

Model Name: GA-Z170-Gaming K3 Rev 1.01

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09	DDR4 CHANNEL B 1,2
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12	PCH MISC
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34	ATX POWER , A_-PROCHOT
35	KB_MS_USB
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38	ASM1142 USB31A
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Gigabyte Technology			
Title			
Cover Sheet			
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GIGABYTE

Model Name: GA-Z170-GAMING-K3

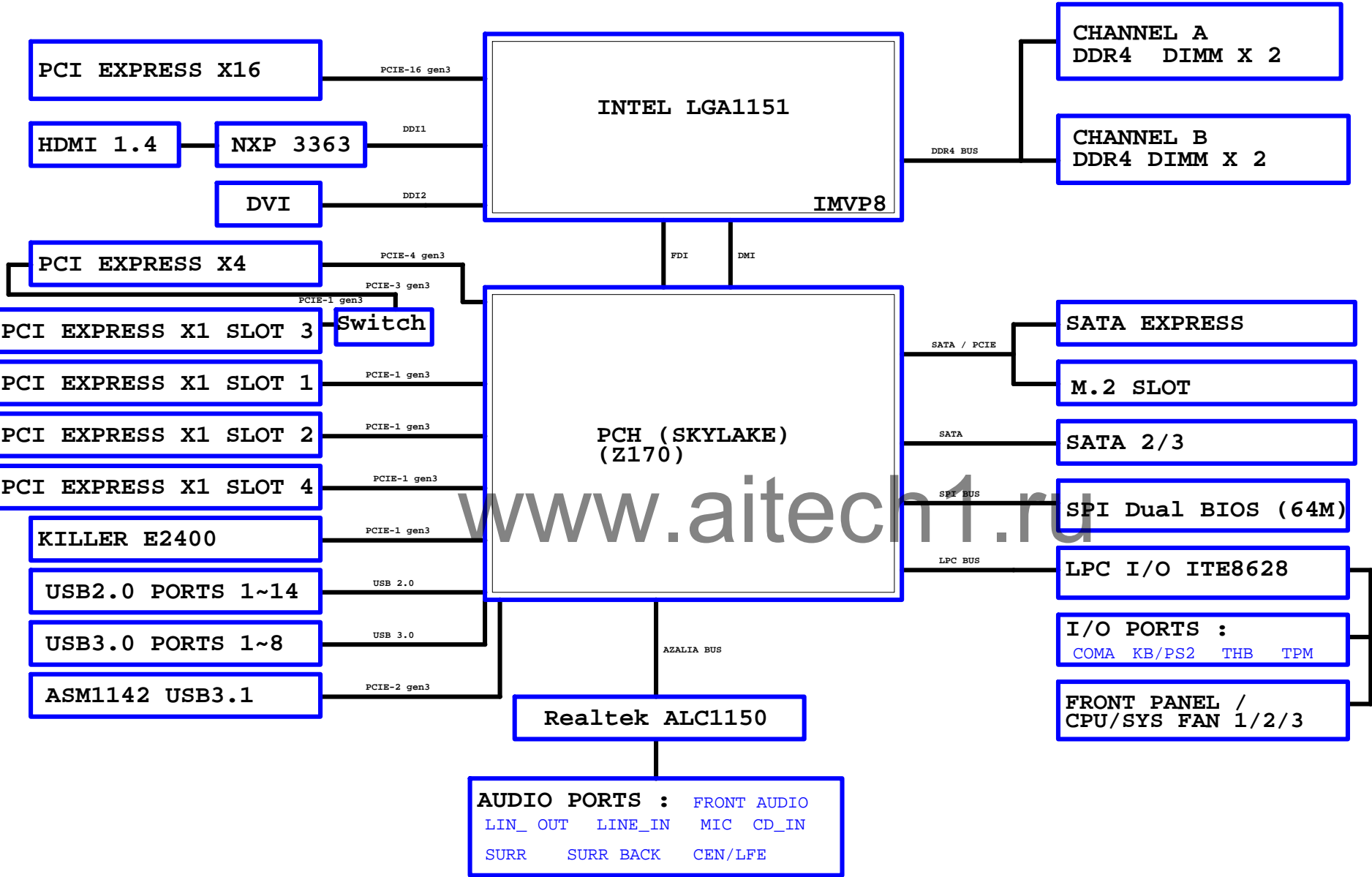
Component value change history

[illegible]

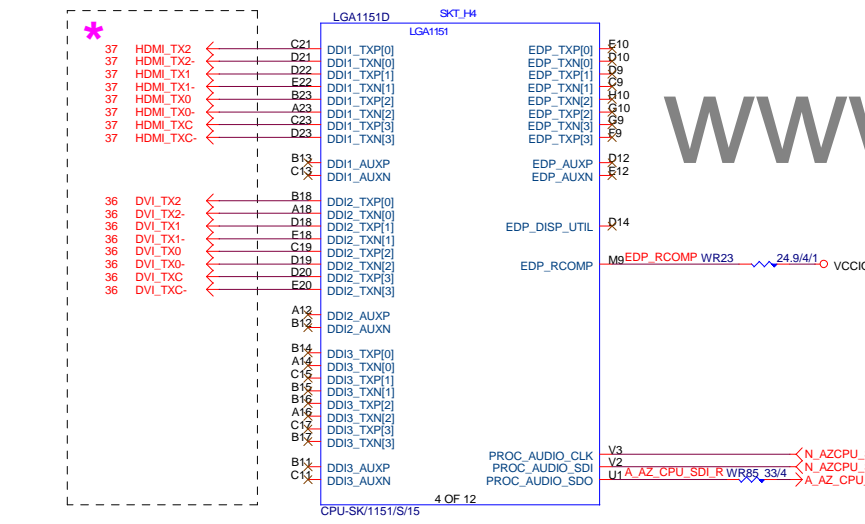
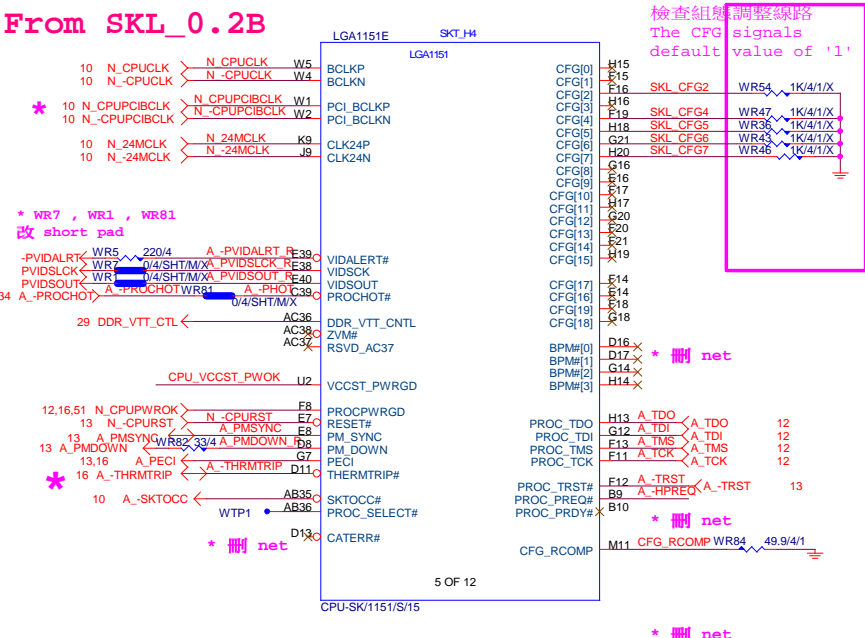
Circuit or PCB layout change

[illegible]

BLOCK DIAGRAM

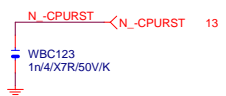


From SKL_0.2B

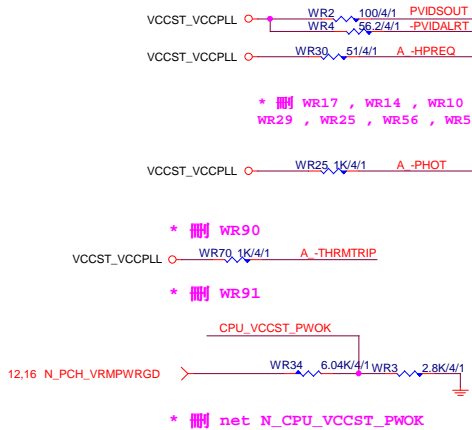


G-15u : (CPU-SK/1151/S/15)
10SC1-F01151-11R / 10SC1-F01151-12R
G-FL : (CPU-SK/1151/S/GF)
10SC1-F01151-21R / 10SC1-F01151-22R

-CPURST



檢查組態調整線路
The CFG signals
default value of '1'



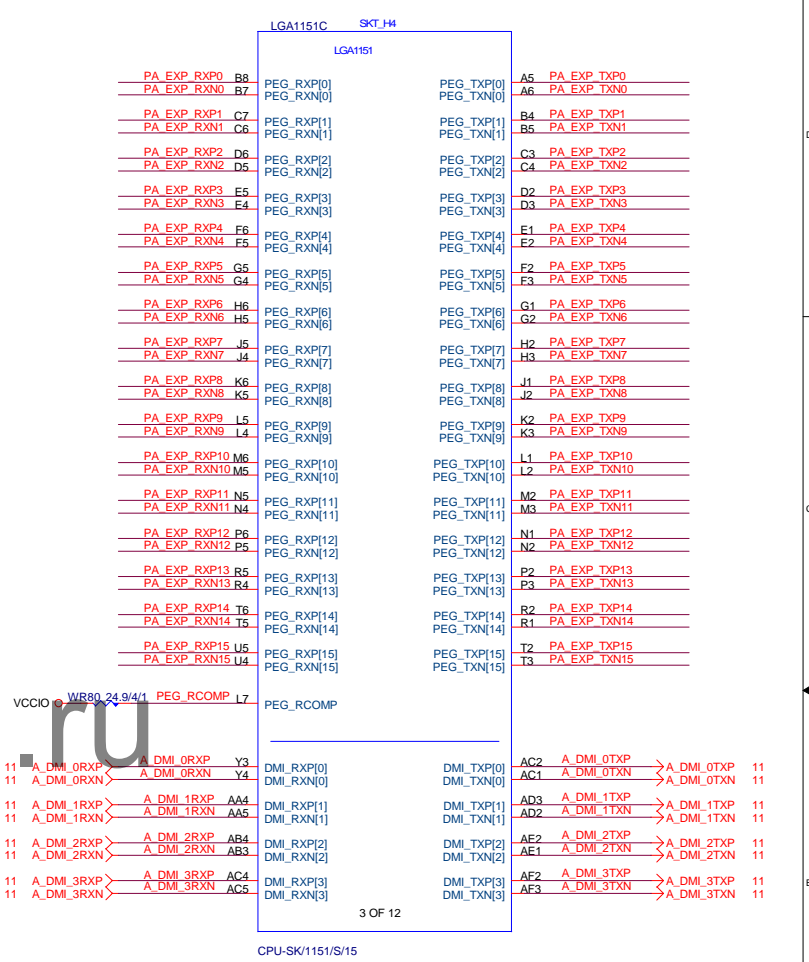
OUT 12

12

CFG[2]:x16 Lane Numbering
Reversal. 1=
NORMAL;0=reversal
CFG[4]: eDP
enable:1/disable/0=enable
CFG[6:5]:PCI Express* BiFurcation; 1l=
1 x16 PCI Express;10=2x8 PCI Express
CFG[7]: PEG Training:1=(default) PEG Train
immediately following RESET#;0=PEG Wait
for BIOS

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

3

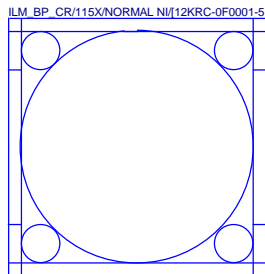
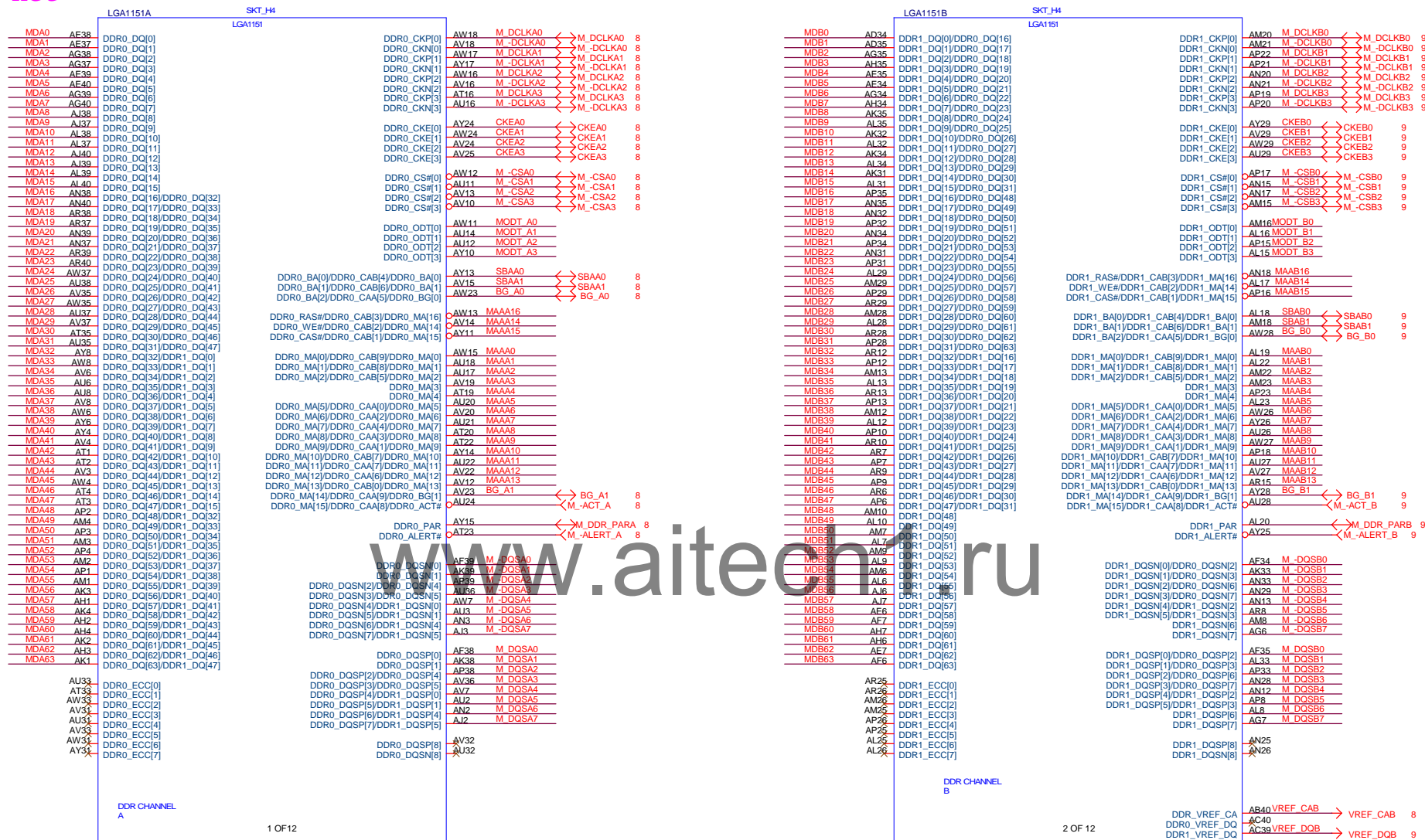


PA_EXP_TXP[0..15] >> PA_EXP_TXP[0..15] 19
PA_EXP_TXN[0..15] >> PA_EXP_TXN[0..15] 19
PA_EXP_RXP[0..15] >> PA_EXP_RXP[0..15] 19
PA_EXP_RXN[0..15] >> PA_EXP_RXN[0..15] 19

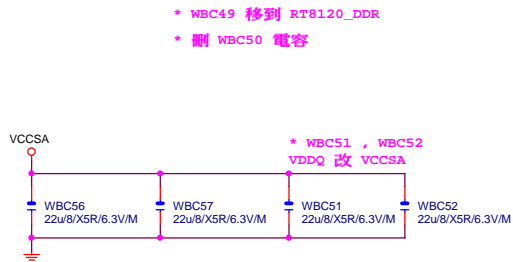
W=12 mil out of CPU
S=15 mil out of CPU

Intel CRB		
CPU LGA1151-A		
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* 改DDR4 net

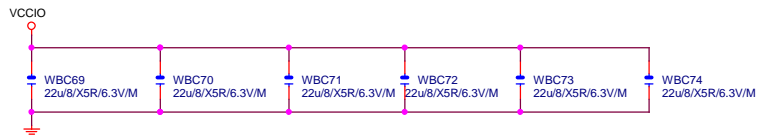
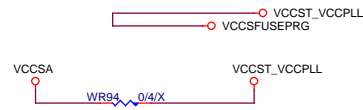


Need check the new CPU ME

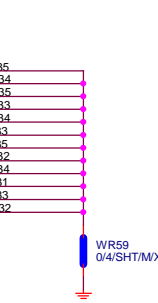
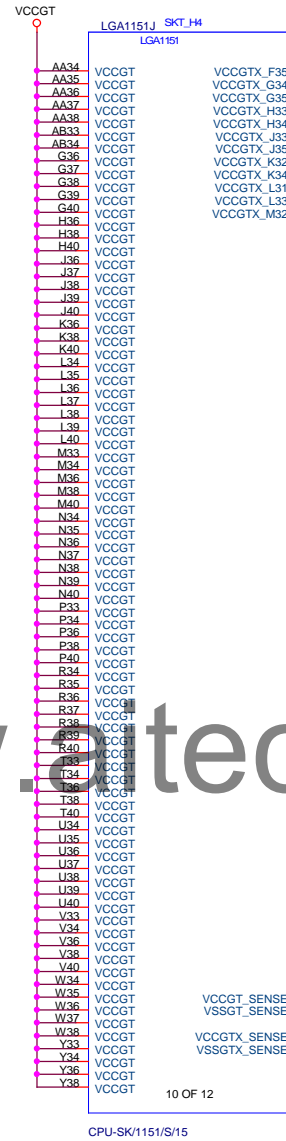


