

GA-F2A78M-D3H

PAGE	TITLE	Revision : 3.0
01	COVER SHEET	
02	BOM & PCB MODIFY HISTORY	
03	BLOCK DIAGRAM	
04	APU DDRIII MEMORY	
05	APU CONTROL	
06	APU GFX, GPP, UMI I/F	
07	APU POWER & GND	
08	DDRIII CHANNEL A	
09	DDRIII CHANNEL B	
10	HUDSON D4 UMI/PCIE/PCI/LPC/CPU	
11	HUDSON D4 ACPI/USB/GPIO/AUDIO	
12	HUDSON D4 SATA/SPI/RGB	
13	HUDSON D4 POWER & GND	
14	PCI EXPRESS x16 ,x1	
15	PCI EXPRESS x4, VGA CONNECTOR	
16	PCI SLOT	
17	ITE 8620 , KB/MS. HWMO,TPM	
18	F_USB, F_USB30 ,R_USB30	
19	FAN/COM/LPT/MOSFET HOT	
20	ALC887-VD2 CODEC	
21	AUDIO JACK	
22	ATX, FRONT PANEL	
23	POWER SEQUENCE	
24	VCORE (PWM ISL6377)	
25	VCORE MOS	

[illegible]

Model Name:GA-F2A78M-D3H

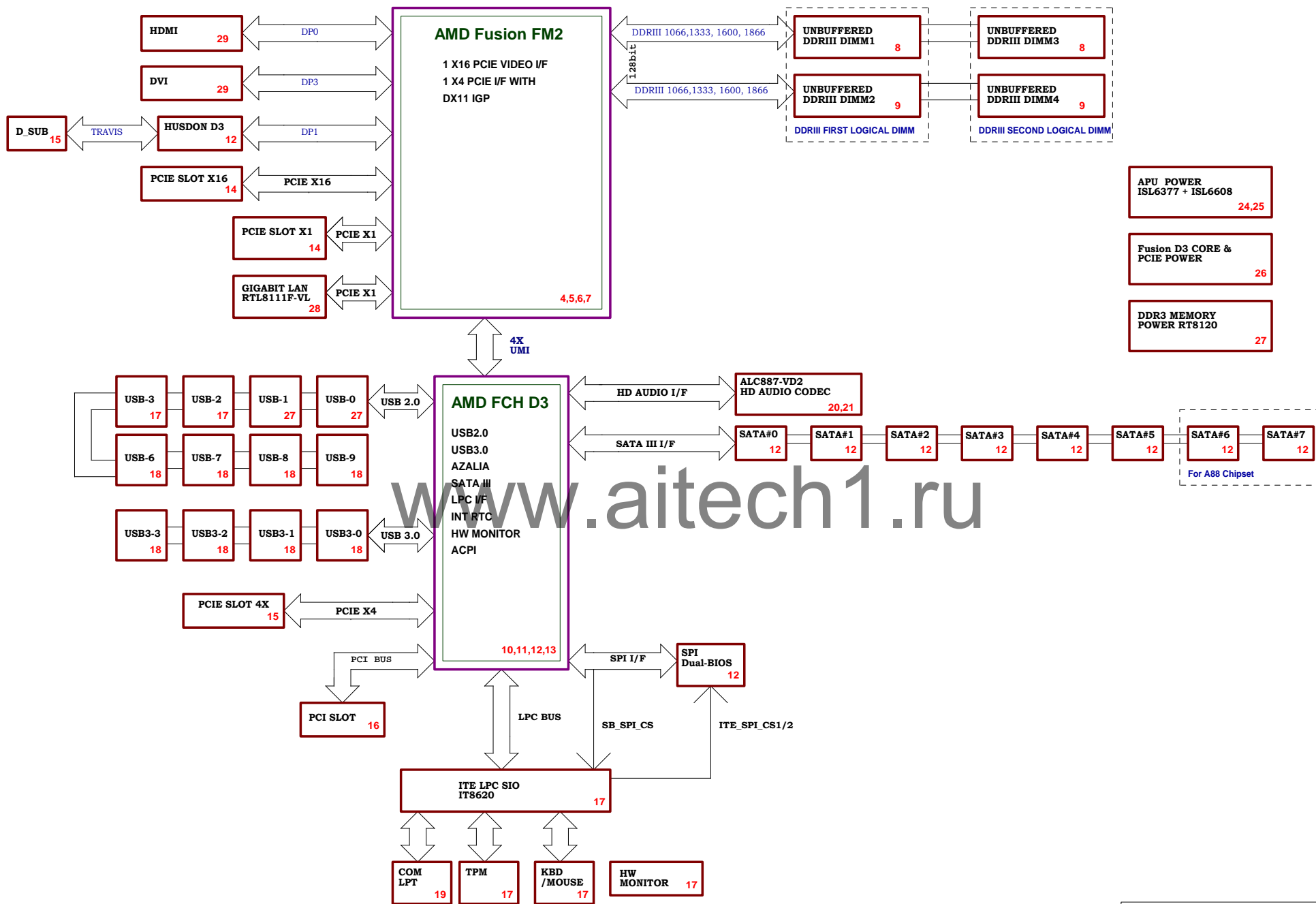
Component value change history

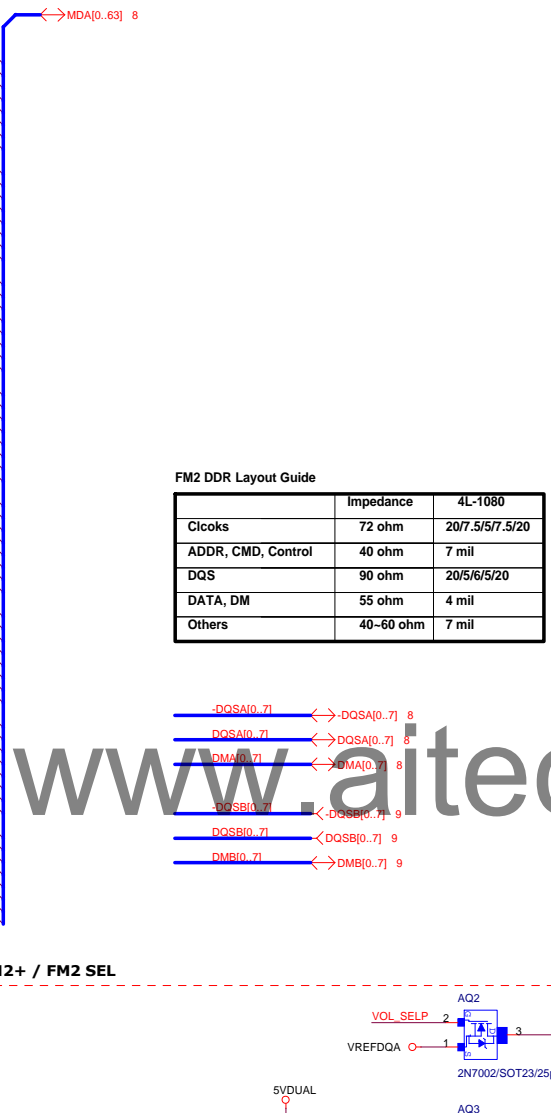
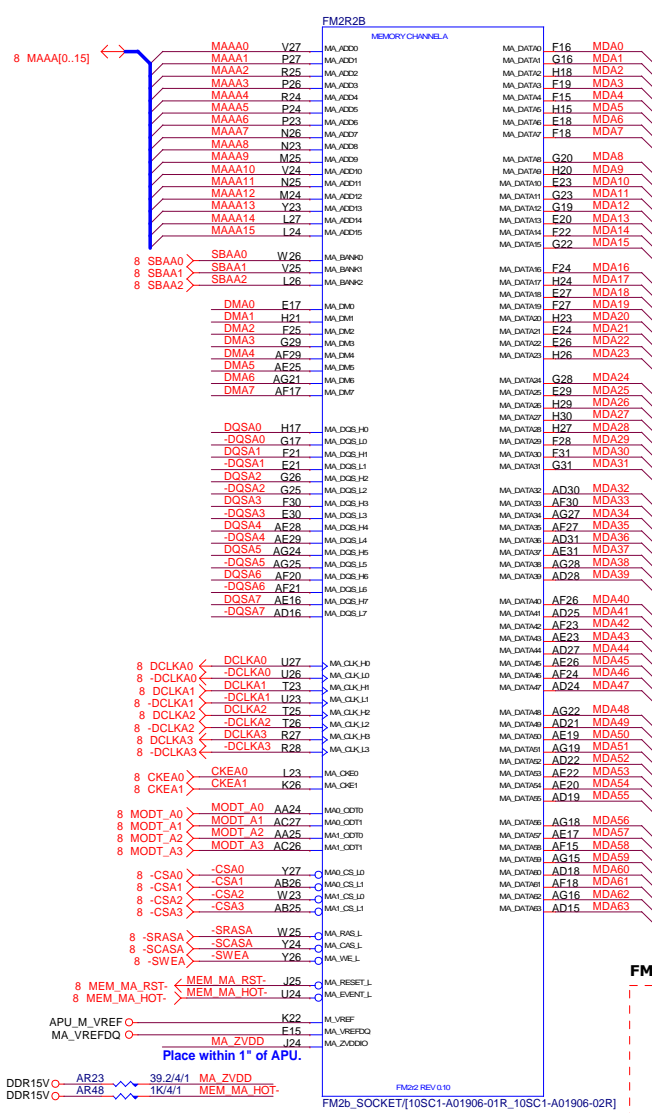
Version: 3.0
P-Code: U13126-0

Date	Change Item	Reason
2012.05.25	0.1 New BOM Release. PCB: 0.1	Modify from GA-A75M-UD2H Rev2.0
2012.07.04	1.0A BOM Release. PCB: 1.0	PM change spec to 4+2 phase ,ISL6377
2012.08.10	1.0B BOM Release. PCB: 1.01	Colay HDMI_SPDIF connector for 清庫存 ,Mask SATA3_6/7 connector
2012.08.23	1.0C BOM Release. PCB: 1.01	Change U1 A75 Rev.A13 => Rev.A14 ,轉 P-BOM
2012.09.12	1.0A BOM Release. PCB: 1.0	Change A85X chipset ,support 8 SATA port
2012.09.19	1.0B BOM Release. PCB: 1.01	Mask OPTICAL connector
2012.09.21	1.0G BOM Release. PCB: 1.01	Update BIOS size 32Mb to 64Mb for RAID5 raidrom use
2012.10.25	1.1A P-BOM Release. PCB: 1.1	HDMI_SPDIF Connector 庫存清完 ,改回單獨 HDMI & OPTICAL connector
2012.12.18	1.1B MP BOM Release. PCB:1.1	USB_LAN (RU9):11NR6-702009-96R ,使用RU9 USB_LAN可省略LAESD4保護LED
2013.04.11	1.2A E- BOM Release. PCB:1.2	Update FM2CPU footprint ,改咖啡黑PCB ,slot/connector配色
2013.04.29	1.2B P- BOM Release. PCB:1.2	Fixed 串接兩層 PS/2 KVM switch issue ,R51,R52 改 8.2k
2013.06.26	3.0A E-BOM Release. PCB:3.0	Modify Colay FM2+ ,IT8620 ,FAN NCT3941S-A
2013.07.03	3.0A E-BOM Release. PCB:3.0	Modify from GA-F2A88XM-D3H Rev3.0 Change A75 chipset ,Mask SATA3_6/7 connector
2013.09.24	3.0B P-BOM Release. PCB:3.01	CPU_FAN change to White color ,PCIEX16 cap change to 0.22uF , modify VDDA25 分壓阻值 ,modify DDR15V 分壓阻值
2013.11.18	3.0A E-BOM Release. PCB:3.0	Modify from GA-F2A75M-D3H Rev3.01 Change U1 A78 chipset ,CU1 887-VD2 加強版
2013.11.29	3.0A P-BOM Release. PCB:3.0	轉P-BOM ,Add PCI slot second-source

