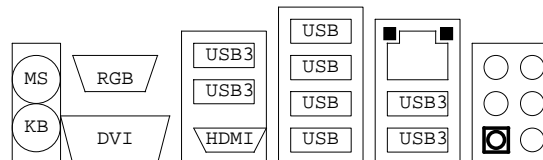
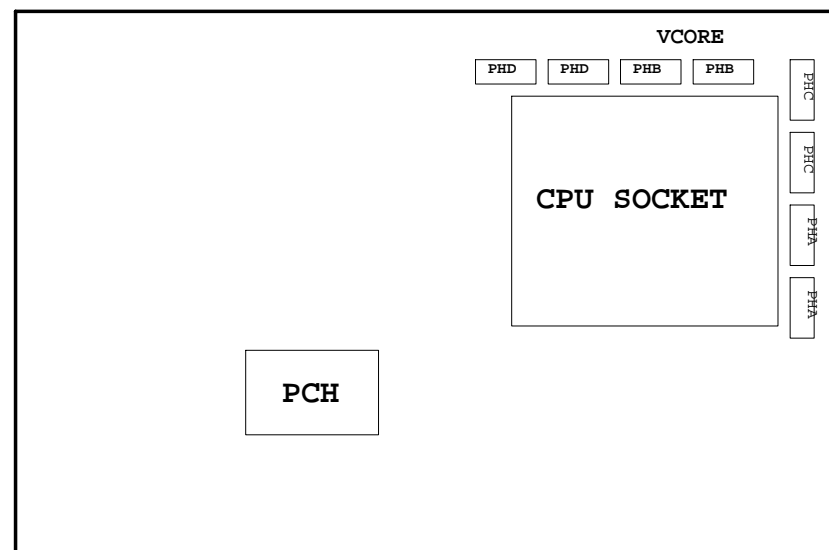
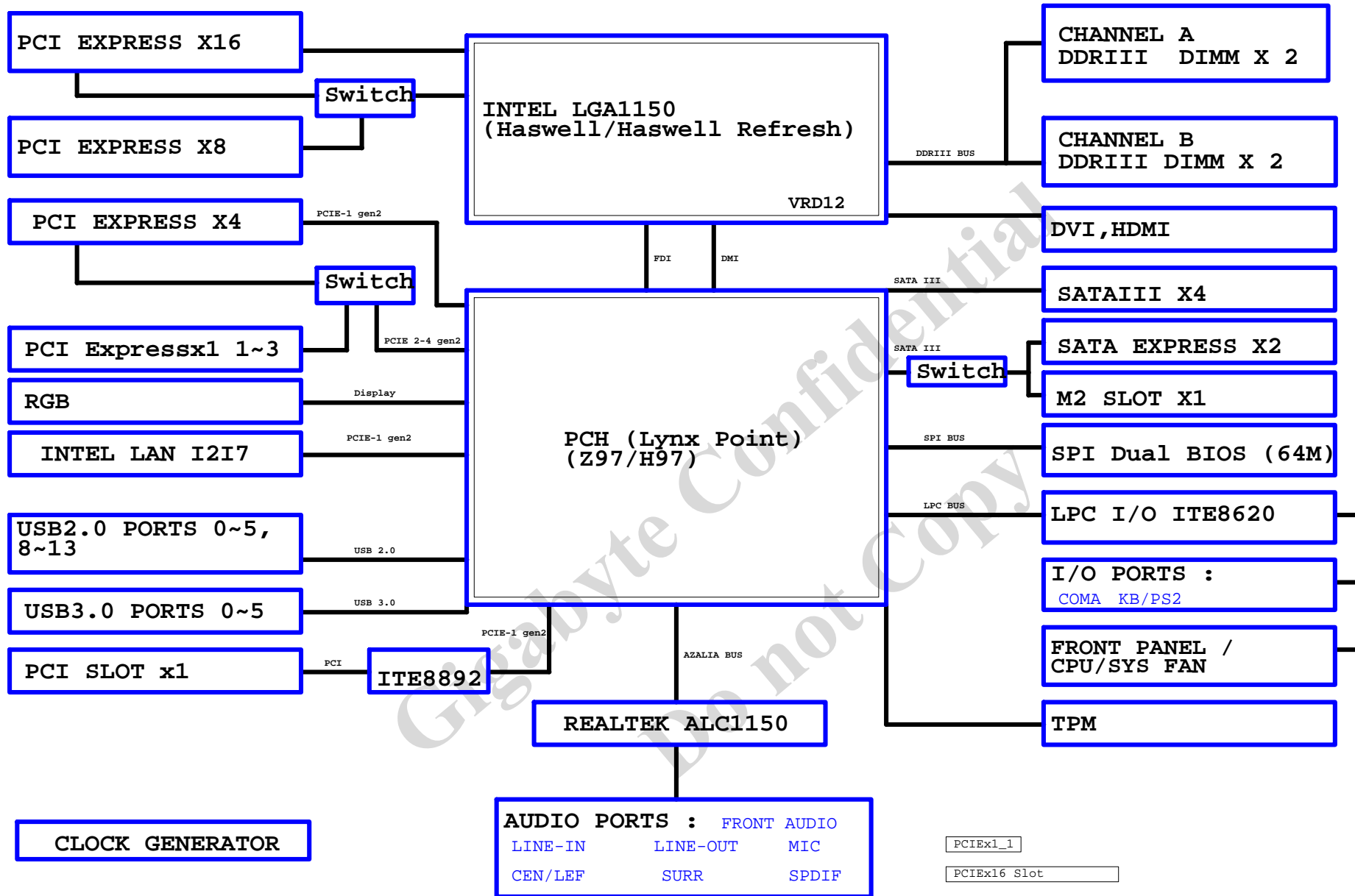


SHEET	TITLE
28	DISCRETE POWER
29	DUAL BIOS
30	FP,F_USB,USB PWR,BZ
31	ATX POWER CONNECTOR
32	H/W MONITOR,FAN CTRL
33	DVI
34	HDMI_USB30
35	INTEL LAN I2I7
36	M.2_SATA_EXPRESS
37	TABLE LIST
39	
40	



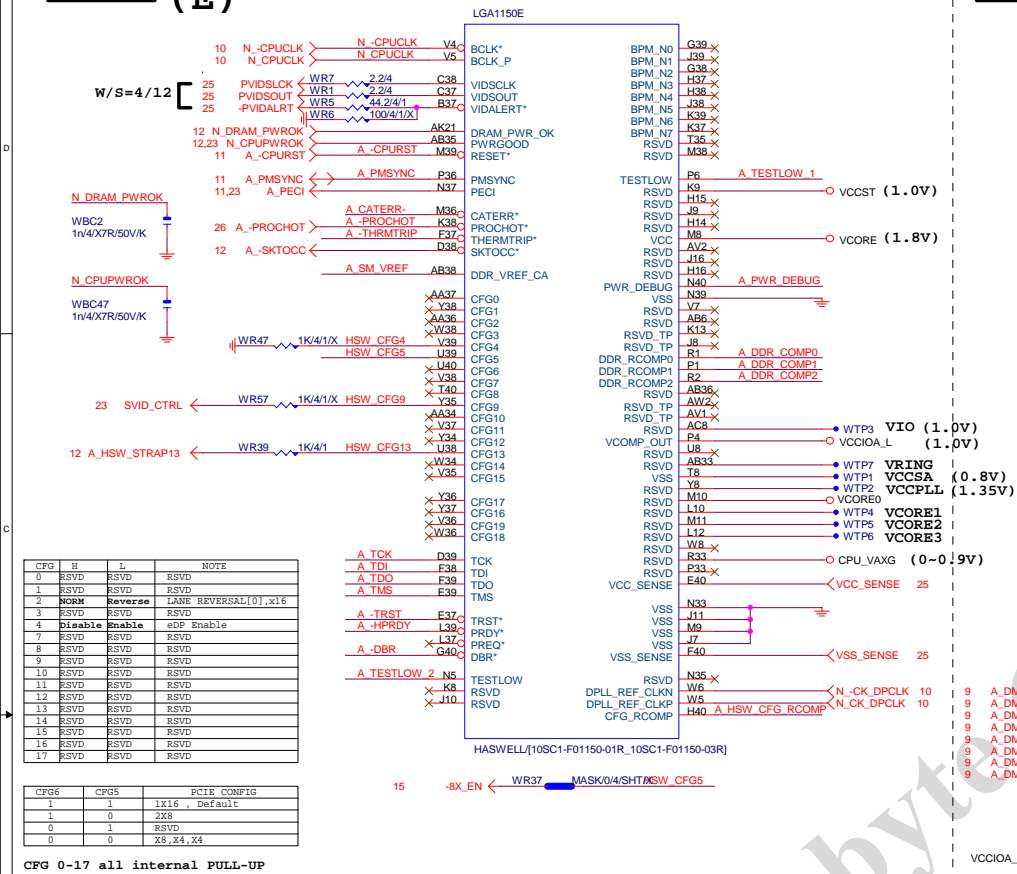
BLOCK DIAGRAM

www.xinxunwei.com 400-800-9990

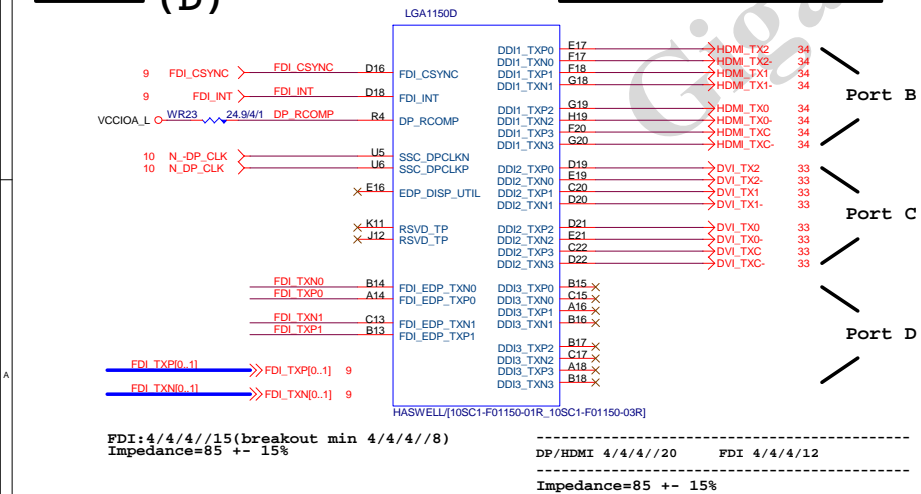


- PCIEx1_1
- PCIEx16 Slot
- PCIEx1_2
- PCIEx1_3
- PCIEx8
- PCI Slot
- PCIEx4

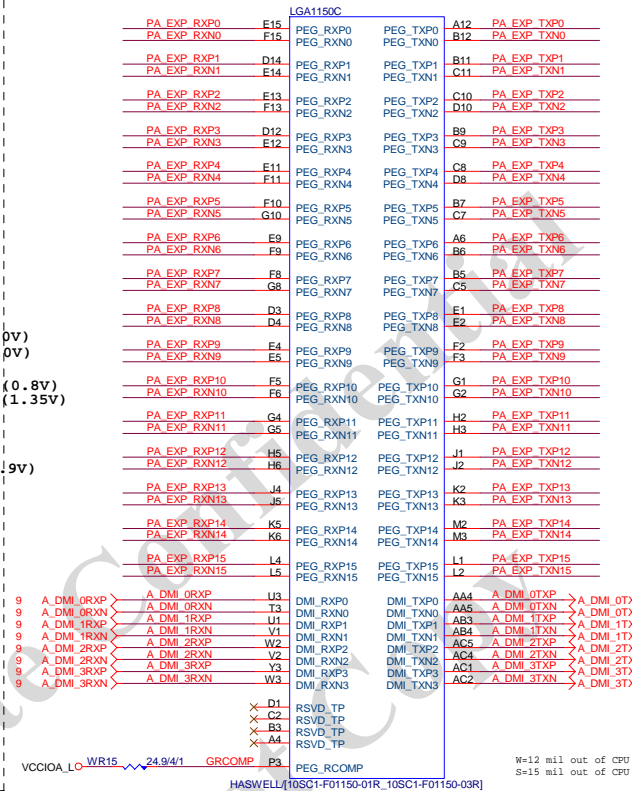
LGA1150 (E)



LGA1150 (D)



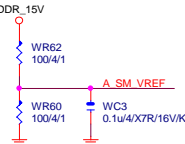
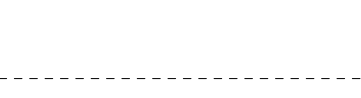
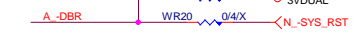
LGA1155 (C)



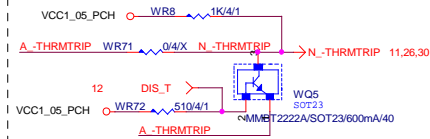
CPU SVID



CPU PU/PD



THRMTRIP DISABLE FOR Z87 OVERCLOCK



1.1V分壓

A_CPURST < A_CPURST 11

WBC3
1n4/X7R/50V/K

DDR BUS

Title				CPU LGA1150-B			
Size	Custom	Document Number	GA-Z97X-UD3H-BK				Rev
							1.1
Date:	Wednesday, June 25, 2014			Sheet	5	of	37

DDRO_MAO0	DDRO_D00	AD38	MDA0
DDRO_MAO1	DDRO_D01	AD39	MDA1
DDRO_MAO2	DDRO_D02	AF38	MDA2
DDRO_MAO3	DDRO_D03	AF39	MDA3
DDRO_MAO4	DDRO_D04	AF40	MDA4
DDRO_MAO5	DDRO_D05	AD37	MDA5
DDRO_MAO6	DDRO_D06	AF40	MDA6
DDRO_MAO7	DDRO_D07	AH40	MDA7
DDRO_MAO8	DDRO_D08	AH39	MDA8
DDRO_MAO9	DDRO_D09	AK38	MDA9
DDRO_MAO10	DDRO_D10	AK39	MDA10
DDRO_MAO11	DDRO_D11	AK37	MDA11
DDRO_MAO12	DDRO_D12	AH38	MDA12
DDRO_MAO13	DDRO_D13	AH38	MDA13
DDRO_MAO14	DDRO_D14	AK40	MDA14
DDRO_MAO15	DDRO_D15	AK40	MDA15
DDRO_ODT0	DDRO_D16	AM40	MDA16
DDRO_ODT1	DDRO_D17	AP38	MDA17
DDRO_ODT2	DDRO_D18	AP39	MDA18
DDRO_ODT3	DDRO_D19	AP38	MDA19
DDRO_ODT4	DDRO_D20	AM38	MDA20
DDRO_ODT5	DDRO_D21	AP37	MDA21
DDRO_ODT6	DDRO_D22	AP37	MDA22
DDRO_ODT7	DDRO_D23	AP37	MDA23
DDRO_ODT8	DDRO_D24	AW37	MDA24
DDRO_ODT9	DDRO_D25	AW35	MDA25
DDRO_ODT10	DDRO_D26	AT37	MDA26
DDRO_ODT11	DDRO_D27	AT37	MDA27
DDRO_ODT12	DDRO_D28	AT37	MDA28
DDRO_ODT13	DDRO_D29	AT37	MDA29
DDRO_ODT14	DDRO_D30	AW35	MDA30
DDRO_ODT15	DDRO_D31	AW36	MDA31
DDRO_ODT16	DDRO_D32	AW36	MDA32
DDRO_ODT17	DDRO_D33	AU6	MDA33
DDRO_ODT18	DDRO_D34	AV4	MDA34
DDRO_ODT19	DDRO_D35	AV4	MDA35
DDRO_ODT20	DDRO_D36	AV6	MDA36
DDRO_ODT21	DDRO_D37	AW6	MDA37
DDRO_ODT22	DDRO_D38	AW4	MDA38
DDRO_ODT23	DDRO_D39	AW4	MDA39
DDRO_ODT24	DDRO_D40	AR1	MDA40
DDRO_ODT25	DDRO_D41	AR4	MDA41
DDRO_ODT26	DDRO_D42	AR3	MDA42
DDRO_ODT27	DDRO_D43	AR3	MDA43
DDRO_ODT28	DDRO_D44	AR3	MDA44
DDRO_ODT29	DDRO_D45	AR3	MDA45
DDRO_ODT30	DDRO_D46	AN2	MDA46
DDRO_ODT31	DDRO_D47	AN1	MDA47
DDRO_ODT32	DDRO_D48	AL1	MDA48
DDRO_ODT33	DDRO_D49	AL3	MDA49
DDRO_ODT34	DDRO_D50	AL4	MDA50
DDRO_ODT35	DDRO_D51	AL4	MDA51
DDRO_ODT36	DDRO_D52	AL4	MDA52
DDRO_ODT37	DDRO_D53	AL3	MDA53
DDRO_ODT38	DDRO_D54	AL2	MDA54
DDRO_ODT39	DDRO_D55	AL1	MDA55
DDRO_ODT40	DDRO_D56	AG4	MDA56
DDRO_ODT41	DDRO_D57	AG3	MDA57
DDRO_ODT42	DDRO_D58	AG4	MDA58
DDRO_ODT43	DDRO_D59	AG2	MDA59
DDRO_ODT44	DDRO_D60	AG2	MDA60
DDRO_ODT45	DDRO_D61	AG3	MDA61
DDRO_ODT46	DDRO_D62	AE1	MDA62
DDRO_ODT47	DDRO_D63	AE2	MDA63
DDRO_ODT48	DDRO_D64	AE3	MDA64
DDRO_ODT49	DDRO_D65	AE3	MDA65
DDRO_ODT50	DDRO_D66	AE3	MDA66
DDRO_ODT51	DDRO_D67	AE2	MDA67
DDRO_ODT52	DDRO_D68	AE1	MDA68
DDRO_ODT53	DDRO_D69	AE3	MDA69
DDRO_ODT54	DDRO_D70	AE3	MDA70
DDRO_ODT55	DDRO_D71	AE3	MDA71
DDRO_ODT56	DDRO_D72	AE3	MDA72
DDRO_ODT57	DDRO_D73	AE3	MDA73
DDRO_ODT58	DDRO_D74	AE3	MDA74
DDRO_ODT59	DDRO_D75	AE3	MDA75
DDRO_ODT60	DDRO_D76	AE3	MDA76
DDRO_ODT61	DDRO_D77	AE3	MDA77
DDRO_ODT62	DDRO_D78	AE3	MDA78
DDRO_ODT63	DDRO_D79	AE3	MDA79
DDRO_ODT64	DDRO_D80	AE3	MDA80
DDRO_ODT65	DDRO_D81	AE3	MDA81
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DDRO_ODT67	DDRO_D83	AE3	MDA83
DDRO_ODT68	DDRO_D84	AE3	MDA84
DDRO_ODT69	DDRO_D85	AE3	MDA85
DDRO_ODT70	DDRO_D86	AE3	MDA86
DDRO_ODT71	DDRO_D87	AE3	MDA87
DDRO_ODT72	DDRO_D88	AE3	MDA88
DDRO_ODT73	DDRO_D89	AE3	MDA89
DDRO_ODT74	DDRO_D90	AE3	MDA90
DDRO_ODT75	DDRO_D91	AE3	MDA91
DDRO_ODT76	DDRO_D92	AE3	MDA92
DDRO_ODT77	DDRO_D93	AE3	MDA93
DDRO_ODT78	DDRO_D94	AE3	MDA94
DDRO_ODT79	DDRO_D95	AE3	MDA95
DDRO_ODT80	DDRO_D96	AE3	MDA96
DDRO_ODT81			

