

Model Name: IPMH81G1

Revision 2.01

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS X1 *2 SLOT
16	ITE 8620
17	COM,KB_MS_USB,USB30_20
18	HWM,FAN CTRL,OV,-PROCHOT
19	DUAL BIOS
20	FP,FUSB,SPK,SATALED
21	Realtek ALC887-VD2
22	REAR AUDIO JACK
23	REALTEK RTL8111G
24	DISCRETE POWER
25	ATX , CLOCK GEN
26	VCORE ISL95812_1
27	VCORE ISL95812_2

SHEET

TITLE

28	RT8120_DDR POWER
29	HDMI
30	
31	
32	

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Cover Sheet

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Model Name: IPMH81G1

Component value change history

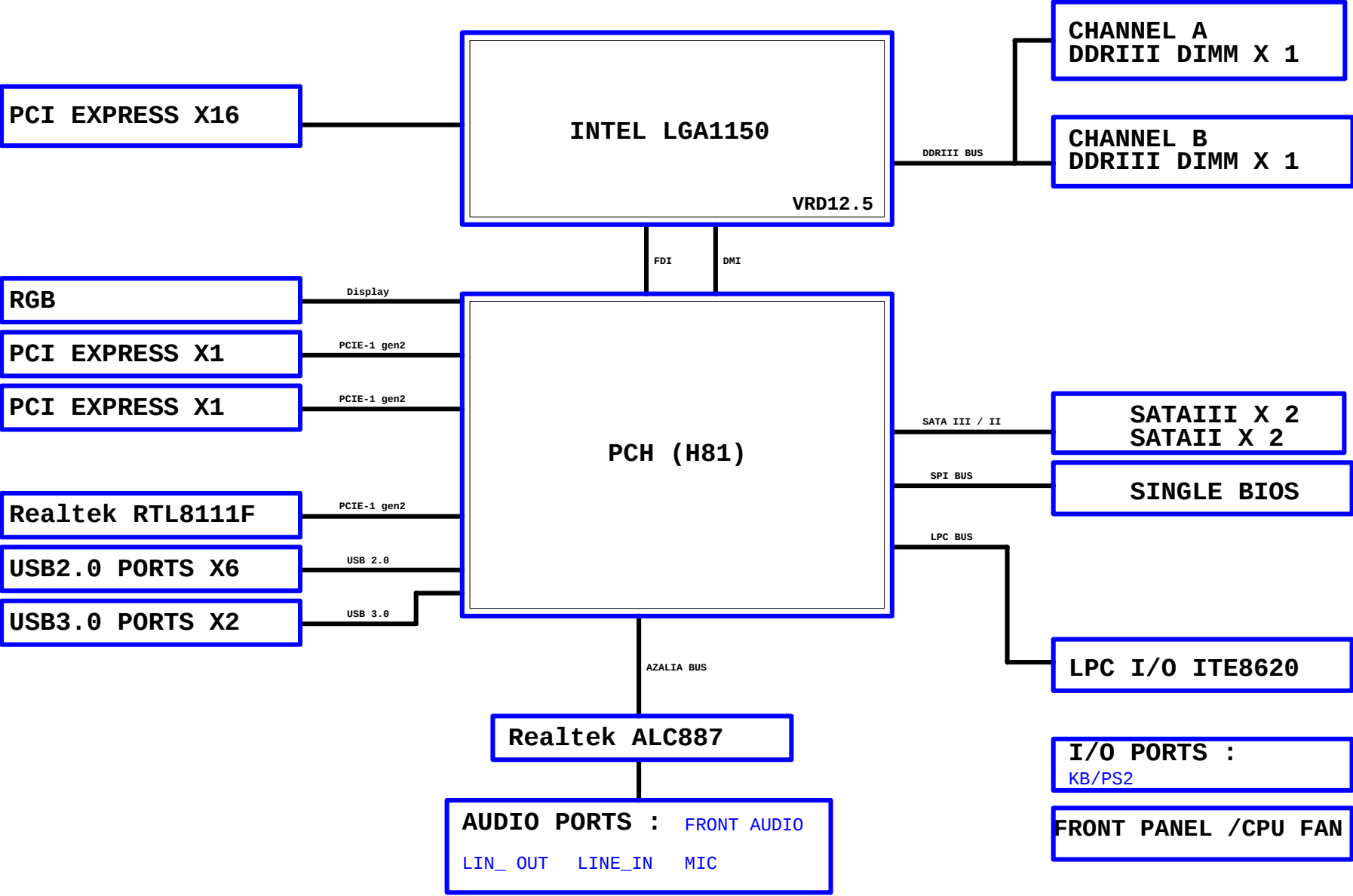
2013/07/04

[illegible]

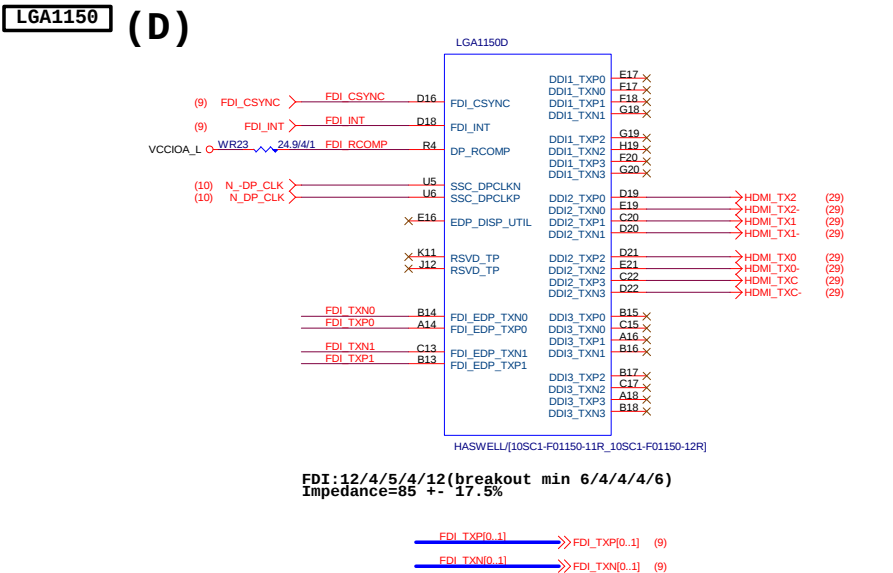
Circuit or PCB layout change

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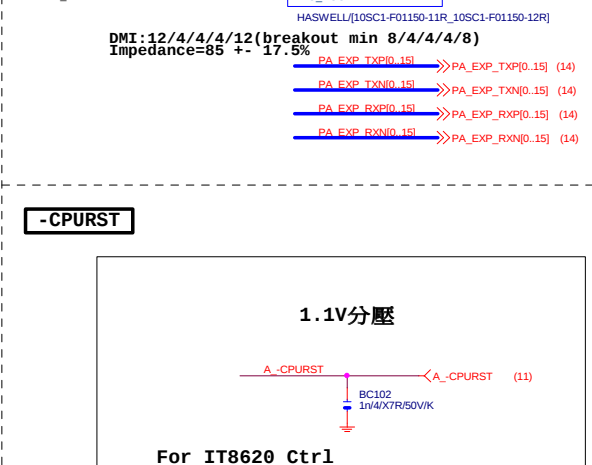
BLOCK DIAGRAM



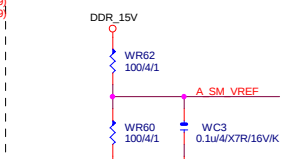
LGA1150 (D)



-CPURST



CPU	PU/PD
1	1
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100	100



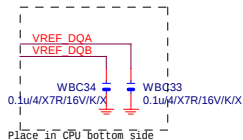
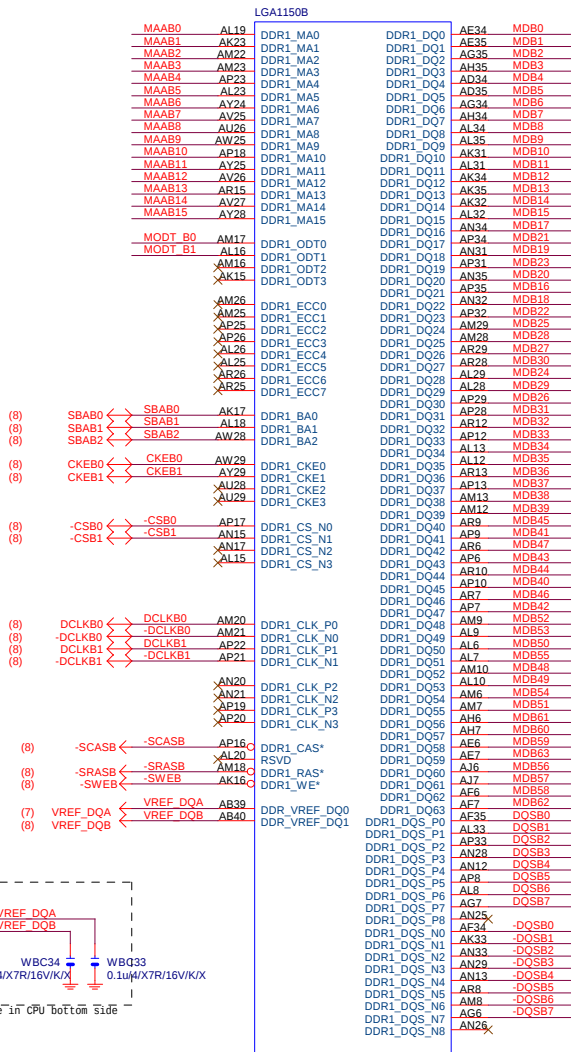
LGA1150

(A)



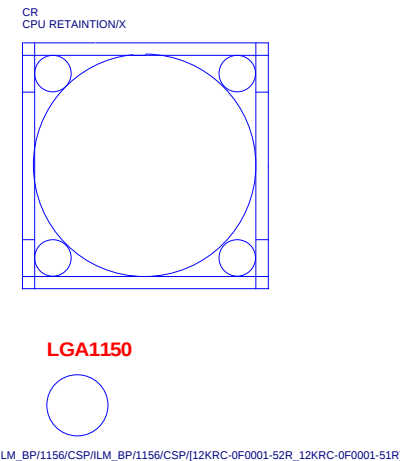
LGA1150

(B)

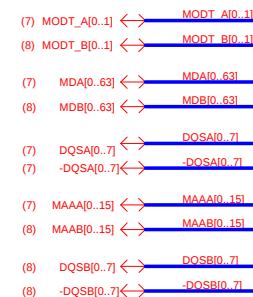


LGA1150

(CR)



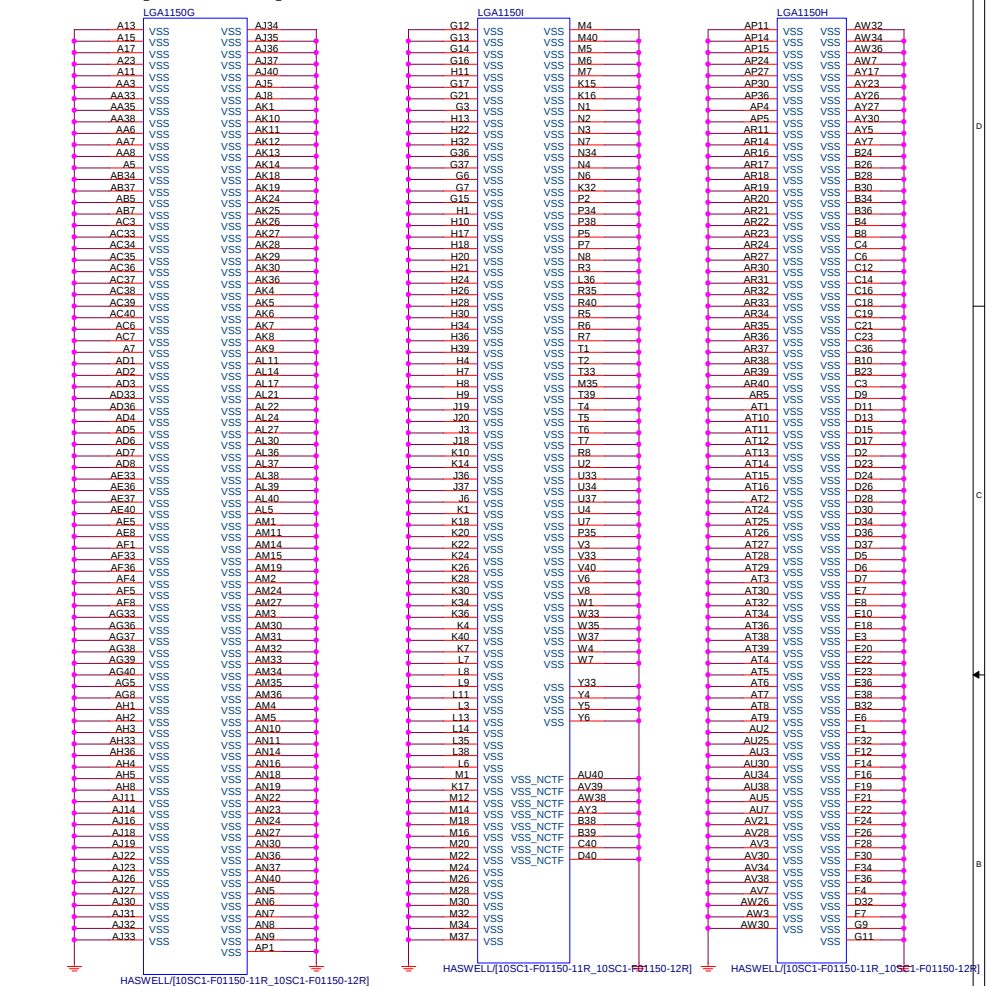
DDR BUS



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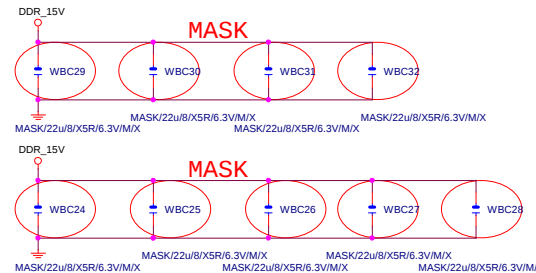
Title			CPU LGA1150-B
Size			IPMH81G1
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LGA1155 (G, H, I)



DDR CAP

(x9)

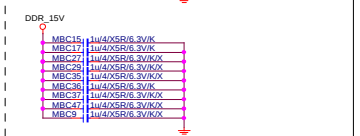


Title				CPU LGA1150-C			
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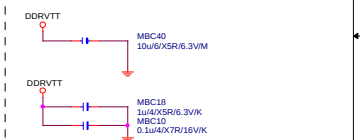
(A)



