

Model Name: GA-B85M-D2V-TM Revision 3.0

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS X1 *2 SLOT
16	PCI SLOT (NA)
17	ITE 8620 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC887-VD2
23	REAR AUDIO JACK
24	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX
27	VCORE ISL95812_1

SHEET TITLE

28	VCORE ISL95812_2
29	RT8120_DDR POWER
30	LPT
31	DVI
32	IT8892E (NA)
33	USB3 VL805 (NA)

Gigabyte Technology

Cover Sheet

GA-B85M-D2V-TM


Rev
3.0

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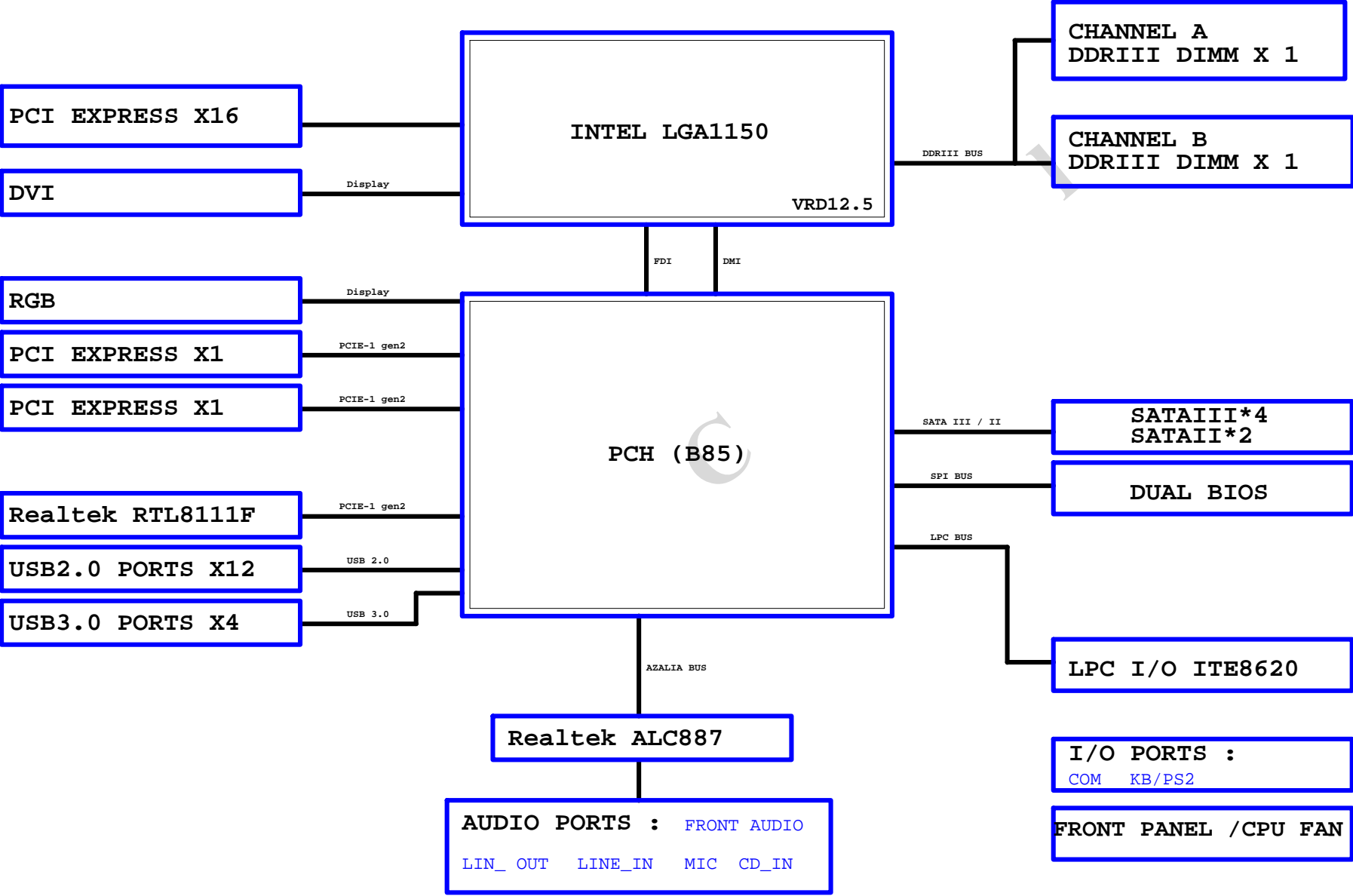
Component value change history

Circuit or PCB layout change

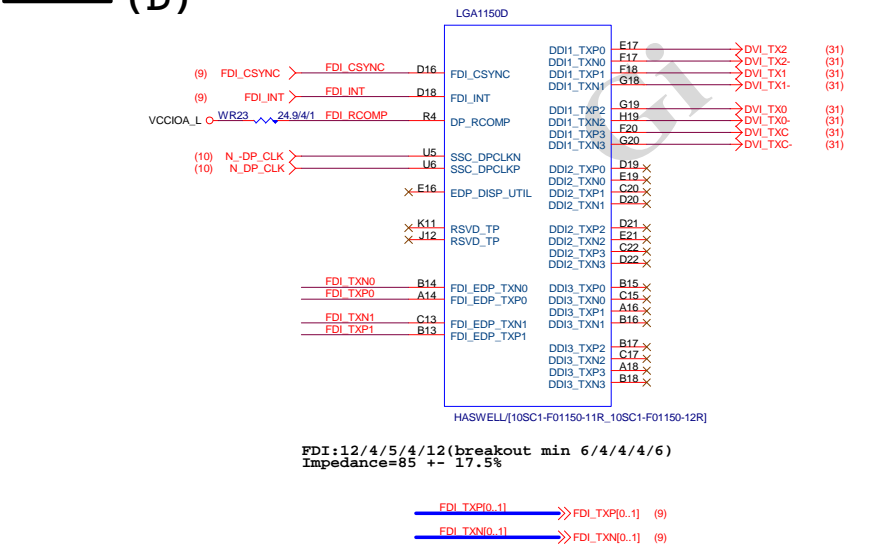
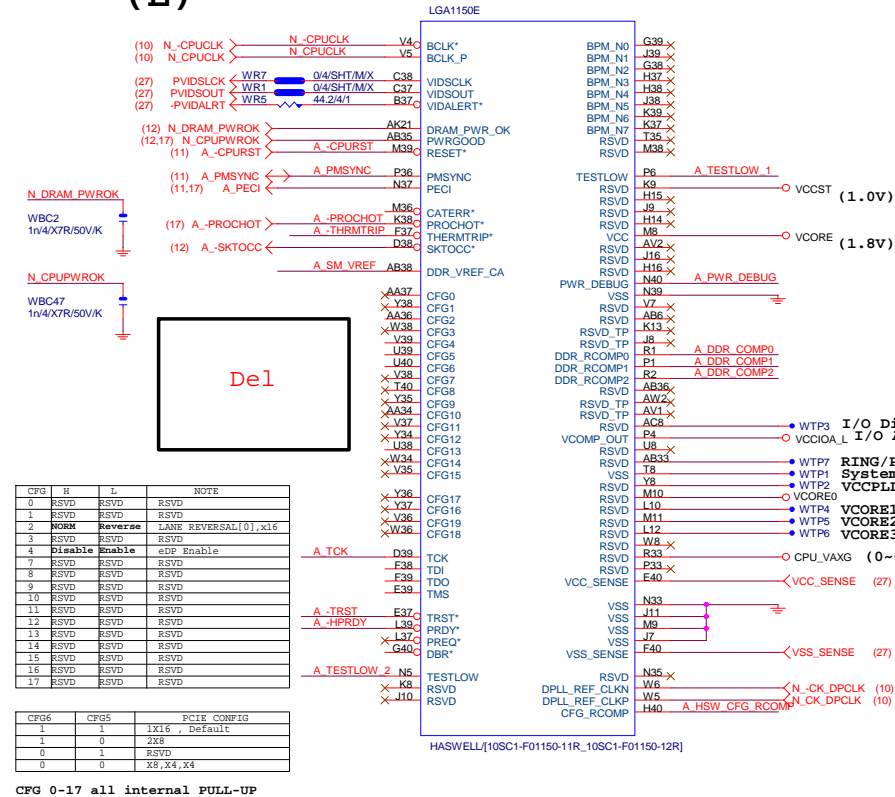
PCB : S4VNB (精成,全成信,伊利亞達)
S:單文
4:四層板
V:第二層是VCC
N:咖啡色
B:製程

				
Title				
BOM & PCB MODIFY HISTORY				
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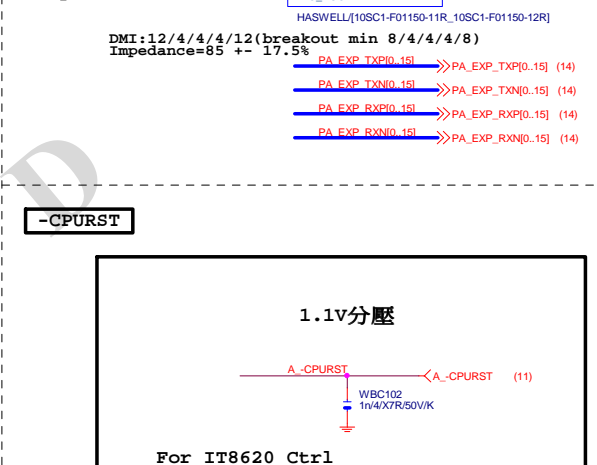
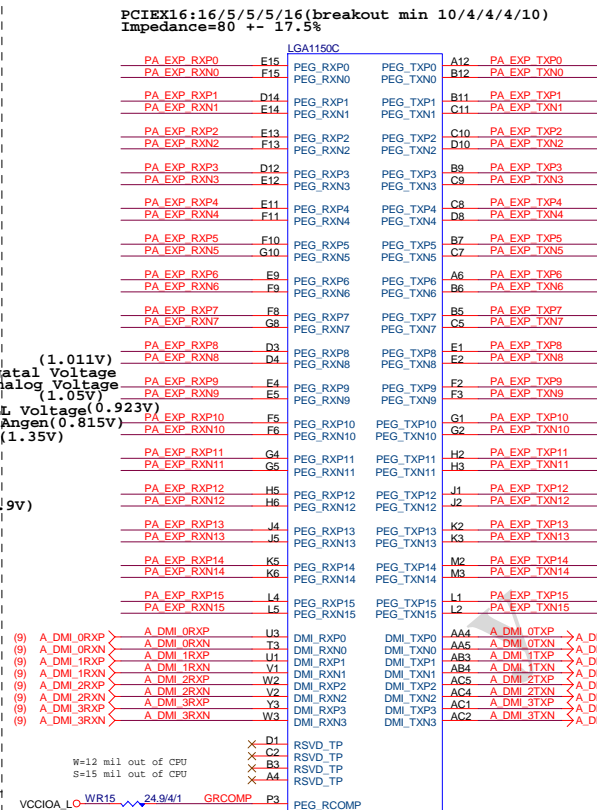
BLOCK DIAGRAM



LGA1150 (D)



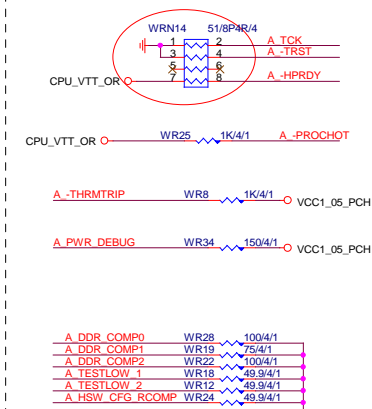
LGA1155 (C)



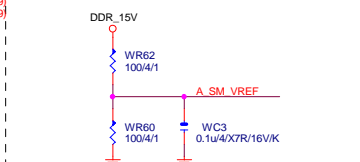
CPU SVID



CPU PU/PD



SM REF



新增



LGA1150 (A)

LGA1150A		DDR0_MA0	DDR0_D00	AD38	MDA0
MAAA0	AU13	DDR0_MA1	DDR0_D01	AD39	MDA1
MAAA1	AV16	DDR0_MA2	DDR0_D02	AF38	MDA2
MAAA2	AU16	DDR0_MA3	DDR0_D03	AF39	MDA3
MAAA3	AW17	DDR0_MA4	DDR0_D04	AD37	MDA4
MAAA4	AU17	DDR0_MA5	DDR0_D05	AD40	MDA5
MAAA5	AW18	DDR0_MA6	DDR0_D06	AE37	MDA6
MAAA6	AV17	DDR0_MA7	DDR0_D07	AF40	MDA7
MAAA7	AT18	DDR0_MA8	DDR0_D08	AH40	MDA9
MAAA8	AU18	DDR0_MA9	DDR0_D09	AH39	MDA10
MAAA9	AT19	DDR0_MA10	DDR0_D10	AK38	MDA11
MAAA10	AW11	DDR0_MA11	DDR0_D11	AK39	MDA12
MAAA11	AV19	DDR0_MA12	DDR0_D12	AH37	MDA13
MAAA12	AU19	DDR0_MA13	DDR0_D13	AH38	MDA14
MAAA13	AT20	DDR0_MA14	DDR0_D14	AK40	MDA15
MAAA14	AW21	DDR0_MA15	DDR0_D15	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_D16	AM39	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_D17	AP38	MDA18
AW9		DDR0_ODT2	DDR0_D18	AP39	MDA19
AW8		DDR0_ODT3	DDR0_D19	AM37	MDA20
AW33			DDR0_D21	AM38	MDA16
AW33		DDR0_ECC0	DDR0_D22	AP37	MDA22
AU31		DDR0_ECC1	DDR0_D23	AP40	MDA23
AU31		DDR0_ECC2	DDR0_D24	AW37	MDA29
AT33		DDR0_ECC3	DDR0_D26	AU35	MDA26
AU33		DDR0_ECC4	DDR0_D27	AU35	MDA27
AT31		DDR0_ECC5	DDR0_D28	AT37	MDA28
AW31		DDR0_ECC6	DDR0_D29	AU37	MDA24
AW31		DDR0_ECC7	DDR0_D30	AT35	MDA30
			DDR0_D31	AW35	MDA31
			DDR0_D32	AY6	MDA33
			DDR0_D33	AU6	MDA37
			DDR0_D34	AV4	MDA34
			DDR0_D35	AU4	MDA35
			DDR0_D36	AW6	MDA32
			DDR0_D37	AW4	MDA38
			DDR0_D38	AY4	MDA39
			DDR0_D39	AR1	MDA41
			DDR0_D40	AR4	MDA45
			DDR0_D41	AN3	MDA42
			DDR0_D42	AN4	MDA43
			DDR0_D43	AR2	MDA44
			DDR0_D44	AR3	MDA40
			DDR0_D45	AN2	MDA46
			DDR0_D46	AN1	MDA47
			DDR0_D47	AL1	MDA49
			DDR0_D48	AL4	MDA53
			DDR0_D49	AL4	MDA50
			DDR0_D50	AJ4	MDA51
			DDR0_D51	AL2	MDA52
			DDR0_D52	AJ2	MDA48
			DDR0_D53	AJ2	MDA54
			DDR0_D54	AJ1	MDA55
			DDR0_D55	AG1	MDA57
			DDR0_D56	AG4	MDA61
			DDR0_D57	AE3	MDA58
			DDR0_D58	AE4	MDA59
			DDR0_D59	AG2	MDA60
			DDR0_D60	AG3	MDA56
			DDR0_D61	AE2	MDA62
			DDR0_D62	AE1	MDA63
			DDR0_D63	AE39	DQSA0
			DDR0_D64	AJ39	DQSA1
			DDR0_D65	AN39	DQSA2
			DDR0_D66	AV36	DQSA3
			DDR0_D67	AV5	DQSA4
			DDR0_D68	AP3	DQSA5
			DDR0_D69	AK3	DQSA6
			DDR0_D70	AF3	DQSA7
			DDR0_D71	AV32	DQSA8
			DDR0_D72	AE38	DQSA9
			DDR0_D73	AJ38	DQSA1
			DDR0_D74	AN38	DQSA2
			DDR0_D75	AJ36	DQSA3
			DDR0_D76	AW5	DQSA4
			DDR0_D77	AP2	DQSA5
			DDR0_D78	AK2	DQSA6
			DDR0_D79	AF2	DQSA7
			DDR0_D80	AU32	

HASWELL[10SC1-F01150-11R_10SC1-F01150-12R]

LGA1150 (B)

