

## Model Name: GA-P85-D3

1.1

SHEET

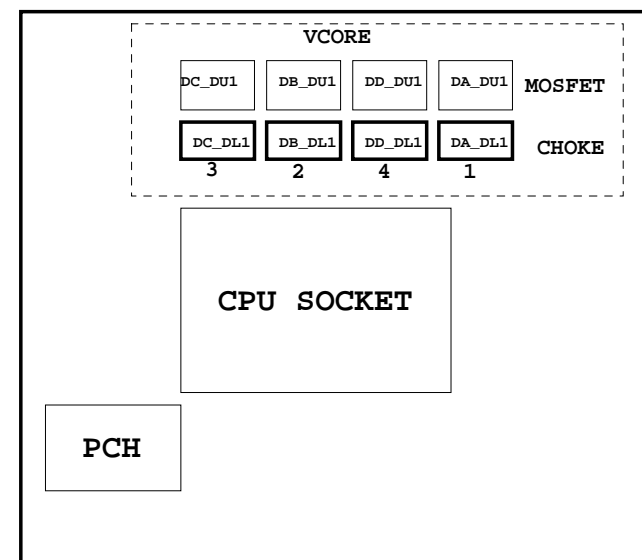
TITLE

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
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCIEX1*1 , PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1~4
18	I/O ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS / LPT
21	ALC887 CODEC
22	REAR AUDIO JACK
23	VCORE_ ISL95820_1
24	VCORE_ ISL95820_2
25	DDR15V / M3 POWER
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET

TITLE

28	F_PANEL , F_USB2.0/3.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	Realtek 8111F-VL
32	HDMI
33	TABLE LIST
34	
35	
36	
37	
38	
39	
40	



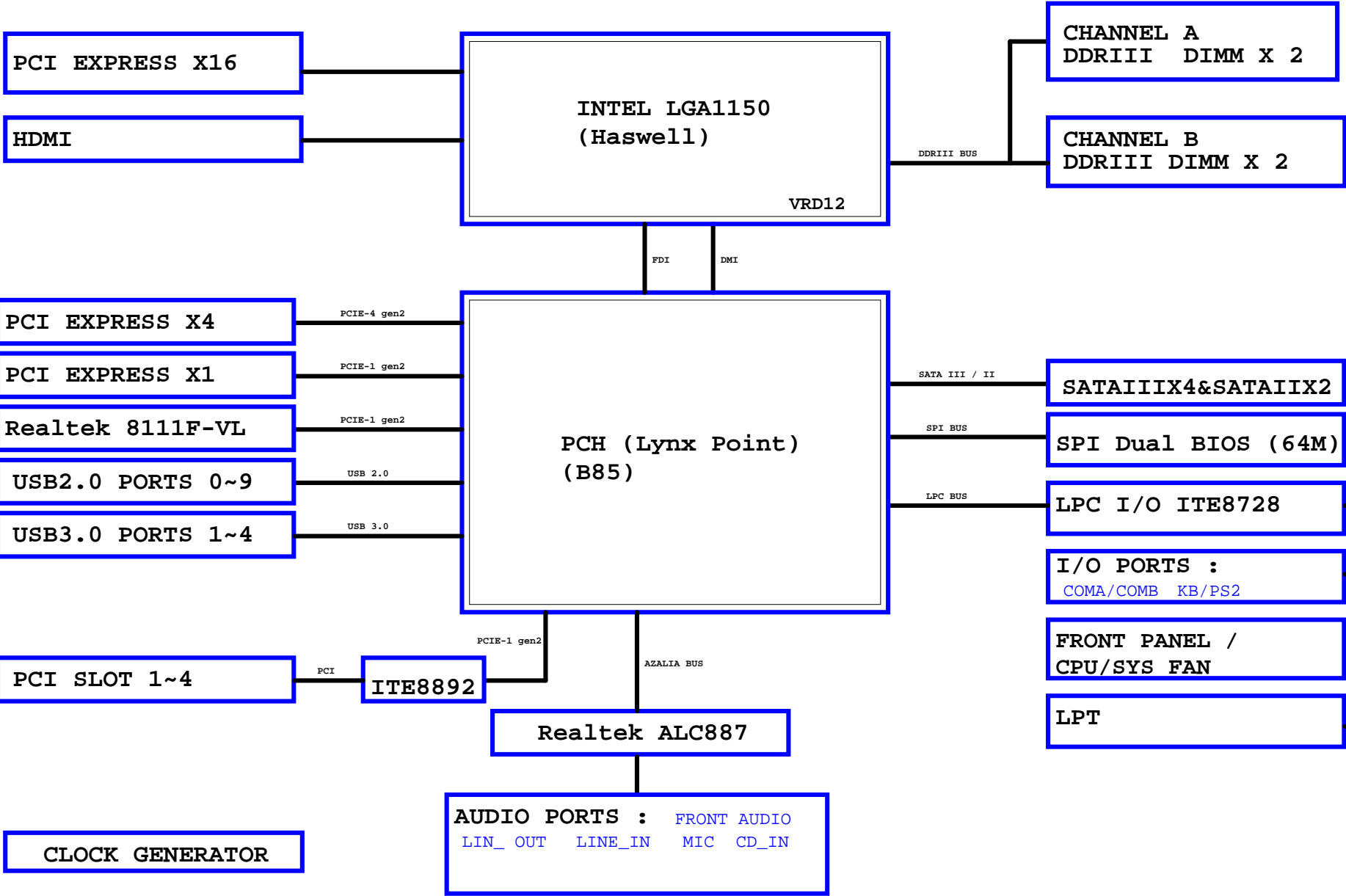


## Component value change history

[illegible][illegible]

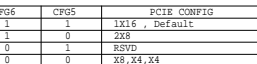


BLOCK DIAGRAM

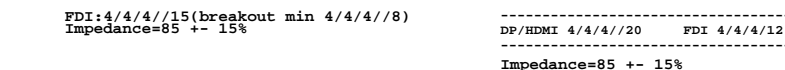




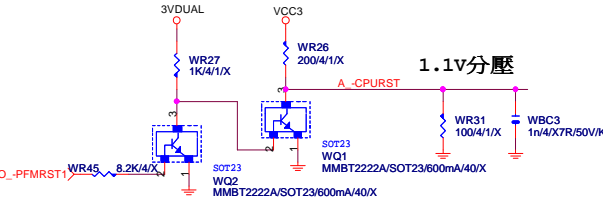
LGA1150 (D)



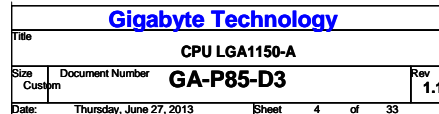
G 0-17 all internal PULL-UP



**-CPURST**



## CPU PU/PD





## LGA1150 (A)

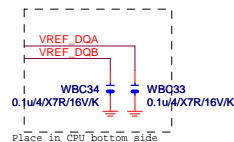
## LGA1150 (B)

## LGA1150 (CR)

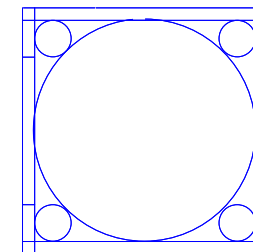
LGA1150A									
MAAA0	AU13	DDR0_MA0	DDR0_D00	AD38	MDA0				
MAAA1	AV16	DDR0_MA1	DDR0_D01	AD39	MDA1				
MAAA2	AU16	DDR0_MA2	DDR0_D02	AF38	MDA2				
MAAA3	AW17	DDR0_MA3	DDR0_D03	AF39	MDA3				
MAAA4	AU17	DDR0_MA4	DDR0_D04	AD37	MDA4				
MAAA5	AW18	DDR0_MA5	DDR0_D05	AD40	MDA5				
MAAA6	AV17	DDR0_MA6	DDR0_D06	AE37	MDA6				
MAAA7	AT18	DDR0_MA7	DDR0_D07	AF40	MDA7				
MAAA8	AU18	DDR0_MA8	DDR0_D08	AH40	MDA9				
MAAA9	AT19	DDR0_MA9	DDR0_D09	AH39	MDA10				
MAAA10	AW11	DDR0_MA10	DDR0_D10	AK38	MDA11				
MAAA11	AV19	DDR0_MA11	DDR0_D11	AK39	MDA12				
MAAA12	AU19	DDR0_MA12	DDR0_D12	AH37	MDA12				
MAAA13	AY10	DDR0_MA13	DDR0_D13	AH38	MDA14				
MAAA14	AT20	DDR0_MA14	DDR0_D14	AK37	MDA15				
MAAA15	AU21	DDR0_MA15	DDR0_D15	AK40	MDA17				
MODT_A0	AW10	DDR0_ODT0	DDR0_D16	AM40	MDA17				
MODT_A1	AY8	DDR0_ODT1	DDR0_D17	AM39	MDA21				
MODT_A2	AW9	DDR0_ODT2	DDR0_D18	AP38	MDA18				
MODT_A3	AU8	DDR0_ODT3	DDR0_D19	AP39	MDA19				
			DDR0_D20	AM37	MDA20				
			DDR0_D21	AM38	MDA16				
			DDR0_D22	AP37	MDA22				
			DDR0_D23	AP40	MDA23				
			DDR0_D24	AV37	MDA25				
			DDR0_D25	AW37	MDA29				
			DDR0_D26	AU35	MDA28				
			DDR0_D27	AV35	MDA27				
			DDR0_D28	AT37	MDA28				
			DDR0_D29	AU37	MDA24				
			DDR0_D30	AT35	MDA30				
			DDR0_D31	AW35	MDA31				
			DDR0_D32	AY6	MDA33				
			DDR0_D33	AU6	MDA37				
			DDR0_D34	AV4	MDA34				
			DDR0_D35	AW6	MDA36				
			DDR0_D36	AV6	MDA32				
			DDR0_D37	AW4	MDA38				
			DDR0_D38	AY4	MDA39				
			DDR0_D39	AR4	MDA41				
			DDR0_D40	AN4	MDA45				
			DDR0_D41	AN3	MDA42				
			DDR0_D42	AN4	MDA43				
			DDR0_D43	AR2	MDA44				
			DDR0_D44	AR3	MDA40				
			DDR0_D45	AN2	MDA46				
			DDR0_D46	AN1	MDA47				
			DDR0_D47	AL1	MDA49				
			DDR0_D48	AL4	MDA53				
			DDR0_D49	AJ3	MDA50				
			DDR0_D50	AJ4	MDA51				
			DDR0_D51	AL2	MDA52				
			DDR0_D52	AJ2	MDA48				
			DDR0_D53	AJ2	MDA54				
			DDR0_D54	AJ1	MDA55				
			DDR0_D55	AG1	MDA57				
			DDR0_D56	AG4	MDA61				
			DDR0_D57	AE3	MDA58				
			DDR0_D58	AE4	MDA59				
			DDR0_D59	AG2	MDA60				
			DDR0_D60	AG3	MDA56				
			DDR0_D61	AE2	MDA62				
			DDR0_D62	AE1	MDA63				
			DDR0_D63	AE39	DQSA0				
			DDR0_D64	AJ39	DQSA1				
			DDR0_D65	AN39	DQSA2				
			DDR0_D66	AV36	DQSA3				
			DDR0_D67	AV5	DQSA4				
			DDR0_D68	AP3	DQSA5				
			DDR0_D69	AK3	DQSA6				
			DDR0_D70	AF3	DQSA7				
			DDR0_D71	AV32	DQSA8				
			DDR0_D72	AE38	DQSA9				
			DDR0_D73	AJ38	DQSA1				
			DDR0_D74	AN38	DQSA2				
			DDR0_D75	AJ36	DQSA3				
			DDR0_D76	AW5	DQSA4				
			DDR0_D77	AP2	DQSA5				
			DDR0_D78	AK2	DQSA6				
			DDR0_D79	AF2	DQSA7				
			DDR0_D80	AU32	DQSA8				

HASWELL[10SC1-F01150-01R]

LGA1150B									
MAAB0	AL19	DDR1_MA0	DDR1_D00	AE34	MDB0				
MAAB1	AK23	DDR1_MA1	DDR1_D01	AE35	MDB1				
MAAB2	AM22	DDR1_MA2	DDR1_D02	AG35	MDB2				
MAAB3	AM23	DDR1_MA3	DDR1_D03	AH35	MDB3				
MAAB4	AP23	DDR1_MA4	DDR1_D04	AD34	MDB4				
MAAB5	AL23	DDR1_MA5	DDR1_D05	AD35	MDB5				
MAAB6	AY24	DDR1_MA6	DDR1_D06	AG34	MDB6				
MAAB7	AV25	DDR1_MA7	DDR1_D07	AH34	MDB7				
MAAB8	AU26	DDR1_MA8	DDR1_D08	AL34	MDB8				
MAAB9	AV25	DDR1_MA9	DDR1_D09	AL35	MDB9				
MAAB10	AP18	DDR1_MA10	DDR1_D10	AK31	MDB11				
MAAB11	AY25	DDR1_MA11	DDR1_D11	AL31	MDB11				
MAAB12	AV26	DDR1_MA12	DDR1_D12	AK34	MDB12				
MAAB13	AR15	DDR1_MA13	DDR1_D13	AK35	MDB13				
MAAB14	AV27	DDR1_MA14	DDR1_D14	AK32	MDB14				
MAAB15	AY28	DDR1_MA15	DDR1_D15	AL32	MDB15				
MODT_B0	AM17	DDR1_ODT0	DDR1_D16	AP34	MDB17				
MODT_B1	AL16	DDR1_ODT1	DDR1_D17	AP34	MDB21				
MODT_B2	AM16	DDR1_ODT2	DDR1_D18	AP31	MDB23				
MODT_B3	AK15	DDR1_ODT3	DDR1_D19	AP35	MDB20				
			DDR1_D20	AP35	MDB16				
			DDR1_D21	AN32	MDB18				
			DDR1_D22	AP32	MDB22				
			DDR1_D23	AM29	MDB25				
			DDR1_D24	AM28	MDB28				
			DDR1_D25	AR29	MDB27				
			DDR1_D26	AR28	MDB30				
			DDR1_D27	AL28	MDB24				
			DDR1_D28	AL28	MDB29				
			DDR1_D29	AP29	MDB26				
			DDR1_D30	AP28	MDB31				
			DDR1_D31	AR12	MDB32				
			DDR1_D32	AP12	MDB33				
			DDR1_D33	AL13	MDB34				
			DDR1_D34	AL12	MDB35				
			DDR1_D35	AR13	MDB36				
			DDR1_D36	AP13	MDB37				
			DDR1_D37	AM13	MDB38				
			DDR1_D38	AM12	MDB39				
			DDR1_D39	AR9	MDB45				
			DDR1_D40	AP9	MDB41				
			DDR1_D41	AR6	MDB47				
			DDR1_D42	AP6	MDB43				
			DDR1_D43	AR10	MDB44				
			DDR1_D44	AP10	MDB40				
			DDR1_D45	AR7	MDB46				
			DDR1_D46	AP7	MDB42				
			DDR1_D47	AM9	MDB52				
			DDR1_D48	AL9	MDB53				
			DDR1_D49	AL6	MDB50				
			DDR1_D50	AL7	MDB55				
			DDR1_D51	AM10	MDB48				
			DDR1_D52	AL10	MDB49				
			DDR1_D53	AM6	MDB54				
			DDR1_D54	AM7	MDB51				
			DDR1_D55	AH6	MDB61				
			DDR1_D56	AH7	MDB60				
			DDR1_D57	AE6	MDB59				
			DDR1_D58	AE7	MDB63				
			DDR1_D59	AJ6	MDB56				
			DDR1_D60	AJ7	MDB57				
			DDR1_D61	AF6	MDB58				
			DDR1_D62	AF7	MDB62				
			DDR1_D63	AF35	DQSB0				
			DDR1_D64	AL33	DQSB1				
			DDR1_D65	AN28	DQSB2				
			DDR1_D66	AN28	DQSB3				
			DDR1_D67	AN12	DQSB4				
			DDR1_D68	AP8	DQSB5				
			DDR1_D69	AL8	DQSB6				
			DDR1_D70	AG7	DQSB7				
			DDR1_D71	AN25	DQSB8				
			DDR1_D72	AK33	DQSB1				
			DDR1_D73	AN29	DQSB2				
			DDR1_D74	AK13	DQSB3				
			DDR1_D75	AR8	DQSB5				
			DDR1_D76	AM8	DQSB6				
			DDR1_D77	AG6	DQSB7				
			DDR1_D78	AN26	DQSB8				



HASWELL[10SC1-F01150-01R]

LGA1150  
ILM\_BP/1156/CSP

## DDR BUS

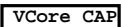
7	MODT_A[0..3]	MODT_A[0..3]
8	MODT_B[0..3]	MODT_B[0..3]
7	MDA[0..63]	MDA[0..63]
8	MDB[0..63]	MDB[0..63]
7	DQSA[0..7]	DQSA[0..7]
7	DQSA[0..7]	DQSA[0..7]
7	MAAA[0..15]	MAAA[0..15]
8	MAAB[0..15]	MAAB[0..15]
8	DQSB[0..7]	DQSB[0..7]
8	DQSB[0..7]	DQSB[0..7]

## Gigabyte Technology

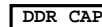
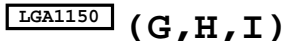
Title			
CPU LGA1150-B			
Size	Document Number	Rev	
Custom	GA-P85-D3	1.1	
Date:	Thursday, June 27, 2013	Sheet	5 of 33



**(F, J)**



(X30)



(X15)



CPU LGA1150-C

Size	Document Number	<b>GA-P85-D3</b>
Custom		

Date: Thursday, June 27, 2013 Sheet

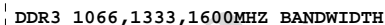
Date:	Thursday, June 27, 2013	Sheet
-------	-------------------------	-------

## 1.1









```
DDR3 1066MHZ
DDR3 clock=533MHZ
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s
```

```
DDR3 1333MHZ
DDR3 clock=667MHZ
DDR3 single channel bandwidth=10.6GB/s
DDR3 dual channel bandwidth=21GB/s
```

```
| DDR3 1600MHZ
| DDR3 clock=800MHZ
| DDR3 single channel bandwidth=12.8GB/s
| DDR3 dual channel bandwidth=25.6GB/s
```

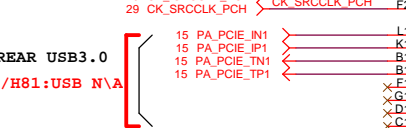


Diagram illustrating the memory layout for a 4-rank 16GB DDR4 DIMM configuration. The layout is divided into two channels, CHA and CHB. Channel CHA contains DIMM4 and DIMM2. Channel CHB contains DIMM3 and DIMM1. Each channel has two rows of DIMMs, with the top row (DIMM4 and DIMM3) being populated and the bottom row (DIMM2 and DIMM1) being empty.



