

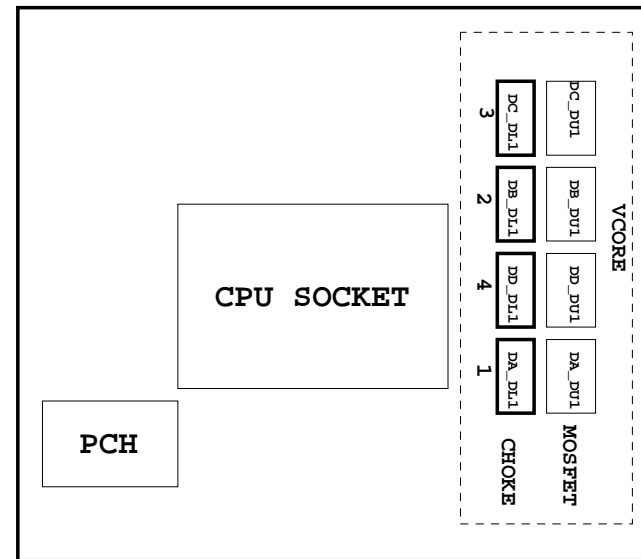
Model Name: GA-Z87P-D3

SHEET TITLE

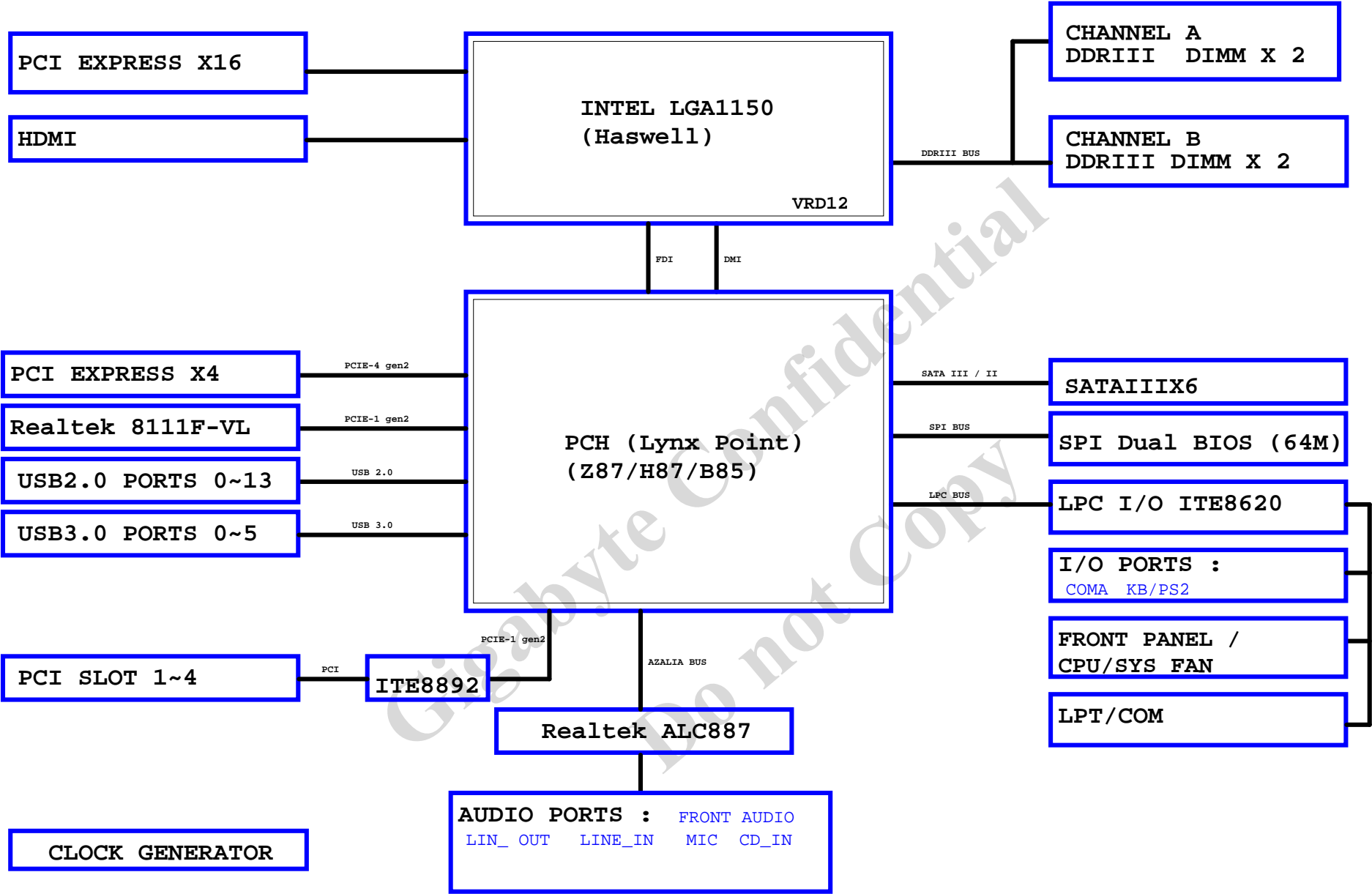
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1~4
18	I/O ITE8620
19	COM, -PROHOT, R_USB
20	Dual BIOS / LPT
21	ALC887 CODEC
22	REAR AUDIO JACK
23	VCORE_ ISL95820_1
24	VCORE_ ISL95820_2
25	DDR15V / M3 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	Realtek 8111F-VL
32	HDMI
33	TABLE LIST
34	
35	
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40	



BLOCK DIAGRAM



LGA1150

(A)

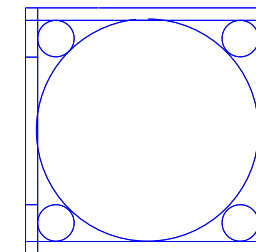
LGA1150

(B)

LGA1150

(CR)

www.xinxunwei.com 400-800-9990

LGA1150
ILM_BP/1156/CSP/12KRC-0F0001-52R_12KRC-0F0001-51R

LGA1150A

LGA1150B

MAAA0	AU13	DDR0_MA0	DDR0_D00	AD38	MDA0
MAAA1	AV16	DDR0_MA1	DDR0_D01	AD39	MDA1
MAAA2	AU16	DDR0_MA2	DDR0_D02	AF38	MDA2
MAAA3	AW17	DDR0_MA3	DDR0_D03	AF39	MDA3
MAAA4	AU17	DDR0_MA4	DDR0_D04	AD40	MDA4
MAAA5	AW18	DDR0_MA5	DDR0_D05	AE37	MDA6
MAAA6	AV17	DDR0_MA6	DDR0_D06	AF40	MDA7
MAAA7	AT18	DDR0_MA7	DDR0_D07	AH40	MDA9
MAAA8	AU18	DDR0_MA8	DDR0_D08	AH39	MDA13
MAAA9	AT19	DDR0_MA9	DDR0_D09	AK38	MDA10
MAAA10	AW11	DDR0_MA10	DDR0_D10	AK39	MDA11
MAAA11	AV19	DDR0_MA11	DDR0_D11	AH37	MDA12
MAAA12	AU19	DDR0_MA12	DDR0_D12	AH38	MDA14
MAAA13	AT20	DDR0_MA13	DDR0_D13	AK40	MDA15
MAAA14	AW21	DDR0_MA14	DDR0_D14	AK40	MDA17
MAAA15	AU21	DDR0_MA15	DDR0_D15	AM40	MDA21
MODT_A0	AW10	DDR0_ODT0	DDR0_D16	AP38	MDA19
MODT_A1	AY8	DDR0_ODT1	DDR0_D17	AP39	MDA20
MODT_A2	AW9	DDR0_ODT2	DDR0_D18	AM37	MDA16
MODT_A3	AU8	DDR0_ODT3	DDR0_D19	AM38	MDA22
			DDR0_D20	AP37	MDA23
			DDR0_D21	AP40	MDA25
			DDR0_D22	AW37	MDA29
			DDR0_D23	AU35	MDA35
			DDR0_D24	AT35	MDA27
			DDR0_D25	AT37	MDA28
			DDR0_D26	AU37	MDA24
			DDR0_D27	AT35	MDA30
			DDR0_D28	AW35	MDA33
			DDR0_D29	AY6	MDA37
			DDR0_D30	AU6	MDA34
			DDR0_D31	AW4	MDA36
			DDR0_D32	AW6	MDA32
			DDR0_D33	AW8	MDA38
			DDR0_D34	AW4	MDA39
			DDR0_D35	AR1	MDA41
			DDR0_D36	AR4	MDA45
			DDR0_D37	AN3	MDA42
			DDR0_D38	AN4	MDA43
			DDR0_D39	AR2	MDA44
			DDR0_D40	AR3	MDA40
			DDR0_D41	AN2	MDA46
			DDR0_D42	AN1	MDA47
			DDR0_D43	AL1	MDA49
			DDR0_D44	AL4	MDA53
			DDR0_D45	AL3	MDA50
			DDR0_D46	AJ4	MDA51
			DDR0_D47	AL2	MDA52
			DDR0_D48	AJ2	MDA48
			DDR0_D49	AJ2	MDA54
			DDR0_D50	AJ1	MDA55
			DDR0_D51	AG1	MDA57
			DDR0_D52	AG4	MDA61
			DDR0_D53	AE3	MDA58
			DDR0_D54	AE4	MDA59
			DDR0_D55	AG2	MDA60
			DDR0_D56	AG3	MDA56
			DDR0_D57	AE2	MDA62
			DDR0_D58	AE1	MDA63
			DDR0_D59	AE39	DQSA0
			DDR0_D60	AJ39	DQSA1
			DDR0_D61	AN39	DQSA2
			DDR0_D62	AV36	DQSA3
			DDR0_D63	AV5	DQSA4
			DDR0_D64	AP3	DQSA5
			DDR0_D65	AK3	DQSA6
			DDR0_D66	AF3	DQSA7
			DDR0_D67	AV32	DQSA8
			DDR0_D68	AE38	DQSA9
			DDR0_D69	AJ38	DQSA1
			DDR0_D70	AN38	DQSA2
			DDR0_D71	AU36	DQSA3
			DDR0_D72	AW5	DQSA4
			DDR0_D73	AP2	DQSA5
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			DDR0_D76	AU32	DQSA8

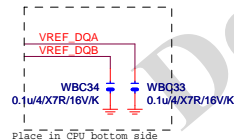
HASWELL[10SC1-F01150-01R_10SC1-F01150-03R]

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MAAB1	AK23	DDR1_MA1	AE35	MD81
MAAB2	AM22	DDR1_MA2	AG35	MD82
MAAB3	AM23	DDR1_MA3	AH35	MD83
MAAB4	AP23	DDR1_MA4	AD34	MD84
MAAB5	AL23	DDR1_MA5	AD35	MD85
MAAB6	AY24	DDR1_MA6	AG34	MD86
MAAB7	AV25	DDR1_MA7	AH34	MD87
MAAB8	AU26	DDR1_MA8	AL34	MD88
MAAB9	AV25	DDR1_MA9	AL35	MD89
MAAB10	AE18	DDR1_MA10	AK31	MD810
MAAB11	AY25	DDR1_MA11	AL31	MD811
MAAB12	AV26	DDR1_MA12	AK34	MD812
MAAB13	AR15	DDR1_MA13	AK35	MD813
MAAB14	AV27	DDR1_MA14	AK32	MD814
MAAB15	AY28	DDR1_MA15	AL32	MD815
MODT_B0	AM17	DDR1_ODT0	AP34	MD816
MODT_B1	AL16	DDR1_ODT1	AN31	MD817
MODT_B2	AM16	DDR1_ODT2	AP31	MD818
MODT_B3	AK15	DDR1_ODT3	AP35	MD819
			AP35	MD820
			AP35	MD816
			AP32	MD818
			AP32	MD822
			AP29	MD825
			AP28	MD828
			AP28	MD827
			AP28	MD830
			AP28	MD824
			AL28	MD829
			AP29	MD826
			AP28	MD831
			AP12	MD832
			AP12	MD833
			AL13	MD834
			AL12	MD835
			AP13	MD836
			AP13	MD837
			AM13	MD838
			AM12	MD839
			AR9	MD845
			AP9	MD841
			AR6	MD847
			AP6	MD843
			AR10	MD844
			AP10	MD840
			AR7	MD846
			AP7	MD842
			AM9	MD852
			AL9	MD853
			AL6	MD850
			AL7	MD855
			AM10	MD848
			AL10	MD849
			AM6	MD854
			AM2	MD851
			AH6	MD861
			AH7	MD860
			AE6	MD859
			AE7	MD863
			AJ6	MD856
			AJ7	MD857
			AF7	MD858
			AF6	MD862
			AF7	MD862
			AF35	DQSB0
			AL33	DQSB1
			AP33	DQSB2
			AN28	DQSB3
			AN12	DQSB4
			AP8	DQSB5
			AL8	DQSB6
			AG7	DQSB7
			AN25	DQSB8
			AK33	DQSB9
			AN33	DQSB2
			AN29	DQSB3
			AN13	DQSB4
			AR8	DQSB5
			AM8	DQSB6
			AG6	DQSB7
			AN26	DQSB8

HASWELL[10SC1-F01150-01R_10SC1-F01150-03R]

DDR BUS

MODT_A[0..3]	MODT_A[0..3]
MODT_B[0..3]	MODT_B[0..3]
MDA[0..63]	MDA[0..63]
MDB[0..63]	MDB[0..63]
DQSA[0..7]	DQSA[0..7]
-DQSA[0..7]	-DQSA[0..7]
MAAA[0..15]	MAAA[0..15]
MAAB[0..15]	MAAB[0..15]
DQSB[0..7]	DQSB[0..7]
-DQSB[0..7]	-DQSB[0..7]

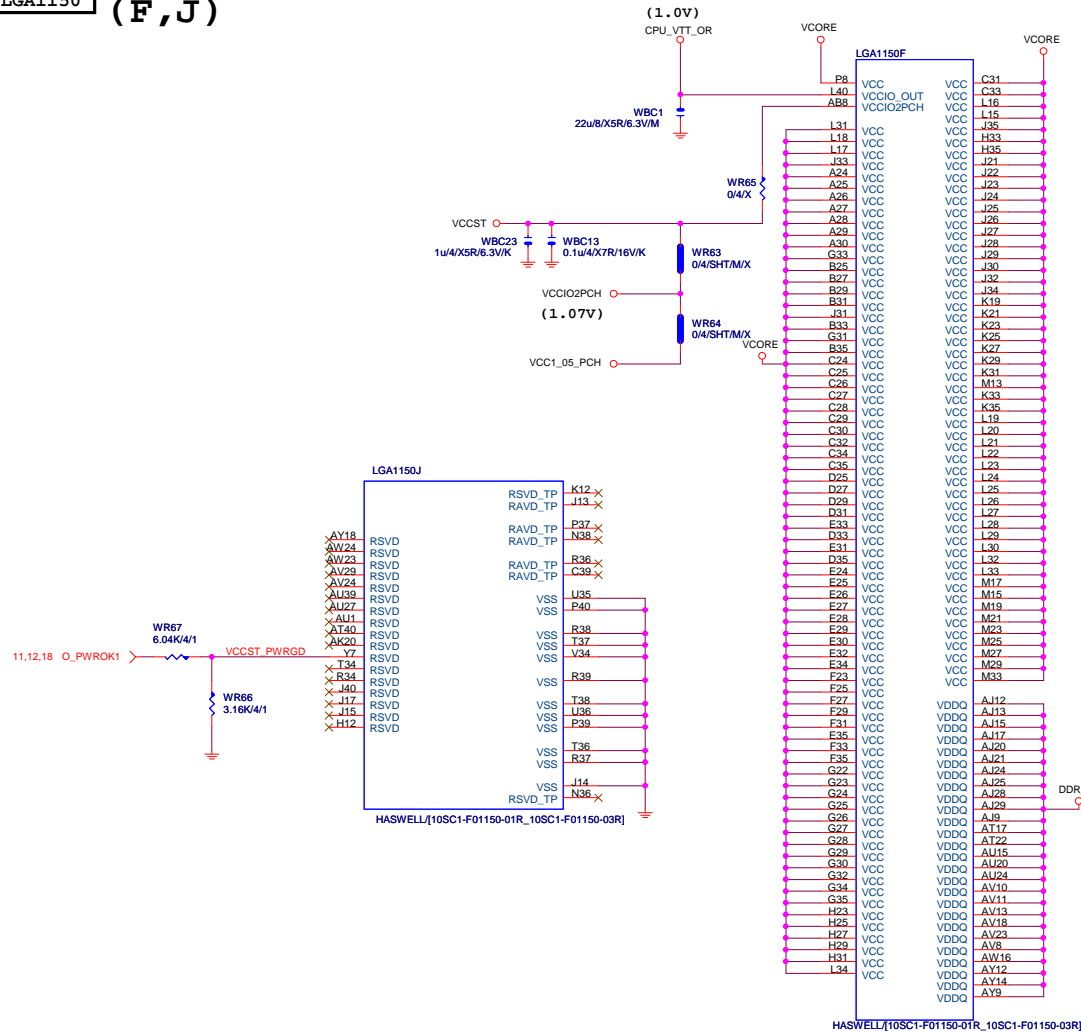


Gigabyte Technology

Title				CPU LGA1150-B	
Size				GA-Z87P-D3	
Date				Rev 2.0	
Thursday, September 26, 2013				Sheet 5 of 33	

