

Model Name: GA-Z87-D3HP

1.0

SHEET

TITLE

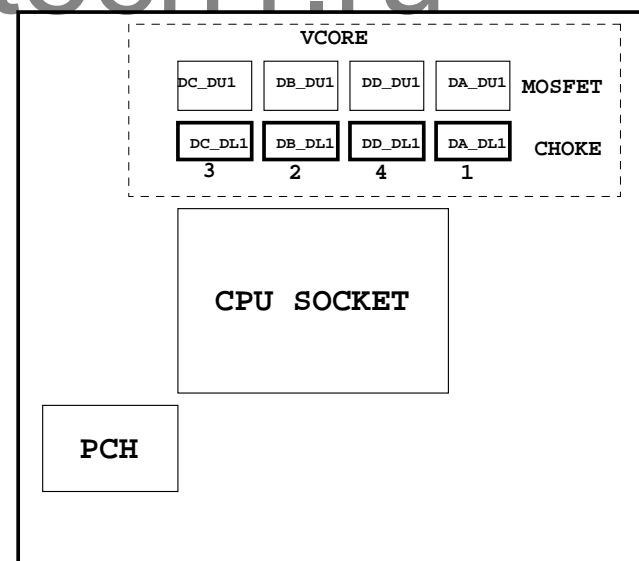
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCIEX1*2 , PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1&2
18	I/O ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS , TPM SLB9635TT
21	ALC892 CODEC
22	REAR AUDIO JACK
23	VCORE PWM_IR3564a
24	VCORE+DDR PWM IR3553+IR3598
25	ME POWER
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET

TITLE

28	F_PANEL , F_USB2.0/3.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	LAN INTEL i217
32	DVI
33	HDMI , R_USB30
34	TABLE LIST
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Title			
Cover Sheet			
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Custom			1.0
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GA-Z87-D3HP

Component value change history

Data	Change Item	Reason
0.1-0925	E-BOM	
	1. Z77-D3H改為削光黑PCB, slots同原本削光黑機種配色, CPU socket鍍黑	
	2. 8 series IR digital power PWM因Intel spec change, 須改用b版 (必須發行Firmware)	
	3. H77-D3H 注意上H87 chips, 上ME power, 咖啡黑機種配色	
	3. H77-D3H GPIO37 需Pull up to 3VDUAL	
0.2	1. Load-line DAR47 2.06K --> 2.37K , DAR46/50 1.4K --> 1.6K , DAC17 150P --> 100P	
	2. N_-LAN_WAKE NR60 8.2K/4 --> 1K/4/1	
	3. DA_DUI1,DB_DUI1,DD_DUI1,DC_DUI1 10IFB-403553-01R --> 0TA1-603551-00R	
	4. DDR CHOKE阻值調整	
	5. CPU SOCKET + RM 要用新料號?	
0.2B	1. 確定Power stage用料:IR3553 or IR3550 or 3551?	
	2. GPIO8 "NR136"不上	
	3. Add +12V排阻 RN2-RN6	
0.2C	1. HU1 , HU2 level shifter change to NXP	
0.3	1. PWM MOSFET修改 IR3564B + power stage 改成 IR3564B + IR3535 + power pak (Cancel)	
	3. PWM MOSFET修改 IR3564B + power stage 改成 IR3564B + IR3535 + power pak	
1.0	1. PCIEX16 patch reset circuit 怎麼上?	
	2. Prochot是否只上一組	
	3. PCH_HS & MOS_HS change new 料號	
	4. 因DII 2222禁用, 注意Z87-D3H試產時用Panjit 2222是否可用(BOM已內建)	
	5. HDMI/DVI change to NXP level shifter	
	6. CHECK 5VSB保護線路是否上件	
Z87-D3HP		
1.0A	1. 5VDUAL OVP --> 5VSB OVP	
	2. Remove 全成信PCB	
1.0B	1. Remove DAJP1	
	2. HR29 3.09K --> 3.3K	
	3. USB3.0 HUB add RT9018	

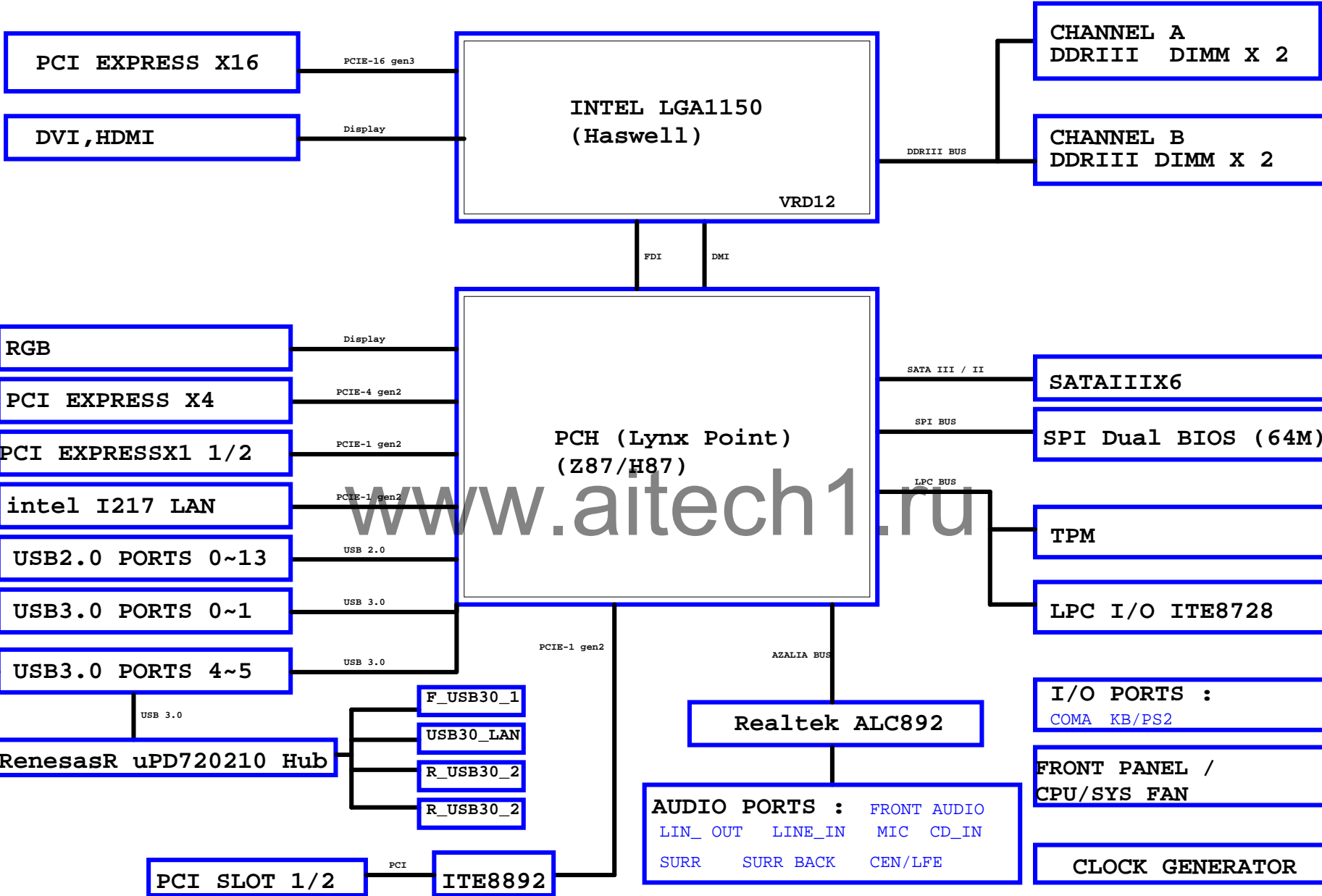
Circuit or PCB layout change

DATE	Change Item	Reason
0.1	E-BOM	
0.2	1. U8 pin3加粗40mils 2. Update LAYOUT NEW RULE for四層板 3. MDA6線長T型要繞等長 4. N_GPIO37 pull up VCC3 --> 3VDUAL 5. CPU Thertrip CPU_VTT --> VCC1_05_PCH 6. 確認 R/G/B ESD擺放位置 7. Add PCIEX16 reset patch circuit 8. PCIE signal by group 成對走 9. VIN0 --> VCORE0 , VIN5 --> VCORE 10. CS 1pin --> 2pin 11. 後窗部份鋪銅會挖 + 字處理 12. Add MA_DR8 , MA_DC8單獨下地 13. add VTT_PWRGD control circit 14. Update F_PANEL footprint "H2X10PANEL-3" 15. NR132跟NC59 layout位置交換 16. Add DS_ME GP67 control 17. Q6位置靠近 PWM power control pin 18. WR59 change to "R0204-2" 19. 文字面 "DualBIOS" , 改為" Dual UEFI BIOS" , Add "Intel GbE LAN" 20. MAU2 REF "GND" 21. DDR Choke ML1,ML2 1.2uH/20A --> 0.8uH/35A	
0.21	1. AUDIO SPDIF-IN CR77 "0402-2" FOR short protection 2. add AUDIO ON/OFF PLAYER 3. Change PCIEX1/PCIX4 CLK 4. Update F_PANEL footprint 5. CPU VRIN OV IO_GP81 --> IO_GP21	
0.3	1. PWM MOSFET修改 IR3564B + power stage 改成 IR3564B + IR3535 + power pak (Cancel)	
1.0	1. 0 ohm --> short pad 2. 簡化CPU Config setting 3. Remove "BIOS_PH" & "M_BIOS socket" & "CS" pin 4. 注意Slot和後窗正面有做十字Thermal處理 5. NBC65移靠近PCH 6. Add R700-R702 for FAN short protection 7. PWR_LED 改為IO_GP65 8. VTT_PWRGD Update 9. N_GPIO37 pull-up to VCC3 10. +12V RN2-RN6 & VCC/VCC3/5VSB dummy load 排阻 11. DDR_15V H/W monitor detect 改從 DDR slot 拉回 12. 5VSB AD1要過 NET 13. DDR VIN 間隔拉開 , 背板GATE往上移 14. Add DDR_15V dummy load 15. 5VSB/5VDUAL OVP protection 16. 預留N_PCH_DPWROK 控制線路	
Z87-D3HP-0.1	1. add USB3.0 Hub	

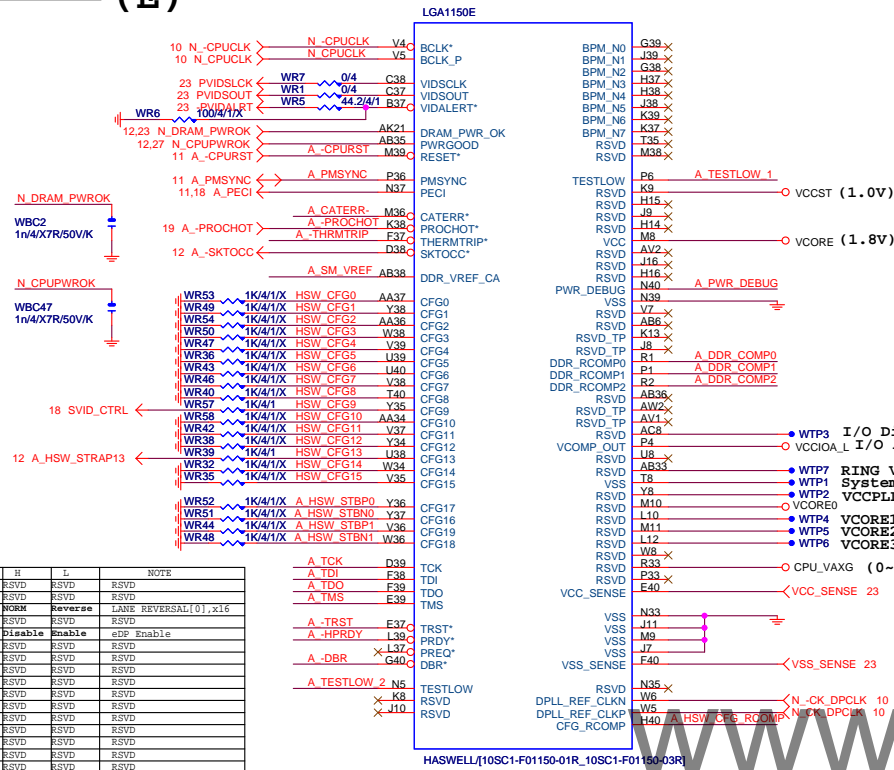
Z87-D3HP-1.0 1. DART2改成R0402-2(靠近DD_DUI1) ,DART4改成R0603-RH(放在DART2左邊) , RS1改成R0402-2
2. Add DAR82 For MOSFET "PHSFLT-" protect

Gigabyte Technology			
BOM & PCB MODIFY HISTORY			
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BLOCK DIAGRAM



(E)

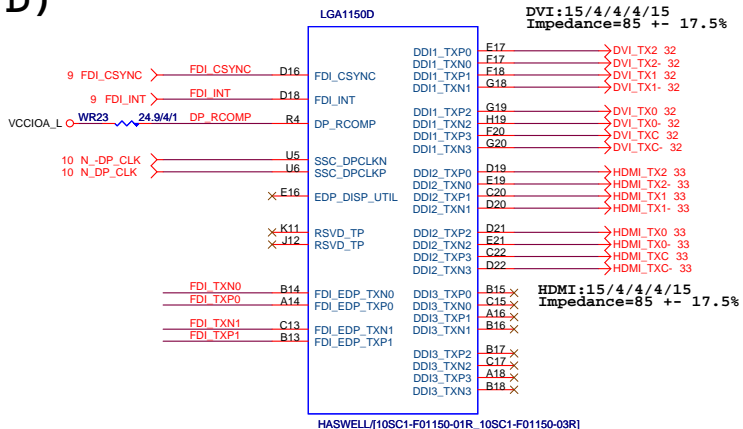


CFG	H	L	NOTE
0	R _{SVD}	R _{SVD}	R _{SVD}
1	R _{SVD}	R _{SVD}	R _{SVD}
2	Normal	Reverse	LANE REVERSAL{0},x16
3	R _{SVD}	R _{SVD}	R _{SVD}
4	Disable	Enable	eDE Enable
7	R _{SVD}	R _{SVD}	R _{SVD}
8	R _{SVD}	R _{SVD}	R _{SVD}
9	R _{SVD}	R _{SVD}	R _{SVD}
10	R _{SVD}	R _{SVD}	R _{SVD}
11	R _{SVD}	R _{SVD}	R _{SVD}
12	R _{SVD}	R _{SVD}	R _{SVD}
13	R _{SVD}	R _{SVD}	R _{SVD}
14	R _{SVD}	R _{SVD}	R _{SVD}
15	R _{SVD}	R _{SVD}	R _{SVD}
16	R _{SVD}	R _{SVD}	R _{SVD}
17	R _{SVD}	R _{SVD}	R _{SVD}

CFG6	CFG5	PCIE CONFIG
1	1	1x16 , Default
1	0	2X8
0	1	RSVD
0	0	X8,X4,X4

CFG 0-17 all internal PULL-UP

(D)

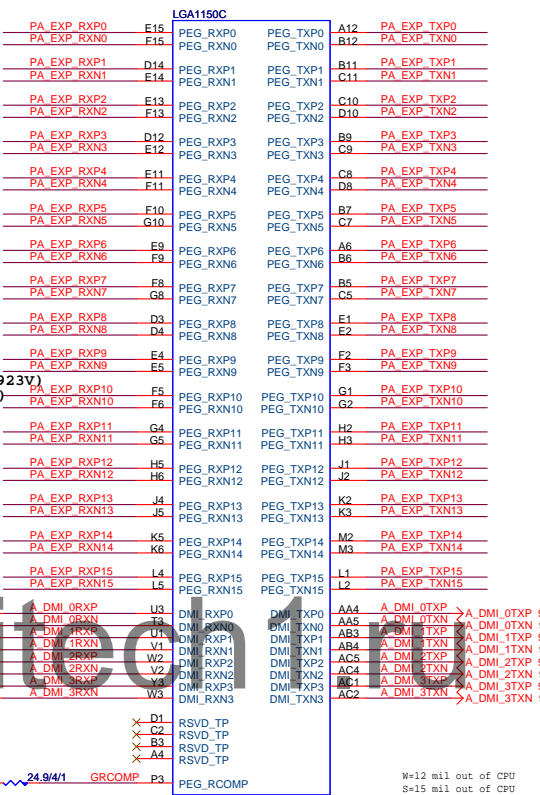


FDI:12/4/4/4/12(breakout min 6/4/4/4/6)
Impedance=85 +- 17.5%

FDI_TXP[0..1] >>> FDI_TXP[0..1] 9
FDI_TXN[0..1] >>> FDI_TXN[0..1] 9

(c)

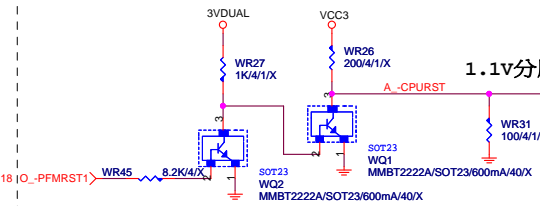
PCIEX16:20/5/4/5/20(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%



DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

```
PA_EXP_TXP[0..15]  >> PA_EXP_TXP[0..15]  14
PA_EXP_TXN[0..15]  >> PA_EXP_TXN[0..15]  14
PA_EXP_RXP[0..15]  >> PA_EXP_RXP[0..15]  14
PA_EXP_RXN[0..15]  >> PA_EXP_RXN[0..15]  14
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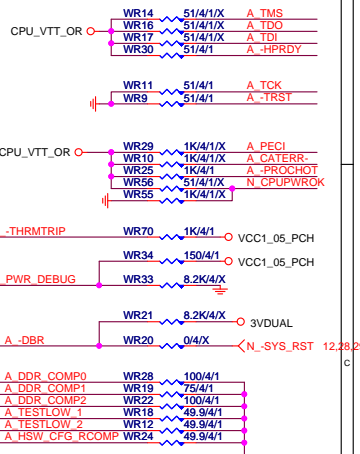
-CPURST



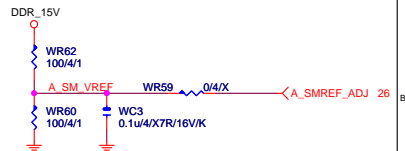
CPU SVID



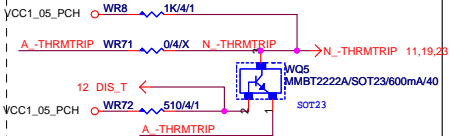
CPU	PU/PD
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SM	REF
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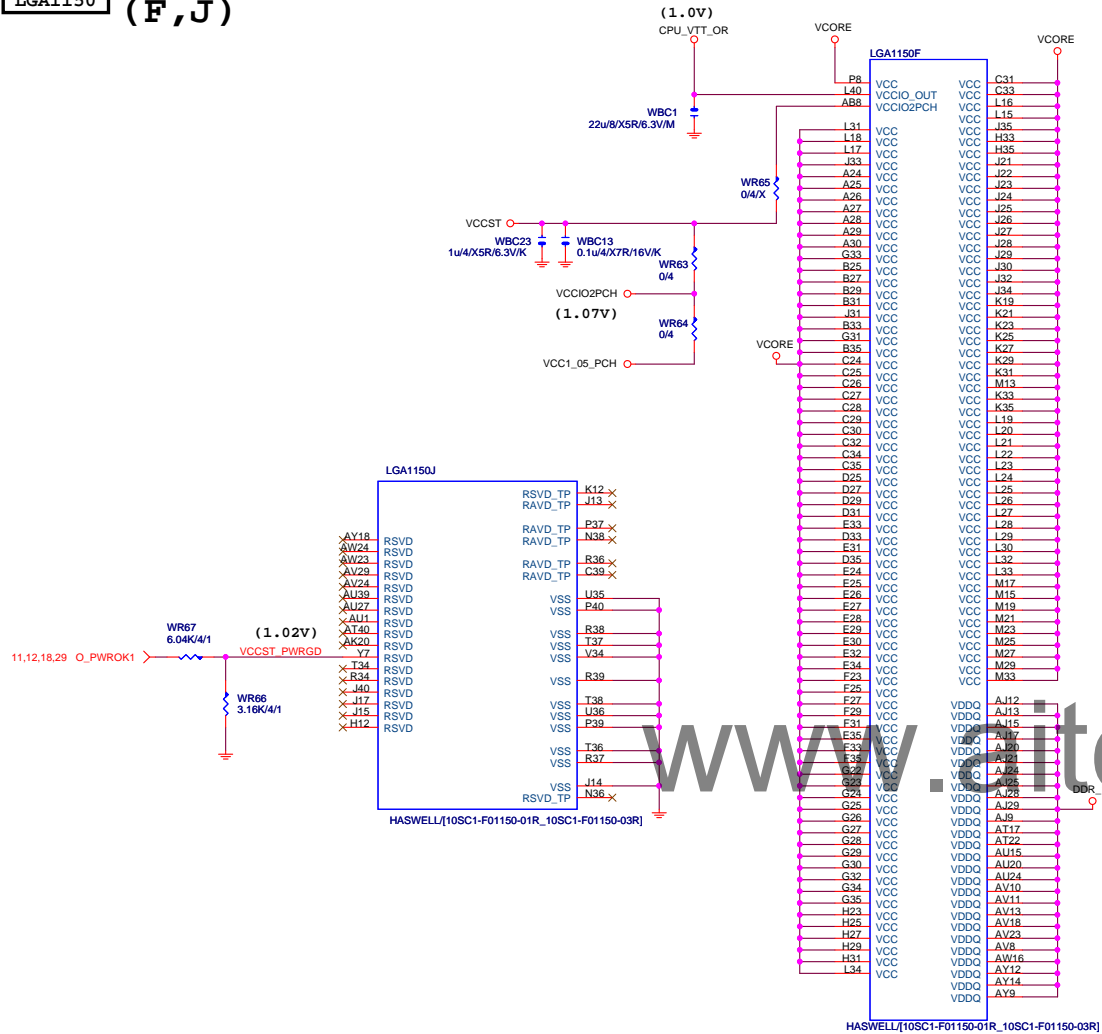


THRMTRIP DISABLE



LGA1150A			
MAAA0	AU13	DDR0_MA0	DDR0_D00
MAAA1	AV16	DDR0_MA1	DDR0_D01
MAAA2	AU16	DDR0_MA2	DDR0_D02
MAAA3	AW17	DDR0_MA3	DDR0_D03
MAAA4	AU17	DDR0_MA4	DDR0_D04
MAAA5	AW18	DDR0_MA5	DDR0_D05
MAAA6	AV17	DDR0_MA6	DDR0_D06
MAAA7	AT18	DDR0_MA7	DDR0_D07
MAAA8	AU18	DDR0_MA8	DDR0_D08
MAAA9	AT19	DDR0_MA9	DDR0_D09
MAAA10	AW11	DDR0_MA10	DDR0_D10
MAAA11	AV19	DDR0_MA11	DDR0_D11
MAAA12	AU19	DDR0_MA12	DDR0_D12
MAAA13	AT20	DDR0_MA13	DDR0_D13
MAAA14	AW20	DDR0_MA14	DDR0_D14
MAAA15	AU21	DDR0_MA15	DDR0_D15
MODT_A0	AW10	DDR0_ODT0	DDR0_D16
MODT_A1	AV2	DDR0_ODT1	DDR0_D17
MODT_A2	AW9	DDR0_ODT2	DDR0_D18
MODT_A3	AU8	DDR0_ODT3	DDR0_D19
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			DDR0_D414
			DDR0_D415

LGA1150 (F,J)

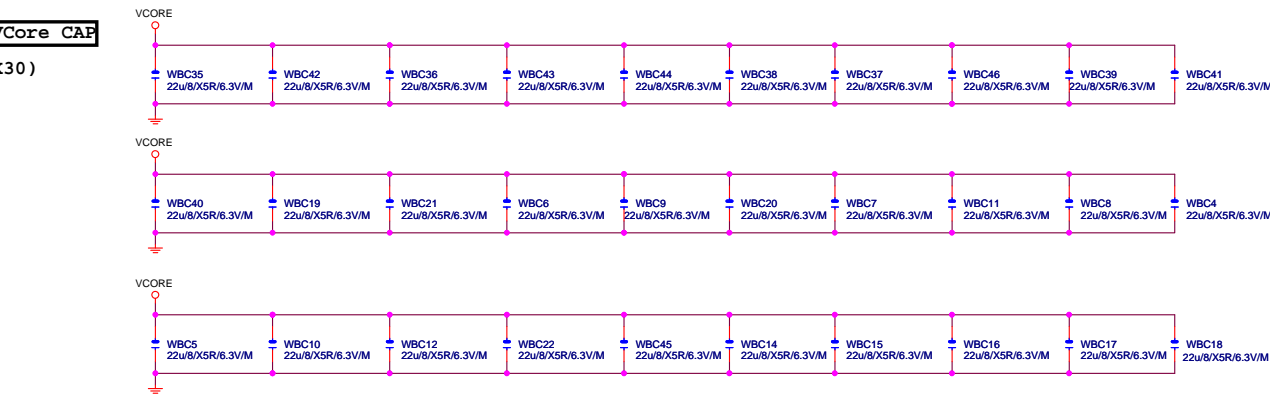


LGA1150 (G,H,I)



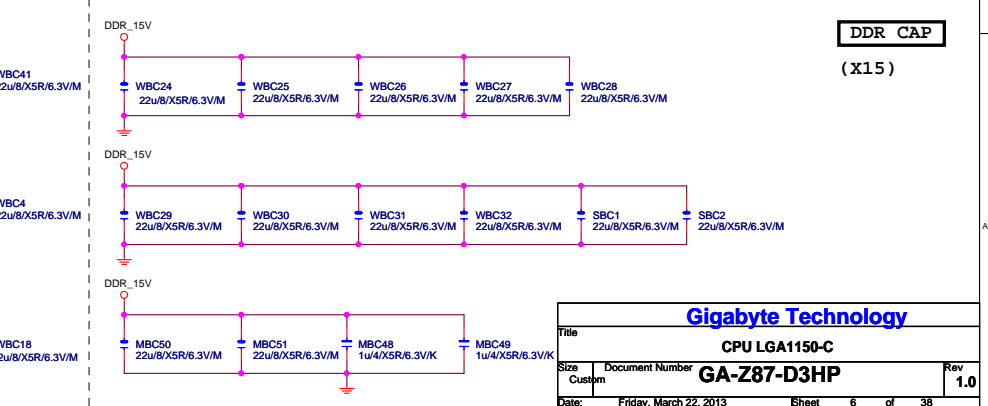
VCore CAP

(X30)



VCore CAP

(X15)



Gigabyte Technology

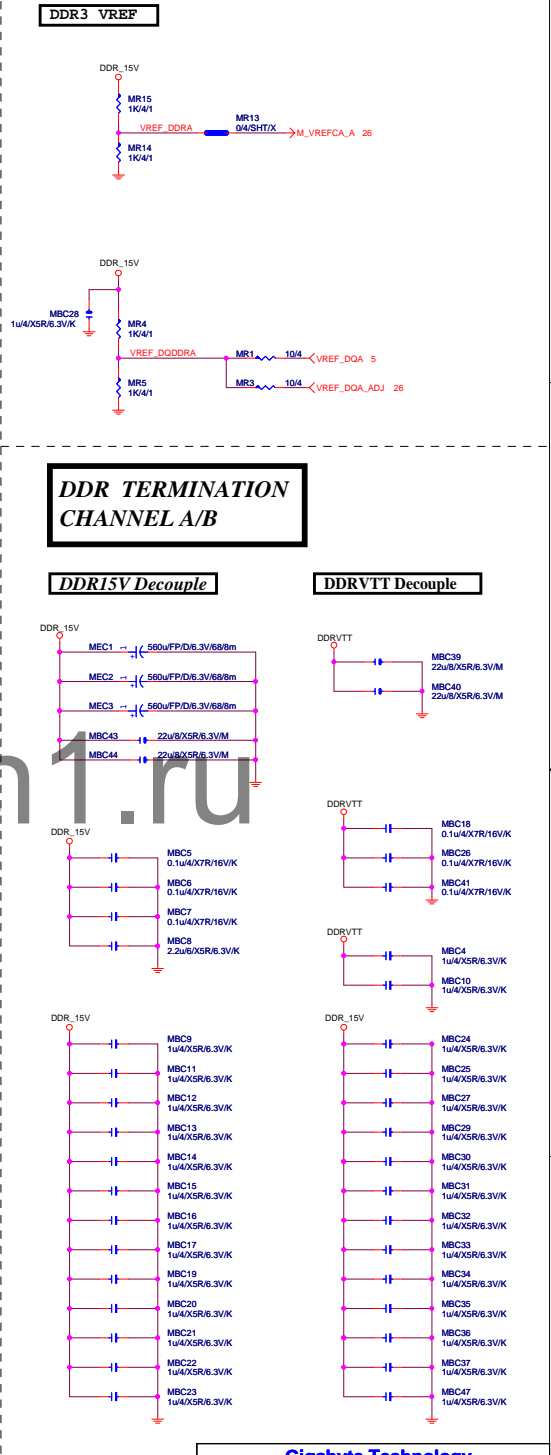
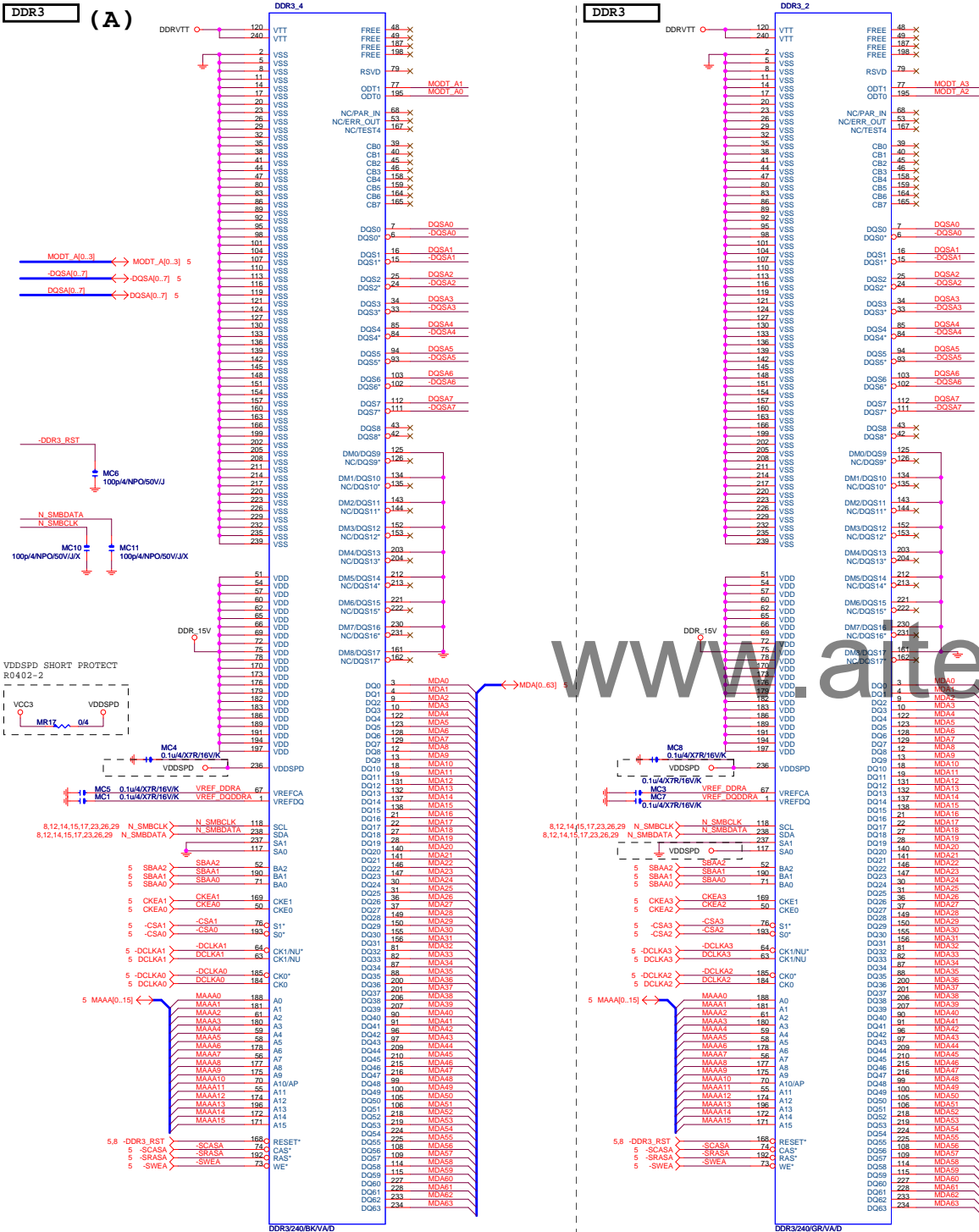
CPU LGA1150-C

GA-Z87-D3HP

Rev 1.0

Friday, March 22, 2013

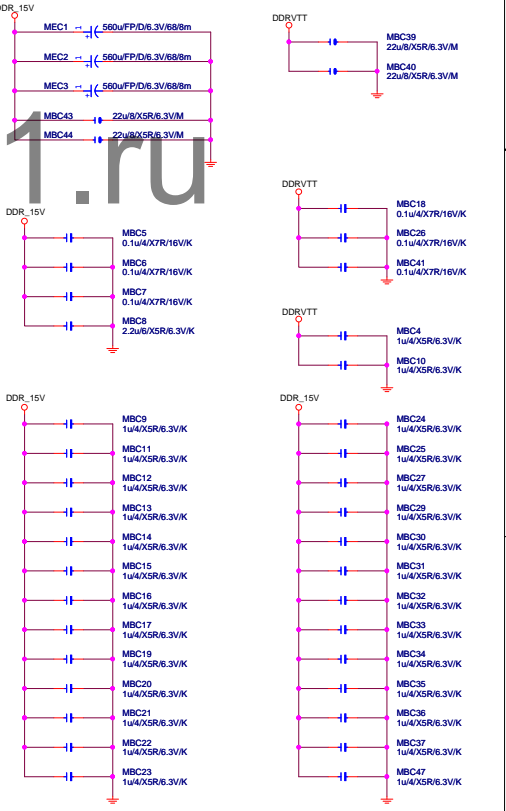
Sheet 6 of 38

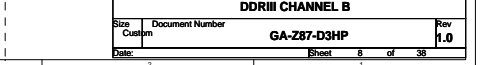


DDR TERMINATION CHANNEL A/B

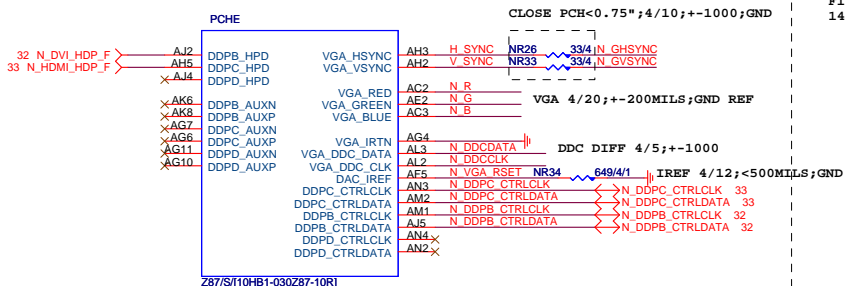
DDR15V Decouple

DDRVTT Decouple





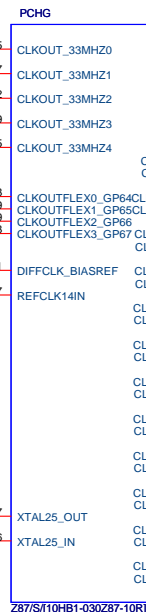
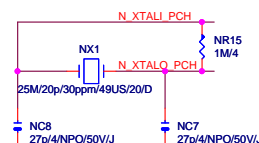
PCH (E)



VGA DISABLE	
R,G,B	NC OR GND
IRTN / IREF	GND