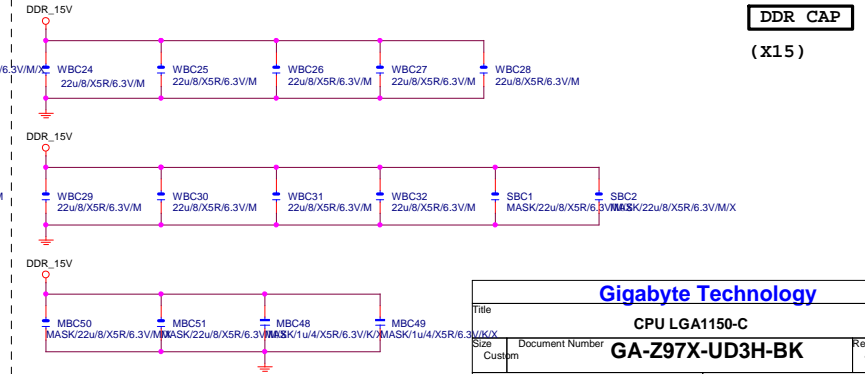
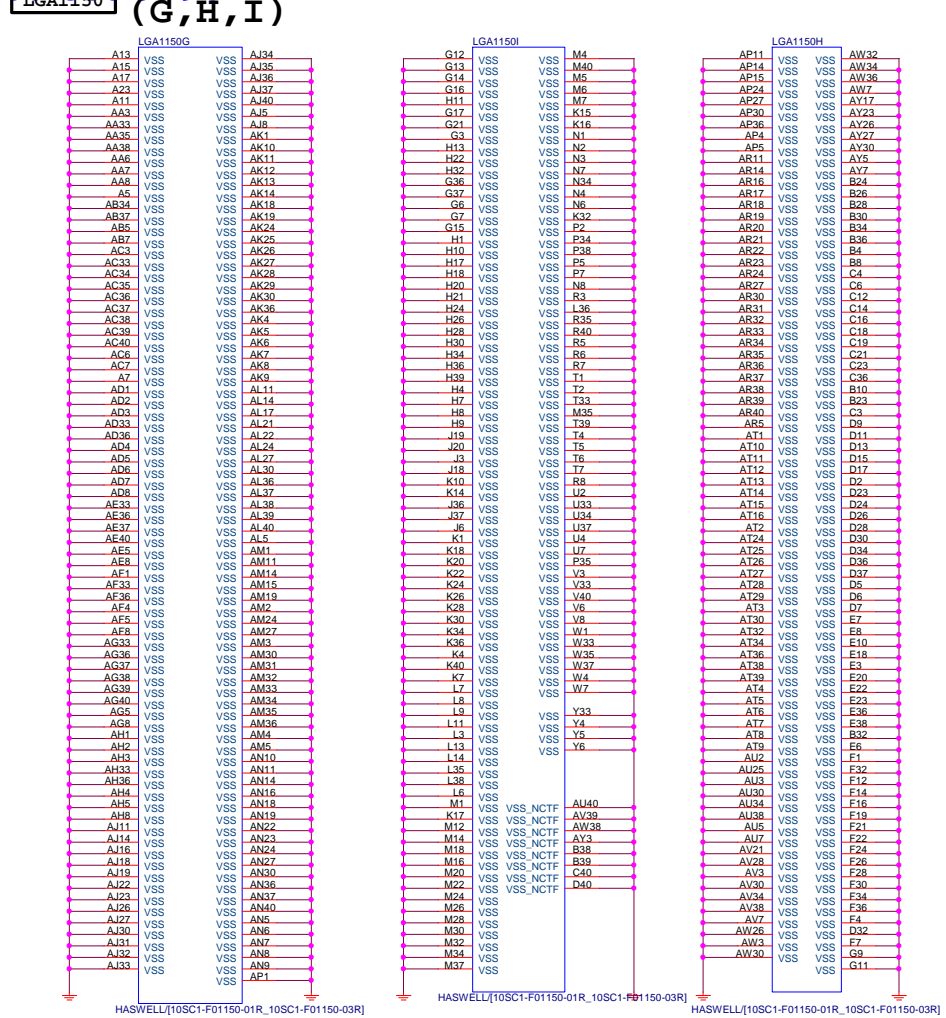
MAA80	AL19	DDR1_MA0	DDR1_D00	AE34	MD80
MAA81	AK23	DDR1_MA1	DDR1_D01	AE35	MD81
MAA82	AM22	DDR1_MA2	DDR1_D02	AG35	MD82
MAA83	AM23	DDR1_MA3	DDR1_D03	AH35	MD83
MAA84	AL23	DDR1_MA4	DDR1_D04	AD34	MD84
MAA85	AL23	DDR1_MA5	DDR1_D05	AD35	MD85
MAA86	AY24	DDR1_MA6	DDR1_D06	AG34	MD86
MAA87	AV25	DDR1_MA7	DDR1_D07	AH34	MD87
MAA88	AU26	DDR1_MA8	DDR1_D08	AL34	MD88
MAA89	AW25	DDR1_MA9	DDR1_D09	AL35	MD89
MAAB10	AP18	DDR1_MA10	DDR1_D010	AK31	MD810
MAAB11	AY25	DDR1_MA11	DDR1_D011	AK31	MD811
MAAB12	AV27	DDR1_MA12	DDR1_D012	AK32	MD812
MAAB13	AV27	DDR1_MA13	DDR1_D013	AK33	MD813
MAAB14	AV28	DDR1_MA14	DDR1_D014	AK32	MD814
MAAB15	AY28	DDR1_MA15	DDR1_D015	AK32	MD815
MODT_B0	AM17		DDR1_D016	AN34	MD816
MODT_B1	AL16	DDR1_ODT0	DDR1_D017	AN31	MD819
MODT_B2	AM16	DDR1_ODT1	DDR1_D018	AP31	MD823
MODT_B3	AL23	DDR1_ODT2	DDR1_D019	AN35	MD820
	AK15	DDR1_ODT3	DDR1_D020	AP35	MD821
	AM25		DDR1_D021	AN32	MD818
	AM25	DDR1_ECC0	DDR1_D022	MD32	MD822
	AM25	DDR1_ECC1	DDR1_D023	AM29	MD825
	AP26	DDR1_ECC2	DDR1_D024	AM28	MD826
	AL26	DDR1_ECC3	DDR1_D025	AE28	MD827
	AL26	DDR1_ECC4	DDR1_D026	AE28	MD830
	AR25	DDR1_ECC5	DDR1_D027	AL29	MD824
	AR26	DDR1_ECC6	DDR1_D028	AL28	MD829
	AR26	DDR1_ECC7	DDR1_D029	AL29	MD828
			DDR1_D030	MD32	MD831
SBA80	AK17	DDR1_BA0	DDR1_D031	AR12	MD832
SBA81	AL18	DDR1_BA1	DDR1_D032	AP12	MD833
SBA82	AW28	DDR1_BA2	DDR1_D033	AL12	MD834
			DDR1_D034	AL13	MD835
CKE80	AW29	DDR1_CKE0	DDR1_D035	AR13	MD836
CKE81	AU28	DDR1_CKE1	DDR1_D036	AR13	MD837
CKE82	AY29	DDR1_CKE2	DDR1_D037	AM13	MD838
CKE83	AU29	DDR1_CKE3	DDR1_D038	AM12	MD839
			DDR1_D039	AR9	MD845
CS80	AP17	DDR1_CS_N0	DDR1_D040	AP9	MD841
CS81	AN17	DDR1_CS_N1	DDR1_D041	AR6	MD847
CS82	AN17	DDR1_CS_N2	DDR1_D042	AR6	MD848
CS83	AL15	DDR1_CS_N3	DDR1_D043	AR10	MD844
			DDR1_D044	AP10	MD840
			DDR1_D045	MD34	MD846
			DDR1_D046	AM9	MD849
			DDR1_D047	AL7	MD853
DLCKB0	AM20	DDR1_CLK_P0	DDR1_D048	AL6	MD850
DLCKB0	AM21	DDR1_CLK_N0	DDR1_D049	AL7	MD855
DLCKB1	AP22	DDR1_CLK_P1	DDR1_D050	AL6	MD849
DLCKB1	AP21	DDR1_CLK_N1	DDR1_D051	AL7	MD855
			DDR1_D052	AL10	MD849
DLCKB2	AN20	DDR1_CLK_P2	DDR1_D053	AM6	MD854
DLCKB2	AN21	DDR1_CLK_N2	DDR1_D054	MD6	MD851
DLCKB3	AP19	DDR1_CLK_P3	DDR1_D055	AR6	MD860
DLCKB3	AP20	DDR1_CLK_N3	DDR1_D056	AE7	MD860
			DDR1_D057	AE7	MD859
SCASB	AP16	DDR1_CAS*_	DDR1_D058	AE7	MD863
	ALX20	RSVD	DDR1_D059	AJ6	MD856
SRASB	AM18	DDR1_RAS*_	DDR1_D060	AJ7	MD857
SWEB	AK16	DDR1_WE*_	DDR1_D061	AF6	MD858
			DDR1_D062	AF7	MD862
			DDR1_D063	AF35	DSB80
AB39		DDR_VREF_D00	DDR1_D064	AF33	DSB80
AB40		DDR_VREF_D01	DDR1_D065_P0	AK33	DSB81
			DDR1_D065_P1	AN23	DSB82
			DDR1_D065_P2	AN28	DSB83
			DDR1_D065_P3	AN12	DSB84
			DDR1_D065_P4	AP8	DSB85
			DDR1_D065_P5	AL8	DSB86
			DDR1_D065_P6	AG7	DSB87
			DDR1_D065_P7	AN25	
			DDR1_D065_P8	AF34	DSB80
			DDR1_D065_N0	AK33	DSB81

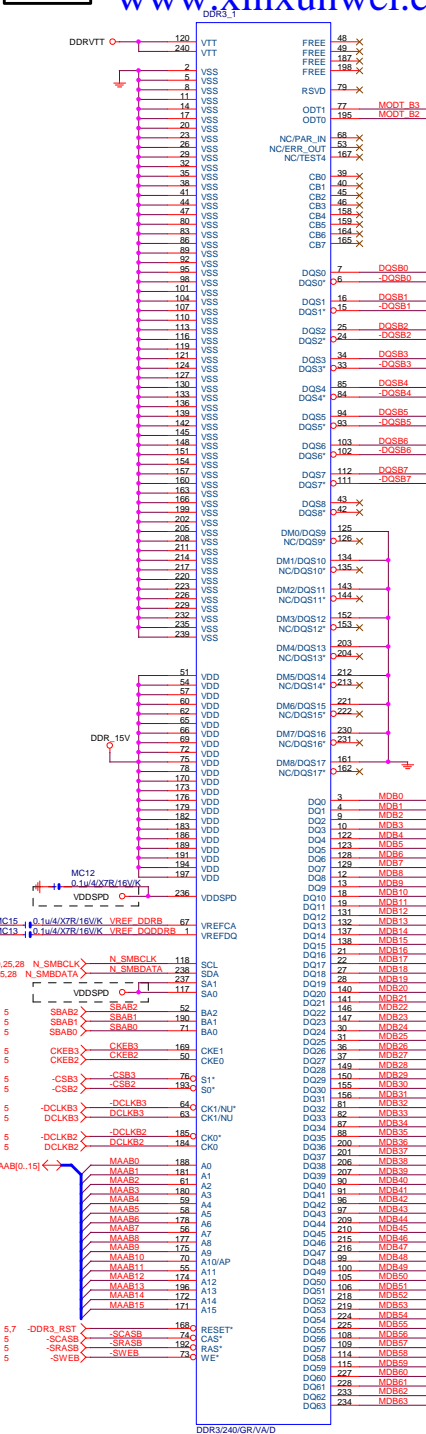
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VREF_DQB

WBC34
0.1u/4/X7R/16V/K

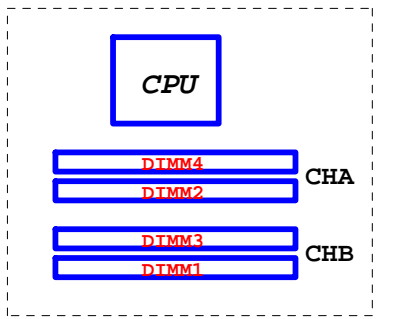
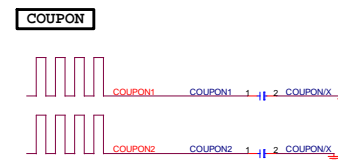
WBC33
0.1u/4/X7R/16V/K

Place in CPU bottom side

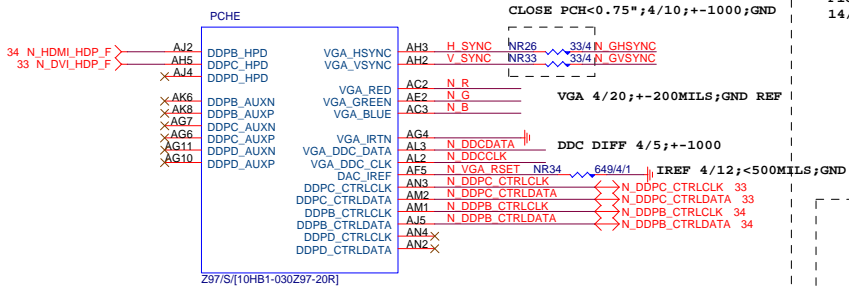




```
DDR3 1600MHZ
DDR3 clock=800MHZ
DDR3 single channel bandwidth=12.8GB/s
DDR3 dual channel bandwidth=25.6GB/s
```



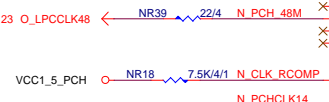
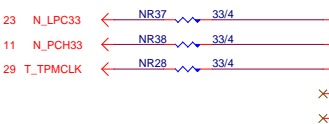
PCH (E)