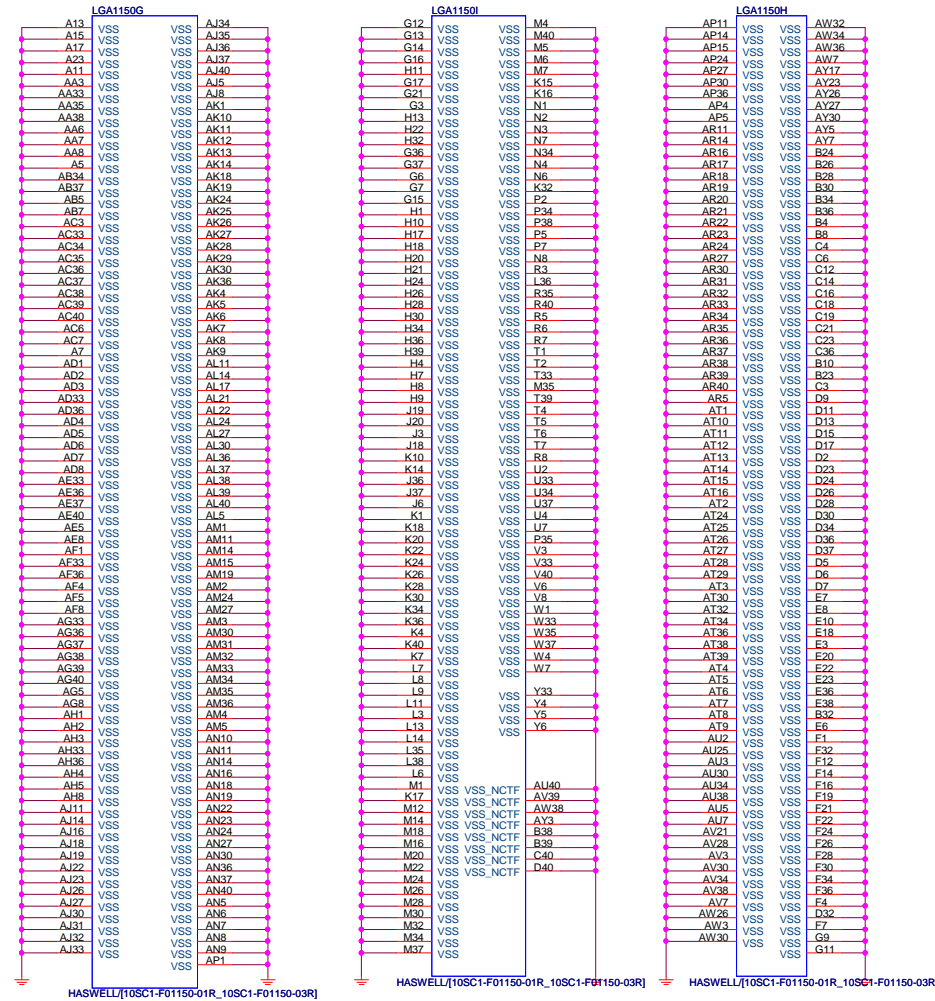
LGA1150

(F,J)



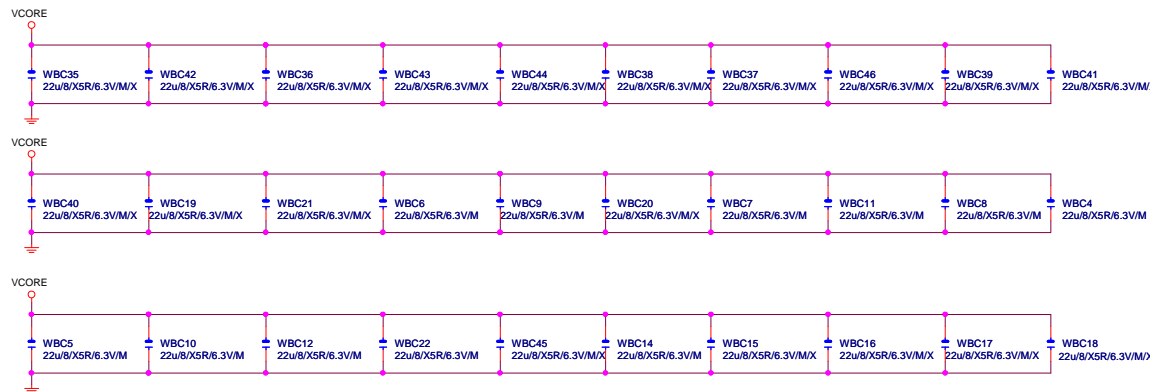
LGA1150

(G,H,I)



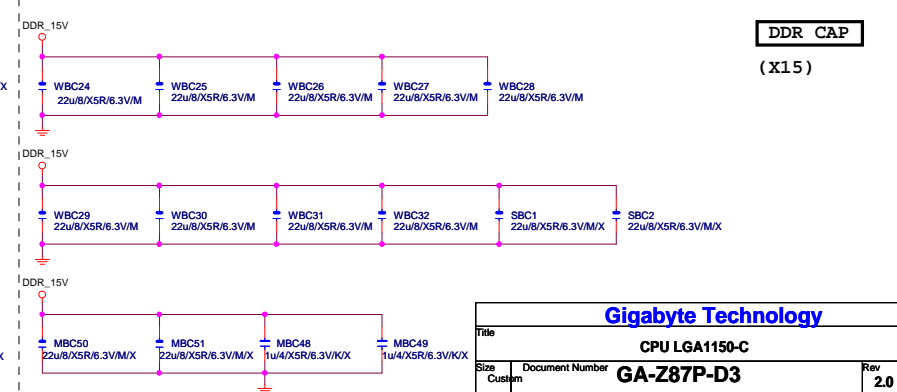
VCore CAP

(X30)



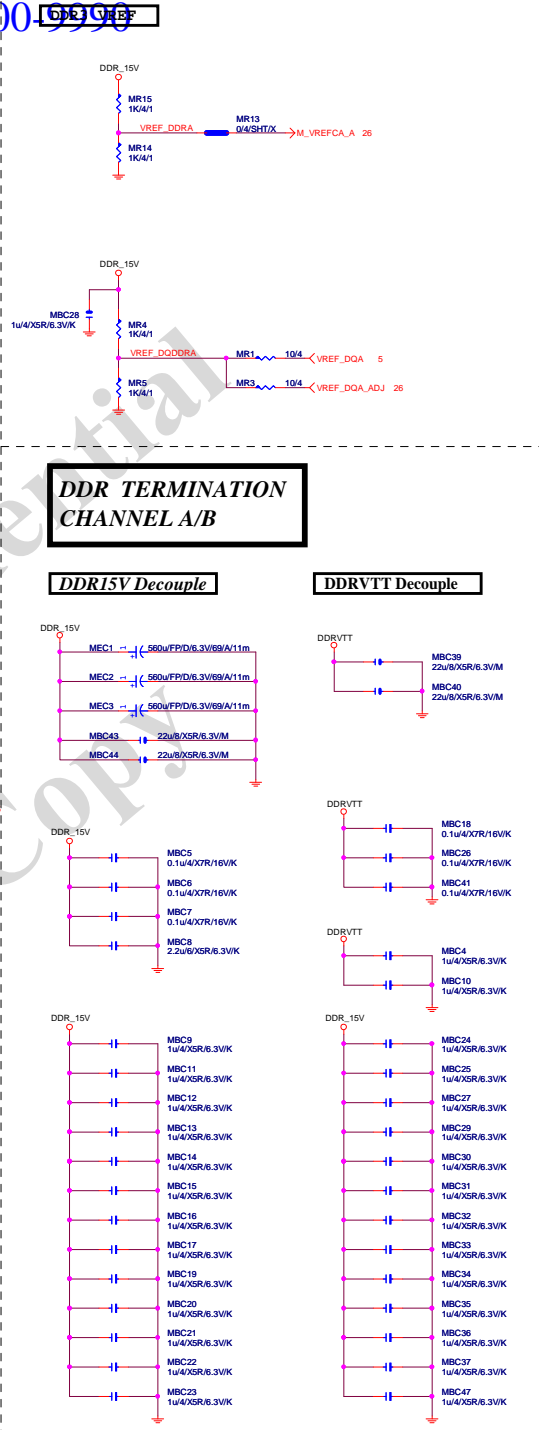
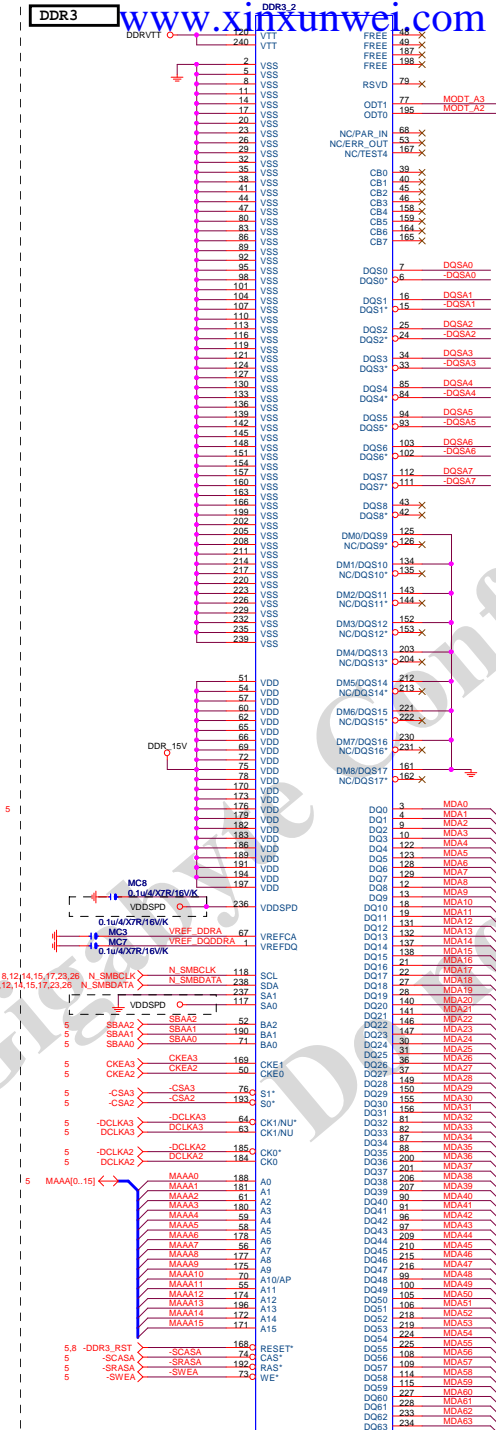
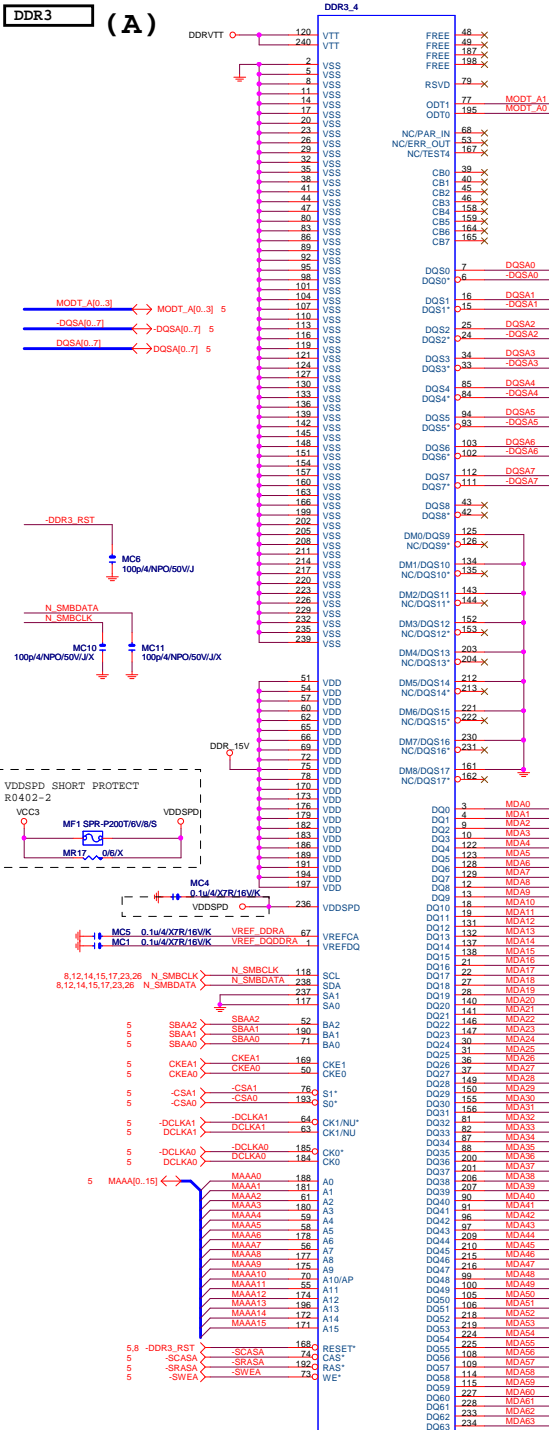
DDR CAP

(X15)



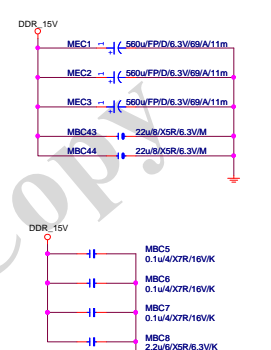
Gigabyte Technology

Title	CPU LGA1150-C	Rev	2.0
Size	Document Number	GA-Z87P-D3	
Date	Thursday, September 26, 2013	Sheet	6 of 33

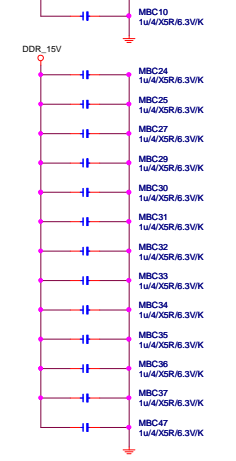
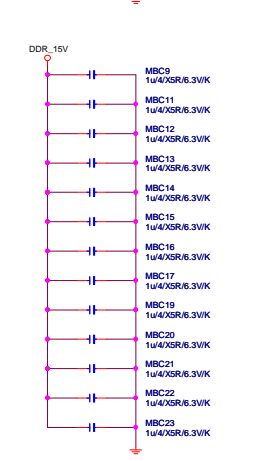
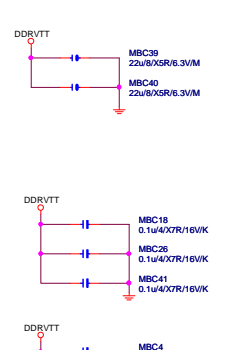


DDR TERMINATION CHANNEL A/B

DDR15V Decouple

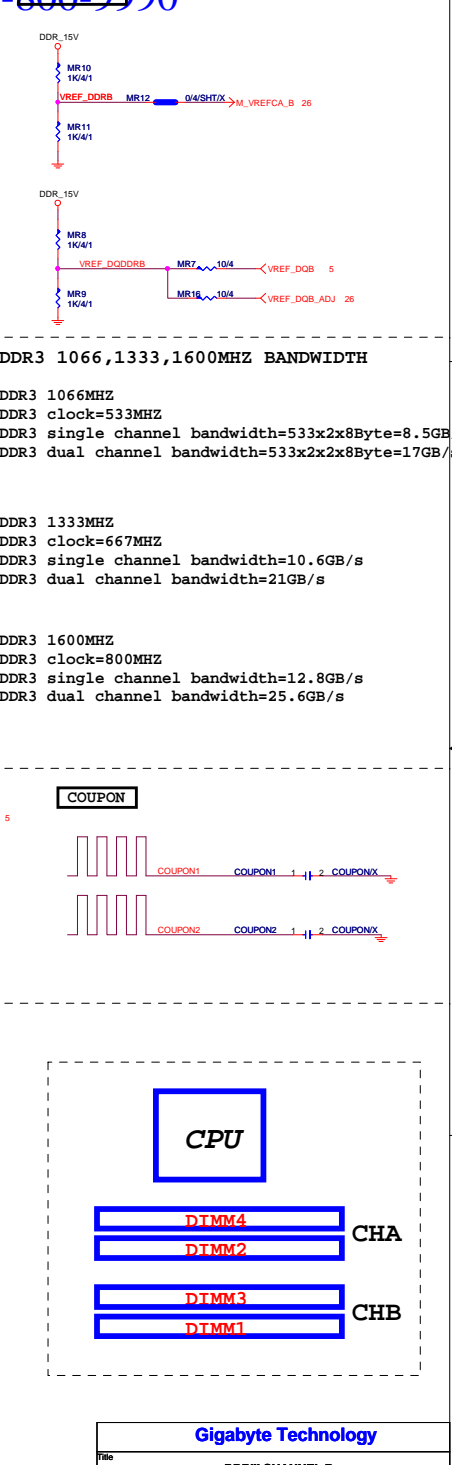


DDRVTT Decouple

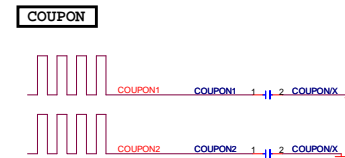


Gigabyte Technology

File		DDR3 CHANNEL A	
Size	Document Number	Rev	2.0
Custom	GA-Z87P-D3	7	of 33
Date:		Sheet	7