Circuit or PCB layout change for next version

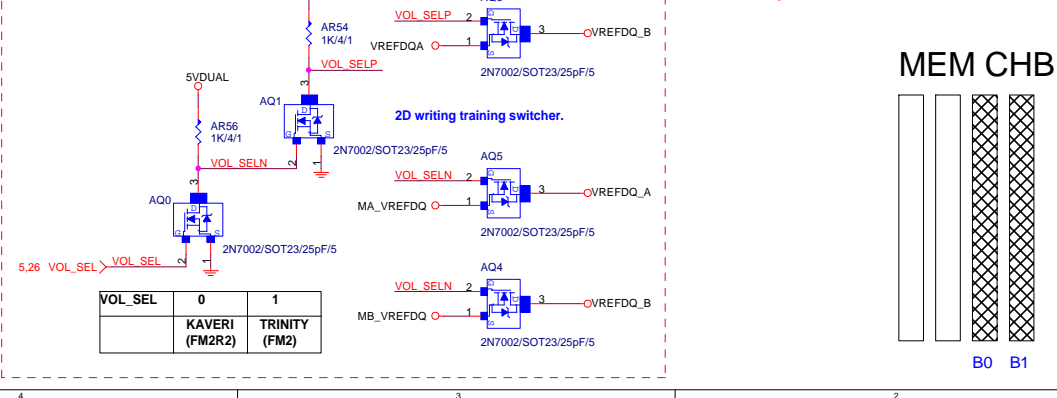
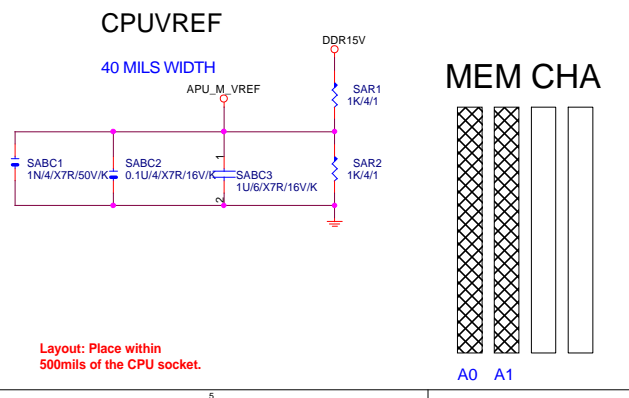
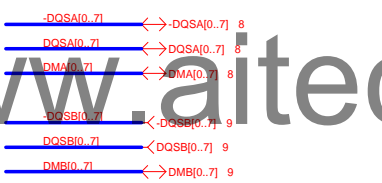
Date	Change Item	Reason
2012.05.24	Rev 0.1 Gerber-out	Modify from GA-A75M-UD2H Rev2.0
2012.07.03	Rev 1.0 Gerber-out	PM change spec to 4+2 phase ,ISL6377
2012.08.09	Rev 1.01 Gerber-out	Colay HDMI_SPDIF connector for 清庫存 ,Mask SATA3_6/7 connector
2012.09.11	Rev 1.0 Gerber-out	Change A85X chipset ,support 8 SATA port
2012.09.18	Rev 1.01 Gerber-out	Mask OPTICAL connector
2012.10.25	Rev 1.1 Gerber-out	HDMI_SPDIF Connector 庫存清完 ,改回單獨 HDMI & OPTICAL connector
2013.04.10	Rev 1.2 Gerber-out	Update FM2CPU footprint ,改咖啡黑PCB ,slot/connector配色 , DDR layout 貼 F2A85X-UP4-R102 走線
2013.06.25	Rev 3.0 Gerber-out	Modify Colay FM2+ ,IT8620 ,FAN NCT3941S-A
2013.07.02	Rev 3.0 Gerber-out	Modify from GA-F2A88XM-D3H Rev3.0 Change A75 chipset ,Mask SATA3_6/7 connector
2013.09.23	Rev 3.01 Gerber-out	Change SIO GP25 ,VDDSPD colay fuse ,PCB 文字面修改
2013.11.15	Rev 3.0 Gerber-out	Modify from GA-F2A75M-D3H Rev3.01 Only Modify PCB silkscreen





FM2 DDR Layout Guide

	Impedance	4L-1080
Clocks	72 ohm	207.5/5/7.5/20
ADDR, CMD, Control	40 ohm	7 mil
DQS	90 ohm	20/5/6/5/20
DATA, DM	55 ohm	4 mil
Others	40-60 ohm	7 mil



