

Model Name: GA-X99-SOC Force-LN2 Rev 1.0

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04-06	CPU_LGA2011-DDR
07	CPU_LGA2011-CTRL
08	CPU_LGA2011-PCIE_DMI
09-10	CPU_LGA2011-PWR
11	PCH_SATA
12	PCH_GPIO_AUDIO
13	PCH_DMI_USB_PCIE
14-15	PCH_PWR_GND
16-17	DDR III CHANNEL A/B
18-19	DDR III CHANNEL C/D
20	PCI EXPRESS X16 SLOT 2
21	PCI EXPRESS X16 SLOT_1
22	PCI EXPRESSX16_X8 SWITCH
23	PCI EXPRESS X8 SLOT 2
24	PCI EXPRESS X8 SLOT 1
25	PCI EXPRESS X1
26	ITE 8620 SIO
27	DUAL BIOS
28	COMA
29-30	VCORE IR3580+3550
31	DDR CH A/B & CH C/D IR3553
32	VPP25 CH A/B & CH C/D IR3553
33	DDR CH A/B & VPP25 IR3570A
34	DDR CH C/D & VPP25 IR3570A
35	VCC1_05_WBG RT8120

SHEET TITLE

36-37	DISCRETE POWER
38	Front Panel
39	ATX power
40	HWM ,FAN CTRL
41	PCIE CLK BUFFER
42	IT8791 EC
43	IT8951
44	OC Button
45	80 port and PCIE_SE
46	EC FAN CTRL
47	CPU CLK BUFFER
48-49	AL1150 & AMP
50	INTEL LAN I217
51	LAN & AUDIO Connector
52	PS2/USB & HS
53-54	HUB & POWER (A)
55-56	HUB & POWER (B)
57	R_USB30_1 Connector
58	R_USB30_2 Connector
59	F_USB30 & F_USB20
60	ADS1118
61	M2 SLOT
62	Sound Level

D

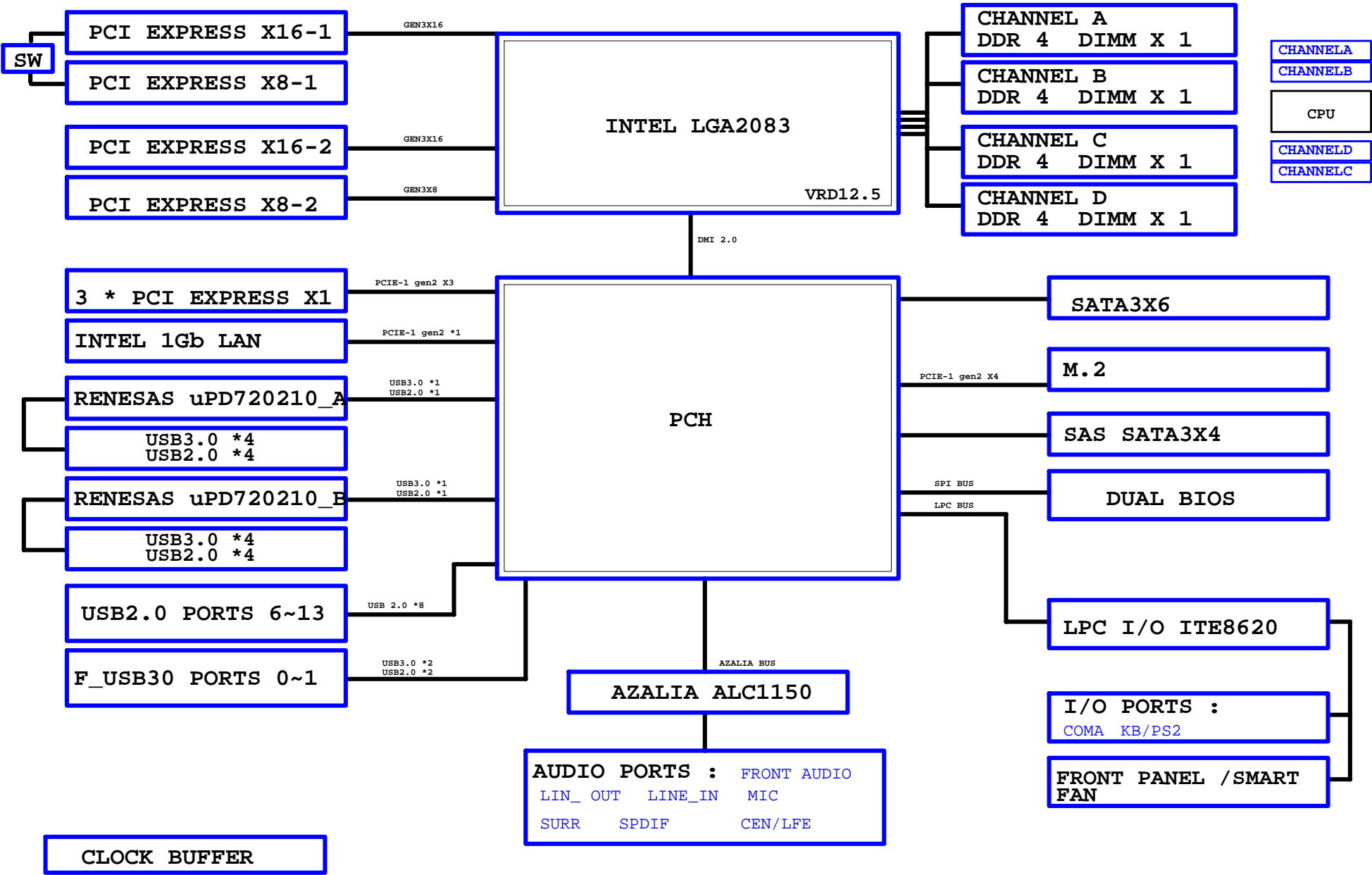
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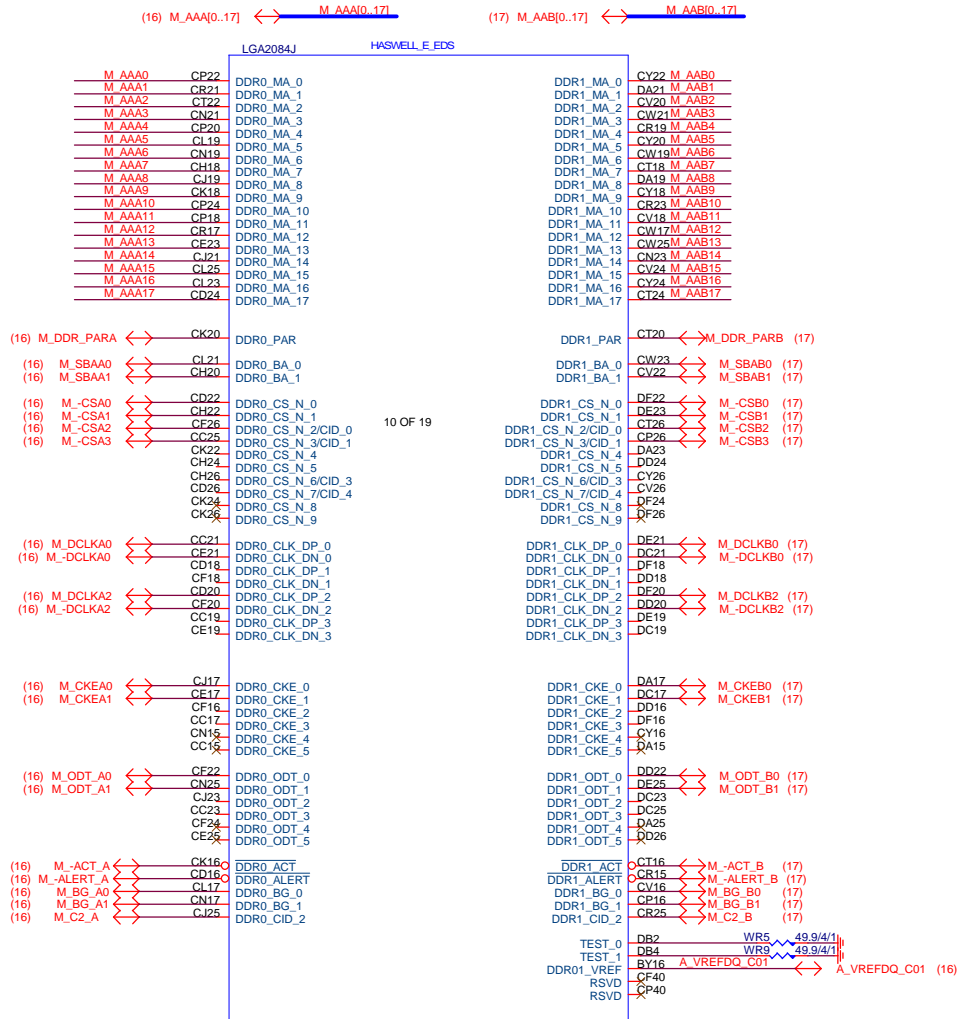
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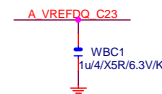
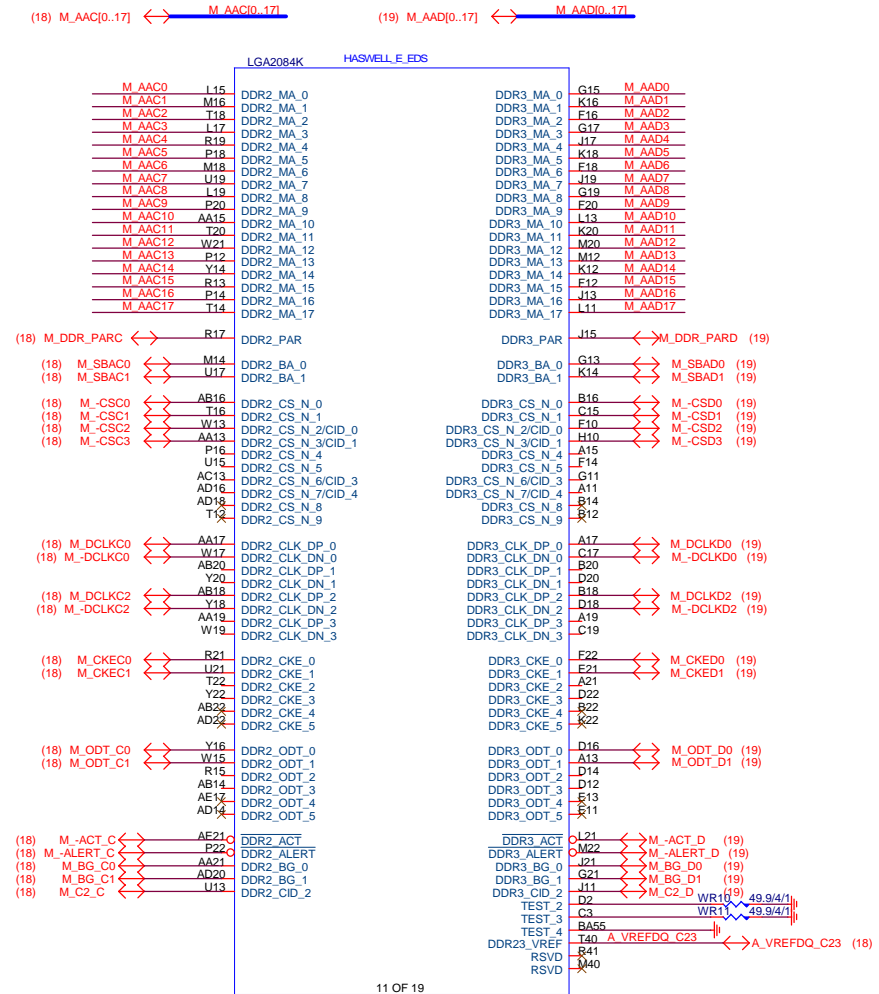
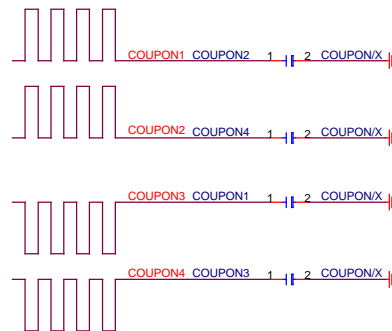
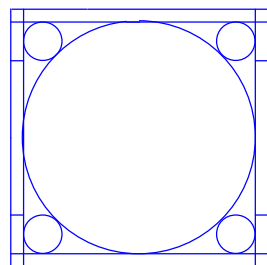
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BLOCK DIAGRAM





LGA2084
ILM_BP/2011/CSP12KRC-0F2011-61R]



CHANNEL A

LGA2084F		HASWELL_E_EDS	
M DA0	BU7	DDR0_DQ_0	BY6 M -DQSA0
M DA1	BT6	DDR0_DQ_1	BY6 M -DQSA0
M DA2	CA8	DDR0_DQ_2	
M DA3	CB8	DDR0_DQ_3	BY12 M -DQSA1
M DA4	BT8	DDR0_DQ_4	BY11 M -DQSA1
M DA5	BU8	DDR0_DQ_5	
M DA6	CA7	DDR0_DQ_6	CH10 M -DQSA2
M DA7	CB6	DDR0_DQ_7	CG11 M -DQSA2
M DA8	BT12	DDR0_DQ_8	
M DA9	BU11	DDR0_DQ_9	CK14 M -DQSA3
M DA10	BW13	DDR0_DQ_10	CL13 M -DQSA3
M DA11	BY14	DDR0_DQ_11	
M DA12	BT14	DDR0_DQ_12	CK30 M -DQSA4
M DA13	BU15	DDR0_DQ_13	CM30 M -DQSA4
M DA14	CA11	DDR0_DQ_14	
M DA15	BY12	DDR0_DQ_15	CD30 M -DQSA5
M DA16	CE9	DDR0_DQ_16	CF30 M -DQSA5
M DA17	CF8	DDR0_DQ_17	
M DA18	CK10	DDR0_DQ_18	CC37 M -DQSA6
M DA19	CL11	DDR0_DQ_19	CE37 M -DQSA6
M DA20	CD10	DDR0_DQ_20	
M DA21	CE11	DDR0_DQ_21	CJ37 M -DQSA7
M DA22	CK8	DDR0_DQ_22	CL37 M -DQSA7
M DA23	CJ8	DDR0_DQ_23	
M DA24	CE13	DDR0_DQ_24	CV10
M DA25	CG15	DDR0_DQ_25	CT10
M DA26	CM14	DDR0_DQ_26	
M DA27	CH14	DDR0_DQ_27	BV8
M DA28	CC13	DDR0_DQ_28	BW9
M DA29	CD14	DDR0_DQ_29	
M DA30	CM12	DDR0_DQ_30	BU13
M DA31	CL13	DDR0_DQ_31	BV14
M DA32	CK28	DDR0_DQ_32	
M DA33	CH28	DDR0_DQ_33	CG9
M DA34	CK32	DDR0_DQ_34	CH8
M DA35	CH32	DDR0_DQ_35	
M DA36	CL27	DDR0_DQ_36	CG13
M DA37	CJ27	DDR0_DQ_37	CF14
M DA38	CL31	DDR0_DQ_38	
M DA39	CJ31	DDR0_DQ_39	CL29
M DA40	CD28	DDR0_DQ_40	CV29
M DA41	CB28	DDR0_DQ_41	
M DA42	CD32	DDR0_DQ_42	CE29
M DA43	CB32	DDR0_DQ_43	CC29
M DA44	CE27	DDR0_DQ_44	
M DA45	CG27	DDR0_DQ_45	CF36
M DA46	CE31	DDR0_DQ_46	CD36
M DA47	CC31	DDR0_DQ_47	
M DA48	CE35	DDR0_DQ_48	CM36
M DA49	CC35	DDR0_DQ_49	CK36
M DA50	CE38	DDR0_DQ_50	
M DA51	CC39	DDR0_DQ_51	CU9
M DA52	CE34	DDR0_DQ_52	CV9
M DA53	CD34	DDR0_DQ_53	
M DA54	CF38	DDR0_DQ_54	
M DA55	CD38	DDR0_DQ_55	
M DA56	CL35	DDR0_DQ_56	
M DA57	CJ35	DDR0_DQ_57	
M DA58	CL39	DDR0_DQ_58	
M DA59	CJ39	DDR0_DQ_59	
M DA60	CM34	DDR0_DQ_60	
M DA61	CK34	DDR0_DQ_61	
M DA62	CM38	DDR0_DQ_62	
M DA63	CK38	DDR0_DQ_63	
CT8		DDR0_ECC_0	
CV8		DDR0_ECC_1	
CW13		DDR0_ECC_2	
CU13		DDR0_ECC_3	
CP8		DDR0_ECC_4	
CN8		DDR0_ECC_5	
CP10		DDR0_ECC_6	
CR13		DDR0_ECC_7	

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(16) M_DQSA[0..7] <-- M_DQSA[0..7]

(16) M_-DQSA[0..7] <-- M_-DQSA[0..7]

CHANNEL B

LGA2084G		HASWELL_E_EDS	
M DB0	BV4	DDR1_DQ_0	BY4 M -DQSB0
M DB1	BU1	DDR1_DQ_1	BW3 M -DQSB0
M DB2	CA3	DDR1_DQ_2	
M DB3	CB4	DDR1_DQ_3	CJ5 M -DQSB1
M DB4	BT4	DDR1_DQ_4	CH6 M -DQSB1
M DB5	BT2	DDR1_DQ_5	
M DB6	CA1	DDR1_DQ_6	CT4 M -DQSB2
M DB7	BY2	DDR1_DQ_7	CV4 M -DQSB2
M DB8	CE3	DDR1_DQ_8	
M DB9	CF4	DDR1_DQ_9	DB10 M -DQSB3
M DB10	CL5	DDR1_DQ_10	DC9 M -DQSB3
M DB11	CM4	DDR1_DQ_11	
M DB12	CE5	DDR1_DQ_12	CT30 M -DQSB4
M DB13	CF6	DDR1_DQ_13	CV30 M -DQSB4
M DB14	CK6	DDR1_DQ_14	
M DB15	CL3	DDR1_DQ_15	DD32 M -DQSB5
M DB16	CR3	DDR1_DQ_16	DB32 M -DQSB5
M DB17	CV2	DDR1_DQ_17	
M DB18	CT6	DDR1_DQ_18	DB37 M -DQSB6
M DB19	CB6	DDR1_DQ_19	CJ37 M -DQSB6
M DB20	CR1	DDR1_DQ_20	
M DB21	CP2	DDR1_DQ_21	DB38 M -DQSB7
M DB22	CU5	DDR1_DQ_22	DA37 M -DQSB7
M DB23	CR5	DDR1_DQ_23	
M DB24	DA7	DDR1_DQ_24	DB14
M DB25	DB8	DDR1_DQ_25	DA13
M DB26	DE11	DDR1_DQ_26	
M DB27	DC11	DDR1_DQ_27	BV2
M DB28	DA5	DDR1_DQ_28	BW1
M DB29	CE6	DDR1_DQ_29	
M DB30	DE9	DDR1_DQ_30	CH4
M DB31	DE10	DDR1_DQ_31	CG3
M DB32	CT28	DDR1_DQ_32	
M DB33	CP28	DDR1_DQ_33	CW3
M DB34	CT32	DDR1_DQ_34	CU3
M DB35	CP32	DDR1_DQ_35	
M DB36	CU27	DDR1_DQ_36	DC7
M DB37	CR27	DDR1_DQ_37	DD8
M DB38	CU31	DDR1_DQ_38	
M DB39	CR31	DDR1_DQ_39	CU29
M DB40	DA29	DDR1_DQ_40	CR29
M DB41	DB30	DDR1_DQ_41	
M DB42	DC33	DDR1_DQ_42	DA31
M DB43	DE34	DDR1_DQ_43	CY32
M DB44	DB28	DDR1_DQ_44	
M DB45	CY28	DDR1_DQ_45	CV36
M DB46	DA33	DDR1_DQ_46	CT36
M DB47	DE33	DDR1_DQ_47	
M DB48	CU35	DDR1_DQ_48	DD36
M DB49	CR35	DDR1_DQ_49	DE37
M DB50	CU39	DDR1_DQ_50	
M DB51	CR39	DDR1_DQ_51	CW13
M DB52	CV34	DDR1_DQ_52	CY14
M DB53	CT34	DDR1_DQ_53	
M DB54	CV38	DDR1_DQ_54	
M DB55	CT39	DDR1_DQ_55	
M DB56	DC37	DDR1_DQ_56	
M DB57	DE36	DDR1_DQ_57	
M DB58	DC39	DDR1_DQ_58	
M DB59	DA39	DDR1_DQ_59	
M DB60	DC35	DDR1_DQ_60	
M DB61	DB36	DDR1_DQ_61	
M DB62	DE38	DDR1_DQ_62	
M DB63	DE39	DDR1_DQ_63	
CU13		DDR1_ECC_0	
CV13		DDR1_ECC_1	
DD13		DDR1_ECC_2	
DF14		DDR1_ECC_3	
CR13		DDR1_ECC_4	
CT14		DDR1_ECC_5	
DC13		DDR1_ECC_6	
DE13		DDR1_ECC_7	

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(17) M_DB[0..63] <-- M_DB[0..63]

(17) M_DQSB[0..7] <-- M_DQSB[0..7]

(17) M_-DQSB[0..7] <-- M_-DQSB[0..7]

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Title			CPU LGA2011-A		
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CHANNEL C

LGA2084H HASWELL_E_EDS

M DC0	AD38	DDR2_DQ_0	DDR2_QQS_DP_0	V38	M_DQSC0
M DC1	AA37	DDR2_DQ_1	DDR2_QQS_DN_0	W37	M_-DQSC0
M DC2	R37	DDR2_DQ_2			
M DC3	Y38	DDR2_DQ_3	DDR2_QQS_DP_1	U31	M_DQSC1
M DC4	AE37	DDR2_DQ_4	DDR2_QQS_DN_1	V32	M_-DQSC1
M DC5	AC38	DDR2_DQ_5			
M DC6	T38	DDR2_DQ_6		AB32	M_DQSC2
M DC7	U37	DDR2_DQ_7	DDR2_QQS_DP_2	AD32	M_-DQSC2
M DC8	V34	DDR2_DQ_8			
M DC9	U33	DDR2_DQ_9		U25	M_DQSC3
M DC10	V30	DDR2_DQ_10	DDR2_QQS_DP_3	W25	M_-DQSC3
M DC11	T30	DDR2_DQ_11	DDR2_QQS_DN_3		
M DC12	U35	DDR2_DQ_12		N7	M_DQSC4
M DC13	R35	DDR2_DQ_13	DDR2_QQS_DP_4	P8	M_-DQSC4
M DC14	T32	DDR2_DQ_14	DDR2_QQS_DN_4		
M DC15	W31	DDR2_DQ_15		AB10	M_DQSC5
M DC16	AD34	DDR2_DQ_16	DDR2_QQS_DP_5	Y10	M_-DQSC5
M DC17	AB34	DDR2_DQ_17			
M DC18	AD30	DDR2_DQ_18	DDR2_QQS_DP_6	AH12	M_DQSC6
M DC19	AB30	DDR2_DQ_19	DDR2_QQS_DN_6	AJ13	M_-DQSC6
M DC20	AC35	DDR2_DQ_20			
M DC21	AA35	DDR2_DQ_21	DDR2_QQS_DP_7	AJ7	M_DQSC7
M DC22	AE31	DDR2_DQ_22	DDR2_QQS_DN_7	AH8	M_-DQSC7
M DC23	AC31	DDR2_DQ_23			
M DC24	U27	DDR2_DQ_24	DDR2_QQS_DP_8	AC25	
M DC25	R27	DDR2_DQ_25	DDR2_QQS_DN_8	AE25	
M DC26	U23	DDR2_DQ_26			
M DC27	R23	DDR2_DQ_27	DDR2_QQS_DP_9	AB38	
M DC28	V28	DDR2_DQ_28	DDR2_QQS_DN_9	AC37	
M DC29	T28	DDR2_DQ_29			
M DC30	V24	DDR2_DQ_30	DDR2_QQS_DP_10	T34	
M DC31	T24	DDR2_DQ_31	DDR2_QQS_DN_10	R33	
M DC32	N8	DDR2_DQ_32			
M DC33	K8	DDR2_DQ_33	DDR2_QQS_DP_11	AC33	
M DC34	R7	DDR2_DQ_34	DDR2_QQS_DN_11	AA33	
M DC35	P6	DDR2_DQ_35			
M DC36	J8	DDR2_DQ_36	DDR2_QQS_DP_12	V26	
M DC37	L9	DDR2_DQ_37	DDR2_QQS_DN_12	X26	
M DC38	K6	DDR2_DQ_38			
M DC39	M6	DDR2_DQ_39	DDR2_QQS_DP_13	M8	
M DC40	U8	DDR2_DQ_40	DDR2_QQS_DN_13	L7	
M DC41	W11	DDR2_DQ_41			
M DC42	AA11	DDR2_DQ_42	DDR2_QQS_DP_14	V8	
M DC43	AB8	DDR2_DQ_43	DDR2_QQS_DN_14	X9	
M DC44	T10	DDR2_DQ_44			
M DC45	U11	DDR2_DQ_45	DDR2_QQS_DP_15	AH16	
M DC46	AA9	DDR2_DQ_46	DDR2_QQS_DN_15	AJ15	
M DC47	Y8	DDR2_DQ_47			
M DC48	AE11	DDR2_DQ_48	DDR2_QQS_DP_16	AH10	
M DC49	AE12	DDR2_DQ_49	DDR2_QQS_DN_16	AJ9	
M DC50	AK12	DDR2_DQ_50			
M DC51	AL13	DDR2_DQ_51	DDR2_QQS_DP_17	AD26	
M DC52	AG15	DDR2_DQ_52	DDR2_QQS_DN_17	AB26	
M DC53	AE14	DDR2_DQ_53			
M DC54	AK14	DDR2_DQ_54			
M DC55	AL15	DDR2_DQ_55			
M DC56	AG9	DDR2_DQ_56			
M DC57	AG7	DDR2_DQ_57			
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AA2Z
AC2Z
AA2Z
AD2Z
AB2Z
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AB2Z

