

Title	Page
Cover Sheet	1
Block Diagram	2
CPU-CLK/Control/MISC/PEG ,CPU-Memory	3,4
CPU-Power,CPU-GND	5,6
DDR III DIMM 1 ,DDR III DIMM 2	7,8
PCH-PCI/E/DMI/USB/CLK	9
PCH-SATA/HOST/FAN/GPIO	10
PCH-SMB/LPC/AUDIO/RTC/RST	11
PCH-POWER,GND/NVRAM	12,13
PCH-STRAPS	14
HDMI	15
PCIe x16 Slot	16
VRD12 - ISL6364	17
DrMOS	18
uPD720200 USB3.0	19
LAN RTL8111E	20
Audio Codec ALC892	21
USB Connector	22
SATA / FAN Control	23
ACPI Controller UPI	24
PCH / CPU_SA Power	25
DDR Power NCP1587	26
CPU_VTT NCP5217A	27
NA	28
NA	29
ATX F_Panel	30
Manual Parts	31
CPU/PCH XDP	32
History	33

MS-7704

Mini-ITX Ver: 2.0

CPU:

INTEL-Sandy bridge LGA1155

System Chipset:

INTEL-Cougar Point

OnBoard Chipset:

HD Audio Codec:ALC892

uPD720200 USB3.0

LAN-RTL8111E

SIO:Fintek F71889AD

Flash ROM: 64 Mb SPI

Main Memory:

DDRIII (1066/1333MHz) * 2 (Dual Channel)

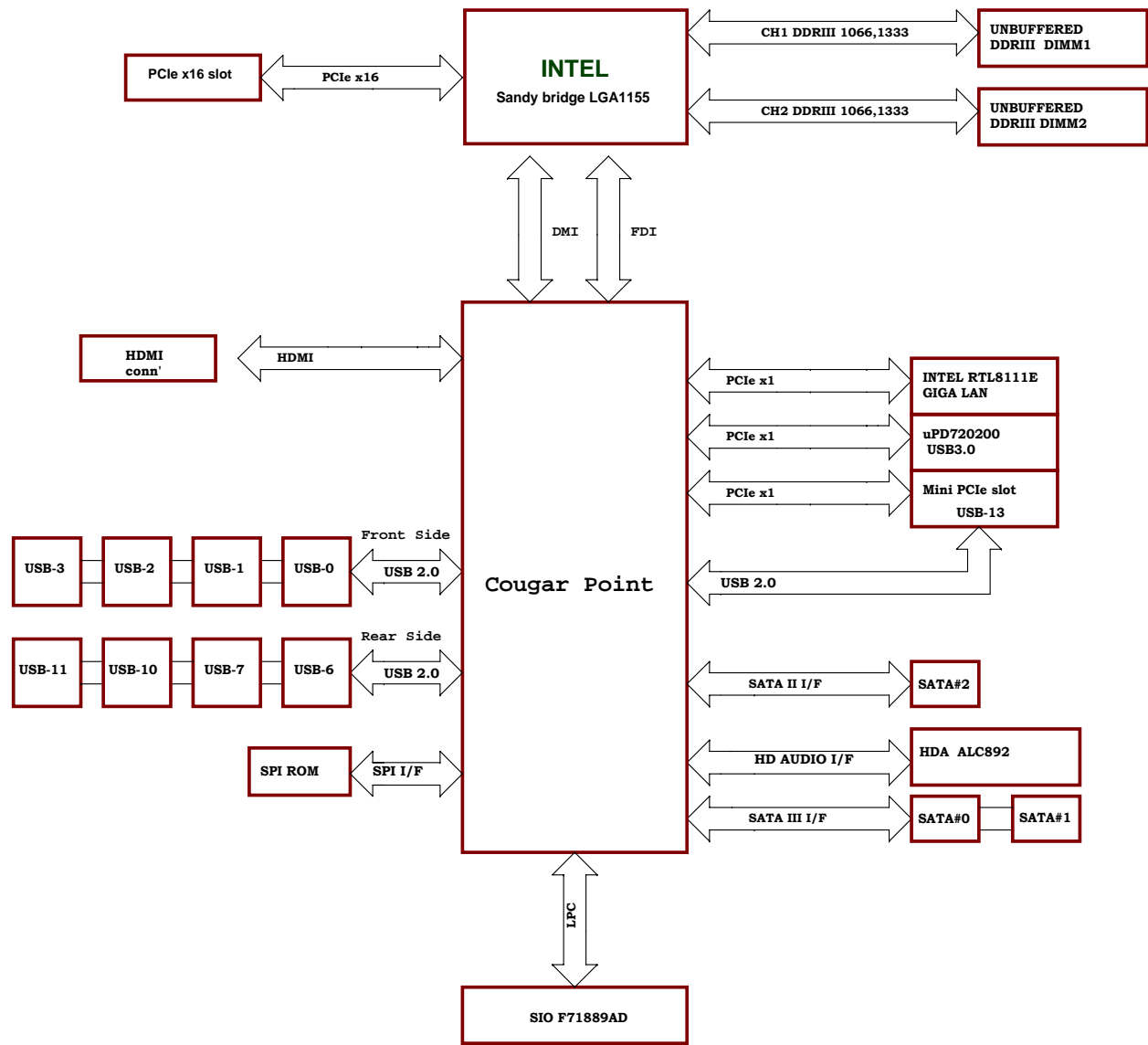
Expansion Slots:

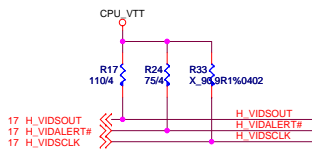
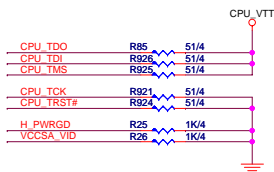
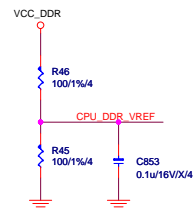
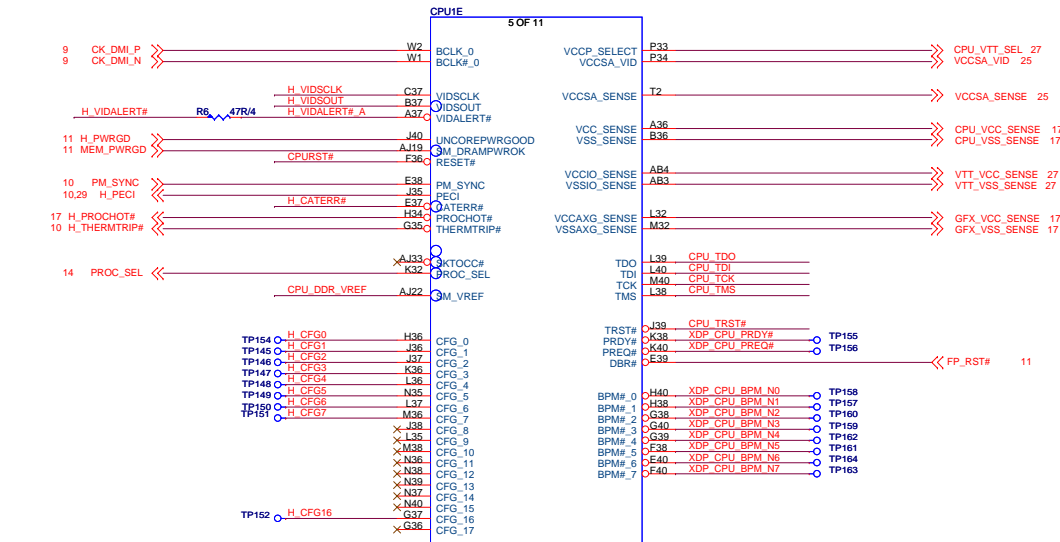
PCI Express (X16) Slot * 1

Mini PCIe(X1) Slot * 1

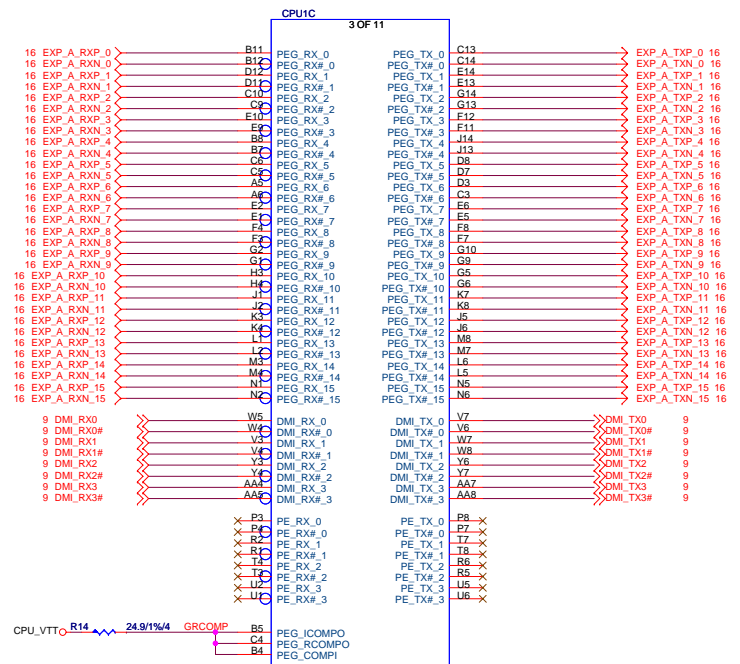
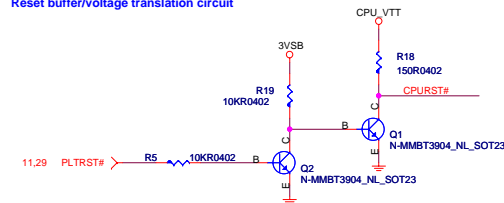
PWM:

VRD12 ISL6364 4-Phase Dr.MOS

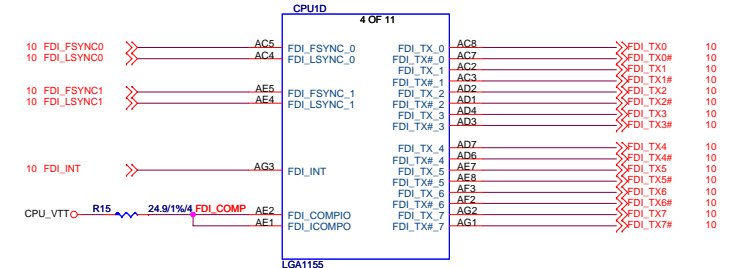


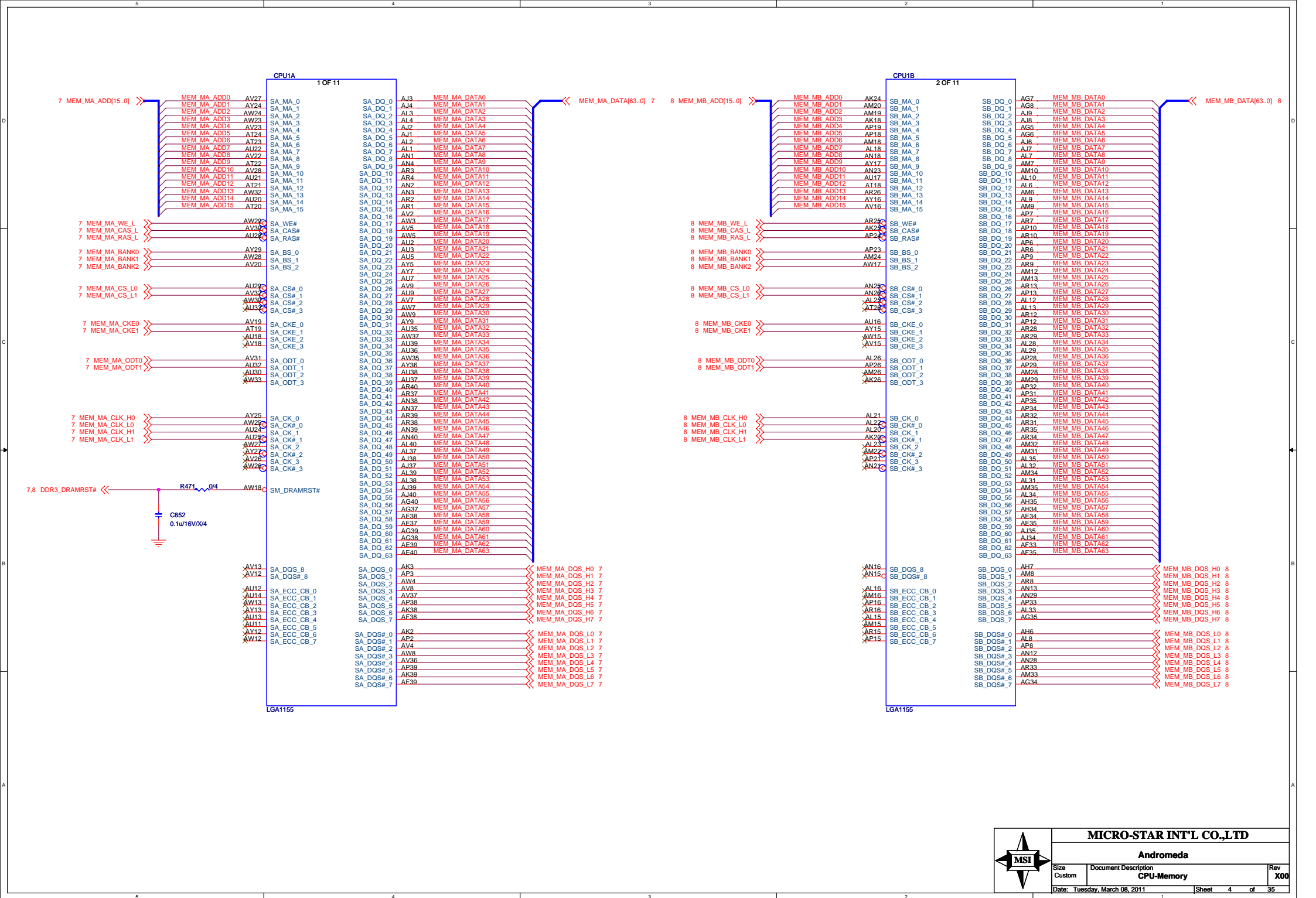


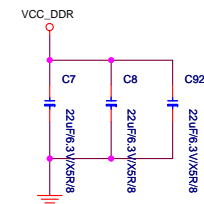
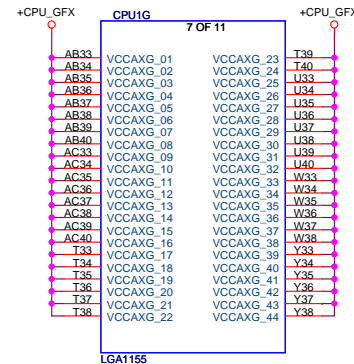
Reset buffer/voltage translation circuit