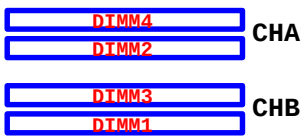
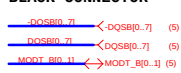
1



DDRVTT Decouple



(B)



PCH (B)

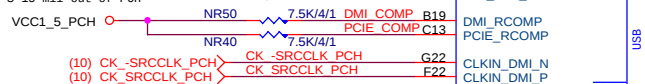
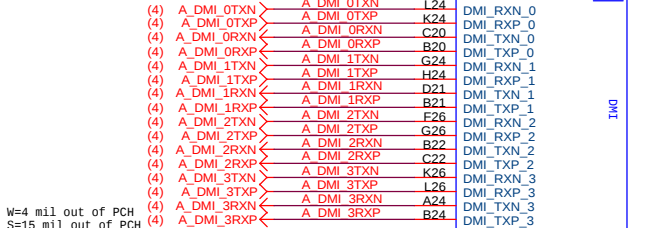
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +/- 17.5%

USB2.0 : 12/4.5/7.5/4.5/12 (breakout min 8/4/4/4/8)
Impedance=90 +/- 17.5%

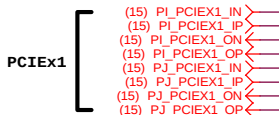
PCHB

B85: Port 6/7 N/A

H81: Port 6/7/12/13 N/A



PCIE Only



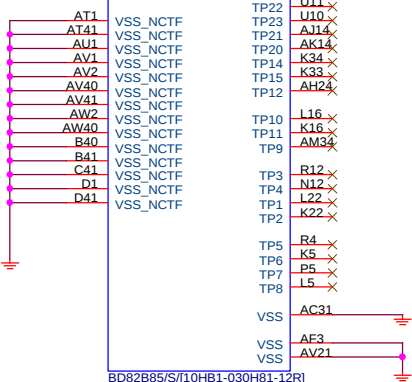
N/A

放靠近 Device & PCI-E Slot
Impedance=80 +/- 17.5%

PCIEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)

PCH (J)

PCHJ



BD82B85/S/[10HB1-030H81-12R]

PCH (F)



N/A

VCC3

NR62

NR63

PCHF

USB3

FDILINK

USB3_RXN_0

USB3_RXP_0

USB3_TXN_0

USB3_TXP_0

USB3_RXN_1

USB3_RXP_1

USB3_TXN_1

USB3_TXP_1

USB3_RXN_4

USB3_RXP_4

USB3_TXN_4

USB3_TXP_4

USB3_RXN_5

USB3_RXP_5

USB3_TXN_5

USB3_TXP_5

TACH6_GP70

TACH7_GP71

BD82B85/S/[10HB1-030H81-12R]

FDI_TXP0_11

FDI_TXN0_11

FDI_TXP0_11

FDI_TXN0_11

FDI_TXP0_11

FDI_TXN0_11

FDI_TXP0_11

FDI_TXN0_11

FDI_TXP0_11

FDI_TXN0_11

FDI_TXP0_11

FDI_TXN0_11

FDI_TXP0_11

FDI_TXN0_11

FDI_TXP0_11

FDI_TXN0_11

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FDI_TXN0_11

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FDI_TXN0_11

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FDI_TXN0_11

FDI_TXP0_11

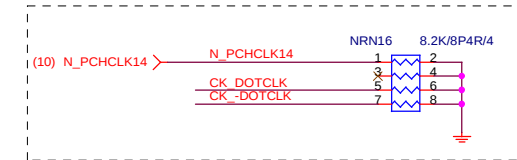
FDI_TXN0_11

FDI_TXP0_11

FDI_TXN0_11

PCH CLK PD

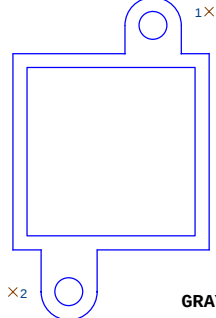
Mount for integrated clock Generation Mode



PCH H/S

LOW COST ICH7 HEATSINK

SB_HEATSIN



×2

GRAY HS

PCH_HS

PCH_HS/[12SP2-030005-43R_12SP2-030005-41R_12SP2-030005-42R]

USB TABLE

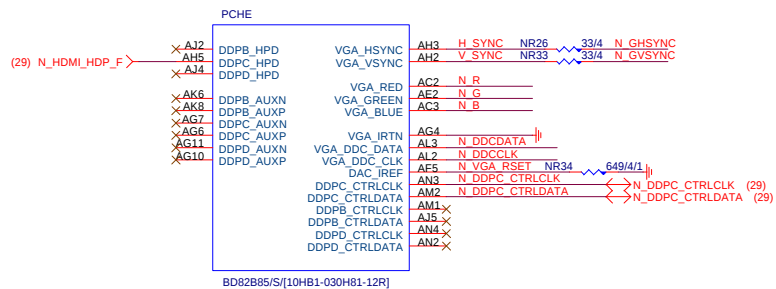
OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)

USB OC# Configure	
OC0#	R_USB30
OC1#	USB_LAN
OC2#	Not Use
OC3#	N/A
OC4#	F_USB1
OC5#	F_USB2
OC6#	Not Use
OC7#	N/A

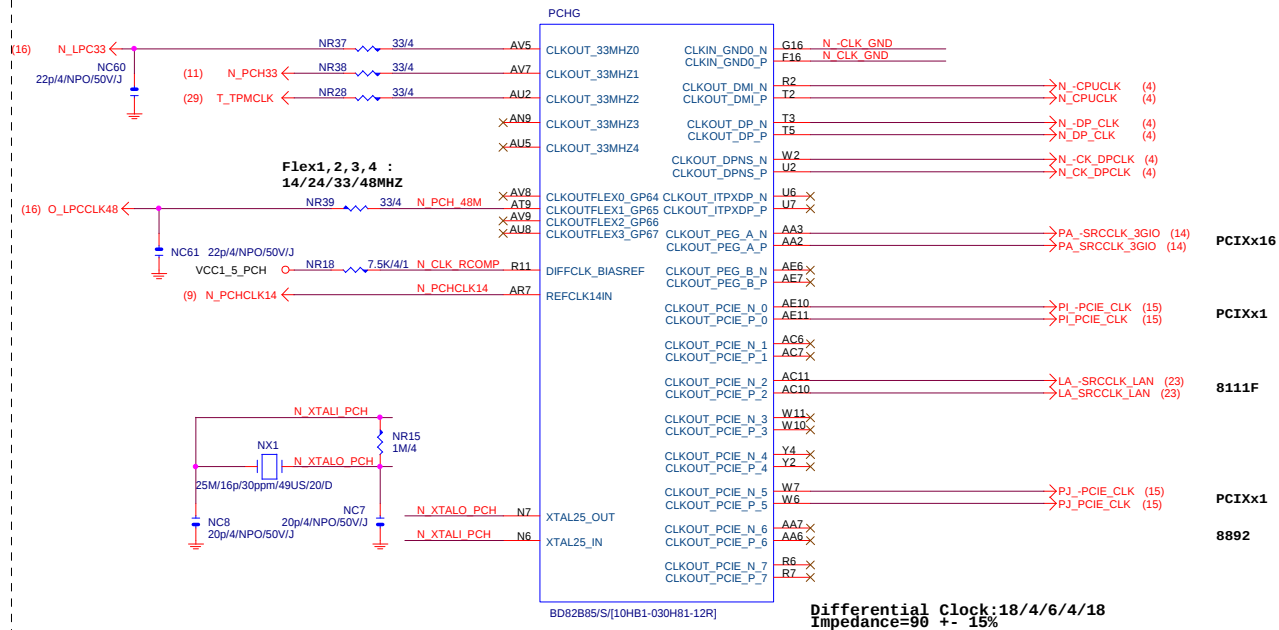
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Title		PCH FDI,DMI,USB ,PCIE,NVRAM	
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PCH

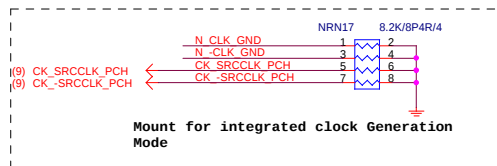


PCH (G)

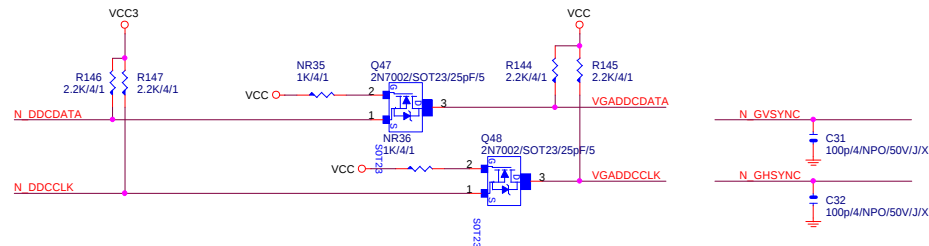


Differential Clock: 18/4/6/4/18
Impedance=90 +- 15%

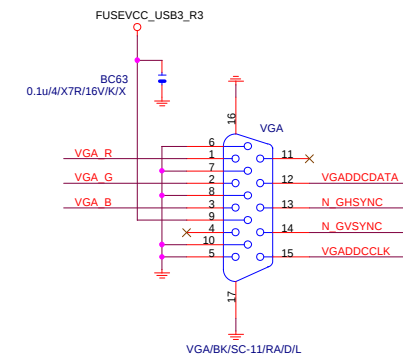
PCH CLK PD



VGA DDC



VGA CONNECTOR



VGA/BK/SC-11/RA/D/L
BLACK CONNECTOR

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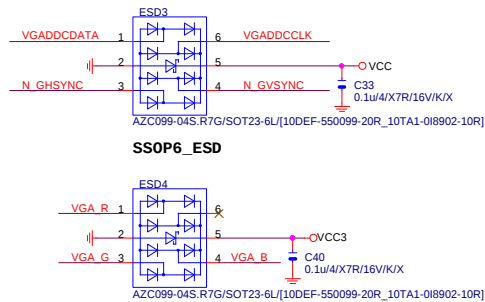
PCH DISPLAY ,CLK BUFFER

IPMH81G1

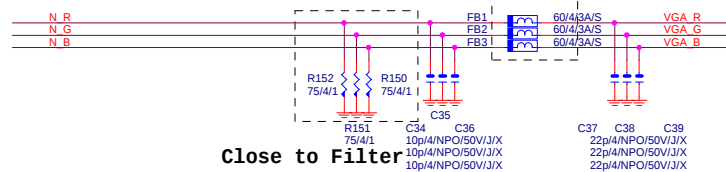
Rev	2.01
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VGA ESD



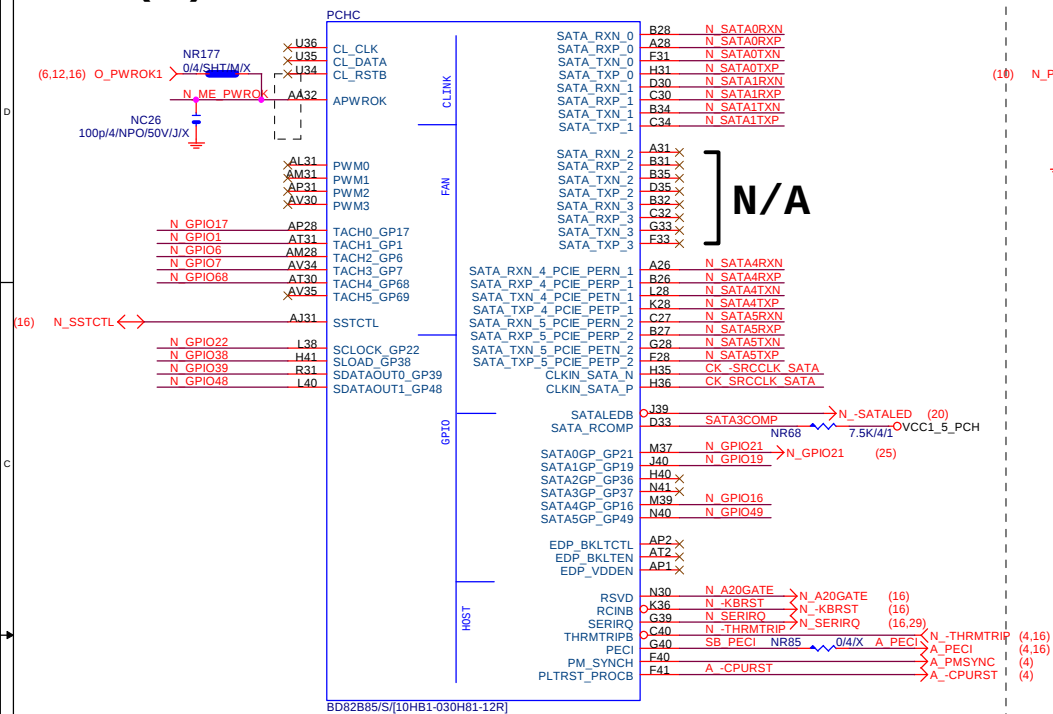
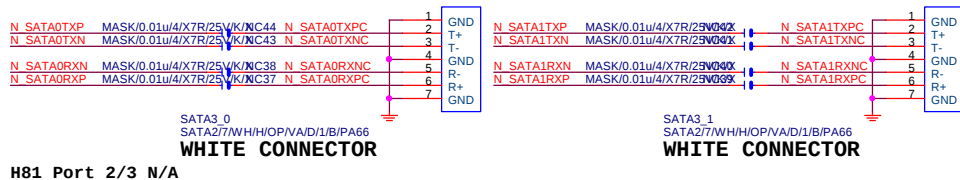
VGA DDC



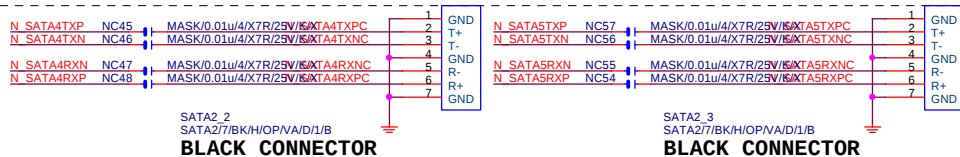
75/4/1
Close to Filter

PCH (C)

