

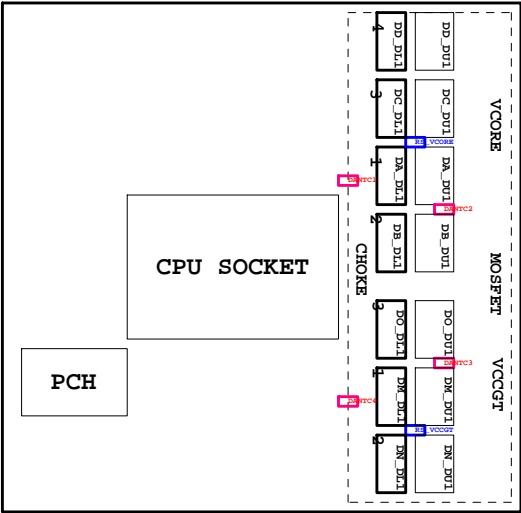
Model Name: GA-B150-HD3 DDR3 rev 1.0

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A
05	CPU_LGA1151-B-DDR4
06	CPU_LGA1151-C
07	CPU_LGA1151-D
08	DDR 4 CHANNEL A
09	DDR 4 CHANNEL B
10	PCH CLOCK BUFFER
11	PCH DMI,USB,PCIE
12	PCH MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	Dual BIOS
16	I/O ITE8628
17	HWM
18	FAN CTRL-SIO
19	PCIEX16 SLOT
20	PCIEX4 SLOT
21	PCIEX1*2 SLOT / switch
22	M.2 x4
23	SATA EXPRESS
24	switch for M.2 / SATA EXPRESS & PCI
25	VCORE_ ISL95856(PWM)
26	VCORE_ ISL95856(Vcore)
27	VCORE_ ISL95856(VccGT)
28	VCCSA_VCCIO_VCCPLL
29	RT8237_DDR_BEAD
30	RT8237_PCH_BEAD
31	DISCRETE POWER
32	NTC3933 OVER VOLTAGE
33	ATX POWER , -PROCHOT
34	KB_MS_USB

SHEET TITLE

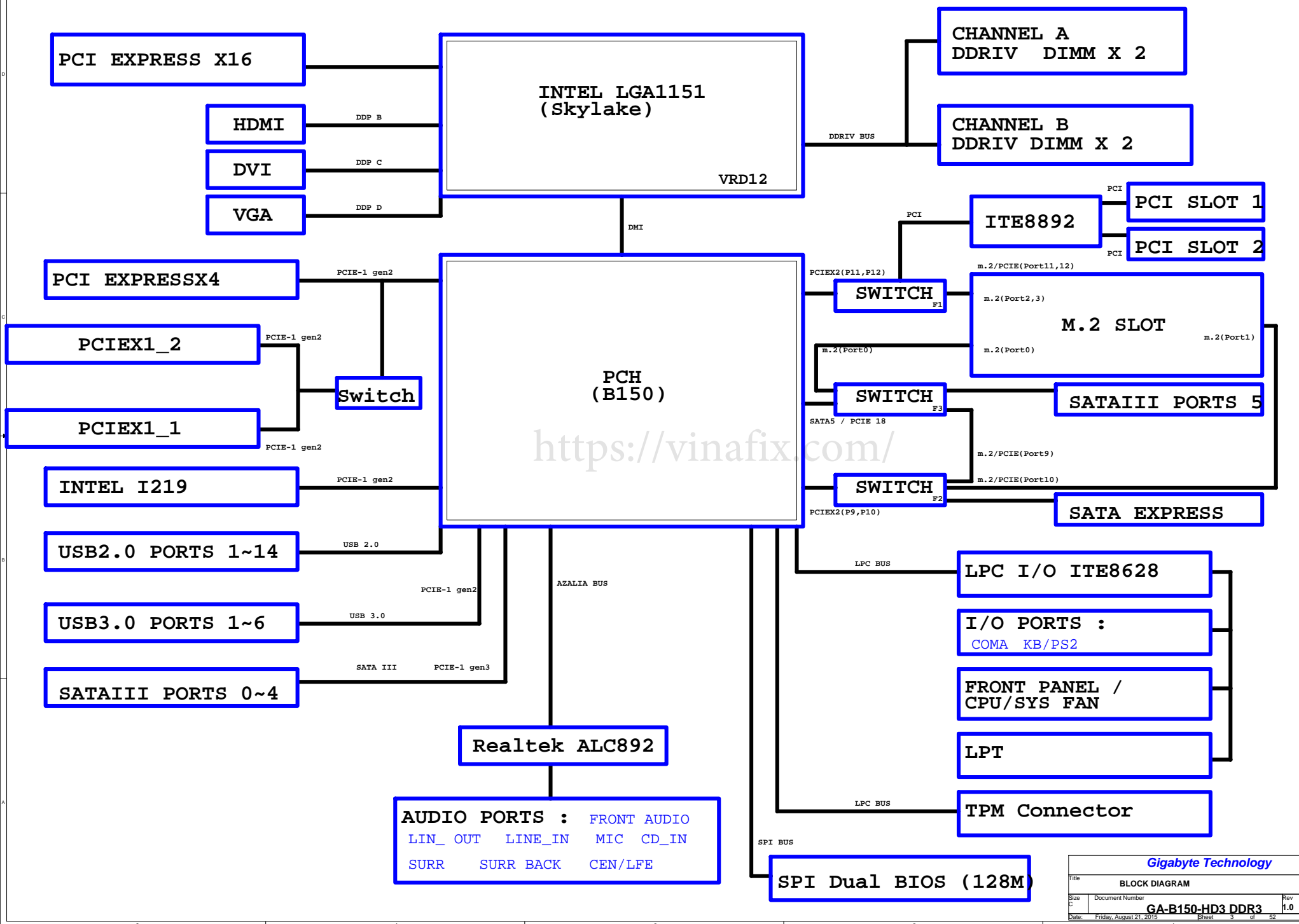
35	DVI
36	RTD2168 - DP to VGA - IC
37	RTD2168 - DP to VGA - Conn
38	HDMI
39	R_USB30
40	INTEL I219
41	USB30_LAN CONNECTOR-I219
42	Realtek ALC892
43	REAR AUDIO JACK
44	F_USB30
45	F_USB20
46	COM , LPT , TPM , THB
47	F_PANEL
48	IT8892E/JX
49	PCI SLOT 1&2
50	IT8892 POWER
51	EMI-ESD
52	TABLE LIST
53	
54	

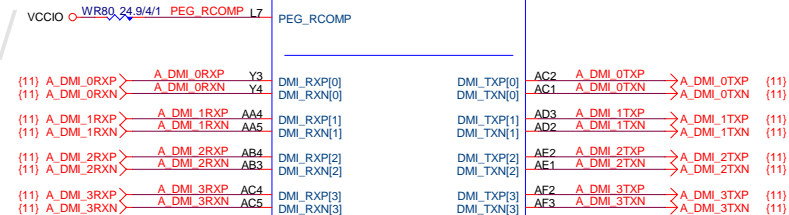
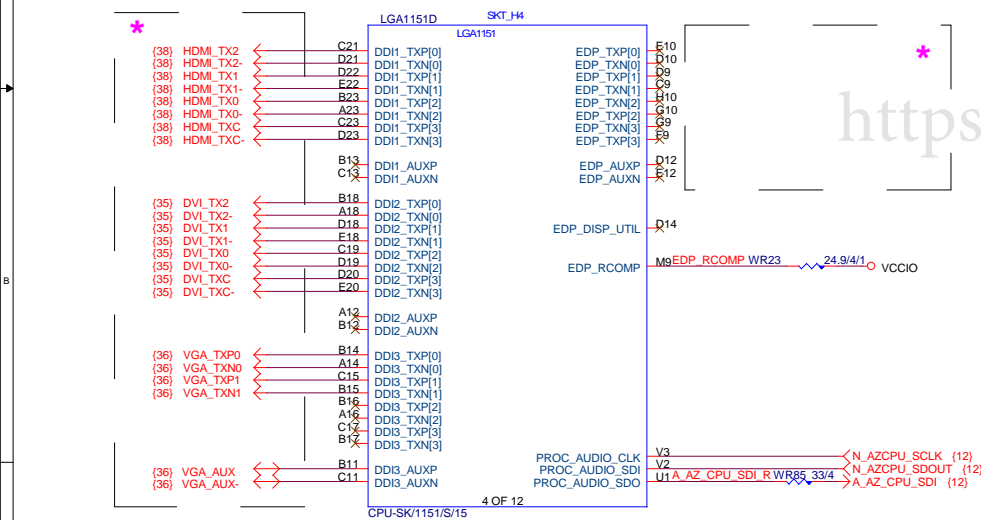
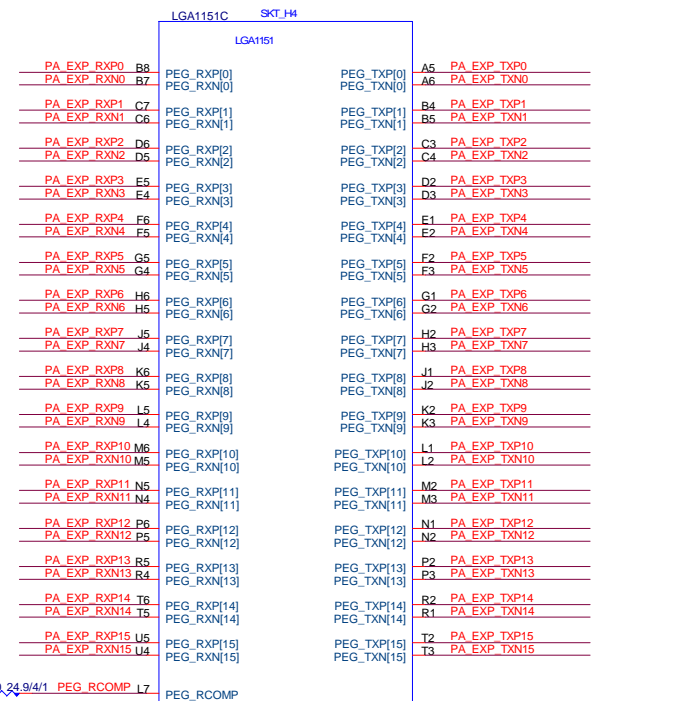
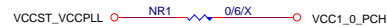
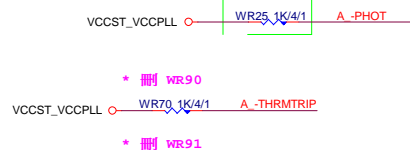
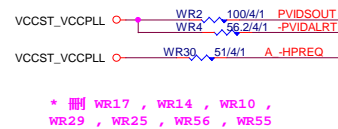


Component value change history

[illegible][illegible]

BLOCK DIAGRAM

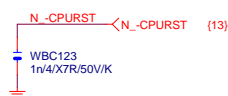




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```
G-15u : (CPU-SK/1151/S/15)
10SC1-F01151-11R / 10SC1-F01151-12R
G-FL : (CPU-SK/1151/S/GF)
10SC1-F01151-21R / 10SC1-F01151-22R
```

-CPURST



Bifurcation Config.	Signals Lanes		
	CFG[6]	CFG[5]	CFG[2]
1x16	1	1	1
1x16 Reversed	1	1	0
2x8	1	0	1
2x8 Reversed	1	0	0
1x8+2x4	0	0	1
1x8+2x4 Reversed	0	0	0

```
W=12 mil out of CPU
S=15 mil out of CPU
```

* 改DDR3 net

LGA1151A		SKT_H4	
LGA1151		LGA1151	
MDA0 AE38	DDR0_DQ[0]	DDR0_CK[0]	AW18 M_DCLKA0 <=> M_DCLKA0 (8)
MDA1 AE37	DDR0_DQ[1]	DDR0_CK[1]	AV18 M_DCLKA0 <=> M_DCLKA0 (8)
MDA2 AG38	DDR0_DQ[2]	DDR0_CK[1]	AW17 M_DCLKA1 <=> M_DCLKA1 (8)
MDA3 AG37	DDR0_DQ[3]	DDR0_CK[1]	AY17 M_DCLKA1 <=> M_DCLKA1 (8)
MDA4 AE38	DDR0_DQ[4]	DDR0_CK[2]	AW16 M_DCLKA2 <=> M_DCLKA2 (8)
MDA5 AE40	DDR0_DQ[5]	DDR0_CK[2]	AV16 M_DCLKA2 <=> M_DCLKA2 (8)
MDA6 AG38	DDR0_DQ[6]	DDR0_CK[3]	AT16 M_DCLKA3 <=> M_DCLKA3 (8)
MDA7 AG40	DDR0_DQ[7]	DDR0_CK[3]	AW16 M_DCLKA3 <=> M_DCLKA3 (8)
MDA8 AJ38	DDR0_DQ[8]		
MDA9 AJ37	DDR0_DQ[9]	DDR0_CKE[0]	AY24 CKEA0 <=> CKEA0 (8)
MDA10 AL38	DDR0_DQ[10]	DDR0_CKE[1]	AV24 CKEA1 <=> CKEA1 (8)
MDA11 AL37	DDR0_DQ[11]	DDR0_CKE[2]	AV24 CKEA2 <=> CKEA2 (8)
MDA12 AL40	DDR0_DQ[12]	DDR0_CKE[3]	AV25 CKEA3 <=> CKEA3 (8)
MDA13 AJ38	DDR0_DQ[13]		
MDA14 AL39	DDR0_DQ[14]	DDR0_CS[0]	AW12 M_CSA0 <=> M_CSA0 (8)
MDA15 AL40	DDR0_DQ[15]	DDR0_CS[1]	AV12 M_CSA1 <=> M_CSA1 (8)
MDA16 AX38	DDR0_DQ[16]	DDR0_CS[2]	AV10 M_CSA2 <=> M_CSA2 (8)
MDA17 AN40	DDR0_DQ[17]	DDR0_CS[3]	AV10 M_CSA3 <=> M_CSA3 (8)
MDA18 AR38	DDR0_DQ[18]		
MDA19 AR37	DDR0_DQ[19]	DDR0_ODT[0]	AW11 MODT_A0
MDA20 AN39	DDR0_DQ[20]	DDR0_ODT[1]	AU14 MODT_A1
MDA21 AN37	DDR0_DQ[21]	DDR0_ODT[2]	AU12 MODT_A2
MDA22 AR39	DDR0_DQ[22]	DDR0_ODT[3]	AY10 MODT_A3
MDA23 AR40	DDR0_DQ[23]		
MDA24 AW37	DDR0_DQ[24]	DDR0_BA[0]/DDR0_CAB[4]/DDR0_BA[0]	AY13 SBAA0 <=> SBAA0 (8)
MDA25 AU38	DDR0_DQ[25]	DDR0_BA[1]/DDR0_CAB[5]/DDR0_BA[1]	AV15 SBAA1 <=> SBAA1 (8)
MDA26 AV35	DDR0_DQ[26]	DDR0_BA[2]/DDR0_CAB[5]/DDR0_BG[0]	AW23 SBAA2 <=> SBAA2 (8)
MDA27 AW36	DDR0_DQ[27]		
MDA28 AU37	DDR0_DQ[28]	DDR0_RAS#/DDR0_CAB[3]/DDR0_MA[16]	AW13 M_SRASA <=> M_SRASA (8)
MDA29 AV37	DDR0_DQ[29]	DDR0_WE#/DDR0_CAB[2]/DDR0_MA[14]	AV14 M_SWEA <=> M_SWEA (8)
MDA30 AT36	DDR0_DQ[30]	DDR0_CAS#/DDR0_CAB[1]/DDR0_MA[15]	AY11 M_SCASA <=> M_SCASA (8)
MDA31 AU38	DDR0_DQ[31]		
MDA32 AY38	DDR0_DQ[32]	DDR0_MA[0]/DDR0_CAB[9]/DDR0_MA[0]	AW15 MAA0
MDA33 AW38	DDR0_DQ[33]	DDR0_MA[1]/DDR0_CAB[8]/DDR0_MA[1]	AU18 MAA1
MDA34 AV6	DDR0_DQ[34]	DDR0_MA[2]/DDR0_CAB[5]/DDR0_MA[2]	AU17 MAA2
MDA35 AU6	DDR0_DQ[35]	DDR0_MA[3]	AV19 MAA3
MDA36 AU8	DDR0_DQ[36]	DDR0_MA[4]	AT19 MAA4
