

REV: 1.01

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26	CPU_VTT_PWM_ISL6322G
27	VCORE_PWM_ISL6334CRZ

TITLE

[illegible]

GA-H55M-USB3 Version: 1.01

Component value change history

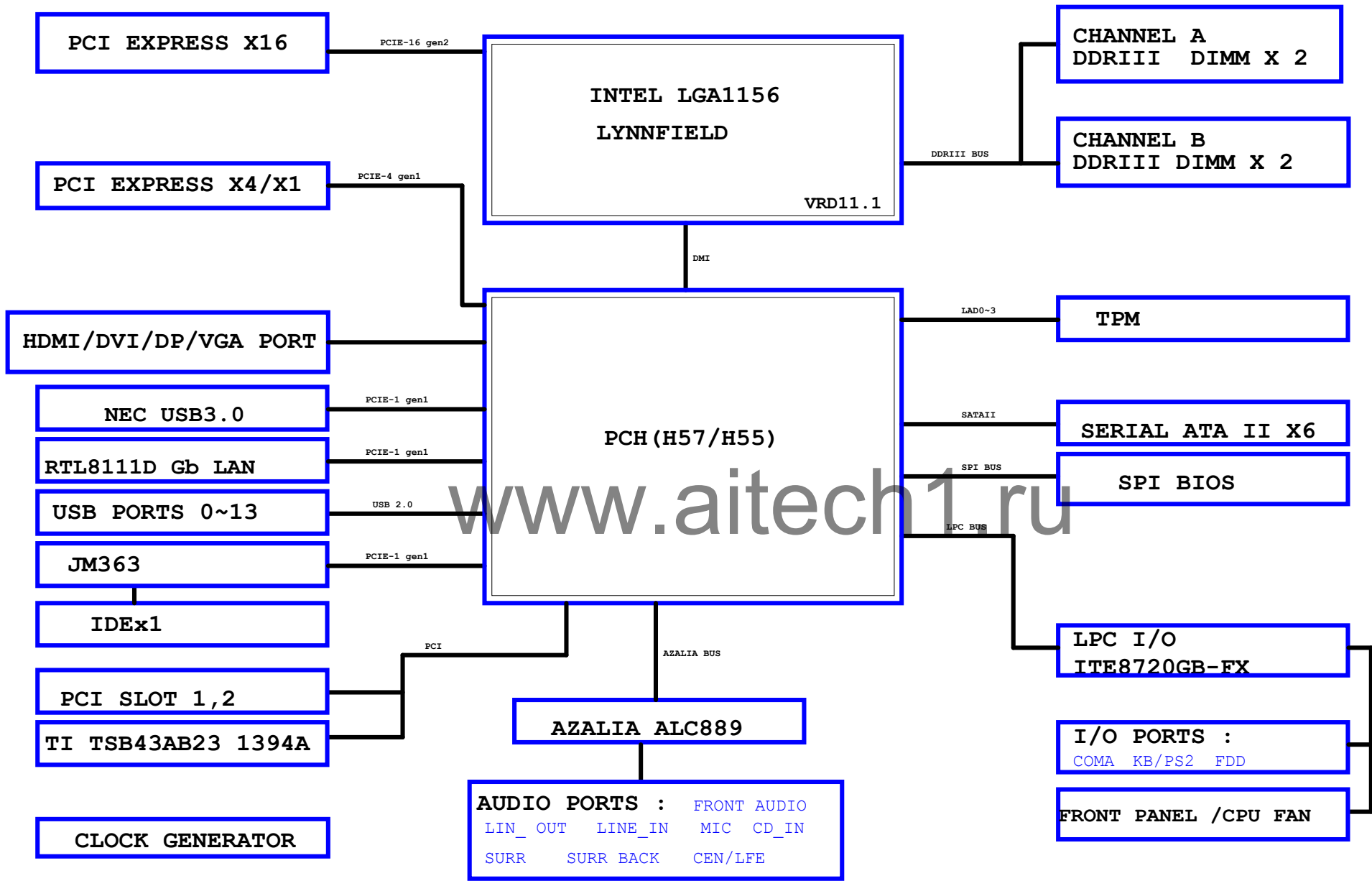
2009/12/22

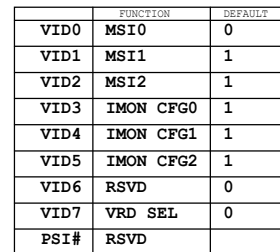
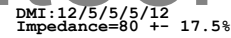
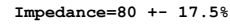
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Circuit or PCB layout change
for next version

[illegible]

BLOCK DIAGRAM





POWER ON CONFIG TABLE (Default=1.2250V)



Gigabyte Technology			
Title			
CPU LGA1156-A			
Size	Document Number	GA-H55M-USB3	Rev 1.01
Custom			
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LGA1156A			
MAAA0	AW18	SA_MA[0]	AK3 DQSA0
MAAA1	AY15	SA_MA[1]	AK3 -DQSA0
MAAA2	AV15	SA_MA[2]	AK2 DMA0
MAAA3	AU15	SA_MA[3]	
MAAA4	AW14	SA_MA[4]	AH1 MDA0
MAAA5	AY13	SA_MA[5]	AJ4 MDA1
MAAA6	AV14	SA_MA[6]	AL2 MDA2
MAAA7	AW13	SA_MA[7]	AL1 MDA3
MAAA8	AU14	SA_MA[8]	AG2 MDA4
MAAA9	AW12	SA_MA[9]	AH2 MDA5
MAAA10	AT19	SA_MA[10]	AK1 MDA6
MAAA11	AW11	SA_MA[11]	AK2 MDA7
MAAA12	AU13	SA_MA[12]	
MAAA13	AU24	SA_MA[13]	AP2 DQSA1
MAAA14	AT11	SA_MA[14]	AP3 -DQSA1
MAAA15	AR10	SA_MA[15]	AN1 DMA1
[7] -SWEA	AT22	SA_WE#	AN3 MDA8
[7] -SCASA	AU22	SA_CAS#	AN2 MDA9
[7] -SRASA	AT20	SA_RAS#	AR3 MDA10
[7] SBAA0	AV20	SA_BS[0]	AR2 MDA11
[7] SBAA1	AU19	SA_BS[1]	AM3 MDA12
[7] SBAA2	AU12	SA_BS[2]	AM2 MDA13
		SA_BS[3]	AP1 MDA14
		SA_BS[4]	AR4 MDA15
[7] -CSA0	AV21	SA_CS#	
[7] -CSA1	AW24	SA_CS#	AJ4 DQSA2
[7] -CSA2	AU21	SA_CS#	AL3 -DQSA2
[7] -CSA3	AU23	SA_CS#	AU1 DMA2
[7] CKEA0	AU10	SA_CKE[0]	AT4 MDA16
[7] CKEA1	AW10	SA_CKE[1]	AJ2 MDA17
[7] CKEA2	AV10	SA_CKE[2]	AW3 MDA18
[7] CKEA3	AY10	SA_CKE[3]	AW4 MDA19
		SA_CKE[4]	AT3 MDA20
		SA_CKE[5]	AT1 MDA21
		SA_CKE[6]	AV2 MDA22
		SA_CKE[7]	AV4 MDA23
MODT_A0	AV23	SA_ODT[0]	
MODT_A1	AV24	SA_ODT[1]	
MODT_A2	AW23	SA_ODT[2]	
MODT_A3	AY24	SA_ODT[3]	
		SA_ODT[4]	AY6 DQSA3
		SA_ODT[5]	AW6 -DQSA3
		SA_ODT[6]	AW6 DMA3
[7] DCLKA0	AR22	SA_CK[0]	
[7] -DCLKA0	AR21	SA_CK#	AW5 MDA24
[7] DCLKA1	AP18	SA_CK[1]	AY5 MDA25
[7] -DCLKA1	AN18	SA_CK#	AJ8 MDA26
[7] DCLKA2	AN21	SA_CK[2]	AJ8 MDA27
[7] -DCLKA2	AP21	SA_CK#	AJ5 MDA28
[7] DCLKA3	AP19	SA_CK[3]	AW6 MDA29
[7] -DCLKA3	AN19	SA_CK#	AV7 MDA30
[7,8] -DDR3_RST	AV8	SM_DRAMRST#	AW7 MDA31
			AR28 DQSA4
TP1	AK22	SA_CS#	AT29 -DQSA4
TP1	AM22	SA_CS#	AN29 DMA4
TP1	AL23	SA_CS#	
TP1	AK23	SA_CS#	AN27 MDA32
			AT28 MDA33
			AP28 MDA34
			AP30 MDA35
			AP27 MDA36
			AP27 MDA37
			AR29 MDA38
			AN30 MDA39
			AV32 DQSA5
			AW32 -DQSA5
			AW31 DMA5
			AU30 MDA40
			AJ31 MDA41
			AV33 MDA42
			AJ34 MDA43
			AW30 MDA44
			AW30 MDA45
			AJ33 MDA46
			AW33 MDA47
			AW36 DQSA6
			AV35 -DQSA6
			AJ35 DMA6
			AW35 MDA48
			AY35 MDA49
			AV37 MDA50
			AJ37 MDA51
			AY34 MDA52
			AW34 MDA53
			AV36 MDA54
			AW37 MDA55
			AR39 DQSA7
			AR38 -DQSA7
			AT38 DMA7
			AT39 MDA56
			AT40 MDA57
			AN38 MDA58
			AN39 MDA59
			AJ38 MDA60
			AP39 MDA61
			AP39 MDA62
			AP40 MDA63

DDR_A

1 OF 10

LGA1156(10SC1-F01156-04R)

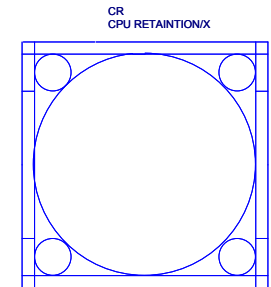
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[7] -DQSA[0..7]	-DQSA[0..7]
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[8] -DQSB[0..7]	-DQSB[0..7]
[7] MODT_A[0..3]	MODT_A[0..3]
[8] MODT_B[0..3]	MODT_B[0..3]
[7] MAA[0..15]	MAA[0..15]
[8] MAA[0..15]	MAA[0..15]
[7] DMA[0..7]	DMA[0..7]
[8] DMA[0..7]	DMA[0..7]
[7] DMB[0..7]	DMB[0..7]
[8] DMB[0..7]	DMB[0..7]
[7] MDA[0..63]	MDA[0..63]
[8] MDA[0..63]	MDA[0..63]
[7] MDB[0..63]	MDB[0..63]
[8] MDB[0..63]	MDB[0..63]

DDR_B

2 OF 10

LGA1156(10SC1-F01156-04R)

LGA1156B			
MAAB0	AU20	SB_DSQ[0]	AF4 DQSB0
MAAB1	AU18	SB_DSQ[1]	AE5 -DQSB0
MAAB2	AV18	SB_DSQ[2]	AE4 DMB0
MAAB3	AU17	SB_DSQ[3]	
MAAB4	AY18	SB_DSQ[4]	AD7 MDB0
MAAB5	AV17	SB_DSQ[5]	AD6 MDB1
MAAB6	AW17	SB_DSQ[6]	AH8 MDB2
MAAB7	AU16	SB_DSQ[7]	AJ8 MDB3
MAAB8	AT17	SB_DSQ[8]	AC7 MDB4
MAAB9	AY16	SB_DSQ[9]	AC6 MDB5
MAAB10	AY25	SB_DSQ[10]	AF5 MDB6
MAAB11	AW16	SB_DSQ[11]	AE6 MDB7
MAAB12	AY15	SB_DSQ[12]	AH6 DQSB1
MAAB13	AW18	SB_DSQ[13]	AJ5 -DQSB1
MAAB14	AY12	SB_DSQ[14]	AH4 DMB1
MAAB15	AV11	SB_DSQ[15]	
[8] -SWEB	AW26	SB_WE#	AG5 MDB8
[8] -SCASB	AW26	SB_CAS#	AH7 MDB9
[8] -SRASB	AW26	SB_RAS#	AK6 MDB10
[8] SBAB0	AW25	SB_BS[0]	AL4 MDB11
[8] SBAB1	AW25	SB_BS[1]	AG6 MDB12
[8] SBAB2	AV12	SB_BS[2]	AC4 MDB13
		SB_BS[3]	AJ7 MDB14
		SB_BS[4]	AK7 MDB15
[8] -CSB0	AY27	SB_CS#	
[8] -CSB1	AW26	SB_CS#	AN6 DQSB2
[8] -CSB2	AW26	SB_CS#	AM6 -DQSB2
[8] -CSB3	AW26	SB_CS#	AM7 DMB2
[8] CKEB0	AW8	SB_CKE[0]	AL6 MDB16
[8] CKEB1	AY9	SB_CKE[1]	AN6 MDB17
[8] CKEB2	AU9	SB_CKE[2]	AP6 MDB18
[8] CKEB3	AV9	SB_CKE[3]	AR5 MDB19
		SB_CKE[4]	AL5 MDB20
		SB_CKE[5]	AM4 MDB21
		SB_CKE[6]	AN7 MDB22
		SB_CKE[7]	AP5 MDB23
MODT_B0	AU27	SB_ODT[0]	
MODT_B1	AU27	SB_ODT[1]	
MODT_B2	AV27	SB_ODT[2]	
MODT_B3	AV27	SB_ODT[3]	
		SB_ODT[4]	AR8 DQSB3
		SB_ODT[5]	AP8 -DQSB3
		SB_ODT[6]	AT7 DMB3
[8] DCLKB0	AR17	SB_CK[0]	
[8] -DCLKB0	AR16	SB_CK#	AT6 MDB24
[8] DCLKB1	AT15	SB_CK[1]	AR7 MDB25
[8] -DCLKB1	AR15	SB_CK#	AP9 MDB26
[8] DCLKB2	AN17	SB_CK[2]	AM8 MDB27
[8] -DCLKB2	AN16	SB_CK#	AN8 MDB28
[8] DCLKB3	AR18	SB_CK[3]	AR6 MDB29
[8] -DCLKB3	AR18	SB_CK#	AL8 MDB30
		SB_CK[4]	AT9 MDB31
		SB_CK[5]	AT25 DQSB4
		SB_CK[6]	AR24 -DQSB4
		SB_CK[7]	AN24 DMB4
		SB_CK[8]	AN23 MDB32
		SB_CK[9]	AP23 MDB33
		SB_CK[10]	AR25 MDB34
		SB_CK[11]	AR26 MDB35
		SB_CK[12]	AT23 MDB36
		SB_CK[13]	AP22 MDB37
		SB_CK[14]	AP25 MDB38
		SB_CK[15]	AT26 MDB39
		SB_CK[16]	AP32 DQSB5
		SB_CK[17]	AR32 -DQSB5
		SB_CK[18]	AN32 DMB5
		SB_CK[19]	AT32 MDB40
		SB_CK[20]	AP31 MDB41
		SB_CK[21]	AR33 MDB42
		SB_CK[22]	AM32 MDB43
		SB_CK[23]	AT31 MDB44
		SB_CK[24]	AR34 MDB45
		SB_CK[25]	AT33 MDB46
		SB_CK[26]	AP36 MDB47
		SB_CK[27]	AP36 MDB48
		SB_CK[28]	AT36 MDB49
		SB_CK[29]	AP36 MDB50
		SB_CK[30]	AP36 MDB51
		SB_CK[31]	AP34 MDB52
		SB_CK[32]	AT35 MDB53
		SB_CK[33]	AN34 MDB54
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		SB_CK[35]	AL37 DQSB7
		SB_CK[36]	AM36 -DQSB7
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		SB_CK[43]	AN35 MDB60
		SB_CK[44]	AM34 MDB61
		SB_CK[45]	AJ35 MDB62
		SB_CK[46]	AL36 MDB63
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		SB_CK[59]	
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		SB_CK[62]	
		SB_CK[63]	



