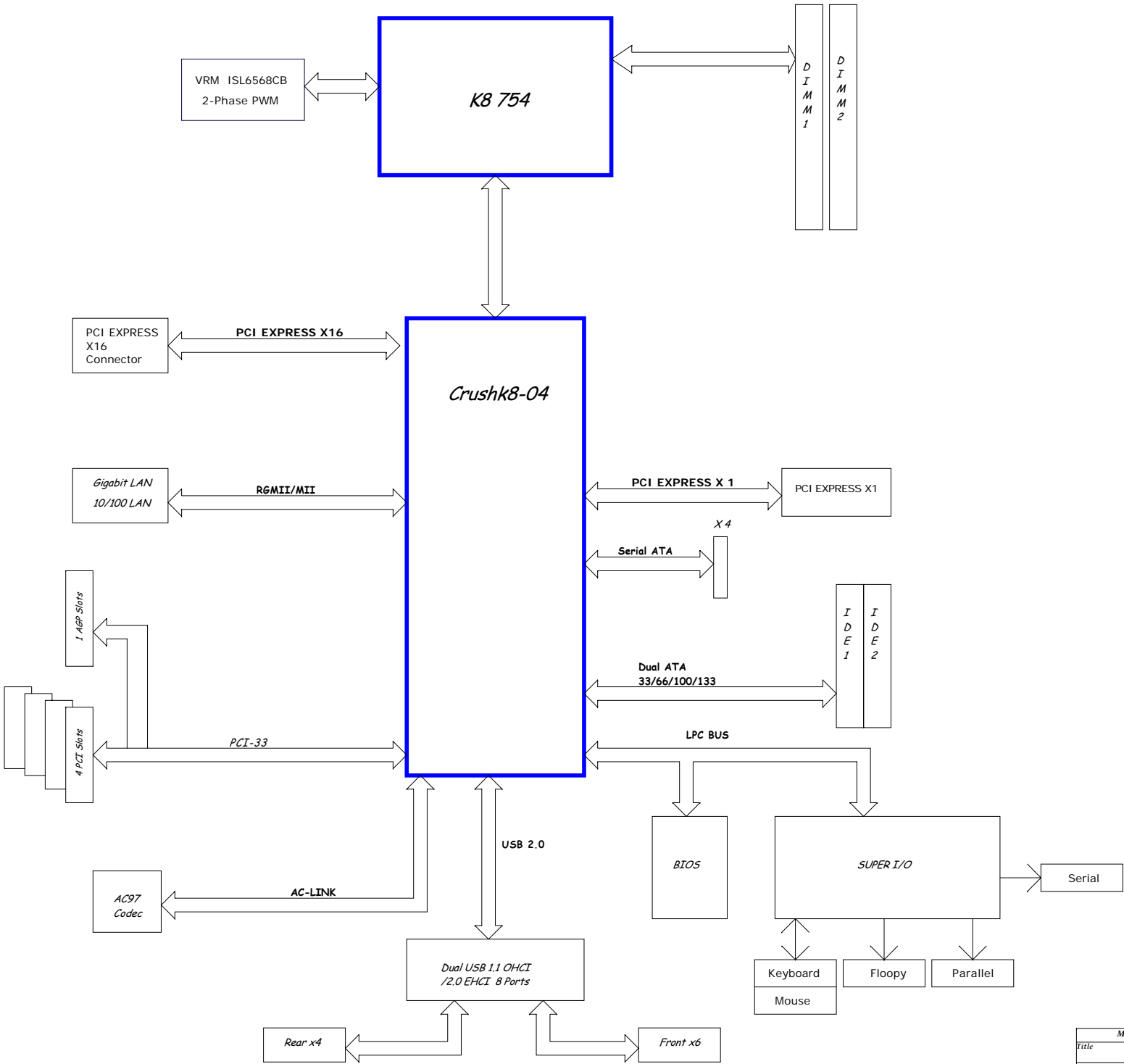


MS-7135 VER:100 ATX

- *AMD PGA 754 K8-Processor (DDR 400)
- *Nvidia CK8S04
- *Winbond 83627THF LPC I/O
- *MARVELL/88E1111L Giga Bit LAN Support
- *8201CL 100/10 Bit LAN Support
- *USB 2.0 support (10 Port,integrated into Chip)
- *ALC655 6 channel S/W Audio
- *DDR DIMM * 2
- *PCI-EXPRESS X16 SLOT * 1
- *PCI-EXPRESS X1 SLOT * 1
- *AGP SLOT * 1 (PCI Mode)
- *PCI SLOT * 3

Title	Page
Cover Sheet	1
Block Diagram	2
GPIO SPEC	3
AMD K8 -> 754 PGA Socket	4,5,6
System Memory DDR DIMM 1 & 2	7
DDR Terminations R & C	8
DDR Damping R & Bypass Cap.	9
SYSTEM CHIP NVIDIA CK8S-04	10,11,12,13,14,15
K8 Vcore Power(ISL6568)	16
PCI -Express PORT(X1,X16)	17
ATA66/100/133 IDE connector	18
AGP & PCI Connectors X 3	19,20
Front and Rear USB Port	21
LPC I/O W83627THF& ROM & Floppy&Fan	22
KeyBoard/Mouse/LPT/COM Connectors	23
LAN_ 88E1111CAA/8201CL	24
ALCALC655 6 channel S/W Audio	25
ACPI Power CONTROLLER (MS-6)	26
System Regulator&Front Panel	27
Decoupling Cap.	28
Power Sequence	29
History	30
OPTION PARTS	31

Block Diagram



GPIO FUNCTION

CK8S-04

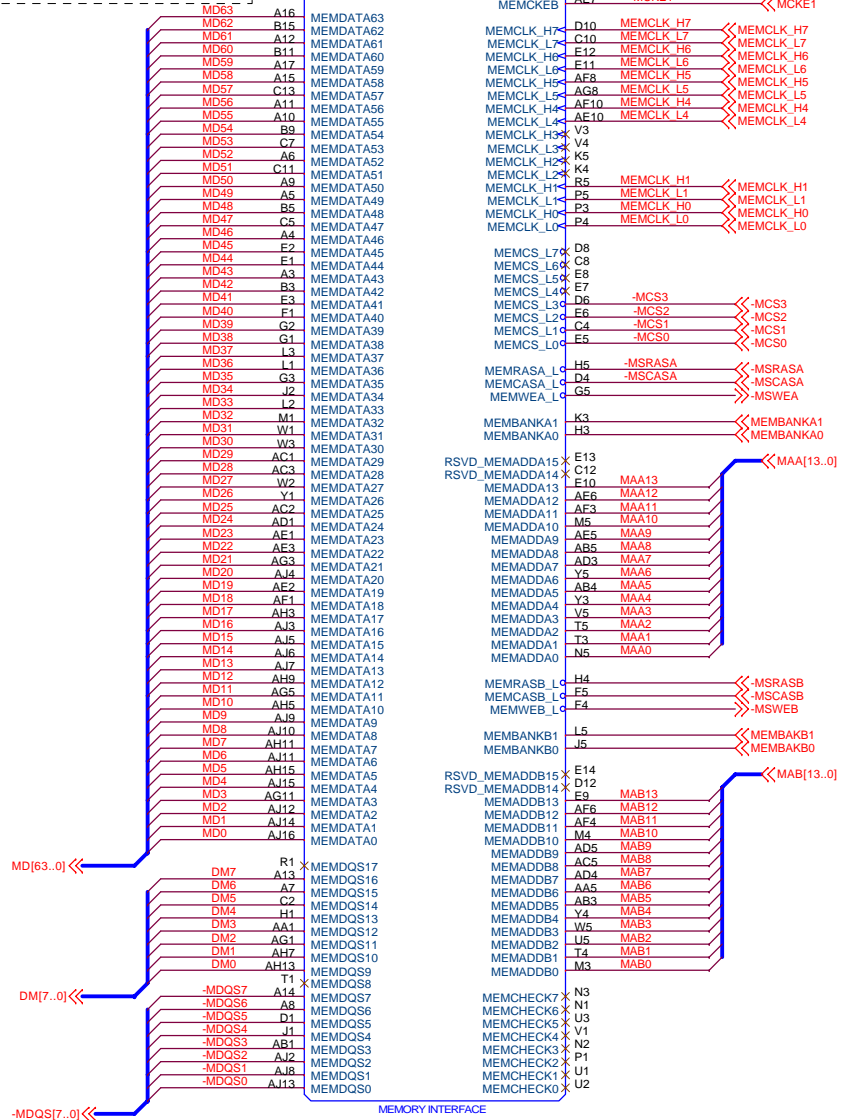
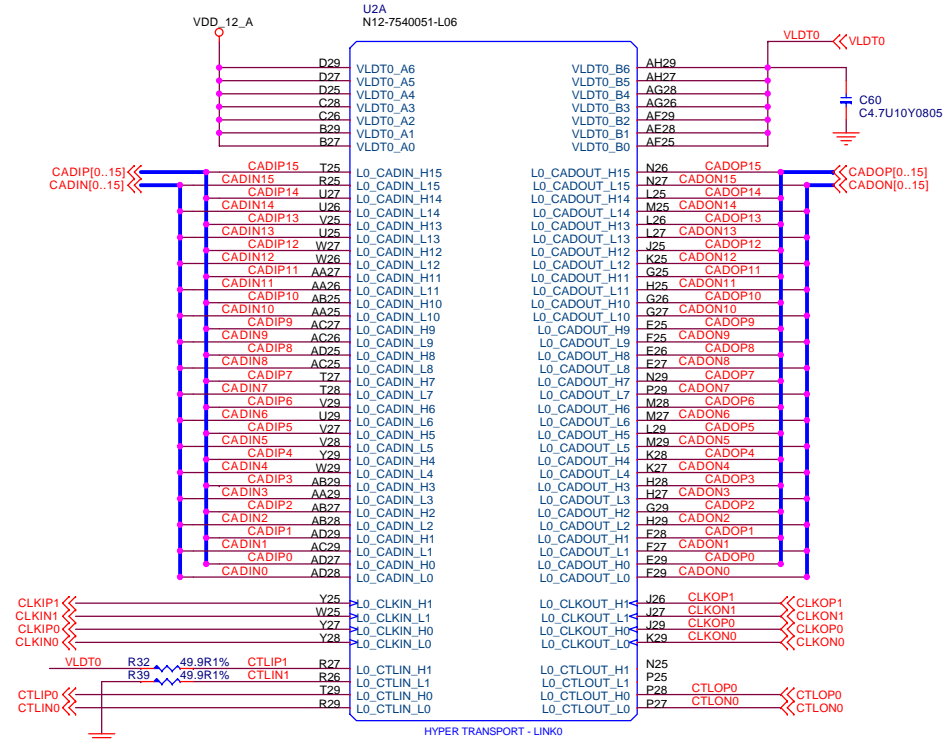
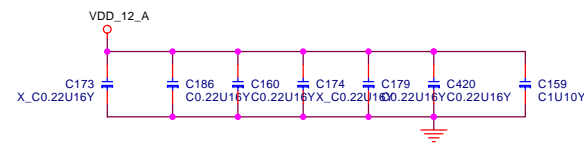
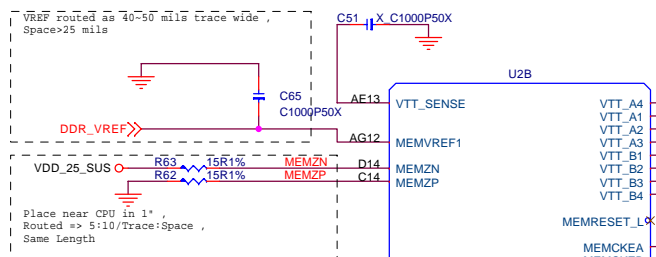
NAME	Function Description
GPIO_1	NC
GPIO_2/CPU_SLP*	NC
GPIO_3/CPU_CLKRUN*	
GPIO_4/SUS_STAT*	LAN_RST# (88E1111)
GPIO_5/SYS_ERR*	

S/IO GPIO Function Define

PIN NAME	Function define
Pin70/GP44	BIOS WRITE PROTECT

PCI Routing

DEVICES	INT#	IDSEL	REQ#/GNT#	CLOCK
AGP SLOT	INT#A INT#B	AD22	PREQ#1 PGNT#1	PCICLK1
PCI SLOT 2	INT#B INT#C INT#D INT#A	AD23	PREQ#2 PGNT#2	PCICLK2
PCI SLOT 3	INT#C INT#D INT#A INT#B	AD24	PREQ#3 PGNT#3	PCICLK3
PCI SLOT 4	INT#D INT#A INT#B INT#C	AD25	PREQ#4 PGNT#4	PCICLK4



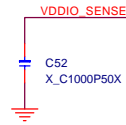
<i>Micro Star Restricted Secret</i>			
Title K8 DDR & HT			Rev 200
Document Number MS-7135			
MICRO-STAR INT'L CO. LTD. No. 89, Li-De St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006 Sheet 4 of 31	

VCCA_PLL trace length from the VR1 to the PGA must be 0.75".

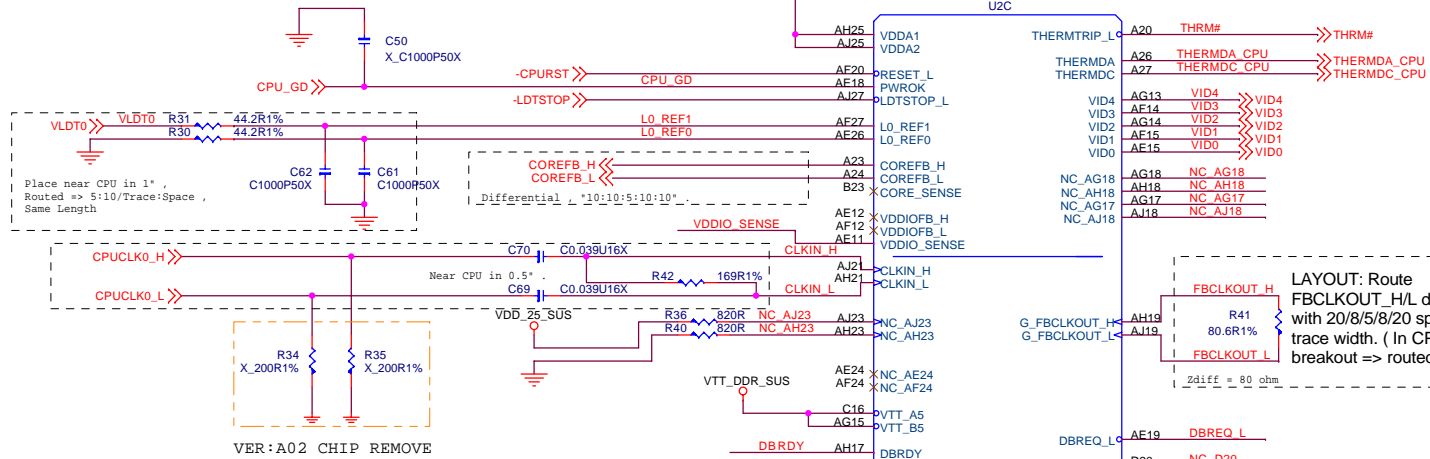
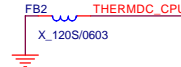
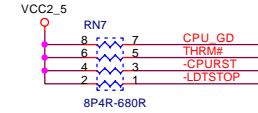
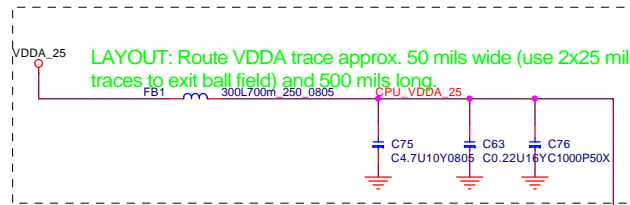
Place all filters close to the PGA.