LGA1150B		DDR1_MA0	AE34	MD80
MAAB0	AL19	DDR1_MA1	AE35	MD81
MAAB1	AK23	DDR1_MA2	AG35	MD82
MAAB2	AM22	DDR1_MA3	AH35	MD83
MAAB3	AM23	DDR1_MA4	AD34	MD84
MAAB4	AP23	DDR1_MA5	AD35	MD85
MAAB5	AL23	DDR1_MA6	AG34	MD86
MAAB6	AY24	DDR1_MA7	AH34	MD87
MAAB7	AV25	DDR1_MA8	AL34	MD88
MAAB8	AU26	DDR1_MA9	AL35	MD89
MAAB9	AW25	DDR1_MA10	AK31	MD810
MAAB10	AP18	DDR1_MA11	AL31	MD811
MAAB11	AY25	DDR1_MA12	AK34	MD812
MAAB12	AV26	DDR1_MA13	AK35	MD813
MAAB13	AR15	DDR1_MA14	AK32	MD814
MAAB14	AV27	DDR1_MA15	AL32	MD815
MAAB15	AY28			
MODT_B0	AM17	DDR1_ODT0	AP34	MD817
MODT_B1	AL16	DDR1_ODT1	AN31	MD819
AM16		DDR1_ODT2	AP31	MD823
AK15		DDR1_ODT3	AN35	MD820
AM26			AP35	MD816
AM25		DDR1_ECC0	AN32	MD818
AP25		DDR1_ECC1	AP32	MD822
AP26		DDR1_ECC2	AM29	MD825
AL26		DDR1_ECC3	AM28	MD828
AL25		DDR1_ECC4	AR29	MD827
AR26		DDR1_ECC5	AR28	MD830
AR26		DDR1_ECC6	AL23	MD824
AR26		DDR1_ECC7	AL28	MD829
		DDR1_BA0	AP29	MD826
		DDR1_BA1	AP28	MD831
		DDR1_BA2	AR12	MD832
		DDR1_CS_N0	AL12	MD835
		DDR1_CS_N1	AR13	MD836
		DDR1_CS_N2	AP13	MD837
		DDR1_CS_N3	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
			AM7	MD851
			AH6	MD861
			AH7	MD860
			AE6	MD859
			AE7	MD863
			AJ6	MD856
			AJ7	MD857
			AF6	MD858
			AF7	MD862
			AF35	DQSB0
			AL33	DQSB1
			AN28	DQSB2
			AN29	DQSB3
			AN12	DQSB4
			AP8	DQSB5
			AL8	DQSB6
			AG7	DQSB7
			AN25	
			AE34	DQSB0
			AK33	DQSB1
			AN33	DQSB2
			AN29	DQSB3
			AL13	DQSB4
			AR8	DQSB5
			AM8	DQSB6
			AG6	DQSB7
			AN26	

VREF DOA
VREF DOB

WBC34 0.1u4/X7R/16V/K/X

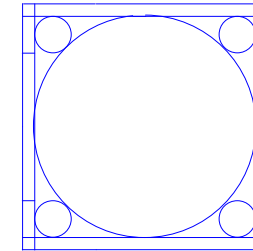
WBG33 0.1u4/X7R/16V/K/X

Place in CPU bottom side

未上件

HASWELL[10SC1-F01150-11R_10SC1-F01150-12R]

LGA1150 (CR)

CR
CPU RETAINTION/X

LGA1150



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

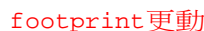
DDR BUS

(7)	MODT_A[0..1]	MODT_A0..1
(8)	MODT_B[0..1]	MODT_B0..1
(7)	MDA[0..63]	MDA0..63
(8)	MDB[0..63]	MDB0..63
(7)	DQSA[0..7]	DQSA0..7
(7)	DQSA[0..7]	DQSA0..7
(7)	MAAA[0..15]	MAAA0..15
(8)	MAAB[0..15]	MAAB0..15
(8)	DQSB[0..7]	DQSB0..7
(8)	DQSB[0..7]	DQSB0..7

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Title		CPU LGA1150-B	
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(F, J)



(G,H,I)



(X18)



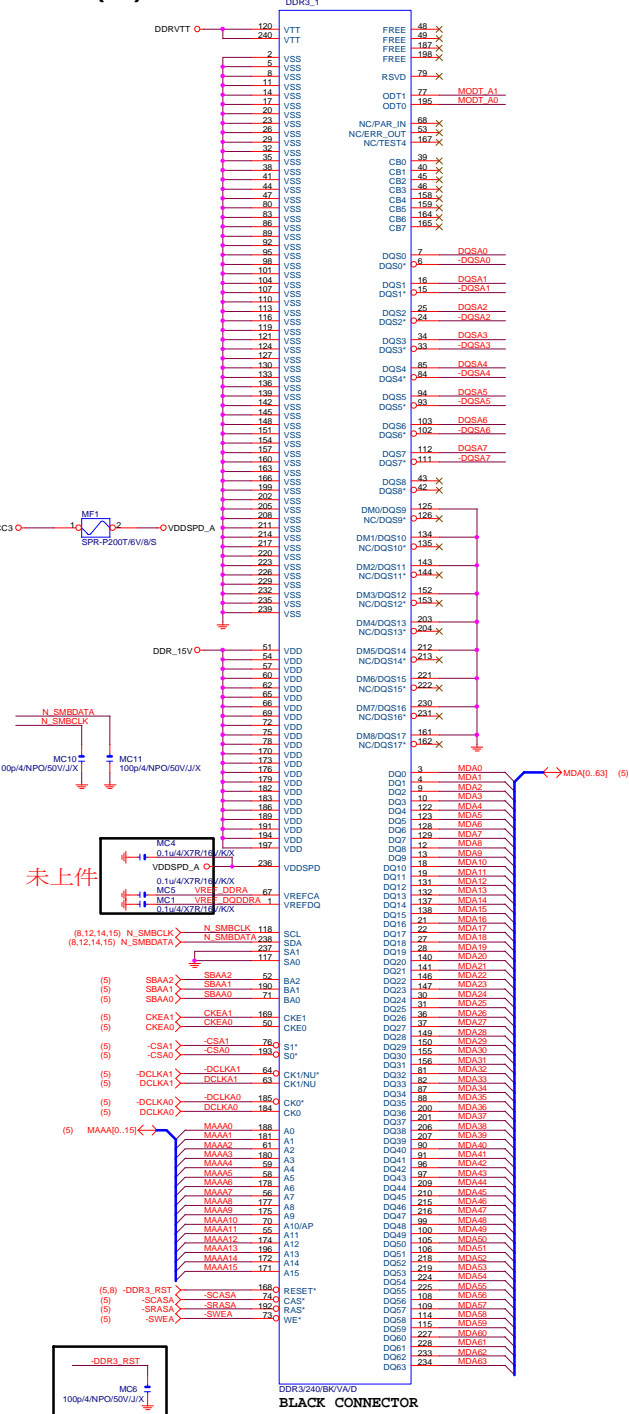
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Title			
CPU LGA1150-C			
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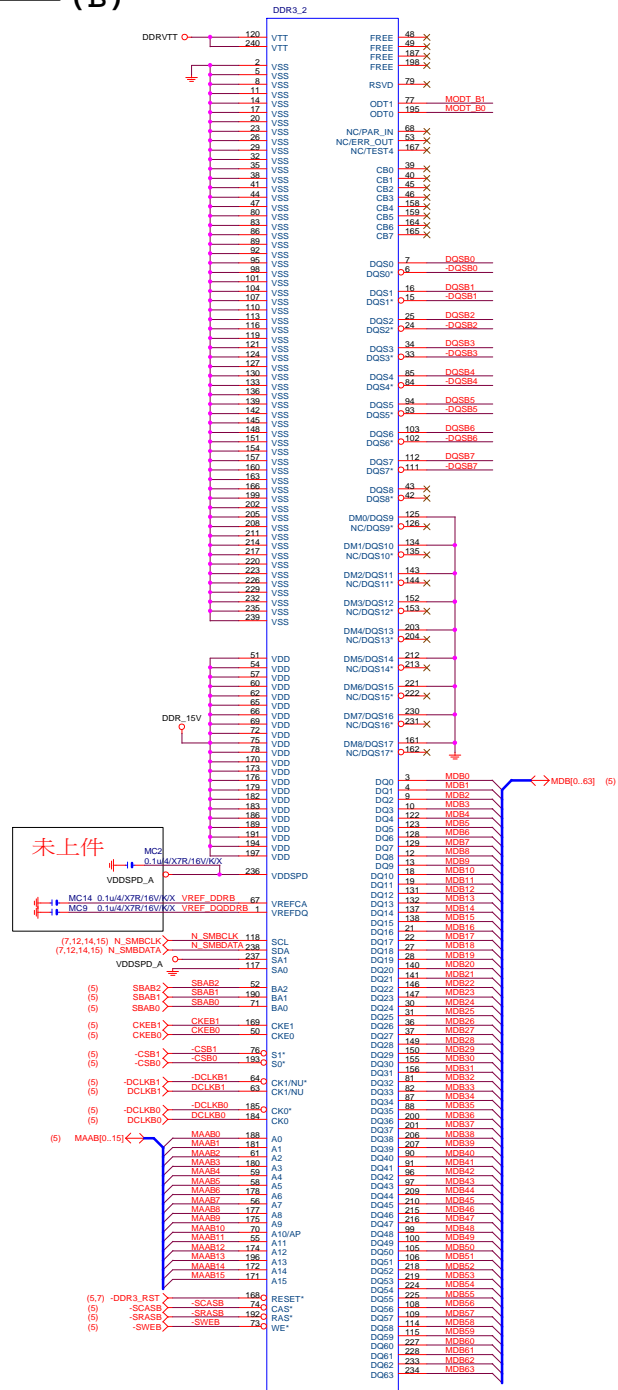
DDR3

(A)

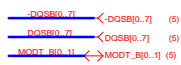


DDR3

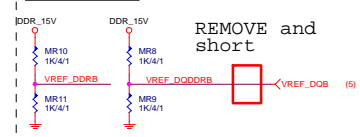
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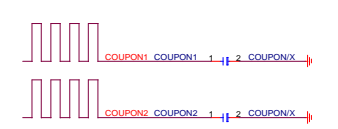
DDR3/240/BK/VA/D
BLACK CONNECTOR



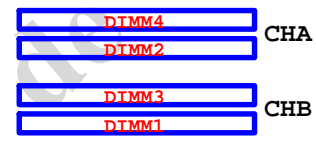
DDR3 VREF



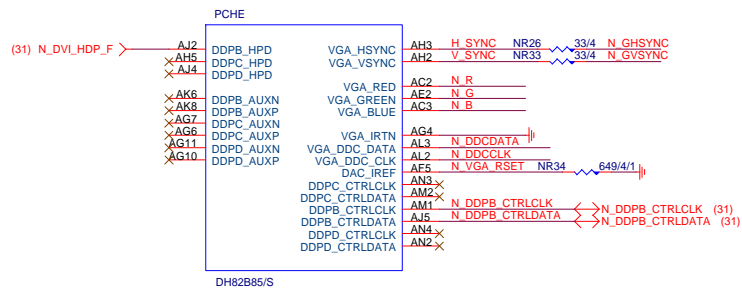
COUPON



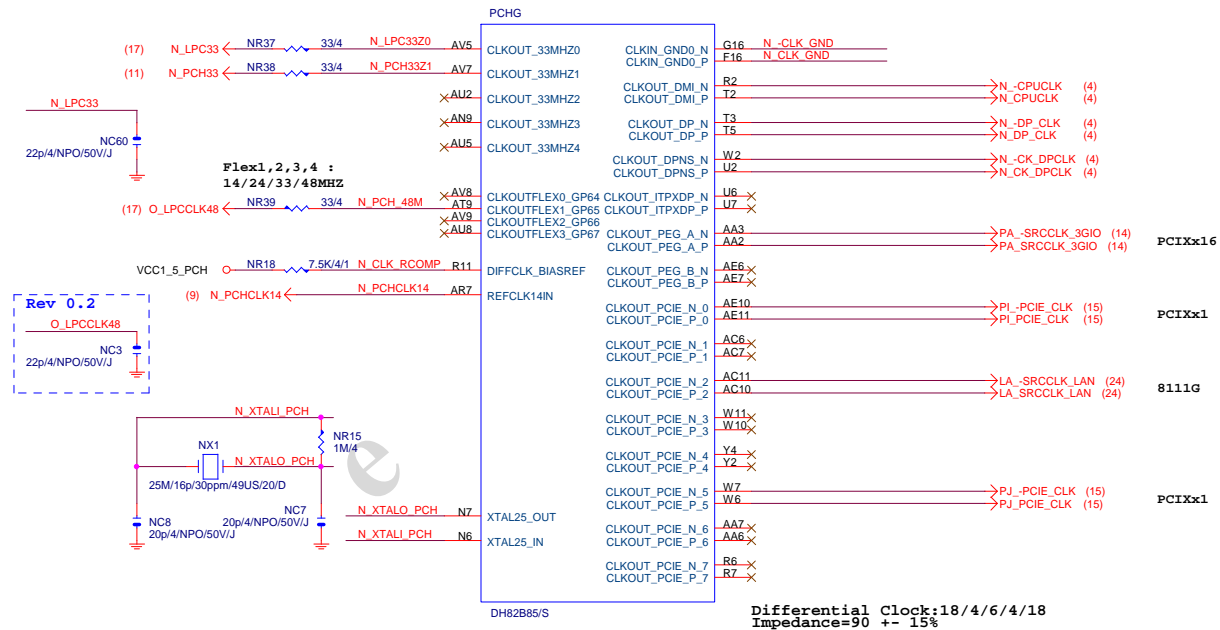
CPU



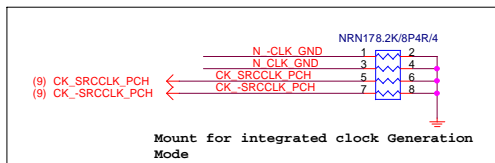
PCH (E)



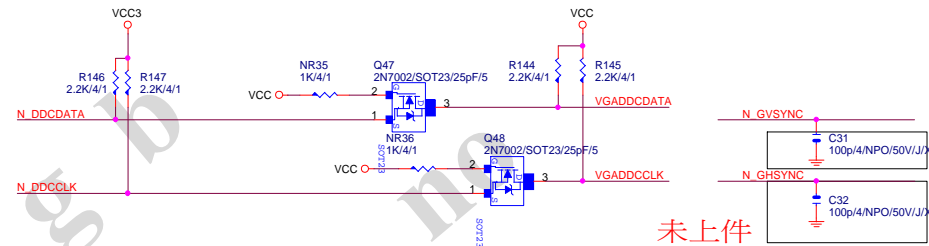
PCH (G)