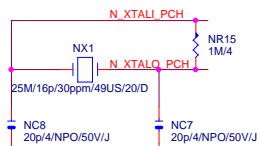
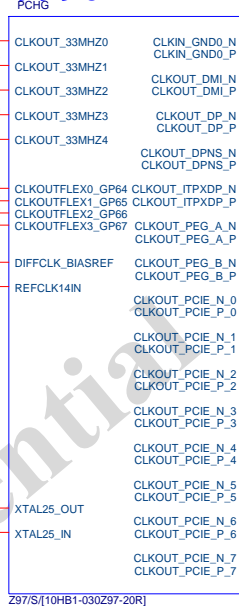
VGA DISABLE

R,G,B NC OR GND

IRTN / IREF GND

VGA_HSYNC, VGA_VSYNC, DDC_CLK,
DDC_DATA NCPOWER VCCADAC(AF2),
VCCADACBG(AE1) GNDFlex1,2,3,4 :
14/24/33/48MHZ

XTAL Trace Length < 1500 mil

X'TAL 25MHz須參考GND
CRYSTAL/TRACE 週邊不要有訊號,VIA靠近
走線遠離其他40mil以上

M2 Clock需接Clock#0

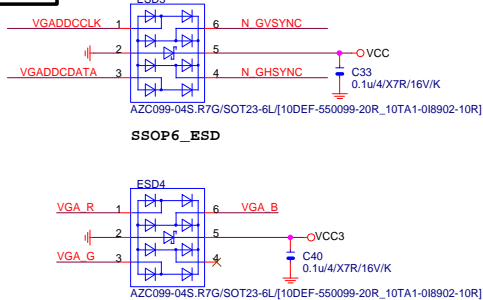
Differential Clock:18/4/6/4/18
Impedance=90 +- 15%

PCH CLK PD

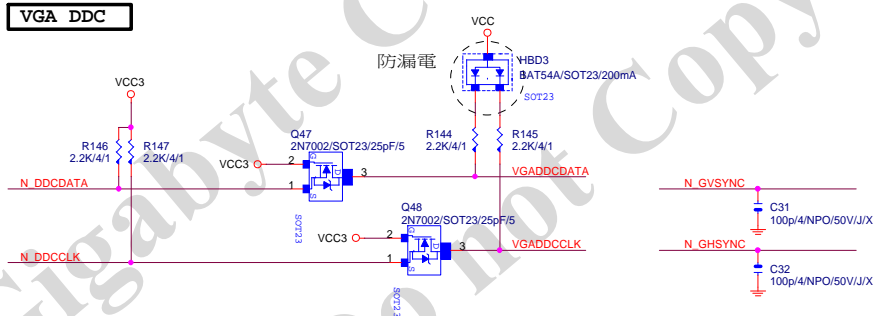


Mount for integrated clock Generation Mode

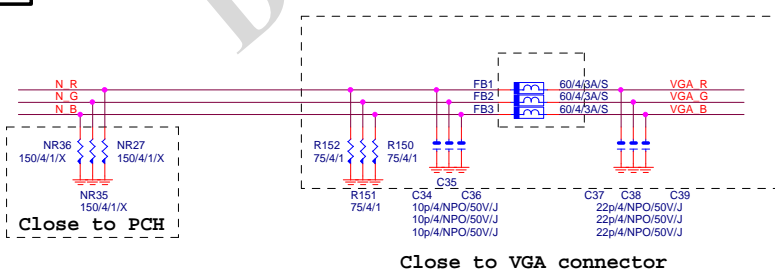
VGA ESD



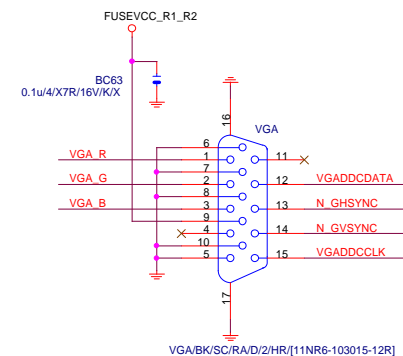
VGA DDC



VGA DDC



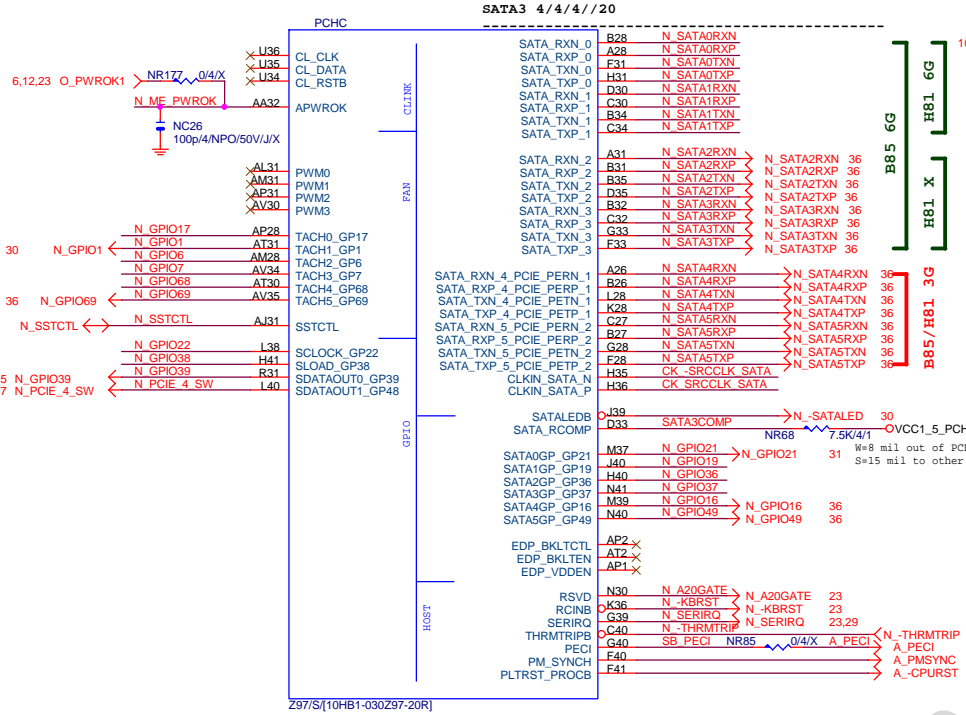
VGA CONNECTOR



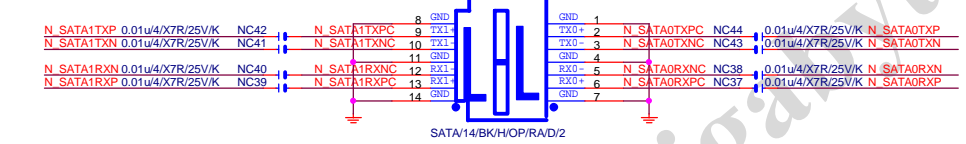
Gigabyte Technology

Title		
PCH DISPLAY ,CLK BUFFER		
Size	Document Number	Rev
Custom	Gigabyte	1.1
Date:	Wednesday, June 25, 2014	Sheet 10 of 37

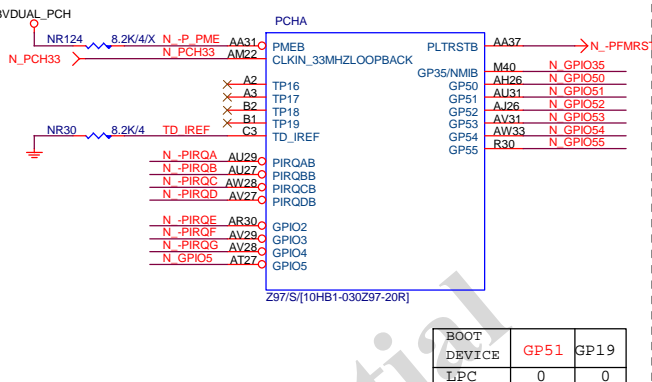
PCH (C)



SATA CONNECTOR

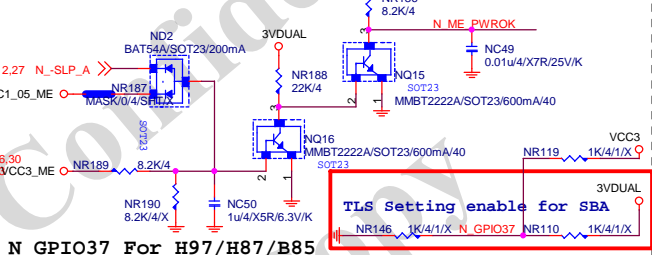


PCH (A)



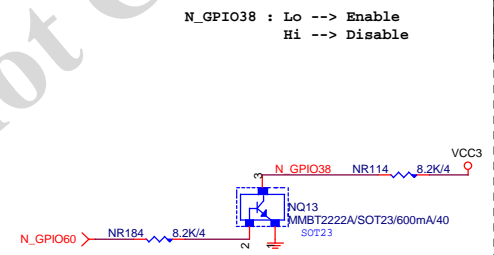
Default int pull up on GP51,
 Default SPI boot devices

ME PWROK



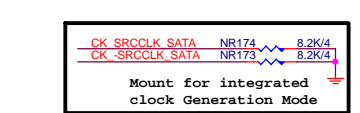
N_GPIO37 For H97/H87/B85

GPIO38 Ctrl

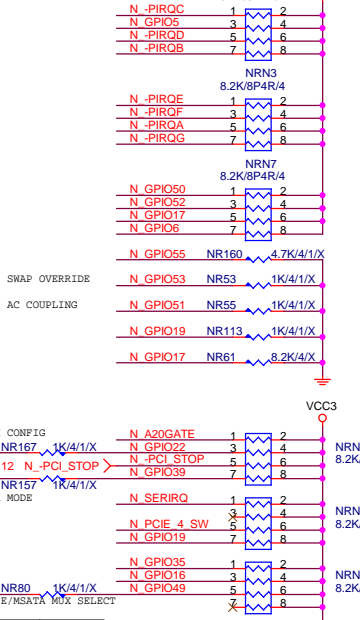


12 N_GPIO60

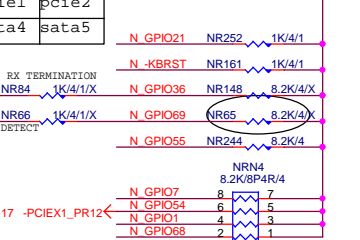
PCH CLK PD



PCH PU/PD



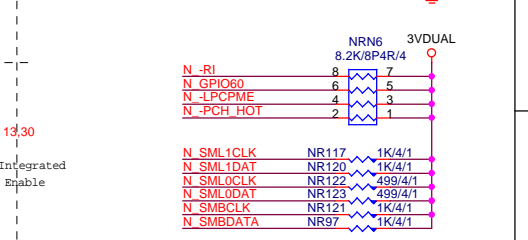
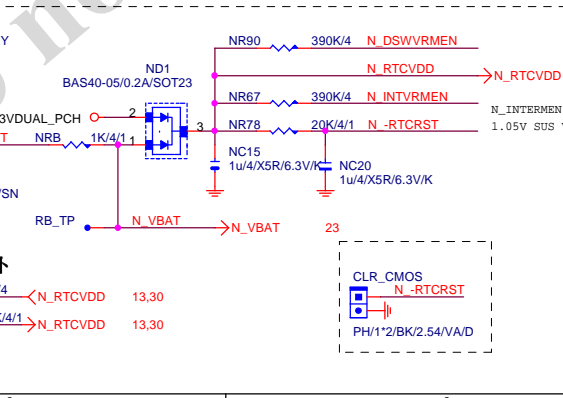
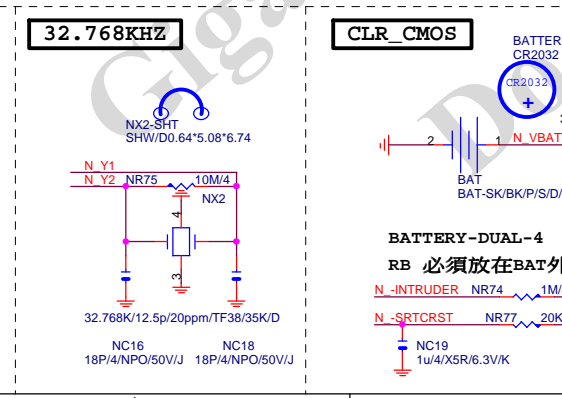
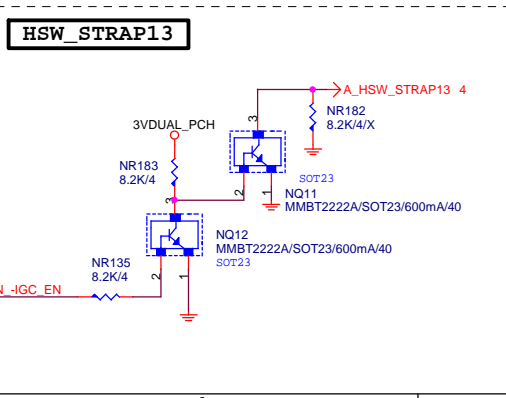
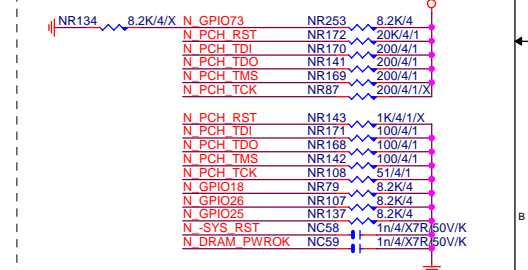
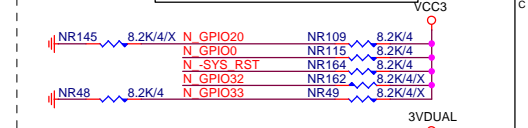
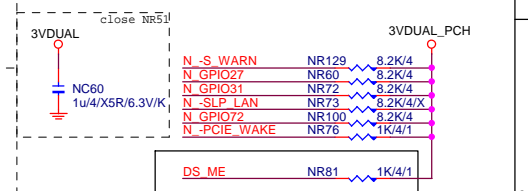
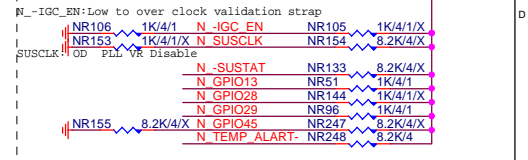
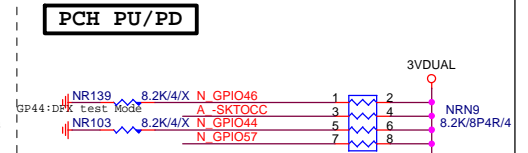
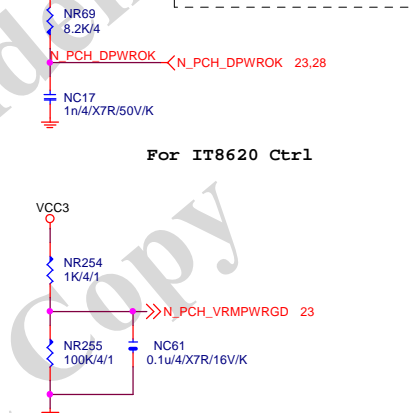
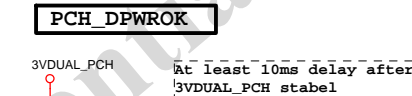
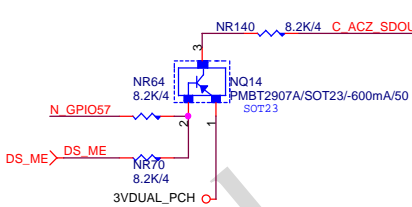
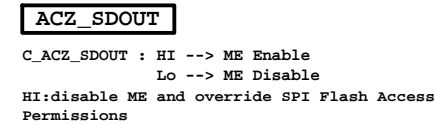
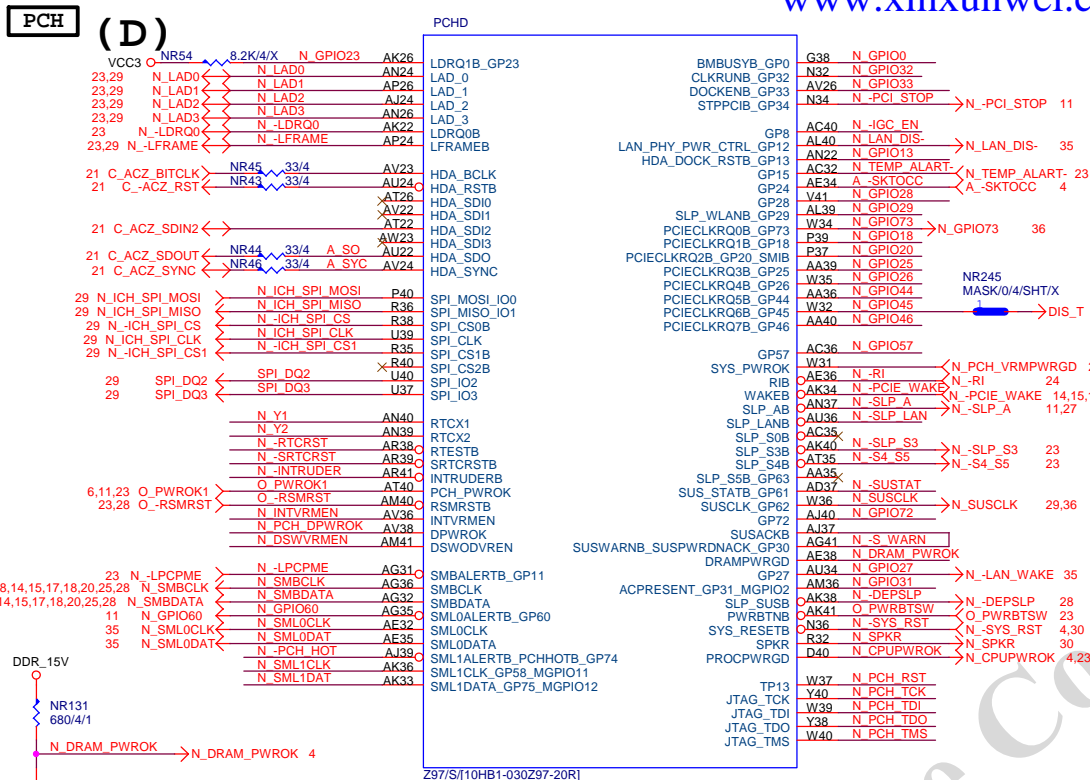
soft strap GP16 GP49



