



MS-7596 Ver:0A

CPU:

AMD M2 Athlon 64/Athlon 64 FX AM3

System Chipset:

AMD/ATI RS780 Colay RS880

AMD/ATI SB710

On Board Chipset:

FINTEK Super I/O -- F71889

LAN -- RTL8111DL

HD Codec -- ALC888S-V2

1394 -- VT6315N

BIOS -- SPI ROM 8M

Main Memory:

DDR III X 4 (Max 8GB)

Expansion Slots:

PCI-E X 16 *1

PCI-E X 1 *1

PCI 2.2 Slot X 2

Clock Generator:

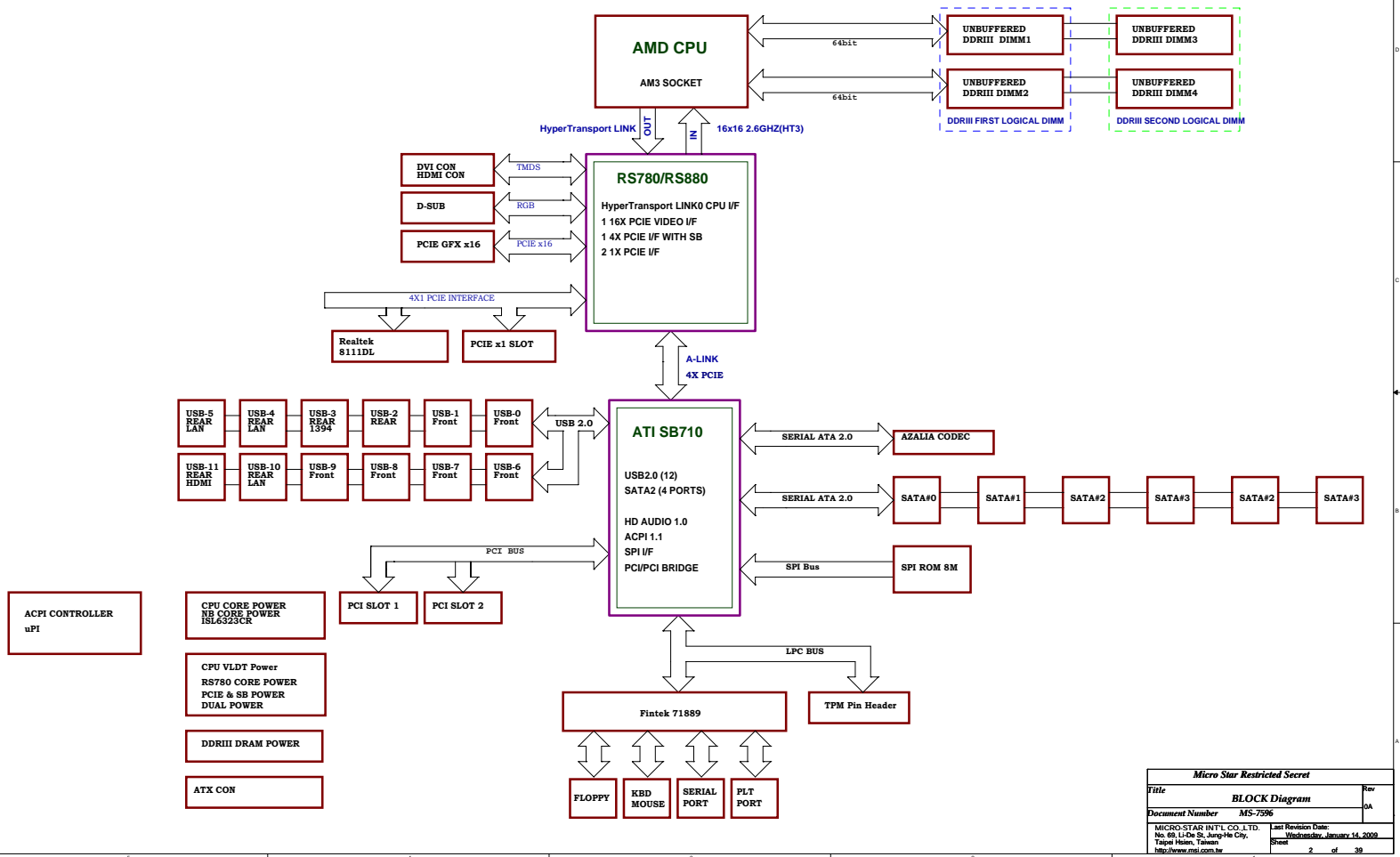
Controller--ICS9LPRS477CKL

PWM:

ISL6323+UPI6262

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Project RS-780/880 BLOCK DIAGRAM



www.schematic-x.blogspot.com

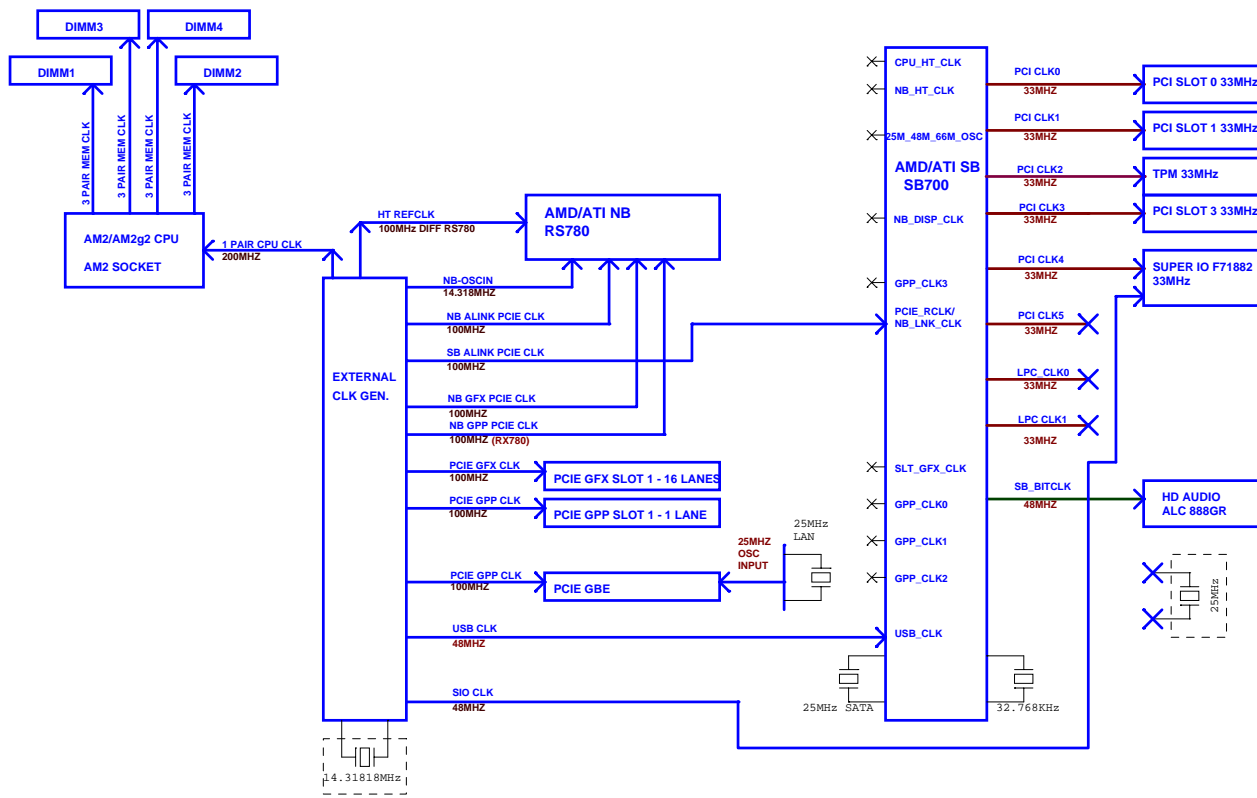
Micro Star Restricted Secret		
Title	BLOCK Diagram	Rev
Document Number	MS-7596	0A
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SB700/750 GPIO Config

[illegible]

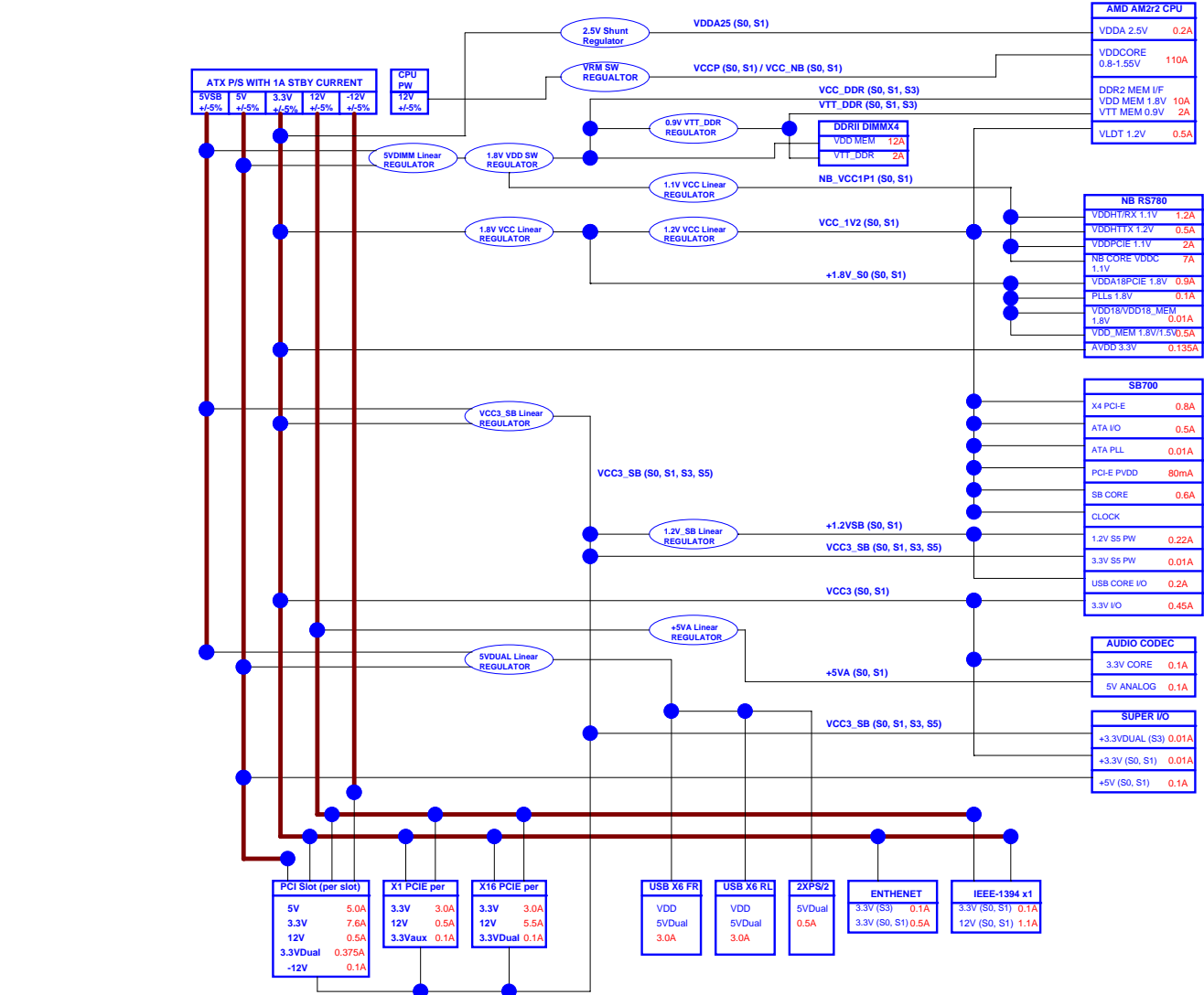
DEVICE	MCPI INT Pin	REQ#/GNT#	IDSEL	CLOCK
PCI Slot 1	PCI_INT# PCI_INT# PCI_INTG# PCI_INTH#	REQ#0 PGNT#0	AD21	PCICLK0
PCI Slot 2	PCI_INTF# PCI_INTF# PCI_INTH# PCI_INTF#	REQ#1 PGNT#1	AD22	PCICLK1

