

SHEET

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SHEET

TITLE

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Gigabyte Technology

Title		Cover Sheet	
Size	Document Number	GA-Z270X-GAMING K5	
Custom		Rev	1.02
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Model Name: GA-Z270X-GAMING K5

Component value change history


Data	Change Item	Reason
2016/07/01	1. PCB First Release	9MZ27GME3-00-01
2016/07/25	1. NC2 27P/4 to 22P/4 2. Remove NR17,NR186 8.2K/4 3. OR56 10K/4 to 8.2K/4 4. PCIEIX4 change to Black 5. PWM to ISL95866 6. TTR2 5.49K/4/1 to 4.7K/4/1 7. TTR8 4.02K/4/1 to 4.3K/4/1 8. CR20,CR1 0/4 to 75/4/1 9. Remove BSR1,BSR5 1K/4/1	9MZ27GME3-00-02
2016/09/12	1. Upadte LED circuit 2. Upadte Type C Ti3220	9MZ27GMK5-00-01
2016/10/06	1. Remove 0 ohm 2. Update H.S. 料號 3. 新增SSAR82&SSAR83 3.3ohm 4. Add Audio beat mode 5. PCB Rev 1.0	9MZ27GMK5-00-10A
2016/10/21	1. PCB Rev 1.01 2. 移除DC_SBC7/8, MR25/26,MC20 3. 增加DCC1/2/3, MABC6 4. Add DCC51,DCC52,DCC53,DCC55 5. Add MOATR3 0ohm 6. Add CR22 0ohm 7. Remove 12pcs LED	9MZ27GMK5-00-10D
2016/10/27	1. MOSFET change to ON	9MZ27GMK5-00-10E
2016/11/07	1.PCB change to Rev 1.02	9MZ27GMK5-00-10F

Circuit or PCB layout change

DATE	Change Item	Reason
2016/07/01	New SPEC.	Rev 0.1
2016/07/25	1.A.R. 改為ASM2142 USB3.1 2.Remove PD 27W 3.Remove USB3.0 HUB 4.Remove OC button 5.Remove IT8792 6.CPU side HDMI port reverse 7.Remove CPU DDI3 8.Add NR85,NR86 9.OR56改接3VDUAL_PCH 10.Remove PCIEIX16 & PCIEIX8 USB signal 11.PCIEIX4 slot 改跟PCIEIX1 切換 (原本跟M2P_32G) 12.Add PWM ID NR400,NR401 close to PCH 13.F_USB30_1 DAC power,改為FBU2EC1,FBU3F1,FAU3C5 fuse power 14.USB30_LAN 改為USB_LAN 15.Remove DP_IN 16.R_USB30 connect rename to R_USB31 17.M2P_32G改為M2A_32G 18.Remove DP_IN 19.U2_32G pin D6改接GND 20.LED control update 21.太陽花紅線不要壓到LED 線 22.DEBUG LED 文字加粗 23.AUDIO切割靠近AUDIO connect處加LED 或由其他地方移LED過來 24.NX1 背板SHAPE REMOVE	Rev 0.2
2016/09/09	1.請由Z270X-Gaming 3 Rev 0.2來修改 2.MABC8 0603改為0402 3.LED circuit update a.MCU1 power 改成 MCU_PW33 b.Remove MCU_PHL, test pin c.MCUR13改short-pad d.LEDR3改2.2M/4,VRN3改330/8P4R/6 e.側發光改宏齊LED料號:10DL6-220RGB-51R f.移除背板PCB LED和G1.Gaming囊空,改成正面雷雕導光燈條設計 g.刪除Audio 正面LED 4.ASM2142 circuit update a.SSAC40,SSAC41,SSAC42,SSAC43,SSAC44,SSAC45,SSAC46,SSAC24,SSAC49 0603改為0402 Capture Value:2.2u/4/X5R/6.3V/M 5.Remove AUDIO_COVER 6.MH1改GND, MOATR1&MOATC1移到F_AUDIO下方 7.MH2改dummy 8.SYS_TEMP2移到FFPR13右方 9.MOATR1&MOATC1移到F_AUDIO下方 10.MOATR3 &MOATC3移到目前 Rev 0.2版MOATR1&MOATC1的位置 11.Debug LED 文字面加框放在下面一點 12.RBU3D2標示pin1 13.REAR_HS的footprint請改成 " Z270X_BASE_COVER" 14.C_3LED16,C_3LED17,C_3LED10,C_3LED11, C_3LED25,C_3LED20, C_3LED19,C_3LED38, C_3LED15刪除 15.TPM Pin 20 change to NC 16.Remove NR86 17.TBC3 net改為TPMCLK 18.LED circuit update,修改漏電issue 19.WR59,WR60,WR61改為0402 non-short 20.Remove OC_BT & OC_LED connect 21.SYS3_PUMP rename to SYS_FAN3_PUMP 22.TTTR1跟VRM_TEMP對調位置 (VCORE最熱的MOS是DC_DQ1) 23.TTTR2放在DO_DQ2下方 (VAXG最熱的MOS是DO_DQ2) 24.Type C 改為Ti3220	Z270X-Gaming K5 Rev 0.1
2016/10/06 Rev 1.0	1.由Z270X-Gaming K5 Rev 0.1來修改 2.0 ohm改為short pad 3.MOS_HS改為TMOS: MOSHSINK-SNIPERB8-T & RMOS: MOSHSINK-SNIPERB8-R 4.新增SSAR82&SSAR83 for USB3.1 5.Audio修改 a.Remove ALC1220 pin41 CPVDD LDO POWER , 改成從3VDUAL過來 b.MOATR1, MOATR3 改 SHORT PAD 6.LED修改 a.Add "N_GFP_D10" software beat mode control b.Remove PCIE LED control ON/OFF circuit 7.AUDIO及板邊燈條,壓到斜線圖騰cut掉斜線 8.H_3LED1 MASK	

2016/10/06 Rev 1.01
1.由Z270X-Gaming K5 Rev 1.0修改
2. 移除DC_SBC7/8, MR25/26,MC20
3. 增加DCC1/2/3, MABC6
4. Add DCC51,DCC52,DCC53,DCC55
5. MOATR3 footprint改為R0402-2
6. 修改DDR O.C. Layout

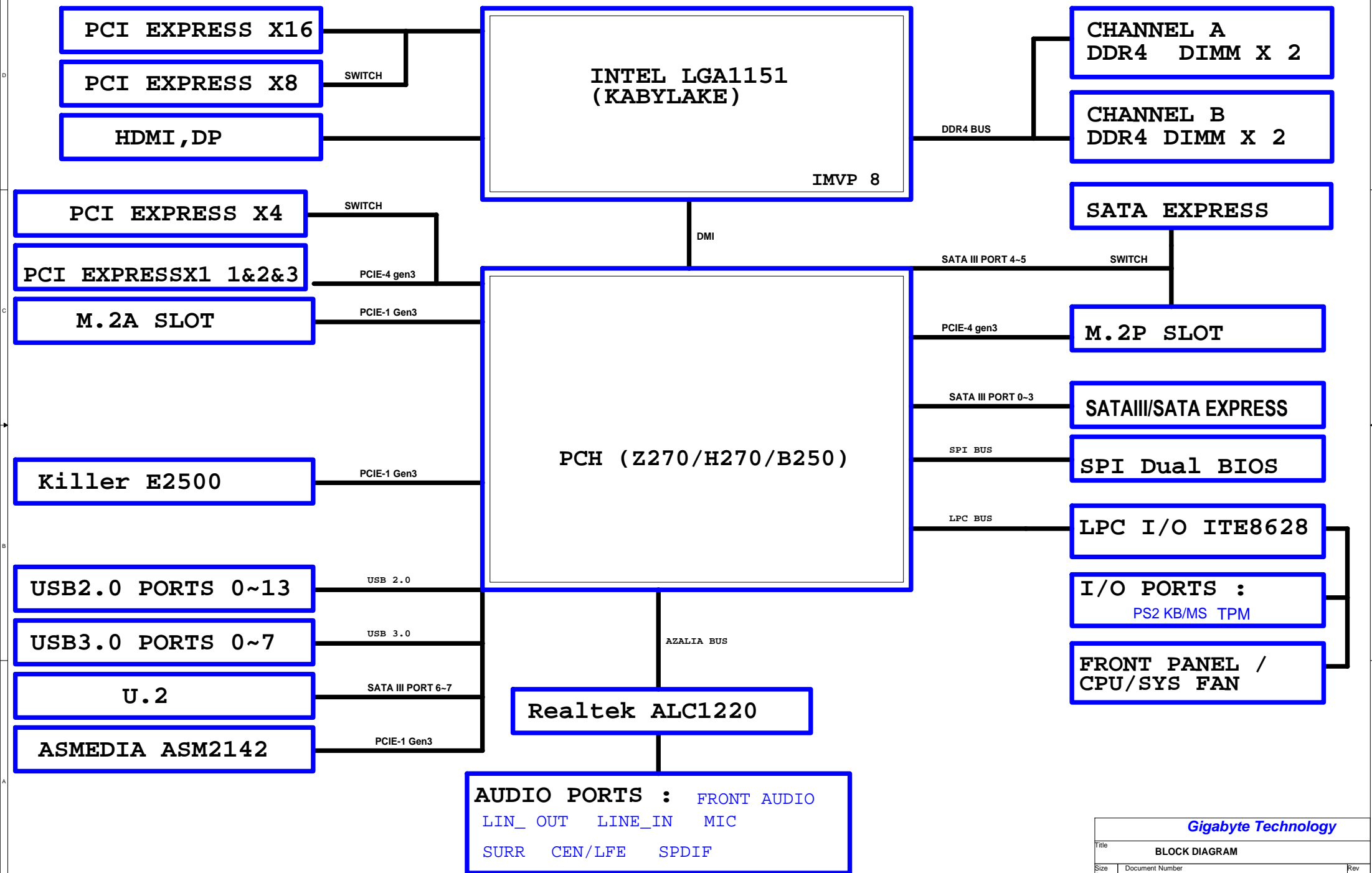
2016/11/07 Rev 1.02
1.DDR Data slot內4mils trace to 4.5mils



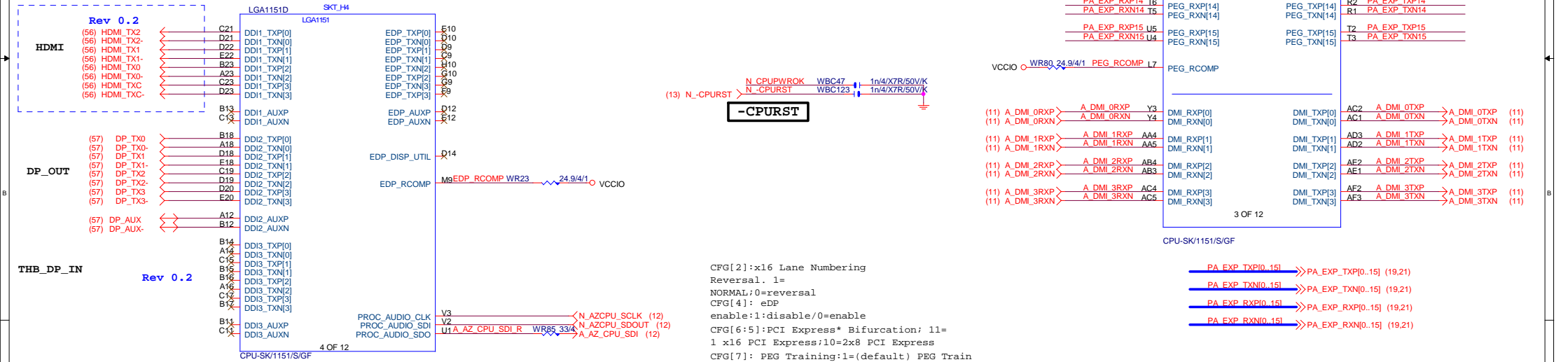
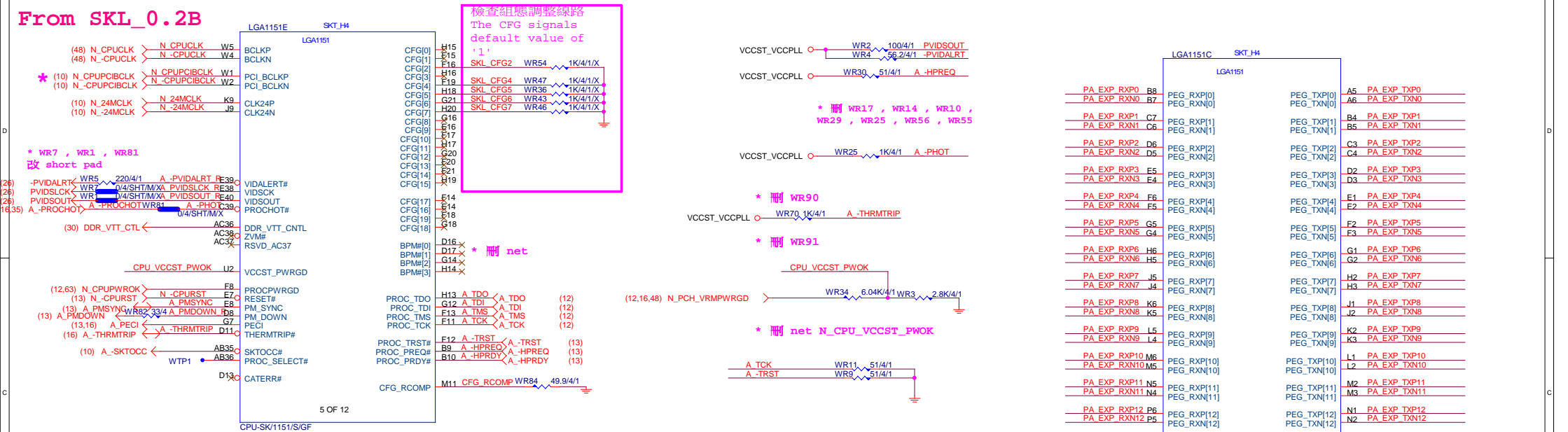
BOM & PCB MODIFY HISTORY

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BLOCK DIAGRAM



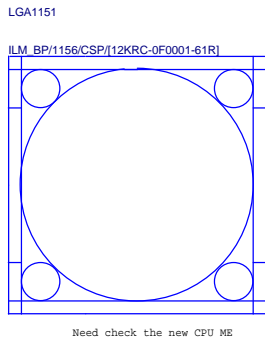
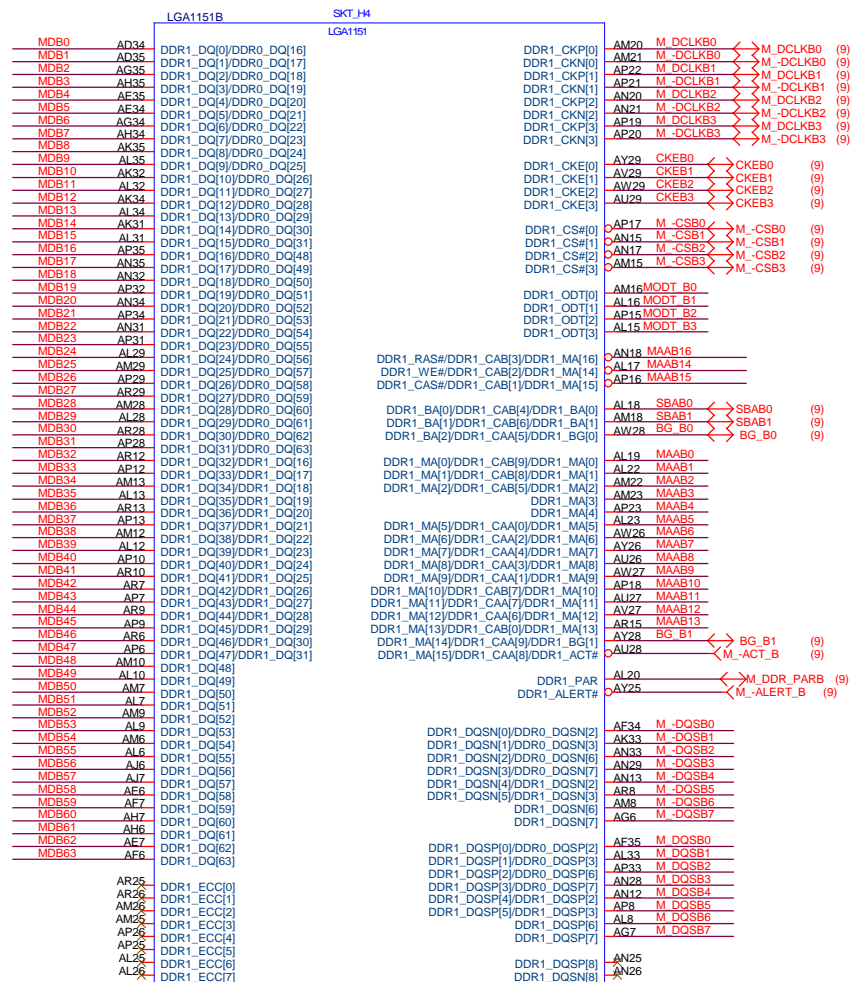
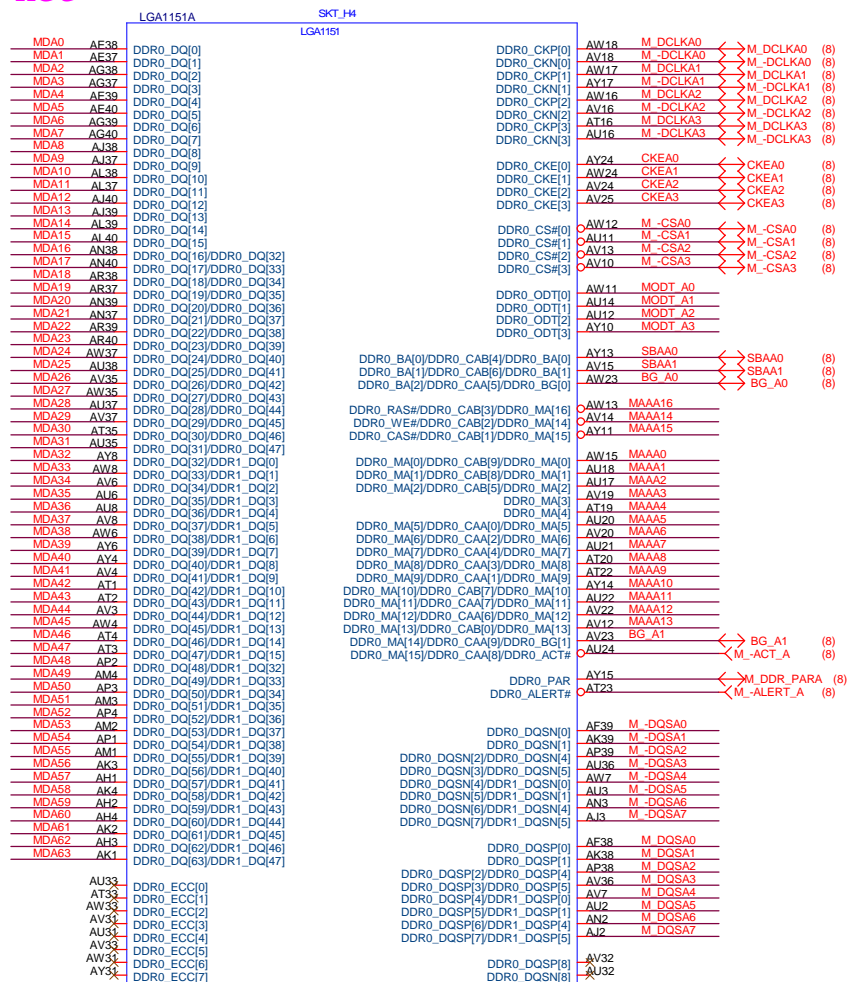
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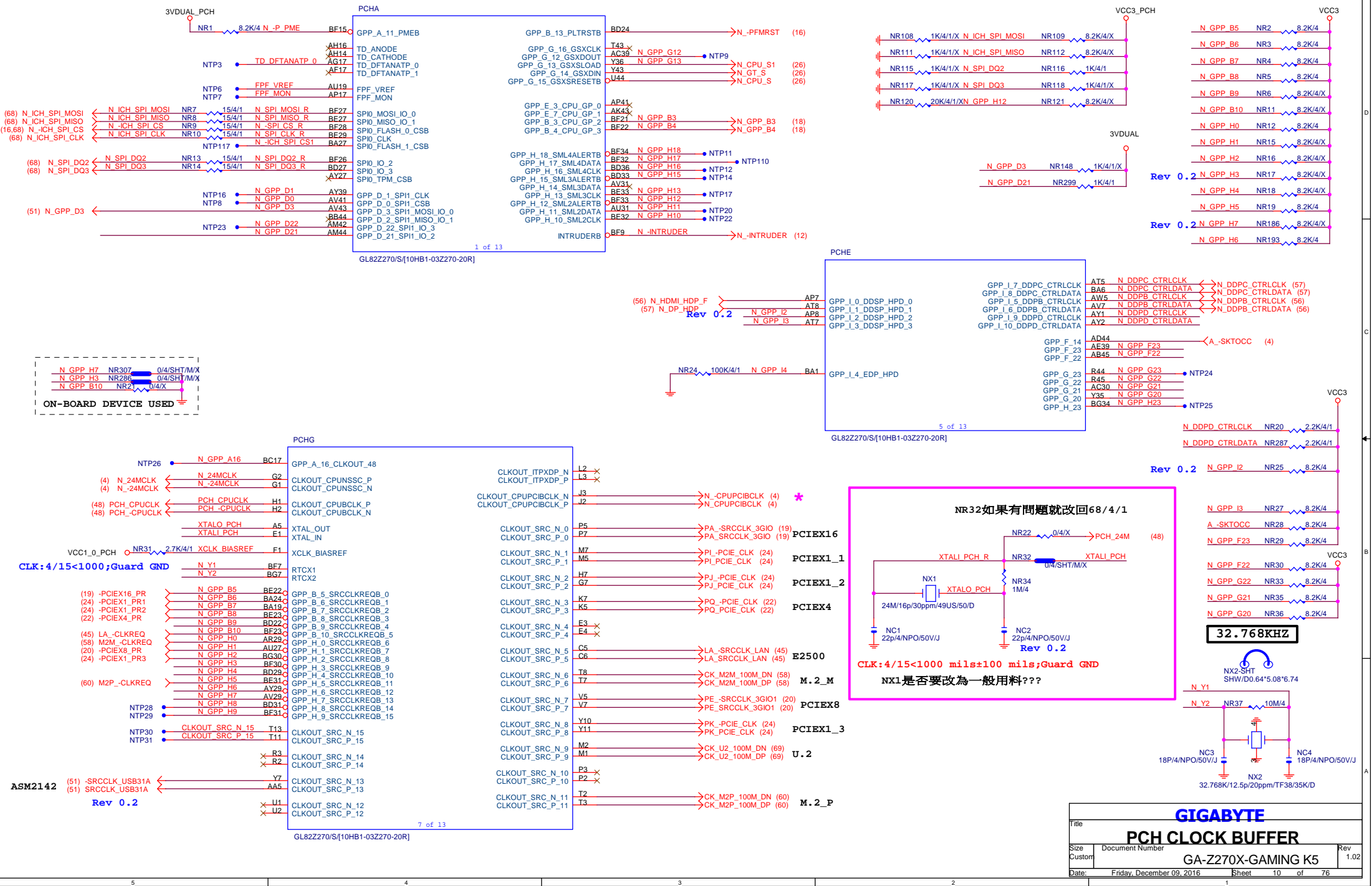
Bifurcation Config.	Signals Lanes		
	CFG[6]	CFG[5]	CFG[2]
1x16	1	1	1
1x16 Reversed	1	1	0
2x8	1	0	1
2x8 Reversed	1	0	0
1x8+2x4	0	0	1
1x8+2x4 Reversed	0	0	0