MDA37 AV8	DDR0_DQ[37]	DDR0_MA[5]	AU20 MAA5
MDA38 AW8	DDR0_DQ[38]	DDR0_MA[6]	AU20 MAA6
MDA39 AV6	DDR0_DQ[39]	DDR0_MA[7]	AU21 MAA7
MDA40 AY4	DDR0_DQ[40]	DDR0_MA[8]	AV14 MAA8
MDA41 AV4	DDR0_DQ[41]	DDR0_MA[9]	AT22 MAA9
MDA42 AT4	DDR0_DQ[42]	DDR0_MA[10]	AU22 MAA10
MDA43 AT2	DDR0_DQ[43]	DDR0_MA[11]	AV22 MAA11
MDA44 AV3	DDR0_DQ[44]	DDR0_MA[12]	AV12 MAA12
MDA45 AW4	DDR0_DQ[45]	DDR0_MA[13]	AV12 MAA13
MDA46 AT4	DDR0_DQ[46]	DDR0_MA[14]	AV23 MAA14
MDA47 AT3	DDR0_DQ[47]	DDR0_MA[15]	AU24 MAA15
MDA48 AP2	DDR0_DQ[48]		
MDA49 AM4	DDR0_DQ[49]	DDR0_PAR	AY15
MDA50 AP3	DDR0_DQ[50]	DDR0_ALERT#	AT23
MDA51 AM3	DDR0_DQ[51]		
MDA52 AP4	DDR0_DQ[52]	DDR0_DQSN[0]	AF39 M_DQSA0
MDA53 AM2	DDR0_DQ[53]	DDR0_DQSN[1]	AK39 M_DQSA1
MDA54 AP1	DDR0_DQ[54]	DDR0_DQSN[2]	AP39 M_DQSA2
MDA55 AM1	DDR0_DQ[55]	DDR0_DQSN[3]	AW36 M_DQSA3
MDA56 AK3	DDR0_DQ[56]	DDR0_DQSN[4]	UJ3 M_DQSA4
MDA57 AH1	DDR0_DQ[57]	DDR0_DQSN[5]	AN3 M_DQSA5
MDA58 AK4	DDR0_DQ[58]	DDR0_DQSN[6]	AJ3 M_DQSA6
MDA59 AH2	DDR0_DQ[59]	DDR0_DQSN[7]	AF38 M_DQSA7
MDA60 AH4	DDR0_DQ[60]		
MDA61 AK2	DDR0_DQ[61]	DDR0_DQSP[0]	AF38 M_DQSA0
MDA62 AH3	DDR0_DQ[62]	DDR0_DQSP[1]	AK38 M_DQSA1
MDA63 AK1	DDR0_DQ[63]	DDR0_DQSP[2]	AP38 M_DQSA2
		DDR0_DQSP[3]	AV36 M_DQSA3
		DDR0_DQSP[4]	UJ2 M_DQSA4
		DDR0_DQSP[5]	AN2 M_DQSA5
		DDR0_DQSP[6]	AJ2 M_DQSA6
		DDR0_DQSP[7]	AF32
			AJ32

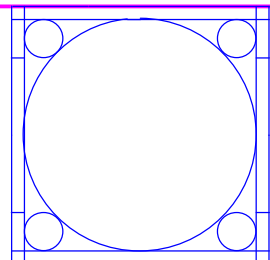
DDR CHANNEL
A

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LGA1151

ILM_BP_CR/115X/NORMAL NI[12KRC-0F0001-52R]

CPU-SK/1151/S/15



Need check the new CPU MB

LGA1151B		SKT_H4	
LGA1151		LGA1151	
MDB0 AD34	DDR1_DQ[0]/DDR0_DQ[16]	DDR1_CK[0]	AM20 M_DCLKB0 <=> M_DCLKB0 (9)
MDB1 AD35	DDR1_DQ[1]/DDR0_DQ[17]	DDR1_CK[1]	AM21 M_DCLKB0 <=> M_DCLKB0 (9)
MDB2 AG35	DDR1_DQ[2]/DDR0_DQ[18]	DDR1_CK[1]	AP22 M_DCLKB1 <=> M_DCLKB1 (9)
MDB3 AH35	DDR1_DQ[3]/DDR0_DQ[19]	DDR1_CK[1]	AP21 M_DCLKB1 <=> M_DCLKB1 (9)
MDB4 AE35	DDR1_DQ[4]/DDR0_DQ[20]	DDR1_CK[2]	AN20 M_DCLKB2 <=> M_DCLKB2 (9)
MDB5 AE34	DDR1_DQ[5]/DDR0_DQ[21]	DDR1_CK[2]	AN21 M_DCLKB2 <=> M_DCLKB2 (9)
MDB6 AG34	DDR1_DQ[6]/DDR0_DQ[22]	DDR1_CK[3]	AP19 M_DCLKB3 <=> M_DCLKB3 (9)
MDB7 AH34	DDR1_DQ[7]/DDR0_DQ[23]	DDR1_CK[3]	AP20 M_DCLKB3 <=> M_DCLKB3 (9)
MDB8 AK35	DDR1_DQ[8]/DDR0_DQ[24]		
MDB9 AL35	DDR1_DQ[9]/DDR0_DQ[25]	DDR1_CKE[0]	AY29 CKEB0 <=> CKEB0 (9)
MDB10 AL32	DDR1_DQ[10]/DDR0_DQ[26]	DDR1_CKE[1]	AV29 CKEB1 <=> CKEB1 (9)
MDB11 AL32	DDR1_DQ[11]/DDR0_DQ[27]	DDR1_CKE[2]	AV29 CKEB2 <=> CKEB2 (9)
MDB12 AK34	DDR1_DQ[12]/DDR0_DQ[28]	DDR1_CKE[3]	AV29 CKEB3 <=> CKEB3 (9)
MDB13 AL34	DDR1_DQ[13]/DDR0_DQ[29]		
MDB14 AK31	DDR1_DQ[14]/DDR0_DQ[30]	DDR1_CS[0]	AP17 M_CSB0 <=> M_CSB0 (9)
MDB15 AL31	DDR1_DQ[15]/DDR0_DQ[31]	DDR1_CS[1]	AN15 M_CSB1 <=> M_CSB1 (9)
MDB16 AP35	DDR1_DQ[16]/DDR0_DQ[32]	DDR1_CS[2]	AN15 M_CSB2 <=> M_CSB2 (9)
MDB17 AN35	DDR1_DQ[17]/DDR0_DQ[33]	DDR1_CS[3]	AM15 M_CSB3 <=> M_CSB3 (9)
MDB18 AN32	DDR1_DQ[18]/DDR0_DQ[34]		
MDB19 AP32	DDR1_DQ[19]/DDR0_DQ[35]	DDR1_ODT[0]	AM16 MODT_B0
MDB20 AN34	DDR1_DQ[20]/DDR0_DQ[36]	DDR1_ODT[1]	AL16 MODT_B1
MDB21 AP34	DDR1_DQ[21]/DDR0_DQ[37]	DDR1_ODT[2]	AP15 MODT_B2
MDB22 AN31	DDR1_DQ[22]/DDR0_DQ[38]	DDR1_ODT[3]	AL15 MODT_B3
MDB23 AP31	DDR1_DQ[23]/DDR0_DQ[39]		
MDB24 AL29	DDR1_DQ[24]/DDR0_DQ[40]	DDR1_RAS#/DDR1_CAB[3]/DDR1_MA[16]	AN18 M_SRASB <=> M_SRASB (9)
MDB25 AM29	DDR1_DQ[25]/DDR0_DQ[41]	DDR1_WE#/DDR1_CAB[2]/DDR1_MA[14]	AL17 M_SWEB <=> M_SWEB (9)
MDB26 AP29	DDR1_DQ[26]/DDR0_DQ[42]	DDR1_CAS#/DDR1_CAB[1]/DDR1_MA[15]	AP16 M_SCASB <=> M_SCASB (9)
MDB27 AR29	DDR1_DQ[27]/DDR0_DQ[43]		
MDB28 AM28	DDR1_DQ[28]/DDR0_DQ[44]	DDR1_BA[0]/DDR1_CAB[4]/DDR1_BA[0]	AL18 SBAB0 <=> SBAB0 (9)
MDB29 AL28	DDR1_DQ[29]/DDR0_DQ[45]	DDR1_BA[1]/DDR1_CAB[5]/DDR1_BA[1]	AM18 SBAB1 <=> SBAB1 (9)
MDB30 AR28	DDR1_DQ[30]/DDR0_DQ[46]	DDR1_BA[2]/DDR1_CAB[5]/DDR1_BG[0]	AW28 SBAB2 <=> SBAB2 (9)
MDB31 AR28	DDR1_DQ[31]/DDR0_DQ[47]		
MDB32 AR12	DDR1_DQ[32]/DDR0_DQ[48]		
MDB33 AP12	DDR1_DQ[33]/DDR0_DQ[49]	DDR1_MA[0]/DDR1_CAB[9]/DDR1_MA[0]	AL19 MAA0
MDB34 AM13	DDR1_DQ[34]/DDR0_DQ[50]	DDR1_MA[1]/DDR1_CAB[8]/DDR1_MA[1]	AL22 MAA1
