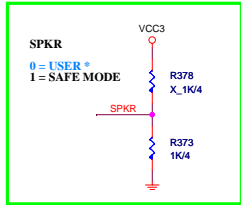
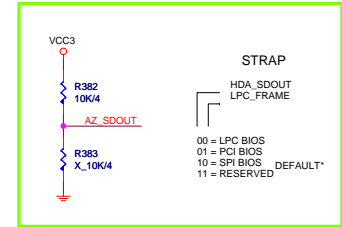
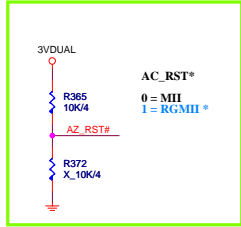
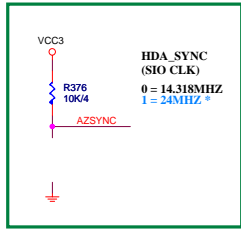


PCI\_CLKIN = PCICLK+3000mil

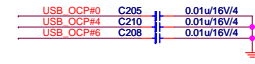
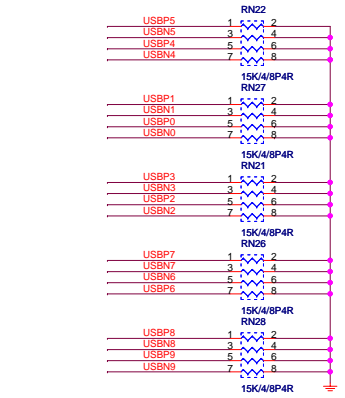
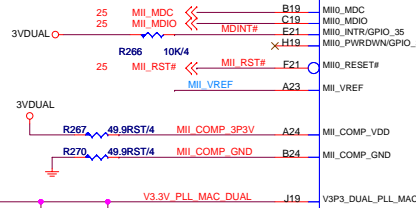
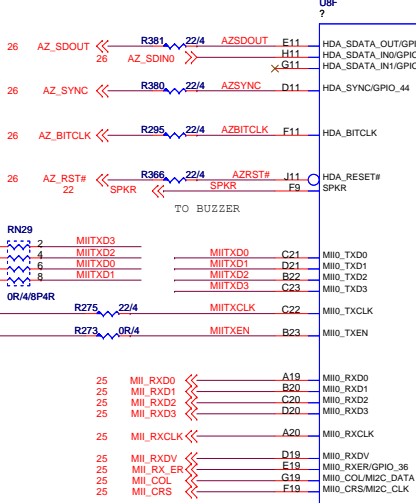
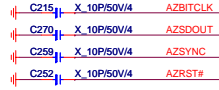


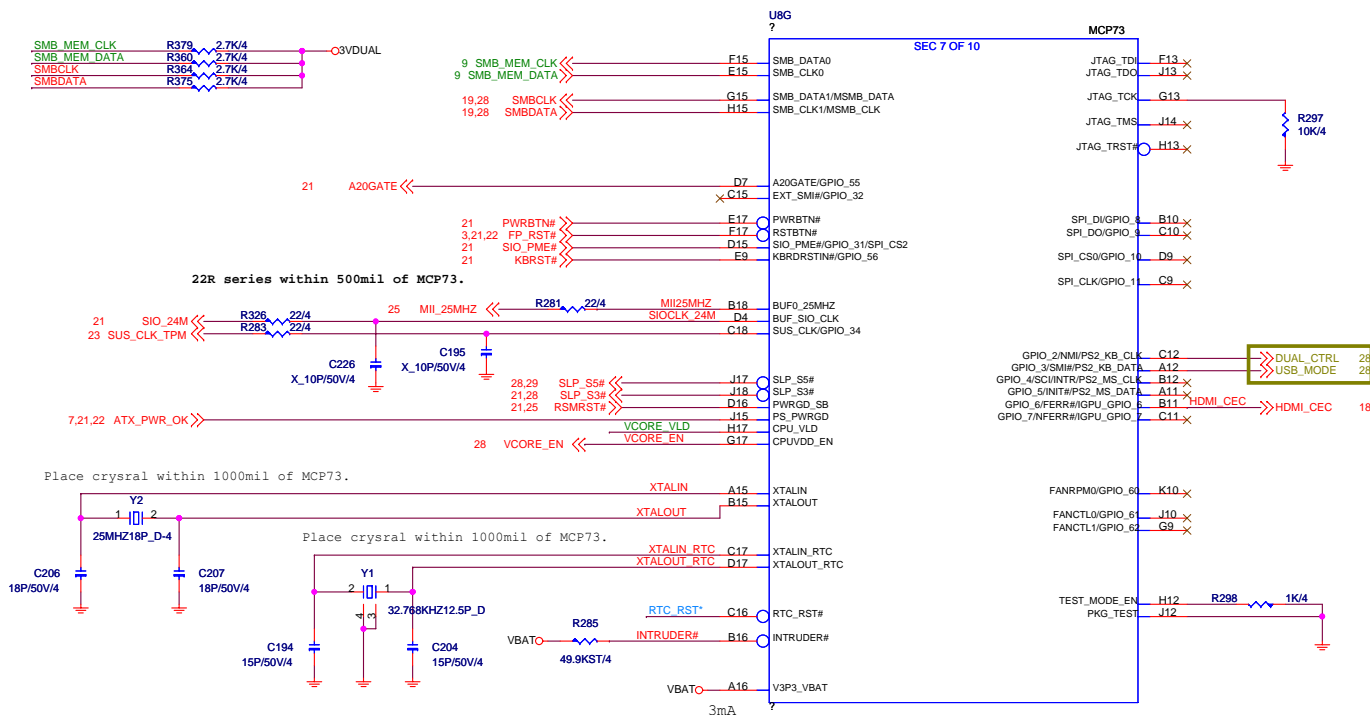
00 = LPC BIOS  
01 = PCI BIOS  
10 = SPI BIOS DEFAULT\*  
11 = RESERVED





MII\_VREF不當STRAP PIN了嗎?



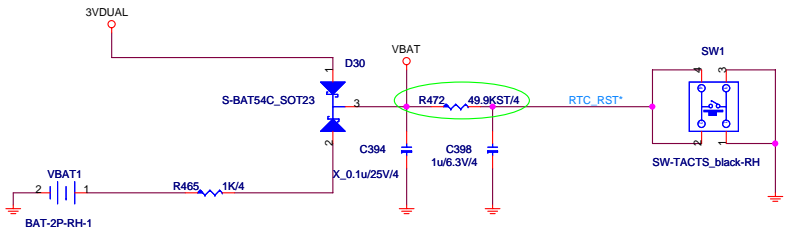
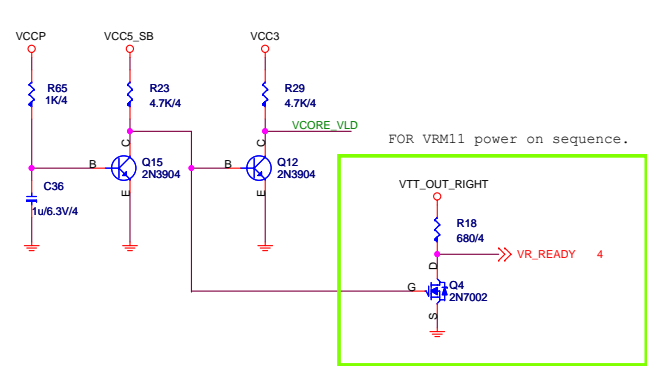


Whether glitch with VRM\_GD?