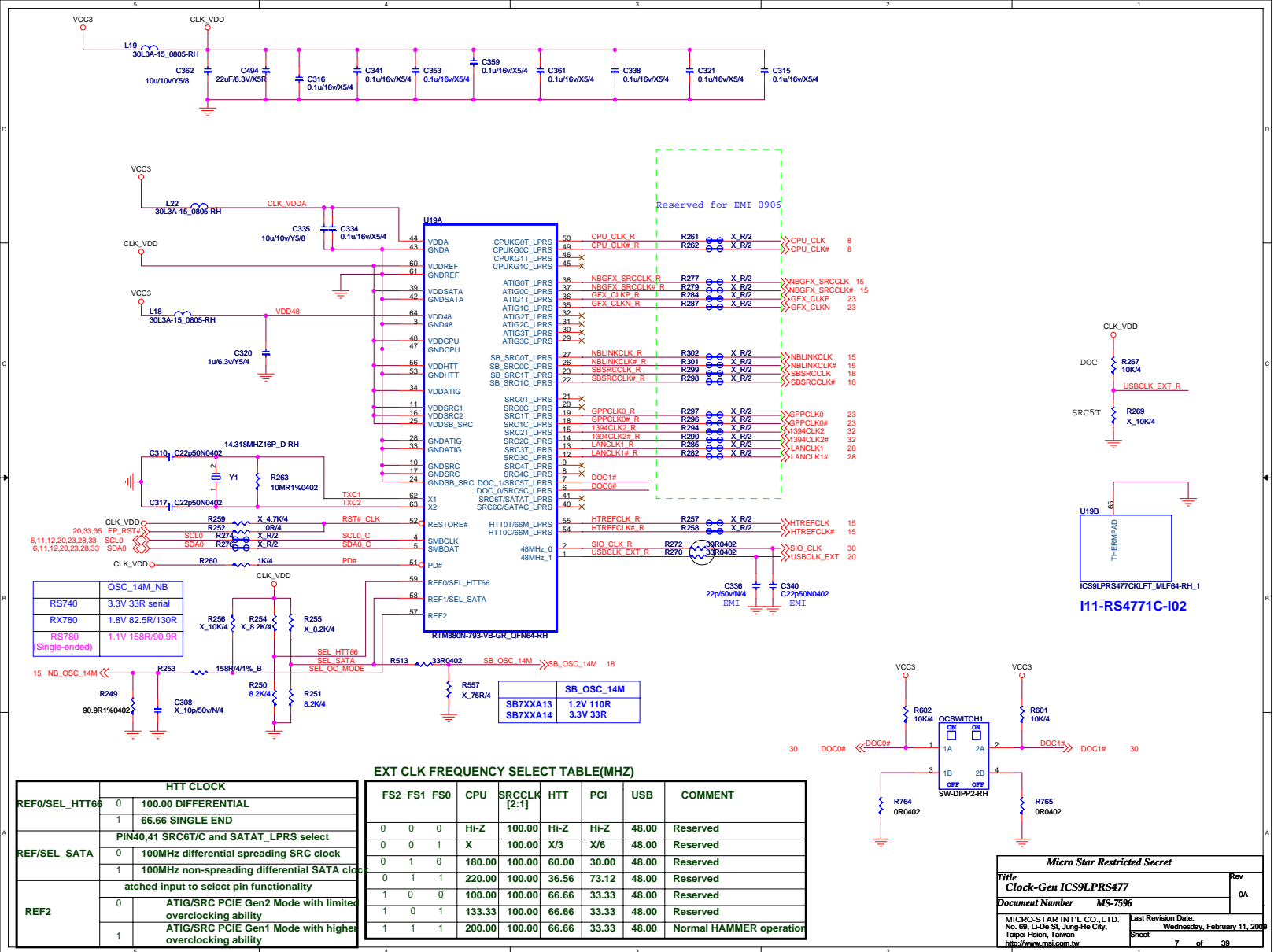
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Title	GPIO Configuration	Rev
Document Number	MS-7596	0A
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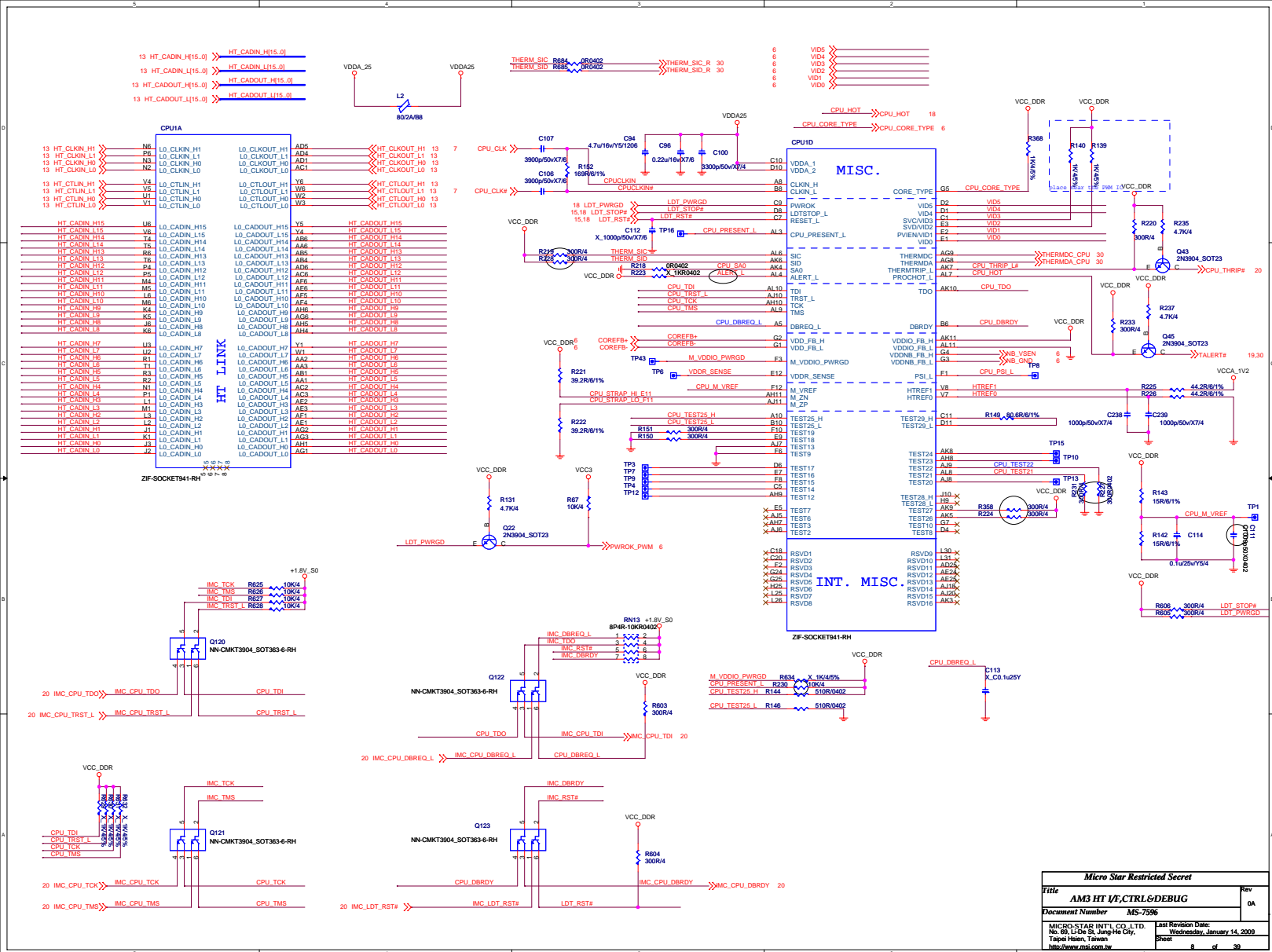


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Document Number	MS-7596	0A
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Power Deliver Chart

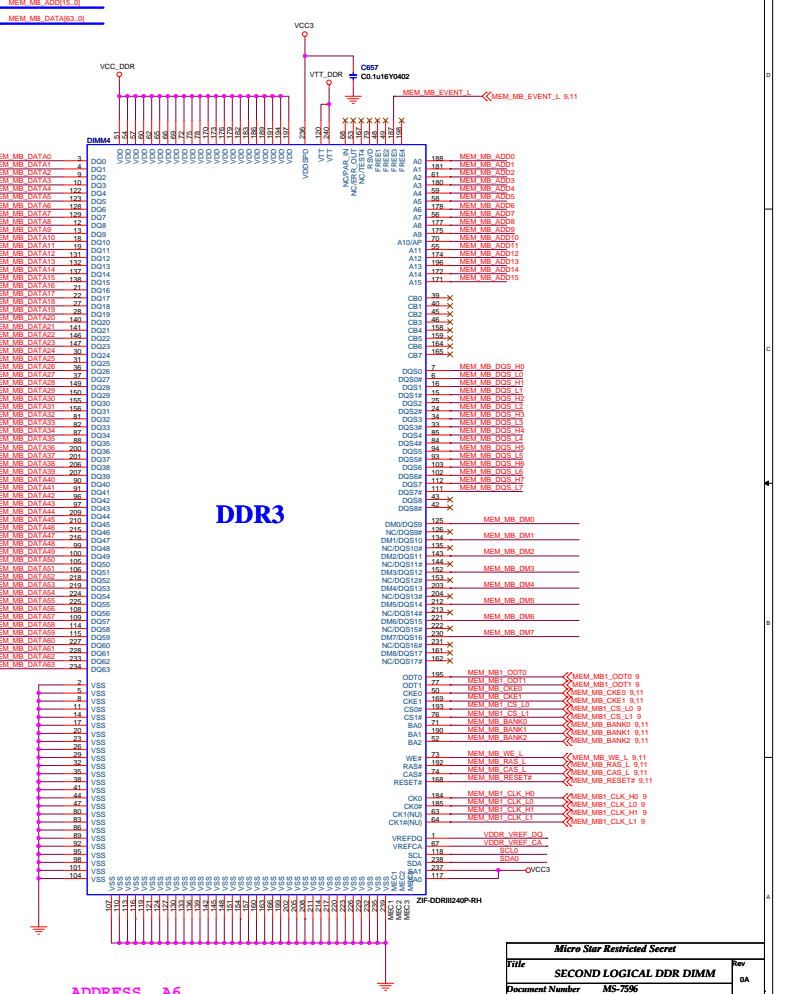
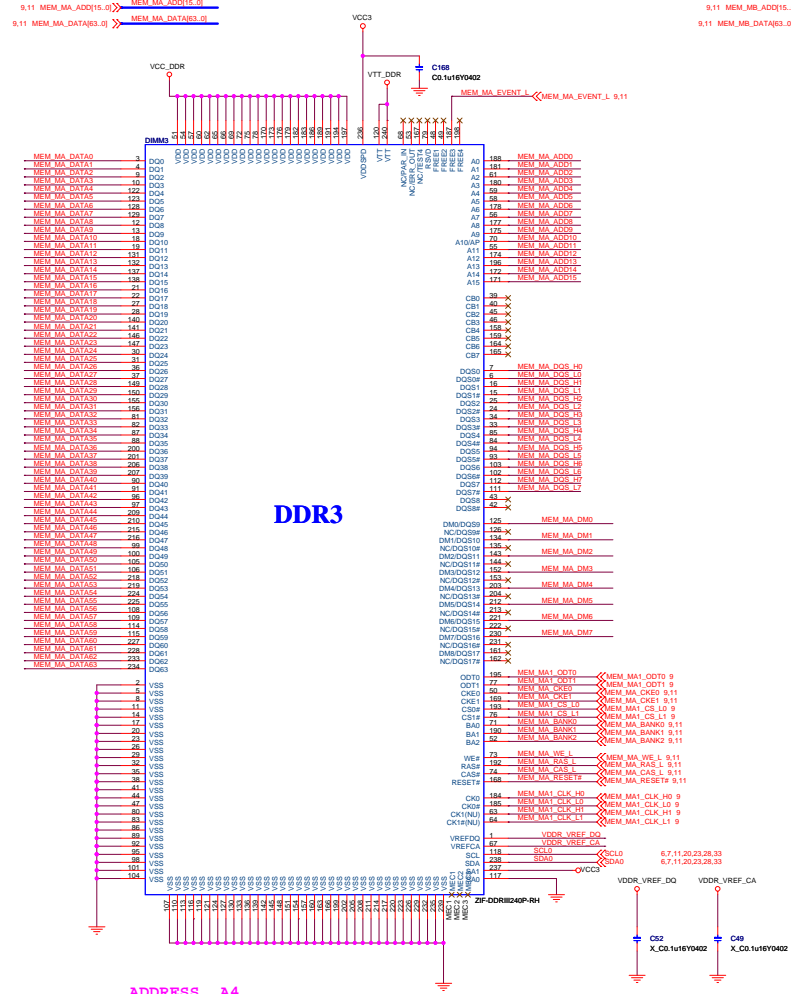