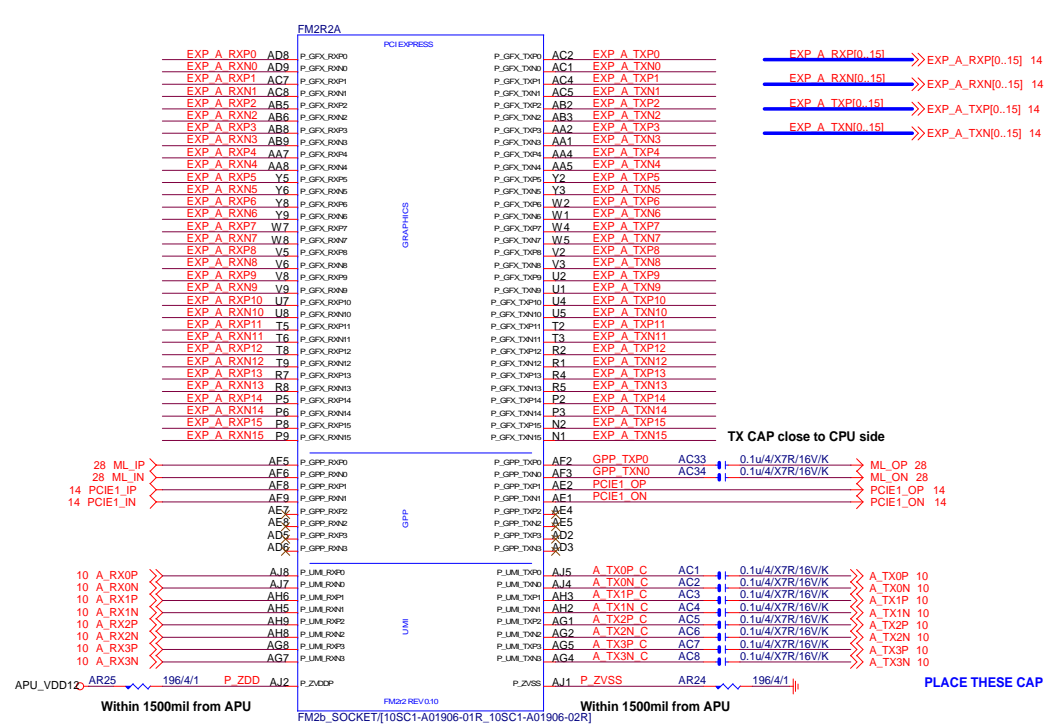
GIGABYTE

Title: **APU DDRIII MEMORY**

Size: Custom Document Number: **GA-F2A78M-D3H** Rev: **3.0**

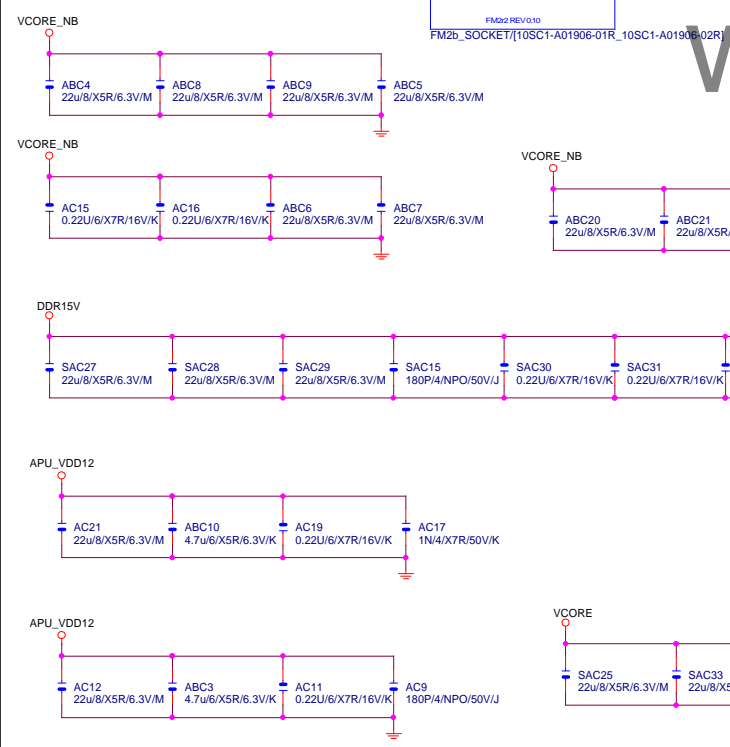
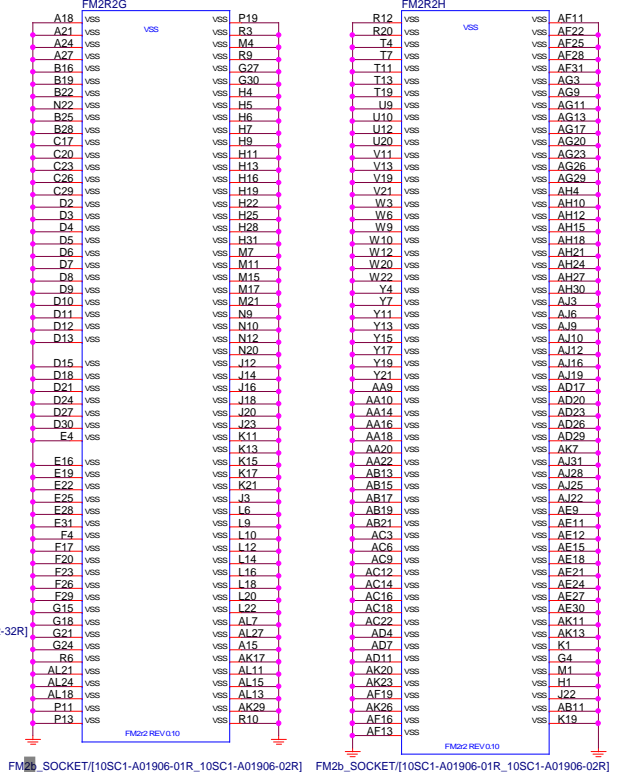
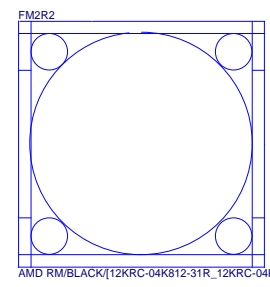
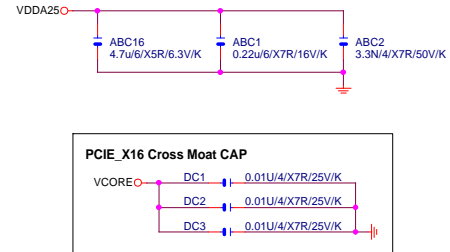
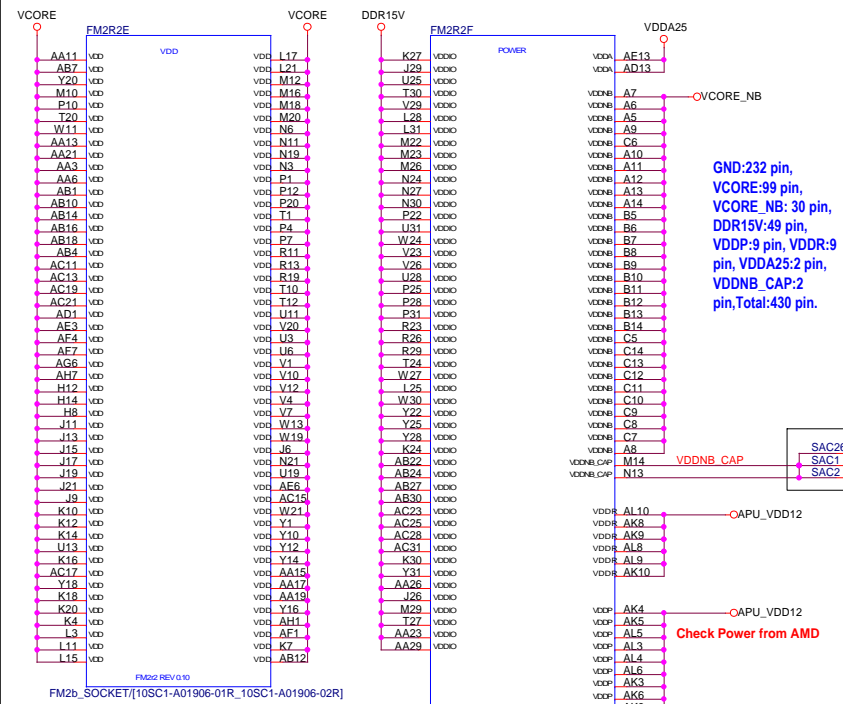
Date: Friday, November 29, 2013 Sheet: 4 of 29



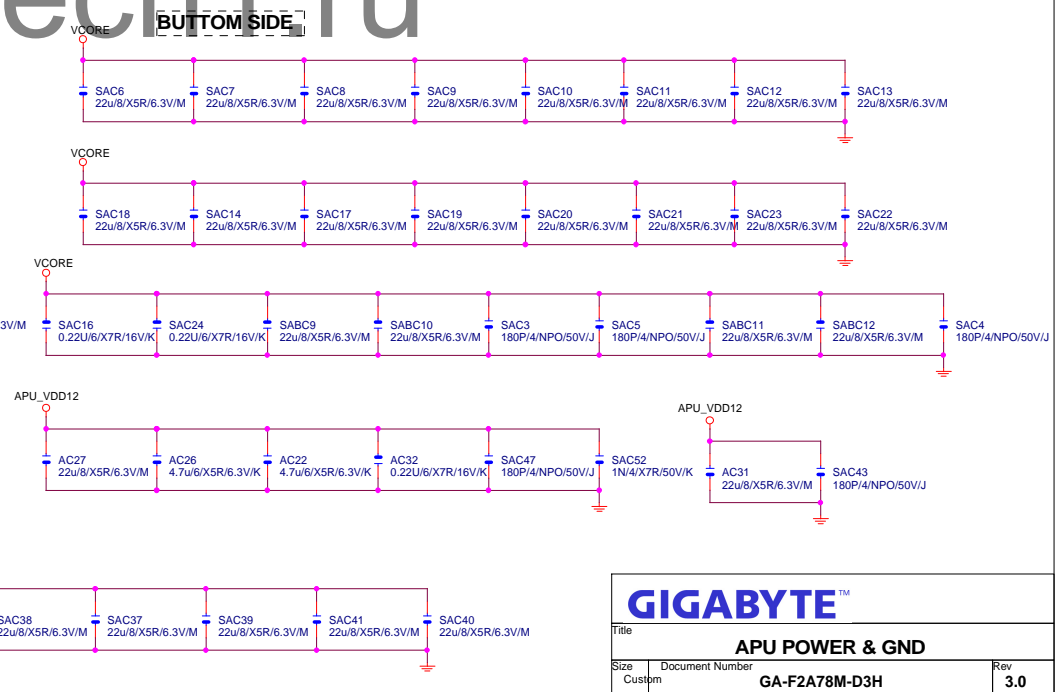


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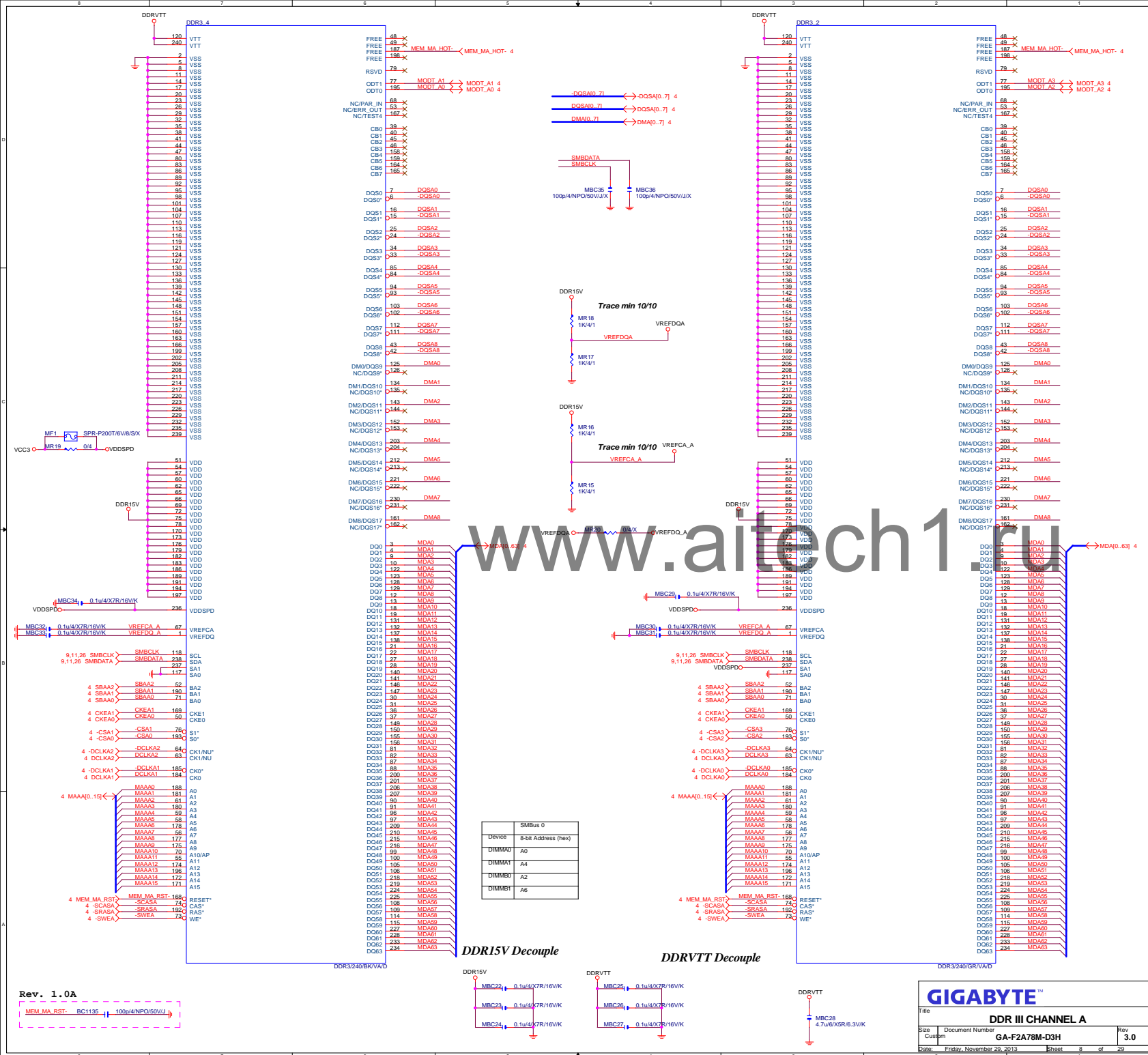
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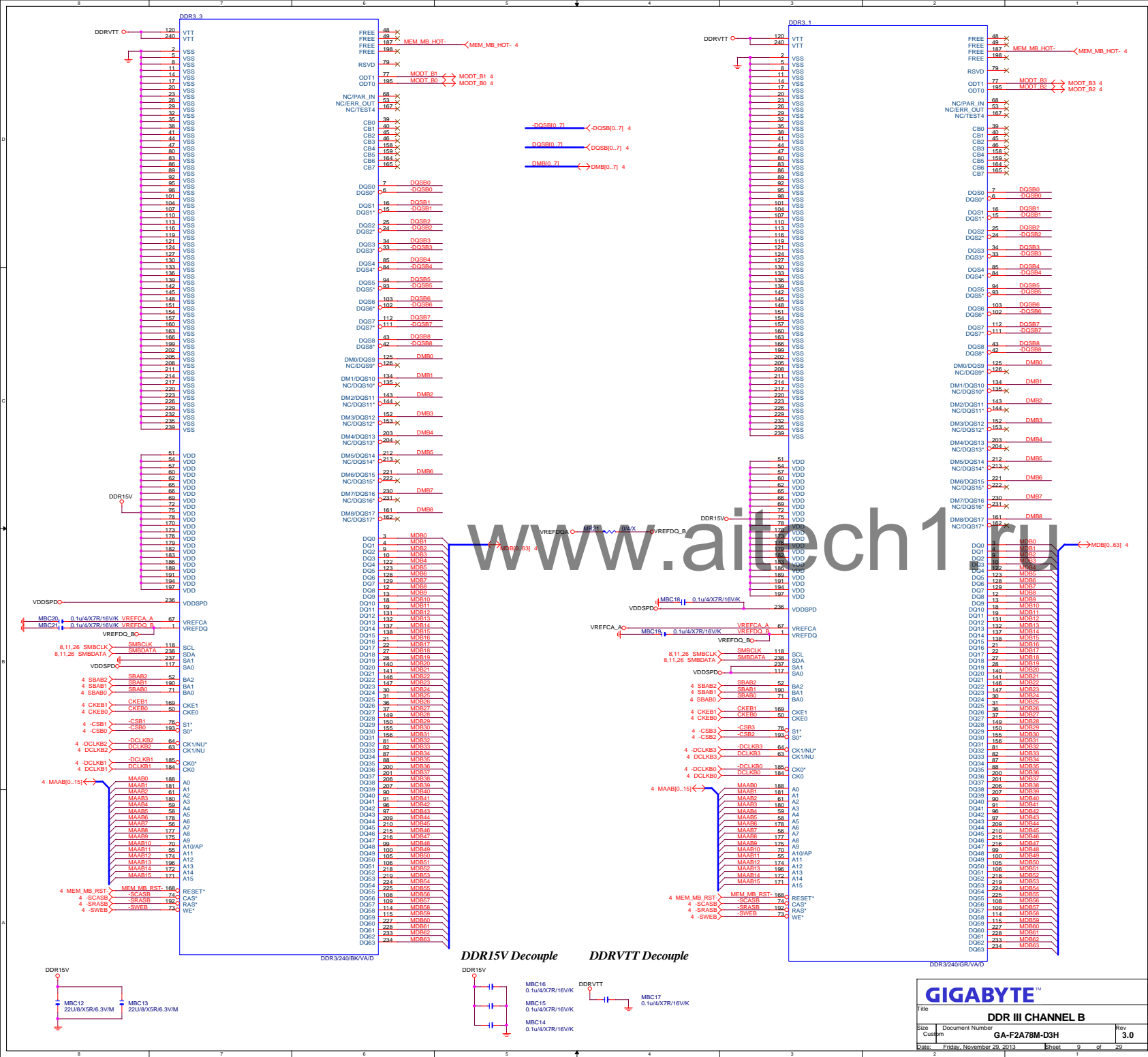