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

4	A_DMI_0TXN	A_DMI_0TXN	L
4	A_DMI_0TXP	A_DMI_0TXP	K
4	A_DMI_0RXN	A_DMI_0RXN	C
4	A_DMI_0RXP	A_DMI_0RXP	B
4	A_DMI_1TXN	A_DMI_1TXN	H
4	A_DMI_1TXP	A_DMI_1TXP	F
4	A_DMI_1RXN	A_DMI_1RXN	D
4	A_DMI_1RXP	A_DMI_1RXP	B
4	A_DMI_2TXN	A_DMI_2TXN	F
4	A_DMI_2TXP	A_DMI_2TXP	G
4	A_DMI_2RXN	A_DMI_2RXN	C
4	A_DMI_2RXP	A_DMI_2RXP	C
4	A_DMI_3TXN	A_DMI_3TXN	K
4	A_DMI_3TXP	A_DMI_3TXP	L
4	A_DMI_3RXN	A_DMI_3RXN	A
4	A_DMI_3RXP	A_DMI_3RXP	B



```

LAN AR8161
31 LB_ML_ON
31 LB_ML_OP
16 C_BCI2BIN

```

Bridge \ 16 G\_PCIEBOP <—  
15 PE\_PCIE\_IN1 <—  
14 PE\_PCIE\_IN0 <—

```

PCIEX4_port2
15 PF_PCIE_IN2
15 PF_PCIE_IP2

```

PCIEX4 port3

```

PCIEX4 port4
PCIEX1_2

```

放靠近 Device & PCI-E slot

-----

28 PCH\_USB3\_RXN0

對應

26 PCH\_USB3\_RXP0  
26 PCH\_USB3\_TXN0  
26 PCH\_USB3\_TXP0

26 PCH\_USB3\_RXN1  
26 PCH\_USB3\_RXP1  
26 PCH\_USB3\_TXN1  
26 PCH\_USB3\_TXP1

19 PCH\_USB3\_RXN4  
19 PCH\_USB3\_RXP4  
19 PCH\_USB3\_TXN4  
19 PCH\_USB3\_TXP4

19 PCH\_USB3\_RXN5  
19 PCH\_USB3\_RXP5  
19 PCH\_USB3\_TXN5

1: USB3.0 N/A

Imped  
Back  
T...

\_\_\_\_\_

\_\_\_\_\_

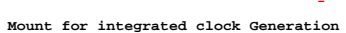
\_\_\_\_\_

NR9

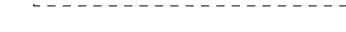
---

USB3	FDILINK	
USB3_RXN_0	FDI_RXN_0	N1 N2 ✗

---



---



\_\_\_\_\_

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

--	--

**PCH FDI,DMI,USB ,PCIE**

	1
--	---



PCHE

CLOSE PCH=0.75";4/10;+-1000;GND

DDPB\_HPD VGA\_HSYNC AH3✗  
DDPC\_HPD VGA\_VSYNC AH2✗  
DDPD\_HPD AC2✗  
VGA\_RED AC2  
DDPB\_AUXN VGA\_GREEN AC3✗  
DDPC\_AUXP VGA\_BLUE AE2✗  
DDPC\_AUXN AG4✗  
DDPC\_AUXP AG4  
DDPB\_AUXN VGA\_IRTN AL3✗  
DDPD\_AUXP VGA\_DDC\_DATA AL2✗  
VGA\_DDC\_CLK AF5✗  
VGA\_DDC\_IRF AF5  
DDPB\_CTRLCLK AN3✗  
DDPC\_CTRLCLK AN3  
DDPC\_CTRLDATA AM2✗  
DDPB\_CTRLDATA AM2  
DDPD\_CTRLCLK AJ5✗  
DDPD\_CTRLDATA AN2✗

VGA 4/20;+-200MILS;GND REF

DDC DIFF 4/5;+-1000

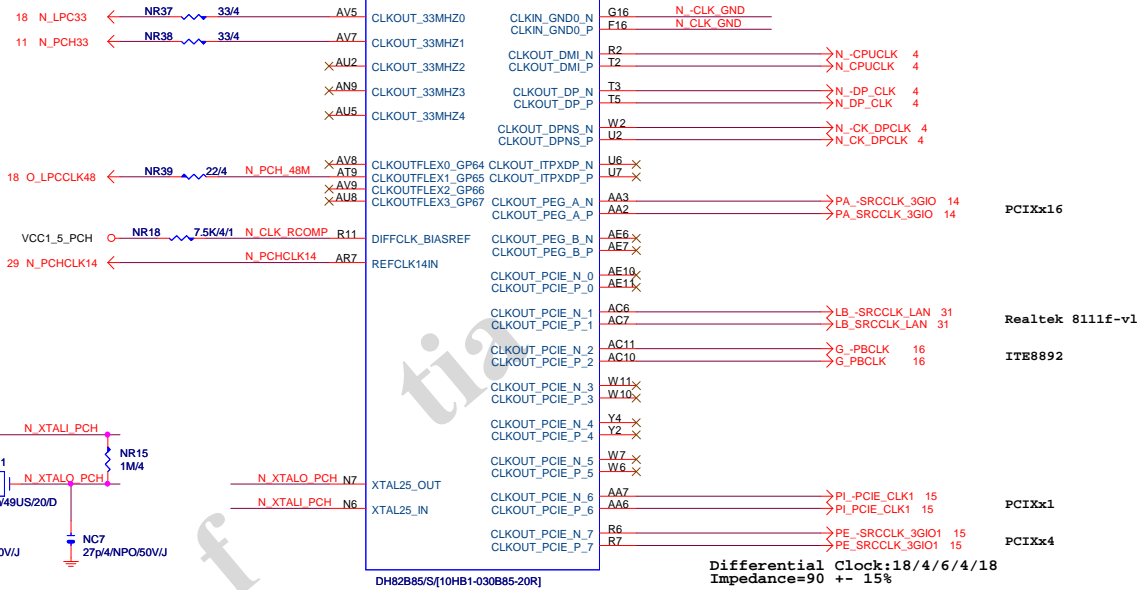
0/4SH/TM IREF 4/12; <500MILS;GND

N\_DDCDATA  
N\_DDCCLK  
N\_VGA\_RSET NR34  
N\_DDPG\_CTRLCLK  
N\_DDPG\_CTRLDATA  
N\_DDPG\_CTRLCLK 32  
N\_DDPG\_CTRLDATA 32

DH82B85/S[10HB1-030B85-20R]

VGA DISABLE	
R,G,B	NC OR GND
IIRTN / IREF GND	
VGA_HSYNC, VGA_VSYNC, DDC_CLK,	
DDC_DATA	NC
POWER VCCADAC(AF2),	
VCCADACBG(AE1) GND	

Flex1,2,3,4 :  
14/24/33/48MHZ



Mount for integrated clock Generation Mode

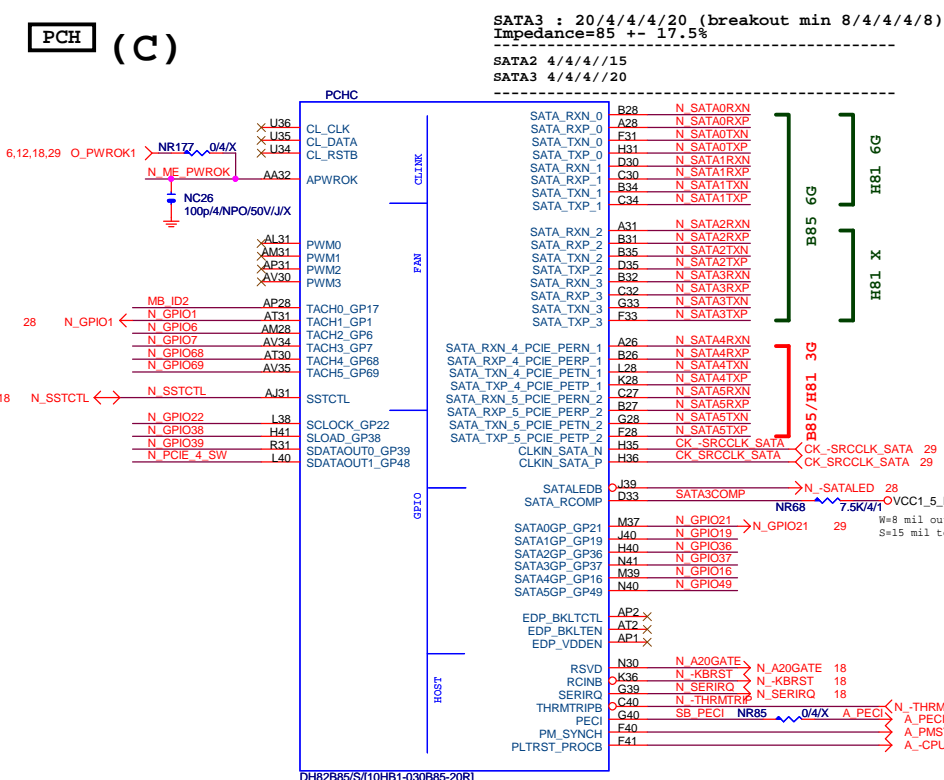
VGA DDC

## Gigabyte Technology

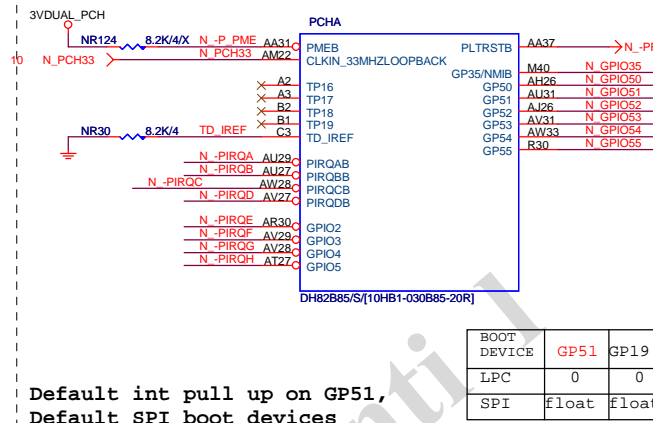
Title			
PCH DISPLAY ,CLK BUFFER			
Size	Document Number		Rev
Custom	GA-P85-D3		1.1
Date:	Friday, June 28, 2013	Sheet	10 of 33



**PCH (C)**



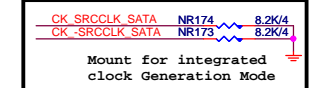
**PCH (A)**



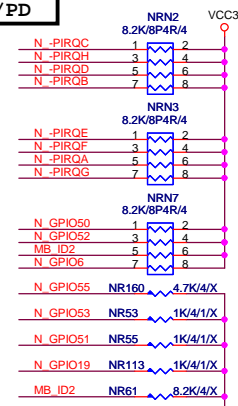
```
Default int pull up on GP51,  
Default SPI boot devices
```

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	float	float

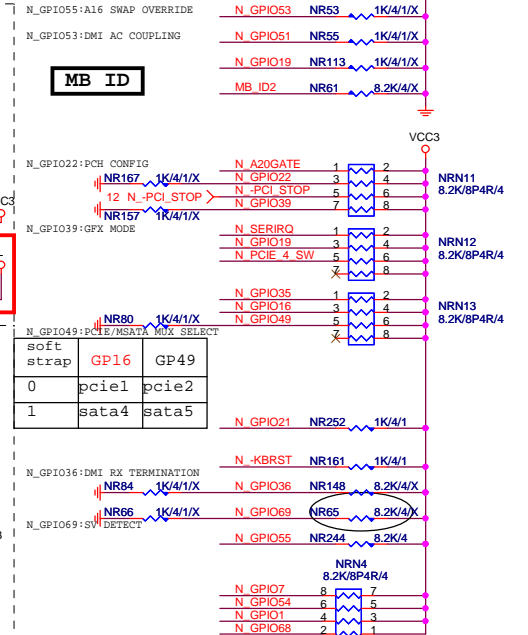
PCH CLK PD



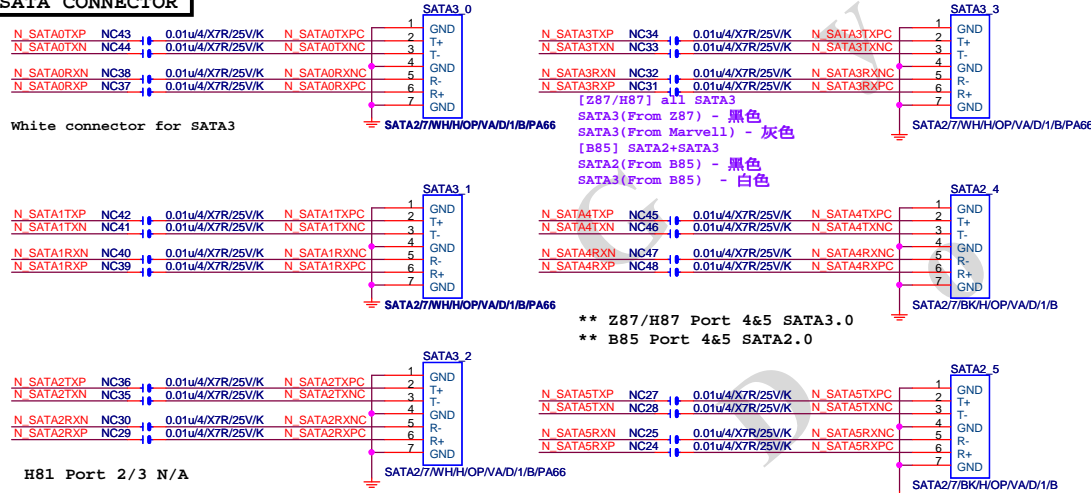
PCH PU/PD



MB ID



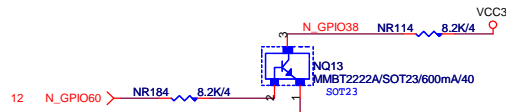
## SATA CONNECTOR



GPIO38 Ctrl

**MFG Mode**

```
N_GPIO38 : Lo --> Enable
           Hi --> Disable
```





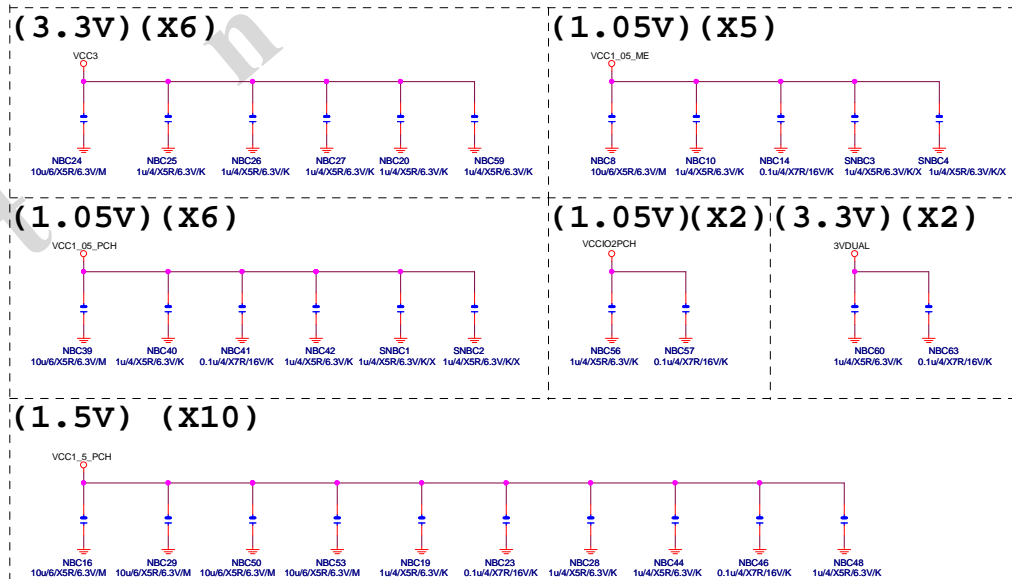
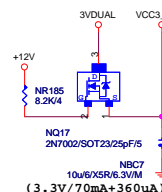