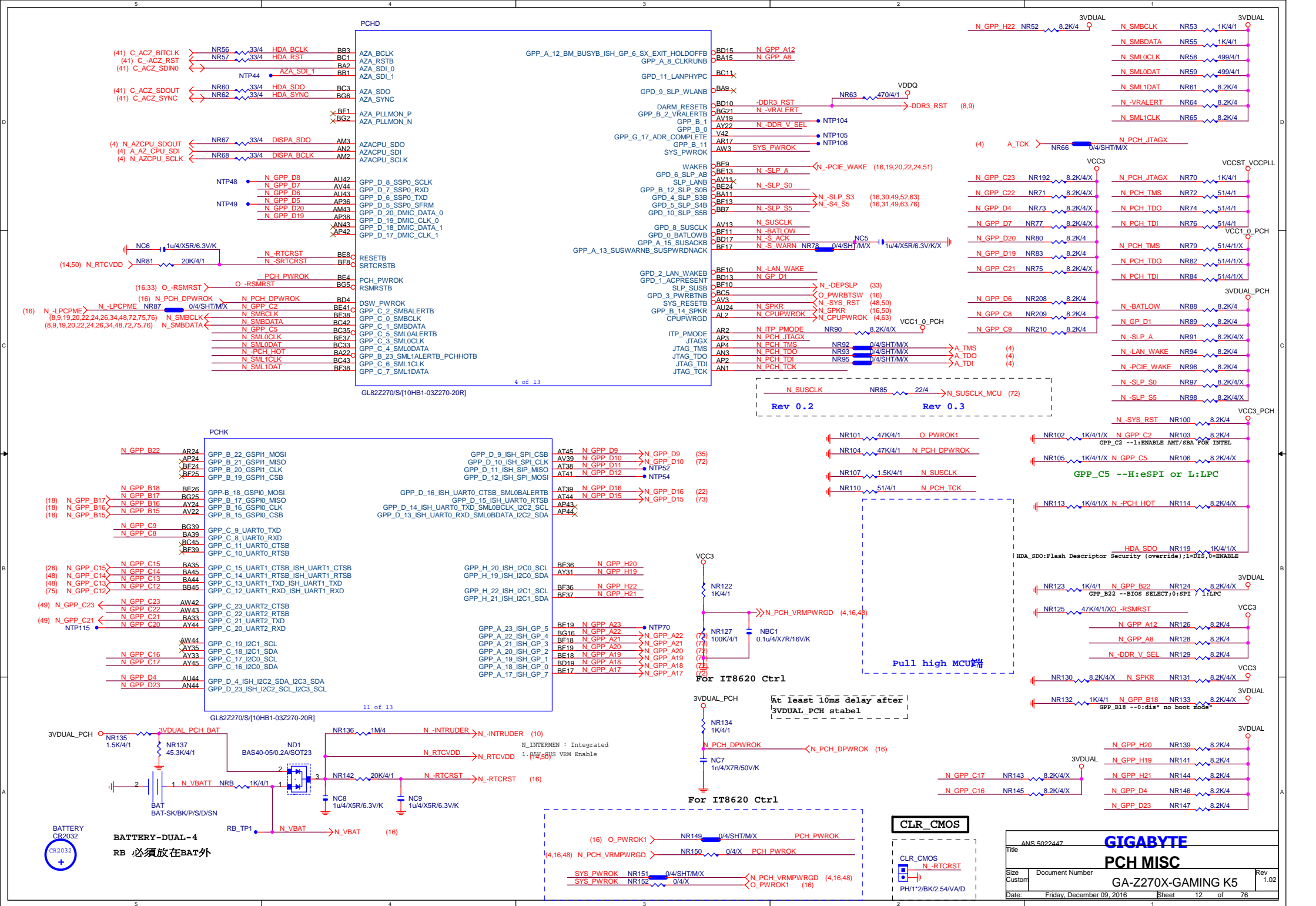
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Size Custom	Document Number		Rev
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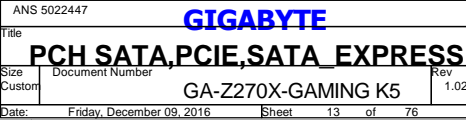
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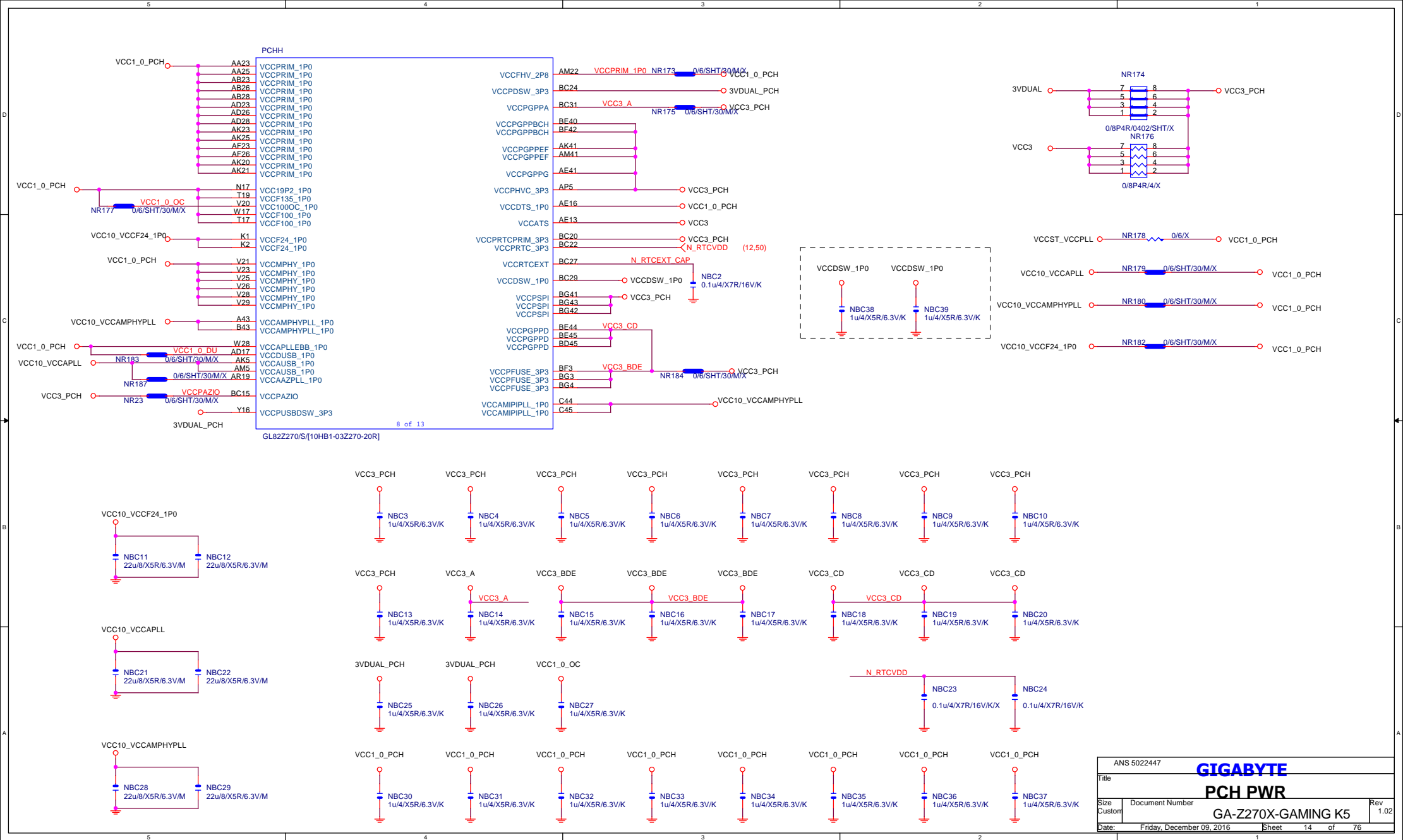












PCHL		
A25	VSS	VSS
A30	VSS	VSS
P22	VSS	VSS
AV38	VSS	VSS
AV45	VSS	VSS
AV8	VSS	VSS
AY11	VSS	VSS
AY19	VSS	VSS
AY37	VSS	VSS
AY4	VSS	VSS
AY42	VSS	VSS
AY8	VSS	VSS
B25	VSS	VSS
B3	VSS	VSS
B30	VSS	VSS
B35	VSS	VSS
B4	VSS	VSS
B41	VSS	VSS
BA13	VSS	VSS
BA17	VSS	VSS
BA37	VSS	VSS
BA29	VSS	VSS
BA31	VSS	VSS
BA37	VSS	VSS
BA4	VSS	VSS
BA42	VSS	VSS
BB40	VSS	VSS
BC38	VSS	VSS
BC40	VSS	VSS
BC9	VSS	VSS
BD11	VSS	VSS
BD16	VSS	VSS
BD2	VSS	VSS
BD21	VSS	VSS
BD25	VSS	VSS
F2	VSS	VSS
F31	VSS	VSS
E6	VSS	VSS
E8	VSS	VSS
F39	VSS	VSS
F43	VSS	VSS
G4	VSS	VSS
G40	VSS	VSS
G42	VSS	VSS
F6	VSS	VSS
G9	VSS	VSS
H11	VSS	VSS
H19	VSS	VSS
H22	VSS	VSS
H24	VSS	VSS
H27	VSS	VSS
H29	VSS	VSS
H33	VSS	VSS
H35	VSS	VSS
H38	VSS	VSS
H4	VSS	VSS
H42	VSS	VSS
H9	VSS	VSS
J4	VSS	VSS
M36	VSS	VSS
M4	VSS	VSS
M8	VSS	VSS
M9	VSS	VSS
N13	VSS	VSS
N15	VSS	VSS
N19	VSS	VSS
N22	VSS	VSS
N24	VSS	VSS
N31	VSS	VSS
N42	VSS	VSS
P10	VSS	VSS
P12	VSS	VSS
AV35	VSS	VSS

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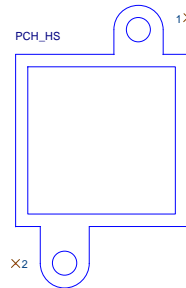
GL82Z270/S/[10HB1-03Z270-20R]

PCHL		
BD34	VSS[70]	AB18
BD39	VSS[71]	AB20
BD7	VSS[72]	AB21
BE2	VSS[73]	AB25
BF43	VSS[74]	AB29
BF2	VSS[75]	AB4
BG18	VSS[76]	AB42
AG23	VSS[77]	AC10
AG28	VSS[78]	AC14
AG32	VSS[79]	AC16
AG37	VSS[80]	AC38
AG40	VSS[81]	AC4
AG9	VSS[83]	AC5
C1	VSS[84]	AC7
A12	VSS[85]	AC8
C2	VSS[86]	AD1
C37	VSS[87]	AD18
A6	VSS[88]	AD20
AC32	VSS[89]	AD21
D1	VSS[90]	AD25
D10	VSS[91]	AD29
D12	VSS[92]	AD45
D15	VSS[93]	AE11
D16	VSS[94]	AE14
B12	VSS[95]	AE32
D19	VSS[96]	AE33
D21	VSS[97]	AK29
D24	VSS[98]	AK30
D25	VSS[99]	AK32
D29	VSS[100]	AK35
AG20	VSS[101]	AK39
D33	VSS[102]	AL4
D35	VSS[103]	AL42
D36	VSS[104]	AM10
D39	VSS[105]	AM11
D44	VSS[106]	AM13
D7	VSS[107]	AM17
P13	VSS[108]	AM19
AH13	VSS[109]	AM24
AH30	VSS[110]	AM27
AH32	VSS[111]	AM29
AH33	VSS[112]	AM32
AH38	VSS[113]	AM33
AJ1	VSS[114]	AM4
AJ17	VSS[115]	AN45
P4	VSS[116]	AP10
P42	VSS[117]	AP11
P8	VSS[118]	AP15
R1	VSS[119]	AP22
R32	VSS[120]	AP27
T10	VSS[121]	AP31
T14	VSS[122]	AP33
T22	VSS[123]	AP34
T29	VSS[124]	AP39
AJ45	VSS[125]	T4
AK10	VSS[126]	W26
T38	VSS[127]	V16
AK16	VSS[128]	V17
AK17	VSS[129]	V18
AK18	VSS[130]	V30
AK26	VSS[131]	V32
AK28	VSS[132]	V33
AM14	VSS[133]	V38
AN14	VSS[134]	V4
AP19	VSS[135]	V8
AR22	VSS[136]	W18
AR27	VSS[137]	W20
AU29	VSS[138]	W21
AU33	VSS[139]	W23
AV1	VSS[140]	W25
AV10	VSS[141]	A44
AV15	VSS[142]	BE1
AV24	VSS[143]	BD1
AV27	VSS[144]	B1
AV33	VSS[145]	B2
AV35	VSS[146]	B3
Y4	VSS[147]	B4
Y30	VSS[148]	B45
Y32	VSS[149]	
Y33	VSS[150]	
VSS_BG14	VSS_2	
	VSS_3	

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GL82Z270/S/[10HB1-03Z270-20R]

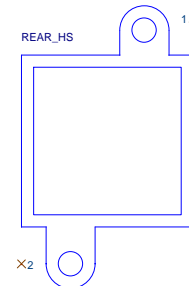
装甲HEATSINK 分成五大部份



Footprint :
BGAHSINK-Z170X-UD3_ULTRA

Footprint :
1704-GAMING7-SATA_ARMOR

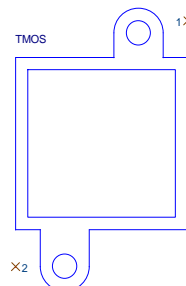
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Footprint :
1704-GAMING-ARMOR_AUDIO

Footprint :
Z270X_BASE_COVER

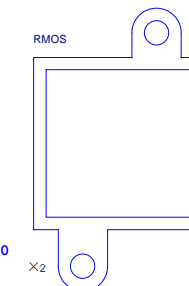
HEAT SINK[12KRC-0H0007-41R]



Footprint :
MOSHSINK-SNIPERB8-T

Footprint :
MOSHSINK-SNIPERB8-R

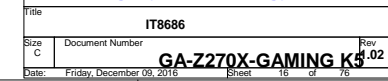
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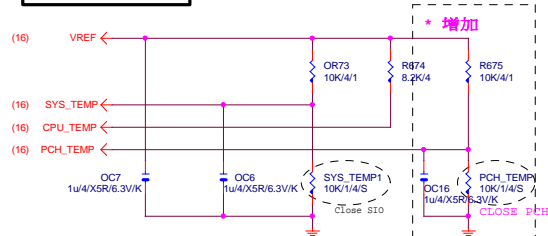
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K5 Rev 1.0

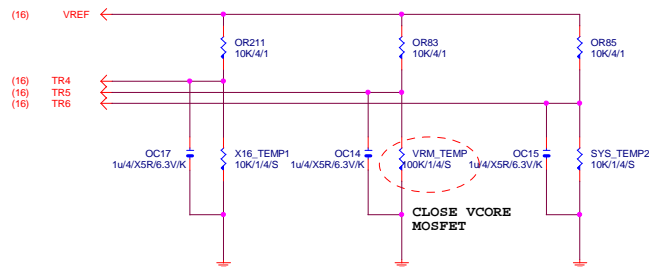
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Title			
GIGABYTE			
PCH GND			
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TEMP H/W MONITOR

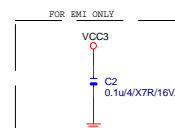
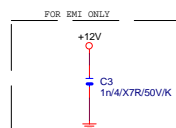
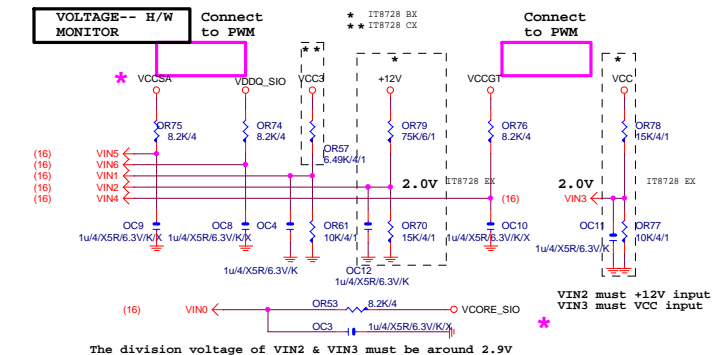


5個FAN時使用



8個FAN時使用

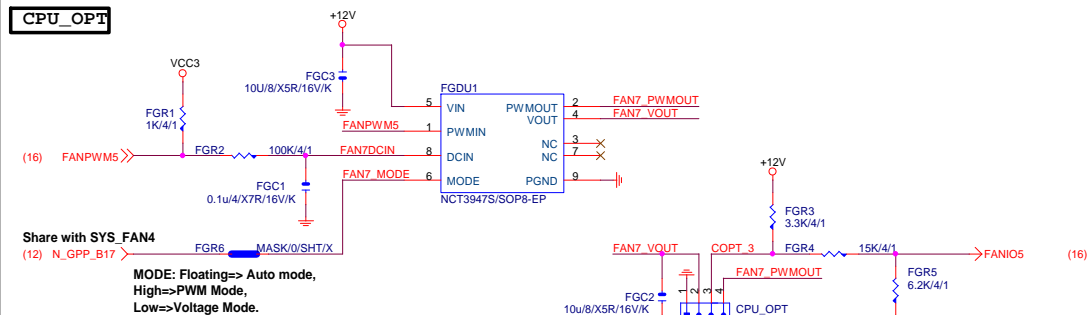
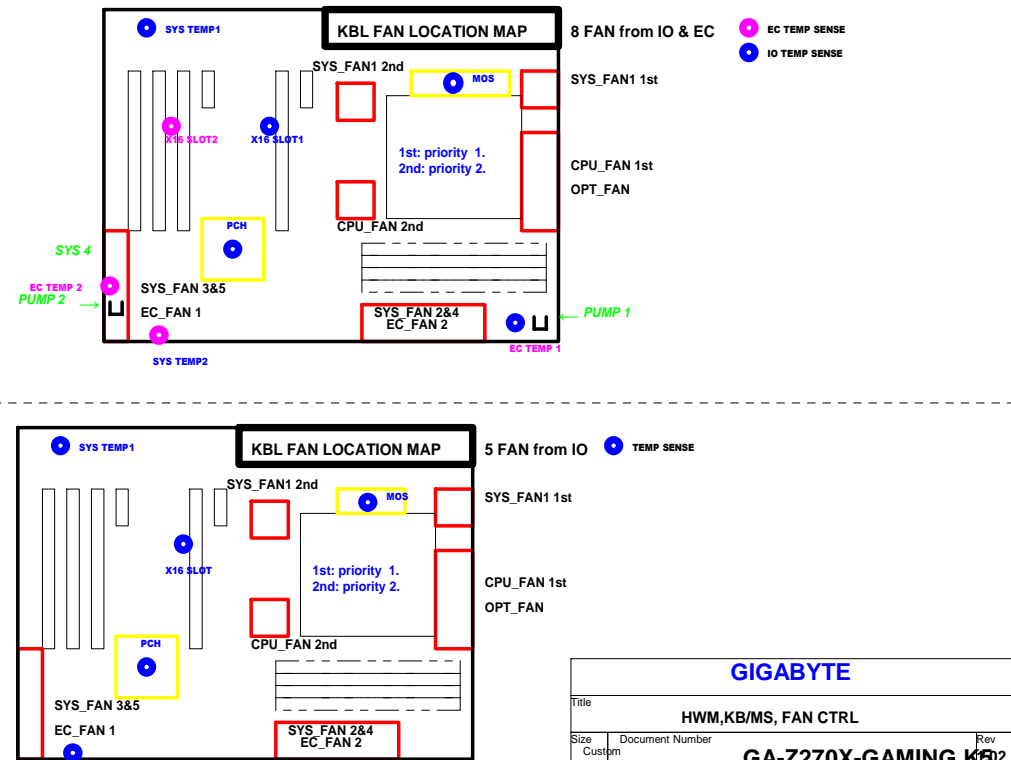
VOLTAGE-- H/W MONITOR



★Update 2015-04.24

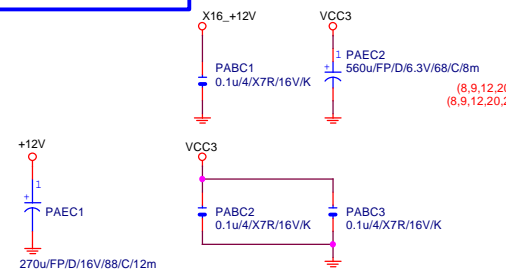
Gigabyte Technology

Title			HWM,KB/MS, FAN CTRL
Size	Document Number	Rev	
Custom	GA-Z270X-GAMING K5	1.02	
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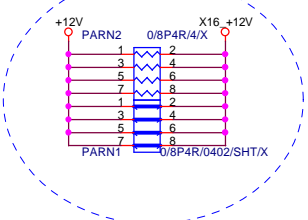
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Rev 0.3

PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect
short-wire test

PCIEX16 AC CAP

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

PCI-E REV:1.1--> 2.5GHZ

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

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

PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

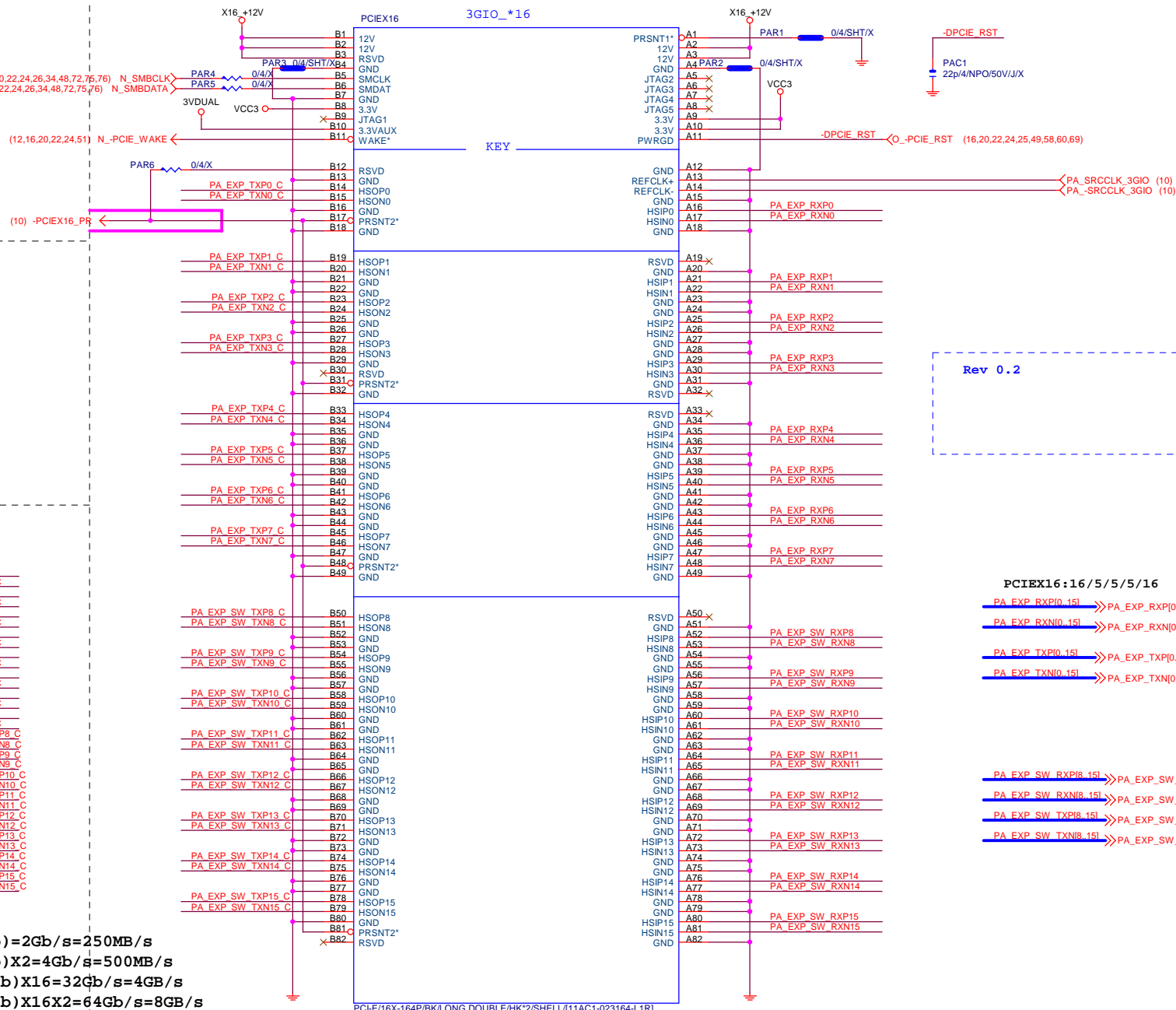
PCI-E REV:2.0--> 5GHZ

PCE-E X1(單向) BANDWITH=5GHz*(8b/10b)=4Gb/s=500MB/s

PCI-E REV:3.0--> 8GHZ

PCE-E X1(單向) BANDWITH=8GHz*(128b/130b)=8Gb/s=1GB/s

PCIEX16 SLOT

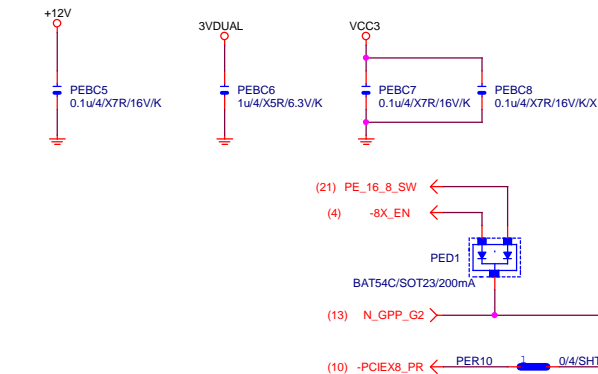
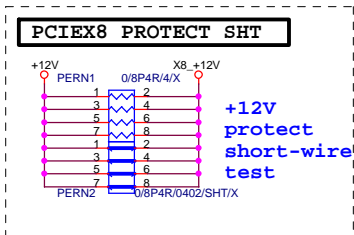


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Gigabyte Technology

Title		PCI EXPRESS * 16	
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Rev 0.3



(8,9,12,19,22,24,26,34,48,72,75,76) N_SMBCLK N_SMBCLK PER8 0/4/X
(8,9,12,19,22,24,26,34,48,72,75,76) N_SMBDATA N_SMBDATA PER9 0/4/X

(12,16,19,22,24,51) N_-PCIE_WAKE

PE_EXP_SW_TXP8_C
PE_EXP_SW_TXN8_C

PE_EXP_SW_TXP9_C
PE_EXP_SW_TXN9_C

PE_EXP_SW_TXP10_C
PE_EXP_SW_TXN10_C

PE_EXP_SW_TXP11_C
PE_EXP_SW_TXN11_C

PE_EXP_SW_TXP12_C
PE_EXP_SW_TXN12_C

PE_EXP_SW_TXP13_C
PE_EXP_SW_TXN13_C

PE_EXP_SW_TXP14_C
PE_EXP_SW_TXN14_C

PE_EXP_SW_TXP15_C
PE_EXP_SW_TXN15_C

PCIESLOT-98STH

3GIO_*8

PCI-E/8X-99P/BK/LONG DOUBLE/HK*2/SHELL[11AC1-023099-F1R]

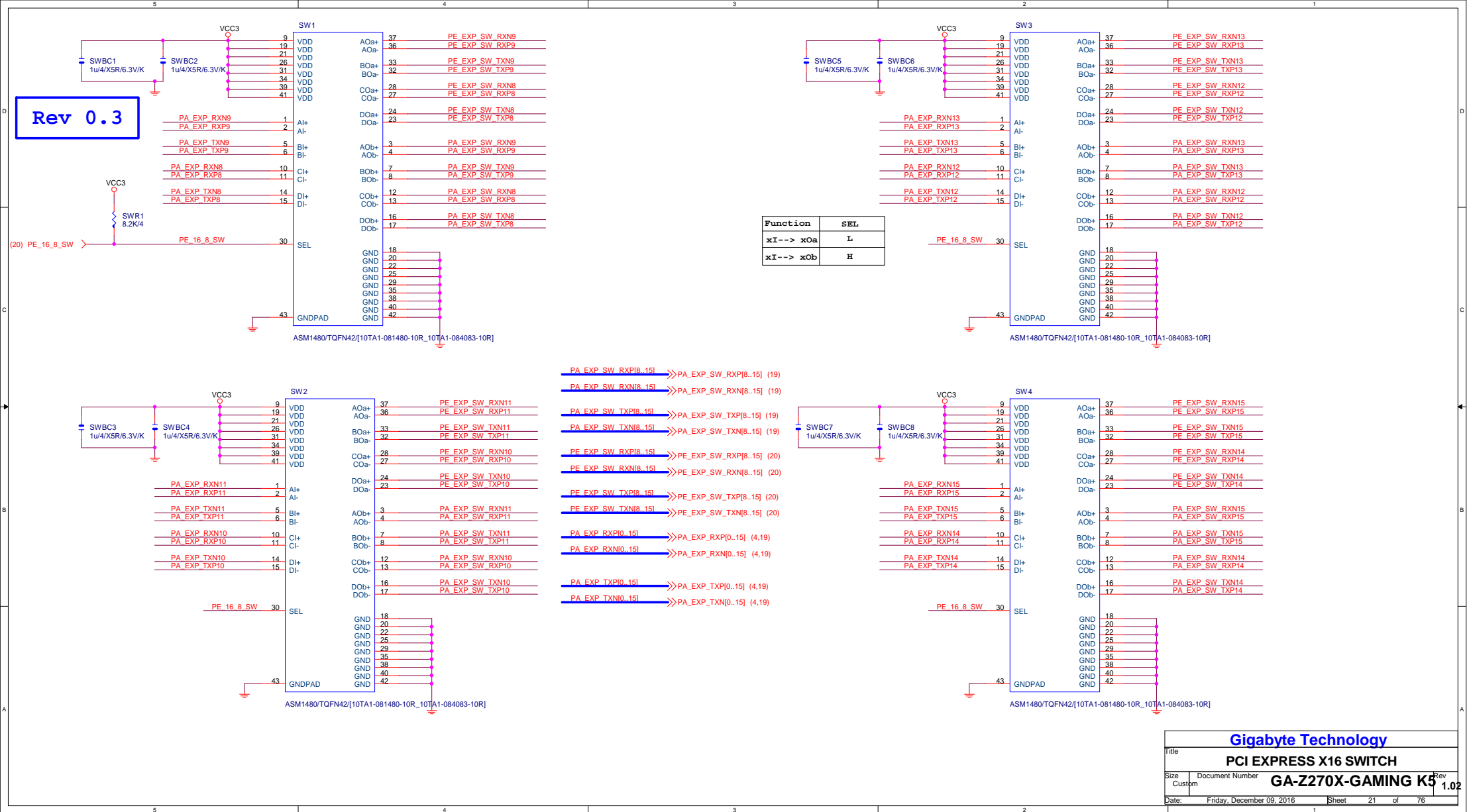
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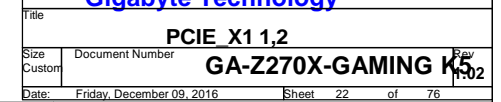
PE_EXP_SW_TXP8	PEC7	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXP8_C
PE_EXP_SW_TXN8	PEC8	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXN8_C
PE_EXP_SW_TXP9	PEC9	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXP9_C
PE_EXP_SW_TXN9	PEC10	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXN9_C
PE_EXP_SW_TXP10	PEC11	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXP10_C
PE_EXP_SW_TXN10	PEC12	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXN10_C
PE_EXP_SW_TXP11	PEC13	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXP11_C
PE_EXP_SW_TXN11	PEC14	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXN11_C
PE_EXP_SW_TXP12	PEC15	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXP12_C
PE_EXP_SW_TXN12	PEC16	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXN12_C
PE_EXP_SW_TXP13	PEC17	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXP13_C
PE_EXP_SW_TXN13	PEC18	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXN13_C
PE_EXP_SW_TXP14	PEC19	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXP14_C
PE_EXP_SW_TXN14	PEC20	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXN14_C
PE_EXP_SW_TXP15	PEC21	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXP15_C
PE_EXP_SW_TXN15	PEC22	0.22u4/X5R/6.3V/K	PE_EXP_SW_TXN15_C

Rev 0.2

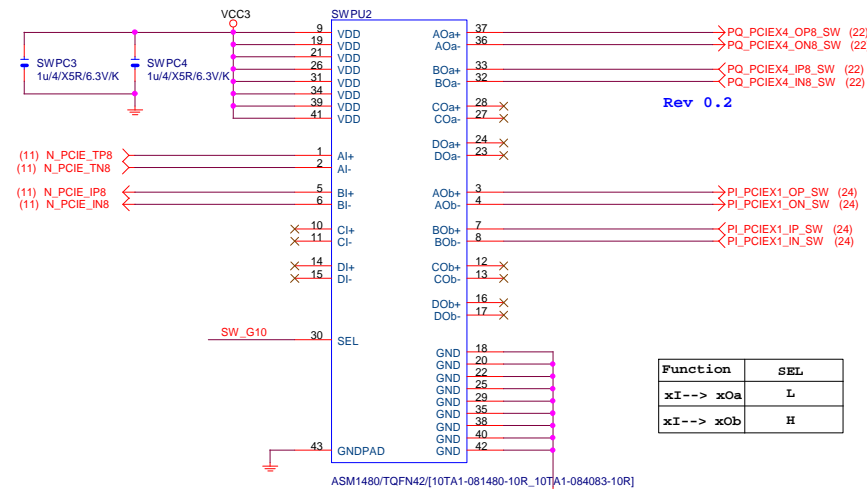
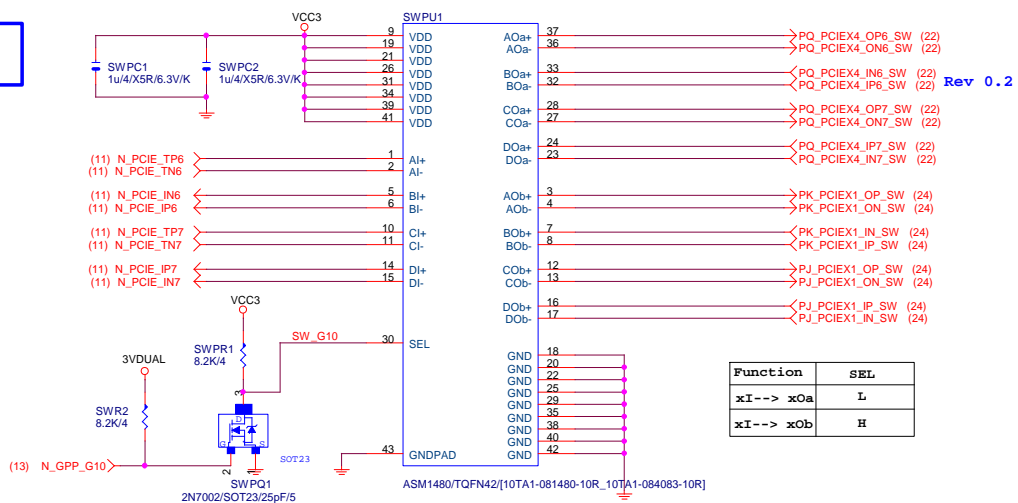
PE_EXP_SW_RXP8_15L >>> PE_EXP_SW_RXP8_15L (21)
PE_EXP_SW_RXN8_15L >>> PE_EXP_SW_RXN8_15L (21)
PE_EXP_SW_TXP8_15L >>> PE_EXP_SW_TXP8_15L (21)
PE_EXP_SW_TXN8_15L >>> PE_EXP_SW_TXN8_15L (21)

Gigabyte Technology			
Title			
PCI EXPRESS X8			
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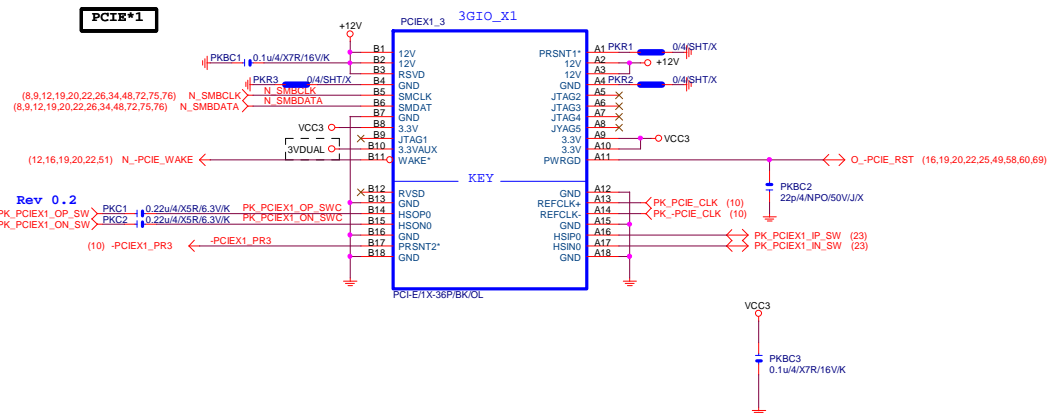
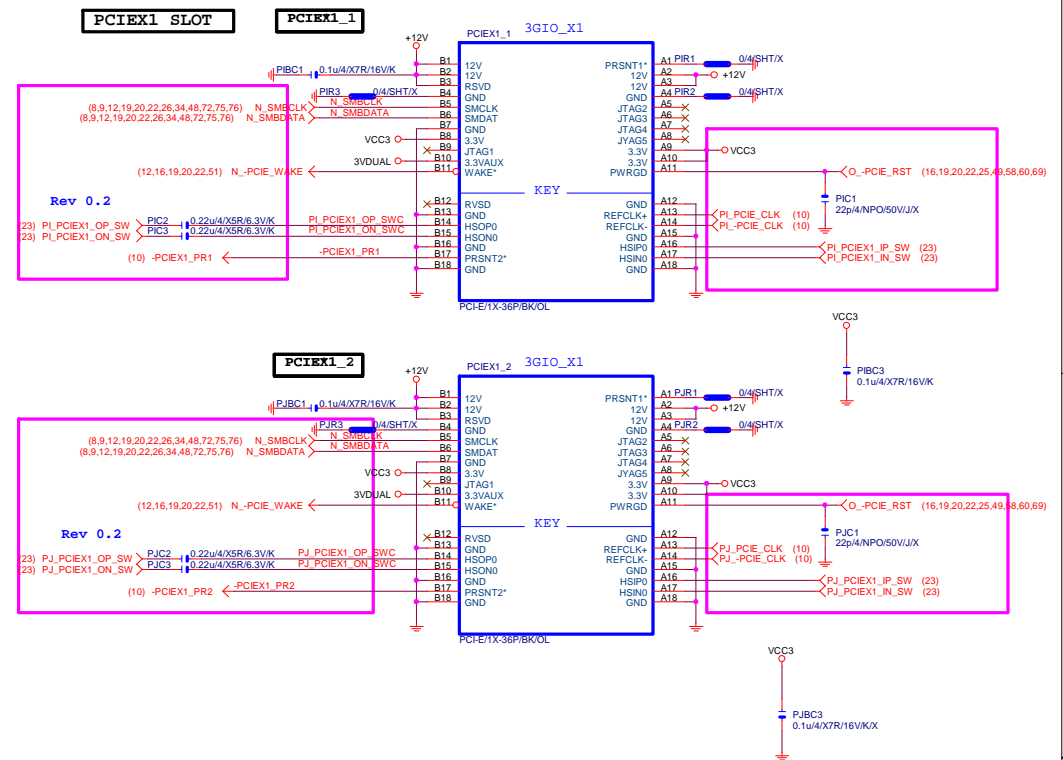
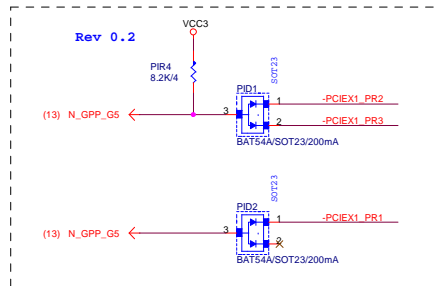