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



CPU

CHA

1

CHE

CAF

10

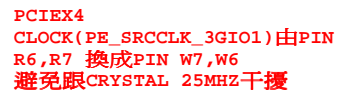
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1

biology

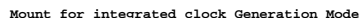
8 of

(E)



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

PCH CLK PD

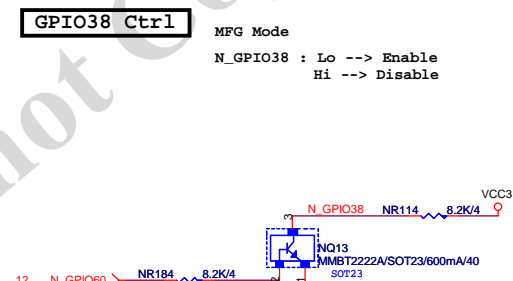
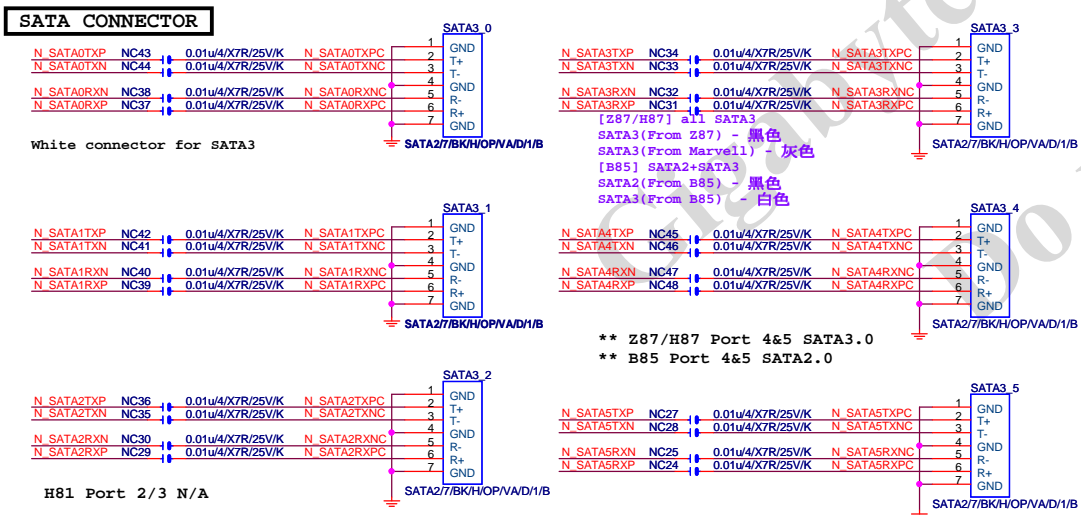
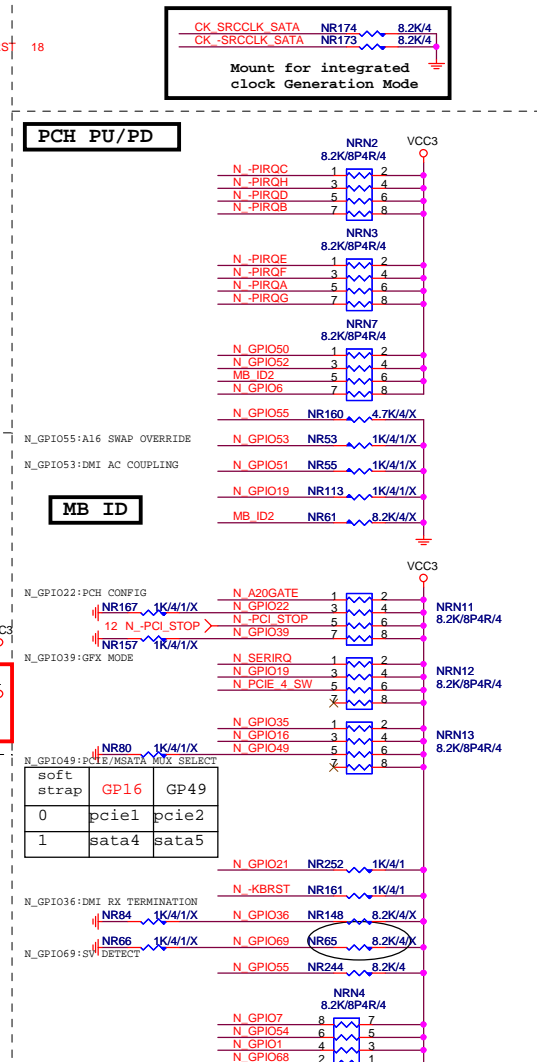
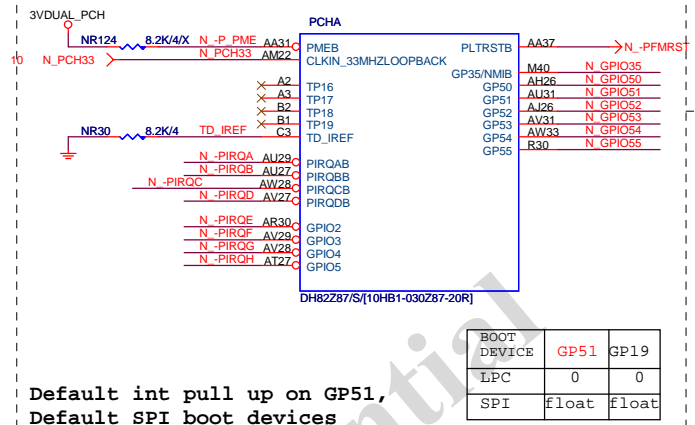


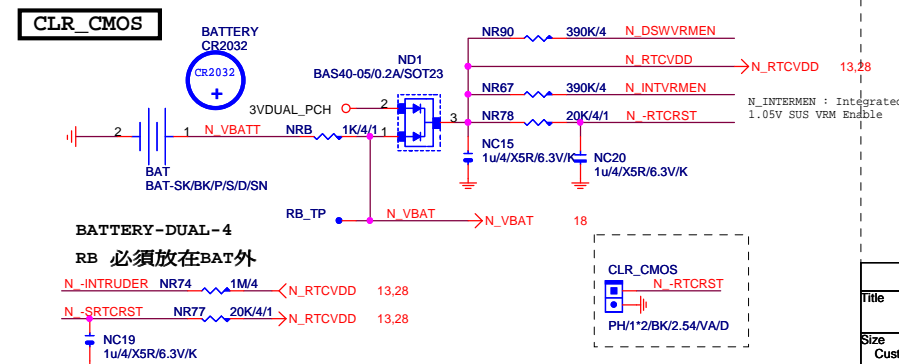
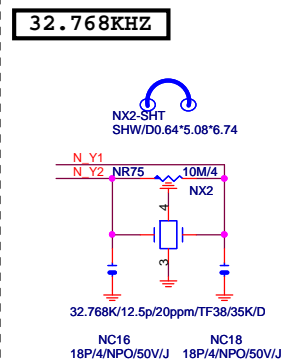
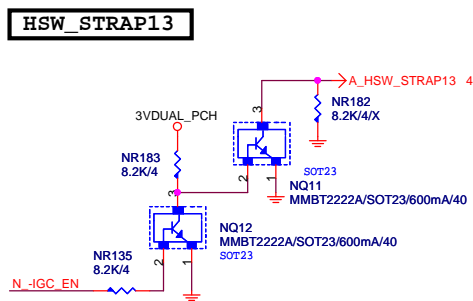
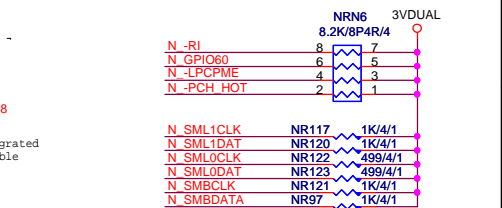
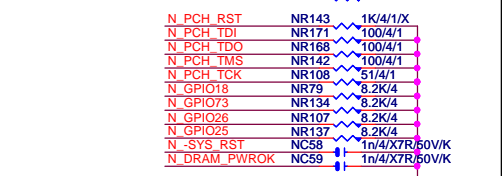
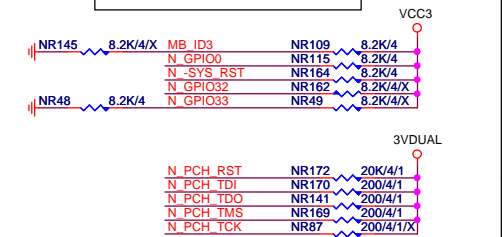
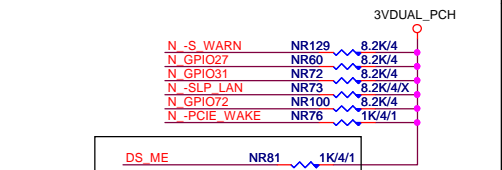
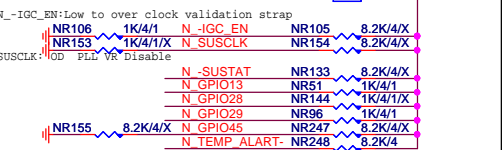
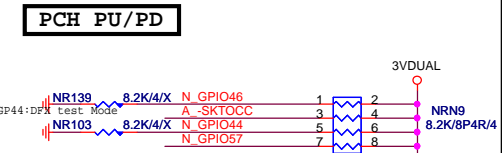
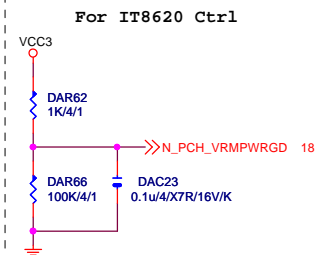
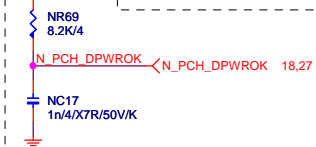
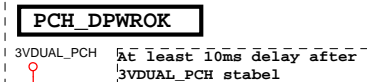
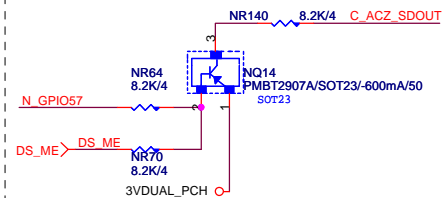
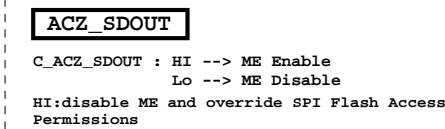
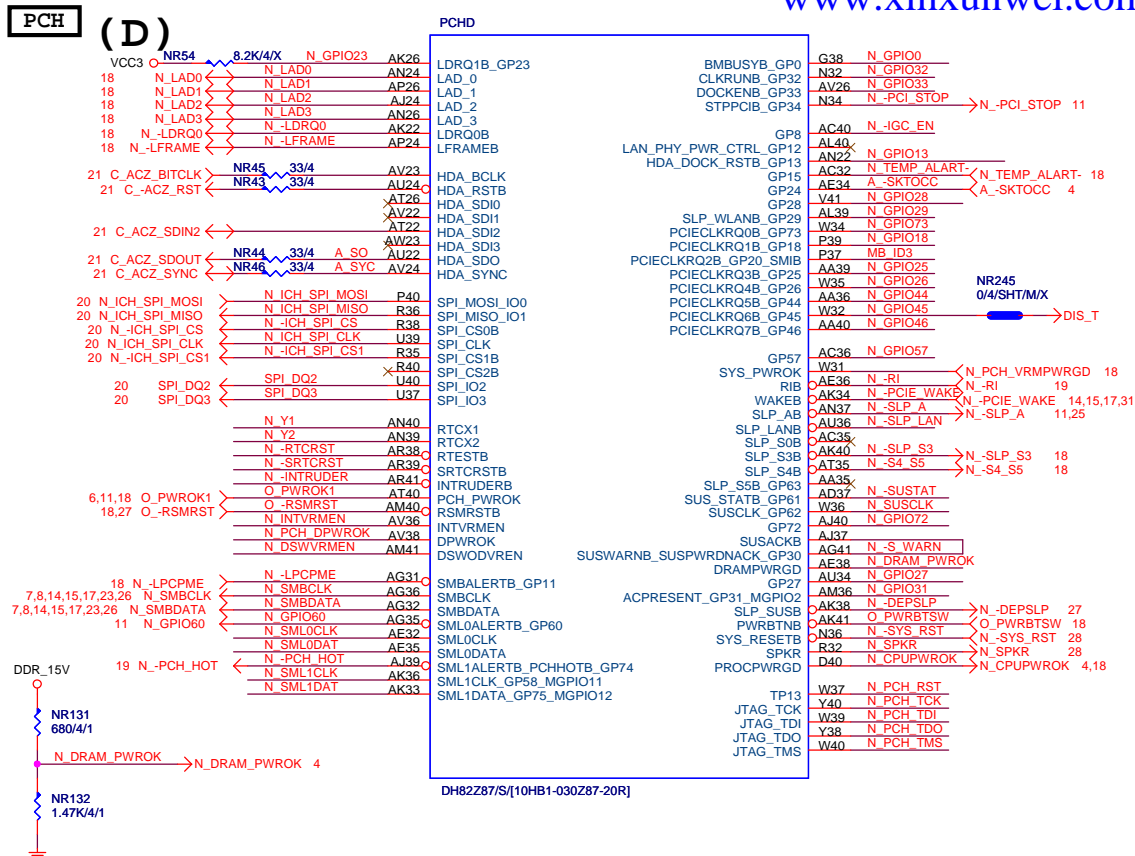
VGA DDC

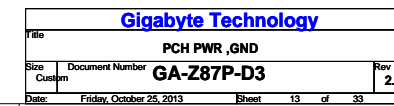


VGA DDC

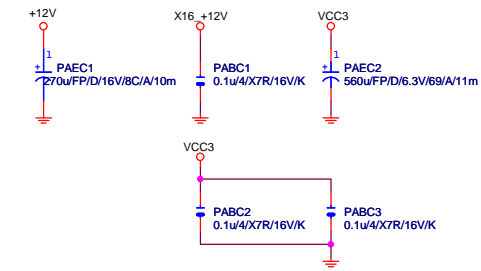
VGA CONNECTOR





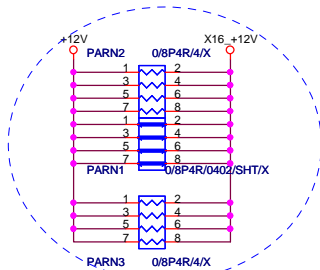


PCIEX16 CAP



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 TXN0 C	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1 C	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1 C	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2 C	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2 C	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3 C	PAC10	0.22u4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3 C	PAC11	0.22u4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4 C	PAC12	0.22u4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4 C	PAC13	0.22u4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5 C	PAC14	0.22u4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5 C	PAC15	0.22u4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6 C	PAC16	0.22u4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6 C	PAC17	0.22u4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7 C	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7 C	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8 C	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8 C	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9 C	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9 C	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10 C	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10 C	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11 C	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11 C	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12 C	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12 C	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13 C	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13 C	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14 C	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14 C	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15 C	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15 C	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