**PCH (I)**

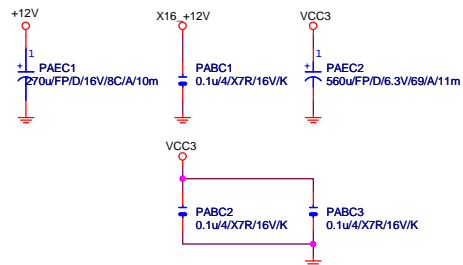


SHT PWR



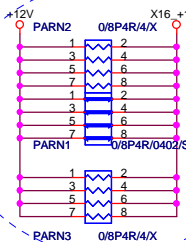


## PCIEX16 CAP



## PCIEX16 PROTECT SHT

```
+12 protect
short-wire test
```



PCIEX16 AC CAP
----------------

PA EXP TXP0	PAC5	0.22u4/4X5R6 3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/4X5R6 3V/K	PA EXP TXN0 C
PA EXP TXN1	PAC7	0.22u4/4X5R6 3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/4X5R6 3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/4X5R6 3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u4/4X5R6 3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u4/4X5R6 3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u4/4X5R6 3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u4/4X5R6 3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u4/4X5R6 3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u4/4X5R6 3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u4/4X5R6 3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u4/4X5R6 3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u4/4X5R6 3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u4/4X5R6 3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u4/4X5R6 3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u4/4X5R6 3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/4X5R6 3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/4X5R6 3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/4X5R6 3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/4X5R6 3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/4X5R6 3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/4X5R6 3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/4X5R6 3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/4X5R6 3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/4X5R6 3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/4X5R6 3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/4X5R6 3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/4X5R6 3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/4X5R6 3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/4X5R6 3V/K	PA EXP TXN15 C

PCI-E REV:1.1--&gt; 2.5GHZ

PCE-E X1(單向) BANDWIDTH=2.5GHz\*(8b/10b)=2Gb/s=250MB/s

PCE-E X1(雙向) BANDWIDTH=2.5GHz\*(8b/10b)X2=4Gb/s=500MB/s

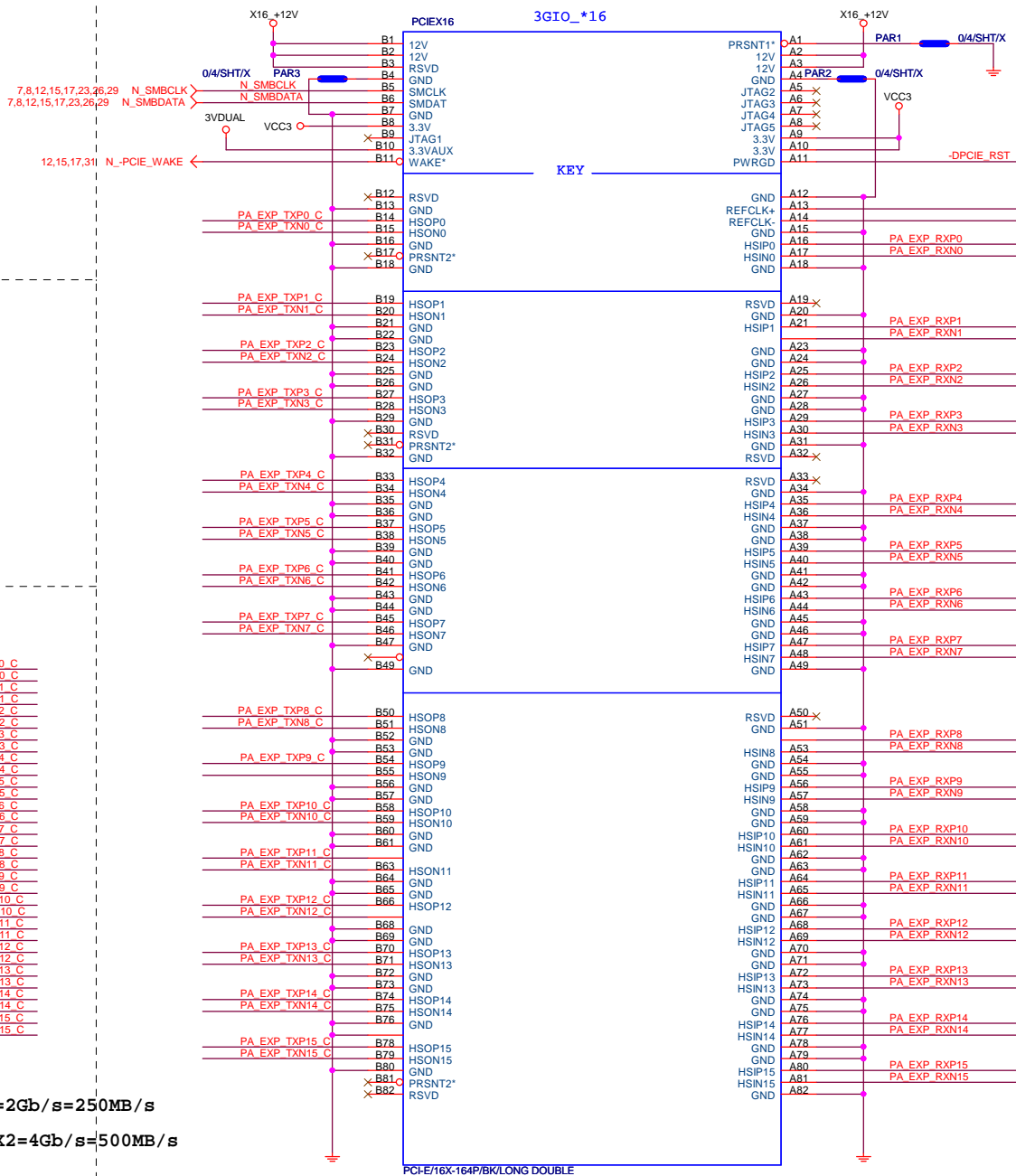
PCE-E X16(單向) BANDWIDTH=2.5GHZ\*(8b/10b)X16=32Gb/s=4GB/s

PCE-E X16(雙向) BANDWITH=2.5GHz\*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--&gt; 5GHZ

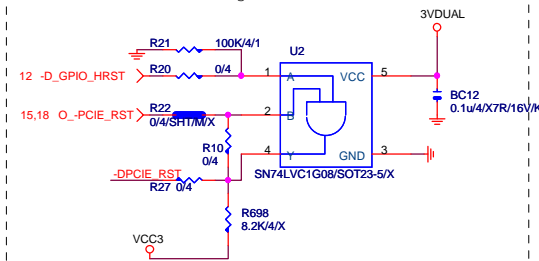
## PCIEX16 SLOT

## PCIESLOT-164DN-Q



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

The auxillary reset circuit is only required for PCIe Gen3 margining and functional link training

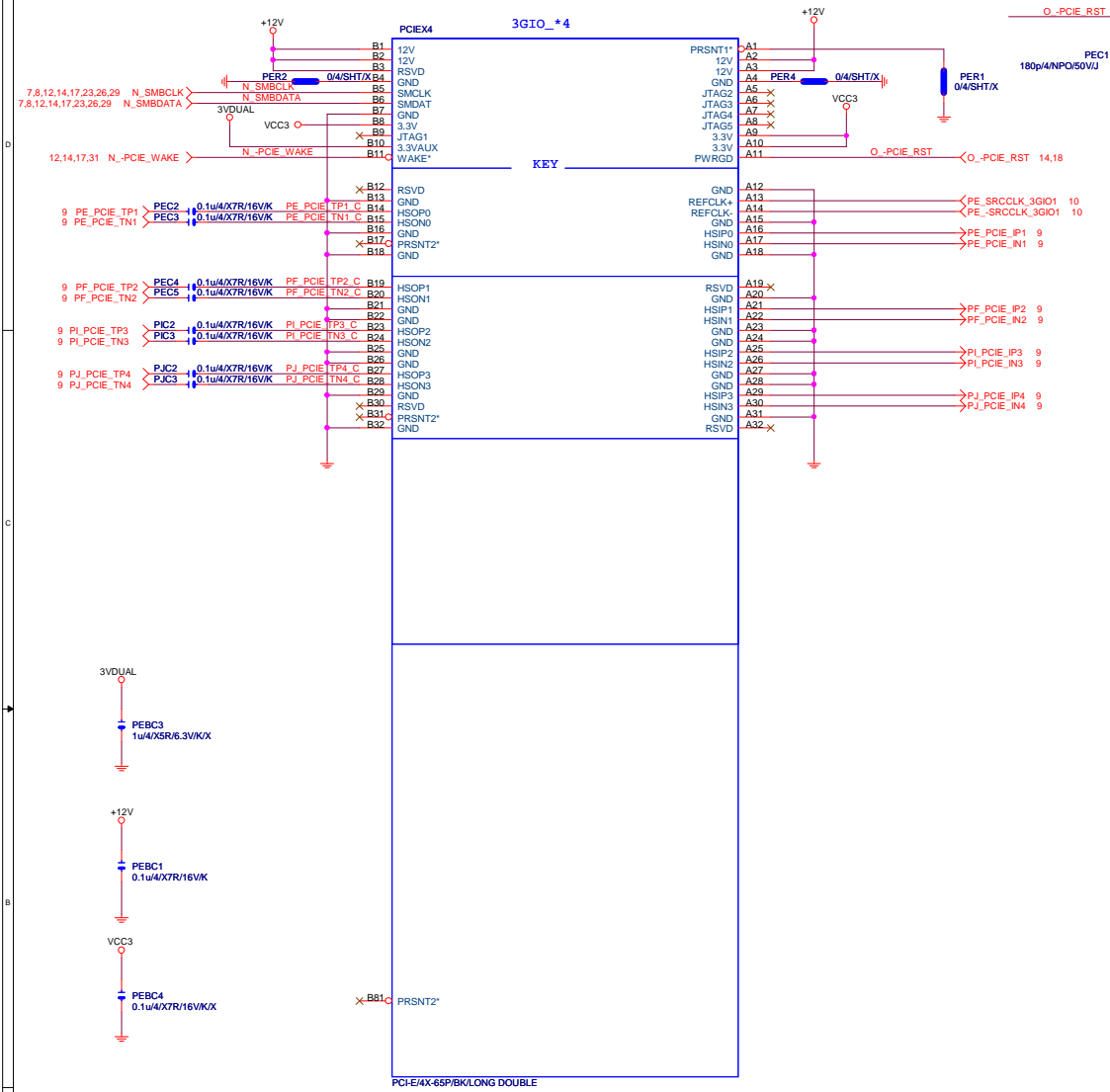


PCIEX16:16/5/5/5/16

PA_EXP_RXP[0..15]	>>	PA_EXP_RXP[0..15]	4
PA_EXP_RXN[0..15]	>>	PA_EXP_RXN[0..15]	4
PA_EXP_TXP[0..15]	>>	PA_EXP_TXP[0..15]	4
PA_EXP_TXN[0..15]	>>	PA_EXP_TXN[0..15]	4



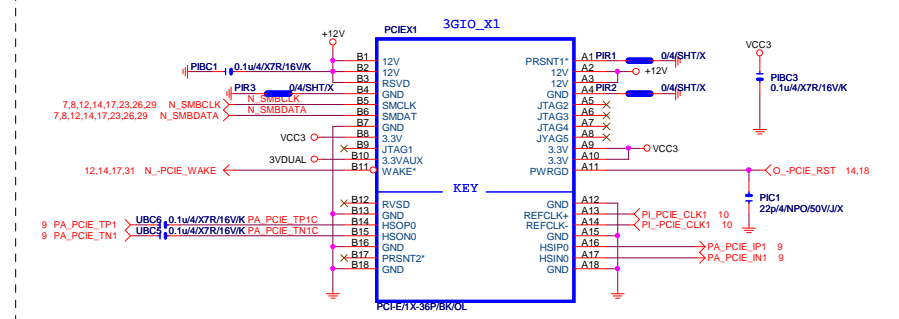
# PCIEX4 SLOT



	N_PCIE_4_SW (PCH GPIO48)	PCIEX4_X1
P	H	H
C	H	H
PCIEX4 No devices	H	H
PCIEX4 -> X1	H	H
PCIEX4 Have devices	L	L
PCIEX4 -> X4	L	L
PCIEX1_1/2 --> N/A		

