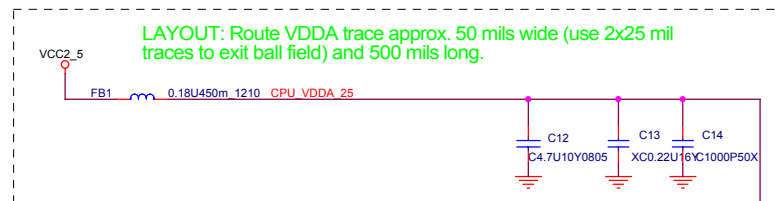


VCCA_PLL trace length from the VR1 to the PGA must be 0.75".

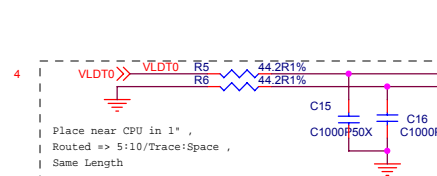
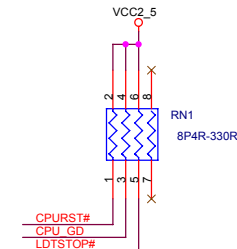
Place all filters close to the PGA.

Keep all power and signal trace away from the VR1.

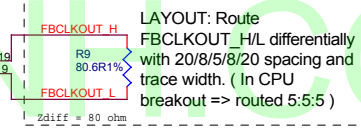
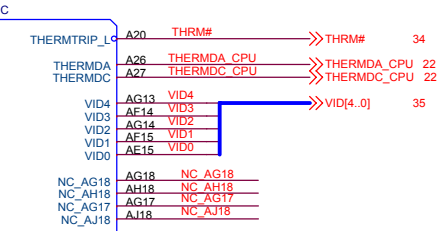
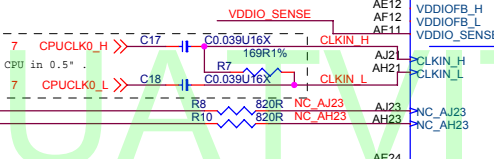
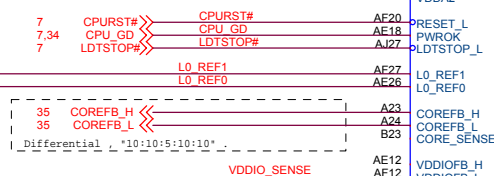
Place a cut in the GND plane around the VCCA_PLL regulator circuit.



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

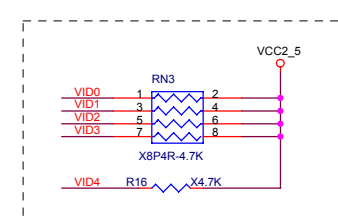
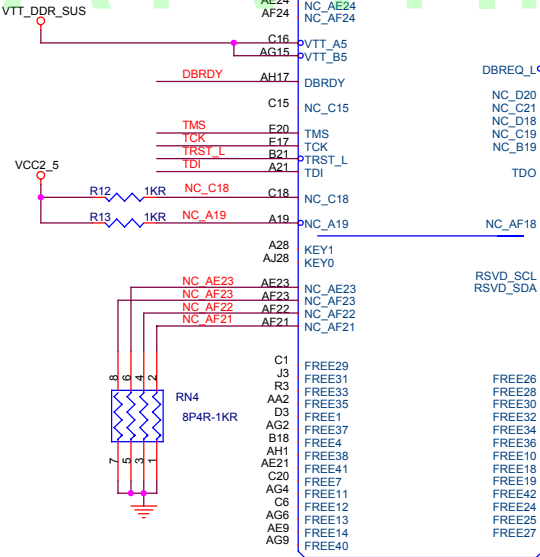
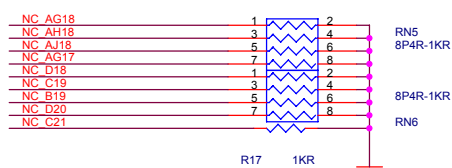
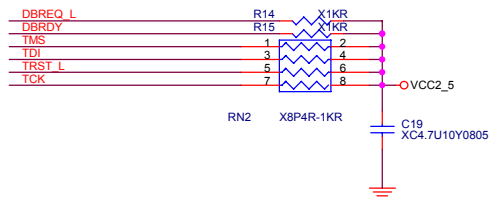


Place near CPU in 1" ,
Routed => 5:10/Trace:Space ,
Same Length



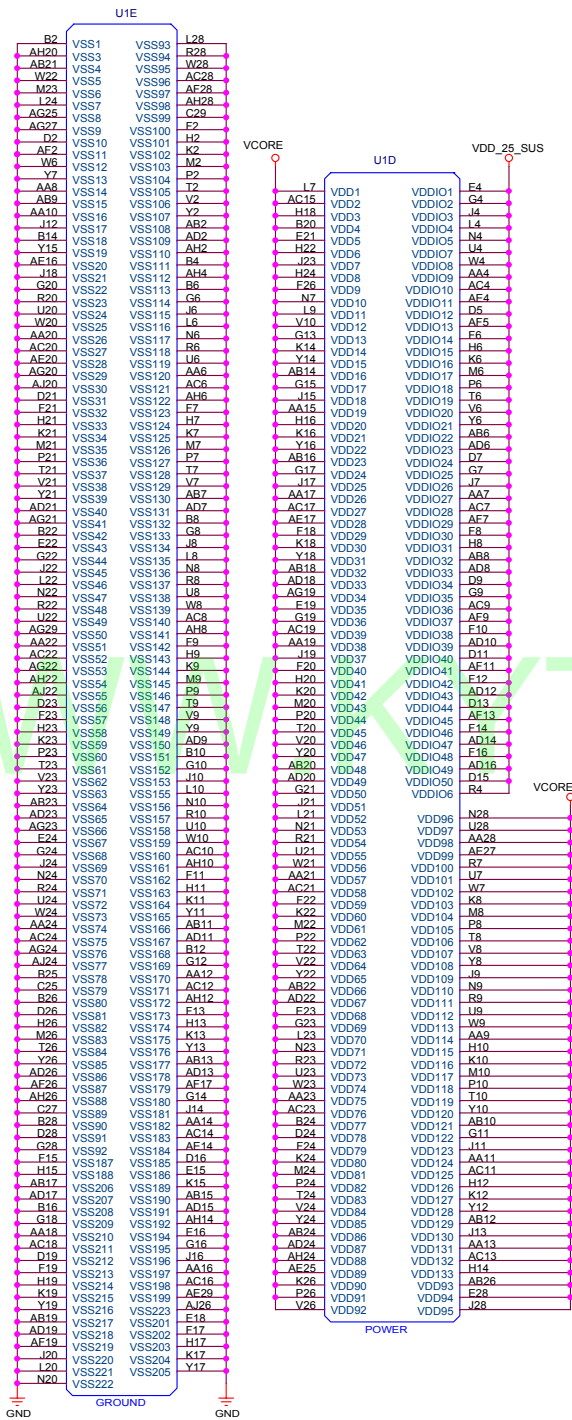
LAYOUT: Route FBCLKOUT_H/L differentially with 20/8/5/8/20 spacing and trace width. (In CPU breakout => routed 5:5:5)

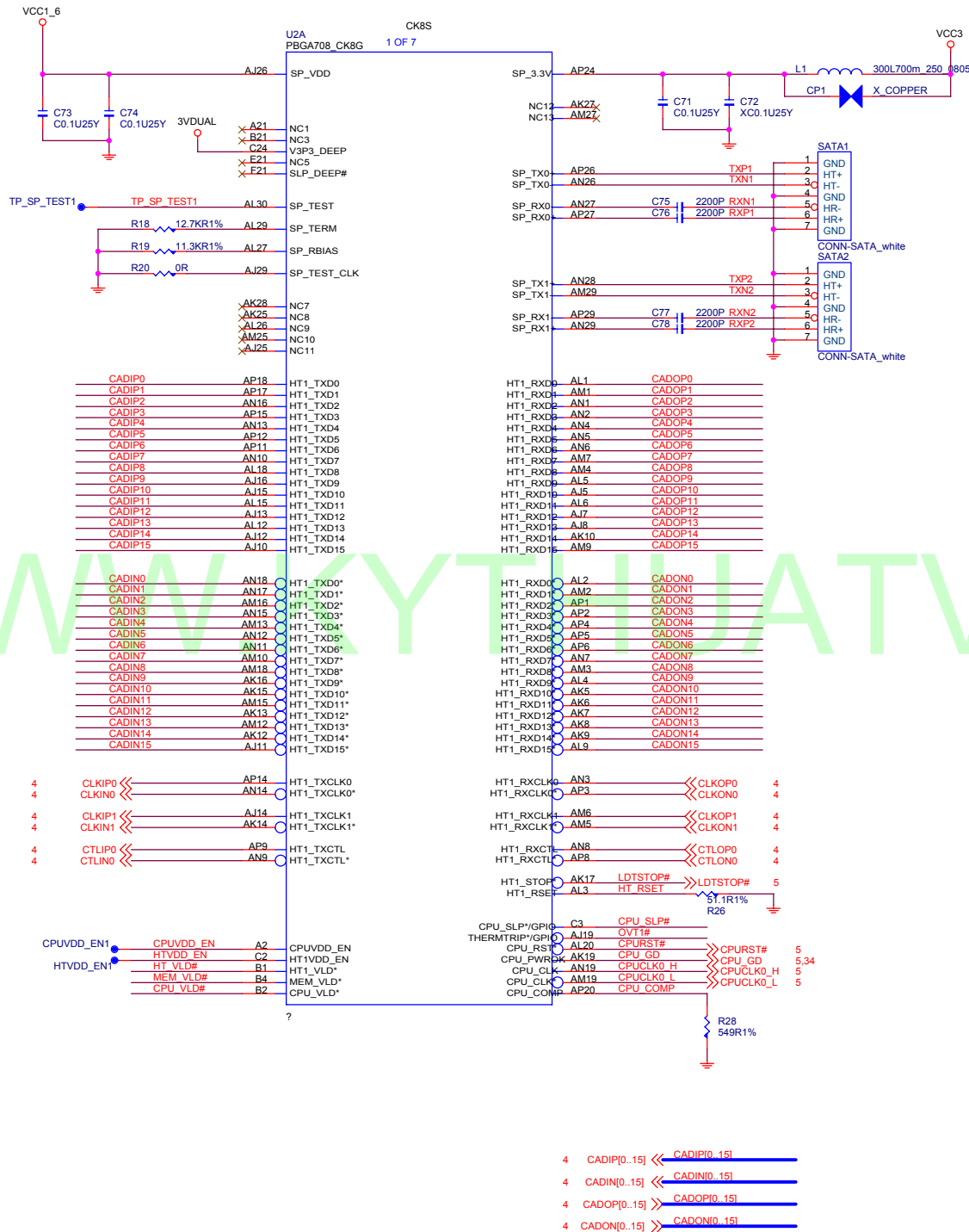
HDT Test Port Signal .