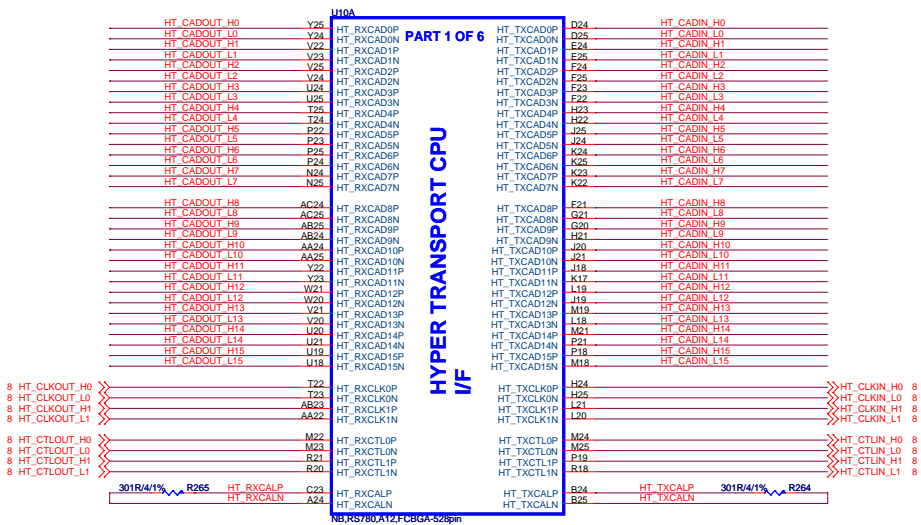
9.11 MEM_MA_DOS_H07.0) MEM_MA_DOS_H07.0)
9.11 MEM_MA_DOS_H07.0) MEM_MA_DOS_H07.0)
9.11 MEM_MA_DOS_H07.0) MEM_MA_DOS_H07.0)
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9.11 MEM_MB_DOS_H07.0) MEM_MB_DOS_H07.0)



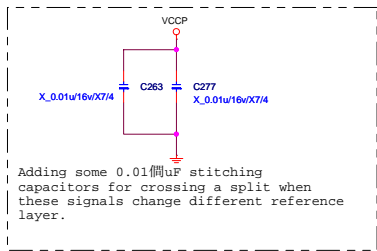
8 HT_CADOUT_H[15..0] >> HT_CADOUT_H[15..0]
8 HT_CADOUT_L[15..0] >> HT_CADOUT_L[15..0]

8 HT_CADIN_H[15..0] >> HT_CADIN_H[15..0]
8 HT_CADIN_L[15..0] >> HT_CADIN_L[15..0]

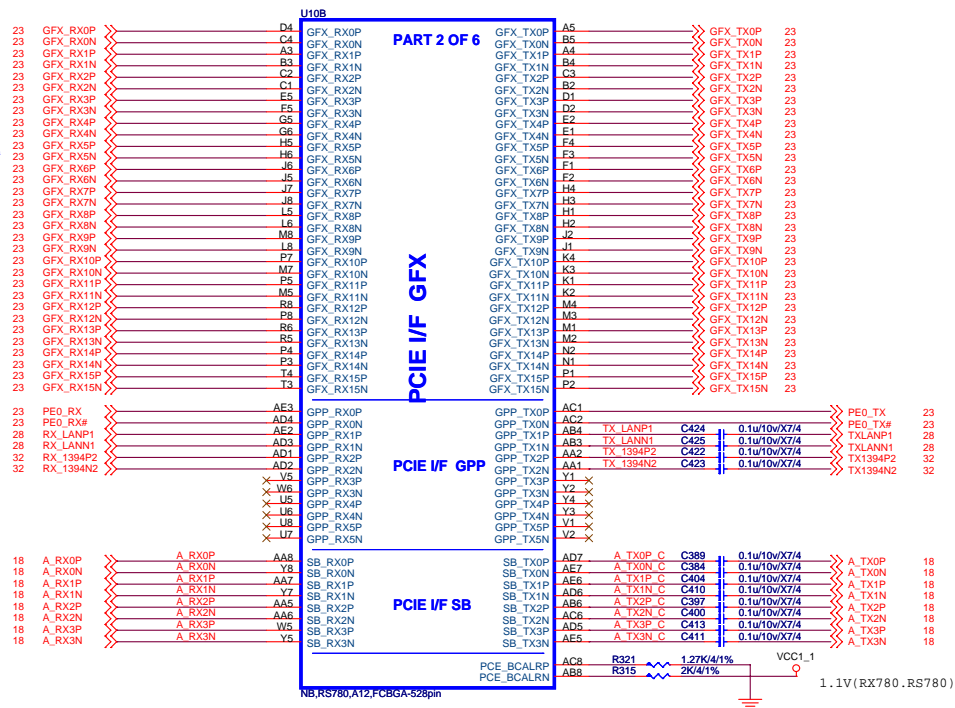


RX780/RS740/RS780 difference table (HT LINK)

SIGNALS	RS740	RX780	RS780
HT_RXCALP	49.9R (GND)	1.21K	301R
HT_RXCALN	49.9R (VDDHT)		
HT_TXCALP	100R	1.21K	301R
HT_TXCALN			

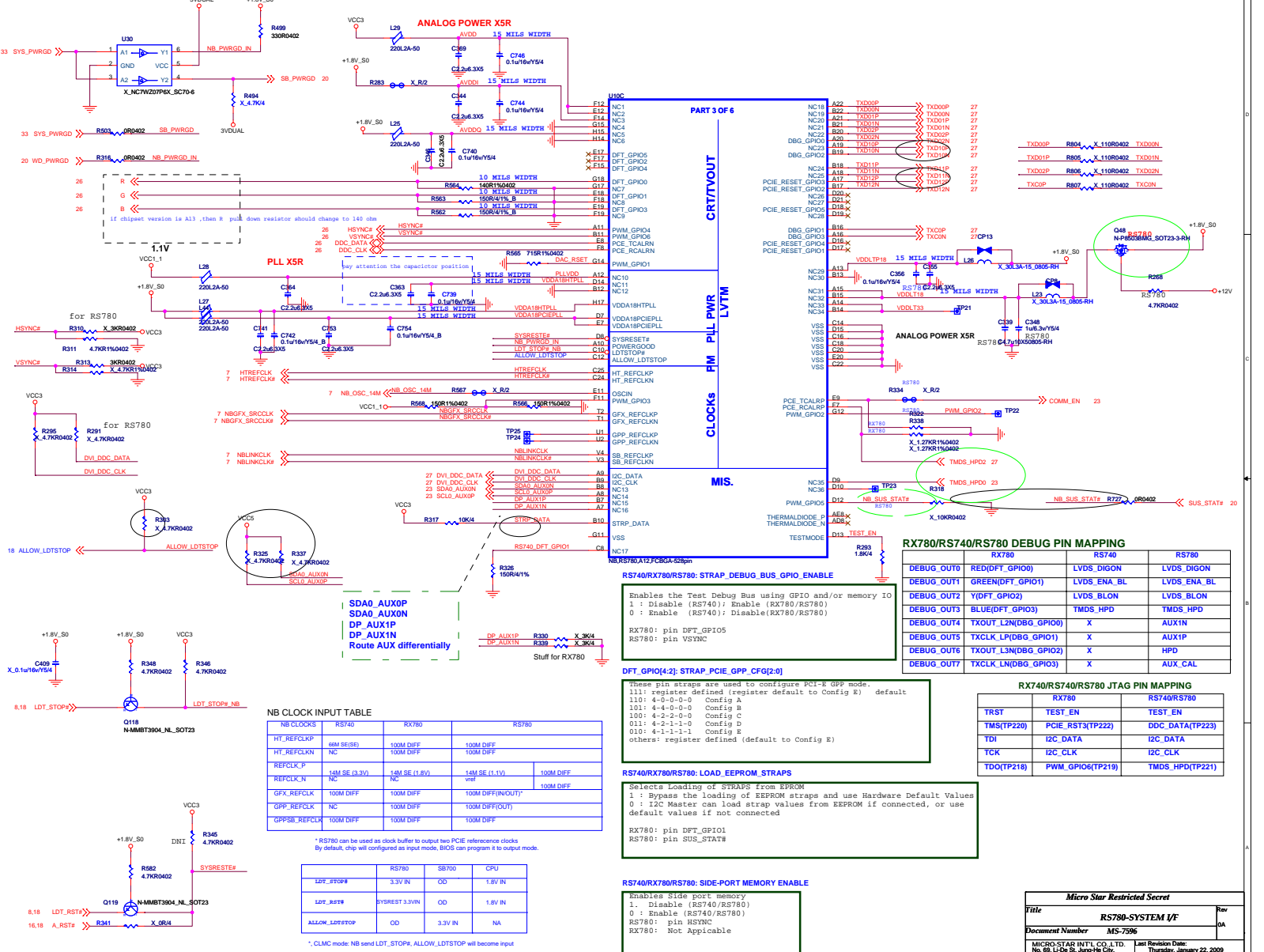


Micro Star Restricted Secret	
Title	RS780-HT L
Document Number	MS-7596
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RS780 Display Port Support (muxed on GFX)

DP0	GFX_TX0,TX1,TX2 and TX3 AUX0 and HPD0
DP1	GFX_TX4,TX5,TX6 and TX7 AUX1 and HPD1



NB CLOCK INPUT TABLE

NB CLOCKS	RS740	RX780	RS780
HT_REFCLKP	50M SE (8E)	100M DIFF	100M DIFF
HT_REFCLKN	NC	100M DIFF	100M DIFF
REFCLKP	14M SE (3.3V)	14M SE (1.8V)	14M SE (1.1V)
REFCLKN	NC	VDD	100M DIFF
GFX_REFCLK	100M DIFF	100M DIFF	100M DIFF (INOUT)
GFX_REFCLK	NC	100M DIFF	100M DIFF (OUT)
GPP_REFCLK	100M DIFF	100M DIFF	100M DIFF
GPP_REFCLK	NC	100M DIFF	100M DIFF

* RS780 can be used as clock buffer to output two PCIe reference clocks.
By default, chip will be configured as input mode. BIOS can program it to output mode.