MDB35 AL13	DDR1_DQ[35]/DDR0_DQ[51]	DDR1_MA[2]/DDR1_CAB[5]/DDR1_MA[2]	AM22 MAA2
MDB36 AR13	DDR1_DQ[36]/DDR0_DQ[52]	DDR1_MA[3]	AM23 MAA3
MDB37 AP13	DDR1_DQ[37]/DDR0_DQ[53]	DDR1_MA[4]	AP23 MAA4
MDB38 AM12	DDR1_DQ[38]/DDR0_DQ[54]	DDR1_MA[5]	AP23 MAA5
MDB39 AL12	DDR1_DQ[39]/DDR0_DQ[55]	DDR1_MA[6]	AW26 MAA6
MDB40 AP10	DDR1_DQ[40]/DDR0_DQ[56]	DDR1_MA[7]	AY26 MAA7
MDB41 AR10	DDR1_DQ[41]/DDR0_DQ[57]	DDR1_MA[8]	AW27 MAA8
MDB42 AR7	DDR1_DQ[42]/DDR0_DQ[58]	DDR1_MA[9]	AL18 MAA9
MDB43 AF7	DDR1_DQ[43]/DDR0_DQ[59]	DDR1_MA[10]	AU27 MAA10
MDB44 AR9	DDR1_DQ[44]/DDR0_DQ[60]	DDR1_MA[11]	AV27 MAA11
MDB45 AP9	DDR1_DQ[45]/DDR0_DQ[61]	DDR1_MA[12]	AL17 MAA12
MDB46 AR6	DDR1_DQ[46]/DDR0_DQ[62]	DDR1_MA[13]	AV25 MAA13
MDB47 AP6	DDR1_DQ[47]/DDR0_DQ[63]	DDR1_MA[14]	AY28 MAA14
MDB48 AM10	DDR1_DQ[48]	DDR1_MA[15]	AU28 MAA15
MDB49 AL10	DDR1_DQ[49]		
MDB50 AM7	DDR1_DQ[50]	DDR1_PAR	AL20
MDB51 AL7	DDR1_DQ[51]	DDR1_ALERT#	AY25
MDB52 AM8	DDR1_DQ[52]		
MDB53 AL9	DDR1_DQ[53]	DDR1_DQSN[0]	AF34 M_DQSB0
MDB54 AM6	DDR1_DQ[54]	DDR1_DQSN[1]	AK33 M_DQSB1
MDB55 AL6	DDR1_DQ[55]	DDR1_DQSN[2]	AN33 M_DQSB2
MDB56 AJ6	DDR1_DQ[56]	DDR1_DQSN[3]	AN29 M_DQSB3
MDB57 AJ7	DDR1_DQ[57]	DDR1_DQSN[4]	AN13 M_DQSB4
MDB58 AF6	DDR1_DQ[58]	DDR1_DQSN[5]	ARA M_DQSB5
MDB59 AF7	DDR1_DQ[59]	DDR1_DQSN[6]	AM5 M_DQSB6
MDB60 AH7	DDR1_DQ[60]	DDR1_DQSN[7]	AG6 M_DQSB7
MDB61 AH6	DDR1_DQ[61]		
MDB62 AF7	DDR1_DQ[62]	DDR1_DQSP[0]	AF35 M_DQSB0
MDB63 AF6	DDR1_DQ[63]	DDR1_DQSP[1]	AL33 M_DQSB1
		DDR1_DQSP[2]	AP33 M_DQSB2
		DDR1_DQSP[3]	AN28 M_DQSB3
		DDR1_DQSP[4]	AN12 M_DQSB4
		DDR1_DQSP[5]	AP8 M_DQSB5
		DDR1_DQSP[6]	AL8 M_DQSB6
		DDR1_DQSP[7]	AG7 M_DQSB7
		DDR1_DQSP[8]	AN25
		DDR1_DQSN[8]	AN26

DDR CHANNEL
B

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CPU-SK/1151/S/15

- (8) MODT_A[0..3] <=> MODT_A10..31
- (9) MODT_B[0..3] <=> MODT_B10..31
- (8) MDA[0..63] <=> MDA10..631
- (9) MDB[0..63] <=> MDB10..631
- (8) M_DQSA[0..7] <=> M_DQSA10..71
- (8) M_-DQSA[0..7] <=> M_-DQSA10..71
- (8) MAA[0..15] <=> MAA10..151
- (9) MAB[0..15] <=> MAB10..151
- (9) M_DQSB[0..7] <=> M_DQSB10..71
- (9) M_-DQSB[0..7] <=> M_-DQSB10..71

Gigabyte Technology

Title

CPU LGA1151-B

Size

Custom

Document Number

GA-B150-HD3 DDR3

Date

Friday, August 21, 2015

Sheet

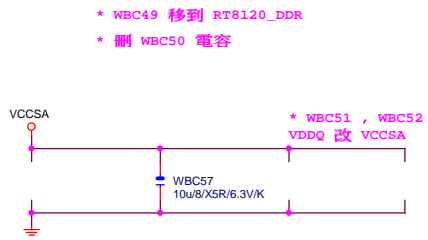
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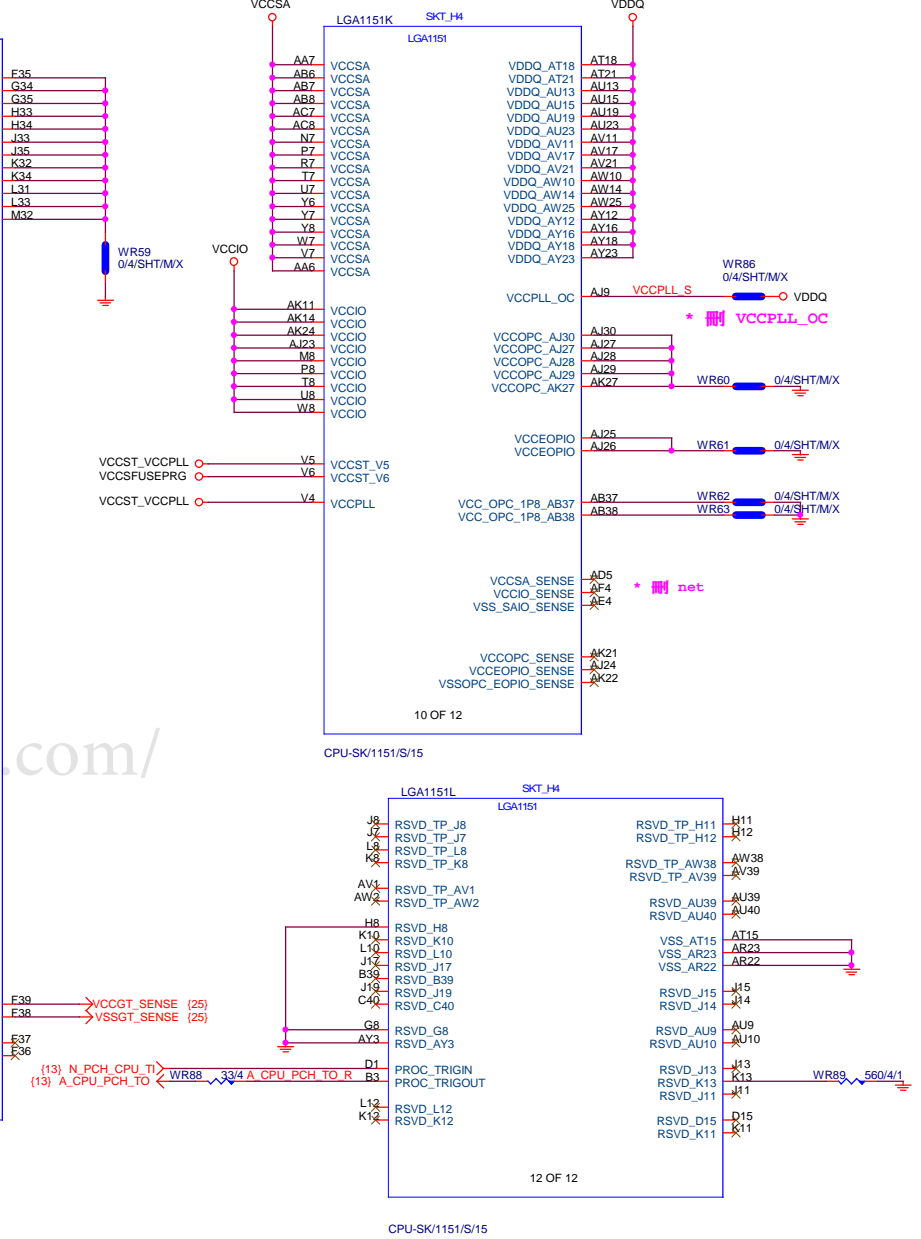
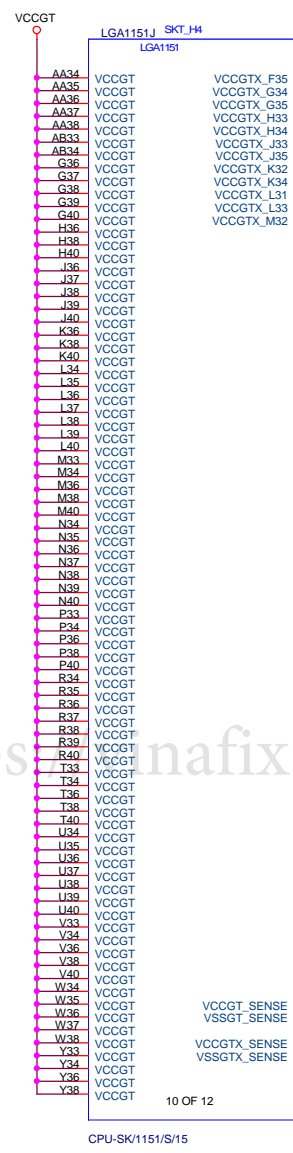
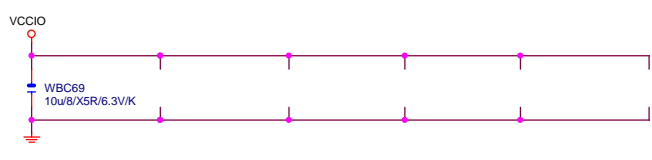
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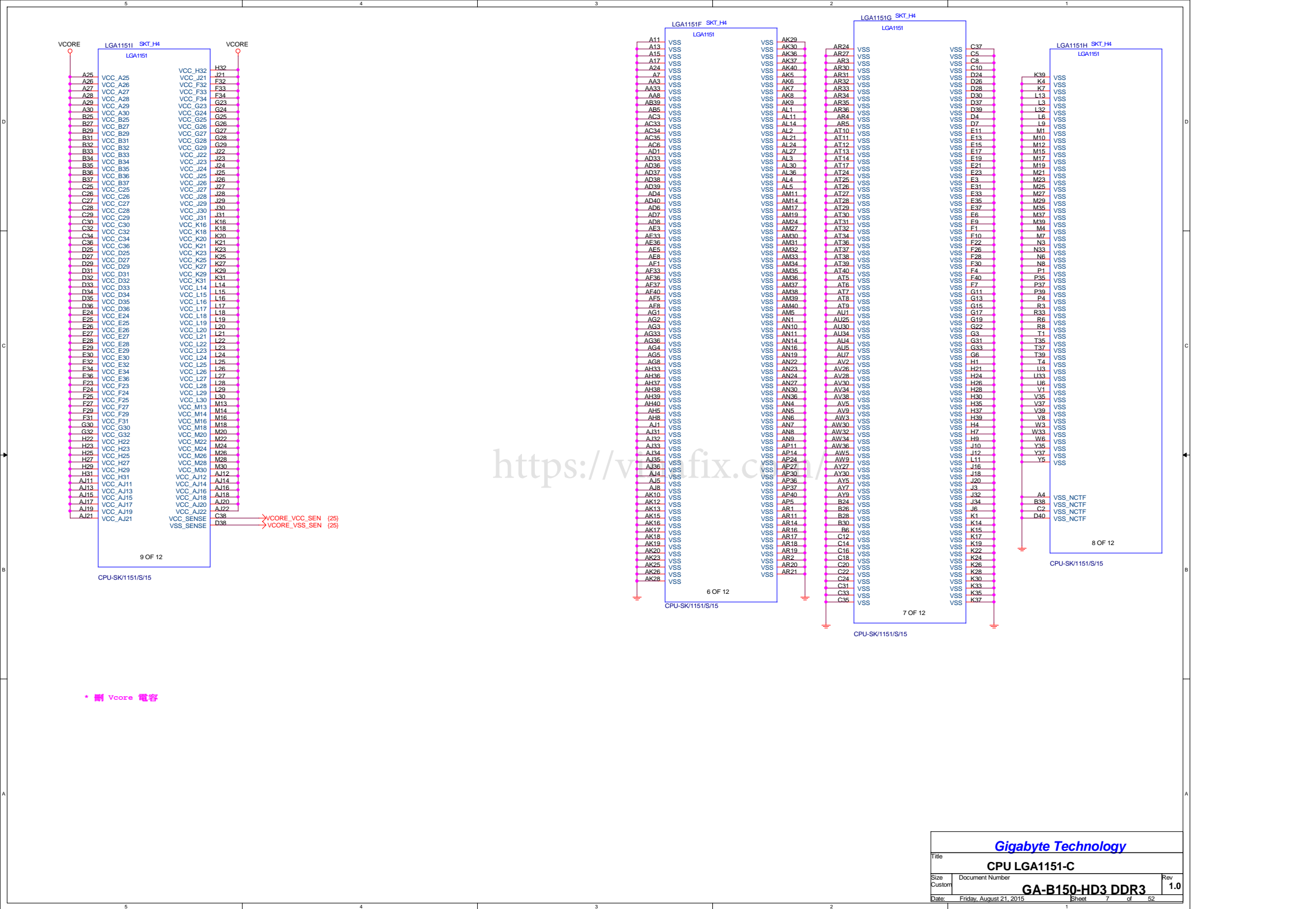
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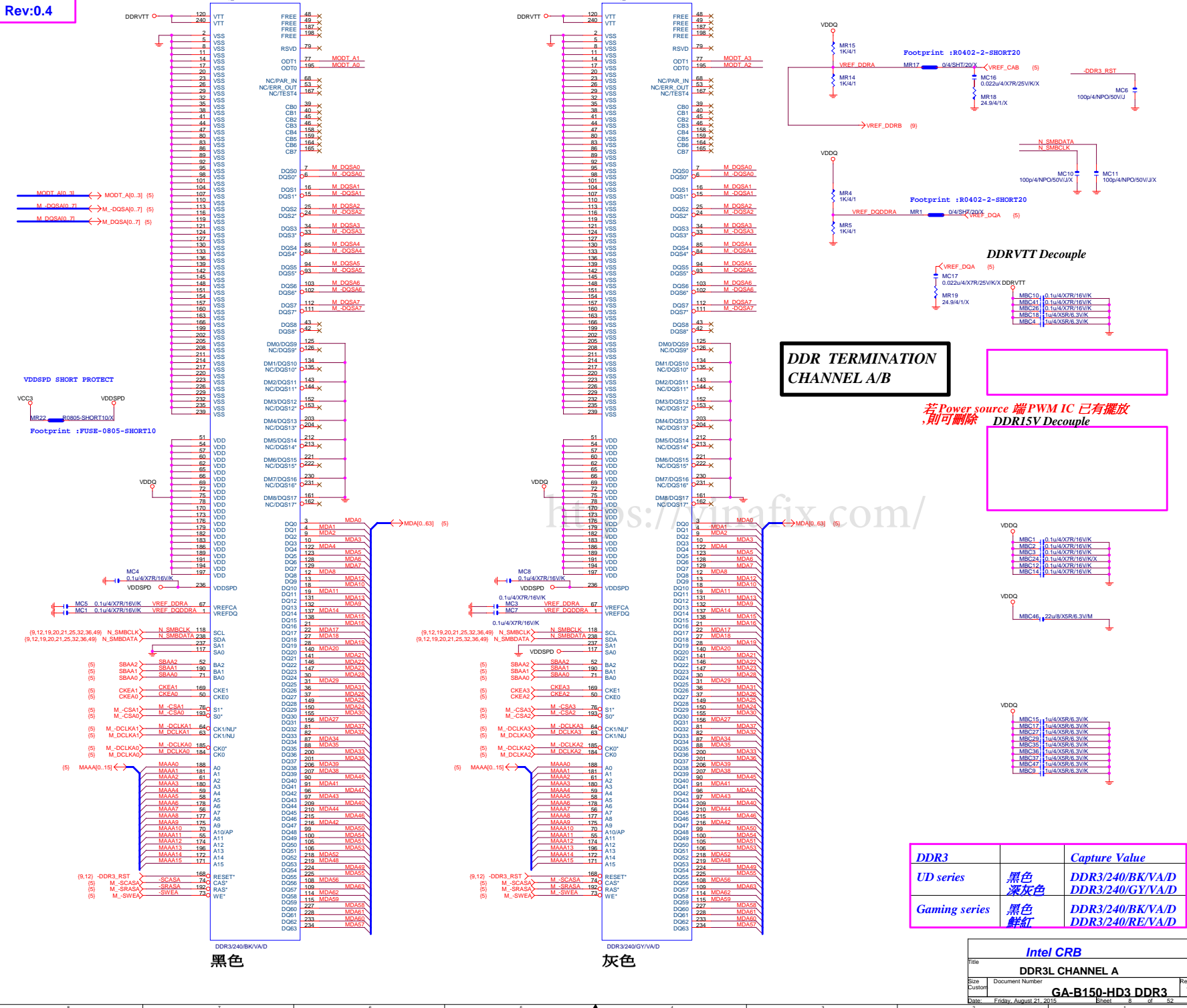
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* 刪 WBC124 , WBC125 , WBC126 , WBC127 電容



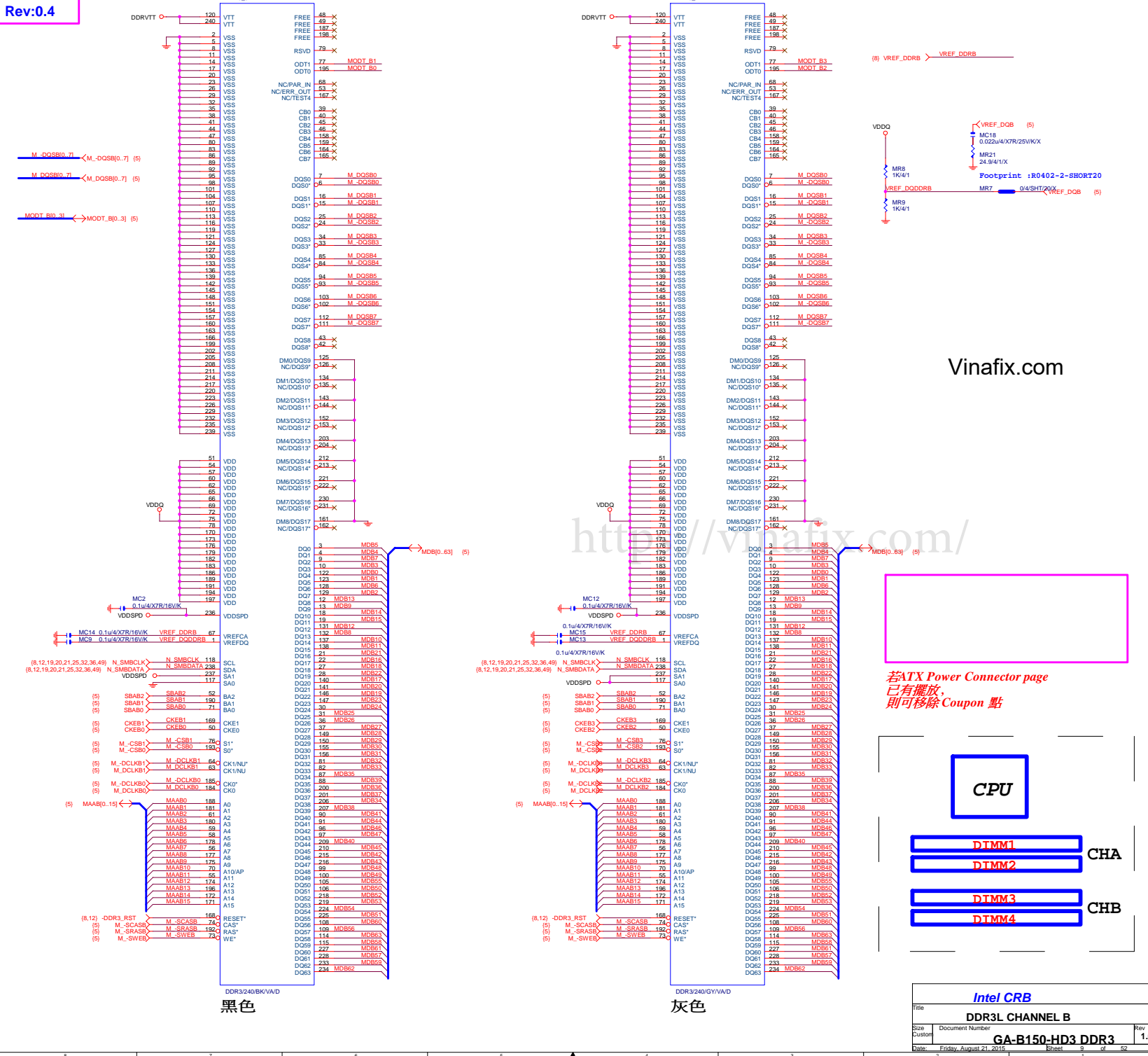




DDR3		Capture Value
UD series	黑色 深灰色	DDR3/240/BK/VA/D DDR3/240/GY/VA/D
Gaming series	黑色 鮮紅	DDR3/240/BK/VA/D DDR3/240/RE/VA/D

Intel CRB			
Title			
DDR3L CHANNEL A			
Size	Document Number	Rev	
Custom	GA-B150-HD3 DDR3		
Date:	Friday, August 21, 2015	Sheet	6 of 52

Rev:0.4



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若ATX Power Connector page
已有擺放，
則可移除Coupon 點

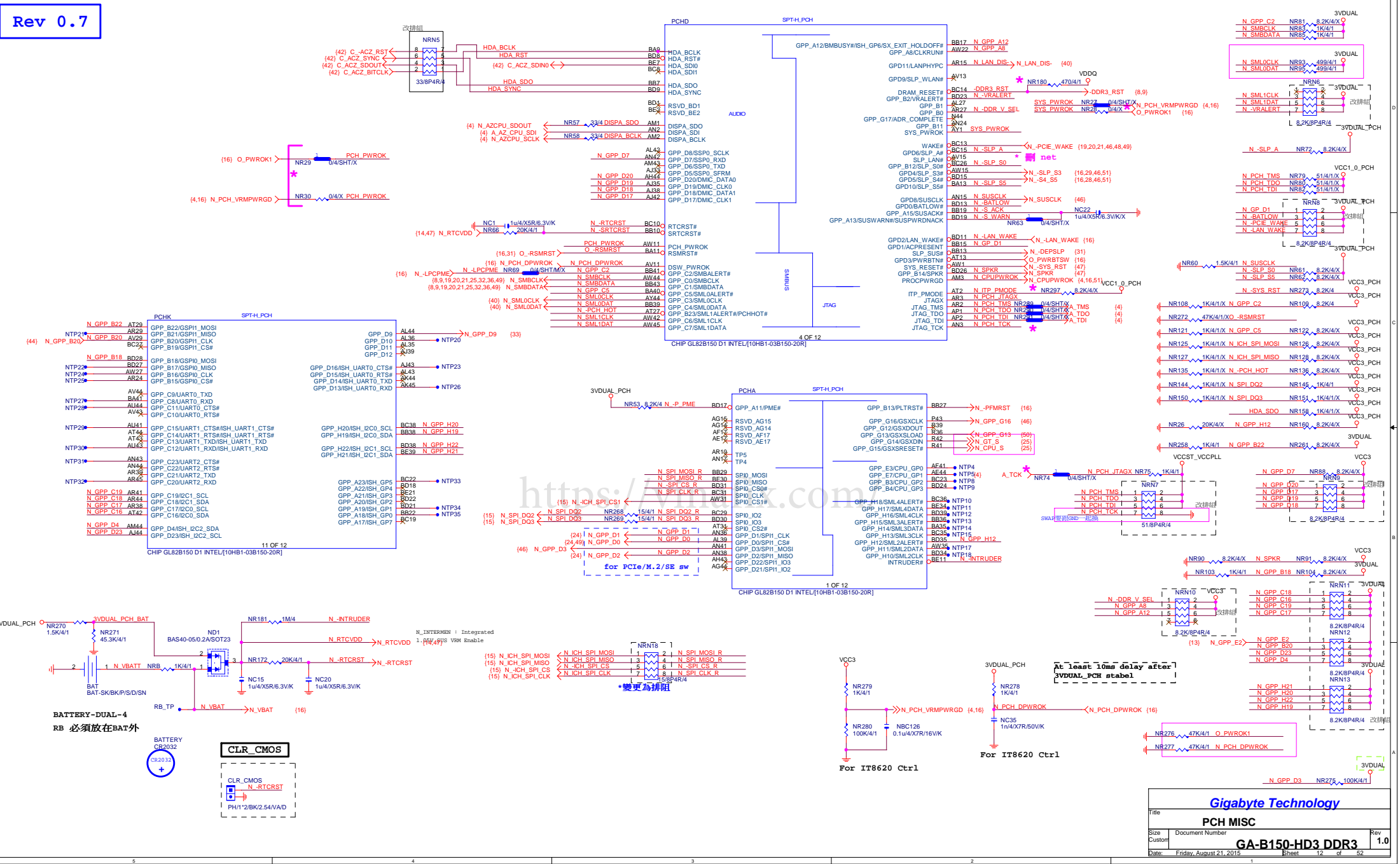
CPU

CHA

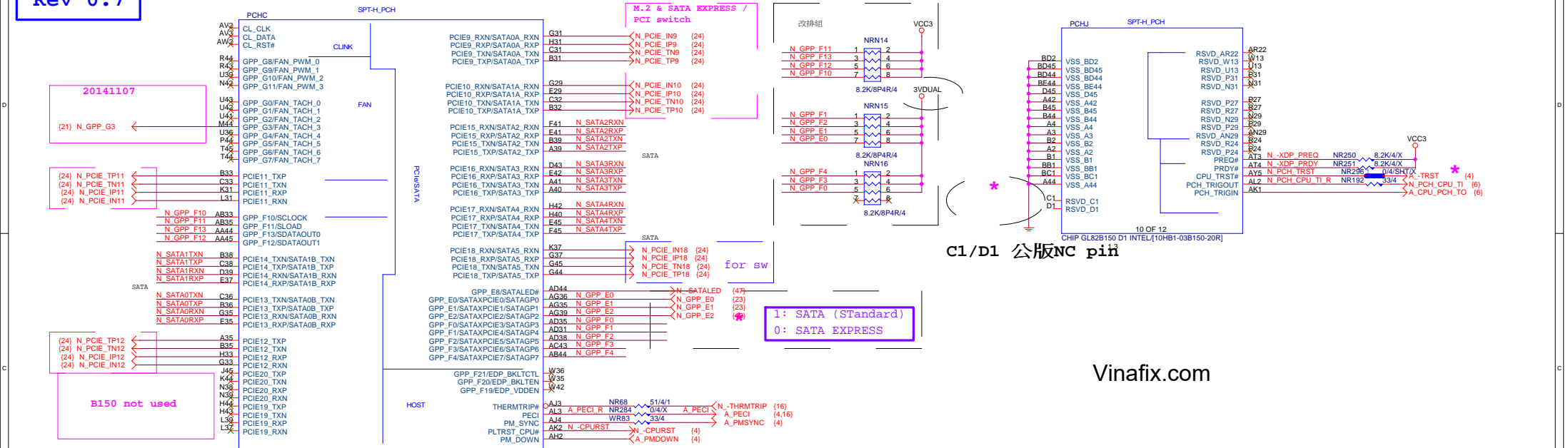
CHB

Intel CRB

Title			
DDR3L CHANNEL B			
Size Custom	Document Number	Rev 1.	
GA-B150-HD3 DDR3			
Date: Friday, August 21, 2015	Sheet	9	of 52

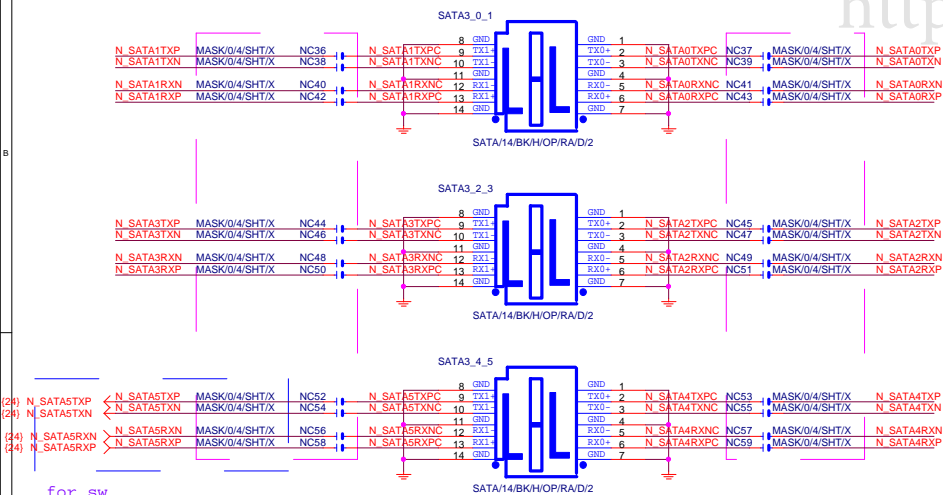


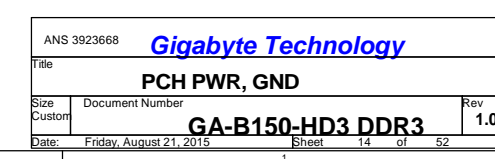
Rev 0.7



C1/D1 公版NC pin

Vinafix.com

<https://vinafix.com/>

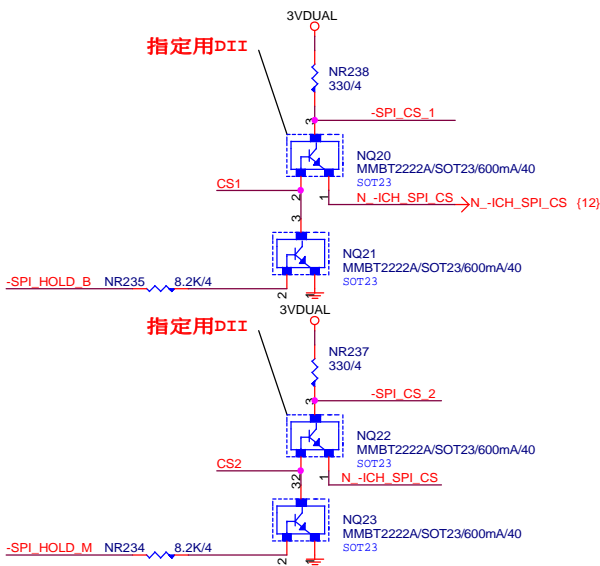


Rev 0.1

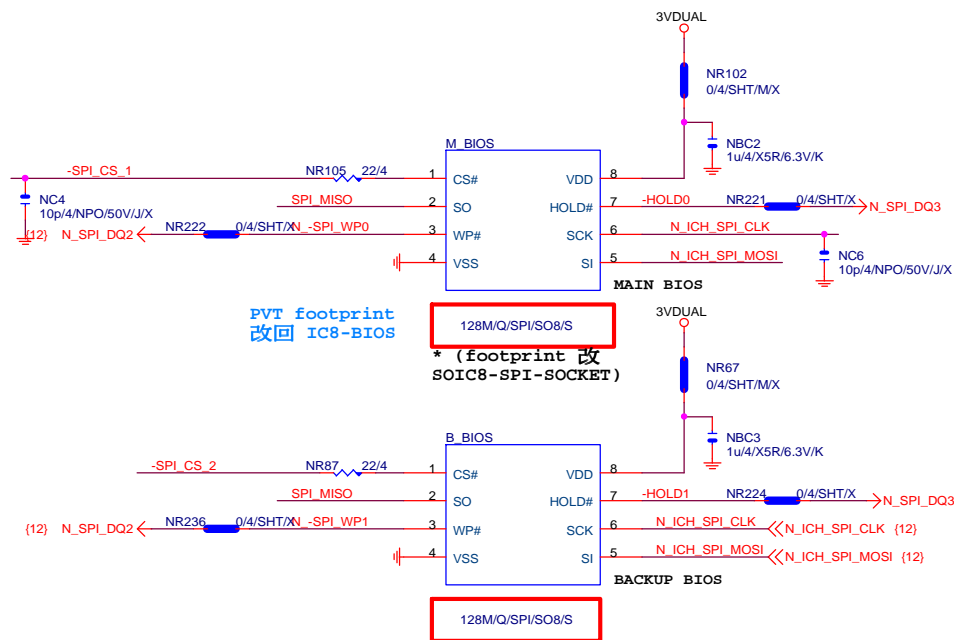
DUAL BIOS

MOSI For DMI RX Termination Voltage

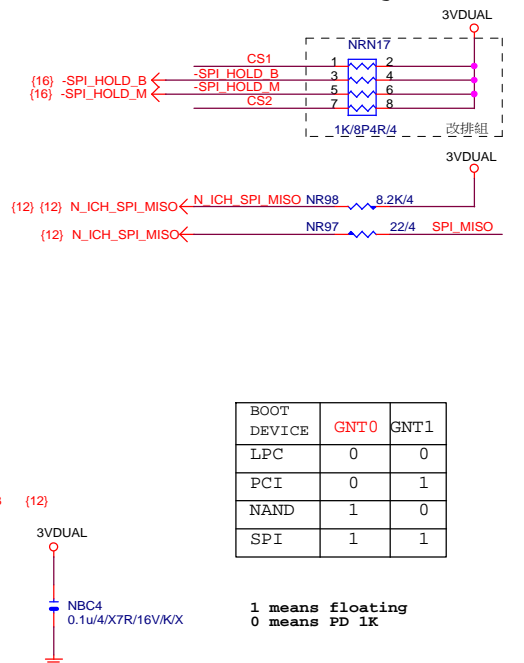
指定用DII



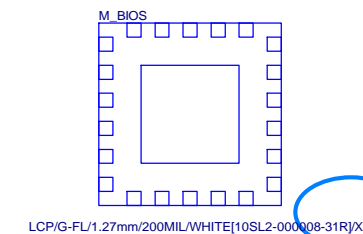
指定用DII



* (footprint 改 IC8-BIOS)

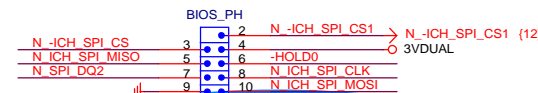


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K
<https://vinafix.com/>


* 試産先上, PVT 移除

BIOS_PH

★Update
2015-01.29

Footprint the same, confirmed by Graceing.

Use COM port pin header part.

