

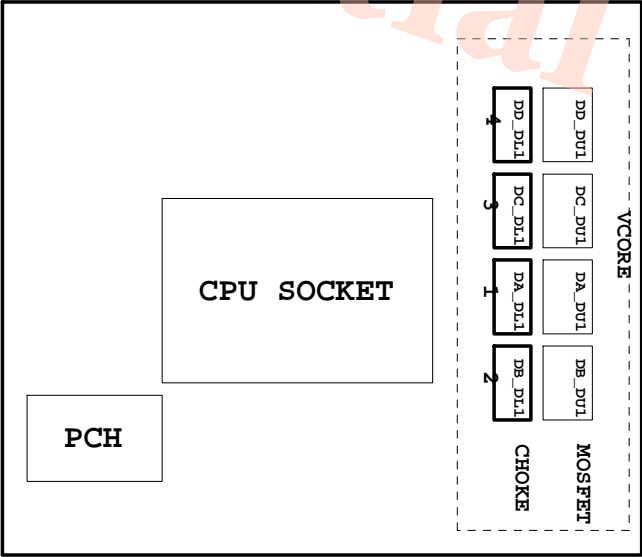
Model Name: GA-H110M-S2PH

SHEET TITLE Rev 1.0

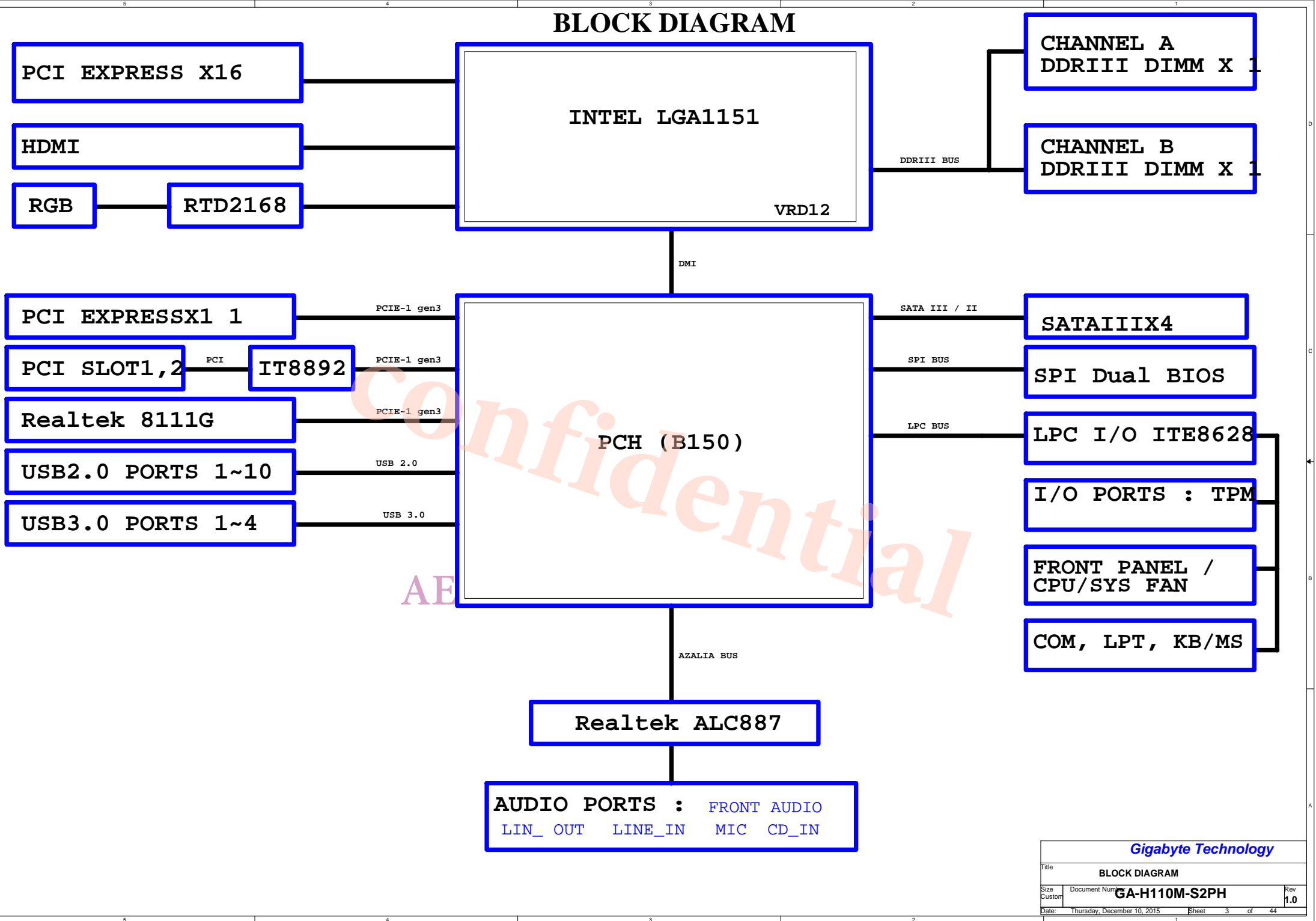
| | |
|----|------------------------------|
| 01 | COVER SHEET |
| 02 | BOM & PCB MODIFY HISTORY |
| 03 | BLOCK DIAGRAM |
| 04 | CPU_LGA1151-A |
| 05 | CPU_LGA1151-B-DDR3 |
| 06 | CPU_LGA1151-C |
| 07 | CPU_LGA1151-D |
| 08 | DDR 3 CHANNEL A |
| 09 | DDR 3 CHANNEL B |
| 10 | PCH CLOCK BUFFER |
| 11 | PCH DMI,USB,PCIE |
| 12 | PCH MISC |
| 13 | PCH SATA,PCIE,SATA SATA CONN |
| 14 | PCH_PWR,GND |
| 15 | Dual BIOS |
| 16 | I/O ITE8628 |
| 17 | HWM |
| 18 | FAN CTRL-SIO |
| 19 | PCIEX16 SLOT |
| 20 | PCIEX1 SLOT |
| 21 | IT8892E/FX |
| 22 | PCI SLOT 1, 2 |
| 23 | ISL95858_856 PWM |
| 24 | ISL95858_856 MOS_VCORE |
| 25 | ISL95858_856 MOS_VCCGT |
| 26 | VCCSA_VCCIO_VCCPLL |
| 27 | RT8237_DDR_BEAD |
| 28 | RT8237_PCH-BEAD |

SHEET TITLE

| | |
|----|-----------------------|
| 29 | DISCRETE POWER |
| 30 | ATX POWER , -PROCHOT |
| 31 | KB_MS_USB |
| 32 | HDMI CONN |
| 33 | RTD2168 - DP to VGA |
| 34 | R_USB30 |
| 35 | Realtek 8111G USB 2.0 |
| 36 | ALC887-VD2 CODEC |
| 37 | REAR AUDIO JACK |
| 38 | F_USB30 |
| 39 | F_USB20 |
| 40 | COM , LPT |
| 41 | F_PANEL, EMI |
| 42 | POWER MAP |
| 43 | POWER 零件使用表 |
| 44 | TABLE LIST |



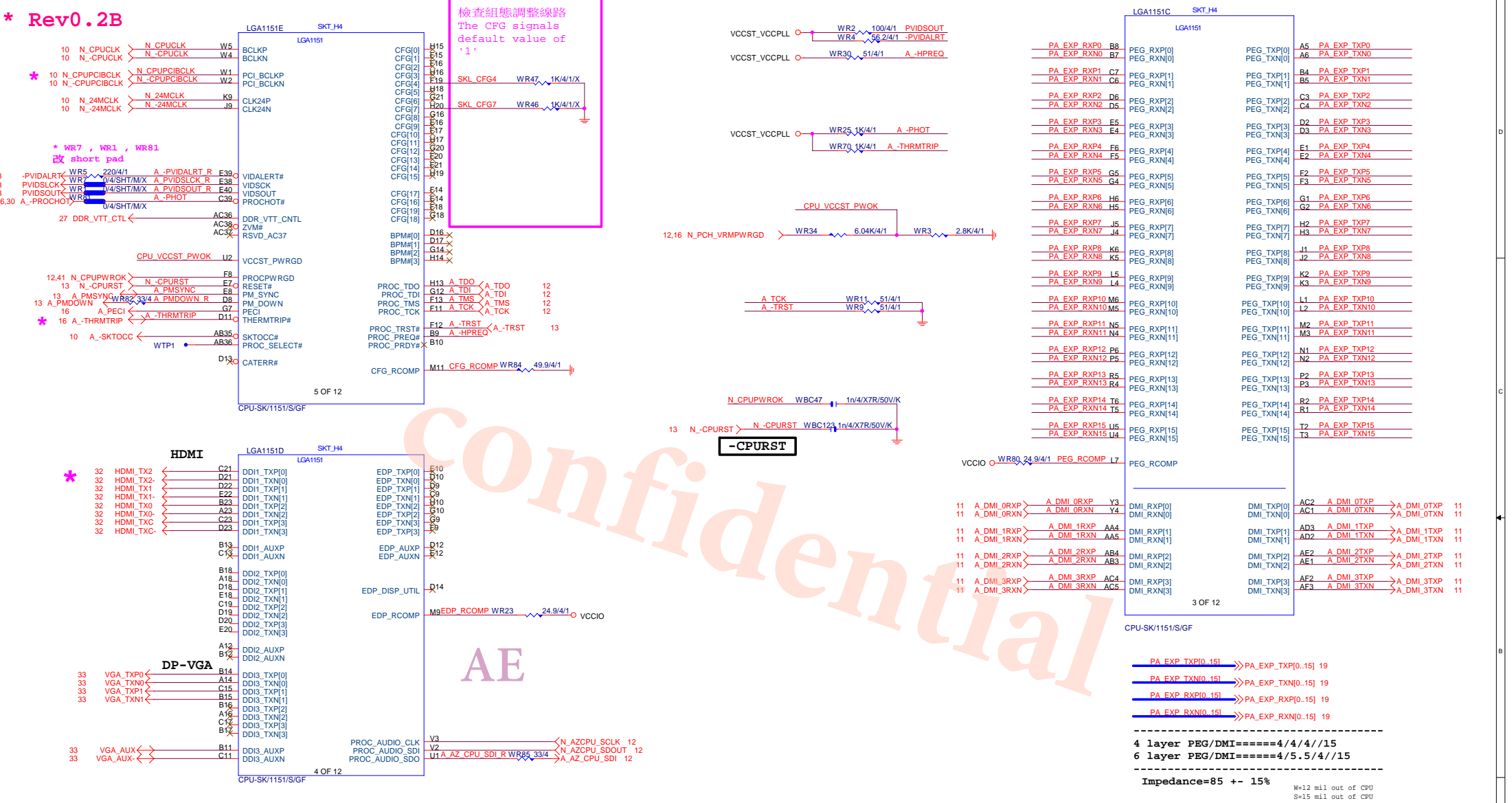
BLOCK DIAGRAM



Gigabyte Technology

| | | | |
|---------------|-----------------------------|-------|---------|
| Title | | | |
| BLOCK DIAGRAM | | | |
| Size | Document Number | Rev | |
| Custom | GA-H110M-S2PH | 1.0 | |
| Date: | Thursday, December 10, 2015 | Sheet | 3 of 44 |

* Rev0.2B



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

4 layer HDMI/DP/eDP/====4/4/4//15
6 layer HDMI/DP/eDP/====4/5.5/4//15

Impedance=85 +- 15%

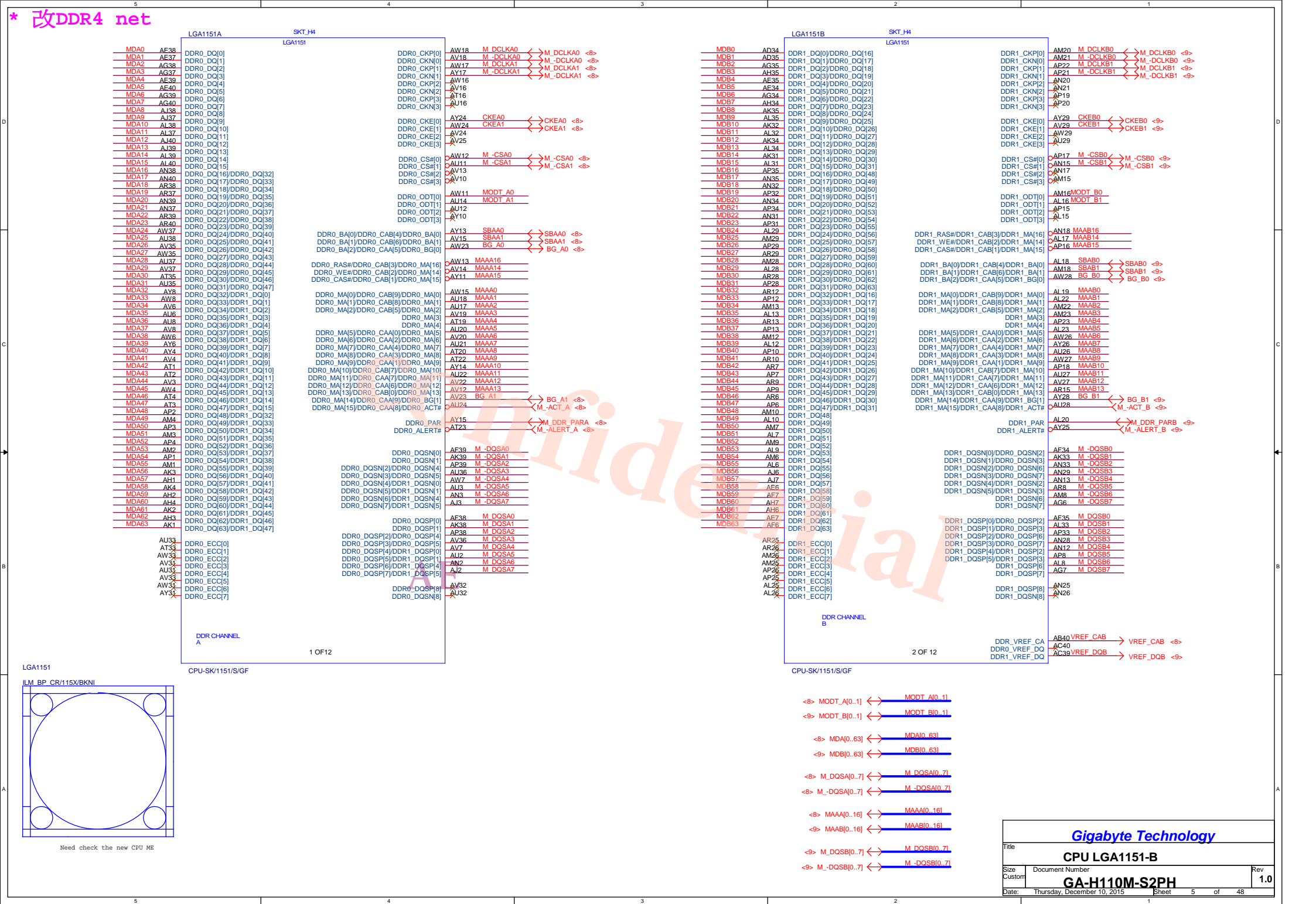
| Bifurcation Config. | Signals Lanes CPG[6] CPG[5] CPG[2] |
|---------------------|---------------------------------------|
| 1x16 | 1 1 1 |
| 1x16 Reversed | 1 1 0 |
| 2x8 | 1 0 1 |
| 2x8 Reversed | 1 0 0 |
| 1x8+2x4 | 0 0 1 |
| 1x8+2x4 Reversed | 0 0 0 |

PA_EXP_TXP0_15] >>> PA_EXP_TXP0[0..15] 19
PA_EXP_TXN0_15] >>> PA_EXP_TXN0[0..15] 19
PA_EXP_RXP0_15] >>> PA_EXP_RXP0[0..15] 19
PA_EXP_RXN0_15] >>> PA_EXP_RXN0[0..15] 19

