

Model Name: GA-Z87M-D3H

Revision 1.12

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 1,2
08	DDR III CHANNEL B 1,2
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*4 SLOT
16	PCI SLOT1,2
17	ITE 8728 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV,-PROCHOT
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC892-GR
23	REAR AUDIO JACK
24	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX , CLOCK GEN, TPM
27	VCORE ISL95820_1

SHEET

TITLE

28	VCORE ISL95820_2
29	RT8120_DDR POWER
30	LPT, M3 POWER
31	DVI, HDMI
32	IT8892E

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Gigabyte Technology

Cover Sheet

Size Custom	Document Number <b>GA-Z87M-D3H</b>	Rev <b>1.12</b>
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Revision 1.12

## Component value change history

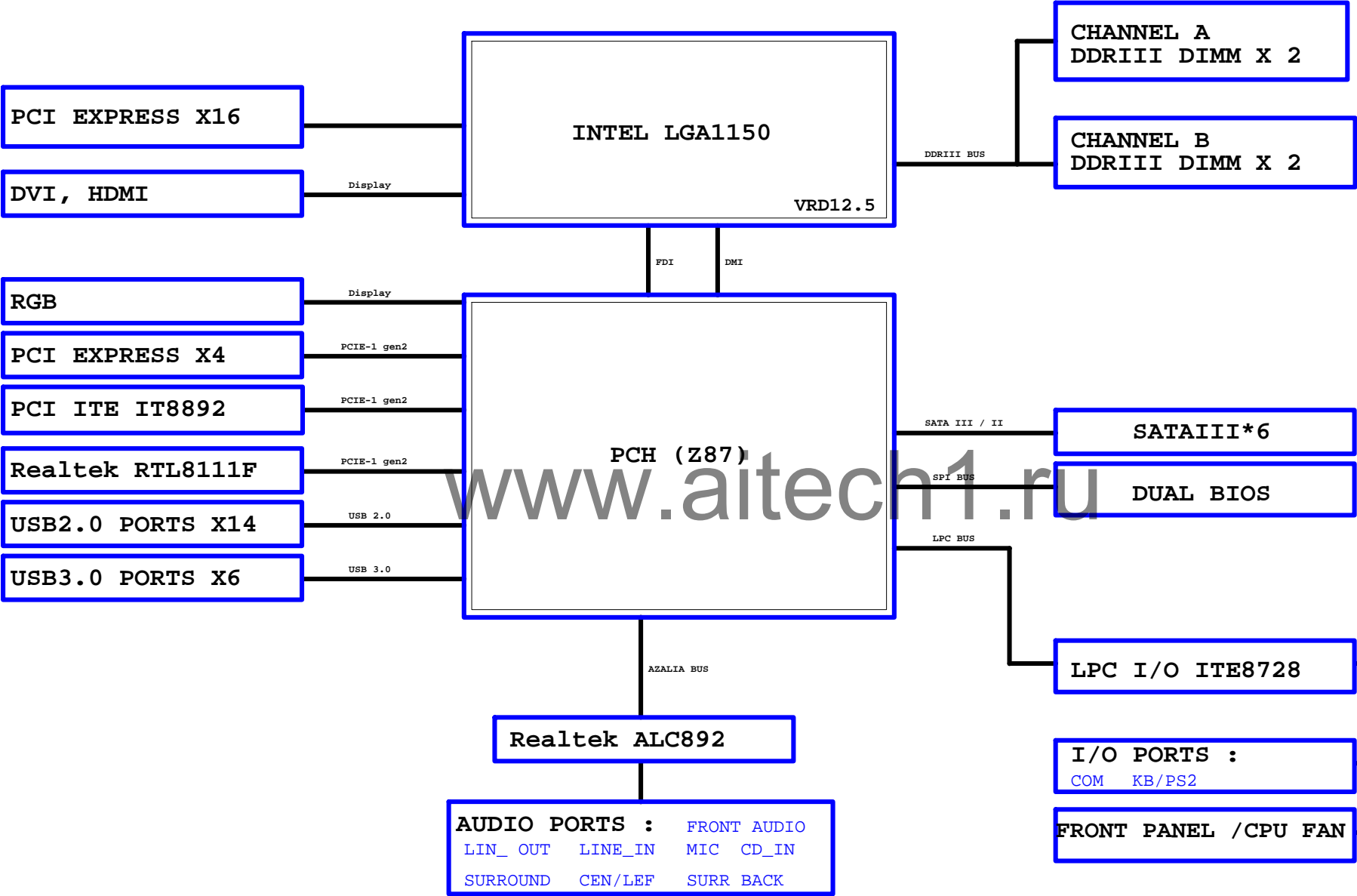
2013/11/27

Data	Change Item	Reason
2012/10/26	Update MH7 & Add Q51 (DDR Low Side MOS)	
2012/10/29	Polyswitch down size	
	PCIE X4 add PPRN1 & PPRN2	
2012/11/01	DEL VIN CHOKE	
2012/11/12	ADD THRMTRIP DISABLE	
2012/12/21	Update to Rev: 0.2	
2013/01/09	ADD NCT3933 O.V. For Vcore	
2013/01/10	PCIEX16 ADD 270u CAP	
	CPU MOS Modify to 1U2D	
2013/01/14		EBOM: 9MZ87MD3H-00-02
2013/02/26	Update to Rev: 1.0	
	Modify F_PANEL MPD+ (Super I/O GP65)	
	ADD SYS_FAN 防燒	
2013/02/27	ADD N_-THRMTRIP / A_-PROCHOT Protection Option	
2013/03/01	ADD 5VSB OVP Protection	
	ADD +12V Dummy Control	
	Reserve N_PCH_DPWROK Control	
2013/03/07	Update to Rev: 1.01	PBOM: 9MZ87MD3H-00-10B
	Follow U3/U2 Mapping Rule	
2013/03/28	DVI Level Shift Change to ASMedia	PBOM: 9MZ87MD3H-00-10C
2013/05/23	Modify MOS_HS	PBOM: 9MZ87MD3H-00-10D
	Del 12SP2-S08824-1*R	
	Add 12SP2-S08824-4*R	
2013/06/27	Update to Rev: 1.1	PBOM: 9MZ87MD3H-00-11A
	Chipset change REV: C2	
	Update HDMI Footprint "HDMI-3"	
2013/07/11	5VSB OVP Protection	PBOM: 9MZ87MD3H-00-11B
	DEL R704: 8.2K/4	
	ADD R706: 8.2K/4	
	R705: 715/4/1 -> 825/4/1	
	DEL AUDIO AZ2225-01L CD1	

## Circuit or PCB layout change

[illegible]

BLOCK DIAGRAM



[illegible][illegible]

PCIEX16:16/5/5/16(breakout min 10/4/4/4/10)									
Impedance=80 +- 1.5%									
LGAI1500C									
PA EXP RXP0	F15	PEG_RXP0	A12	PA EXP TXP0					
PA EXP RXN0	F15	PEG_RXN0	B12	PA EXP TXN0					
PA EXP RXP1	D14	PEG_RXP1	B11	PA EXP TXP1					
PA EXP RXN1	E14	PEG_RXN1	C11	PA EXP TXN1					
PA EXP RXP2	E13	PEG_RXP2	C10	PA EXP TXP2					
PA EXP RXN2	F13	PEG_RXN2	D10	PA EXP TXN2					
PA EXP RXP3	D12	PEG_RXP3	B9	PA EXP TXP3					
PA EXP RXN3	E12	PEG_RXN3	C9	PA EXP TXN3					
PA EXP RXP4	E11	PEG_RXP4	D8	PA EXP TXP4					
PA EXP RXN4	F11	PEG_RXN4	D8	PA EXP TXN4					
PA EXP RXP5	F10	PEG_RXP5	B7	PA EXP TXP5					
PA EXP RXN5	G10	PEG_RXN5	C7	PA EXP TXN5					
PA EXP RXP6	E9	PEG_RXP6	A6	PA EXP TXP6					
PA EXP RXN6	F9	PEG_RXN6	B6	PA EXP TXN6					
PA EXP RXP7	F8	PEG_RXP7	B5	PA EXP TXP7					
PA EXP RXN7	G8	PEG_RXN7	C5	PA EXP TXN7					
PA EXP RXP8	D3	PEG_RXP8	E1	PA EXP TXP8					
PA EXP RXN8	D4	PEG_RXN8	F2	PA EXP TXN8					
PA EXP RXP9	E4	PEG_RXP9	F3	PA EXP TXP9					
PA EXP RXN9	E5	PEG_RXN9	F2	PA EXP TXN9					
PA EXP RXP10	F5	PEG_RXP10	G1	PA EXP TXP10					
PA EXP RXN10	F6	PEG_RXN10	G2	PA EXP TXN10					
PA EXP RXP11	G4	PEG_RXP11	H2	PA EXP TXP11					
PA EXP RXN11	G5	PEG_RXN11	H3	PA EXP TXN11					
PA EXP RXP12	H5	PEG_RXP12	J1	PA EXP TXP12					
PA EXP RXN12	H6	PEG_RXN12	J2	PA EXP TXN12					
PA EXP RXP13	J4	PEG_RXP13	K2	PA EXP TXP13					
PA EXP RXN13	J5	PEG_RXN13	K3	PA EXP TXN13					
PA EXP RXP14	K5	PEG_RXP14	M2	PA EXP TXP14					
PA EXP RXN14	K6	PEG_RXN14	M3	PA EXP TXN14					
PA EXP RXP15	L4	PEG_RXP15	L1	PA EXP TXP15					
PA EXP RXN15	L5	PEG_RXN15	L2	PA EXP TXN15					
A DMI_0RXP	U3	DMI_TXP0	A44	A DMI_0TXP					
A DMI_0RXN	U3	DMI_RXN0	A45	A DMI_0TXN					
A DMI_1RXP	U1	DMI_TXP1	A43	A DMI_1TXP					
A DMI_1RXN	U1	DMI_RXN1	A44	A DMI_1TXN					
A DMI_2RXP	U2	DMI_TXP2	A45	A DMI_2TXP					
A DMI_2RXN	U2	DMI_RXN2	A44	A DMI_2TXN					
A DMI_3RXP	U3	DMI_TXP3	AC1	A DMI_3TXP					
A DMI_3RXN	U3	DMI_RXN3	AC2	A DMI_3TXN					
	X D1	RSVD_TP							
	X C2	RSVD_TP							
	X B3	RSVD_TP							
	X A4	RSVD_TP							
W=12 mil out of CPU									
S=15 mil out of CPU									
WCIOA_LO	WR15	24.9/41	GRCOMP	P3	PEG_RCOMP				
HASWELL10SC1-F01150-01R 10SC1-F01150-03R1									

3V DUAL

WR27 1K4/1/X

VCC3

WR26 200k/4/1/X

1.1V分壓

A -CPURST

WR31 100k/4/1/X

WBC3 1n4/4/7R/1

O -PFMRST1

WR45 8.2K/4/X

SOT23

MMBT2222A/SOT23/600mA/40/X

WQ1

MMBT2222A/SOT23/600mA/40/X

WQ2

CPU\_VTT\_OR

CPU\_VTT\_OR

WR14	51/4/1/X	A TMS
WR16	51/4/1/X	A TDO
WR17	51/4/1/X	A TDI
WR30	51/4/1	A -HPRDY

WR11	51/4/1	A TCK
WR9	51/4/1	A -TRST

A schematic diagram of the power supply section of the board. It shows a 3V3 regulator (U1) connected to a 3V3 input. The output of the regulator is connected to the VCC1\_05\_PCH pin. The regulator is also connected to the A\_THRMTRIP pin. The A\_PWR\_DEBUG pin is connected to the WR33 pin. The A\_DBR pin is connected to the WR20 pin. The WR21 pin is connected to the 3VDUAL pin. The WR34 pin is connected to the VCC1\_05\_PCH pin. The WR70 pin is connected to the 3V3 input. The WR33 pin is connected to the A\_THRMTRIP pin. The WR20 pin is connected to the A\_DBR pin. The WR21 pin is connected to the 3VDUAL pin. The WR34 pin is connected to the VCC1\_05\_PCH pin. The WR70 pin is connected to the 3V3 input.

[illegible]

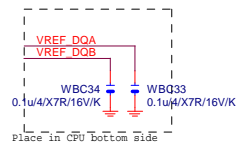
## LGA1150 (A)

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	AW17	DDR0_MA5	DDR0_D05	AD40	MDA5
MAAA5	AW18	DDR0_MA6	DDR0_D06	AE37	MDA6
MAAA6	AW17	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	MDA10
MAAA10	AW11	DDR0_MA11	DDR0_D11	AK39	MDA11
MAAA11	AV19	DDR0_MA12	DDR0_D12	AH37	MDA12
MAAA12	AU19	DDR0_MA13	DDR0_D13	AH38	MDA13
MAAA13	AY10	DDR0_MA14	DDR0_D14	AK37	MDA14
MAAA14	AT20	DDR0_MA15	DDR0_D15	AK40	MDA15
MAAA15	AU21	DDR0_MA16	DDR0_D16	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_D17	AM39	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_D18	AP38	MDA18
MODT_A2	AW9	DDR0_ODT2	DDR0_D19	AP39	MDA19
MODT_A3	AU8	DDR0_ODT3	DDR0_D20	AM37	MDA20
			DDR0_D21	AM38	MDA16
			DDR0_D22	AP37	MDA22
			DDR0_D23	AP40	MDA23
			DDR0_D24	AW37	MDA29
			DDR0_D25	AU35	MDA26
			DDR0_D26	AU35	MDA27
			DDR0_D27	T137	MDA28
			DDR0_D28	AU37	MDA24
			DDR0_D29	AT35	MDA30
			DDR0_D30	AW35	MDA31
			DDR0_D31	AY6	MDA33
			DDR0_D32	AU6	MDA37
			DDR0_D33	AW4	MDA34
			DDR0_D34	AW4	MDA35
			DDR0_D35	AW6	MDA32
			DDR0_D36	AW4	MDA38
			DDR0_D37	AW4	MDA39
			DDR0_D38	AR1	MDA41
			DDR0_D39	AR4	MDA45
			DDR0_D40	AN3	MDA42
			DDR0_D41	AN4	MDA43
			DDR0_D42	AR2	MDA44
			DDR0_D43	AR3	MDA40
			DDR0_D44	AN2	MDA46
			DDR0_D45	AN1	MDA47
			DDR0_D46	AL1	MDA49
			DDR0_D47	AL4	MDA53
			DDR0_D48	AL4	MDA50
			DDR0_D49	AJ4	MDA51
			DDR0_D50	AJ2	MDA52
			DDR0_D51	AJ2	MDA48
			DDR0_D52	AJ2	MDA54
			DDR0_D53	AJ1	MDA55
			DDR0_D54	AG1	MDA57
			DDR0_D55	AG4	MDA61
			DDR0_D56	AE3	MDA58
			DDR0_D57	AE4	MDA59
			DDR0_D58	AG2	MDA60
			DDR0_D59	AG3	MDA56
			DDR0_D60	AE2	MDA62
			DDR0_D61	AE1	MDA63
			DDR0_D62	AE39	DQSA0
			DDR0_D63	AJ39	DQSA1
			DDR0_D64	AN39	DQSA2
			DDR0_D65	AV36	DQSA3
			DDR0_D66	AV5	DQSA4
			DDR0_D67	AP3	DQSA5
			DDR0_D68	AK3	DQSA6
			DDR0_D69	AF3	DQSA7
			DDR0_D70	AV32	
			DDR0_D71	AE38	DQSA0
			DDR0_D72	AJ38	DQSA1
			DDR0_D73	AN38	DQSA2
			DDR0_D74	AJ36	DQSA3
			DDR0_D75	AW5	DQSA4
			DDR0_D76	AP2	DQSA5
			DDR0_D77	AK2	DQSA6
			DDR0_D78	AF2	DQSA7
			DDR0_D79	AU32	

