GA-F2A68HM-DS2

Revision : 1.01

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06	APU UMI, GFX, GPP
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08	DDRIII CHANNEL A
09	Bolton D3 UMI, PCIE, PCI, CPU, LPC
10	Bolton D3 ACPI, GPIO, USB, AUDIO
11	Bolton D3 SATA,SPI,HWM
12	Bolton D3 POWER & GND
13	PCIE x16 , x1
14	PCI SLOT
15	ITE 8620 , Dual-BIOS , KB/MS , HWMO
16	COM ,RGB ,DVI
17	FAN , HWMO , F_USB , R_USB
18	ALC887-VD2 CODEC
19	ATX, FRONT PANEL
20	POWER SEQUENCE
21	VCORE (ISL62773)
22	VCORE MOS
23	DDR POWER, 5VDUAL , ERP
24	RTL8111G
25	VCC_SB , APU_VDDP , VCC11_DUAL , VDDA25

APU_VDDIO_SUS=DDR15V

APU_VTT_SUS=DDRVTT
APU_VDDP_RUN=APU_VDDR_RUN=APU_VDDP

+1.1V_RUN=FCH_VDD_11_RUN=VCC_SB

+3.3V_RUN=VCC3
+3.3V_ALW=3VDUAL

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Title: COVER SHEET		
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Model Name:GA-F2A68HM-DS2

Version: 1.01
9MF278MS2-00
P-Code: U14076-0

Component value change history

Date	Change Item	Reason
2014.06.20	3.0A New BOM release PCB:3.11	Change From F2A88XM-DS2 3.11 1. VCORE : Remove DAQ4, DBQ4 DCQ4 (H1L1) 2. FCH Change A78
2013.11.28	3.0B New BOM release PCB:3.11	CEC6,CEC2,CEC9,CEC1 Change Chemicon Audio cap
2014.09.15	1.0B New BOM release PCB:1.0	Change from F2A78M-DS2 PCB Ver 3.11 1. LAN+USB30 change to LAN+USB20 2. KB/MS change to KB/MS+USB20 3. USB30 change port (real) 4. remove 5VSB OVP 5. OR41 , OR45 0402 change to 0603 short-pad 6. PX2 -->16pf & PC15&PC16 change to 20pf
2014.10.21	1.0B Auto BOM release PCB:1.01	Add BC677 (FUSEVCC for 水波紋ISSUE) Add BC121 for EMI USB Add UBEC4 for 5VDUAL
2014.10.28	1.0B P-BOM release PCB:1.01	轉P-BOM

Circuit or PCB layout change for next version

Date	Change Item	Reason
2014.06.23	Rev 3.11 Gerber-out	Change from F2A88XM-DS2 PCB Ver 3.11 VCORE : Remove DAQ4, DBQ4 DCQ4 (H1L1)
2014.09.xx	Rev 1.0 Gerber-out	Change from F2A78M-DS2 PCB Ver 3.11 1. LAN+USB30 change to LAN+USB20 2. KB/MS change to KB/MS+USB20 3. USB30 change port (real) 4. remove 5VSB OVP 5. OR41 , OR45 0402 change to 0603 short-pad
2014.10.21	Rev 1.01 Gerber-out	Add BC677 (FUSEVCC for 水波紋ISSUE) Add BC121 for EMI USB Add UBEC4 for 5VDUAL

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Title	BOM & PCB HISTORY	
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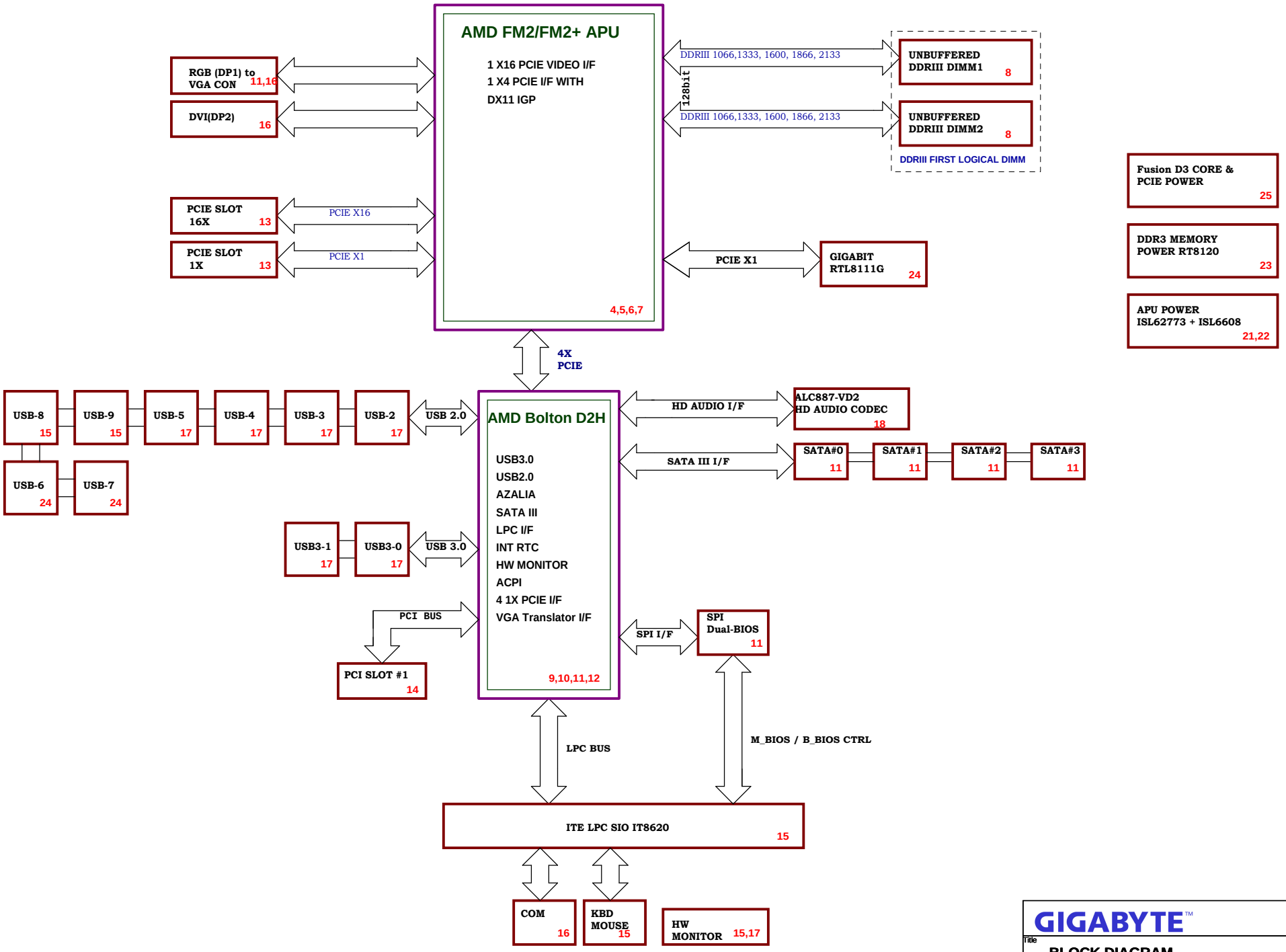