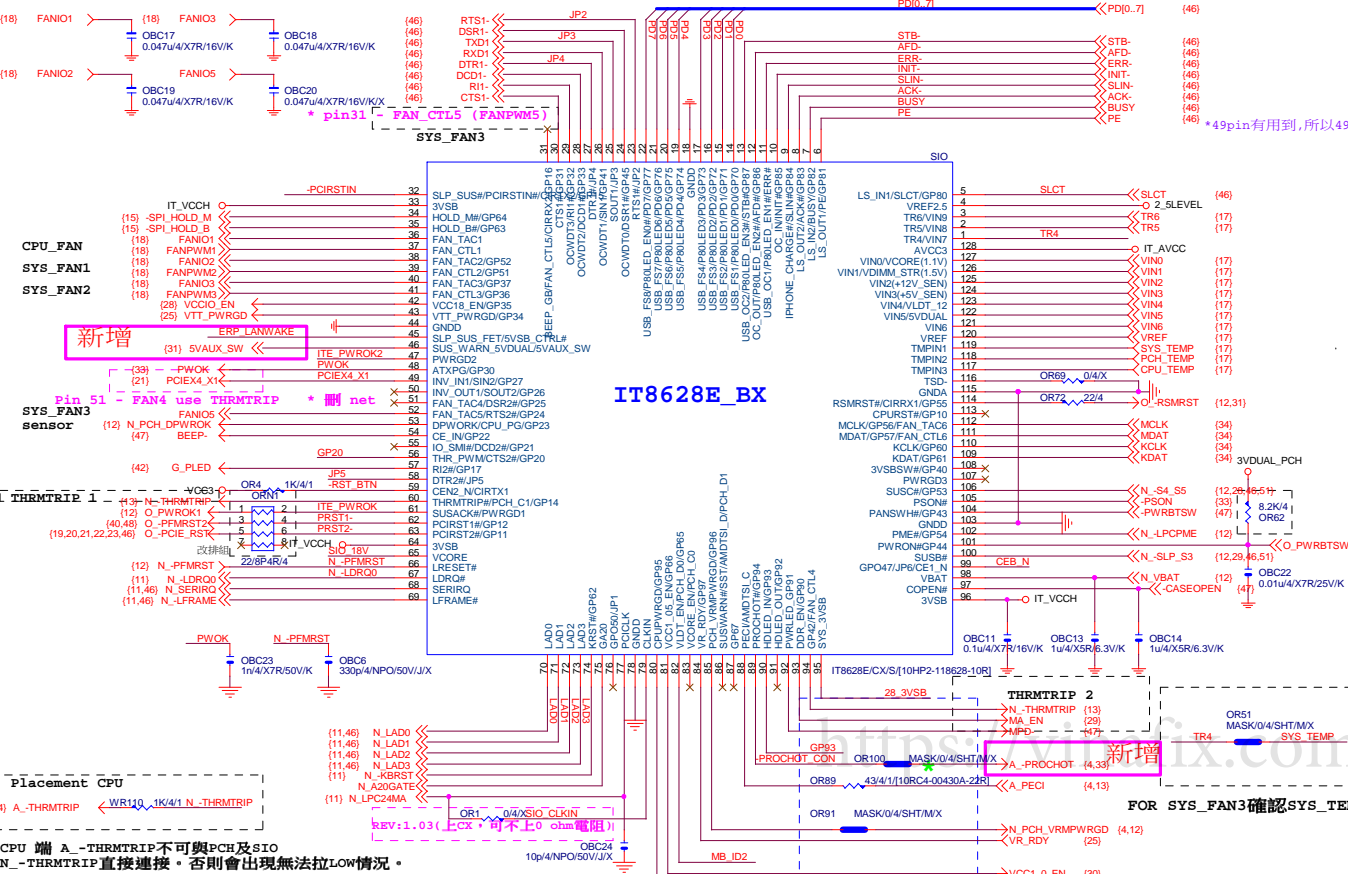
* 試産先上, PVT mask

PVT mask footprint
:BIOS2X5-RH-1-MASK

Gigabyte Technology

Title			BIOS
Size	Document Number	Rev	1.0
Custom	GA-B150-HD3 DDR3		
Date:	Friday, August 21, 2015	Sheet	15 of 52

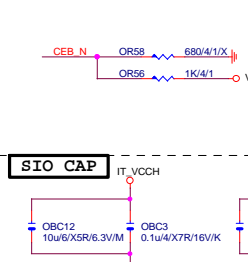
SIO IT8628BX REV:1.08



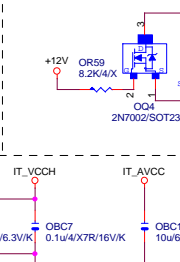
FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL5 FAN_TAC5
OPT_FAN or SYS_FAN4	N/A
THRMTrip1	YES PIN60
THRMTrip2	YES PIN94

IT8628BX GPIO問題匯整	
PIN 50	GP26-第一次接上POWER時 會拉 Lo
PIN 90/91	DEFAULT為HDLed FUNCTION, GP93 BYPASS TO GP92 高溫時 GP92 會被拉 Lo (ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 Lo
PIN 111/112	MOUSE 跟FAN6 FUNCTION 擇一使用,不然會互相干擾
PIN 22	PIN23, 需高於3V, 若低於 該部分COM PORT及LPT裝置 蜂鳴器會異常動作。

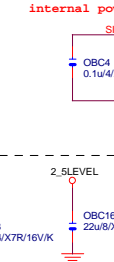
DUAL BIOS OPT STRAP



Power leakage



SIO_18V



SIO CAP



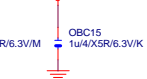
IT_VCC



IT_AVCC

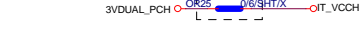


3VDUAL_PCH

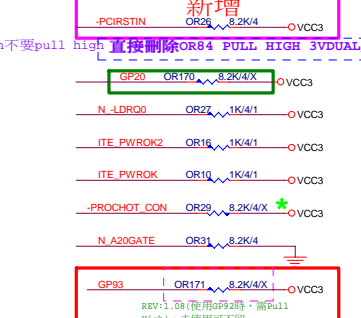


CLOSE SIO PIN4 2_5LEVEL

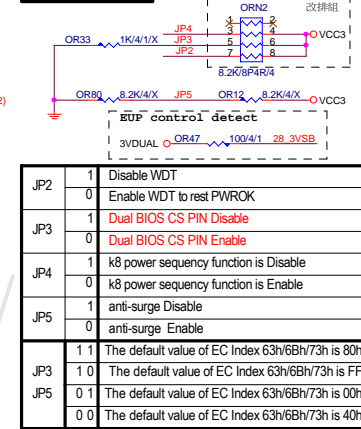
PWR SHT



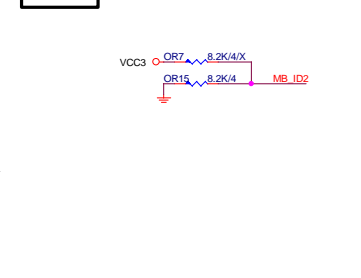
SIO PU



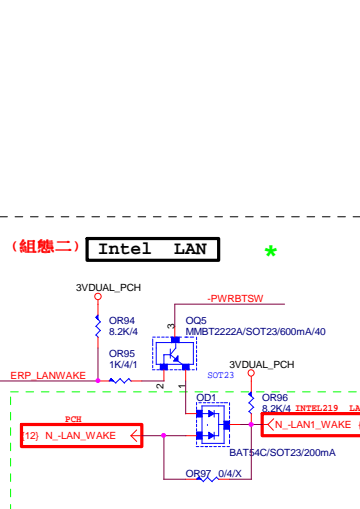
SIO STRAP



MB ID



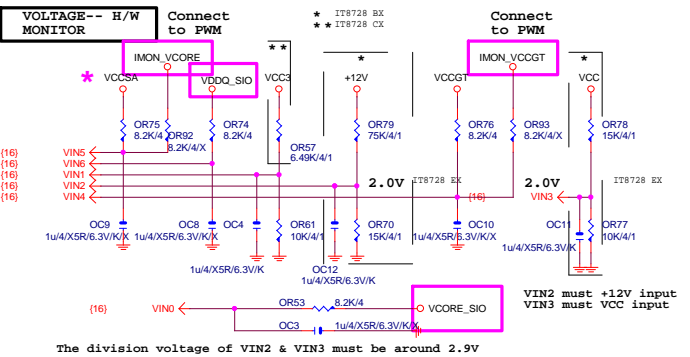
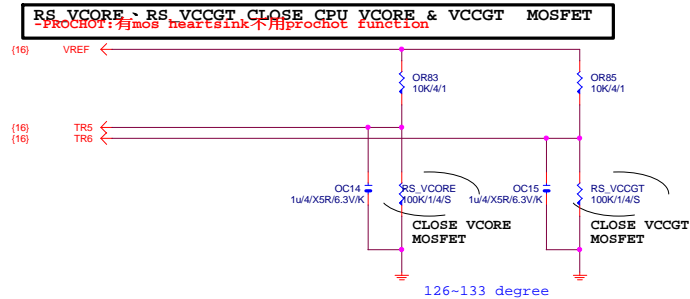
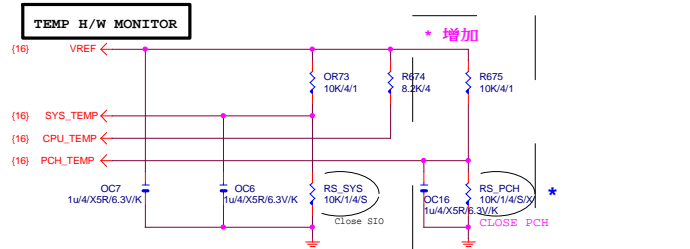
ERP WAKE on LAN (依LAN組態選擇)



ERP Wake on LAN		
Single LAN	Realtek	組態一
	Atheros	組態二
Dual LAN	Intel 219	組態二
	Atheros+Atheros	組態一
No Support ERP	Intel 219+Atheros	組態一
	Intel 219+Intel 210	組態三
BOM不上		N/A

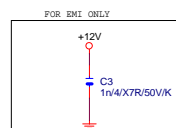
Gigabyte Technology		
ITE 8628 LPC IO		
Size Custom	Document Number	Rev 1.0
GA-B150-HD3 DDR3		
Date: Friday, August 21, 2015	Sheet 16	of 52

REV:1.08



<https://vinafix.com/>

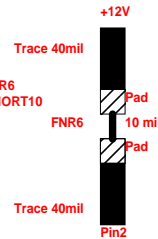
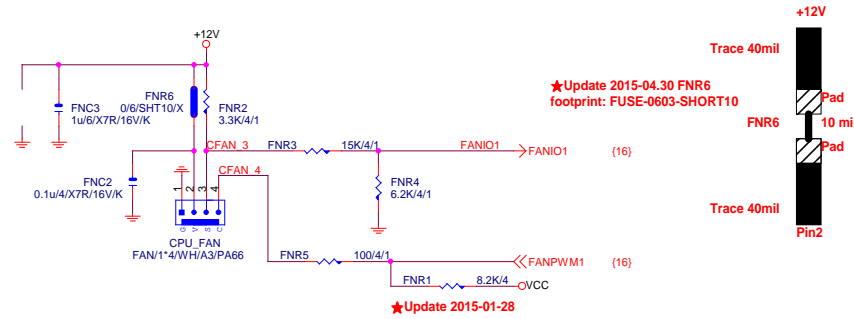
Vinafix.com



Gigabyte Technology			
Title		HWM,KB/MS, FAN CTRL	
Size	Document Number	GA-B150-HD3 DDR3	Rev
Custom			1.0
Date: Friday, August 21, 2015		Sheet 17 of 52	

CPU SMART FAN

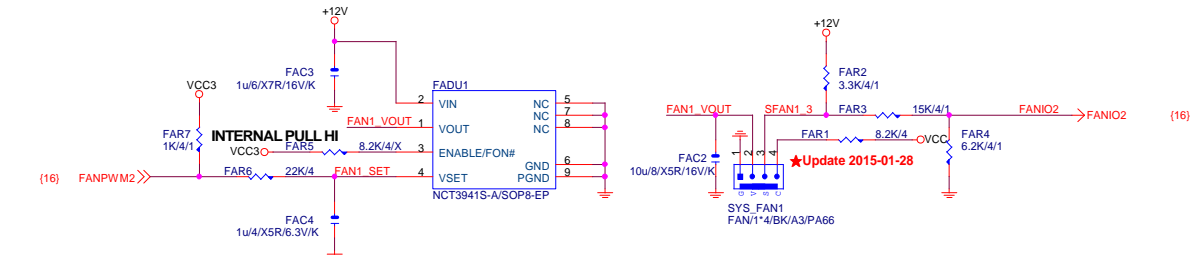
★Update 2015-04.02 FNEC1 only for Z170/H170 series, B150 or H110 don't keep footprint.



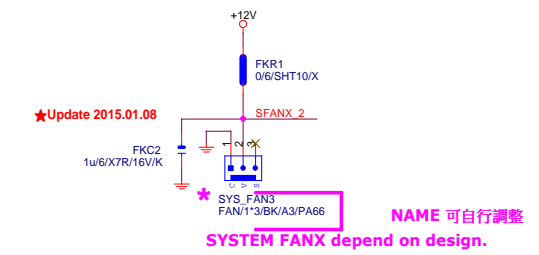
SYSTEM FAN1

Linear SYS_FAN

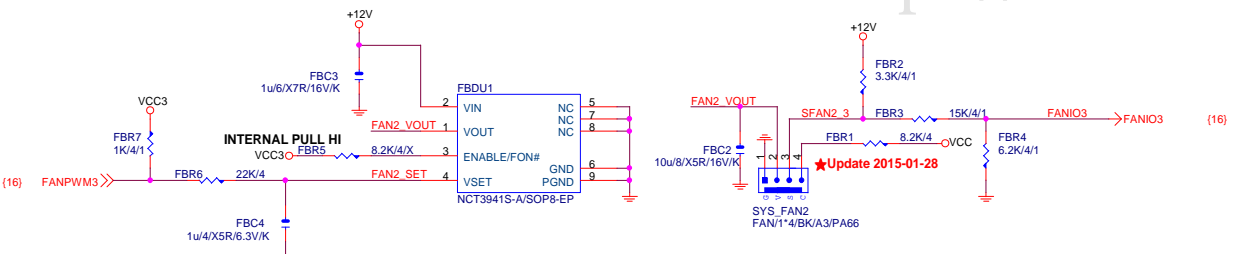
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)



SYSTEM FANX



SYSTEM FAN2



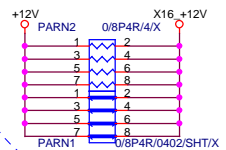
<https://vinafix.com/>

GIGABYTE

Title			HWM,KB/MS, FAN CTRL
Size	Custom	Document Number	GA-B150-HD3 DDR3
Date:	Friday, August 21, 2015	Sheet	18 of 52

Rev
1.0

Rev 0.1

* +12 protect
short-wire test

(8,9,12,20,21,25,32,36,49) N_SMBCLK
(8,9,12,20,21,25,32,36,49) N_SMBDATA
(12,20,21,46,48,49) N_-PCIE_WAKE

PA_EXP_RXP0..15] >> PA_EXP_RXP[0..15] (4)
PA_EXP_RXN0..15] >> PA_EXP_RXN[0..15] (4)
PA_EXP_TXP0..15] >> PA_EXP_TXP[0..15] (4)
PA_EXP_TXN0..15] >> PA_EXP_TXN[0..15] (4)

PA_EXP_TXP0	PAC5	0.22u4/X5R/6.3V/K	PA_EXP_TXP0 C
PA_EXP_TXN0	PAC4	0.22u4/X5R/6.3V/K	PA_EXP_TXN0 C
PA_EXP_TXP1	PAC6	0.22u4/X5R/6.3V/K	PA_EXP_TXP1 C
PA_EXP_TXN1	PAC7	0.22u4/X5R/6.3V/K	PA_EXP_TXN1 C
PA_EXP_TXP2	PAC8	0.22u4/X5R/6.3V/K	PA_EXP_TXP2 C
PA_EXP_TXN2	PAC9	0.22u4/X5R/6.3V/K	PA_EXP_TXN2 C
PA_EXP_TXP3	PAC10	0.22u4/X5R/6.3V/K	PA_EXP_TXP3 C
PA_EXP_TXN3	PAC11	0.22u4/X5R/6.3V/K	PA_EXP_TXN3 C
PA_EXP_TXP4	PAC12	0.22u4/X5R/6.3V/K	PA_EXP_TXP4 C
PA_EXP_TXN4	PAC13	0.22u4/X5R/6.3V/K	PA_EXP_TXN4 C
PA_EXP_TXP5	PAC14	0.22u4/X5R/6.3V/K	PA_EXP_TXP5 C
PA_EXP_TXN5	PAC15	0.22u4/X5R/6.3V/K	PA_EXP_TXN5 C
PA_EXP_TXP6	PAC16	0.22u4/X5R/6.3V/K	PA_EXP_TXP6 C
PA_EXP_TXN6	PAC17	0.22u4/X5R/6.3V/K	PA_EXP_TXN6 C
PA_EXP_TXP7	PAC18	0.22u4/X5R/6.3V/K	PA_EXP_TXP7 C
PA_EXP_TXN7	PAC19	0.22u4/X5R/6.3V/K	PA_EXP_TXN7 C
PA_EXP_TXP8	PAC20	0.22u4/X5R/6.3V/K	PA_EXP_TXP8 C
PA_EXP_TXN8	PAC21	0.22u4/X5R/6.3V/K	PA_EXP_TXN8 C
PA_EXP_TXP9	PAC22	0.22u4/X5R/6.3V/K	PA_EXP_TXP9 C
PA_EXP_TXN9	PAC23	0.22u4/X5R/6.3V/K	PA_EXP_TXN9 C
PA_EXP_TXP10	PAC24	0.22u4/X5R/6.3V/K	PA_EXP_TXP10 C
PA_EXP_TXN10	PAC25	0.22u4/X5R/6.3V/K	PA_EXP_TXN10 C
PA_EXP_TXP11	PAC26	0.22u4/X5R/6.3V/K	PA_EXP_TXP11 C
PA_EXP_TXN11	PAC27	0.22u4/X5R/6.3V/K	PA_EXP_TXN11 C
PA_EXP_TXP12	PAC28	0.22u4/X5R/6.3V/K	PA_EXP_TXP12 C
PA_EXP_TXN12	PAC29	0.22u4/X5R/6.3V/K	PA_EXP_TXN12 C
PA_EXP_TXP13	PAC30	0.22u4/X5R/6.3V/K	PA_EXP_TXP13 C
PA_EXP_TXN13	PAC31	0.22u4/X5R/6.3V/K	PA_EXP_TXN13 C
PA_EXP_TXP14	PAC32	0.22u4/X5R/6.3V/K	PA_EXP_TXP14 C
PA_EXP_TXN14	PAC33	0.22u4/X5R/6.3V/K	PA_EXP_TXN14 C
PA_EXP_TXP15	PAC34	0.22u4/X5R/6.3V/K	PA_EXP_TXP15 C
PA_EXP_TXN15	PAC35	0.22u4/X5R/6.3V/K	PA_EXP_TXN15 C

PCIE16:16/5/5/5/16

PCI-E REV:1.1--> 2.5GHZ

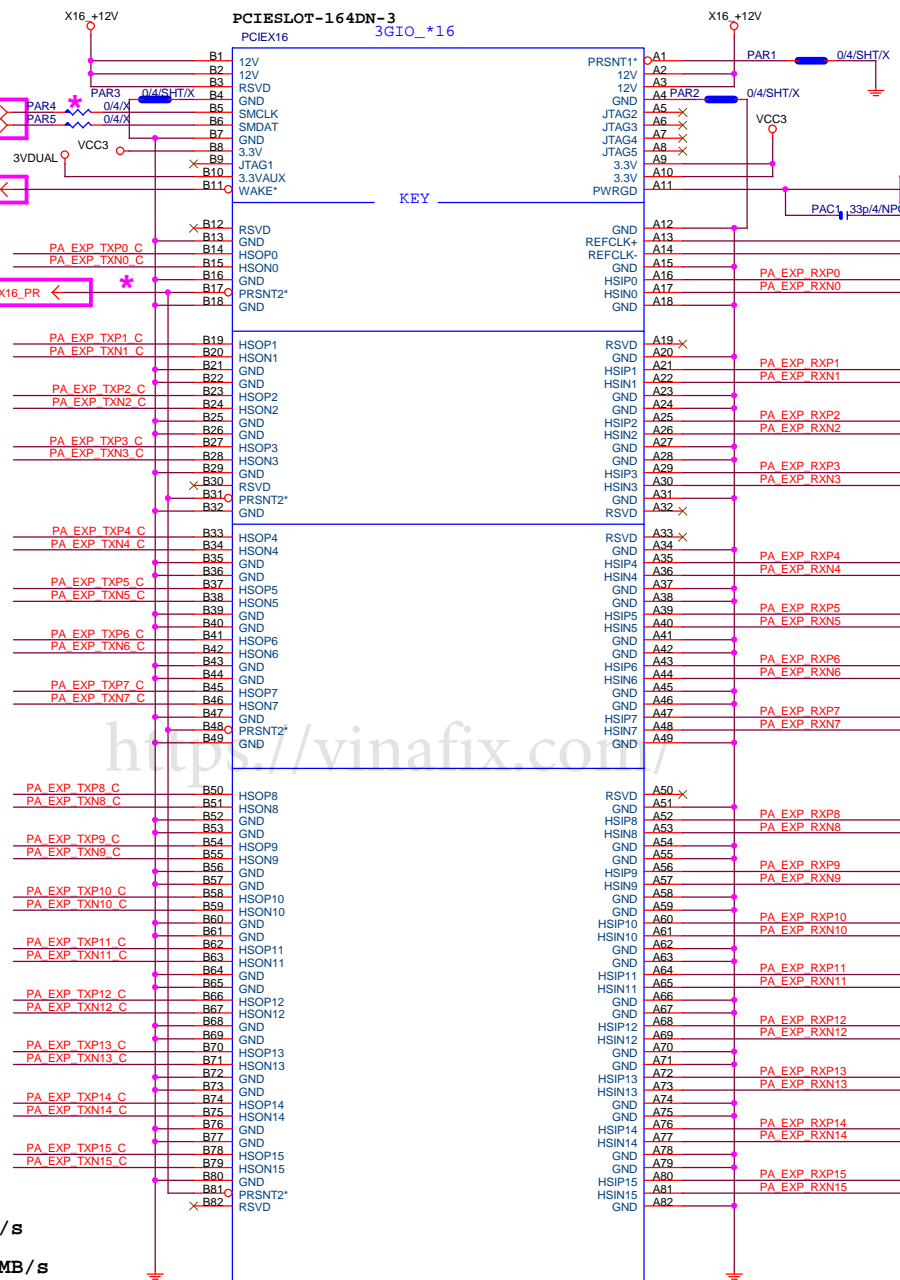
PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

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

PCE-E X16(單向) BANDWITH=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--> 5GHZ



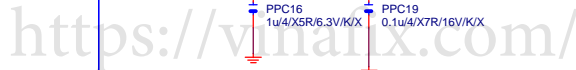
PCI-E/16X-164P/GY/LONG DOUBLE/HK*2

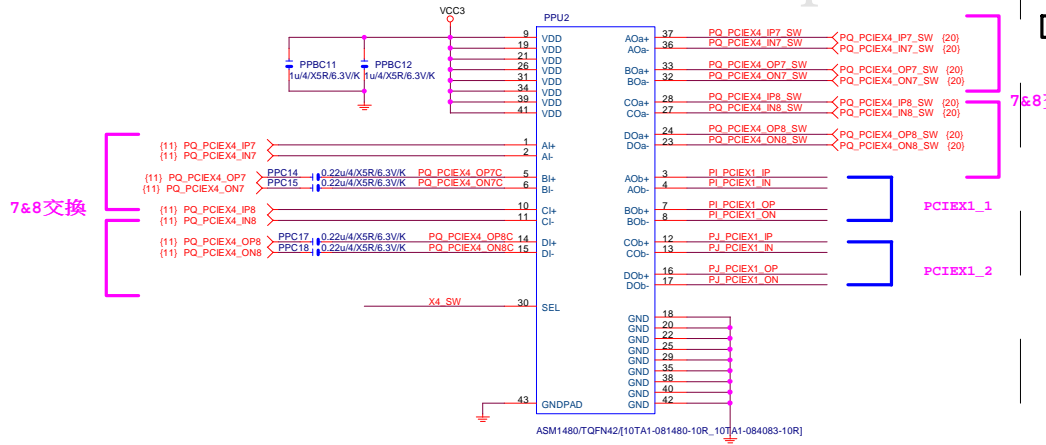
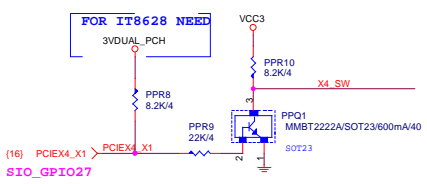
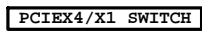
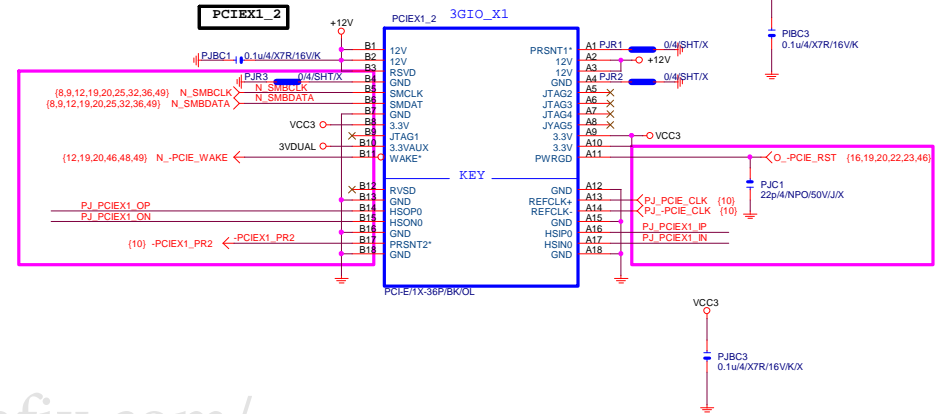
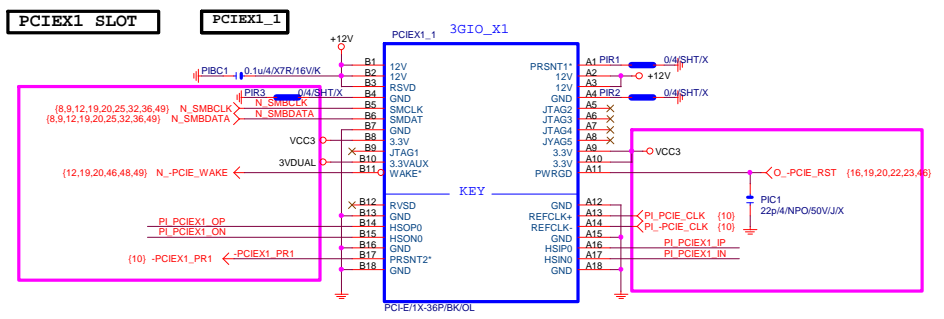
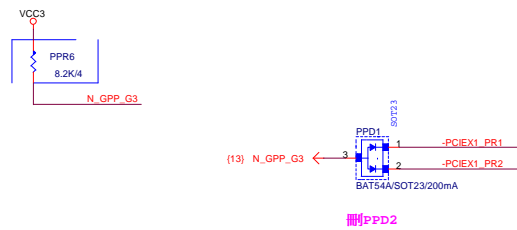
* footprint : PCIESLOT-164P

Gigabyte Technology

Title			PCI EXPRESS * 16	
Size			Document Number	Rev
Custom			GA-B150-HD3 DDR3	1.0
Date:			Friday, August 21, 2015	Sheet 19 of 52

PCIE*4





	N_GPP_G3 (PCH_GPP_G3)	PCIEX4_X1 (SIO_GPIO27)
PCIEX4 -> X4 M2_WIFI -> N/A PCIEX1 --> N/A (Default)	H	H
PCIEX4 -> X1 M2_WIFI -> X1 PCIEX1 --> X1	L	L

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

<h1 style="text-align: center;">Gigabyte Technology</h1>			
<h2 style="text-align: center;">PCIe X1 1,2</h2>			
Size Custom	Document Number		Rev
	<h1>GA-B150-HD3 DDR3</h1>		1.0
Date:	Friday, August 21, 2015	Sheet 21	of 52

Rev 0.7

M.2 Lane4 from PCH port18

M.2 Lane3 from PCH port17

M.2 Lane2 from PCH port16

M.2 Lane2 from PCH port15 or
port 24

支援SATA and M.2 function

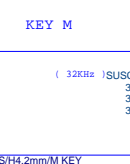
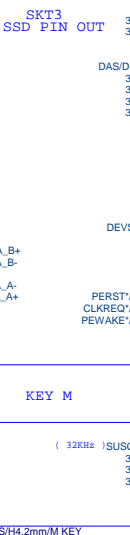
需與M2_-CLKREQ對應

SATA : GND.