4 layer PEG/DMI=====4/4/4//15
6 layer PEG/DMI=====4/5.5/4//15

Impedance=85 +- 15%

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



VCCSA

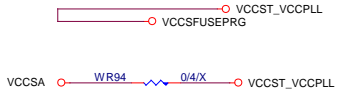


* 刪 WBC124 , WBC125 , WBC126 , WBC127 電容

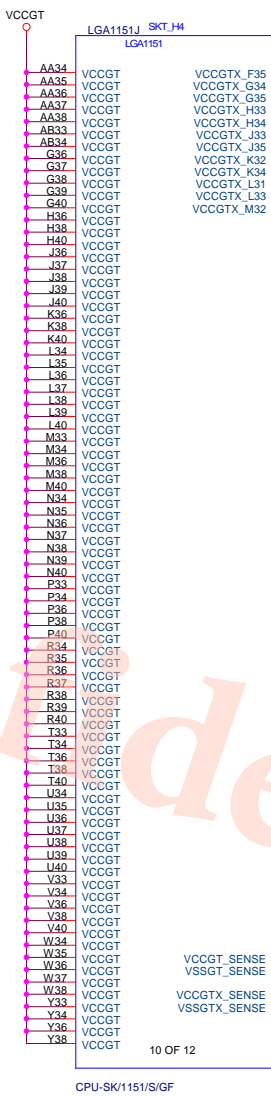
VCCIO



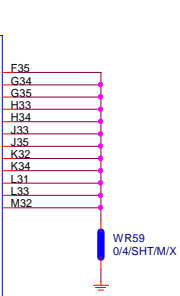
* 刪 VCCGT 電容



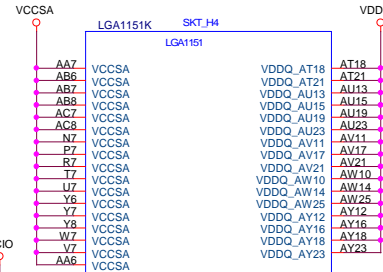
VCCSA WR94 0/4/X VCCST_VCCPLL



CPU-SK/1151/S/GF

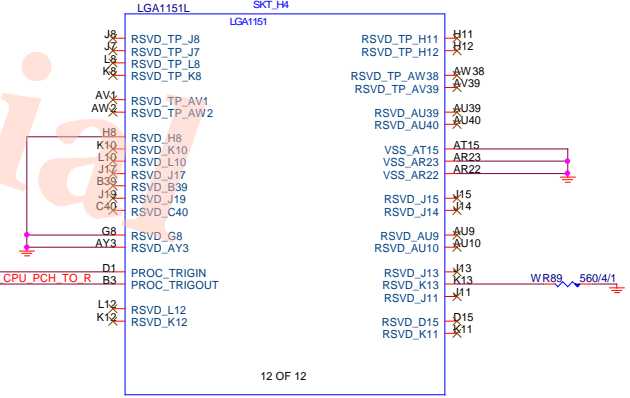


VCCST_VCCPLL
VCCSFUSEPRG
VCCST_VCCPLL



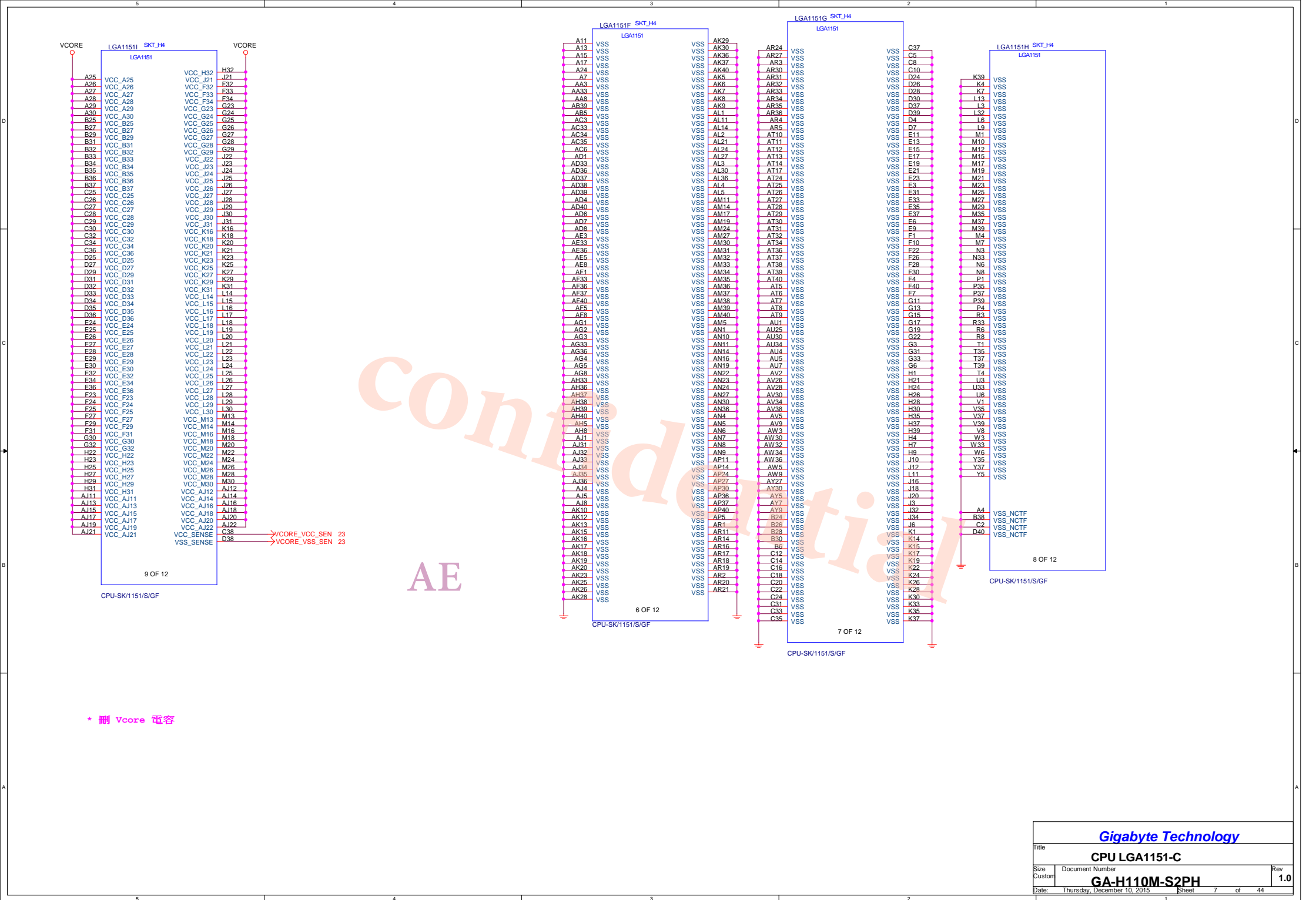
VCCST_V5
VCCST_V6
VCCPLL

CPU-SK/1151/S/GF

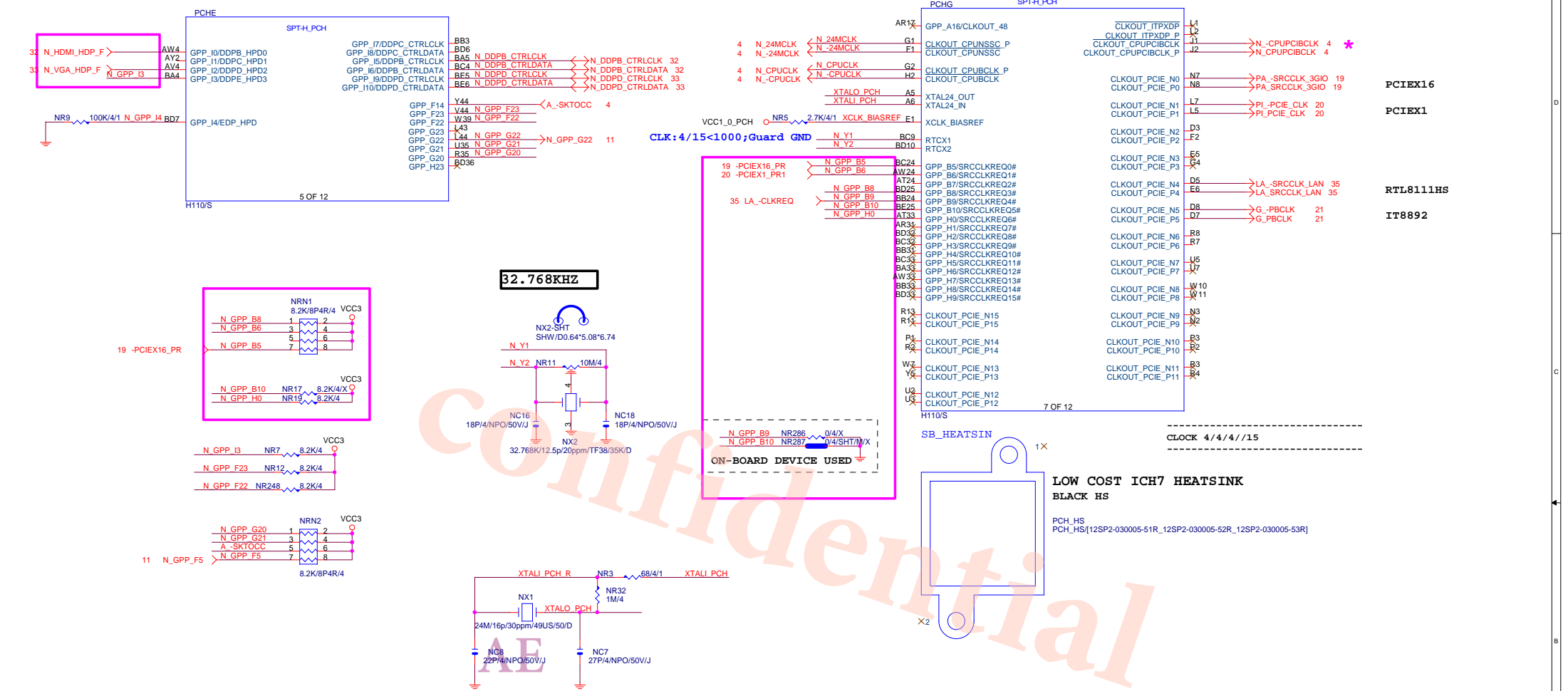


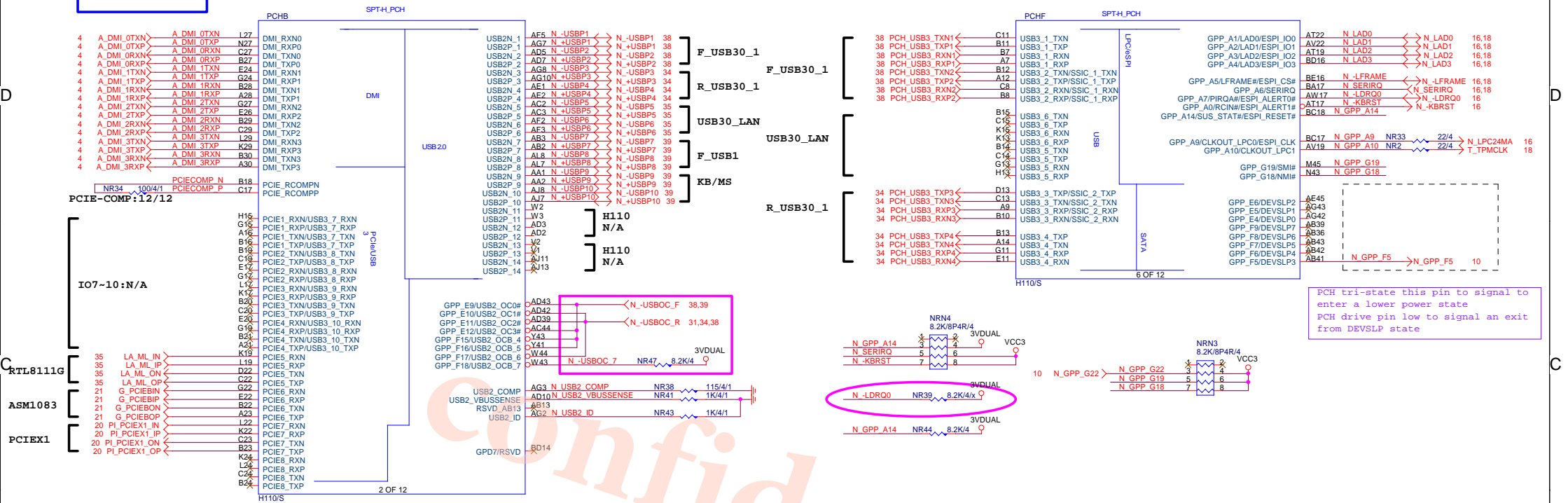
CPU-SK/1151/S/GF

| Gigabyte Technology | | | |
|---------------------|-----------------------------|-------|---------|
| Title | | | |
| CPU LGA1151-C | | | |
| Size | Document Number | Rev | |
| Custom | GA-H110M-S2PH | 1.0 | |
| Date: | Thursday, December 10, 2015 | Sheet | 6 of 44 |

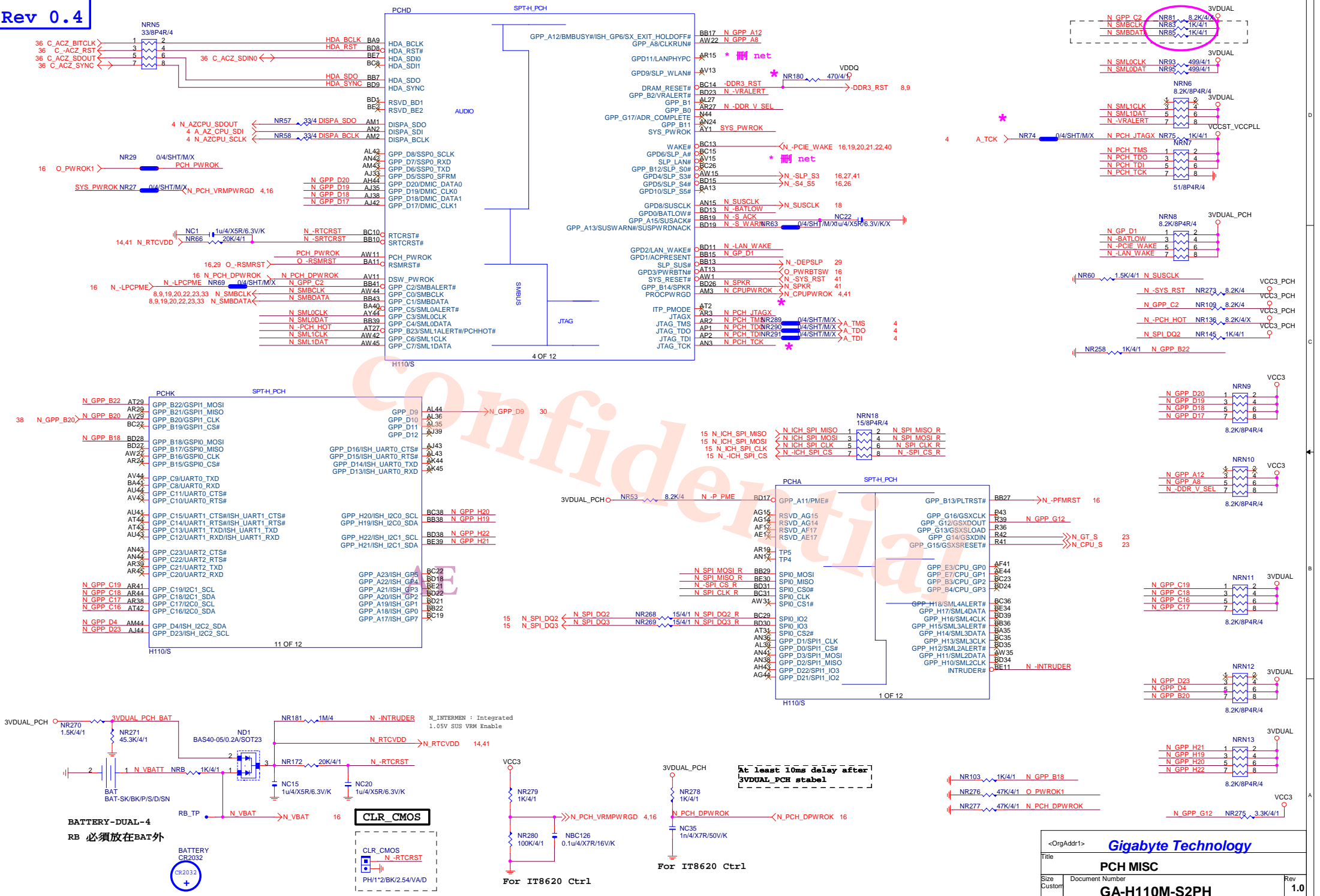


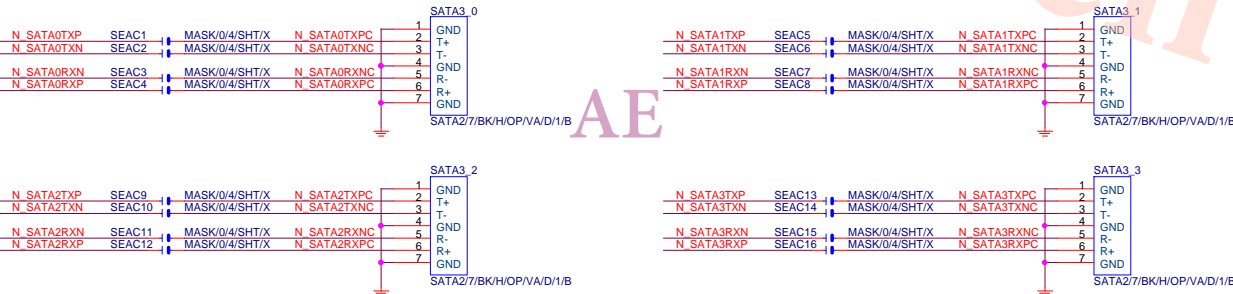
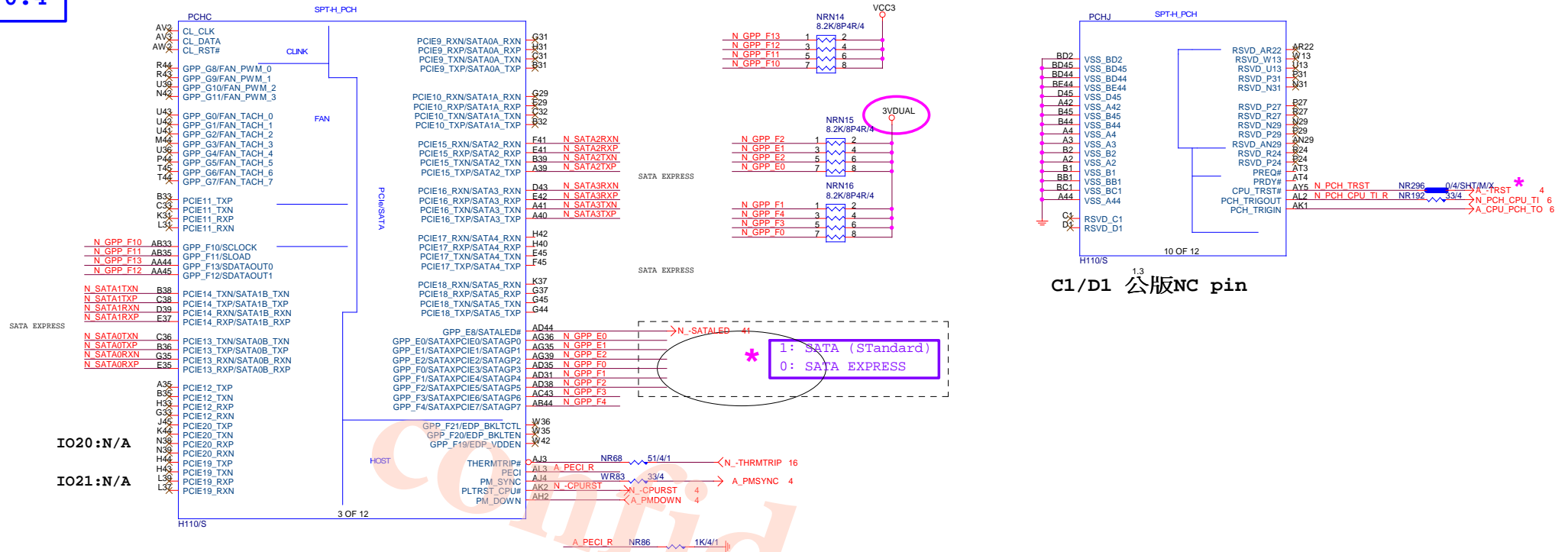
* Rev0.2