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Title: BLOCK DIAGRAM		
Size: Custom	Document Number: GA-F2A68HM-DS2	Rev: 1.01
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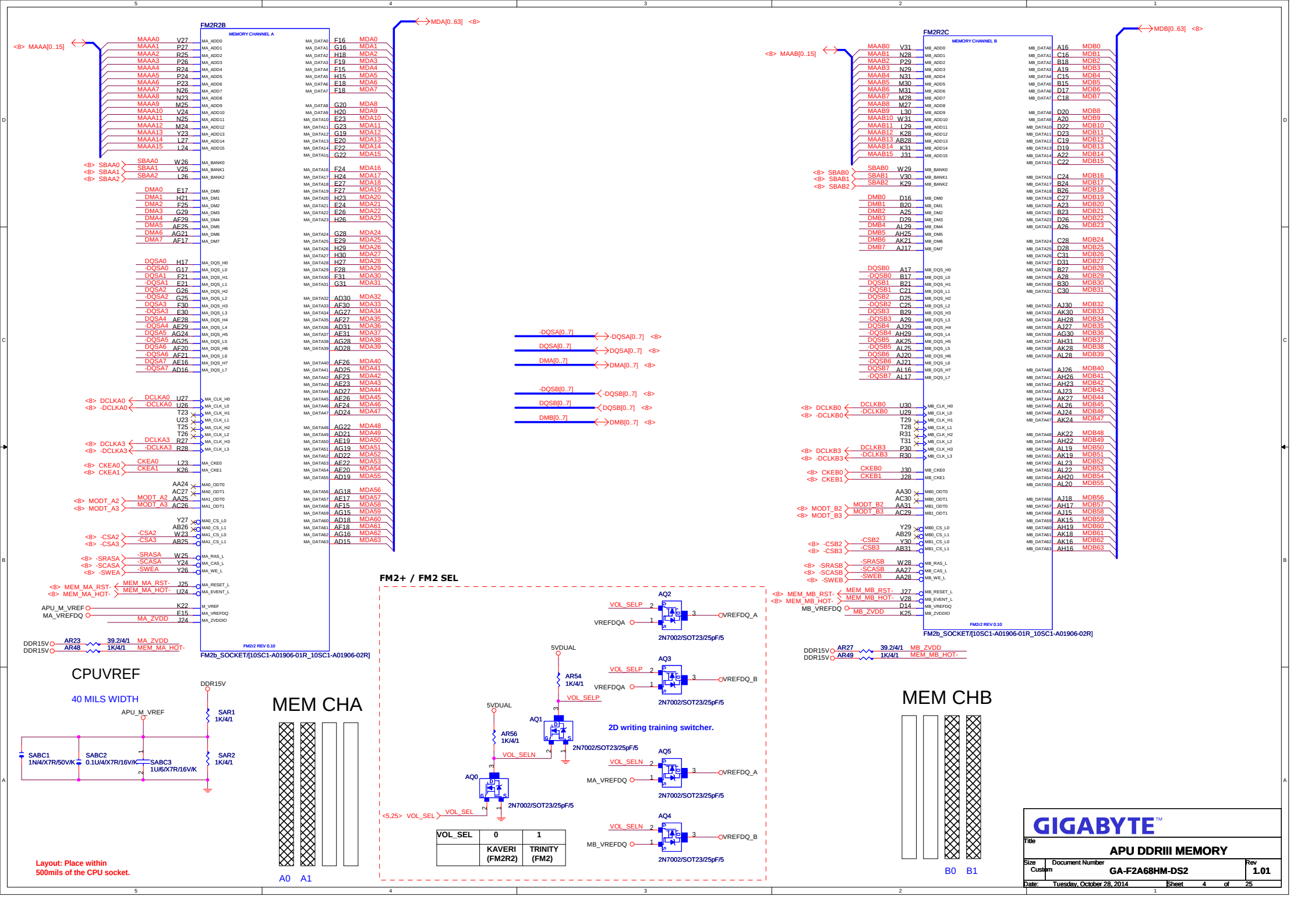
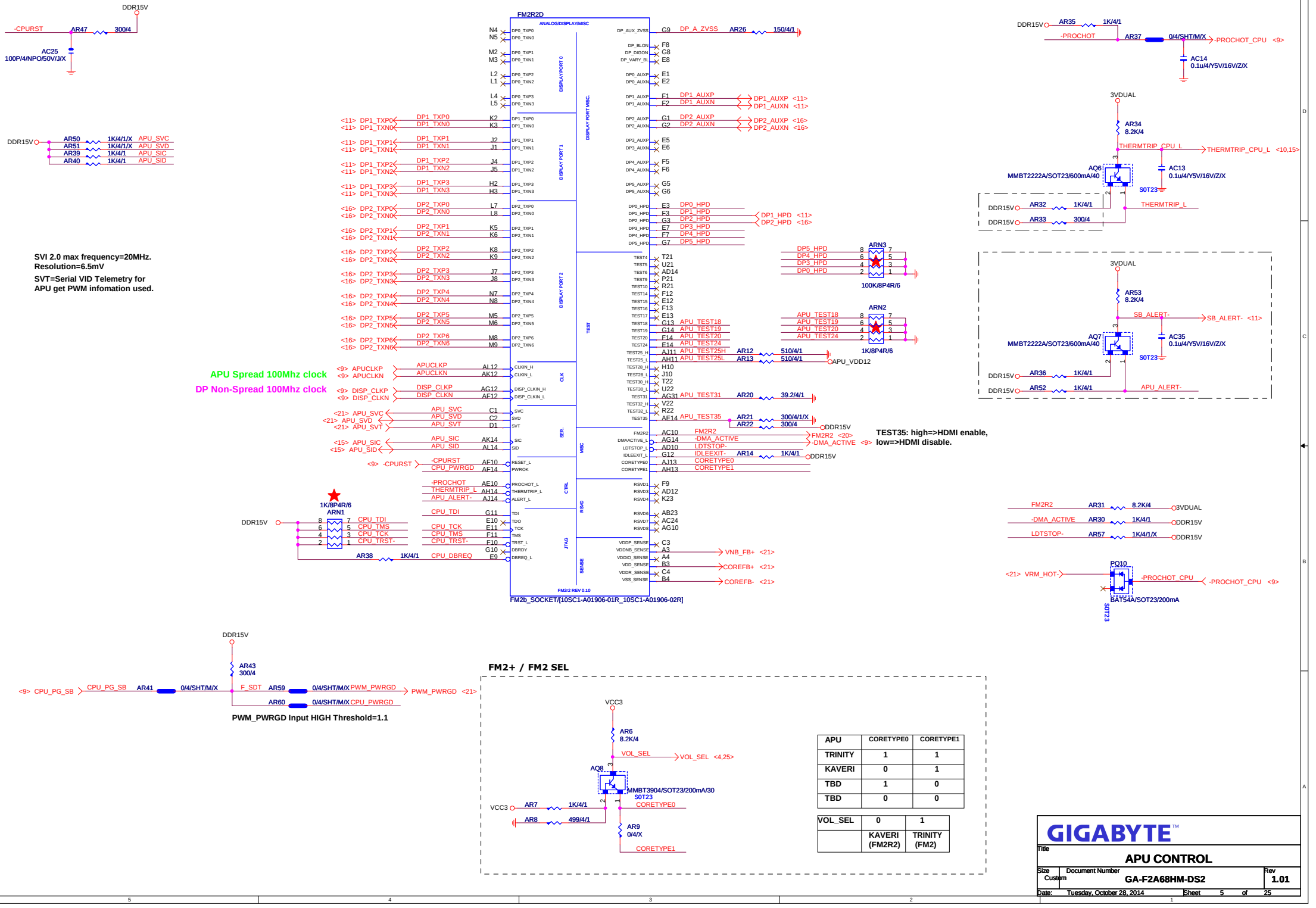

FM2R2B
MEMORY CHANNEL A
FM2b_SOCKET/[10SC1-A01906-01R_10SC1-A01906-02R]
FM2R2C
MEMORY CHANNEL B
FM2b_SOCKET/[10SC1-A01906-01R_10SC1-A01906-02R]
FM2+ / FM2 SEL
2D writing training switcher.
CPUVREF
40 MILS WIDTH
Layout: Place within
500mils of the CPU socket.
MEM CHA
A0 A1
MEM CHB
B0 B1
GIGABYTE
APU DDRIII MEMORY
GA-F2A68HM-DS2
1.01
Tuesday, October 28, 2014


FM2R2D
ANALOG/DISPLAY/MISC
FM2b_SOCKET/[10SC1-A01906-01R_10SC1-A01906-02R]
FM2/2 REV 0.10
DISPLAY PORT 0
DISPLAY PORT MISC.
DISPLAY PORT 1
DISPLAY PORT 2
TEST
CLK.
SER.
MISC
CTRL
RSVD
JTAG
SENSE
DDR15V
-CPURST
AR47 300/4
AC25 100P/4/NPO/50V/J/X
SVI 2.0 max frequency=20MHz.
Resolution=6.5mV
SVT=Serial VID Telemetry for
APU get PWM infomation used.
AR50 1K/4/1/X APU_SVC
AR51 1K/4/1/X APU_SVD
AR39 1K/4/1 APU_SIC
AR40 1K/4/1 APU_SID
APU Spread 100Mhz clock
DP Non-Spread 100Mhz clock
APUCLKP
APUCLKN
DISP_CLKP
DISP_CLKN
APU_SVC
APU_SVD
APU_SVT
APU_SIC
APU_SID
-CPURST
CPU_PWRGD
-PROCHOT
THERMTRIP_L
APU_ALERT-
CPU_TDI
CPU_TMS
CPU_TCK
CPU_TRST-
CPU_DBREQ
AR38 1K/4/1
1K/8P4R/6
ARN1
DP1_TXP0
DP1_TXN0
DP1_TXP1
DP1_TXN1
DP1_TXP2
DP1_TXN2
DP1_TXP3
DP1_TXN3
DP2_TXP0
DP2_TXN0
DP2_TXP1
DP2_TXN1
DP2_TXP2
DP2_TXN2
DP2_TXP3
DP2_TXN3
DP2_TXP4
DP2_TXN4
DP2_TXP5
DP2_TXN5
DP2_TXP6
DP2_TXN6
DP_A_ZVSS AR26 150/4/1
DP1_AUXP
DP1_AUXN
DP2_AUXP
DP2_AUXN
DP0_HPD
DP1_HPD
DP2_HPD
DP3_HPD
DP4_HPD
DP5_HPD
APU_TEST18
APU_TEST19
APU_TEST20
APU_TEST24
APU_TEST25H AR12 510/4/1
APU_TEST25L AR13 510/4/1
APU_VDD12
APU_TEST31 AR20 39.2/4/1
APU_TEST35 AR21 300/4/1/X
AR22 300/4
FM2R2
-DMA_ACTIVE
LDTSTOP-
IDLEEXIT- AR14 1K/4/1
CORETYPE0
CORETYPE1
ARN3 100K/8P4R/6
ARN2 1K/8P4R/6
VNB_FB+
COREFB+
COREFB-
TEST35: high=>HDMI enable,
low=>HDMI disable.
DDR15V AR35 1K/4/1
-PROCHOT AR37 0/4/SHT/M/X -PROCHOT_CPU
AC14 0.1u/4/Y5V/16V/Z/X
3VDUAL
AR34 8.2K/4
THERMTRIP_CPU_L
AQ6 MMBT2222A/SOT23/600mA/40
S0T23
AC13 0.1u/4/Y5V/16V/Z/X
AR32 1K/4/1
AR33 300/4
AR53 8.2K/4
SB_ALERT-
AQ7 MMBT2222A/SOT23/600mA/40
AC35 0.1u/4/Y5V/16V/Z/X
AR36 1K/4/1
AR52 1K/4/1
APU_ALERT-
FM2R2 AR31 8.2K/4
-DMA_ACTIVE AR30 1K/4/1
LDTSTOP- AR57 1K/4/1/X
PQ10 BAT54A/SOT23/200mA
VRM_HOT-
-PROCHOT_CPU
AR43 300/4
CPU_PG_SB AR41 0/4/SHT/M/X
F_SDT AR59 0/4/SHT/M/X PWM_PWRGD
AR60 0/4/SHT/M/X CPU_PWRGD
PWM_PWRGD Input HIGH Threshold=1.1
FM2+ / FM2 SEL
VCC3
AR6 8.2K/4
VOL_SEL
AQ8 MMBT3904/SOT23/200mA/30
AR7 1K/4/1
AR8 499/4/1
AR9 0/4/X
CORETYPE0
CORETYPE1
APU | CORETYPE0 | CORETYPE1
TRINITY | 1 | 1
KAVERI | 0 | 1
TBD | 1 | 0
TBD | 0 | 0
VOL_SEL | 0 | 1
KAVERI (FM2R2) | TRINITY (FM2)
GIGABYTE
Title
APU CONTROL
Size Custom
Document Number GA-F2A68HM-DS2
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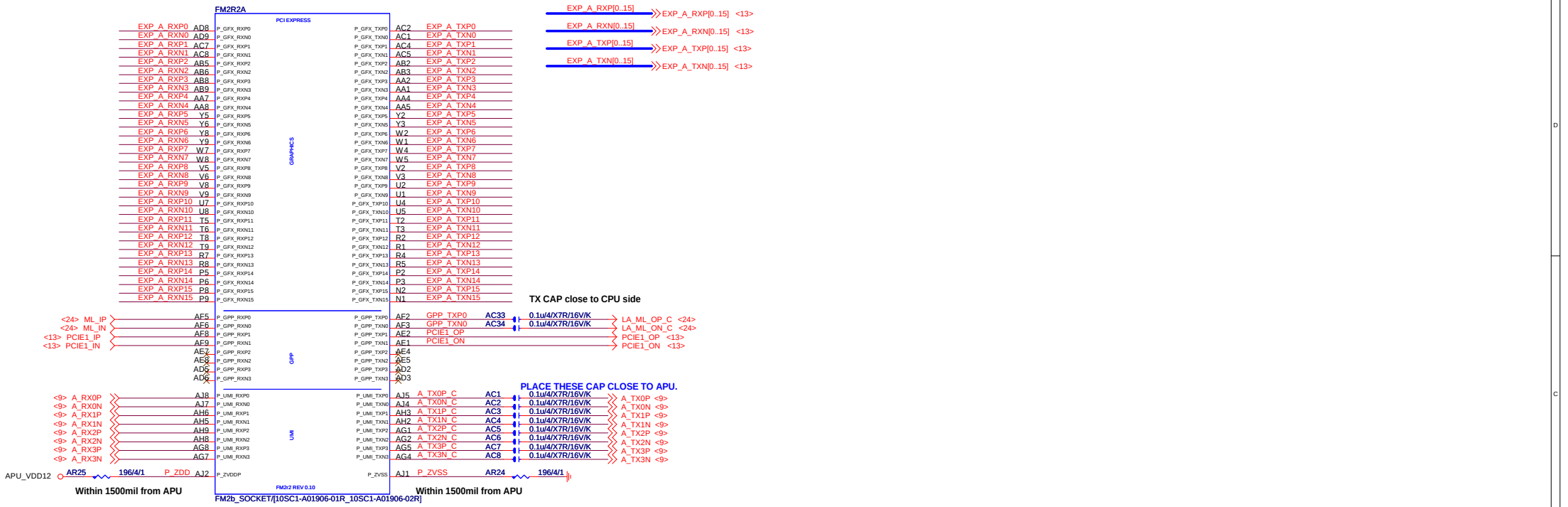