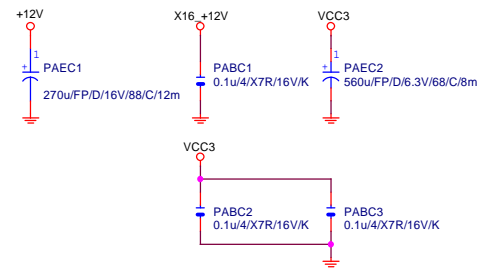
17 -PCIE1_PR12

Gigabyte Technology

Title	PCH HOST , SATA, PCI	Rev	1.1
Size	Document Number	GA-Z97X-UD3H-BK	
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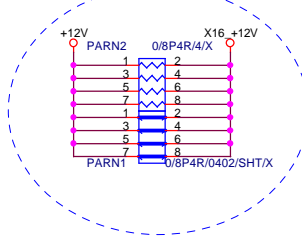


PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect short-wire test



PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP SW TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA EXP SW TXP8 C
PA EXP SW TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA EXP SW TXN8 C
PA EXP SW TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA EXP SW TXP9 C
PA EXP SW TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA EXP SW TXN9 C
PA EXP SW TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA EXP SW TXP10 C
PA EXP SW TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA EXP SW TXN10 C
PA EXP SW TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA EXP SW TXP11 C
PA EXP SW TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA EXP SW TXN11 C
PA EXP SW TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA EXP SW TXP12 C
PA EXP SW TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA EXP SW TXN12 C
PA EXP SW TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA EXP SW TXP13 C
PA EXP SW TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA EXP SW TXN13 C
PA EXP SW TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA EXP SW TXP14 C
PA EXP SW TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA EXP SW TXN14 C
PA EXP SW TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA EXP SW TXP15 C
PA EXP SW TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA EXP SW TXN15 C

PCI-E REV:1.1--> 2.5GHZ

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

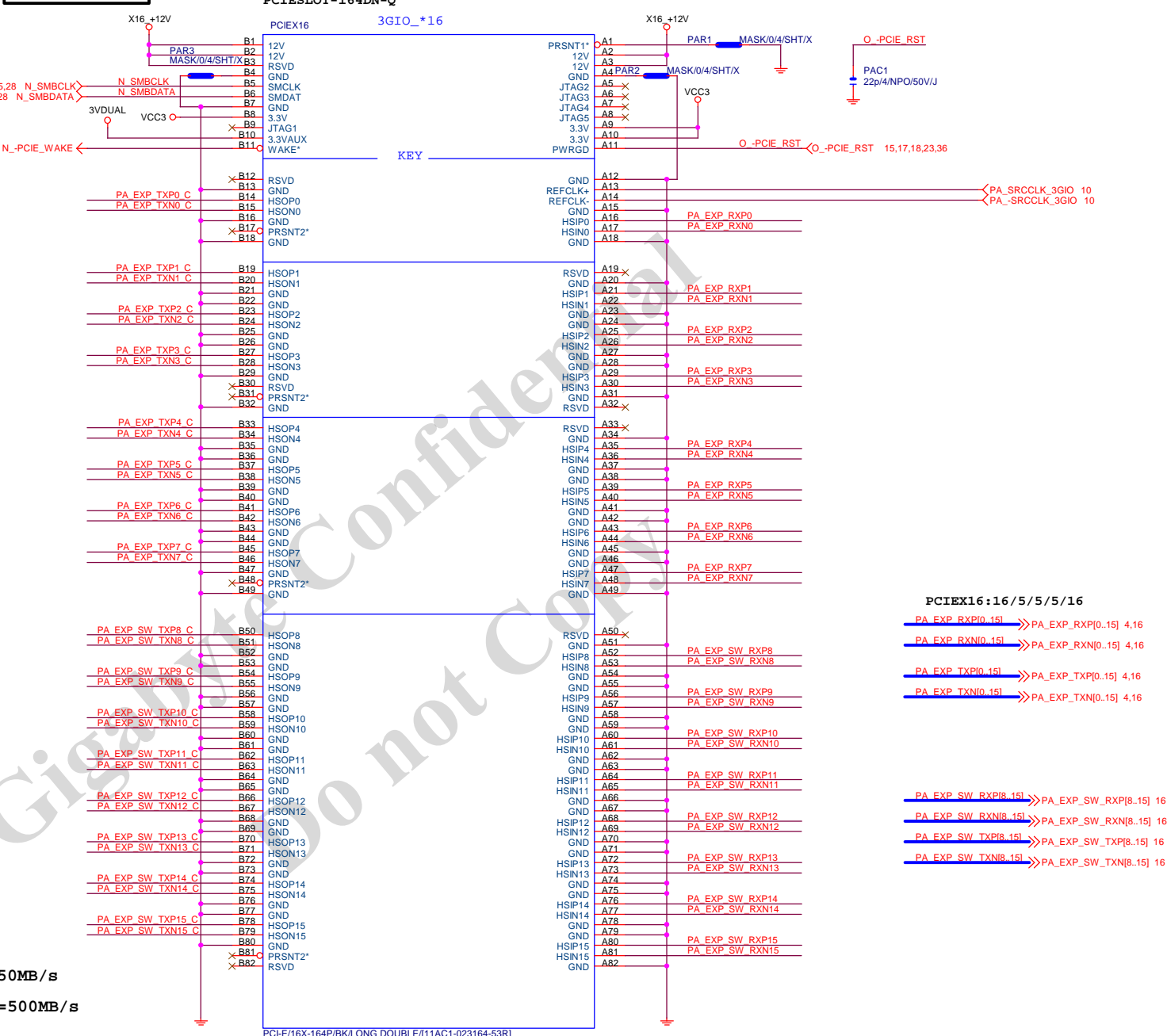
PCE-E X1(雙向) BANDWIDTH=2.5GHZ*(8b/10b)X2=4Gb/s=500MB/s

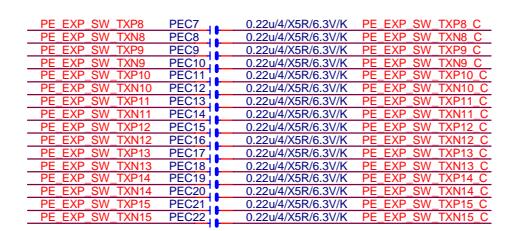
PCE-E X16(單向) BANDWIDTH=2.5GHZ*(8b/10b)X16=32Gb/s=4GB/s

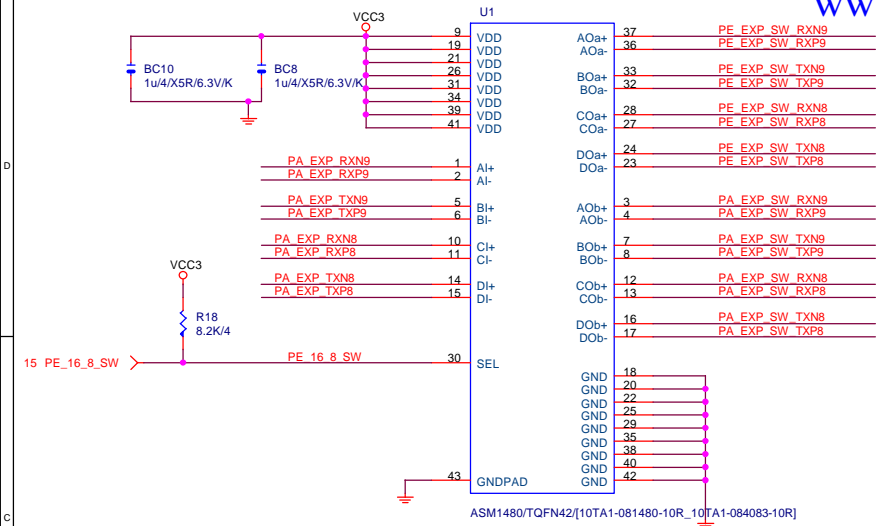
PCE-E X16(雙向) BANDWIDTH=2.5GHZ*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ

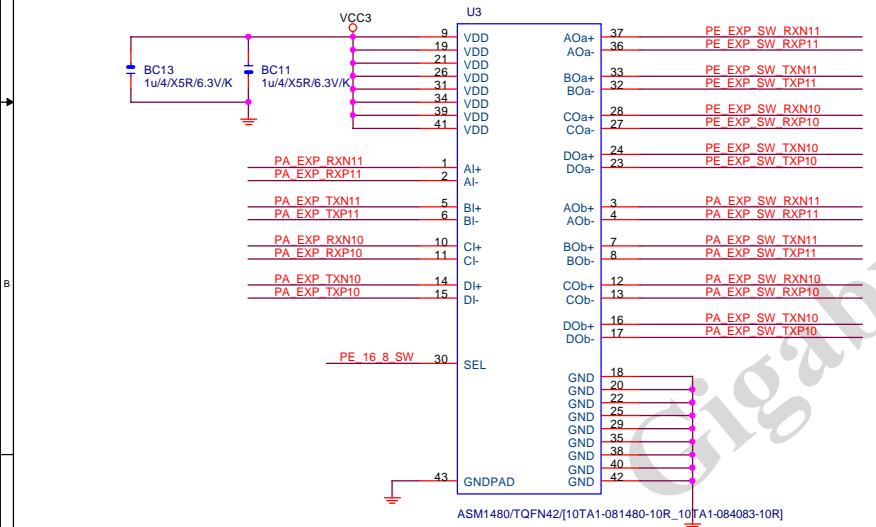
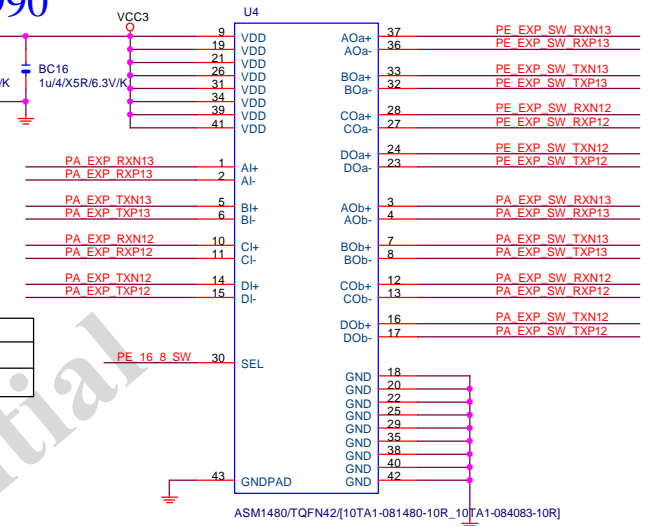
PCIEX16 SLOT







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



PA_EXP_SW_RXP[8..15] 14

PA_EXP_SW_RXN[8..15] 14

PA_EXP_SW_TXP[8..15] 14

PA_EXP_SW_TXN[8..15] 14

PE_EXP_SW_RXP[8..15] 15

PE_EXP_SW_RXN[8..15] 15

PE_EXP_SW_TXP[8..15] 15

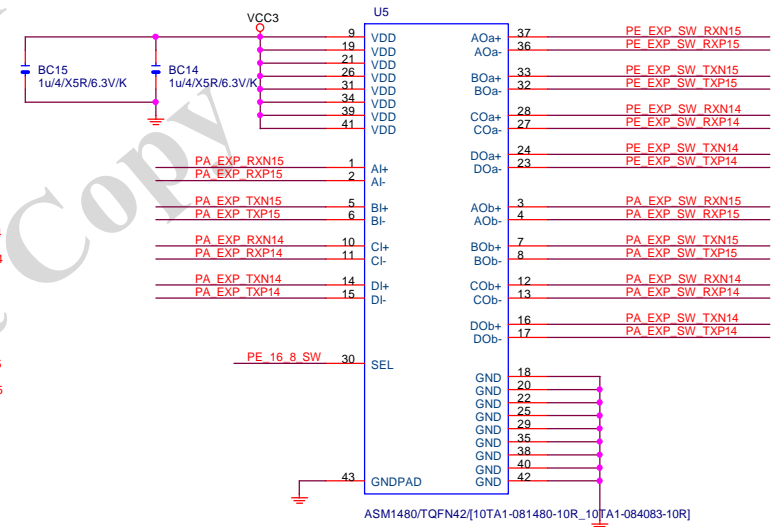
PE_EXP_SW_TXN[8..15] 15

PA_EXP_RXP[0..15] 4,14

PA_EXP_RXN[0..15] 4,14

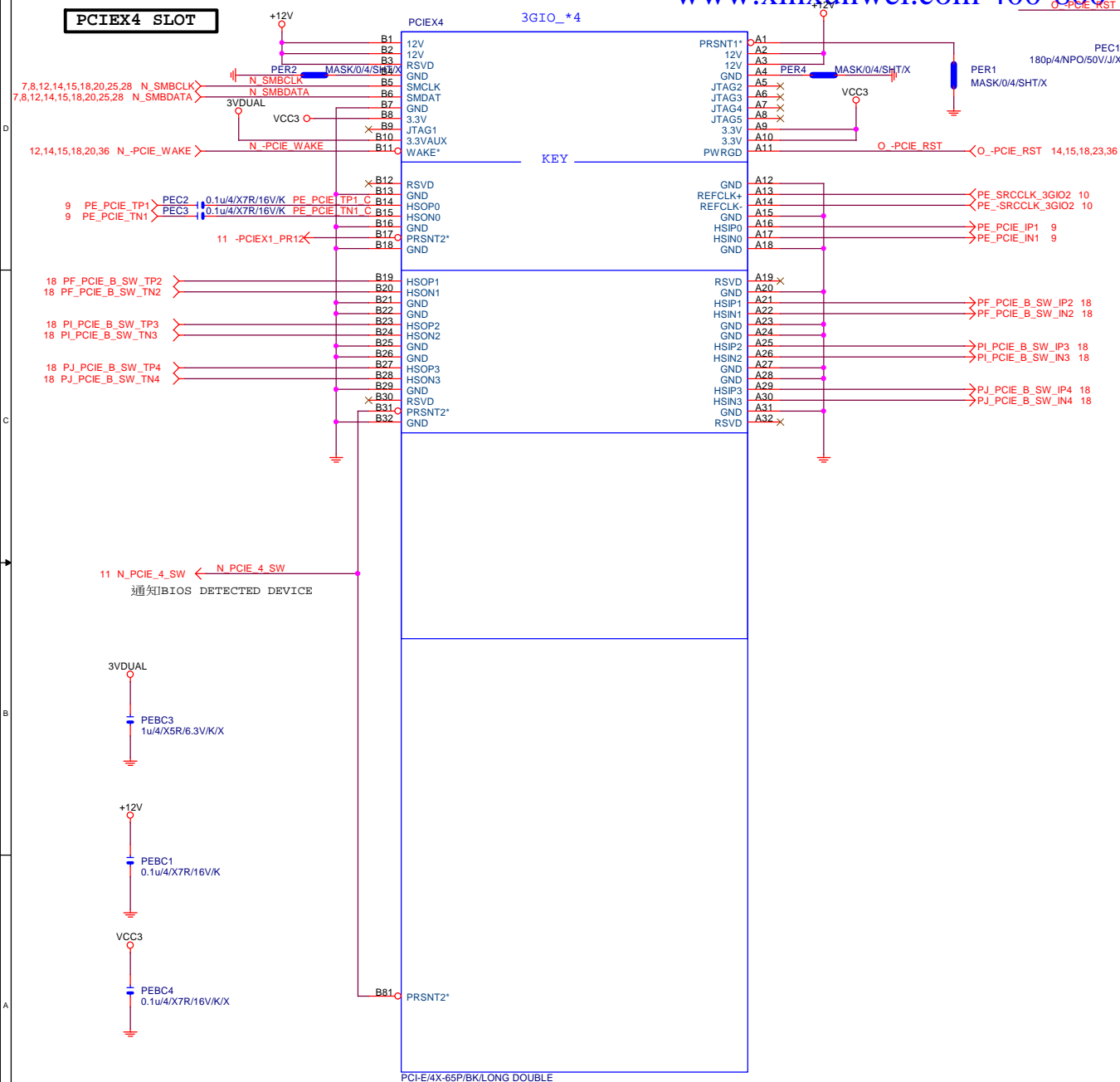
PA_EXP_TXP[0..15] 4,14

PA_EXP_TXN[0..15] 4,14

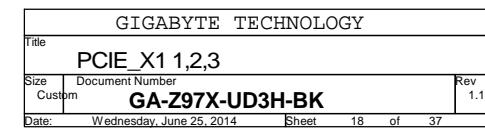
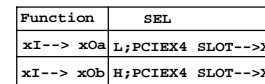
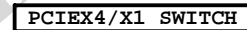
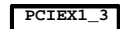


