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**HP Gwen X5 (HP SCH P/N:718773-000)**  
**HP Mordred X5 (HP SCH P/N:718773-000)**

uATX(244 mm X 244 mm)

(MS-7860 11)

**CPU:** Intel Haswell Processor

HP P/N	Description
718772-001	PCA,GWEN
718773-000	SCH,GWEN
718774-001	PCB,GWEN

**System Chipset:** Intel Lynx Point Chipset

HP P/N	Description
718775-001	PCA,MORDRED
718773-000	SCH,MORDRED
718774-001	PCB,MORDRED

**OnBoard Chipset:** AZALIA Codec: Realtek ALC 221  
LAN: Realtek RTL8151GH-CG 10/100/1000 NIC  
SIO: Nuvoton NPCD379H  
Flash ROM: 64 Mb

**Main Memory:** DDRIII (1333/1600MHz) \* 4 (Dual Channel)

**Expansion Slots:** PCI Express (X16) Slot \* 1  
PCI Express (X1) Slot \* 3  
DDI Port Slot \*1

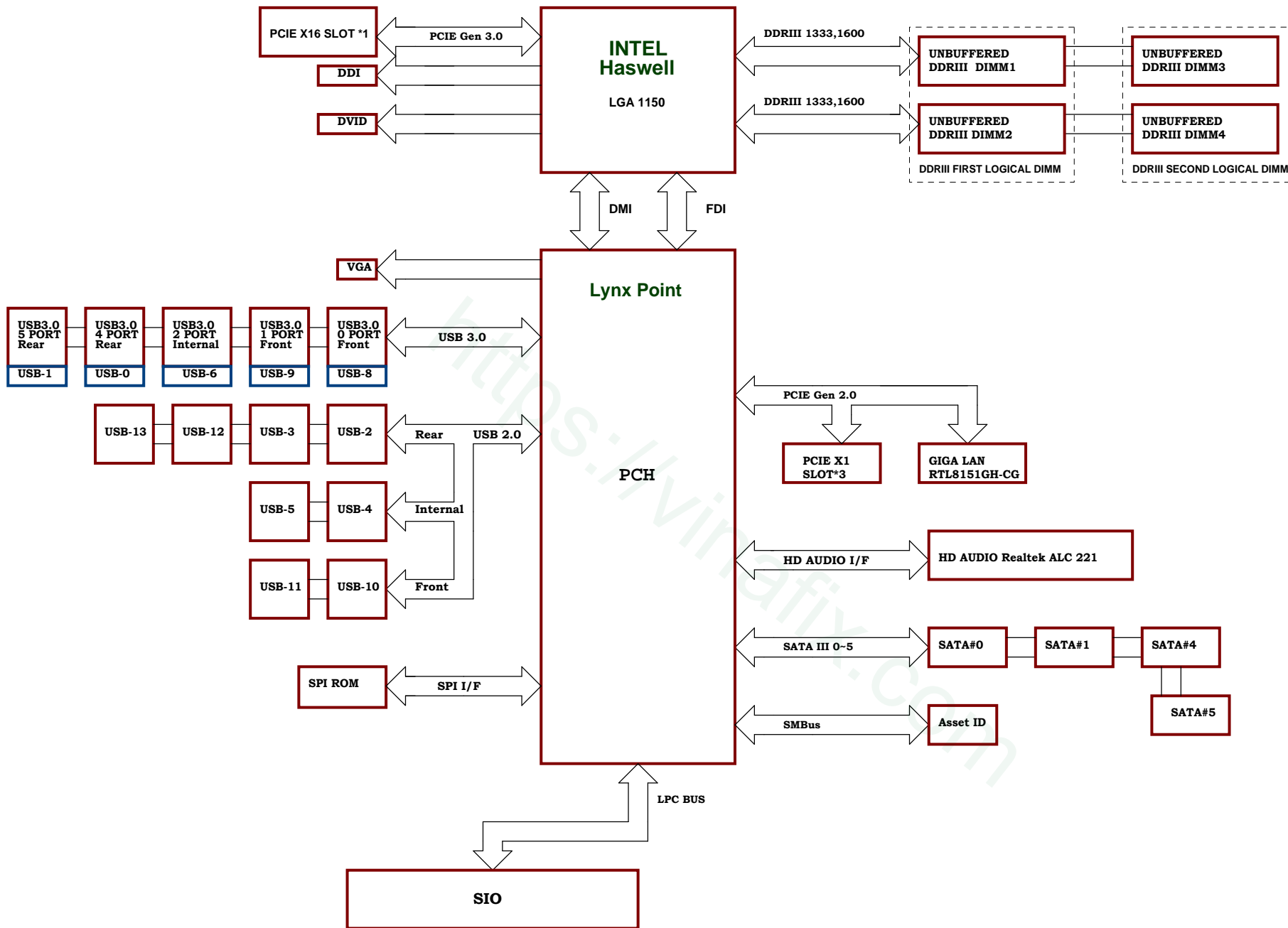
**PWM:** Controller: ISL95816HRZ  
Controller: NCP1587GDR2G

**Other:** SATA \*4  
USB3.0 \*5 (Rear\*2 Front\*2 Internal\*1)  
USB2.0 \*8 (Rear\*4 Front\*2 Internal\*2)  
DVI PORT\*1  
VGA PORT \*1  
PRINT Header \*1  
COM PORT \*1  
COM Header \*1

**BOM DISTRIBUTION RULE**  
Gwen,Mordred  
(BOM,BOM)

Release Date : Wednesday, July 24, 2013  
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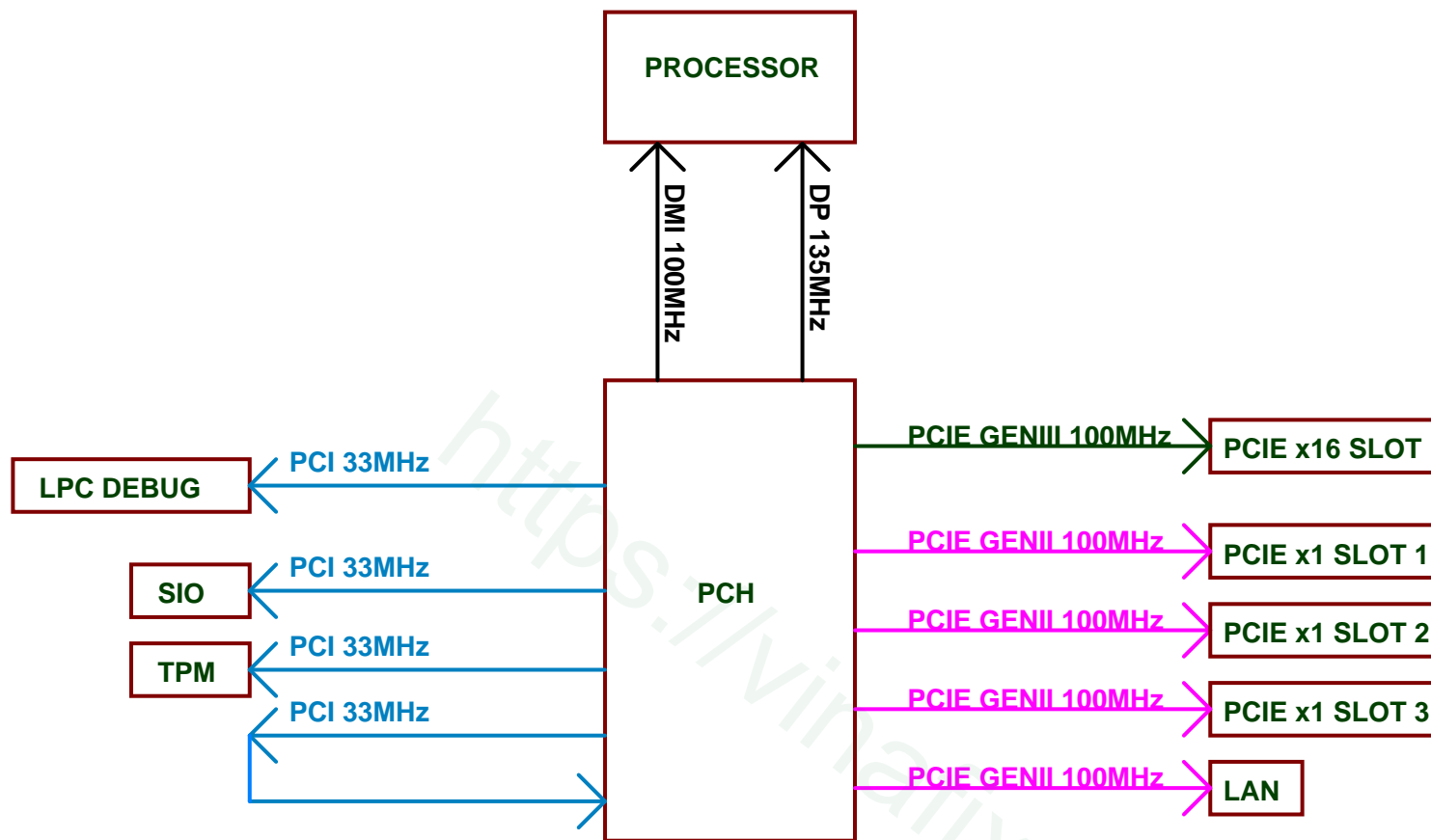
MICRO-STAR INT'L CO.,LTD		
HP SCH P/N: 718773-000(MSI MS-7860)		
Size Custom	Document Description Cover Sheet	Rev X5
Date:	Sheet 1 of 56	



Release Date : Wednesday, July 24, 2013

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HP SCH P/N: 718773-000(MSI MS-7860)		Rev X5	
Size Custom	Document Description	Block Diagram	
Date:	Sheet 2 of 56		

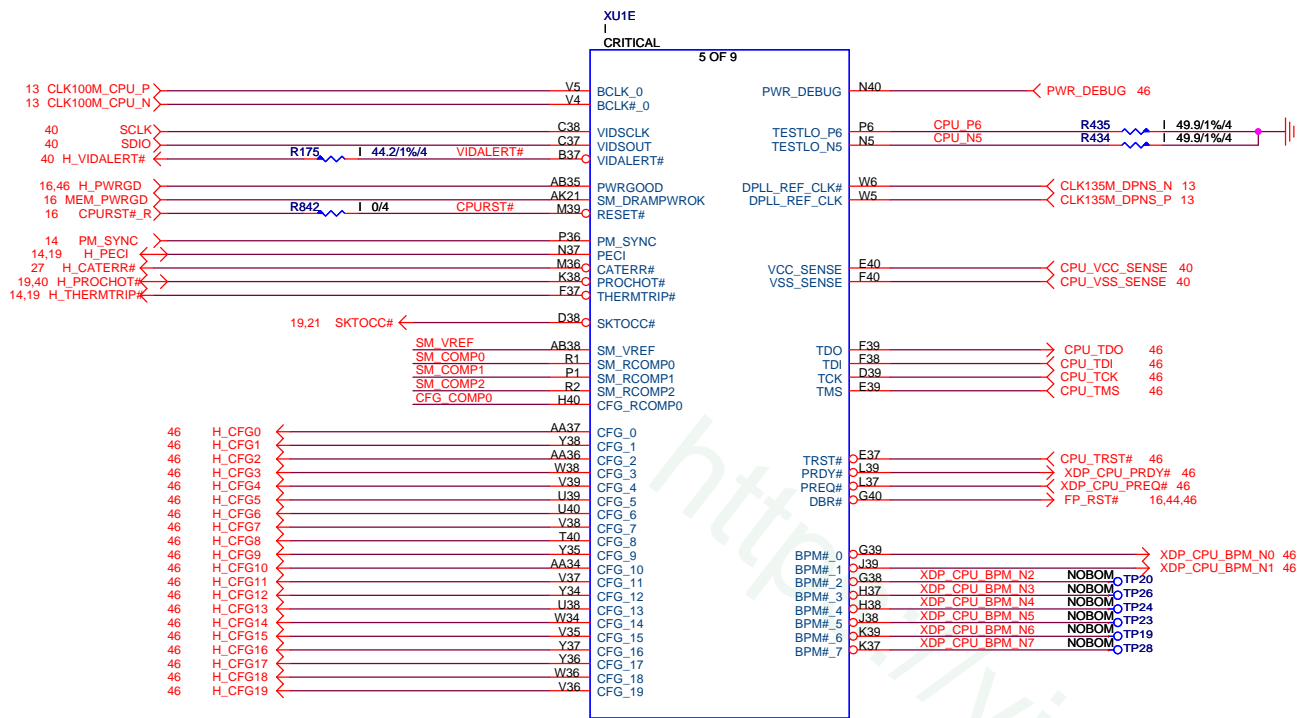


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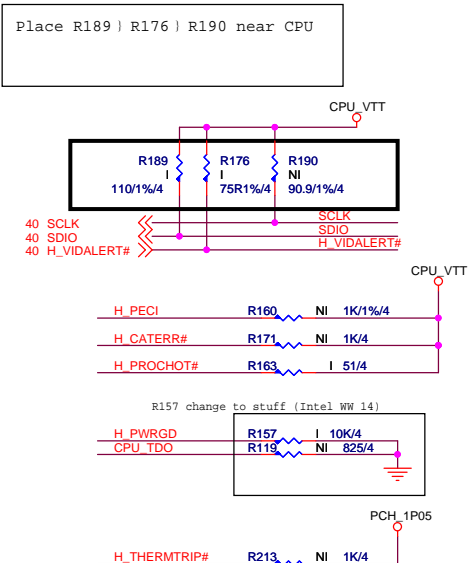
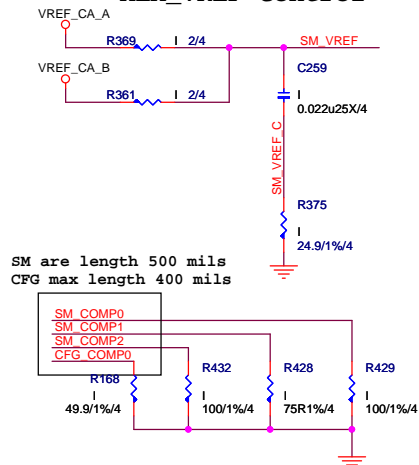


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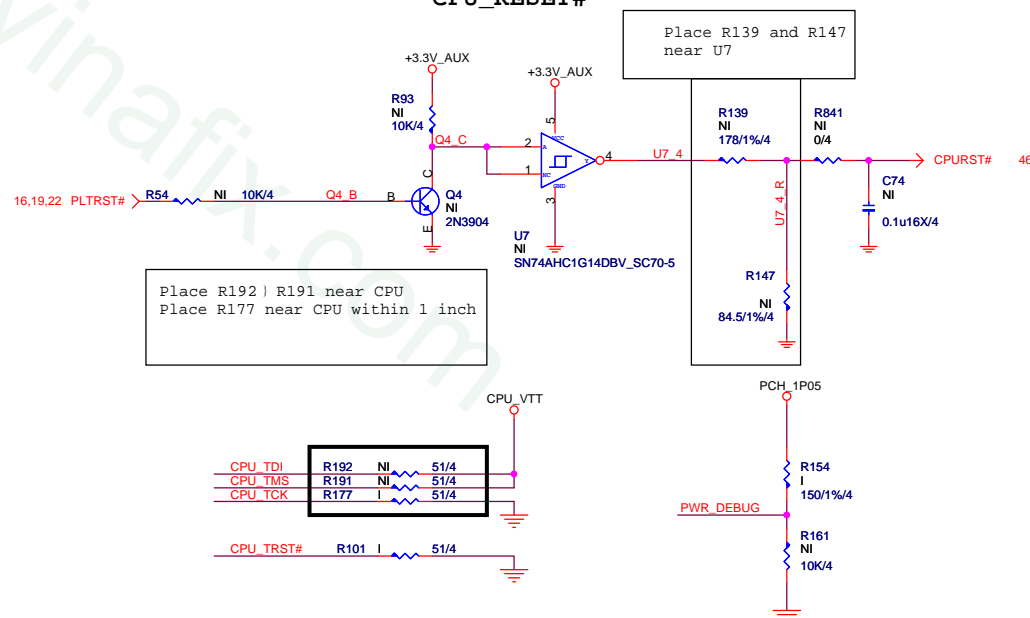


CPU2\_2 **N12-150A010-L06**  
**AVL:N12-150A020-F02**

### MEM\_VREF Control



### CPU\_RESET#



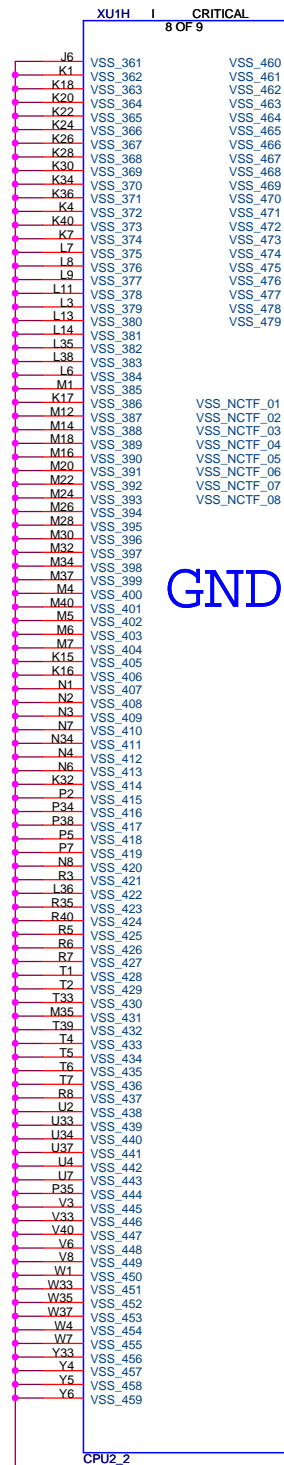
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Size Custom	Document Description CPU-CLK/Control	Rev X5
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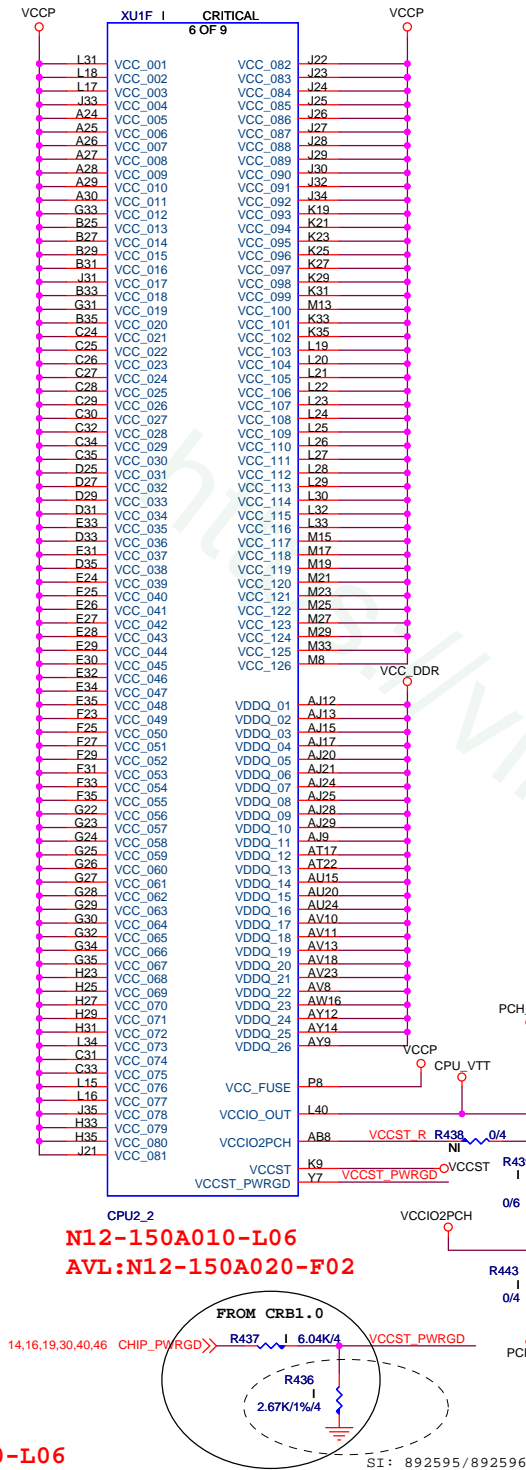




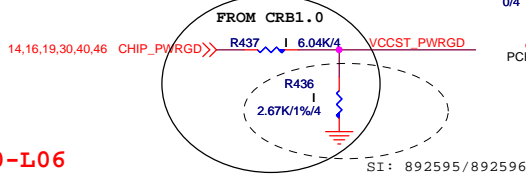


GND

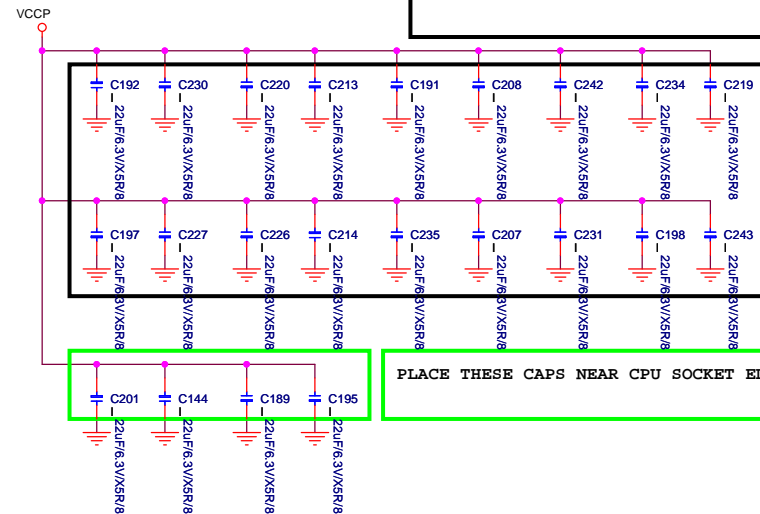
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AVL:N12-150A020-F02



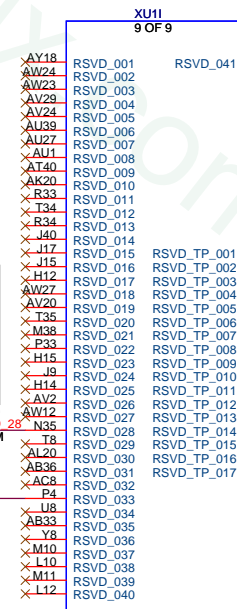
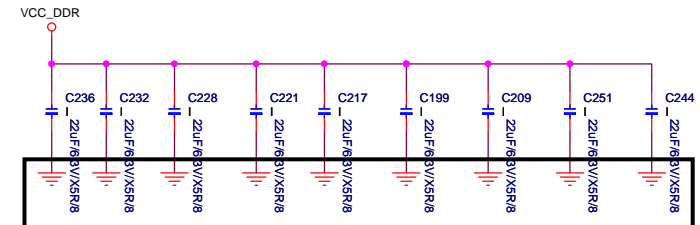
CPU2\_2  
N12-150A010-L06  
AVL:N12-150A020-F02



## VCCP-Decoupling



## VCC\_DDR-Decoupling



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CPU-GND/Power

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XU1G  
CRITICAL

7 OF 9

GND

N12-150A010-L06

AVL:N12-150A020-F02

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HP SCH P/N: 718773-000(MSI MS-7860)

Size  
Custom

Document Description

CPU-GND

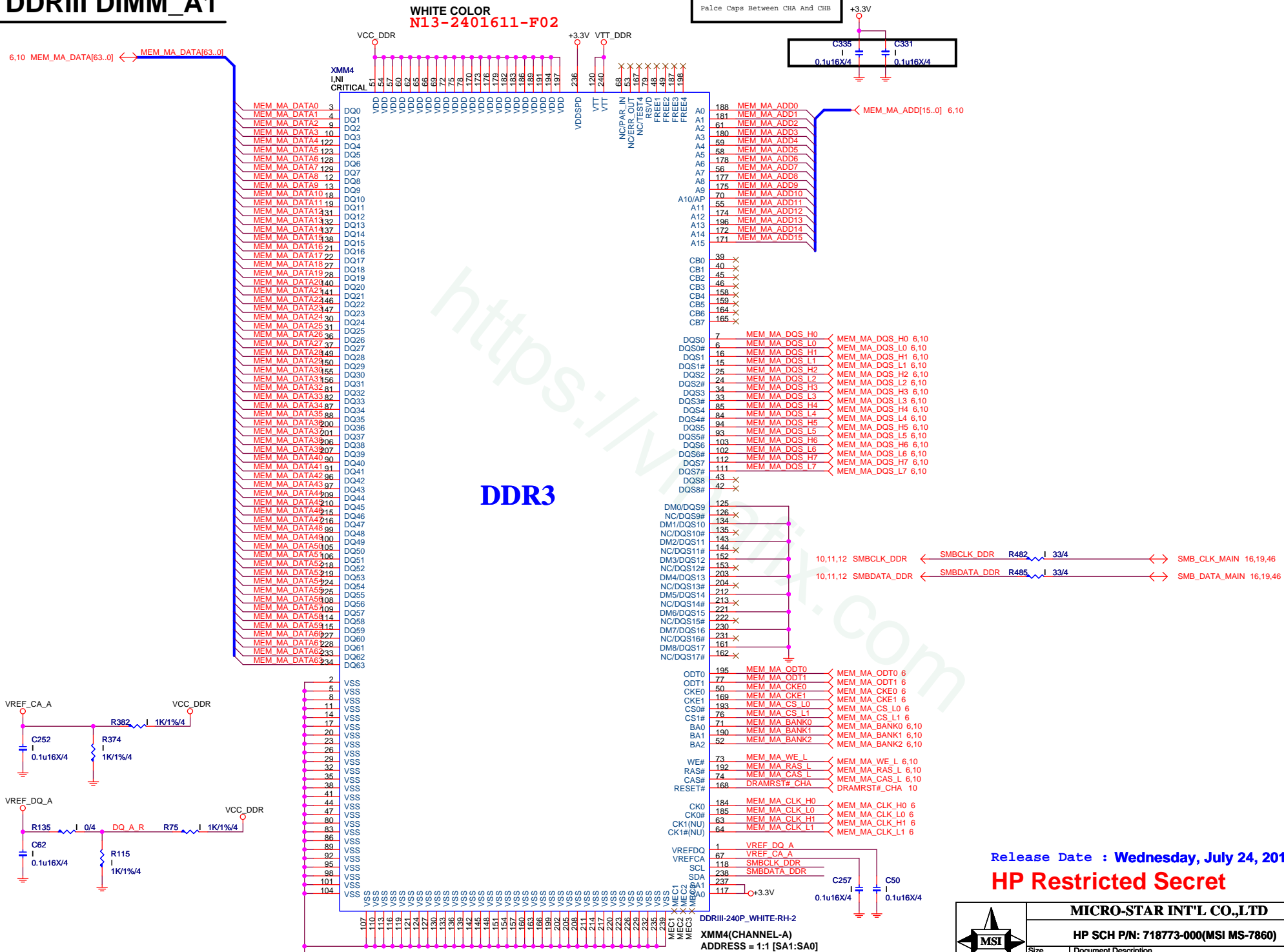
Rev  
X5

Date:

Sheet 8 of 56

## DDRIII DIMM A1

WHITE COLOR  
N13-2401611-F02



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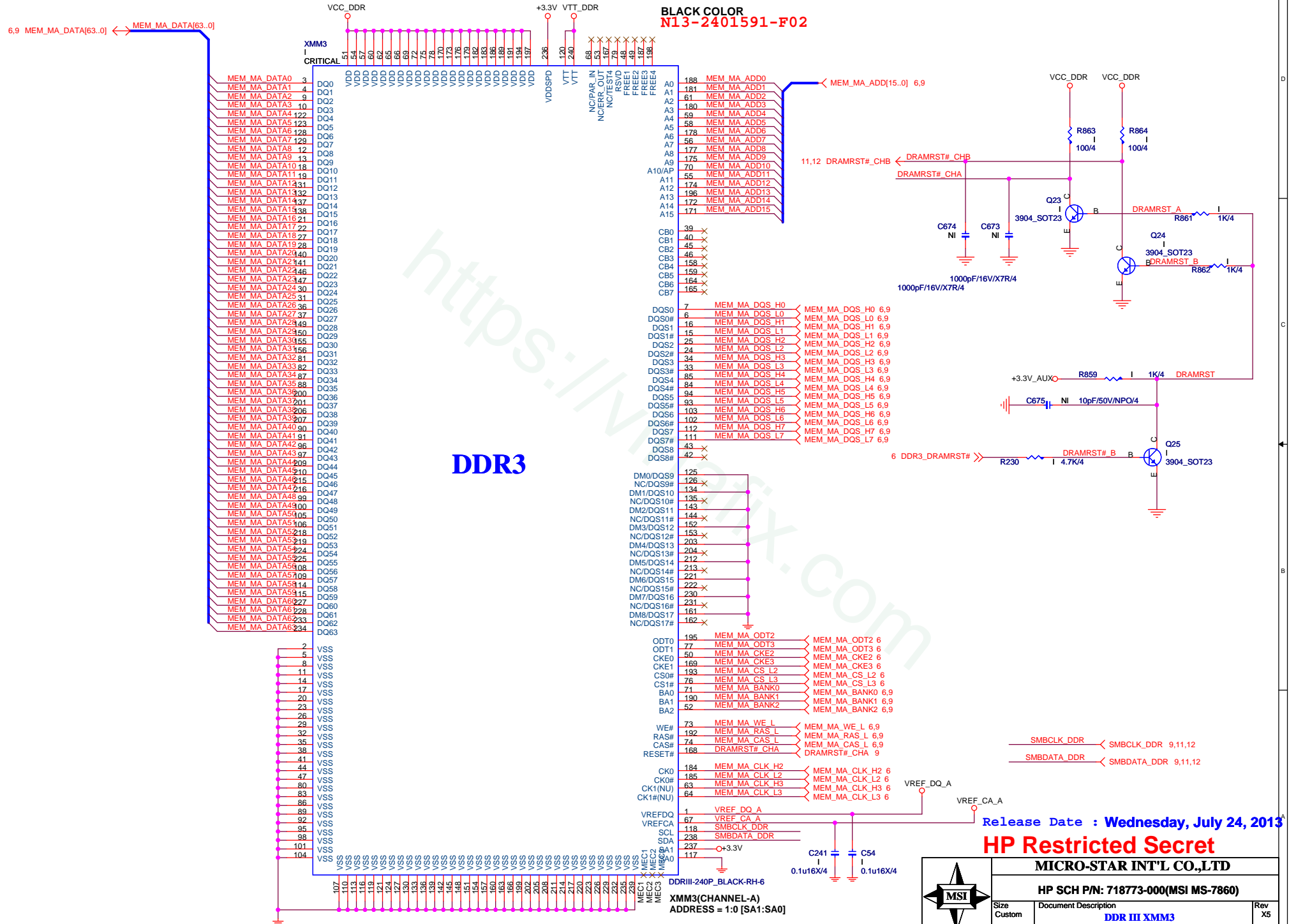
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### DDR III XMM4

Date:	Sheet 9 of 56
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# DDR3 DIMM\_A2



# DDRIII DIMM\_B1

WHITE COLOR  
N13-2401611-F02

DDR3

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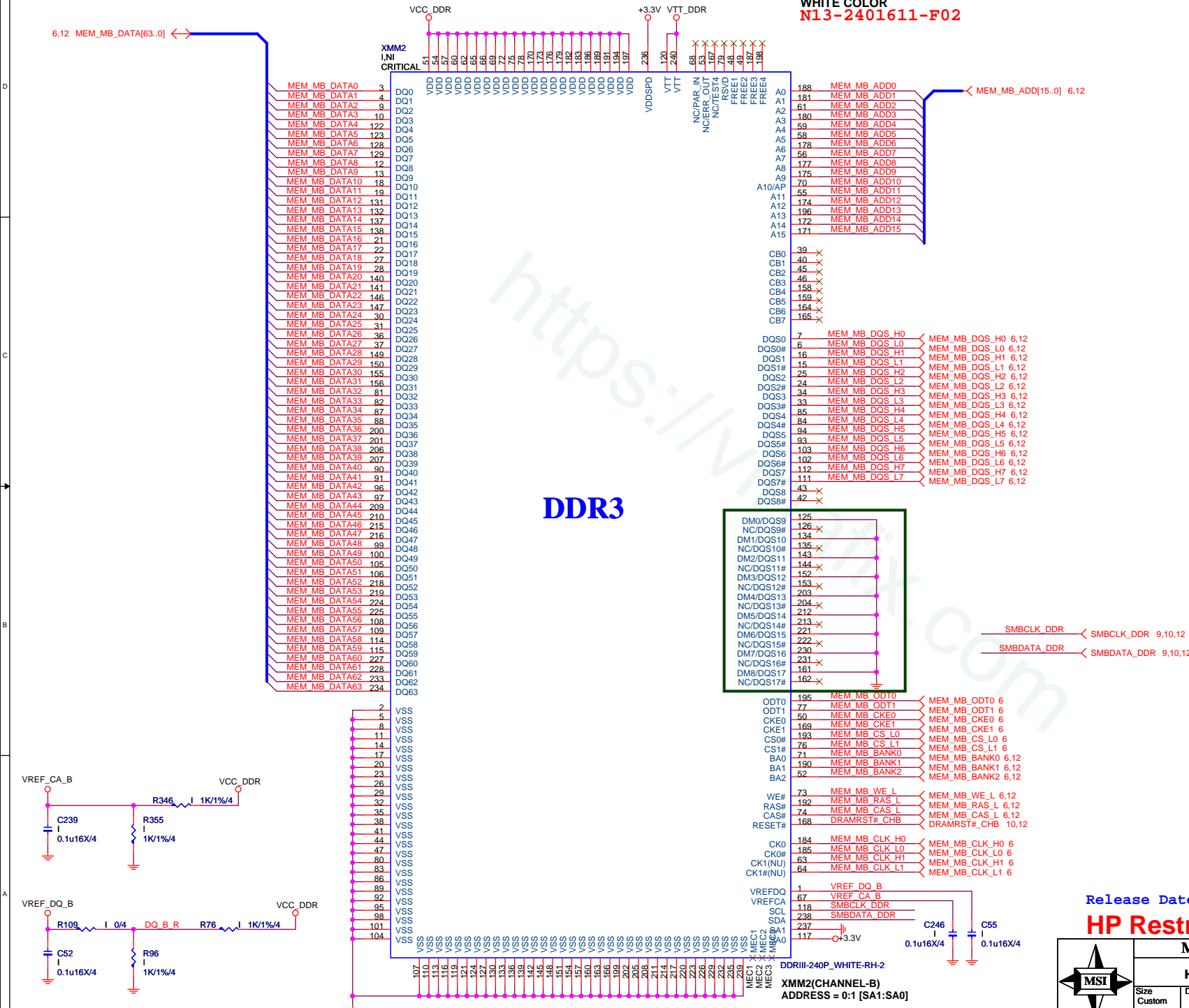
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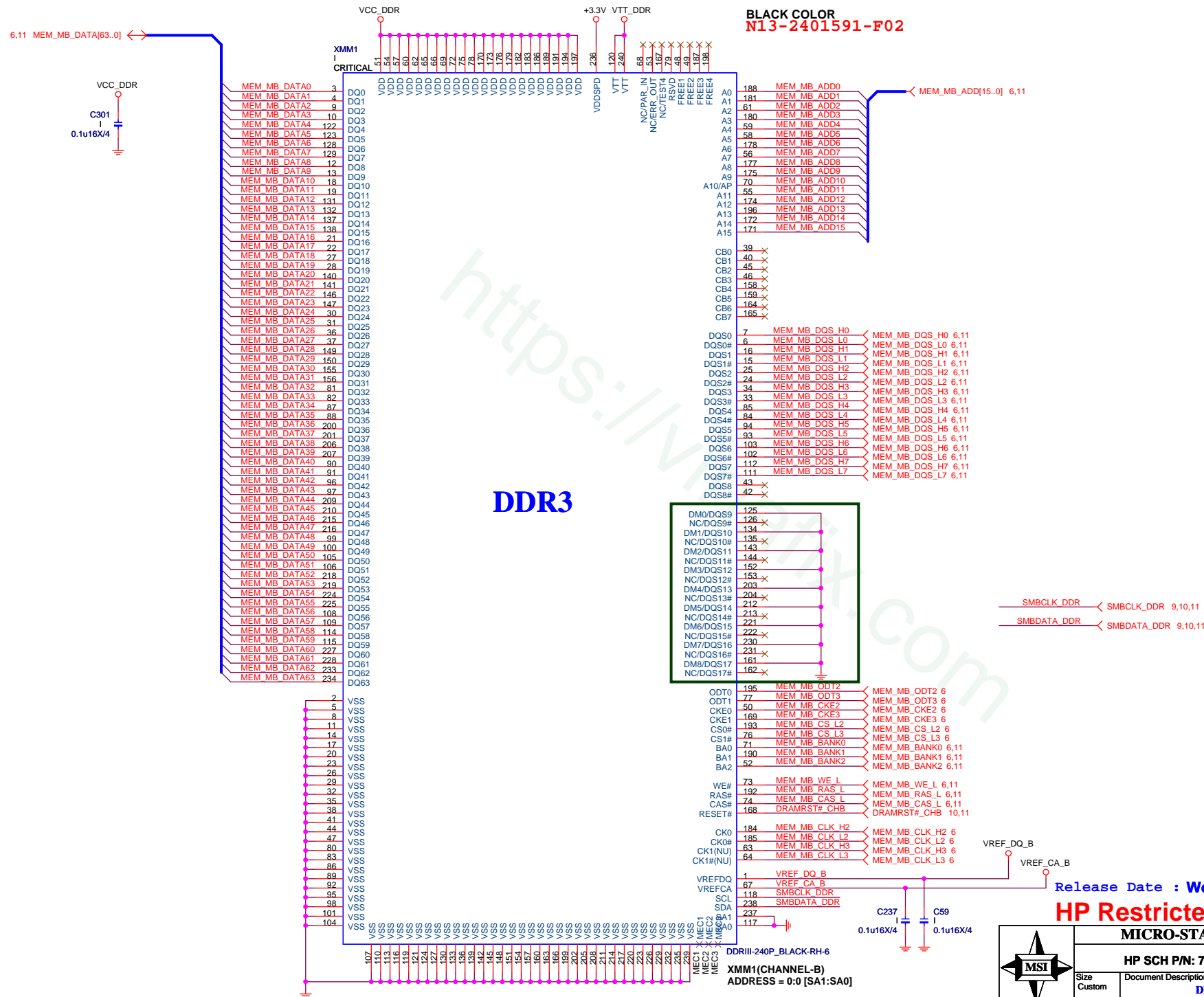
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DDR III XMM2

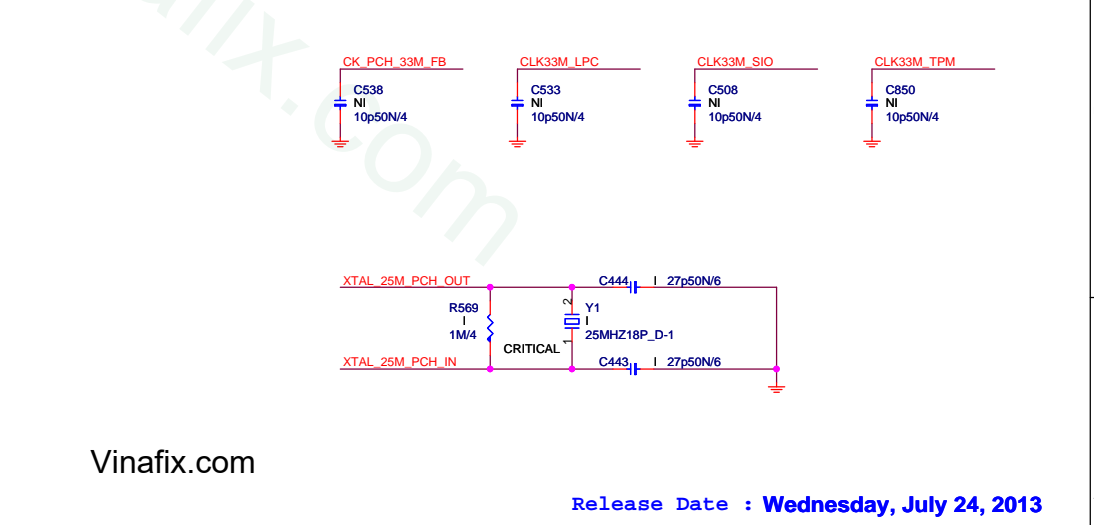
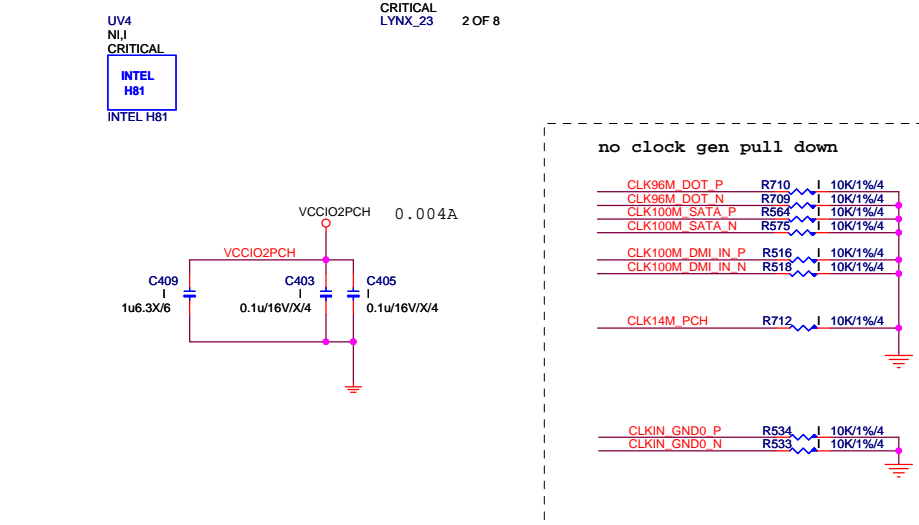
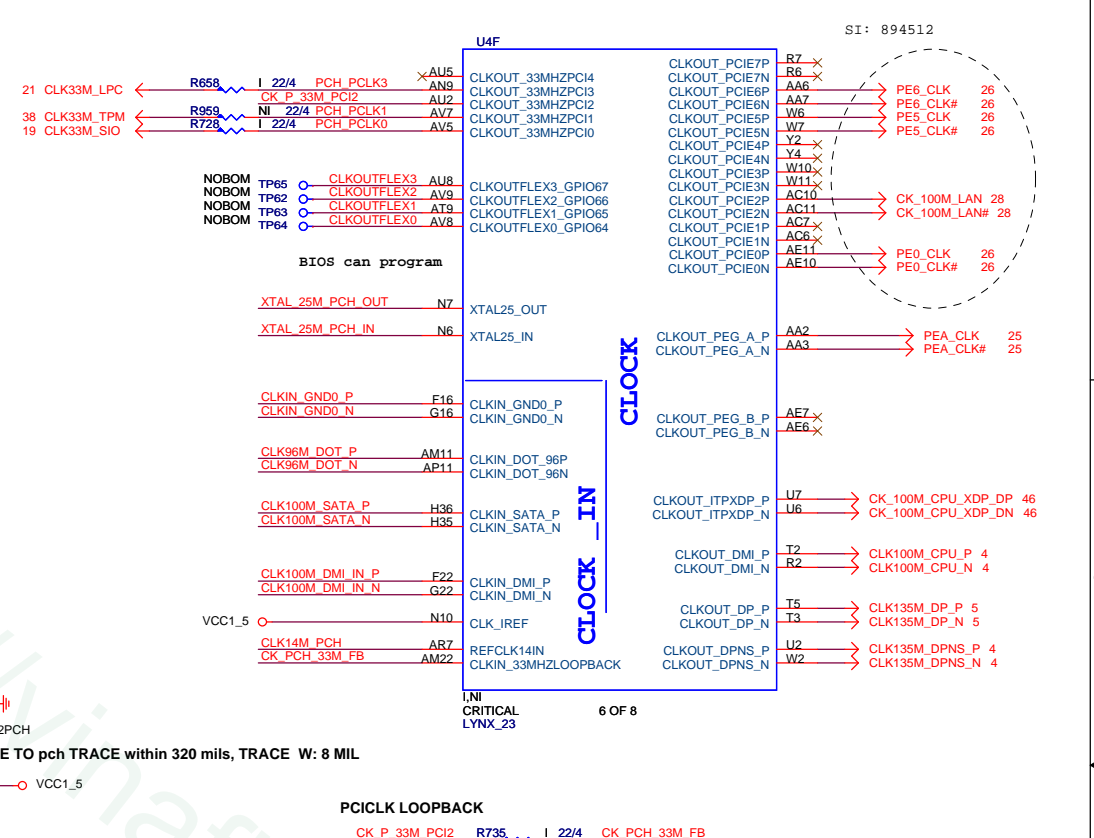
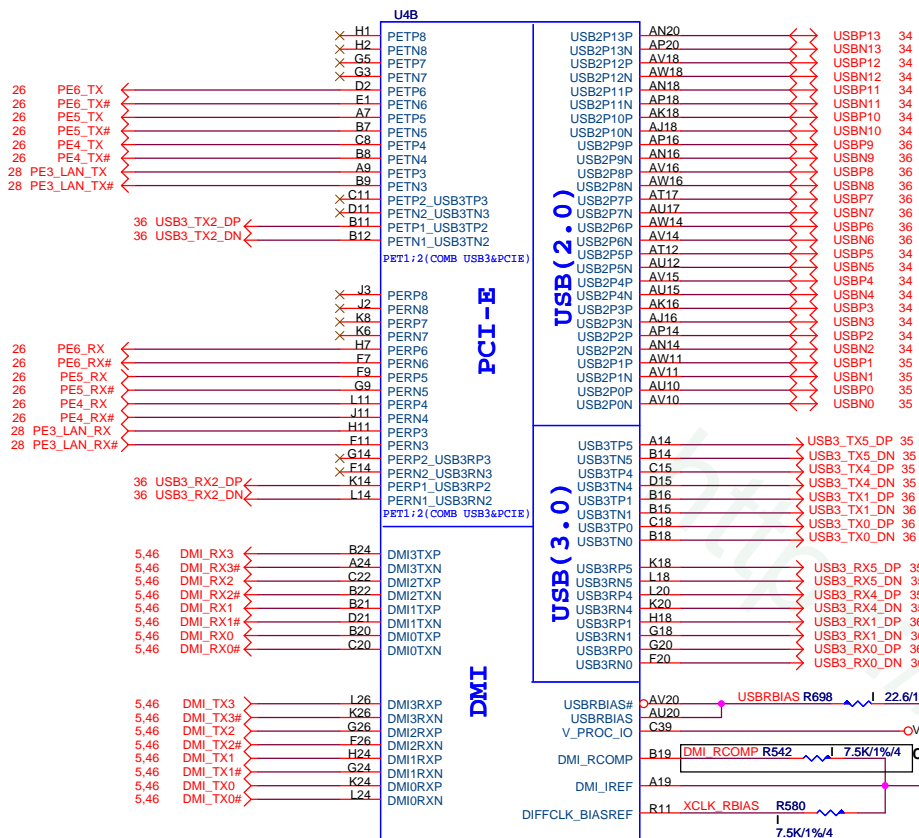
Rev  
X5

Date: Sheet 11 of 56

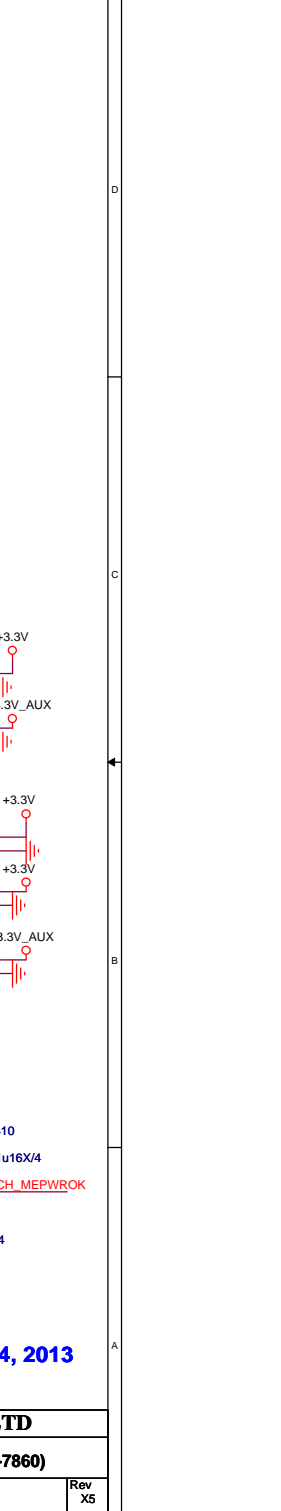
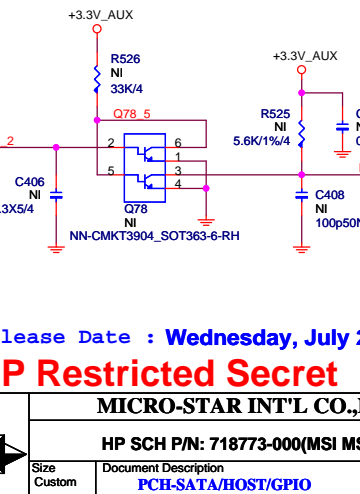
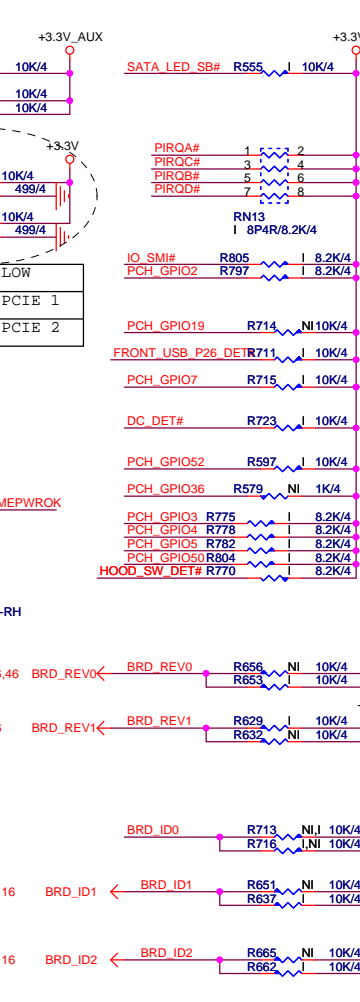
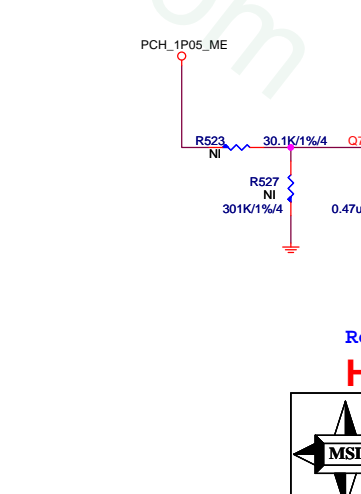
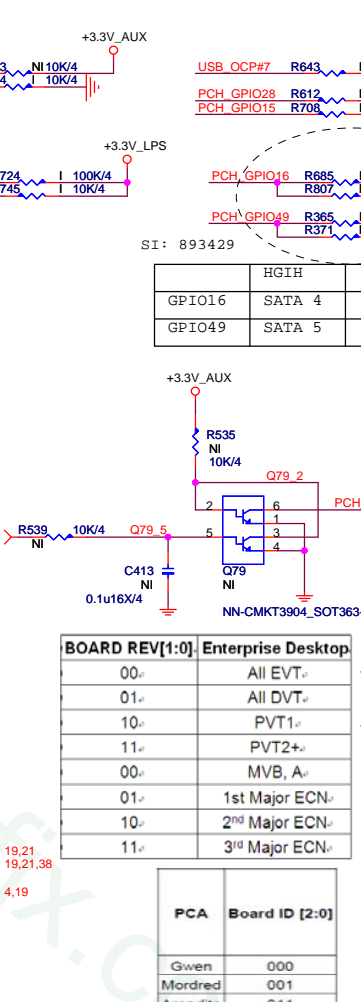
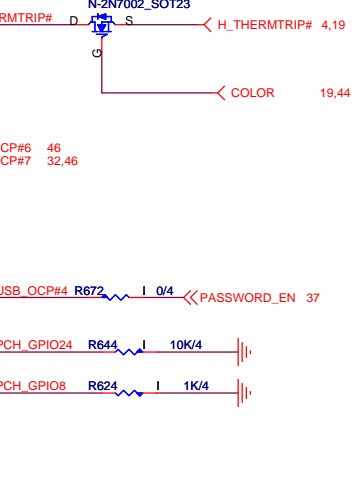
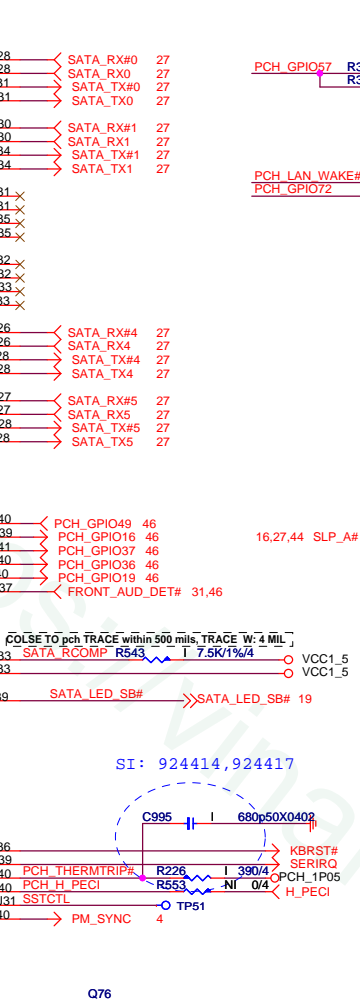
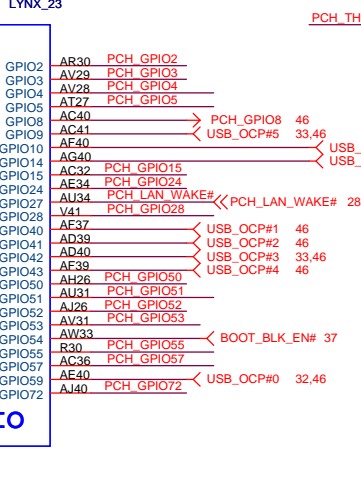
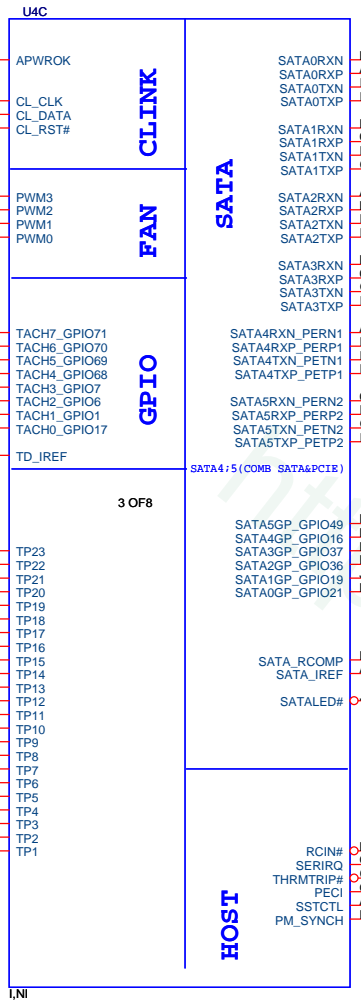
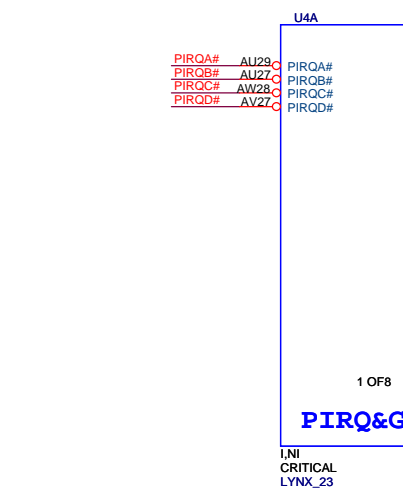
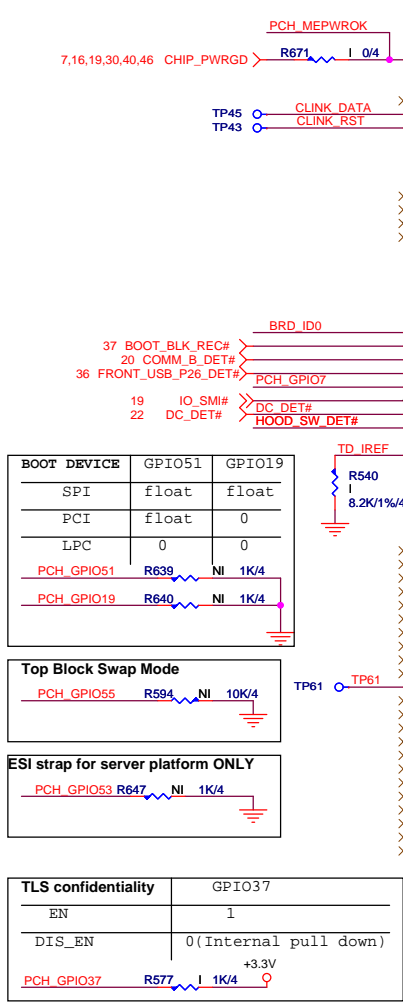