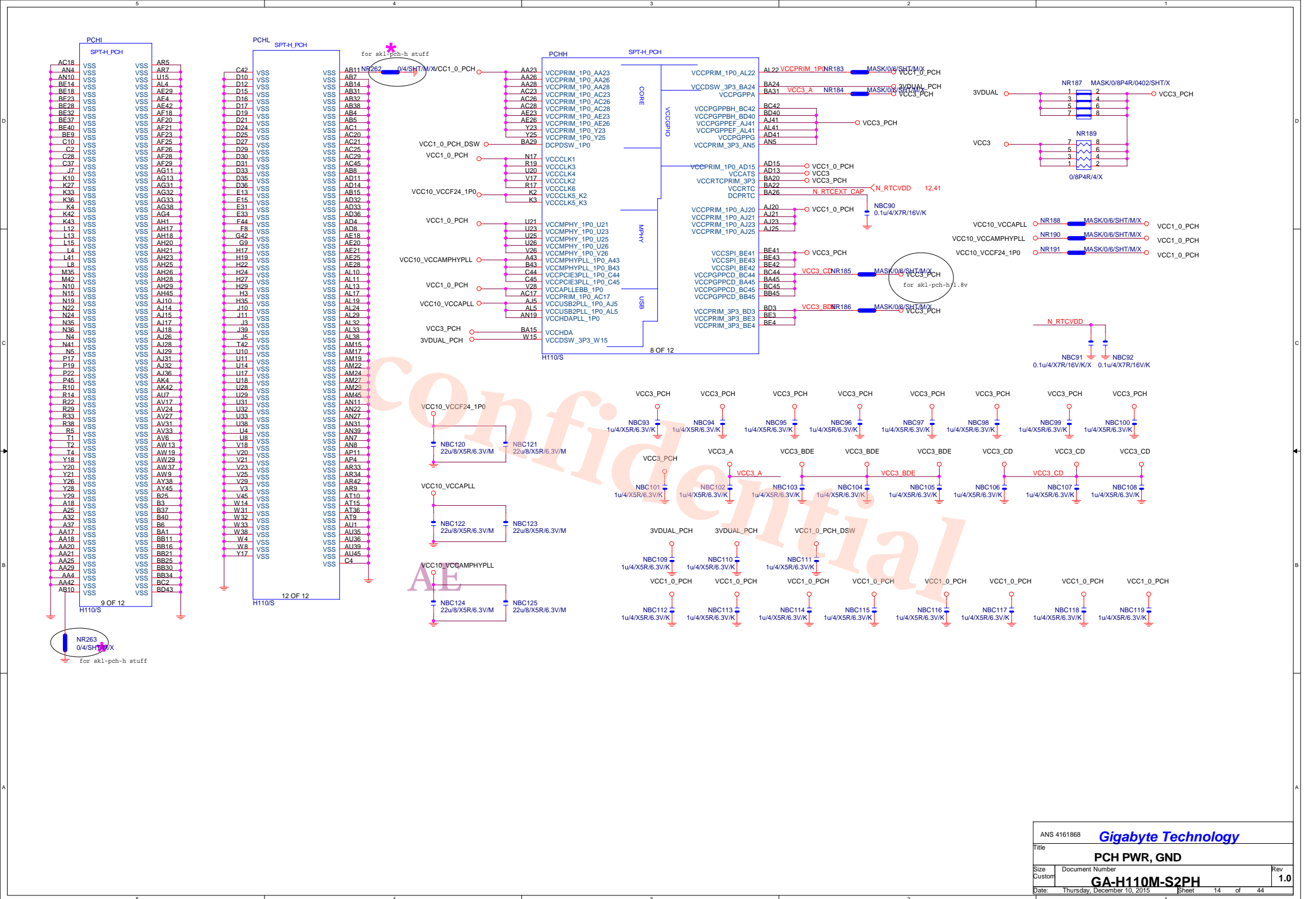


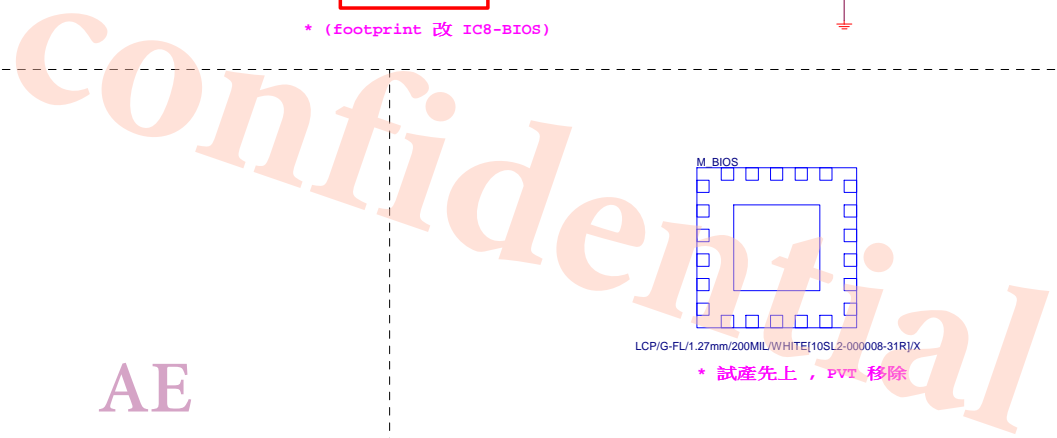


PCH tri-state this pin to signal to enter a lower power state
PCH drive pin low to signal an exit from DEVSLP state

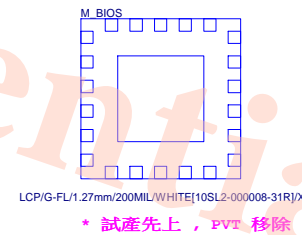


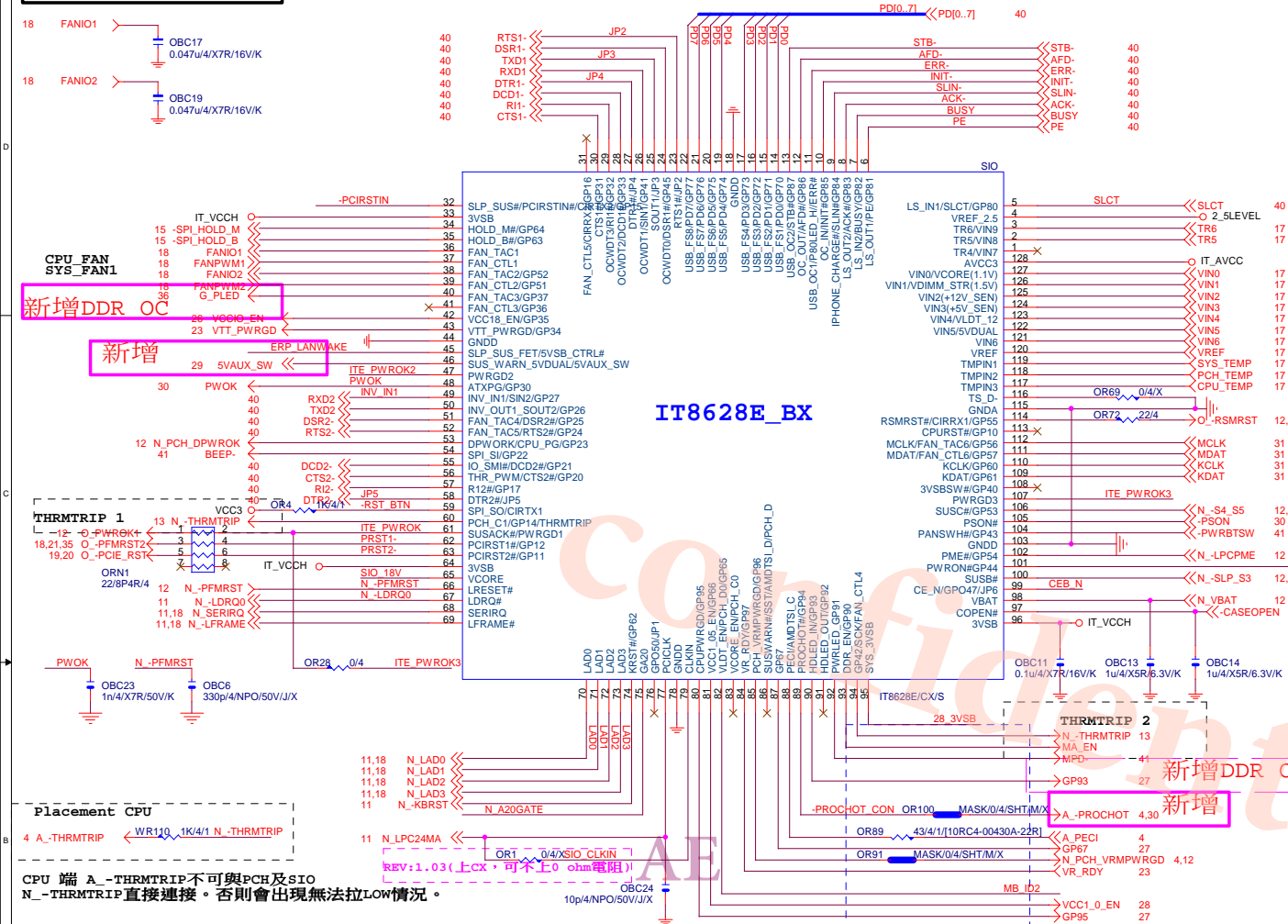






AE

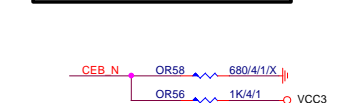




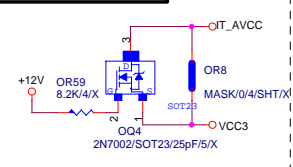
| FAN TABLE | |
|------------------------|----------------------|
| CPU_FAN | FAN_CTL1 FAN_TAC1 |
| SYS_FAN1 | FAN_CTL2 FAN_TAC2 |
| SYS_FAN2 | FAN_CTL3 FAN_TAC3 |
| SYS_FAN3 | FAN_CTL5 FAN_TAC5 |
| OPT_FAN or SYS_FAN4 | N/A |
| THRMTRIP1 | YES PIN60 |
| THRMTRIP2 | YES PIN94 |

| IT8628E 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 | PIN22, 需高於3V, 若低於 將部分COM PORT及LPT裝置 蜂鳴器會異常動作。 |

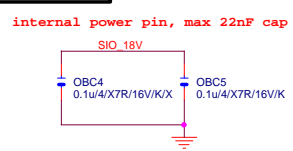
DUAL BIOS OPT STRAP



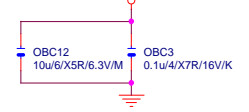
Power leakage



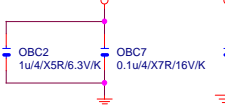
SIO 18V



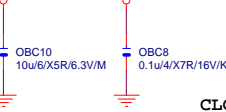
SIO CAP



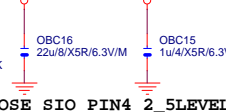
IT_VCCH



IT_AVCC



3VDUAL_PCH

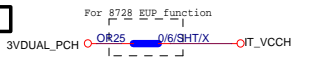


2_5LEVEL



CLOSE SIO PIN4 2_5LEVEL

PWR SHT

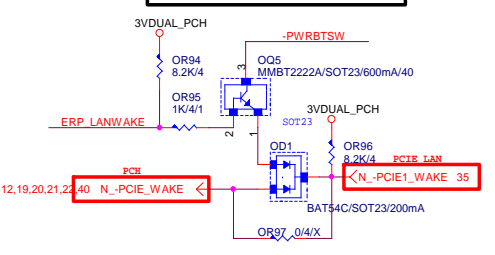


SIO PU

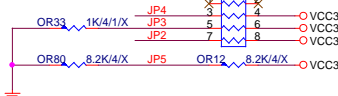


ERP WAKE on LAN (依LAN組態選擇)

(組態一) Realtek/ATHEROS LAN



SIO STRAP

EUP control detect
3VDUAL O47 100/4/1 28 3VSB

| | | |
|-----|-----|---|
| JP2 | 1 | Disable WDT |
| | 0 | Enable WDT to rest PWROK |
| JP3 | 1 | SPI-Flash Disable |
| | 0 | SPI-Flash Enable |
| JP4 | 1 | k8 power sequency function is Disable |
| | 0 | k8 power sequency function is Enable |
| JP5 | 1 | anti-surge Disable |
| | 0 | anti-surge Enable |
| JP3 | 1 1 | The default value of EC Index 63h/6Bh/73h is 80h. |
| | 1 0 | The default value of EC Index 63h/6Bh/73h is FFh. |
| JP5 | 0 1 | The default value of EC Index 63h/6Bh/73h is 00h. |
| | 0 0 | The default value of EC Index 63h/6Bh/73h is 40h. |

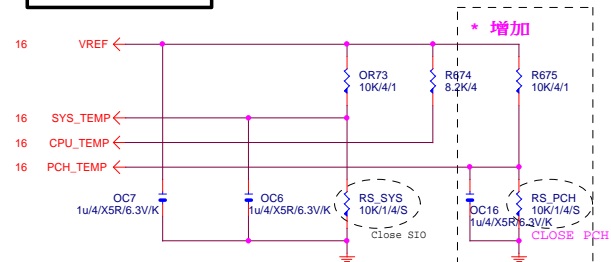
MB ID



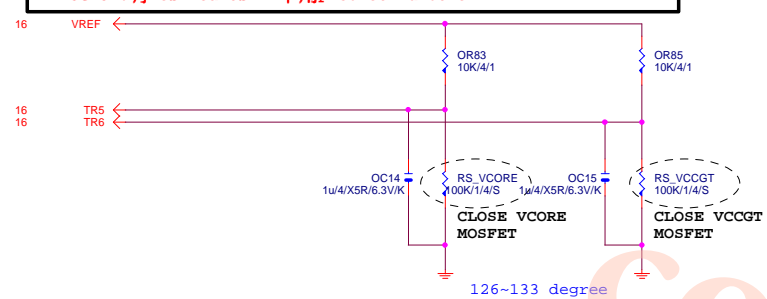
Gigabyte Technology

| | | | |
|--------|-----------------------------|-----------------|----------|
| Title | | ITE 8628 LPC IO | |
| Size | Document Number | GA-H110M-S2PH | |
| Custym | | Rev 1.0 | |
| Date: | Thursday, December 10, 2015 | Sheet | 16 of 44 |

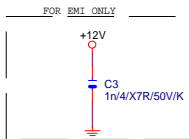
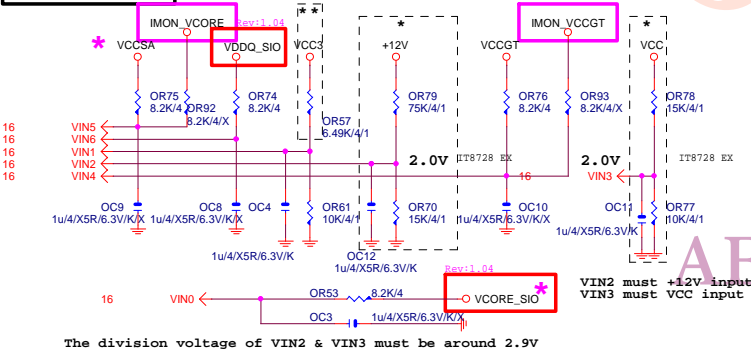
TEMP H/W MONITOR REV 1.04



RS_VCORE, RS_VCCGT, CLOSE CPU_VCORE & VCCGT MOSFET



VOLTAGE-- H/W MONITOR

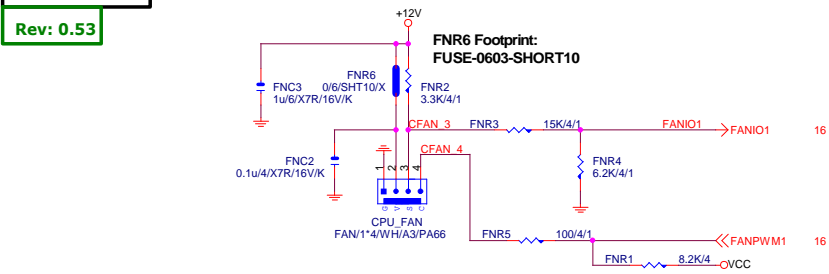


Gigabyte Technology

| | | | |
|--------|-----------------|-----------------------------|----------------|
| Title | | HWM,KB/MS, FAN CTRL | |
| Size | Document Number | GA-H110M-S2PH | |
| Custom | Date | Thursday, December 10, 2015 | Sheet 17 of 44 |
| Rev | | 1.0 | |

CPU SMART FAN

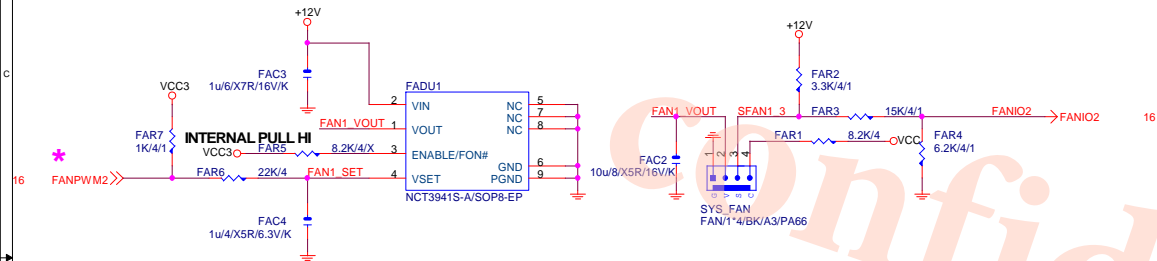
Rev: 0.53



SYSTEM FAN1

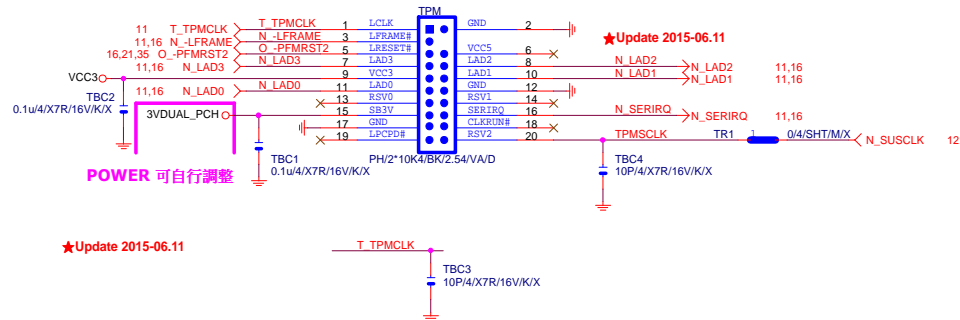
Linear SYS_FAN

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



AE

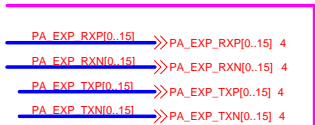
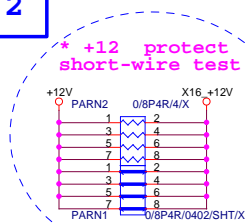
TPM CONNECTOR