CLKM	RS780	SB780	CFU
LDT_RST#	3.3V IN	OD	1.8V IN
LDT_RST#	3.3V IN	OD	1.8V IN
ALLOW_LDTSTOP	OD	3.3V IN	NA

* CLKM mode: NB send LDT_STOP#, ALLOW_LDTSTOP will become input

RX780/RS780 DEBUG PIN MAPPING

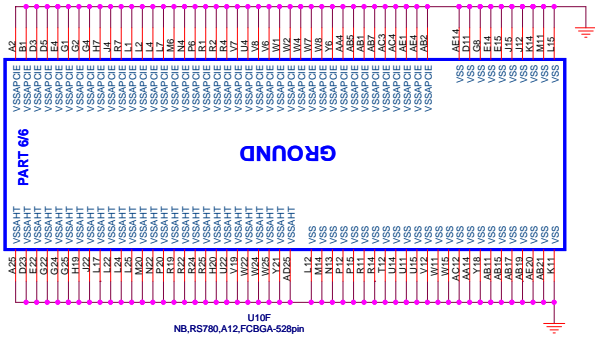
DEBUG_OUT0	RED(DFT_GPIO0)	LVDS_DIGON	LVDS_DIGON
DEBUG_OUT1	GREEN(DFT_GPIO1)	LVDS_ENA_BL	LVDS_ENA_BL
DEBUG_OUT2	Y(DFT_GPIO2)	LVDS_BLOK	LVDS_BLOK
DEBUG_OUT3	BLUE(DFT_GPIO3)	TMDS_HPD	TMDS_HPD
DEBUG_OUT4	TXOUT_L2N(DBG_GPIO0)	X	AUX1N
DEBUG_OUT5	TXCLK_LP(DBG_GPIO1)	X	AUX1P
DEBUG_OUT6	TXOUT_L3N(DBG_GPIO2)	X	HPD
DEBUG_OUT7	TXCLK_LN(DBG_GPIO3)	X	AUX_CAL

RX740/RS740/RS780 JTAG PIN MAPPING

TRST	TEST_EN	TEST_EN
TMDS(TP220)	PCIE_RST3(TP222)	DDC_DATA(TP223)
TDI	I2C DATA	I2C DATA
YCK	I2C CLK	I2C CLK
TDQ(TP218)	PWM_GPIO6(TP219)	TMDS_HPD(TP221)

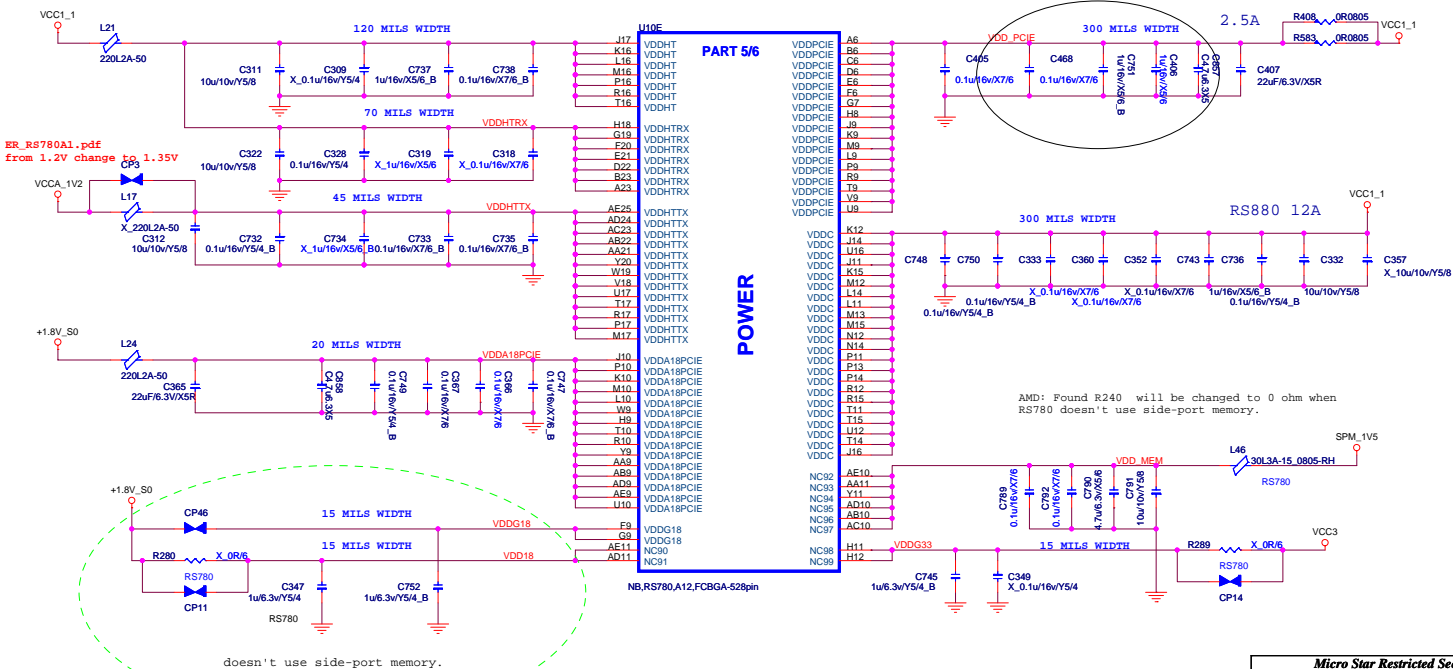
Micro Star Restricted Secret

Title	RS780-SYSTEM I/F	Rev	0A
Document Number	MS-7596		
MICRO-STAR INT'L CO., LTD.			
No. 68, Li-De St., Jung-He City,			
Taipei, Taiwan, Taiwan			
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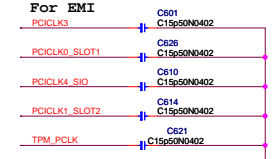
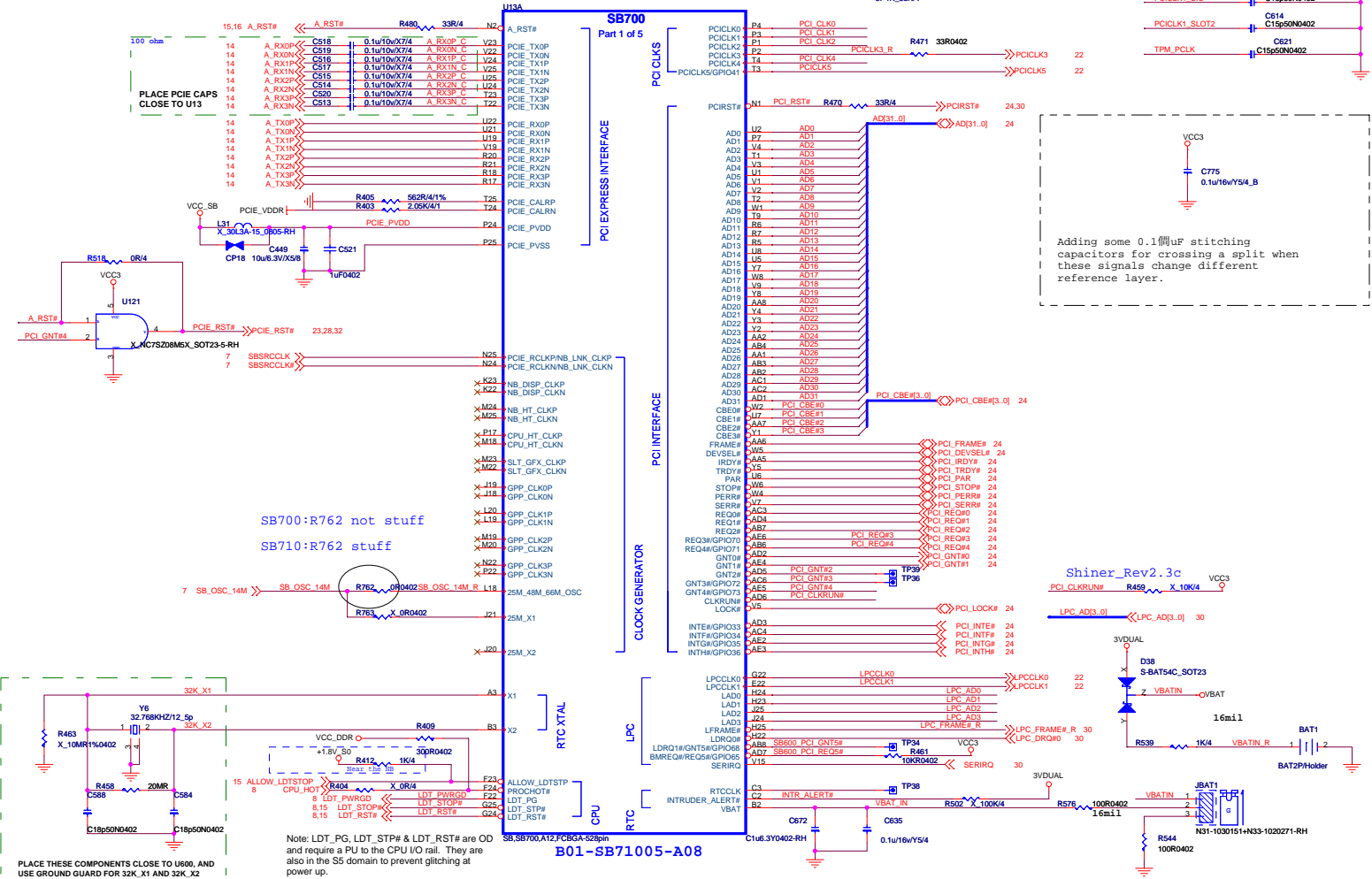


RS740/RX780/RS780 POWER DIFFERENCE TABLE

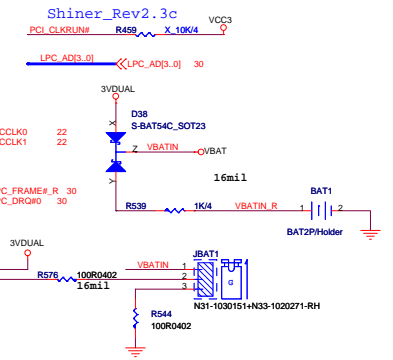
PIN NAME	RS740	RX780	RS780	PIN NAME	RS740	RX780	RS780
VDDHT	NC	+1.1V	+1.1V	IOPLLVD	+1.2V	NC	+1.1V
VDDHTRX	NC	+1.1V	+1.1V	AVDD	+3.3V	NC	+3.3V
VDDHTTX	+1.2V	+1.2V	+1.2V	AVDDDI	+1.8V	NC	+1.8V
VDDA18PCIE	NC	+1.8V	+1.8V	AVDDQ	+1.8V	NC	+1.8V
VDD18	+1.8V	+1.8V	+1.8V	PLLVD	+1.2V	NC	+1.1V
VDD18_MEM	NC	NC	+1.8V	PLLVD18	+1.8V	NC	+1.8V
VDDPCIE	+1.2V	+1.1V	+1.1V	VDDA18PCIEPLL	+1.2V	+1.8V	+1.8V
VDDC	+1.2V	+1.1V	+1.1V	VDDA18HTPLL	+1.8V	+1.8V	+1.8V
VDD_MEM	+1.8V/1.5V	NC	+1.8V/1.5V	VDDLTP18	+1.8V	NC	+1.8V
VDD33	+3.3V	NC	+3.3V	VDDLTP18	+1.8V	NC	+1.8V
IOPLLVD18	+1.8V	NC	+1.8V	VDDLTP33	+3.3V	NC	NC