HASWELL[10SC1-F01150-01R\_10SC1-F01150-03R]

## LGA1150 (B)

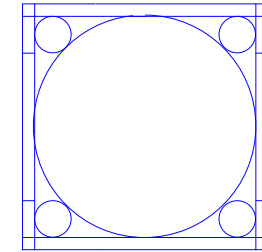
LGA1150B		DDR1_MA0	AE34	MDB0
MAAB0	AL19	DDR1_MA1	AE35	MDB1
MAAB1	AK23	DDR1_MA2	AG35	MDB2
MAAB2	AM23	DDR1_MA3	AH35	MDB3
MAAB3	AM23	DDR1_MA4	AD34	MDB4
MAAB4	AP23	DDR1_MA5	AD35	MDB5
MAAB5	AL23	DDR1_MA6	AG34	MDB6
MAAB6	AY24	DDR1_MA7	AH34	MDB7
MAAB7	AY25	DDR1_MA8	AL34	MDB8
MAAB8	AU26	DDR1_MA9	AL35	MDB9
MAAB9	AW25	DDR1_MA10	AL31	MDB10
MAAB10	AY25	DDR1_MA11	AL31	MDB11
MAAB11	AY25	DDR1_MA12	AK34	MDB12
MAAB12	AY26	DDR1_MA13	AK35	MDB13
MAAB13	AR15	DDR1_MA14	AK32	MDB14
MAAB14	AV27	DDR1_MA15	AL32	MDB15
MAAB15	AY28			
MODT_B0	AM17	DDR1_ODT0	AP34	MDB21
MODT_B1	AL16	DDR1_ODT1	AP31	MDB19
MODT_B2	AM16	DDR1_ODT2	AP31	MDB23
MODT_B3	AK15	DDR1_ODT3	AP35	MDB20
			AP35	MDB16
			AP32	MDB18
			AP32	MDB22
			AP29	MDB25
			AM28	MDB28
			AR29	MDB27
			AR28	MDB30
			AL28	MDB24
			AL28	MDB29
			AP29	MDB26
			AP28	MDB31
			AP12	MDB32
			AL12	MDB35
			AR13	MDB36
			AP13	MDB37
			AM13	MDB38
			AM12	MDB39
			AR9	MDB45
			AP9	MDB41
			AR6	MDB47
			AP6	MDB43
			AR10	MDB44
			AP10	MDB40
			AR7	MDB46
			AP7	MDB42
			AM9	MDB52
			AL9	MDB53
			AL6	MDB50
			AL7	MDB55
			AM10	MDB48
			AL10	MDB49
			AM6	MDB54
			AM7	MDB51
			AH6	MDB61
			AH7	MDB60
			AE6	MDB59
			AE7	MDB63
			AJ6	MDB56
			AJ7	MDB57
			AF6	MDB58
			AF7	MDB62
			AF35	DQSB0
			AL33	DQSB1
			AN28	DQSB2
			AN28	DQSB3
			AN12	DQSB4
			AP8	DQSB5
			AL8	DQSB6
			AG7	DQSB7
			AN25	
			AE34	DQSB0
			AK33	DQSB1
			AN33	DQSB2
			AN29	DQSB3
			AN13	DQSB4
			AR8	DQSB5
			AM8	DQSB6
			AG6	DQSB7
			AN26	



LGA1150B

HASWELL[10SC1-F01150-01R\_10SC1-F01150-03R]

## LGA1150 (CR)

CR  
CPU RETAINION/X

LGA1150\_P



ILM\_BP/1156/CSP/ILM\_BP/1156/CSP/[12KRC-0F0001-52R\_12KRC-0F0001-51R]

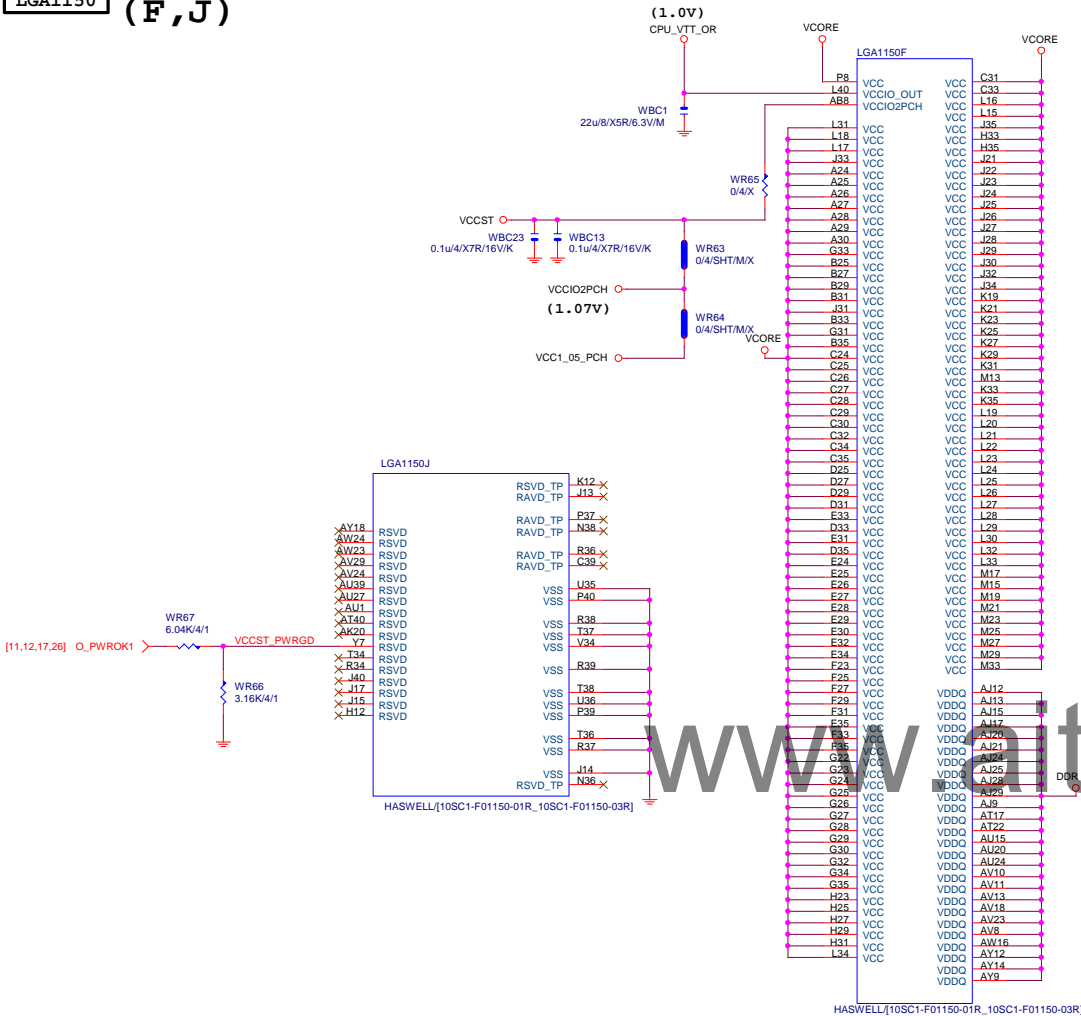
DDR BUS

[7] MODT_A[0..3]	MODT_A0..3
[8] MODT_B[0..3]	MODT_B0..3
[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] MAA[0..15]	MAA0..15
[8] MAB[0..15]	MAB0..15
[8] DQSB[0..7]	DQSB0..7
[8] DQSB[0..7]	DQSB0..7

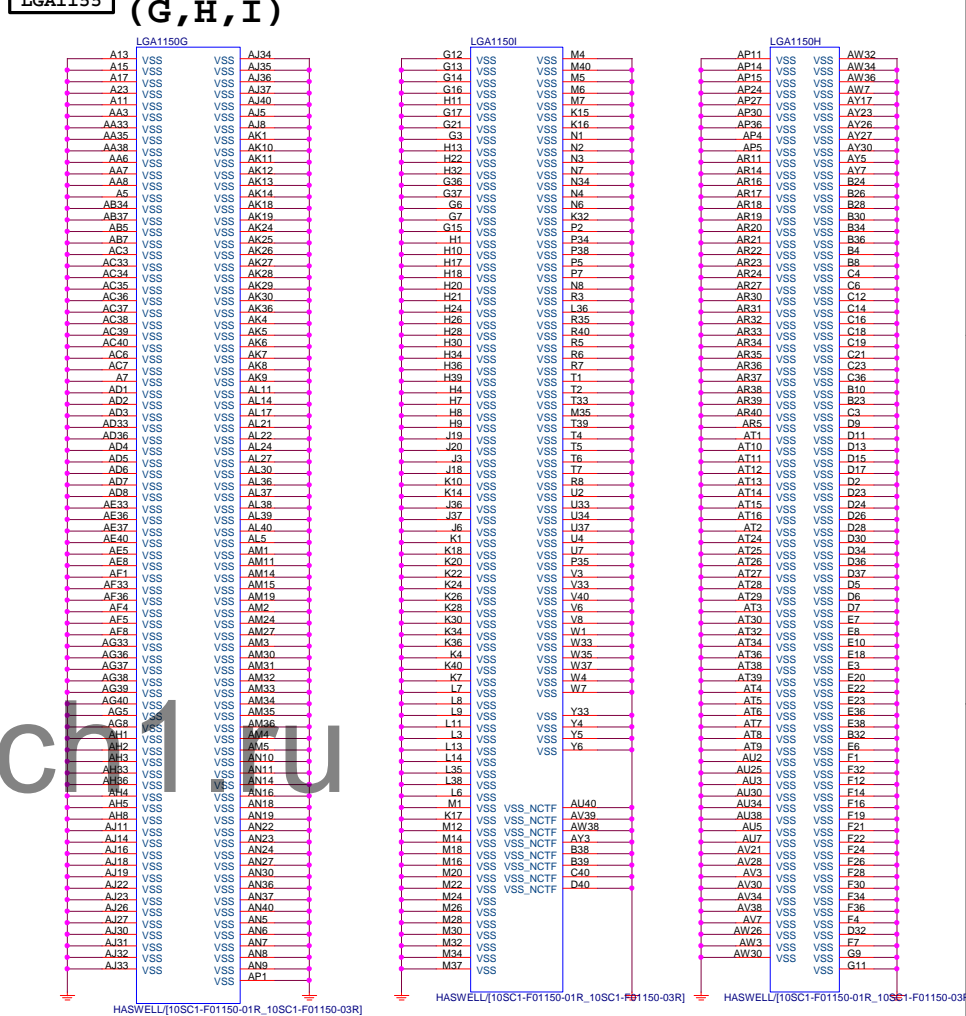
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# LGA1150 (F,J)

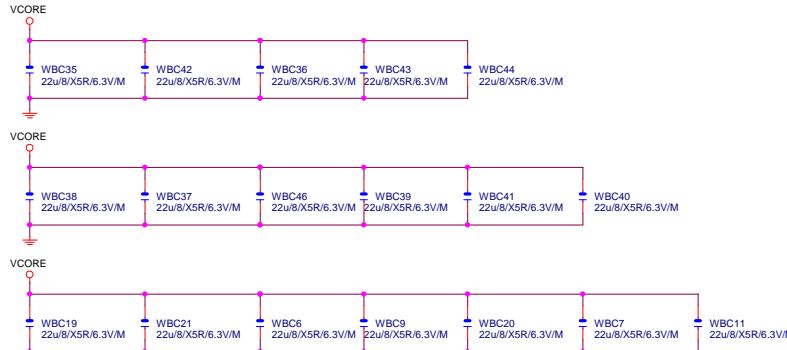


# LGA1155 (G,H,I)



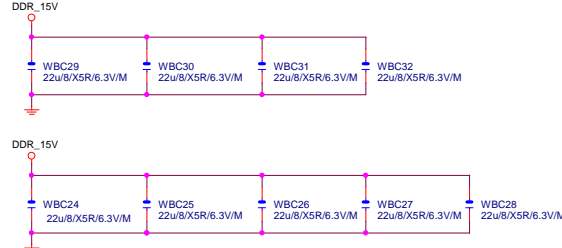
## VCore CAP

(X18)



## DDR CAP

(X9)

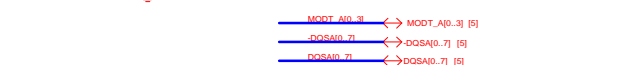


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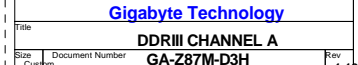
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(A)



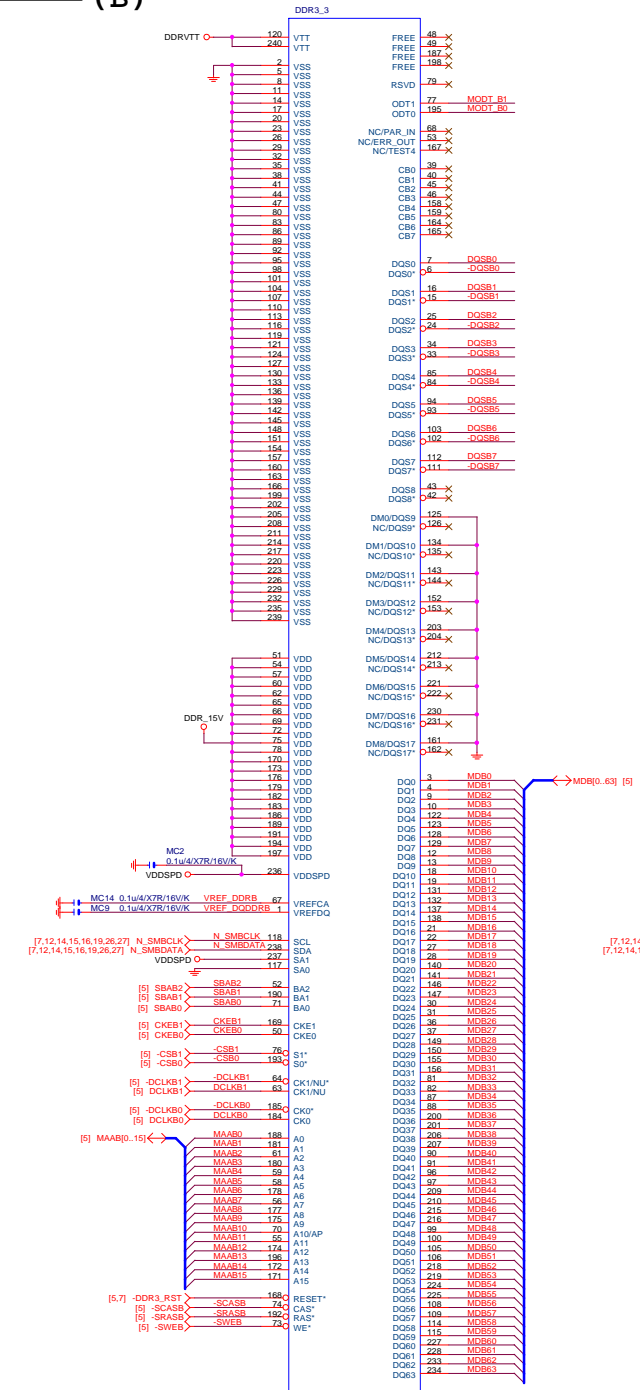
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**CF**