PCIE : NC

M2插卡時為Low

<https://vinafix.com/>

M2F_32G



VCC3



VCC3



VCC3



80F



CR[12KS2-110202-01R]

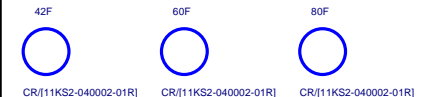
DIP螺絲

DIP螺柱



CR[12KSF-F10303-01R]

SMD螺柱



CR[11KS2-040002-01R] CR[11KS2-040002-01R] CR[11KS2-040002-01R]

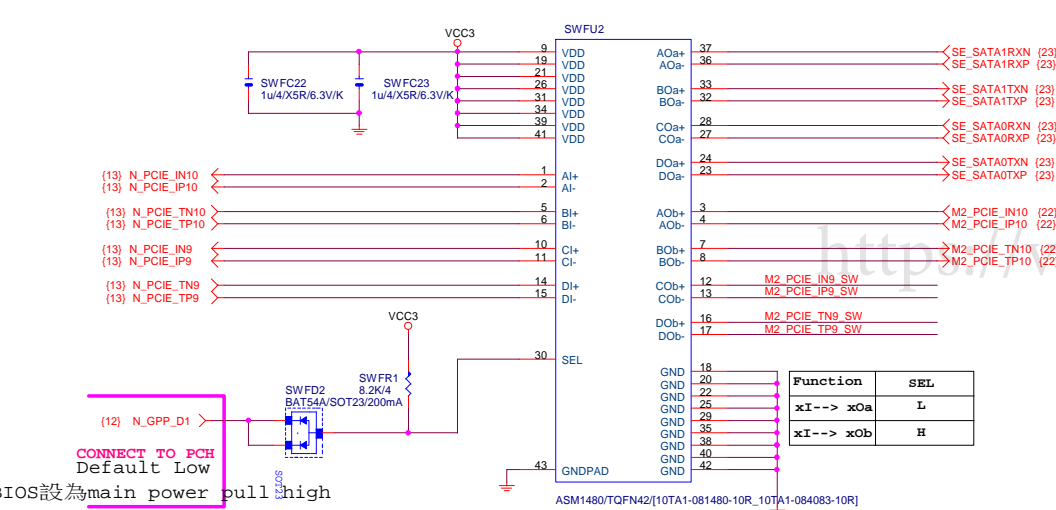
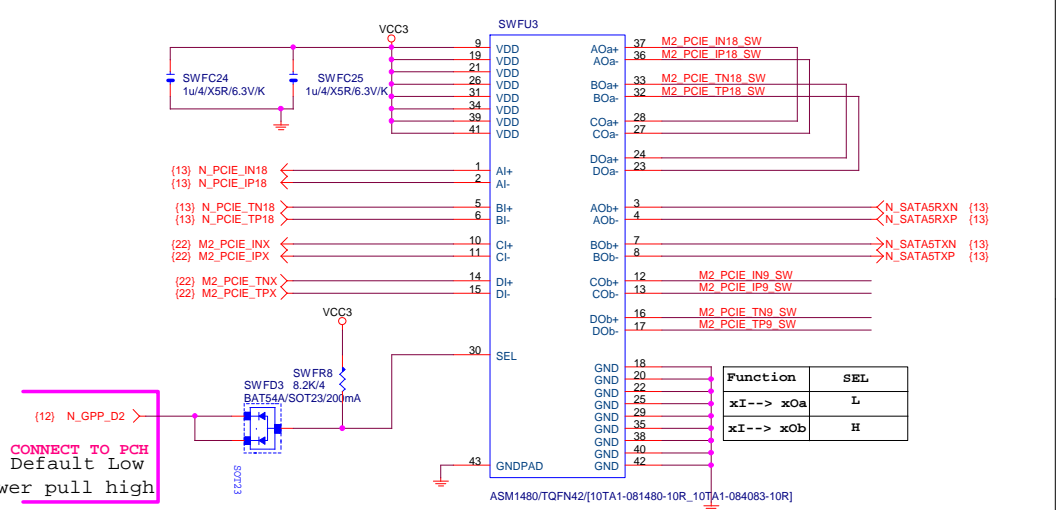
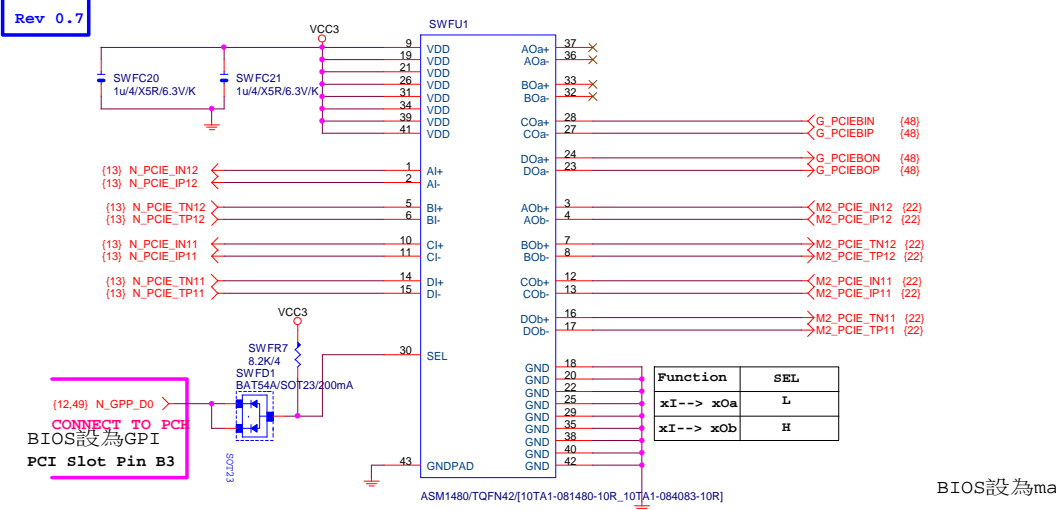
GIGABYTE Technology

M.2 X4

GA-B150-HD3 DDR3

Rev 1.0

Date: Friday, August 21, 2015 Sheet 22 of 52



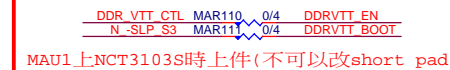
當偵測到此組態

	PCI S.E. M.2 (SATA)	PCI S.E. PORT S5	PCI M.2 (PCIEX2) PORT S5	M.2 (PCIEX4) PORT S5
N_GPP_D0	L	L	L	H
N_GPP_G20	L	H	L	L
N_GPP_G21	L	H	H	H
N_GPP_E0	L	L	H	H

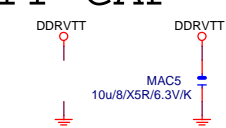
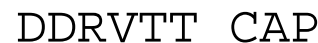
設定為此組態

	PCI S.E. M.2 (SATA)	PCI S.E. PORT S5	PCI M.2 (PCIEX2) PORT S5	M.2 (PCIEX4) PORT S5
N_GPP_D1	L	S5_L	H	H
N_GPP_D2	L	H	H	H

DDR3



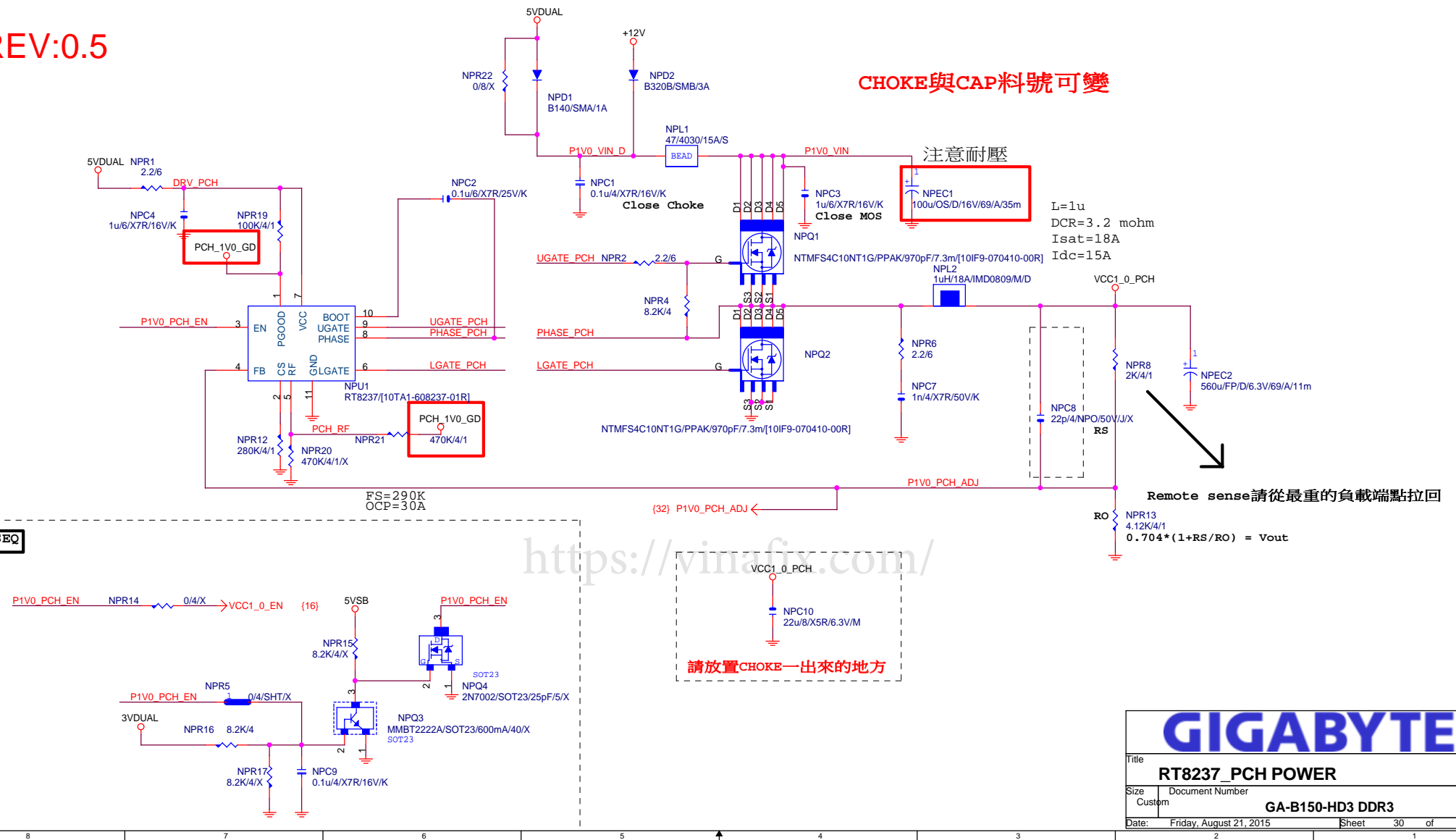
DDR CAP 560u*2PCS

**GIGABYTE™**

Title			
RT8237_DDR3 POWER			
Size	Document Number	Rev	
Custom	GA_B150-HD3 DDR3	1.0	
Date:	Friday, August 21, 2015	Sheet	29 of 52

REV:0.5

CHOKE與CAP料號可變



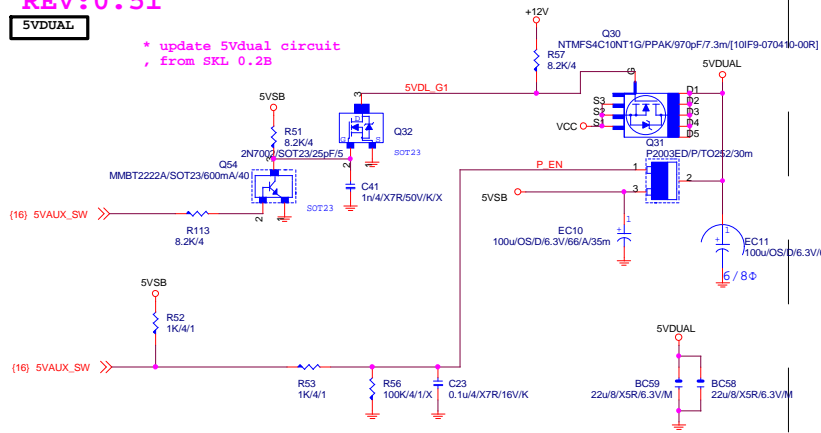
GIGABYTE™

Title			
RT8237_PCH POWER			
Size	Document Number	Rev	
Custom	GA-B150-HD3 DDR3	1.0	
Date:	Friday, August 21, 2015	Sheet	30 of 52

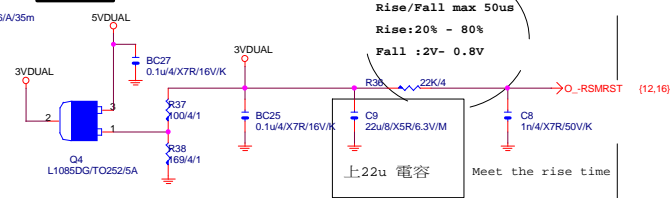
REV:0.51

5VDUAL

* update 5Vdual circuit
from SKL 0.2B



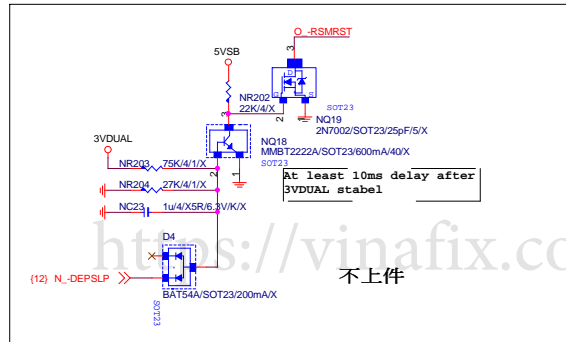
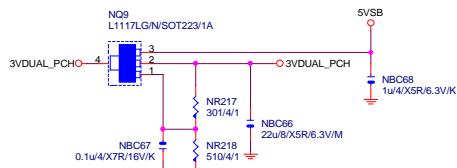
3VDUAL



Rise/Fall max 50us
Rise:20% - 80%
Fall :2V- 0.8V

上22u 電容
Meet the rise time

3VDUAL_PCH



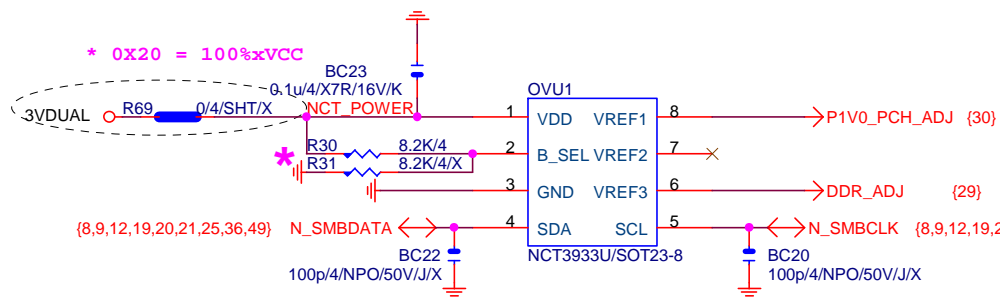
不上件

Vinafix.com

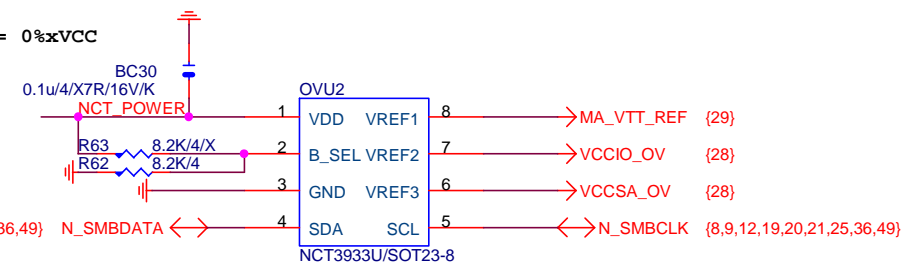
Gigabyte Technology

Title		
DISCRETE POWER		
Size	Document Number	Rev
Custom	GA-B150-HD3 DDR3	1.0
Date:	Friday, August 21, 2015	Sheet 31 of 52

OVER VOLTAGE



0X2A = 0%xVCC



0X22 = 75%xVCC

* 删除 OVU3

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: NCT3933

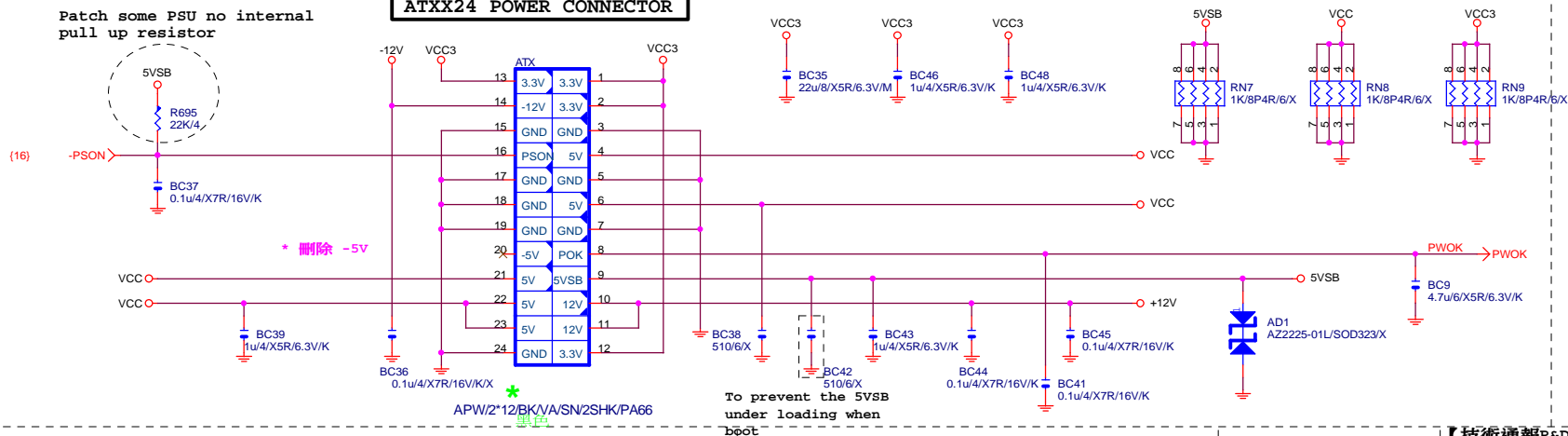
Size Custom	Document Number	Rev 1.0
Date: Friday, August 21, 2015		

GA-B150-HD3 DDR3

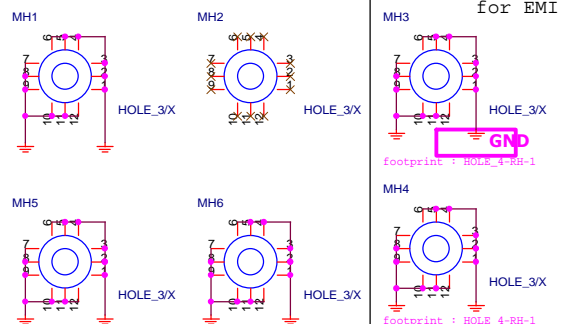
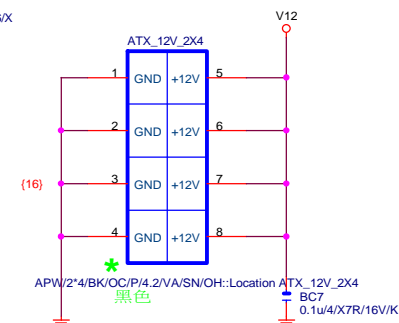