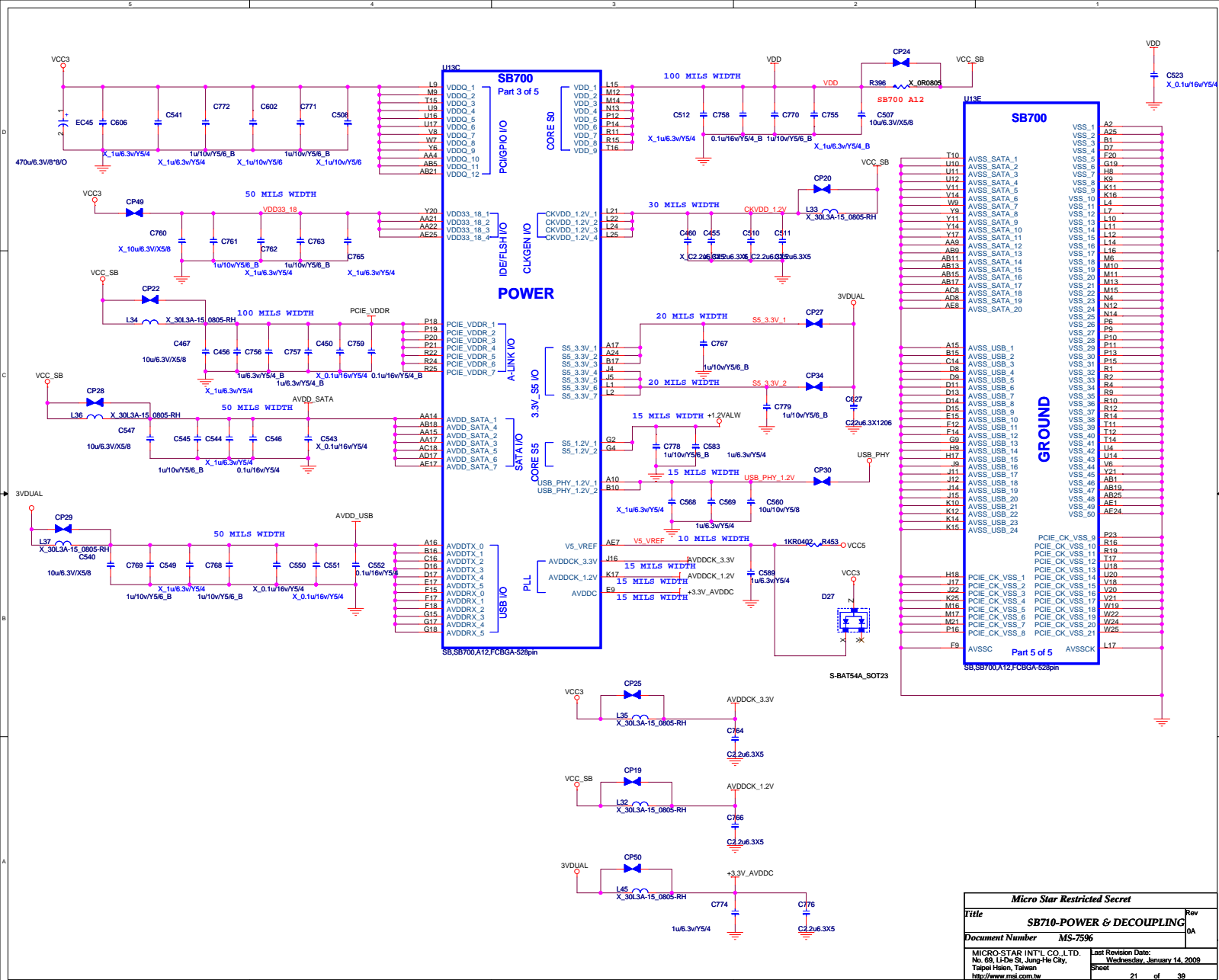
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Title	RS780-POWER	Rev
Document Number	MS-7596	0A
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Adding some 0.1μF stitching capacitors for crossing a split when these signals change different reference layer.

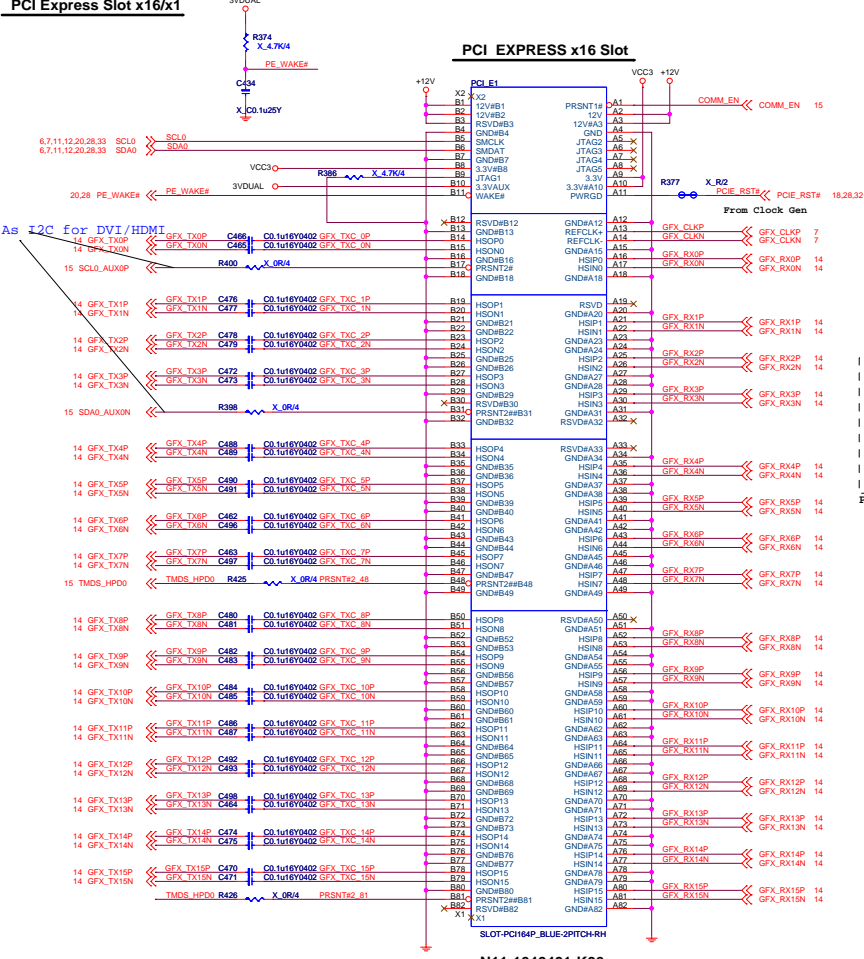


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Document Number	MS-7596	
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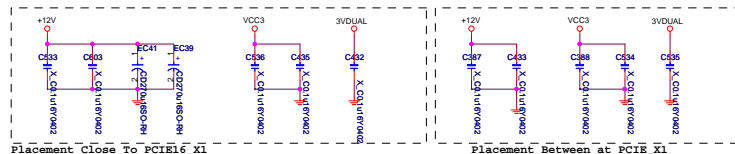
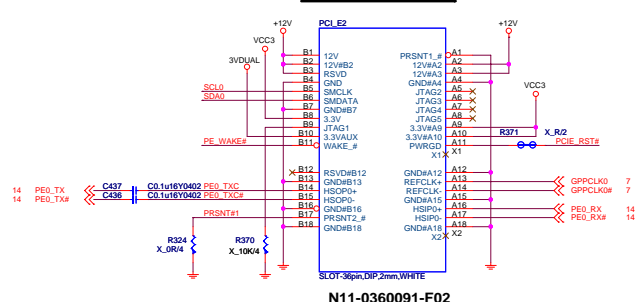


Micro Star Restricted Secret		
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Document Number	MS-7596	
MICRO-STAR INT'L CO. LTD. No. 68, Li-Hsi St., Jung-Hsi City, Taippei Hsien, Taiwan		Last Revision Date: Wednesday, January 14, 2009
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PCI Express Slot x16/x1



PCI EXPRESS 1 Slot-1



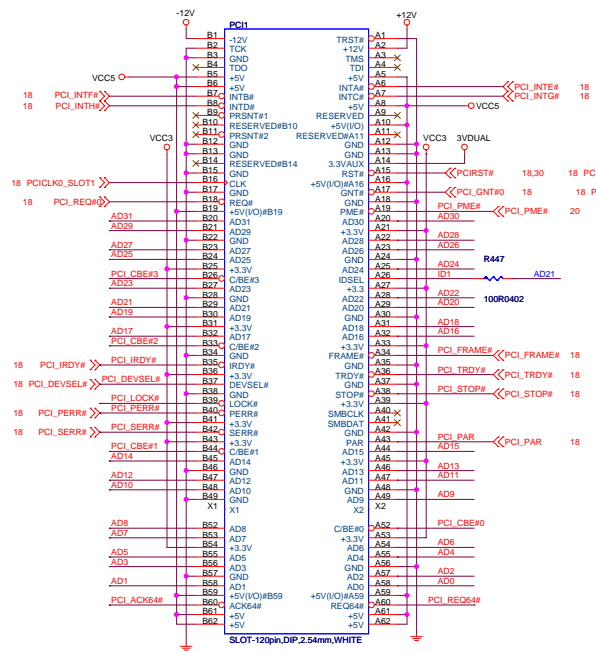
Placement Close To PCIe16_X1

Placement Between at PCIe X1

<i>Micro Star Restricted Secret</i>		
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Document Number	MS-7596	0A
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18 AD31_0 >> AD31_0
18 PCI_CBE#3_0 >> PCI_CBE#3_0

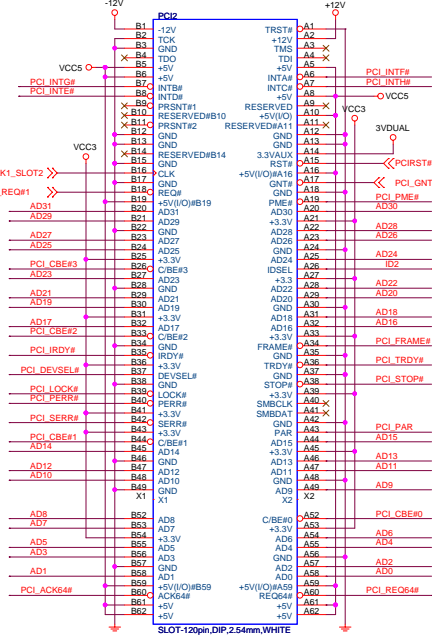
PCI SLOT 1 (PCI VER: 2.2 COMPLY)



ISSEL = AD21
MASTER = PCI_REQ#0
PCI_GNT#0

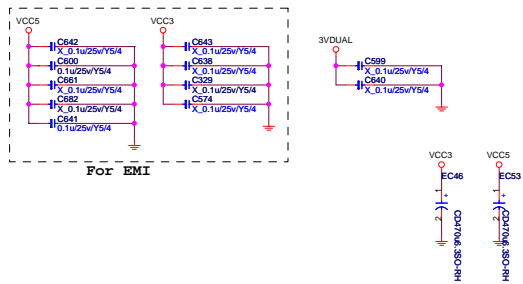
N11-1200271-F02

PCI SLOT 2 (PCI VER: 2.2 COMPLY)

