



# MS-7119 Ver:100

**CPU:** Socket A for AMD Athlon XP (K7)

**System Chipset:**  
NFORCE2 IGP-64  
MCP2SL (South Bridge)

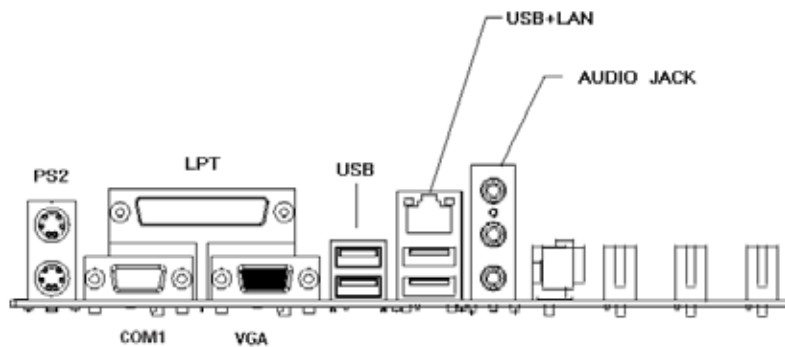
**On Board Chipset:**  
LPC Super I/O -- W83627THF Ver:E  
LAN -- PHY RTL8201CL  
AC'97 Codec --ALC655

BIOS --LPC FLASH ROM

**Main Memory:**  
DDR \* 2 Support DDR400/333/266

**Expansion Slots:**  
PCI2.3 SLOT \* 3

**PWM:**  
NIKO N2101



## CHIPSET NFORCE2 IGP-64 + MCP2SL

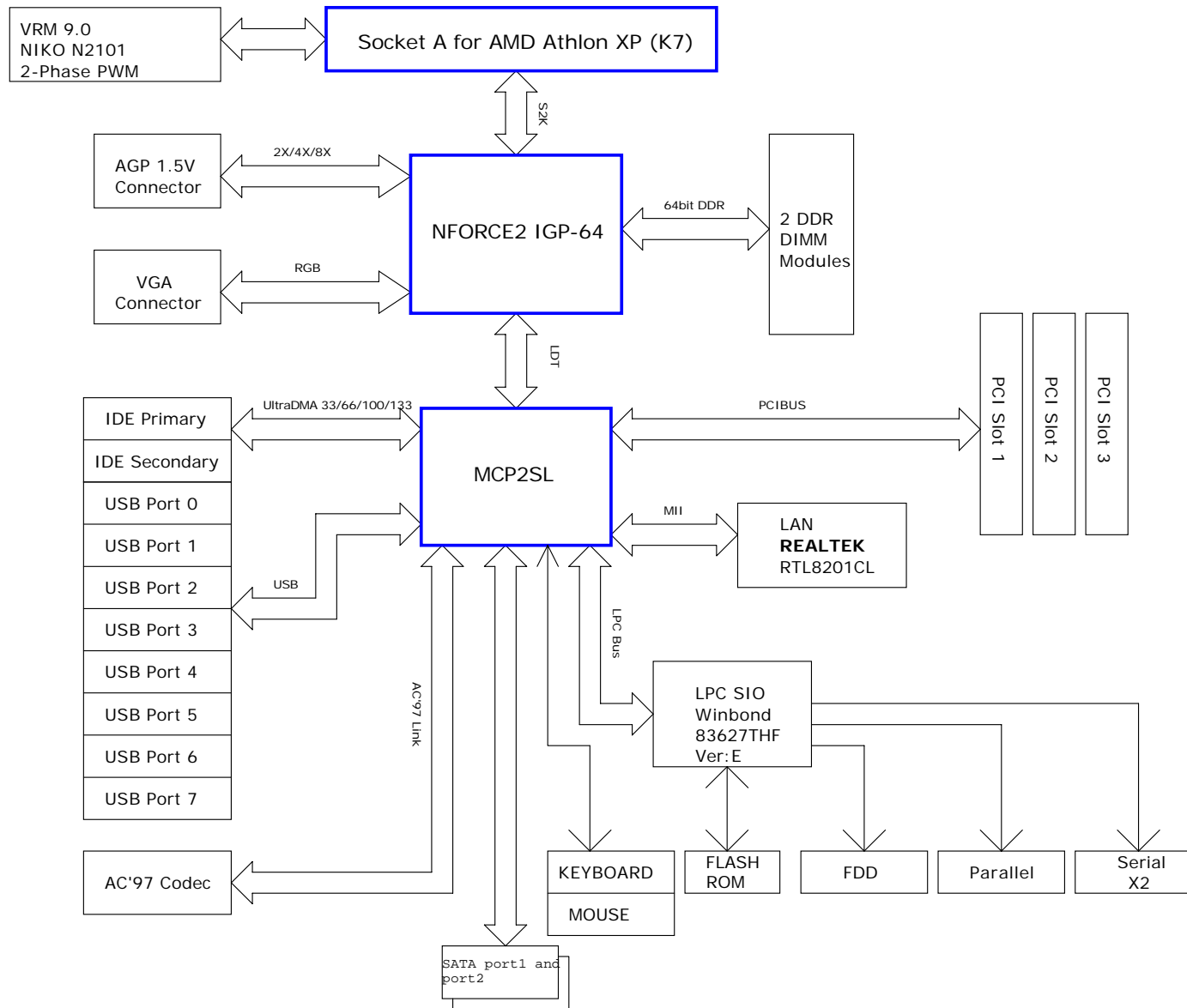
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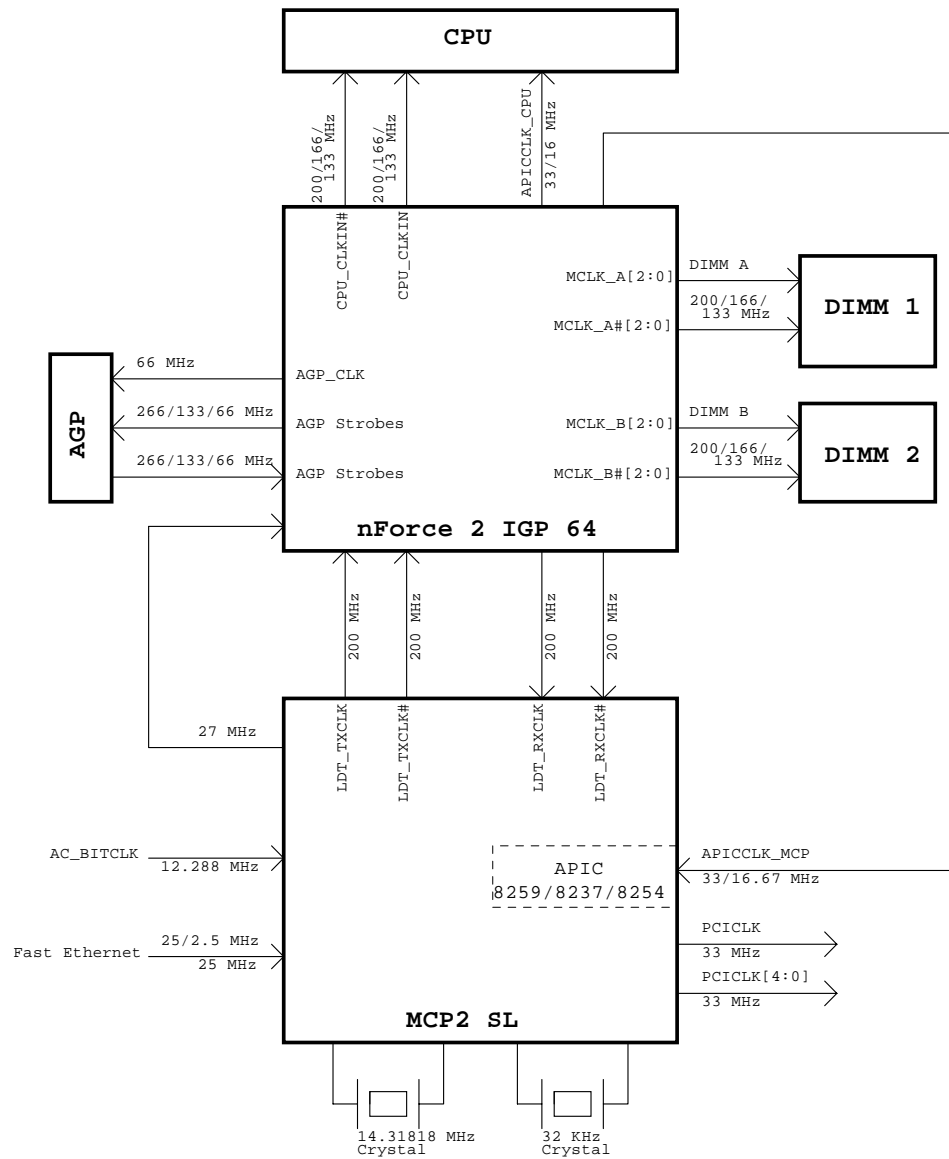
MICRO-STAR INT'L CO., LTD.

Title Cover Sheet		
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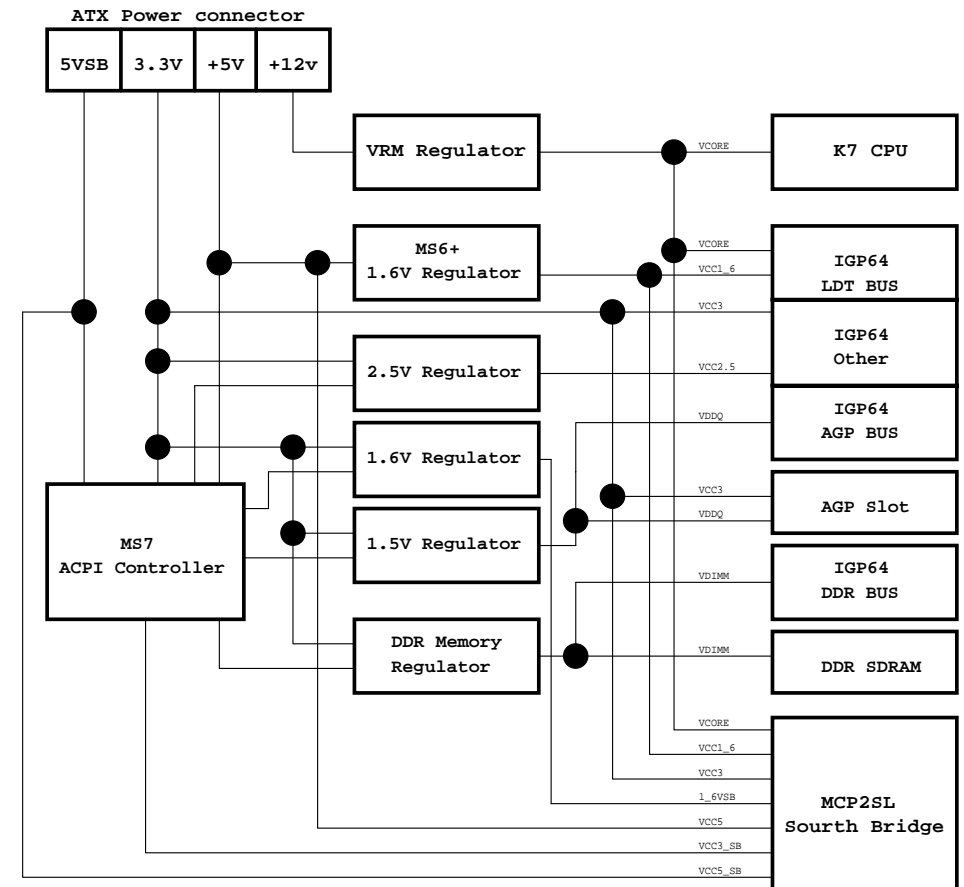
# Block Diagram