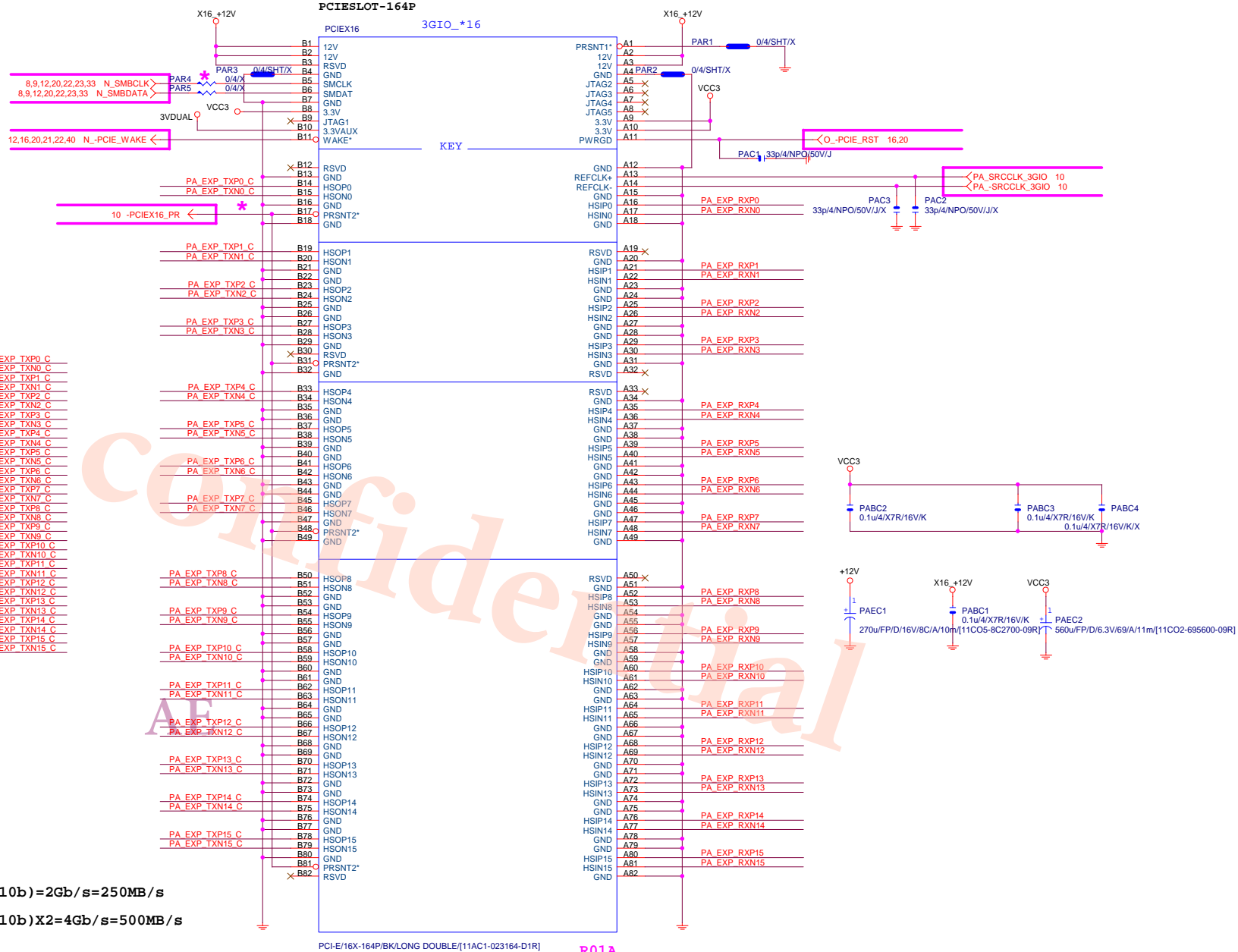
Gigabyte Technology

| | | | | |
|--------|-----------------------------|-------|---------------------|-------|
| Title | | | HWM,KB/MS, FAN CTRL | |
| Size | Document Number | | | Rev |
| Custom | GA-H110M-S2PH | | | 1.0 |
| Date: | Thursday, December 10, 2015 | Sheet | 18 | of 44 |

Rev 0.2



| | | | |
|--------------|-------|-------------------|----------------|
| PA EXP TXP0 | PAC5 | 0.22u4/45VR6/3V/K | PA EXP TXP0 C |
| PA EXP TXN0 | PAC4 | 0.22u4/45VR6/3V/K | PA EXP TXN0 C |
| PA EXP TXP1 | PAC6 | 0.22u4/45VR6/3V/K | PA EXP TXP1 C |
| PA EXP TXN1 | PAC7 | 0.22u4/45VR6/3V/K | PA EXP TXN1 C |
| PA EXP TXP2 | PAC8 | 0.22u4/45VR6/3V/K | PA EXP TXP2 C |
| PA EXP TXN2 | PAC9 | 0.22u4/45VR6/3V/K | PA EXP TXN2 C |
| PA EXP TXP3 | PAC10 | 0.22u4/45VR6/3V/K | PA EXP TXP3 C |
| PA EXP TXN3 | PAC11 | 0.22u4/45VR6/3V/K | PA EXP TXN3 C |
| PA EXP TXP4 | PAC12 | 0.22u4/45VR6/3V/K | PA EXP TXP4 C |
| PA EXP TXN4 | PAC13 | 0.22u4/45VR6/3V/K | PA EXP TXN4 C |
| PA EXP TXP5 | PAC14 | 0.22u4/45VR6/3V/K | PA EXP TXP5 C |
| PA EXP TXN5 | PAC15 | 0.22u4/45VR6/3V/K | PA EXP TXN5 C |
| PA EXP TXP6 | PAC16 | 0.22u4/45VR6/3V/K | PA EXP TXP6 C |
| PA EXP TXN6 | PAC17 | 0.22u4/45VR6/3V/K | PA EXP TXN6 C |
| PA EXP TXP7 | PAC18 | 0.22u4/45VR6/3V/K | PA EXP TXP7 C |
| PA EXP TXN7 | PAC19 | 0.22u4/45VR6/3V/K | PA EXP TXN7 C |
| PA EXP TXP8 | PAC21 | 0.22u4/45VR6/3V/K | PA EXP TXP8 C |
| PA EXP TXN8 | PAC20 | 0.22u4/45VR6/3V/K | PA EXP TXN8 C |
| PA EXP TXP9 | PAC22 | 0.22u4/45VR6/3V/K | PA EXP TXP9 C |
| PA EXP TXN9 | PAC23 | 0.22u4/45VR6/3V/K | PA EXP TXN9 C |
| PA EXP TXP10 | PAC24 | 0.22u4/45VR6/3V/K | PA EXP TXP10 C |
| PA EXP TXN10 | PAC25 | 0.22u4/45VR6/3V/K | PA EXP TXN10 C |
| PA EXP TXP11 | PAC26 | 0.22u4/45VR6/3V/K | PA EXP TXP11 C |
| PA EXP TXN11 | PAC27 | 0.22u4/45VR6/3V/K | PA EXP TXN11 C |
| PA EXP TXP12 | PAC28 | 0.22u4/45VR6/3V/K | PA EXP TXP12 C |
| PA EXP TXN12 | PAC29 | 0.22u4/45VR6/3V/K | PA EXP TXN12 C |
| PA EXP TXP13 | PAC30 | 0.22u4/45VR6/3V/K | PA EXP TXP13 C |
| PA EXP TXN13 | PAC31 | 0.22u4/45VR6/3V/K | PA EXP TXN13 C |
| PA EXP TXP14 | PAC32 | 0.22u4/45VR6/3V/K | PA EXP TXP14 C |
| PA EXP TXN14 | PAC33 | 0.22u4/45VR6/3V/K | PA EXP TXN14 C |
| PA EXP TXP15 | PAC34 | 0.22u4/45VR6/3V/K | PA EXP TXP15 C |
| PA EXP TXN15 | PAC35 | 0.22u4/45VR6/3V/K | PA EXP TXN15 C |



PCIEX16:16/5/5/5/16

PCI-E REV:1.1--> 2.5GHZ

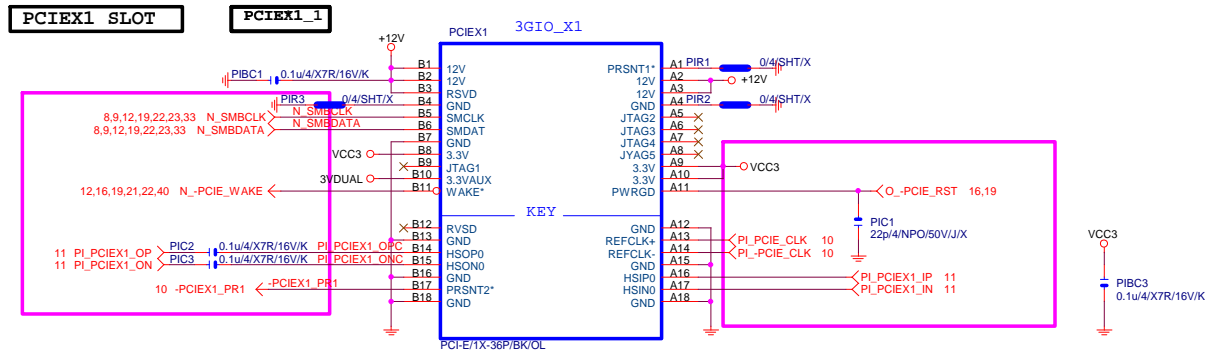
PCE-E X1(單向) BANDWIDTH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

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) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ



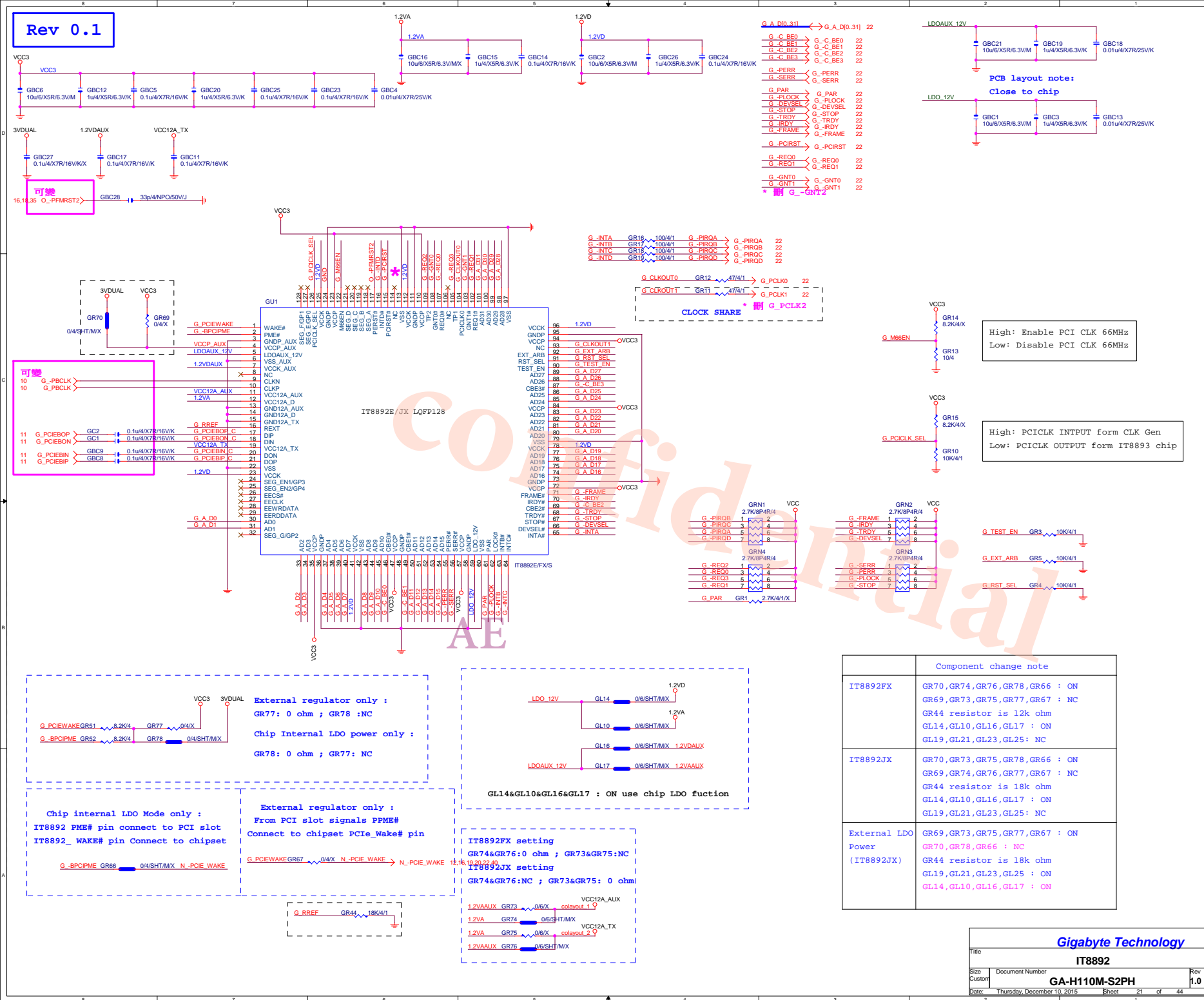
Confidential

AE

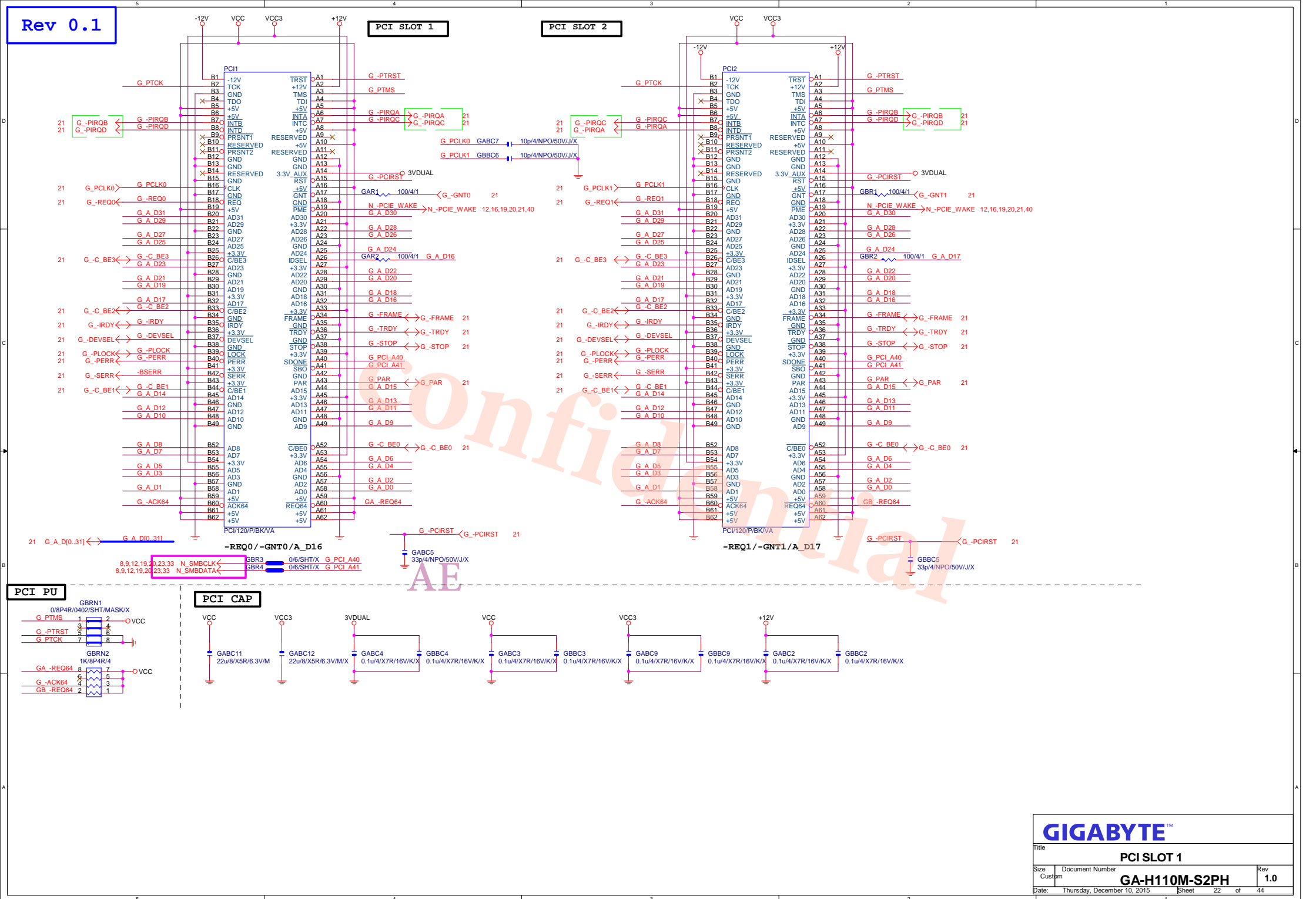
Gigabyte Technology

| | | | |
|--------|-----------------------------|-------|-------------|
| Title | | | PCIE_X1 1,2 |
| Size | Document Number | Rev | |
| Custom | GA-H110M-S2PH | 1.0 | |
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Rev 0.1

