



MS-7599VER:5.0

CPU

AMD M3 Phenom/Athlon 64 FX AM3

System Chipset

AMD RX780

ATI SB710

On Board Chip

PI3PCIE2415

FINTEK Super I/O -- F71889ED

USB3.0 -- NEC/UPD720200F1

SATA3.0 -- Marvell 88SE9128B1

LAN -- RTL8111EL

HD Codec --ALC892 Colay ALC887

VT6308P 1394

BIOS -- SPI ROM 8M

Clock Generator

Controller--RTM880N-793

PWM

Controller--Intersil ISL6323 4+1 Phase

Vcore 4 Phase (MOS HIGHX2 LOWX2)

Vnb 1 Phase (MOS HIGHX1 LOWX2)

Main Memory

DDR III X 4 (Max 8GB)

Expansion Slots

PCI-E X 16*1

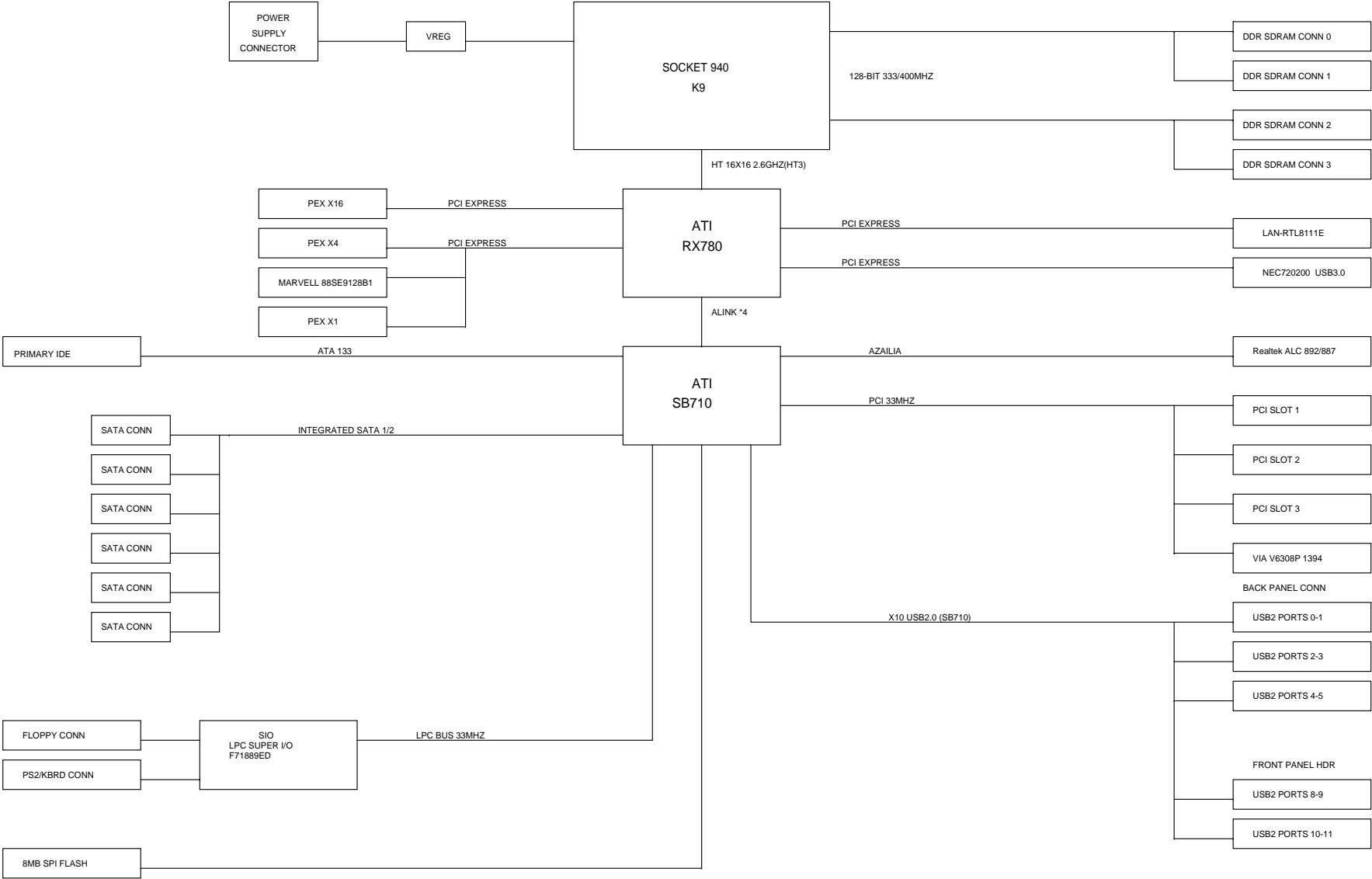
PCI-E X 4 *1

PCI-E X 1 *1

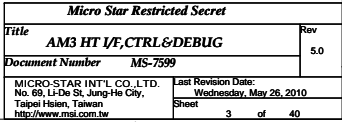
PCI 2.2 Slot X 3

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BLOCK DIAGRAM

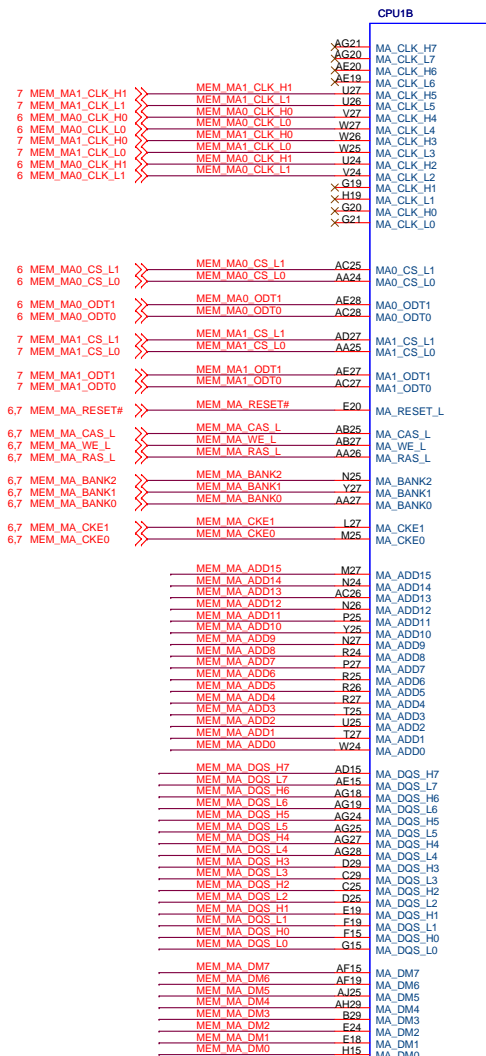


Micro Star Restricted Secret		
Title	Block Diagram	Rev
Document Number	MS-7599	5.0
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Tuesday, May 25, 2010
		Sheet 2 of 40

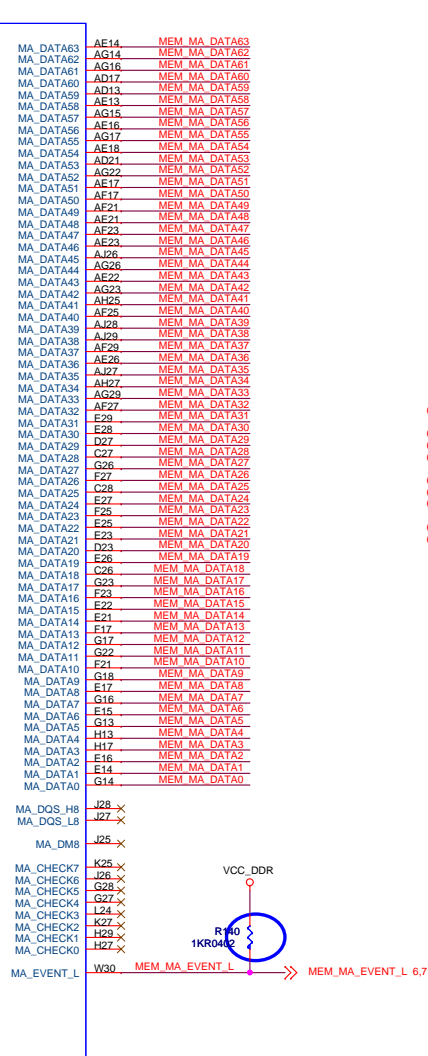


6,7 MEM_MA_DQS_L[7..0] >> MEM_MA_DQS_L[7..0]
6,7 MEM_MA_DQS_H[7..0] >> MEM_MA_DQS_H[7..0]
6,7 MEM_MA_DM[7..0] >> MEM_MA_DM[7..0]
6,7 MEM_MA_ADD[15..0] >> MEM_MA_ADD[15..0]
6,7 MEM_MA_DATA[63..0] >> MEM_MA_DATA[63..0]

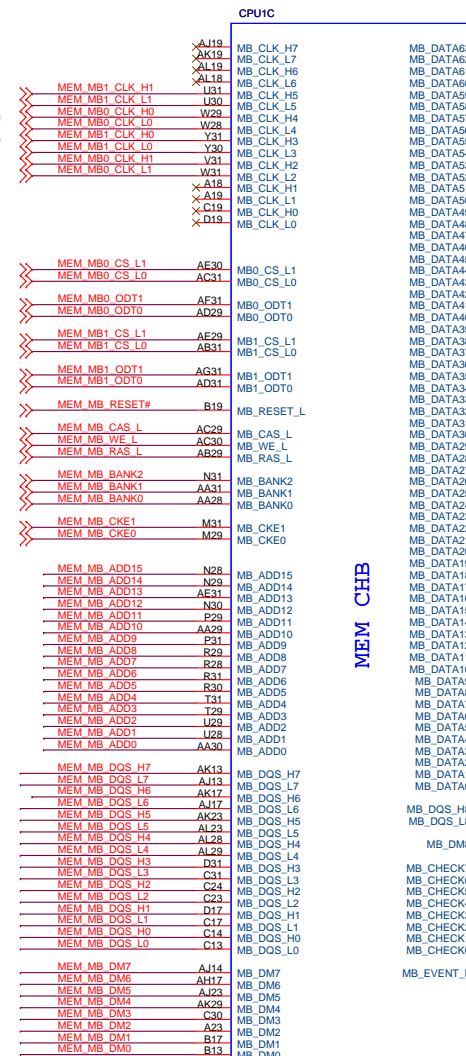
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6,7 MEM_MB_DQS_H[7..0] >> MEM_MB_DQS_H[7..0]
6,7 MEM_MB_DM[7..0] >> MEM_MB_DM[7..0]
6,7 MEM_MB_ADD[15..0] >> MEM_MB_ADD[15..0]
6,7 MEM_MB_DATA[63..0] >> MEM_MB_DATA[63..0]