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Title			
APU POWER & GND			
Size	Document Number	Rev	
Custom	GA-F2A78M-D3H	3.0	
Date:	Friday, November 29, 2013	Sheet	7 of 29







SHW/D0.64*5.08*6.74

T24 APB1_C2MP
 T23 APB1_C2MP
 J20 ALT_C2MP_C2MP
 K28 ALT_C2MP_C2MP
 H27 GPP_C2MP
 H28 GPP_C2MP
 REQ2CLK REQ2C2MP04 AF15
 REQ2CLK REQ2C2MP02 AM17
 GNT1CLK GNT1C2MP04 AD16 -GNT0
 GNT2CLK GNT2C2MP04 AD13
 GNT3CLK GNT3C2MP04 AD21
 CLK1CLK CLK1C2MP04 AK17
 CLK2CLK CLK2C2MP04 AK19 -PCLCLKRUN
 L202 L202 AH9 -PLOCK
 → GNT0 16
 → PLOCK 16

Title			
HUDSON D4 PCIE/PCI/CPU/LPC			
Size	Document Number	Rev	
Custom	GA-F2A78M-D3H	3.0	
Date:	Friday, November 29, 2013	Sheet	10 of 29

SATA 6-7 for Hudson D4.

PLACE SATA_CAL RES VERY CLOSE TO BALL OF U1

VCC_SB 1K/4/1 PR75 931/4/1 SATA_CALRP AF28 SATA_CALRN AF27

22 -SATA_LED -SATA_LED AD22 SATA_ACT#GPI07

5 SB_ALERT- 3VDUAL_SB PR85 8.2K/4

BOLTON-D3[10HB1-060BT3-10R]

RGMI NOT SUPPORT. DG:1.20

10" Max for FCH VGA.

SATA3_6

SATA2/7/BK/H/OP/VA/D/1/B/X

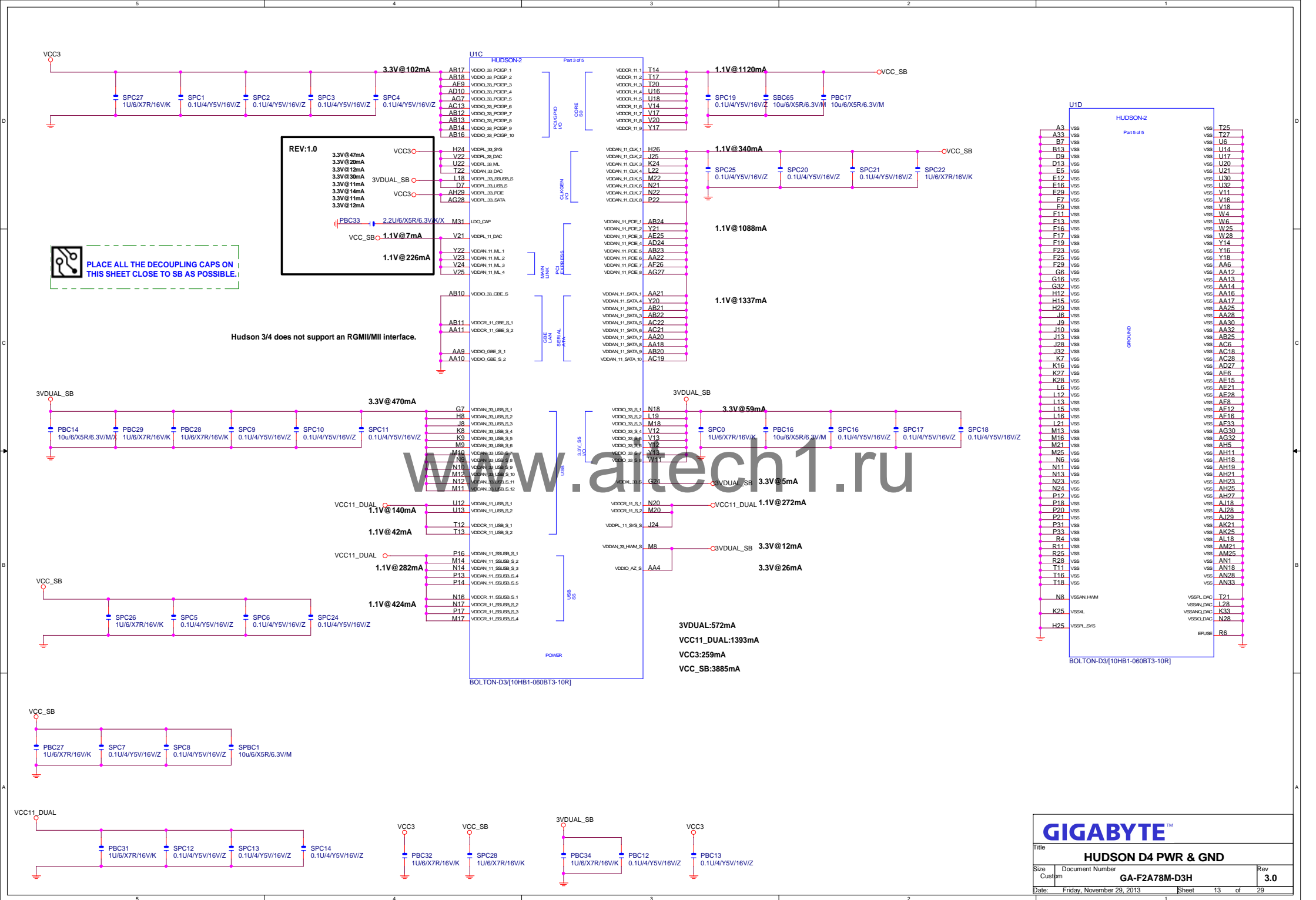
SATA3_7

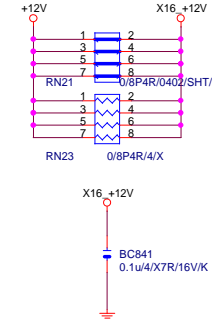
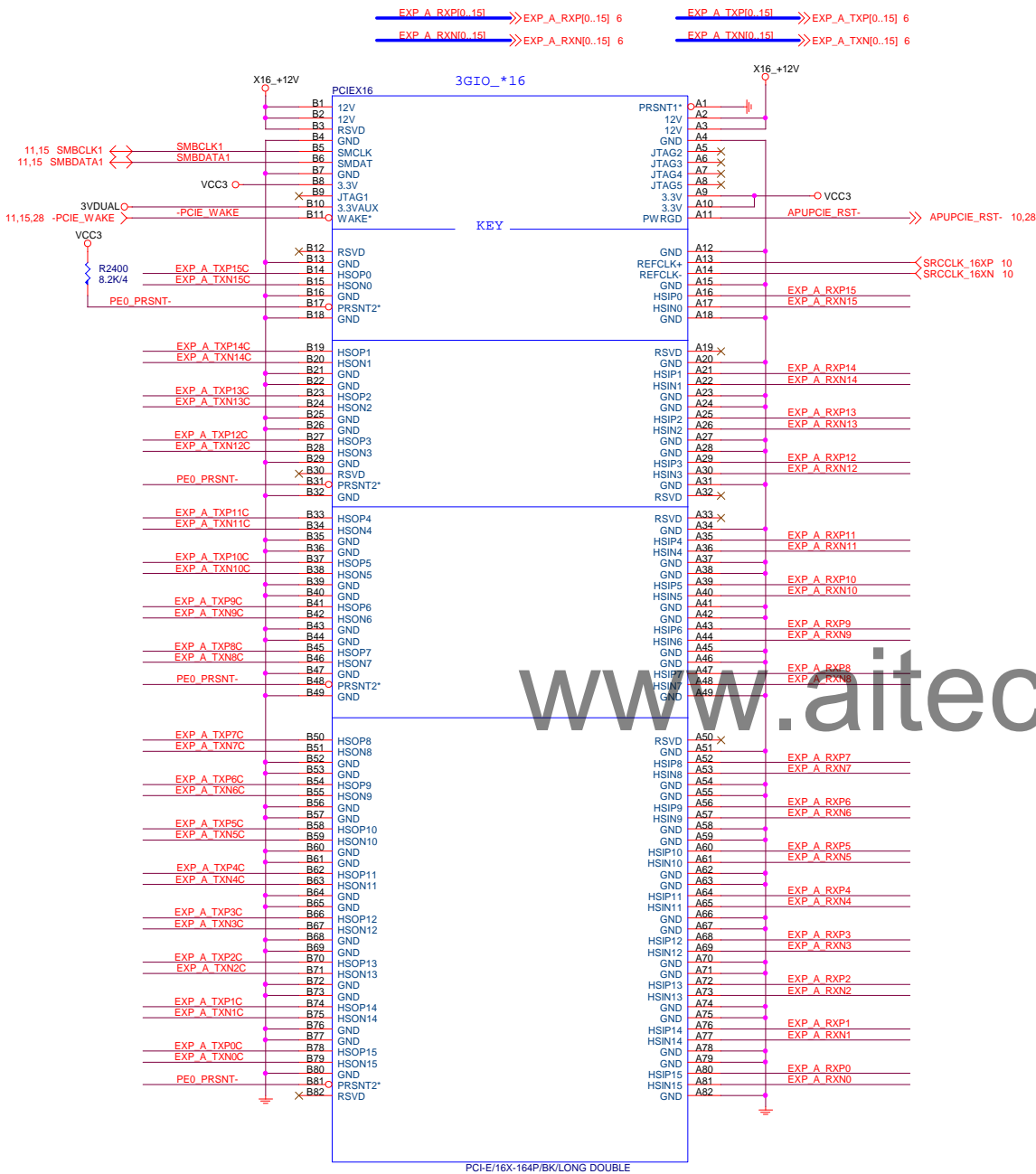
SATA2/7/BK/H/OP/VA/D/1/B/X