# DDRIII DIMM\_B2





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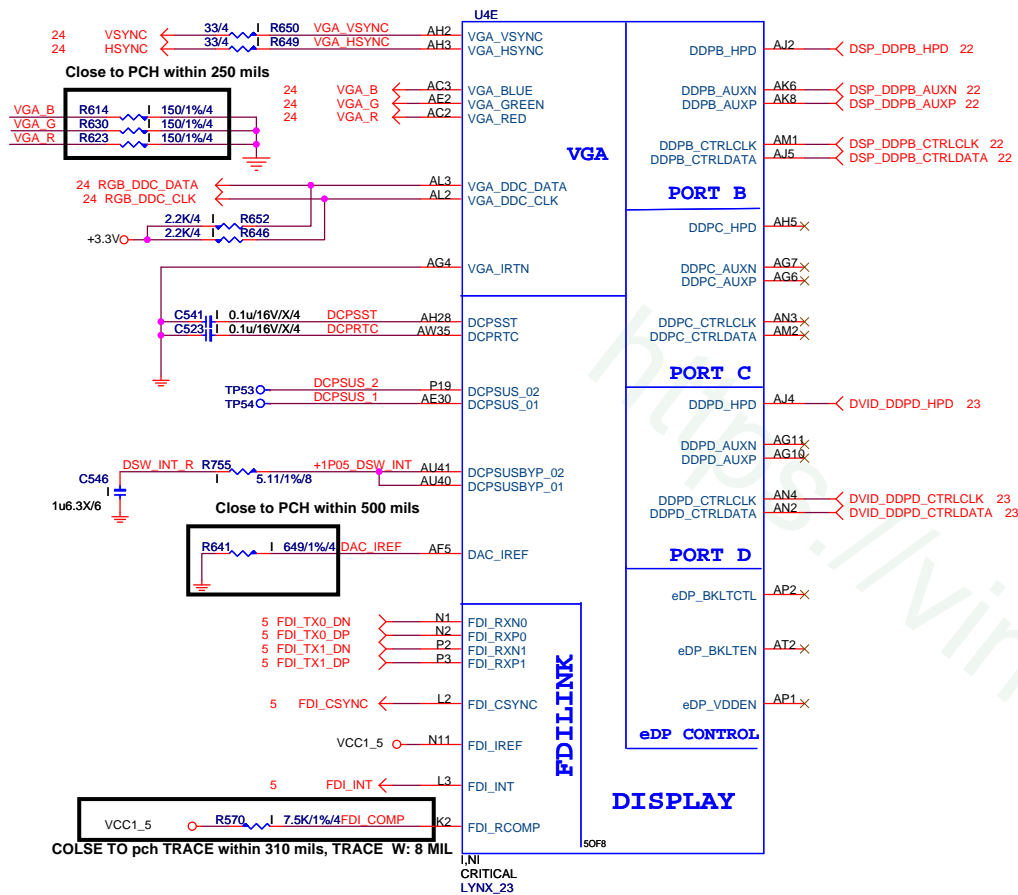
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**MICRO-STAR INT'L CO.,LTD**

HP SCH P/N: 718773-000(MSI MS-7860)

Size Custom Document Description PCH-SATA/HOST/GPIO Rev X5

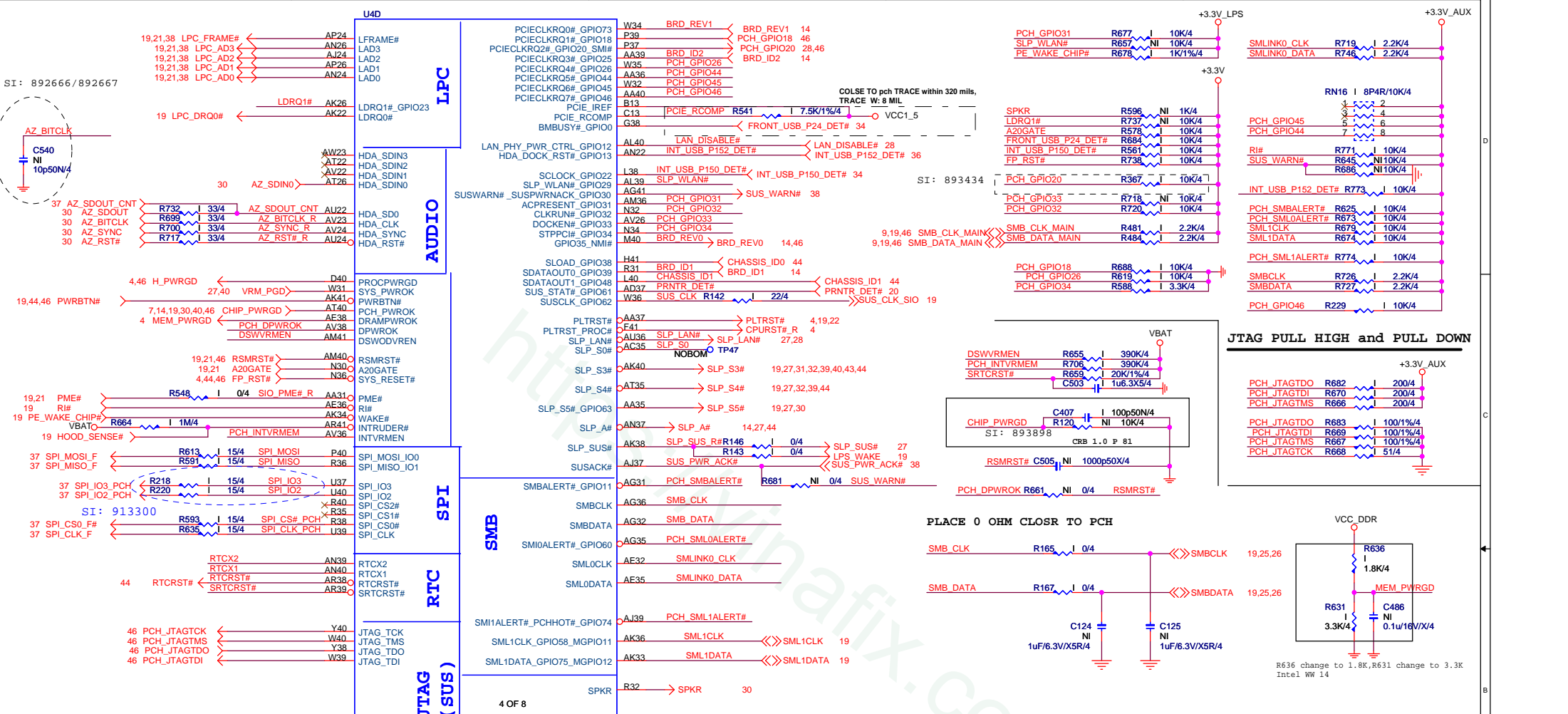
Date: Sheet 14 of 56



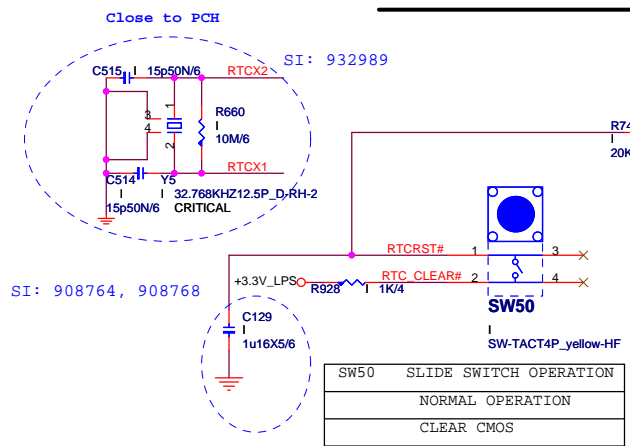
Release Date : Wednesday, July 24, 2013

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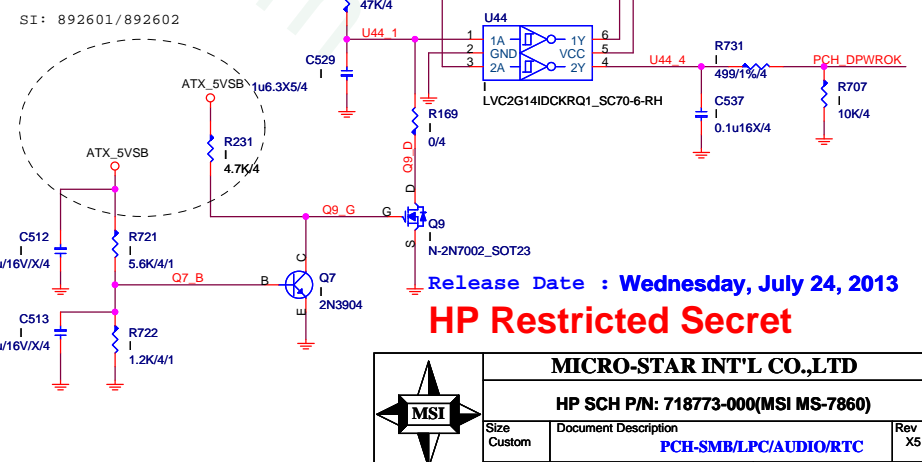
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HP SCH P/N: 718773-000(MSI MS-7860)		
Size Custom	Document Description <b>PCH-DDI/VGA</b>	Rev X5
Date:	Sheet 15 of 56	



RTC Block

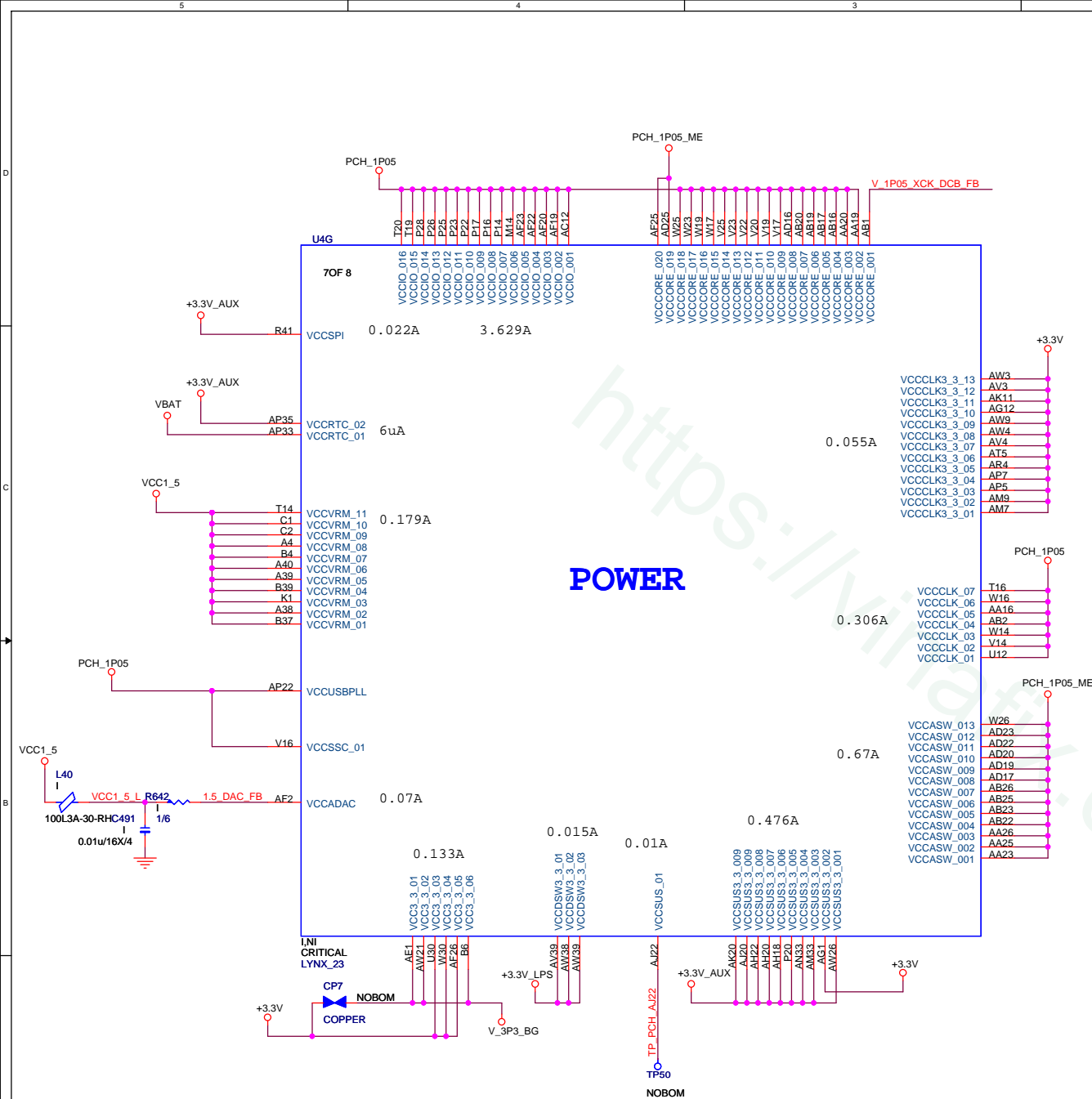


N91-01F0201-L06



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Size Custom	Document Description	Rev X5
PCH-SMB/LPC/AUDIO/RTC		
Date:	Sheet 16	of 56



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Place C283 | C237 near P14, P16, P17, P26, P28  
C285 near M14 C288 near U12 C289 near W14  
C291 near AB2 C295 near V16 C297 near AA16, W16  
C300 near AP22, AF19

Place C303 near AV4, AR4, AT5, AP5  
C634 near AG1 C633 near W30 C304 near AF26

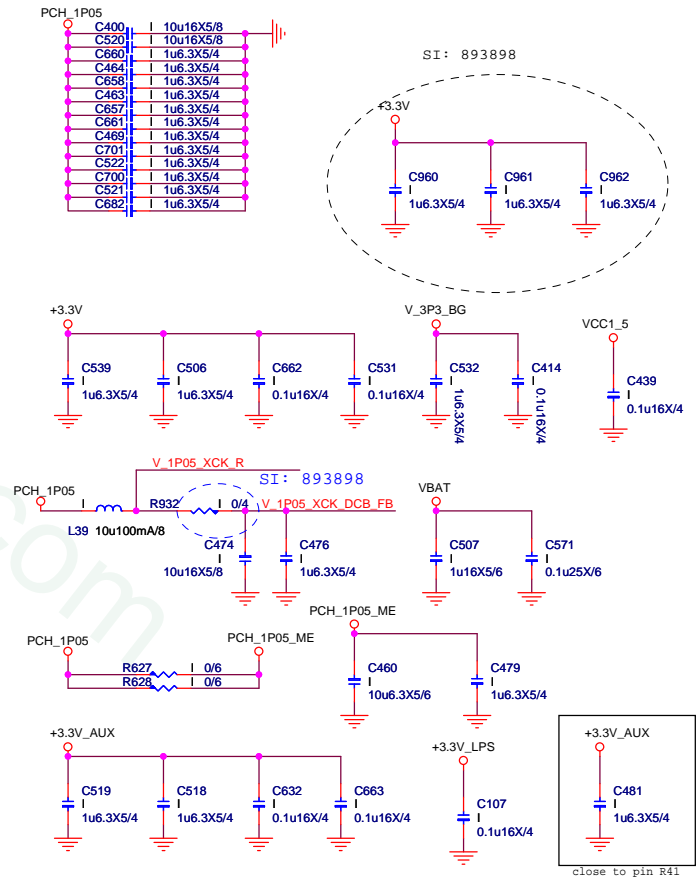
Place C630 near AN33 C301 near AK20  
C631 near AW26 C302 near AP35

Place C635 near T14

Place C636 near AW39

Place C312 | C311 near AD17, AD19

Place C306 near AW21 C632 near B6



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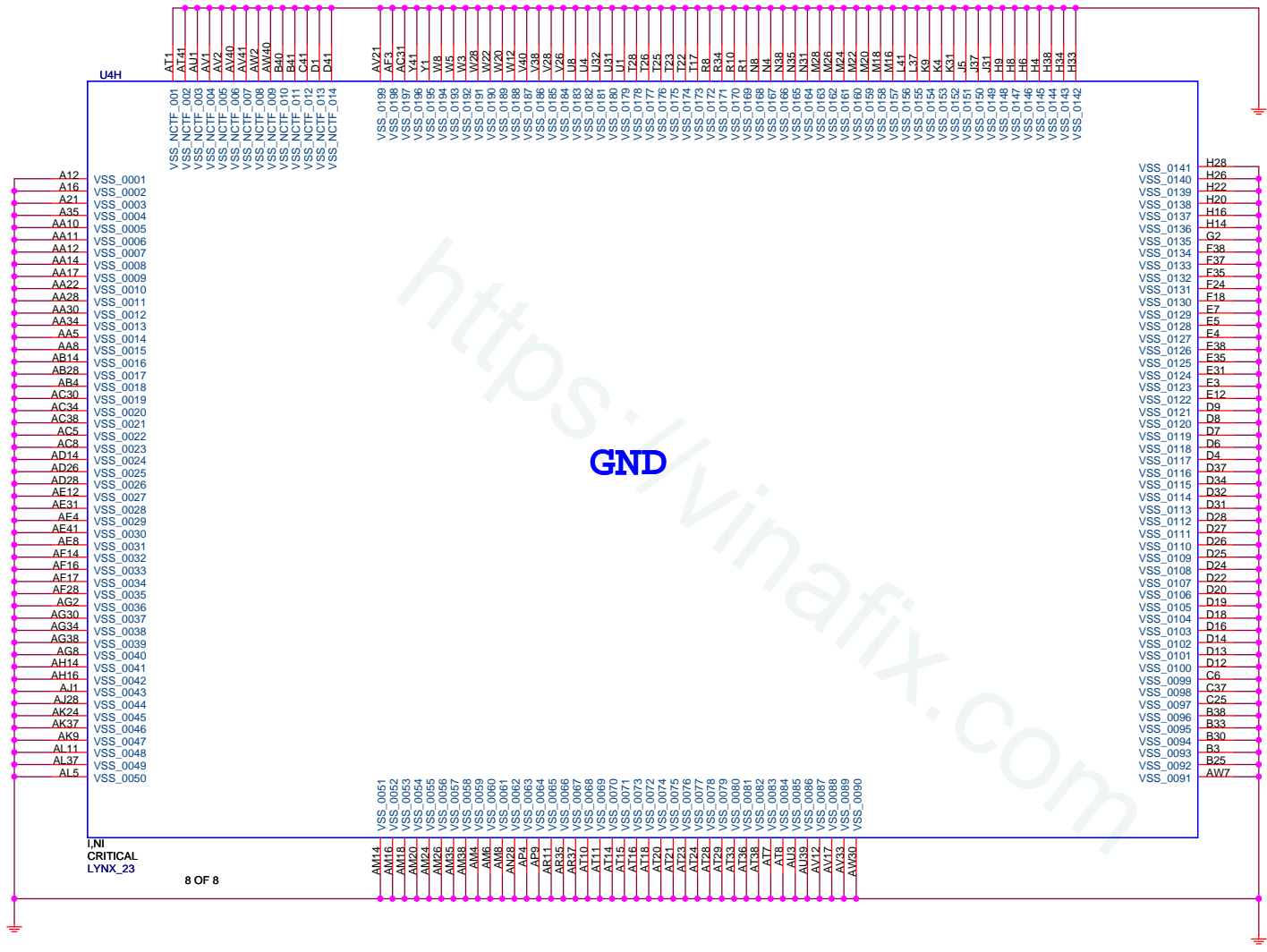


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HP SCH P/N: 718773-000(MSI MS-7860)


Size	Document Description	Rev
Custom	PCH-Power	X5
Date:		

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	<b>HP SCH P/N: 718773-000(MSI MS-7860)</b>		
	Size Custom	Document Description <b>PCH-GND</b>	Rev X5
	Date:		Sheet 18 of 56
	1		





SYSOPT Strap (RTS1-):  
R124 - 0x2E\* DEFAULT  
R144 - 0x4E

10 KΩ<sup>1</sup> external pull-up resistor - Workstations pins default.  
10 KΩ<sup>1</sup> external pull-down resistor - Desktop pins default.

No pull-down resistor (default) - normal device operation.  
4.7 KΩ<sup>1</sup> external pull-down resistor - JTAG selected.