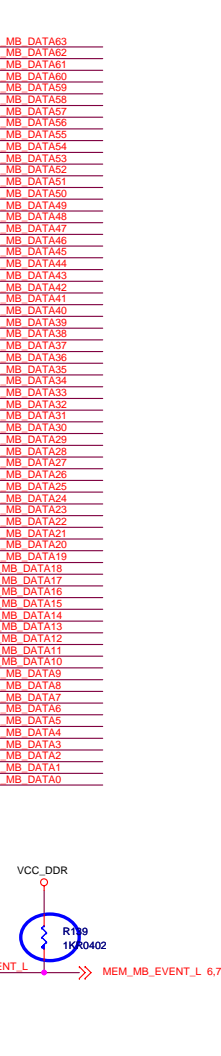
ZIF-SOCKET941-RH



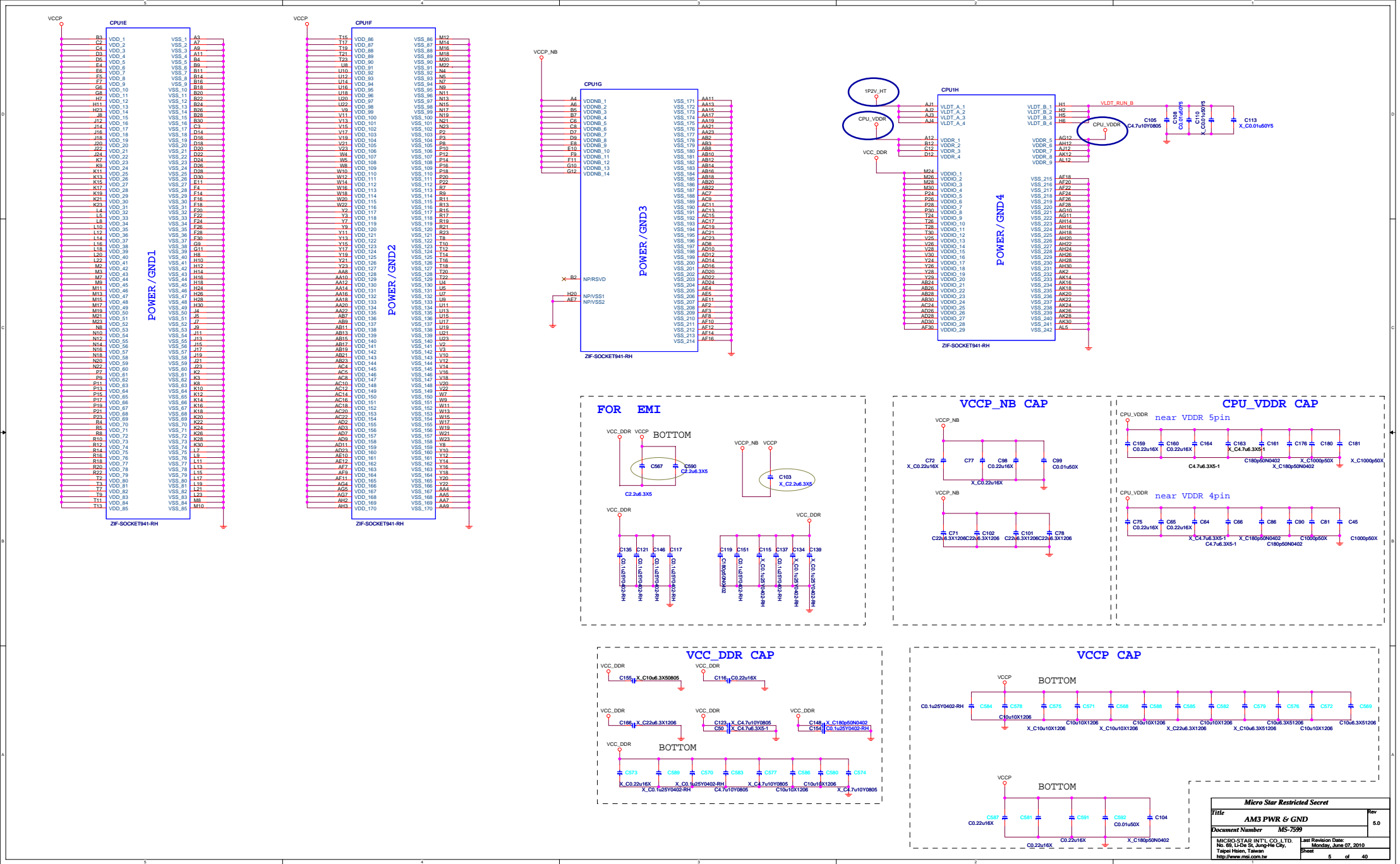
MEM MA EVENT_L 6.7

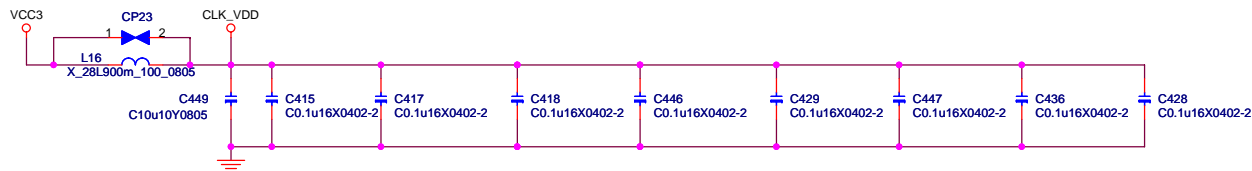


ZIF-SOCKET941-RH

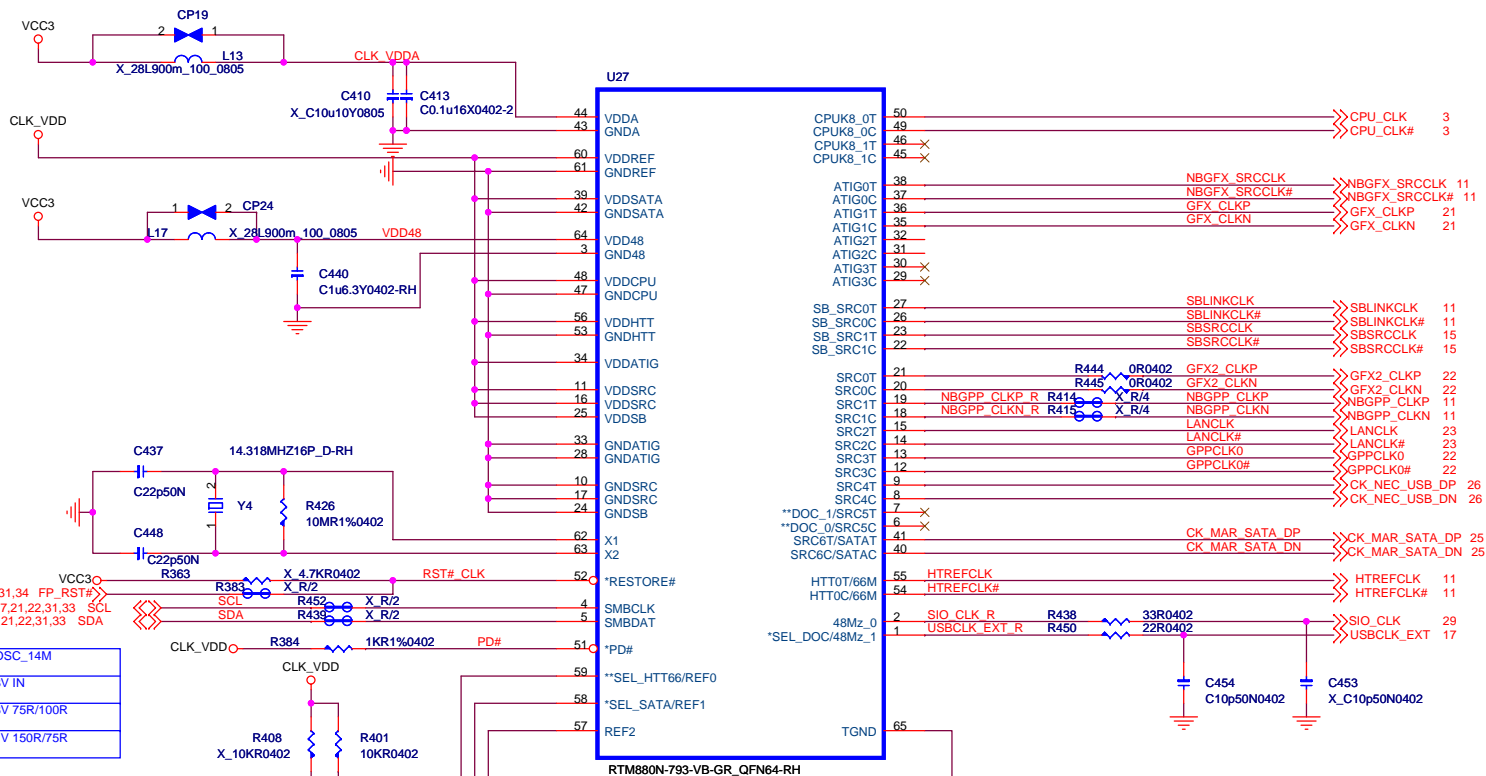


MEM MB EVENT_L 6.7





- 1- PLACE ALL THE SERIES TERMINATION RESISTORS AS CLOSE AS U19 AS POSSIBLE
- 2- ROUTE ALL CPUCLK/#, NBSRCCLK/#, GPPCLK/# AS DIFFERENT PAIR RULE
- 3- PUT DECOUPLING CAPS CLOSE TO U19 POWER PIN



NB_OSC_14M	
RS740	3.3V IN
RX780	1.8V 75R/100R
RS780	1.1V 150R/75R

SATA SSC NO SUPPORT

SEL_HTT66 : 'L' 100Mhz FOR 780

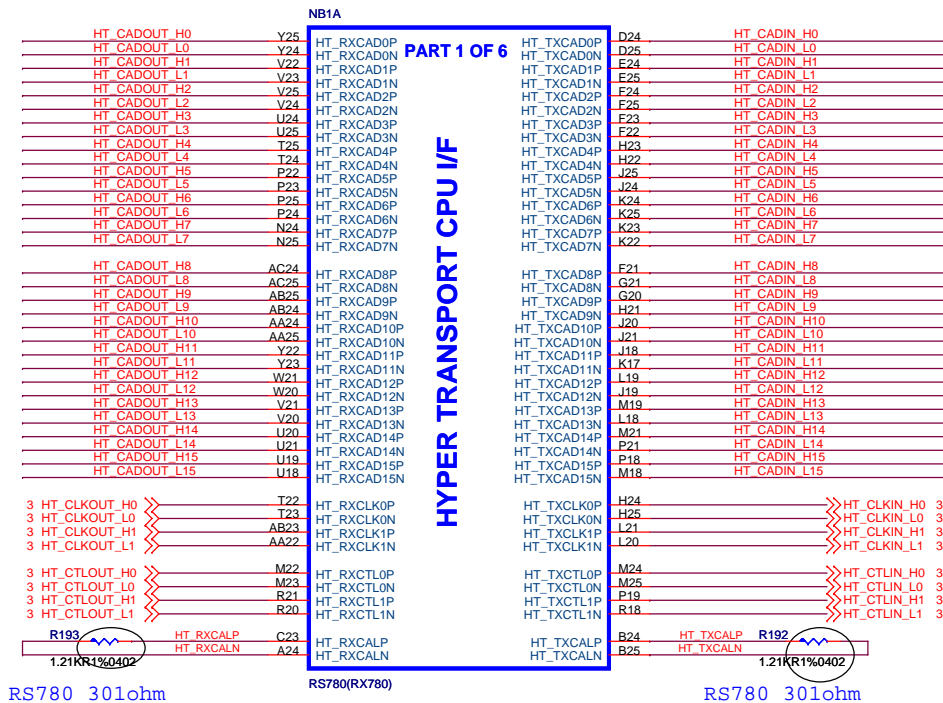
'H' 66Mhz FOR 740

Micro Star Restricted Secret	
Title	Clock Generator RTM880N-793
Document Number	MS-7599
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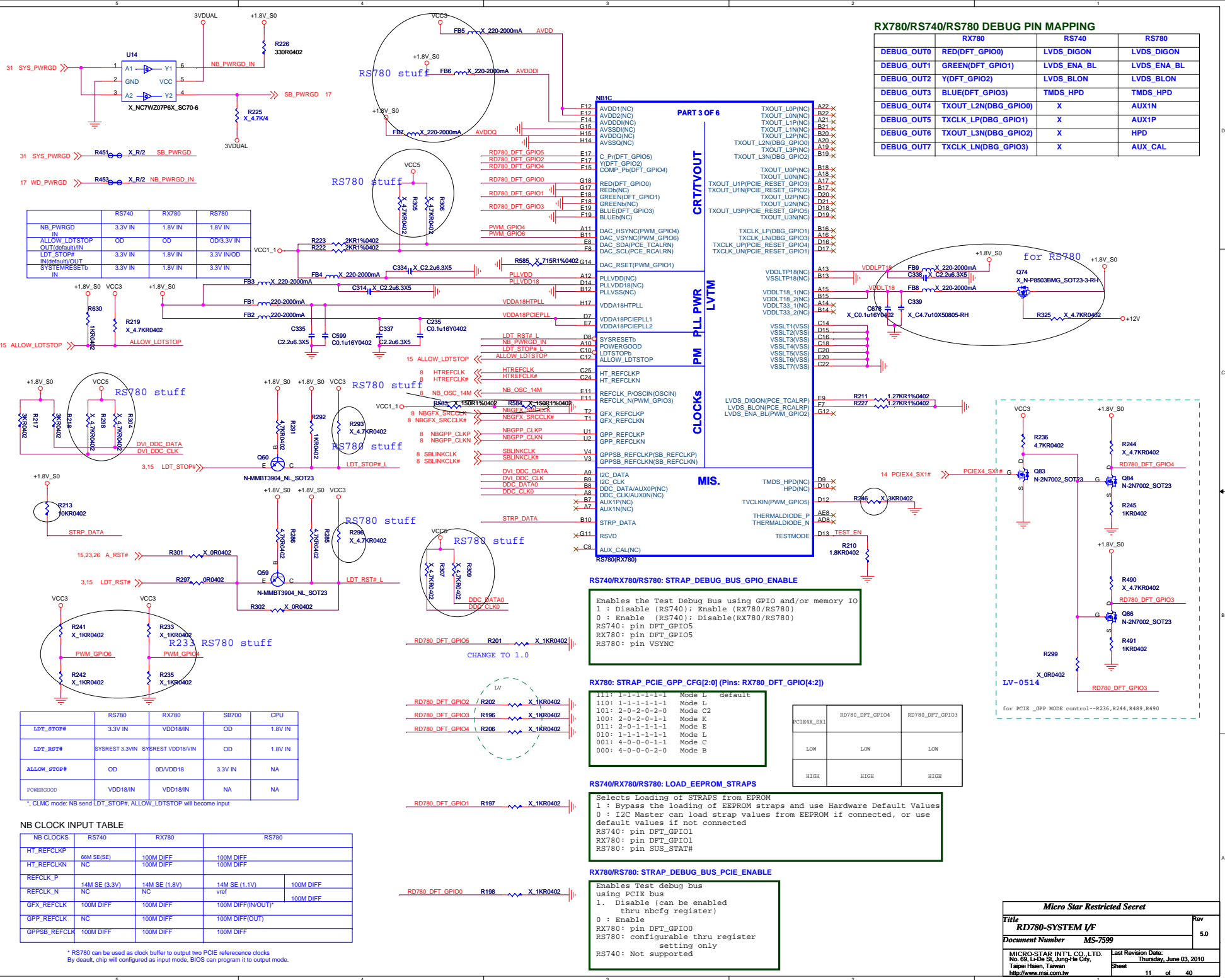
3 HT_CADIN_H[15..0] >> HT_CADIN_H[15..0]
3 HT_CADIN_L[15..0] >> HT_CADIN_L[15..0]
3 HT_CADOUT_H[15..0] >> HT_CADOUT_H[15..0]
3 HT_CADOUT_L[15..0] >> HT_CADOUT_L[15..0]