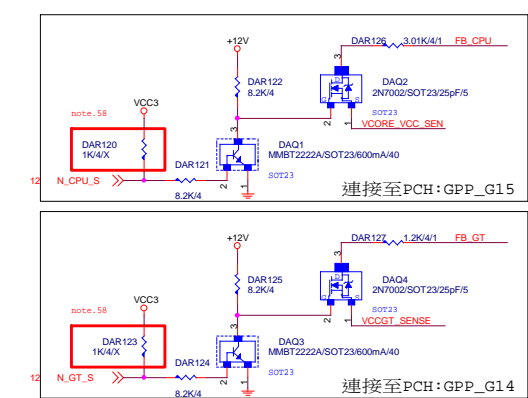
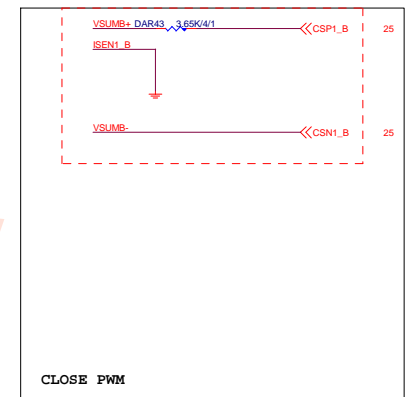
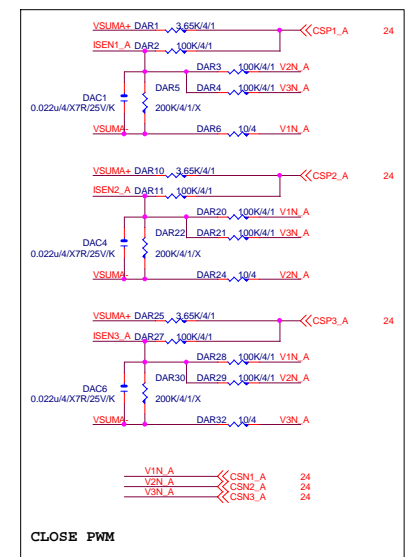
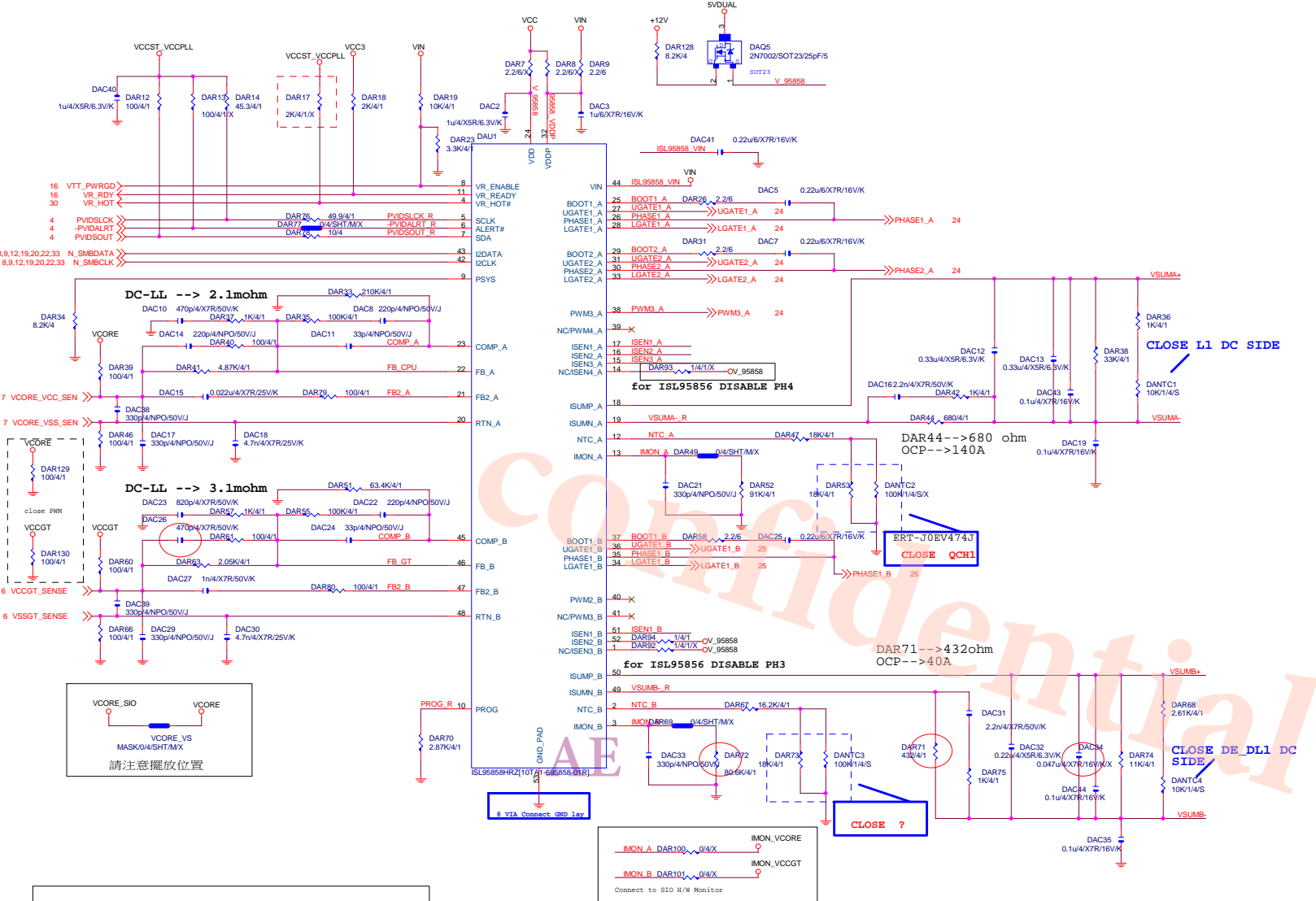


| | Component change note |
|-------------------------------------|--|
| IT8892FX | GR70,GR74,GR76,GR78,GR66 : ON GR69,GR73,GR75,GR77,GR67 : NC GR44 resistor is 12k ohm GL14, GL10, GL16, GL17 : ON GL19, GL21, GL23, GL25 : NC |
| IT8892JX | GR70,GR73,GR75,GR78,GR66 : ON GR69,GR74,GR76,GR77,GR67 : NC GR44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



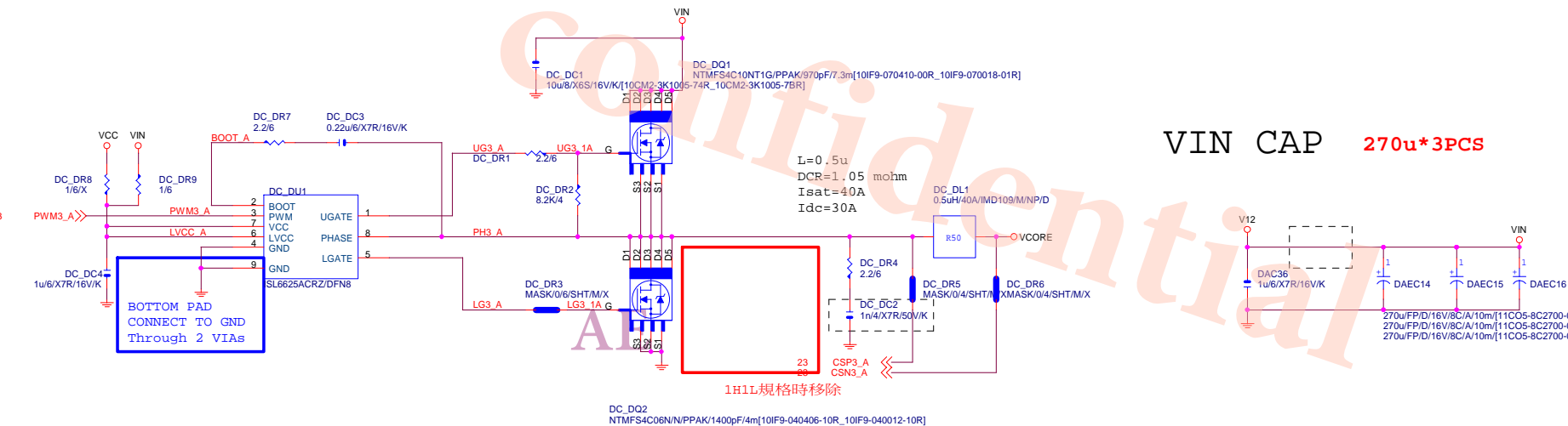
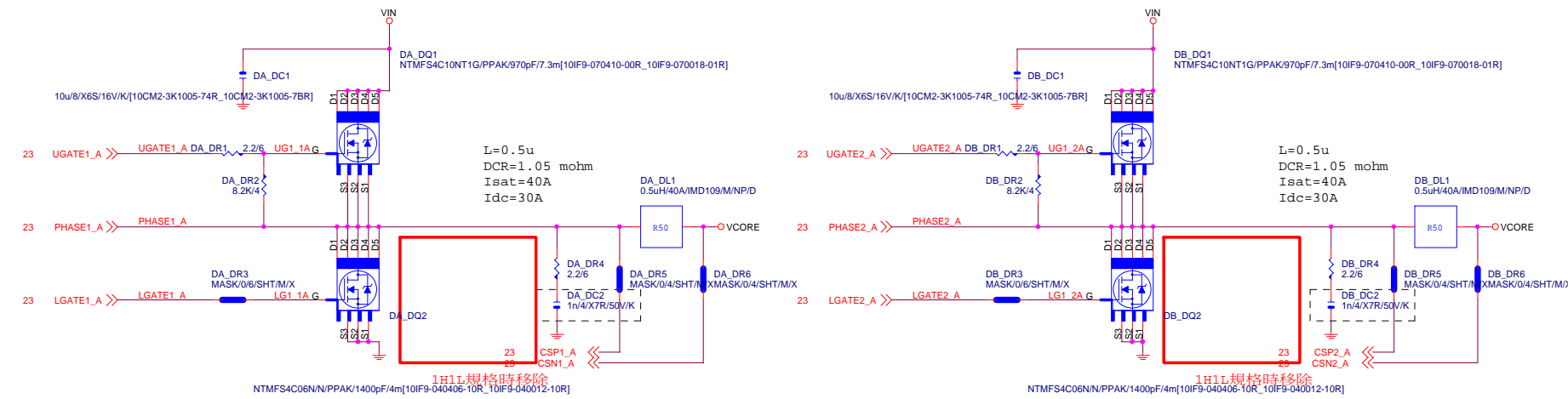
GIGABYTE™

| | | | |
|--------|-----------------------------|-------|------------|
| Title | | | PCI SLOT 1 |
| Size | Document Number | Rev | |
| Custom | GA-H110M-S2PH | 1.0 | |
| Date: | Thursday, December 10, 2015 | Sheet | 22 of 44 |

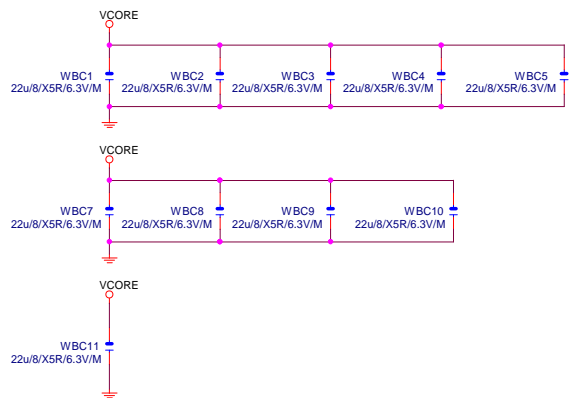
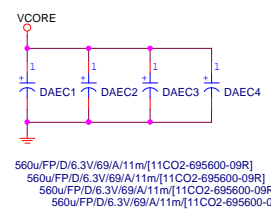


REV:0.91

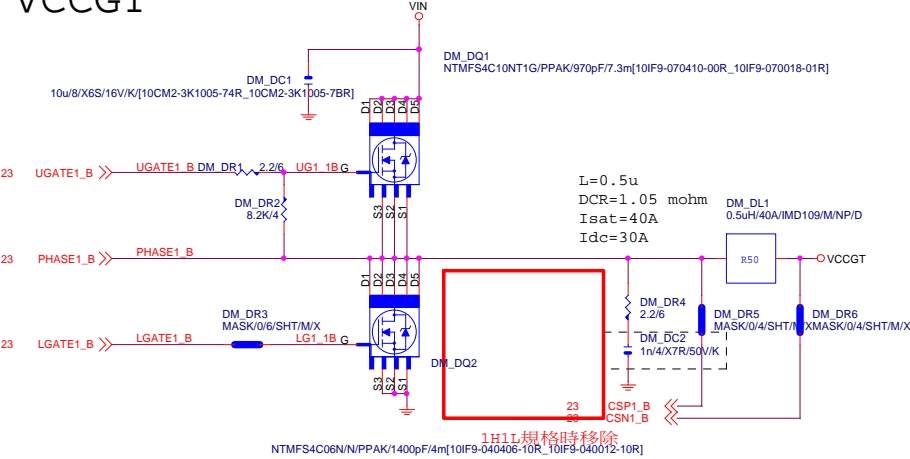
VCORE



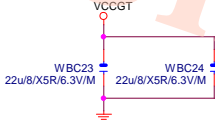
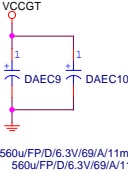
VCORE CAP 560u*4PCS
22u*10PCS



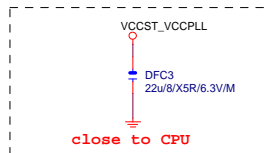
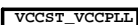
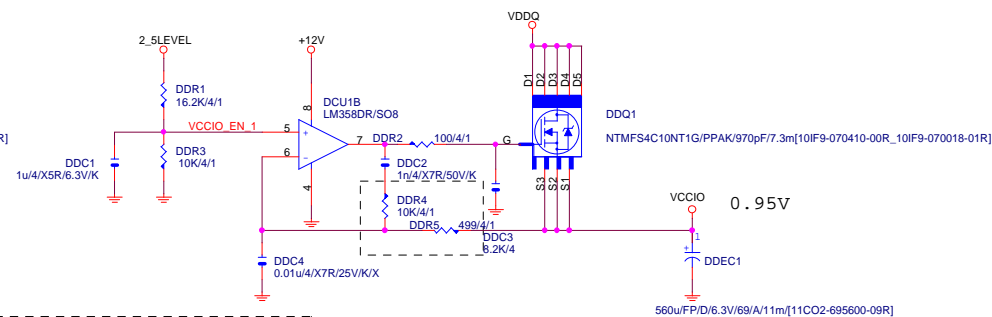
VCCGT



VCCGT CAP 560u*2PCS
22u*2PCS



AE



REV:0.4

DDR4

CHOKE與CAP料號可變

DDR VIN CAP
560u*2PCS

1.2V

SUPPORT DDR4

25A MAX

 $L=1\mu$
 $DCR=2.5\text{ mohm}$
 $I_{sat}=35A$
 $I_{dc}=28A$ 請放置CHOKE--出來位置.先預留.
請自行確認ripple後再決定是否上件

Remote sense請從最重的負載端點拉回

1H1L規格移除

DDR ADJ

<16> GP93 MA_DR20 9.1K/4/1 1.35V
<16> GP95 MA_DR21 26.1K/4/1 1.25V
<16> GP67 MA_DR22 6.8K/4/1 1.4V

PIN7-->20mil
PIN1-->6mil
PIN2-->6mil
PIN5-->6mil
PIN3-->6mil

FS=290K
OCP=40A

MA_DR38.MA_DC15

VPP_25V使用8120.8068A.RT8237時上件

PWR SEQ

CLOSE TO DDR POWER PLANE

AE

DDRVTT

MAU1上RT9045時上件

<12,16,46> N_SLP_S3

<4> DDR_VTT_CTL

DDRVTT CAP

* 大電容 x0

DDR_VTT_CTL MA_R110 0/4 DDRVTT_EN
N_SLP_S3 MA_R111 0/4 DDRVTT_BOOT

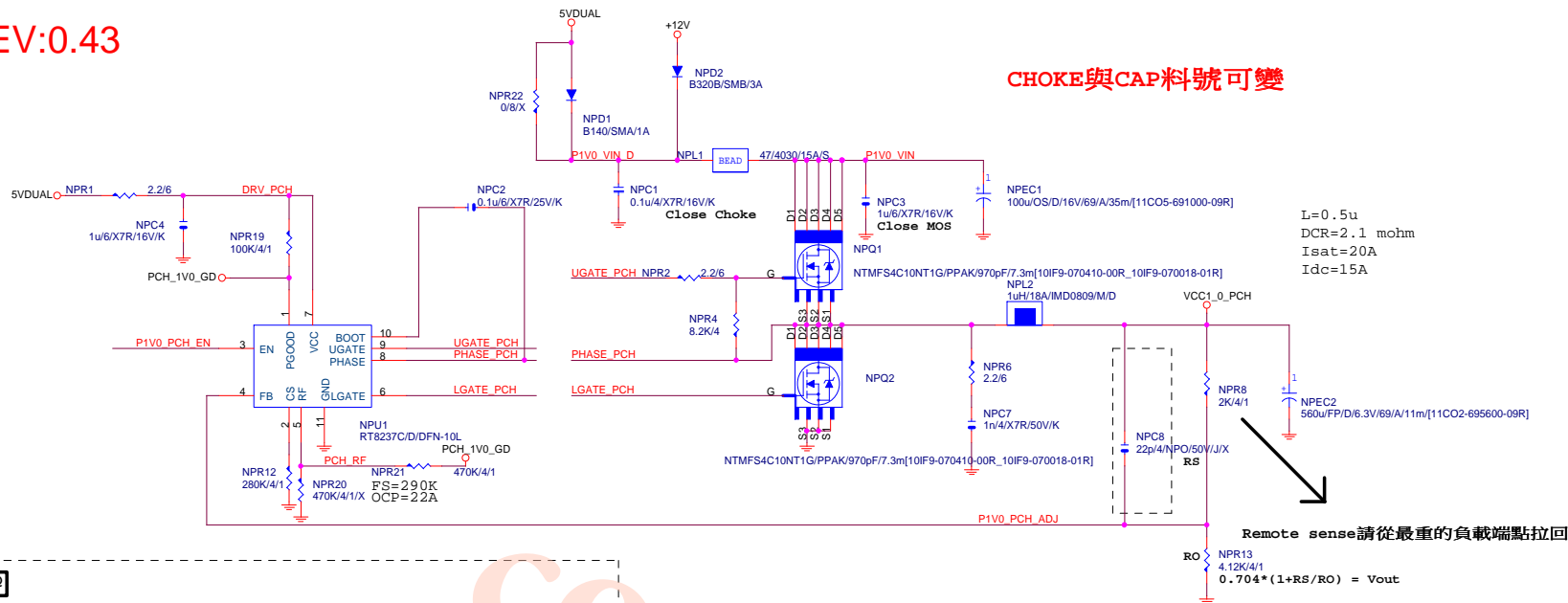
MAU1上NCT3103時上件

GIGABYTE™

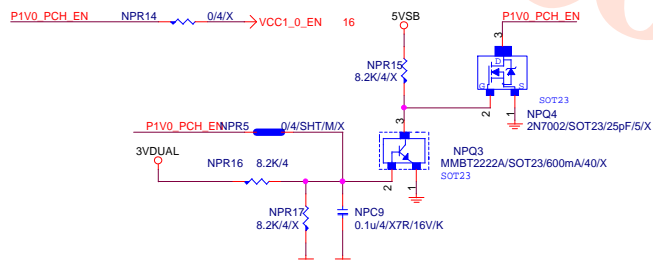
| RT8120_DDR POWER | | |
|------------------|-----------------------------|----------------|
| Title | Document Number | Rev |
| Custom | GA-H110M-S2PH | 1.0 |
| Date: | Thursday, December 10, 2015 | Sheet 27 of 45 |