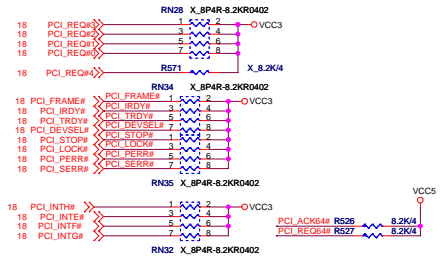


ISSEL = AD22
MASTER = PCI_REQ#1
PCI_GNT#1

PCI SLOT DECOUPLING CAPACITORS

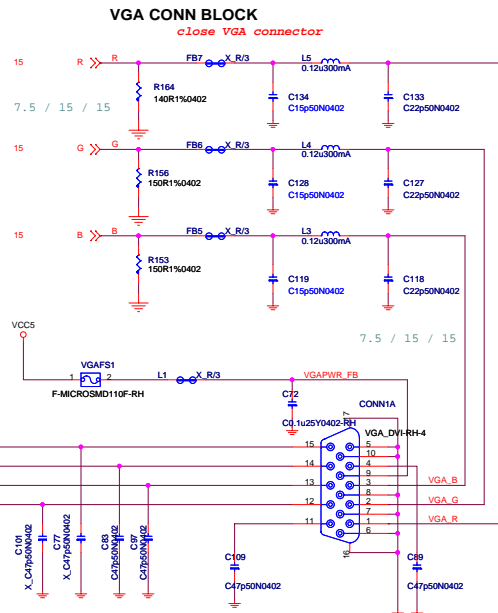
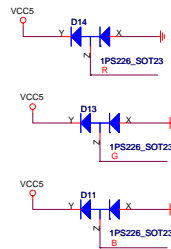
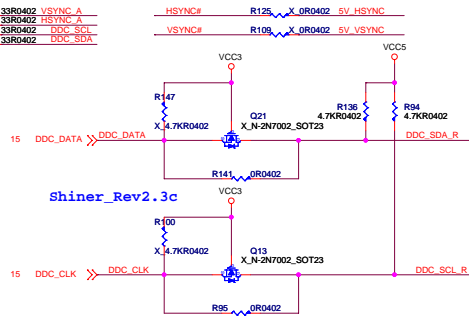


PCI PULL-UP / DOWN RESISTORS



Micro Star Restricted Secret		
Title	PCI Slot 1 2	Rev
Document Number	MS-7596	OA
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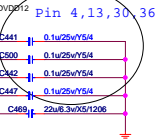
SV_VSYNC R109 33R0402 VSYNC_A
SV_HSYNC R124 33R0402 HSYNC_A
DDC_SCL_R R98 33R0402 DDC_SCL
DDC_SDA_R R136 33R0402 DDC_SDA



Micro Star Restricted Secret		
Title	VGA Connection	Rev
Document Number	MS-7596	0A
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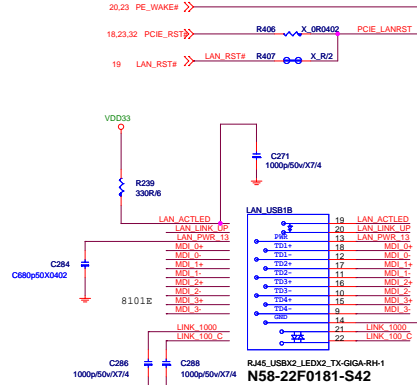
Place R365 close to LAN chip within 200 mil

MDIx+/- Reference to GND plan.



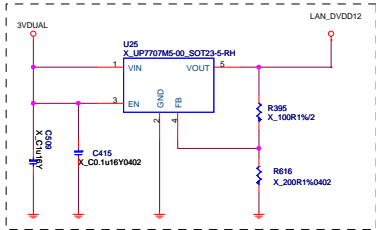
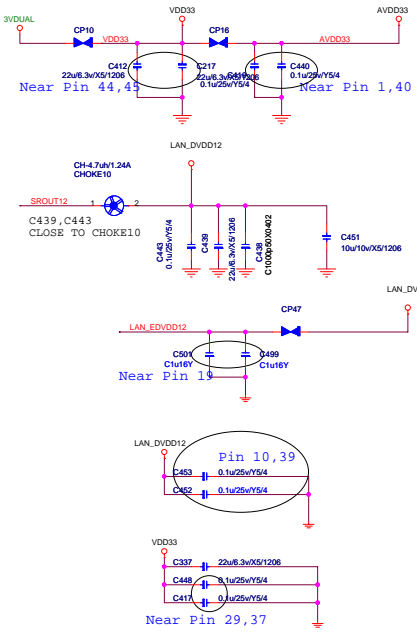
Power domain chart

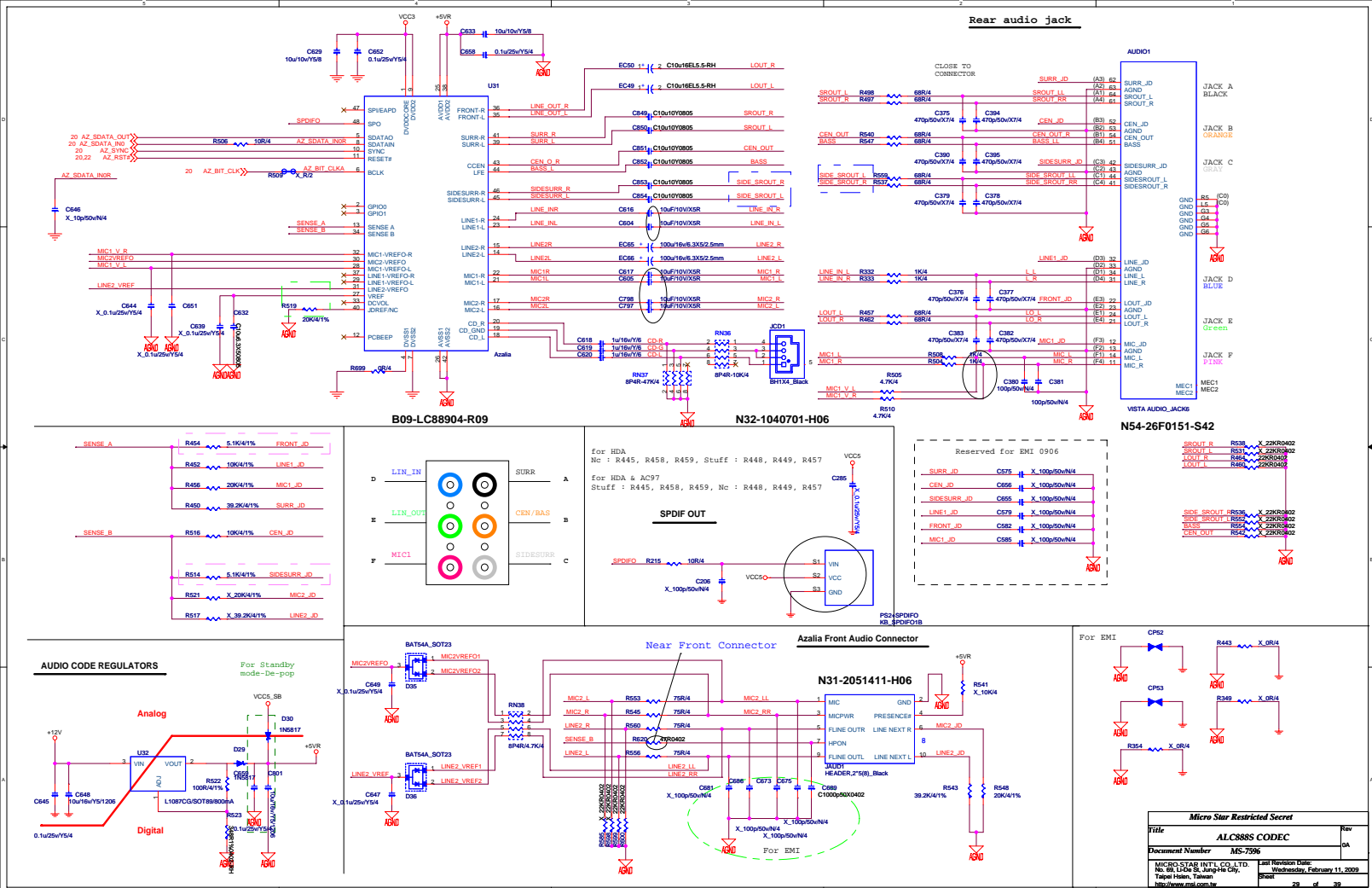
	RTL8111DL	
AVDD33	3.3V	
VDDSR	3.3V	
VDD33	3.3V	
EVDD12	1.2V	
DVDD12	1.2V	
AVDD12	1.2V	



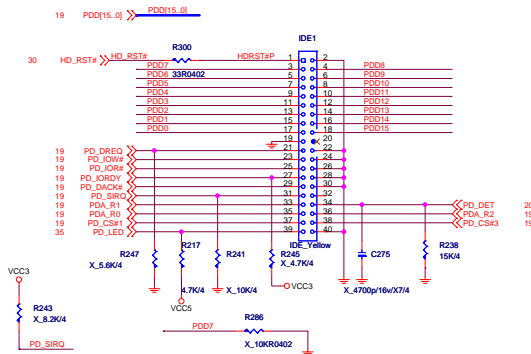
Power consumption		
	1G	100M
3.3V	103mA	TBD
1.5V	367mA	TBD
1.8V	198mA	TBD

Giga-Lan		10/100-Lan	
N58-22F0081-S42		N58-22F0061-S42	
N58-22F0061-P02		N58-22F0061-P02	
Link	Yellow	Link	Yellow
Active	Blinking	Active	Blinking
1000	Green	1000	Green
100	Orange	100	Orange
10	None	10	None
19	Yellow	19	Yellow
20	Yellow	20	Yellow
21	Orange	21	Orange
22	Green	22	Green





IDE 1

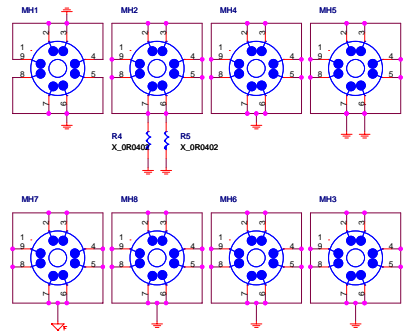


N32-2201321-H06

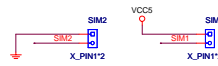
Optics Orientation Holes



Mounting Holes



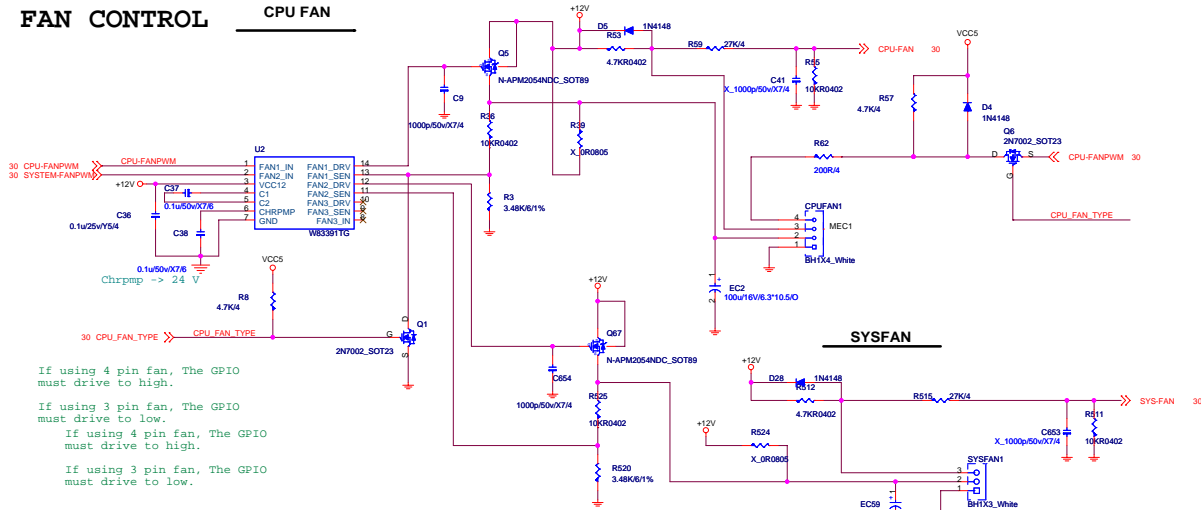
Simulation



If using 3 pin fan, The Q40 will turn off to avoid the VCC5(R527) bias to CPU-FANPWM.

