

# Model Name: GA-B75M-D3V-JP Revision 1.01

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1155-A
05	CPU_LGA1155-B
06	CPU_LGA1155-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*1 X3 SLOT
16	ITE 8728 LPC IO
17	KB_MS_USB,USB30_20
18	HWM,FAN CTRL,OV,-PROCHOT
19	DUAL BIOS
20	FP,FUSB,SPK,SATALED
21	Realtek ALC887-VD2
22	REAR AUDIO JACK
23	REALTEK RTL8111F-VL
24	DISCRETE POWER
25	ATX,TPM,ME POWER
26	RT8120_CPU_VTT
27	RT8120_DDR POWER

SHEET TITLE

28	VCORE ISL95836_1
29	VCORE ISL95836_2
30	DVI

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<b>Gigabyte Technology</b>			
Title			
Cover Sheet			
Size Custom	Document Number	<b>GA-B75M-D3V-JP</b>	Rev 1.01
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Revision 1.01

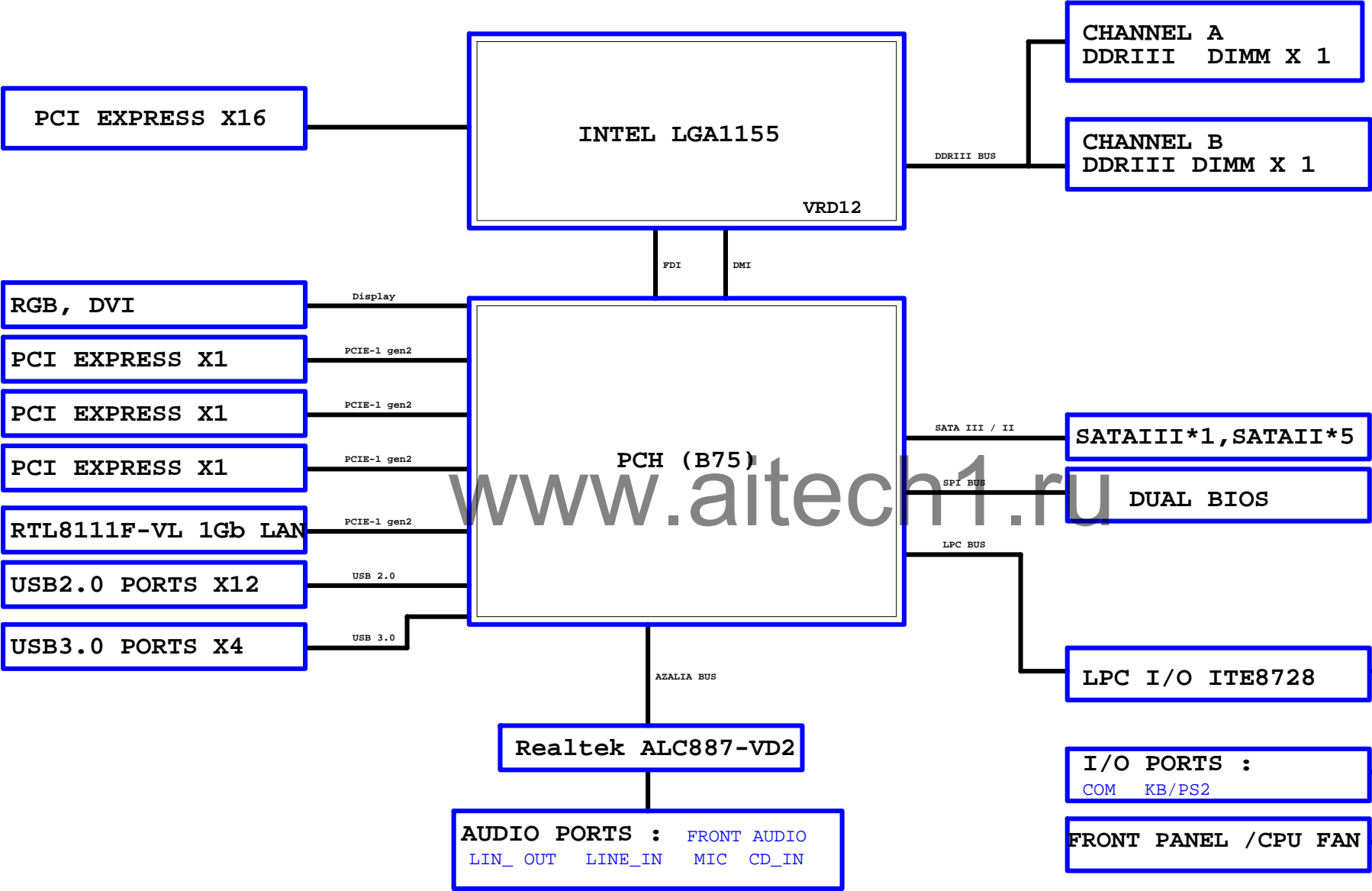
## Circuit or PCB layout change

## Component value change history

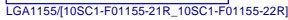
2012/04/26

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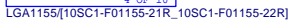
BLOCK DIAGRAM



LGA1155E



LGA1155D



LGA1155



R218 1K/4/1 R215 200/4/1 1.1V分壓

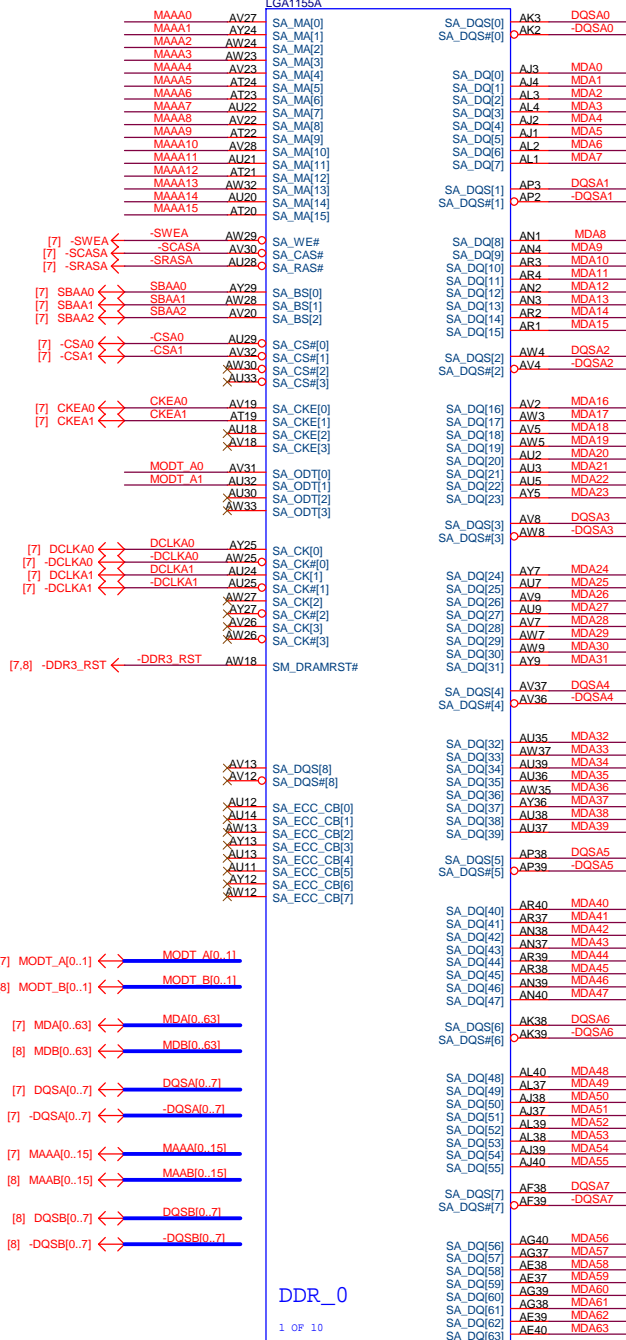


The schematic diagram illustrates the CPU\_VTT power plane. It includes the following components and connections:

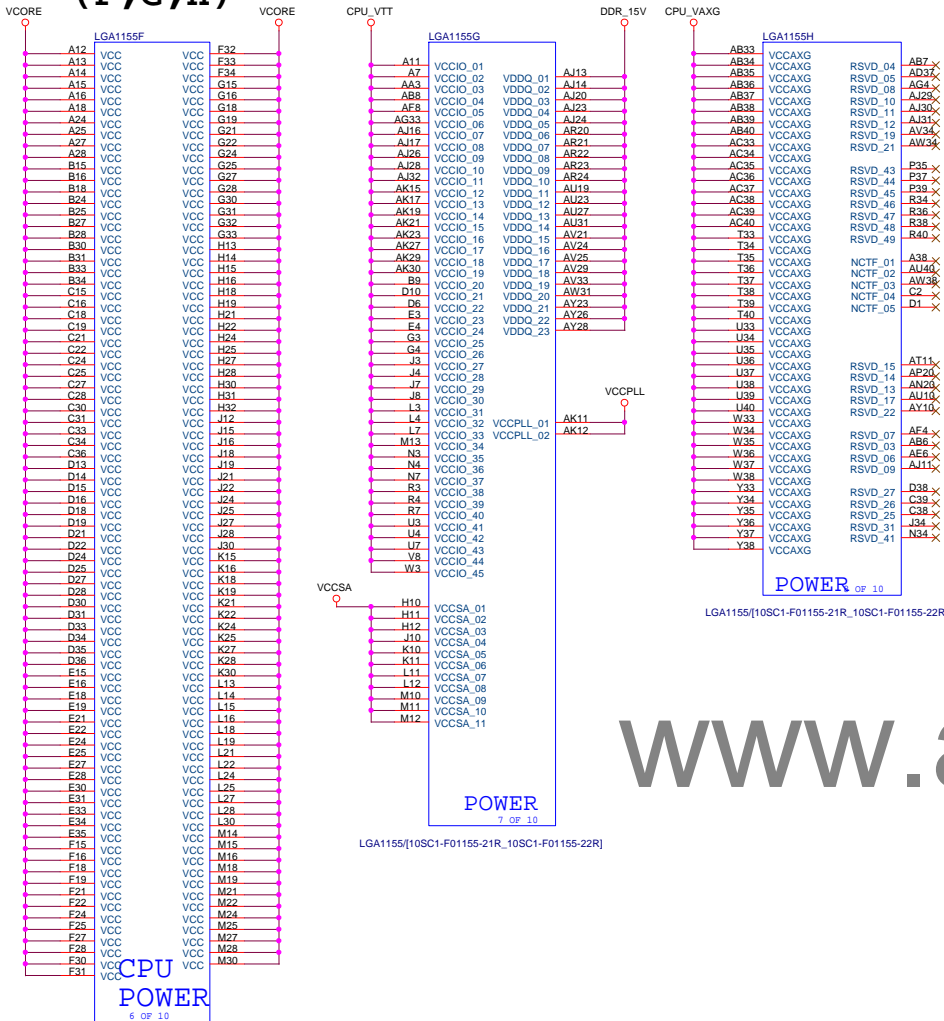
- Top Section:**
  - CPU\_VTT** input terminal.
  - R204** (1K/4/1) and **R120** (1K/4/1) resistors in series.
  - R146** (1K/4/1) resistor connected to ground.
  - Signals: **-THRMTRIP**, **-PROCHOT**, and **CPU\_PWRON** are connected to the top of the resistor network.
- Middle Section:**
  - CPU\_VTT** input terminal.
  - RN5** (51/8P4R/4) resistor network.
  - Signals: **TDI**, **TDO**, **TMS**, and **-HPRDY** are connected to the right side of the resistor network.
- Bottom Section:**
  - R165** (51/4/1) and **R164** (51/4/1) resistors in series.
  - Signals: **TCK** and **-TRST** are connected to the right side of the resistor network.

Title			
CPU LGA1155-A			
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LGA1155A

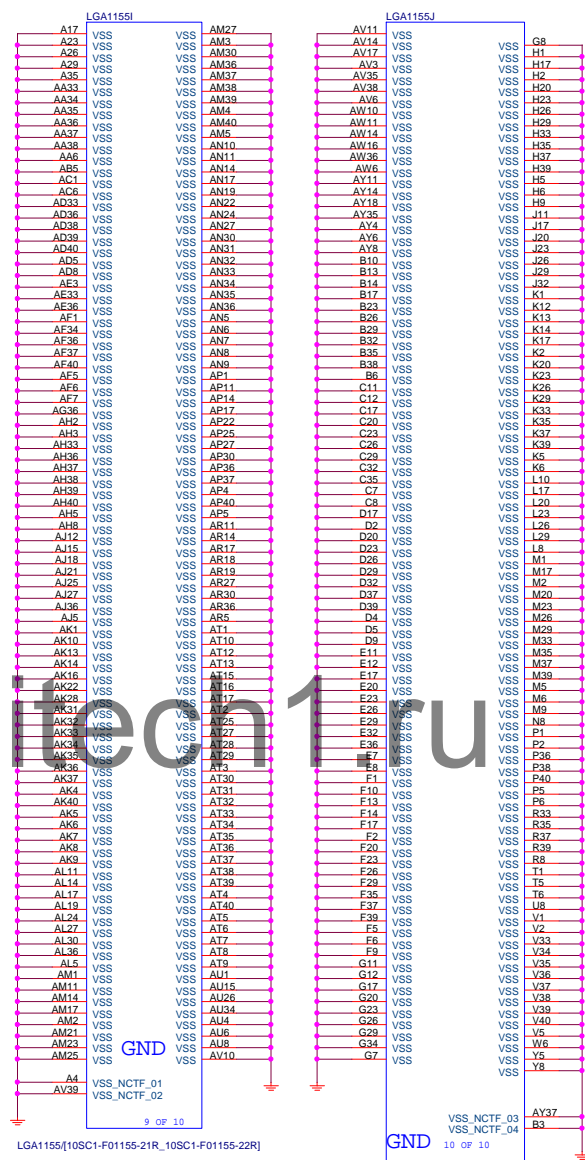


LGA1155 (F,G,H)



LGA1155/[10SC1-F01155-21R\_10SC1-F01155-22R]