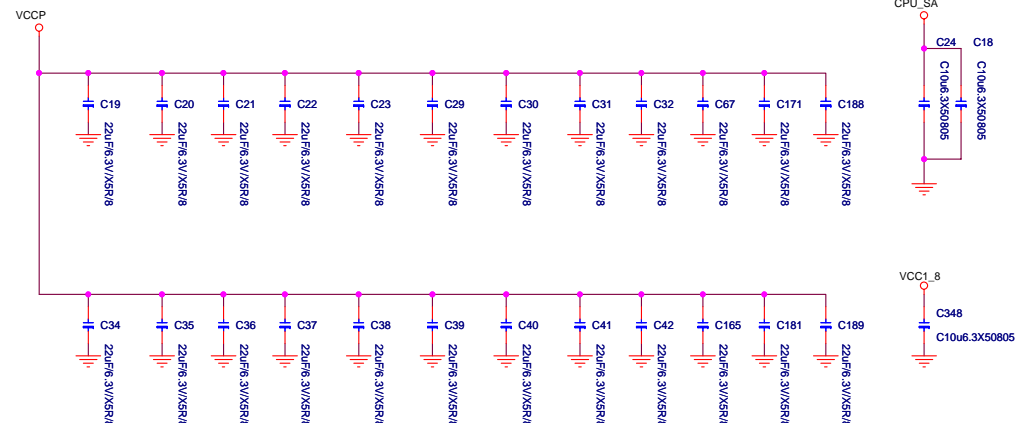
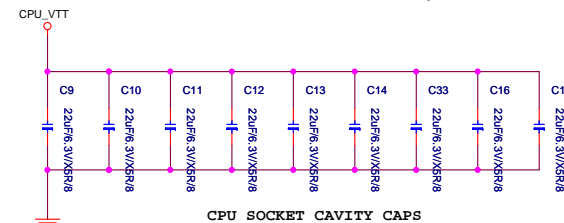
CPU_VTT R14 24.9/1%4 GRCOMP





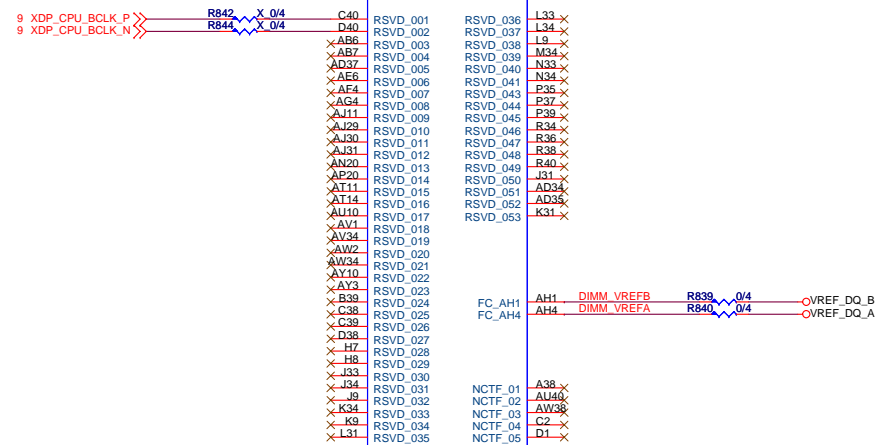
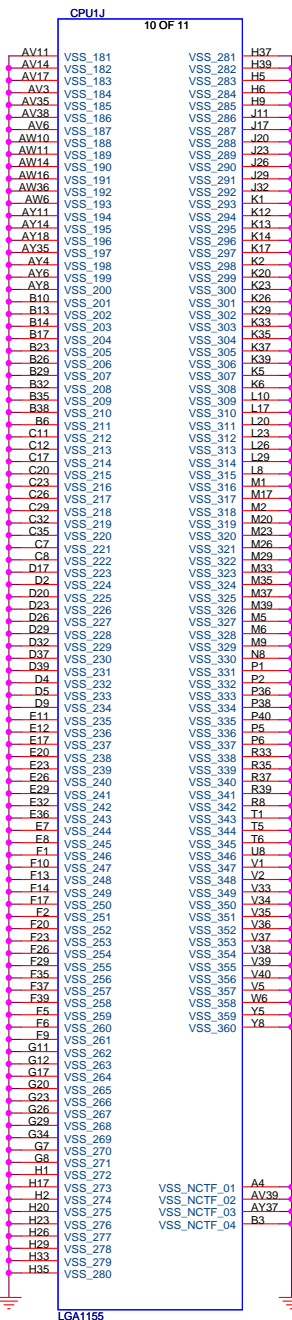
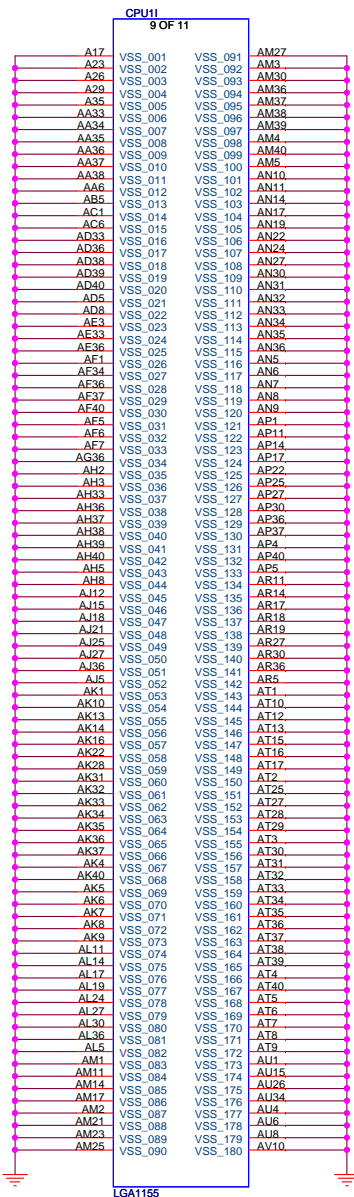


+CPU_VTT Decoupling

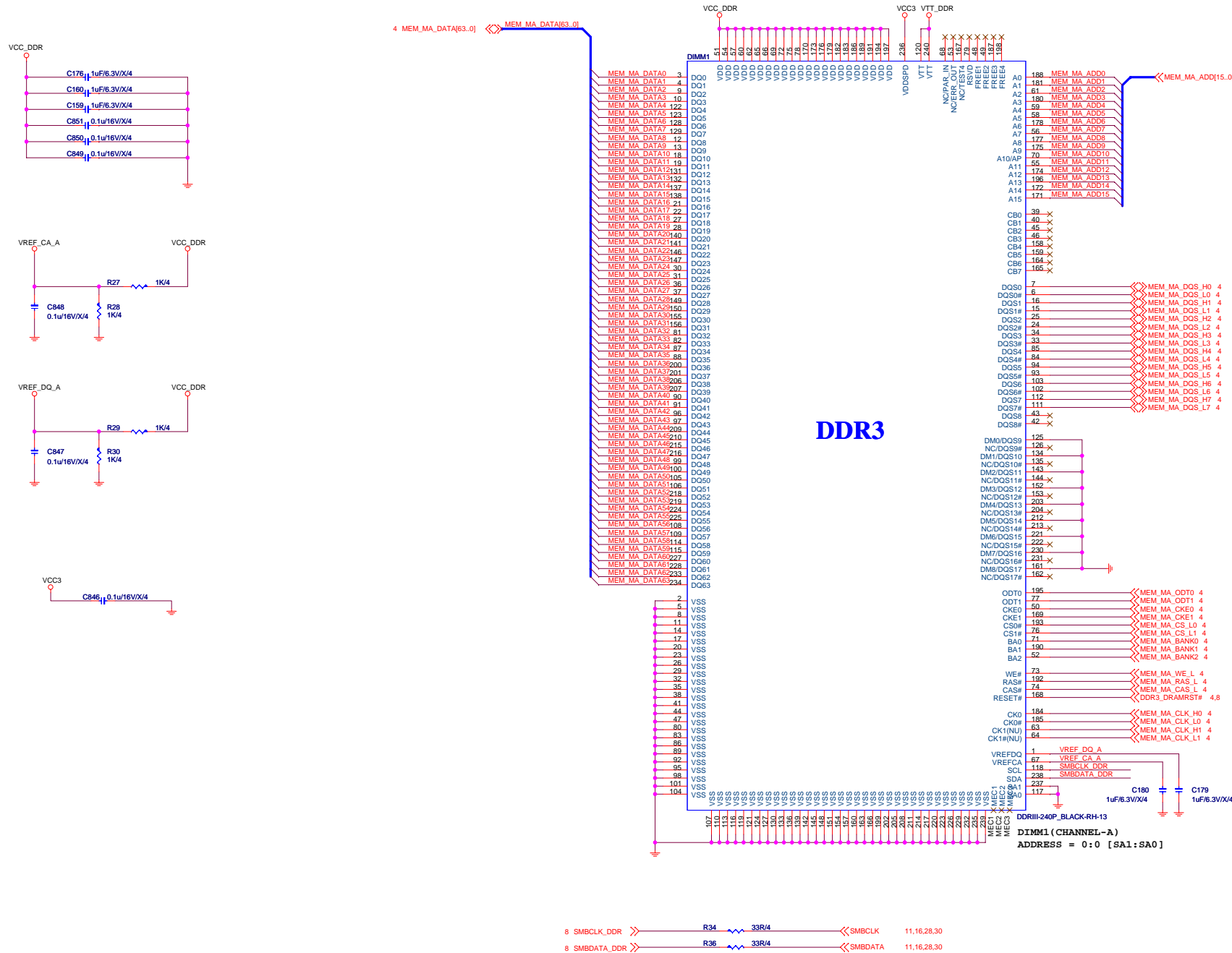


Size Custom	Document Description CPU-Power	Rev X00
----------------	--	-------------------

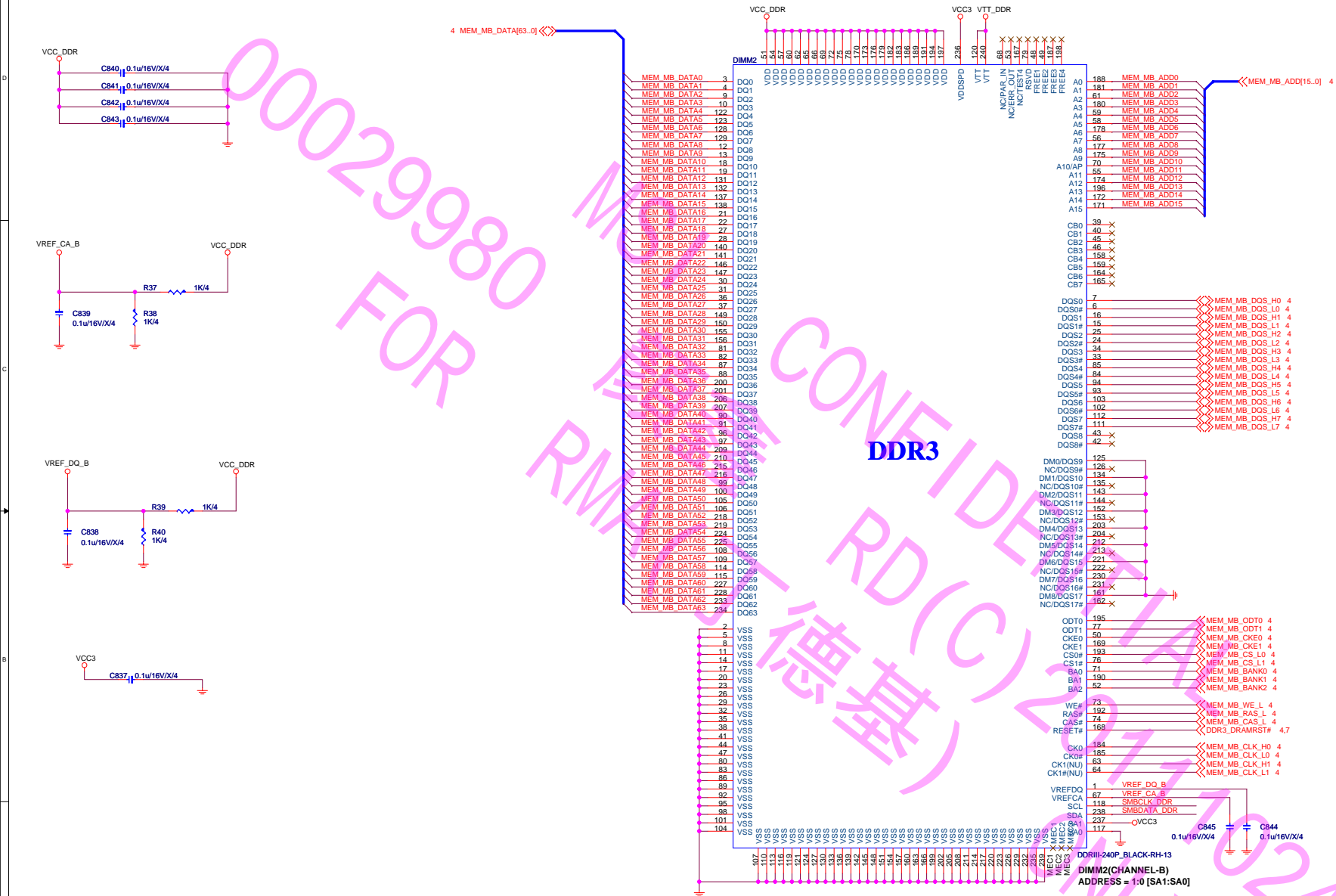
Date: Tuesday, March 08, 2011 Sheet 5 of 35

