

Model Name: GA-Z170N-WIFI

rev 2.0

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	DDR4 CHANNEL A
09	DDR4 CHANNEL B
10	PCH_CLK BUFFER
11	PCH_DMI,USB,PCIE
12	PCH_MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	Dual BIOS
16	ITE 8628 LPC IO
17	HWM
18	FAN CTRL--SIO
19	PCI EXPRESS*16 SLOT
20	ETRON EJ1790D TYPE_C
21	M.2X4
22	M.2 WIFI
23	SATA EXPRESS
24	ISL95858 PWM_VCORE
25	ISL95858 MOS_VCORE
26	ISL95858 MOS_VCCGT
27	VCCSA_VCCIO_VCCPLL

SHEET TITLE

28	RT8120_DDR_VDDQ
29	RT8068_VPP_25V
30	RT8120_PCH_VCC1_0_PCH
31	DISCRETE POWER
32	NCT3933
33	ATX POWER , A_-PROCHOT
34	R_USB30,KB_MS_USB3
35	DVI-D CONN
36	HDMI DUAL
37	INTEL I219
38	INTEL I211
39	DUAL_USB30_LAN -I219_I211
40	Realtek ALC1150
41	REAR AUDIO JACK
42	AUDIO POWER
43	F_USB30
44	F_USB
45	F_PANEL
46	EMI-ESD
47	TABLE LIST
48	POWER MAP

Gigabyte Technology			
Cover Sheet			
Size	Document Number	GA-Z170N-WIFI	Rev
Custom			2.0
Date:	Tuesday, June 14, 2016	Sheet	1 of 48

rev 2.0

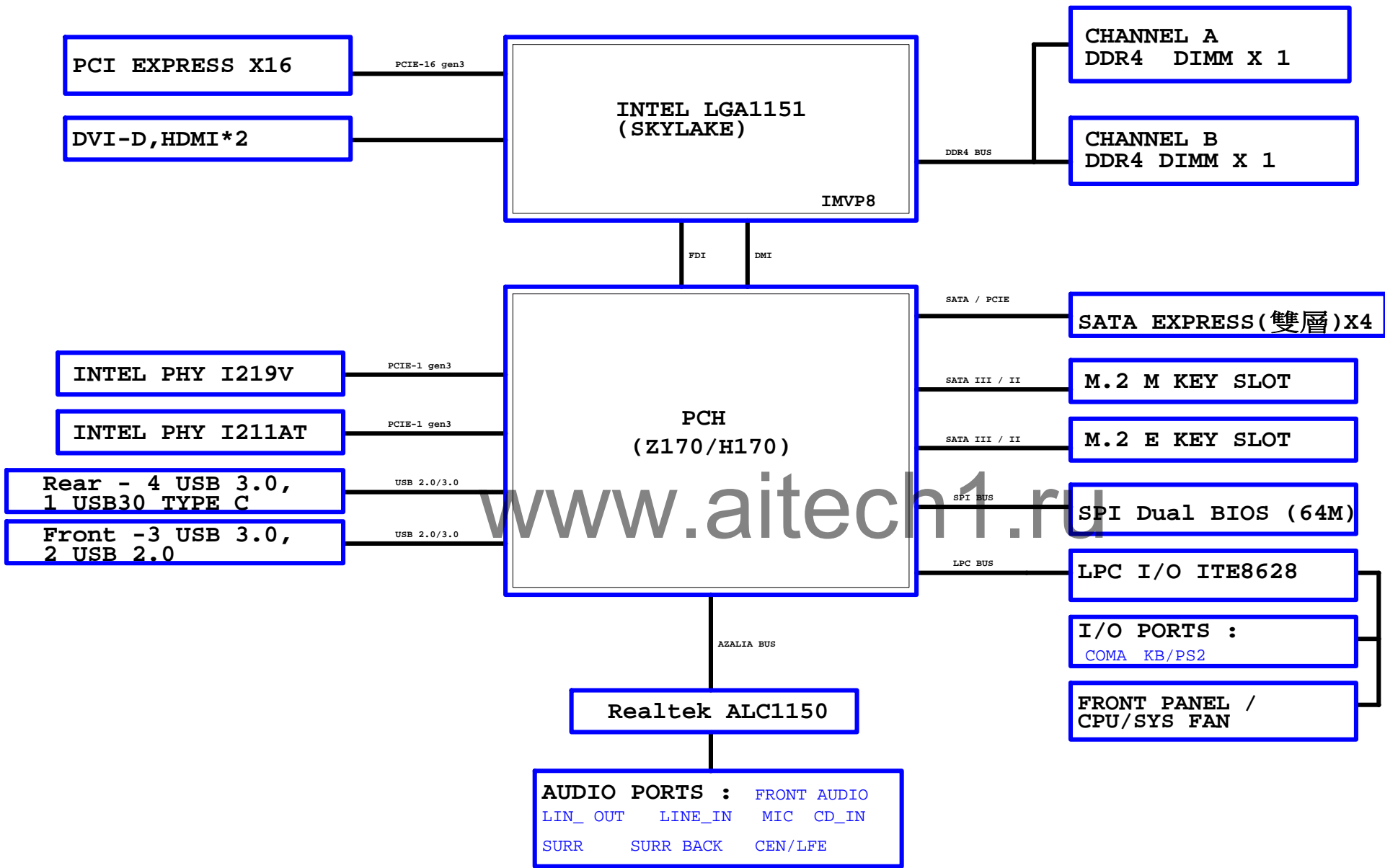
Circuit or PCB layout change

Component value change history

2016/05/27

[illegible][illegible]

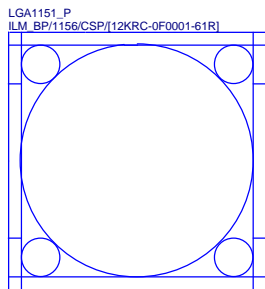
BLOCK DIAGRAM





Date: Tuesday, June 14, 2016 Sheet 4 of 48

* 改DDR4 net



Need check the new CPU ME

BLACK NI

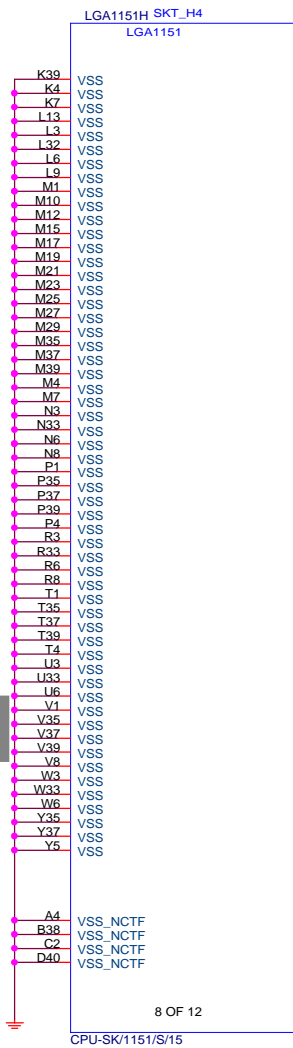
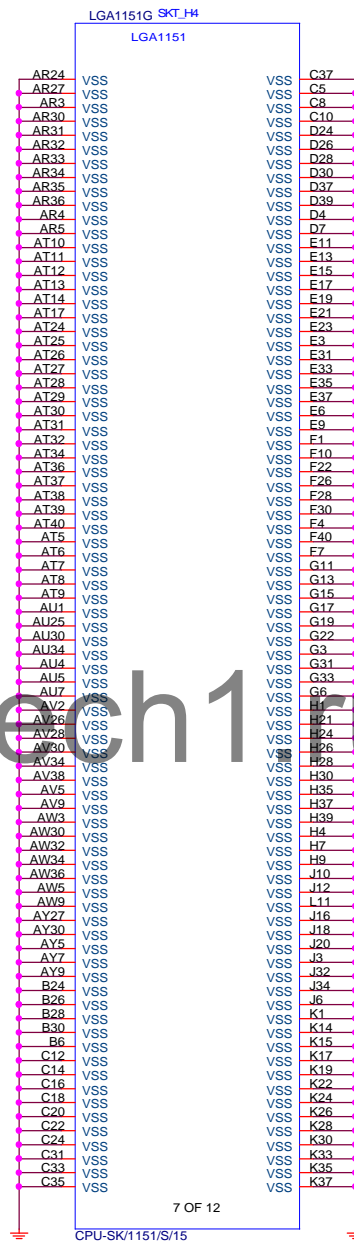
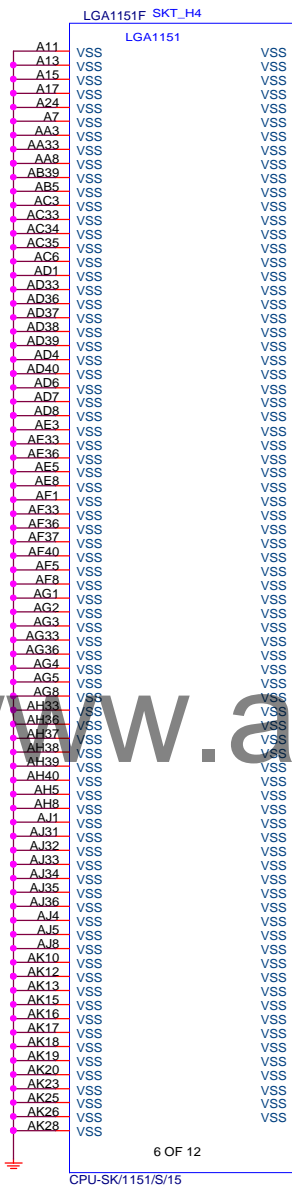
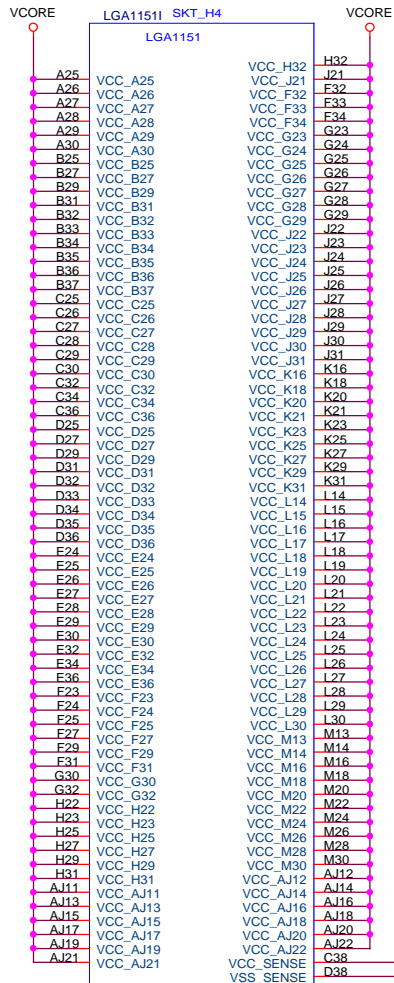
Figure 1 illustrates the mapping of 16-bit input and output ports to 32-bit internal ports. The diagram shows two columns of ports. The left column lists 16-bit ports, and the right column lists 32-bit ports. Each 16-bit port is connected to its corresponding 32-bit port by a double-headed arrow, indicating a bidirectional connection.

16-bit Port	32-bit Port
MODT_A[0..1]	MODT_AIO_11
MODT_B[0..1]	MODT_BIO_11
MDA[0..63]	MDA[0..63]
MDB[0..63]	MDB[0..63]
M_DQSA[0..7]	M_DQSAIO_71
M_-DQSA[0..7]	M_-DQSAIO_71
MAAA[0..16]	MAAA[0..16]
MAAB[0..16]	MAABIO_16
M_DQSB[0..7]	M_DQSBIO_71
M_-DQSB[0..7]	M_-DQSBIO_71

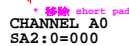
Gigabyte Technology

CPU LGA1151-B
GA-Z170N-WIFI

Rev
2.0



* 刪 Vcore 電容



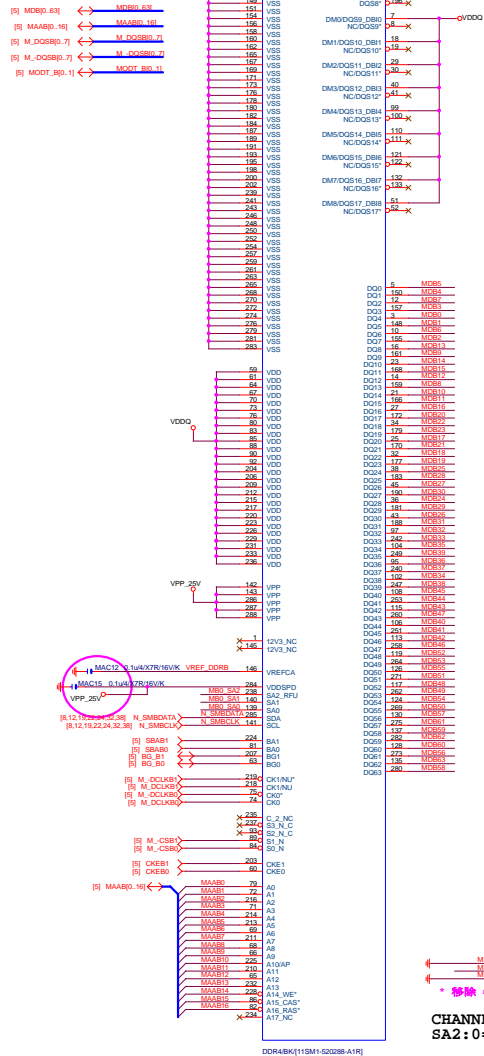
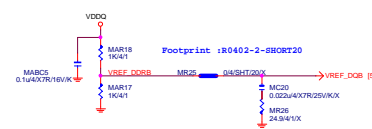
DDR12V Decouple

- 電容移到 [RT8120_DDR]