PCI-E REV:1.1--> 2.5GHZ

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

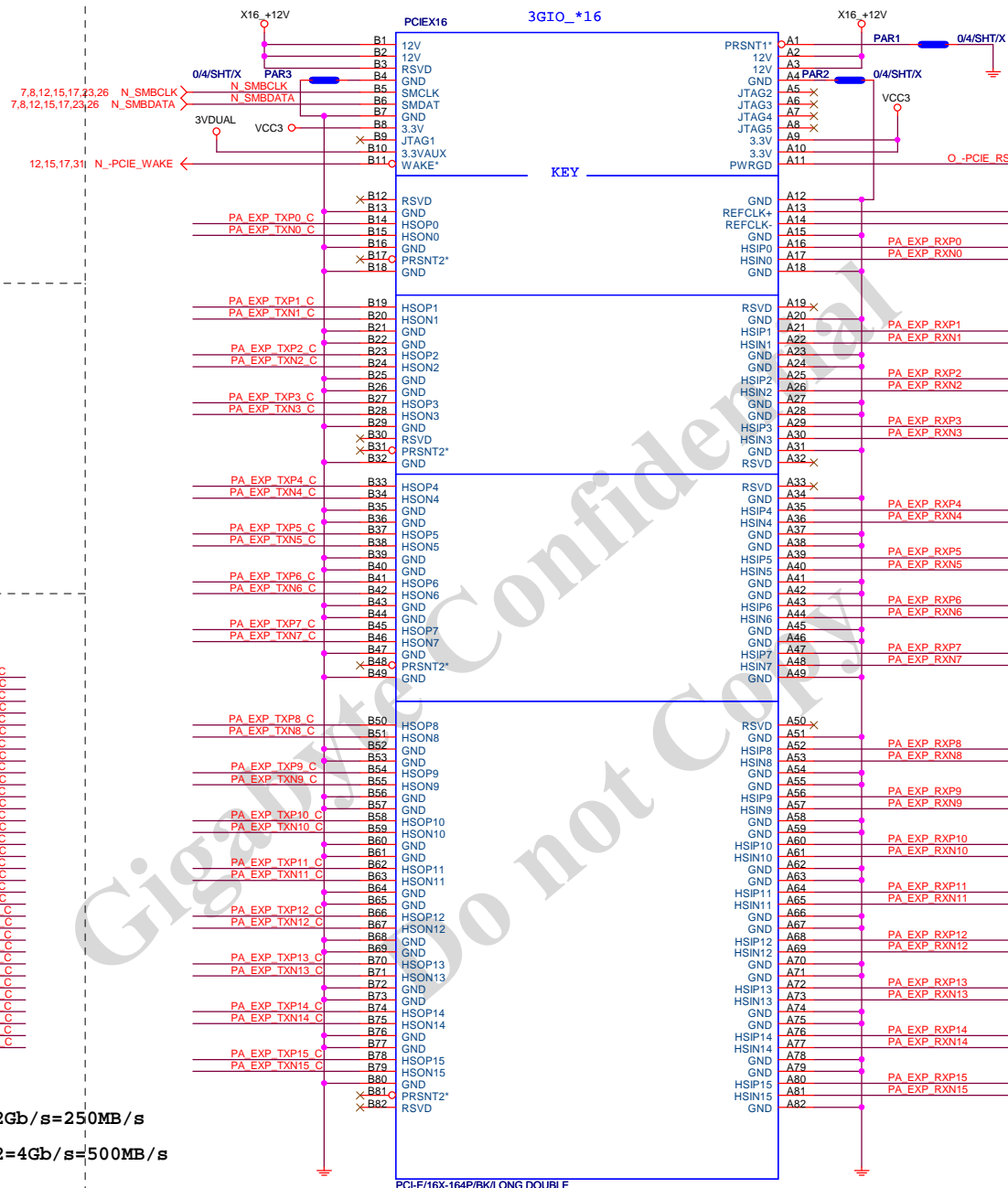
PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

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

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT



The auxiliary reset circuit is only required for PCIe Gen3 margining and functional link training

PCIEX16:16/5/5/5/16

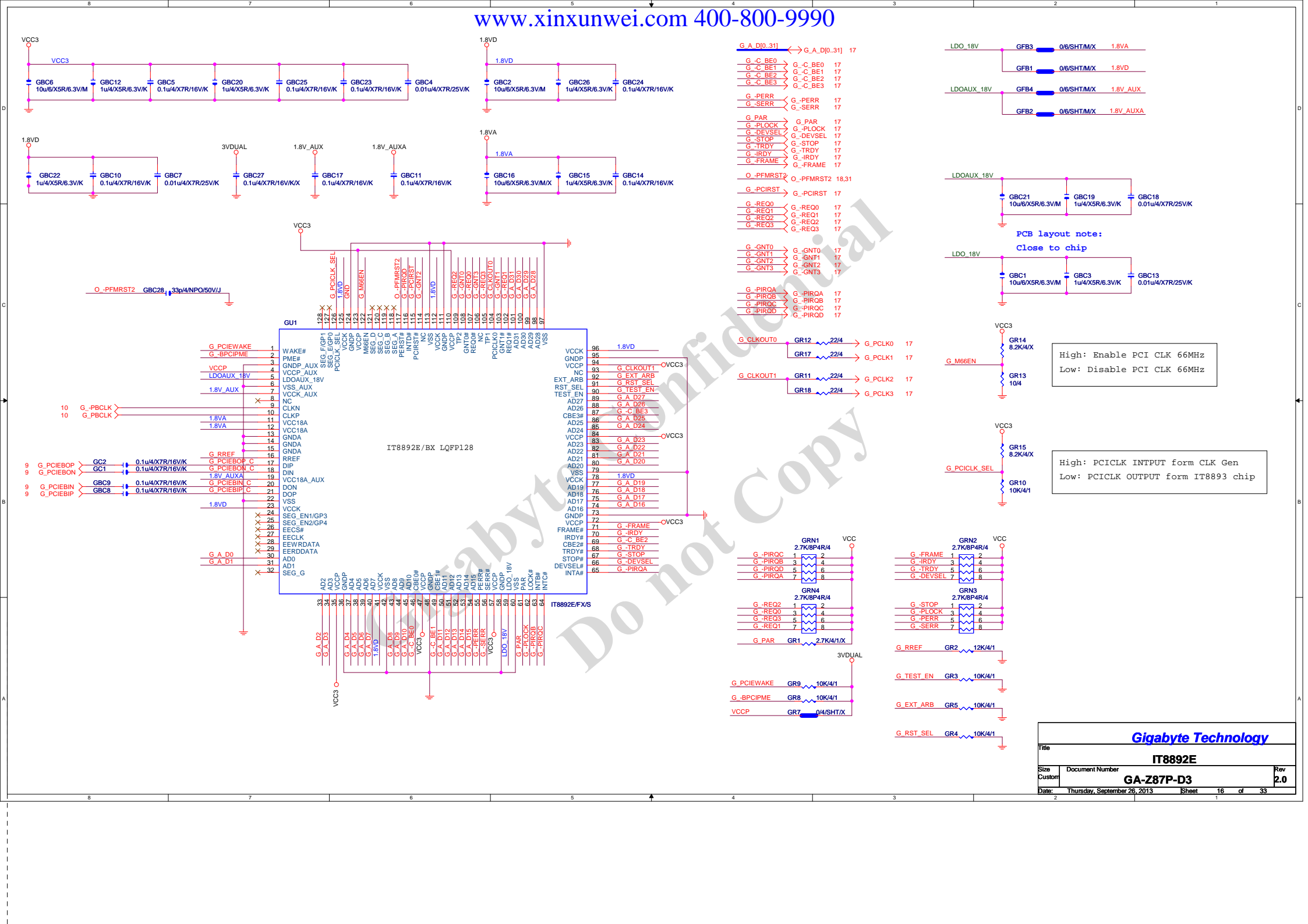
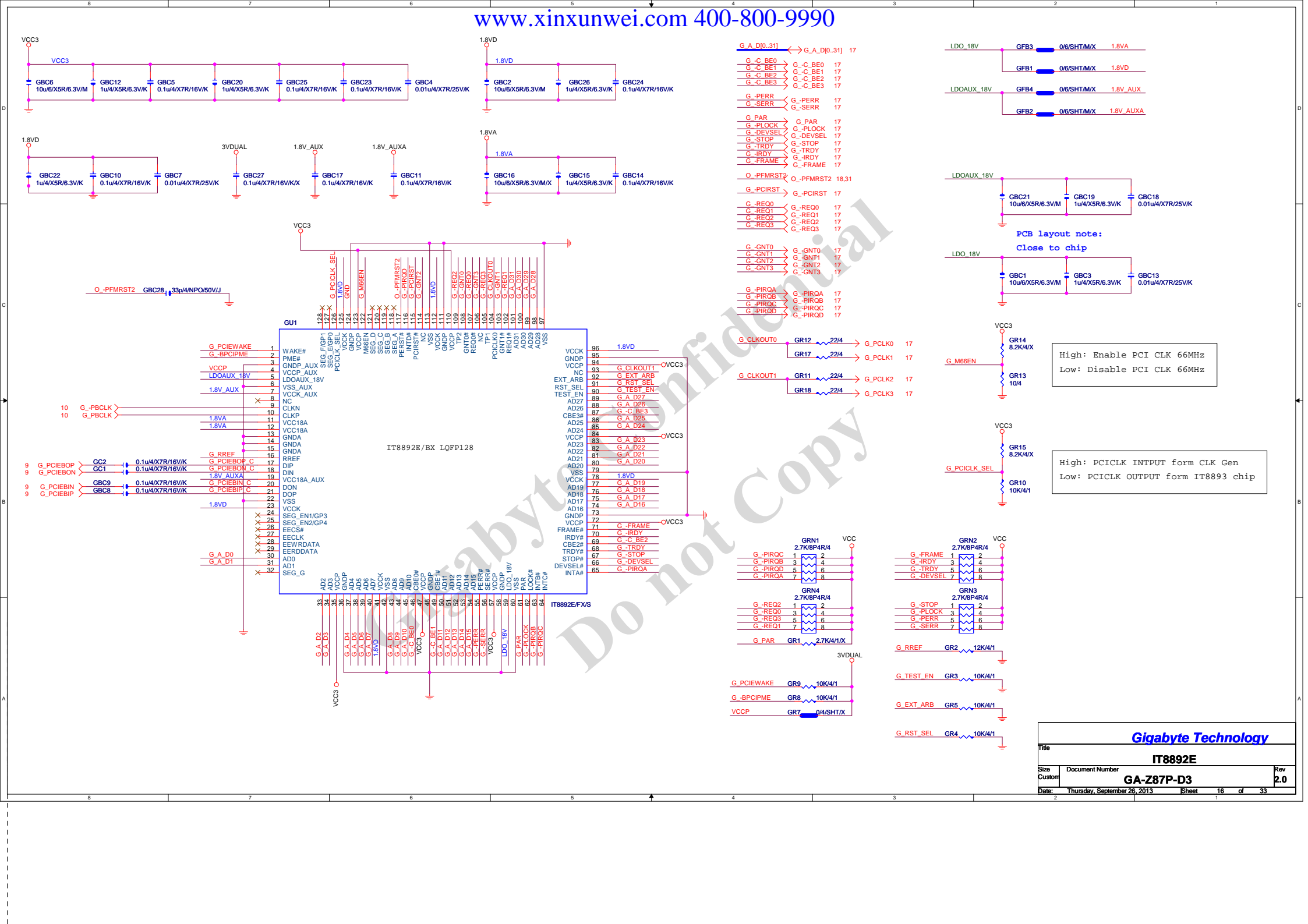
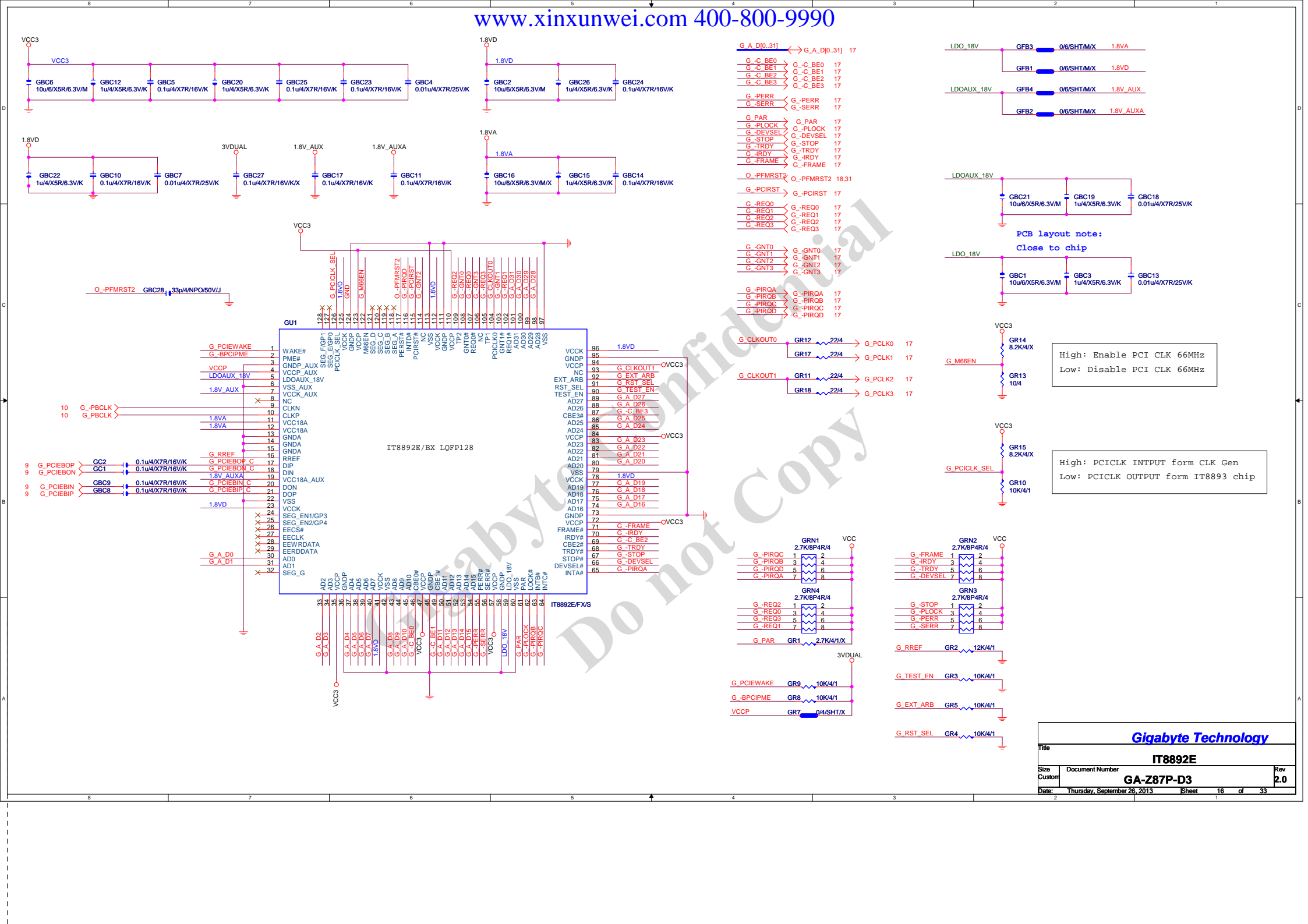
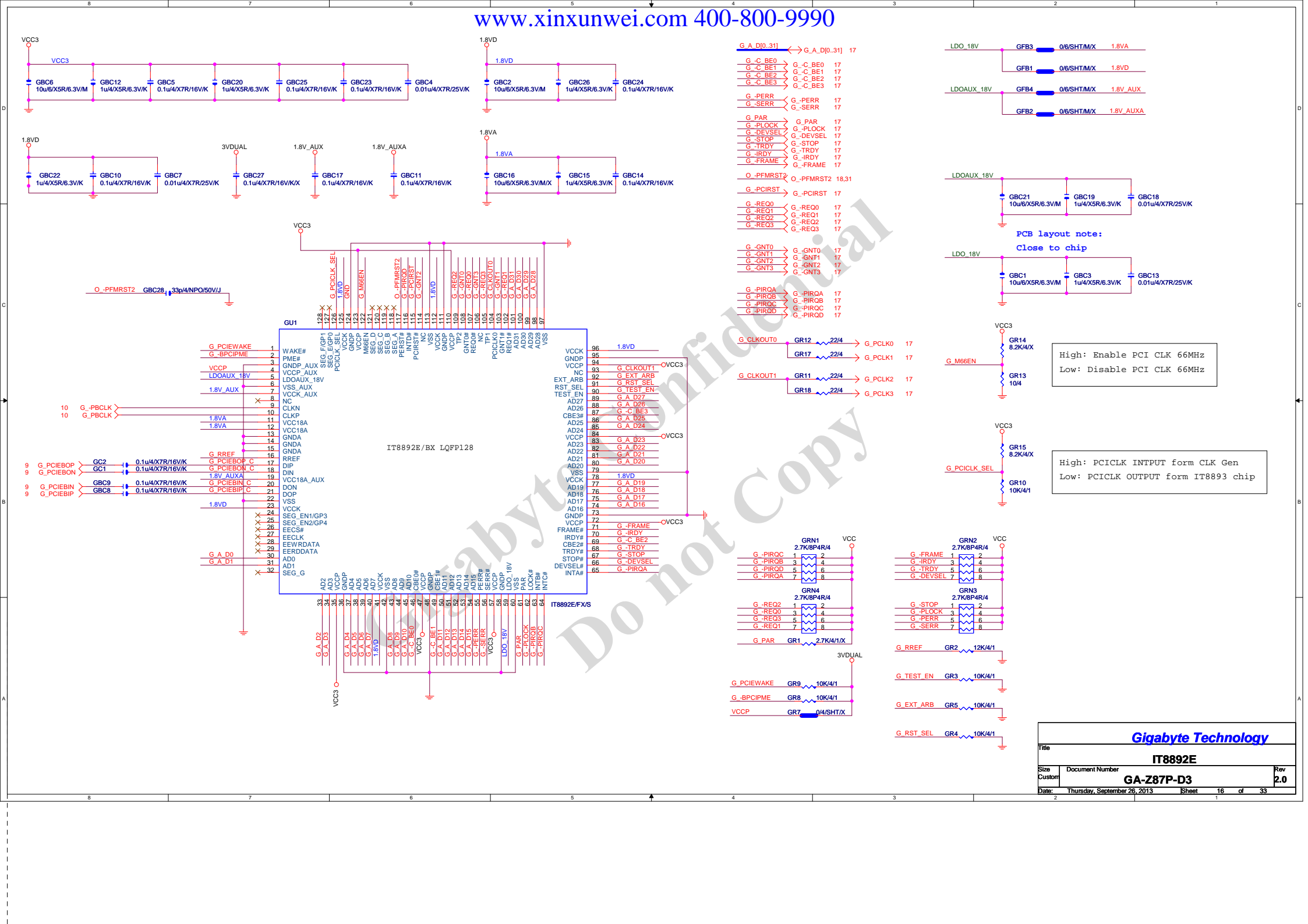
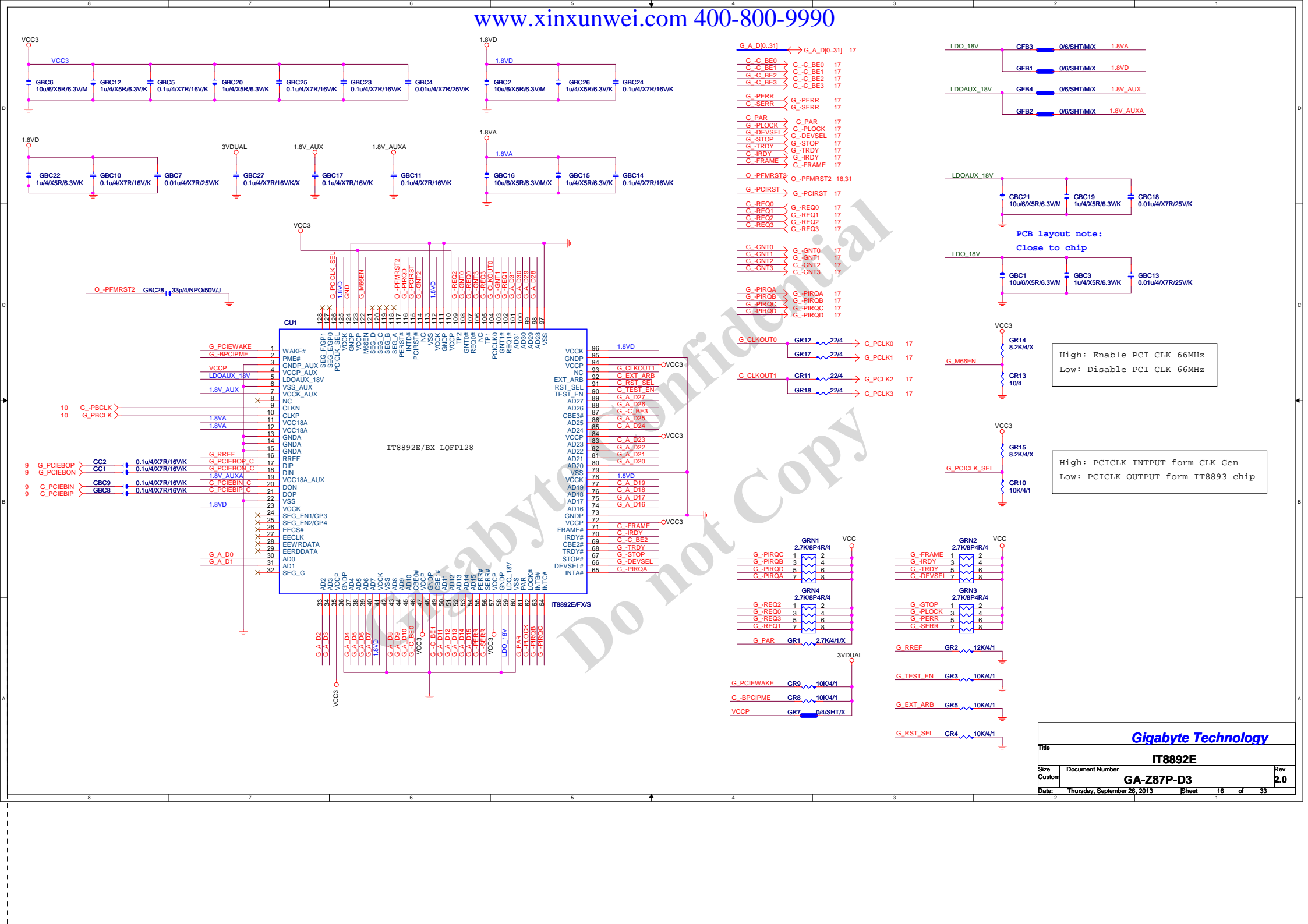
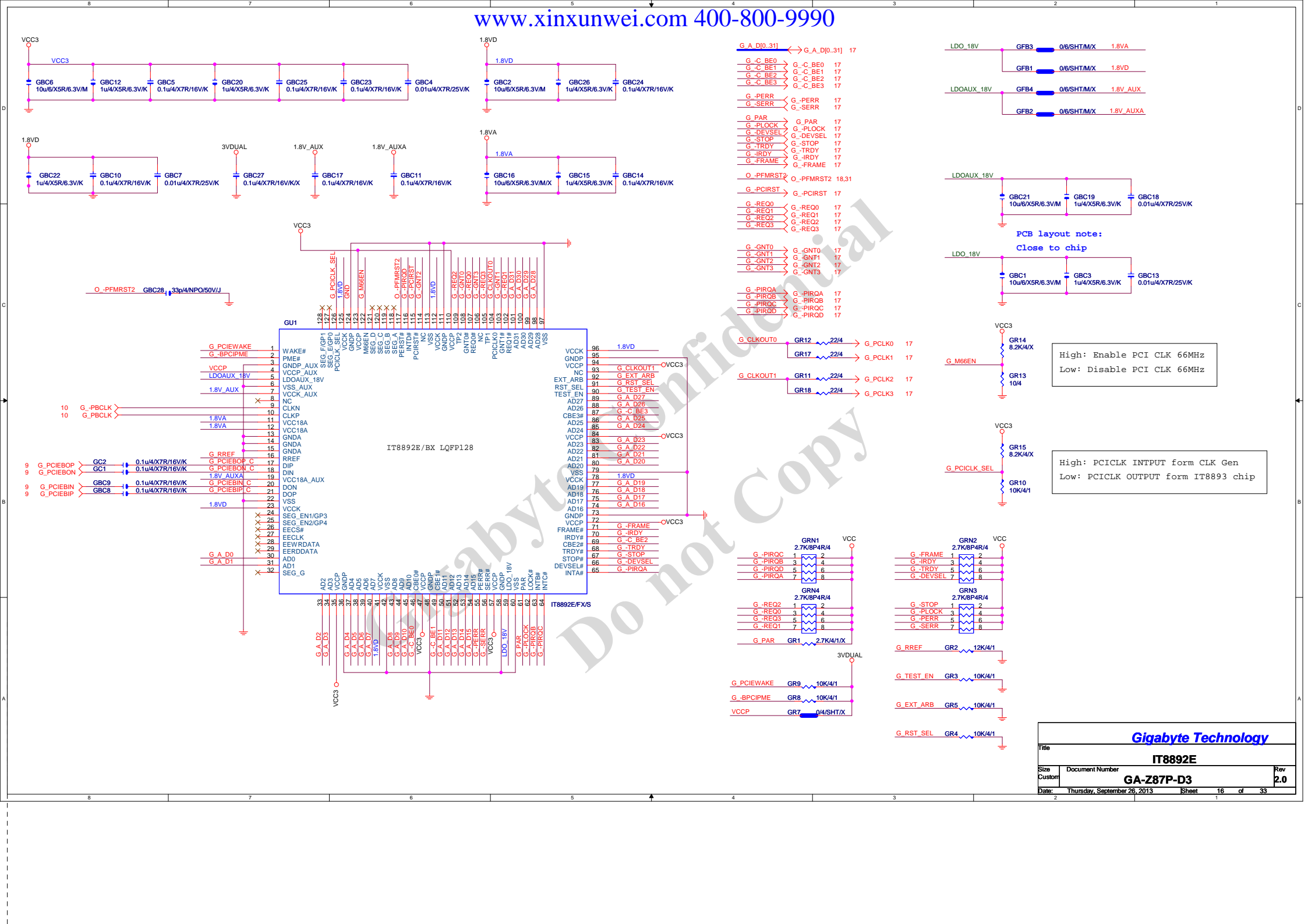
PA EXP RXP0[0..15]	>>>PA_EXP_RXP[0..15]	4
PA EXP RXN0[0..15]	>>>PA_EXP_RXN[0..15]	4
PA EXP TXP0[0..15]	>>>PA_EXP_TXP[0..15]	4
PA EXP TXN0[0..15]	>>>PA_EXP_TXN[0..15]	4