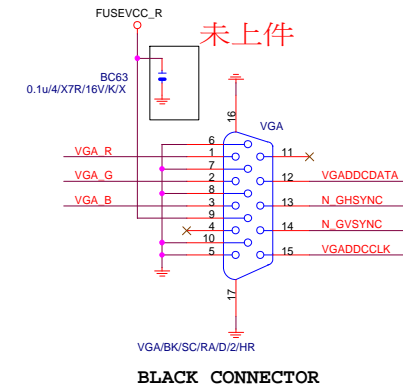
PCH CLK PD



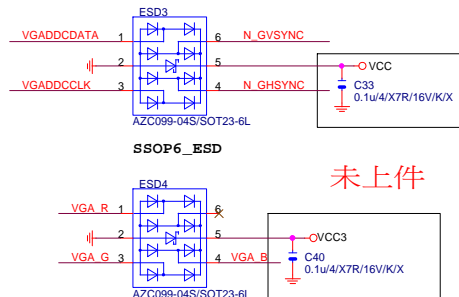
VGA DDC



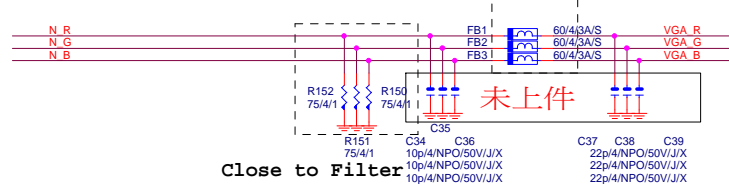
VGA CONNECTOR



VGA ESD



VGA DDC

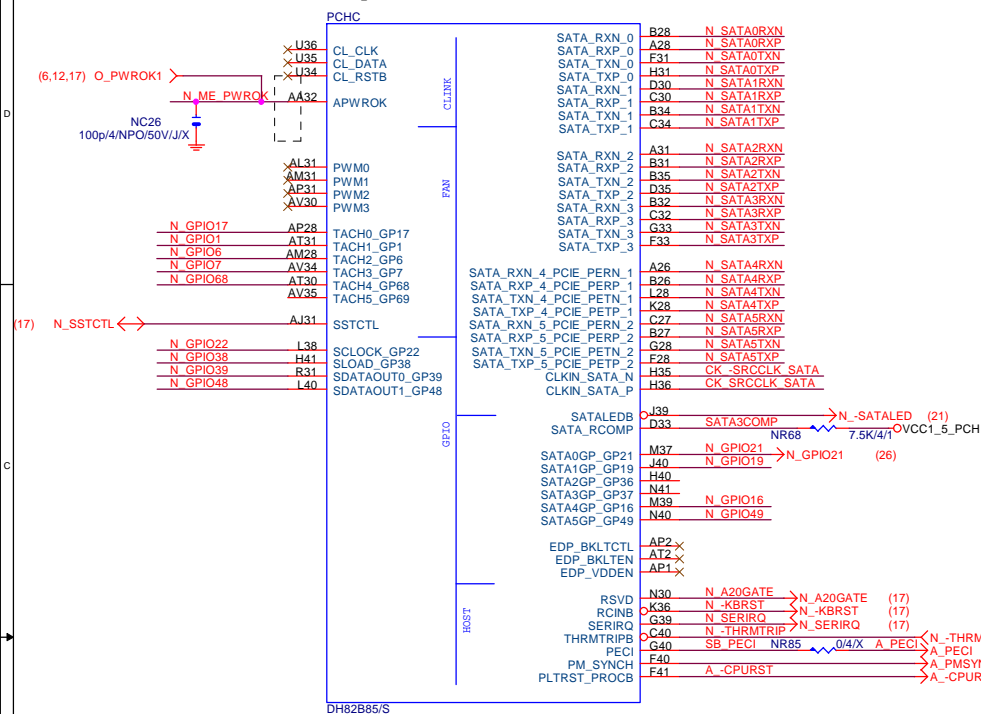


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Title			
PCH DISPLAY ,CLK BUFFER			
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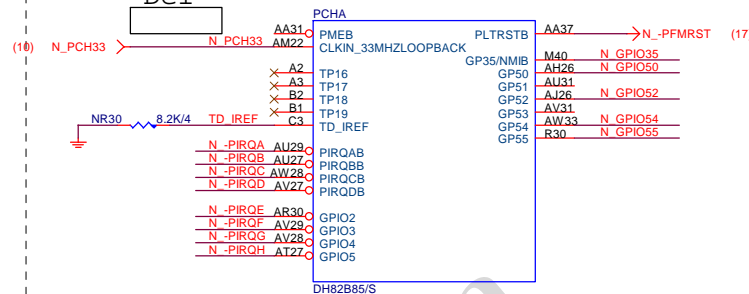
(C)

SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

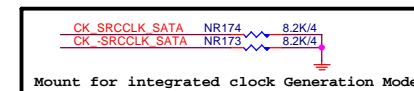


PCH (A)

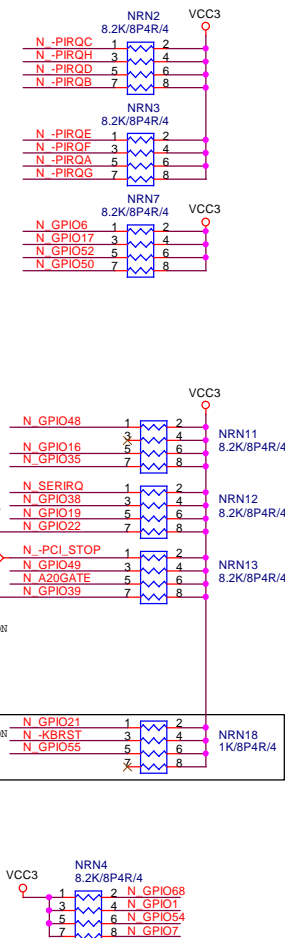
Del



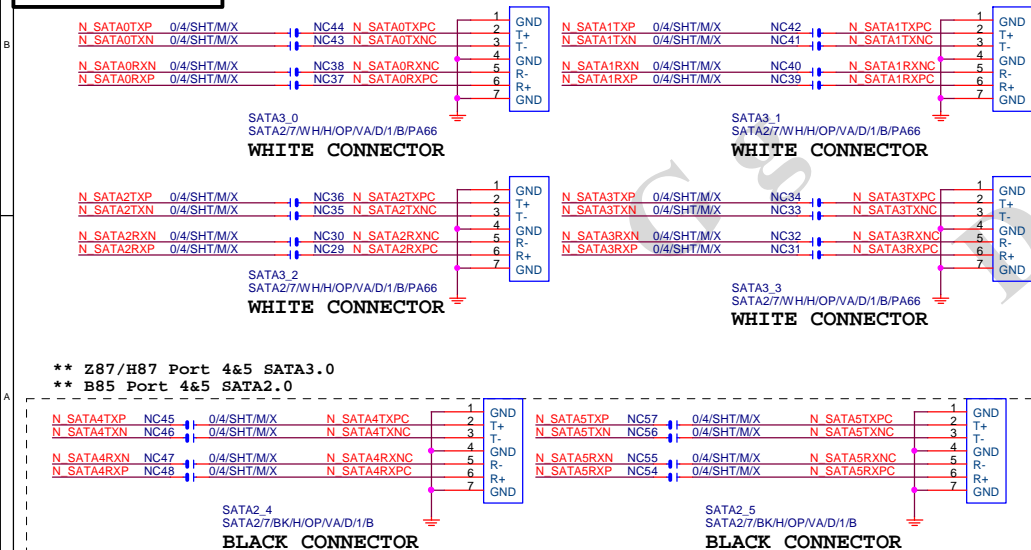
PCH	CLK	PD
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PCH	PU/PD
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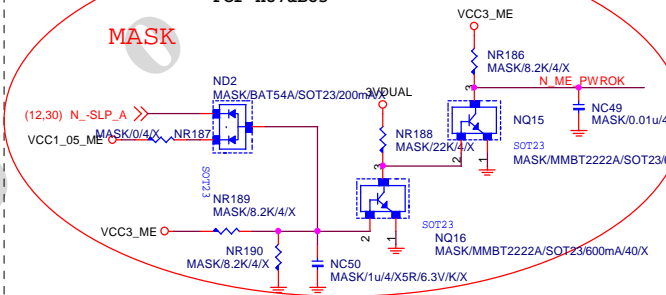


SATA CONNECTOR



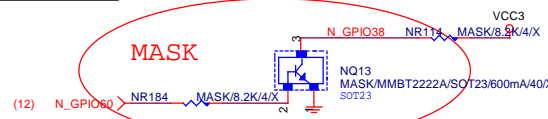
ME PWROK

GPI037 PU VCC3 ENABLE SBA
For H87&B85



GPIO38 Ctrl

MASK

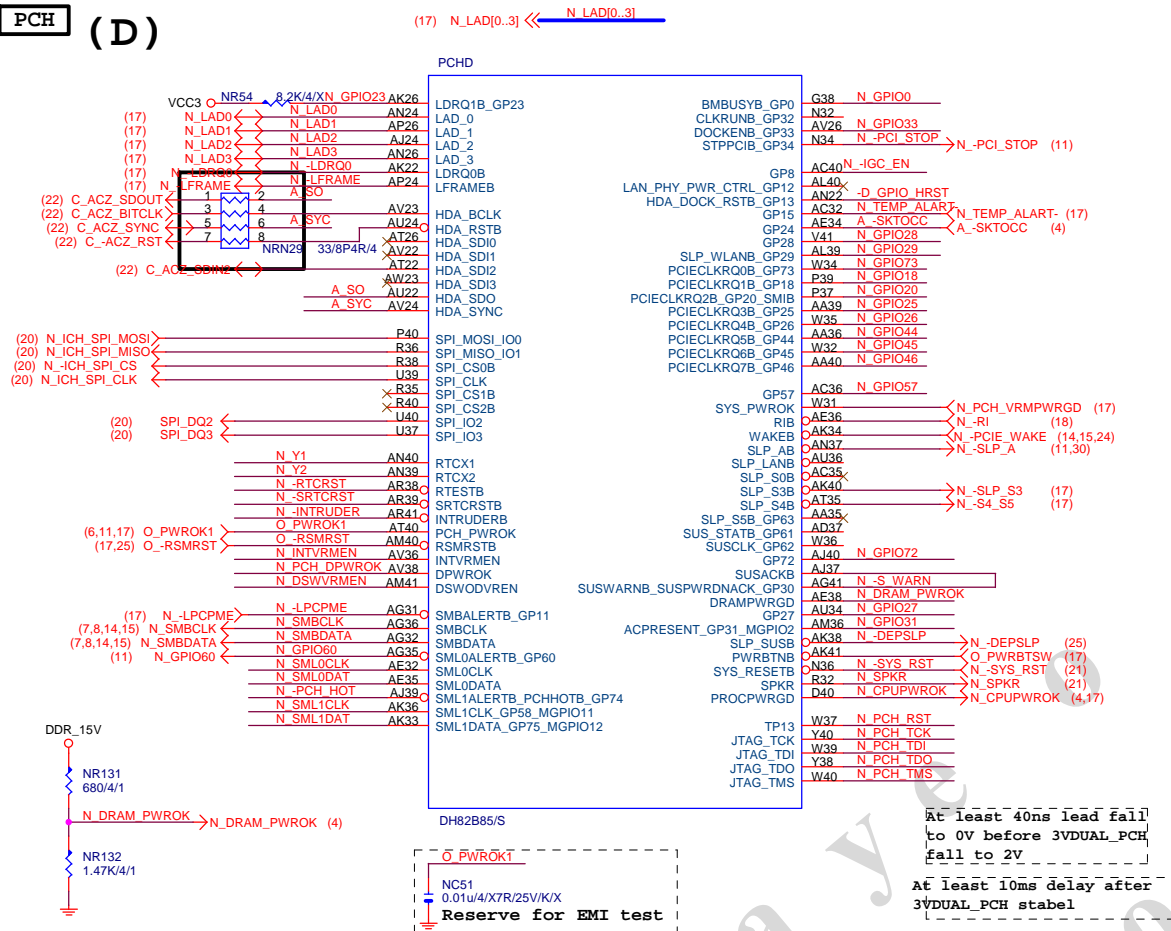


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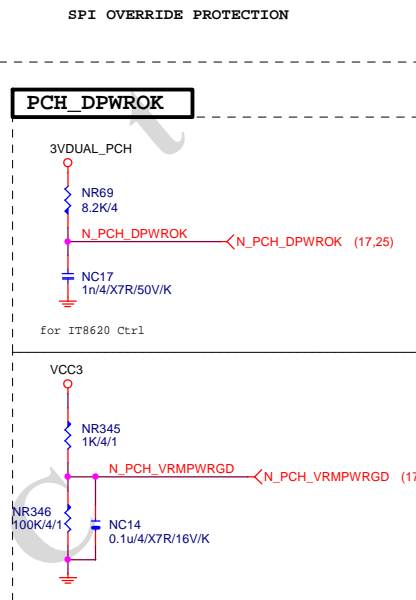
PCH HOST , SATA, PCI
GA-B85M-D2V-TM

Title				PCH HOST , SATA, PCI				Rev	
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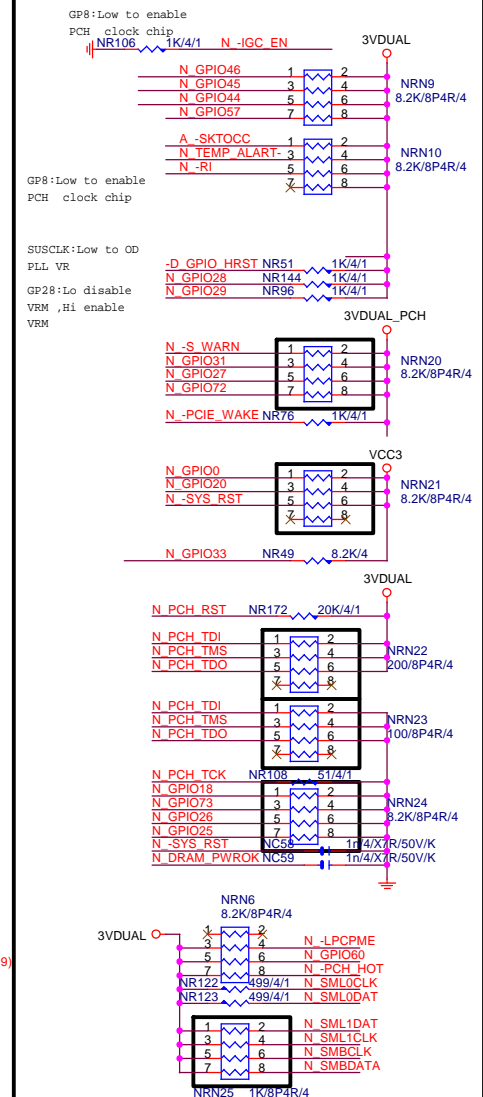
(D)



ACZ_SDOUT



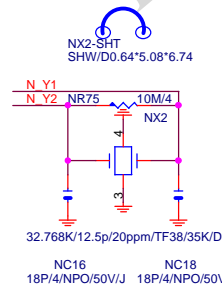
PCH	PU/PD
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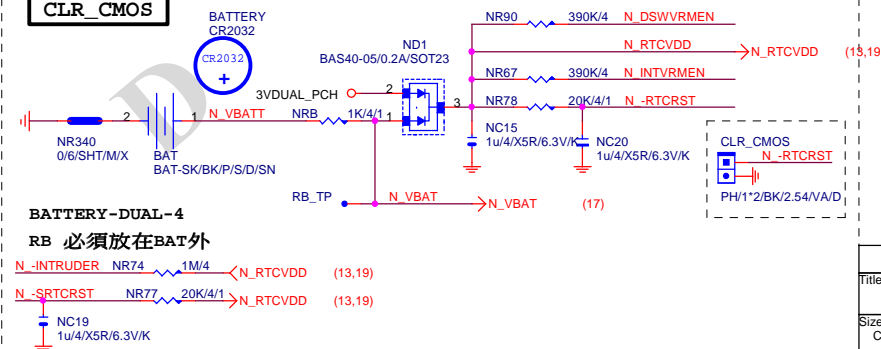
HSW_STRAP13



32.768KHZ



CLR_CMOS

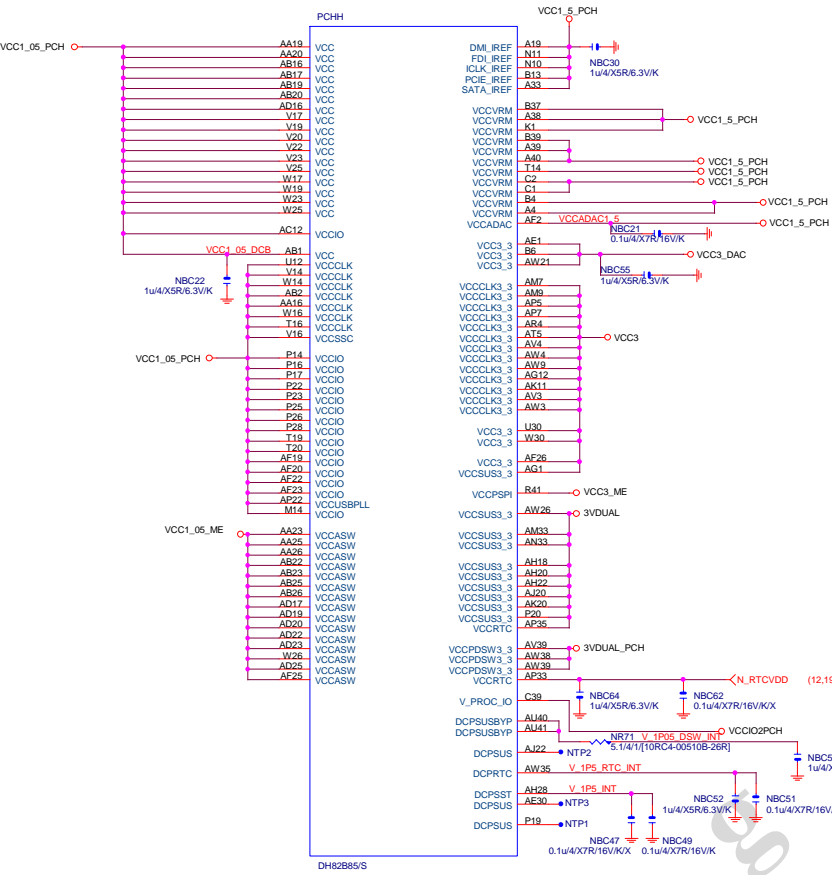


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PCH GPIO , CTRL , AUDIO

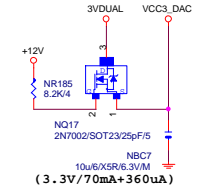
Title			
PCH GPIO , CTRL , AUDIO			
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PCH (H)