Rev 0.1



Function	SEL
xI--> x0a	L
xI--> x0b	H

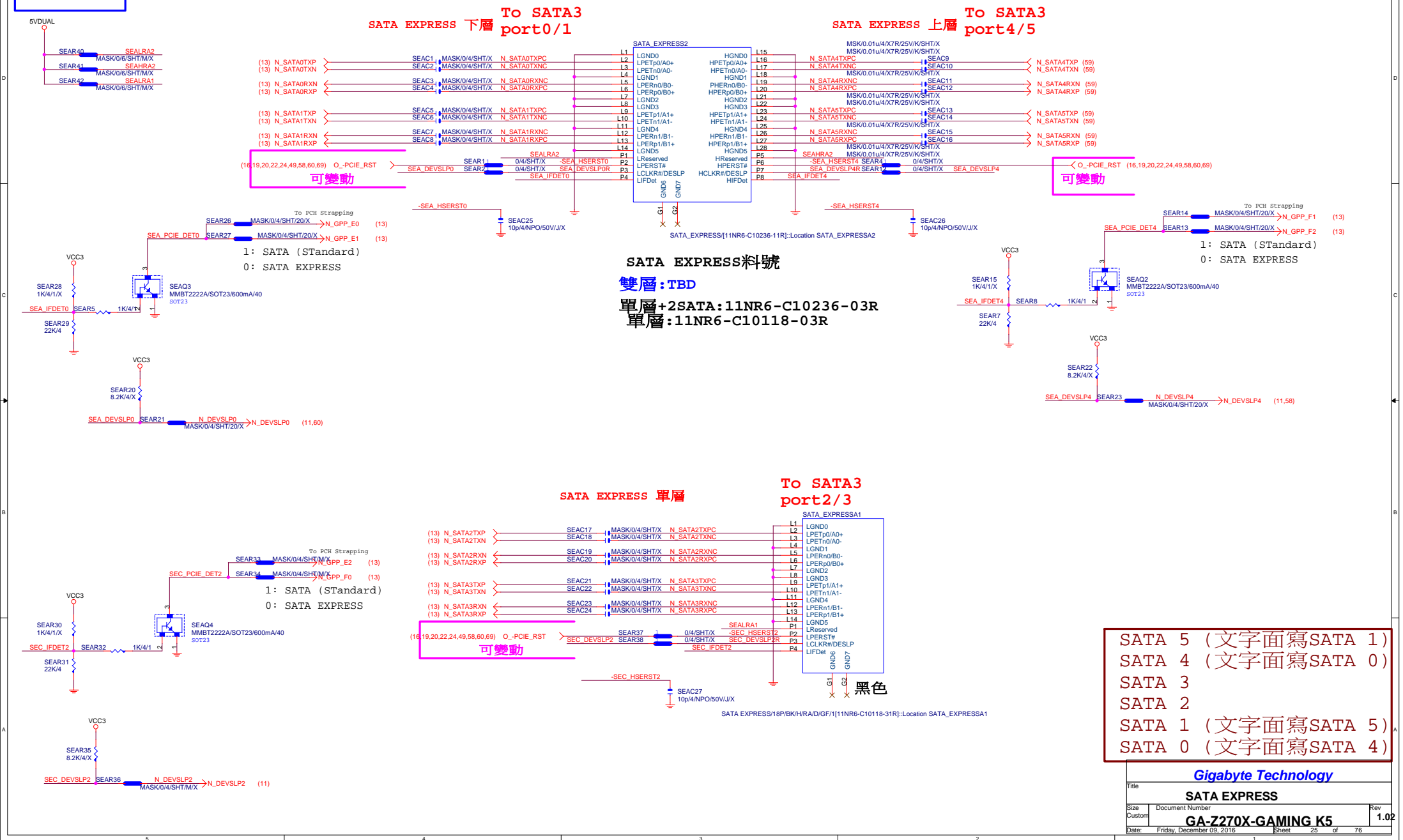
Function	SEL
xI--> x0a	L
xI--> x0b	H

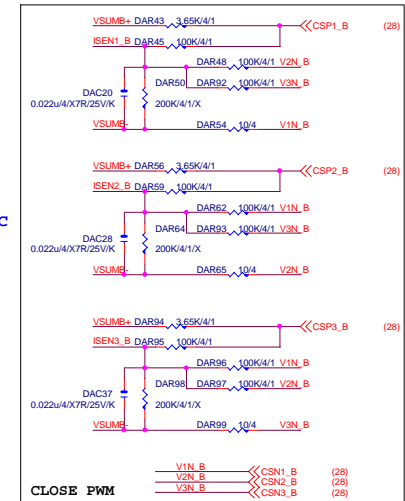
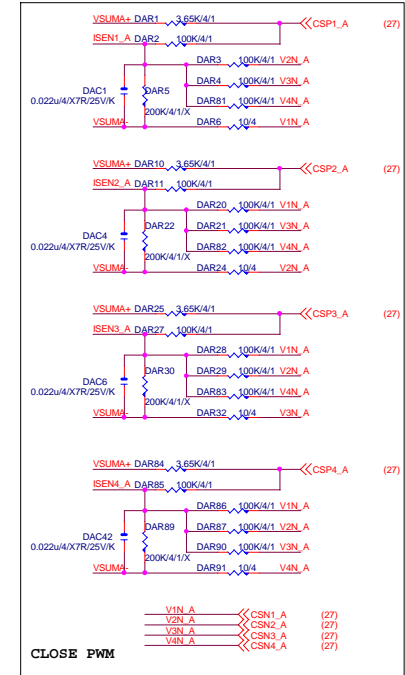
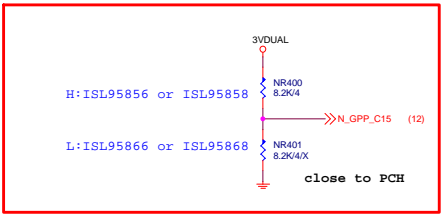


Gigabyte Technology

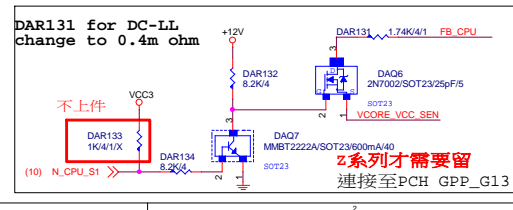
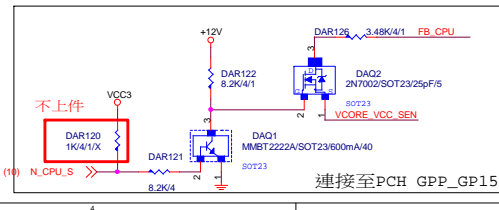
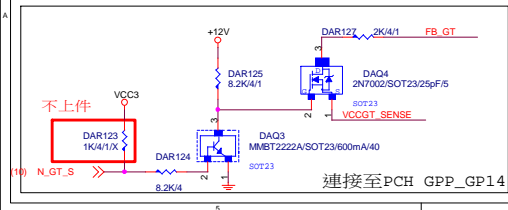
PCIEX1 1,2		
File	Document Number	Rev
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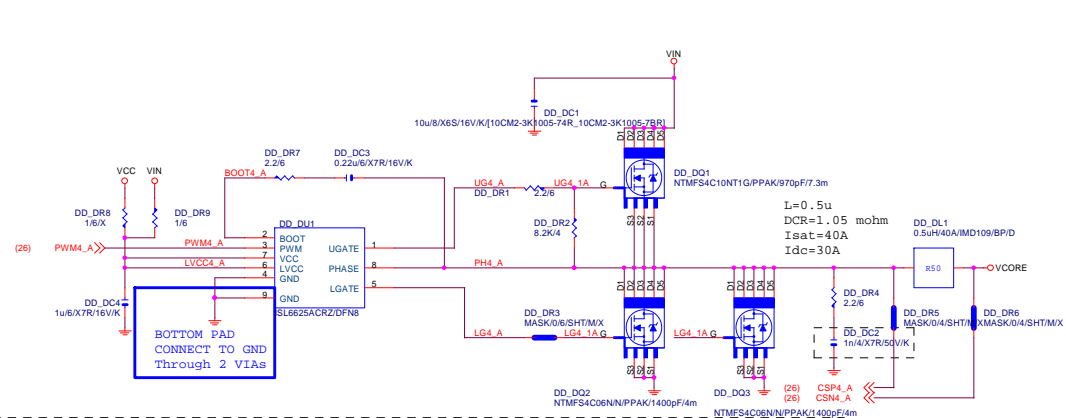
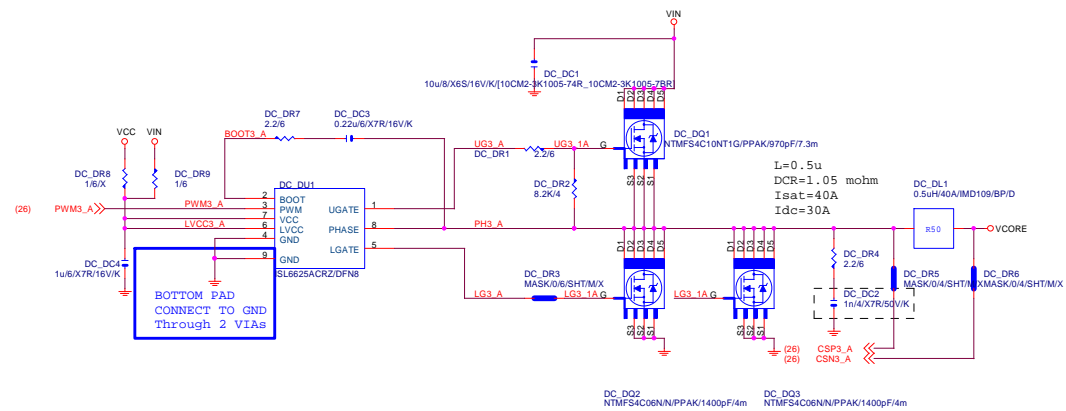
Rev 0.5



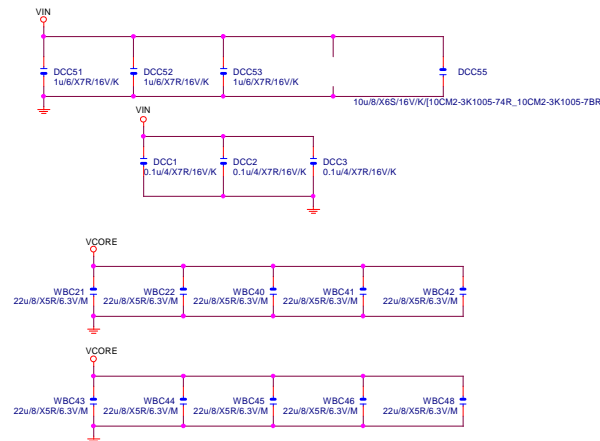


VSCORE	ISL95856	ISL95866	VCCGT	ISL95856	ISL95866
DAR137	X	V	DAR140	X	V
DAR138	V	X	DAR141	V	X
DAR139	X	V	DAR142	X	V
DAC15	V	X	DAC27	V	X
DAR79	V	X	DAR80	V	X
DAR33	V	X	DAR51	V	X



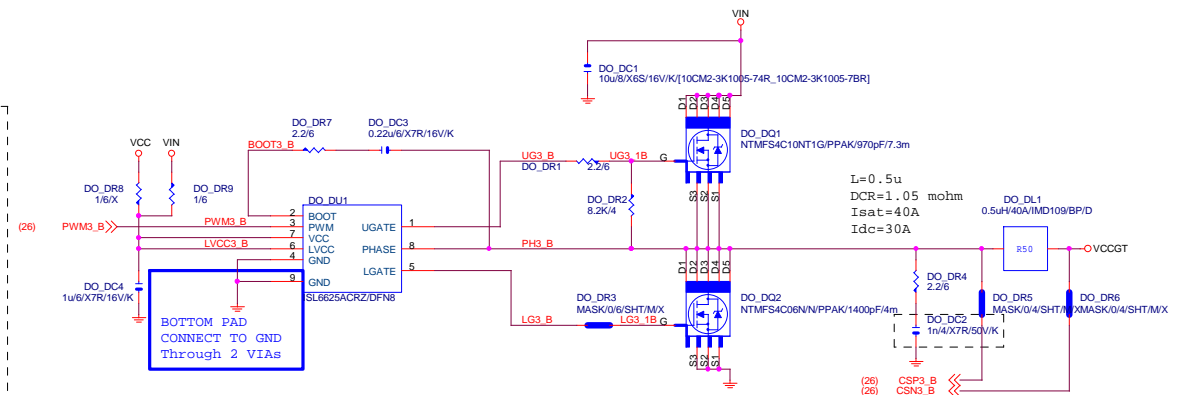
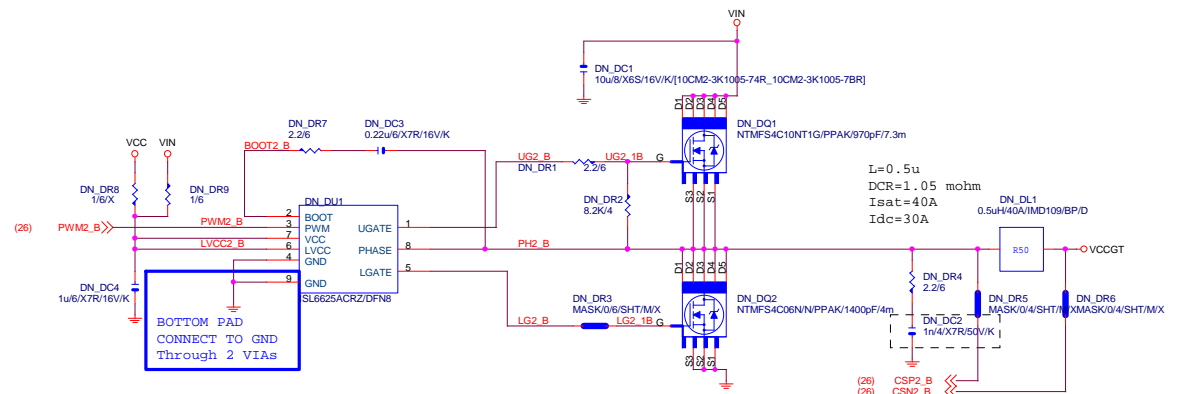
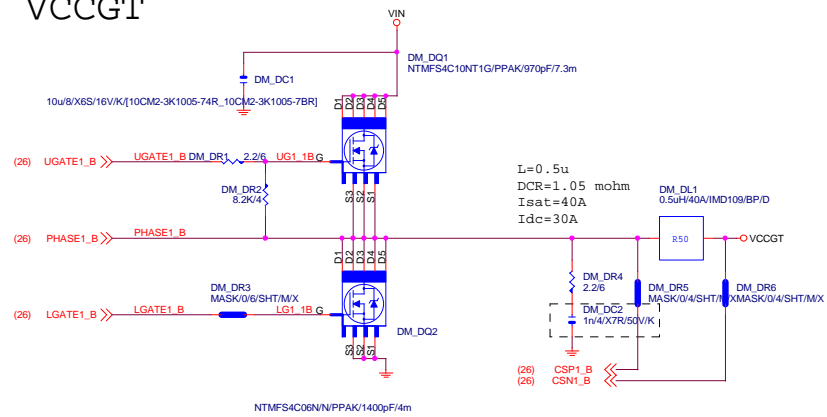


560uF/PP/D6.3V/68C/8m
 560uF/PP/D6.3V/68C/8m
 560uF/PP/D6.3V/68C/8m
 560uF/PP/D6.3V/68C/8m
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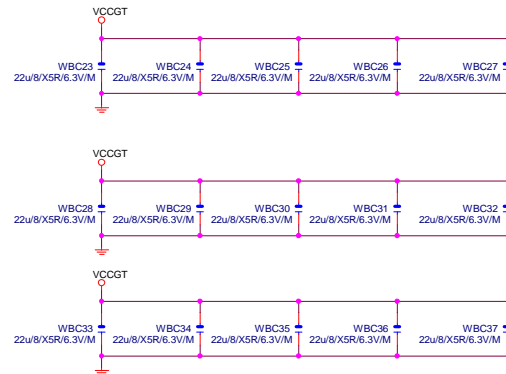
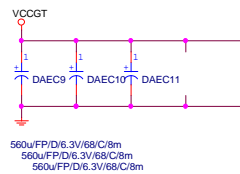


The schematic diagram shows the DAC36 circuit. It includes a V12 supply, a DAC36 component, a DAC36 1uF/BX7R/16V/K capacitor, a DAL1 0.5uH/40A/IMD109/BP/D inductor, and a resistor R50. The output of the DAC36 is connected to a network of capacitors: 270uF/PP/D/16V/S8/C12m, 270uF/PP/D/16V/S8/C12m, 270uF/PP/D/16V/S8/C12m, and 270uF/PP/D/16V/S8/C12m. The output is also connected to a VIN input.

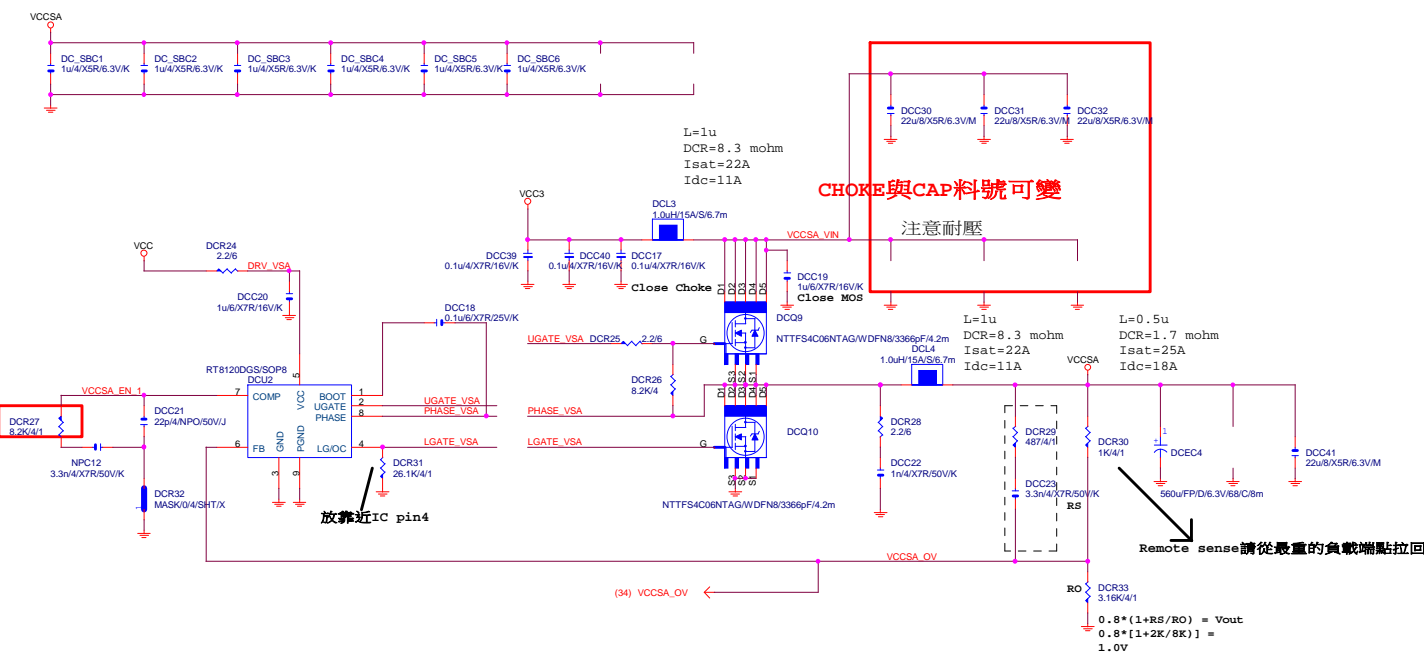
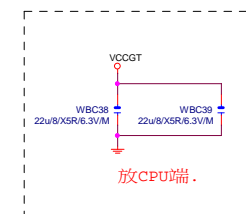
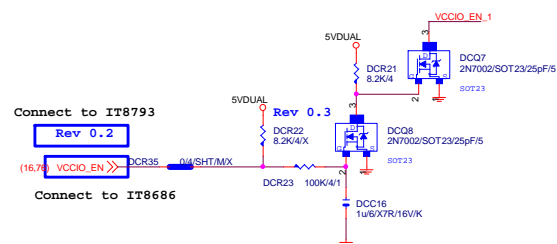
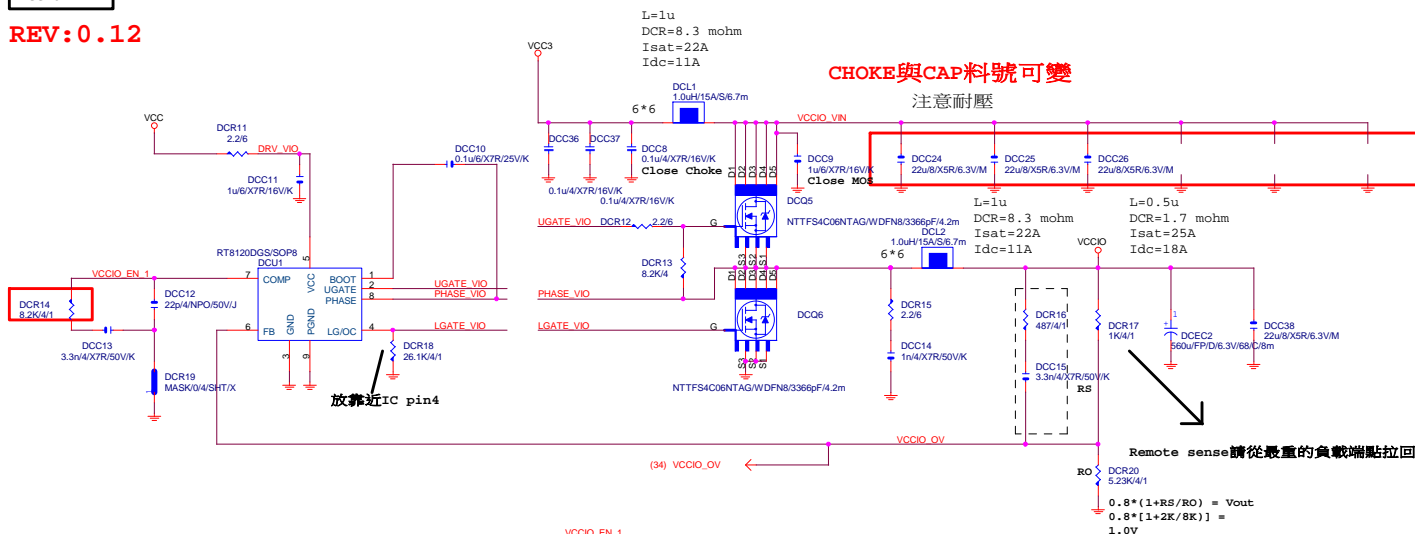
GIGABYTE™



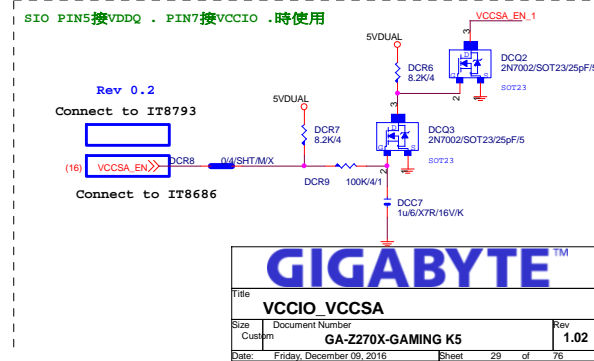
VCCGT CAP 560u*5PCS
22u*15PCS



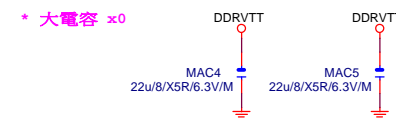
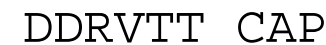
REV:0.12



SIO PIN5 . PIN7 用在其他function時使用



DDR4

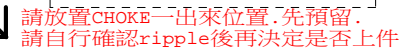
**GIGABYTE™**

Title			
RT8120_DDR4 POWER			
Size	Document Number	Rev	
Custom	GA-Z270X-GAMING K5	1.02	
Date:	Friday, December 09, 2016	Sheet	30 of 76