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Title	APU GFX PCIE	
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DDR15V=1.25V/1.35V/1.5V(DDR3)

VCORE

VCORE

DDR15V

VDDA25

FM2R2E

FM2R2F

FM2R2G

FM2R2H

FM2b_SOCKET/[10SC1-A01906-01R_10SC1-A01906-02R]

GND:232 pin,
VCORE:99 pin,
VCORE_NB: 30 pin,
DDR15V:49 pin,
VDDP:9 pin, VDDR:9 pin, VDDA25:2 pin,
VDDNB_CAP:2 pin,Total:430 pin.

PCIE_X16 Cross Moat CAP

VCORE

DC1 0.01U/4/X7R/25V/K

DC2 0.01U/4/X7R/25V/K

DC3 0.01U/4/X7R/25V/K

VDDA25

ABC16 4.7u/6/X5R/6.3V/K

ABC1 0.22u/6/X7R/16V/K

ABC2 3.3N/4/X7R/50V/K

VCORE_NB

VDDNB_CAP

SAC1 22u/8/X5R/6.3V/M

SAC2 22u/8/X5R/6.3V/M

Place close N13, M14 pin inside the backplate cavity opeining.

APU_VDD12

APU_VDD12

Check Power from AMD

VCORE_NB

ABC4 22u/8/X5R/6.3V/M

ABC8 22u/8/X5R/6.3V/M

ABC9 22u/8/X5R/6.3V/M

ABC5 22u/8/X5R/6.3V/M

VCORE_NB

AC15 0.22U/6/X7R/16V/K

AC16 0.22U/6/X7R/16V/K

ABC6 22u/8/X5R/6.3V/M

ABC7 22u/8/X5R/6.3V/M

VCORE_NB

ABC20 22u/8/X5R/6.3V/M

ABC21 22u/8/X5R/6.3V/M

ABC22 22u/8/X5R/6.3V/M

ABC23 22u/8/X5R/6.3V/M

FM2R2

AMD RM/BLACK/[12KRC-04K812-31R_12KRC-04K812-32R]

BUTTOM SIDE

VCORE

SAC6 22u/8/X5R/6.3V/M

SAC7 22u/8/X5R/6.3V/M

SAC8 22u/8/X5R/6.3V/M

SAC9 22u/8/X5R/6.3V/M

SAC10 22u/8/X5R/6.3V/M

SAC11 22u/8/X5R/6.3V/M

SAC12 22u/8/X5R/6.3V/M

SAC13 22u/8/X5R/6.3V/M

VCORE

SAC18 22u/8/X5R/6.3V/M

SAC14 22u/8/X5R/6.3V/M

SAC17 22u/8/X5R/6.3V/M

SAC19 22u/8/X5R/6.3V/M

SAC20 22u/8/X5R/6.3V/M

SAC21 22u/8/X5R/6.3V/M

SAC23 22u/8/X5R/6.3V/M

SAC22 22u/8/X5R/6.3V/M

VCORE

SAC16 0.22U/6/X7R/16V/K

SAC24 0.22U/6/X7R/16V/K

SABC9 22u/8/X5R/6.3V/M

SABC10 22u/8/X5R/6.3V/M

SAC3 180P/4/NPO/50V/J

SAC5 180P/4/NPO/50V/J

SAC4 180P/4/NPO/50V/J

DDR15V

SAC27 22u/8/X5R/6.3V/M

SAC28 22u/8/X5R/6.3V/M

SAC29 22u/8/X5R/6.3V/M/X

SAC15 180P/4/NPO/50V/J

SAC30 0.22U/6/X7R/16V/K/X

SAC31 0.22U/6/X7R/16V/K

SAC32 4.7u/6/X5R/6.3V/K

SAC54 4.7u/6/X5R/6.3V/K

SAC55 0.22U/6/X7R/16V/K

SAC53 22u/8/X5R/6.3V/M

APU_VDD12

AC21 22u/8/X5R/6.3V/M

ABC10 4.7u/6/X5R/6.3V/K

AC19 0.22U/6/X7R/16V/K

AC17 1N/4/X7R/50V/K

APU_VDD12

AC27 22u/8/X5R/6.3V/M/X

AC26 4.7u/6/X5R/6.3V/K/X

AC22 4.7u/6/X5R/6.3V/K

AC32 0.22U/6/X7R/16V/K

SAC47 180P/4/NPO/50V/J

SAC52 1N/4/X7R/50V/K

APU_VDD12

AC31 22u/8/X5R/6.3V/M/X

SAC43 180P/4/NPO/50V/J/X

APU_VDD12

AC12 22u/8/X5R/6.3V/M/X

ABC3 4.7u/6/X5R/6.3V/K/X

AC11 0.22U/6/X7R/16V/K/X

AC9 180P/4/NPO/50V/J/X

VCORE

SAC25 22u/8/X5R/6.3V/M/X

SAC33 22u/8/X5R/6.3V/M/X

SAC34 22u/8/X5R/6.3V/M/X

SAC35 22u/8/X5R/6.3V/M/X

SAC36 22u/8/X5R/6.3V/M/X

SAC38 22u/8/X5R/6.3V/M/X

SAC37 22u/8/X5R/6.3V/M/X

SAC39 22u/8/X5R/6.3V/M/X

SAC41 22u/8/X5R/6.3V/M/X

SAC40 22u/8/X5R/6.3V/M/X

GIGABYTE

Title: APU POWER & GND

Size: Custom | Document Number: GA-F2A68HM-DS2 | Rev: 1.01

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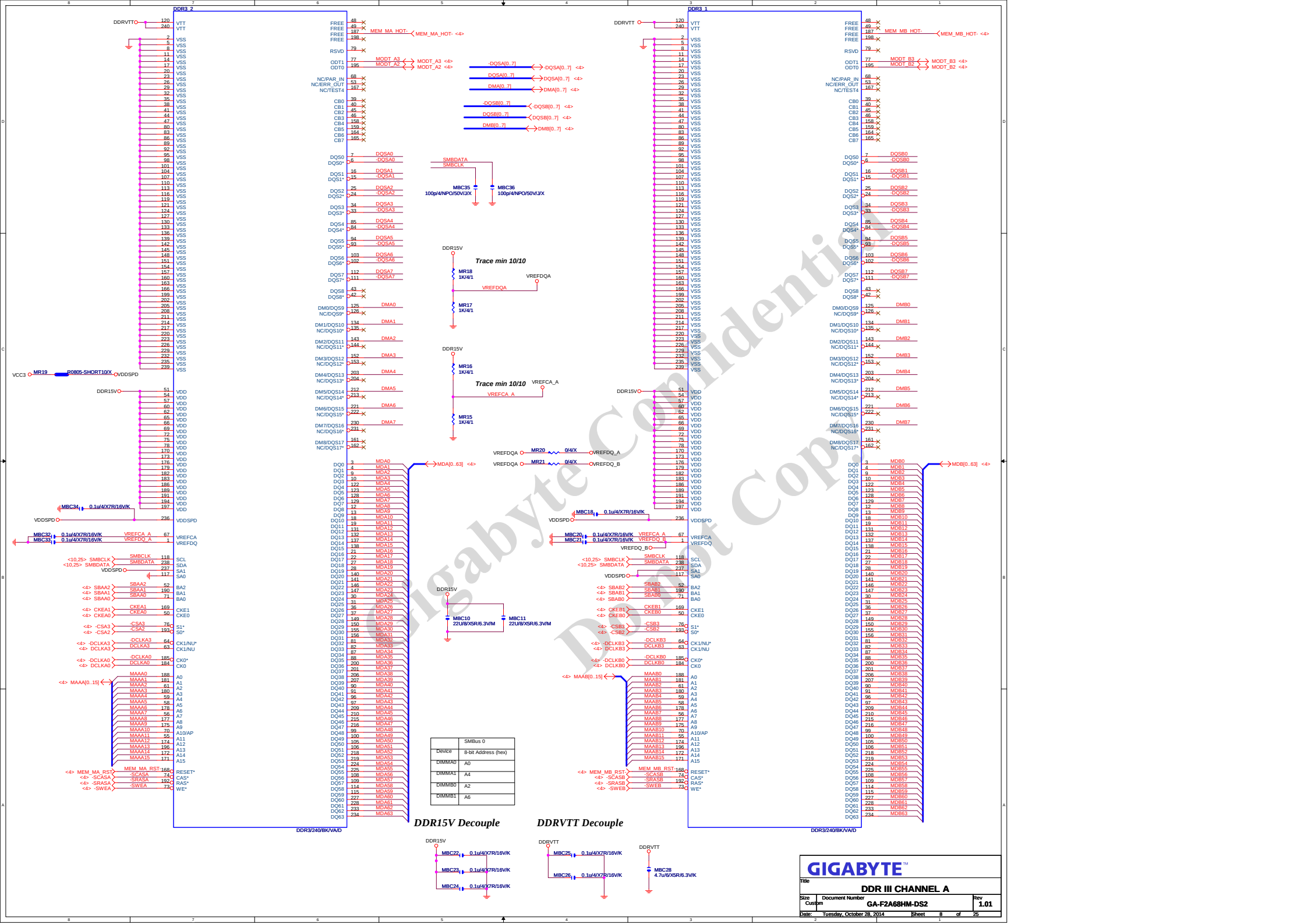
DDR3_2
DDR3_1
DDR3/240/BK/VA/D
DDRVTT
DDR15V
VCC3
VDDSPD
MR19
R0805-SHORT10/X
MEM_MA_HOT-
MEM_MB_HOT-
MODT_A3
MODT_A2
MODT_B3
MODT_B2
-DQSA[0..7]
DQSA[0..7]
DMA[0..7]
-DQSB[0..7]
DQSB[0..7]
DMB[0..7]
SMBDATA
SMBCLK
MBC35 100p/4/NPO/50V/J/X
MBC36 100p/4/NPO/50V/J/X
Trace min 10/10
MR18 1K/4/1
MR17 1K/4/1
MR16 1K/4/1
MR15 1K/4/1
VREFDQA
VREFCA_A
MR20 0/4/X
MR21 0/4/X
VREFDQ_A
VREFDQ_B
MBC34 0.1u/4/X7R/16V/K
MBC32 0.1u/4/X7R/16V/K
MBC33 0.1u/4/X7R/16V/K
MBC18 0.1u/4/X7R/16V/K
MBC20 0.1u/4/X7R/16V/K
MBC21 0.1u/4/X7R/16V/K
MBC10 22U/8/X5R/6.3V/M
MBC11 22U/8/X5R/6.3V/M
MBC22 0.1u/4/X7R/16V/K
MBC23 0.1u/4/X7R/16V/K
MBC24 0.1u/4/X7R/16V/K
MBC25 0.1u/4/X7R/16V/K
MBC26 0.1u/4/X7R/16V/K
MBC28 4.7u/6/X5R/6.3V/K
SMBus 0
Device
8-bit Address (hex)
DIMMA0 A0
DIMMA1 A4
DIMMB0 A2
DIMMB1 A6
DDR15V Decouple
DDRVTT Decouple
Gigabyte Confidential
Do not Copy
GIGABYTE
Title
DDR III CHANNEL A
Size Custom
Document Number GA-F2A68HM-DS2
Rev 1.01
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PLACE THESE PCIE AC COUPLING CAPS CLOSE TO SB850