Sheet 32 of 52

Patch some PSU no internal pull up resistor

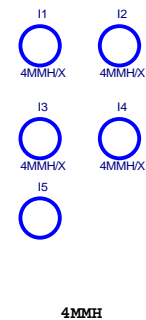
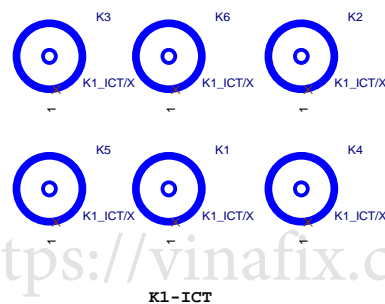
ATXX24 POWER CONNECTOR



ATXX4 POWER CONNECTOR

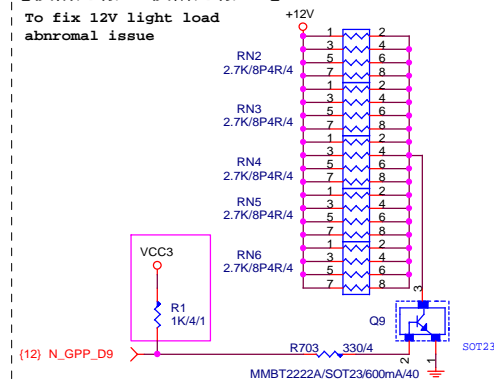


沒有TYPE-C螺絲洞改整圈, footprint :HOLE_4-RH-1

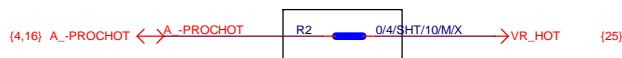


【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



-PROHOT



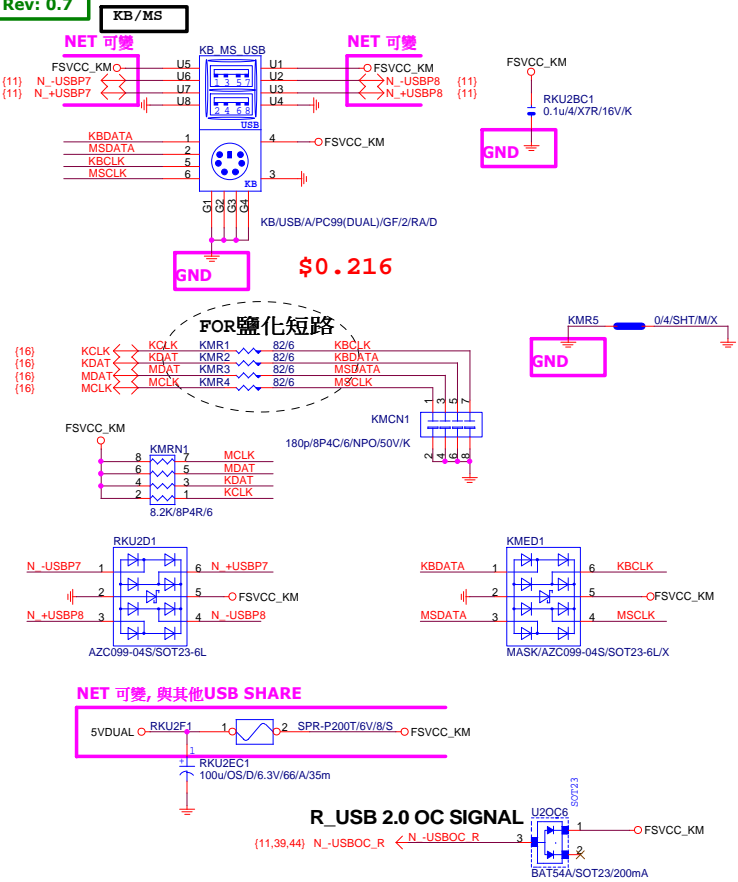
COUPON



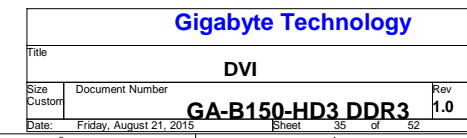
Gigabyte Technology

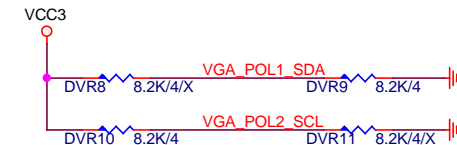
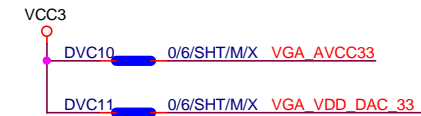
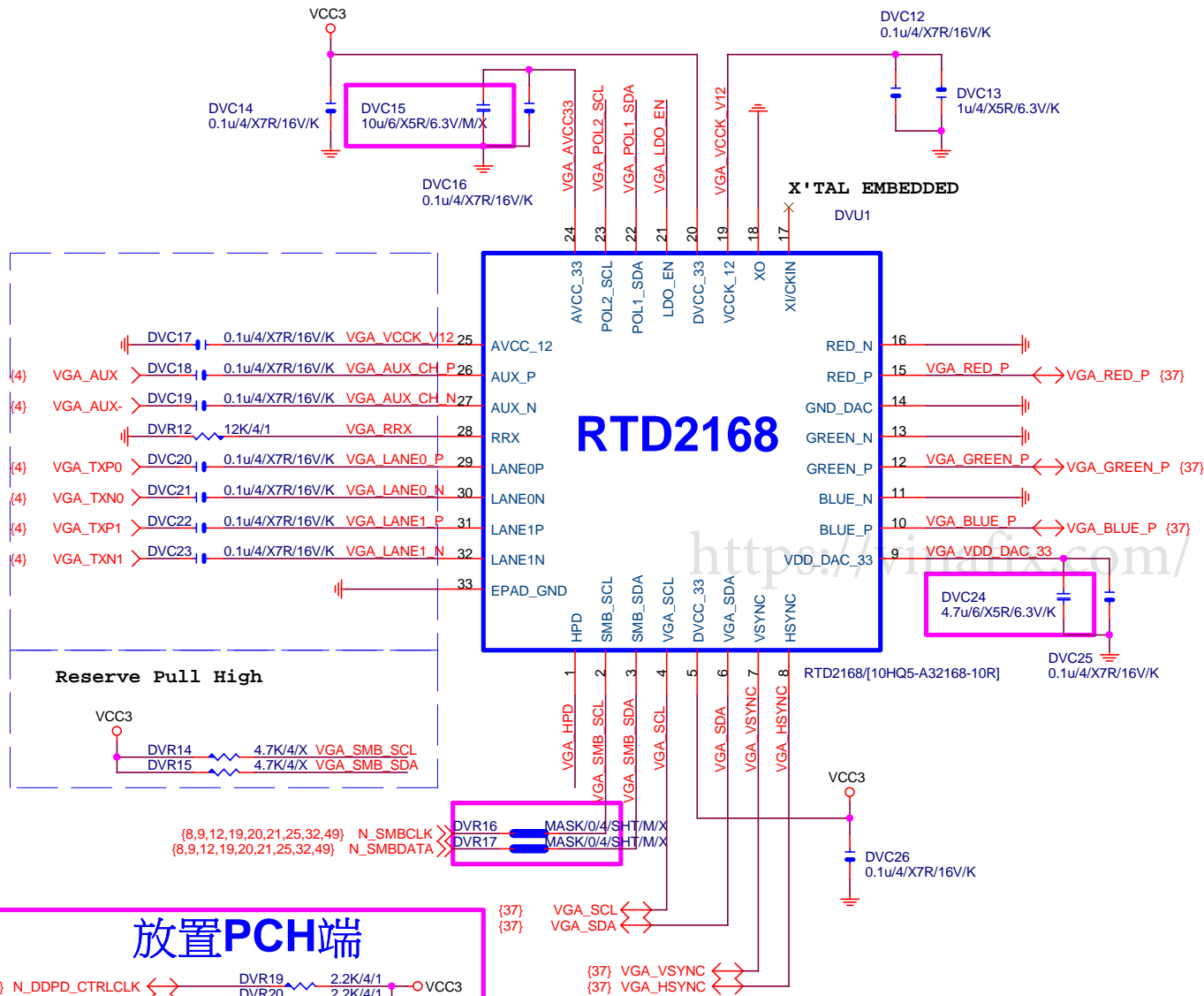
Title			
ATX POWER CONNECTOR			
Size	Document Number		Rev
Custom	GA-B150-HD3 DDR3		1.0
Date:	Friday, August 21, 2015	Sheet 33 of 52	

GA-B150-HD3 DDR3

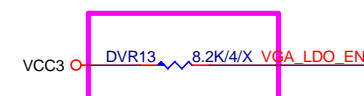


<https://vinafix.com/>





		POL1_SDA(PIN22)	
		0	1
POL2_SCL (PIN23)	0	X	EP MODE
	1	ROM ONLY MODE	EEPROM MODE



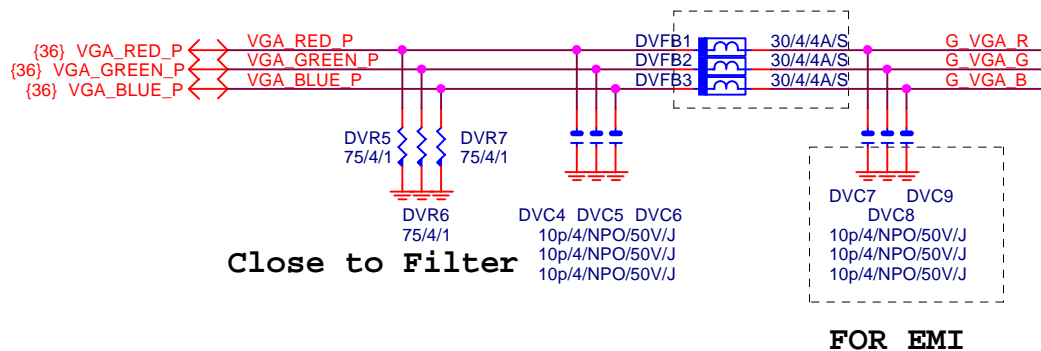
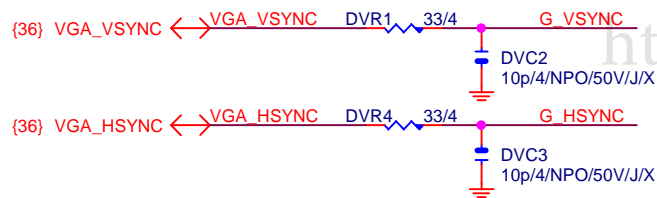
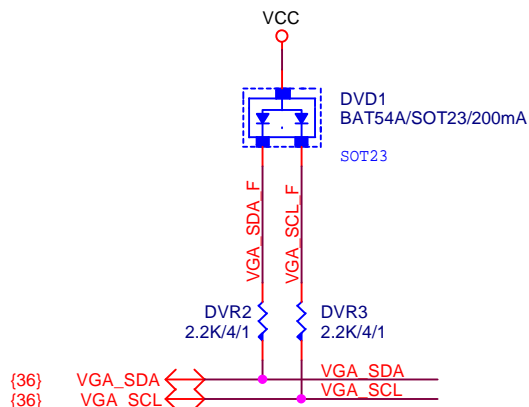
LDO_EN(PIN21)	
0	1
VCCCK_V12 from External 1.2V	VCCCK_V12 from Embedded LDO



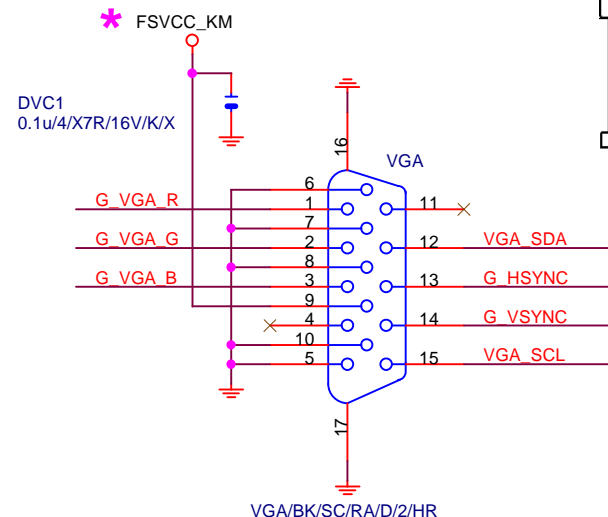
Gigabyte Technology
DP-VGA RTD2168

Title	Size	Document Number	Rev
	Custom	GA-B150-HD3 DDR3	1.0
Date:	Friday, August 21, 2015	Sheet	36 of 52

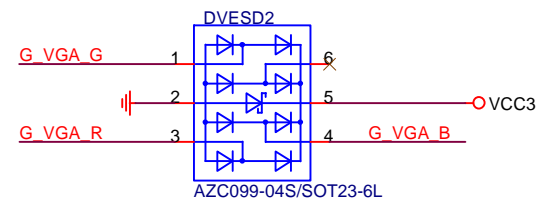
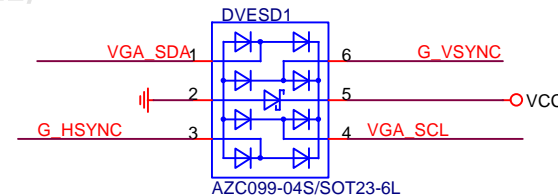
VGA SIGNAL R1.03



VGA CONN. 架高型VGA (BLACK)



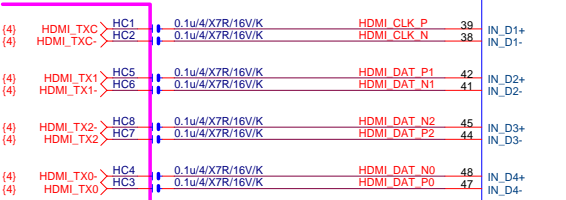
VGA ESD



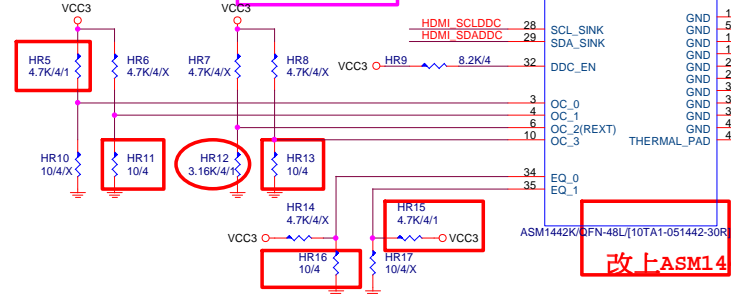
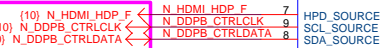
Gigabyte Technology		
DP-VGA RTD2168		
Title	Document Number	Rev
Size	Custom	GA-B150-HD3 DDR3
Date:	Friday, August 21, 2015	Sheet 37 of 52

HDMI LEVEL SHIFT

NET 可變



Port 自行調整



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

HR5;HR15:4.7K/4;
R11; HR13; HR16:10/4;
HR12:3.16K;
HU1:10TA1-051442-30R
B150改上ASM1142

改上ASM1442:capture value:ASM1442K/QFN-48L

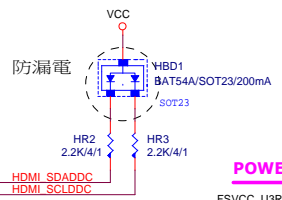
改上PTN3360:capture value:PTN3360DBS/HVQFN48

【技術通報R&D技術通報150】

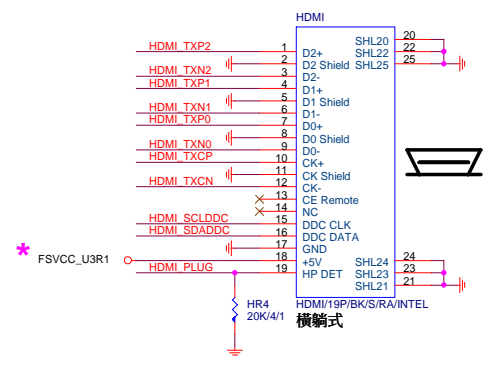
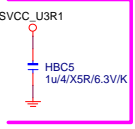
HDMI eye diagram 1.4版(deep color)會fail
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