SI: 955525

SI: 784070

LPC Debug

N31-2061311-H06

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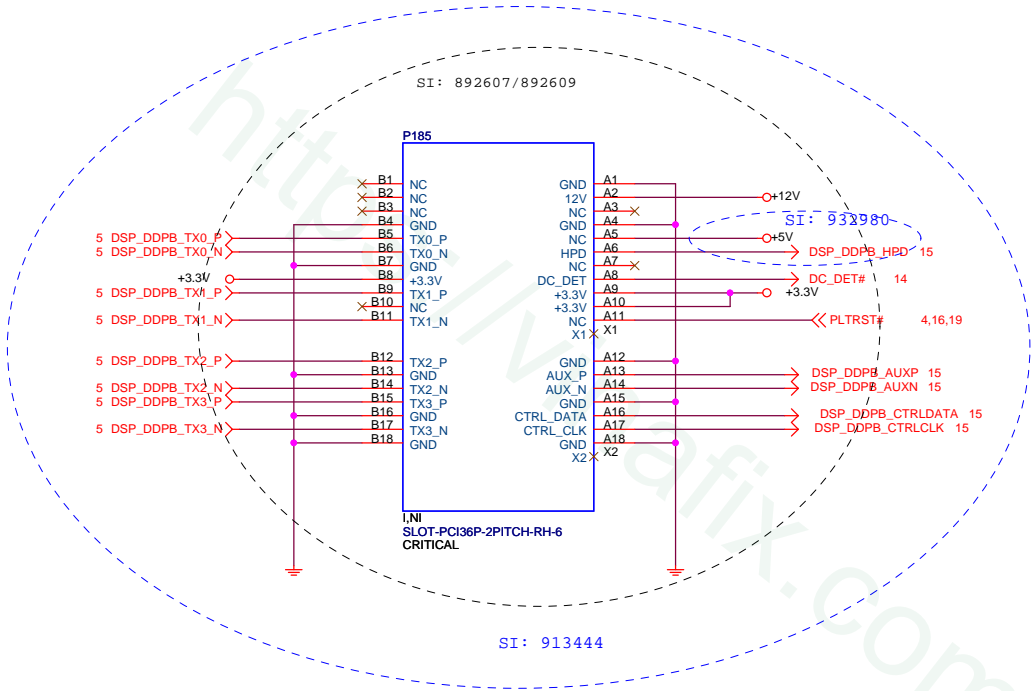
SIO- PULL UP/DOWN/PS\_ON

Rev X5

Date:

Sheet 21 of 56

DDI Port Slot



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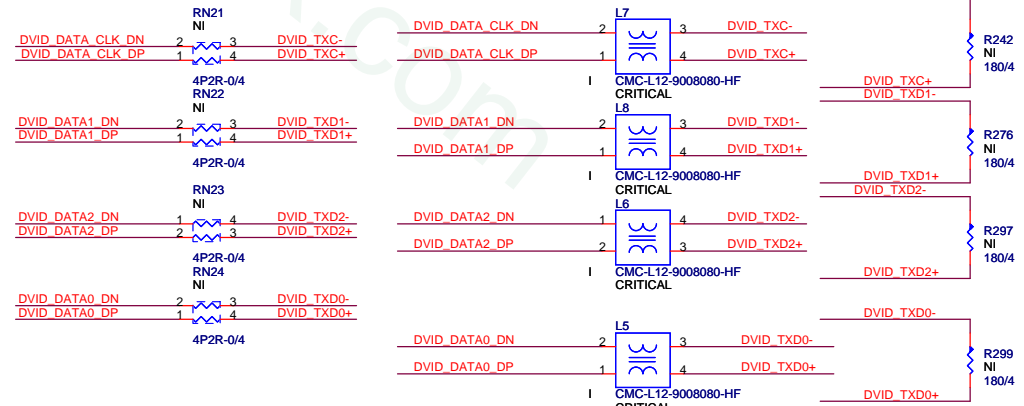
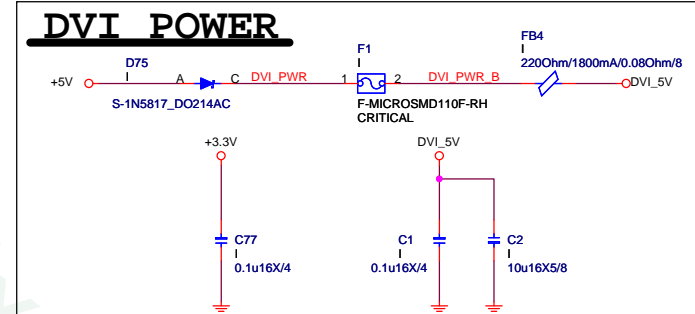
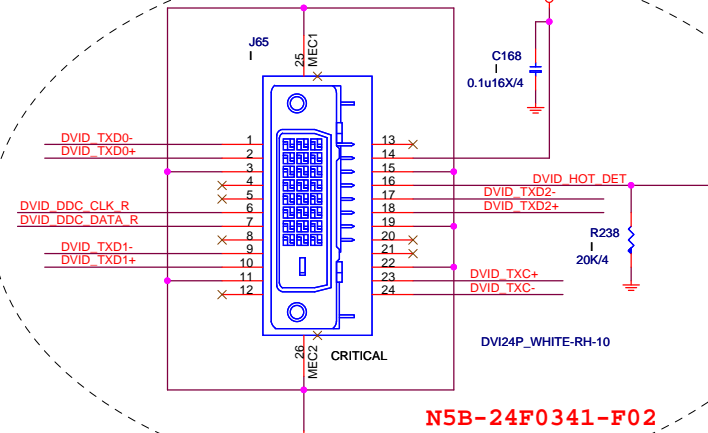
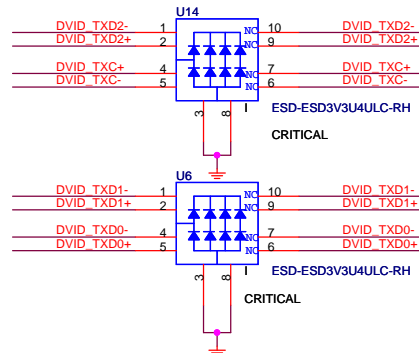
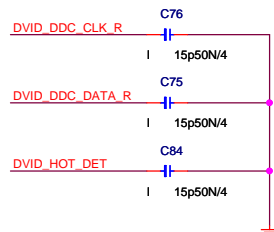
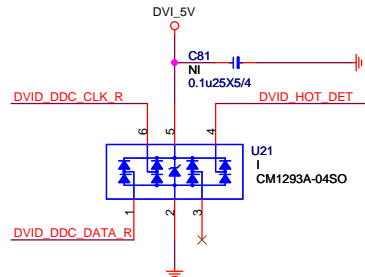
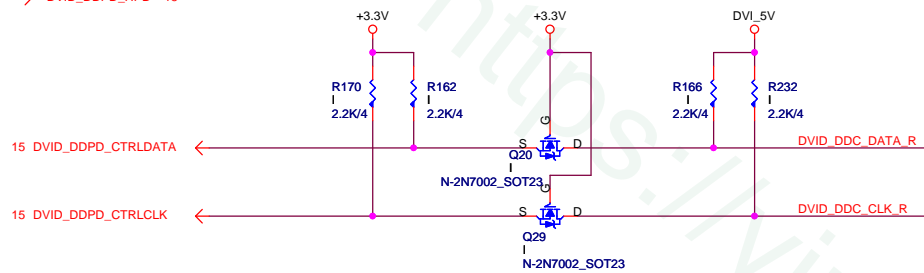
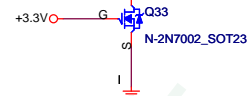
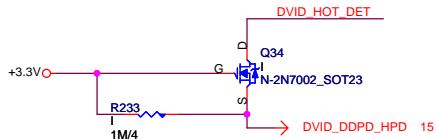
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	HP SCH P/N: 718773-000(MSI MS-7860)		
	Size Custom	Document Description DDI Port Slot	Rev X5
	Date:		Sheet 22 of 56

# DVID level shifter

SI: 892611/892614

5 DVID\_DDPD\_CLK\_P C66 0.1u16X/4 DVID\_DATA\_CLK\_DP  
5 DVID\_DDPD\_CLK\_N C69 0.1u16X/4 DVID\_DATA\_CLK\_DN  
5 DVID\_DDPD\_TX2\_P C56 0.1u16X/4 DVID\_DATA2\_DP  
5 DVID\_DDPD\_TX2\_N C57 0.1u16X/4 DVID\_DATA2\_DN  
5 DVID\_DDPD\_TX1\_P C58 0.1u16X/4 DVID\_DATA1\_DP  
5 DVID\_DDPD\_TX1\_N C61 0.1u16X/4 DVID\_DATA1\_DN  
5 DVID\_DDPD\_TX0\_P C51 0.1u16X/4 DVID\_DATA0\_DP  
5 DVID\_DDPD\_TX0\_N C53 0.1u16X/4 DVID\_DATA0\_DN

Q33 D R181 680/4 DVID\_DATA\_CLK\_DN  
R164 680/4 DVID\_DATA\_CLK\_DP  
R173 680/4 DVID\_DATA1\_DN  
R138 680/4 DVID\_DATA1\_DP  
R140 680/4 DVID\_DATA2\_DN  
R172 680/4 DVID\_DATA2\_DP  
R103 680/4 DVID\_DATA0\_DN  
R112 680/4 DVID\_DATA0\_DP

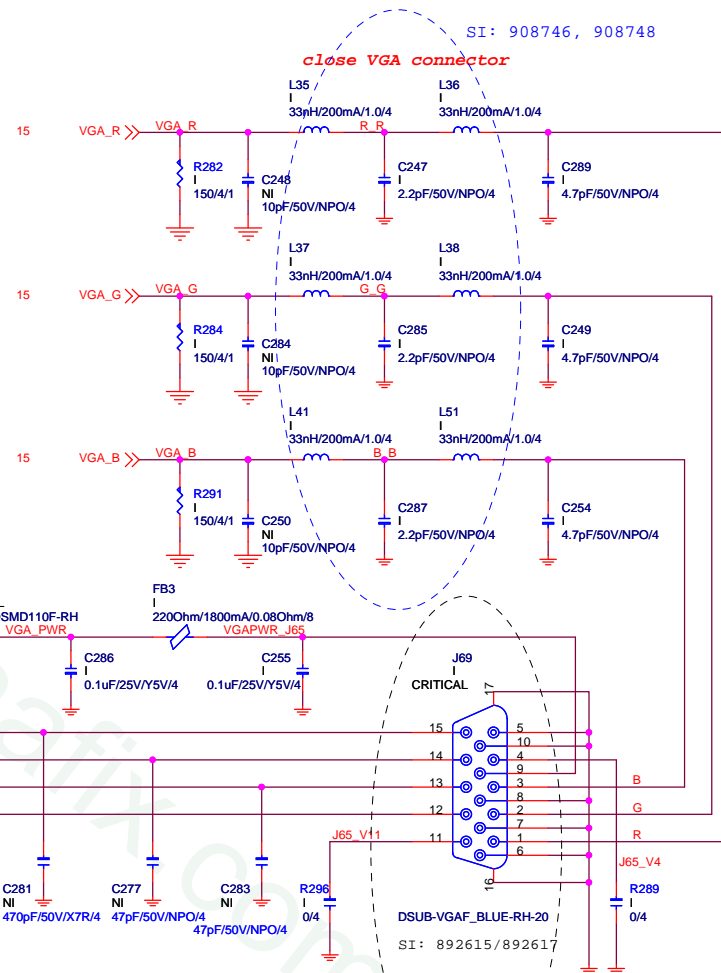
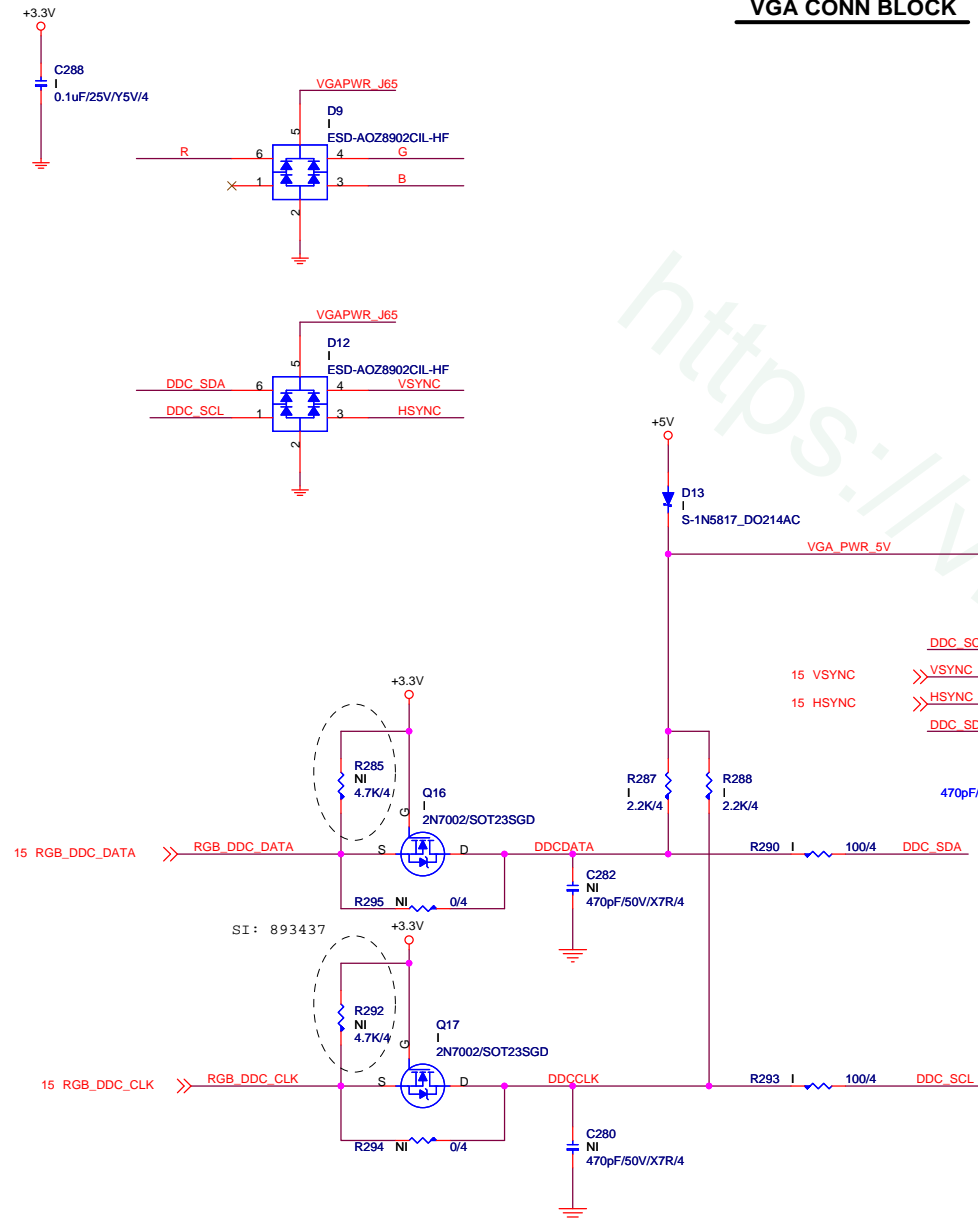


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Size Custom	Document Description DVI Port CONN		Rev X5
Date:	Sheet 23 of 56		

# VGA CONN BLOCK



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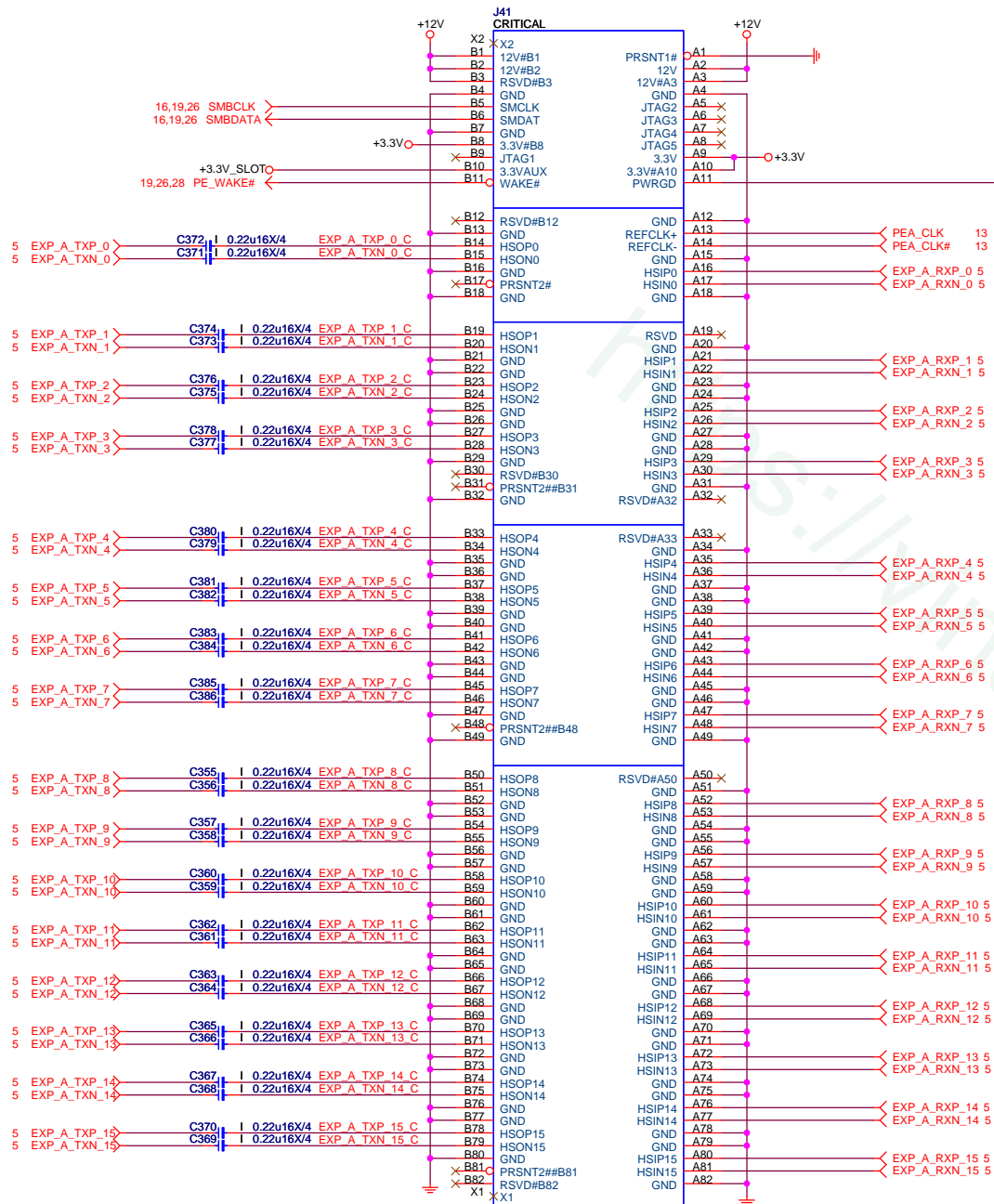
**HP SCH P/N: 718773-000(MSI MS-7860)**

Document Description  
**VGA CONN**

Rev  
X5

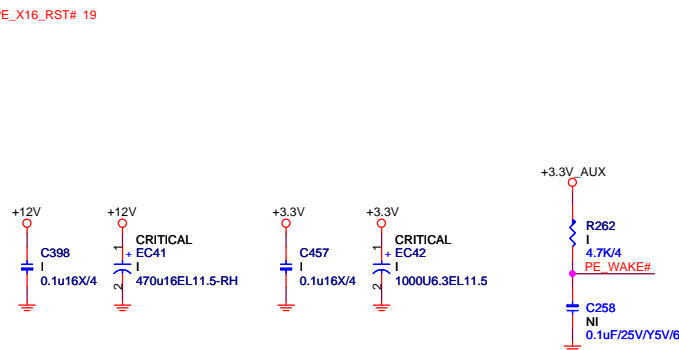
Date: Sheet 24 of 56

# PCI EXPRESS X16 SLOT

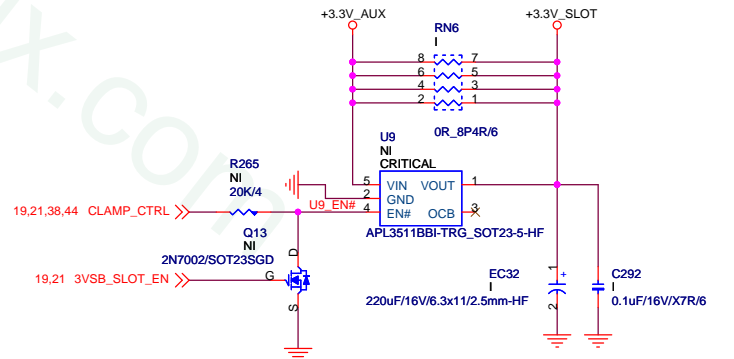


SLOT-PCI164P\_BLACK-2PITCH-RH-20

N11-1641151-L06



## +3.3V SLOT



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HP SCH P/N: 718773-000(MSI MS-7860)

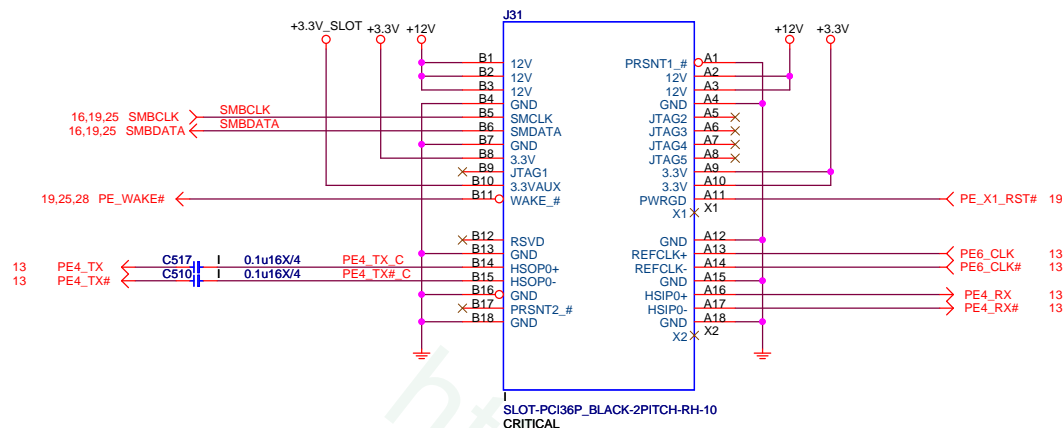
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**PCIE x16 Slot**

Rev  
X5

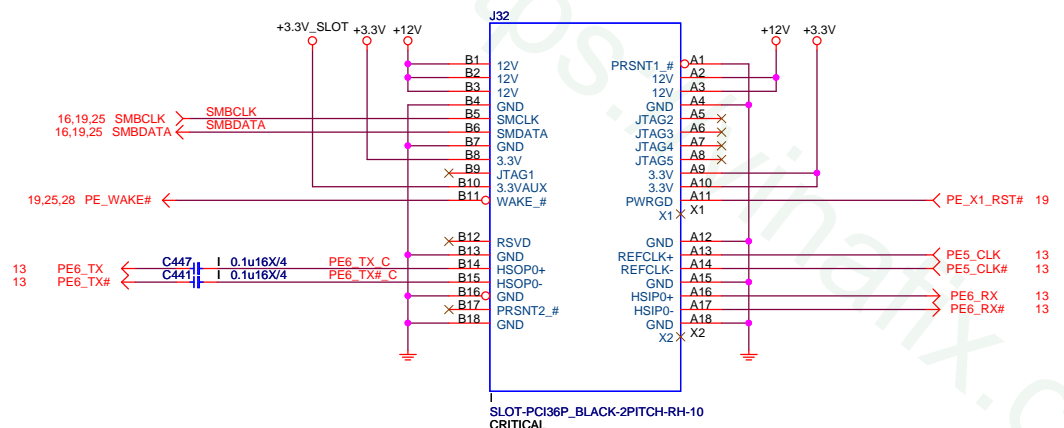
Date: Sheet 25 of 56



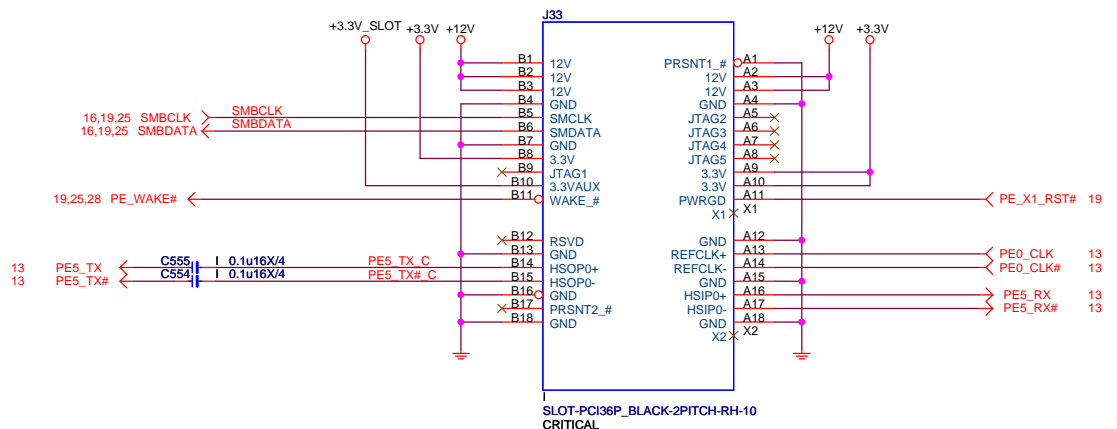
## PCI EXPRESS x1-PORT



## PCI EXPRESS x1-PORT



## PCI EXPRESS x1-PORT



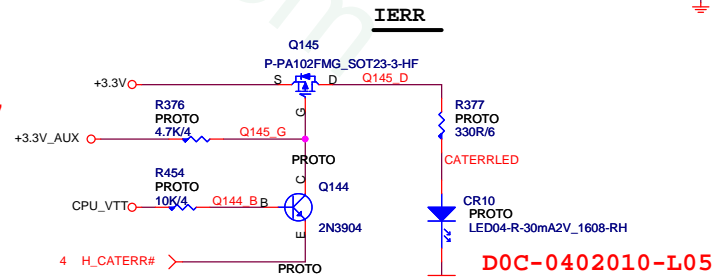
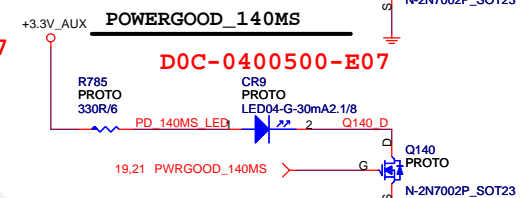
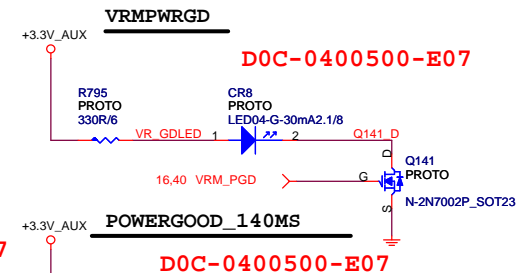
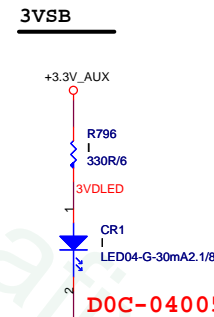
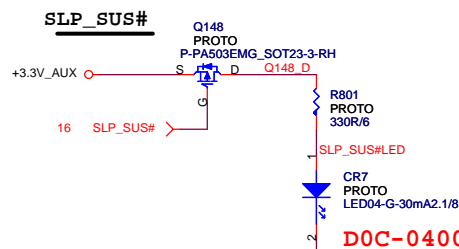
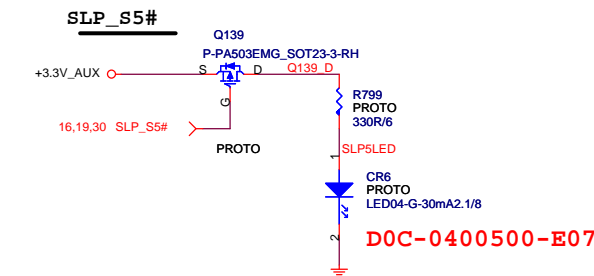
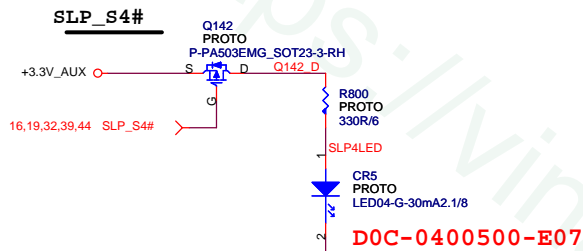
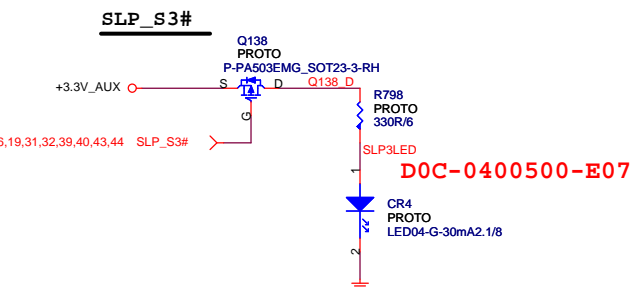
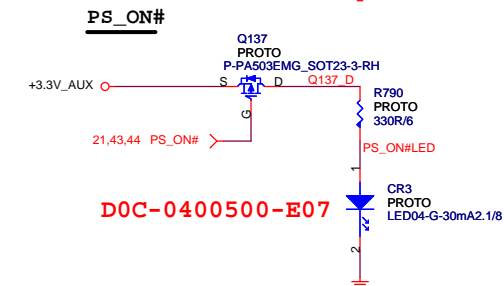
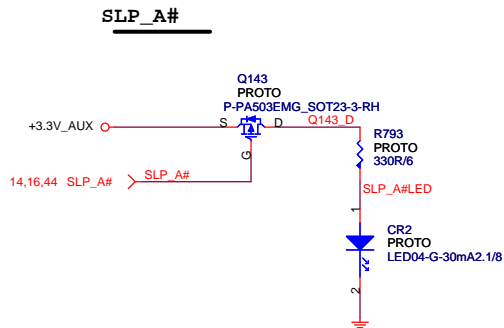
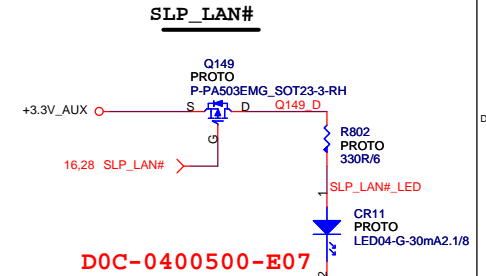
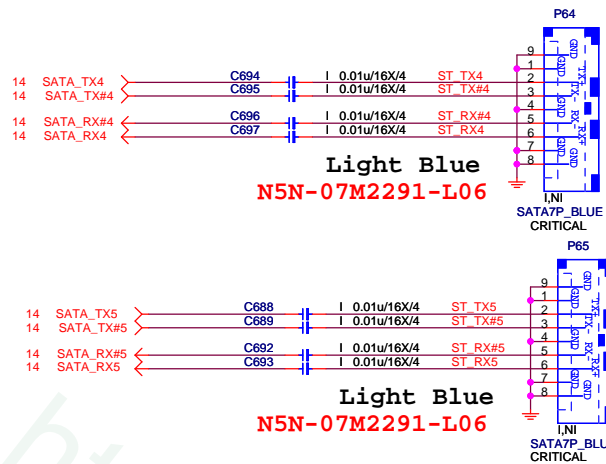
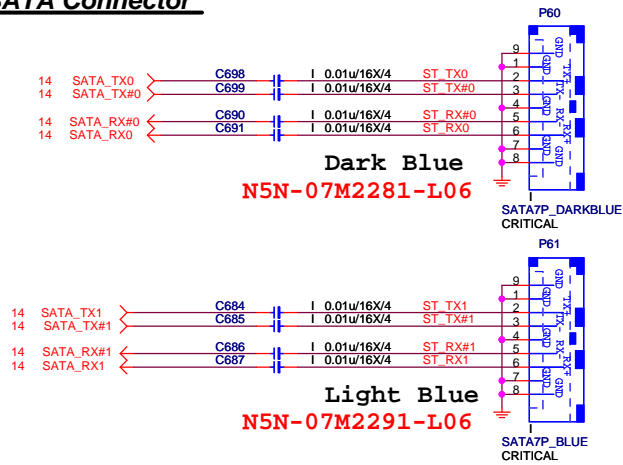
N11-0360381-L06