Gigabyte Technology

PCI EXPRESS * 16			
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PCHEX4

Gigabyte Technology			
PCIE_X1 1,2			
Size Custom	Document Number		Rev 2.0
GA-Z87P-D3			
Date:	Thursday, September 26, 2013	Sheet	15 of 33

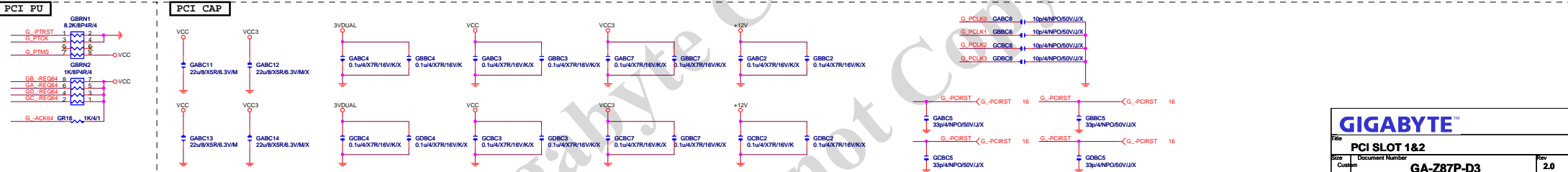
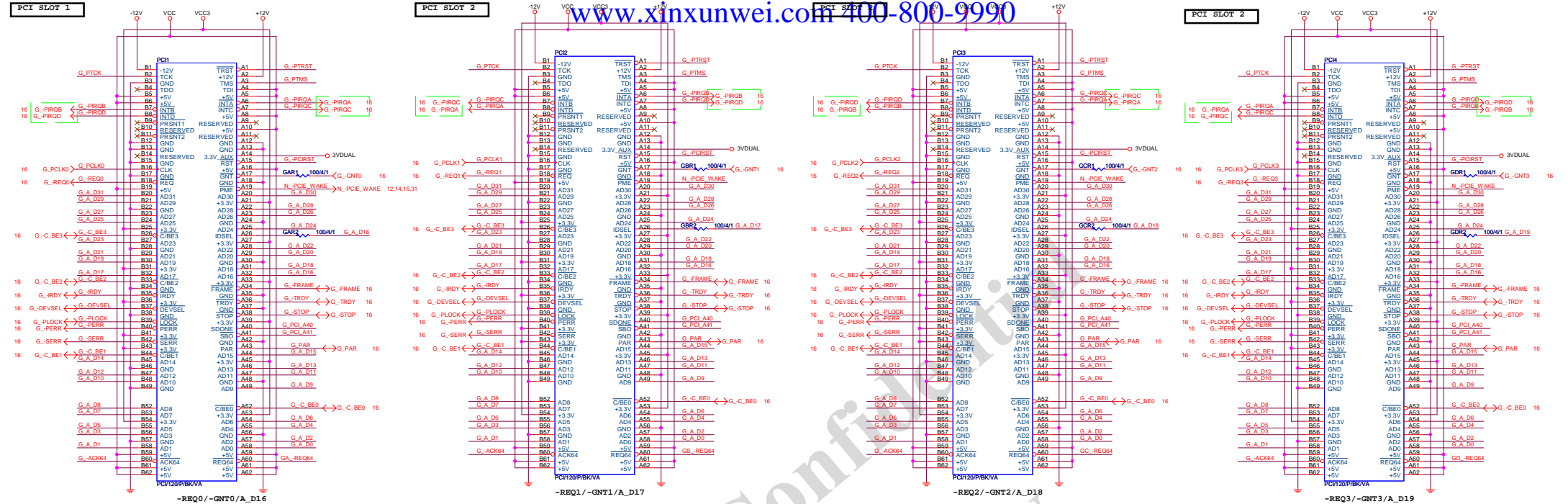


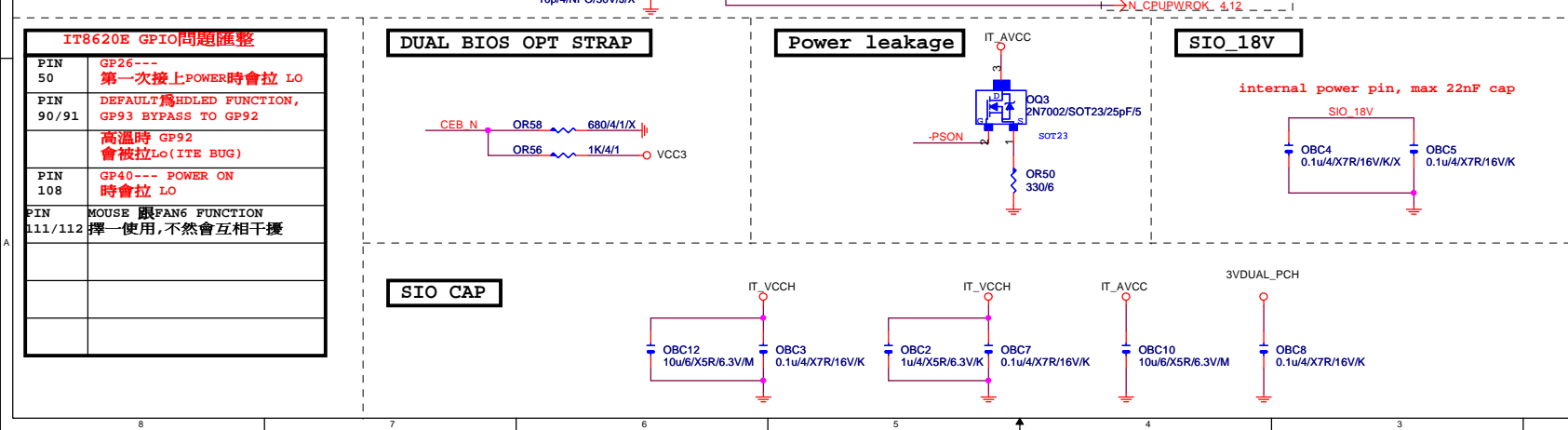
www.xinxunwei.com 400-800-9990

High: Enable PCI CLK 66MHz
Low: Disable PCI CLK 66MHz

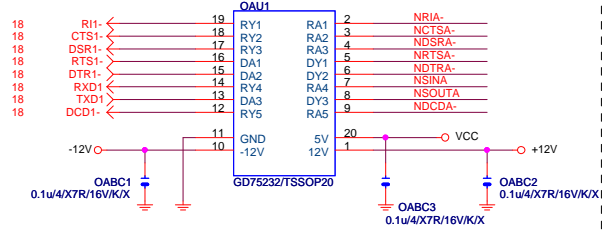
High: PCICLK INPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip

Gigabyte Technology		
Title		
IT8892E		
Size	Document Number	Rev
Custom	GA-Z87P-D3	2.0
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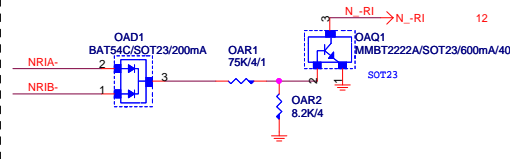




