



SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A
05	CPU_LGA1151-B_DDR4
06	CPU_LGA1151-C
07	CPU_LGA1151-D
08	DDR4 CHANNEL A 1,2
09	DDR4 CHANNEL B 1,2
10	PCH_RGB,CLK BUFFER
11	PCH_DMI,USB,PCIE
12	PCH_MISC
13	PCH_SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	PCH_GND
16	ITE 8686 LPC_IO
17	HMW
18	FAN_CTRL--SIO
19	PCI_EXPRESS_X16_SLOT
20	PCI_EXPRESS_X8_SLOT
21	PCI_EXPRESS_X16_SWITCH
22	PCI_EXPRESS_X4_SLOT(CPU)
23	PCIEX4 & PCIEX1 SWITCH
24	PCI_EXPRESS_X1_SLOTS
25	SATA_EXPRESS
26	ISL95856_PWM
27	ISL95856_MOS_VCORE
28	ISL95856_MOS_VCCGT
29	VCCSA_VCCIO_VCCPLL
30	RT8120_DDR
31	RT8120_VPP
32	RT8120_PCH
33	DISCRETE_POWER1
34	NCT3933
35	ATX_POWER , A_-PROCHOT

SHEET

TITLE

36	KB_MS_USB
37	OC_BUTTON
38	F_USB30
39	F_USB20
40	R_USB31
41-42	ALC1220
45	KILLER_E2500
46	NA
47	USB_LAN-E2500
48	IDT6V41630_CLK_BUFFER
49	COM , TPM , THB_C
50	F_PANEL
51~52	ASM2142_USB3.1
55	NA
56	HDMI
57	DP_OUT
58	M2M_32G (M.2 22110) (Q)
59	M2M_32G & STA4/5_SWITCH
60	M2A_32G (M.2 2280) (P)
61	NA
62	NA
63	EMI/ESD
64	NTC_MAP
65	POWER_MAP
66	POWER零件使用表
67	TABLE_LIST
68	DUAL_BIOS
69	U2_32G
70	NA
71	NA
72~74	MCU_LED
75	USB_DAC_POWER
76	VCCPLL , VCCPLL_OC , VCCST_VCCPLL

Gigabyte Technology

Cover Sheet			
Size	Document Number	GA-Z270X-GAMING K5	Rev 1.02
Custom			
Date	Friday, December 09, 2016	Sheet 1 of 76	



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. PCIE X4 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

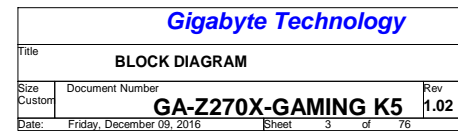
DATE	Change Item	Reason
2016/07/01	New SPEC.	Rev 0.1
2016/07/25	1.A.R. 改為ASM2142 USB3.1 2.Remove PD 27W 3.Remove USB3.0 HUB 4.Remove OC button 5.Remove IT8792 6.CPU side HDMI port reverse 7.Remove CPU DDI3 8.Add NR85,NR86 9. OR56改接3VDUAL_PCH 10.Remove PCIE X16 & PCIE X8 USB signal 11.PCIE X4 slot 改跟PCIE X1 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_PH1, 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蓋空,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FPR13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_PAN3_PUMP 22.TTRT1跟VRM_TEMP對調位置 (VCORE最熱的MOS是DC_DQ1) 23.TTRT2放在DO_DQ2下方 (VAX6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

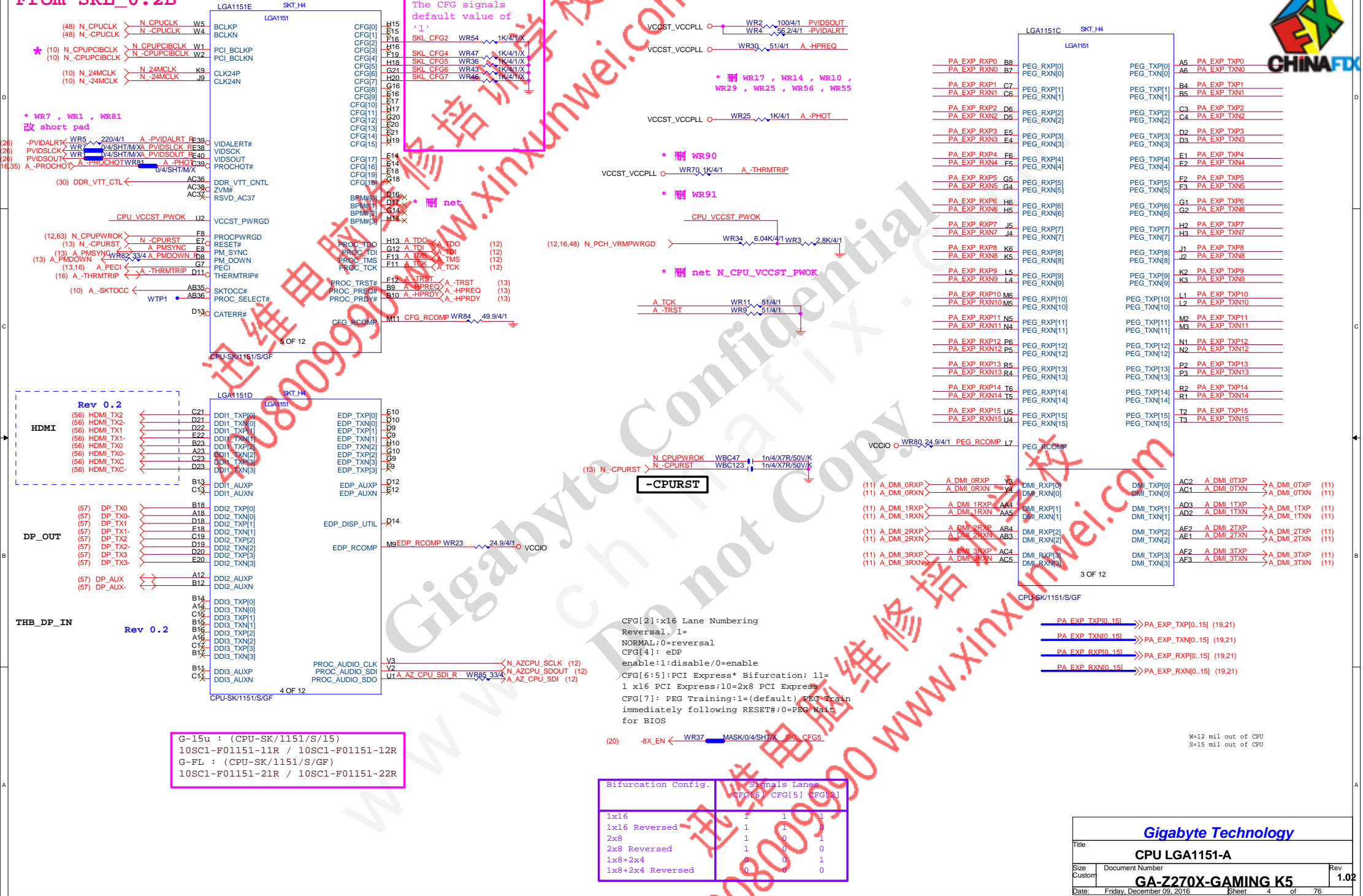
GIGABYTE™
BOM & PCB MODIFY HISTORY

File	GA-Z270X-GAMING K5		Rev
Size	Document Number		
Custom			1.02
Date	Friday, December 09, 2016	Sheet	2 of 76



From SKL_0.2B

www.xinxunwei.com 400-800-9990



Bifurcation Config.	Signals Lane CFG[6] CFG[5] CFG[4]
1x16	1 1 1
1x16 Reversed	1 1 1
2x8	1 0 1
2x8 Reversed	1 0 0
1x8+2x4	0 0 1
1x8+2x4 Reversed	0 0 0

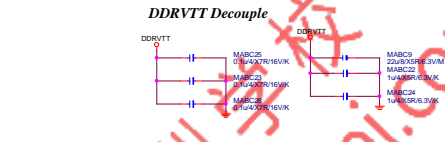
<i>Gigabyte Technology</i>			
Title CPU LGA1151-A			
Size Custom	Document Number		Rev 1.0
GA-Z270X-GAMING K5			
Date:	Friday, December 09, 2016	Sheet	4 of 76

* 改DDR4 net

www.xinxunwei.com 400-800-9990



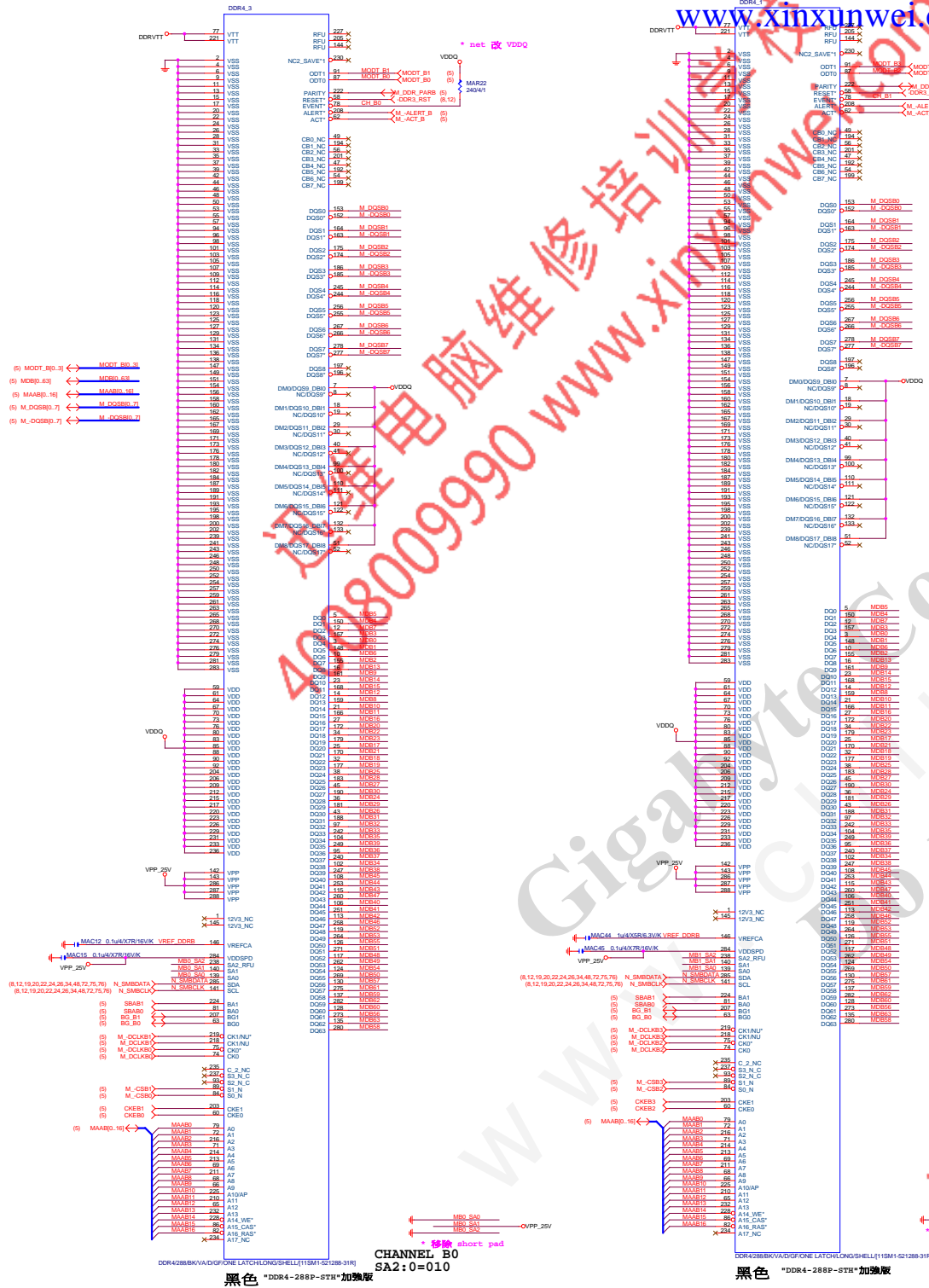
Title			
CPU LGA1151-C			
Size	Document Number	Rev	
Custom	GA-Z270X-GAMING K5	1.02	
Date:	Friday, December 09, 2016	Sheet	6 of 76



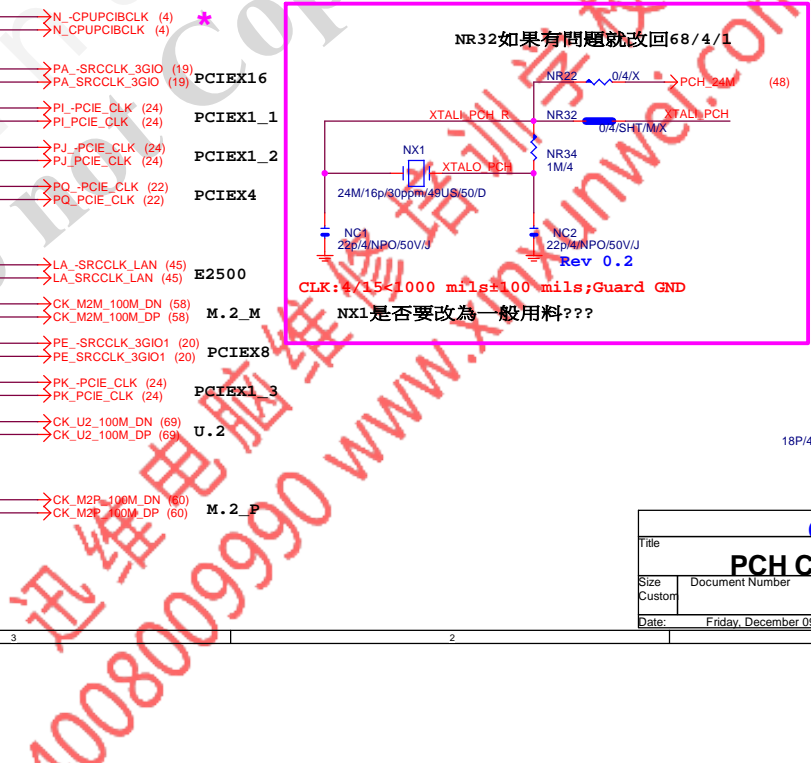
DDR4		Capture Value
SOC series	黑色	DDR4/288/BK/VA/S/G15/4ROW/LONG
	黑色	DDR4/288/BR/VA/S/G15/4ROW/LONG
UD series	黑色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG
	深灰色	DDR4/288/GY/VA/D/G15/ONE LATCH/LONG
Gaming series	黑色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG
	鮮紅	DDR4/288/RE/VA/D/G15/ONE LATCH/LONG
GL Sniper	黑色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG
	綠色	DDR4/288/GE/VA/D/G15/ONE LATCH/LONG



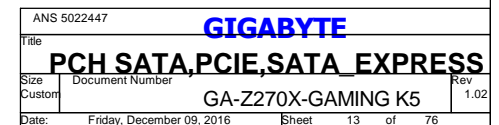
www.xinxunwei.com 400-800-9990

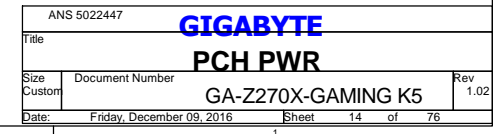


Gigabyte Technology		
File: DDR4 CHANNEL B		
Size	Document Number	Rev
GA-Z270X-GAMING K5		1.02







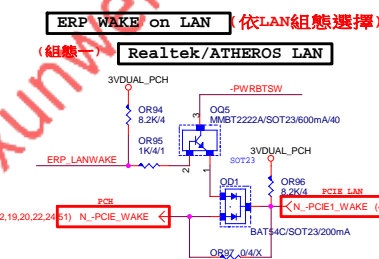


PCHL		
A25	VSS	A42
A30	VSS	D45
P22	VSS	BG44
AV38	VSS	BE44
AV45	VSS	BF43
AV8	VSS	BF2
AY11	VSS	W29
AY19	VSS	A35
AY37	VSS	A40
AY4	VSS	AA1
AY42	VSS	AA17
AY8	VSS	AA18
B25	VSS	AA20
B3	VSS	AA21
B30	VSS	AA26
B35	VSS	AA28
B4	VSS	AA29
B41	VSS	AB17
BA13	VSS	AC32
BA17	VSS	AE4
BA29	VSS	AE8
BA31	VSS	AF18
BA37	VSS	AF20
BA4	VSS	AF21
BA42	VSS	AF25
BB40	VSS	AF28
BC38	VSS	AF29
BC40	VSS	AF4
BC9	VSS	AF42
BD11	VSS	AG18
BD16	VSS	AG20
BD2	VSS	AG21
BD21	VSS	AG23
BD25	VSS	AG25
F2	VSS	AG26
F31	VSS	AG28
E6	VSS	AG29
E8	VSS	AH11
F39	VSS	AH13
F43	VSS	AH30
G4	VSS	AH62
G40	VSS	AH33
G42	VSS	AH38
F6	VSS	AJ1
G9	VSS	AJ17
H11	VSS	AJ18
H13	VSS	AJ20
H17	VSS	AJ21
H19	VSS	AJ23
H22	VSS	AJ25
H24	VSS	AJ26
H27	VSS	AJ28
H29	VSS	AJ29
H33	VSS	AJ45
H35	VSS	AK10
H38	VSS	AK14
H4	VSS	AK16
H42	VSS	AK17
H9	VSS	AK18
J4	VSS	AK26
M36	VSS	AK28
M38	VSS	AM14
M4	VSS	AM14
M8	VSS	AM14
M9	VSS	AP19
N13	VSS	AR22
N15	VSS	AR27
N19	VSS	AU29
N22	VSS	AU33
N24	VSS	AV1
N31	VSS	AV10
N42	VSS	AV15
P10	VSS	AV24
P12	VSS	AV27
AV35	VSS	AV33