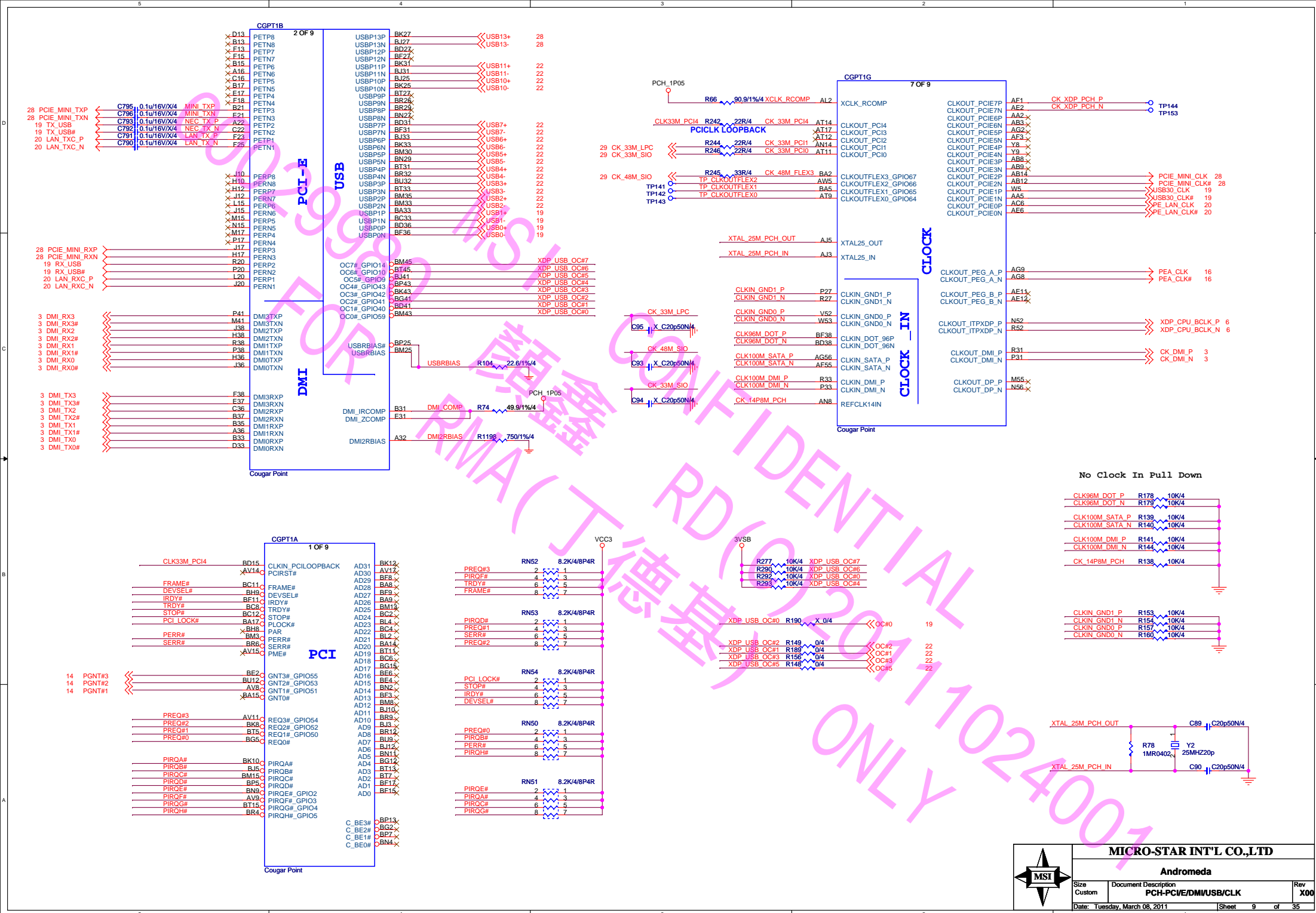


DDR3 DIMM1_A0



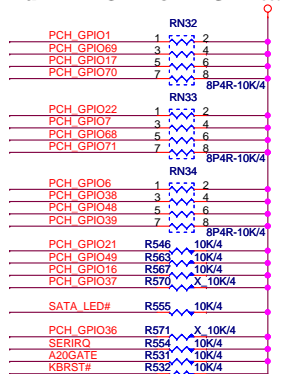
DDR3 DIMM2_B0



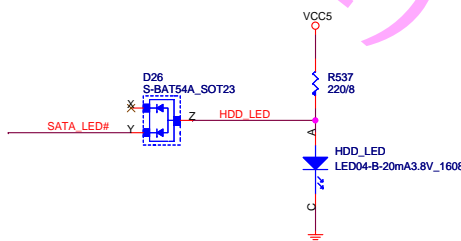




Pull HIGH for PCH



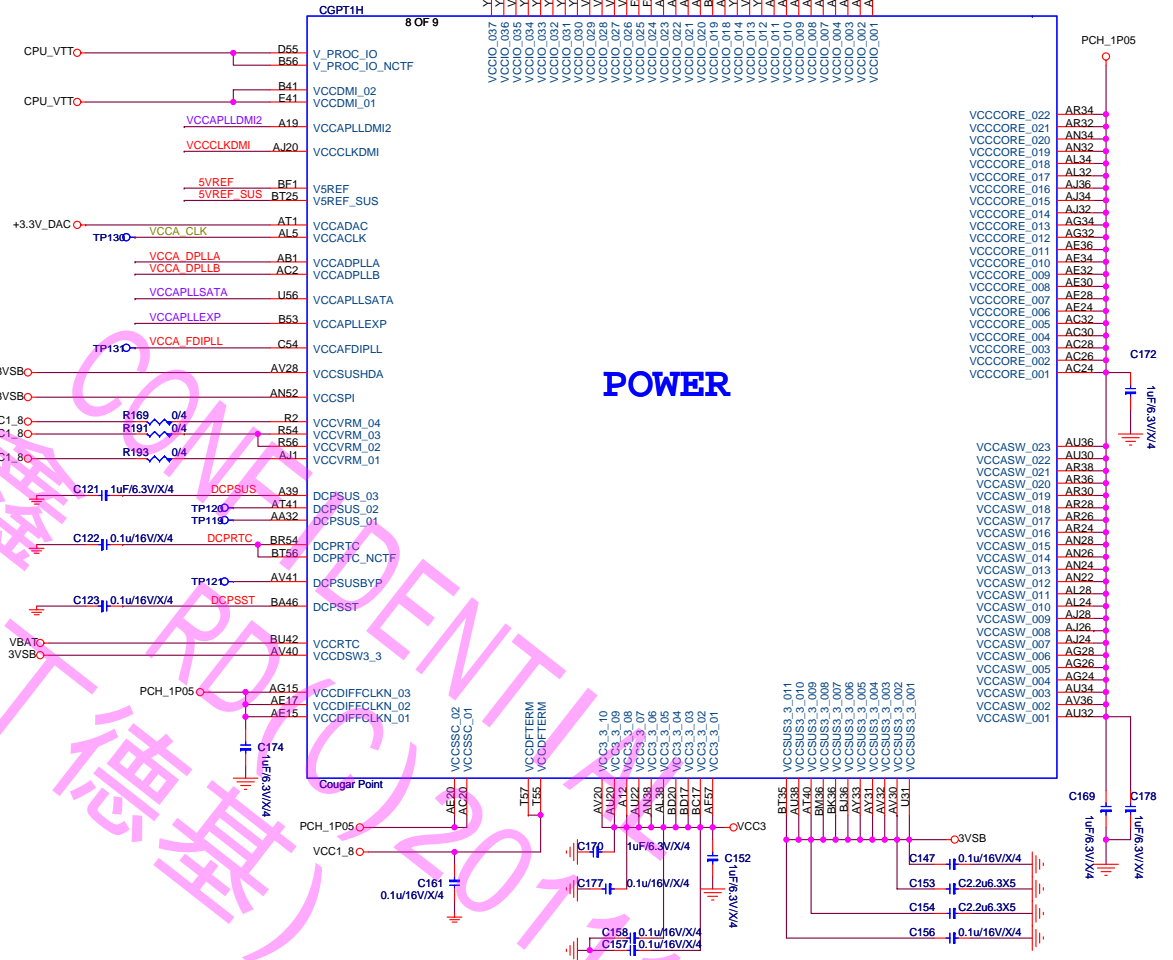
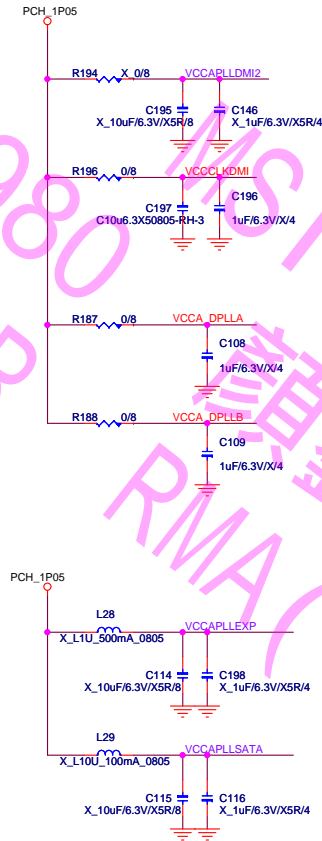
HDD LED



MICRO-STAR INT'L CO.,LTD

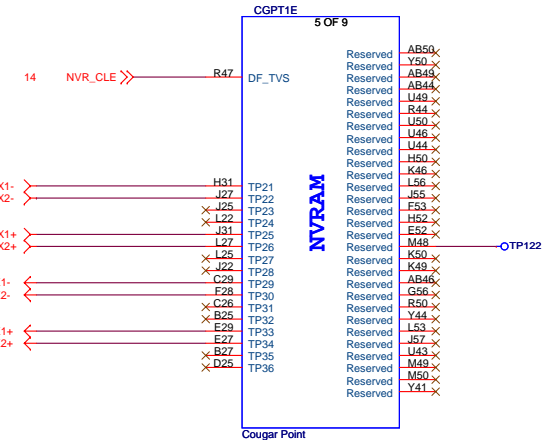
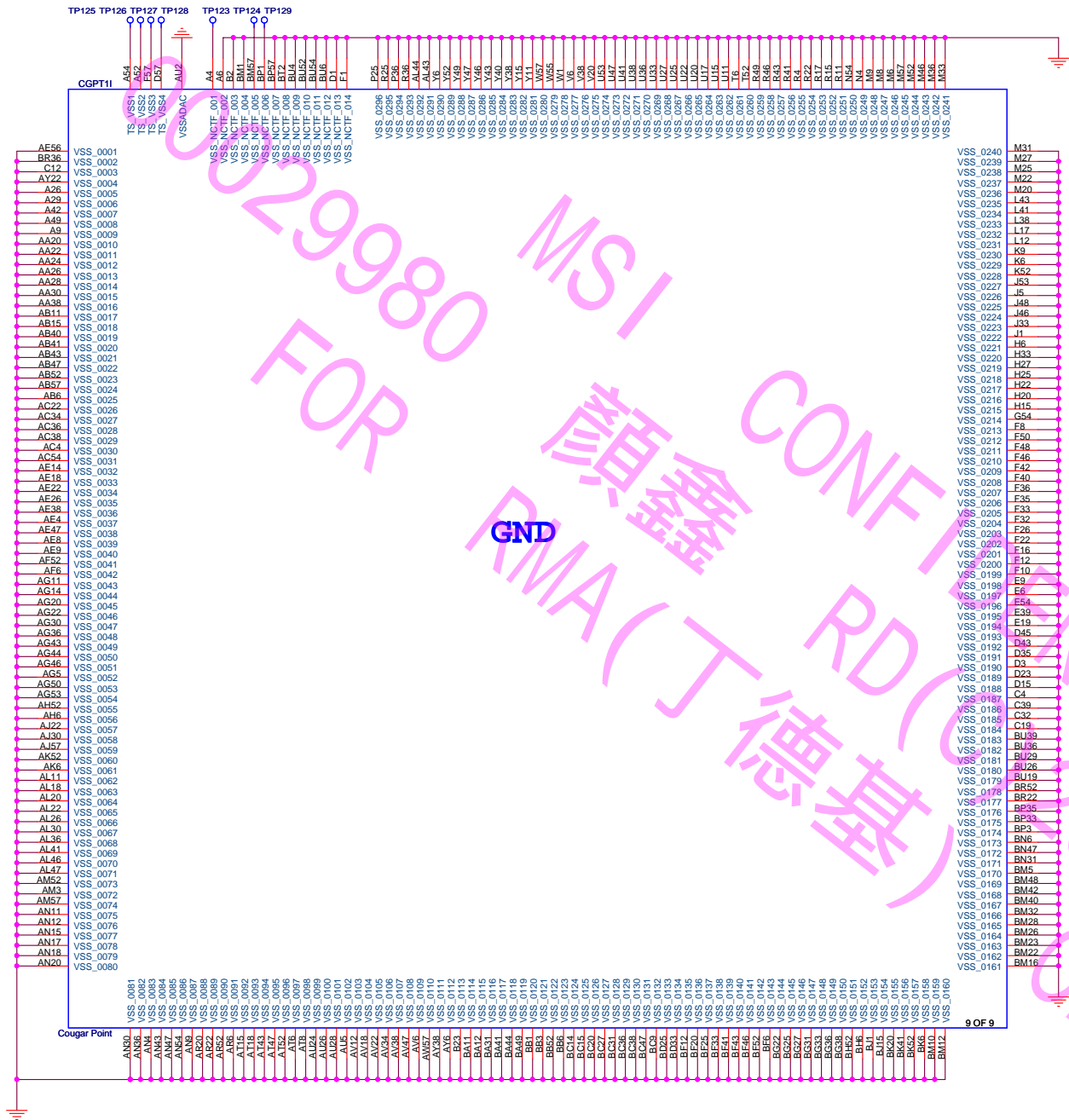
Andromeda