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CHANNEL D

LGA2084I HASWELL_E_EDS

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M DD2	L37	DDR3_DQ_2			
M DD3	M38	DDR3_DQ_3	DDR3_QQS_DP_1	B32	M_DQSD1
M DD4	C39	DDR3_DQ_4	DDR3_QQS_DN_1	A33	M_-DQSD1
M DD5	J39	DDR3_DQ_5			
M DD6	G37	DDR3_DQ_6		M32	M_DQSD2
M DD7	K38	DDR3_DQ_7	DDR3_QQS_DP_2	K32	M_-DQSD2
M DD8	A35	DDR3_DQ_8			
M DD9	B34	DDR3_DQ_9	DDR3_QQS_DP_3	E25	M_DQSD3
M DD10	G31	DDR3_DQ_10	DDR3_QQS_DN_3	G25	M_-DQSD3
M DD11	E31	DDR3_DQ_11			
M DD12	F34	DDR3_DQ_12	DDR3_QQS_DP_4	H2	M_DQSD4
M DD13	E35	DDR3_DQ_13	DDR3_QQS_DN_4	G3	M_-DQSD4
M DD14	D32	DDR3_DQ_14			
M DD15	E33	DDR3_DQ_15		E7	M_DQSD5
M DD16	K34	DDR3_DQ_16	DDR3_QQS_DP_5	C7	M_-DQSD5
M DD17	M34	DDR3_DQ_17			
M DD18	K30	DDR3_DQ_18	DDR3_QQS_DP_6	AK2	M_DQSD6
M DD19	M30	DDR3_DQ_19	DDR3_QQS_DN_6	AJ1	M_-DQSD6
M DD20	J35	DDR3_DQ_20			
M DD21	L35	DDR3_DQ_21	DDR3_QQS_DP_7	AB4	M_DQSD7
M DD22	L31	DDR3_DQ_22	DDR3_QQS_DN_7	AA5	M_-DQSD7
M DD23	N31	DDR3_DQ_23			
M DD24	F28	DDR3_DQ_24	DDR3_QQS_DP_8	L25	
M DD25	E27	DDR3_DQ_25	DDR3_QQS_DN_8	N25	
M DD26	F24	DDR3_DQ_26			
M DD27	E23	DDR3_DQ_27	DDR3_QQS_DP_9	E38	
M DD28	G29	DDR3_DQ_28	DDR3_QQS_DN_9	H38	
M DD29	F29	DDR3_DQ_29			
M DD30	C25	DDR3_DQ_30	DDR3_QQS_DP_10	C35	
M DD31	B24	DDR3_DQ_31	DDR3_QQS_DN_10	D34	
M DD32	K4	DDR3_DQ_32			
M DD33	H4	DDR3_DQ_33	DDR3_QQS_DP_11	J33	
M DD34	J1	DDR3_DQ_34	DDR3_QQS_DN_11	L33	
M DD35	L1	DDR3_DQ_35			
M DD36	P4	DDR3_DQ_36	DDR3_QQS_DP_12	E26	
M DD37	N3	DDR3_DQ_37	DDR3_QQS_DN_12	D26	
M DD38	K2	DDR3_DQ_38			
M DD39	R3	DDR3_DQ_39	DDR3_QQS_DP_13	M4	
M DD40	E9	DDR3_DQ_40	DDR3_QQS_DN_13	L3	
M DD41	F8	DDR3_DQ_41			
M DD42	E5	DDR3_DQ_42	DDR3_QQS_DP_14	B8	
M DD43	F6	DDR3_DQ_43	DDR3_QQS_DN_14	D8	
M DD44	C9	DDR3_DQ_44			
M DD45	A9	DDR3_DQ_45	DDR3_QQS_DP_15	AH4	
M DD46	D6	DDR3_DQ_46	DDR3_QQS_DN_15	AJ5	
M DD47	G7	DDR3_DQ_47			
M DD48	AG3	DDR3_DQ_48	DDR3_QQS_DP_16	V6	
M DD49	AG1	DDR3_DQ_49	DDR3_QQS_DN_16	W5	
M DD50	AL3	DDR3_DQ_50			
M DD51	AL5	DDR3_DQ_51	DDR3_QQS_DP_17	M26	
M DD52	AG5	DDR3_DQ_52	DDR3_QQS_DN_17	K26	
M DD53	AE3	DDR3_DQ_53			
M DD54	AJ3	DDR3_DQ_54			
M DD55	AL1	DDR3_DQ_55			
M DD56	V4	DDR3_DQ_56			
M DD57	W3	DDR3_DQ_57			
M DD58	AC5	DDR3_DQ_58			
M DD59	AE5	DDR3_DQ_59			
M DD60	U5	DDR3_DQ_60			
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M DD62	AC3	DDR3_DQ_62			
M DD63	AB6	DDR3_DQ_63			

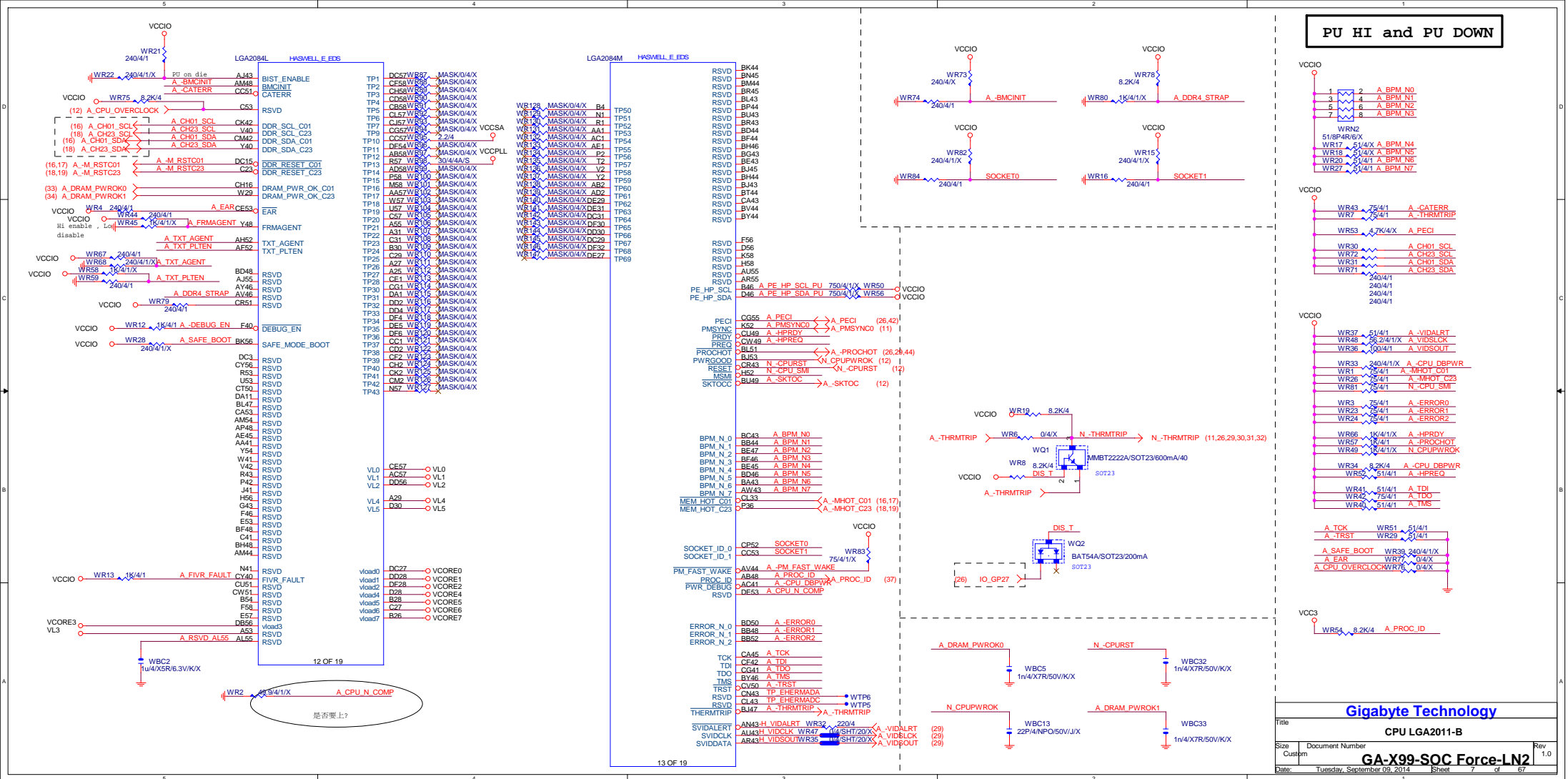
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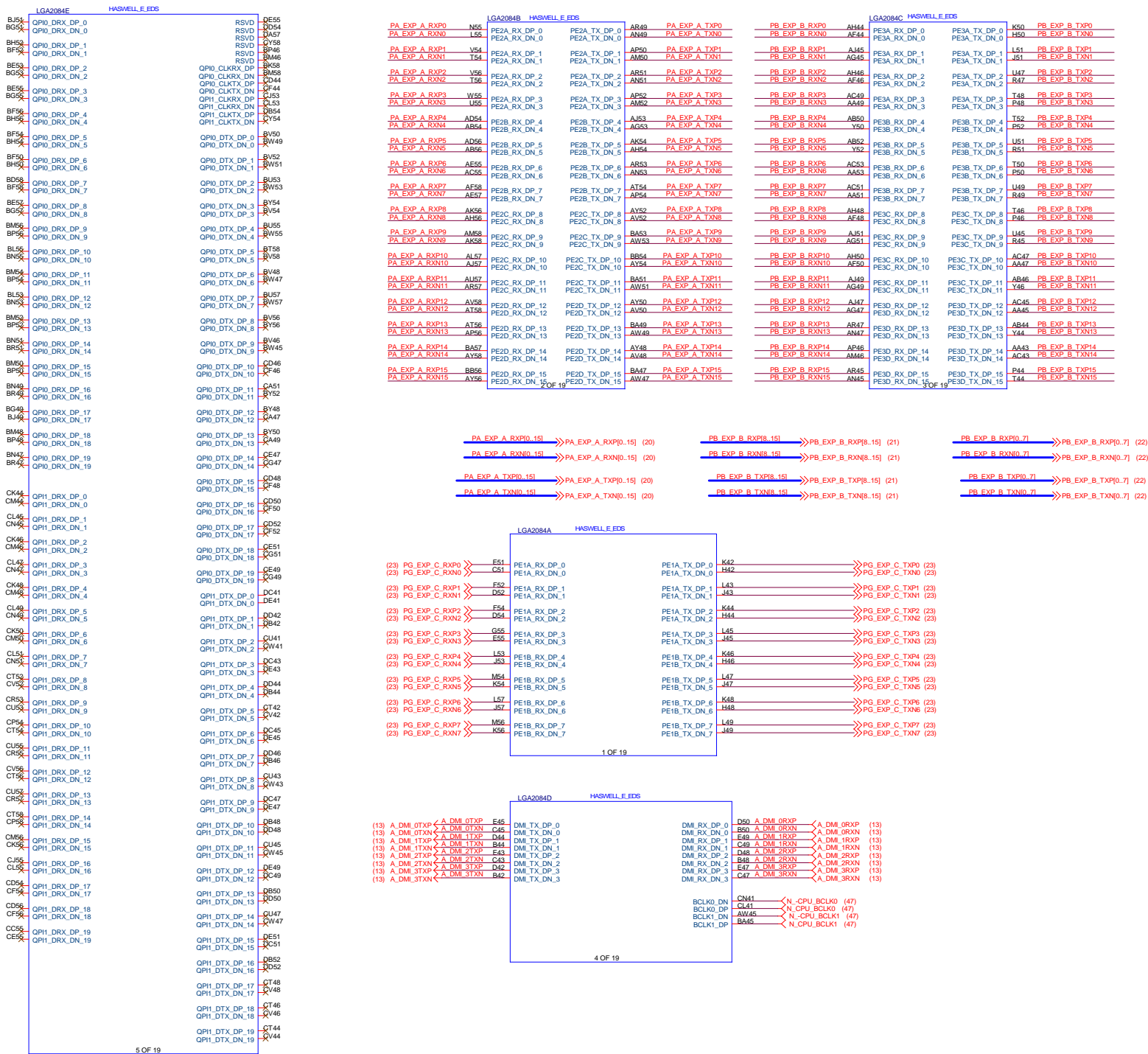
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(19) M_-DQSD[0..7] <— M_-DQSD[0..7]

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Gigabyte Technology

Title			CPU LGA2011-A		
Size			Document Number		
Custom			GA-X99-SOC Force-LN2		
Date:			Tuesday, September 09, 2014		
			Sheet 6 of 67		
			Rev 1.0		

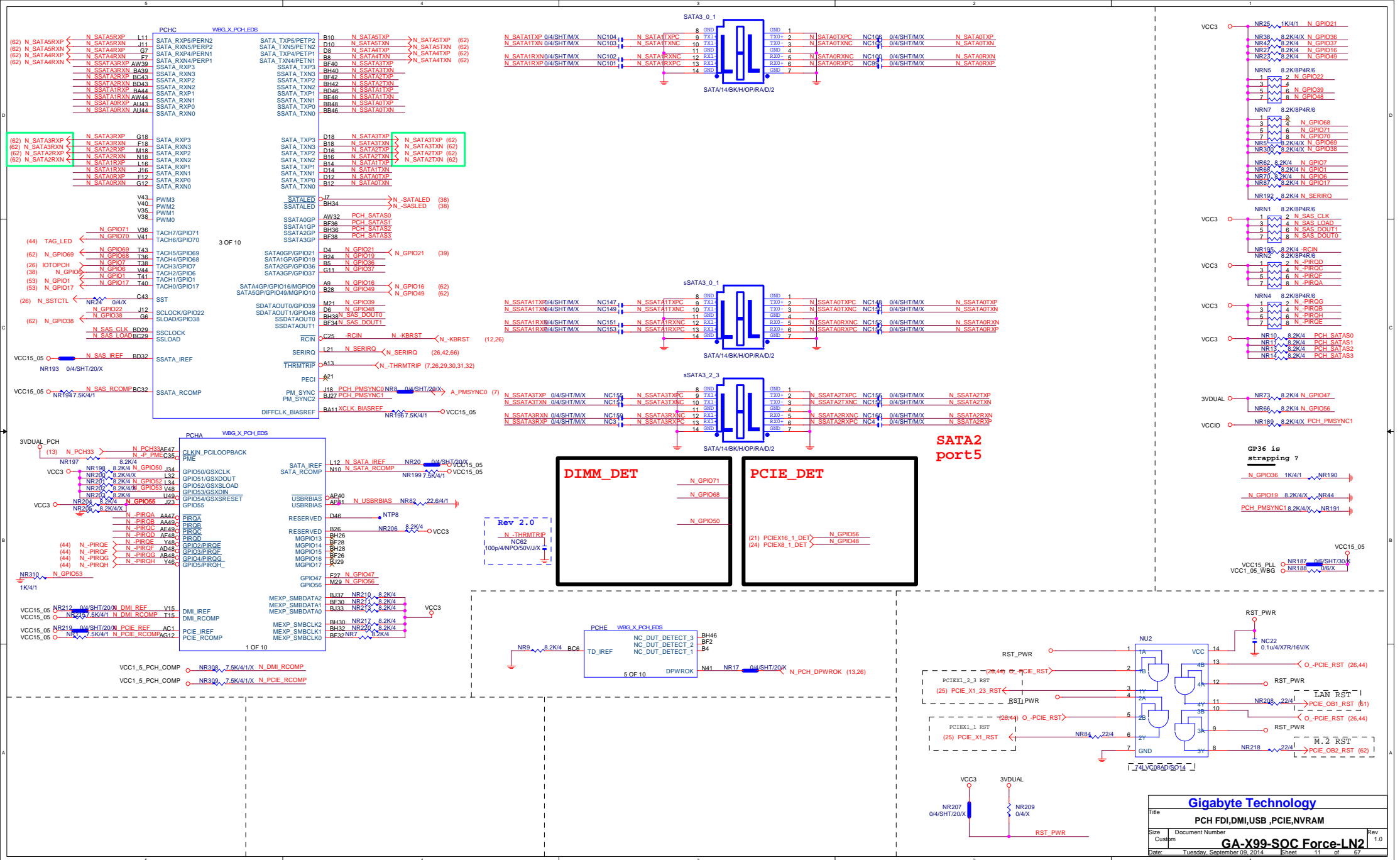


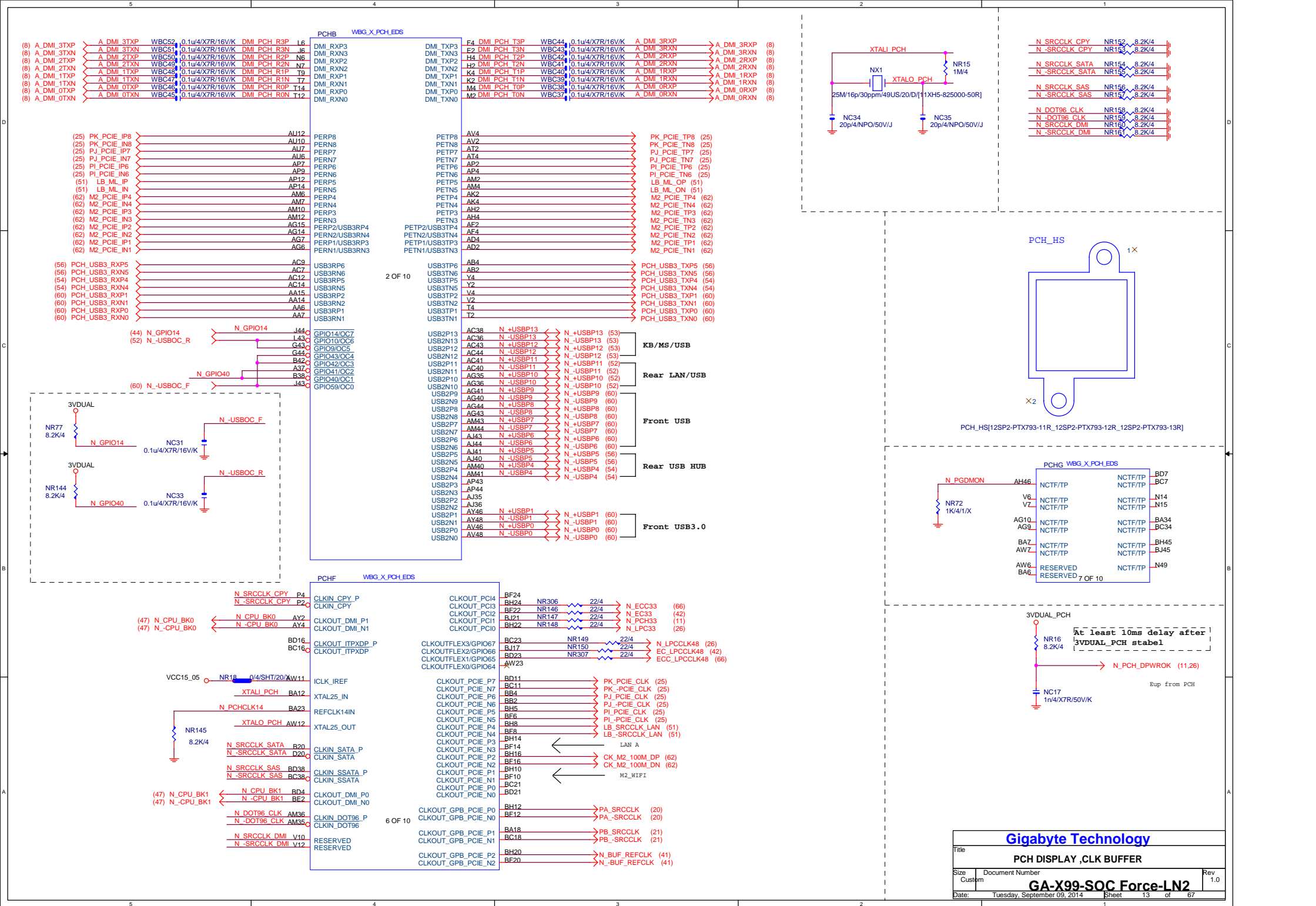


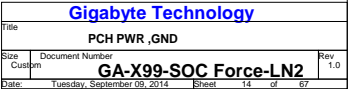
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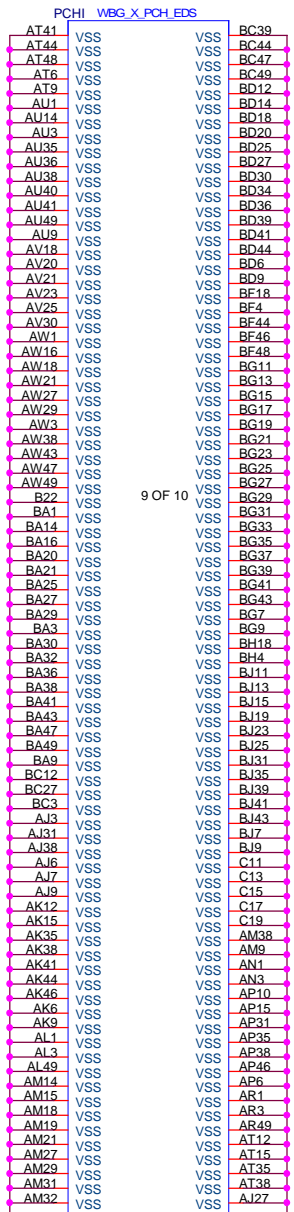
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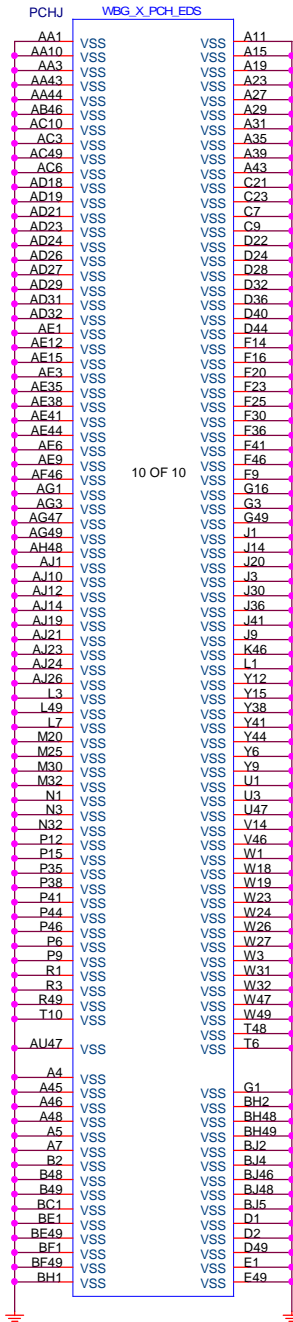