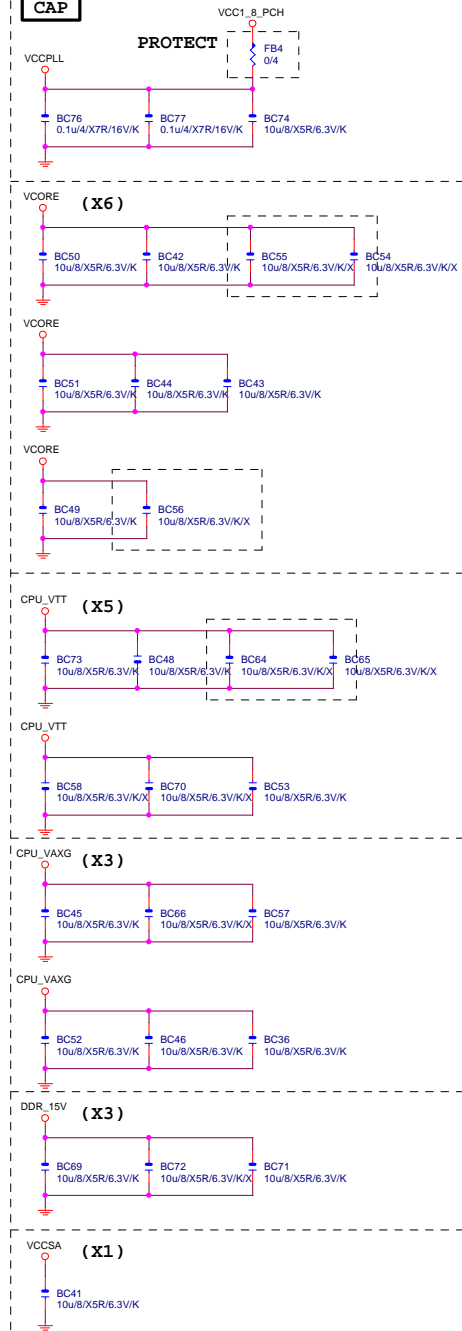
LGA1155 (I,J)



LGA1155/[10SC1-F01155-21R\_10SC1-F01155-22R]

LGA1155/[10SC1-F01155-21R\_10SC1-F01155-22R]

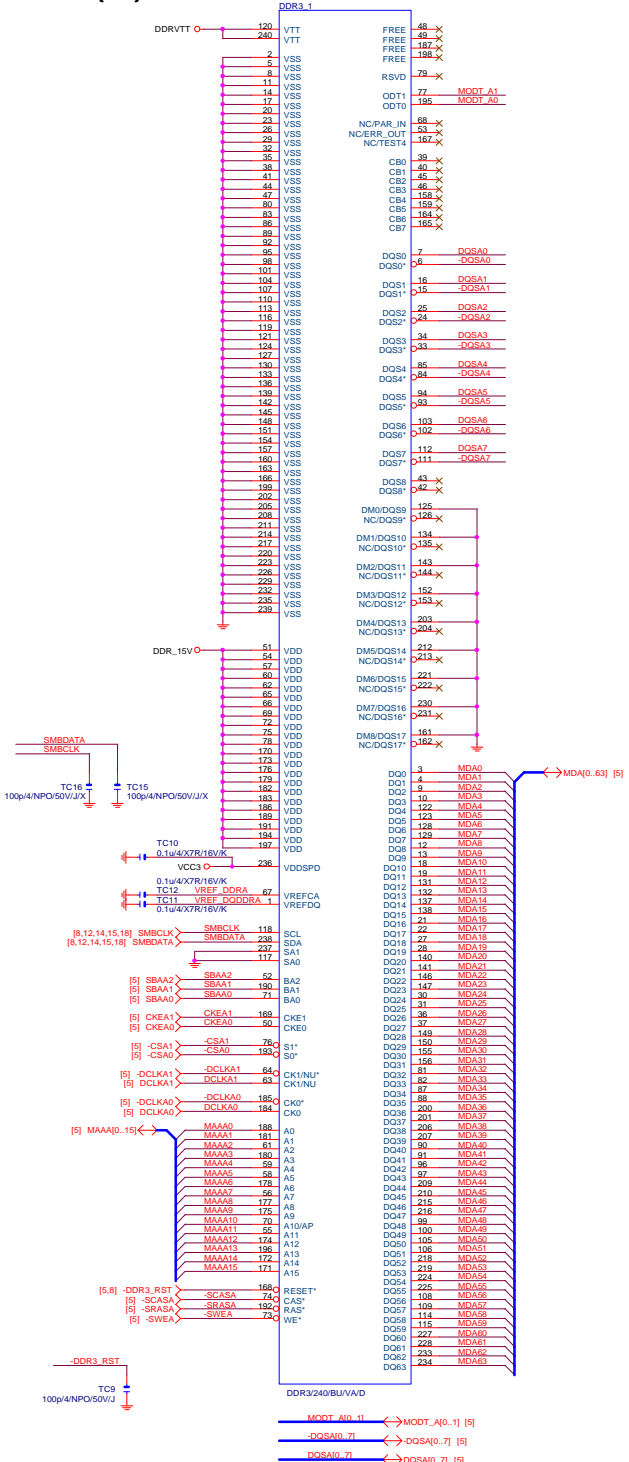
## CAP



<b>Gigabyte Technology</b>			
Title			
<b>CPU LGA1156-C</b>			
Size	Document Number	Rev	
Custom	<b>GA-B75M-D3V-JP</b>	<b>1.0</b>	
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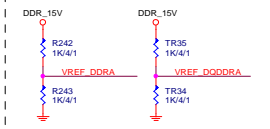
DDR3

(A)

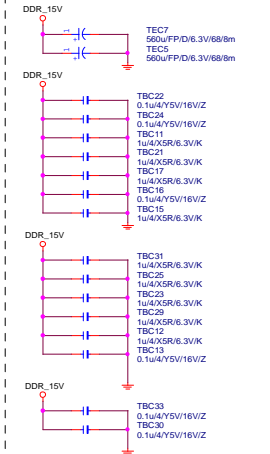


DDR3

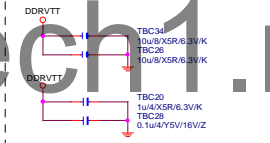
DDR3 VREF



DDR15V Decouple

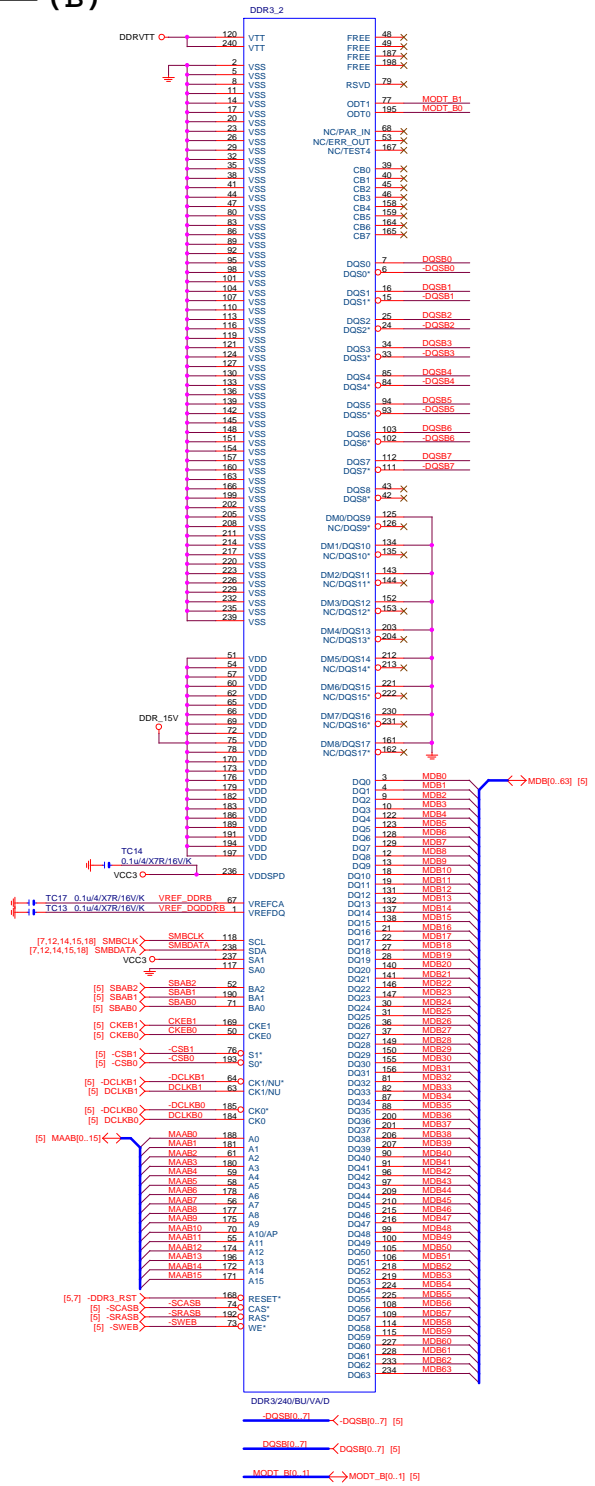


DDRVTT Decouple

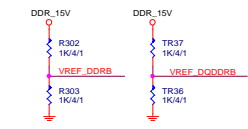


DDR3

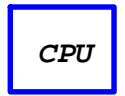
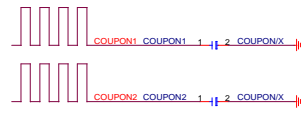
(B)



DDR3 VREF



COUPON



DIMM1

CHA

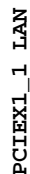
DIMM2

CHB

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**(B)**

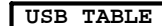
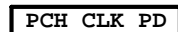


(E)

SB HEATSIN



**(G)**



## Gigabyte Technology

Title			
PCH FDI,DMI,USB ,PCIE,NVRAM			
Size	Document Number		Rev
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**(F)**



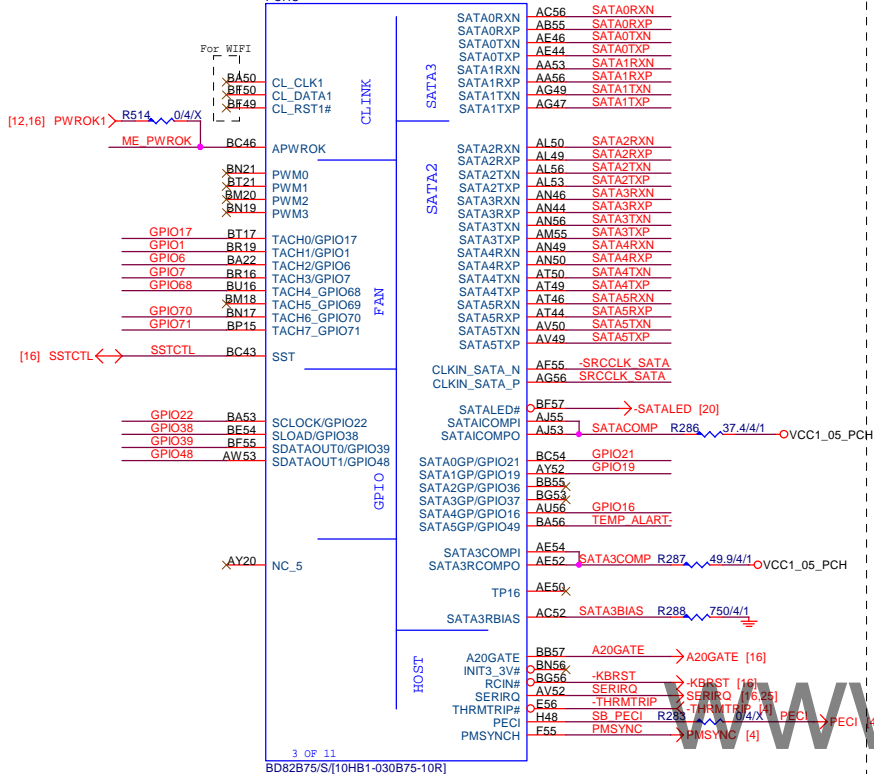
Title				PCH DISPLAY ,CLK BUFFER				Rev	
Size		Document Number		GA-B75M-D3V-JP				1.	
Custom									
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PCH

(C)

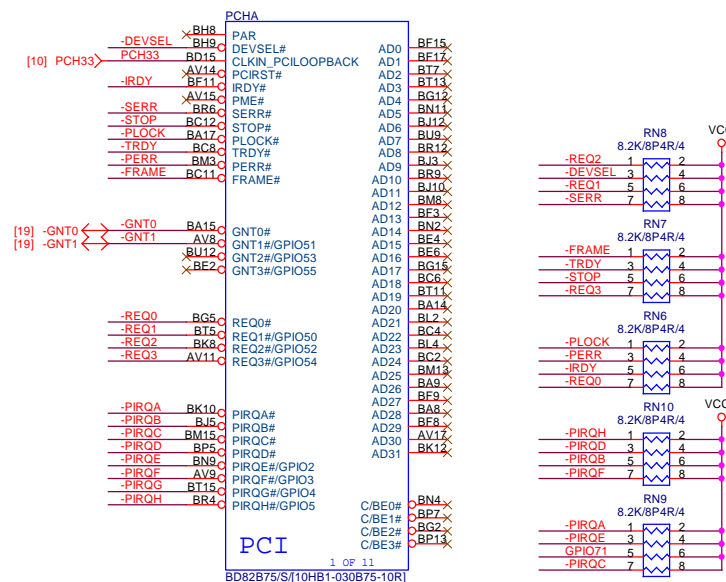
B75 SATA3.0 ONLY PORT0  
B75 Not Support RAID

PCHC

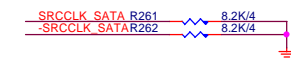


PCH

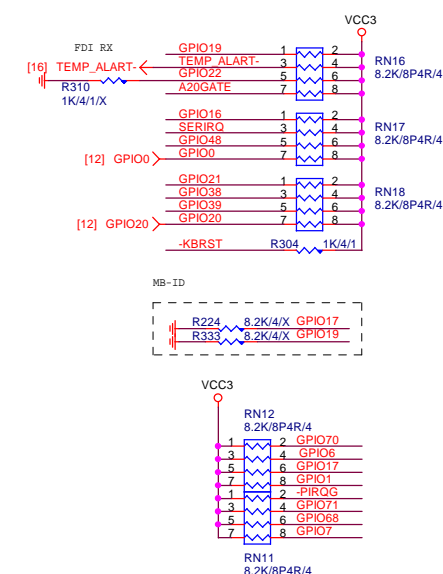
(A)