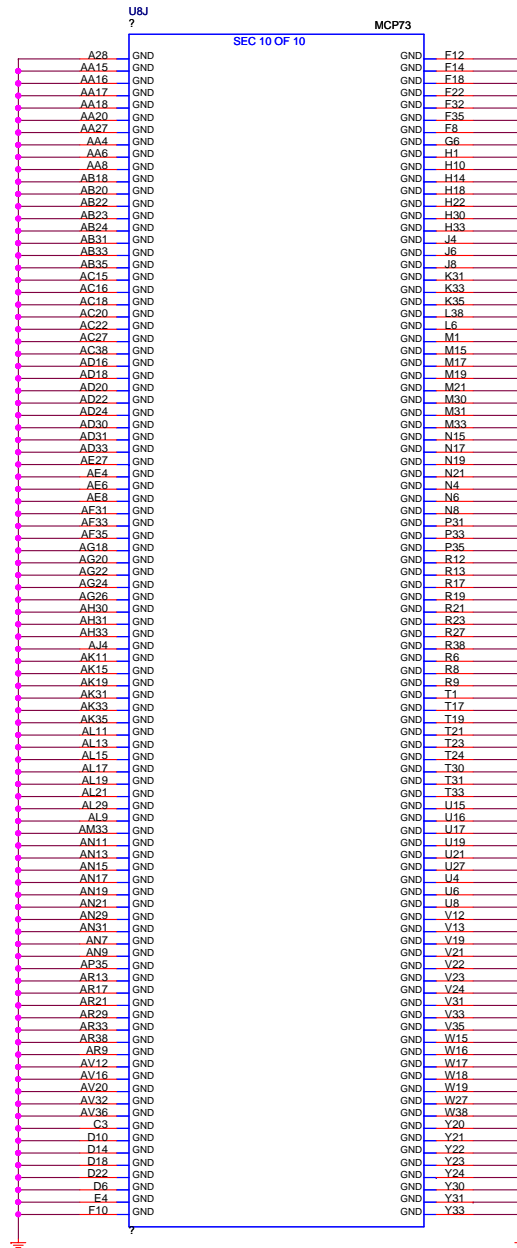
30 VRM\_GD << R247 X\_0R/4 VCORE\_VLD

DUAL\_CTRL R288 10K/4

Vcore power-on sequence control circuit





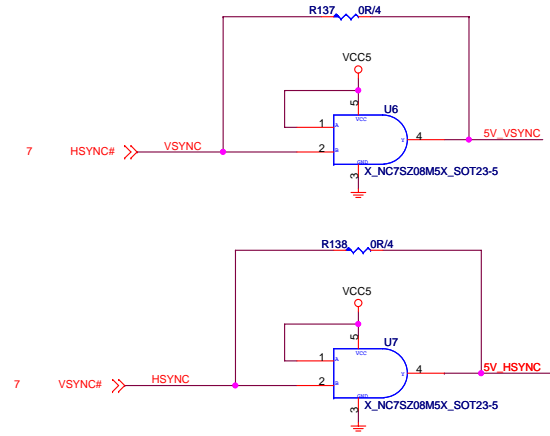


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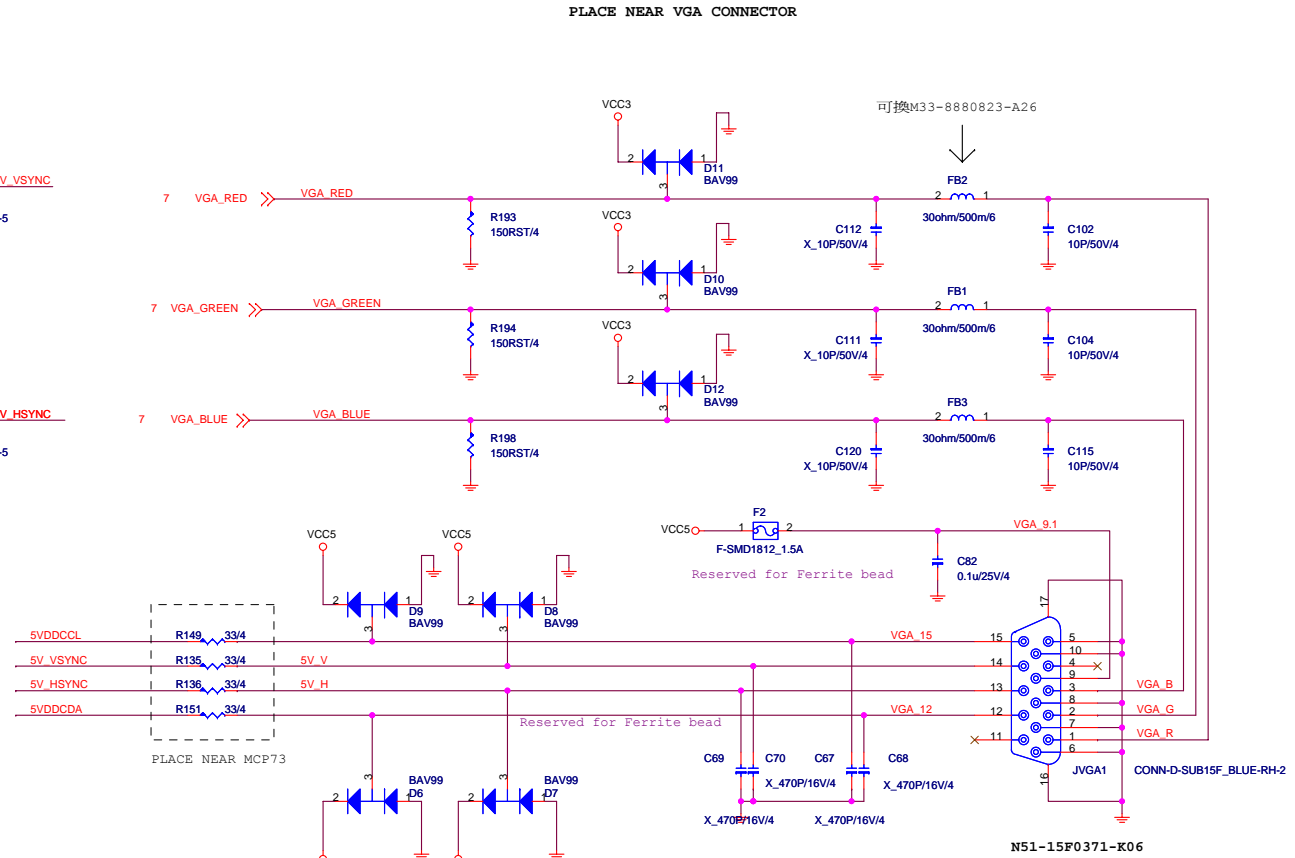
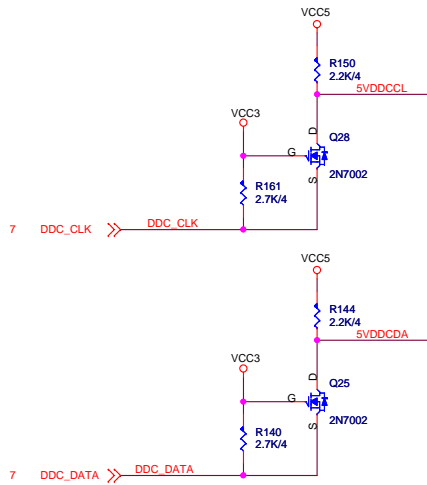
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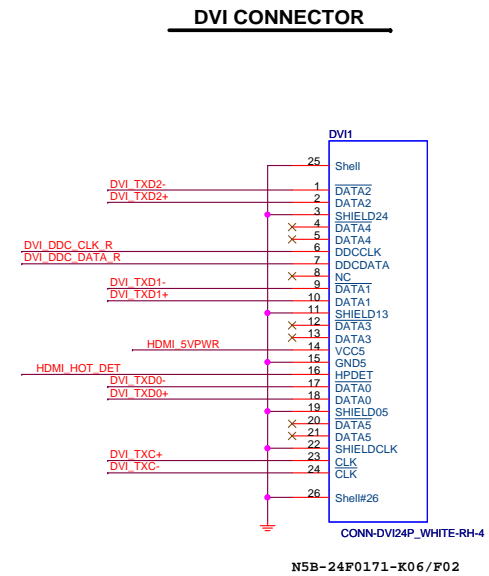
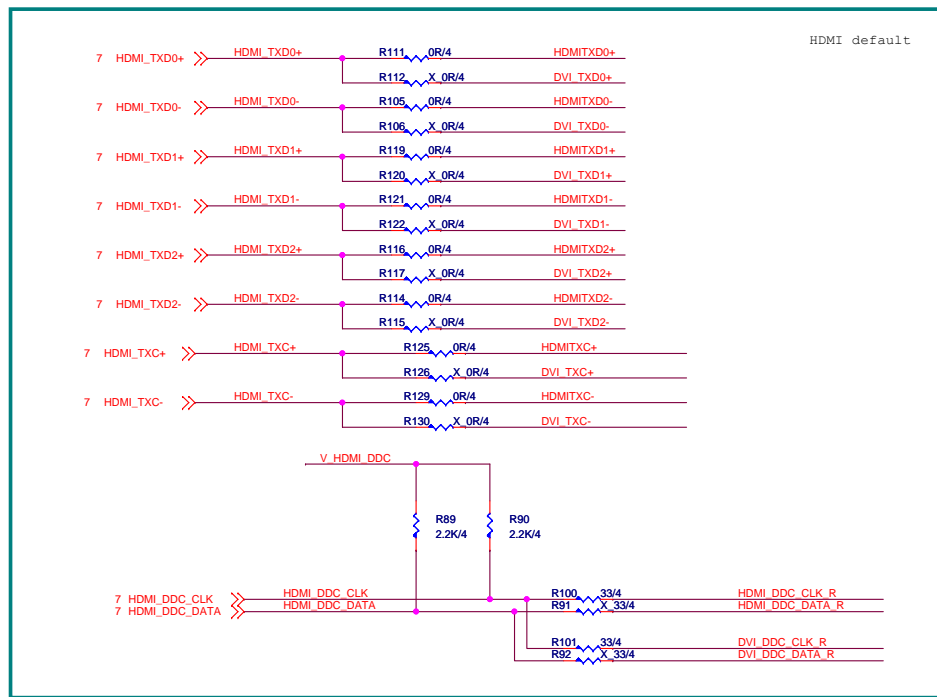
DO they need to change 5V?



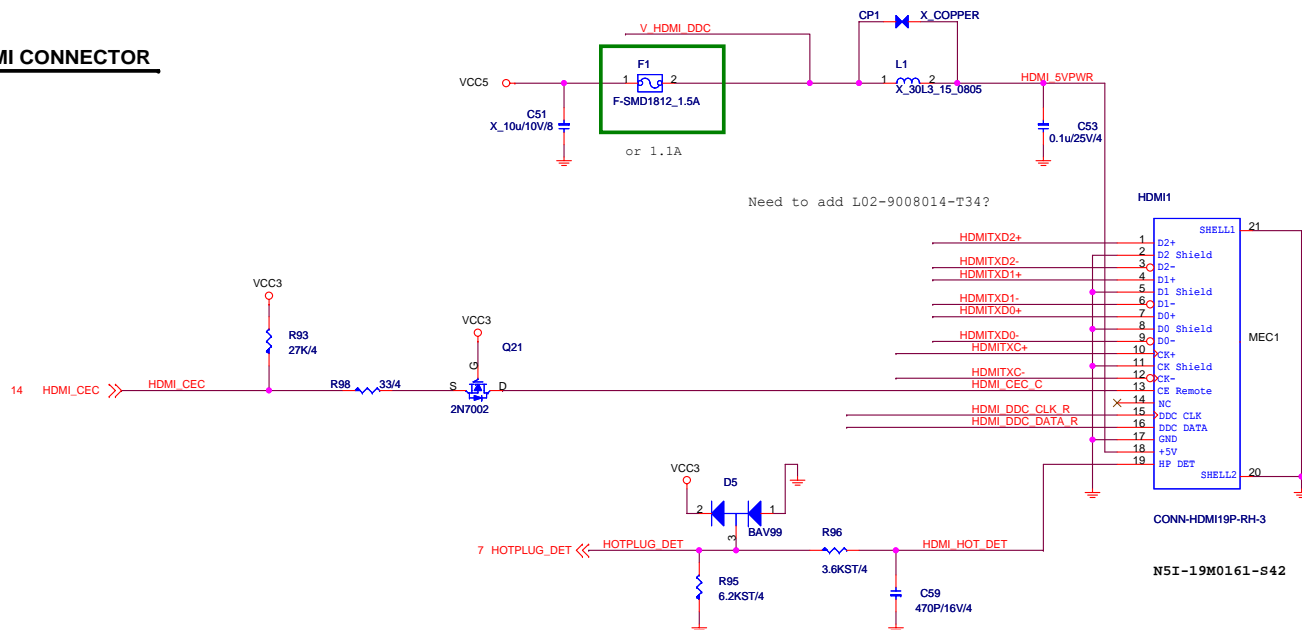
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## HDMI CONNECTOR