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HUDSON D4 SATA/VGA

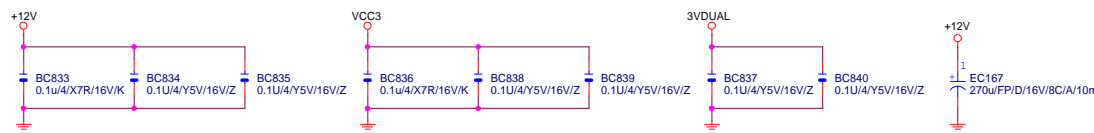
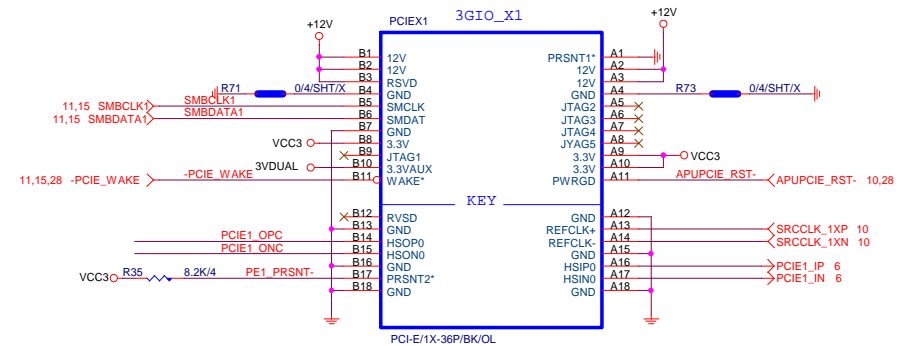
Size Document Number Rev
Custm GA-F2A78M-D3H 3.0
Date: Friday, November 29, 2013 Sheet 12 of 29

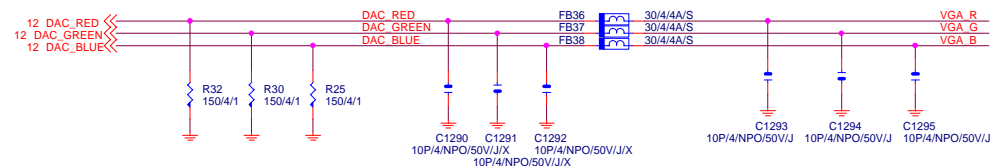




EXP A TXP0	C1644	0.22u4/X5R/6.3V/K/EXP A TXP0C
EXP A TXN0	C1645	0.22u4/X5R/6.3V/K/EXP A TXN0C
EXP A TXP1	C1646	0.22u4/X5R/6.3V/K/EXP A TXP1C
EXP A TXN1	C1647	0.22u4/X5R/6.3V/K/EXP A TXN1C
EXP A TXP2	C1648	0.22u4/X5R/6.3V/K/EXP A TXP2C
EXP A TXN2	C1649	0.22u4/X5R/6.3V/K/EXP A TXN2C
EXP A TXP3	C1650	0.22u4/X5R/6.3V/K/EXP A TXP3C
EXP A TXN3	C1651	0.22u4/X5R/6.3V/K/EXP A TXN3C
EXP A TXP4	C1652	0.22u4/X5R/6.3V/K/EXP A TXP4C
EXP A TXN4	C1653	0.22u4/X5R/6.3V/K/EXP A TXN4C
EXP A TXP5	C1654	0.22u4/X5R/6.3V/K/EXP A TXP5C
EXP A TXN5	C1655	0.22u4/X5R/6.3V/K/EXP A TXN5C
EXP A TXP6	C1656	0.22u4/X5R/6.3V/K/EXP A TXP6C
EXP A TXN6	C1657	0.22u4/X5R/6.3V/K/EXP A TXN6C
EXP A TXP7	C1658	0.22u4/X5R/6.3V/K/EXP A TXP7C
EXP A TXN7	C1659	0.22u4/X5R/6.3V/K/EXP A TXN7C
EXP A TXP8	C1660	0.22u4/X5R/6.3V/K/EXP A TXP8C
EXP A TXN8	C1661	0.22u4/X5R/6.3V/K/EXP A TXN8C
EXP A TXP9	C1662	0.22u4/X5R/6.3V/K/EXP A TXP9C
EXP A TXN9	C1663	0.22u4/X5R/6.3V/K/EXP A TXN9C
EXP A TXP10	C1664	0.22u4/X5R/6.3V/K/EXP A TXP10C
EXP A TXN10	C1665	0.22u4/X5R/6.3V/K/EXP A TXN10C
EXP A TXP11	C1666	0.22u4/X5R/6.3V/K/EXP A TXP11C
EXP A TXN11	C1667	0.22u4/X5R/6.3V/K/EXP A TXN11C
EXP A TXP12	C1668	0.22u4/X5R/6.3V/K/EXP A TXP12C
EXP A TXN12	C1669	0.22u4/X5R/6.3V/K/EXP A TXN12C
EXP A TXP13	C1670	0.22u4/X5R/6.3V/K/EXP A TXP13C
EXP A TXN13	C1671	0.22u4/X5R/6.3V/K/EXP A TXN13C
EXP A TXP14	C1672	0.22u4/X5R/6.3V/K/EXP A TXP14C
EXP A TXN14	C1673	0.22u4/X5R/6.3V/K/EXP A TXN14C
EXP A TXP15	C1674	0.22u4/X5R/6.3V/K/EXP A TXP15C
EXP A TXN15	C1675	0.22u4/X5R/6.3V/K/EXP A TXN15C

6 PCIE1_OP >>> C13 0.1u4/X7R/16V/K PCIE1 OPC
6 PCIE1_ON >>> C14 0.1u4/X7R/16V/K PCIE1 ONC

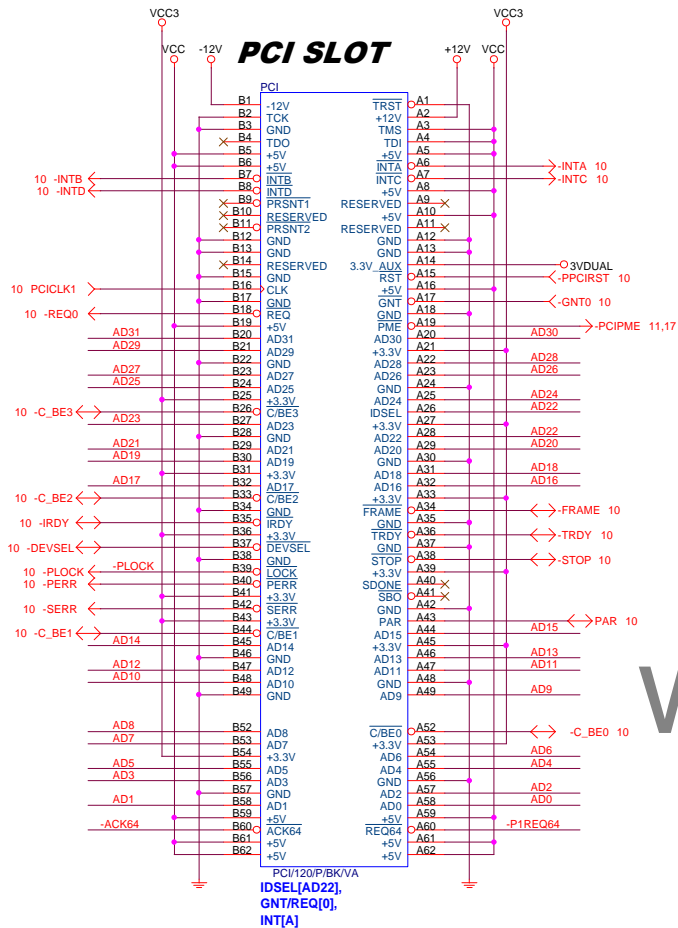




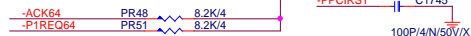
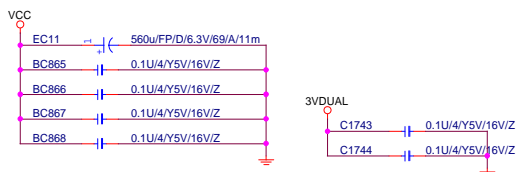
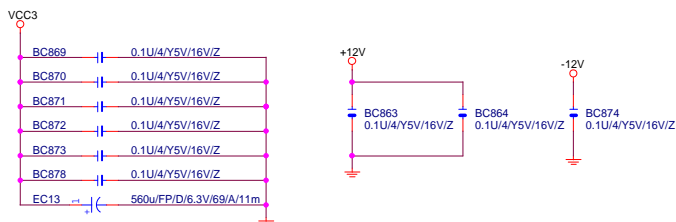
PCI SLOT 1,2