For APU PCI_E devices.

U1E

HUDSON-2

Part 1 of 5

PCI CLKS

PCI EXPRESS INTERFACES

PCI INTERFACE

CLOCK GENERATOR

LPC

APU

SS PLUS

<13,24> APUPCIE_RST PR2 33/4 AE2 PCIE_RST#
<15> -A_RST PR3 33/4 AD5 A_RST#

<6> A_RX0P PC3 0.1U/4/X7R/16V/K UMI_TXP0 AE30 UMI_TX0P
<6> A_RX0N PC4 0.1U/4/X7R/16V/K UMI_TXN0 AE32 UMI_TX0N
<6> A_RX1P PC5 0.1U/4/X7R/16V/K UMI_TXP1 AD33 UMI_TX1P
<6> A_RX1N PC6 0.1U/4/X7R/16V/K UMI_TXN1 AD31 UMI_TX1N
<6> A_RX2P PC7 0.1U/4/X7R/16V/K UMI_TXP2 AD28 UMI_TX2P
<6> A_RX2N PC8 0.1U/4/X7R/16V/K UMI_TXN2 AD29 UMI_TX2N
<6> A_RX3P PC9 0.1U/4/X7R/16V/K UMI_TXP3 AC30 UMI_TX3P
<6> A_RX3N PC10 0.1U/4/X7R/16V/K UMI_TXN3 AC32 UMI_TX3N

<6> A_TX0P AB33 UMI_RX0P
<6> A_TX0N AB31 UMI_RX0N
<6> A_TX1P AB28 UMI_RX1P
<6> A_TX1N AB29 UMI_RX1N
<6> A_TX2P Y33 UMI_RX2P
<6> A_TX2N Y31 UMI_RX2N
<6> A_TX3P Y28 UMI_RX3P
<6> A_TX3N Y29 UMI_RX3N

VCC_SB PR5 590/4/1 PR4 2K/4/1 AF29 PCIE_CALRP AF31 PCIE_CALRN

V33 GPP_TX0P
V31 GPP_TX0N
W30 GPP_TX1P
W32 GPP_TX1N
AB26 GPP_TX2P
AB27 GPP_TX2N
AA24 GPP_TX3P
AA23 GPP_TX3N

AA27 GPP_RX0P
AA26 GPP_RX0N
W27 GPP_RX1P
V27 GPP_RX1N
V26 GPP_RX2P
W26 GPP_RX2N
W24 GPP_RX3P
W23 GPP_RX3N

VCC_SB PR45 2K/4/1 CLK_CAL F27 CLK_CALRN

G30 PCIE_RCLKP
G28 PCIE_RCLKN

<5> DISP_CLKP R26 DISP_CLKP
<5> DISP_CLKN T26 DISP_CLKN

H33 DISP2_CLKP
H31 DISP2_CLKN

<5> APUCLKP T24 APU_CLKP
<5> APUCLKN T23 APU_CLKN

<13> SRCCLK_16XP J30 SLT_GFX_CLKP
<13> SRCCLK_16XN K29 SLT_GFX_CLKN

<24> SRCCLK_LAN H27 GPP_CLK0P
<24> -SRCCLK_LAN H28 GPP_CLK0N

<13> SRCCLK_1XP J27 GPP_CLK1P
<13> SRCCLK_1XN K26 GPP_CLK1N

F33 GPP_CLK2P
F31 GPP_CLK2N

E33 GPP_CLK3P
E31 GPP_CLK3N

M23 GPP_CLK4P
M24 GPP_CLK4N

M27 GPP_CLK5P
M26 GPP_CLK5N

N25 GPP_CLK6P
N26 GPP_CLK6N

R23 GPP_CLK7P
R24 GPP_CLK7N

N27 GPP_CLK8P
R27 GPP_CLK8N

<15> LPC48 PR94 22/4 LPC48_C J26 14M_25M_48M_OSC

25MHZ_X1 C31 25M_X1

PR7 1M/4 25MHZ_X2 C33 25M_X2

PX2
25M/16p/30ppm/49US/20/D
PC15 20p/4/NPO/50V/J
PC16 20p/4/NPO/50V/J

RTC_XI
PR6 20M/4 RTC_XO
PX1
32.768K/12.5p/20ppm/TF38/35K/D
PC13 18P/4/NPO/50V/J
PC14 18P/4/NPO/50V/J

PX1
SHW/D0.64*5.08*6.74

AF3 PCLK0 PR8 33/4 LPC33 LPC33 <15>
AF1 PCLK1 PR9 33/4 PCICLK1 PCICLK1 <14>
AF5
AG2 PCLK3
AF6 PCLK4

AB5 PR13 33/4 -PPCIRST -PPCIRST <14>

AD[0..31] <14>

AJ3 AD0
AL5 AD1
AG4 AD2
AL6 AD3
AH3 AD4
AJ5 AD5
AL1 AD6
AN5 AD7
AN6 AD8
AJ1 AD9
AL8 AD10
AL3 AD11
AM7 AD12
AJ6 AD13
AK7 AD14
AN8 AD15
AG9 AD16
AM11 AD17
AJ10 AD18
AL12 AD19
AK11 AD20
AN12 AD21
AG12 AD22
AE12 AD23
AC12 AD24
AE13 AD25
AF13 AD26
AH13 AD27
AH14 AD28
AD15 AD29
AC15 AD30
AE16 AD31

AN3 -C_BE0 -C_BE0 <14>
AJ8 -C_BE1 -C_BE1 <14>
AN10 -C_BE2 -C_BE2 <14>
AD12 -C_BE3 -C_BE3 <14>
AG10 -FRAME -FRAME <14>
AK9 -DEVSEL -DEVSEL <14>
AL10 -IRDY -IRDY <14>
AF10 -TRDY -TRDY <14>
AE10 PAR PAR <14>
AH1 -STOP -STOP <14>
AM9 -PERR -PERR <14>
AH8 -SERR -SERR <14>
AG15 -REQ0 -REQ0 <14>
AG13
AF15
AM17
AD16 -GNT0 -GNT0 <14>
AD13
AD21
AK17
AD19
AH9 -PLOCK -PLOCK <14>

AF18 -INTA -INTA <14>
AE18 -INTB -INTB <14>
AC16 -INTC -INTC <14>
AD18 -INTD -INTD <14>

B25 LPC_CLK0
D25 LPC_CLK1
D27 LAD0 LAD0 <15>
C28 LAD1 LAD1 <15>
A26 LAD2 LAD2 <15>
A29 LAD3 LAD3 <15>
A31 -LFRAME -LFRAME <15>
B27 -LDRQ0 -LDRQ0 <15>
AE27 PR0 8.2K/4/X VCC3
AE19 SERIRQ SERIRQ <15>

G25 -DMA_ACTIVE -DMA_ACTIVE <5>
E28 -PROCHOT_CPU -PROCHOT_CPU <5>
F26 CPU_PG_SB <5>
G26
F26 -CPURST -CPURST <5>

Note: LDT_STP# leave NC--DG1.0

G2 RTC_XI
G4 RTC_XO

H7 S5_CORE_EN S5_CORE_EN <25>
F1 RTC_CLK
F3 -INTR_ALERT PR27 100K/4/1 RTCVDD
E6 RTCVDD

PBC2
1u/4/X5R/6.3V/K

218-0844029/S

3VDUAL
RTC_CLK PR90 8.2K/4/X PR97 2.2K/4/1
Pull down for S5+ Mode

S.B HEATSINK

SB_HS
SB_HS/[12SP2-SA0301-11R _12SP2-SA0301-12R _12SP2-SA0301-13R]

PRN2
PCLK3
PCLK4
PCLK1
8.2K/8P4R/6
VCC3

PCLK3

PULL HIGH	USE DEBUG STRAPS
PULL LOW	IGNORE DEBUG STRAPS DEFAULT

CLKGEN Mode: Only for integrated clock mode.