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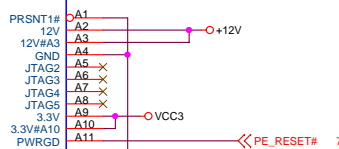
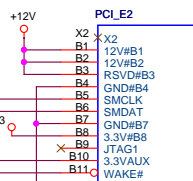
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# PCI-Express X16 Primary Slot X16/X8

7 PE\_A\_TXP[0..15] >>  
7 PE\_A\_TXN[0..15] >>

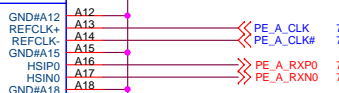
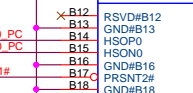
14,28 SMBCLK >>  
14,28 SMBDATA >>



7 PE\_A\_RXP[0..15] >>  
7 PE\_A\_RXN[0..15] >>

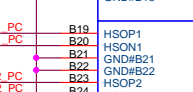
7 PE\_A\_TXP0 >>  
7 PE\_A\_TXN0 >>

C293 0.1u/25V/4 PE\_A\_TXP0 PC  
C294 0.1u/25V/4 PE\_A\_TXN0 PC



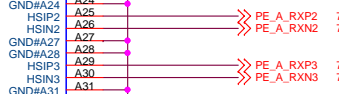
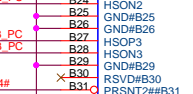
7 PE\_A\_TXP1 >>  
7 PE\_A\_TXN1 >>

C295 0.1u/25V/4 PE\_A\_TXP1 PC  
C296 0.1u/25V/4 PE\_A\_TXN1 PC



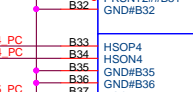
7 PE\_A\_TXP2 >>  
7 PE\_A\_TXN2 >>

C298 0.1u/25V/4 PE\_A\_TXP2 PC  
C297 0.1u/25V/4 PE\_A\_TXN2 PC



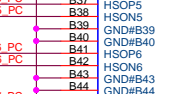
7 PE\_A\_TXP3 >>  
7 PE\_A\_TXN3 >>

C299 0.1u/25V/4 PE\_A\_TXP3 PC  
C300 0.1u/25V/4 PE\_A\_TXN3 PC



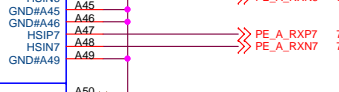
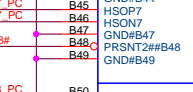
7 PE\_A\_TXP4 >>  
7 PE\_A\_TXN4 >>

C301 0.1u/25V/4 PE\_A\_TXP4 PC  
C302 0.1u/25V/4 PE\_A\_TXN4 PC



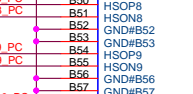
7 PE\_A\_TXP5 >>  
7 PE\_A\_TXN5 >>

C303 0.1u/25V/4 PE\_A\_TXP5 PC  
C304 0.1u/25V/4 PE\_A\_TXN5 PC



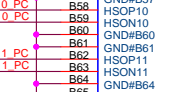
7 PE\_A\_TXP6 >>  
7 PE\_A\_TXN6 >>

C305 0.1u/25V/4 PE\_A\_TXP6 PC  
C306 0.1u/25V/4 PE\_A\_TXN6 PC



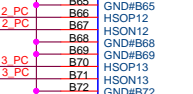
7 PE\_A\_TXP7 >>  
7 PE\_A\_TXN7 >>

C307 0.1u/25V/4 PE\_A\_TXP7 PC  
C308 0.1u/25V/4 PE\_A\_TXN7 PC



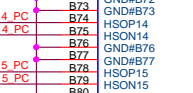
7 PE\_A\_TXP8 >>  
7 PE\_A\_TXN8 >>

C309 0.1u/25V/4 PE\_A\_TXP8 PC  
C310 0.1u/25V/4 PE\_A\_TXN8 PC



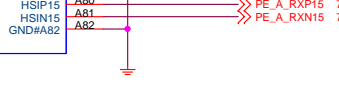
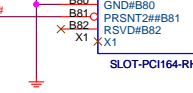
7 PE\_A\_TXP9 >>  
7 PE\_A\_TXN9 >>

C311 0.1u/25V/4 PE\_A\_TXP9 PC  
C312 0.1u/25V/4 PE\_A\_TXN9 PC



7 PE\_A\_TXP10 >>  
7 PE\_A\_TXN10 >>

C313 0.1u/25V/4 PE\_A\_TXP10 PC  
C314 0.1u/25V/4 PE\_A\_TXN10 PC



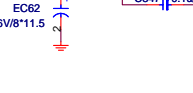
7 PE\_A\_TXP11 >>  
7 PE\_A\_TXN11 >>

C315 0.1u/25V/4 PE\_A\_TXP11 PC  
C316 0.1u/25V/4 PE\_A\_TXN11 PC



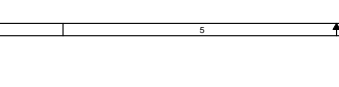
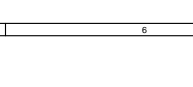
7 PE\_A\_TXP12 >>  
7 PE\_A\_TXN12 >>

C289 0.1u/25V/4 PE\_A\_TXP12 PC  
C290 0.1u/25V/4 PE\_A\_TXN12 PC



7 PE\_A\_TXP13 >>  
7 PE\_A\_TXN13 >>

C317 0.1u/25V/4 PE\_A\_TXP13 PC  
C318 0.1u/25V/4 PE\_A\_TXN13 PC



7 PE\_A\_TXP14 >>  
7 PE\_A\_TXN14 >>

C320 0.1u/25V/4 PE\_A\_TXP14 PC  
C318 0.1u/25V/4 PE\_A\_TXN14 PC



7 PE\_A\_TXP15 >>  
7 PE\_A\_TXN15 >>

C292 0.1u/25V/4 PE\_A\_TXP15 PC  
C291 0.1u/25V/4 PE\_A\_TXN15 PC



7 PE\_PRSNT1# << PE\_PRSNT1#

7 PE\_PRSNT4# << PE\_PRSNT4#

7 PE\_PRSNT8# << PE\_PRSNT8#

7 PE\_PRSNT16# << PE\_PRSNT16#

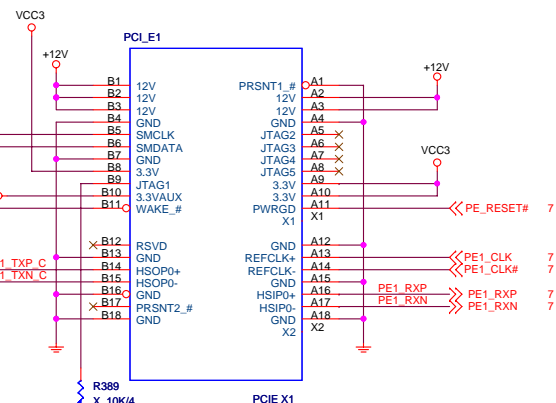
7 PE\_PRSNT16# << PE\_PRSNT16#

7 PE\_PRSNT16# << PE\_PRSNT16#

7 PE\_PRSNT16# << PE\_PRSNT16#

7 PE\_PRSNT16# << PE\_PRSNT16#

## PCI-Express x1 SLOT 1



7 PE1\_TXP >>  
7 PE1\_TXN >>

C282 0.1u/25V/4 PE1\_TXP C  
C278 0.1u/25V/4 PE1\_TXN C

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

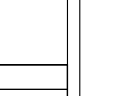
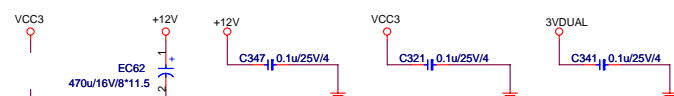
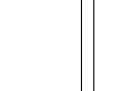
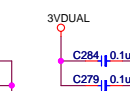
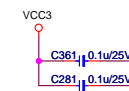
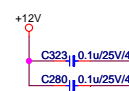
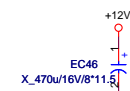
7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

