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# MS-7366 Micro ATX

Version: 1.01\_071113

**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 co-lay RTL8201CL**  
**CLOCK Gen -- Integrated in MCP73**  
**1394 Controller -- JMB381**

## Main Memory:

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


## Expansion Slots:

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

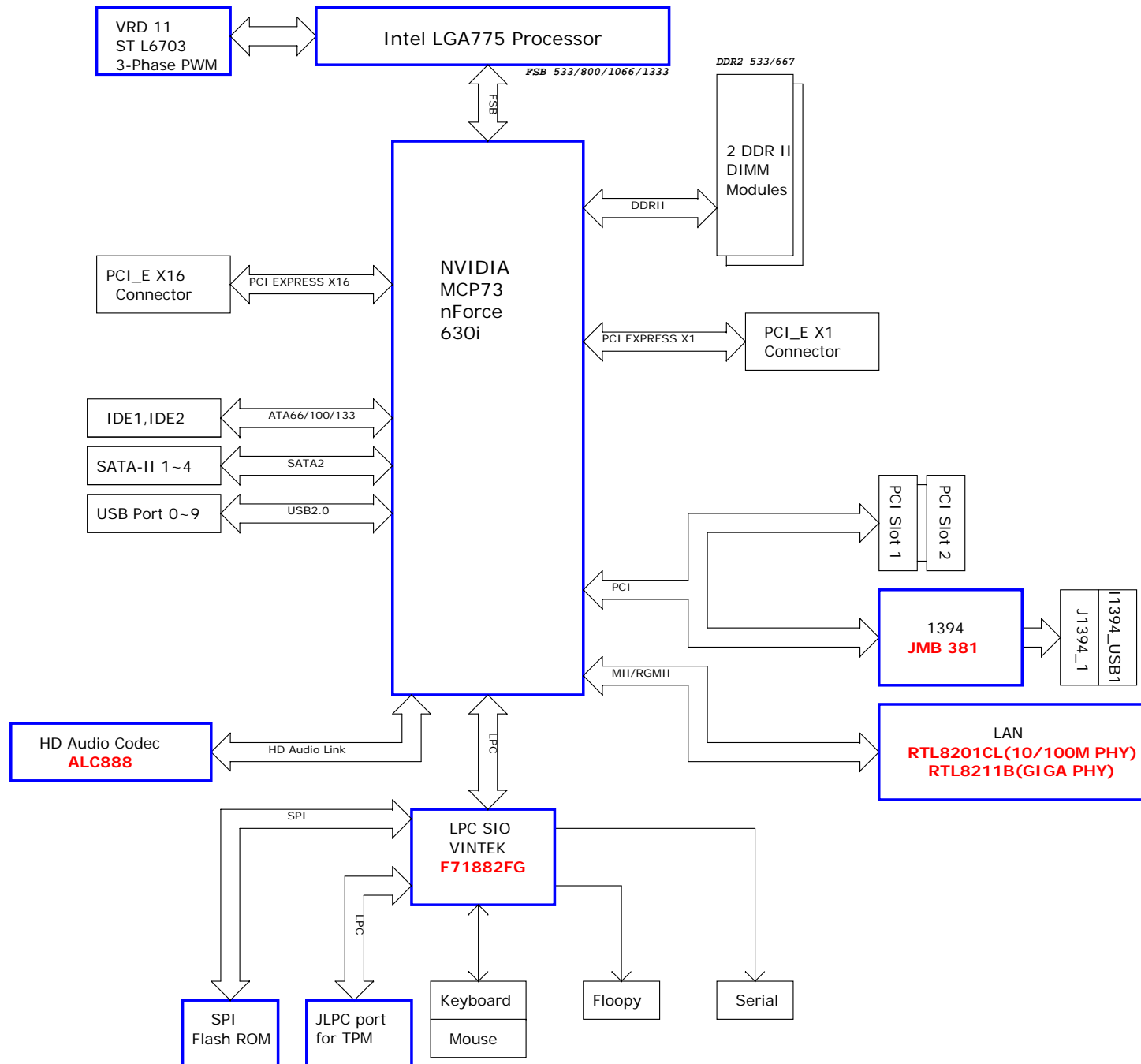
## Intersil PWM:

**Controller: ST L6703 (3 Phases)**  
**Driver:ST L6703**

OPT	Function	Orcad Configure	BOM
A	MCP73U(HDMI,D-SUB)/F71882FG/ALC888/RTL8211BL/JMB381	Cfg-U	601-7366-03S
B	MCP73PV(DVI,D-SUB)/F71882FG/ALC888/RTL8211BL	Cfg-PV	601-7366-04S
C	MCP73S(D-SUB)/F71882FG/ALC888/RTL8211BL	Cfg-S	
D	MCP73V(D-SUB)/F71882FG/ALC888/RTL8201CL	Cfg-V	601-7366-05S

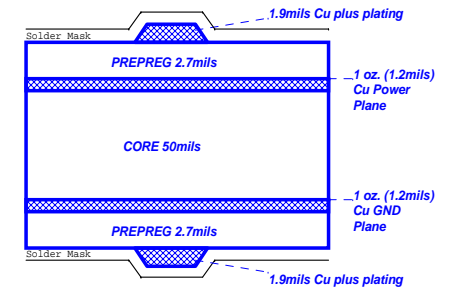
 <b>MICRO-STAR INT'L CO.,LTD</b>			
<b>MS-7366</b>			
Size Custom	Document Description <b>COVER SHEET</b>		Rev 1.01
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# Block Diagram



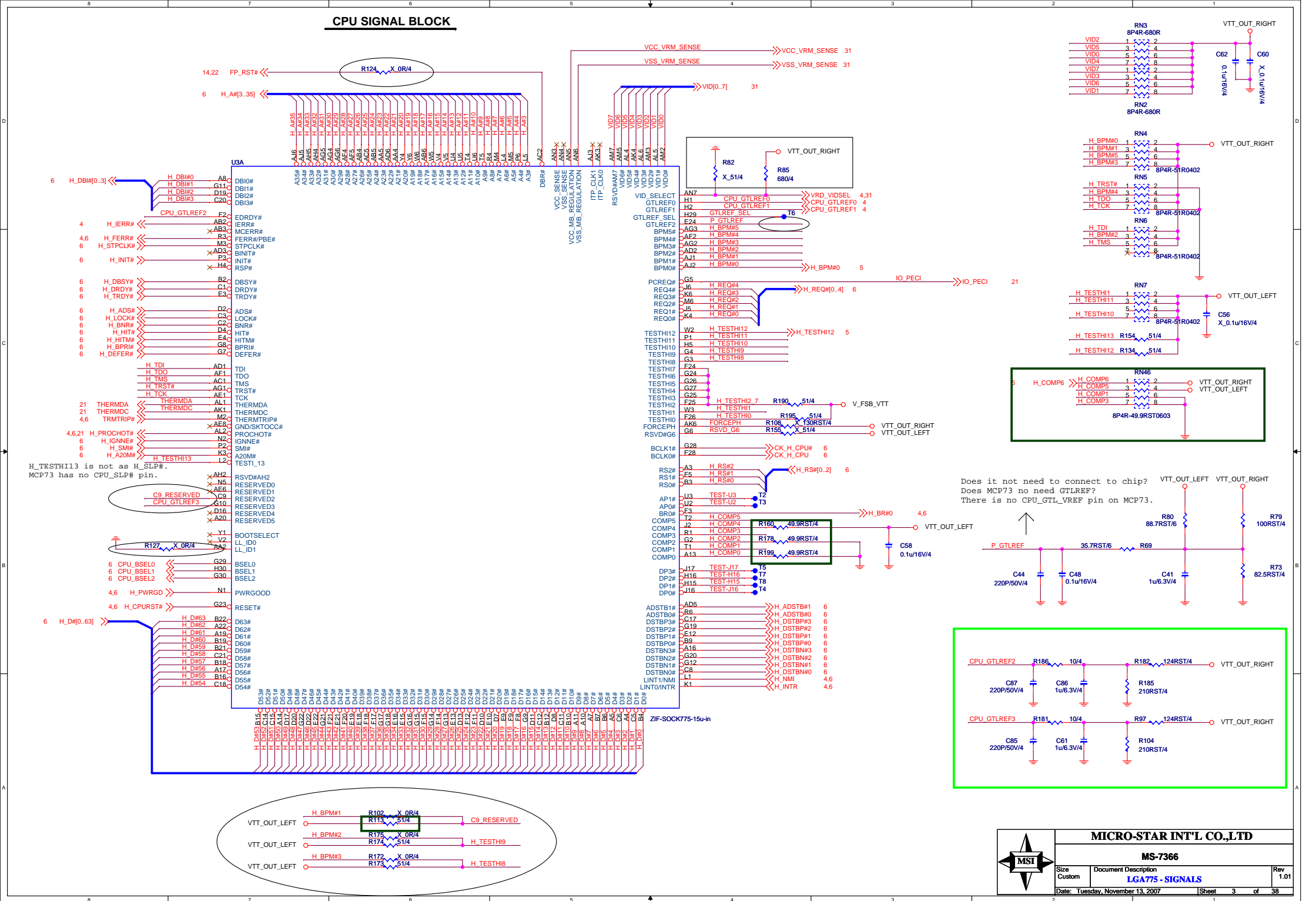
## Board Stack-up

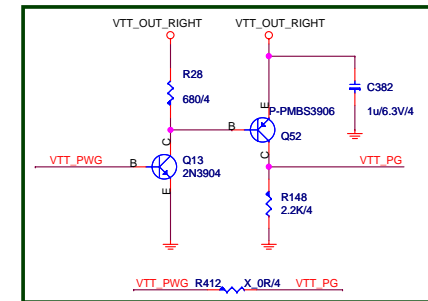
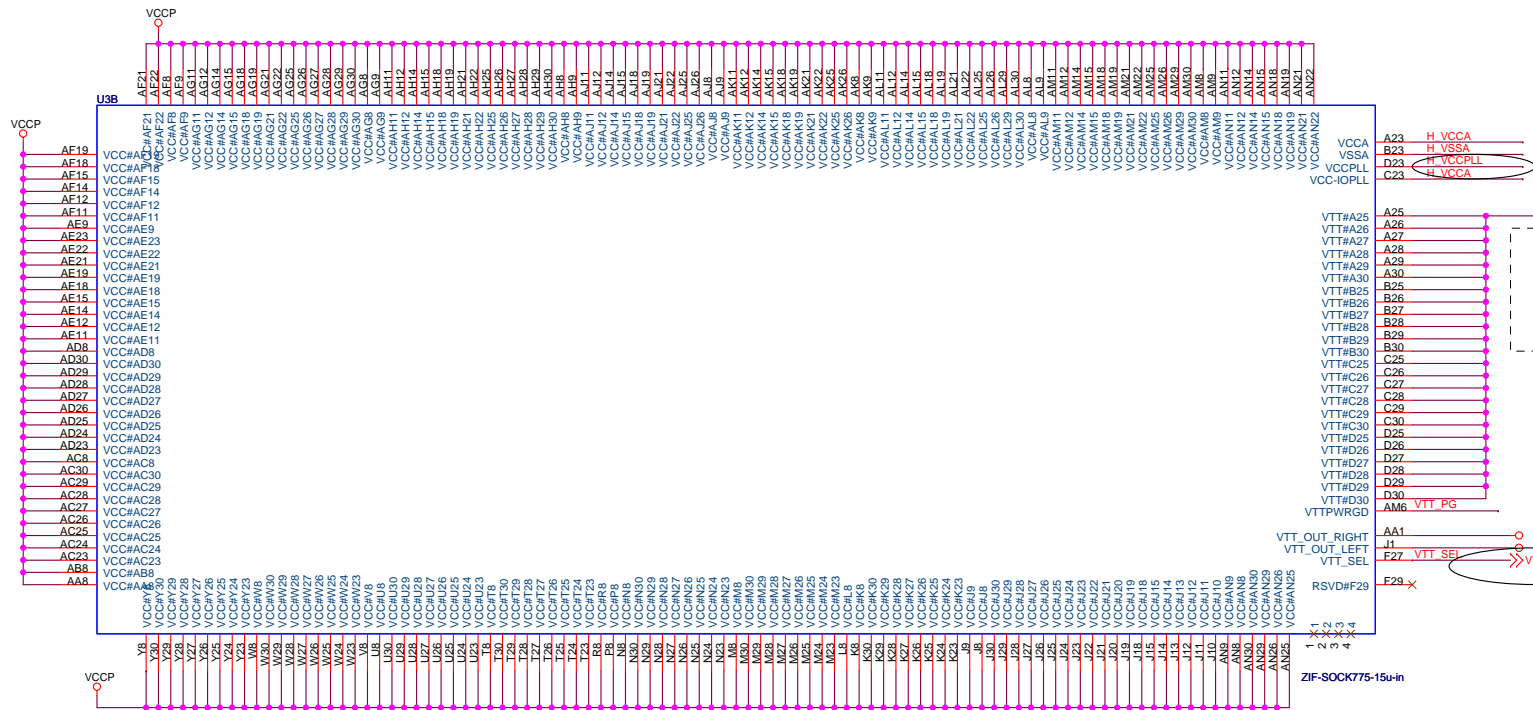
(1080 Prepreg Considerations)