VGA_HSYNC, VGA_VSYNC, DDC_CLK, DDC_DATA	NC
POWER VCCADAC(AF2), VCCADACBG(AE1)	GND

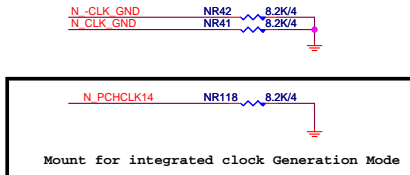
PCH (G)

Flex1,2,3,4 : 14/24/33/48MHz



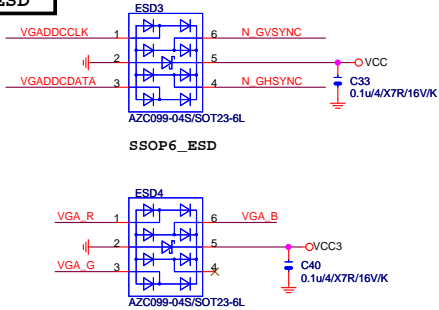
Differential Clock:15/4/6/4/15 Impedance=90 +- 15%

PCH CLK PD

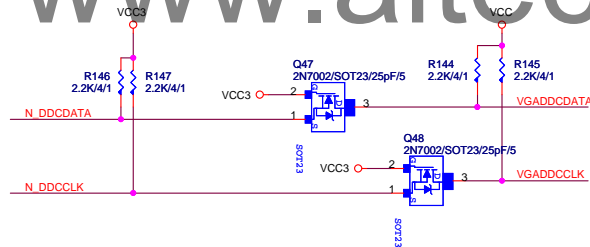


Mount for integrated clock Generation Mode

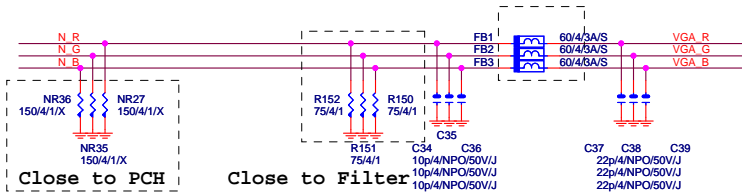
VGA ESD



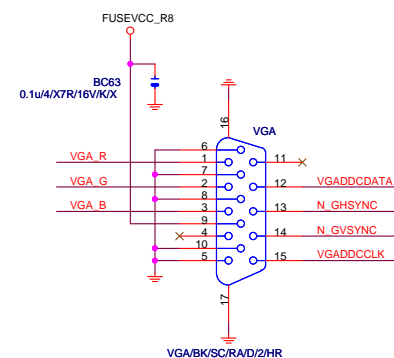
VGA DDC



VGA DDC



VGA CONNECTOR

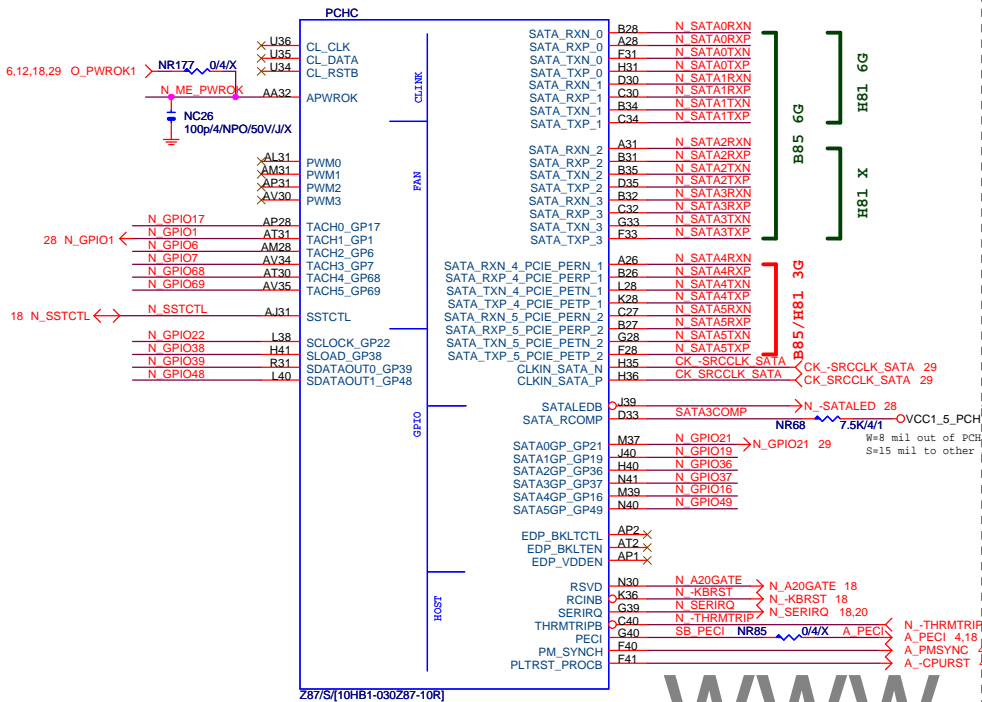


Gigabyte Technology

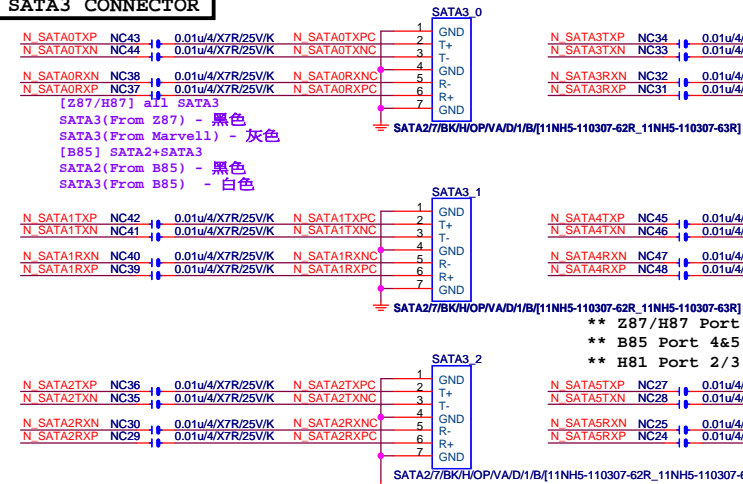
Title		
PCH DISPLAY ,CLK BUFFER		
Size	Document Number	Rev
Custom	GA-Z87-D3HP	1.0
Date:	Tuesday, March 26, 2013	Sheet 10 of 38

PCH (C)

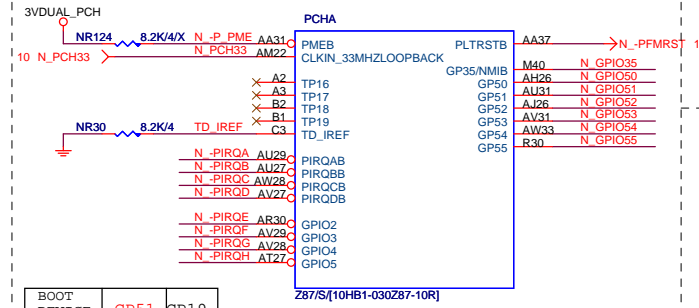
SATA3 : 20/4/4/20 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%



SATA3 CONNECTOR



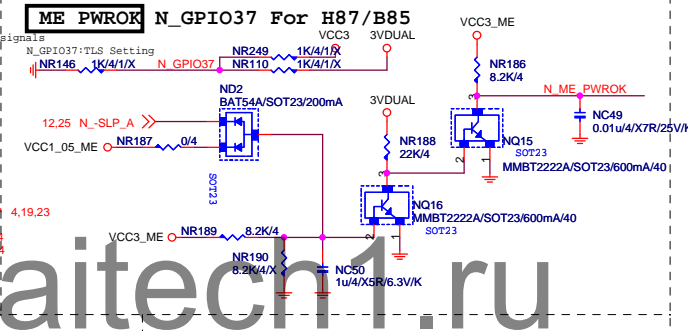
PCH (A)



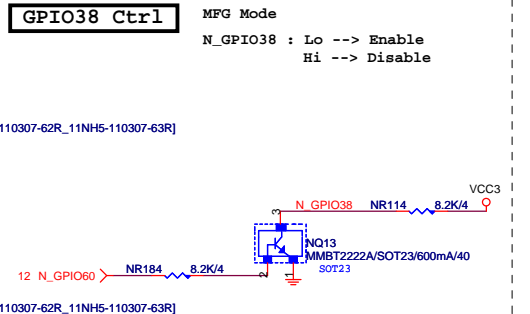
BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	1	1

Default int pull up on GP51,
Default SPI boot devices

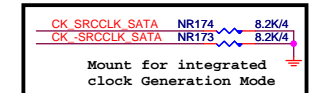
ME PWROK N_GPIO37 For H87/B85



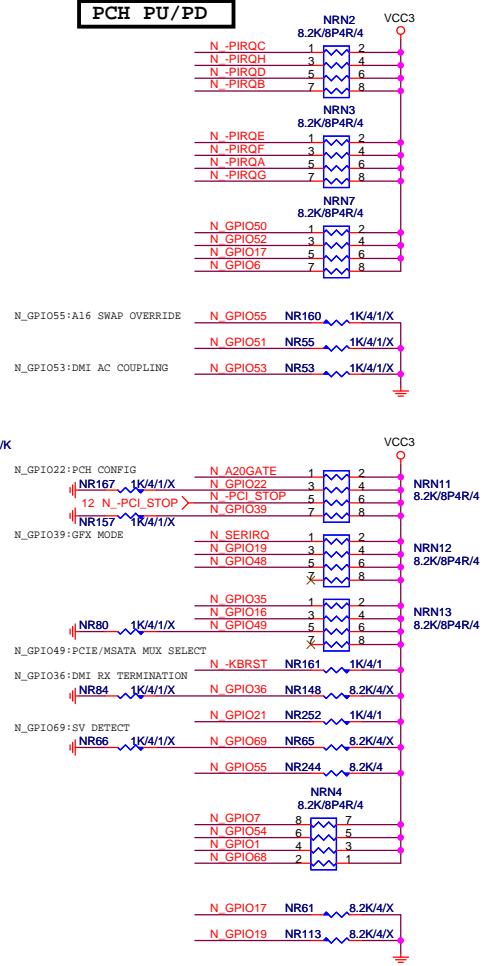
GPIO38 Ctrl



PCH CLK PD



PCH PU/PD



Gigabyte Technology

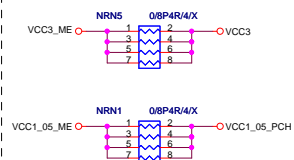
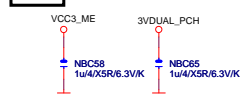
Title		
PCH HOST , SATA, PCI		
Size	Document Number	Rev
Custom	GA-Z87-D3HP	1.0
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PCH (I)

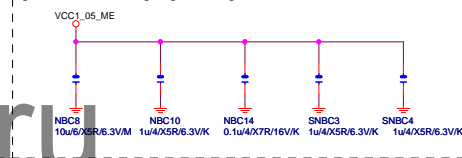


SHT PWR

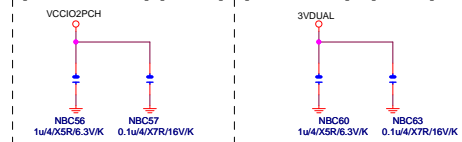
CAP



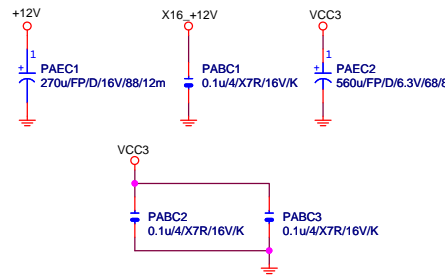
(1.05V) (x5)



(1.05V)(x2) (3.3V) (x2)

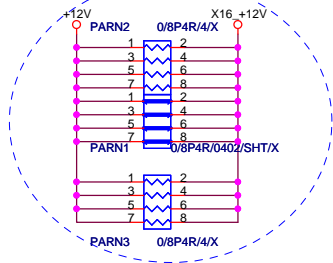


PCIEX16 CAP



PCIEX16 PROTECT SHT

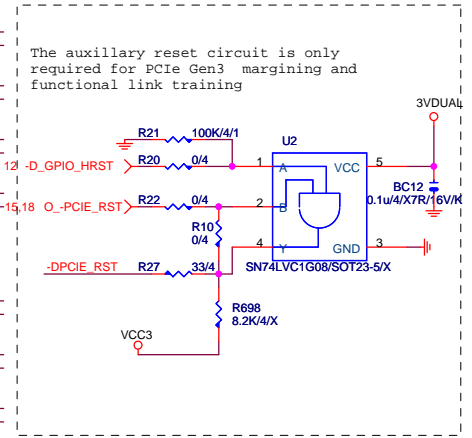
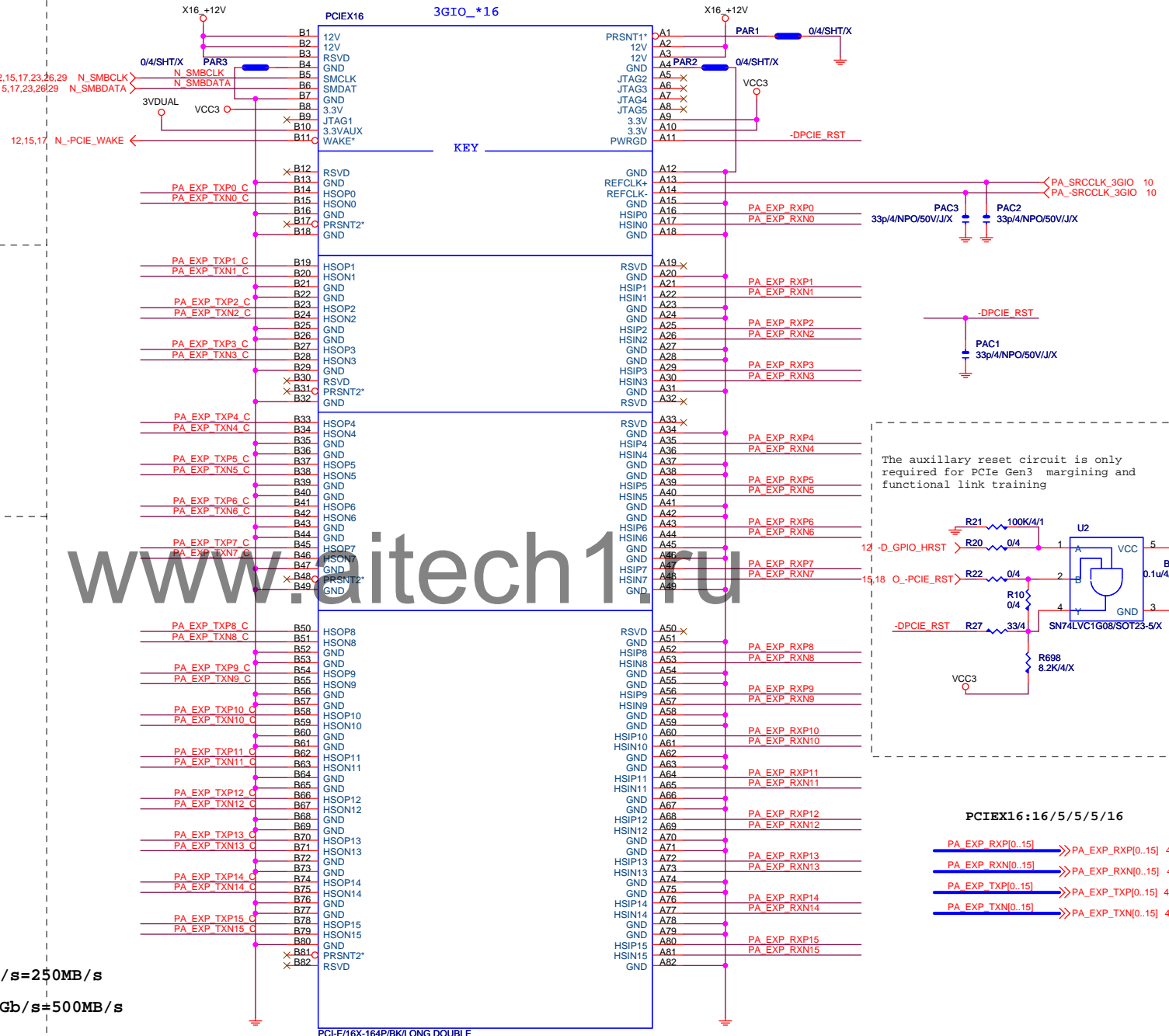
+12 protect
short-wire test



PCIEX16 AC CAP