PCH CLK PD

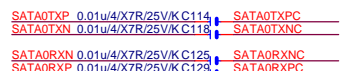


PCH PU/PD



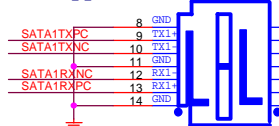
SATA CONNECTOR H1X7-SATA2-HS-MASK

B75 SATA 3.0



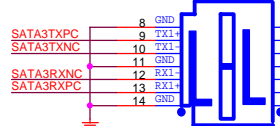
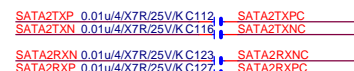
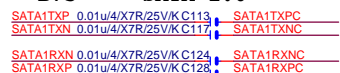
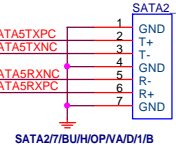
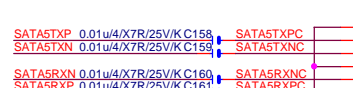
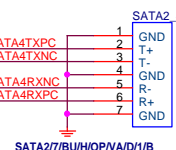
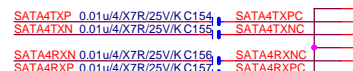
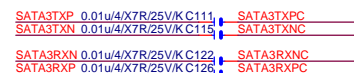
WHITE COLOR

SATA3\_0\_1

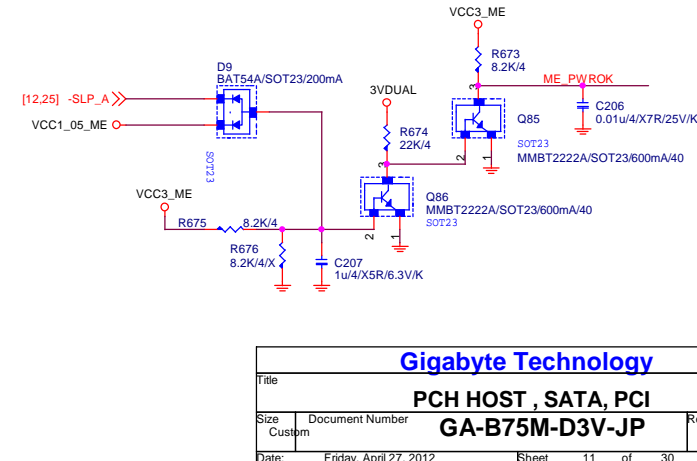


SATA14/WH/HOP/RA/D/2

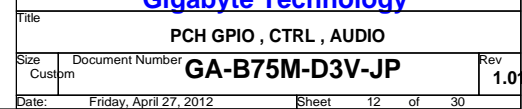
B75 SATA 2.0

SATA2\_2\_3  
SATA14/BU/HOP/RA/D/2

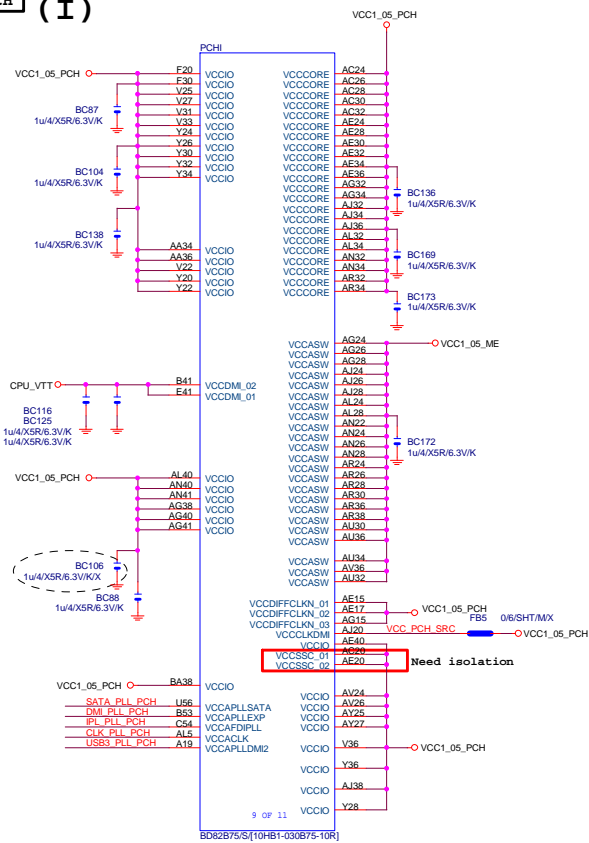
ME PWROK



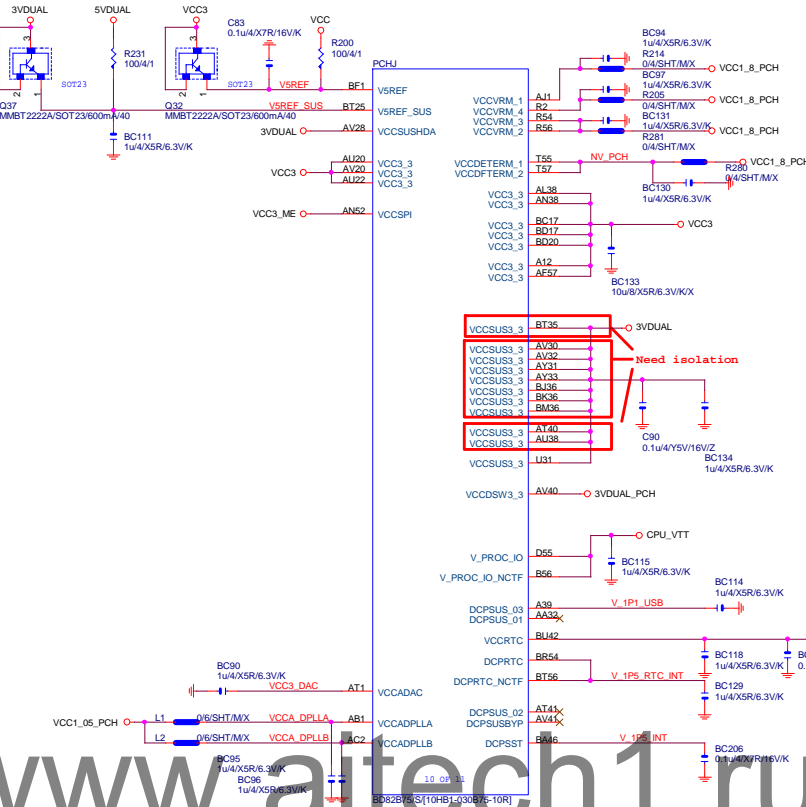
**(D)**



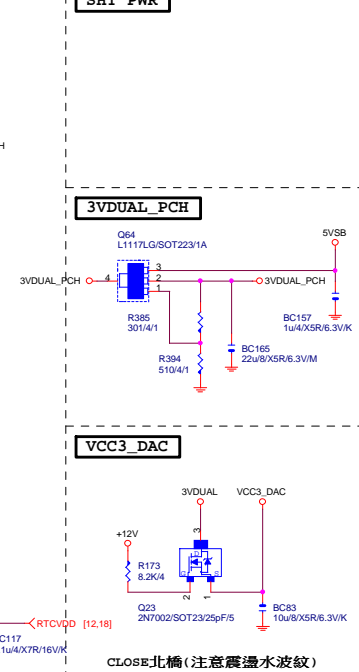
(I)



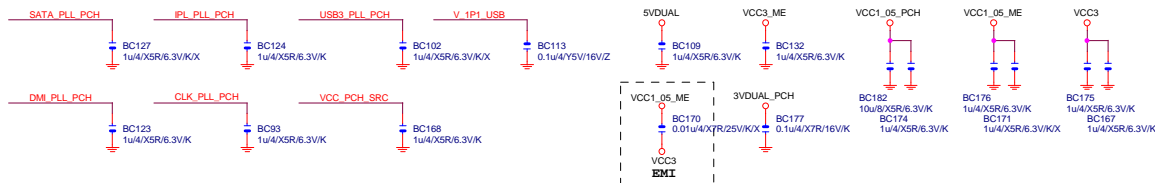
(J)



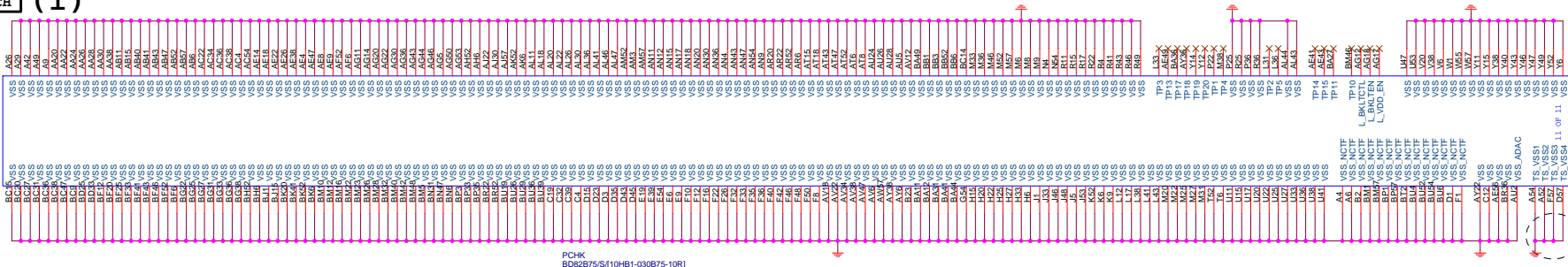
SHT	PWR
-----	-----



## CAP



(I)

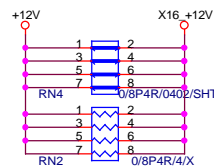




# PCIEX16 CAP



# PCIEX16 PROTECT SHT

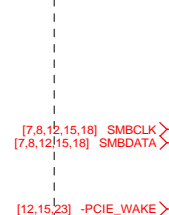


# PCIEX16 AC CAP

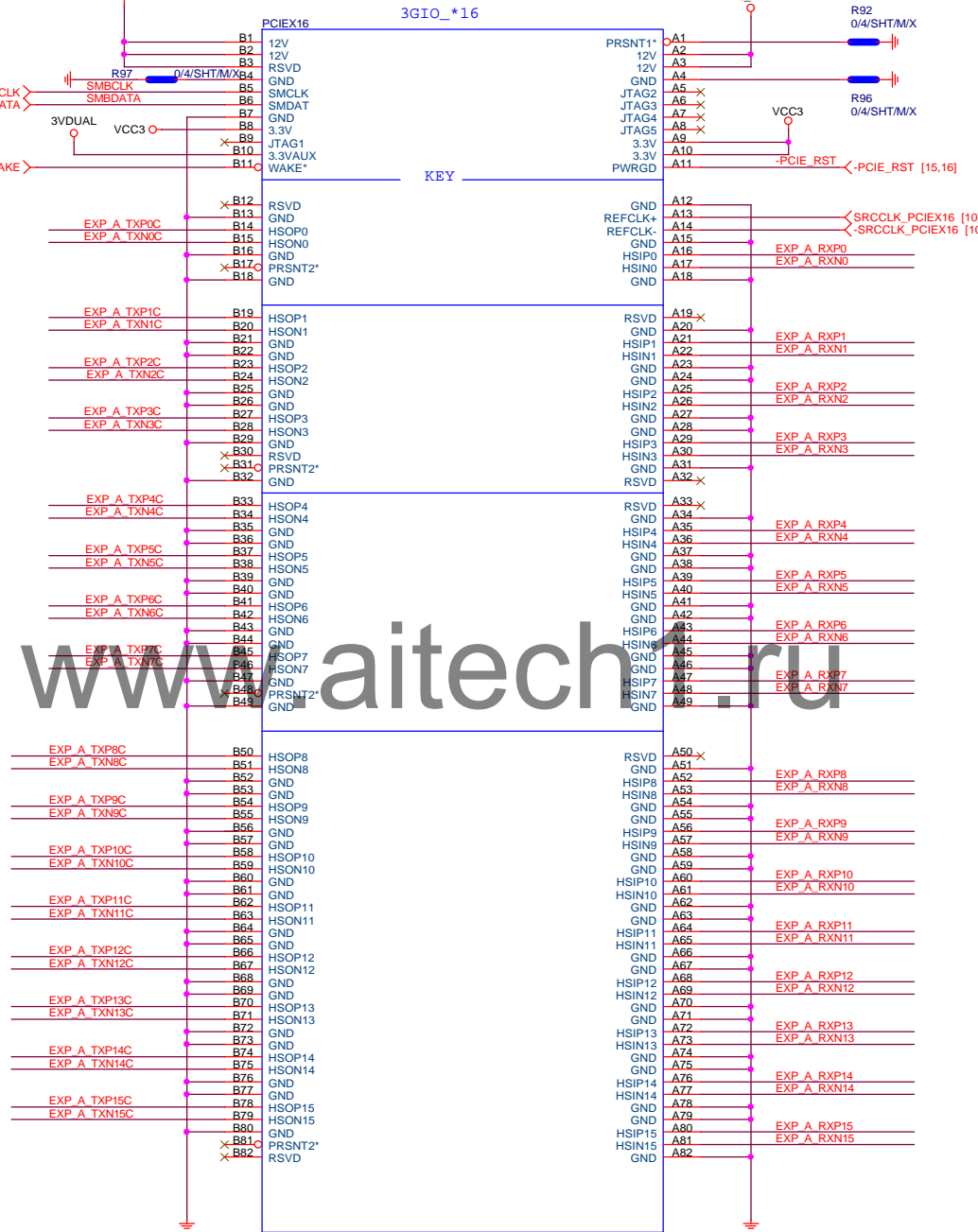
EXP A TXP0	C32	0.22u/4X5R/6.3V/K	EXP A TXP0C
EXP A TXN0	C30	0.22u/4X5R/6.3V/K	EXP A TXN0C
EXP A TXP1	C35	0.22u/4X5R/6.3V/K	EXP A TXP1C
EXP A TXN1	C37	0.22u/4X5R/6.3V/K	EXP A TXN1C
EXP A TXP2	C39	0.22u/4X5R/6.3V/K	EXP A TXP2C
EXP A TXN2	C41	0.22u/4X5R/6.3V/K	EXP A TXN2C
EXP A TXP3	C43	0.22u/4X5R/6.3V/K	EXP A TXP3C
EXP A TXN3	C45	0.22u/4X5R/6.3V/K	EXP A TXN3C
EXP A TXP4	C46	0.22u/4X5R/6.3V/K	EXP A TXP4C
EXP A TXN4	C49	0.22u/4X5R/6.3V/K	EXP A TXN4C
EXP A TXP5	C50	0.22u/4X5R/6.3V/K	EXP A TXP5C
EXP A TXN5	C51	0.22u/4X5R/6.3V/K	EXP A TXN5C
EXP A TXP6	C52	0.22u/4X5R/6.3V/K	EXP A TXP6C
EXP A TXN6	C54	0.22u/4X5R/6.3V/K	EXP A TXN6C
EXP A TXP7	C57	0.22u/4X5R/6.3V/K	EXP A TXP7C
EXP A TXN7	C58	0.22u/4X5R/6.3V/K	EXP A TXN7C
EXP A TXP8	C60	0.22u/4X5R/6.3V/K	EXP A TXP8C
EXP A TXN8	C61	0.22u/4X5R/6.3V/K	EXP A TXN8C
EXP A TXP9	C62	0.22u/4X5R/6.3V/K	EXP A TXP9C
EXP A TXN9	C63	0.22u/4X5R/6.3V/K	EXP A TXN9C
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EXP A TXN10	C65	0.22u/4X5R/6.3V/K	EXP A TXN10C
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EXP A TXN11	C67	0.22u/4X5R/6.3V/K	EXP A TXN11C
EXP A TXP12	C68	0.22u/4X5R/6.3V/K	EXP A TXP12C
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EXP A TXP13	C72	0.22u/4X5R/6.3V/K	EXP A TXP13C
EXP A TXN13	C73	0.22u/4X5R/6.3V/K	EXP A TXN13C
EXP A TXP14	C74	0.22u/4X5R/6.3V/K	EXP A TXP14C
EXP A TXN14	C75	0.22u/4X5R/6.3V/K	EXP A TXN14C
EXP A TXP15	C77	0.22u/4X5R/6.3V/K	EXP A TXP15C
EXP A TXN15	C78	0.22u/4X5R/6.3V/K	EXP A TXN15C