## NFORCE 2 IGP-64 PLATFORM CLOCK MAP



## NFORCE 2 IGP-64 PLATFORM POWER DELIVERY MAP



V<sub>CORE</sub>: 45A at 1.75V+/-50mV  
 2.6V: (C17IGP=1A)  
 1.6V: (C17IGP+MCP2SL=8A)  
 1.6VSB: (MCP2SL=100mA)  
 1.5V: 100mA

## MCP2SL GPIO Function Define

PIN NAME	Default Function	Function define
GPIO29	GPI29	Primary IDE Detect
GPIO31	GPI31	Secondary IDE Detect
SATA_LED/GPIO46	SATA_LED	SATA_LED

## PCI Config.

DEVICE	MCP2 INT Pin	REQ#/GNT#	IDSEL	CLOCK
PCI Slot 1	INTC# INTD# INTA# INTB#	PREQ#0 PGNT#0	AD22	PCICLK0
PCI Slot 2	INTD# INTA# INTB# INTC#	PREQ#1 PGNT#1	AD23	PCICLK2
PCI Slot 3	INTA# INTB# INTC# INTD#	PREQ#2 PGNT#2	AD24	PCICLK3

## USB

	Port	DATA +/-	OC#
Rear	USB1	USBP0+ USBN0- USBP1+ USBN1-	USB_OC#1
	LAN_USB1A	USBP2+ USBN2- USBP3+ USBN3-	
Front	JUSB1	USBP4+ USBN4- USBP5+ USBN5-	USB_OC#3
	JUSB2	USBP6+ USBN6- USBP7+ USBN7-	

## PCI RESET DEVICE

Signals	Target
PCIRST#	MS7
PCIRST#1	SIO, BIOS
PCIRST#2	PCI slot 1-3
PCIRST#4	AGP Slot, NB
HD_RST#	Primary, Scndary IDE

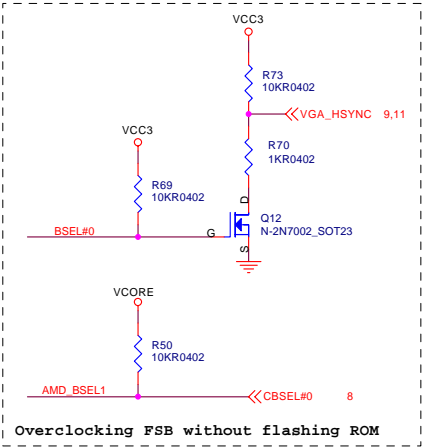
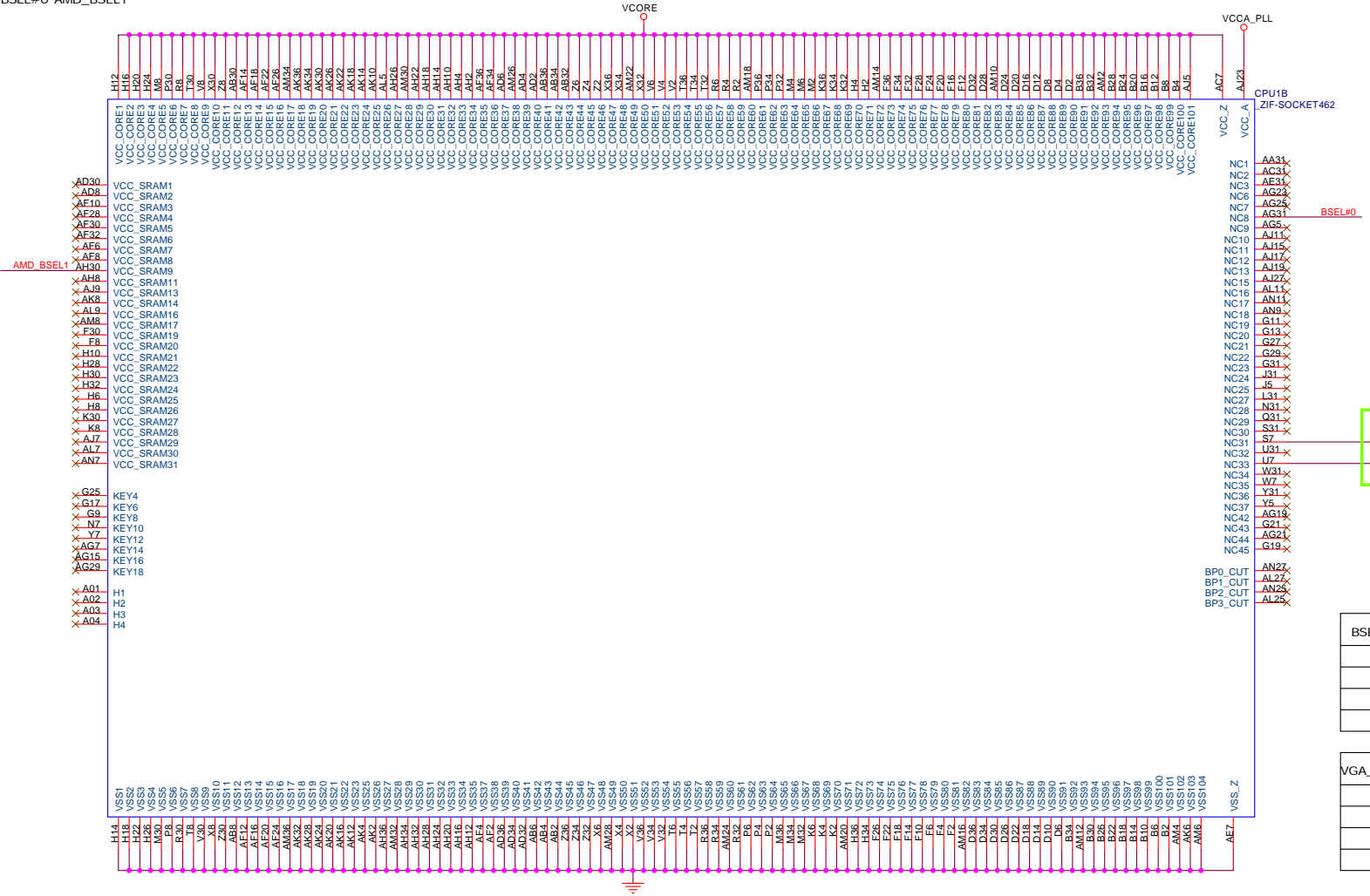
## SMBUS DEVICE

Signals	Target
SMBCLK0	Memory
SMBCLK1	MS7

## DDR DIMM Config.

DEVICE	ADDRESS	CLOCK
DIMM 1	(A2) 1010001B	MDCLKA0/MDCLKA#0 MDCLKA1/MDCLKA#1 MDCLKA2/MDCLKA#2
DIMM 2	(A4) 1010010B	MDCLKB0/MDCLKB#0 MDCLKB1/MDCLKB#1 MDCLKB2/MDCLKB#2





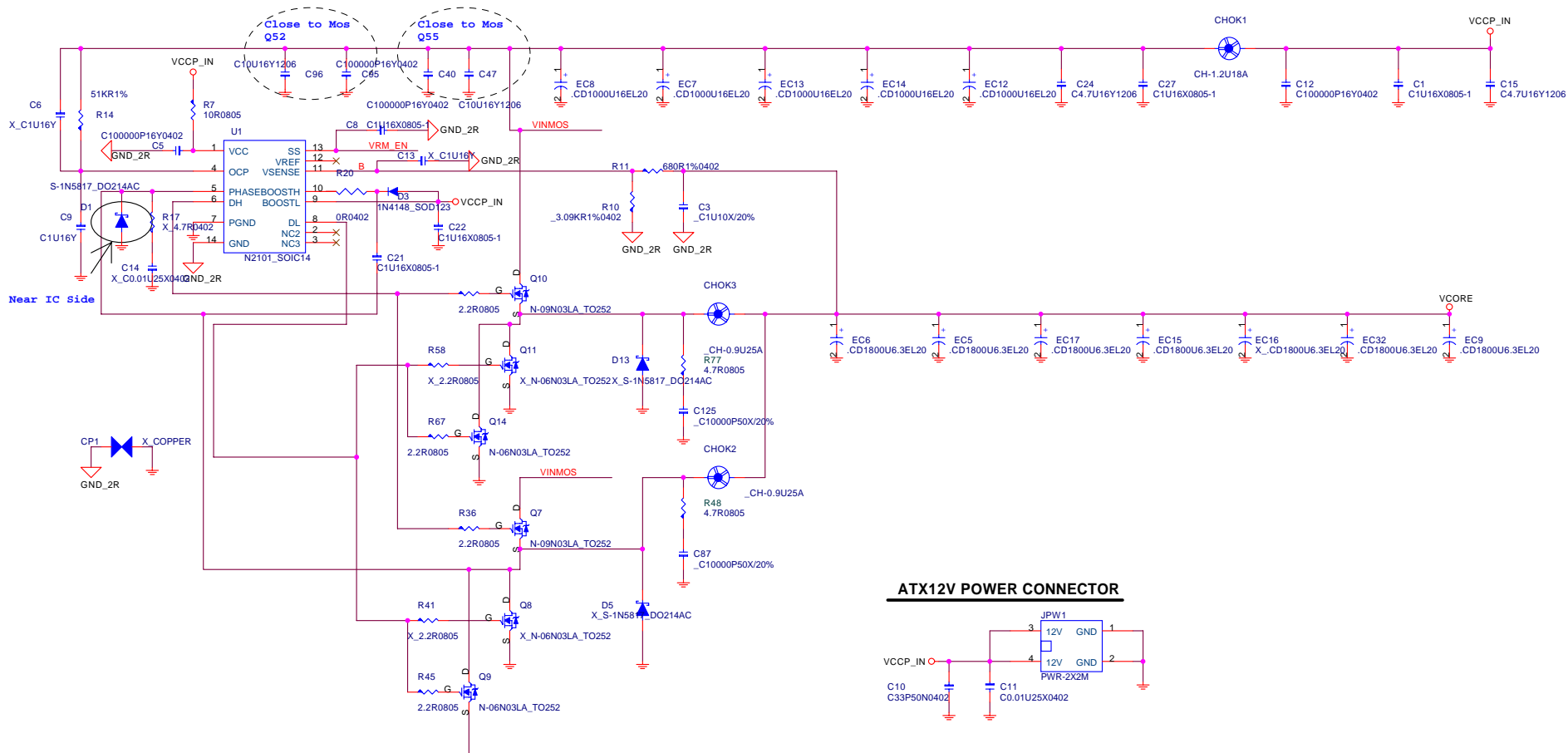
CPU\_TEMP\_A 15.19

VTIN\_GND 19

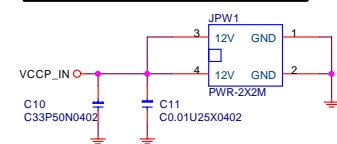
BSEL#0	AMD_BSEL1	CPU FREQUENCY
0	0	200 MHZ
1	0	166 MHZ
1	1	133 MHZ
0	1	RESERVED