* 刪 WBC124, WBC125, WBC126, WBC127 電容

* WR94, WR59, WR86, WR60, WR61, WR62, WR63 改 short pad



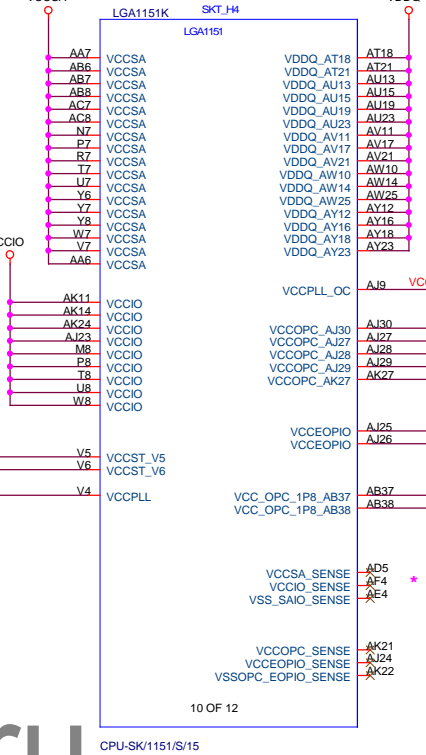
* 刪 VCCGT 電容



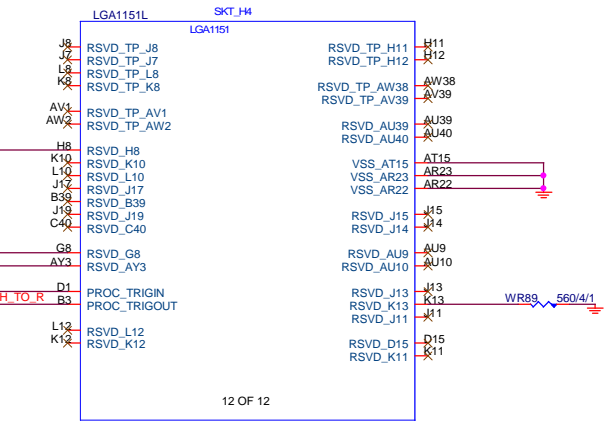
VCCST_VCCPLL
VCCSFUSEPRG
VCCST_VCCPLL

F39 VCCGT_SENSE 25
F38 VSSGT_SENSE 25
F37
F36

13 N_PCH_CPU_T1
13 A_CPU_PCH_TO

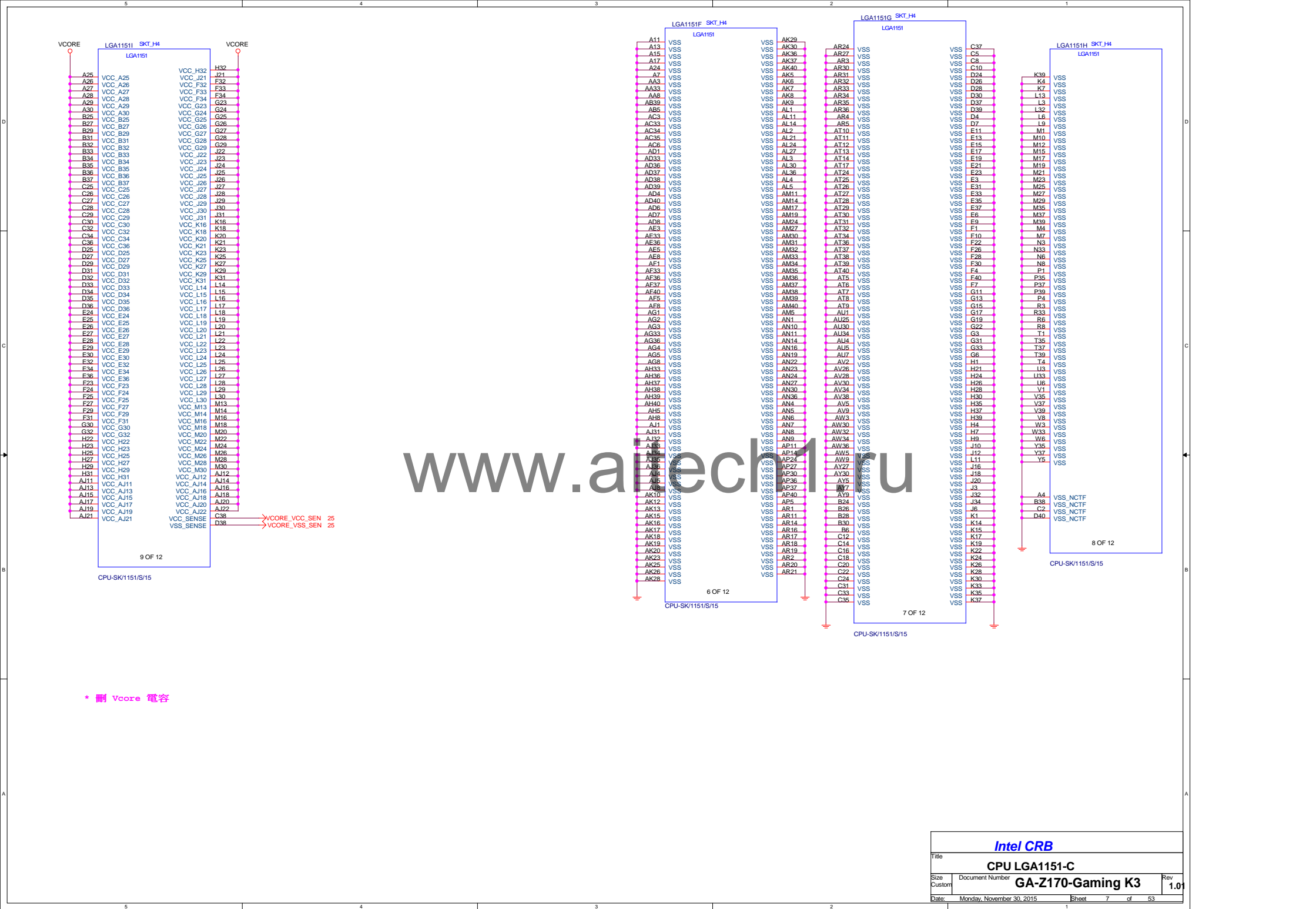


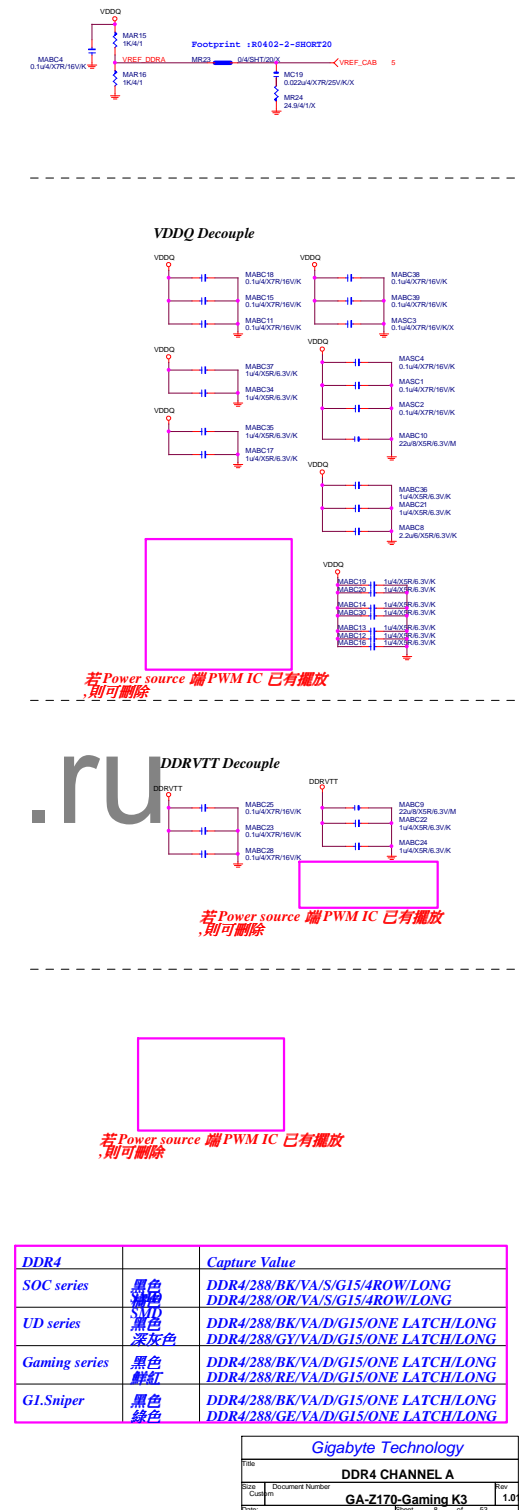
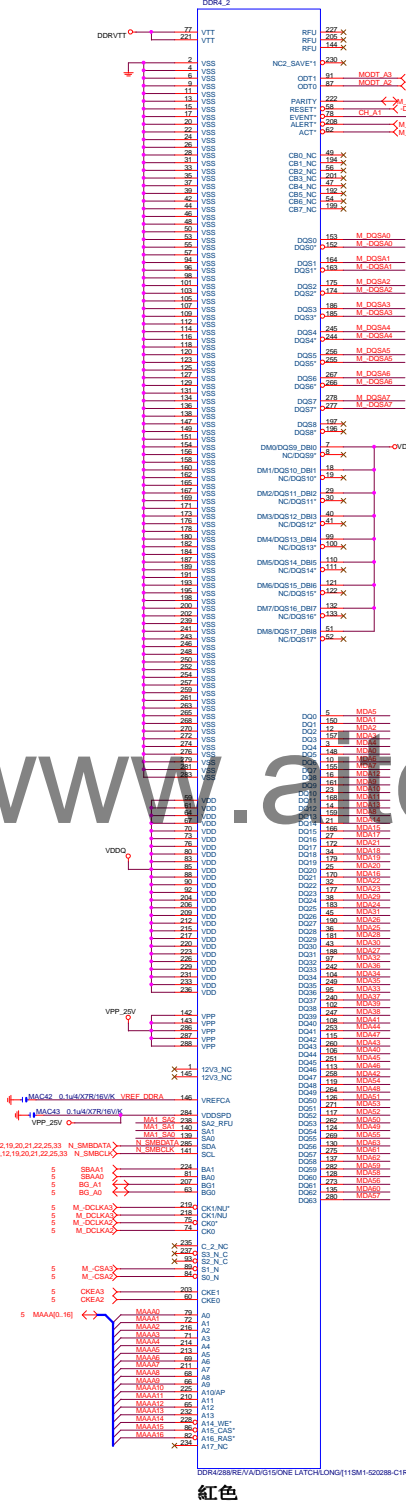
CPU-SK/1151/S/15

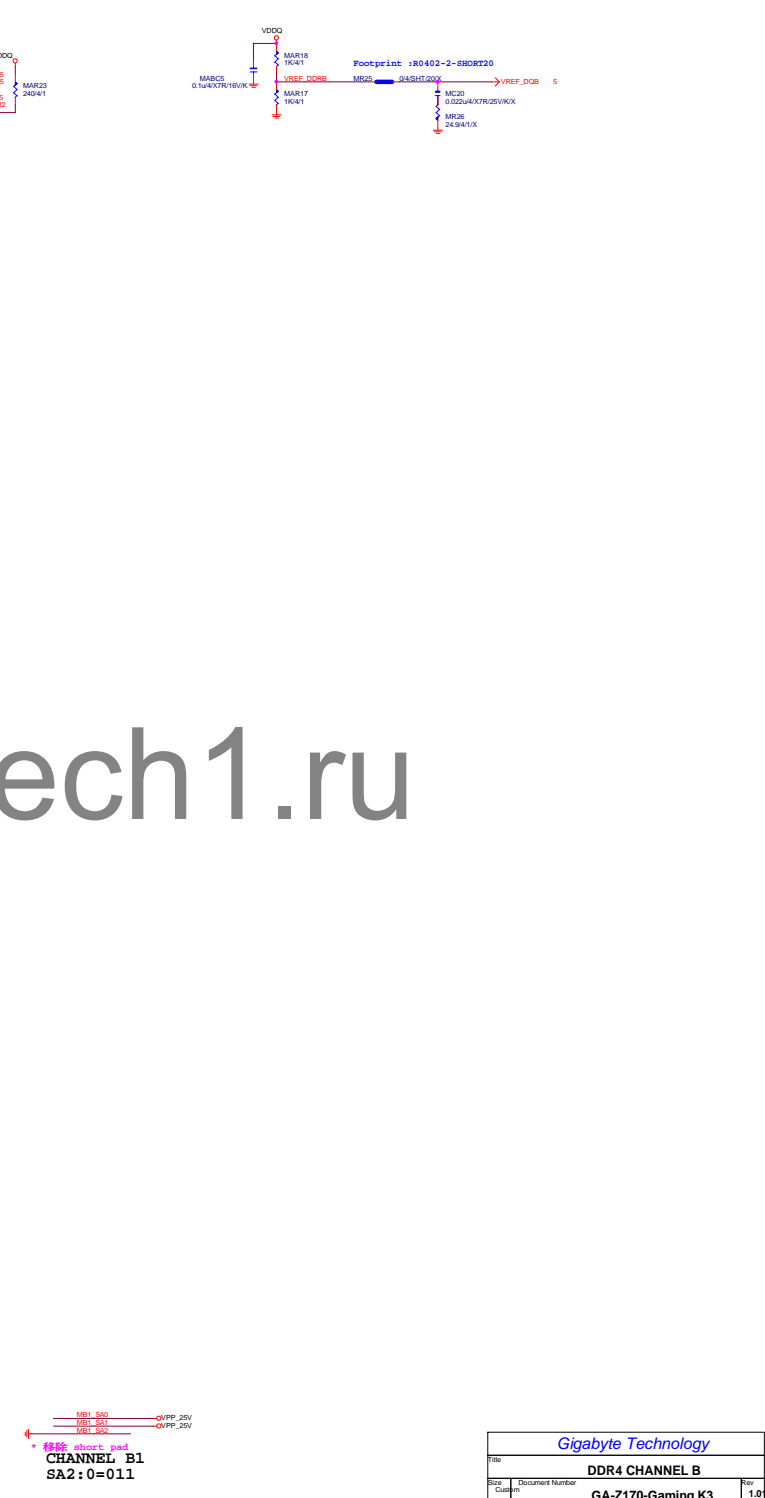
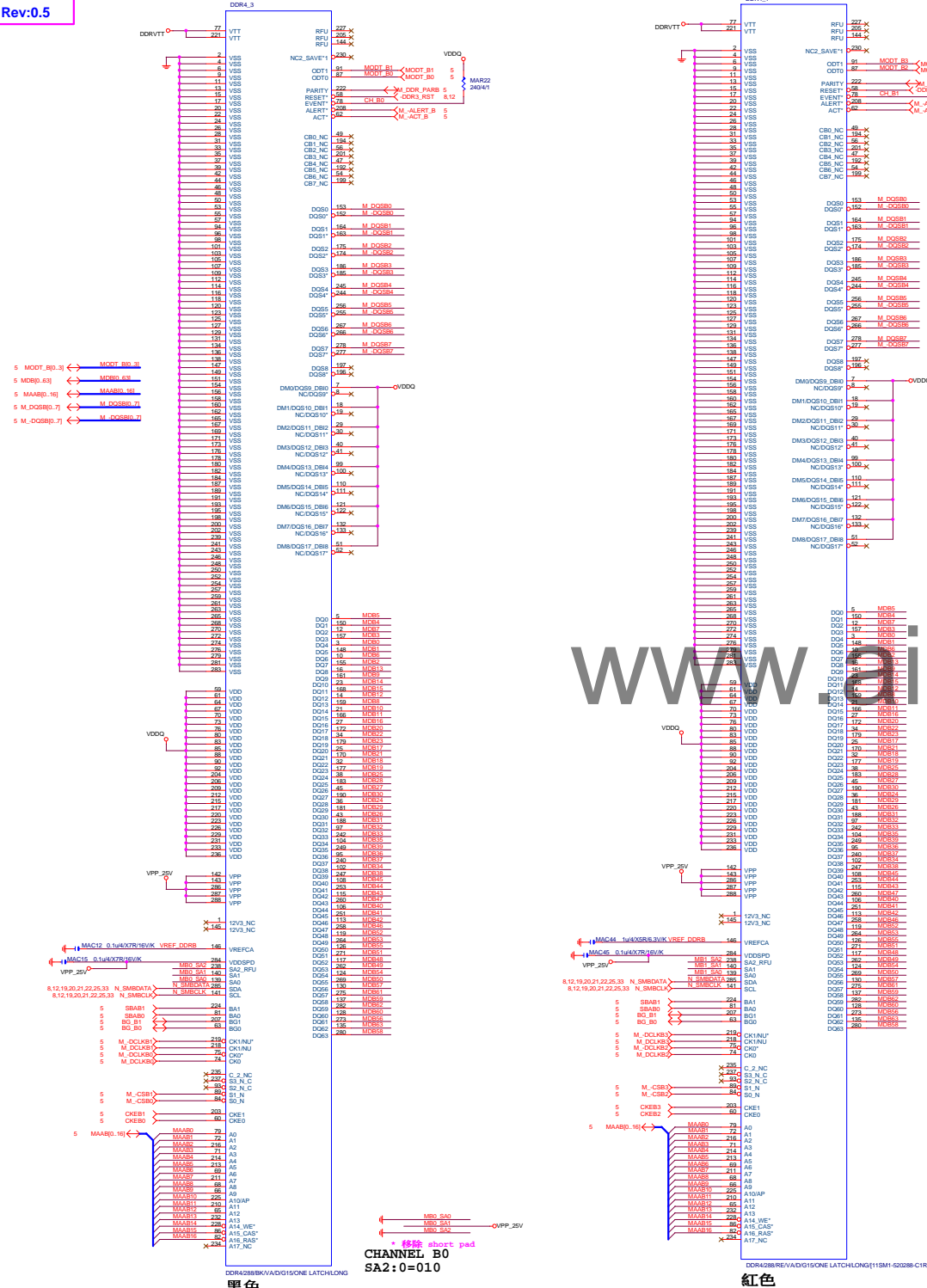


CPU-SK/1151/S/15

Intel CRB			
Title			
CPU LGA1151-C			
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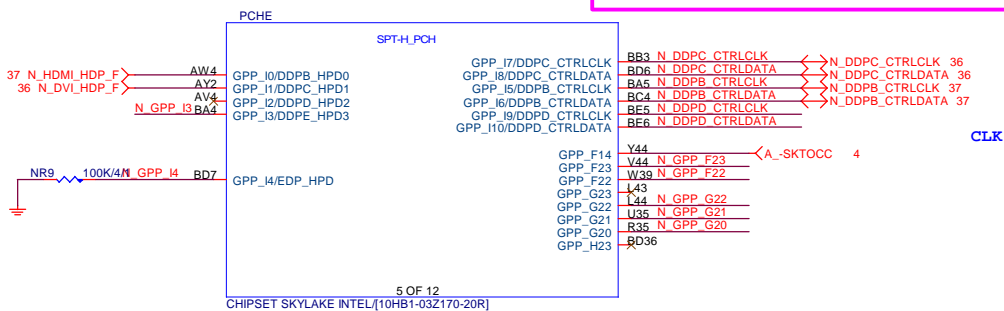




Rev 0.7

放置PCH端

N DDPD_CTRLCLK NR307 2.2K/4/1/X
N DDPD_CTRLDATA NR4 2.2K/4/1/X



CLK: 4/15<1000; Guard GND

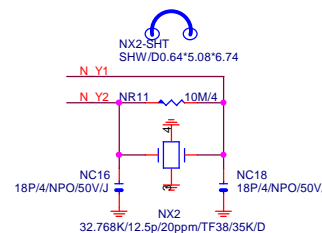
VCC1_0_PCH NR5 2.7K/4/1 XCLK_BIASREF

N Y1
N Y2BC9
BD10N GPP_B5
N GPP_B6
N GPP_B7
N GPP_B8
N GPP_B9
N GPP_B10
N GPP_H0
N GPP_H1
N GPP_H2BC24
AW24
AT24
BD25
BD24
BE25
AT33
AR31
BD32
BC32
BB32
BA33
AW33
BB33
BD33GPP_B5/SRCCLKREQ0#
GPP_B6/SRCCLKREQ1#
GPP_B7/SRCCLKREQ2#
GPP_B8/SRCCLKREQ3#
GPP_B9/SRCCLKREQ4#
GPP_B10/SRCCLKREQ5#
GPP_H0/SRCCLKREQ6#
GPP_H1/SRCCLKREQ7#
GPP_H2/SRCCLKREQ8#
GPP_H3/SRCCLKREQ9#
GPP_H4/SRCCLKREQ10#
GPP_H5/SRCCLKREQ11#
GPP_H6/SRCCLKREQ12#
GPP_H7/SRCCLKREQ13#
GPP_H8/SRCCLKREQ14#
GPP_H9/SRCCLKREQ15#CLKOUT_ITPXDP
CLKOUT_ITPXDP_P
CLKOUT_CPUNSSC P
CLKOUT_CPUNSSC
CLKOUT_CPBCLK P
CLKOUT_CPBCLKXTAL24_OUT
XTAL24_IN

XCLK_BIASREF

RTCX1
RTCX2GPP_B5/SRCCLKREQ0#
GPP_B6/SRCCLKREQ1#
GPP_B7/SRCCLKREQ2#
GPP_B8/SRCCLKREQ3#
GPP_B9/SRCCLKREQ4#
GPP_B10/SRCCLKREQ5#
GPP_H0/SRCCLKREQ6#
GPP_H1/SRCCLKREQ7#
GPP_H2/SRCCLKREQ8#
GPP_H3/SRCCLKREQ9#
GPP_H4/SRCCLKREQ10#
GPP_H5/SRCCLKREQ11#
GPP_H6/SRCCLKREQ12#
GPP_H7/SRCCLKREQ13#
GPP_H8/SRCCLKREQ14#
GPP_H9/SRCCLKREQ15#CLKOUT_PCIE_N0
CLKOUT_PCIE_P0CLKOUT_PCIE_N1
CLKOUT_PCIE_P1CLKOUT_PCIE_N2
CLKOUT_PCIE_P2CLKOUT_PCIE_N3
CLKOUT_PCIE_P3CLKOUT_PCIE_N4
CLKOUT_PCIE_P4CLKOUT_PCIE_N5
CLKOUT_PCIE_P5CLKOUT_PCIE_N6
CLKOUT_PCIE_P6CLKOUT_PCIE_N7
CLKOUT_PCIE_P7CLKOUT_PCIE_N8
CLKOUT_PCIE_P8CLKOUT_PCIE_N9
CLKOUT_PCIE_P9CLKOUT_PCIE_N10
CLKOUT_PCIE_P10CLKOUT_PCIE_N11
CLKOUT_PCIE_P11CLKOUT_PCIE_N12
CLKOUT_PCIE_P12CLKOUT_PCIE_N13
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CLKOUT_PCIE_P38CLKOUT_PCIE_N39
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CLKOUT_PCIE_P41CLKOUT_PCIE_N42
CLKOUT_PCIE_P42CLKOUT_PCIE_N43
CLKOUT_PCIE_P43CLKOUT_PCIE_N44
CLKOUT_PCIE_P44CLKOUT_PCIE_N45
CLKOUT_PCIE_P45CLKOUT_PCIE_N46
CLKOUT_PCIE_P46CLKOUT_PCIE_N47
CLKOUT_PCIE_P47CLKOUT_PCIE_N48
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CLKOUT_PCIE_P49CLKOUT_PCIE_N50
CLKOUT_PCIE_P50