Keep all power and signal trace away from the VR1.

Place a cut in the GND plane around the VCCA_PLL regulator circuit.

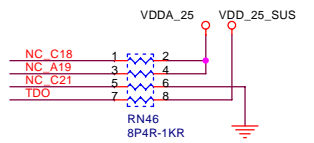
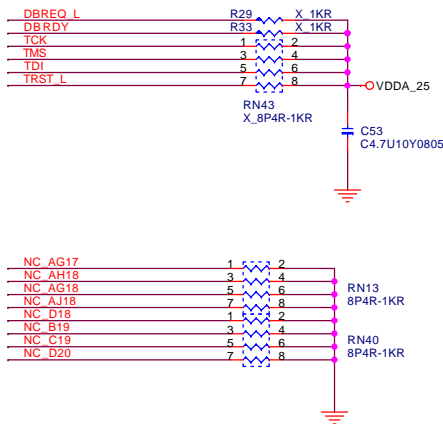


LAYOUT: Route VDDA trace approx. 50 mils wide (use 2x25 mil traces to exit ball field) and 500 mils long

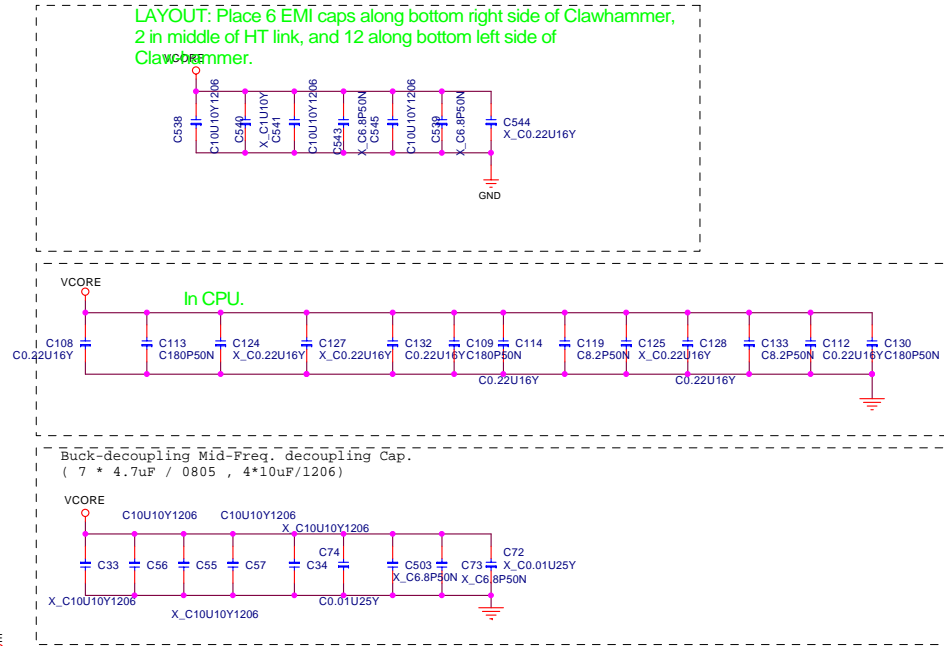
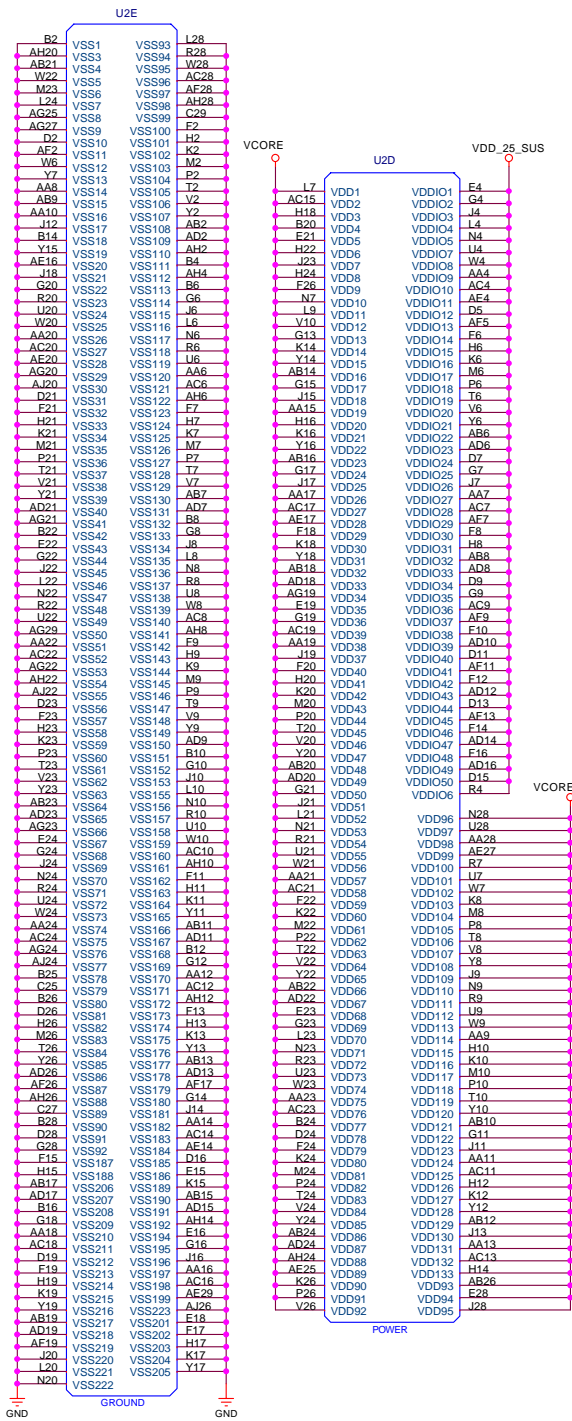


LAYOUT: Route FBCLKOUT_H/L differentially with 20/8/5/8/20 spacing and trace width. (In CPU breakout => routed 5:5:5)

HDT Test Port Signal .

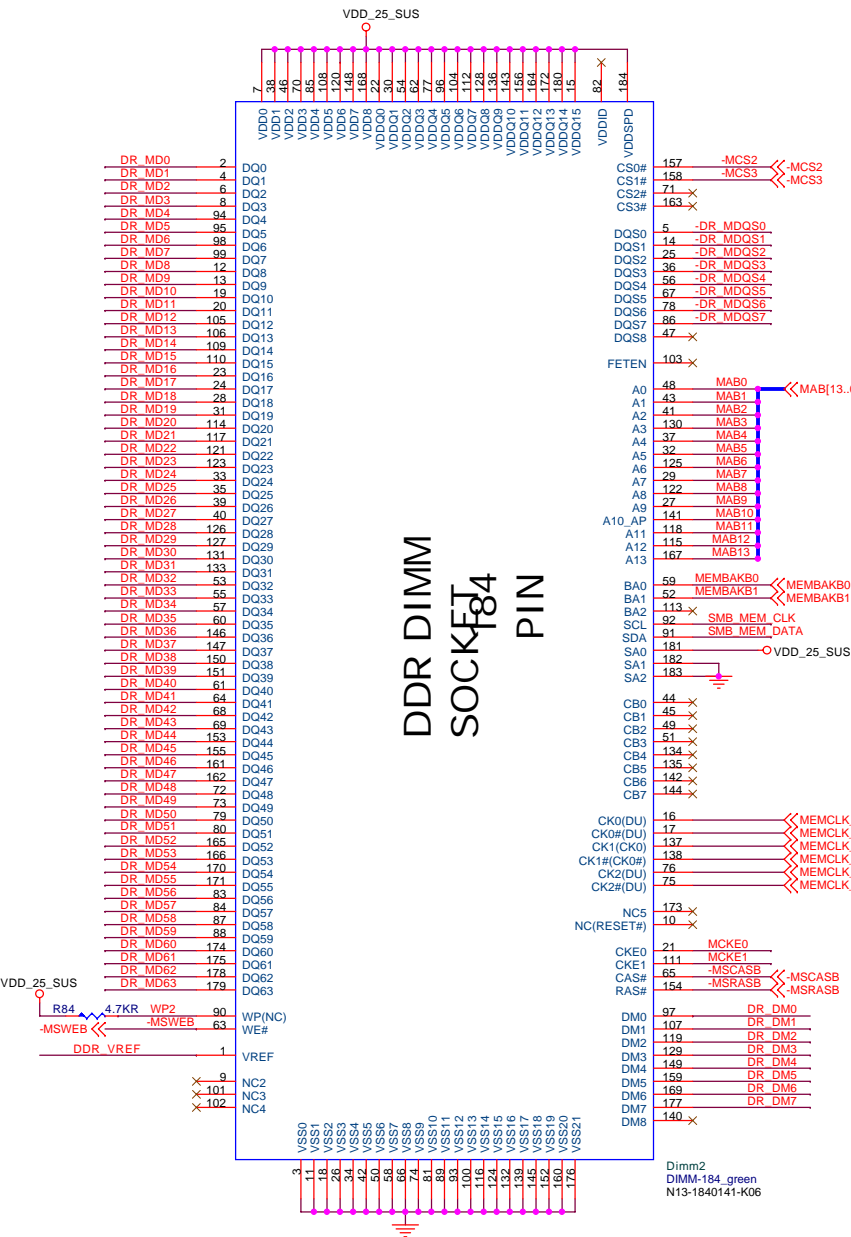
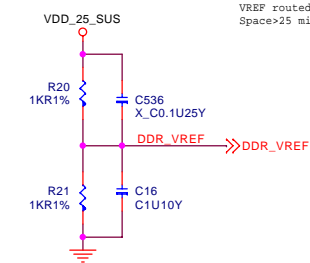
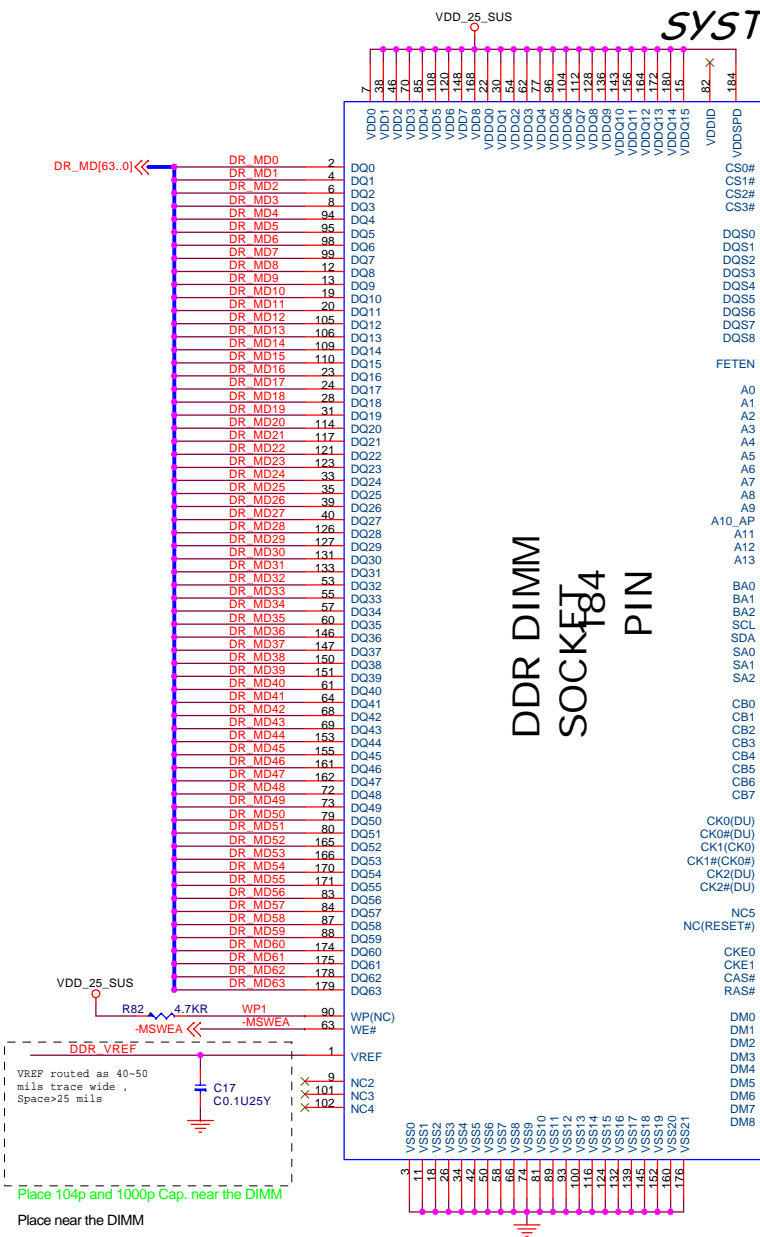


Micro Star Restricted Secret		
Title	K8 HDT & MISC	Rev 200
Document Number	MS-7135	
MICRO STAR INT'L CO. LTD. No. 69, Li-De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006 Sheet 5 of 31



Micro Star Restricted Secret		
Title	K8 POWER & GND	Rev 200
Document Number	MS-7135	
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006 Sheet 6 of 31

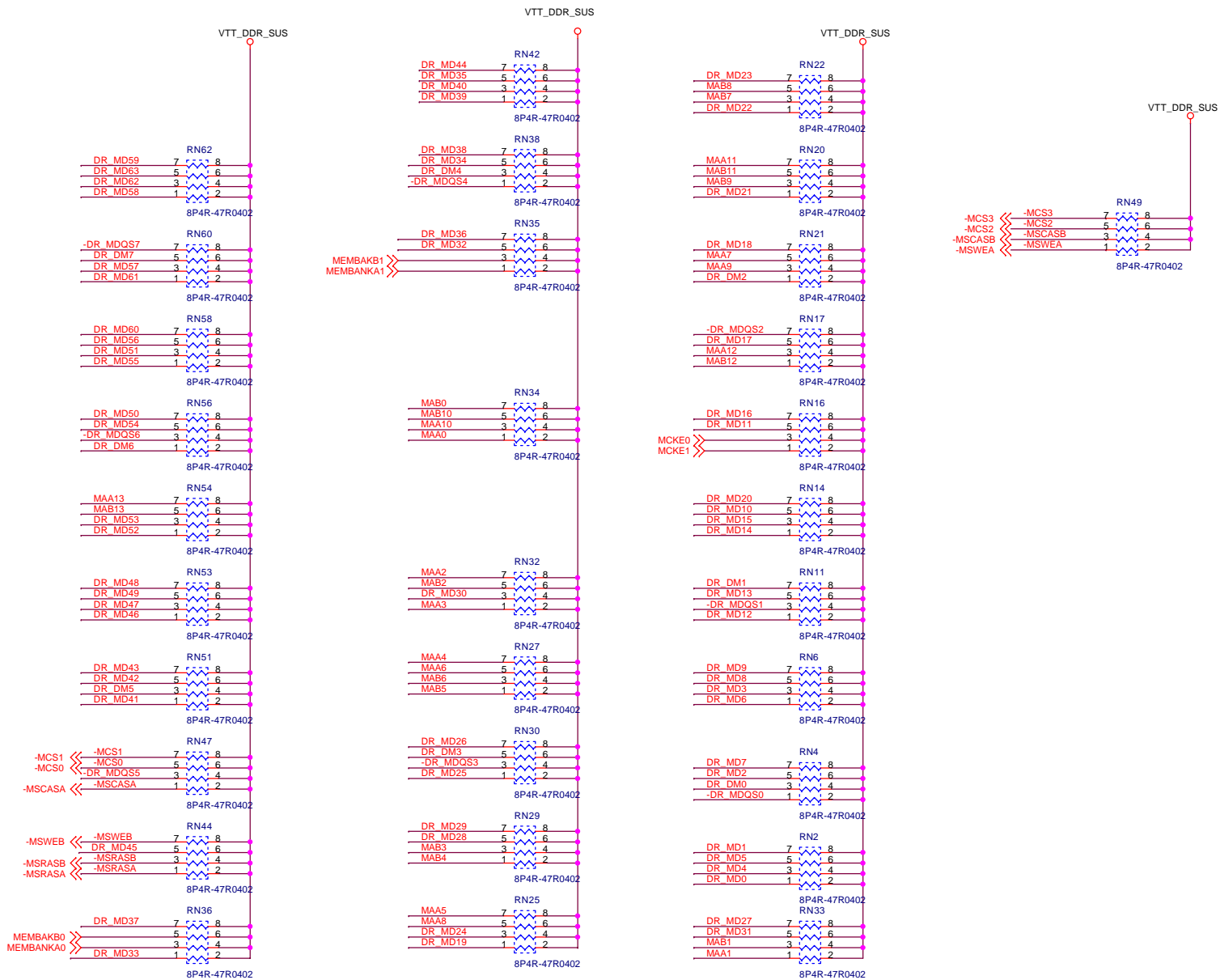
SYSTEM MEMORY



DIMM2 SLAVE ADDRESS
= (1010001X)B = A2

Micro Star Restricted Secret		
Title	System Memory : DDR DIMM 1,2	Rev 200
Document Number	MS-7135	
MICRO STAR INT'L CO. LTD. No. 69, Li-De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006 Sheet 7 of 31