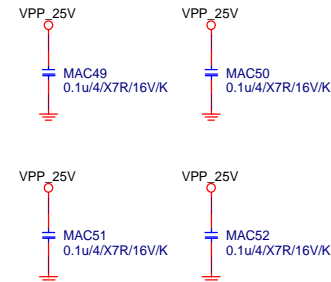
VPP 25V

DDR_VPP VIN CAP
560u*1PCS

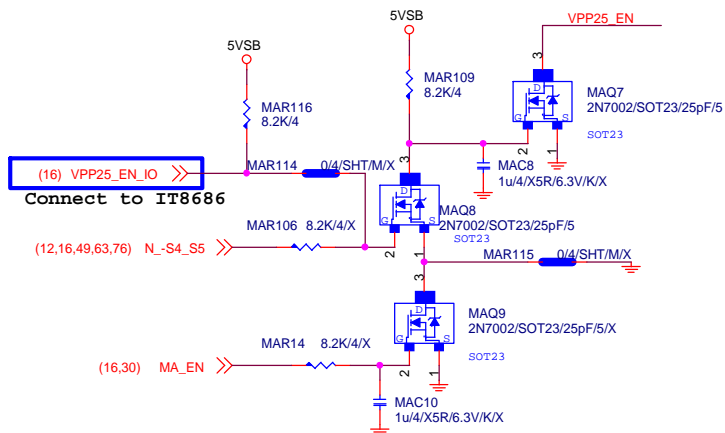
L=1u
DCR=8.3 mohm
Isat=22A
Idc=11A



* 大電容 x1

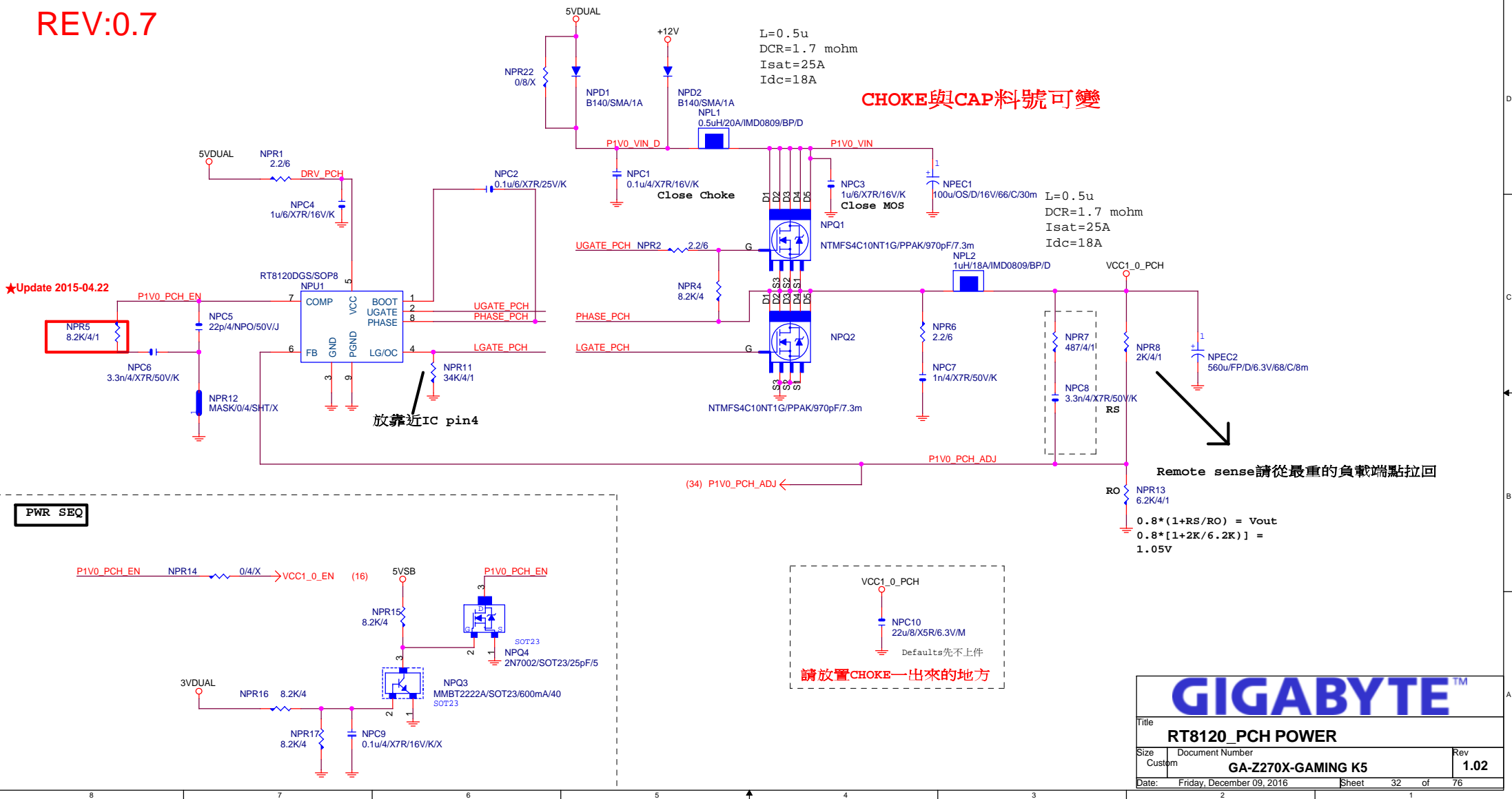


* 删除 MA_DR32

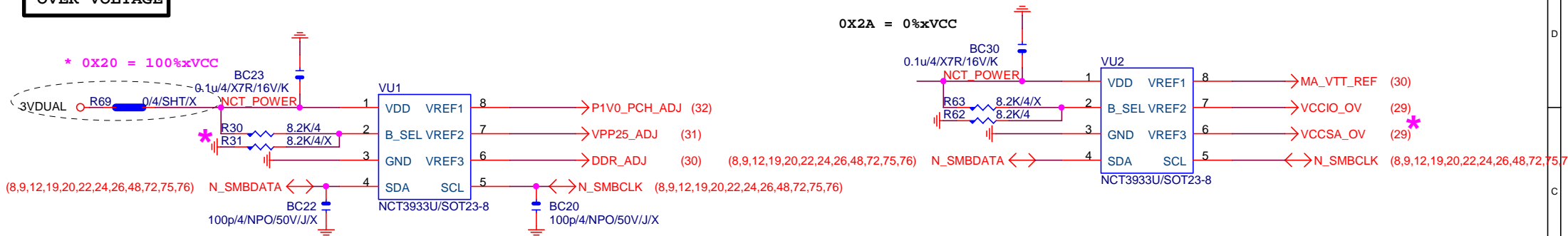
**GIGABYTE™**

Title			
RT8120_VPP25 POWER			
Size	Document Number	Rev	
Custom	GA-Z270X-GAMING K5	1.02	
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REV:0.7



OVER VOLTAGE



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

Gigabyte Technology

CPU CORE VR-2

GA-Z270X-GAMING K5

Title

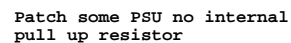
Size Custom

Date: Friday, December 09, 2016

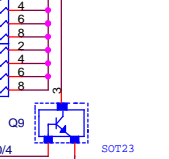
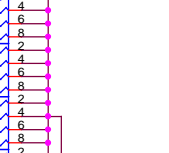
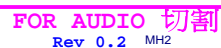
Document Number

Rev 1.02

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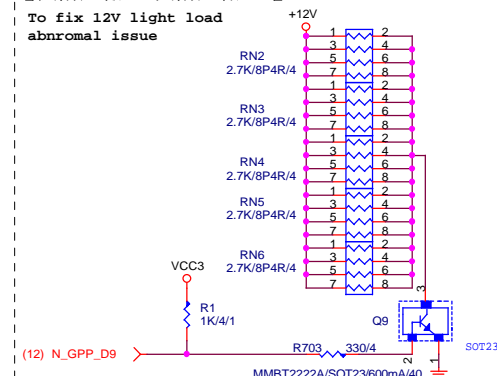


To prevent the 5VSB
under loading when
boot-----

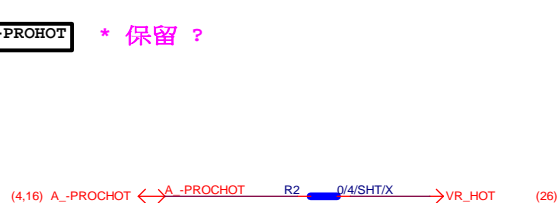


4MMH

To fix 12V light load
abnromal issue

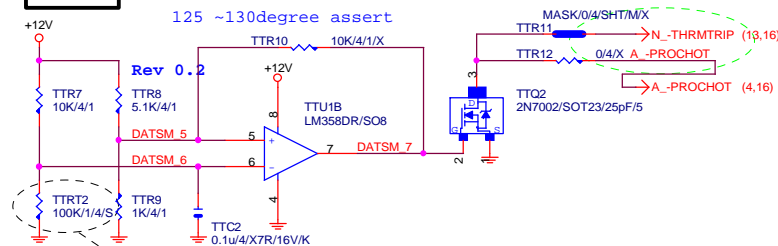


```
OTP:130度 / PCB THERMAL TRIP:128 度
125 ~130degree assert
```



CLOSE VCORE PWM UPPER MOSFET

OTP:130度 / PCB THERMAL TRIP:129 度
125 ~130degree assert

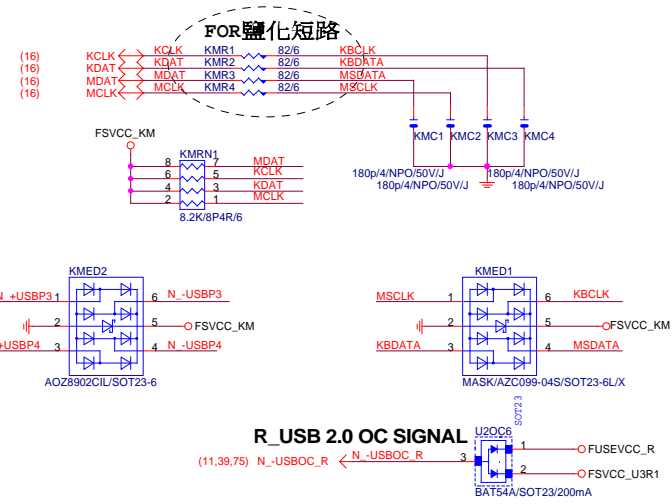
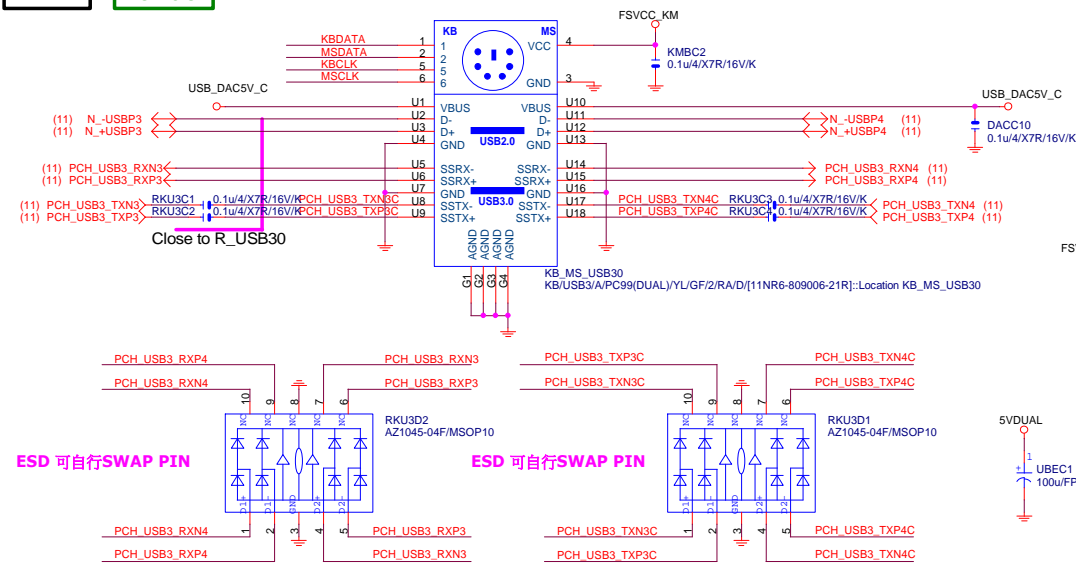


CLOSE VCCGT PWM UPPER MOSFET



Gigabyte Technology

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5VDUAL R_KU2F1 SPR-P2007/6V/8/S FSVCC_KM

Gigabyte Technology

AUDIO JACK

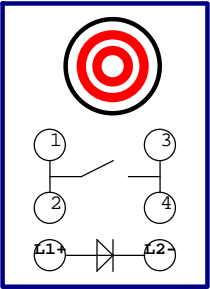
GA-Z270X-GAMING K5

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POWER

Reset

Clear CMOS



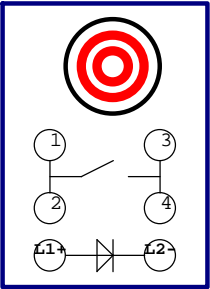
OC KEY

Rev 0.2

K5 Rev 0.1

PCH:GPP_D6

PCH:GPP_D4

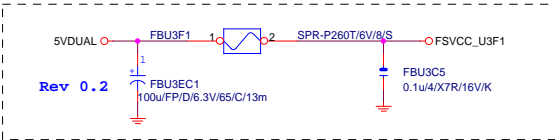
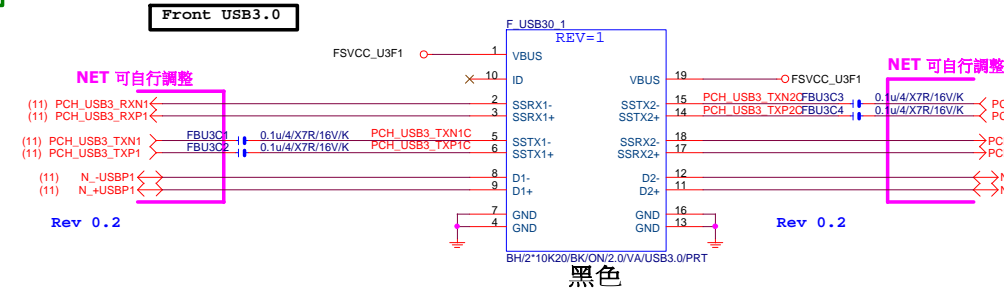


ECO KEY

PCH:GPP_C9

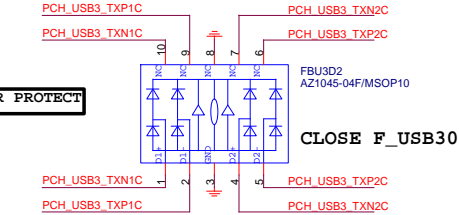
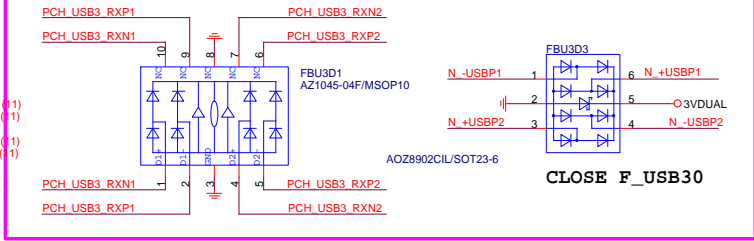
PCH:GPP_B20

Gigabyte Technology			
Title			
OC BUTTON			
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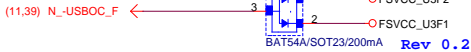
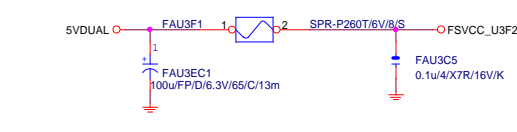
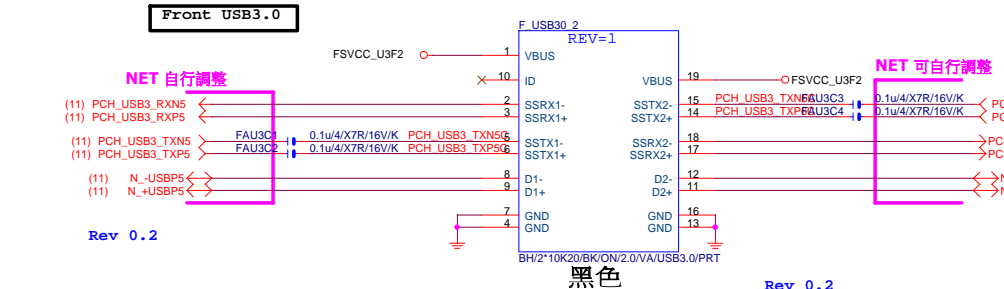
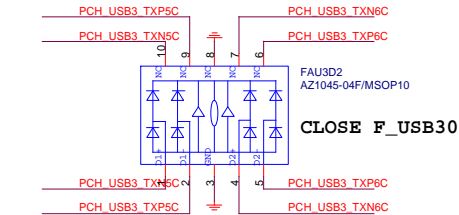
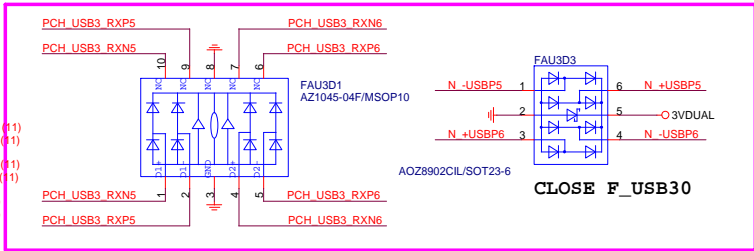


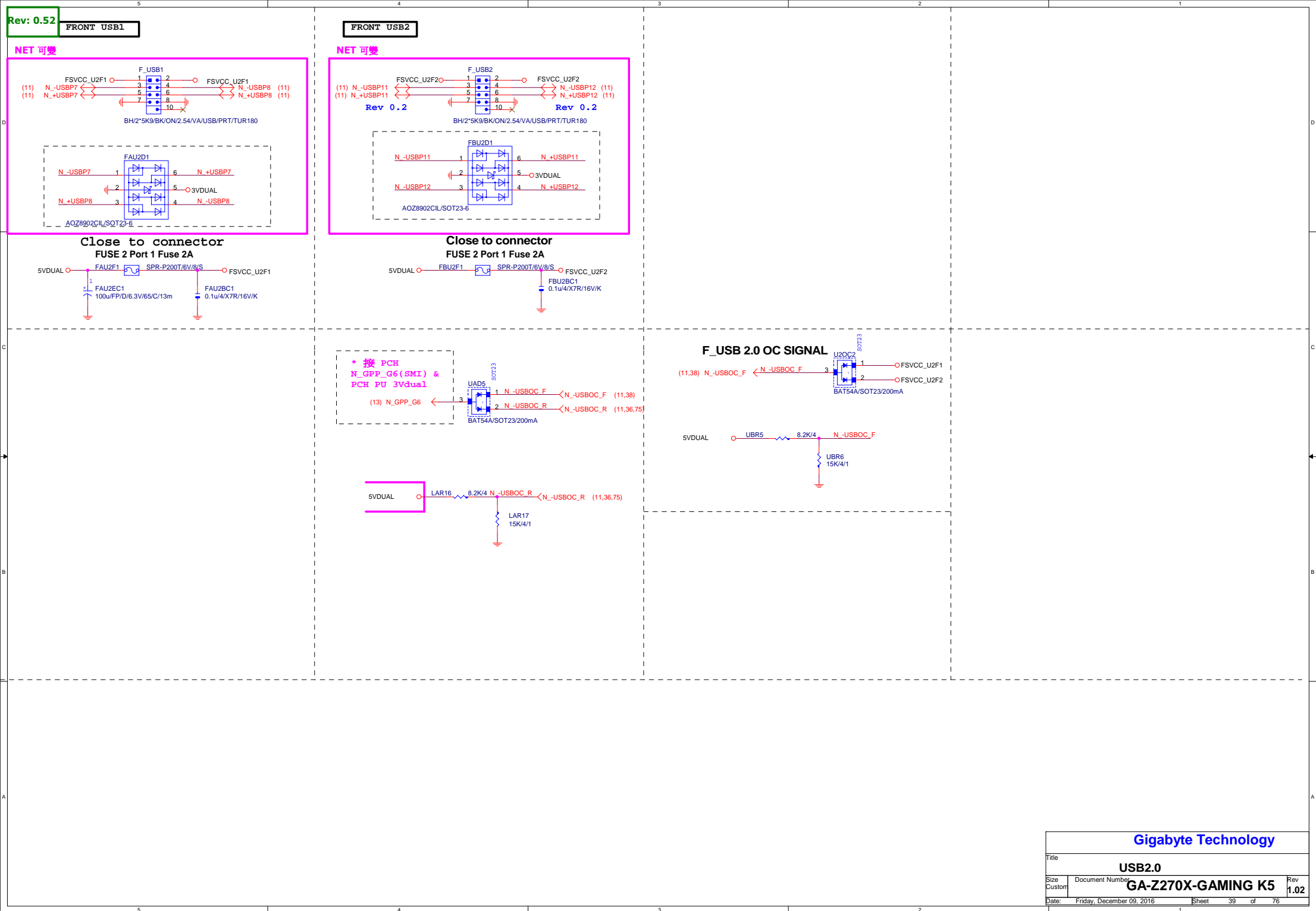
F_USB POWER PROTECT

NET 可自行調整

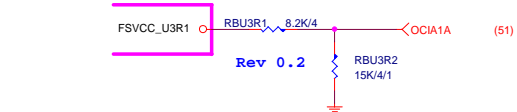
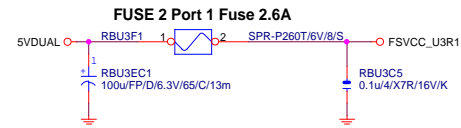
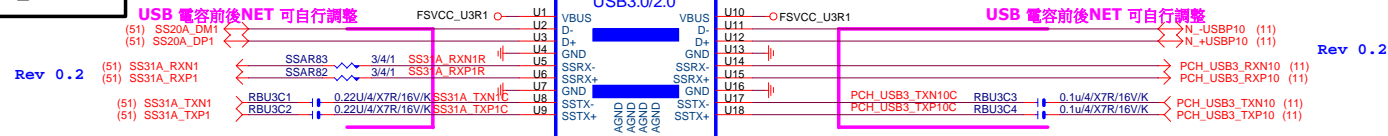