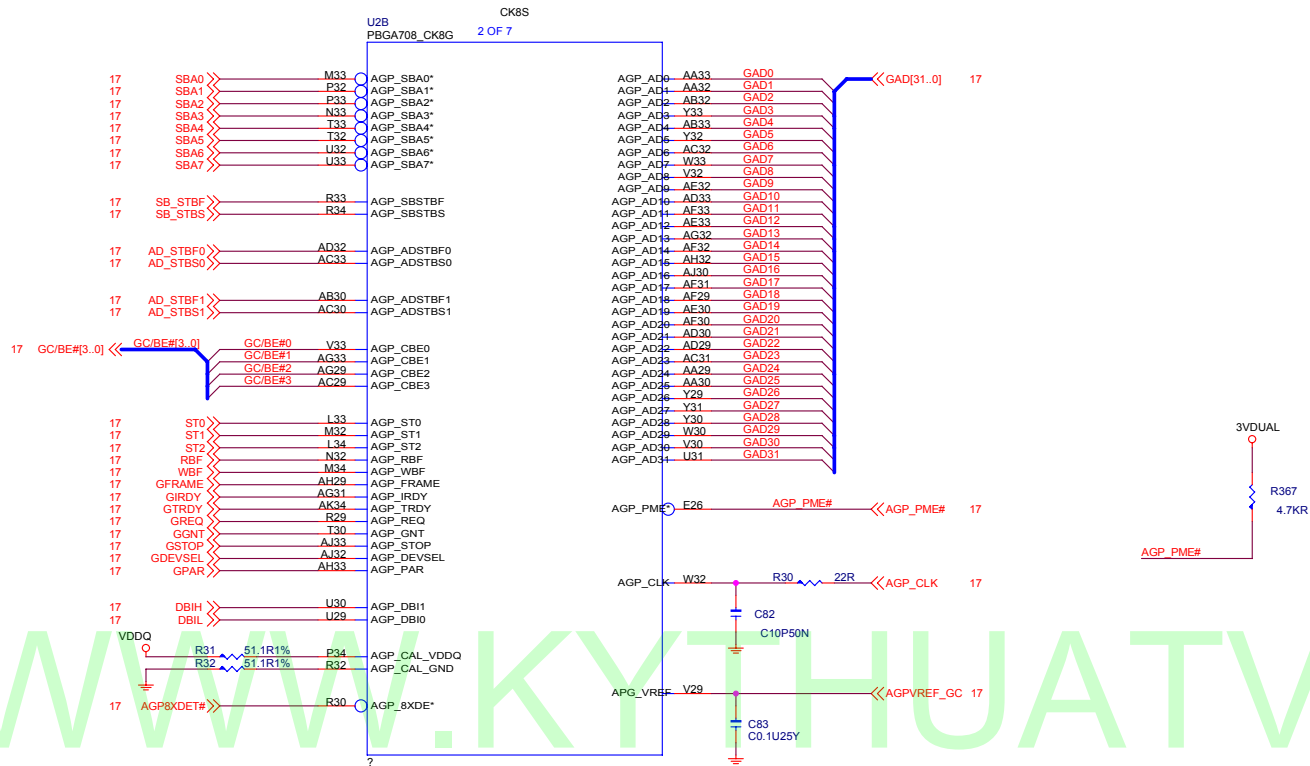


Micro Star Restricted Secret

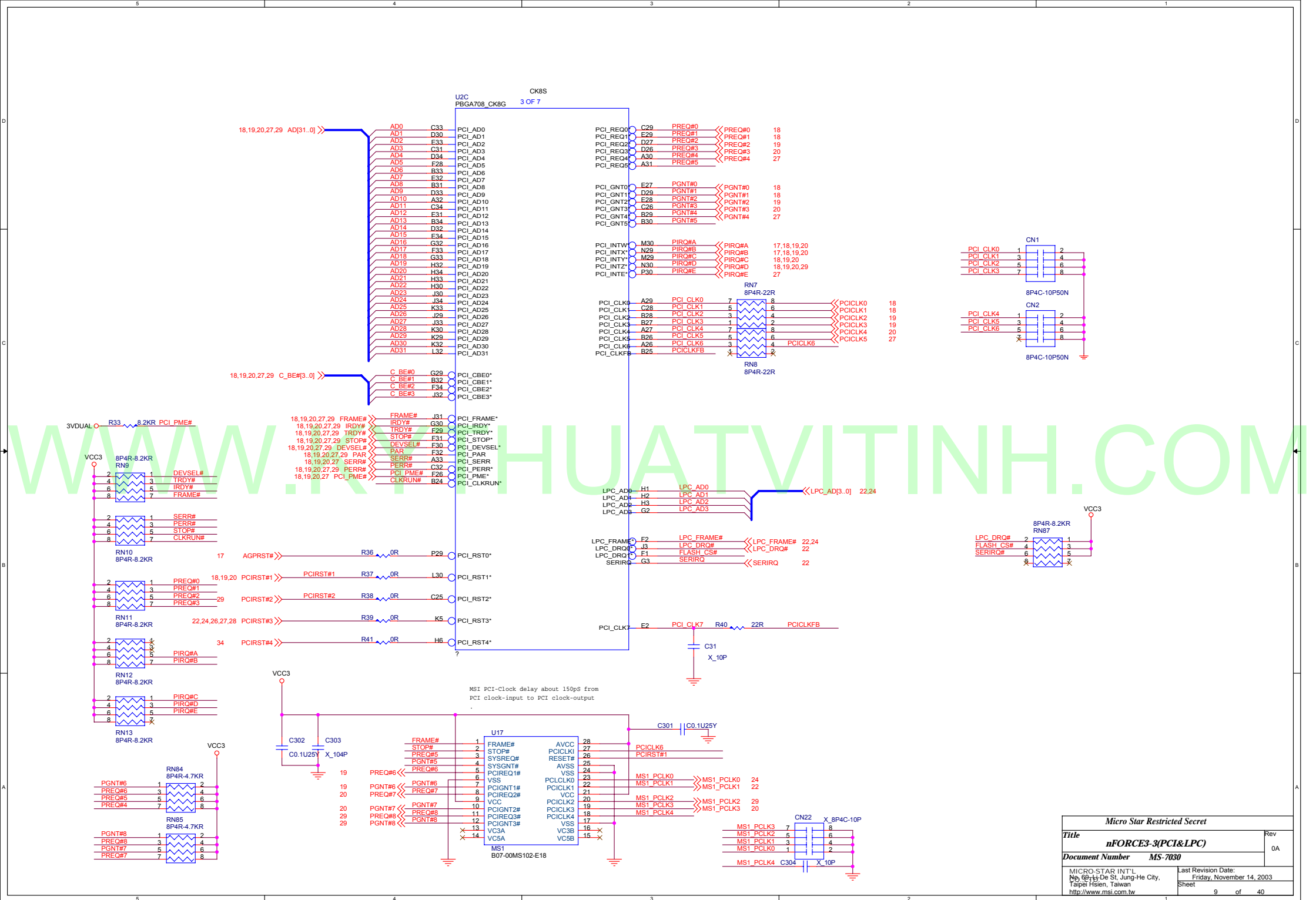
Title	K8 HDT & MISC	Rev
Document Number	MS-7030	0A
MICRO-STAR INT'L	Last Revision Date:	
CO., LTD.	Friday, November 14, 2003	
No. 69, Li-De St, Jung-He City,	Sheet	
Taipei Hsien, Taiwan	5 of 40	
http://www.msi.com.tw		



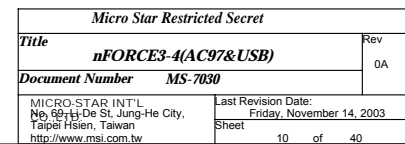
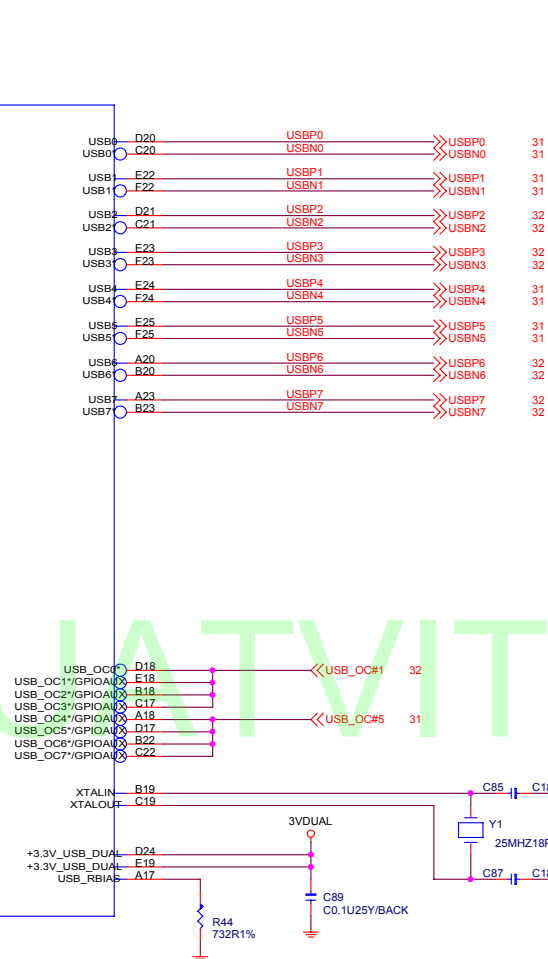


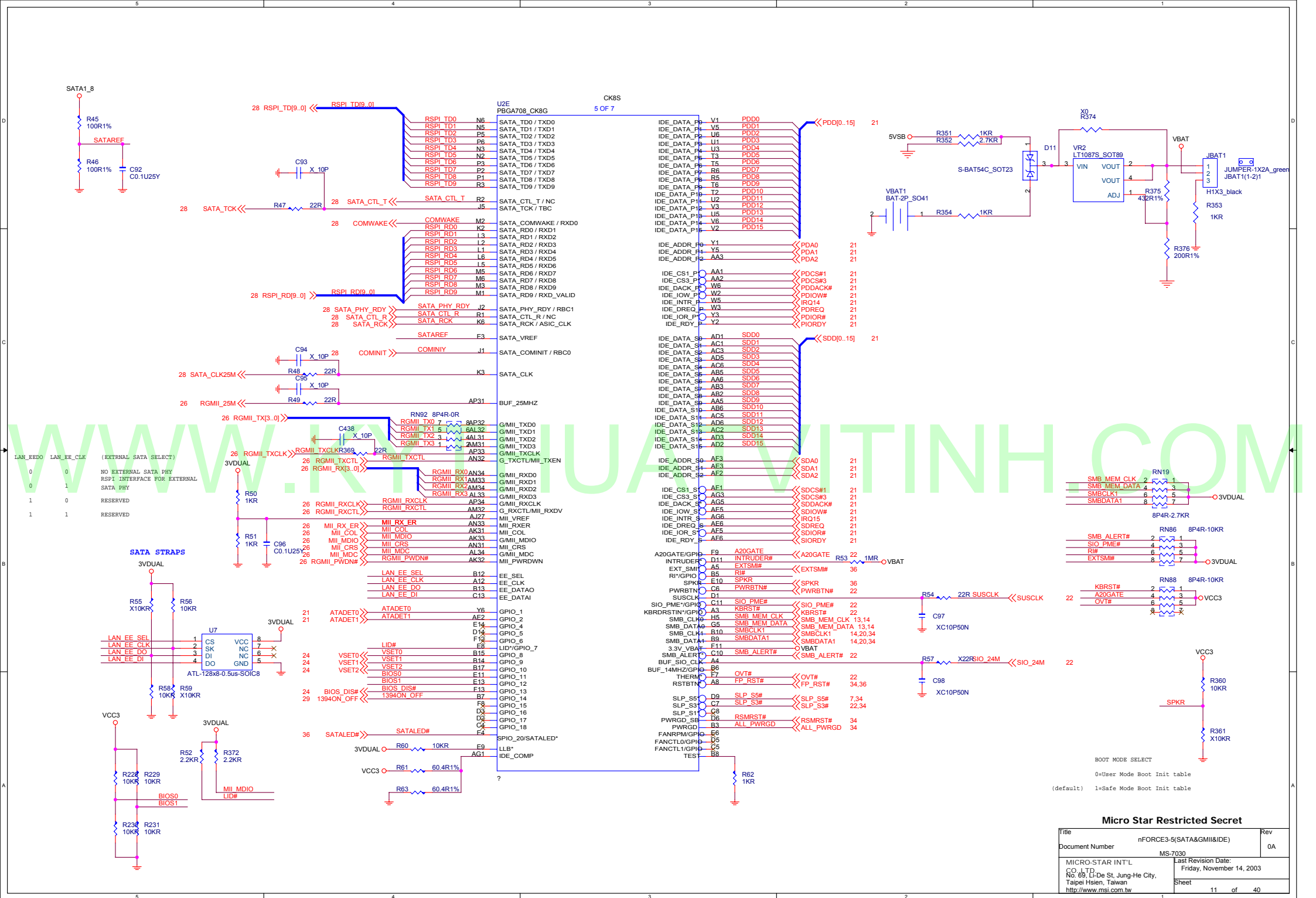


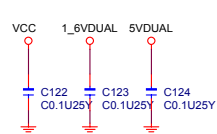
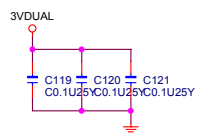
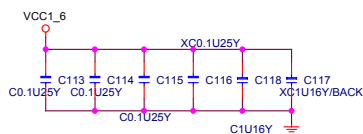
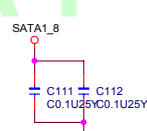
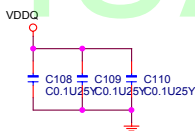
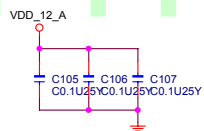
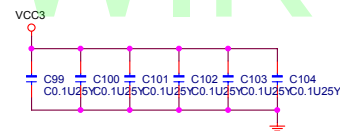
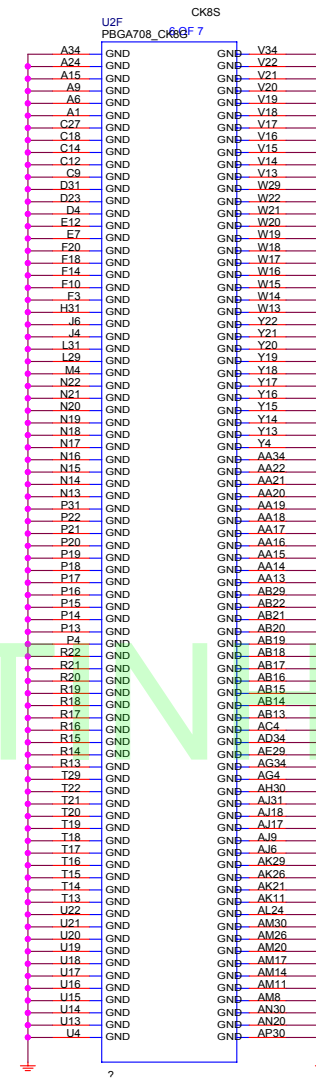
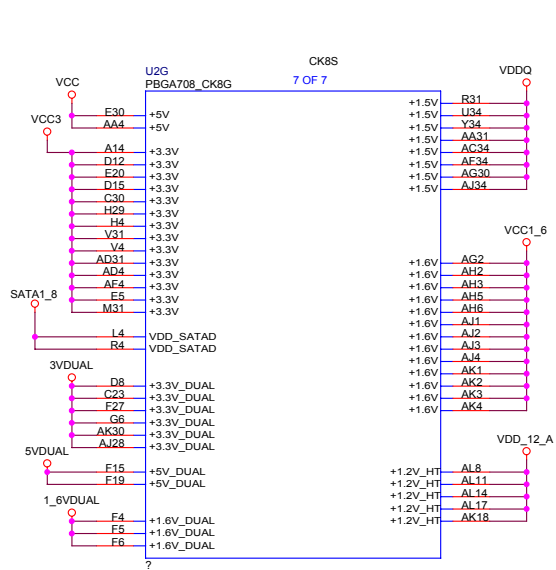
Micro Star Restricted Secret		
Title	nFORCE3-2(AGP8X)	
Document Number	MS-7030	Rev 0A
MICRO-STAR INT'L No. 66, Hsiao-De St., Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003
		Sheet 8 of 40