LPC_CLK0 PR20 8.2K/4
3VDUAL
LPC_CLK1 PR95 8.2K/4

	LPC_CLK0	LPC_CLK1
PULL HIGH	IMC ENABLED	CLKGEN ENABLED
	AOD Extreme	
PULL LOW	IMC DISABLED DEFAULT	CLKGEN DISABLED DEFAULT

20mil 20mil

3VDUAL PQ1 RTCVDD
<15> VBAT VBAT_2 RB 1K/4/1 BAT54C/SOT23/200mA PR28 1K/4/1
PBC24 0.1u/4/X7R/16V/K
PBC25 1u/4/X5R/6.3V/K
20mil

BAT
BAT-SK/BK/P/S/D/SN
CR2032 BAT CR2032

CLR_CMOS
RTCVDD
PH/1*2/BK/2.54/VA/D

CLR_CMOS	
SHORT	CLEAR CMOS
OPEN	NORMAL

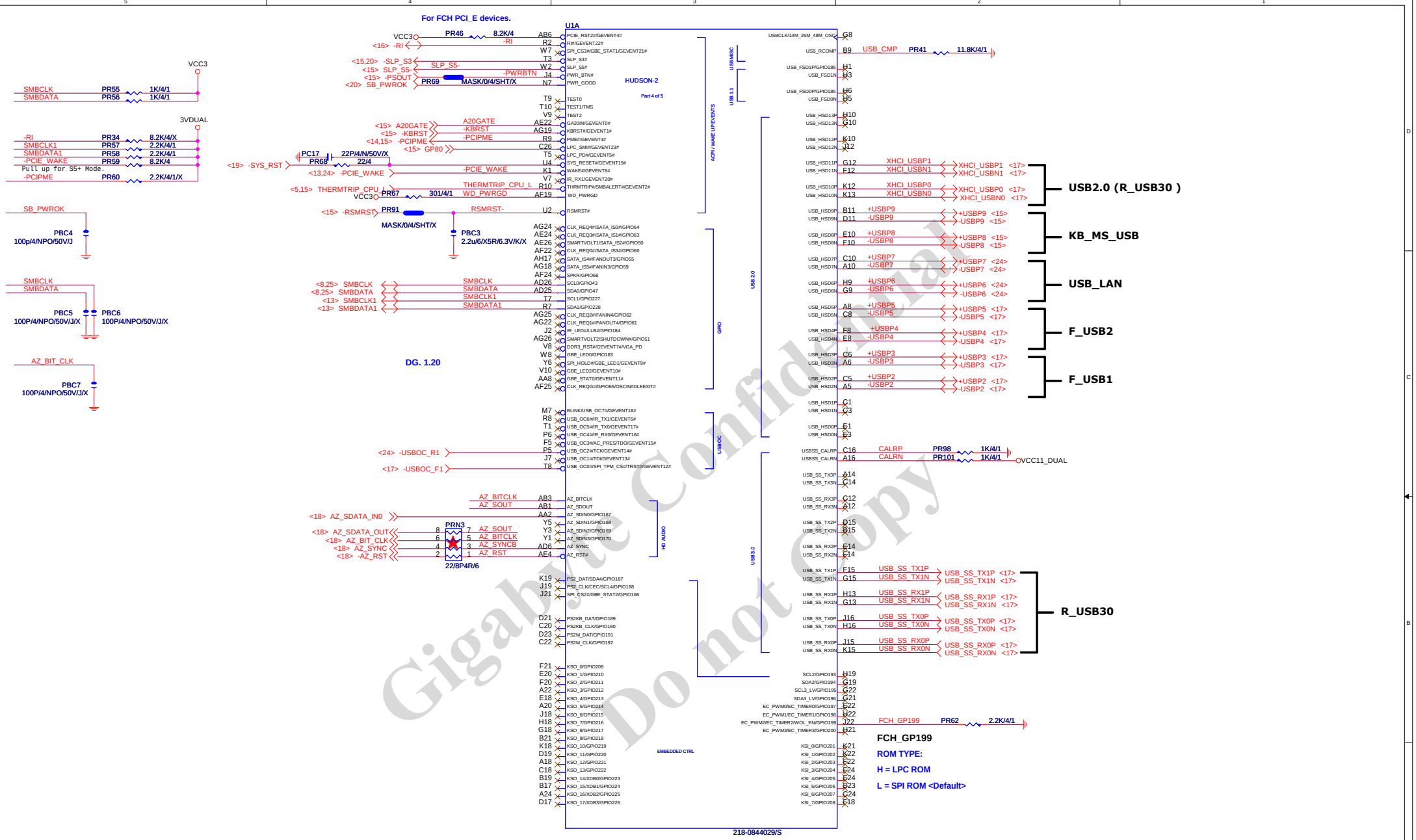
NOT ADD ICT FOR RTCVDD PIN

GIGABYTE™

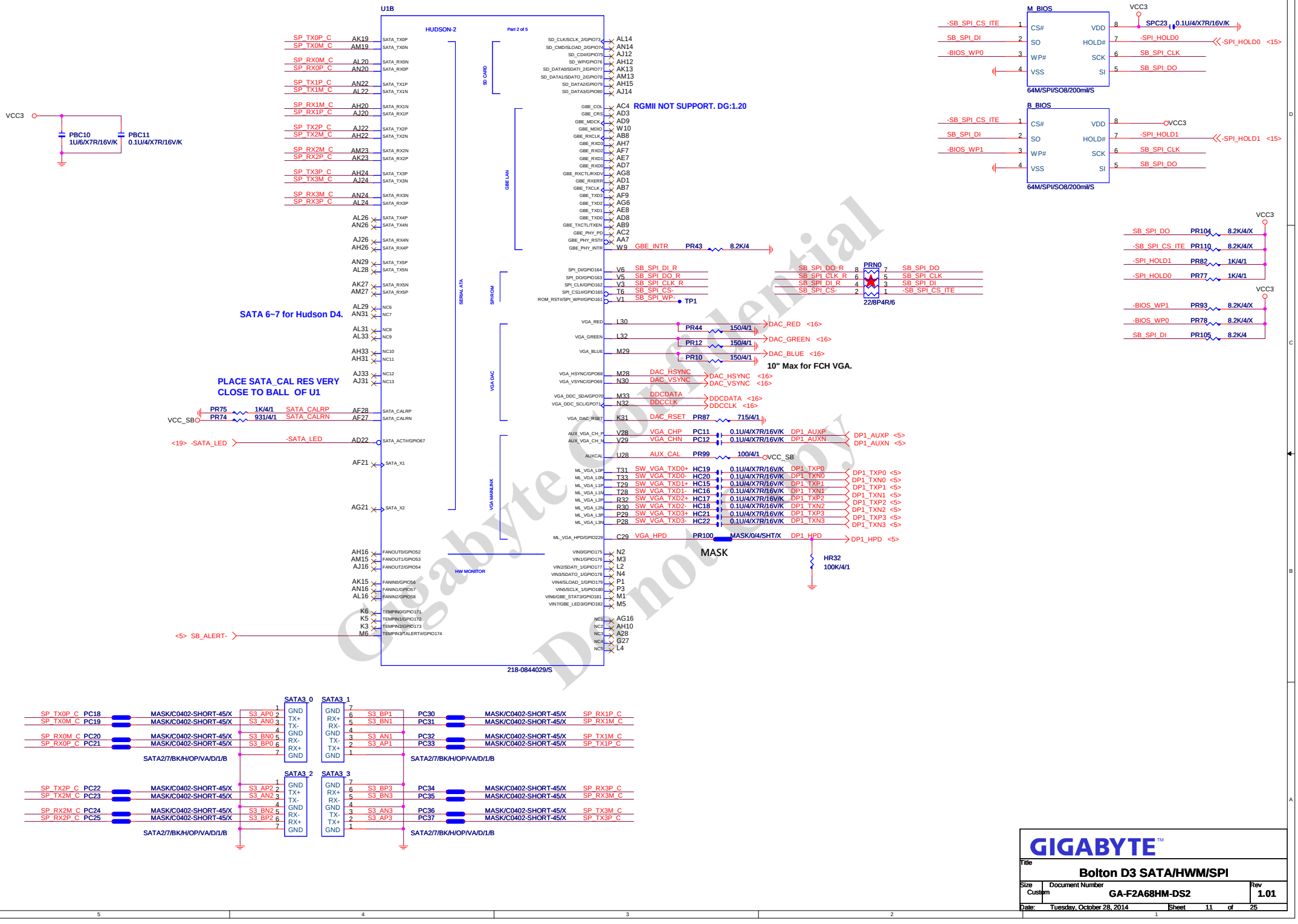
Title: Bolton D3 PCIE/PCI/CPU/LPC

Size	Document Number	Rev
Custom	GA-F2A68HM-DS2	1.01

Date: Tuesday, October 28, 2014 Sheet 9 of 25



Title	Bolton D3 ACPI/USB/AUDIO/GPIO
Size	Custom
Document Number	GA-F2A68HM-DS2
Rev	1.01
Date:	Tuesday, October 28, 2014
Sheet	10 of 25


U1B
HUDSON-2
Part 2 of 5
SD CARD
GBE LAN
SPIROM
SERIAL ATA
VGA DAC
VGA MAIN_LINK
HW MONITOR
SATA 6~7 for Hudson D4.
PLACE SATA_CAL RES VERY CLOSE TO BALL OF U1
RGMII NOT SUPPORT. DG:1.20
10" Max for FCH VGA.
MASK
218-0844029/S
M_BIOS
B_BIOS
64M/SPI/SO8/200mil/S
22/8P4R/6
SATA3_0
SATA3_1
SATA3_2
SATA3_3
SATA2/7/BK/H/OP/VA/D/1/B
GIGABYTE
Bolton D3 SATA/HWM/SPI
GA-F2A68HM-DS2
1.01
Tuesday, October 28, 2014
Sheet 11 of 25
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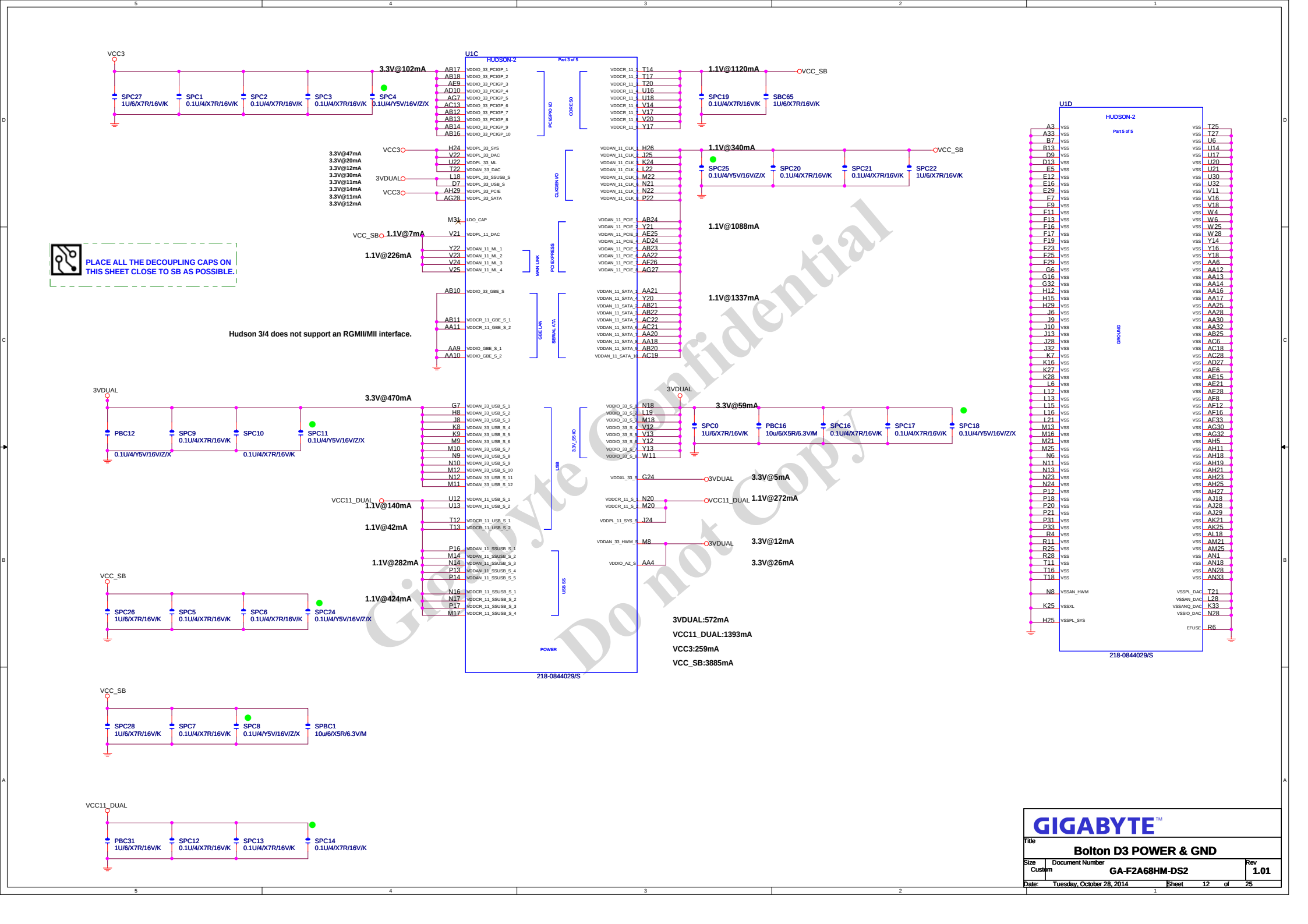
Do not copy