VGA_HSYNC	CBSEL#0	FSB	Pointer location
1	0	200	0xFFFF_FFE4
0	0	166	0xFFFF_FFE0
0	1	133	0xFFFF_FFE8
1	1	N/A	0xFFFF_FFEC

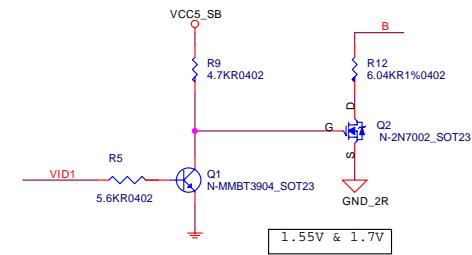
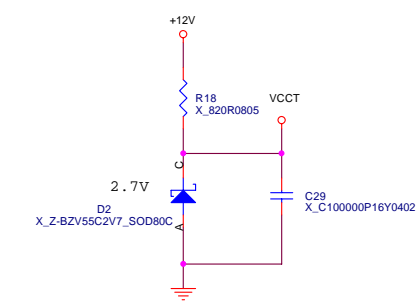
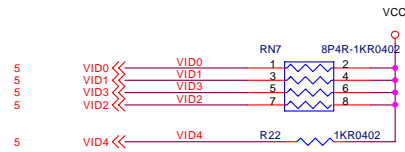
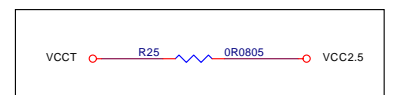


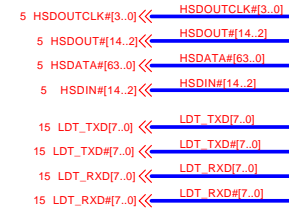
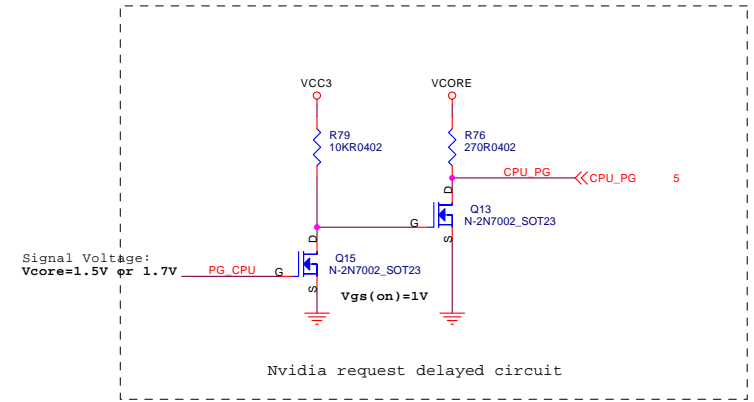


### ATX12V POWER CONNECTOR

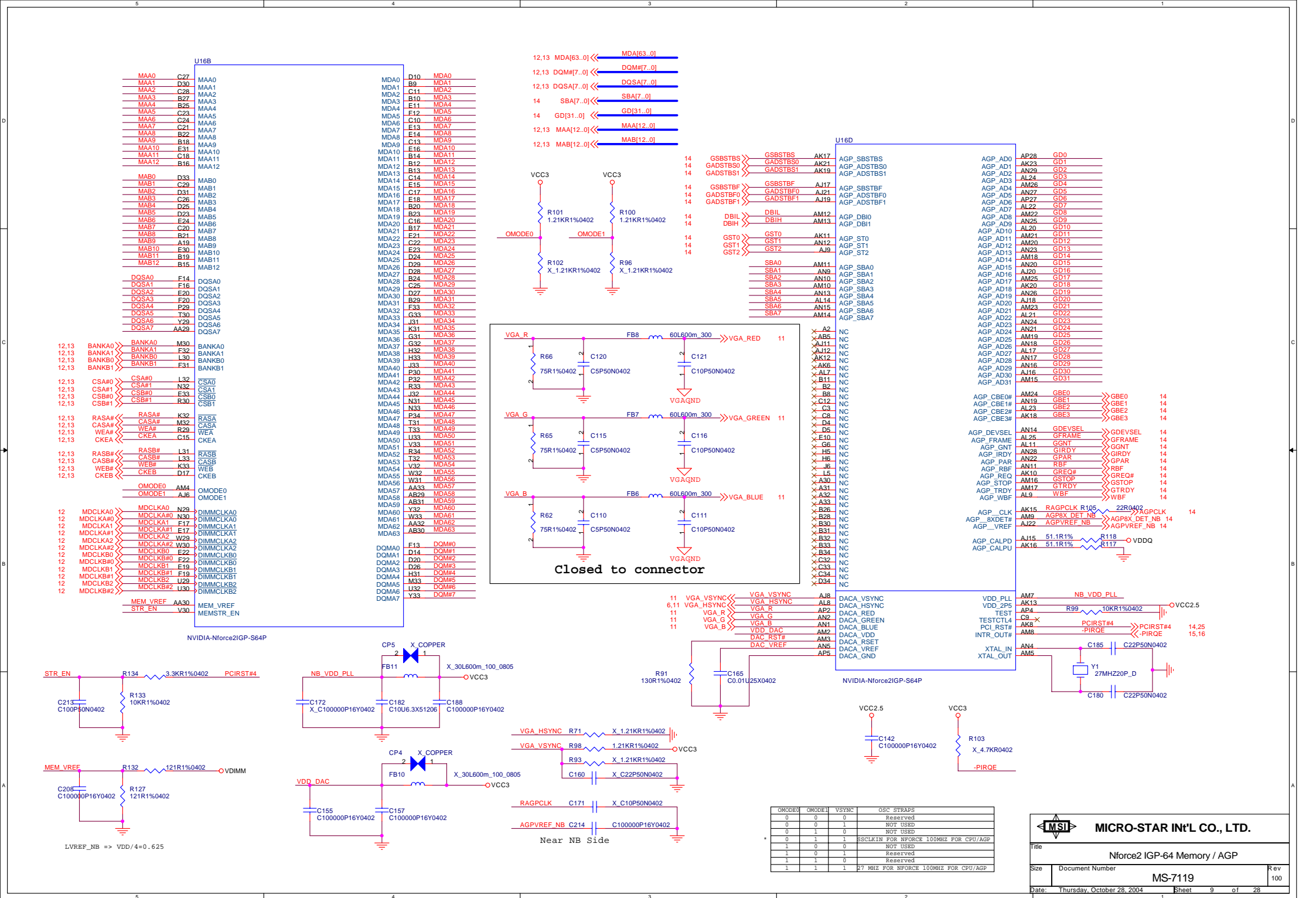


### VID PULL-UP RESISTORS

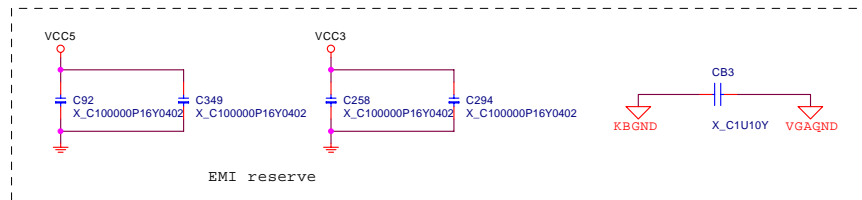
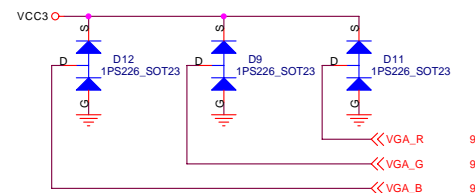
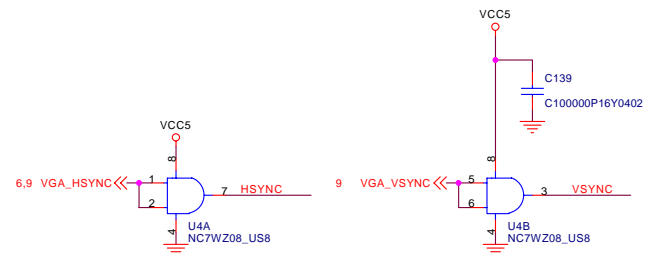
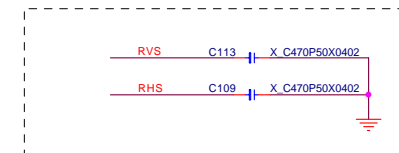
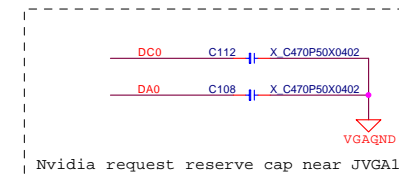
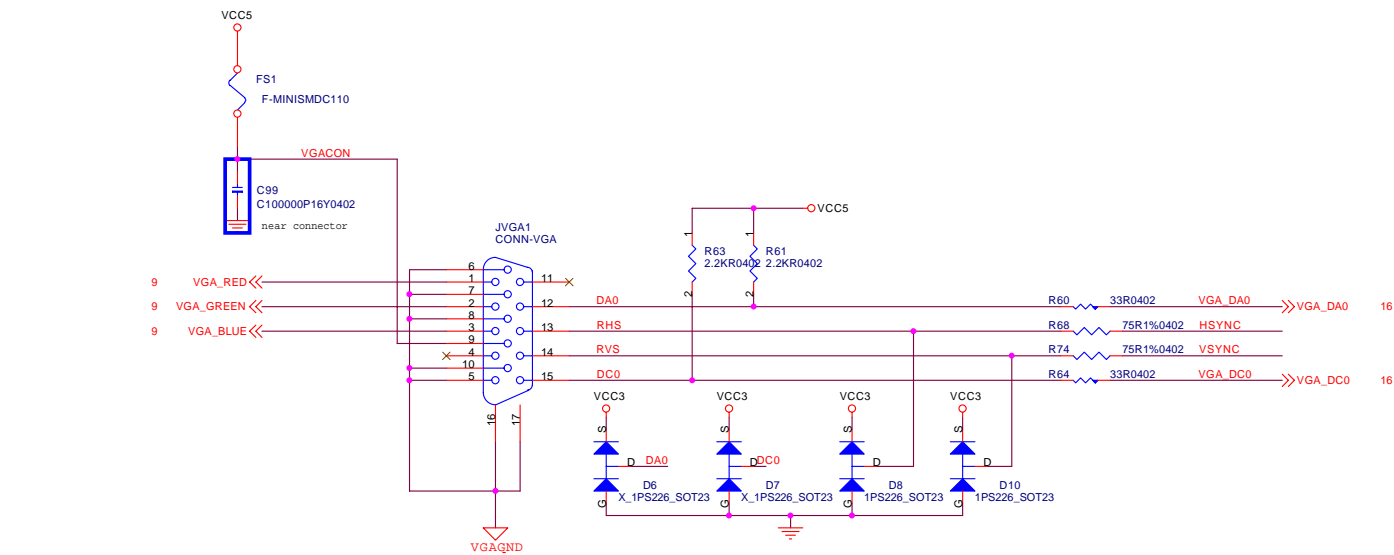