Need check the new CPU ME

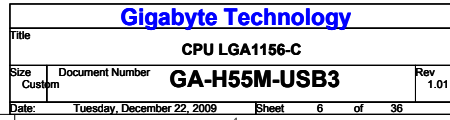
LGA1156_P

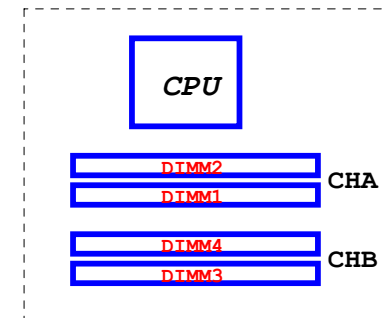
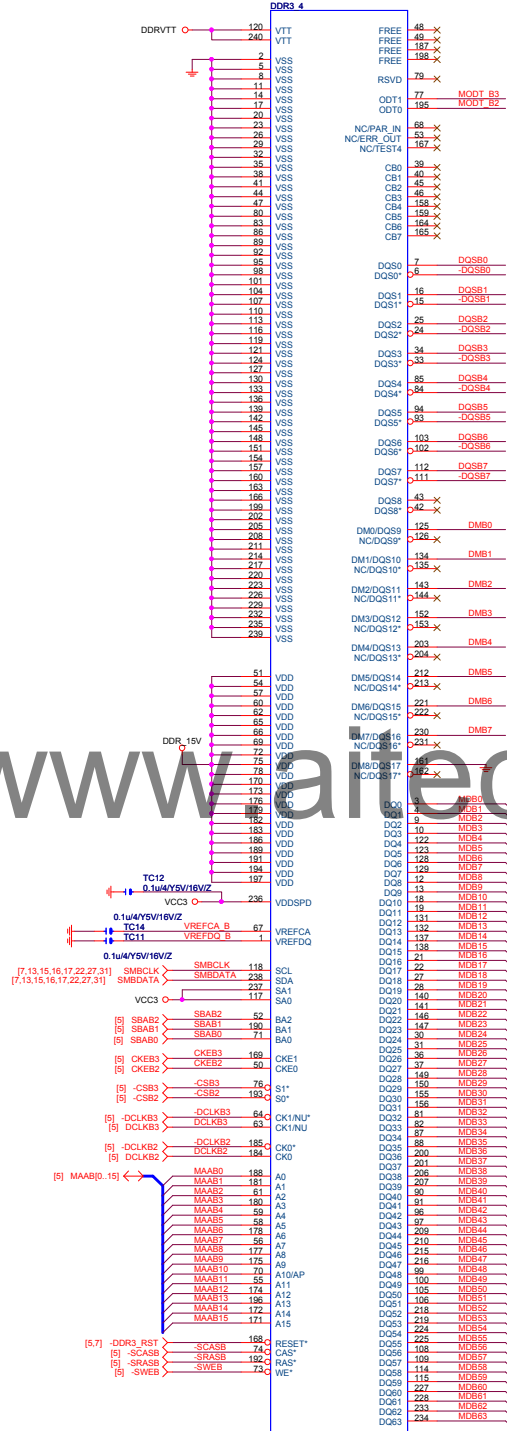
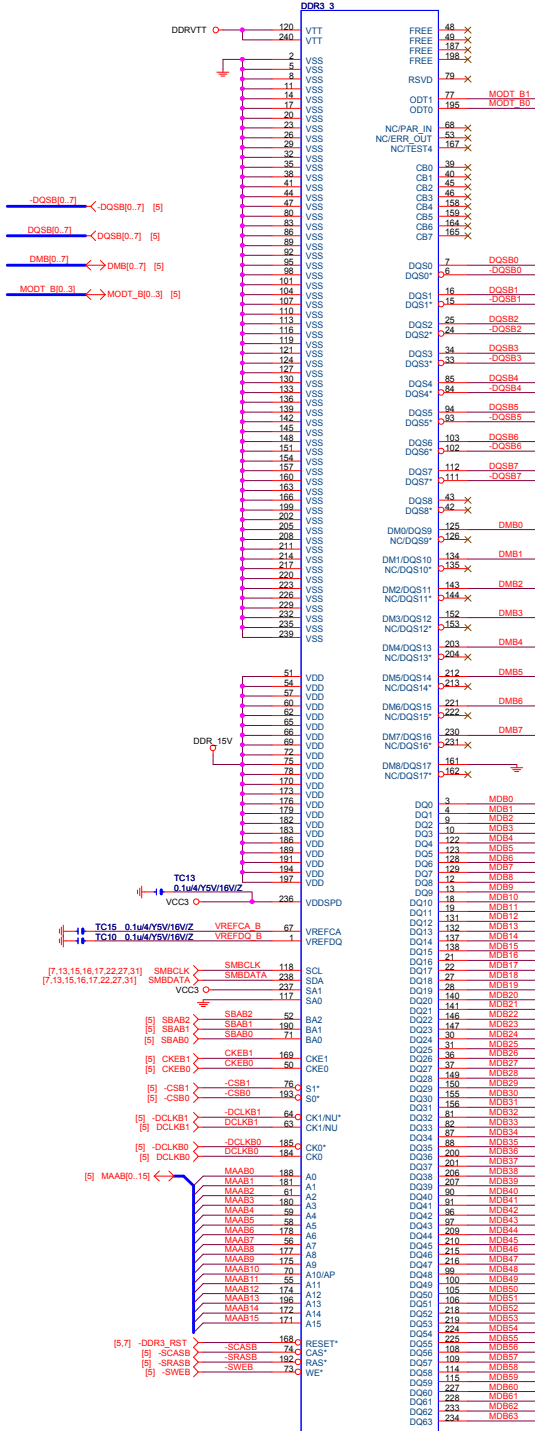


PLATE+HLM(12KRC-0F0001-04R)

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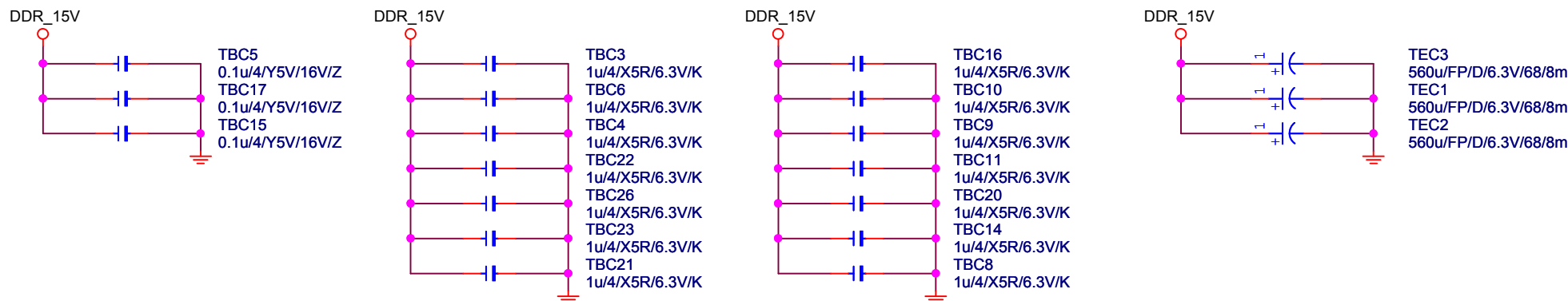
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CPU LGA1156-B			
Size Custom			
Document Number			
G4-H55M-USB3			
Date			
Tuesday, December 22, 2009			
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1.01			



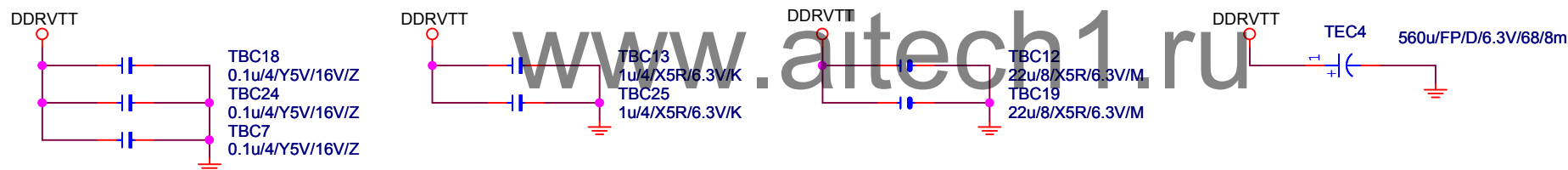


DDR TERMINATION CHANNEL A/B

DDR15V Decouple



DDRVTT Decouple



REF GND層GND, VCC層GND要塞孔

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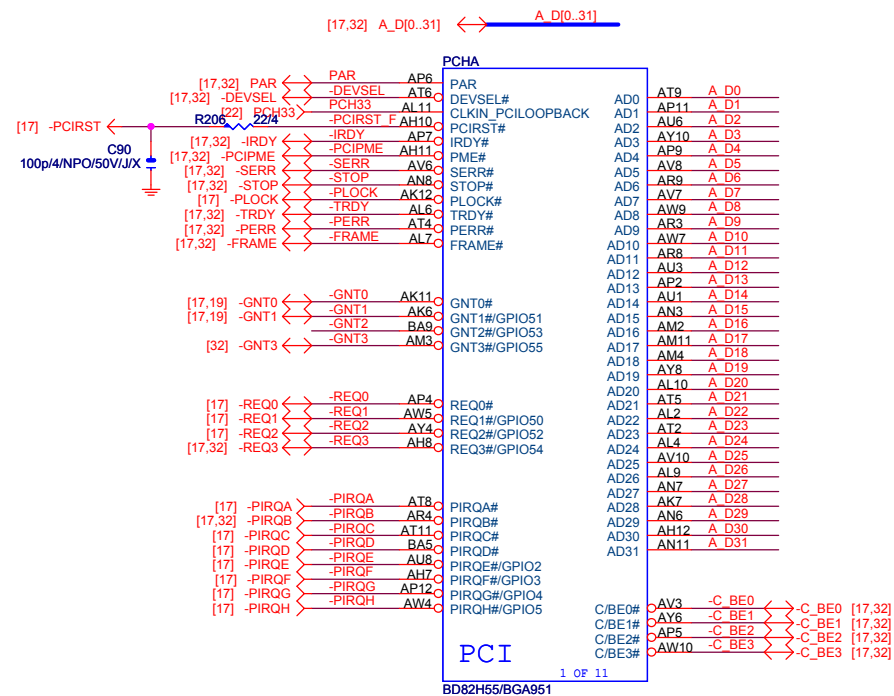
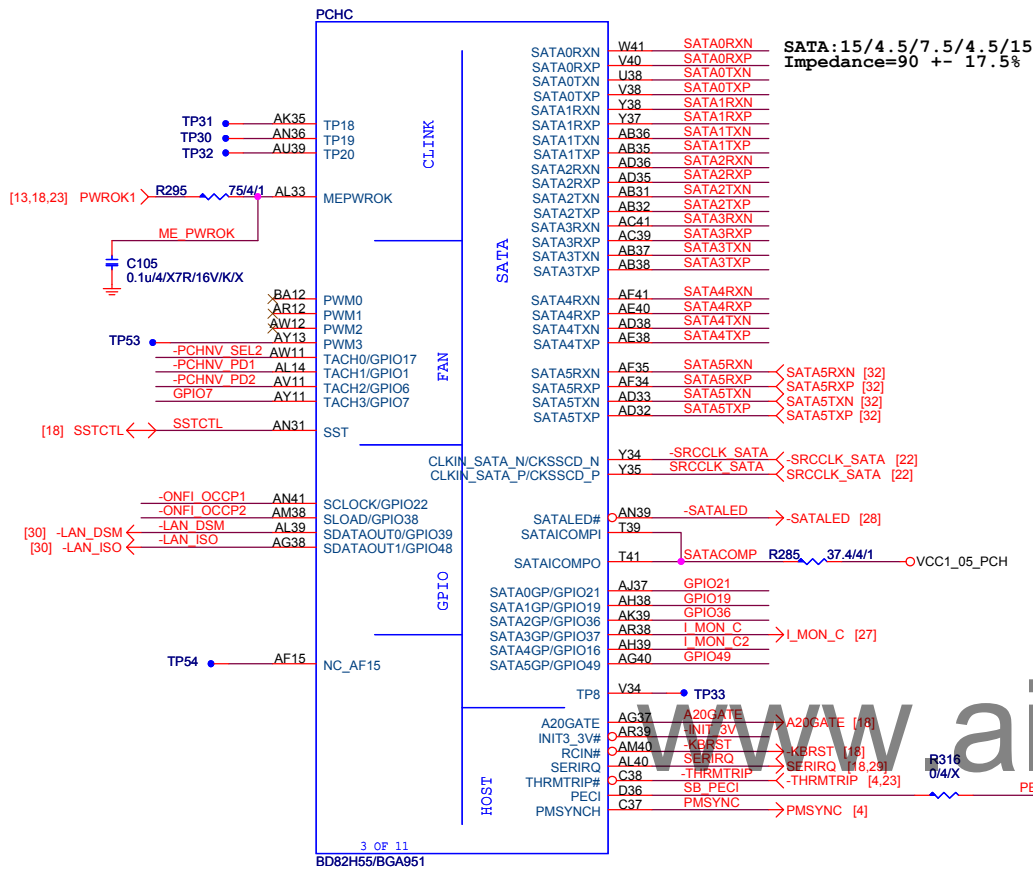
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Size A	Document Number	Rev
	GA-H55M-USB3	1.01
Date:	Monday, November 30, 2009	Sheet 9 of 36