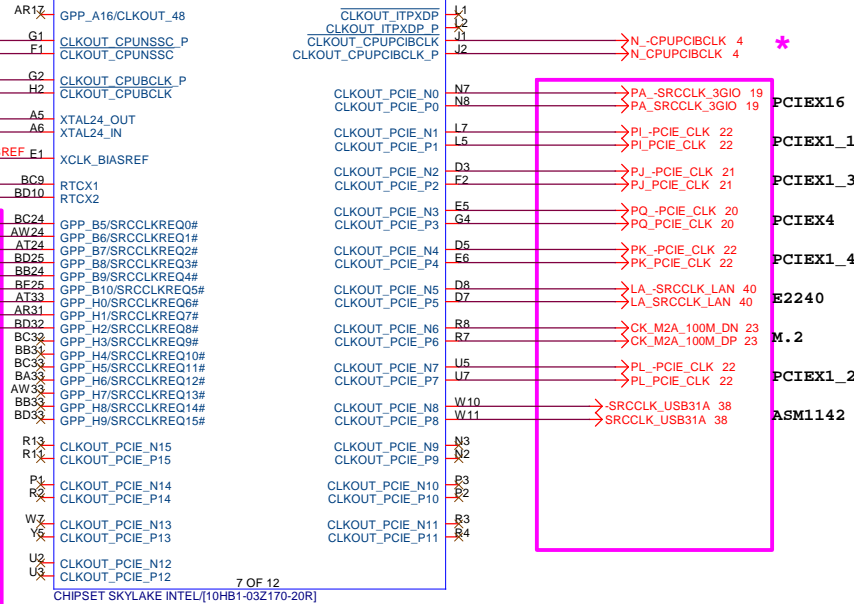
32.768KHZ



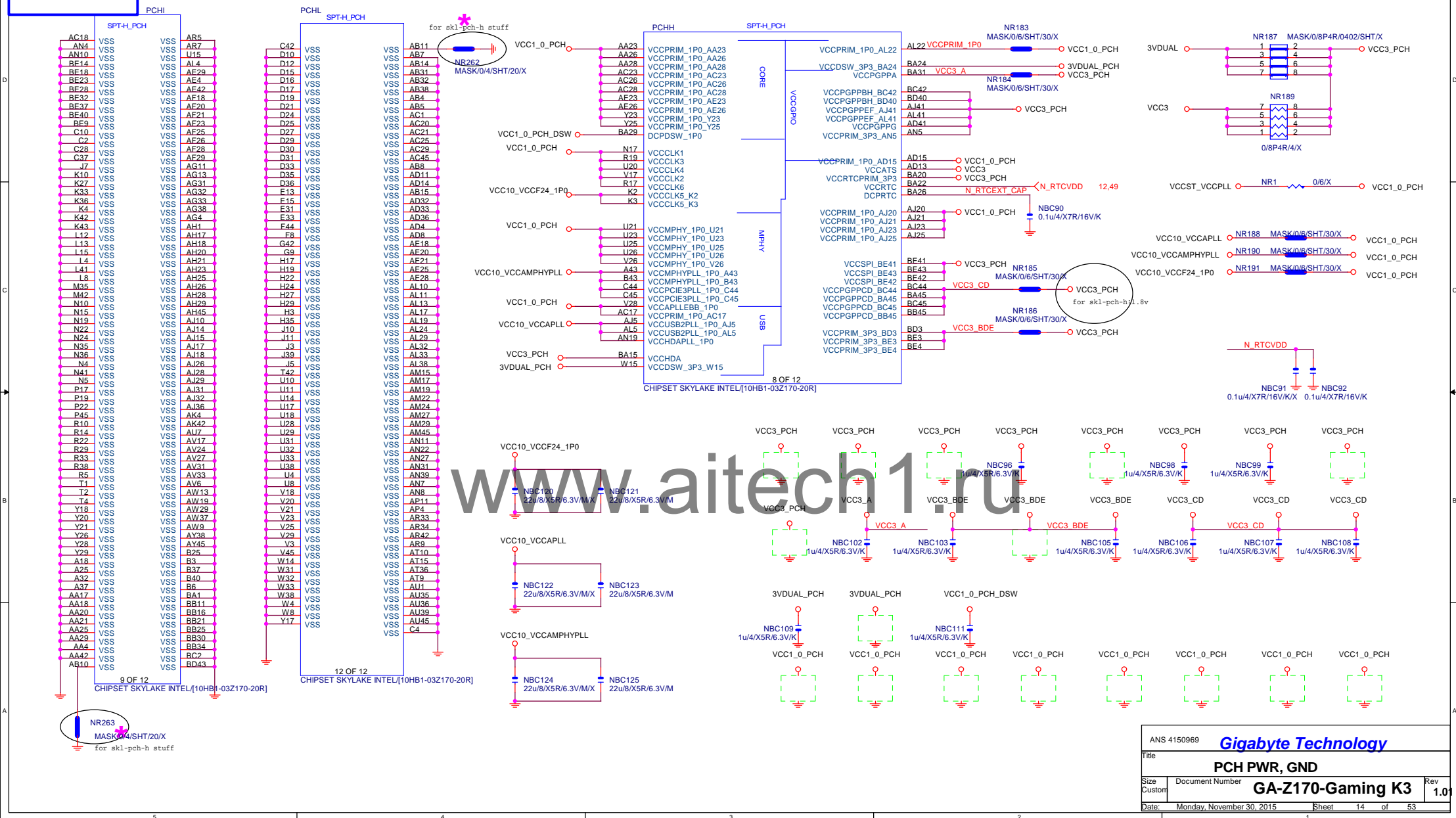
ON-BOARD DEVICE USED

N GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
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N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
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N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
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N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/XN GPP_B9 NR286 0/4/X
N GPP_B10 NR287 0/4/X

PCHG SPT-H_PCH



ANS 4150969		Gigabyte Technology		A
Title				
PCH CLOCK BUFFER				
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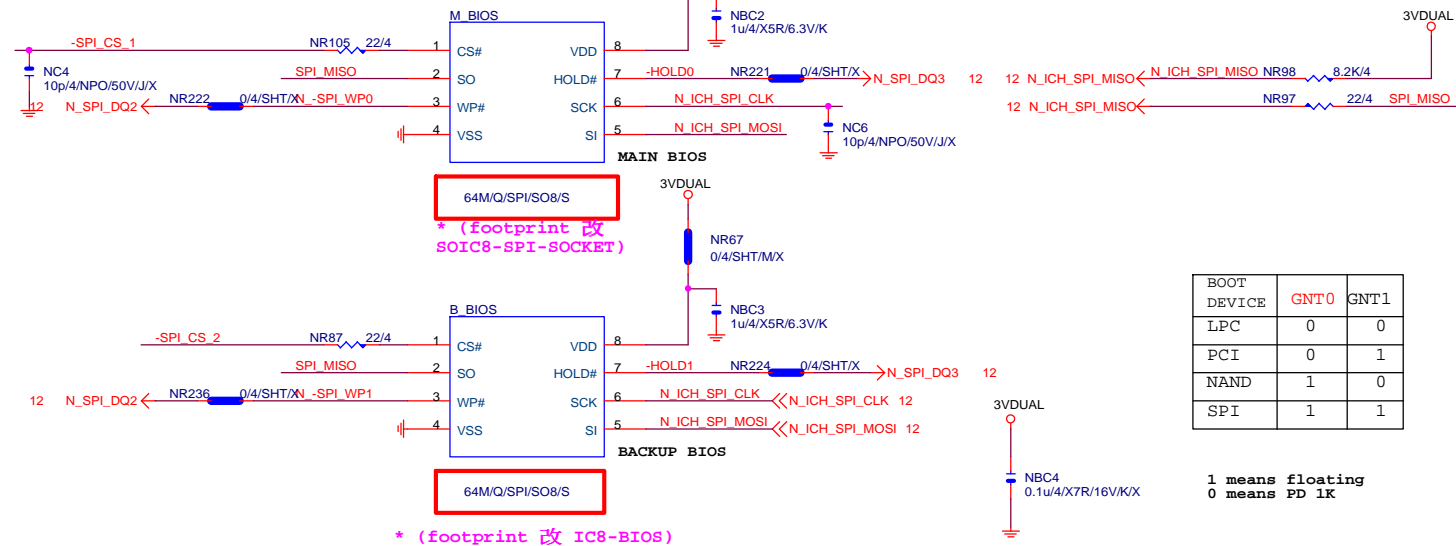


DUAL BIOS

MOSI For DMI RX Termination Voltage

指定用DII

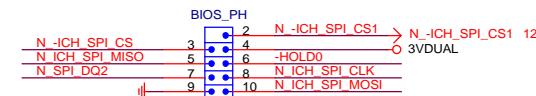
指定用DII



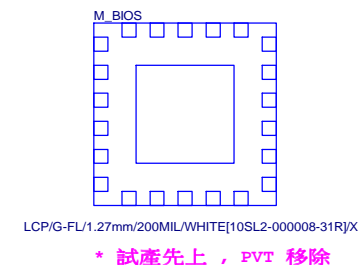
www.aitech1.ru

BIOS_PH

★Update
2015-01.29

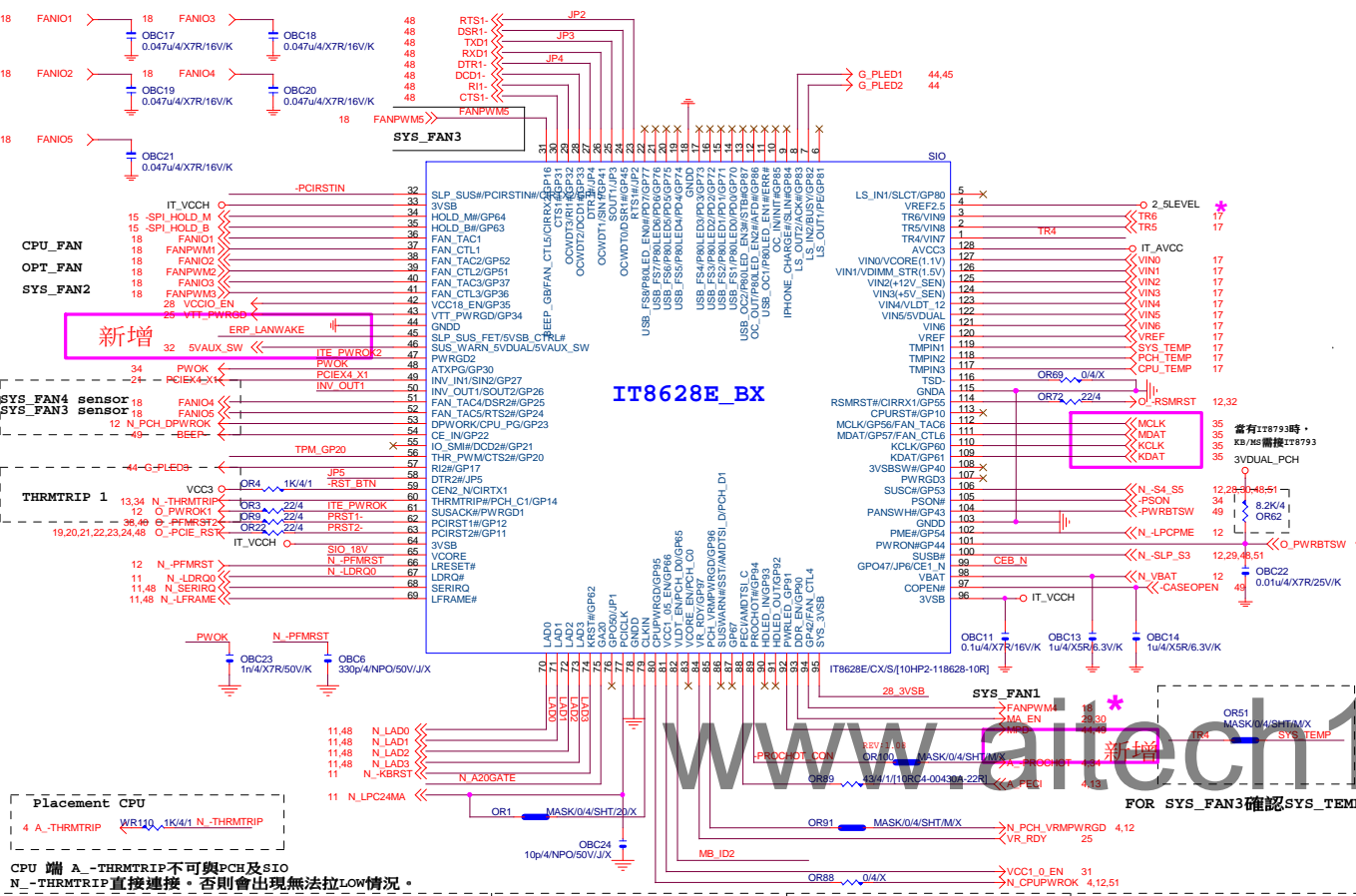


PH/2*5K10/BK/2.54/VA/D/X
Footprint the same, confirmed by Graceing.
Use COM port pin header part.



Gigabyte Technology

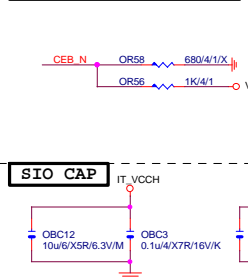
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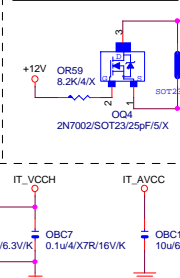
FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL4 FAN_TAC4
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL5 FAN_TAC5
OPT_FAN	FAN_CTL2 FAN_TAC2
THRMTrip1	YES PIN60

IT8628E GPIO問題匯整	
PIN 50	GP26-第一次接上POWER時會拉LO
PIN 90/91	DEFAULT為HDLED FUNCTION, GP93 BYPASS TO GP92 高運時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟PAN6 FUNCTION 擇一使用,不然會互相干擾
PIN 22	PIN22-,需高於3V-,若低於此部分COM PORT及LPT裝置 蜂鳴器會異常動作。

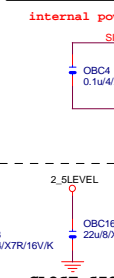
DUAL BIOS OPT STRAP



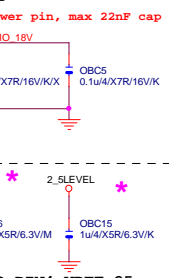
Power leakage



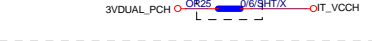
SIO_18V



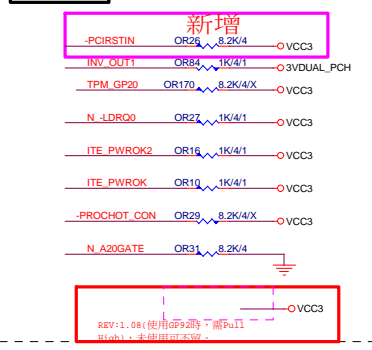
CLOSE SIO PIN4 VREF_25



PWR SHT



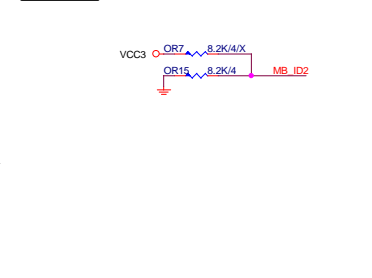
SIO PU



SIO STRAP

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

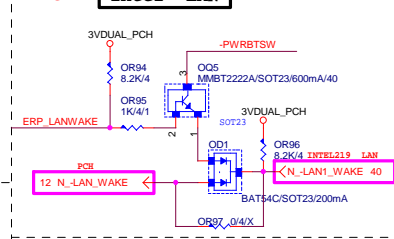
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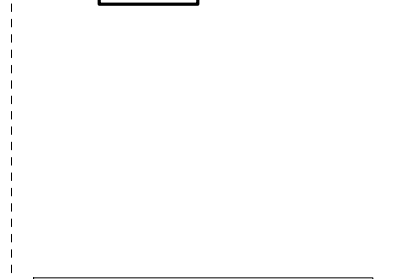
ERP WAKE on LAN (依LAN組態選擇)

(組態一) Realtek/ATHEROS LAN

(組態二) Intel LAN



(組態三) Dual LAN

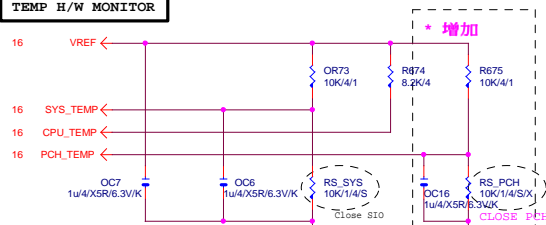


ERP Wake on LAN		
Single LAN	Realtek	組態一
	Atheros	組態一
Dual LAN	Intel 219	組態二
	Atheros+Athertos	組態一
No Support ERP	Intel 219+Athertos	組態一
	Intel 219+Intel 210	組態三
BOM不上		N/A

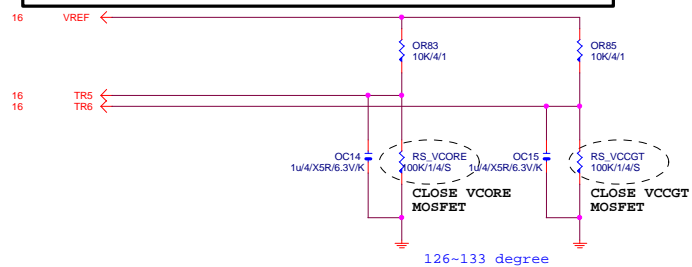
Gigabyte Technology

ITE 8620 LPC IO		
GA-Z170-Gaming K3		
Size	Document Number	Rev
Custom		1.01
Date:	Monday, November 30, 2015	Sheet 16 of 53

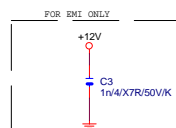
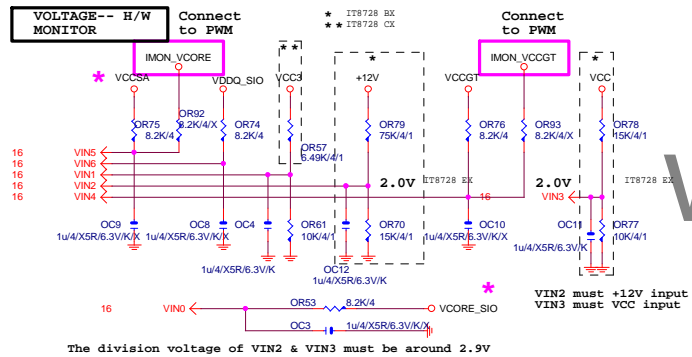
TEMP H/W MONITOR



RS_VCORE、RS_VCCGT、CLOSE CPU_VCORE & VCCGT MOSFET

~~PROCHOT:有mos meartsink不用prochot function~~

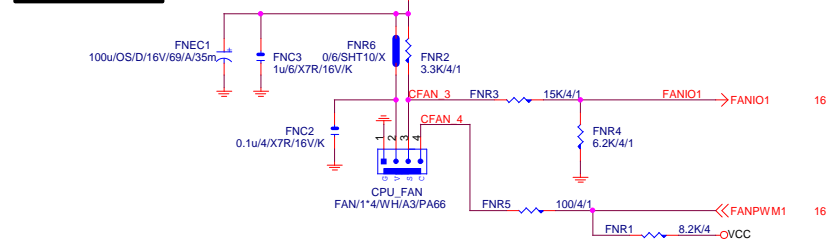
VOLTAGE-- H/W MONITOR



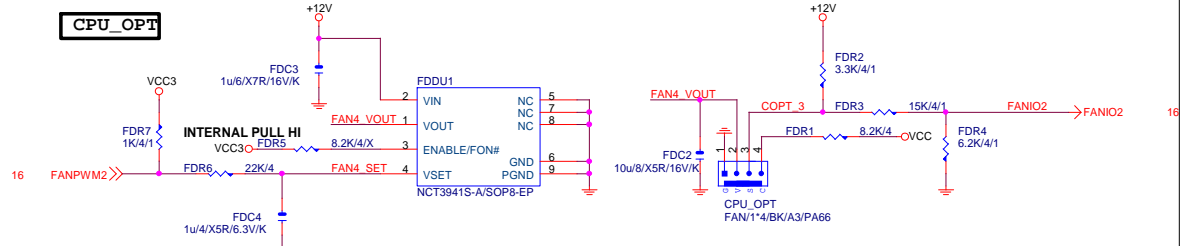
Gigabyte Technology

Title			HWM,KB/MS, FAN CTRL
Size	Document Number	GA-Z170-Gaming K3	
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CPU SMART FAN

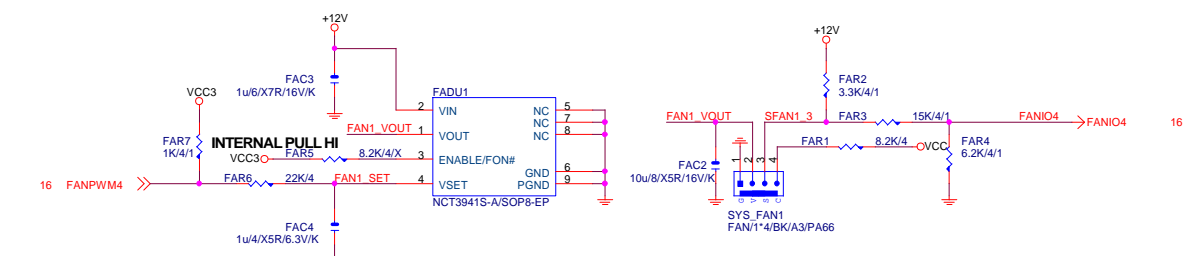


CPU_OPT

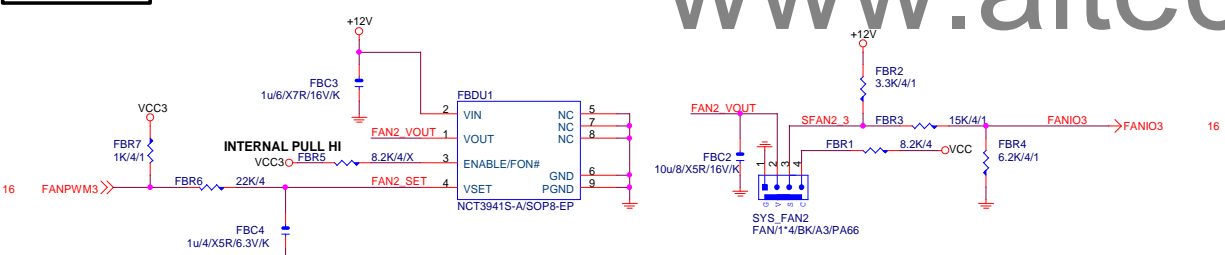


SYSTEM FAN1

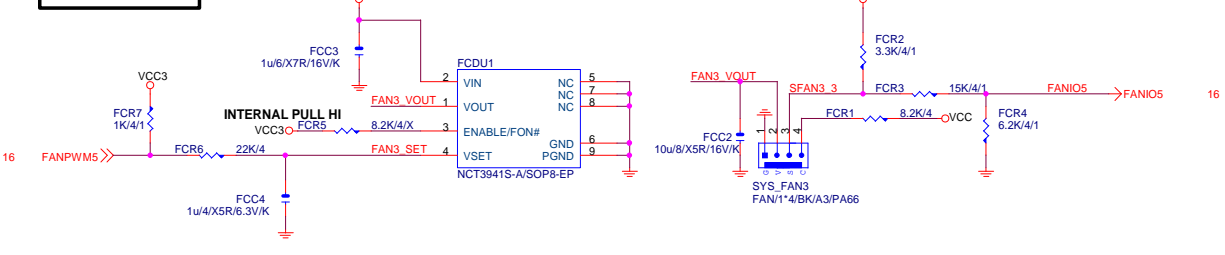
Linear SYS_FAN
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)



SYSTEM FAN2



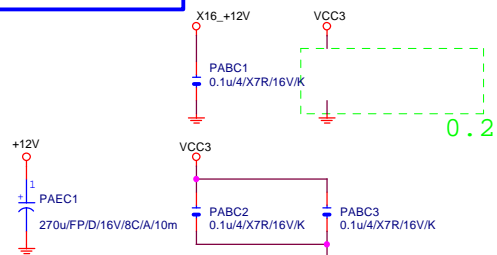
SYSTEM FAN3



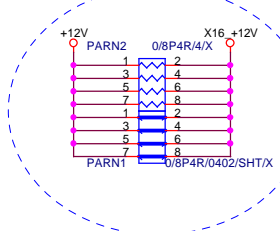
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Rev 0.3