AC_SYNC	0=RESEVED
(default)	1=NORMAL MODE



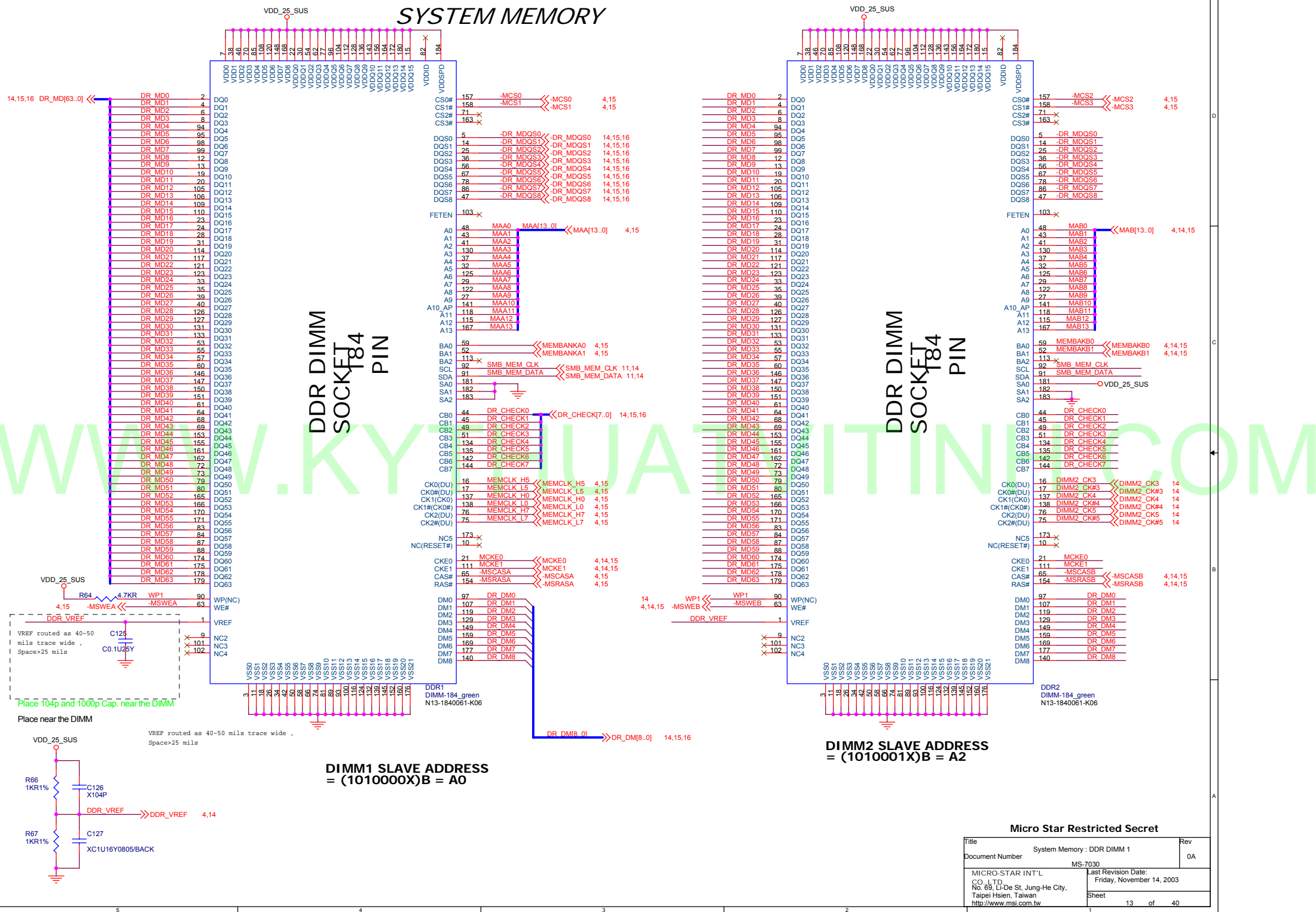




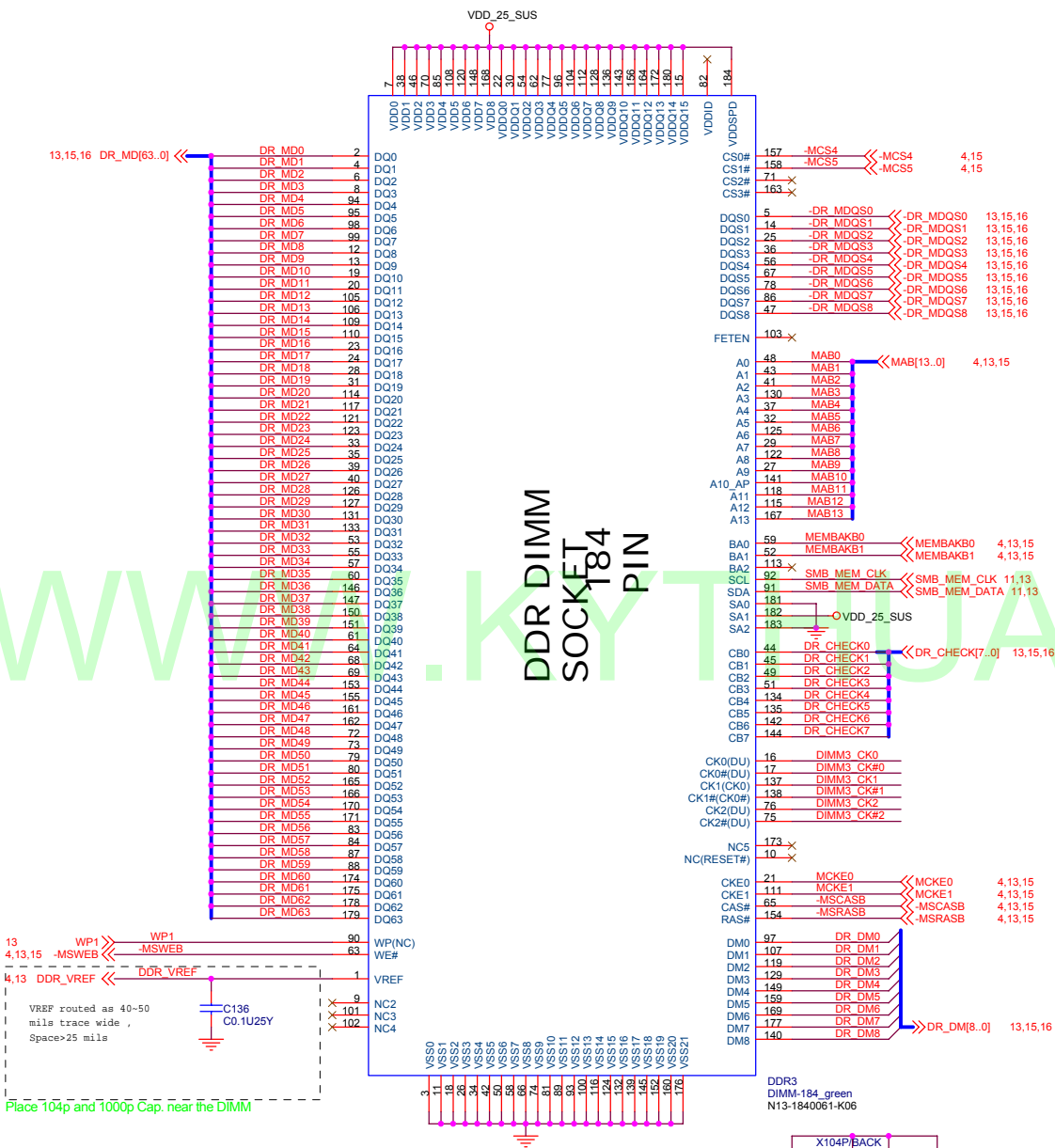
Micro Star Restricted Secret

Title	nFORCE3-67(Power&GND)	Rev	0A
Document Number	MS-7030		
MICRO-STAR INT'L		Last Revision Date:	
CO., LTD.		Friday, November 14, 2003	
No. 69, Li-De St., Jung-Ho City,		Sheet	
Taipei Hsien, Taiwan		12 of 40	
http://www.msi.com.tw			

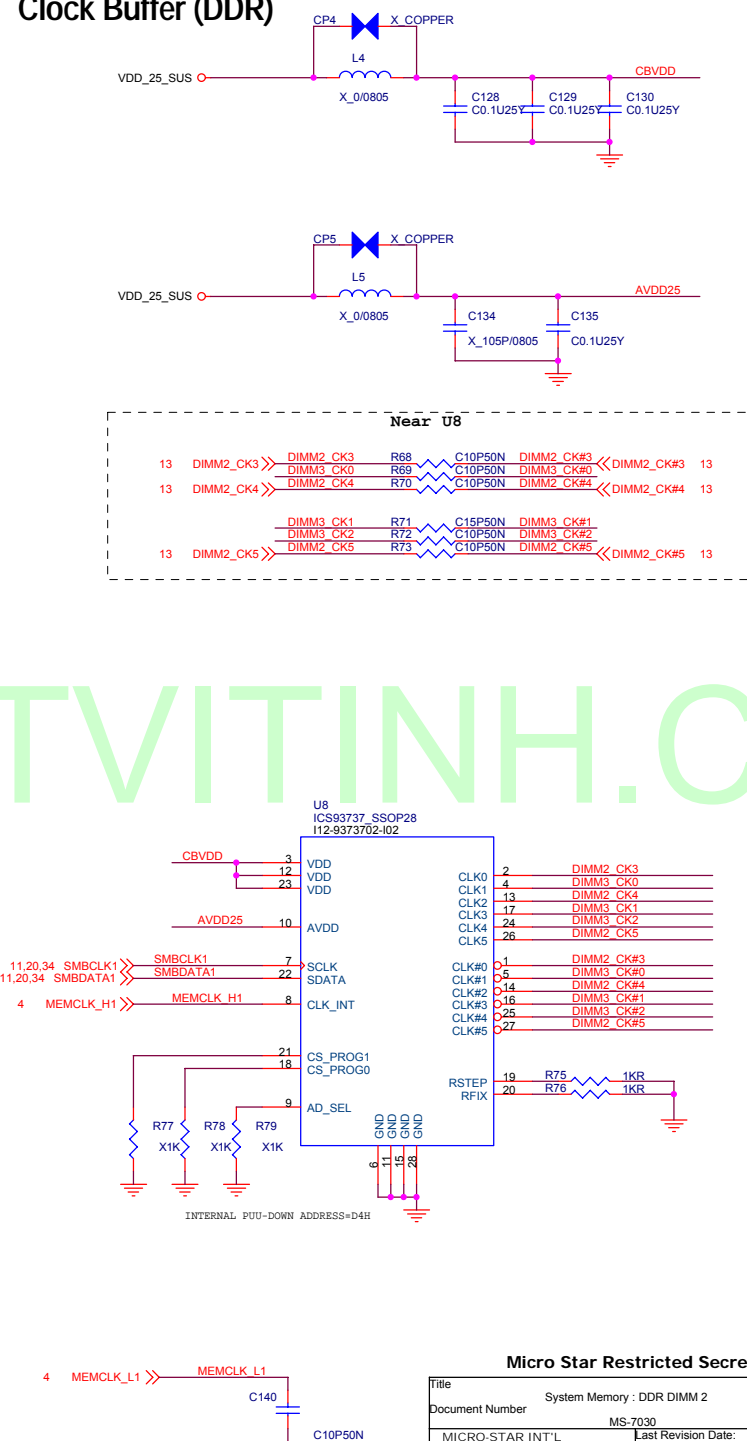
SYSTEM MEMORY



SYSTEM MEMORY



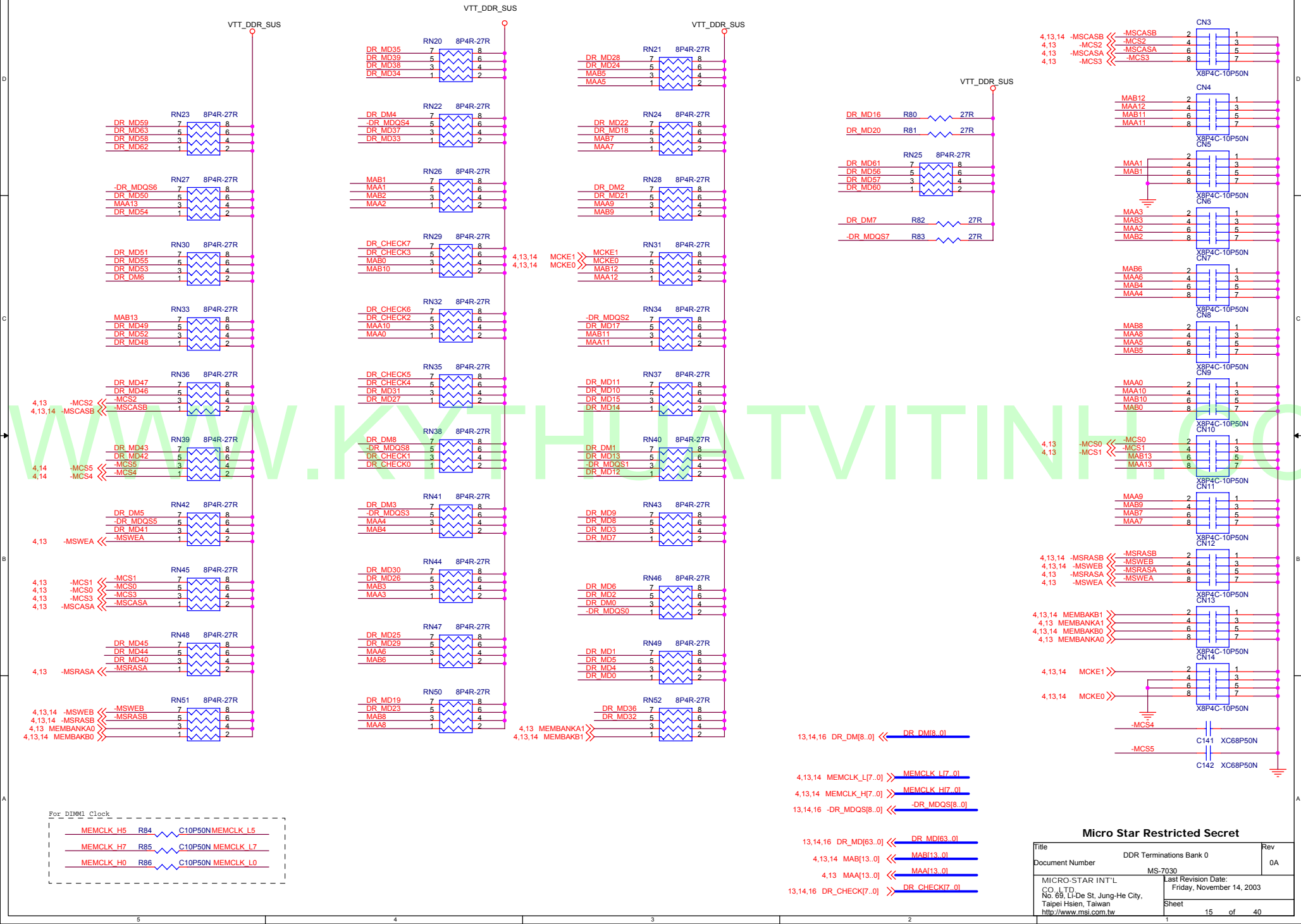
Clock Buffer (DDR)