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

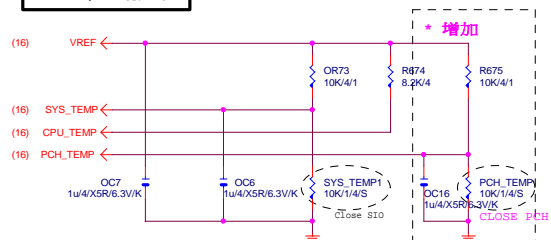
9 of 13

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
BG23	VSS[77]	AC10
BG28	VSS[78]	AC14
BG32	VSS[79]	AC16
BG37	VSS[80]	AC18
BG40	VSS[81]	AC4
BG9	VSS[83]	AC5
C1	VSS[84]	AC7
A12	VSS[85]	AC8
C2	VSS[86]	AD1
CA29	VSS[87]	AD18
CA6	VSS[88]	AD20
CA32	VSS[89]	AD21
D1	VSS[90]	AD25
D10	VSS[91]	AD29
D12	VSS[92]	AD45
D15	VSS[93]	AE11
D16	VSS[94]	AE14
D19	VSS[95]	AE32
D21	VSS[96]	AE33
D24	VSS[97]	AE38
D25	VSS[98]	AK29
D29	VSS[99]	AK30
D30	VSS[100]	AK32
D33	VSS[101]	AK35
D35	VSS[102]	AK39
D36	VSS[103]	AL4
D39	VSS[104]	AL42
D44	VSS[105]	AM10
D7	VSS[106]	AM11
P13	VSS[107]	AM13
P15	VSS[108]	AM17
P17	VSS[109]	AM19
P19	VSS[110]	AM24
P31	VSS[111]	AM27
P33	VSS[112]	AM29
P35	VSS[113]	AM32
P4	VSS[114]	AM33
P42	VSS[115]	AM4
P8	VSS[116]	AN45
R1	VSS[117]	AP10
R32	VSS[118]	AP11
T10	VSS[119]	AP13
T14	VSS[120]	AP15
T22	VSS[121]	AP22
T29	VSS[122]	AP27
T32	VSS[123]	AP31
T36	VSS[124]	AP33
T38	VSS[125]	AP34
Y38	VSS[126]	AP39
Y4	VSS[127]	T4
Y8	VSS[128]	W26
T42	VSS[129]	V16
T5	VSS[130]	V17
U4	VSS[131]	V18
U42	VSS[132]	V30
V10	VSS[133]	V32
V14	VSS[134]	V33
W3	VSS[135]	V38
AR13	VSS[136]	V4
AR31	VSS[137]	V8
AR33	VSS[138]	W18
AR4	VSS[139]	W20
AT10	VSS[140]	W21
AT13	VSS[141]	W23
AT35	VSS[142]	W25
AT37	VSS[143]	A44
AT42	VSS[144]	BE1
AT44	VSS[145]	BD1
AU11	VSS[146]	B1
AU17	VSS[147]	B2
BD30	VSS[148]	B3
W45	VSS[149]	B4
Y13	VSS[150]	B45
Y14	VSS[151]	
Y30	VSS[152]	
Y32	VSS[153]	
Y33	VSS[154]	
Y34	VSS[155]	
Y35	VSS[156]	
Y36	VSS[157]	
Y37	VSS[158]	
Y38	VSS[159]	
Y39	VSS[160]	
Y40	VSS[161]	
Y41	VSS[162]	
Y42	VSS[163]	
Y43	VSS[164]	
Y44	VSS[165]	
Y45	VSS[166]	
Y46	VSS[167]	
Y47	VSS[168]	
Y48	VSS[169]	
Y49	VSS[170]	
Y50	VSS[171]	
Y51	VSS[172]	
Y52	VSS[173]	
Y53	VSS[174]	
Y54	VSS[175]	
Y55	VSS[176]	
Y56	VSS[177]	
Y57	VSS[178]	
Y58	VSS[179]	
Y59	VSS[180]	
Y60	VSS[181]	
Y61	VSS[182]	
Y62	VSS[183]	
Y63	VSS[184]	
Y64	VSS[185]	
Y65	VSS[186]	
Y66	VSS[187]	
Y67	VSS[188]	
Y68	VSS[189]	
Y69	VSS[190]	
Y70	VSS[191]	
Y71	VSS[192]	
Y72	VSS[193]	
Y73	VSS[194]	
Y74	VSS[195]	
Y75	VSS[196]	
Y76	VSS[197]	
Y77	VSS[198]	
Y78	VSS[199]	
Y79	VSS[200]	
Y80	VSS[201]	
Y81	VSS[202]	
Y82	VSS[203]	
Y83	VSS[204]	
Y84	VSS[205]	
Y85	VSS[206]	
Y86	VSS[207]	
Y87	VSS[208]	
Y88	VSS[209]	
Y89	VSS[210]	
Y90	VSS[211]	
Y91	VSS[212]	
Y92	VSS[213]	
Y93	VSS[214]	
Y94	VSS[215]	
Y95	VSS[216]	
Y96	VSS[217]	
Y97	VSS[218]	
Y98	VSS[219]	
Y99	VSS[220]	
Y100	VSS[221]	
Y101	VSS[222]	
Y102	VSS[223]	
Y103	VSS[224]	
Y104	VSS[225]	
Y105	VSS[226]	
Y106	VSS[227]	
Y107	VSS[228]	
Y108	VSS[229]	
Y109	VSS[230]	
Y110	VSS[231]	
Y111	VSS[232]	
Y112	VSS[233]	
Y113	VSS[234]	
Y114	VSS[235]	
Y115	VSS[236]	
Y116	VSS[237]	
Y117	VSS[238]	
Y118	VSS[239]	
Y119	VSS[240]	
Y120	VSS[241]	
Y121	VSS[242]	
Y122	VSS[243]	
Y123	VSS[244]	
Y124	VSS[245]	
Y125	VSS[246]	
Y126	VSS[247]	
Y127	VSS[248]	
Y128	VSS[249]	
Y129	VSS[250]	
Y130	VSS[251]	
Y131	VSS[252]	
Y132	VSS[253]	
Y133	VSS[254]	
Y134	VSS[255]	
Y135	VSS[256]	
Y136	VSS[257]	
Y137	VSS[258]	
Y138	VSS[259]	
Y139	VSS[260]	
Y140	VSS[261]	
Y141	VSS[262]	
Y142	VSS[263]	
Y143	VSS[264]	
Y144	VSS[265]	
Y145	VSS[266]	
Y146	VSS[267]	
Y147	VSS[268]	
Y148	VSS[269]	
Y149	VSS[270]	
Y150	VSS[271]	
Y151	VSS[272]	
Y152	VSS[273]	
Y153	VSS[274]	
Y154	VSS[275]	
Y155	VSS[276]	
Y156	VSS[277]	
Y157	VSS[278]	
Y158	VSS[279]	
Y159	VSS[280]	
Y160	VSS[281]	
Y161	VSS[282]	
Y162	VSS[283]	
Y163	VSS[284]	
Y164	VSS[285]	
Y165	VSS[286]	
Y166	VSS[287]	
Y167	VSS[288]	
Y168	VSS[289]	
Y169	VSS[290]	
Y170	VSS[291]	
Y171	VSS[292]	
Y172	VSS[293]	
Y173	VSS[294]	
Y174	VSS[295]	
Y175	VSS[296]	
Y176	VSS[297]	
Y177	VSS[298]	
Y178	VSS[299]	
Y179	VSS[300]	
Y180	VSS[301]	
Y181	VSS[302]	
Y182	VSS[303]	
Y183	VSS[304]	
Y184	VSS[305]	
Y185	VSS[306]	
Y186	VSS[307]	
Y187	VSS[308]	
Y188	VSS[309]	
Y189	VSS[310]	
Y190	VSS[311]	
Y191	VSS[312]	
Y192	VSS[313]	
Y193	VSS[314]	
Y194	VSS[315]	
Y195	VSS[316]	
Y196	VSS[317]	
Y197	VSS[318]	
Y198	VSS[319]	
Y199	VSS[320]	
Y200	VSS[321]	
Y201	VSS[322]	
Y202	VSS[323]	
Y203	VSS[324]	
Y204	VSS[325]	
Y205	VSS[326]	
Y206	VSS[327]	
Y207	VSS[328]	
Y208	VSS[329]	
Y209	VSS[330]	
Y210	VSS[331]	
Y211	VSS[332]	
Y212	VSS[333]	
Y213	VSS[334]	
Y214	VSS[335]	
Y215	VSS[336]	
Y216	VSS[337]	
Y217	VSS[338]	
Y218	VSS[339]	
Y219	VSS[340]	
Y220	VSS[341]	
Y221	VSS[342]	
Y222	VSS[343]	
Y223	VSS[344]	
Y224	VSS[345]	
Y225	VSS[346]	
Y226	VSS[347]	
Y227	VSS[348]	
Y228	VSS[349]	
Y229	VSS[350]	
Y230	VSS[351]	
Y231	VSS[352]	
Y232	VSS[353]	
Y233	VSS[354]	
Y234	VSS[355]	
Y235	VSS[356]	
Y236	VSS[357]	
Y237	VSS[358]	
Y238	VSS[359]	
Y239	VSS[360]	
Y240	VSS[361]	
Y241	VSS[362]	
Y242	VSS[363]	
Y243	VSS[364]	
Y244	VSS[365]	
Y245	VSS[366]	
Y246	VSS[367]	
Y247	VSS[368]	
Y248	VSS[369]	
Y249	VSS[370]	
Y250	VSS[371]	
Y251	VSS[372]	
Y252	VSS[373]	
Y253	VSS[374]	
Y254	VSS[375]	
Y255	VSS[376]	
Y256	VSS[377]	
Y257	VSS[378]	
Y258	VSS[379]	
Y259	VSS[380]	
Y260	VSS[381]	
Y261	VSS[382]	
Y262	VSS[383]	
Y263	VSS[384]	
Y264	VSS[385]	
Y265	VSS[386]	
Y266	VSS[387]	
Y267	VSS[388]	
Y268	VSS[389]	
Y269	VSS[390]	
Y270	VSS[391]	
Y271	VSS[392]	
Y272	VSS[393]	
Y273	VSS[394]	
Y274	VSS[395]	
Y275	VSS[396]	
Y276	VSS[397]	
Y277	VSS[398]	
Y278	VSS[399]	
Y279	VSS[400]	
Y280	VSS[401]	
Y281	VSS[402]	
Y282	VSS[403]	
Y283	VSS[404]	
Y284	VSS[405]	
Y285	VSS[406]	
Y286	VSS[407]	
Y287	VSS[408]	
Y288	VSS[409]	
Y289	VSS[410]	
Y290	VSS[411]	
Y291	VSS[412]	
Y292	VSS[413]	
Y293	VSS[414]	
Y294	VSS[415]	
Y295	VSS[416]	
Y296	VSS[417]	
Y297	VSS[418]	
Y298	VSS[419]	
Y299	VSS[420]	
Y300	VSS[421]	
Y301	VSS[422]	
Y302	VSS[423]	
Y303	VSS[424]	
Y304	VSS[425]	
Y305	VSS[426]	
Y306	VSS[427]	
Y307	VSS[428]	
Y308	VSS[429]	

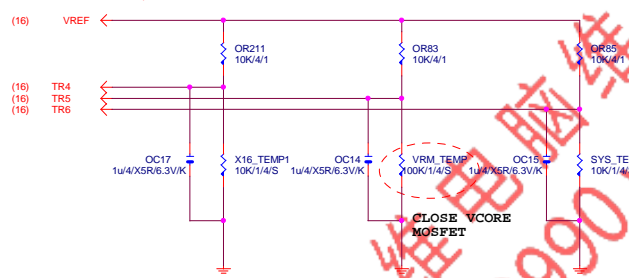


Gigabyte Technology			
Title		IT8686	
Size	Document Number		Rev
C	GA-Z270X-GAMING K5		
Date:	Friday, December 09, 2016	Sheet	16 of 76

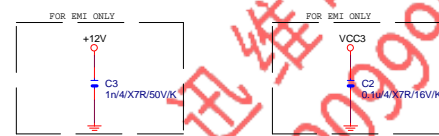
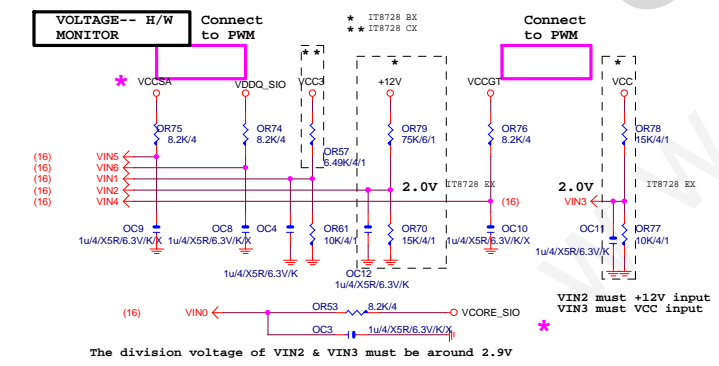
TEMP H/W MONITOR



5個FAN時使用

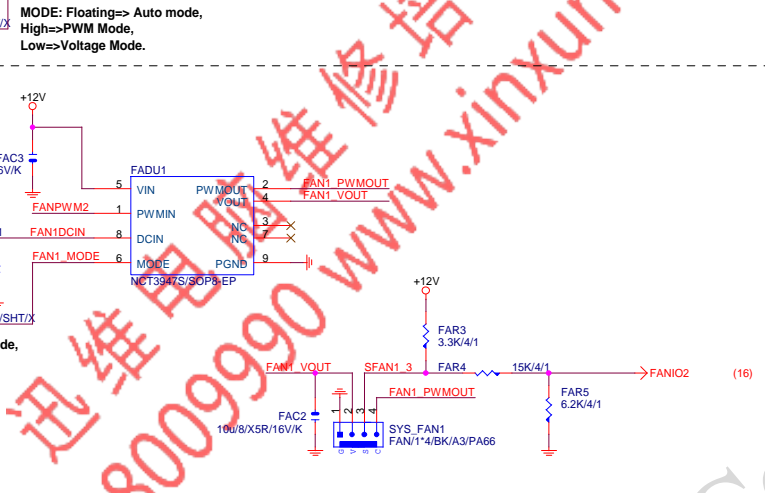


8個FAN時使用

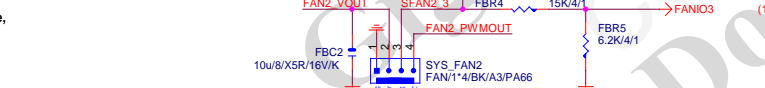
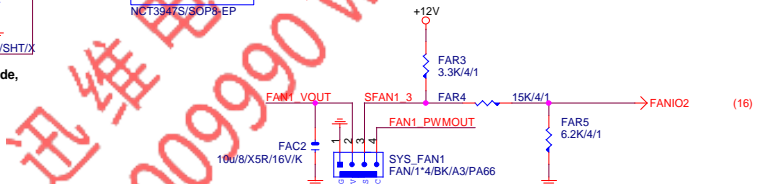


★Update 2015-04.24

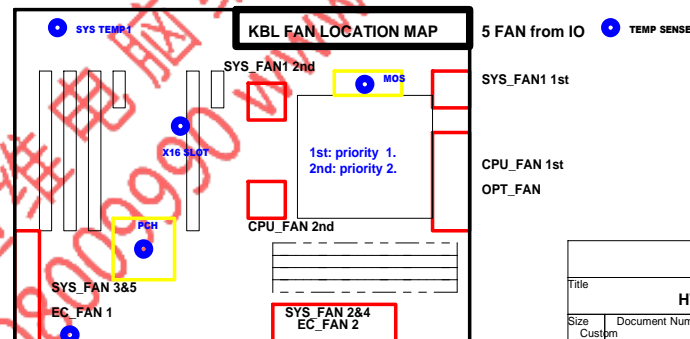
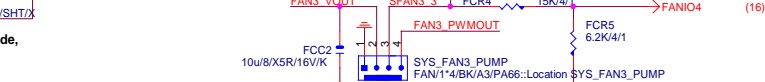
Gigabyte Technology			
Title		HWM,KB/MS, FAN CTRL	
Size	Document Number	Rev	
Custom	GA-Z270X-GAMING K5	1.02	
Date:	Friday, December 09, 2016	Sheet	17 of 76



CPU_OPT

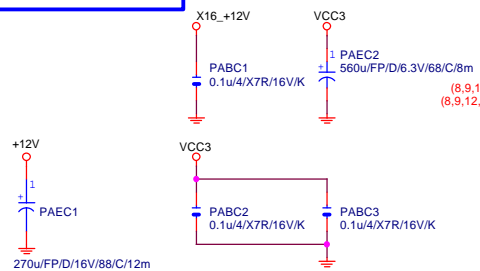


.....

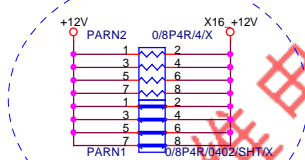


Rev 0.3

PCIEX16 AC 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
PA EXP SW TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA EXP SW TXN9 C
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) BANDWIDTH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

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

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

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

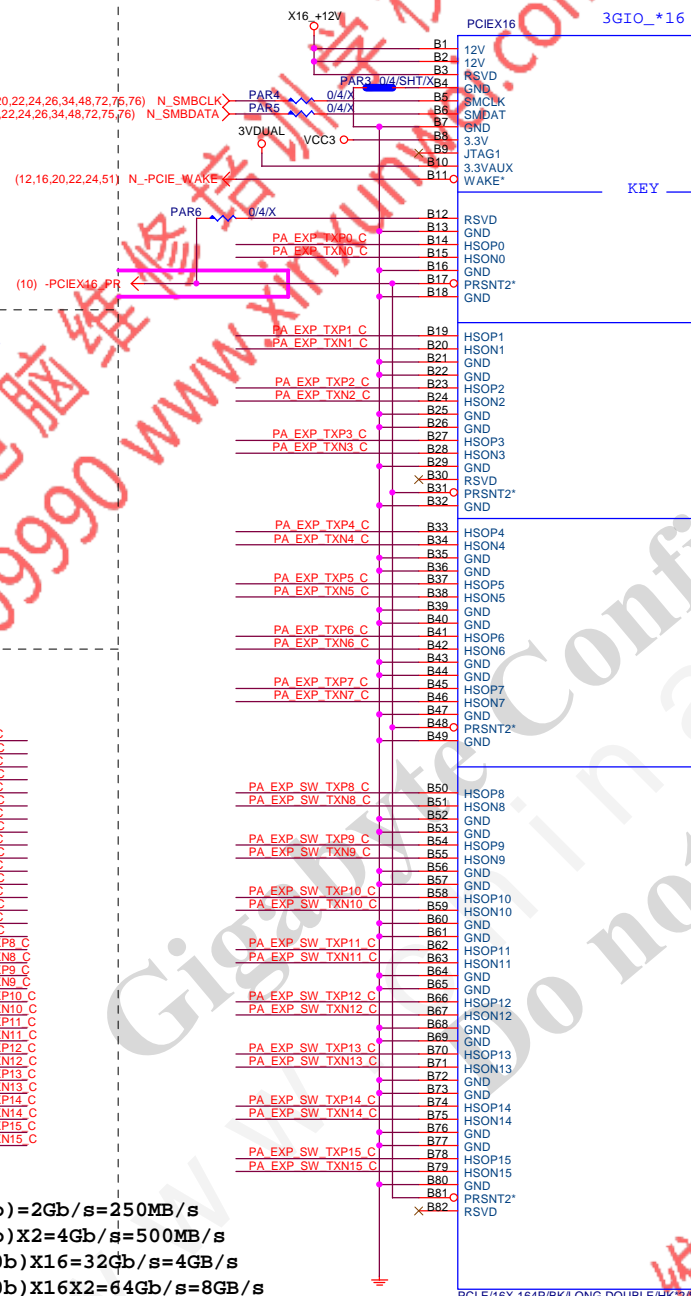
PCI-E REV:2.0--> 5GHZ

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

PCI-E REV:3.0--> 8GHZ

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

PCIEX16 SLOT



黑色金屬加強

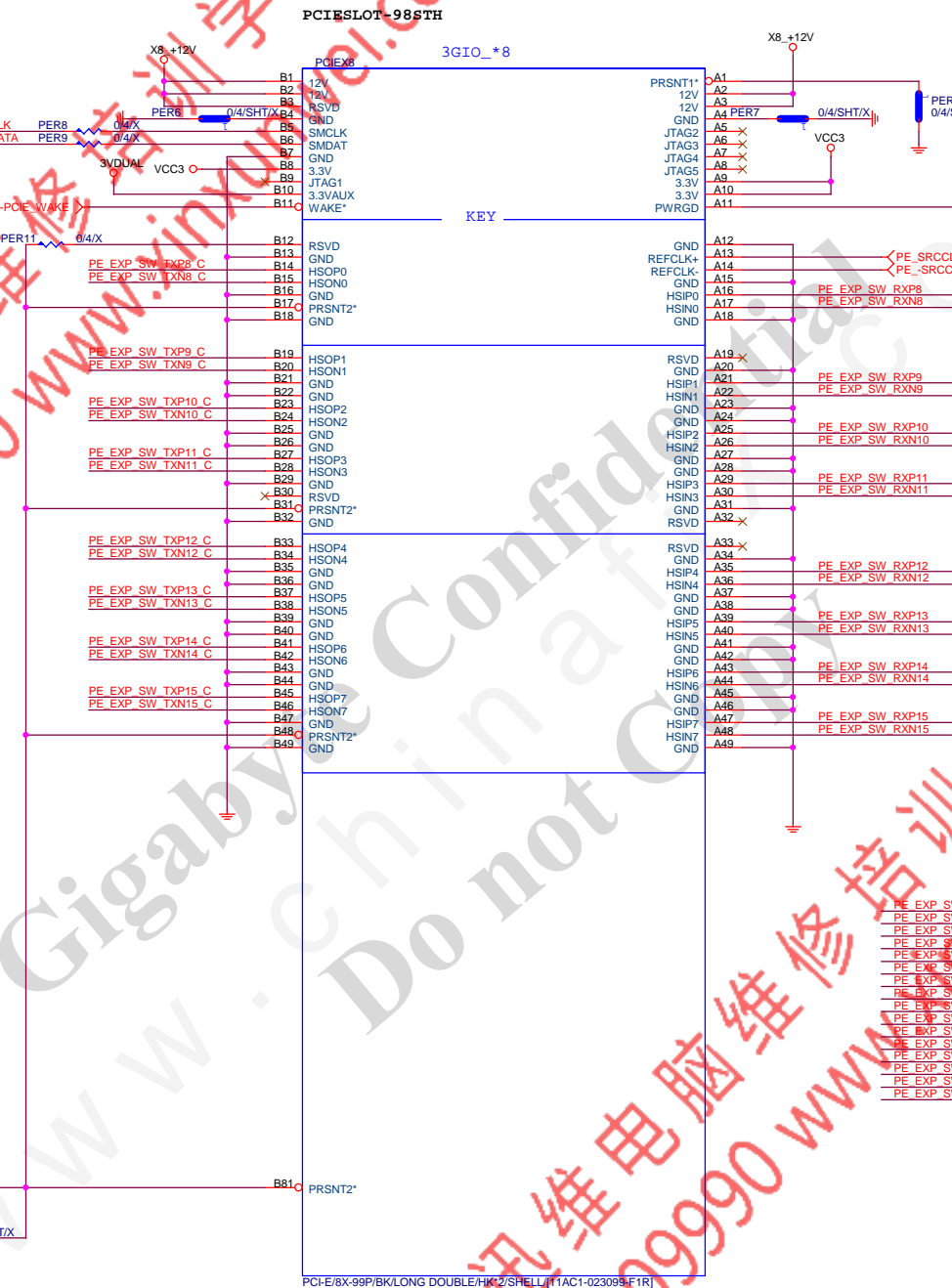
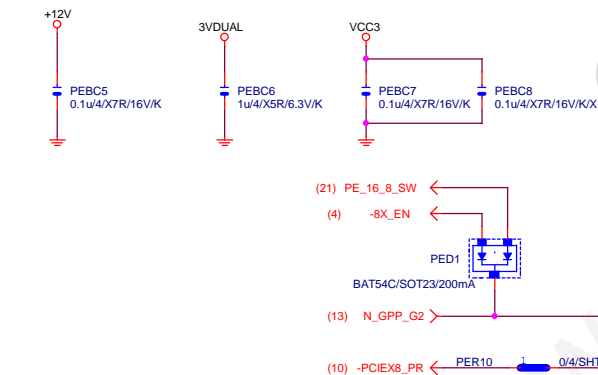
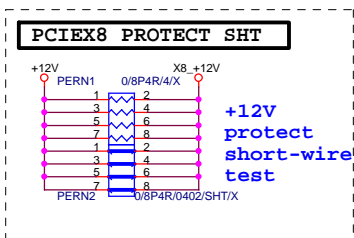
PCI-E/16X-164P/BK/LONG DOUBLE/HK/2/SHELL/11AC1-023104-L/R



Gigabyte Technology			
PCI EXPRESS * 16			
Title	Document Number	GA-Z270X-GAMING K9 Rev 1.02	
Size	Custom		
Date:	Friday, December 09, 2016	Sheet	19 of 76

Rev 0.3

www.xinxunwei.com 400-800-9990



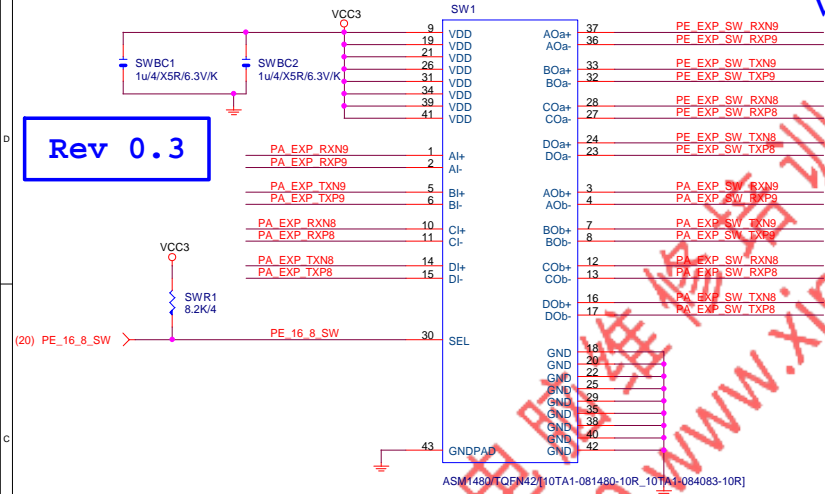
Rev 0.2

PE EXP SW TXP8	PEC7	0.22u/4/X5R/6.3V/K	PE EXP SW TXP8_C
PE EXP SW TXN8	PEC8	0.22u/4/X5R/6.3V/K	PE EXP SW TXN8_C
PE EXP SW TXP9	PEC9	0.22u/4/X5R/6.3V/K	PE EXP SW TXP9_C
PE EXP SW TXN9	PEC10	0.22u/4/X5R/6.3V/K	PE EXP SW TXN9_C
PE EXP SW TXP10	PEC11	0.22u/4/X5R/6.3V/K	PE EXP SW TXP10_C
PE EXP SW TXN10	PEC12	0.22u/4/X5R/6.3V/K	PE EXP SW TXN10_C
PE EXP SW TXP11	PEC13	0.22u/4/X5R/6.3V/K	PE EXP SW TXP11_C
PE EXP SW TXN11	PEC14	0.22u/4/X5R/6.3V/K	PE EXP SW TXN11_C
PE EXP SW TXP12	PEC15	0.22u/4/X5R/6.3V/K	PE EXP SW TXP12_C
PE EXP SW TXN12	PEC16	0.22u/4/X5R/6.3V/K	PE EXP SW TXN12_C
PE EXP SW TXP13	PEC17	0.22u/4/X5R/6.3V/K	PE EXP SW TXP13_C
PE EXP SW TXN13	PEC18	0.22u/4/X5R/6.3V/K	PE EXP SW TXN13_C
PE EXP SW TXP14	PEC19	0.22u/4/X5R/6.3V/K	PE EXP SW TXP14_C
PE EXP SW TXN14	PEC20	0.22u/4/X5R/6.3V/K	PE EXP SW TXN14_C
PE EXP SW TXP15	PEC21	0.22u/4/X5R/6.3V/K	PE EXP SW TXP15_C
PE EXP SW TXN15	PEC22	0.22u/4/X5R/6.3V/K	PE EXP SW TXN15_C