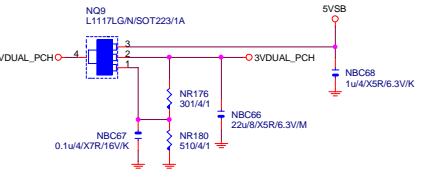


VCC3_DAC

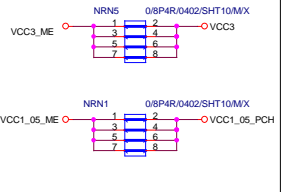
CLOSE北橋(注意震盪水波紋)



3VDUAL_PCH

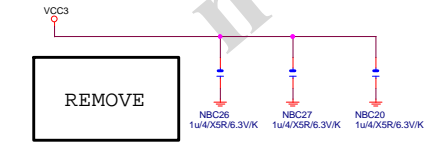


SHT_PWR



CAP

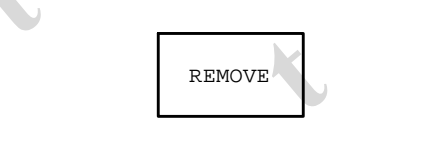
(3.3V) (X6)



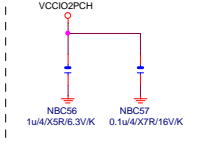
(1.05V) (X5)



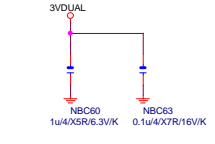
(1.05V) (X6)



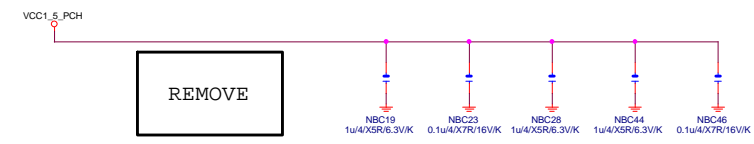
(1.05V) (X2)



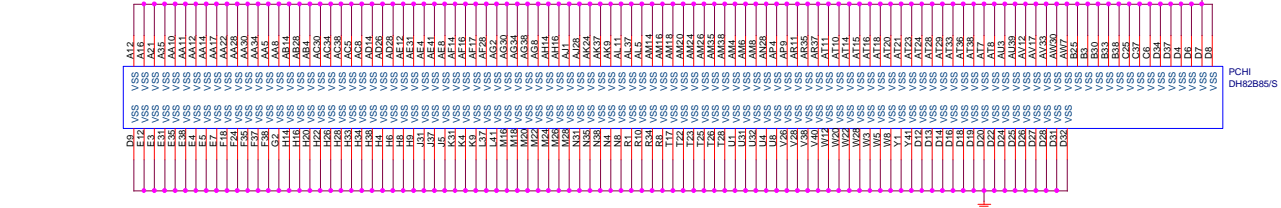
(3.3V) (X2)



(1.05V) (X10)



PCH (I)



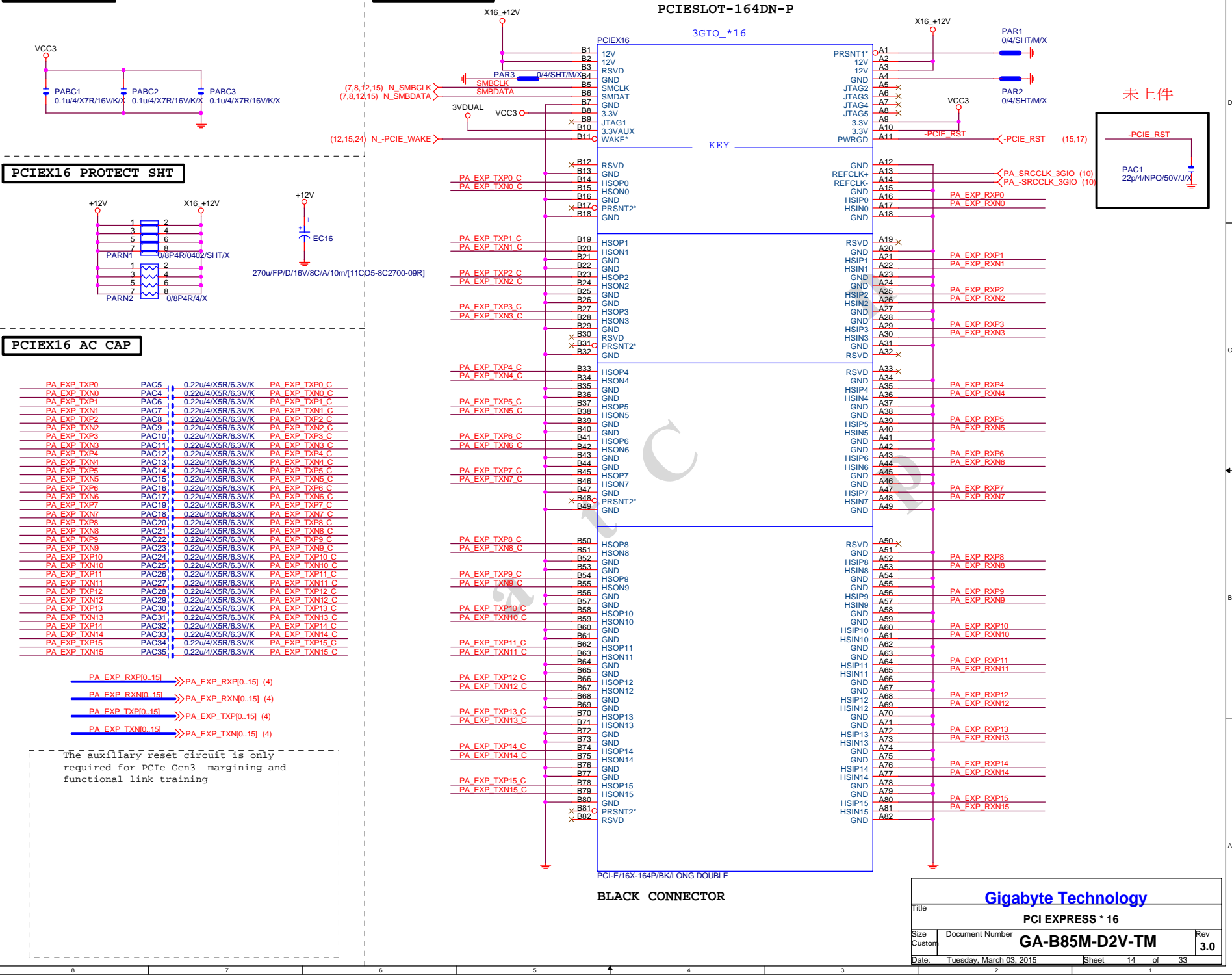
PCIEX16 CAP

PCIEX16 PROTECT SHT

PCIEX16 AC CAP

PCIEX16 SLOT

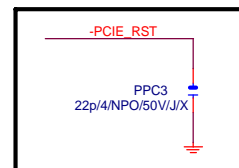
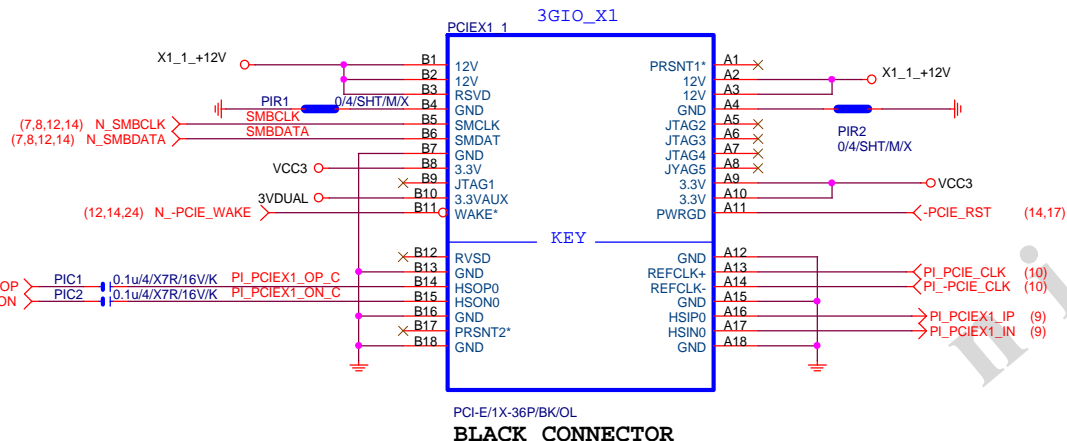
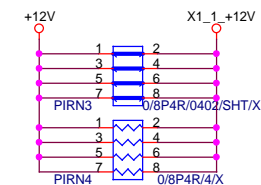
PCIESLOT-164DN-P



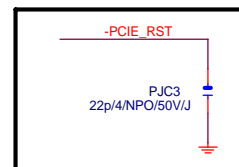
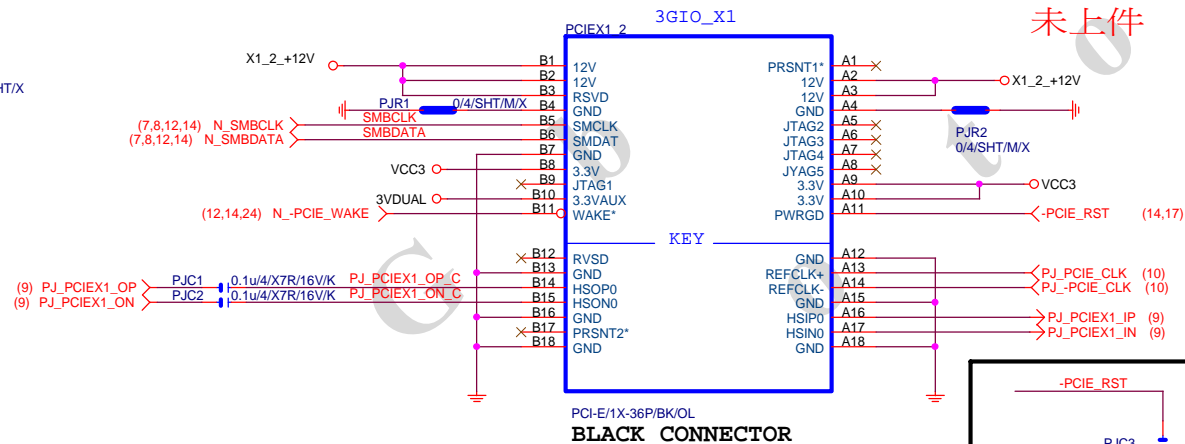
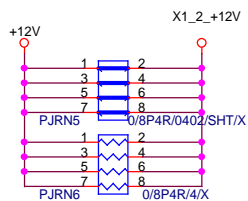
Gigabyte Technology

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Size	Document Number	GA-B85M-D2V-TM			Rev
Custom					3.0
Date:	Tuesday, March 03, 2015	Sheet	14	of	33