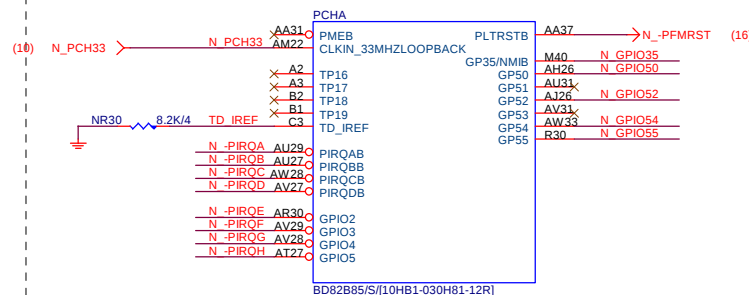
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +/- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +/- 17.5%

**SATA CONNECTOR**

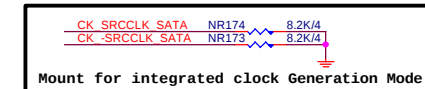
```
** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0
```



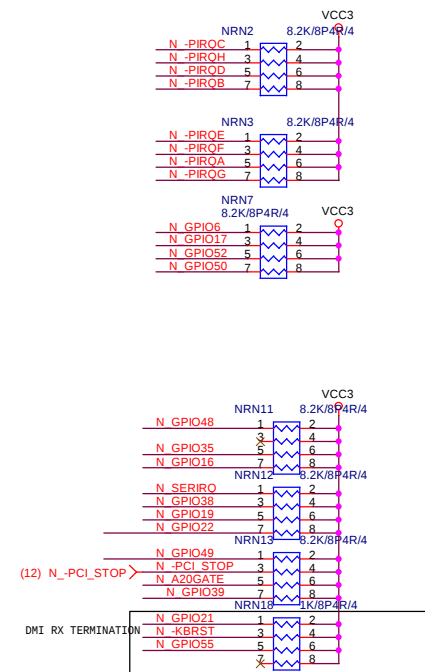
PCH (A)



PCH	CLK	PD
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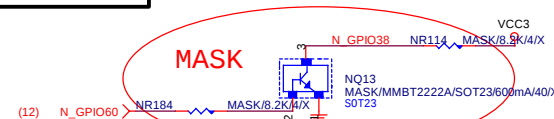


PCH	PU/PD
-----	-------



ME PWROK

GPI038 Ctrl



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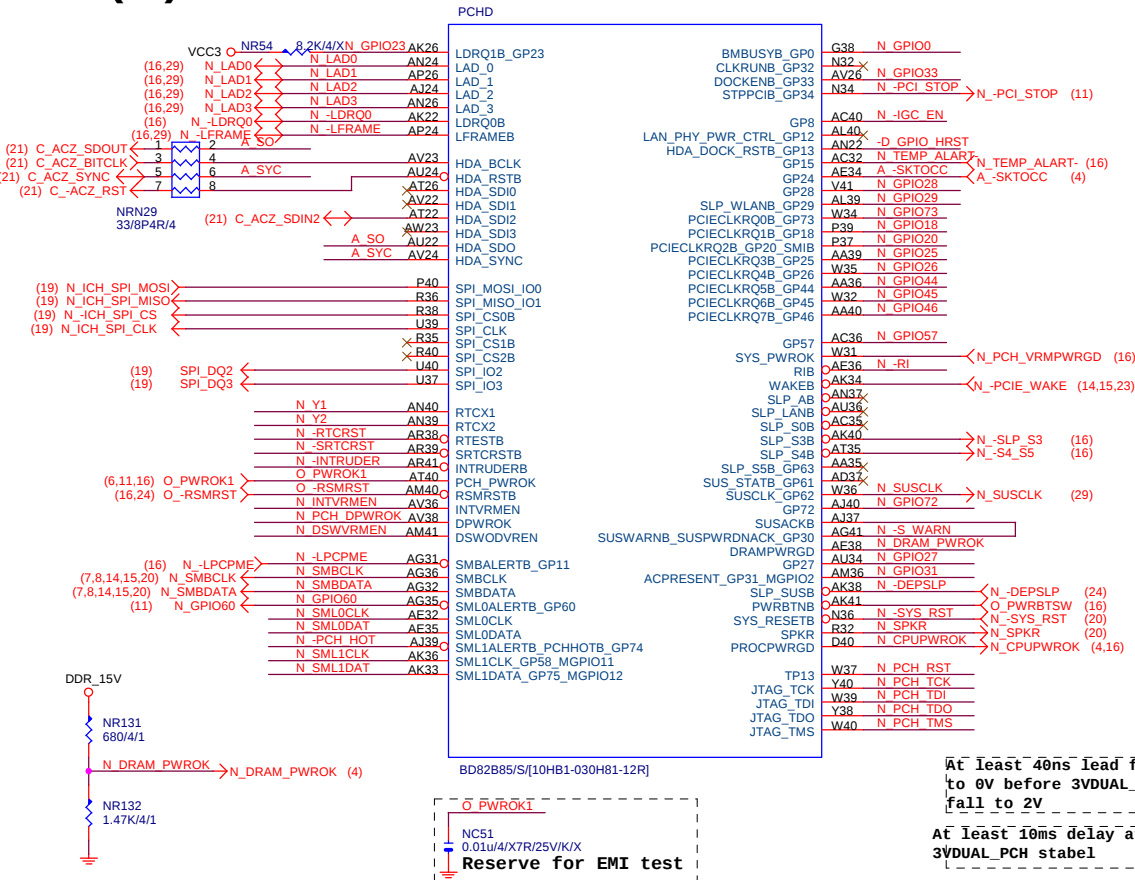
PCH HOST , SATA, PCI

IPMH81G1

Title			
PCH HOST , SATA, PCI			
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PCH (D)

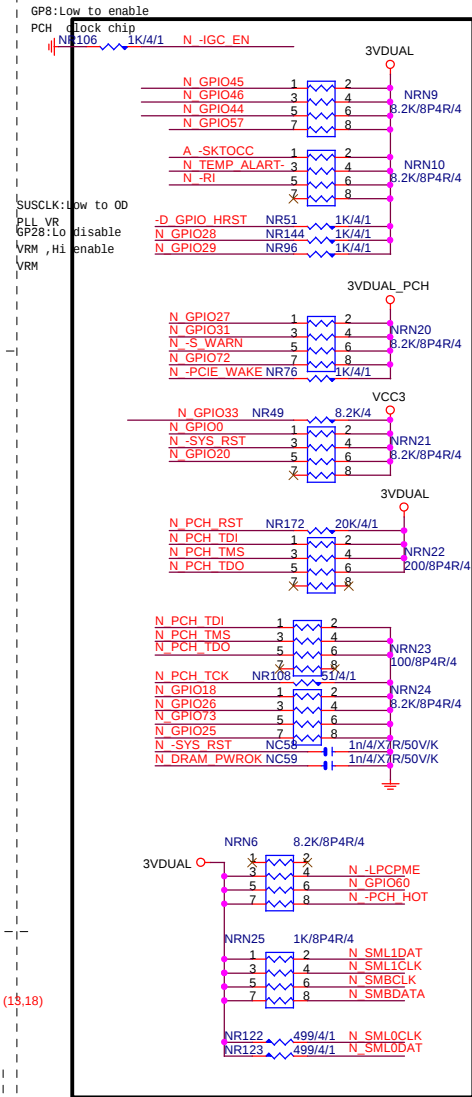
(16,29) N_LAD[0..3] << N_LAD[0..3]



ACZ_SDOUT

PCH_DPWR0K

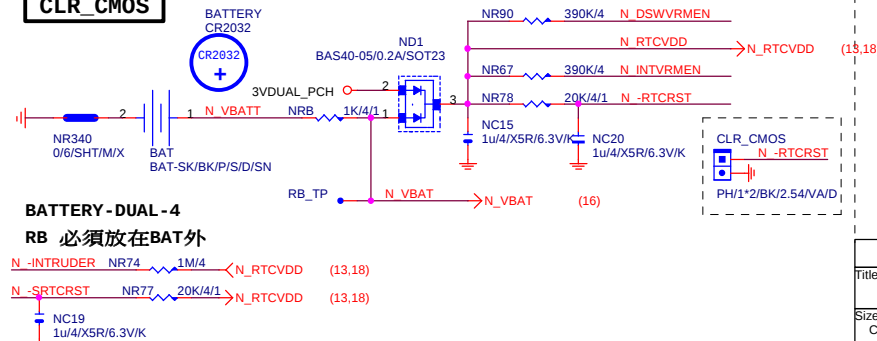
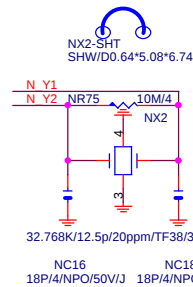
PCH PU/PD



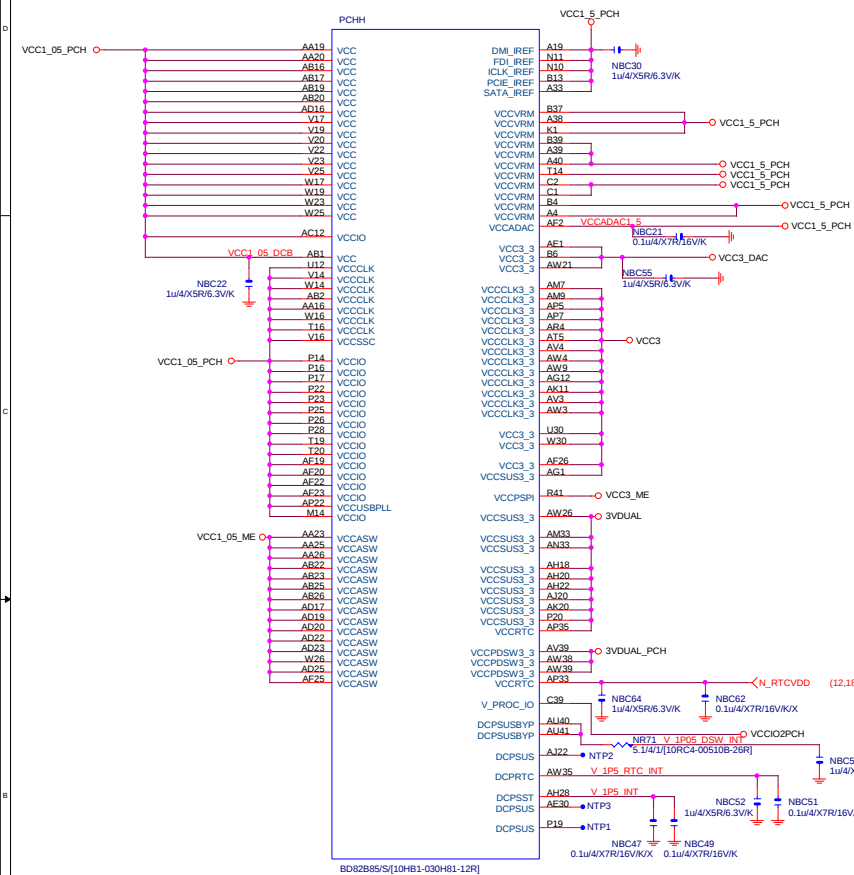
HSW_STRAP13

32.768KHZ

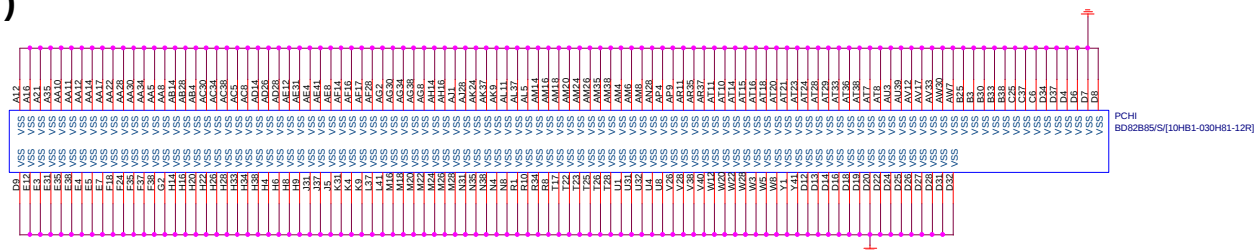
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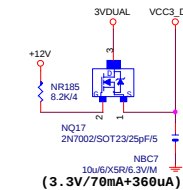
PCH (H)



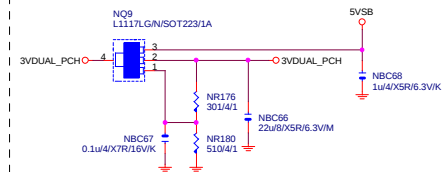
PCH (I)



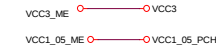
VCC3_DAC



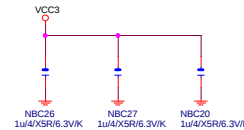
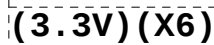
3VDUAL_PCH



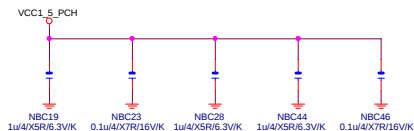
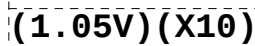
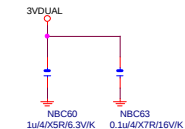
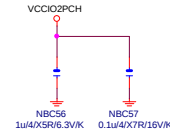
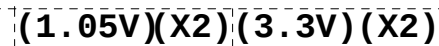
SHT PWR



CAP

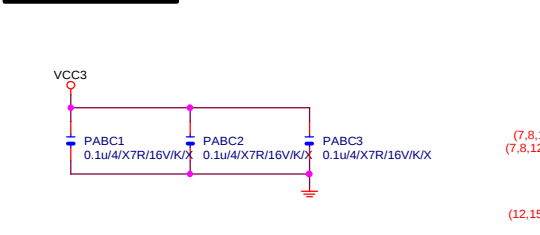


Remove

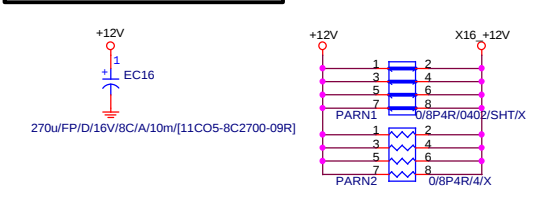


Remove

PCIEX16 CAP



PCIEX16 PROTECT SHT



PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22uF/4X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22uF/4X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22uF/4X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22uF/4X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22uF/4X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22uF/4X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22uF/4X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22uF/4X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22uF/4X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22uF/4X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22uF/4X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22uF/4X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22uF/4X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22uF/4X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC19	0.22uF/4X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC18	0.22uF/4X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22uF/4X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22uF/4X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22uF/4X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22uF/4X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22uF/4X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22uF/4X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22uF/4X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22uF/4X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22uF/4X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22uF/4X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22uF/4X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22uF/4X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22uF/4X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22uF/4X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22uF/4X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22uF/4X5R/6.3V/K	PA EXP TXN15 C