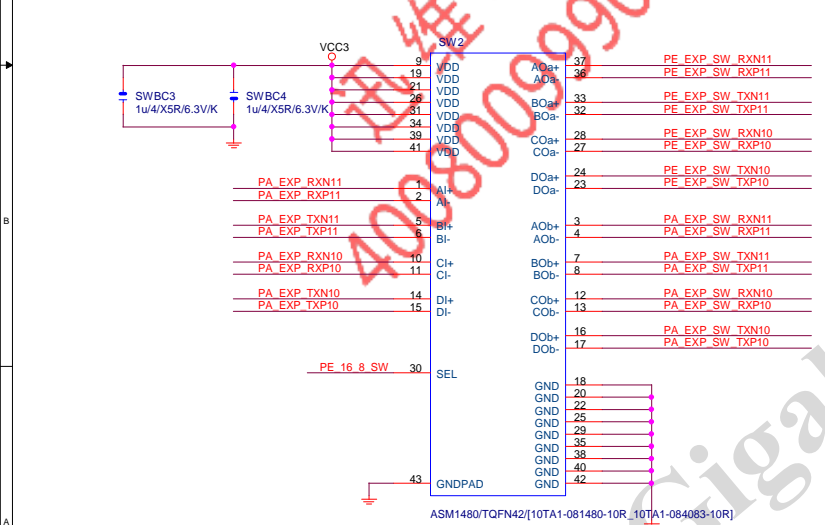
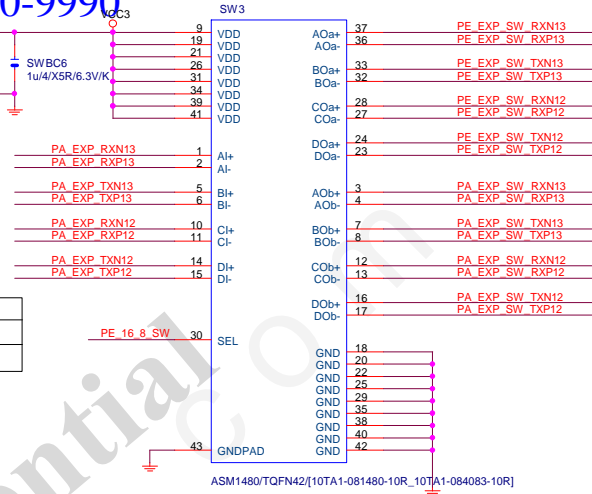
黑色金屬加強

Gigabyte Technology			
Title			
PCI EXPRESS X8			
Size			
Custom			
Document Number			
GA-Z270X-GAMING K5			
Date			
Friday, December 09, 2016			
Sheet			
20			
of			
76			
Rev			
1.02			

Rev 0.3



Function	SEL
xI--> xOa	L
xI--> xOb	H



PA EXP SW RXP18..15] >>> PA_EXP_SW_RXP18..15] (19)

PA EXP SW RXN8..15] >>> PA_EXP_SW_RXN8..15] (19)

PA EXP SW TXP18..15] >>> PA_EXP_SW_TXP18..15] (19)

PA EXP SW TXN8..15] >>> PA_EXP_SW_TXN8..15] (19)

PE EXP SW RXP18..15] >>> PE_EXP_SW_RXP18..15] (20)

PE EXP SW RXN8..15] >>> PE_EXP_SW_RXN8..15] (20)

PE EXP SW TXP18..15] >>> PE_EXP_SW_TXP18..15] (20)

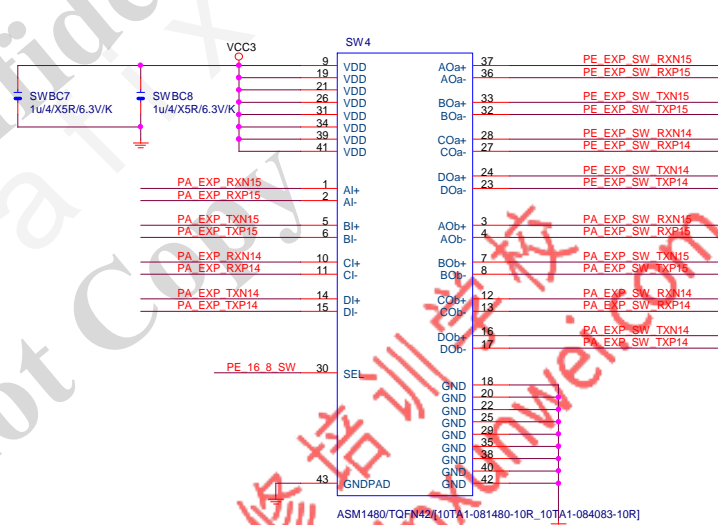
PE EXP SW TXN8..15] >>> PE_EXP_SW_TXN8..15] (20)

PA EXP RXP10..15] >>> PA_EXP_RXP10..15] (4,19)

PA EXP RXN10..15] >>> PA_EXP_RXN10..15] (4,19)

PA EXP TXP10..15] >>> PA_EXP_TXP10..15] (4,19)

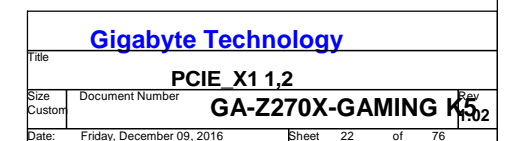
PA EXP TXN10..15] >>> PA_EXP_TXN10..15] (4,19)



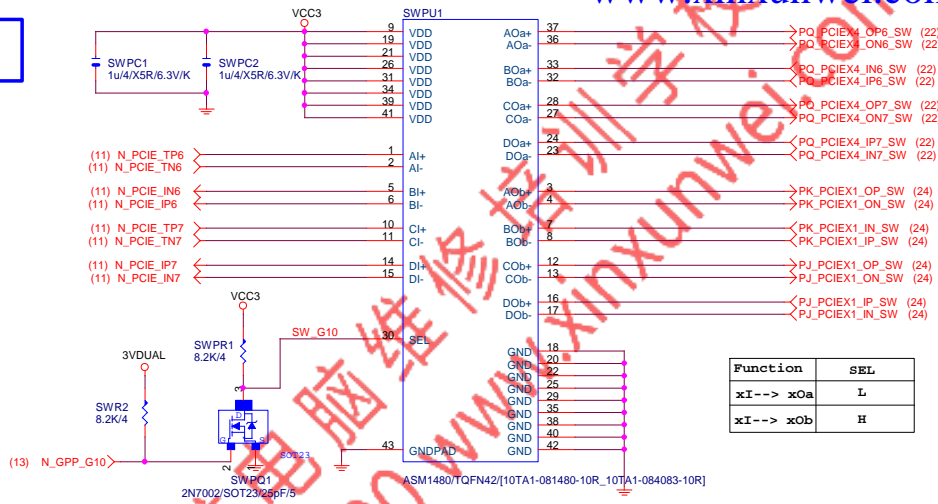
Gigabyte Technology

PCI EXPRESS X16 SWITCH

Title	Document Number	Rev
Size	Custom	GA-Z270X-GAMING K5 1.02
Date:	Friday, December 09, 2016	Sheet 21 of 76



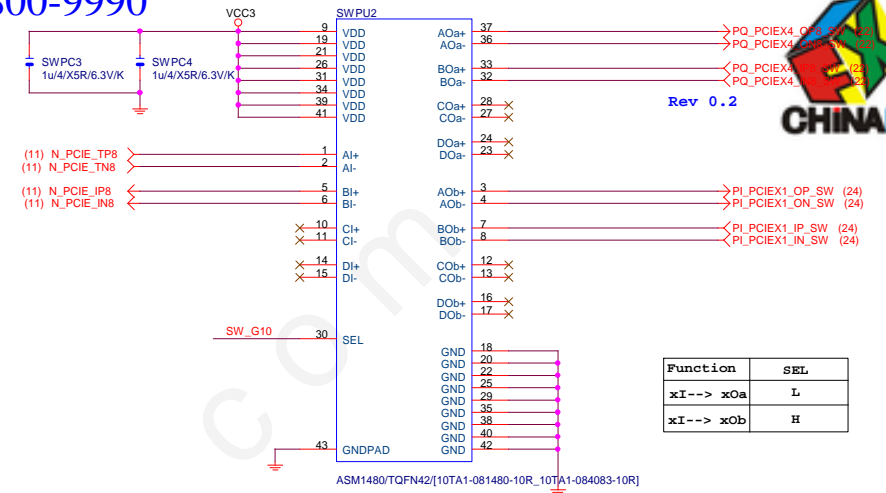
Rev 0.1



Rev 0.2

www.xinxunwei.com 400-800-9990

Rev 0.2

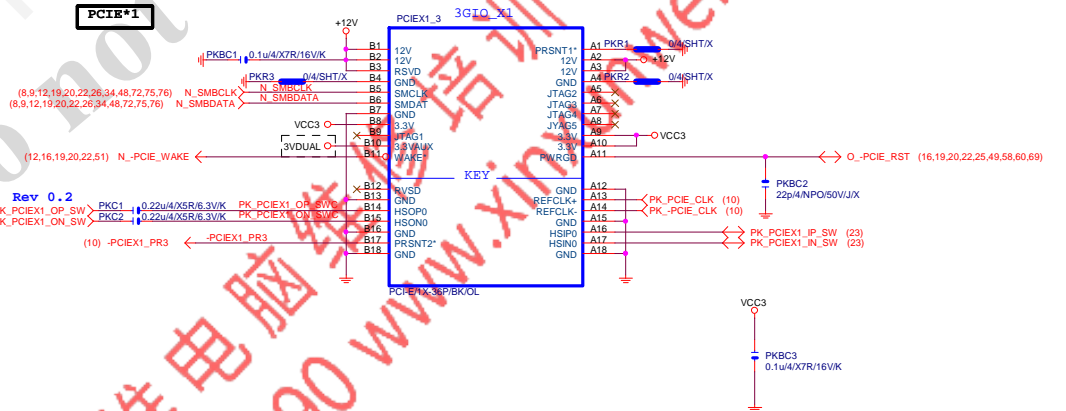


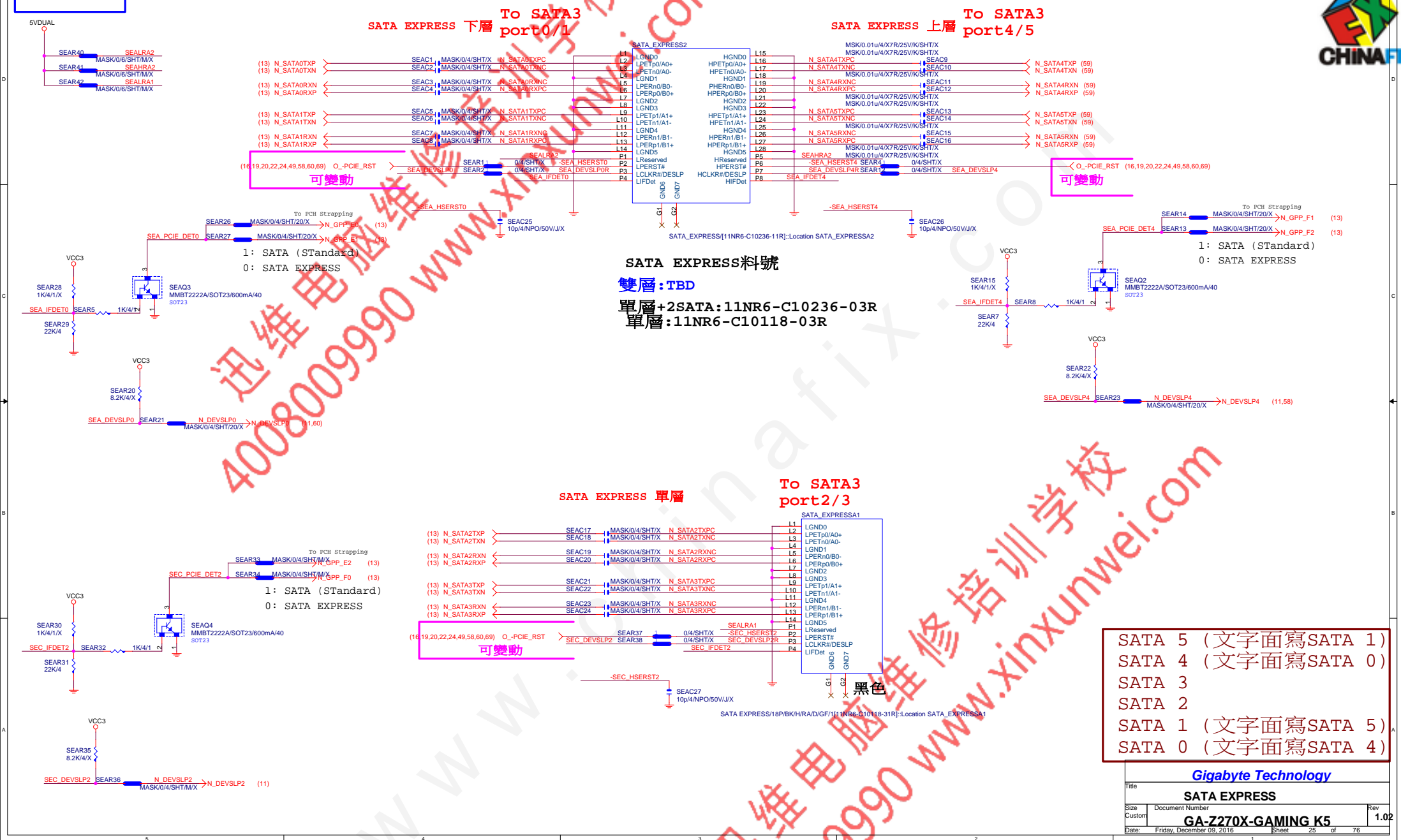
Gigabyte Technology
SWITCH

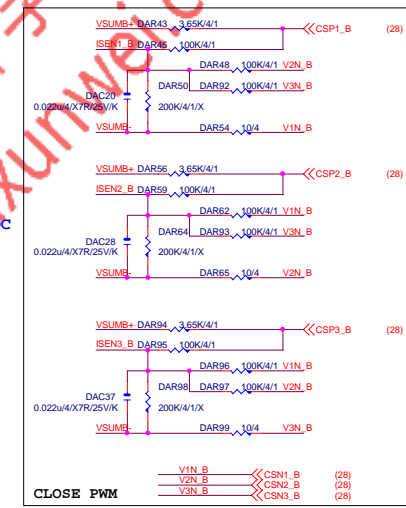
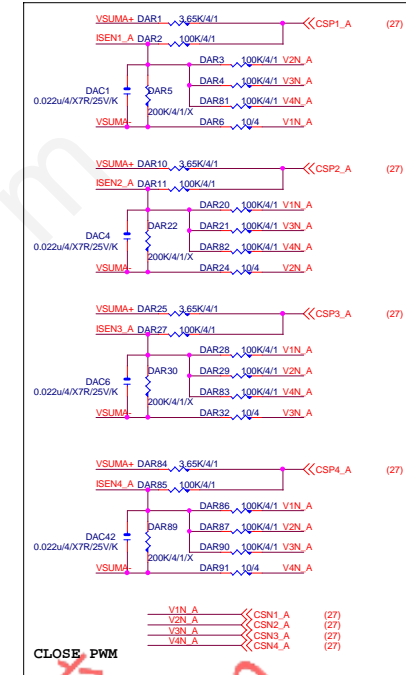
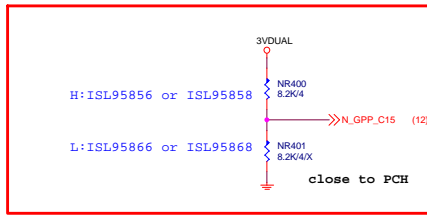
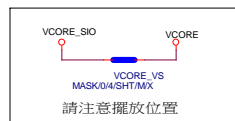
Title

Size Custom Document Number GA-Z270X-GAMING K5 Rev 1.02

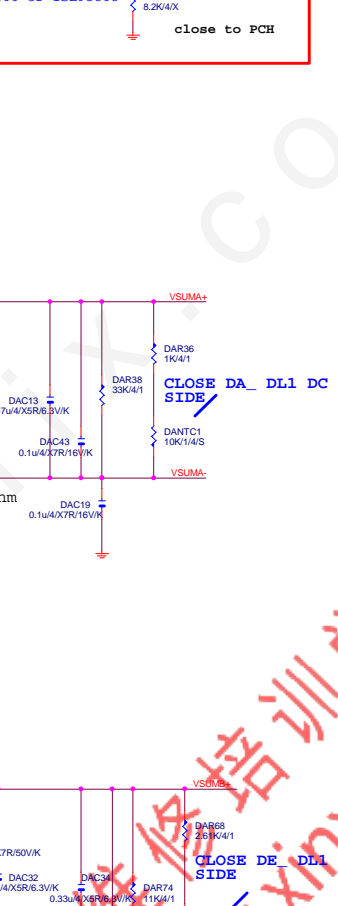
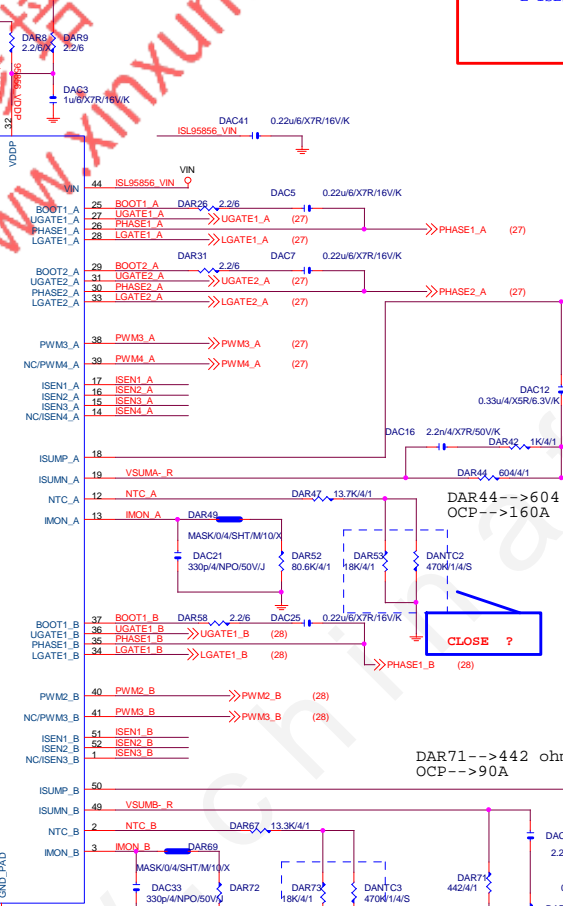
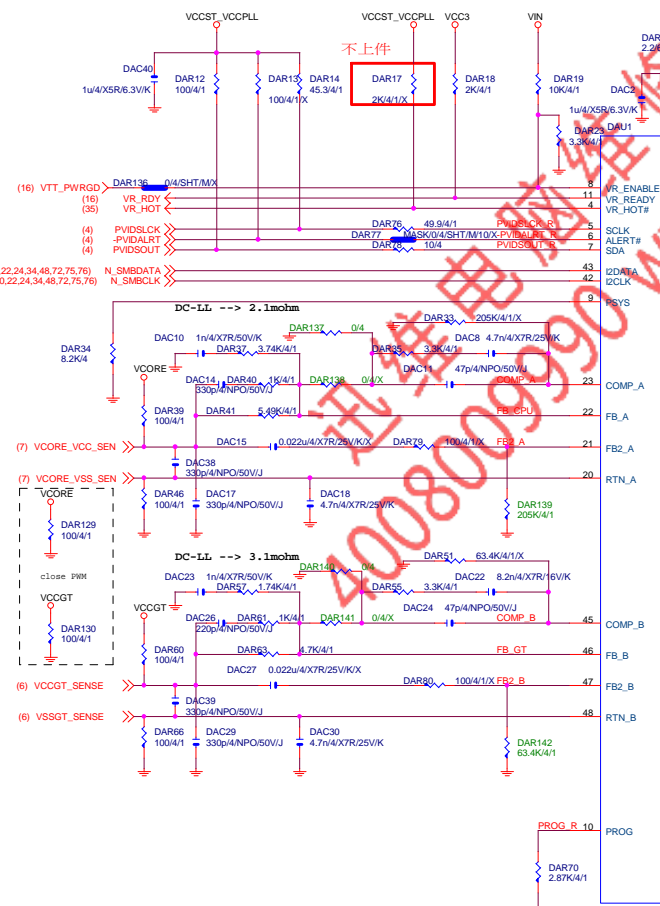
Date: Friday, December 09, 2016 Sheet 23 of 76



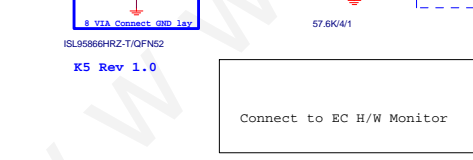




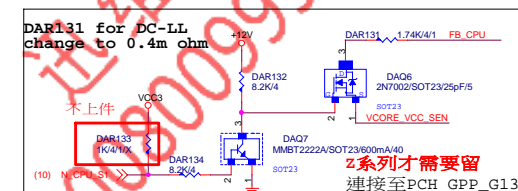
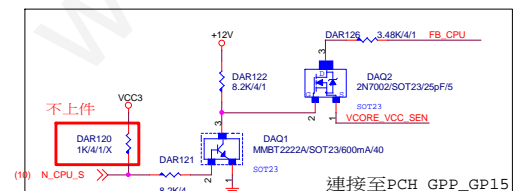
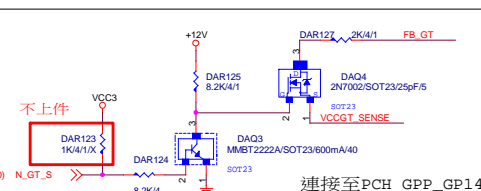
GIGABYTE™			
Title	ISL95866_PWM		
Size	Document Number	Rev	1.02
Custom	GA-Z270X-GAMING K5		
Date:	Friday, December 09, 2016	Sheet	26 of 76