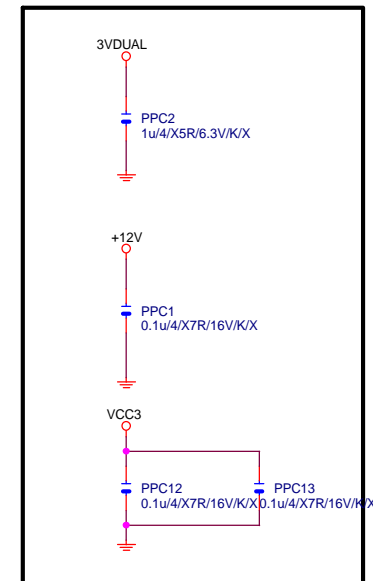
PCIE X1 SLOT



未上件



未上件

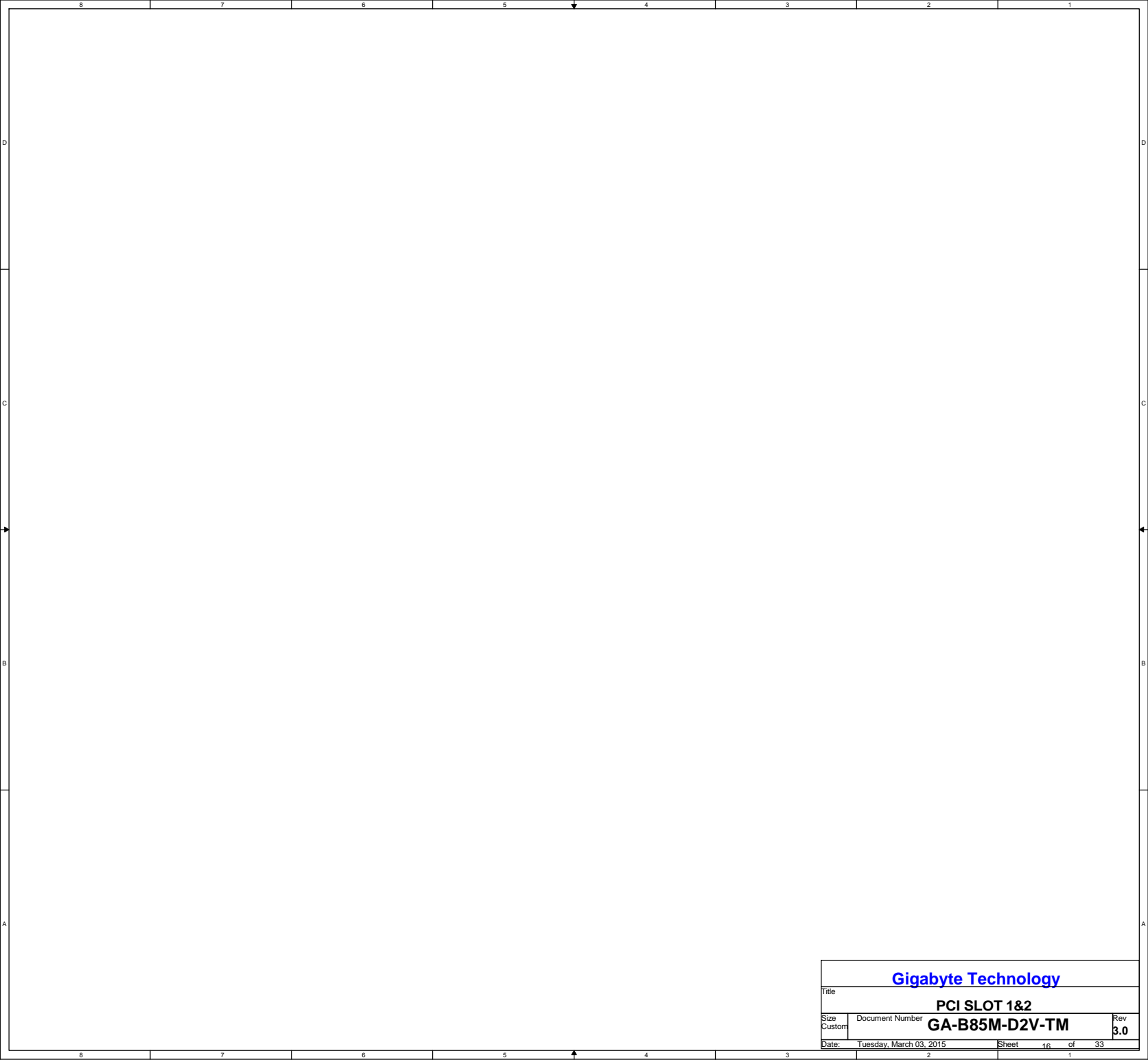


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Gigabyte Technology

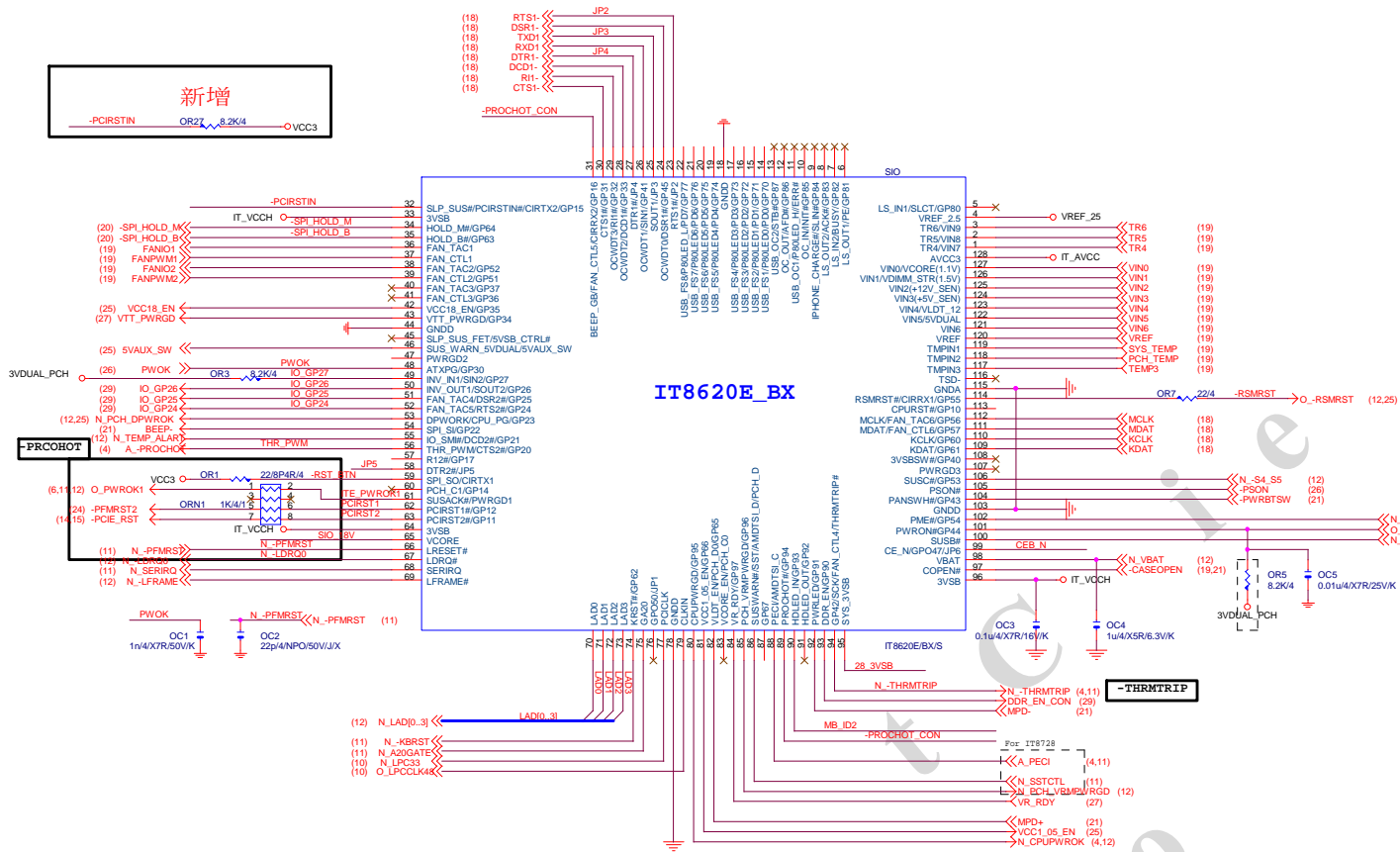
PCI EXPRESS X 1 PORT

Title	Document Number	Rev
Size Custom	GA-B85M-D2V-TM	3.0
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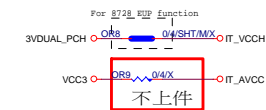


Gigabyte Technology			
Title			
PCI SLOT 1&2			
Size	Document Number		Rev
Custom	GA-B85M-D2V-TM		3.0
Date:	Tuesday, March 03, 2015	Sheet	16 of 33

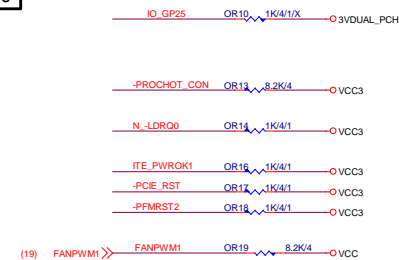
SIO IT8620



PWR	SHT
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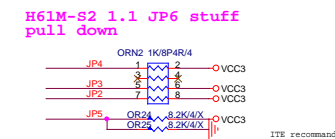


SIO PU



OR20 删除

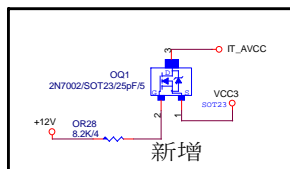
SIO STRAP



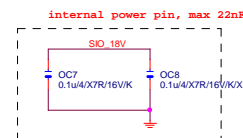
Power leakage

remove

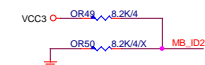
DUAL BIOS OPT STRAP



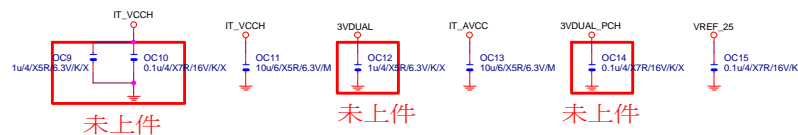
SIO_18V

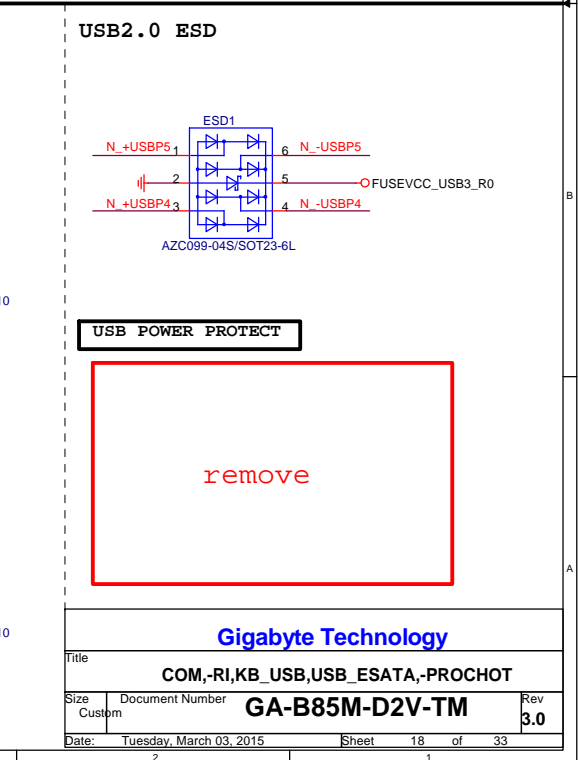
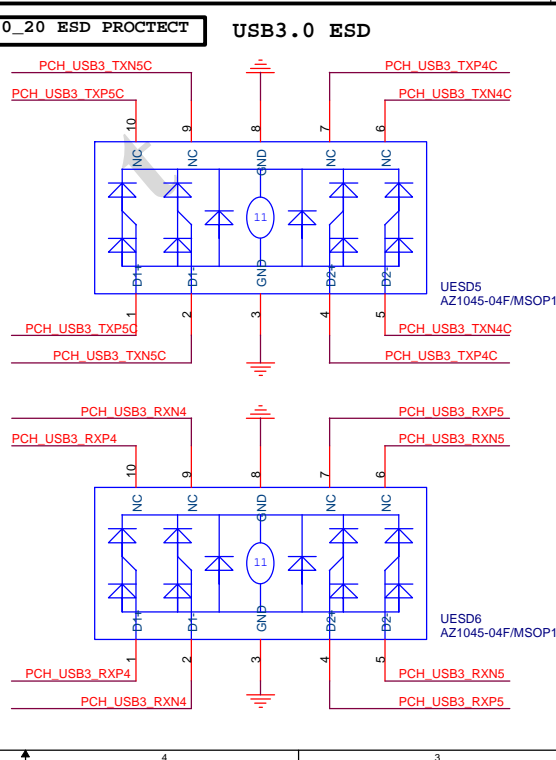
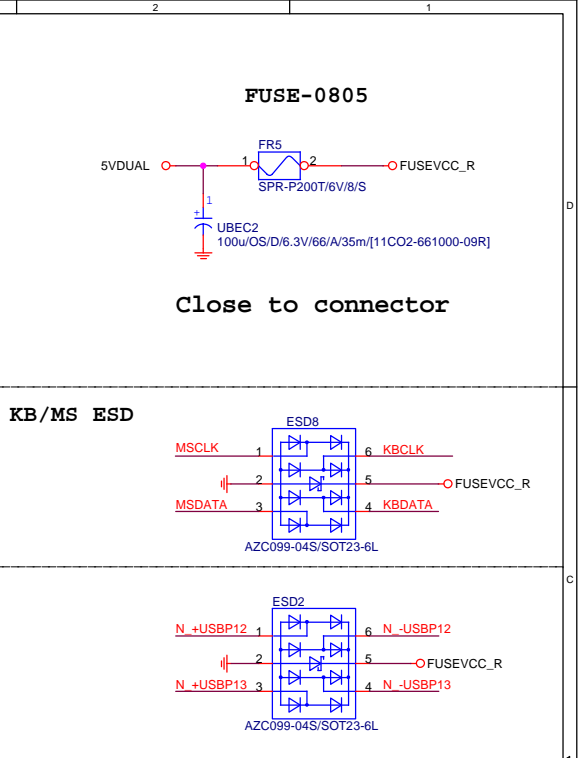
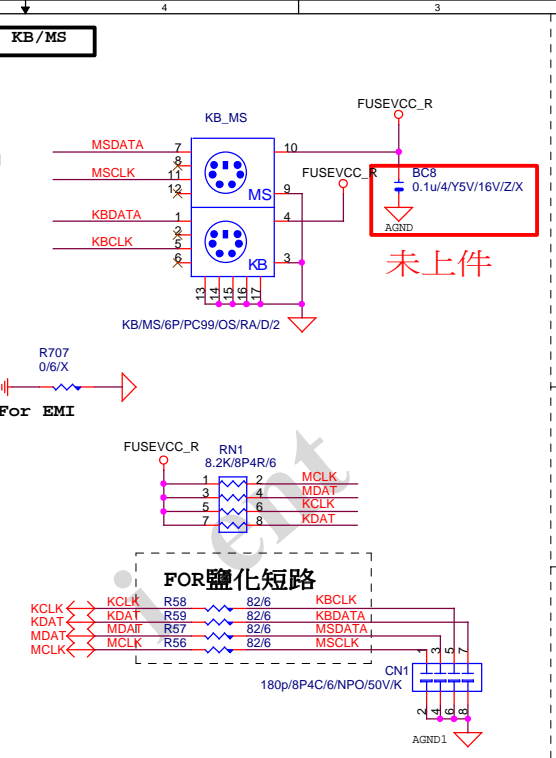
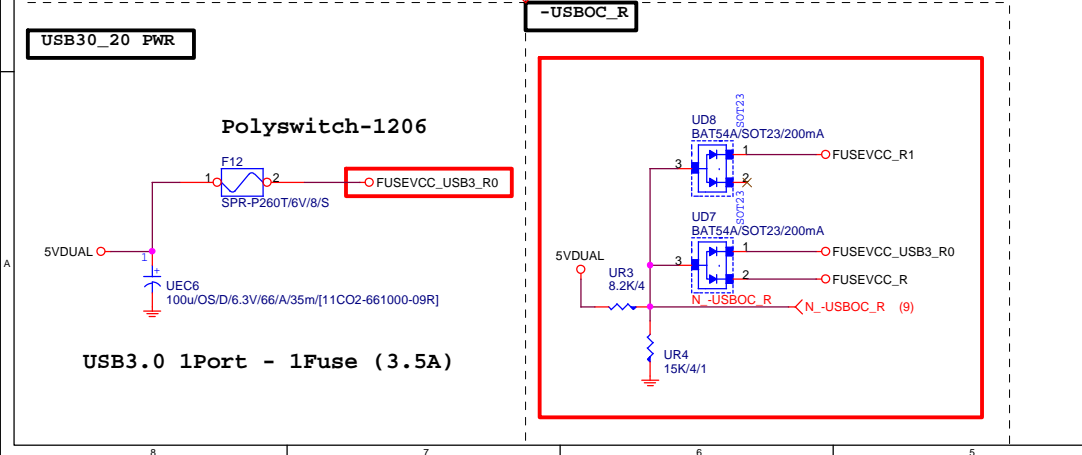
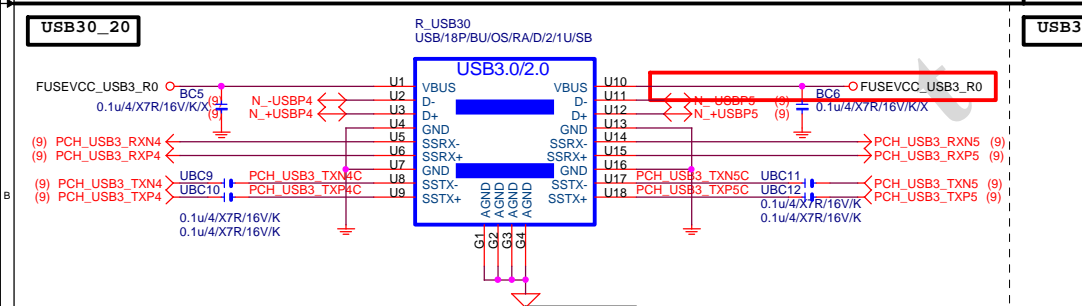
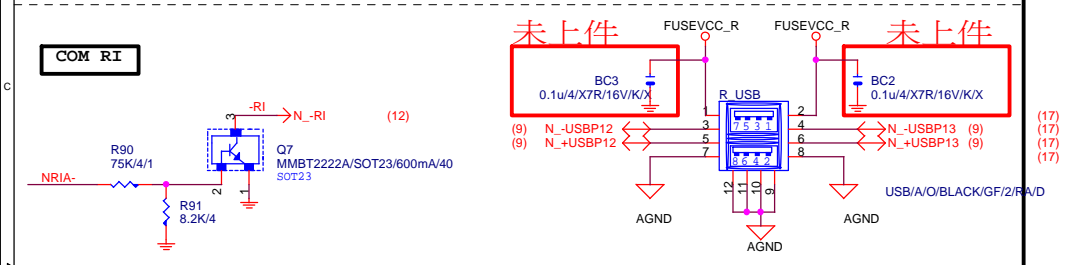
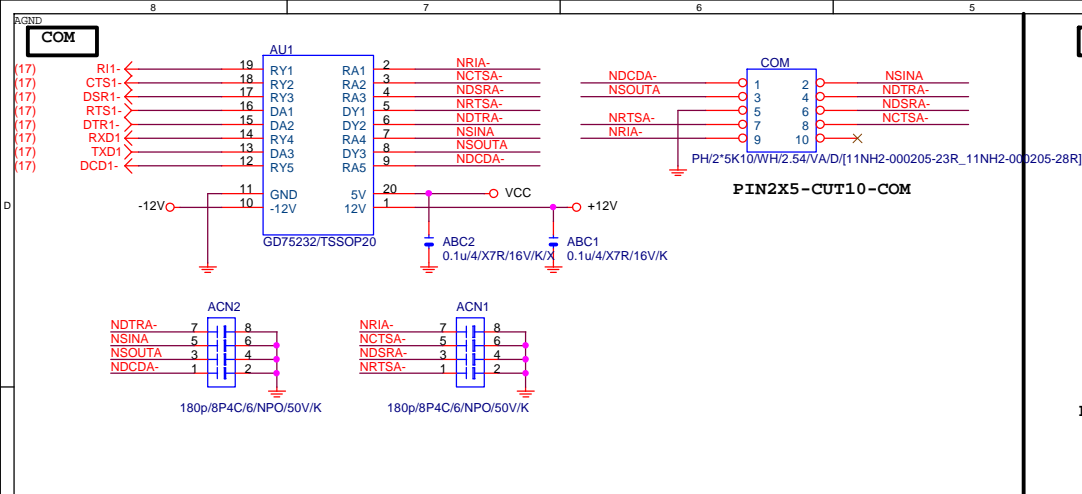