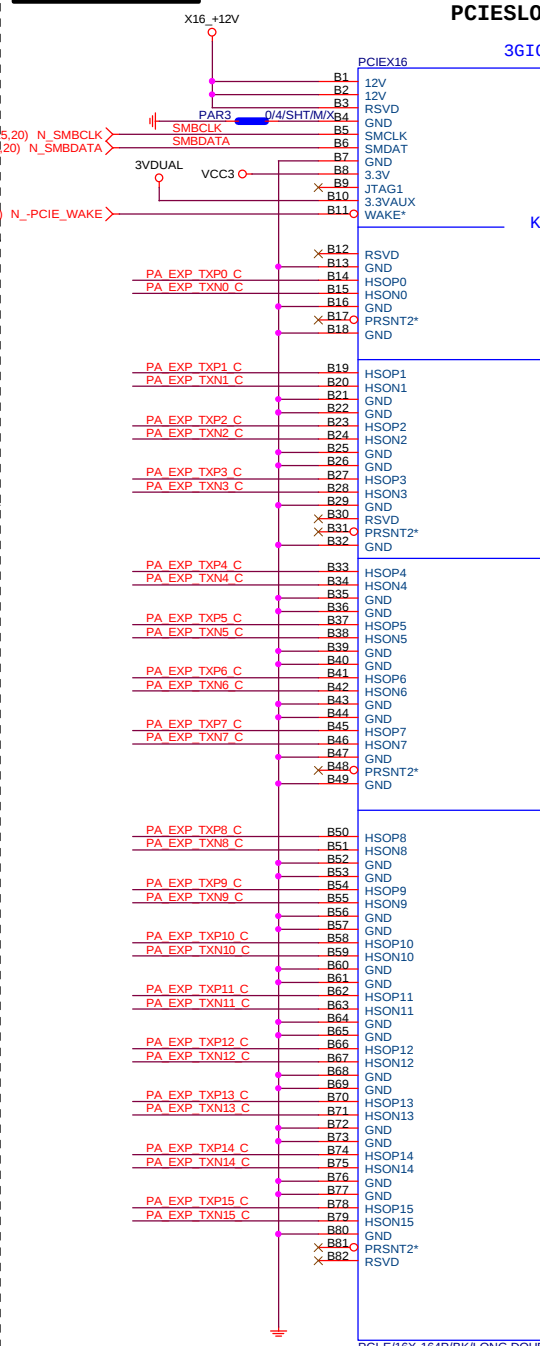
PA EXP RXPI0.15] >>> PA_EXP_RXP[0.15] (4)

PA EXP RXNI0.15] >>> PA_EXP_RXN[0.15] (4)

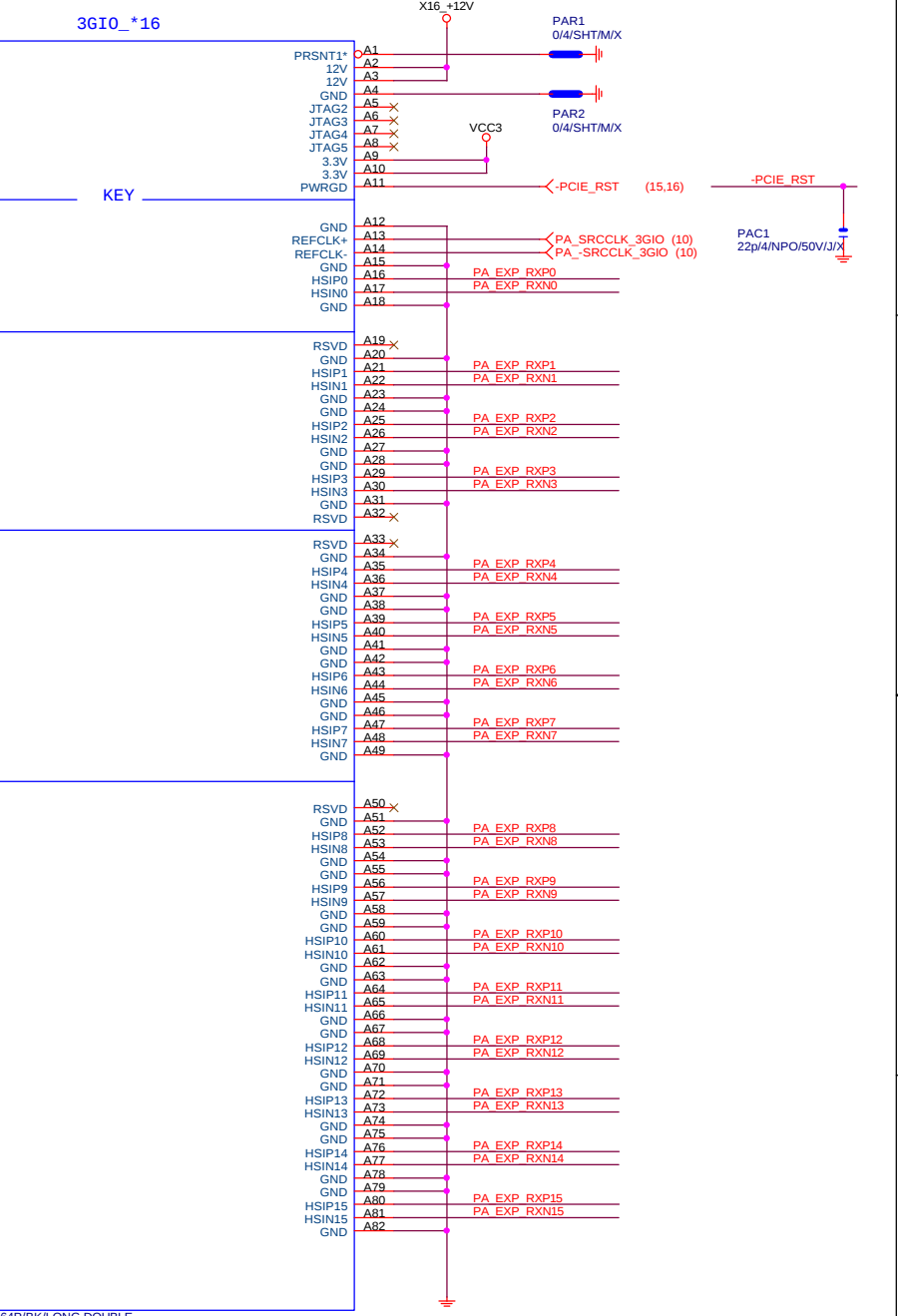
PA EXP TXPI0.15] >>> PA_EXP_TXP[0.15] (4)

PA EXP TXNI0.15] >>> PA_EXP_TXN[0.15] (4)

PCIEX16 SLOT



PCIESLOT-164DN-P



PCI-E/16X-164P/BK/LONG DOUBLE

BLACK CONNECTOR

Gigabyte Technology

Title

PCI EXPRESS * 16

Size

Document Number

Rev

Custom

IPMH81G1

2.01

Date:

Monday, July 07, 2014

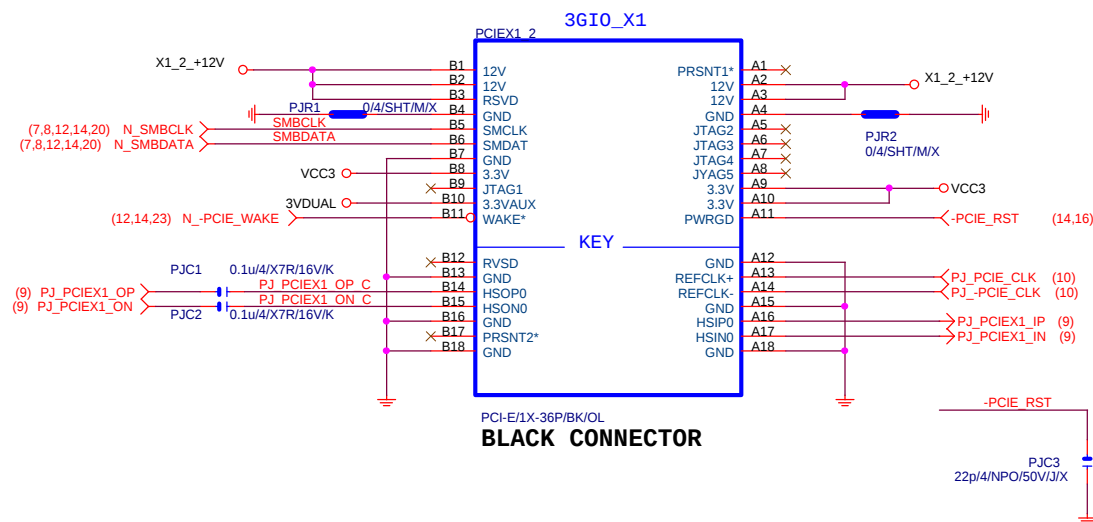
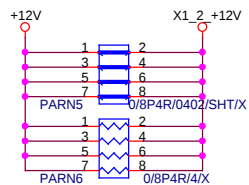
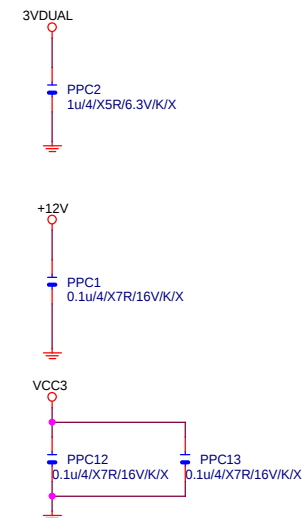
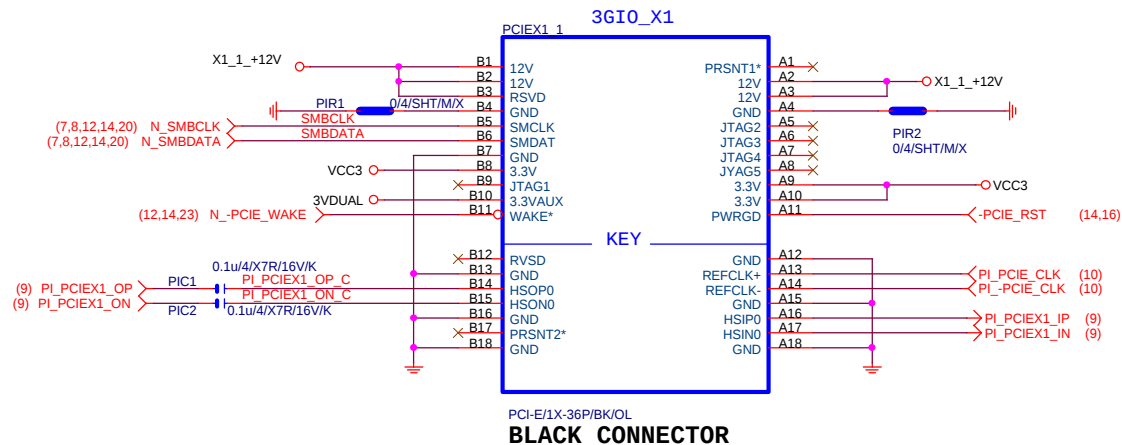
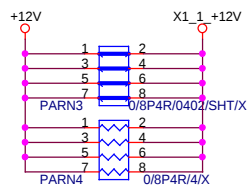
Sheet

14

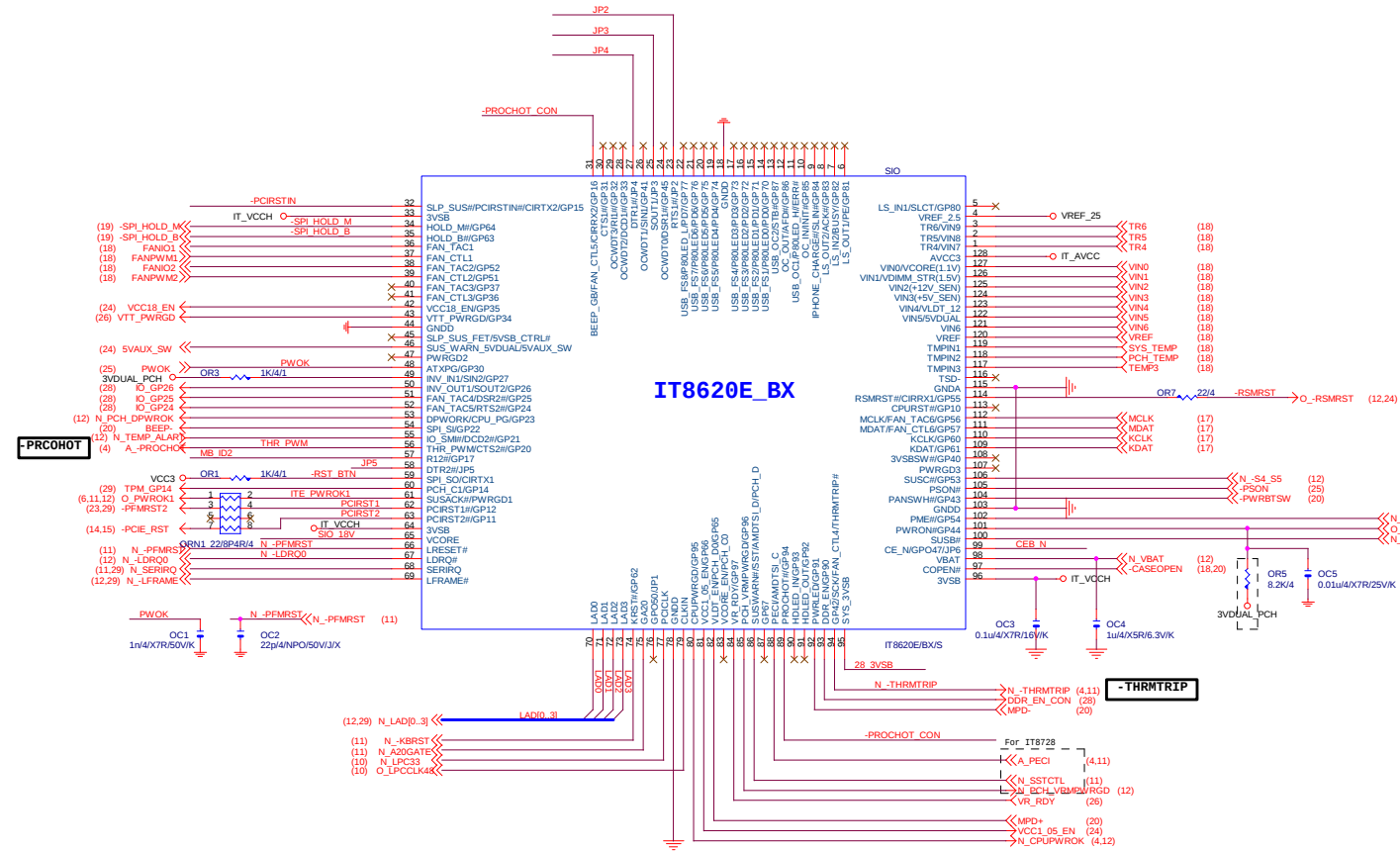
of

29

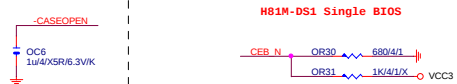
PCIEX1	PROTECT	SHT
--------	---------	-----