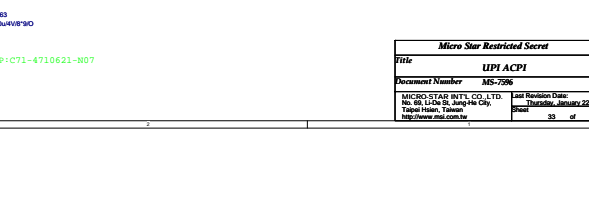
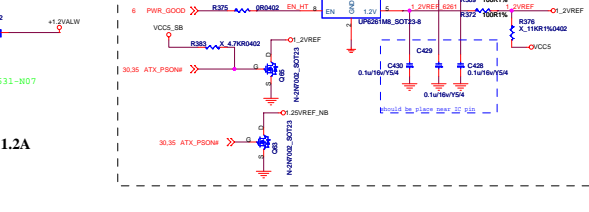
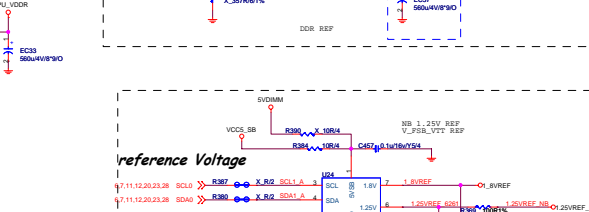
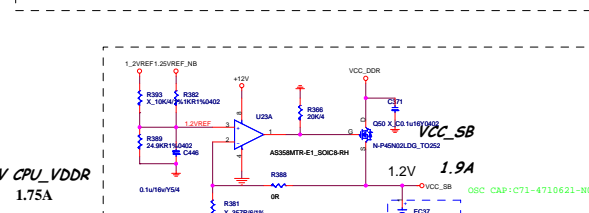
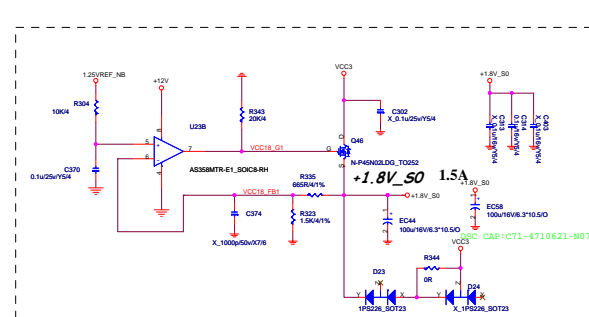
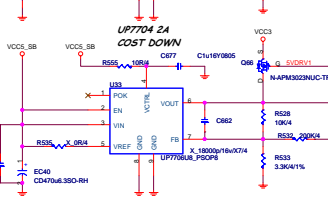
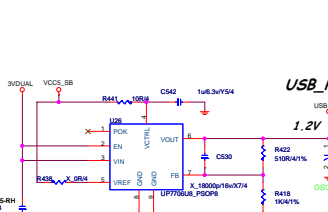
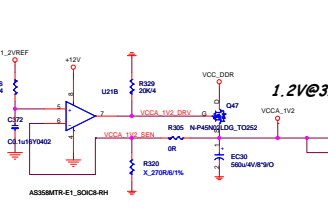
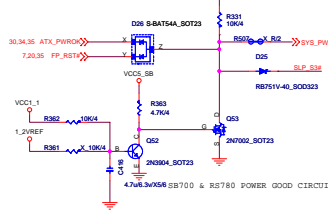
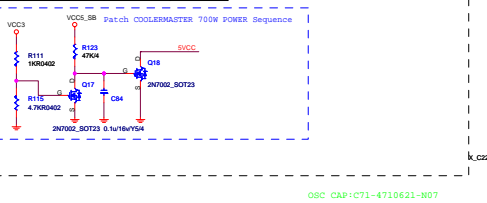
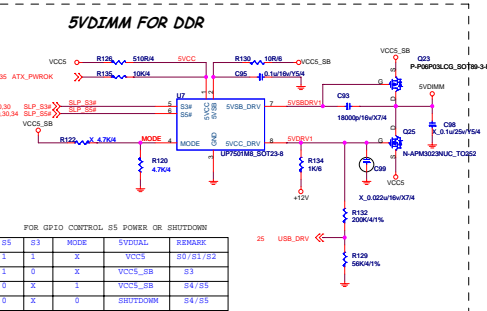
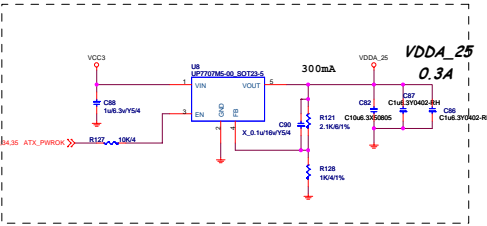
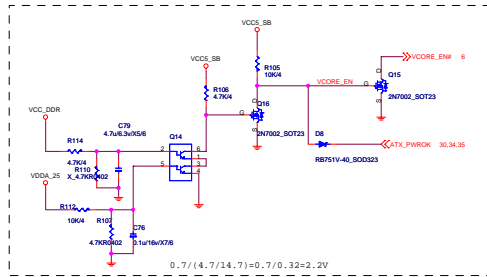
FAN CONTROL

CPU FAN

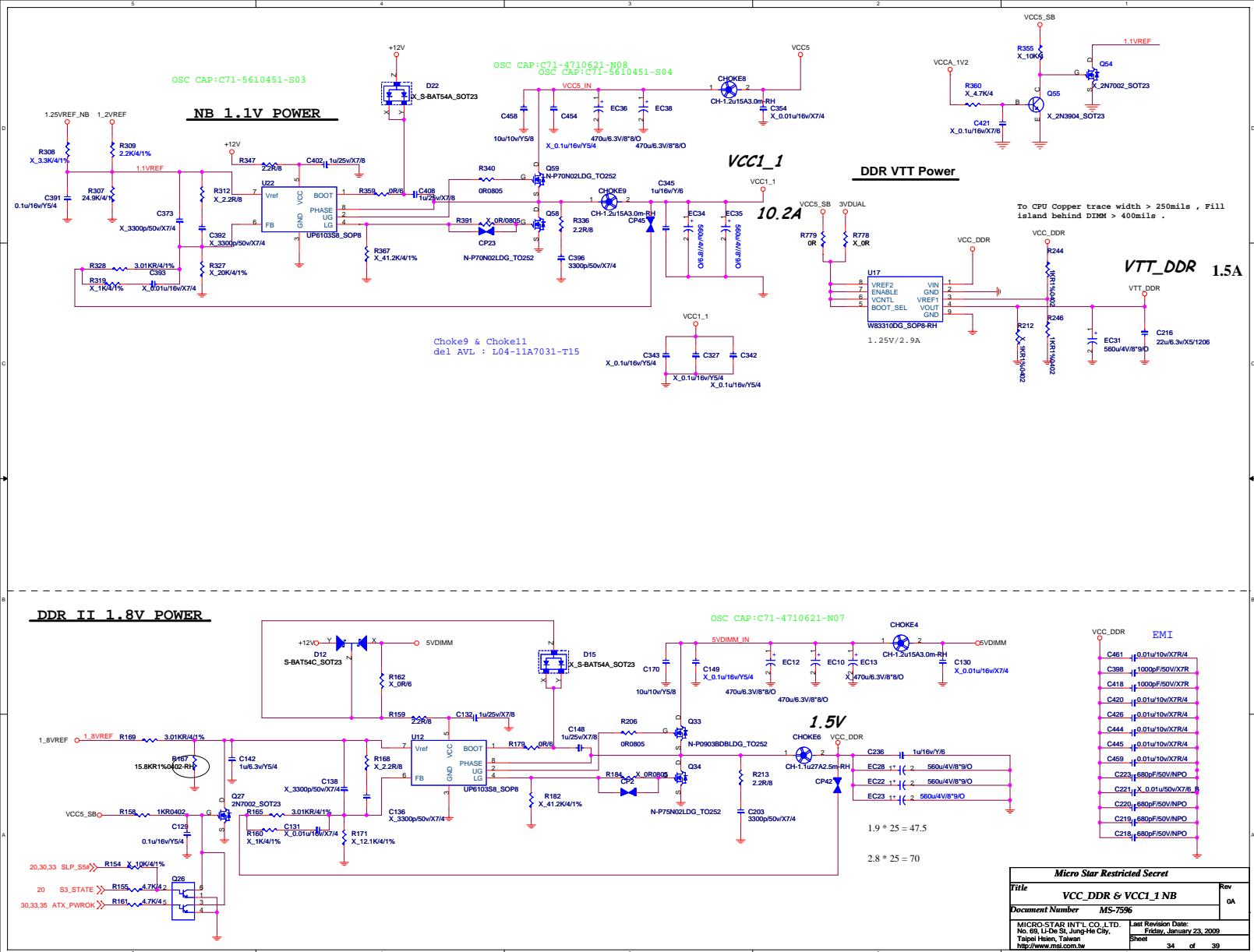


If using 4 pin fan, The GPIO must drive to high.
If using 3 pin fan, The GPIO must drive to low.
If using 4 pin fan, The GPIO must drive to high.
If using 3 pin fan, The GPIO must drive to low.