MB ID

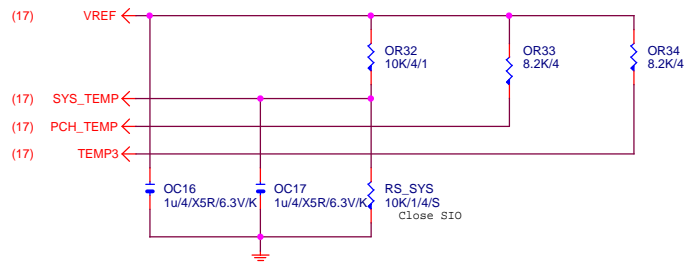


SIO CAP

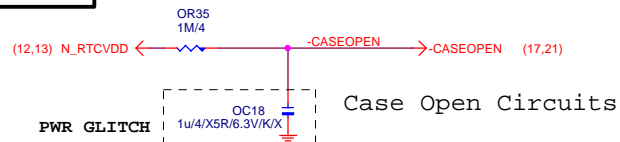




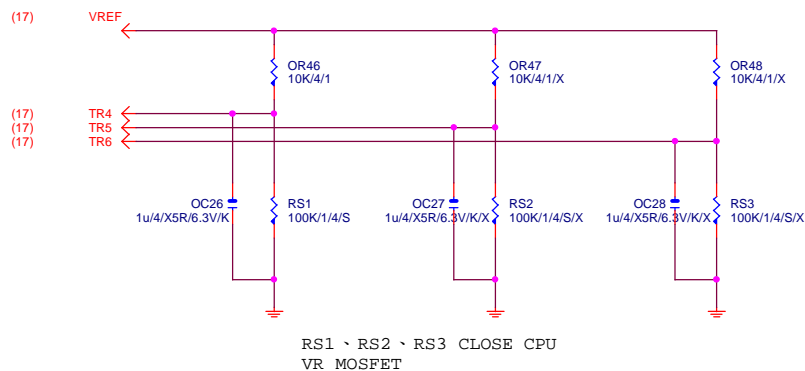
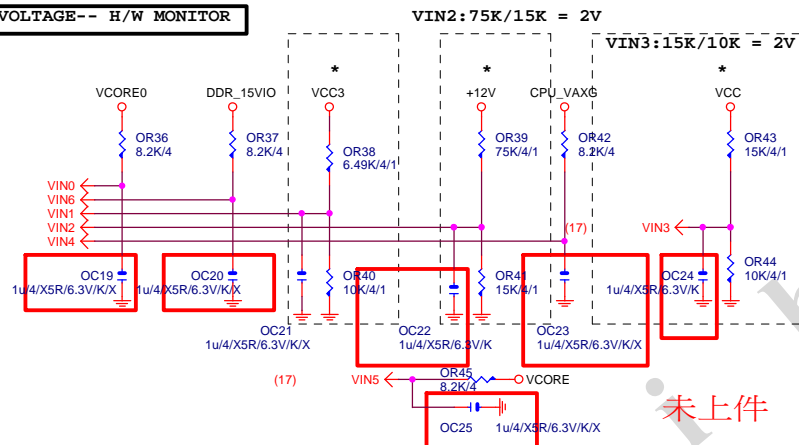
TEMP H/W MONITOR



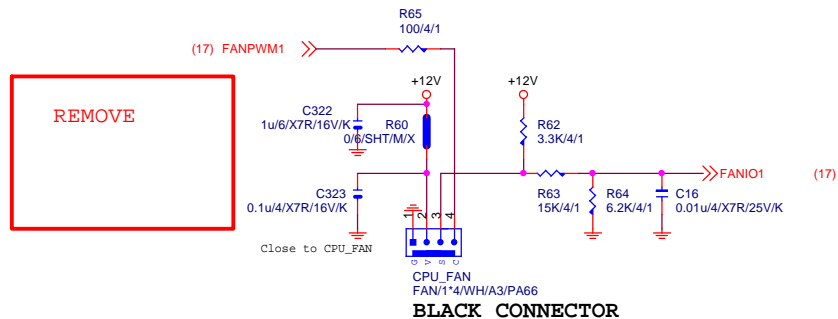
CASE OPEN



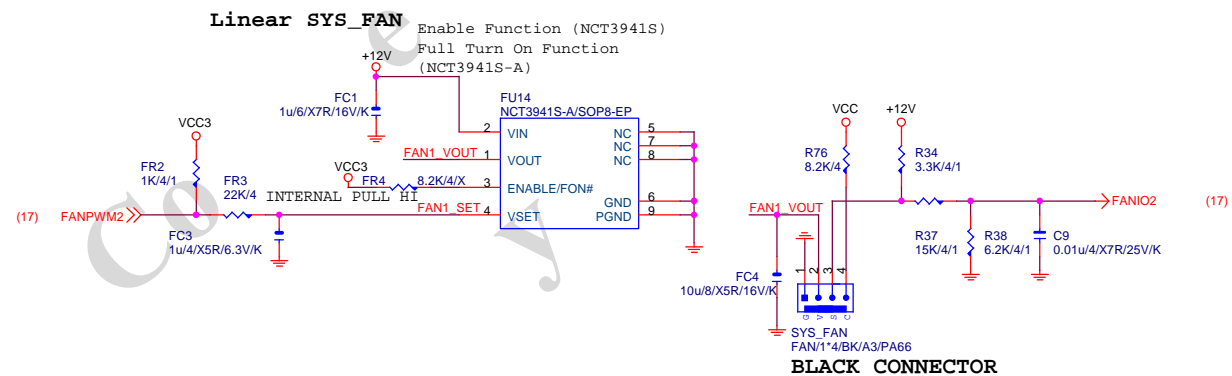
VOLTAGE-- H/W MONITOR



CPU SMART FAN



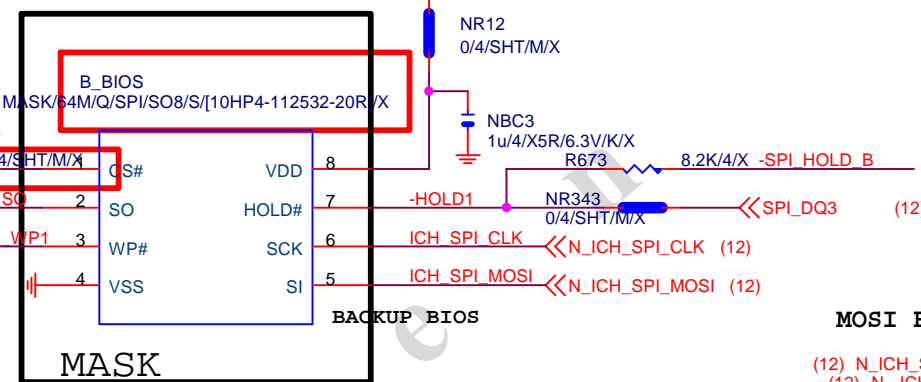
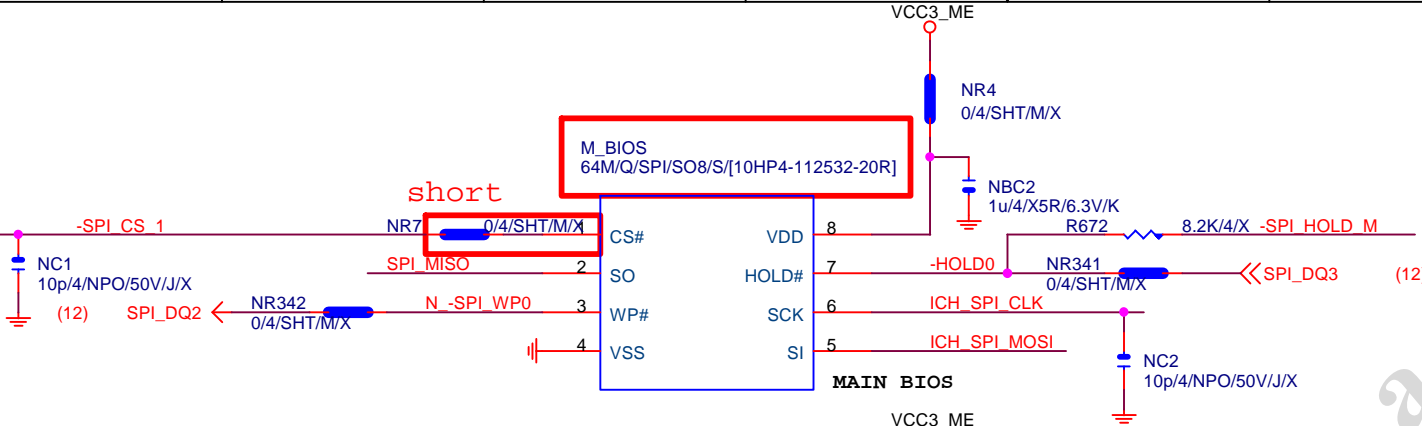
SYS SMART FAN



-PROHOT

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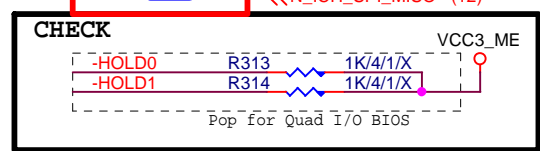
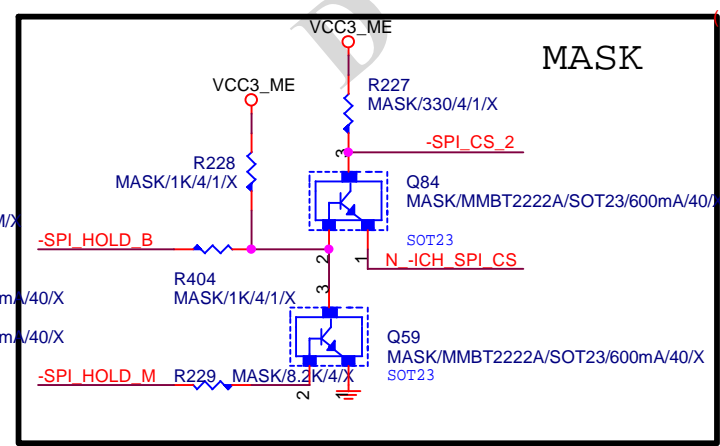
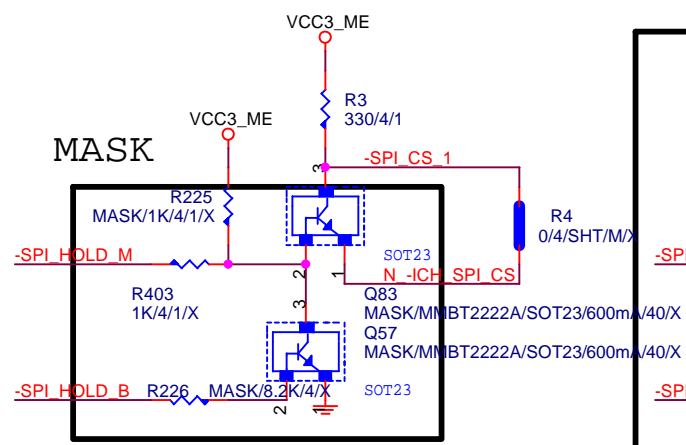
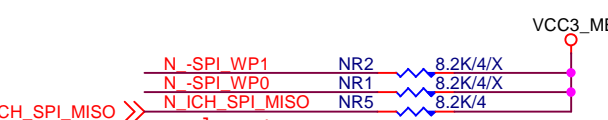
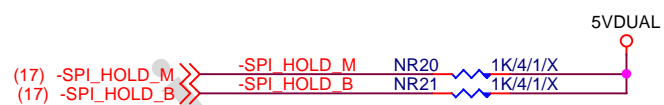
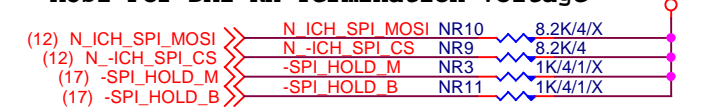
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BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

MOSI For DMI RX Termination Voltage



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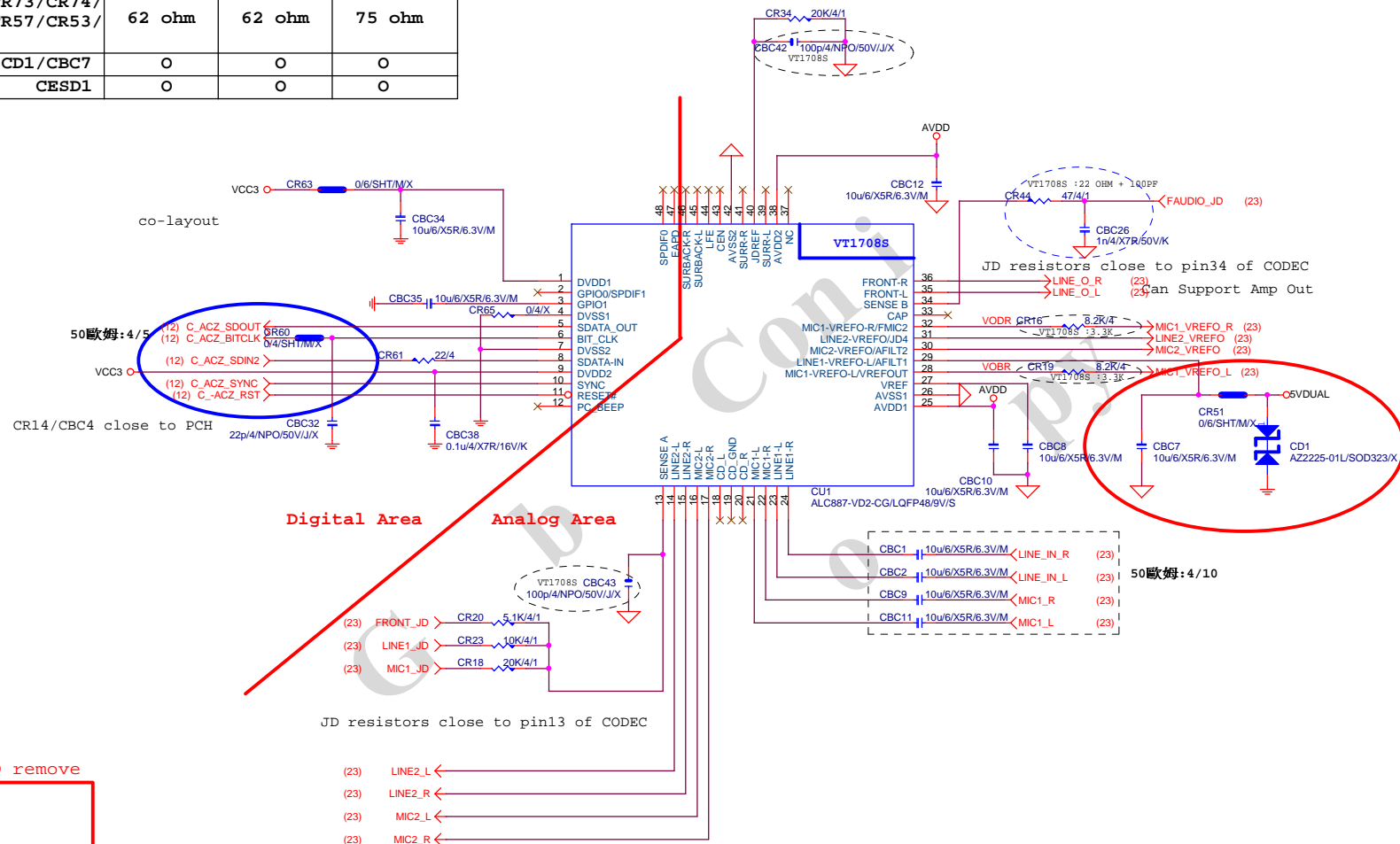
DUAL BIOS

GA-B85M-D2V-TM

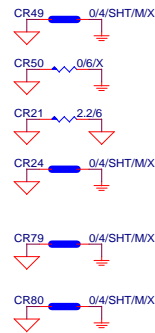
Title		Rev
Size	Document Number	3.0
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AZALIA CODEC ALC892/ALC887-VD2/VT1708-CE Colay

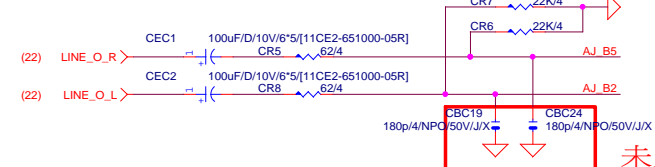
	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	O	O	O