Vcore	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



Connect to EC H/W Monitor

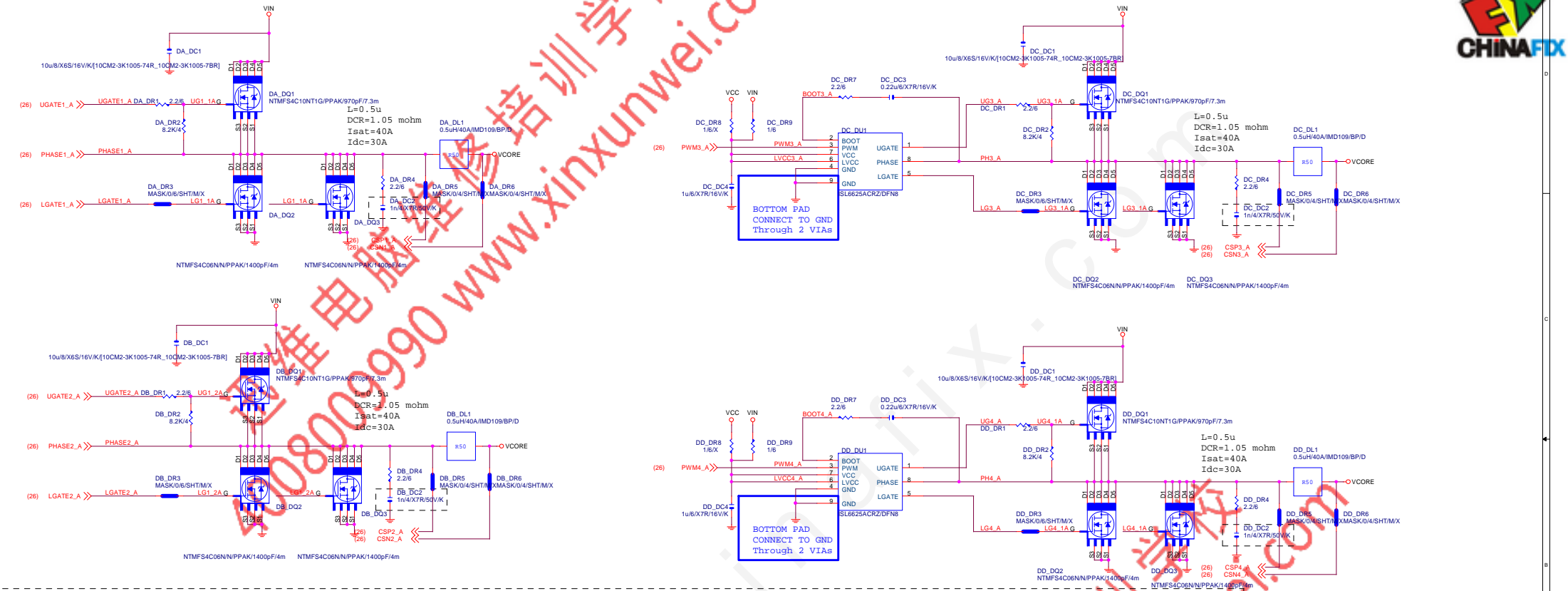


DAR131 for DC-LL change to 0.4m ohm

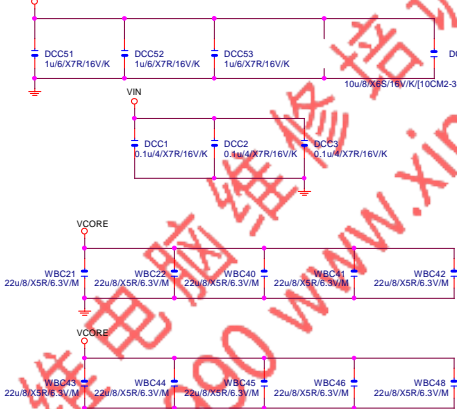
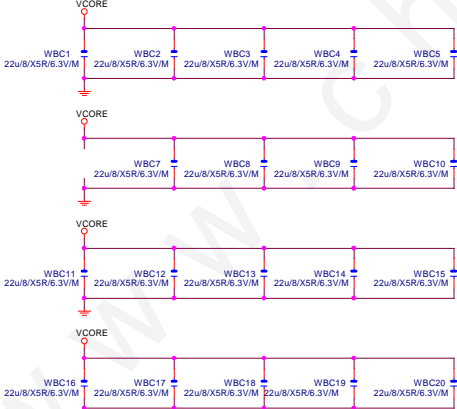
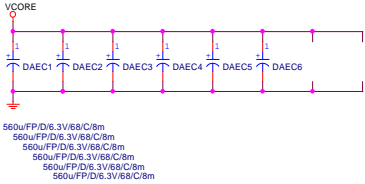
2系列才需要留

連接至PCH GPP_GP13

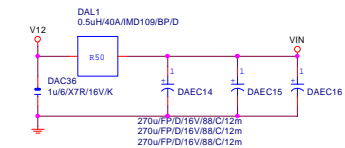
VCORE



VCORE CAP 560u*8PCS 22u*29PCS



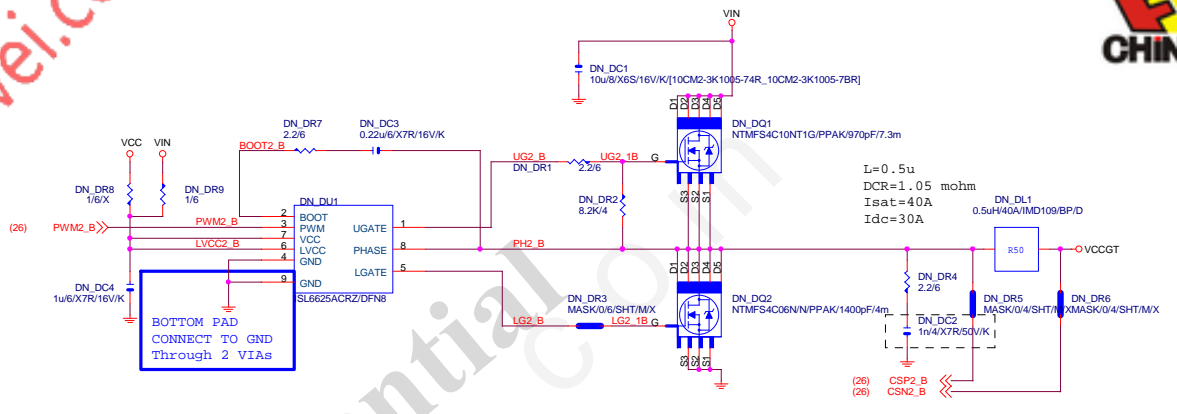
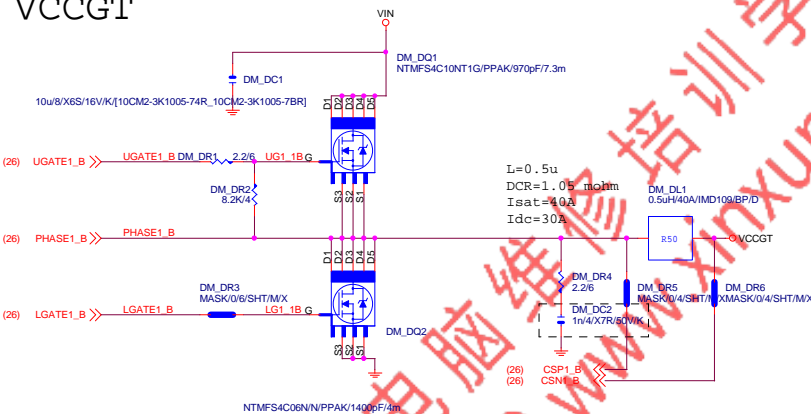
VIN CAP 270u*3PCS



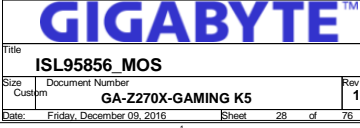
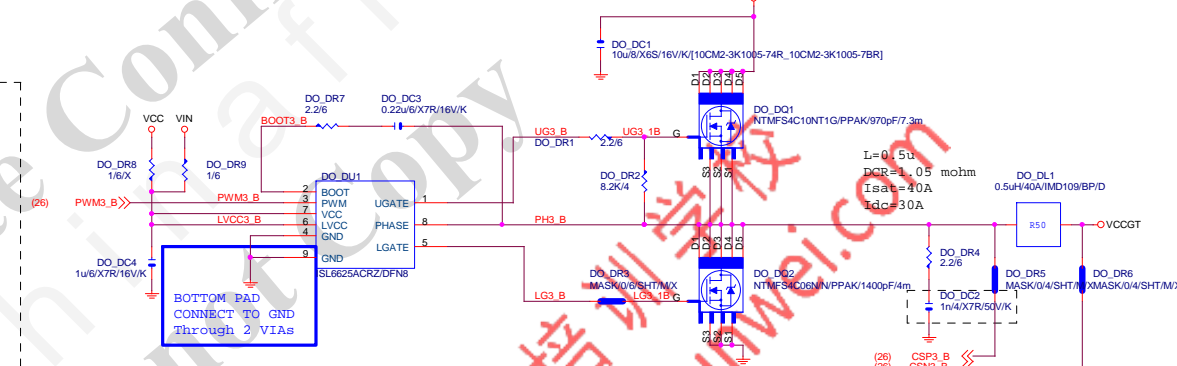
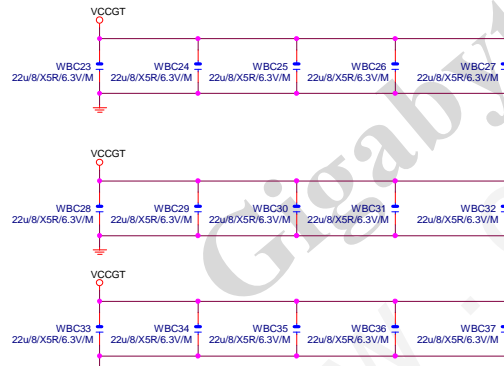
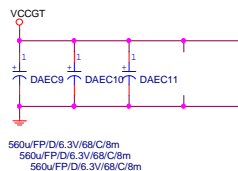
GIGABYTE™			
ISL95856_MOS			
Title	Document Number	Rev	
Size	Custom	GA-Z270X-GAMING K5	
Date	Friday, December 09, 2016	Sheet	27 of 76

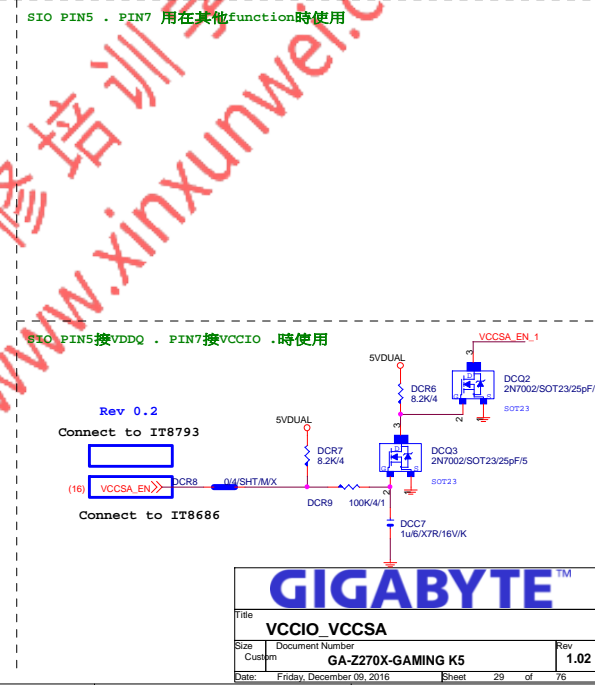
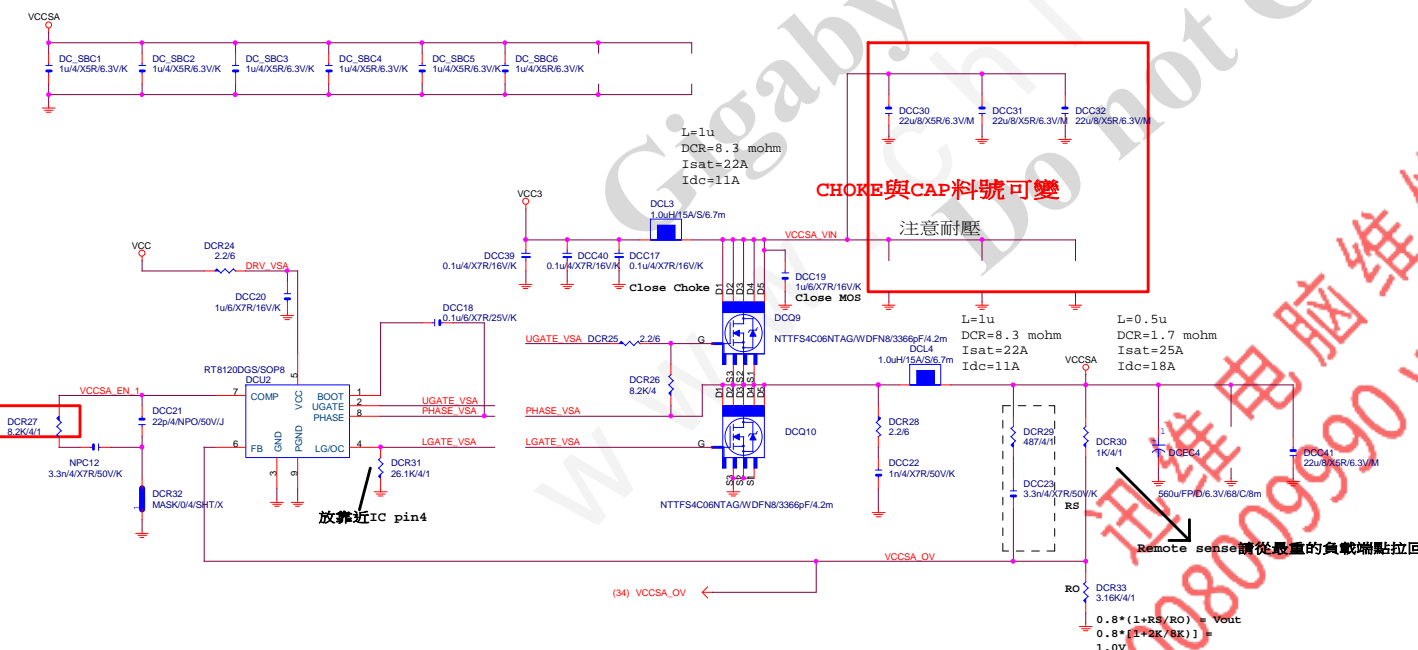
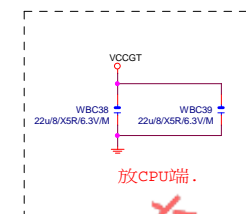
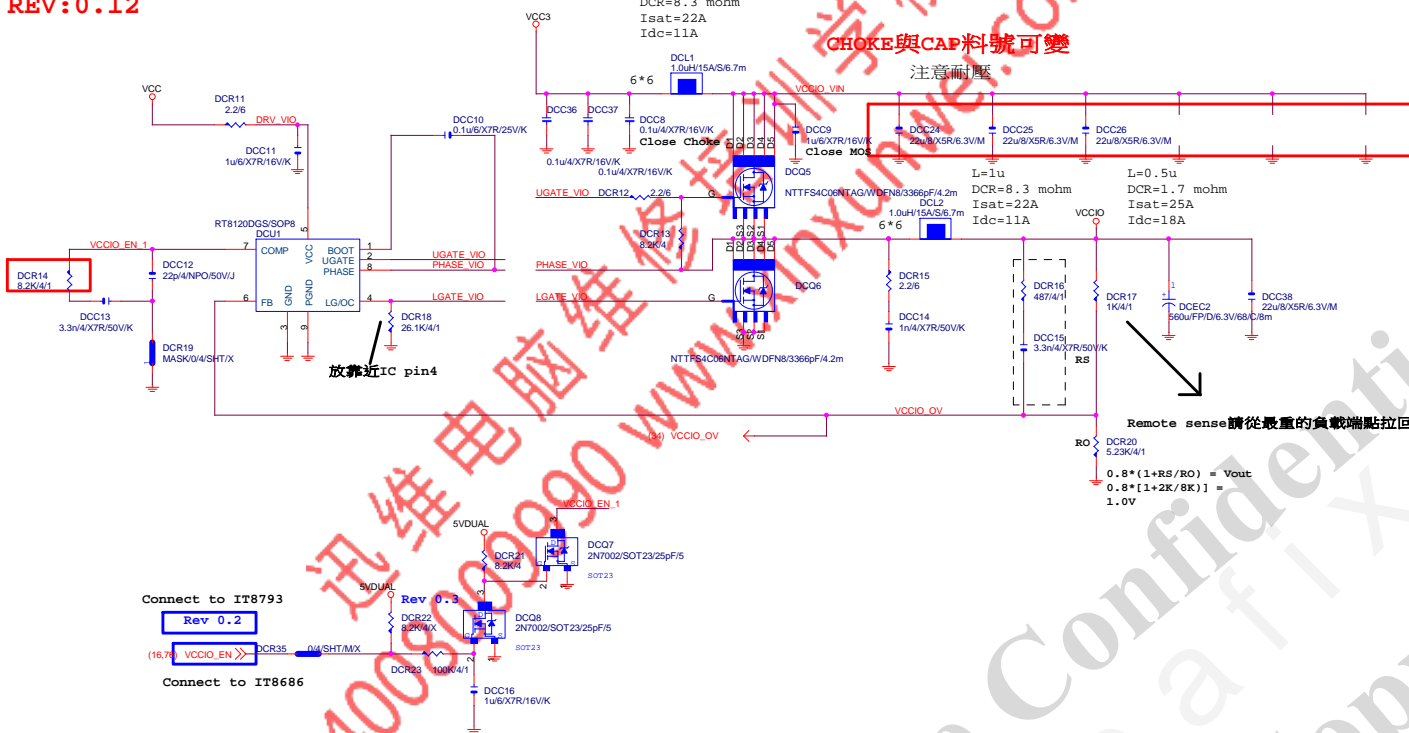