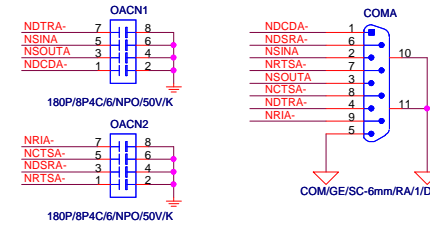
COMA



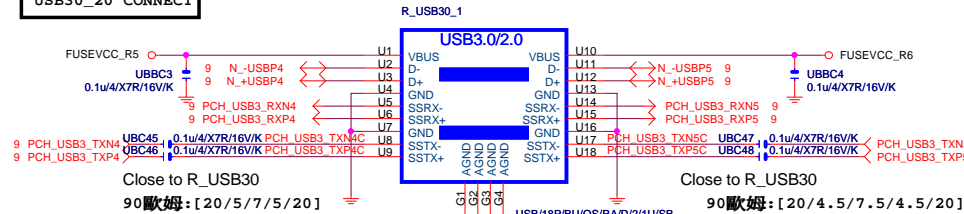
COM RT



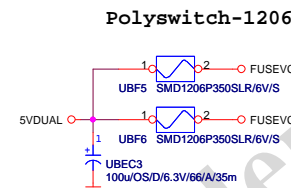
COM BUFFER



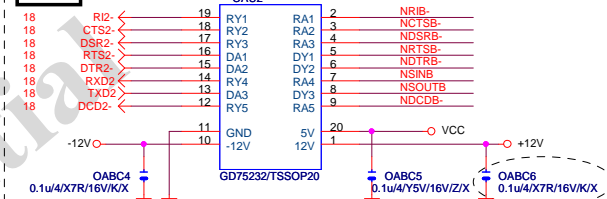
USB30_20 CONNECT



USB30 PWR

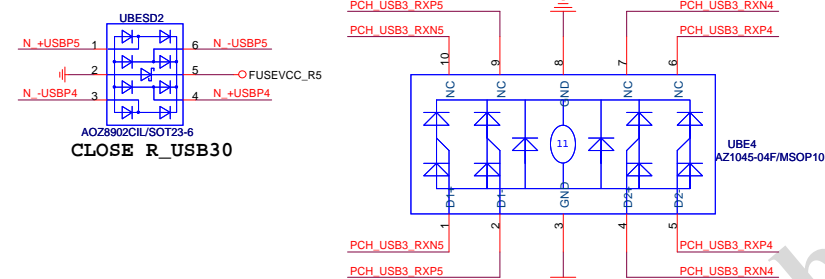


COMB

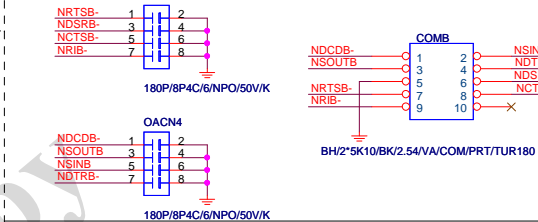


USB20 ESD PROTECT

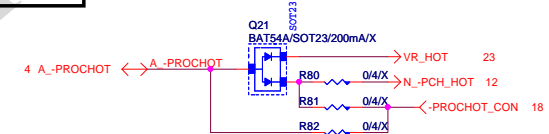
USB30 ESD PROTECT



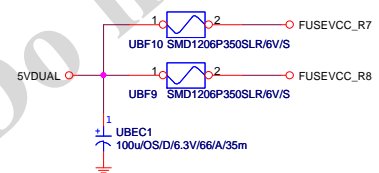
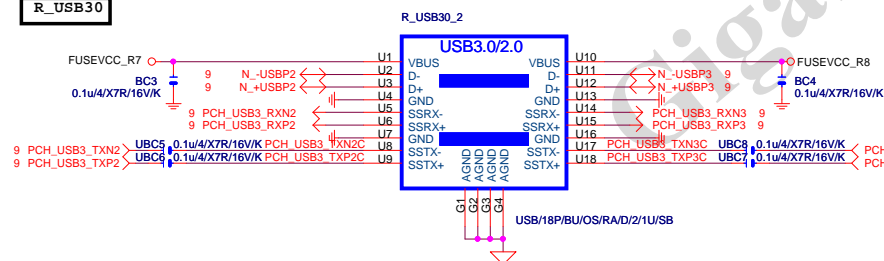
USB3.0 1Port - 1Fuse (3.5A)



-PROHOT

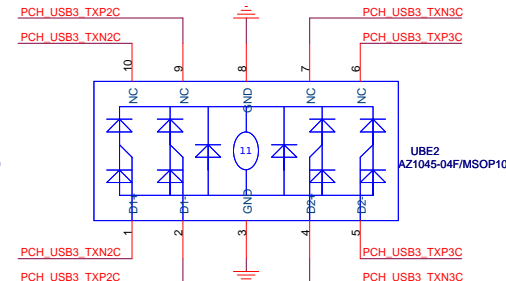
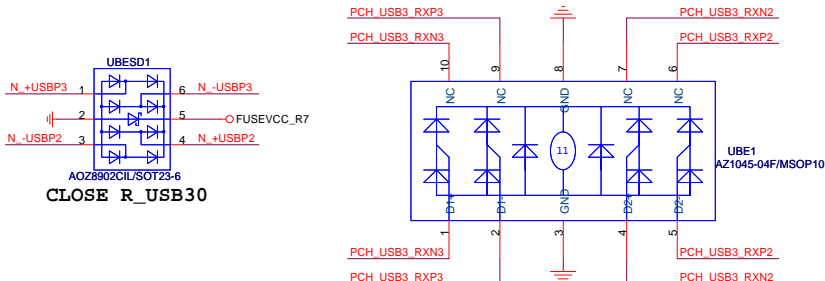


R_USB30



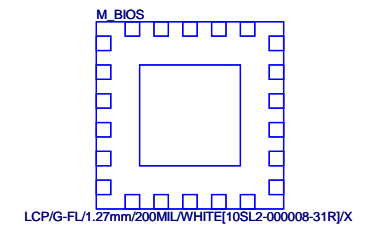
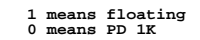
USB20 ESD PROTECT

USB30 ESD PROTECT



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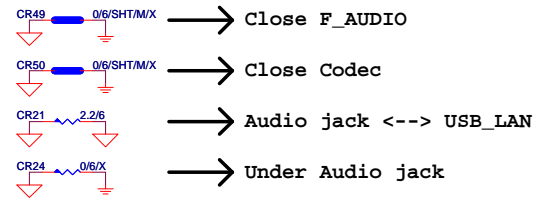
Title			COM/PROHOT/R_USB3
Size	Document Number	Rev	
Custom		GA-Z87P-D3	
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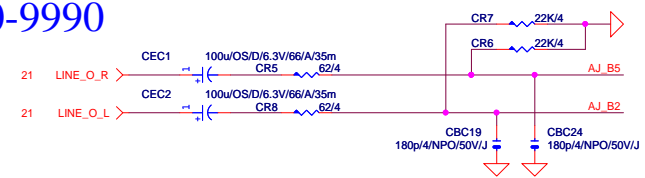
FOR ON/OFF PLAY



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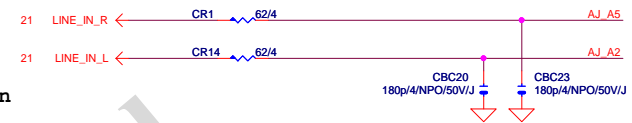
LINE-OUT



LINE-IN

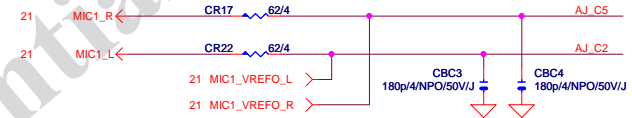
Verify MIC function
in LINE-in

Only reserved for ALC888



For 889A/888

MIC-IN

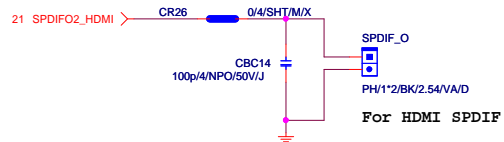


SURROUND

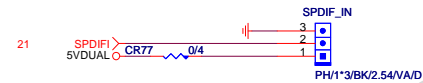
CEN/LFE

SURR BACK

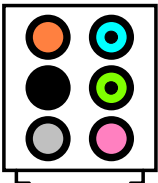
SPDIF_OUT



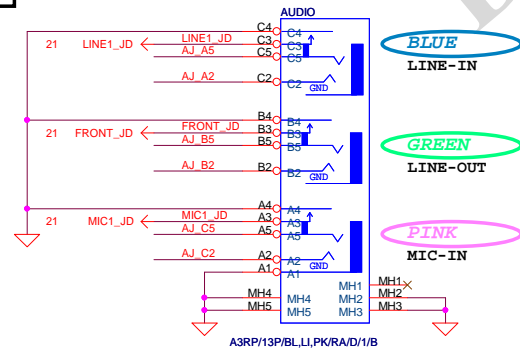
SPDIF_IN



AZALIA JACK



AZALIA JACK

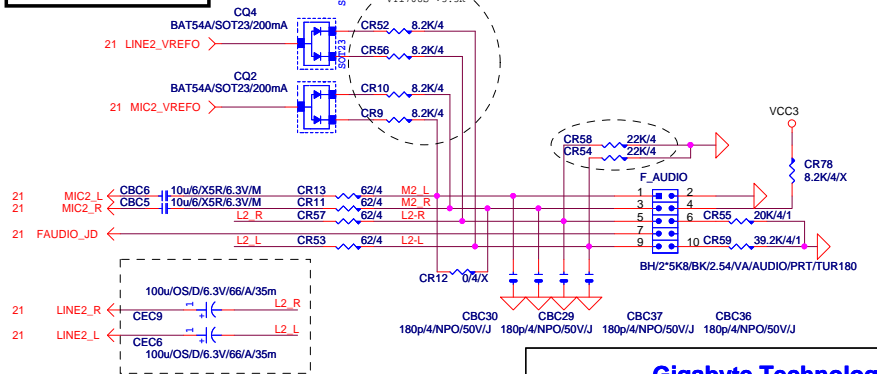


BLUE
LINE-IN

GREEN
LINE-OUT

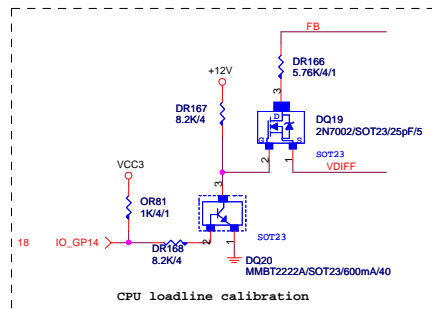
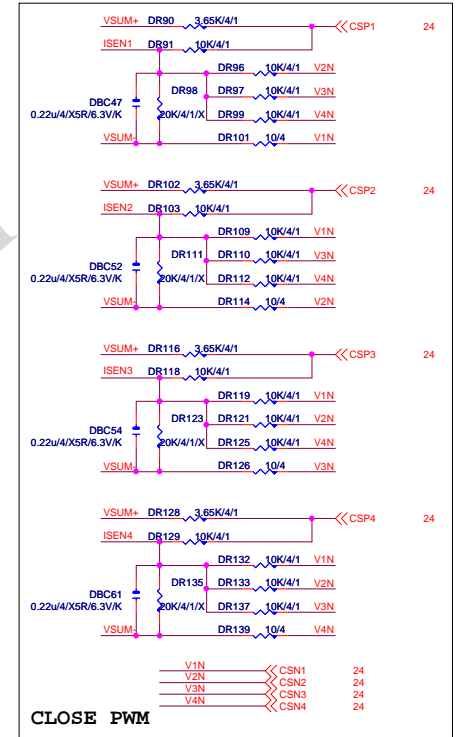
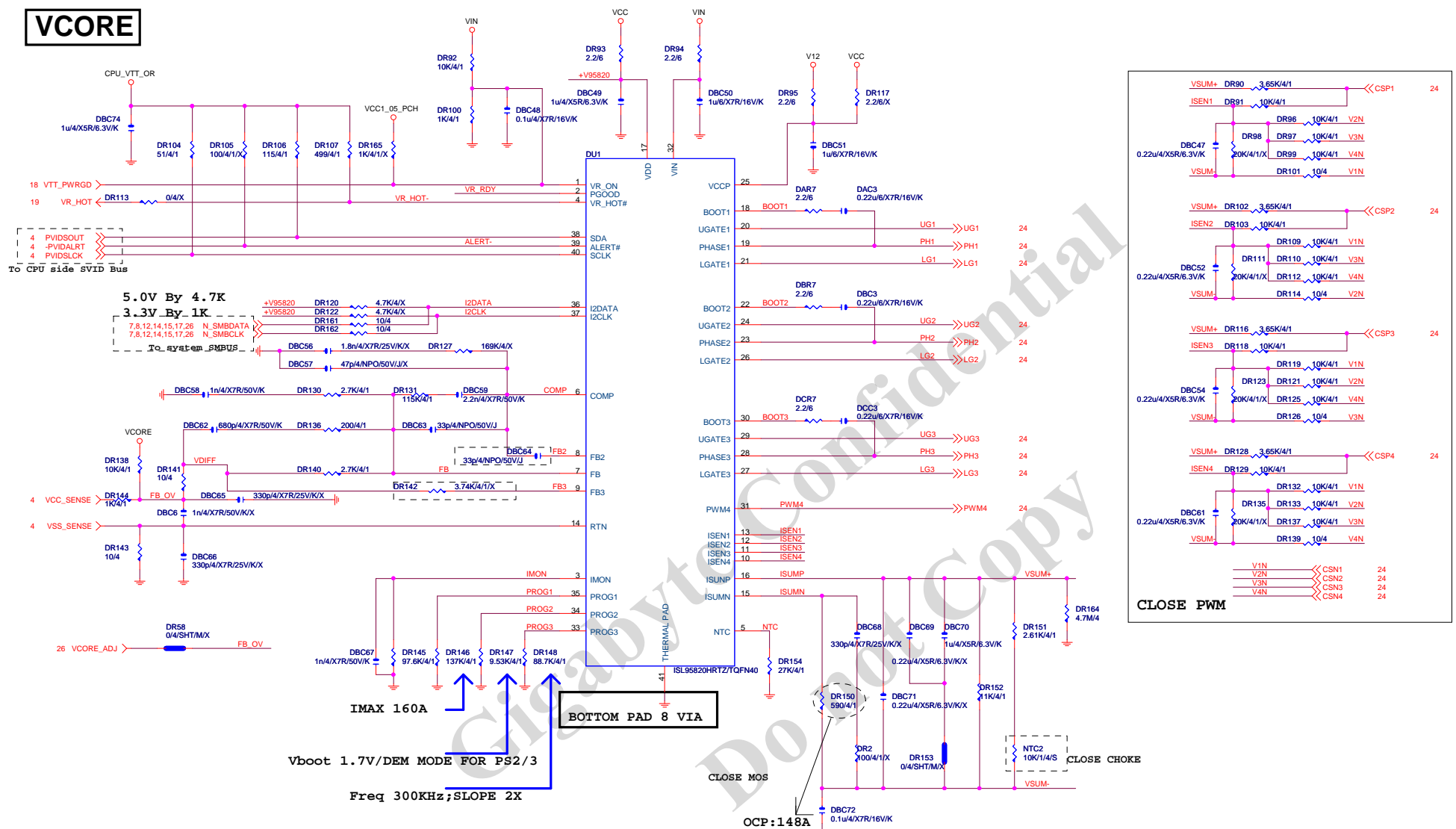
PINK
MIC-IN

AZALIA FRONT PANEL



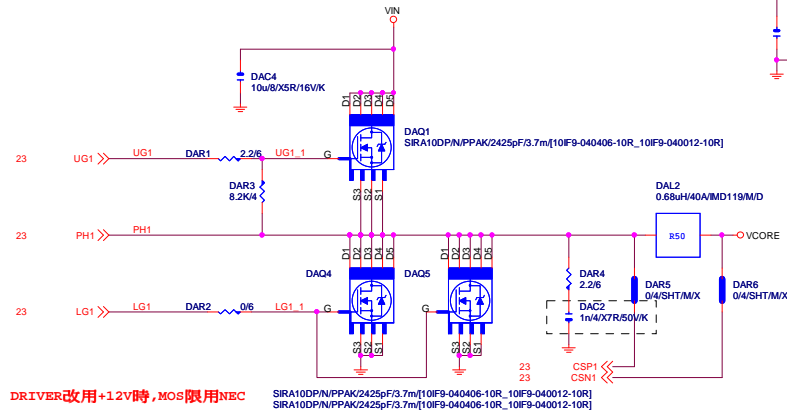
Gigabyte Technology

Title	AUDIO JACK		
Size	Document Number	GA-Z87P-D3	Rev
Custom			2.0
Date:	Thursday, September 26, 2013	Sheet	22 of 33

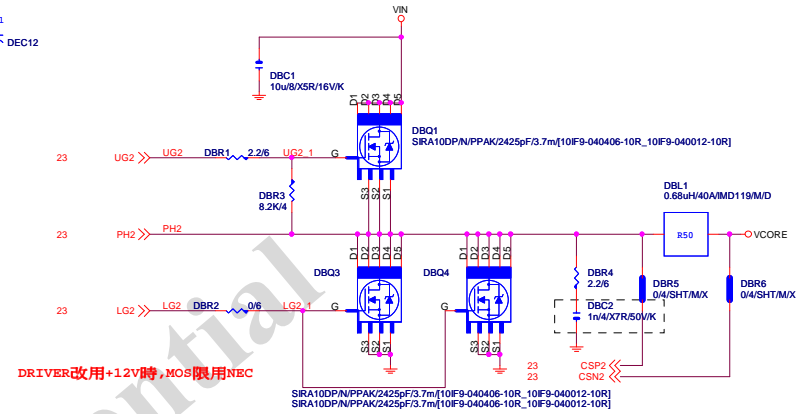
VCORE

VCORE

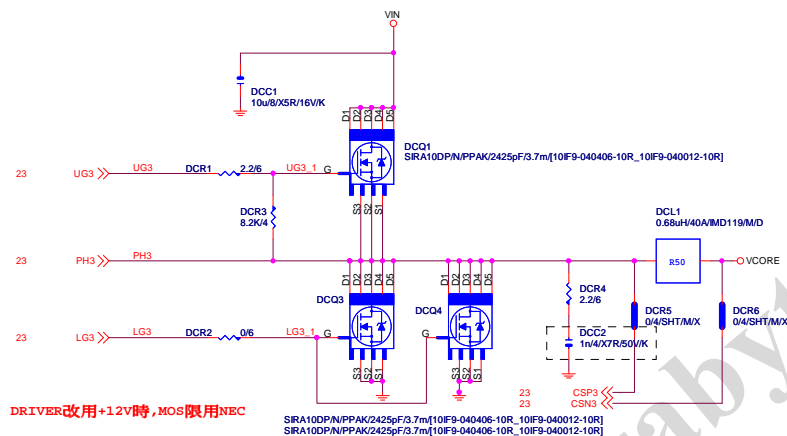
[1]