VCC3
3.3V@102mA
SPC27 1U/6/X7R/16V/K
SPC1 0.1U/4/X7R/16V/K
SPC2 0.1U/4/X7R/16V/K
SPC3 0.1U/4/X7R/16V/K
SPC4 0.1U/4/Y5V/16V/Z/X
U1C
HUDSON-2
Part 3 of 5
PCI/GPIO IO
CORE 5O
1.1V@1120mA
VCC_SB
SPC19 0.1U/4/X7R/16V/K
SBC65 1U/6/X7R/16V/K
3.3V@47mA
3.3V@20mA
3.3V@12mA
3.3V@30mA
3.3V@11mA
3.3V@14mA
3.3V@11mA
3.3V@12mA
CLKGEN I/O
1.1V@340mA
SPC25 0.1U/4/Y5V/16V/Z/X
SPC20 0.1U/4/X7R/16V/K
SPC21 0.1U/4/X7R/16V/K
SPC22 1U/6/X7R/16V/K
1.1V@7mA
1.1V@226mA
MAIN LINK
PCI EXPRESS
1.1V@1088mA
PLACE ALL THE DECOUPLING CAPS ON THIS SHEET CLOSE TO SB AS POSSIBLE.
Hudson 3/4 does not support an RGMII/MII interface.
GBE LAN
SERIAL ATA
1.1V@1337mA
3VDUAL
3.3V@470mA
PBC12 0.1U/4/Y5V/16V/Z/X
SPC9 0.1U/4/X7R/16V/K
SPC10 0.1U/4/X7R/16V/K
SPC11 0.1U/4/Y5V/16V/Z/X
USB
3.3V_5S I/O
3.3V@59mA
SPC0 1U/6/X7R/16V/K
PBC16 10u/6/X5R/6.3V/M
SPC16 0.1U/4/X7R/16V/K
SPC17 0.1U/4/X7R/16V/K
SPC18 0.1U/4/Y5V/16V/Z/X
3.3V@5mA
VCC11_DUAL
1.1V@140mA
1.1V@42mA
1.1V@272mA
3.3V@12mA
3.3V@26mA
1.1V@282mA
1.1V@424mA
USB SS
VCC_SB
SPC26 1U/6/X7R/16V/K
SPC5 0.1U/4/X7R/16V/K
SPC6 0.1U/4/X7R/16V/K
SPC24 0.1U/4/Y5V/16V/Z/X
SPC28 1U/6/X7R/16V/K
SPC7 0.1U/4/X7R/16V/K
SPC8 0.1U/4/Y5V/16V/Z/X
SPBC1 10u/6/X5R/6.3V/M
PBC31 1U/6/X7R/16V/K
SPC12 0.1U/4/X7R/16V/K
SPC13 0.1U/4/X7R/16V/K
SPC14 0.1U/4/X7R/16V/K
POWER
3VDUAL:572mA
VCC11_DUAL:1393mA
VCC3:259mA
VCC_SB:3885mA
218-0844029/S
U1D
HUDSON-2
Part 5 of 5
GROUND
218-0844029/S
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GIGABYTE
Title
Bolton D3 POWER & GND
Size
Custom
Document Number
GA-F2A68HM-DS2
Rev
1.01
Date: Tuesday, October 28, 2014
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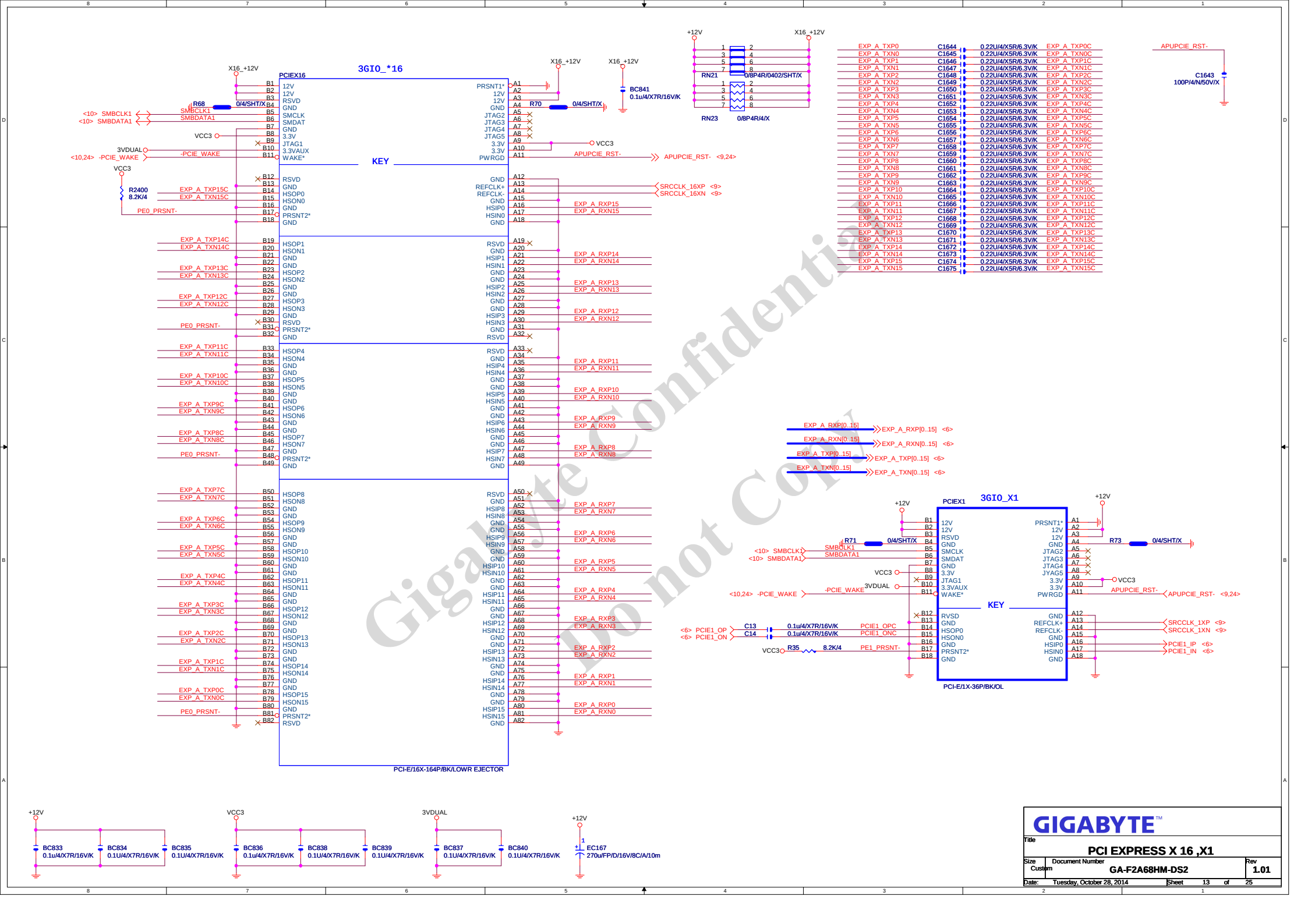
3GIO_*16
PCIEX16
KEY
PCI-E/16X-164P/BK/LOWR EJECTOR
3GIO_X1
PCIEX1
PCI-E/1X-36P/BK/OL
PCI EXPRESS X 16 ,X1
GIGABYTE
GA-F2A68HM-DS2
1.01
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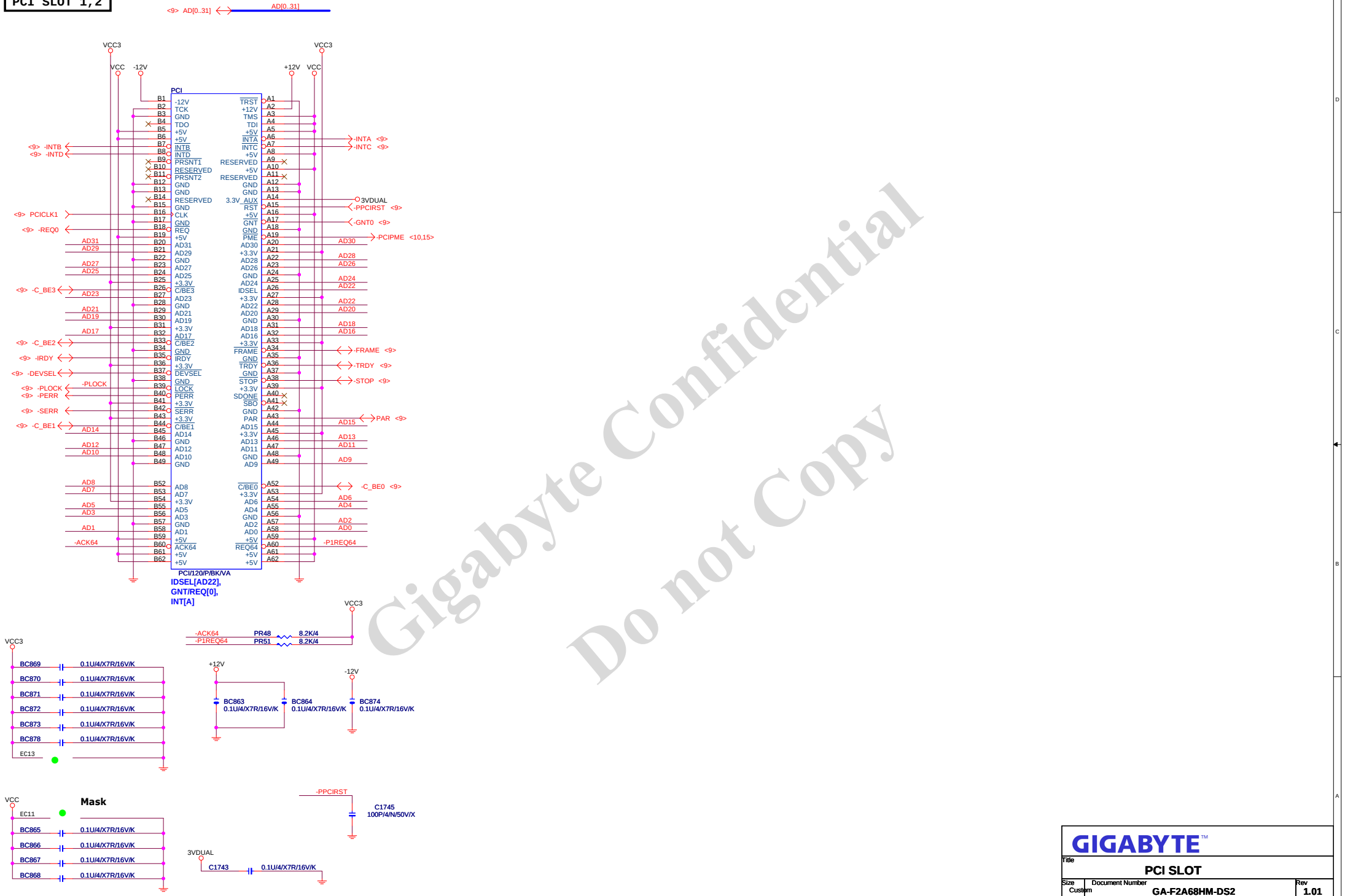
PCI SLOT 1,2