EXP A RXP0.15] >> EXP\_A\_RXP0.15] [4]  
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# PCIEX16 SLOT



# PCIESLOT-164DN-P

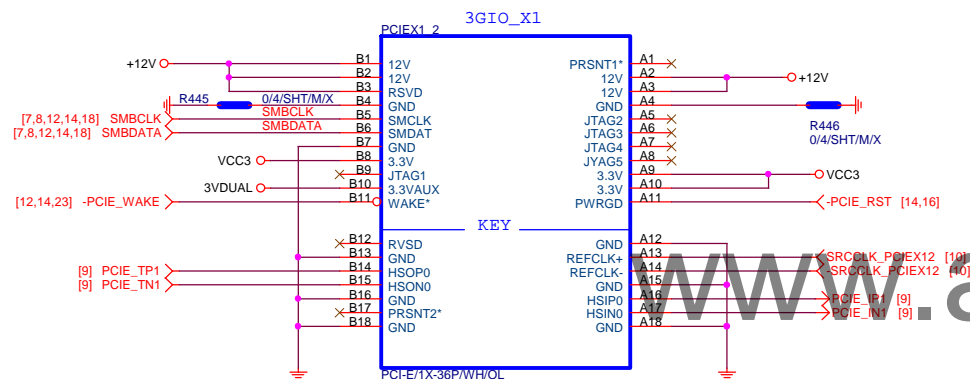
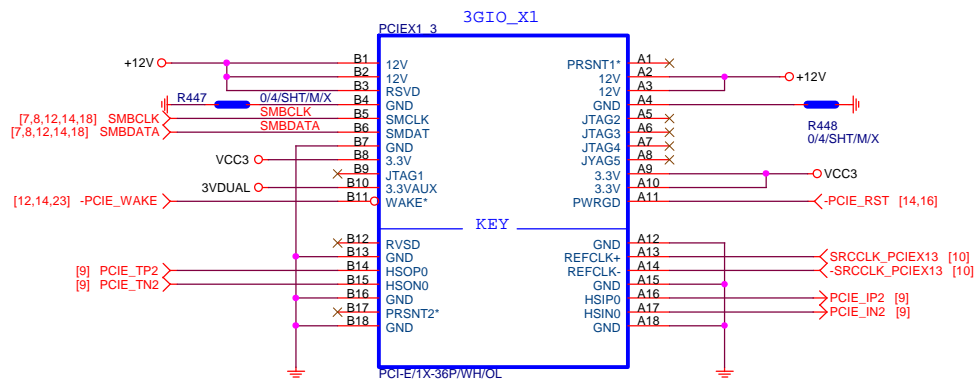
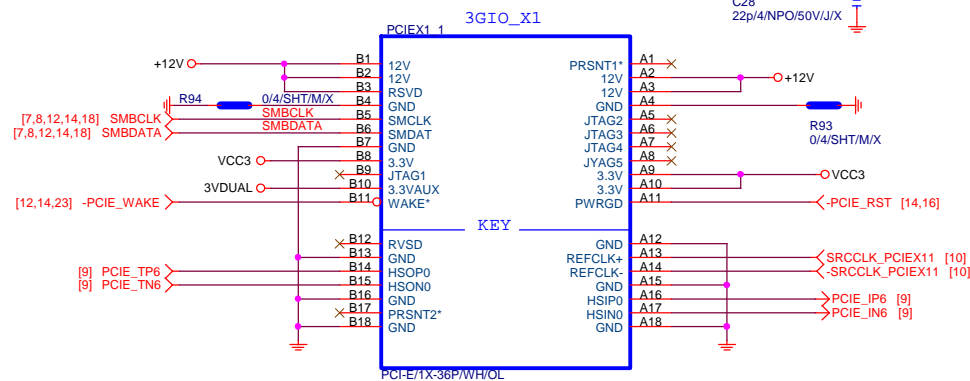


PCI-E16X-164P/297C/DOUBLE PUSH LATCH

Gigabyte Technology

Title			PCI EXPRESS * 16		
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# PCIE1 SLOT



# PCIE1 CAP



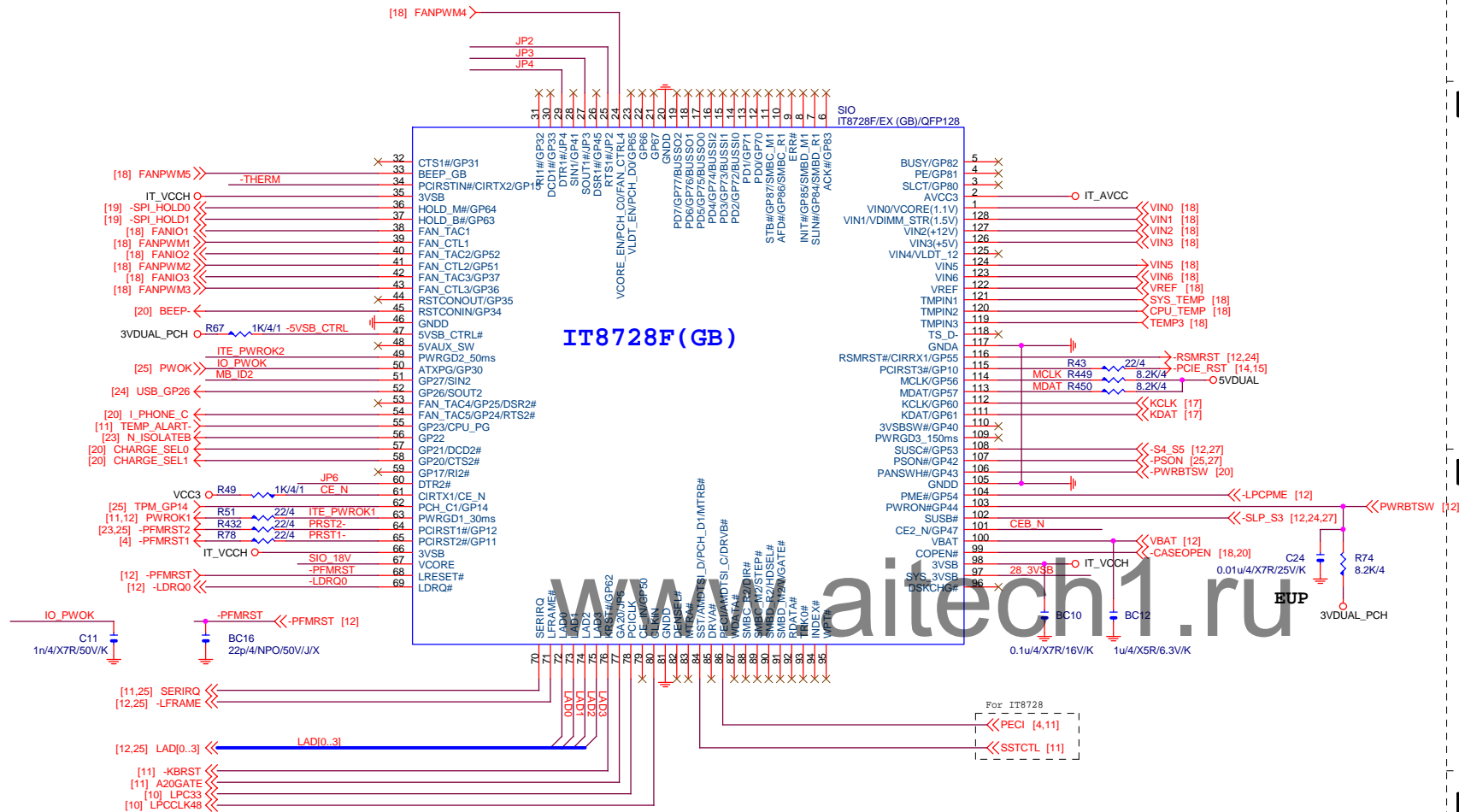
# Gigabyte Technology

## PCI EXPRESS X 1 PORT

Size	Document Number	Rev
Custom	GA-B75M-D3V-JP	1.01

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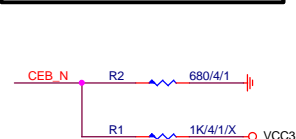
## SIO IT8728F



## IT8728F NOTE

IT8728	
PIN121	VCORE_EN/PCH_C0
PIN120	VLDLT_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDTSL_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSL_C/DRV#
PIN66	SYS_3VSB
PIN70	GP47
PIN95	VIN2 (VCC5)
PIN96	VIN1 (VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0/VCORE(1.1V)/NC

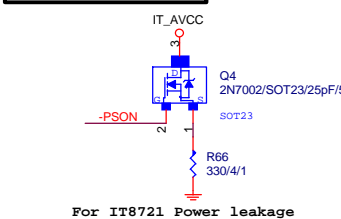
## DUAL BIOS OPT STRAP



## SIO CAP



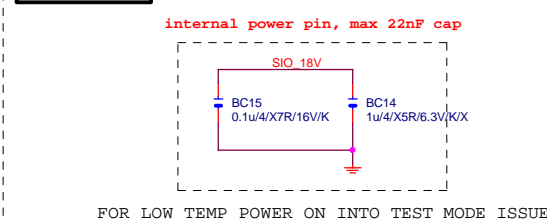
## Power leakage



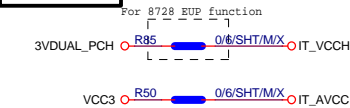
## SIO\_18V



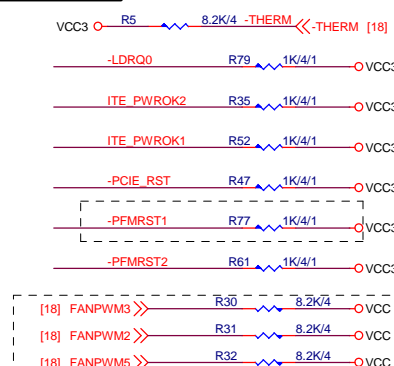
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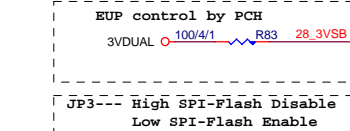
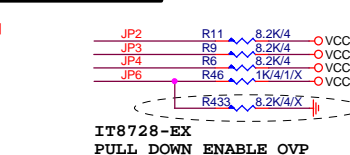
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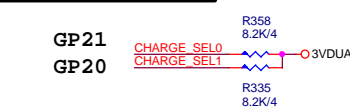
## SIO PU