DDR3

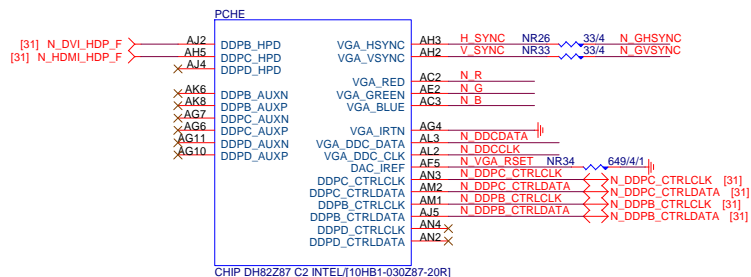
(B)



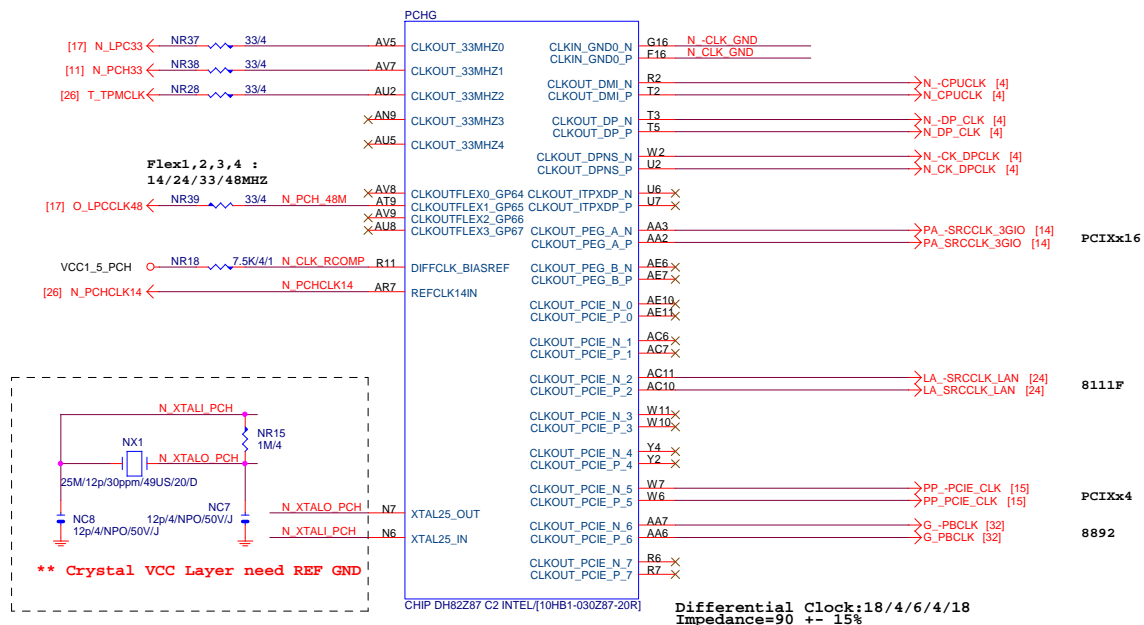




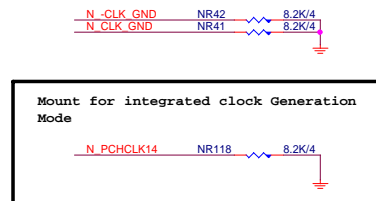
**PCH (E)**



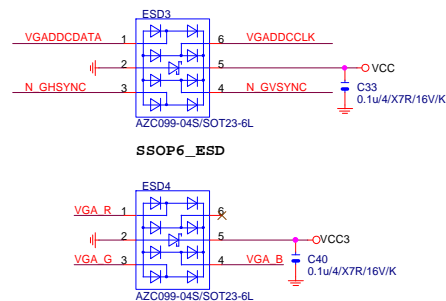
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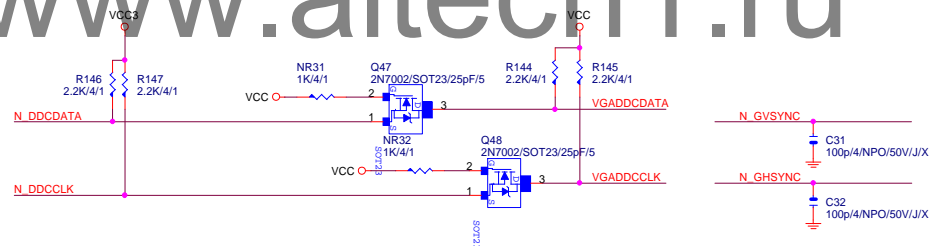
PCH CLK PD
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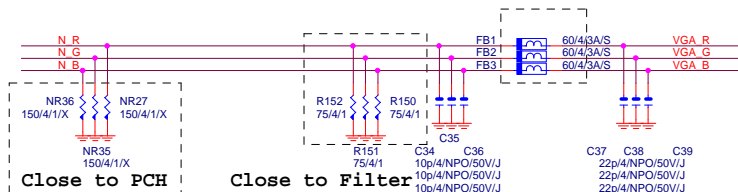
## VGA ESD



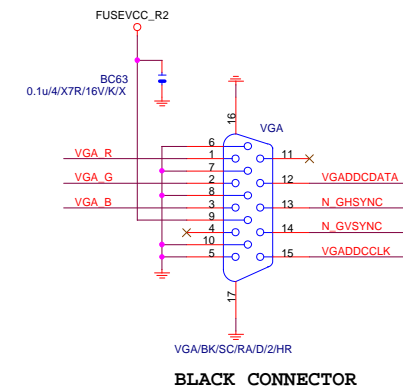
## VGA DDC



## VGA DDC



## VGA CONNECTOR



## Gigabyte Technology

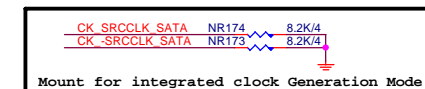
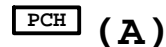
PCH DISPLAY ,CLK BUFFER

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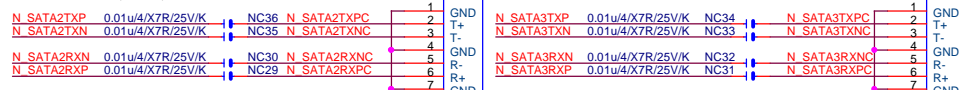
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%  
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%



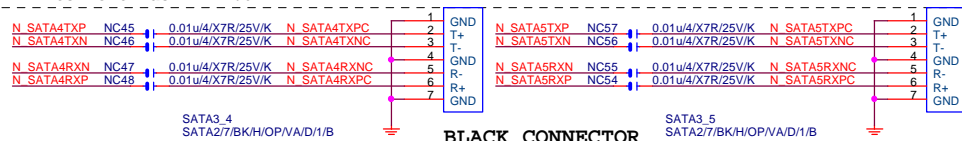
The schematic diagram illustrates the connection of six 8255 PPI chips to a VCC3 supply. The chips are arranged in two columns. The left column contains chips NR2, NR3, and NR7, while the right column contains chips NR160, NR55, and NR53. Each chip has four pins labeled N-PIRQ, N-PIRO, N-PIROA, and N-PIROB. The chips are connected to a VCC3 supply via a 1K/4/1/X resistor network. The chips are labeled NR2, NR3, NR7, NR160, NR55, and NR53.

N_SATA1TXP	0.01u/4X7R/25V/K	NC42	N_SATA1TXPC	9 TX1		GND	1	N_SATA0TXPC	NC44	0.01u/4X7R/25V/K	N_SATA0TXP
N_SATA1TXN	0.01u/4X7R/25V/K	NC41	N_SATA1TXNC	10 TX1		TXD+	2	N_SATA0TXNC	NC43	0.01u/4X7R/25V/K	N_SATA0TXN
				11 GND		TXD-	3				
N_SATA1RXN	0.01u/4X7R/25V/K	NC40	N_SATA1RXNC	12 RX1		RXD+	5	N_SATA0RXNC	NC38	0.01u/4X7R/25V/K	N_SATA0RXN
N_SATA1RXP	0.01u/4X7R/25V/K	NC39	N_SATA1RXP	13 RX1		RXD-	6	N_SATA0RXP	NC37	0.01u/4X7R/25V/K	N_SATA0RPN

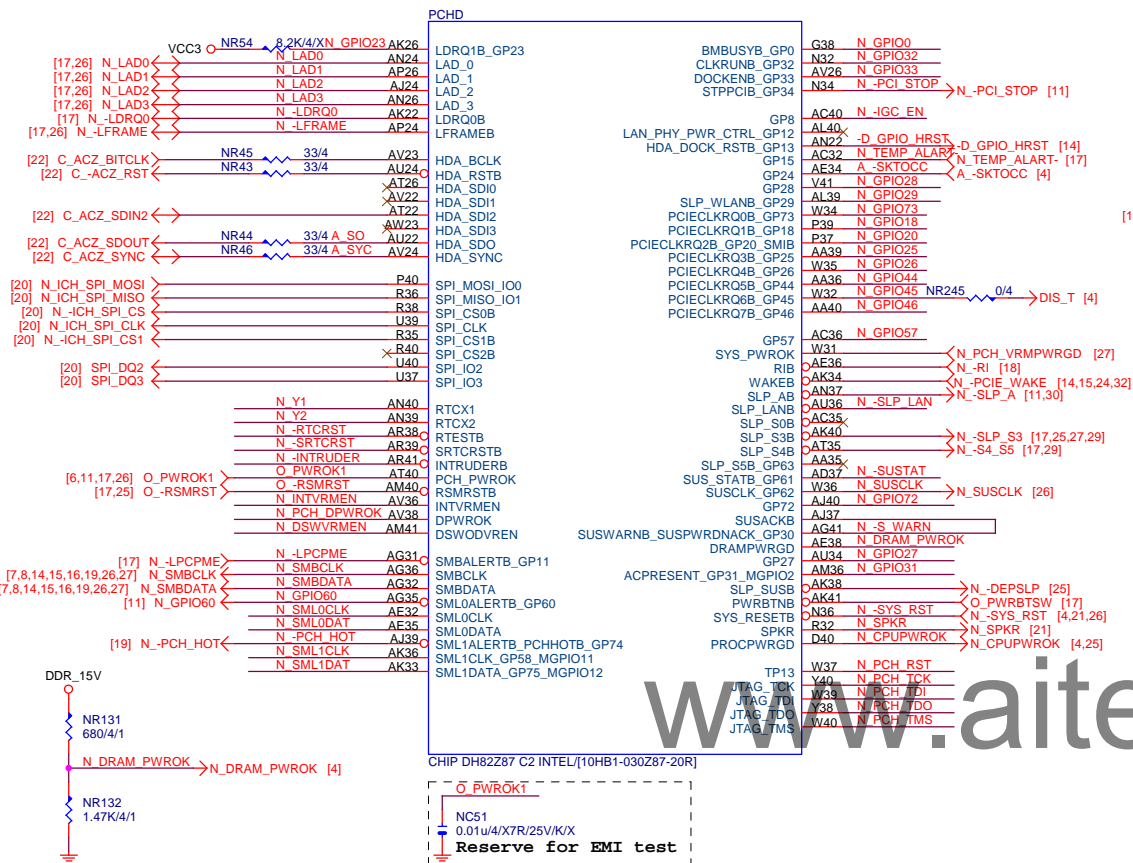
## H81 Port 2/3 N/A



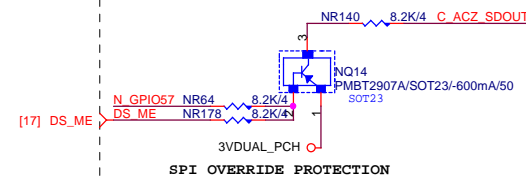
```
** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0
```



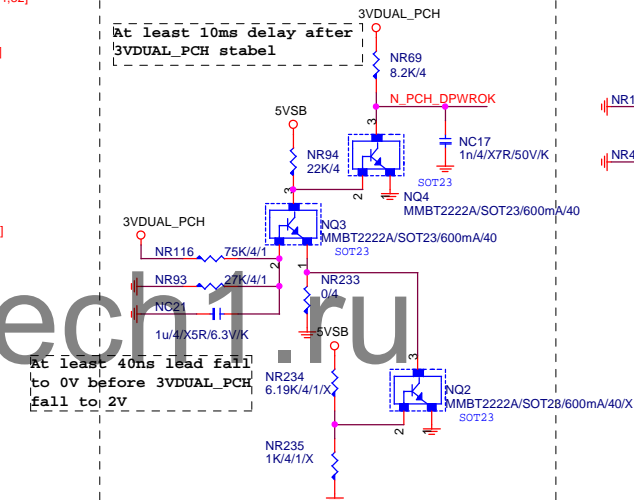
(D)



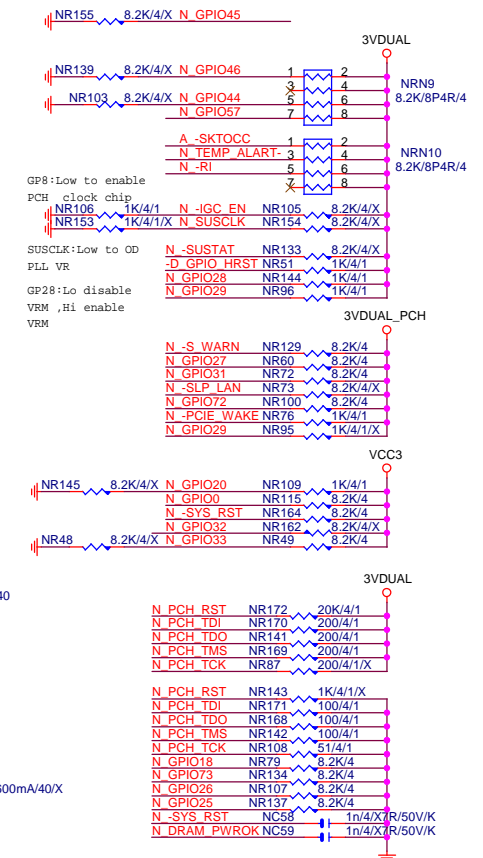
## ACZ\_SDOUT



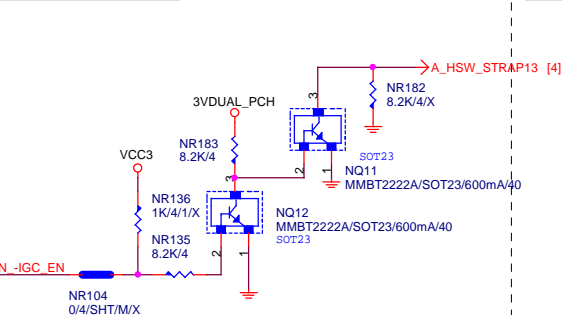
PCH\_DPWROK



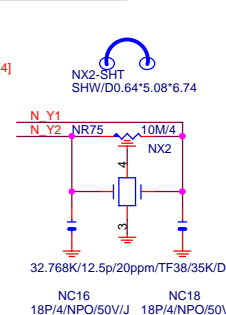
PCH	PU/PD
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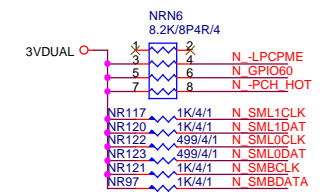
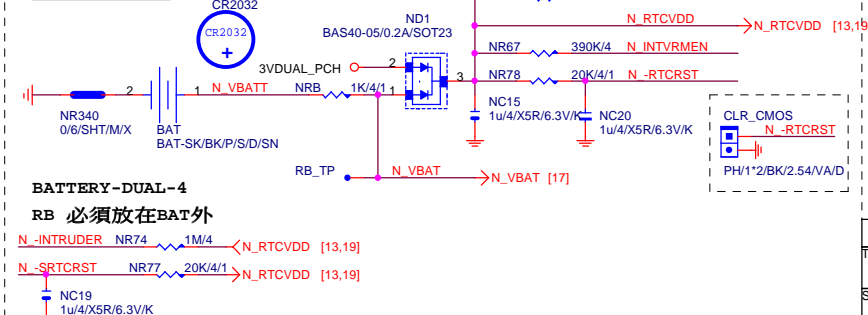
## HSW\_STRAP13