# PCIEX1 SLOT

# PCIEX1\_1



# PCIEX4/X1 SWITCH

Function	SEL
xI--> x0a	L;PCIEX4 SLOT-->X1
xI--> x0b	H;PCIEX4 SLOT-->X4

**Gigabyte Technology**

Title

Size Custom

Date: Thursday, June 27, 2013

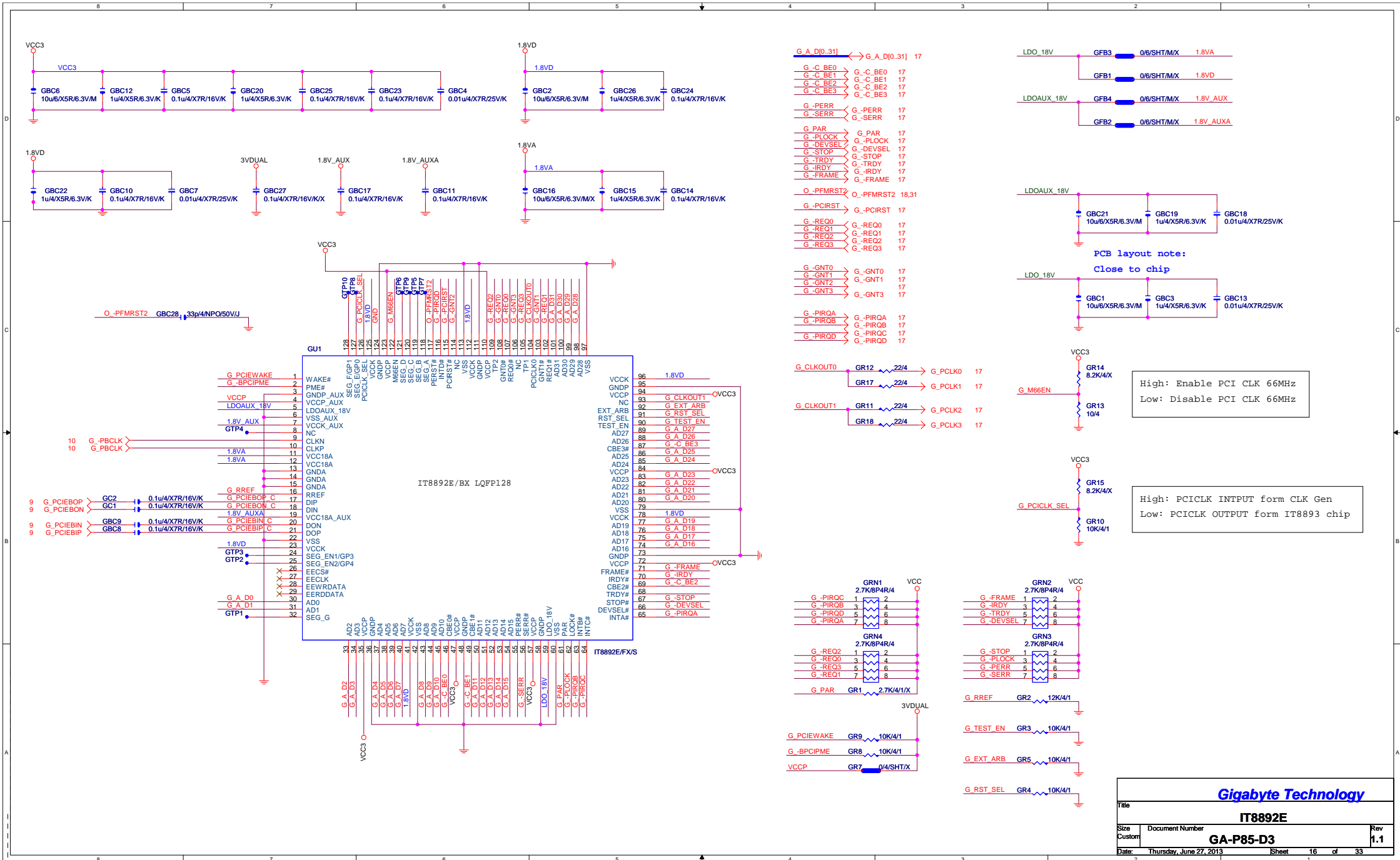
Document Number

GA-P85-D3

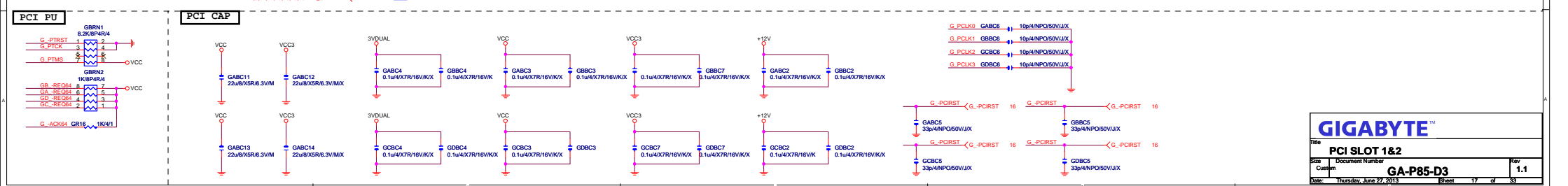
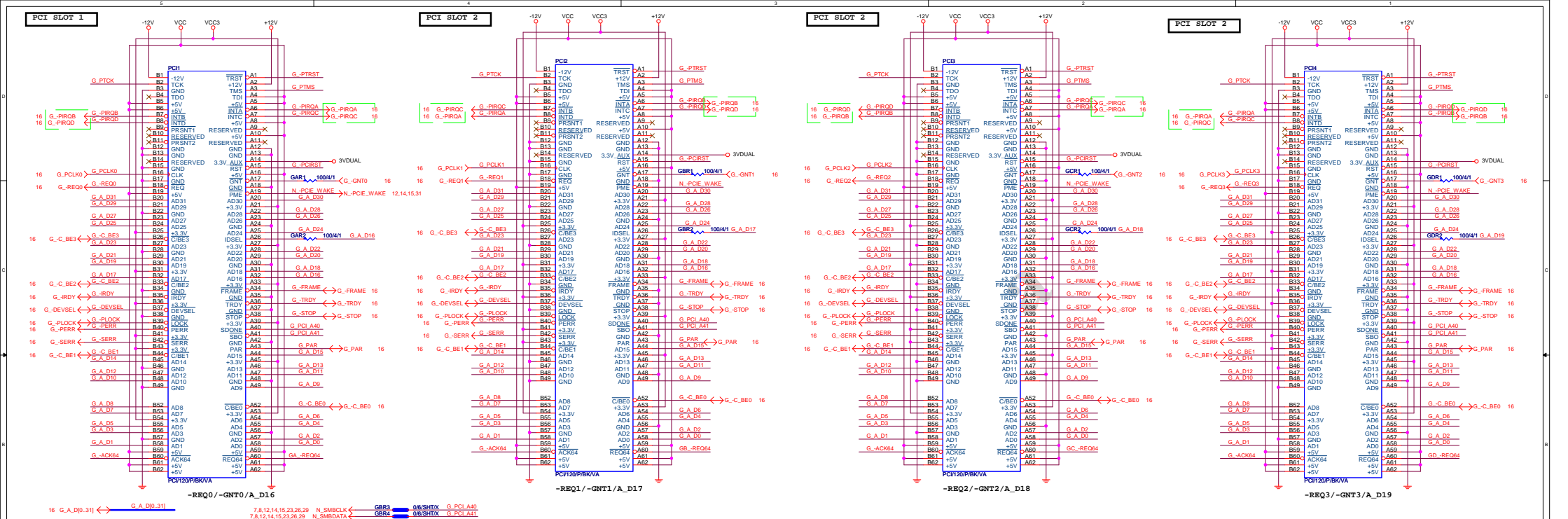
Sheet 15 of 33

Rev 1.1



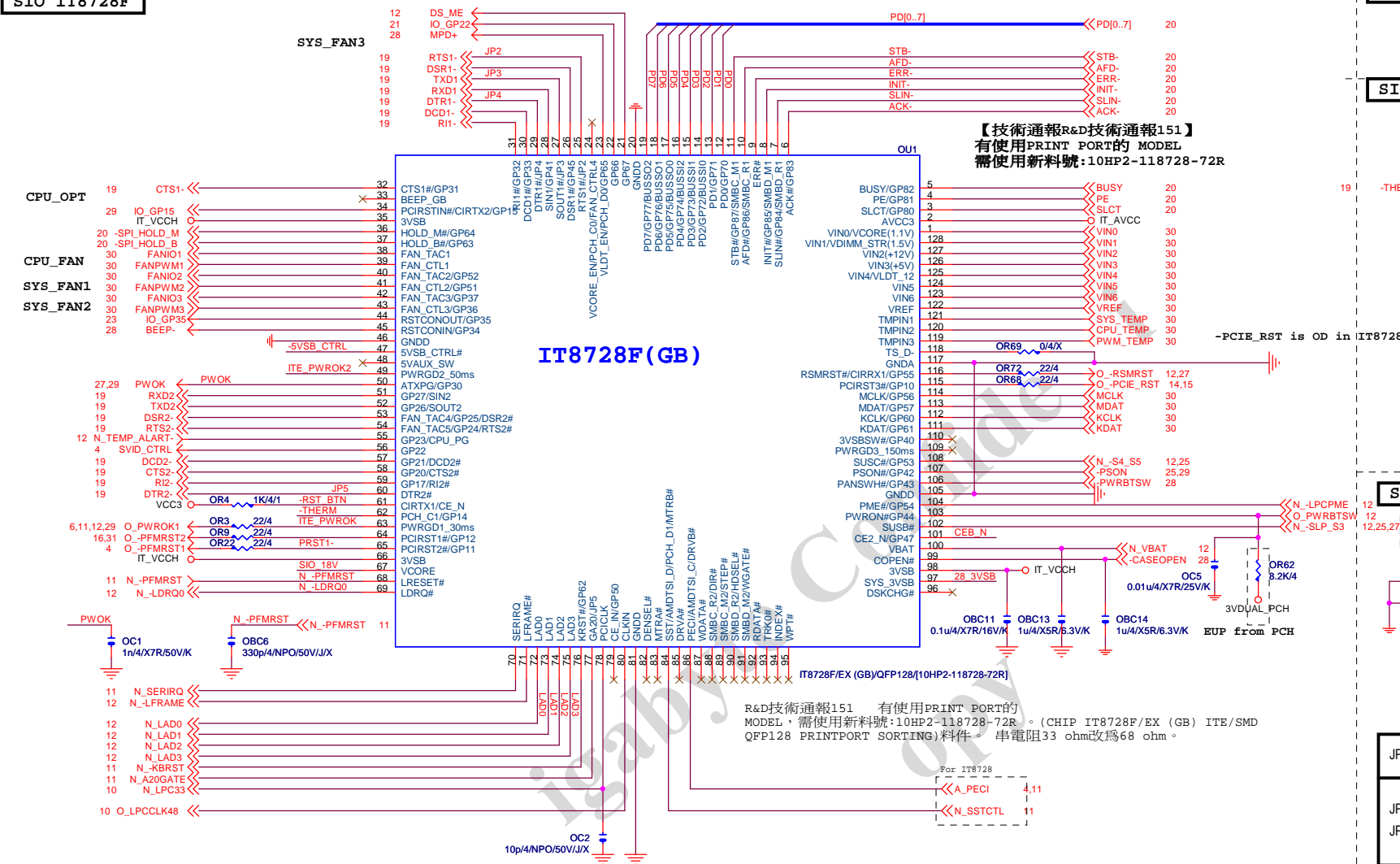




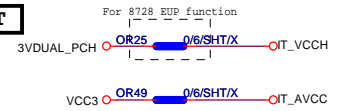




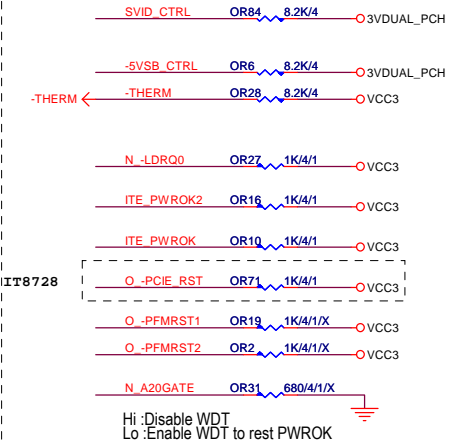
**SIO IT8728F**



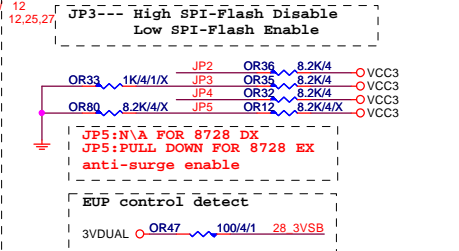
PWR	SHT
-----	-----



SIO	PU
-----	----



SIO STRAP

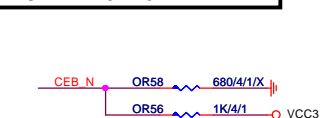


JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 8Fh.
	1 0	The default value of EC Index 63h/6Bh/73h is 80h.
JP5	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

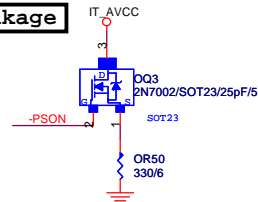
## IT8728F NOTE

	IT8728
PIN121	VCORE_EN/PCF_C0
PIN120	VLDI_EN/PCF_D0
PIN19	ATXPG
PIN31	PCF_C1
PIN53	SST/AMDSI_D/MTRB#/PCF_D1
PIN55	PECI/AMDSI_C/DRV#
PIN66	SVS_3VSB
PIN70	GP47
PIN95	VIN2(VOC5)
PIN96	VIN1(VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0/VCORE(1.1V)/NC

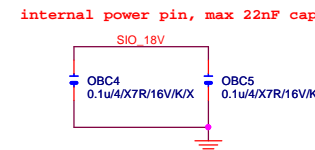
## DUAL BIOS OPT STRAP



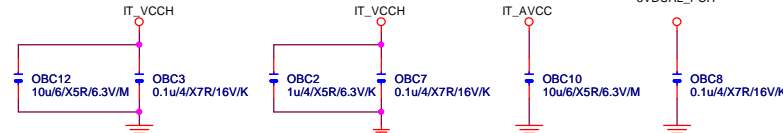
## Power leakage



## SIO\_18V



## SIO CAP

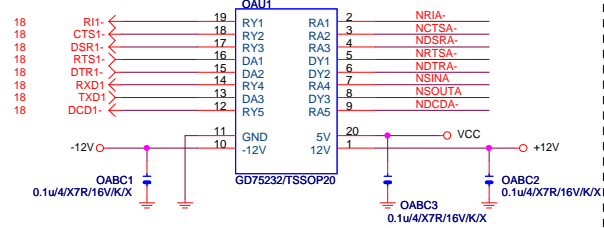


## Gigabyte Technology

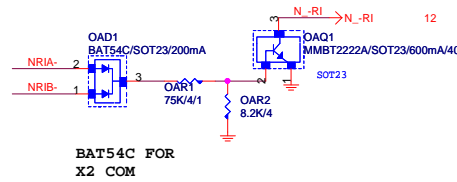
Title			
ITE 8728 LPC IO			
Size B	Document Number		Rev 1.1
GA-P85-D3			
Date:	Monday, July 01, 2013	Sheet	18 of 33



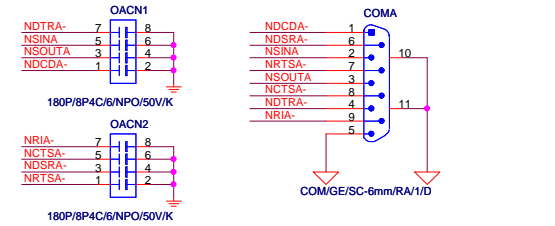
COMA



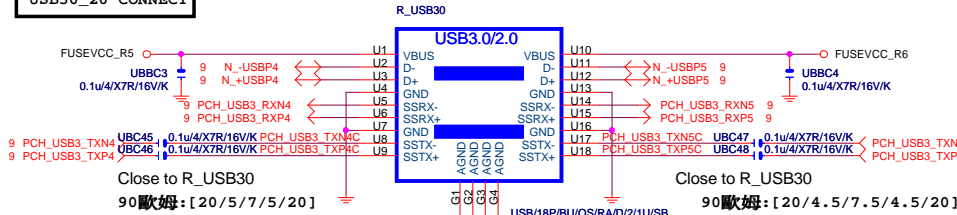
COM RI



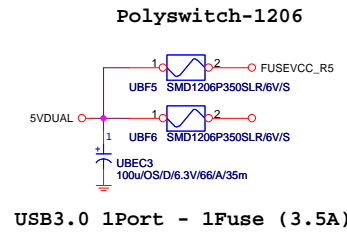
COM BUFFER



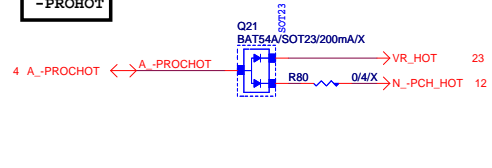
USB30\_20 CONNECT



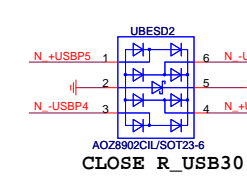
USB30 PWR



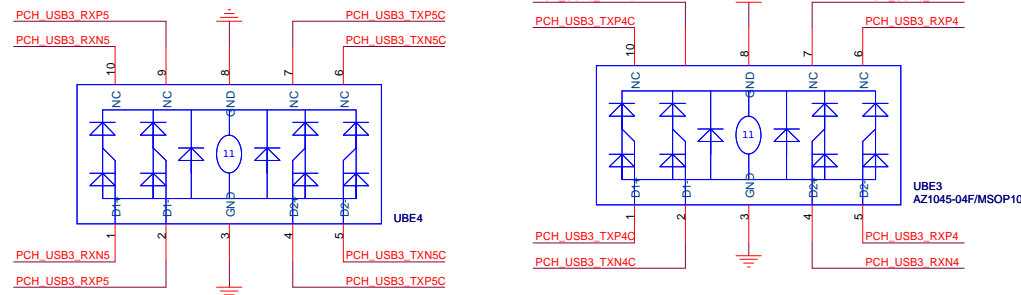
-PROHOT



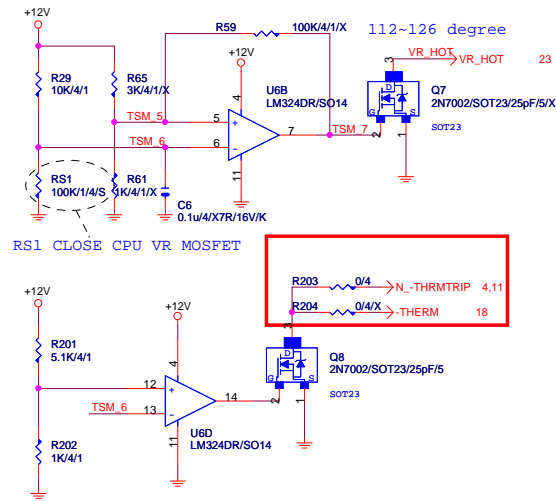
USB20 ESD PROTECT



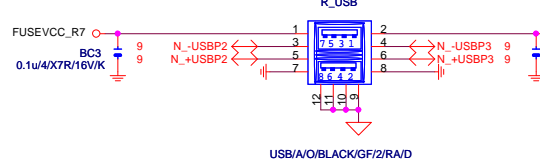
USB30 ESD PROTECT



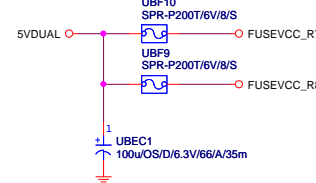
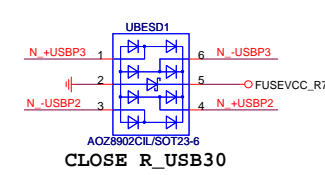
-PROCHOT:有mos heartsink不用prochot function