■ *DDRVTT Decouple*

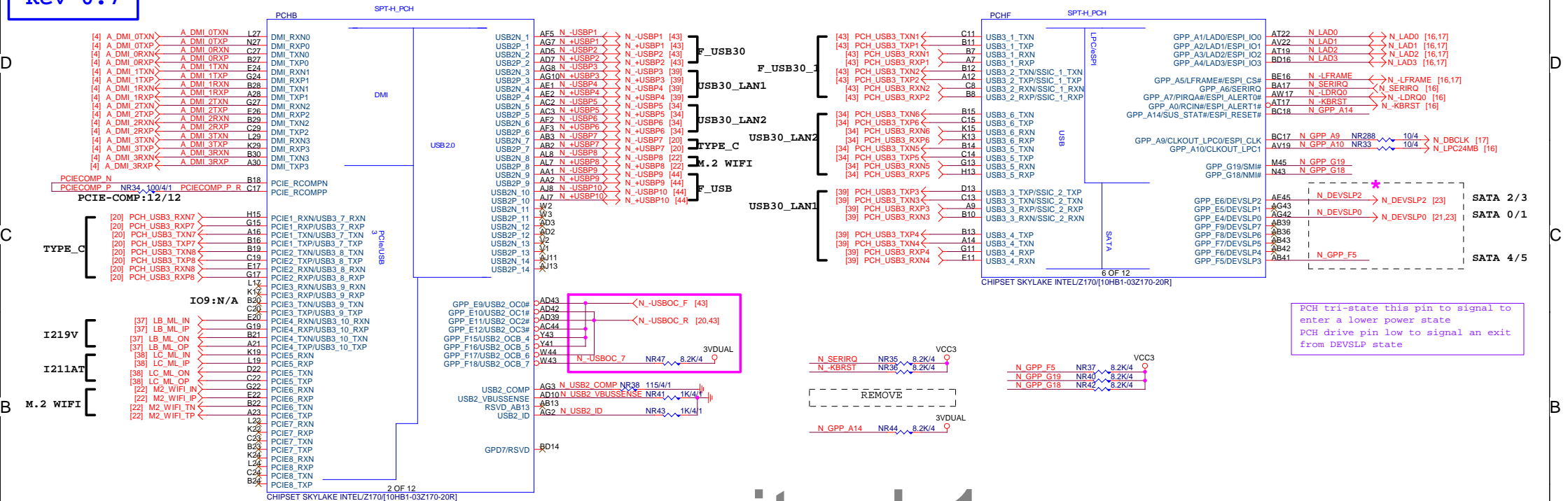
- 割電容

- 副電容



CHANNEL B0
SA2:0=010

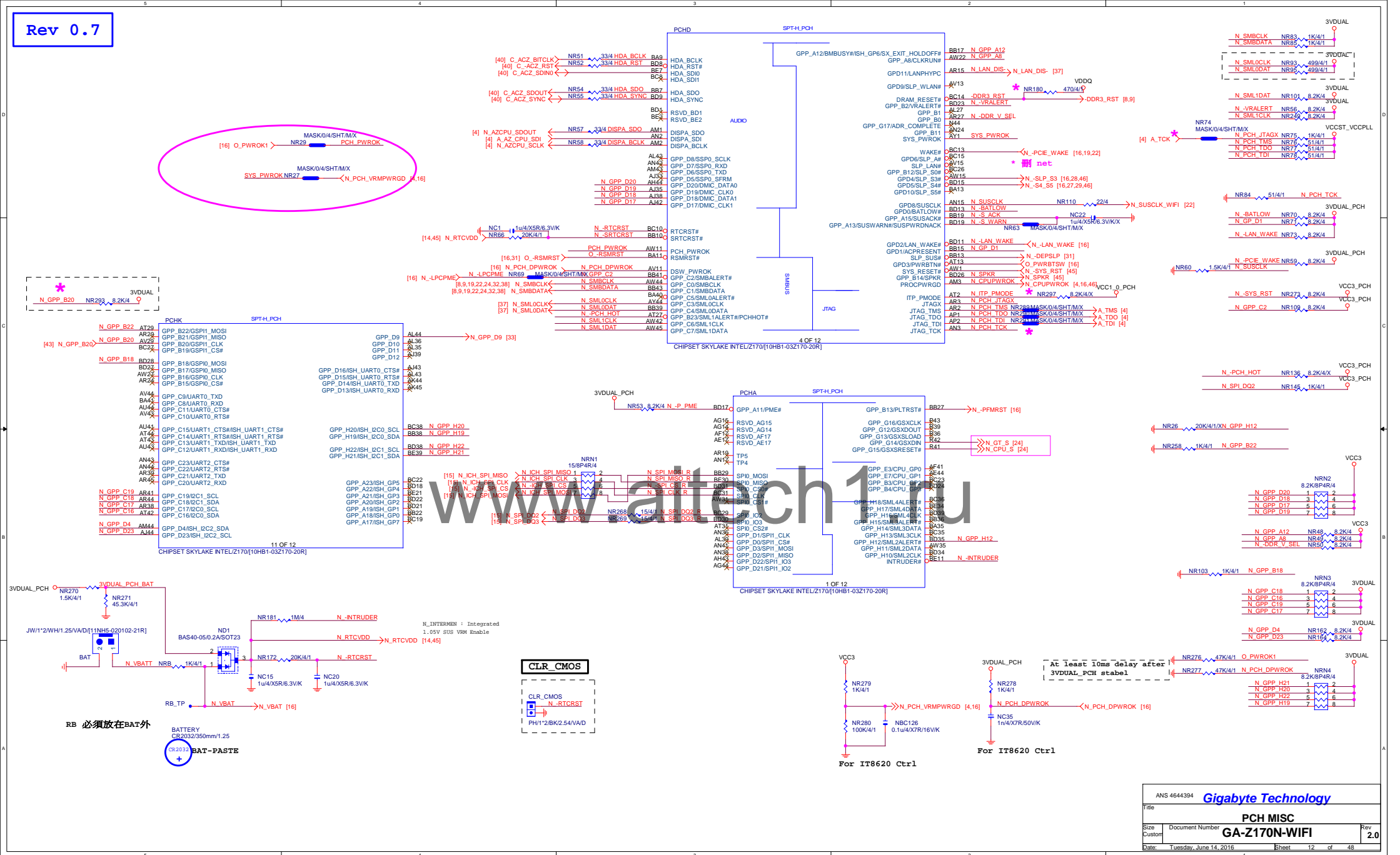
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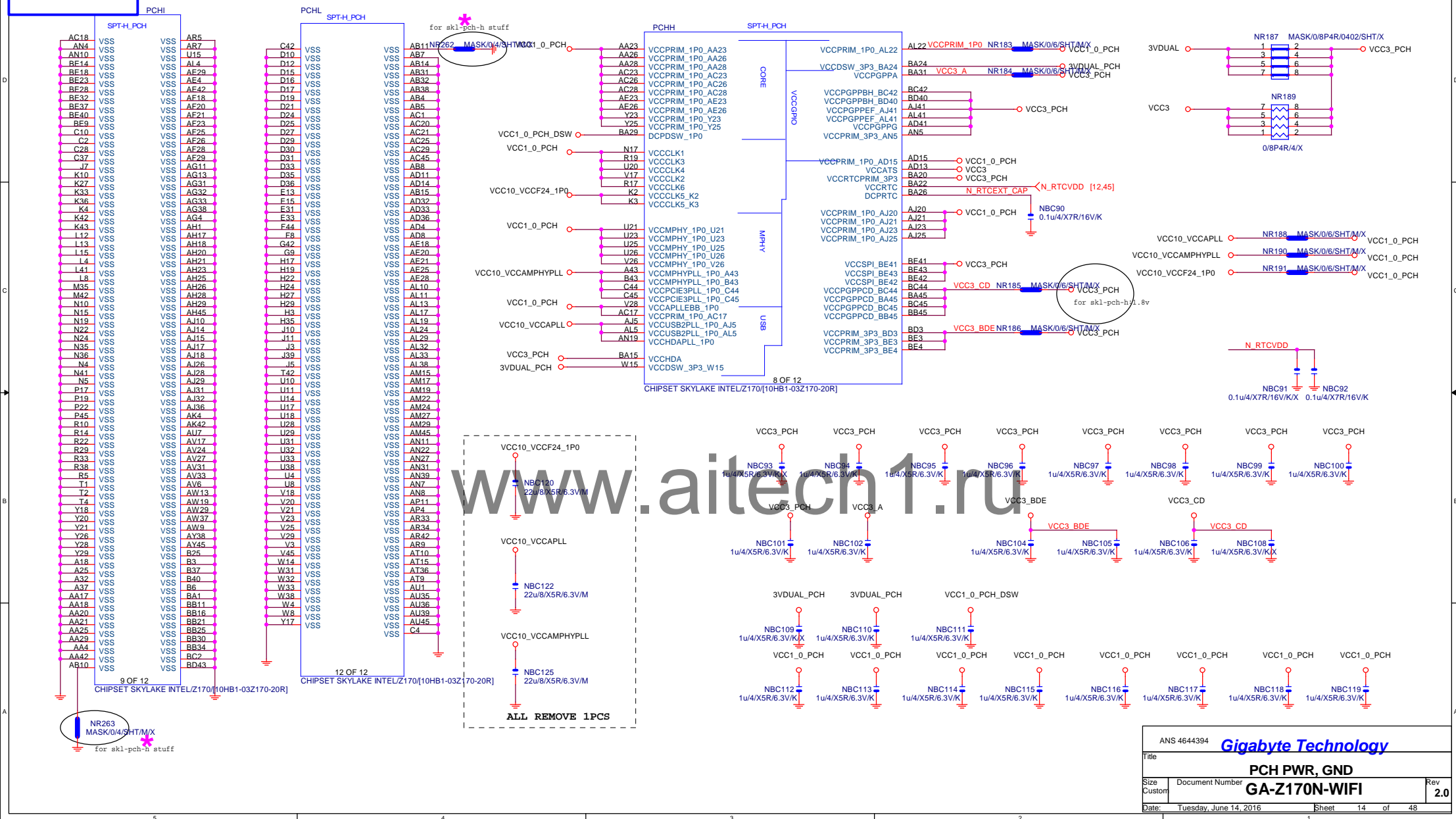


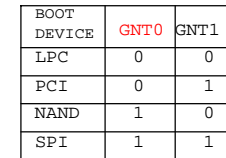
4 layer USB3/USB2/SATA/PCH PCIe=====4/4/15
6 layer USB3/USB2/SATA/PCH PCIe=====4/5/5/4/15

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ANS 4644394		Gigabyte Technology	
Title		PCH DMI,USB,PCIE	
Size		Document Number	
Customer		GA-Z170N-WIFI	
Date:		Tuesday, June 14, 2016	Sheet 11 of 48

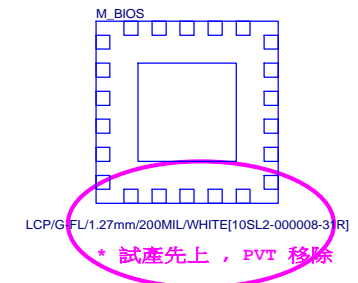


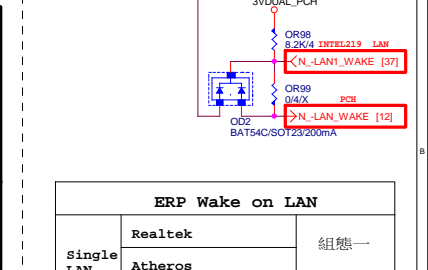
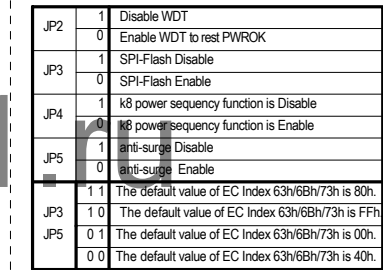
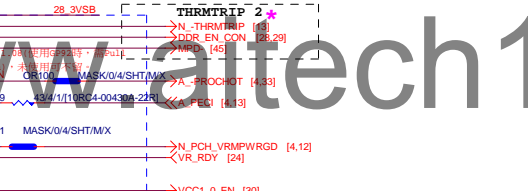
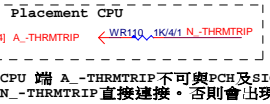




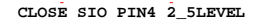
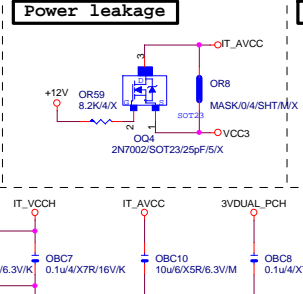
1 means floating
0 means PD 1K

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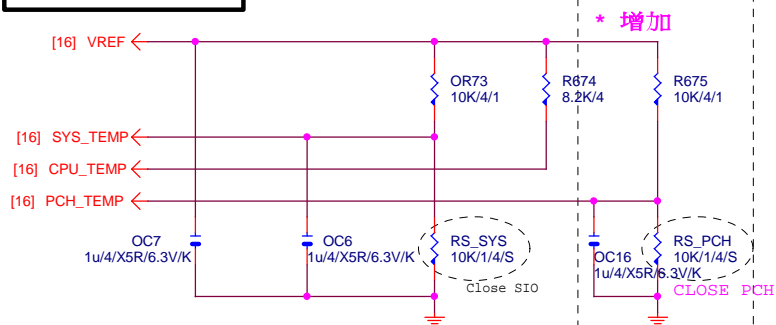


IT8620B GPIO問題匯整	
PIN 50	GP26 第一次撥上POWER時會拉 Lo
PIN 90/91	DEFAULT 為HDDLED FUNCTION GP93 BYPASS TO GP92 高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40 --- POWER ON 時會拉 Lo
PIN 111/112	MOUSE 跟FANQ FUNCTION 擇一使用，不然會互相干擾
PIN 22	PIN22，標高於3V，若低於該部分COM PORT及LED裝置 誤導器會異常動作。

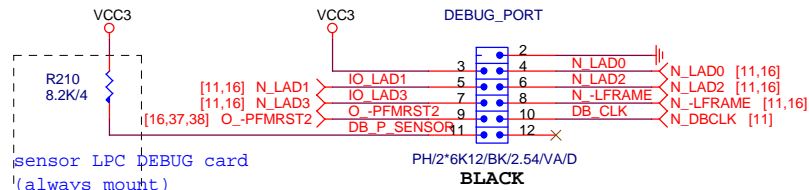


Gigabyte Technology			
Title			
ITE 8628 LPC IO			
Size	Document Number	GA-Z170N-WIFI	Rev
Custom			2.0
Date:	Tuesday, June 14, 2016	Sheet	16 of 48
2		1	

TEMP H/W MONITOR

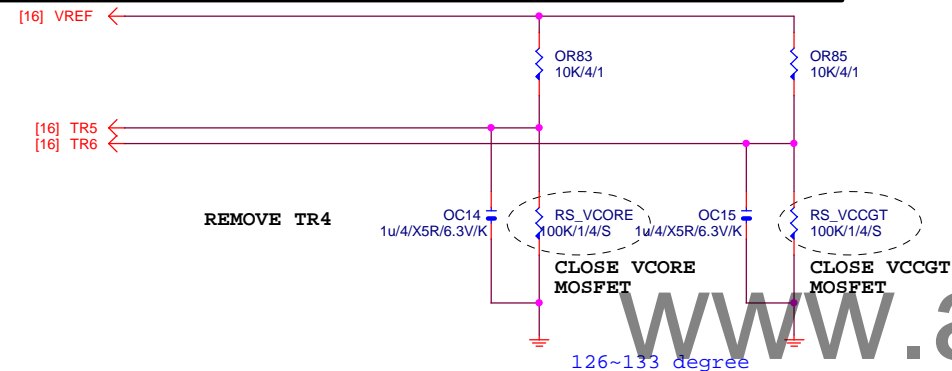


DEBUG PORT

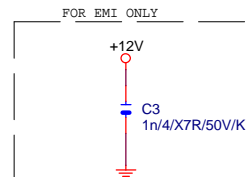
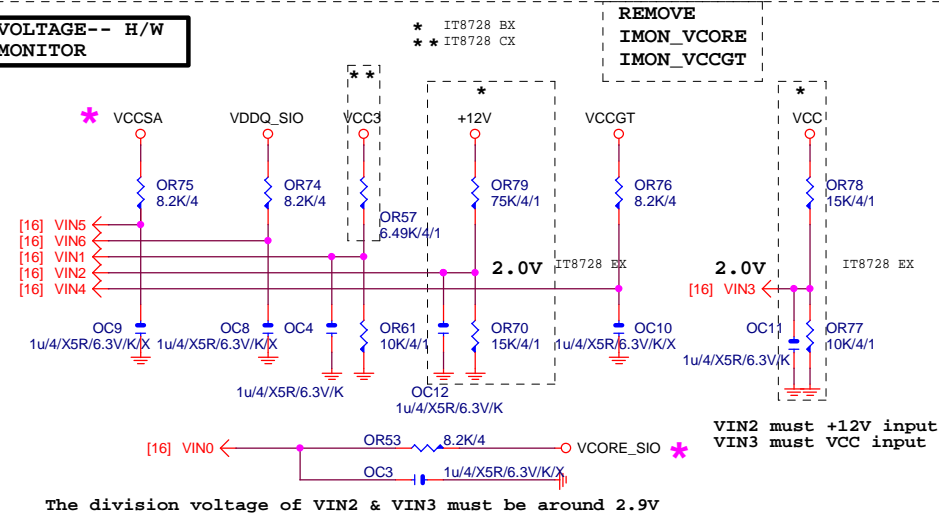


RS_VCORE, RS_VCCGT, CLOSE CPU_VCORE & VCCGT MOSFET

-PROCHOT:有mos heartsink不用prochot function



VOLTAGE-- H/W MONITOR

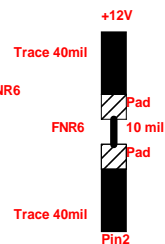
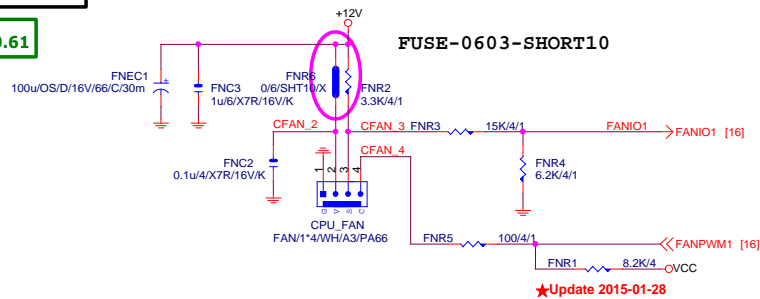


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Title	HWM,KB/MS, FAN CTRL	
Size	Document Number	Rev
Custom	GA-Z170N-WIFI	2.0
Date:	Tuesday, June 14, 2016	Sheet 17 of 48

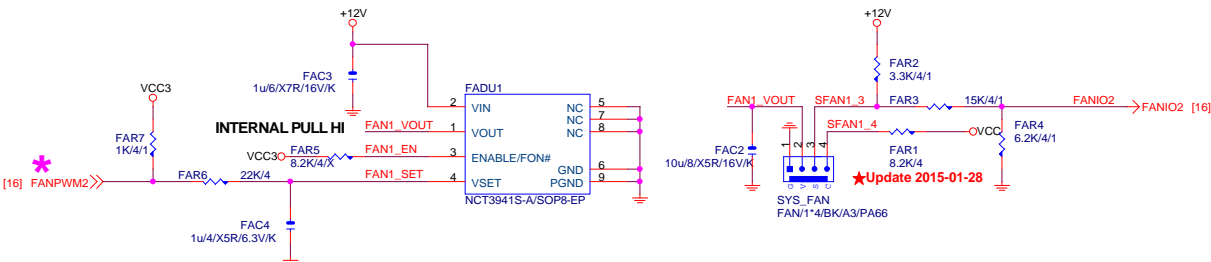
CPU SMART FAN

Rev: 0.61



SYSTEM FAN1

A. Linear SYS_FAN
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)



SYSTEM FAN2

N/A

SYSTEM FAN3

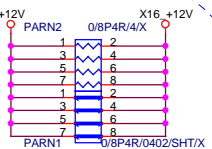
N/A

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Gigabyte Technology

Title		
FAN CTRL		
Size	Document Number	Rev
Custom	GA-Z170N-WIFI	2.0
Date:	Tuesday, June 14, 2016	Sheet 18 of 48

Rev 0.2

+12_protect
short-wire test

PCIESLOT-164P

[8,9,12,22,24,32,38] N_SMBCLK
[8,9,12,22,24,32,38] N_SMBDATA

[12,16,22] N_-PCIE_WAKE

[10] -PCIE16_PR

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]

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	PAC21	0.22u4/X5R/6.3V/K	PA_EXP_TXP8 C
PA_EXP_TXN8	PAC20	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

PCIEX16:16/5/5/5/16

PCI-E REV:1.1--> 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) BANDWIDTH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ

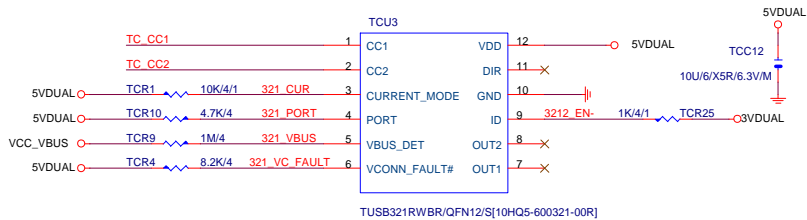
PCI-E/16X-164P/GY/LONG DOUBLE/HK*2

NPA雙魚叉

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Gigabyte Technology		
Title		
PCI EXPRESS * 16		
Size Custom		
Document Number		
GA-Z170N-WIFI		
Date: Tuesday, June 14, 2016		
Sheet 19 of 48		
Rev 2.0		