7 PE1\_RXP >>  
7 PE1\_RXN >>

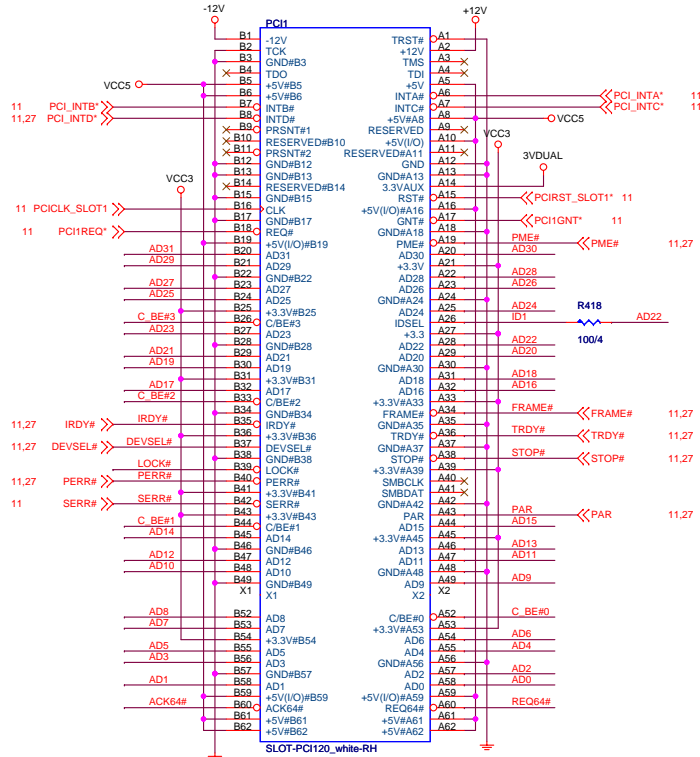


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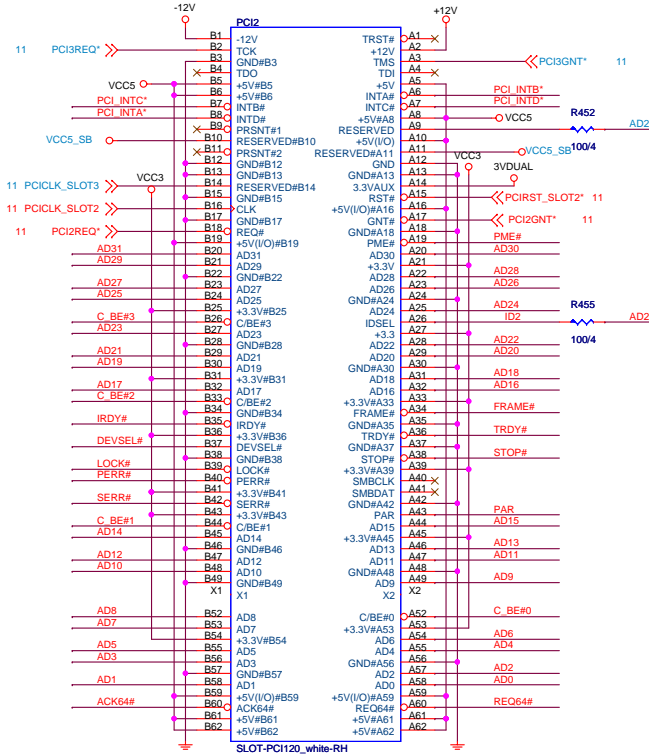
Size	Document Description	Rev
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# PCI SLOT 1 (PCI VER: 2.2 COMPLY)



**IDSEL = AD22**  
**MASTER = PC11REQ\***  
**PC11GNT\***

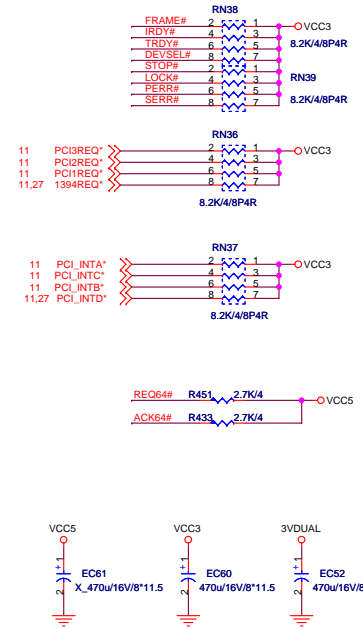
# PCI SLOT 2 (PCI VER: 2.2 COMPLY)



**IDSEL = AD23**  
**MASTER = PCI2REQ\***  
**PCI2GNT\***

**IDSEL = AD24**  
**MASTER = PCI3REQ\***  
**PCI3GNT\***

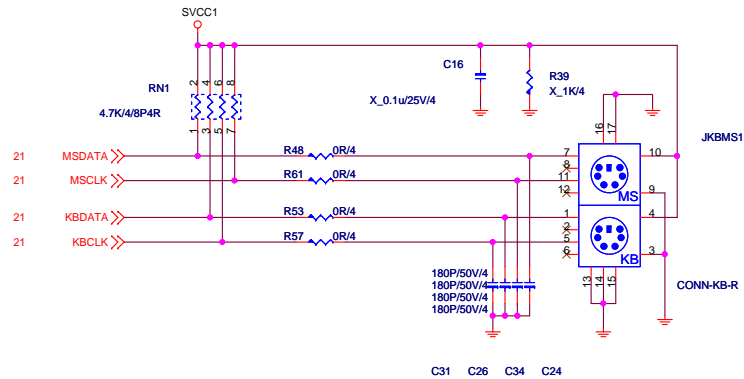
# PCI PULL-UP / DOWN RESISTORS



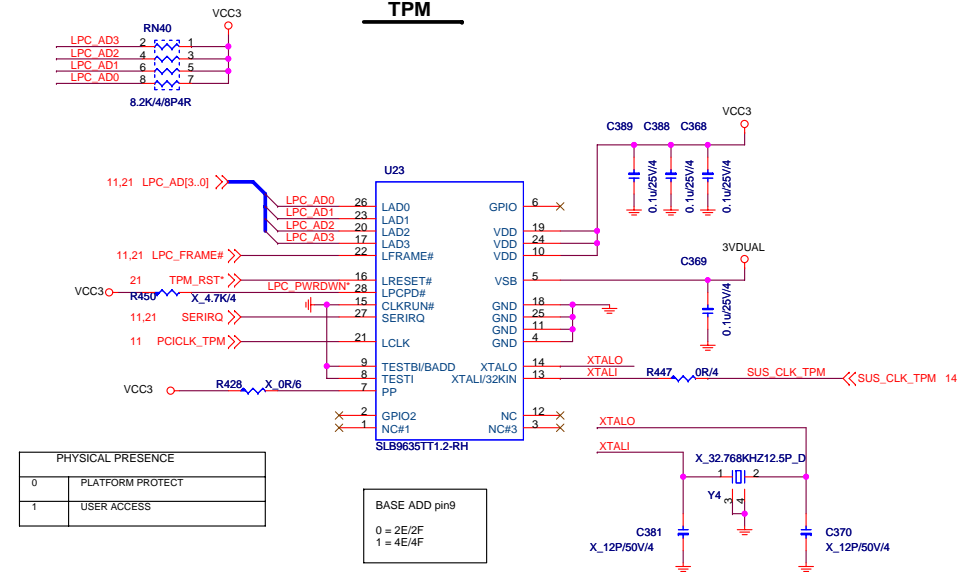




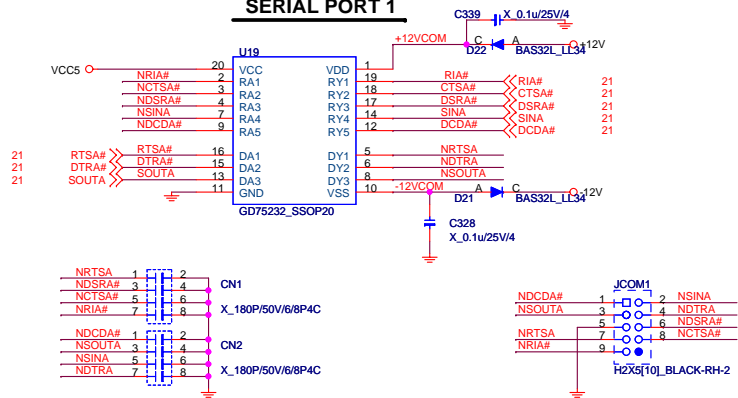
## PS2 KEYBOARD & MOUSE CONNECTOR



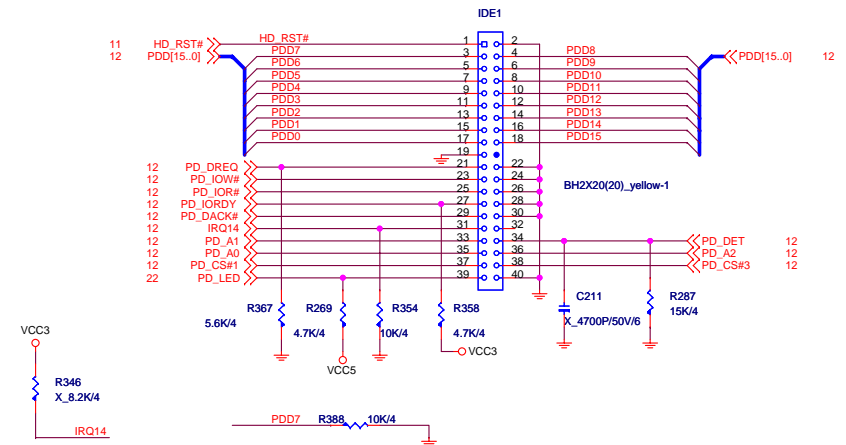
## TPM



## SERIAL PORT 1



## PRIMARY IDE BLOCK

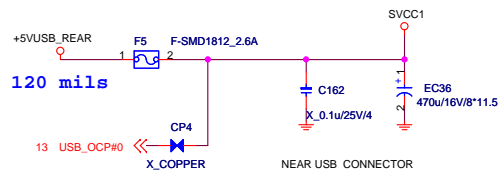


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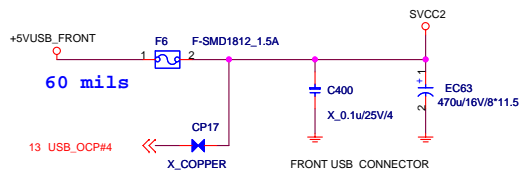
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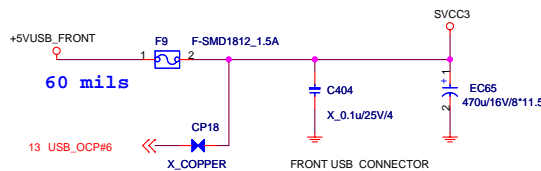
### POWER CIRCUIT FOR USB PORT 0,1,2,3