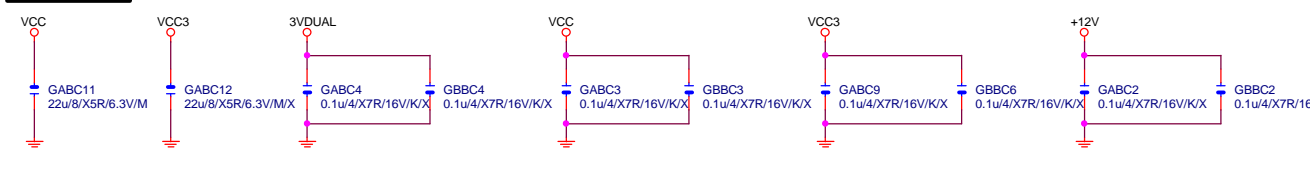
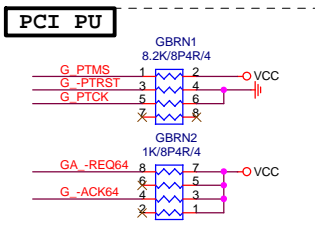
GIGABYTE™

Title			PCI EXPRESS X16 SWITCH
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	N_PCIE_4_SW (PCH_GPIO48)	PCIEX4_X1 (SIO_GPIO27)
PCIE1,PCIEX4 --> X1 (Default)	H	H
PCIEX4 No devices PCIEX4 -> X1	H	H
PCIEX4 Have devices PCIEX4 -> X4 PCIEX1 1/2 --> N/A	L	L





GIGABYTE™			
File PCI SLOT 1&2			
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Date:	Wednesday, June 25, 2014	Sheet	20 of 37

AZALIA CODEC

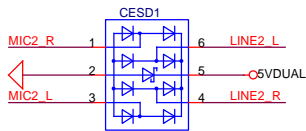
Thermal pad is DGND

Thermal pad is DGND

Digital Area

Analog Area

SMOATR1 MASK/0/6/X
0/6/X For AGND/GND
moat under Codec
_Body



MASK/AZC099-04S.R7G/SOT23-6L[10DEF-550099-20R_10TA1-018902-10R]/X

EAPD: Default L
H : ON
L : OFF

Close to ALC1150

BOM OPTION : 1. 台固/日固/日黑固/MUSE MW音效電容

2. 金屬外罩 Reserve

3. LED Reserve (若LED有上,G_PLED p-up請上CR130)

ALC1150

有LED機種, 請上CR130
(IT8620 GP26)

23 G_PLED

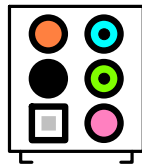
MOAT LED

2N7002/SOT23/25pF/5 2N7002/SOT23/25pF/5

Gigabyte Technology

Title			HD AUDIO ALC887B-VD2/VT1708SVT2021
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AZALIA JACK



Audio jack -> USB (各打2 VIA hole)



Under Audio jack (各打2 VIA hole)



Near F_AUDIO (各打2 VIA hole)



Near Codec (各打2 VIA hole)

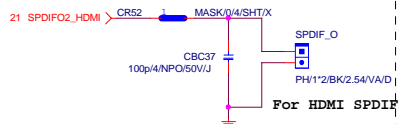


Near R_AUDIO (各打2 VIA hole)



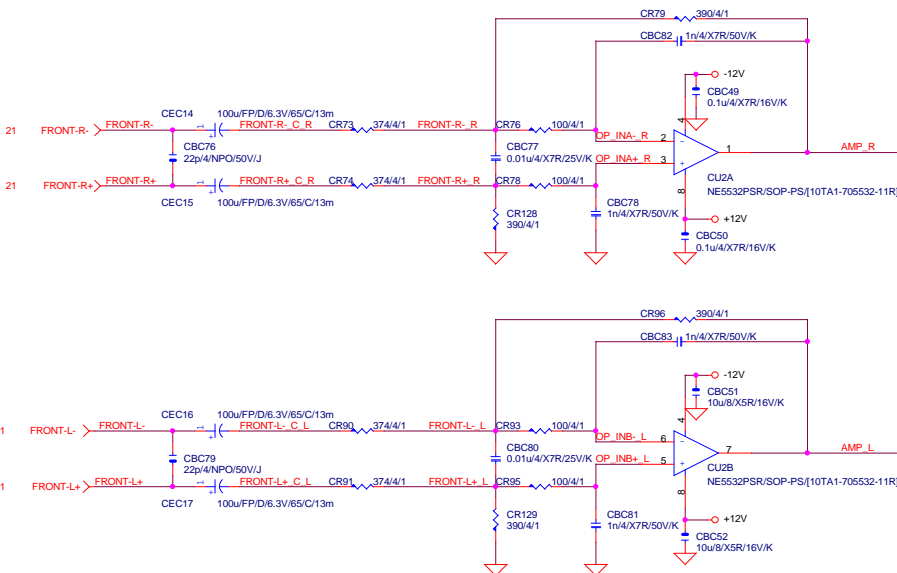
Near AMP (各打2 VIA hole)

SPDIF OUT

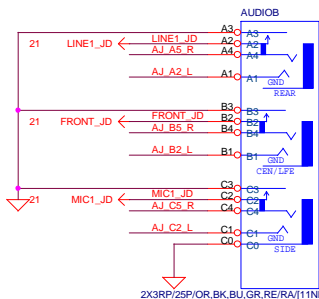


For HDMI SPDIF

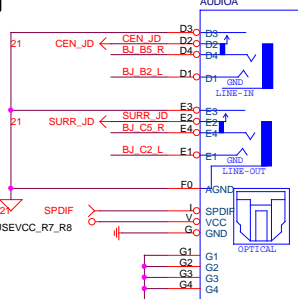
Differential to Single-End AMPLIFIED



AZALIA JACK

BLUE
LINE-INGREEN
LINE-OUTPINK
MIC-IN

2X3RP/25P/OR,BK,BU,GR,RE/RA[11NR6-403025-A1R]



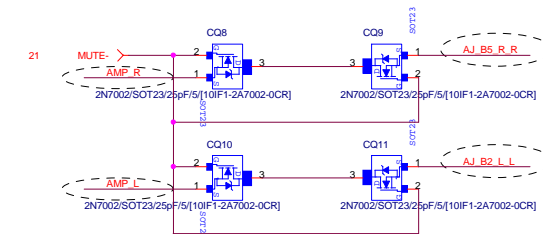
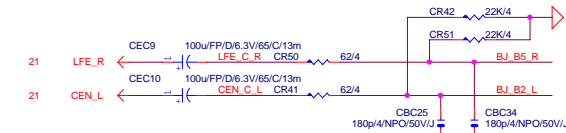
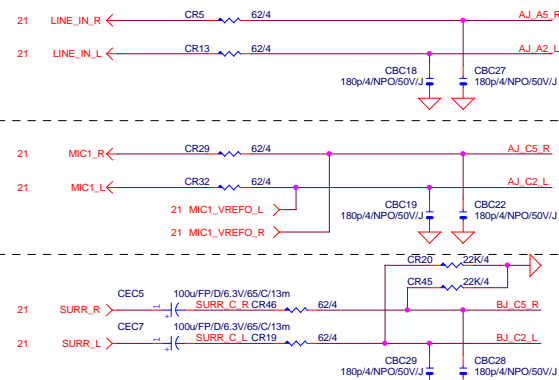
2X3RP/25P/OR,BK,BU,GR,RE/RA[11NR6-403025-A1R]

LINE-IN

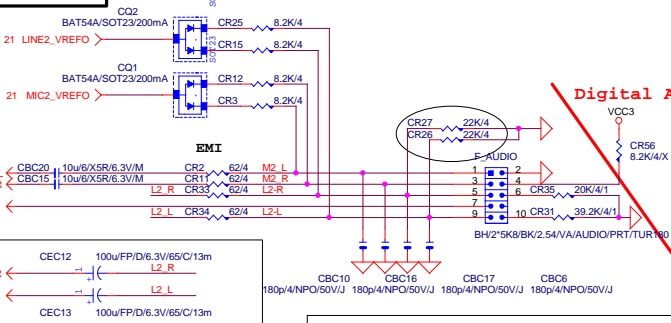
MIC-IN

SURROUND

CEN/LFE

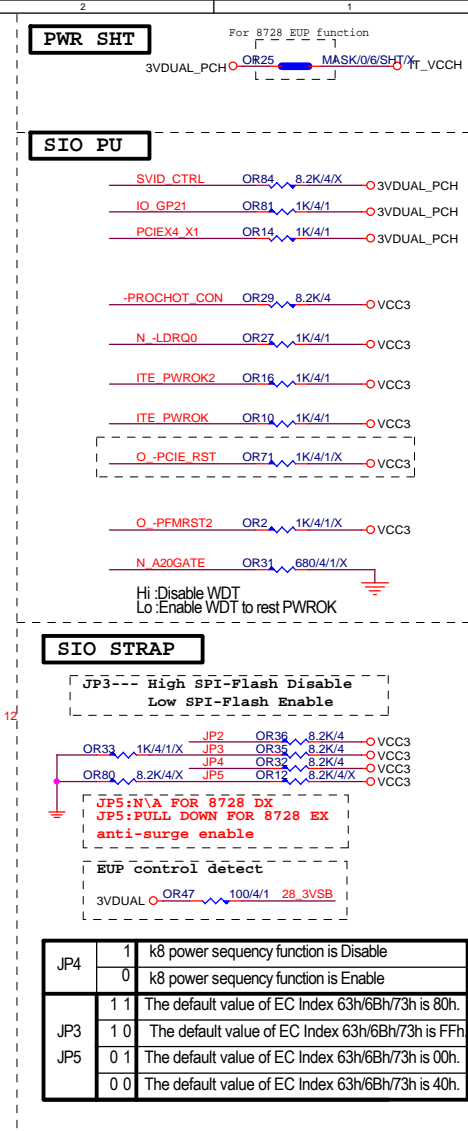
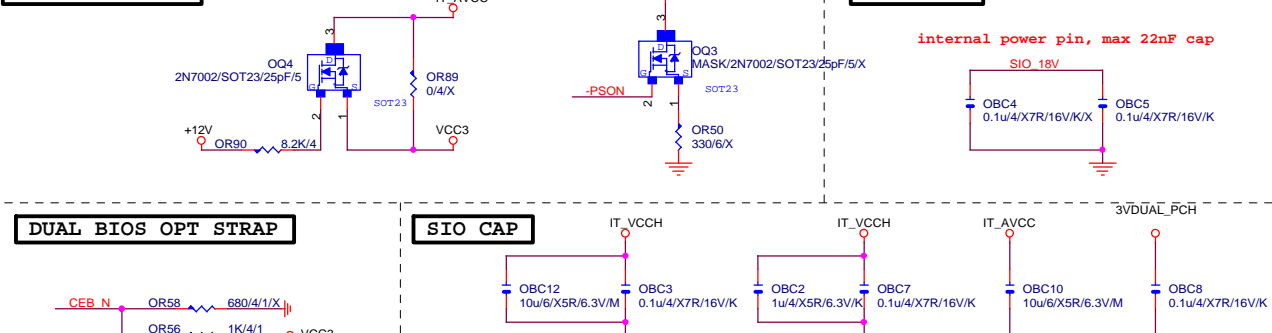


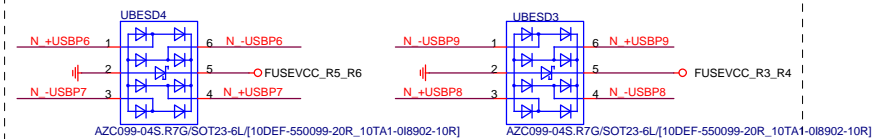
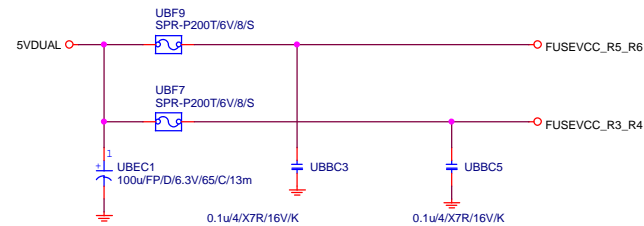
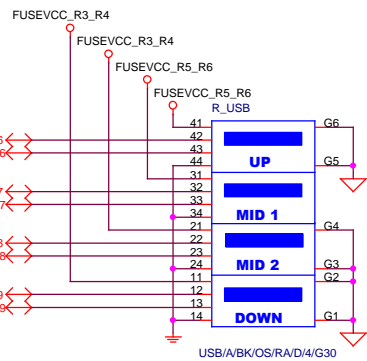
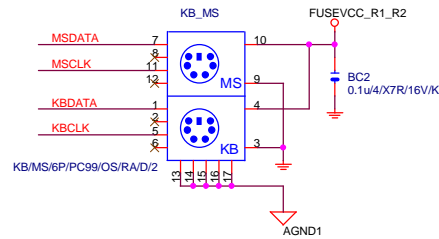
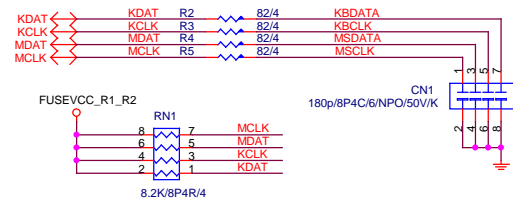
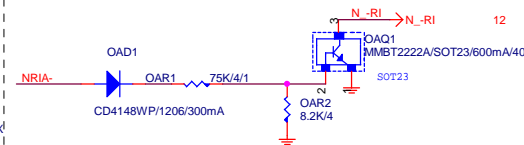
AZALIA FRONT PANEL