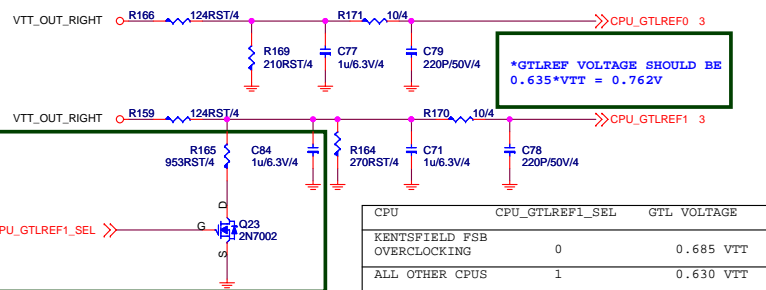
Single End 50ohm Top/Bottom : 4mils  
 USB2.0 - 100ohm : 20/4/8/4/20  
 HDMI - 100ohm : 20/4/8/4/20  
 SATA - 100ohm : 20/4/8/4/20  
 LAN - 100ohm : 20/4/8/4/20  
 PCIE - 100ohm : 20/4/8/4/20  
 IEEE1394 - 110ohm : 15/4/9/4/15  
 IDE : 15/4/8/4/15

### CPU SIGNAL BLOCK

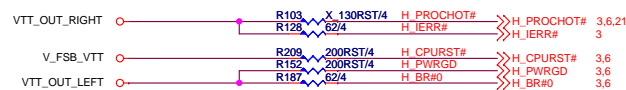




For Intel Kantisfield CPU



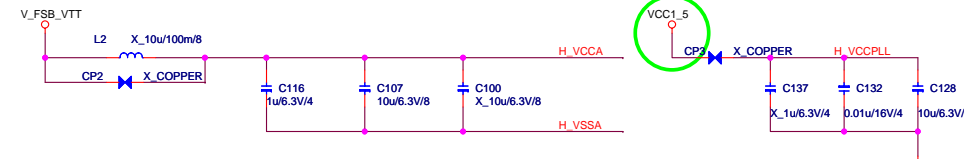
PLACE AT CPU END OF ROUTE



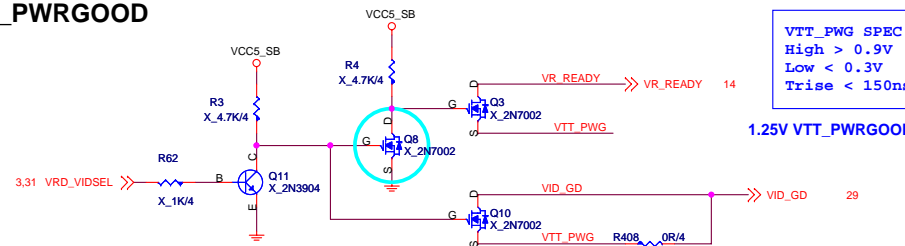
PLACE AT C55 END OF ROUTE



\*PLACE COMPONENTS AS CLOSE AS POSSIBLE TO PROCESSOR SOCKET  
\*TRACE WIDTH TO CAPS MUST BE NO SMALLER THAN 12MILS



## VTT\_PWRGOOD



VID_SELECT	VTT_PWG	power on sequence
0 (VRM10)	VID_GD	VTT_PWG before VCCP
1 (VRM11)	VR_READY	VCCP before VTT_PWG



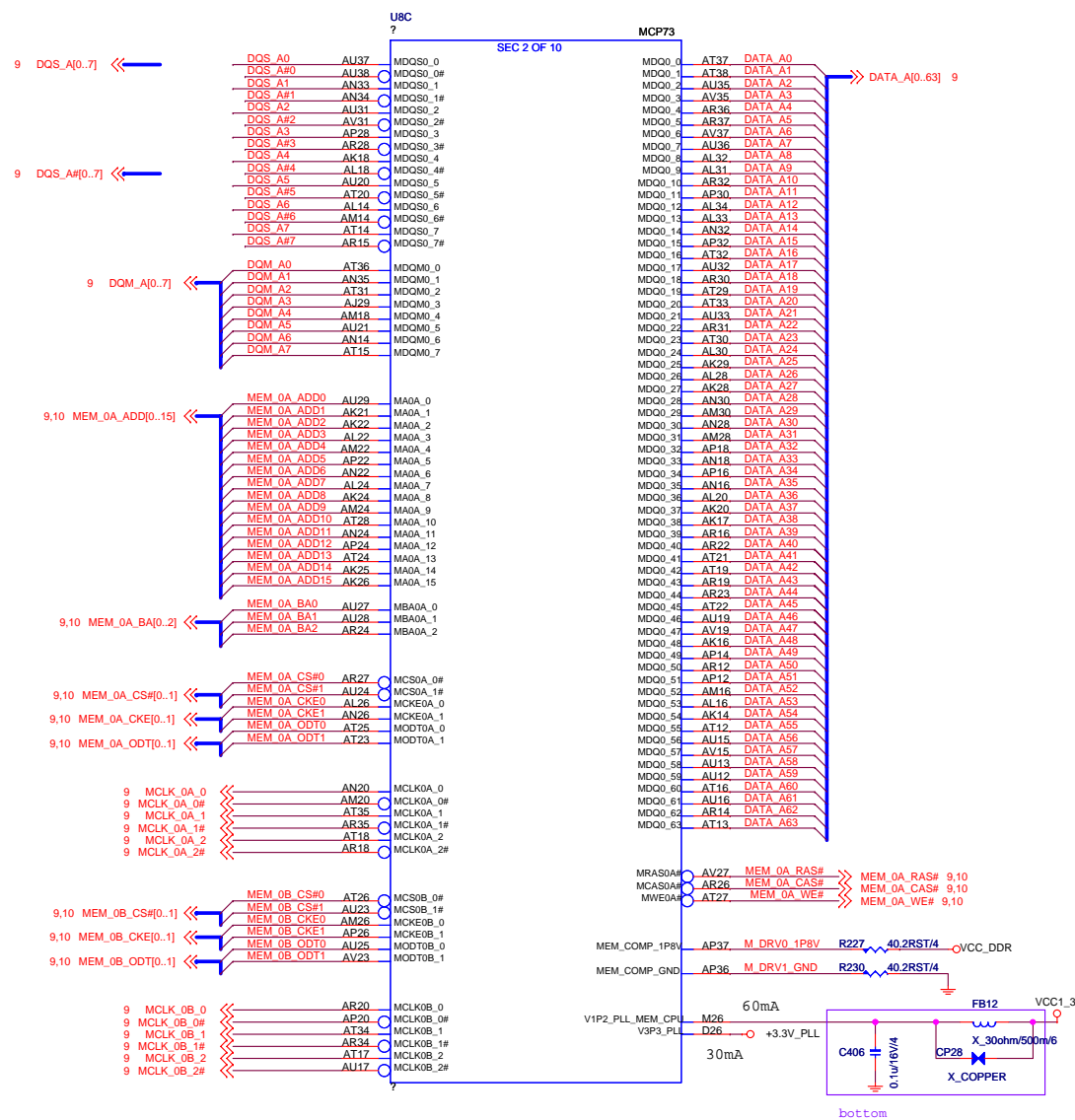
MICRO-STAR INT'L CO.,LTD			
MS-7366			
Size	Document Description	Rev	
Custom	LGA775 - POWER	1.01	
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DATA 0		DIMM 1	ADDR 0A / CNTL 0A
		DIMM 2	ADDR 0B / CNTL 0B

**DIMM 0A**

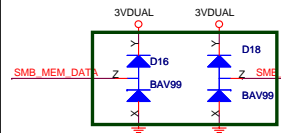
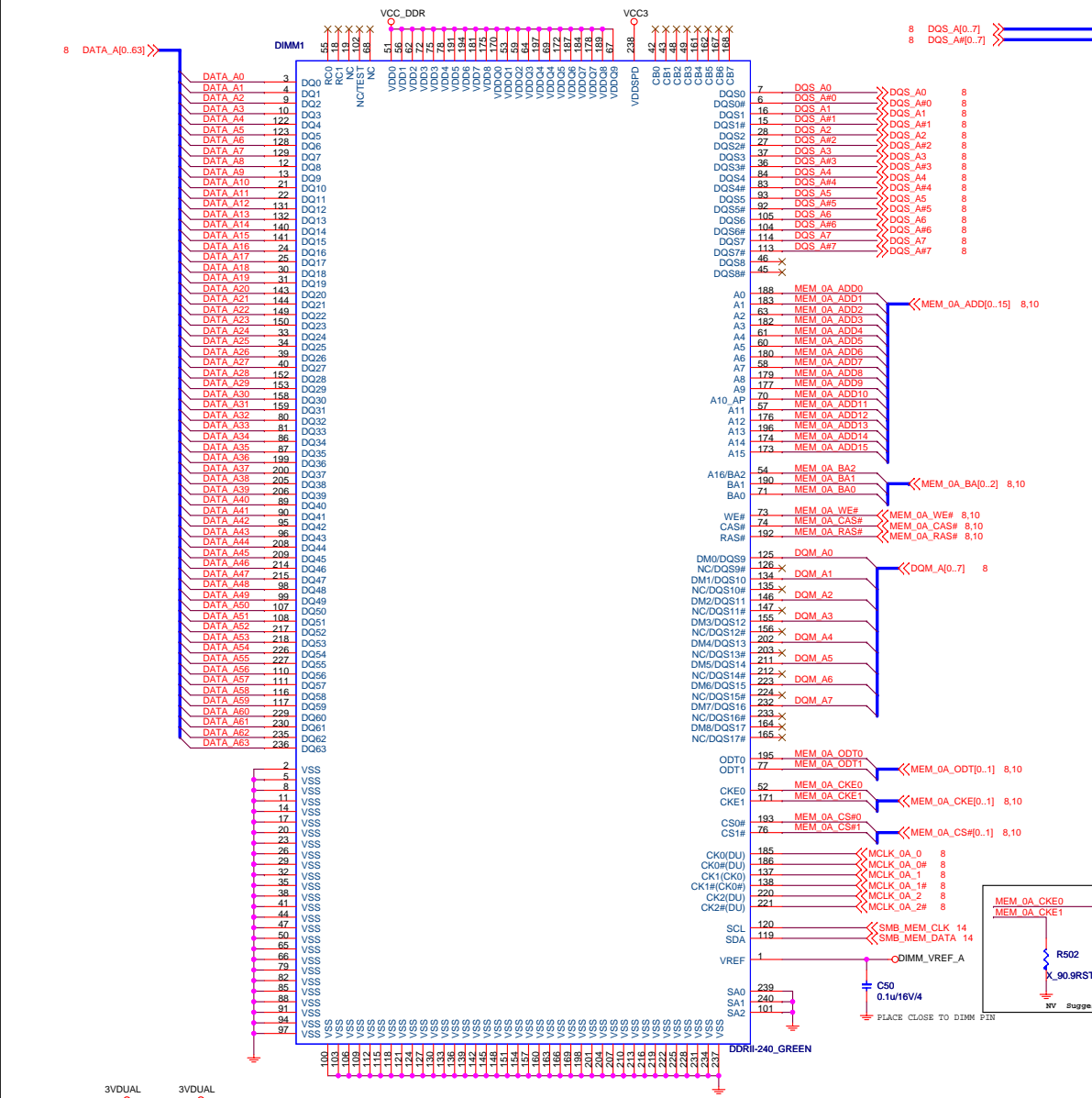
**MICRO-STAR INT'L CO.,LTD**

**MS-7366**

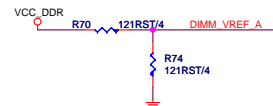
Size Custom	Document Description <b>MCP73-MEM</b>	Rev 1.01
Date: Tuesday, November 13, 2007		Sheet 8 of 38



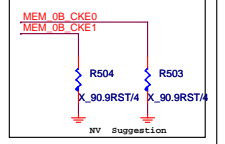
## DIMM1 / 0A



ADDRESS: 000  
0xA0



## DIMM2 / 0B



ADDRESS: 001  
0xA2

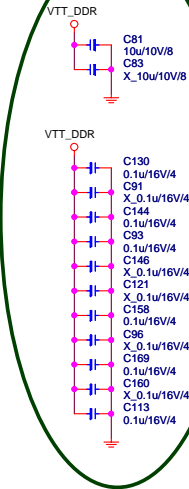
MICRO-STAR INT'L CO.,LTD

MS-7366

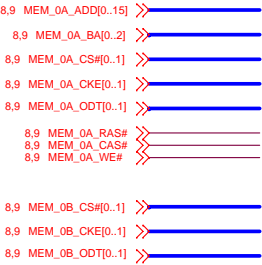
Size Custom Document Description DDR II - DIMM 1 & 2 Sockets Rev 1.01

Date: Tuesday, November 13, 2007 [Sheet 9 of 38]