10 AD[0..31] <--> AD[0..31]

PCI SLOT

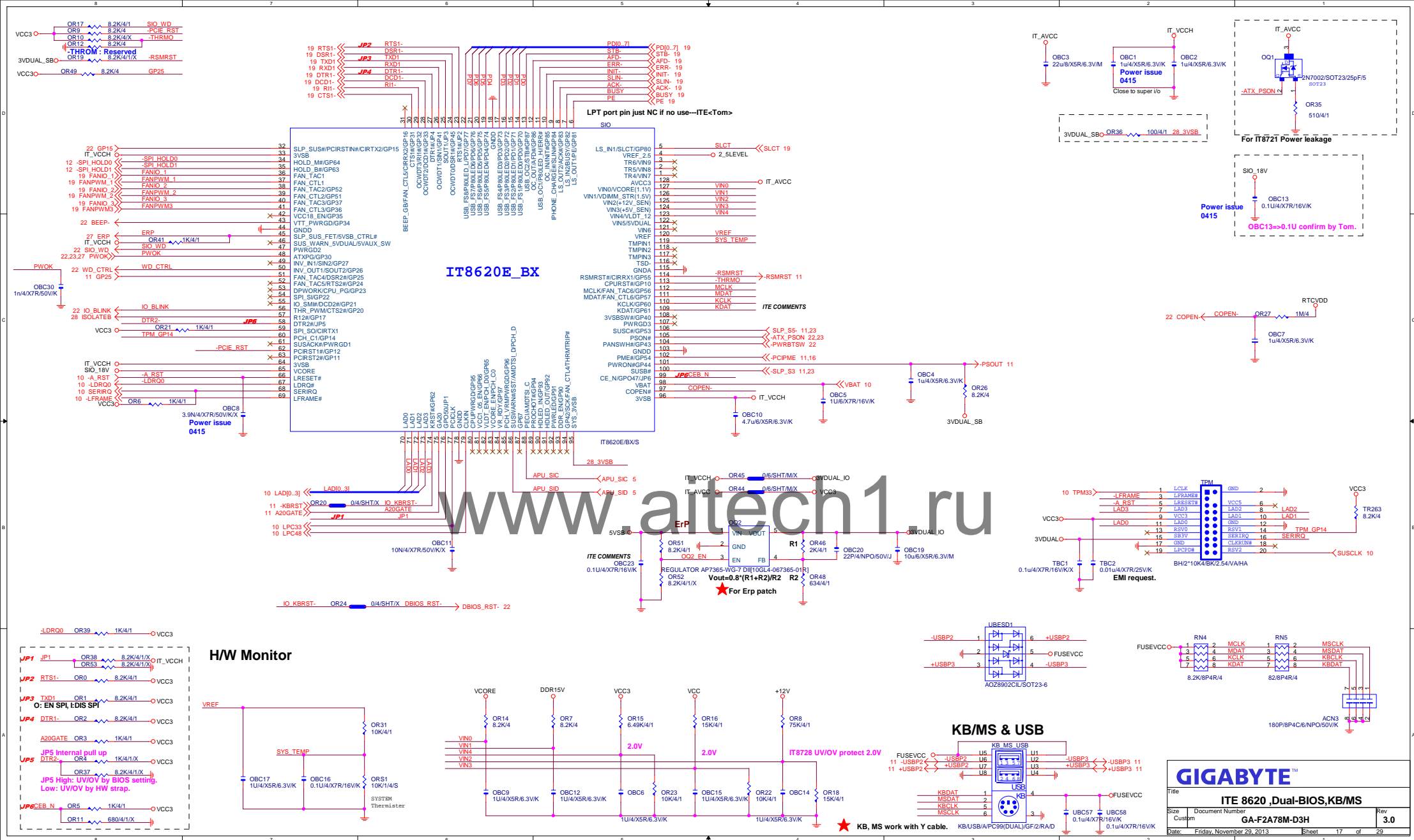


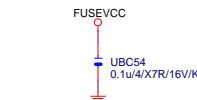
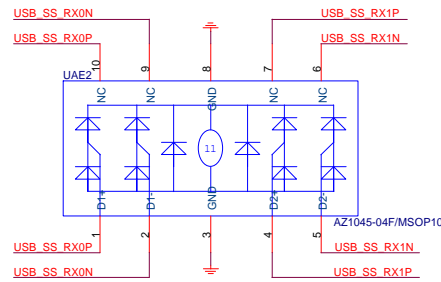
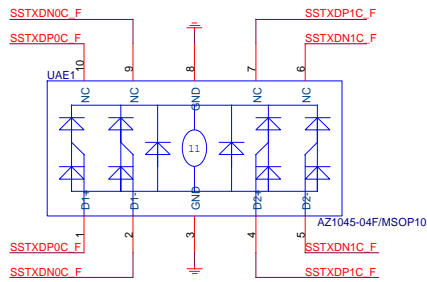
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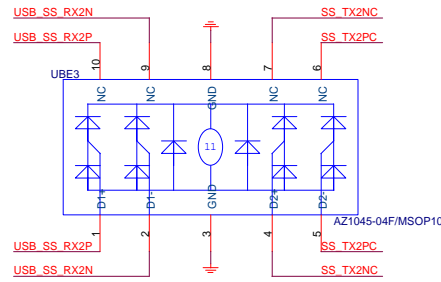
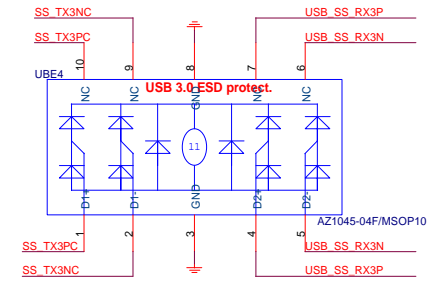
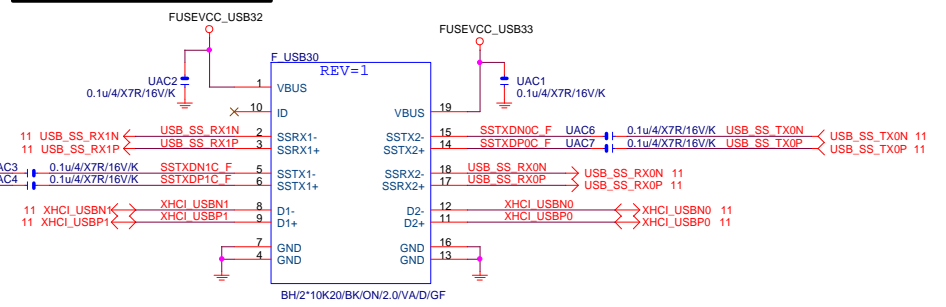
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Title			PCI SLOT
Size	Document Number	Rev	
Custom	GA-F2A78M-D3H	3.0	
Date:	Friday, November 29, 2013	Sheet	16 of 29

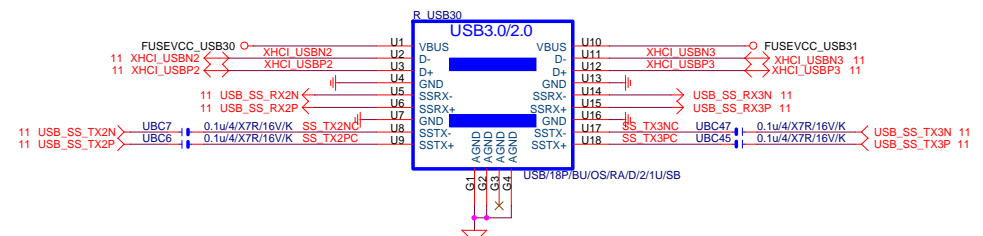




FRONT SIDE USB2

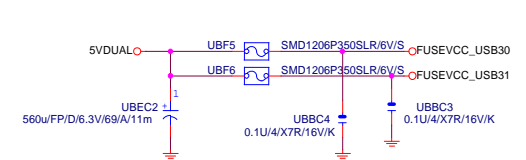
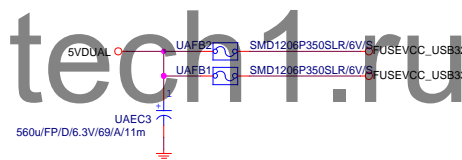
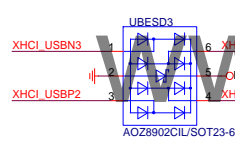
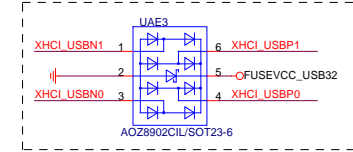


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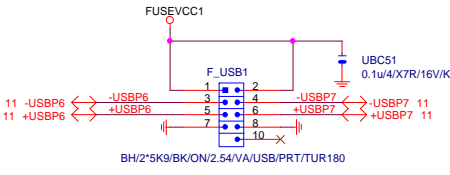


FRONT SIDE

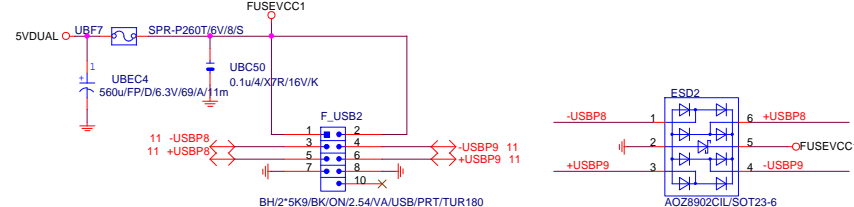
REAR SIDE



FRONT SIDE USB1



FRONT SIDE USB2



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Title: **F_USB, F_USB30, R_USB30**

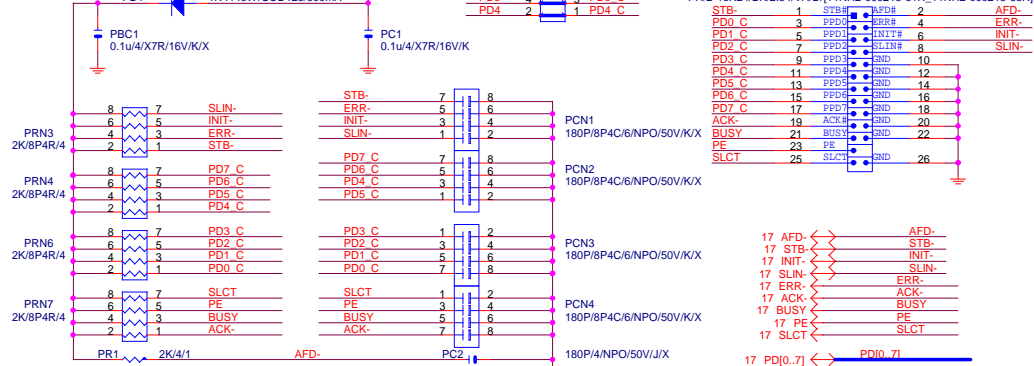
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Date: Friday, November 29, 2013 Sheet: 18 of 29

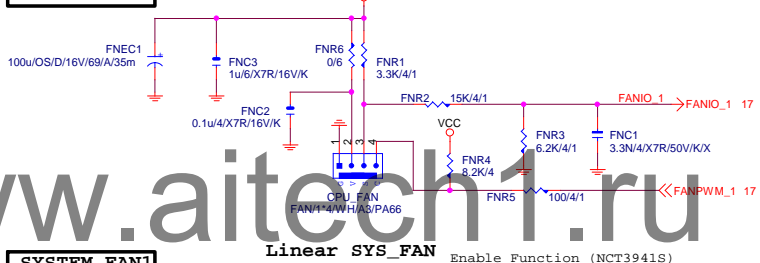
COM



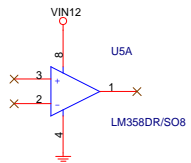
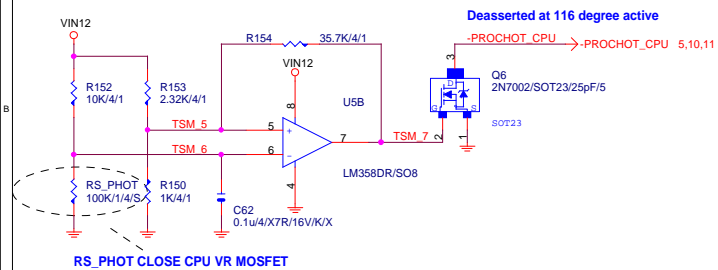
LPT