Type C U30 SW Rev. 1.02



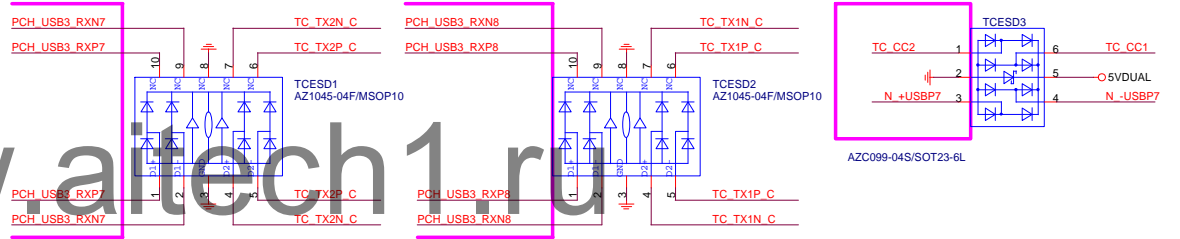
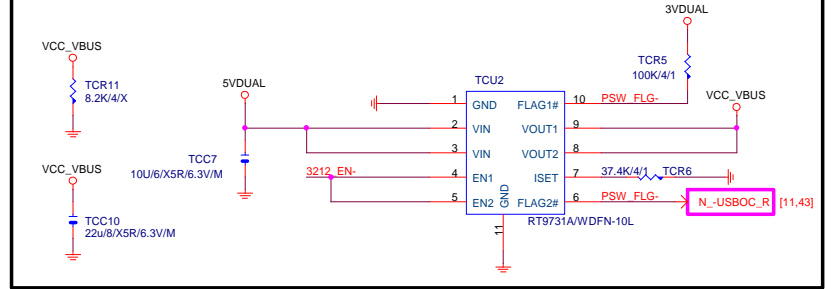
CURRENT MODE

L - Default current / Pull down to GND or NC
M - Medium (1.5A) current / Pull up to VDD 500K
H - High (3.0A) current / Pull up to VDD 10K

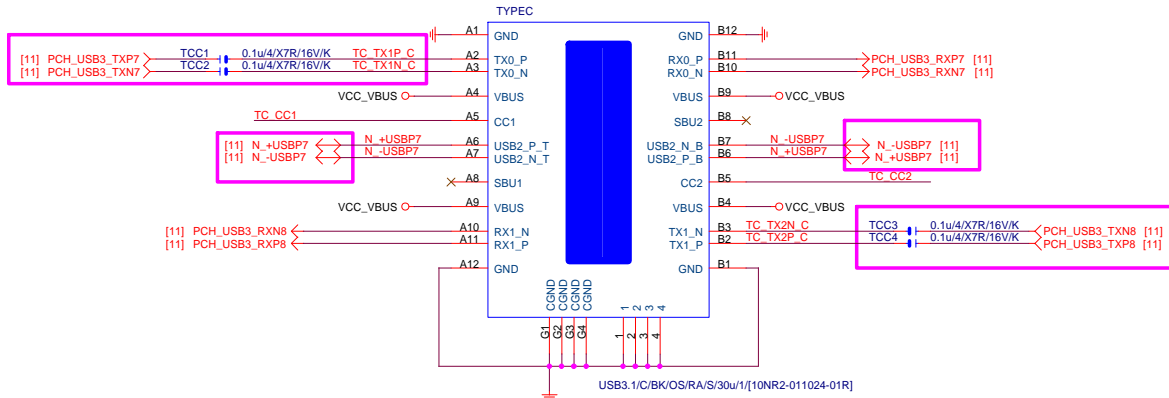
PORT

H - HOST
L - Device
NC - Dual Role

TypeC default 5V/3A



Color markers can be changed by model



USB2.0 can be used the same source

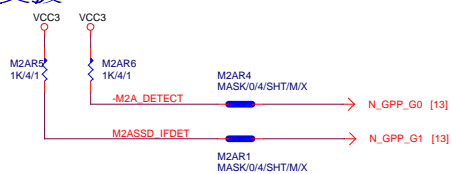
M.2 Lane4 from PCH port18

M.2 Lane3 from PCH port17

M.2 Lane2 from PCH port16

M.2 Lane2 from PCH port15

支援SATA and M.2 function



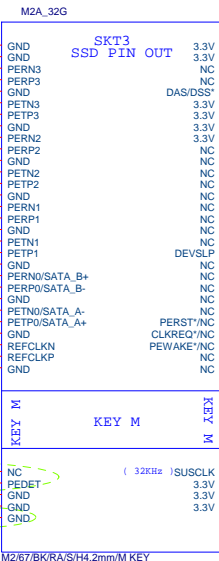
需與M2-CLKREQ對應

SATA : GND
PCIE : NC

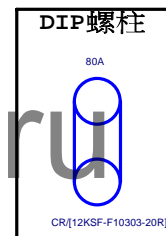
M2插卡時為Low

NGFF-M-75P-CUT42
REMOVE 42A, FOOTPRINT 正反共用。

M.2 有插卡 /沒插卡 GPP_G0	M.2插何種卡? GPP_G1	SATA Express 插何種硬碟? GPP_E0/E2/F1	IO15 (S0)	IO16 (S1)	IO17	IO18	IO19 (S0)	IP20 (S1)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA (M.2)	PCIE x1	PCIE x1	PCIE X1	PCIE x1	SATA
		SATA Express (Low)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	SATA Express	
	PCIE Mode (Hi)	SATA (Hi)	PCIE x4 (For M.2)				SATA	SATA
		SATA Express (Low)	PCIE x4 (For M.2)				SATA Express	
沒插卡 (Hi)	Don't Care (Hi)	SATA (Hi)	PCIE x4				SATA	SATA
		SATA Express (Low)	PCIE x4				SATA Express	

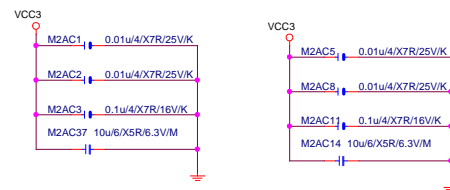
M2ASATAE PERST_N
M2AR7 10p4/NPO/50V/J/X

DIP螺柱



M.2上在背板須修改:

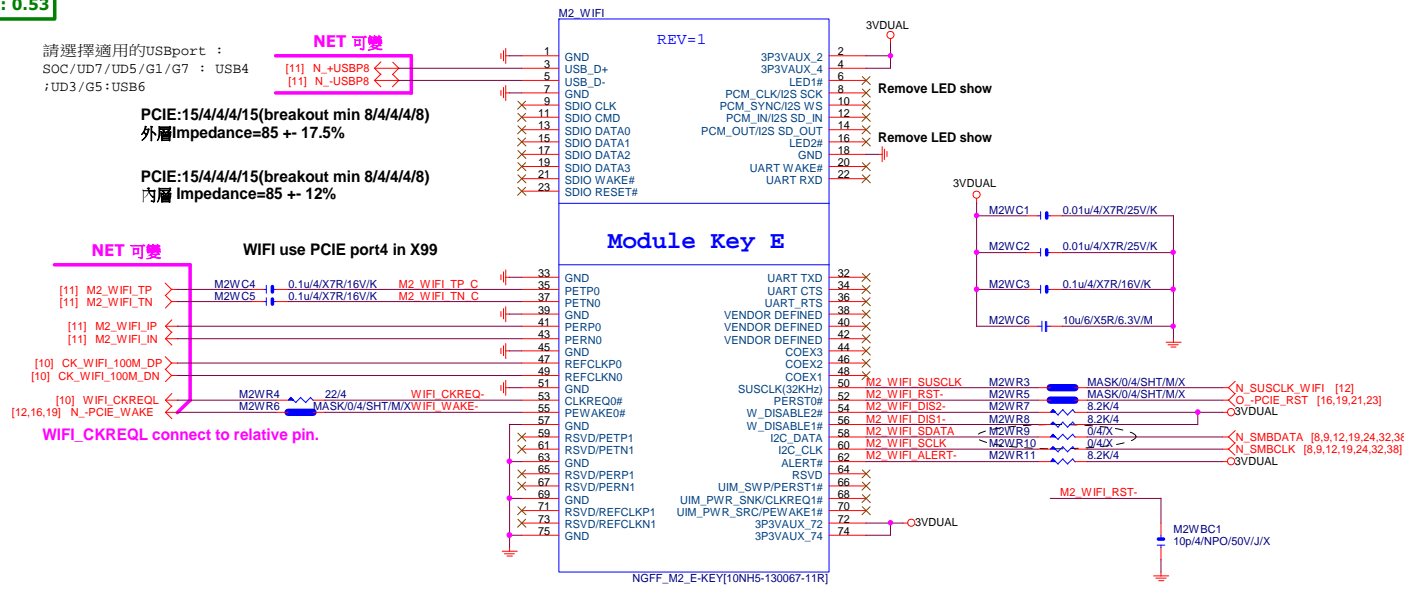
1. DIP螺絲背板上件
2. DIP螺絲背板上件, 須修改料號
3. SMD螺絲正面上件, 須修改料號及FOOTPRINT 正反共用。



SMD螺柱



FOOTPRINT: 276c236B165P



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FOR M.2 WIFI MODULE ON BOARD

WIFI CARD 螺絲BOM建成WIFI-BRACKET

WIFI-SCREW

SCREW M2*4mm[12KS2-010204-31R]/X

N/A-->已包含在WIFI-BRACKET內

FOR M.2 WIFI PIN SIZE

SMA ANT2
SMA[11NH6-010001-71R]

SMA ANT1
SMA[11NH6-010001-71R]

ANTENNA_BRACKET
BRACKET[12AC2-000001-01R]

WIFI-CAP 白色透明

M2_WIFI_CAP[111KWP-000001-11R]

MODULE 可變

M.2 EKEY

WIFI_MODULE
Wi-Fi WITH BT M.2 CARD QUALCOM[20CB1-028260-20R]

WIFI-BRACKET

1 X 1 2 X 2

WIFI-BRACKET[12AC2-000005-01R]

M.2 WIFI 支架料號包含
底座螺絲及CARD螺絲

FOOTPRINT:
M2-WIFI-BRACKET

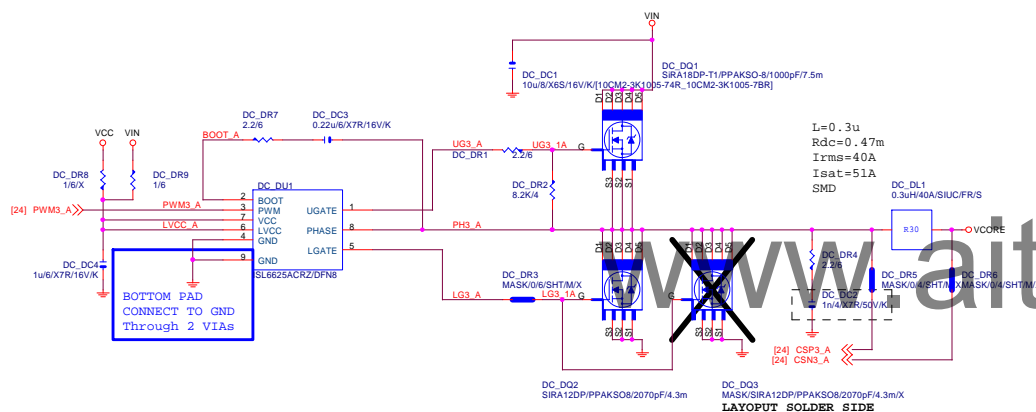
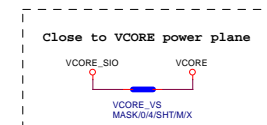
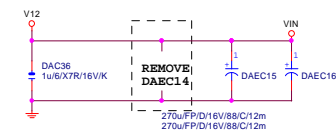
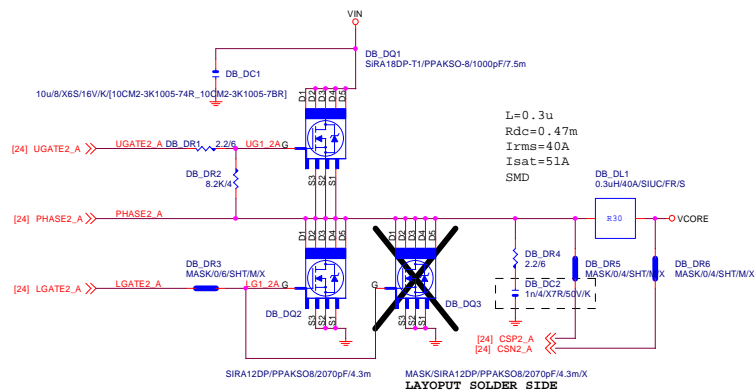
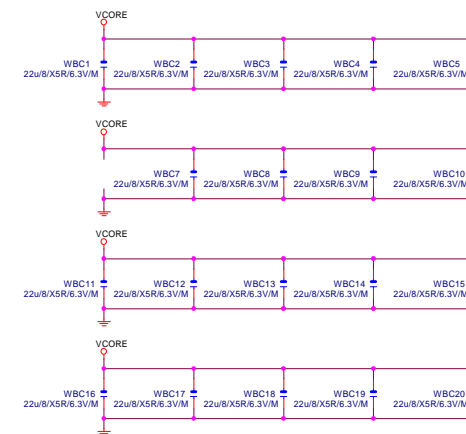
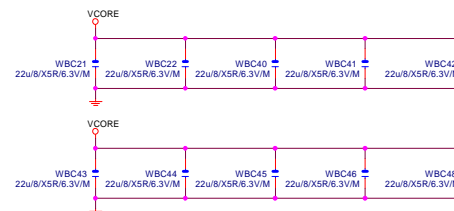
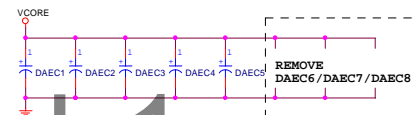
GIGABYTE™

Title **M2_WIFI_E_KEY**

Size Custom Document Number **GA-Z170N-WIFI** Rev **2.0**

Date: Tuesday, June 14, 2016 Sheet 22 of 48

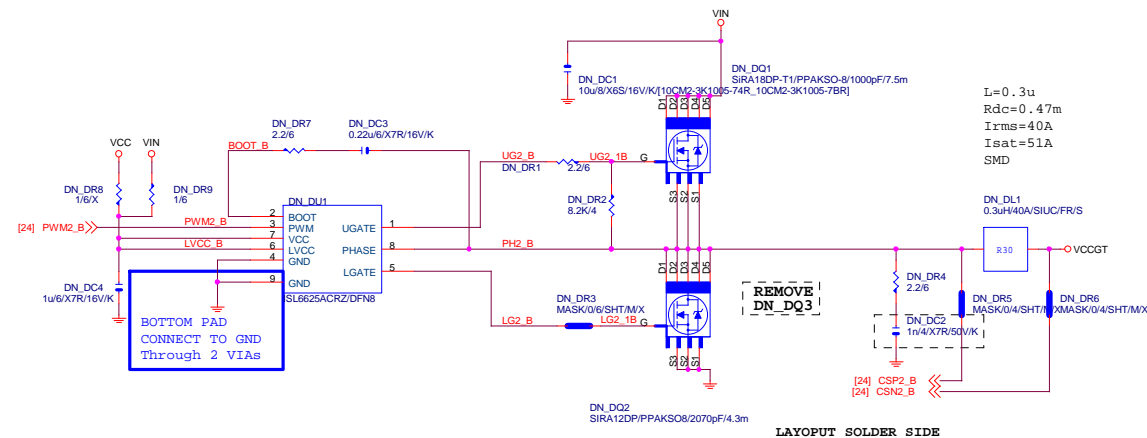
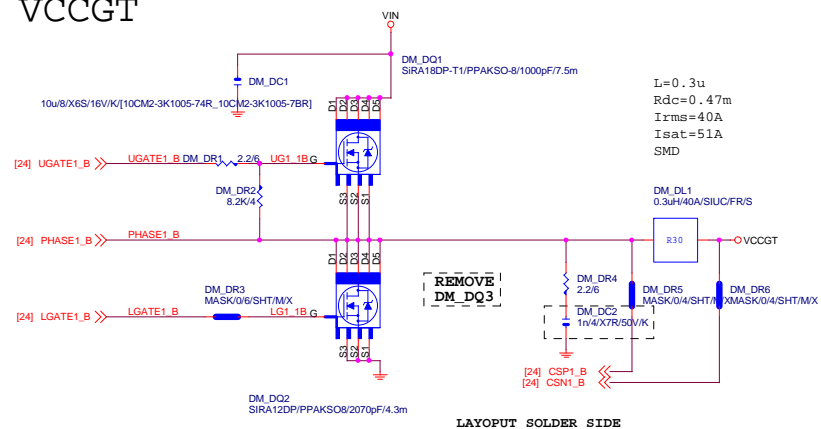
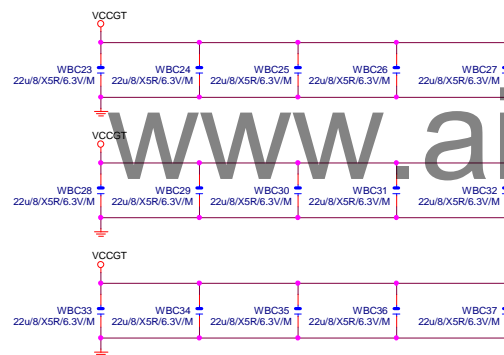
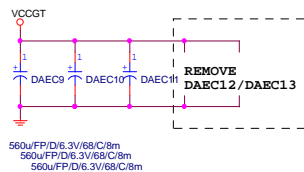
VCORE

VCORE CAP 560u*5PCS
22u*29PCS

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Title			
ISL95858 MOS			
Size	Document Number	Rev	
Custom	GA-Z170N-WIFI	2.0	
Date:	Tuesday, June 14, 2016	Sheet	25 of 48