NET 可自行調整

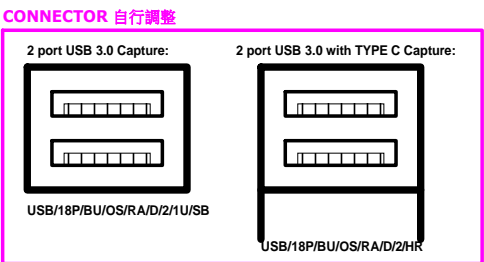
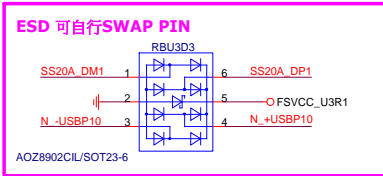
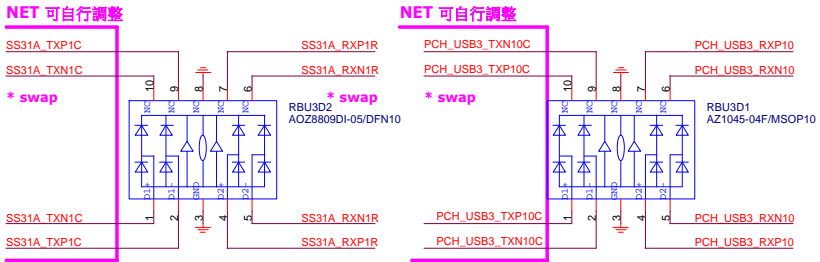




R_USB30



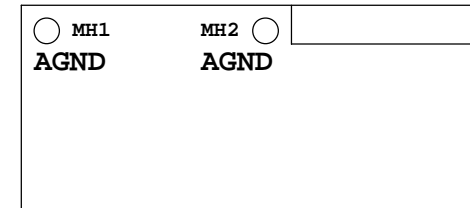
USB30_20



Rev 0.4

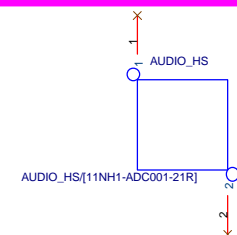
ALC1220 5H+1S+AMP

LAYOUT注意:螺絲孔下AGND方式
1. MH1,MH2全部下AGND



LAYOUT注意:是否要加?
AGND切割線

音效區域印刷



BOM OPTION :

1. AUDIO CONNECT

不銹鋼料號:11NR6-403025-A2R

鍍金料號:11NR6-403025-92R

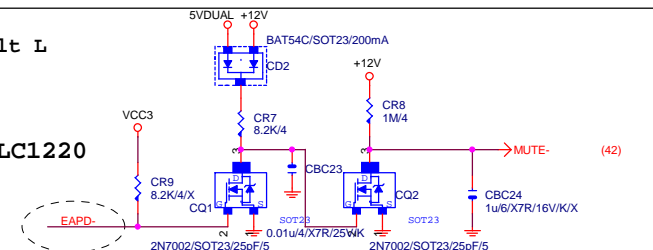
2. AUDIO CAP

Nichicon MW音效電容 : 11CE1-651000-12R

Chemicon音效電容 : 11CE2-651000-05R

EAPD: Default L
H : ON
L : OFF

Close to ALC1220



Gigabyte Technology

ALC1220

Title		
ALC1220		
Size	Document Number	Rev
Custom	GA-Z270X-GAMING K5	1.02
Date:	Friday, December 09, 2016	Sheet 41 of 76

Rev 0.2

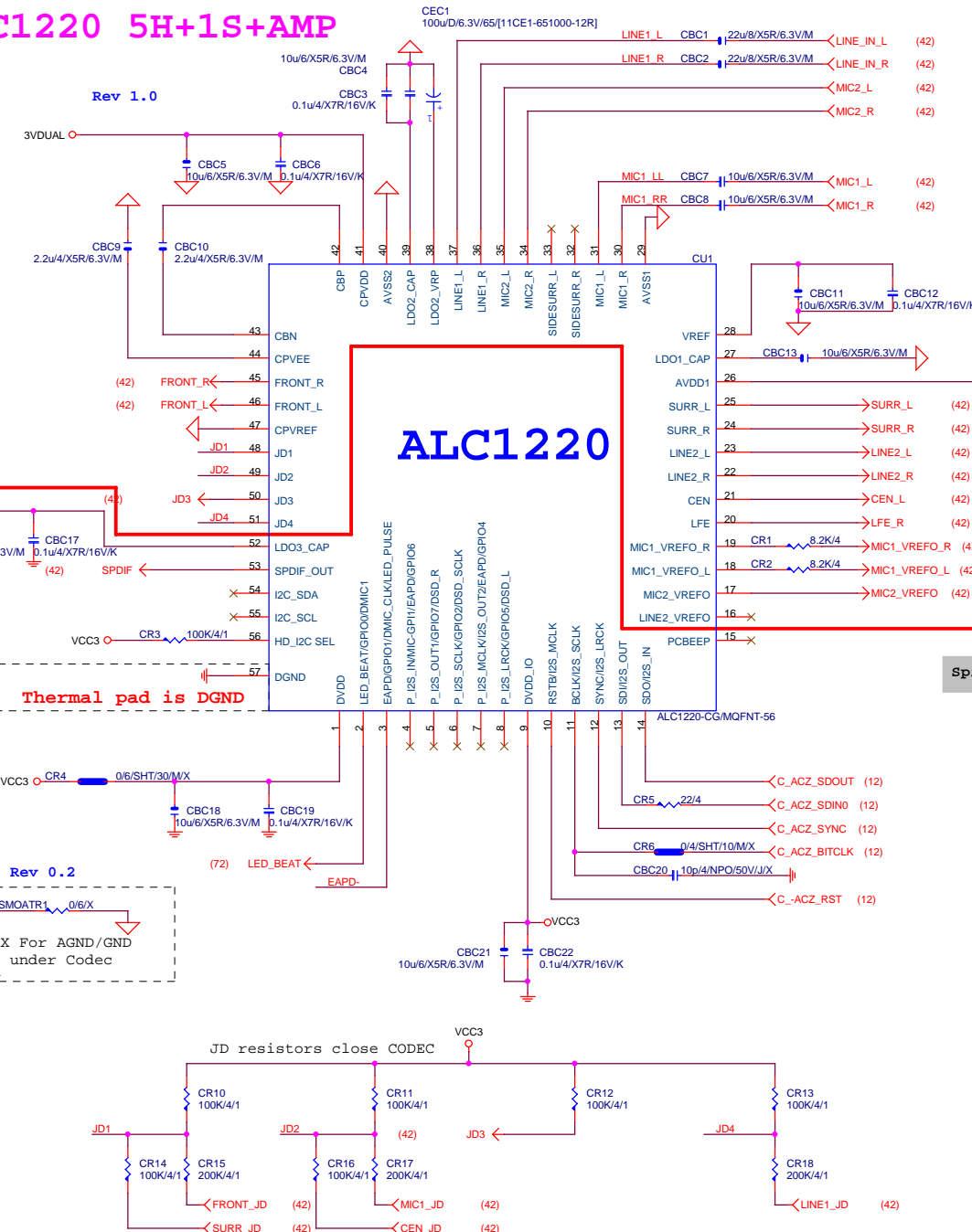
Spilt by DGND

Analog

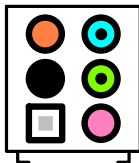
Digital

ALC1220

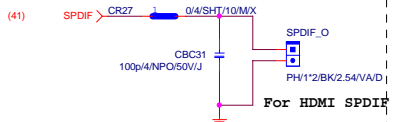
Rev 1.0



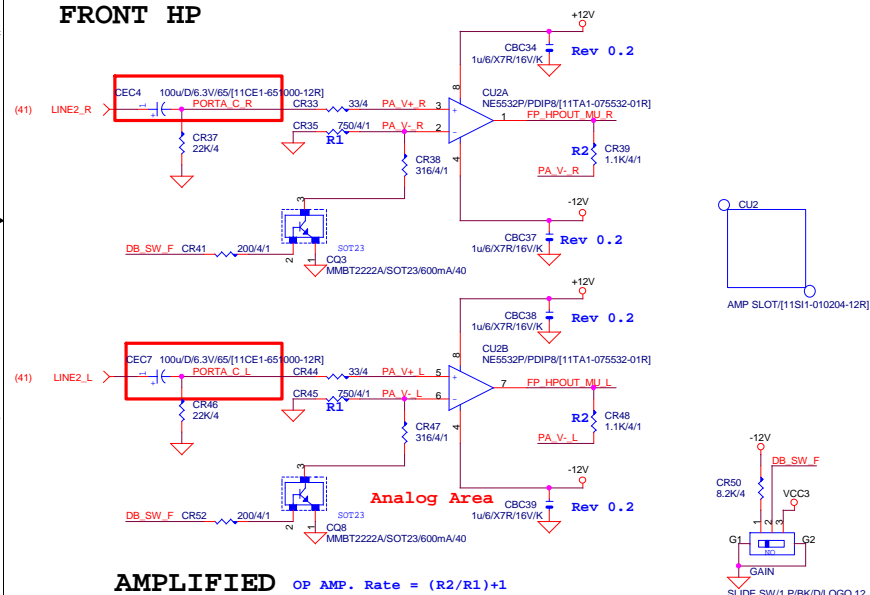
AZALIA JACK



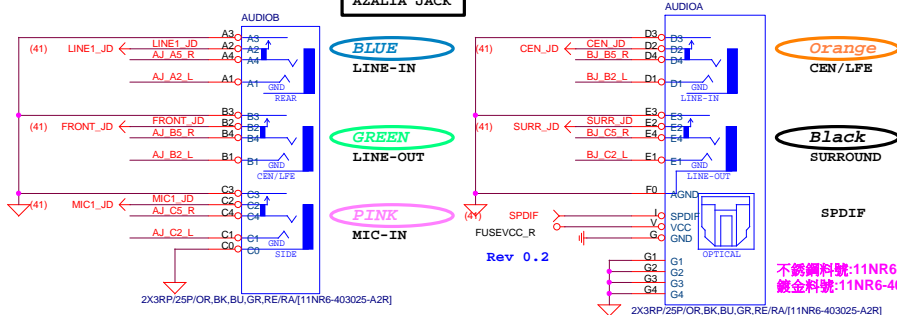
SPDIF_OUT



FRONT HP

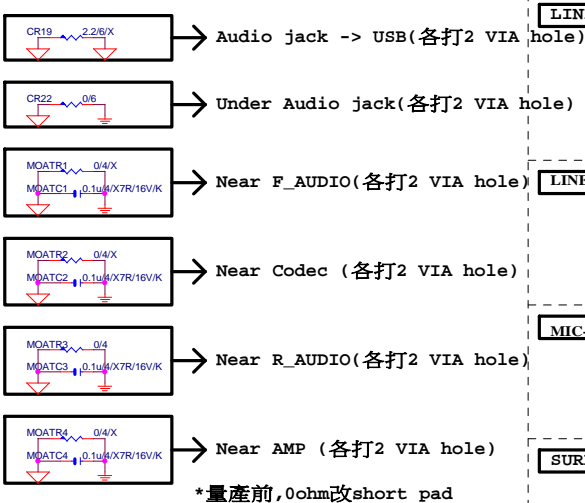


AZALIA JACK

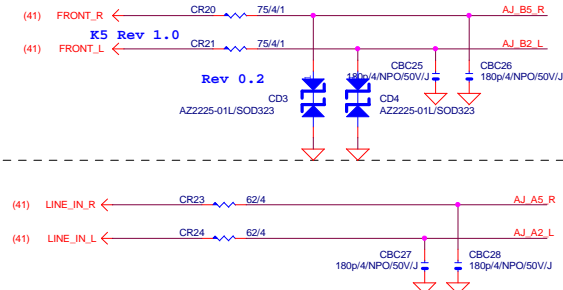


不銹鋼料號:11NR6-403025-A2R
鍍金料號:11NR6-403025-92R

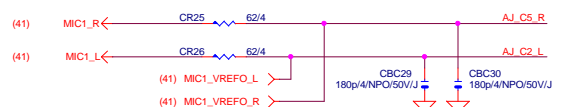
LINE-OUT



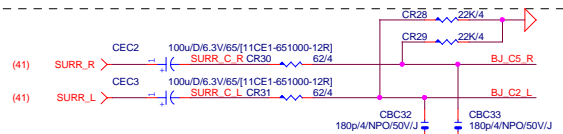
LINE-IN



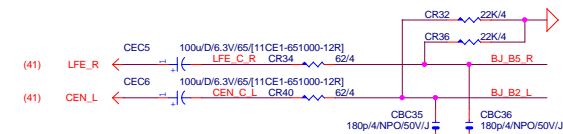
MIC-IN



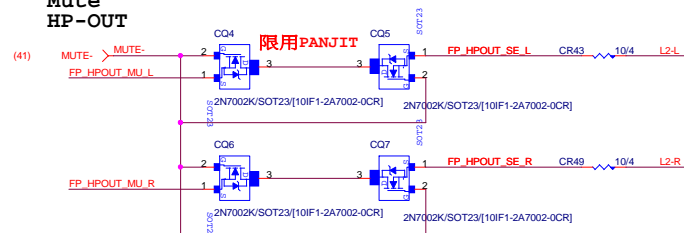
SURROUND



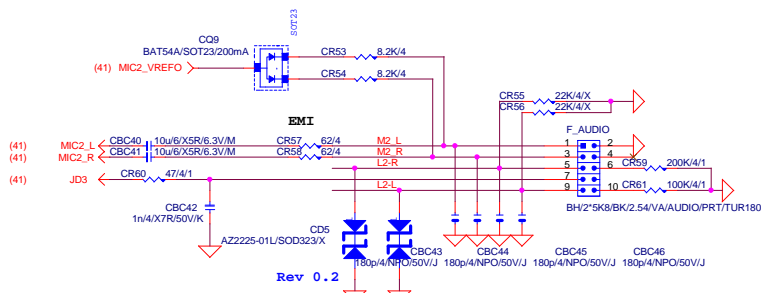
CEN/LFE



Mute
HP-OUT



AZALIA FRONT PANEL

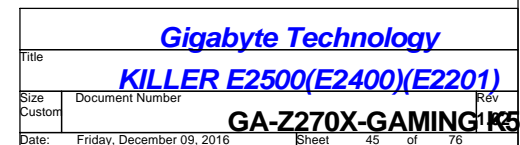


Gigabyte Technology

AUDIO JACK

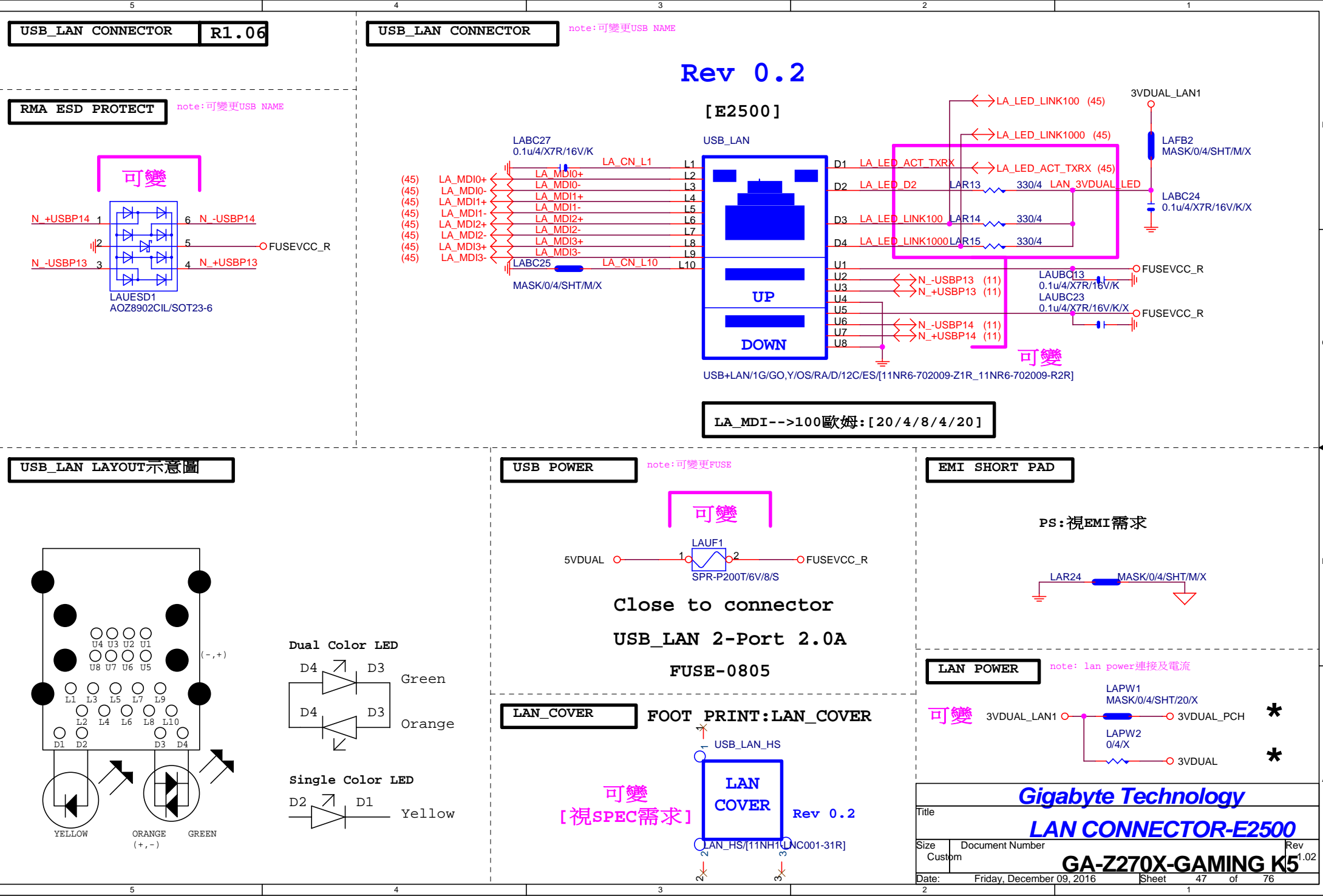
GA-Z270X-GAMING K5

Title			
AUDIO JACK			
Size	Document Number	Rev	
Custom	GA-Z270X-GAMING K5	1.02	
Date:	Friday, December 09, 2016	Sheet	42 of 76

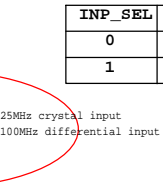
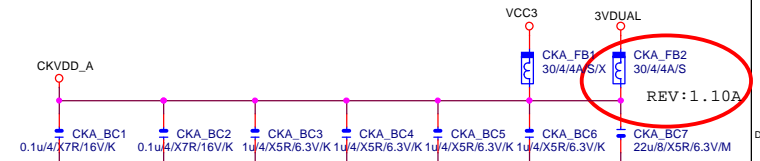


5	4	3	2	1
D				D
C				C
B				B
A				A
5	4	3	2	1

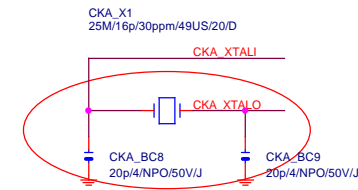
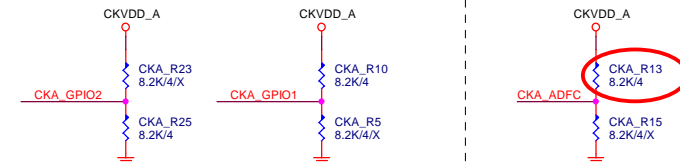
Gigabyte Technology		
DUAL LAN~ E2201+I219		
GA-Z270X-GAMING K8		
Date:	Friday, December 09, 2016	Sheet 46 of 76



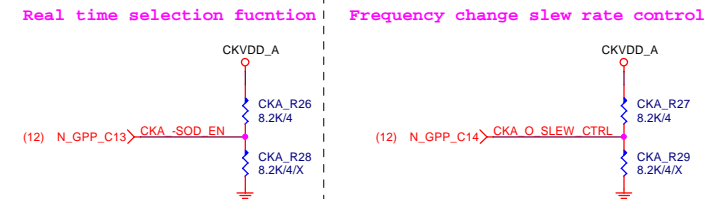
IDT6V41630



B53b1(FS1)	B53b0(FS0)	VCO (MHz)	CPU Divider	CPU (MHz)	Typ SS%	Typ SS ON/OFF
0	0	200.00	2.00	100.00	-	OFF
0	1	400.00	4.00	100.00	-	OFF
1	0	1000.00	10.00	100.00	-0.50%	ON
1	1	100.00	1.00	100.00	-	OFF



CKA_XTALO	CKA_R18	0/4/SHT/MIX	X1
CKA_XTALI	CKA_R19	0/4/SHT/MIX	X2
CKA_PEX_REFCLK	CKA_R30	0/4/X	CKA_X1
CKA_PEX_REFCLK	CKA_R31	0/4/X	CKA_X2



Title				IDT6V41530_CLK BUFFER			
Size		Document Number				Rev	
Custom		GA-Z270X-GAMING K5				1.02	
Date: Friday, December 09, 2016				Sheet 48 of 76			

*可變，依需求上件不上件。

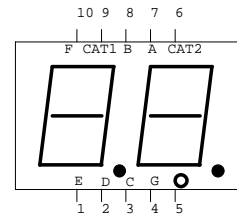
Rev: 0.52

COM PORT

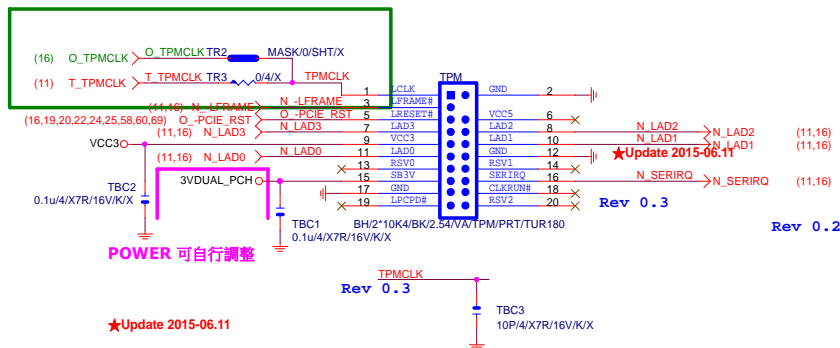
COMA

80 PORT

Physical Package
(TOP VIEW)