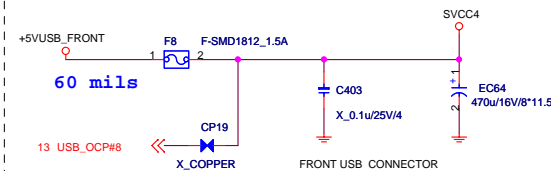
### POWER CIRCUIT FOR USB PORT 4,5



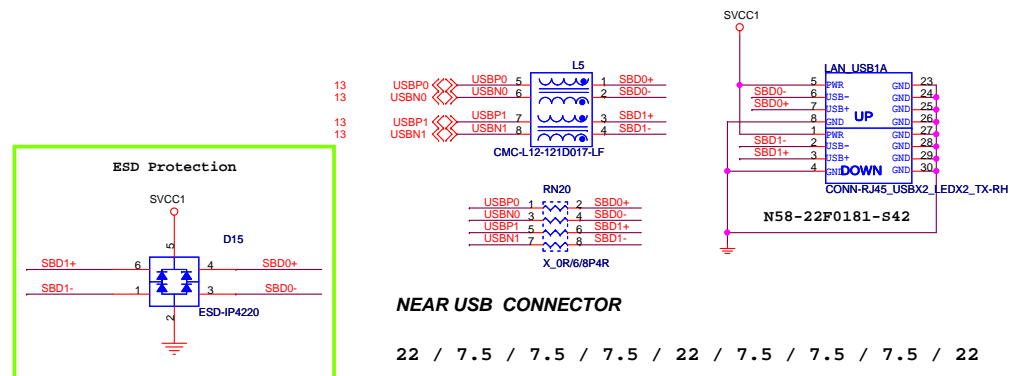
### POWER CIRCUIT FOR USB PORT 6,7



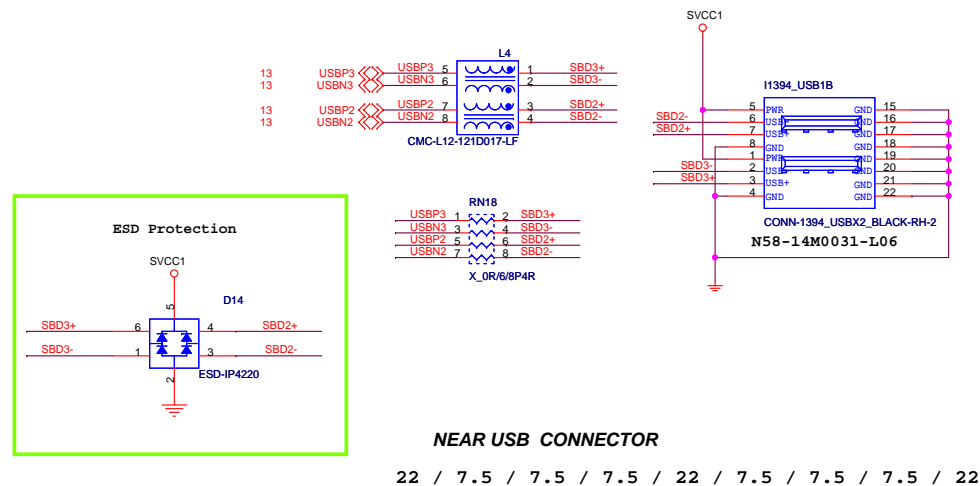
### POWER CIRCUIT FOR USB PORT 8,9



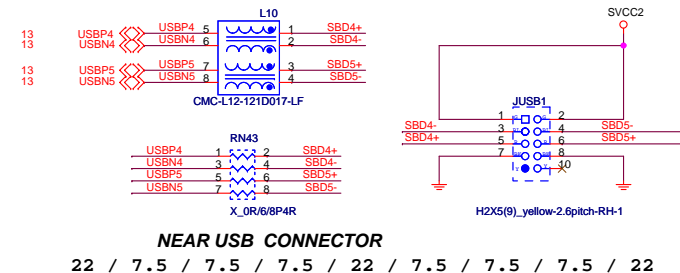
### REAR PANEL USB CONNECTOR FOR USB PORT 0,1



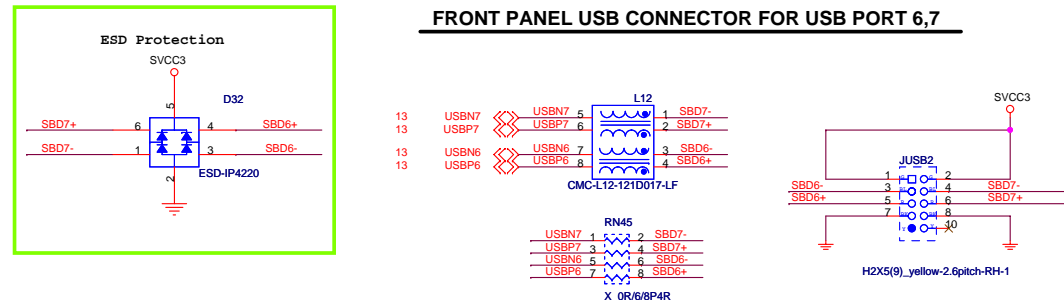
### REAR PANEL USB CONNECTOR FOR USB PORT 2,3



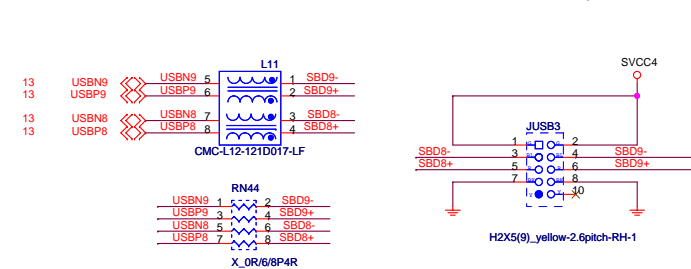
### FRONT PANEL USB CONNECTOR FOR USB PORT 4,5