PCIEX16 CAP



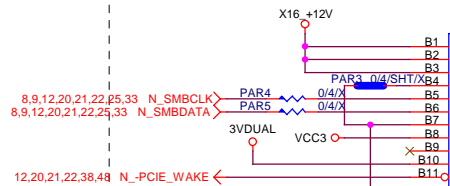
PCIEX16 PROTECT SHT

+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 TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA EXP TXN15 C

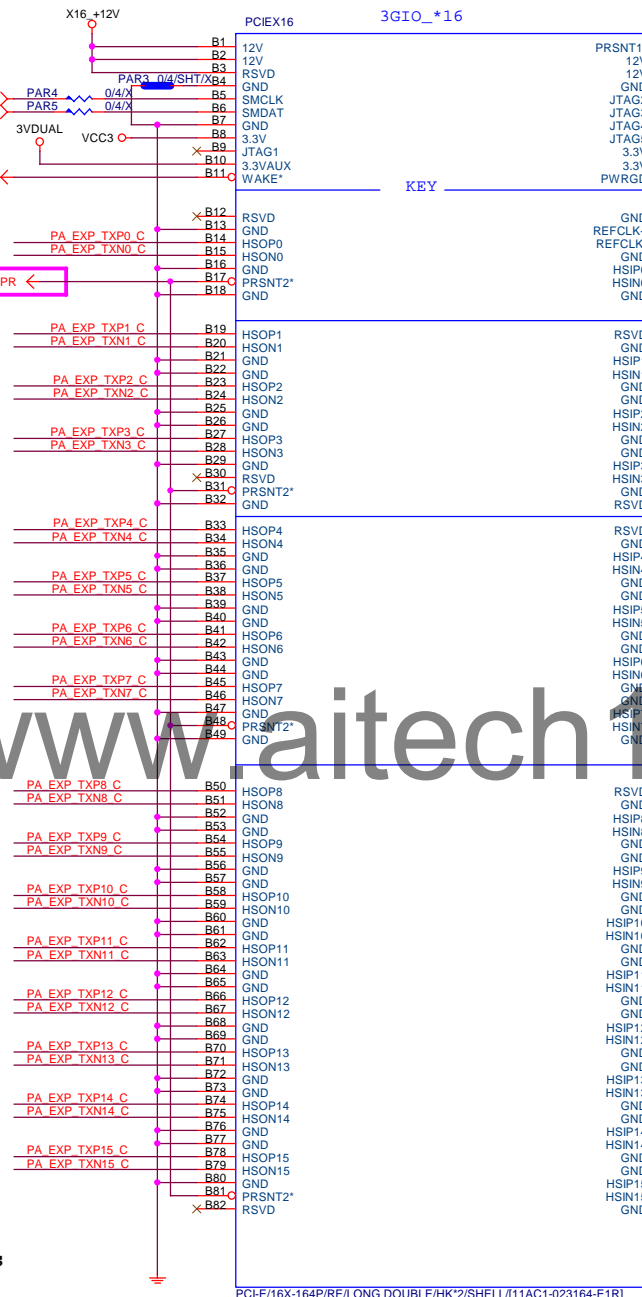
PCIEX16 SLOT

8,9,12,20,21,22,25,33 N_SMBCLK
8,9,12,20,21,22,25,33 N_SMBDATA
12,20,21,22,38,48 N_-PCIE_WAKE

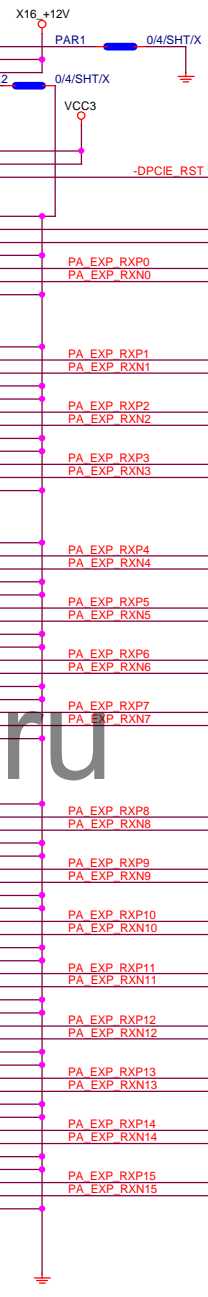
10 -PCIEX16_PR

PA EXP TXP0 C
PA EXP TXN0 C
PA EXP TXP1 C
PA EXP TXN1 C
PA EXP TXP2 C
PA EXP TXN2 C
PA EXP TXP3 C
PA EXP TXN3 C
PA EXP TXP4 C
PA EXP TXN4 C
PA EXP TXP5 C
PA EXP TXN5 C
PA EXP TXP6 C
PA EXP TXN6 C
PA EXP TXP7 C
PA EXP TXN7 C
PA EXP TXP8 C
PA EXP TXN8 C
PA EXP TXP9 C
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PA EXP TXP10 C
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PA EXP TXP11 C
PA EXP TXN11 C
PA EXP TXP12 C
PA EXP TXN12 C
PA EXP TXP13 C
PA EXP TXN13 C
PA EXP TXP14 C
PA EXP TXN14 C
PA EXP TXP15 C
PA EXP TXN15 C

PCIESLOT-164DN-Q



PCI-E/16X-164P/RE/LONG DOUBLE/HK*2/SHELL/11AC1-023164-E1R



PCIEX16:16/5/5/5/16

PA EXP_RXP[0..15] >> PA_EXP_RXP[0..15] 4
PA EXP_RXN[0..15] >> PA_EXP_RXN[0..15] 4
PA EXP_TXP[0..15] >> PA_EXP_TXP[0..15] 4
PA EXP_TXN[0..15] >> PA_EXP_TXN[0..15] 4

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

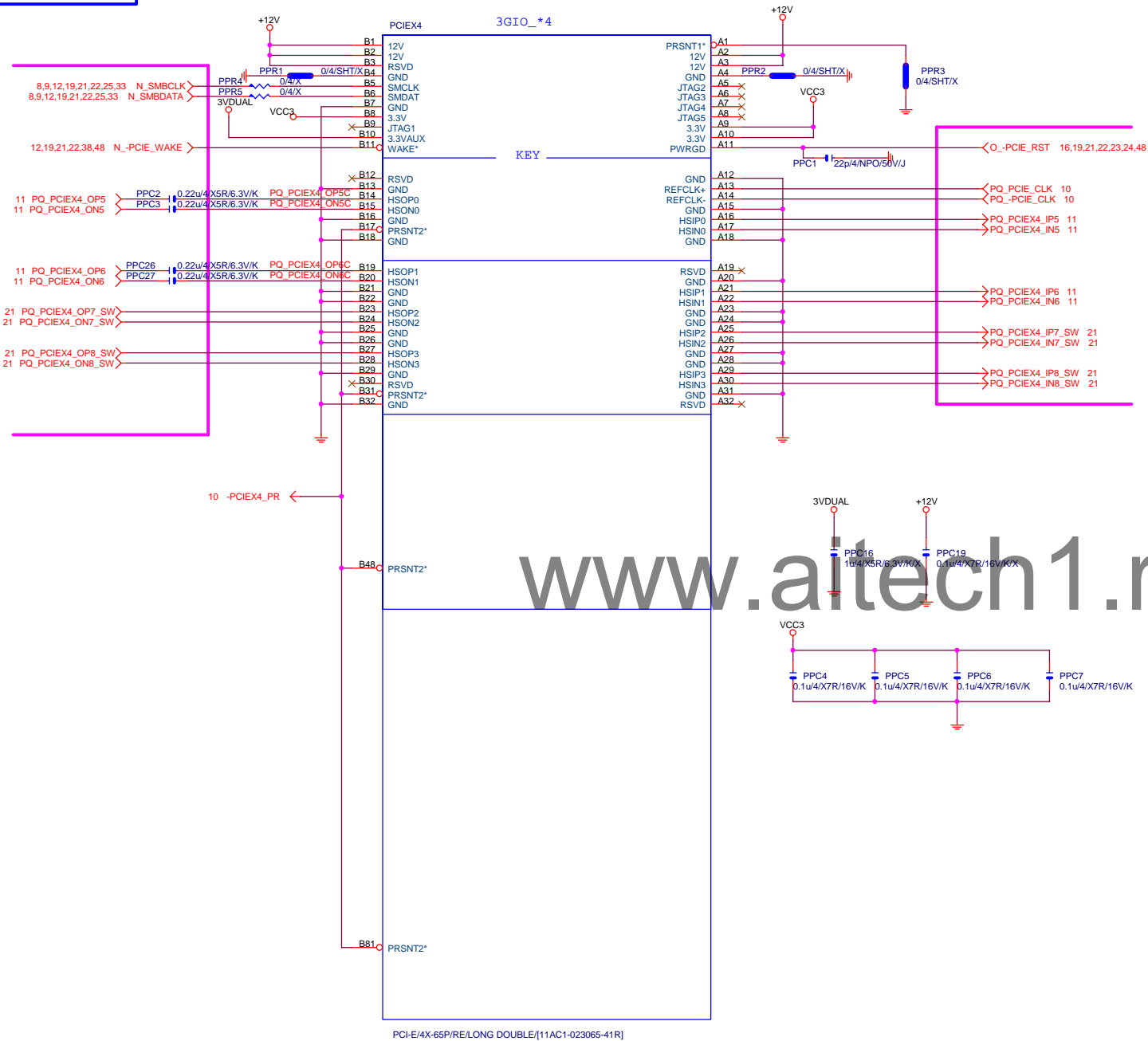
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

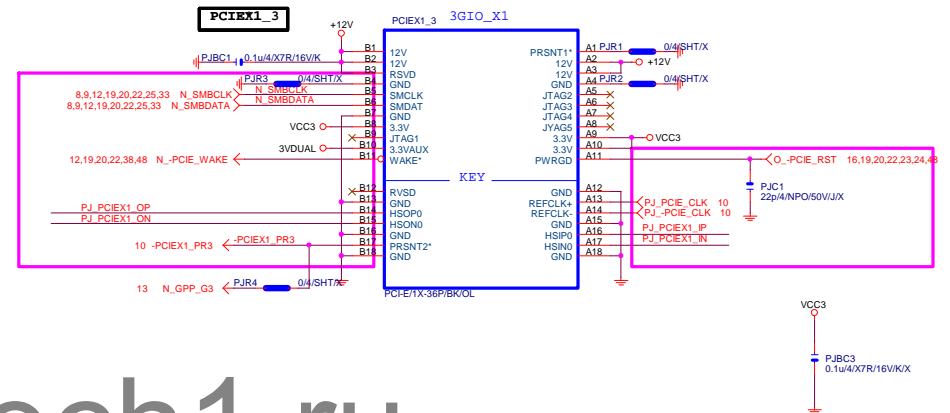
Gigabyte Technology

Title			PCI EXPRESS * 16
Size	Document Number	GA-Z170-Gaming K3	
Custom			Rev 1.01
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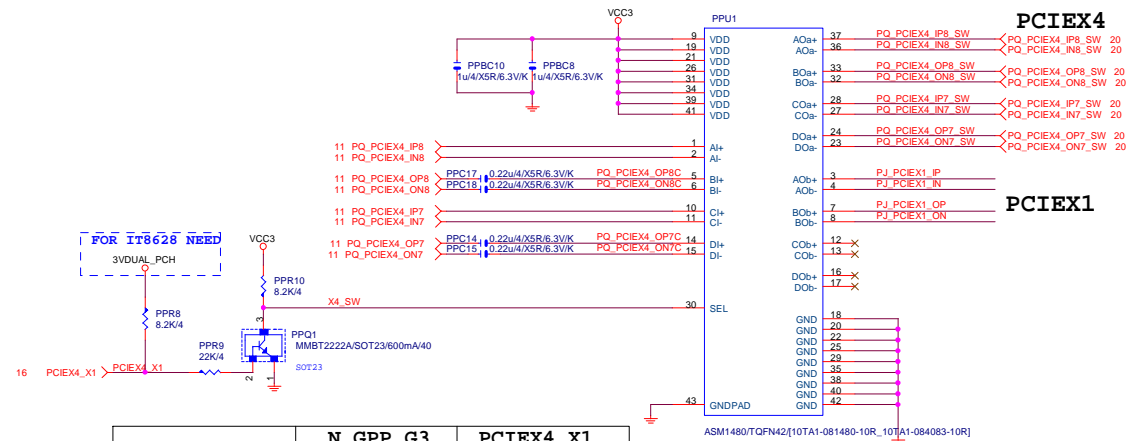


GIGABYTE

Title			
PCIE_X4			
Size	Document Number	GA-Z170-Gaming K3	
Custom		Rev	1.0
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PCIEX4/X1 SWITCH



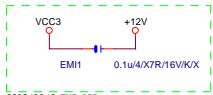
	N_GPP_G3 (PCH GPP_G3)	PCIEX4_X1 (SIO_GPIO27)
PCIEX4 -> X4 M2_WIFI -> N/A PCIEX1_1/2 --> N/A (Default)	H	H
PCIEX4 -> X1 M2_WIFI -> X1 PCIEX1_1/2 --> X1	L	L

Function	SEL
xI--> x0h	L;PCIEX4 SLOT-->X4
xI--> x0h	H;PCIEX4 SLOT-->X1

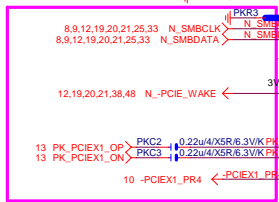
Gigabyte Technology

File	PCIEX1 1.2	Rev	1.01
Size	Custom	Document Number	GA-Z170-Gaming K3
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M.2 Lane4 from PCH port18

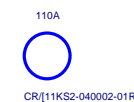
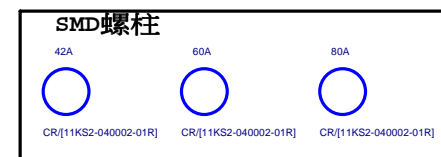
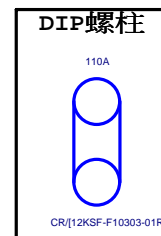
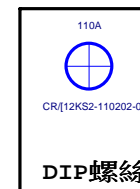
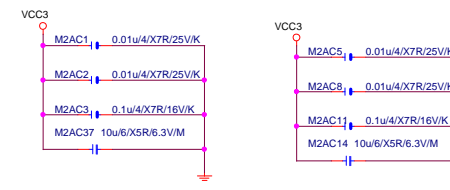
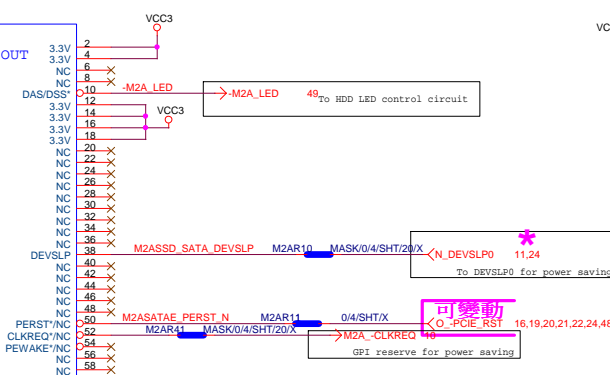
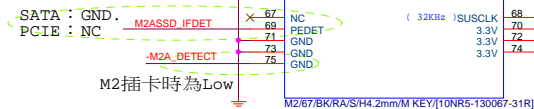
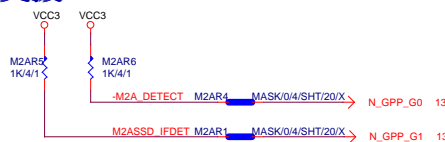
M.2 Lane3 from PCH port17

M.2 Lane2 from PCH port16

M.2 Lane2 from PCH port15

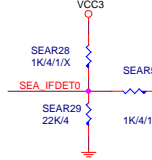
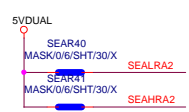
需與M2-CLKREQ對應

支援SATA and M.2 function



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

Rev 0.5



雙層:TBD

單層:11NR6-C10118-03R

To SATA3
port 2/3



SATA 5	(文字面寫SATA 1)
SATA 4	(文字面寫SATA 0)
SATA 3	
SATA 2	
SATA 1	(文字面寫SATA 5)
SATA 0	(文字面寫SATA 4)

GIGABYTE Technology

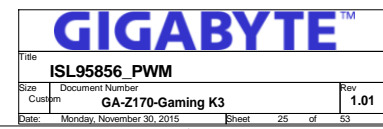
SATA EXPRESS

GA-Z170-Gaming K3

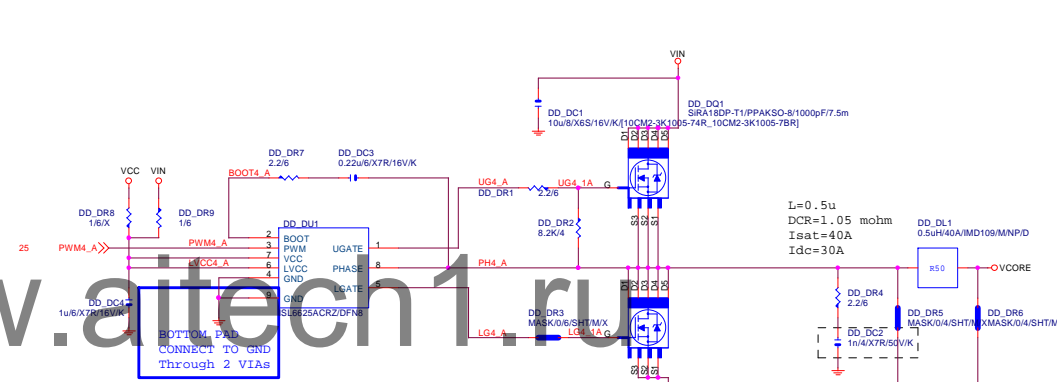
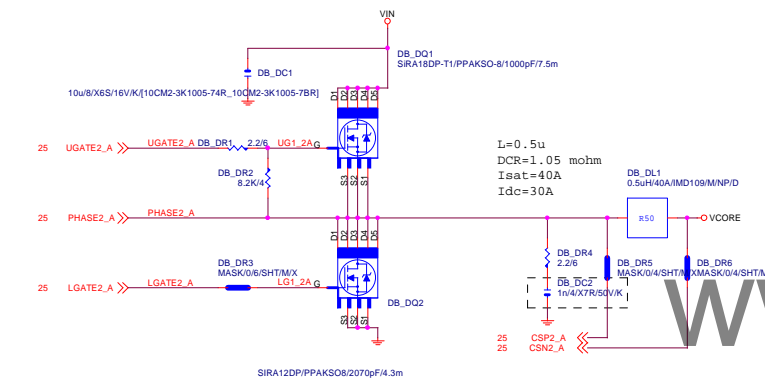
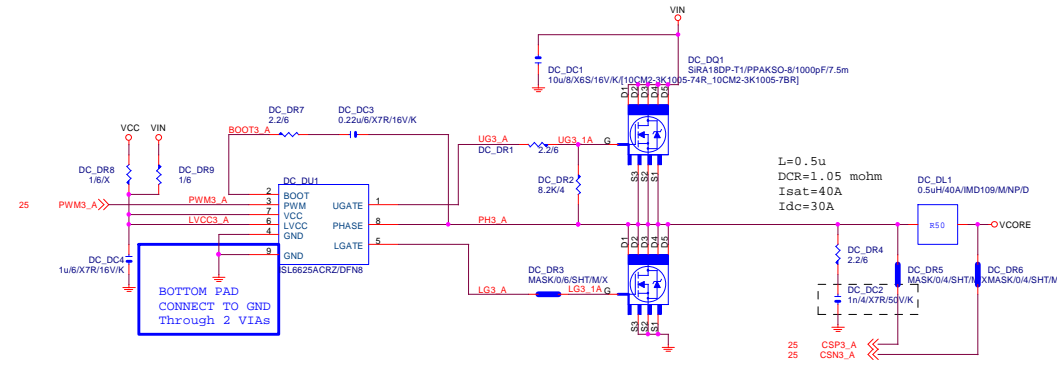
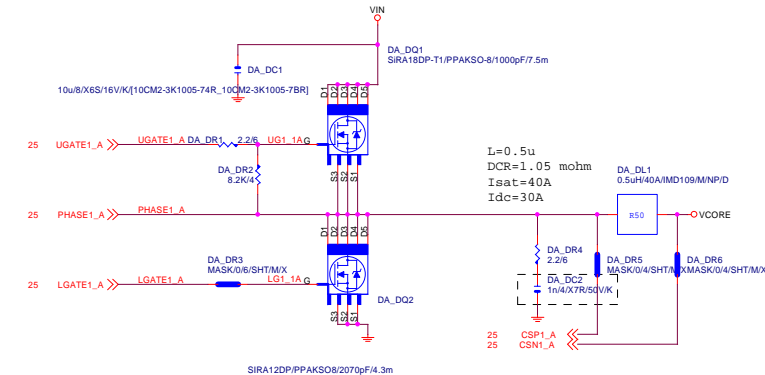
Rev	1.0
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Customer:	GA-Z170-Gaming K3			1.0
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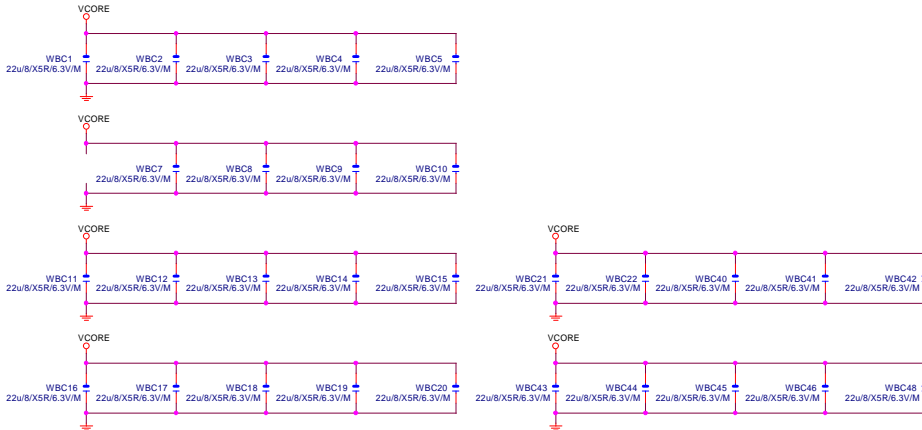
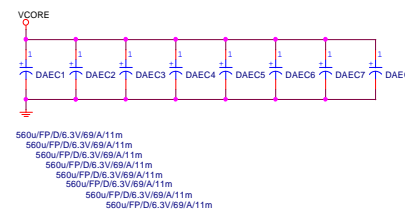
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1	