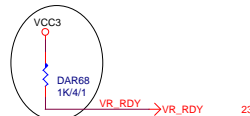
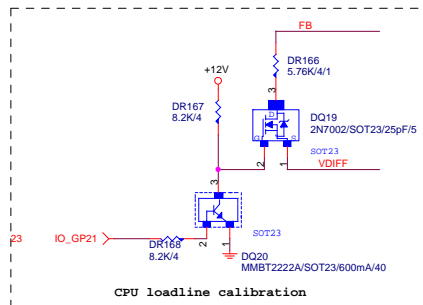
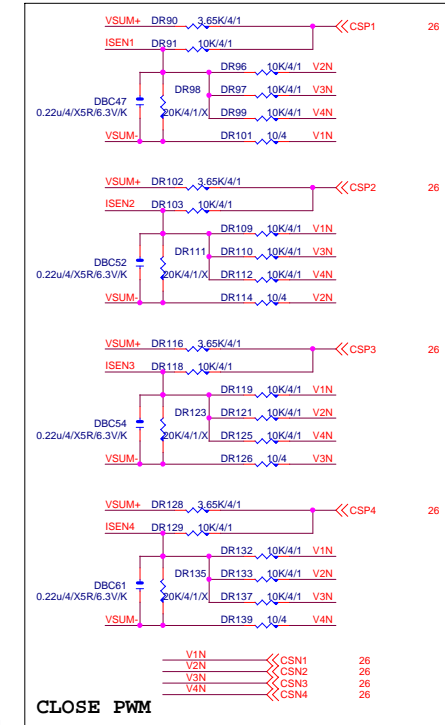
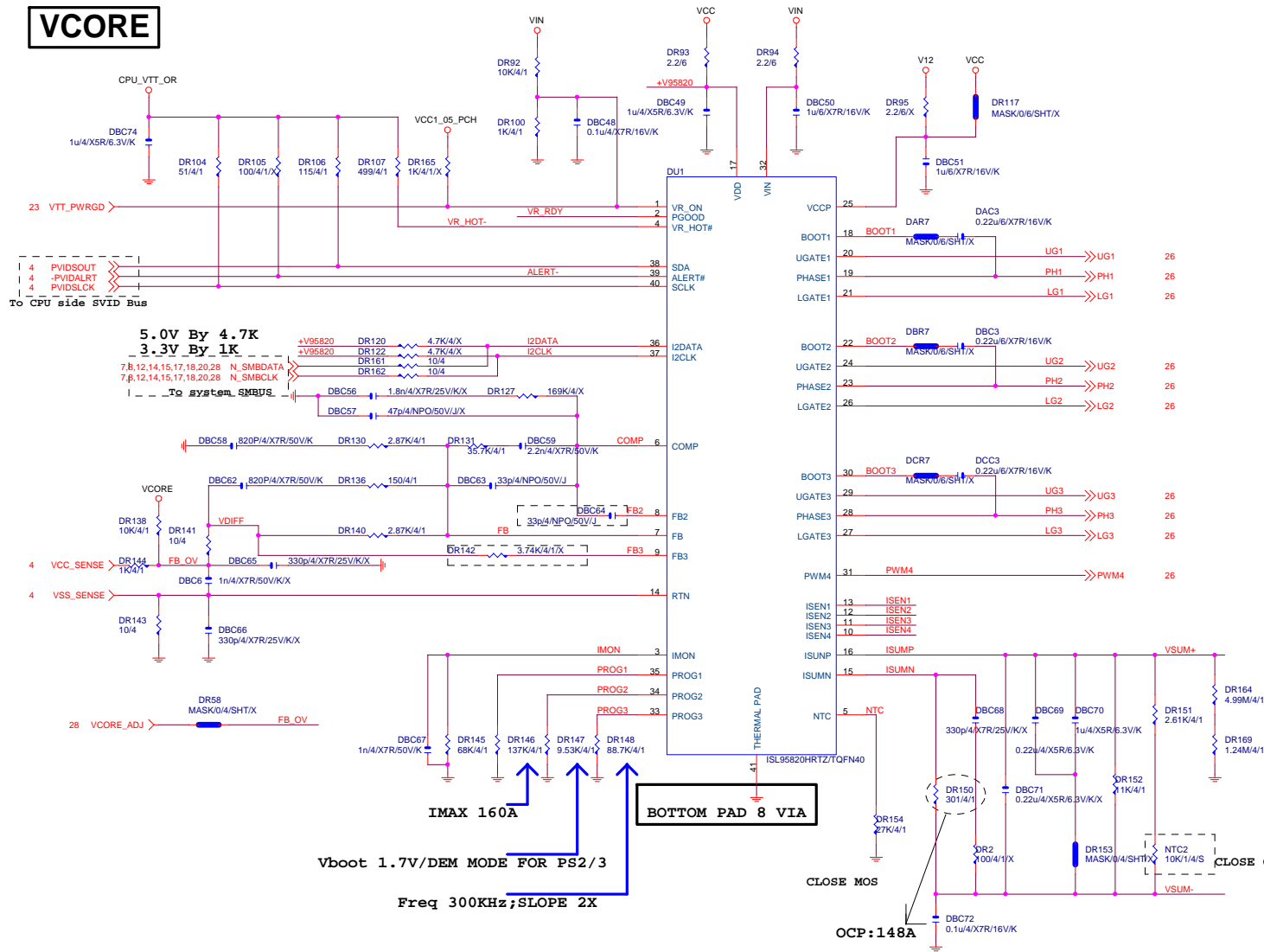


Gigabyte Technology

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MB ID



VCORE

VCORE各層切割

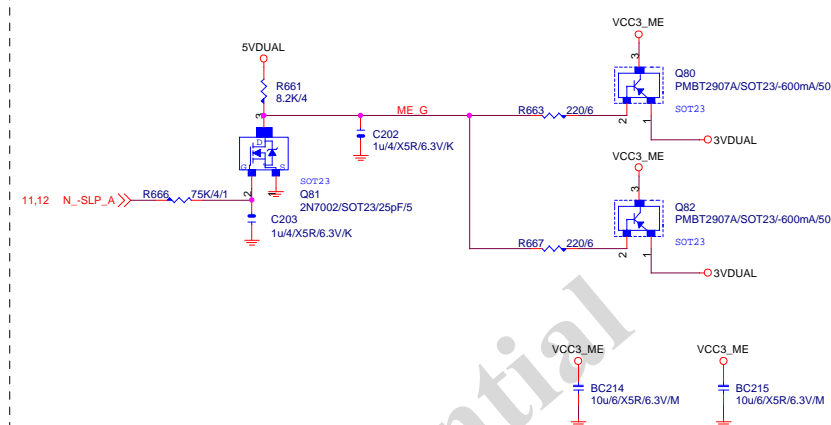
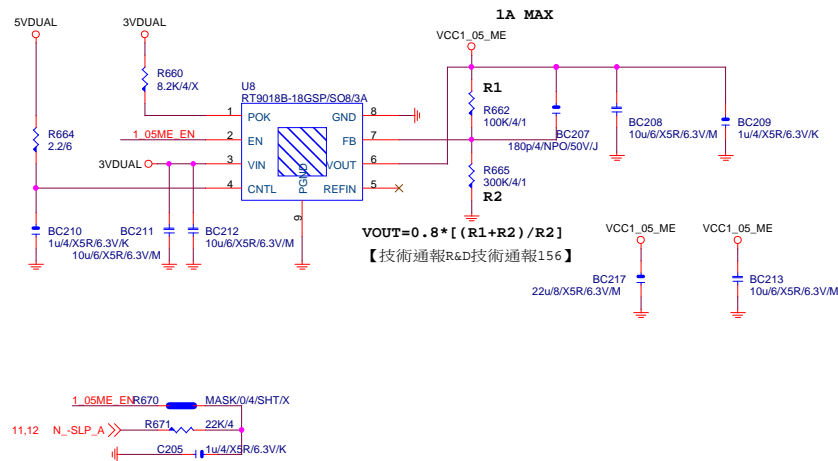
第一層:VCORE

第二層:VCORE

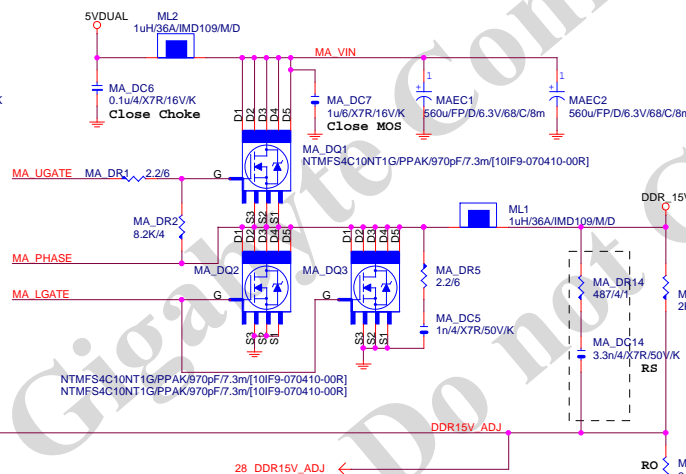
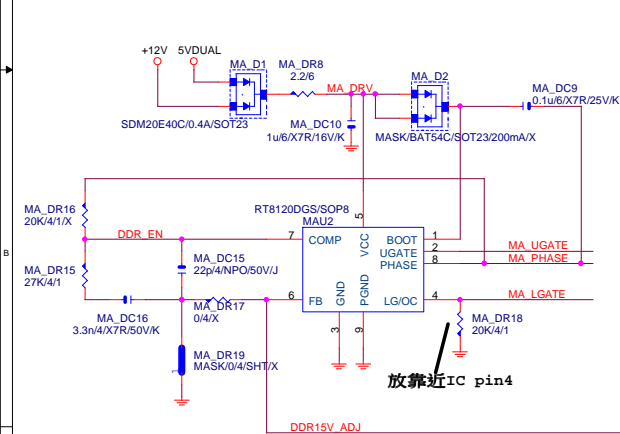
第三層：GND

第四層:VCORE

VCC1_05_ME



DDR 15V



Remote sense請從最重的負載端點拉回

$$0.8 * (1 + RS/RO) = V_{out}$$

$$0.8 * [1 + 2K / (2.2K)] = 1.527V$$

VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1

IRMS=11.45A

560uF/P/D/6.3V/68/8m RIPPLE CURRENT=4.7A

Coefficient=1.7(85°C), 1(105°C)

VIN Ripple current=4.7X1.7=7.99A(85°C)

-->故固態電容須2X7.99=15.98>11.45A

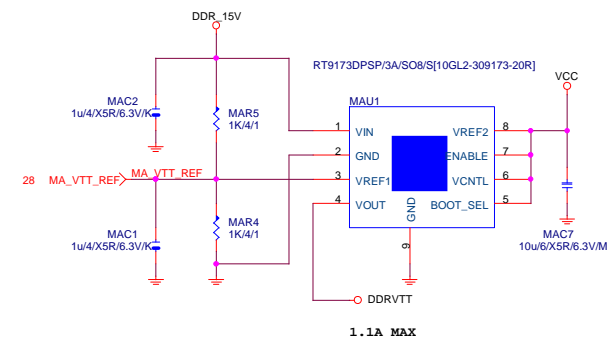
OCP:35.82A for Rds=6.7m for vishay@4.5V

OCP:72.727A for Rds=3.3m for renesas@10V

OCP:48A=RoSet*Iocset / Rds(on)

=12K*10uA / [5//5]

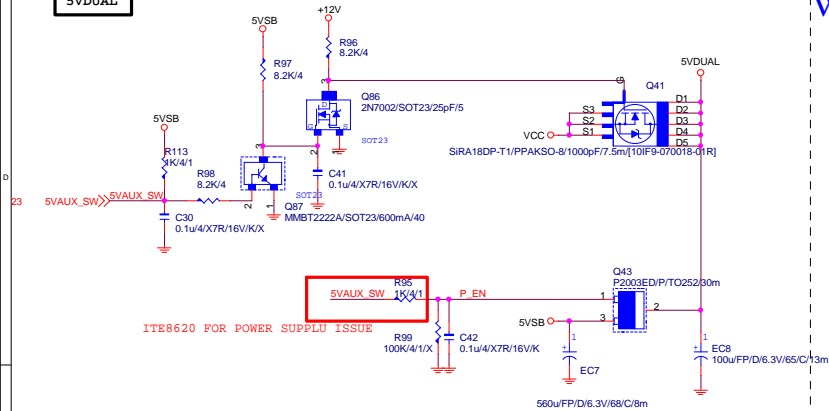
DDRVTT



GIGABYTE™

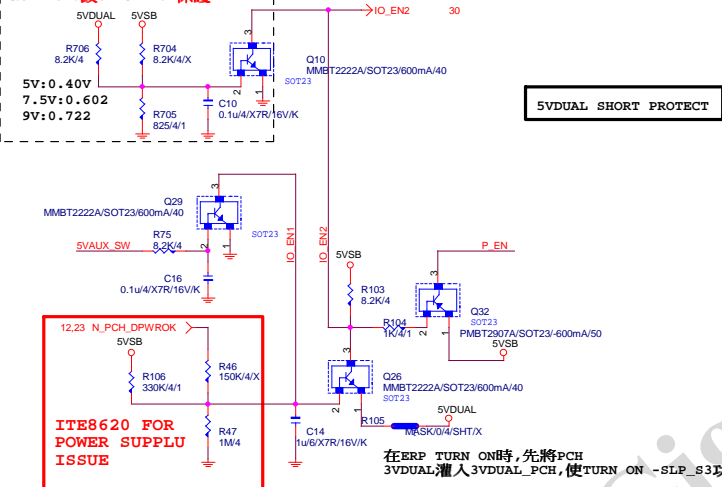
Title			
DDR15V / M3 POWER			
Size	Document Number	Rev	
Custom	GA-Z97X-UD3H-BK	1.1	
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5VDUAL

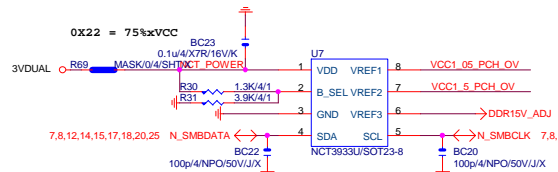


```
5VSB OVP:7.5V protection
```

NOTE 82:改5VDUAL 6v保護

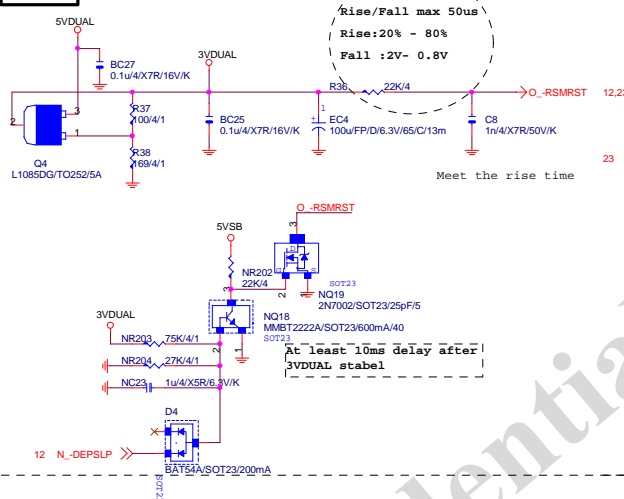


OVER VOLTAGE

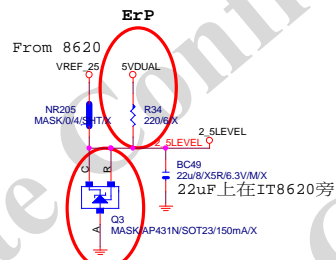


NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

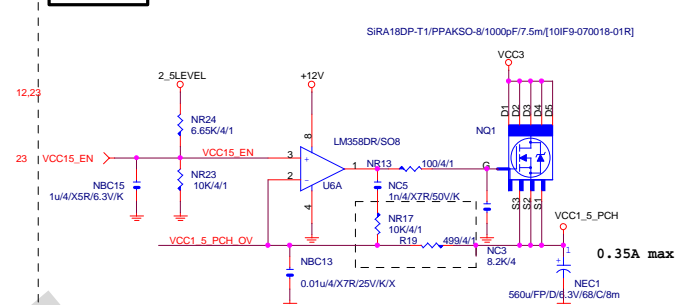
3VDUAL.