### FRONT PANEL USB CONNECTOR FOR USB PORT 6,7



### FRONT PANEL USB CONNECTOR FOR USB PORT 8,9



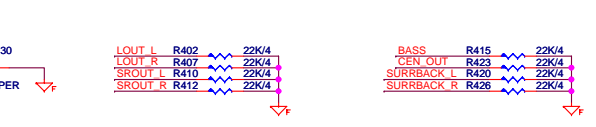
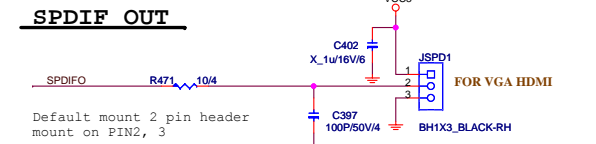
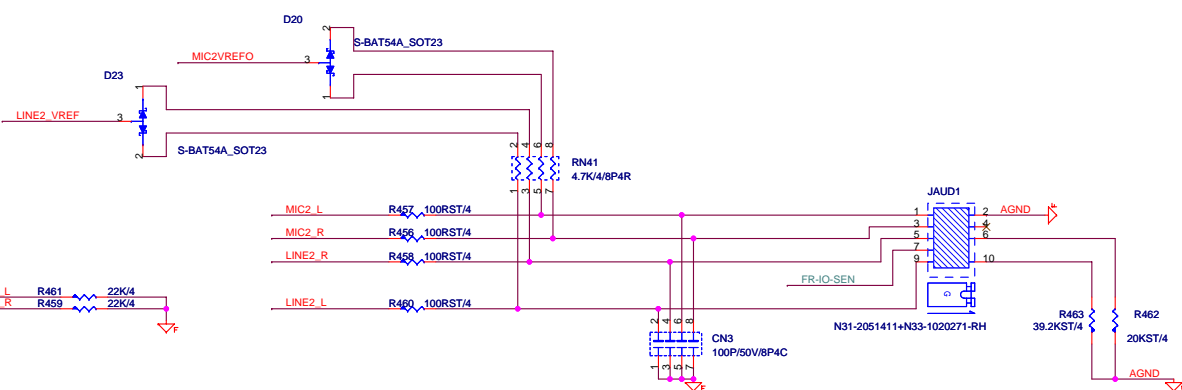
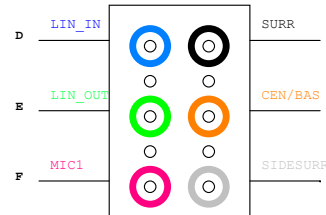
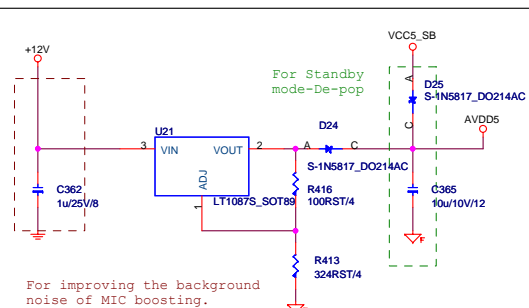
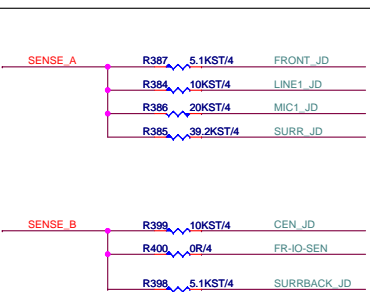
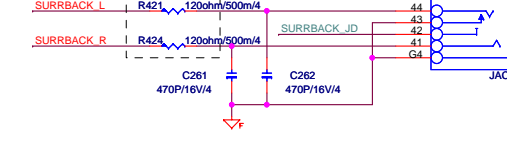
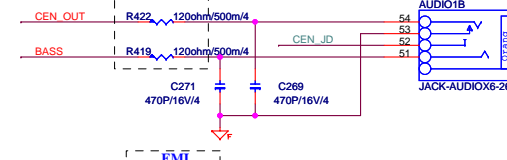
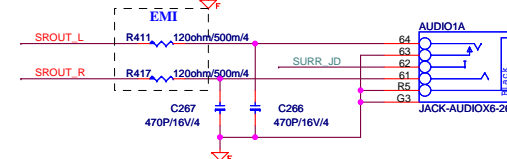
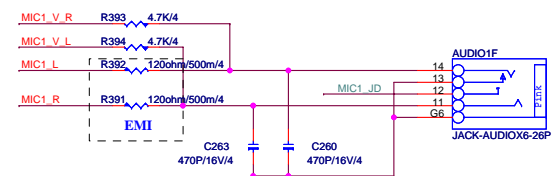
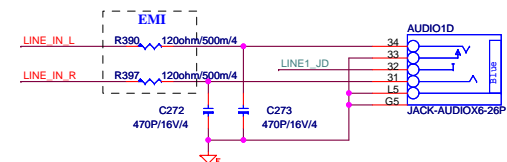
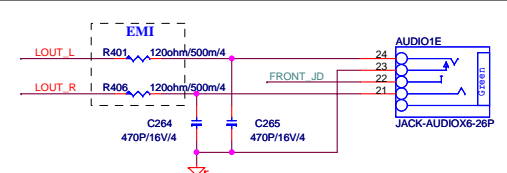
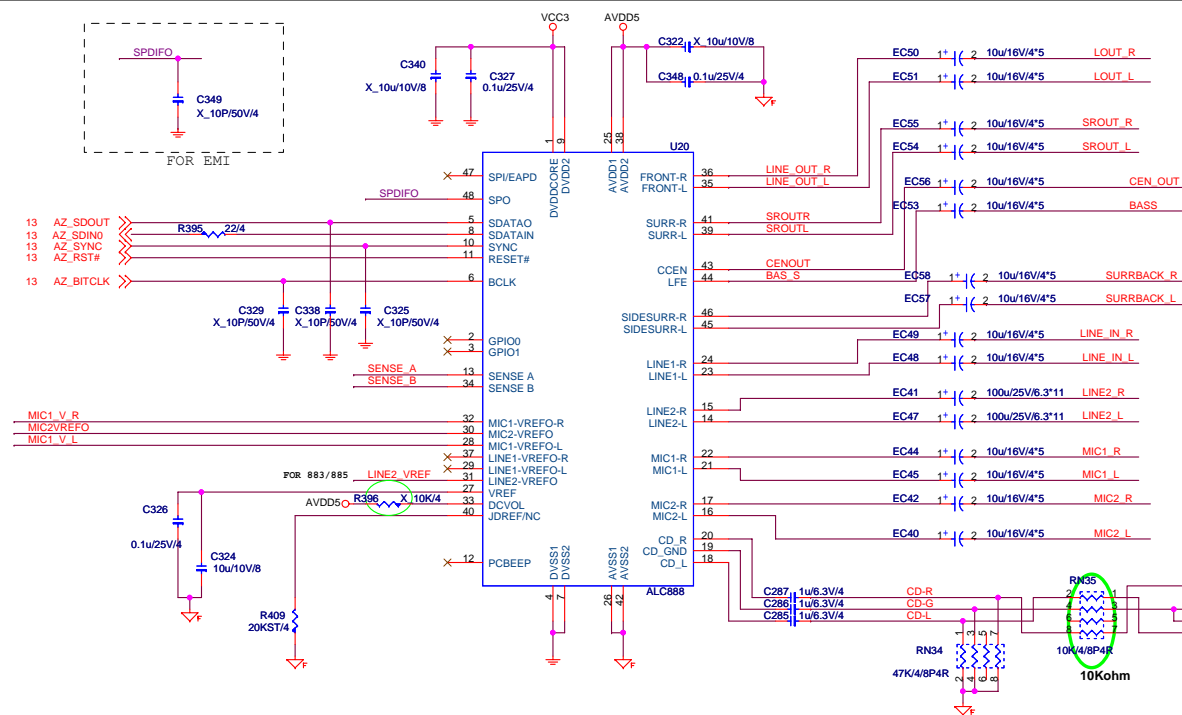
**MICRO-STAR INT'L CO.,LTD**

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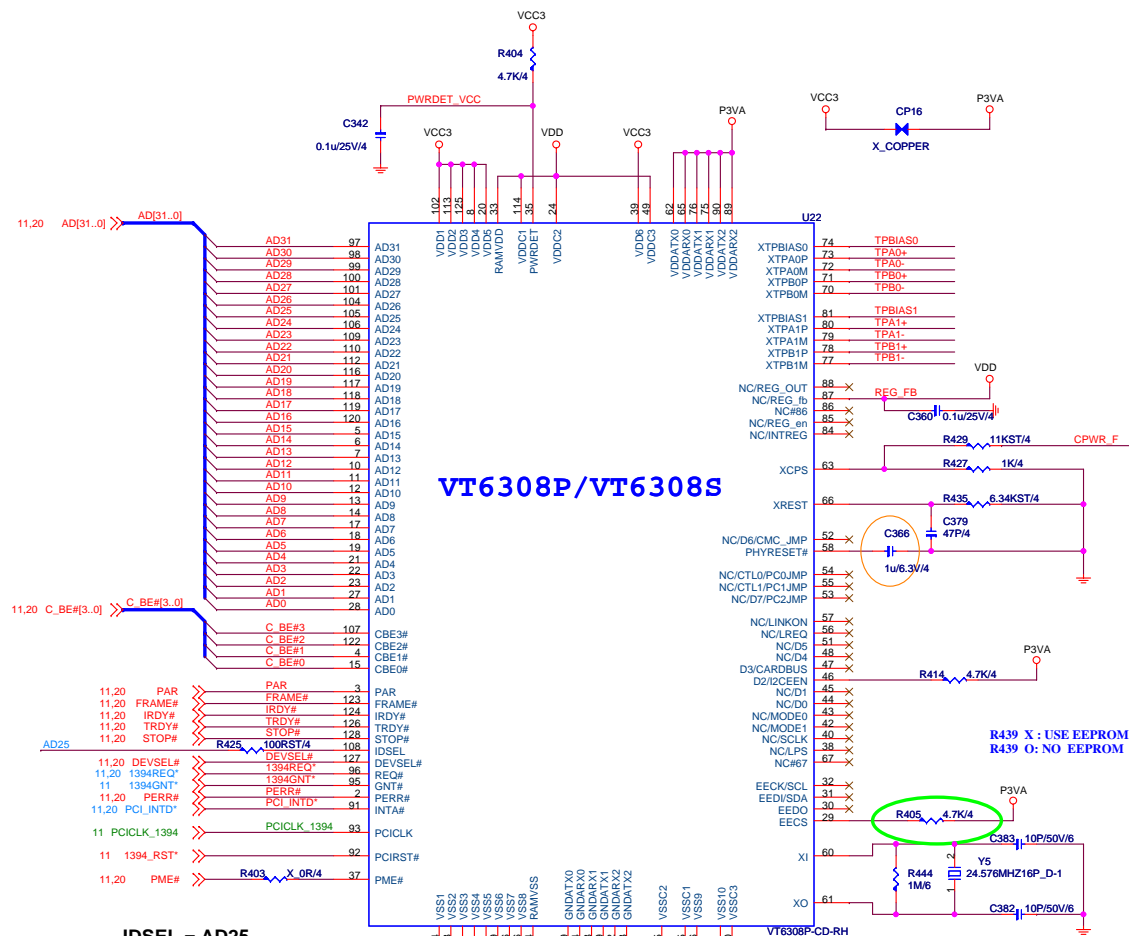
Size Custom	Document Description <b>USB CONNECTORS</b>	Rev 0A
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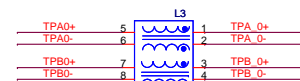
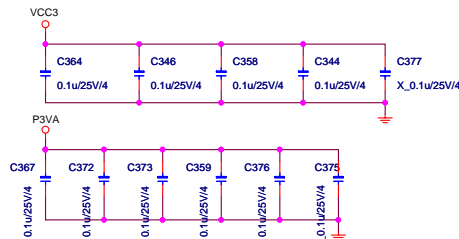
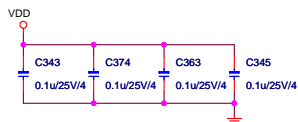


# VT6308P - 1394 Controller

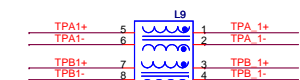


VT6308P/VT6308S

IDSEL = AD25  
INT = PCI\_INTD\*  
MASTER = 1394REQ\*  
1394GNT\*



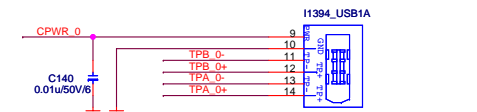
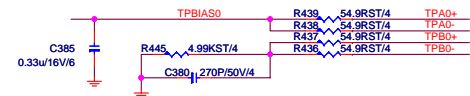
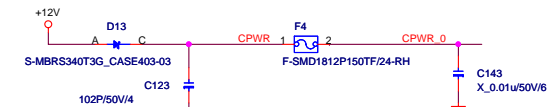
X\_CMC-L12-121D017-LF