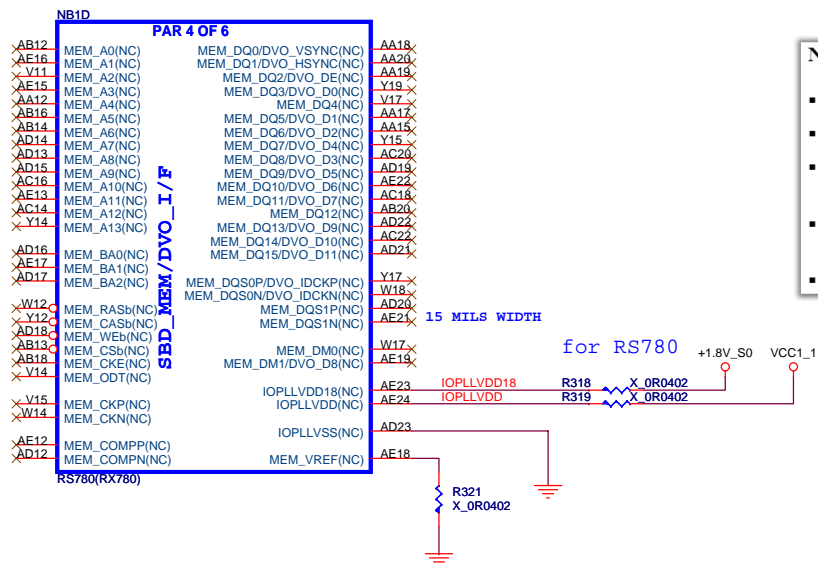
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RX780/RS740/RS780 difference table (HT LINK)

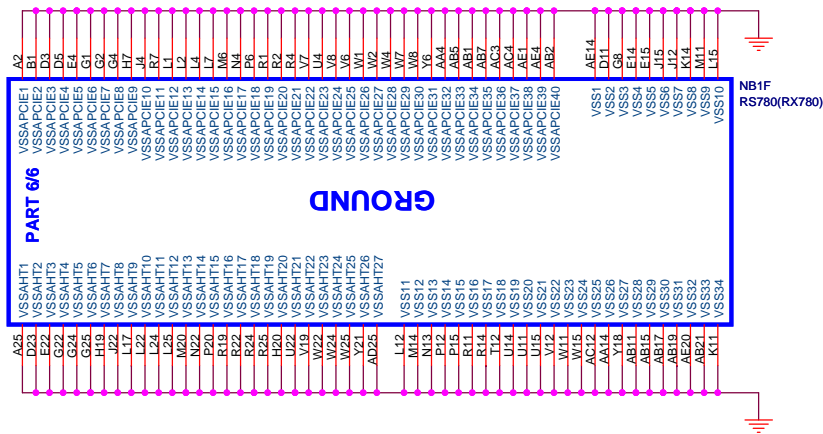
SIGNALS	RS740	RX780	RS780
HT_RXCALP	49.9R (GND)	1.21K	301R
HT_RXCALN	49.9R (VDDHT)		
HT_TXCALP HT_TXCALN	100R	1.21K	301R





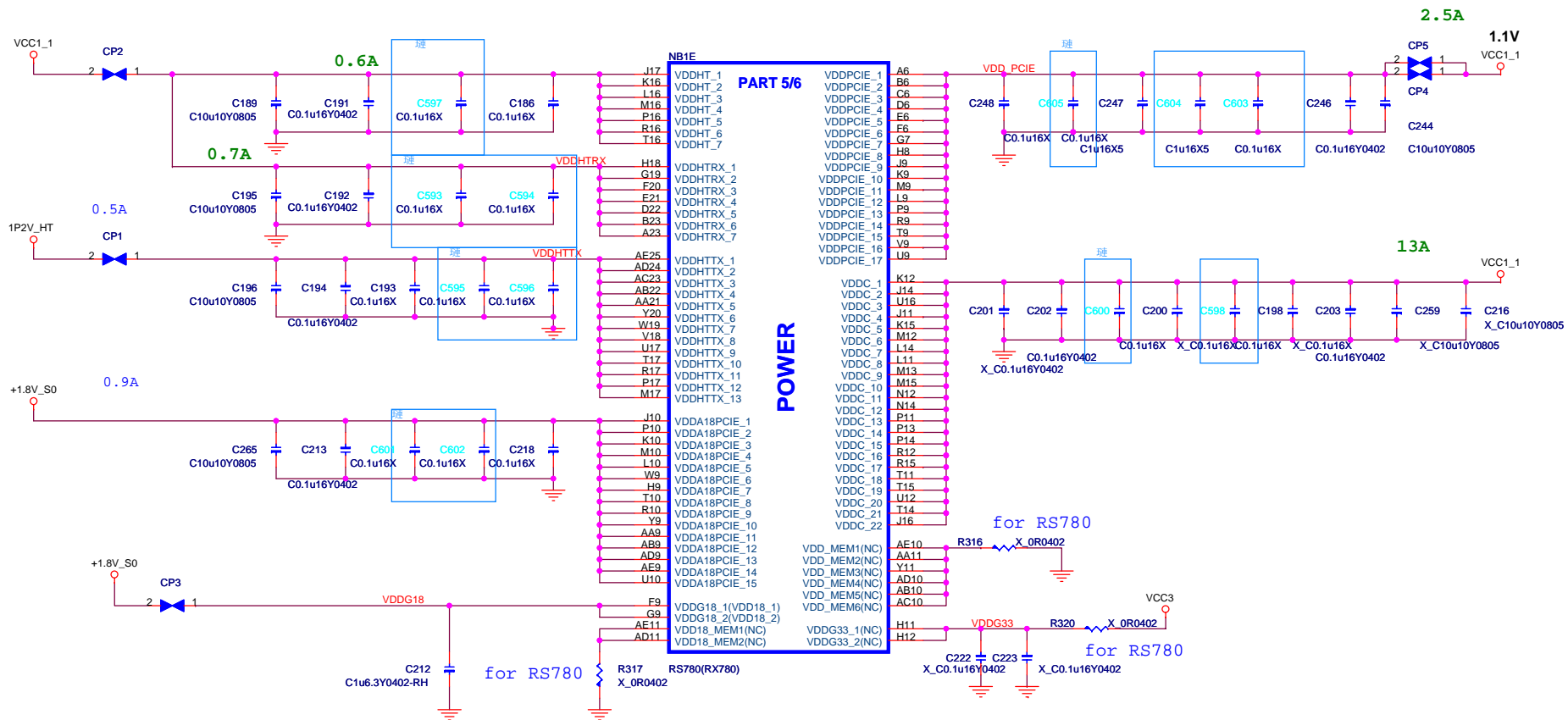
Note: If the Side-port memory interface is **not** used, make sure that:

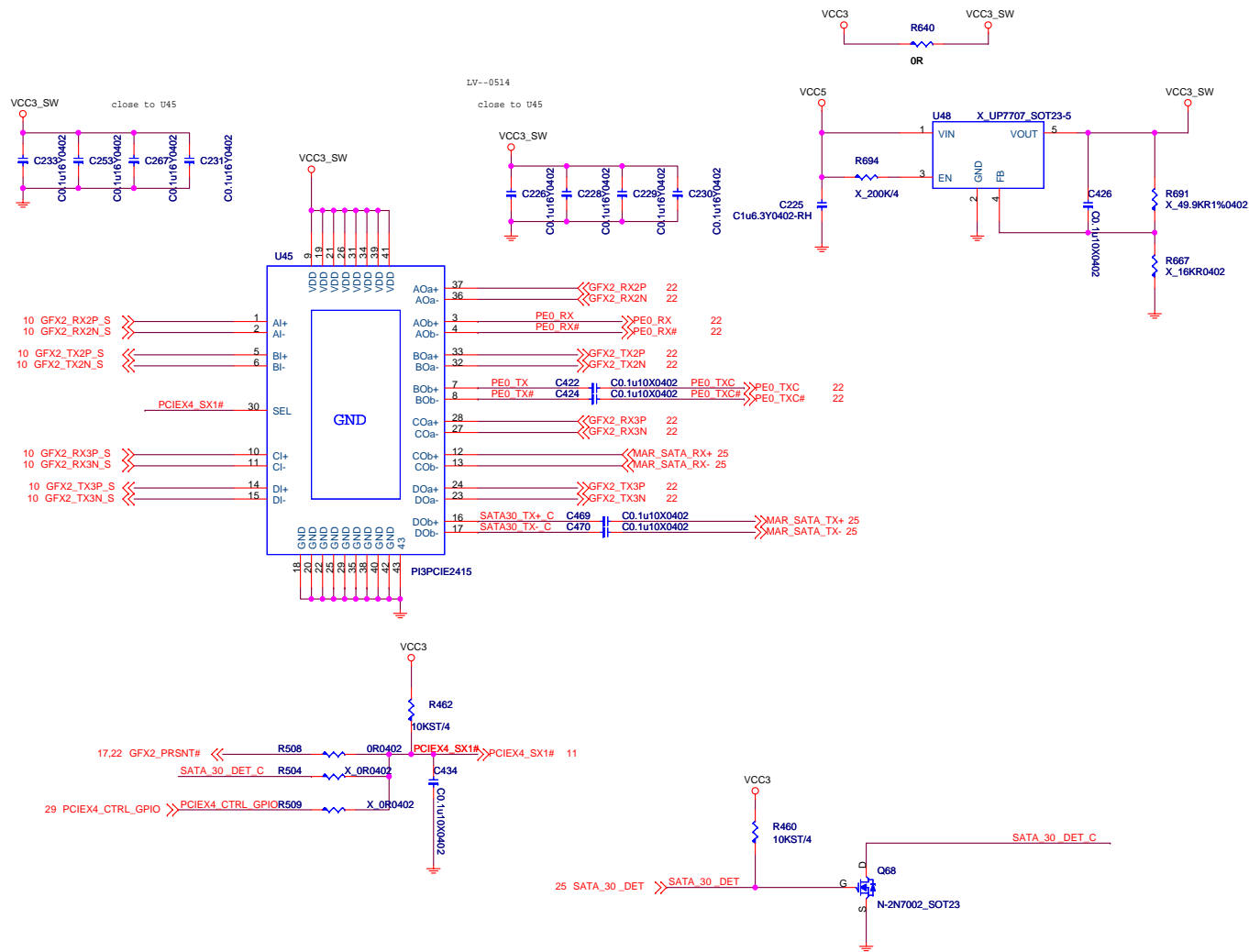
- The memory interface IO power (VDD_MEM) is connected to 1.5 V for DDR3 or 1.8 V for DDR2.
- The memory interface IO transform power (VDD18_MEM) is connected to 1.8 V.
- The voltage divider for memory interface reference voltage MEM_VREF is connected to 1.5 V for DDR3 or 1.8 V for DDR2.
- The memory interface PLL power IOPLLVD18 is connected to 1.8 V and IOPLLVD is connected to 1.2 V for the RS740 and to 1.1 V for the RS780.
- The memory interface enable strap DFT_GPIO0 is **not** connected to the GND.