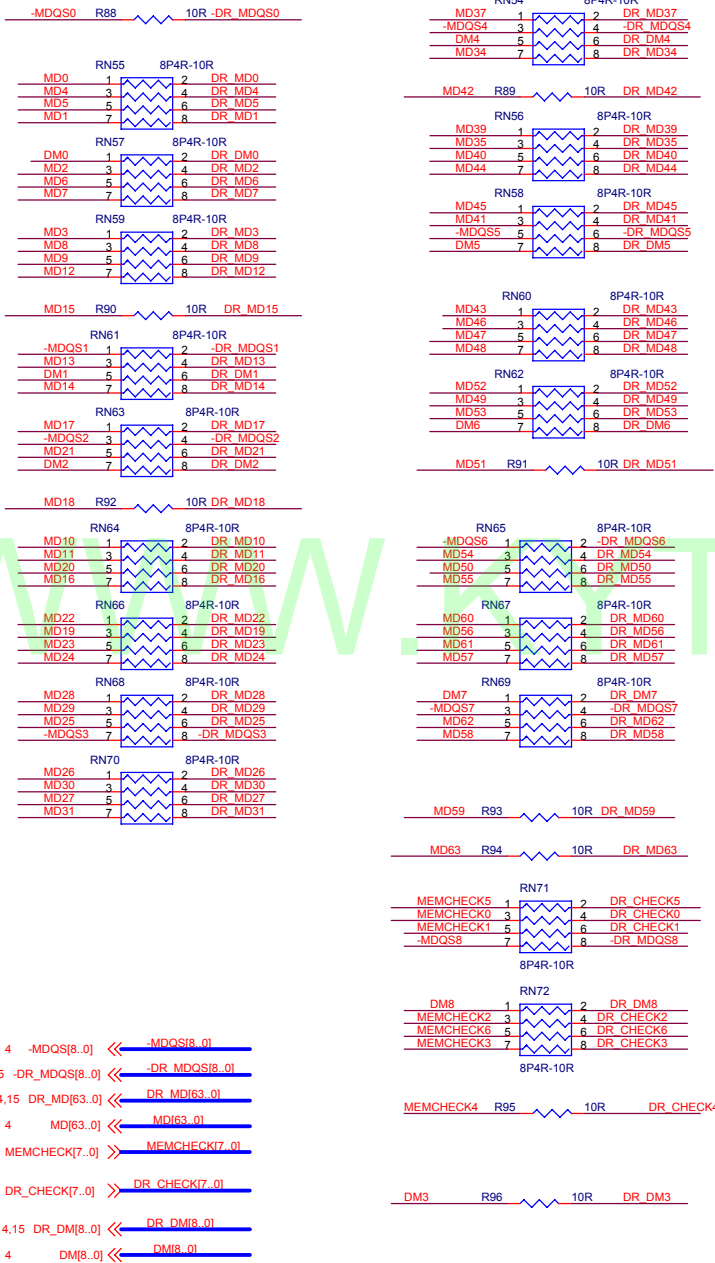
Micro Star Restricted Secret

Title	System Memory : DDR DIMM 2	Rev	0A
Document Number	MS-7030	Last Revision Date:	Friday, November 14, 2003
MICRO-STAR INT'L	CO., LTD.	No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan	Sheet 14 of 40
http://www.msi.com.tw			

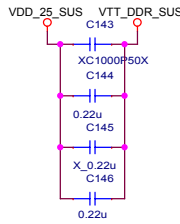
DDR Terminations



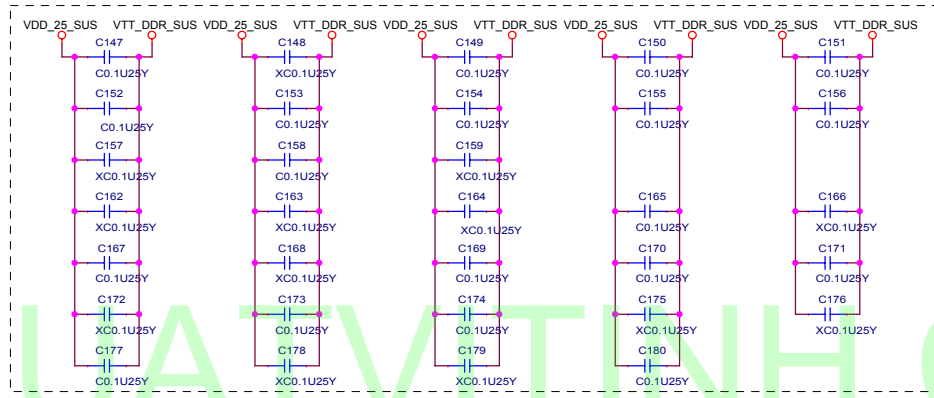
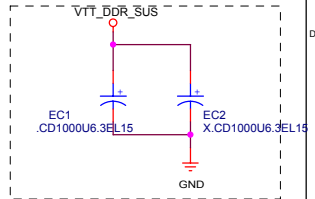
DDR Terminations



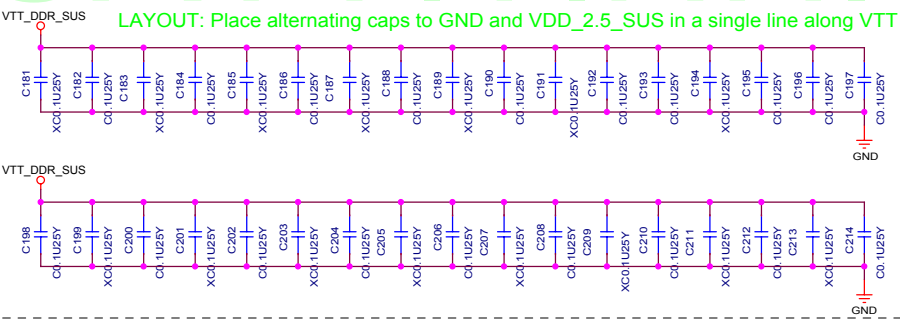
LAYOUT: Place on backside, evenly spaced around VTT fill.



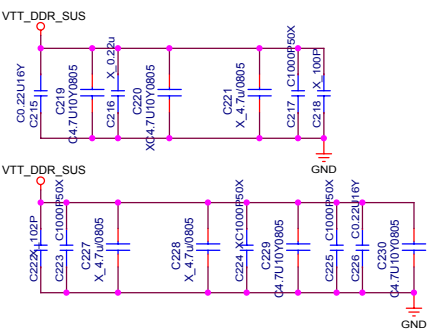
LAYOUT: Locate close to Clawhammer socket.



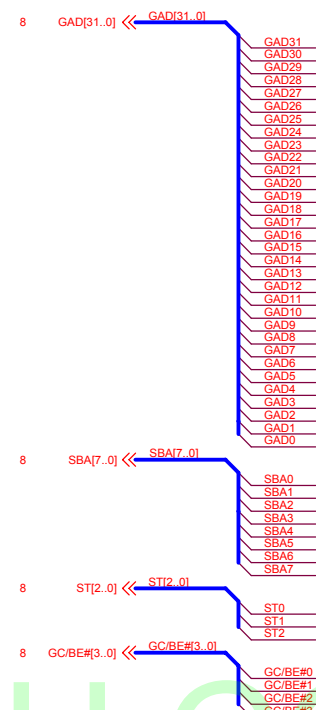
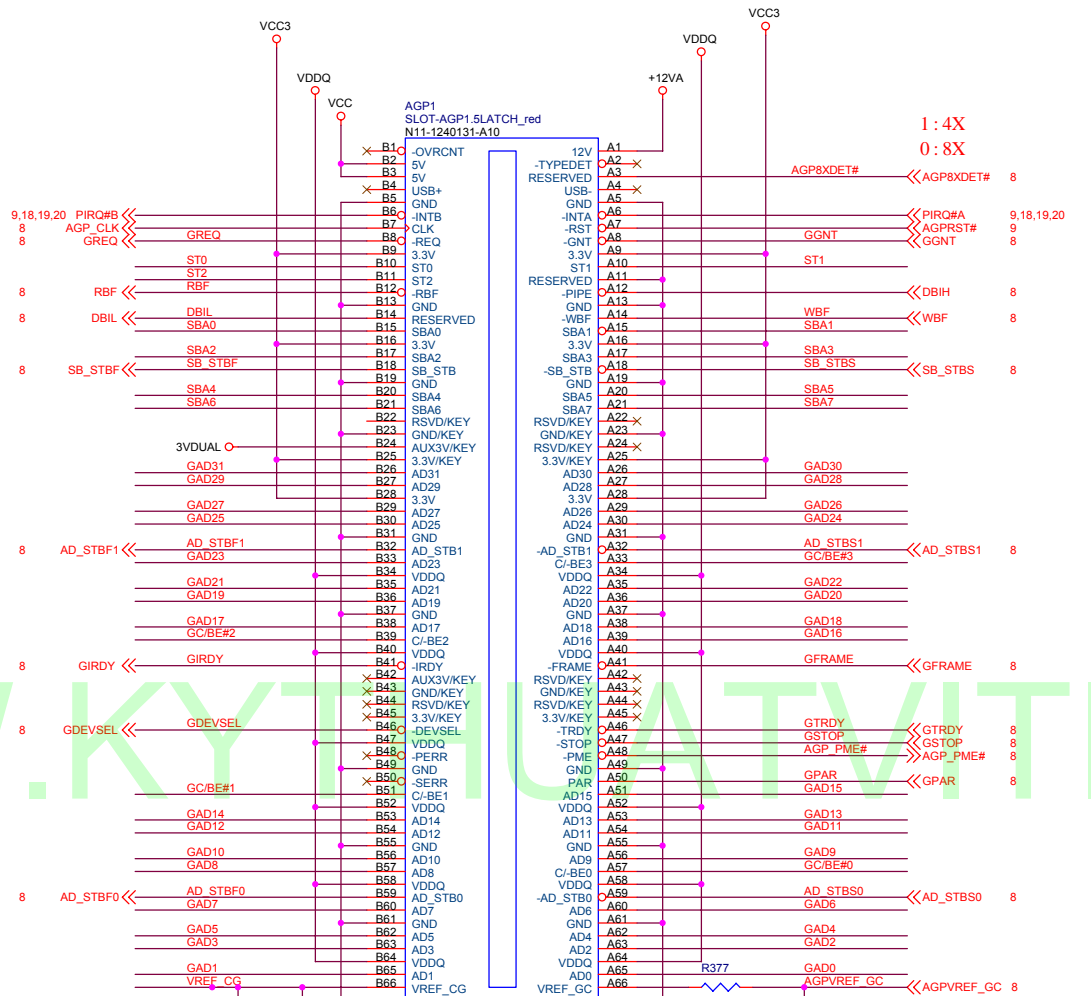
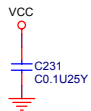
LAYOUT: Place alternating caps to GND and VDD_2.5_SUS in a single line along VTT island.



LAYOUT: Locate close to Clawhammer socket.



AGP PRO Connector



AGP "Vref" => 4X : 0.5*1.5V=0.75 Volt ,
8X : 0.23*1.5 =0.345 Volt

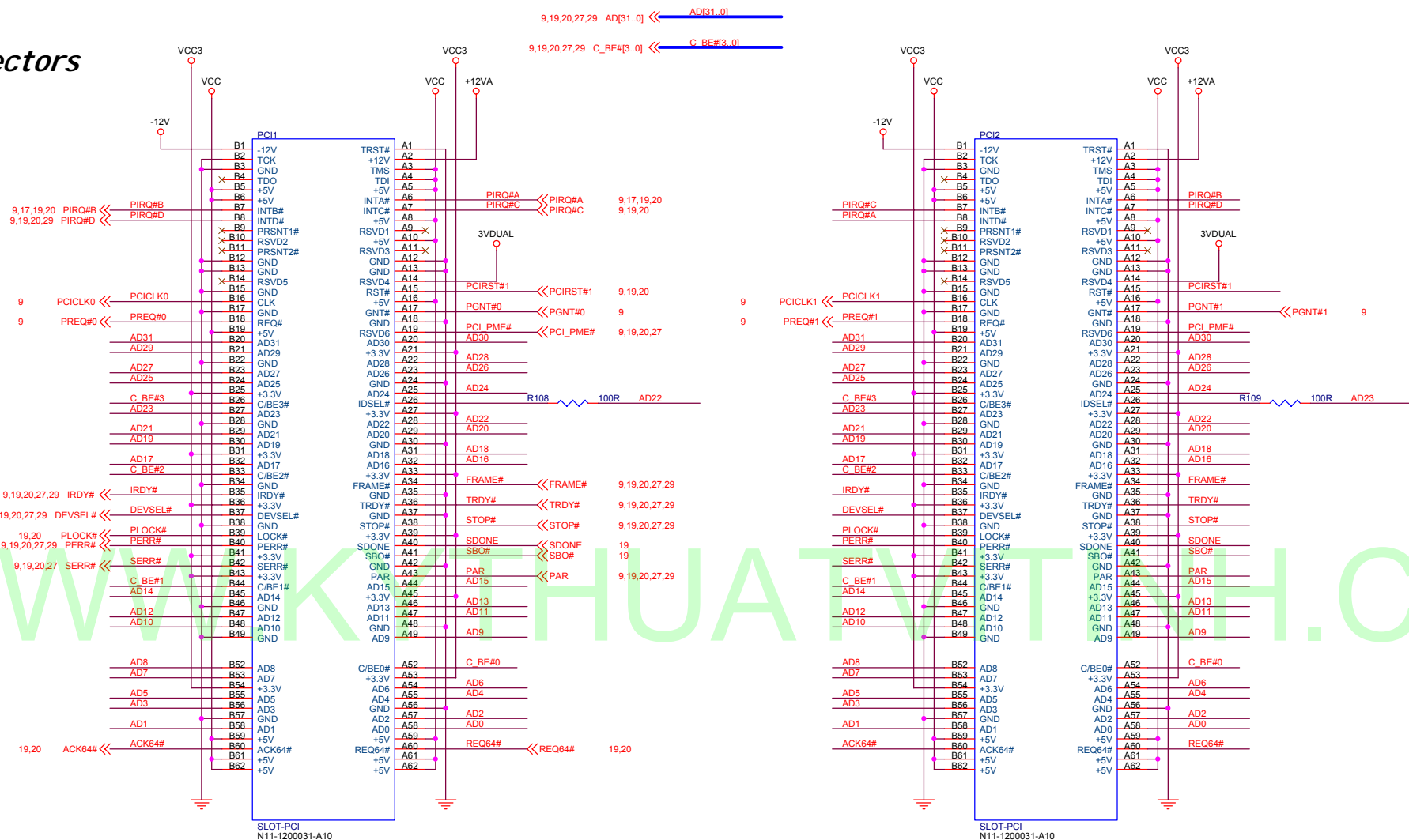
4X : 0.75V
8X : 0.35V

"AGP8XDET_GC#" => 4X=High, 8X=Low

Add-in Card Power				
	I _{max}	V _{Min}	V _{Max}	Units
VDDQ	2.0A	1.425	1.575	V
VCC3	6.0A	3.15	3.45	V
3VDUAL	0.75A	3.15	3.45	V
VCC5	2.0A	4.75	5.25	V
VCC12	1.0A	11.4	12.6	V