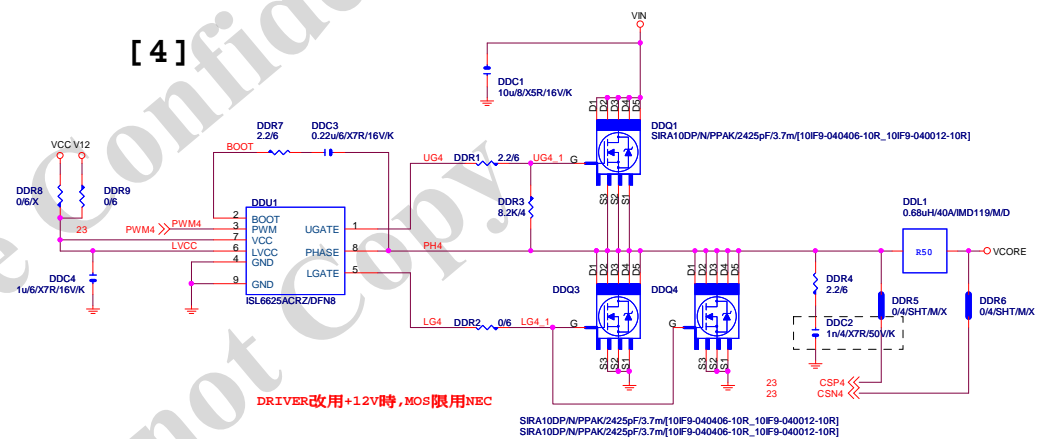
[2]



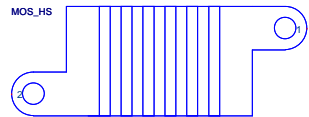
[3]



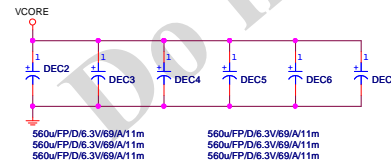
[4]



MOSFET HEATSINK



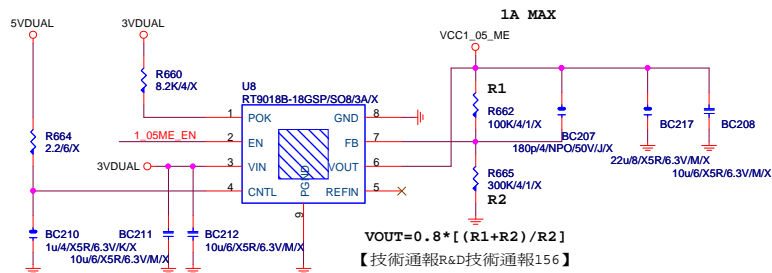
MOS_HeatSink[12SP2-S07517-01R_12SP2-S07517-02R_12SP2-S07517-03R]



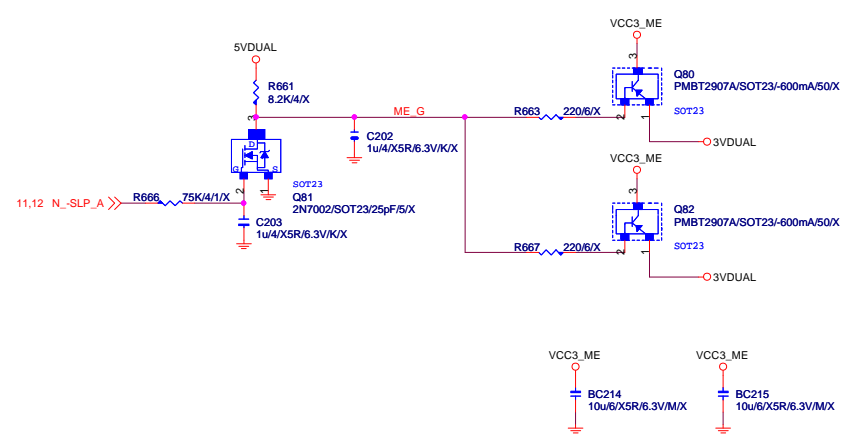
Gigabyte Technology

Title			ISL95820_2
Size	Document Number	GA-Z87P-D3	
Custom			Rev 2.0
Date:	Thursday, September 26, 2013	Sheet	24 of 33

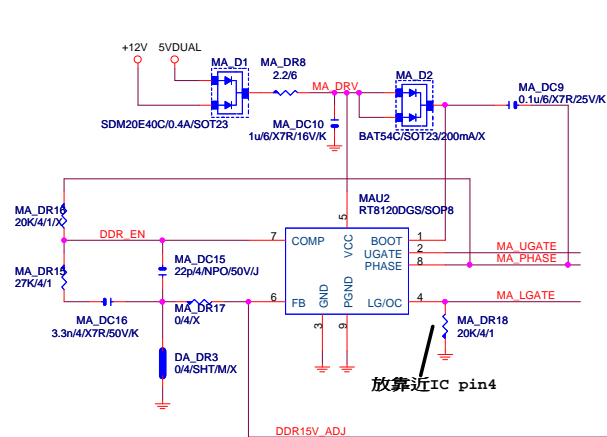
VCC1_05_ME



VCC3_ME1

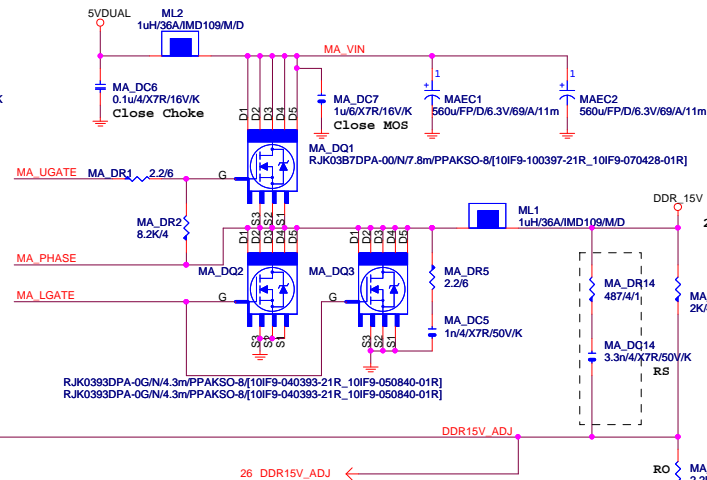


DDR_15V



PWR_SEQ

DDR_EN < DDR_EN_CON 18



VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1
IRMS=11.45A

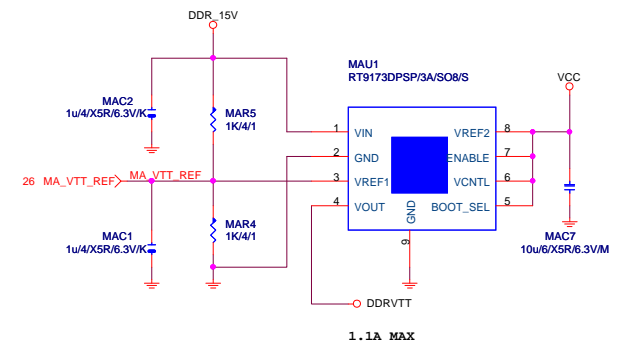
560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85°C), 1(105°C)

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



Remote sense請從最重的負載端點拉回

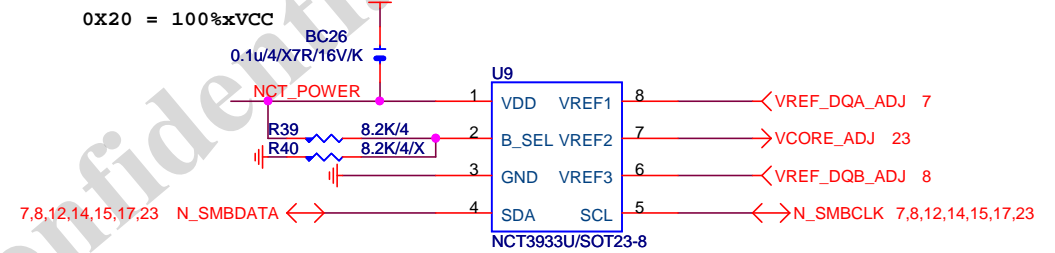
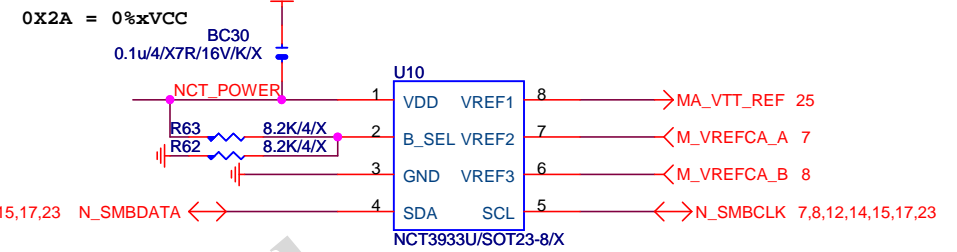
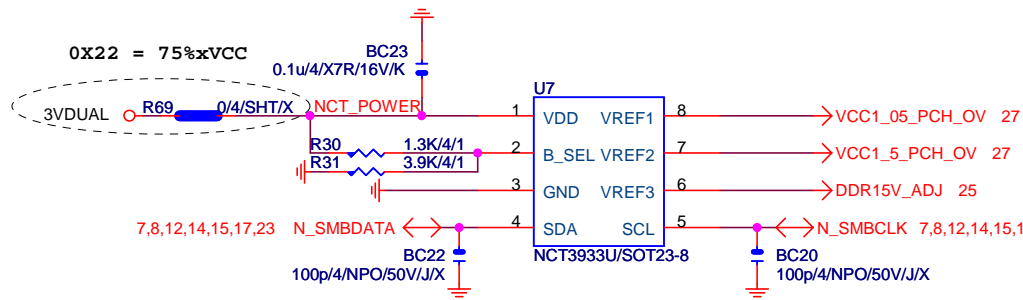
$$0.8 * (1 + RS / RO) = V_{out}$$

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

GIGABYTE™

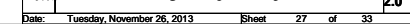
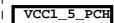
Title			
DDR15V / M3 POWER			
Size	Document Number	Rev	
Custom	GA-Z87P-D3	2.0	
Date:	Thursday, September 26, 2013	Sheet	25 of 33

OVER VOLTAGE

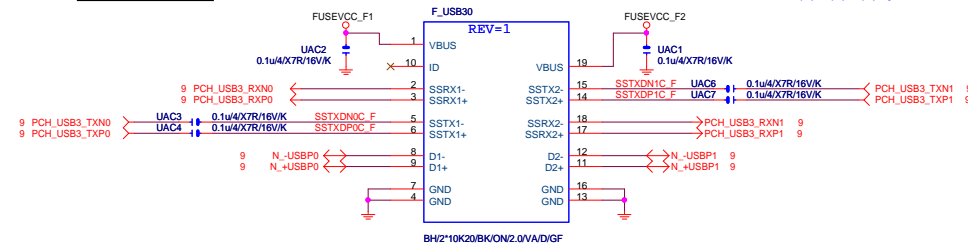


NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

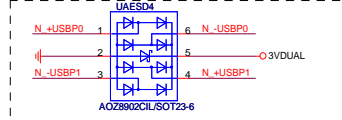
Gigabyte Technology		
Title CPU CORE VR-2		
Size Custom	Document Number GA-Z87P-D3	Rev 2.0
Date: Friday, September 27, 2013	Sheet 26 of 33	



Front USB3.0

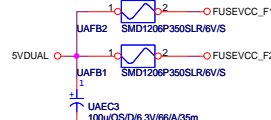


BLUE

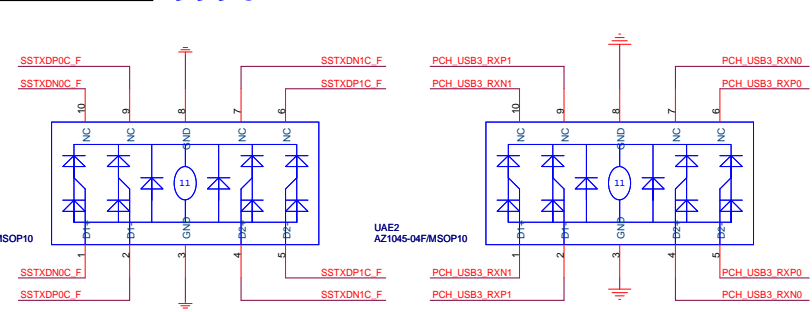


Close to connector

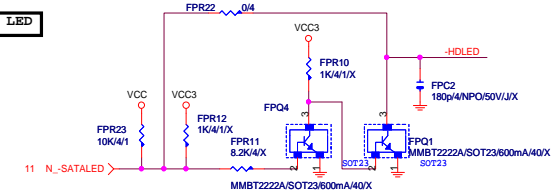
F_USB30 PWR



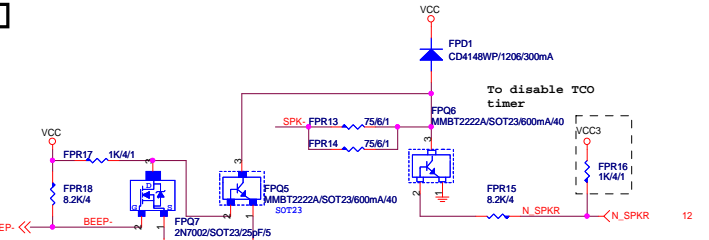
Front USB3.0



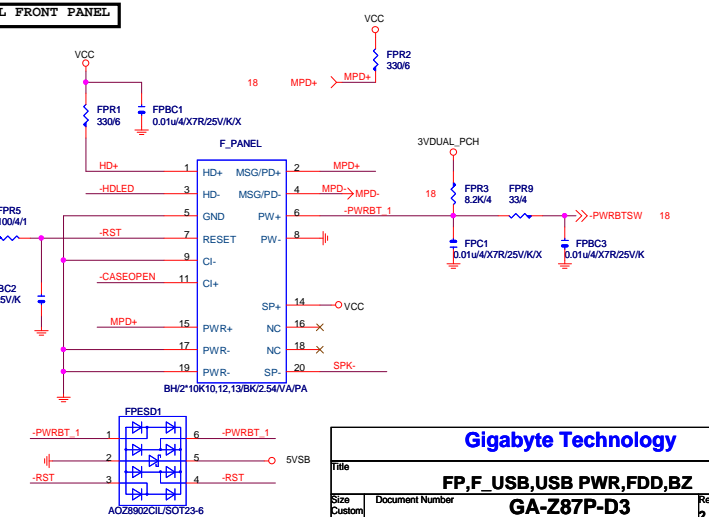
SATA LED



SPKR



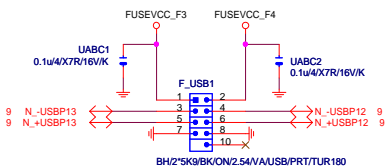
INTEL FRONT PANEL



Gigabyte Technology

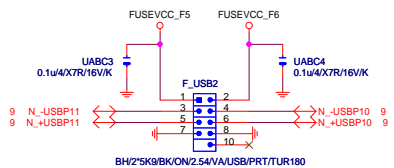
Title			
FP,F_USB,USB PWR,FDD,BZ			
Size Custom	Document Number		Rev
	GA-Z87P-D3		2.0
Date:	Thursday, December 12, 2013	Sheet	28 of 33

FRONT USB1



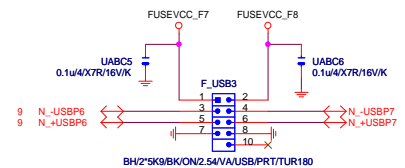
Close to connector

FRONT USB2



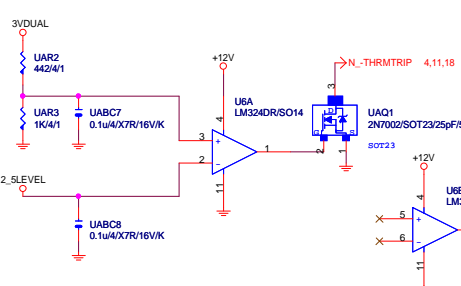
Close to connector

FRONT USB3

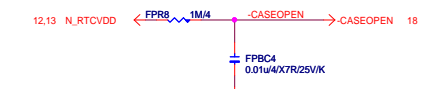


USB2.0 Signal & power short protection

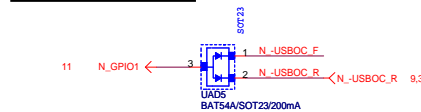
USB2.0 Signal > 4.85V
Enable --> 3VUUAL=3.75V