VCCGT

VCCGT CAP 560u*3PCS
22u*15PCS

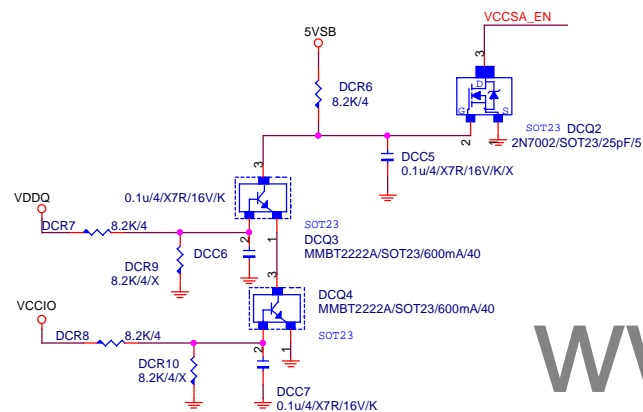
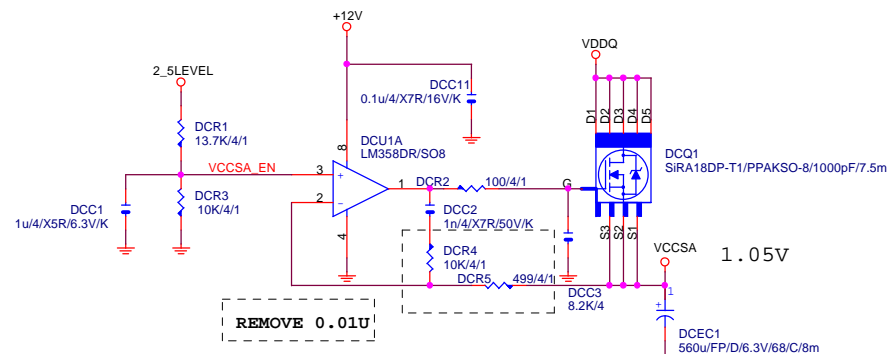
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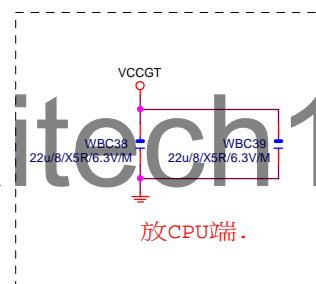
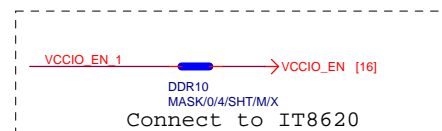
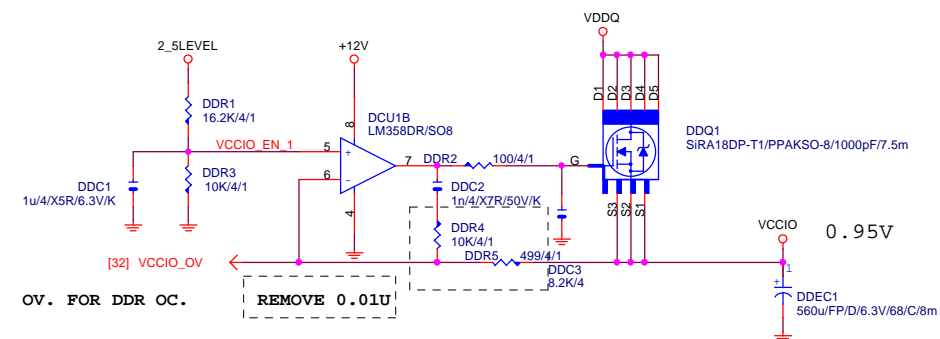
Title		
ISL95858 MOS		
GA-Z170N-WIFI		
Size	Document Number	Rev
Custom		2.0
Date:	Tuesday, June 14, 2016	Sheet 26 of 49

VCCSA

REV:0.4

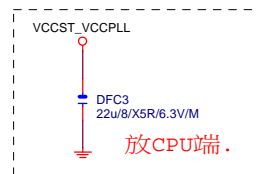
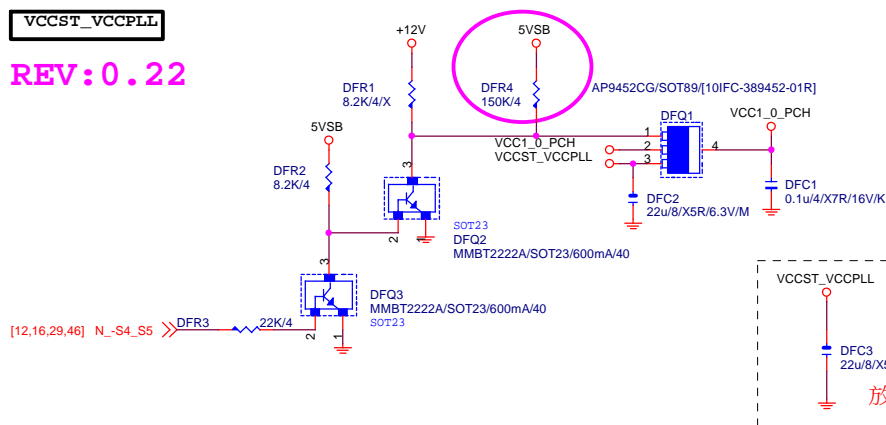


VCCIO



VCCST_VCCPLL

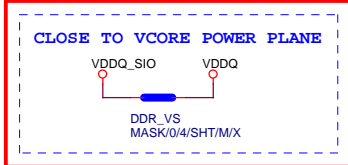
REV:0.22



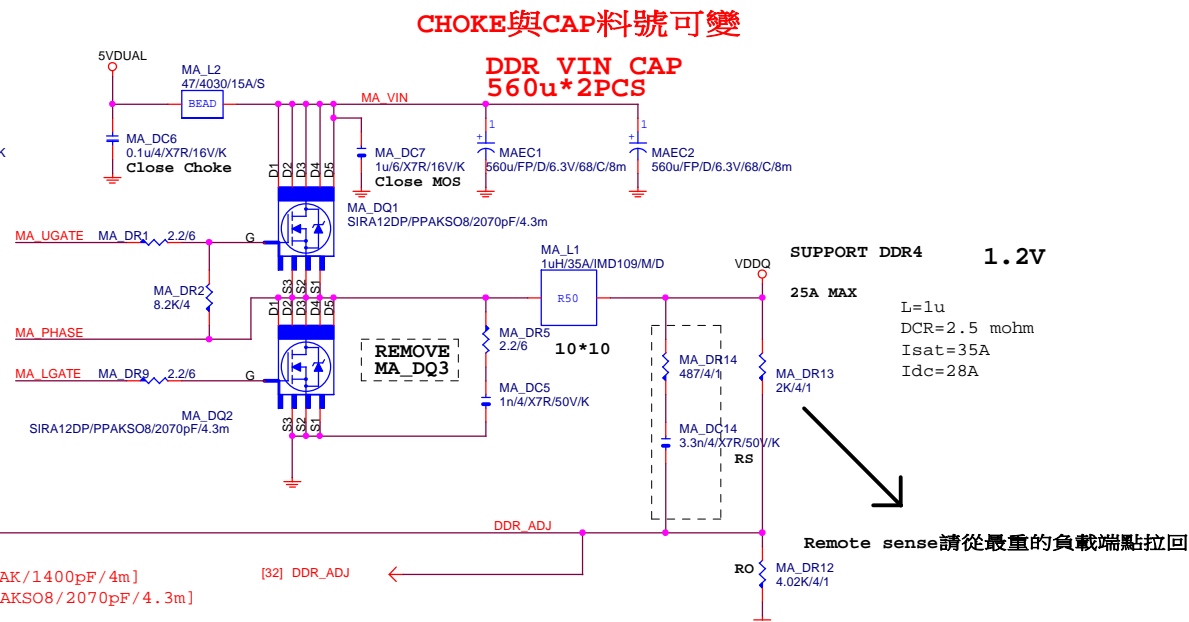
GIGABYTE™

Title	VCCSA VCCIO		
Size	Document Number	GA-Z170N-WIFI	Rev
Custom			2.0
Date:	Tuesday, June 14, 2016	Sheet	27 of 48

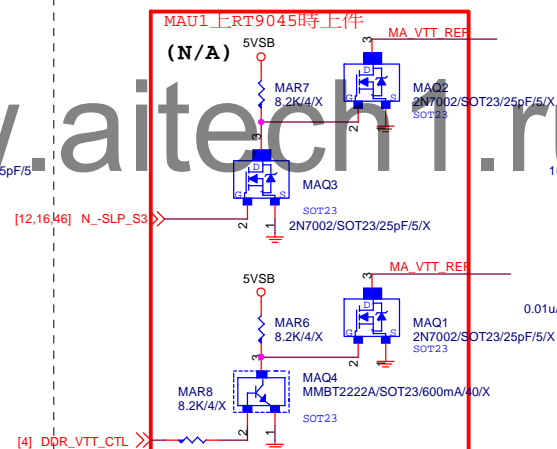
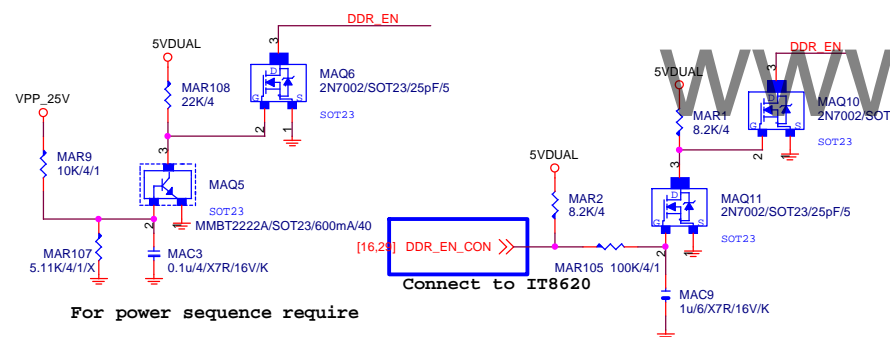
REV: 0.86



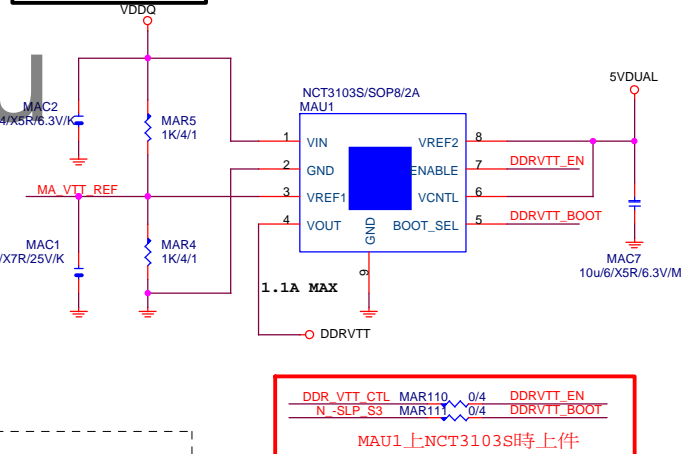
MOSFET請依MOSFET使用規則,自行選擇
ON-->10IF9-040406-10R[NTMF54C06N/N/PPAK/1400pF/4m]
VISHAY-->10IF9-040012-10R[SIRA12DP/PPAKS08/2070pF/4.3m]



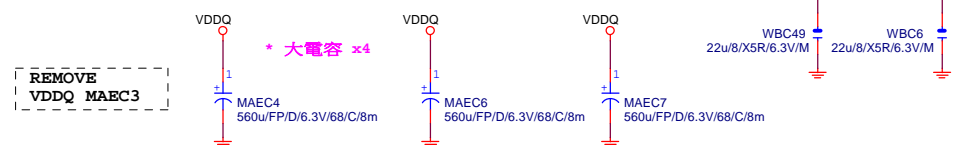
PWR SEQ



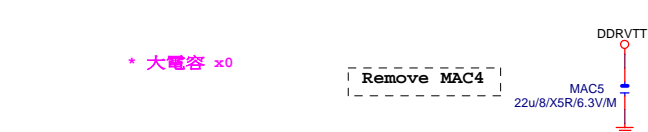
DDRVTT



DDR	CAP	560u*4PCS	22u*2PCS
-----	-----	-----------	----------



DDRVTT CAP



GIGABYTE™

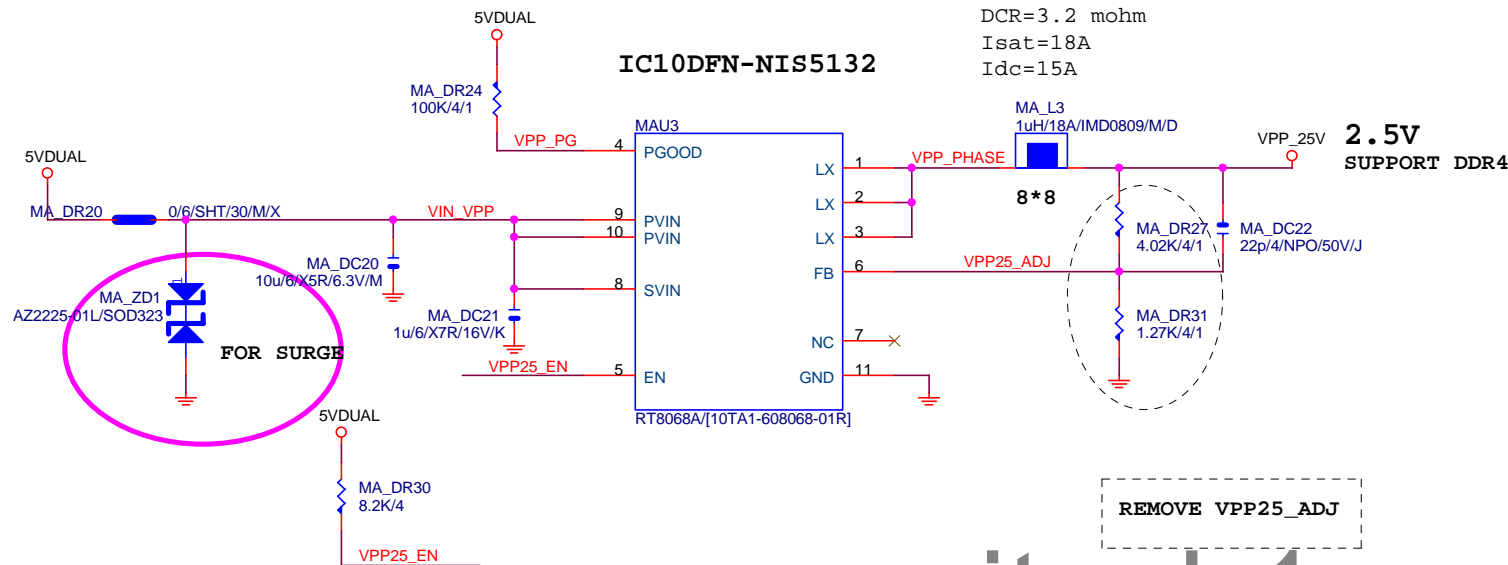
Title			
RT8120_DDR POWER			
Size	Document Number	Rev	
Custom	GA-Z170N-WIFI	2.0	
Date:	Tuesday, June 14, 2016	Sheet	28 of 48

VPP_25V

REV:0.88 (IRON CHOKE)

CHOKE與CAP料號可變

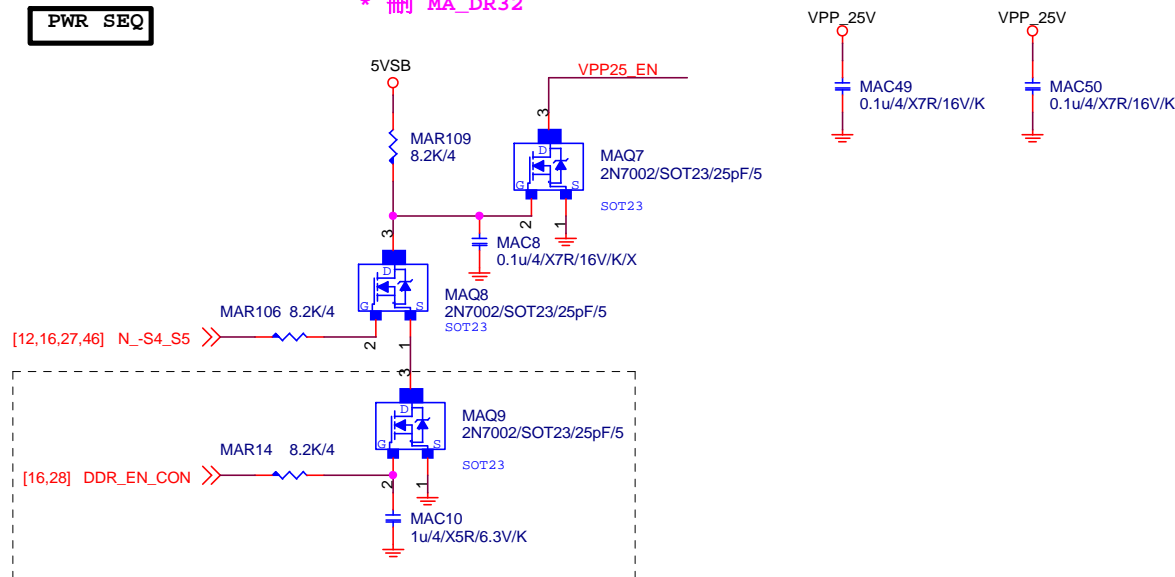
L=1u
DCR=3.2 mohm
Isat=18A
Idc=15A



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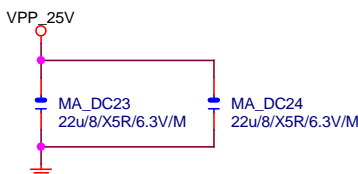
PWR_SEQ

* 刪 MA_DR32



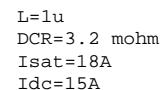
VPP CAP 22u*1PCS

* 大電容 x0



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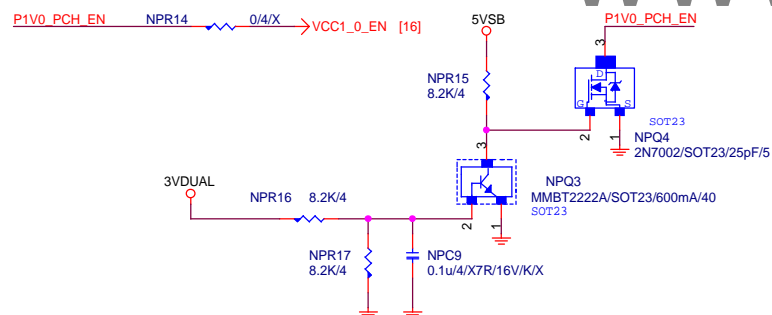
Title RT8068A_VPP25 POWER		
Size Custom	Document Number GA-Z170N-WIFI	Rev 2.0
Date: Tuesday, June 14, 2016	Sheet 29	of 48