PCHB

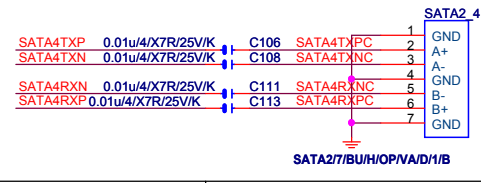
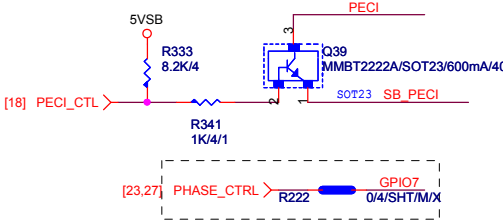
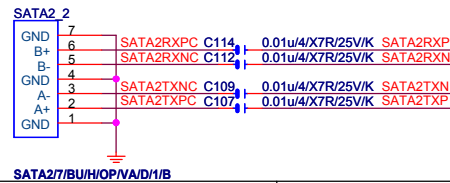
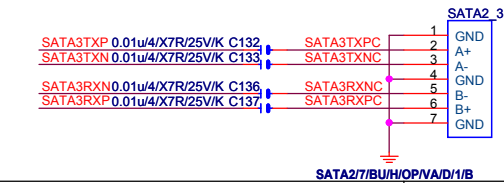
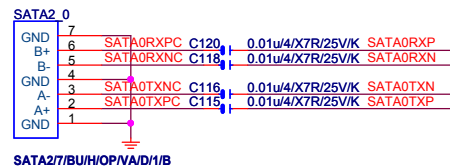
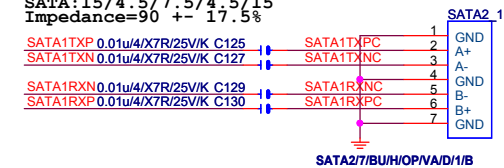
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PCHE

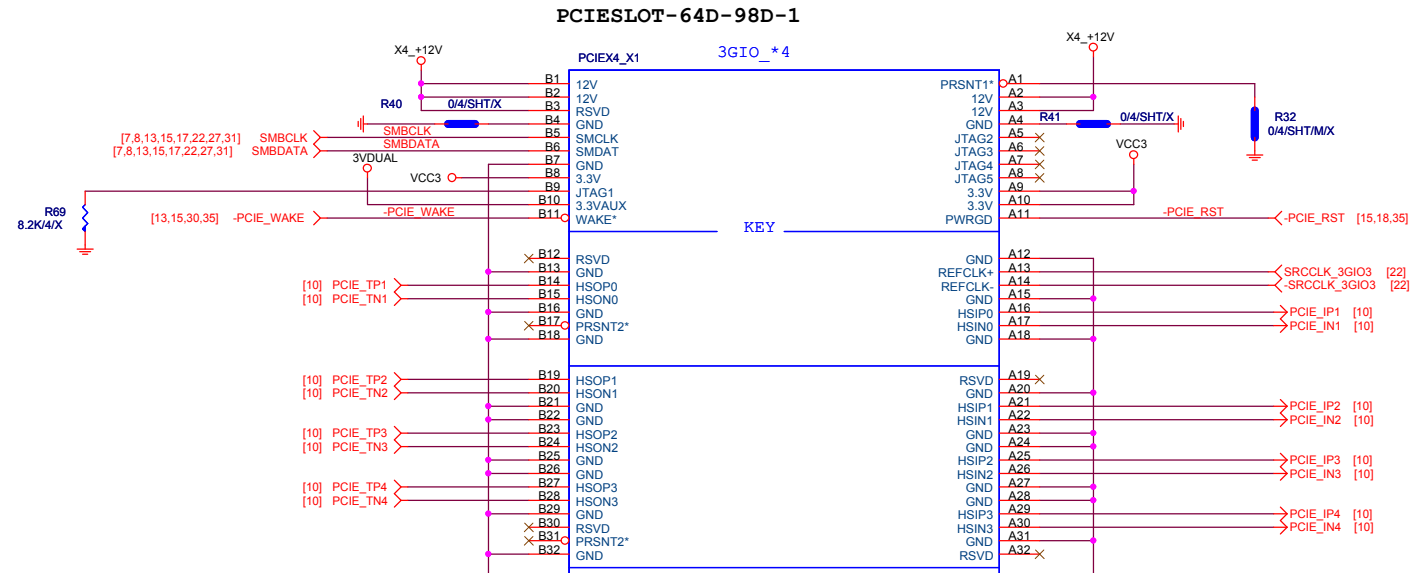
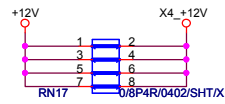




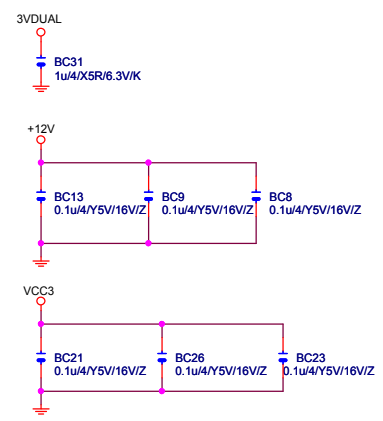
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Impedance=90 +- 17.5%



Gigabyte Technology			
Title PCH HOST , SATA, PCI			
Size B	Document Number	GA-H55M-USB3	
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		Rev	1.01



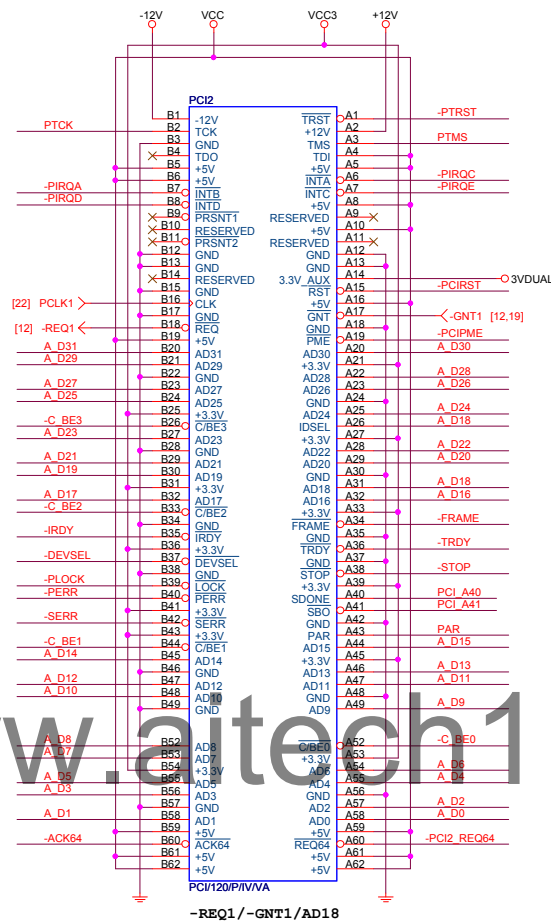
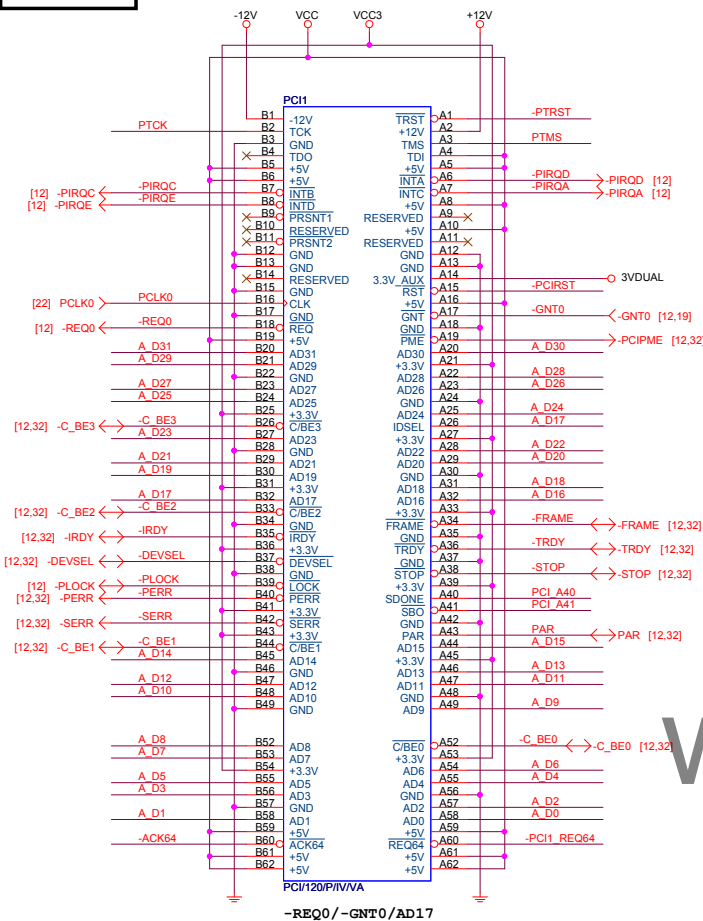
www.aitech1.ru



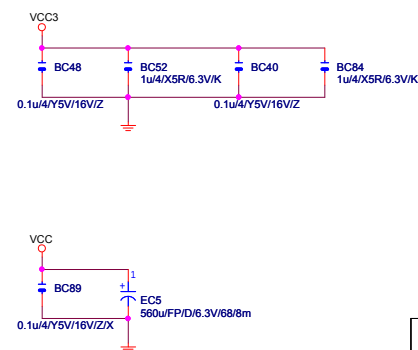
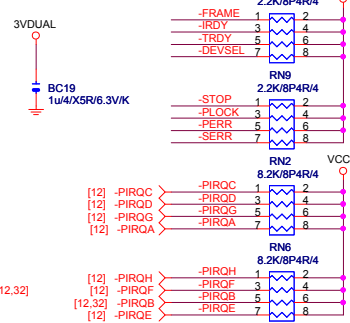
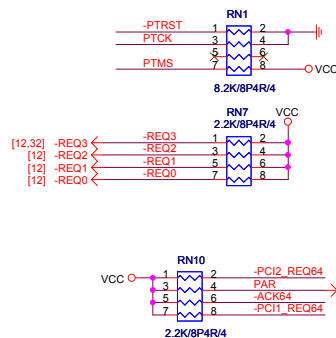
PCI-E/16X-65P/BU/RIGHT PUSH

Gigabyte Technology			
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PCI EXPRESS X 4 PORT			
Size	Document Number	GA-H55M-USB3	
Custom			Rev 1.01
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PCI1,2 SLOT