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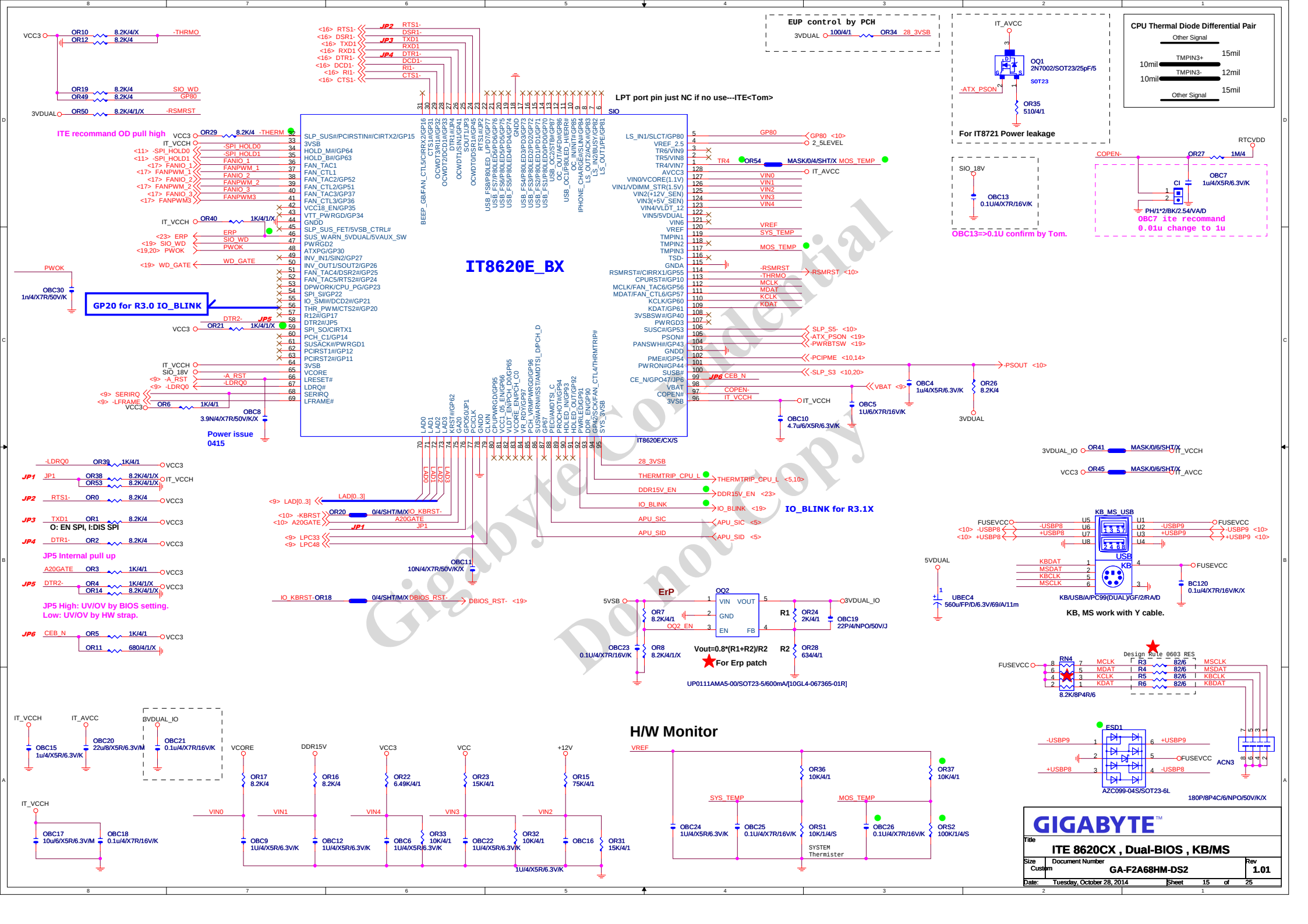
Title: PCI SLOT		
Size: Custom	Document Number: GA-F2A68HM-DS2	Rev: 1.01
Date: Tuesday, October 28, 2014	Sheet 14 of 25	