## SIO STRAP



## Cell Phone PU



## MB ID



## Gigabyte Technology

Title		ITE 8728 LPC IO	
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COM

KB/MS

USB2.0 ESD

USB2.0 PWR

USB\_LAN, KB\_USB 4-Port 2.6A

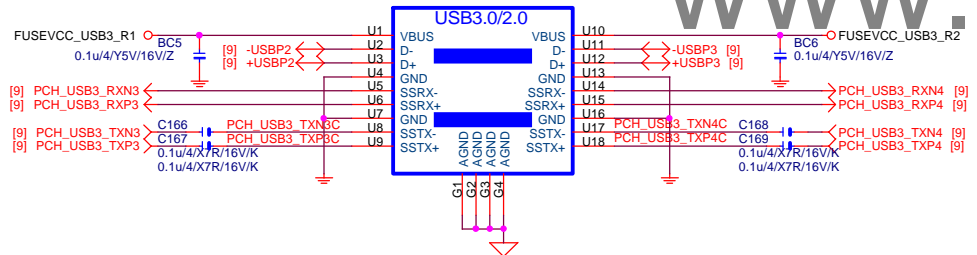
COM RI

USB30\_20

USB30\_20 ESD PROTECT

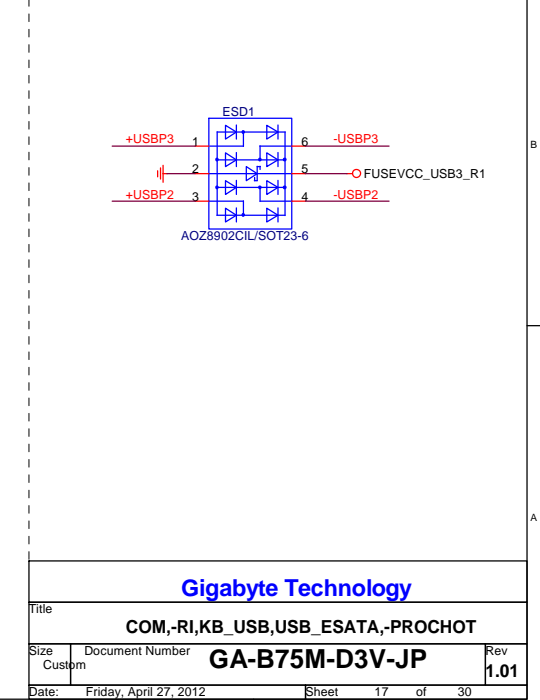
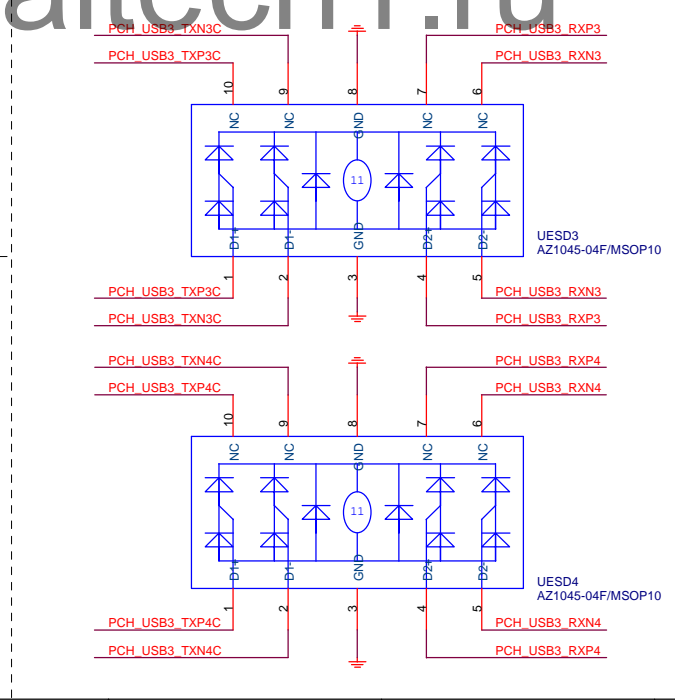
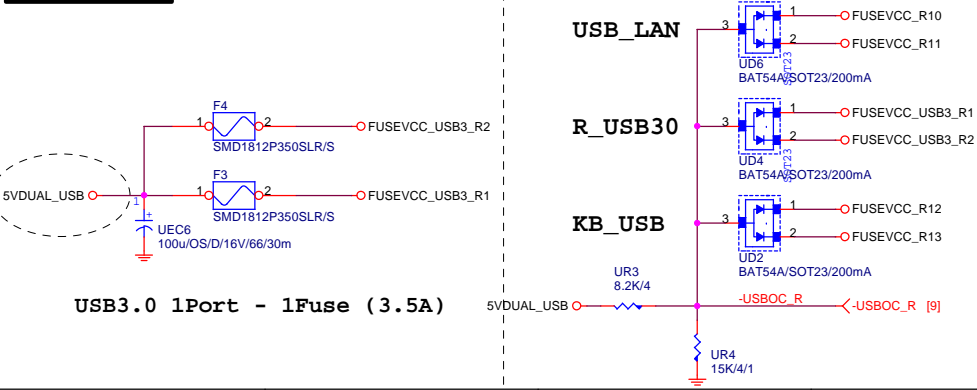
USB3.0 ESD

USB2.0 ESD



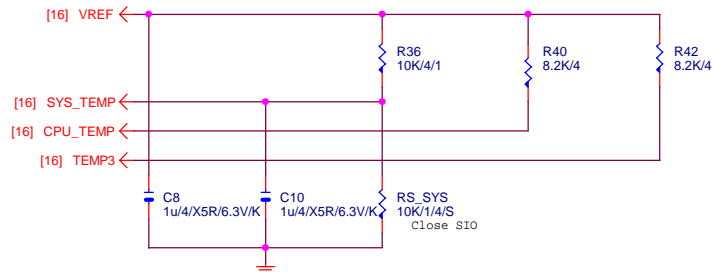
USB30\_20 PWR

-USBOC\_R

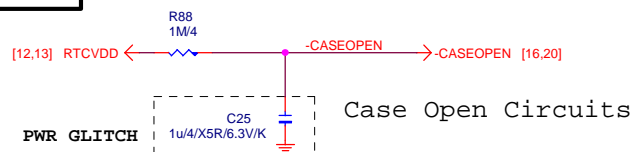


Gigabyte Technology			
Title			
COM,-RI,KB_USB,USB_ESATA,-PROCHOT			
Size			
Custom			
Document Number			
GA-B75M-D3V-JP			
Rev			
1.01			
Date:	Friday, April 27, 2012	Sheet	17 of 30

## TEMP H/W MONITOR

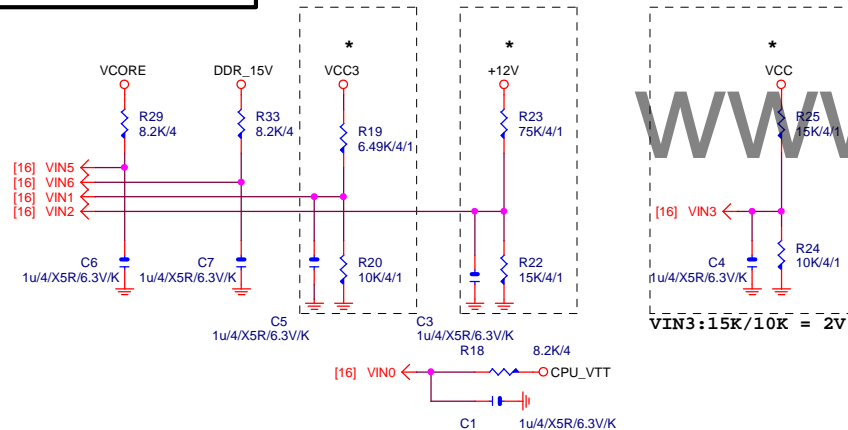


## CASE OPEN

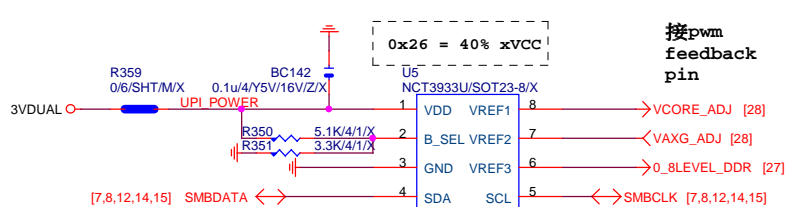


## VOLTAGE-- H/W MONITOR

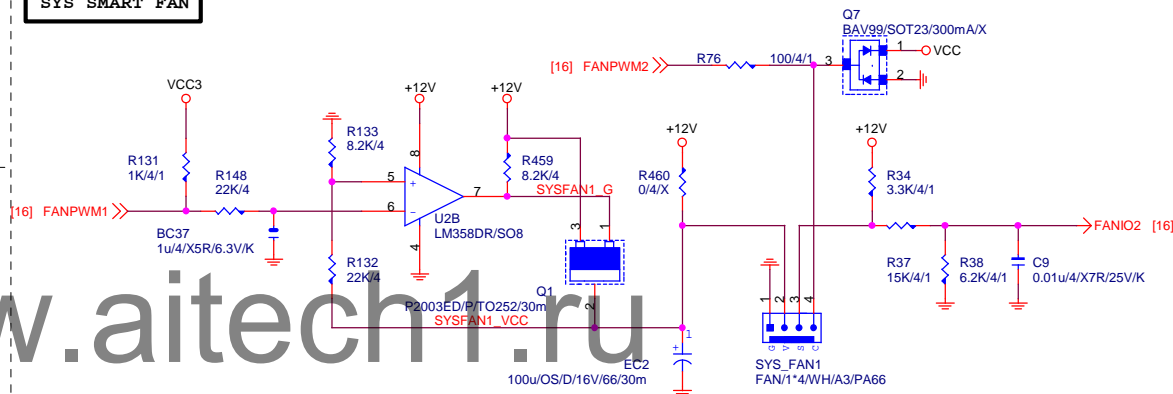
VIN2: 75K/15K = 2V



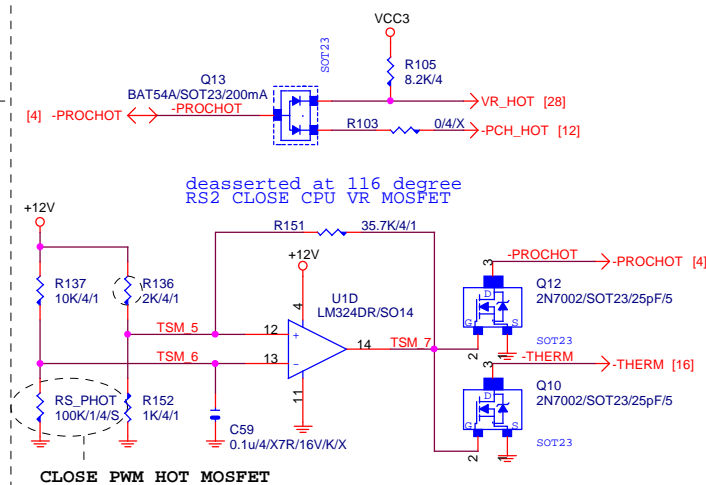
## OV NCT3933



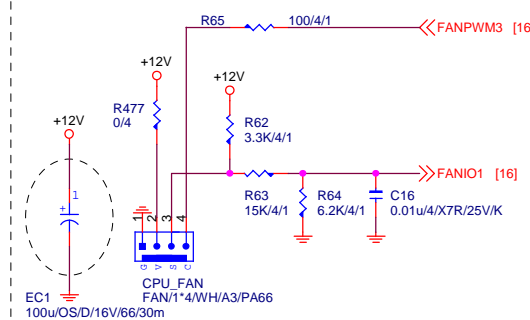
## SYS SMART FAN



## -PROHOT



## CPU SMART FAN



FOR HOT-PLUG ISSUE

Gigabyte Technology

Title			
HWM,FAN CTRL,OV			
Size	Document Number	Rev	
Custom	GA-B75M-D3V-JP	1.01	
Date:	Friday, April 27, 2012	Sheet	18 of 30

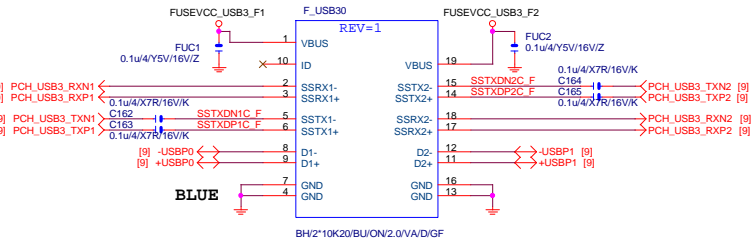
## DUAL BIOS



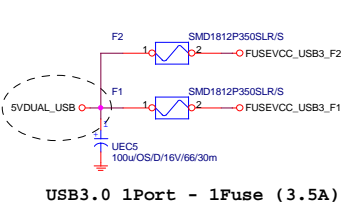
1	means	floating
0	means	PD 1K

Title			
DUAL BIOS			
Size A	Document Number	GA-B75M-D3V-JP	Rev 1.01
Date:	Friday, April 27, 2012	Sheet 19 of 30	

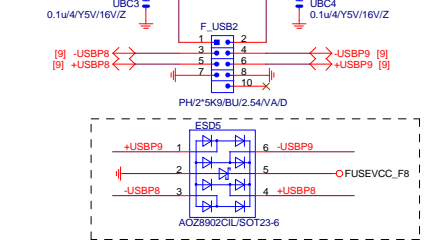
F\_USB30



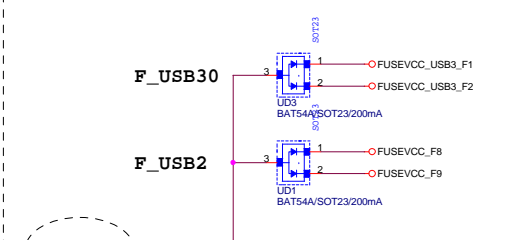
F\_USB30 PWR



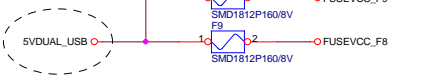
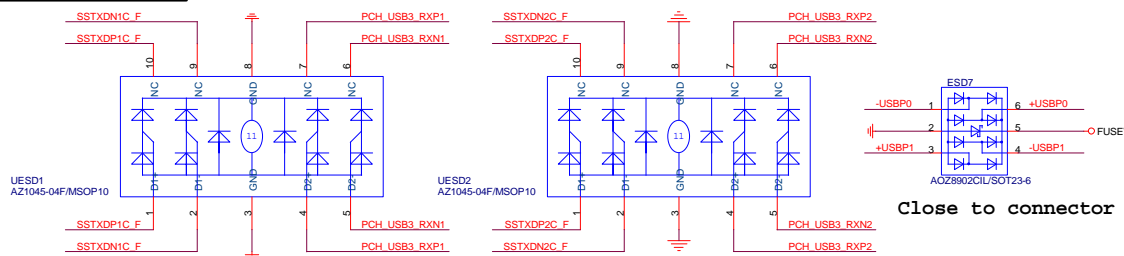
FRONT USB2