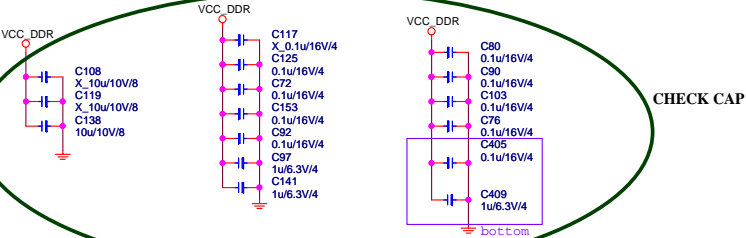
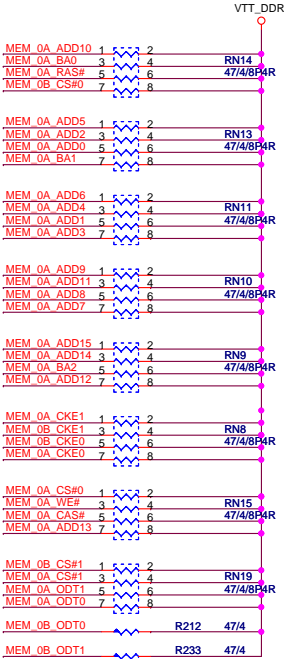
CHANNEL A VTT\_DDR DECOUPLING CAPS



CHECK CAP

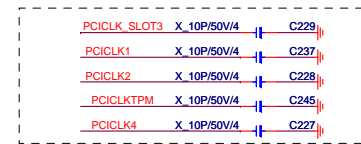
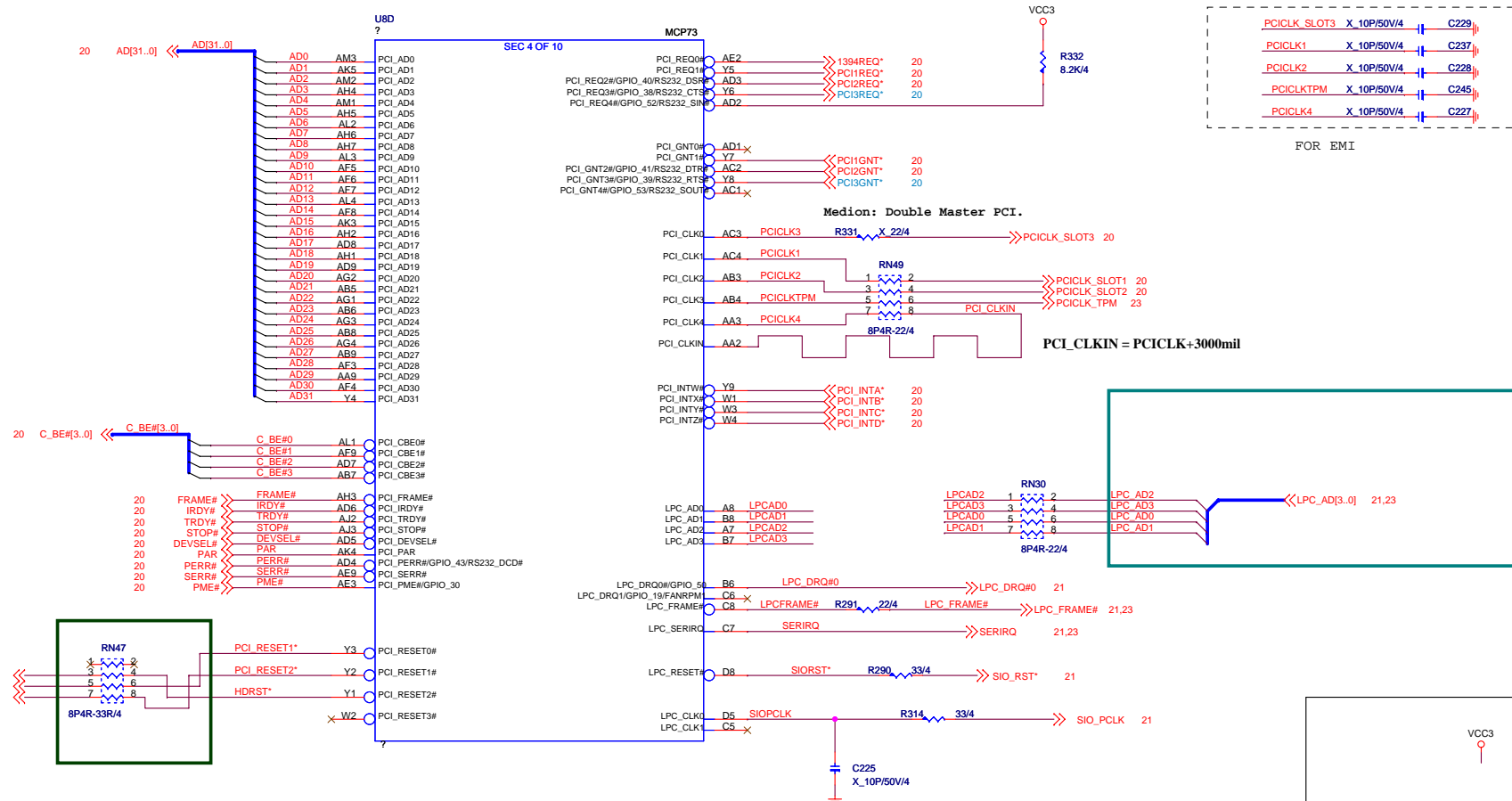


CHANNEL A ----- 0A , 0B



CHECK CAP

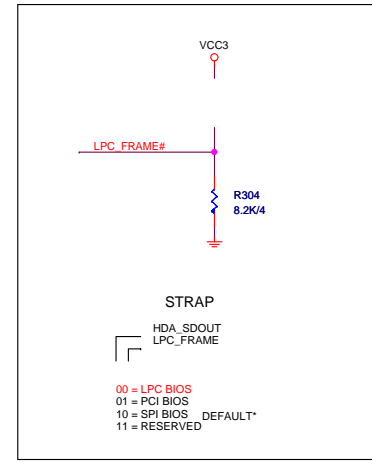
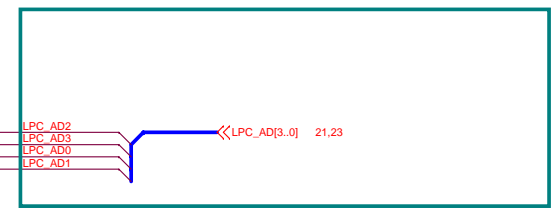
公板上0.1u X5, 1uX3, 10uX3  
兩根再X2



FOR EMI

Medion: Double Master PCI.