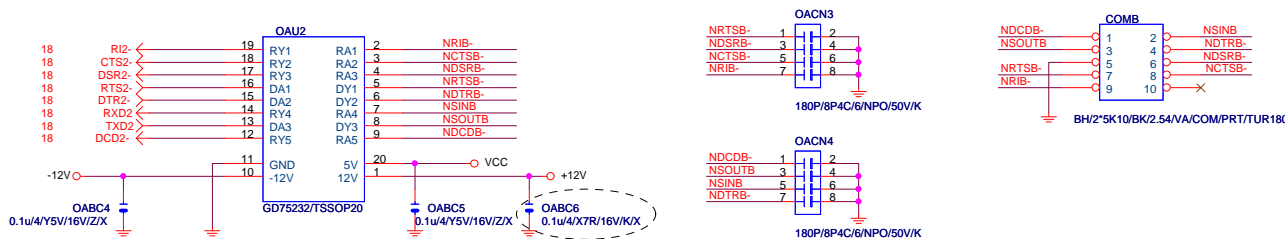
R\_USB30



USB20 ESD PROTECT

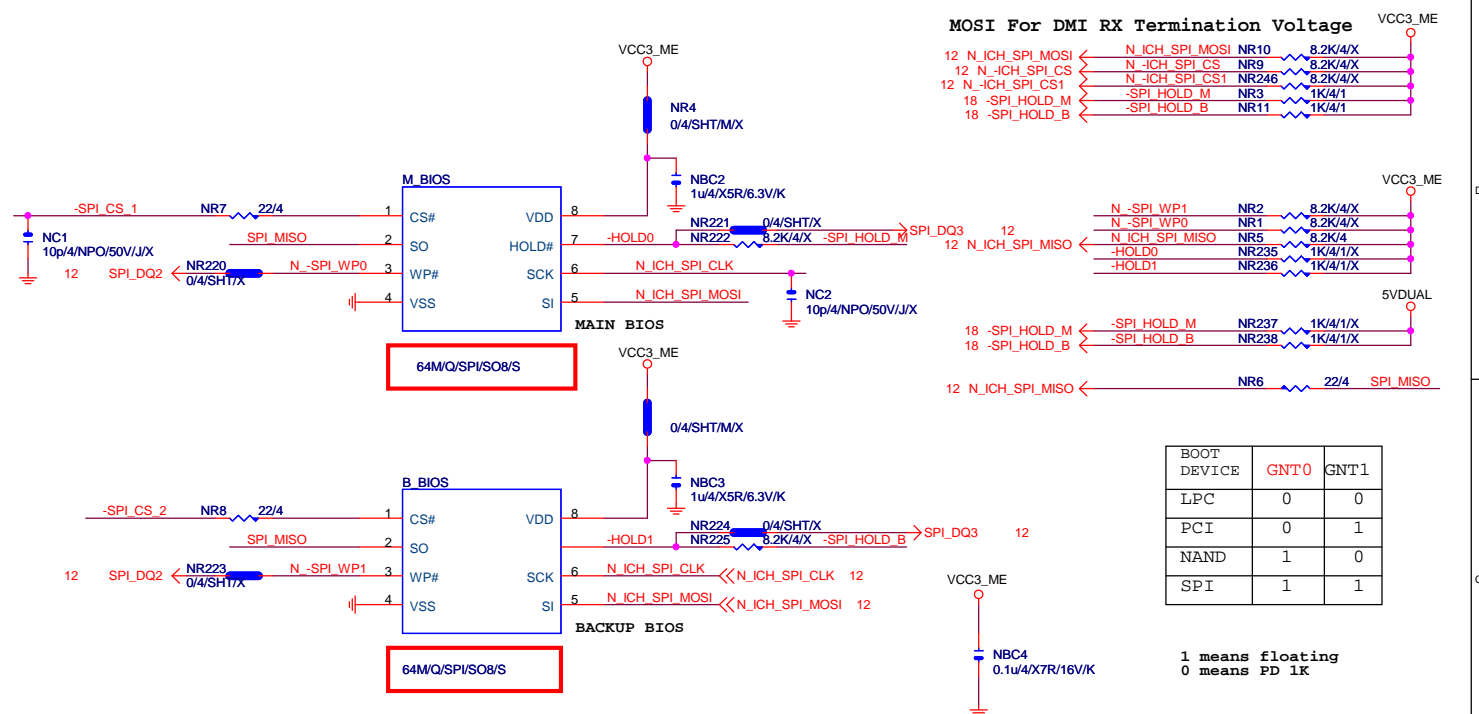
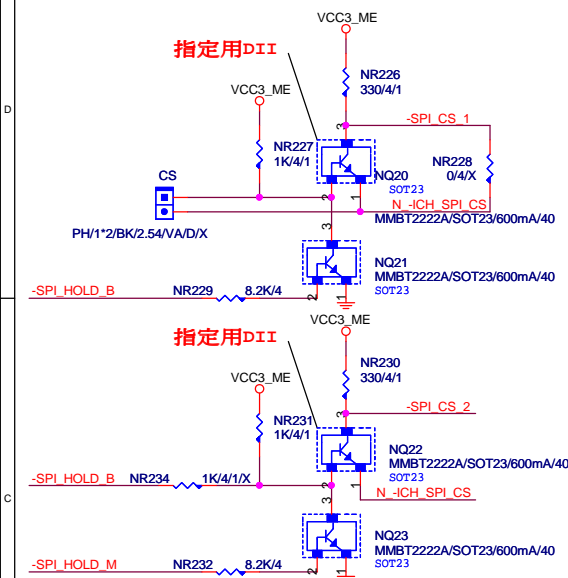


COMB

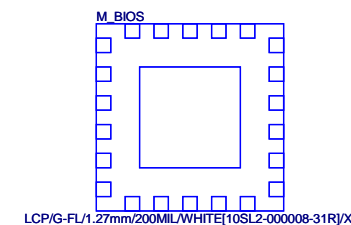
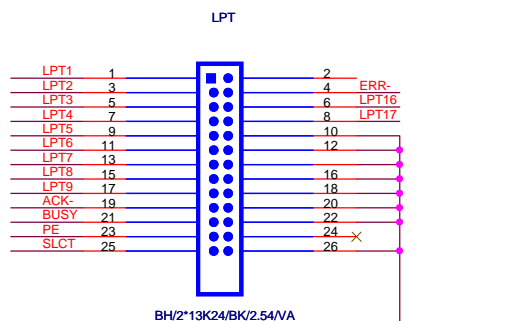
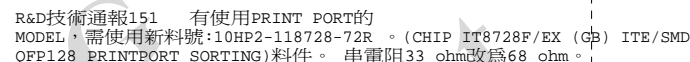
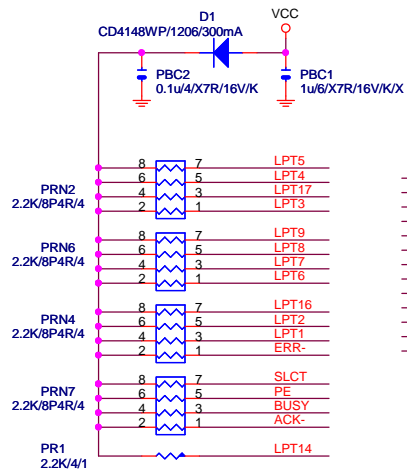
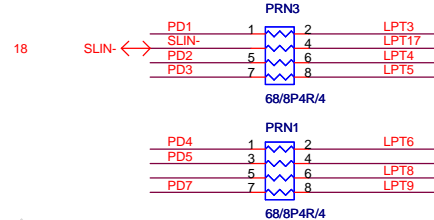
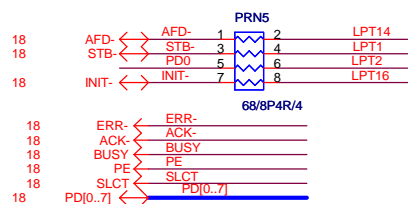