Size	Document Description	Rev
Custom	PCH-SATA/HOST/FAN/GPIO	X00
Date: Tuesday, March 08, 2011	Sheet 10 of 35	



Andromeda

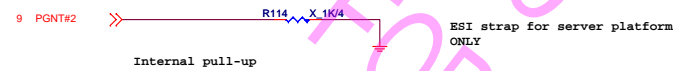
Size Custom	Document Description PCH -POWER	Rev X00
Date: Tuesday, March 08, 2011		Sheet 12 of 35



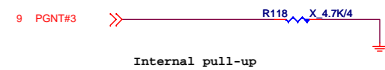
BOOT DEVICE	GNT1	SATA1GP/GPIO19
LPC	0	0
PCI	0	0
SPI	1	1



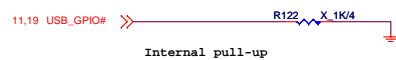
WEAK INTERNAL PULLUPS ON GNT1#



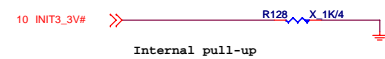
ESI strap for server platform ONLY



Top Block Swap Mode:
Connect to ground with 4.7k Ohm weak pulldown resistor.



GPIO8
Integrated Clocking Enable (FCIM)
Buffer Through Mode Enable (BTM)
FCIM
Pull low with 1K to GND.
BTM
Leave floating. Do not pull low.



INTVRMEN
0: DISABLE INTERNAL VRM
1: ENABLE INTERNAL VRM *

When these voltage regulators are enabled, the integrated GbE only operates at 10/100 Mbps during S3-S5.



DSWVRMEN
0: Disable Internal Deep Sleep 1.05 V regulators.
1: Enable Internal Deep Sleep 1.05 V regulators.

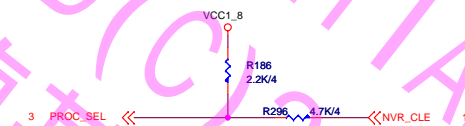
This signal enables the internal Deep Sleep 1.05 V regulators. Must be connected even when not supporting DSW.



HDA_SYNC
On die PLL VR voltage selector



GPIO15
Default (Disable TLS):
Leave NC. Internal pull down.



DMI/FDI TERMINATION VOLTAGE
AC COUPLED: TX SET TO VCC/2, RX SET TO VSS REGARDLESS OF THIS STRAP
DC COUPLED: TX/RX TO VSS IF SAMPLED LOW
DC COUPLED: TX/RX TO VCC ISF SAMPLED HIGH



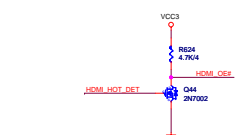
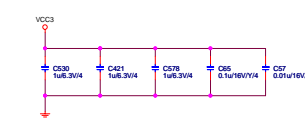
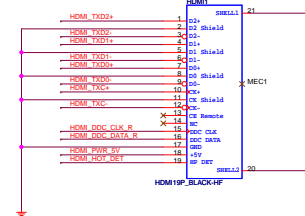
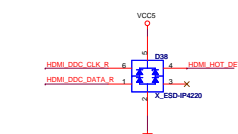
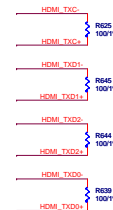
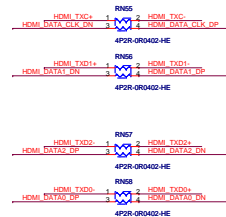
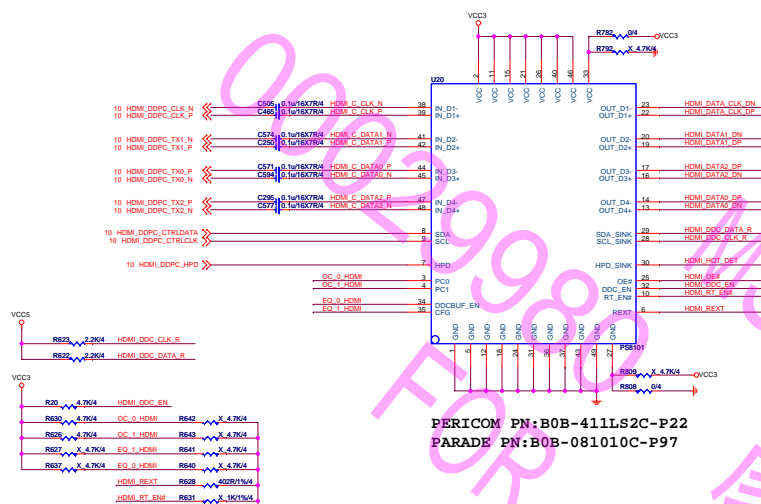
No Reboot Mode with TCO Disabled:
Connect to Vcc3_3 with 8.2k-10k Ohm weak pullup resistor.



MICRO-STAR INT'L CO.,LTD

Andromeda

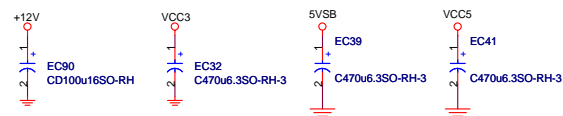
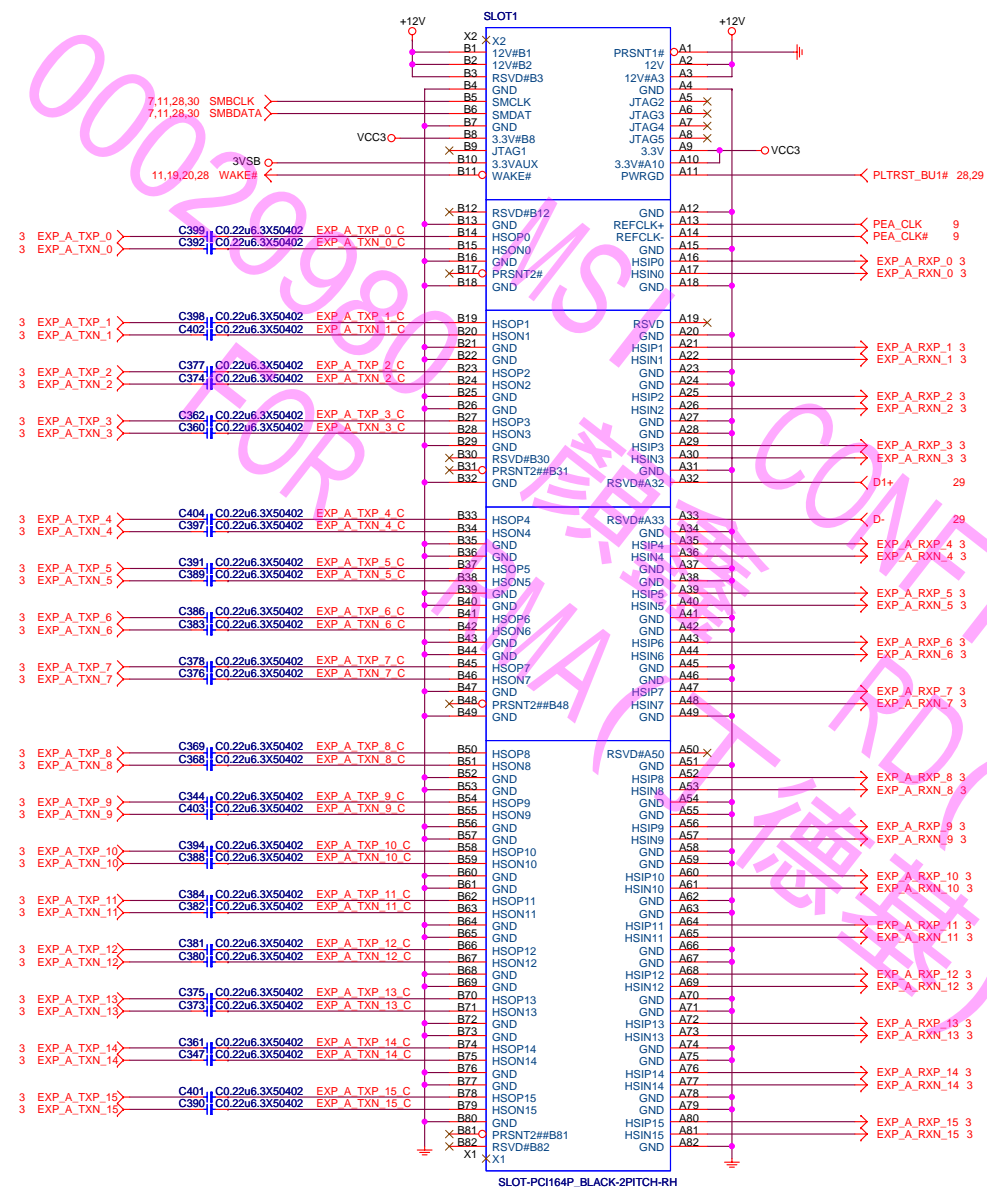
Size	Document Description	Rev
Custom	PCH-STRAPS	X00
Date: Tuesday, March 08, 2011	Sheet 14 of 35	



	"0"	"1"	note
DDC_EN	DDC level shifter disable	DDC level shifter enable	internal pull-up at ~500K ohm.
RT_EN	Input 50 ohm termination resistor enable	the input termination ; resistors are set to high impedances	internal pull-down at ~500K ohm.
OEN	enable	the chip is power down and input termination resistors will be at high impedance.	internal pull-down at ~500K ohm.
HPD_SINK	disable	enable	internal pull-down at ~200K ohm; 5V tolerant.
DDCBUF_EN	For DDC level shifting configuration, please refer to Table.		internal pull-down at ~500K ohm.
REXT			analog current generation.