PCI\_CLKIN = PCICLK+3000mil

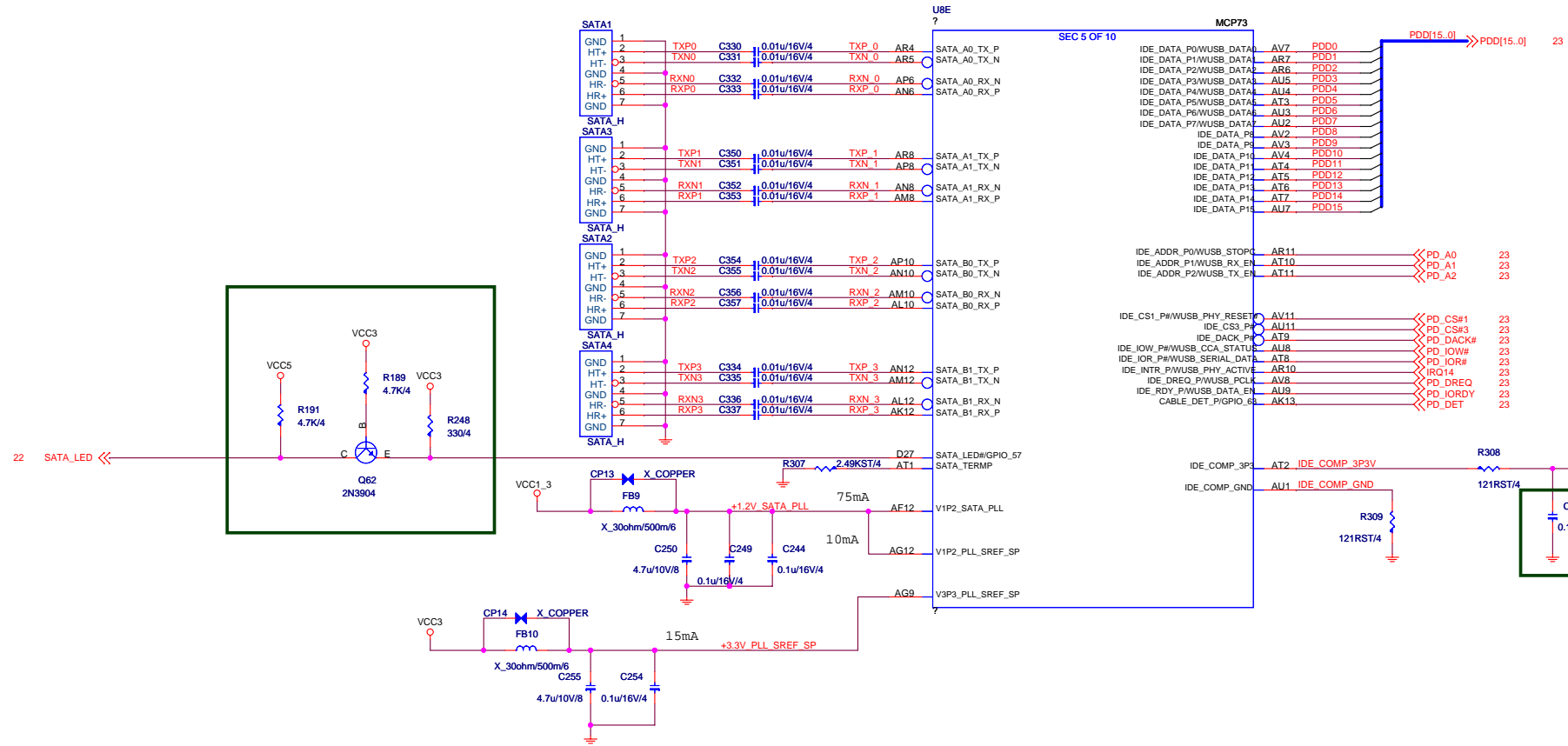


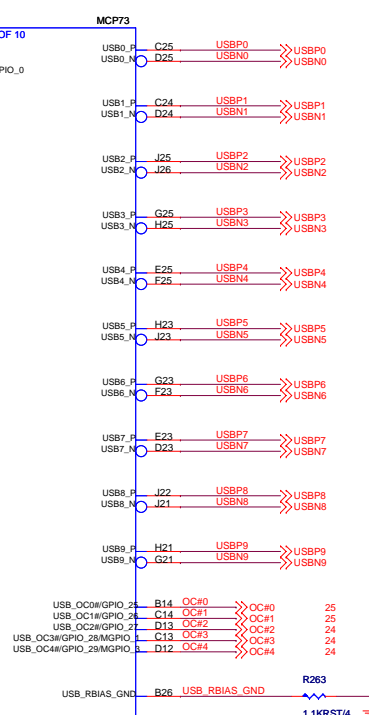
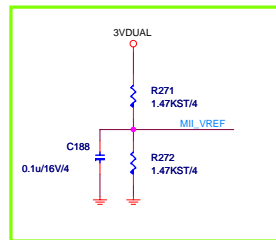
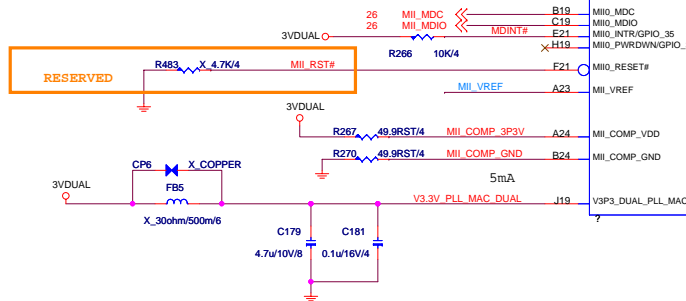
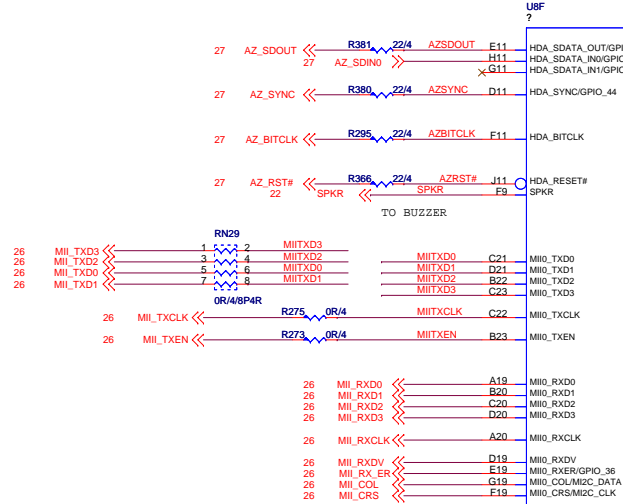
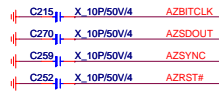
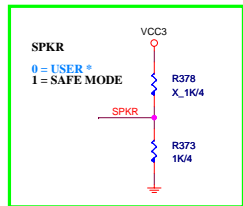
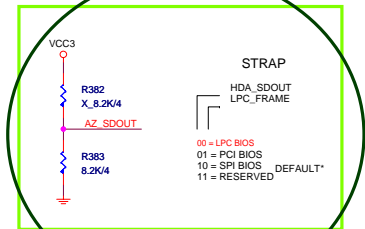
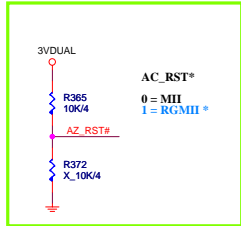
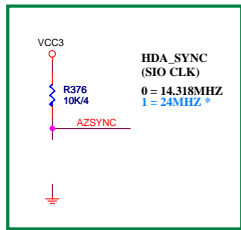
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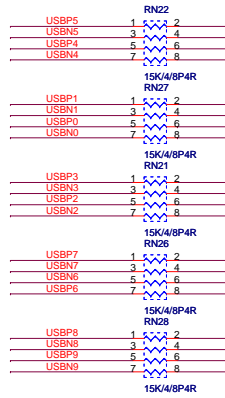
Size	Document Description	Rev
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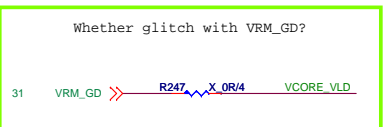
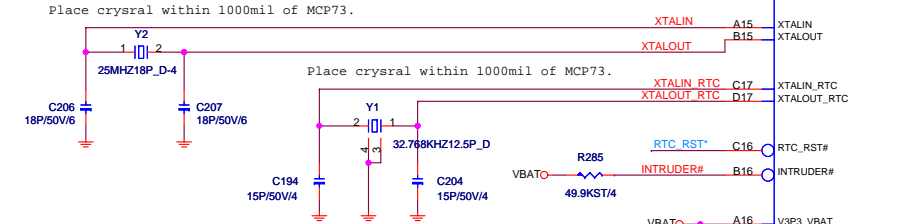
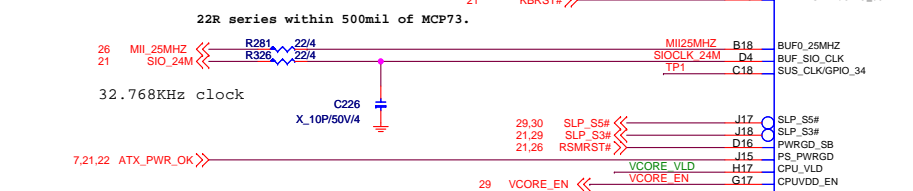
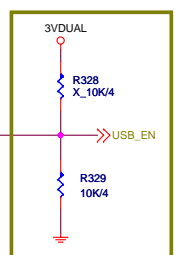
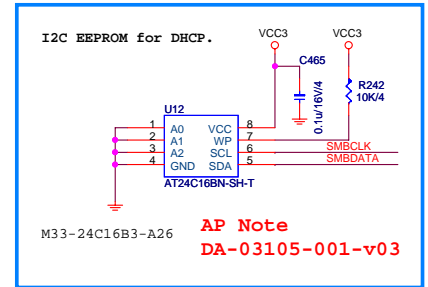
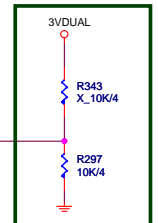
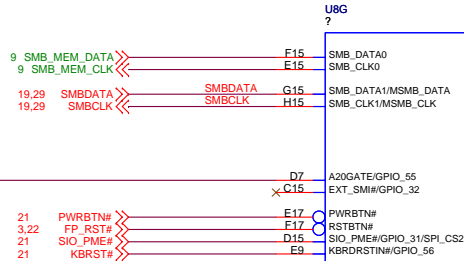
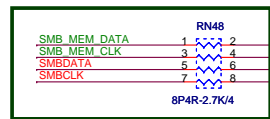
PLACE CAPS AT CONNECTOR.



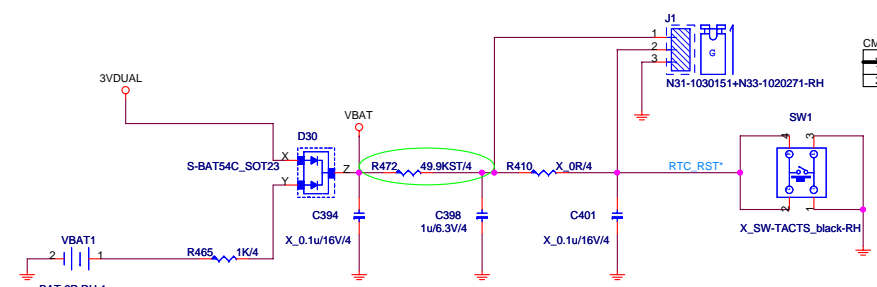
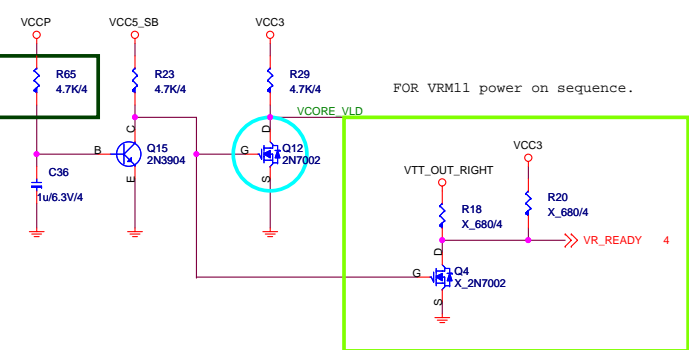


["USB3--USB[8.9] is not present in MCP73"]