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	VDDL18	+1.8V	NC	+1.8V
IOPLLVD18	+1.8V	NC	+1.8V	VDDL33	+3.3V	NC	NC

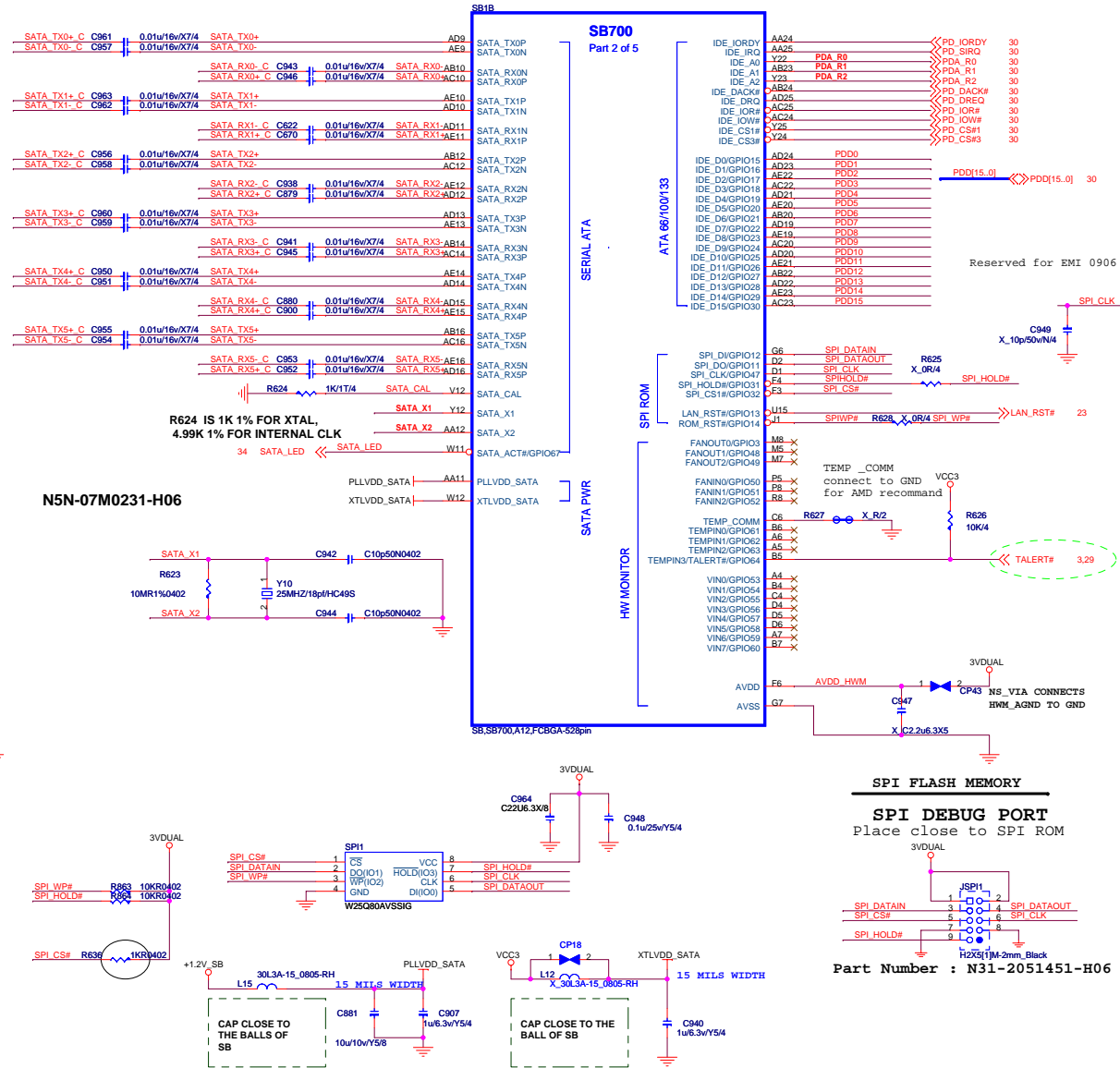
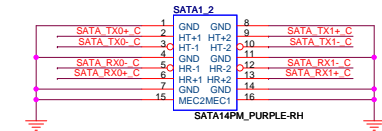
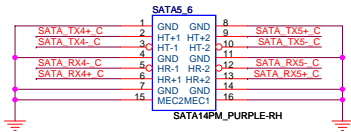
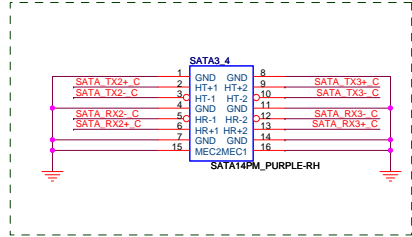