PA EXP TXP0 C	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXP1 C	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXP2 C	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXP3 C	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXP4 C	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXP5 C	PAC10	0.22u4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXP6 C	PAC11	0.22u4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXP7 C	PAC12	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXP8 C	PAC13	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXP9 C	PAC14	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXP10 C	PAC15	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXP11 C	PAC16	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXP12 C	PAC17	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXP13 C	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXP14 C	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXP15 C	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN0 C	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXN1 C	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXN2 C	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXN3 C	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXN4 C	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXN5 C	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXN6 C	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXN7 C	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXN8 C	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXN9 C	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXN10 C	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXN11 C	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXN12 C	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXN13 C	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXN14 C	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXN15 C			PA EXP TXN15 C

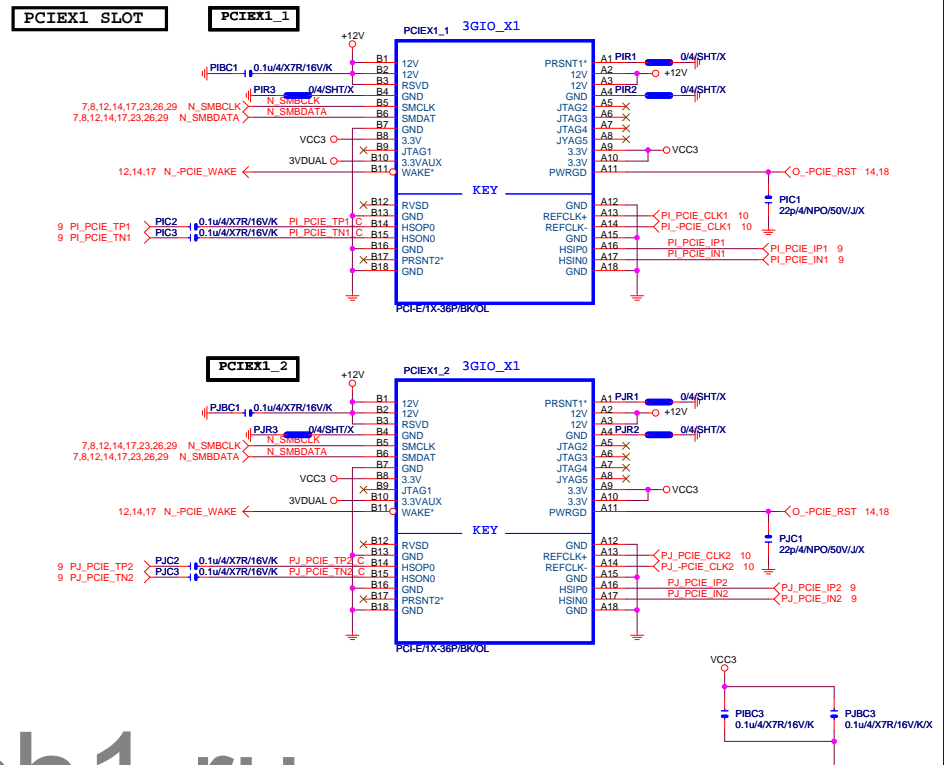
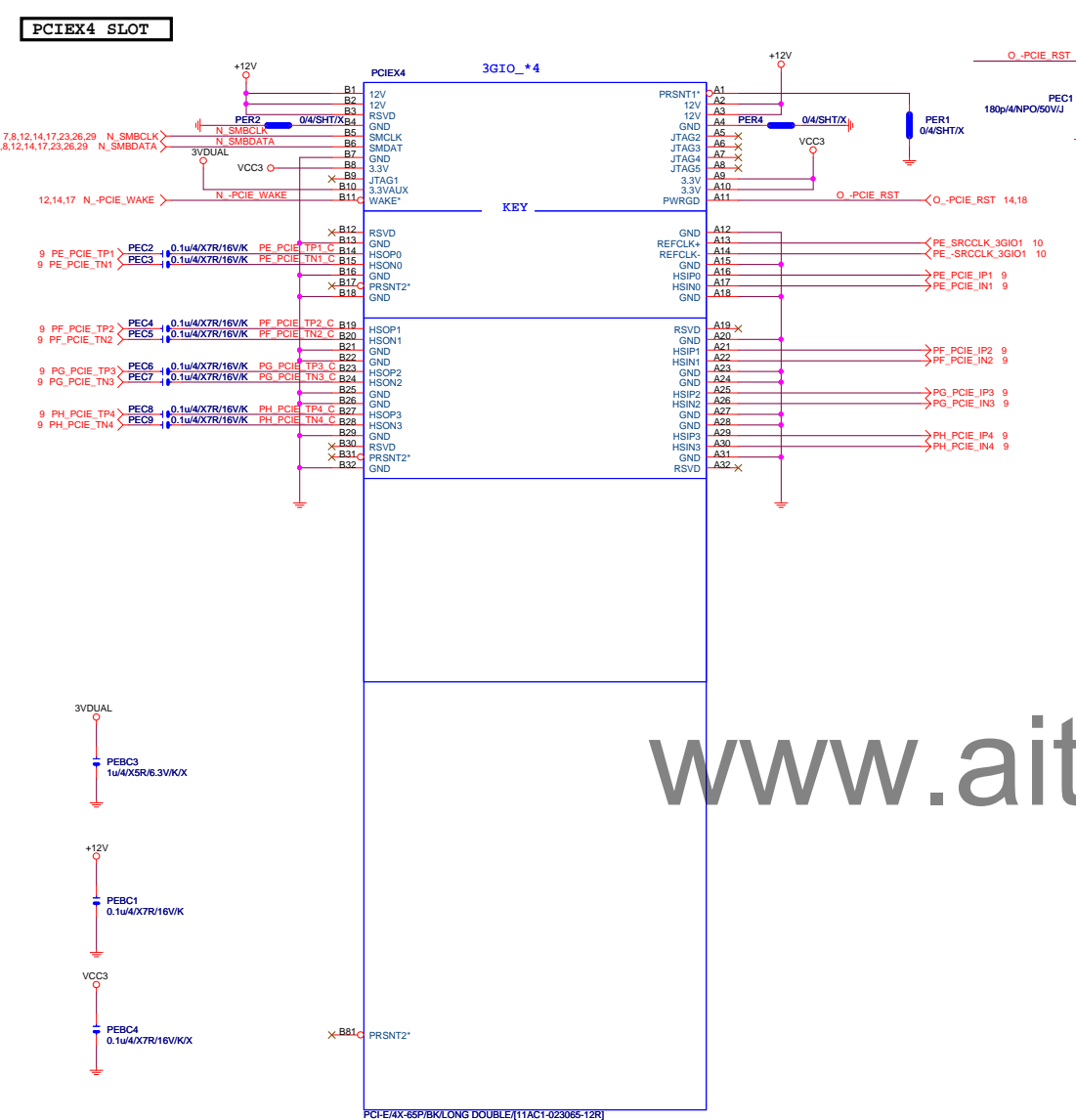
PCIEX16 SLOT



PCIEX16:16/5/5/16

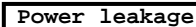
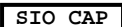