Release Date : Wednesday, July 24, 2013

**HP Restricted Secret**

MICRO-STAR INT'L CO.,LTD		
HP SCH P/N: 718773-000(MSI MS-7860)		
Size Custom	Document Description PCIE x1 Slots	Rev X5
Date:	Sheet 26 of 56	

# SATA Connector

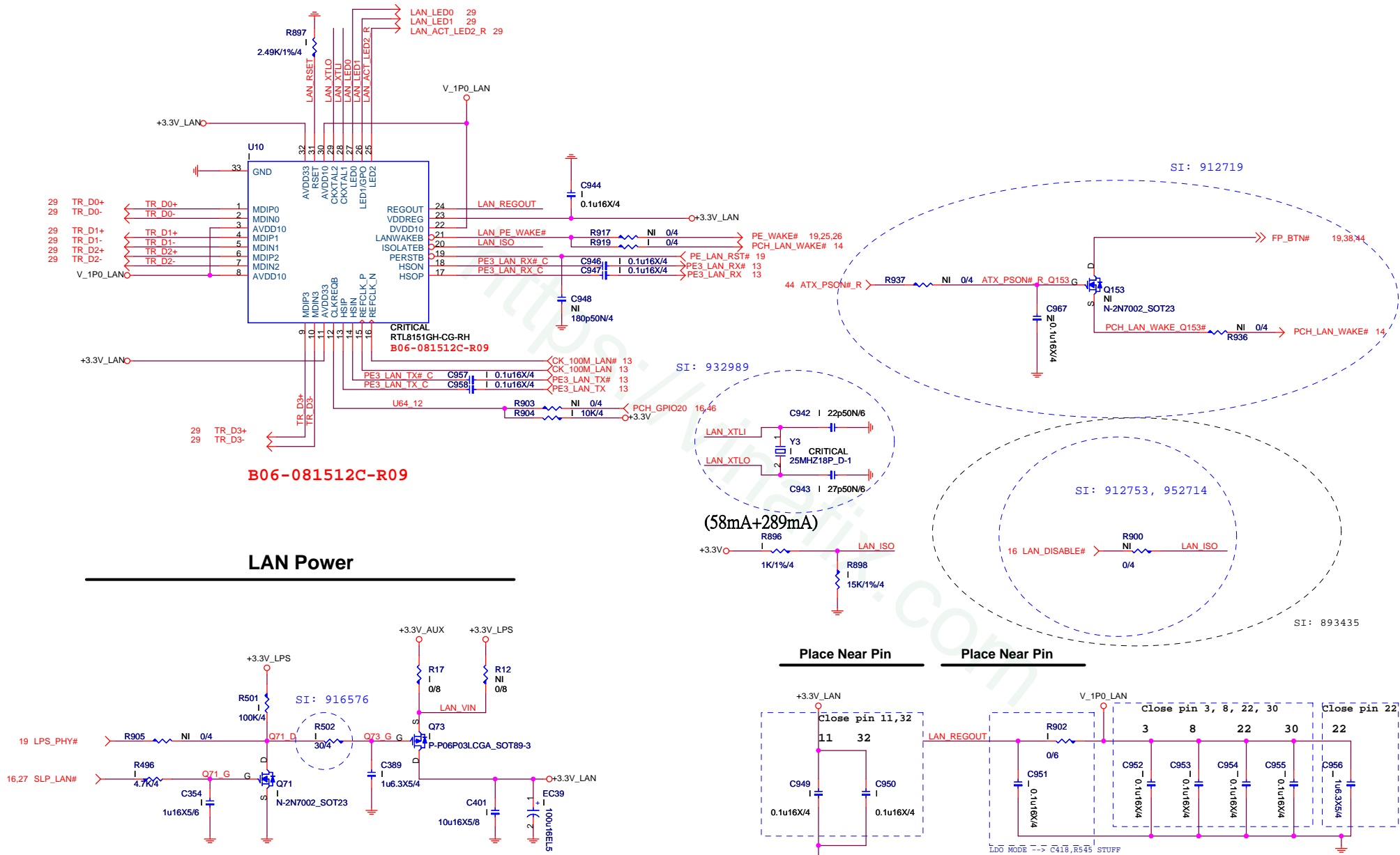


Release Date : Wednesday, July 24, 2013

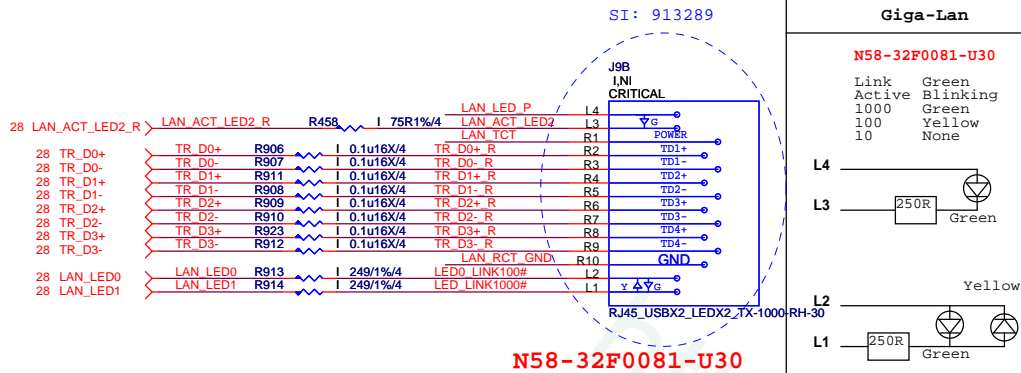
**HP Restricted Secret**

MSI		MICRO-STAR INT'L CO.,LTD	
HP SCH P/N: 718773-000(MSI MS-7860)		Rev X5	
Size Custom	Document Description	SATA/LED	
Date:		Sheet 27 of 56	

Gigabit LAN RTL8151GH-CG

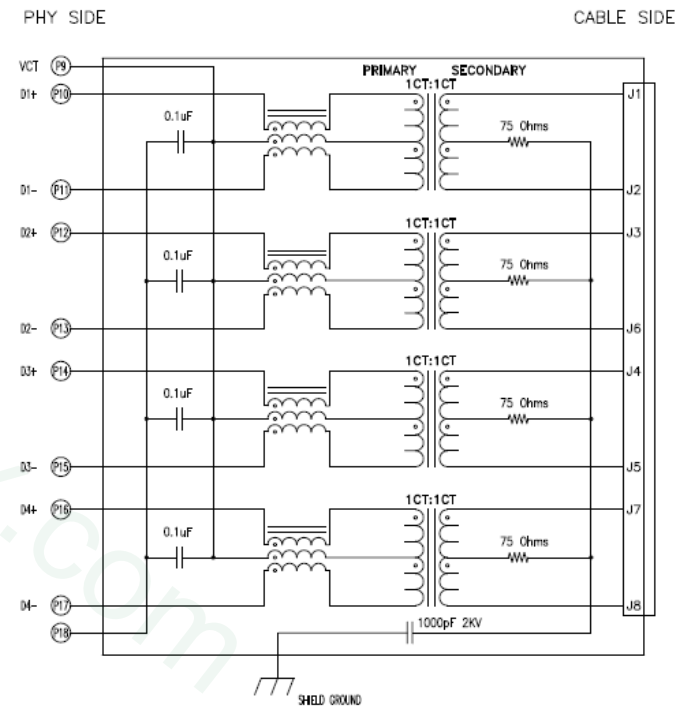


## LAN Connector

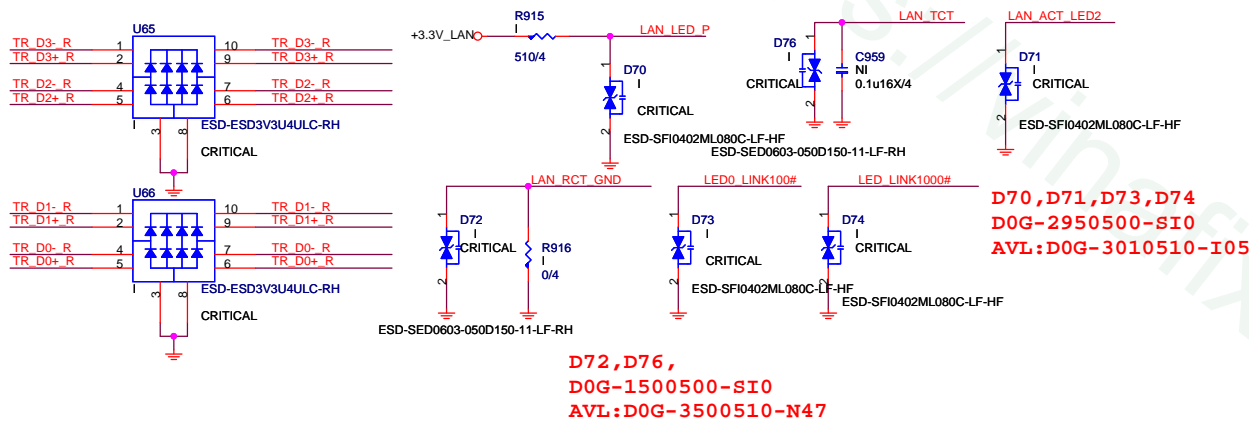


Function	Link LED	Speed LED
10Mb Link	Green (solid)	Off
100Mb Link	Green (solid)	Yellow (solid)
1000Mb Link	Green (solid)	Green (solid)
10Mb Data Transfer	Green (blink)	Off
100Mb Data Transfer	Green (blink)	Yellow (solid)
1000Mb Data Transfer	Green (blink)	Green (solid)

## SCHEMATIC



## ESD



Release Date : Wednesday, July 24, 2013

**HP Restricted Secret**

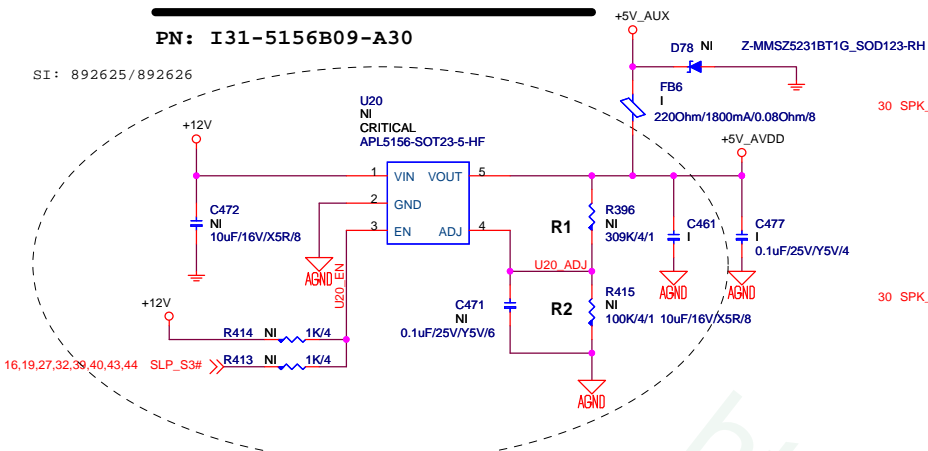
MICRO-STAR INT'L CO.,LTD		
HP SCH P/N: 718773-000(MSI MS-7860)		
Size Custom	Document Description <b>LAN CONNECTOR</b>	Rev X5
Date:	Sheet 29 of 56	



# AUDIO CODEC REGULATORS

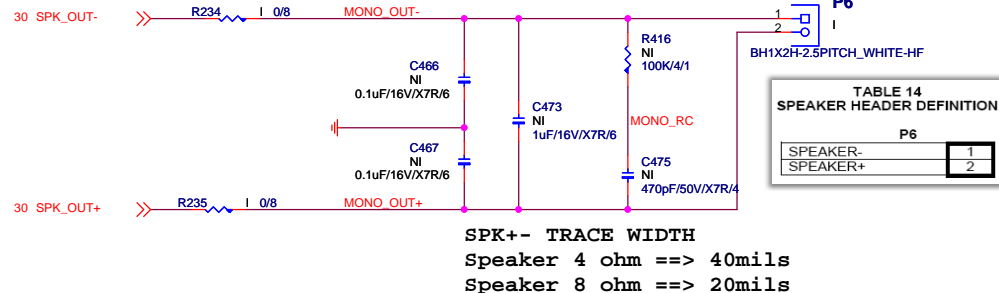
PN: I31-5156B09-A30

SI: 892625/892626

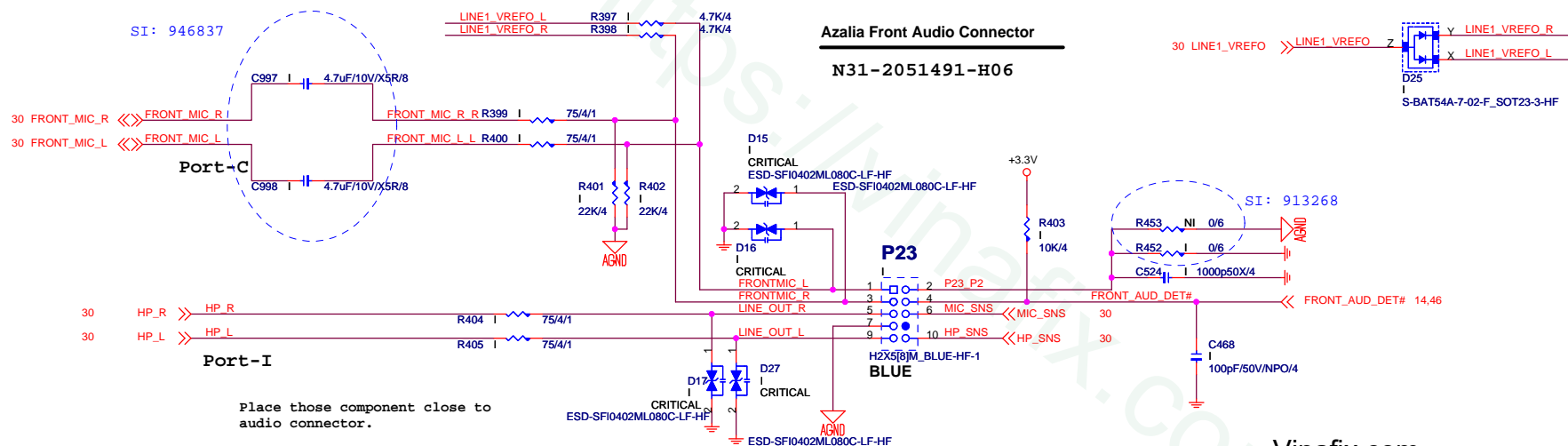


# SPEAKER HEADER

P/N:N32-1020521-H06

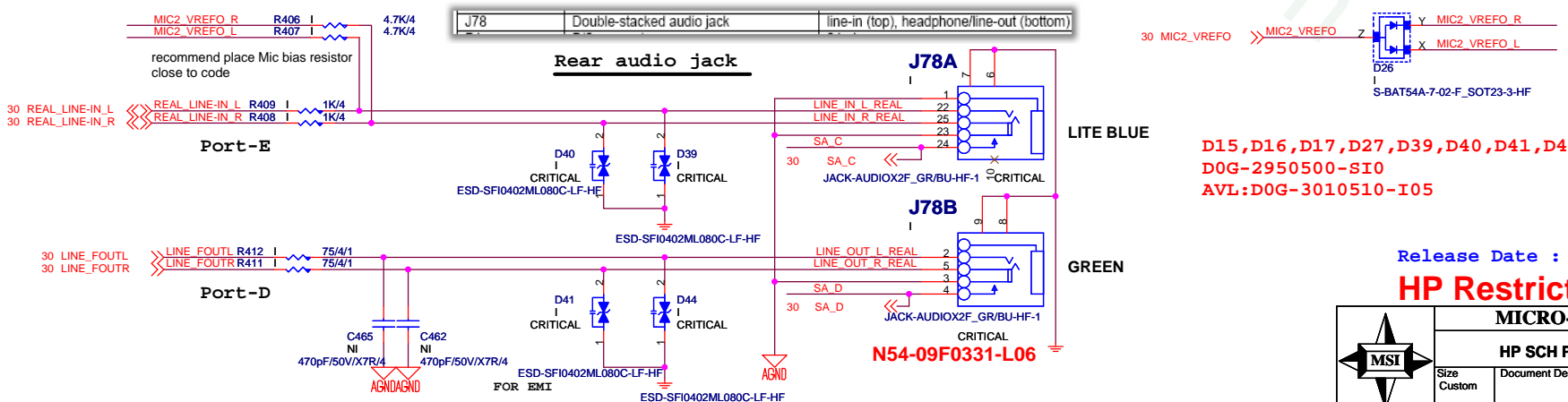


SI: 946837



Vinafix.com

# Rear audio jack

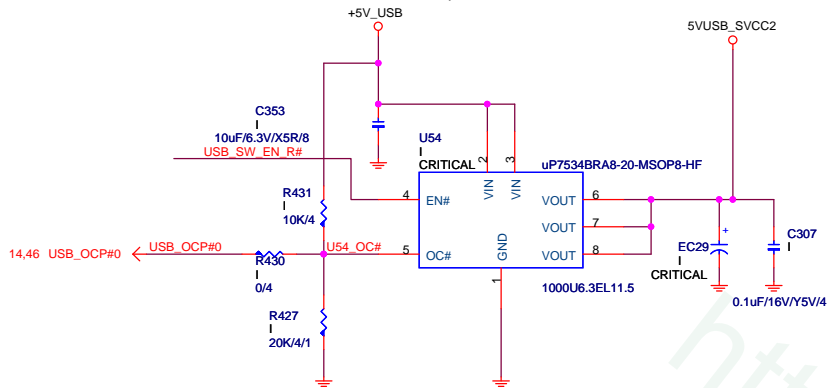


Release Date : Wednesday, July 24, 2013

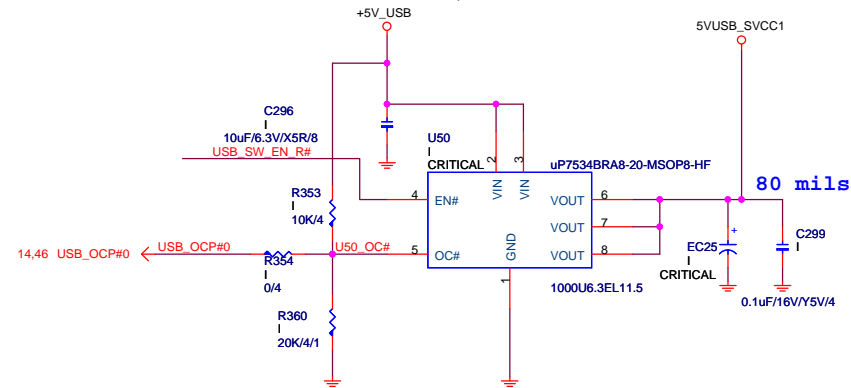
HP Restricted Secret

MICRO-STAR INT'L CO.,LTD		
HP SCH P/N: 718773-000(MSI MS-7860)		
Size Custom	Document Description	Rev X5
AUDIO CONNECTOR		
Date:	Sheet 31	of 56

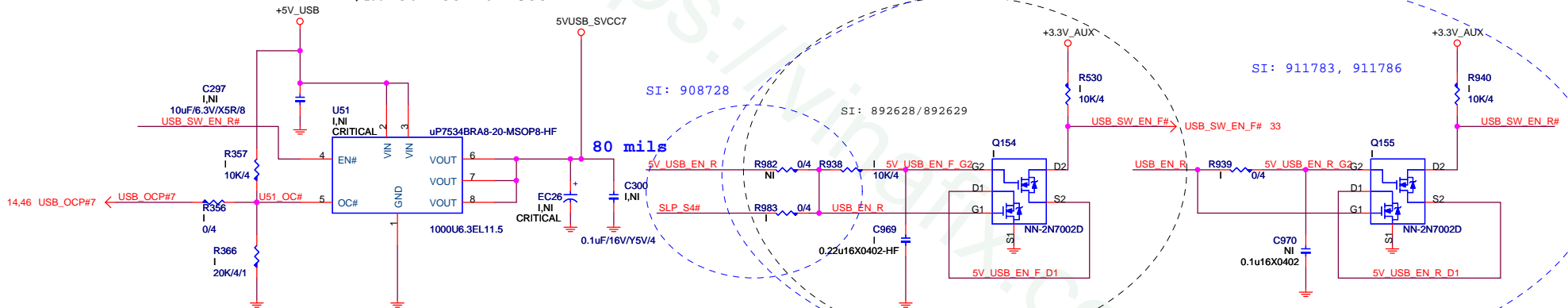
### POWER CIRCUIT FOR USB PORT 2,3 P/N: I36-7534B02-U33



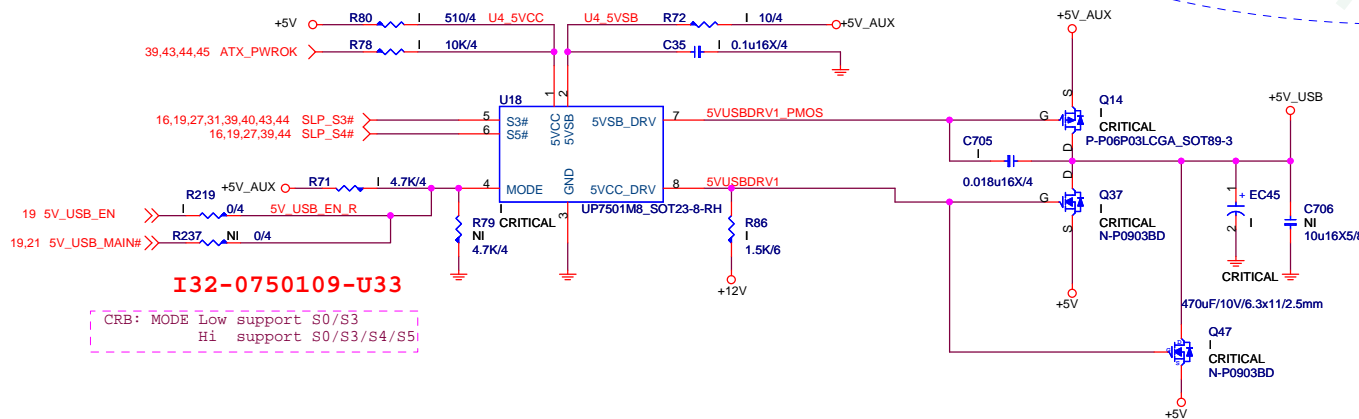
### POWER CIRCUIT FOR USB PORT 0,1 P/N: I36-7534B02-U33