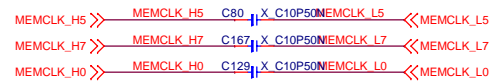
DDR Terminations



For DIMM2 Clock



For DIMM1 Clock



DR_DM[7..0] << DR_DM[7..0]

-DR_MDQS[7..0] << -DR_MDQS[7..0]

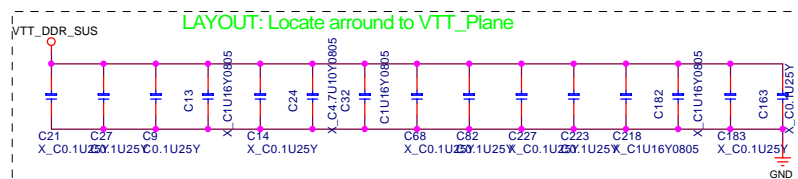
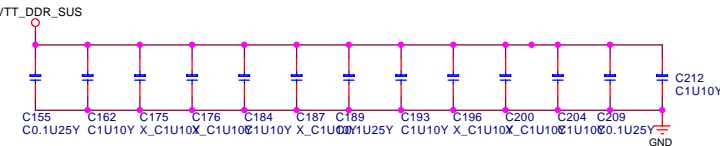
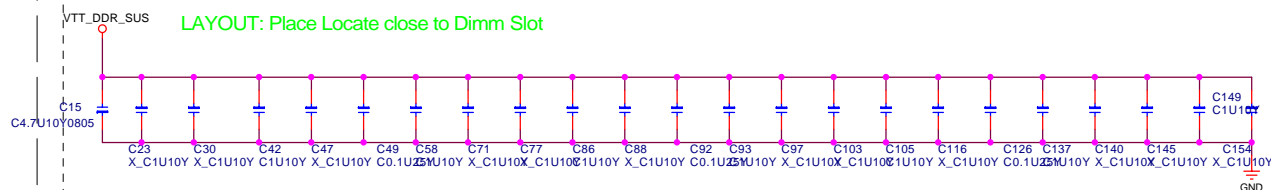
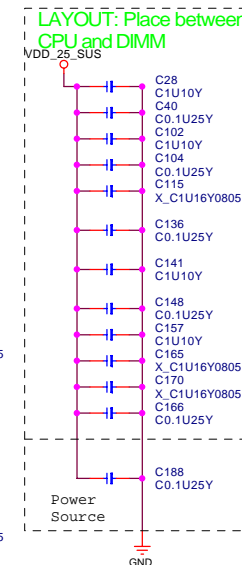
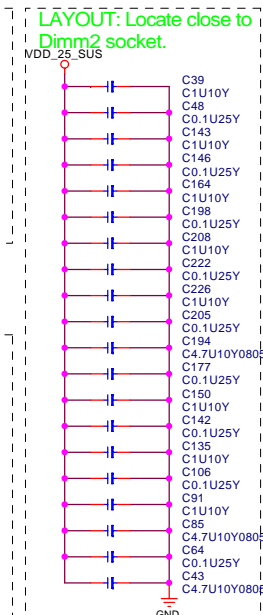
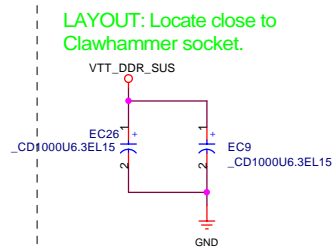
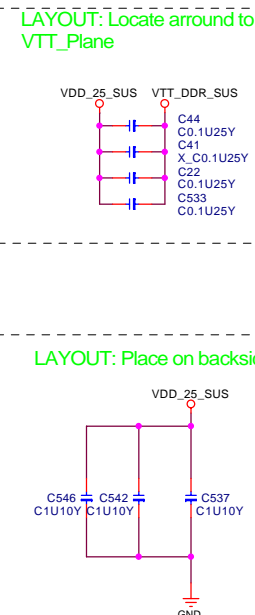
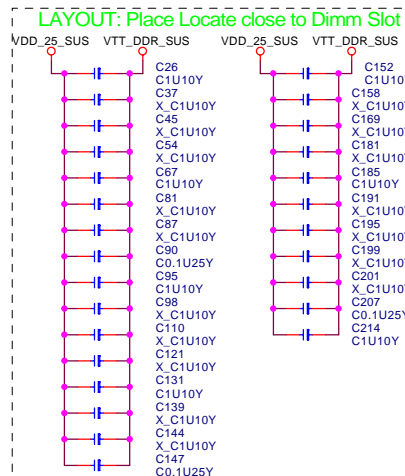
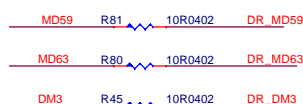
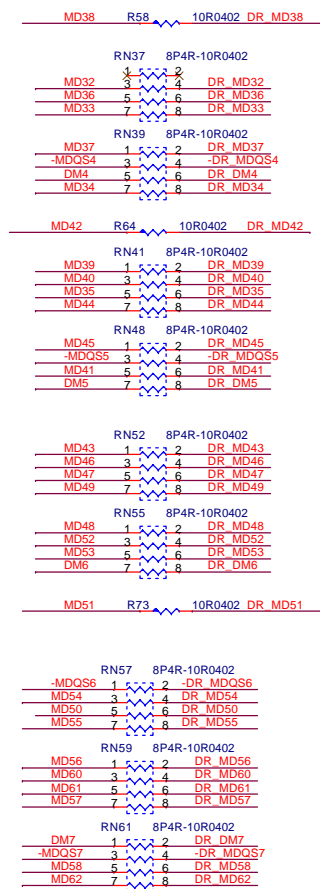
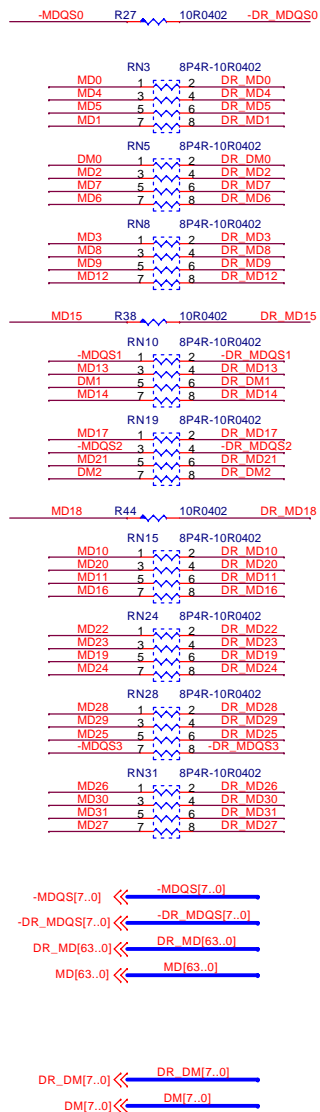
DR_MD[63..0] << DR_MD[63..0]

MAB[13..0] << MAB[13..0]

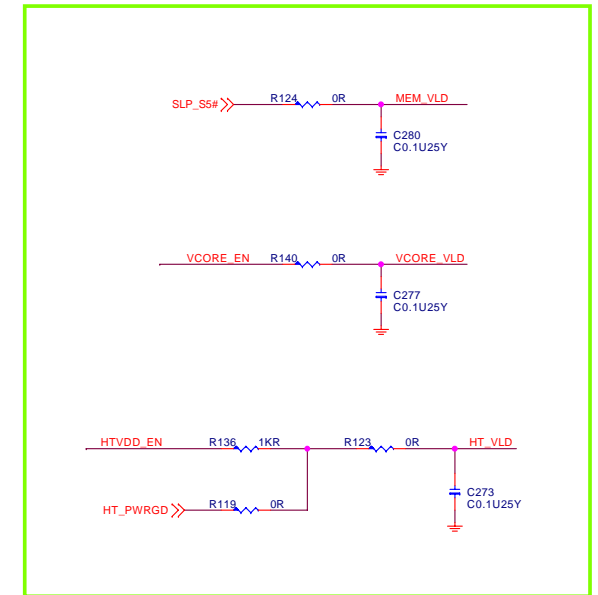
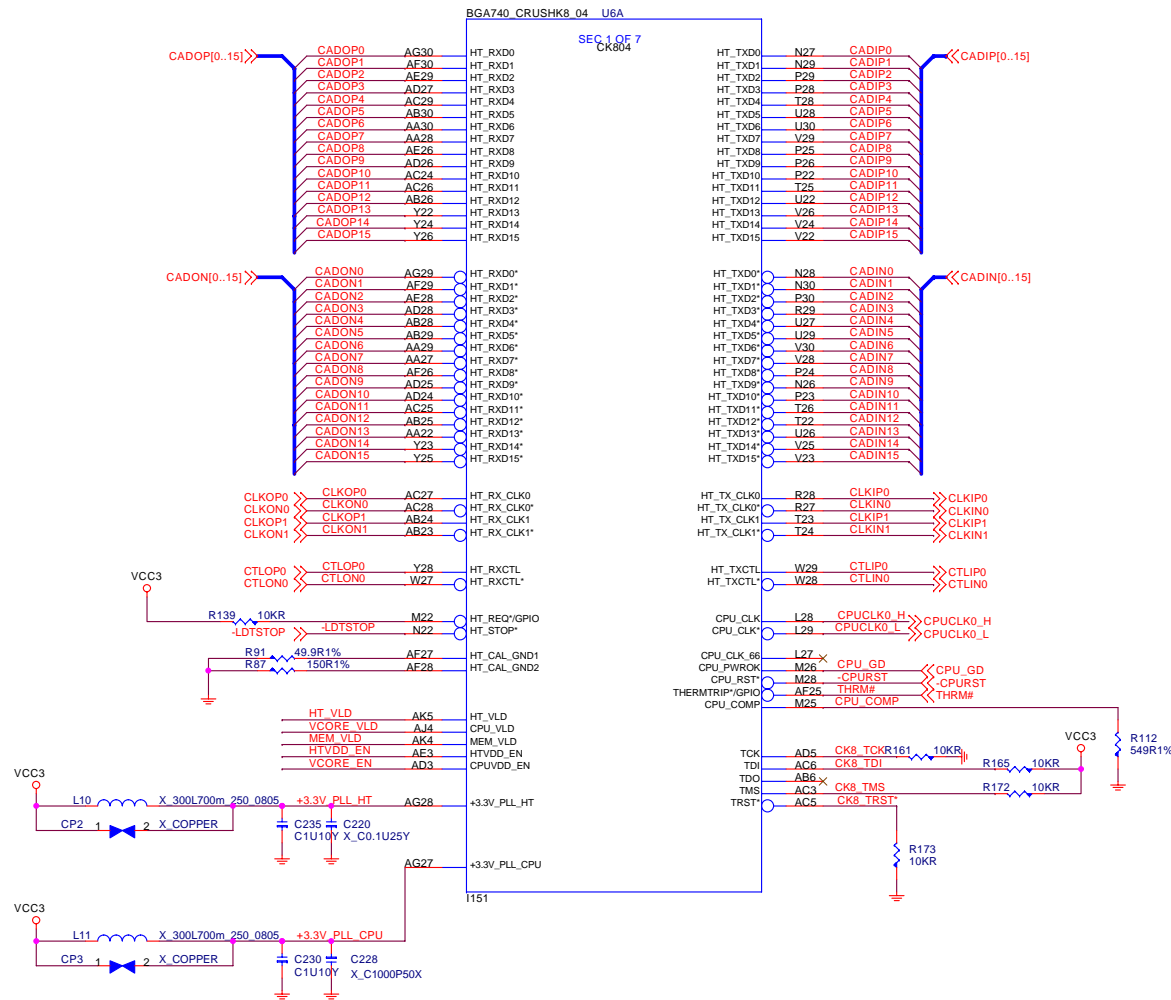
MAA[13..0] <<

Micro Star Restricted Secret		
Title	DDR Terminations Bank 0	Rev 200
Document Number MS-7135		
MICRO-STAR INT'L CO. LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006 Sheet 8 of 31