[DDC_EN, DDCBUF_EN, OEN]	DDC Passive Switch	DDC Active Buffer	PC1, PC0	note
1, 0, X	On	Off	00	8 dB
1, 1, 0	Off	On	01	4 dB
1, 1, 1	Off	Off	10	12 dB
0, X, X	Off	Off	11	0 dB

PCI EXPRESS X16 SLOT



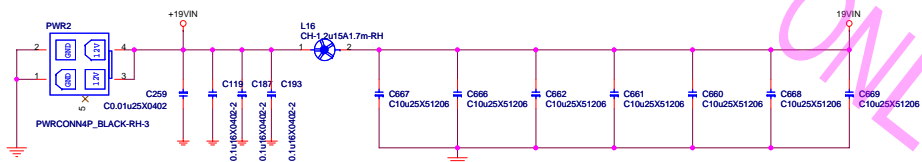
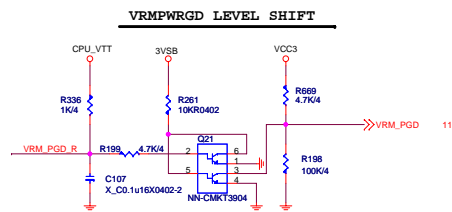
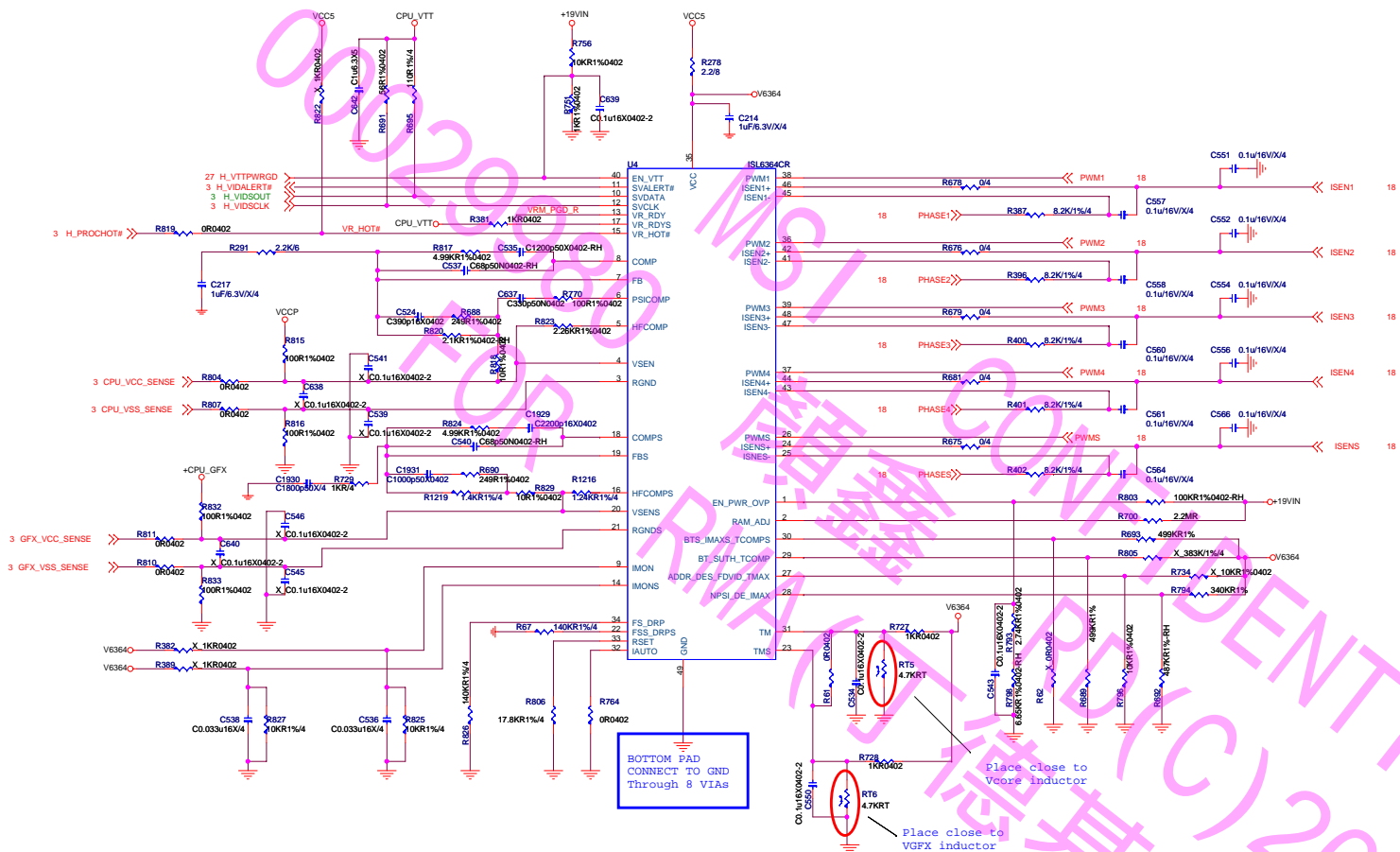
MICRO-STAR INT'L CO.,LTD

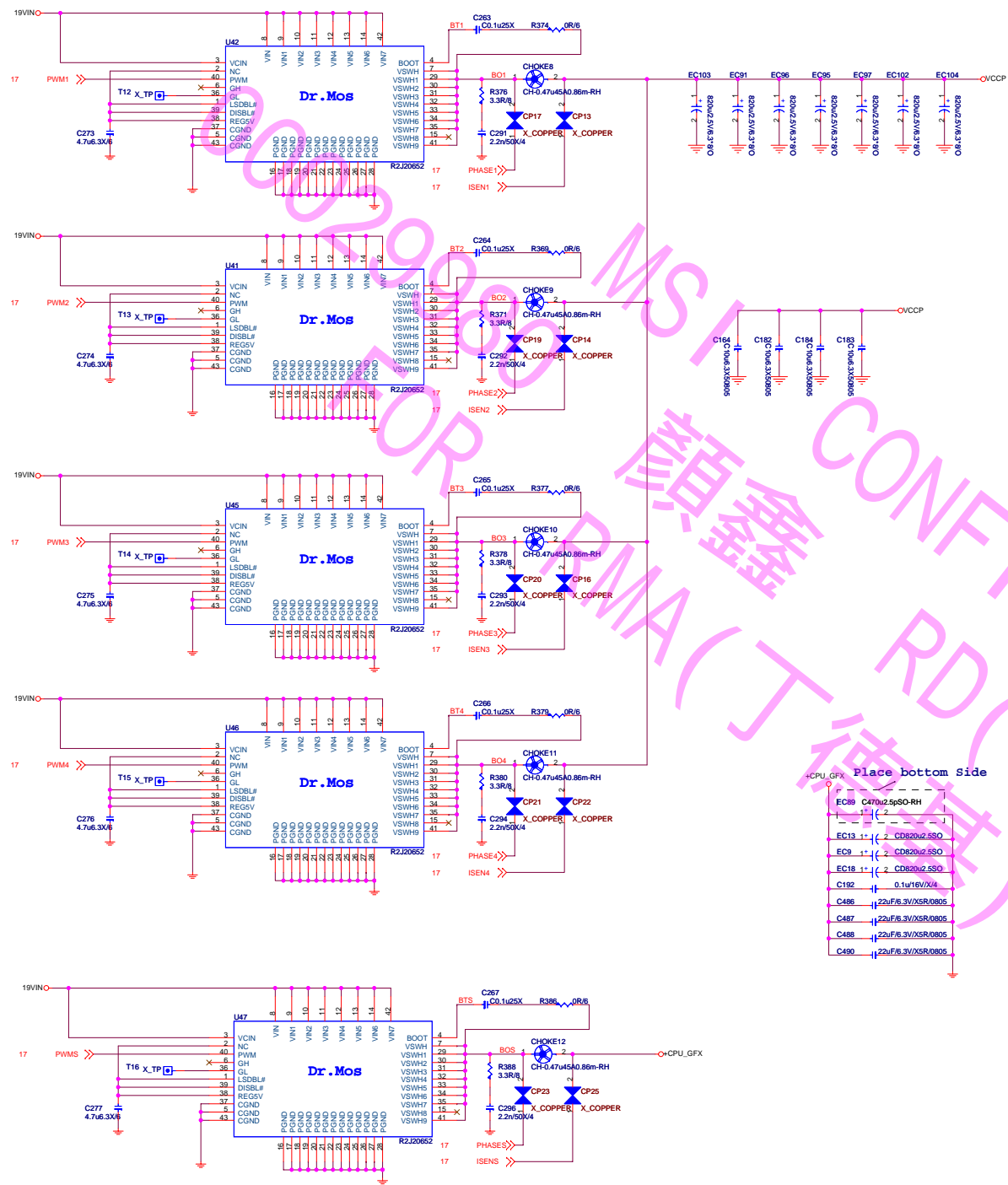
Andromeda

Size	Document Description	Rev
Custom	PCIEx16 slot	X00

Date: Tuesday, March 08, 2011	Sheet 16 of 35
-------------------------------	----------------

VOLTAGE REGULATOR MODULE (VRD12)





Place bottom Side

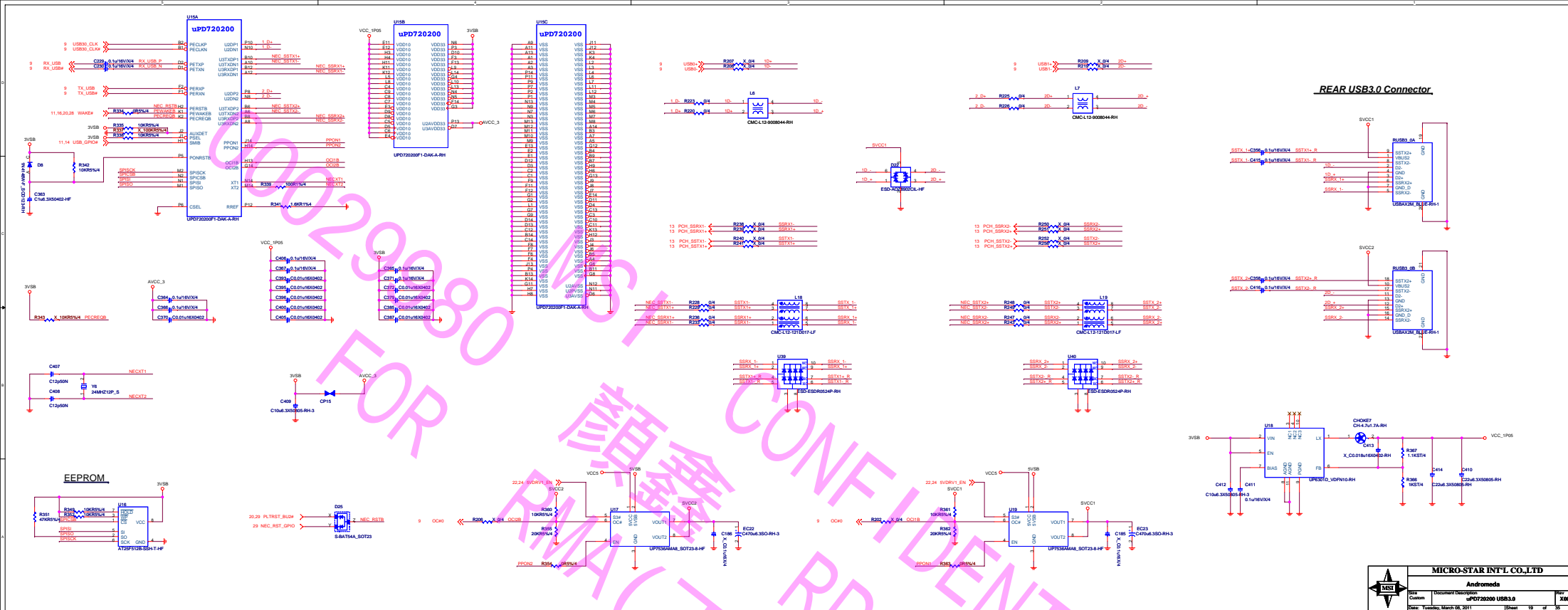
EC89	C470u2.5p50-RH
EC13	1+ (2) CD620u2.5S0
EC9	1+ (2) CD620u2.5S0
EC18	1+ (2) CD620u2.5S0
C192	0.1u18V/X/4
C486	22uF6.3V/XSR/0805
C487	22uF6.3V/XSR/0805
C488	22uF6.3V/XSR/0805
C490	22uF6.3V/XSR/0805



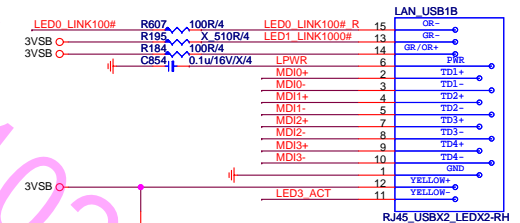
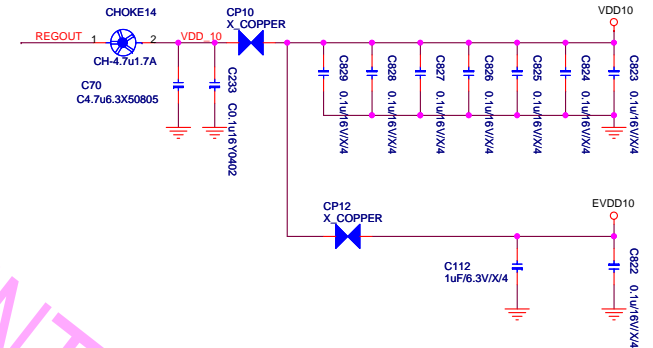
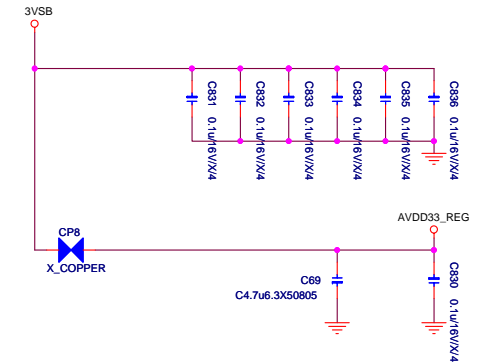
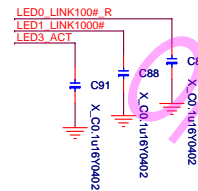
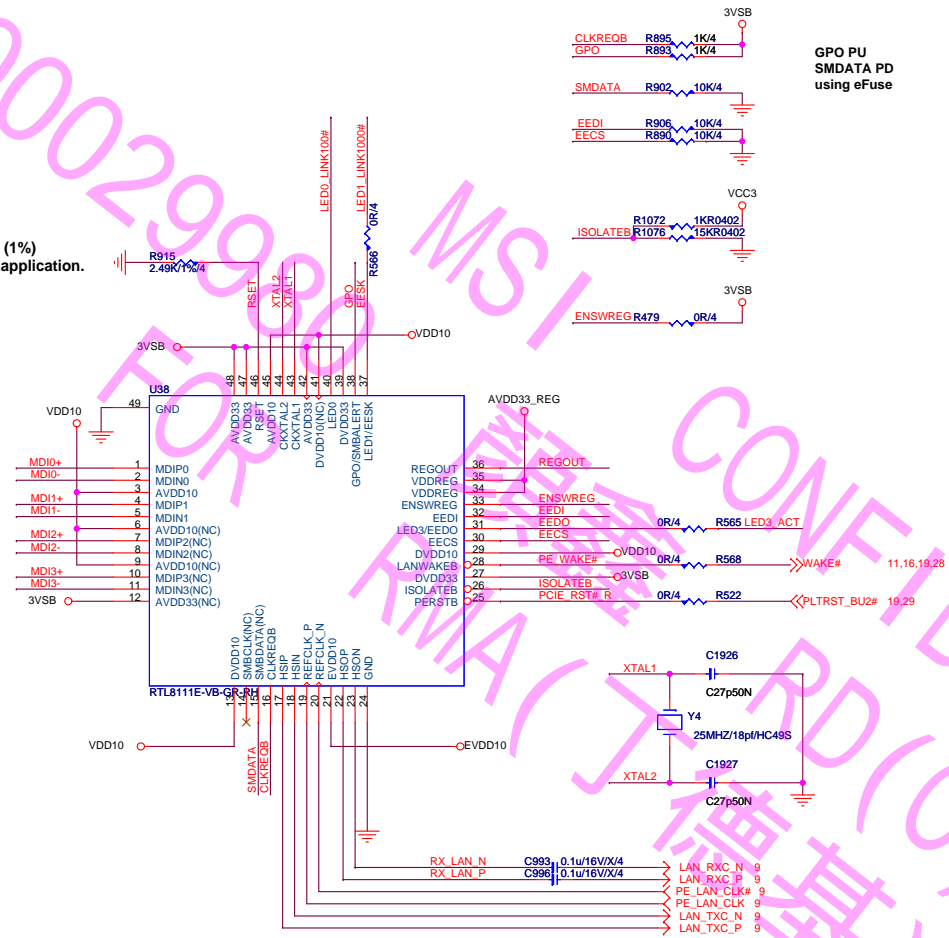
MICRO-STAR INT'L CO.,LTD