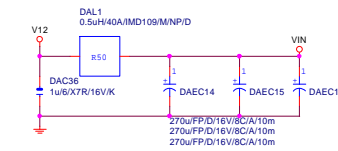
VCORE



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

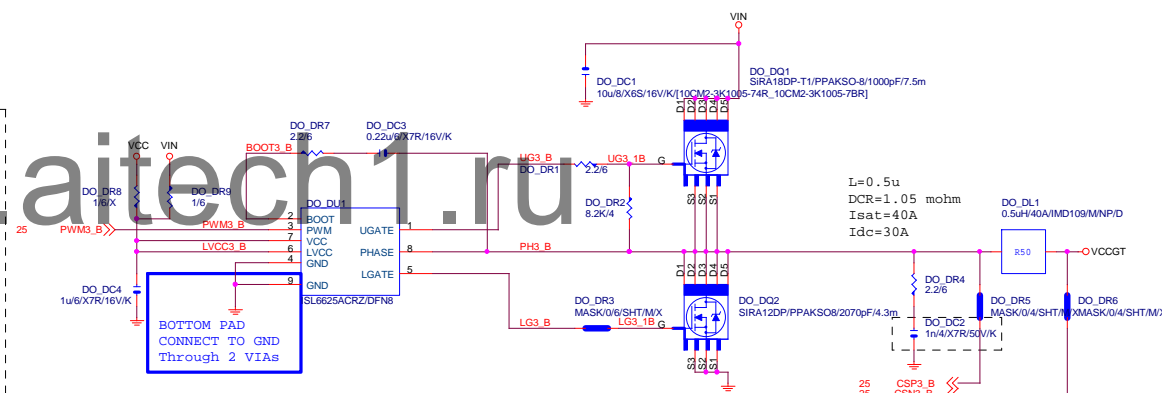
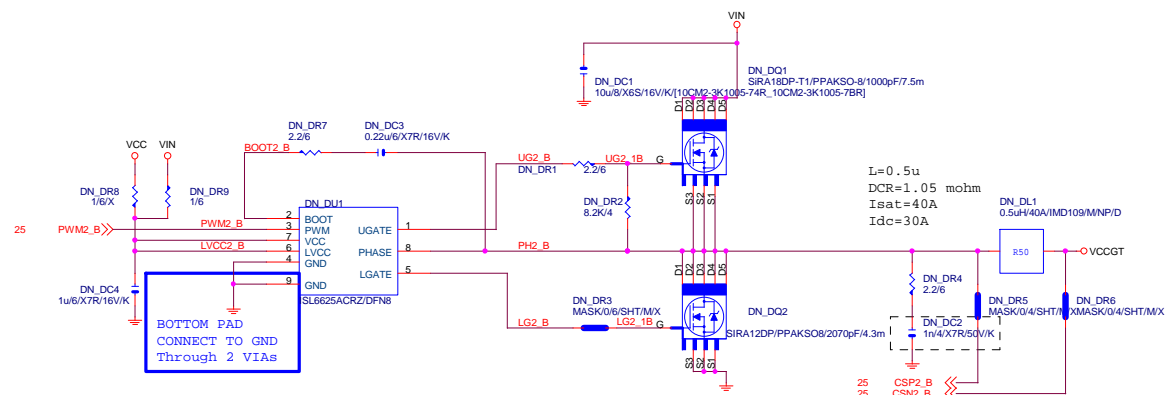


VIN CAP 270u*3PCS



GIGABYTE™


ISL95856_MOS		
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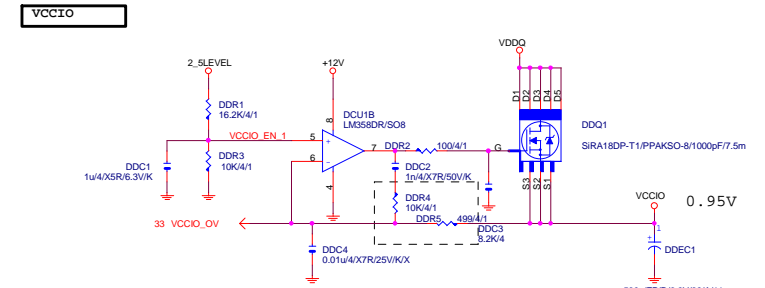
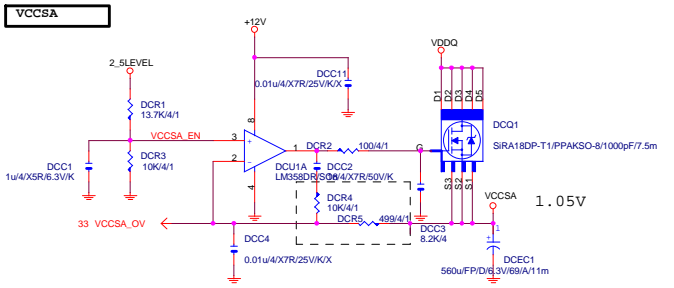
VCCGT

DAEC9 DAEC10 DAEC1 DAEC12 DAEC13

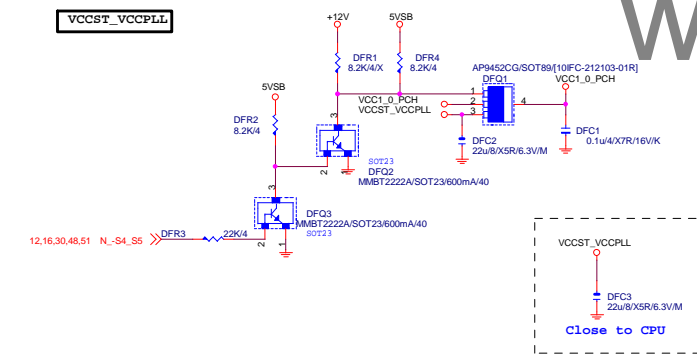
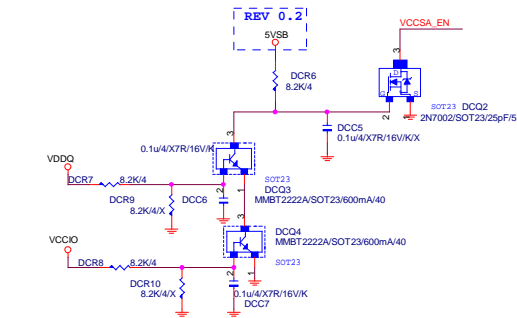
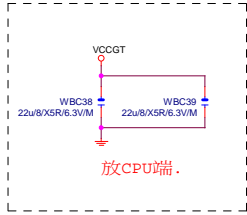
560uF/PP/D6.3V/69A/11m
 560uF/PP/D6.3V/69A/11m
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 560uF/PP/D6.3V/69A/11m

			
Title			
ISL95856_MOS			
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REV:0.4

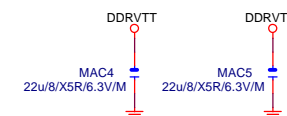
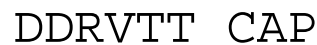
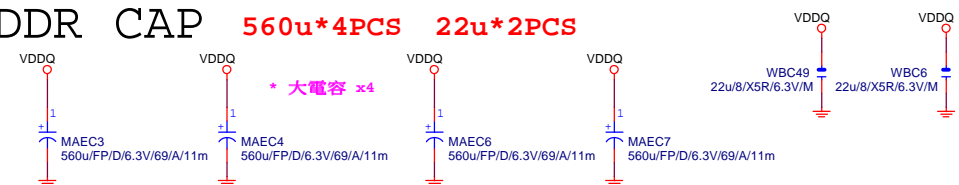
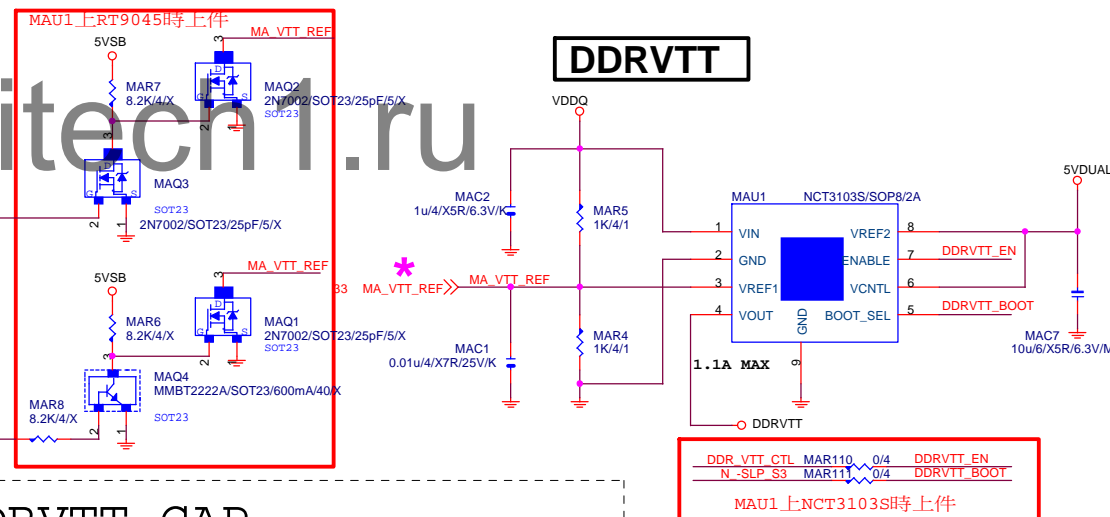
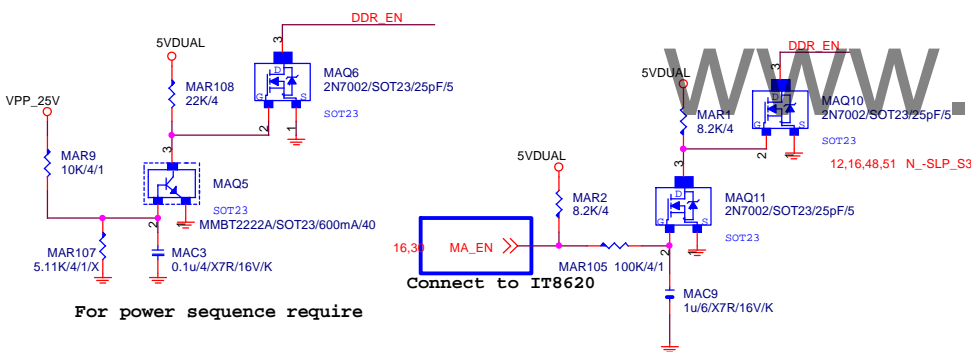
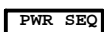
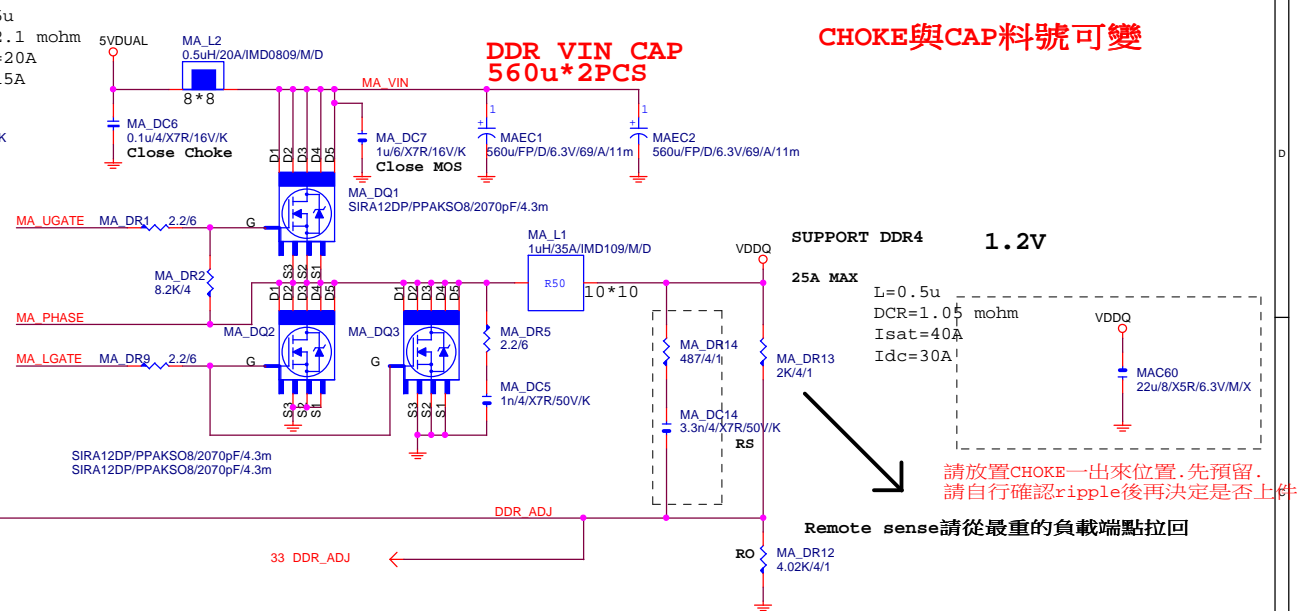
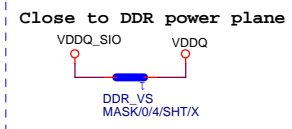


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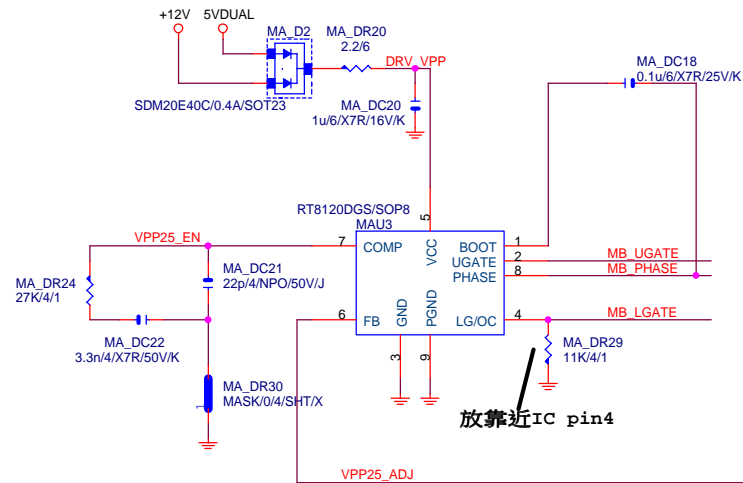
DDR4

**GIGABYTE™**

Title			
RT8120_DDR4 POWER			
Size	Document Number	Rev	
Custom	GA-Z170-Gaming K3	1.01	
Date:	Monday, November 30, 2015	Sheet	29 of 53

REV:0.83

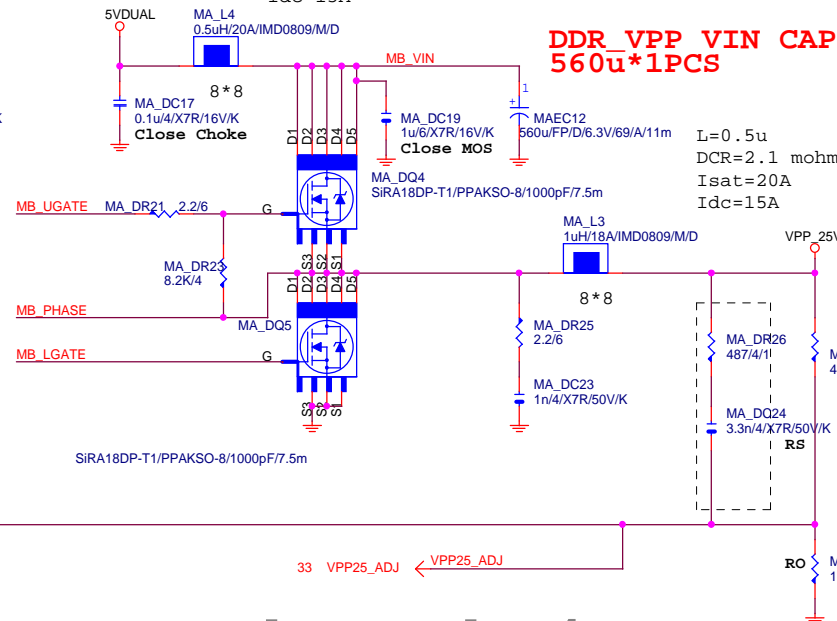
VPP_25V



L=0.5u
DCR=2.1 mohm
Isat=20A
Idc=15A

CHOKE與CAP料號可變

DDR_VPP VIN CAP
560u*1PCS



SUPPORT DDR4 2.5V

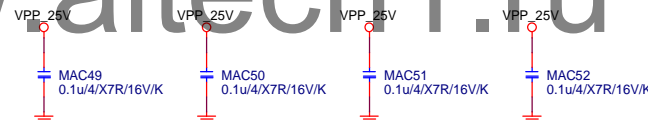
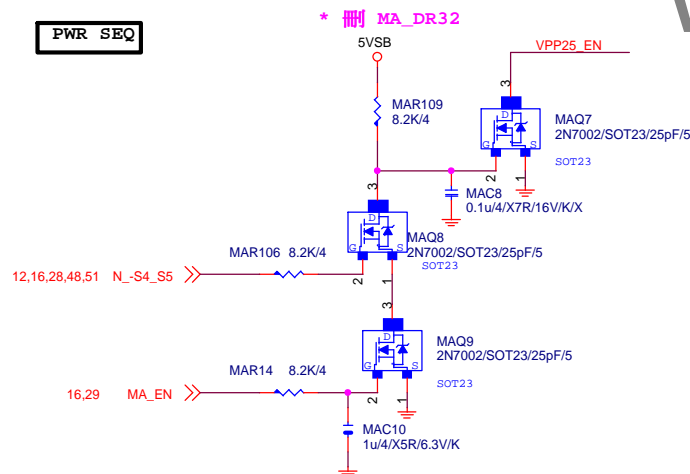
25A MAX

請放置CHOKE一出來位置.先預留.
請自行確認ripple後再決定是否上件

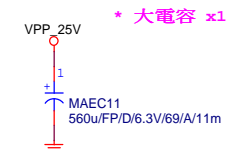
Remote sense請從最重的負載端點拉回

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PWR_SEQ



VPP CAP 560u*1PCS



GIGABYTE™

Title RT8120_VPP25 POWER		
Size Custom	Document Number GA-Z170-Gaming K3	Rev 1.01
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REV:0.64

L=0.5u
DCR=1.7 mohm
Isat=25A
Idc=18A

CHOKES與CAP料號可變

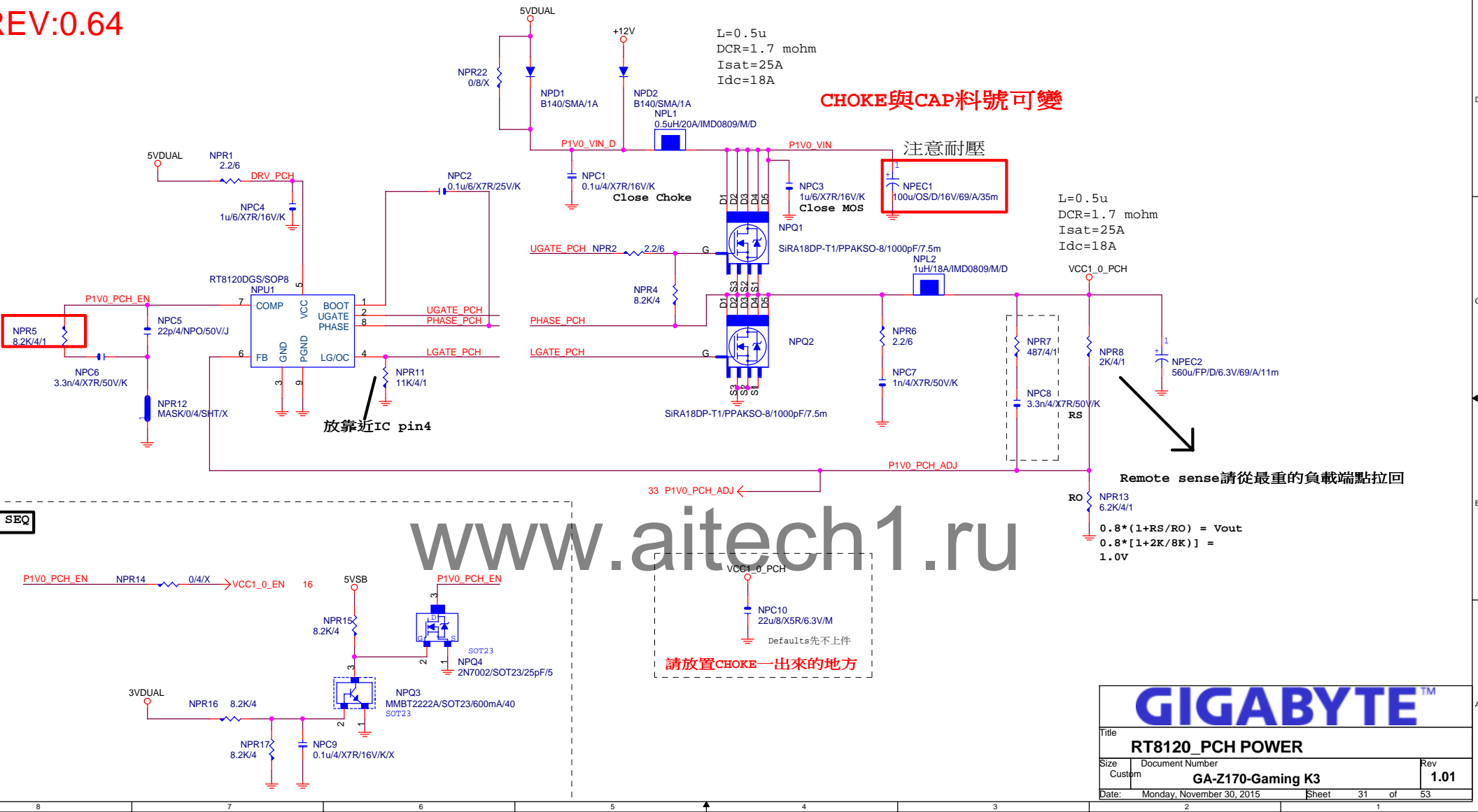
注意耐壓

L=0.5u
DCR=1.7 mohm
Isat=25A
Idc=18A

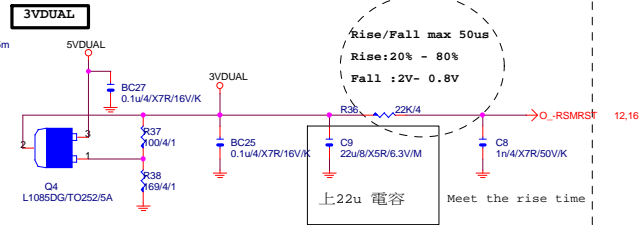
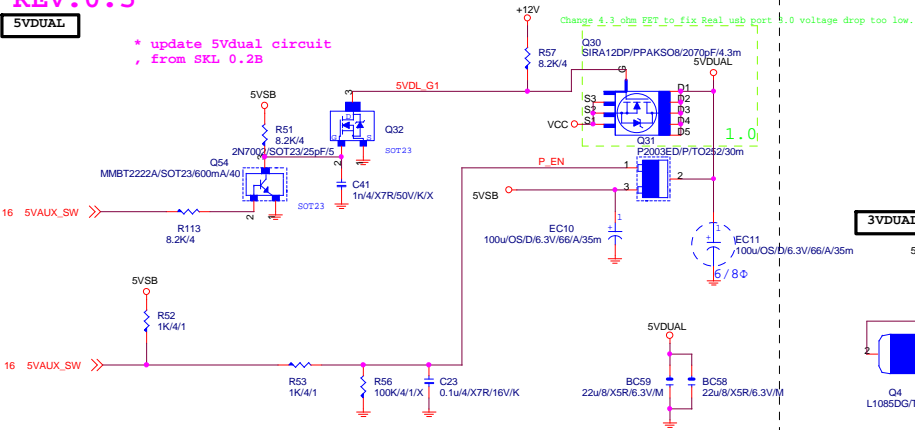
Remote sense請從最重的負載端點拉回