### POWER CIRCUIT FOR USB PORT 12,13 P/N: I36-7534B02-U33



### USB POWER



I32-0750109-U33

CRB: MODE Low support S0/S3  
Hi support S0/S3/S4/S5

Release Date : Wednesday, July 24, 2013

**HP Restricted Secret**

MICRO-STAR INT'L CO.,LTD

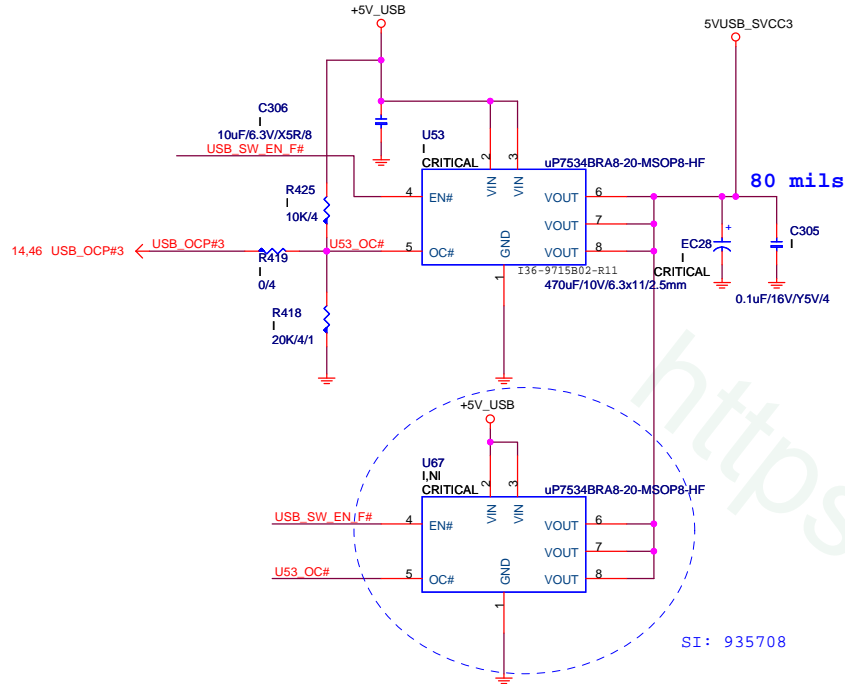
HP SCH P/N: 718773-000(MSI MS-7860)

Document Description  
**Rear USB POWER**

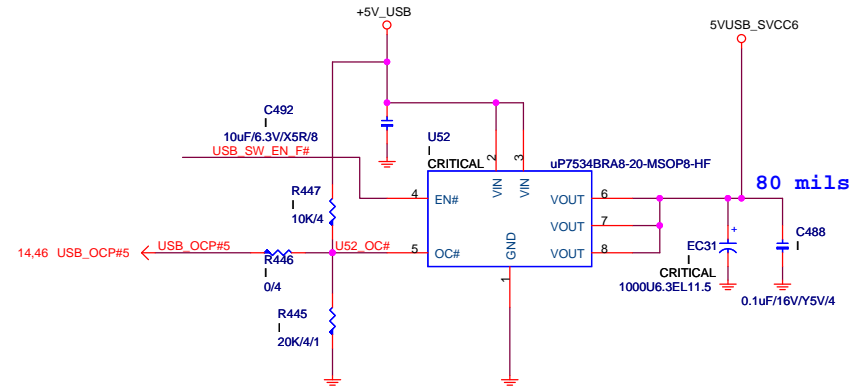
Date: Sheet 32 of 56



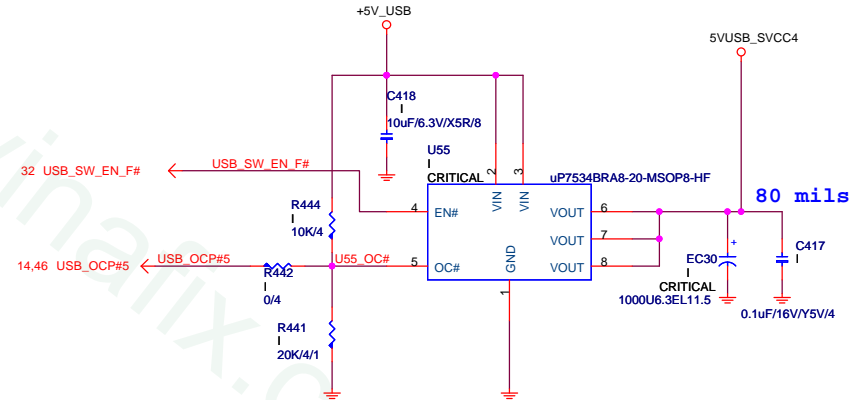
**POWER CIRCUIT FOR USB PORT 4,5,6**  
P/N: I36-7534B02-U33



**POWER CIRCUIT FOR USB PORT 10,11**  
P/N: I36-7534B02-U33



**POWER CIRCUIT FOR USB PORT 8,9**  
P/N: I36-7534B02-U33



Release Date : Wednesday, July 24, 2013

**HP Restricted Secret**

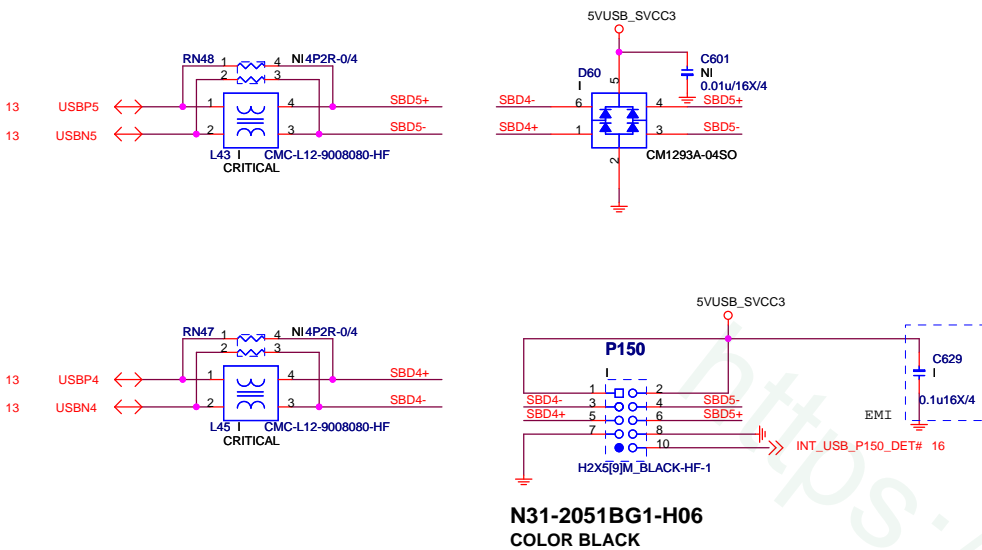


**MICRO-STAR INT'L CO.,LTD**

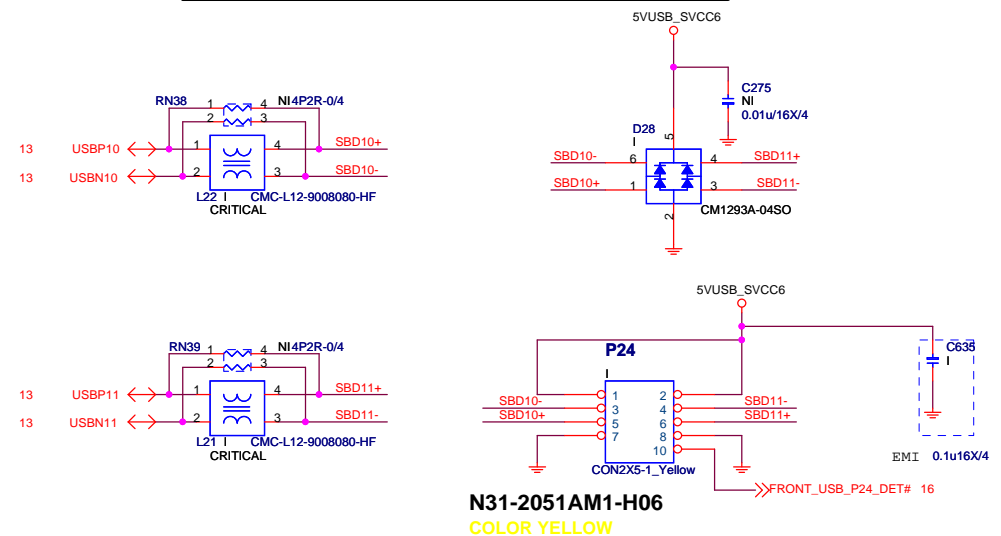
**HP SCH P/N: 718773-000(MSI MS-7860)**

Size Custom	Document Description <b>Front USB POWER</b>	Rev X5
Date:	Sheet 33 of 56	

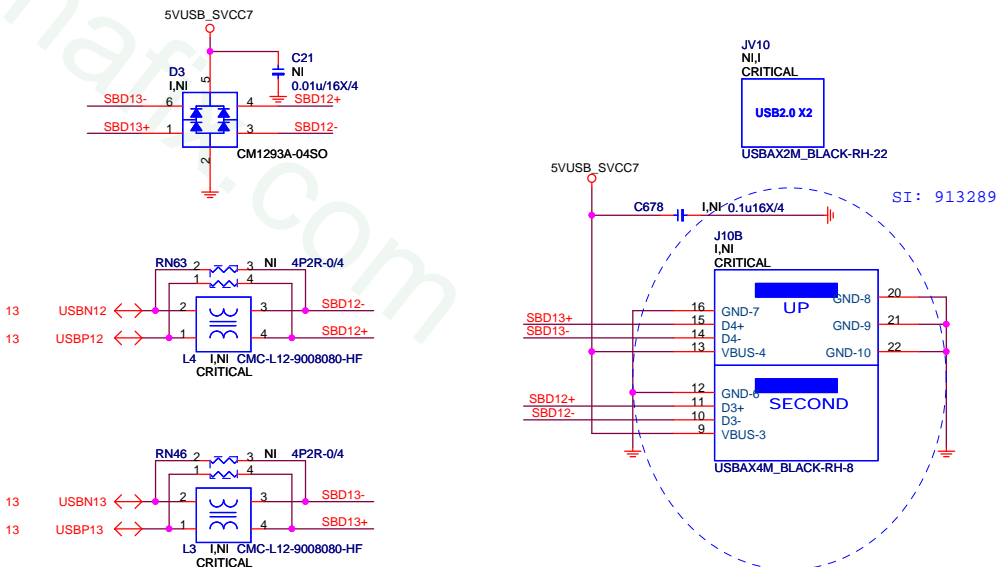
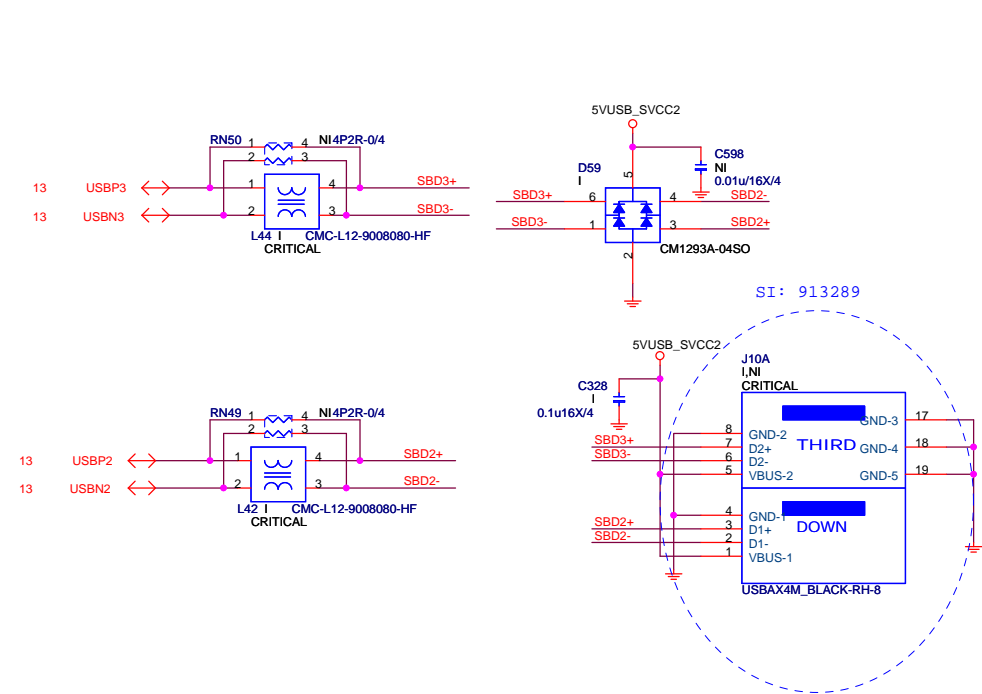
## Internal USB Connector For USB Port 4 / 5



## Front Panel USB Connector For USB Port 10 / 11



## Rear USB Connector For USB Port 2/3



Release Date : Wednesday, July 24, 2013

**HP Restricted Secret**

**MICRO-STAR INT'L CO.,LTD**

**HP SCH P/N: 718773-000(MSI MS-7860)**

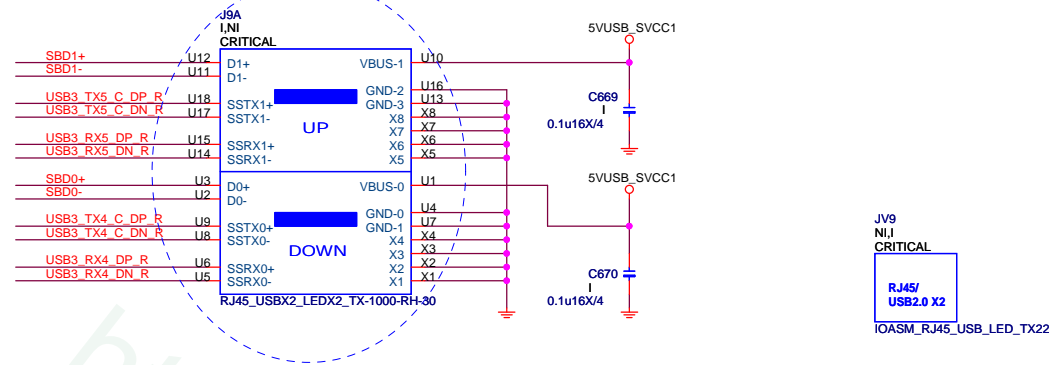
**USB2.0**

Rev  
X5

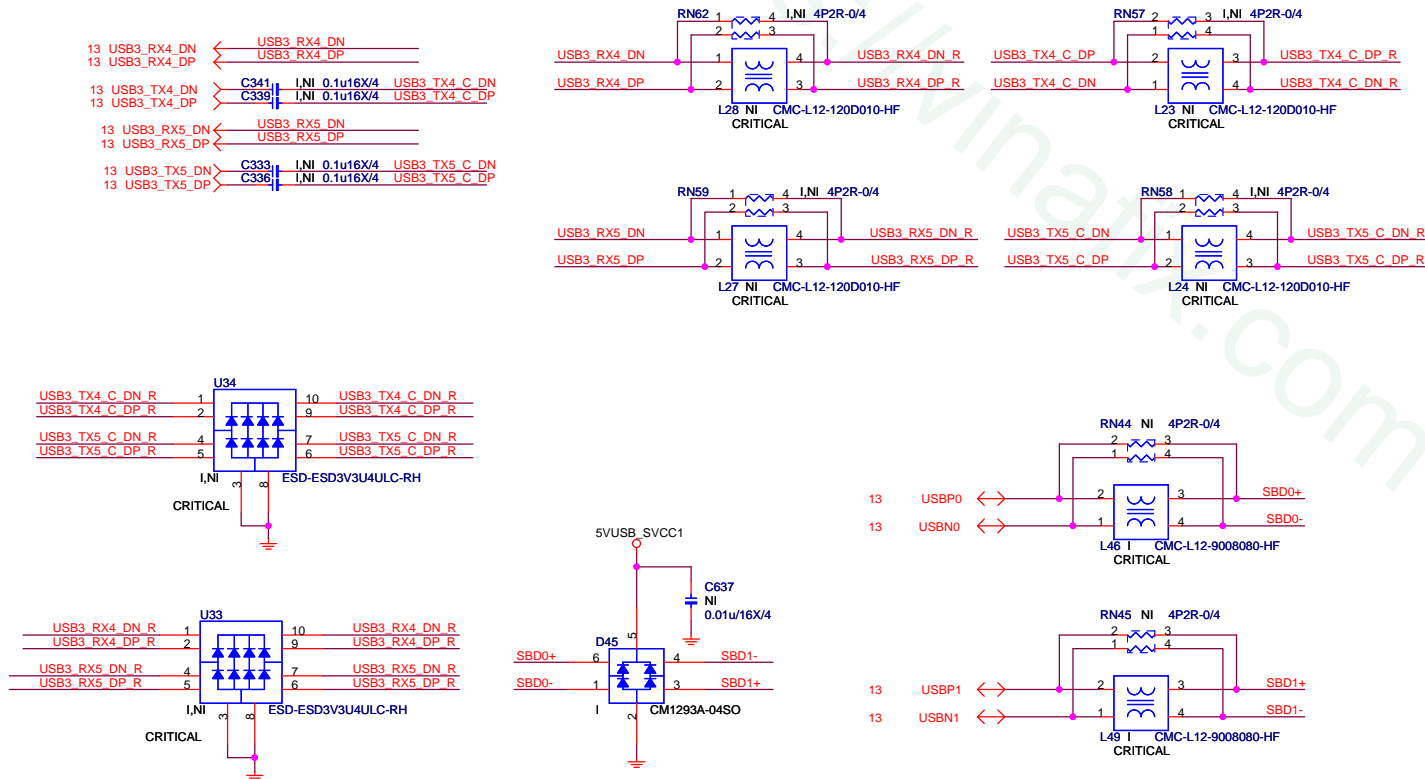


Date: Sheet 34 of 56

SI: 913289



### REAR USB3.0 Connector For USB3.0 Port 4/5

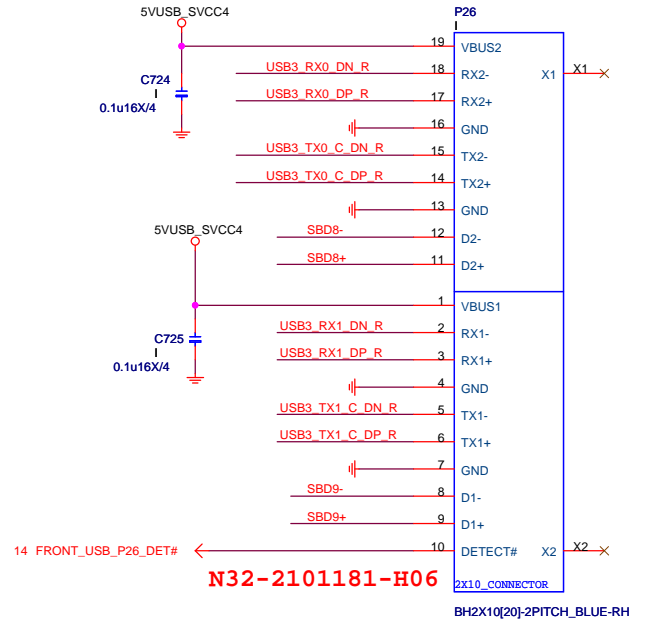
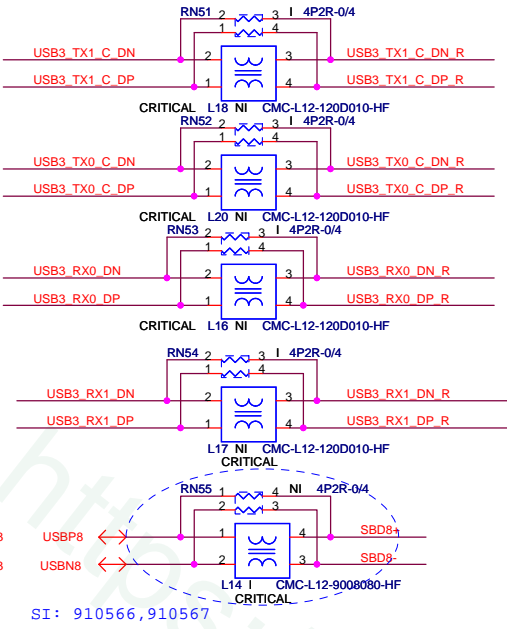
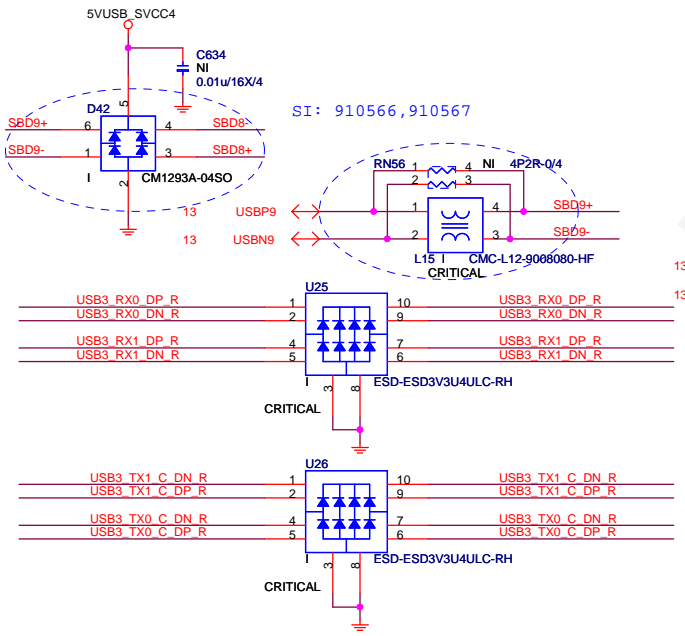
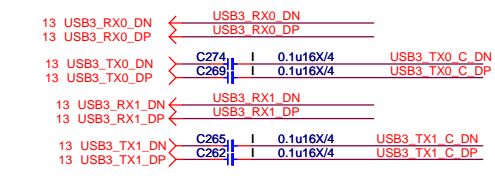


Release Date : Wednesday, July 24, 2013

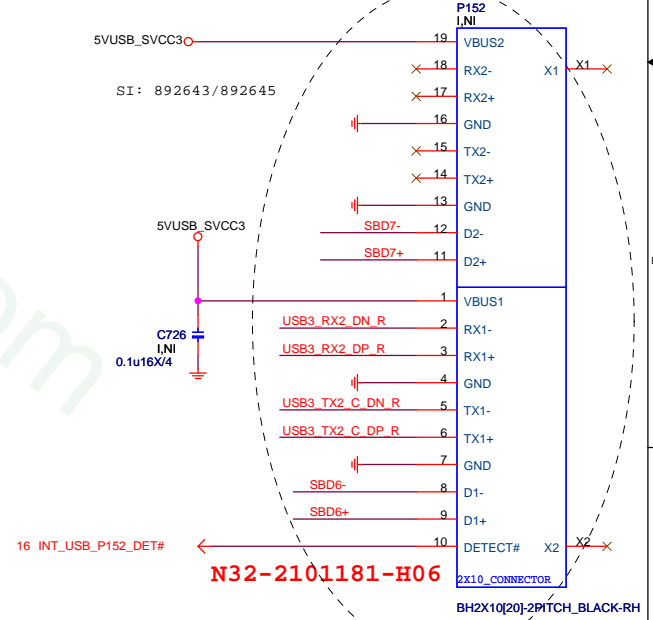
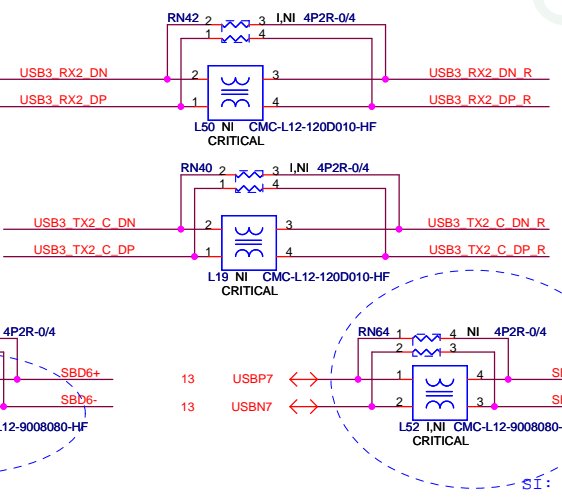
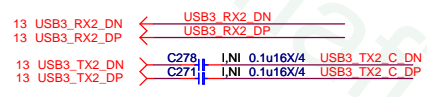
**HP Restricted Secret**

MICRO-STAR INT'L CO.,LTD		
HP SCH P/N: 718773-000(MSI MS-7860)		
Size Custom	Document Description	Rev X5
Rear USB 3.0		
Date:	Sheet 35	of 56

FRONT USB3.0 Connector For USB3.0 Port 1 / 2



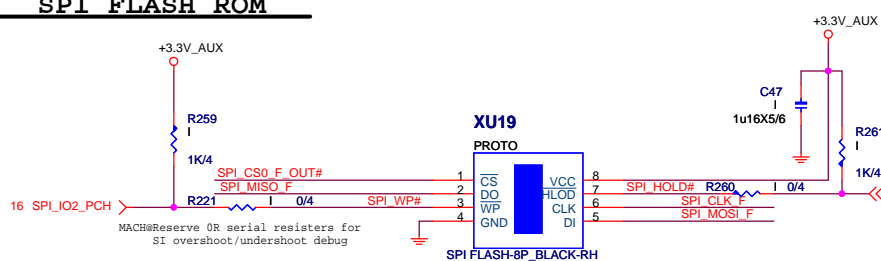
The six USB 3.0 pairs can be mapped with any USB 2.0 pair to a given connector but ACPI tables and BIOS should be updated to reflect the USB 2.0 to USB 3.0 pair mapping., DG PAGE 159



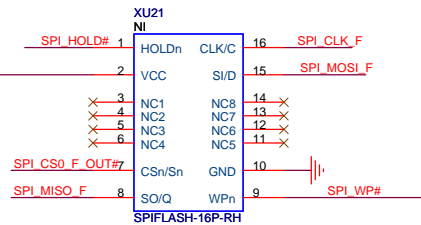
Release Date : Wednesday, July 24, 2013  
HP Restricted Secret

MICRO-STAR INT'L CO.,LTD		
HP SCH P/N: 718773-000(MSI MS-7860)		
Size Custom	Document Description	Rev X5
Front USB 3.0		
Date:	Sheet 36	of 56

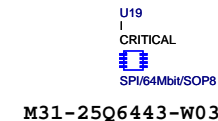
## SPI FLASH ROM



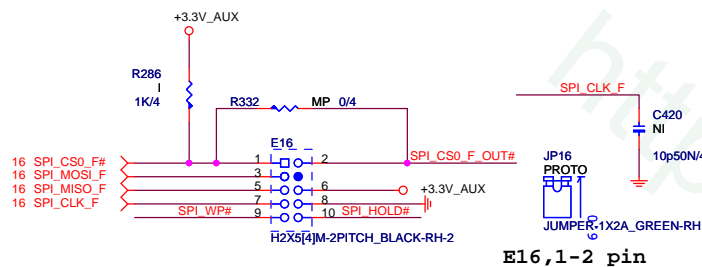
## SPI 64M ROM1



## BIOS

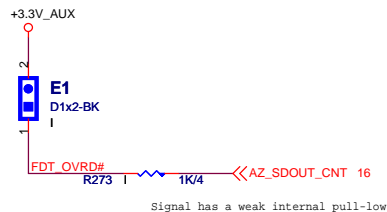


## SPI DEBUG PROT



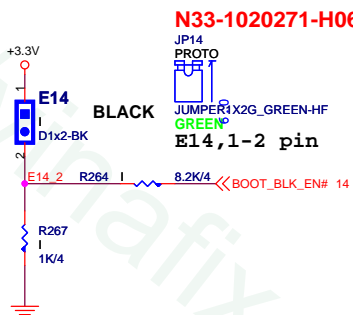
## Flash Descriptor Override Header (ME\_DIS)