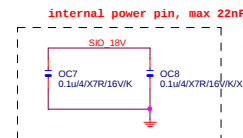
SIO IT8620



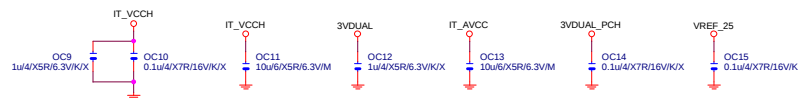
DUAL BIOS OPT STRAP



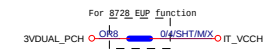
SIO_18V



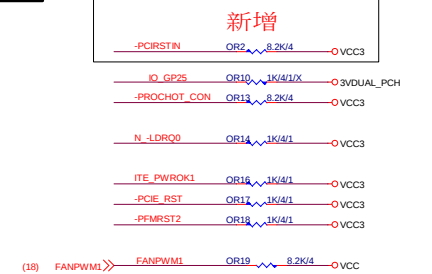
SIO CAP



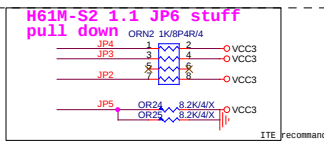
PWR SHT



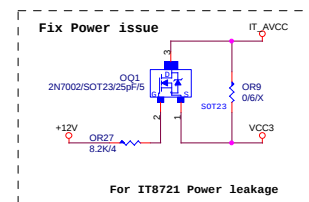
SIO PU



SIO STRAP



Power leakage



MB ID

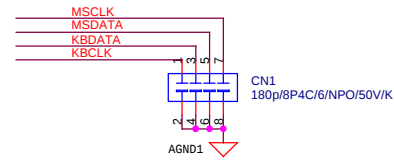
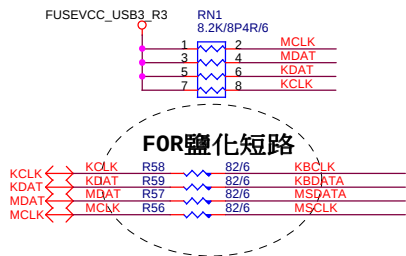
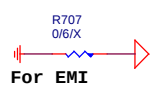
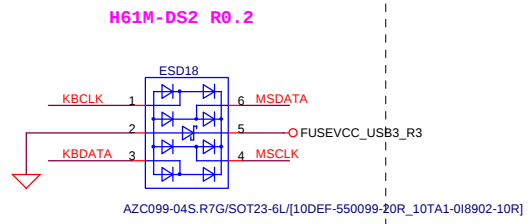
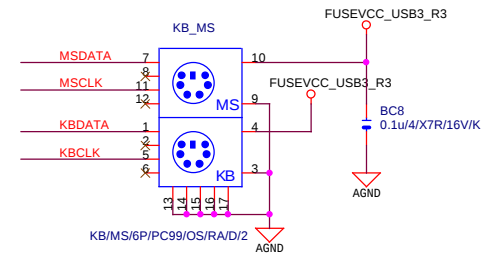


COM

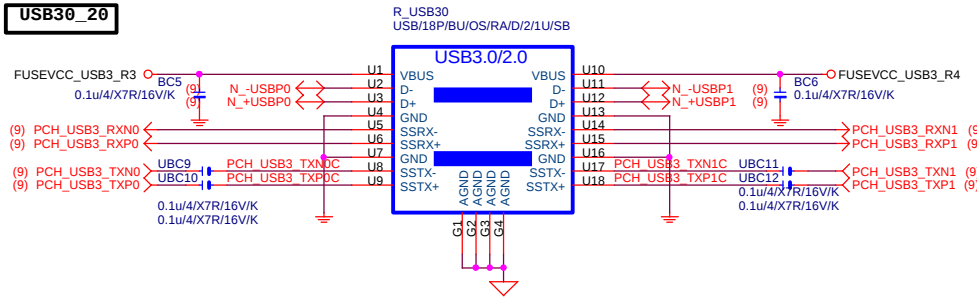
KB/MS

KB_MS ESD

COM RI



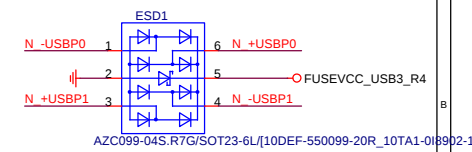
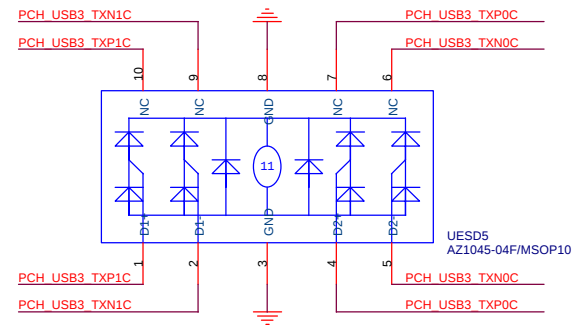
USB30_20



USB30_20 ESD PROTECT

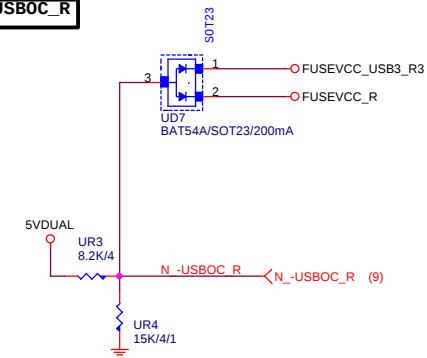
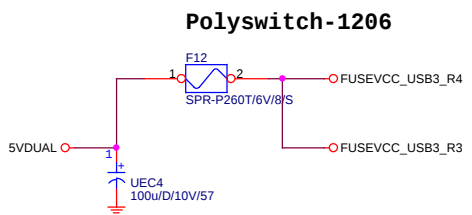
USB3.0 ESD

USB POWER PROTECT



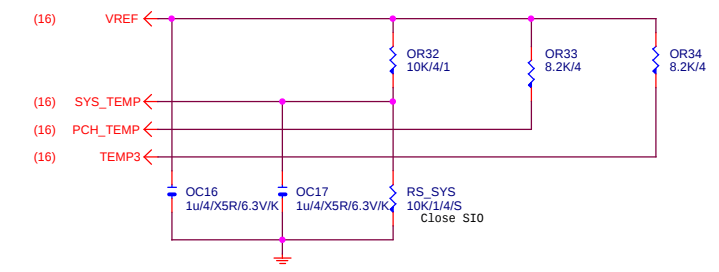
USB30_20 PWR

-USBOC_R

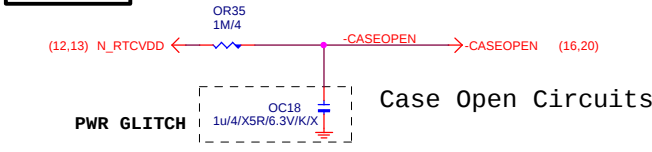


USB3.0 1Port - 1Fuse (3.5A)

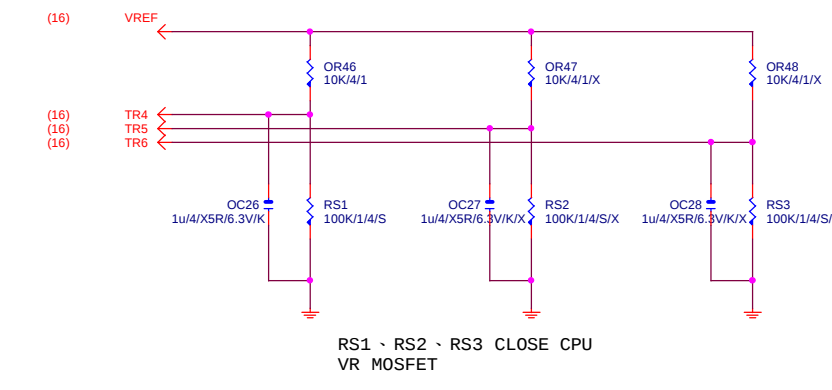
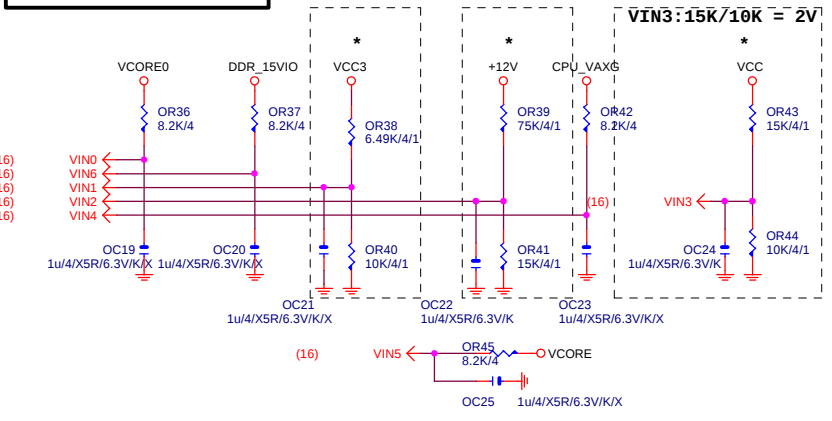
TEMP H/W MONITOR



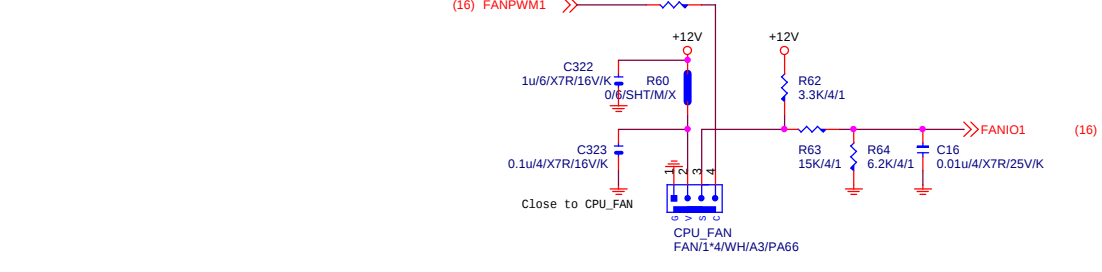
CASE OPEN



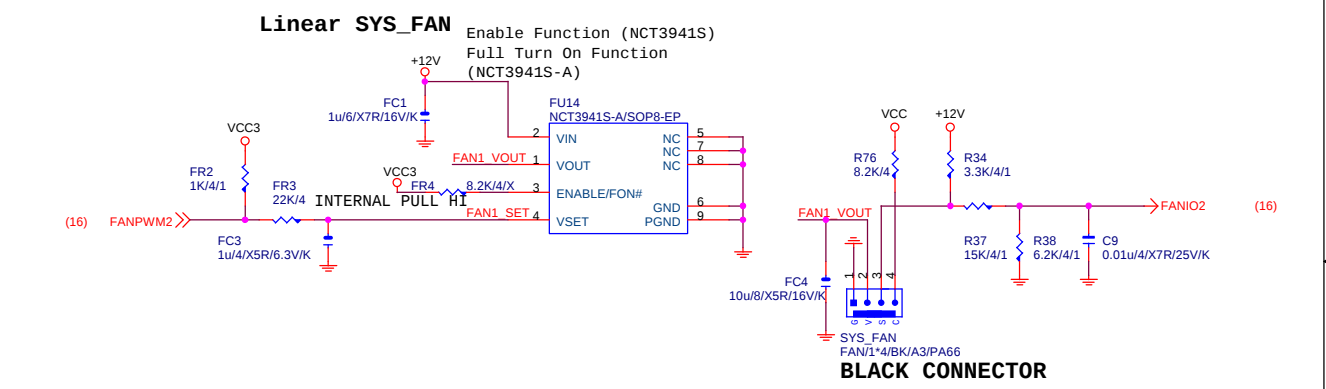
VOLTAGE-- H/W MONITOR



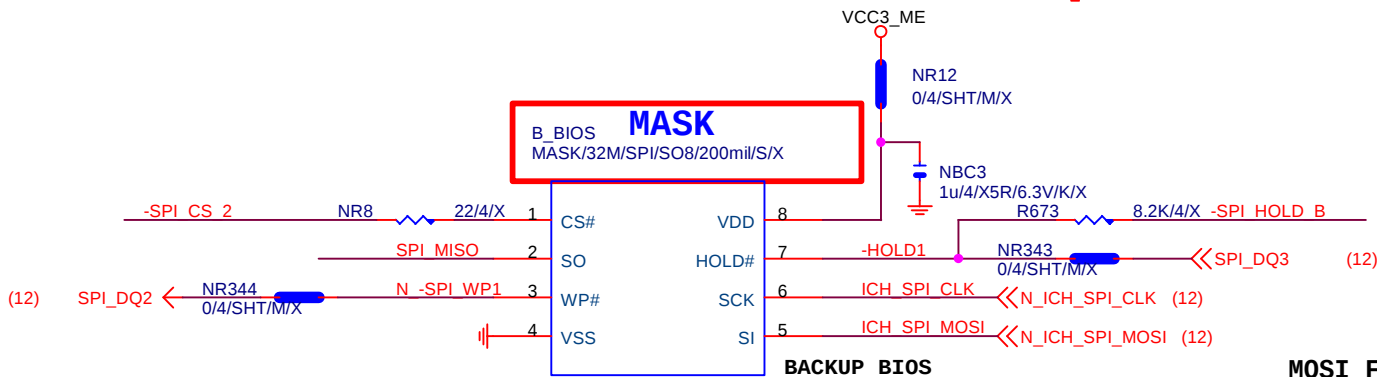
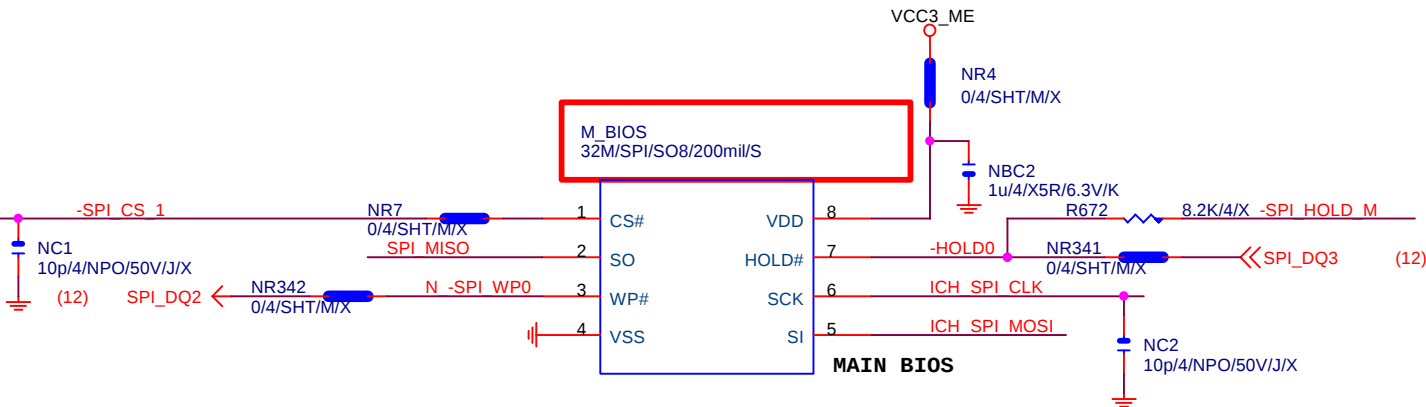
CPU SMART FAN