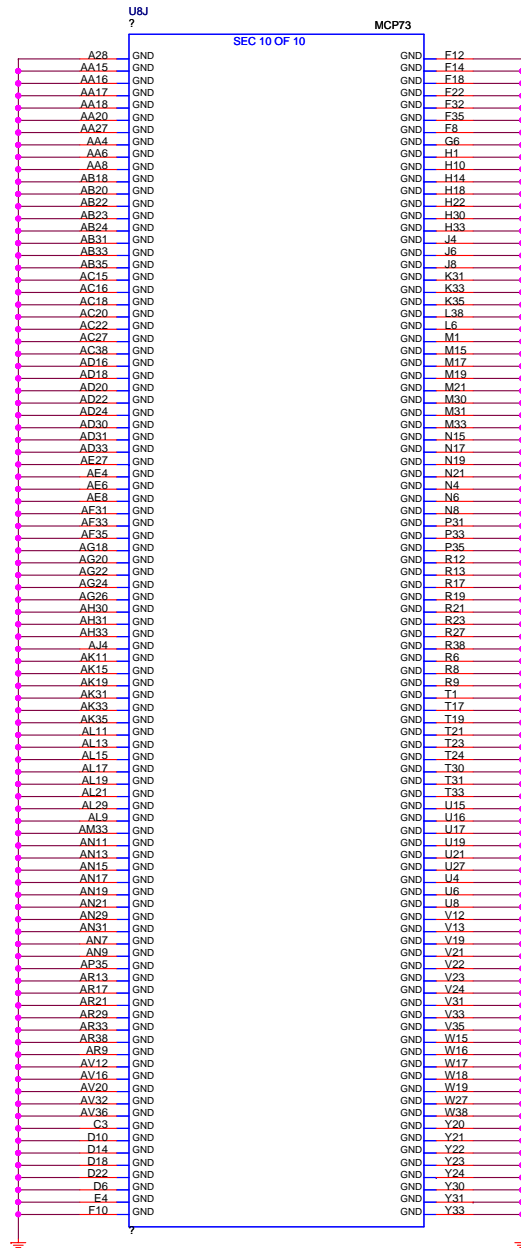


# Vcore power-on sequence control circuit



CMOS CLEAR JUMPER	
1-2	Clear CMOS
2-3	Normal
2-3	Clear CMOS





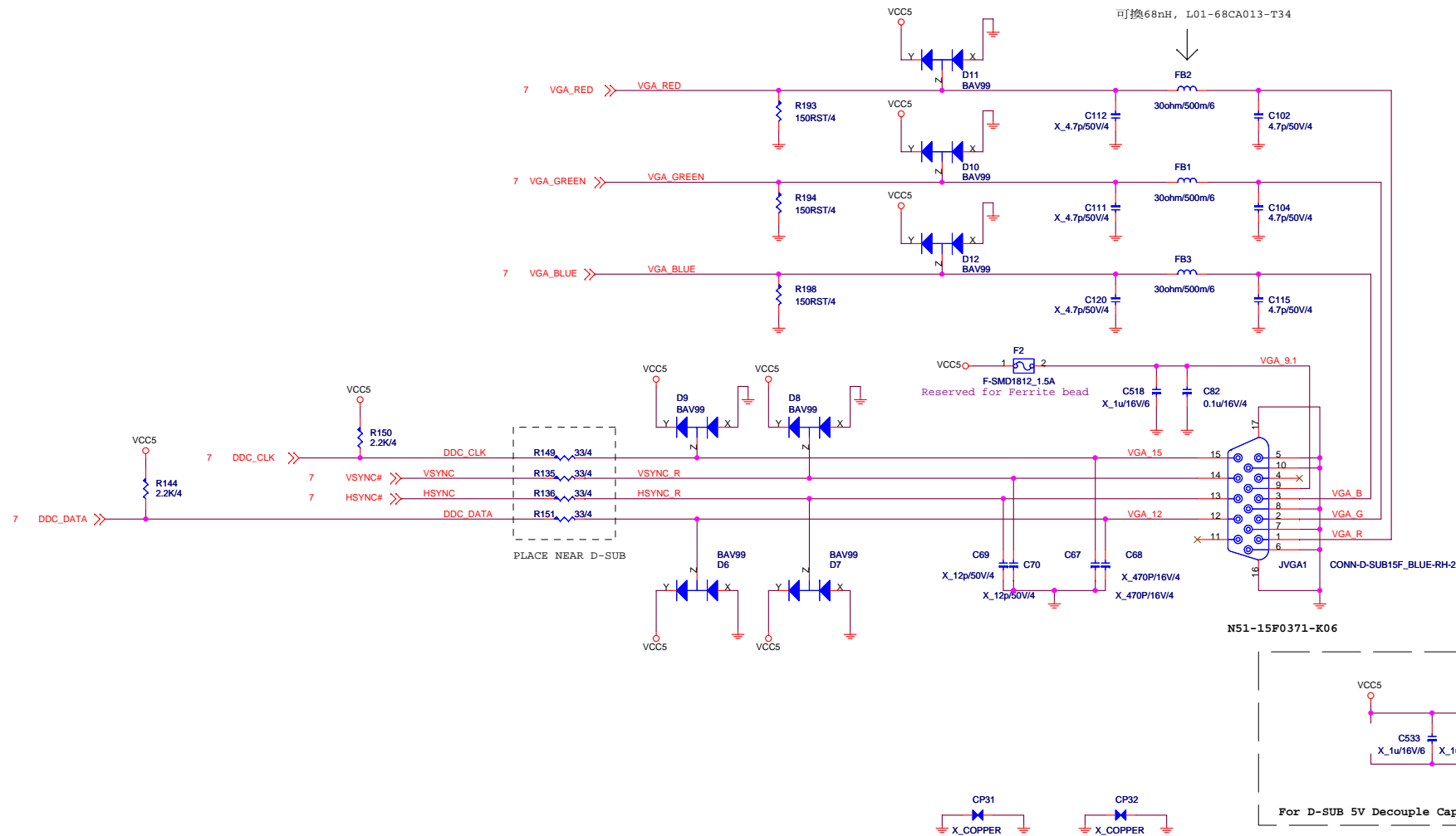
MICRO-STAR INT'L CO.,LTD

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PLACE NEAR VGA CONNECTOR



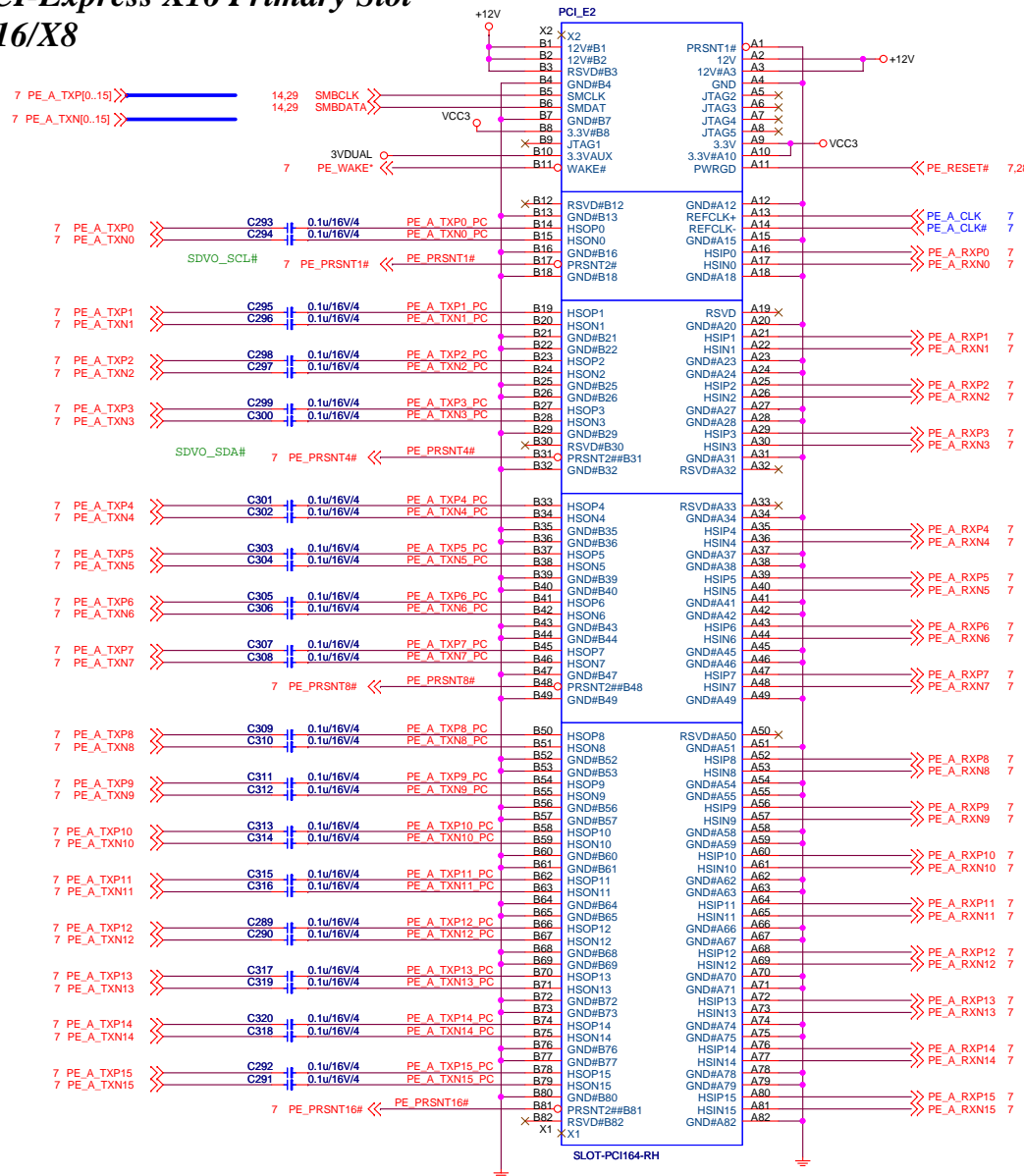
MICRO-STAR INT'L CO.,LTD

MS-7366

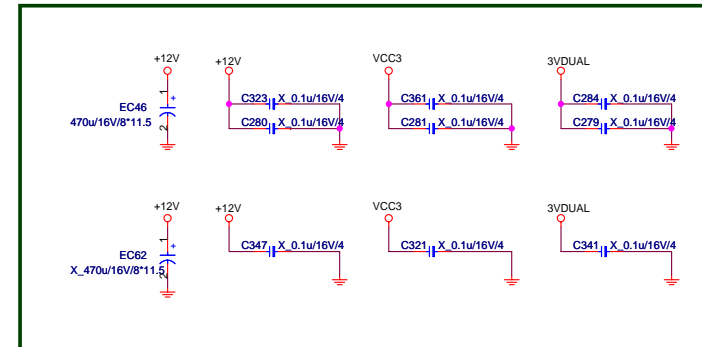
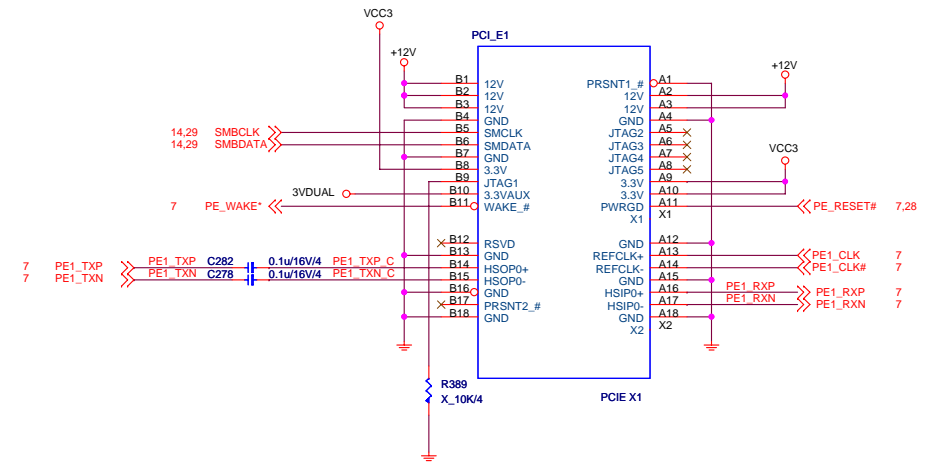
Size	Document Description	Rev
Custom	D-SUB	1.01
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**PCI-Express X16 Primary Slot**  
**X16/X8**



**PCI-Express x1 SLOTT 1**

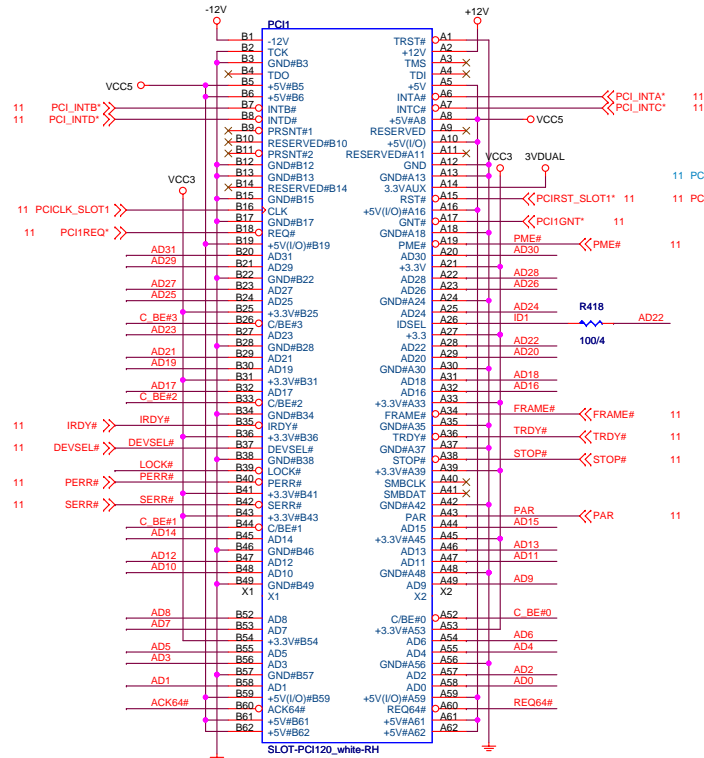


**MICRO-STAR INT'L CO.,LTD**

MS-7366

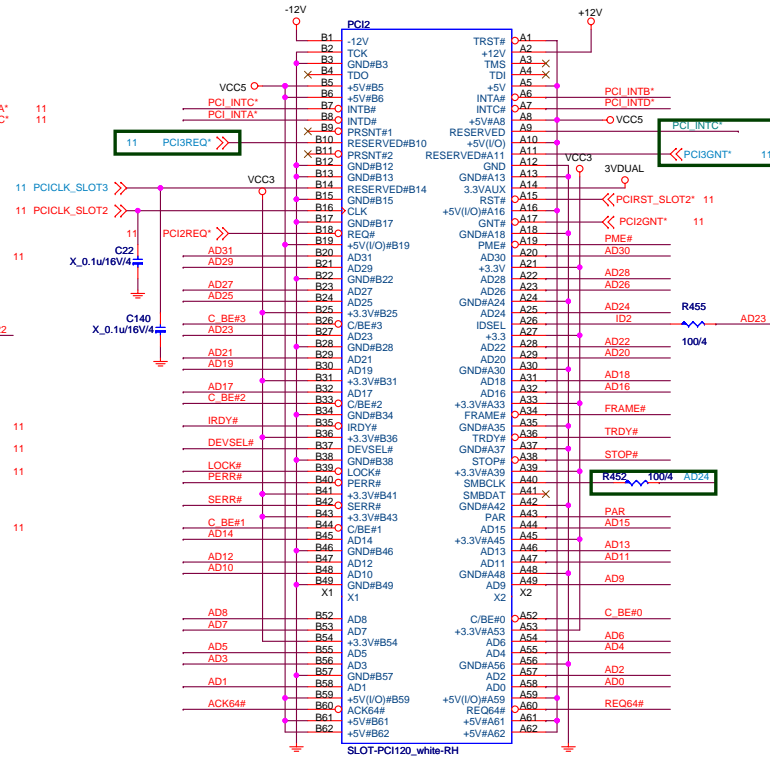
Size Custom	Document Description <b>PCI-E X16/X1 Slot</b>	Rev 1.01
Date: Tuesday, November 13, 2007		Sheet 19 of 38

# PCI SLOT 1 (PCI VER: 2.2 COMPLY)



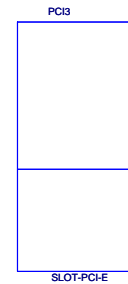
**IDSEL = AD22**  
**MASTER = PCI1REQ\***  
**PCI1GNT\***  
**PCI1ROUTE=A,B,C,D**

# PCI SLOT 2 (PCI VER: 2.2 COMPLY)

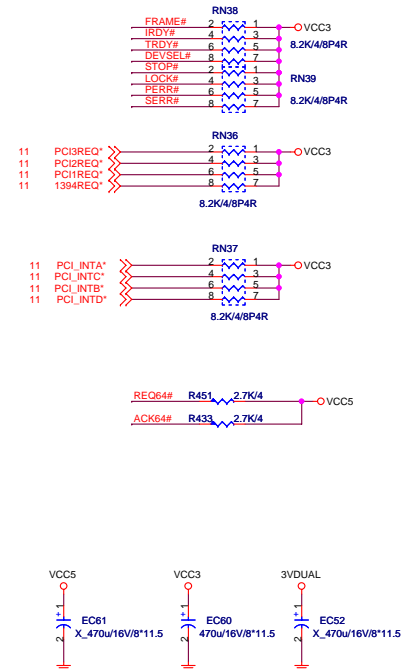


**IDSEL = AD23**  
**MASTER = PCI2REQ\***  
**PCI2GNT\***  
**PCI1ROUTE=B,C,D,A**  
**IDSEL = AD24**  
**MASTER = PCI3REQ\***  
**PCI3GNT\***  
**PCI1ROUTE=C**

Medion BLUE PCI SLOT



# PCI PULL-UP / DOWN RESISTORS



MICRO-STAR INT'L CO.,LTD

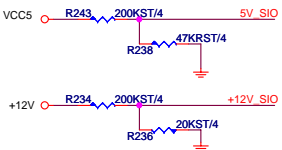
MS-7366

Size	Document Description	Rev
Custom	PCI Slot 1 & 2	1.01
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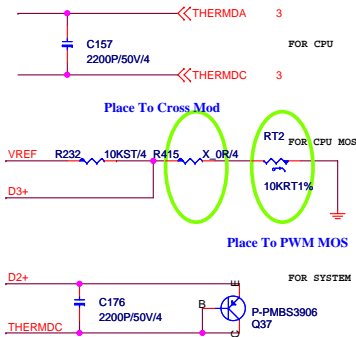
**LPC SUPER I/O F71882**



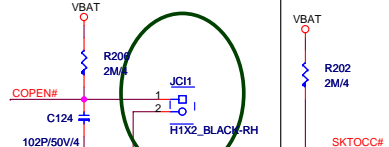
The best voltage input level is about 1V.