PA EXP RXP[0..15]	>>>PA_EXP_RXP[0..15]	4
PA EXP RXN[0..15]	>>>PA_EXP_RXN[0..15]	4
PA EXP TXP[0..15]	>>>PA_EXP_TXP[0..15]	4
PA EXP TXN[0..15]	>>>PA_EXP_TXN[0..15]	4

Gigabyte Technology		
Title		
PCI EXPRESS * 16		
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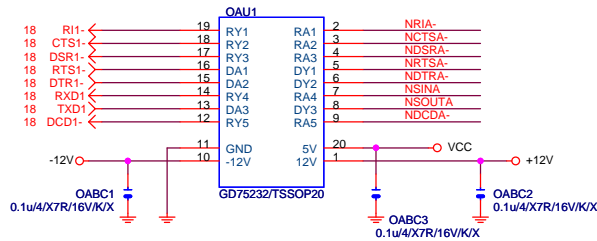
www.aitech1.ru

IT8728F NOTE

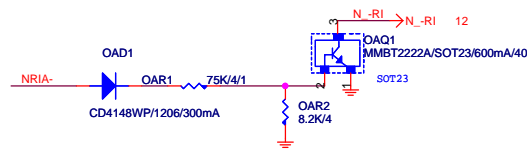
DUAL BIOS OPT STRAP

Title			
ITE 8728 LPC IO			
Size B	Document Number	GA-Z87-D3HP	Rev 1.0
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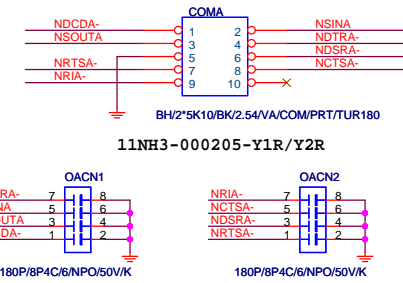
COMA



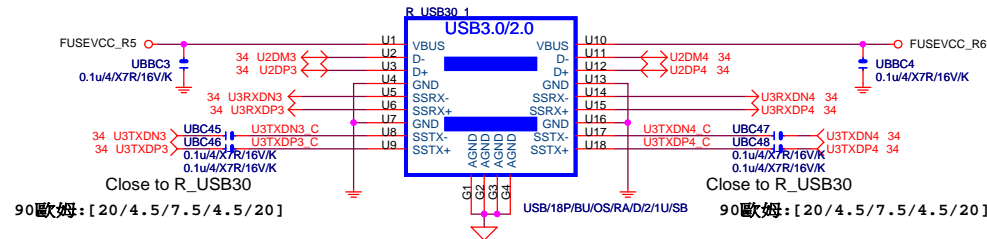
COM RI



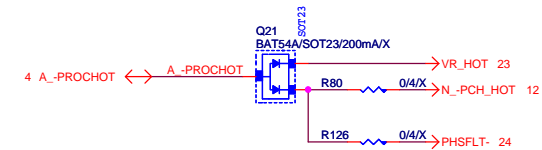
COM BUFFER



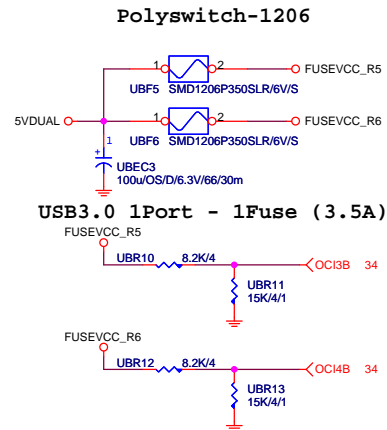
USB30_20 CONNECT



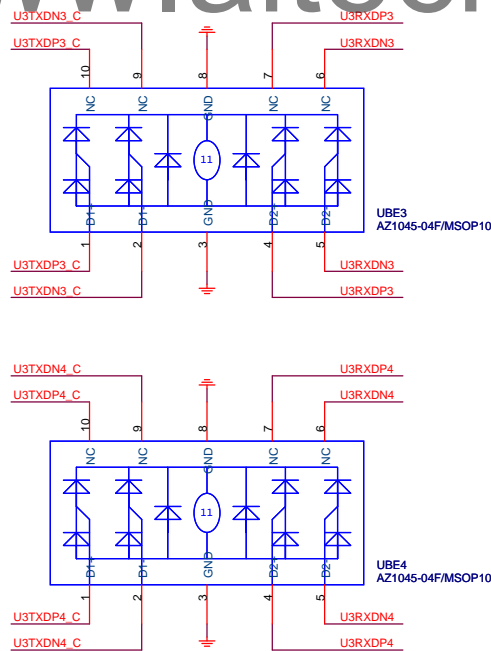
-PROHOT



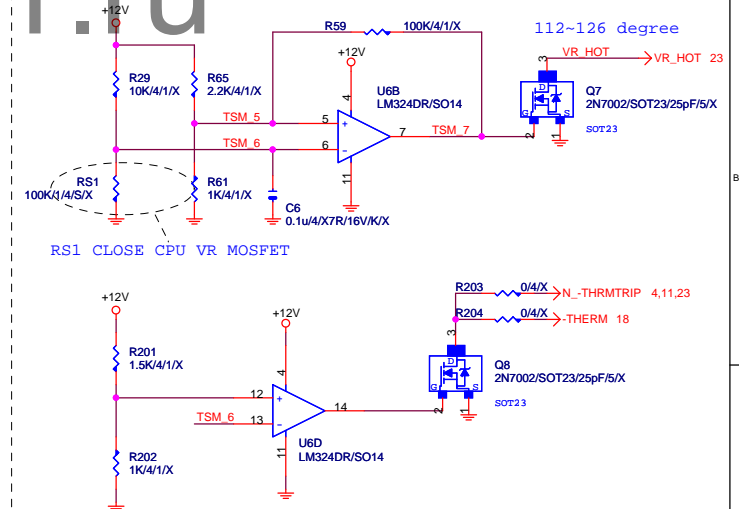
USB30 PWR



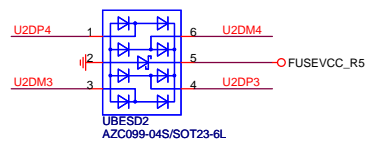
USB30 ESD PROTECT



-PROHOT



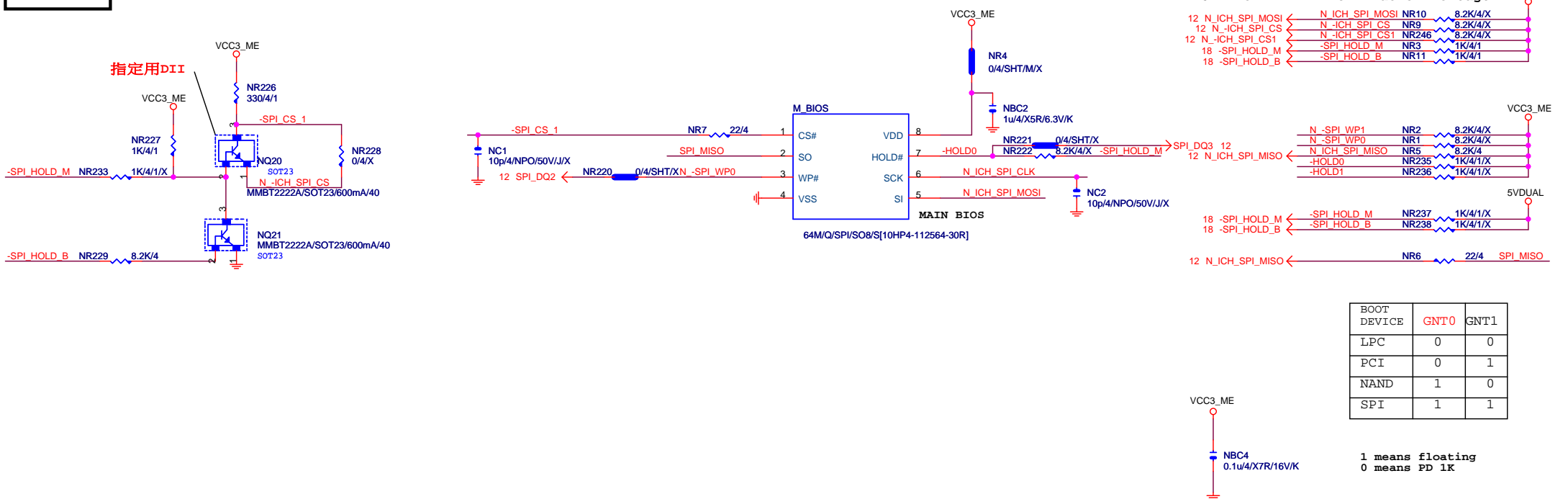
USB20 ESD PROTECT



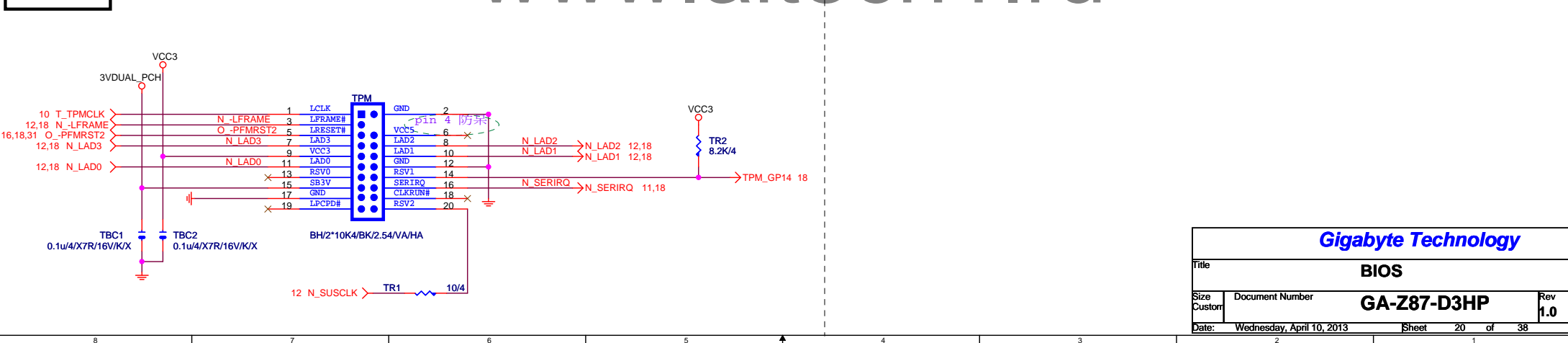
Gigabyte Technology

Title			
COM & PROHOT/Dynamic O.C.			
Size	Document Number	Rev	
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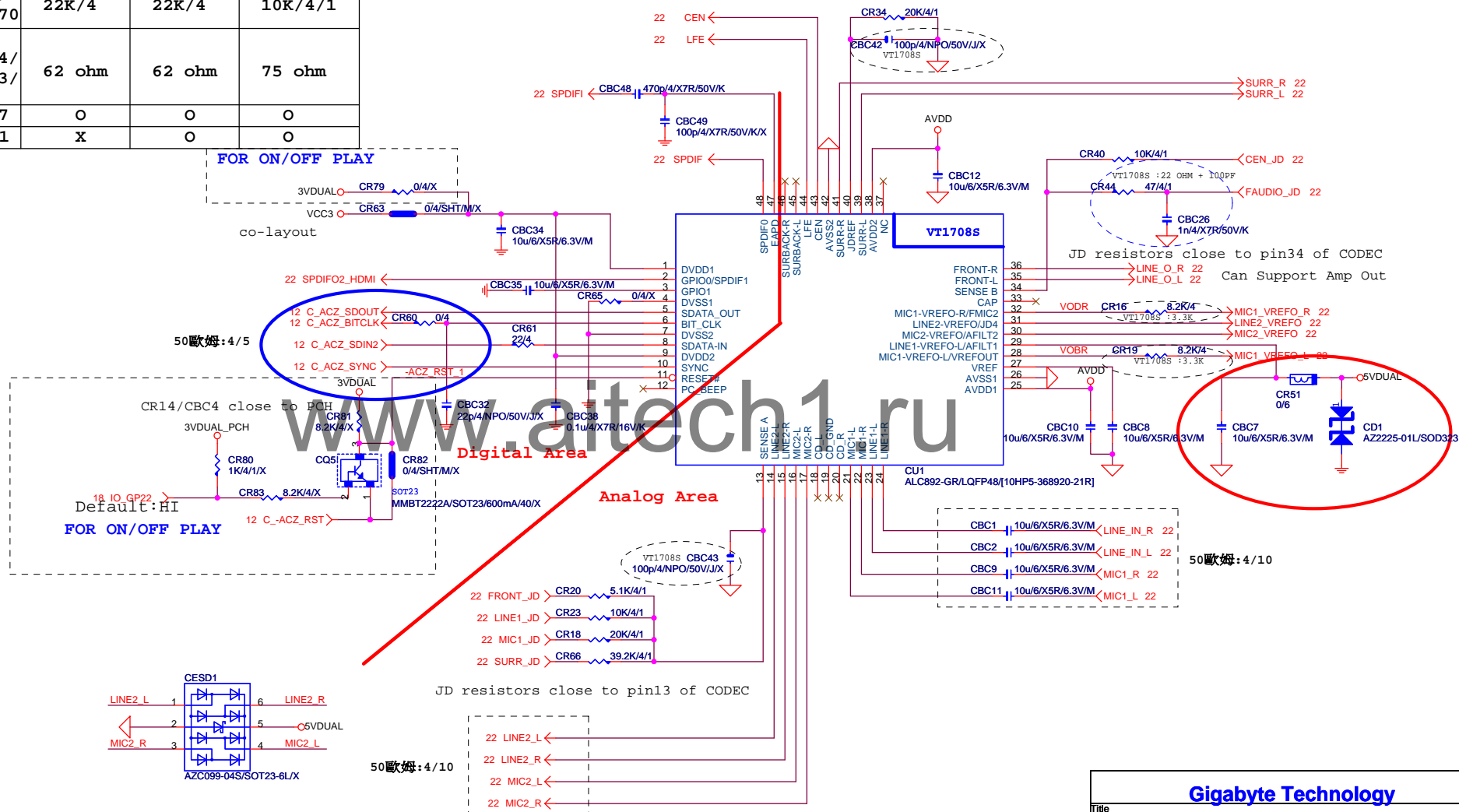
DUAL BIOS

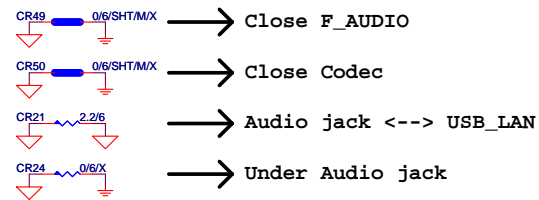


TPM CONNECT

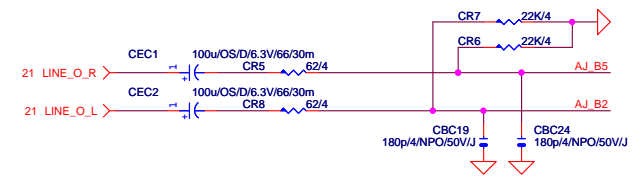


	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR16/CR19 CR52/CR56/CR10/CR9	8.2K/4	8.2K/4	3.3K/4/1
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	X	O	O



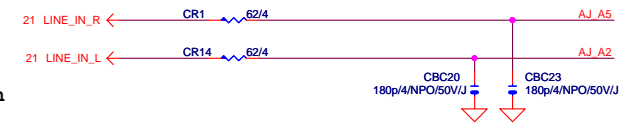


LINE-OUT



LINE-IN

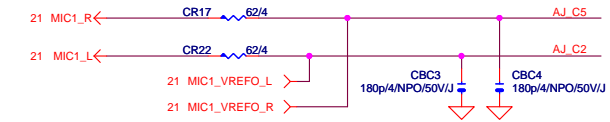
Only reserved for ALC888



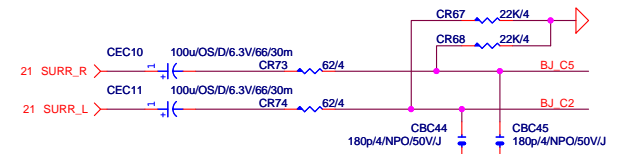
Verify MIC function
in LINE-in

For 889A/888

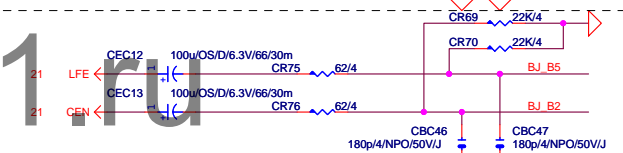
MIC-IN



SURROUND

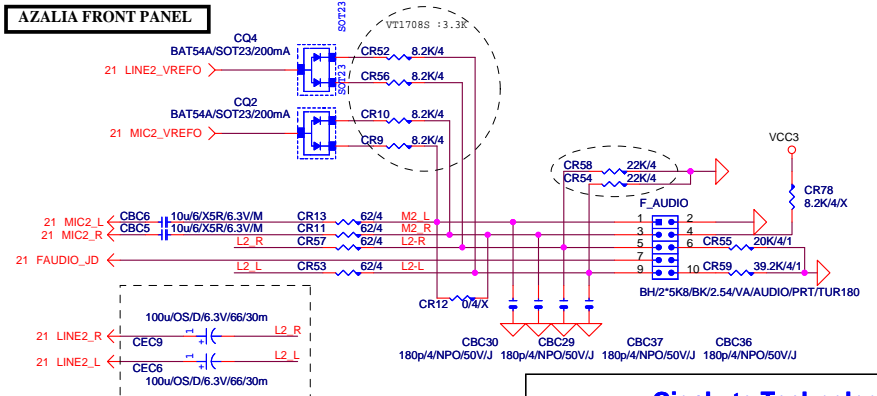


CEN/LFE



SURR BACK

AZALIA FRONT PANEL

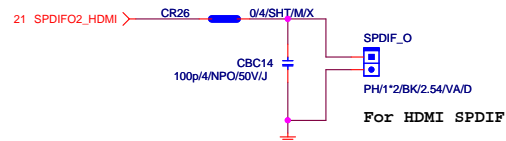


Gigabyte Technology

AUDIO JACK

Title	Document Number	Rev
	GA-Z87-D3HP	1.0