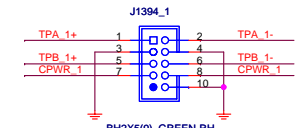
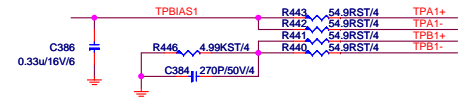
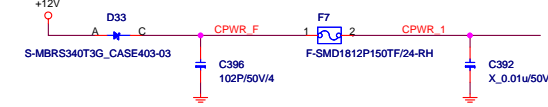
X\_CMC-L12-121D017-LF



60 mils  
1.5A



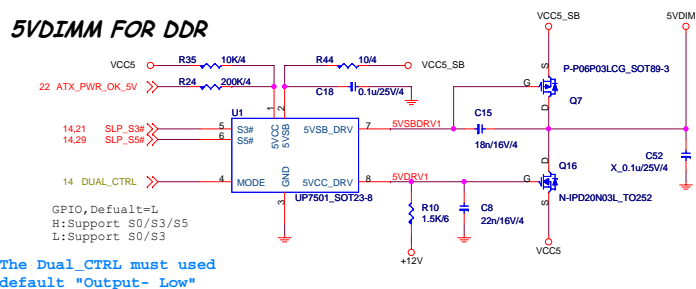
60 mils  
1.5A



For Intel 1394 pinheader

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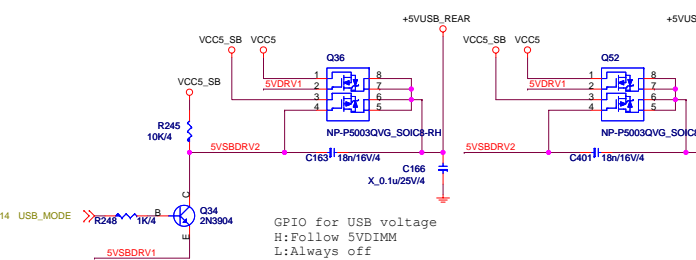
## 5VDIMM FOR DDR



The Dual\_CTRL must used  
default "Output- Low"

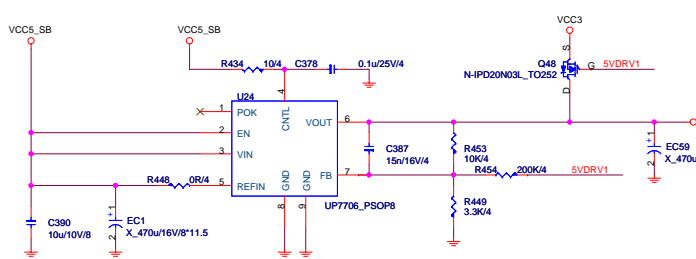
### 5VSB FOR Rear USB

### 5VSB FOR Front USB

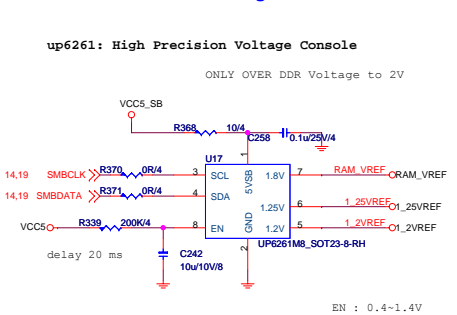


```
GPIO for USB voltage
H:Follow 5VDIMM
L:Always off
```

### 3VDUAL, ?A



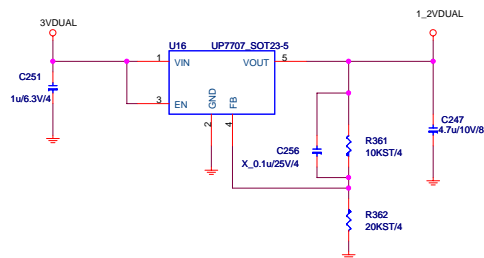
## Reference Voltage



EN : 0.4~1.4V

1\_2VDUAL, 20mA

up7707: 600mA Low Dropout Linear Regulator

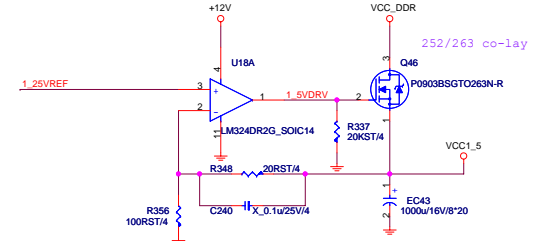


$$V_{out} = 0.8 * (R1 + R2) / R1$$

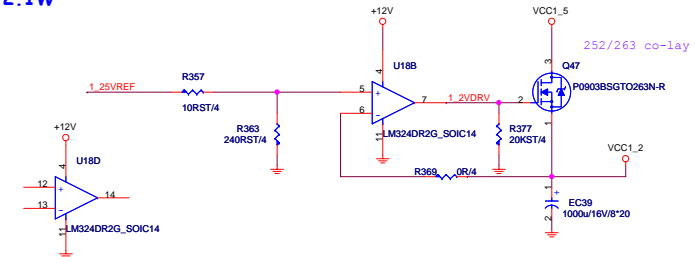
	S0	S3	S4			S5		
DUAL_CTRL	X	X	0	1	1	0	1	1
5VSBDRV1	1	0	1	0	0	1	0	0
5VDRV1	1	0	0	0	0	0	0	0
5VSBDRV2	X	0	1	0	0	1	0	0
USB_MODE	X	1	X	1	0	X	1	0
5VDIMM	Y	Y	N	Y	N	N	Y	N
USB power	Y	Y	N	Y	N	N	Y	N

VCC1\_5, 7.1A  
2.1W

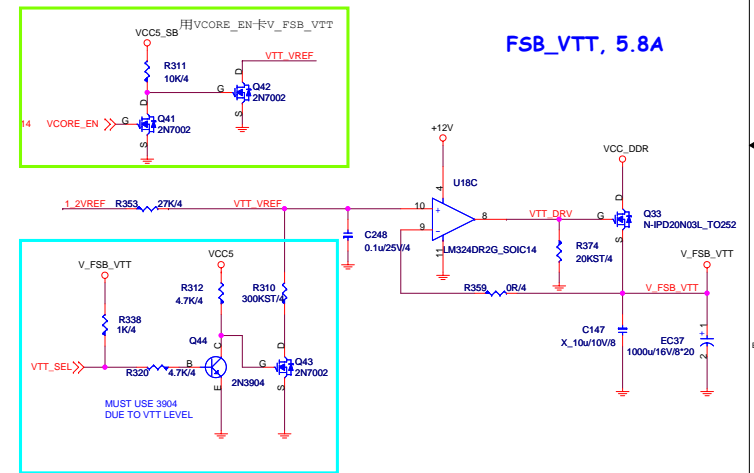
H\_VCCPLL=>100mA  
MCP73 =>7A



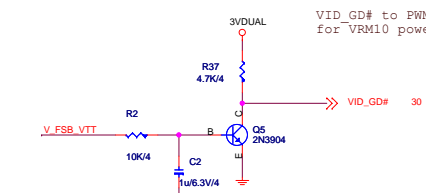
VCC1\_2, 7A  
2.1W



## FSB\_VTT, 5.8A



<b>VTT_SEL = L</b>	V_FSB_VTT=1.1V	For future KENTSFIELD processor. (FSB1333, Quad-Core)
<b>VTT_SEL = H</b>	V_FSB_VTT=1.2V	For normal processors.



VID\_GD# to PWM and VID\_GD to CPU  
for VRM10 power sequence.



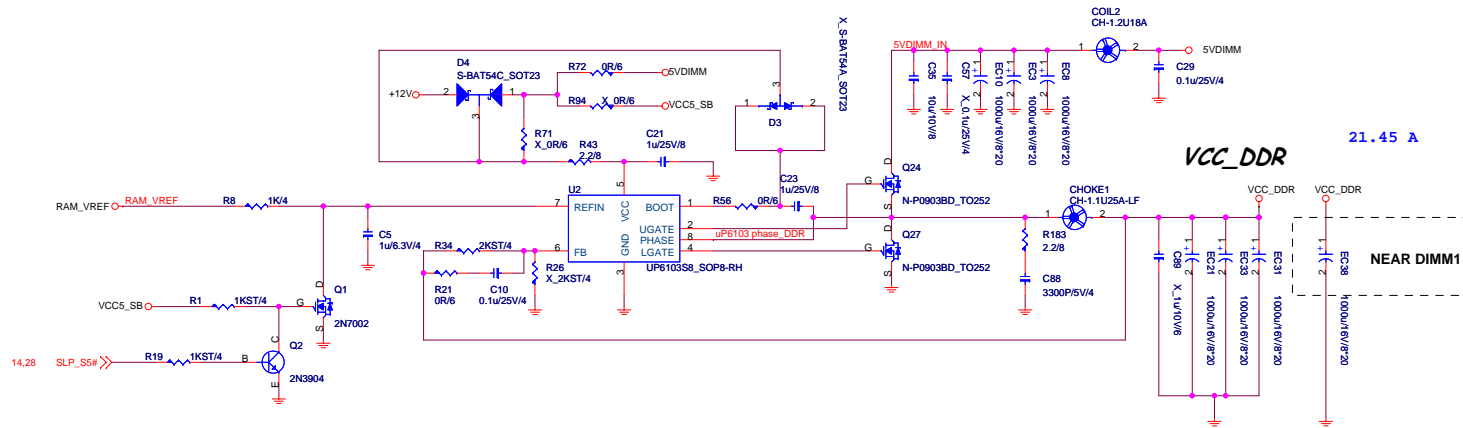
**MICRO-STAR INT'L CO.,LTD**

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m	Document Description
	<b>ACPI Controller UPI</b>