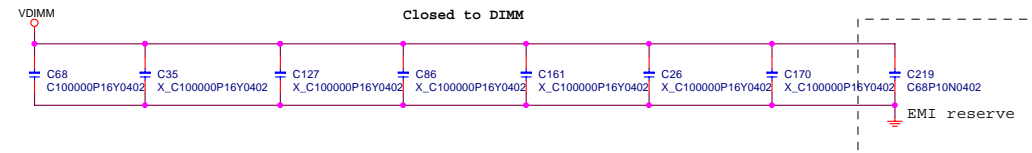
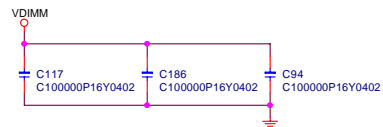
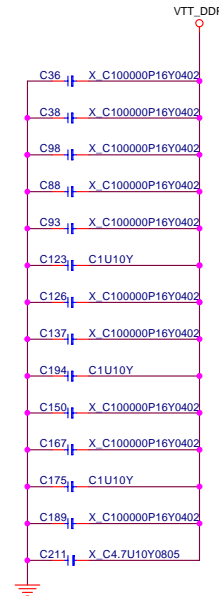
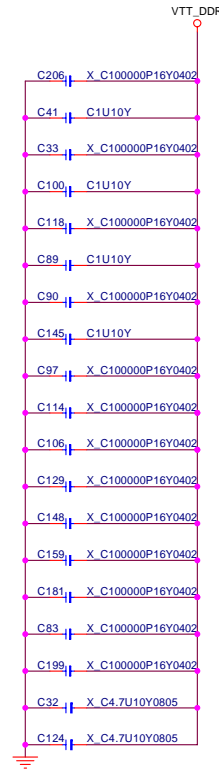
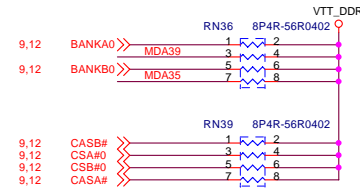
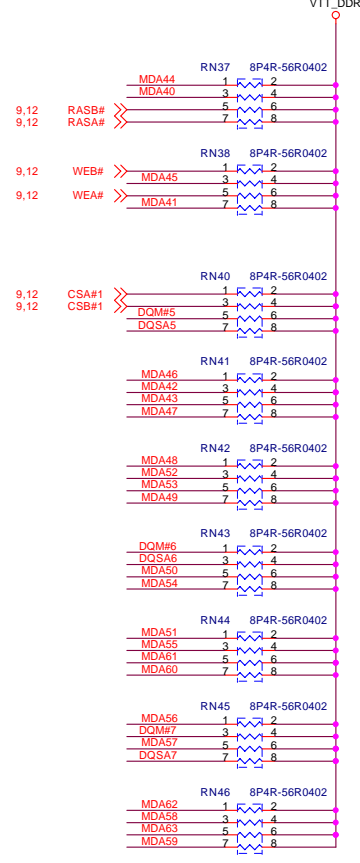
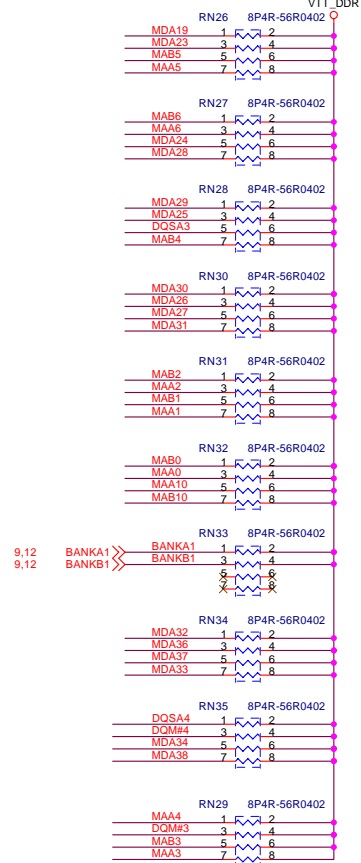
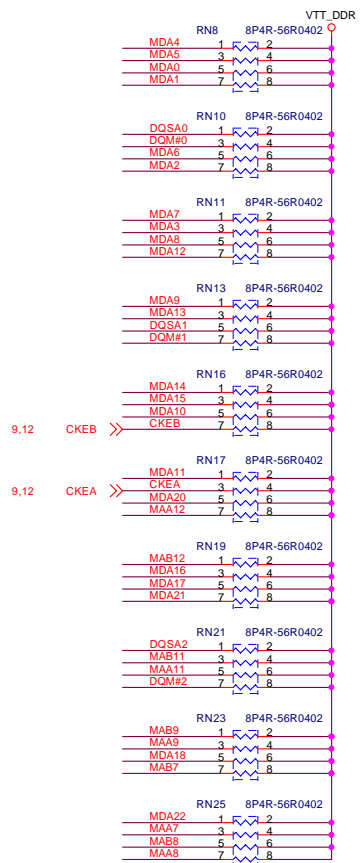




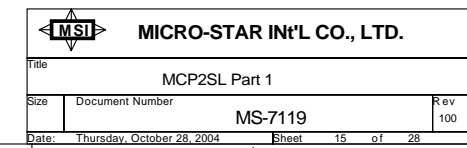
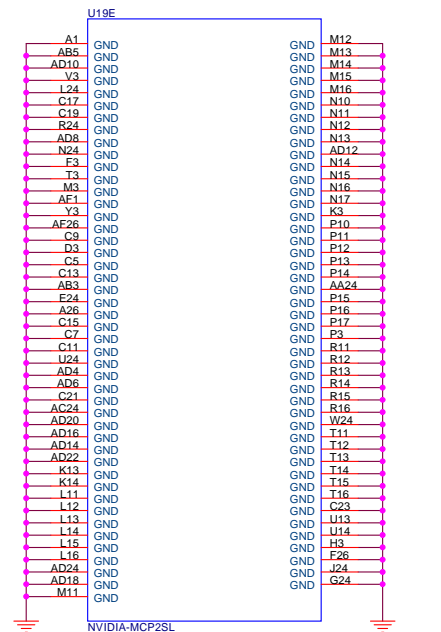


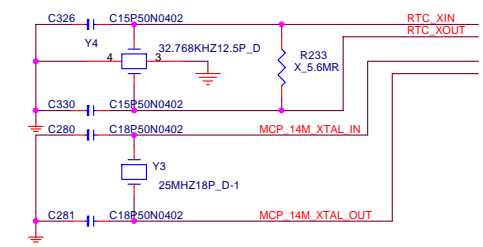
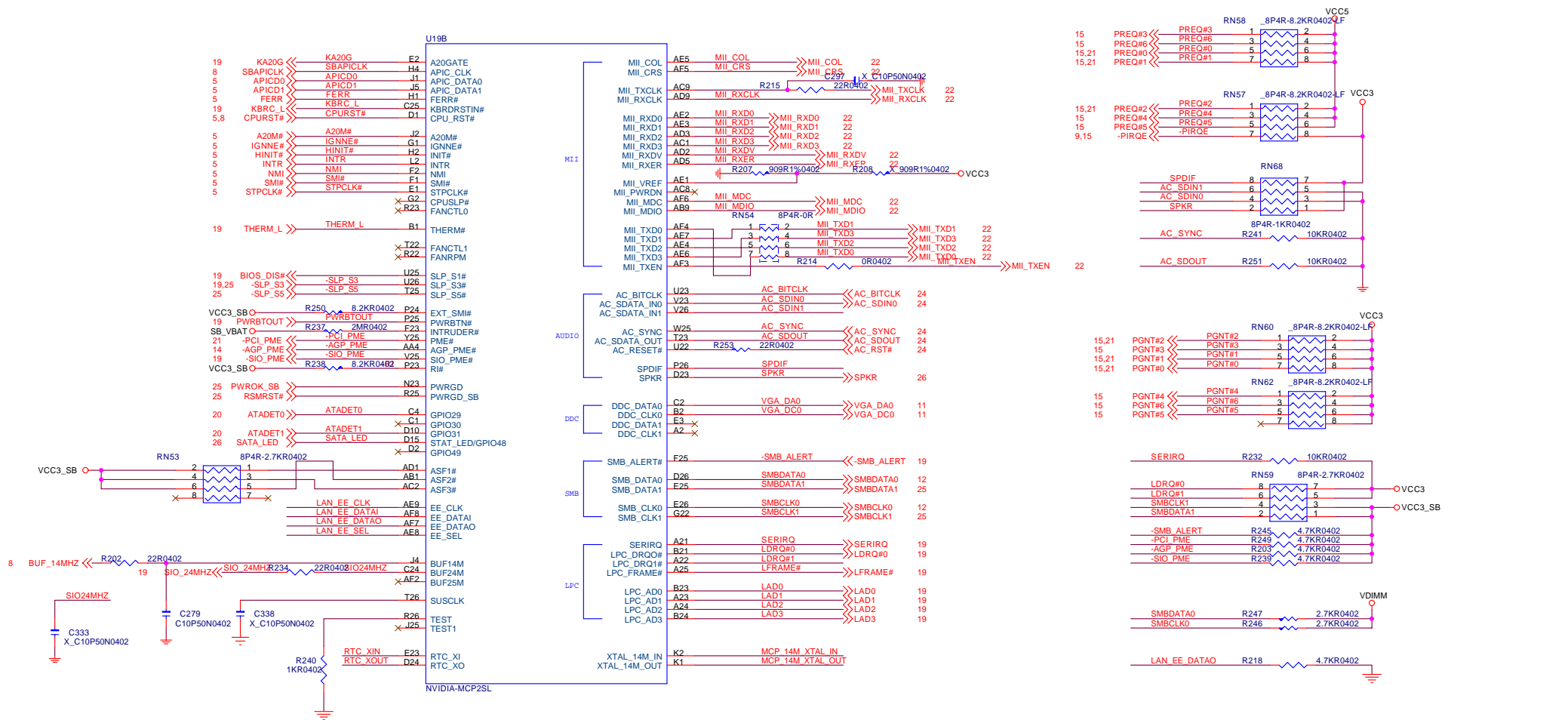
MDA[63..0] << MDA[63..0] 9,12  
DQM#[7..0] << DQM#[7..0] 9,12  
DQSA[7..0] << DQSA[7..0] 9,12