REV:0.43

CHOKE與CAP料號可變



PWR SEQ



請放置CHOKE一出來的地方

GIGABYTE™

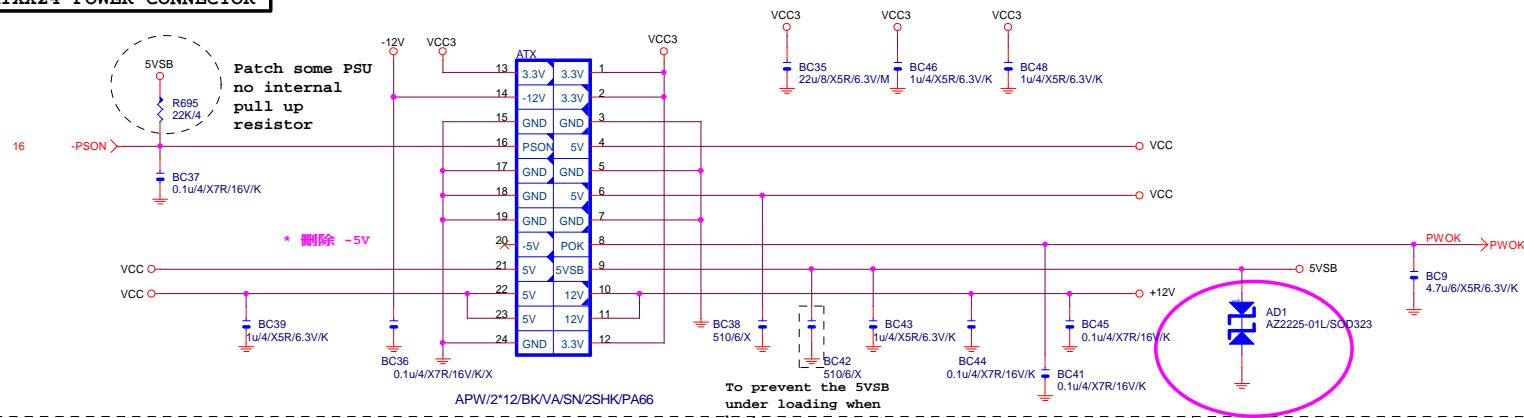
Title
RT8237_PCH POWER

Size
Custom
Document Number
GA-H110M-S2PH

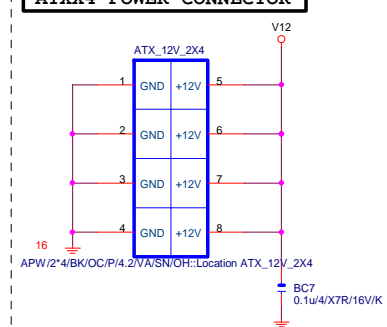
Rev
1.0

Date: Thursday, December 10, 2015 Sheet 28 of 44

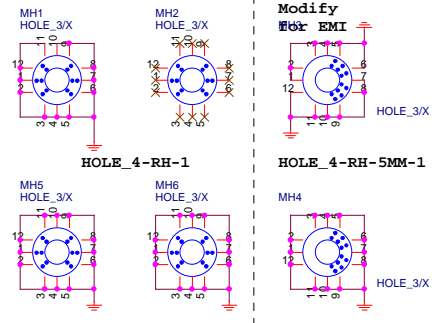
ATXX24 POWER CONNECTOR



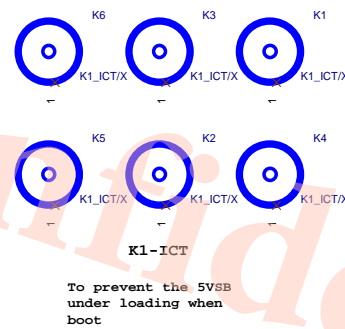
ATXX4 POWER CONNECTOR



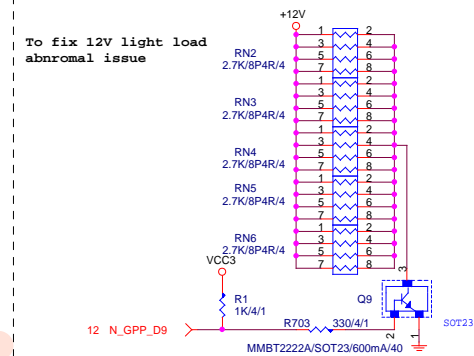
螺絲孔



固定孔/光學點

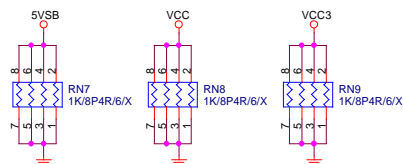


+12V DUMMY LOAD



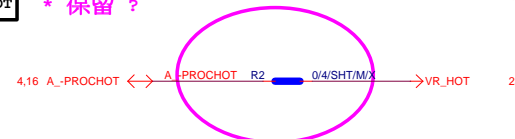
【技術通報R&D技術通報153】

| |
|------------|
| DUMMY LOAD |
|------------|

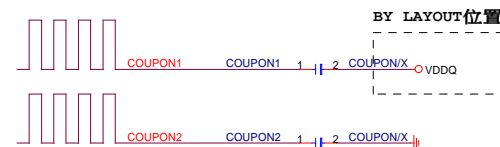


-PROHOT

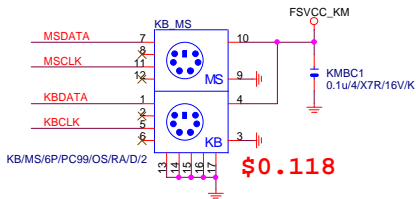
* 保留？



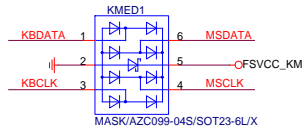
COUPON



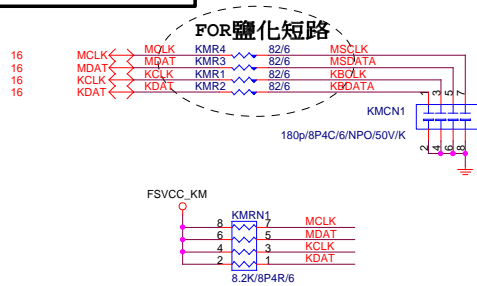
KB_MS_USB



ESD

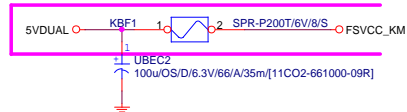


KB_MS_USB DAMPING/PU

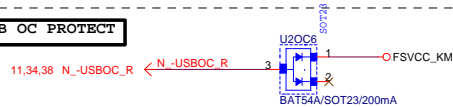


KB_MS_USB PWR

NET 可變, 與其他USB SHARE



USB OC PROTECT

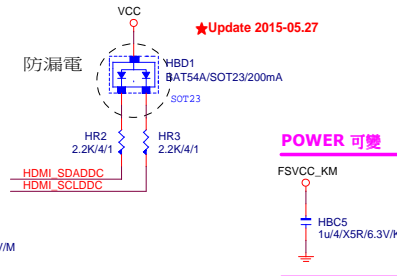


Confidential

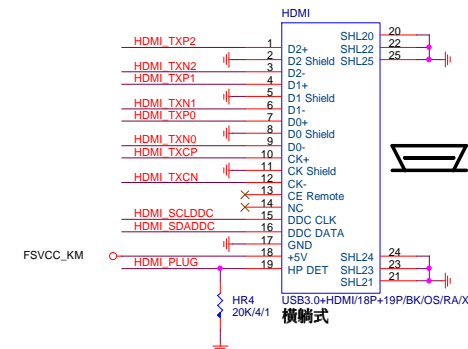
AE

Gigabyte Technology

| | | | | | |
|-------|--|--|--|-----------------------------|----------------|
| Title | | | | AUDIO JACK | |
| Size | | | | GA-H110M-S2PH | |
| Date: | | | | Thursday, December 10, 2015 | Sheet 31 of 44 |
| Rev | | | | 1.0 | |

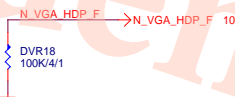


【技術通報R&D技術通報150】
HDMI eye diagram1.4版(deep color)會fail
原因: eye diagram的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

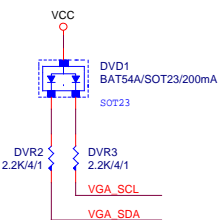




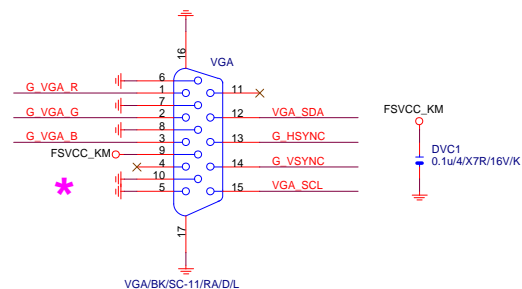
Embedded LDO



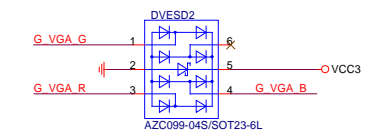
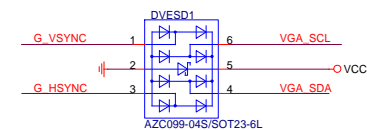
| | |
|------------|-------|
| VGA SIGNAL | R1.02 |
|------------|-------|



VGA (BLACK)



VGA ESD



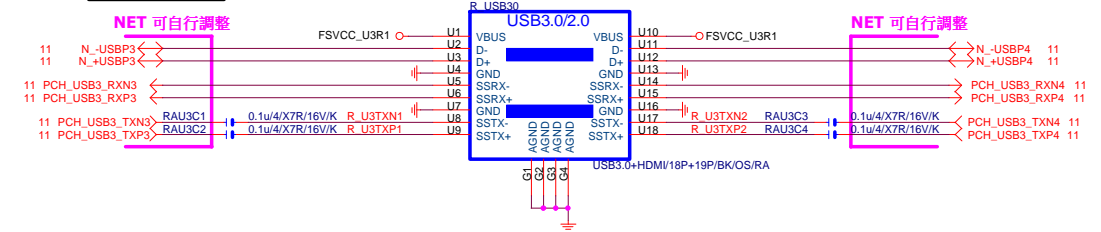
FOR EMI

Gigabyte Technology
DP-VGA RTD2168

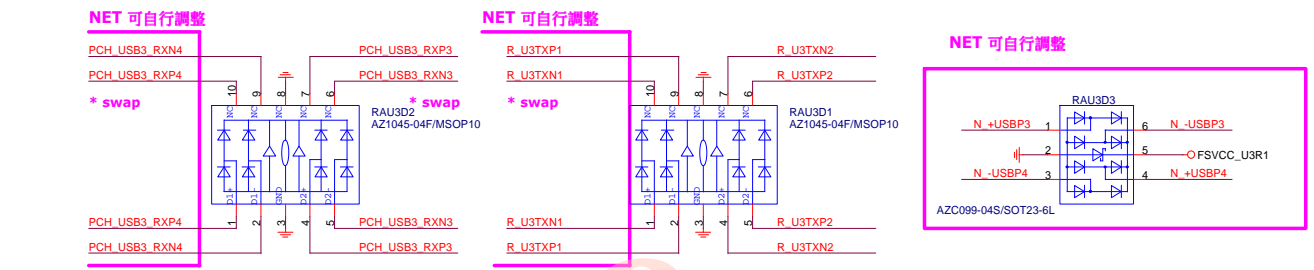
| | | |
|-----------------------------------|---|------------|
| Size Custom | Document Number GA-H110M-S2PH | Rev 1.0 |
| Date: Thursday, December 10, 2015 | Sheet 33 of 44 | |

R_USB30_1

ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可



ESD

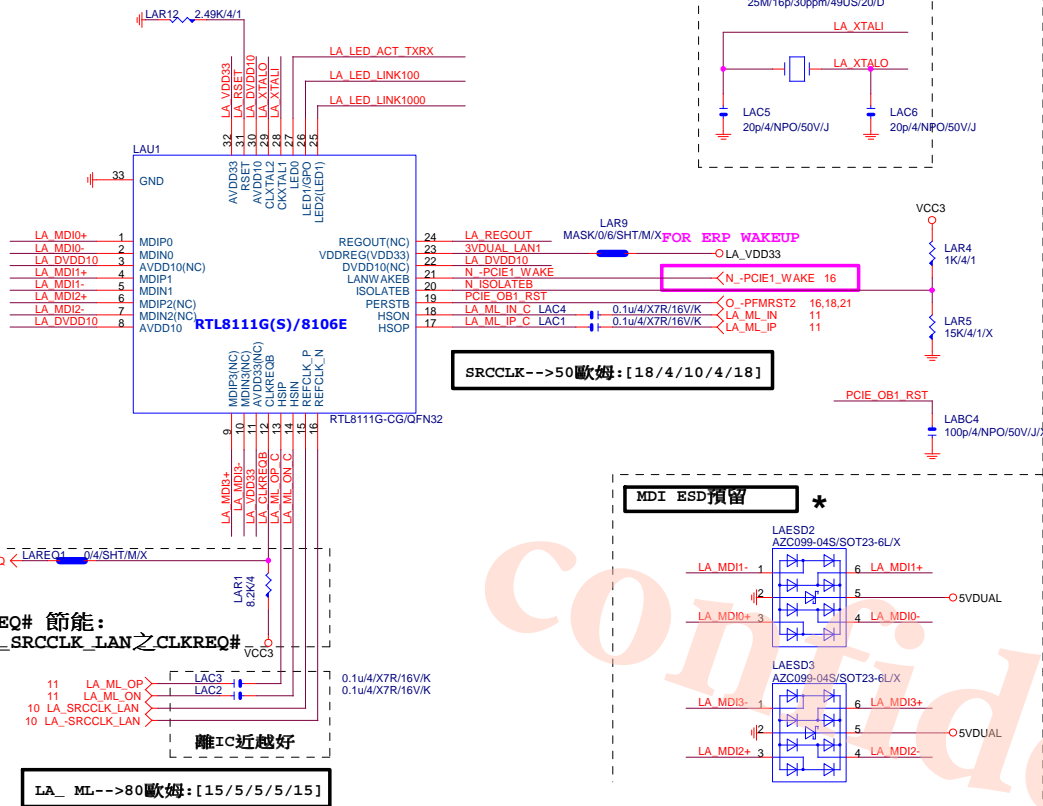


FUSE

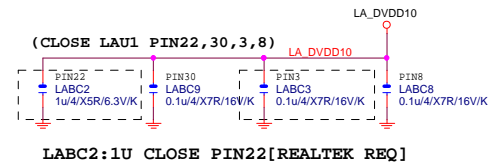


AE

| | |
|--------------|-------|
| LAN:RTL8111G | R1.06 |
|--------------|-------|

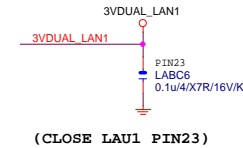


LAN POWER

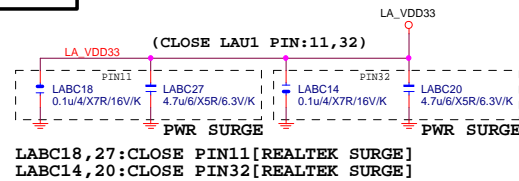


LAN POWER

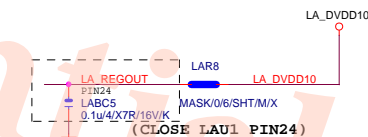
note: lan power連接及電流



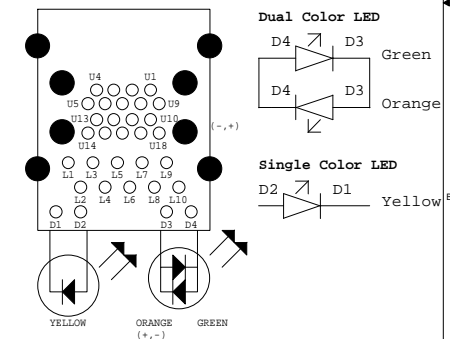
LAN POWER



LAN POWER

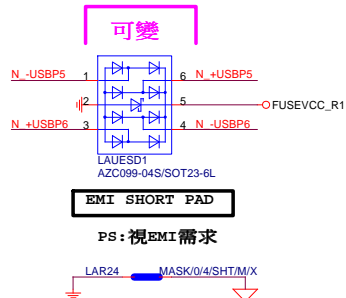


USB30_LAN LAYOUT示意圖



| | |
|-------------------|-------|
| USB_LAN CONNECTOR | R1.06 |
|-------------------|-------|

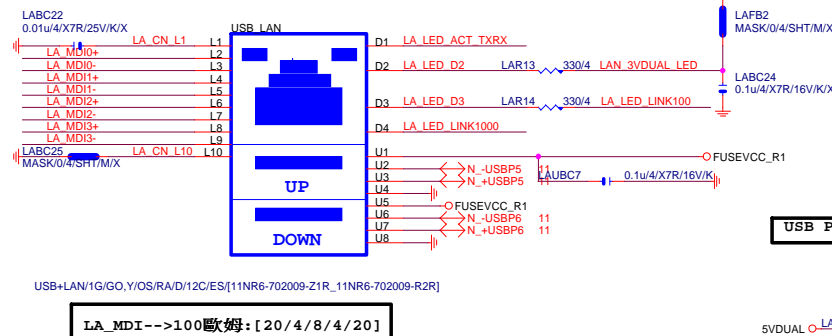
RMA ESD PROTECT



USB_LAN CONNECTOR

note:可變更USB NAME

[RTL8111G]



USB POWER

note:可變更FUSE

可變

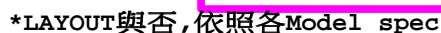
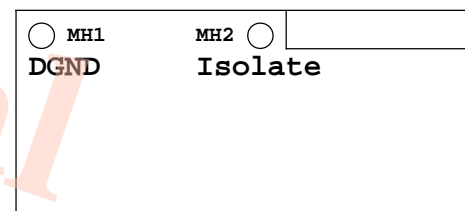
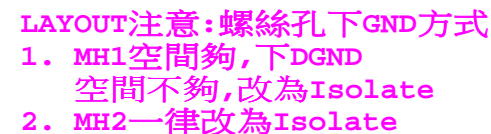
Close to connector FUSE-0805

Gigabyte Technology

Realtek RTL8111GUS

GA-H110M-S2PH

| | | | |
|--------------------|-----------------------------|----------------|-----|
| Title | | | |
| Realtek RTL8111GUS | | | |
| Size | Document Number | | Rev |
| Custom | GA-H110M-S2PH | | 1.0 |
| Date: | Thursday, December 10, 2015 | Sheet 35 of 44 | |