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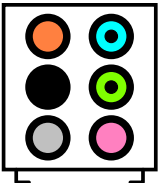
SPDIF_OUT



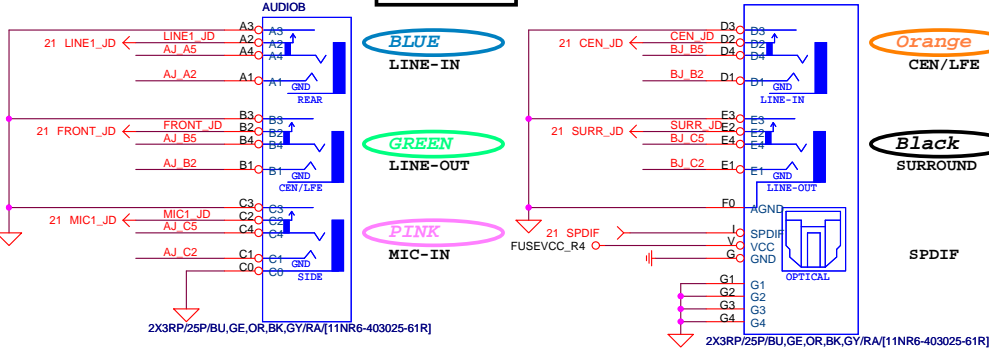
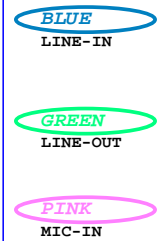
SPDIF_IN

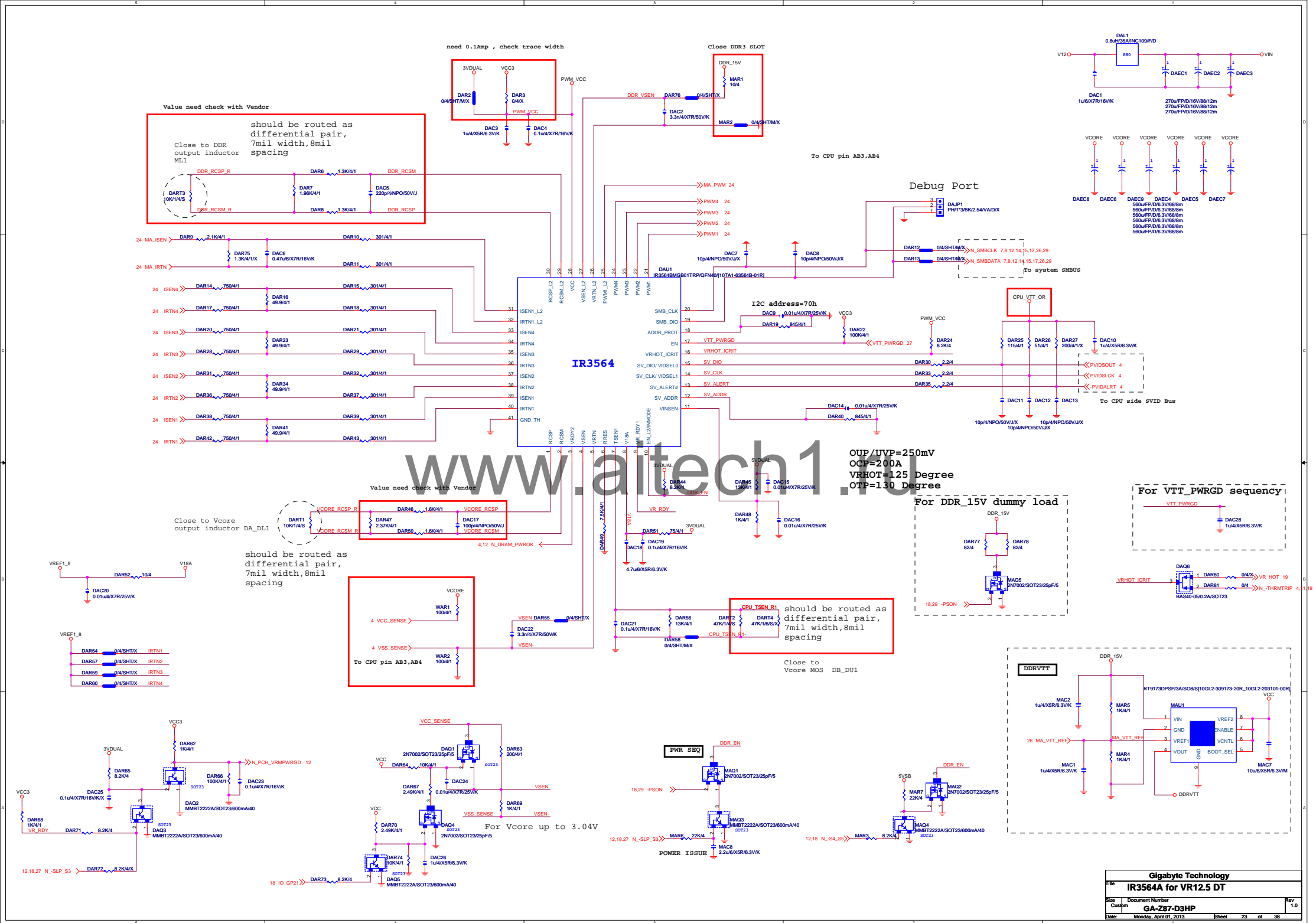


AZALIA JACK



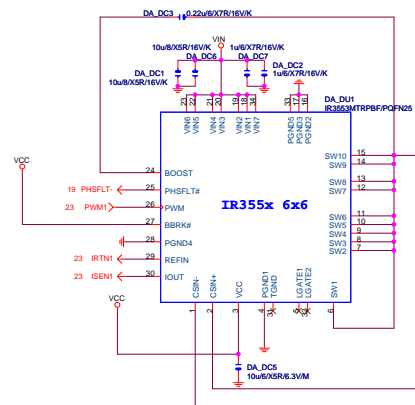
AZALIA JACK



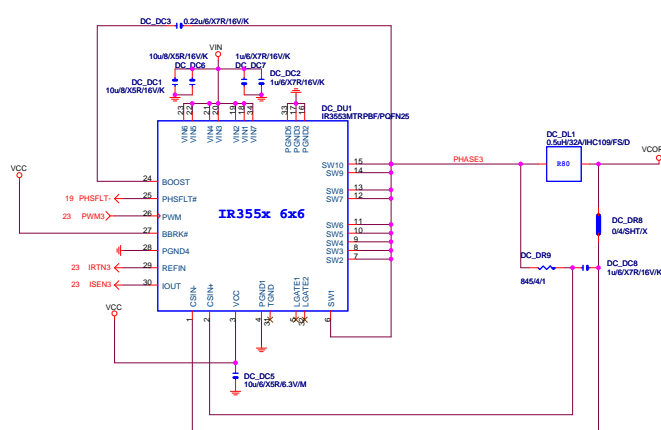


VCORE

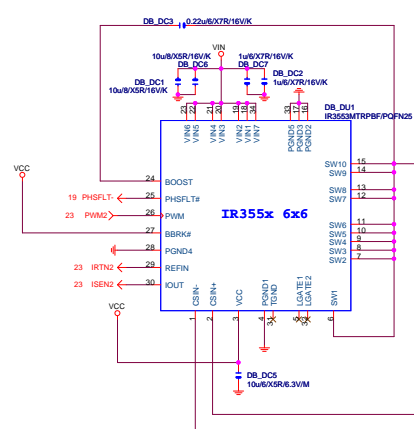
VCORE-PHASE1



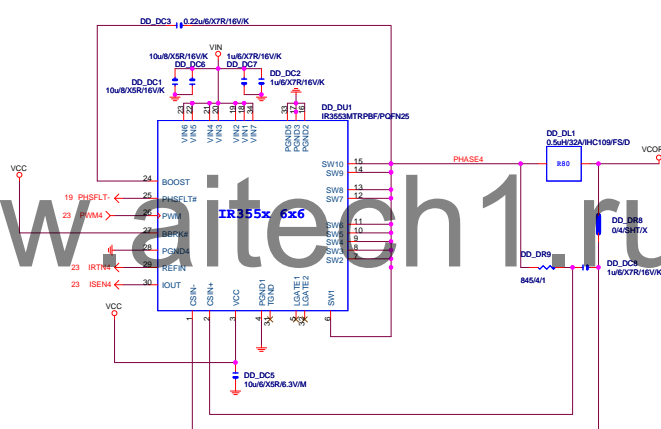
VCORE-PHASE3



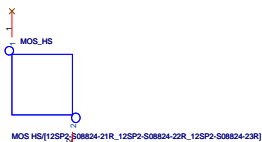
VCORE-PHASE2



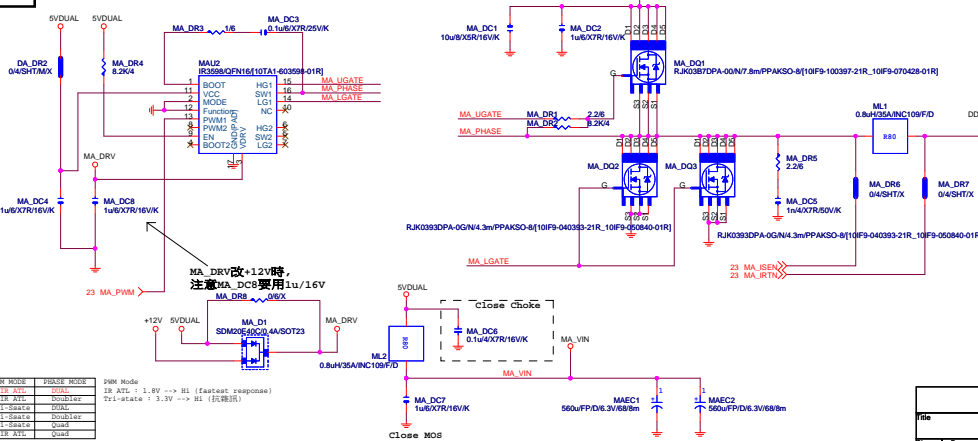
VCORE-PHASE4



MOSFET HEATSINK



DDR_15V



PHASE	MODE	PHASE	MODE	PHASE	MODE
0	1	10	20	30	40
1	1	10	20	30	40
0	0	10	10	30	10
0	0	10	10	30	10
0	0	10	10	30	10
0	0	10	10	30	10
0	0	10	10	30	10
0	0	10	10	30	10
0	0	10	10	30	10
0	0	10	10	30	10

In Quad mode, IC1 pin19 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PJ

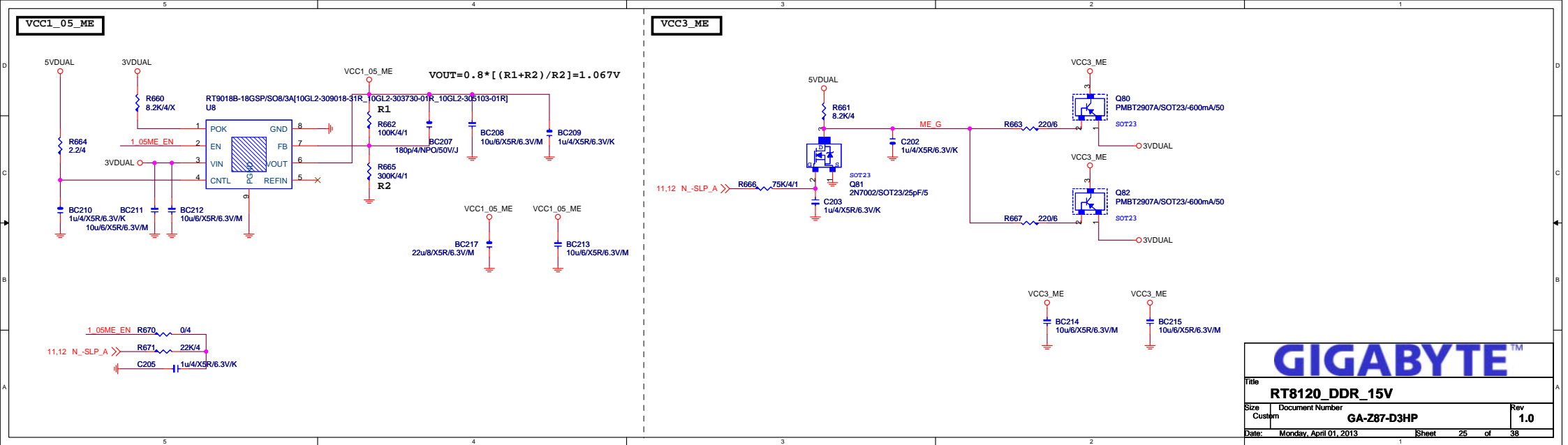
Gigabyte Technology

CPU CORE VR

GA-Z87-D3HP

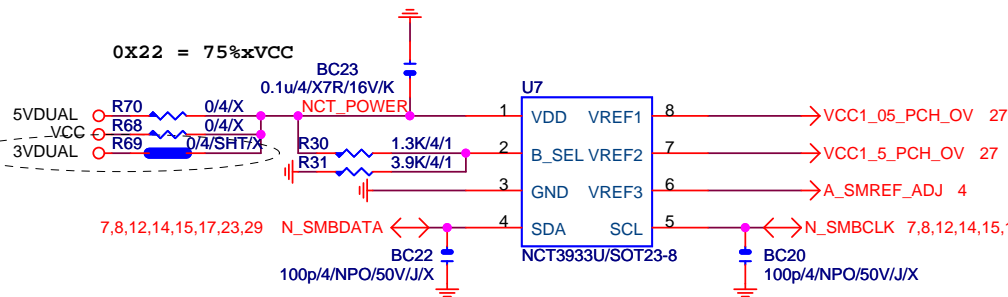
Rev 1.0

Date: Monday, March 26, 2013 Sheet 24 of 38

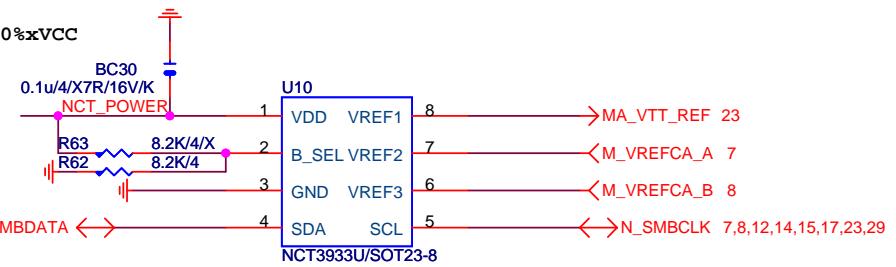


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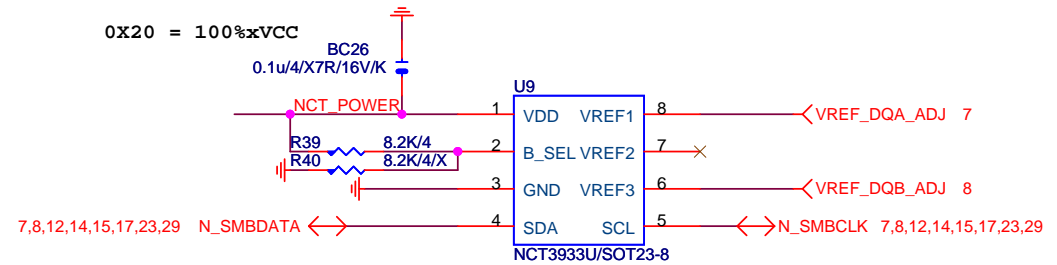
OVER VOLTAGE



0X2A = 0%xVCC



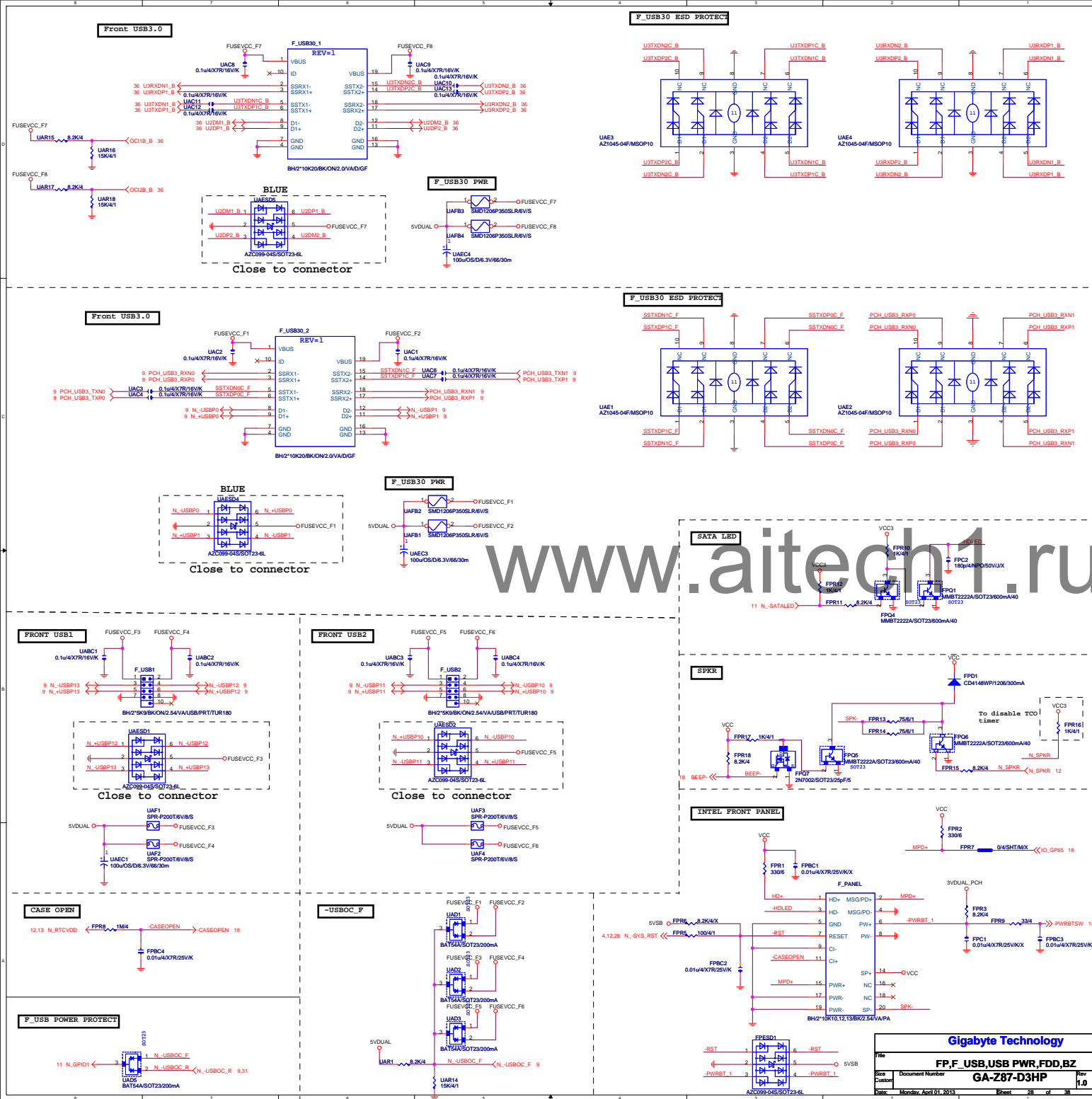
0X20 = 100%xVCC



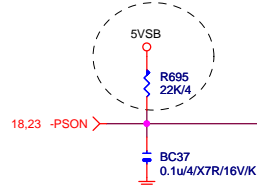
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology

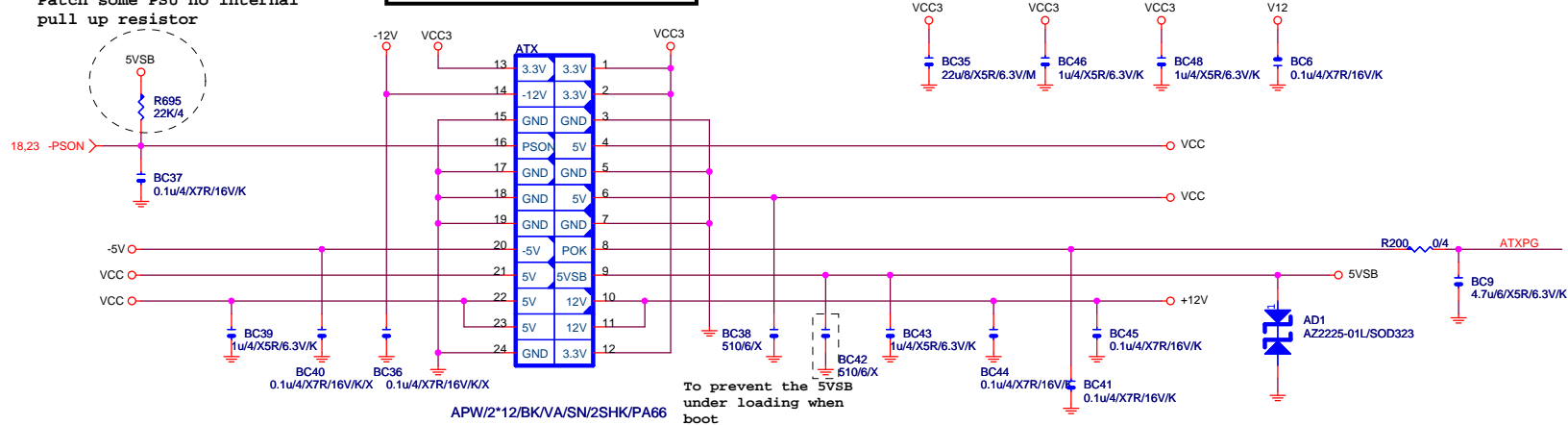
Title		
CPU CORE VR-2		
Size	Document Number	Rev
Custom	GA-Z87-D3HP	1.0
Date:	Friday, March 22, 2013	Sheet 26 of 38



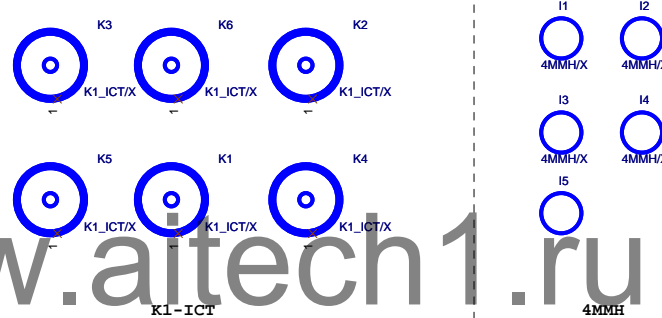
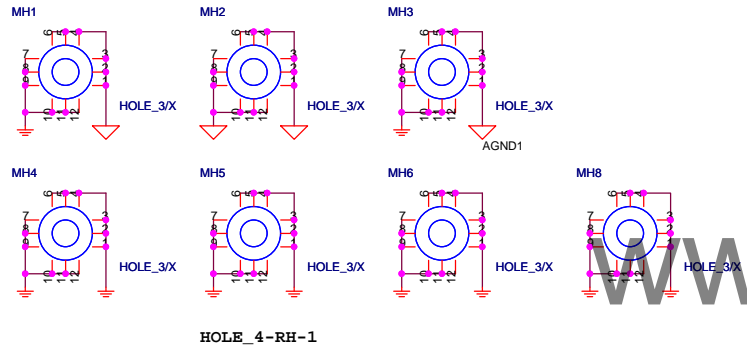
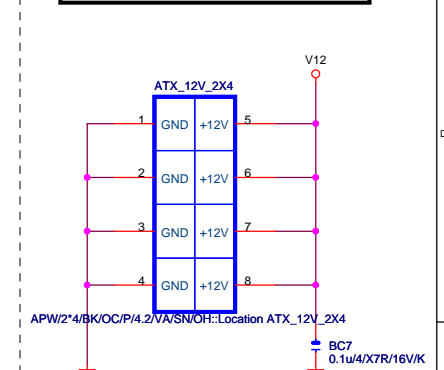
Patch some PSU no internal pull up resistor



ATXX24 POWER CONNECTOR

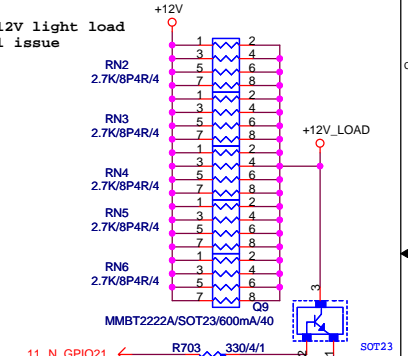


ATXX4 POWER CONNECTOR



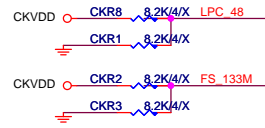
【技術通報R&D技術通報153】

To fix 12V light load abnormal issue

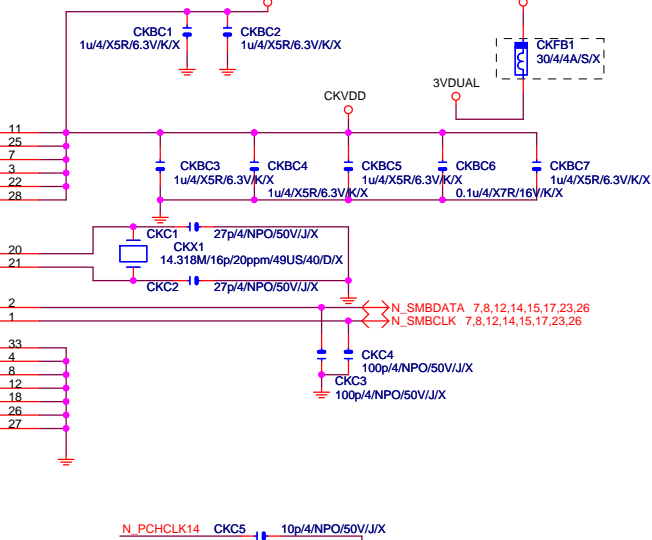
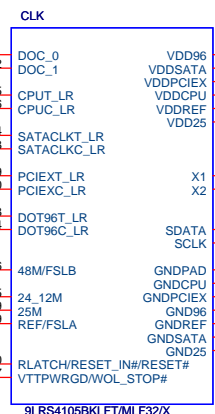