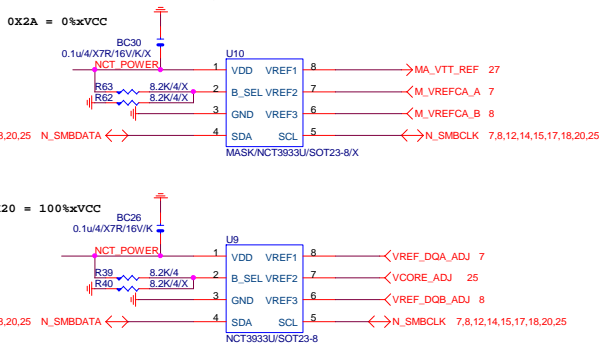
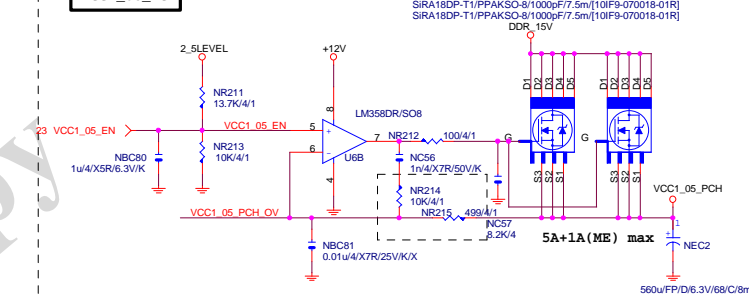
2 5LEVEL

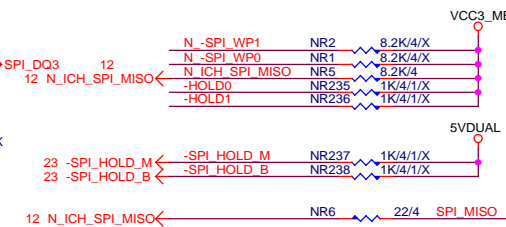
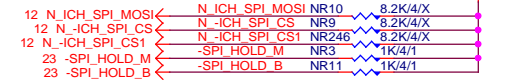


VCC1_5_PCH



VCC1_05_PCH

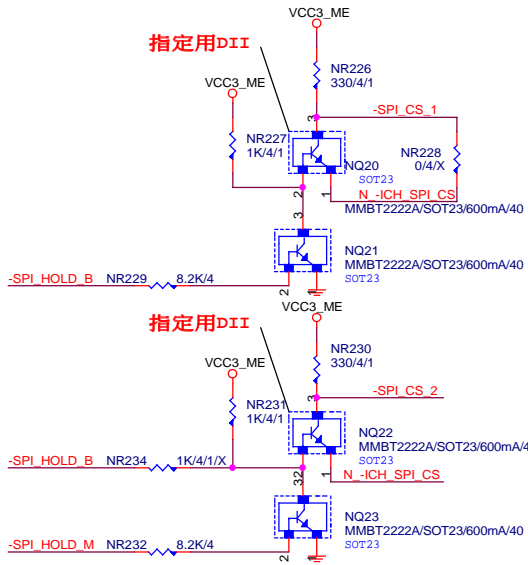




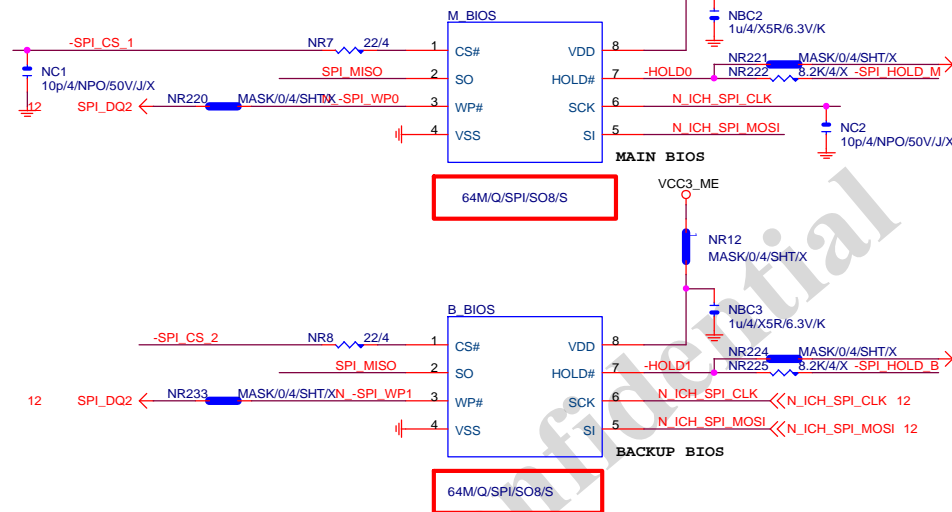
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

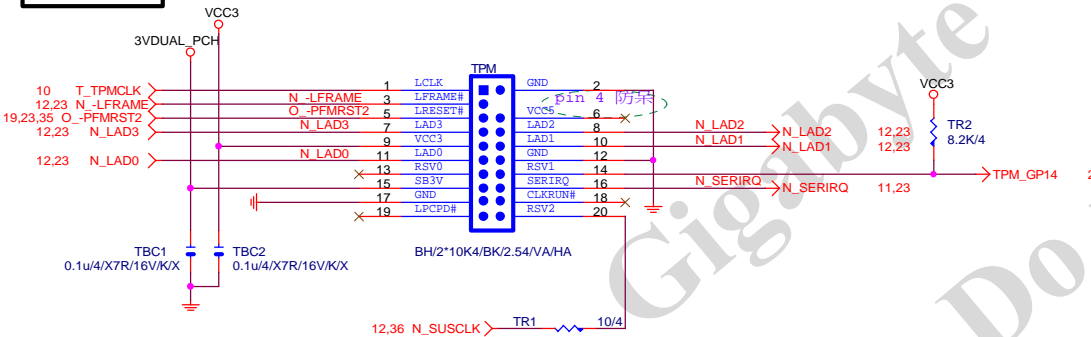
指定用DII



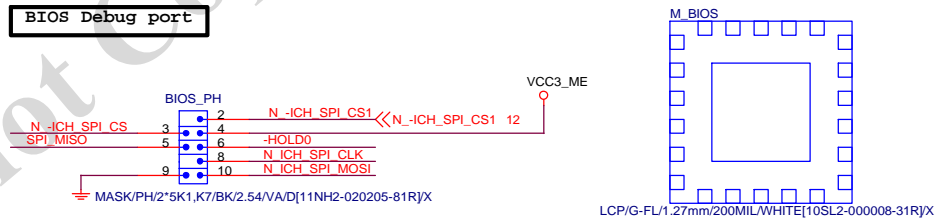
指定用DII



TPM CONNECT



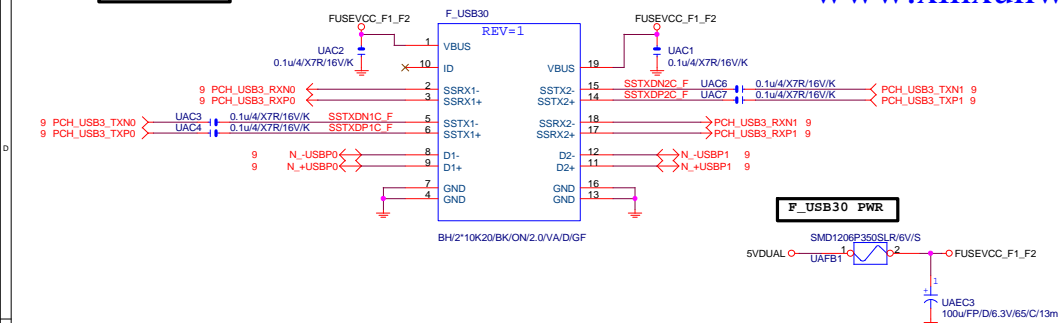
BIOS Debug port



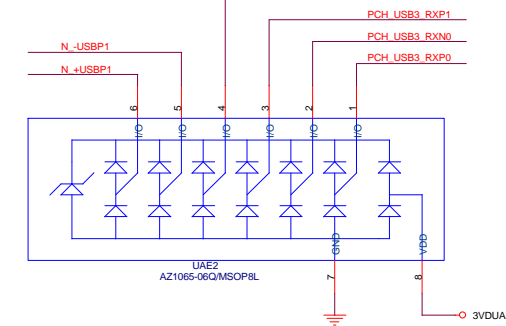
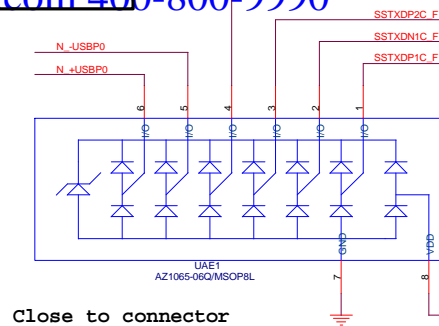
Gigabyte Technology

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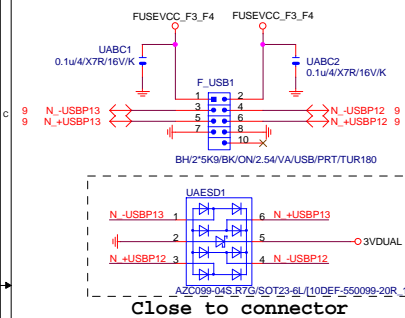
Front USB3.0



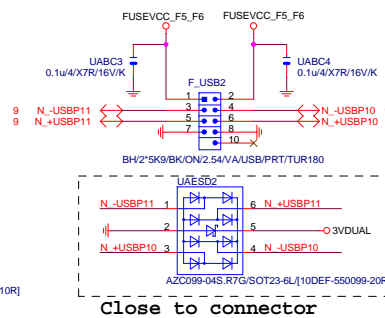
Close to connector



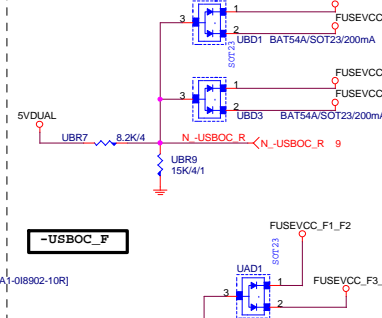
FRONT USB1



FRONT USB2

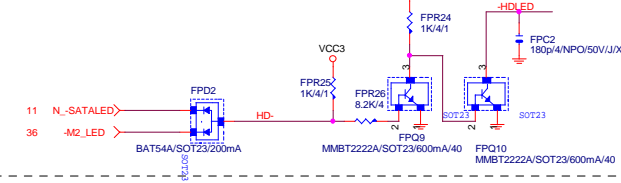


-USBOC_R

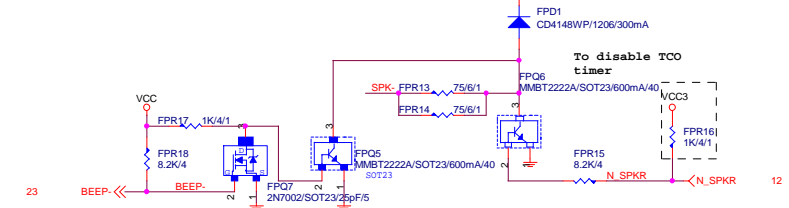


SATA LED

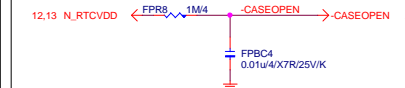
SATALED# signal open-collector, pull-up (8.2 kΩ to 10 kΩ) to Vcc3_3



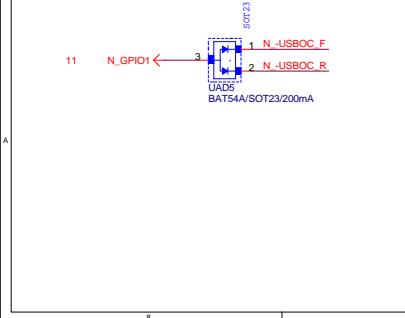
SPKR



CASE OPEN



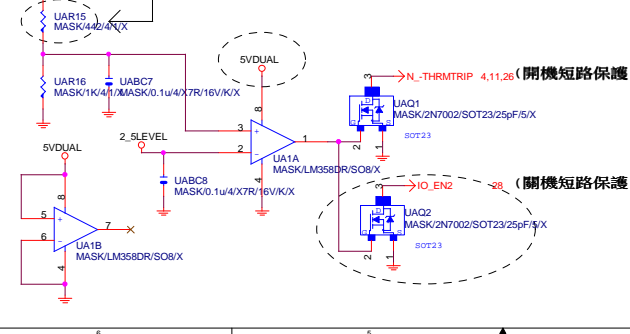
F_USB POWER PROTECT



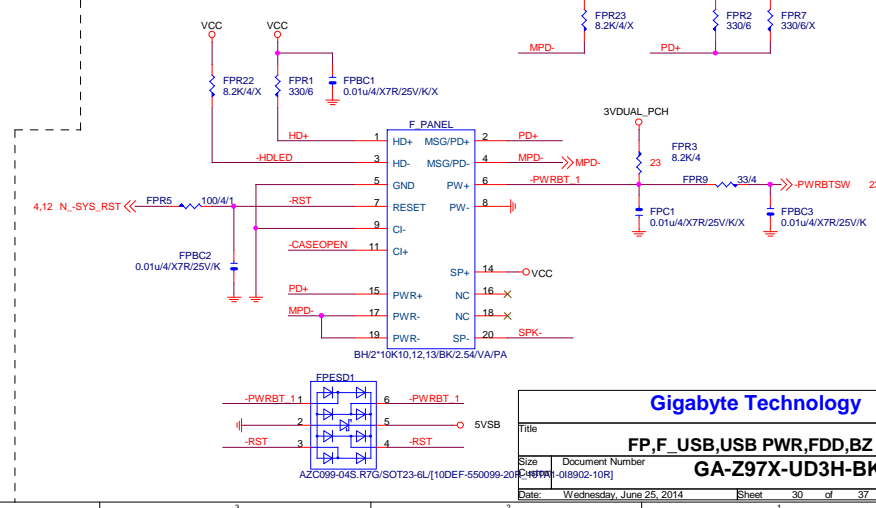
USB2.0 Signal & power short protection

USB2.0 Signal > 4.85V

Enable --> 3VDUAL=3.6V

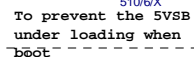
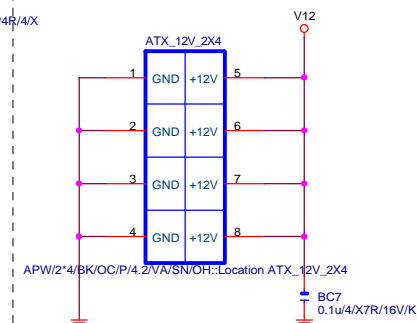


INTEL FRONT PANEL

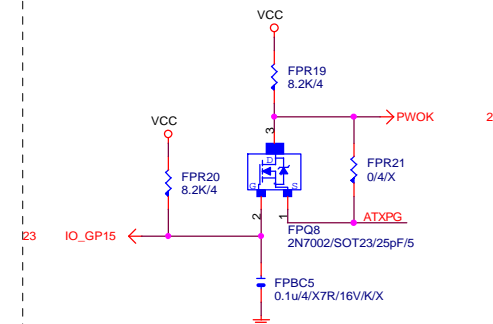
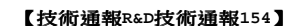
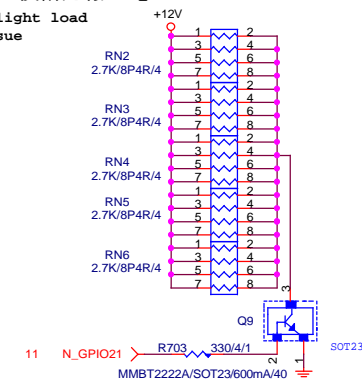


Gigabyte Technology

Title	FP,F_USB,USB PWR,FDD,BZ
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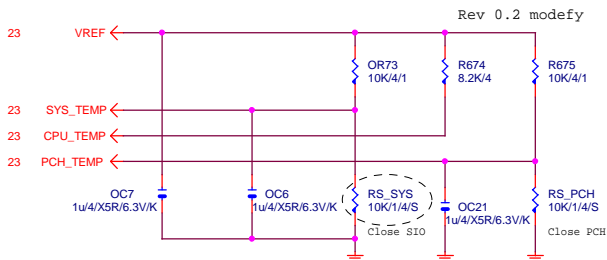


To fix 12V light load
abnromal issue



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TEMP H/W MONITOR

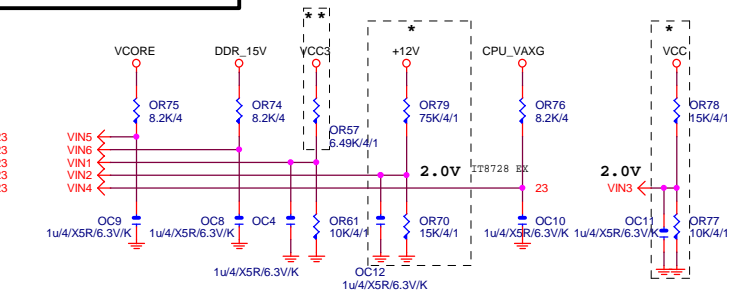


Thrmtrip#改用LM358做

VOLTAGE-- H/W MONITOR

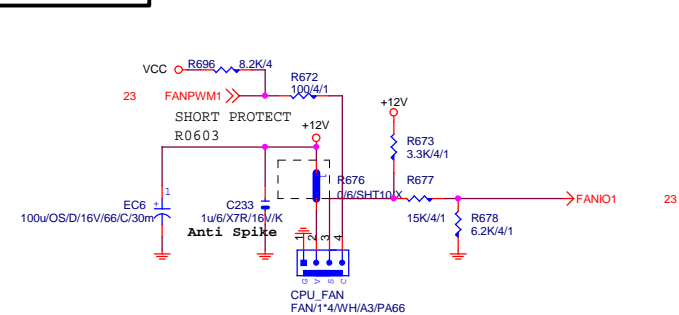
* IT8728 BX
* * IT8728 CX

VIN2 must +12V input
VIN3 must VCC input



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

CPU SMART FAN



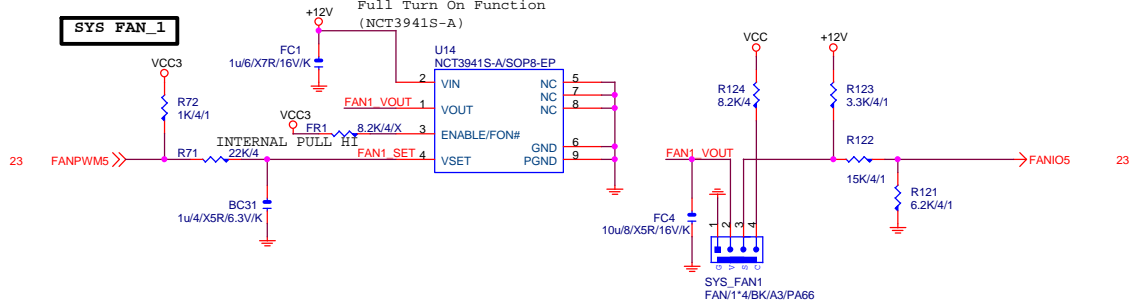
www.xinxunwei.com 400-800-9990

Linear SYS_FAN

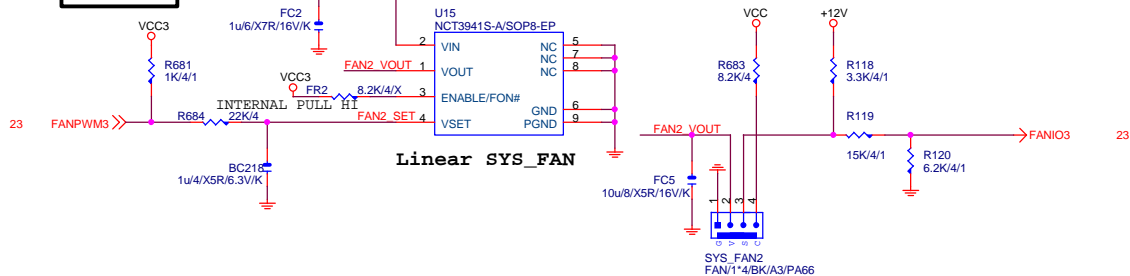
Enable Function (NCT3941S)