## DIODE SENSING CIRCUIT



CPU VID reset



## MS-7366

Size Custom	Document Description <b>LPC-Super I/O F71882FG</b>	Rev 1.01
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## Intel Front Panel



## ATX Connector



### Winbond Protection circuit

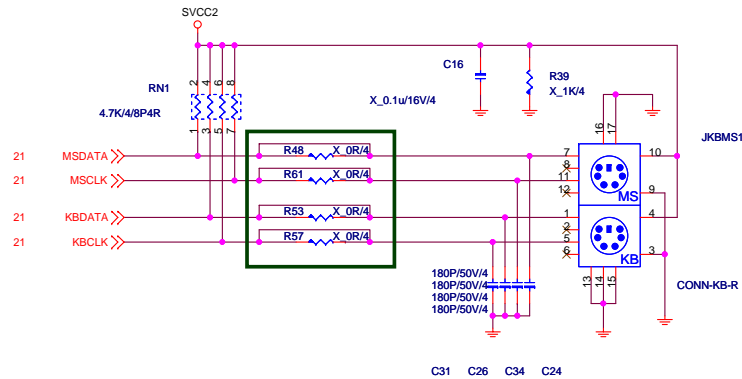
Reserve for NB\_FAN, Near MCP73  
MP Remove



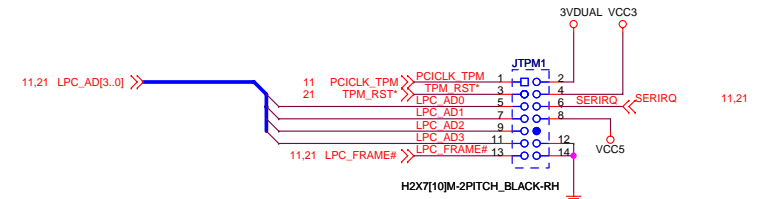
**MS-7366**

Size Custom	Document Description <b>ATX/Front Panel/FAN</b>	Rev 1.01
Date: Tuesday, November 13, 2007		Sheet 22 of 38

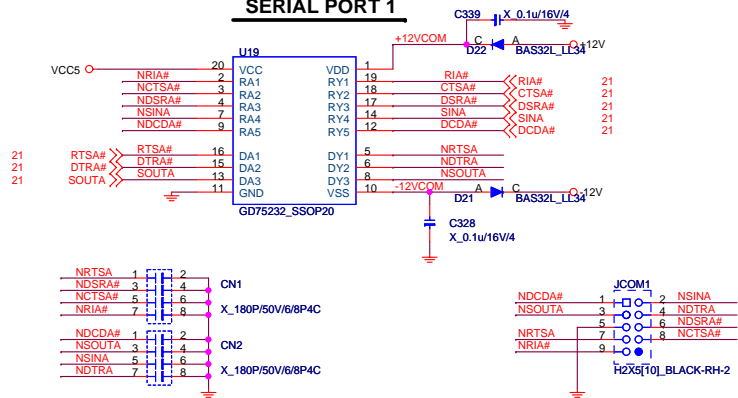
## PS2 KEYBOARD & MOUSE CONNECTOR



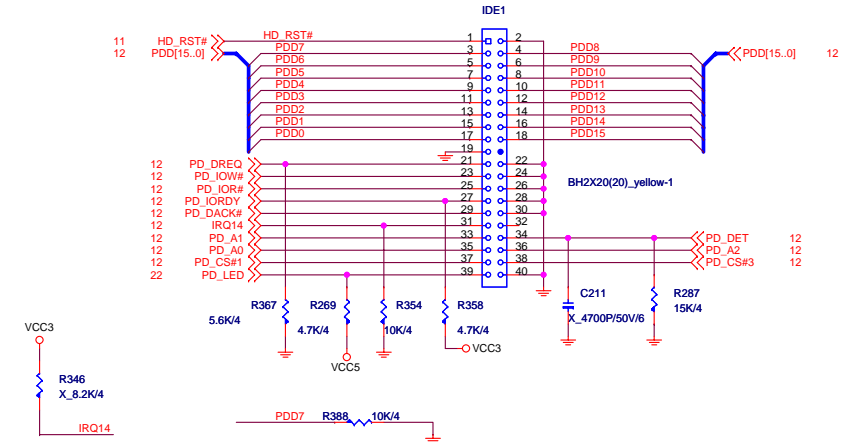
## JLPC port for TPM



## SERIAL PORT 1

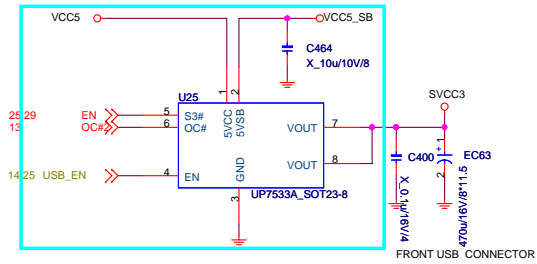


## PRIMARY IDE BLOCK

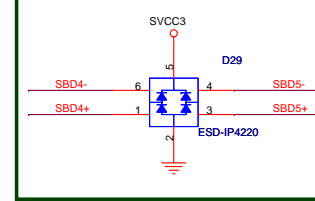


# FRONT PANEL USB CONNECTOR

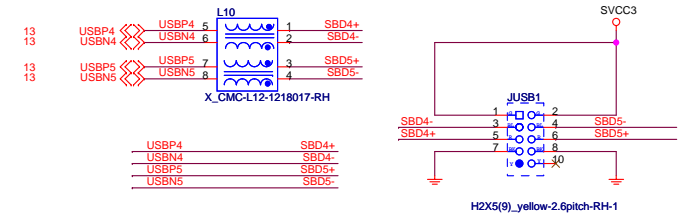
## POWER CIRCUIT FOR USB PORT 4,5



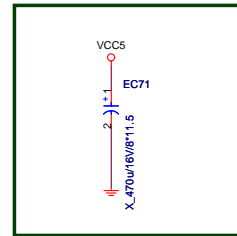
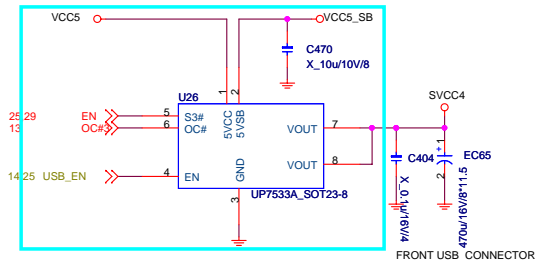
## ESD Protection



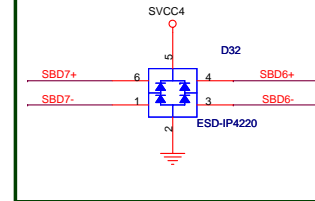
## FRONT PANEL USB CONNECTOR FOR USB PORT 4,5



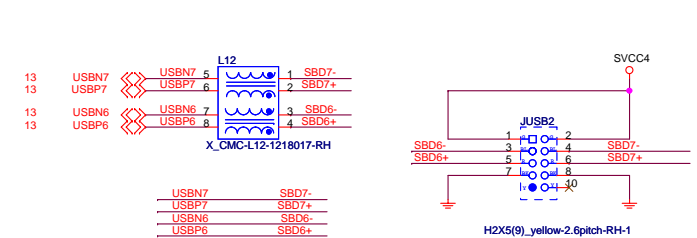
## POWER CIRCUIT FOR USB PORT 6,7



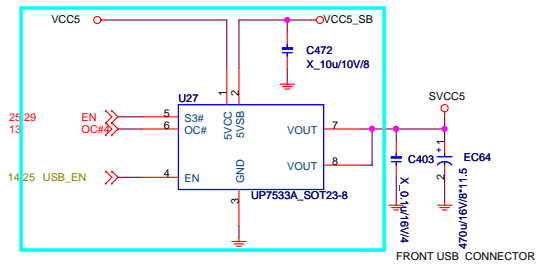
## ESD Protection



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

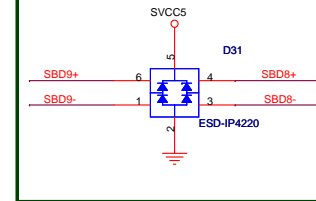


## POWER CIRCUIT FOR USB PORT 8,9

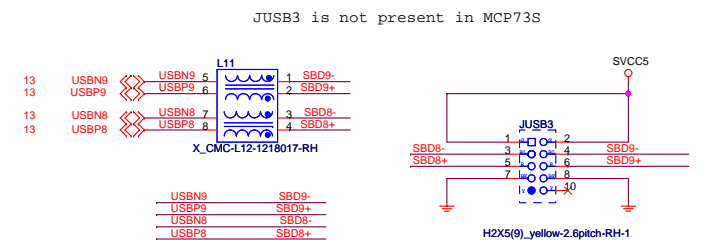


JUSB3--USB[8.9] is not present in MCP73V

## ESD Protection



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

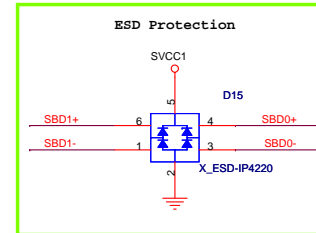
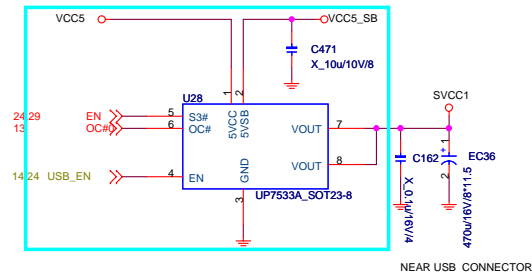


JUSB3--USB[8.9] is not present in MCP73V

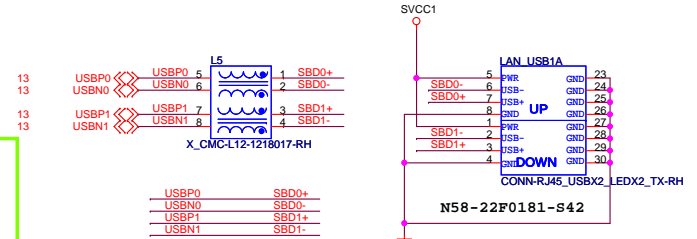


# REAR PANEL USB CONNECTOR

## POWER CIRCUIT FOR USB PORT 0,1



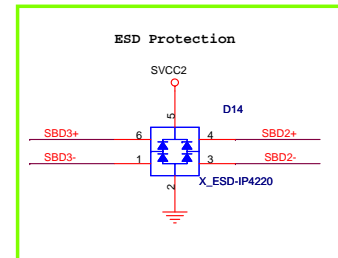
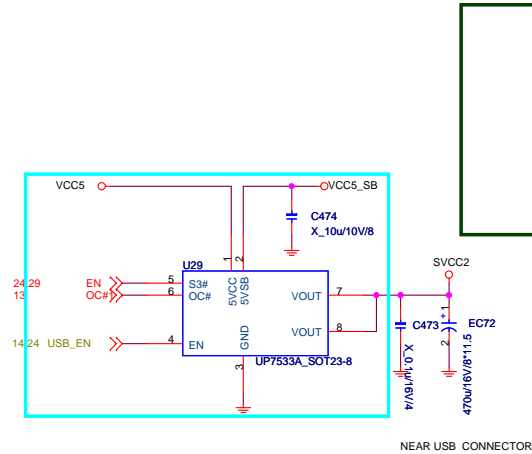
## REAR PANEL USB CONNECTOR FOR USB PORT 0,1