Remote sense請從最重的負載端點拉回

RO NPR13 1.053V
6.2K/4/1

$0.8 \cdot (1 + R_S / R_O) = V_{out}$
 $0.8 \cdot [1 + 2K / 6.2K] = 1.053V$



請放置CHOKE一出來的地方

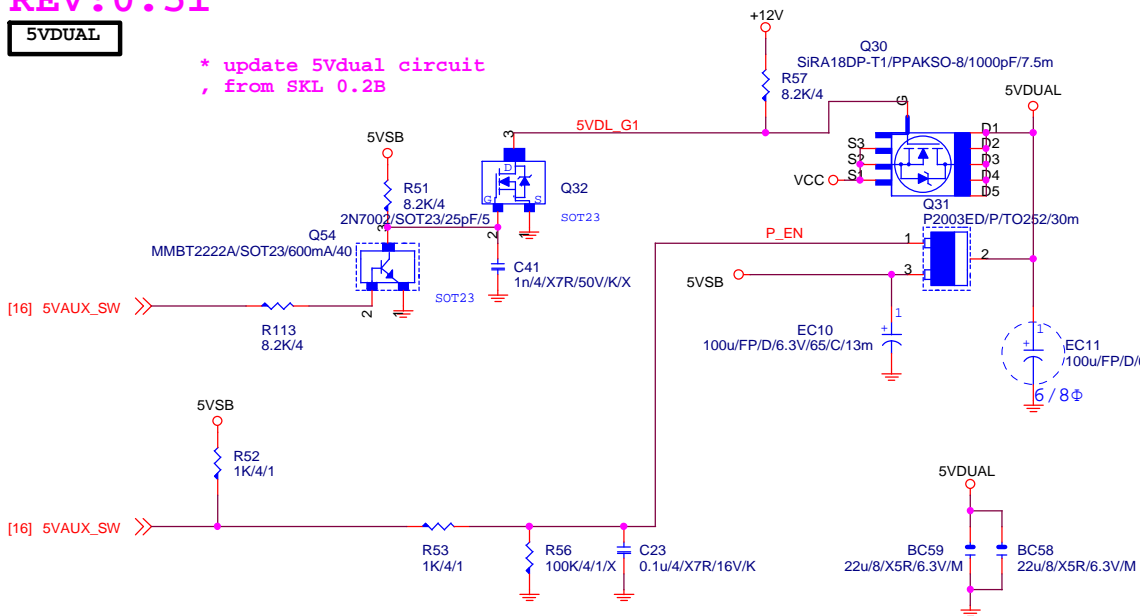
GIGABYTE™

Title			
RT8120_PCH POWER			
Size	Document Number	Rev	
Custom	GA-Z170N-WIFI	2.0	
Date:	Tuesday, June 14, 2016	Sheet	30 of 48

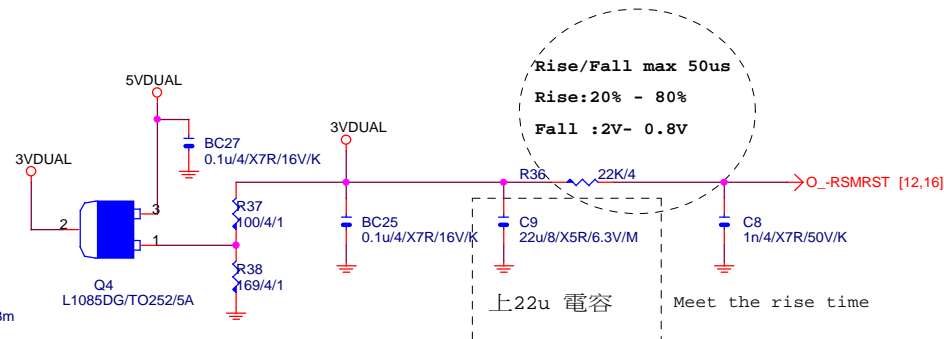
REV:0.51

5VDUAL

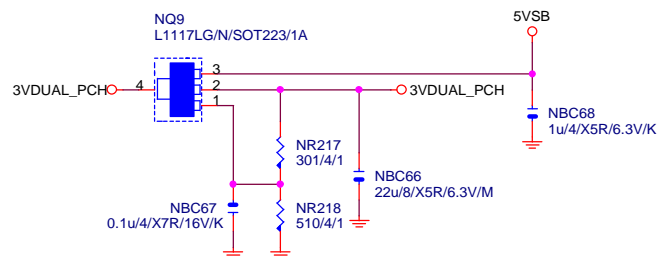
* update 5Vdual circuit
from SKL 0.2B



3VDUAL

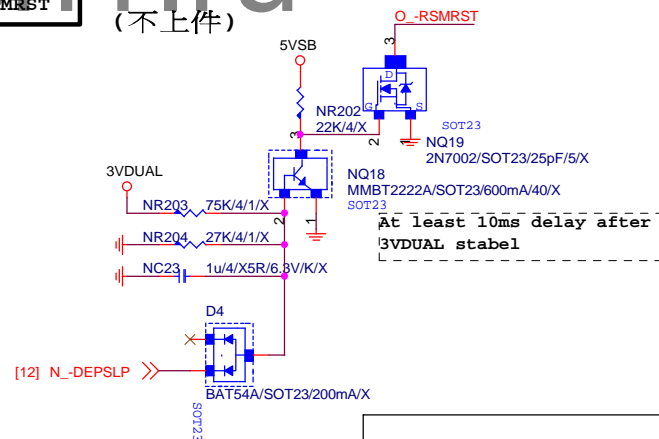


3VDUAL_PCH



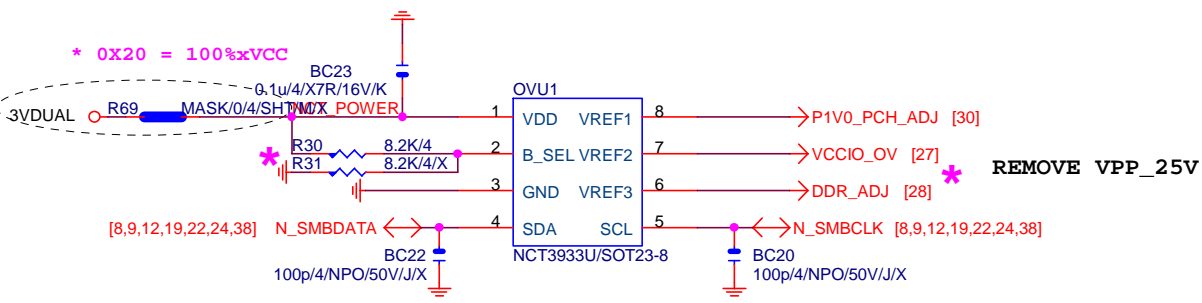
O_RSMRST

(不上件)



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Title			
DISCRETE POWER			
Size	Document Number	Rev	
Custom		GA-Z170N-WIFI	
Date:	Tuesday, June 14, 2016	Sheet	31 of 48

OVER VOLTAGE

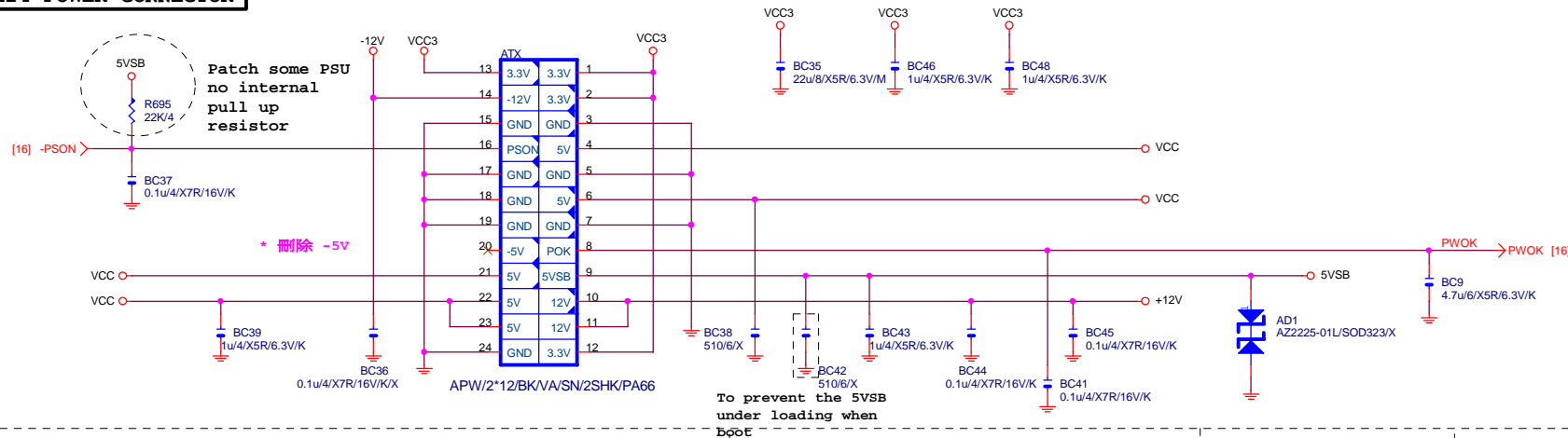


NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCCL_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

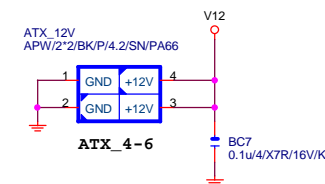
Gigabyte Technology

Title		
CPU CORE VR-2		
Size Custom	Document Number	Rev
	GA-Z170N-WIFI	2.0
Date:	Tuesday, June 14, 2016	Sheet 32 of 48

ATXX24 POWER CONNECTOR



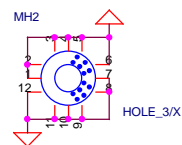
ATXX4 POWER CONNECTOR



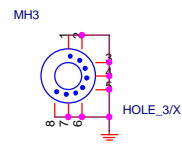
BLACK CONNECTOR

螺絲孔

MH1:GND-T FOR EMI TEST驗證

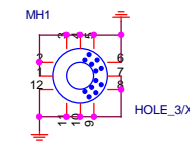


HOLE_4-RH-5MM-1

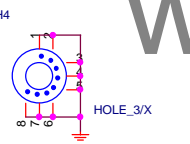


HOLE_4-RH-5MM-5PIN-1

Modify for EMI

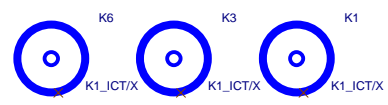


HOLE_4-RH-5MM-1



HOLE_4-RH-5MM-5PIN-1

固定孔/光學點



K1-ICT

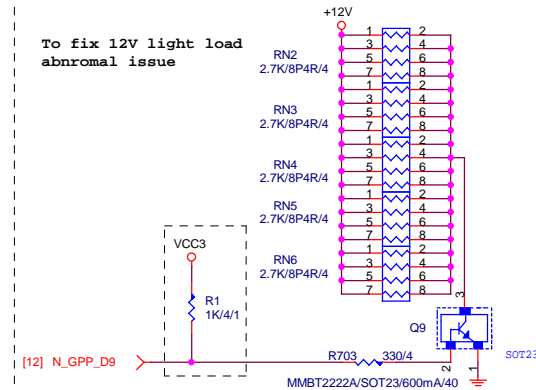
To prevent the 5VSB under loading when boot