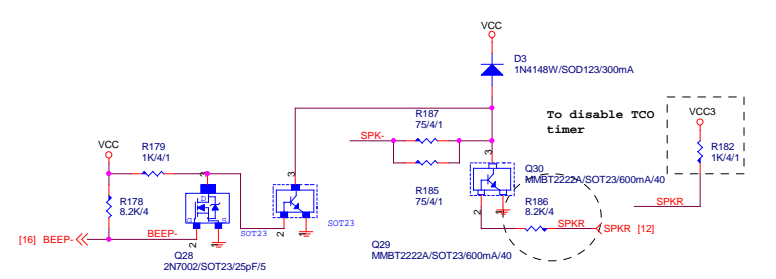
-USBOC\_F



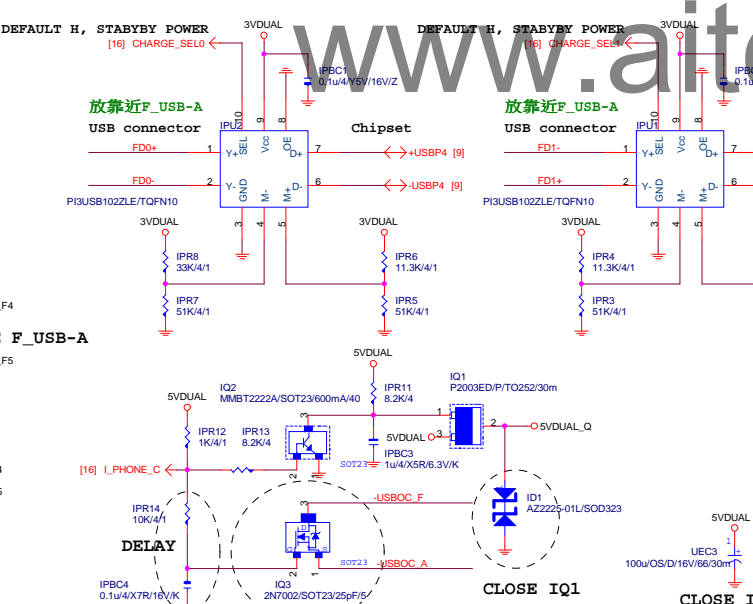
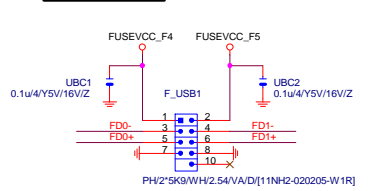
F\_USB30 ESD PROTECT



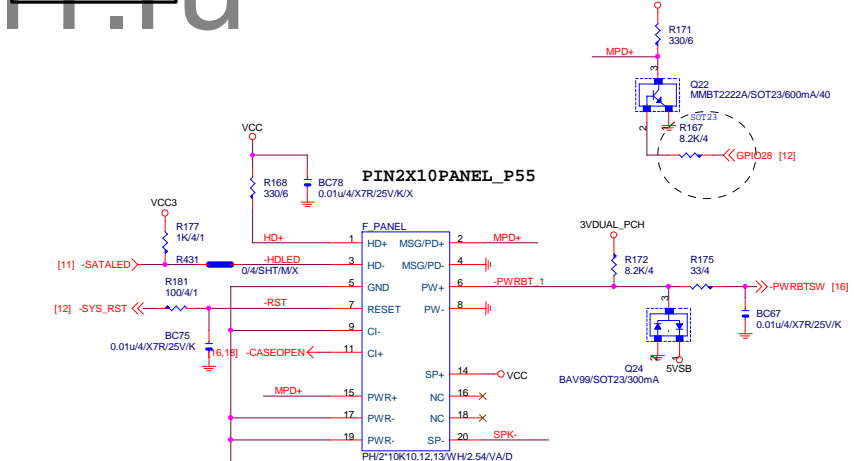
SPKR



FRONT USB1



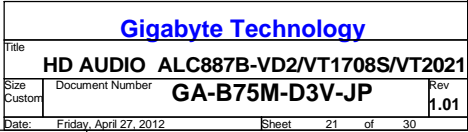
INTEL FRONT PANEL



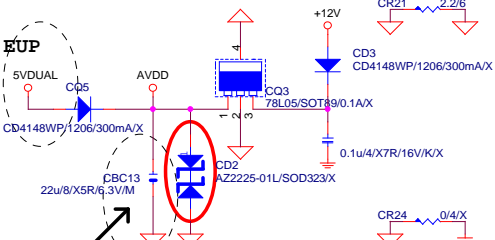
Gigabyte Technology			
Title			
FP,F_USB,USB PWR,SPKR,SATA LED			
Size	Document Number	Rev	
Custort	GA-B75M-D3V-JP	1.01	
Date:	Friday, April 27, 2012	Sheet	20 of 30

CR34: 20K/4/1% @Realtek cdec  
CR34: 5.1K/4/1% @VIA cdec  
CBC39 100P @VIA codec

CR34 20K/4/1%  
CBC42 100pF/4/NPO/50V/J/X

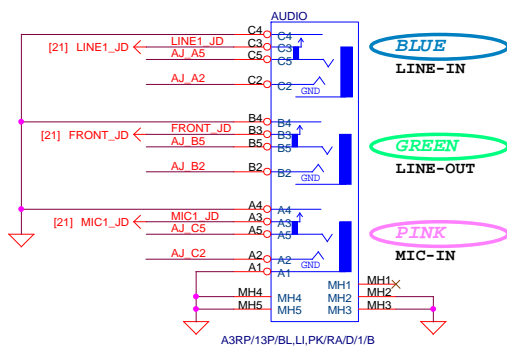


# CODEC POWER/EMI PAD

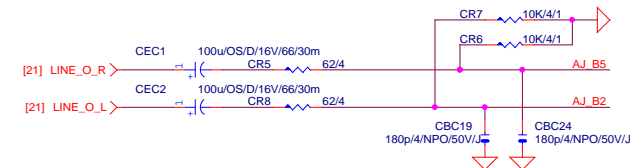


上ALC892時,此顆電容要保留  
ADD CD2 For ESD PROTECT DIODE

# SPDIF\_OUT

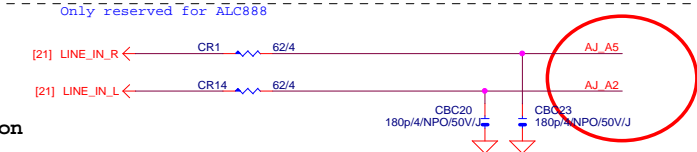


# LINE-OUT

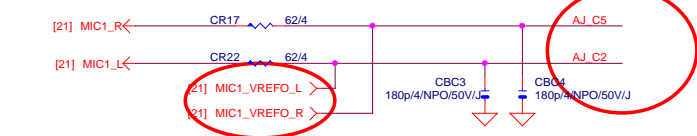


# LINE-IN

Verify MIC function  
in LINE-in

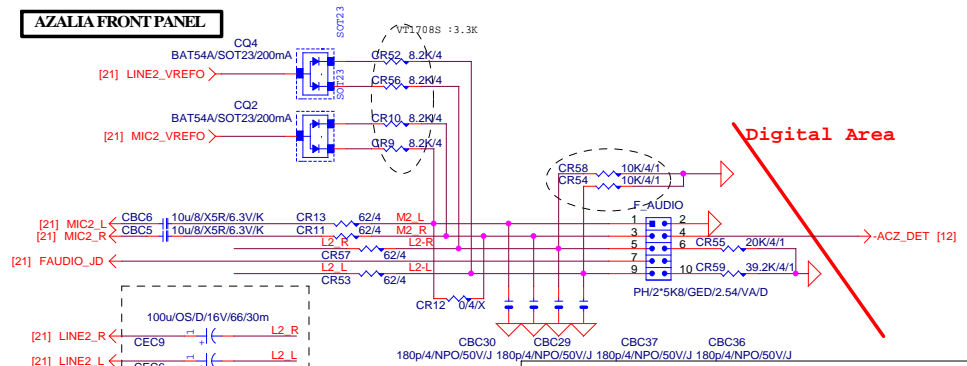


# MIC-IN



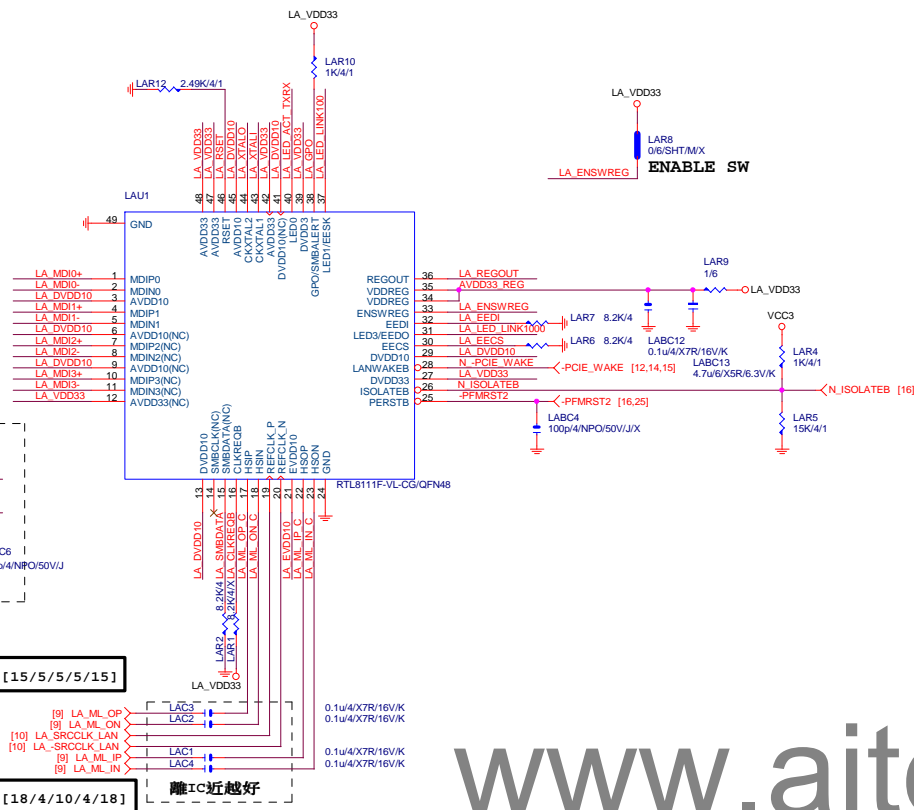
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# AZALIA FRONT PANEL

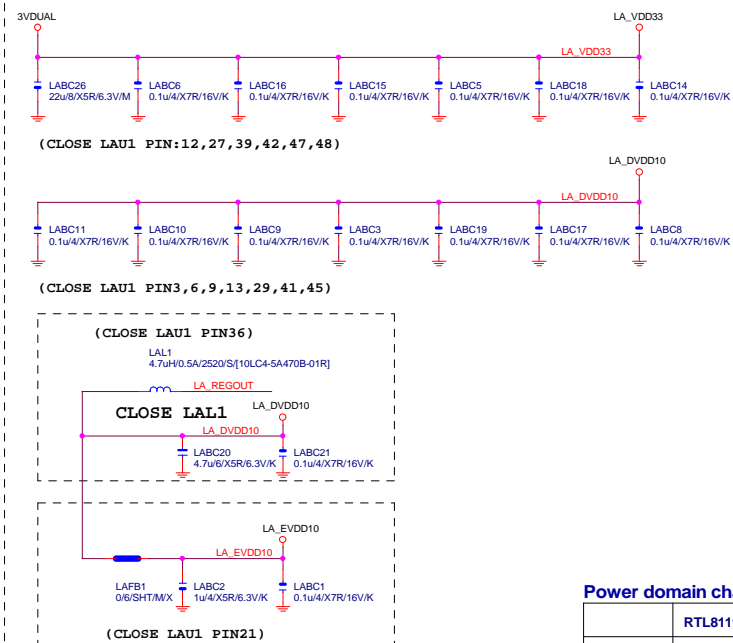


Gigabyte Technology			
Title			
AUDIO JACK			
Size	Document Number	GA-B75M-D3V-JP	
Custom			Rev 1.01
Date:	Friday, April 27, 2012	Sheet	22 of 30

## LAN:RTL8111E/F/VB/VL



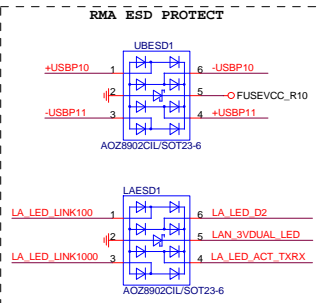
## LAN POWER



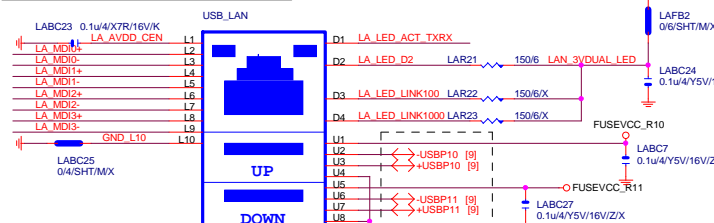
### Power domain chart

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

## USB\_LAN CONNECTOR

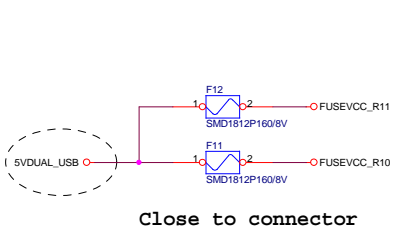


LA\_MDI-->100歐姆:[20/4/8/4/20]



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

## USB X3 POWER

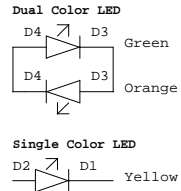


## EMI SHORT PAD

PS:視EMI需求



注意:LAN LED PROTECT:(CO-LAYOUT)  
1.ESD(6PIN):AOZ8902CIL/SOT23-6(DEFAULT)  
2.SURGE(5PIN):AZ2025-04S/SOT23-5L



料號	規格	廠商
11NR6-702009-0ER 1G LAN (12core)		UDE
11NR6-702009-91R 1G LAN(8 core)		FOXCONN
11NR6-702009-92R 1G LAN(8 core)		UDE
11NR6-702009-11R 1G LAN(12core/RED)		UDE
11NR6-702009-12R 1G LAN(8 core/RED)		FOXCONN

USB\_LAN BOM區分:

1. (紅色/12CORE/三倍):USB+LAN/1G/GO,Y/OS/RA/D/1/RED
2. (黑色/12CORE):USB+LAN/1G/GO,Y/OS/RA/D/1
3. (黑色/8CORE):USB+LAN/1G/GO,Y/OS/RA/D/8C

The schematic shows the power supply section. A +12V input is connected to pin 3 of the LM324 op-amp (U1A). The non-inverting input (pin 2) is connected to ground through R184 (40.2K/4%) and R183 (2K/4%). The output of U1A (pin 1) is connected to the base of Q26 (SIR428DP/N7.5m/PPAKSO-8(1)) through R169 (100/4%). The emitter of Q26 is connected to ground through R170 (8.2K/4%). The collector of Q26 is connected to VCC3 (5V) through R170. The output of the regulator is taken from the collector of Q26, labeled as VCC1\_8\_PCH. A 1.5A maximum current is indicated. The output filter capacitor EC6 (560µF/D/6.3V/68/m) is connected between the output and ground.