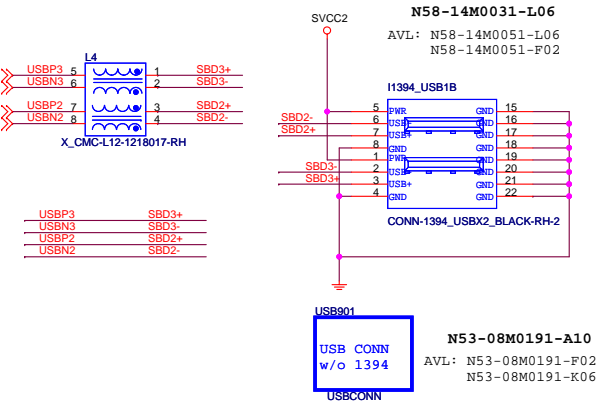
## NEAR USB CONNECTOR

22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22

## POWER CIRCUIT FOR USB PORT 2,3



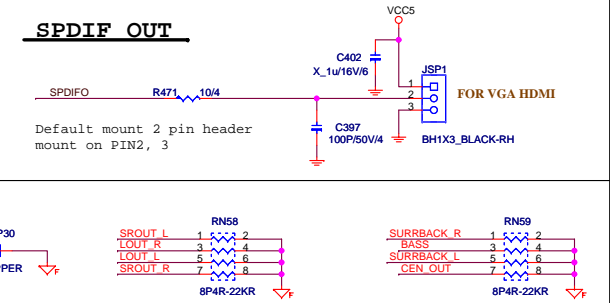
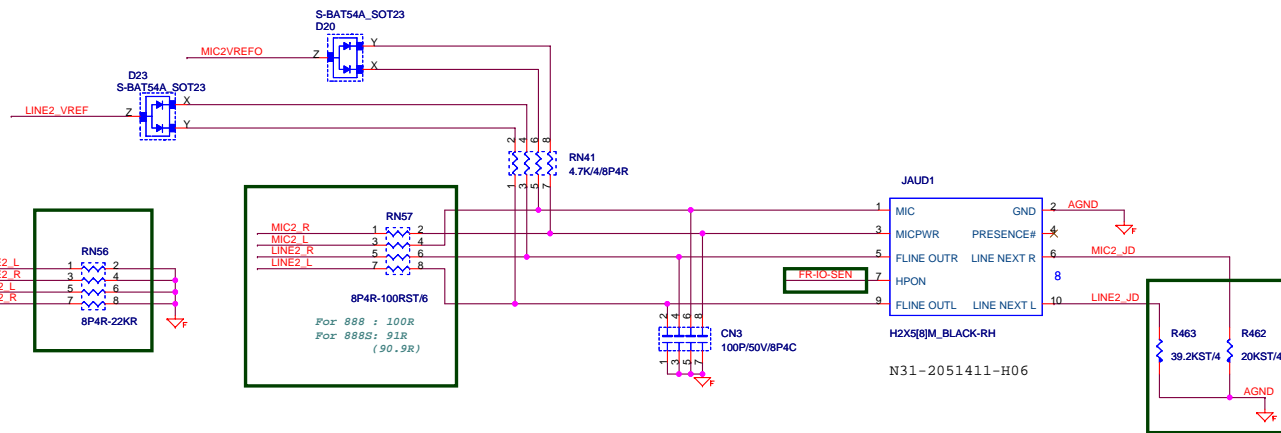
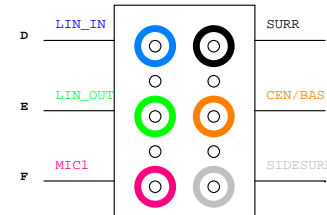
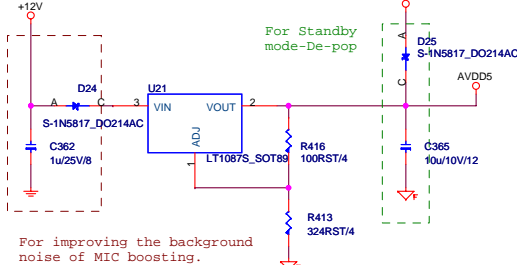
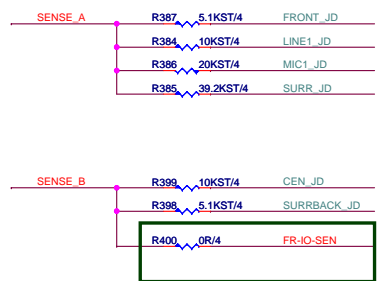
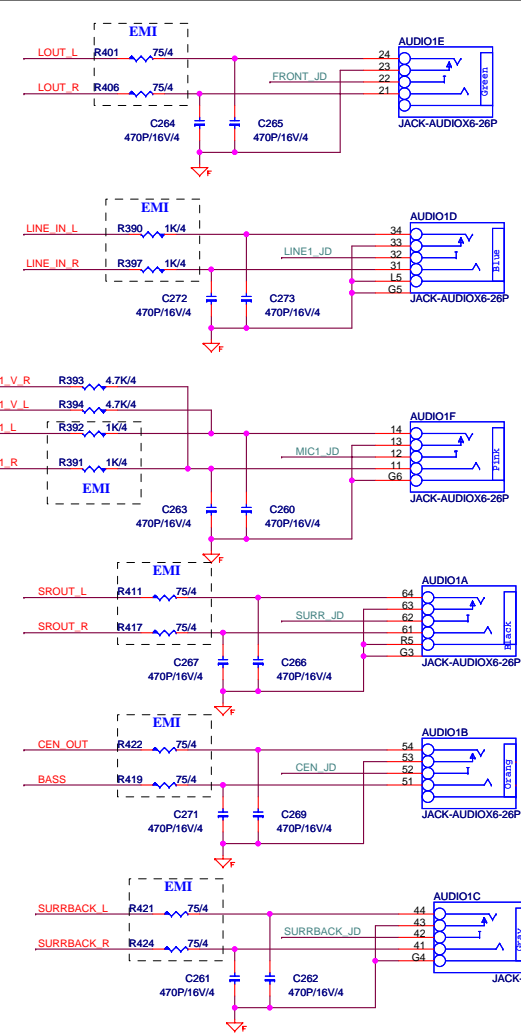
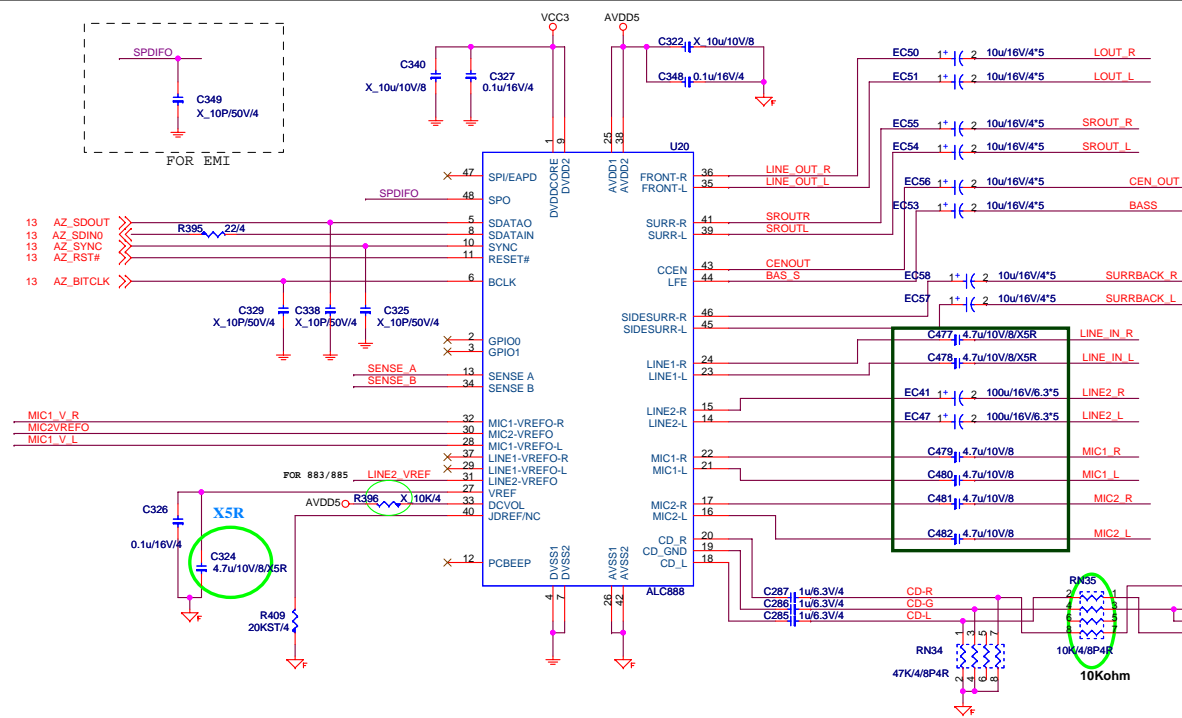
## REAR PANEL USB CONNECTOR FOR USB PORT 2,3



## NEAR USB CONNECTOR

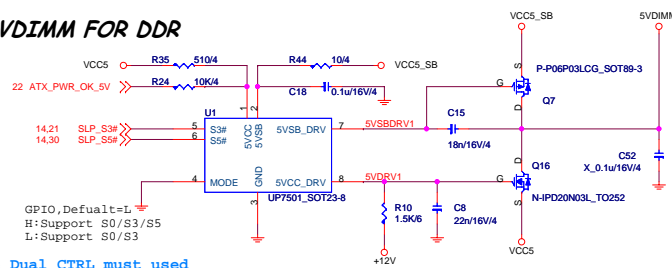
22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22





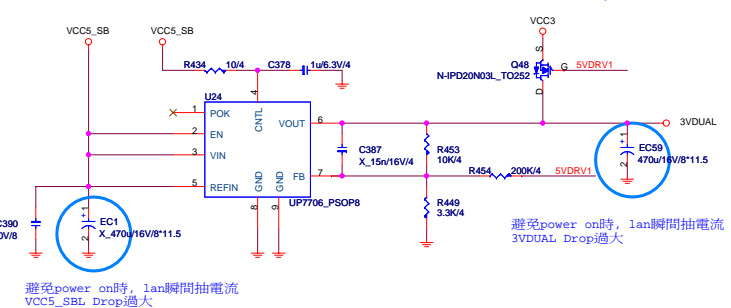


## 5VDIMM FOR DDR

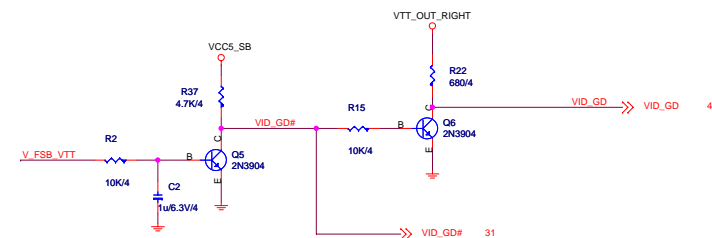


The Dual\_CTRL must used default "Output- Low"

## 3VDUAL, 1.7A



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

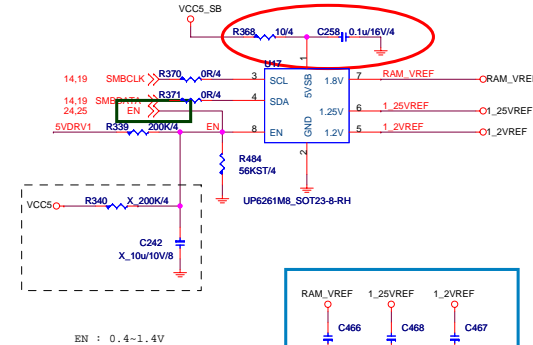


## Reference Voltage

up6261: High Precision Voltage Console

ONLY OVER DDR Voltage to 2V

VCC5\_SB to UP6261 pin1 path keep the same.