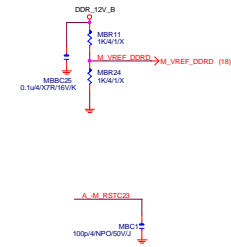


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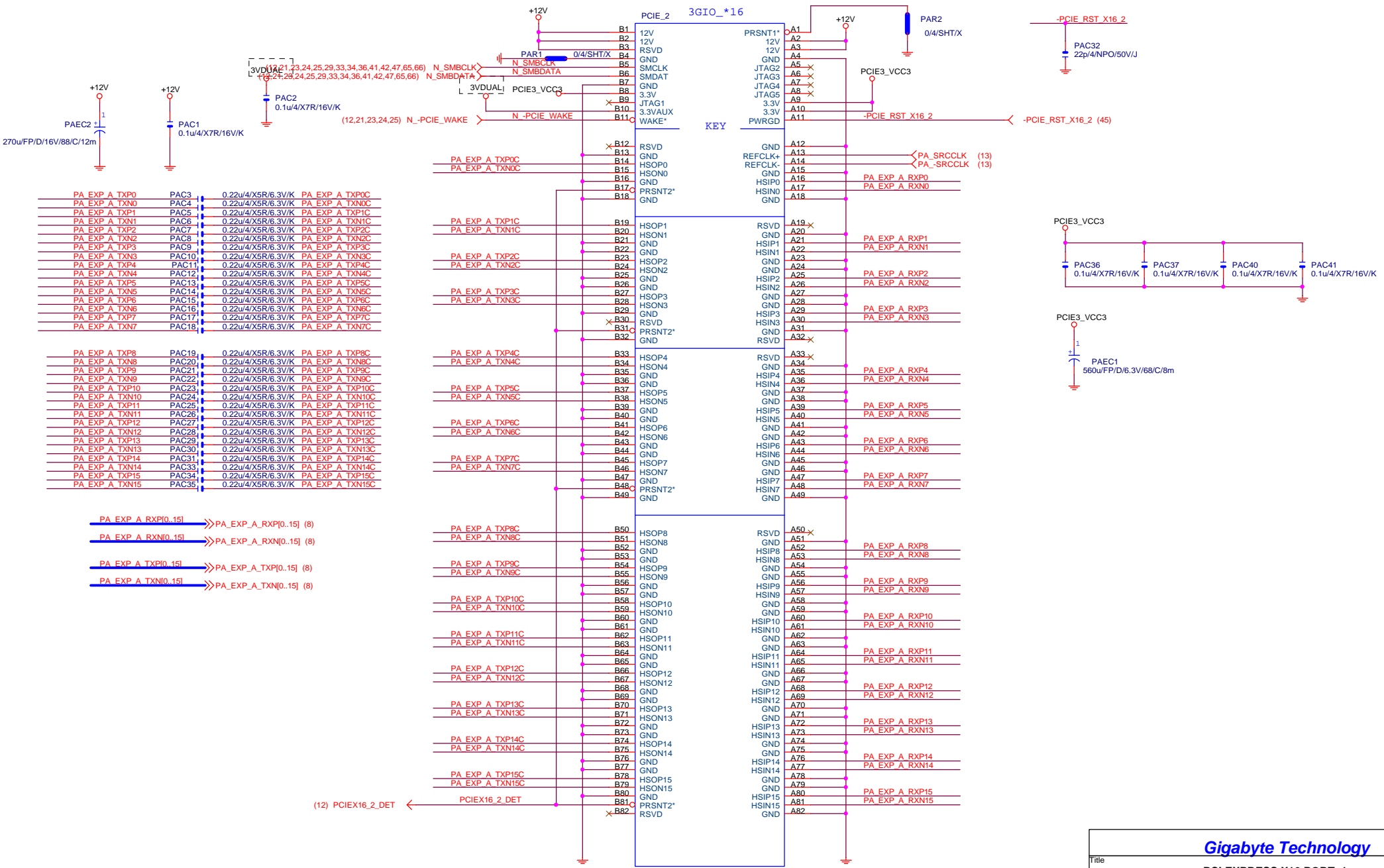
Gigabyte Technology

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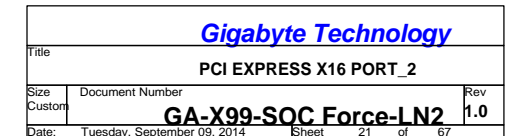


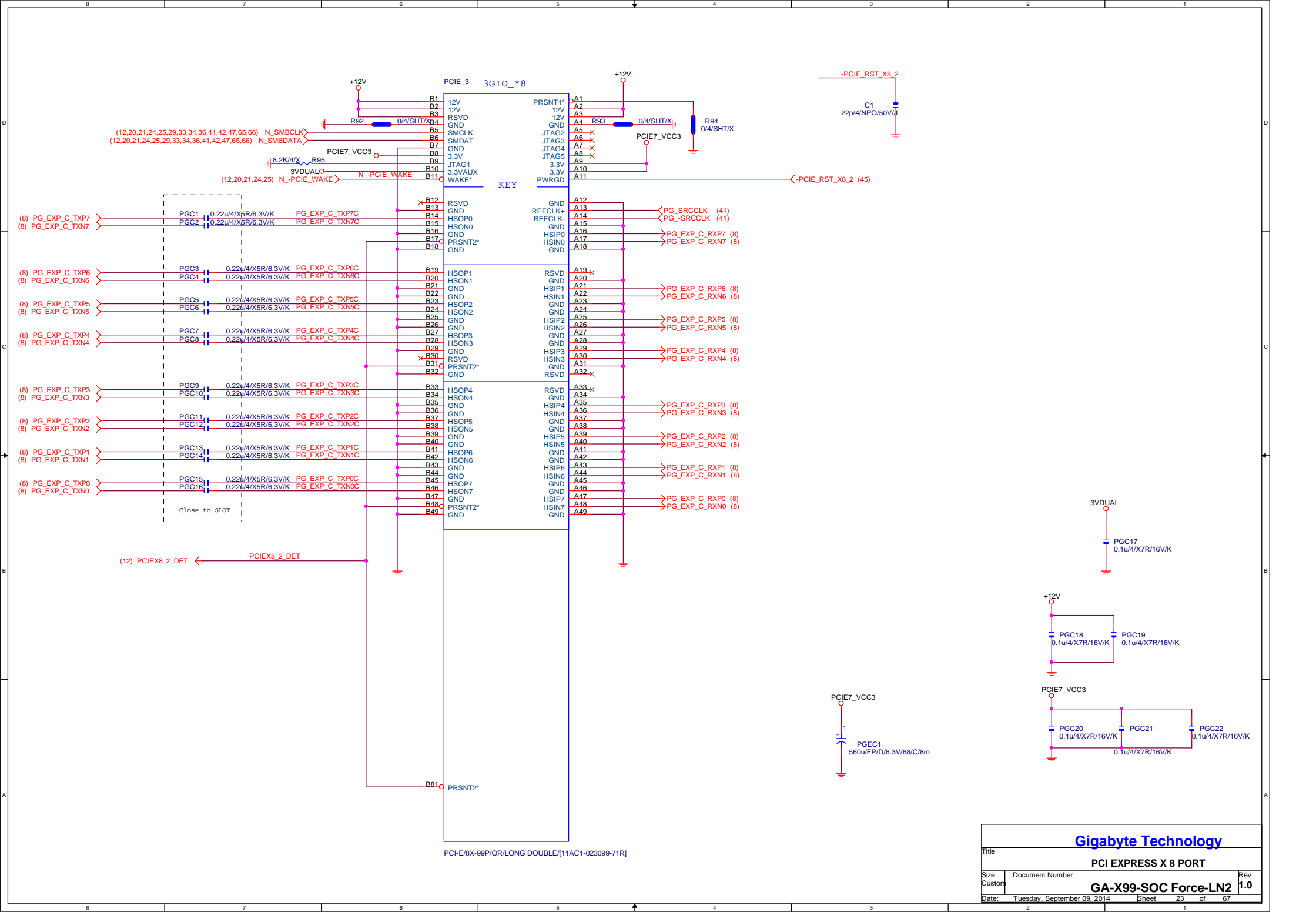
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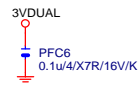
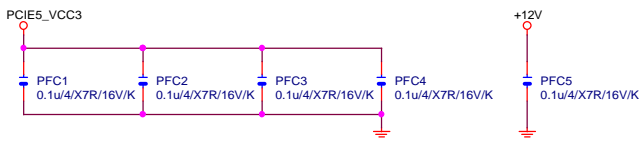
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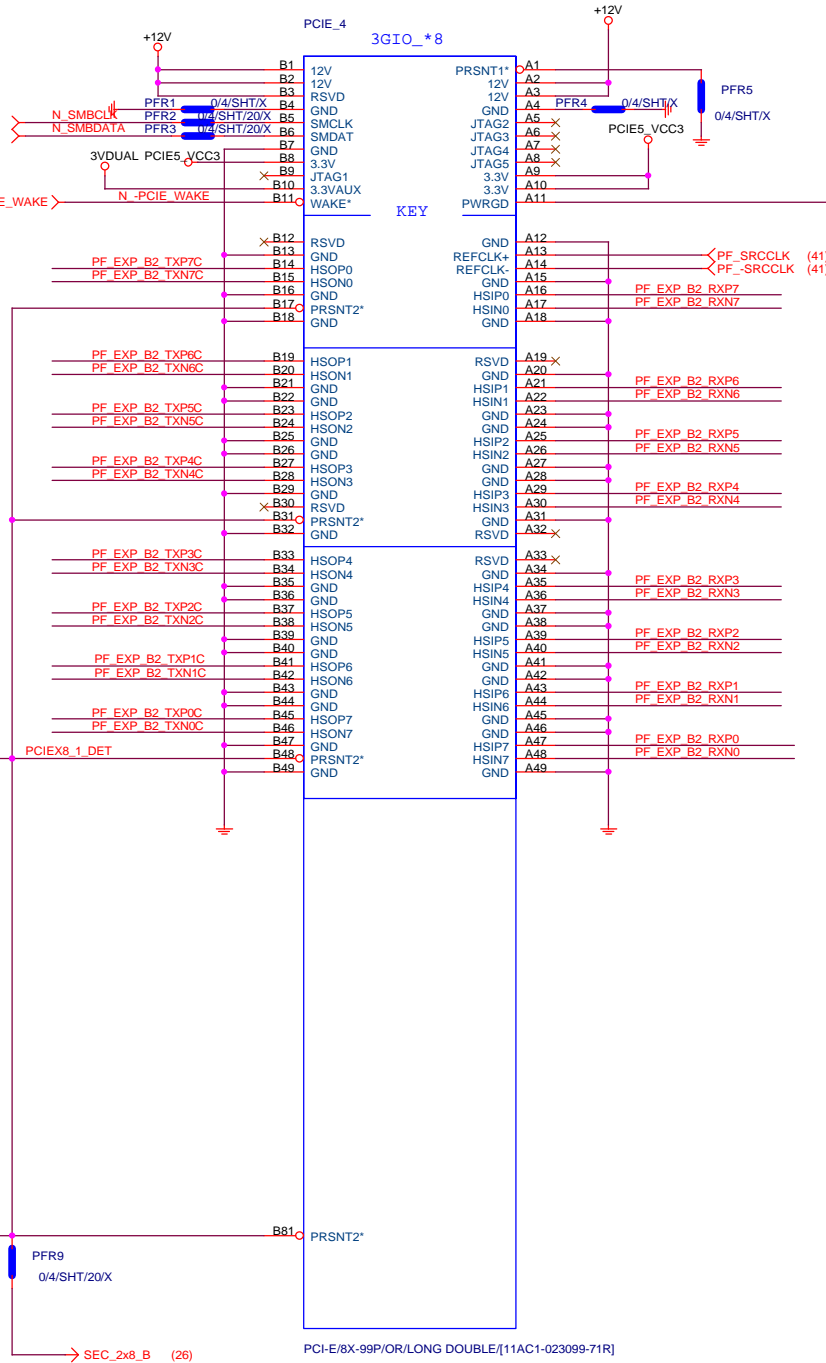
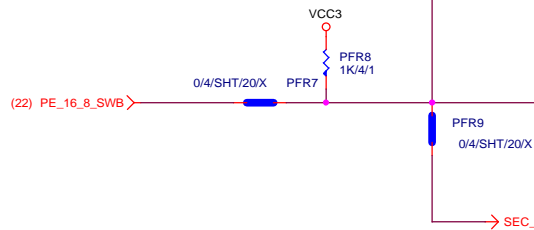




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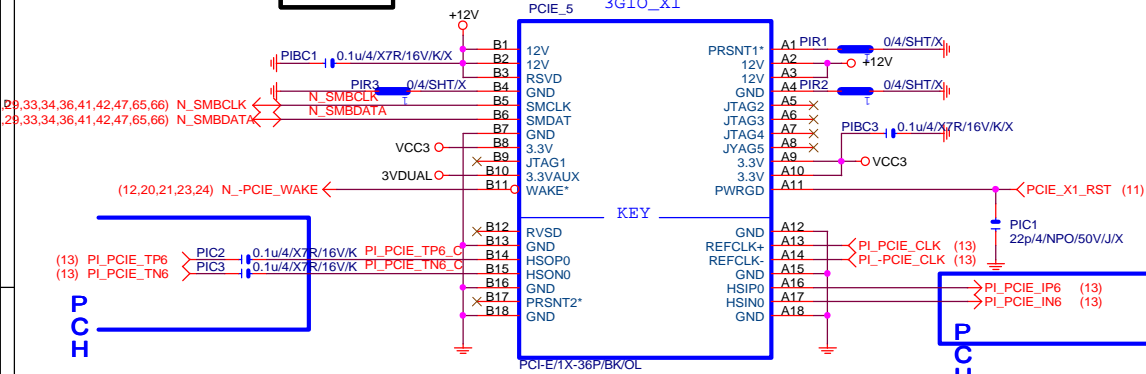
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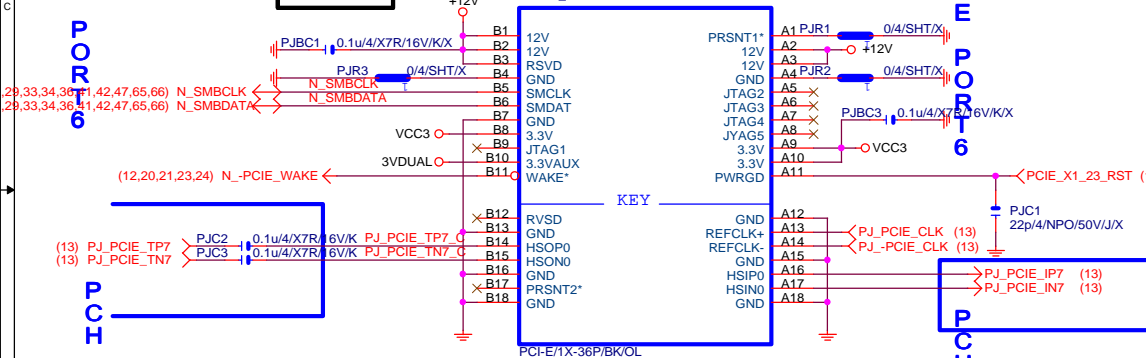


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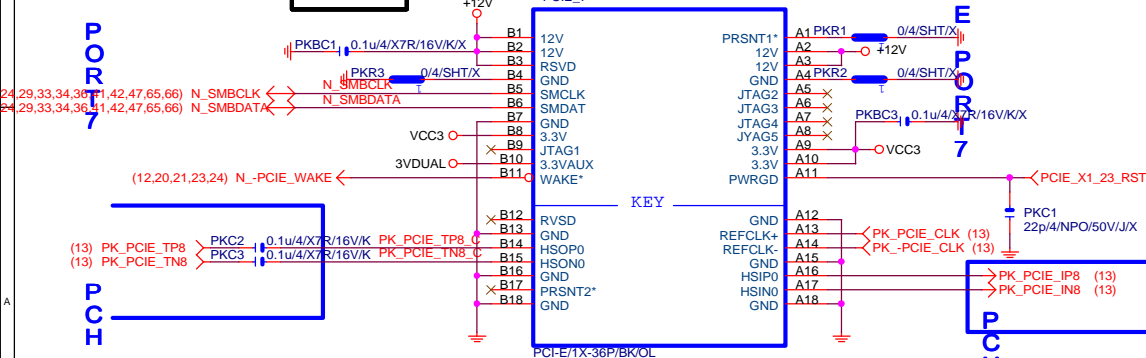
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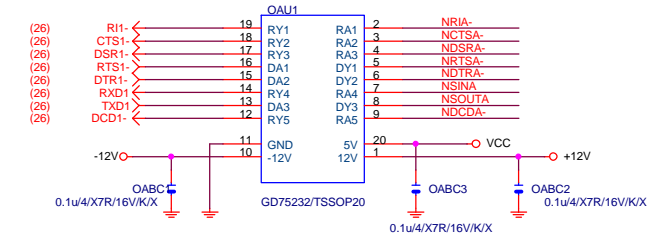
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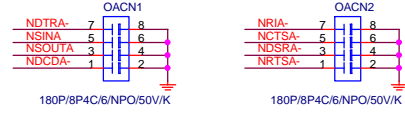
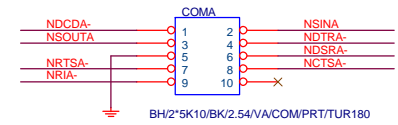
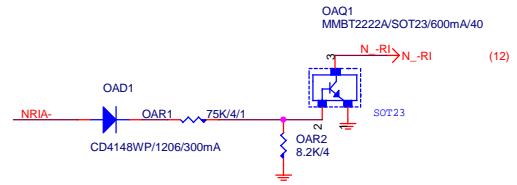
Gigabyte Technology

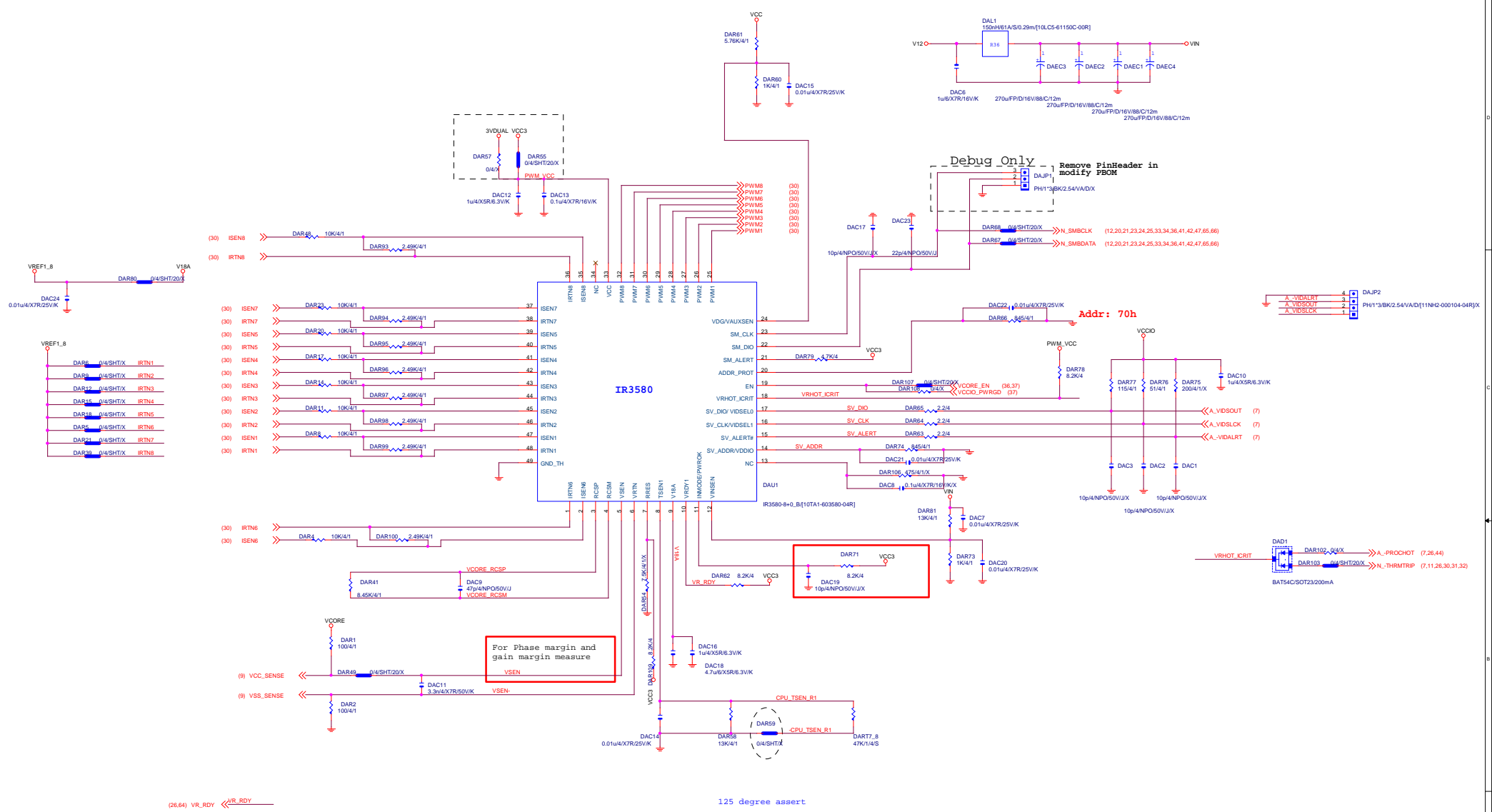
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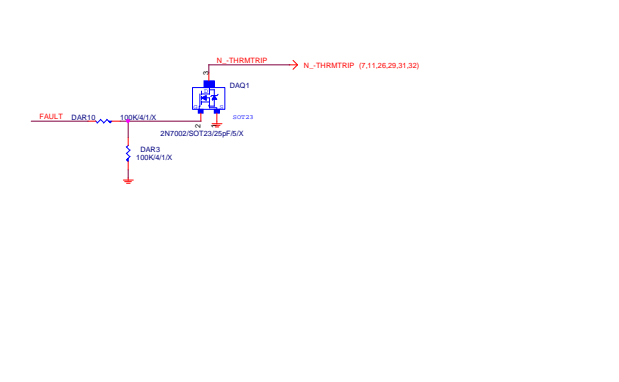
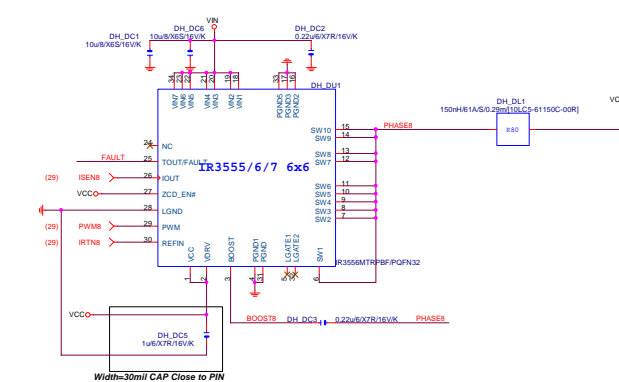
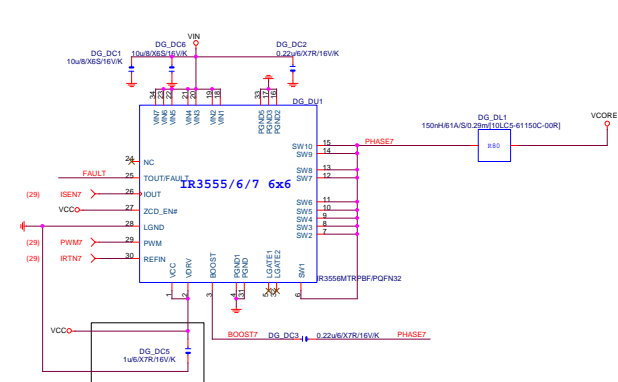
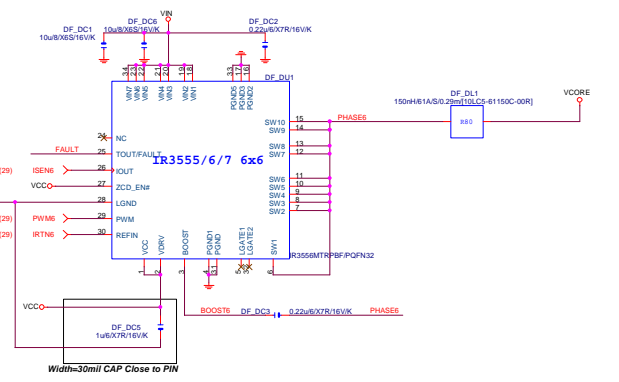
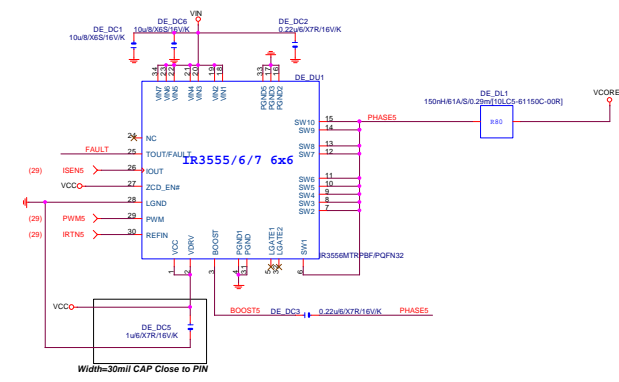
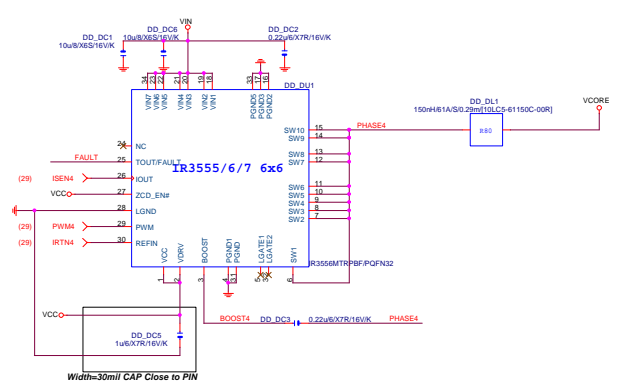
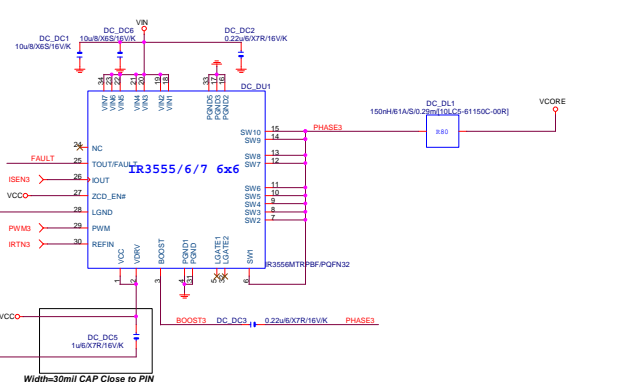
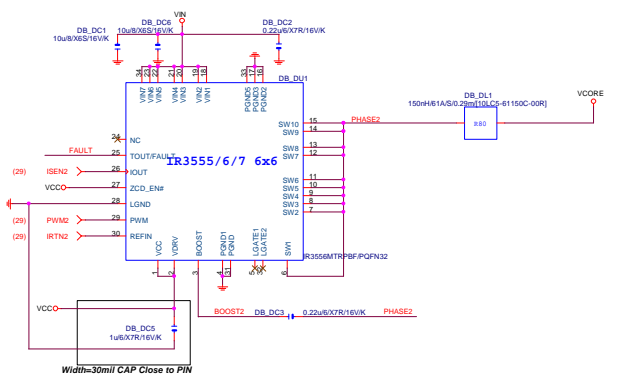
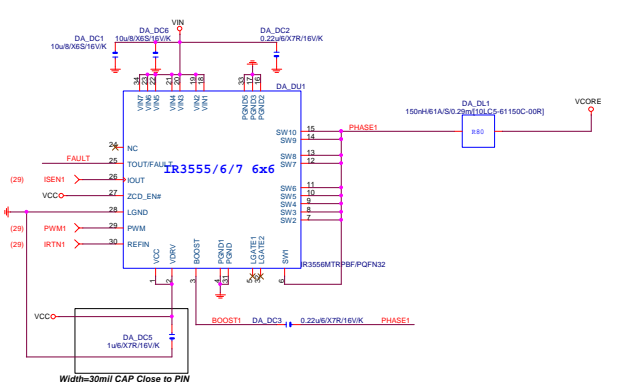
Tuesday, September 09, 2014