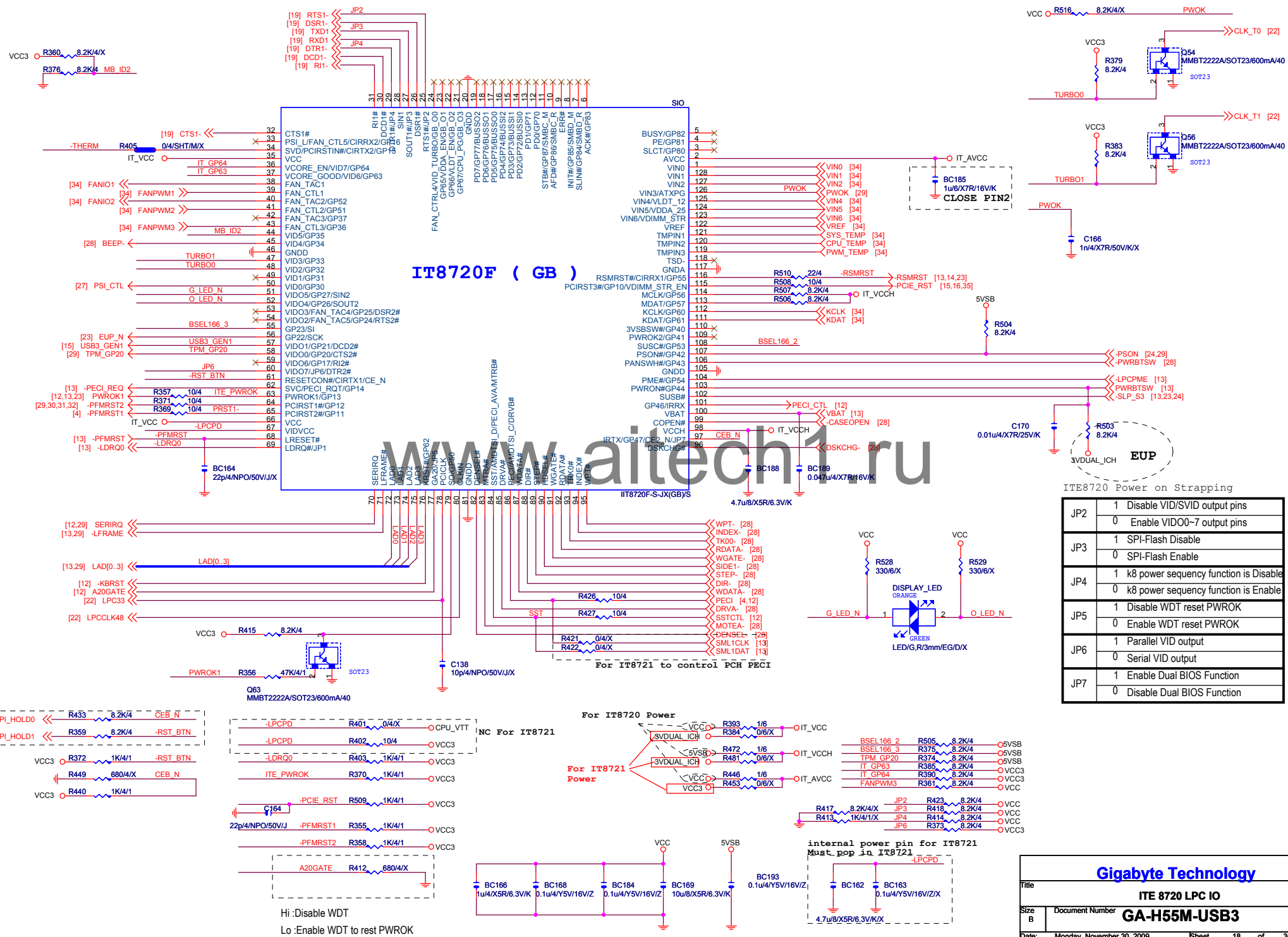


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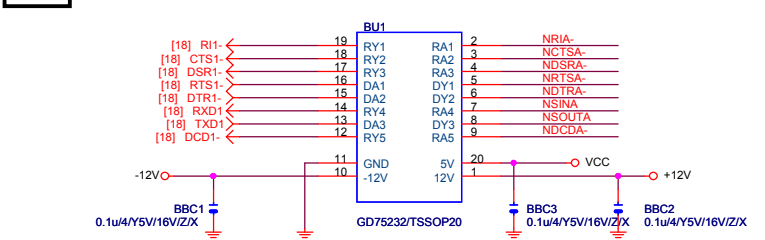


Gigabyte Technology

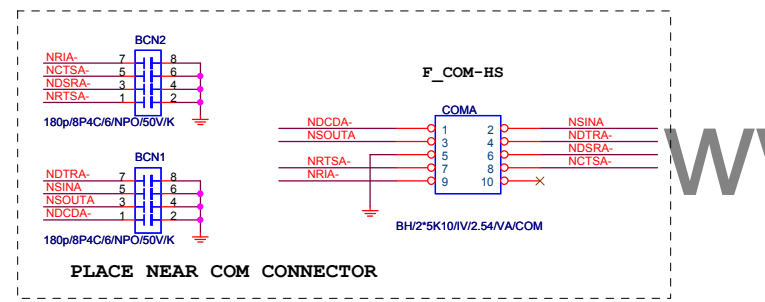
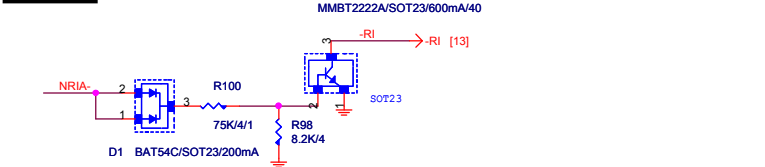
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Size Custom	Document Number	GA-H55M-USB3	Rev 1.01
Date:	Monday, November 30, 2009	Sheet 17 of 36	



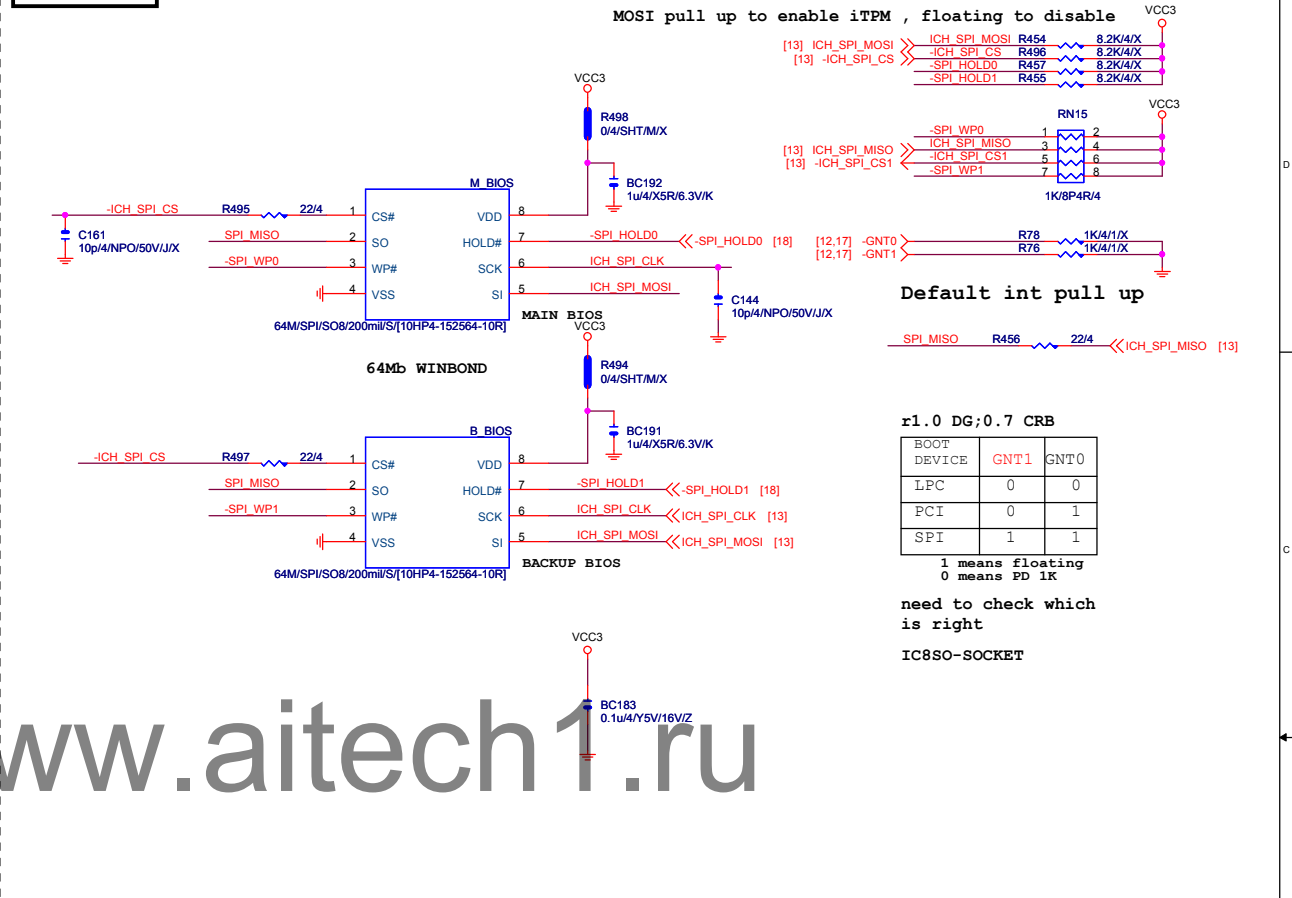
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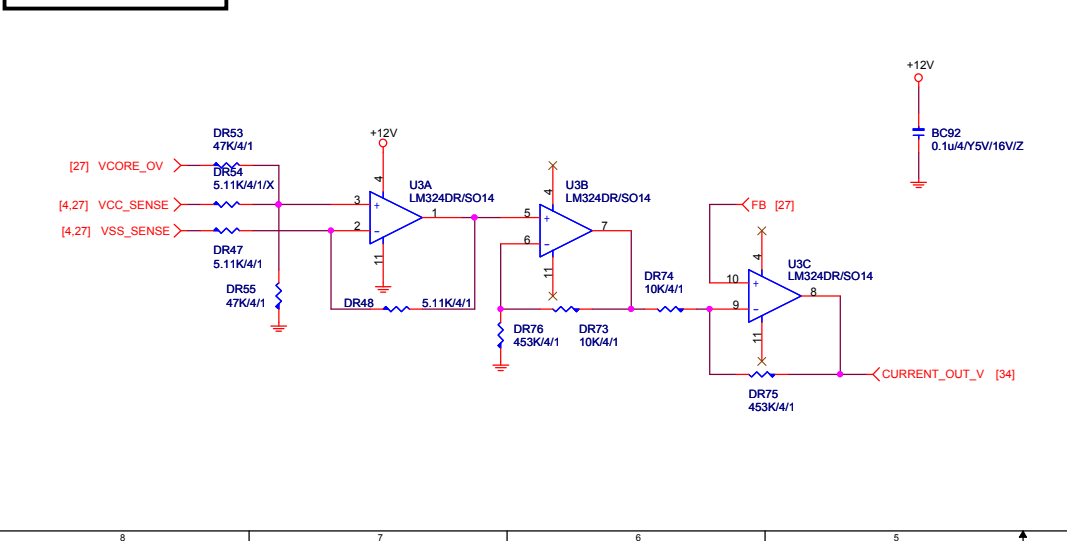
RING IN



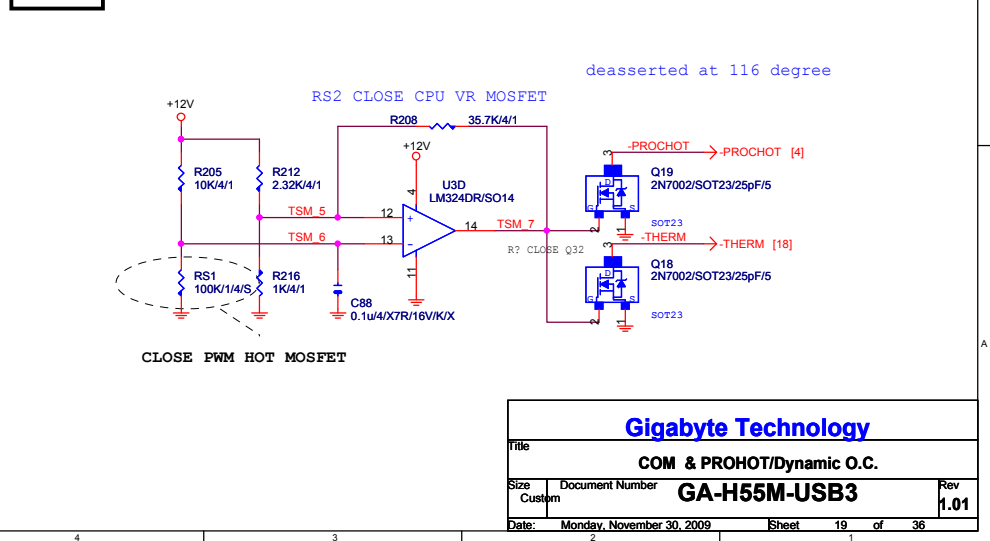
DUAL BIOS



DYNAMIC CURRENT OC



-PROHOT



	ALC888B	ALC888 -VA	ALC889A	ALC888 -VD	ALC892
CR59	X	O	O	O	O
CR53, 58	X	X	O	X	X
CR56	O	O	O	O	X
CR63	X	X	X	X	O
CR34	20K/1%	20K/1%	20K/0.1%	20K/1%	20K/1%

CR14/CBC4 close to SouthBridge

Digital Area

Analog Area

JD resistors close to pin13 of CODEC

Can Support Amp Out

CR2: 20K/4/0.1% @ALC889A

CR2: 20K/4/1% @ALC889A+/ALC888Vx

[21] GEN ←

[21] LFE ←

[21] S_SURR_L ←

[21] S_SURR_R ←

[21] SPDIFI ←

CBC31
470p/4/X7R/50V/K

[21] SPDIF ←

CU1
ALC889A+

JD resistors close to pin34 of CODEC

Can Support Amp Out

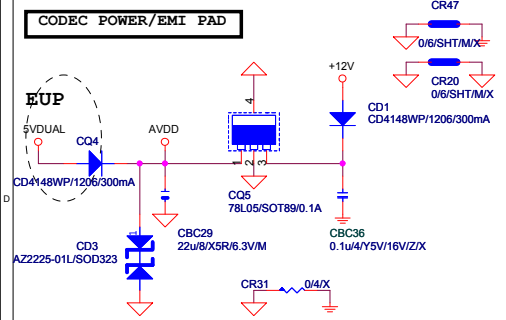
50歐姆: 4/10

FOR ALC892

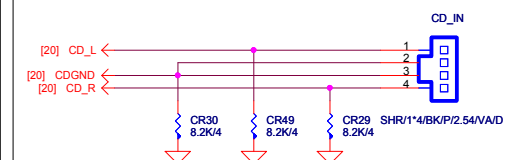
Gigabyte Technology

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HD AUDIO ALC889				
Size	Document Number			Rev
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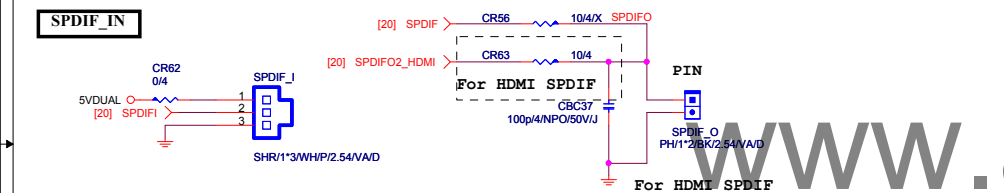
CODEC POWER/EMI PAD