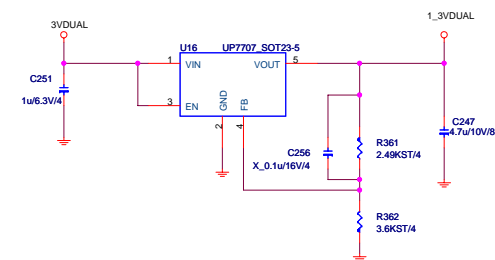


EN : 0.4~1.4V

I32-0626109-U33, delay 20 ms  
避免EN比 5VDVR1早, MCP73 core power  
抽到VCC5\_SB

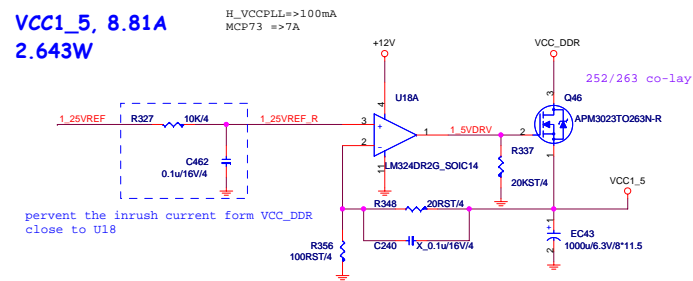
## 1\_3VDUAL, 25mA

up7707: 600mA Low Dropout Linear Regulator

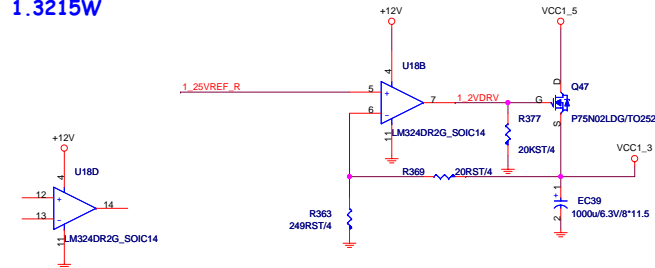


Vout=0.8 \* (R1+R2)/R1

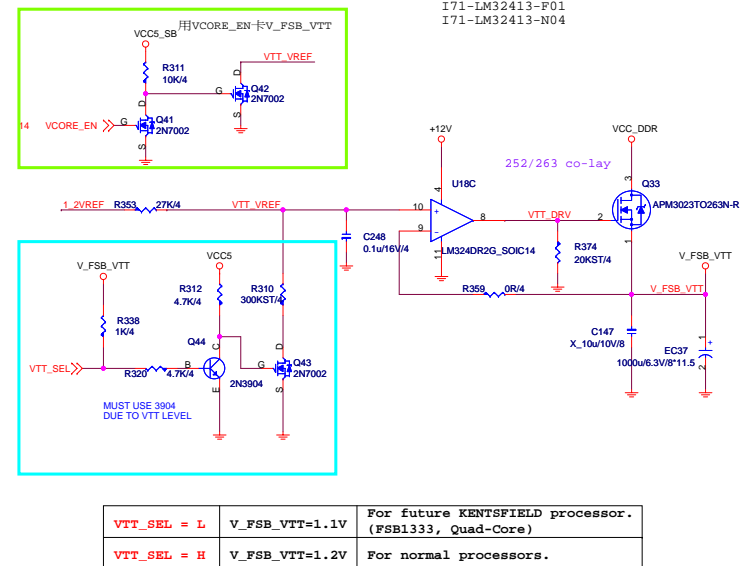
VCC1\_5, 8.81A  
2.643W



VCC1\_3, 8.81A  
1.3215W



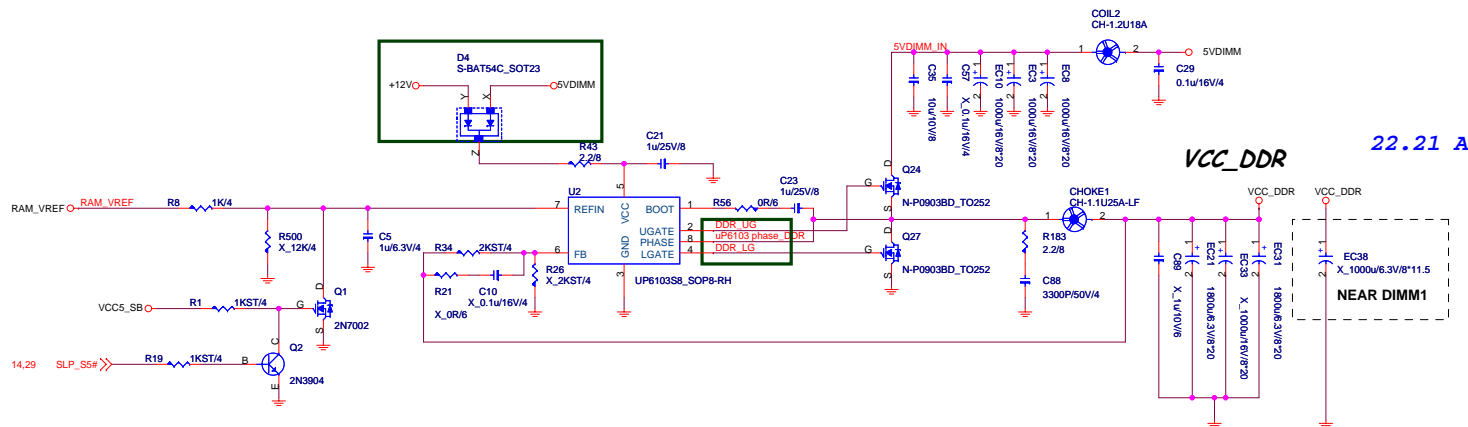
FSB\_VTT, 6.1A  
3.66W



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

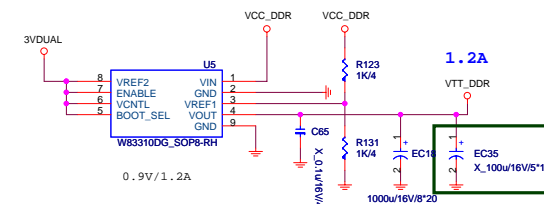
## DDR II 1.8V POWER

$I_{ripple} = 22.21 \times 0.6 \times 0.8 / 1 = 10.66A$   
 $2.35 \times 3 \times 1.7 = 11.985A \approx 10.08A$

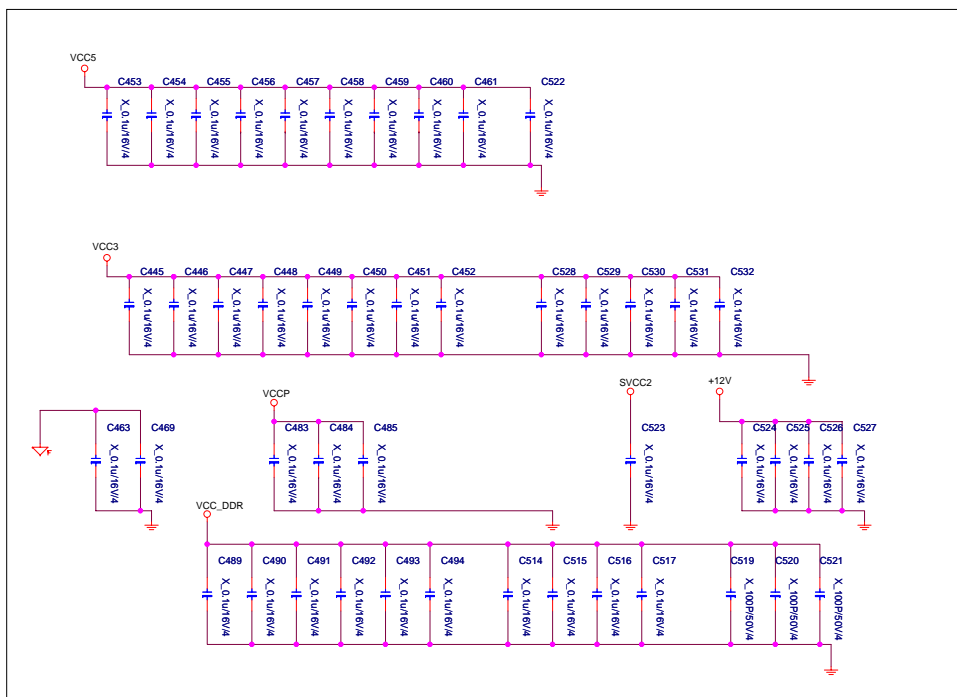


## DDR VTT Power

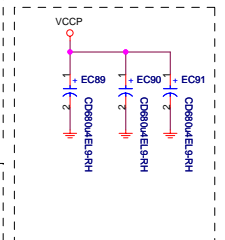
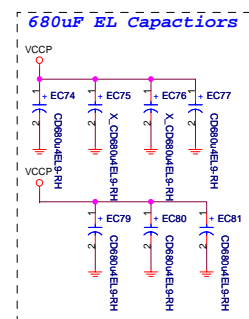
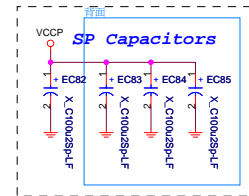
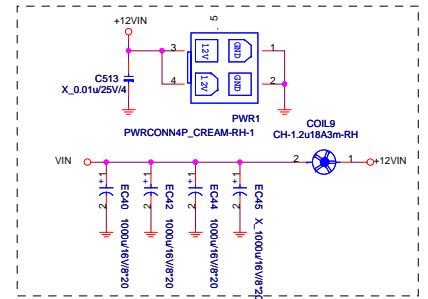
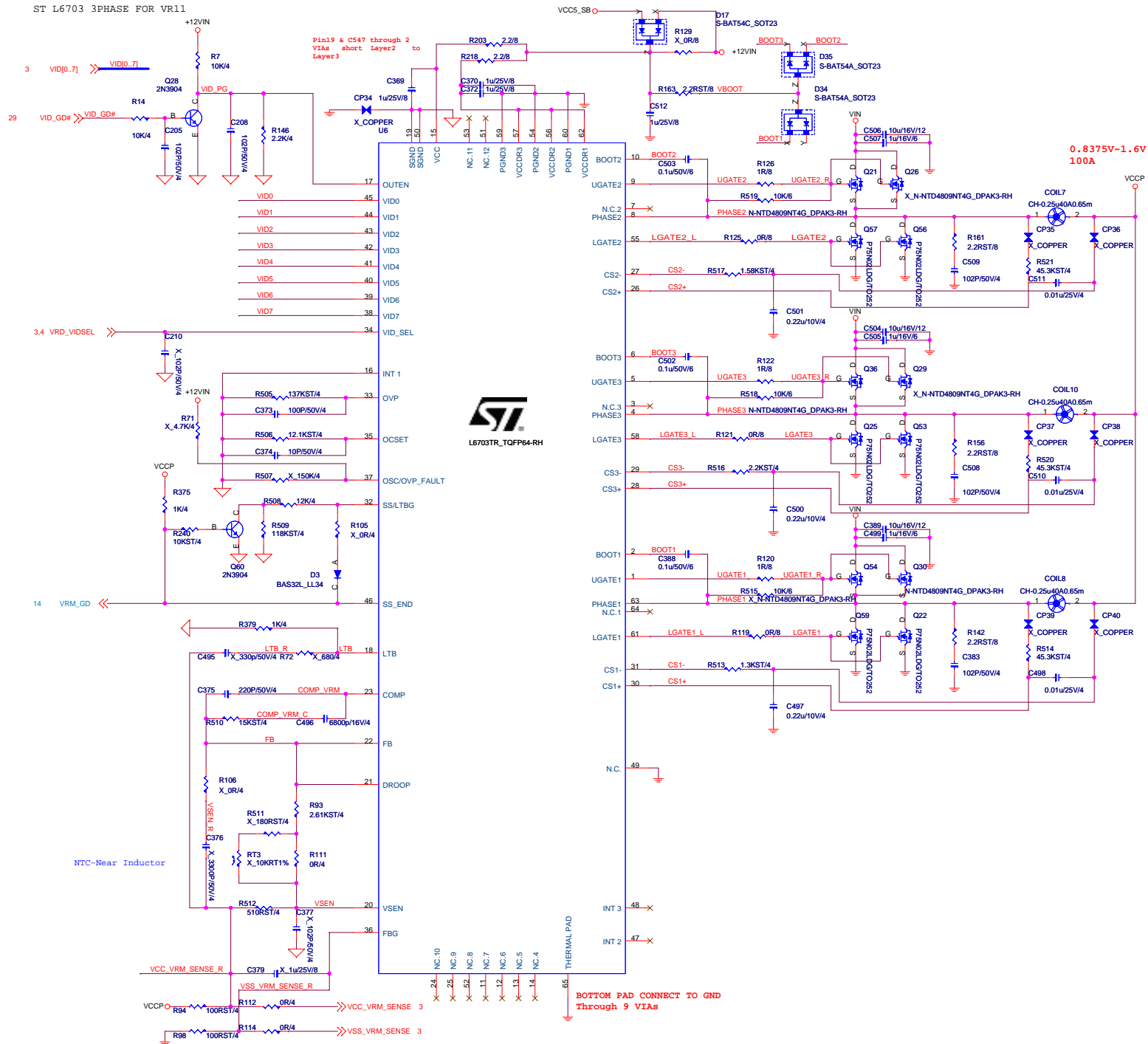
To CPU Copper trace width > 200mils



EMI



# ST L6703 3PHASE FOR VR11



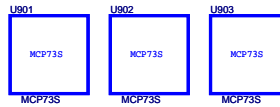
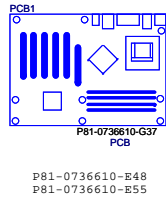
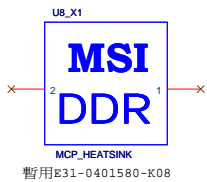
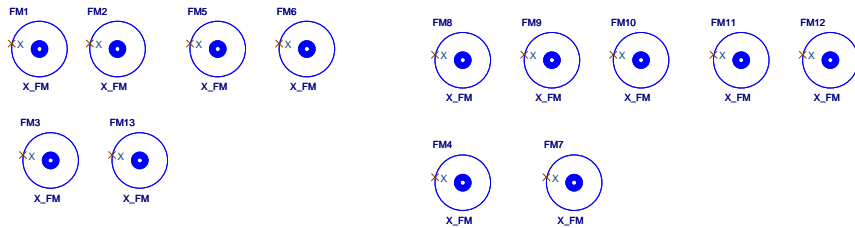


Table 1-4. Comparison of Different MCP73 Models

Features	MCP73D	MCP73PV	MCP730	MCP73S	MCP73V
IGPU	No	DX9 SM3.0	DX9 SM3.0	DX9 SM3.0	DX9 SM3.0
Display Interface	N/A	HDMI, DVI, RGB, sDVO	DVI, RGB, sDVO	DVI, RGB, sDVO	RGB
Integrated HDCP	N/A	Yes	Yes	Yes	No
FSB	1333	1333	1333	1066	1066
Memory	DDR2-667 64-bit	DDR2-667 64-bit	DDR2-667 64-bit	DDR2-667 64-bit	DDR2-667 64-bit
PCI Express	1 x16, 2 x1	1 x16, 2 x1	1 x16, 2 x1	1 x16, 2 x1	1 x16, 2 x1
USB Ports	8	10	10	10	8
Networking	10/100/1000	10/100/1000	10/100/1000	10/100/1000	10/100
SATA II Ports	4	4	4	4	4
RAID	0, 1	0, 1, 0+1, 5	0, 1, 0+1, 5	0, 1, 0+1, 5	0, 1
PATA-133	Two devices	Two devices	Two devices	Two devices	Two devices
iGPU Dev-ID	N/A	0x7E0	0x7E1	0x7E2	0x7E3
Marketing Brand Name	NVIDIA nForce 630i	NVIDIA nForce 630i GeForce 7050	NVIDIA nForce 630i GeForce 7050	NVIDIA nForce 630i GeForce 7025	NVIDIA nForce 610i GeForce 7025

### Optics Orientation Holes



### Mounting Holes

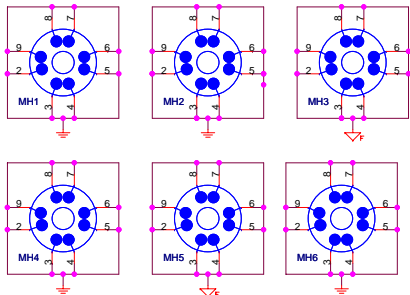


Table 1. MCP73 SKU Definition

Features	MCP73PV	MCP73S	MCP73V
FSB	1333	1333	1066
Memory	DDR2-800 64 bit	DDR2-667 64 bit	DDR2-667 64 bit
Display	HDMI, DVI, RGB, sDVO	DVI, RGB, sDVO	RGB
Integrated HDCP	Yes	Yes	No
Integrated Networking	10/100/1000	10/100/1000	10/100
Vista Premium	Yes	Yes	Yes
PCI-E	1 x16, 2 x1	1 x16, 2 x1	1 x16, 2 x1
USB Ports	10	10	8
SATA II Ports	4	4	4
RAID	0,1,0+1,5	0,1,0+1,5	0, 1
PATA Drives	2	2	2

### Simulation