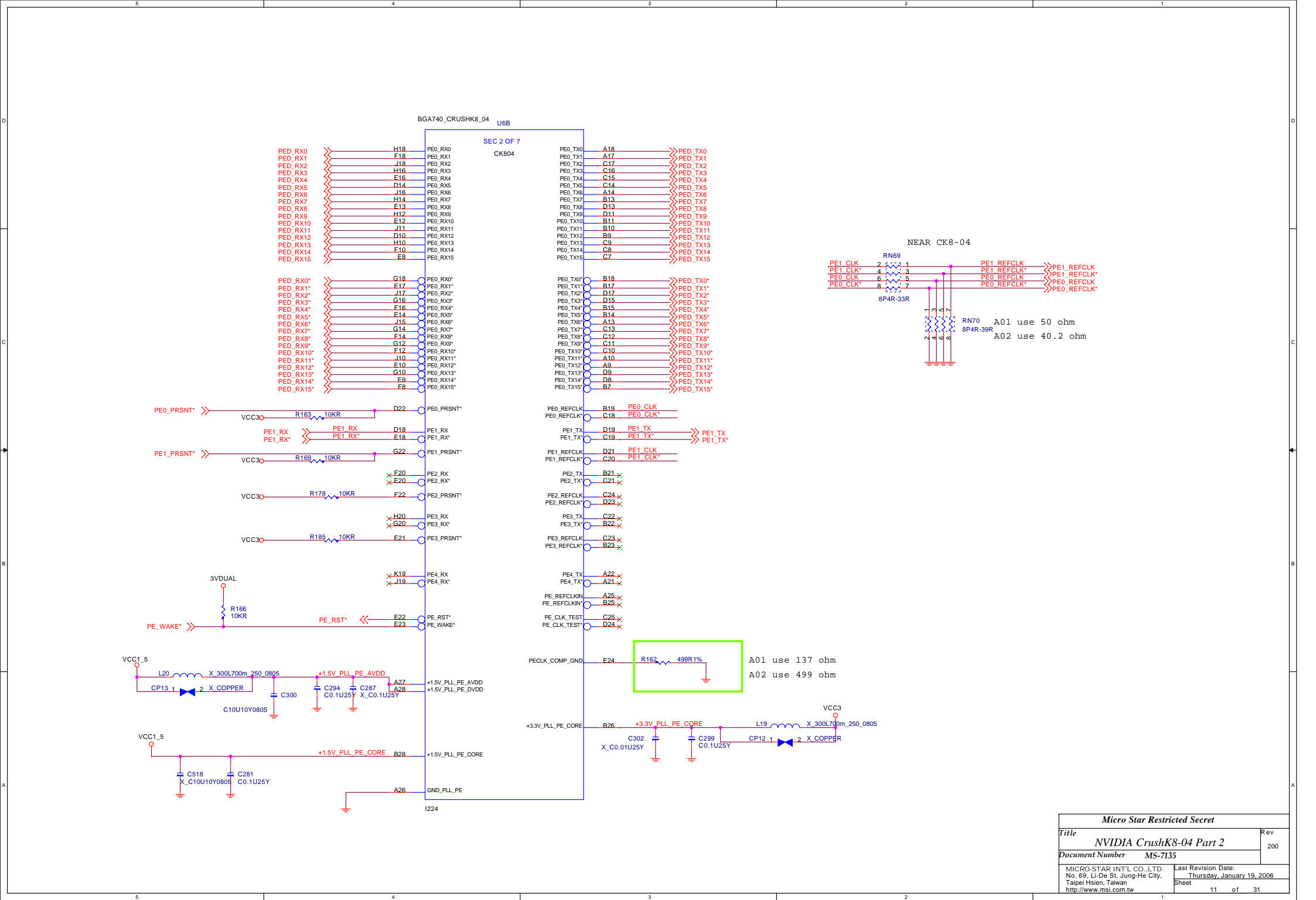
DDR Terminations

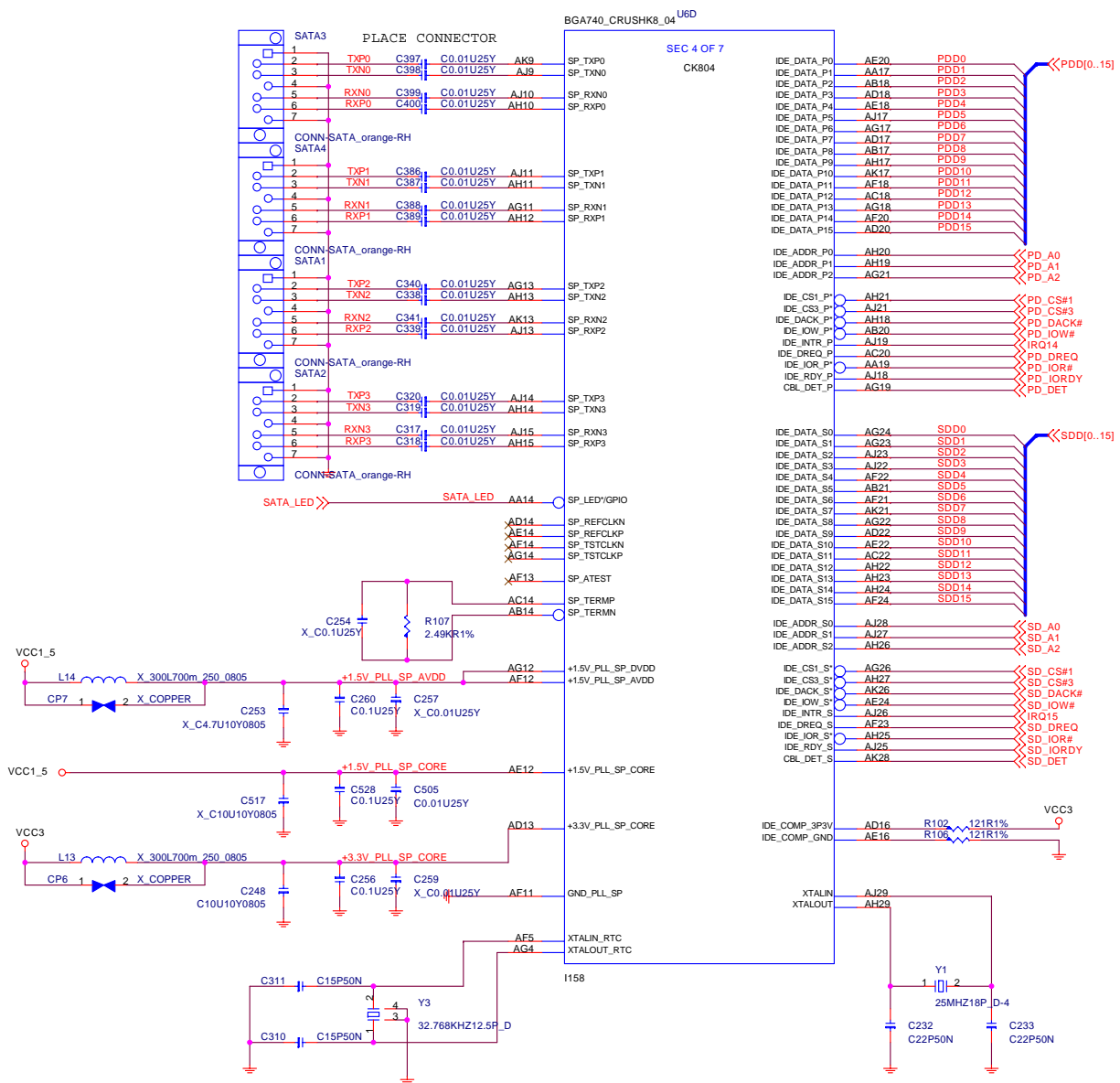


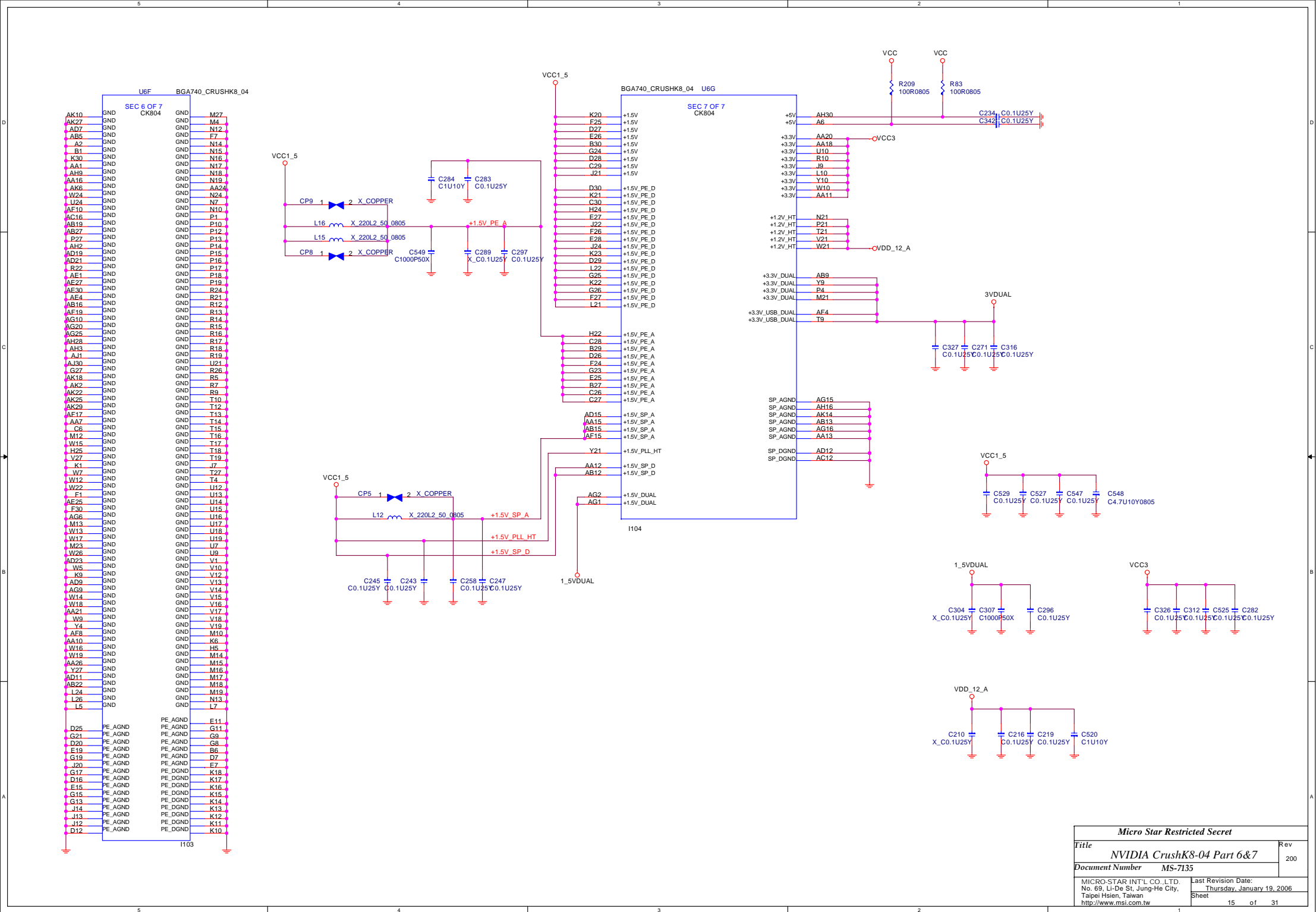
<i>Micro Star Restricted Secret</i>		
<i>Title</i>	DDR Terminations Bank 1	Rev 200
<i>Document Number</i>	MS-7135	
MICRO STAR INT'L CO. LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2001 Sheet 9 of 31



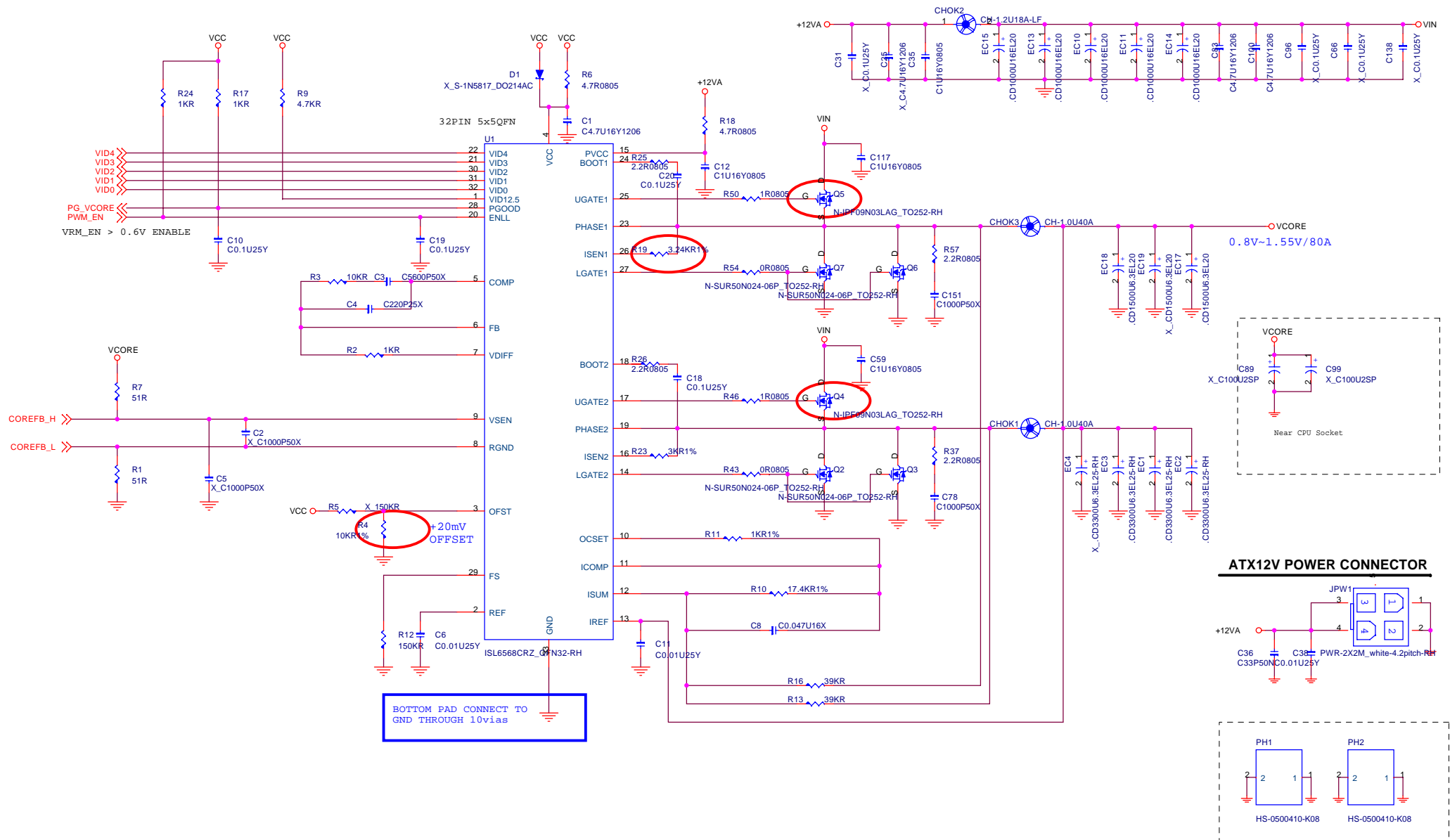
Micro Star Restricted Secret		
Title	NVIDIA CrushK8-04 Part 1	Rev 200
Document Number	MS-7135	
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006 Sheet 10 of 31