Sheet

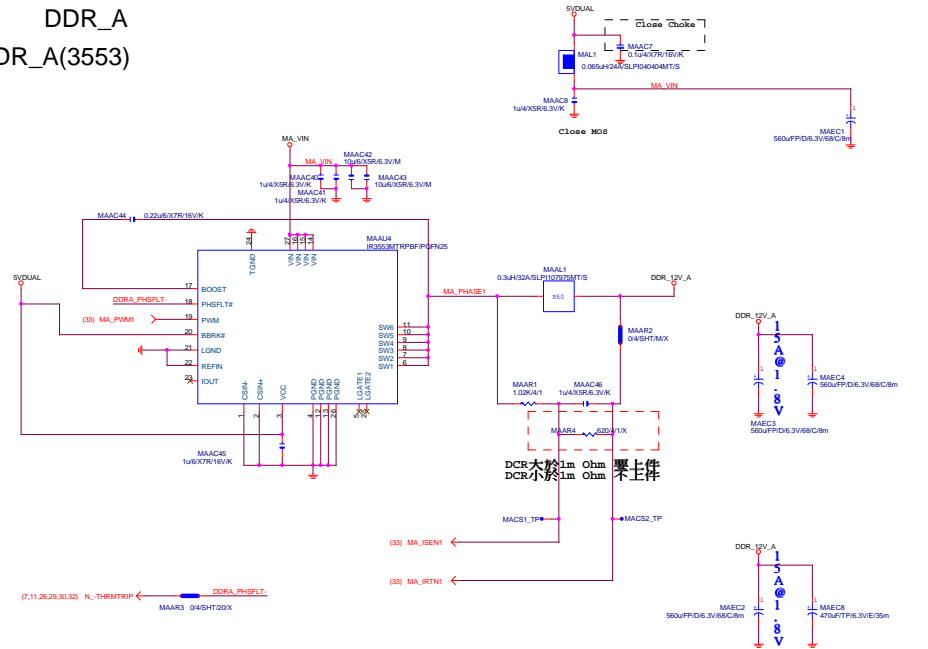
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Rev

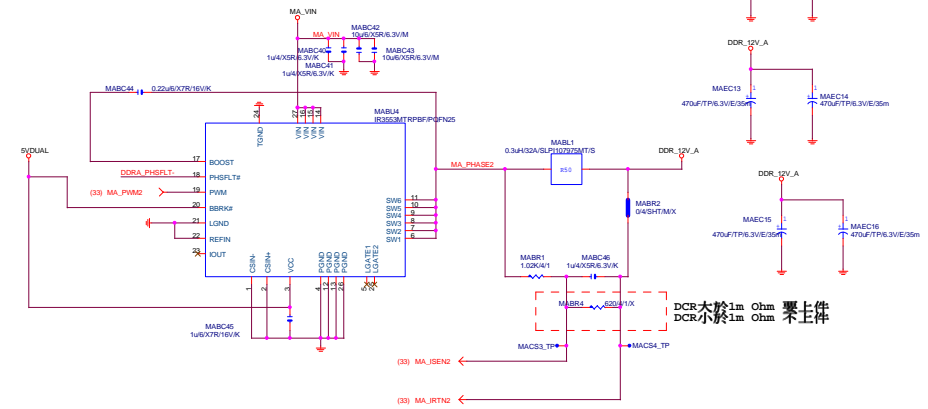
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DDR_A DDR_A(3553)

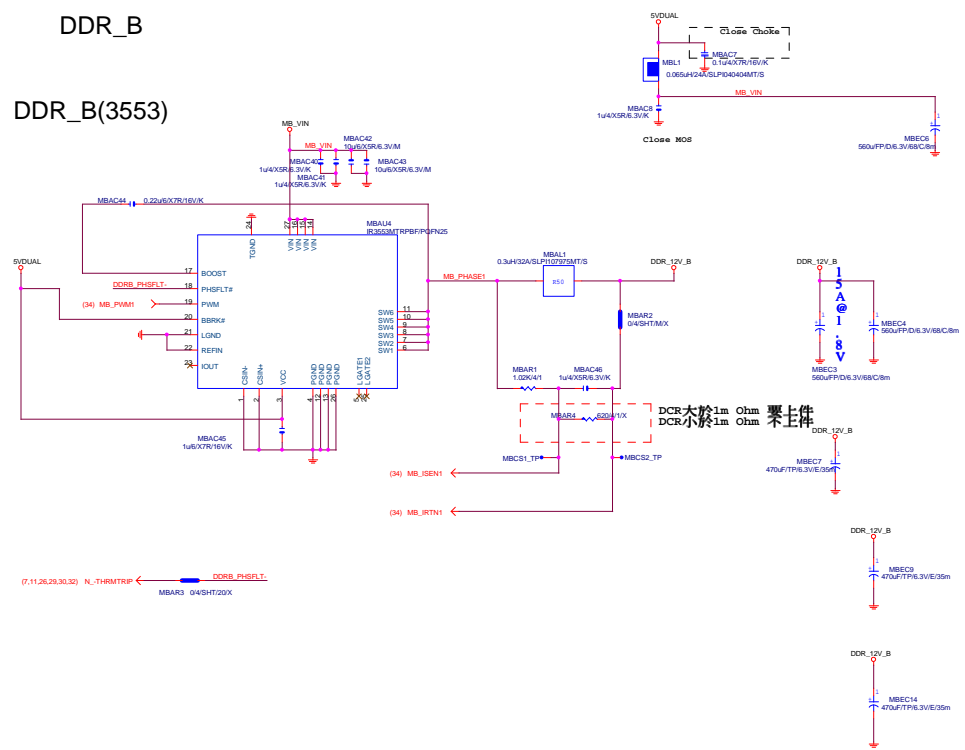


DDR_A(3553)

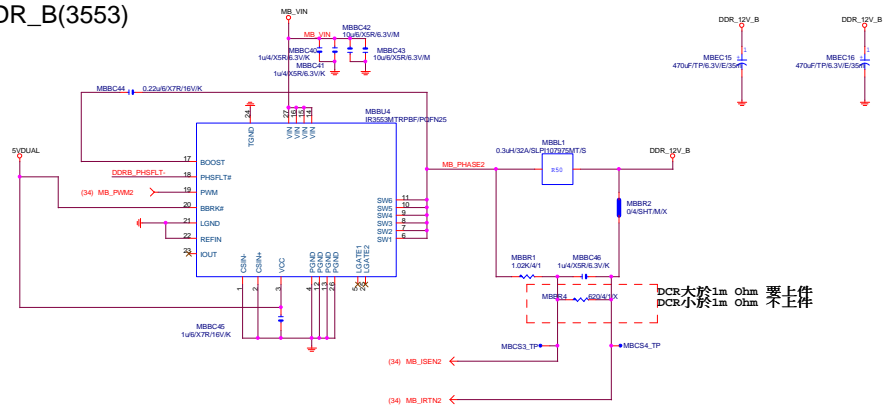


DDR_B

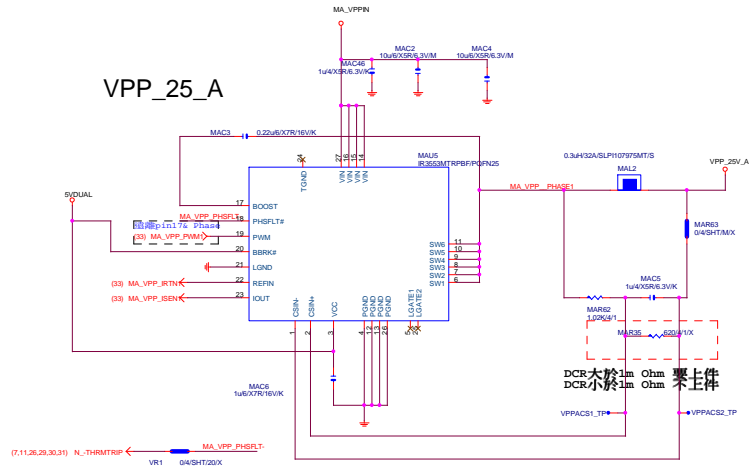
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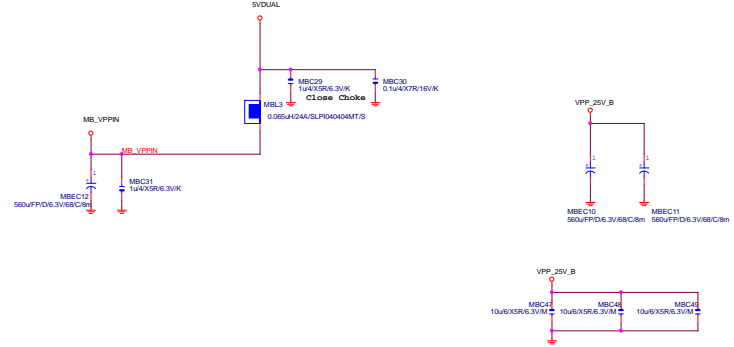
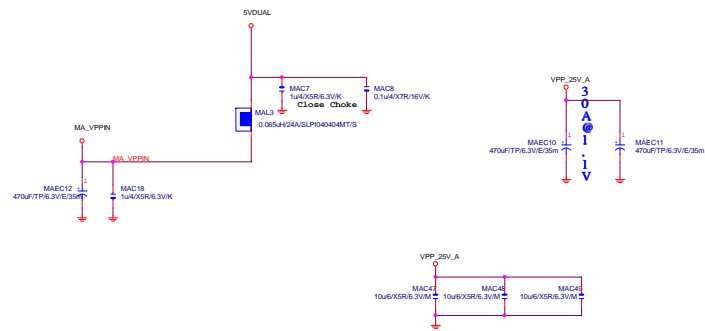
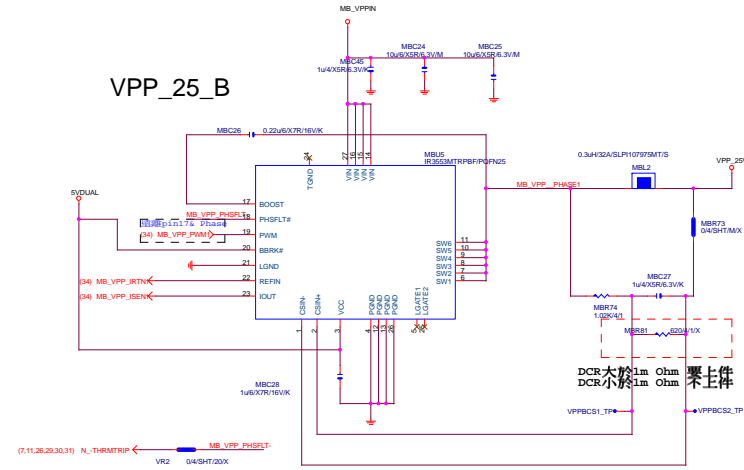
DDR_B(3553)



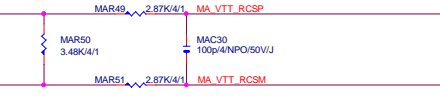
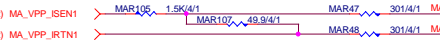
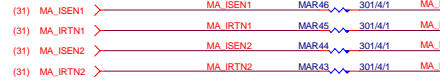
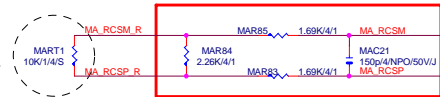
VPP_25_A



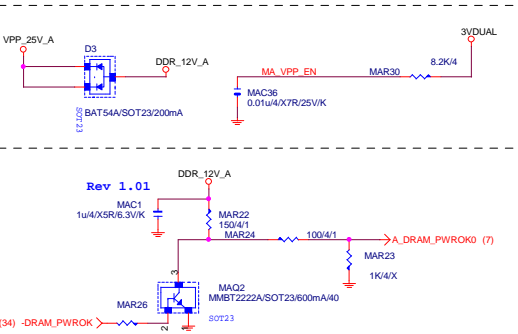
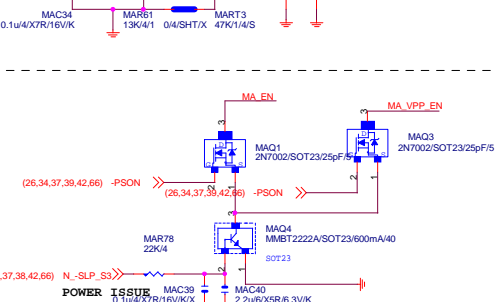
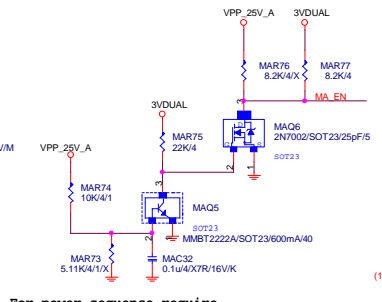
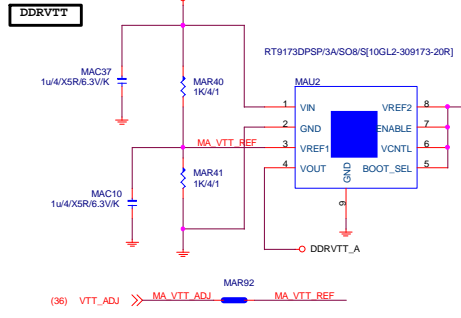
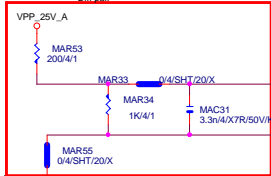
VPP_25_B



Close to Vcore
output inductor



should be routed as
differential pair,
7mil width, 8mil
spacing



Close to Vcore
output inductor

should be routed as
differential pair,
7mil width,8mil
spacing

DDRVTT

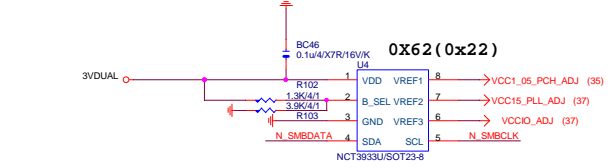
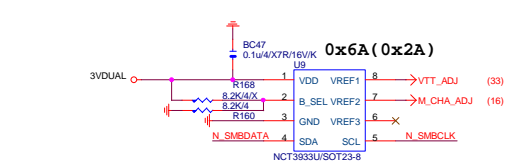
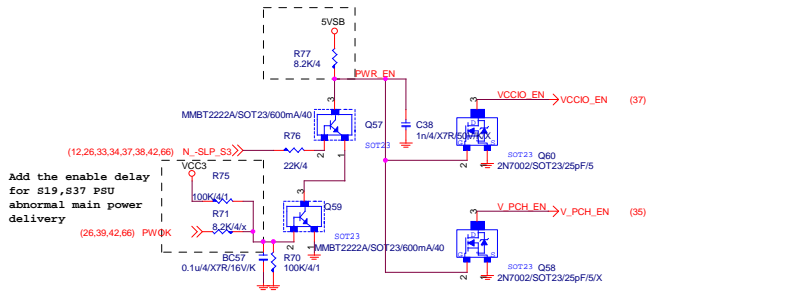
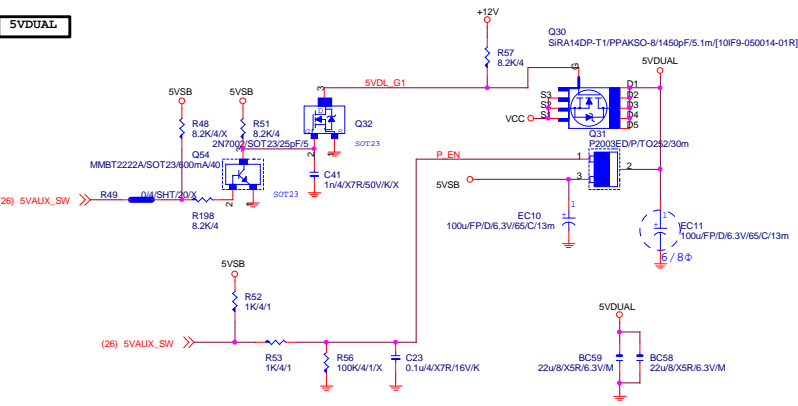
For power sequence require

POWER ISSUES

GIGABYTE™

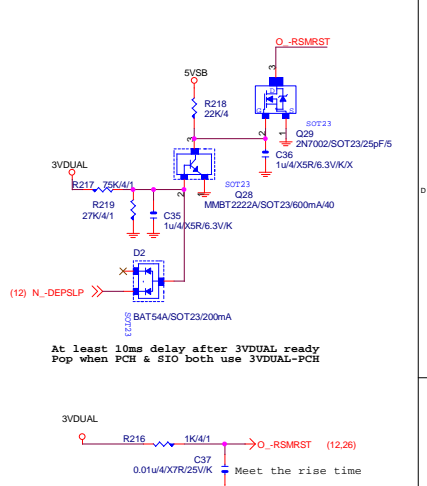
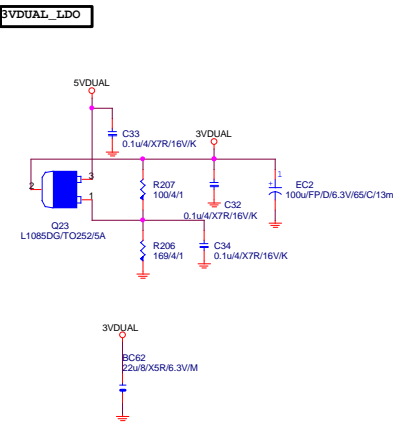
Title			DDR_A& CPU_VTT POWER IR3570
Size	Document Number	GA-X99-SOC Force-LN2	
		Rev	1.0
Date:	Tuesday, September 09, 2014	Sheet	34 of 67

5VDUAL

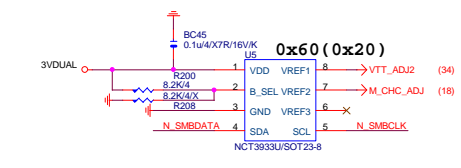
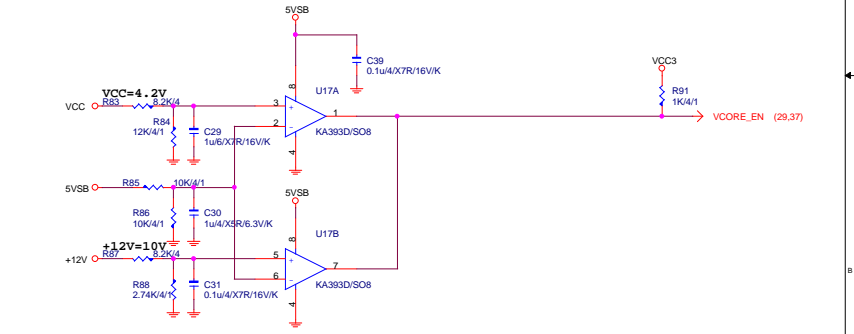


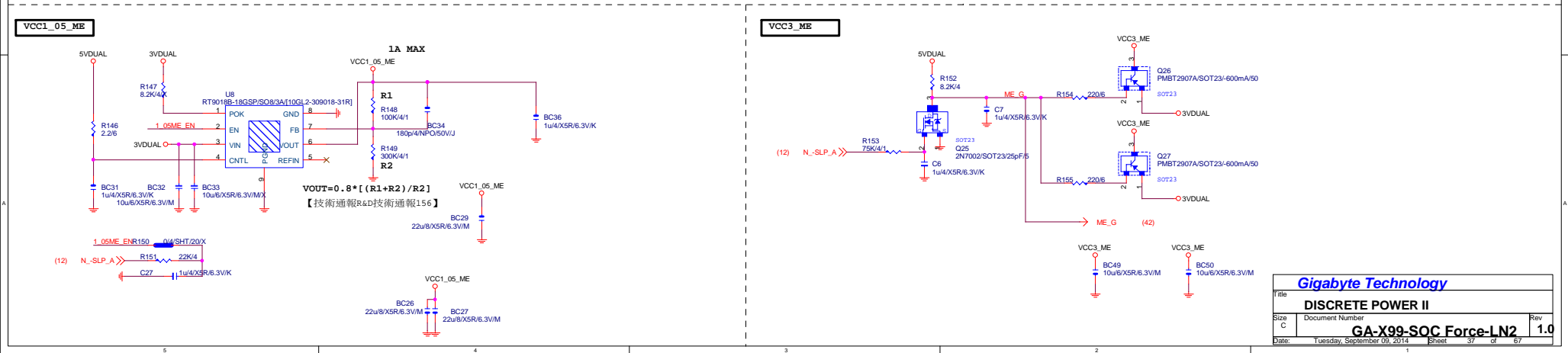
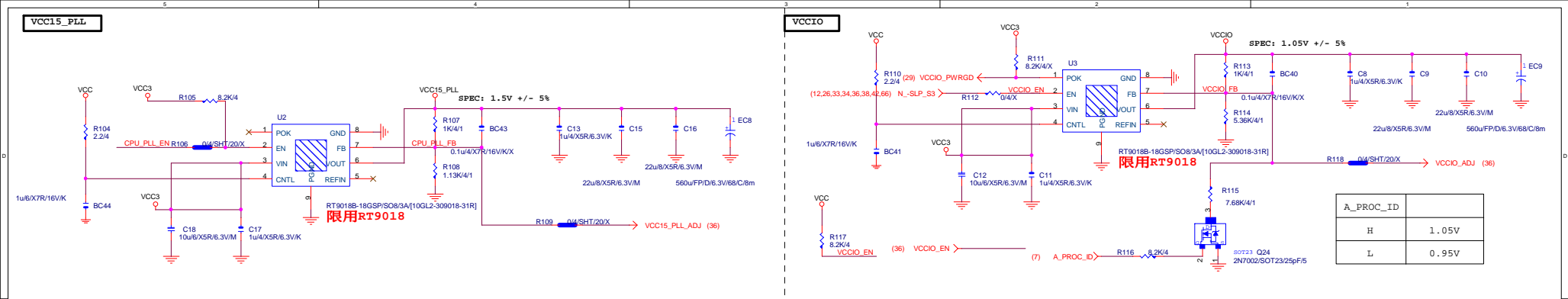
N_SMBCLK (12,20,21,23,24,25,29,33,34,41,42,47,65,66)
N_SMBDATA (12,20,21,23,24,25,29,33,34,41,42,47,65,66)