CD IN

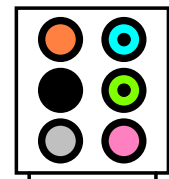


SPDIF IN

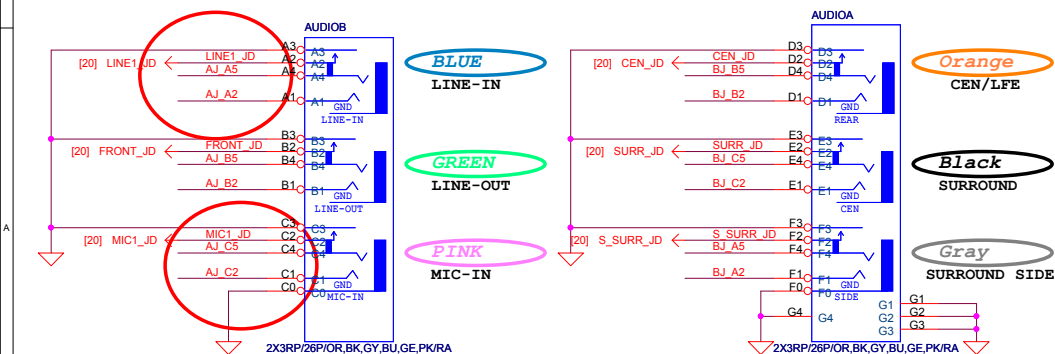


AZALIA JACK

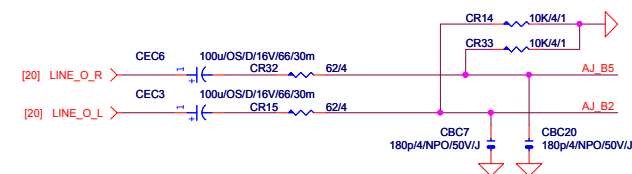
BTX AZALIA CONNECTOR



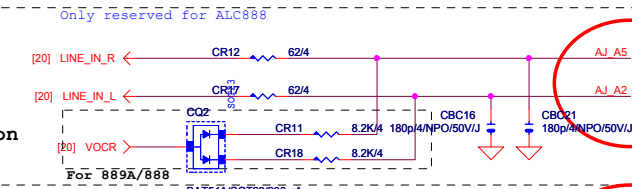
11NR6-403007-21R



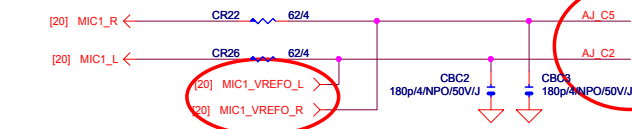
LINE-OUT



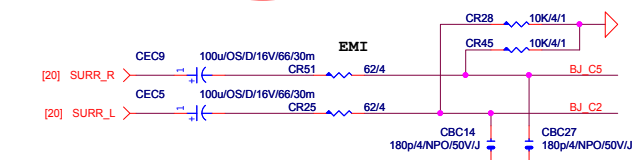
LINE-IN

Verify MIC function
in LINE-in

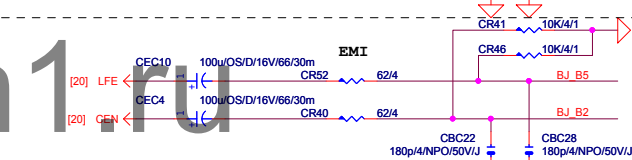
MIC-IN



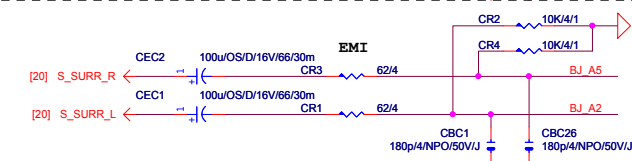
SURROUND



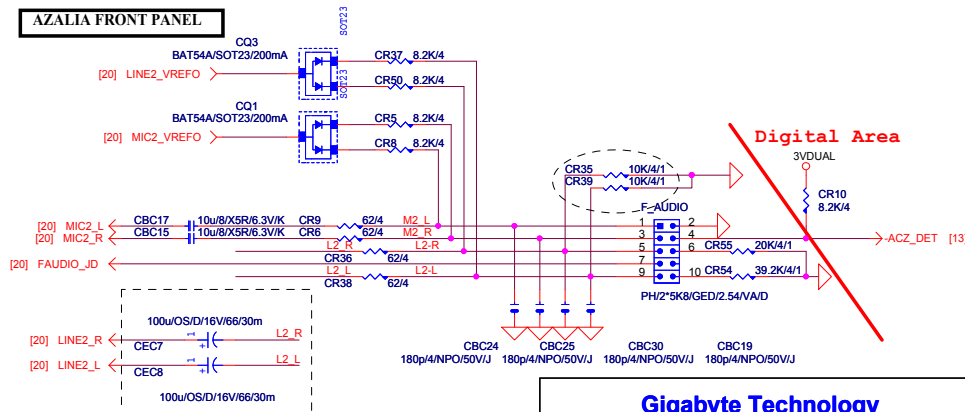
CEN/LFE



SURR BACK



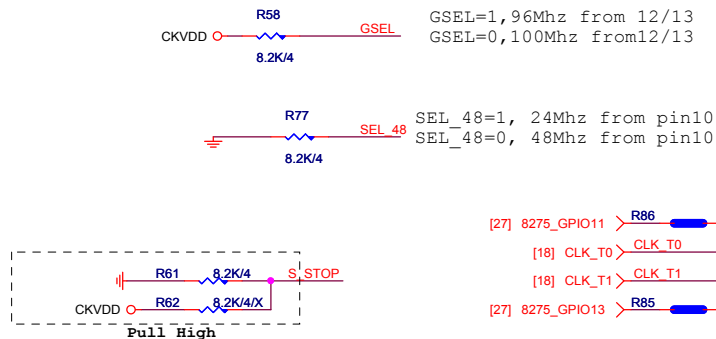
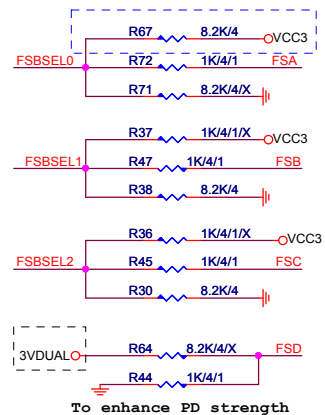
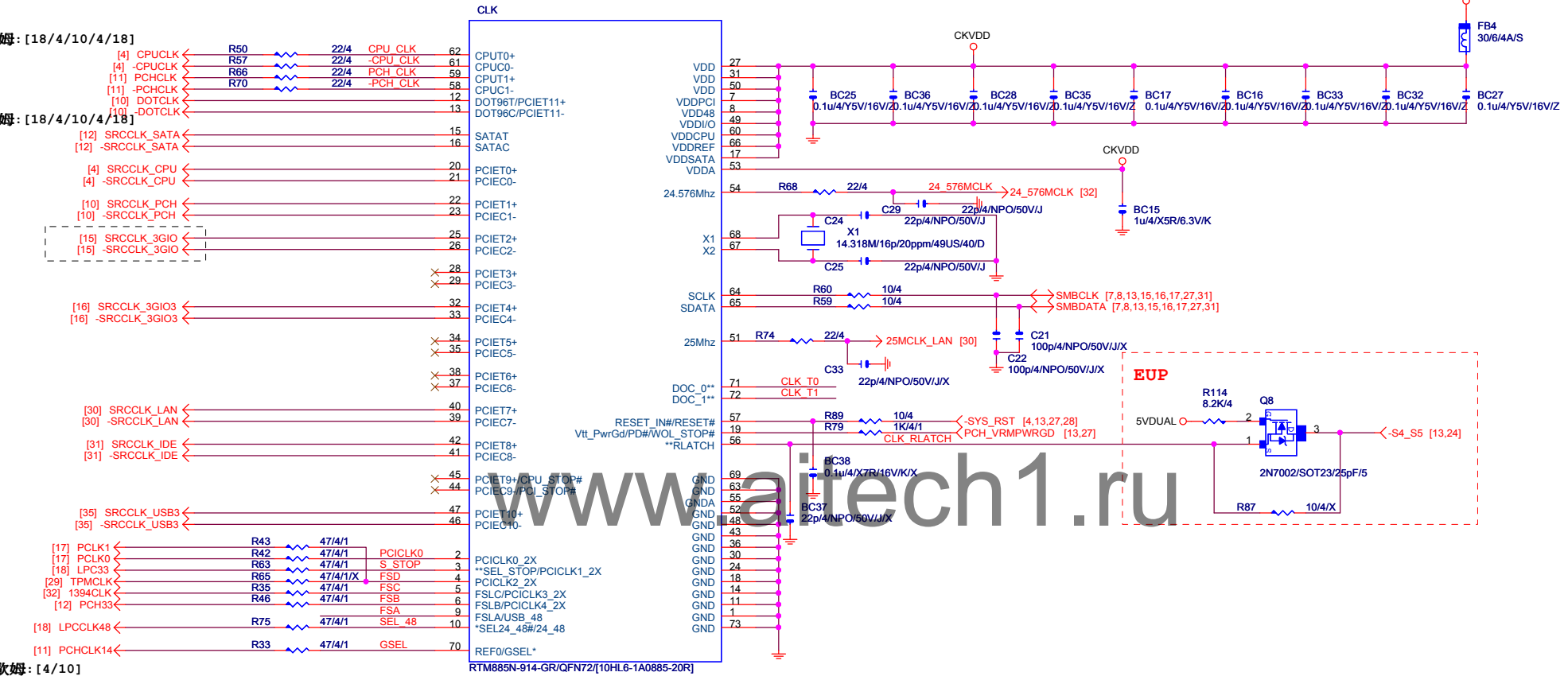
AZALIA FRONT PANEL



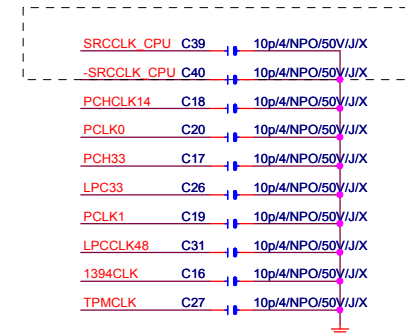
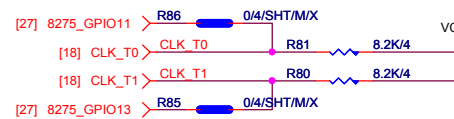
Gigabyte Technology

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AUDIO JACK			
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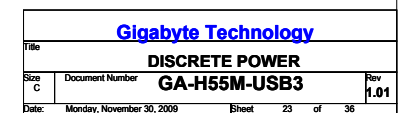
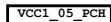
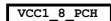
50歐姆:[4/10]



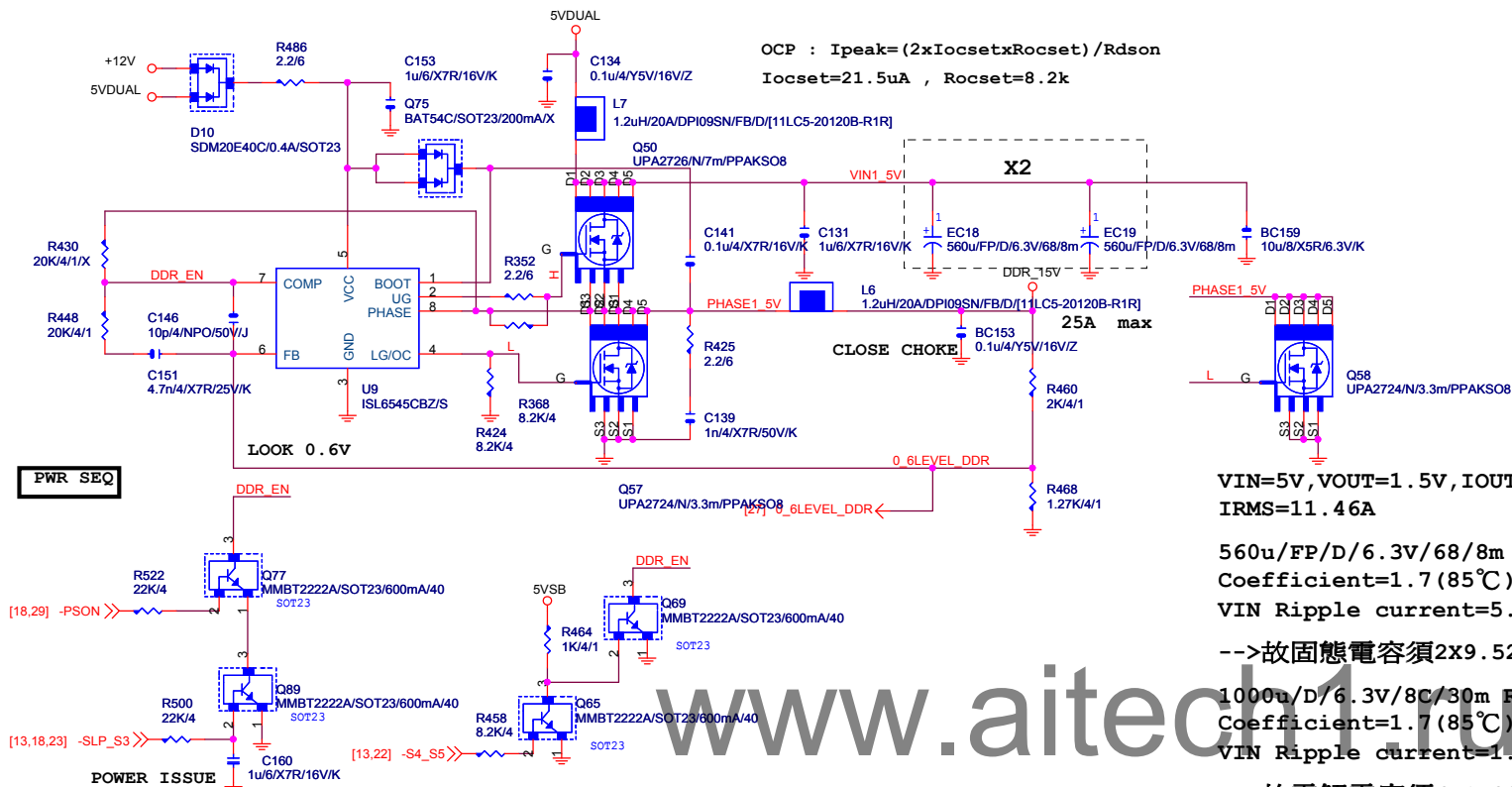
FSC	FSB	FSA	CPU
0	0	0	266MHz
0	0	1	133MHz
0	1	0	200MHz
0	1	1	166MHz
1	0	0	333MHz
1	1	0	400MHz