Full Turn On Function

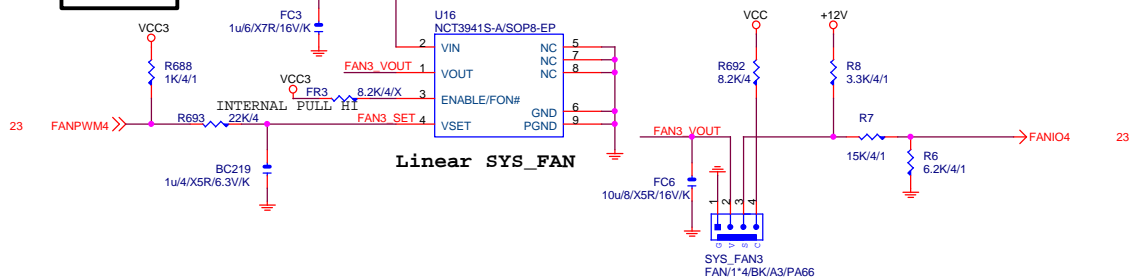
(NCT3941S-A)



SYS FAN_2



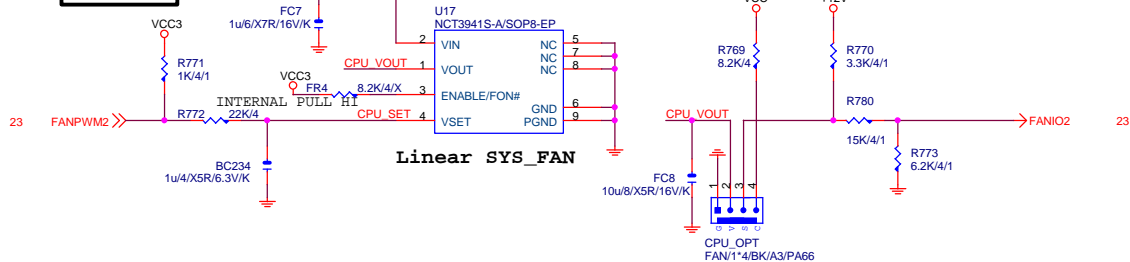
SYS FAN_3



CPU_OPT

Enable Function (NCT3941S)


Full Turn On Function (NCT3941S-A)



FOR EMI ONLY

+12V

C3
1n4/X7R/50V/K

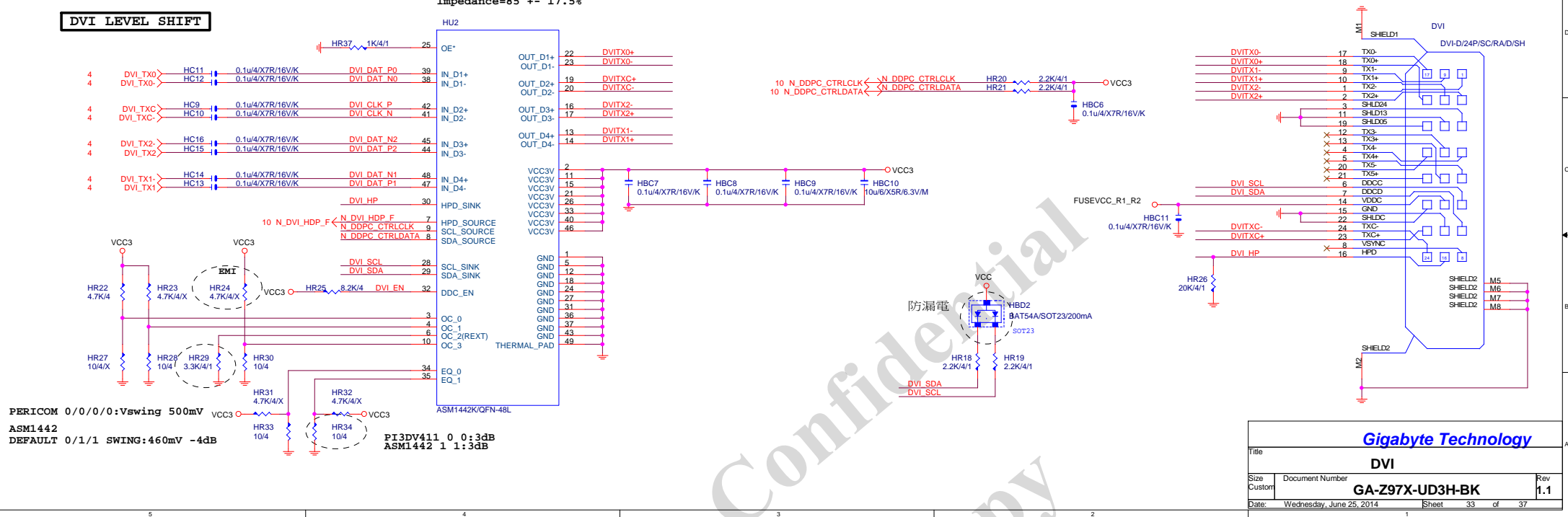


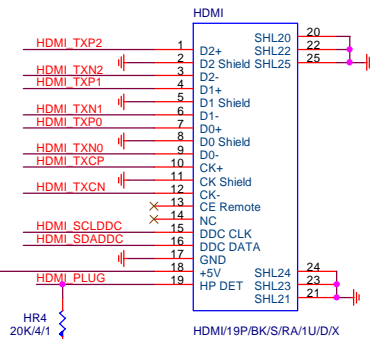
A schematic diagram showing a resistor labeled R1. One end of the resistor is connected to a triangle symbol labeled AGND1. The other end is connected to a pin labeled MASK/0/4/SHT/X, which is also connected to a ground symbol.

Gigabyte Technology

Title				HWM,KB/MS, FAN CTRL			
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		GA-Z97X-UD3H-BK				1.	
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DVI LEVEL SHIFT



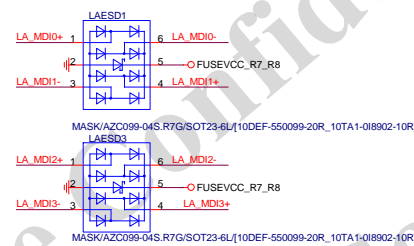
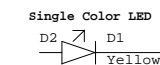
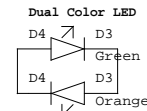
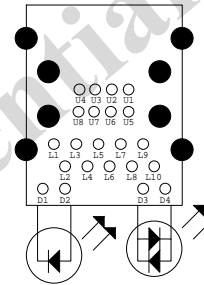
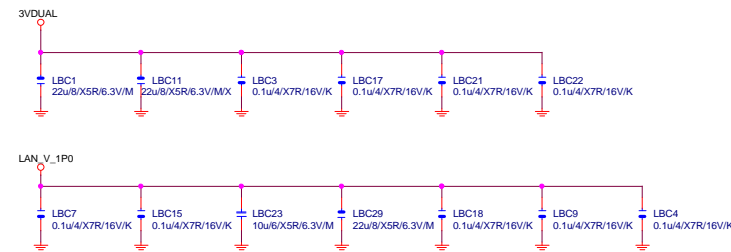
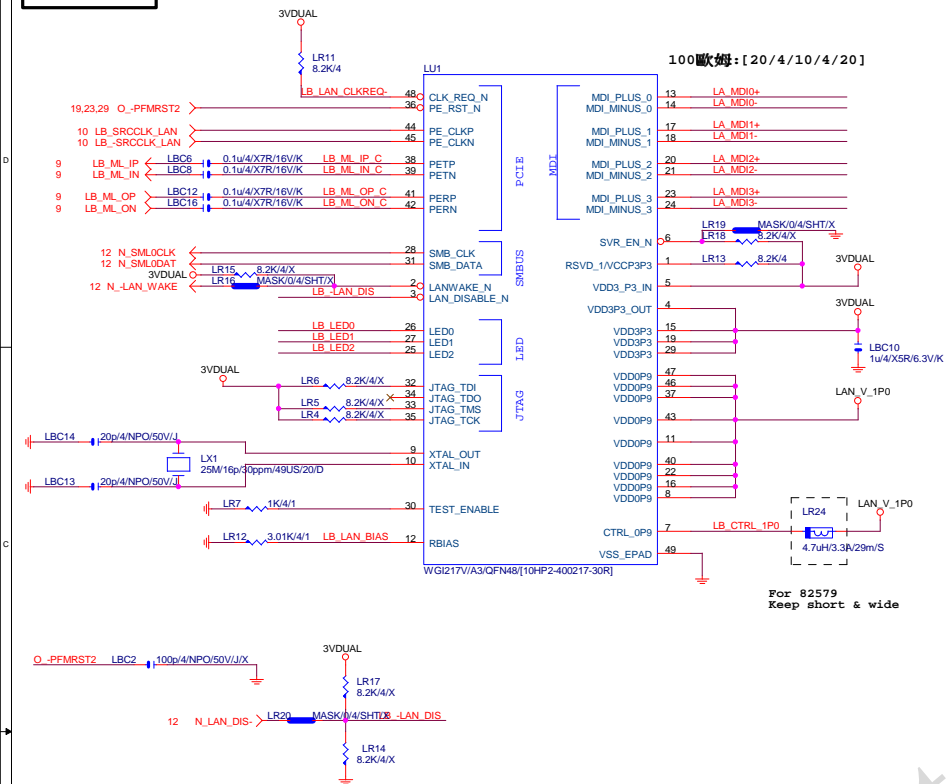


HDMI與R_USB共用一個料件

改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

			
Title			
HDMI			
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LAN:INTEL I217



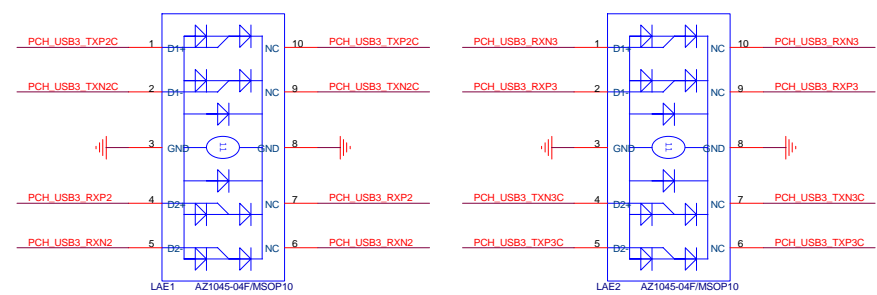
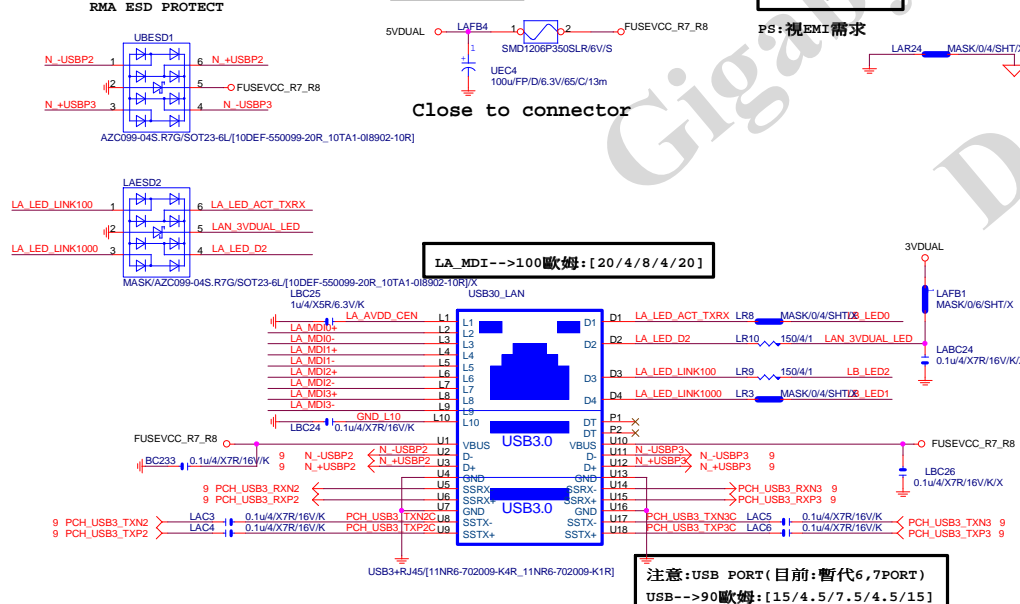
1Gb	Orange
100Mb	Green
10Mb	Off

Access	Blinking
Link	Yellow

USB LAN CONNECTOR

USB X3 POWER

EMI SHORT PAD



Gigabyte Technology

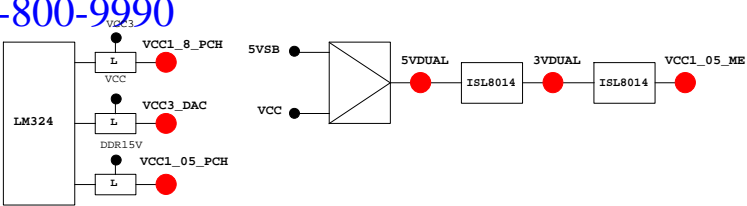
File		
INTEL LAN I217		
Size	Document Number	Rev
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PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI0	N/A	
GP1/TACH1	MAIN		GPI01	N/A	
GP2/PIRQE#	MAIN		GPI -PIRQE	P/U 8.2K VCC3	
GP3/PIRQF#	MAIN		GPI -PIRQF	P/U 8.2K VCC3	
GP4/PIRQG#	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	GPI08	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		GPI016	P/U 8.2K VCC3	
GP17/TACH0	MAIN		GPI017	P/U 8.2K VCC3	
GP18	MAIN		GPI Mobile Only	N/A	
GP19	MAIN		GPI019	P/U 8.2K VCC3	
GP20	MAIN		GPI020	P/U 8.2K VCC3	
GP21	MAIN		GPI021	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	

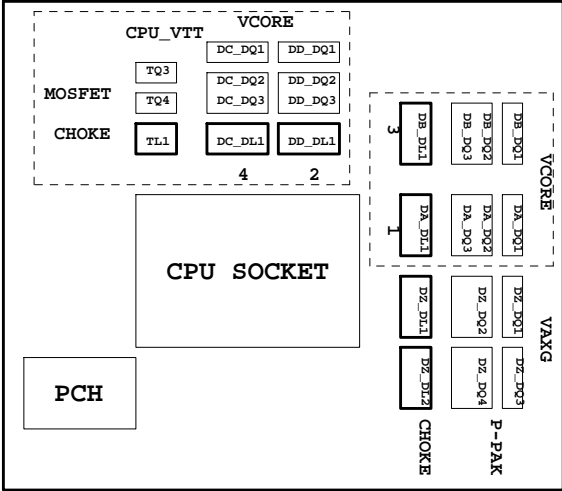
Super I/O ITE8720 GPIO Table

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/BUSSIO	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VBSBW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMBC_R	SEC_PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRXL2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

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

散熱模組料號：

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

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

Gigabyte Technology			
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