32.768KHZ



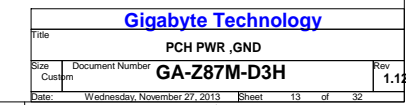
CLR_CMOS
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## Gigabyte Technology

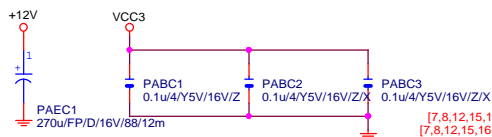
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PCH GPIO , CTRL , AUDIO			
Size	Document Number	Rev	
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**PCH (I)**

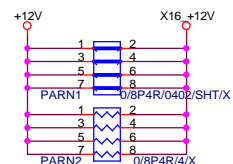




## PCIEX16 CAP



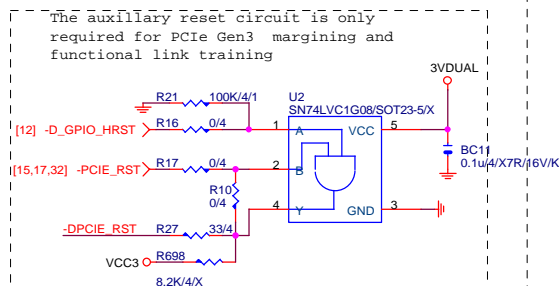
PCIEX16	PROTECT	SHT
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PCIEX16	AC	CAP
---------	----	-----

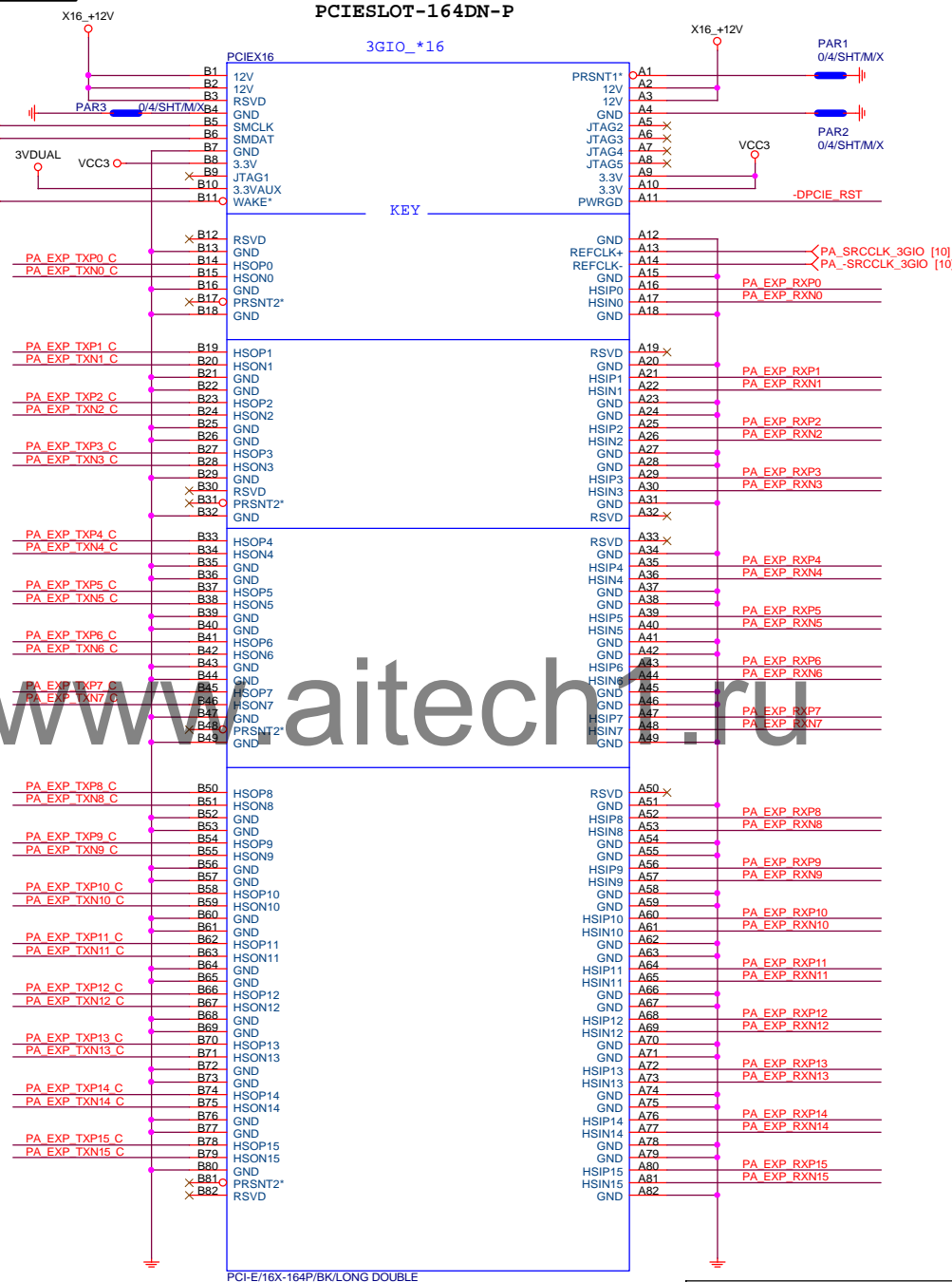
PA EXP TXP0	PA C5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PA C6	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PA C6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PA C7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PA C8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PA C9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PA C10	0.22u4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PA C11	0.22u4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PA C12	0.22u4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PA C13	0.22u4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PA C14	0.22u4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PA C15	0.22u4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PA C16	0.22u4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PA C17	0.22u4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PA C19	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PA C20	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PA C20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PA C21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PA C22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PA C23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PA C24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PA C25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PA C26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PA C27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PA C28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PA C29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PA C30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PA C31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PA C32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PA C33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PA C34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PA C35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

PA\_EXP\_RXP[0..15] >> PA\_EXP\_RXP[0..15] [4]  
PA\_EXP\_RXN[0..15] >> PA\_EXP\_RXN[0..15] [4]  
PA\_EXP\_TXP[0..15] >> PA\_EXP\_TXP[0..15] [4]  
PA\_EXP\_TXN[0..15] >> PA\_EXP\_TXN[0..15] [4]



PCIEX16 SLOT

## PCIESLOT-164DN-P



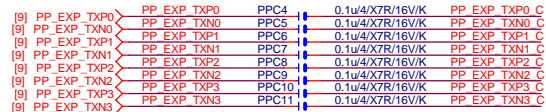
BLACK CONNECTOR

## Gigabyte Technology

PCI EXPRESS \* 16

Title			
PCI EXPRESS * 16			
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PCIEX4 SLOT



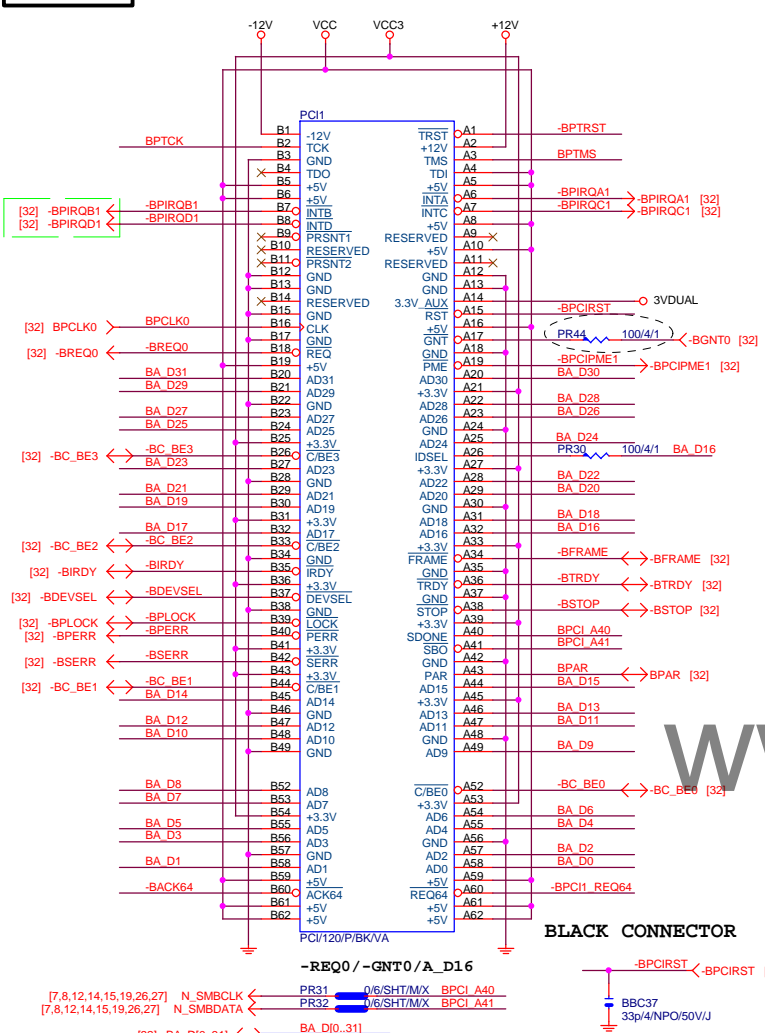
www.aitech1.ru

PCI-E/4X-65P/BK/LONG DOUBLE

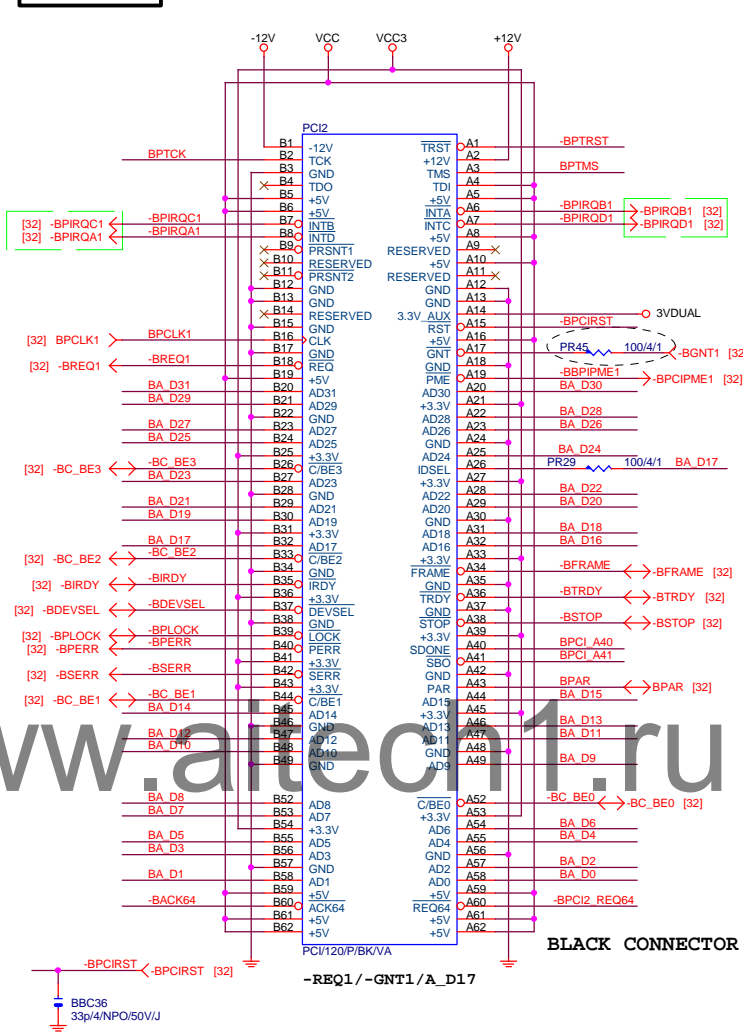
BLACK CONNECTOR



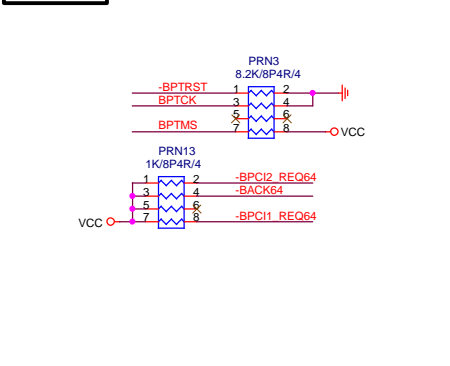
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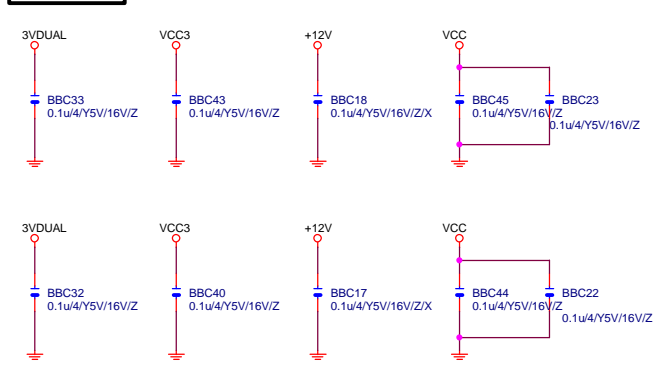
# PCI SLOT 2



# PCI PU

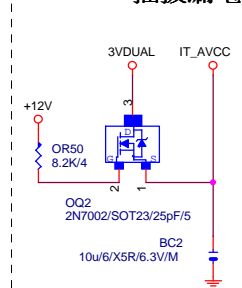
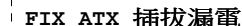
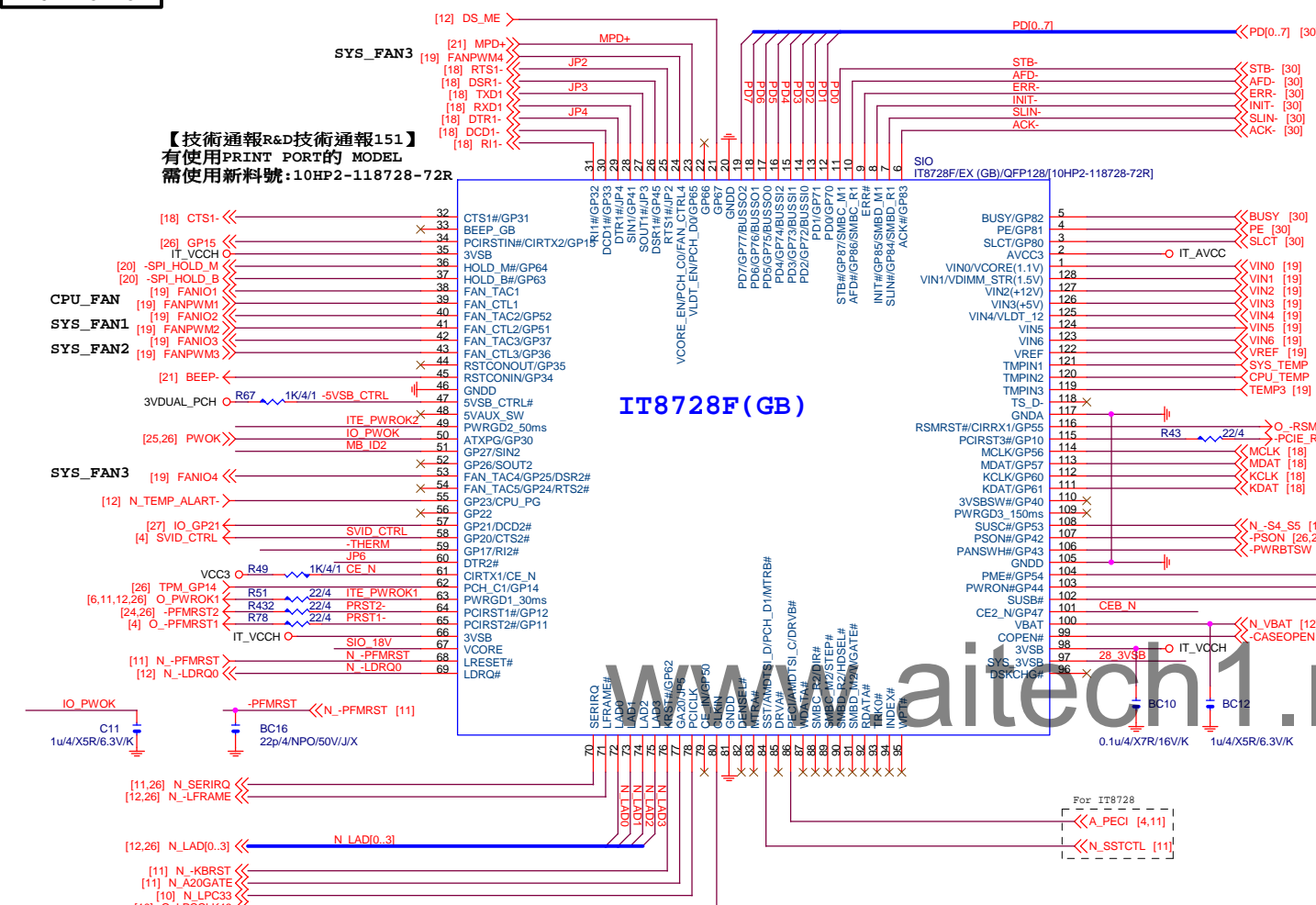