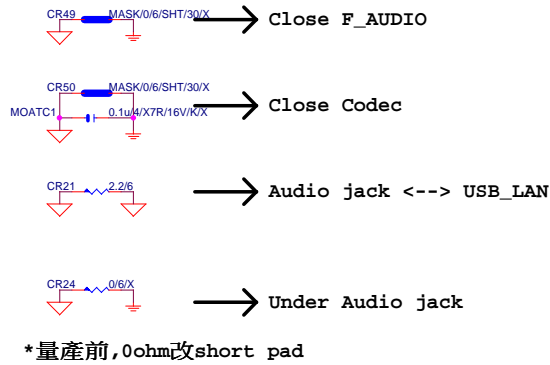
VALUE可變,LED顏色請自行修改
(預設:低亮度黃色LED:LED/Y/6/S)

LAYOUT注意:要加
GND切割線

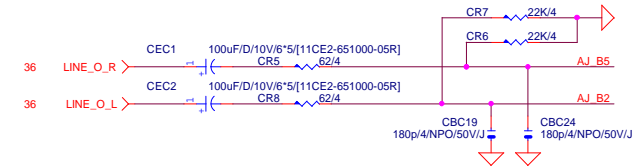
音效區域印刷

BOM OPTION : 1. Chemicon音效電容
2. 金屬外罩 Reserve (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)

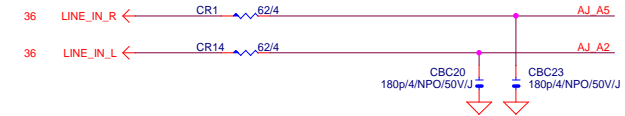
Rev 0.4



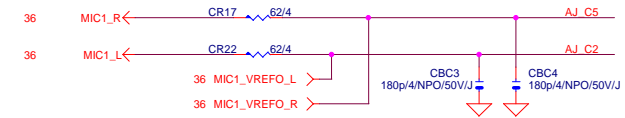
LINE-OUT



LINE-IN



MIC-IN

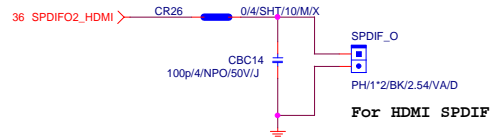


SURROUND

CEN/LFE

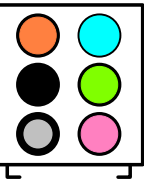
SURRBACK

SPDIF_OUT



SPDIF_IN

AZALIA JACK

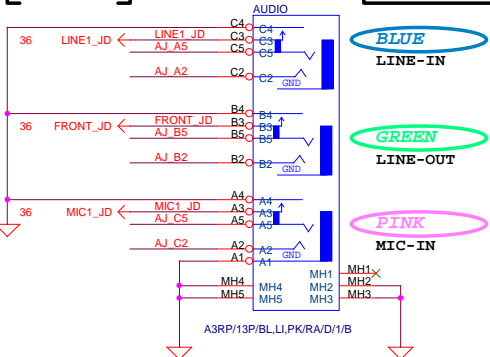


AZALIA JACK

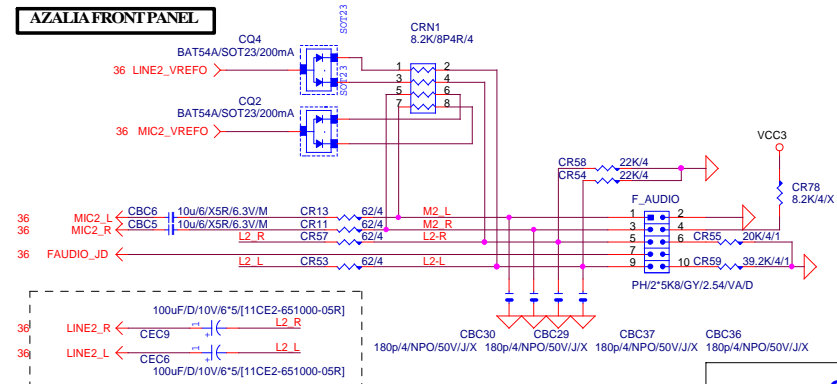
BLUE
LINE-IN

GREEN
LINE-OUT

PINK
MIC-IN



AZALIA FRONT PANEL

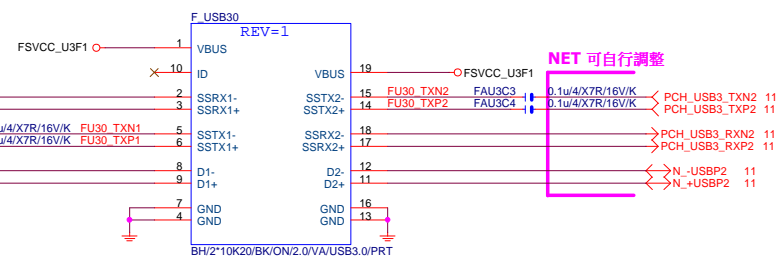


Gigabyte Technology

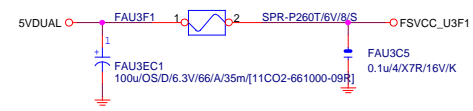
AUDIO JACK

| | | |
|-------|-----------------------------|----------------|
| Title | Document Number | Rev |
| | GA-H110M-S2PH | 1.0 |
| Size | Custom | |
| Date | Thursday, December 10, 2015 | Sheet 37 of 44 |

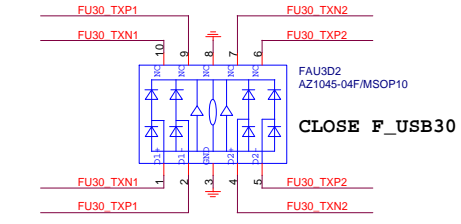
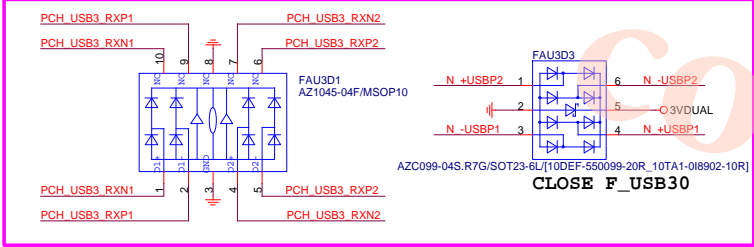
Front USB3.0



F_USB30_PWR

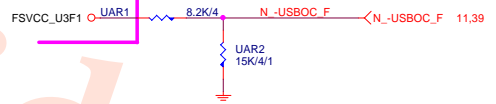


NET 可自訂調整



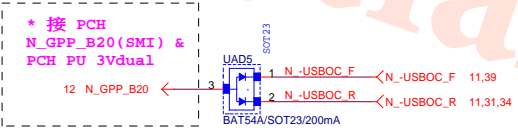
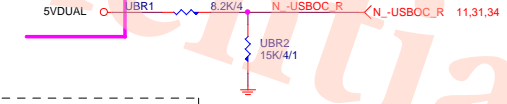
-USBOC_F

POWER 可自訂調整



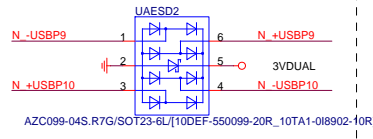
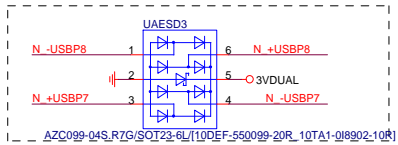
-USBOC_R

POWER 可自訂調整



AE

NET 可變



F_USB 2.0 OC SIGNAL

11,38 N_USBOC_F ← N_USBOC_F 3

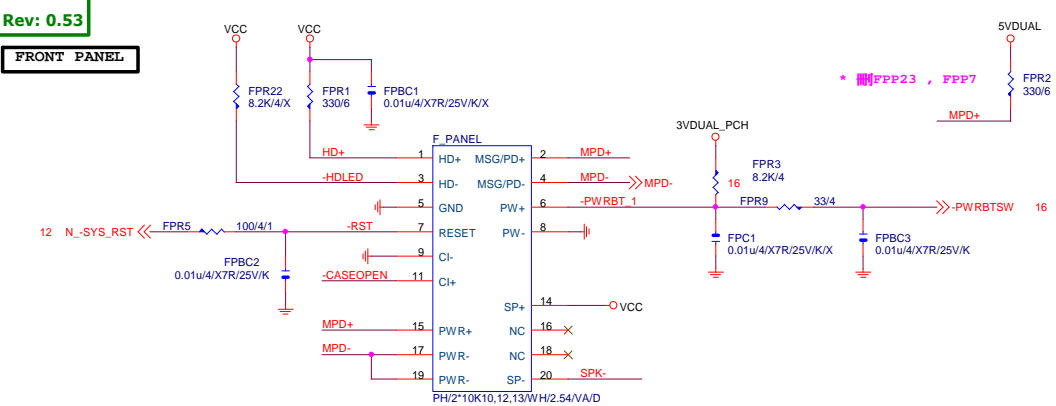
U202 SOT23

1 FSVCC_F1

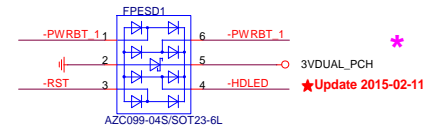
2 BAT54A/SOT23/200mA

AE

FRONT PANEL

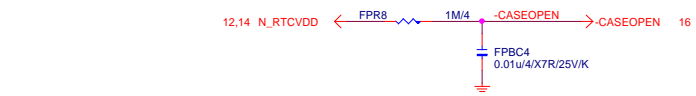


ESD

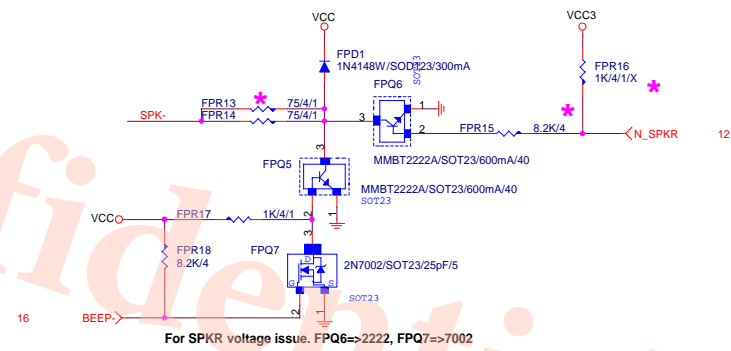


FOOTPRINT: PIN2X10PANEL-NEW

CASE OPEN

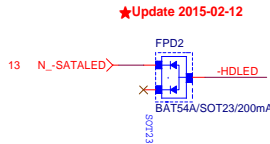


SPKR



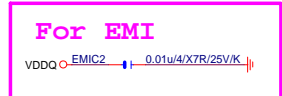
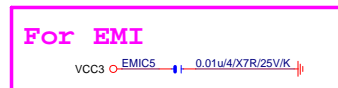
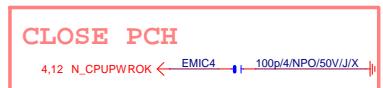
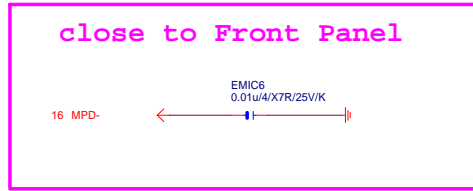
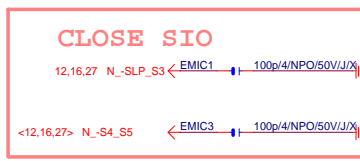
SATA LED

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

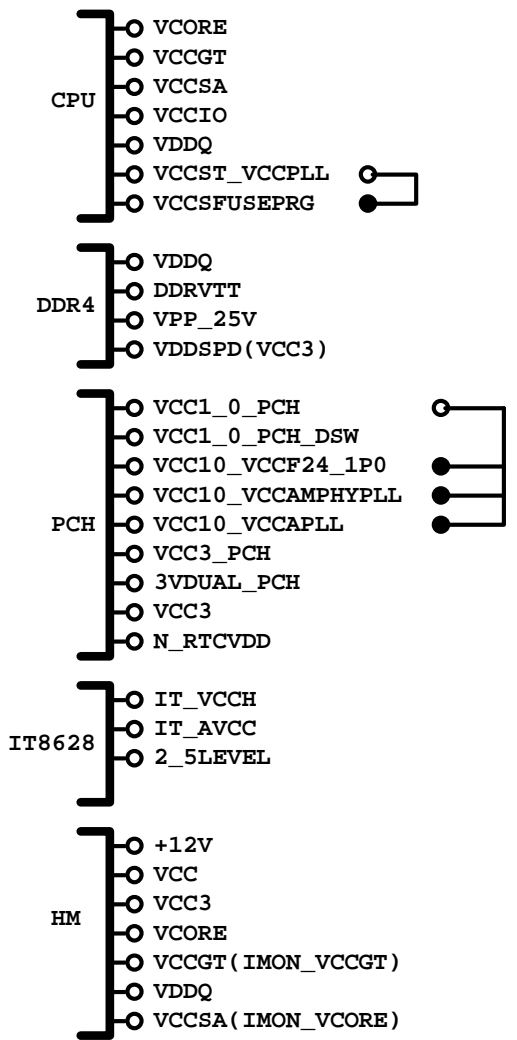


AE

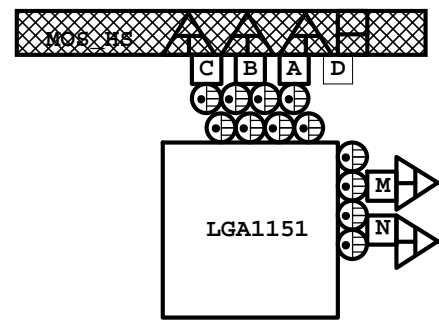
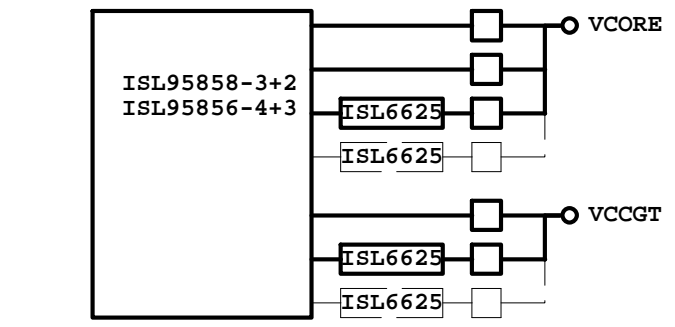
EMI/ESD R0.1



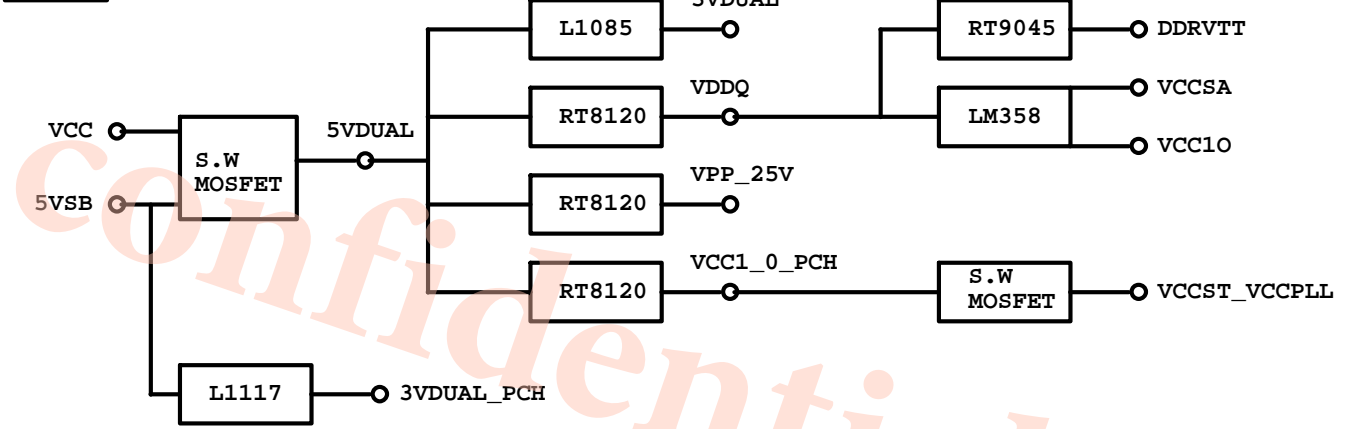
POWER BLOCK MAP



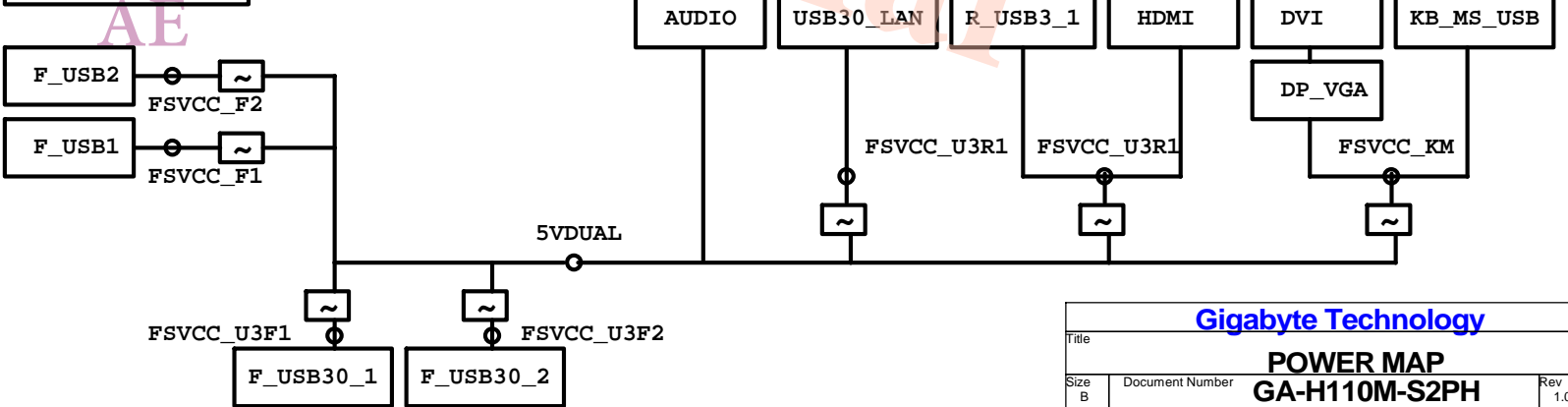
VCORE/VCCGT



POWER



FUSE POWER F/R



固態電容料號.請自行修改

| 日系黑色固態 | Capture Value |
|------------------|-------------------------|
| 11C02-C85600-01R | 560u/FP/D/6.3V/68/C/8m |
| 11C05-C82700-01R | 270u/FP/D/16V/88/C/12m |
| 11C05-C61000-01R | 100u/OS/D/16V/66/C/30m |
| 11C02-C51000-01R | 100u/FP/D/6.3V/65/C/13m |

| 日系一般固態 | Capture Value |
|------------------|-----------------------|
| 11C02-685600-01R | 560u/FP/D/6.3V/68/8m |
| 11C05-882700-01R | 270u/FP/D/16V/88/12m |
| 11C05-661000-03R | 100u/OS/D/16V/66/30m |
| 11C02-651000-02R | 100u/OS/D/6.3V/66/30m |

| 台系固態 | Capture Value |
|------------------|-------------------------|
| 11C02-661000-09R | 100u/OS/D/6.3V/66/A/35m |
| 11C05-691000-09R | 100u/OS/D/16V/69/A/35m |
| 11C05-8C2700-09R | 270u/FP/D/16V/8C/A/10m |
| 11C02-695600-09R | 560u/FP/D/6.3V/69/A/11m |