## DUAL BIOS



## LPT PORT

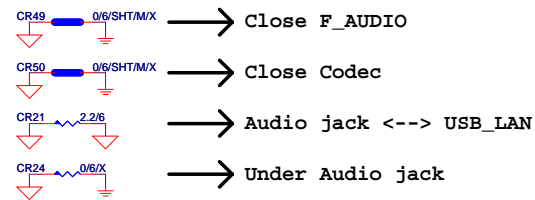




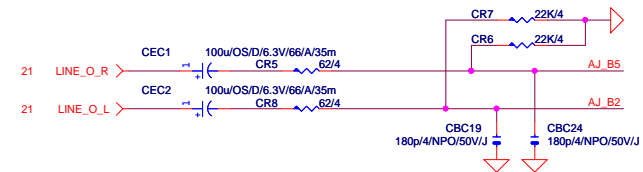
5	4
---	---





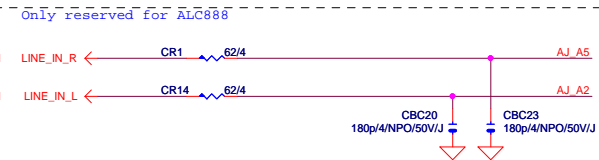


### LINE-OUT



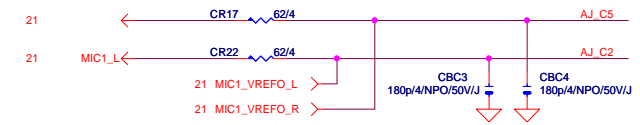
### LINE-IN

Verify MIC function  
in LINE-in



For 889A/888

### MIC-IN

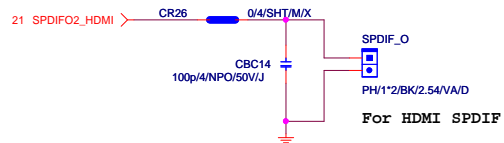


### SURROUND

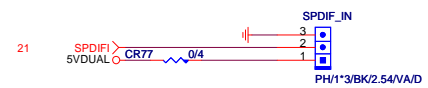
### CEN/LFE

### SURR BACK

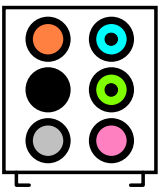
### SPDIF\_OUT



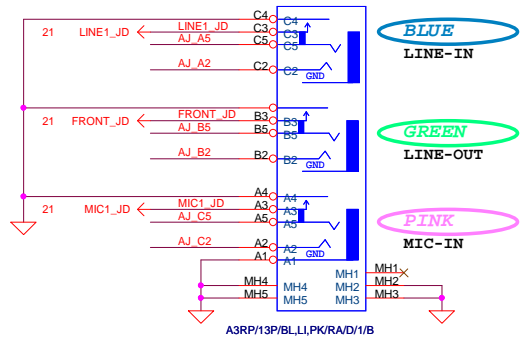
### SPDIF\_IN



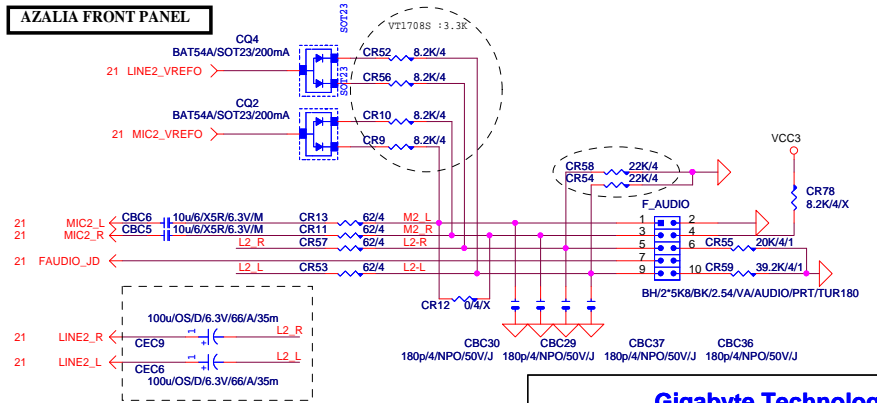
### AZALIA JACK



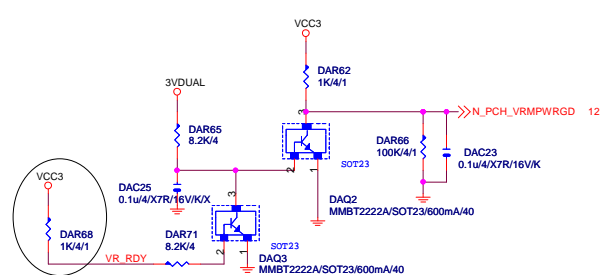
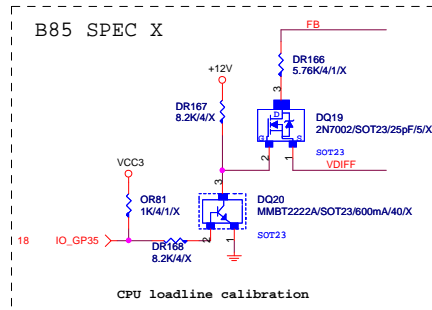
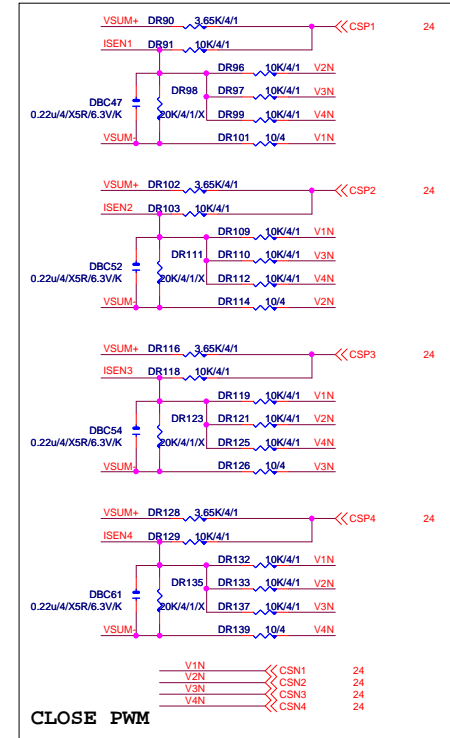
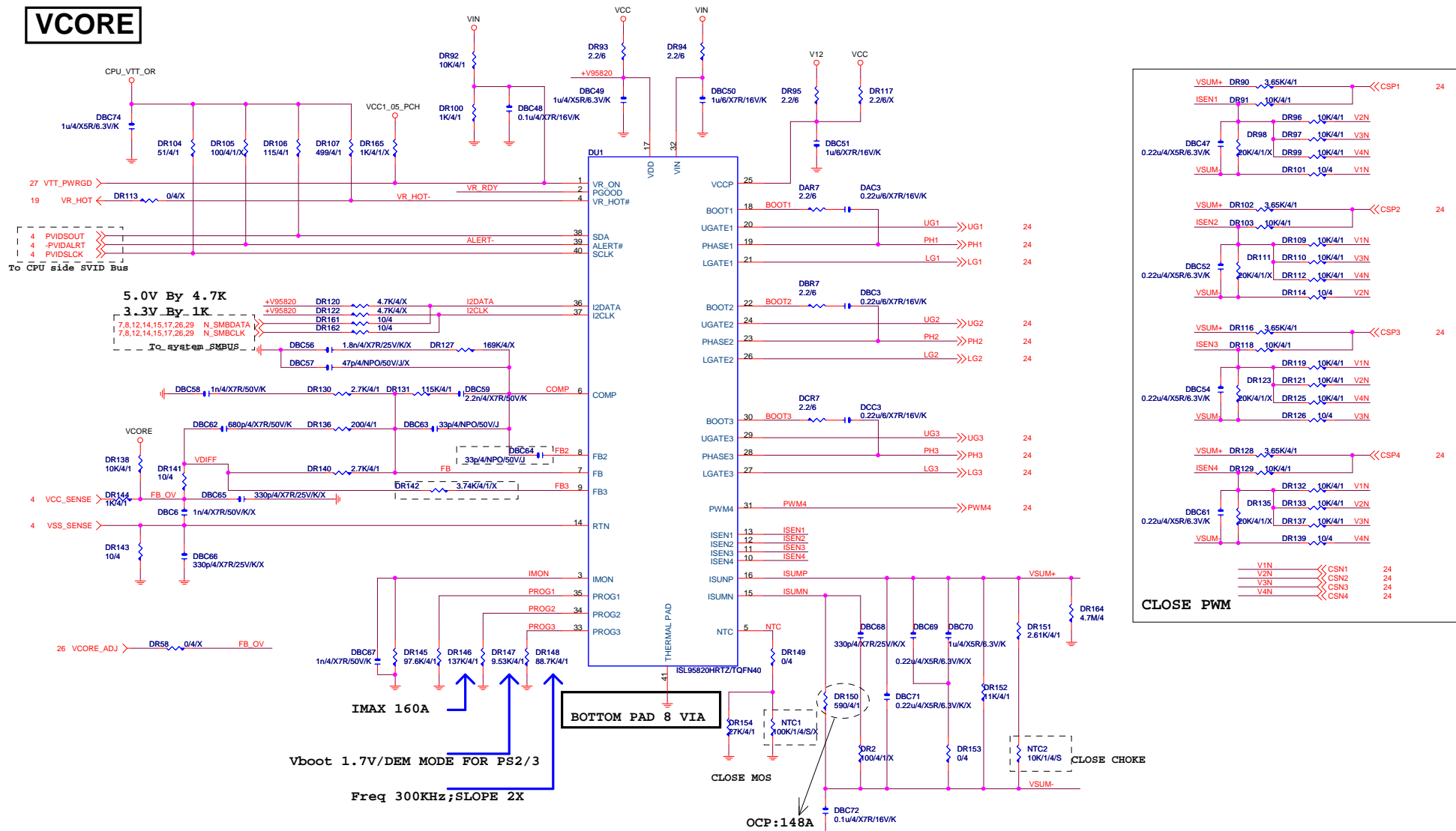
### AZALIA JACK



### AZALIA FRONT PANEL



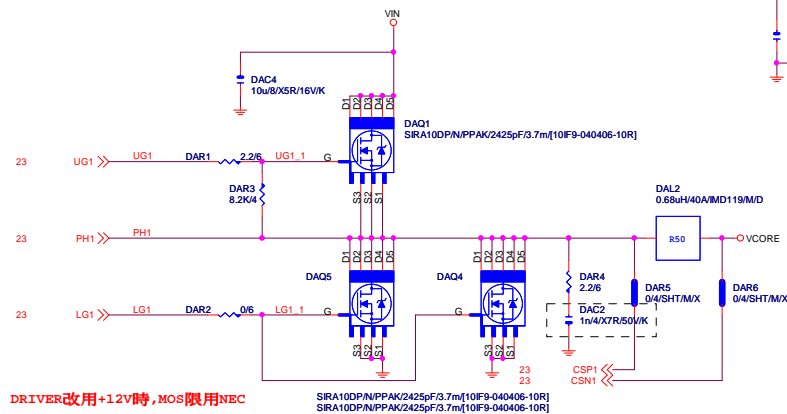


**VCORE**

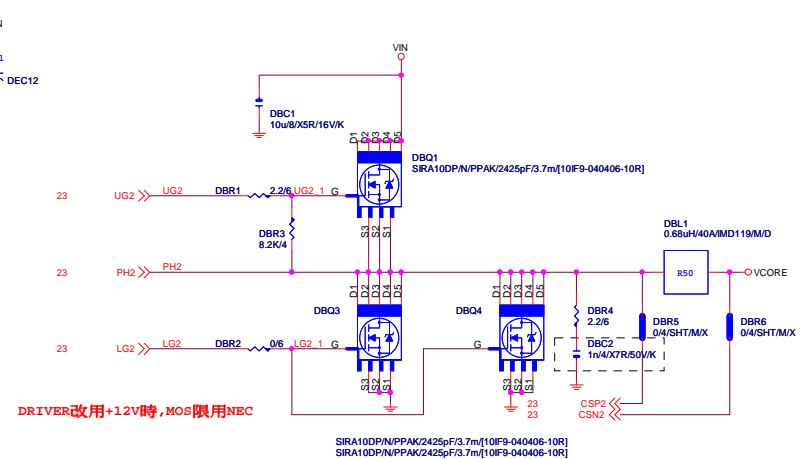


# VCORE

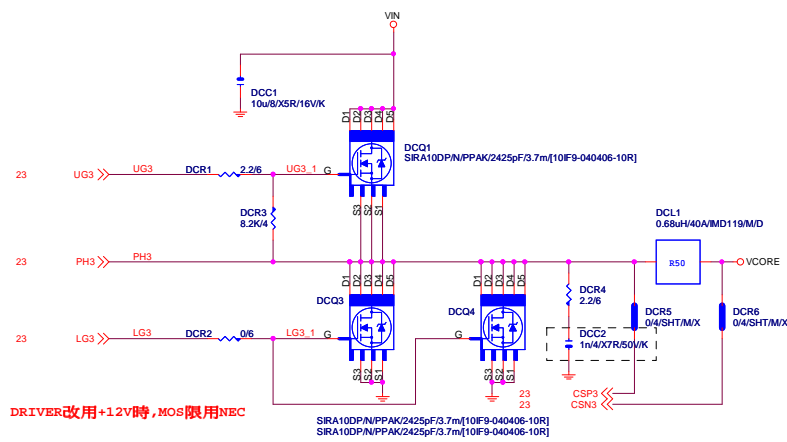
[1]



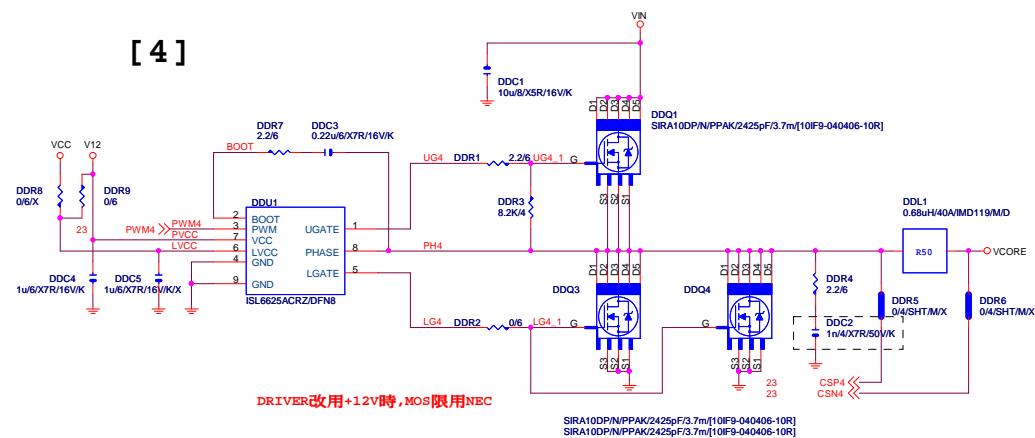
[2]



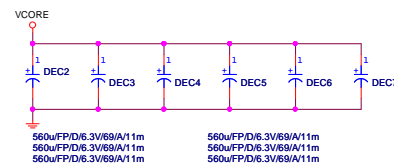
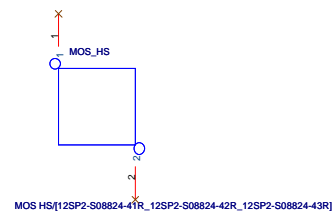
[3]



[4]



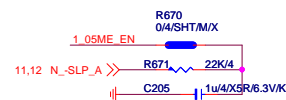
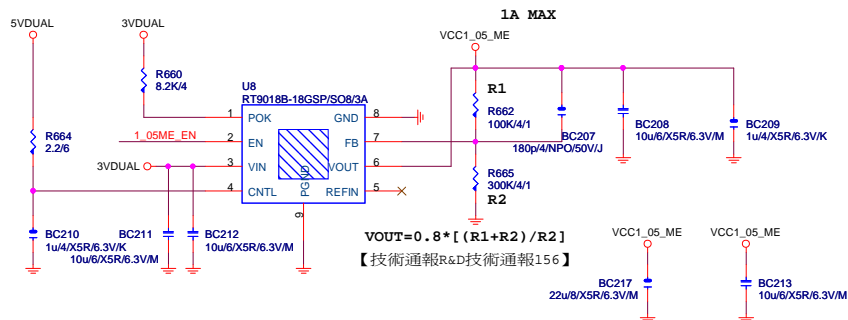
# MOSFET HEATSINK



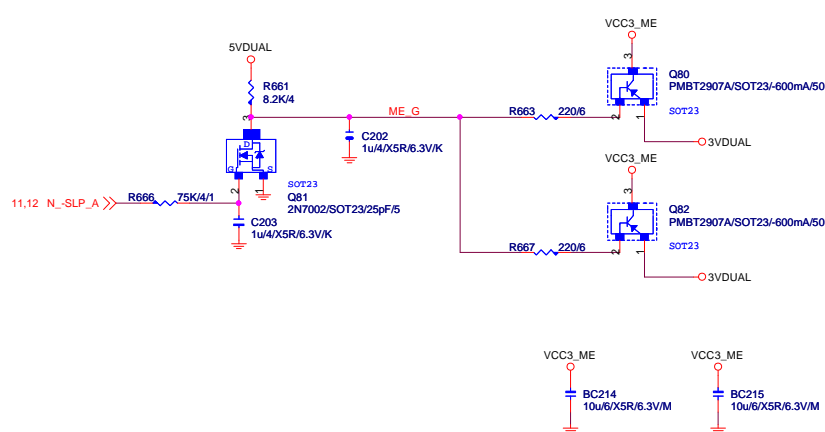
Gigabyte Technology		
Title	ISL95820_2	
Size	Document Number	GA-P85-D3
Custom		Rev 1.1
Date	Thursday, June 27, 2013	Sheet 24 of 33



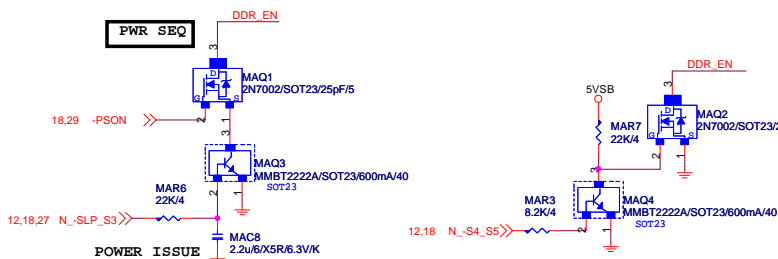
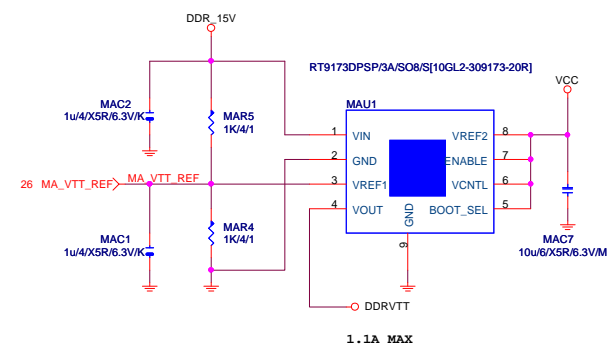
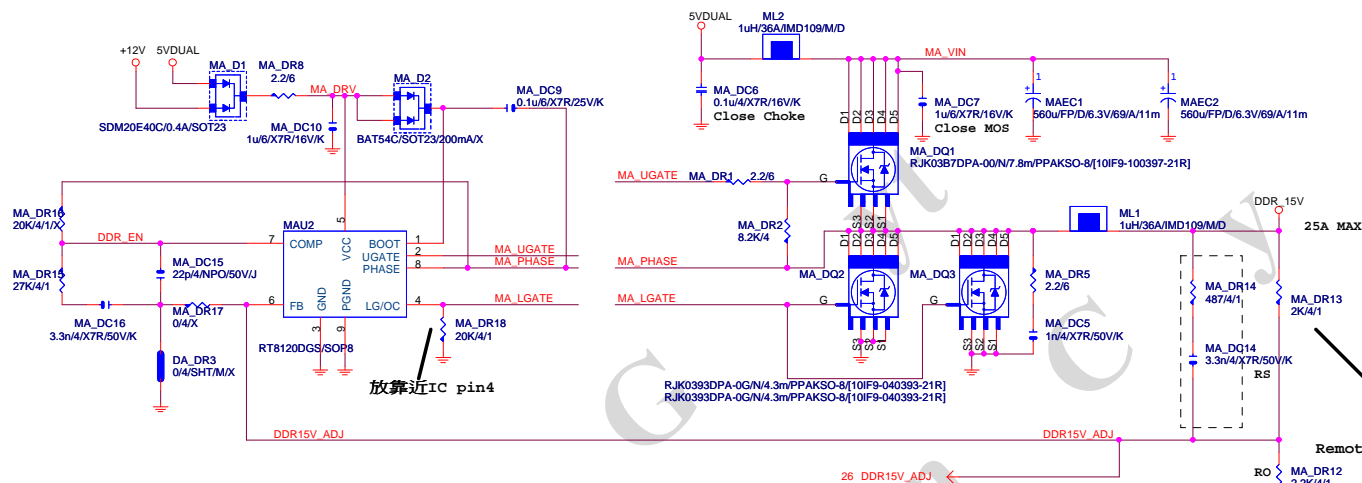
## VCC1\_05\_ME



## VCC3\_ME



**DDR\_15V**



VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1  
IRMS=11.45A  
560uF/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

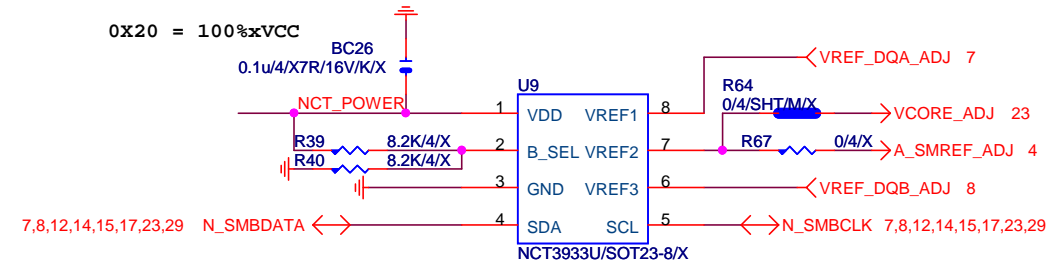
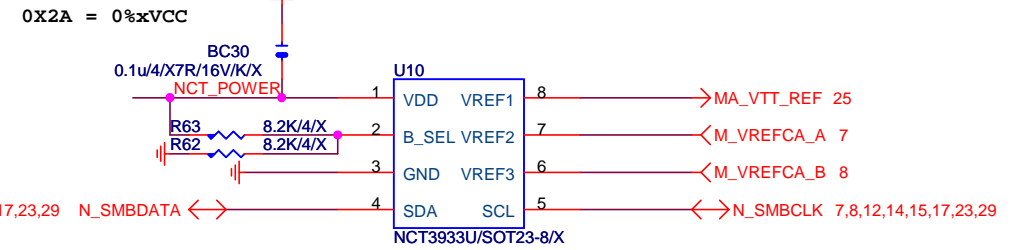
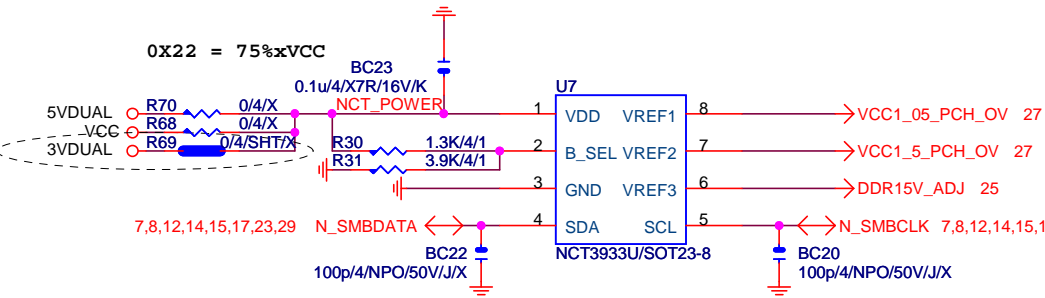
```
OCP:35.82A for Rds=6.7m for vishay@4.5V
OCP:72.727A for Rds=3.3m for renesas@10V
OCP:48A=Roset*Iocset / Rds(on)
      =12K*10uA / [5/5]
```