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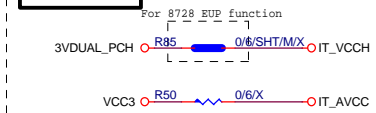


Gigabyte Technology			
Title			
PCI SLOT 1&2			
Size			
Custom			
Document Number			
GA-Z87M-D3H			
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Wednesday, November 27, 2013			
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Rev			
1.12			

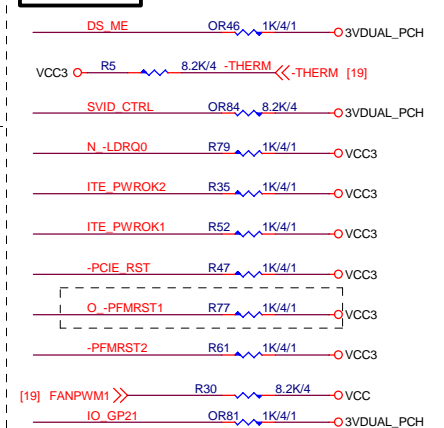
SIO IT8728F



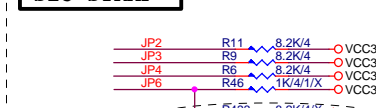
PWR	SHT
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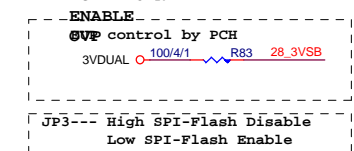
## SIO PU



SIO STRAP



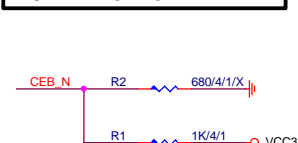
IT8728-EX  
PULL DOWN



## IT8728F NOTE

	IT8728
PIN121	VCORE_EN/PCH_C0
PIN120	VLDT_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDTSI_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSI_C/DRV#
PIN66	SYS_3V5B
PIN70	GP47
PIN95	VIN2(VCC5)
PIN96	VIN1(VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0/VCORE(1.1V)/NC

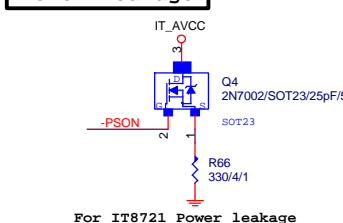
## DUAL BIOS OPT STRAP



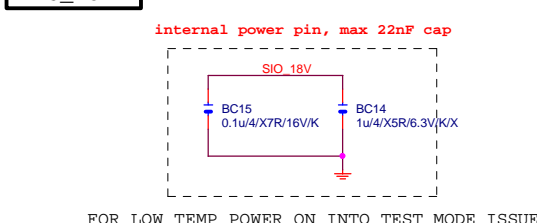
SIO CAP



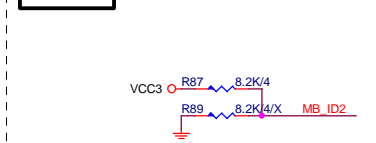
## Power leakage



## SIO 18V



MB ID
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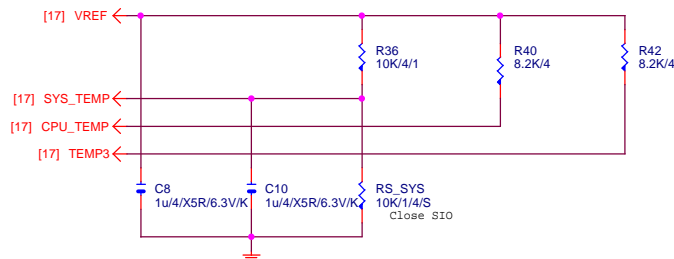


## Gigabyte Technology

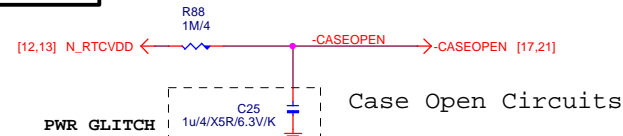
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Size	Document Number					Rev	
Custom	GA-Z87M-D3H					1.12	
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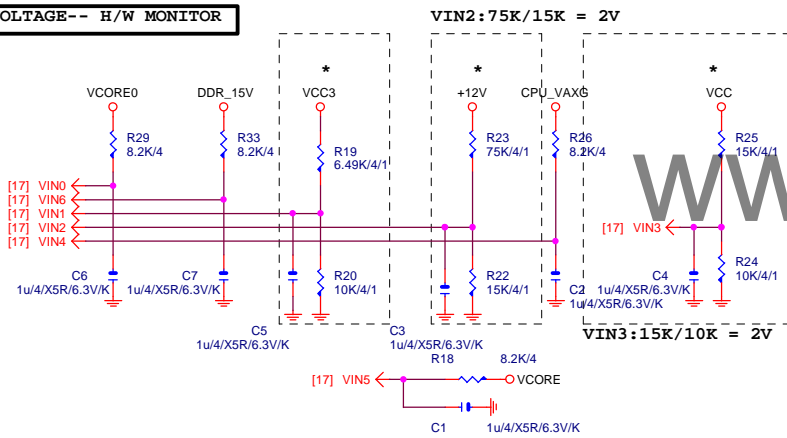
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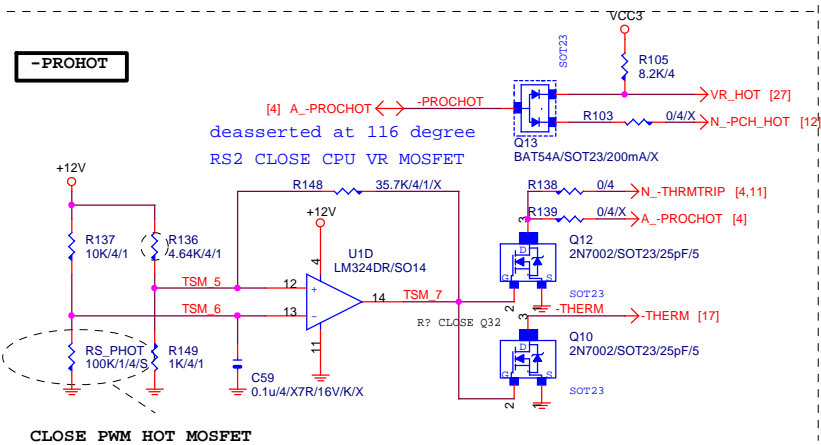
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# VOLTAGE-- H/W MONITOR

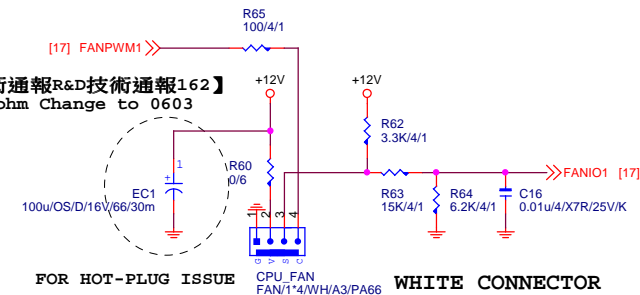


# -PROHOT

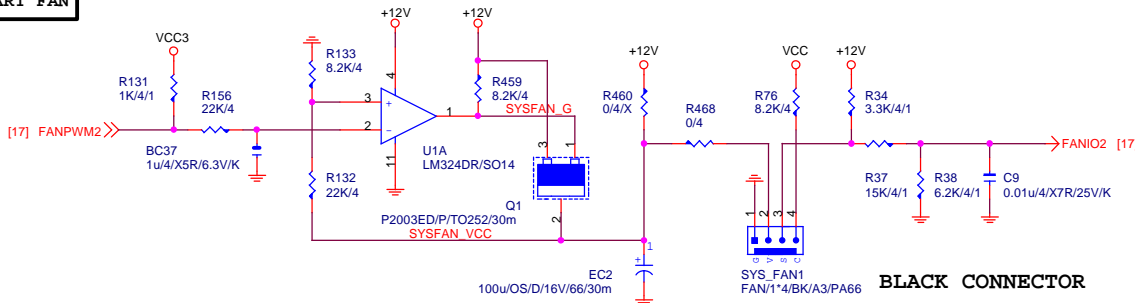


# CPU SMART FAN

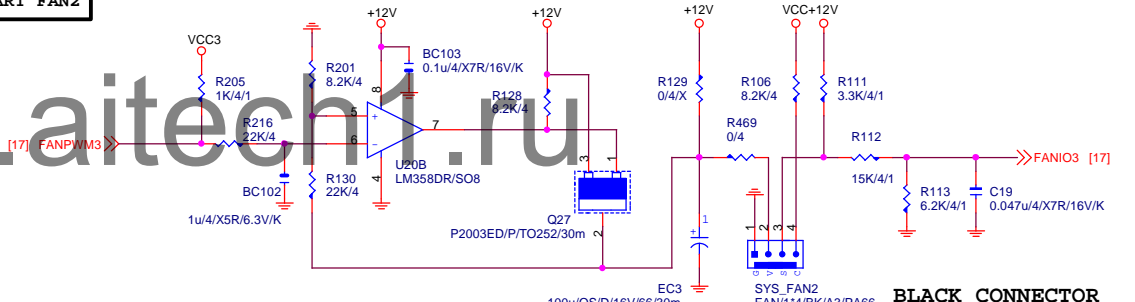
【技術通報R&D技術通報162】  
FAN 0ohm Change to 0603



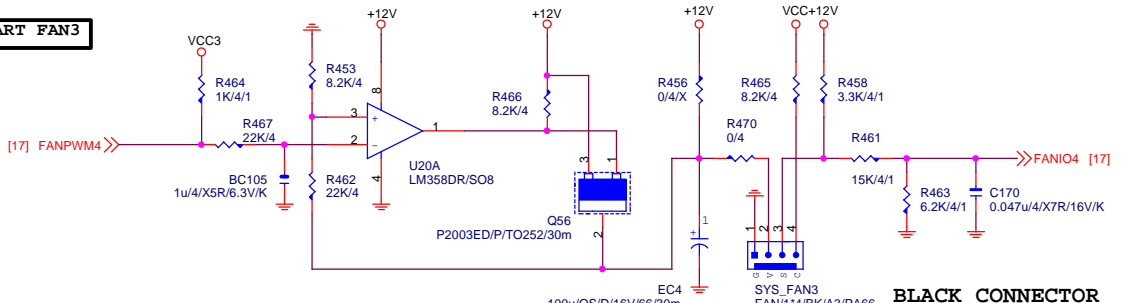
# SYS SMART FAN



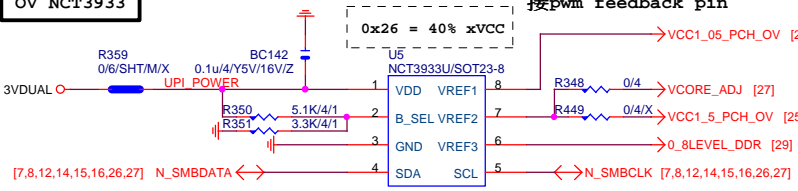
# SYS SMART FAN2



# SYS SMART FAN3



# OV NCT3933

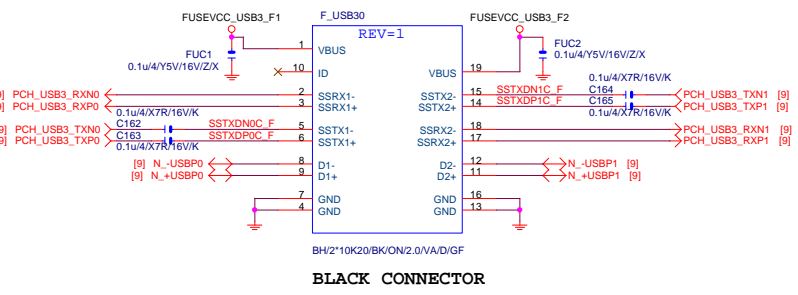


Gigabyte Technology

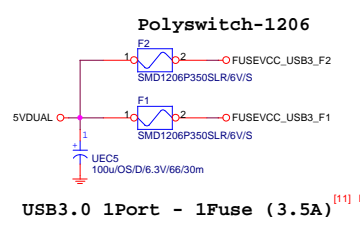
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Size		GA-Z87M-D3H	
Document Number		Rev 1.12	
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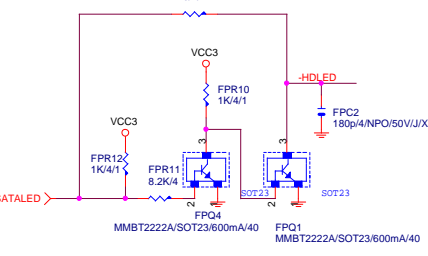
F\_USB30