IRON CHOKE

| | 料號 | Capture Value | SIZE | Footprint |
|-----|------------------|-----------------------|-------|--------------------|
| DIP | 11LC5-M4500C-01R | 0.5uH/40A/IMD109/M/D | 10*10 | CHOKE05U-40A-1PQ-3 |
| DIP | 11LC5-M2500C-01R | 0.5uH/20A/IMD0809/M/D | 8*8 | CHOKE1U-R50M-IF |

Ferrite

| | 料號 | Capture Value | SIZE | Footprint |
|-----|------------------------|-------------------------|-------|--------------------|
| DIP | 11LC5-F3500C-11R | 0.5uH/32A/INCG109/FSI/D | 10*10 | CHOKE05U-40A-1PQ-3 |
| DIP | 11LC5-F2500C-11R | 0.5uH/25A/INC0809/F/D | 8*8 | CHOKE1U-R50M-IF |
| SMD | 未建(SIUC1007-R30M-JJ1W) | | 10*7 | CHOKE11X8MM-SMD |

BEAD

| | 料號 | Capture Value | SIZE | Footprint |
|-----|------------------|---------------|------|-----------------|
| DIP | 10LFB-15470A-01R | 47/4030/15A/S | 4*3 | BEADC8B-BPH_SMD |

PWM料號

| | | 料號 | Capture Value | Footprint |
|-----|----------|------------------|---------------|-------------------|
| PWM | ISL95856 | 10TA1-695856-01R | | IC52QFN-6x6-G |
| PWM | ISL95858 | 10TA1-695858-01R | | IC52QFN-6x6-G |
| PWM | IR35201 | 10TA1-635201-00R | | IC56QFN-9VRS4339 |
| PWM | IR3570 | 10TA1-603570-00R | | IC40MLFP-ISL95835 |

GIGABYTE™

TitlePOWER零件使用表

SizeCustom

Date:Thursday, December 10, 2015

Document NumberGA-H110M-S2PH

Rev1.0

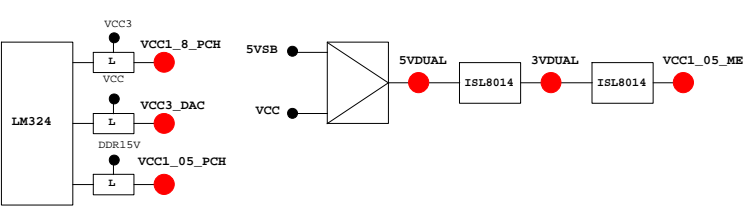
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| PCH GPIO LIST TABLE | | | | | |
|---------------------|------|---------|--------|--------------------|-----------------|
| PIN NAME | PWR | Default | USAGE | NOTE | |
| GP0 | MAIN | H-Z | GPI | GPIO0 | N/A |
| GP1/TACH1 | MAIN | | GPI | GPIO1 | N/A |
| GP2/PIRQE# | MAIN | | GPI | -PIRQE | P/U 8.2K VCC3 |
| GP3/PIRQF# | MAIN | | GPI | -PIRQF | P/U 8.2K VCC3 |
| GP4/PIRQG# | MAIN | | GPI | -PIRQG | P/U 8.2K VCC3 |
| GP5/PIRQH# | MAIN | | GPI | -PIRQH | P/U 8.2K VCC3 |
| GP6/TACH2 | MAIN | | GPI | PCIEX1 Detect | P/U 8.2K VCC3 |
| GP7/TACH3 | MAIN | | GPI | GPIO7 | P/U 8.2K VCC3 |
| GP8 | STBY | H | GPI | GPIO8 | N/A |
| GP9/OC5# | STBY | | NATIVE | USB OC5# | N/A |
| GP10/OC6# | STBY | | NATIVE | USB OC6# | N/A |
| GP11/SMBALERT# | STBY | | NATIVE | USB PWR protect | P/U 8.2K 3VDUAL |
| GP12 | STBY | L | GPI | GPIO12 | N/A |
| GP13 | STBY | L | GPI | LPCPME# | P/U 8.2K 3VDUAL |
| GP14/OC7# | STBY | | NATIVE | USB OC7# | N/A |
| GP15 | STBY | L | GPI | GPIO15(TLS Enable) | P/U 8.2K 3VDUAL |
| GP16 | MAIN | | GPI | GPIO16 | P/U 8.2K VCC3 |
| GP17/TACH0 | MAIN | | GPI | GPIO17 | P/U 8.2K VCC3 |
| GP18 | MAIN | | GPI | Mobile Only | N/A |
| GP19 | MAIN | | GPI | GPIO19 | P/U 8.2K VCC3 |
| GP20 | MAIN | | GPI | GPIO20 | P/U 8.2K VCC3 |
| GP21 | MAIN | | GPI | GPIO21 | P/U 8.2K VCC3 |
| GP22 | MAIN | H-Z | GPI | GPIO22 | P/U 8.2K VCC3 |
| GP23 | MAIN | | GPI | GPIO23 | N/A |
| GP24 | STBY | L | GPI | SKTOCC# | N/A |
| GP25 | STBY | | | Mobile Only | N/A |
| GP26 | STBY | | | Mobile Only | N/A |
| GP27 | STBY | H | GPO | GPIO27 | P/U 8.2K 3VDUAL |
| GP28 | STBY | H | GPO | PWR LED | P/U 8.2K 3VDUAL |
| GP29 | STBY | L | GPI | GPIO29 | N/A |
| GP30 | STBY | H-Z | GPI | Mobile Only | N/A |
| GP31 | STBY | H-Z | GPI | Mobile Only | N/A |
| GP32 | MAIN | H | GPO | N/A | N/A |
| GP33 | MAIN | H | GPO | N/A | N/A |
| GP34 | MAIN | H-Z | GPI | -PCI_STOP | P/U 8.2K VCC3 |
| GP35 | MAIN | L | GPO | -ACZ_DET | P/U 8.2K VCC3 |
| GP36 | MAIN | | GPI | N/A | N/A |
| GP37 | MAIN | | GPI | N/A | N/A |
| GP38 | MAIN | H-Z | GPI | PCIEX4 Detect | P/U 8.2K VCC3 |
| GP39 | MAIN | H-Z | GPI | GPIO39 | P/U 8.2K VCC3 |
| GP40 | STBY | | NATIVE | USB OC1# | N/A |
| GP41 | STBY | | NATIVE | USB OC2# | N/A |
| GP42 | STBY | | NATIVE | USB OC3# | N/A |
| GP43 | STBY | | NATIVE | USB OC4# | N/A |
| GP44 | STBY | L | NATIVE | GPIO44 | P/U 8.2K 3VDUAL |
| GP45 | STBY | | NATIVE | GPIO45 | P/U 8.2K 3VDUAL |
| GP46 | STBY | L | NATIVE | GPIO46 | P/U 8.2K 3VDUAL |
| GP47 | STBY | | | Mobile Only | N/A |
| GP48 | MAIN | H-Z | IN | GPIO48 | P/U 8.2K 3VDUAL |
| GP49 | MAIN | H-Z | IN | GPIO49 | P/U 8.2K 3VDUAL |
| GP50 | MAIN | | NATIVE | -REQ1 | P/U 2.2K VCC |
| GP51 | MAIN | H | NATIVE | -GNT1 | N/A |
| GP52 | MAIN | | NATIVE | -REQ2 | P/U 2.2K VCC |
| GP53 | MAIN | H | NATIVE | -GNT2 | N/A |
| GP54 | MAIN | | NATIVE | -REQ3 | P/U 2.2K VCC |
| GP55 | MAIN | H | NATIVE | -GNT3 | N/A |
| GP56 | STBY | | NATIVE | Mobile Only | N/A |
| GP57 | STBY | H-Z | IN | VCORE_OV1 | P/U 8.2K 3VDUAL |
| GP58 | STBY | H-Z | NATIVE | F_USB_OC | P/U 8.2K 3VDUAL |
| GP59 | STBY | | NATIVE | USB_OC0# | N/A |
| GP60 | STBY | H-Z | NATIVE | N/A(Reverse) | P/U 8.2K 3VDUAL |
| GP61 | STBY | L | NATIVE | -SUSTAT | N/A |
| GP62 | STBY | L | NATIVE | SUSCLK | N/A |
| GP63 | STBY | L | NATIVE | GPIO63 | N/A |
| GP64 | MAIN | L | NATIVE | CLKOUTFLEX0 | N/A |
| GP65 | MAIN | L | NATIVE | CLKOUTFLEX1 | N/A |
| GP66 | MAIN | L | NATIVE | CLKOUTFLEX2 | N/A |
| GP67 | MAIN | L | NATIVE | CLKOUTFLEX3 | N/A |
| GP72 | STBY | H-Z | NATIVE | VCORE_OV4 | P/U 8.2K 3VDUAL |
| GP73 | STBY | | | Mobile Only | N/A |
| GP74 | STBY | H-Z | NATIVE | 1_05V_OV2 | P/U 8.2K 3VDUAL |
| GP75 | STBY | H-Z | NATIVE | N/A(Reverse) | P/U 8.2K 3VDUAL |

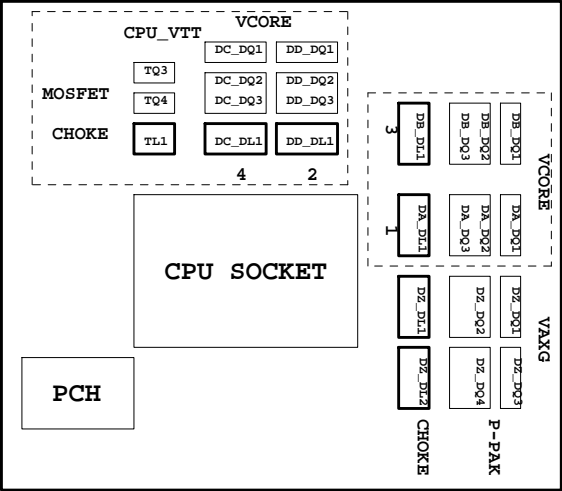
Super I/O ITE8720 GPIO Table

| PIN NAME | USAGE | NOTE |
|----------------------------|------------------|------|
| SVC/PECI_RQT/GP14 | -PECI_REQ | |
| PWROK1/GP13 | PWROK1/ITE_PWROK | |
| KRST#/GP62 | -KBRST | |
| SO/GP50 | -ICH_SPI_CS | |
| IRTX/GP47/CE2_N/JP7 | CEB_N | |
| GP46/IRRX | -LAN2_DSM | |
| PSION#/GP42 | -PSON | |
| PWROK2#/GP41 | PECI_CTL | |
| PCIRST3#/GP10/VDIMM_STR_EN | -PCIE_RST | |
| RSMRST#CIRRXL/GP55 | -RSMRST | |
| PME#/GP54 | -LPCPME | |
| PD5/GP75/BUSS00 | N/A | |

| PIN NAME | USAGE | NOTE |
|-----------------------------|-------------------|------------------|
| FAN_TAC2/GP52 | FANIO2 | |
| FAN_TAC3/GP37 | FANIO3 | |
| VIDO3/FAN_TAC4/GP25/DSR2# | FANIO4 | |
| FAN_CTL2/GP51 | FANPWM2 | |
| FAN_CTL3/GP36 | FANPWM3 | |
| VID4/GP34 | BEEP- | |
| VID3/GP33 | TURBO1 | |
| VID2/GP32 | TURBO0 | |
| VCORE_GOOD/VID6/GP63 | CPUT_LED1_C | |
| VID5/GP35 | CPUT_LED2_C | |
| VID1/GP31 | CPUT_LED3_C | |
| VID0/GP30 | -LAN1_DSM | NBT_LED1_C |
| SLCT/GP80 | CPU_LED1_C | |
| PE/GP81 | CPU_LED2_C | |
| BUSY/GP82 | CPU_LED3_C | |
| PD3/GP73/BUSSI1 | SB_LED1_C | |
| PD4/GP74/BUSSI2 | SB_LED2_C | |
| VCORE_EN/VID7/GP64 | IT_GP64 | SB_LED3_C |
| PD0/GP70 | NB_LED1_C | |
| PD1/GP71 | NB_LED2_C | |
| PD2/GP72/BUSSI0 | NB_LED3_C | |
| GP22/SCK | LOW_PWR_1 | |
| VID05/GP27/SIN2 | LOW_PWR_2 | |
| PCIRST2#/GP11 | -PFMRST1 | |
| PCIRST1#/GP12 | -PFMRST2 | |
| 3VBSBW#/GP40 | CSI_F0 | BSEL166_1 |
| SUSC#/GP53 | CSI_F1 | BSEL166_2 |
| GP23/SI | BSEL166_3/CSISBSL | |
| VIDO0/GP20/CTS2# | CPUT_LED1_C | BSEL166_4 |
| GP65/VDDA_EN/GB_01 | MB_ID2 | |
| PD6/GP76/BUSS01 | MB_ID3 | |
| PD7/GP77/BUSS02 | MB_ID4 | |
| AFD#/GP86/SMBC_R | SEC_PIN | FST_2X8 |
| INIT#/GP85/SMBD_M | SEC_2x8 | GTLREF_AD2 |
| ACK#/GP83 | DDR_LED1_C | |
| VID01/GP21/DCD2# | DDR_LED2_C | |
| STB#/GP87/SMBC_M | DDR_LED3_C | |
| PWRON#/GP44 | VCORE_OV1 | |
| PANSWH#/GP43 | PWRBTSW | |
| KDAT/GP61 | -PWRBTSW | |
| KCLK/GP60 | KDAT | |
| MDAT/GP57 | KCLK | |
| MACL/GP56 | MDAT | |
| GP66/VLDT_EN/GB_02 | NBT_LED1_C | MCLK |
| SVD/PCIRSTIN#/CIRTX/GP15 | PWM2_CR | |
| KDAT/GP61 | PWM2_CR | |
| GP67/CPU_PG/GB_03 | EN_LOADLINE | IT_GP67/-EN_PWM2 |
| SLIN#/GP84/SMBD_R | -EN_PWM2 | |
| PSI_L/FAN_CLT5/CIRRXL2/GP16 | -THERM | |
| VID04/GP26/SOUT2 | DDR18V_PH2_EN | |
| VID02/FAN_TAC5/GP24/DSR2# | DDR18V_LED | |
| VID06/GP17/RI2# | 1_1V_PH_EN | |
| VID07/JP6/DTR2# | JP6 | |
| PD5/GP75/BUSS00 | SB_LED3_C | |



PWM各相位的擺法如下：



BIOS超電壓對應表：

| 線路圖名稱 | BIOS選項 |
|---------------------|------------------|
| Vcore | CPU Vcore |
| CPU_VTT | CPU Termination |
| CPU_VAXG | CPU Graphic Core |
| VCC1_8_PCH | CPU PLL |
| VCC1_05_PCH | PCH core |
| 3VDUAL | 3VDUAL |
| DDR15V | DRAM voltage |
| DDRVTT | DRAM Terminatio |
| VREF_CA_A/VREF_CA_B | DRAM Address Ref |
| VREF_DQ_A/VREF_DQ_B | DRAM Data Ref |

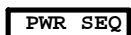
散熱模組料號：

Z77-D3H :
PCH :
12SP2-S05511-01R/02R/03R
MOSFET :
12SP2-S08924-01R/02R/03R

| | 3 pin FAN control | 4 pin FAN control | FAN speed | Controller |
|---------|-------------------|-------------------|---------------|------------|
| CPU FAN | FANPWM1 | FANPWM3 | FANIO1 | IT8720 |
| | ICH_FAN_PWM2 | ICH_FAN_PWM0 | ICH_FAN_TACH0 | PCH |
| SYS FAN | FANPWM2 | N/A | FANIO2 | IT8720 |
| | ICH_FAN_PWM1 | N/A | ICH_FAN_TACH1 | PCH |
| PWR FAN | N/A | N/A | FANIO3 | IT8720 |
| | | | ICH_FAN_TACH2 | PCH |

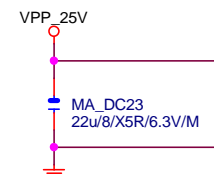
VPP_25V

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



The schematic diagram shows the internal circuit of the MA_S4_S5 module. It features three MOSFETs (MAQ7, MAQ8, MAQ9) and several resistors and capacitors. The input N_S4_S5 is connected to the gate of MAQ8 through resistor MAR106 (8.2K/4). The gate of MAQ8 is also connected to the gate of MAQ7 through resistor MAR109 (8.2K/4). The gate of MAQ7 is connected to VPP25_EN through resistor MAR109 (8.2K/4). The gate of MAQ9 is connected to MA_EN through resistor MAR14 (8.2K/4). The source of MAQ8 is connected to ground through capacitor MAC8 (0.1u/4/X7R/16V/K/X). The source of MAQ7 is connected to ground through capacitor MAC10 (1u/4/X5R/6.3V/K). The source of MAQ9 is connected to ground through capacitor MAC10 (1u/4/X5R/6.3V/K). The drain of MAQ8 is connected to the drain of MAQ7 through capacitor MAC49 (0.1u/4/X7R/16V/K). The drain of MAQ7 is connected to the drain of MAQ9 through capacitor MAC50 (0.1u/4/X7R/16V/K). The drain of MAQ9 is connected to the output VPP_25V through capacitor MAC51 (0.1u/4/X7R/16V/K). The drain of MAQ7 is connected to the output VPP_25V through capacitor MAC52 (0.1u/4/X7R/16V/K). The power supply is 5VSB, and the output is VPP_25V.

* 大電容 x0

**GIGABYTE™**

RT8068A_VPP POWER

| | |
|--------|----------------------|
| Size | Document Number |
| Custom | GA-H110M-S2PH |

| | |
|-----|-----|
| Rev | 1.0 |
|-----|-----|

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