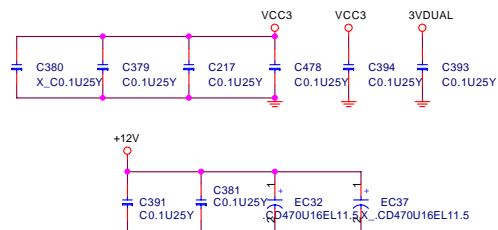
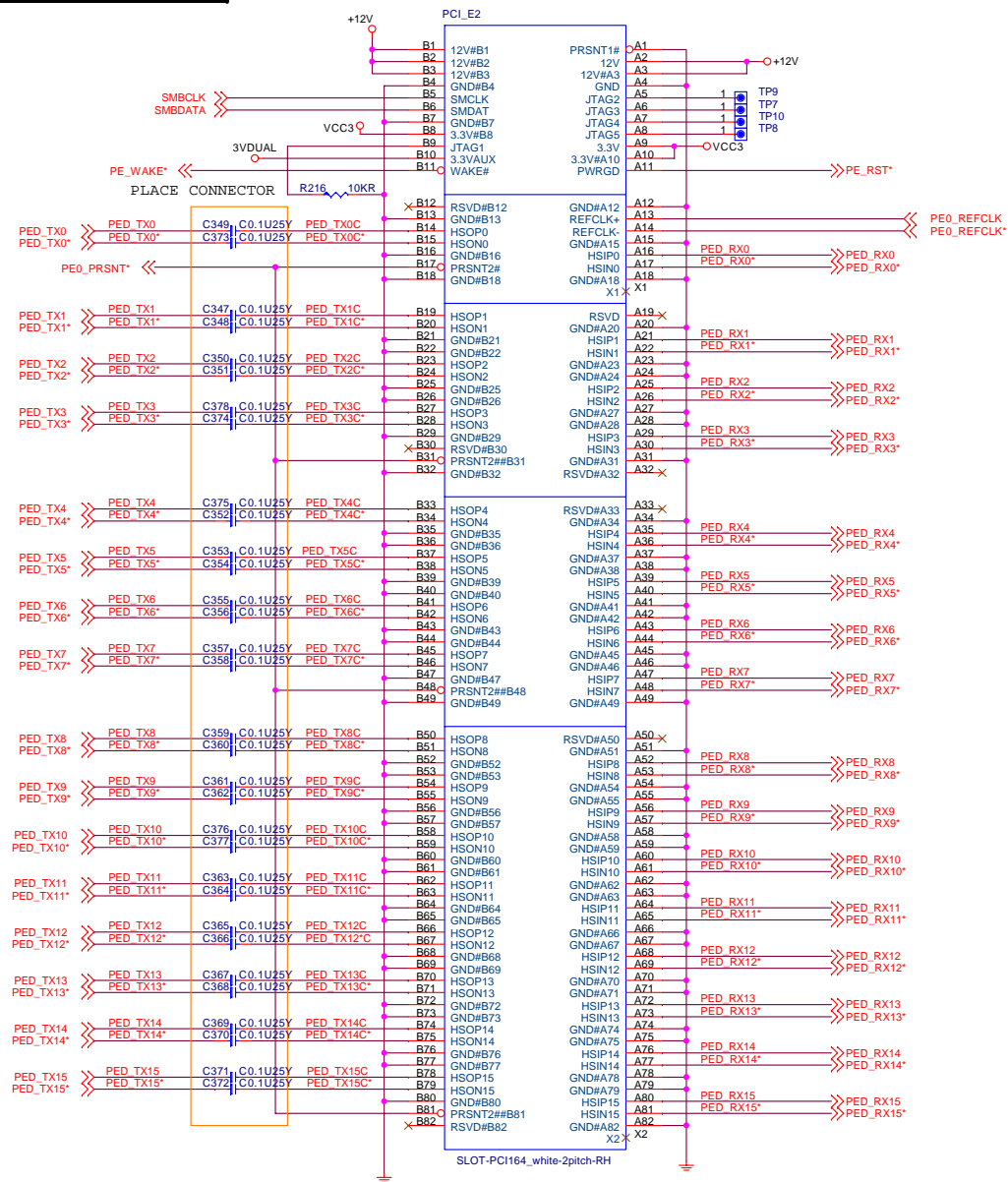


ISL6568CR FOR AMD K8 754 POWER CKT

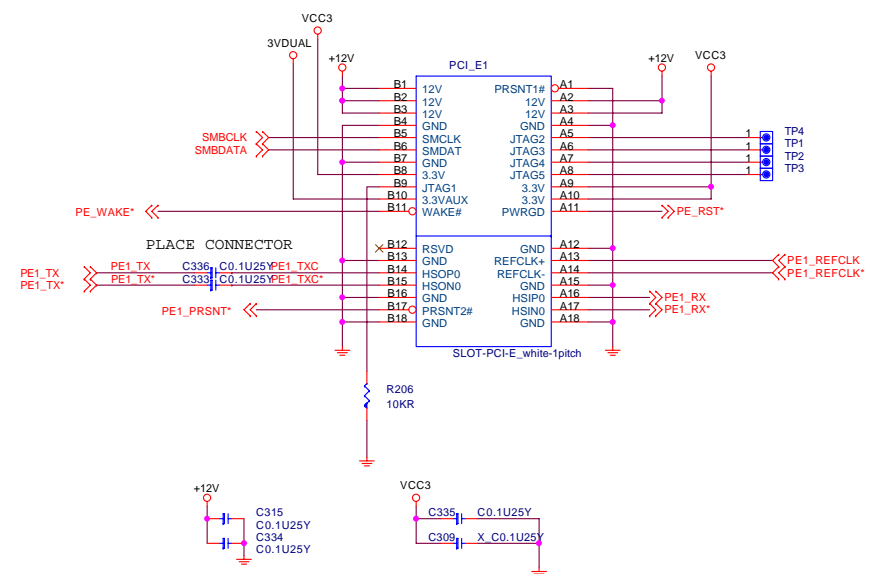


Title			
ISL6568CR K8 754 power ckt - 2 phase			
Size	Document Number	Rev	
	MS7135-200	200	
Date:	Thursday, January 19, 2006	Sheet	16 of 31

PCI-Express x16 SLOT 1



PCI-Express x1 SLOTT 1

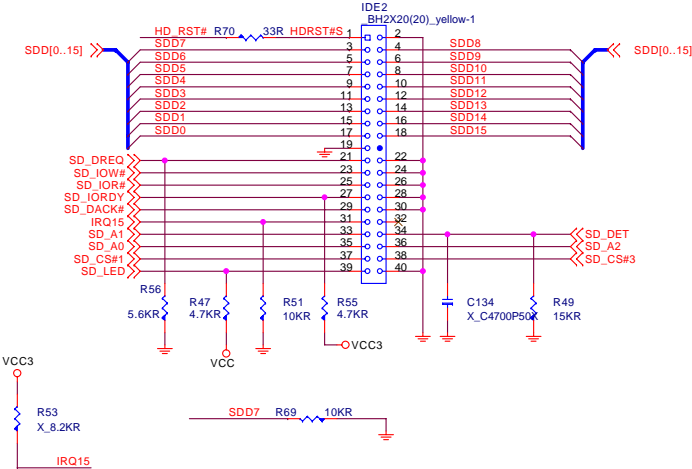
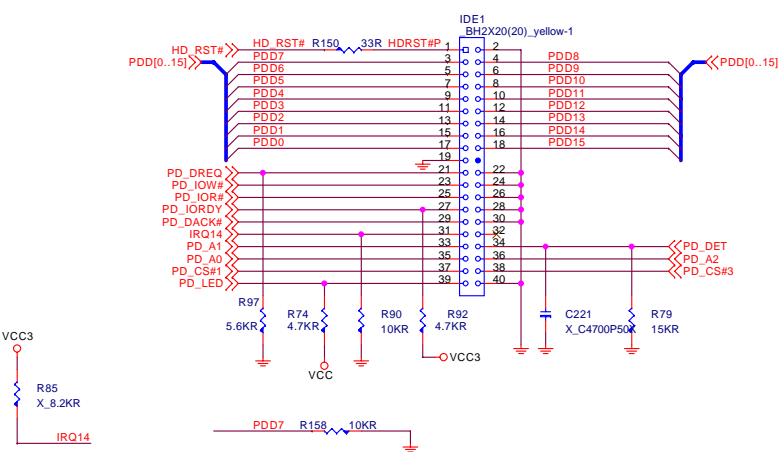


<i>Micro Star Restricted Secret</i>		
<i>Title</i>	<i>PCI EXPRESS X16 POARTA</i>	<i>Rev</i>
<i>Document Number</i>	<i>MS-7135</i>	<i>200</i>
MICRO STAR INT'L CO., LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		<i>Last Revision Date:</i> <i>Tuesday, April 04, 2006</i> <i>Sheet</i>
		<i>17 of 31</i>

ATA 33/66/100 Connector

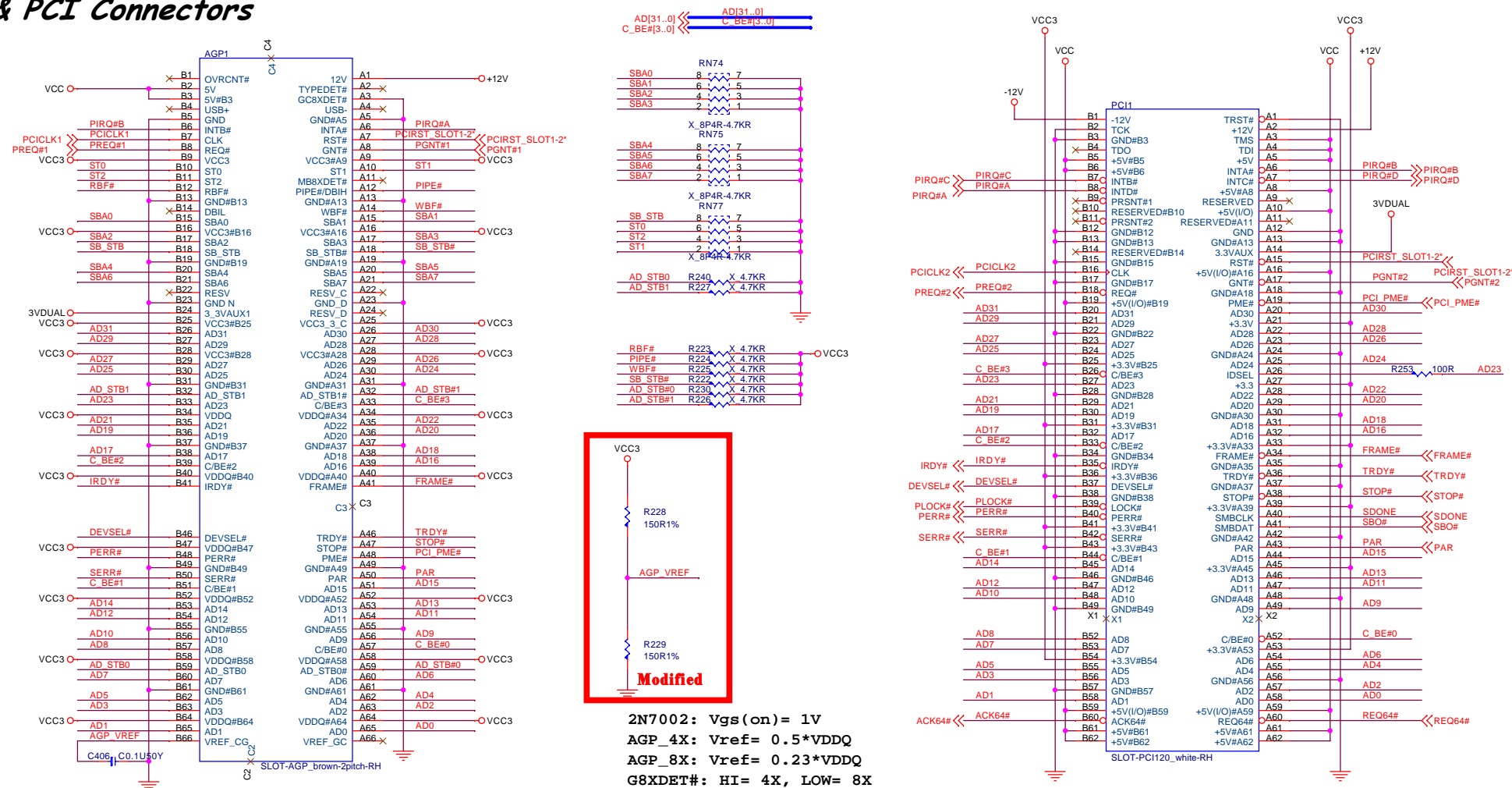
PRIMARY IDE BLOCK

SECONDARY IDE BLOCK

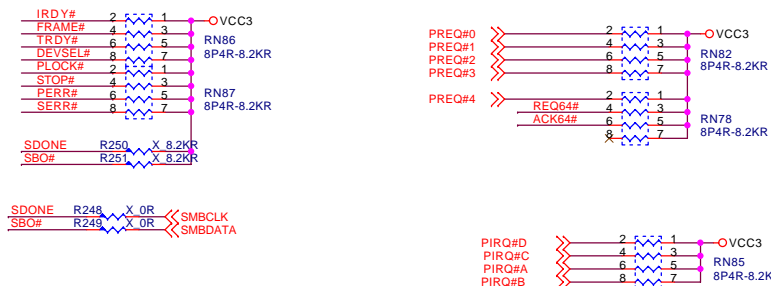


Micro Star Restricted Secret		
Title	ATA 33/66/100 Connector	Rev 200
Document Number	MS-7135	
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006 Sheet 18 of 31

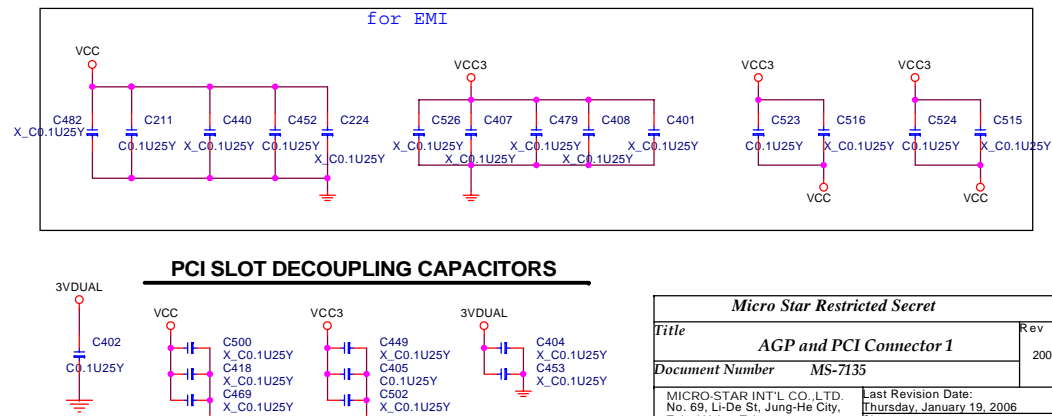
AGP & PCI Connectors



PCI PULL-UP / DOWN RESISTORS

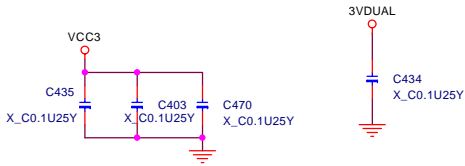
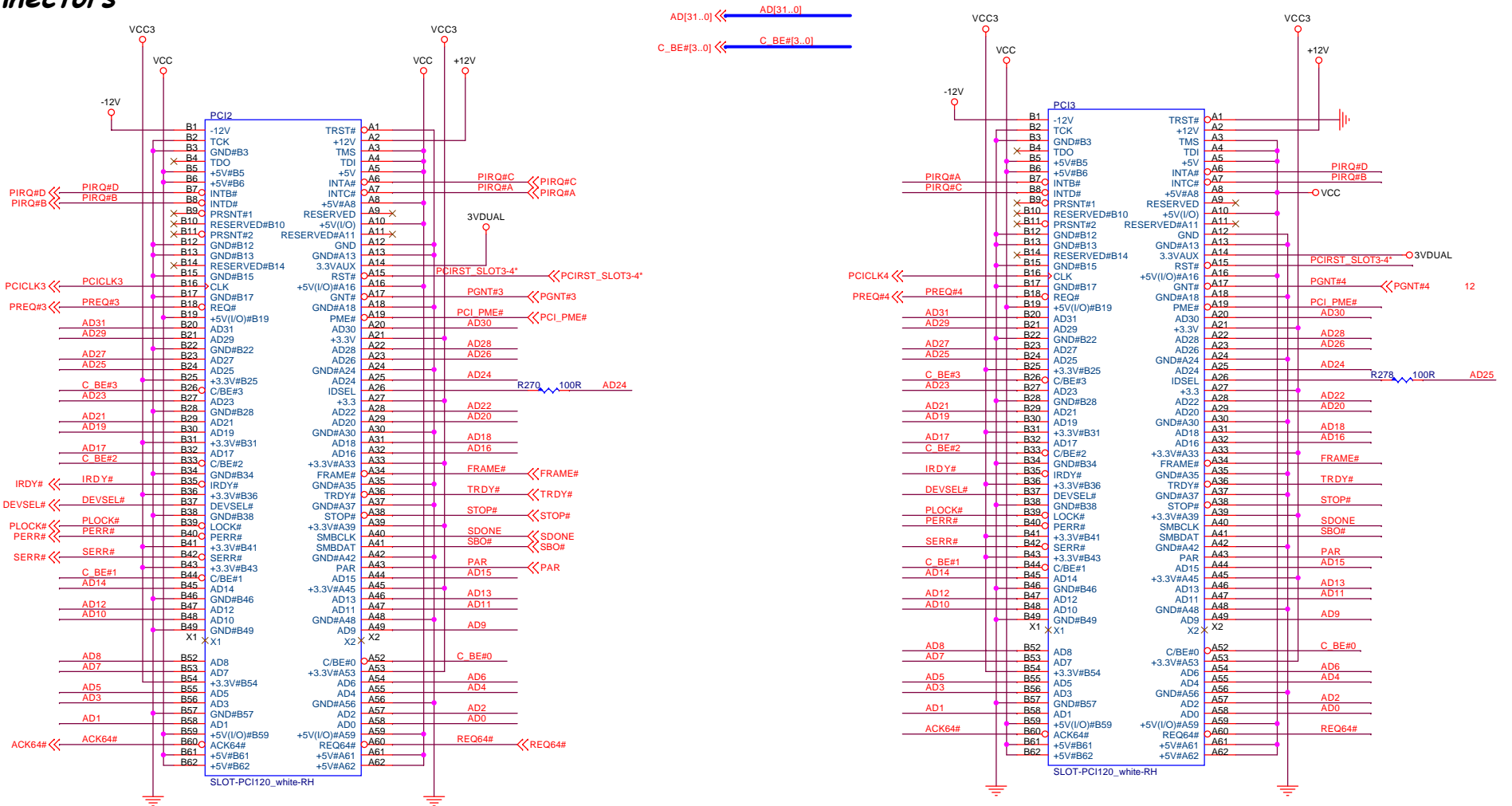