GIGABYTE™			
Title RT8120_PCH POWER			
Size Custom	Document Number GA-Z170-Gaming K3		Rev 1.01
Date: Monday, November 30, 2015	Sheet 31	of 53	

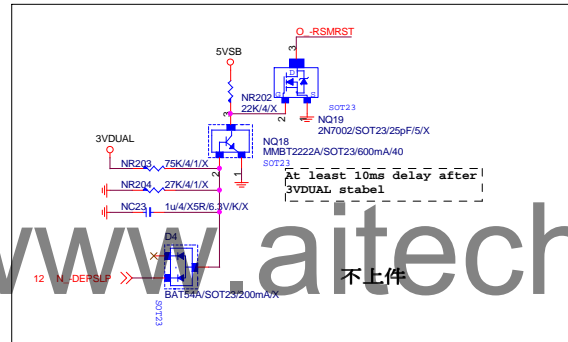
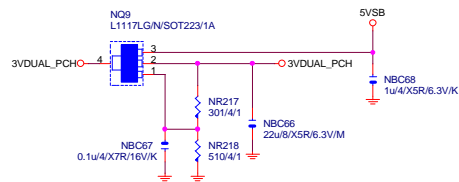
www.aitech1.ru



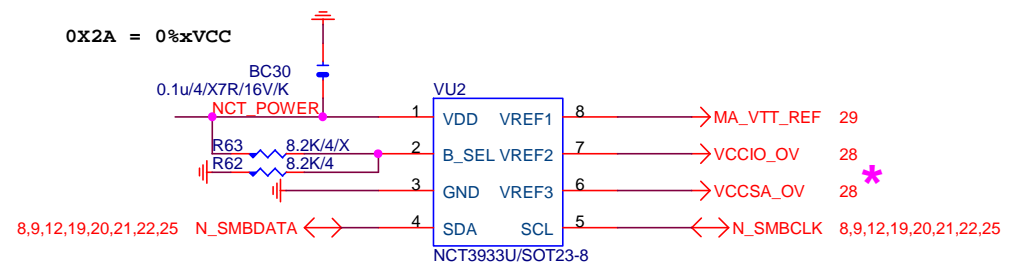
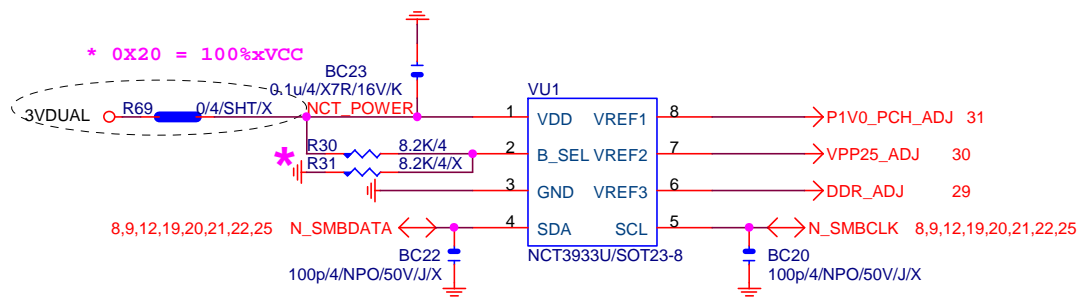
5VDUAL



3VDUAL_PCH



OVER VOLTAGE



0X22 = 75%xVCC

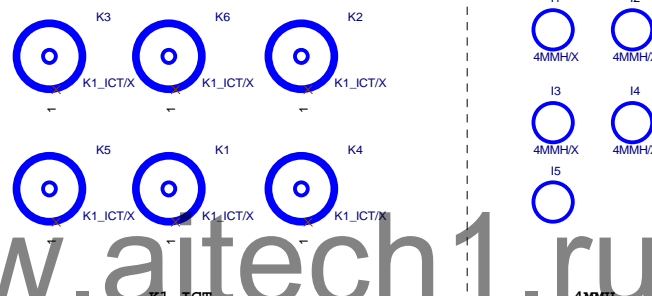
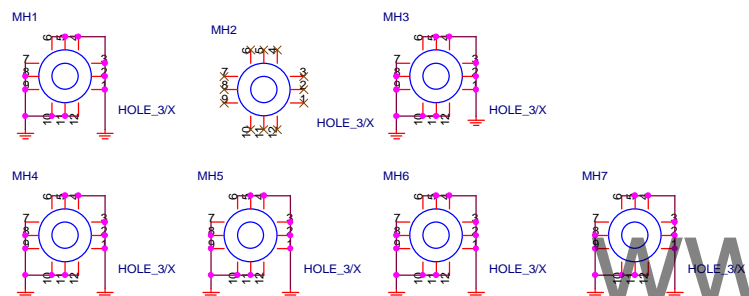
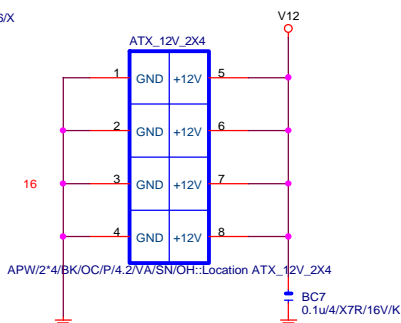
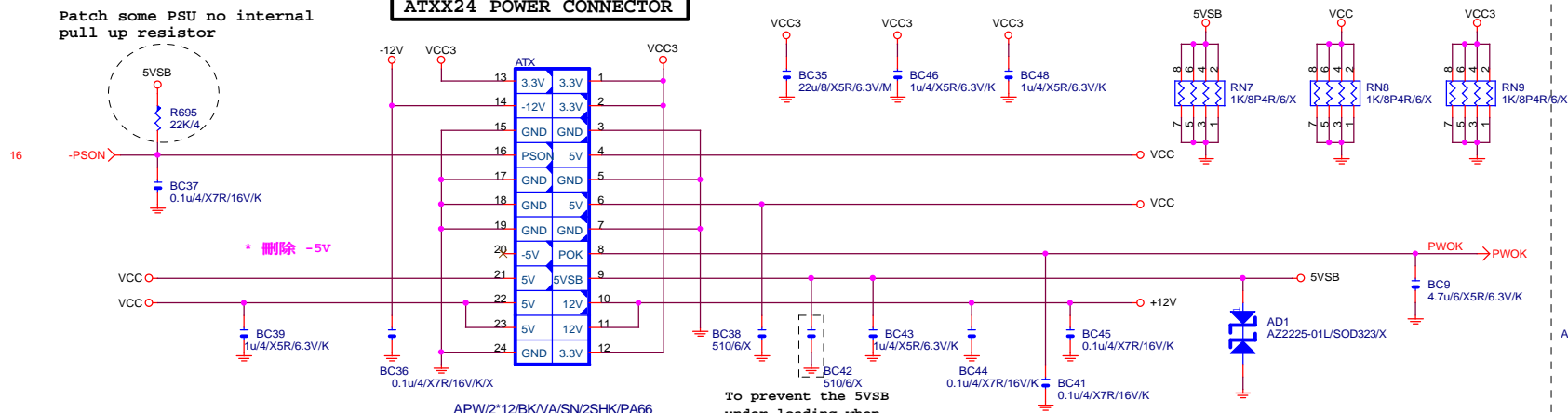
* 删除 OVU3

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

Gigabyte Technology

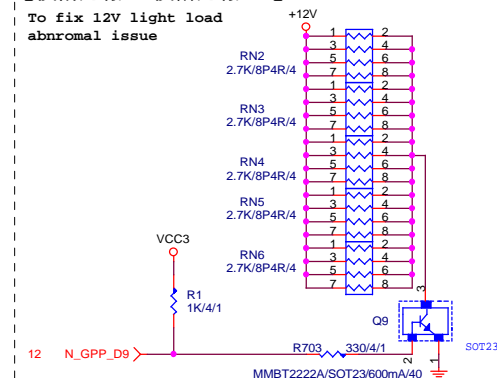
Title: CPU CORE VR-2

Size Custom	Document Number	Rev 1.01
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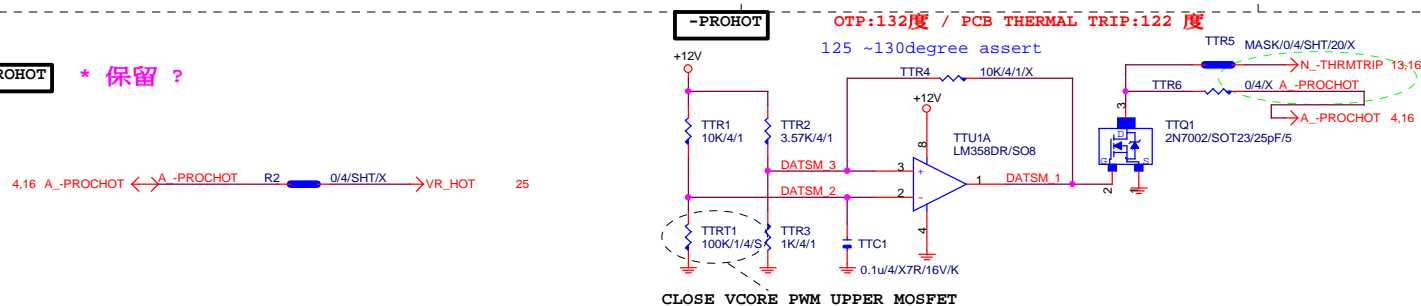


【技術通報R&D技術通報153】

To fix 12V light load
abnromal issue



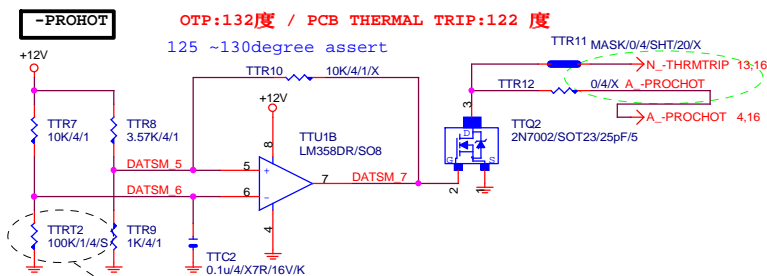
-PROHOT * 保留 ?



CLOSE VCORE PWM UPPER MOSFET

-PROHOT

OTP:132度 / PCB THERMAL TRIP:122 度
125 ~130degree assert



CLOSE VCCGT PWM UPPER MOSFET



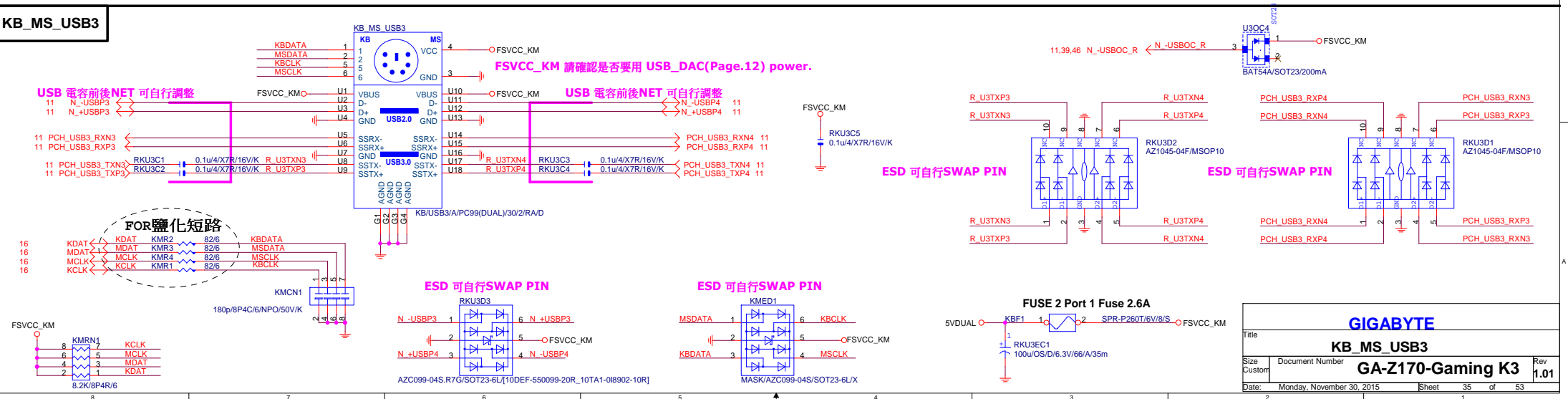
Gigabyte Technology

Title			
ATX POWER CONNECTOR			
Size Custom	Document Number	GA-Z170-Gaming K3	Rev 1.01
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R_USB30_2

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KB_MS_USB3

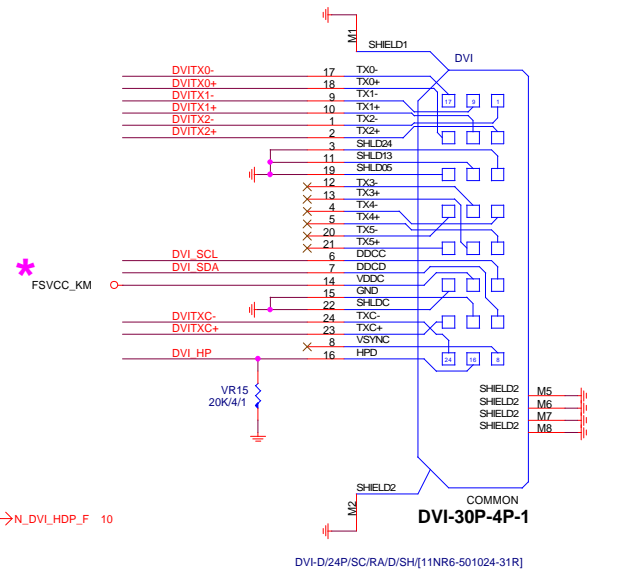
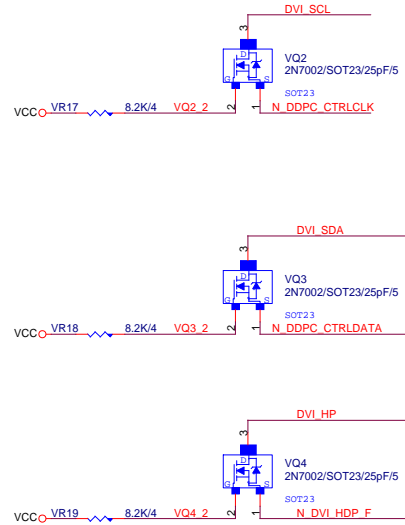
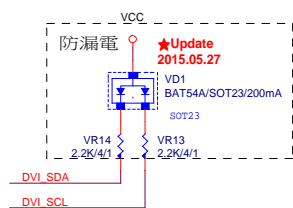
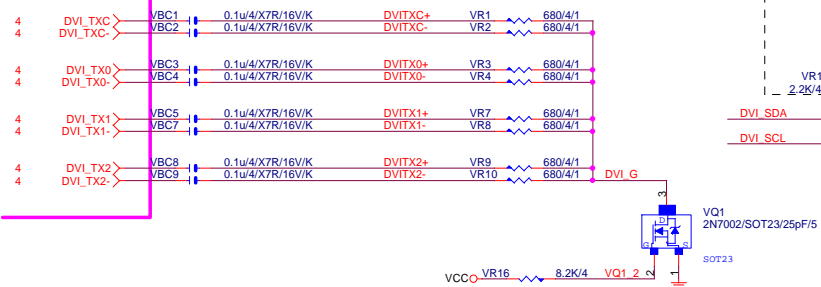


Rev: 0.62

DVI_CONN

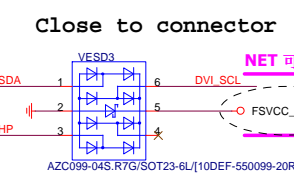
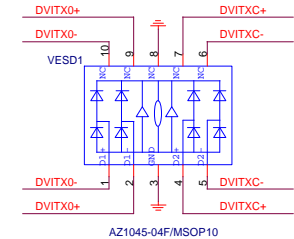
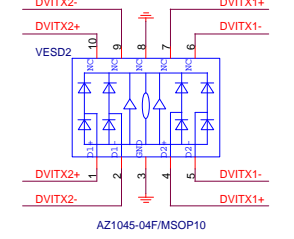
DVI:20/4/6/4/20
Impedance=85 +- 17.5%

NET 可變

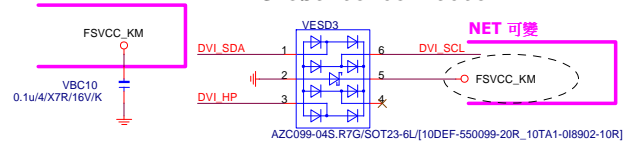


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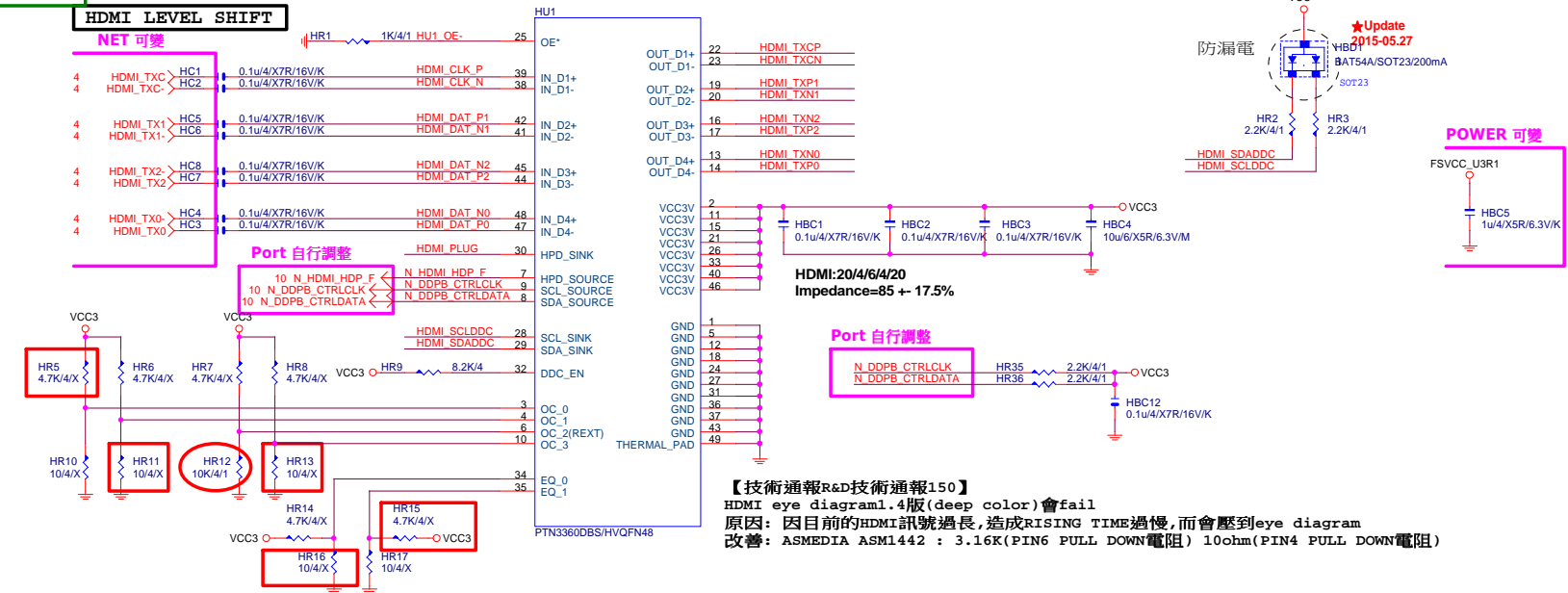
Close to connector