(26) LGATE1_B \gg LG

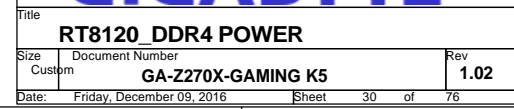


VCCGT





CHOKES與CAP料號可變

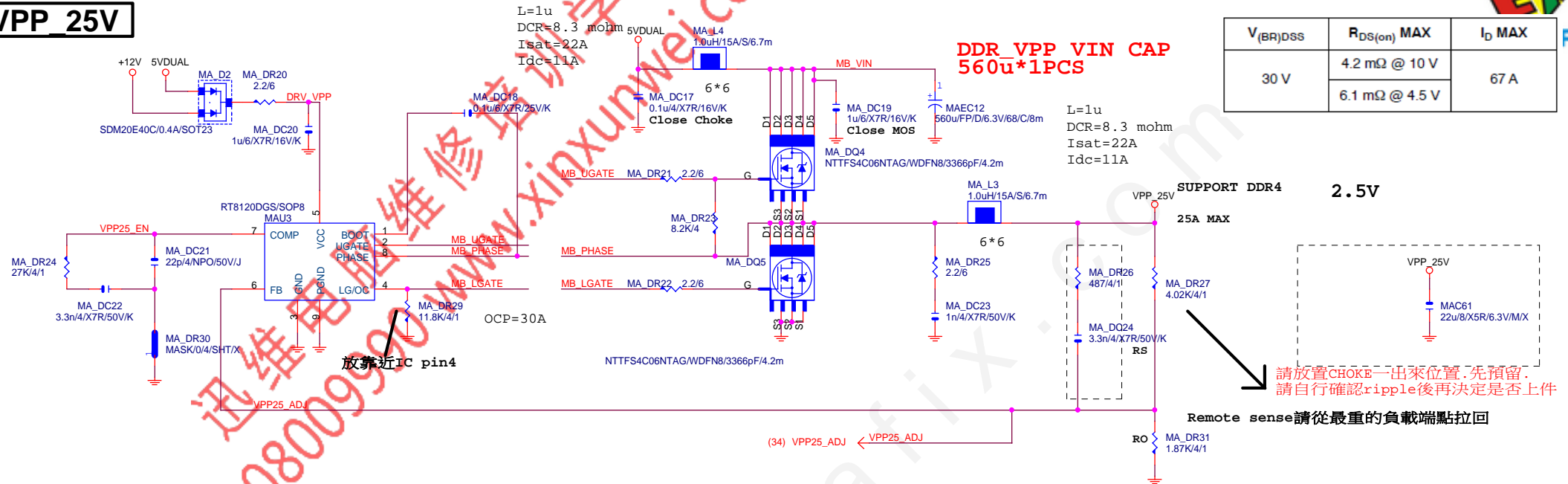


REV:0.1

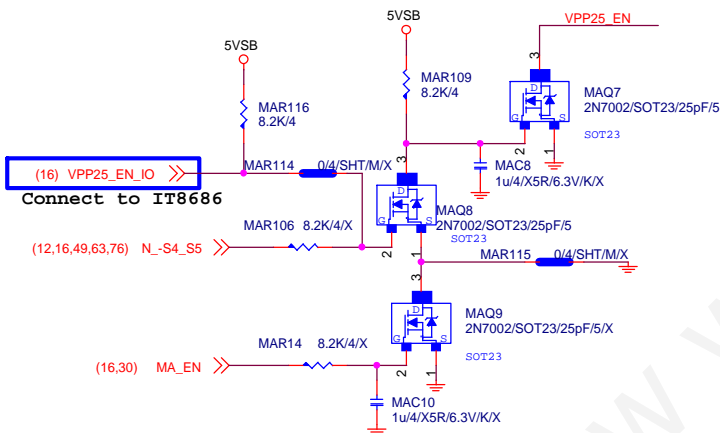
VPP_25V

www.xinxunwei.com 400-800-9990

CHOKE與CAP料號可變



PWR_SEQ

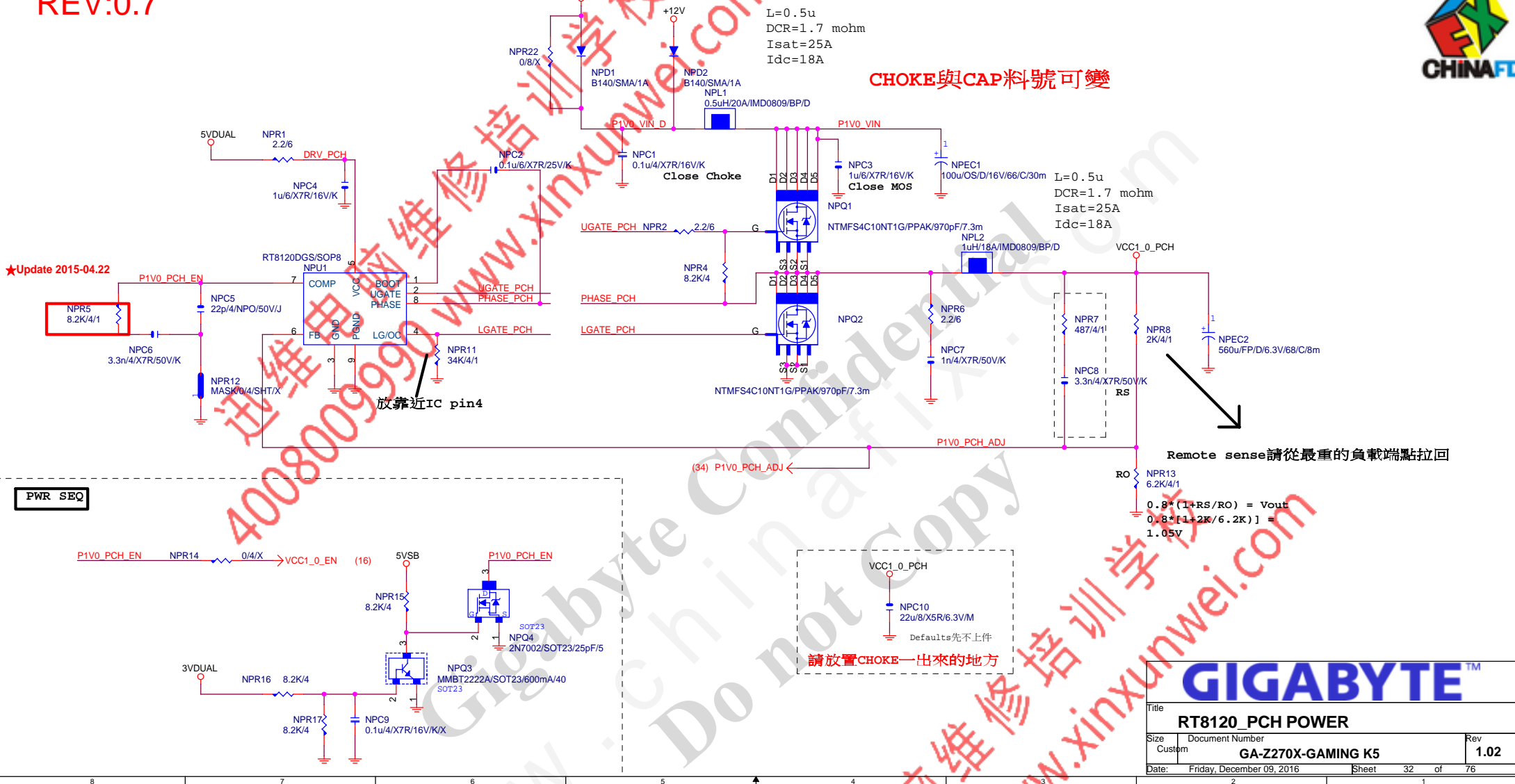


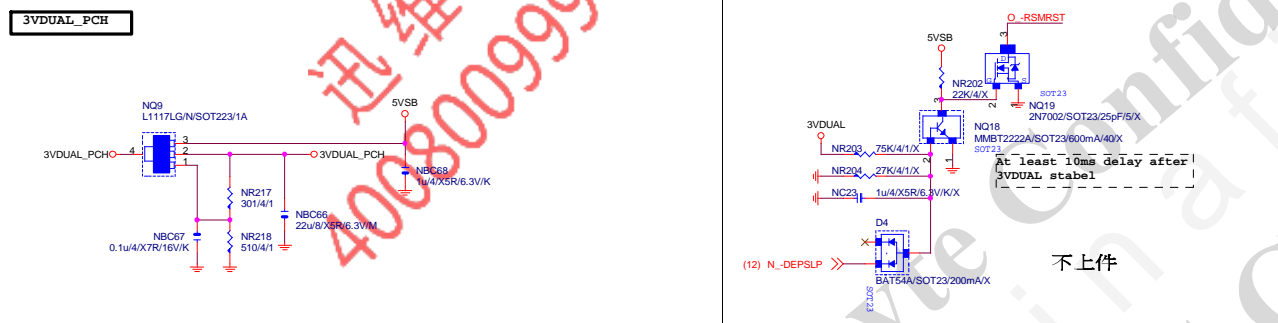
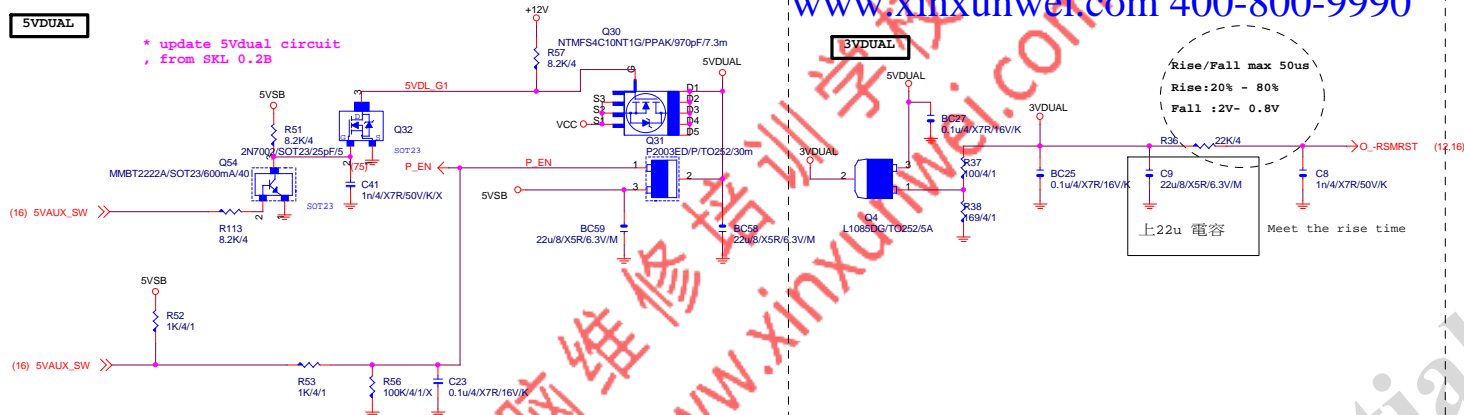
VPP CAP 560u*1PCS

* 大電容 x1

GIGABYTE™			
Title			
RT8120_VPP25 POWER			
Size	Document Number	Rev	
Custom	GA-Z270X-GAMING K5	1.02	
Date:	Friday, December 09, 2016	Sheet	31 of 76

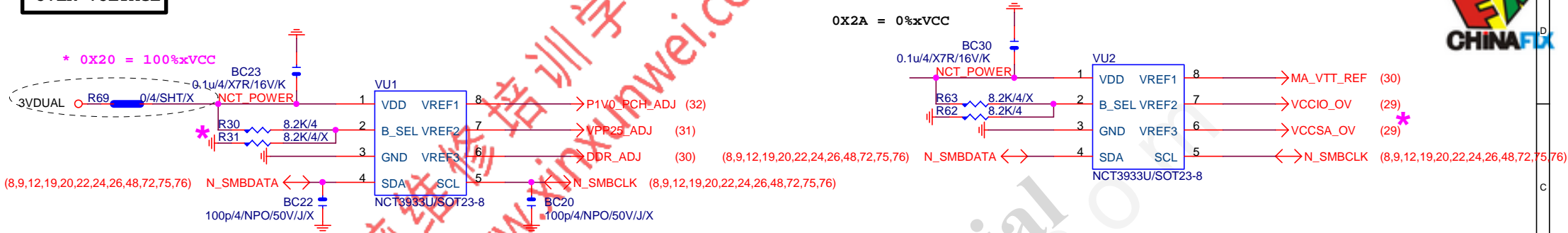
www.xinxunwei.com 400-800-9990







OVER VOLTAGE

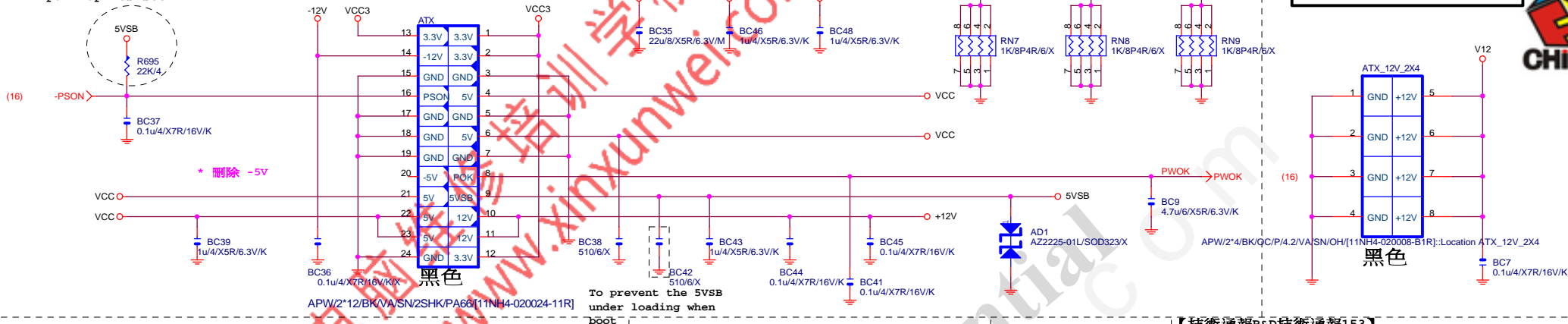


NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology			
Title			
CPU CORE VR-2			
Size Custom	Document Number	GA-Z270X-GAMING K5	Rev 1.02
Date: Friday, December 09, 2016	Sheet 34	of 76	

ATXX4 POWER CONNECTOR

(16)

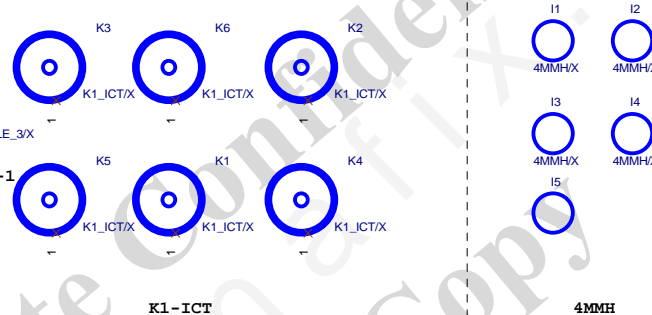
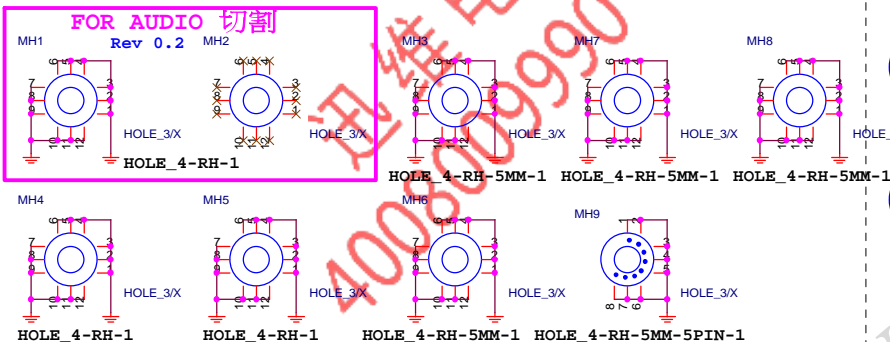


FOR AUDIO 切割

MH1 **Rev 0.2** MH2

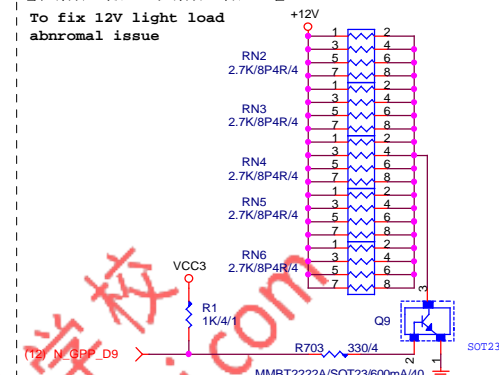
HOLE_3X

HOLE_4-RH-1



【技術通報R&D技術通報153】

To fix 12V light load
abnromal issue

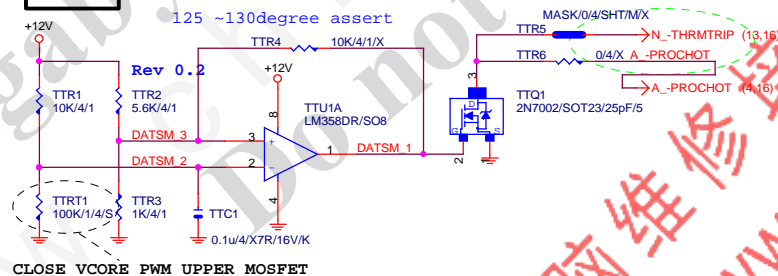


-PROHOT * 保留 ?



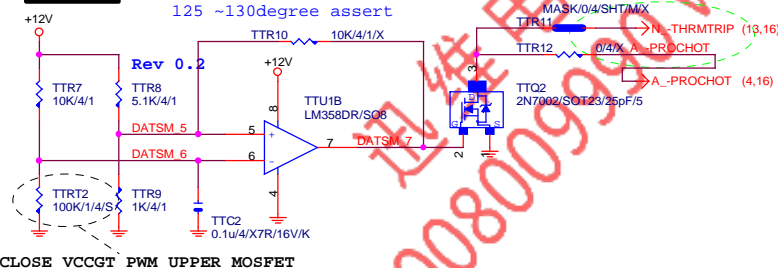
-PROHOT

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



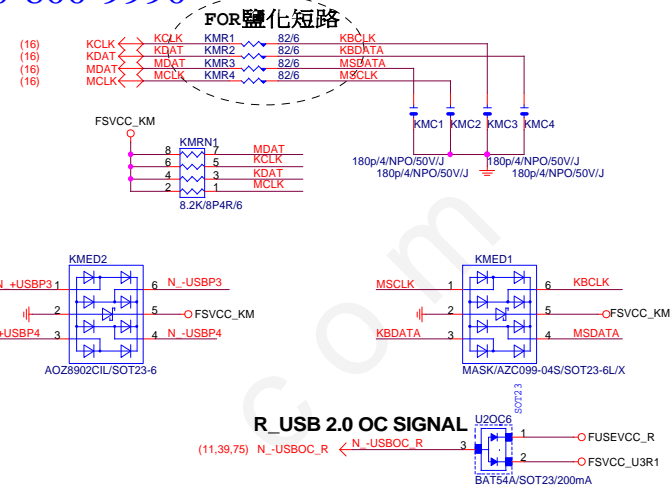
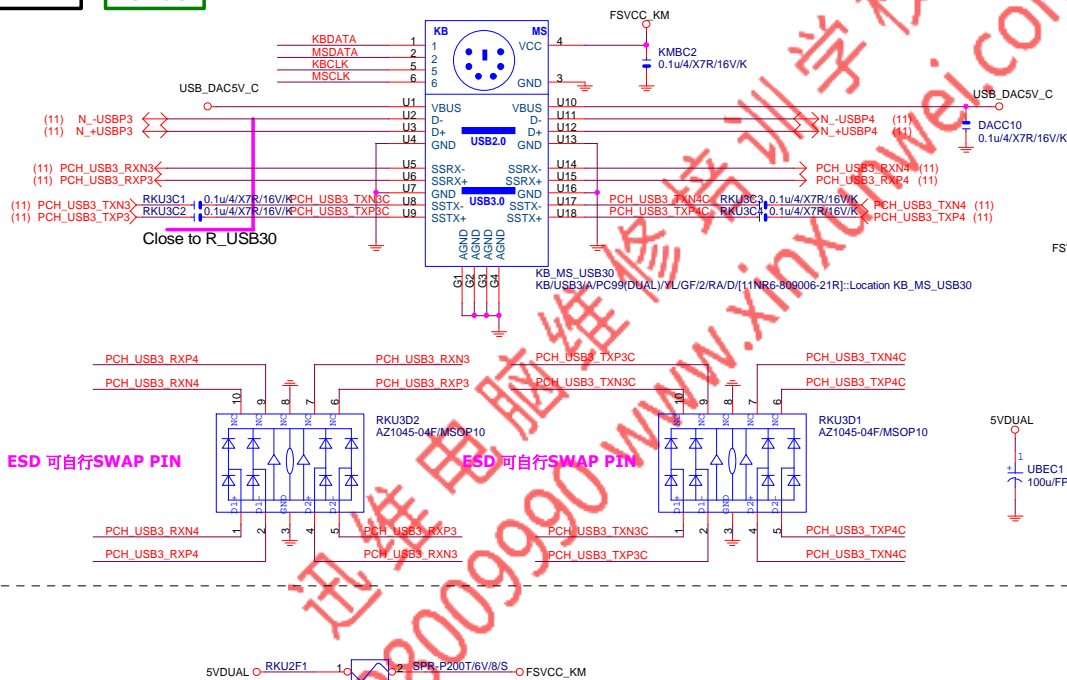
-PROHOT

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



Gigabyte Technology

Title				ATX POWER CONNECTOR			
Size	Document Number						Rev
Custom	GA-Z270X-GAMING K5						1.02
Date:	Friday, December 09, 2016			Sheet	35	of	76

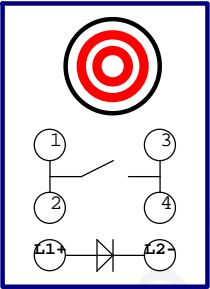




POWER

Reset

Clear CMOS



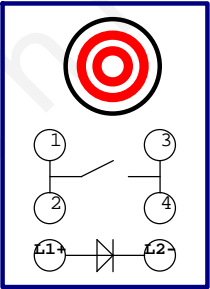
OC KEY

Rev 0.2

K5 Rev 0.1

PCH:GPP_D6

PCH:GPP_D4



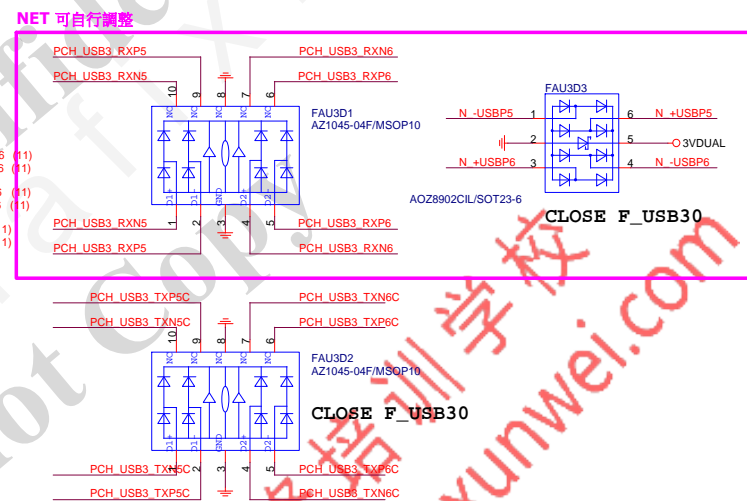
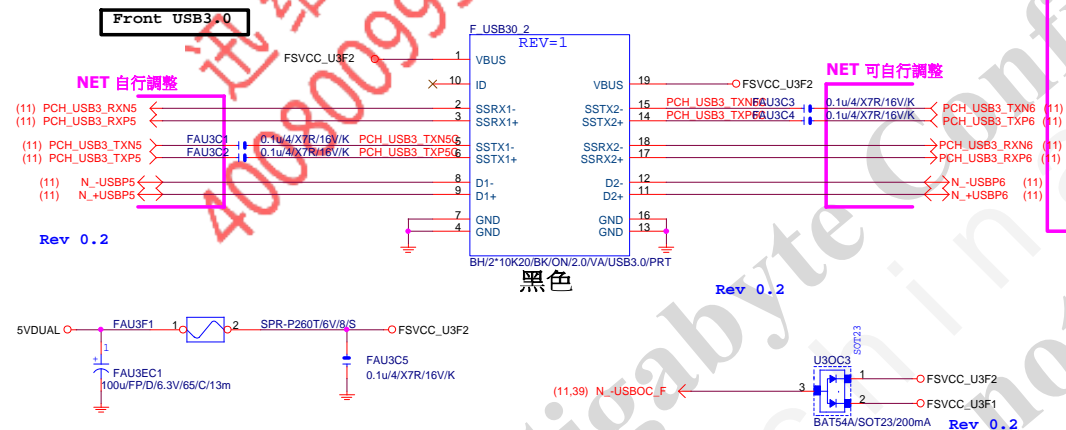
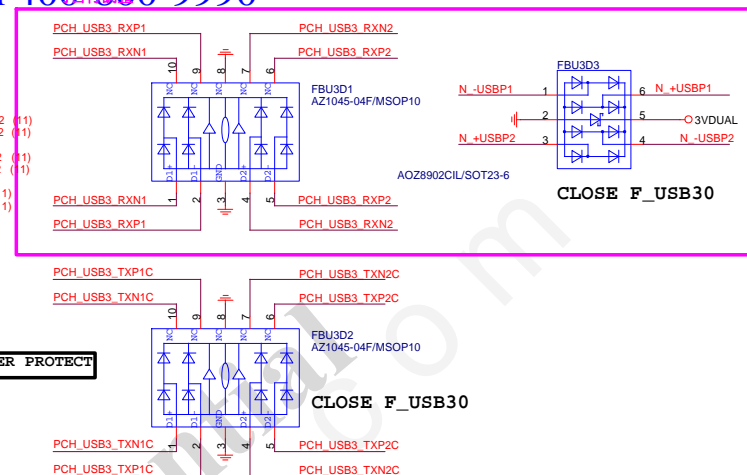
ECO KEY

PCH:GPP_C9

PCH:GPP_B20

Gigabyte Technology			
Title			
OC BOTTOM			
Size	Document Number		
Custom	GA-Z270X-GAMING K5		
Date:	Friday, December 09, 2016	Sheet	37 of 76