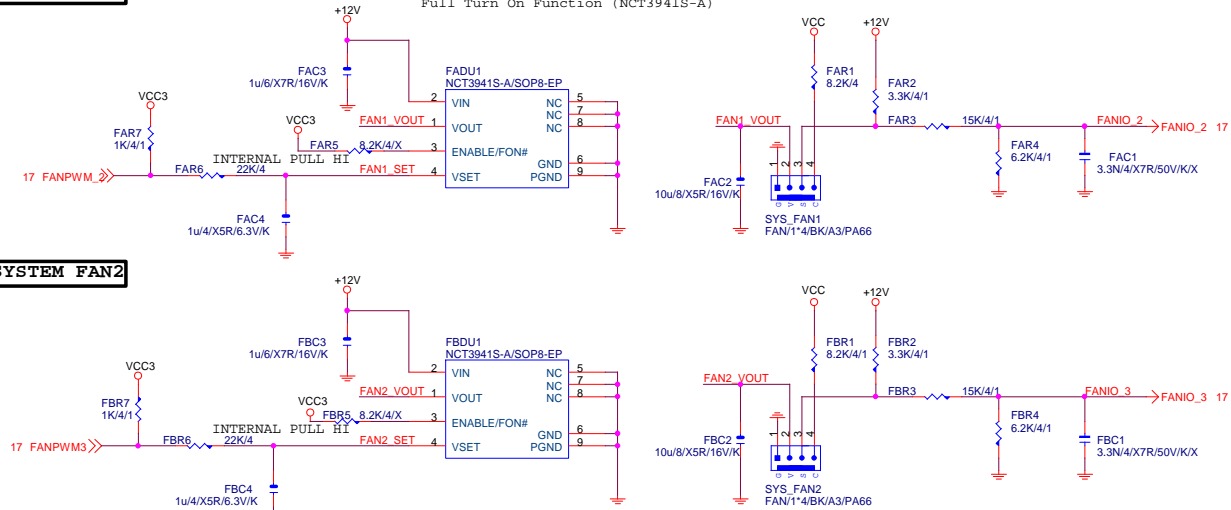
MOSFET Hot Protection



SYSTEM FAN1



SYSTEM FAN2



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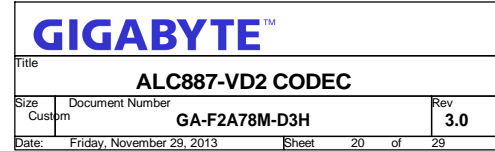
Title CPU & SYS FAN COM I PT MOSEET HOT

Size	Document Number	Rev
Custom	GA-F2A78M-D3H	3.0

Date:	Friday, November 29, 2013	Sheet	19	of	29
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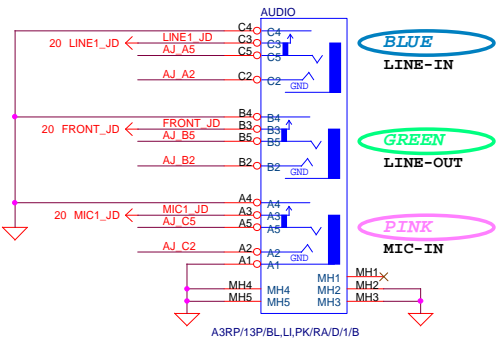
CR34: 20K/4/1% @Realtek cdec
CR34: 5.1K/4/1 @VIA cdec
CBC39 100P @VIA cdec

The diagram shows a parallel combination of a resistor CR34 and a capacitor CBC39. CR34 is labeled with a value of 20K/4/1%. CBC39 is labeled with a value of 100p. The components are connected to a 50V/VJX source and ground. A blue oval highlights the components and their labels.

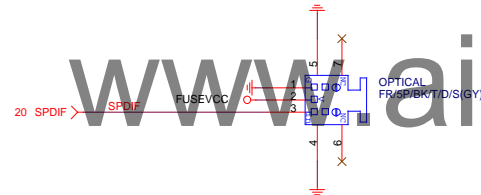


The schematic diagram shows the internal circuitry of the EUP module. Key components include a 5VDUAL input, a CD5 component, an AVDD supply, a CQ3 component, a CD2 component (highlighted with a red circle), and a CD3 LED. Various capacitors are also shown, including a 22uF/8X5R/6.3V/M capacitor and a 0.1uF/X7R/16V/K/X capacitor. The diagram is labeled with 'EUP' and 'CD3'.

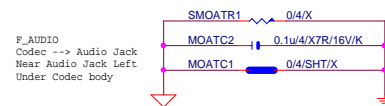
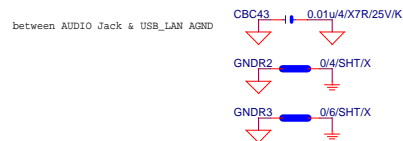
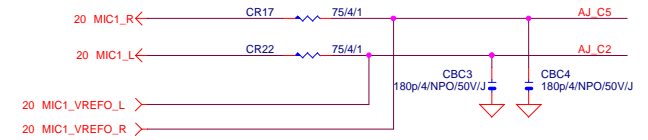
HD Audio Jack



2 type Connector Co-lay



	HDMI_SPDIF	OPTICAL	CR40
Rev: 1.0	V	X	V
Rev: 1.1	HDMI	V	X

**MIC-IN**

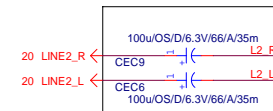
The schematic diagram illustrates the audio section of the TDA1564Q1 evaluation board, divided into an Analog Area and a Digital Area by a red diagonal line.

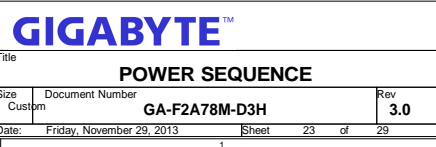
Analog Area:

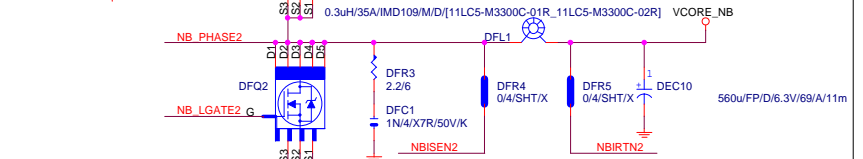
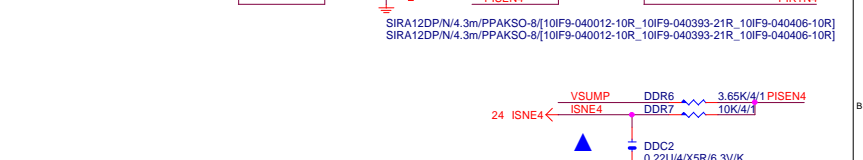
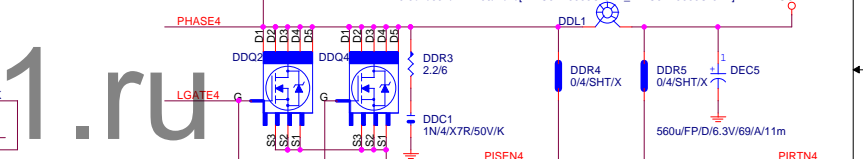
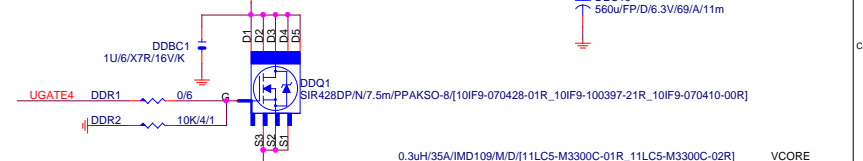
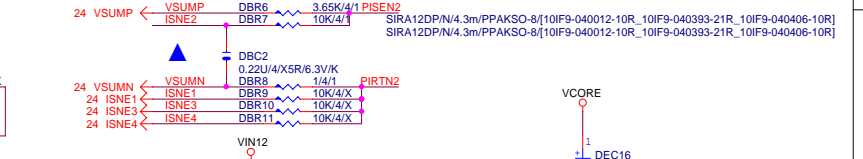
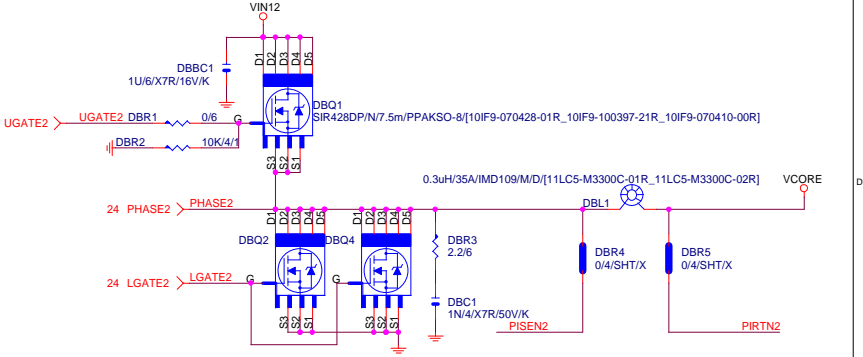
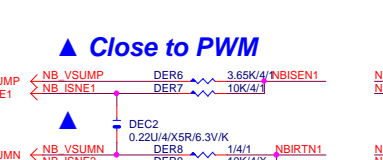
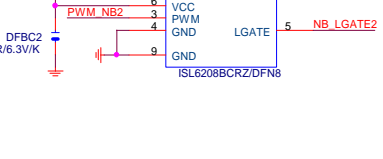
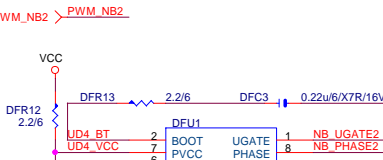
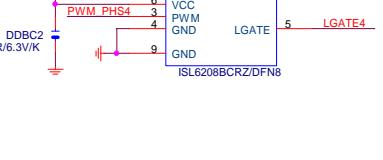
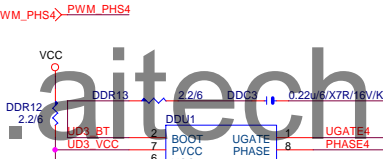
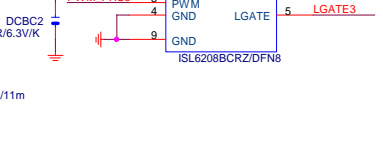
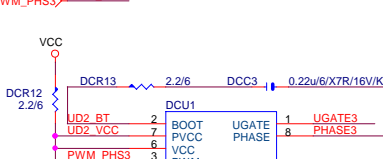
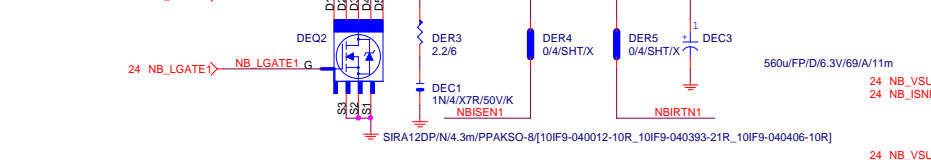
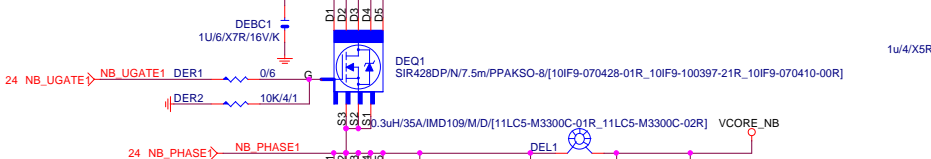
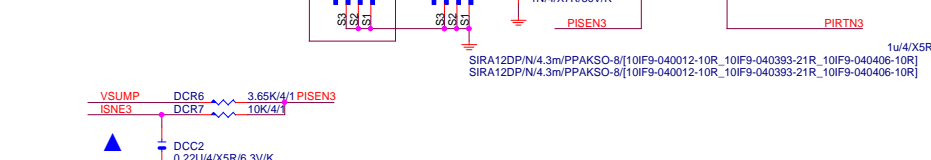
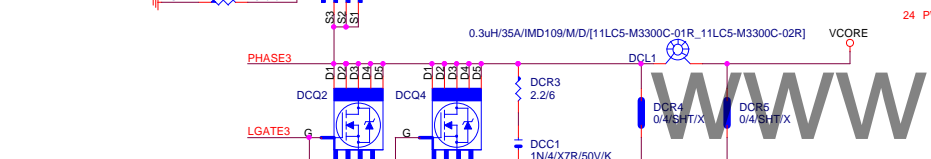
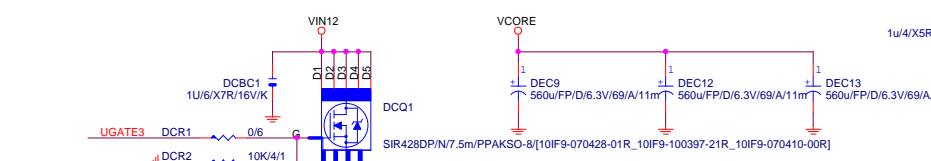
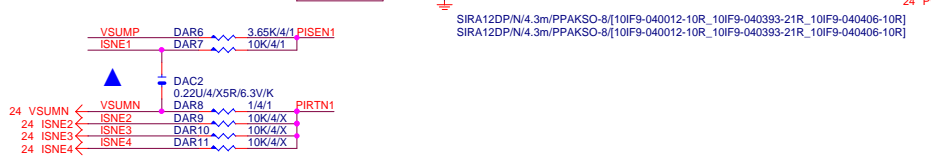
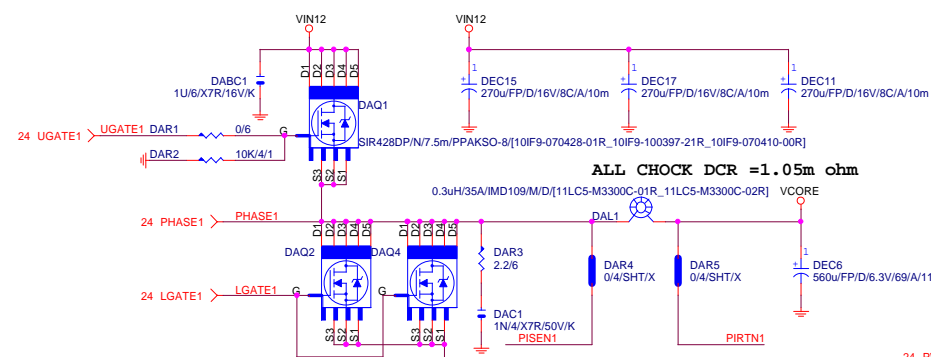
- Inputs:**
 - 20 LINE2_VREF0
 - 20 MIC2_VREF0
 - 20 MIC2_L
 - 20 MIC2_R
 - 20 FAUDIO_ID
- Components:**
 - Capacitors: CQ4, CQ2, CR52, CR56, CR10, CR9, CR58, CR54, CR62, CR55, CR59.
 - Resistors: R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100.
 - Integrated Circuits: CQ4, CQ2, CR52, CR56, CR10, CR9, CR58, CR54, CR62, CR55, CR59.
- Outputs:**
 - F_AUDIO
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9
 - 10
- Power and Ground:**
 - VCC3
 - GND
 - BH/2'5K8/BK/2.54/VA/AUDIO/PRT/TUR180

Digital Area:

- Inputs:**
 - VCC3
 - CR62
- Outputs:**
 - CR55
 - CR59





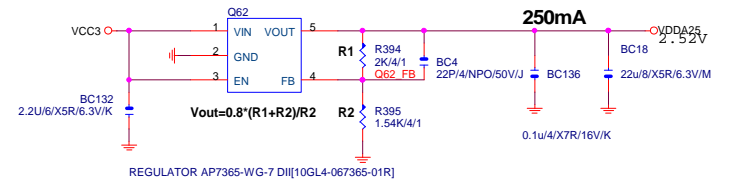
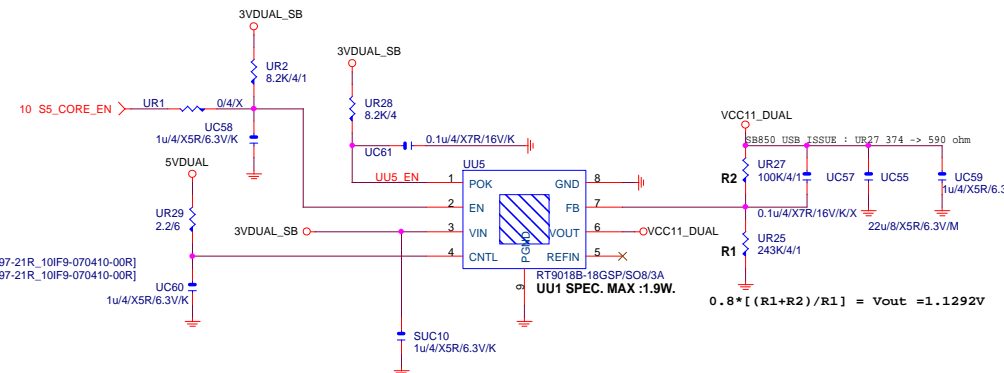
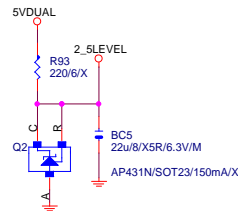
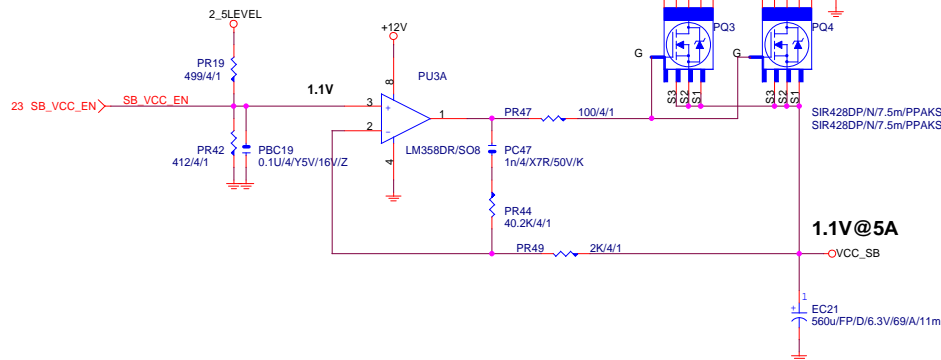


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Close to PWM

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VCORE MOS			
Title	Document Number	Rev	
Size	Custom	GA-F2A78M-D3H	
Date:	Friday, November 29, 2013	Sheet	25 of 29

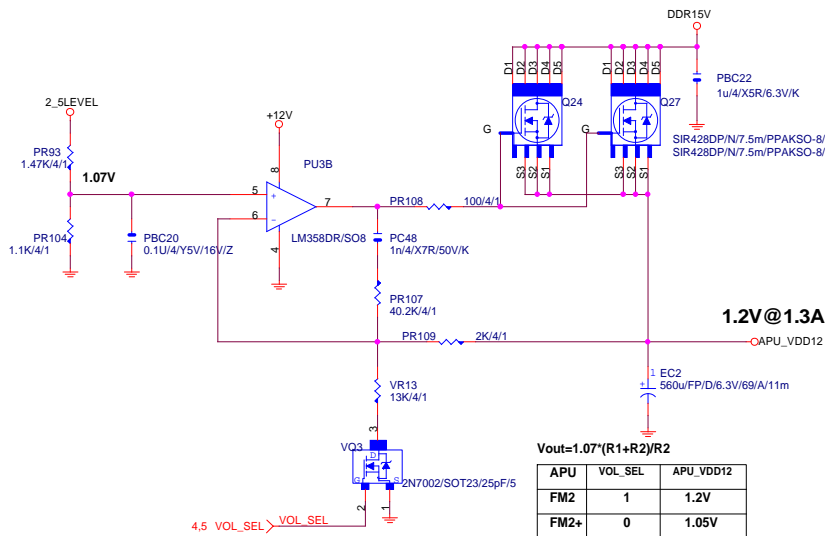
VCC_SB



APU	VOL_SEL	VDDA25
FM2	1	2.5V
FM2+	0	1.8V

4.5 VOL_SEL > VOL_SEL

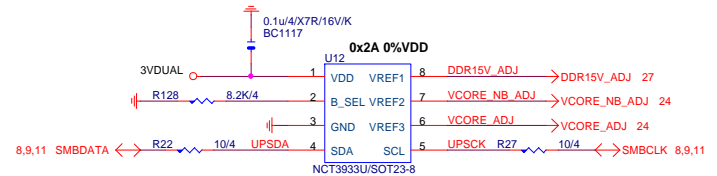
APU_VDDP



$$V_{out} = 1.07 \cdot (R1 + R2) / R2$$

APU	VOL_SEL	APU_VDD12
FM2	1	1.2V
FM2+	0	1.05V

4.5 VOL_SEL > VOL_SEL



GIGABYTE™

SB PWR,VDDA25,VCC11DUAL

Size	Document Number	Rev
Custm	GA-F2A78M-D3H	3.0

Date: Friday, November 29, 2013 Sheet 26 of 29