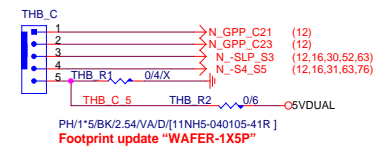


TPM CONNECT



Thunderbolt

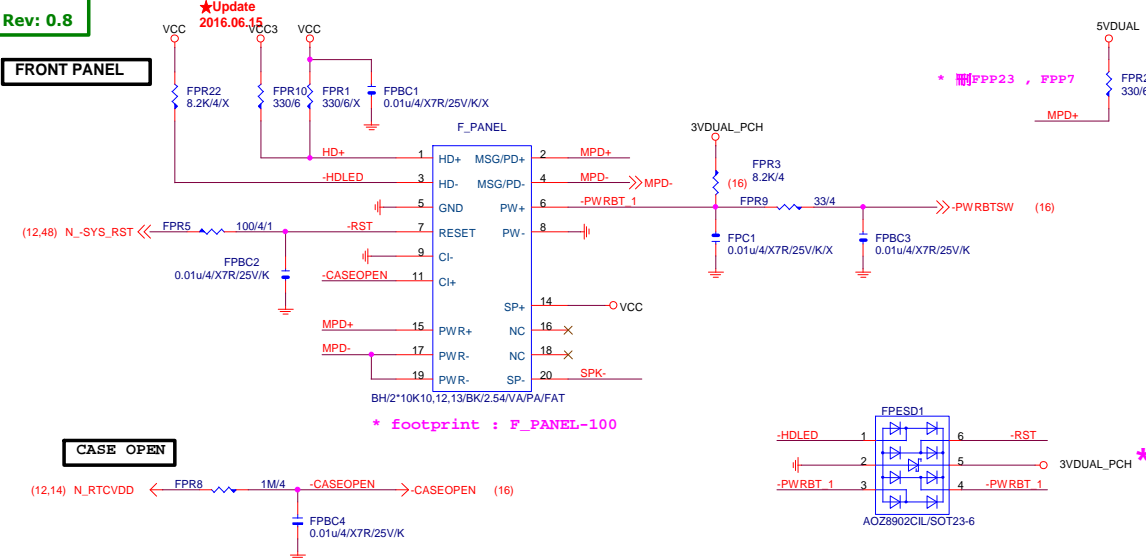
★Update 2015-12-29



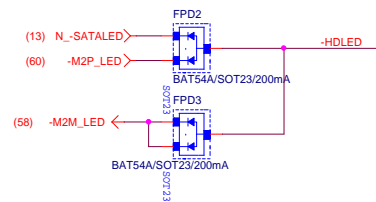
Gigabyte Technology

Title			
FP,F USB,USB PWR,BZ			
Size	Document Number	GA-Z270X-GAMING K5	
Custom		1.02	
Date:	Friday, December 09, 2016	Sheet	49 of 76

Rev: 0.8

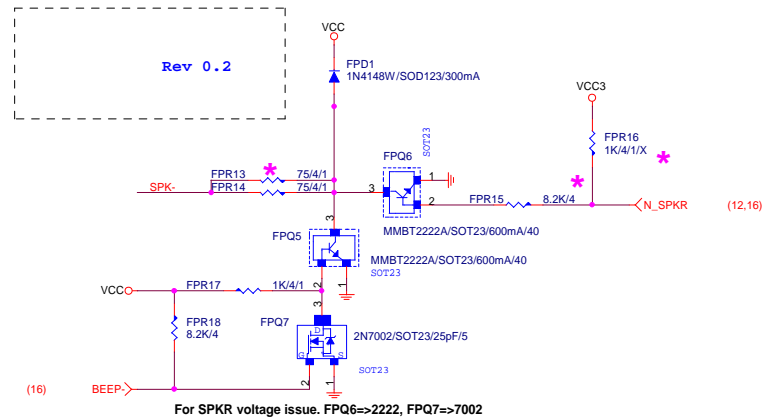


SATA LED SATALED# signal open-collector, pull-up (8.2 kΩ to 10 kΩ) to Vcc3_3

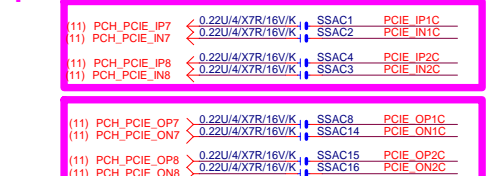


SPEAKER

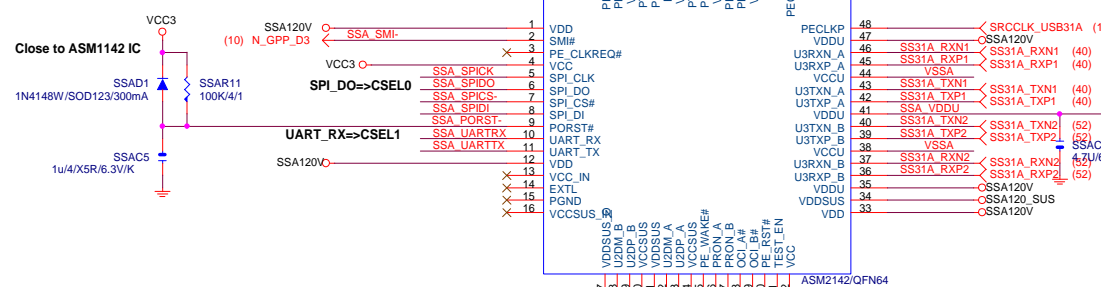
For SPKR voltage issue. FPQ6=>2222, FPQ7=>7002



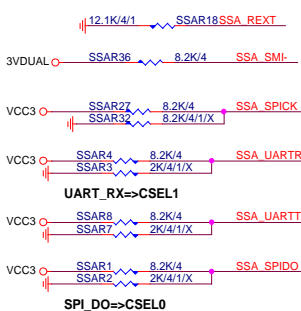
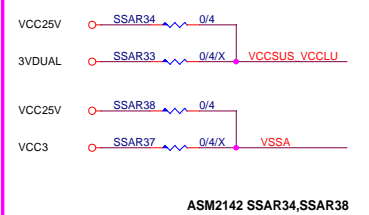
PCH PCIe* Controller Lane Reversal / base on spec To PCIe host.



From PCIe host.

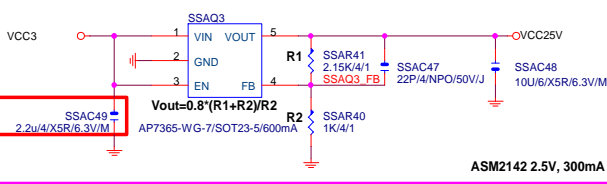


ASM 2142 Option

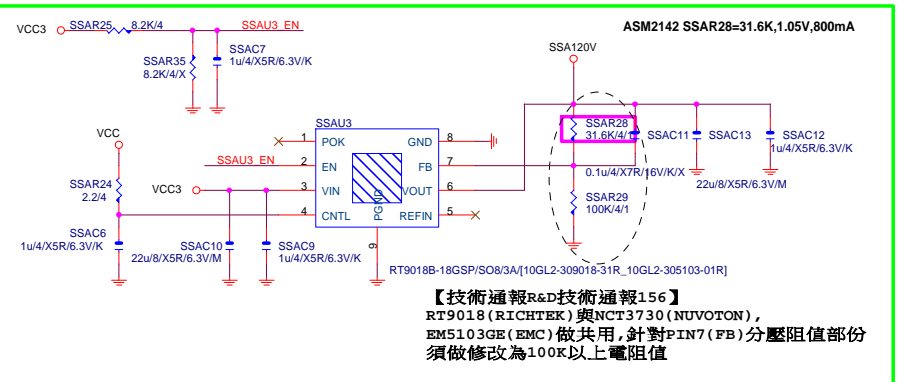
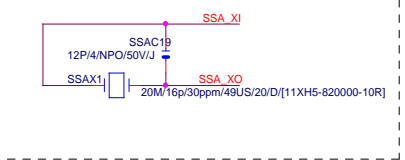
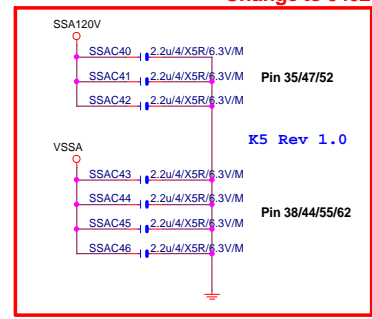
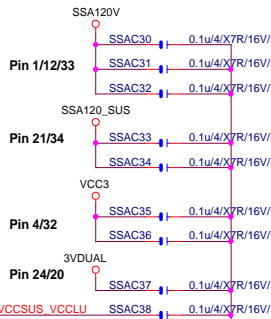


CSEL1	CSEL0	
1	1	External 20MHz Crystal (Asynchronous)
0	1	48MHz clock input (Synchronous)
X	0	Reserved for Test

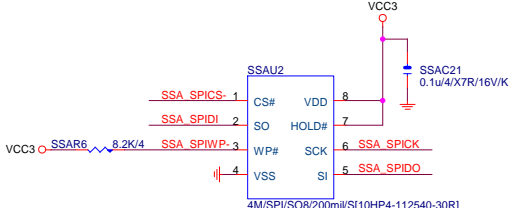
ASM2142 Option



Base on ASM2142 0.1 Reference SCH

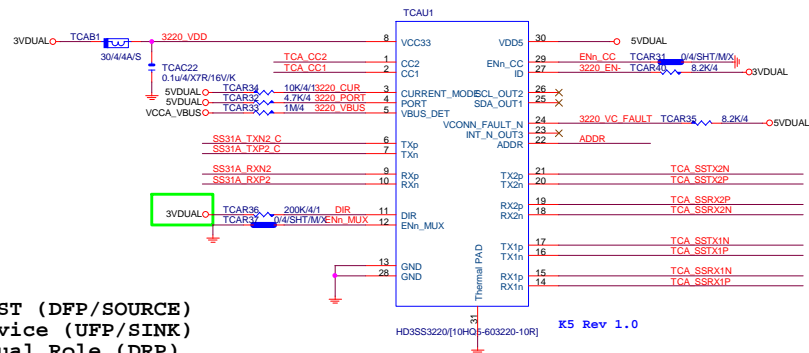
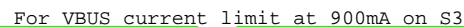


【技術通報R&D技術通報156】
RT9018 (RICHTEK) 與NCT3730 (NUVOTON),
EM5103GE (EMC) 做共用, 針對P-IN7 (FB) 分壓阻值部份
須做修改為100K以上電阻值



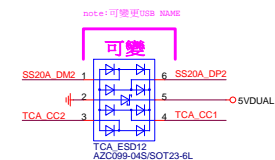
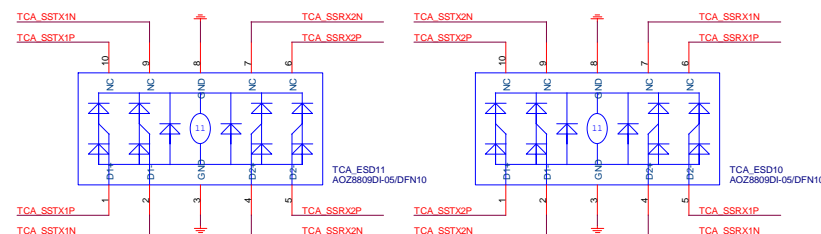
GIGABYTE™			
Title ASM2142			
Size Custom	Document Number GA-Z270X-GAMING K5	Rev 1.02	
Date: Friday, December 09, 2016	Sheet 51	of 76	

USB 3.x SuperSpeed



H - HOST (DFP/SOURCE)
L - Device (UFP/SINK)
NC - Dual Role (DRP)

L - Default (900mA) / Pull down to GND or NC
M - Medium (1.5A) / Pull up to VDD 500K
H - High (3.0A) / Pull up to VDD 10K



GIGABYTE™			
Title			
TI HD3SS3212			
Size	Document Number		Rev
C	GA-Z270X-GAMING K5		1.02
Date:	Friday, December 09, 2016	Sheet	52 of 76

Rev 0.1

M.2 Lane4 from PCH port26

M.2 Lane3 from PCH port25

M.2 Lane2 from PCH port24

M.2 Lane2 from PCH port23

支援SATA and M.2 function

需與M2-CLKREQ對應

SATA : GND.
PCIE : HIGH

M2插卡時為Low

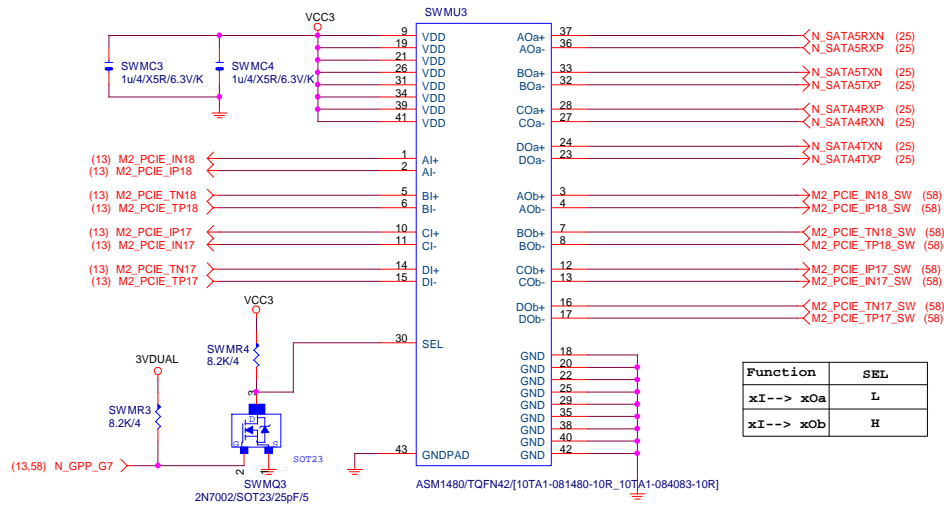
架高

DIP螺柱

SMD螺柱

DIP螺絲

Gigabyte Technology			
Title			
M.2 X4			
Size	Document Number	Rev	
Custom	GA-Z270X-GAMING K5	1.02	
Date:	Friday, December 09, 2016	Sheet	58 of 76



M.2 Detect N_GPP_G7	M.2 MODE N_GPP_G8	PCIE17	PCIE18	PCIE19	PCIE20
HIGH	X	切回 SATA4	切回 SATA5	N\A	N\A
LOW	HIGH(PCIE)	PCIEX4 FOR M.2(最優先)			
LOW	LOW(SATA)	SATA FOR M.2	N\A	N\A	N\A

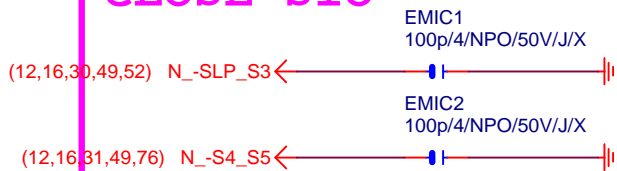
5	4	3	2	1
D				D
C				C
B				B
A				A
5	4	3	2	1

GIGABYTE™			
Title REALTEK RTS5411			
Size Custom	Document Number GA-Z270X-GAMING K5		Rev 1.02
Date: Friday, December 09, 2016	Sheet 61	of 76	



GIGABYTE TM		
Title PD 9V		
Size C	Document Number GA-Z270X-GAMING K5	Rev 1.02
Date: Friday, December 09, 2016	Sheet 62 of 76	1

CLOSE SIO

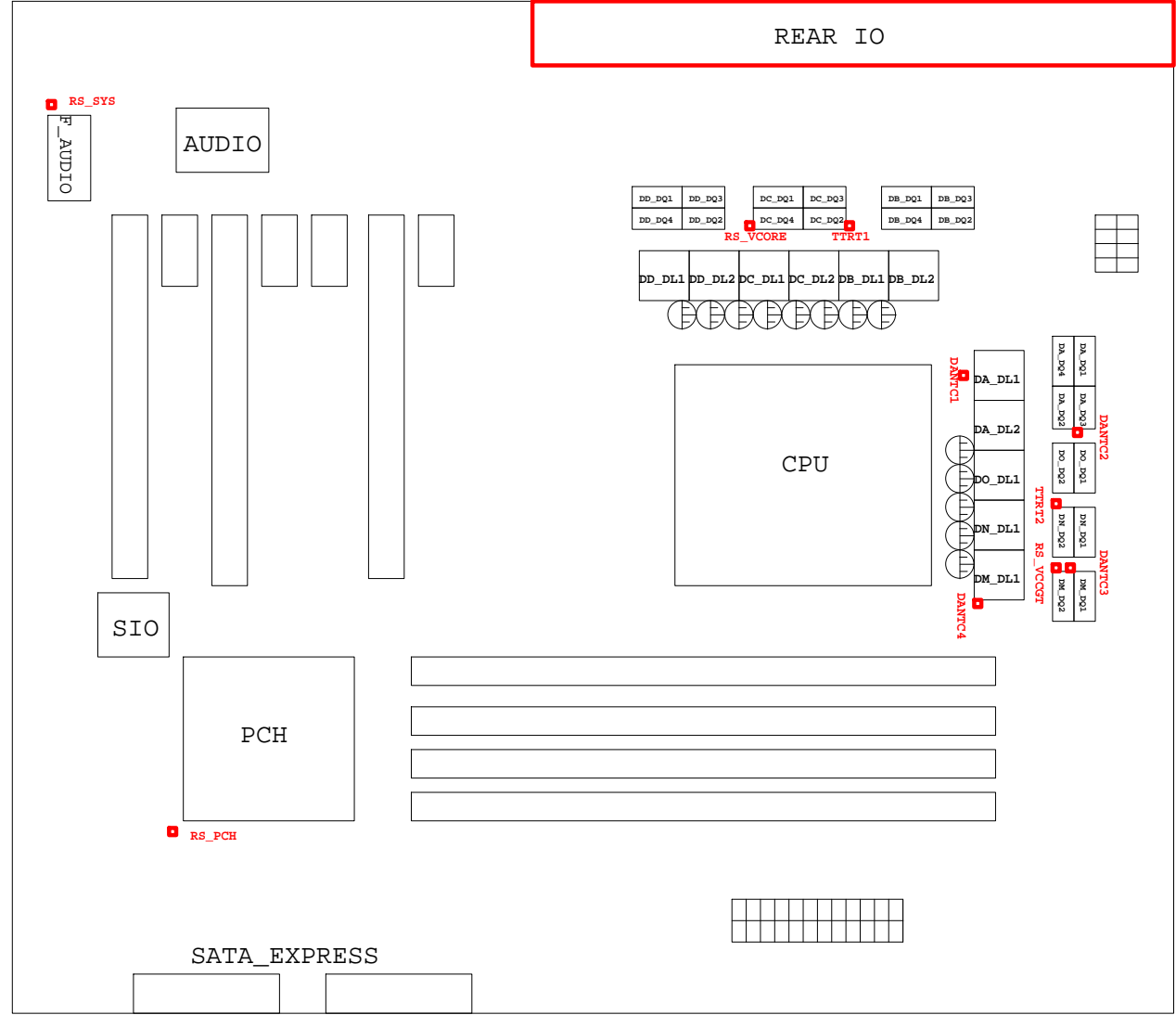


CLOSE PCH



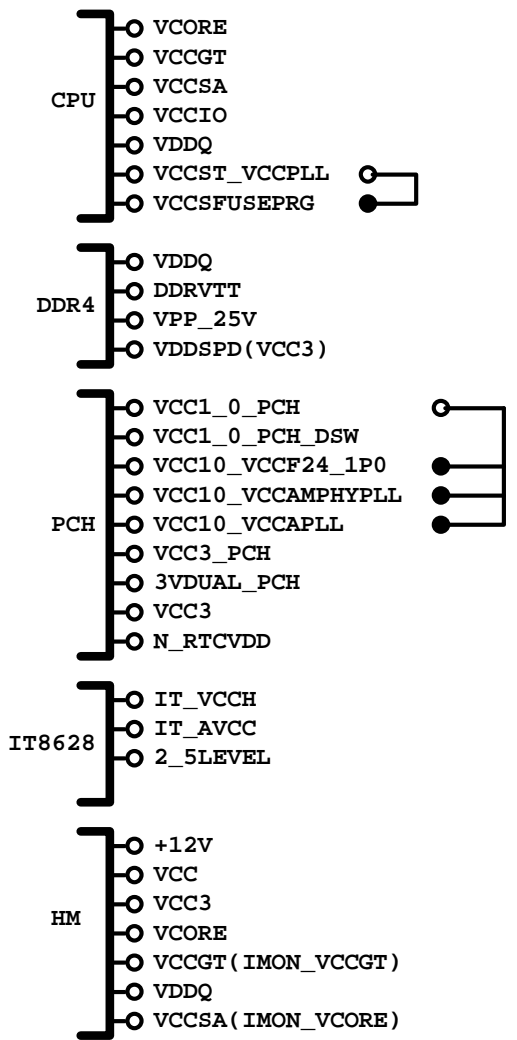
GIGABYTE™

Title		
EM/ESD		
Size A	Document Number GA-Z270X-GAMING K5	Rev 1.02
Date:	Friday, December 09, 2016	Sheet 63 of 76

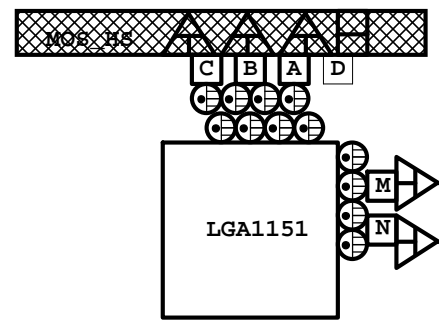
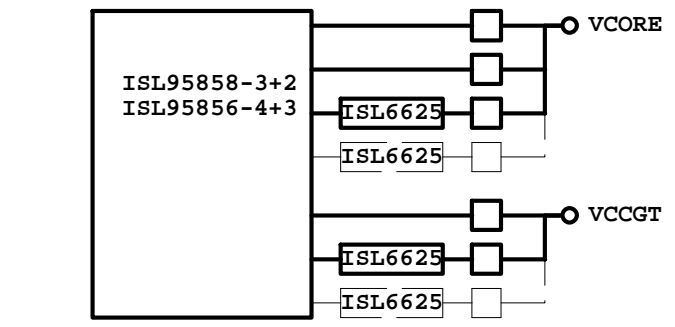


熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL2	Differential
DANTC2	DA_DQ3	Differential
DANTC3	DM_DQ2	Differential
DANTC4	DM_DL1	Differential
RS_VCORE	DC_DQ4	N/A
RS_VCCGT	DM_DQ2	N/A
TTRT1	DC_DQ2	N/A
TTRT2	DN_DQ2	N/A
RS_PCH	PCH	N/A
RS_SYS	F_AUDIO	N/A