4MMH

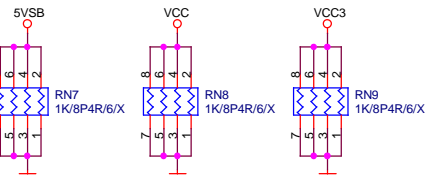
+12V DUMMY LOAD

To fix 12V light load abnormal issue

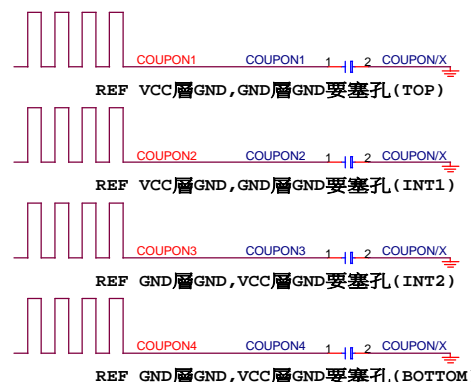


【技術通報R&D技術通報153】

DUMMY LOAD



COUPON



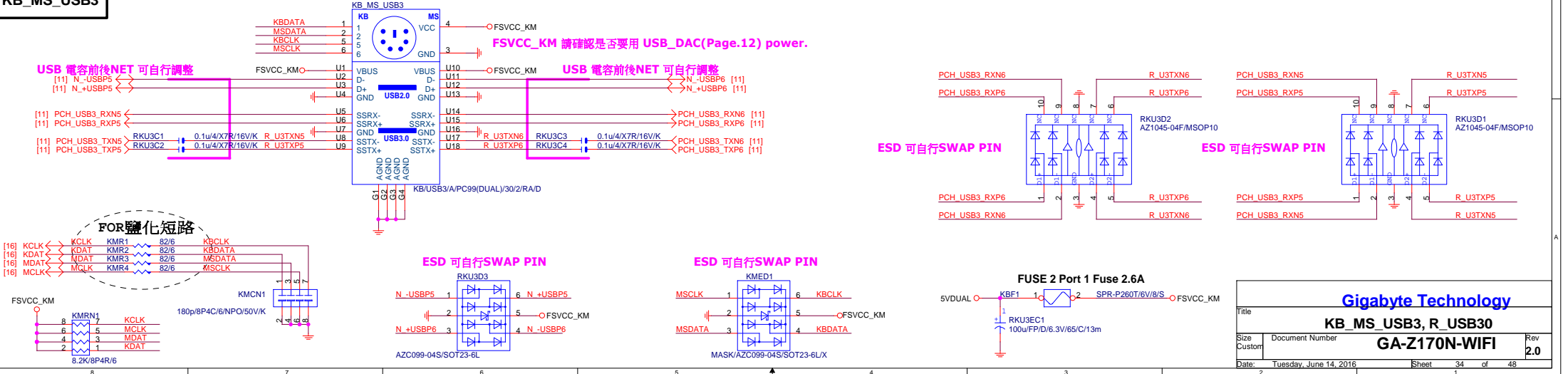
-PROHOT

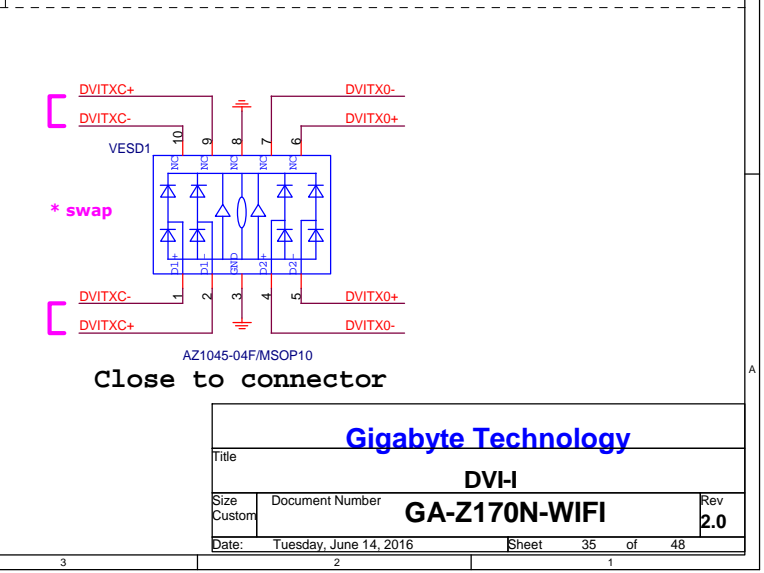
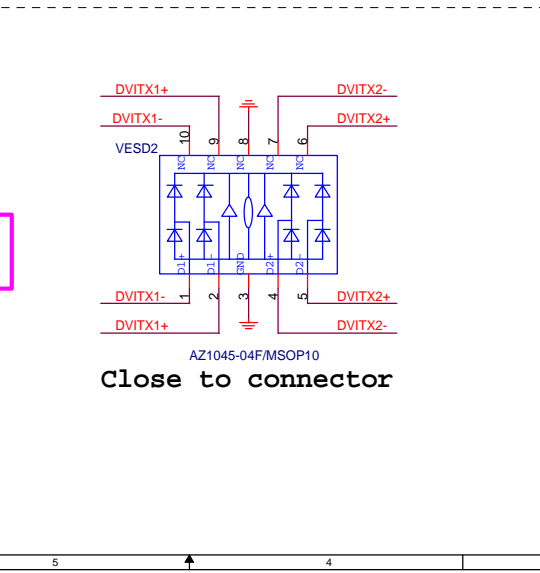
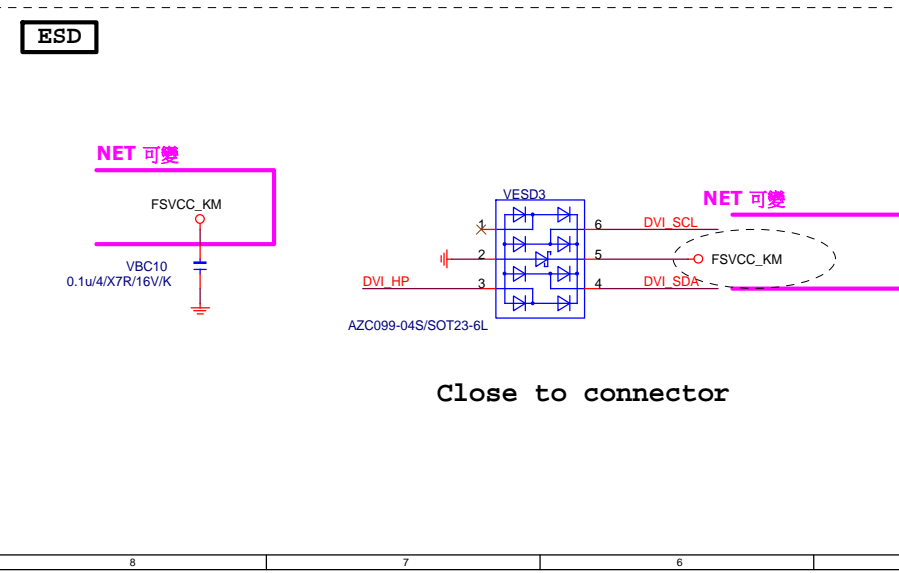
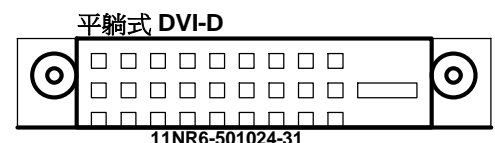
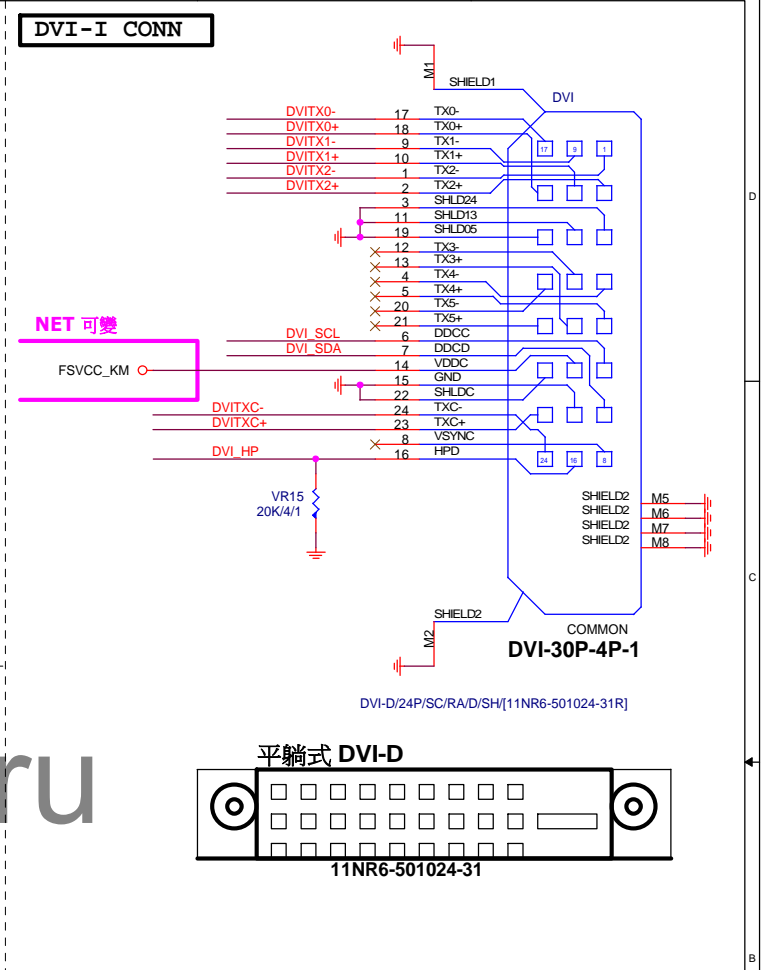
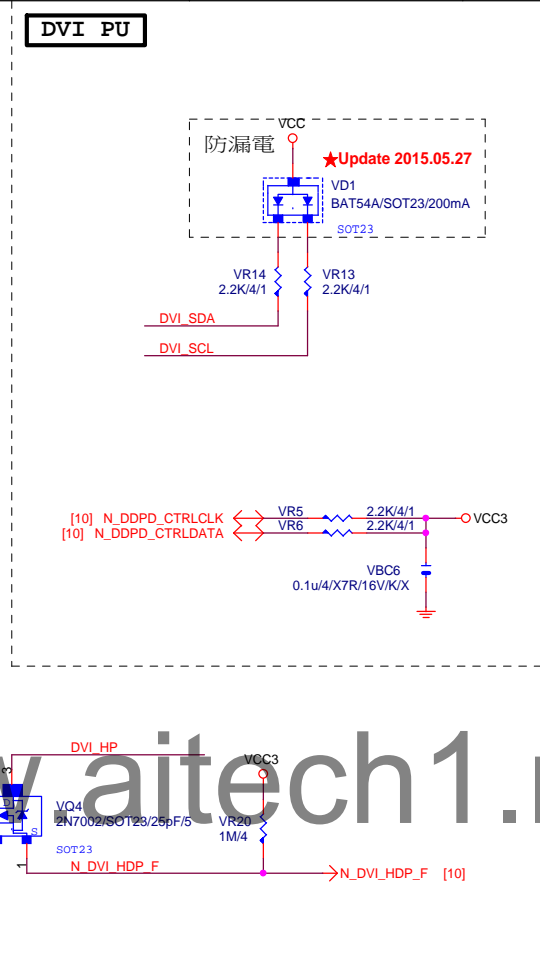
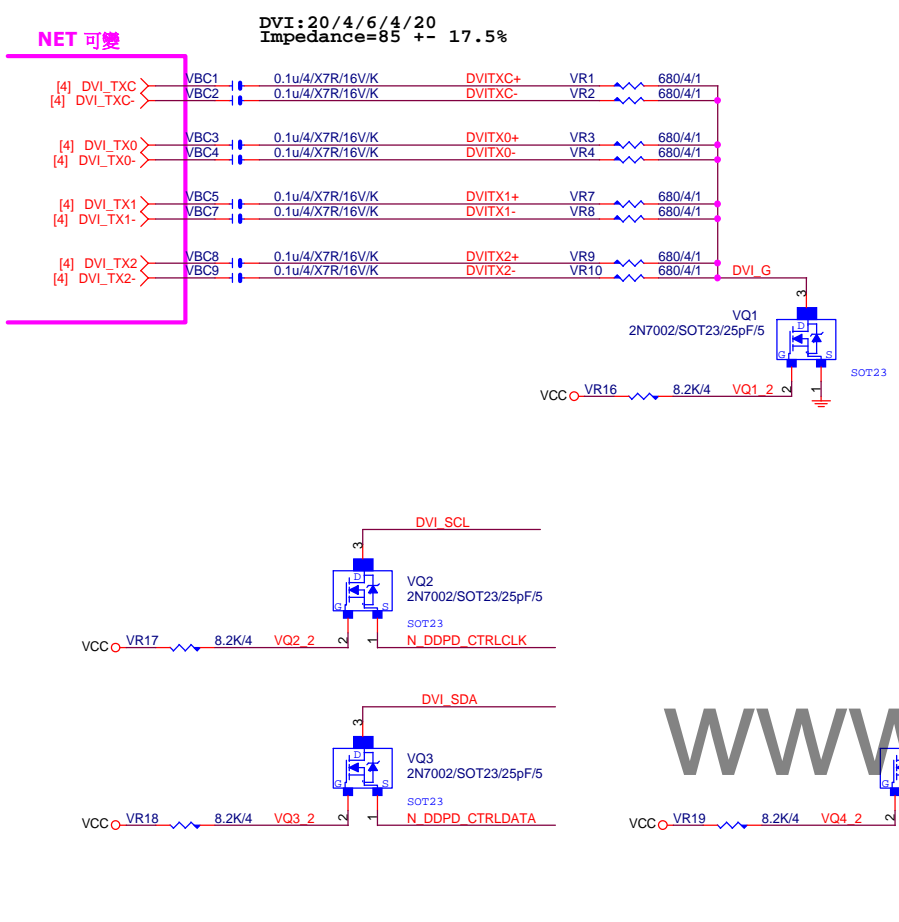
[4,16] A_-PROHOT → **A_-PROCHOT** **R2** MASK/0/4/SHT/M/X → **VR_HOT** [24]

Gigabyte Technology		
ATX POWER CONNECTOR		
Size Custom	Document Number	Rev 2.0
GA-Z170N-WIFI		
Date: Tuesday, June 14, 2016	Sheet 33 of 48	

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KB_MS_USB3





Rev: 0.62

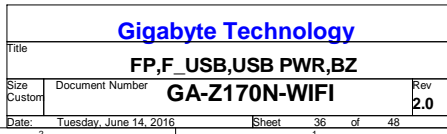
Rev: 0.62

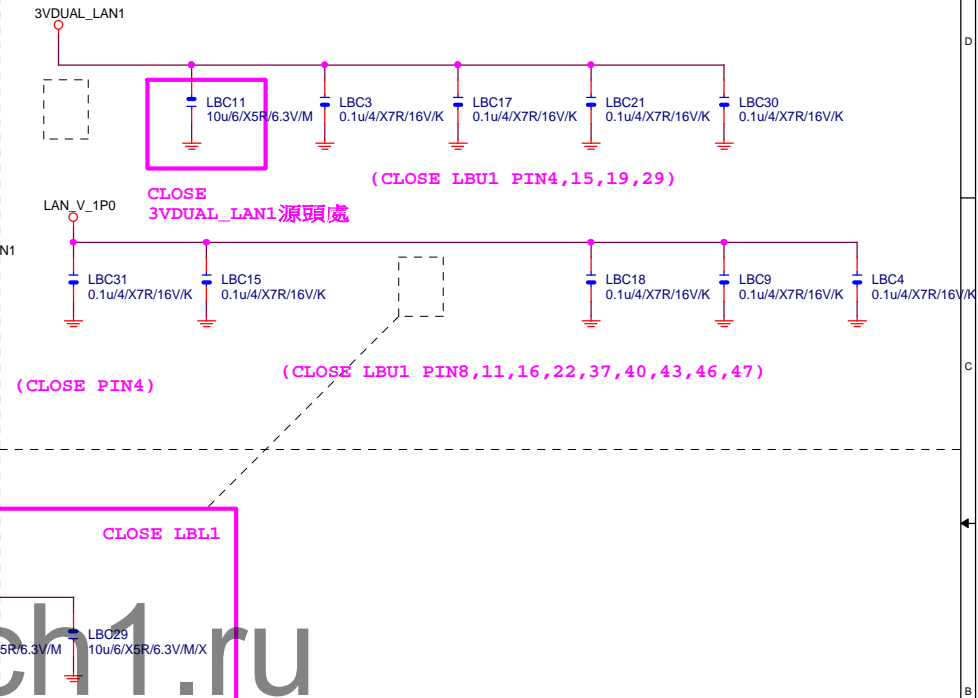
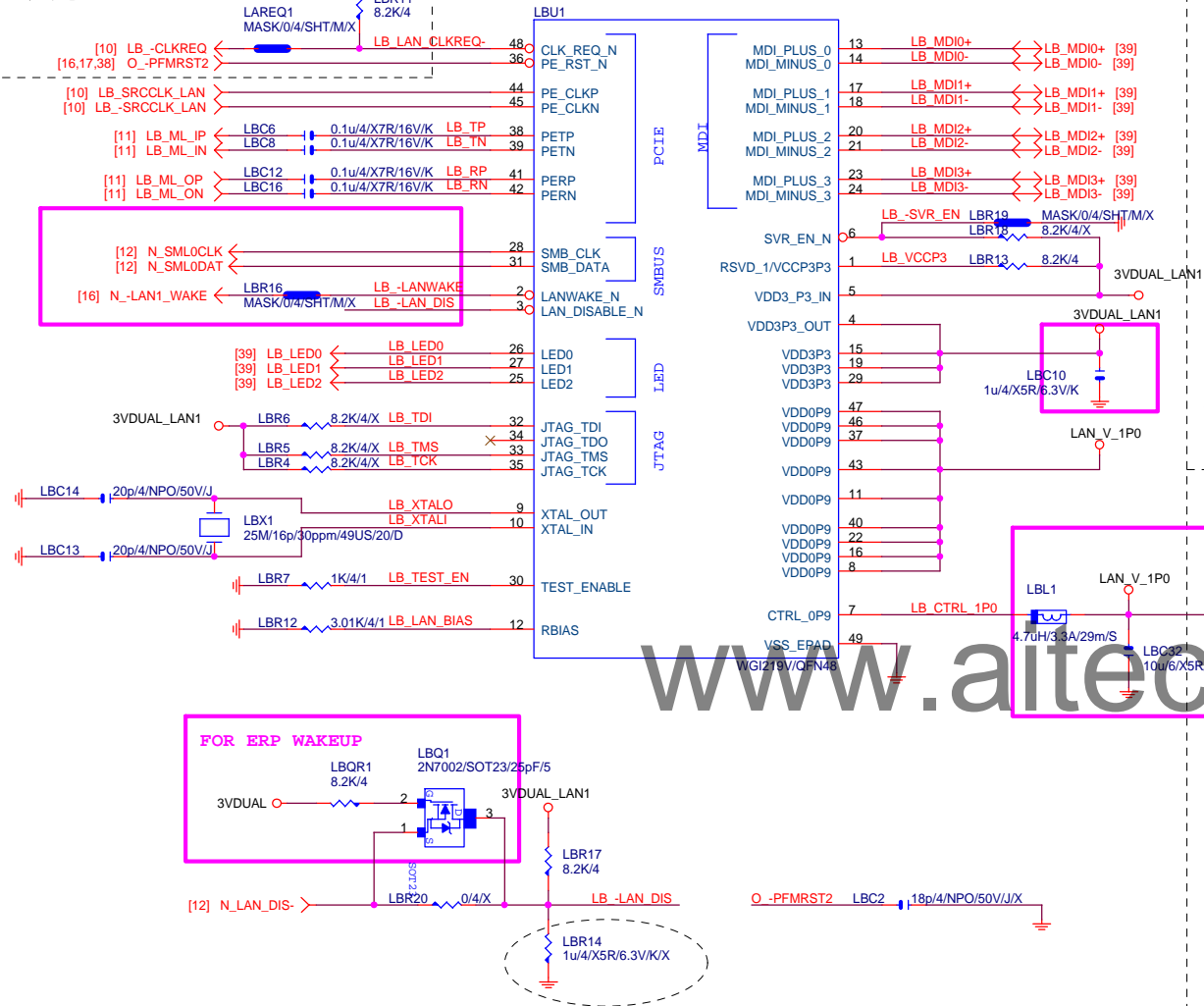


HDMI LEVEL SHIFT SCL, SDA, HPT connect to relative pin at South Bridge side.



【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訊號過慢,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)



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

Gigabyte Technology

DUAL LAN~ I219

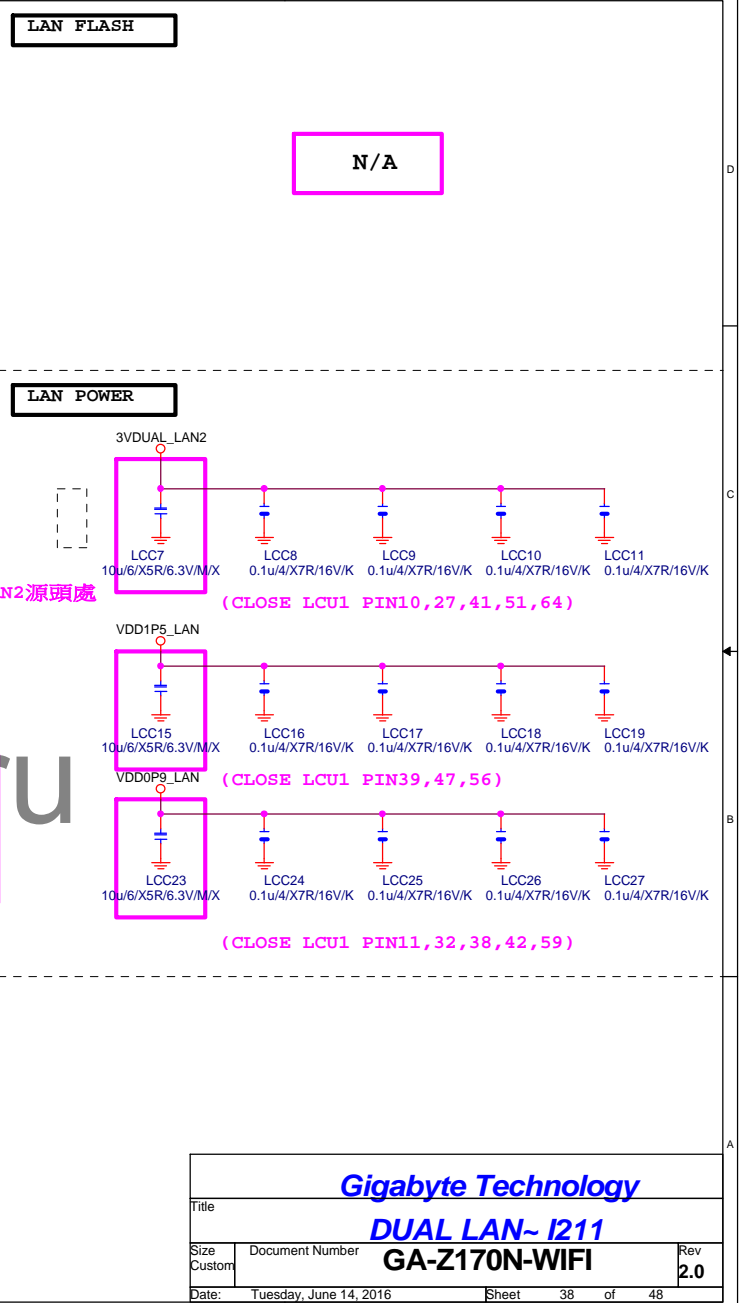
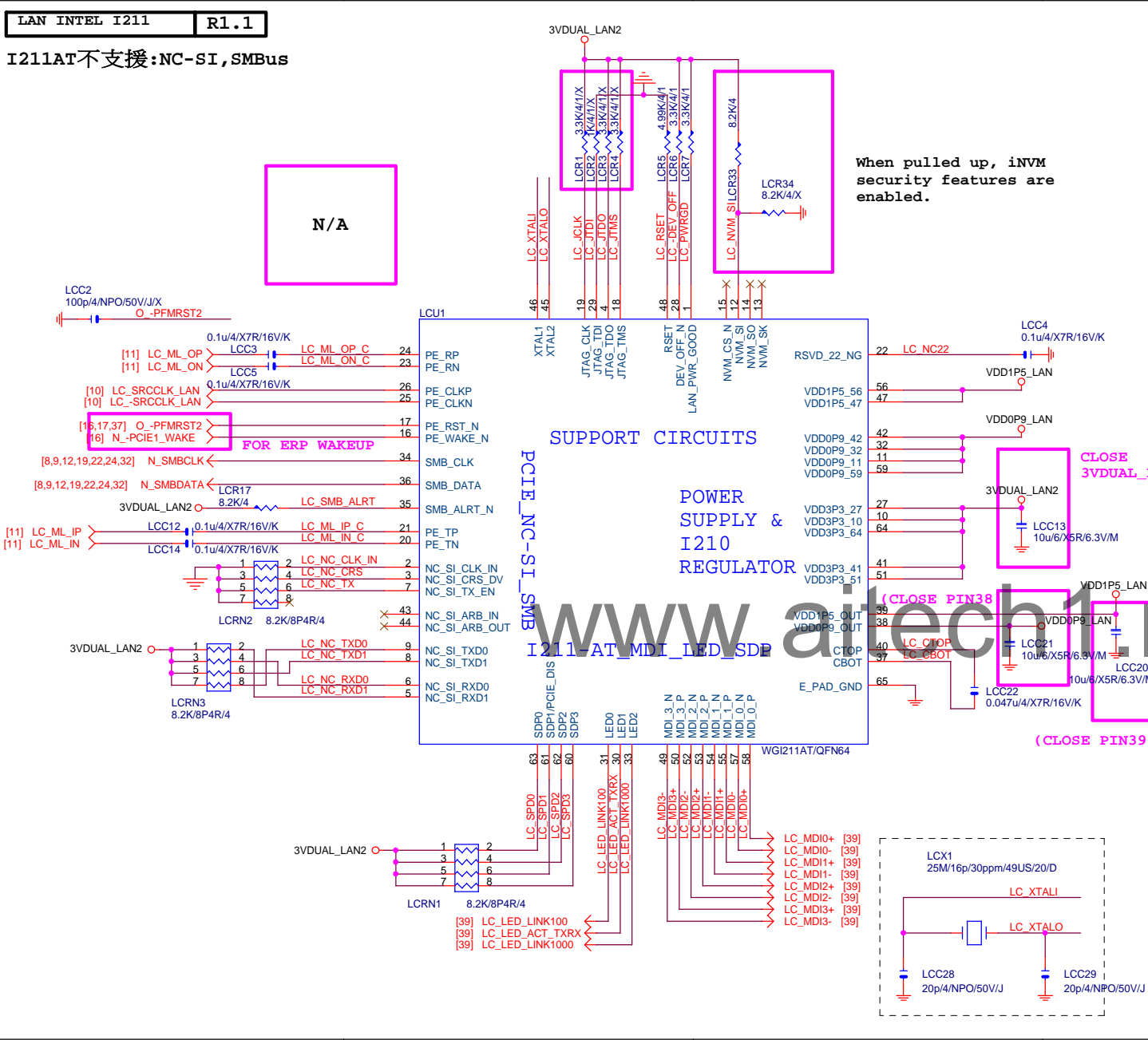
GA-Z170N-WIFI