SYS SMART FAN



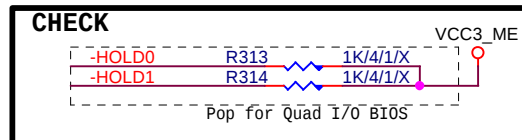
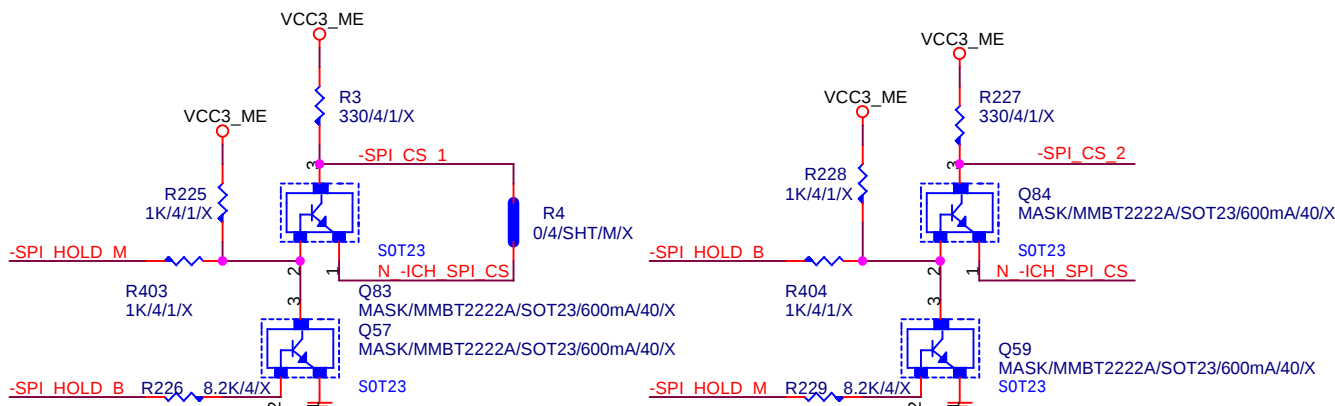
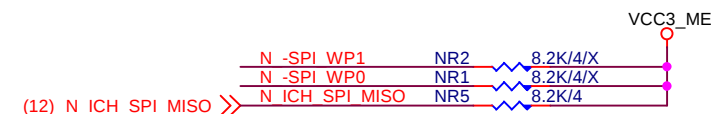
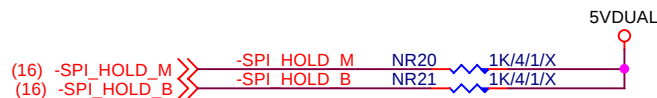
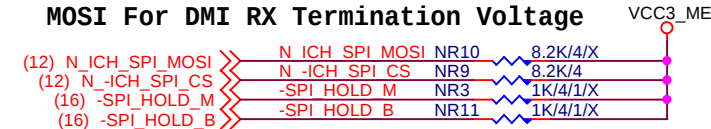
-PROH0T



BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

MOSI For DMI RX Termination Voltage



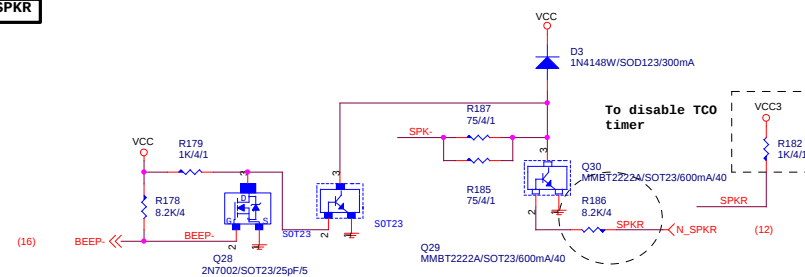
Gigabyte Technology		
Title DUAL BIOS		
Size Custom	Document Number IPMH81G1	Rev 2.01
Date: Monday, July 07, 2014	Sheet 19	of 29

SATA LED

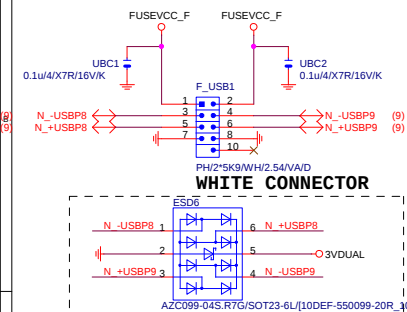
(11) N_SATALED > -HDLED
Remove Level shift

-USB0C_F

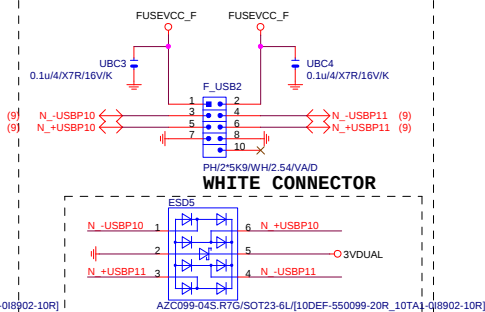
SPKR



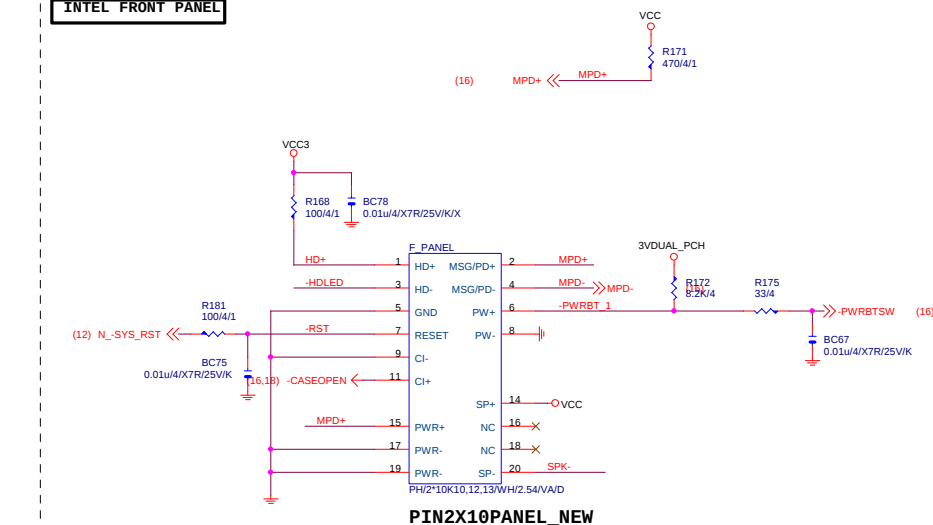
FRONT USB1



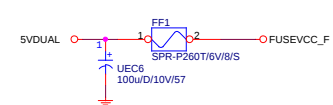
FRONT USB2



INTEL FRONT PANEL



FUSE-0805

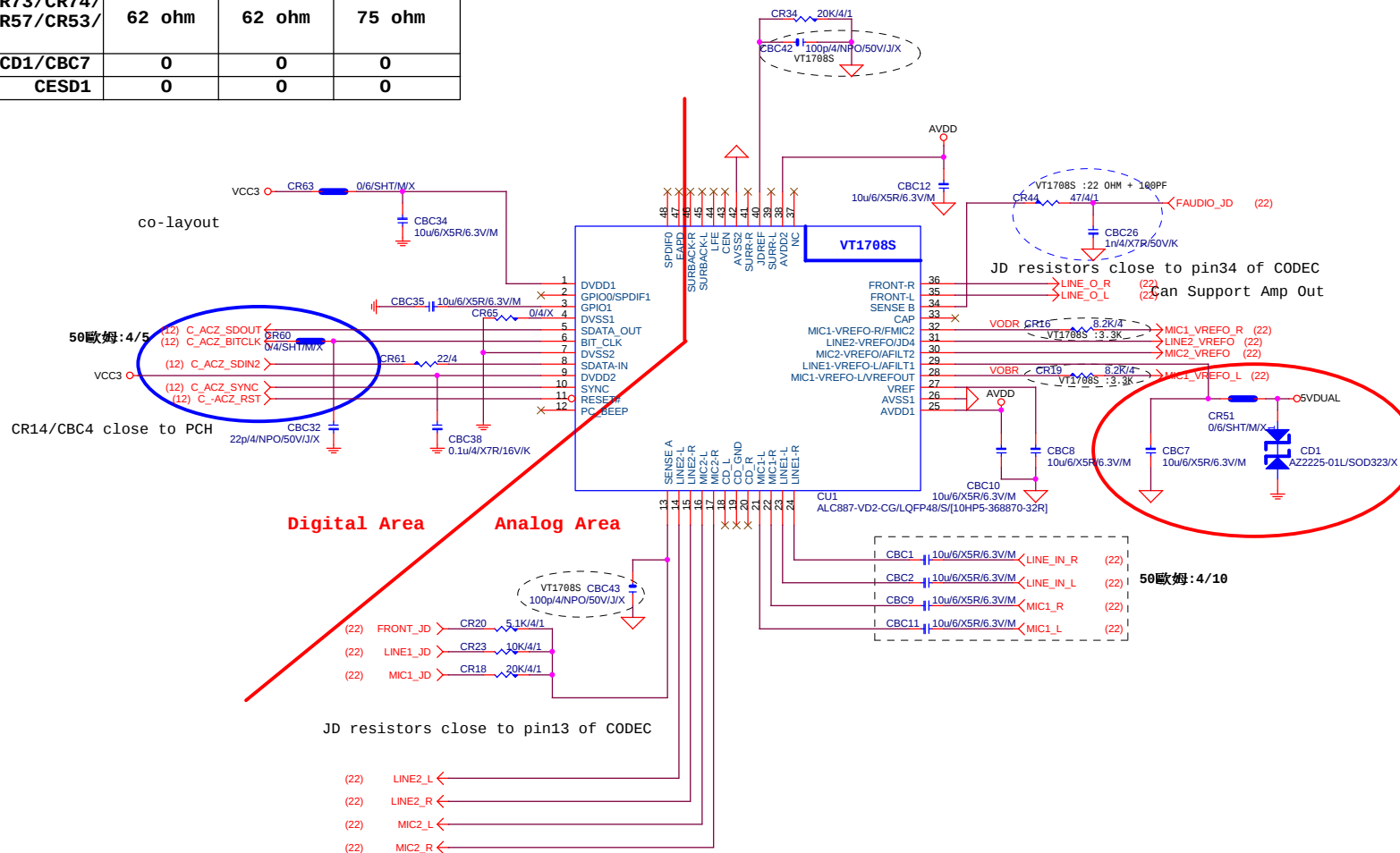


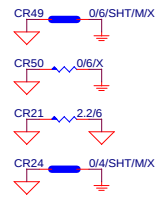
F_USB1, F_USB2 4-Port 2.6A

技術通報 No. 79

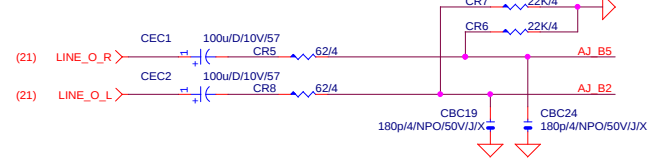
Gigabyte Technology			
FP,F_USB,USB PWR,SPKR,SATA LED			
IPMH81G1			
Date:	Monday, July 07, 2014	Sheet	20 of 29

	ALC892	ALC887 - VD2	VT1708S - CE
CR44/CBC26	470hm+1nF	470hm+1nF	220hm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	0	0	0
CESD1	0	0	0