Remote sense 請從最重的負載端點拉回

$$\begin{aligned} 0.8 \cdot (1 + R_S/R_O) &= V_{out} \\ 0.8 \cdot [1 + 2K/2.2K] &= \\ 1.527V \end{aligned}$$



OVER VOLTAGE



NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

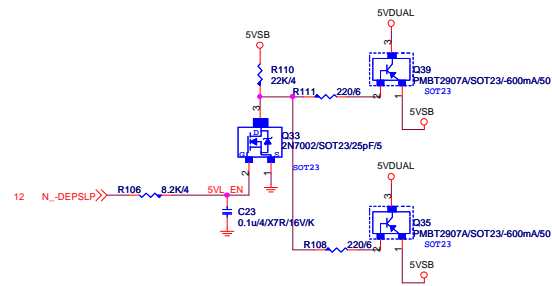
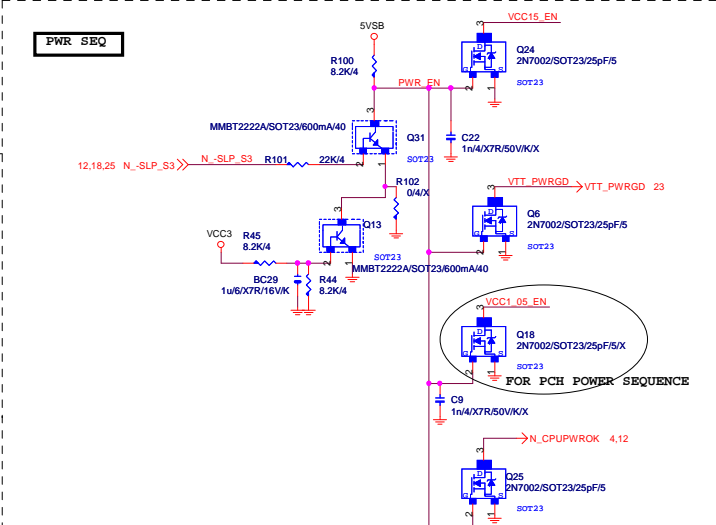
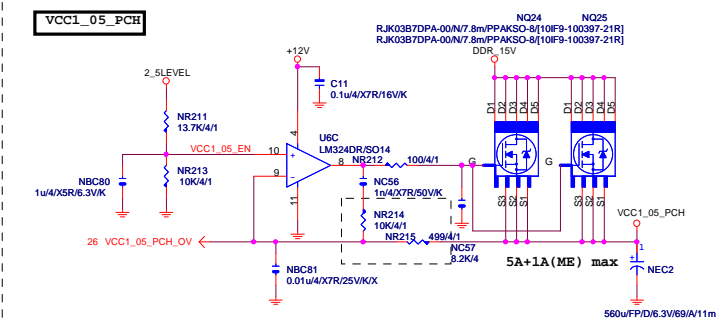
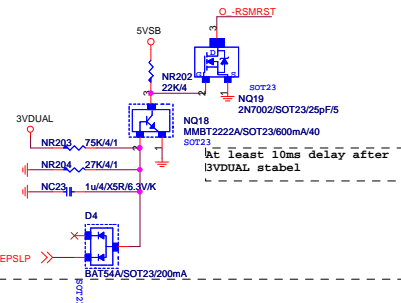
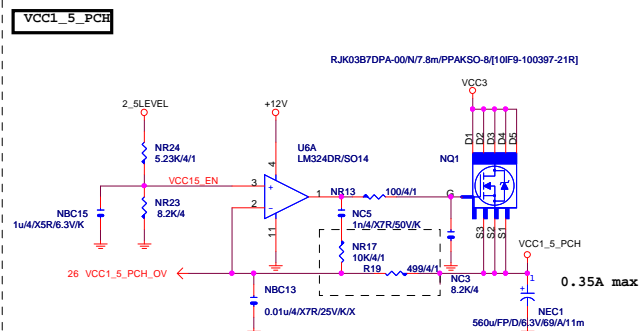
**Gigabyte Technology**

Title: CPU CORE VR-2

Size: Custom Document Number: GA-P85-D3 Rev 1.1

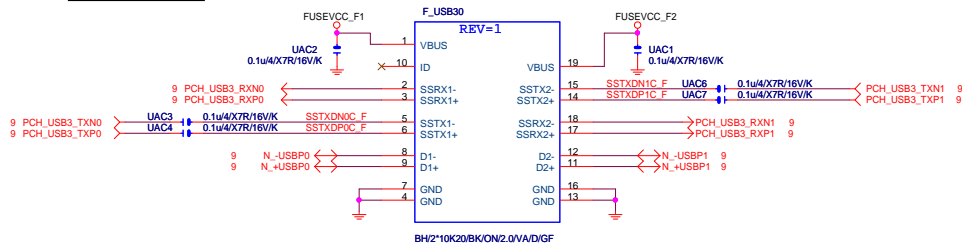
Date: Thursday, June 27, 2013 Sheet 26 of 33



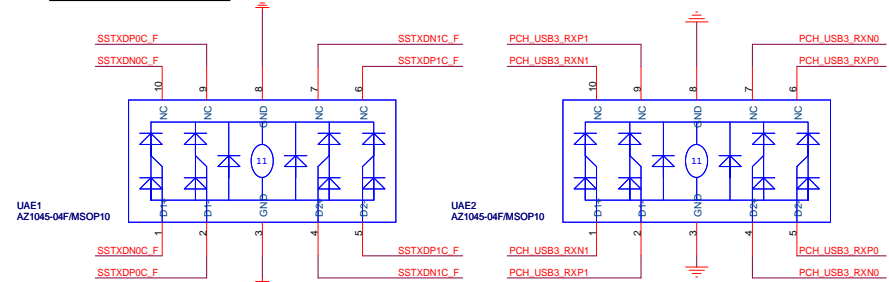




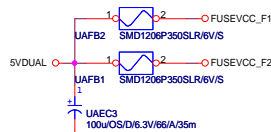
## Front USB3.0



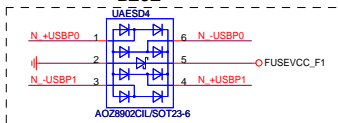
F\_USB30 ESD PROTECT



F_USB30 PWR	
-------------	--

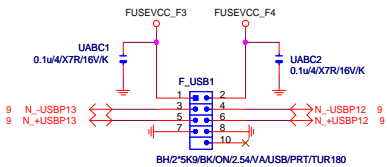


BLUE



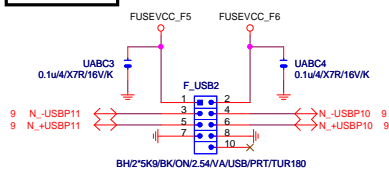
Close to connector

FRONT USB1



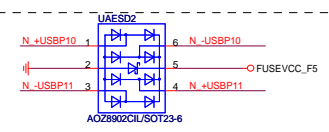
Close to connector

FRONT USB2

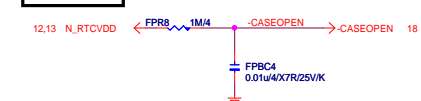


Close to connector

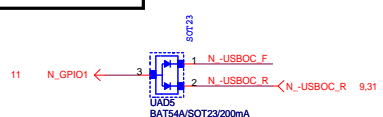
**FRONT USB3**



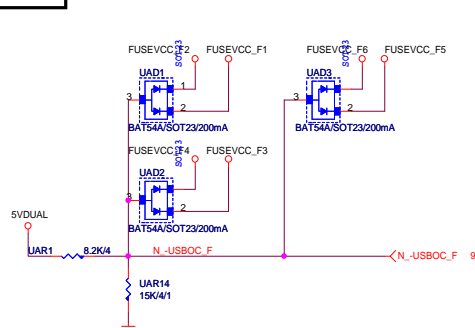
## CASE OPEN



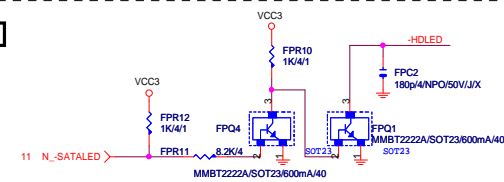
F\_USB POWER PROTECT



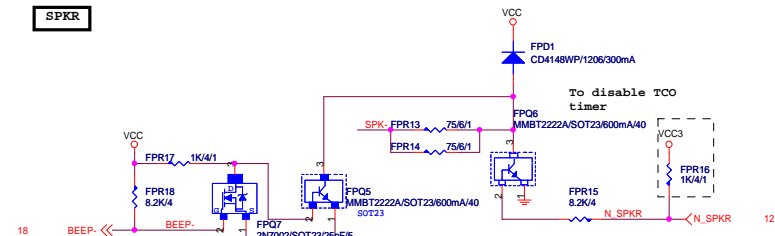
## -USB0C\_F



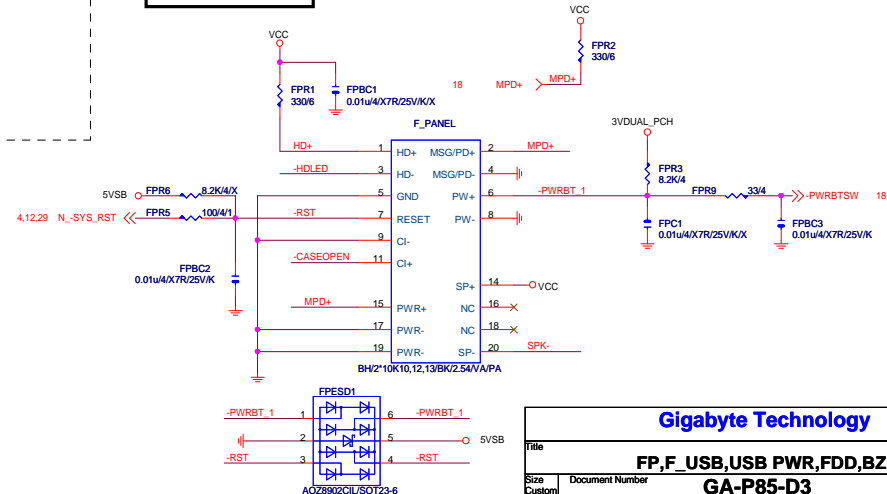
**SATA LED**



## SPKR



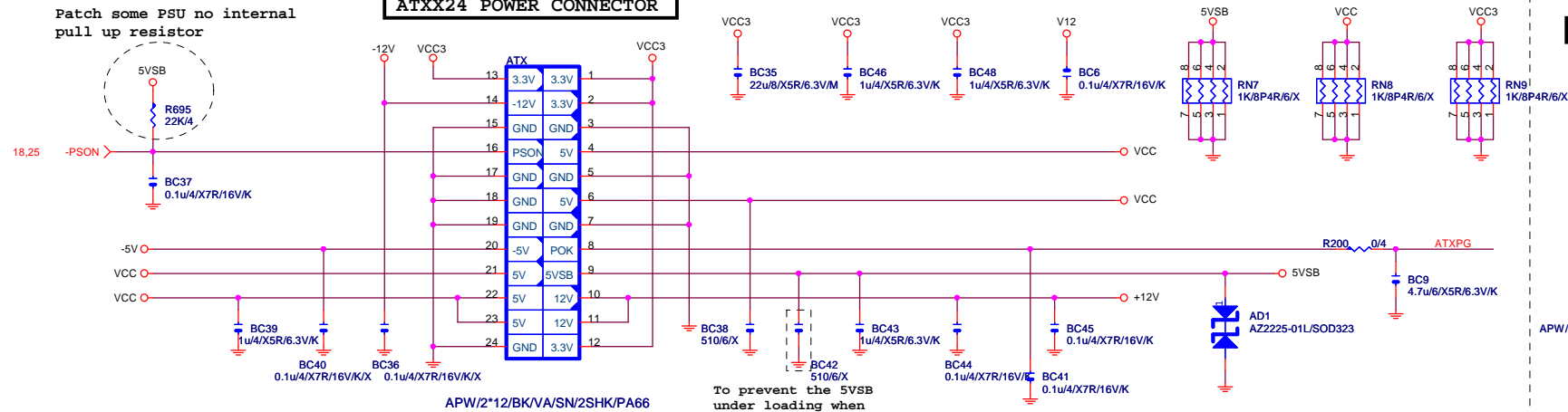
## INTEL FRONT PANEL





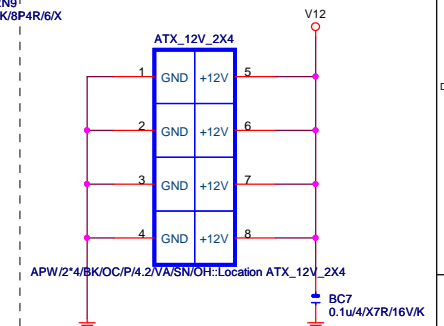
Patch some PSU no internal pull up resistor

## ATXX24 POWER CONNECTOR

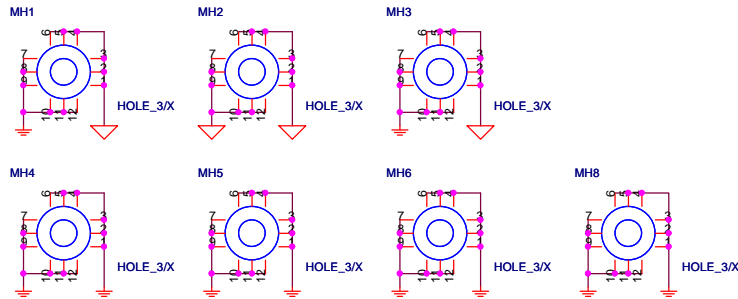


APW/2\*12/BK/VA/SN/2SHK/PA66

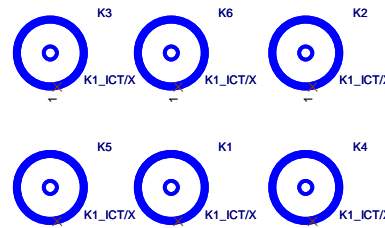
## ATXX4 POWER CONNECTOR



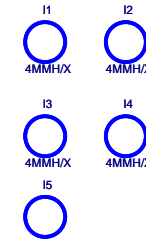
APW/2\*4/BK/OC/PA/2VA/SN/OH:Location ATX\_12V\_2X4