改上ASM1442:

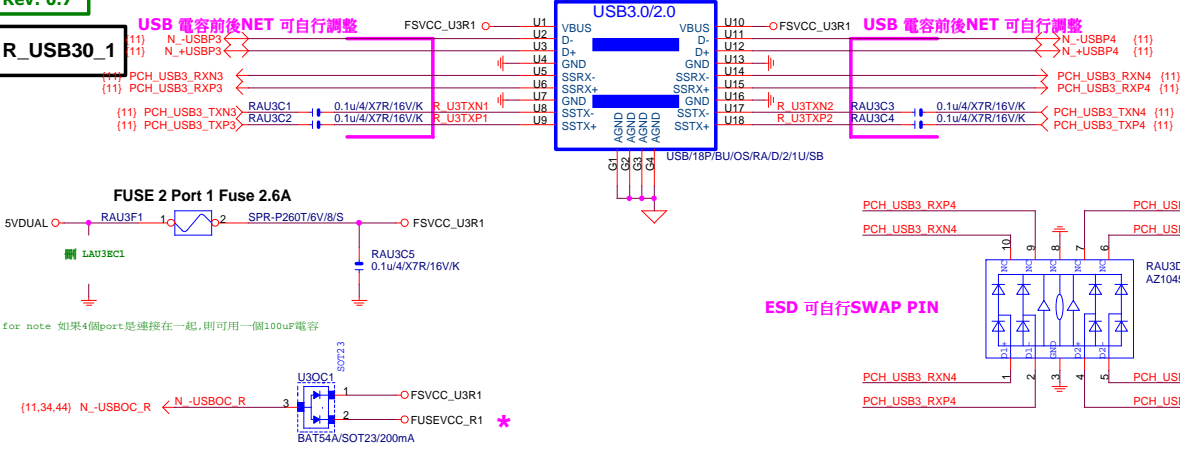
https://vinafix.com/



POWER 可變

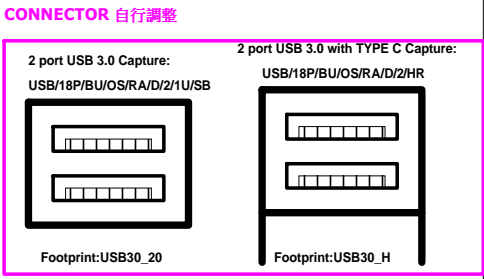
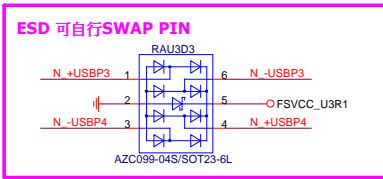


R_USB30_1



R_USB30_2

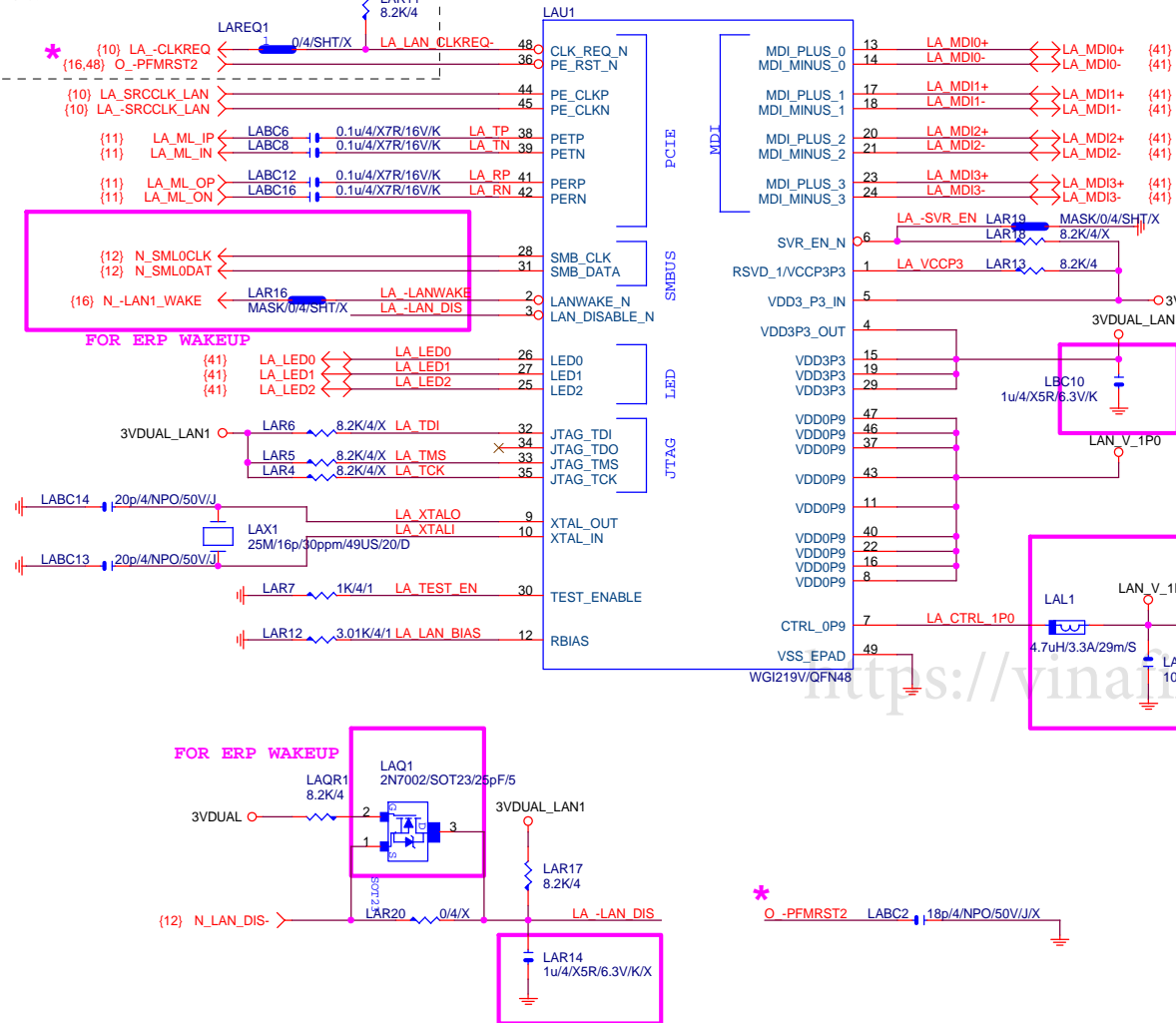
KB_MS_USB3



<https://vinafix.com/>

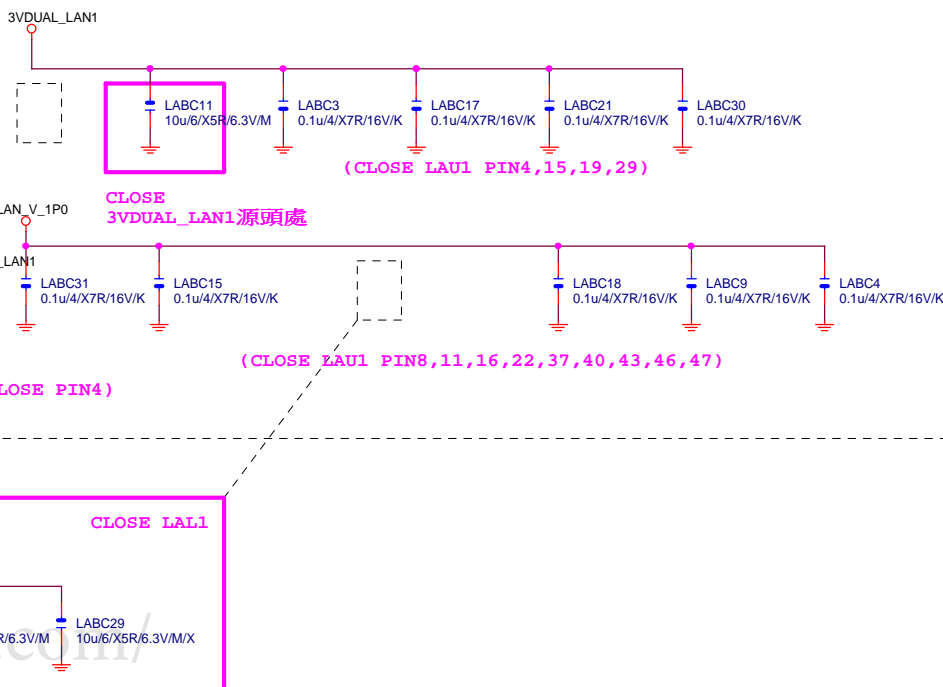
R1.11

L1+CLK REQ# 節能：
需對應LA_SRCCLK_LAN之CLKREQ#



I219:
FOR ERP WAKE線路：無法DETECT LAN ISSUE
不上件:LAR14-->1u/4/X5R/6.3V/K/X

LAN POWER



Gigabyte Technology

INTEL I219

GA-B150-HD3 DDR3

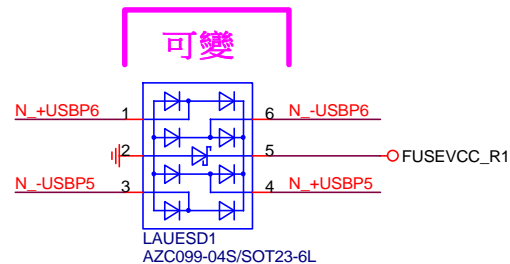
Rev
1.0

Date: Friday, August 21, 2015 Sheet 40 of 52

R1.11

RMA ESD PROTECT

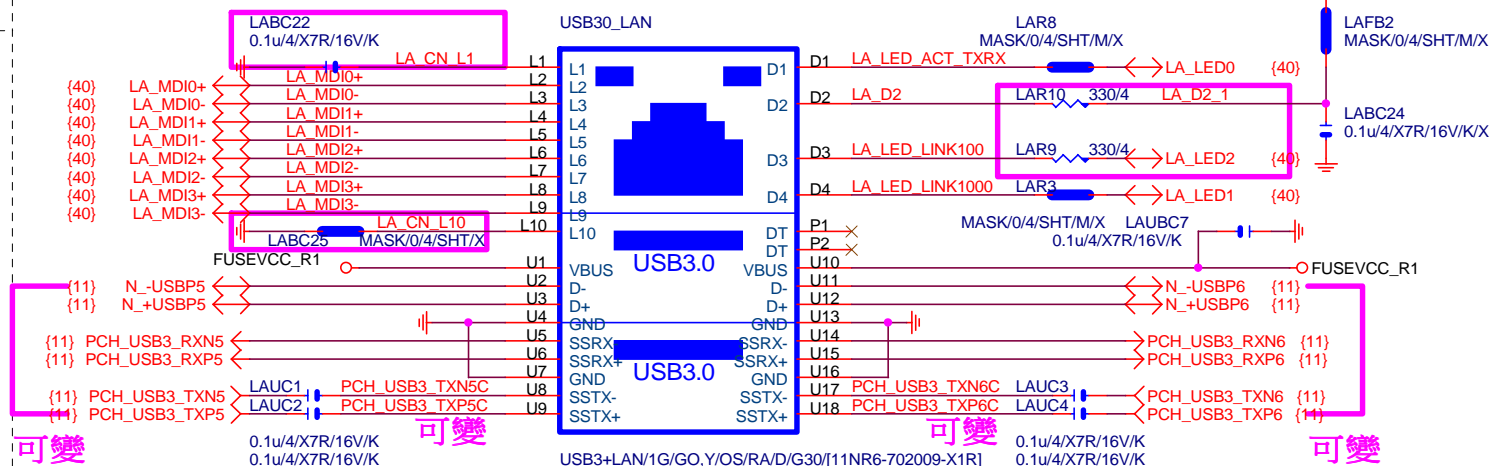
note:可變更USB NAME



USB_LAN CONNECTOR

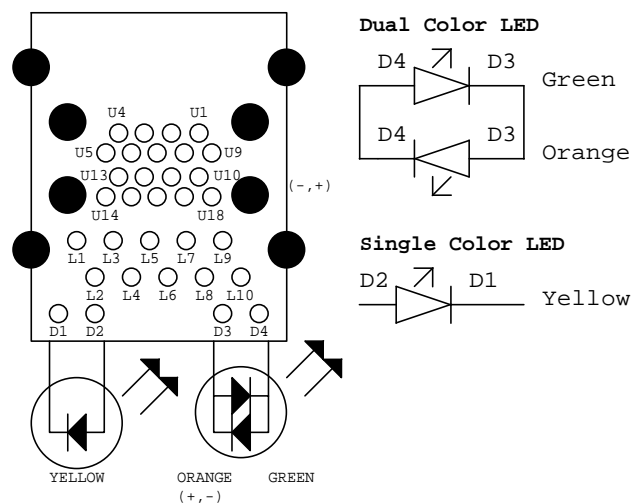
note:可變更USB NAME

[I219]



LA_MDI-->100歐姆:[20/4/8/4/20]

USB30_LAN LAYOUT示意圖



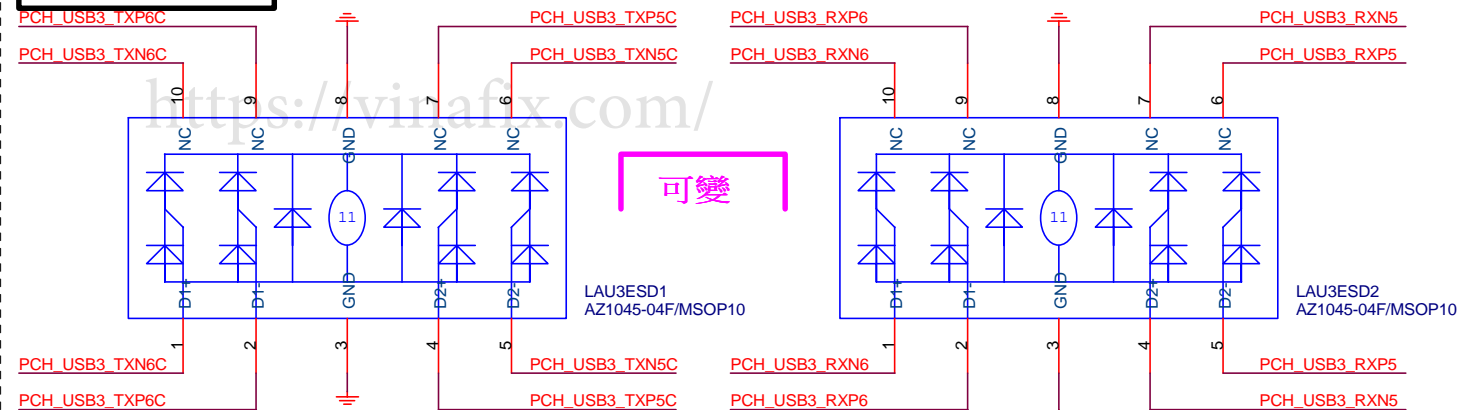
LAN COVER

FOOT PRINT:LAN COVER

可變 [視SPEC需求]

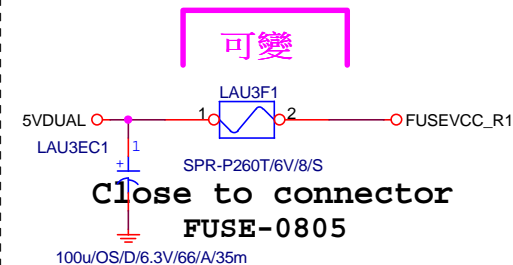
RMA ESD PROTECT

note:可變更USB NAME



USB POWER

note:可變更FUSE



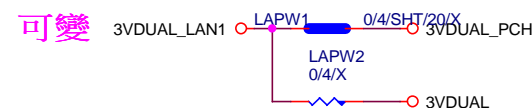
EMI SHORT PAD

PS:視EMI需求



LAN POWER

note: lan power連接及電流



Gigabyte Technology

LAN CONNECTOR-I219

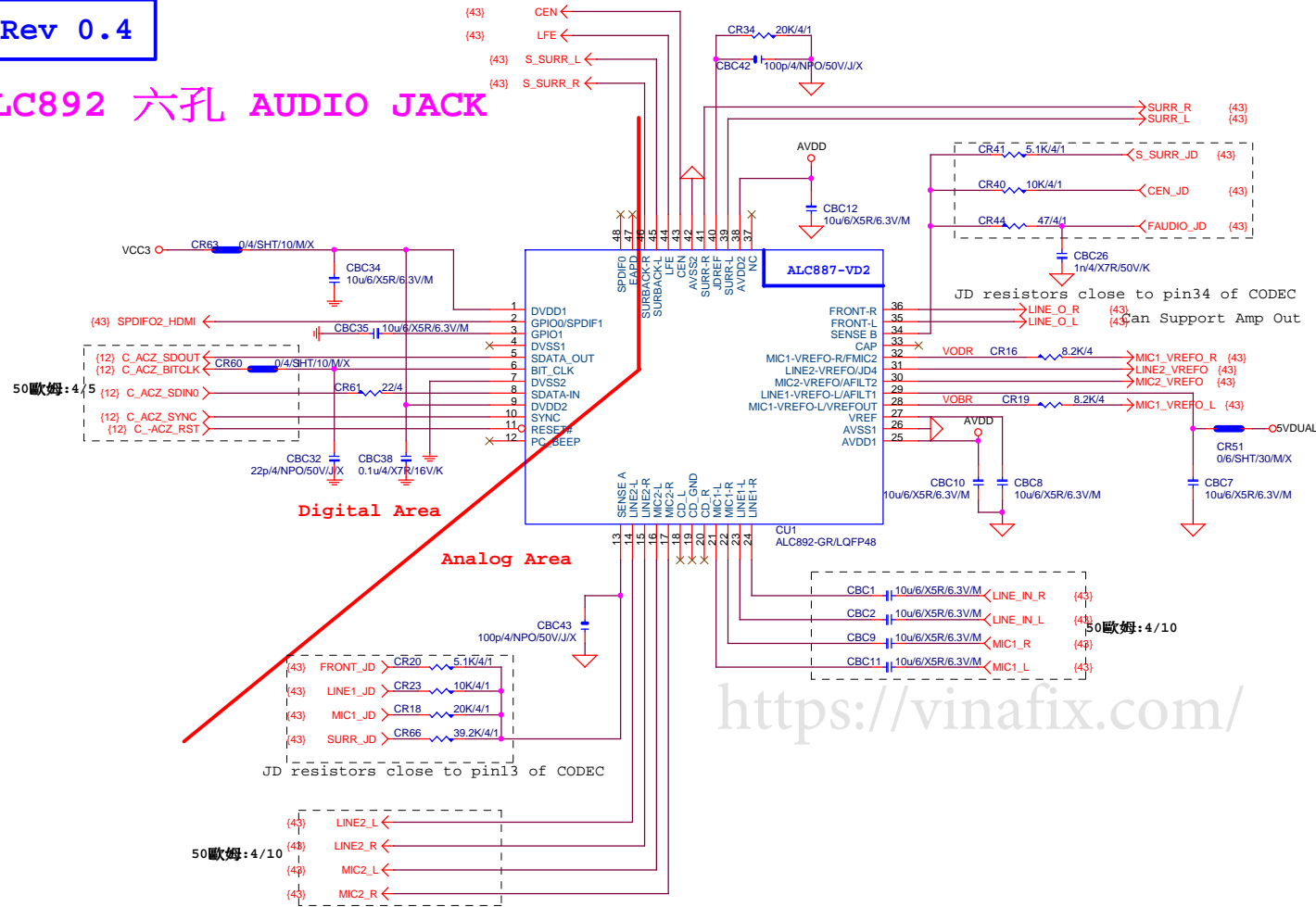
GA-B150-HD3 DDR3

Rev

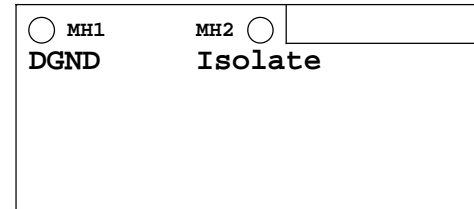
Date: Friday, August 21, 2015 Sheet 41 of 52

Rev 0.4

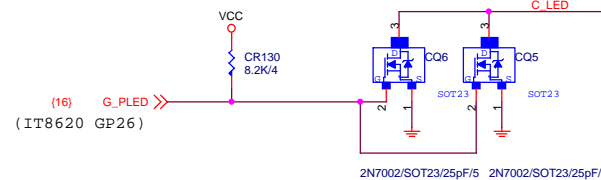
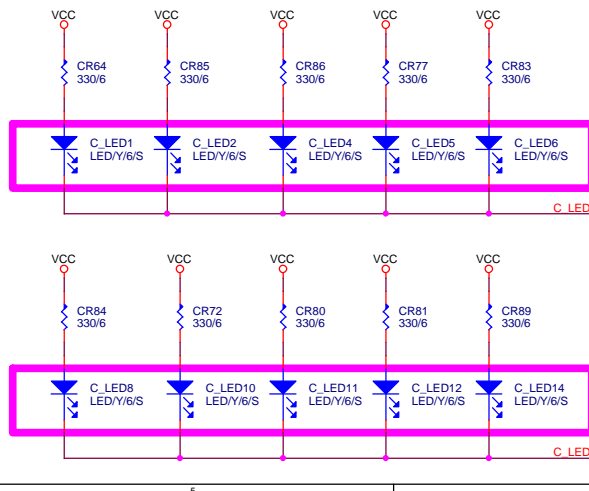
ALC892 六孔 AUDIO JACK



LAYOUT注意: 螺絲孔下GND方式
1. MH1空間夠, 下DGND
空間不夠, 改為Isolate
2. MH2一律改為Isolate



VALUE可變, LED顏色請自行修改
(預設: 低亮度黃色LED: LED/Y/6/S)



*料號後補

LAYOUT注意: 要加
GND切割線

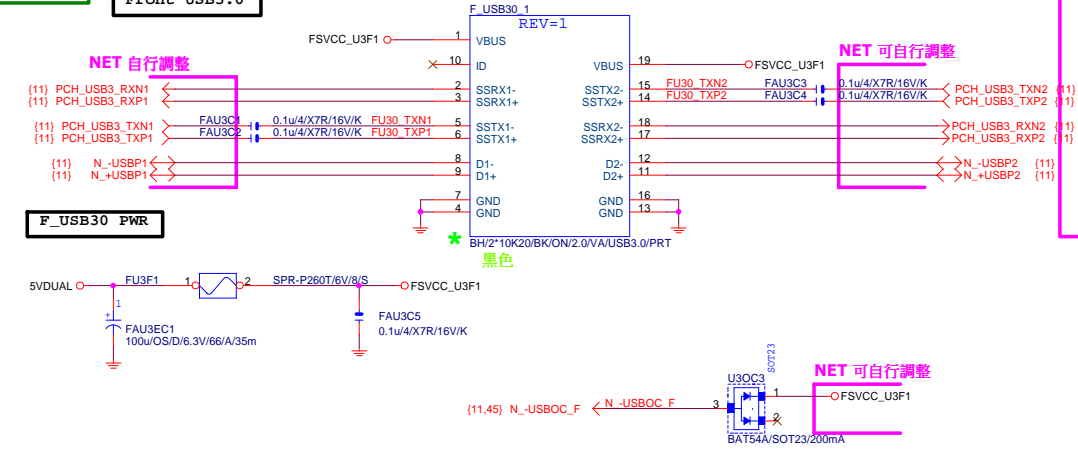
音效區域印刷



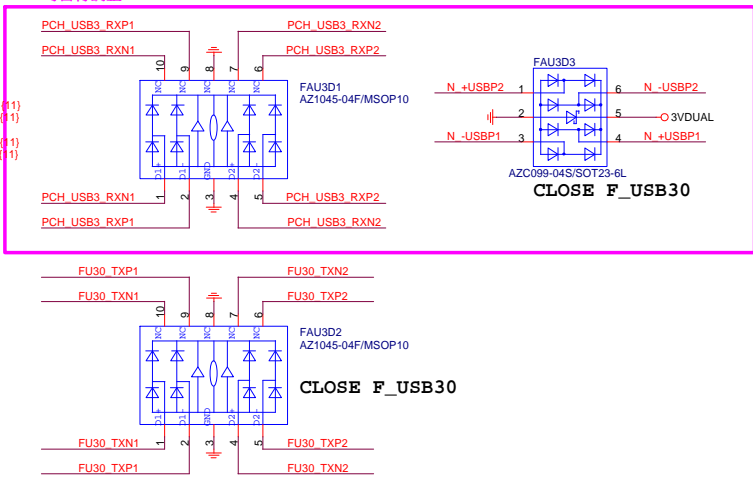
BOM OPTION : 1. Chemicon音效電容
2. 金屬外罩 Reserve (LAYOUT上件與否, 依照各Model spec)
3. LED Reserve (上件與否和LED顏色, 依照各Model spec)

Gigabyte Technology			
Title HD AUDIO ALC892			
Size Custom	Document Number	GA-B150-HD3 DDR3	
Date: Friday, August 21, 2015	Sheet 42 of 52	Rev 1.0	

Front USB3.0

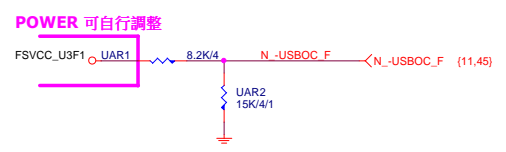


NET 可自行調整

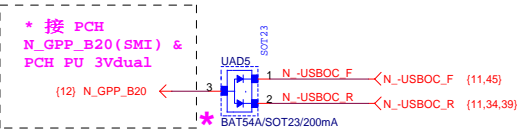
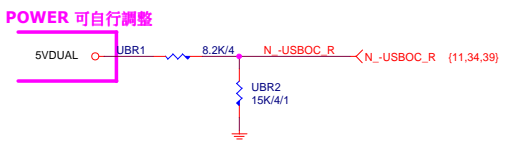


<https://vinafix.com/>

-USBOC_F



-USBOC_R

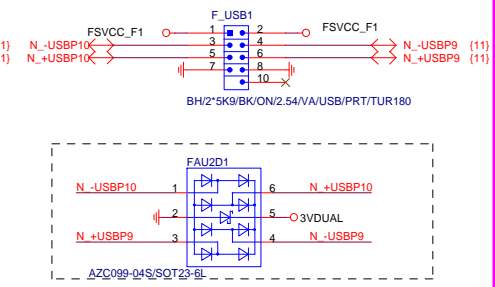