FLASH DESCRIPTOR OVERRIDE

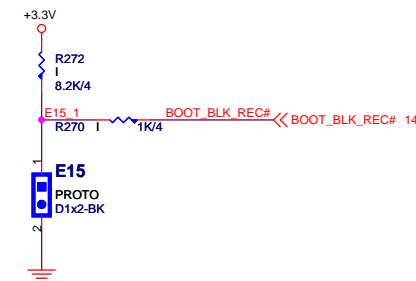


N31-1020151-H06

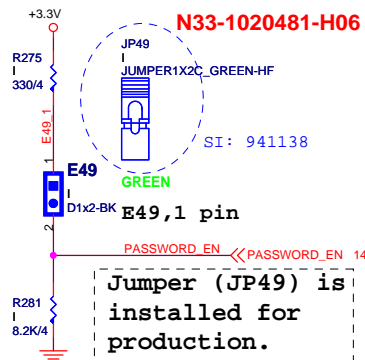
## BOOT BLOCK WRITE JUMPER



## BOOT BLOCK RECOVERY HEADER



## PASSWORD JUMPER

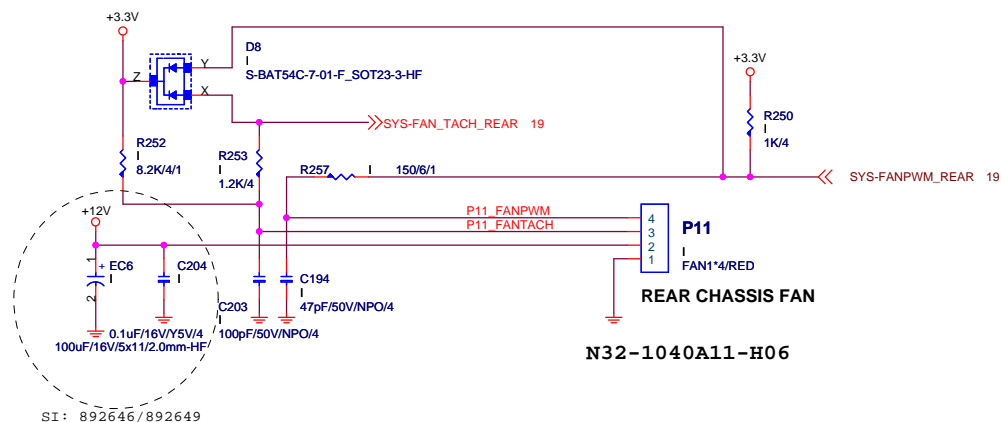
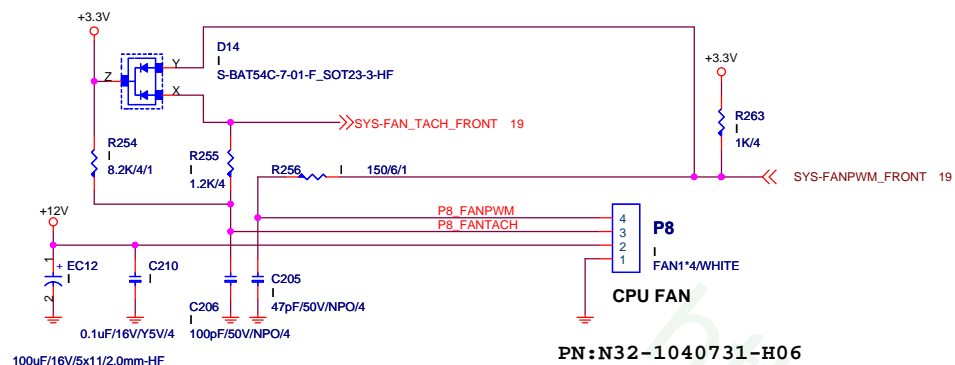


Release Date : Wednesday, July 24, 2013

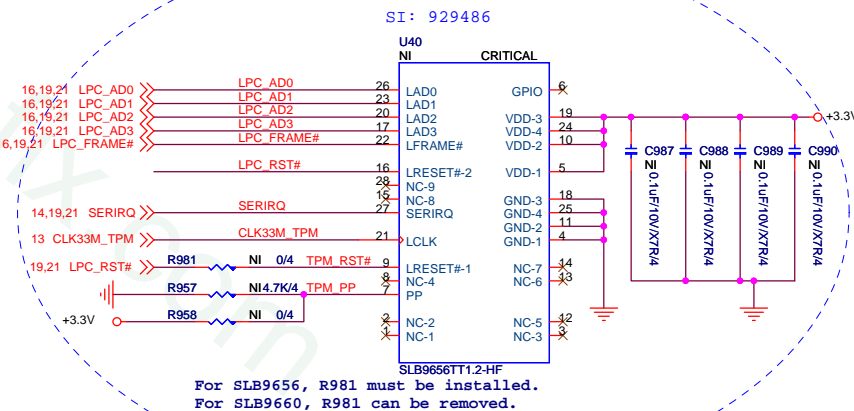
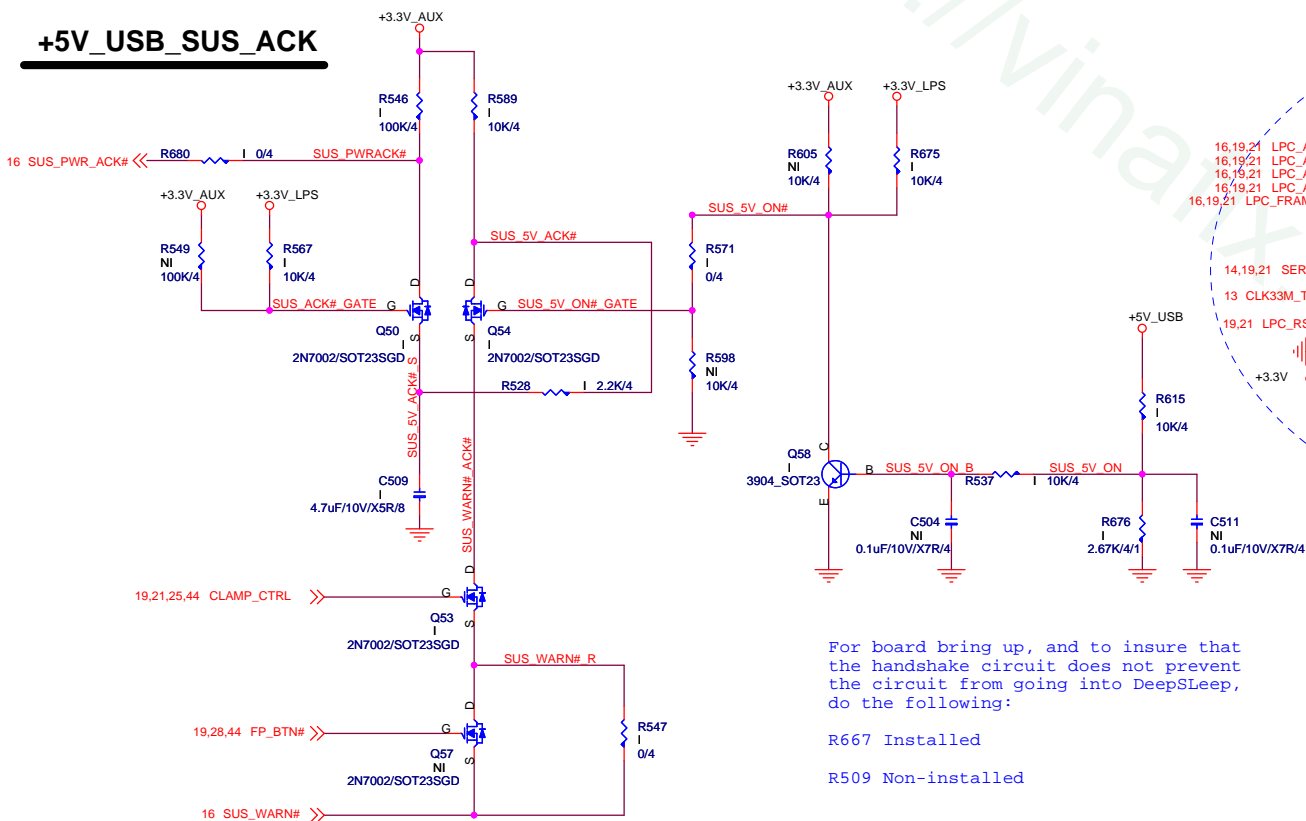
HP Restricted Secret

MICRO-STAR INT'L CO.,LTD		
HP SCH P/N: 718773-000(MSI MS-7860)		
Size Custom	Document Description	Rev X5
Date:	Header/ SPI	
Sheet 37 of 56		

## FAN BLOCK



## +5V\_USB\_SUS\_ACK



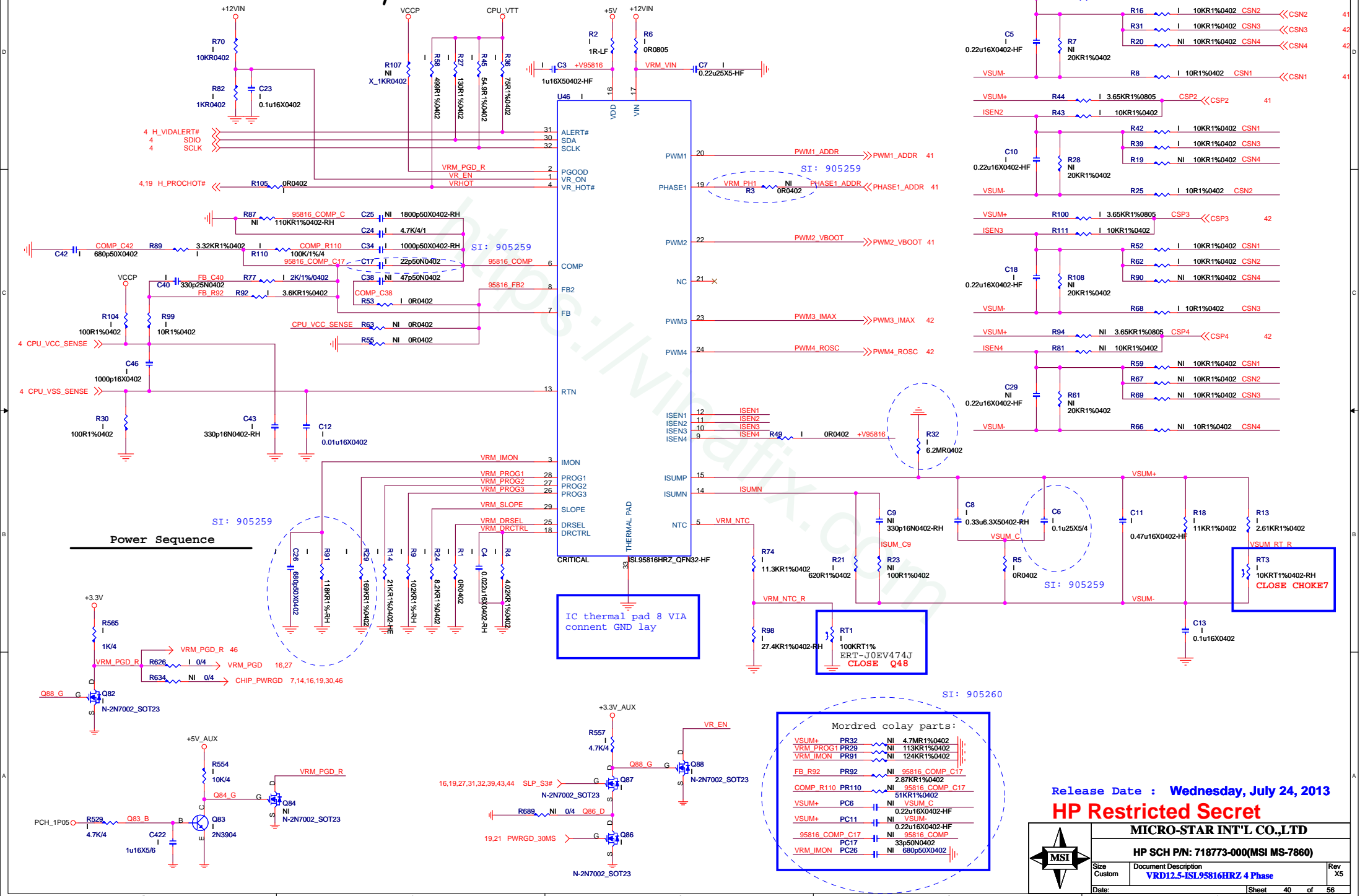
Release Date : Wednesday, July 24, 2013

**HP Restricted Secret**

MICRO-STAR INT'L CO.,LTD	
HP SCH P/N: 718773-000(MSI MS-7860)	
Size Custom	Document Description
FAN/TPM	
Date:	Rev X5



## SharkBay VR12.5 Power Circuit - 4 Phase



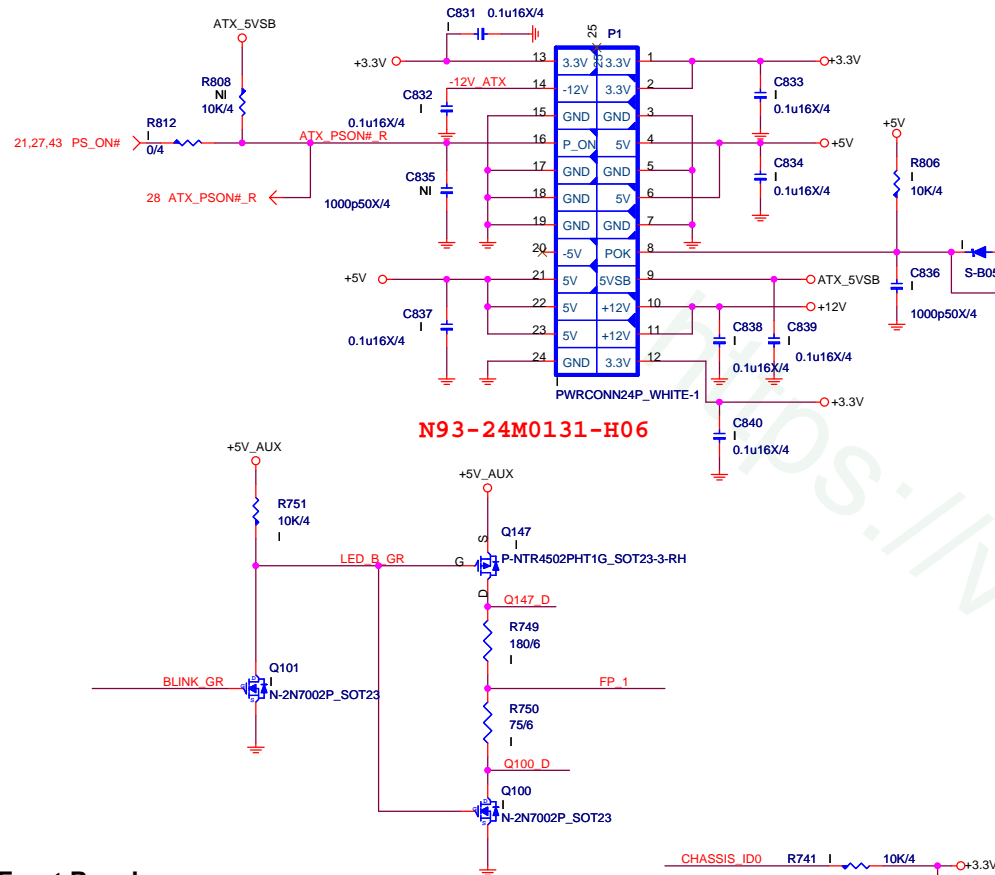






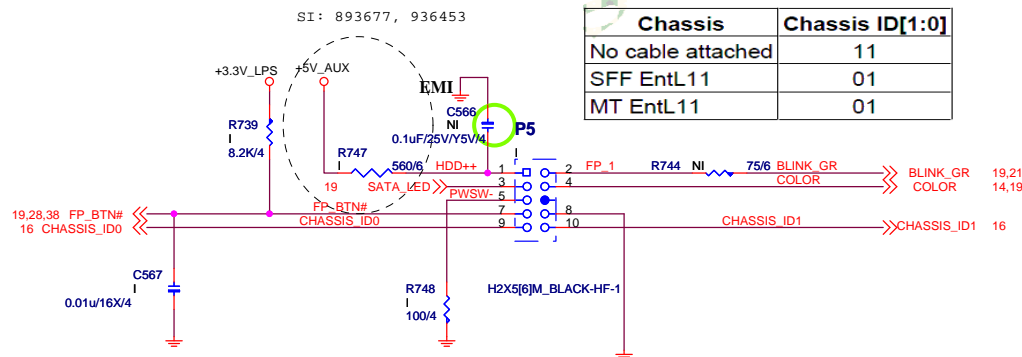
# ATX Power Connector / Front Panel / LED/DSW

## ATX CONNECTOR



## Front Panel

PN:N31-2051641-H06

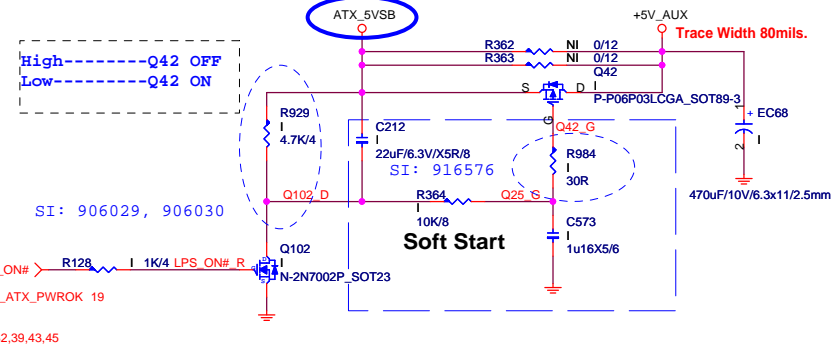


## CHASSIS ID[1:0]

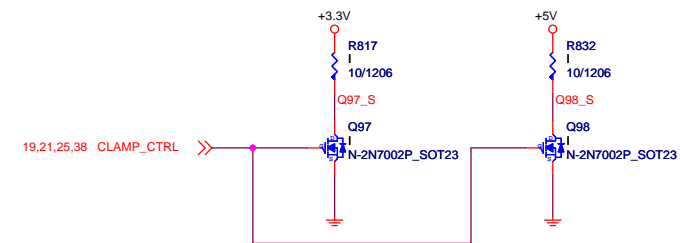
Chassis	Chassis ID[1:0]
No cable attached	11
SFF EntL11	01
MT EntL11	01

## +5V AUX Power Switch

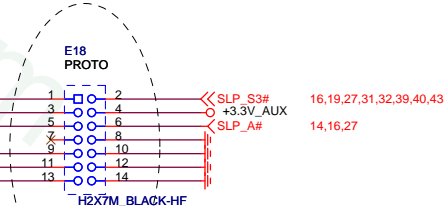
Tune ATX\_5VSB inrush current to 2A from 4A



## BLEED-OFF CIRCUIT



SI: 892659/892663

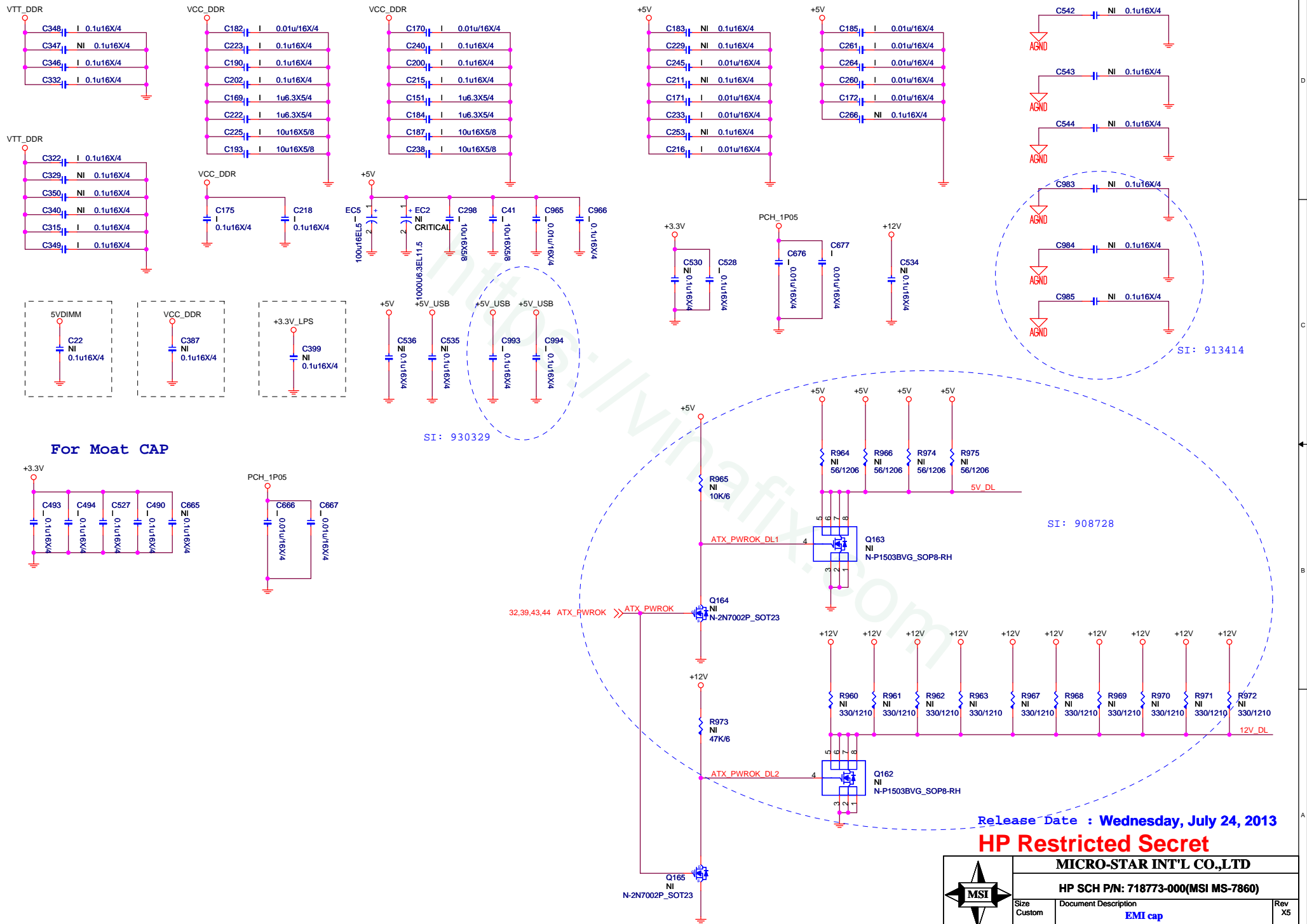


Release Date : Wednesday, July 24, 2013

**HP Restricted Secret**

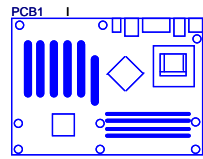
MICRO-STAR INT'L CO.,LTD		
HP SCH P/N: 718773-000(MSI MS-7860)		
Size Custom	Document Description	Rev X5
ATX/F_Panel/EMI		
Date:	Sheet 44	of 56

# EMI CAPs



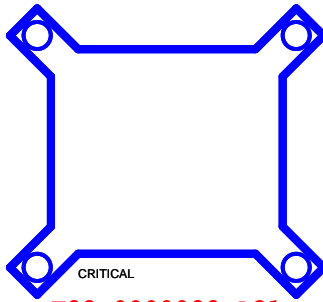


## Manual Parts

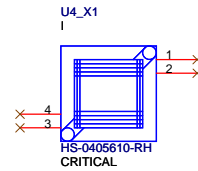


CRITICAL PCB1

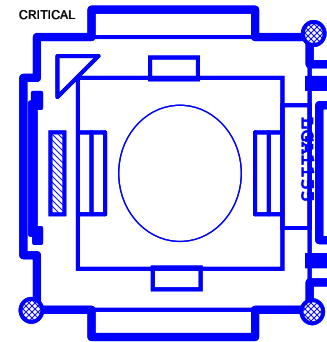
XU1\_X2  
E93-0000099-A21



E93-0000099-A21  
AVL:E22-B009010-C22

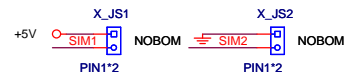


XU1\_X1  
CPU SOCKET  
CRITICAL



E21-AC71010-L06  
AVL:E21-7826010-F02

## Simulation

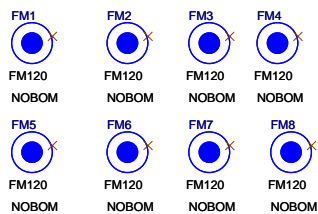


AVL:  
D06-0100161-P52  
D06-0100101-K26

BAT1\_X1  
BAT-CR2032-RH  
CRITICAL

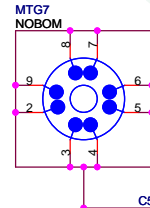
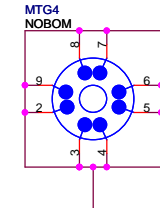
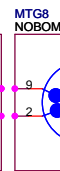
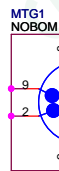
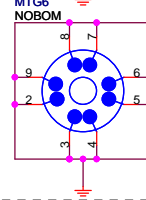
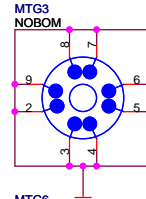
D06-0100101-P01

## Optics Orientation Holes

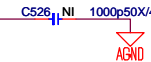


## Mounting Holes

Modify for factory request.