Rev
2.0

Date: Tuesday, June 14, 2016

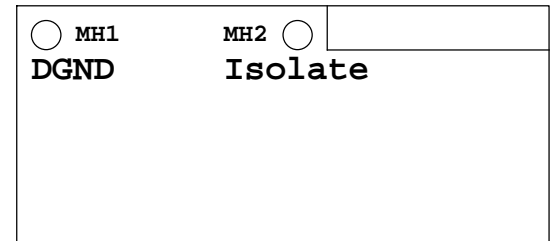
Sheet 37 of 48

I211AT不支援:NC-SI,SMBus



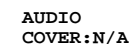
ALC1150 五孔+SPDIF
AUDIO JACK

1. MH1空間夠,下DGND
空間不夠,才改為Isolate
2. MH2一律改為Isolate
3. Codec下方,第二層必須參考GND



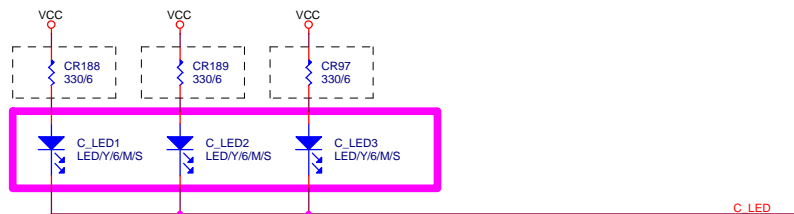
A graph of a step function on a coordinate plane. The x-axis is labeled from 0 to 10 with increments of 2. The y-axis is labeled from 0 to 4 with increments of 1. The function is defined by the following points: (0, 1), (2, 1), (2, 2), (4, 2), (4, 3), (6, 3), (6, 4), (8, 4), (8, 5), (10, 5), and (10, 6). The function consists of three horizontal segments at y=1, y=2, and y=3, each of length 2 units, followed by a final segment at y=5 from x=8 to x=10.

Close to ALC1150



Title			
ALC1150			
Size Custom	Document Number	GA-Z170N-WIFI	Rev 2.0
Date:	Tuesday, June 14, 2016	Sheet 40 of 48	

Rev 0.93



VALUE可變,LED顏色請自行修改

[UD系列--> 中亮黃LED(黃色):LED/Y/6/M/S]

[SOC系列--> 中亮橘LED(橘色):LED/O/M/0603/S]

[GAMING系列--> 中亮紅LED(紅色):LED/R/H/0603/S]

上限截止頻率

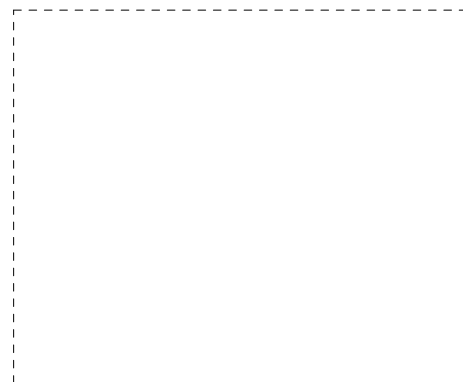
$$f_H = 1 / [2\pi * (R * C)] = 194\text{Hz}$$

電壓增益

$$A_v = 1 + (R_f / R_n) = 100\text{倍}$$

Rear Panel LED ON/OFF

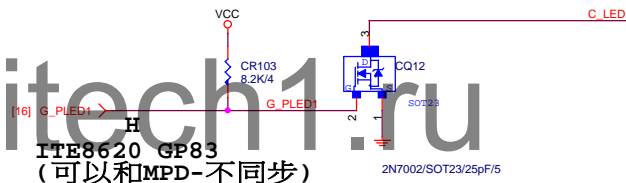
	IO_GP80
REAR LED ON	H
REAR LED OFF	L



LAYOUT OPTION : SOC/UD7系列要LAYOUT,
其餘UD系列機種不留LAYOUT

LAYOUT注意:

CQ12,CQ18,CQ19必須擺放在一起



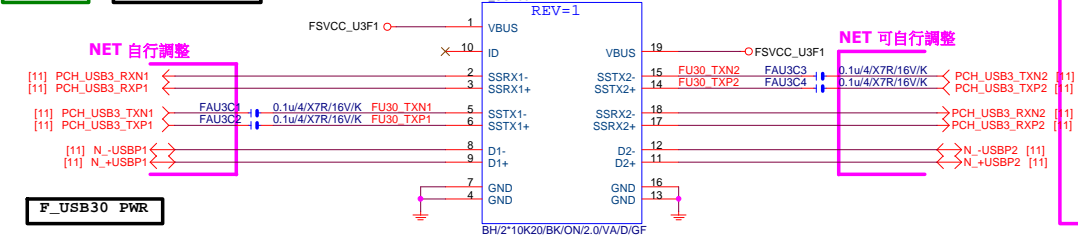
AUDIO LED Control (沒有LPT model)

	IO_GP82	IO_GP83	IO_GP91
Still Mode	L	H	L
OFF Mode	L	L	L
Pluse Mode	L	H	BREATH
Beat Mode	OD	H	L

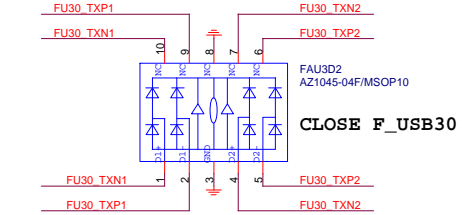
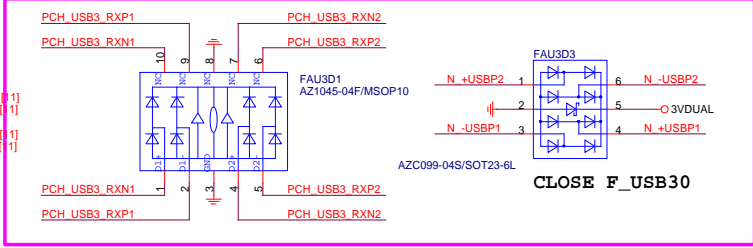
AUDIO LED Control (有LPT model)

	IO_GP92	IO_GP17	IO_GP91
Still Mode	L	H	L
OFF Mode	L	L	L
Pluse Mode	L	H	BREATH
Beat Mode	OD	H	L

GIGABYTE ™		
Title		
AUDIO LED		
Size	Document Number	Rev
Custom	GA-Z170N-WIFI	2.0
Date:	Tuesday, June 14, 2016	Sheet 42 of 48



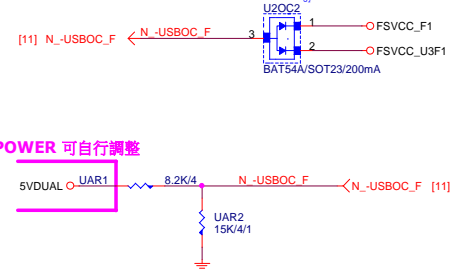
NET 可自行調整



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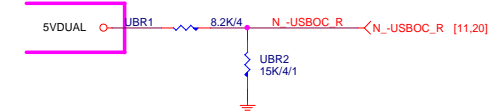
-USBOC_F

F_USB 2.0 OC SIGNAL



-USBOC_R

POWER 可自行調整

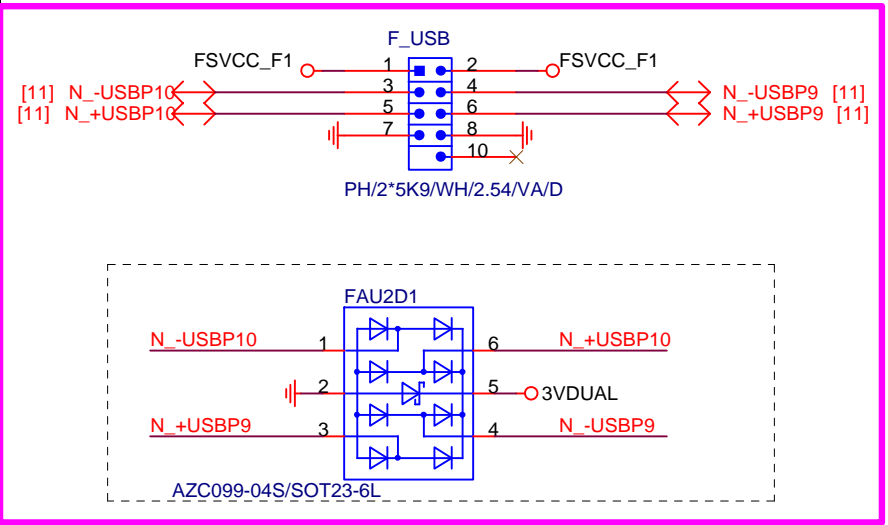


* 接 PCH N_GPP_B21

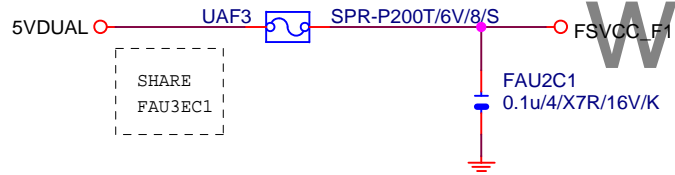
PCH PU 3Vdual



NET 可變



Close to connector
FUSE 2 Port 1 Fuse 2A

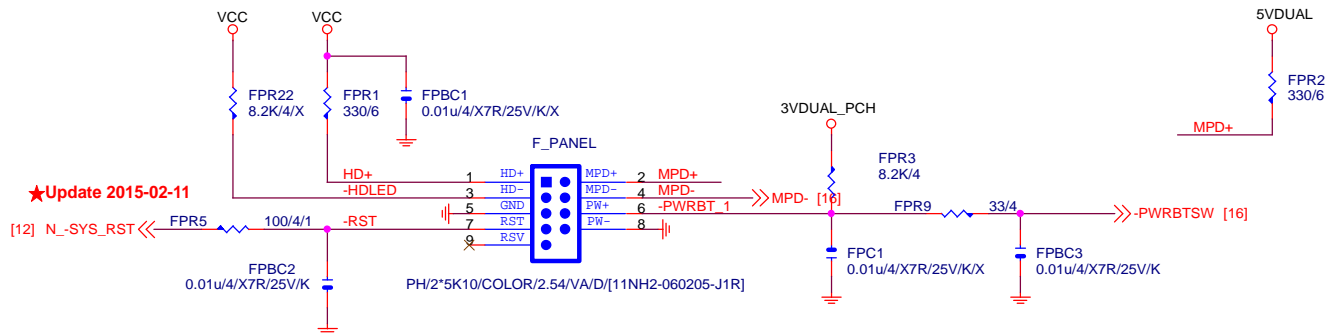


F_USB 2.0 OC SIGNAL-->SCH IN F_USB30
PAGE

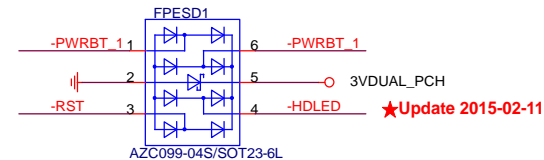
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Title			
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Size A	Document Number		Rev
	GA-Z170N-WIFI		2.0
Date:	Tuesday, June 14, 2016	Sheet	44 of 48

FRONT PANEL

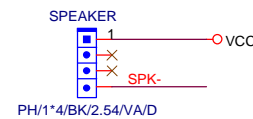
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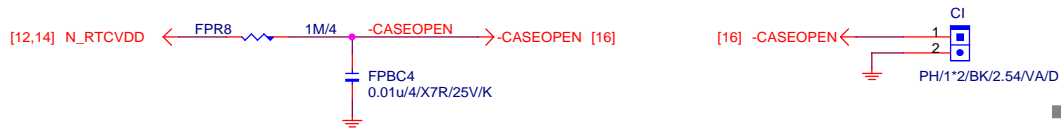
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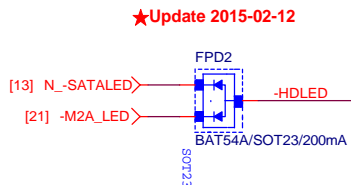


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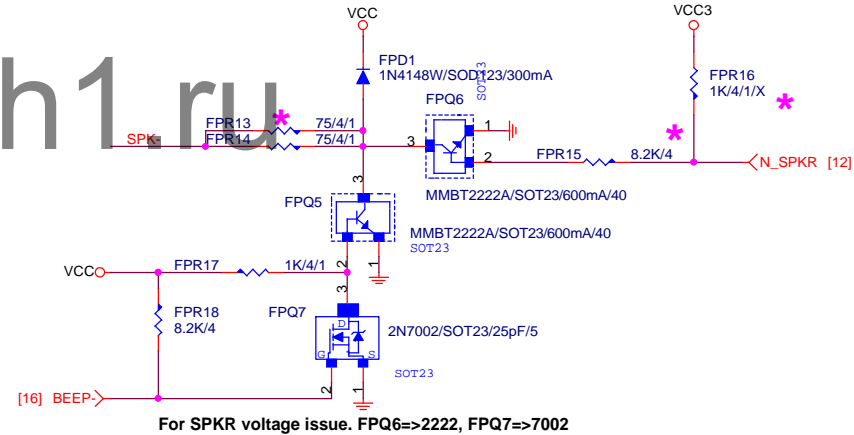


SATA LED

SATALED# signal open-collector, pull-up (8.2 kΩ to 10 kΩ) to Vcc3_3



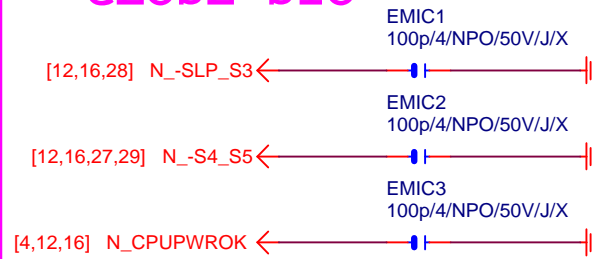
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Gigabyte Technology

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Title	Document Number	Rev
	GA-Z170N-WIFI	2.0
Date:	Tuesday, June 14, 2016	Sheet 45 of 48