5VDUAL



DDR1_5V



$$OCP : I_{peak} = (2 \times I_{ocset} \times R_{ocset}) / R_{dson}$$

$$I_{ocset} = 21.5\mu A, R_{ocset} = 8.2k$$

VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1
IRMS=11.46A

560u/FP/D/6.3V/68/8m RIPPLE CURRENT=5.6A
Coefficient=1.7 (85°C), 1 (105°C)
VIN Ripple current=5.6X1.7=9.52A (85°C)

-->故固態電容須 $2 \times 9.52 = 19.04 > 11.46A$

1000u/D/6.3V/8C/30m RIPPLE CURRENT=1.14A
Coefficient=1.7 (85°C), 1 (105°C)
VIN Ripple current=1.14X1.7=1.938A (85°C)

-->故電解電容須 $6 \times 1.938 = 11.628 > 11.46A$

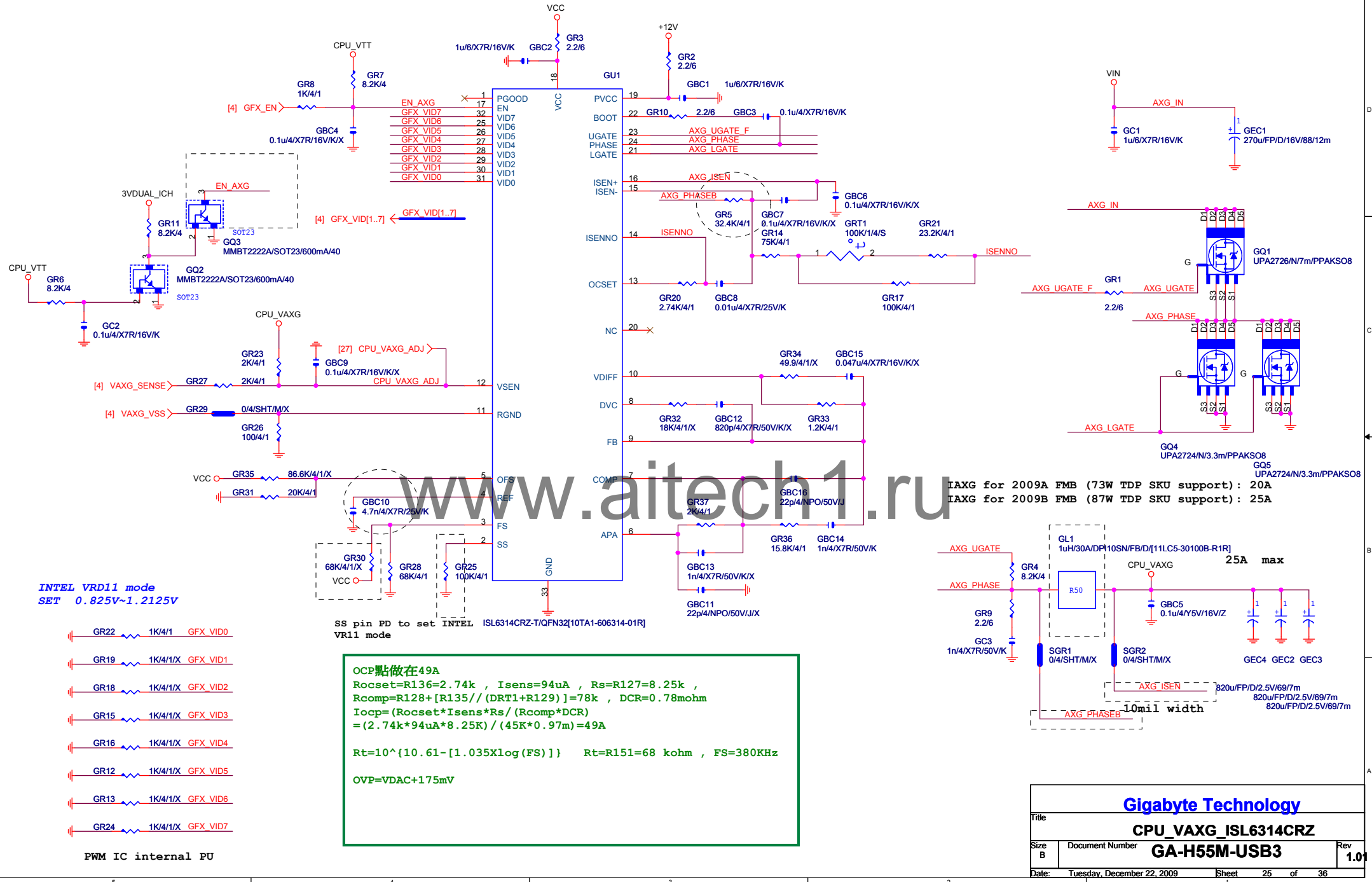
VIN=3V, VOUT=1.05V, IOUT=7.5A, PHASE=1
IRMS=3.5A

-->故固態電容須 $1 \times 9.52 = 9.52 > 3.5A$

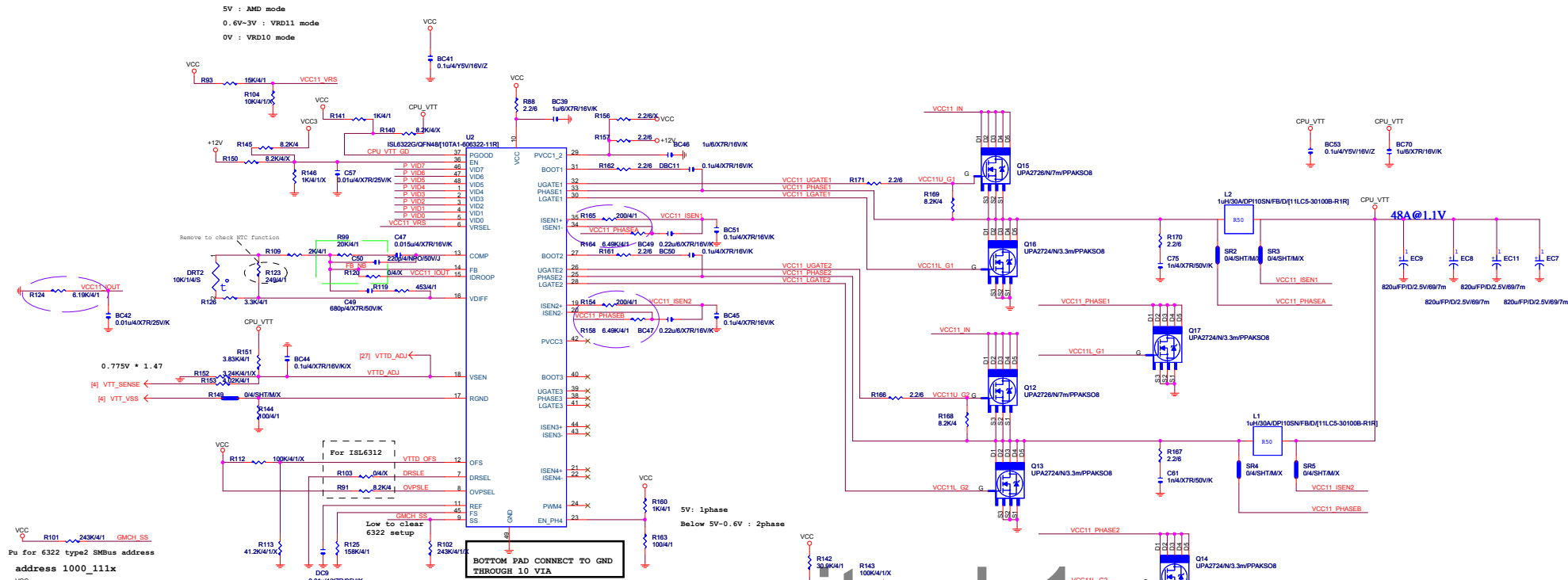
-->故電解電容須 $2 \times 1.938 = 3.876 > 3.5A$

Gigabyte Technology

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DDR_15V			
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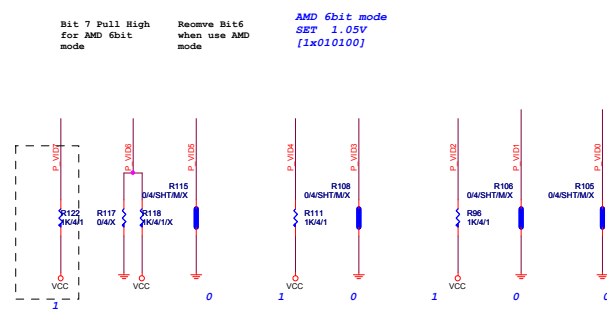


5V : AMD mode
0.6V~3V : VRD11 mode
0V : VRD10 mode



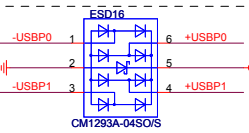
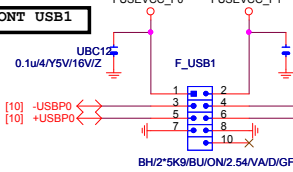
OCF點做在146A
Isensx R270阻值設在590ohm
 $I_{ocp} = (I_{sensx} R_{isensxPhase}) / DCR$
 $= [(120uA \times 590X2) / 0.97] = 146A$
 $L / DCR = R + C$
 $L = 1uH$ $DCR = 0.97m\Omega$ $1uH / 0.97m\Omega = 4.7k\Omega$ $0.22uF$
 $R_{isens} R260$ 阻值=4.7k ohm, $C_{isen} BC75=0.22u$
 $Rt = 10^4 \cdot [10.61 - [1.035X \log(FS)]]$ $Rt = R301 = 158k\Omega$, $FS = 170KHz$
 $OVP = V_{DAC} + 225mV$

1.05V / 1.1V select by CPU



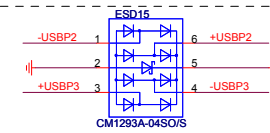
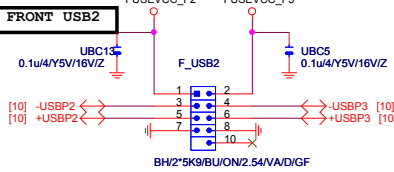
VIN=5V, VOUT=1.1V, IOUT=48A, PHASE=2
IRMS=11.91A
560uF/FPID/6.3V/68/8m RIPPLE CURRENT=5.6A
Coefficient=1.7(85℃), 1(105℃)
VIN Ripple current=5.6X1.7=9.52A(85℃)
-->故固態電容須2X9.52=19.04>11.91A
1000uF/D/6.3V/8C/30m RIPPLE CURRENT=1.14A
Coefficient=1.7(85℃), 1(105℃)
VIN Ripple current=1.14X1.7=1.938A(85℃)
-->故電解電容須7X1.938=13.566>11.91A

FRONT USB1



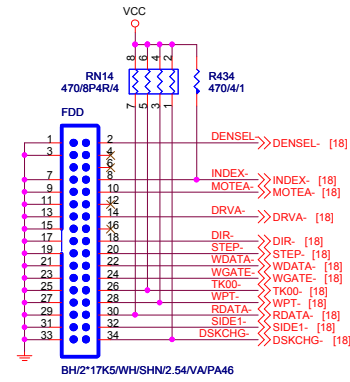
Close to connector

FRONT USB2

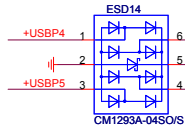
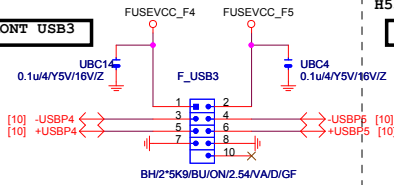


Close to connector

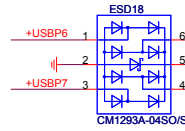
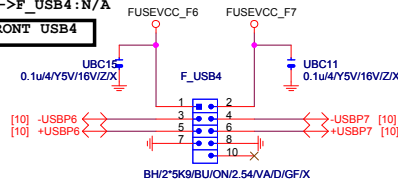
FLOPPY



FRONT USB3

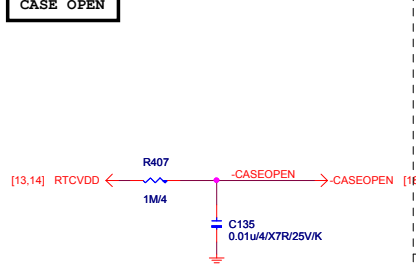


FRONT USB4



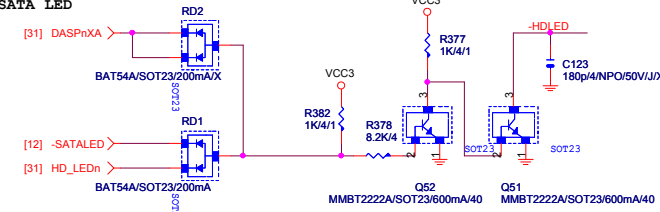
USB4 POP FOR H57/ N/A FOR H55

CASE OPEN

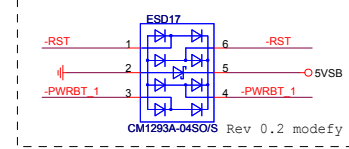
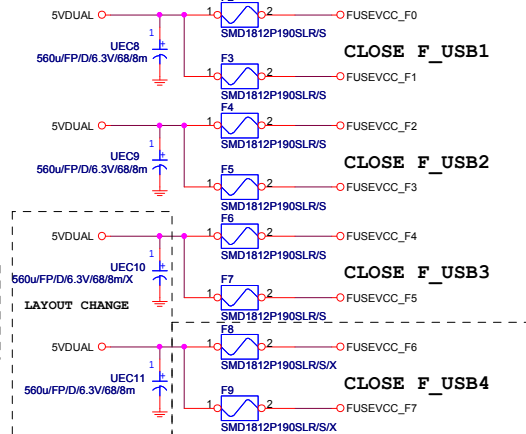
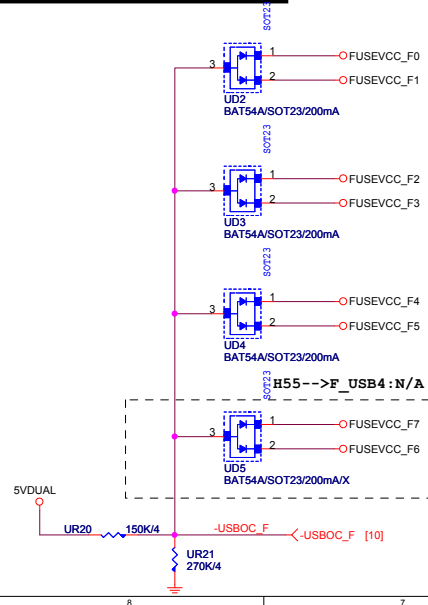