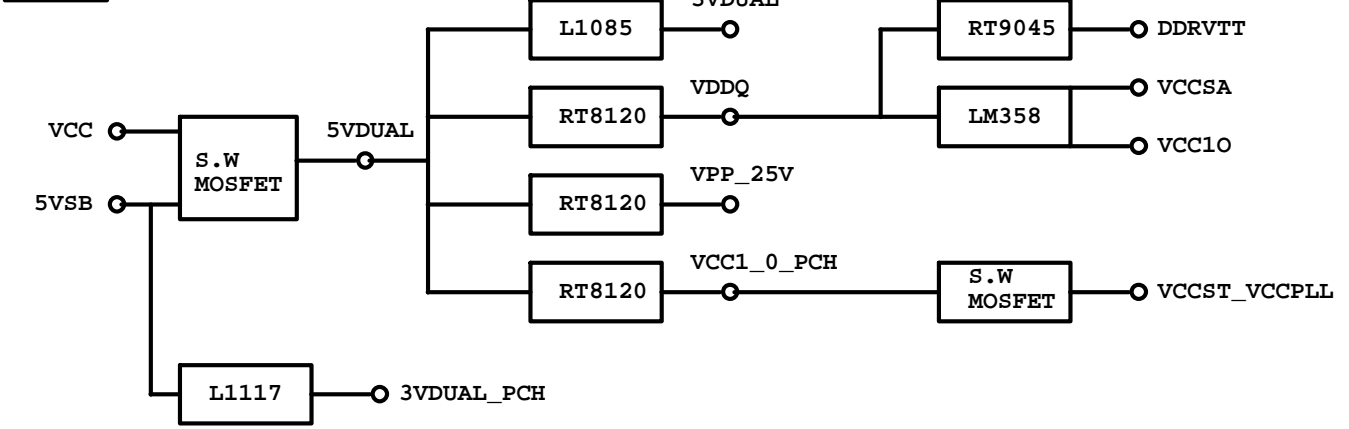
POWER BLOCK MAP



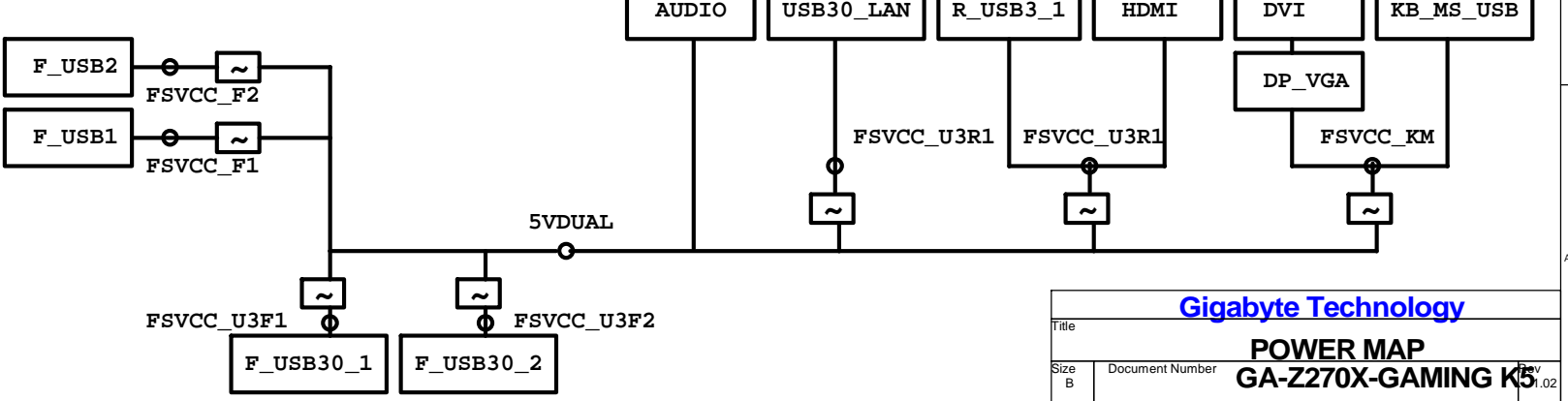
VCORE/VCCGT



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	閃電P
DIP	11LC5-M4500C-11R	0.5uH/40A/IMD109/M/NP/D	10*10	CHOKE05U-40A-1PQ-3	無閃電P
DIP	11LC5-M2500C-01R	0.5uH/20A/IMD0809/M/D	8*8	CHOKE1U-R50M-IF	

Skylake Iron Choke閃電P導入機種如下:
[1] Z170/H170 機種全部導入
[2] B150/H110Gaming機種導入, 其餘不導入

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	10LC5-F4300C-01R	0.3uH/40A/SIUC/FR/S	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
PWM	RT8237C/D	10TA1-608237-01R		IC10DFN-NIS5132

REGULATOR

		料號	Capture Value	Footprint
	NCT3103S	10GL2-203103-01R	NCT3103S/SOP8/2A	IC8-EP50IC

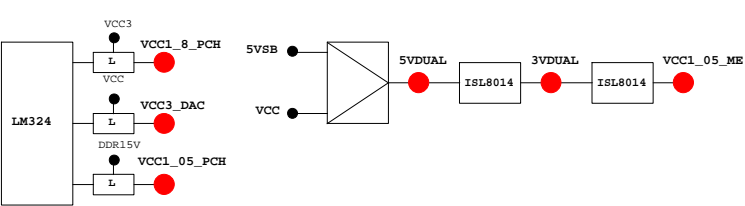
GIGABYTE™			
Title RT8120_DDR4 POWER			
Size Custom	Document Number GA-Z270X-GAMING K5		Rev 1.02
Date:	Friday, December 09, 2016	Sheet 66 of 76	

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

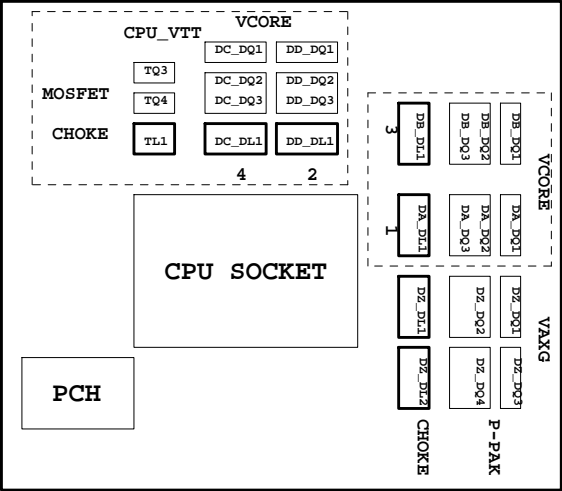
Super I/O ITE8720 GPIO Table

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	-PCI_E_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/BUSSIO	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VIDO5/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	
VIDO1/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	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/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

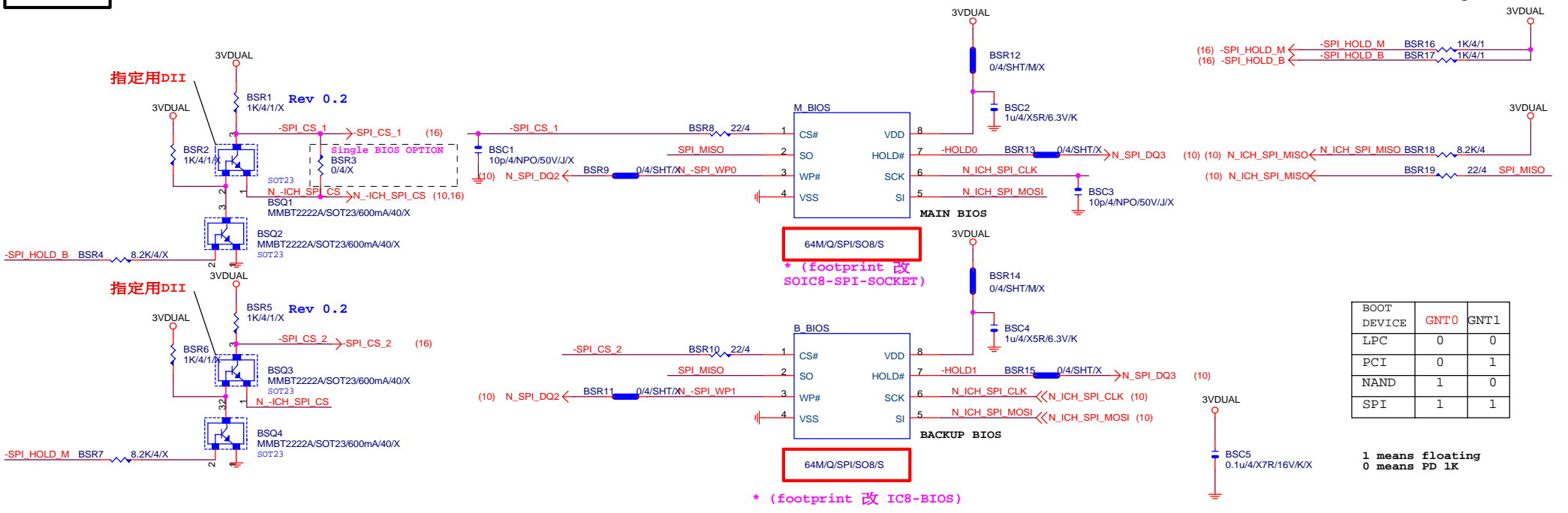
散熱模組料號：

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

DUAL BIOS

MOSI For DMI RX Termination Voltage

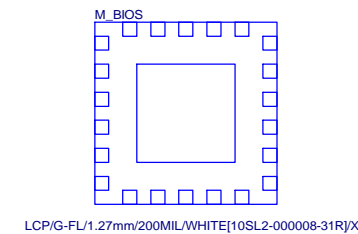


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

```
1 means floating
0 means PD 1K
```

BIOS_SW

BIOS_SW	
1	MAIN_BIOS
2	BACKUP_BIOS

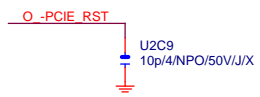


* 試產先上，PVT 移除

SB:Single BIOS	
	Disable
	Enable

Gigabyte Technology				
Title		BIOS		
Size	Document Number	GA-Z270X-GAMING K5		
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Rev 0.3



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GIGABYTE™

Title		
M.2 to MINISAS		
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GIGABYTE

Title

PCH PWR-VCC18_PCH

Size
A

Document Number

GA-Z270X-GAMING K5

Rev	1.02
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Friday, December 09, 2016

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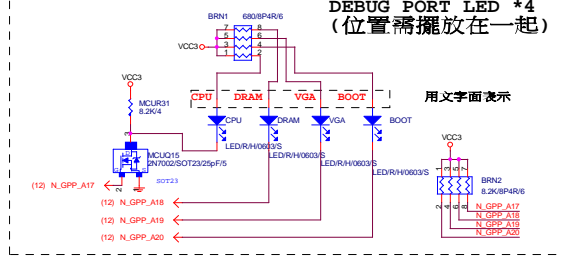
第一區 LED

Rev 0.63

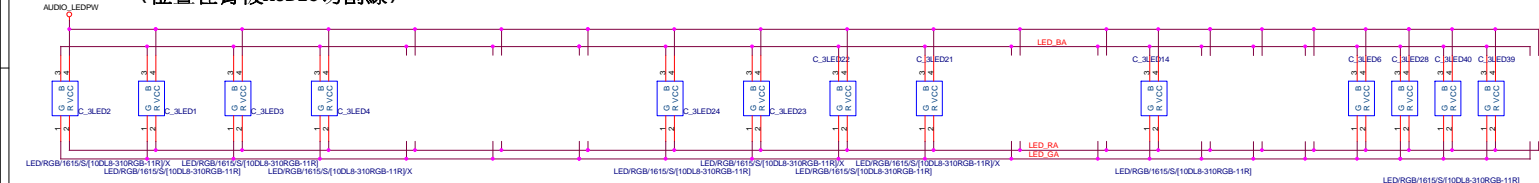
LED GPIO PIN DEFINE

N_GPP_A17	CPU DEBUG
N_GPP_A18	DDR DEBUG
N_GPP_A19	VGA DEBUG
N_GPP_A20	BOOT DEBUG
N_GPP_A21	XMP LED SWITCH
N_GPP_A22	TURBO LED SWITCH
N_GPP_D15	LED_C LED SWITCH
N_GPP_D17	PCIEX16 LED SWITCH
N_GPP_D18	PCIEX8 LED SWITCH

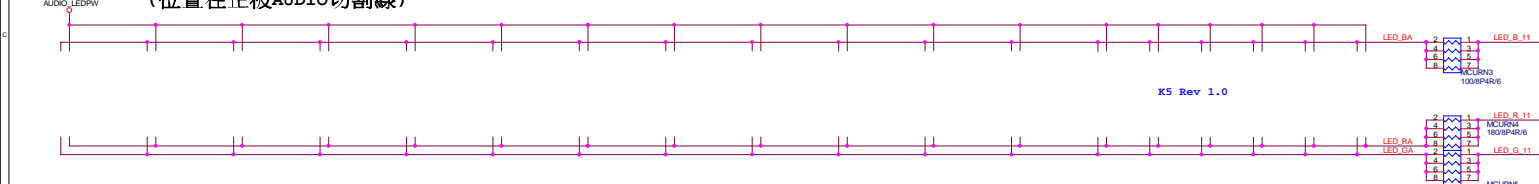
DEBUG PORT LED *4 (位置需擺放在一起)



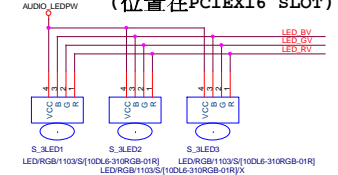
FOR AUDIO 正發光 LED*40 (位置在背板AUDIO切割線)



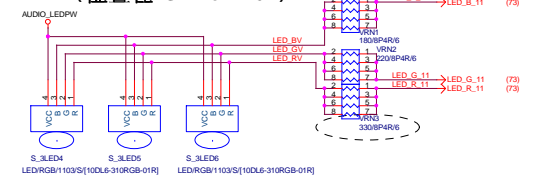
FOR AUDIO 正發光 LED*40 (位置在正板AUDIO切割線)



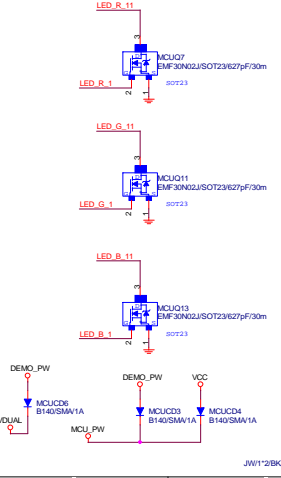
FOR PCIEX16 側發光 LED*3 (位置在PCIEX16 SLOT)



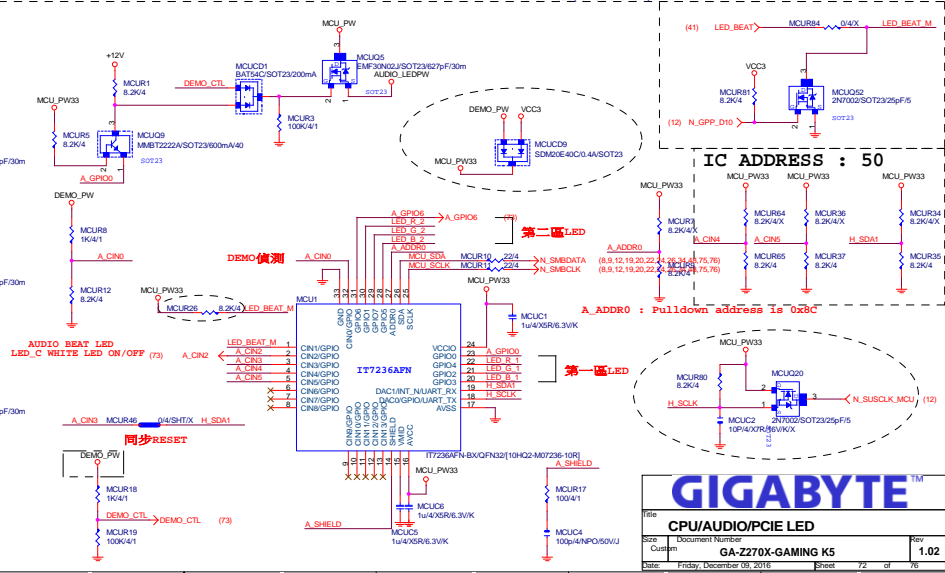
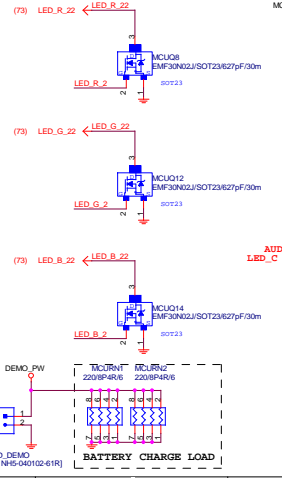
FOR PCIEX8 側發光 LED*3 (位置在PCIEX8 SLOT)



第一區 LED CONTROL



第二區 LED CONTROL



GIGABYTE
CPU/AUDIO/PCIE LED
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第二區 LED

Rev 0.63

FOR PCH 正發光 LED*4 (位置在正板,依據PCH_HS設計擺放)

FOR CPU 正發光 LED*5 (在CPU CHOKE之間,MOS_HS下方,不外露)

FOR PCB 正發光 LED*16 (位置在PCB下方背板邊緣)

位置在正板放在PCB_BAR內部

FOR DIMM 側發光 LED*6 (位置在DIMM兩側)

FOR XMP 側發光 LED*2 (靠近DIMM附近放背板鏤空)

FOR TURBO 側發光 LED*2 (靠近DIMM附近背板鏤空)

FOR 燈條 LED (LED_C放在PCB左邊板邊位置)

DDR燈條*3

RGB LED LAYOUT 注意事項：

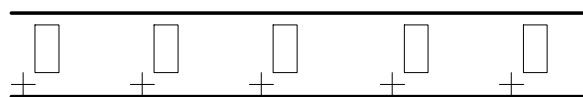
1. Debug LED 文字面表示如右所示 (LED請擺在一起)
2. 背板 RGB LED 方向整板請統一如下
(整板正極可統一朝下或朝上)
3. 正板 RGB LED 統一方向即可
4. LED RGB 10PCS 以上走20mils
LED RGB 10PCS 以下空間問題可以走10mils
LED電源一律走20mils
5. MCU LED 出pin的走線4mils,如:LED_R_1,LED_G_1,LED_B_1
過晶體的走線20mils,包含過排組到LED的走線如:LED_R_11,LED_G_11,LED_B_11..
6. XMP/TURBO/G1.GAMING 側發光 LED 位置如下

Debug LED 文字面 (單色LED)

VGA CPU

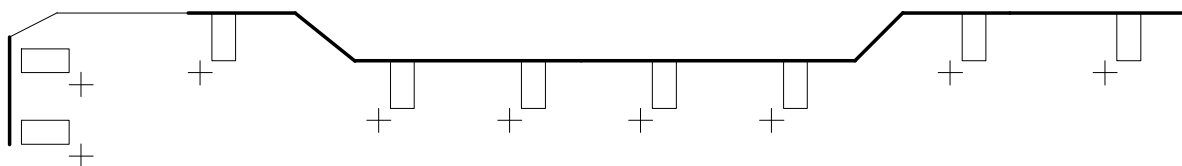
BOOT DRAM

PCB板邊透光model name鏤空+背面 RGB LED



LED間距160mil
G1 GAMING

Audio Ground切割線+背面 RGB LED



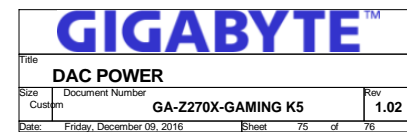
"Turbo", "XMP"字樣(分開控制) 鏤空+背面 RGB側發光 LED

LED間距200mil
TURBO
LED間距200mil
XMP

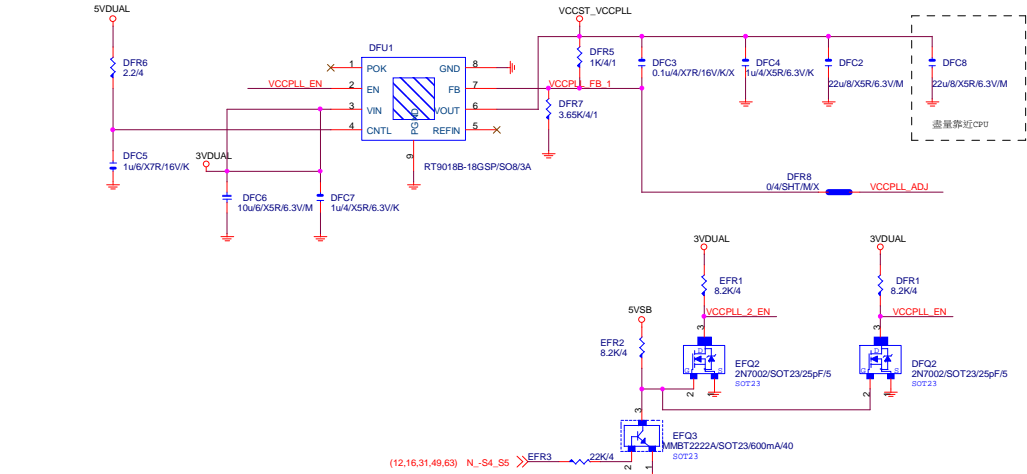
GIGABYTE™		
Title		
MODEL/PCB LED		
Size	Document Number	Rev
Custom	GA-Z270X-GAMING K5	1.02
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F_USB30_1

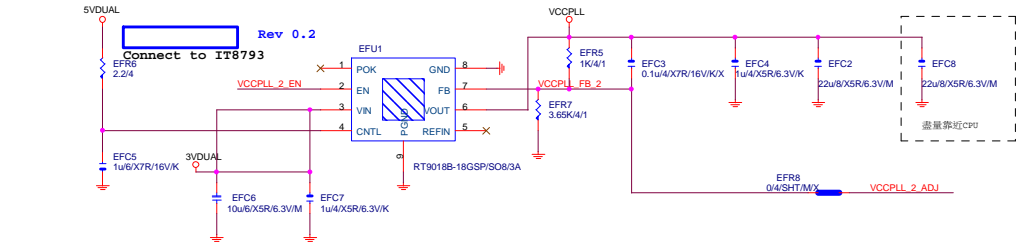
F_USB30_2



VCCST_VCCPLL 替換原先MOS開關線路



VCCPLL



VCCPLL_OC Rev. 0.2