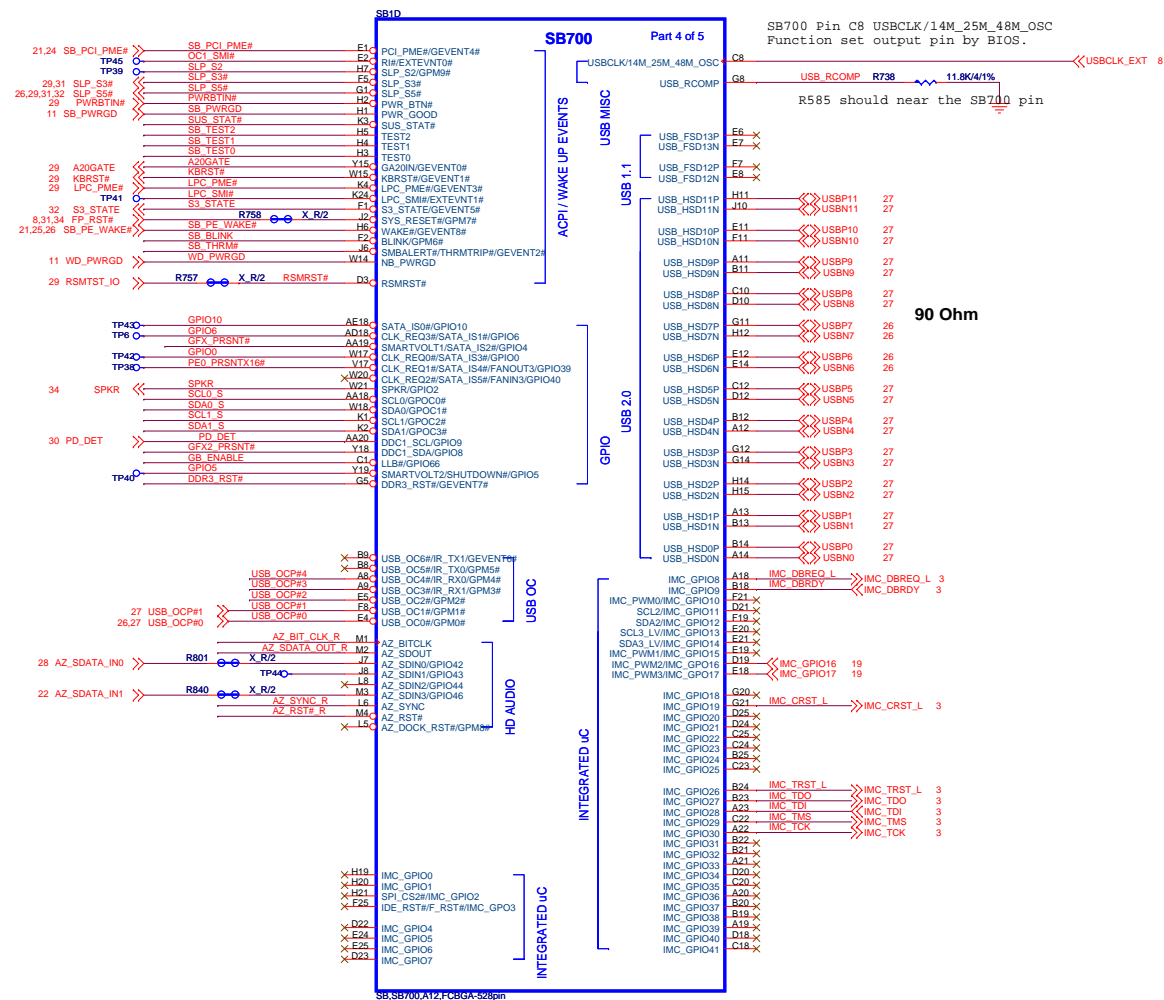


Digital Switch
SELECT pin

SEL (PCIEX4_SX1#)	Output	SLI function
Low	B1	PCIE 4X
Hi	B2	PCIE 1X + SATA_3.0

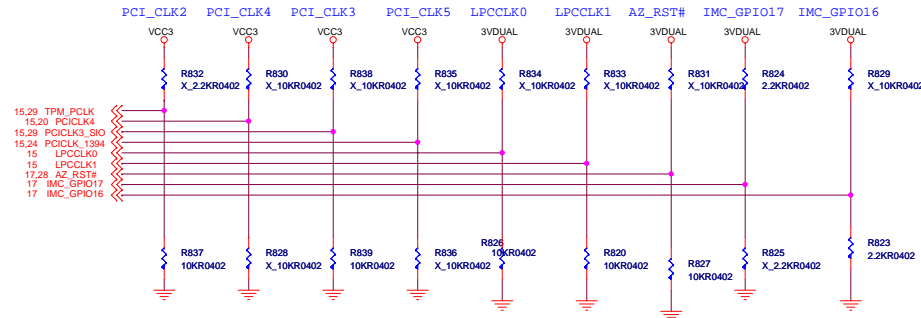
Impedance 90 Ohm, refer to AN_SB700AB2





REQUIRED STRAPS

NOTE: SB700 HAS INTERNAL 15K PULL UP RESISTOR FOR RTC_CLK

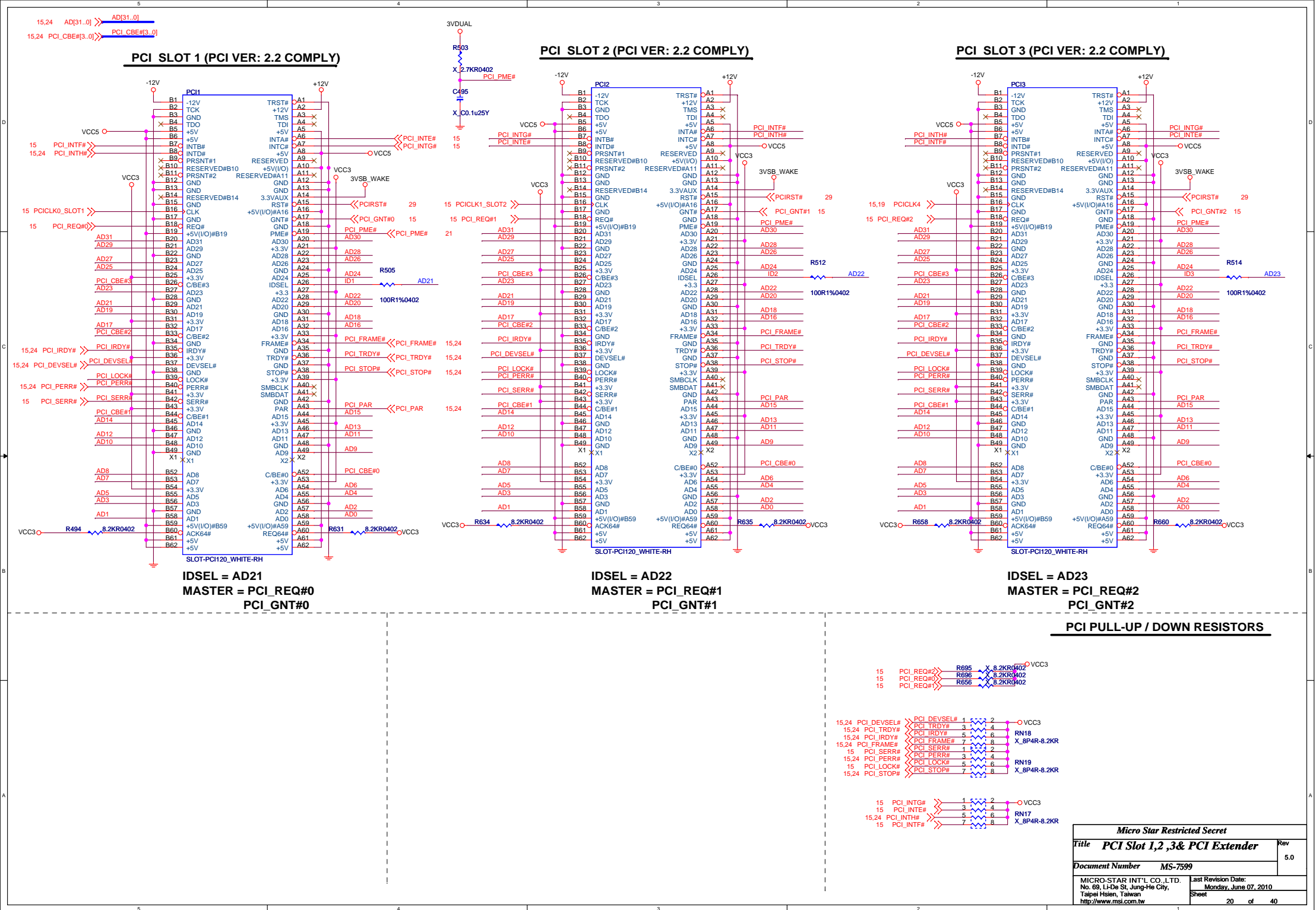


	PCI_CLK2	PCI_CLK4	PCI_CLK3	PCI_CLK5	LPC_CLK0	LPC_CLK1	AZ_RST#	IMC_GPIO17	IMC_GPIO16
PULL HIGH	WATCHDOG TIMER ON NB_PWRGD ENABLED	RESERVED	USE DEBUG STRAPS	RESERVED	ENABLE PCI MEM BOOT	CLKGEN ENABLED	IMC ENABLED	ROM TYPE: H, H = Reserved H, L = SPI ROM DEFAULT	
PULL LOW	WATCHDOG TIMER ON NB_PWRGD DISABLED DEFAULT		IGNORE DEBUG STRAPS DEFAULT		DISABLE PCI MEM BOOT DEFAULT	CLKGEN DISABLED DEFAULT	IMC DISABLED DEFAULT	L, H = LPC ROM L, L = FWH ROM	

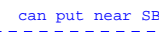
DEBUG STRAPS

SB700 HAS 15K INTERNAL PU FOR PCI_AD[30:23]

	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE LONG RESET DEFAULT	USE PCI PLL DEFAULT	USE ACPI BCLK DEFAULT	USE IDE PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	RESERVED
PULL LOW	USE SHORT RESET	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS	

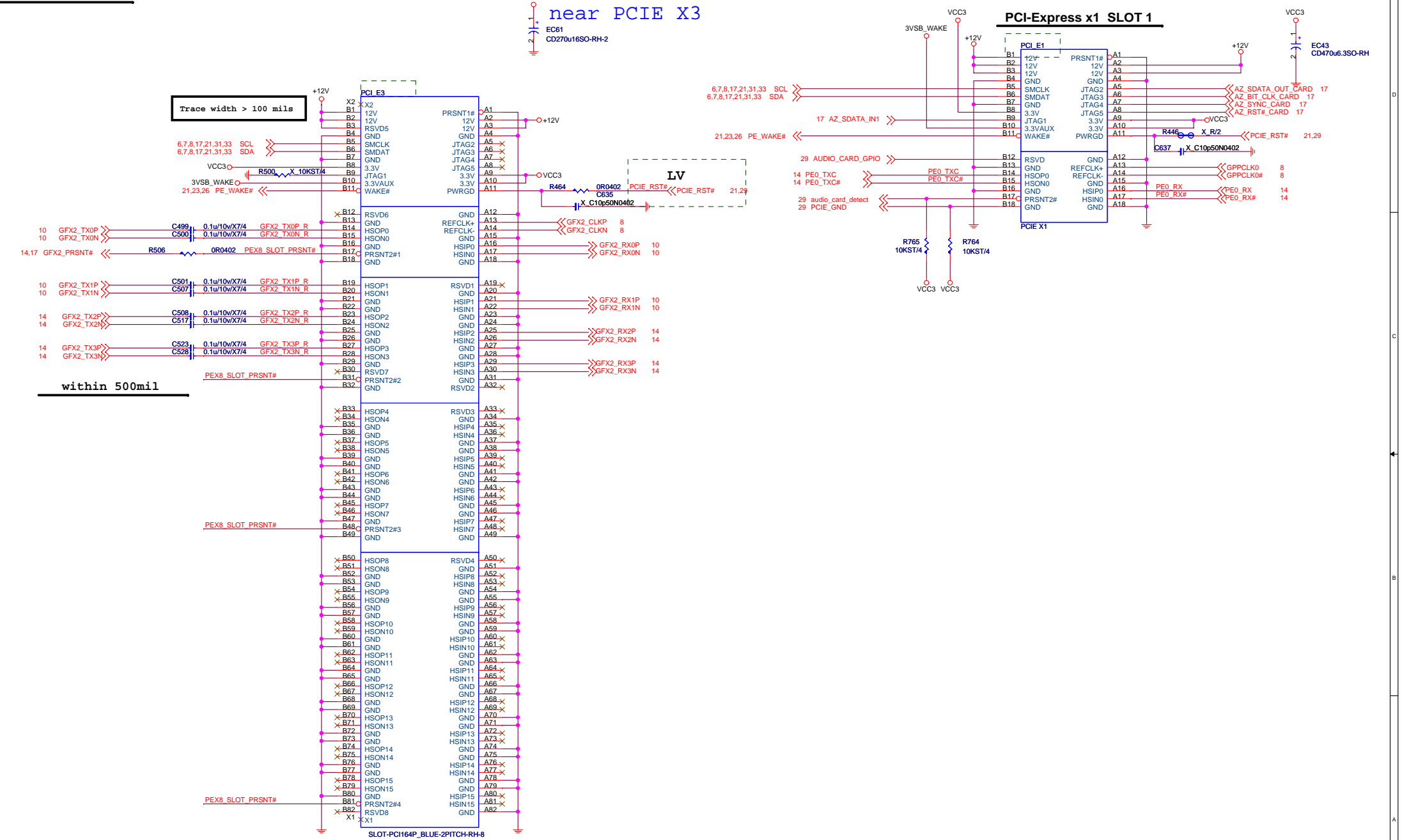


PCI E2



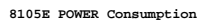
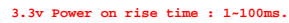
Micro Star Restricted Secret	
Title <i>PCI-E X16 , X1 Slot</i>	Rev 5.0
Document Number <i>MS-7599</i>	
MICRO-STAR INT'L CO. LTD. No. 69, Li De St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, June 08, 2010 Sheet 21 of 40

PCI EXPRESS X4

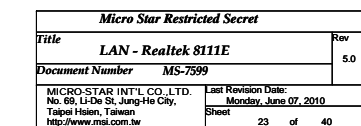
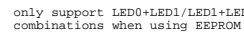


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Title	PCIE X1 Slots	Rev 5.0
Document Number	MS-7599	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Tuesday, June 08, 2010 Sheet 22 of 40