3VDUAL_LDO

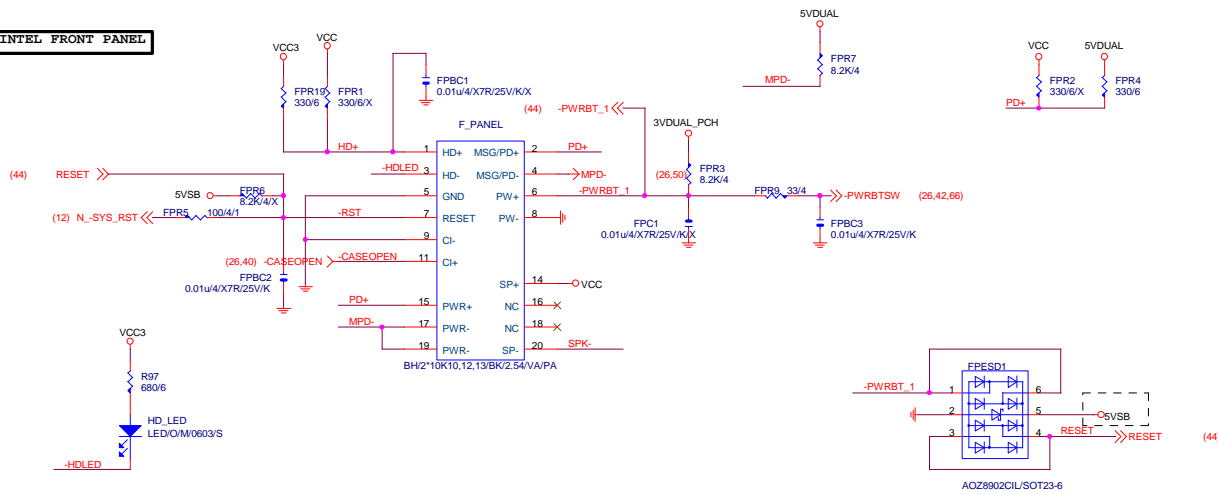


Vcore_EN

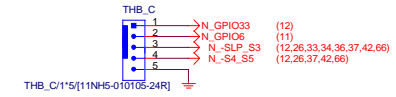




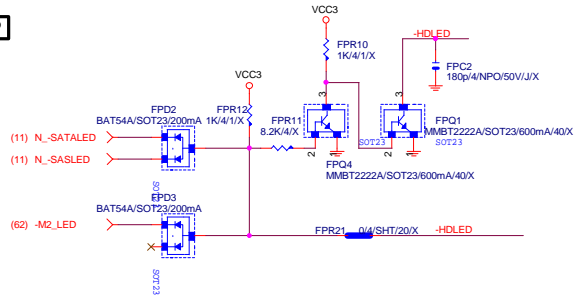
INTEL FRONT PANEL



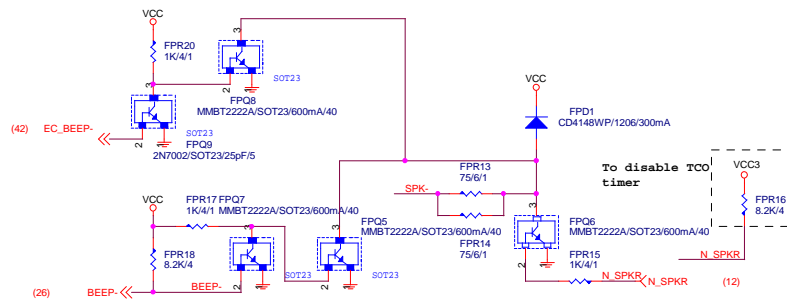
Thunderbolt



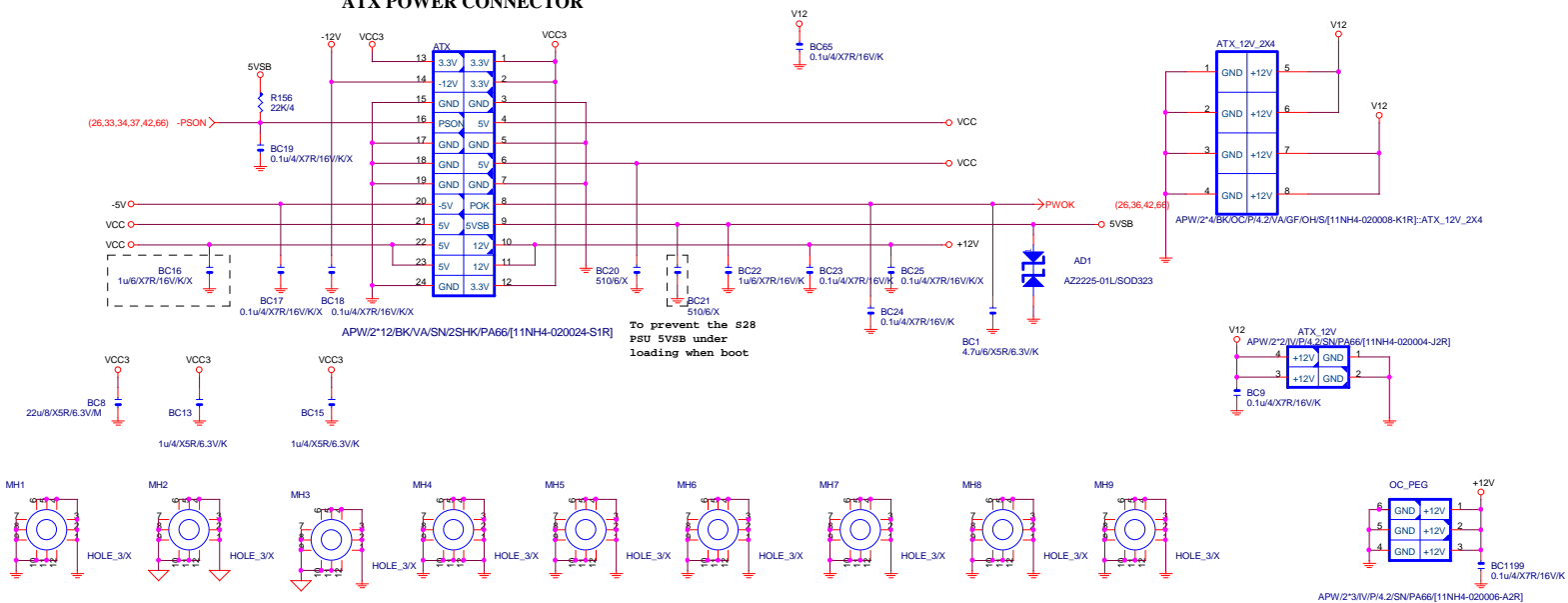
SATA LED



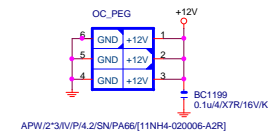
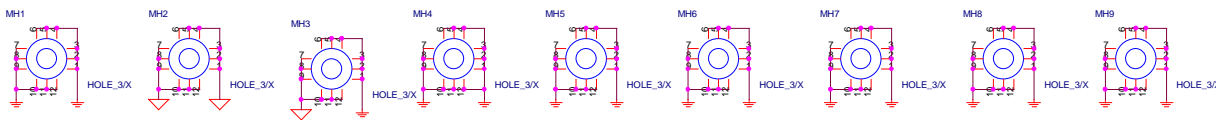
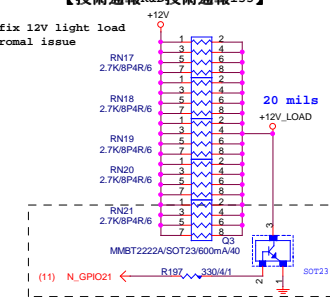
SPKR



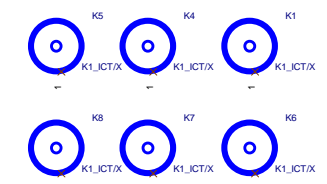
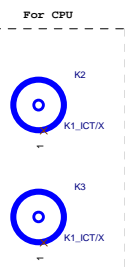
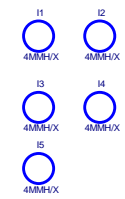
ATX POWER CONNECTOR



To fix 12V light load abnormal issue



OVER CLOCKING

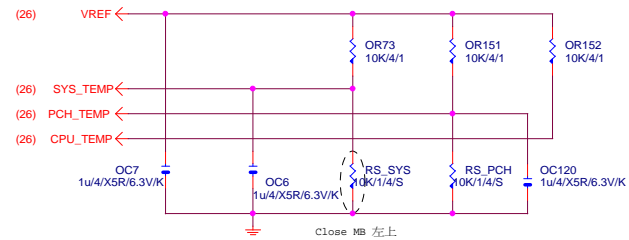


INPUT				OUTPUT	
PR	CL	CLOCK	DATA	Q	-Q
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H	H
H	H	Rising	X	H	L
H	H	Rising	L	L	H
H	H	L	X	No Change	No Change
H	H	Falling	X	No Change	No Change

Gigabyte Technology

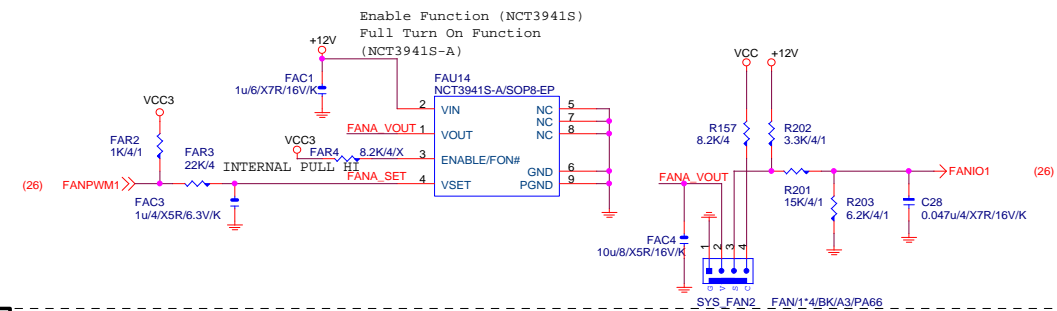
Title		ATX / CLOCK BUFFER	
Size	Document Number	GA-X99-SOC Force-LN2	
Date	Tuesday, September 09, 2014	Sheet	39 of 67

TEMP H/W MONITOR

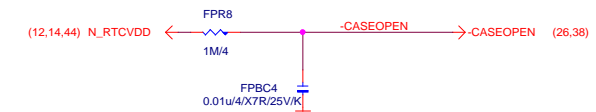


CPU SMART FAN

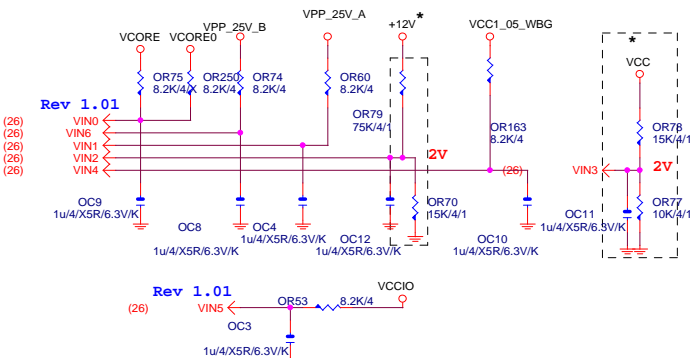
SYS FAN1



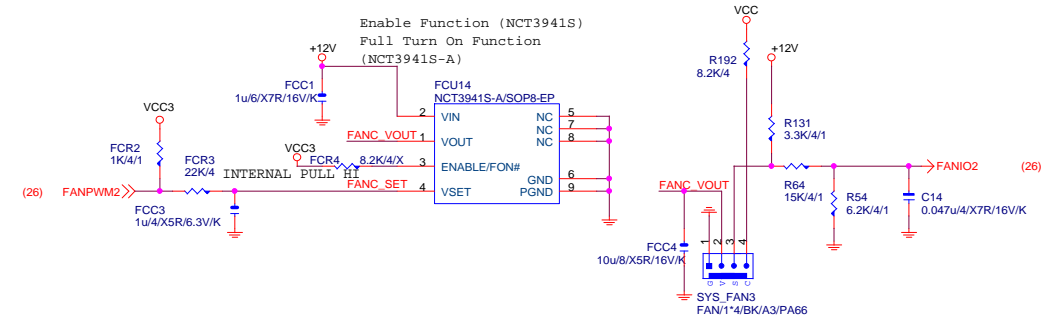
CASE OPEN



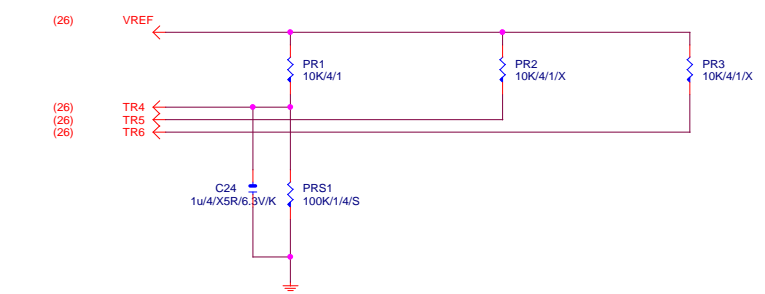
VOLTAGE-- H/W MONITOR



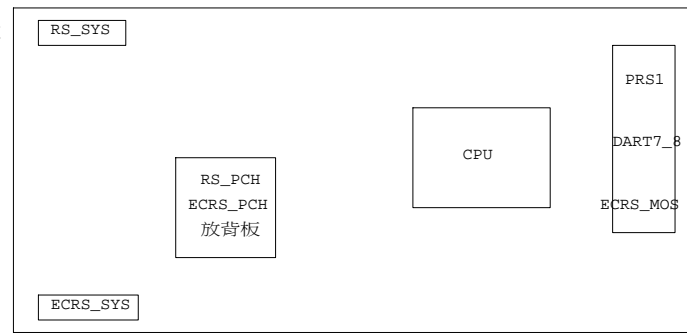
SYS FAN2

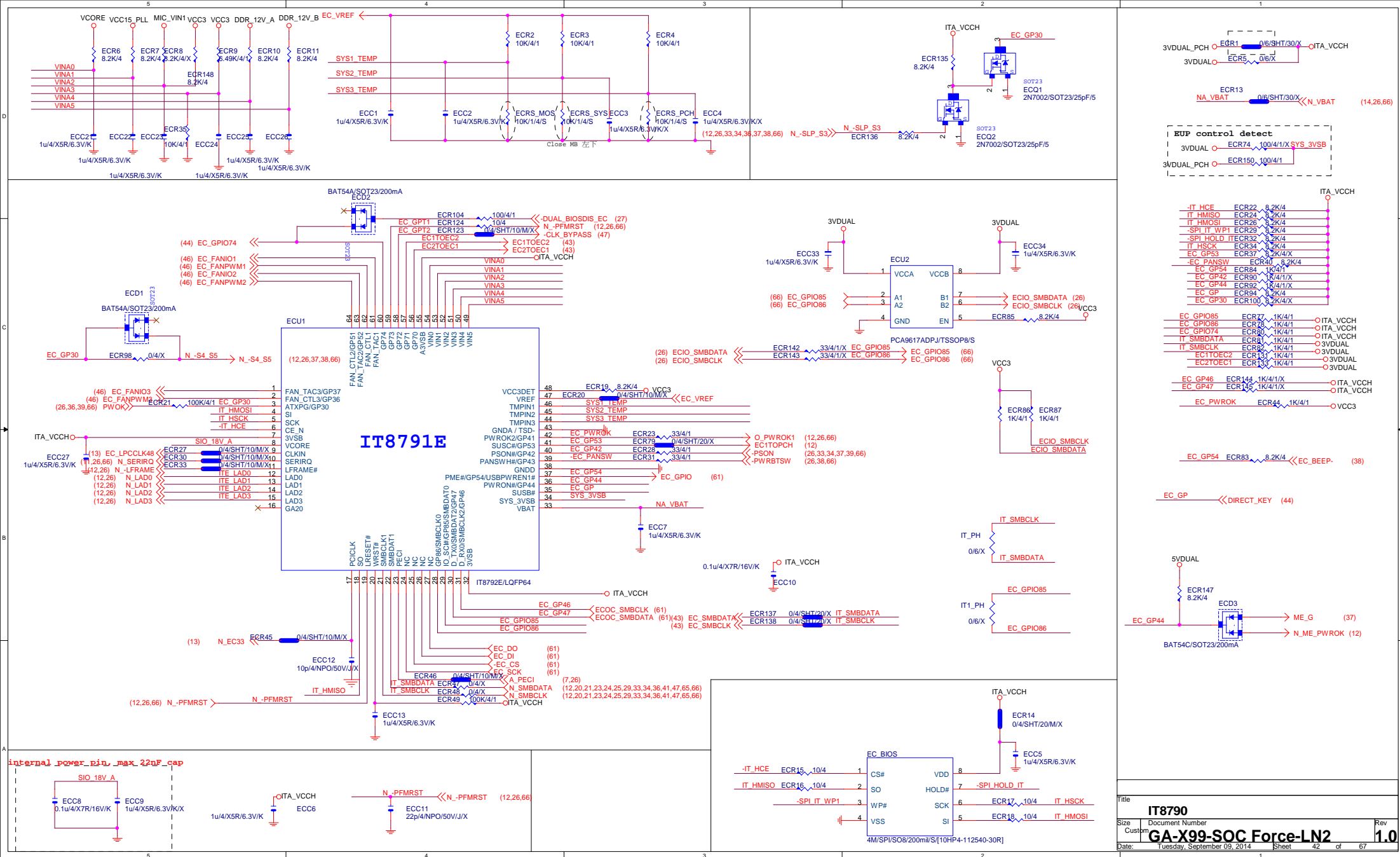


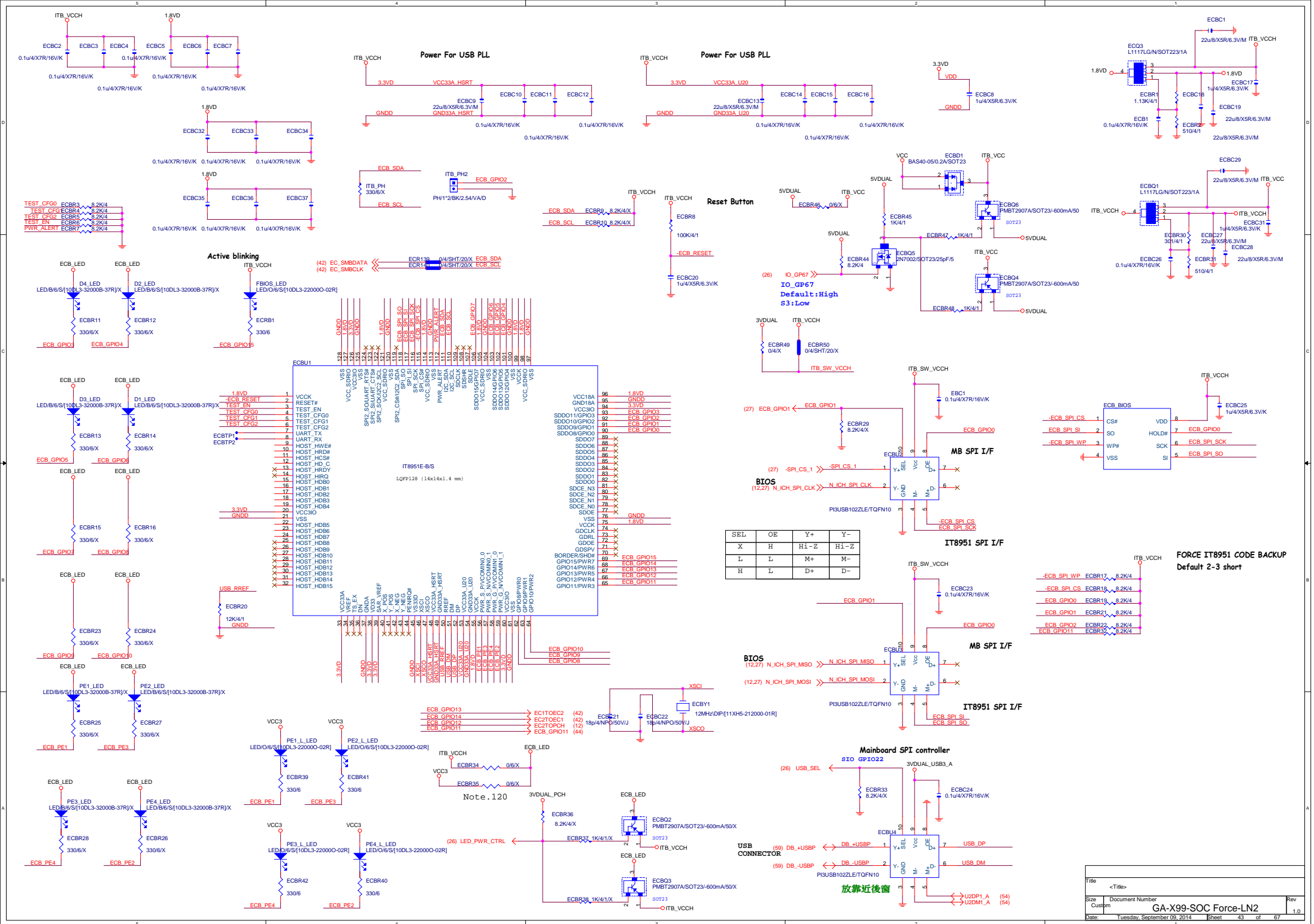
8620 PROCHOT



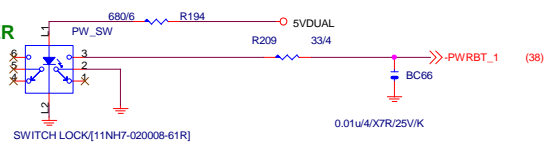
Thermistor 擺放位置



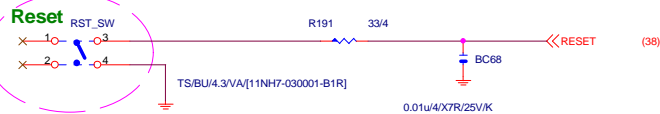




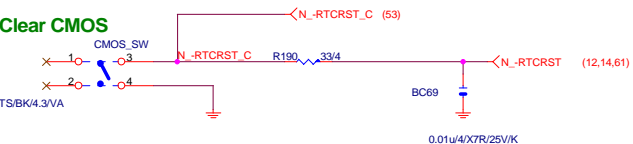
POWER



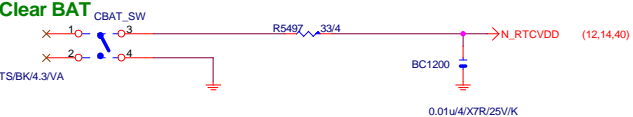
Reset



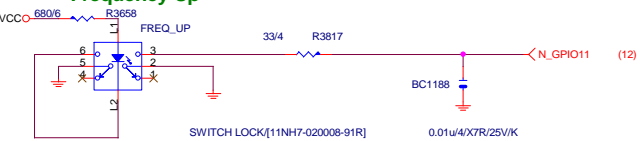
Clear CMOS



Clear BAT



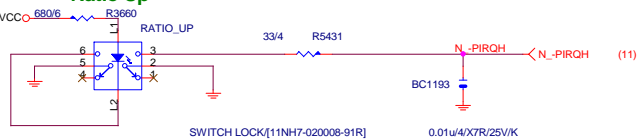
Frequency Up



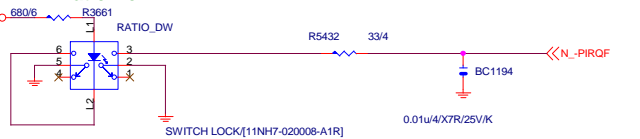
Frequency Down



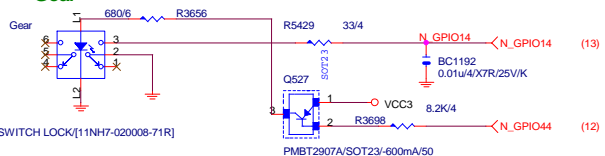
Ratio Up



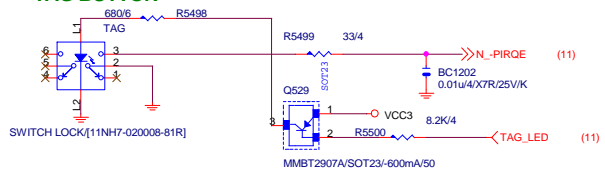
Ratio Down



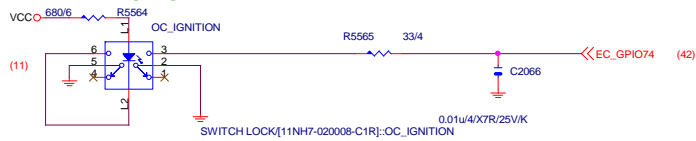
Gear



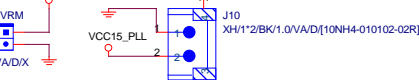
TAG BUTTON



EnPWR BUTTON



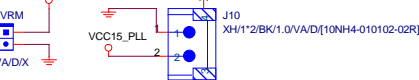
VCC15_PLL



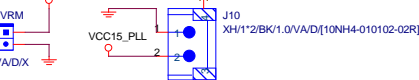
VCC15_PLL



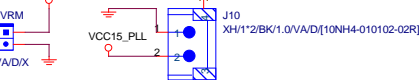
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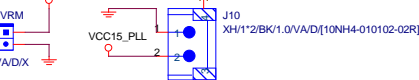
VCC15_PLL