NET 可變

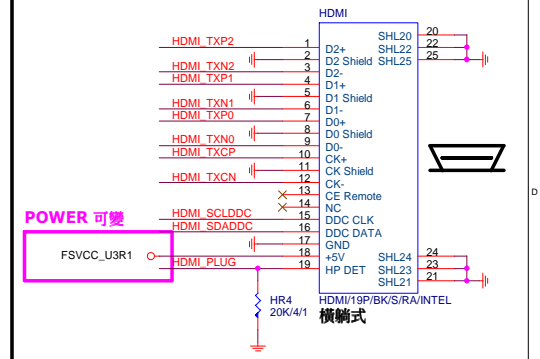


Gigabyte Technology			
Title			
FP,F_USB,USB PWR,BZ			
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PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K
ASM1442:紅色框要上,HR12:3.16K

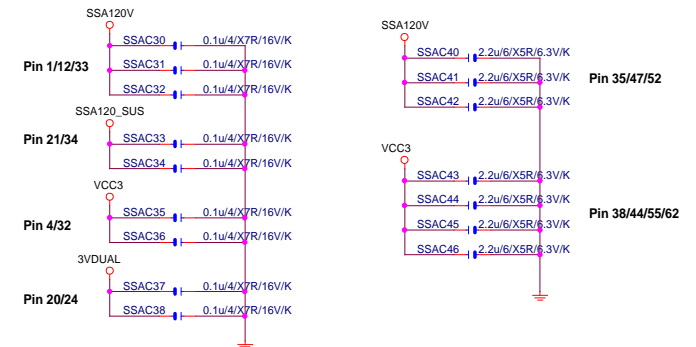
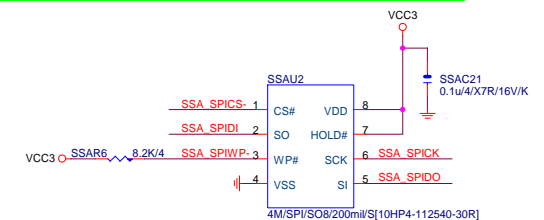
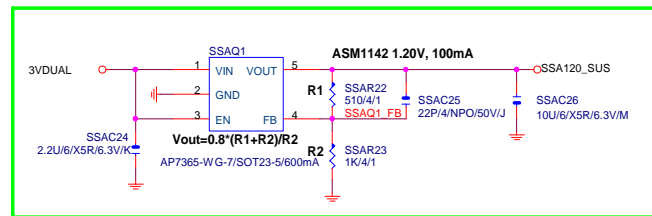
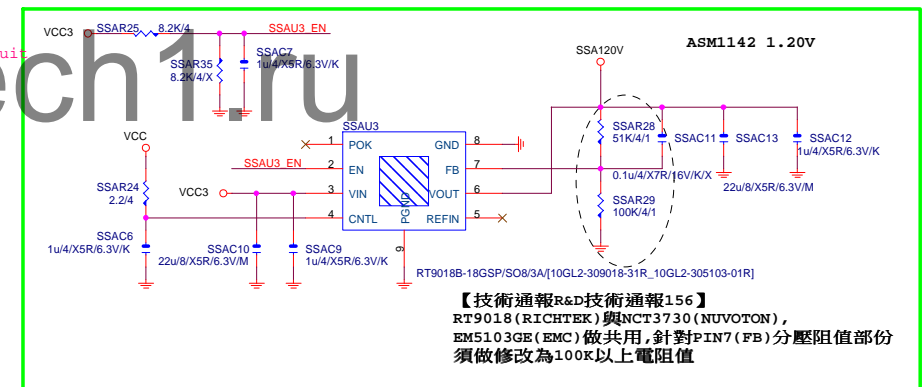
www.aitech1.ru



直立式
P/N:11NR6-H01019-K1R

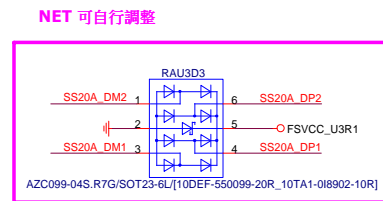
ASM1142 USB3.1

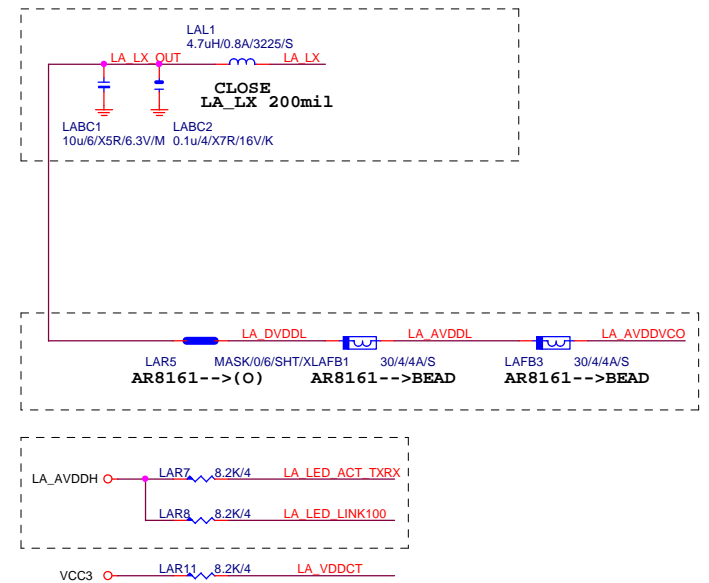
Base on ASM1142 0.3 Reference SCH

[illegible]


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

R_USB30_1



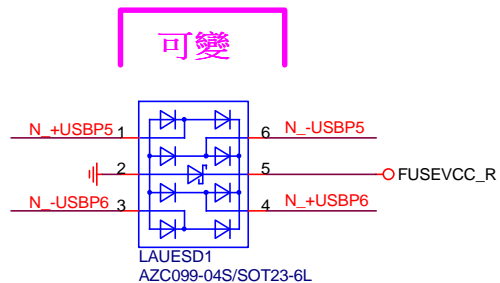


E2207-BL3A-R/S
E2400S-50; E2400-R1V1-RL/QFN40/[10HP2-402400-10R]

<div style="text-align: center;">  </div>			
Title			
<div style="text-align: center;"> KILLER E2201(E2400) GA-Z170-Gaming K3 </div>			
Size	Document Number		Rev
			1.01
Date:	Mondav, November 30, 2015	Sheet	40 of 53

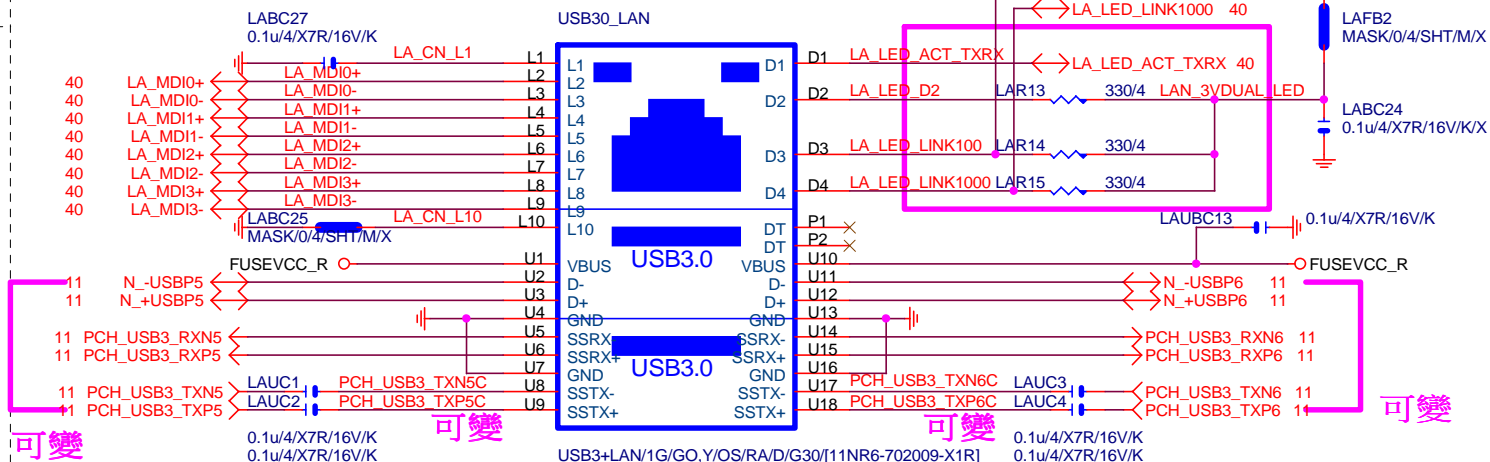
R1.05

note:可變更USB NAME



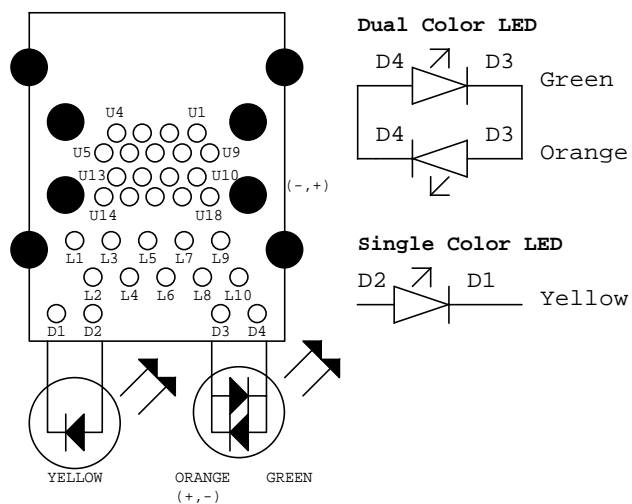
note:可變更USB NAME

USB30_LAN



LA MDI-->100歐姆:[20/4/8/4/20]

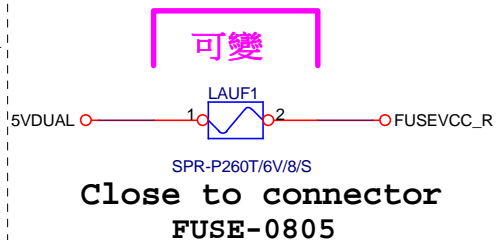
Dual Color LED



FOOT PRINT:LAN COVER

可變 [視SPEC需求]

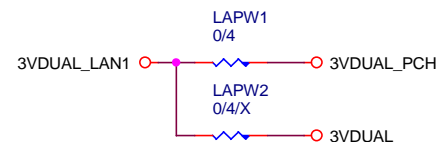
note:可變更FUSE



PS:視EMI需求

LAR24 MASK/0/4/SHT/M/X

可變



Gigabyte Technology

LAN CONNECTOR-E2201

GA-Z170-Gaming K3

Size	Document Number
------	-----------------

Custom

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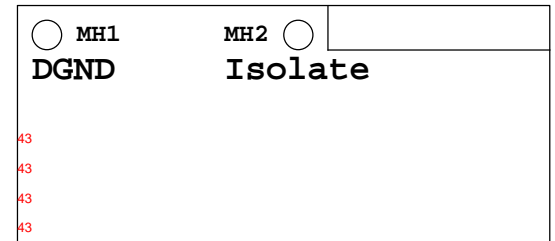
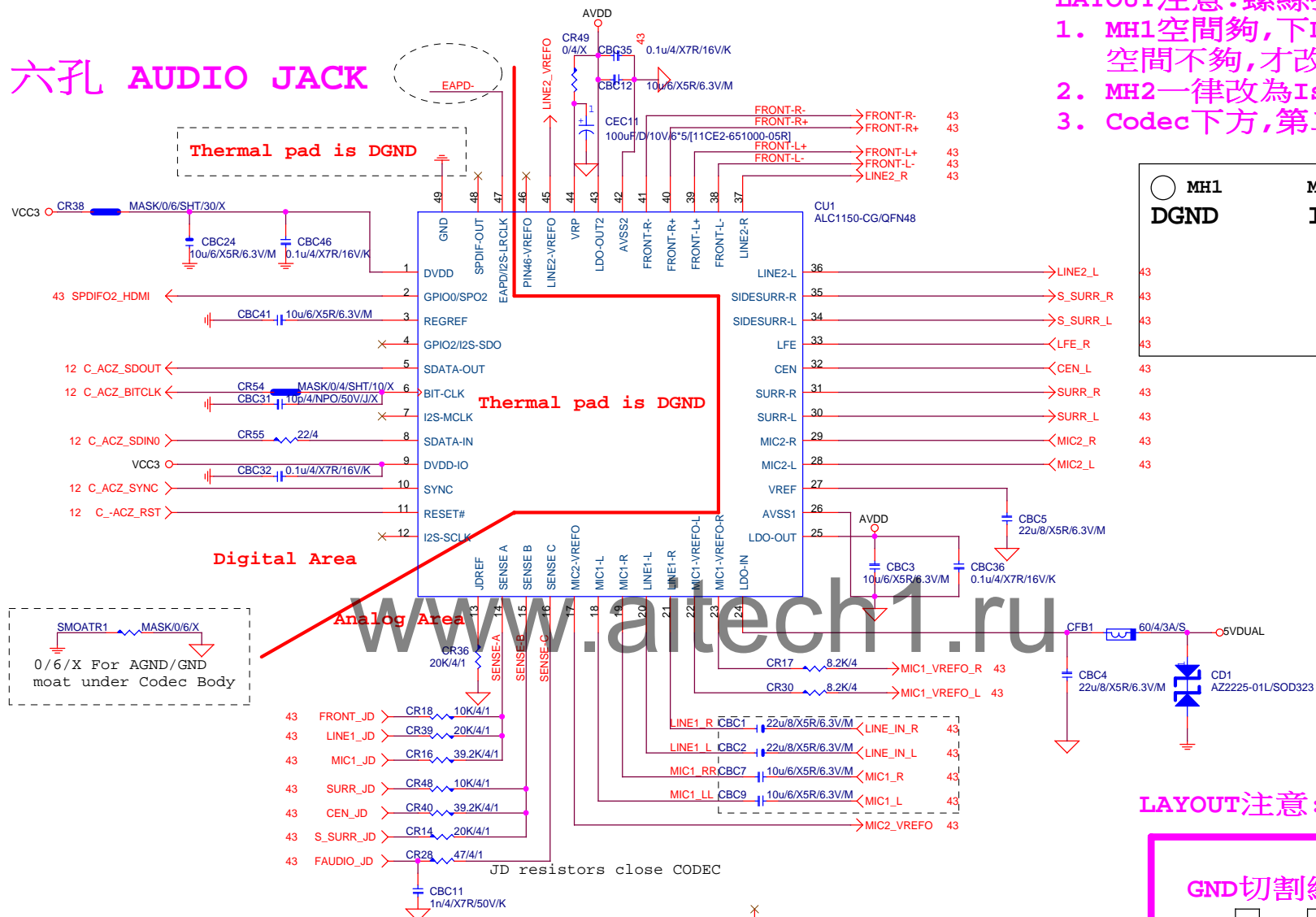
Rev

Rev 0.93

ALC1150 六孔 AUDIO JACK

LAYOUT注意:螺絲孔下GND方式

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



LAYOUT注意:要加

GND切割線



音效區域印刷

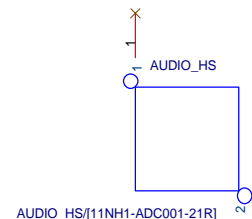
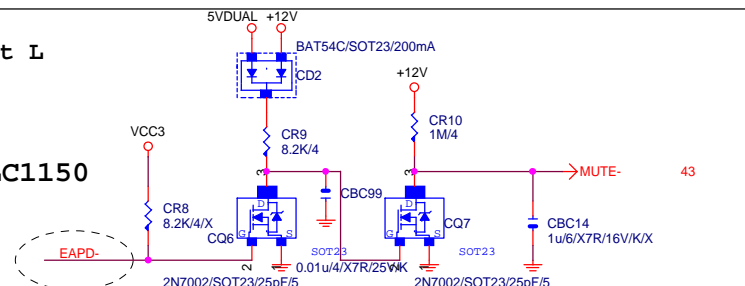


Gigabyte Technology

Title				
ALC1150				
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	GA-Z170-Gaming K3			1.01
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EAPD: Default L
H : ON
L : OFF

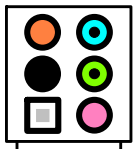
Close to ALC1150



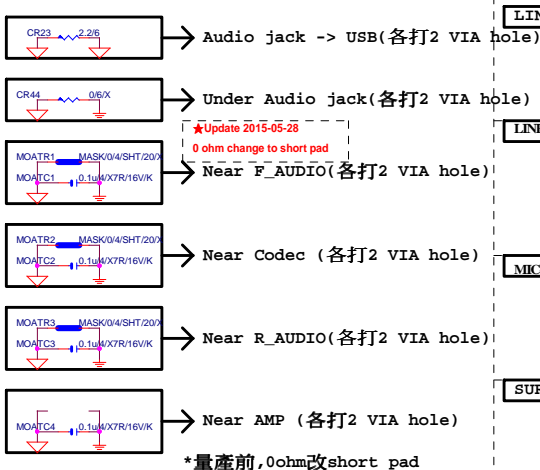
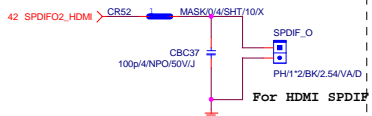
★Update 2015-03-06

更新AUDIO_HS料號:11NH1-ADC001-21R

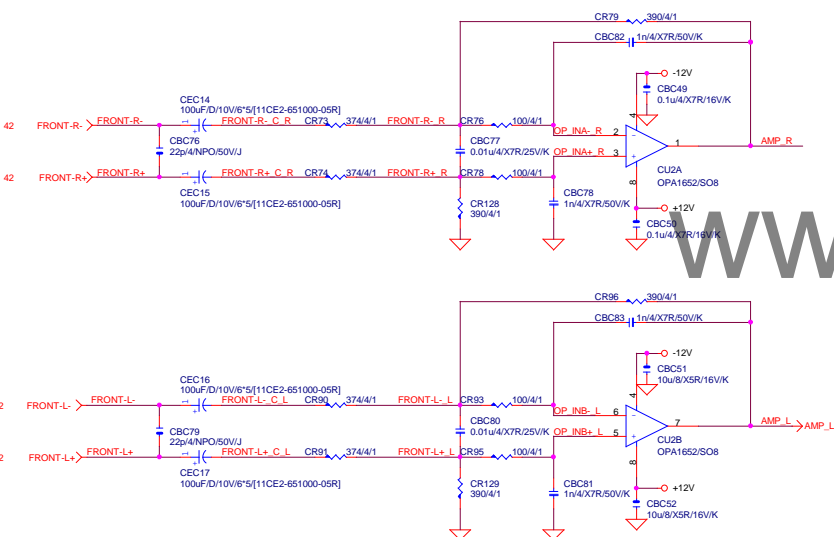
AZALIA JACK



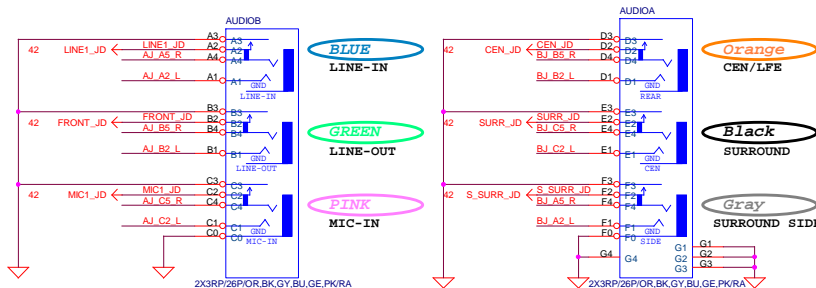
SPDIF_OUT



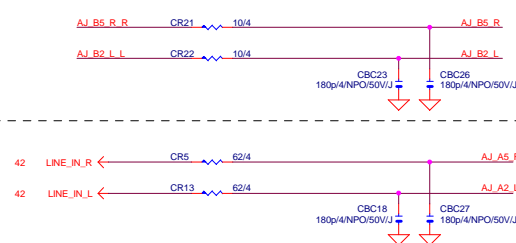
Differential to Single-End AMPLIFIED



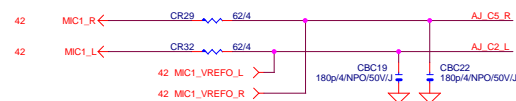
AZALIA JACK



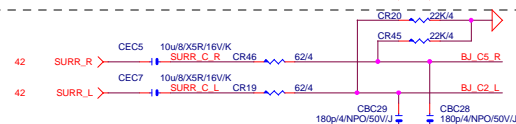
LINE-OUT



LINE-IN

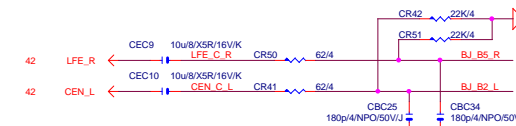


MIC-IN

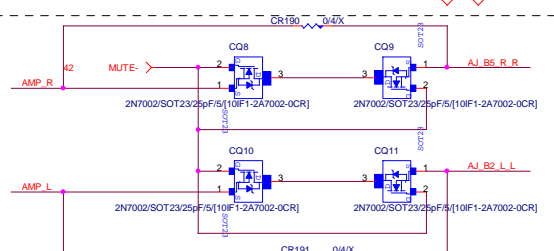
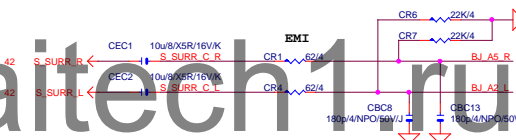
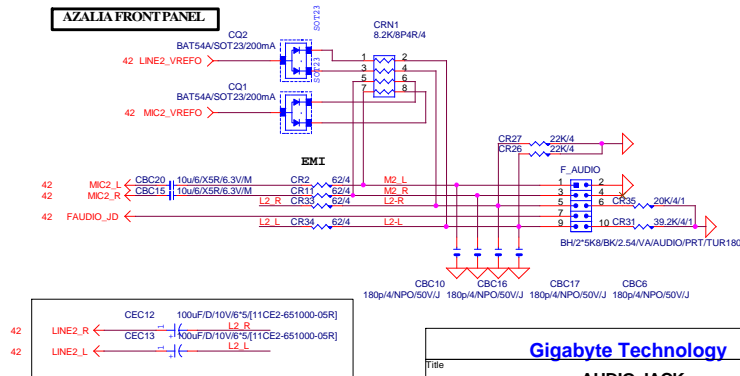