HOLES\_4S\_HP\_D7\_2



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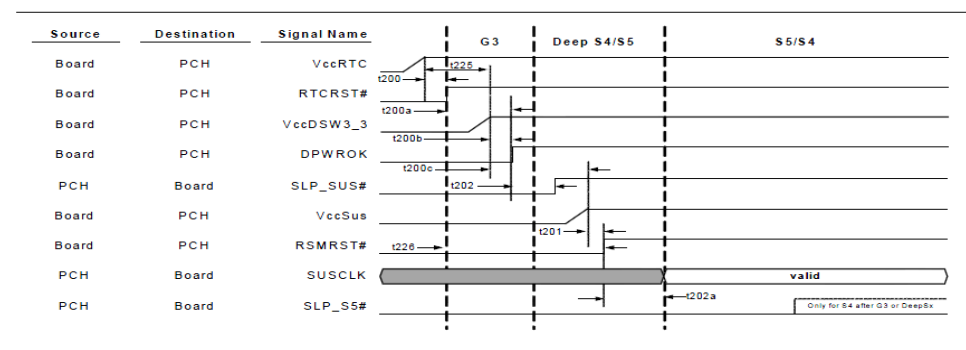


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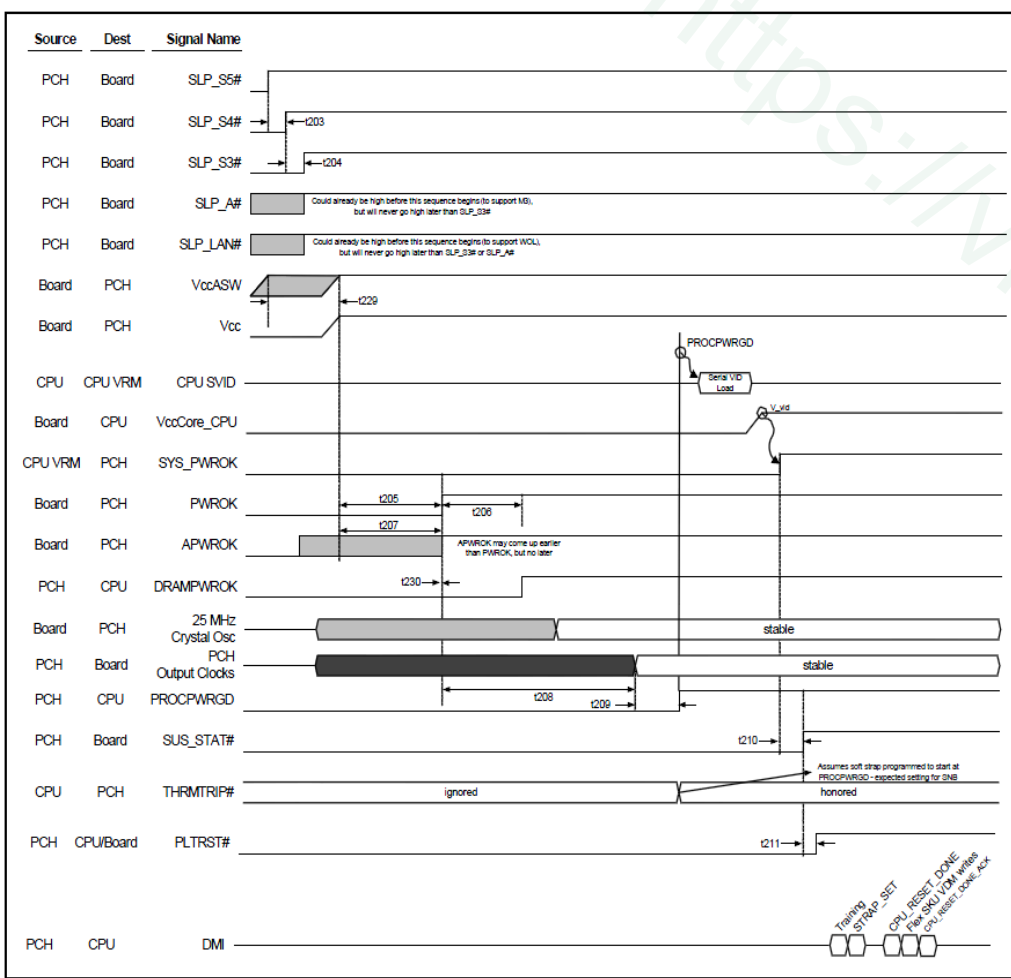
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## G3 w/RTC Loss to S4/S5 (With Deep Sx Support) Timing Diagram



## S5 to S0 Timing Diagram



## G3-S5

ATX\_5VSB

+3.3V\_LPS

SLP\_SUS#

LPS\_ON#

+5V\_AUX

+3.3V\_AUX

RSMRST#

## S5-S0

PWBTIN#

PWBTOUT#

SLP\_S5/S4/S3

PSON#

+12V/+5V/+3.3V

VCC1\_5/VCC\_DDR

PCH\_1P05

CHIP\_PWRGD

MEM\_PWRGD

H\_PWRGD

VCCCP

PLTRST#

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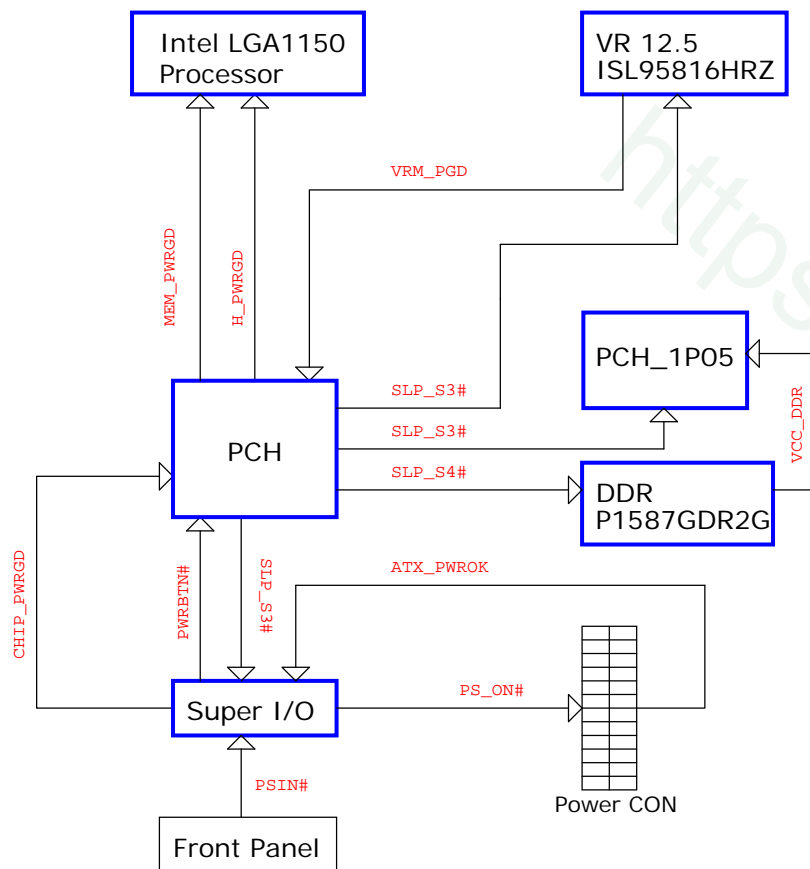
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Rev X5

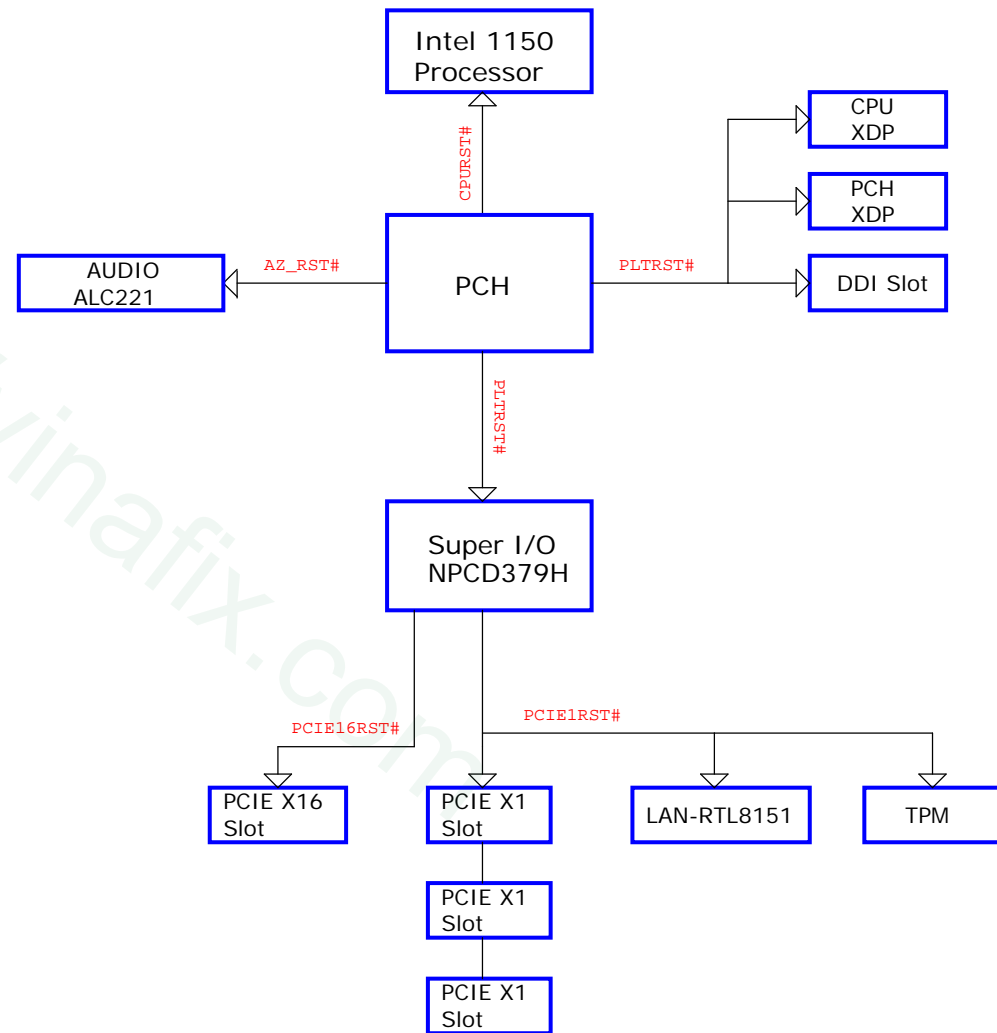
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## PWROK MAP



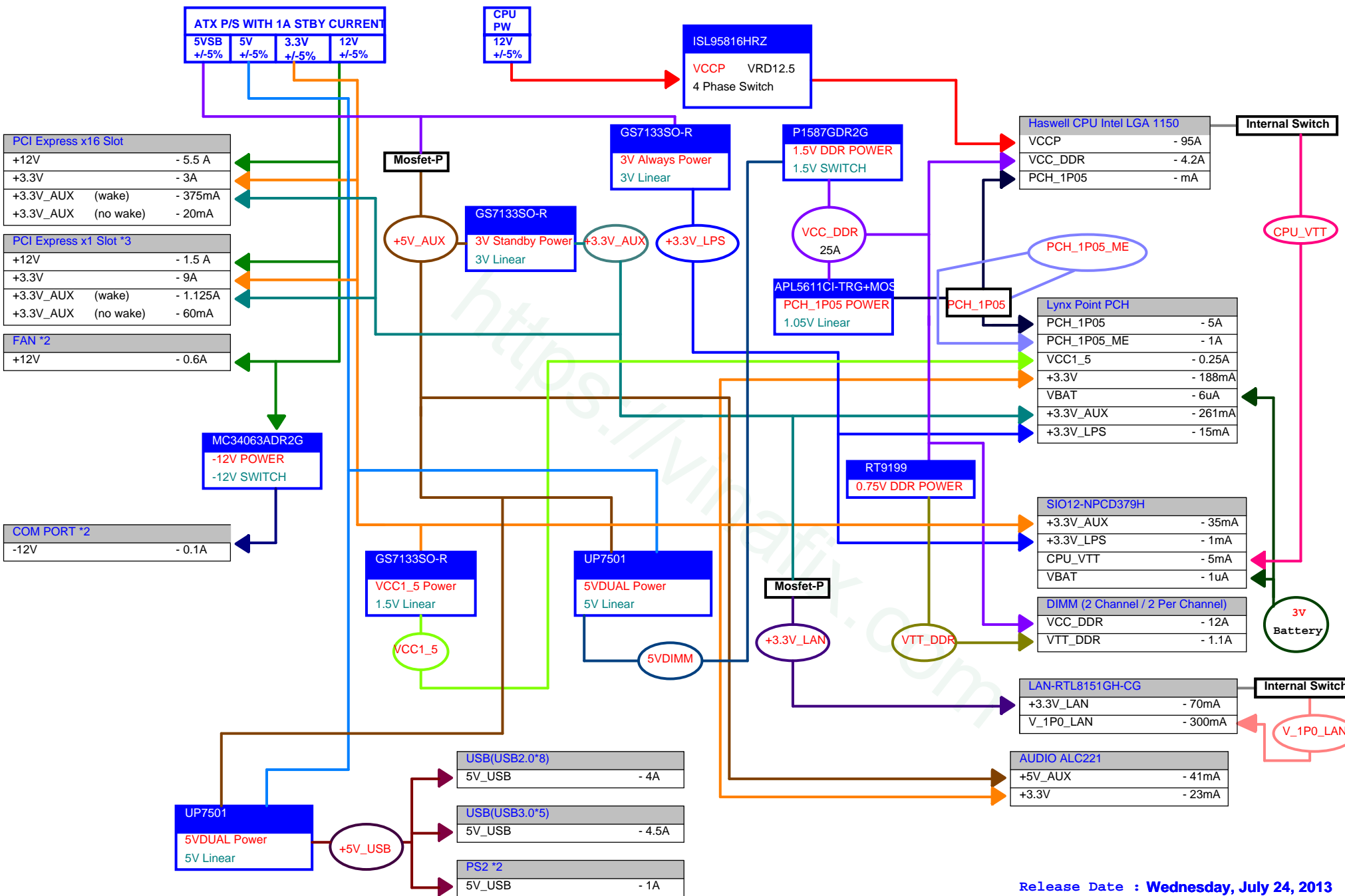
## RESET MAP



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Date:	Rev X5



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Size Custom	Document Description <b>Power Map</b>	Rev X5
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# PCH

GPIO	I/O/NC	Power	Tol	Default	MB Function
GPIO[0]	I/O	Main	3.3V	GPI	FRONT_USB_P24_DET#
GPIO[1]	I/O	Main	3.3V	GPI	PCH_GPIO1
GPIO[2]	I/O	Main	5V	GPI	PCH_GPIO2
GPIO[3]	I/O	Main	5V	GPI	PCH_GPIO3
GPIO[4]	I/O	Main	5V	GPI	PCH_GPIO4
GPIO[5]	I/O	Main	5V	GPI	PCH_GPIO5
GPIO[6]	I/O	Main	3.3V	GPI	IO_SMI#
GPIO[7]	I/O	Main	3.3V	GPI	PCH_GPIO7
GPIO[8]	I/O	Resume	3.3V	GPO	PCH_GPIO8
GPIO[9]	I/O	Resume	3.3V	Native	USB_OCP#5
GPIO[10]	I/O	Resume	3.3V	Native	USB_OCP#6
GPIO[11]	I/O	Resume	3.3V	Native	PCH_SMBALERT#
GPIO[12]	I/O	Resume	3.3V	Native	LAN_DISABLE#
GPIO[13]	I/O	Resume	3.3V	GPI	INT_USB_P151_DET#
GPIO[14]	I/O	Resume	3.3V	Native	GPIO14
GPIO[15]	I/O	Resume	3.3V	GPO	PCH_GPIO15
GPIO[16]	I/O	Main	3.3V	GPI	PCH_GPIO16
GPIO[17]	I/O	Main	3.3V	GPI	PCH_GPIO17
GPIO[18]	I/O	Main	3.3V	Native	PCH_GPIO18
GPIO[19]	I/O	Main	3.3V	GPI	PCH_GPIO19
GPIO[20]	I/O	Main	3.3V	Native	PCIECLKREQ2#
GPIO[21]	I/O	Main	3.3V	GPI	FRONT_AUD_DET#
GPIO[22]	I/O	Main	3.3V	GPI	INT_USB_P150_DET#

GPIO[23]	I/O	Main	3.3V	Native	LDRQ1#
GPIO[24]	I/O	Resume	3.3V	GPO	PCH_GPIO24
GPIO[25]	I/O	Resume	3.3V	Native	BRD_ID2
GPIO[26]	I/O	Resume	3.3V	Native	PCH_GPIO26
GPIO[27]	I/O	DSW	3.3V	GPI	PCH_LAN_WAKE#
GPIO[28]	I/O	Resume	3.3V	GPO	PCH_GPIO28
GPIO[29]	I/O	Resume	3.3V	Native	SLP_WLAN#
GPIO[30]	I/O	Resume	3.3V	GPI	PCH_SUSWARN#
GPIO[31]	I/O	DSW	3.3V	GPI	PCH_GPIO31
GPIO[32]	I/O	Main	3.3V	GPO	PCH_GPIO32
GPIO[33]	I/O	Main	3.3V	GPO	PCH_GPIO33
GPIO[34]	I/O	Main	3.3V	GPI	PCH_GPIO34
GPIO[35]	I/O	Main	3.3V	GPO	BRD_REV0
GPIO[36]	I/O	Main	3.3V	GPI	PCH_GPIO36

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# PCH

GPIO	I/O/NC	Power	Tol	Default	MB Function
GPIO[37]	I/O	Main	3.3V	GPI	PCH_GPIO37
GPIO[38]	I/O	Main	3.3V	GPI	CHASSIS_ID0
GPIO[39]	I/O	Main	3.3V	GPI	BRD_ID1
GPIO[40]	I/O	Resume	3.3V	Native	USB_OCP#1
GPIO[41]	I/O	Resume	3.3V	Native	USB_OCP#2
GPIO[42]	I/O	Resume	3.3V	Native	USB_OCP#3
GPIO[43]	I/O	Resume	3.3V	Native	USB_OCP#4
GPIO[44]	I/O	Resume	3.3V	Native	PCIECLKREQ5#
GPIO[45]	I/O	Resume	3.3V	Native	PCH_GPIO45
GPIO[46]	I/O	Resume	3.3V	Native	PCH_GPIO46
GPIO[48]	I/O	Main	3.3V	GPI	CHASSIS_ID1
GPIO[49]	I/O	Main	3.3V	GPI	PCH_GPIO49
GPIO[50]	I/O	Main	3.3V	GPI	PCH_GPIO50
GPIO[51]	I/O	Main	3.3V	GPO	PCH_GPIO51
GPIO[52]	I/O	Main	3.3V	GPI	PCH_GPIO52
GPIO[53]	I/O	Main	3.3V	GPO	PCH_GPIO53
GPIO[54]	I/O	Main	3.3V	GPI	BOOT_BLK_EN#
GPIO[55]	I/O	Main	3.3V	GPO	PCH_GPIO55
GPIO[57]	I/O	Resume	3.3V	GPI	PCH_GPIO57
GPIO[58]	I/O	Resume	3.3V	Native	SML1CLK
GPIO[59]	I/O	Resume	3.3V	Native	USB_OCP#0
GPIO[60]	I/O	Resume	3.3V	Native	PCH_SML0ALERT#

GPIO[61]	I/O	Resume	3.3V	Native	PRNTER_DET#
GPIO[62]	I/O	Resume	3.3V	Native	SUS_CLK
GPIO[63]	I/O	Resume	3.3V	Native	SLP_S5#
GPIO[64]	I/O	CORE	3.3V	Native	CLKOUTFLEX0
GPIO[65]	I/O	CORE	3.3V	Native	CLKOUTFLEX1
GPIO[66]	I/O	CORE	3.3V	Native	CLKOUTFLEX2
GPIO[67]	I/O	CORE	3.3V	Native	CLKOUTFLEX3
GPIO[68]	I/O	CORE	3.3V	GPI	FRONT_USB_P26_DET#
GPIO[69]	I/O	CORE	3.3V	GPI	COMM_B_DET#
GPIO[70]	I/O	CORE	3.3V	GPI	BOOT_BLK_REC#
GPIO[71]	I/O	CORE	3.3V	GPI	BRD_ID0
GPIO[72]	I/O	DSW	3.3V	Native	PCH_GPIO72
GPIO[73]	I/O	Resume	3.3V	Native	BRD_REV1
GPIO[74]	I/O	Resume	3.3V	Native	PCH_SML1ALERT#
GPIO[75]	I/O	Resume	3.3V	Native	SML1DATA

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**Gwen/Mordred X3**  
**2013/03/26**  
PAGE 46: Follow PCA spec and rename screw hole.  
Rename MH1,MH2,MH3,MH4,MH5,MH6,MH7,MH8 to MTG1,MTG2,MTG3,MTG4,MTG5,MTG6,MTG7,MTG8. (SI: 932283)  
  
PAGE 39/41/42: Follow PCA spec and modify cap size at PWM regulator high-side MOSFET drain .  
Modify C31,C60,C86,C163,C196 size from 0805 to 1206. (SI: 932283)

**2013/03/27**  
PAGE 22: Modify DP slot circuit.  
Connect +5V to Pin A5 of P185. (SI: 932980)  
  
PAGE 16/28: Modify crystal CL value according to crystal vendor test result.  
Modify C942 from 27pF to 22pF. Modify C514 and C515 from 18pF to 15pF. (SI: 932989)

**2013/04/09**  
PAGE 21: Remove the unused thermal sensor by thermal engineer suggestion.  
Modify RT5,R610,C446 from I to NI. (SI: 935536)

PAGE 4: Modify thermtrip circuit according to Intel design guide.  
Modify R213 from I to NI.(SI: 924414,924417)

**Gwen/Mordred X4**

**2013/05/21**  
PAGE 30: Internal speaker has pop noise when UUT remove power cord.  
Modify R200 to NI, Modify R733 from 20K ohm to 1K ohm,  
Modify R734 from 20K ohm to 10K ohm and connect to +3.3V\_AUX.  
Add C996 and connect pin X of D80 to GND(SI: 943581)

PAGE 33/36: Follow PCA spec X81 pin definition to add USB2.0 port7 on P152.  
Add RN64, L52 and U67. (SI: 935708)

PAGE 37: Motherboard have no PSWD jumper that makes BIOS password always be reset.  
Modify JP49 from MP to I. (SI: 941138)

PAGE 43: Modify -12V circuit by msi power team engineer suggestion.  
Modify C49 from 2200 pF to 1500 pF. (SI: 947863 )

PAGE 1: Remove "ODM confidential" from schematic. (SI: 948604 )

**2013/05/27**  
PAGE 39: Modify DDR power circuit by msi power team engineer suggestion.  
Modify R274 from 7.68K ohm to 9.53K ohm, modify R247 from 2.74K ohm to 3.74K ohm. (SI: 948994 )

PAGE 40/42: Modify HP Gwen/Mordred CPU Power circuit to 3 phase support 84W.  
Modify C42 and R89 from NI to I, modify R110 from 82K ohm to 100k ohm, modify R92 from 3.57K ohm to 3.6K ohm,  
modify C26 from 820pf to 680pf, modify R91 from 115K ohm to 118K ohm, modify R21 from 487 ohm to 620 ohm,  
modify R32 from 5.6M ohm to 6.2M ohm, Modify C6 from 0.47uF to 0.1uF, modify C11 from 0.33uF to 0.47uF,  
modify C29,R94,R81,R59,R67,R69,R66,PR32,PR29,PR91,PR92,PR110,PC6,PC11,PC17,PC26,R188,C96,R194,C95,R187,C98,  
U12,R244,R197,R266,Q11,Q21,Q12,R195,C109,CHOKE4,C680 to NI. (SI: 947654 )

**2013/05/29**  
PAGE 31: UUT has noise when play media file and plug in/pull out the MIC from front panel.  
Reserve C997 and C998. (SI: 946837)

**2013/06/10**  
PAGE 31: Remove retasking function.  
Modify EC18 and EC23 from I to NI. Modify C997 and C998 from NI to I. (SI:946837)

PAGE 43: A item of power on sequence signal integrity test is fail.Modify R372  
from 200K ohm to 1M ohm. Modify R538 from 10K ohm to 100K ohm.  
Modify R536 from 29.4K ohm to 287K ohm(SI:949150)

**2013/06/14**  
PAGE 44: The LED brightness and color looks not good on both Power LED and HDD LED.  
modify R747 from 180 to 560 ohm. (SI: 936453)

PAGE 28: Disable GPIO12 function to support after G3 wake on lan.  
Modify R900 from I to NI. (SI: 952714)

**2013/06/14**  
PAGE 34/35/36/43/45: USB 2.0 R/W EMC test issue.  
Modify C171,C172,C185,C216,C233,C245,C260,C261,C264,C411,C416,C423,C666,C667,C676,C677,C965 from 0.1uf and NI to 0.01uf and I.  
Modify RN38,RN39,RN40,RN42,RN44,RN45,RN46,RN47,RN48,RN49,RN50,RN51,RN52,RN53,RN54,RN57,RN58,RN59,RN62,RN63 from I to NI.  
Modify L43,L45,L22,L21,L42,L44,L46,L49 from NI to I.  
Modify L3,L4,L28,L23,L27,L24,L16,L17,L18,L20,L50,L19 from NI to I,NI(SI: 950882)

**Gwen/Mordred X5**  
**2013/07/12**  
PAGE 20/45: Fix COM port ESD issue.  
Modify C966 from NI to I and C766 from 100pf to varistor.(SI: )  
  
PAGE 14: Modify MB rev ID to 10  
Modify R656, R632 from I to NI and modify R653, R629 from NI to I.  
  
PAGE 30: Reserve audio codec ALC221-VA and ALC221-VB colay circuit.  
Add C971,C972,C973,FB17,FB18,R987,R990,R991,R992,R993. (SI:964319)

PAGE 35/36: USB 2.0 R/W EMC test issue.  
Modify L28,L23LL24,L27,L50,L19 from I,NI to NI. Modify RN62,R57,RN58,RN59,RN42,RN40 from NI to I,NI.  
Modify RN51,RN52,RN53,RN54 from NI to I. Modify L14,L16,L18,L20 from NI to I (SI: 950882)

PAGE 43: System power on - off continuity if 12V power did not connect.  
Add Add Q166 and R994. Modify R538 from 100K to 90.9K, R519 power well change to +3.3V\_LPS from +5V\_AUX.(SI: 961863)

PAGE 43: Add a 30 ohm resistor on Q49 gate pin.  
Add R1020. (SI:964320)


PAGE 32/33: USB3.0 HDD re-enumerate or lost intermittent.  
Modify EC25,EC26,EC29,EC30,EC37 caps from 470uF to 1000uF. (SI:958227)

PAGE 21: Power LED blinks 4 times at low temperature during 11.2 strife test.  
Modify R611 from 40K to 27.4K and modify R581 from 10K to 5.6K. (SI:955525)

PAGE 23: Fix DVI EMC test issue.  
Modify RN21,RN22,RN23,RN24 from I to NI and modify L5,L6,L7,L8 from NI to I. (SI:964609)

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