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Document Number

GA-Z170N-WIFI

Rev
2.0

Date: Tuesday, June 14, 2016

Sheet 46 of 48

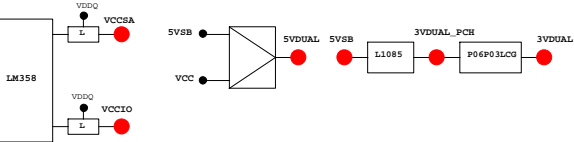
PCB GPIO LIST TABLE

PIN NAME	PWR	Default	USAGE	NOTE	
GPP_A0	MAIN	NATIVE	N_KBRST	P/U 8.2K VCC3	
GPP_A1	MAIN	NATIVE	N_LAD0	N/A	
GPP_A2	MAIN	NATIVE	N_LAD1	N/A	
GPP_A3	MAIN	NATIVE	N_LAD2	N/A	
GPP_A4	MAIN	NATIVE	N_LAD3	N/A	
GPP_A5	MAIN	NATIVE	N_LFRAME	N/A	
GPP_A6	MAIN	NATIVE	N_SBR1Q	P/U 8.2K VCC3	
GPP_A7	MAIN	NATIVE	N_LDRQ0	P/U 8.2K 3VDUAL	
GPP_A8	MAIN	NATIVE	N_GPP_A8	P/U 8.2K VCC3	
GPP_A9	MAIN	NATIVE	N_LPC24MB	N/A	
GPP_A10	MAIN	NATIVE	N_LPC24MA	N/A	
GPP_A11	MAIN	NATIVE	N_P_FMR	P/U 8.2K 3VDUAL_PCH	
GPP_A12	MAIN	GPIO	N_GPP_A12	P/U 8.2K VCC3	
GPP_A13	MAIN	NATIVE	N_S_WARN	N/A	
GPP_A14	MAIN	NATIVE	N_GPP_A14	P/U 8.2K 3VDUAL	
GPP_A15	MAIN	NATIVE	N_S_ACK	N/A	
GPP_B0	MAIN	CORE_V100	N_DDR_V_SEL	P/U 8.2K VCC3	
GPP_B1	MAIN	CORE_V101	N/A	N/A	
GPP_B2	MAIN	GPIO	N_VRALEERT	P/U 8.2K 3VDUAL	
GPP_B5	MAIN	GPIO	-PCIEX16_PR	P/U 8.2K VCC3	
GPP_B6	MAIN	GPIO	-PCIEX16_PR1	P/U 8.2K VCC3	
GPP_B7	MAIN	GPIO	-PCIEX16_PR2	P/U 8.2K VCC3	
GPP_B8	MAIN	GPIO	-PCIEX4_PR	P/U 8.2K VCC3	
GPP_B9	MAIN	GPIO	N/A	N/A	
GPP_B10	MAIN	GPIO	N/A	N/A	
GPP_B11	MAIN	GPO	N/A	N/A	
GPP_B12	MAIN	SLP_S0	N_SLP_S0	N/A	
GPP_B13	MAIN	PLTRST	N_PPMRST	N/A	
GPP_B14	MAIN	H-Z	GPO	N_SFRK	N/A
GPP_B18	MAIN	H-Z	GPO	N_GPP_B18	P/D 1K GND
GPP_B20	MAIN	GPIO	N_GPP_B20	P/U 8.2K 3VDUAL	
GPP_B22	MAIN	GPIO	N_GPP_B22	P/D 1K GND	
GPP_C0	MAIN	SMCLK	N/A	N/A	
GPP_C1	MAIN	SMMDATA	N/A	N/A	
GPP_C2	MAIN	H-Z	GPO	N_LPCVME	N/A
GPP_C3	MAIN	SMCLK	N_SMLCLK	P/U 499 3VDUAL	
GPP_C4	MAIN	SMCLK	N_SMLDAT	P/U 499 3VDUAL	
GPP_C5	MAIN	H-Z	GPO	N_GPP_C5	N/A
GPP_C6	MAIN	GPIO	N_SMLCLK	P/U 8.2K 3VDUAL	
GPP_C7	MAIN	GPIO	N_SMLDAT	P/U 8.2K 3VDUAL	
GPP_D4	MAIN	GPIO	N_GPP_D4	P/U 8.2K 3VDUAL	
GPP_D7	MAIN	GPIO	N_GPP_D7	N/A	
GPP_D9	MAIN	GPIO	N_GPP_D9	N/A	
GPP_D17	MAIN	GPIO	N_GPP_D17	P/U 8.2K VCC3	
GPP_D18	MAIN	GPIO	N_GPP_D18	P/U 8.2K VCC3	
GPP_D19	MAIN	GPIO	N_GPP_D19	P/U 8.2K VCC3	
GPP_D20	MAIN	GPIO	N_GPP_D20	P/U 8.2K VCC3	
GPP_D23	MAIN	GPIO	N_GPP_D23	P/U 8.2K 3VDUAL	
GPP_E0	MAIN	NATIVE	N_GPP_E0	P/U 8.2K VCC3	
GPP_E1	MAIN	NATIVE	N_GPP_E1	P/U 8.2K VCC3	
GPP_E2	MAIN	NATIVE	N_GPP_E2	P/U 8.2K VCC3	
GPP_E3	MAIN	GPIO	N_CPU_S	P/U 8.2K VCC3	
GPP_E4	MAIN	GPIO	N_DEVSLP0	P/U 8.2K VCC3	
GPP_E6	MAIN	GPIO	N_DEVSLP2	P/U 8.2K VCC3	
GPP_E7	MAIN	GPIO	N_GT_S	P/U 8.2K VCC3	
GPP_E8	MAIN	GPIO	N_SATALED	N/A	
GPP_E9	MAIN	H-Z	GPIO	N_USBOC_F	N/A
GPP_E10	MAIN	H-Z	GPIO	N_USBOC_R	N/A
GPP_E11	MAIN	H-Z	GPIO	N_USBOC_R	N/A
GPP_E12	MAIN	H-Z	GPIO	N_USBOC_F	N/A
GPP_F0	MAIN	NATIVE	N_GPP_F0	P/U 8.2K VCC3	
GPP_F1	MAIN	NATIVE	N_GPP_F1	P/U 8.2K VCC3	
GPP_F2	MAIN	NATIVE	N_GPP_F2	P/U 8.2K VCC3	
GPP_F3	MAIN	GPIO	N_GPP_F3	P/U 8.2K VCC3	
GPP_F4	MAIN	GPIO	N_GPP_F4	P/U 8.2K VCC3	
GPP_F5	MAIN	GPIO	N_GPP_F5	P/U 8.2K VCC3	
GPP_F6	MAIN	GPIO	N_DEVSLP4	P/U 8.2K VCC3	
GPP_F10	MAIN	GPIO	N_GPP_F10	P/U 8.2K VCC3	
GPP_F11	MAIN	GPIO	N_GPP_F11	P/U 8.2K VCC3	
GPP_F12	MAIN	GPIO	N_GPP_F12	P/U 8.2K VCC3	
GPP_F13	MAIN	GPIO	N_GPP_F13	P/U 8.2K VCC3	
GPP_F14	MAIN	GPIO	A_SKT0CC	P/U 8.2K VCC3	
GPP_F15	MAIN	GPIO	N_USBOC_F	N/A	
GPP_F16	MAIN	GPIO	N_USBOC_F	N/A	
GPP_F17	MAIN	GPIO	N_USBOC_R	N/A	
GPP_F18	MAIN	GPIO	N_USBOC_F	P/U 8.2K 3VDUAL	
GPP_F22	MAIN	GPIO	N_GPP_F22	P/U 8.2K VCC3	
GPP_F23	MAIN	GPIO	N_GPP_F23	P/U 8.2K VCC3	
GPP_G0	MAIN	GPIO	N_GPP_G0	P/U 1K VCC3	
GPP_G1	MAIN	GPIO	N_GPP_G1	P/U 1K VCC3	
GPP_G12	MAIN	GPIO	N_GPP_G12	P/U 3.3K VCC3	
GPP_G16	MAIN	GPIO	N_GPP_G16	N/A	
GPP_G18	MAIN	GPIO	N_GPP_G18	P/U 8.2K VCC3	
GPP_G19	MAIN	GPIO	N_GPP_G19	P/U 8.2K VCC3	
GPP_G20	MAIN	GPIO	N_GPP_G20	P/U 8.2K VCC3	
GPP_G21	MAIN	GPIO	N_GPP_G21	P/U 8.2K VCC3	
GPP_G22	MAIN	GPIO	N_GPP_G22	P/U 8.2K VCC3	
GPP_H0	MAIN	GPIO	M2_CLKREQ	P/U 8.2K VCC3	
GPP_H12	MAIN	GPO	N_GPP_H12	P/U 8.2K VCC3	
GPP_H19	MAIN	GPIO	N_GPP_H19	P/U 8.2K 3VDUAL	
GPP_H20	MAIN	GPIO	N_GPP_H20	P/U 8.2K 3VDUAL	
GPP_H21	MAIN	GPIO	N_GPP_H21	P/U 8.2K 3VDUAL	
GPP_H22	MAIN	GPIO	N_GPP_H22	P/U 8.2K 3VDUAL	
GPP_I0	MAIN	GPIO	N_HDMI_HDP_F	N/A	
GPP_I1	MAIN	GPIO	N_DVI_HDP_F	P/U 1M VCC3	
GPP_I2	MAIN	GPIO	N_VGA_HDP_F	N/A	

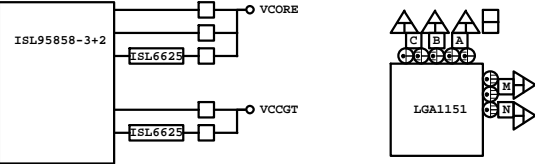
PIN NAME	PWR	Default	USAGE	NOTE
GPP_I3	MAIN	GPIO	N_GPP_I3	P/U 8.2K VCC3
GPP_I4	MAIN	GPIO	N_GPP_I4	P/D 100K GND
GPP_I5	MAIN	GPIO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I6	MAIN	GPO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I7	MAIN	GPIO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I8	MAIN	GPIO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I9	MAIN	GPIO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I10	MAIN	GPIO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPD0	STBY	BATLOW	N_BATLOW	P/U 8.2K 3VDUAL_PCH
GPD1	STBY	ACPRESENT	N_GP_D1	P/U 8.2K 3VDUAL_PCH
GPD2	STBY	LAM_MAKE	N_LAM_MAKE	N/A
GPD3	STBY	PMRSTN	O_PMRSTN	P/U 8.2K 3VDUAL_PCH
GPD4	STBY	SLP_S3	N_SLP_S3	N/A
GPD5	STBY	SLP_S4	N_SLP_S4	N/A
GPD6	STBY	SLP_A	N_SLP_A	P/U 8.2K 3VDUAL
GPD7	STBY	NATIVE	N_S_ACK	N/A
GPD8	STBY	SUSCLK	N_SUSCLK	N/A
GPD10	STBY	SLP_S5	N_SLP_S5	N/A

Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
PCIRST#/GP10/VDINH_STR_EN	N/A	
PCIRST#/GP11	O_PCIE_RST	
PCIRST#/GP12	O_PPMRST	
SVC/FRC1_RQ7/GP14	TPM_GP14	
SLP_SUS#/PCIRST#/CIRT#2/GP15	-PCIRSTN	
PSI_L/FAN_CLT5/CIRRX2/GP16	N_THERMTRIP	
R12#/GP17	MB_ID2	
THR_PWM_CTS#2/GP20	N_THERMTRIP	
IO_SMI#DCD#2/GP21	FIN	
SPI_S1/GP22	BEEP-	
DPWRK/CPU_RQ/GP23	N_PCH_DPWRK	
FAN_TACS/RTS#2/GP24	FIN	
FAN_TAC4/DSR#2/GP25	FANIO4	
INV_OUT1_SOUT2/GP26	Q_PLED	
INV_IN1/SIN2/GP27	INV_IN1	
ATXPG/GP30	FWOK	
CTS1/GP31	CTS1-	
OCWD13/R1#1/GP32	R11-	
OCWD12/DCD1#1/GP33	DCD1-	
VTT_PWRGD/GP34	VTT_PWRGD	
VCC18_EN/GP35	VCCIO_EN	
FAN_CTL3/GP36	FANPWM3	
FAN_TAC3/GP37	FANIO3	
3VSB#W/GP40	FIN	
OCWD11/SIN1/GP41	RXD1	
GP42/SCK/FAN_CTL4	FIN	
PANSW#W/GP43	-PWRBTN	
PWRON#W/GP44	O_PWRBTN	
OCWD10/DSR1#1/GP45	DSR1-	
CE2_N/GP47/JP6	CEB_N	
GP50/JP1	FIN	
FAN_CTL4/GP51	FANPWM2	
FAN_TAC2/GP52	FANIO2	
SUSOCW/GP53	N_S4_S5	
PWR#W/GP54	N_LPCVME	
RSMRST#W/CIRRX1/GP55	O_RSMRST	
KCLK/FAN_TAC5/GP56	KCLK	
MDAT/FAN_CTL6/GP57	MDAT	
KCLK/GP60	KCLK	
KDAT/GP61	KDAT	
KRST#W/GP62	N_KBRST	
HOLD_B#W/GP63	-SPI_HOLD_B	
HOLD_B#W/GP64	-SPI_HOLD_M	
VLD1T_EN/PCH_D0/GP65	FIN	
VCC1_05_EN/GP66	VCC1_0_EN	
GP67	FIN	
USB_FS1/PD0/GP70	PD0	
USB_FS2/PD1/GP71	PD1	
USB_FS3/PD2/GP72	PD2	
USB_FS3/PD3/GP73	PD3	
USB_FS5/PD4/GP74	PD4	
USB_FS6/PD5/GP75	PD5	
USB_FS7/PD7/GP76	PD6	
USB_FS8/PD8/GP77	PD7	
LS_IN1/SLCT/GP80	SLCT	
LS_OUT1/PE/GP81	PE	
LS_IN2/BUSY/GP82	BUSY	
LS_OUT2/ACK#W/GP83	ACK-	
IPHONE_CHARGE#W/SLIN#W/GP84	SLIN-	
OC_IN/INIT#W/GP85	INIT-	
OC_OUT/AFD#W/GP86	AFD-	
USB_OC4/STB#W/GP87	STB-	
DOX_EN/GP90	NA_EN	
PWRLED/GP91	HPD-	
HOLD_OUT/GP92	FIN	
HDLED_IN/GP93	FIN	
PROCOT#W/GP94	-PROCOT#_CON	
CPUPWRGD/GP95	FIN	
PCH_VRMPWRGD/GP96	N_PCH_VRMPWRGD	
VR_RDY/GP97	VR_RDY	



PWM各相位的擺法如下:



BIOS超電壓對應表:

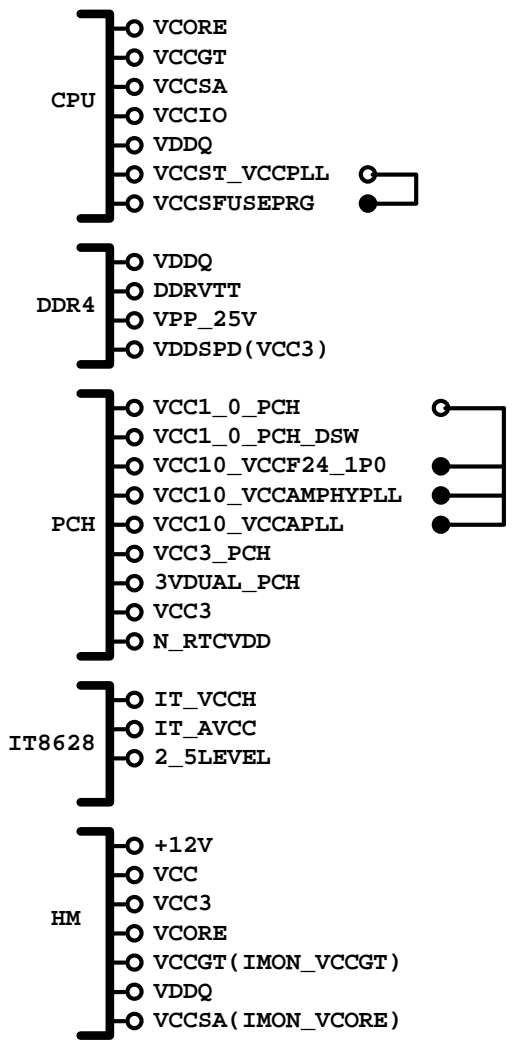
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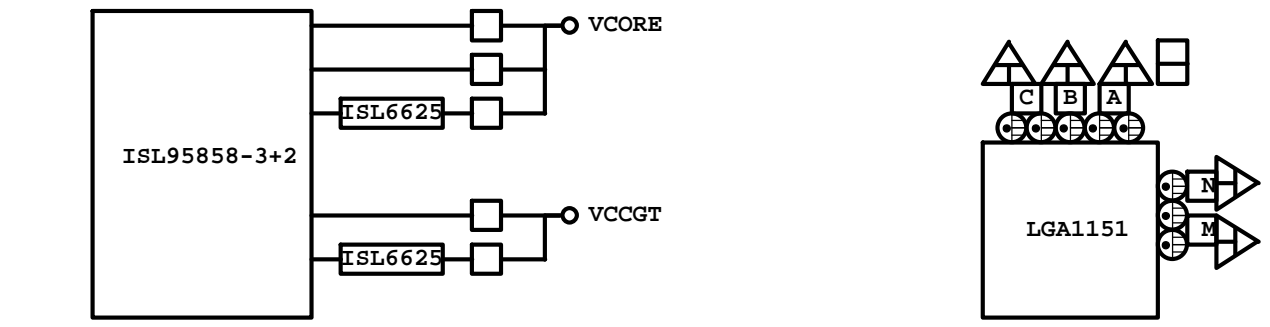
線路圖名稱	BIOS選項
Vcore	CPU Vcore
VCCGT	CPU Graphic Voltage
VCCSA	CPU System Agent Voltage
VCCIO	CPU I/O Voltage
VCC1_0_PCH	CPU Vcore
VDDQ	DRAM voltage
VPP_25V	DRAM VPP voltage
DDRVTT	DRAM Terminatio
VREF_DQ_AVREF_DQ_B	DRAM Data Ref

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	+12V	FANPWM1	FANIO1	IT8628
SYS FAN	FANPWM2	VCC	FANIO2	IT8628
	FAN1_VOUT	N/A	N/A	NCT3941

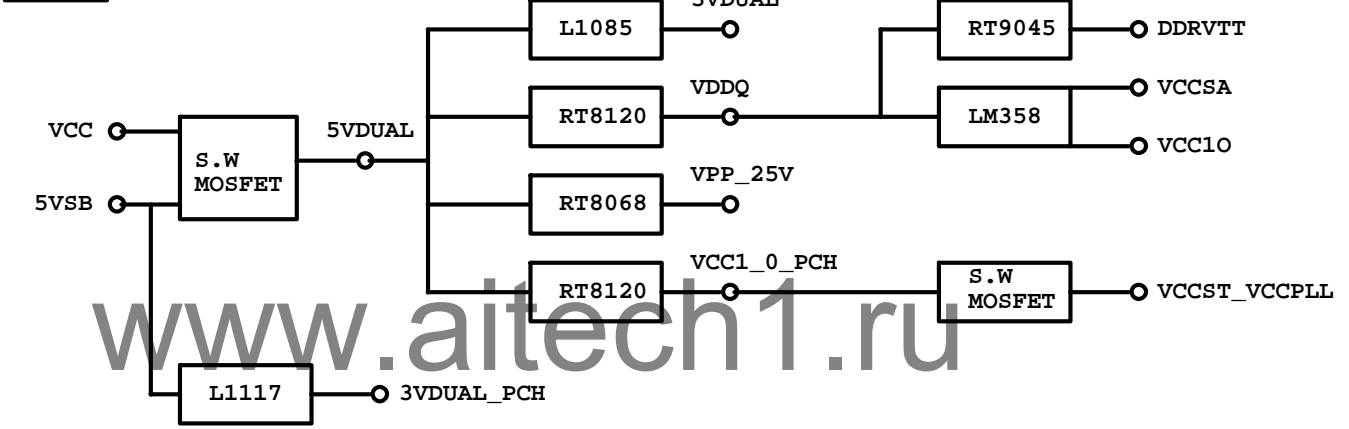
POWER BLOCK MAP



VCORE/VCCGT



POWER



FUSE POWER F/R