MAB[12..0] >> MAB[12..0] 9,12  
MAA[12..0] >> MAA[12..0] 9,12



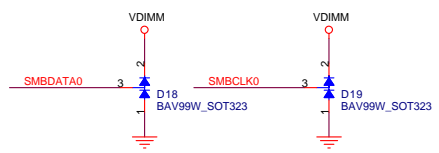




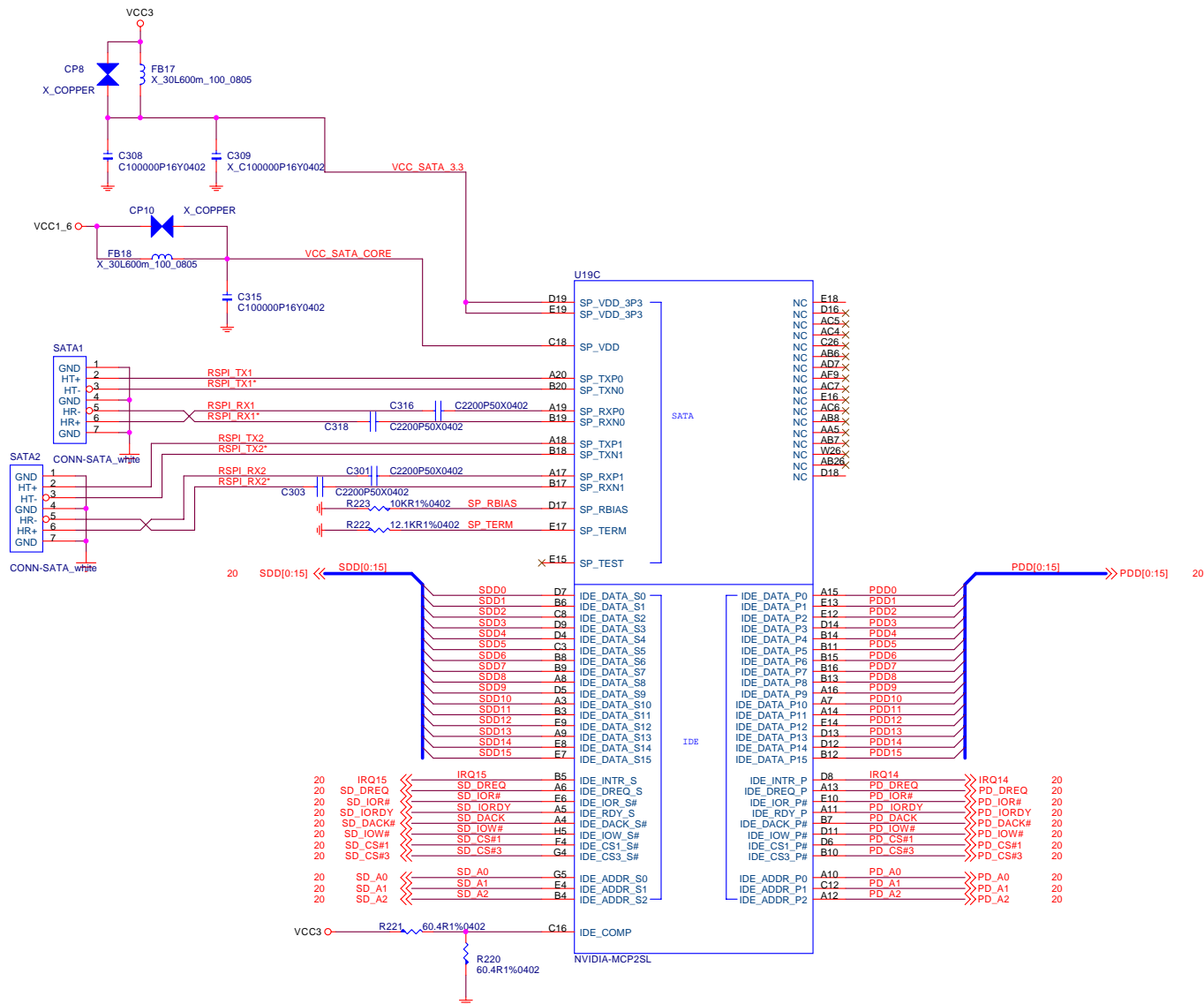


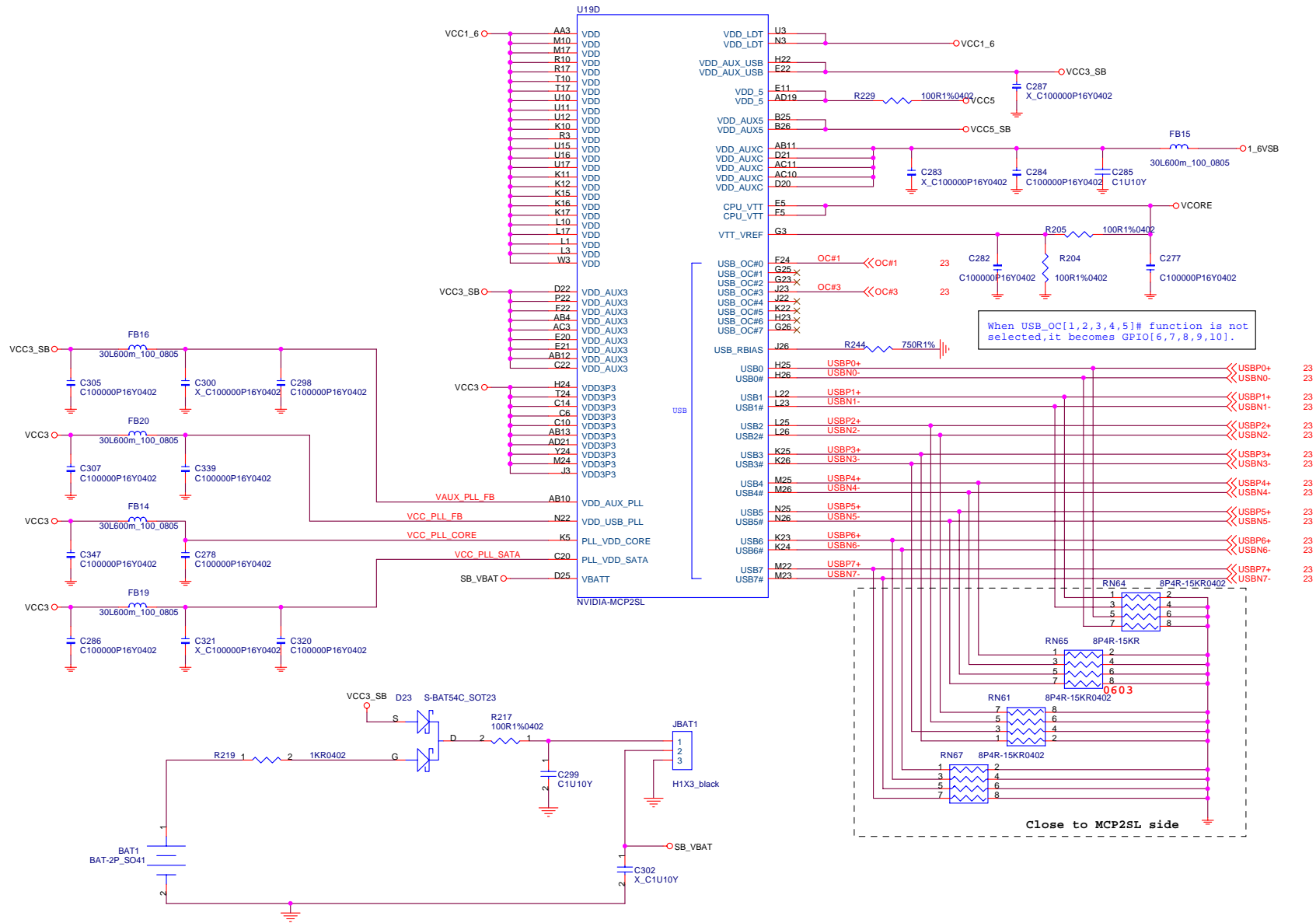
MCP2SL STRAPS	DEFAULT
SPKR	HIGH
SPDIF	HIGH
AC_SDATA_OUT	LOW
AC_SYNC	LOW
EE_DATA_OUT	LOW

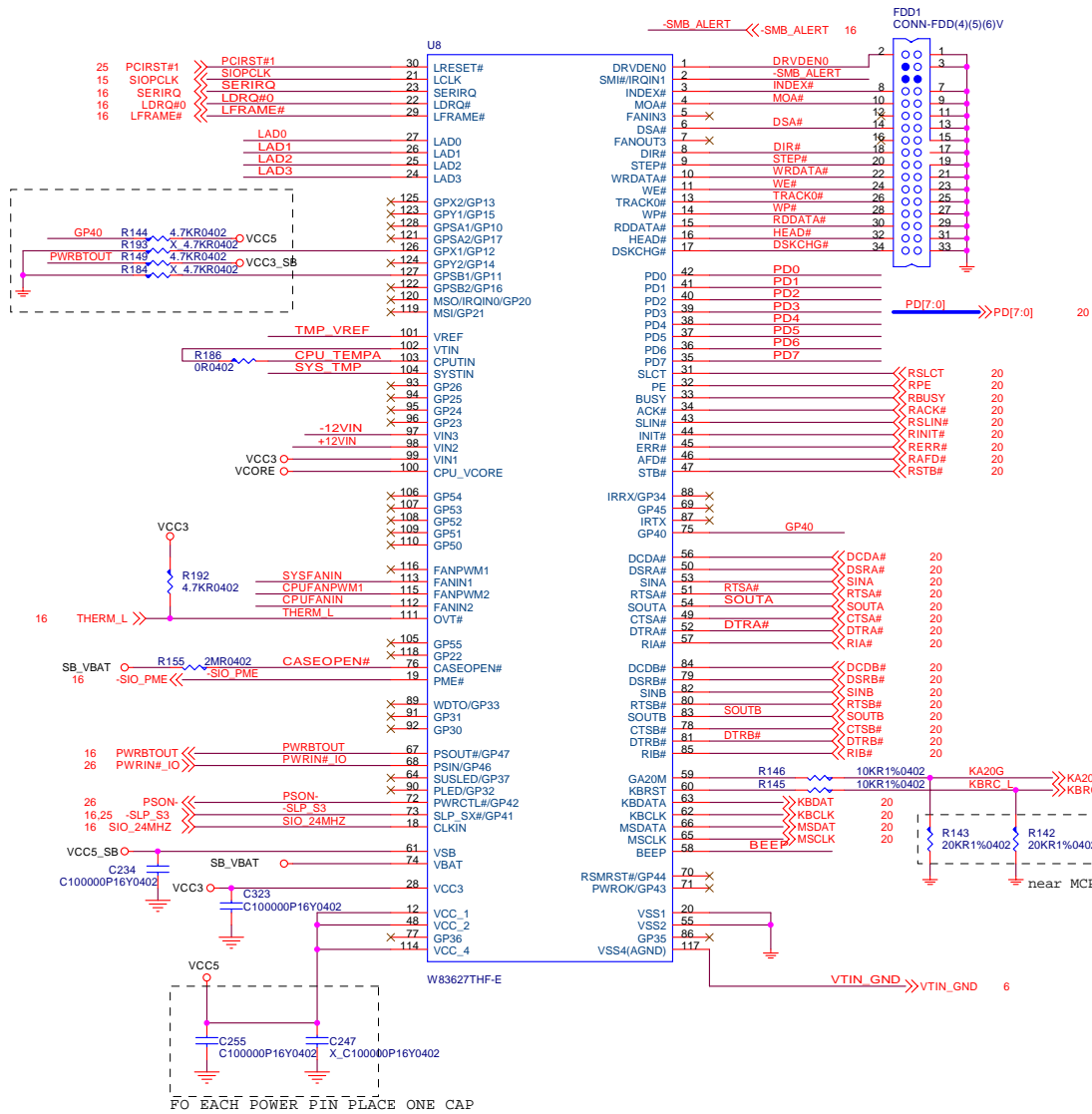
**Notice:**  
SMBDATA0: for Memory  
SMBDATA1: for PCI Slot, CNR, SIO