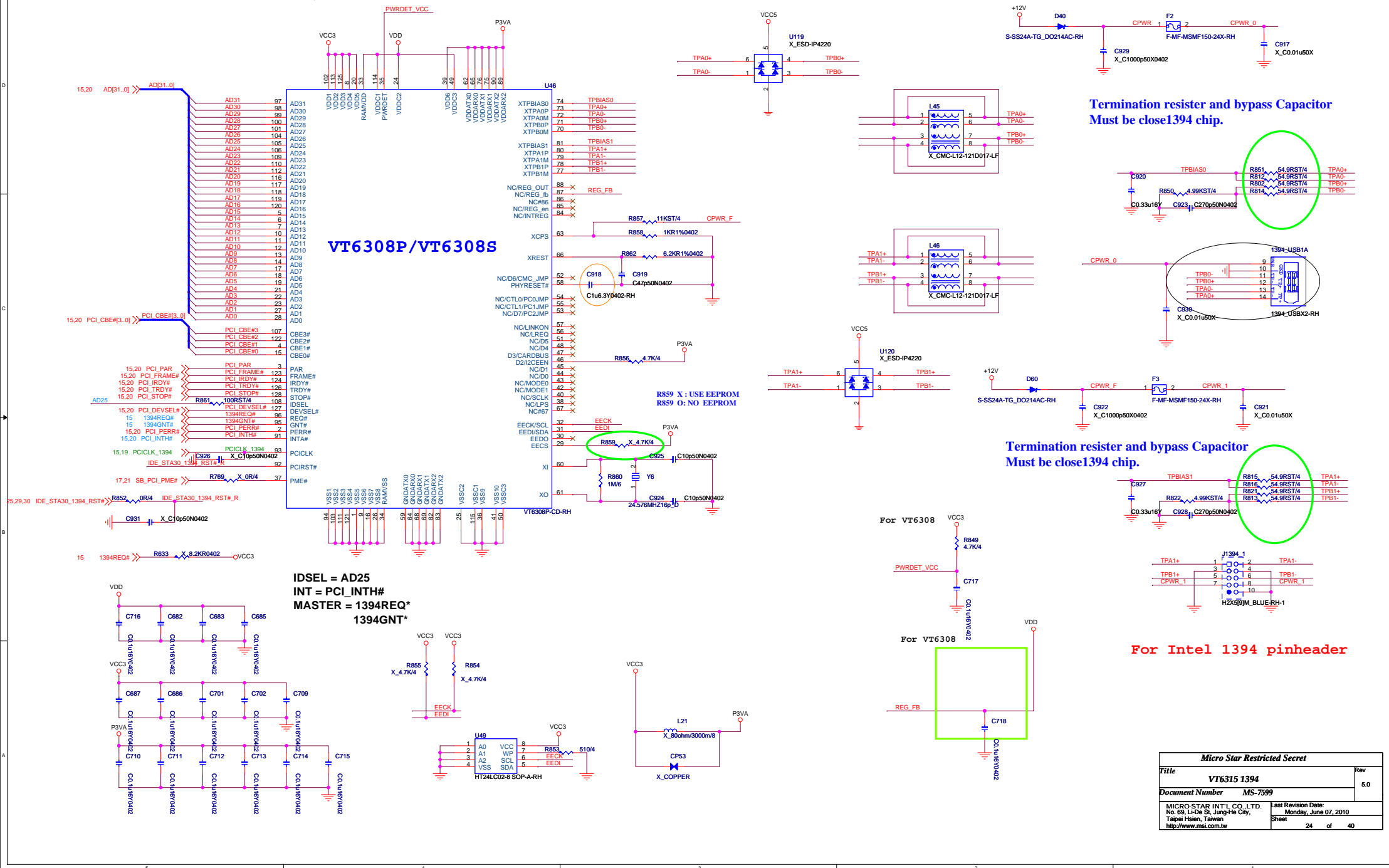
RTL8105E 10/100M LAN

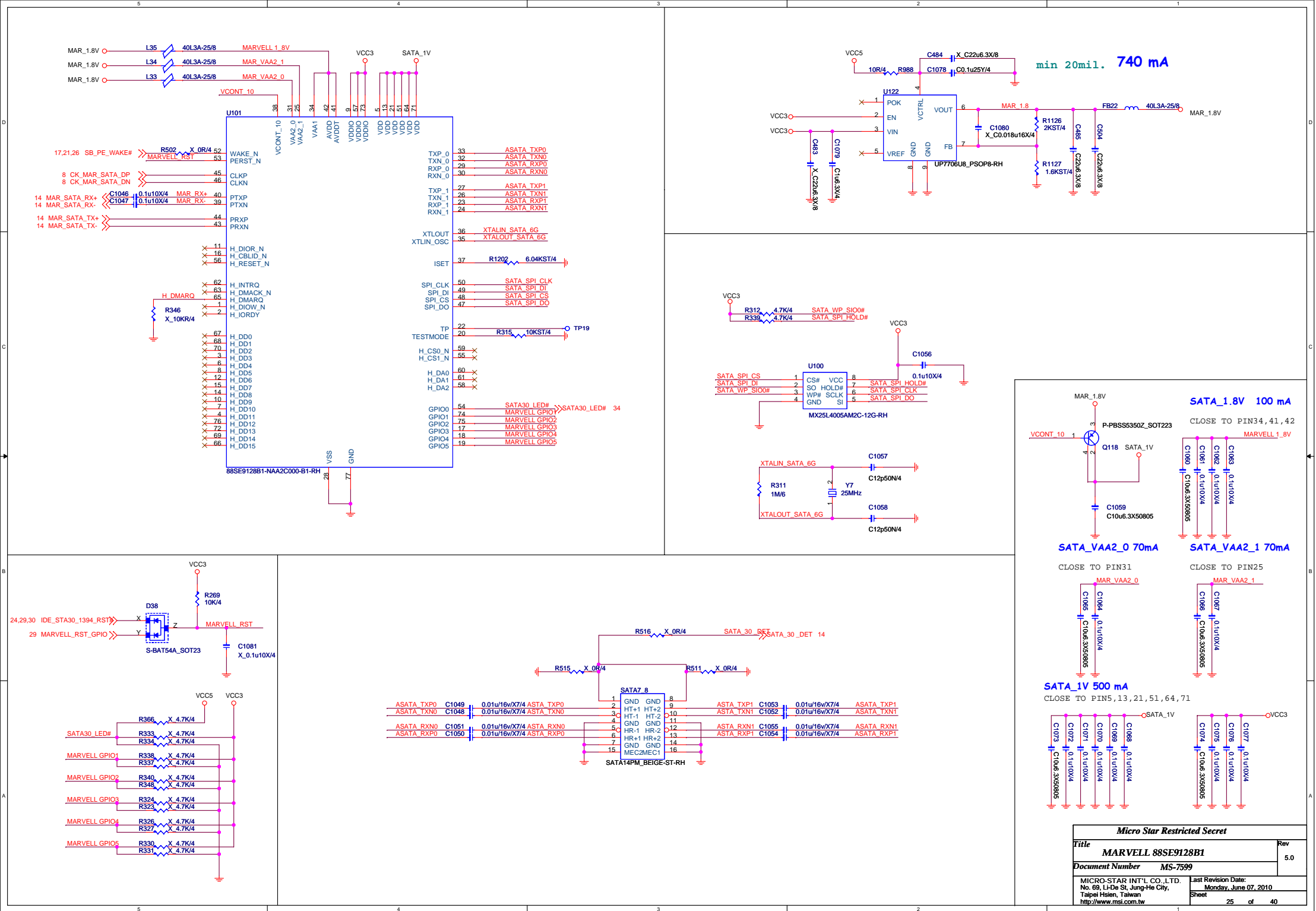
8111E POWER Consumption

LAN Connector

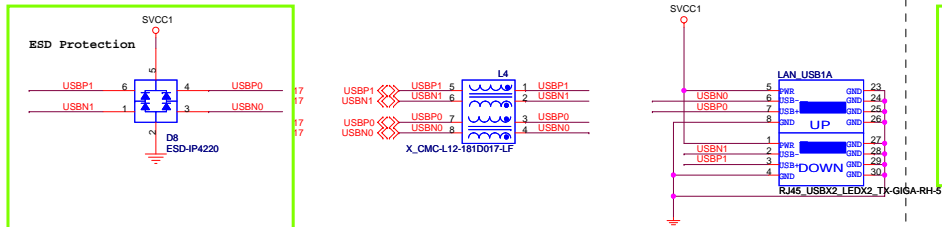


VT6308P - 1394 Controller

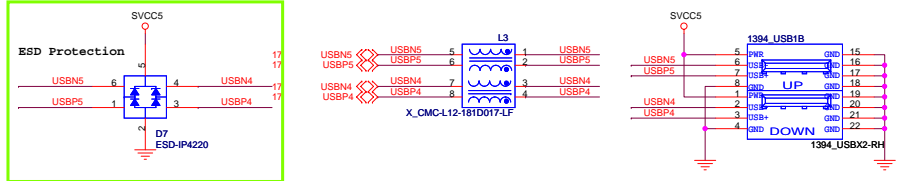




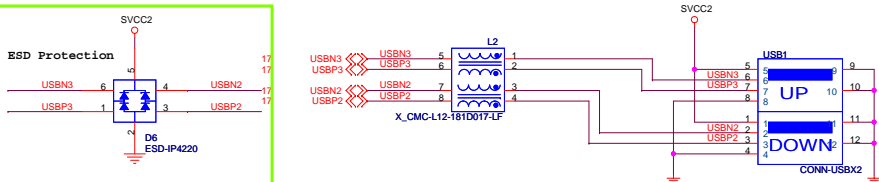
REAR PANEL USB CONNECTOR FOR USB PORT 0,1



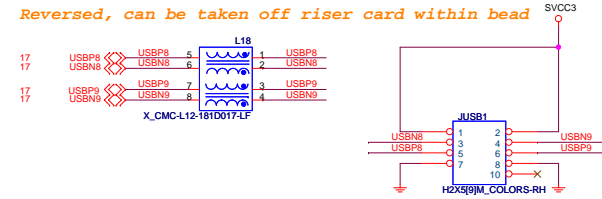
REAR PANEL USB CONNECTOR FOR USB PORT 4,5



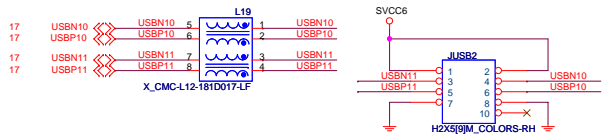
REAR PANEL USB CONNECTOR FOR USB PORT 2,3



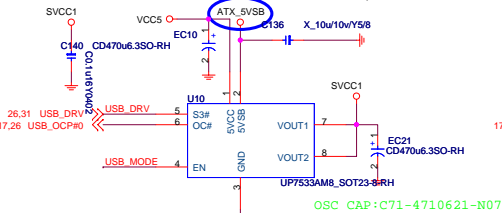
FRONT PANEL USB CONNECTOR FOR USB PORT 8,9



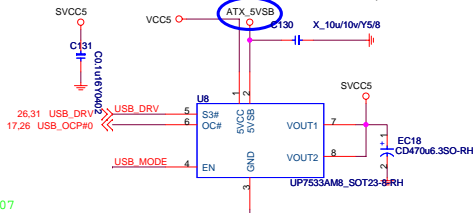
FRONT PANEL USB CONNECTOR FOR USB PORT 10,11



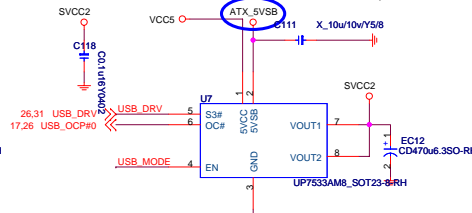
POWER CIRCUIT FOR USB PORT 0,1



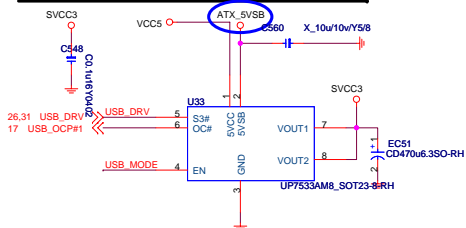
POWER CIRCUIT FOR USB PORT 4,5



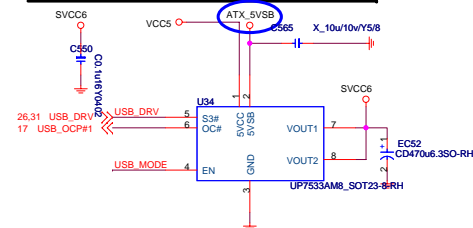
POWER CIRCUIT FOR USB PORT 2,3



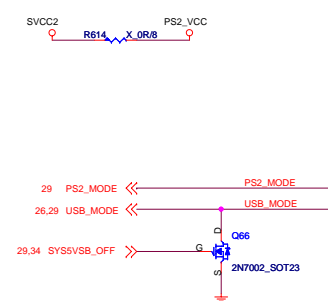
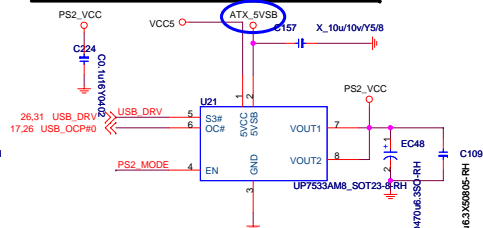
POWER CIRCUIT FOR USB PORT 8,9



POWER CIRCUIT FOR USB PORT 10,11

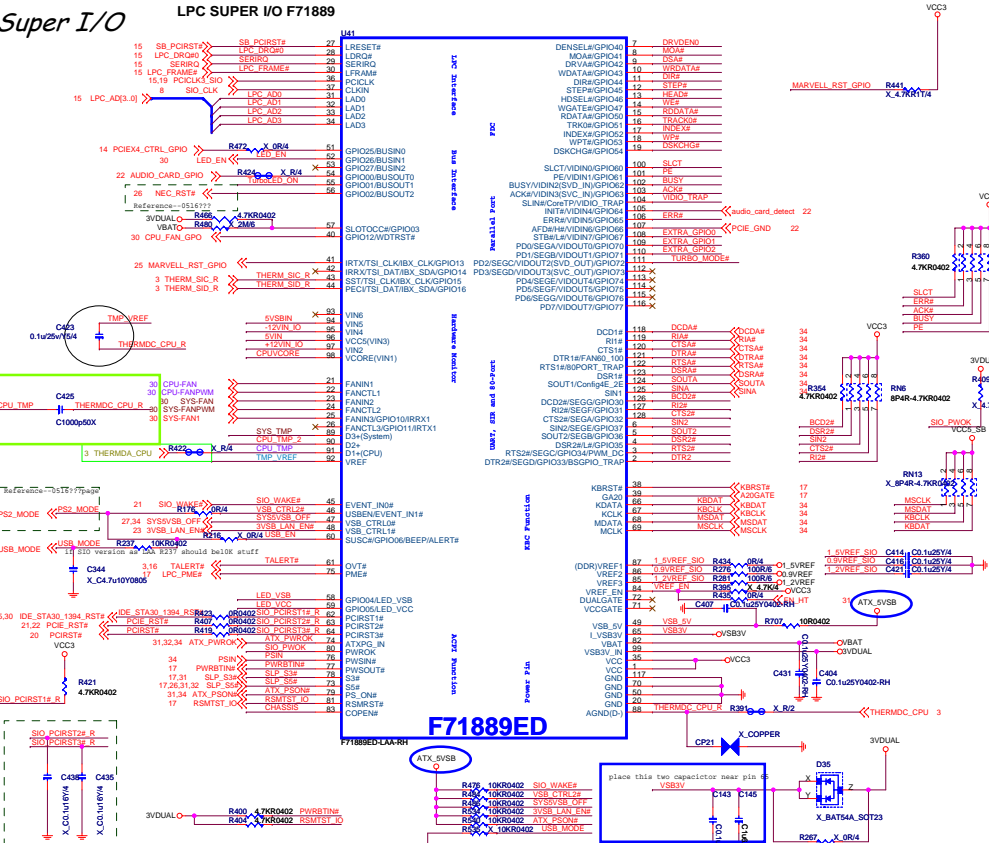


POWER FOR PS/2

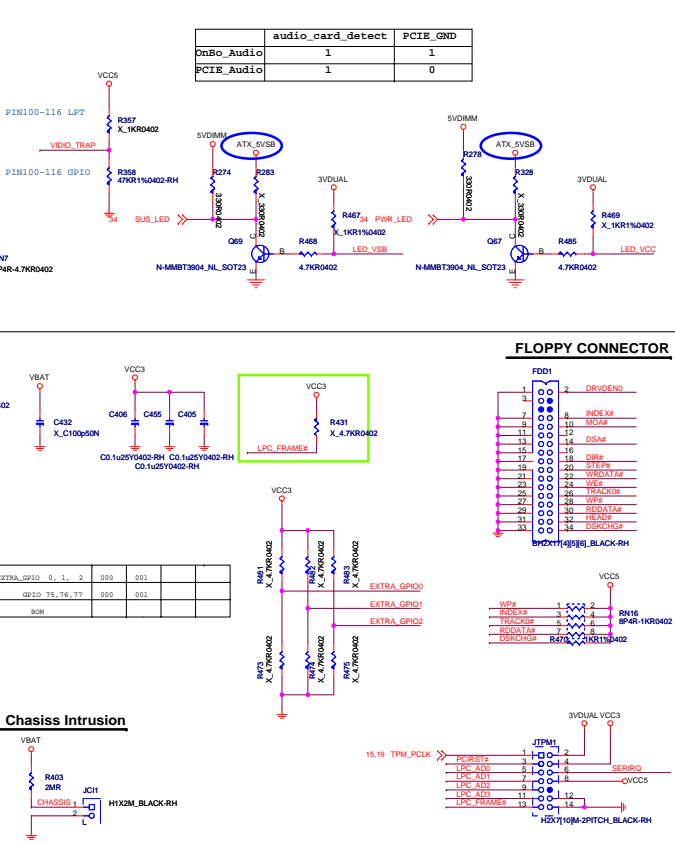
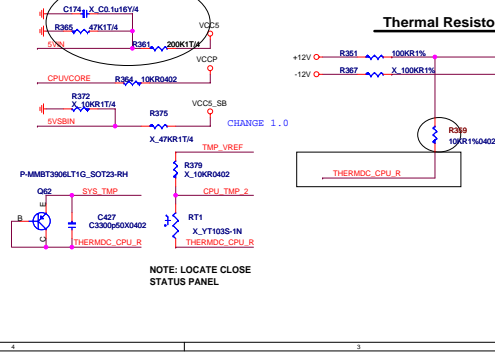
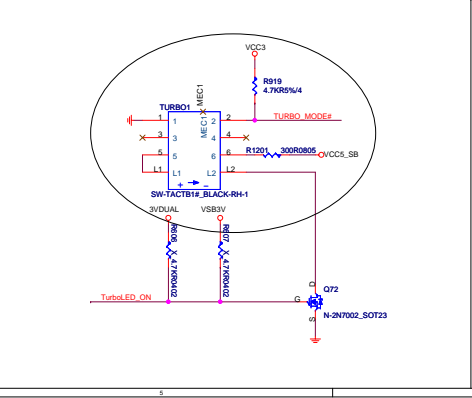