PCI SLOT DECOUPLING CAPACITORS



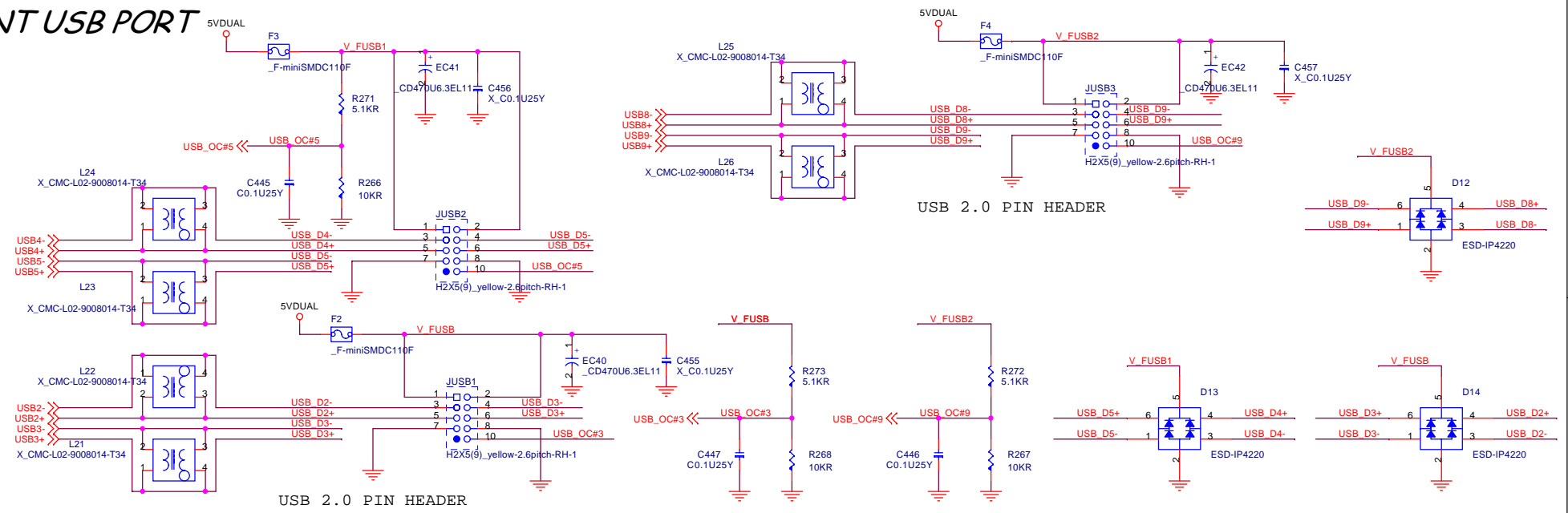
<i>Micro Star Restricted Secret</i>		
Title	AGP and PCI Connector 1	Rev
Document Number	MS-7135	200
MICRO-STAR INT'L CO. LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006 Sheet <div style="text-align: right;">19 of 31</div>

PCI Connectors

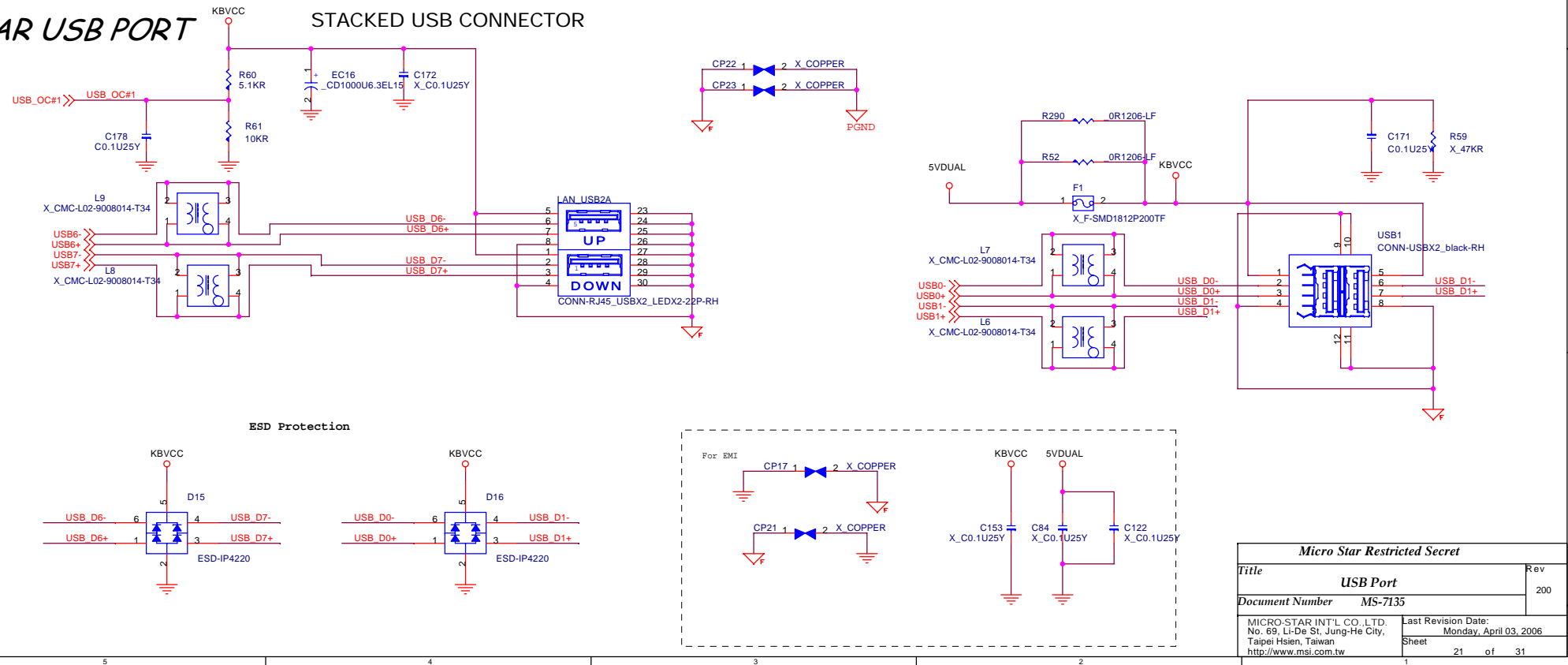


Micro Star Restricted Secret		
Title	PCI Connector 2 & 3	Rev
Document Number	MS-7135	200
MICRO STAR INT'L CO. LTD. No. 69, Li-De St. Jung-He City, Taipei Hsien, Taiwan		Last Revision Date: Thursday, January 19, 2006
http://www.msi.com.tw		Sheet
		20 of 31