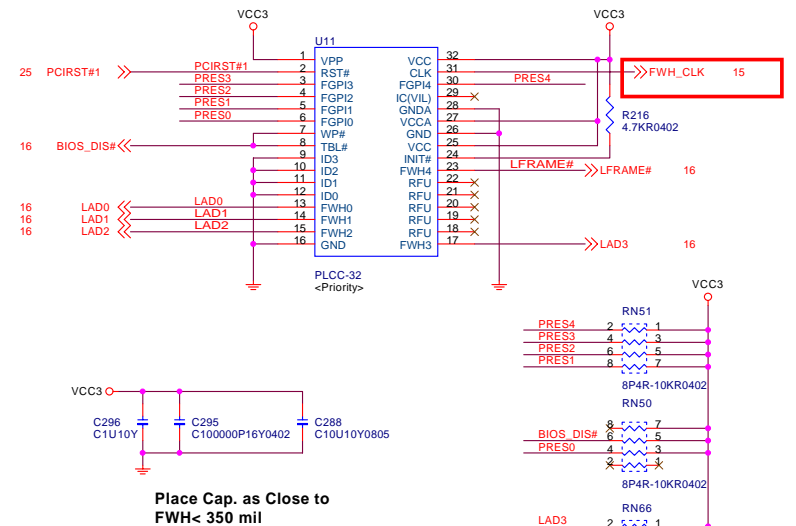




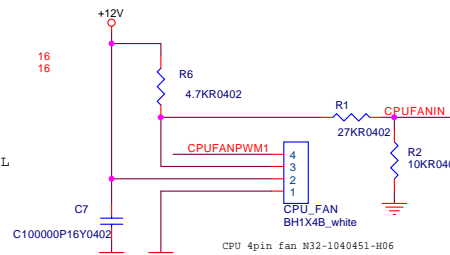




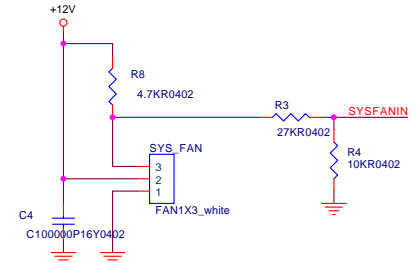
## Flash ROM



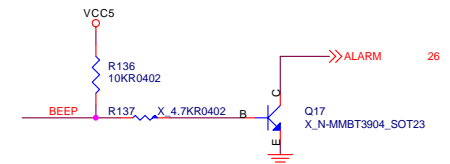
## CPU FAN



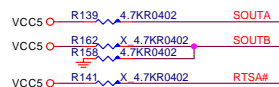
## SYS FAN



## SPEAKER BLOCK

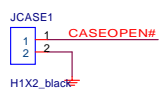


## Straps

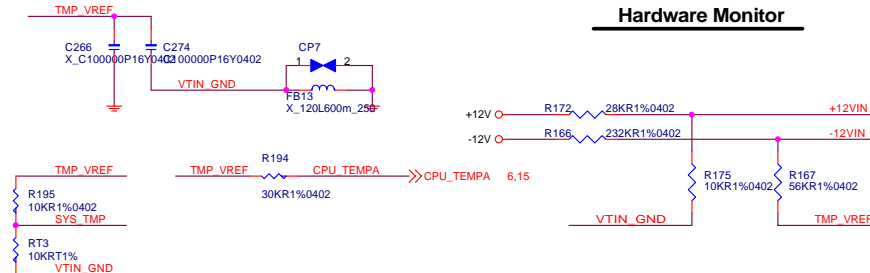


SOUTA	L: Disable KBC	H: Enable KBC
SOUTB	L: 24MHZ	H: 48MHZ
RTSA#	L: CFAD=2E	H: CFAD=4E
DTRA#	L: PNP Default	H: PNP no Default

## Chassis Intrusion

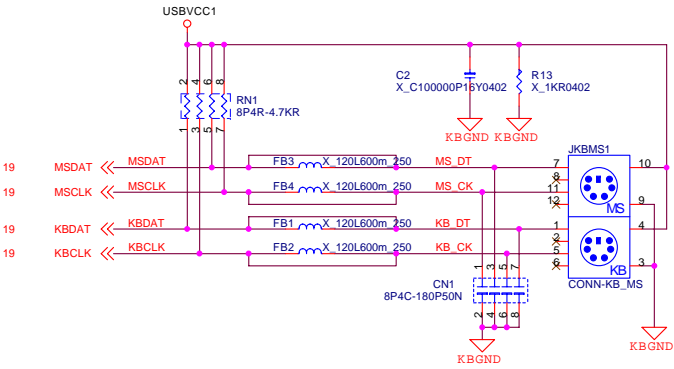


## Hardware Monitor

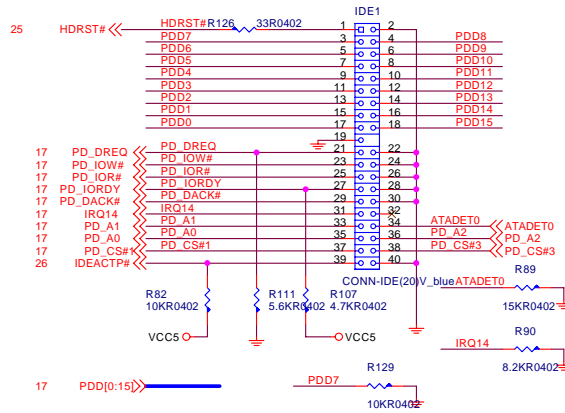


MSI MICRO-STAR INT'L CO., LTD.		
Title W83627THF-E SIO / Flash ROM		
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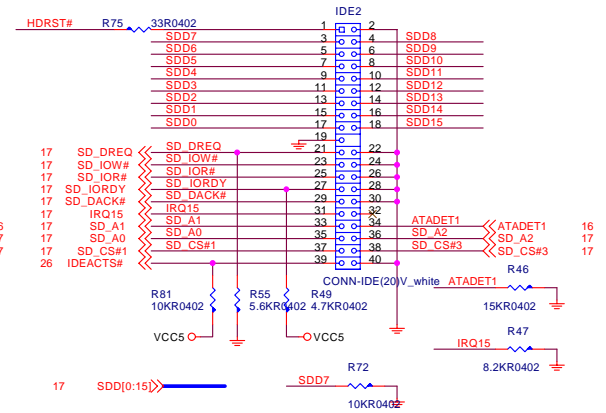
## PS2 KEYBOARD & MOUSE CONNECTOR



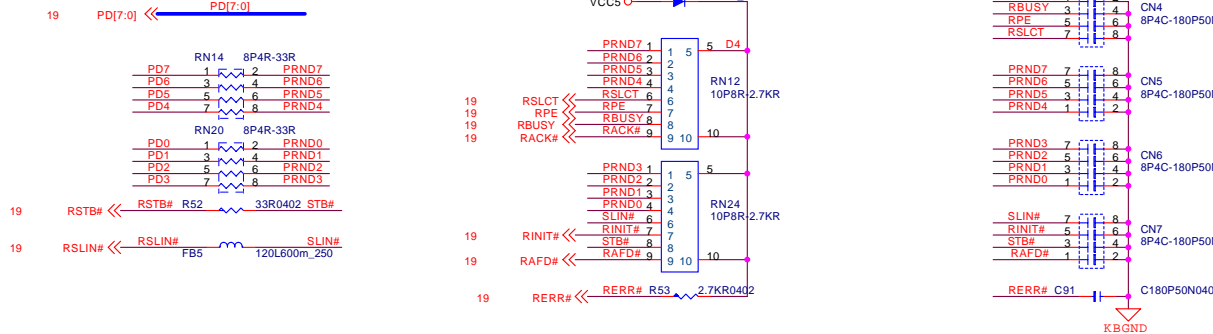
## PRIMARY IDE BLOCK



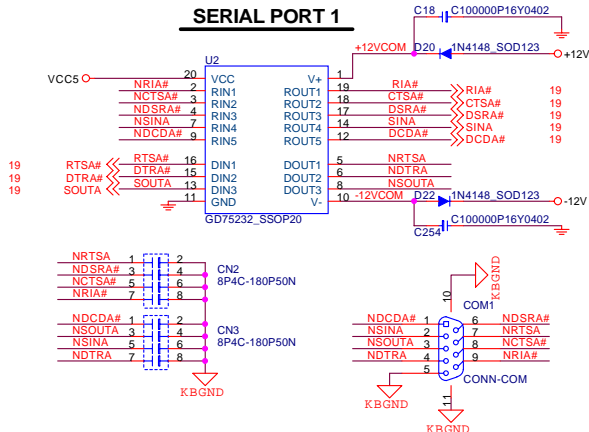
## SECONDARY IDE BLOCK



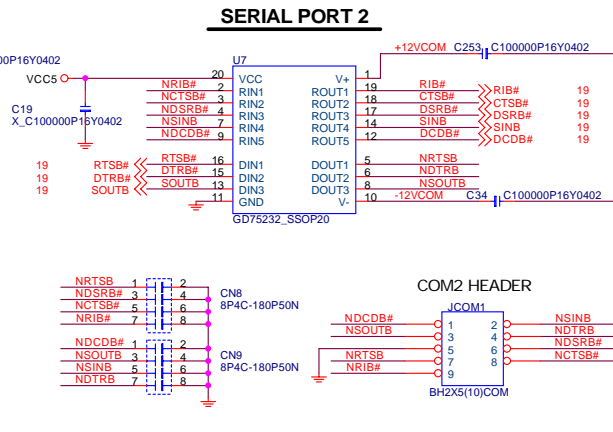
## PARALLAL PORT



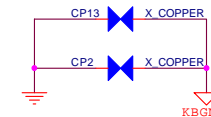
## SERIAL PORT 1



## SERIAL PORT 2



## EMI



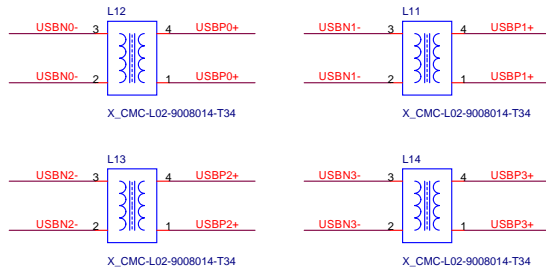
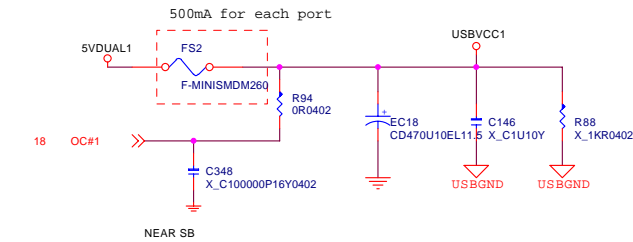
MICRO-STAR INT'L CO., LTD.