Micro Star Restricted Secret	
Title	USB CONNECTORS
Document Number	MS-7599
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Last Revision Date:	Friday, June 04, 2010
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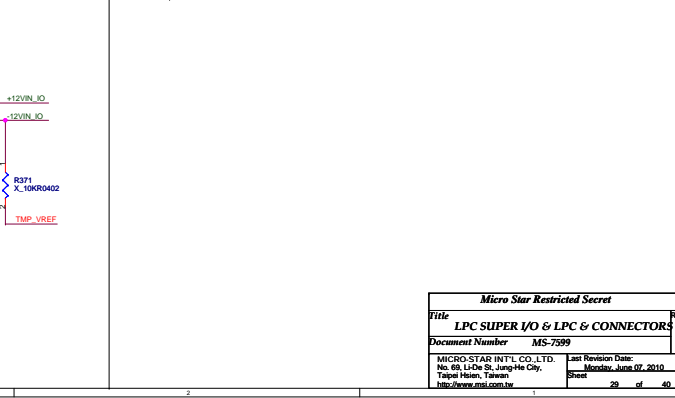
Super I/O

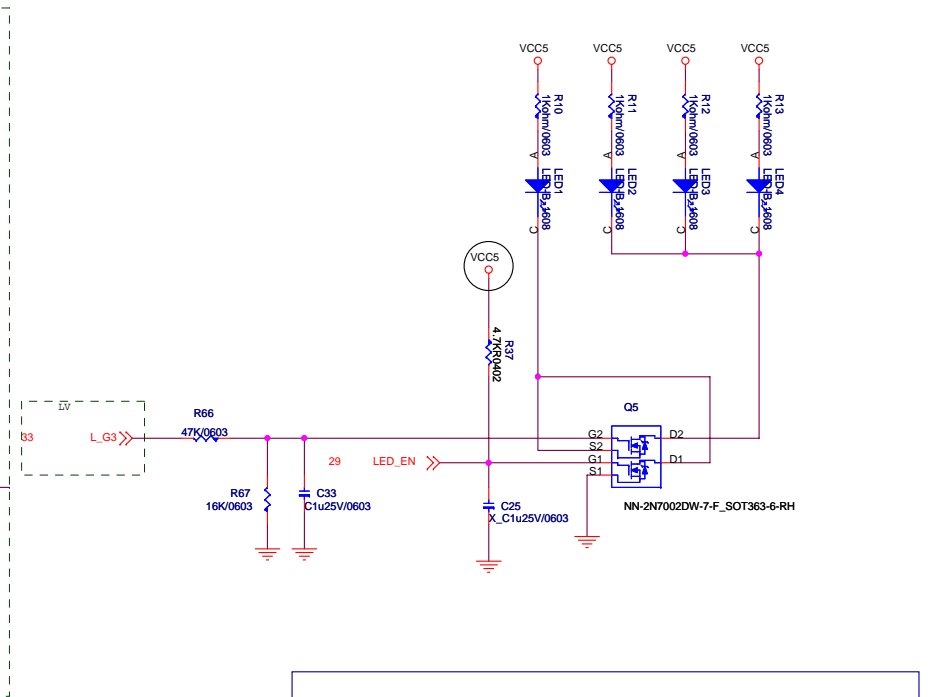
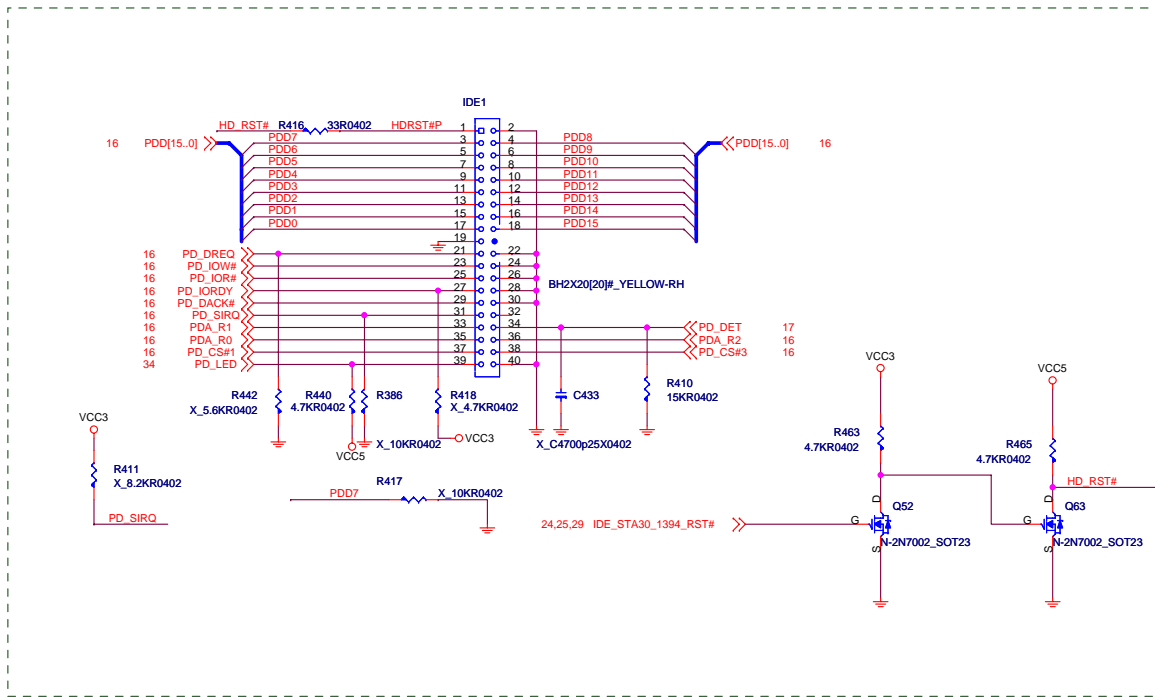


LPC I/O STRAPPING RESISTOR		
Don't STUFF	STUFF	
RTS2#	PRM FAN	LINEAR FAN
RTSA#	80Port enable	80Port disable
SOUTA	4E	2E
DTRA#	FAN START DUTY 60%	FAN START DUTY 100%
DTN2	PIN51-56 as GPIO	PIN51-56 as WDT 1/2
SOUT2	PIN51-56 as GPIO	PIN51-56 as BUS 1/2