HOLE\_4-RH-1



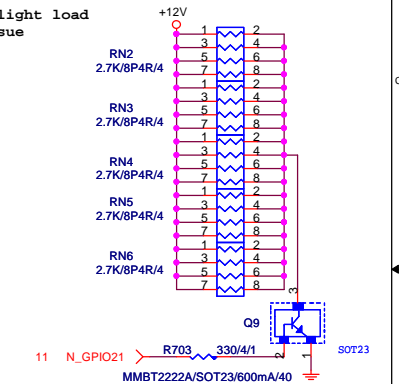
K1-ICT



4MMH

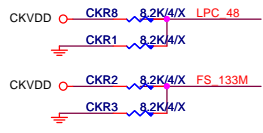
## 【技術通報R&D技術通報153】

To fix 12V light load abnormal issue

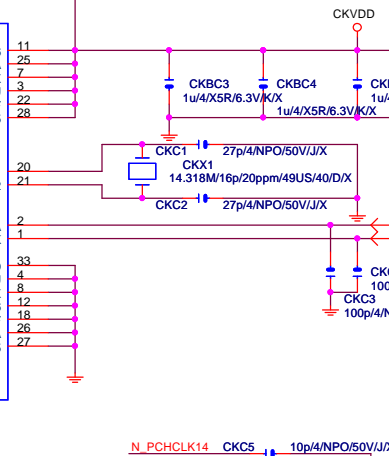
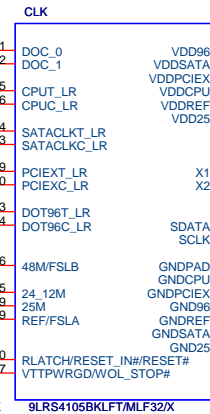
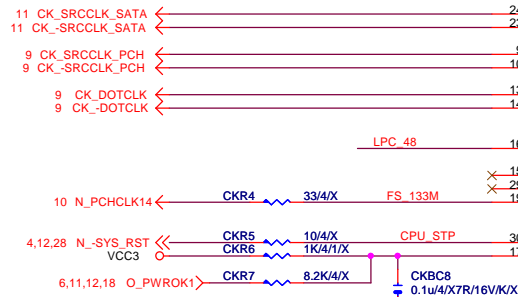


## CLK GEN

### CPU Frequency Selection

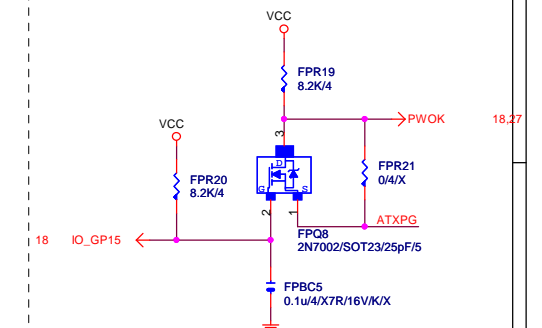


FSLB	FSLA	CPU
0	0	100M <Default>
0	1	133M
1	0	200M
1	1	166M



## PWOK PATCH

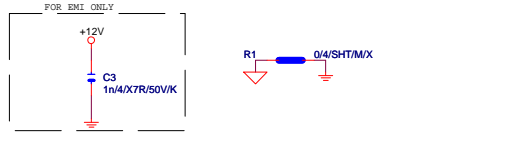
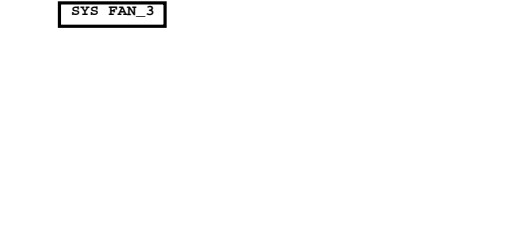
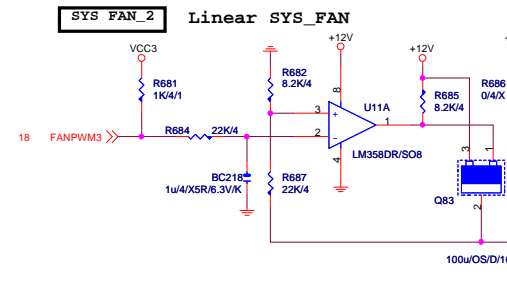
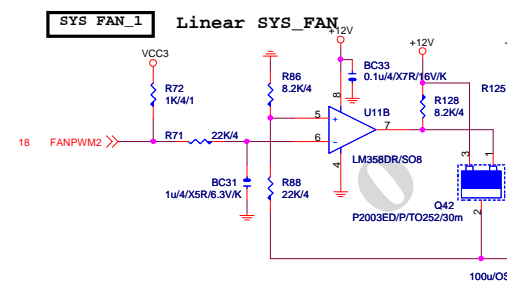
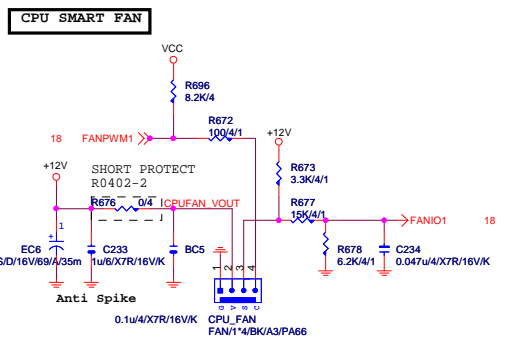
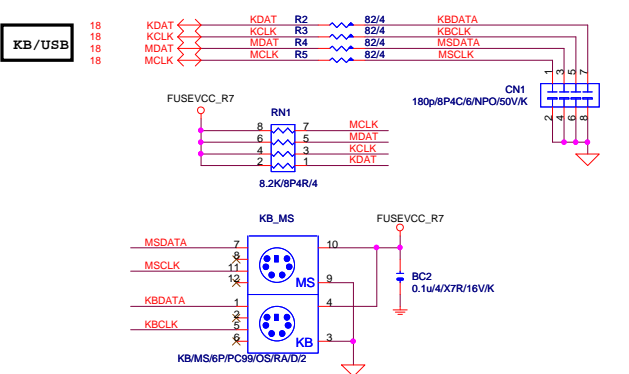
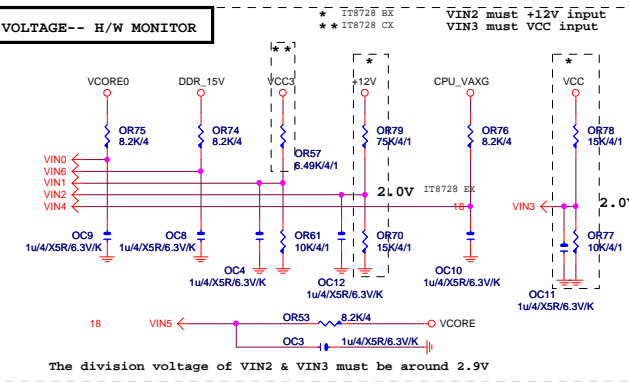
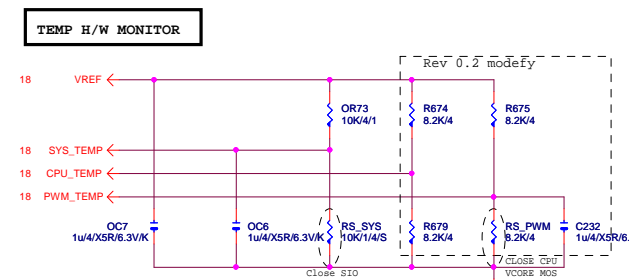
### 【技術通報R&D技術通報154】



Gigabyte Technology

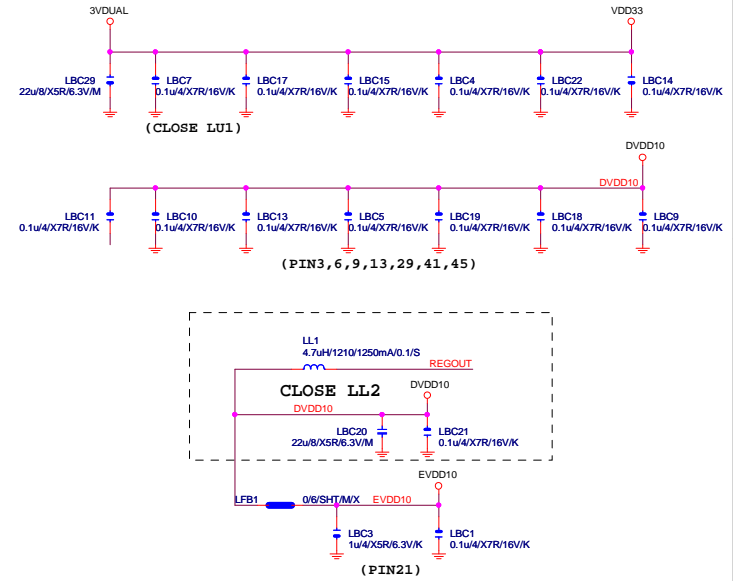
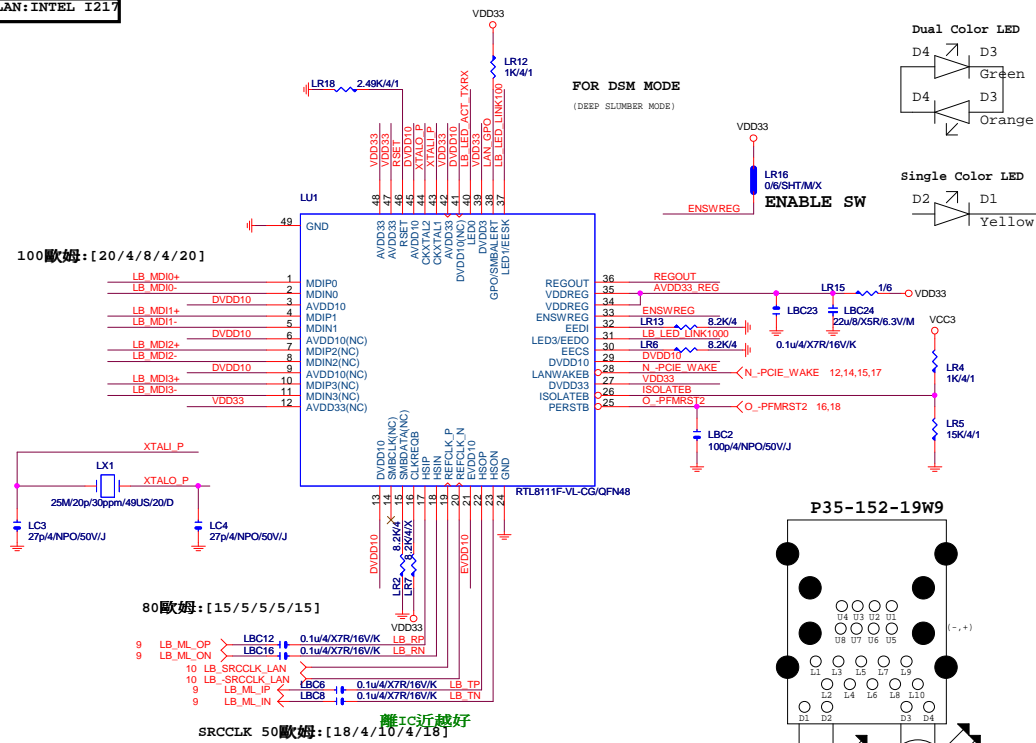
Title		
ATX POWER CONNECTOR		
Size	Document Number	Rev
Custom	GA-P85-D3	1.1
Date	Thursday, June 27, 2013	Sheet 29 of 33



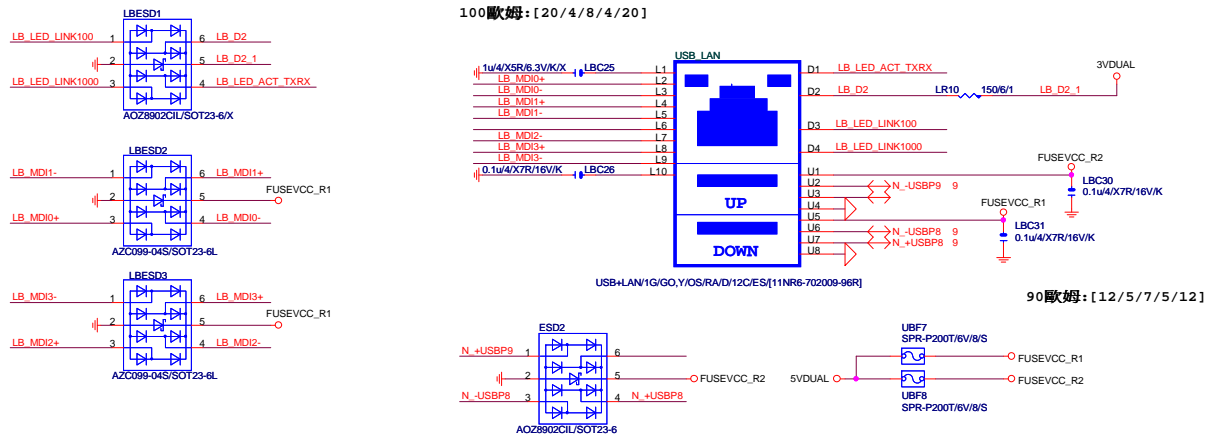




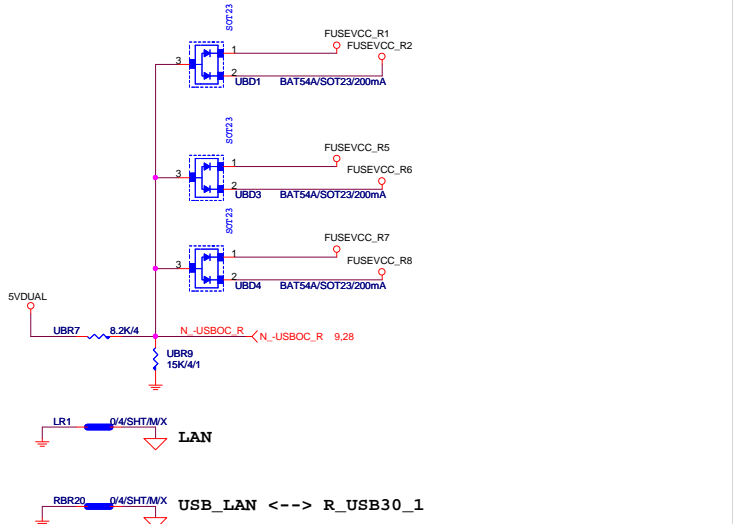
LAN:INTEL I217



## USB30\_LAN CONNECTOR



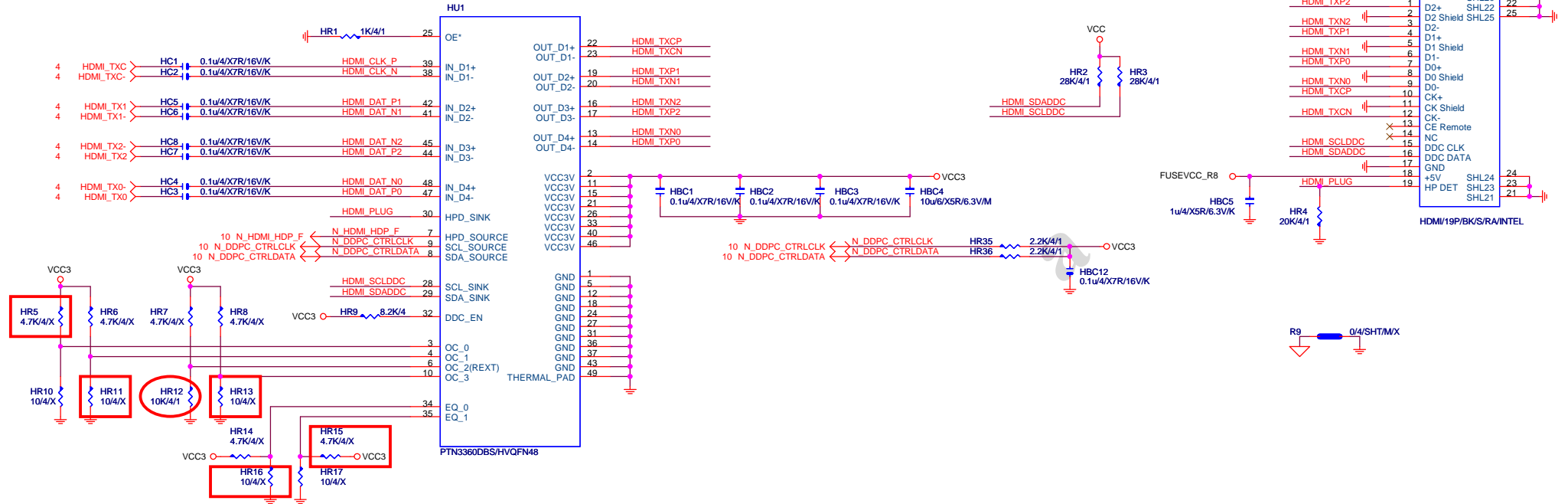
## -USB0C\_R





# HDMI LEVEL SHIFT

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



PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K  
ASM1442:紅色框要上,HR12:3.16K

## GIGABYTE™

Title		
HDMI		
Size	Document Number	Rev
Custom	GA-P85-D3	1.1
Date:	Thursday, June 27, 2013	Sheet 32 of 33