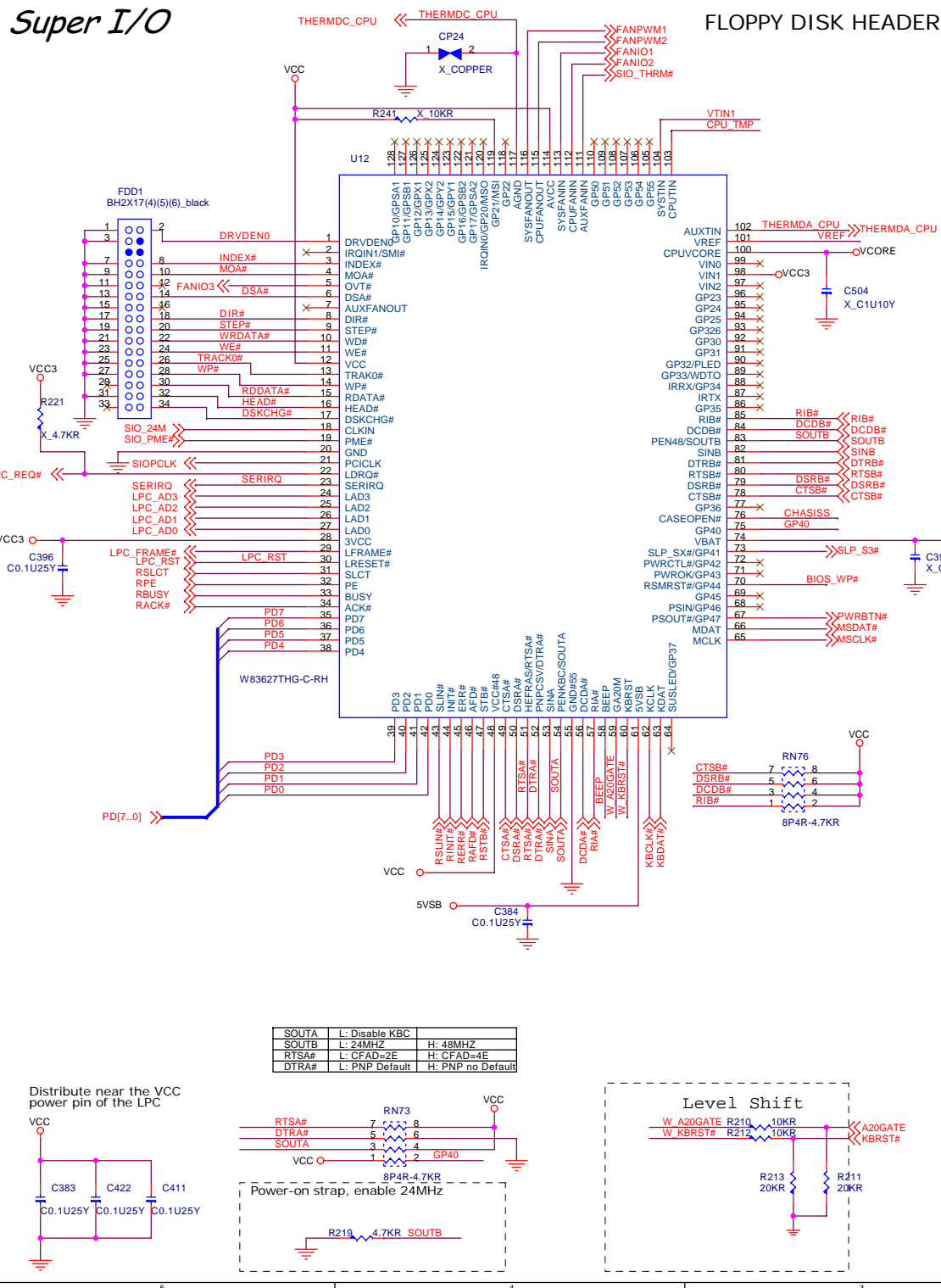
FRONT USB PORT



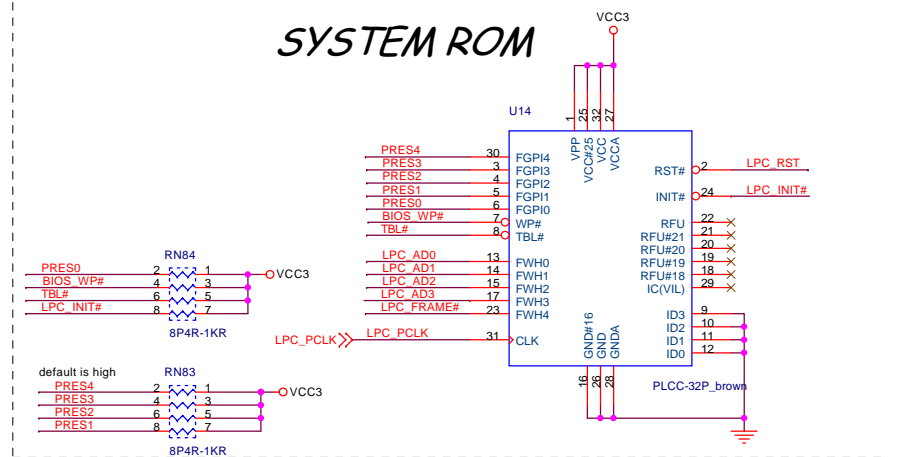
REAR USB PORT



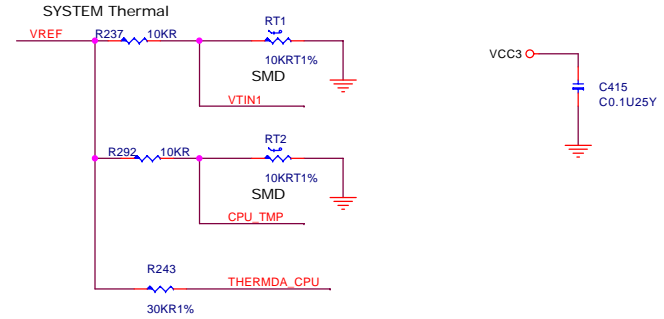
Super I/O



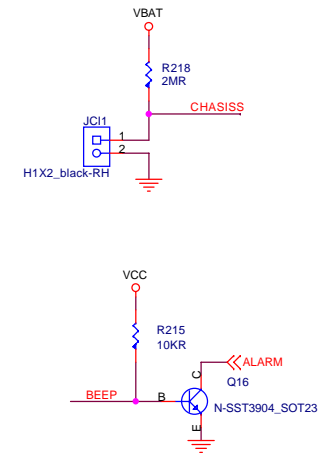
SYSTEM ROM



Hardware Monitor

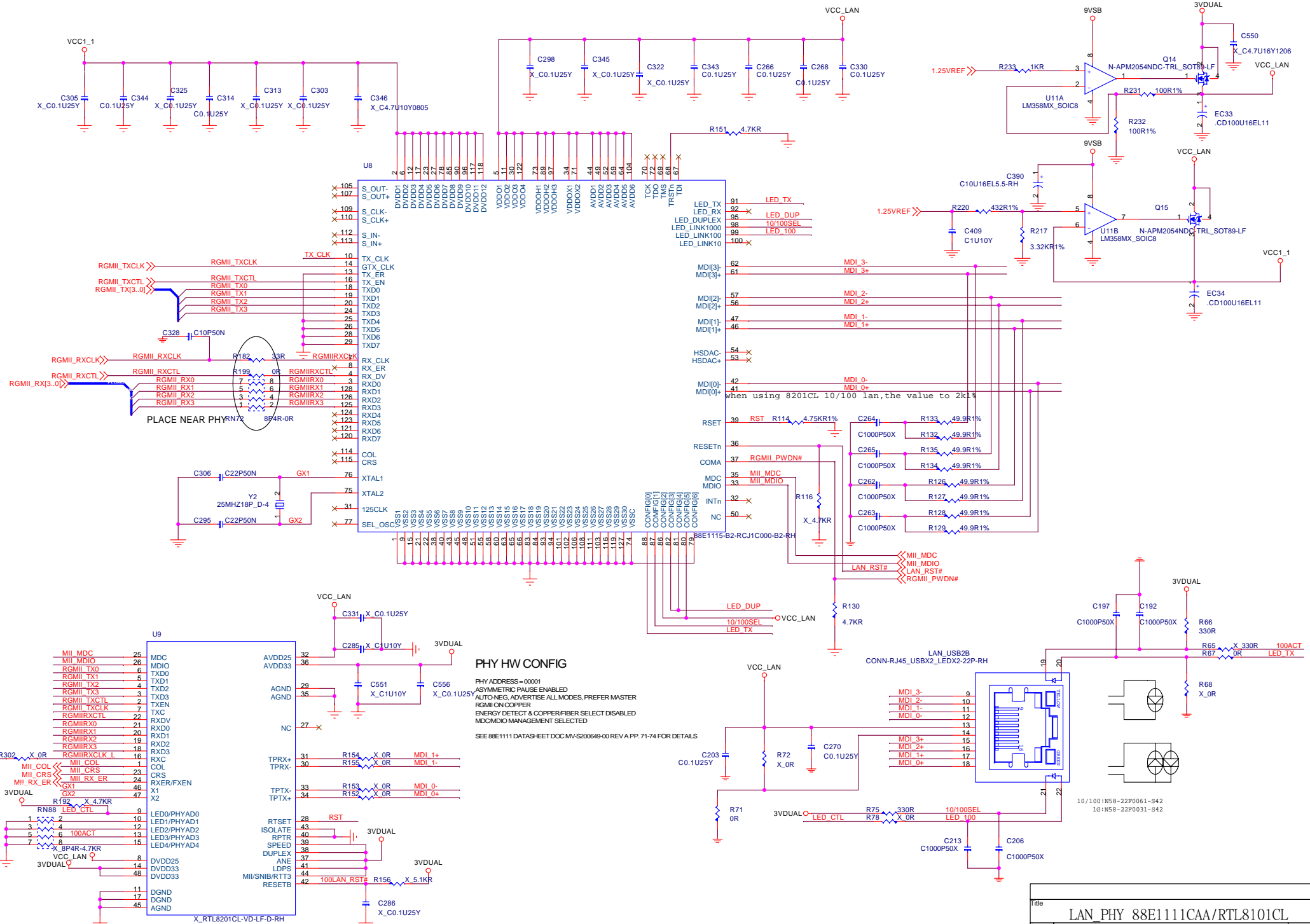


Chassis Intrusion Header

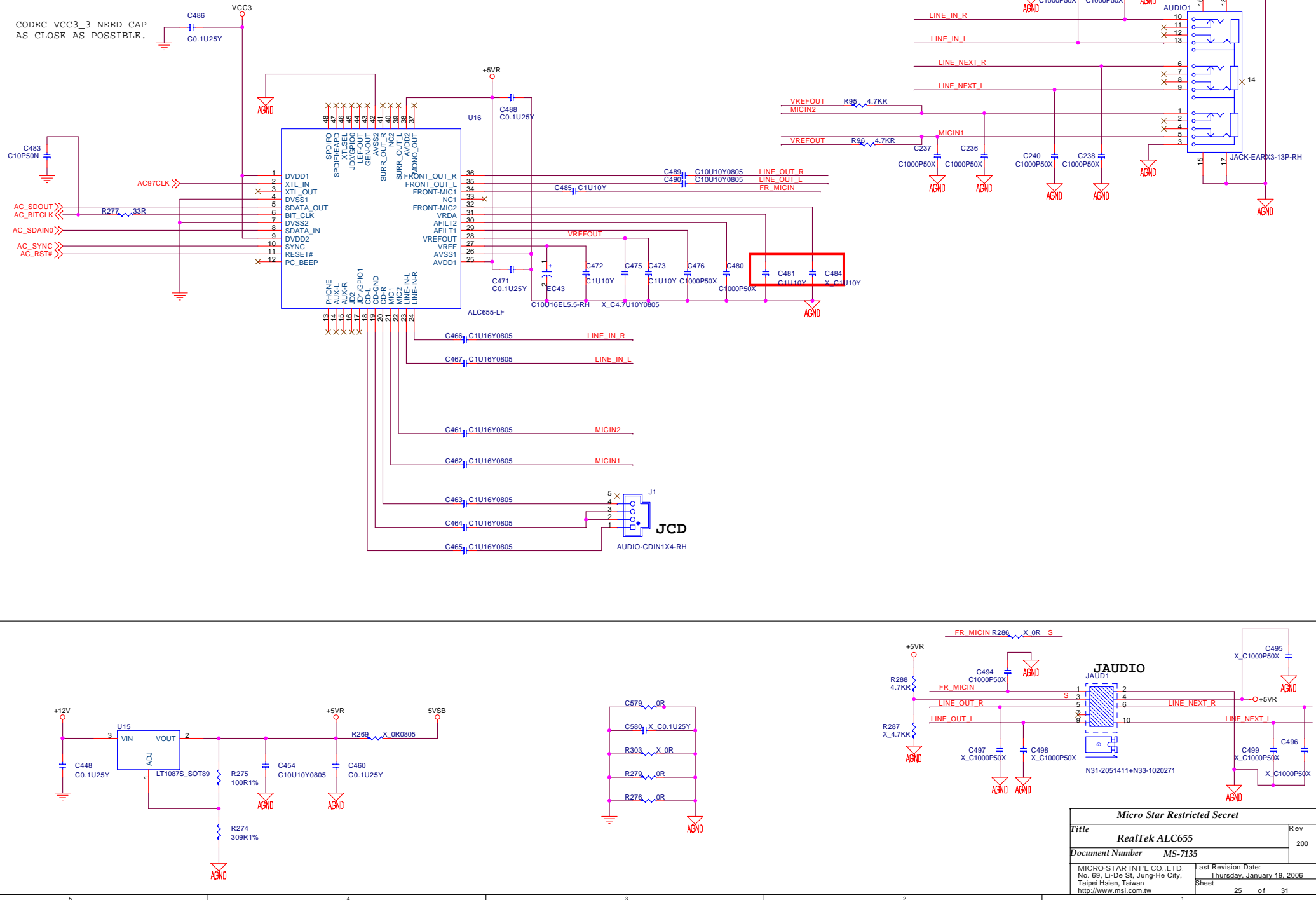


Micro Star Restricted Secret

Title		Rev
LPC I/O & ROM & Floppy&Fan		200
Document Number		MS-7135
MICRO STAR INT'L CO., LTD.		Last Revision Date:
No. 69, Li-De St, Jung-He City,		Monday, April 03, 2006
Taipei Hsien, Taiwan		Sheet
http://www.msi.com.tw		22 of 31



AUDIO CODEC



Micro Star Restricted Secret		
Title	RealTek ALC655	Rev
Document Number	MS-7135	200
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006
Sheet		25 of 31

LINEAR MODE

3VSB MODE SELECT

3VSB MODE	3VLDDEC#
SINGLE MOSFET	PULL HIGH
DUAL MOSFET	PULL LOW

VDIMM LINEAR OR PWM SELECT

VDIMM MODE	EXTRAM
LINEAR REGULATOR	PULL LOW
PWM REGULATOR	PULL HIGH

FRONT PANEL RESET BUTTON
PCIRST# INPUT
PCIRST# BUFFER OUTPUT

PCI SOLT PCIRST# BUFFER OUTPUT

THESE OUTPUT AND INPUT PIN MUST
BE PULL HIGH

CPU PWR_GD OUTPUT
CHIP PWR_GD OUTPUT
I2C BUS
I2C BUS
CONNECT TO SOUTH BRIDGE RSMRST# SIGNAL
SOUTH BRIDGE POWER CONTROL(SLP_S4# OR SUSB#) SIGNAL
SOUTH BRIDGE POWER CONTROL(SLP_S3# OR SUSC#) SIGNAL
ATX POWER OK INPUT

WATCHDOG TIMER SELECT

WD_DET#	TIMER
PULL LOW	OFF
PULL HIGH	ON

THE TWO MODE ONLY ONE MODE PRESENT

SINGLE MODE

THIS MODE SELECT BY PIN
47 PULL HIGH 5VSB

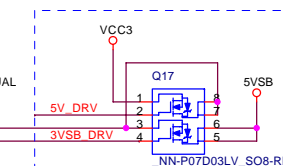
DUAL MODE

THIS MODE SELECT BY
PIN 47 PULL LOW

THE VDIMM_HSEN IN LINEAR MODE

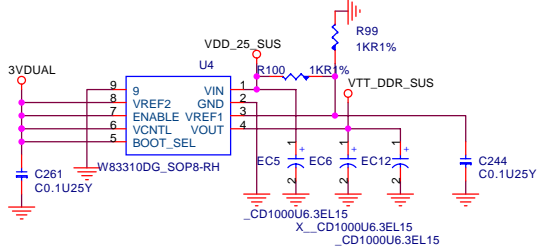
DDRTYPE	VDIMM_HSEN
DDR	VREF
DDR II	2.0V
DDR II	1.7V

3VSB REGULATE BY 5VSB AND VCC3



THIS POINT VOLT CAN'T SETTING
BELOW 2.9V

DDR TERMINATION

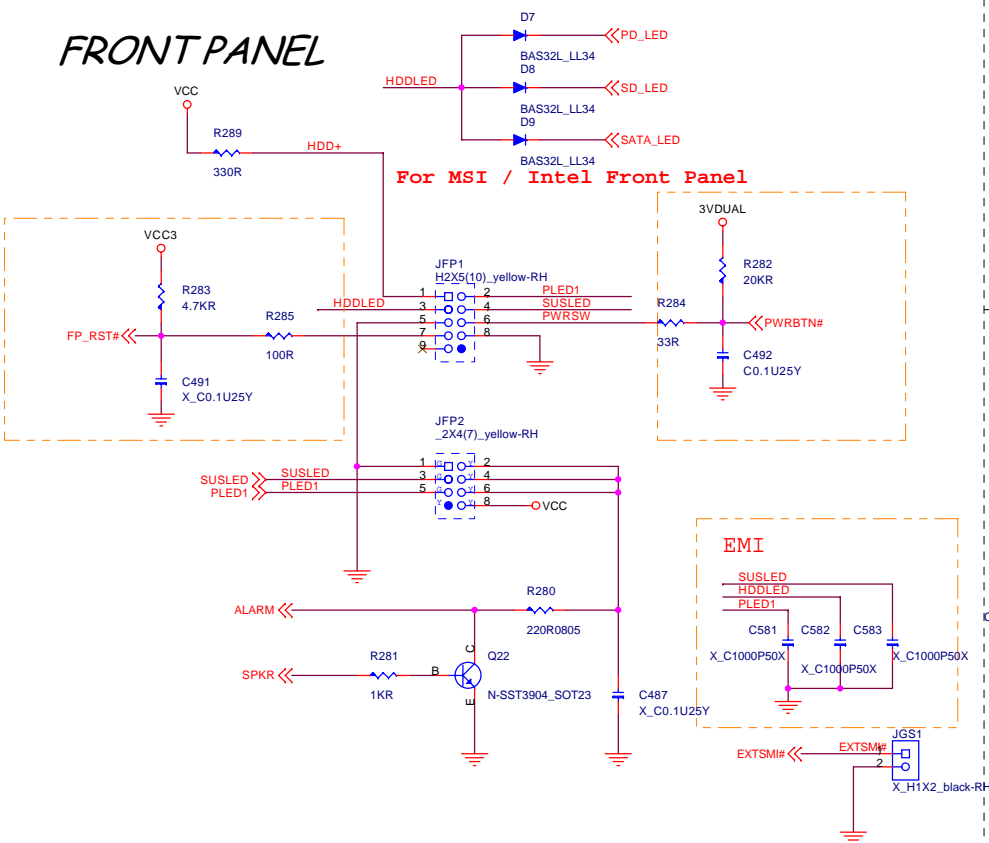


DDR AND DDR II VOLT SELECT

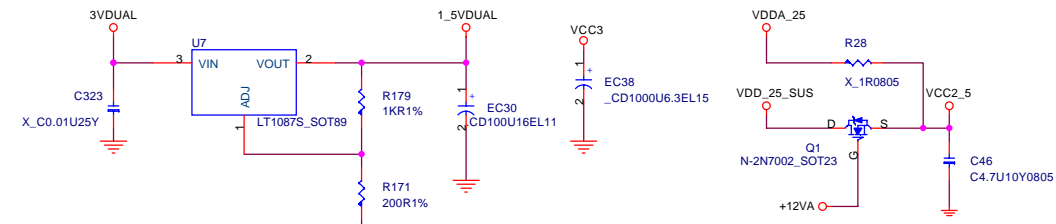
DDRTYPE	VDIMM
PULL LOW	2.5V
PULL HIGH	1.8V

Micro Star Restricted Secret	
Title	ACPI POWER CONTROLLER (MS-6)
Document Number	MS-7135
MICRO-STAR INT'L CO. LTD. No. 69, Li-De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	
Last Revision Date:	Monday, February 27, 2006
Sheet	26 of 31