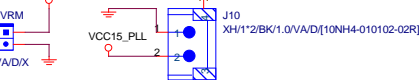
VCC15_PLL



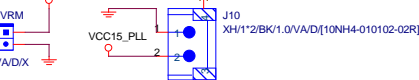
VCC15_PLL



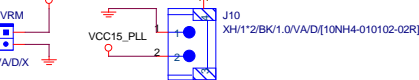
VCC15_PLL



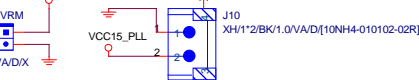
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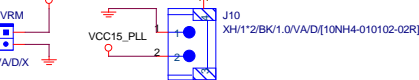
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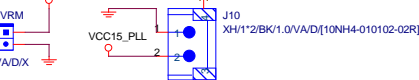
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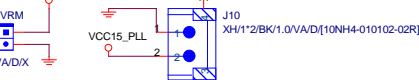
VCC15_PLL



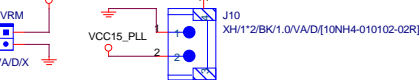
VCC15_PLL



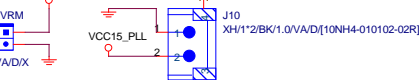
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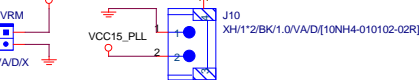
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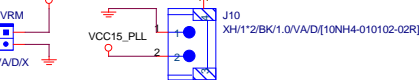
VCC15_PLL



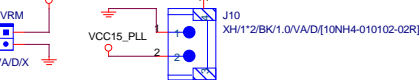
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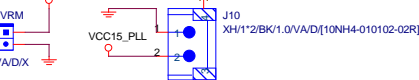
VCC15_PLL



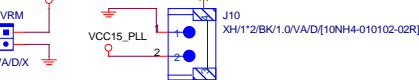
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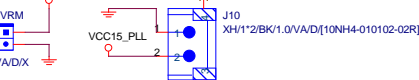
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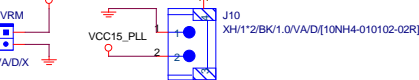
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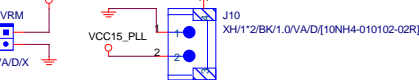
VCC15_PLL



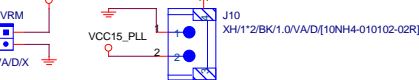
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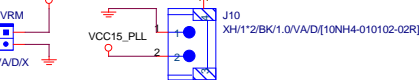
VCC15_PLL



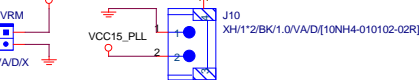
VCC15_PLL



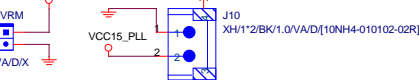
VCC15_PLL



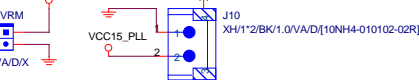
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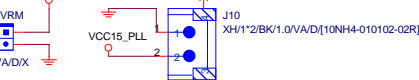
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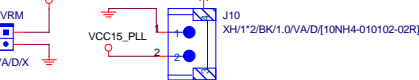
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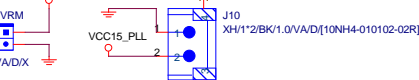
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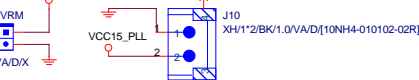
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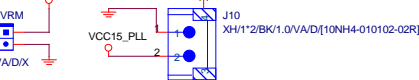
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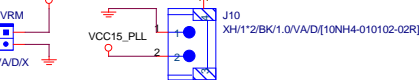
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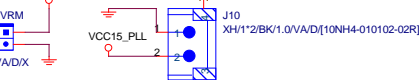
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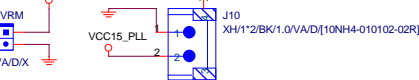
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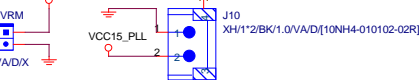
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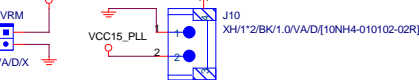
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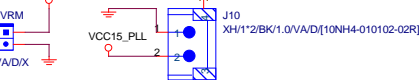
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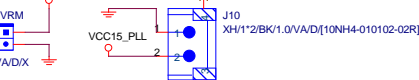
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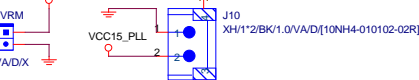
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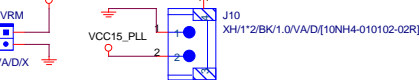
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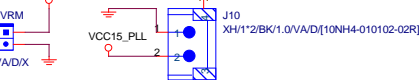
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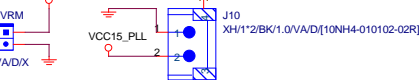
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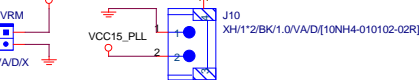
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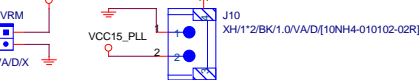
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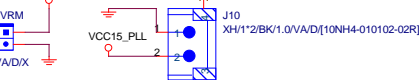
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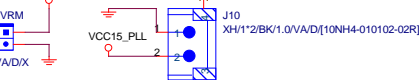
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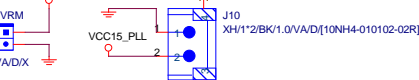
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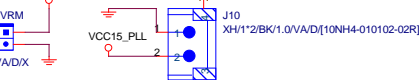
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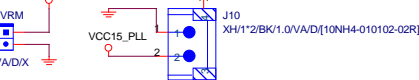
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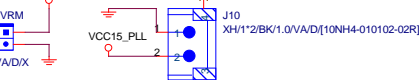
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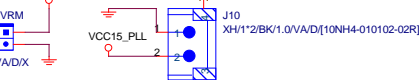
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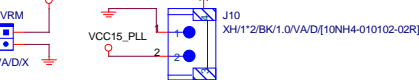
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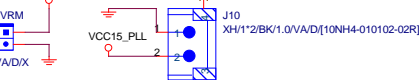
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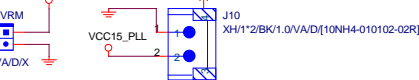
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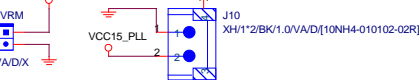
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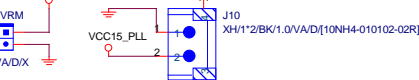
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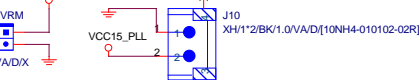
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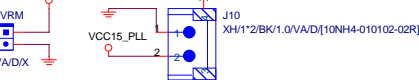
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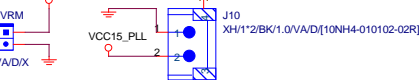
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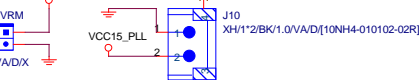
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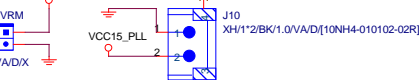
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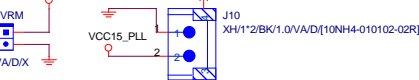
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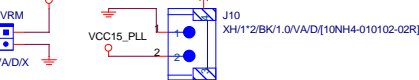
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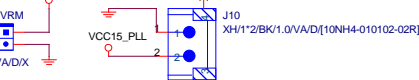
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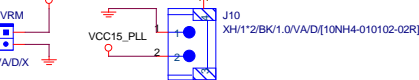
VCC15_PLL



VCC15_PLL

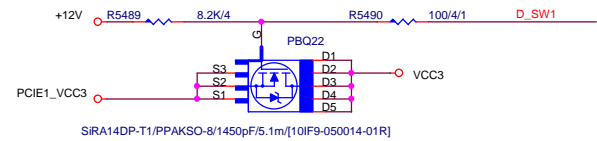


VCC15_PLL

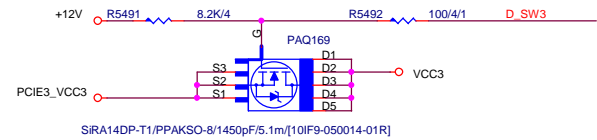


VCC1

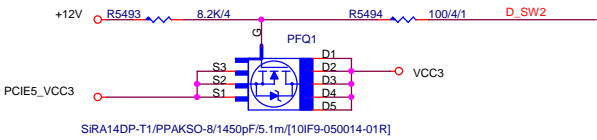
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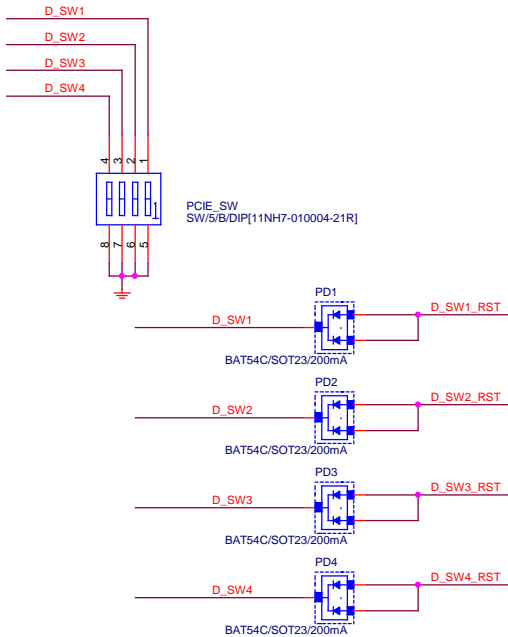
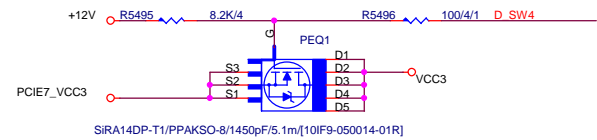
PCIEX16_2



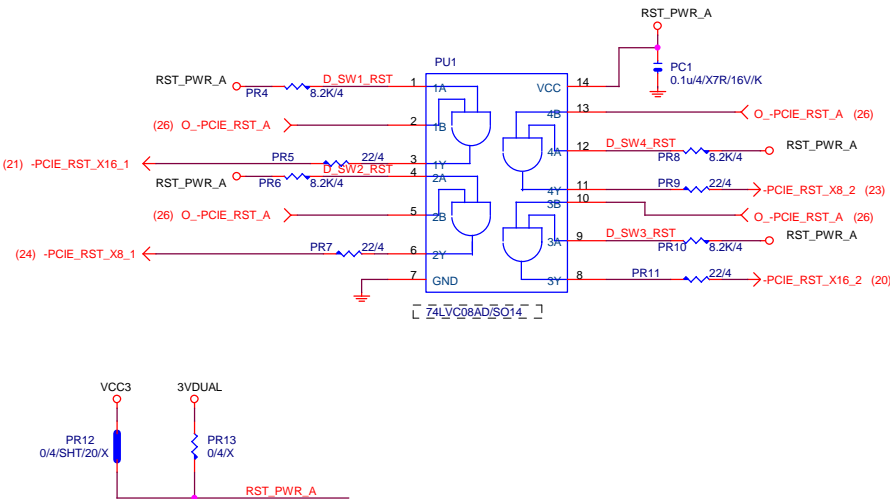
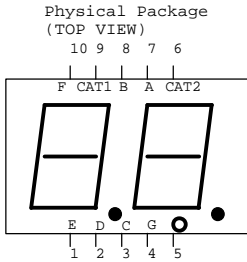
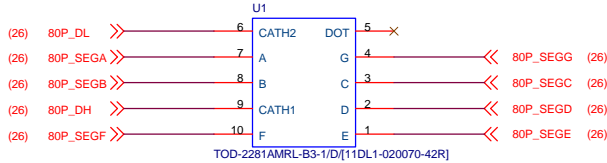
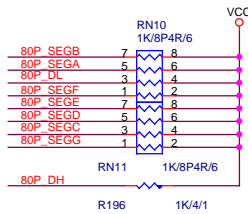
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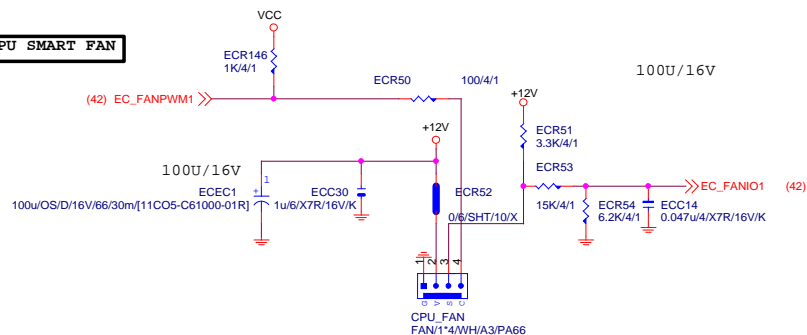
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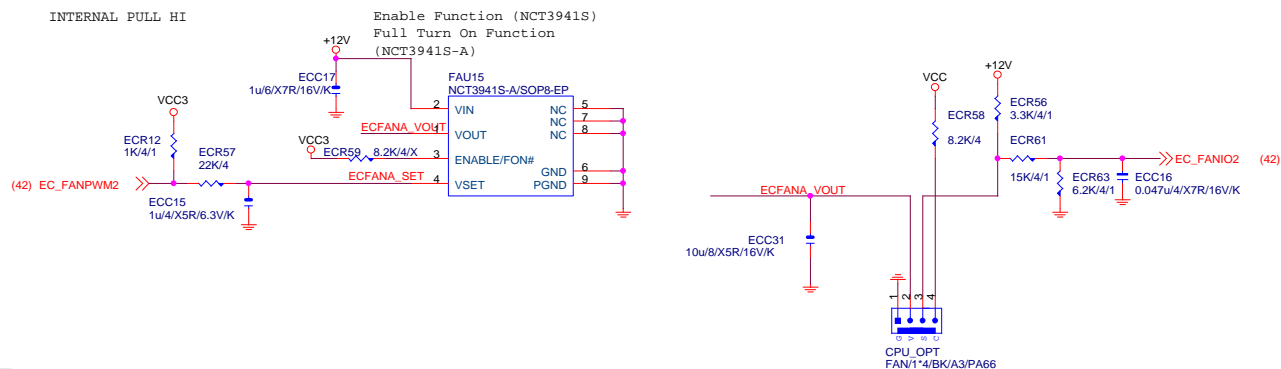
80 PORT



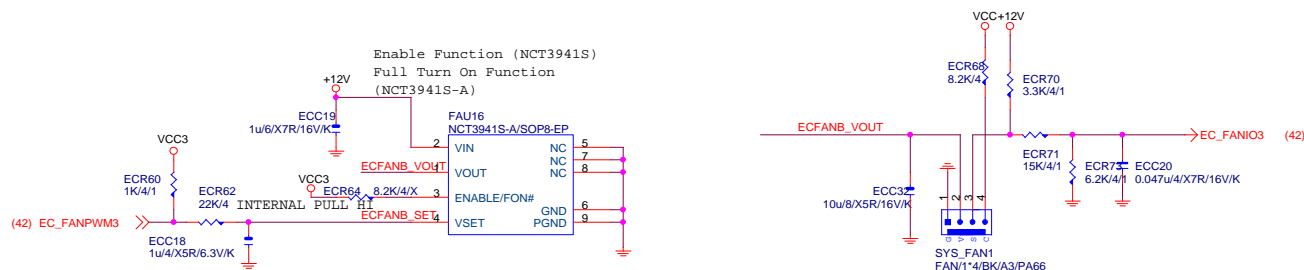
CPU SMART FAN



CPUOPT FAN



SYS FAN1



Gigabyte Technology

Title			HWM,KB/MS, FAN CTRL
Size	Document Number	Rev	
Custom	GA-X99-SOC Force-LN2	1.0	
Date:	Tuesday, September 09, 2014	Sheet	46 of 67

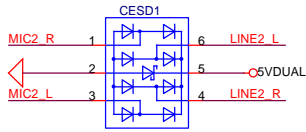
Thermal pad is DGND

Thermal pad is DGND

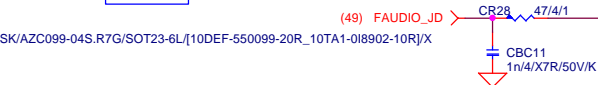
Digital Area

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

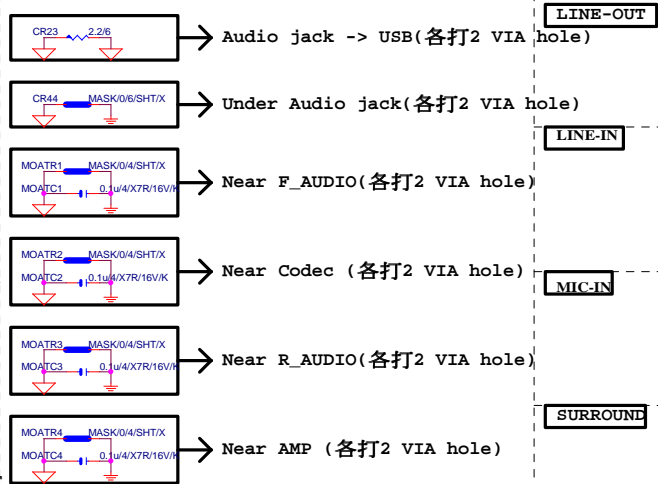
Close to ALC1150

鍍黑鎳金屬外罩+
GND切割

AUDIO_HS[11NH1-00Z97S-03R]

Gigabyte Technology

Title			HD AUDIO ALC887B-VD2/VT1708S/VT2021
Size	Document Number	Rev	
Custom			
Date:			Tuesday, September 09, 2014
Sheet			48 of 67
GA-X99-SOC Force-LN2			1.0