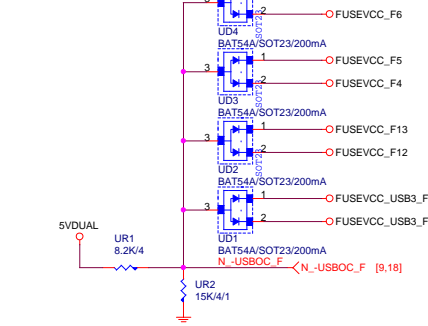
F\_USB30 PWR



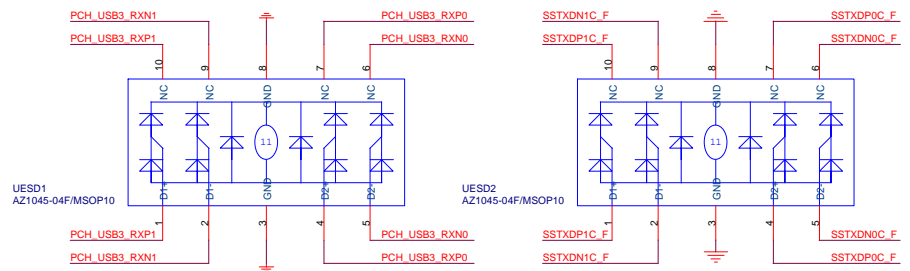
SATA LED



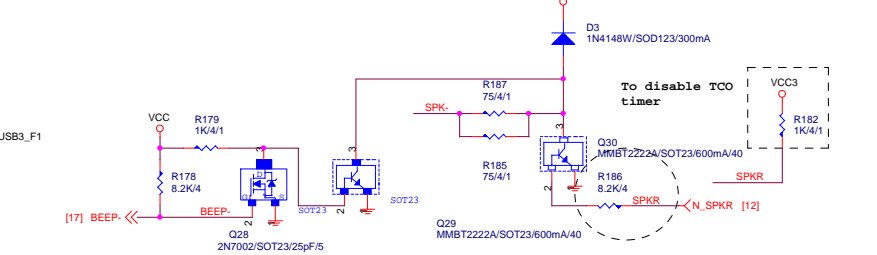
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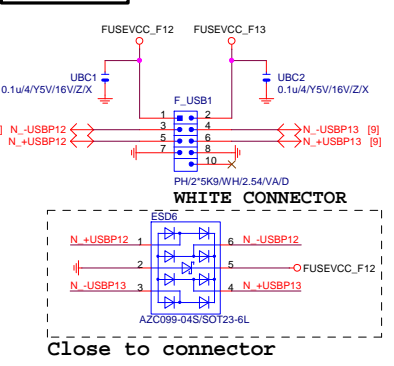
F\_USB30 ESD PROTECT



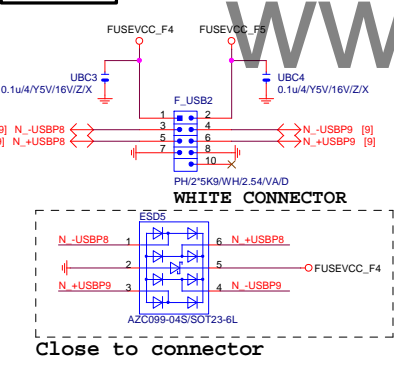
SPKR



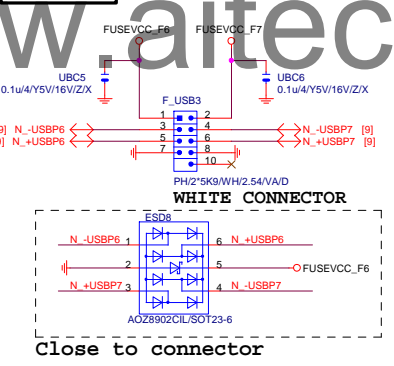
FRONT USB1



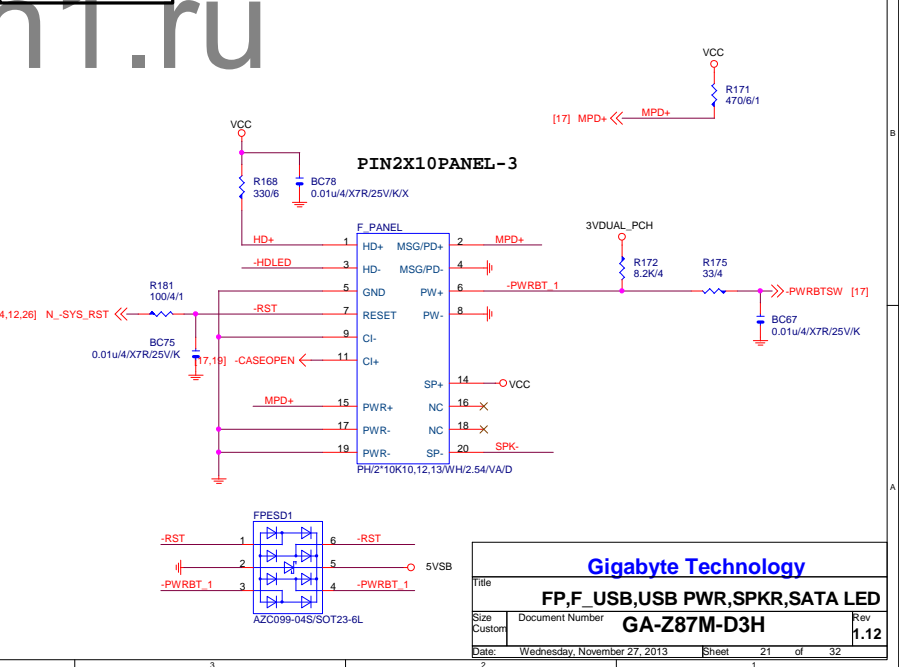
FRONT USB2



FRONT USB3

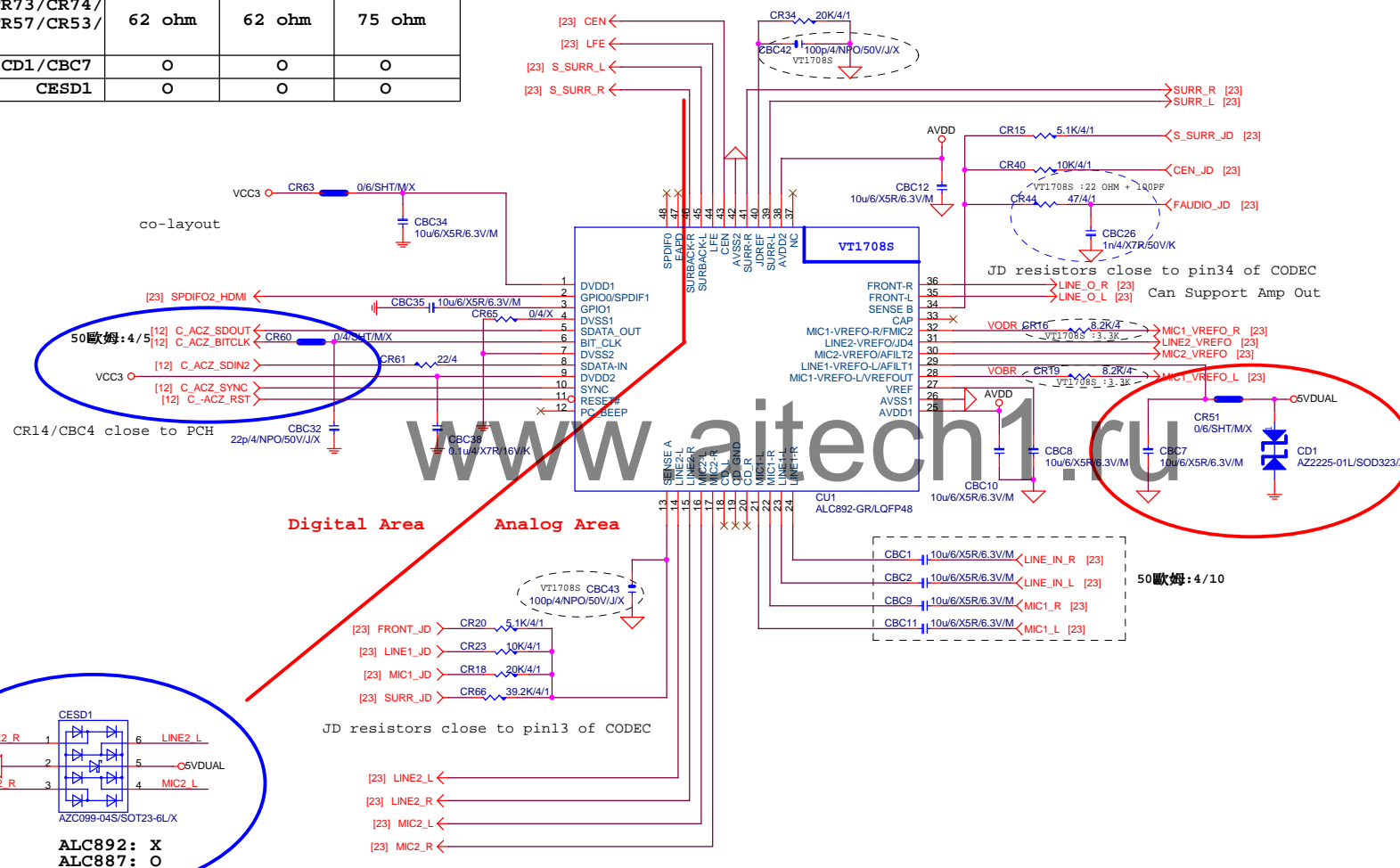


INTEL FRONT PANEL



Gigabyte Technology			
FP,F_USB,USB PWR,SPKR,SATA LED			
GA-Z87M-D3H	Rev	1.12	
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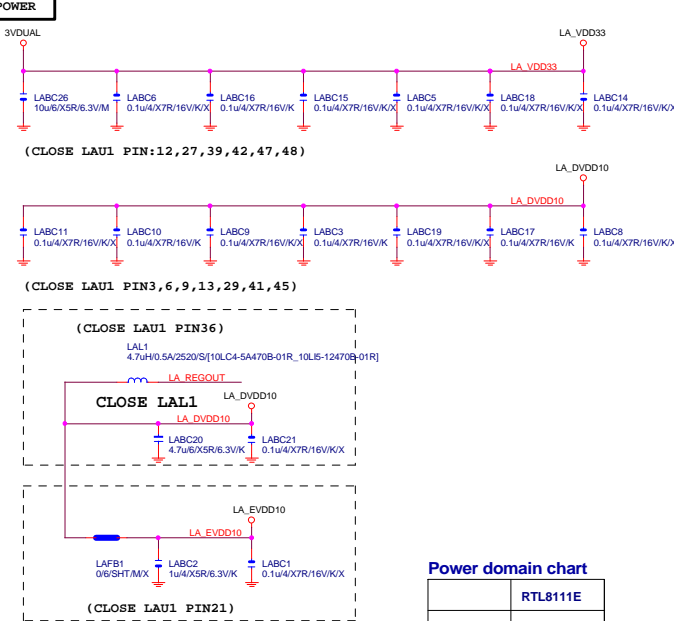
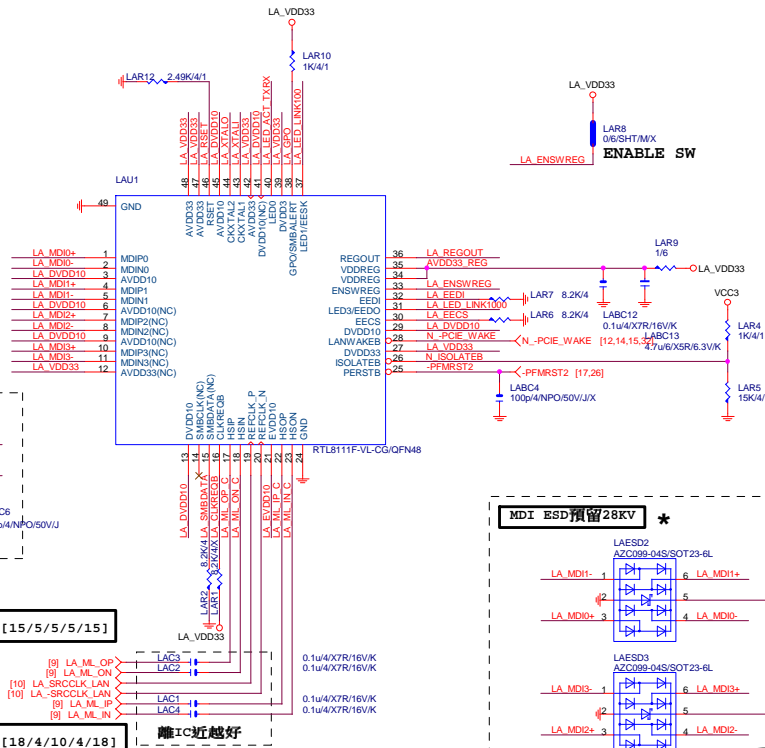
	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	O	O	O





Title			
AUDIO JACK			
Size	Document Number		Rev
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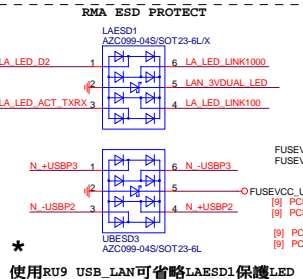
LAN:RTL8111F/VB/VL



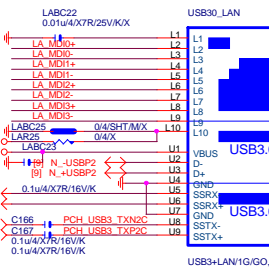
Power domain chart

	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V

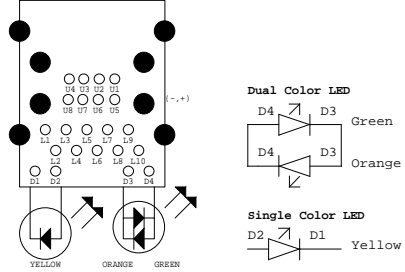
USB LAN CONNECTOR



LA\_MDI-->100歐姆:[20/4/8/4/20]



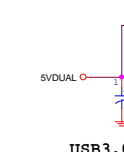
注意:USB PORT(目前:暫代6,7PORT)  
USB-->90歐姆:[15/4.5/7.5/4.5/15]



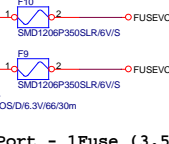
BOM NOTICE

料號	規格	廠商
11NR6-702009-96R	1G LAN (12core)	UDE(RU9 ESD+)
[LED獨立走線,可省略外加AZC099料件LAESD1]		
1. 9KV ESD BOM:		
USB LAN (RU9):11NR6-702009-96R		
2. 28KV ESD BOM:		
USB LAN (RU9):11NR6-702009-96R		
LAESD2,LAESD3:上件AZC398-04S		

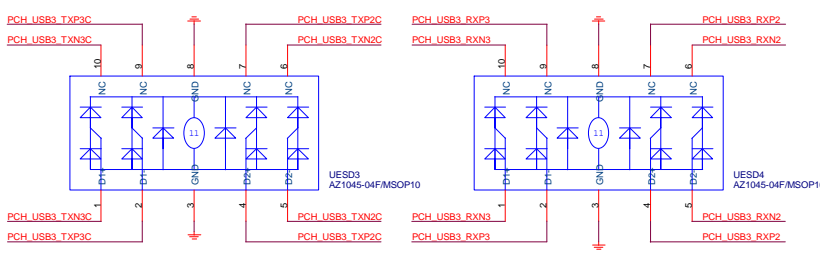
USB X3 POWER



Polyswitch-1206



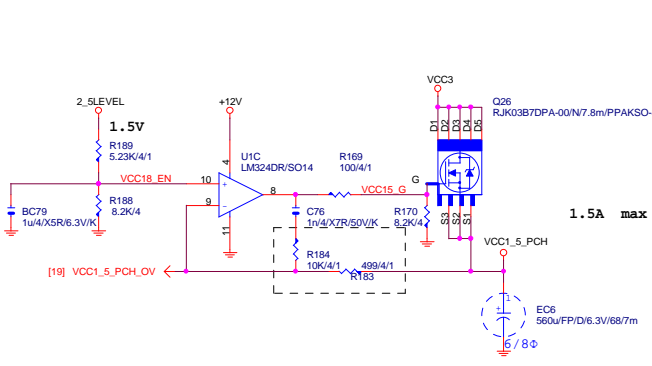
USB3.0 1Port - 1Fuse (3.5A)