Andromeda

Size	Document Description	Rev
Custom	Dr.MOS	X00
Date:	Tuesday, March 06, 2011	Sheet 18 of 35



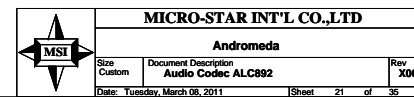
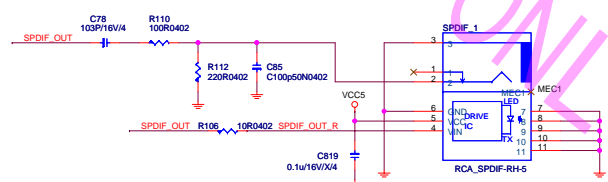
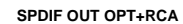
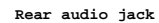
**2.49K (1%)
for all application.**

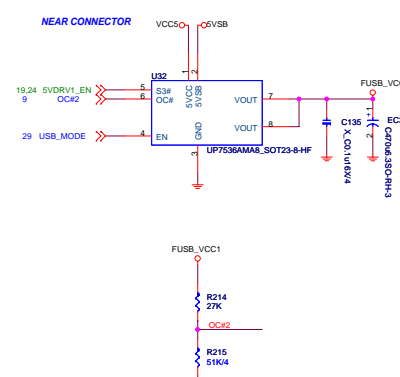
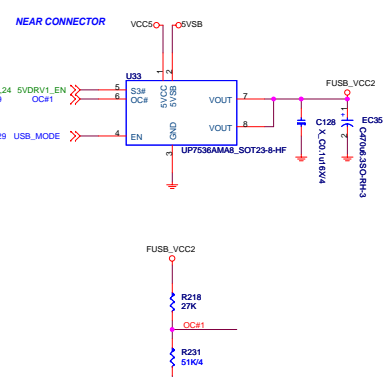
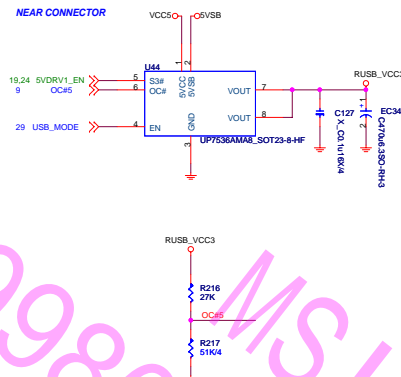
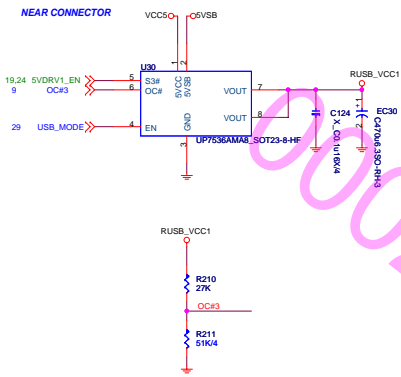


MICRO-STAR INT'L CO.,LTD

Andromeda

Size Custom	Document Description LAN RTL8111E	Rev X00
Date: Tuesday, March 08, 2011		Sheet 20 of 35



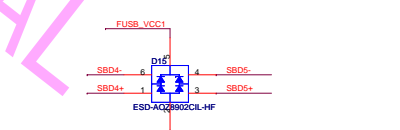
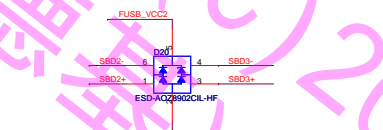
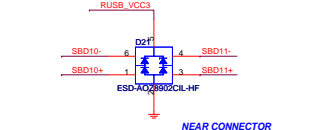
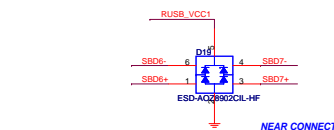
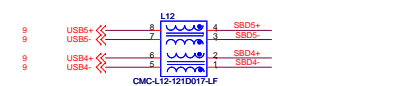
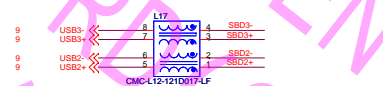
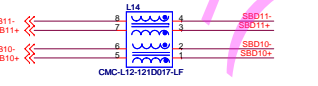
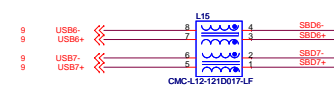
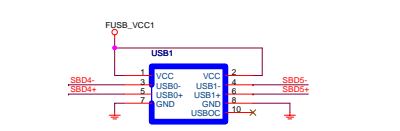
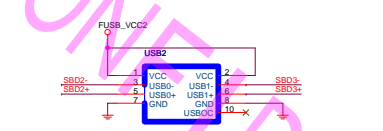
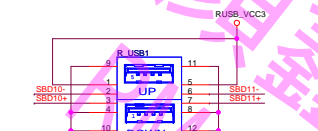
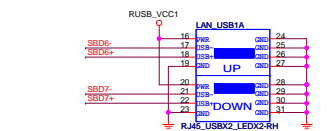


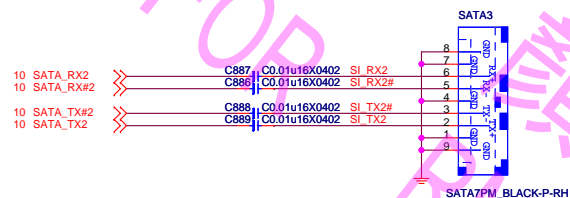
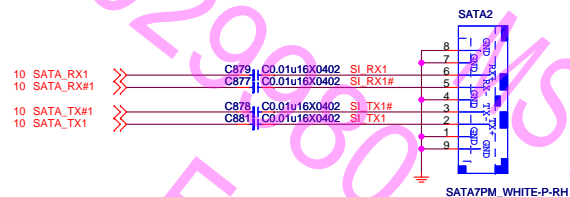
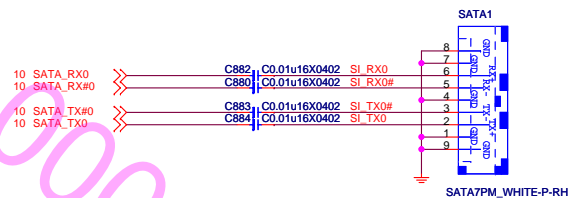
REAR USB PORT 6,7

REAR USB PORT 10,11

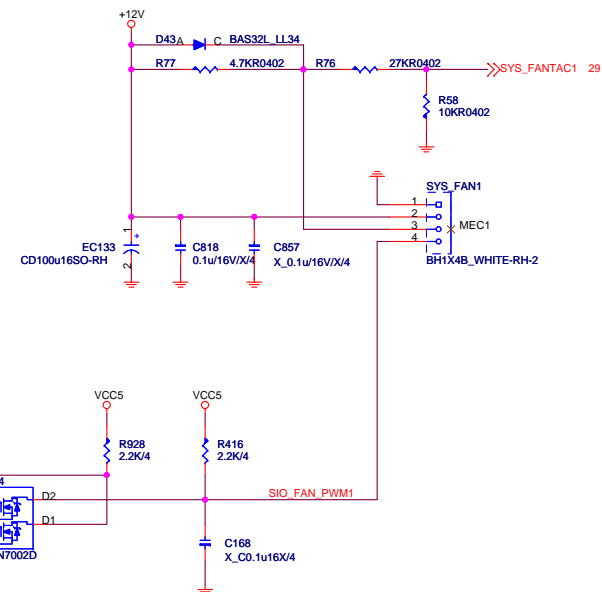
Front USB PORT 2,3

Front USB PORT 4,5

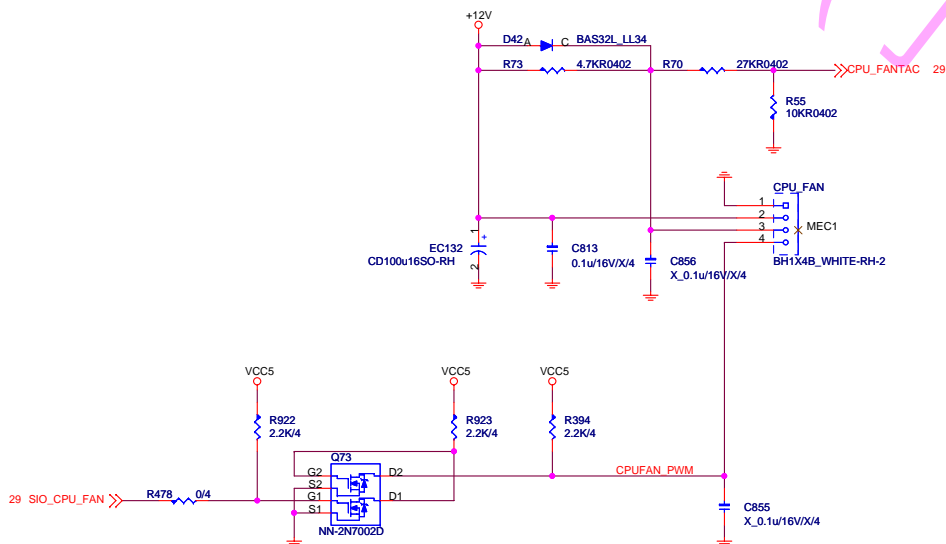




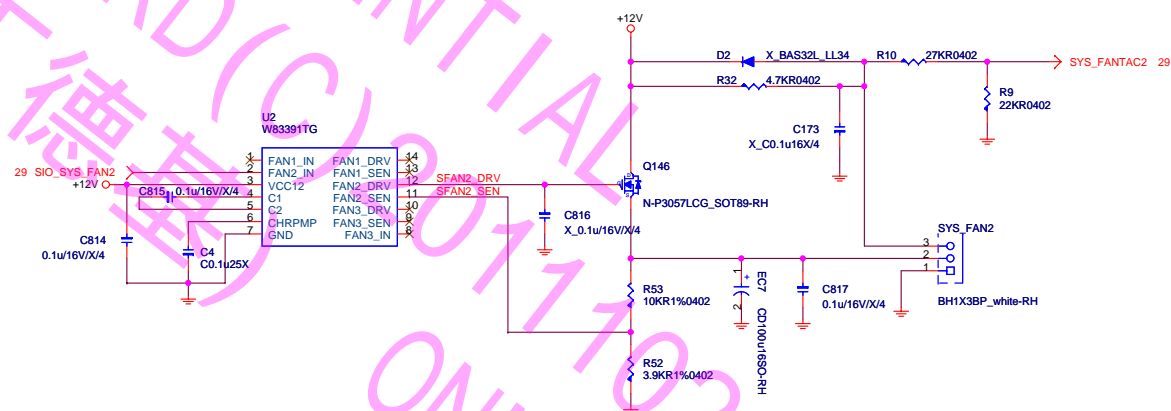
SYS Fan 1



CPU Fan



SYS Fan 2

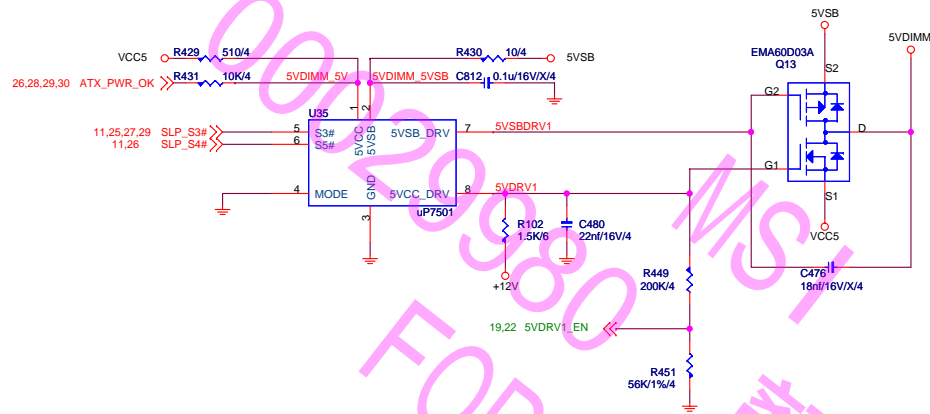


MICRO-STAR INT'L CO.,LTD

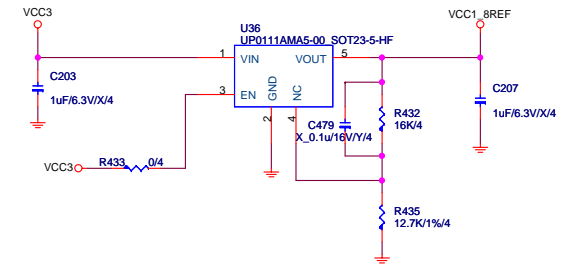
Andromeda

Size	Document Description	Rev
Custom	SATA /FAN Control	X00
Date: Tuesday, March 08, 2011	Sheet 23 of 35	