ESD remove



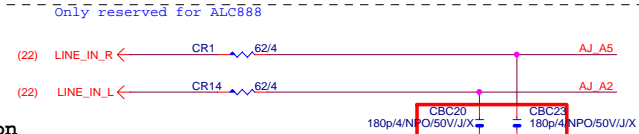
LINE-OUT



未上件

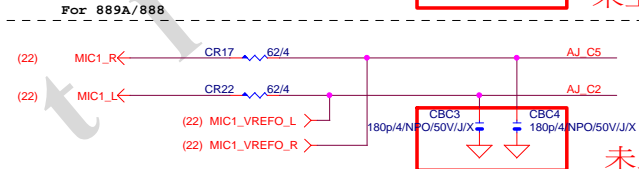
LINE-IN

Verify MIC function
in LINE-in



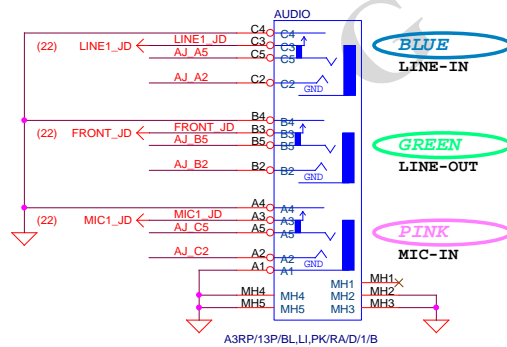
未上件

MIC-IN

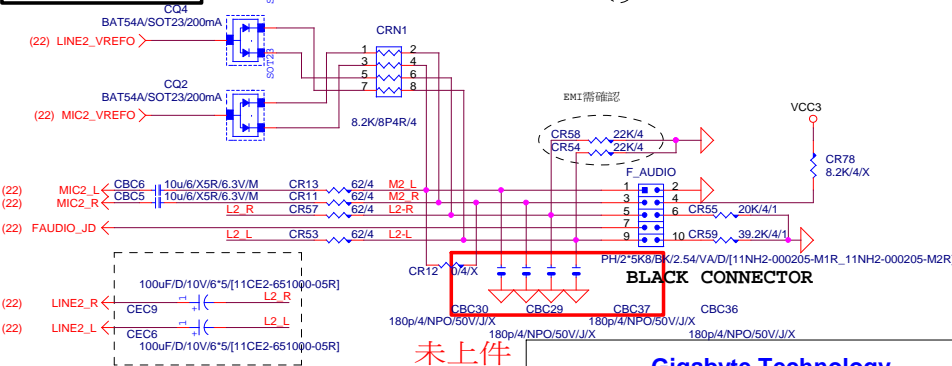


未上件

SPDIF_OUT



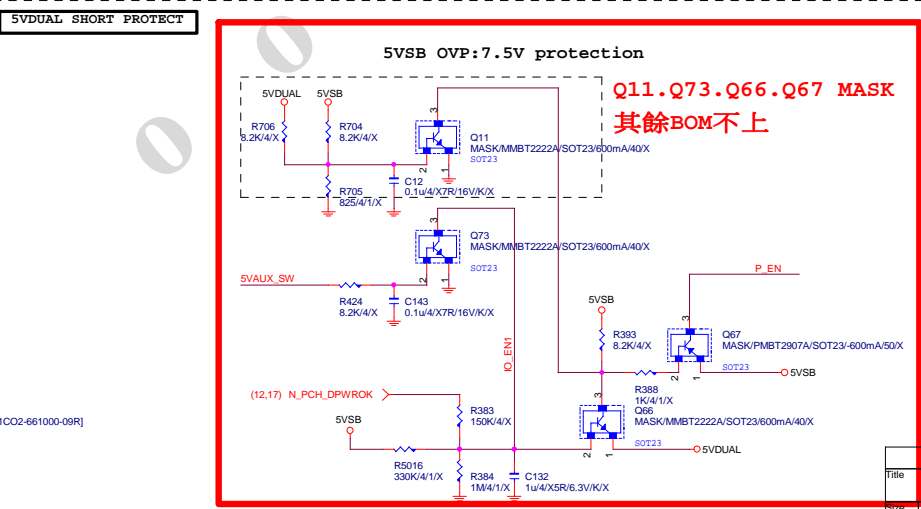
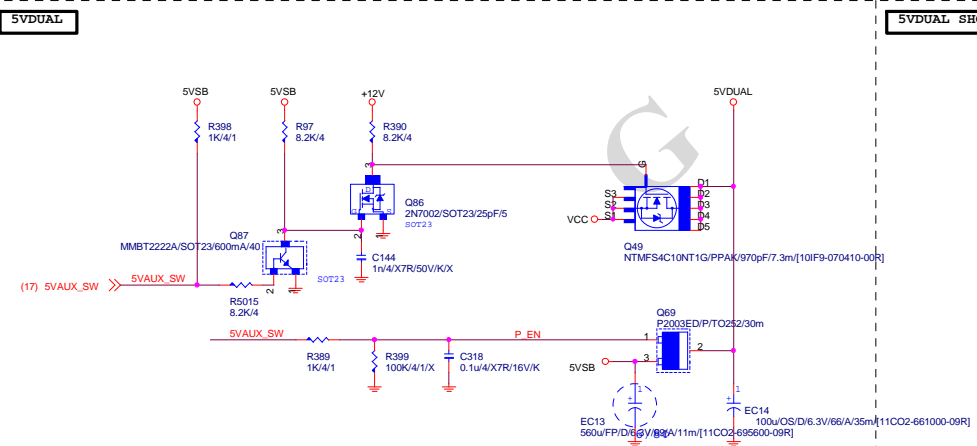
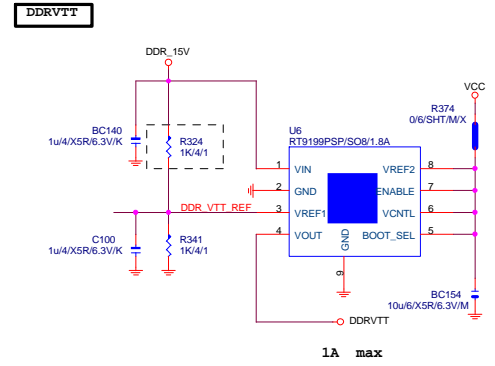
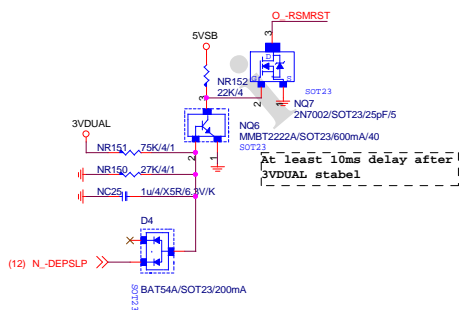
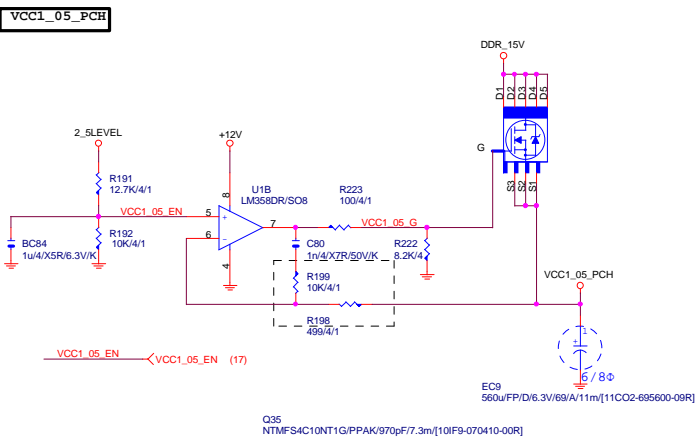
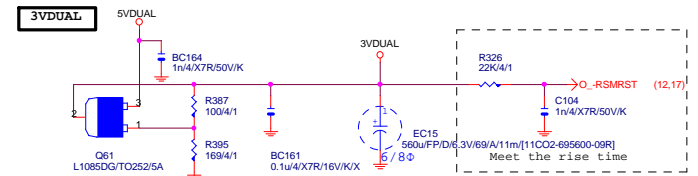
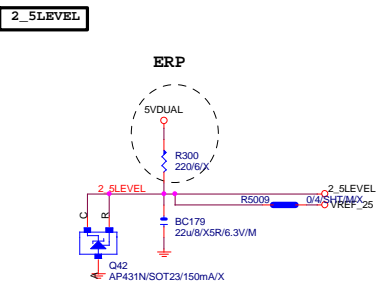
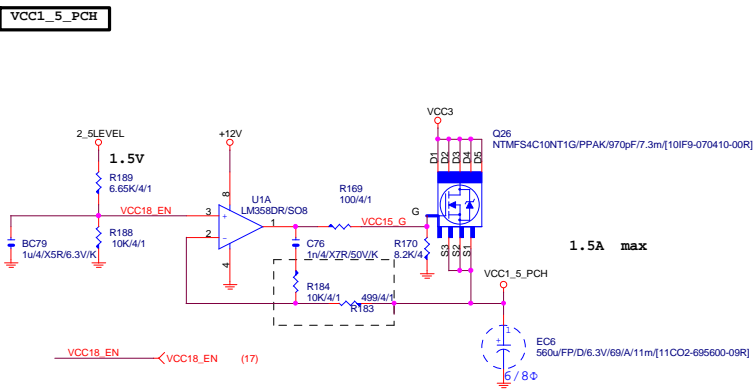
AZALIA FRONT PANEL



未上件

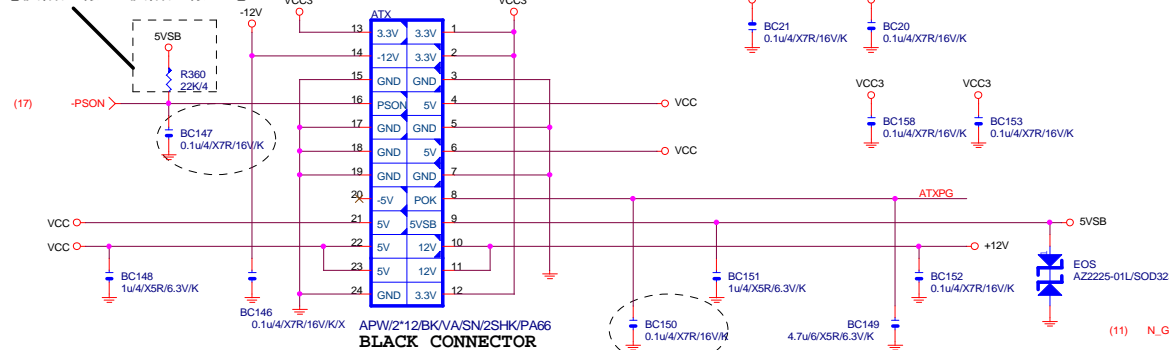
Gigabyte Technology

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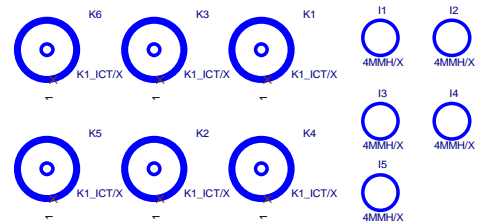
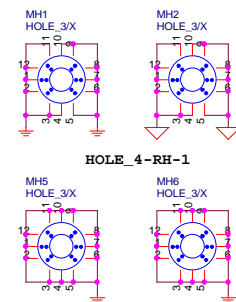


ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】



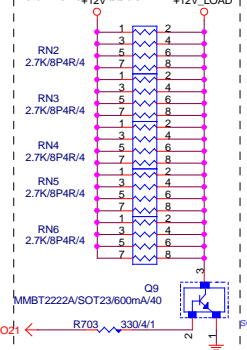
BLACK CONNECTOR



To prevent the 5VSB under loading when boot

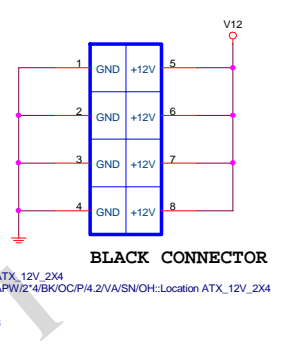
【技術通報R&D技術通報158】

To fix 12V light load abnormality issue



ATXX4 POWER CONNECTOR

To fix 12V light load abnormality issue

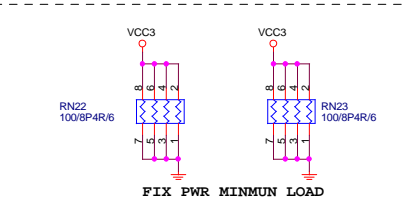
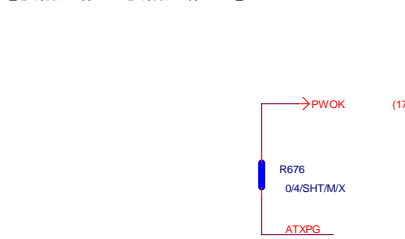


BLACK CONNECTOR

ATX 12V 2X4 APW/2*4BK/OC/P/4.2V/A/SN/OH: Location ATX_12V_2X4

PWOK PATCH

【技術通報R&D技術通報154】

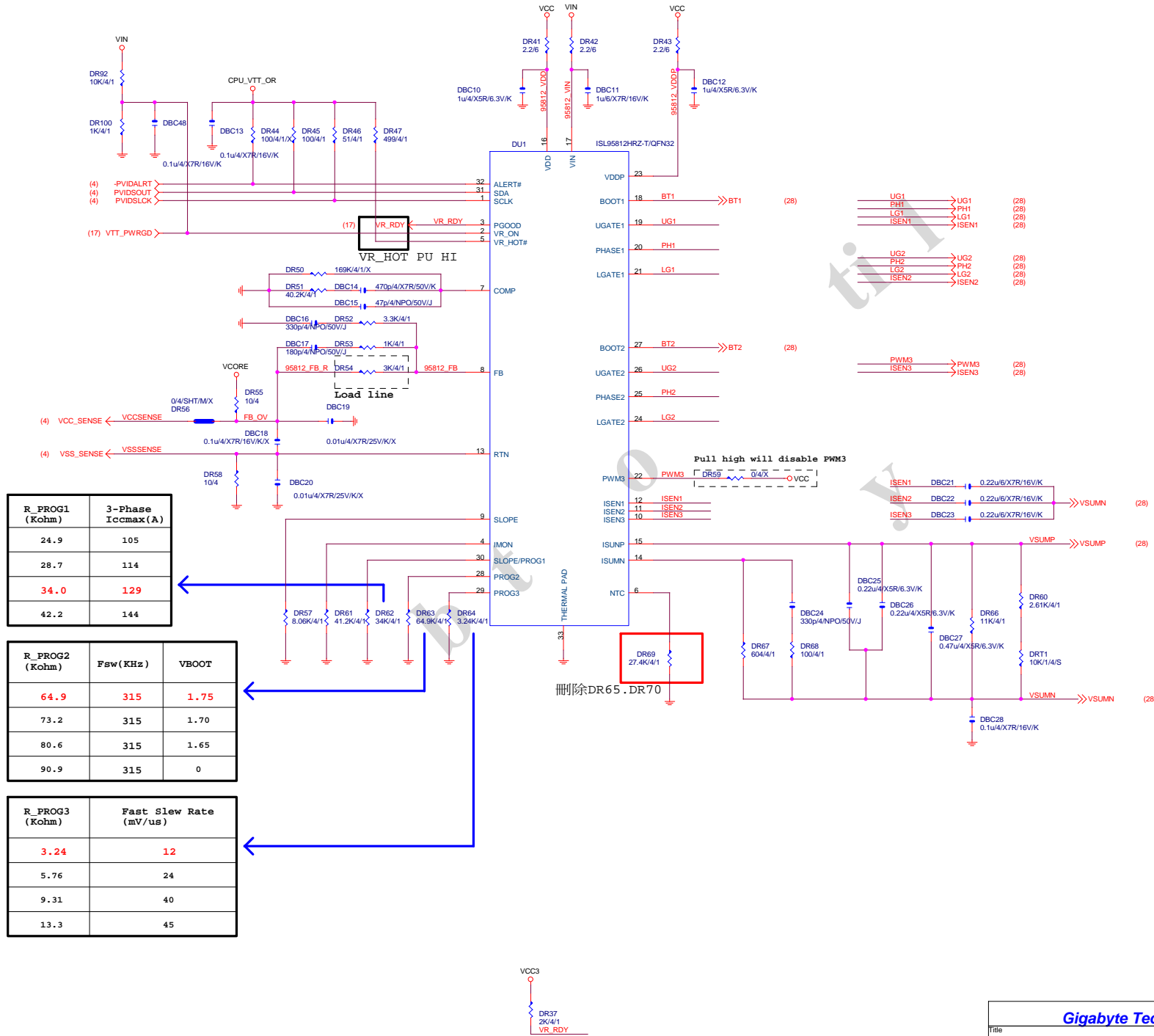


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ATX CONNECTOR

GA-B85M-D2V-TM

Rev 3.0

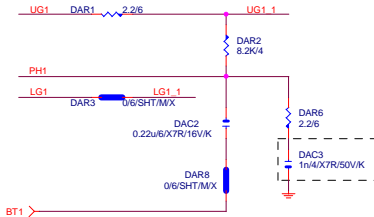
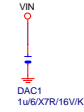
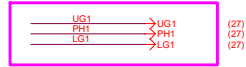


R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

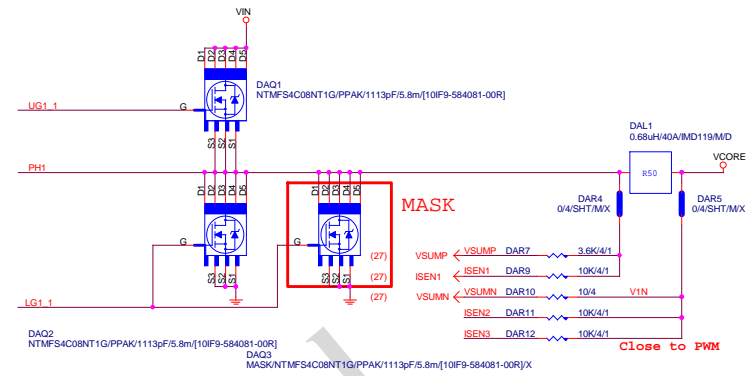
R_PROG2 (Kohm)	Fsw(KHz)	VBOOT
64.9	315	1.75
73.2	315	1.70
80.6	315	1.65
90.9	315	0