Title	KB / MS / LPT / COM / IDE		
Size	Document Number	MS-7119	Rev 100
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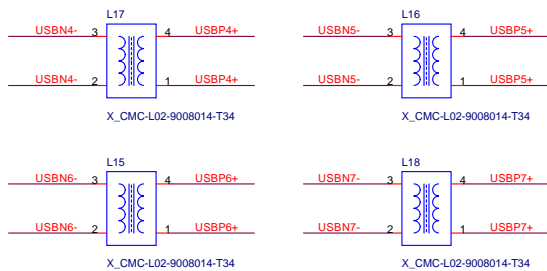
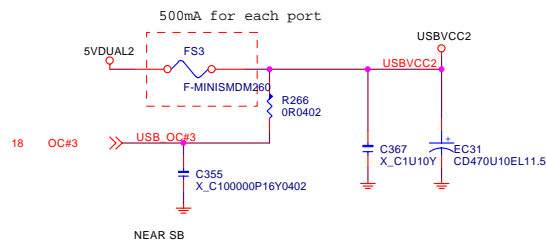




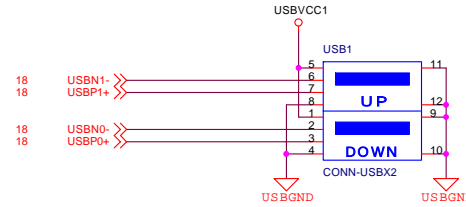
## POWER CIRCUIT FOR USB PORT 0,1



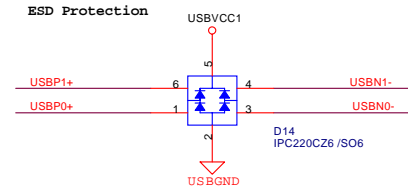
## POWER CIRCUIT FOR USB PORT 4,5



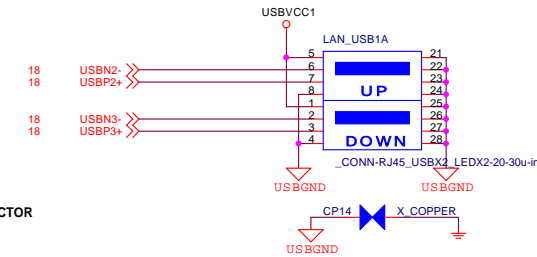
## REAR PANEL USB CONNECTOR FOR USB PORT 0,1



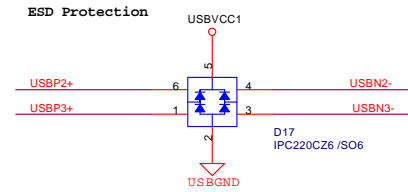
NEAR USB CONNECTOR



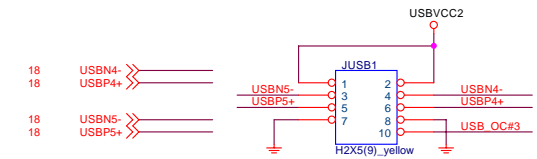
## REAR PANEL USB CONNECTOR FOR USB PORT 2,3



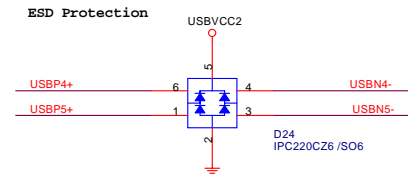
NEAR USB CONNECTOR



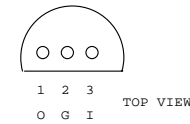
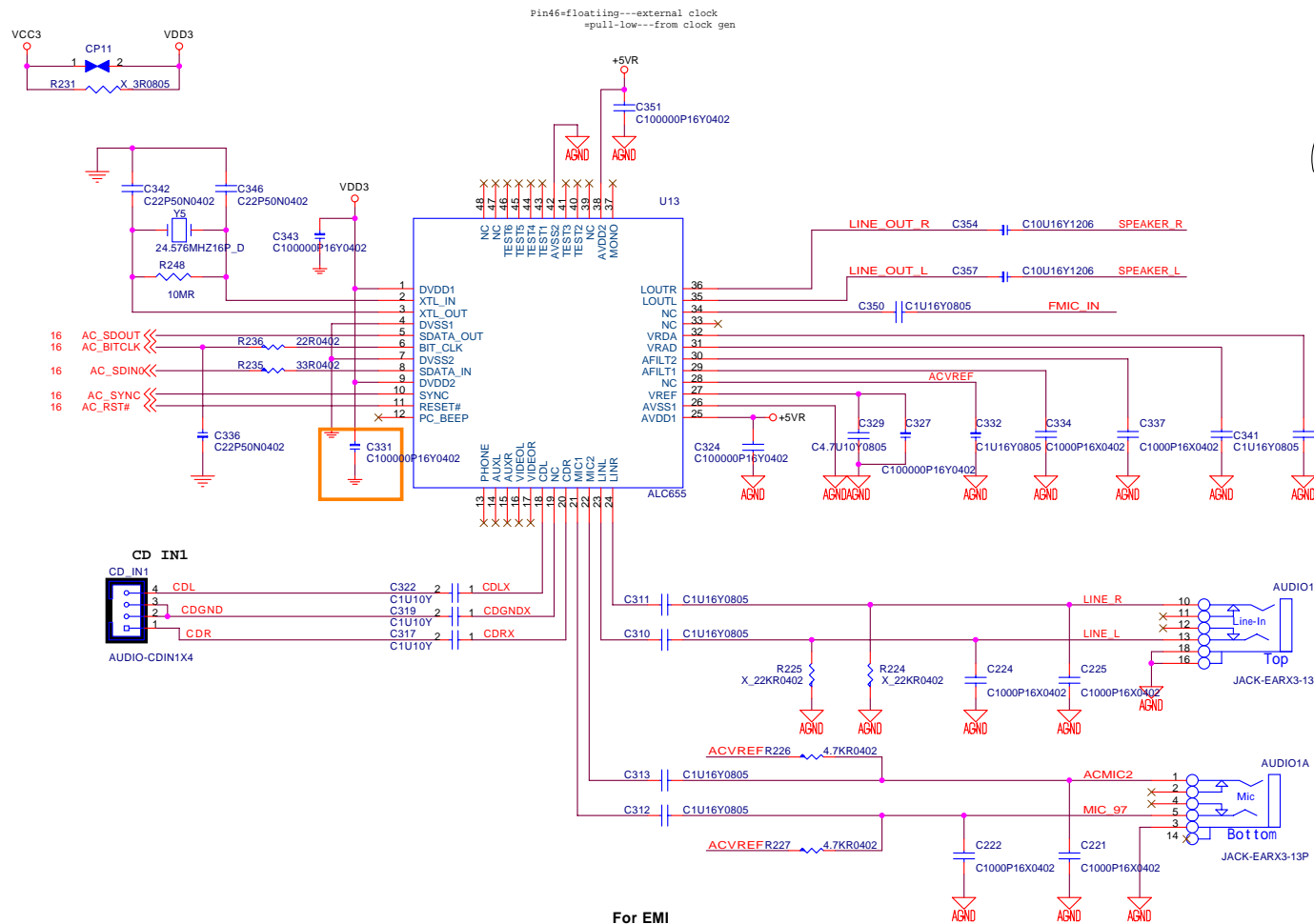
## FRONT PANEL USB CONNECTOR FOR USB PORT 4,5



NEAR USB CONNECTOR

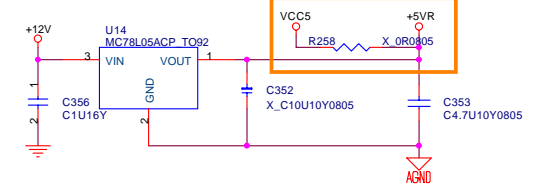


- \* USB Trace width : 7.5 mils
- \* Differential USB Signal Trace, Spacing : 7.5 mils
- \* USB Trace Spacing : 20 mils
- \* USB Power Trace must be 50mils width

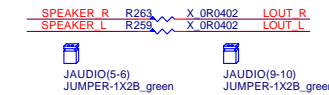
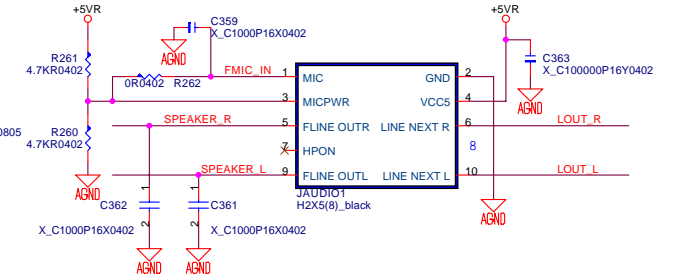


## AUDIO CODE REGULATORS

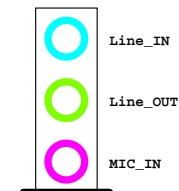
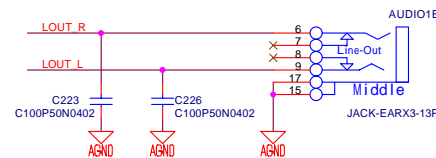
Trace Width 40mils.



## Intel Front Audio Connector



## SPEAKER OUT JACK



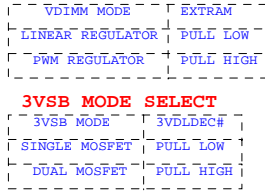
N54-13F0031-A10

MSI MICRO-STAR INT'L CO., LTD.			
Title AC97 Audio CODEC / Connector			
Size	Document Number	MS-7119	
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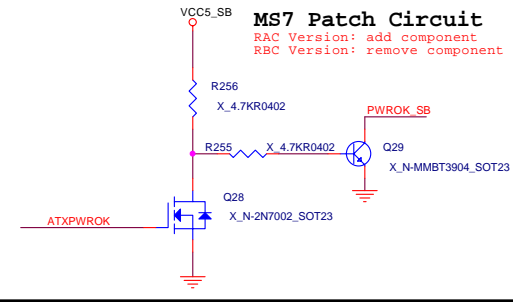
# ACPI Controller

## VDIMM LINEAR OR PWM SELECT

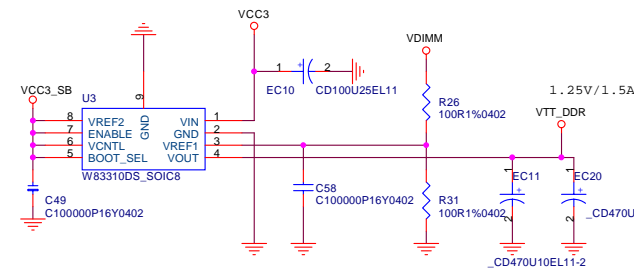


## MS7 Patch Circuit

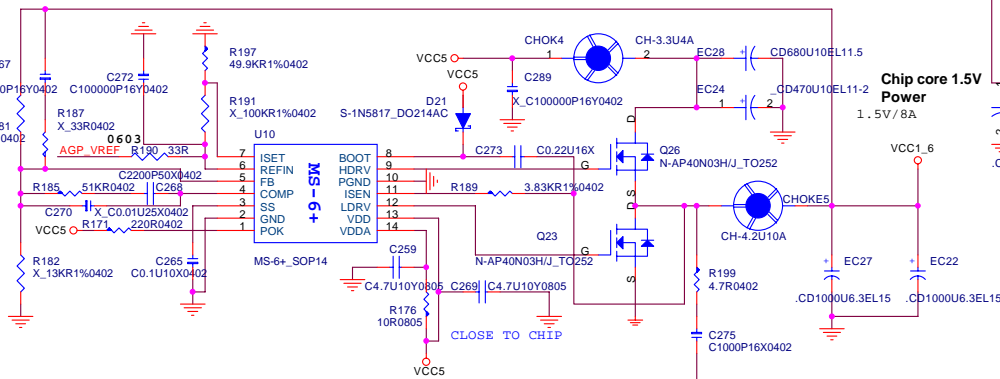
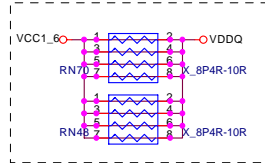
RAC Version: add component  
RBC Version: remove component