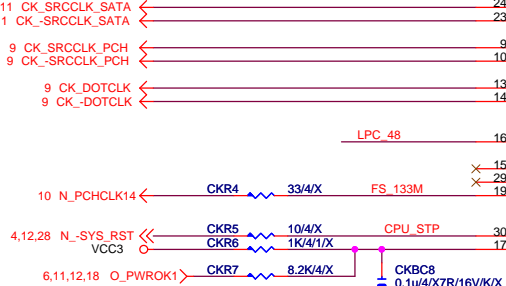


CLK GEN

CPU Frequency Selection

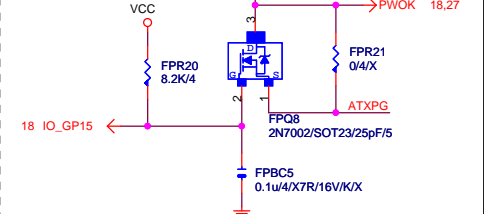


FSLB	FSLA	CPU
0	0	100M <Default>
0	1	133M
1	0	200M
1	1	166M



PWOK PATCH

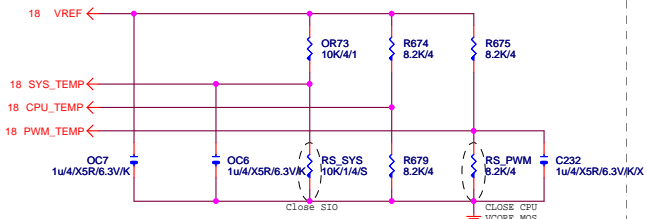
【技術通報R&D技術通報154】



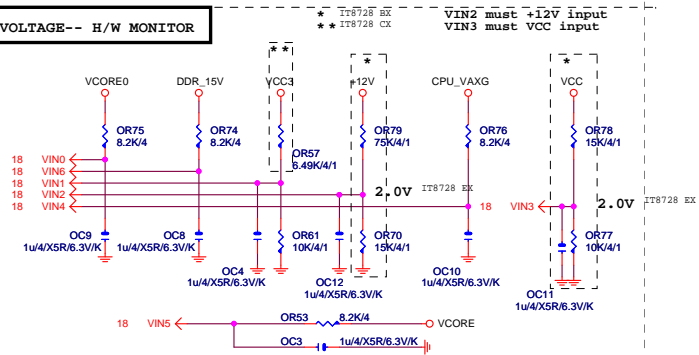
Gigabyte Technology

Title			ATX POWER CONNECTOR
Size	Document Number	GA-Z87-D3HP	
Custom			
Date	Friday, March 22, 2013	Sheet	29 of 38
		Rev	1.0

TEMP H/W MONITOR

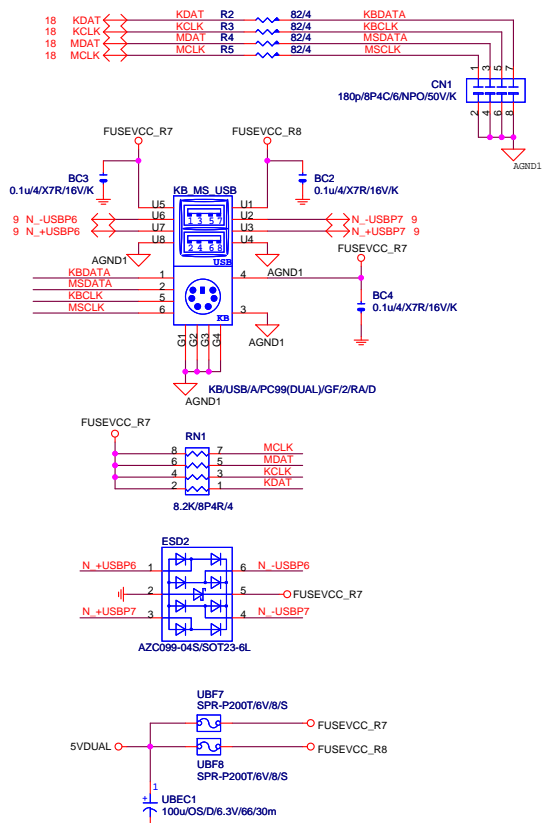


VOLTAGE-- H/W MONITOR

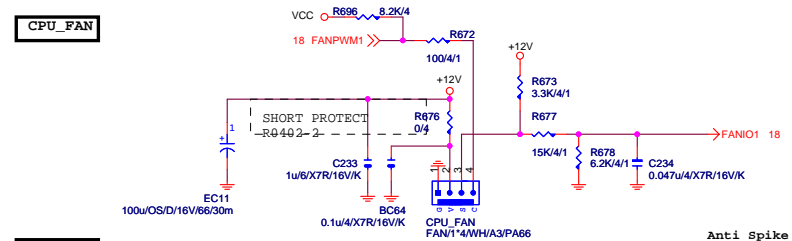


The division voltage of VIN2 & VIN3 must be around 2.9V

KB/USE

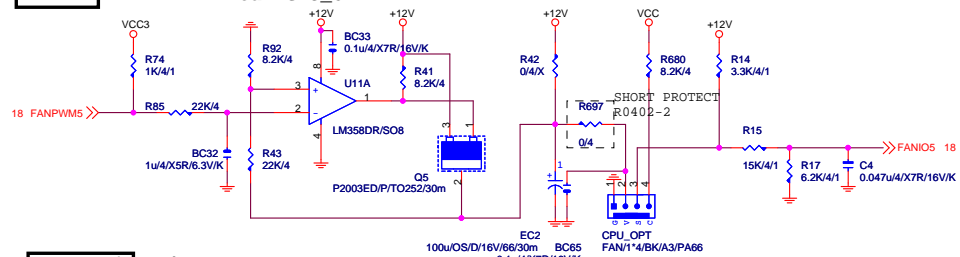


CPU FAN



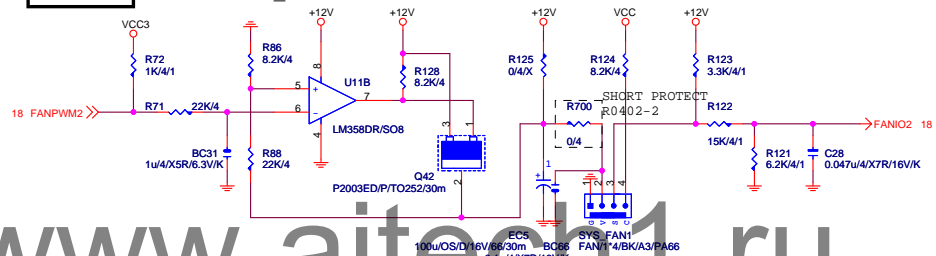
CPU_OPT

Linear CPU OPT



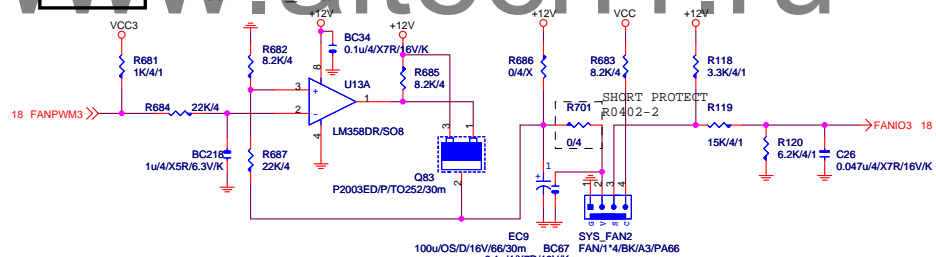
SYS FAN_

Linear SYS FAN



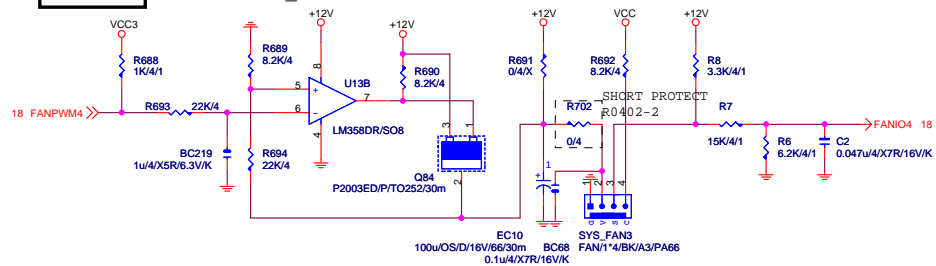
SYS FAN

Linear SYS FAN



SYS FAN

Linear SYS_FAN



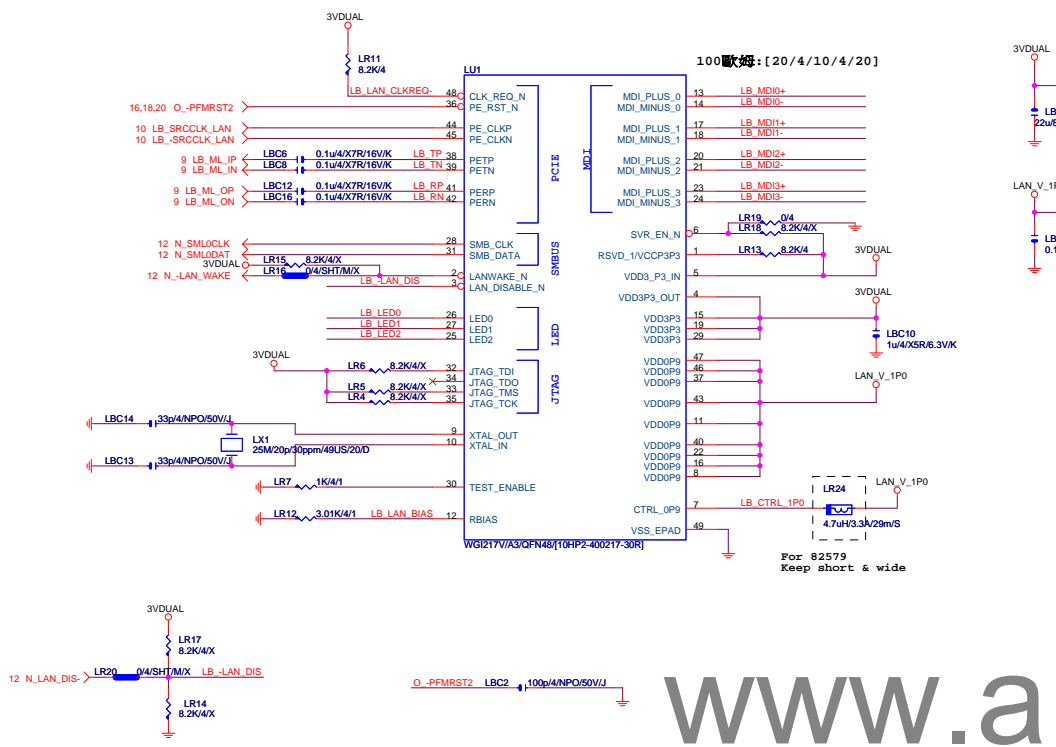
Gigabyte Technology

Title	HWM,KB/MS, FAN CTRL
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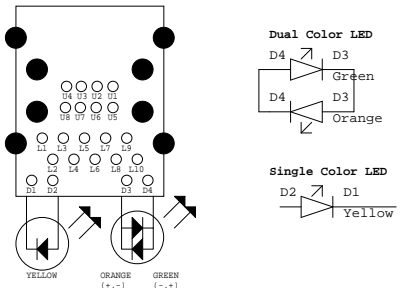
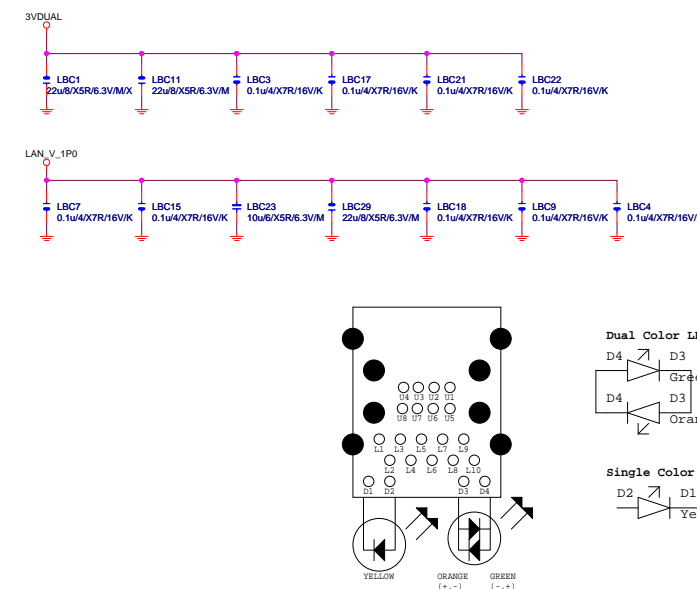
Size	Document Number
Custom	GA-Z87-D3HP

1.0

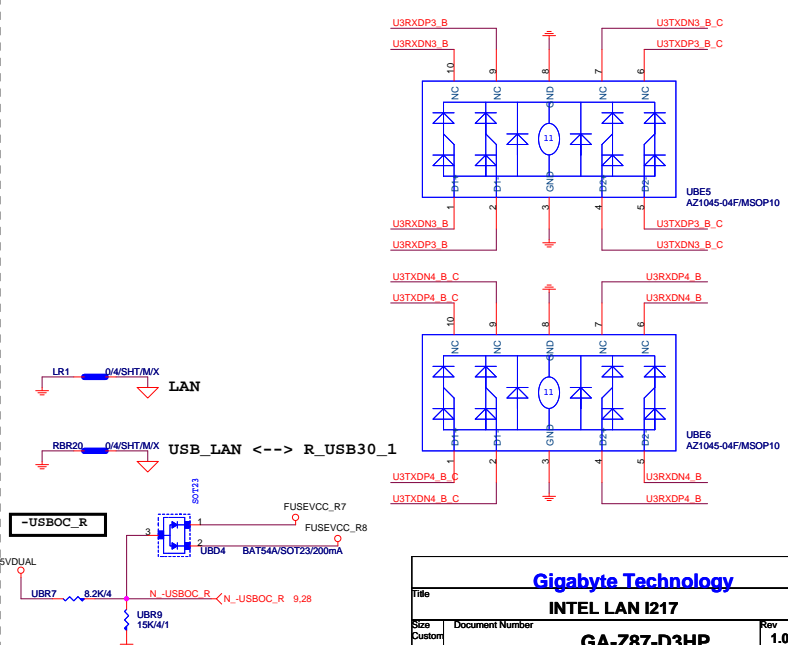
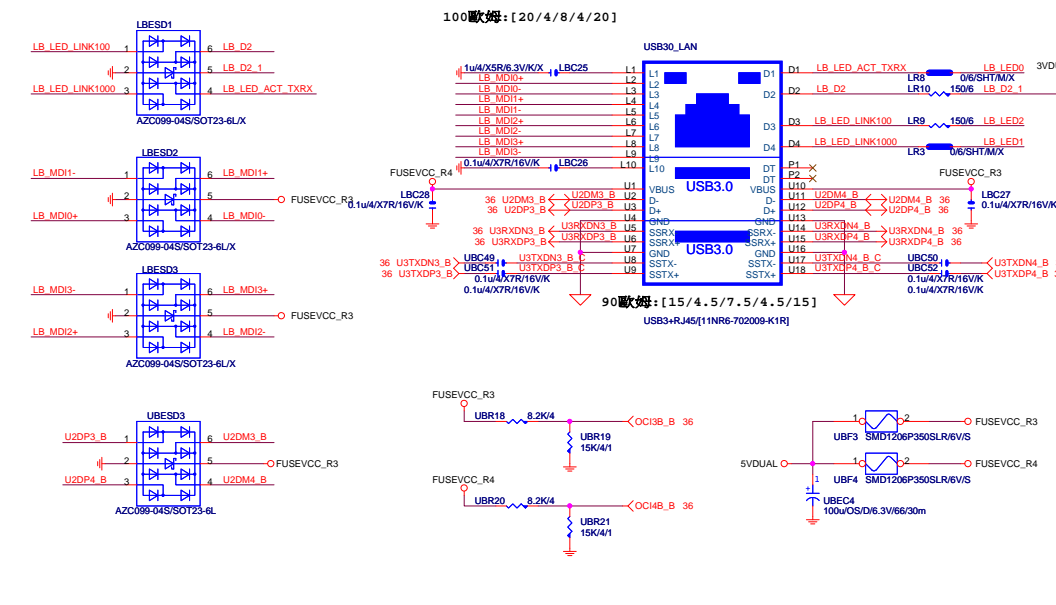
LAN: INTEL I217



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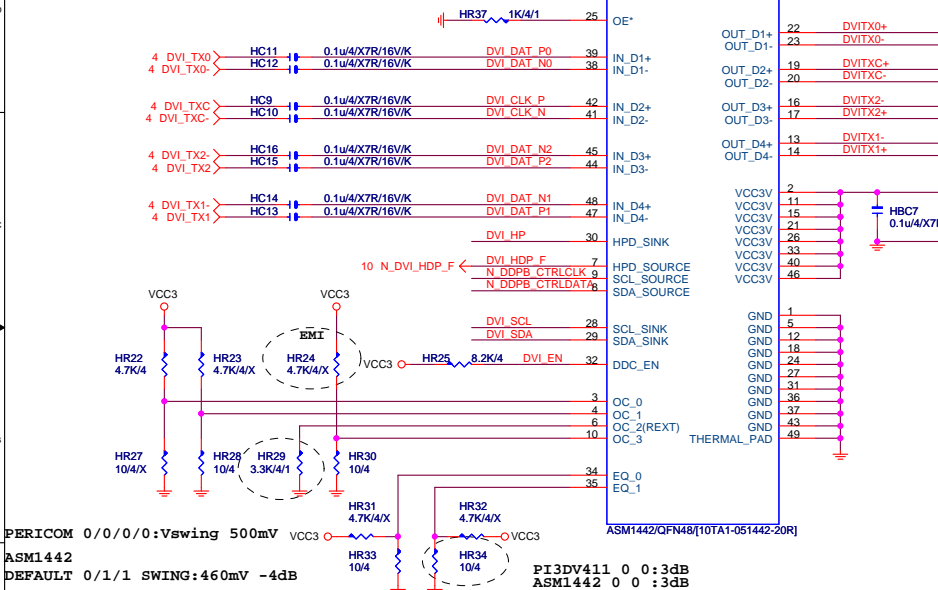
USB30 LAN CONNECTOR



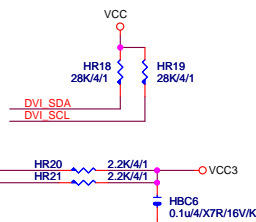
DVI LEVEL SHIFT

DVI:15/4/4/15
Impedance=85 +- 17.5%

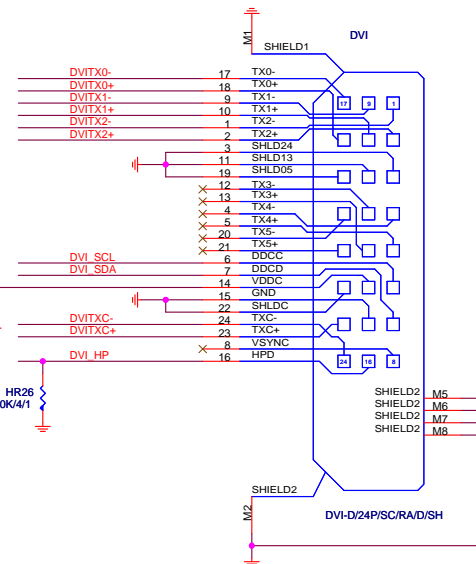
HU2



10 N_DDPB_CTRLCLK < N_DDPB_CTRLCLK
10 N_DDPB_CTRLDATA < N_DDPB_CTRLDATA



FUSEVCC_R8
HBC11
0.1u/4/X7R/16V/K



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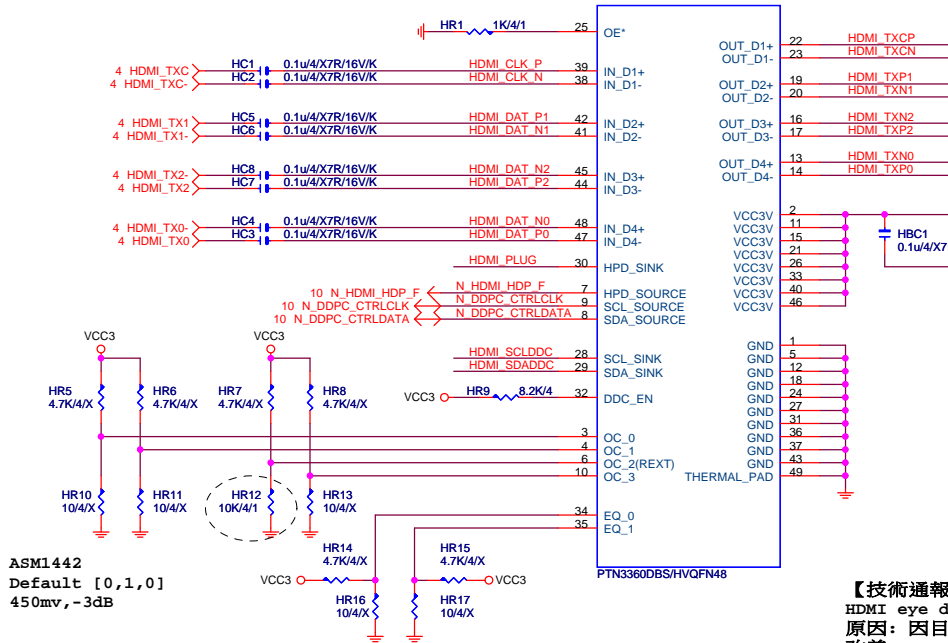
Gigabyte Technology			
Title			
TI TSB43AB23 1394			
Size	Document Number	Rev	
Custom	GA-Z87-D3HP	1.0	
Date:	Thursday, March 28, 2013	Sheet	32 of 38

HDMI LEVEL SHIFT

HDMI:15/4/4/15

Impedance=85 +- 17.5%

HU1