The schematic diagram illustrates the DDR VTT REF circuit. It features a 1.5V supply connected to a network of resistors and capacitors. The network includes a 1.5V supply connected to a network of resistors (R324, R341) and capacitors (BC140, C100, BC154). The network is connected to the VREF1 pin of the U6 chip. The U6 chip also has pins for VIN, GND, VREF2, VCNTL, VOUT, and BOOT\_SEL. The circuit is powered by a 1.5V supply and includes a 1.5V regulator (R374) and a 1.5V capacitor (BC154).

[illegible][illegible][illegible]

GPIO	5VDUAL_USB
High	Power ON
Low	Power OFF

5VDUAL

R683  
8.2K/4

Q87  
P2003ED/P/TO252/30m

5VDUAL\_USB

BC218  
1u4/XSR/6.3V/K/X

EC16  
100uOS/D/16V/86/30m

CLOSE Q87

Q88  
A/SOT23/600mA/40

Q89  
NM45T2222A/SOT23/600mA/40

R686  
8.2K/4

VCC

Force turn on Q87

**GA-B75M-D3V-JP**

**Discrete Power**

**5VSB**

**VCC3**

**PWR\_EN**

**VTT\_PWRGD**

**CPUPWRCK**

**Q43** MMBT2222A/SOT23/600mA/40

**Q44** MMBT2222A/SOT23/600mA/40

**Q46** 2N7002/SOT23/25pF/5

**Q48** 2N7002/SOT23/25pF/5

**Q47** 2N7002/SOT23/25pF/5

**R354** 8.2K/4

**R361** 8.2K/4

**R362** 8.2K/4

**R363** 22K/4

**R364** 8.2K/4

**BC143** 0.1u4/X7R/16V/K

**C167** 1n4/X7R/50V/K/X

**SLOT23**

**SLP\_S3**

**VTT\_PWRGD [26,28]**

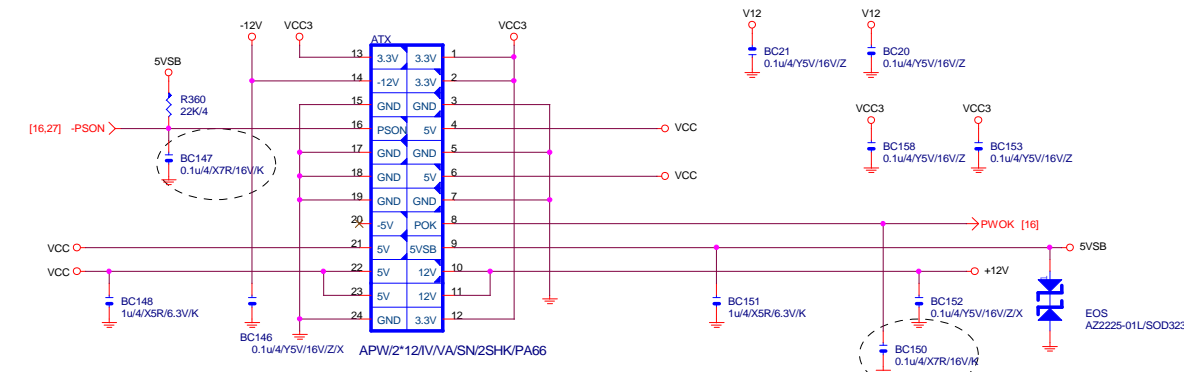
**CPUPWRCK [4,12]**

**VCC18\_EN**

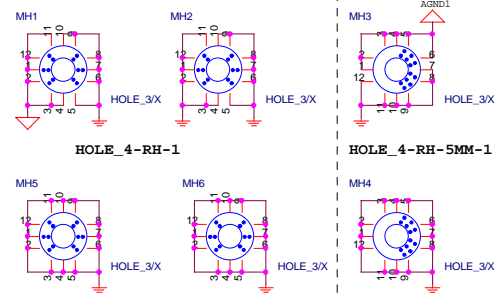
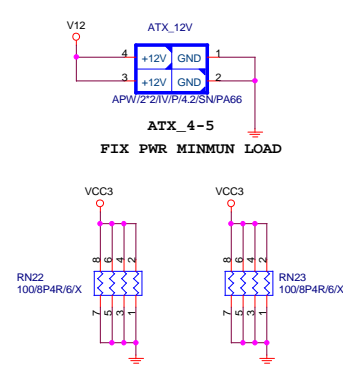
**GA-B75M-D3V-JP**



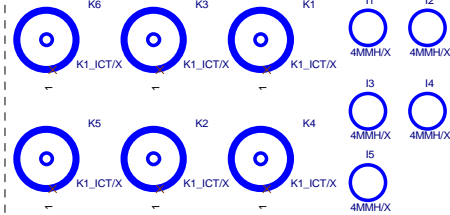
ATXX24 POWER CONNECTOR



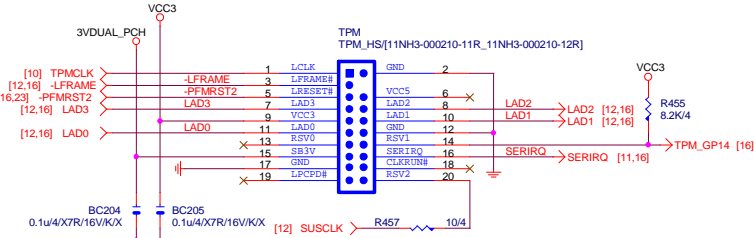
ATXX4 POWER CONNECTOR



To prevent the 5VSR  
under loading when  
boot

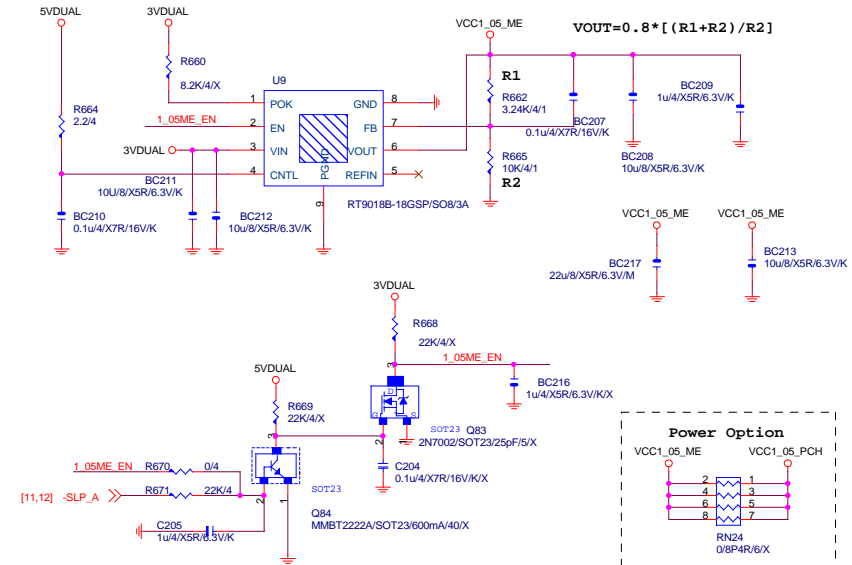


## TPM

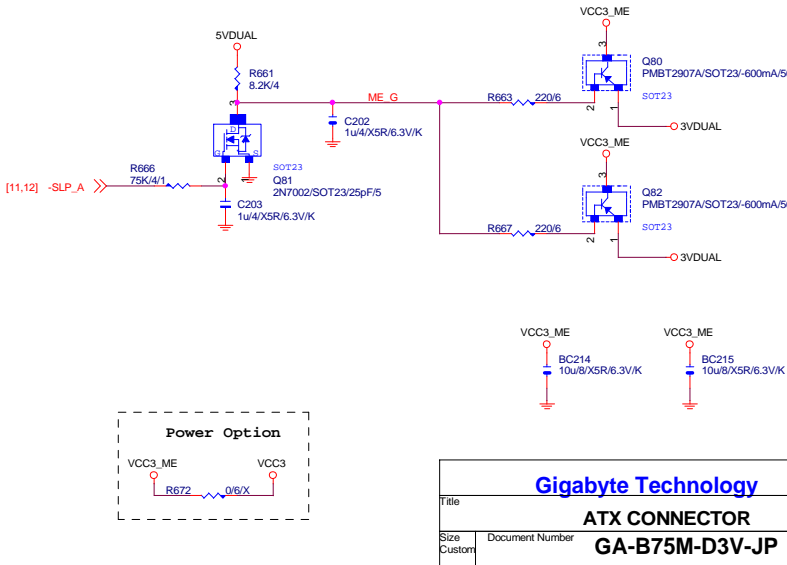


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## VCC1\_05\_ME



## VCC3\_ME



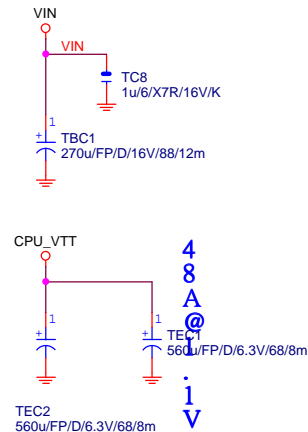
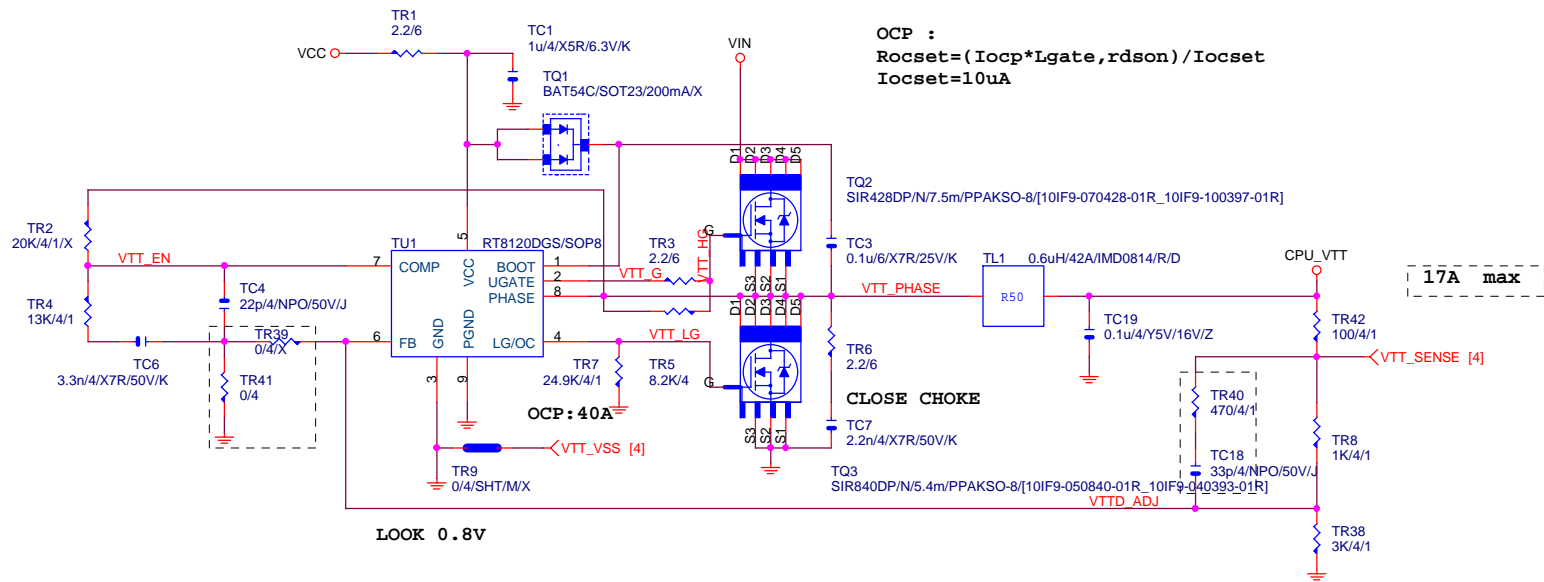
## Gigabyte Technology