LINE-OUT

LINE-IN

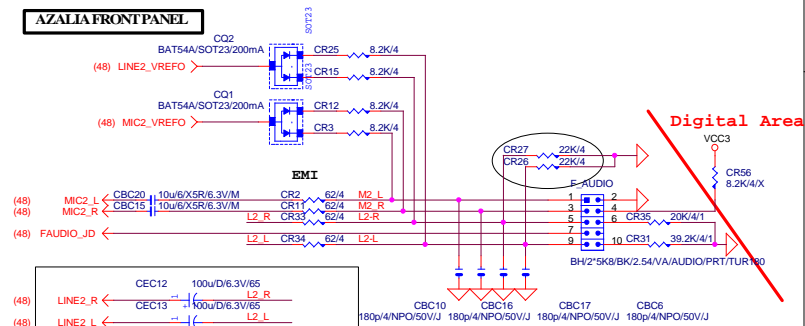
MIC-IN

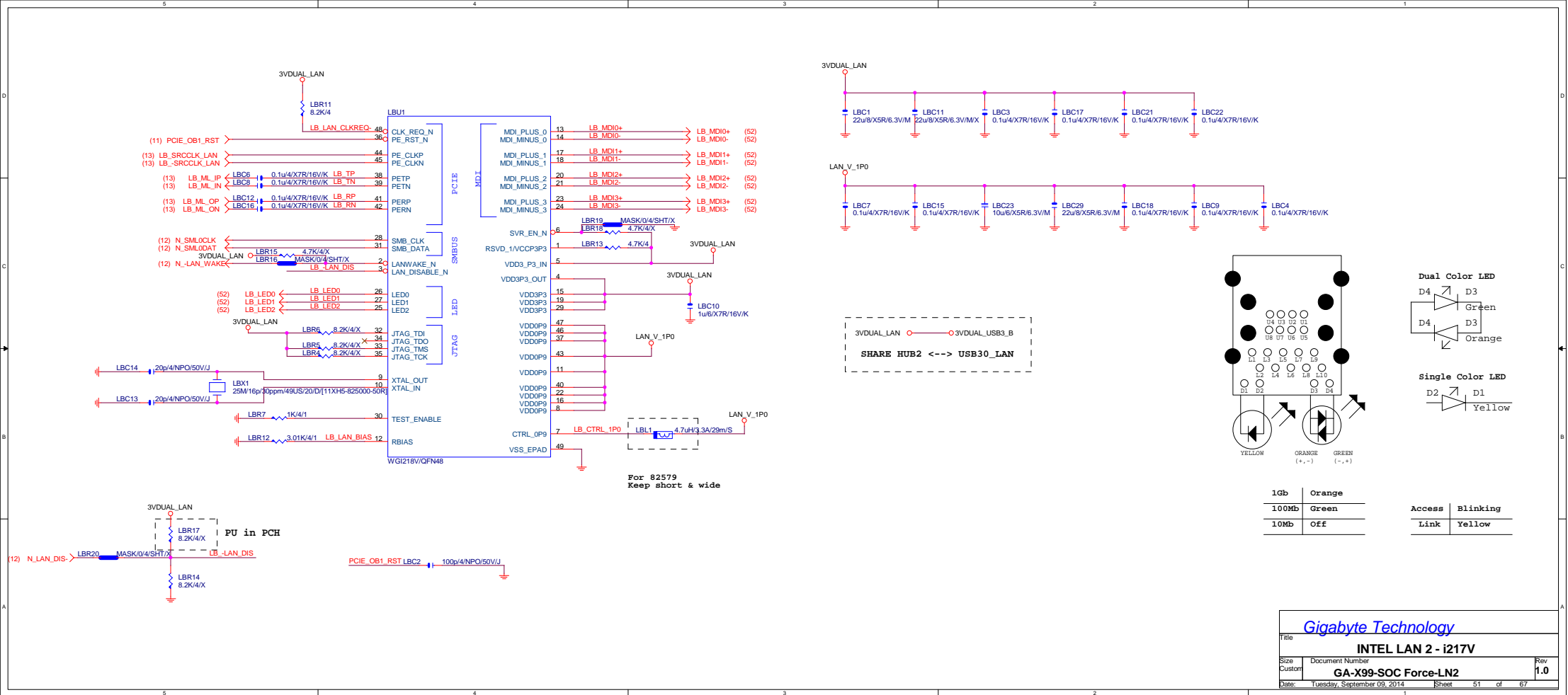
SURROUND

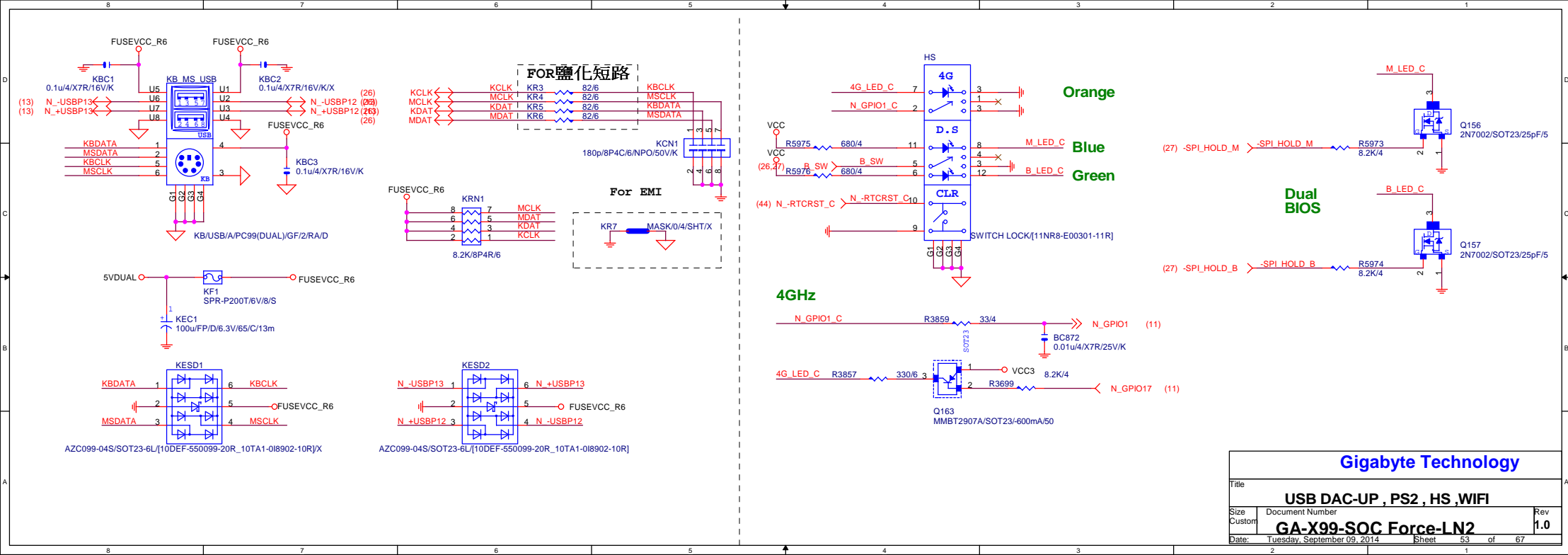
CEN/LFE

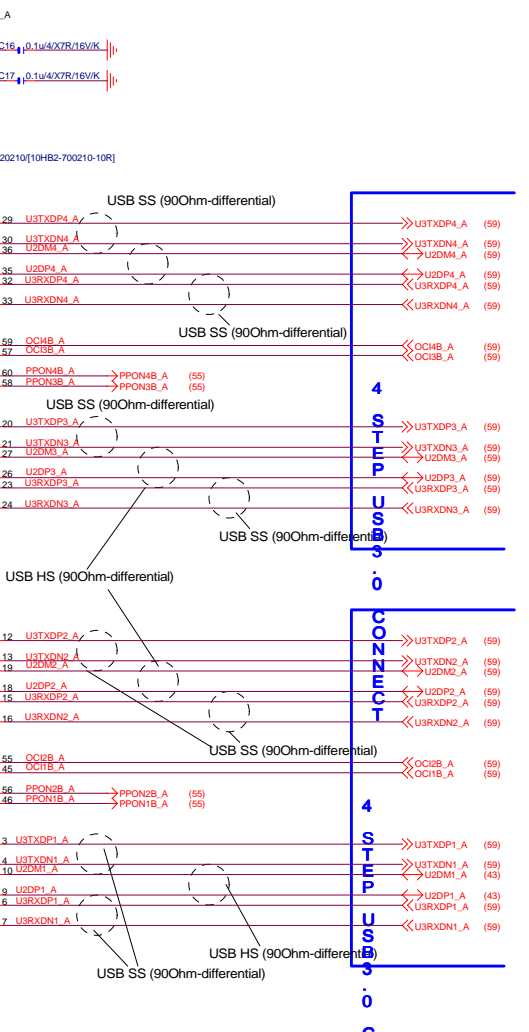
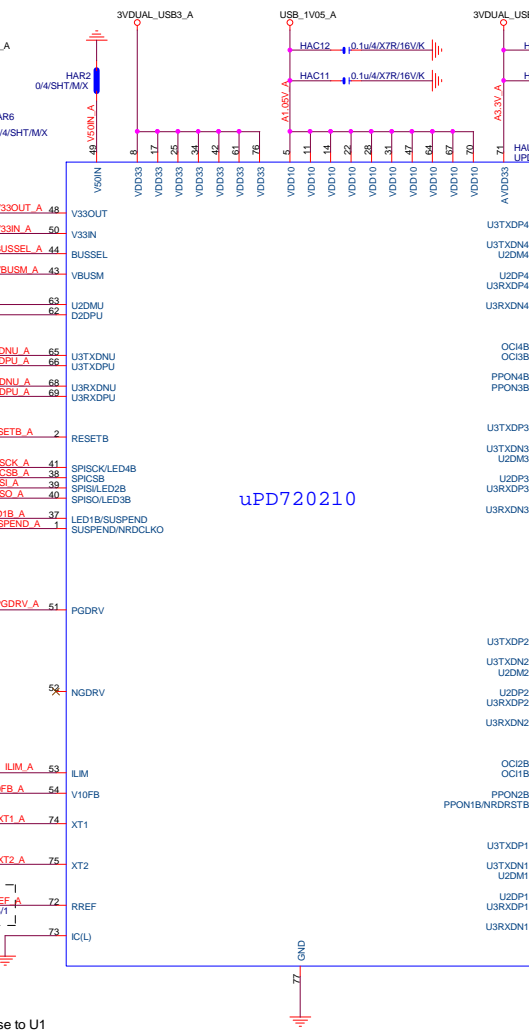
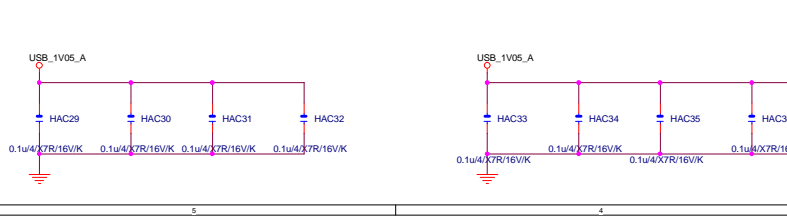
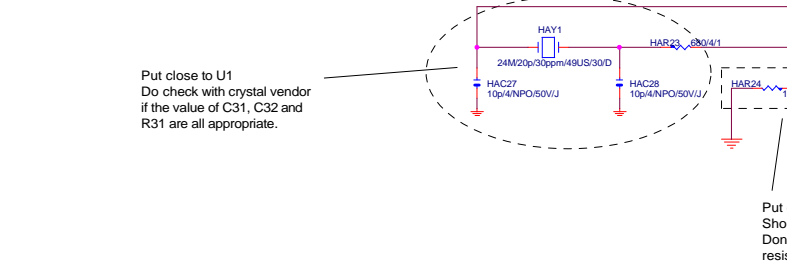
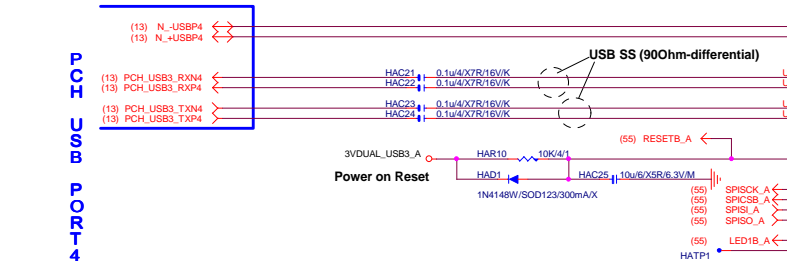
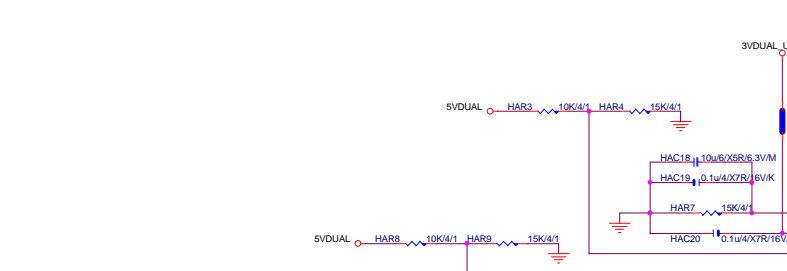
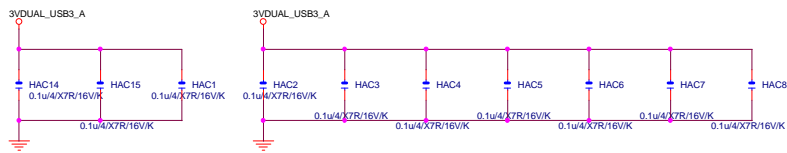
- (50) -

AZALIA FRONT PANEL





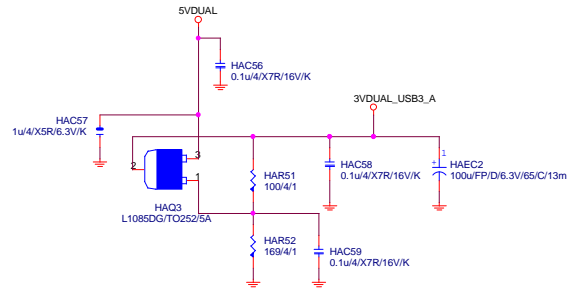




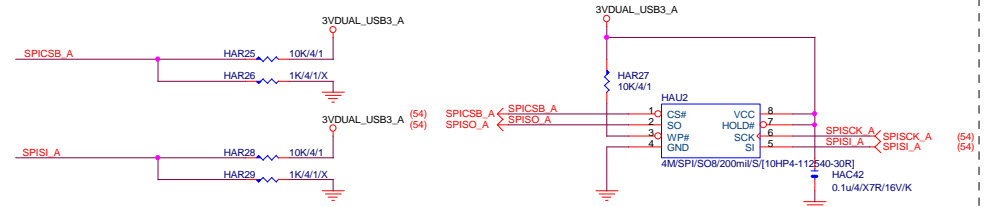
Put close to U1
Do check with crystal vendor
if the value of C31, C32 and
R31 are all appropriate.

Put close to U1
Short and broad connection to GND
Don't split R32 into multiple
resistors.

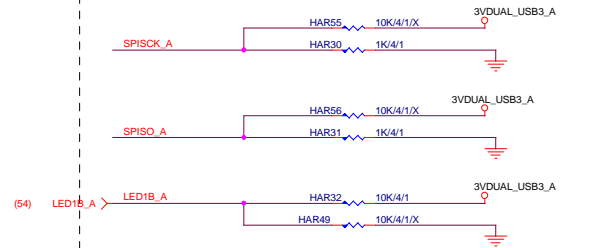
3VDUAL_USB_1



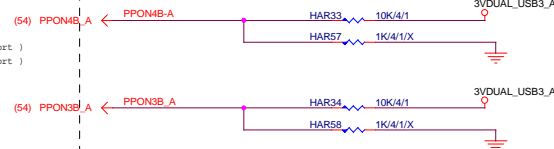
```
# External SPI ROM ; SPI ROM
attached mode
```



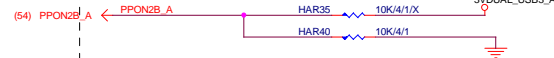
Battery Charging



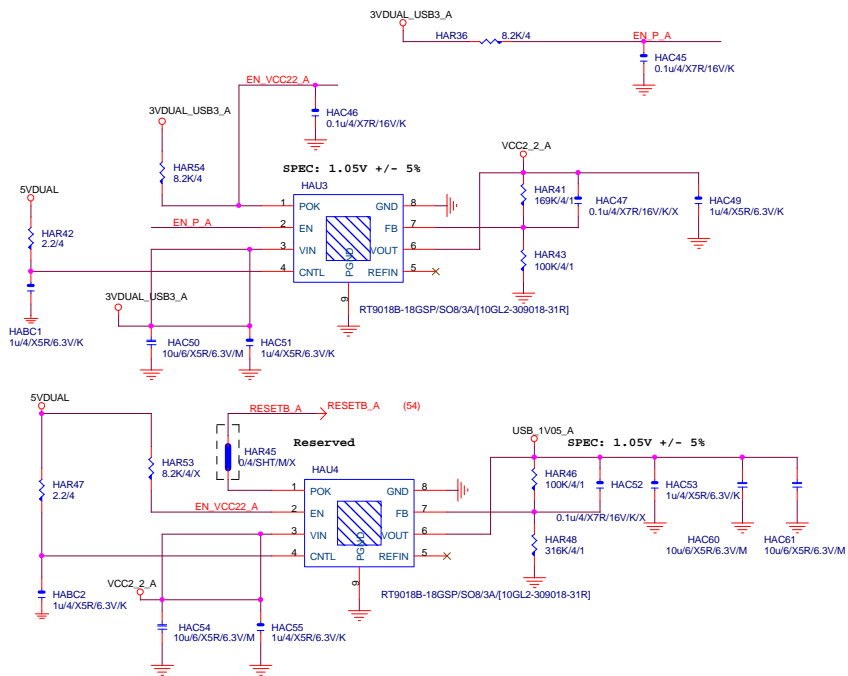
Number of Ports ; 4Ports
mode

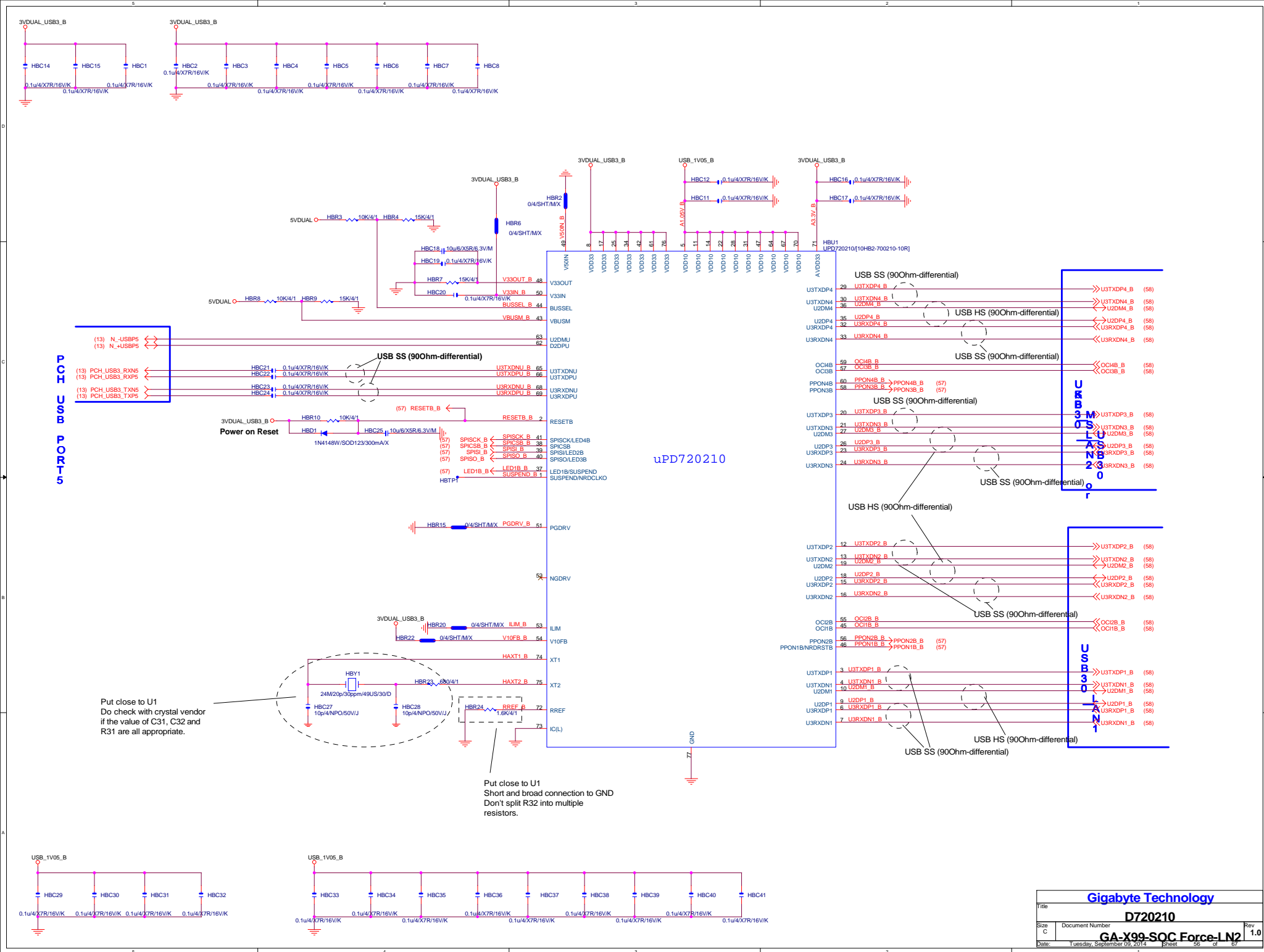


```
| #5 VBUS Power Control
| ; Individual mode
```

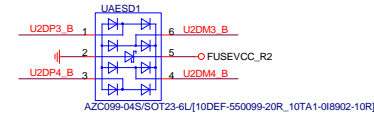
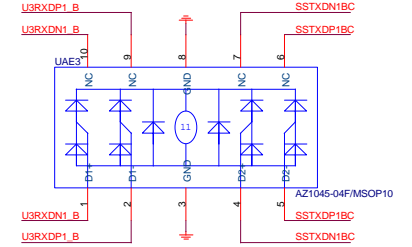
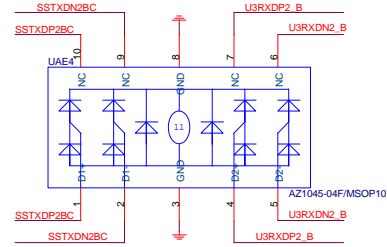
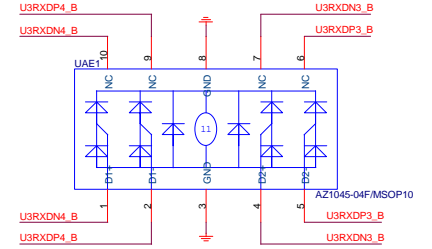
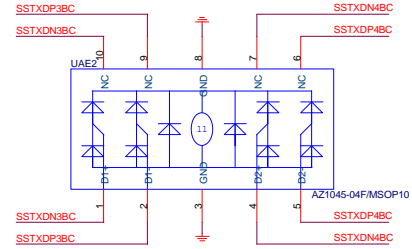
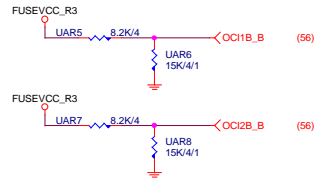
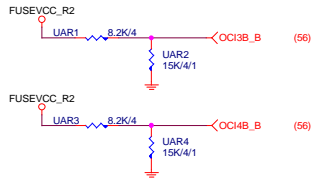
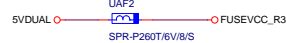
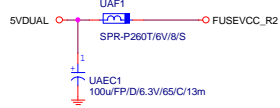
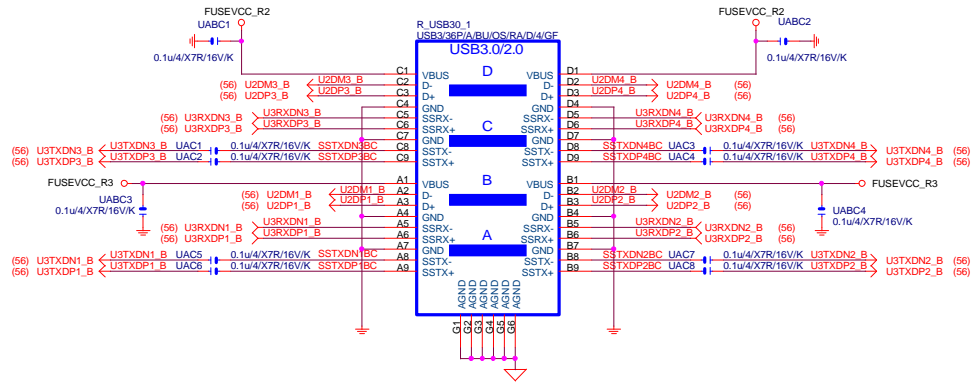


```
# PPON1B Pin Function ;
Port1 PPONB mode
```

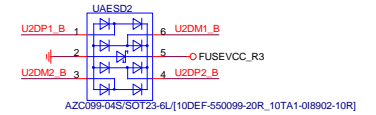




R_USB30 PORT



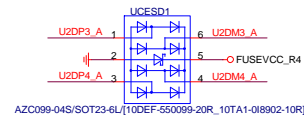
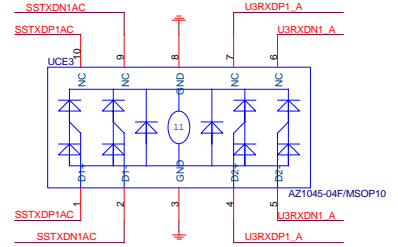
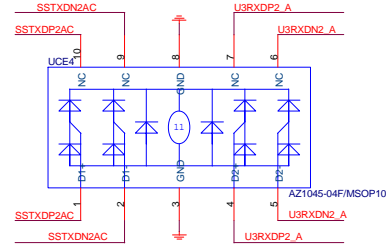
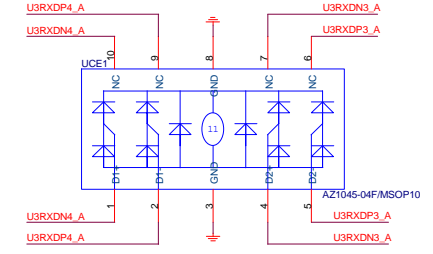
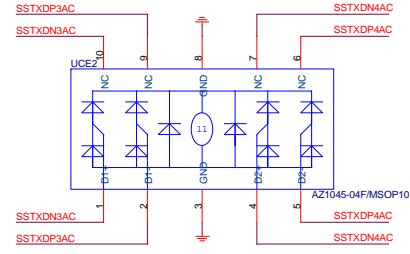
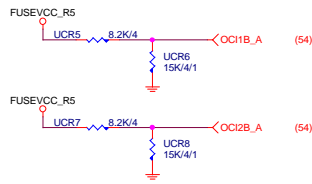
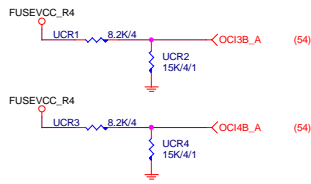
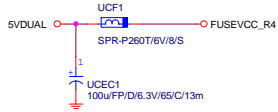
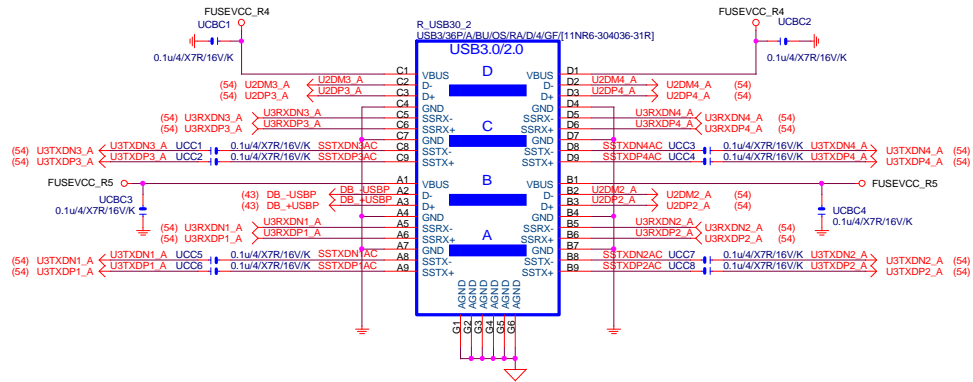
Close to connector