Chassis Intrusion		

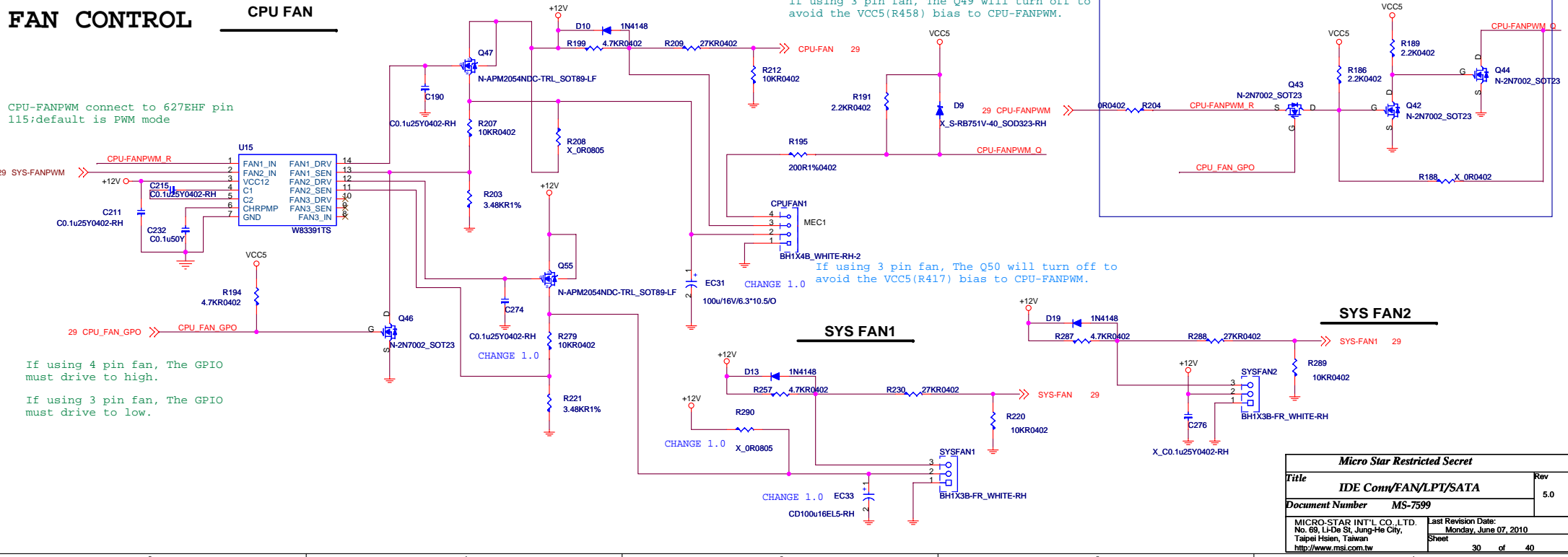




FAN CONTROL

CPU FAN

CPU-FANPWM connect to 627EHF pin 115; default is PWM mode



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

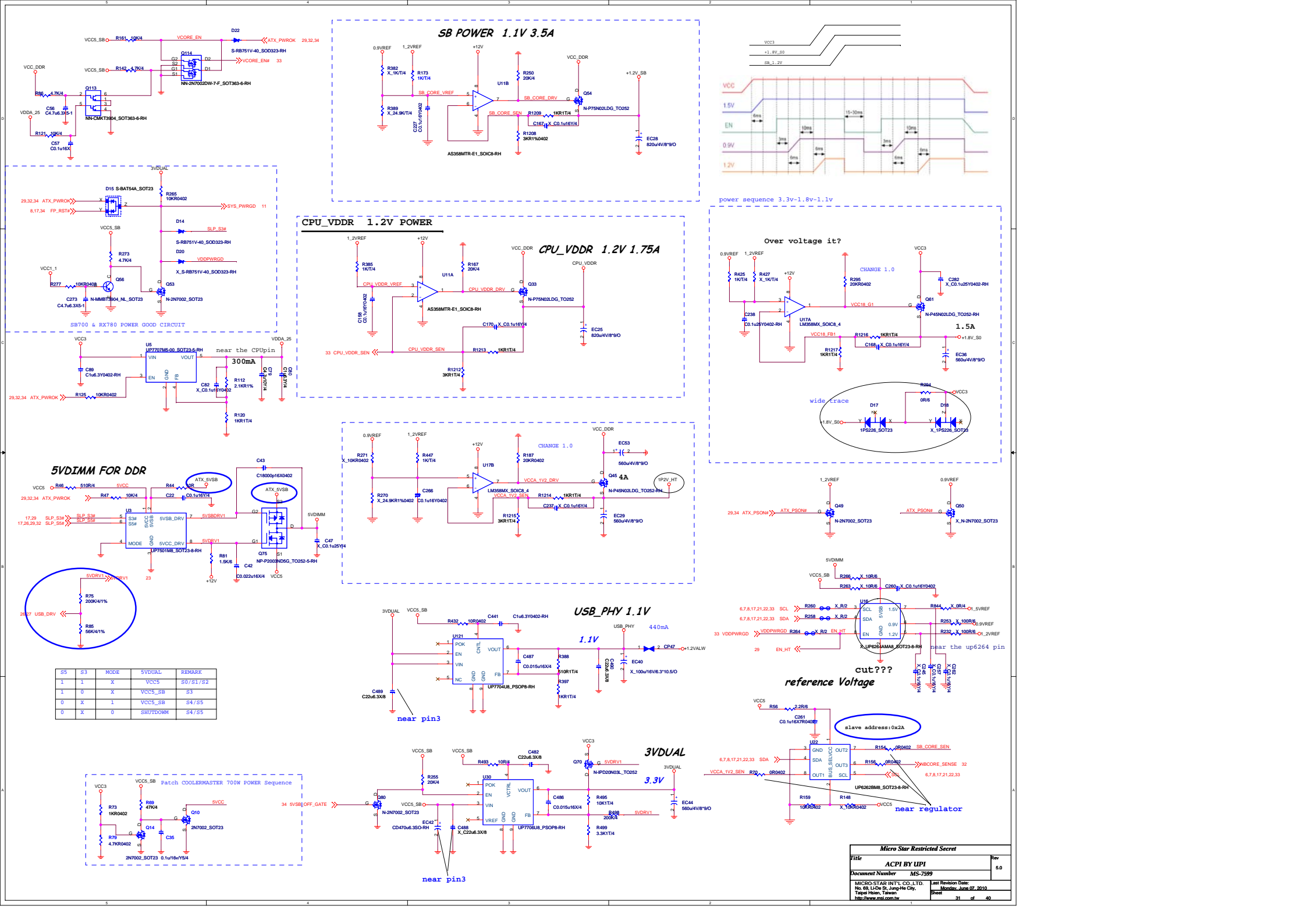
If using 3 pin fan, The GPIO must drive to low.

If using 3 pin fan, The Q49 will turn off to avoid the VCC5(R458) bias to CPU-FANPWM.

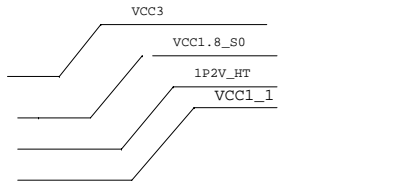
If using 3 pin fan, The Q50 will turn off to avoid the VCC5(R417) bias to CPU-FANPWM.

SYS FAN2

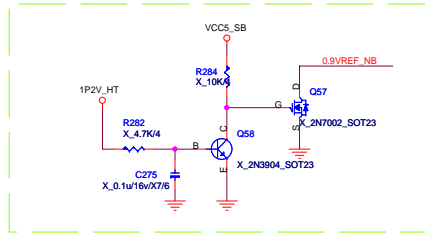
Micro Star Restricted Secret		
Title	IDE Conn/FAN/LPT/SATA	Rev
Document Number	MS-7599	5.0
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, June 07, 2010 Sheet 30 of 40



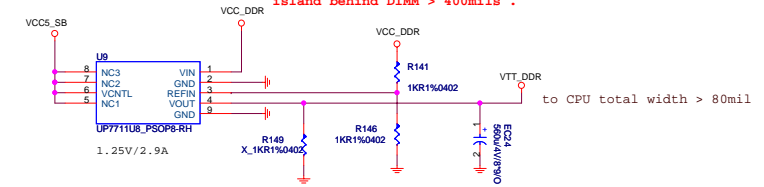
RX780 power up sequence



Reserve for RX780 POS

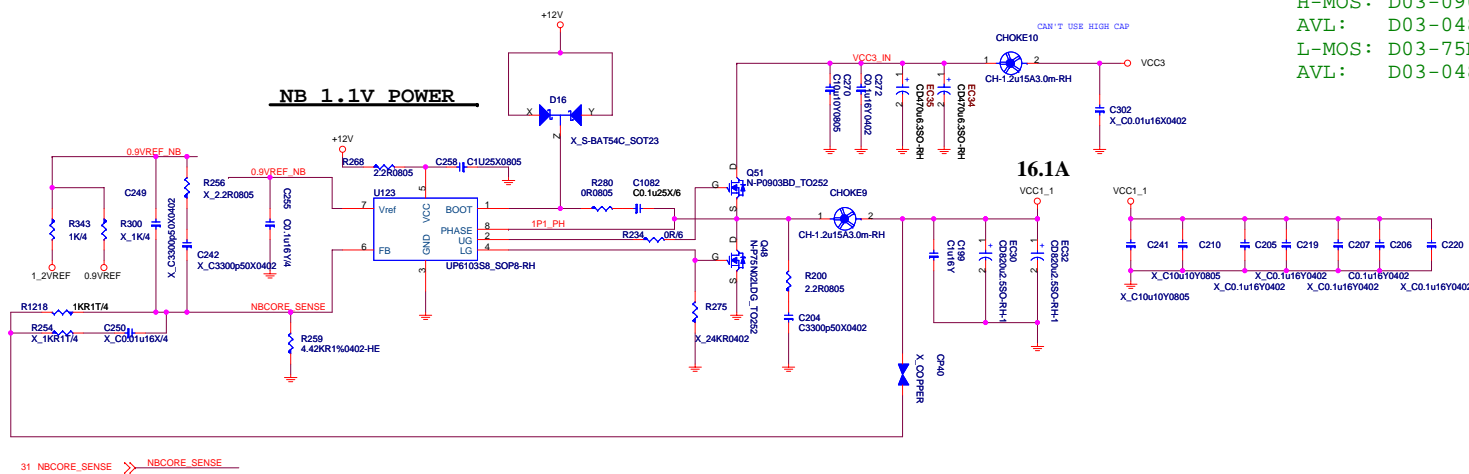


DDR VTT Power

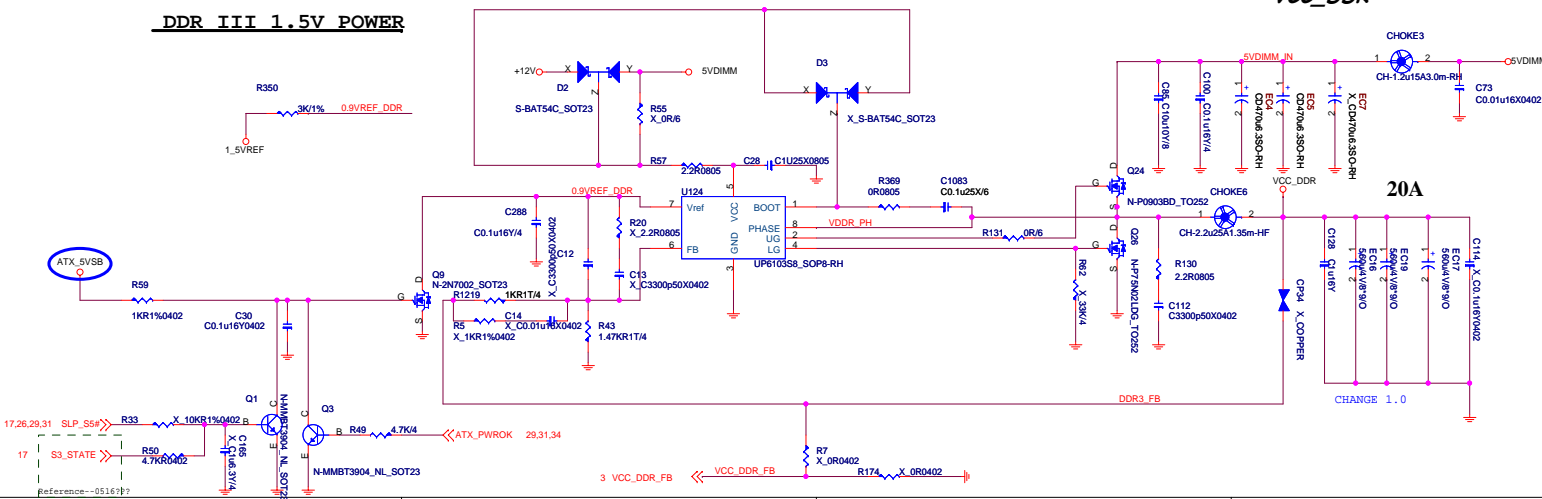


H-MOS: D03-0903BDB-N03
AVL: D03-0480900-O05
L-MOS: D03-75N022B-N03
AVL: D03-0480600-O05

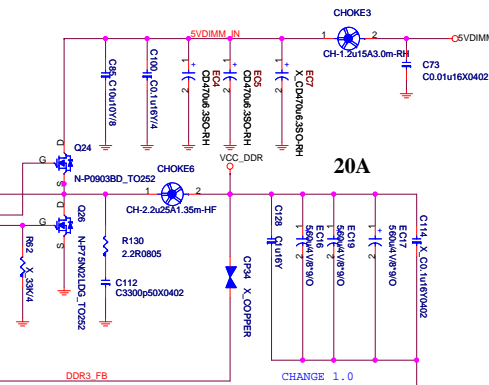
NB 1.1V POWER



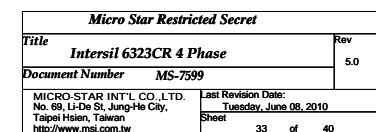
DDR III 1.5V POWER



VCC_DDR



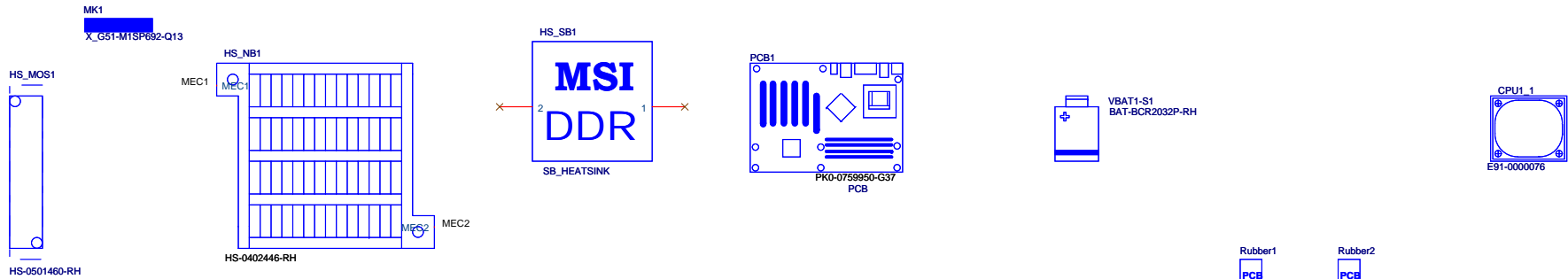
Micro Star Restricted Secret		
Title	VCC_DDR&VCC1_1	Rev 5.0
Document Number	MS-7599	
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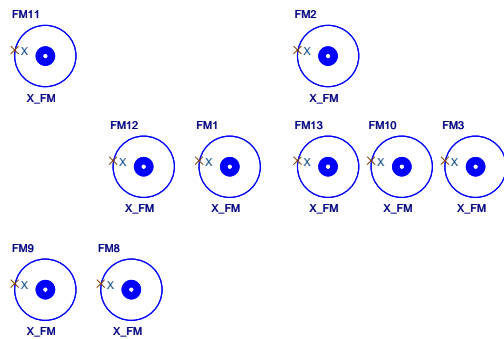
Intel Front Panel



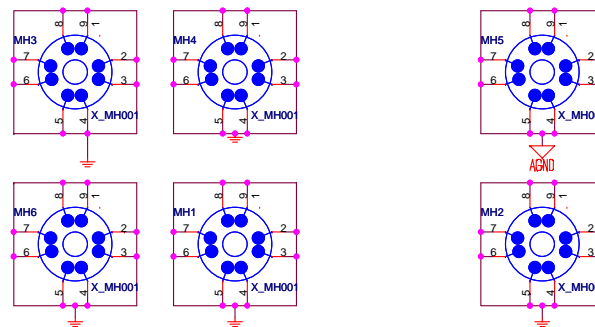
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MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-Hs City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, June 07, 2010 Sheet 34 of 40



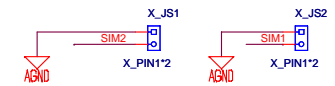
Optics Orientation Holes



Mounting Holes



Simulation



Micro Star Restricted Secret		
Title	MANUAL PARTS	Rev 5.0
Document Number	MS-7599	
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, June 21, 2010 Sheet 35 of 40