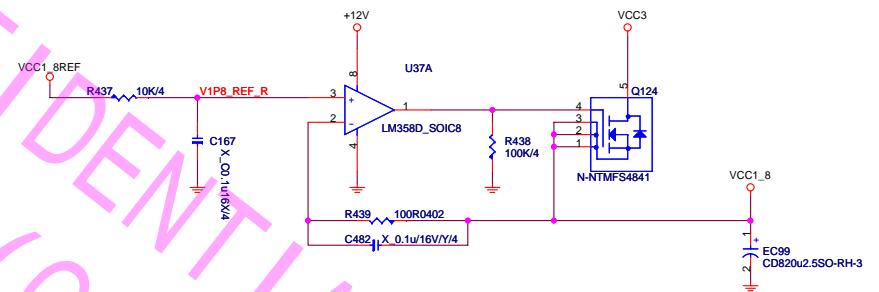
5VDIMM FOR DDR



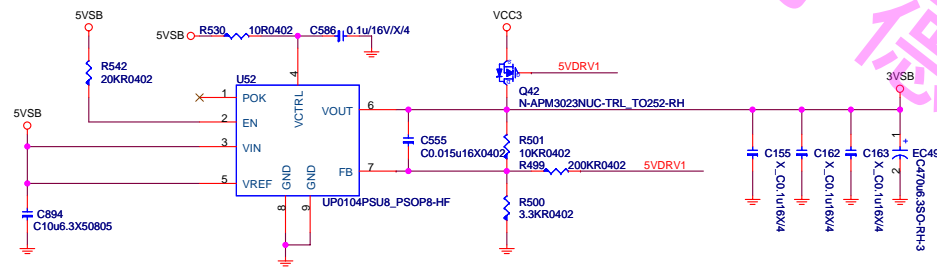
VCC1_8REF



CPU_PLL_1_8



3VSB Power Rail



MICRO-STAR INT'L CO.,LTD

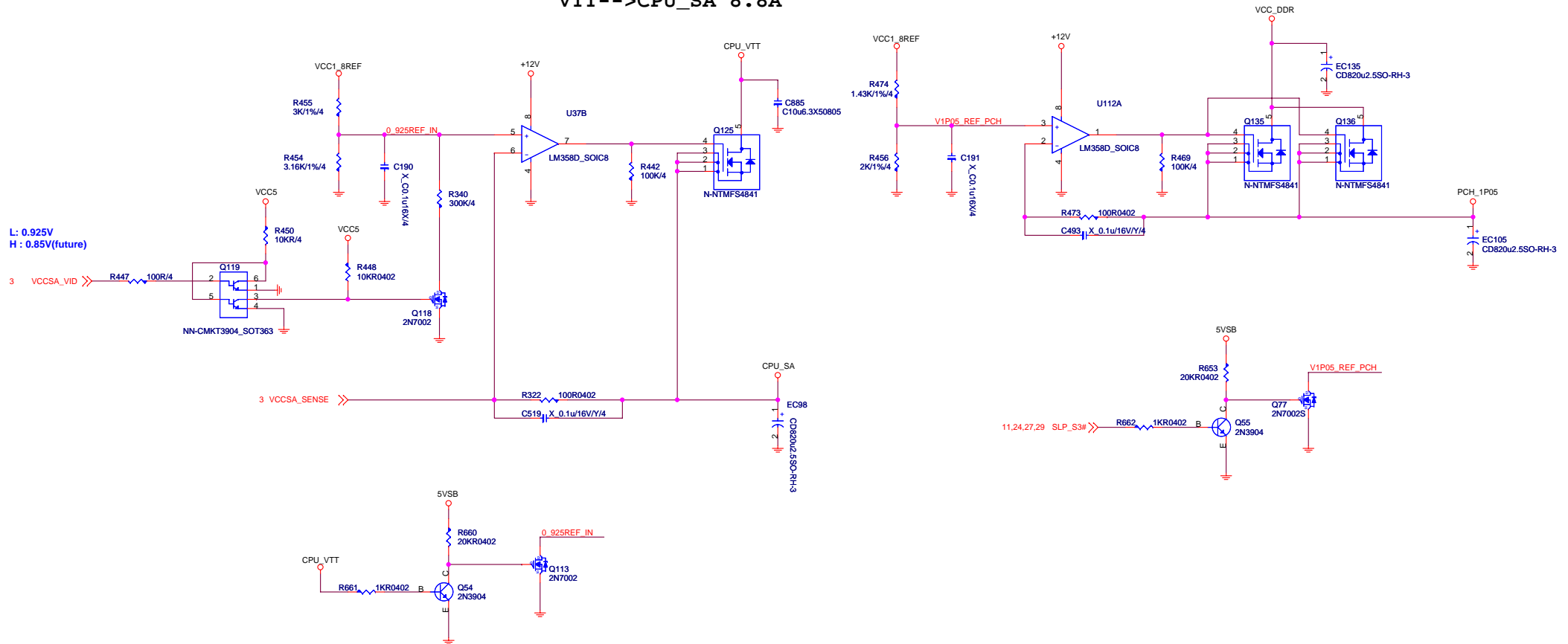
Andromeda

Size Custom Document Description ACPI Controller UPI Rev X00

Date: Tuesday, March 08, 2011 Sheet 24 of 35

VTT-->CPU_SA 8.8A

DDR-->PCH 6.2A

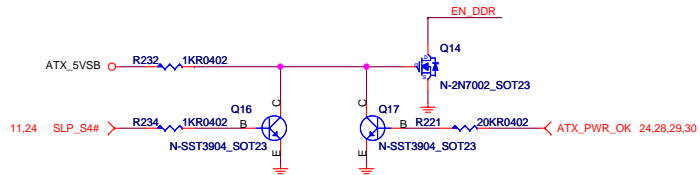
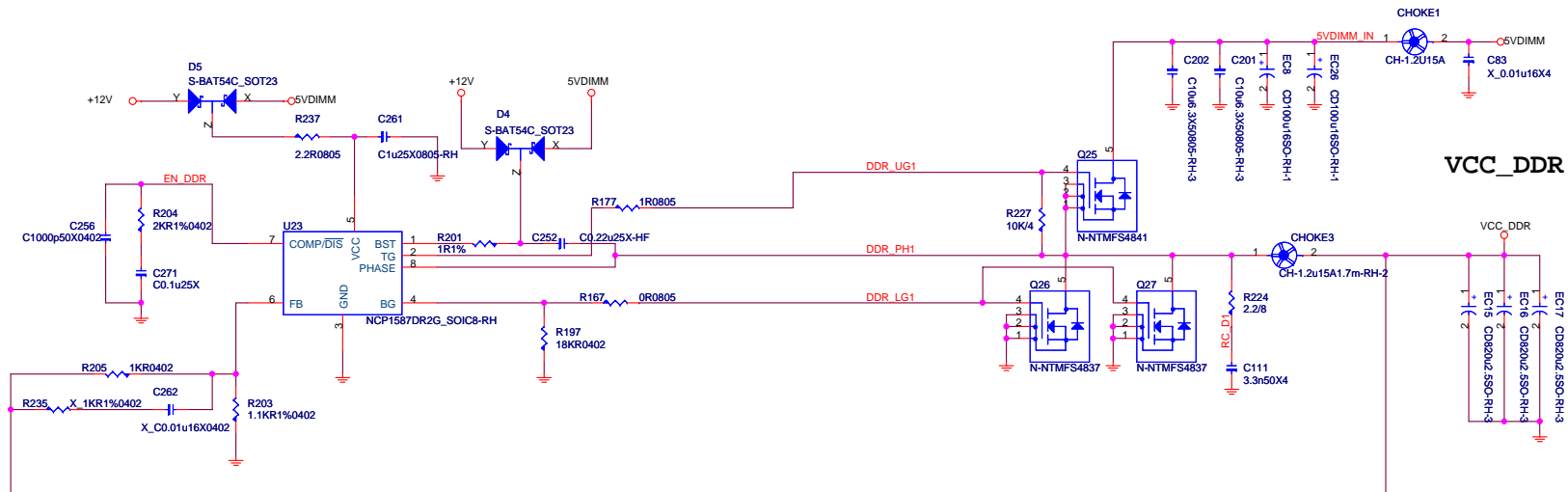


MICRO-STAR INT'L CO.,LTD

Andromeda

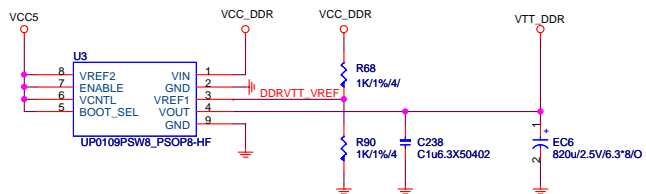
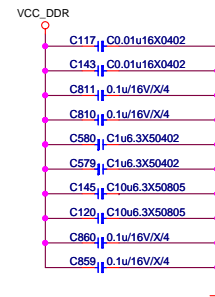
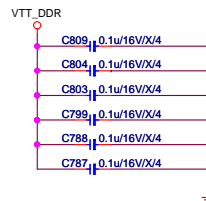
Size	Document Description	Rev
Custom	CPU_SA POWER	X00
Date: Tuesday, March 08, 2011	Sheet 25 of 35	

DDR III 1.5V POWER



DDR VTT Power

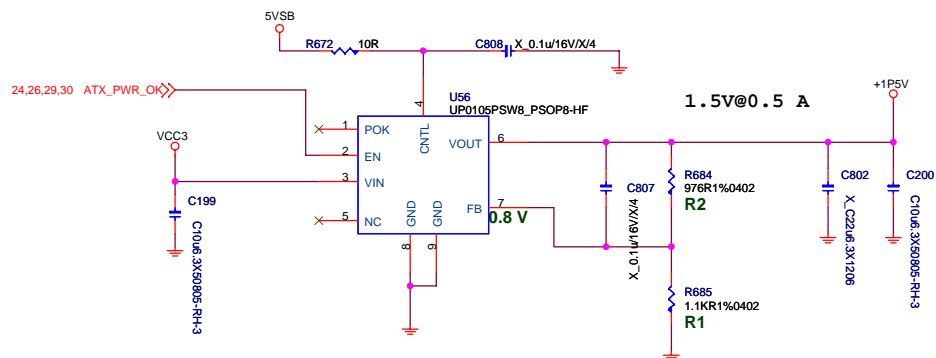
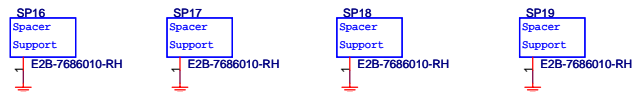
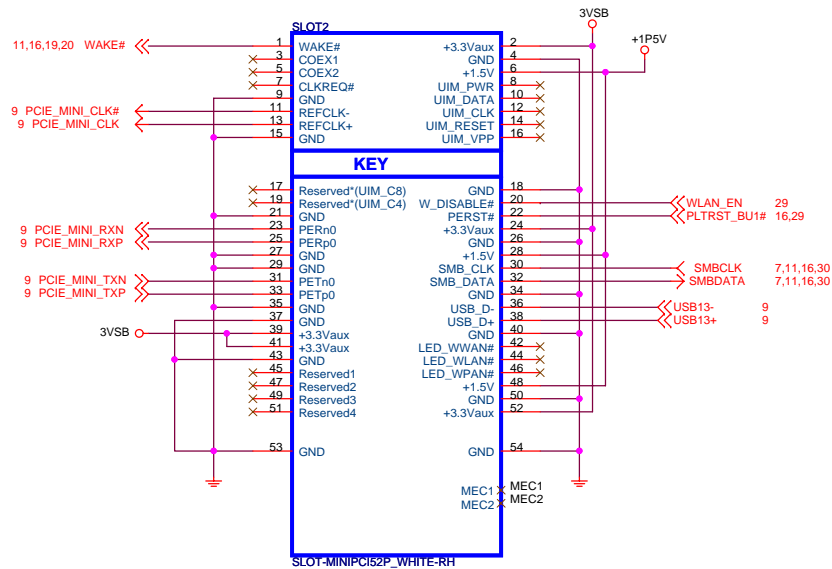
To CPU Copper trace width > 250mils , Fill island behind DIMM > 400mils .