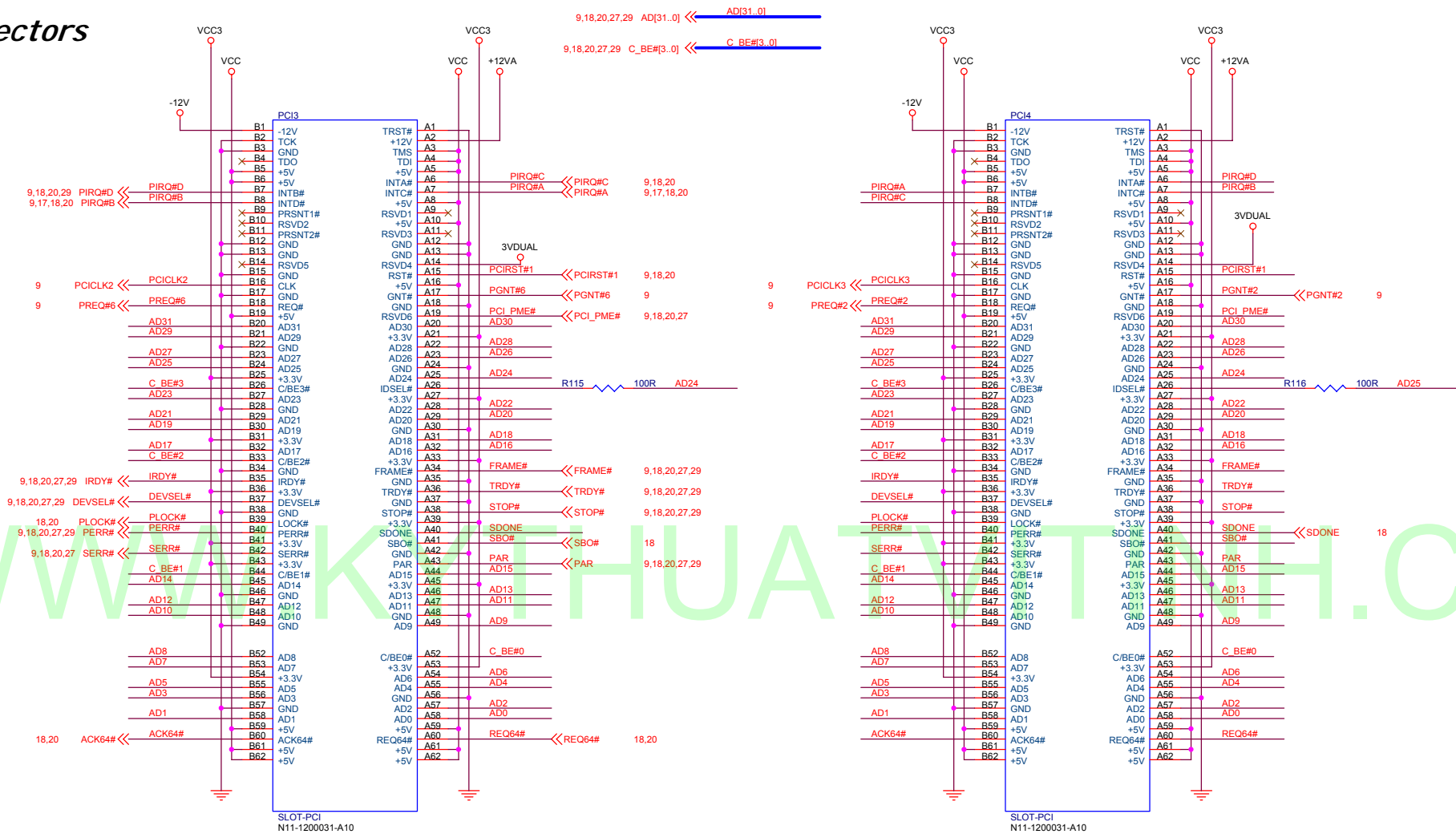
Micro Star Restricted Secret		
Title	AGP 8X Slot	Rev 0A
Document Number	MS-7030	
MICRO-STAR INT'L No. 66, 4th De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		
Last Revision Date: Friday, November 14, 2003		
Sheet	17	of 40

PCI Connectors



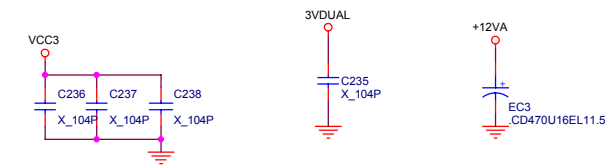
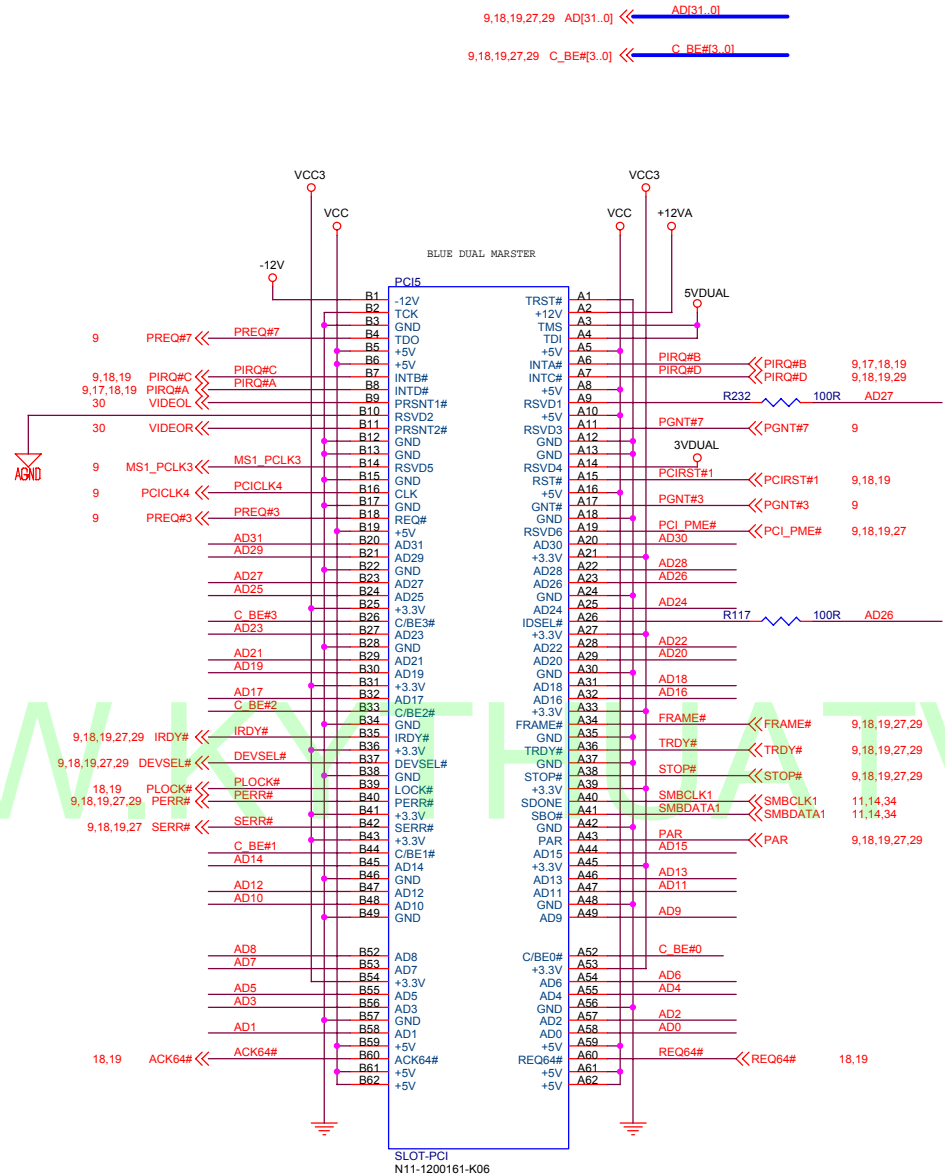
Micro Star Restricted Secret		
Title	PCI Connector 1 & 2	Rev 0A
Document Number	MS-7030	
MICRO-STAR INT'L No. 66, 4th St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003 Sheet 18 of 40

PCI Connectors



Micro Star Restricted Secret		
Title	PCI Connector 3 & 4	Rev 0A
Document Number	MS-7030	
MICRO-STAR INT'L No. 66, De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003 Sheet 19 of 40

PCI Connectors



Micro Star Restricted Secret		
Title	PCI Connector 5	Rev 0A
Document Number	MS-7030	
MICRO-STAR INT'L No. 66, 4th De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003 Sheet 20 of 40

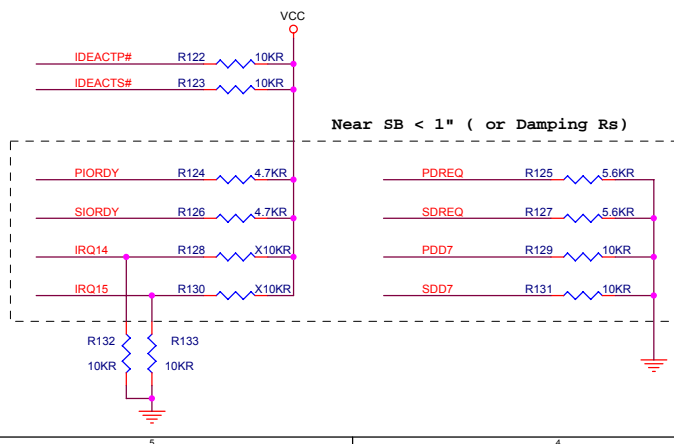
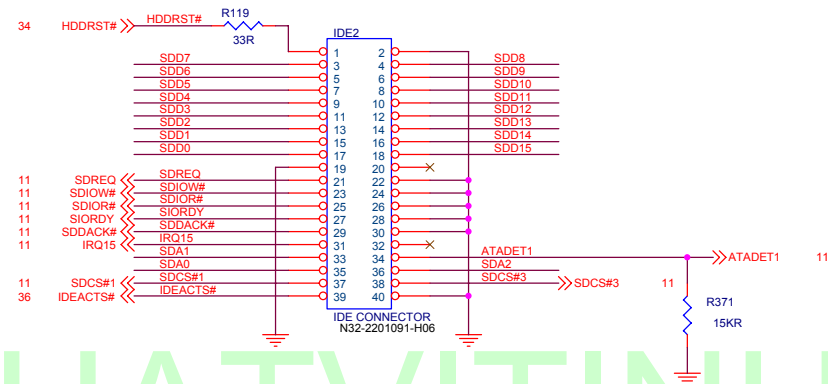
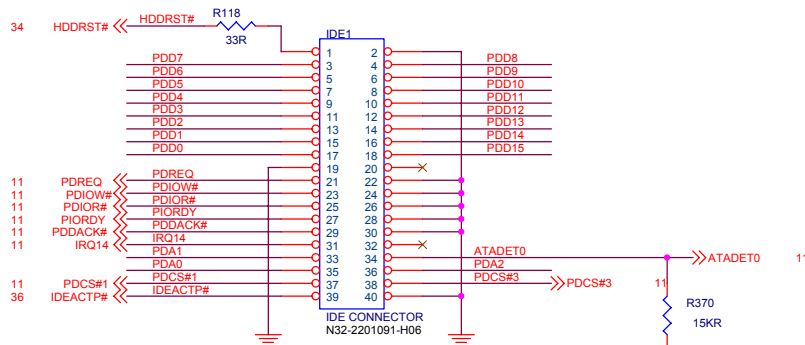
11 PDD[15..0] << PDD[15..0]

11 PDA[2..0] << PDA[2..0]

11 SDA[2..0] << SDA[2..0]

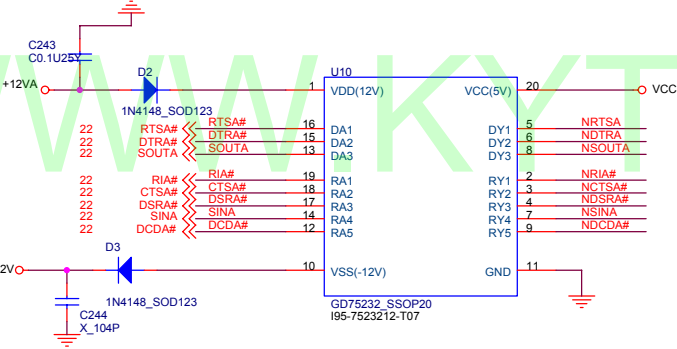
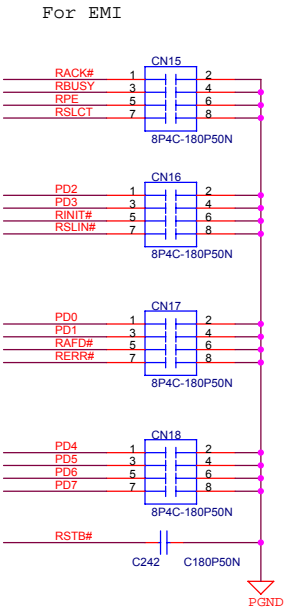
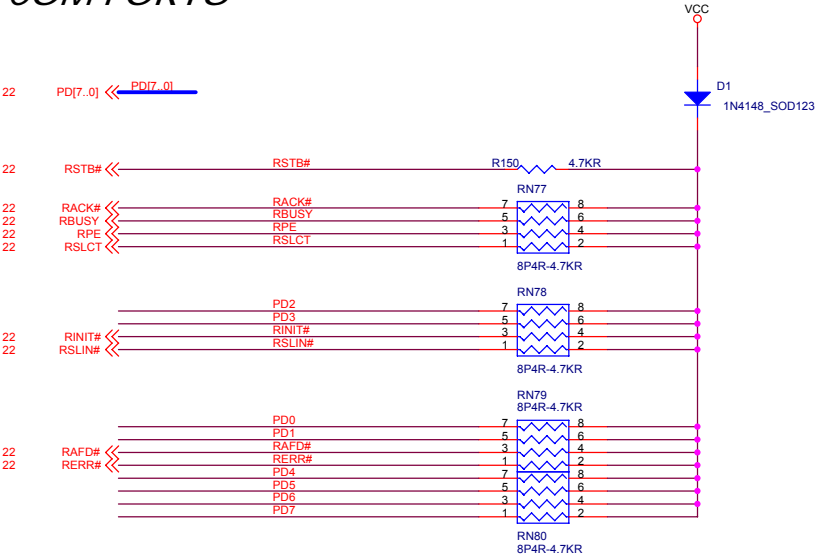
11 SDD[15..0] << SDD[15..0]

SECONDARY IDE CONN.