Rev 1.02



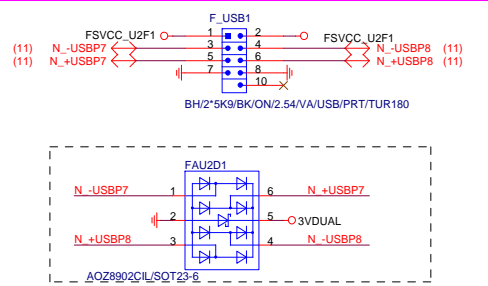
Rev: 0.52

FRONT USB1

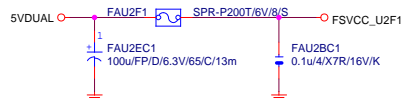
www.xinxunwei.com 400-800-9990



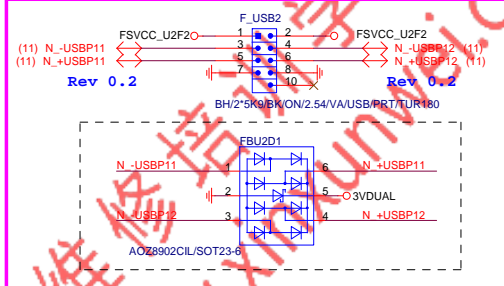
NET 可變



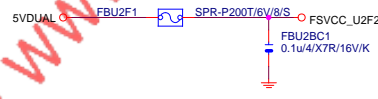
Close to connector
FUSE 2 Port 1 Fuse 2A



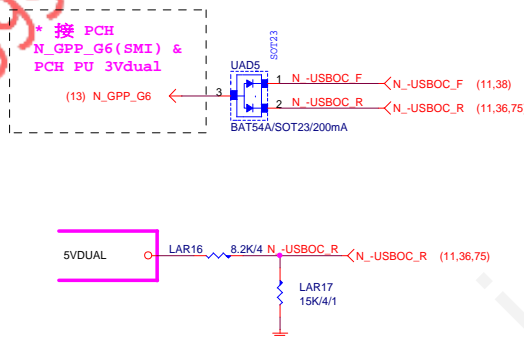
NET 可變



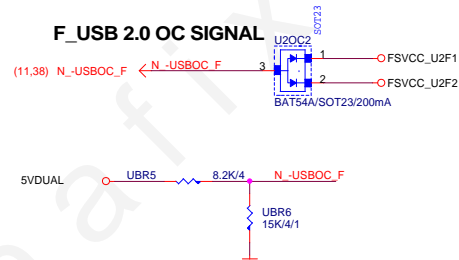
Close to connector
FUSE 2 Port 1 Fuse 2A



* 接 PCH
N_GPP_G6(SMI) &
PCH PU 3vdual



F_USB 2.0 OC SIGNAL

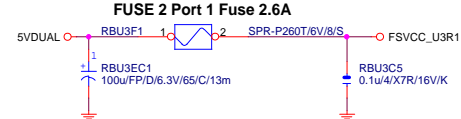
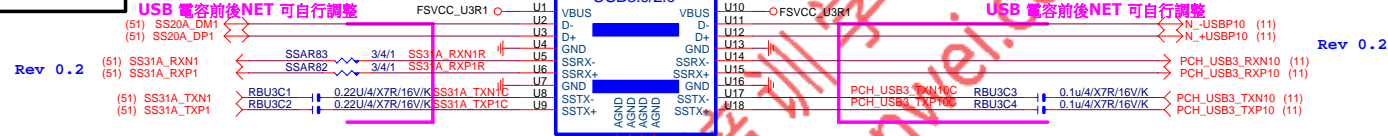


Gigabyte Technology

Title			
USB2.0			
Size	Document Number	GA-Z270X-GAMING K5	Rev
Custom			1.02
Date:	Friday, December 09, 2016	Sheet	39 of 76

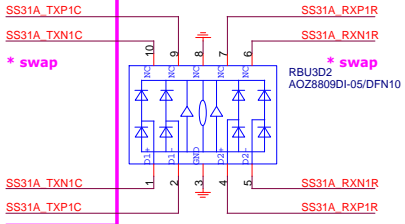


R_USB30

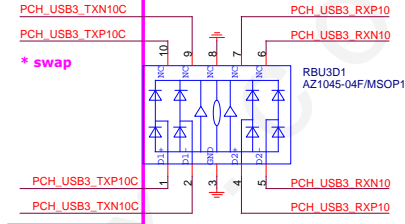


USB30_20

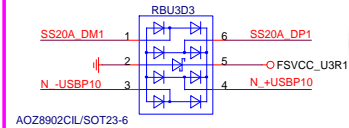
NET 可自行調整



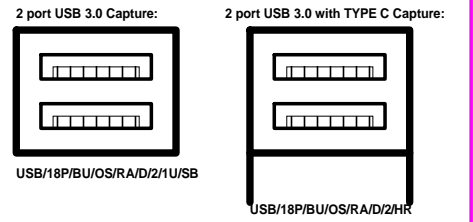
NET 可自行調整



ESD 可自行SWAP PIN



CONNECTOR 自行調整



Gigabyte Technology

Title			KB_MS_USB3, R_USB30
Size	Document Number	Rev	
Custom	GA-Z270X-GAMING K5	1.02	
Date:	Friday, December 09, 2016	Sheet	40 of 76

Rev 0.4

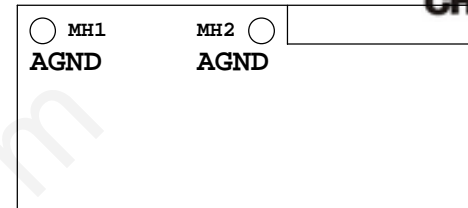
www.xinxunwei.com 400-800-9990



ALC1220 5H+1S+AMP

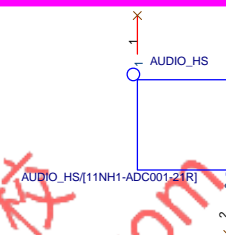
LAYOUT注意:螺絲孔下AGND方式
1. MH1,MH2全部下AGND

Rev 0.2



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

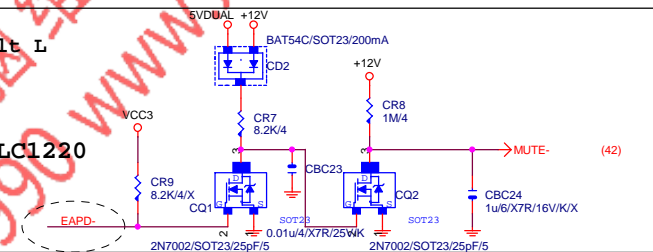
Chemicon音效電容: 11CE2-651000-05R

EAPD: Default L

H : ON

L : OFF

Close to ALC1220



Gigabyte Technology

ALC1220

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

迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Gigabyte Confidential
www.chinafix.com
Do not Copy

迅维电脑维修培训学校
4008009990 www.xinxunwei.com

GIGABYTE™			
Title Creative Sound3Di ZxR			
Size	Document Number		Rev
Custom	GA-Z270X-GAMING K5		1.02
Date	Friday, December 09, 2016		Sheet 43 of 76



迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Gigabyte Confidential
www.chinafix.com
Do not Copy

迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Gigabyte Technology		
Title		
Creative Sound3Di ZxR		
Size	Document Number	Rev
Custom	GA-Z270X-GAMING K5	1.02
Date:	Friday, December 09, 2016	Sheet 44 of 76



迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Gigabyte Confidential
www.chinafix.com
Do not Copy

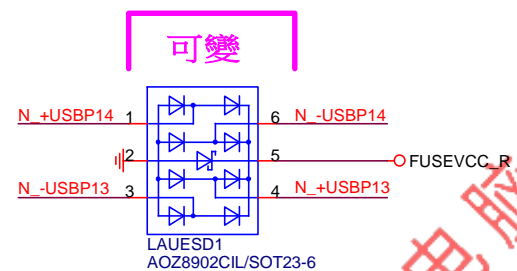
迅维电脑维修培训学校
4008009990 www.xinxunwei.com

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

USB_LAN CONNECTOR R1.06

RMA ESD PROTECT

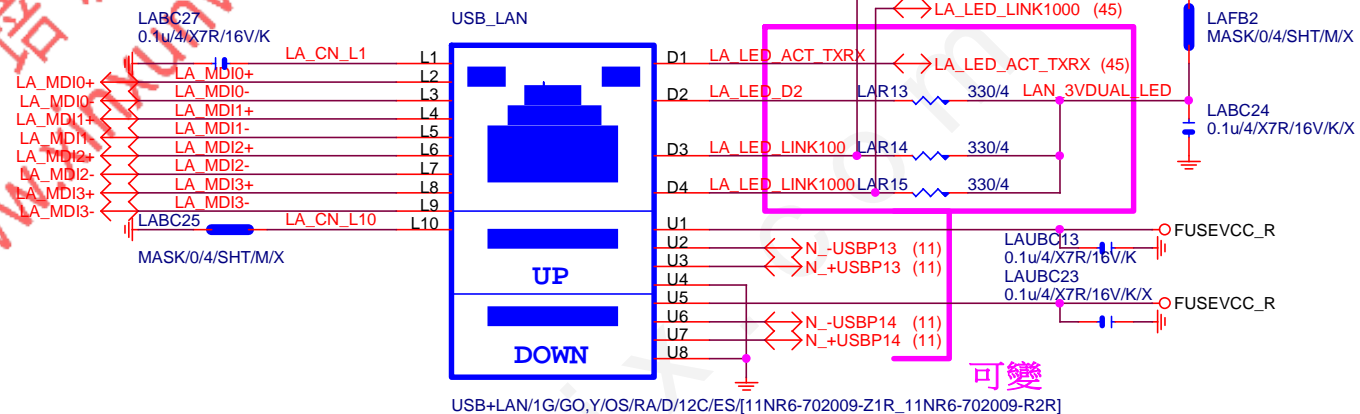
note:可變更USB NAME



USB_LAN CONNECTOR

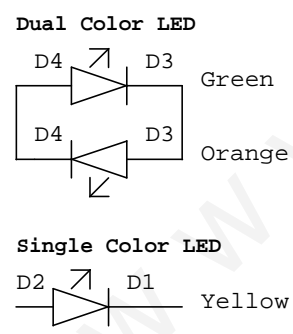
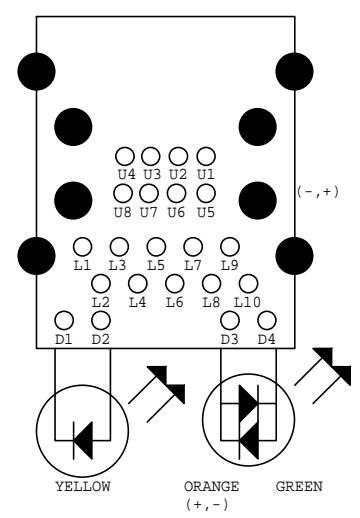
Rev 0.2

[E2500]



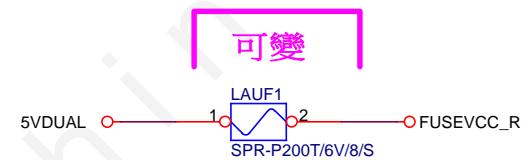
LA_MDIO-->100歐姆:[20/4/8/4/20]

USB_LAN LAYOUT示意图



USB POWER

note:可變更FUSE



Close to connector
USB_LAN 2-Port 2.0A
FUSE-0805

LAN_COVER

FOOT PRINT:LAN COVER



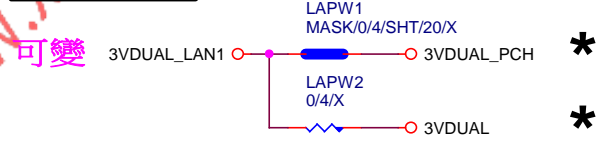
EMI SHORT PAD

PS:視EMI需求

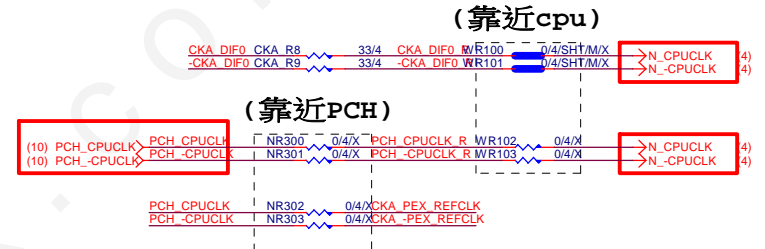
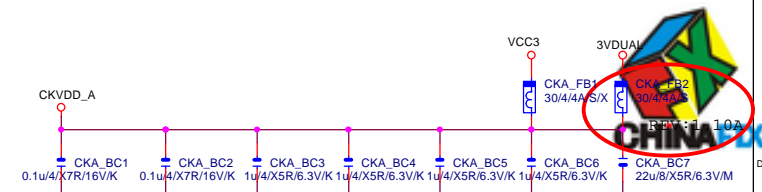


LAN POWER

note: lan power連接及電流

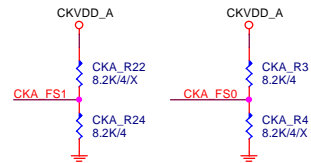


Gigabyte Technology			
Title			
LAN CONNECTOR-E2500			
Size	Document Number		Rev
Custom			1.02
GA-Z270X-GAMING K5			
Date:	Friday, December 09, 2016	Sheet	47 of 76
2:		1	

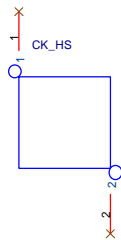
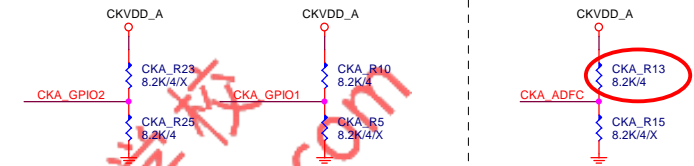


0
1

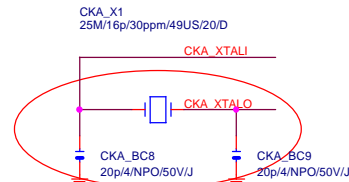
0=25MHz crystal input
1=100MHz differential input



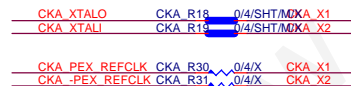
B53b1(FS1)	B53b0(FS0)	VCO (MHz)	CPU Divider	CPU (MHz)	Typ SS%	Typ SS ON/OFF
0	0	200.00	2.00	100.00	-	OFF
0	1	400.00	4.00	100.00	-	OFF
1	0	1000.00	10.00	100.00	-0.50%	ON
1	1	100.00	1.00	100.00	-	OFF



*可變，依需求上件不上件。

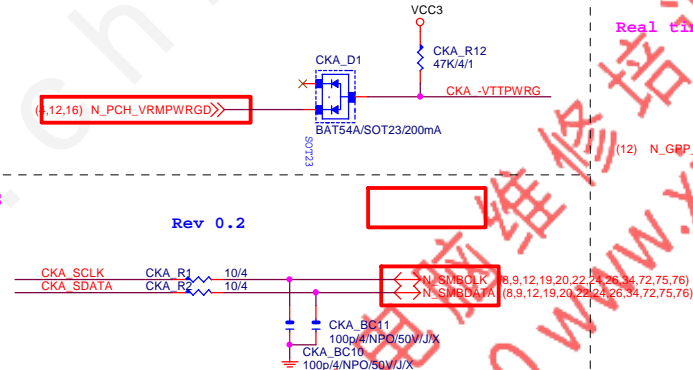


Defaults
CKX1.CKBC8.CKBC9.CKR18.CKR19上件
CKR30.CKR31不上件

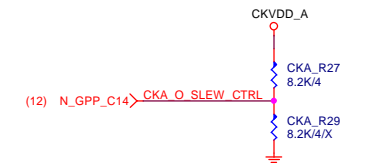


SMBUS

Rev 0.2



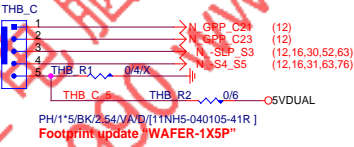
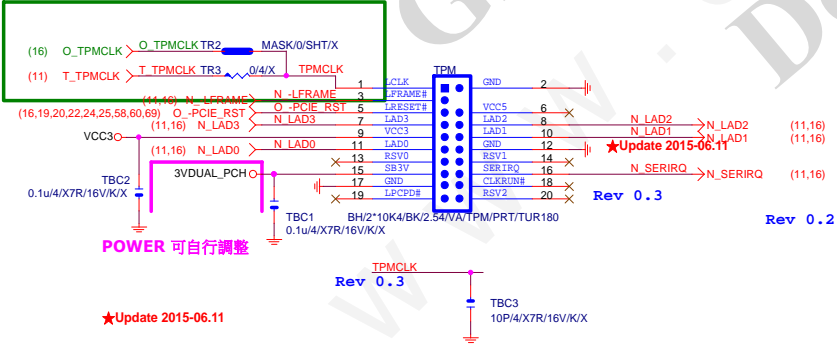
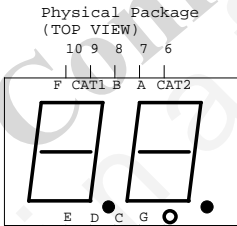
Frequency change slew rate control



GIGABYTE™

Title	IDT6V41530_CLK BUFFER
-------	-----------------------

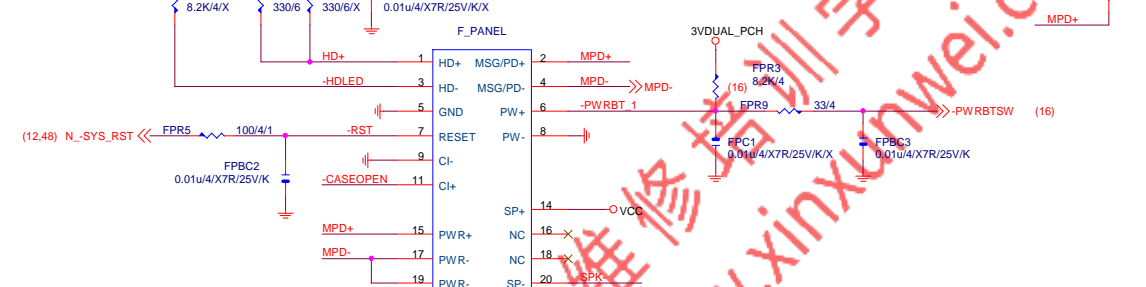
Size	Document Number	Rev
Custom	GA-Z270X-GAMING K5	1.02
Date:	Friday, December 09, 2016	Sheet 48 of 76



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



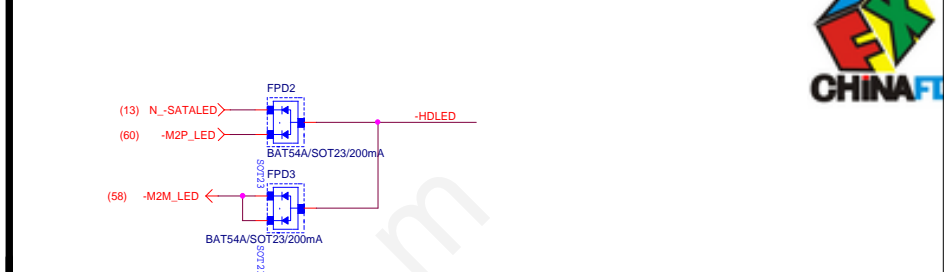
FRONT PANEL



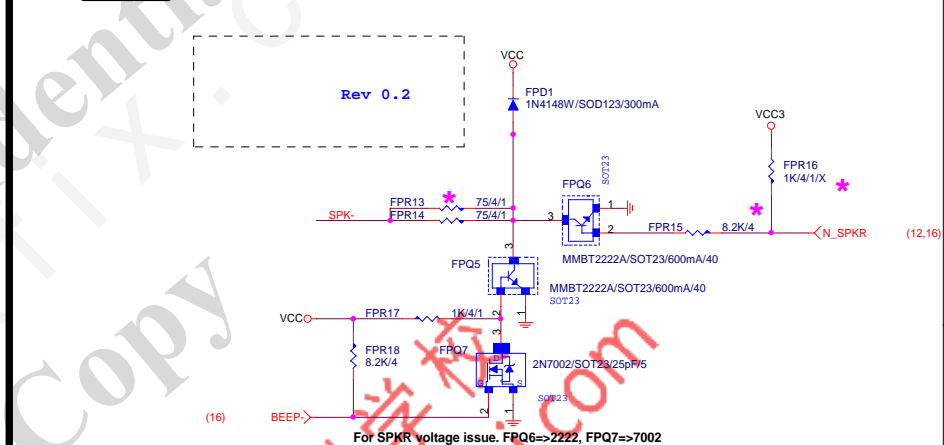
CASE OPEN



Signal open-collector, pull-up (8.2 kΩ to 10 kΩ) to Vcc3_3



SPEAKER

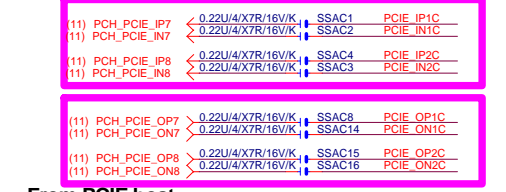


ASM2142 USB3 Host Rev0.2
PCIe Gen3 X2

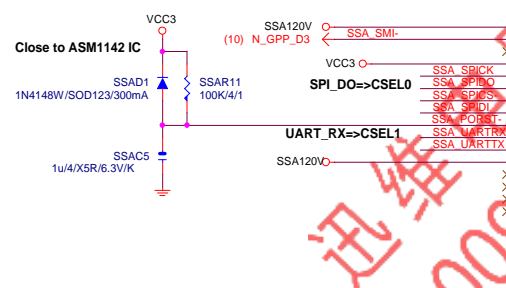
Color markers can be changed by model



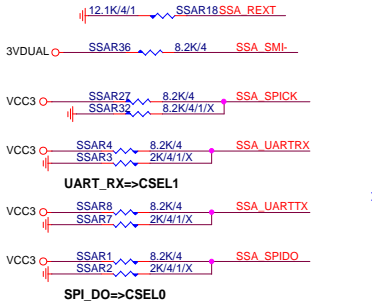
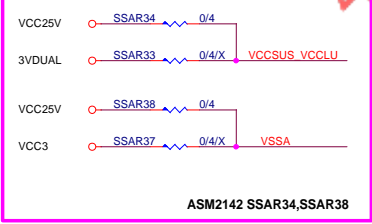
PCH PCIe* Controller Lane Reversal / base on spec To PCIe host.