## DDR VTT Power



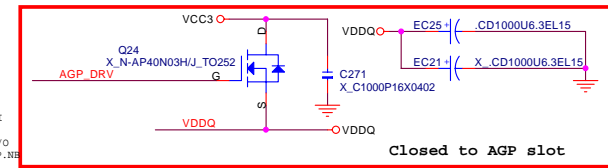
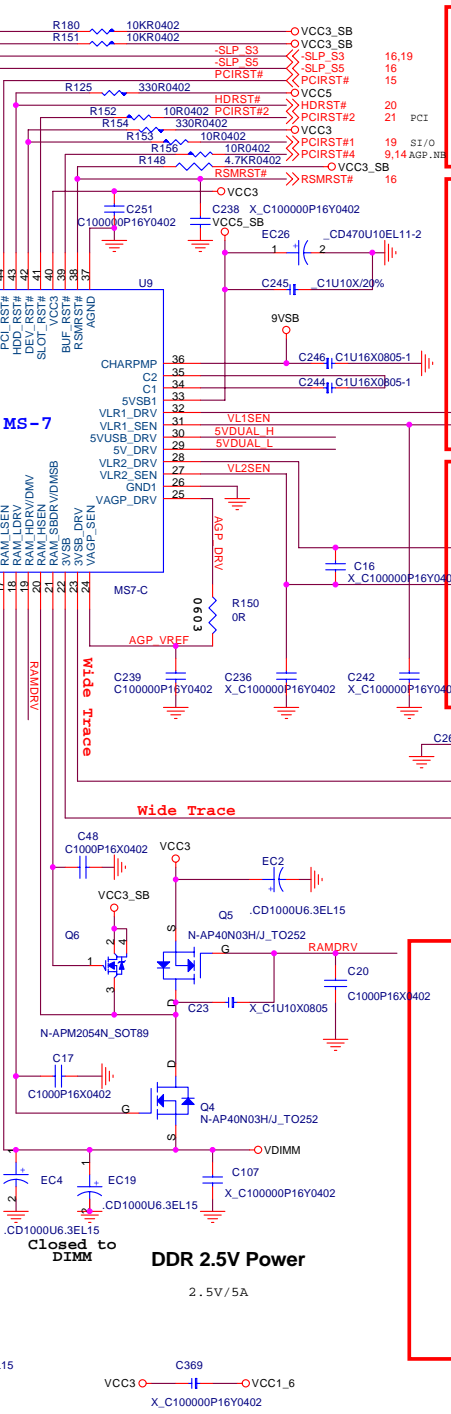
Assume  $I_{agp}=10A$ ,  $40N03$   $R_{ds, on(max)}=18m\Omega$   
 $R_{sen}(R436) \geq 1.5 \cdot I_{agp} \cdot R_{ds, on(max)} / 72\mu A$   
 $\geq 1.5 \cdot 10 \cdot 18m / 72\mu$   
 $\geq 3.75K \Omega$   
 If  $I_{agp}=7A$ , high side and low side driver MOS please use TO-252 type



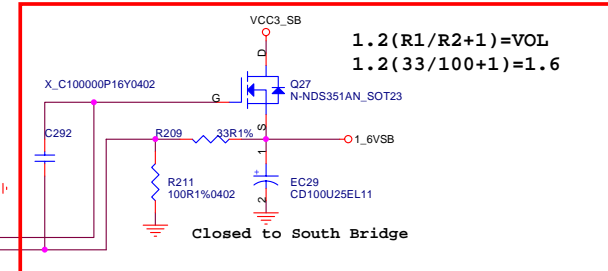
Chip core 1.5V Power  
1.5V / 8A

## DDR 2.5V Power

2.5V / 5A



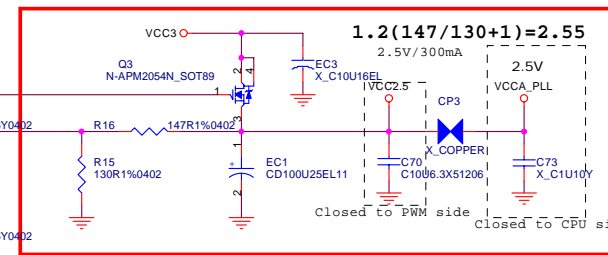
Closed to AGP slot



$$1.2(R1/R2+1)=VOL$$

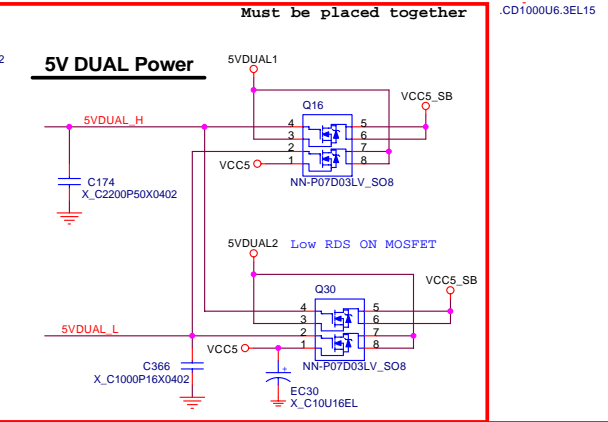
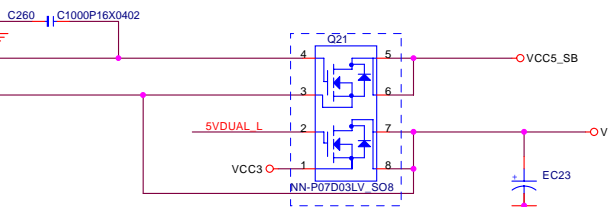
$$1.2(33/100+1)=1.6$$

Closed to South Bridge



$$1.2(147/130+1)=2.55$$

Closed to PWM side  
Closed to CPU side



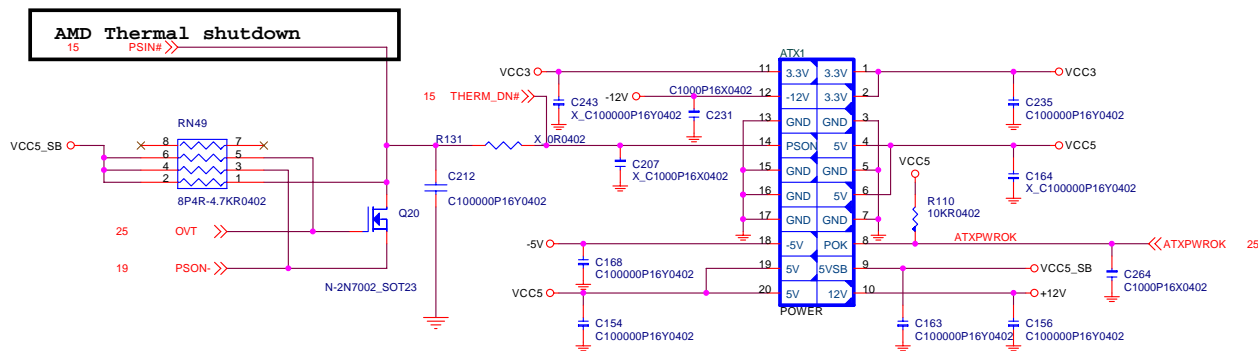
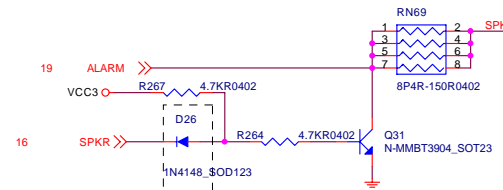
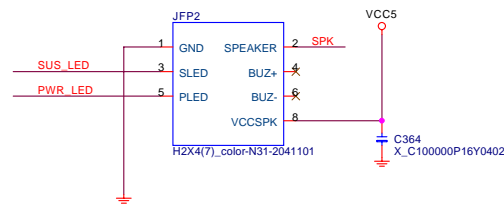
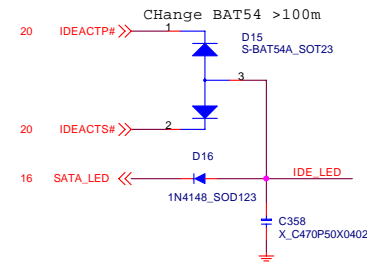
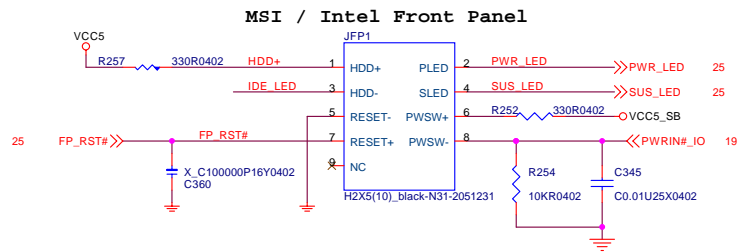
## 5V DUAL Power

Must be placed together

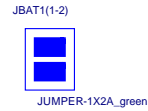
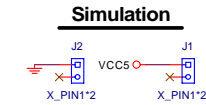
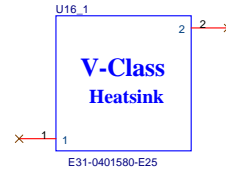
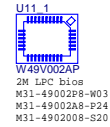


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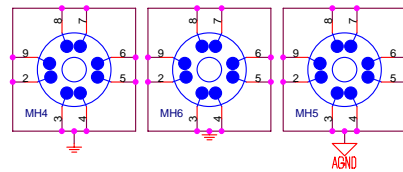
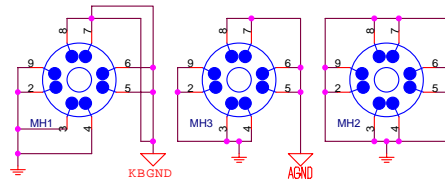
Title			MS7 ACPI Controller
Size	Document Number	MS-7119	
Date	Thursday, October 28, 2004	Sheet	25 of 28



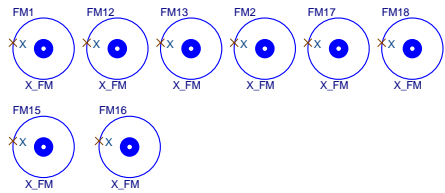
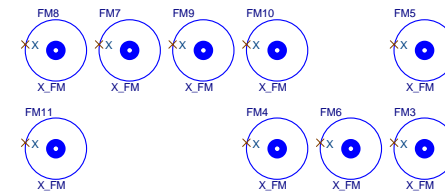
# Jumper Setting / Manual Part



## Mounting Holes



## Optics Orientation Holes



Tag	0A to 100 Schematic change list	Page
1	Change CHOK5 form 3.3uH/4A to 4.2uH/10A	25
2	Change net of R150 from VDDQ to AGP_VREF	25
3	Add two EMI Cap (C385,C386)	10
4	Change K7 CPU footprint to SOCK462S_R36D26T36	5,6
5	Change EC28 to C94-6811021-N07 for large ripple current	25
6	Change R91 from 124 ohm to 130 ohm to decrease the RGB luminance	9
7	Change R189 from 3K ohm to 3.83K ohm,and the OCP trip-point from 6A to 10A	25
8	recommend remove the EC16, C66, C67 (No do yet)	7
9	Change the FS2 and FS3 foorprint to MINISMD050	23
10	remember to remove the JCOM1's frame	