Case Open Circuits

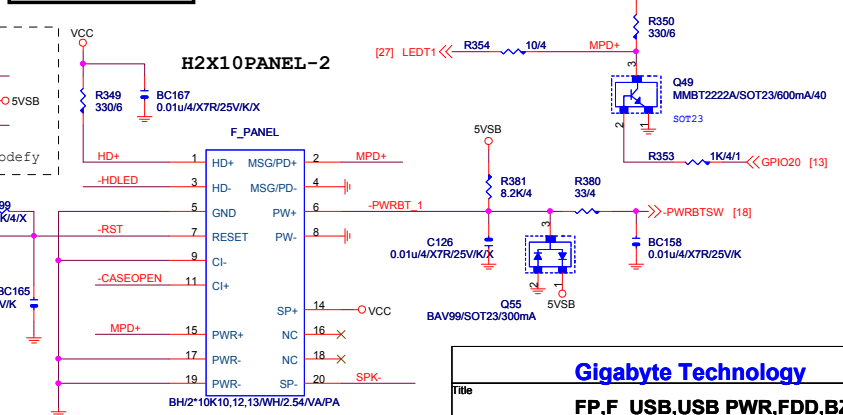
SATA LED



F USB & F 1394 POWER PROTECT



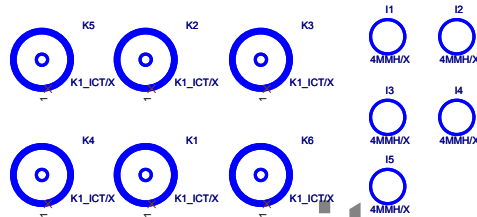
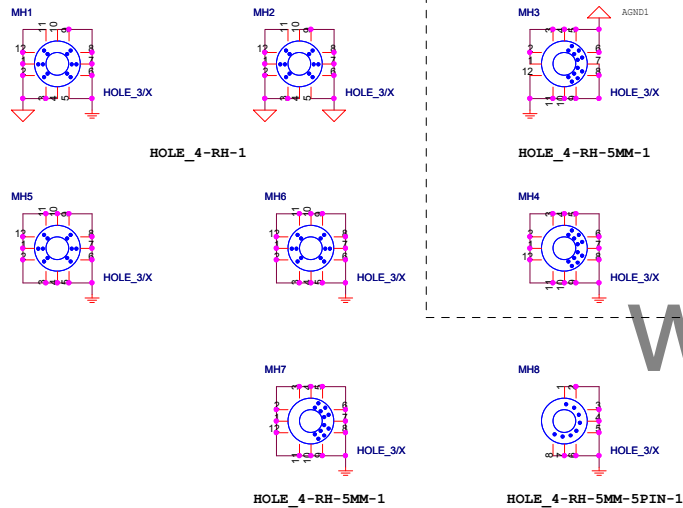
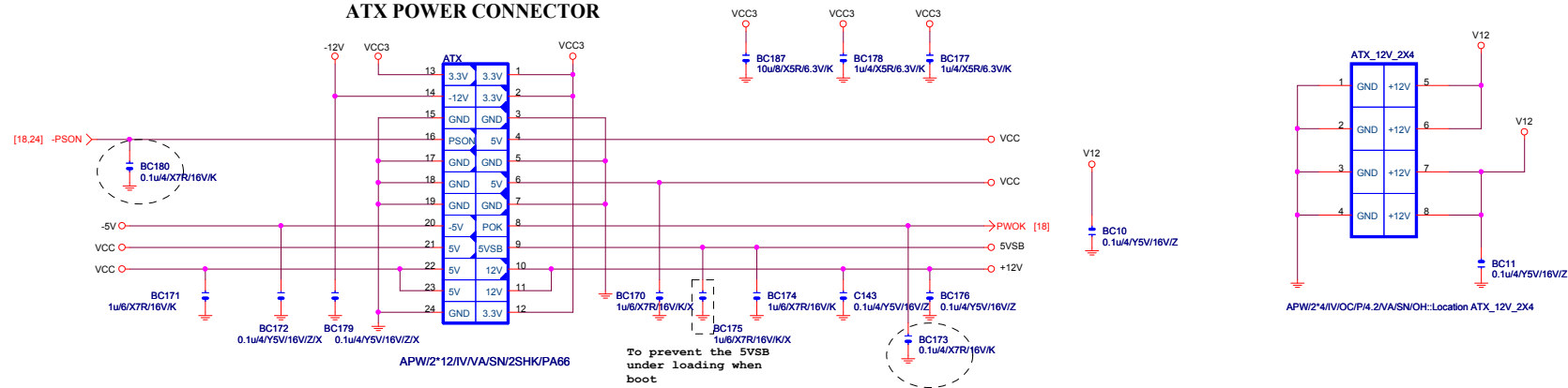
INTEL FRONT PANEL



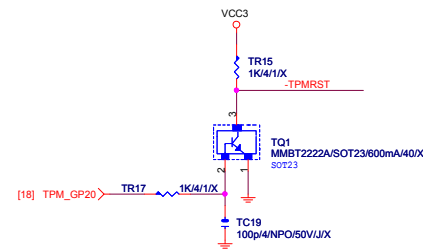
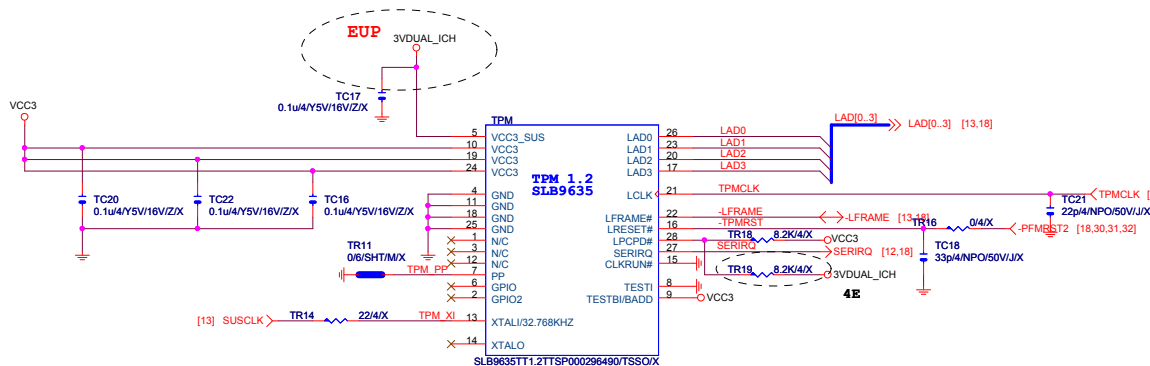
Gigabyte Technology

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ATX POWER CONNECTOR

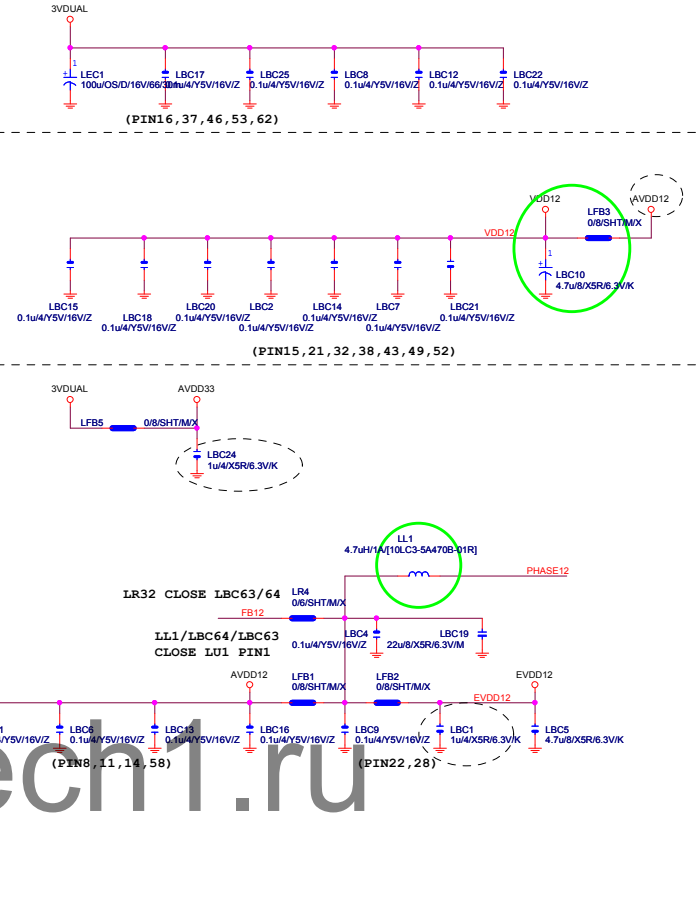
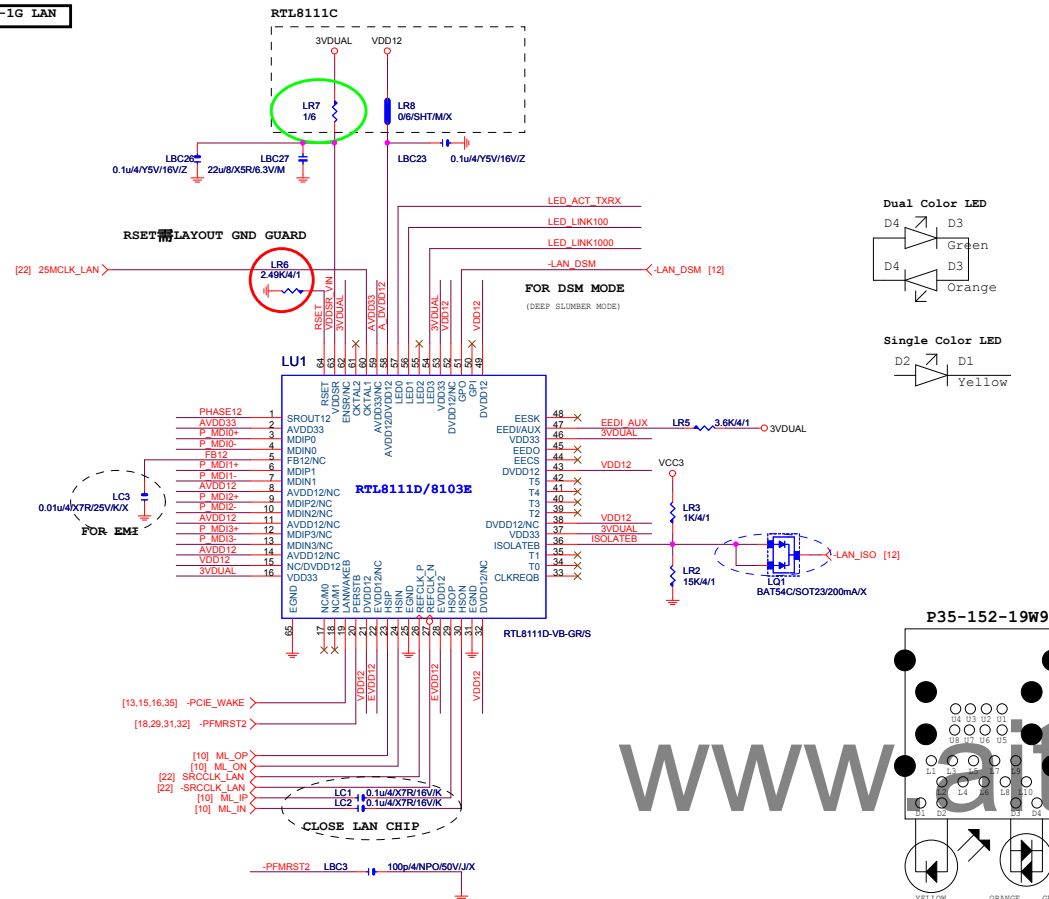


TPM



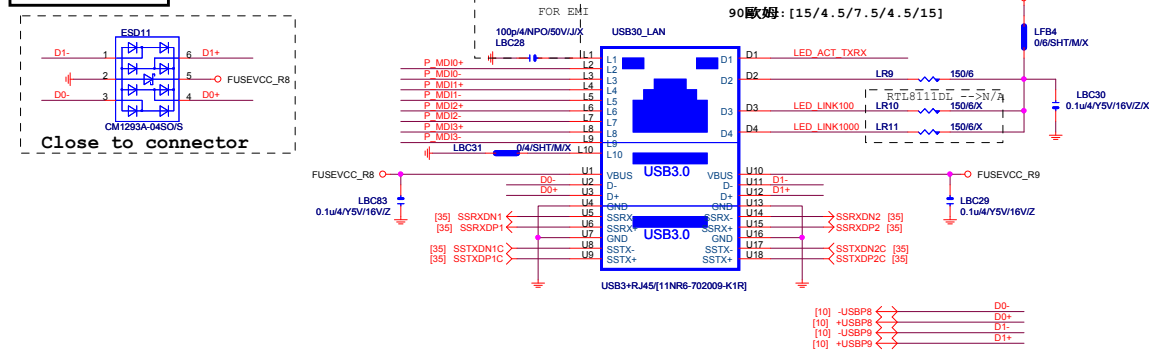
Gigabyte Technology		
ATX POWER CONNECTOR		
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PCIE-1G LAN