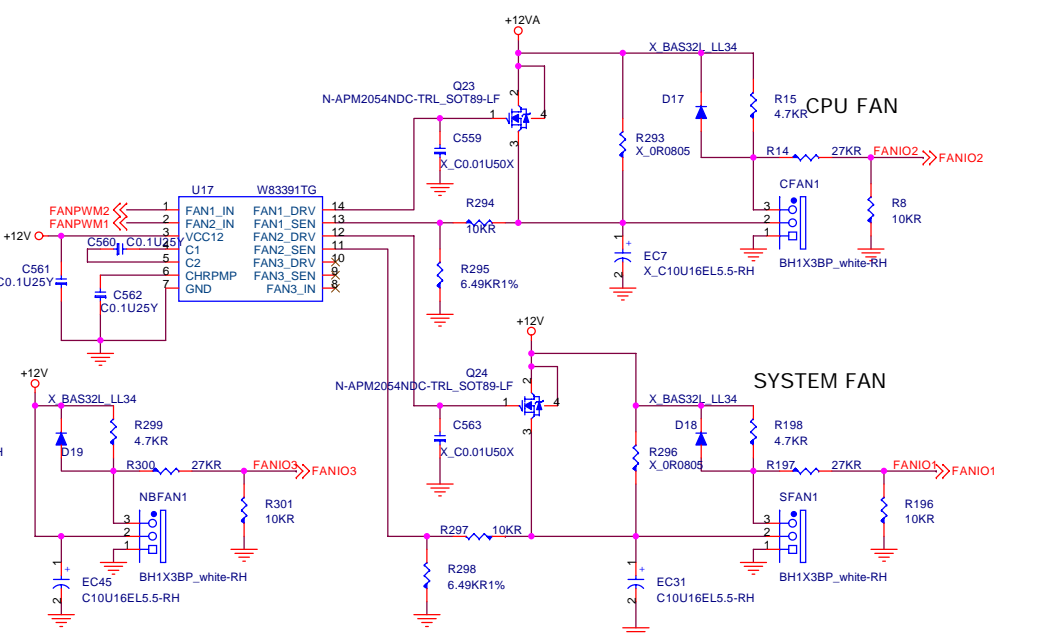
FRONT PANEL



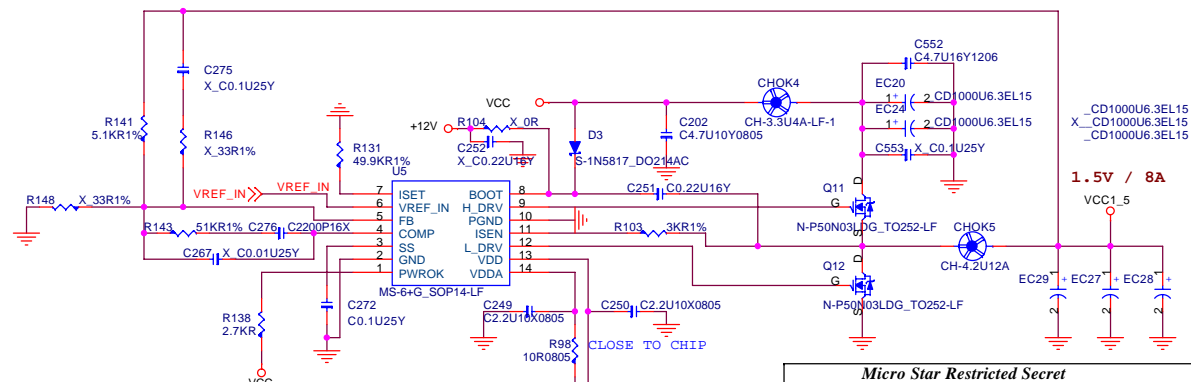
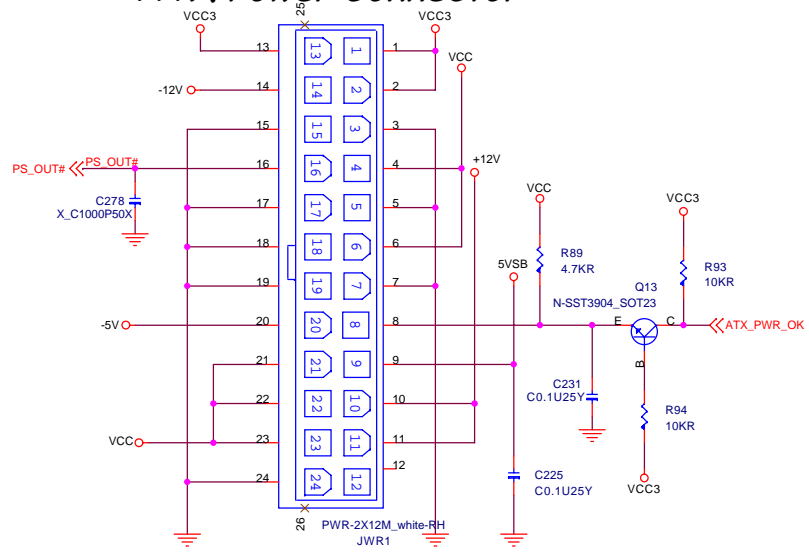
System Voltage Regulator



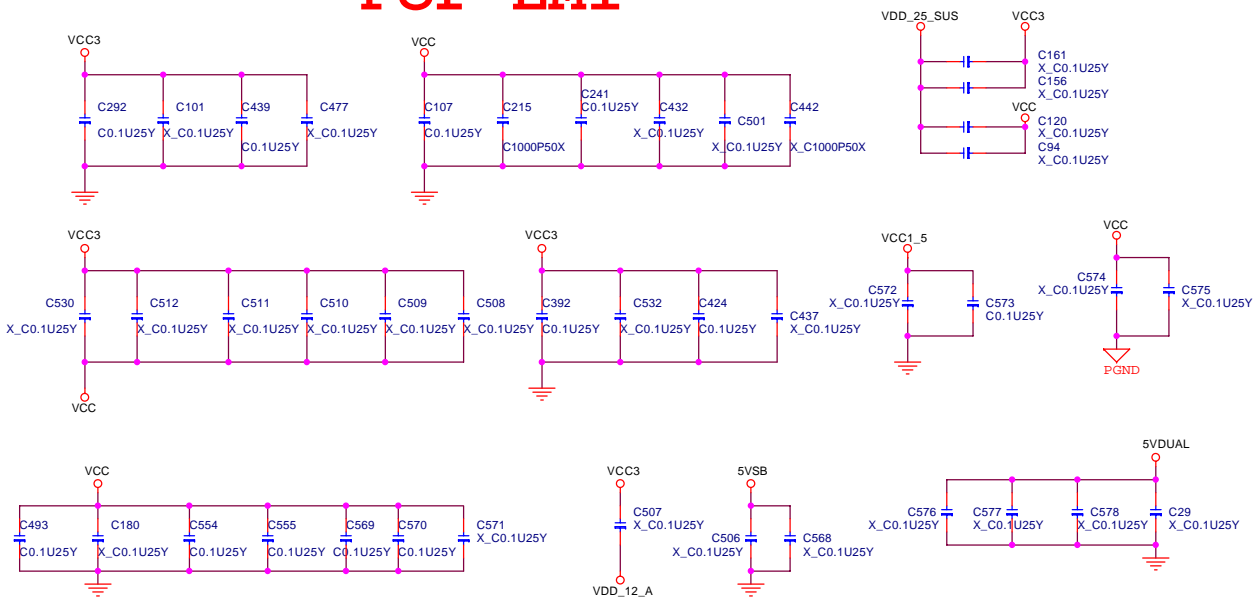
Smart Fan Controller/Connector



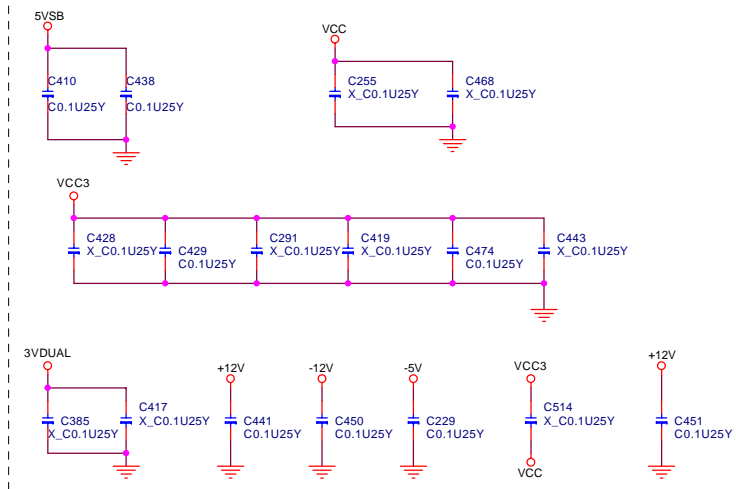
ATX Power Connector



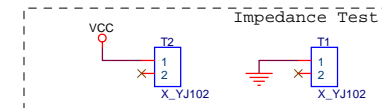
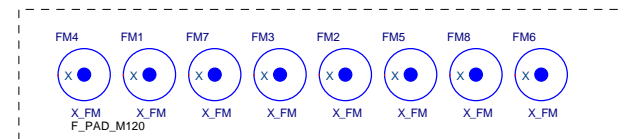
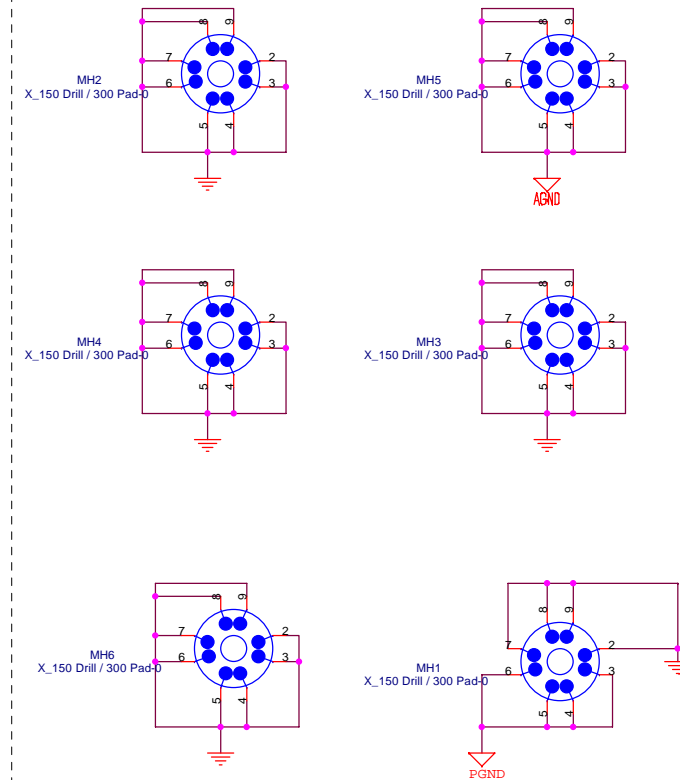
For EMI



SYSTEM



ATX VIA-Hole * 9



Micro Star Restricted Secret

Title	BULK/Decoupling	Rev
Document Number	MS-7135	200
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006
Sheet	28 of 31	

K8 CPU Power

CPU Side

DDR Side

K8 Vcore ->
"VCORE" (60A)

VDDA_2.5 Power ->
"VDDA_25" (0.11A)

HT Power ->
"VDD_12_A"&"VLDTO"
(2A)

DDR Power ->
"VDD_25_SUS"
(6.5A)

DDR-VTTPower ->
"VTT_DDR_SUS"
(3A)

System Chip

SYSTEM Chip Core-Power
-> "VCC1_5" (8A)

SYSTEM Chip
Core-Power-Suspend Power
-> "1_5VDUAL" (?A)

Other Power

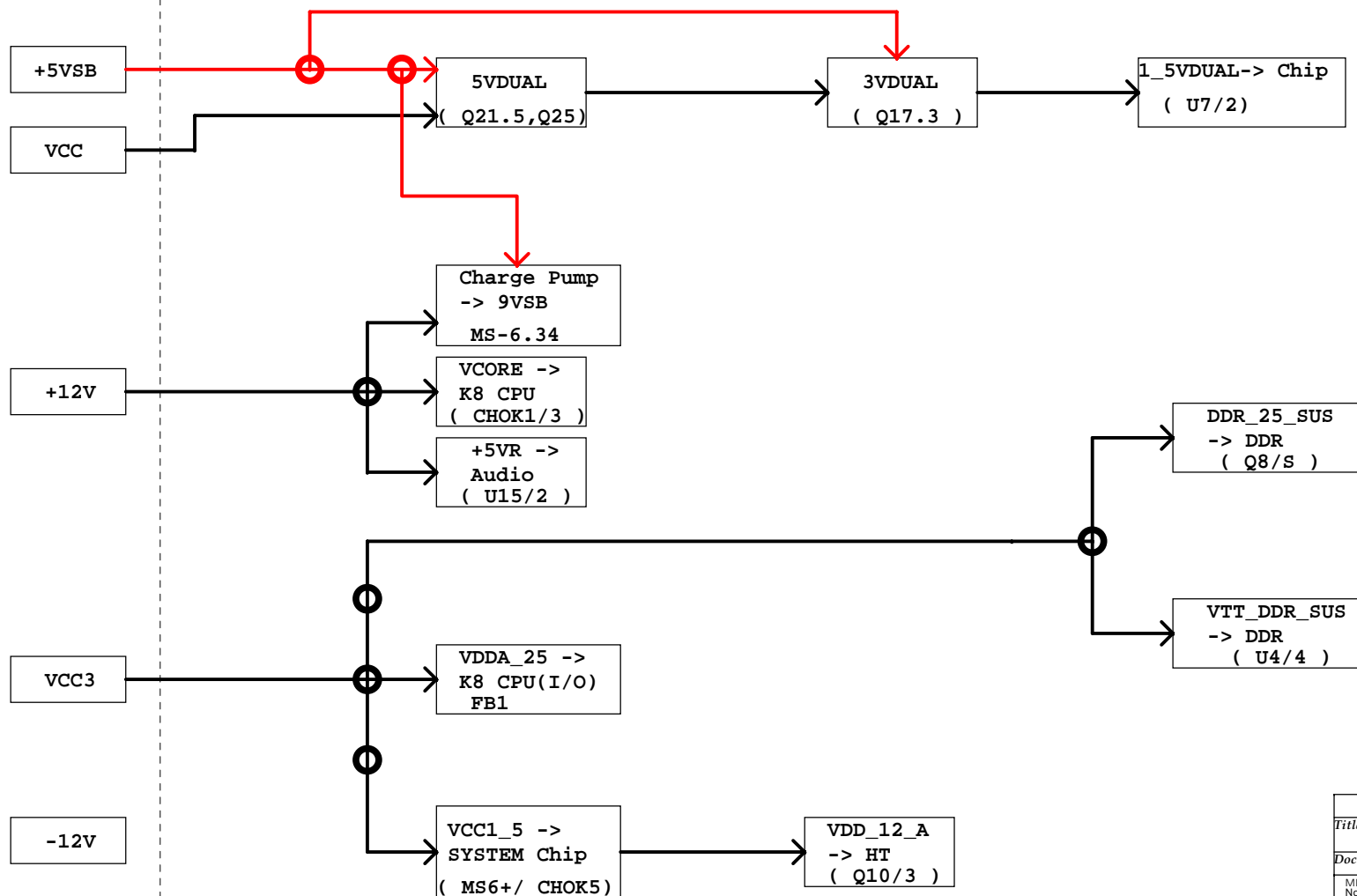
5VDUL

DDR_3VDUAL

3VDUL

9VSB

ATX Power Supply



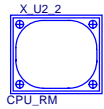
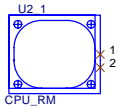
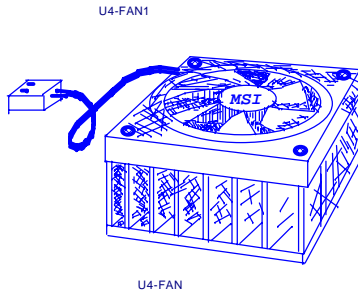
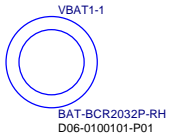
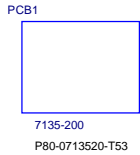
Micro Star Restricted Secret

Title	Power Generation	Rev
Document Number	MS-7135	100
MICRO STAR INT'L CO., LTD. No. 69, Li-De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006
Sheet		29 of 31

Ver. 00A 2004/09/16
New SPEC(Copy from 7094-0B and 7125-0A)

- Ver. 100 2004/11/12
- 1.Add Smart Fan Function
 - 2.Add Sw_BAT1 replace with JABT1
 - 3.Debug for Audio noise(Remove some coppers between UGND and AGND,and replace with cap and resister)
 - 4.Chang PCB print JCASE1 to JCI1,DDR1;2 to Dimm1;Dimm2,SATA,LAN_USB connector
 - 5.Add Q25 For 5vDual Power
 - 6.Add RT2 for CPU temperature monitor and CPU internal thermal diode for MSI DOT function

Micro Star Restricted Secret		
Title	History	Rev
Document Number	MS-7135	100
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Thursday, January 19, 2006
Sheet		30 of 31



Micro Star Restricted Secret		
Title	OPTION PART	Rev 100
Document Number	MS-7135	
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, April 03, 2006
Sheet		31 of 31