Micro Star Restricted Secret		
Title	IDE Conn / FAN	Rev
Document Number	MS-7596	DA
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St., Jung-Ho City, Taipei, Taiwan		Last Revision Date: Monday, February 09, 2009
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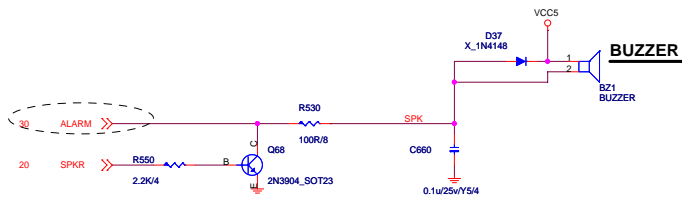
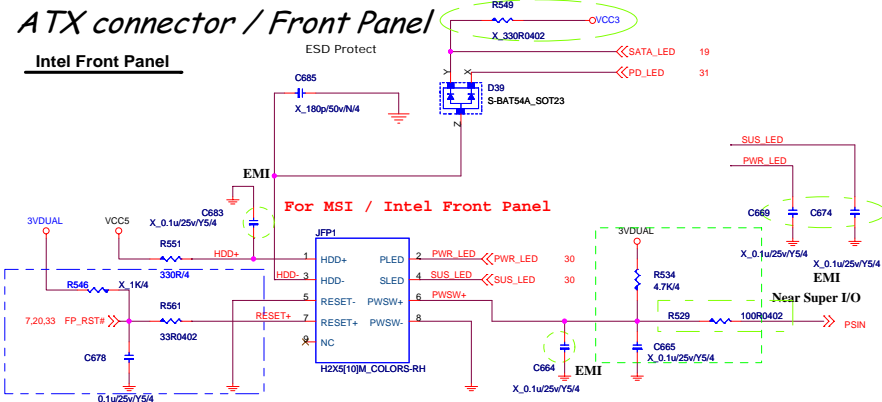


Micro Star Restricted Secret		
Title	UPI ACPI	Rev
Document Number	MS-726	Rev
MICRO STAR INT'L CO. LTD.		Rev
No. 88, Lida Rd., Taipei City, Taiwan		Rev
Date: 2009-08-22		Rev
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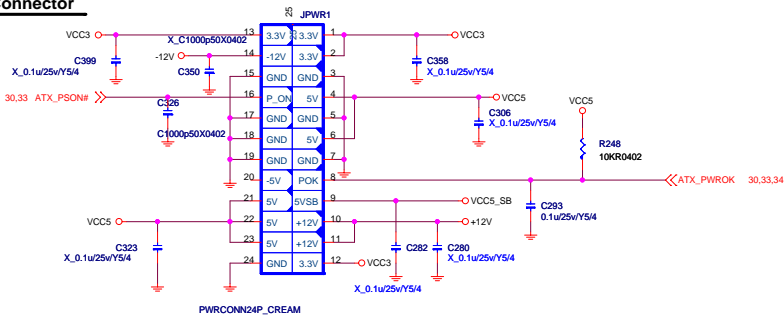


ATX connector / Front Panel

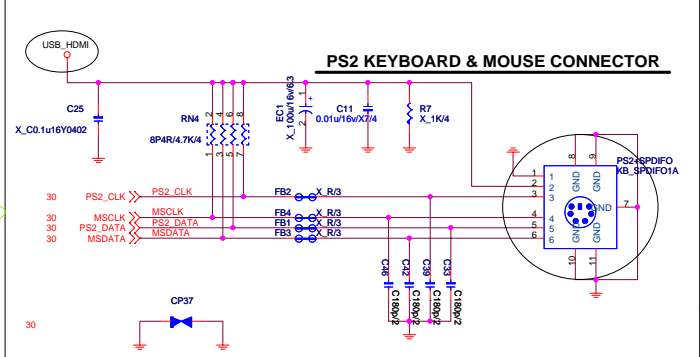
Intel Front Panel



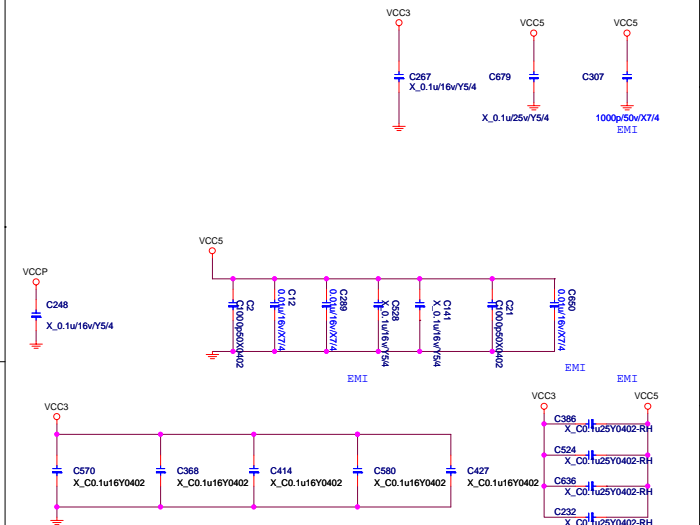
ATX Connector



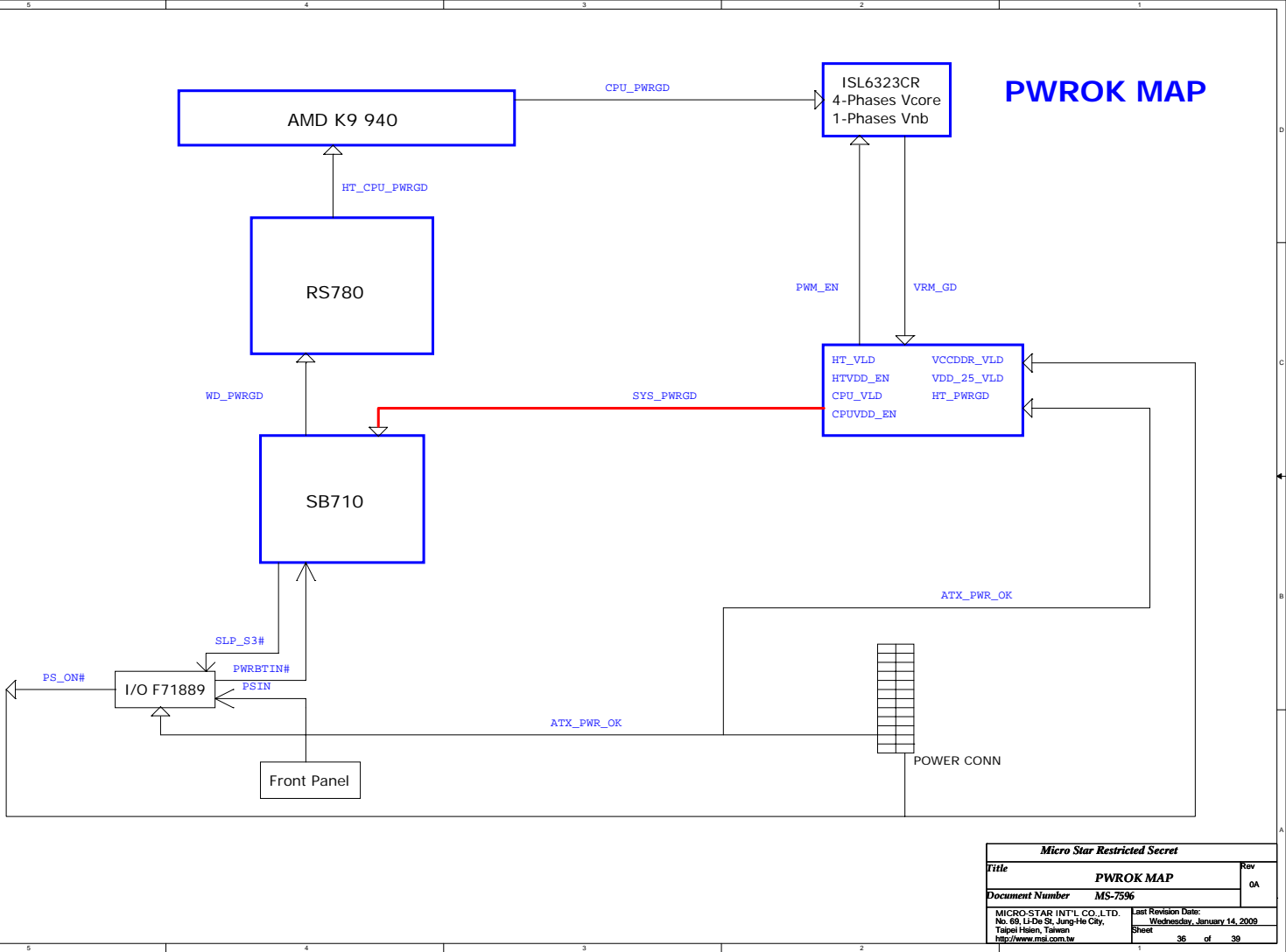
PS2 KEYBOARD & MOUSE CONNECTOR



EMI solution



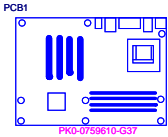
Micro Star Restricted Secret		
Title	ATX/Front Panel/KB/EMI	Rev
Document Number	MS-7596	0A
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Wednesday, January 14, 2009
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5					4					3					2					1				
D																								
C																								
B																								
A																								
5					4					3					2					1				

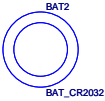
Micro Star Restricted Secret		
Title	RESET MAP	Rev
Document Number	MS-7596	0A
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw		Just Revision Date: Wednesday, January 14, 2009
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PCB



PCB : 1080

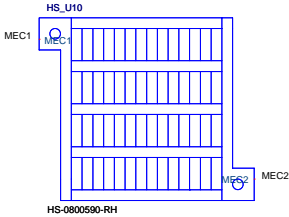
BATTERY



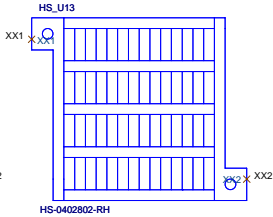
CPU RM



NB HEAT-SINK



SB HEAT-SINK



Micro Star Restricted Secret		
Title	BOM - Option Parts	Rev
Document Number	MS-7596	0A
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Wednesday, February 11, 2009
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- 1.Change Print Port Pull-high Resistor
- 2.Change LAN LED connected way
- 3.Update TittleBlock
- 4.NC_93519,TESTPIN25,H0LES_4S,F_PAD_M120,10F16VS footprint link CIS
- 5.Remove EC32,add C217
- 6.Remove RN39,add R585,R598,R599,R600,C689(Audio Front Panel)
- 7.Remove R518,R557,add R620(Audio)
- 8.Change MIC1_V_L,MIC1_V_R connect way
- 9.Remove R513
- 10.Change C797,C798 to 4.7u
- 11.Update R270,R272 to 33ohm
- 12.Add SB_OSC_14M to SB710
- 13.Update audio connector and codec
- 14.Update the EMI CAP to CIS
- 15.Add net SPM_A13 to support 256M side-port Memory
- 16.Remove R580,R581;add CP48,CP51
- 17.Remove EC68,EC47
- 18.Update Q75 to T0-252(11/26 update to old)
- 19.Update R167 to 15.8K
- 20.Delete R283,SUS_STAT# pull-high to VCC3
- 21.NB_SUS_STAT# connect to SB710
- 22.R203,R209,R94,R136 update to 4.7K
- 23.Update R325,R337 pull-high to VCC5,and add R325,R337 into bom
- 24.Add PCIE_RST# connected to PCIE device
- 25.Change HDMI/DVI common choke
- 26.add RN50 to pull LPC_AD[3..0] high to VCC3
- 27.Change LPC_FRAME# connection way
- 28.Update audio circuit to cost circuit
- 29.Add OCSWITCH1 for OC function
- 30.add R764,R765 for OC jumper
- 31.Remove EC48
- 32.Change the system fan control connection way
- 33.Delete lan LAN_AVDD12 power
- 34.Update CLKGEN footprint
- 35.Add ACC function
- 36.Modify LPC bus pull-high voltage
- 37.Add one phase VRM power
- 38.SIO datasheet update,pin99 connect to 3VDUAL
- 39.add VRM reserve resistor R72,R633
- 40.delete RT1
- 41.add R634
- 42.add C226,C227,C231
- 43.Modify VRM module
- 44.Modify the U17 V_REF power

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- 1.Remove DUAL_SW net
- 2.Update USB_EN circuit
- 3.Update KB_SEL connect function
- 4.Add KBCLK to PS2_CLK circuit
- 5.Update DOC0# and DOC1# circuit
- 6.Add R804,R805,R806,R807
- 7.Change SATA connector
- 8.Change DVI,HDMI connection way for EMI
- 9.Swap L51,L52
- 10.Add C855,C856
- 11.Change R764,R765 to 0ohm
- 12.Reserve R46,R76
- 13.Delete U28
- 14.Remove Y3
- 15.Remove CP15,CP54,L30;Add R408 R583
- 16.Remove CP12,CP4,CP5,CP7

Micro Star Restricted Secret		
Title	HISTORY	
Document Number	MS-7596	Rev 0A
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