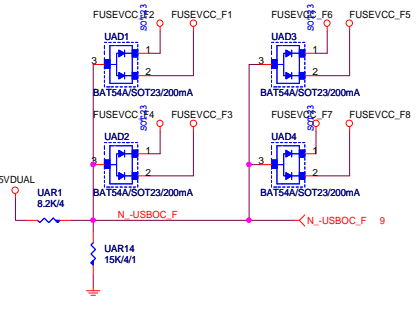
CASE OPEN



F_USB POWER PROTECT



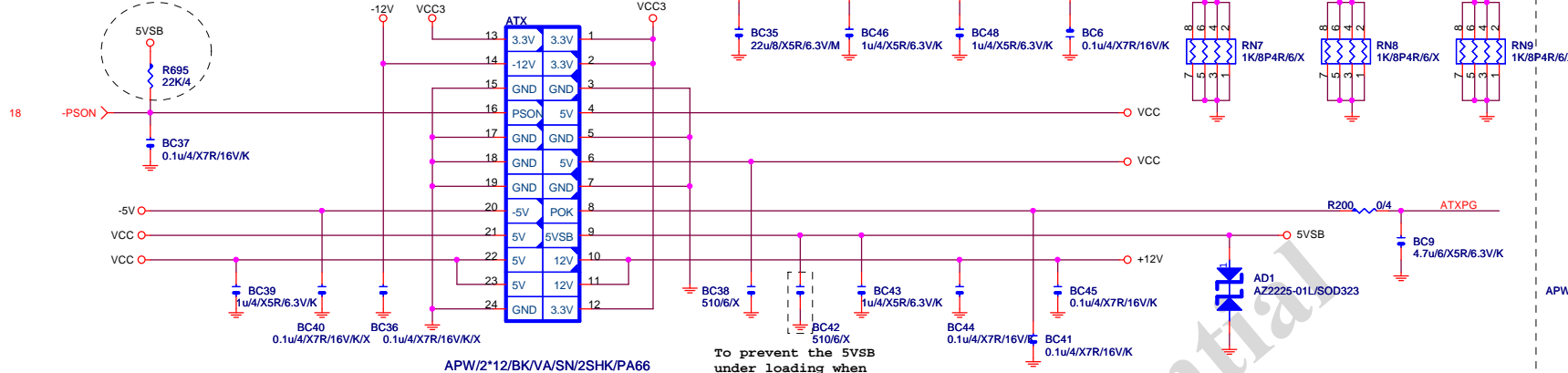
-USBOC_F



ATXX24 POWER CONNECTOR

ATXX4 POWER CONNECTOR

Patch some PSU no internal pull up resistor

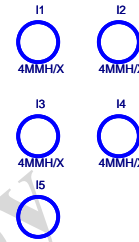
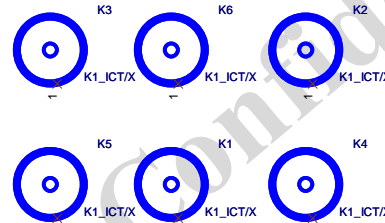
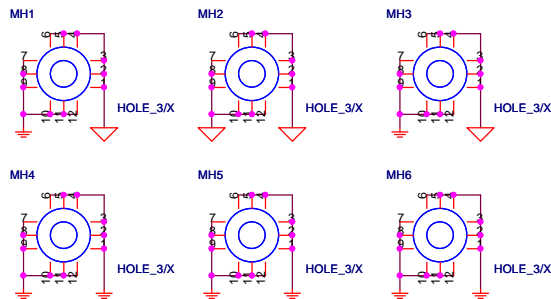
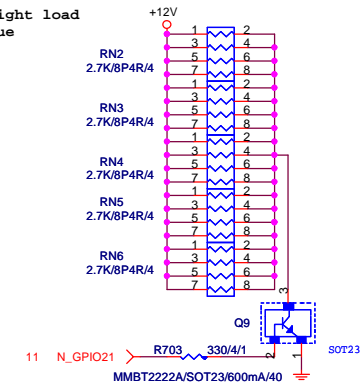


APW/2*12/BK/VA/SN/2SHK/PA66

To prevent the 5VSB under loading when boot

【技術通報R&D技術通報153】

To fix 12V light load abnormal issue

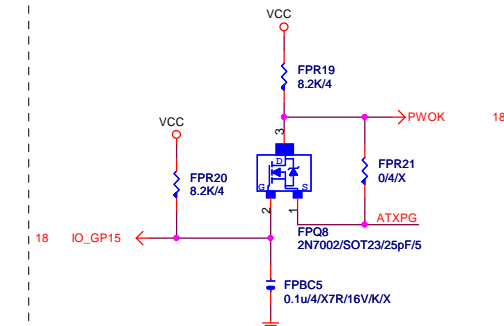


CPU Frequency Selection

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

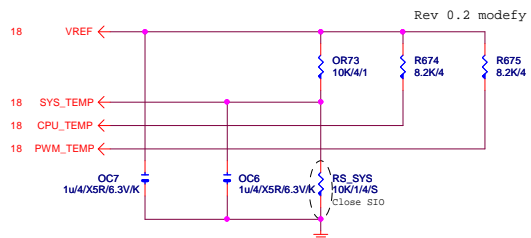
PWOK PATCH

【技術通報R&D技術通報154】

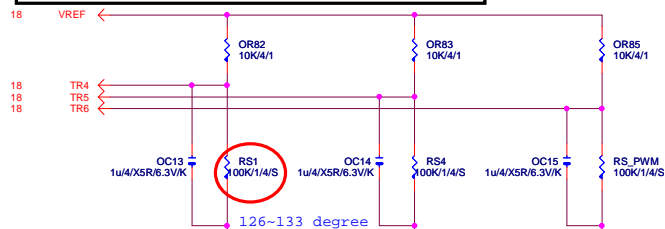


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TEMP H/W MONITOR

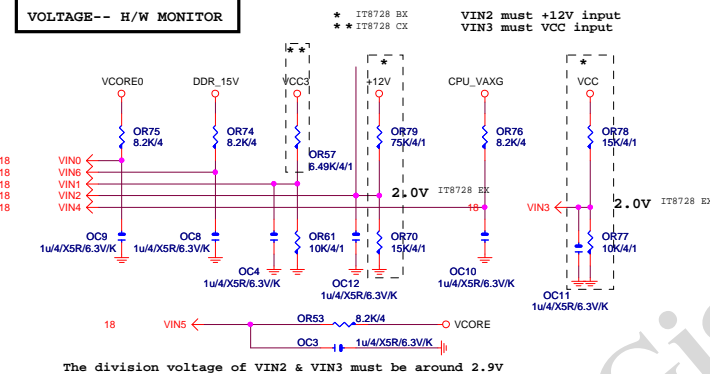


-PROCHOT:有mos heatsink不用prochot function

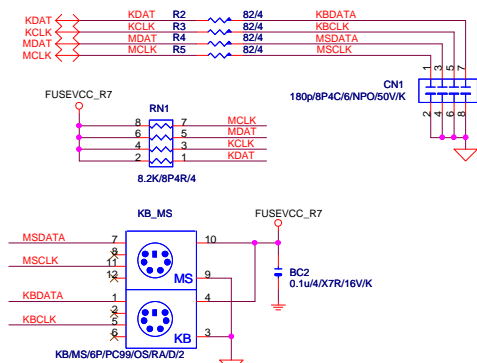


RS1、RS2、RS3 CLOSE CPU VR MOSFET

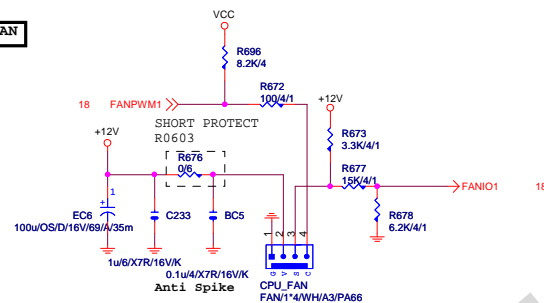
VOLTAGE-- H/W MONITOR



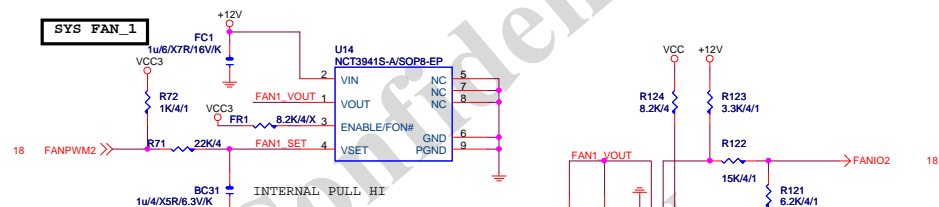
KB/USB



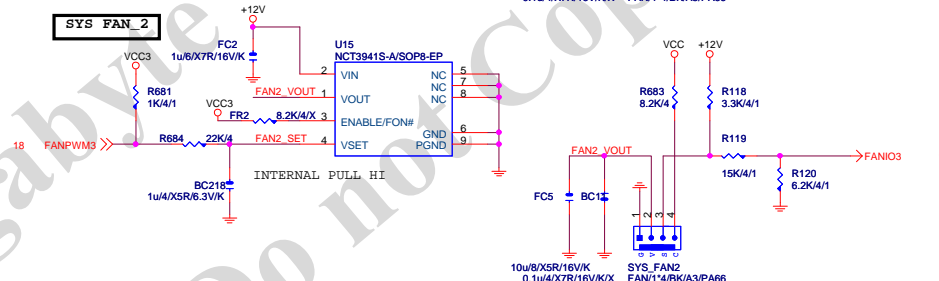
CPU SMART FAN



SYS_FAN_1

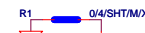
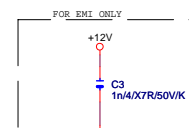
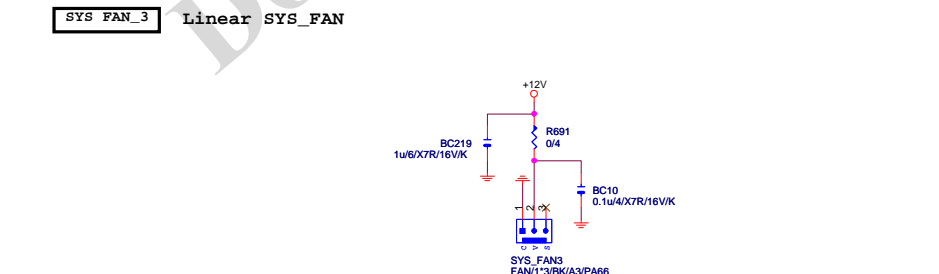


SYS_FAN_2



SYS_FAN_3

Linear SYS_FAN

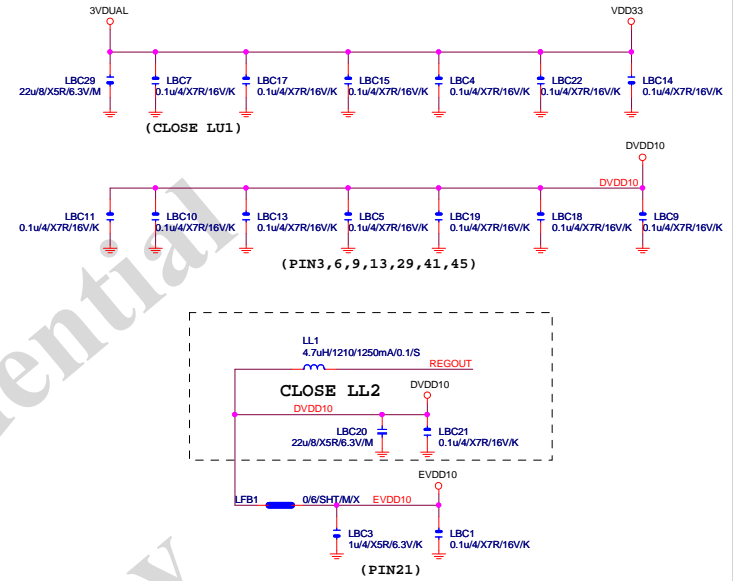
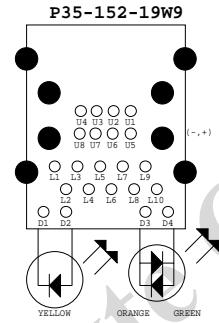
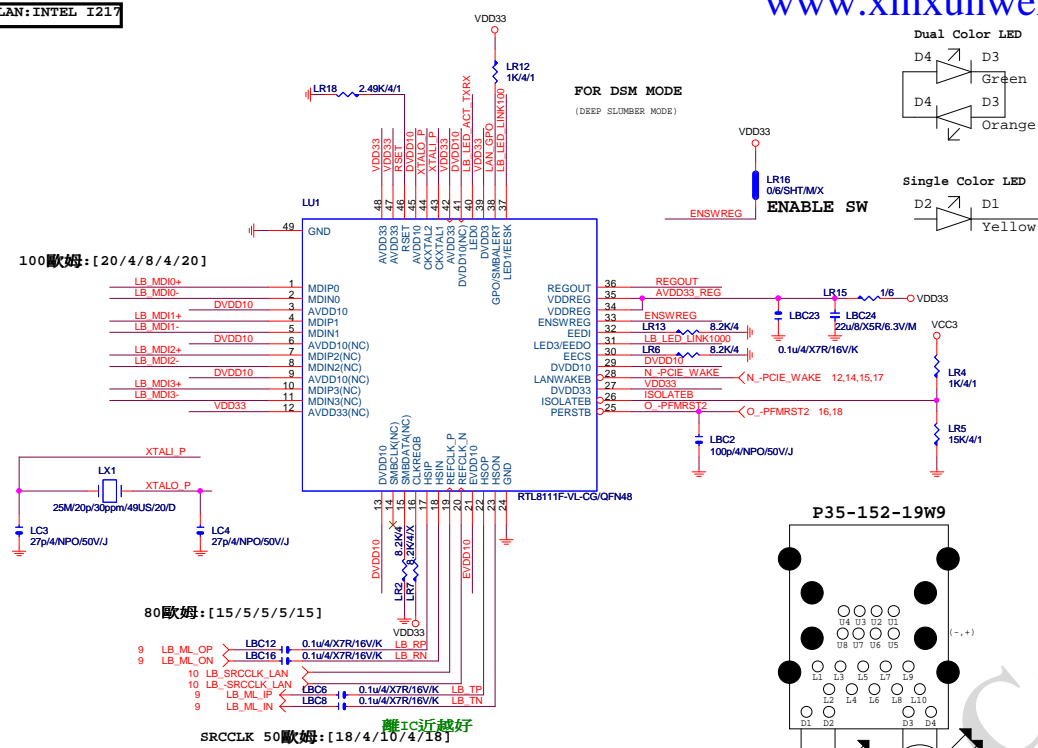


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HWM,KB/MS, FAN CTRL		
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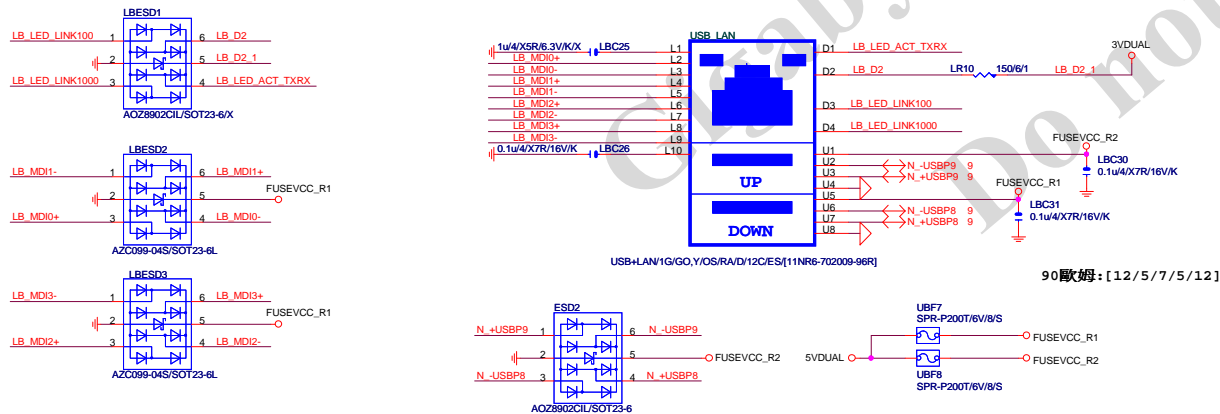
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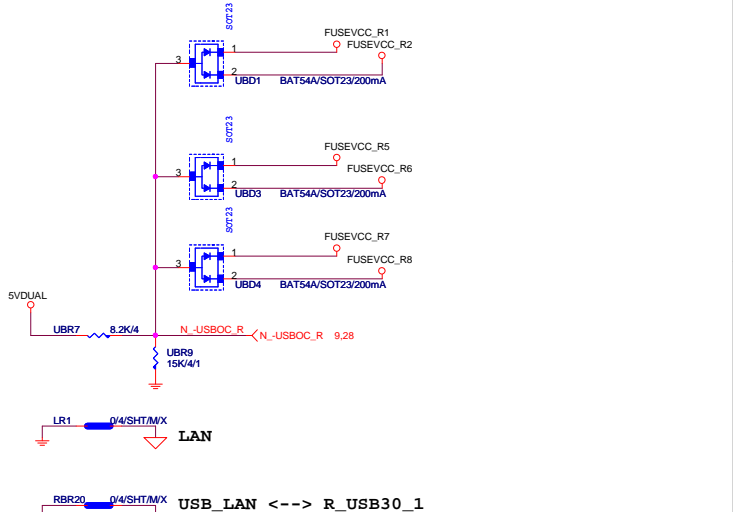


USB30_LAN CONNECTOR

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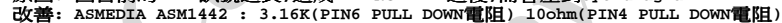


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