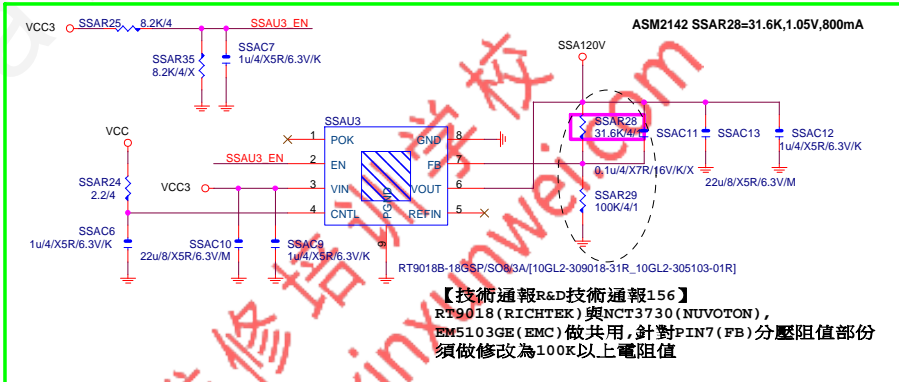
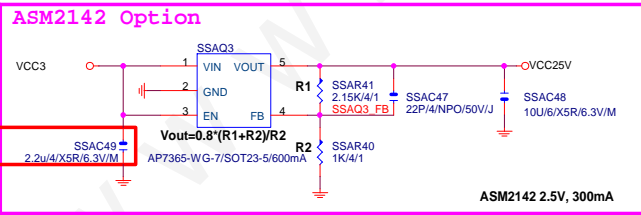
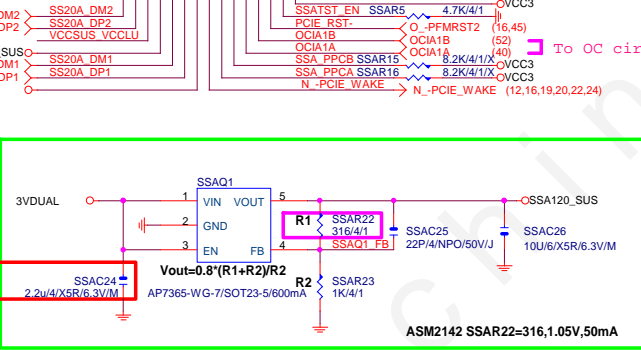
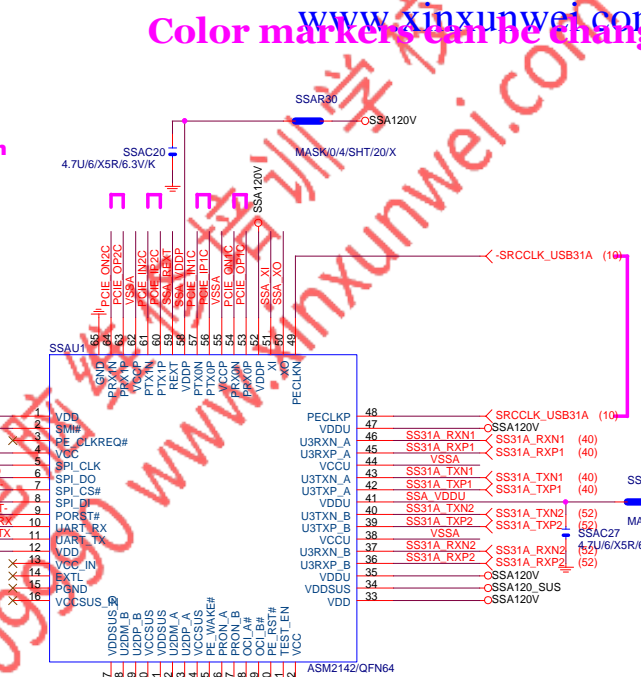
From PCIe host.



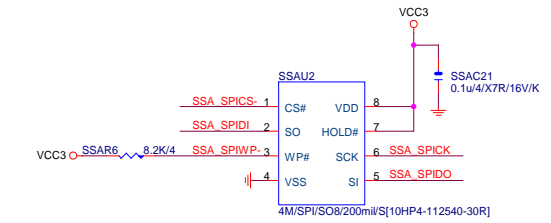
ASM 2142 Option



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



【技術通報R&D技術通報156】
RT9018 (RICHTEK) 與NCT3730 (NUVOTON),
EM5103GE (EMC) 做共用, 針對PIN7 (FB) 分壓阻值部份
須做修改為100K以上電阻值



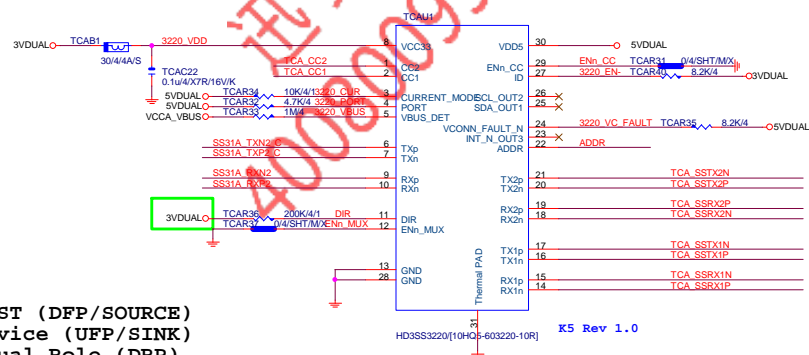
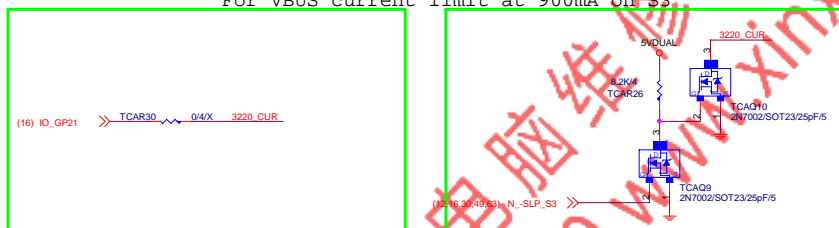
GIGABYTE™		
Title ASM2142		
Size Custom	Document Number GA-Z270X-GAMING K5	Rev 1.02
Date: Friday, December 09, 2016	Sheet 51	of 76

www.xinxunwei.com 400-800-9990

(51) SS31A_RXP2 SS31A_RXP2
(51) SS31A_RXN2 SS31A_RXN2

(51) SS31A_TXP2 SS31A_TXP2 TCAC20 0.22U/4/X7R/16V/K SS31A_TXP2_C
(51) SS31A_TXN2 SS31A_TXN2 TCAC21 0.22U/4/X7R/16V/K SS31A_TXN2_C

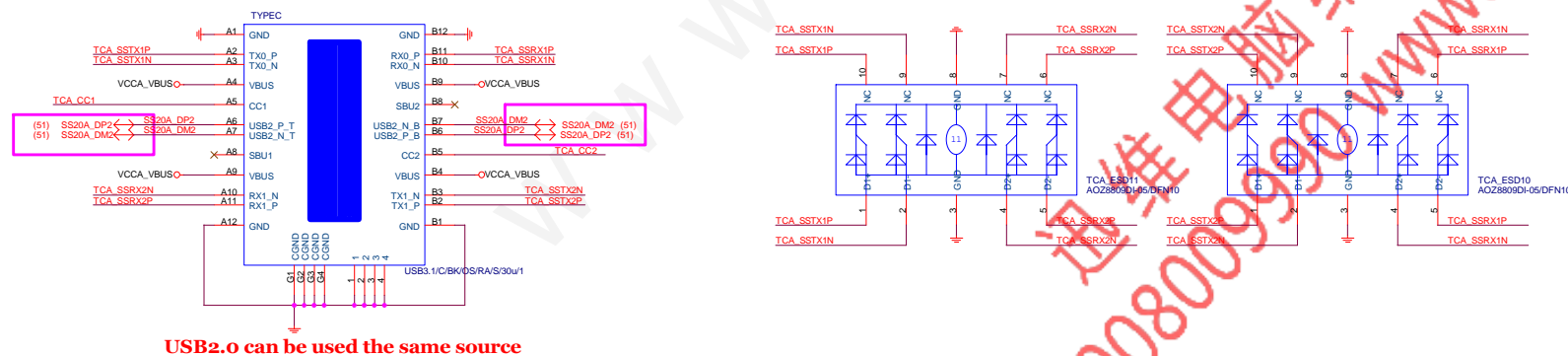
For VBUS current limit at 900mA on S3



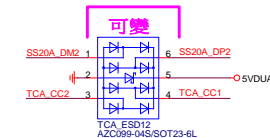
H - HOST (DFP/SOURCE)
L - Device (UFP/SINK)
NC - Dual Role (DRP)

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

Color markers can be changed by model



note: 可變串USB NAME

**GIGABYTE™**

Title			
TI HD3SS3212			
Size	Document Number	Rev	
C	GA-Z270X-GAMING K5	1.0:	
Date:	Friday, December 09, 2016	Sheet	52 of 76



迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Gigabyte Confidential
www.chinafix.com
Do not Copy

迅维电脑维修培训学校
4008009990 www.xinxunwei.com

GIGABYTE™			
Title Type C port A			
Size Custom	Document Number GA-Z270X-GAMING K5		Rev 1.02
Date: Friday, December 09, 2016	Sheet 53	of 76	



迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Gigabyte Confidential
www.chinafix.com
Do not Copy

迅维电脑维修培训学校
4008009990 www.xinxunwei.com

GIGABYTE™		
Title PD 12V3A		
Size Custom	Document Number GA-Z270X-GAMING K5	Rev 1.02
Date: Friday, December 09, 2016	Sheet 54	of 76

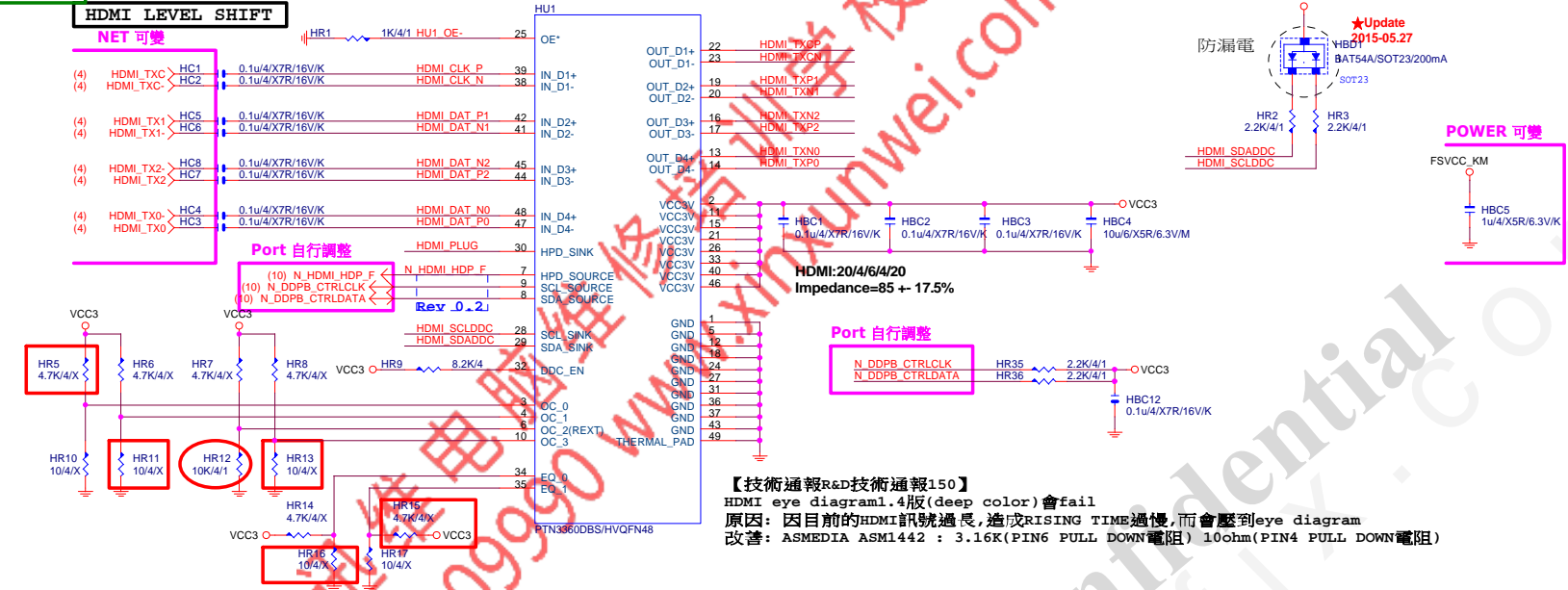


迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Gigabyte Confidential
www.chinafix.com
Do not Copy

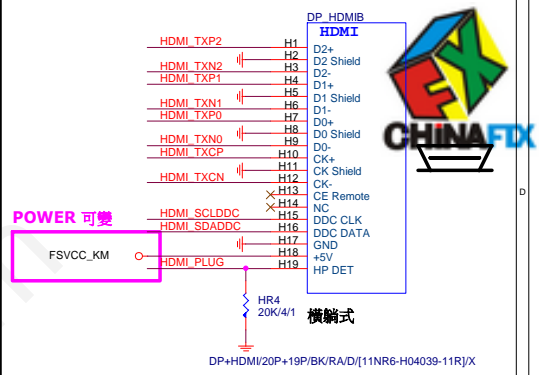
迅维电脑维修培训学校
4008009990 www.xinxunwei.com

GIGABYTE™		
Title DISPLAY PORT IN		
Size Custom	Document Number GA-Z270X-GAMING K5	Rev 1.02
Date: Friday, December 09, 2016	Sheet 55 of 76	



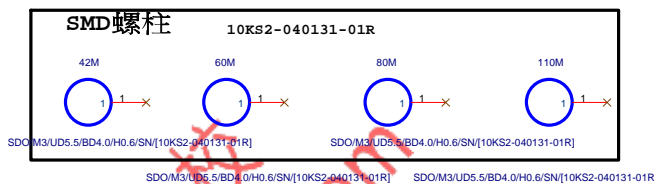
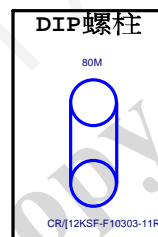
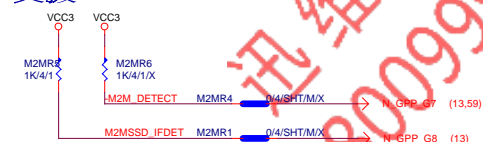
PTN3360:PIN 4/10/34/35 NC, PIN 都不上值;只上HR12:10K
ASM1442:紅色框要上,HR12:3.16K

【技術通報R&D技術通報150】
HDMI eye diagram 1.4版(deep color)會fail
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)



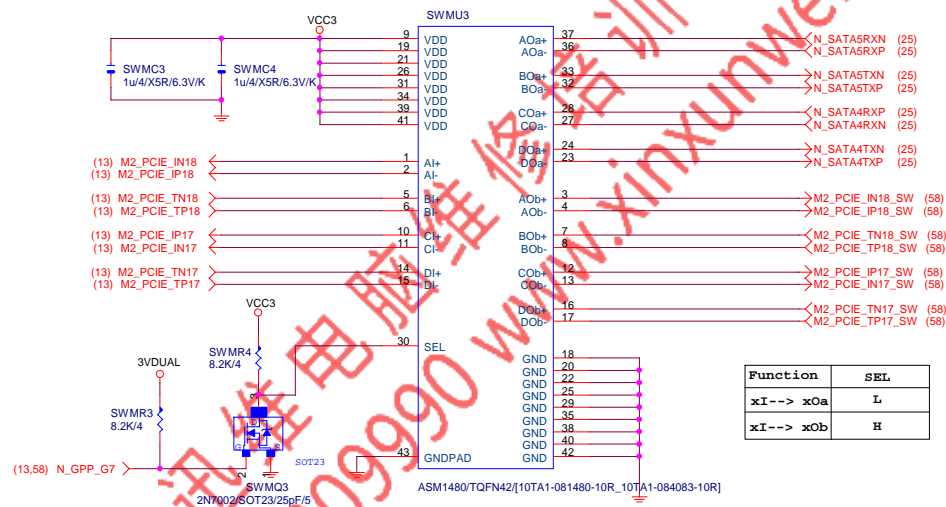
直立式
P/N:11NR6-H01019-K1R

M.2 Lane2 from PCH port23



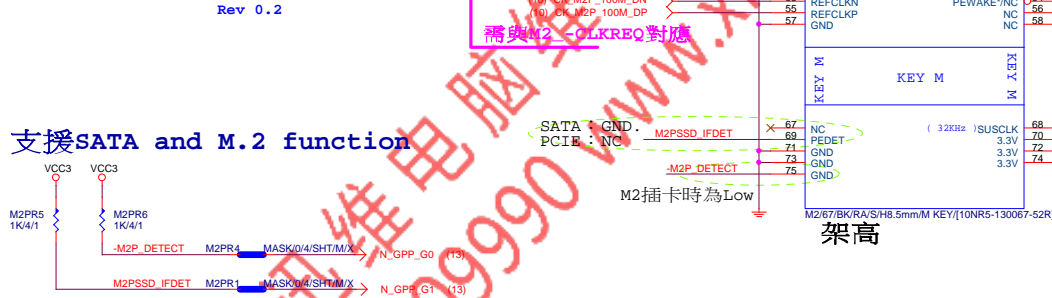
DIP螺絲

(M)TYPE

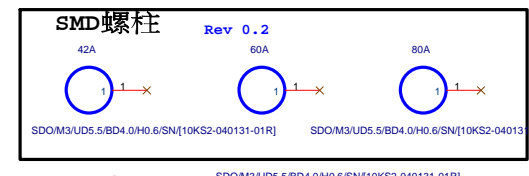
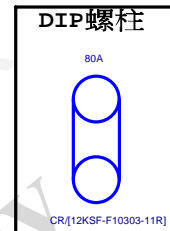
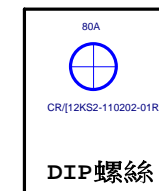
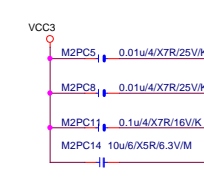
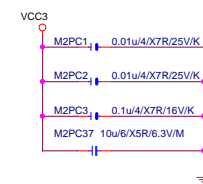
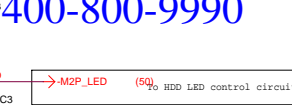
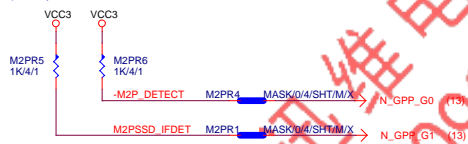



M.2 Detect N_GPP_G7	M.2 MODE N_GPP_G8	PCIE17	PCIE18	PCIE19	PCIE20
HIGH	X	切回 SATA4	切回 SATA5	N\A	N\A
LOW	HIGH(PCIE)	PCIEX4 FOR M.2(最優先)			
LOW	LOW(SATA)	SATA FOR M.2	N\A	N\A	N\A

Rev 0.2



支援SATA and M.2 function



<div style="text-align: center;">  </div>			
Title			
<div style="text-align: center;"> M.2 X4 GA-Z270X-GAMING K5 </div>			
Size	Document Number		Rev
Custom			1.02
Date:	Friday, December 09, 2016	Sheet	60 of 76



迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Gigabyte Confidential
www.chinafix.com
Do not Copy

迅维电脑维修培训学校
4008009990 www.xinxunwei.com

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



迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Gigabyte Confidential
www.chinafix.com
Do not Copy

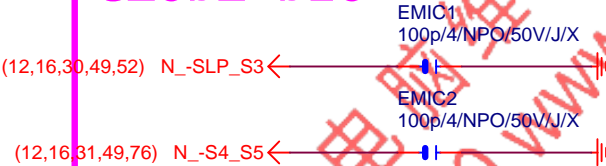
迅维电脑维修培训学校
4008009990 www.xinxunwei.com

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



EMI/ESD R0.1

CLOSE SIO



CLOSE PCH



GIGABYTE™

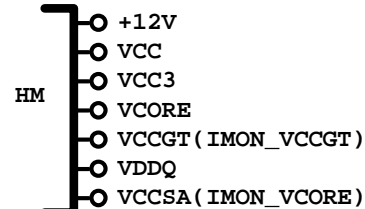
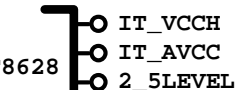
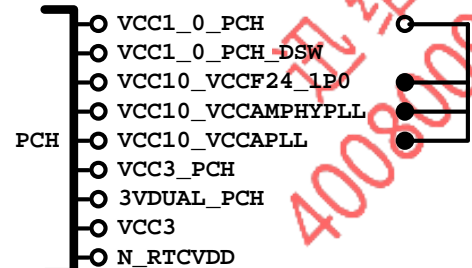
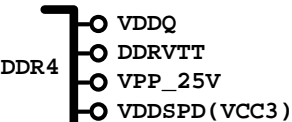
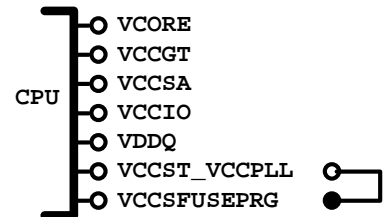
Title		
EMI/ESD		
Size A	Document Number	Rev
	GA-Z270X-GAMING K5	1.02
Date:	Friday, December 09, 2016	Sheet 63 of 76