## ATX CONNECTOR

GA-B75M-D3V-JP

Rev	
1.01	

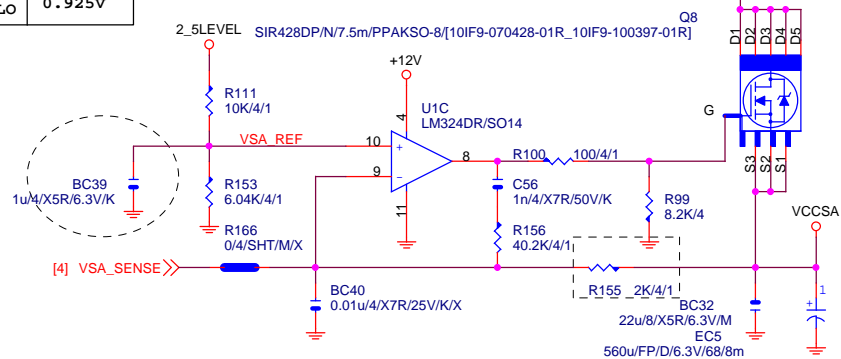
# CPU\_VTT



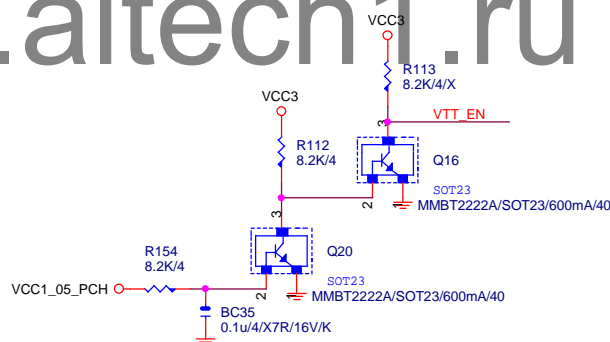
# VCCSA

PDG 0.8

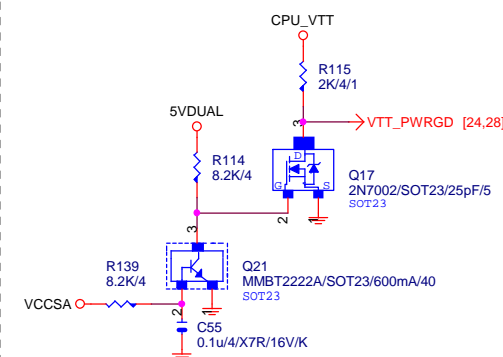
	VSA_SEL
HI	0.85V
LO	0.925V



# CPU\_VTT PWR SEQ



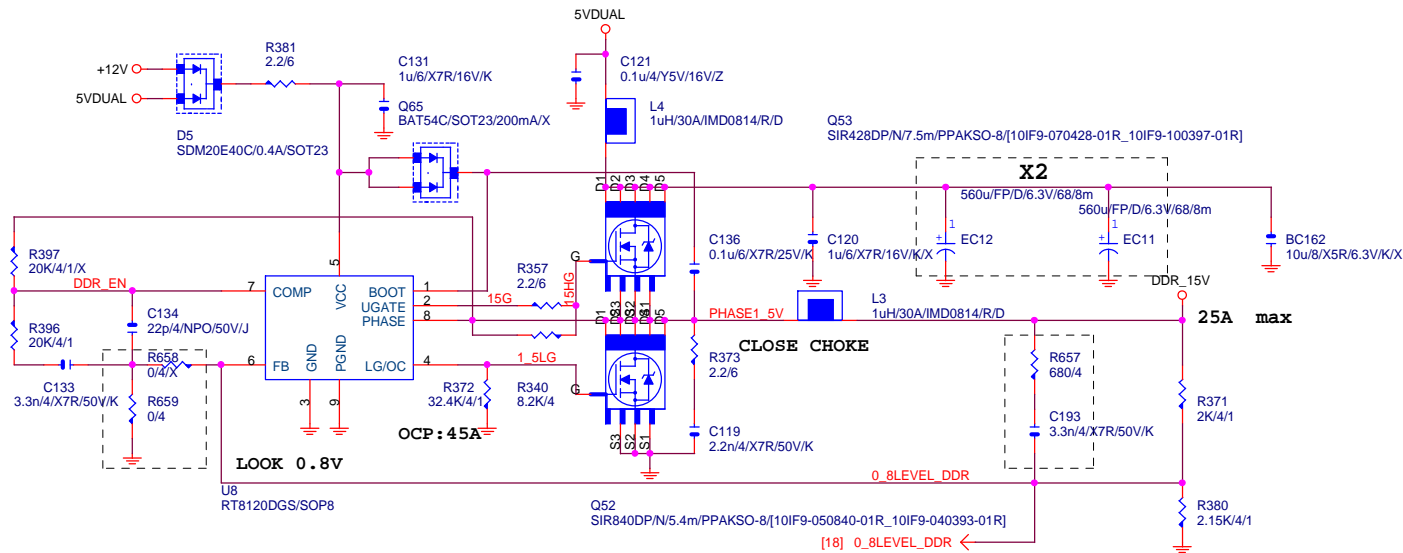
# VTT\_PWRGD



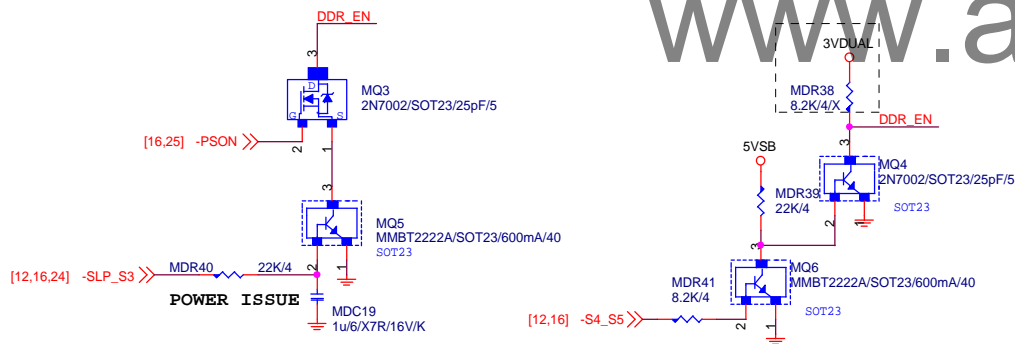
**GIGABYTE**

Title			
CPU_VTT PWM_RT8120			
Size	Document Number	Rev	
Custm	GA-B75M-D3V-JP	1.01	
Date:	Friday, April 27, 2012	Sheet	26 of 30

# DDR1.5V



# PWR\_SEQ



VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1  
IRMS=11.45A  
560u/FP/D/6.3V/68/8m RIPLE CURRENT=4.7A  
Coefficient=1.7(85°C), 1(105°C)

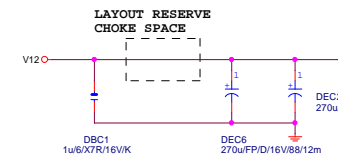
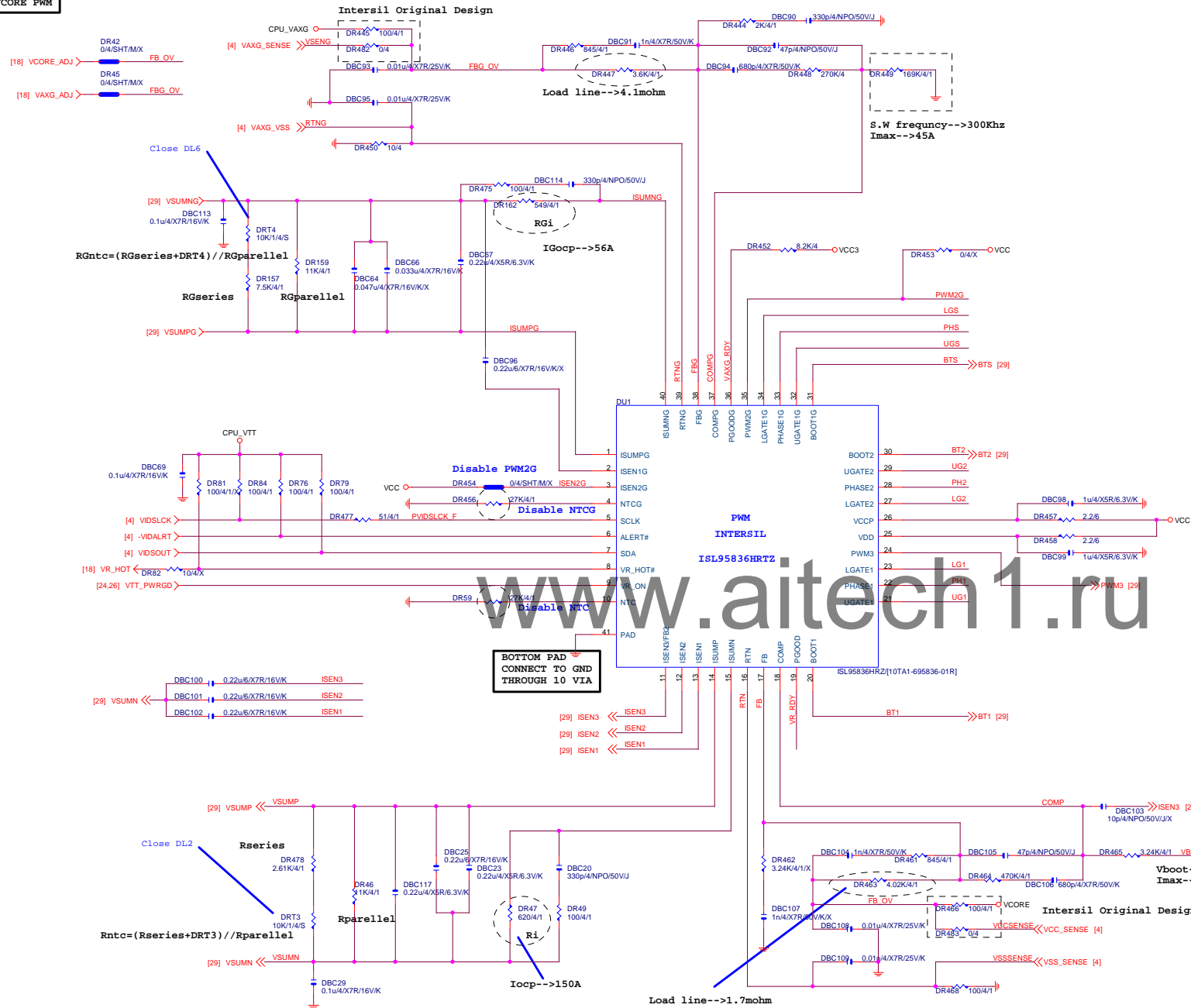
VIN Ripple current=4.7X1.7=7.99A(85°C)  
-->故固態電容須2X7.99=15.98>11.45A

$Rocset = (I_{ocp} * L_{gate, rdson}) / I_{ocset}$   
 $Rocset = (45A * 6.7mOhm) / 10uA = 30K$   
 $I_{ocset} = 10uA$

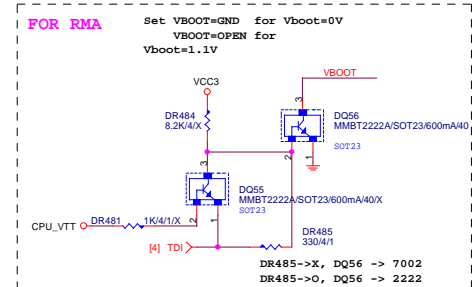
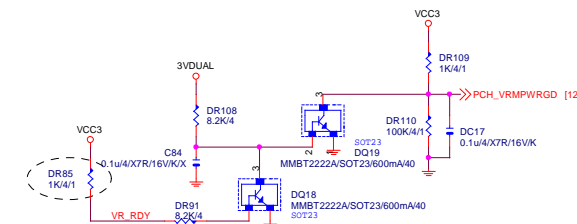
**Gigabyte Technology**

Title			
DDR POWER			
Size Custom	Document Number	GA-B75M-D3V-JP	
Date:	Friday, April 27, 2012	Sheet	27 of 30
		1	

Rev 1.01

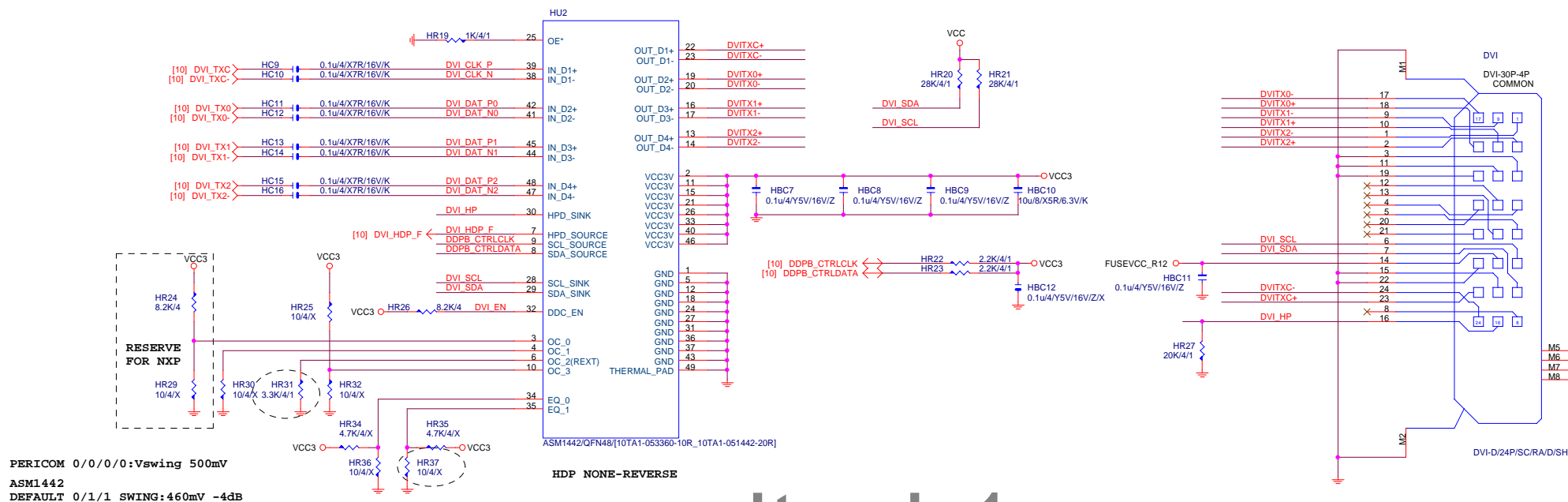


- 
- Diagram illustrating the mapping of input genes to output genes:
- UG1 → UG1 [29]
  - PH1 → PH1 [29]
  - LG1 → LG1 [29]
  - ISEN1 → ISEN1 [29]
  - UG2 → UG2 [29]
  - PH2 → PH2 [29]
  - LG2 → LG2 [29]
  - ISEN2 → ISEN2 [29]
  - UGS → UGS [29]
  - PHS → PHS [29]
  - LGS → LGS [29]
  - PWM3 → PWM3 [29]
  - ISEN3 → ISEN3 [29]





## DVI LEVEL SHIFT



```
PI3DV411 0 0:3dB
ASM1442 1 1:3dB
```

0:3dB  
1:3dB