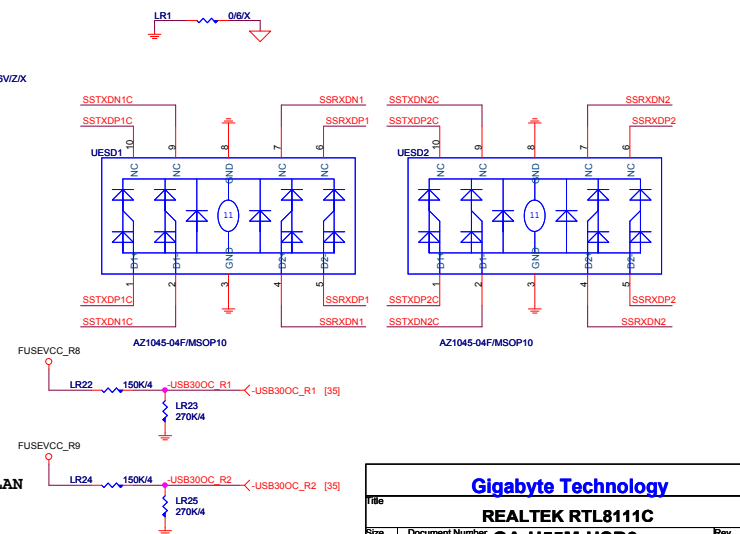


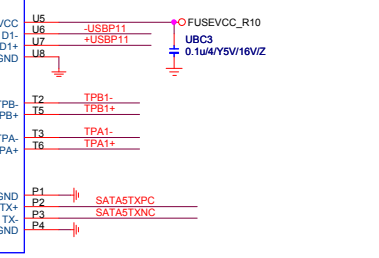
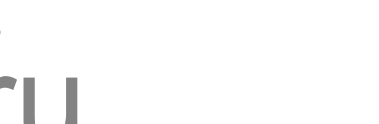
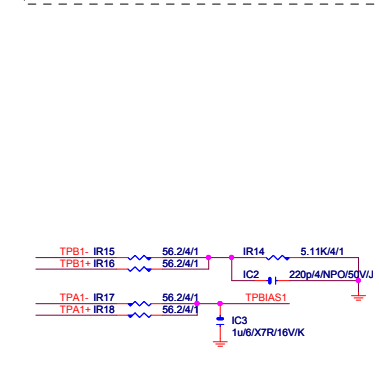
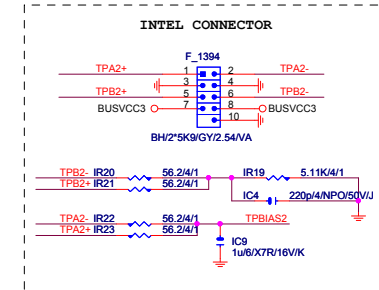
USB_LAN CONNECTOR

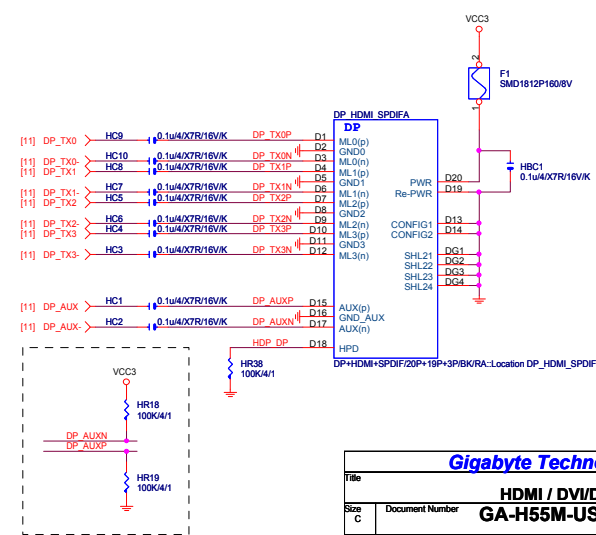
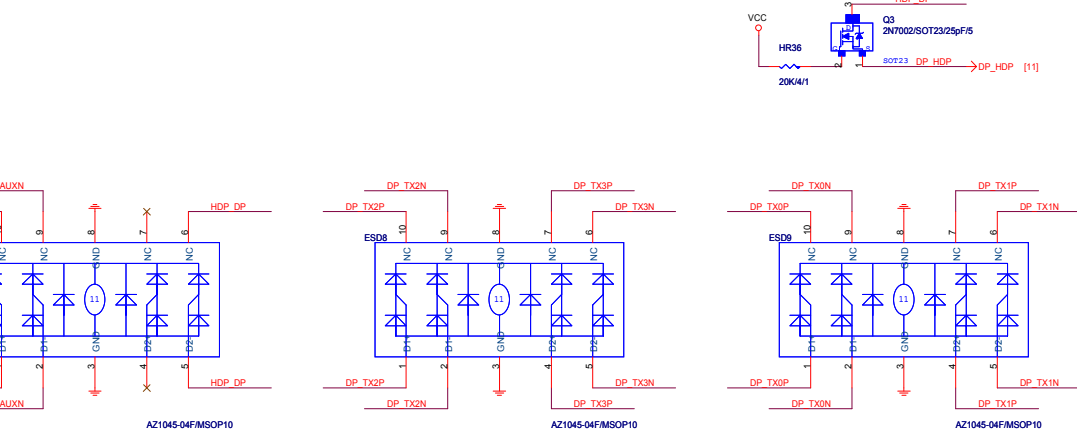
90 歐姆: [20/4/8/4/20]



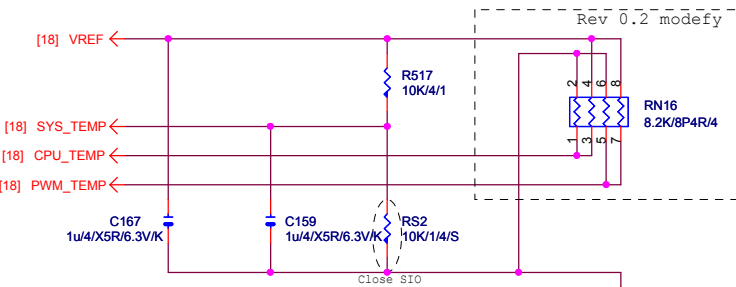
09/21 modify USB2.0 (BY INTEL)



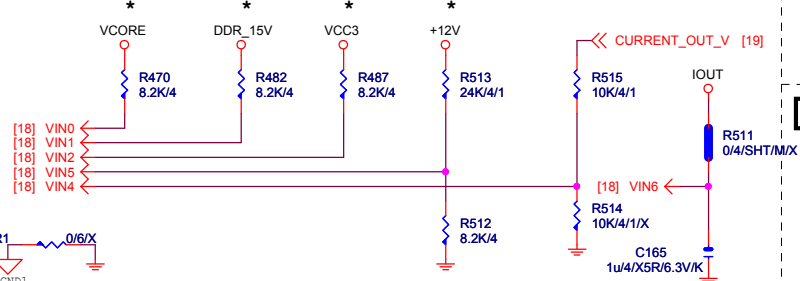




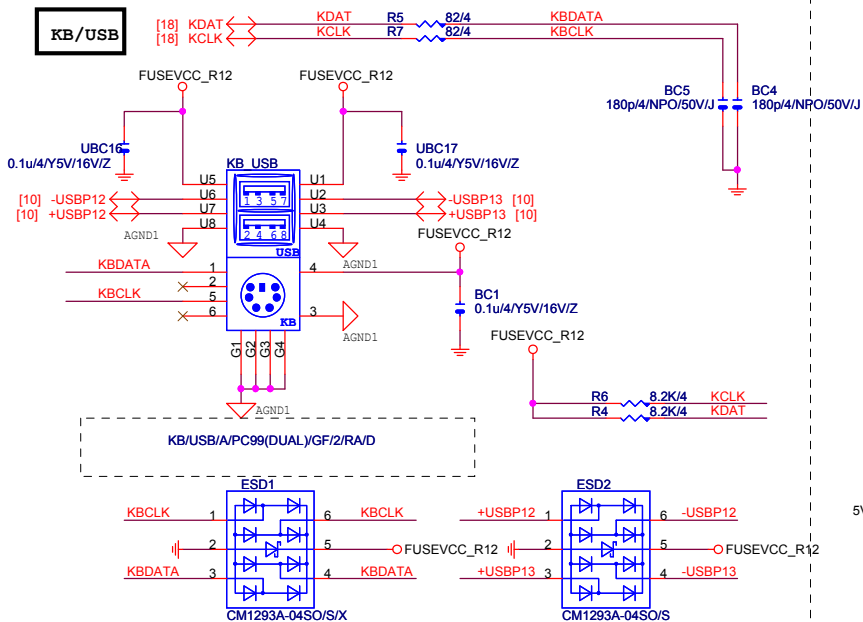
TEMP H/W MONITOR



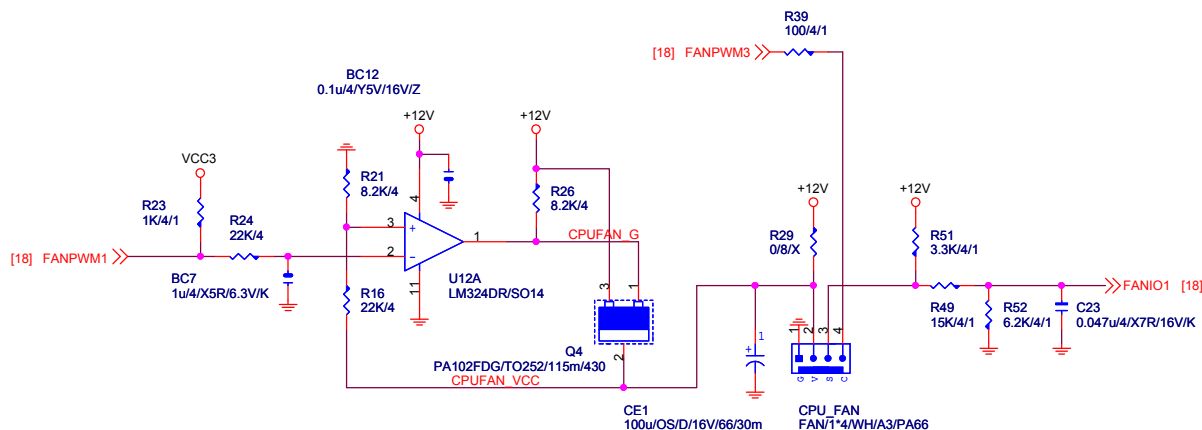
VOLTAGE-- H/W MONITOR



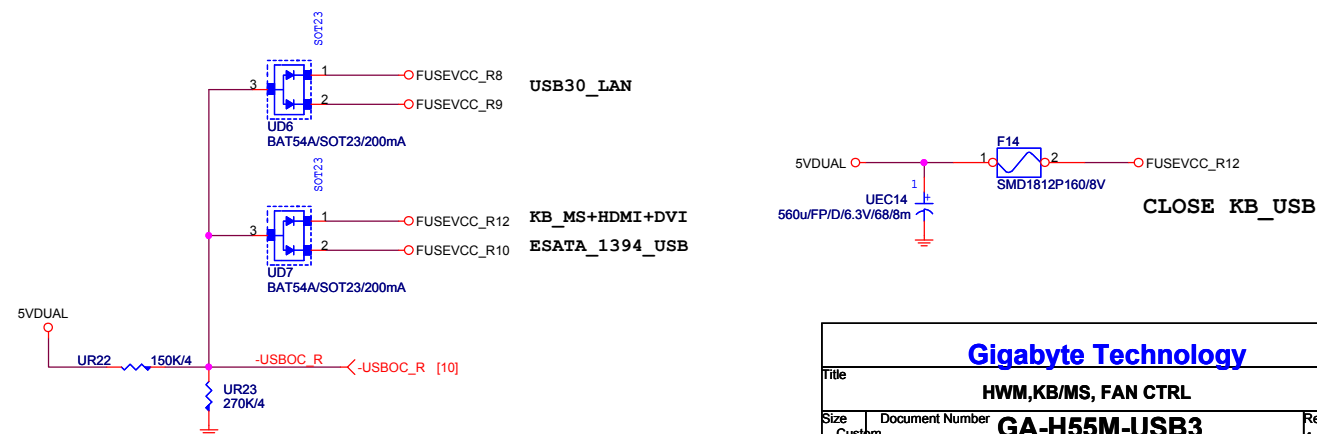
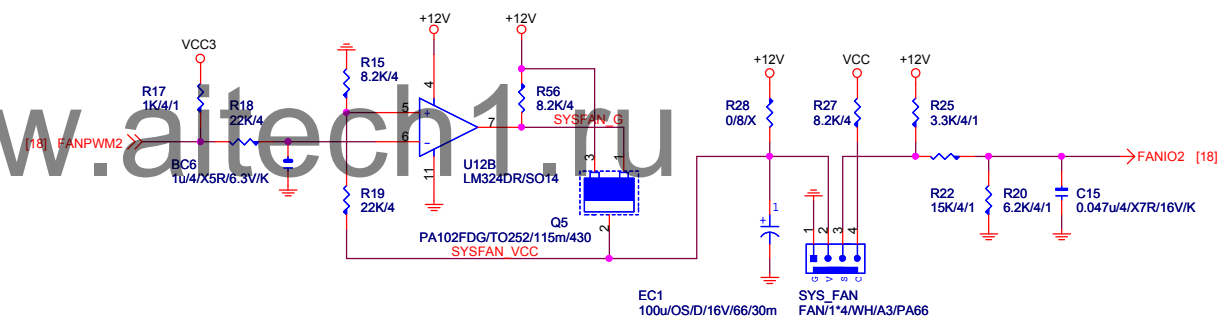
KB/USB



CPU SMART FAN



SYS SMART FAN	Linear SYS_FAN
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Gigabyte Technology

HWM.KB/MS. FAN CTRL

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1.01	

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