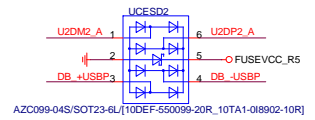
Close to connector

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R_USB30 PORT

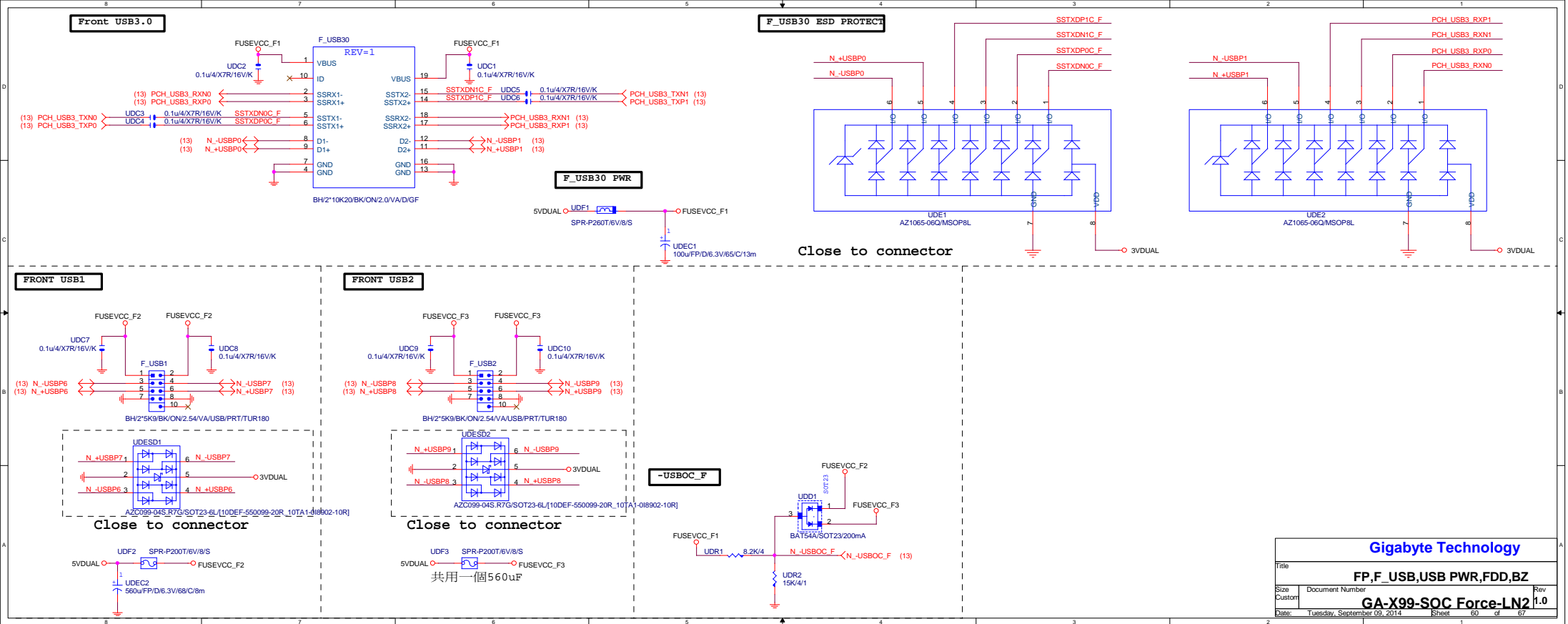


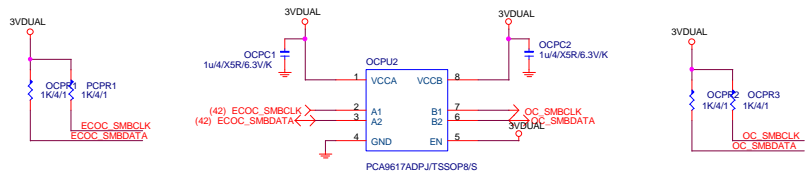
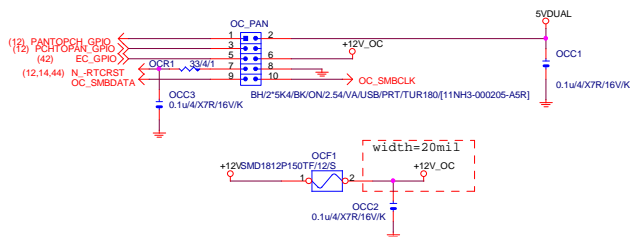
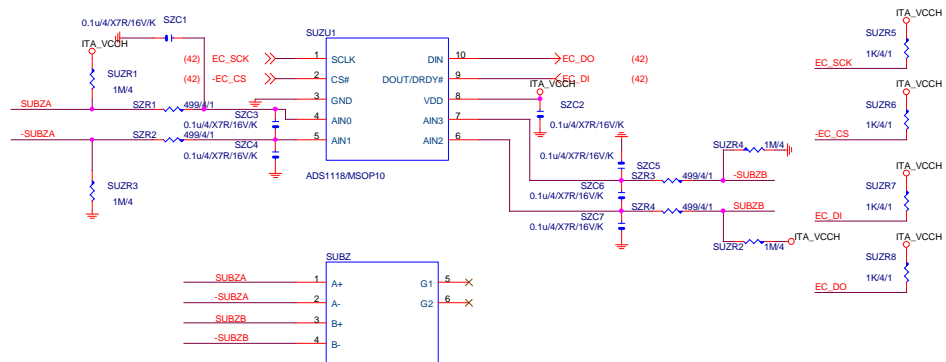
Close to connector



Close to connector

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SL_MIC1

VCC3

SLR1 2.2K/4/1/X

2V BIAS

SLR2 4.7K/4/X

SLC1 1u/4/X5R/6.3V/K/X

SLR4 56K/4/1/X

SLR3 150K/4/X

SLC2 0.01u/4/X7R/25V/K/X

SLR5 1K/4/1/X

R2

SL_MIC1_EN

Gain=1+(R1/R2)

前級放大

SLU1A LM358DR/SO8/X

SLR6 330K/4/1/X

R1

濾成DC

SLR7 56K/4/1/X

SLC4 1u/4/X5R/6.3V/K/X

SLR8 1K/4/1/X

R2

後級放大

SLU1B LM358DR/SO8/X

SLR9 1K/4/1/X

R1

加快放電速度

SLD2

BAT54A/SOT23/200mA/X

SLR10 100K/4/1/X

SLC5 22u/8/X5R/6.3V/M/X

防止瞬間

MIC VIN

22u/8/X5R/6.3V/M/X

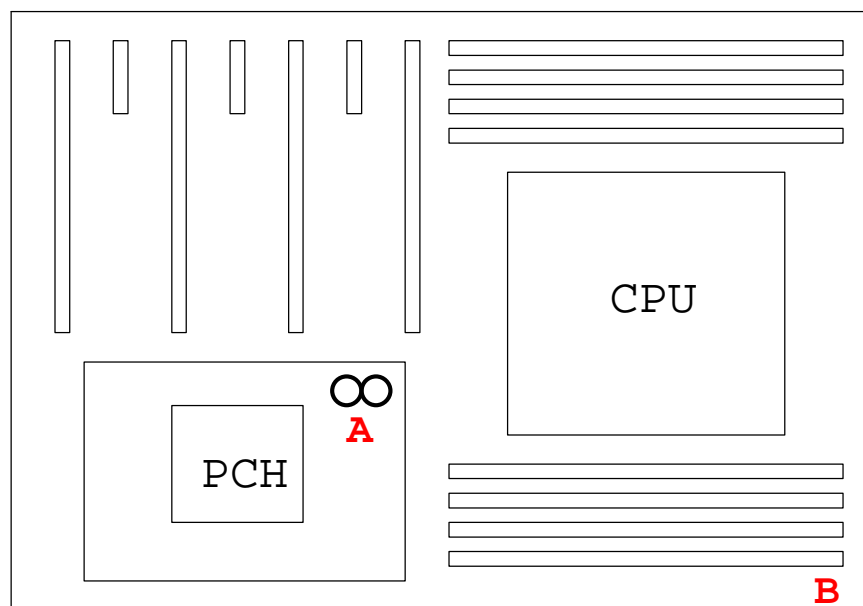
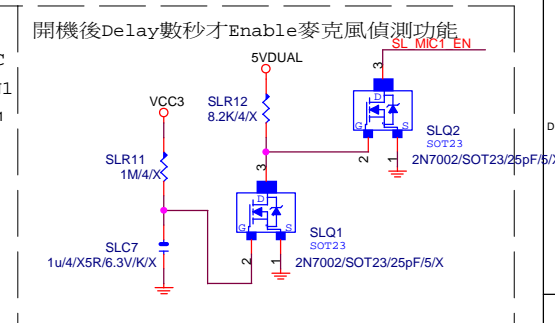
SLC6

噪声反應過快

<=3.3V DO

8620's VIN

[MIC1放在PCH_SINK下，靠近PCIEX16_1處]



1. 假設User設定系統噪音要低於45dB(即VINx=1.75V)，當VINx高於1.75V，8620會把PCH的GPI7拉Low一次。
2. 當噪音降低到VINx低於1.65V(即1.75V-0.1V)時，8620會再把PCH的GPI7拉Low一次。
3. 超過Th時，將CPU & VGA降頻或Throttle。低於Tl時，則回復正常頻率運作。

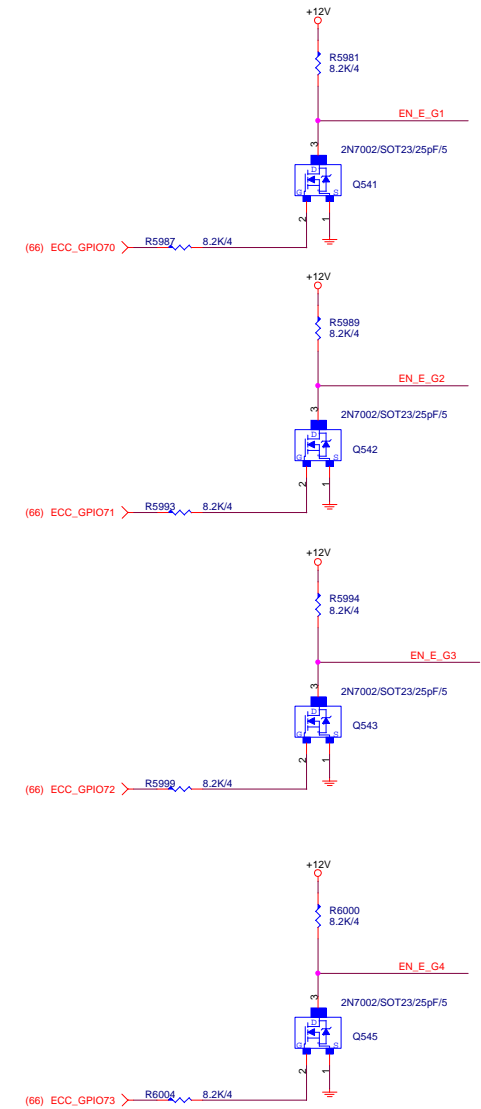
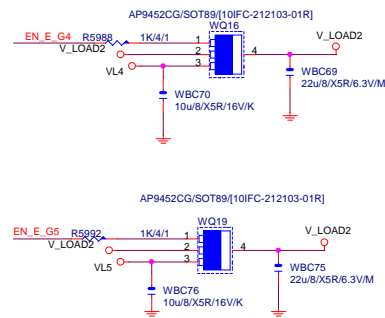
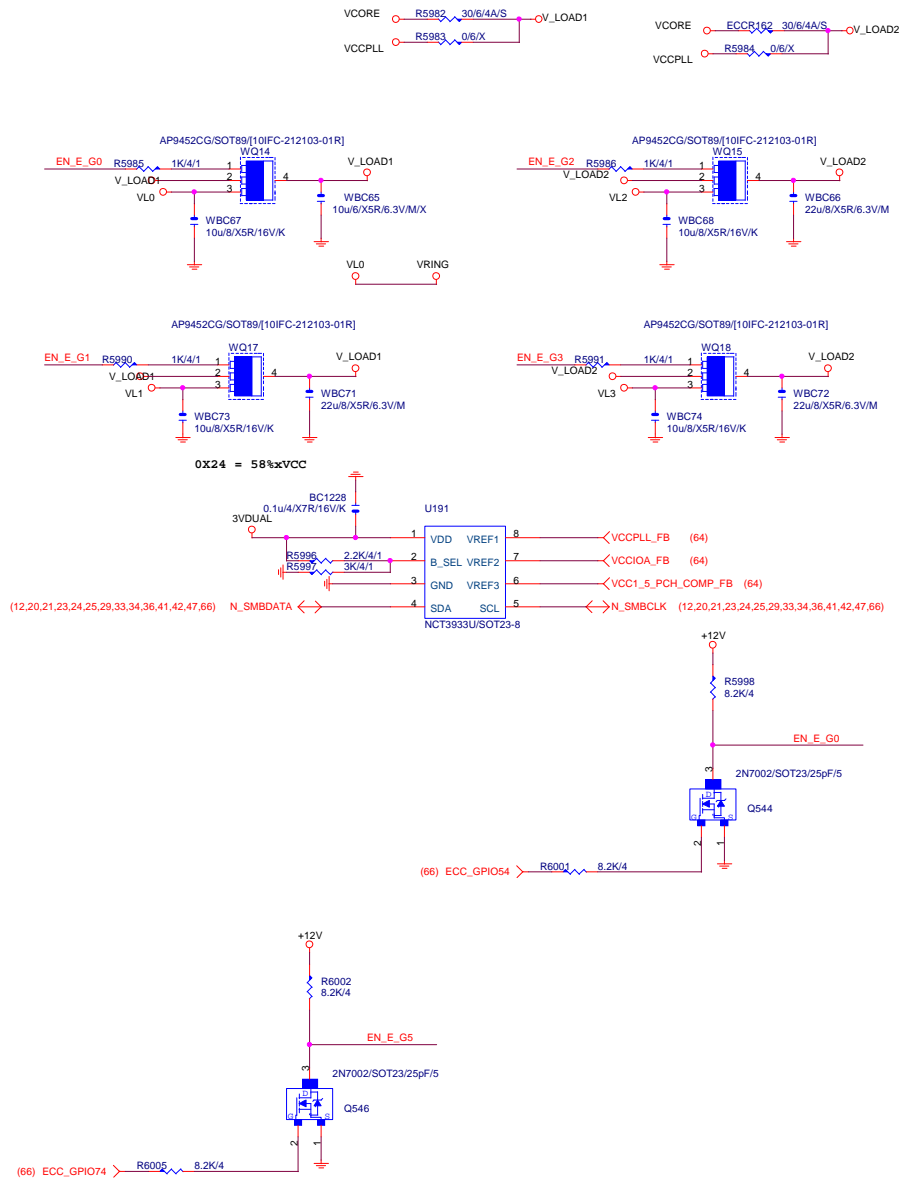
Figure 10.10 illustrates the Interrupt Mode. The graph shows Temperature (Y-axis) versus Time (X-axis). The temperature signal oscillates between levels T_h and T_L . The Interrupt signal is a square wave that transitions from low to high whenever the temperature crosses T_h or T_L . Vertical dashed lines mark the points where the temperature crosses these thresholds.

1. 麥克風不可被CPU_FAN & VGA_FAN吹到，用DIP電容擋住顯卡的風。
2. 麥克風需和OP-AMP越靠近越好，<1000mil。
3. IT8620偵測到dB值超過user設定值，通知PCH的GPI7發SMI。
4. 麥克風料號為：[10BM1-014030-01R]

dB	VINx
30	1.30V
35	1.45V
40	1.60V
45	1.75V
50	1.90V
55	2.05V
60	2.20V
65	2.35V
70	2.50V
75	2.65V
80	2.80V
85	2.95V
90	3.10V
95	3.25V
100	3.33V

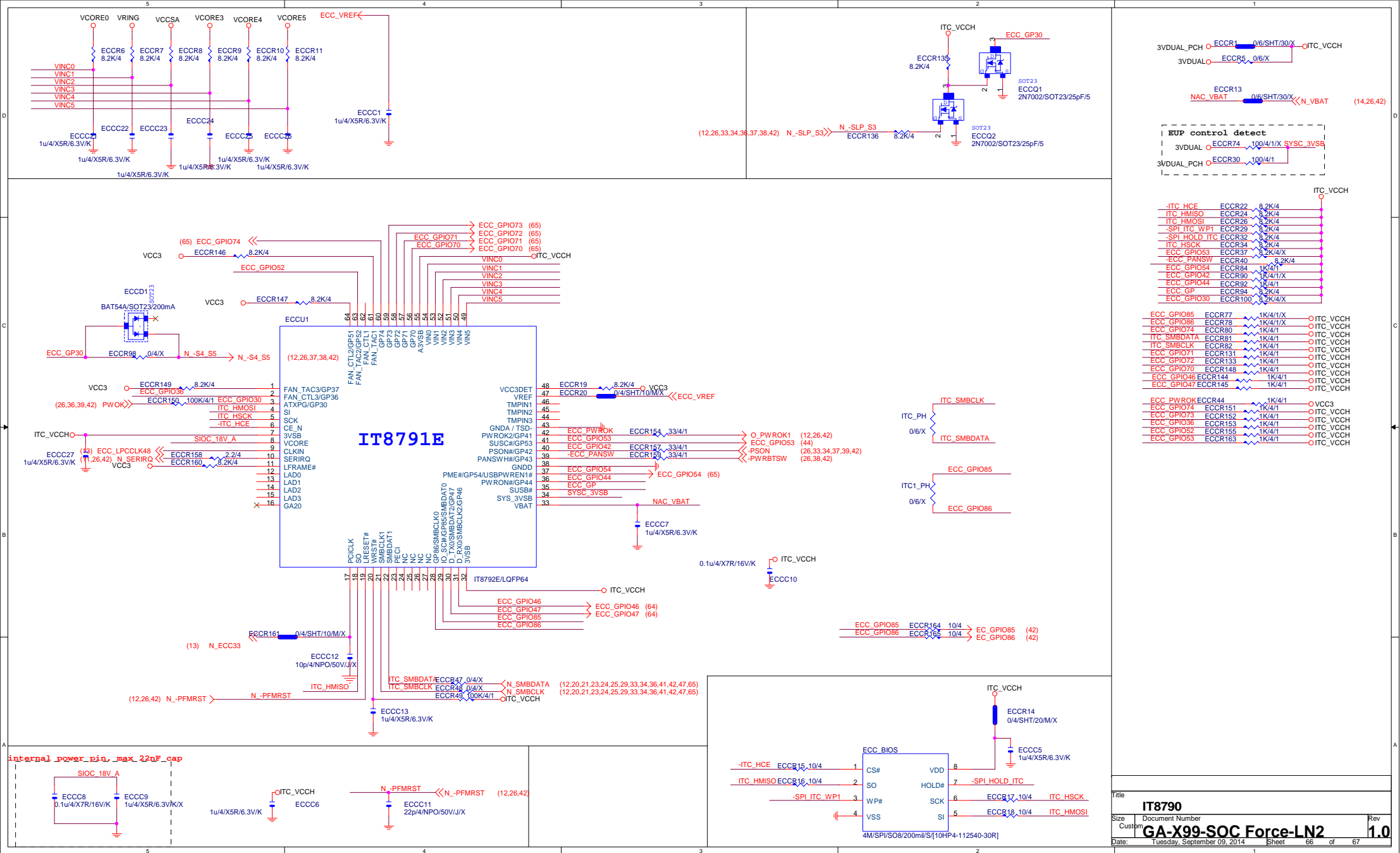
此Table只是假設值，需至無響室測試後確認。

<p align="center">Gigabyte Technology</p>			
<p align="center">Title</p> <p align="center">Sound Level</p>			
<p>Size B</p>	<p>Document Number</p> <p align="center">GA-X99-SOC Force-LN2</p>		<p>Rev 1.</p>
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PCH GPIO

PIN NAME	POWER WELL	USAGE	AFTER PLTRST	S3/S5	NOTES
GP[0]	VCC3	-ICH_PSI	IN		8.2K P/U TO VCC3
GP[1]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[2]	VCC3	-PIRQE	IN		8.2K P/U TO VCC3
GP[3]	VCC3	-PIRQF	IN		8.2K P/U TO VCC3
GP[4]	VCC3	-PIRQG	IN		8.2K P/U TO VCC3
GP[5]	VCC3	-PIRQH	IN		8.2K P/U TO VCC3
GP[6]	VCC3	GPIO6	IN		8.2K P/U TO VCC3
GP[7]	VCC3	GPIO7	IN		8.2K P/U TO VCC3
GP[8]	3VDUAL	GPIO8	OUT		8.2K P/U TO 3VDUAL
GP[9]	3VDUAL	-USBOC5	IN		USB OVER-CURRENT
GP[10]	3VDUAL	-USBOC6	IN		USB OVER-CURRENT
GP[11]	3VDUAL	GPIO11	IN		8.2K P/U TO 3VDUAL
GP[12]	3VDUAL	GPIO12	OUT		8.2K P/U TO 3VDUAL
GP[13]	3VDUAL	-LPCPME	IN		8.2K P/U TO 3VDUAL
GP[14]	3VDUAL	GPIO14	IN		8.2K P/U TO 3VDUAL
GP[15]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL (N/A)
GP[16]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[17]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[18]	VCC3	-SPI_WP0	OUT		8.2K P/U TO VCC3
GP[19]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[20]	VCC3	-SPI_WP1	OUT		8.2K P/U TO VCC3
GP[21]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[22]	VCC3	SPARE	IN		1K P/U TO VCC3
GP[23]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[24]	3VDUAL	-SKTOC	IN		8.2K P/U TO 3VDUAL (N/A)
GP[25]	3VDUAL	GPIO25	OUT		8.2K P/U TO 3VDUAL
GP[26]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[27]	3VDUAL_PCH	SPARE	OUT		8.2K P/U TO 3VDUAL_PCH
GP[28]	3VDUAL	GPIO28	OUT		8.2K P/U TO 3VDUAL
GP[29]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL (N/A)
GP[30]	3VDUAL	-S_WARN	OUT		CONNECT TO -S_ACK
GP[31]	3VDUAL_PCH	SPARE	IN		8.2K P/U TO 3VDUAL_PCH(N/A)
GP[32]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[33]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[34]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[35]	VCC3	-ACZ_DET	OUT		8.2K P/U TO VCC3
GP[36]	VCC3	SPARE	IN		8.2K P/U TO VCC3(N/A)
GP[37]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[38]	VCC3	SPARE	IN		1K P/U TO VCC3

PIN NAME	POWER WELL	USAGE	AFTER PLTRST	S3/S5	NOTES
GP[39]	VCC3	SPARE	IN		1K P/U TO VCC3
GP[40]	3VDUAL	-USBOC1	IN		USB OVER-CURRENT
GP[41]	3VDUAL	-USBOC2	IN		USB OVER-CURRENT
GP[42]	3VDUAL	-USBOC3	IN		USB OVER-CURRENT
GP[43]	3VDUAL	-USBOC4	IN		USB OVER-CURRENT
GP[44]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[45]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[46]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[47]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[48]	VCC3	SPARE	IN		1K P/U TO VCC3
GP[49]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[50]	VCC3	-REQ1	OUT		8.2K P/U TO VCC3
GP[51]	VCC3	-GNT1	OUT		1K P/U TO VCC3
GP[52]	VCC3	-REQ2	OUT		8.2K P/U TO VCC3
GP[53]	VCC3	-GNT2	IN		8.2K P/U TO VCC3(N/A)
GP[54]	VCC3	-REQ3	IN		8.2K P/U TO VCC3
GP[55]	VCC3	-GNT3	IN		8.2K P/U TO VCC3(N/A)
GP[56]	3VDUAL	SPARE	IN		8.2K P/U TO 3VDUAL
GP[57]	3VDUAL	SPARE	IN		8.2K P/U TO 3VDUAL
GP[58]	3VDUAL	SML1CLK	OUT		8.2K P/U TO 3VDUAL
GP[59]	3VDUAL	-USBOC0	IN		USB OVER-CURRENT
GP[60]	3VDUAL	SML0ART	OUT		1K P/U TO 3VDUAL
GP[61]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[62]	3VDUAL	SUSCLK	OUT		8.2K P/U TO 3VDUAL(N/A)
GP[63]	3VDUAL	-SLP_S5	OUT		8.2K P/U TO 3VDUAL(N/A)
GP[64]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[65]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[66]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[67]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[68]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[69]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[70]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[71]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[72]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[73]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[74]	3VDUAL	SML1ART	OUT		1K P/U TO 3VDUAL
GP[75]	3VDUAL	SML1DAT	IN/OUT		8.2K P/U TO 3VDUAL

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