R_PROG3 (Kohm)	Fast Slew Rate (mV/us)
3.24	12
5.76	24
9.31	40
13.3	45

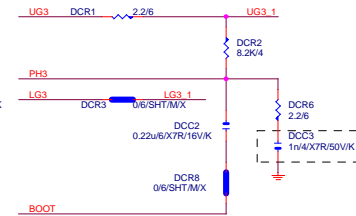
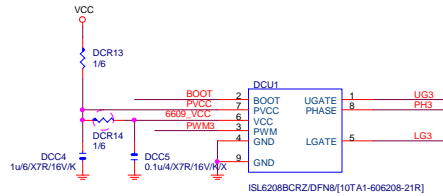
PHASE 1



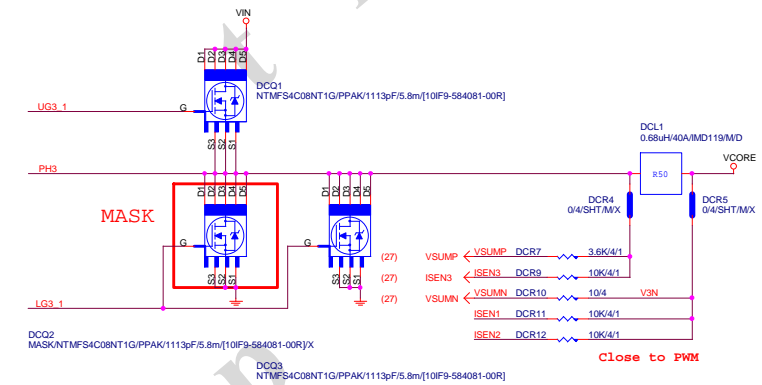
[1]⁽²⁷⁾



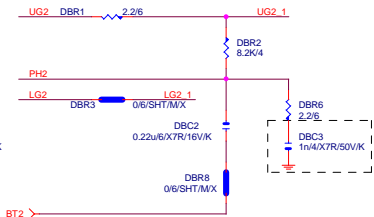
PHASE 3



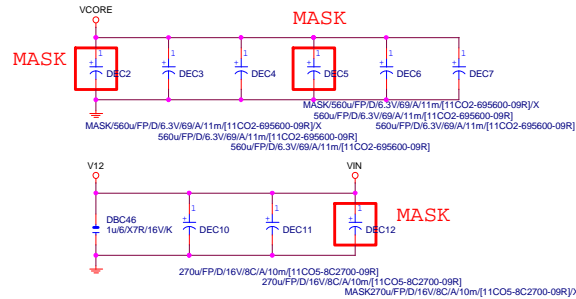
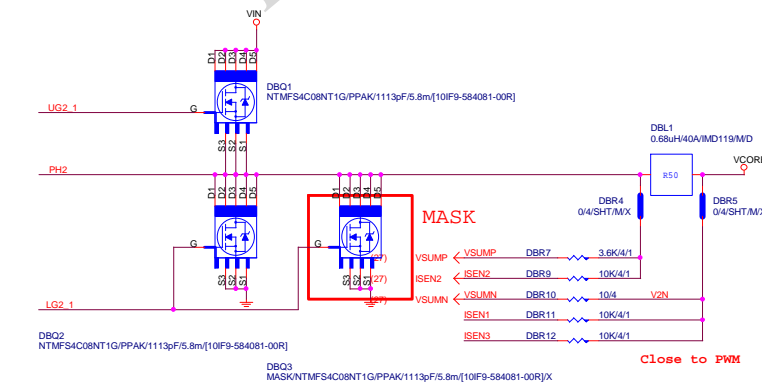
[3]

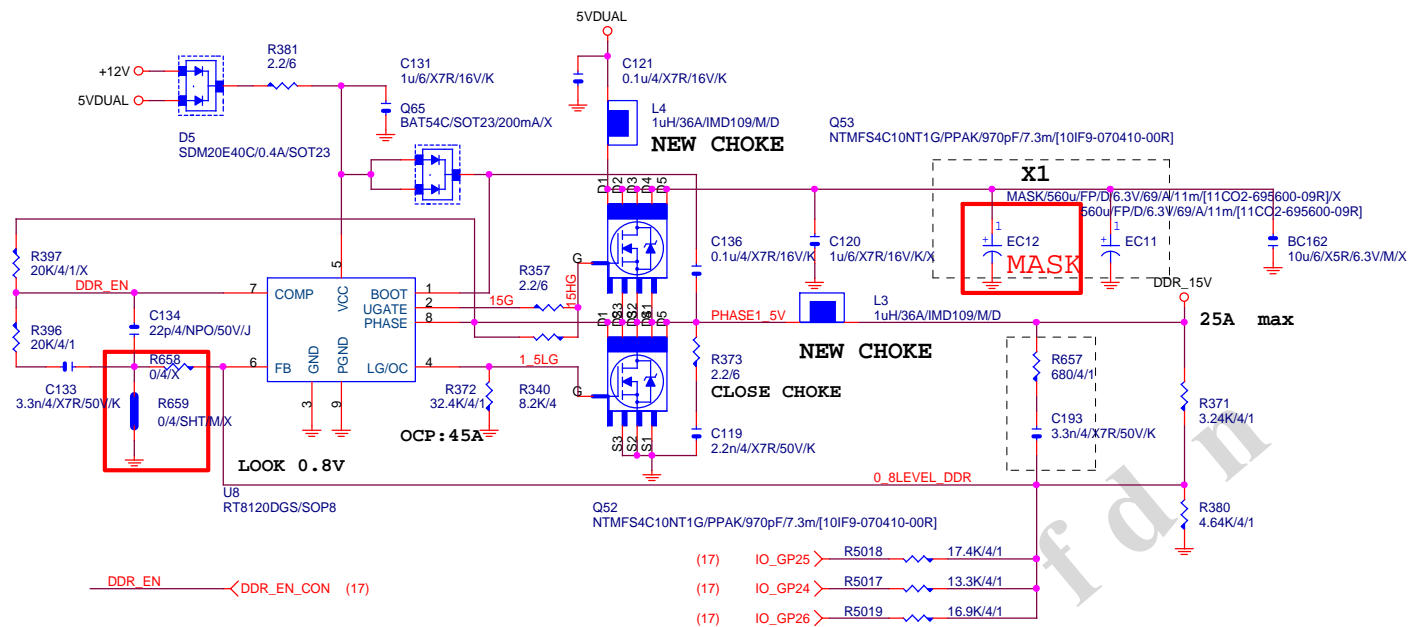


PHASE 2



[⁽²⁷⁾2]

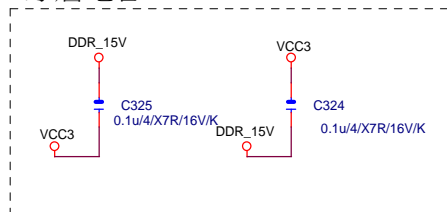




From DDR_15V source
10 mils trace to SIO

DDR_15V DDR_15VIO
MR20 0/4/SHT/M/X

穿層電容



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

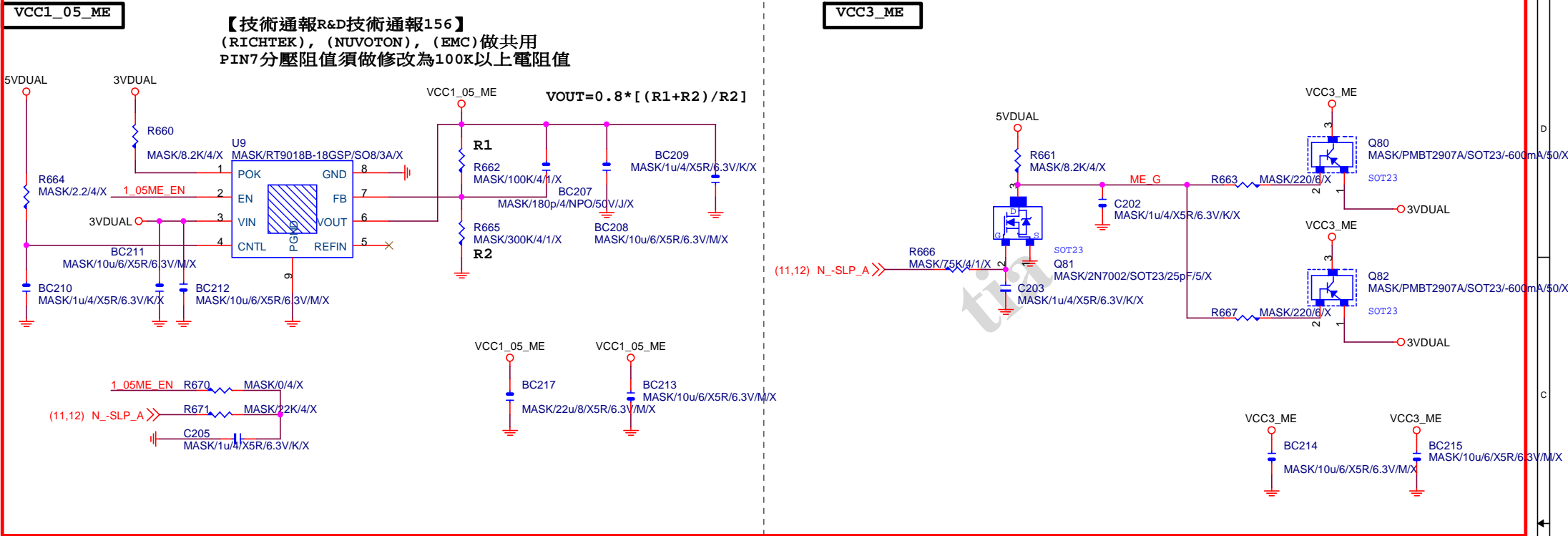
$Rocset = (I_{ocp} * L_{gate, rdson}) / I_{ocset}$

$Rocset = (45A * 6.7m\Omega) / 10uA = 30K$

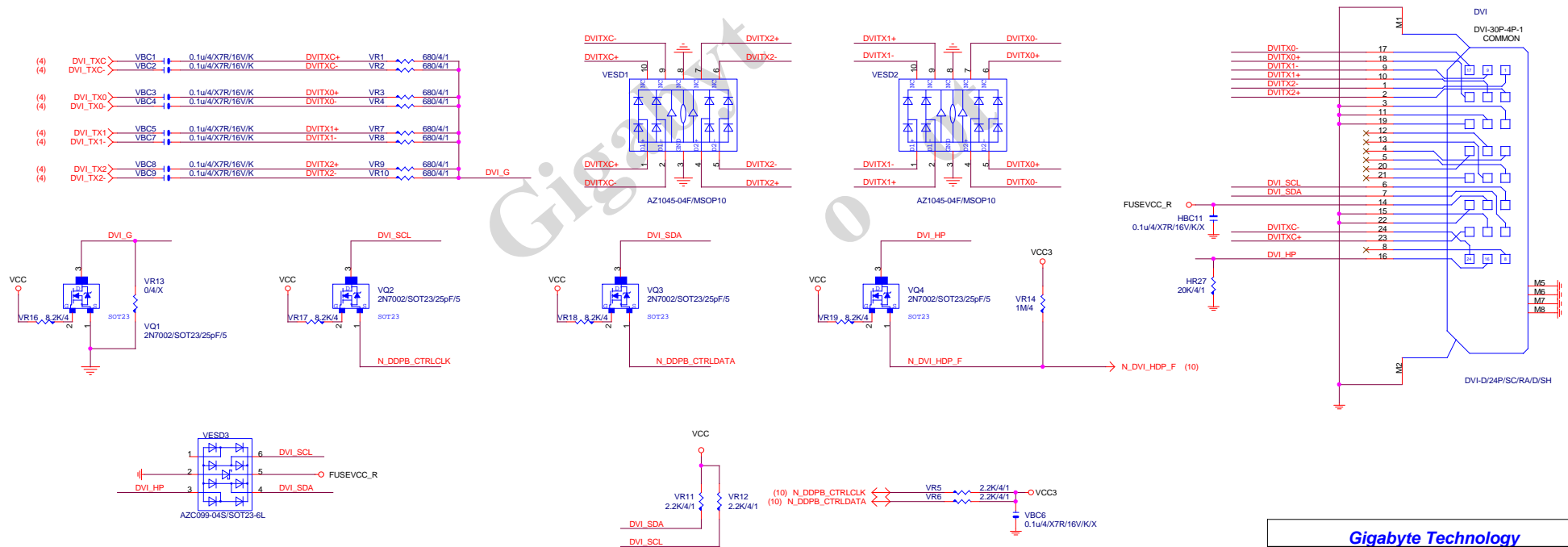
$I_{ocset} = 10uA$

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ITE IT8892E

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Date _____

Tuesday, March 03, 2015

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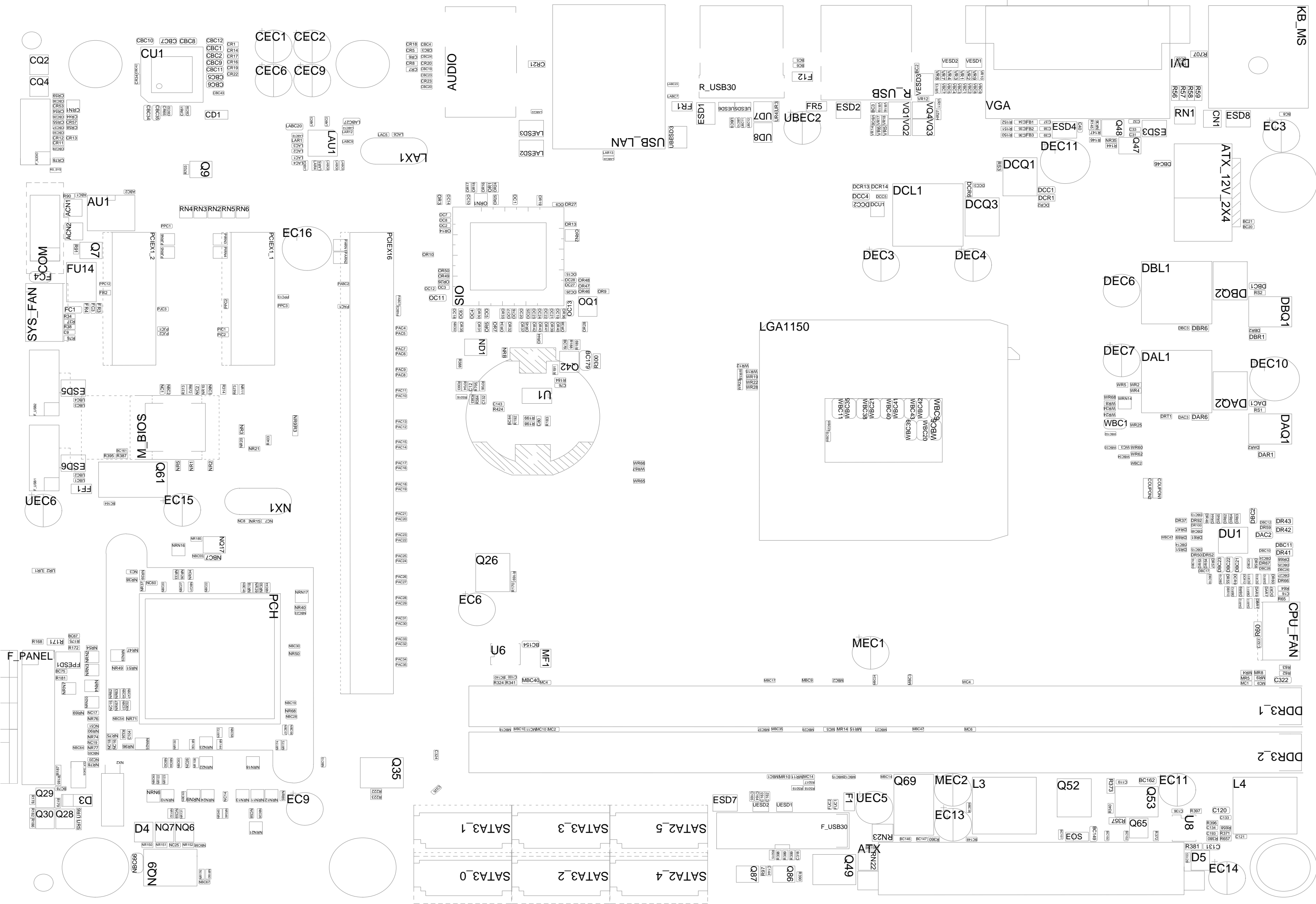
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