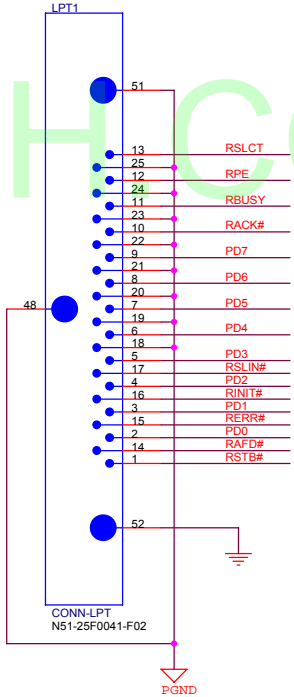
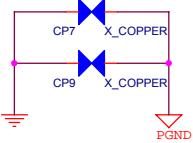
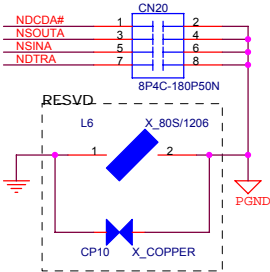
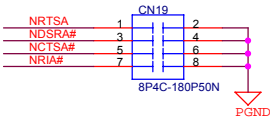
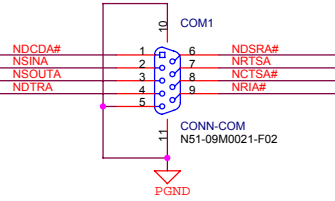


<i>Micro Star Restricted Secret</i>		
<i>Title</i>	<i>ATA 33/66/100 Connector</i>	<i>Rev</i> 0A
<i>Document Number</i>	<i>MS-7030</i>	
MICRO STAR INT'L No. 66-11 De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		<i>Last Revision Date:</i> <i>Friday, November 14, 2003</i> <i>Sheet</i> 21 of 40

LPT / COM PORTS

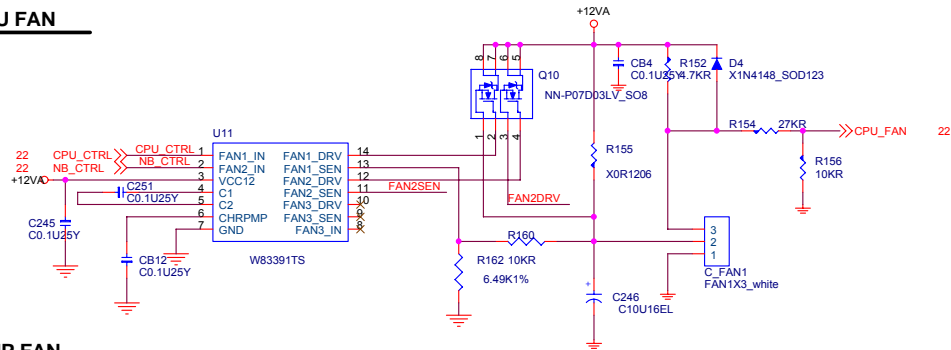


Multiple RS232 Drivers and Receivers

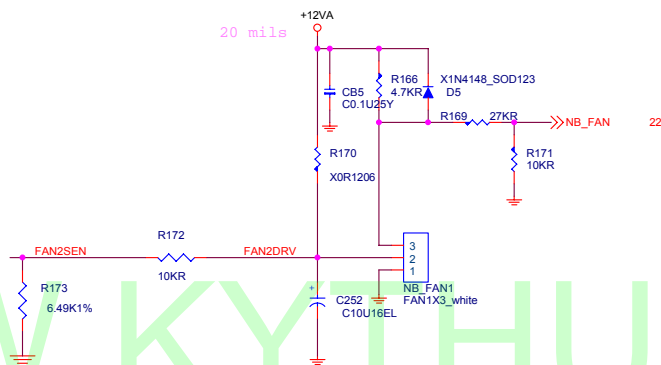


Micro Star Restricted Secret		
Title	LPT / COM Port	Rev
Document Number	MS-7030	0A
MICRO-STAR INT'L No. 66, Sec. 2, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		
Last Revision Date:		Friday, November 14, 2003
Sheet		23 of 40

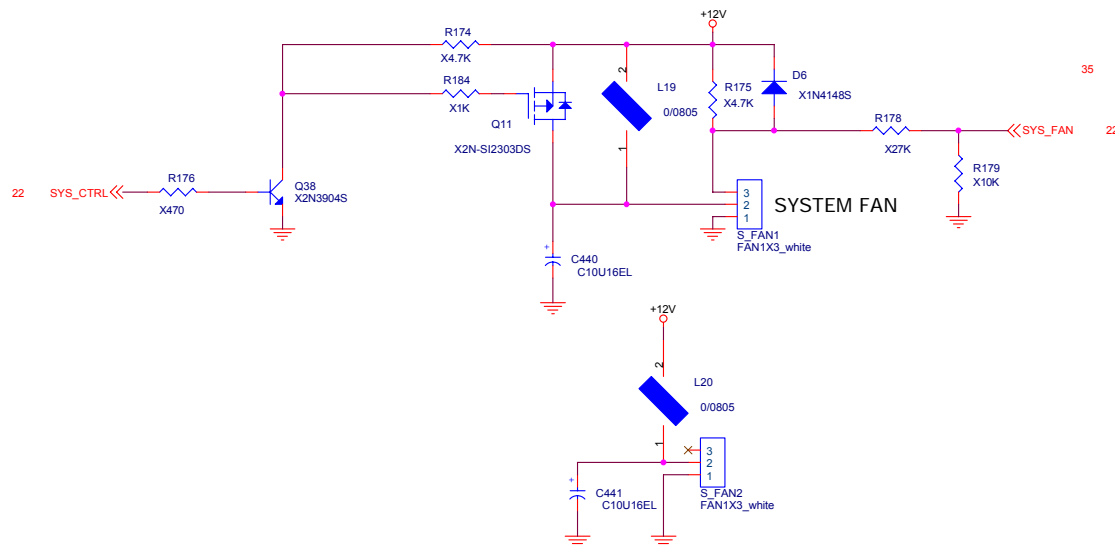
CPU FAN



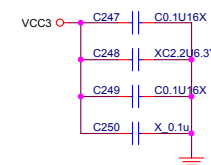
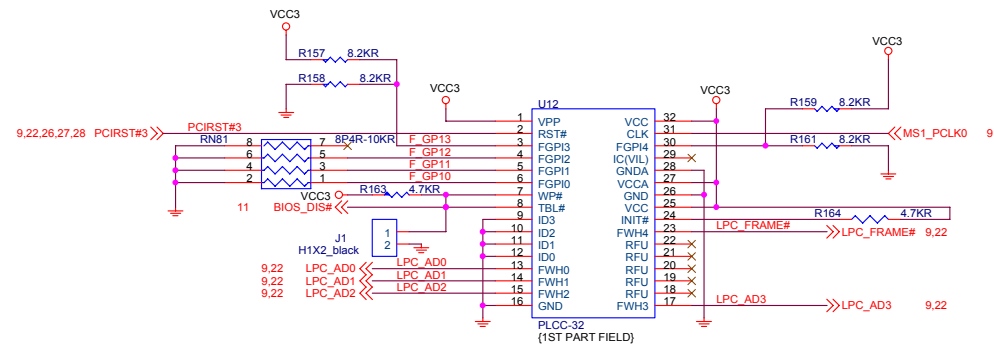
CHIP FAN



SYSTEM FAN



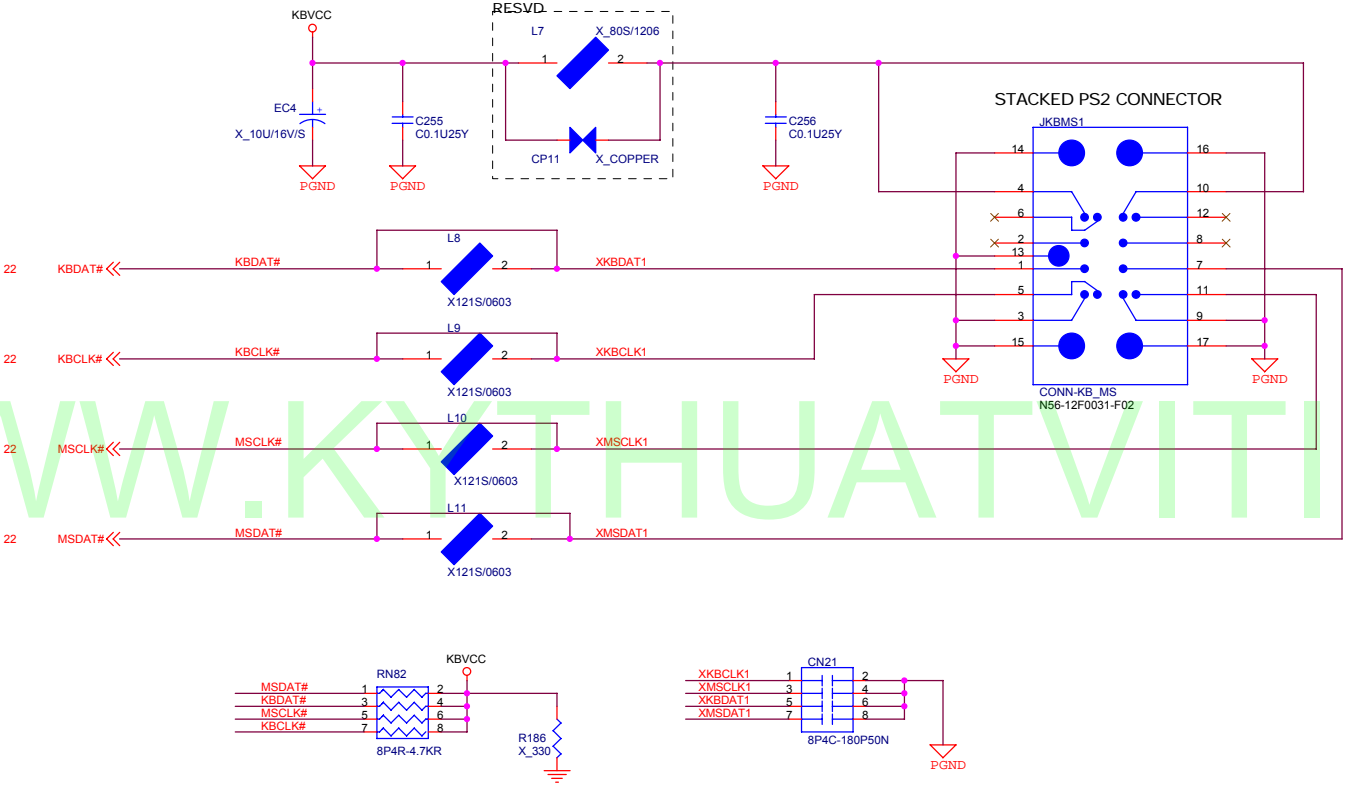
LPC Flash Rom



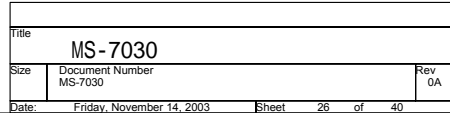
TO SB

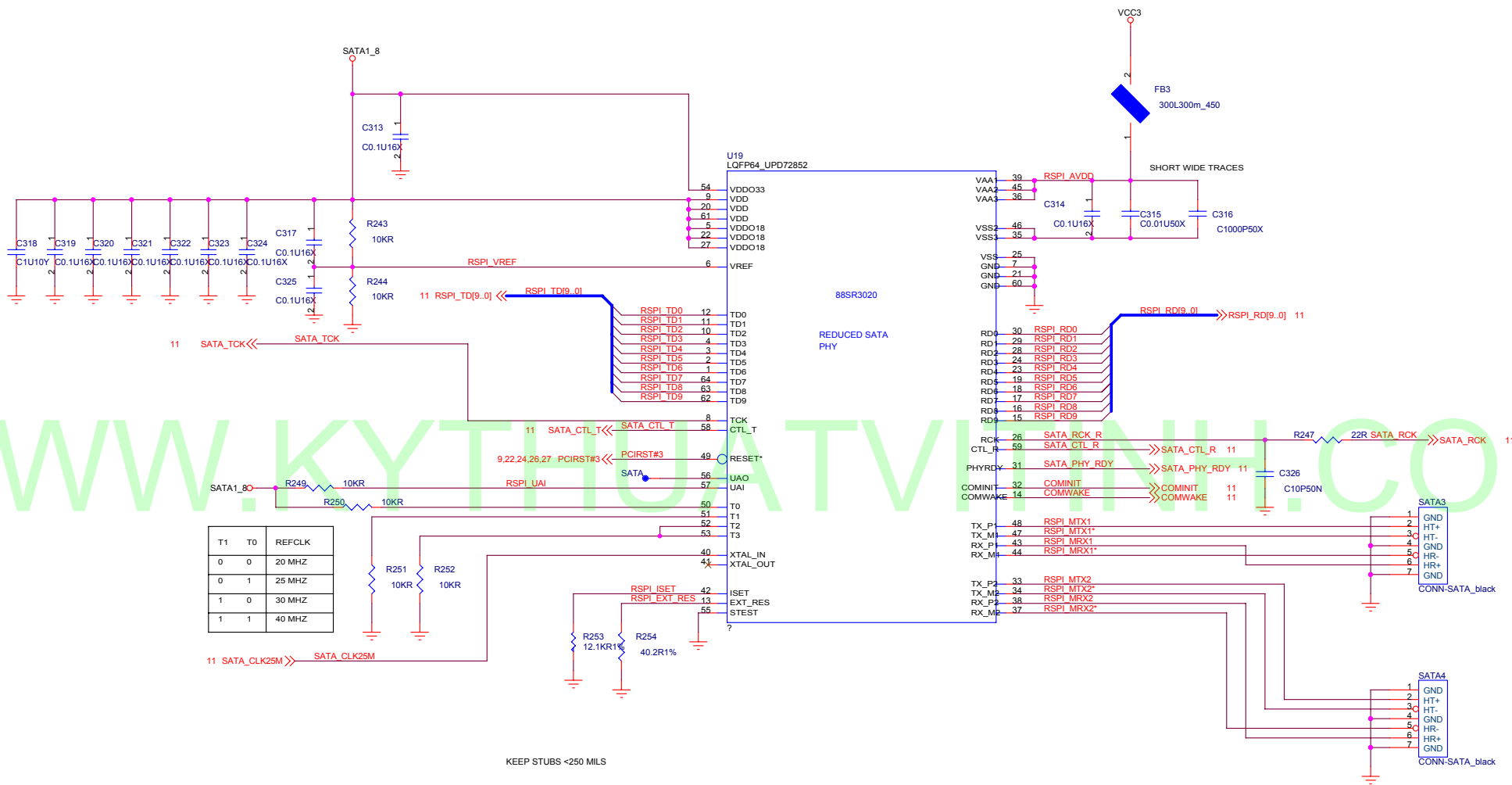
Micro Star Restricted Secret	
Title	FAN AND BIOS
Document Number	MS-7030
MICRO-STAR INT'L No. 66, Hsiao-De St., Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	
Last Revision Date: Friday, November 14, 2003	
Sheet	24 of 40