Gigabyte Technology

Title				R_USB30,F_USB30, USB_OC	
Size		Document Number		Rev	
Custom		GA-B150-HD3 DDR3		1.0	
Date:		Friday, August 21, 2015		Sheet 44 of 52	

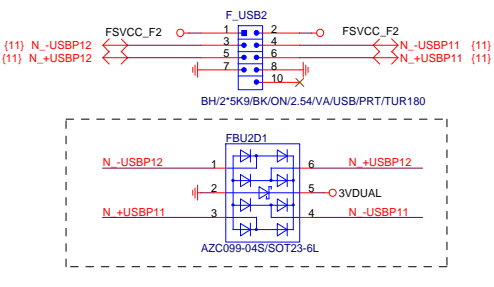
FRONT USB1

NET 可變



FRONT USB2

NET 可變



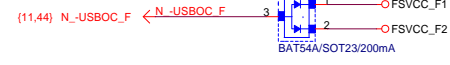
FRONT USB3

FRONT USB4

REAR USB1

REAR USB2

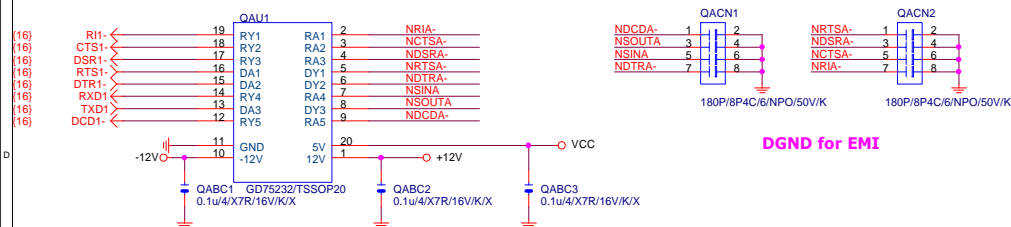
F_USB 2.0 OC SIGNAL



<https://vinafix.com/>

Rev: 0.7

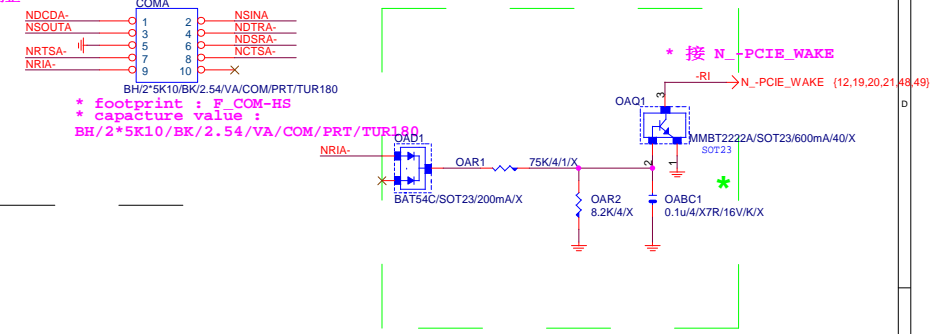
COM PORT



COMA

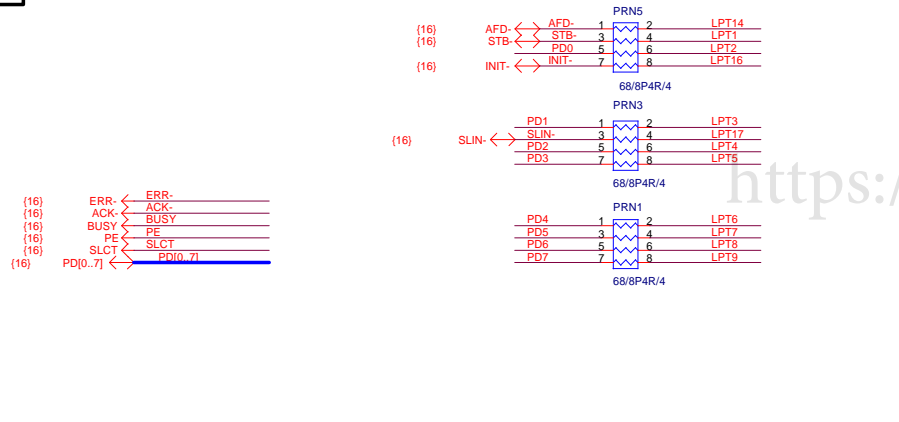
COMA 自行調整

OR

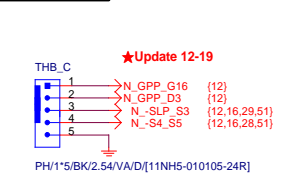


Vinafix.com

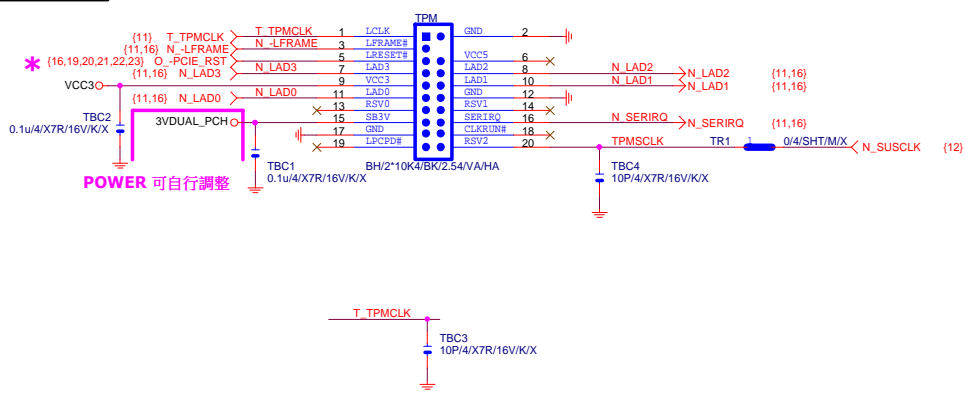
LPT PORT



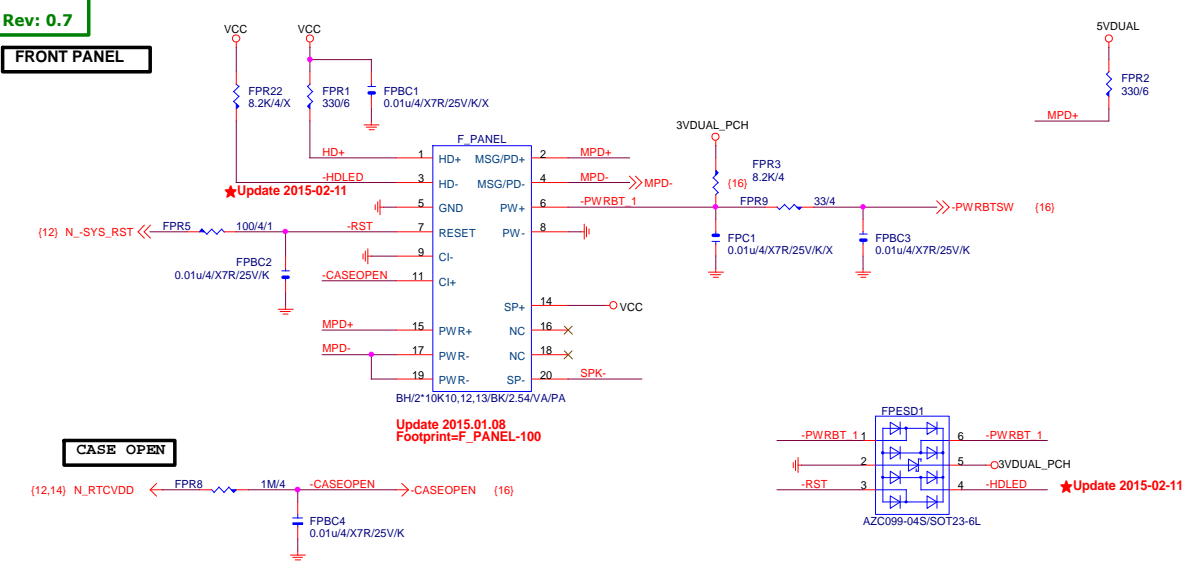
Thunderbolt



TPM CONNECTOR

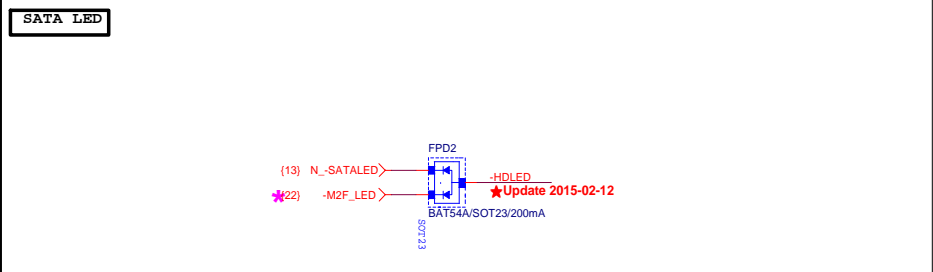


FRONT PANEL

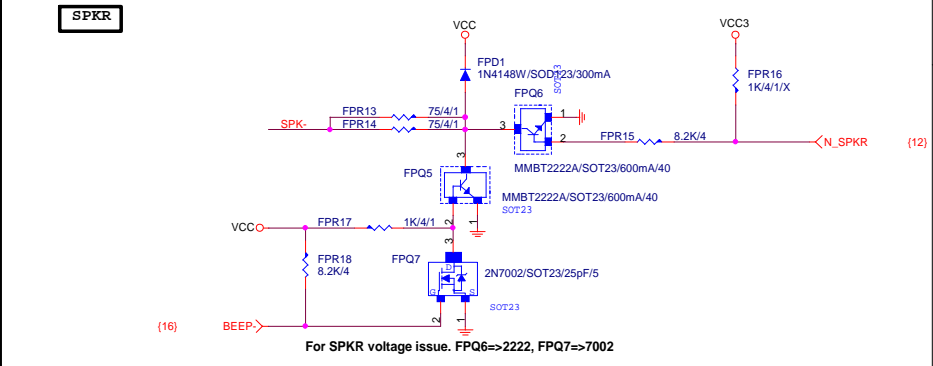


FRONT PANEL SHORT

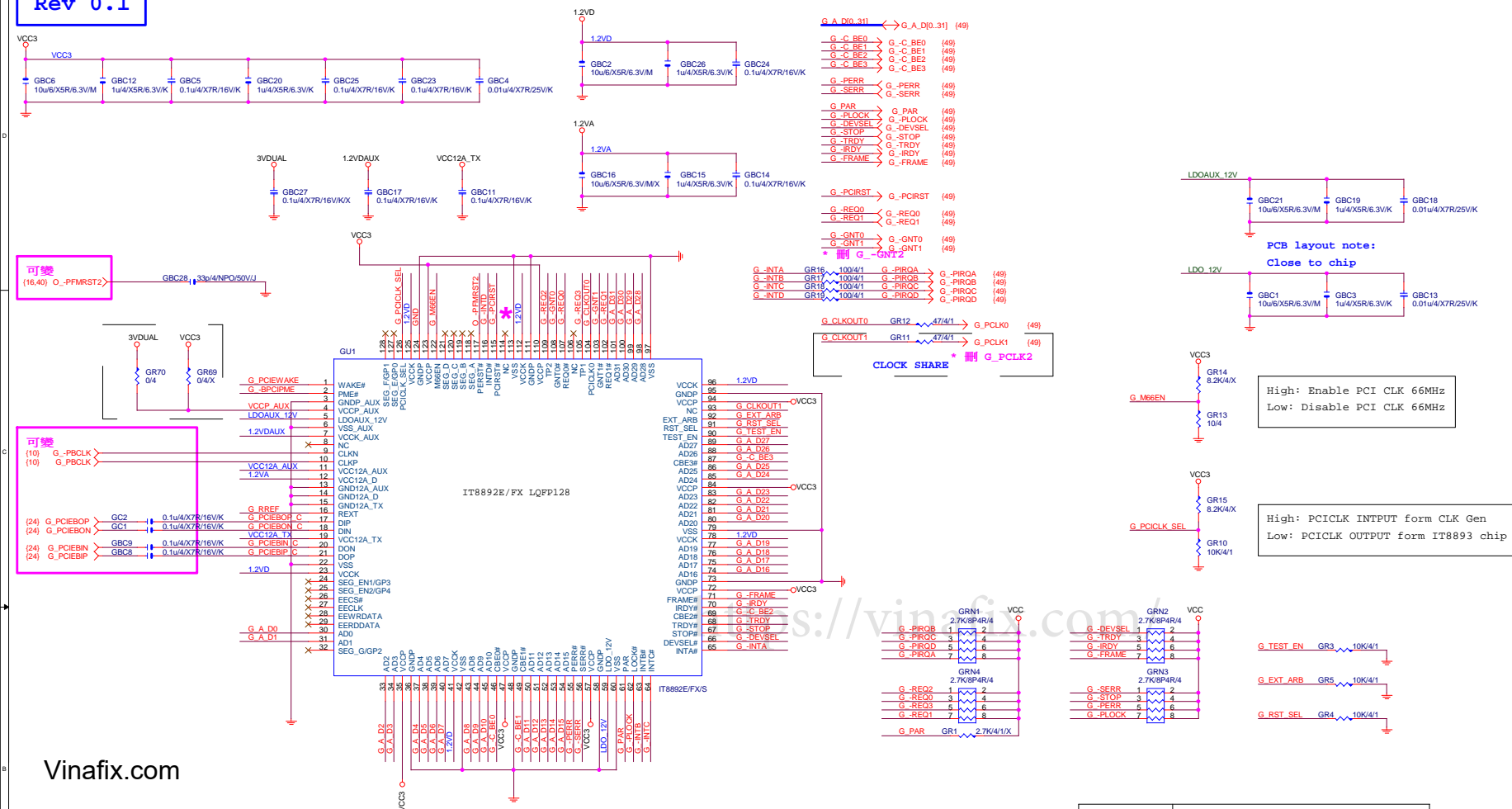
SATA LED



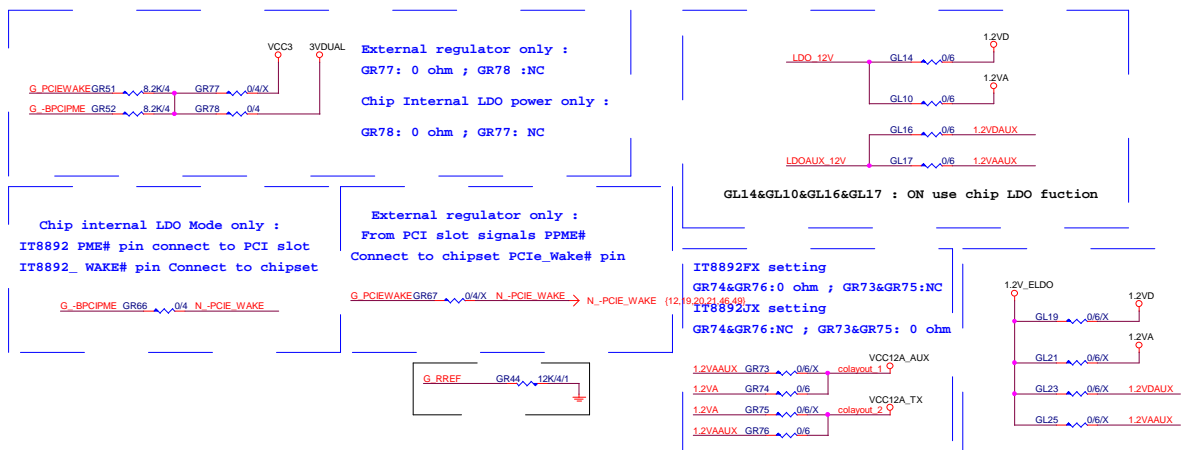
SPKR



<https://vinafix.com/>



Vinafix.com



	Component change note
IT8892FX	GR70, GR74, GR76, GR78, GR66 : ON GR69, GR73, GR75, GR77, GR67 : NC GR44 resistor is 12k ohm GL14, GL10, GL16, GL17 : ON GL19, GL21, GL23, GL25 : NC
IT8892JX	GR70, GR73, GR75, GR78, GR66 : ON GR69, GR74, GR76, GR77, GR67 : NC GR44 resistor is 18k ohm GL14, GL10, GL16, GL17 : ON GL19, GL21, GL23, GL25 : NC
External LDO Power (IT8892JX)	GR69, GR73, GR75, GR77, GR67 : ON GR70, GR78, GR66 : NC GR44 resistor is 18k ohm GL19, GL21, GL23, GL25 : ON GL14, GL10, GL16, GL17 : ON

Rev 0.1

PCI SLOT 1

PCI SLOT 2

PCI SLOT 1

PCI SLOT 2

PCI PU

PCI CAP

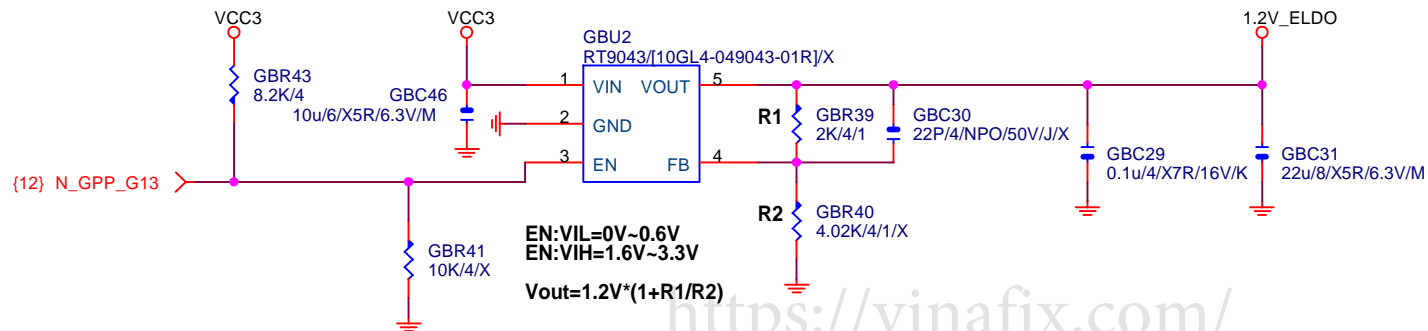
GIGABYTE™

PCI SLOT 1&2

Size Custom Document Number GA-B150-HD3 DDR3 Rev 1.0

Date: Friday, August 21, 2015 Sheet 49 of 52

Rev 0.1



Gigabyte Technology

Title

ASM1085 POWER

Size
Custom

Document Number

GA-B150-HD3 DDR3

Rev
1.0

Date:

Friday, August 21, 2015

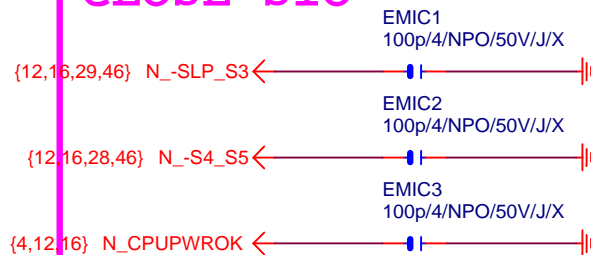
Sheet

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of

52

CLOSE SIO



CLOSE PCH



<https://vinafix.com/>

GIGABYTE™

Title

EMI/ESD

Size
A

Document Number

GA-B150-HD3 DDR3

Rev
1.0

Date: Friday, August 21, 2015

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