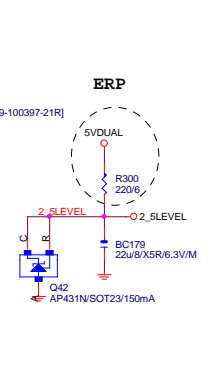
Gigabyte Technology

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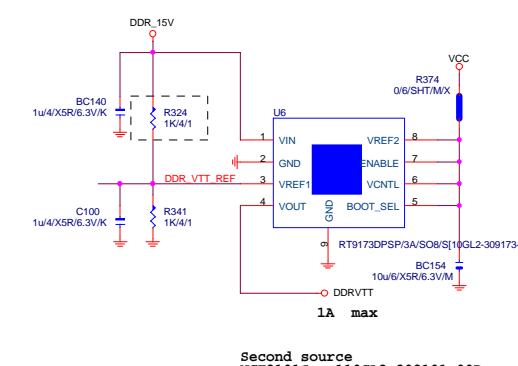
VCC1\_8\_PCH



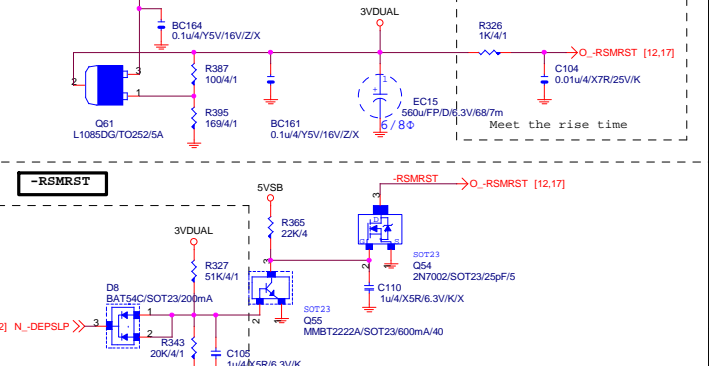
2\_5LEVEL



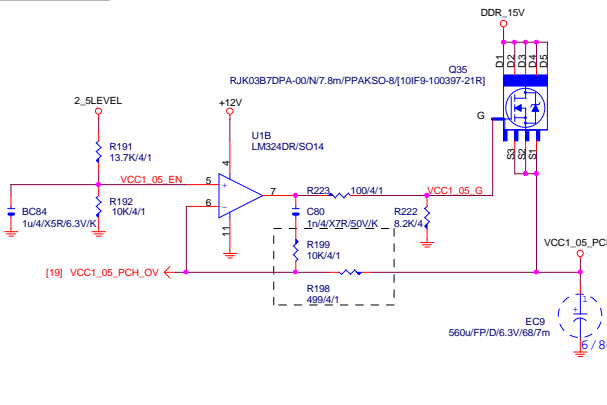
DDR\_VTT



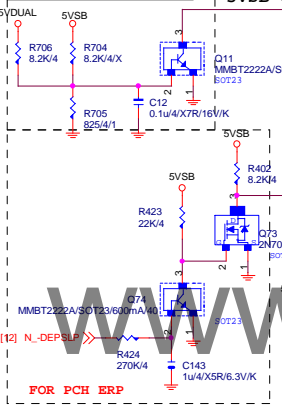
3VDUAL



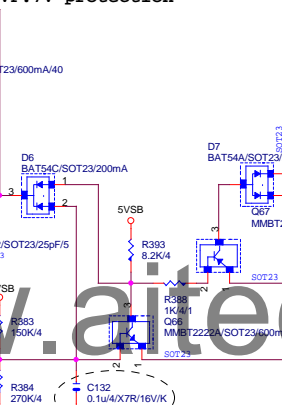
VCC1\_05\_PCH



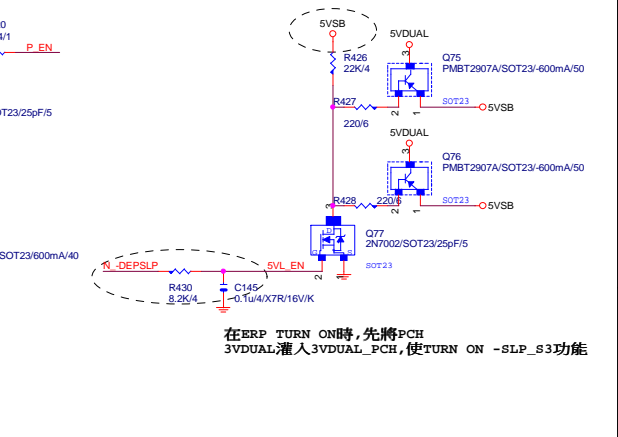
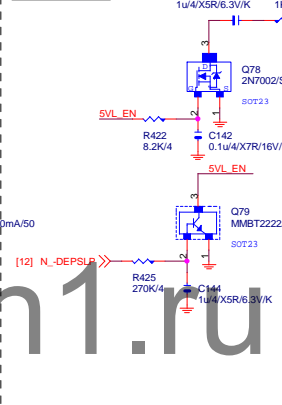
5VDUAL SHORT PROTECT



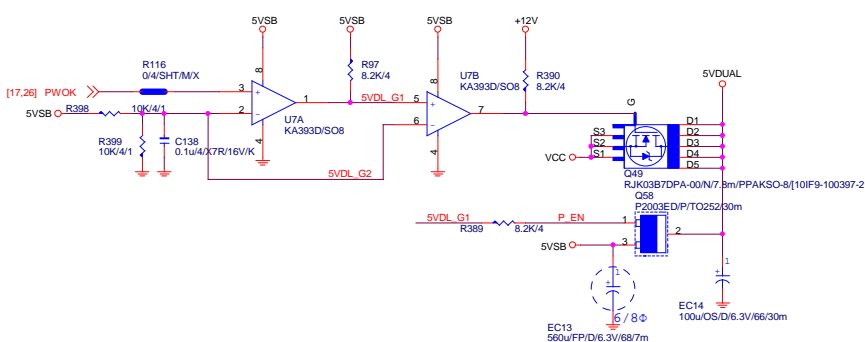
5VSB OVP:7V protection



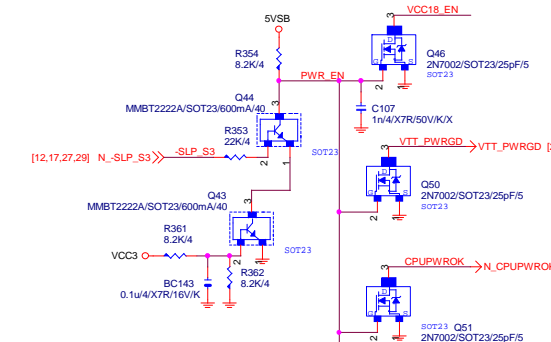
PCH ERP



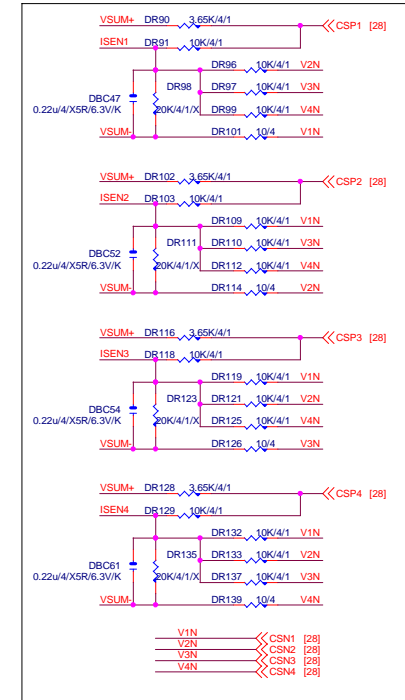
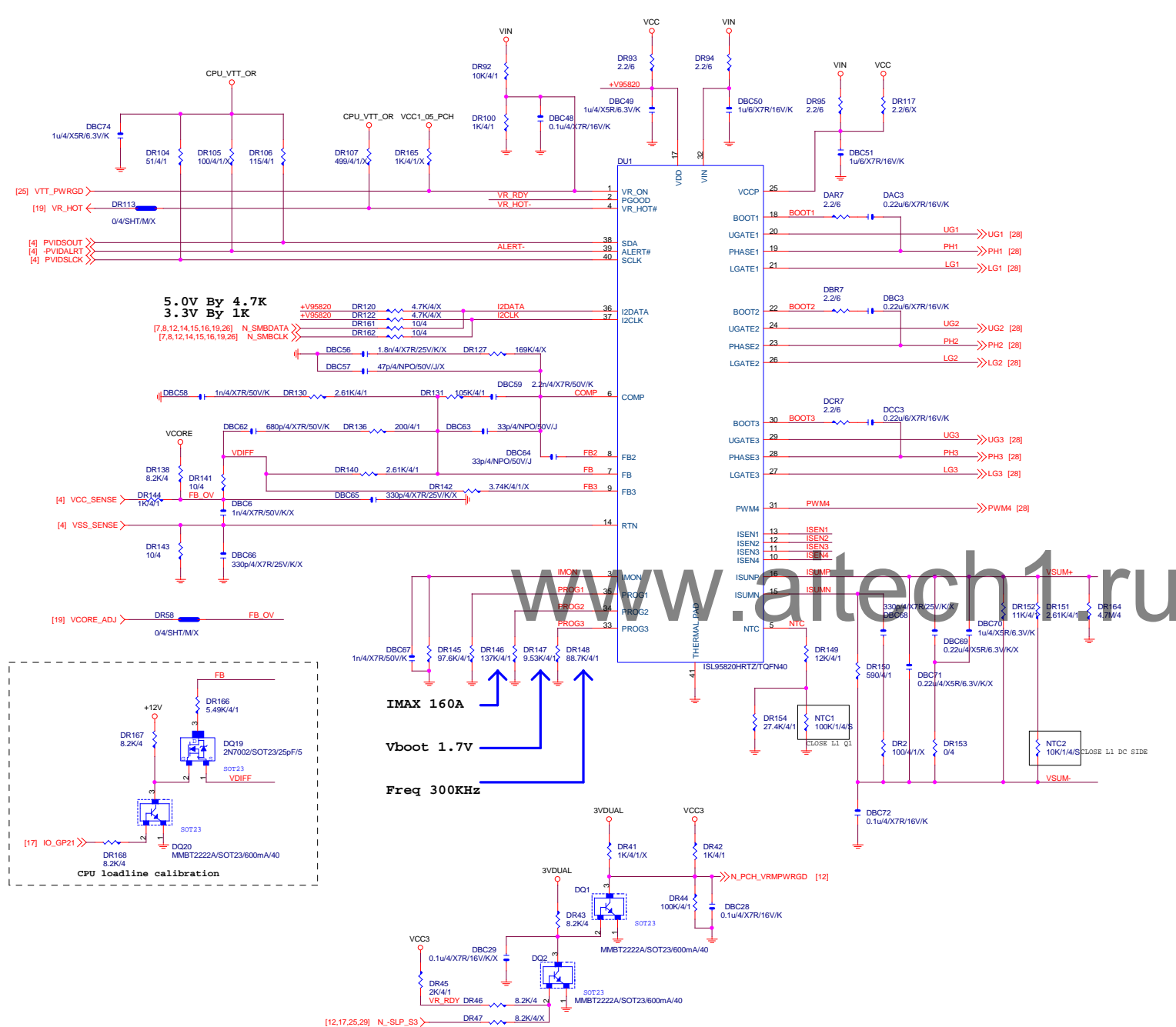
5VDUAL



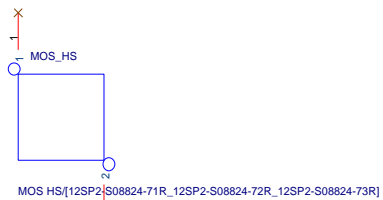
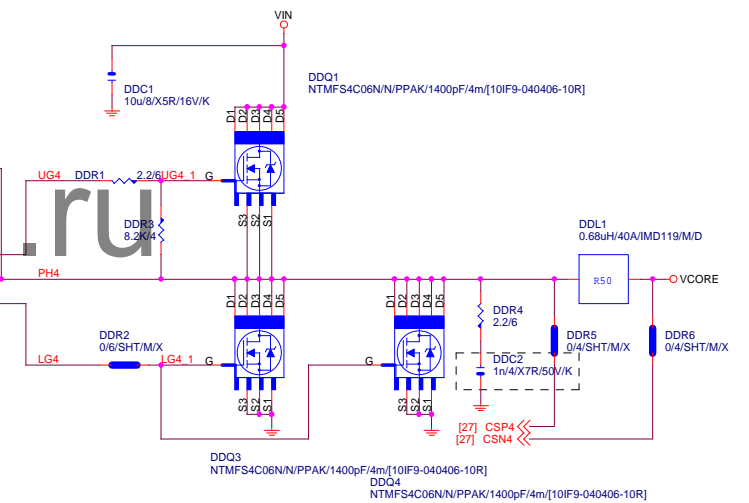
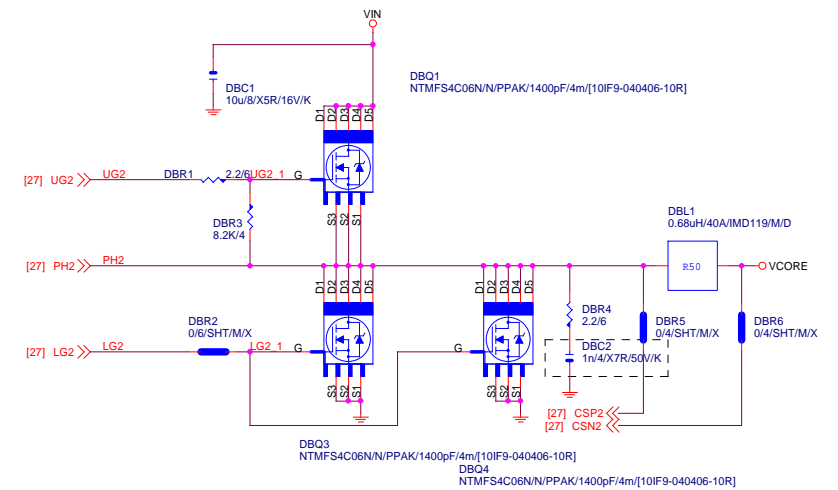
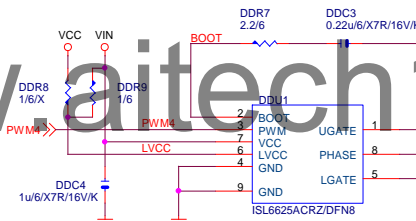
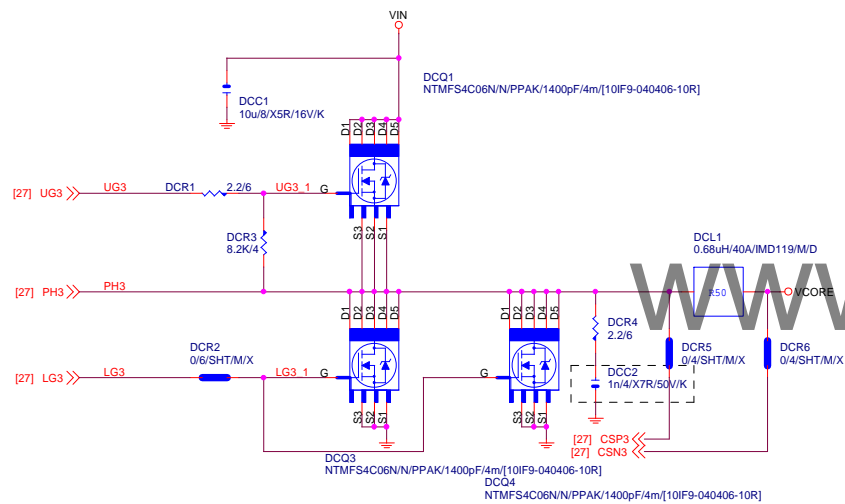
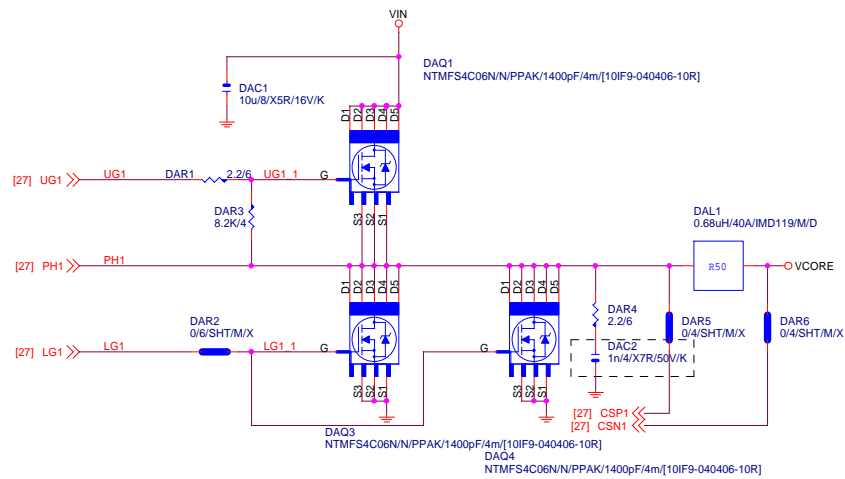
PWR SEQ