Keyboard/Mouse Ports

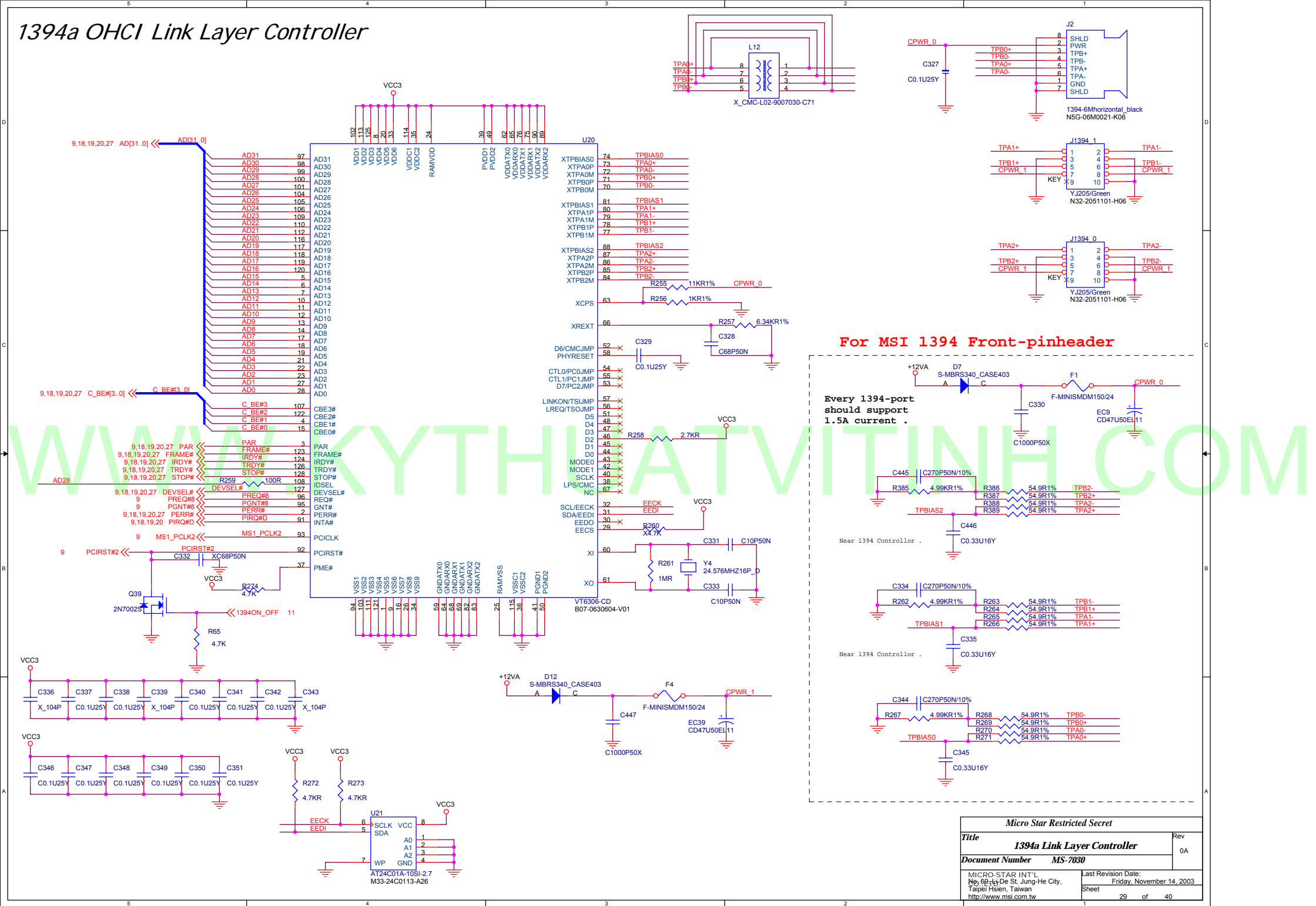


Micro Star Restricted Secret		
Title	KeyBoard / Mouse Port	Rev
Document Number	MS-7030	0A
MICRO-STAR INT'L No. 66, Sec. 4, De St., Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003
Sheet		25 of 40





1394a OHCI Link Layer Controller

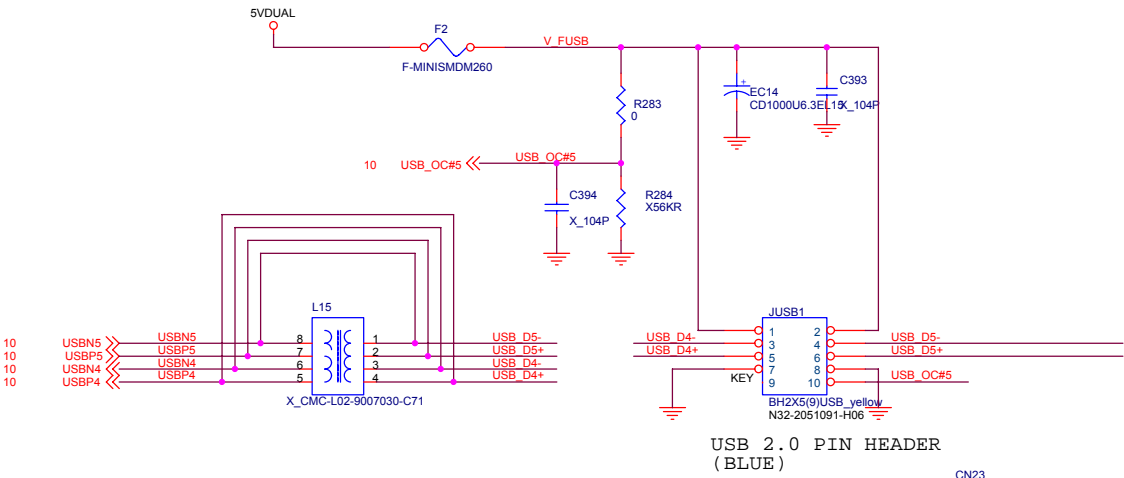


For MSI 1394 Front-pinheader

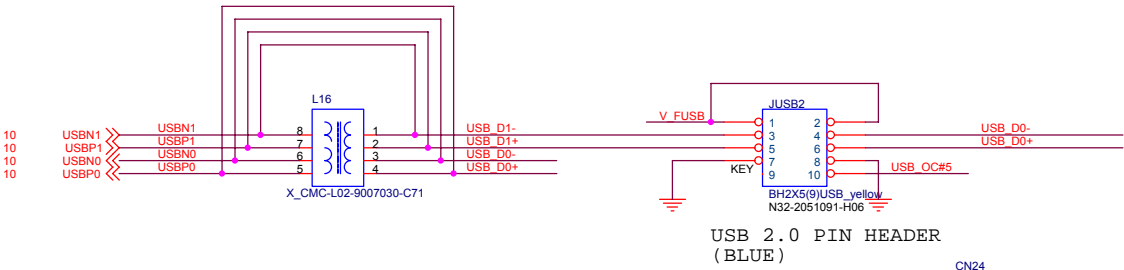
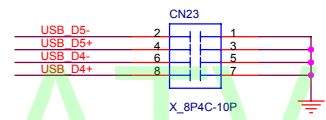
Every 1394-port
should support
1.5A current .

Micro Star Restricted Secret		
Title	1394a Link Layer Controller	Rev 0A
Document Number	MS-7030	
MICRO-STAR INT'L No. 66-11 De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003 Sheet 29 of 40

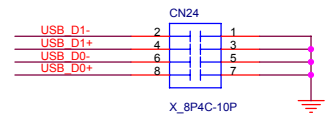
FRONT USB PORT



USB 2.0 PIN HEADER
(BLUE)



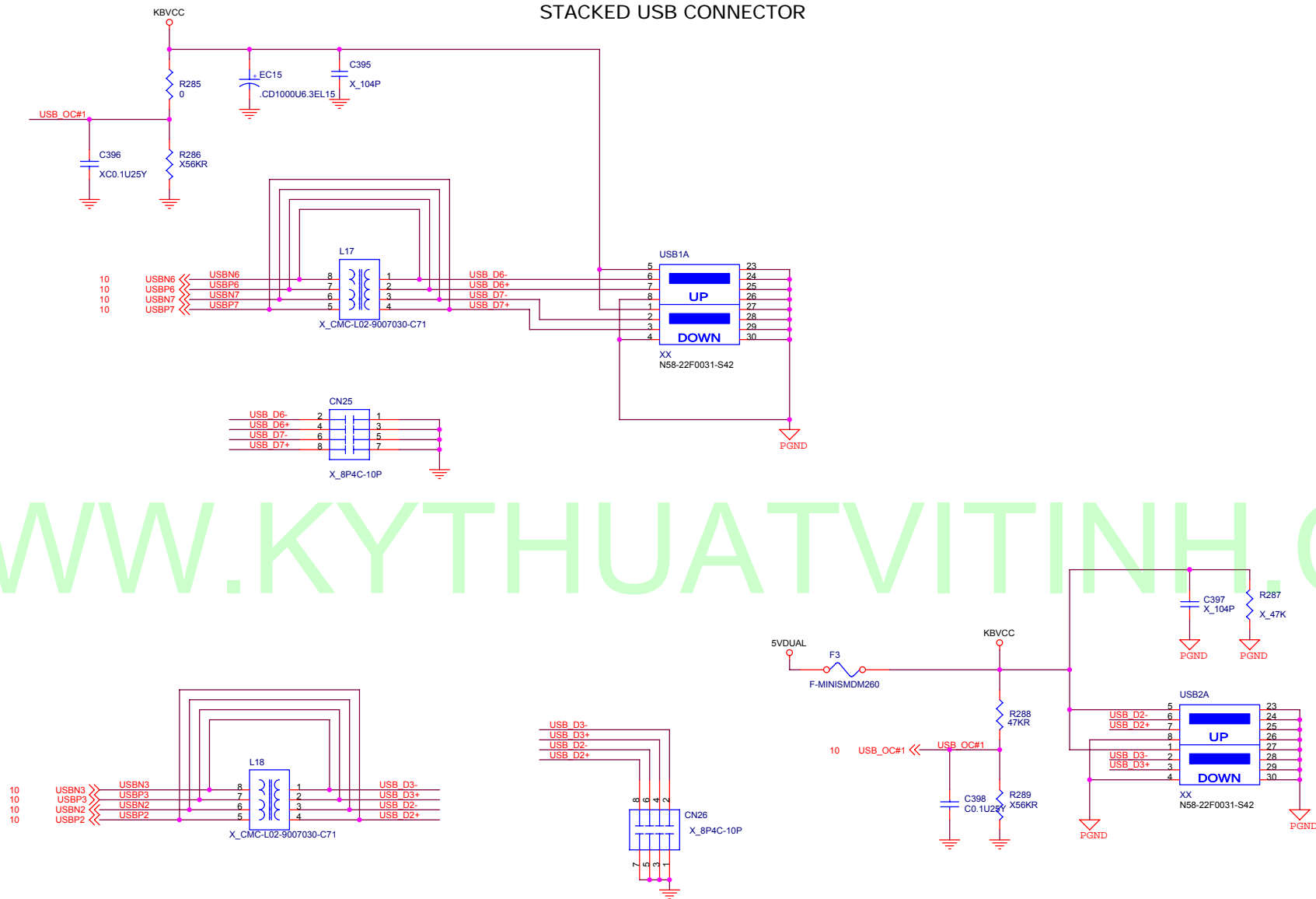
USB 2.0 PIN HEADER
(BLUE)



Micro Star Restricted Secret		
Title	Front USB Port	Rev
Document Number	MS-7030	0A
MICRO-STAR INT'L No. 66, 4th De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003
Sheet		31 of 40

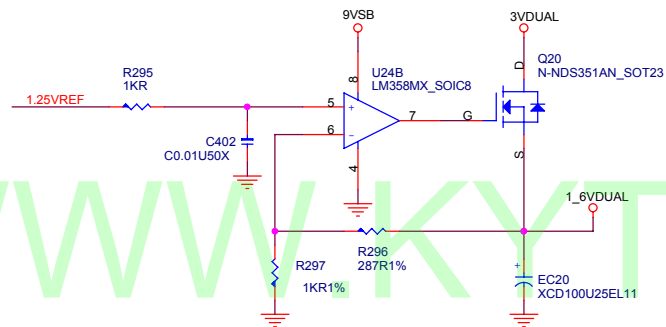
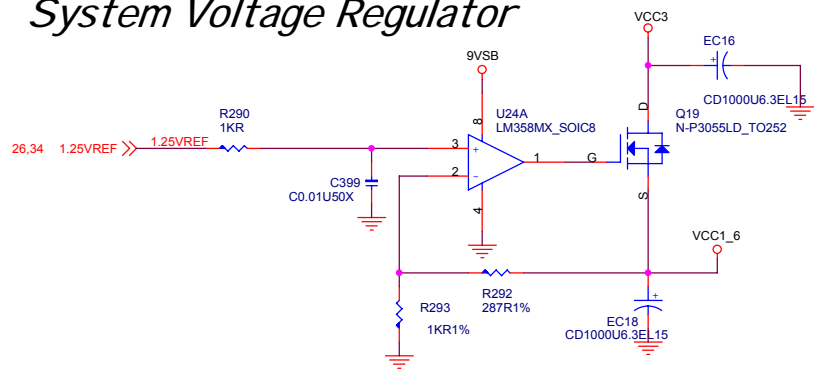
REAR USB PORT

STACKED USB CONNECTOR



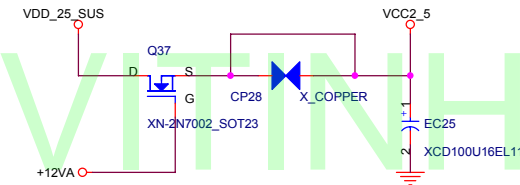
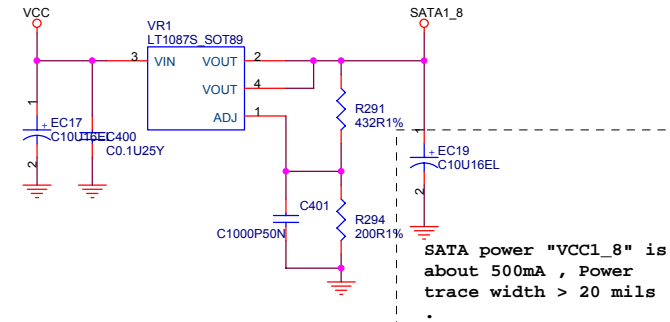
Micro Star Restricted Secret		
Title	Rear USB Port	Rev
Document Number	MS-7030	0A
MICRO-STAR INT'L No. 66, De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003
Sheet		32 of 40

System Voltage Regulator



for SATA & Power Reference .