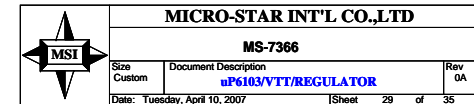
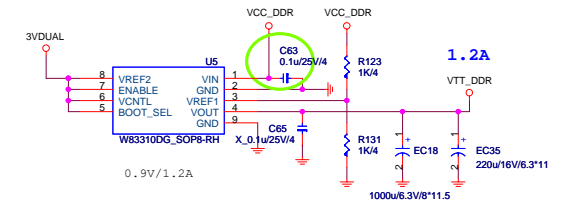
Rev 0A	
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## DDR II 1.8V POWER



### DDR VTT Power

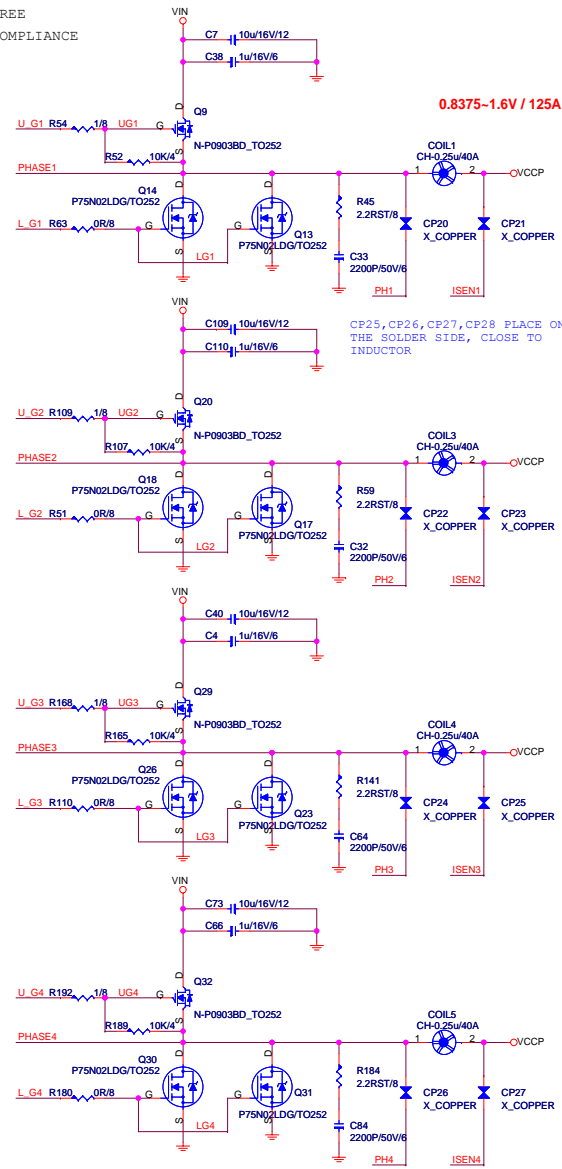
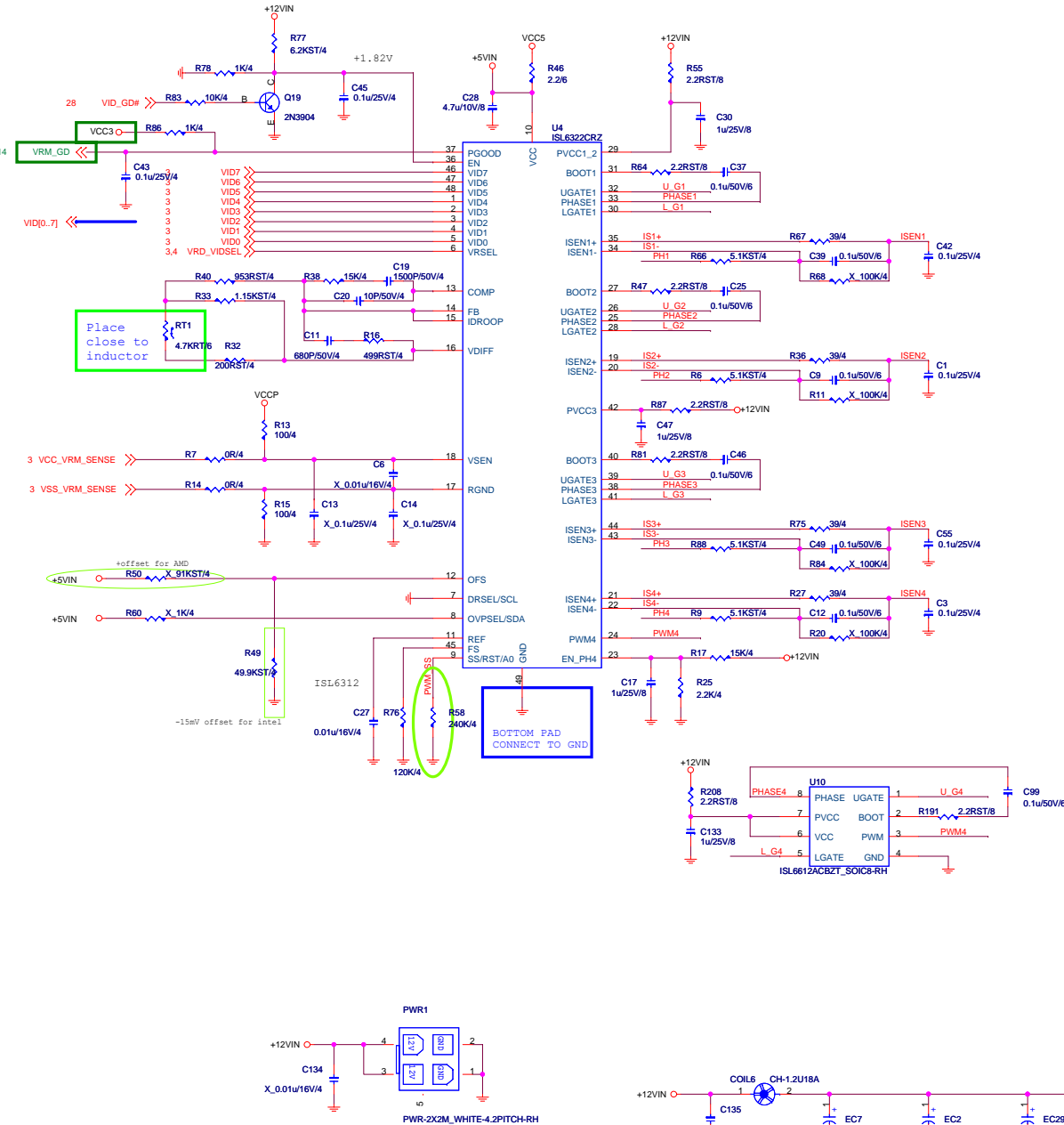
To CPU Copper trace width > 200mils



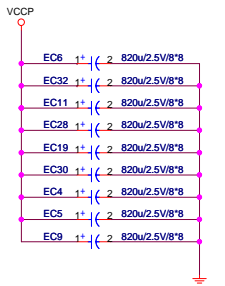
# Voltage Regular Module

N-P0903BDG\_TO252  
P75N02LDG/TO252  
C100U2SP  
CD560U4OS-2  
1800UF/6.3V  
0.25uH/40A  
CH-1.1U25A-LF  
CD1000U16EL20-2

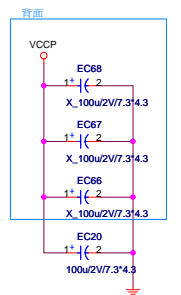
mosfet/n-channel, P0903BDG, SMT/TO252, Rds(on)=9.5mΩ(10V/25A), Vgs(on)=1~3V, Id=50A, Ciss=1800pF, Qg=50nC, Vds=25V, Vgs=±20V, RoHS compliance  
mosfet/n-channel, P75N02LDG, SMT/TO252, Rds(on)=7mΩ(10V, 30A), Vgs(on)=1~3V, Id=75A, Ciss=5000pF, Qg=140nC, Vds=25V, Vgs=±20V, RoHS compliance  
ESR<13mΩ, Ripple cur.<2.7A, LC<12uA, 105C  
CAP, OS-CON, 560u/4V, Dip-2/8\*9/3.5mm, ESR<7mohm, Ripplecur.=6100mA, Lc. <500uA, SPEC series, RoHS compliance  
ESR<12mΩ, Ripplecur<2350mA, 105C, longlife change from 2000hrs to 3000hrs, KZJ series  
, IND CHOKE, 0.25uH, 20%, DIP/8.5mm, 40A, 0.6mOhm, , , PEW, FERRITE, SQUARE, RoHS COMPLIANCE  
IND CHOKE, 1.1uH, 20%, DIP/9mm, 25A, 1.4mOhm, 5.5T, 0.9mmx3, PEW, IRON, , LEAD FREE  
CAP, EL, 1000u, 16V, Dip-8x20/3.5mm, 20%, 12mOhm, 2350mA, 105C, 3000hrs, RoHS COMPLIANCE



## OS-CON Capacitors



## SP Capacitors



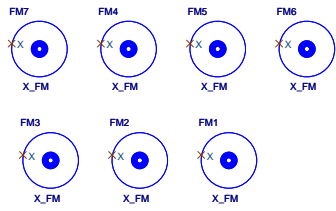
MICRO-STAR INT'L CO., LTD		
MS-7366		
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## Simulation



## Optics Orientation Holes



## Mounting Holes