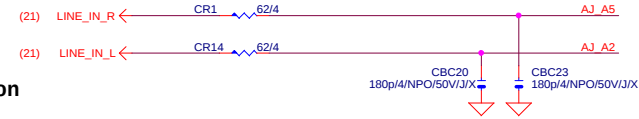
LINE-OUT



LINE-IN

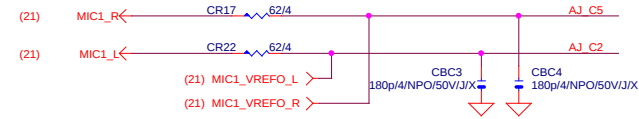
Verify MIC function
in LINE-in

Only reserved for ALC888

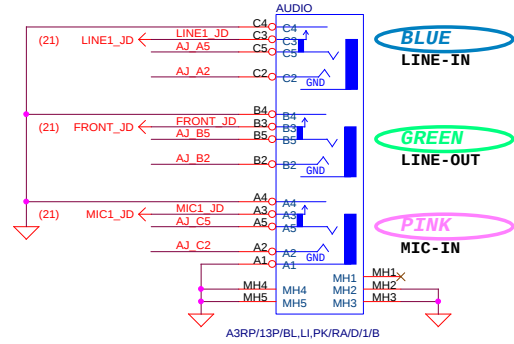


For 889A/888

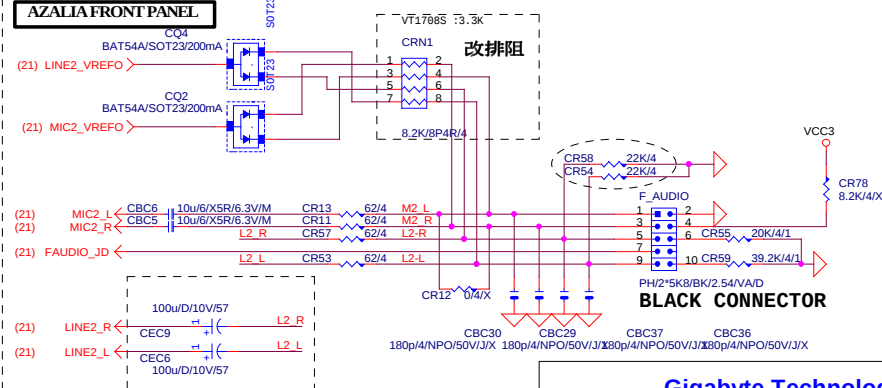
MIC-IN



SPDIF_OUT

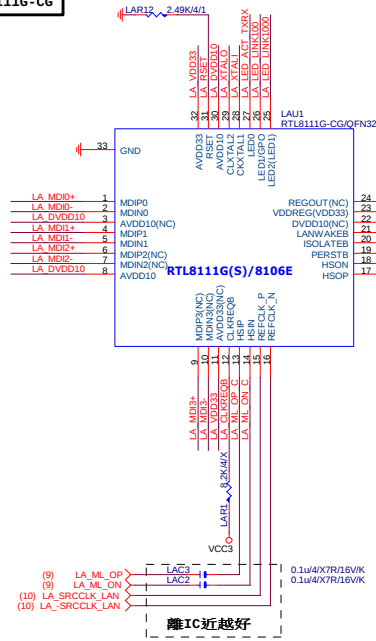


AZALIA FRONT PANEL



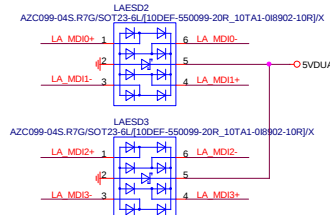
Gigabyte Technology			
Title			
AUDIO JACK			
Size	Document Number	IPMH81G1	Rev
Custom			2.01
Date:	Monday, July 07, 2014	Sheet	22 of 29

LAN RTL8111G-CG



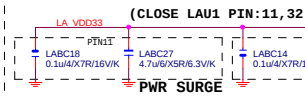
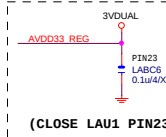
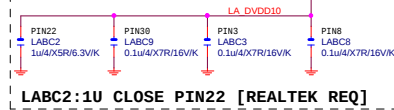
SRCCLK-->50歐姆:[18/4/10/4/18]

MDI ESD預留28KV *



LAN POWER

(CLOSE LAU1 PIN22,30,3,8)



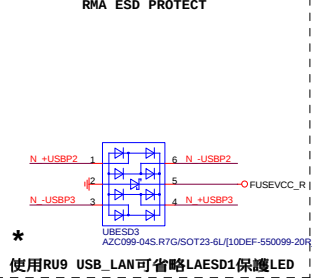
NOTE:
RT8106E: PIN3, 11, 22, 24-->NC
LABC2LABC3, LABC5, LABC18, LABC27-->N/A

BOM NOTICE *

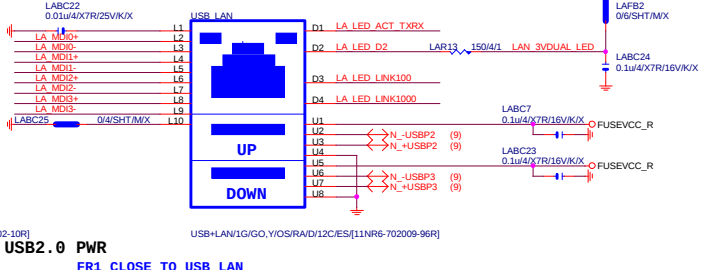
料號 規格 廠商
11NR6-702009-96R 1G LAN (12core) UDE(RU9 ESD+)
[LED獨立走線,可省略外加AZC099料件LAESD1]

- 9KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R
- 28KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R
LAESD2, LAESD3:上件AZC398-04S

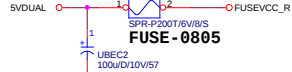
USB_LAN CONNECTOR



LA_MDI-->100歐姆:[20/4/8/4/20]



USB2.0 PWR



Close to connector

注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]

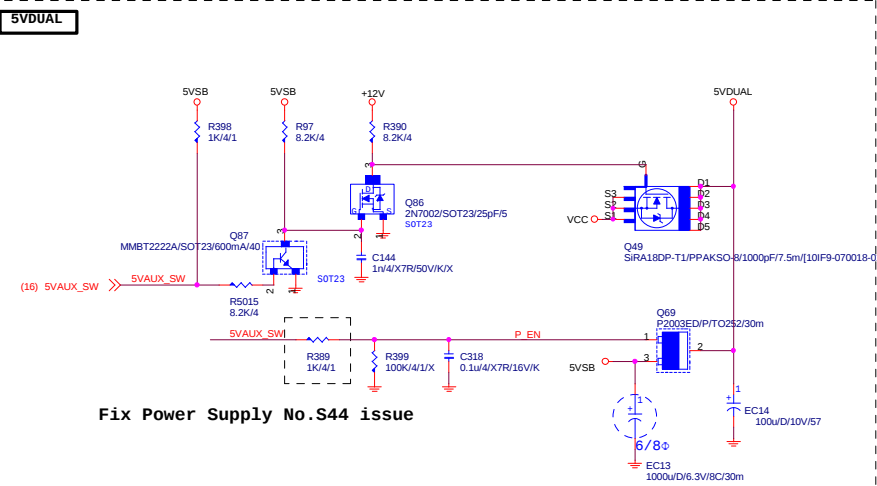
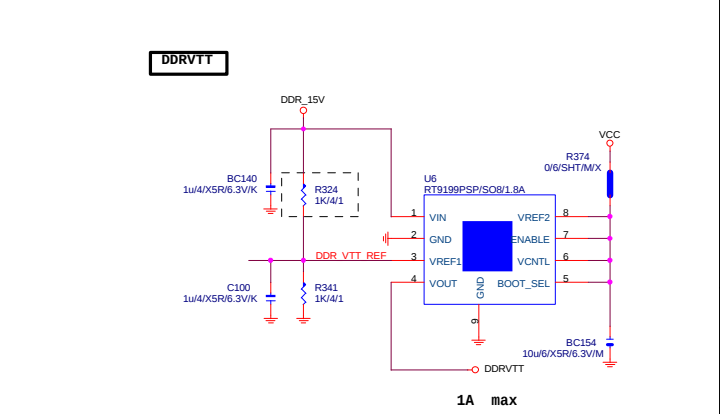
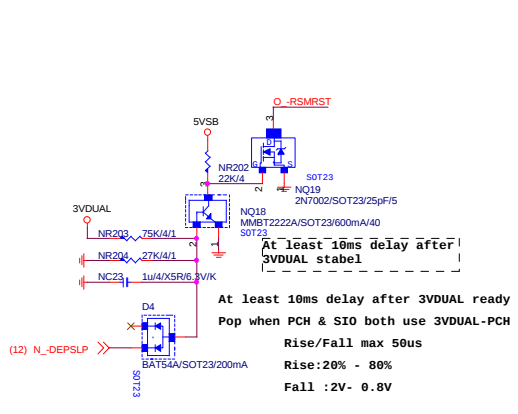
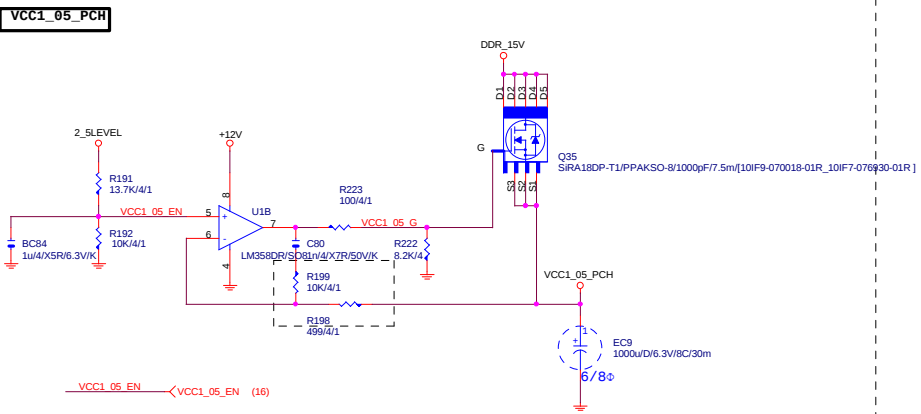
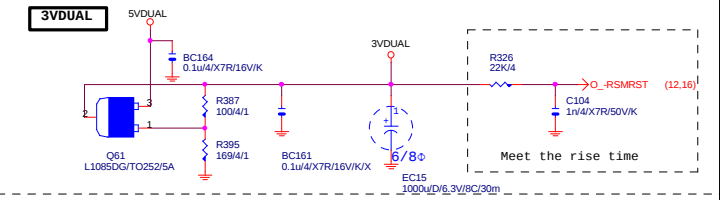
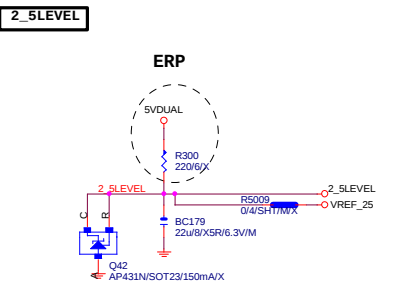
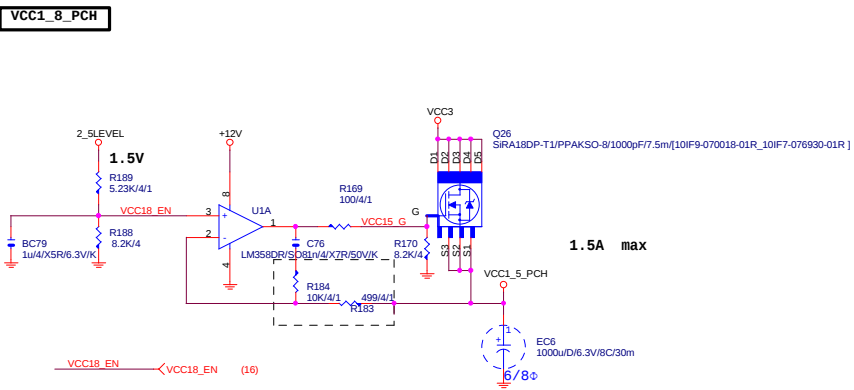
USB X3 POWER



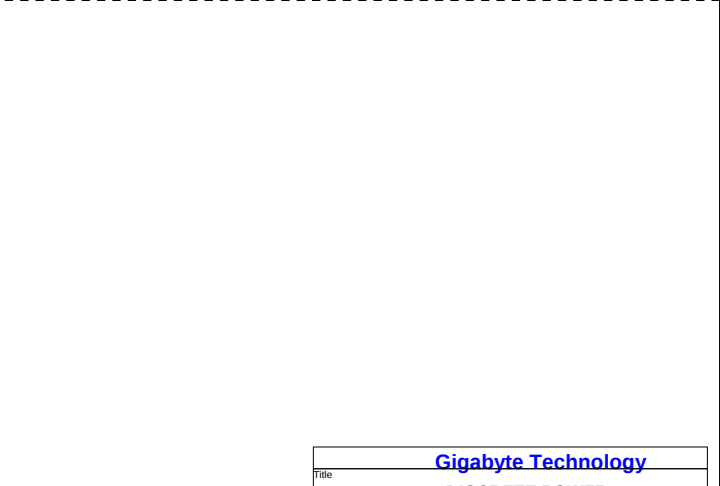
EMI SHORT PAD

PS:視EMI需求



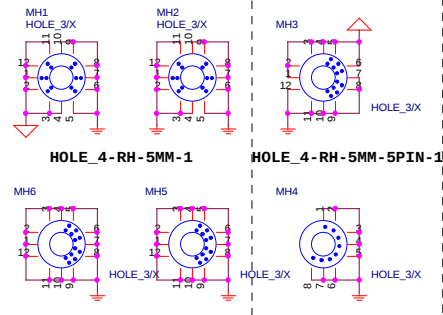


5VDUAL SHORT PROTECT



Fix Power Supply No.S44 issue

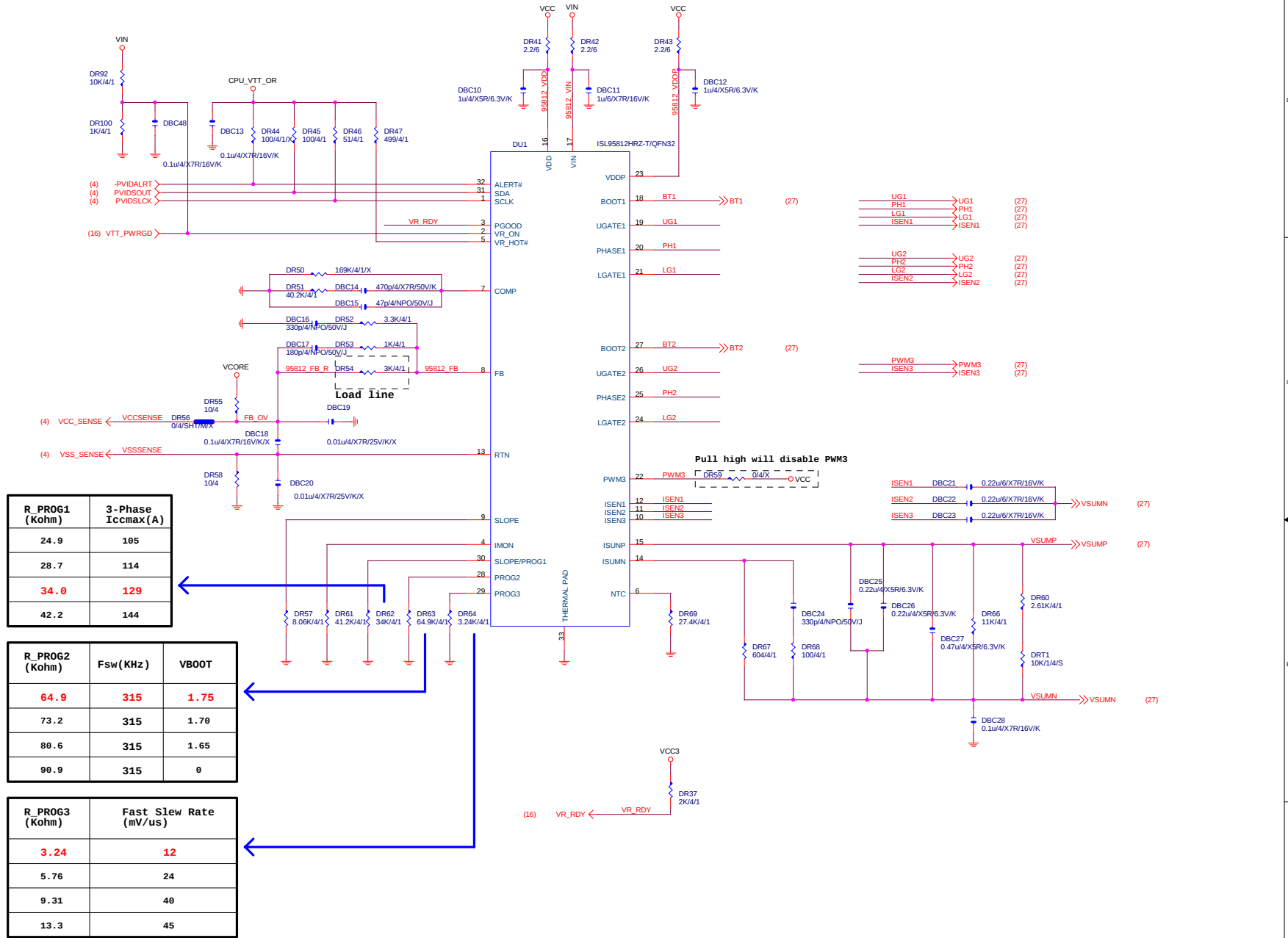
【技術通報R&D技術通報155】



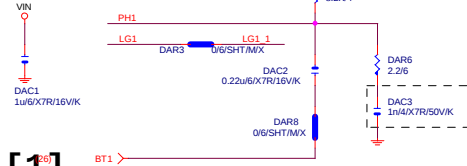
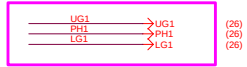
TPM