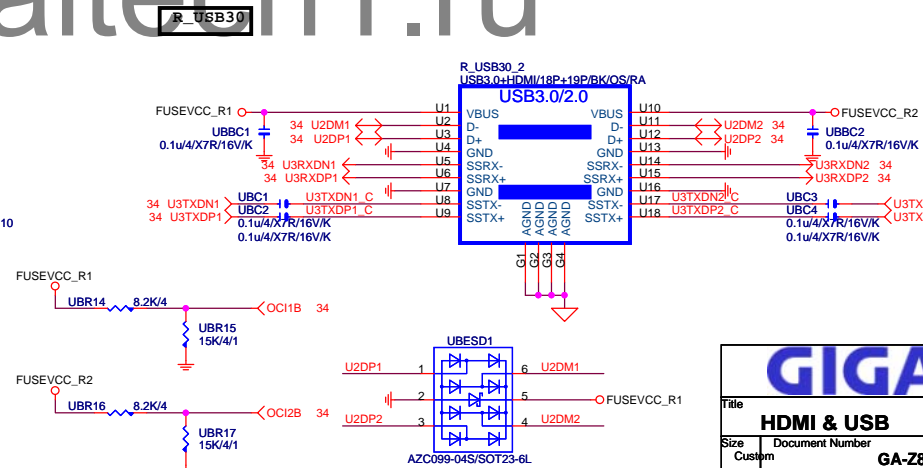
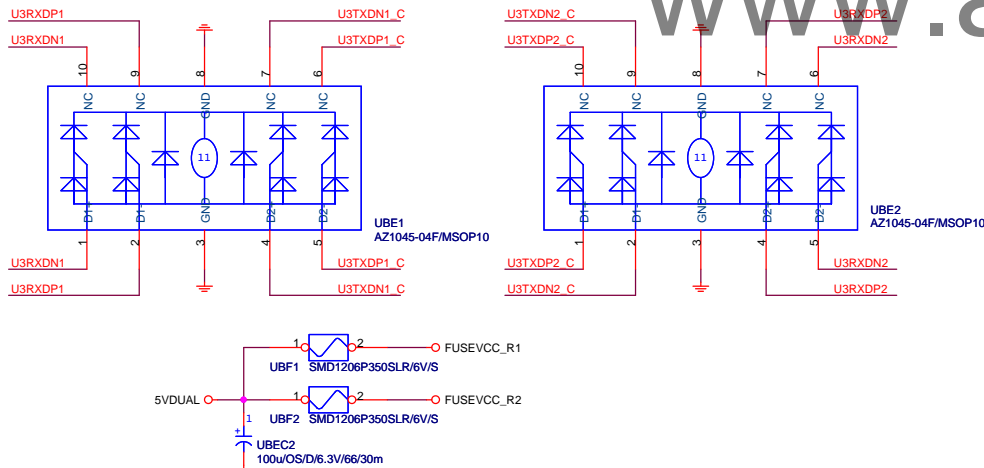
【技術通報R&D技術通報150】

HDMI eye diagram 1.4版(deep color)會fail

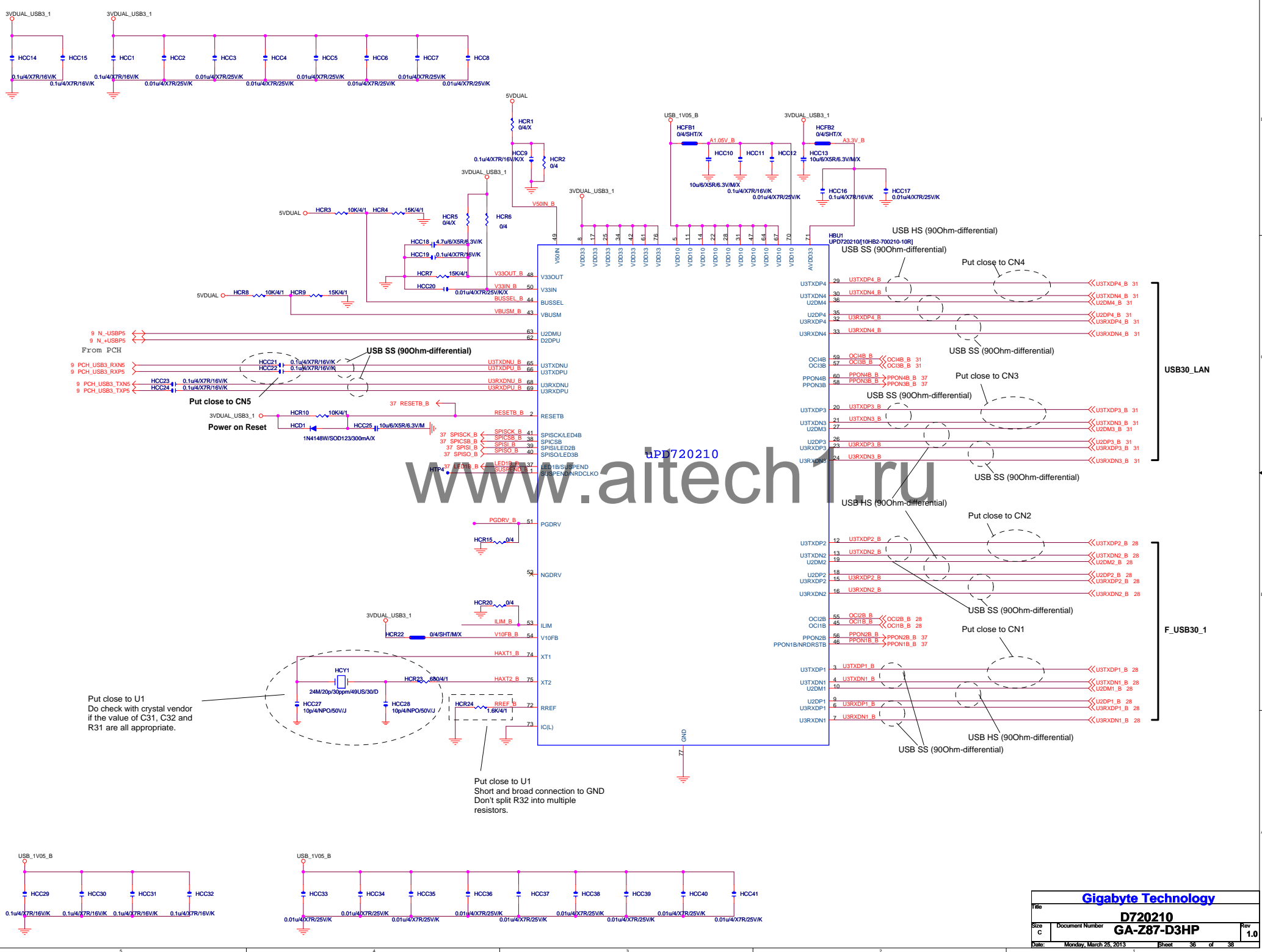
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram

改善: ASMEDIA ASML442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

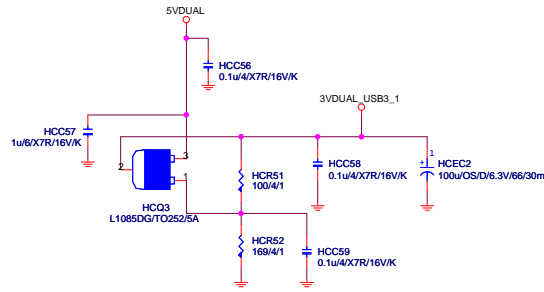
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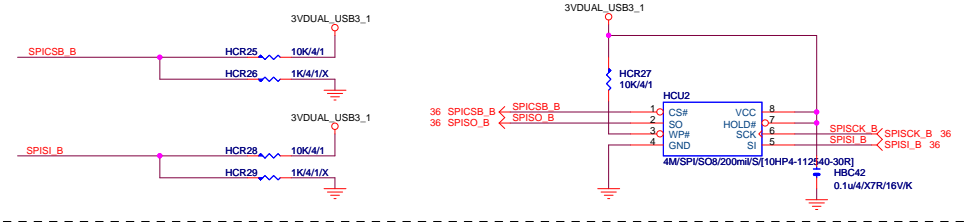
GIGABYTE™			
HDMI & USB			
File	Document Number	Rev	
	GA-Z87-D3HP	1.0	
Date	Monday, April 01, 2013	Sheet	33 of 38



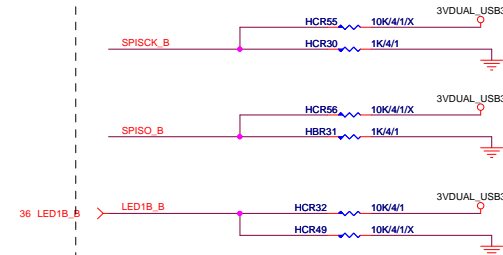
3VDUAL_USB_2



External SPI ROM ; SPI ROM attached mode

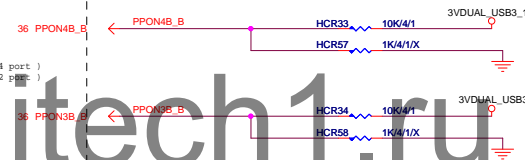


Battery Charging

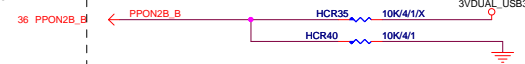


Number of Ports ; 4Ports mode

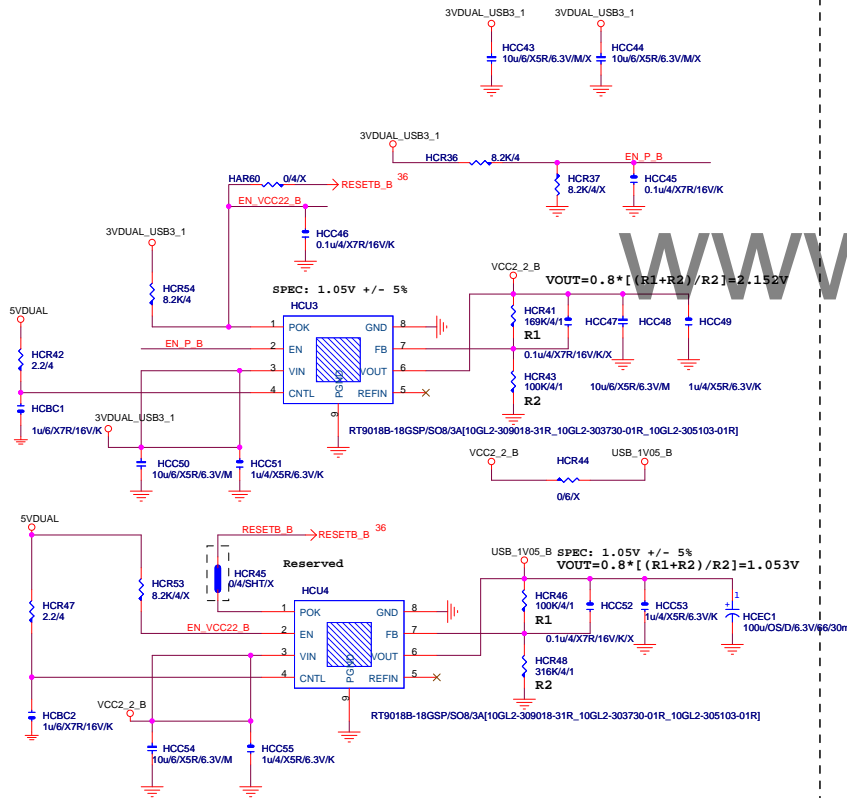
PPON3B / PPON4B : H / H (4 port)
PPON3B / PPON4B : L / L (2 port)



#5 VBUS Power Control ; Individual mode



PPON1B Pin Function ; Port1 PPONB mode



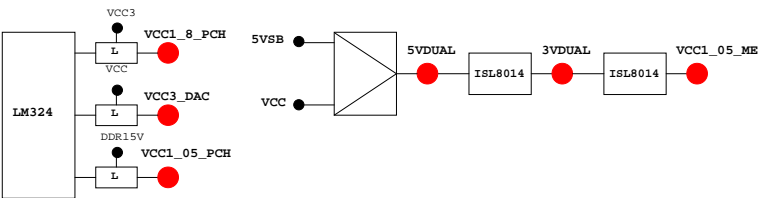
PCH GPIO LIST TABLE

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

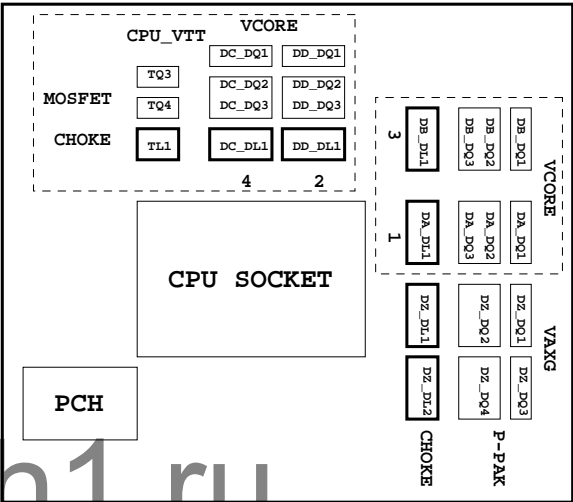
Super I/O ITE8720 GPIO Table

PIN NAME	USAG	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#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSS00	N/A	

PIN NAME	USAG	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/SEN	LOW_PWR_1	
VIDO5/GP27/SEN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSB5W#/GP40	CSI_F0	BSEL166_1
SUSCH#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMB_C_R	SEC_PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/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#/CIRTX2/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

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

	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

散熱模組料號：

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

Gigabyte Technology			
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