MICRO-STAR INT'L CO.,LTD

Andromeda

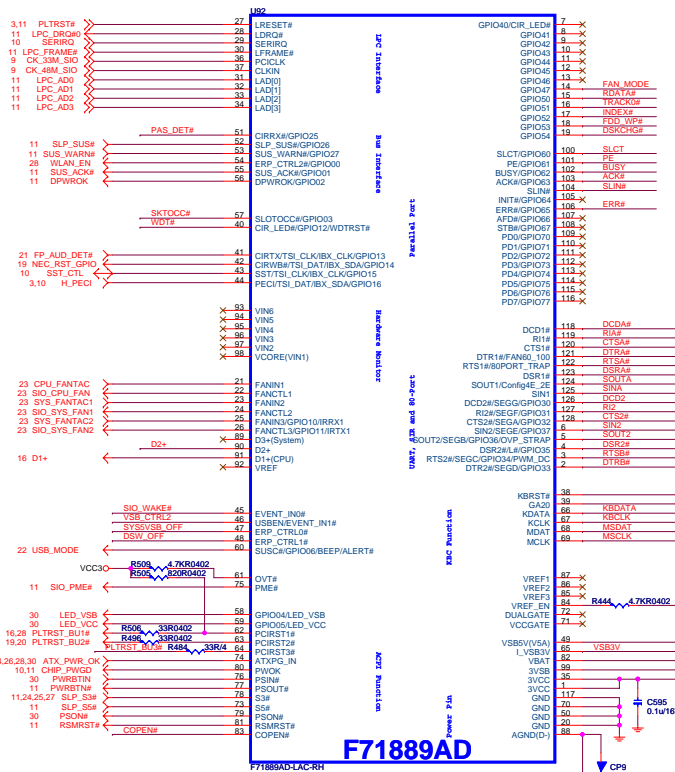
Size Custom	Document Description DDR POWER-NCP1587 1-Phase	Rev X00
Date: Tuesday, March 08, 2011	Sheet 26 of 35	



MICRO-STAR INT'L CO.,LTD

Andromeda

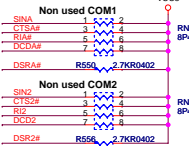
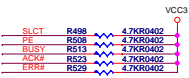
Size Custom	Document Description Mini slot	Rev X00
Date: Tuesday, March 08, 2011	Sheet 28 of 35	



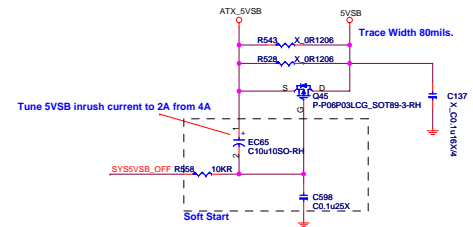
FLOPPY CONNECTOR



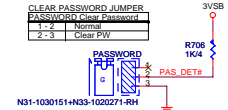
LPT CONNECTOR



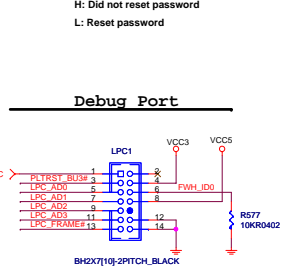
5VSB Power Switch



PASSWORD DETECTION

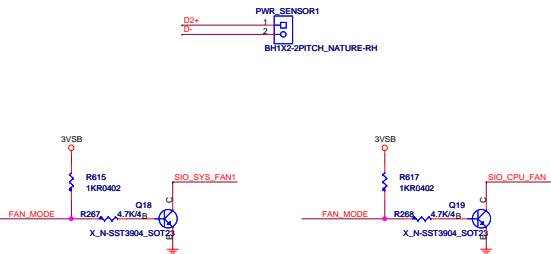


Debug Port

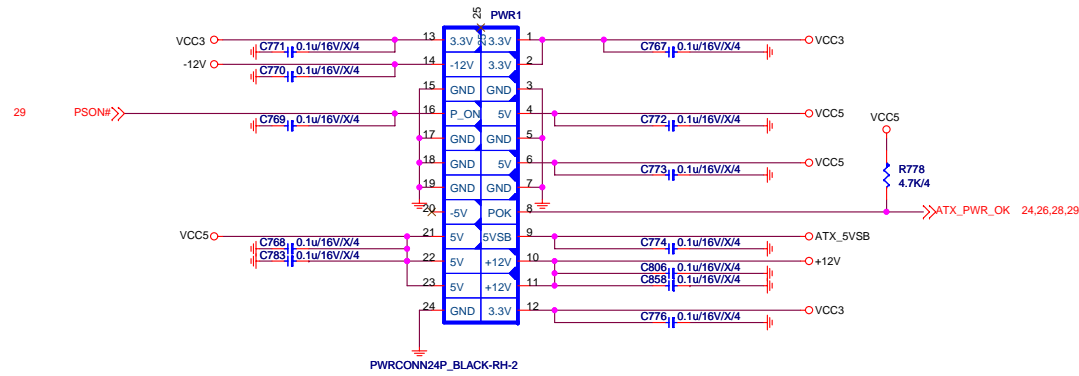


F71889AD

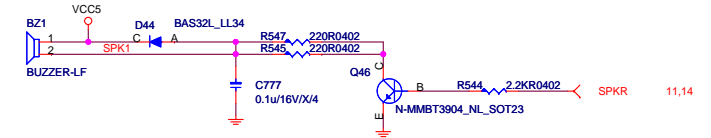
F71889AD-LAC-RH



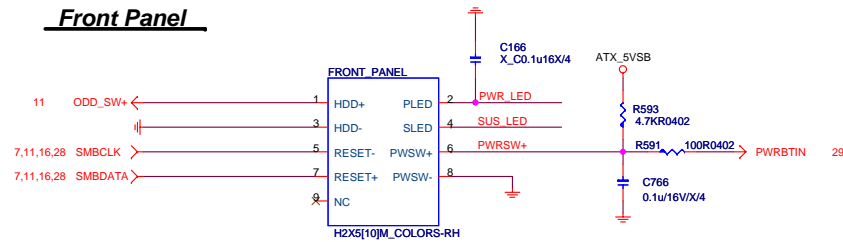
ATX POWER CONNECTOR



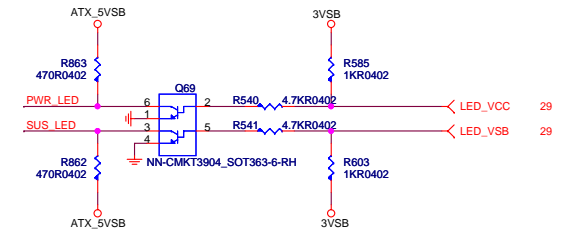
Buzzer Circuit



Front Panel



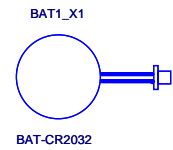
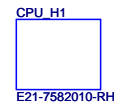
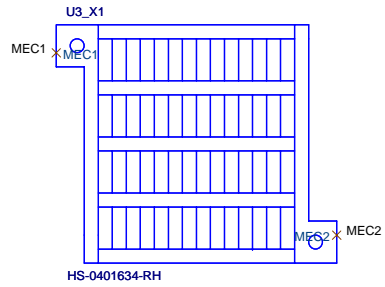
Power LED



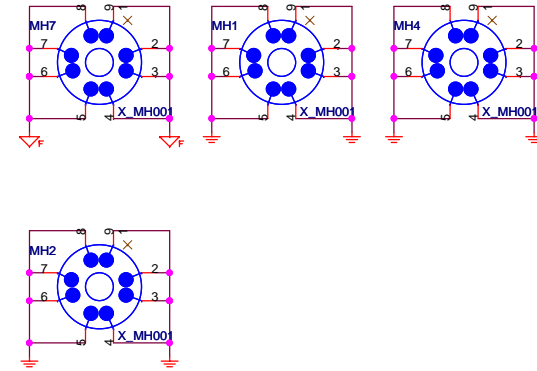
MICRO-STAR INT'L CO.,LTD

Andromeda

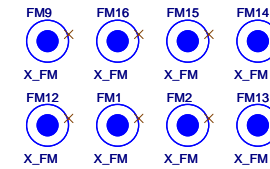
Size	Document Description	Rev
Custom	ATX F_Panel	X00
Date: Tuesday, March 08, 2011	Sheet 30 of 35	



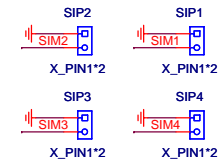
Mounting Holes



Optical Fiducial Marks-120



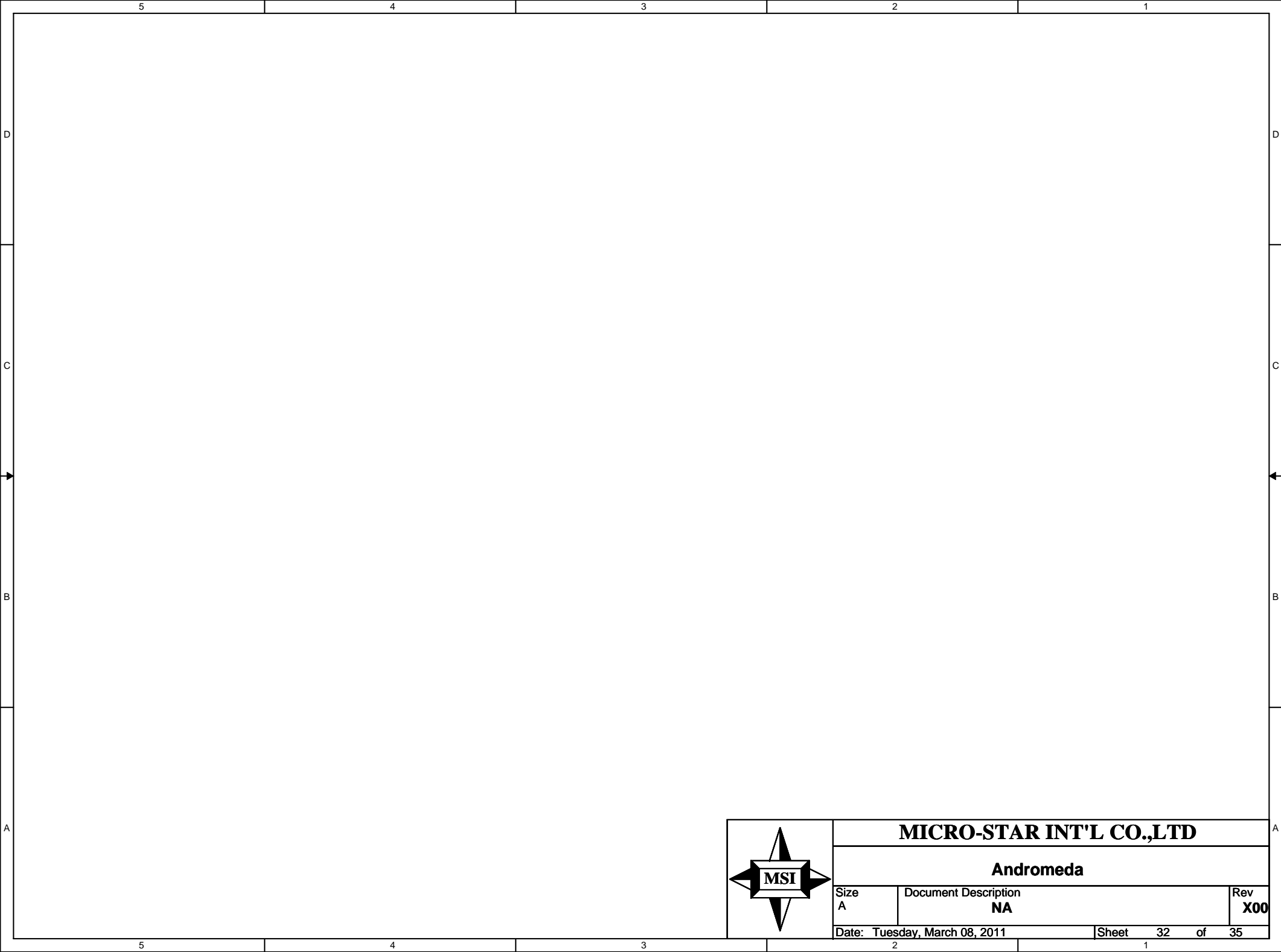
Simulation



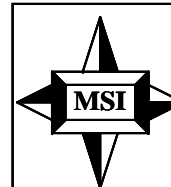
MICRO-STAR INT'L CO.,LTD

Andromeda

Size	Document Description	Rev
Custom	Manual Parts	X00
Date: Tuesday, March 08, 2011		Sheet 31 of 35



MICRO-STAR INT'L CO.,LTD			
Andromeda			
Size A	Document Description NA		Rev X00
Date: Tuesday, March 08, 2011		Sheet 32 of 35	



MICRO-STAR INT'L CO.,LTD

Andromeda

Size
A

Document Description

History

Rev	X00
-----	-----

Date: Tuesday, March 08, 2011

Sheet	33	of	35
-------	----	----	----