To fix 12V light load
abnormal issue

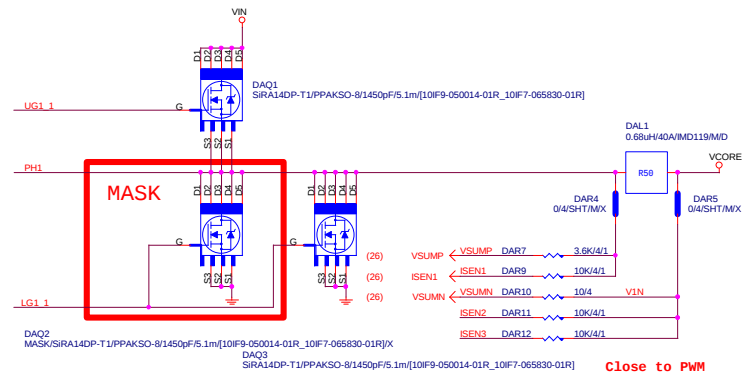




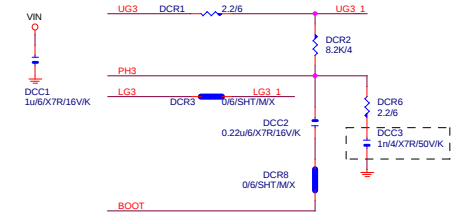
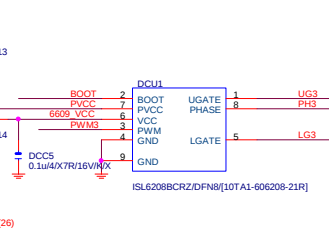
PHASE 1



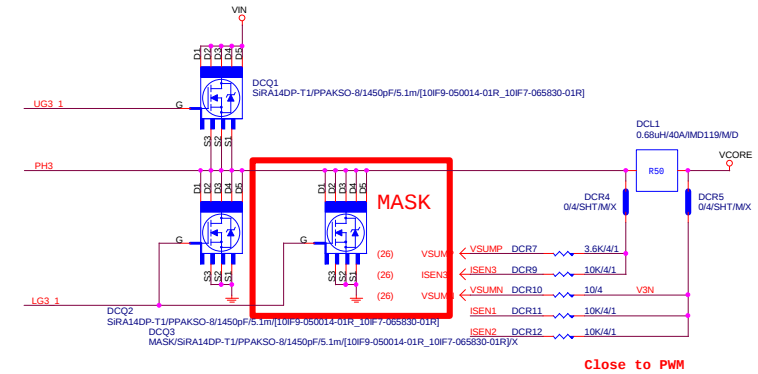
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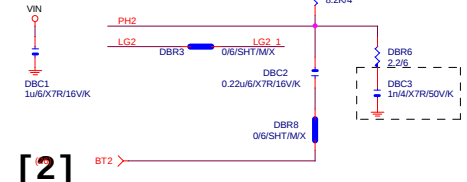
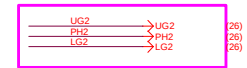
PHASE 3



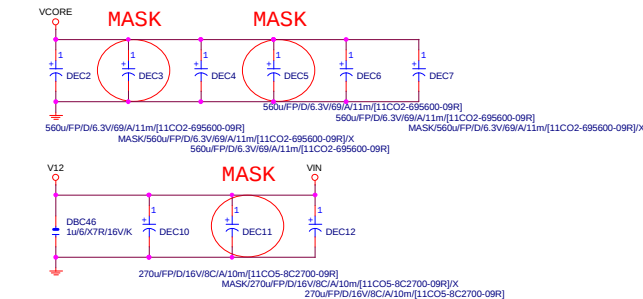
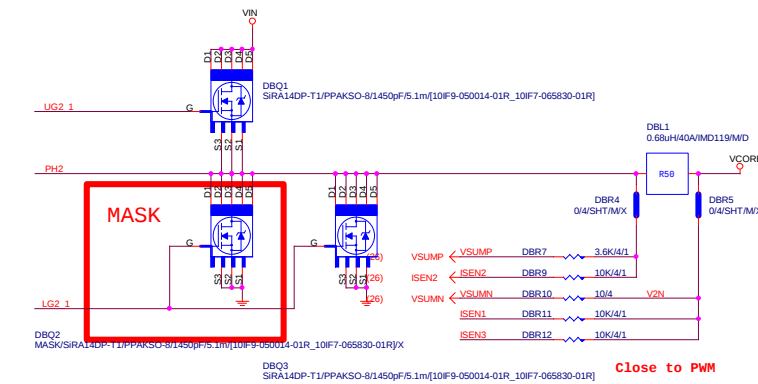
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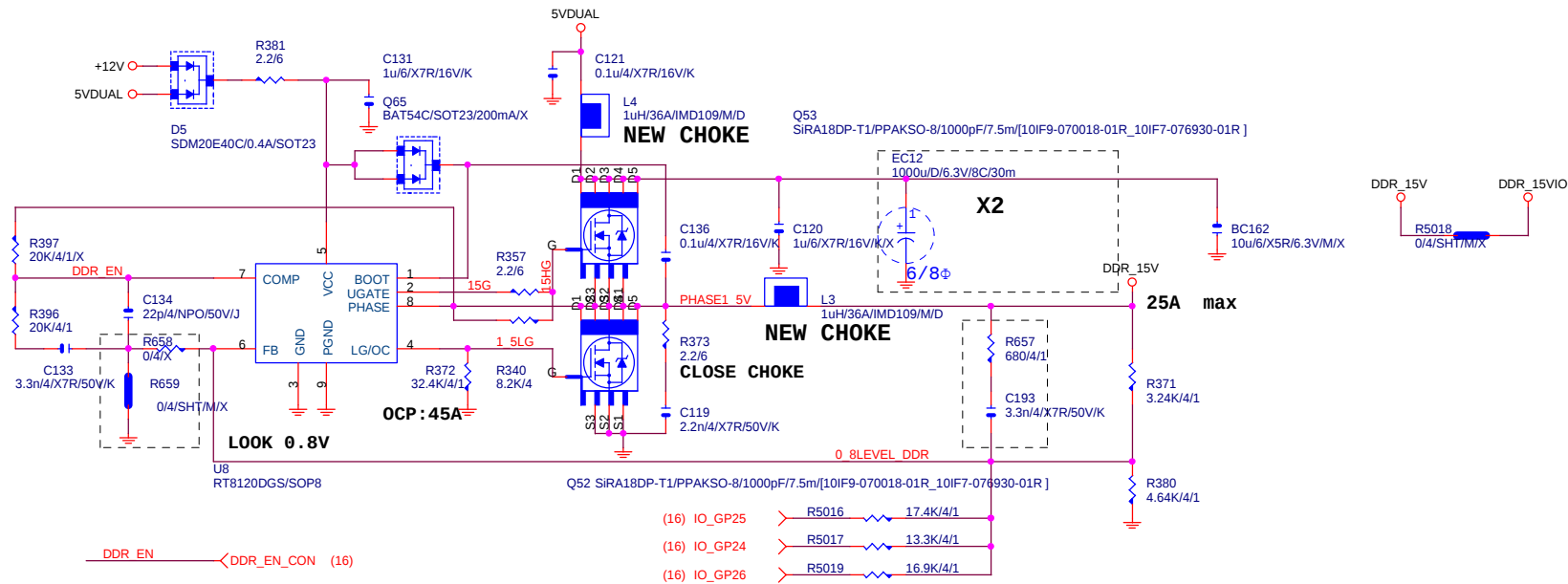
PHASE 2



[2]



DDR15V



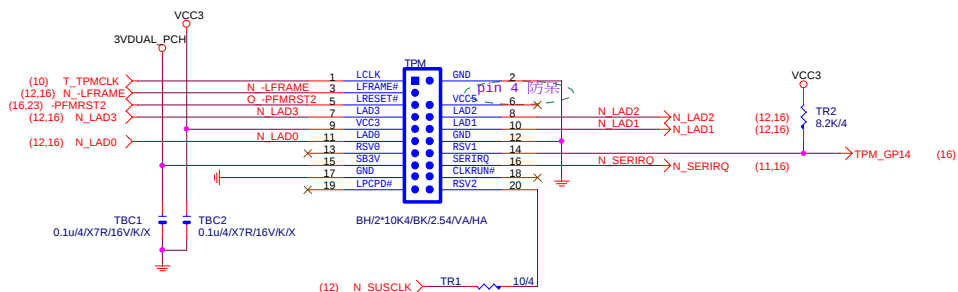
VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1
 IRMS=11.45A
 560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A
 Coefficient=1.7(85°C), 1(105°C)
 VIN Ripple current=4.7X1.7=7.99A(85°C)
 -->故固態電容須2X7.99=15.98>11.45A

Rocset=(Iocp*Lgate, rdson)/Iocset
 Rocset=(45A*6.7mOhm)/10uA = 30K
 Iocset=10uA

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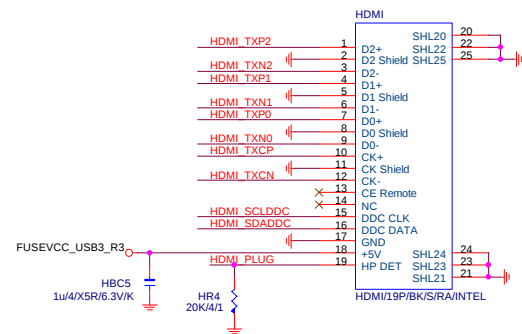
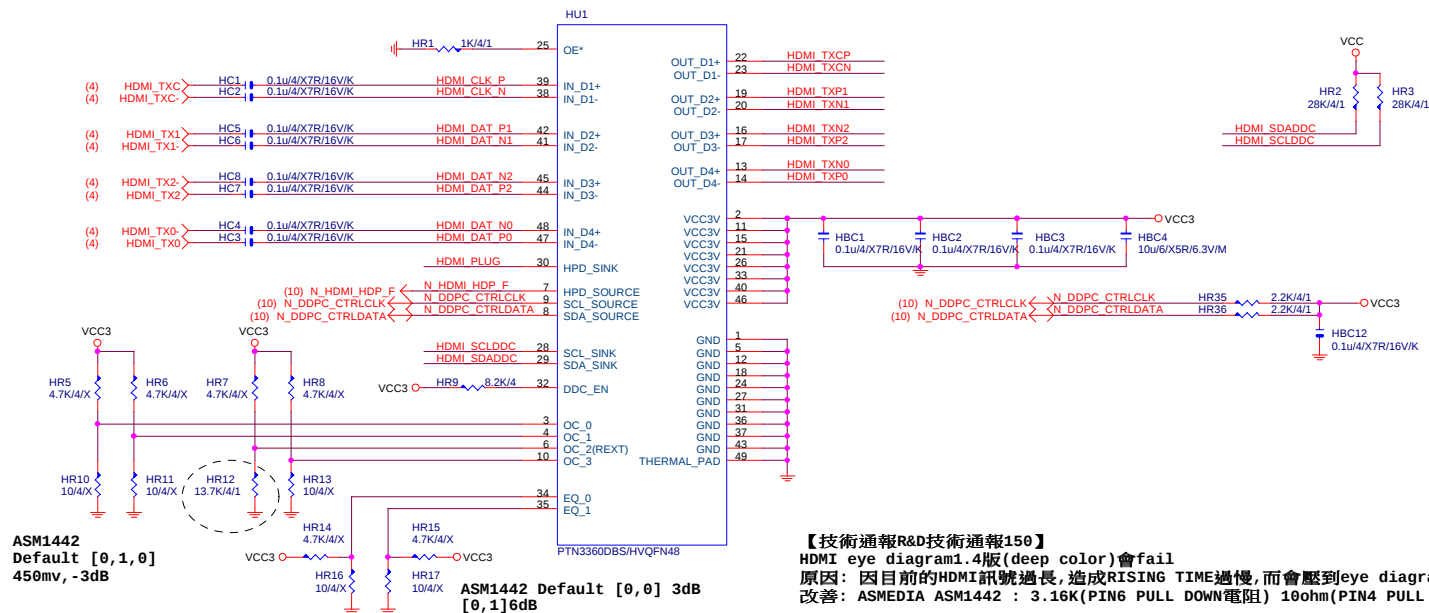
Title		
DDR POWER		
Size	Document Number	Rev
Custom	IPMH81G1	2.01
Date:	Monday, July 07, 2014	Sheet 28 of 29

TPM CONNECT



HDMI LEVEL SHIFT
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HDMI : 20/4/6/4/20
Impedance=85 +- 17.5%



Gigabyte Technology

HDMI

IPMH81G1

Rev	
2.01	

Title

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Date: Monday, July 07, 2014

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