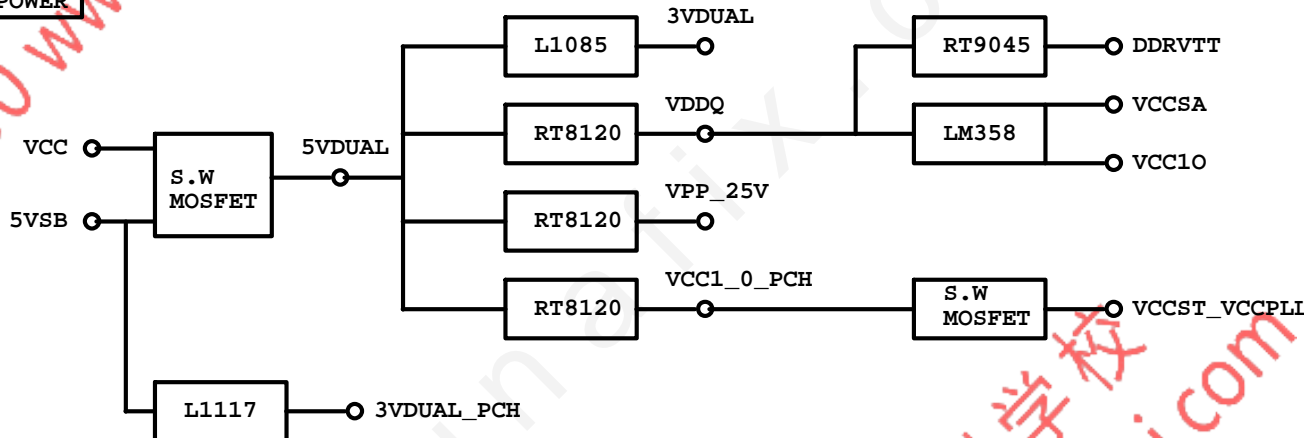
POWER BLOCK MAP

VCORE/VCCGT

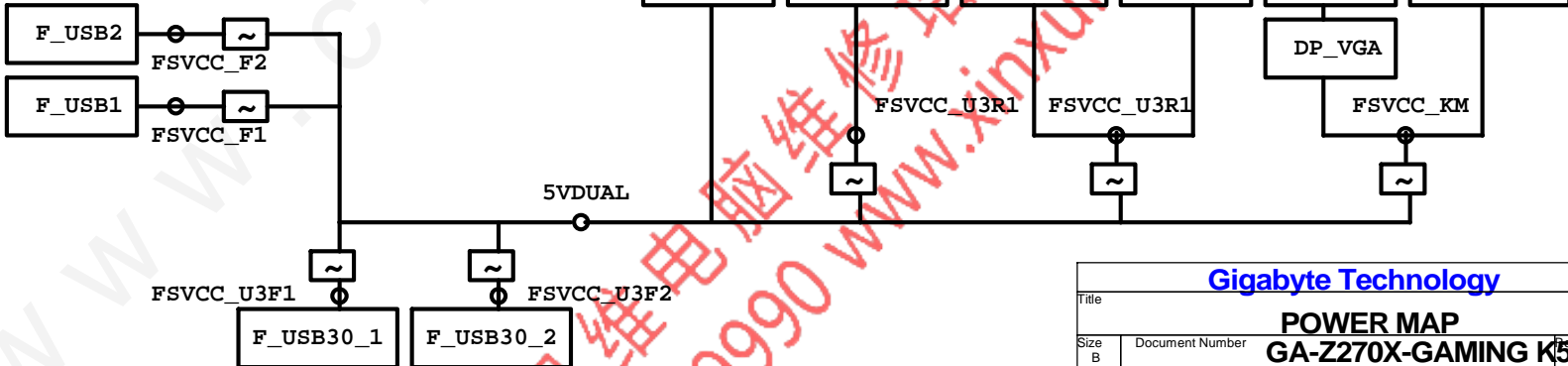
www.xinxunwei.com 400-800-9990



POWER



FUSE POWER F/R



Gigabyte Technology	
Title	POWER MAP
Size B	Document Number
Date	Friday, December 09, 2016
Sheet	65 of 76
Rev	1.02
GA-Z270X-GAMING K5	

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

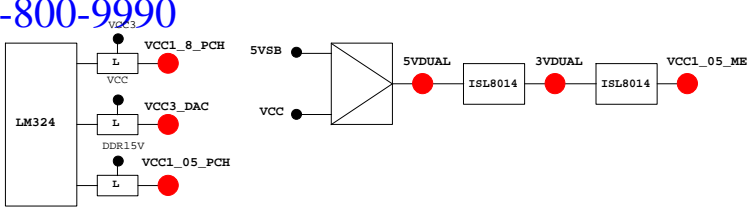
GIGABYTE™			
Title RT8120_DDR4 POWER			
Size Custom	Document Number GA-Z270X-GAMING K5		Rev 1.02
Date: Friday, December 09, 2016	Sheet 66	of 76	

PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI0	GPIO0	N/A
GP1/TACH1	MAIN		GPI0	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		GPI0	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		GPI0	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI0	GPIO17	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI0	GPIO19	P/U 8.2K VCC3
GP20	MAIN		GPI0	GPIO20	P/U 8.2K VCC3
GP21	MAIN		GPI0	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPIO22	P/U 8.2K VCC3
GP23	MAIN		GPI0	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

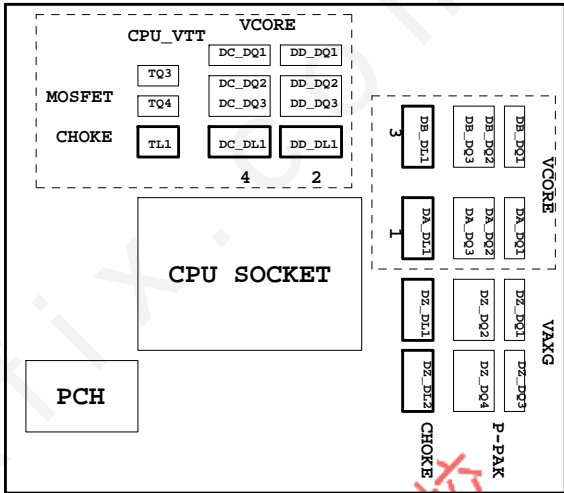
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KRST	
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/CIRRX1/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	
VID00/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/SMB_C_R	SEC_PIN	FST_2X8
INIT#/GP85/SMB_D_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMB_C_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
PANSW#/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/SMB_D_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/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：

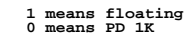
散熱模組料號：

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 Termination
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

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

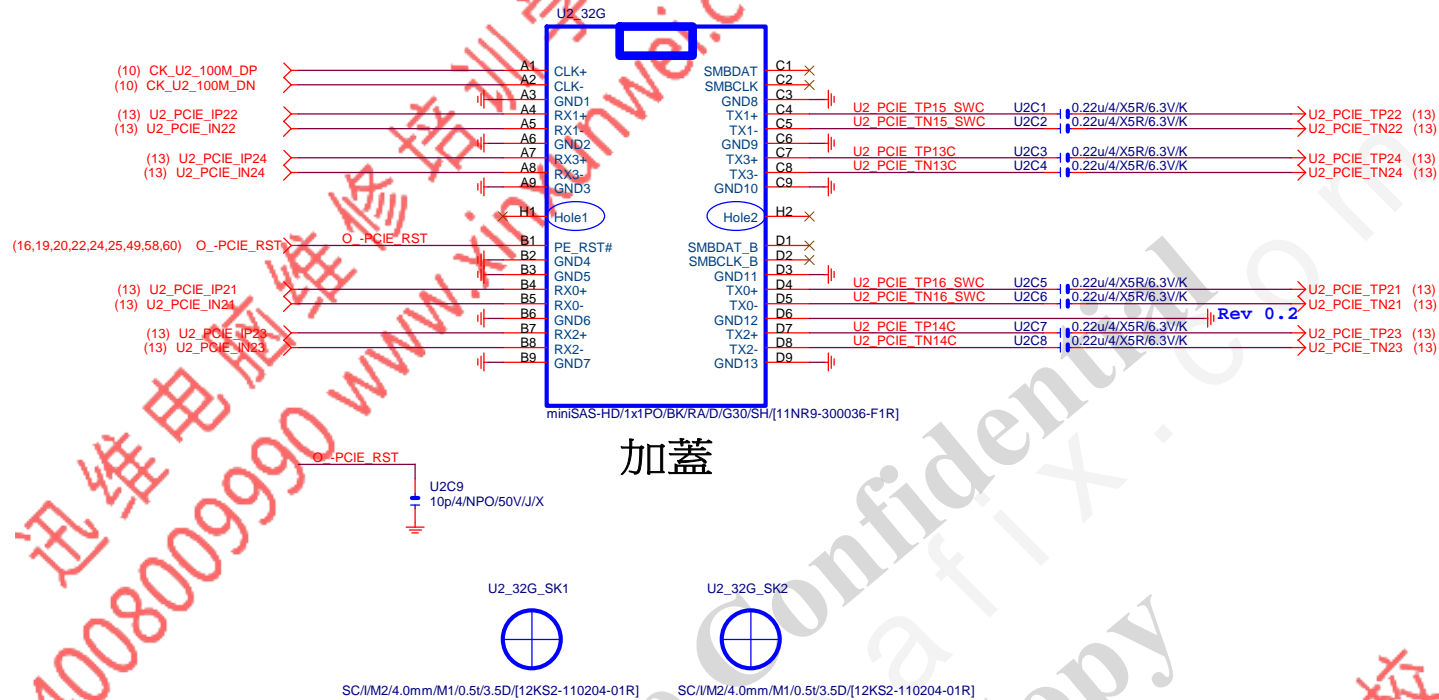
Gigabyte Technology			
Title	TABLE LIST		
Size	Document Number	GA-Z270X-GAMING K5	
C			Rev 1.02
Date:	Friday, December 09, 2016	Sheet 67	of 76



SB:Single BIOS	
	Disable
	Enable

Rev 0.3

www.xinxunwei.com 400-800-9990



加蓋

GIGABYTE™

Title		
M.2 to MINISAS		
Size	Document Number	Rev
B	GA-Z270X-GAMING K5	1.02
Date:	Friday, December 09, 2016	Sheet 69 of 76



迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Gigabyte Confidential
www.chinafix.com
Do not Copy

迅维电脑维修培训学校
4008009990 www.xinxunwei.com

GIGABYTE			
Title			
PCH PWR-VCC18_PCH			
Size	Document Number		Rev
A	GA-Z270X-GAMING K5		1.02
Date:	Friday, December 09, 2016	Sheet	70 of 76



迅维电脑维修培训学校
4008009990 www.xinxunwei.com

www.chinafix.com

迅维电脑维修培训学校
4008009990 www.xinxunwei.com

Title		
5FAN		
Size	Document Number	Rev
Custom	GA-Z270X-GAMING K5	1.02
Date:	Friday, December 09, 2016	Sheet 71 of 76

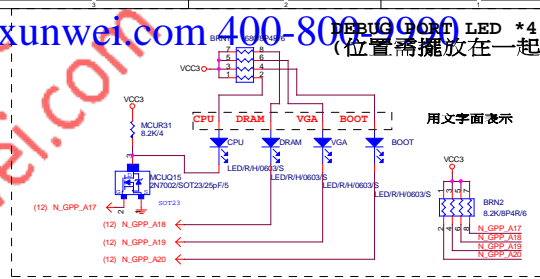


第一區 LED

Rev 0.63

LED GPIO PIN DEFINES

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 POINT 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)

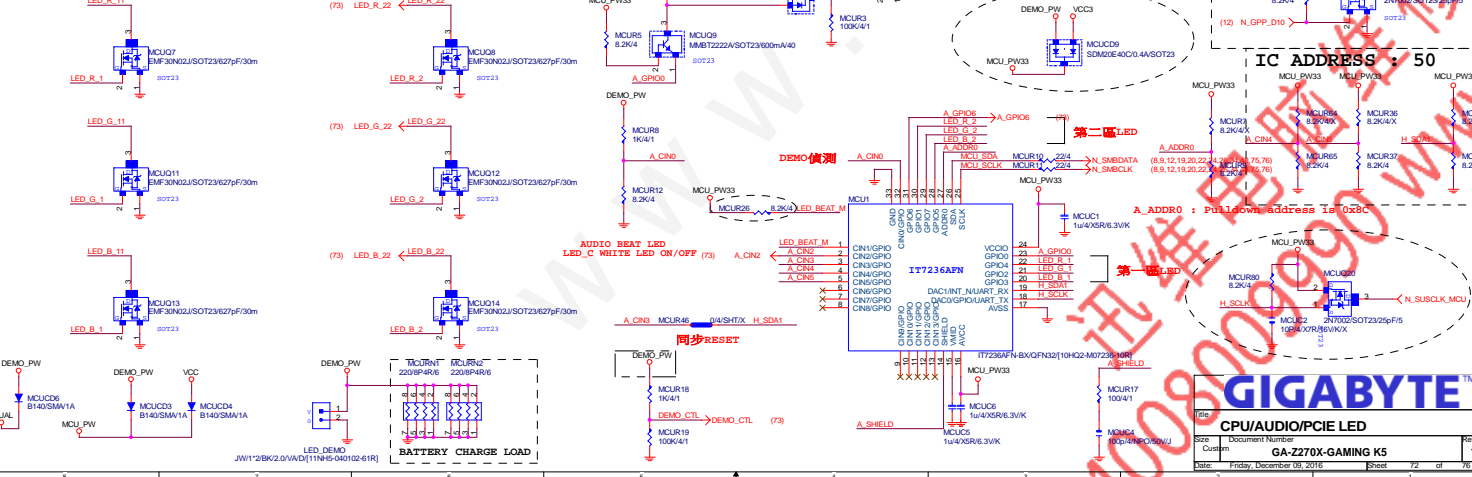
FOR AUDIO 正發光 LED*40
(位置在正板AUDIO切割線)

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

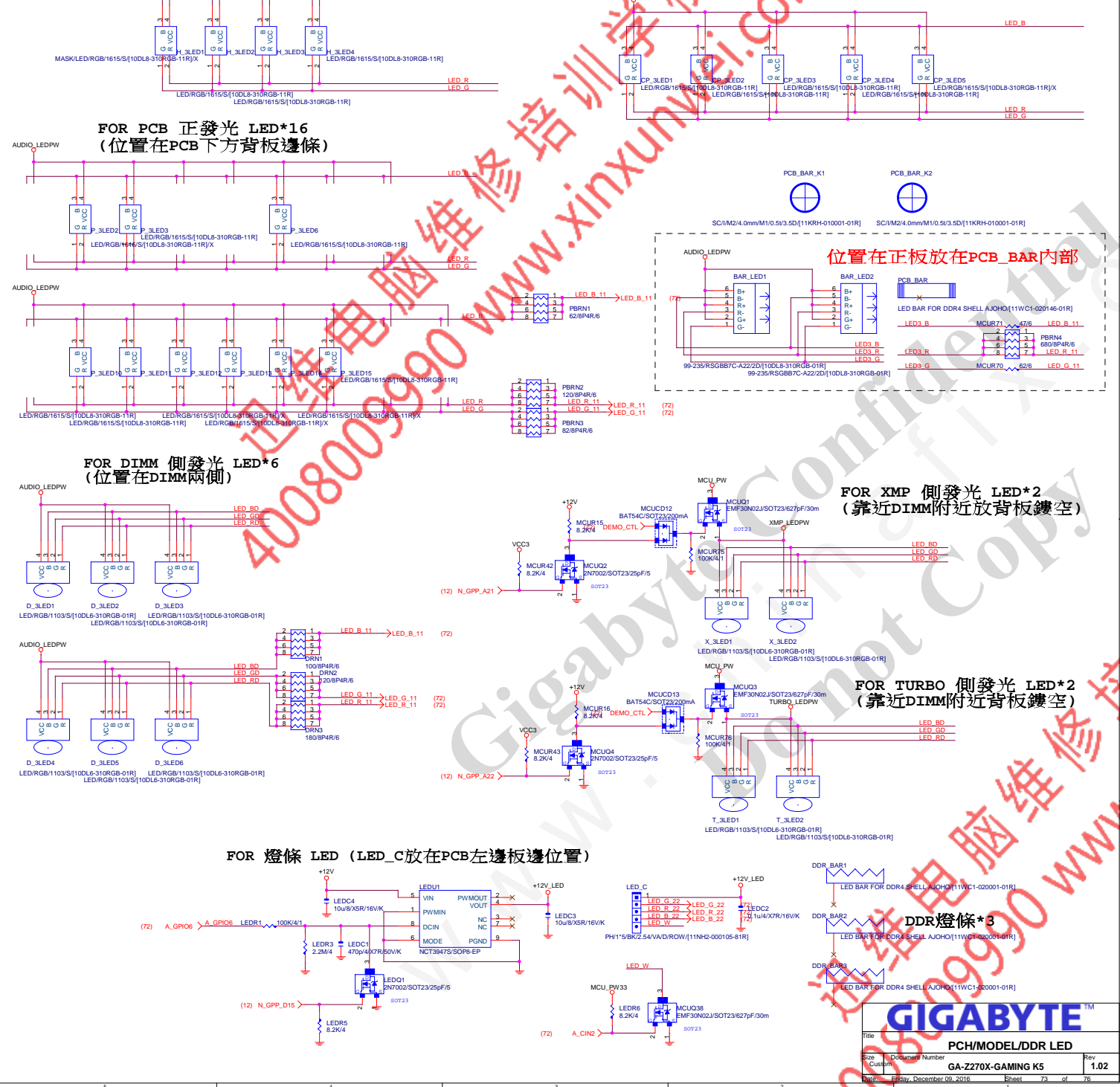
第二區 LED CONTROL



CPU/AUDIO/PCIEX LED

GA-Z270X-GAMING K5

Rev 1.02



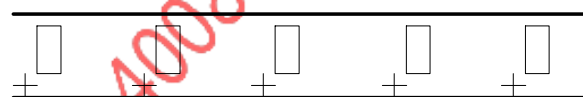
GIGABYTE™		
PCH/MODEL/DDR LED		
Size	Document Number	Rev
Custom	GA-Z270X-GAMING K5	1.02
Date: Friday, December 09, 2016		Sheet: 73 of 76

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



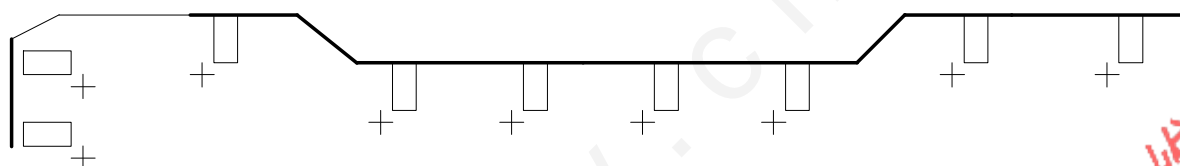

PCB板邊透光model name鏤空+背面 RGB LED



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

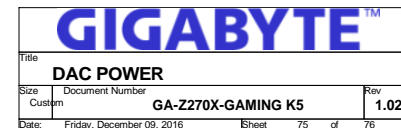
XMP



Title		
MODEL/PCB LED		
Docu	Document Number	Rev
Custom	GA-Z270X-GAMING K5	1.02
Date	Friday, December 09, 2016	Sheet 74 of 76

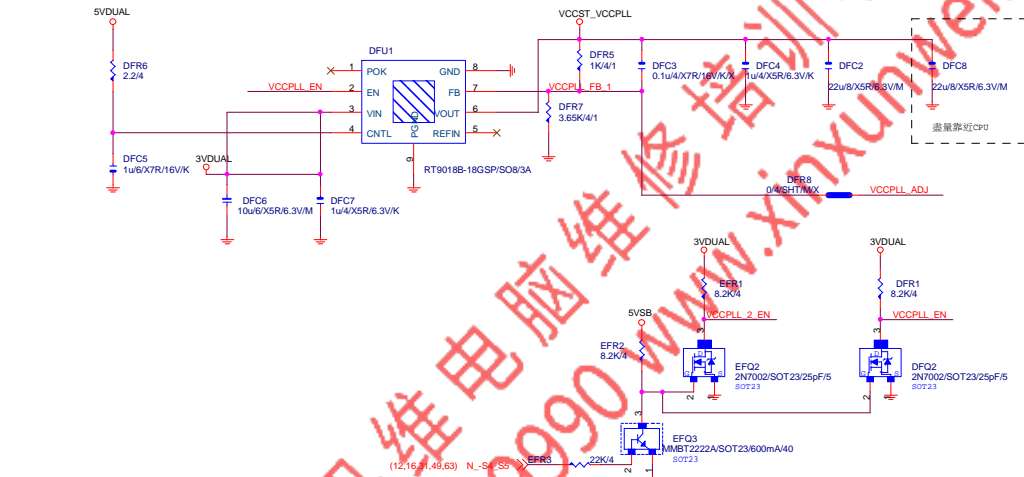
F_USB30_2

KB_MS_USB0

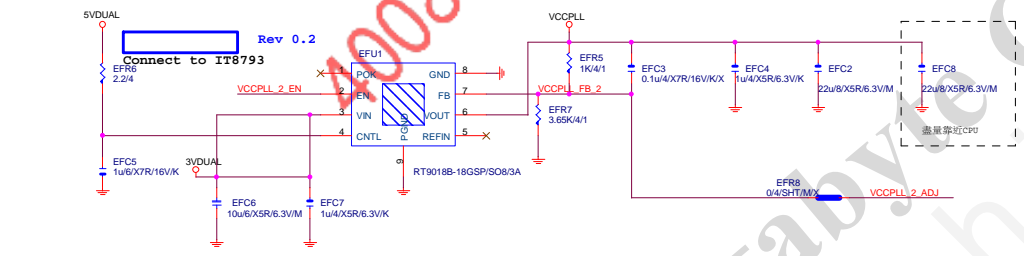




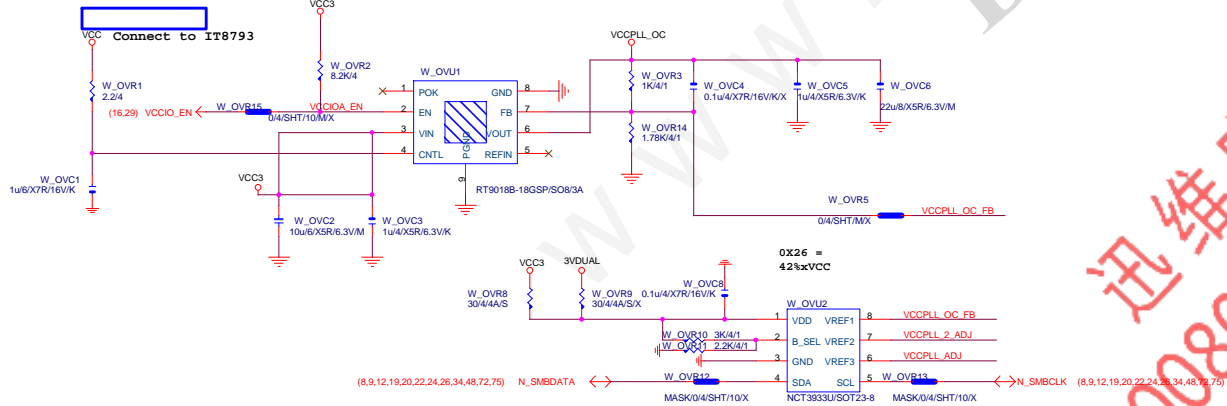
VCCST_VCCPLL 替换原先MOS開關線路



VCCPLL



VCCPLL_OC Rev 0.2



GIGABYTE

CPU POWER

Size: Custom Document Number: GA-Z270X-GAMING K5 Rev: 1.02

Date: Friday, December 09, 2016 Sheet: 76 of 76