Power for SATA



Micro Star Restricted Secret

Title	System Voltage Regulators	Rev
Document Number	MS-7030	0A
MICRO-STAR INT'L CO., LTD. No. 89, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003
Sheet		33 of 40

LINEAR MODE

3VSB MODE SELECT

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

THESE OUTPUT AND INPUT PIN MUST BE PULL HIGH

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

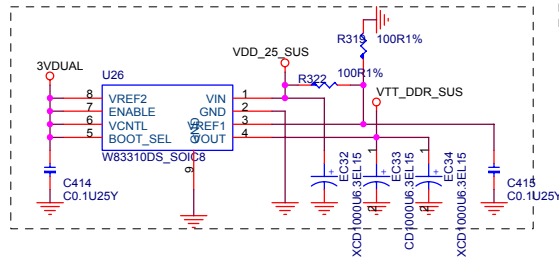
PCI SOLT PCIRST# BUFFER OUTPUT

CLOSE TO CHIP

CONNECT TO SOUTH BRIDGE SUSB# SIGNAL R316

THE TWO BLOCK CHOICE ONE
SUPPORT SYSTEM POWER CONTROL

DDR TERMINATION



DDR AND DDR II VOLT SELECT

DDRTYPE	VDIMM
PULL LOW	2.5V
PULL HIGH	1.8V

WATCHING DOG TIMER SELECT

WD_DET	TIMER
PULL LOW	OFF
PULL HIGH	ON

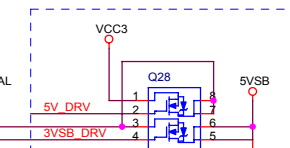
THE TWO MODE ONLY ONE MODE PRESENT
SINGLE MODE
THIS MODE SELECT BY PIN 47 PULL HIGH 5VSB

DUAL MODE
THIS MODE SELECT BY PIN 47 PULL LOW

THE VDIMM_HSEN IN LINEAR MODE

DDRTYPE	VDIMM_HSEN
DDR	2.0V
DDR II	1.7V

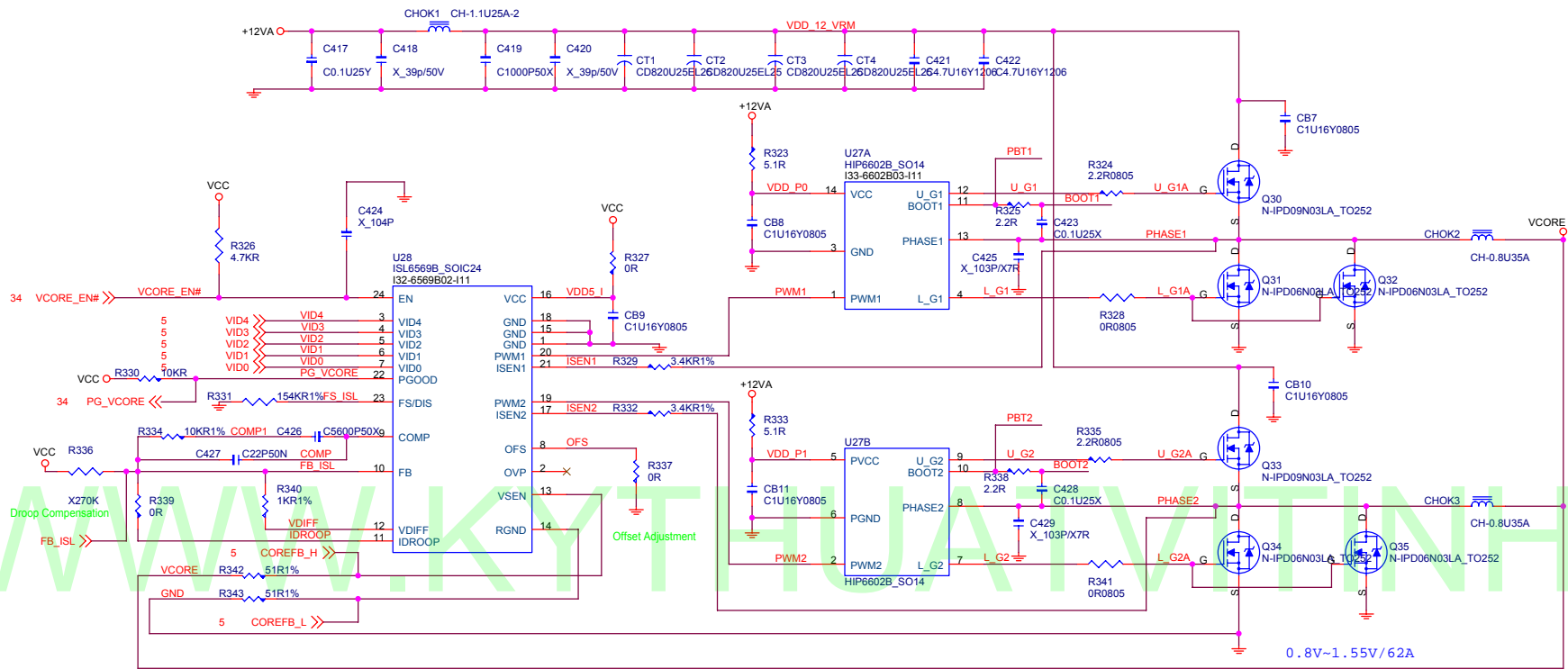
3VSB REGULATE BY 5VSB AND VCC3



Micro Star Restricted Secret

Title	ACPI POWER CONTROLLER (MS-6)	Rev
Document Number	MS-7030	0A
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: Friday, November 14, 2003	
Sheet	34	of 40

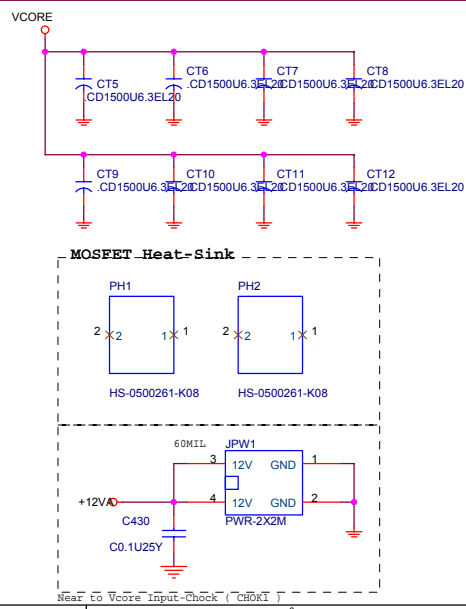
K8 Voltage Regular Module



R14 ORIGINAL 154KST R11-1543T13-Y01
POWER FREQUENCY ADJUSTING
300KRST R11-0304T13-Y01

VID4	VID3	VID2	VID1	VID0	Vout
1	1	1	1	0	0.800
1	1	1	0	1	0.825
1	1	1	0	0	0.850
1	1	0	1	1	0.875
1	1	0	1	0	0.900
1	1	0	0	1	0.925
1	1	0	0	0	0.950
1	0	1	1	1	0.975
1	0	1	1	0	1.000
1	0	1	0	1	1.025
1	0	1	0	0	1.050
1	0	0	1	1	1.075
1	0	0	1	0	1.100
1	0	0	0	1	1.125
1	0	0	0	0	1.150
0	1	1	1	1	1.175

VID4	VID3	VID2	VID1	VID0	Vout
0	1	1	1	0	1.200
0	1	1	0	1	1.225
0	1	1	0	0	1.250
0	1	0	1	1	1.275
0	1	0	1	0	1.300
0	1	0	0	1	1.325
0	1	0	0	0	1.350
0	0	1	1	1	1.375
0	0	1	1	0	1.400
0	0	1	0	1	1.425
0	0	1	0	0	1.450
0	0	0	1	1	1.475
0	0	0	1	0	1.500
0	0	0	0	1	1.525
0	0	0	0	0	1.550
1	1	1	1	1	Shutdown

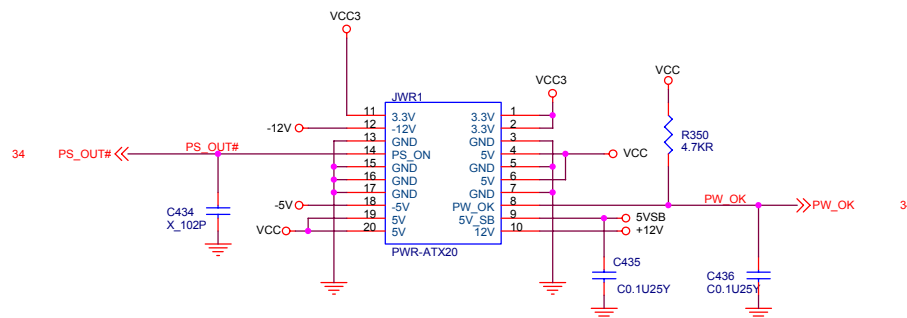
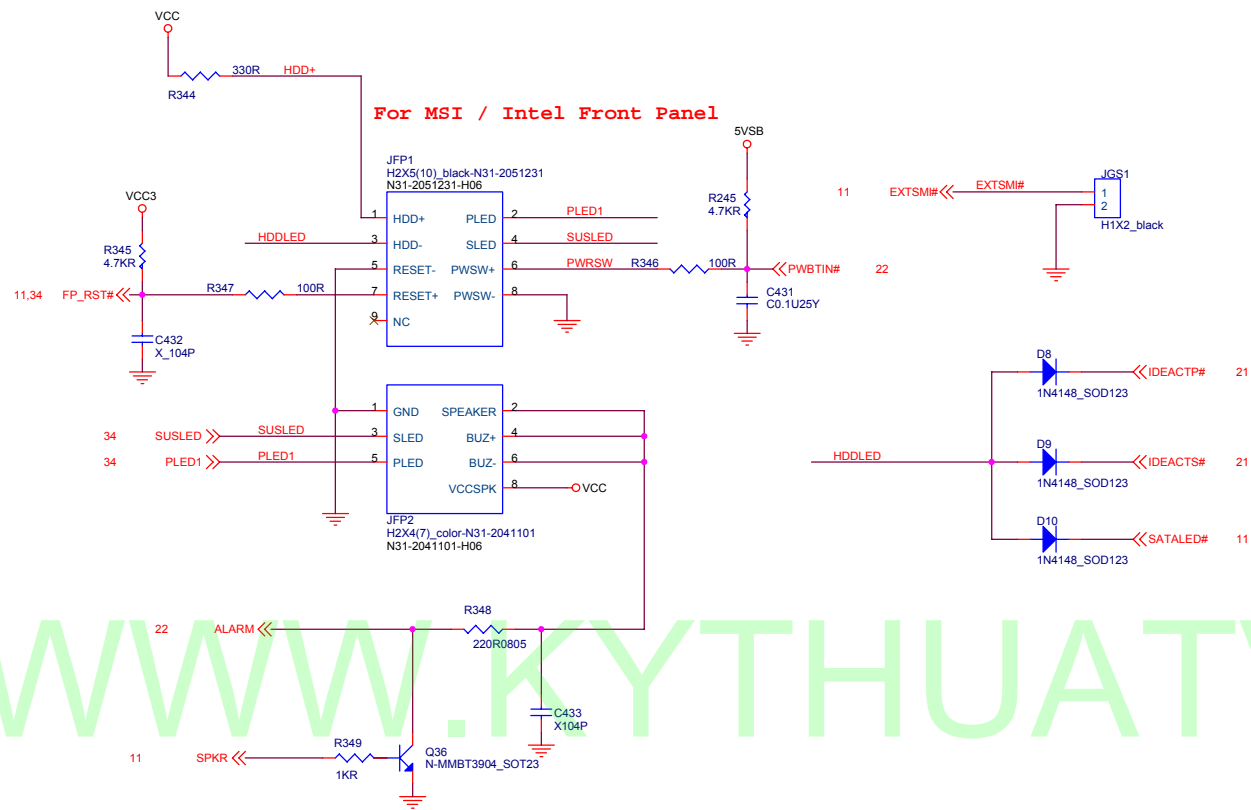


Micro Star Restricted Secret

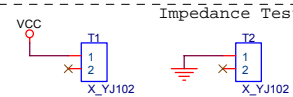
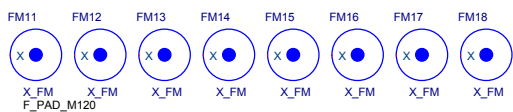
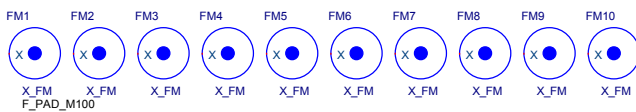
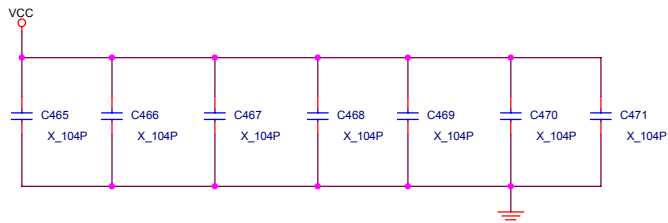
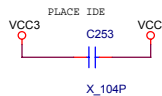
Title	K8 CORE POWER	Rev
Document Number	MS-7030	0A
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Friday, November 14, 2003	
Sheet	35	of 40

FRONT PANEL

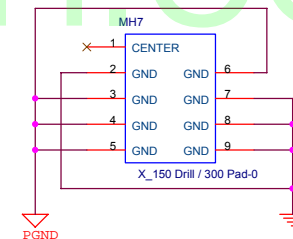
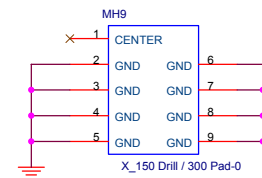
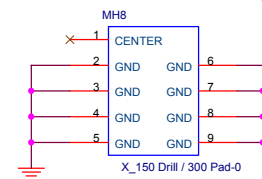
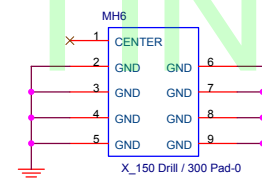
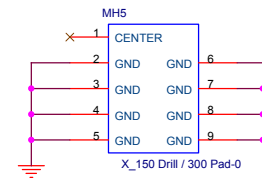
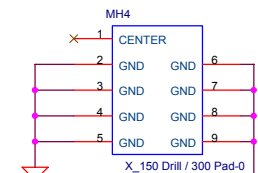
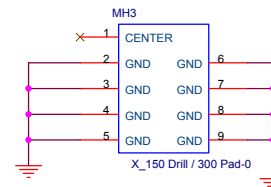
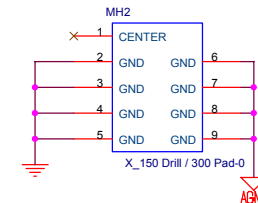
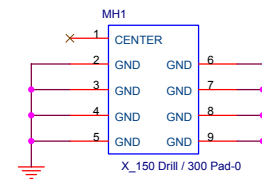
For MSI / Intel Front Panel



Micro Star Restricted Secret		
Title	Front Panel & Power OK Circuits	Rev
Document Number	MS-7030	0A
MICRO-STAR INT'L No. 66, Sec. 4, De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003
Sheet		36 of 40



ATX VIA-Hole * 9



Micro Star Restricted Secret		
Title	BULK / Decoupling	Rev
Document Number	MS-7030	0A
MICRO-STAR INT'L No. 68, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Friday, November 14, 2003
Sheet		37 of 40