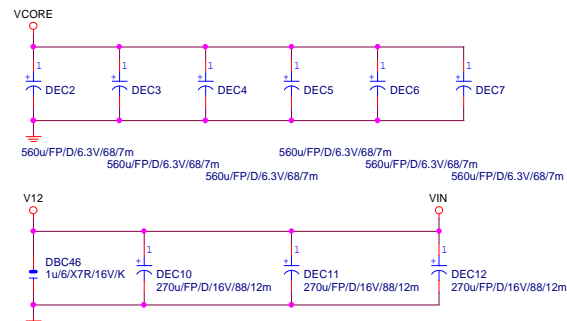




CLOSE PWR

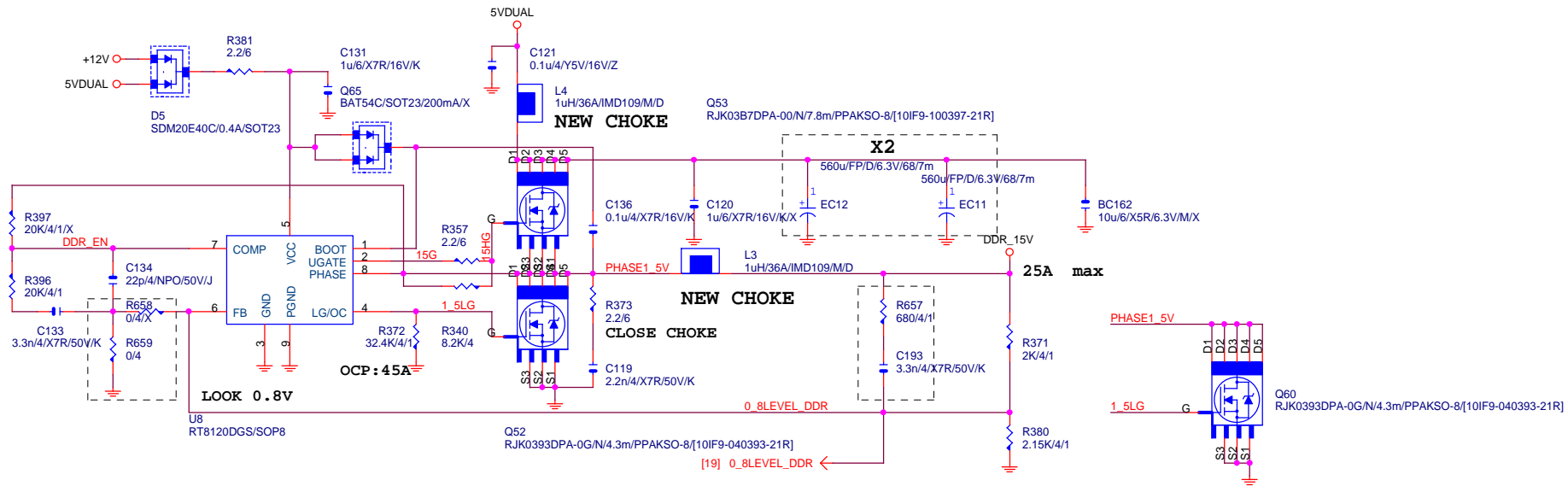


8 Series MOS Heatsink (Screw fix)

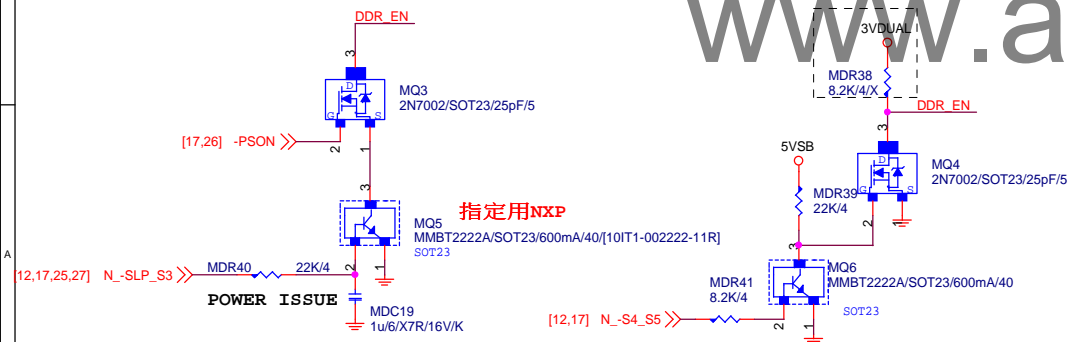


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# DDR1.5V



# PWR\_SEQ



VIN=5V, VOUT=1.5V, IOU=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

$Rocset = (Iocp * Lgate, rdson) / Iocset$   
 $Rocset = (45A * 6.7mOhm) / 10uA = 30K$   
 $Iocset = 10uA$

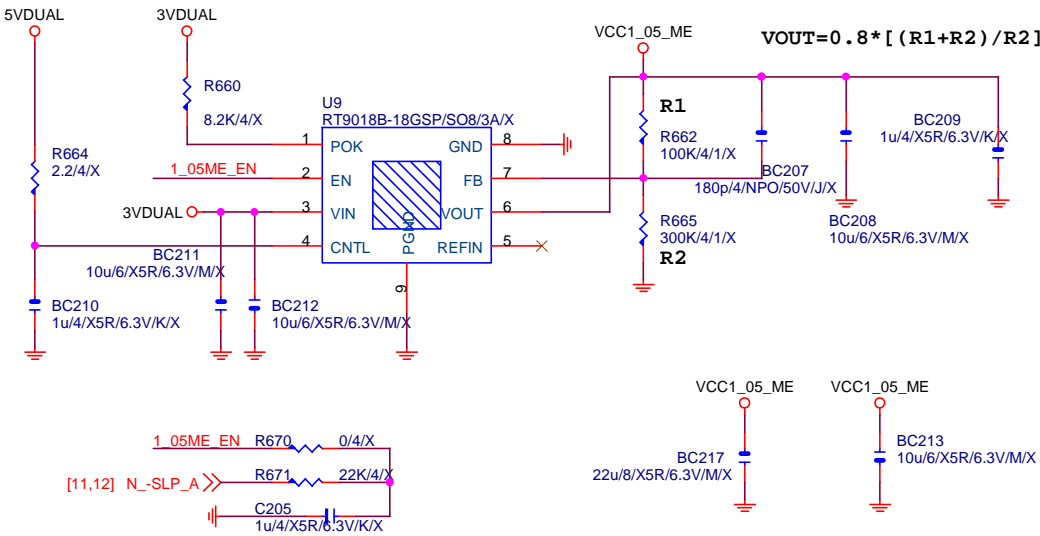
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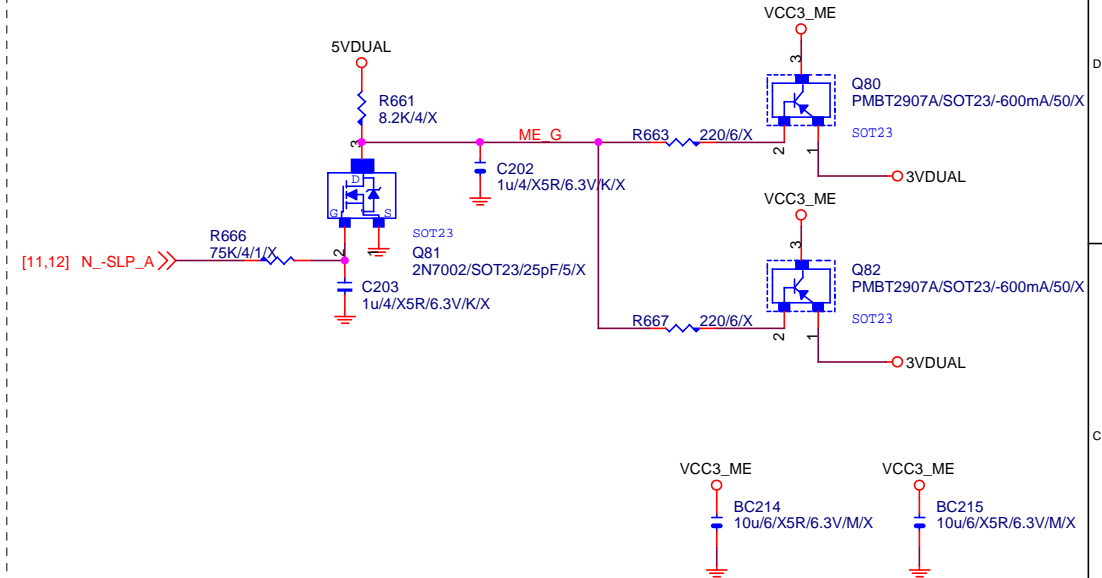
# VCC1\_05\_ME

【技術通報R&D技術通報156】  
(RICHTER), (NUVOTON), (EMC)做共用  
PIN7分壓阻值須做修改為100K以上電阻值



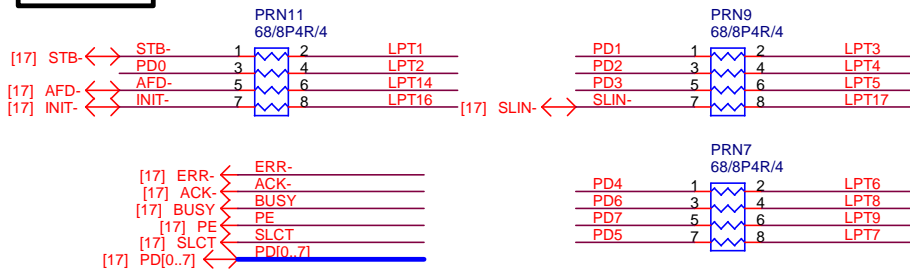
Second source  
EM5103 - 10GL2-305103-01R  
NCT3730S - 10GL2-303730-01R

# VCC3\_ME

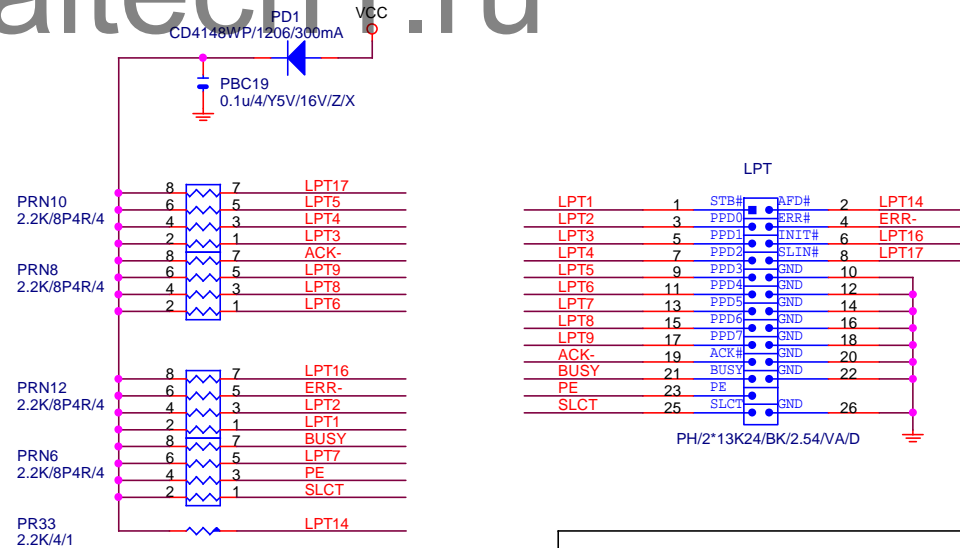


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# LPT PORT

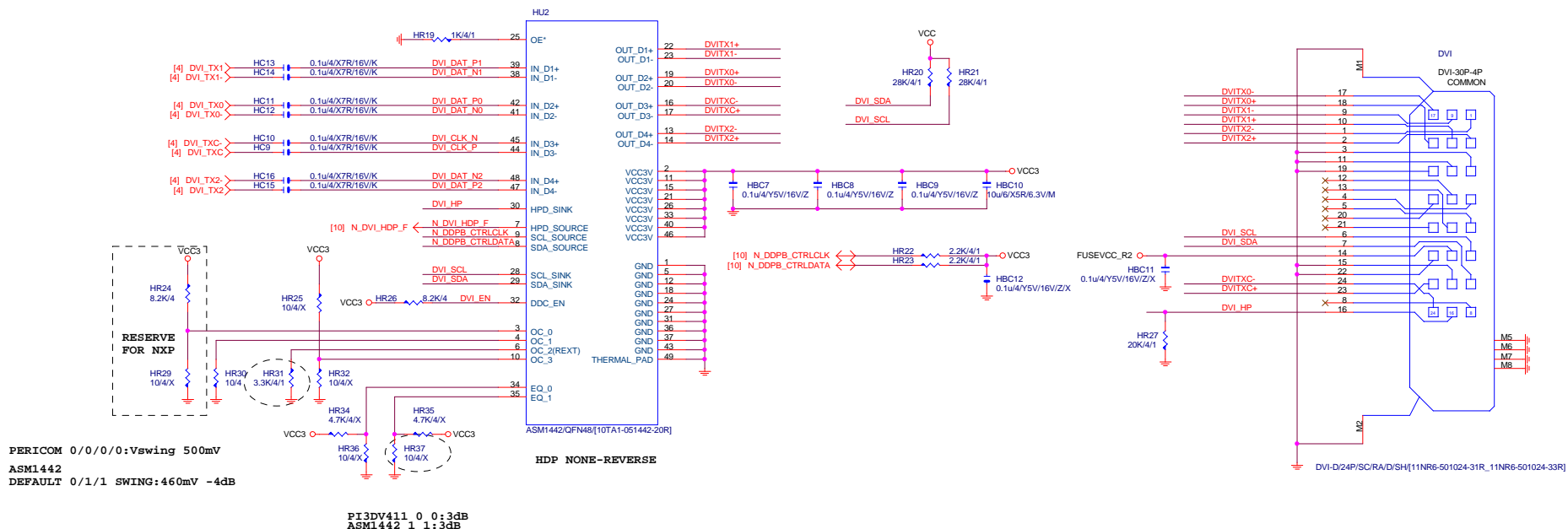


【技術通報R&D技術通報151】  
33ohm Change to 68ohm



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## DVI LEVEL SHIFT



## HDMI LEVEL SHIFT