SURROUND

CEN/LFE



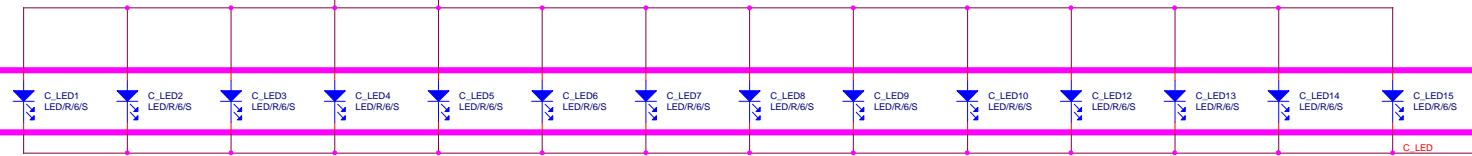
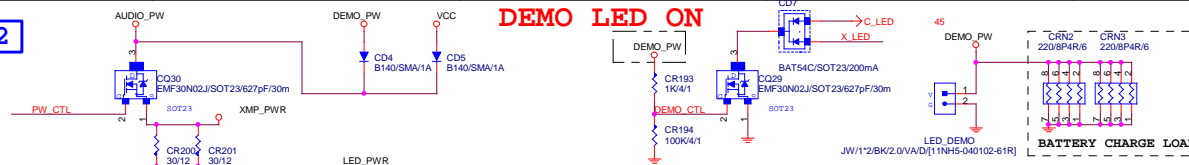
SURR BACK

**AZALIA FRONT PANEL**

Gigabyte Technology

Title		AUDIO JACK	
Size	Document Number	GA-Z170-Gaming K3	Rev
Custom			1.0
Date:	Monday, November 30, 2015	Sheet	43 of 53

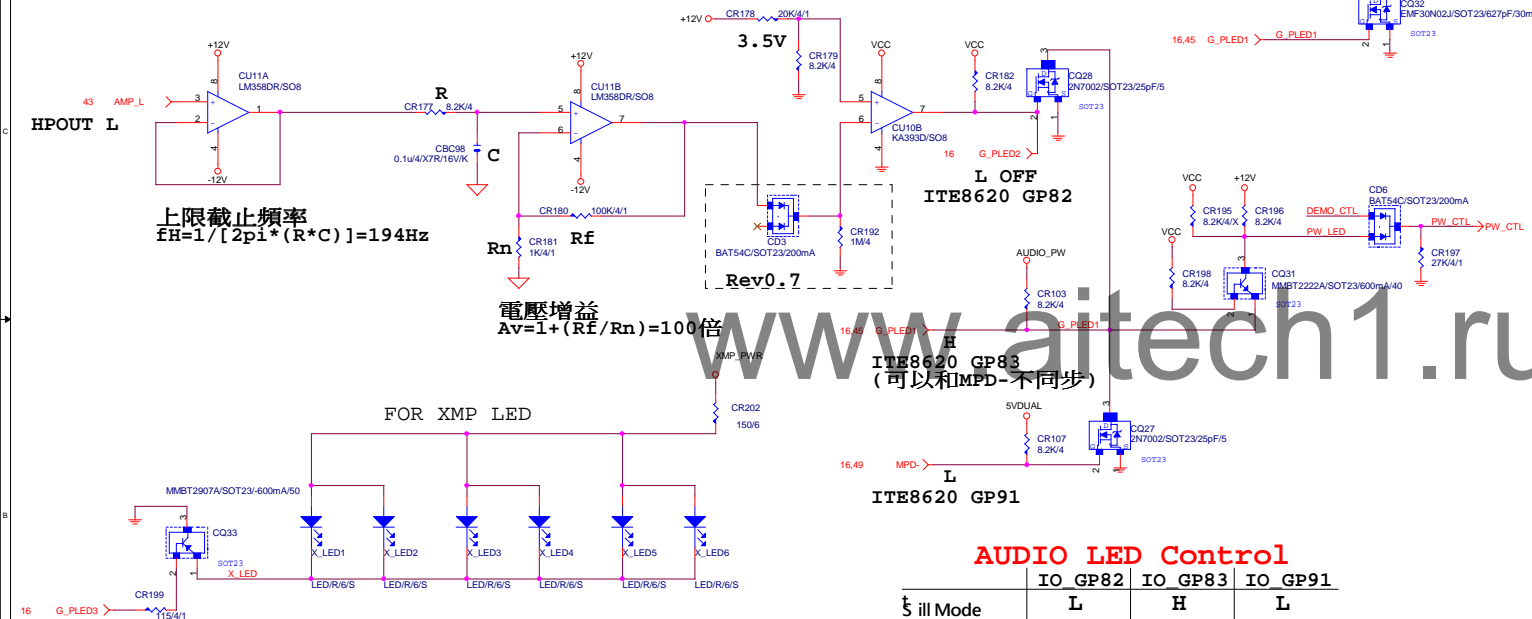
DEMO LED ON



VALUE可變,LED顏色請自行修改

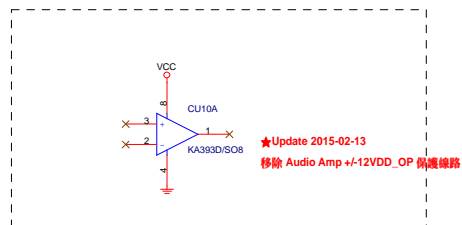
[UD/SOC系列--> 白光LED(黃色):LED/W/6/S]

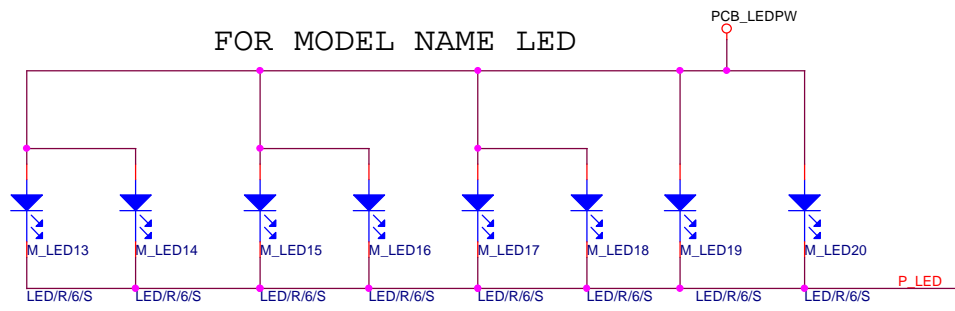
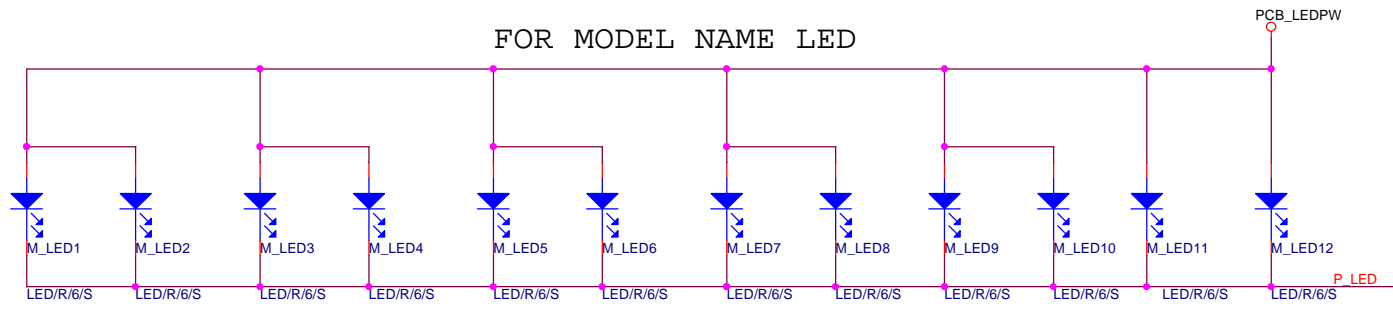
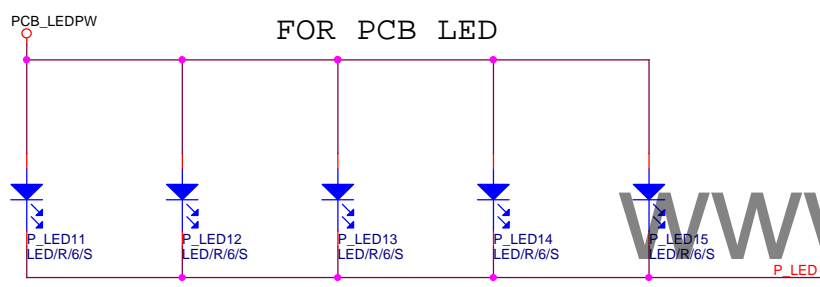
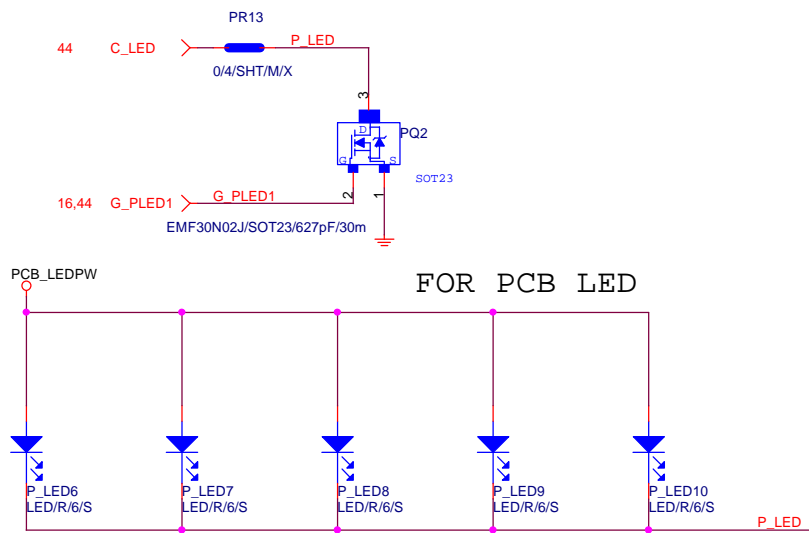
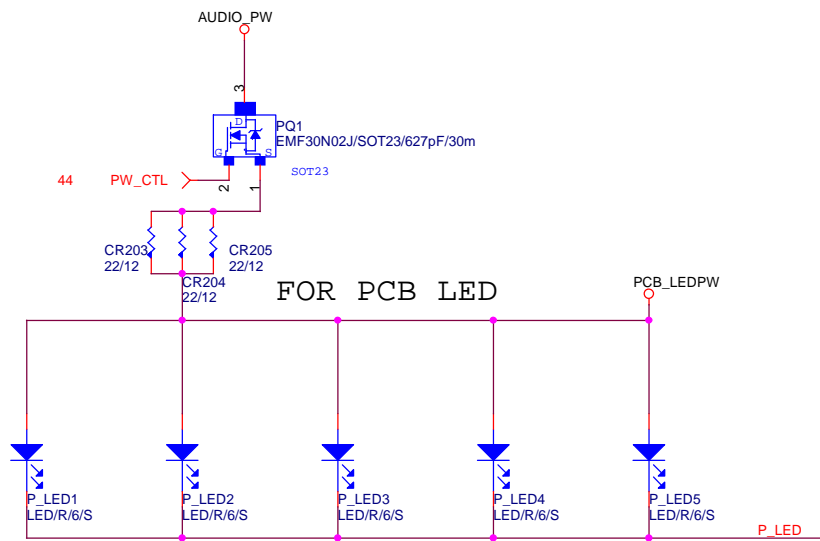
[GAMING系列--> 紅光LED(紅色):LED/R/H/0603/S]



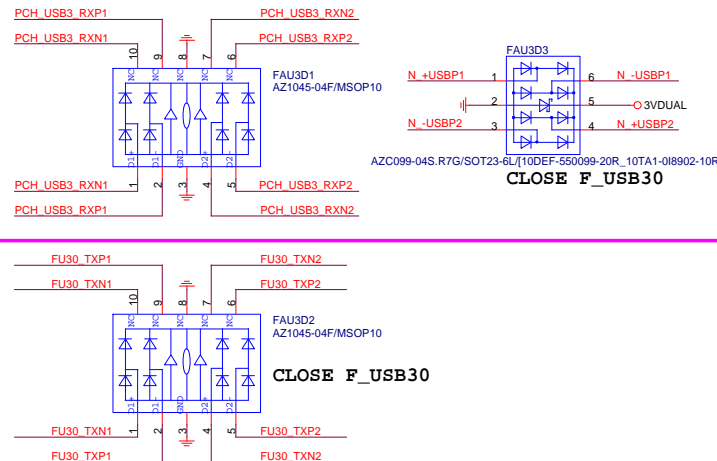
AUDIO LED Control

	IO GP82	IO GP83	IO GP91
Sill Mode	L	H	L
OFF Mode	L	L	L
Pluse Mode	L	H	BREATH
Beat Mode	OD	H	L

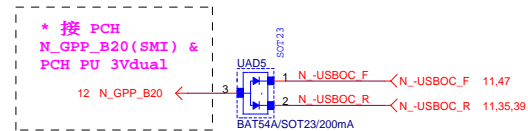
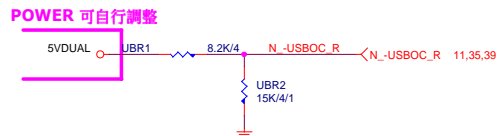




GIGABYTE™		
Title		
MODEL NAME LED		
Size	Document Number	Rev
Custom	GA-Z170-Gaming K3	1.01
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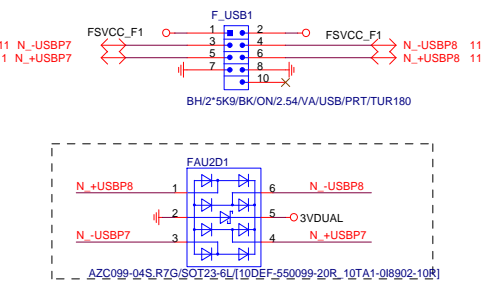


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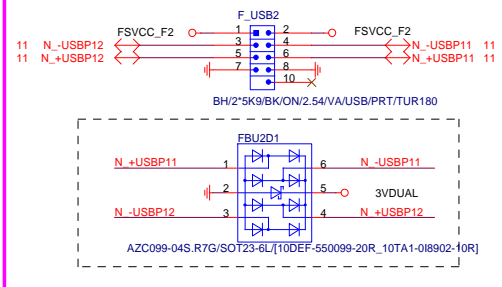
FRONT USB1

NET 可變

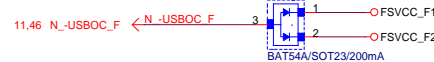


FRONT USB2

NET 可變



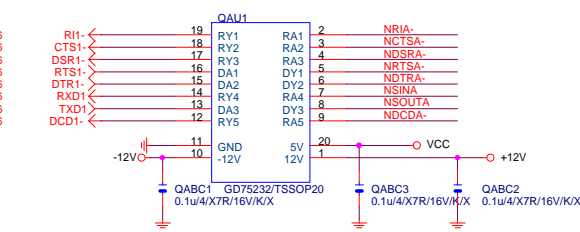
F_USB 2.0 OC SIGNAL



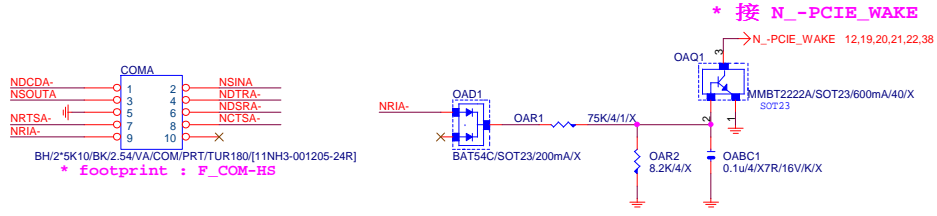
www.aitech1.ru

Rev: 0.41

COM PORT



COMA

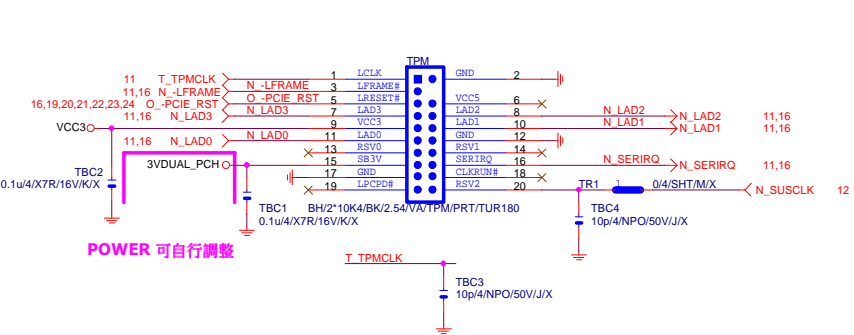


Rev: 0.3

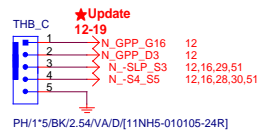
LPT PORT

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TPM CONNECT

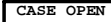


Thunderbolt



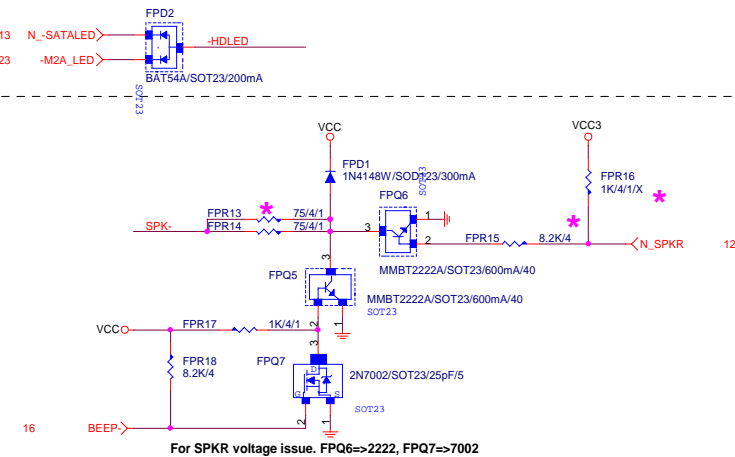
Gigabyte Technology			
Title			
FP,F_USB,USB PWR,BZ			
Size	Document Number	GA-Z170-Gaming K3	
Custom		Rev 1.01	
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FRONT PANEL



Update 2015.01.08
Footprint=F_PANEL-100

SPKR



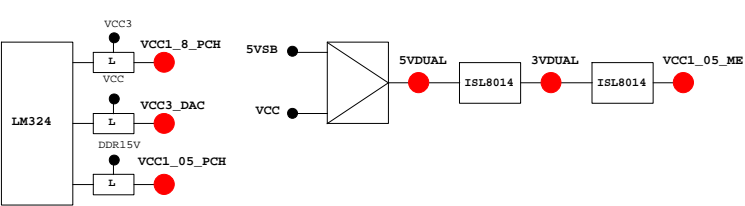
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PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQ#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#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

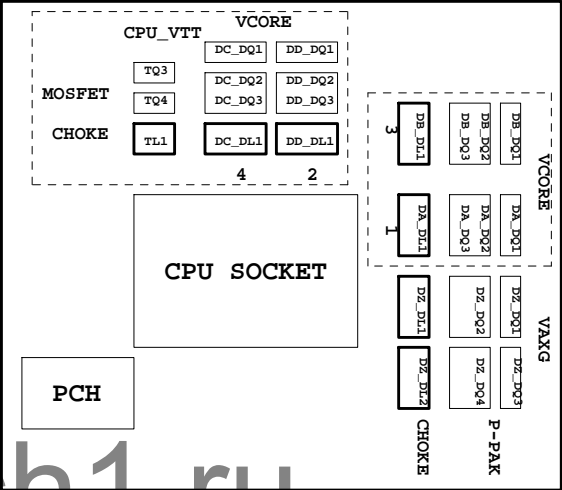
Super I/O ITE8720 GPIO Table

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

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VID05/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PWRST1	
PCIRST1#/GP12	-PWRST2	
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	
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/SMB_D_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRXL2/GP16	-THERM	
VID04/GP26/SOUT2	DDR18V_PH2_EN	
VID02/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VID06/GP17/RI2#	1_1V_PH_EN	
VID07/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

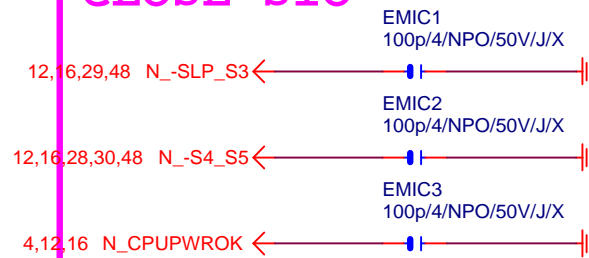
線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Terminatio
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

散熱模組料號：

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

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

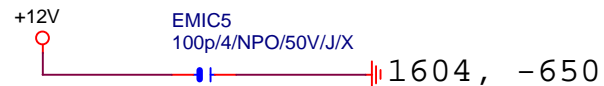
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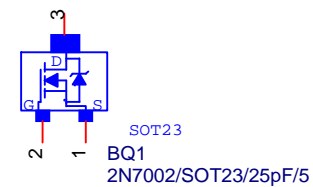
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CLOSE AUDIO



BALANCE MOS HS

**GIGABYTE™**

Title

EMI/ESDSize
A

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固態電容料號.請自行修改

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

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

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

IRON CHOKE

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

Ferrite

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

BEAD

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

PWM料號

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



Title

RT8120_DDR4 POWER

Size

Custom

Document Number

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Date:

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Rev

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REAR IO

RS_SYS

F_AUDIO

AUDIO

DD_DQ2 DD_DQ1 DC_DQ2 DC_DQ1 DB_DQ2 DB_DQ1

RS_VCORE

TTRT1

DD_DL1 DC_DL1 DB_DL1

CPU

DA_DL1
DO_DL1
DN_DL1
DM_DL1

DA_DQ1 DA_DQ2
DO_DQ1 DO_DQ2
DN_DQ1 DN_DQ2
DM_DQ1 DM_DQ2

RS_VCCGT TTRT2

DANTC4

DANTC2

DANTC3

SIO

PCH

RS_PCH

SATA_EXPRESS

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