IT8620E_BX
IT8620E/CX/S
LPT port pin just NC if no use---ITE<Tom>
EUP control by PCH
CPU Thermal Diode Differential Pair
For IT8721 Power leakage
ITE recommand OD pull high
GP20 for R3.0 IO_BLINK
Power issue 0415
JP5 Internal pull up
JP5 High: UV/OV by BIOS setting.
Low: UV/OV by HW strap.
O: EN SPI, I:DIS SPI
IO_BLINK for R3.1X
KB, MS work with Y cable.
OBC13=>0.1U confirm by Tom.
OBC7 ite recommand
0.01u change to 1u
For Erp patch
H/W Monitor
Vout=0.8*(R1+R2)/R2
UP0111AMA5-00/SOT23-5/600mA/[10GL4-067365-01R]
Design Rule 0603 RES
8.2K/8P4R/6
180P/8P4C/6/NPO/50V/K/X
AZC099-04S/SOT23-6L
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GIGABYTE
Title
ITE 8620CX , Dual-BIOS , KB/MS
Size
Custom
Document Number
GA-F2A68HM-DS2
Rev
1.01
Date: Tuesday, October 28, 2014
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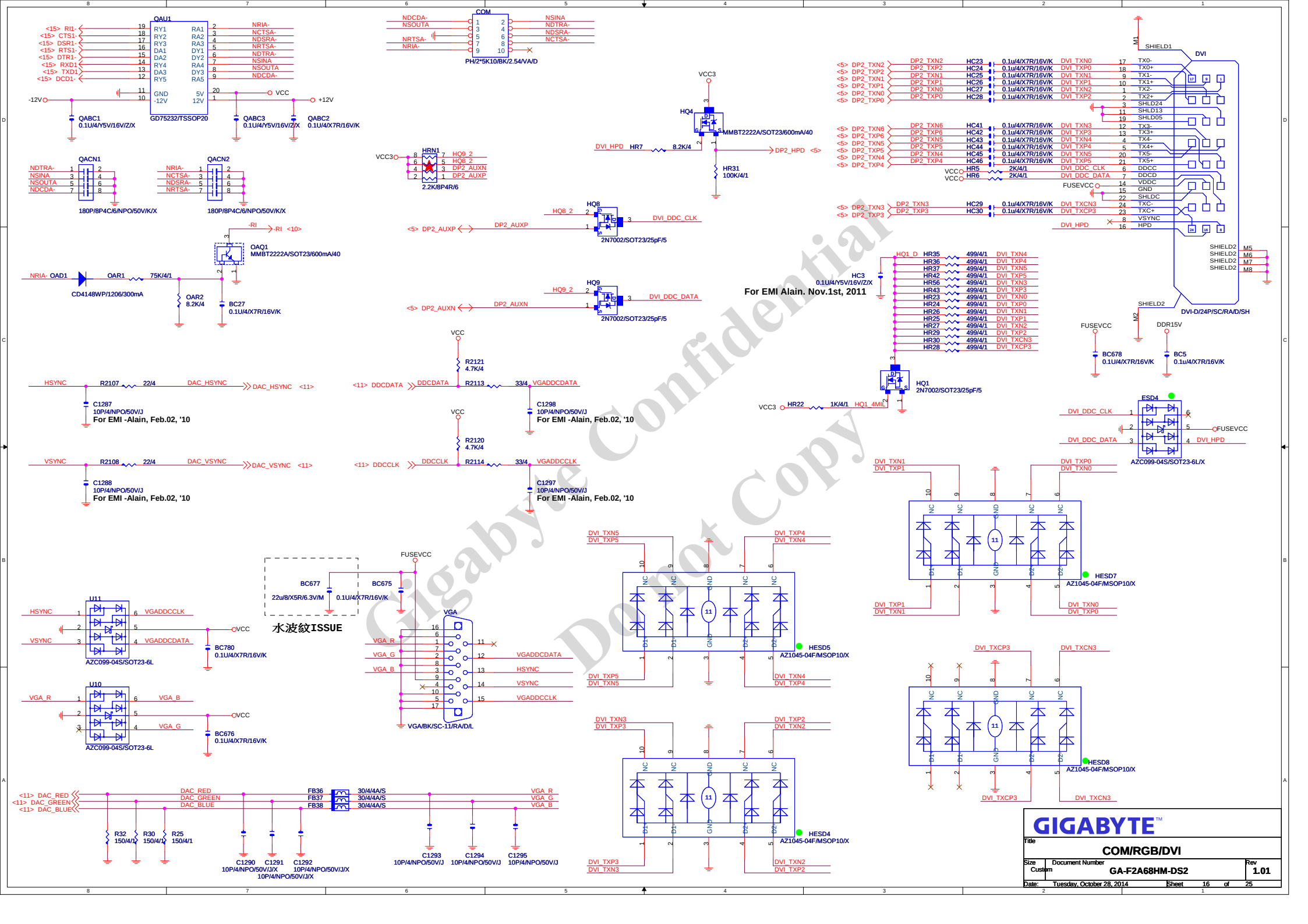
QAU1
GD75232/TSSOP20
QABC1 0.1U/4/Y5V/16V/Z/X
QABC3 0.1U/4/Y5V/16V/Z/X
QABC2 0.1U/4/X7R/16V/K
COM
PH/2*5K10/BK/2.54/VA/D
QACN1
QACN2
180P/8P4C/6/NPO/50V/K/X
HRN1
2.2K/8P4R/6
HQ4
MMBT2222A/SOT23/600mA/40
HR7 8.2K/4
HR31 100K/4/1
HQ8
HQ9
2N7002/SOT23/25pF/5
OAQ1
MMBT2222A/SOT23/600mA/40
OAD1
CD4148WP/1206/300mA
OAR1 75K/4/1
OAR2 8.2K/4
BC27 0.1U/4/X7R/16V/K
R2107 22/4
R2108 22/4
R2121 4.7K/4
R2120 4.7K/4
R2113 33/4
R2114 33/4
C1287 10P/4/NPO/50V/J For EMI -Alain, Feb.02, '10
C1288 10P/4/NPO/50V/J For EMI -Alain, Feb.02, '10
C1298 10P/4/NPO/50V/J For EMI -Alain, Feb.02, '10
C1297 10P/4/NPO/50V/J For EMI -Alain, Feb.02, '10
For EMI Alain. Nov.1st, 2011
HC3 0.1U/4/Y5V/16V/Z/X
HQ1 2N7002/SOT23/25pF/5
HR22 1K/4/1
HQ1_4MIL
SHIELD1
DVI
DVI-D/24P/SC/RA/D/SH
BC678 0.1U/4/X7R/16V/K
BC5 0.1u/4/X7R/16V/K
ESD4
AZC099-04S/SOT23-6L/X
HESD7 AZ1045-04F/MSOP10/X
HESD5 AZ1045-04F/MSOP10/X
HESD8 AZ1045-04F/MSOP10/X
HESD4 AZ1045-04F/MSOP10/X
U11
U10
AZC099-04S/SOT23-6L
BC780 0.1U/4/X7R/16V/K
BC676 0.1U/4/X7R/16V/K
BC677 22u/8/X5R/6.3V/M
BC675 0.1U/4/X7R/16V/K
水波紋ISSUE
VGA
VGA/BK/SC-11/RA/D/L
R32 150/4/1
R30 150/4/1
R25 150/4/1
FB36 30/4/4A/S
FB37 30/4/4A/S
FB38 30/4/4A/S
C1290 10P/4/NPO/50V/J/X
C1291 10P/4/NPO/50V/J/X
C1292 10P/4/NPO/50V/J/X
C1293 10P/4/NPO/50V/J
C1294 10P/4/NPO/50V/J
C1295 10P/4/NPO/50V/J
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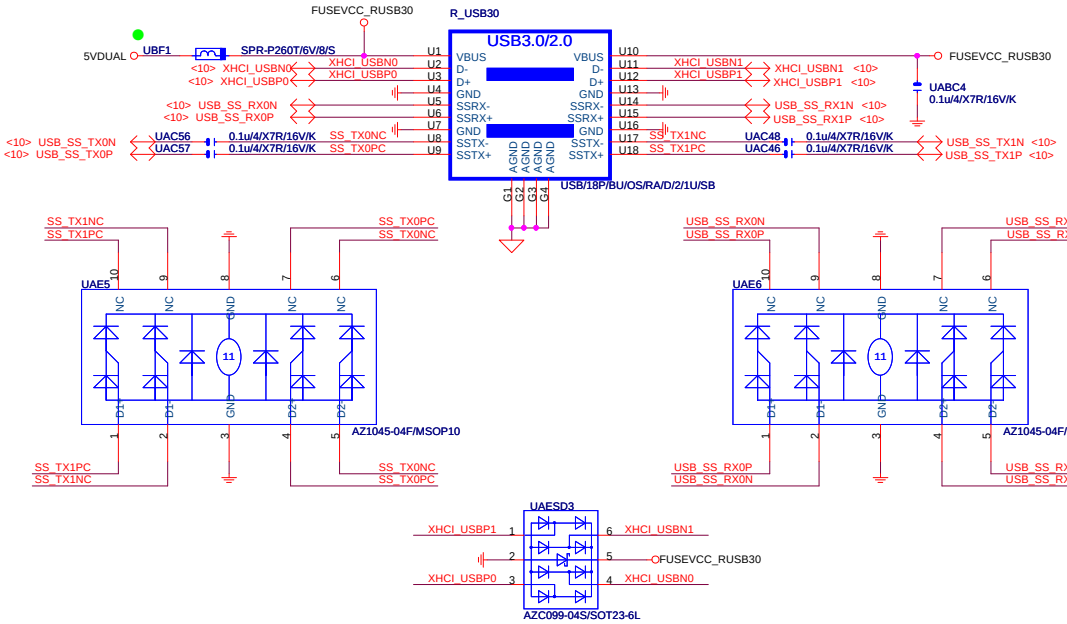
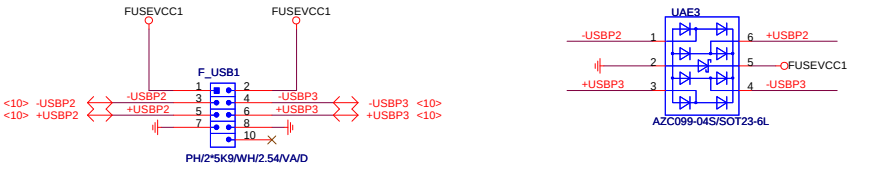
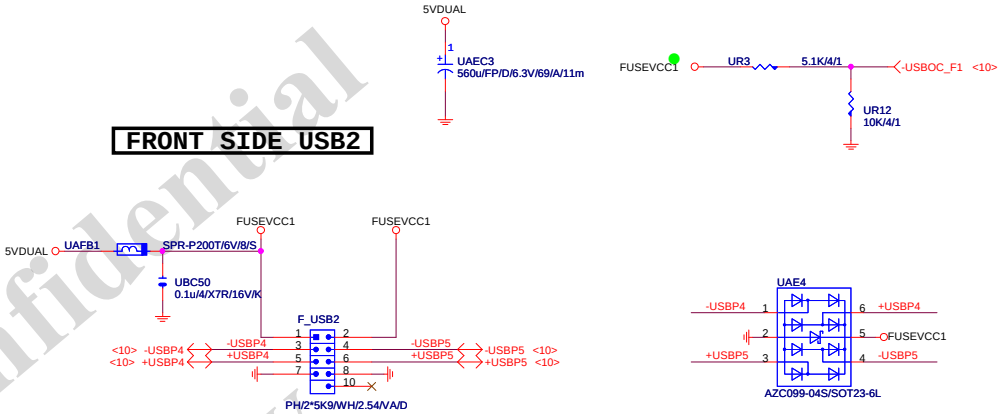
GIGABYTE
Title
COM/RGB/DVI
Size Custom
Document Number GA-F2A68HM-DS2
Rev 1.01
Date: Tuesday, October 28, 2014
Sheet 16 of 25



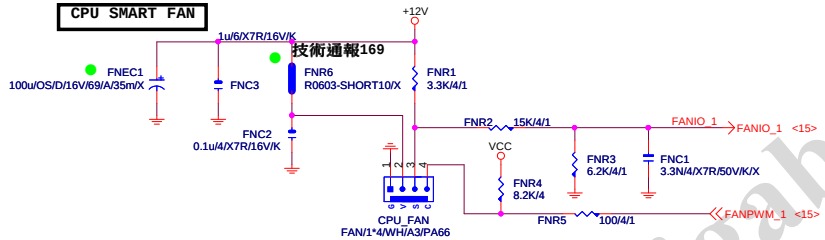
FRONT SIDE USB1



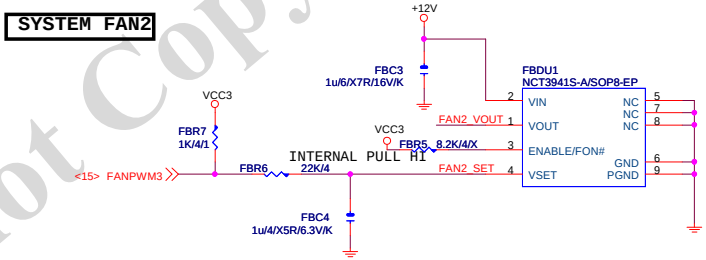
FRONT SIDE USB2



CPU SMART FAN



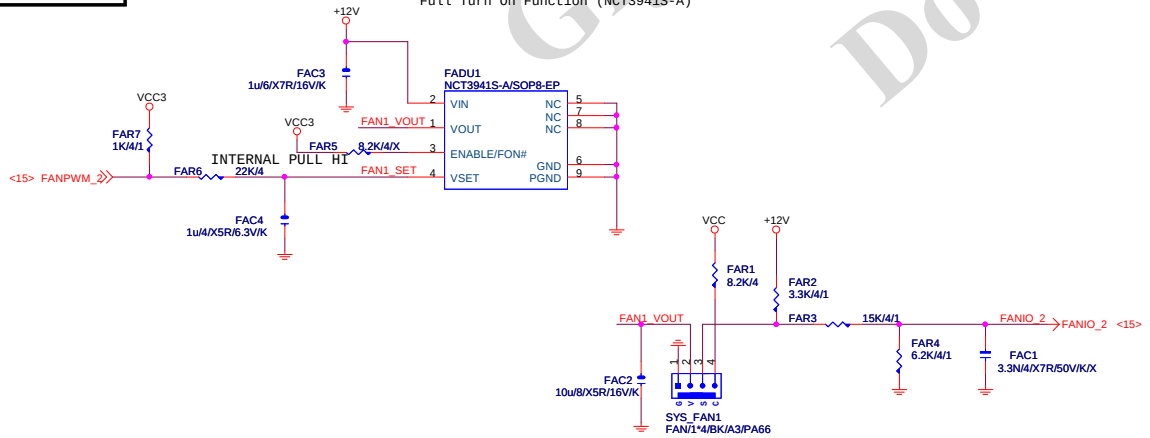
SYSTEM FAN2

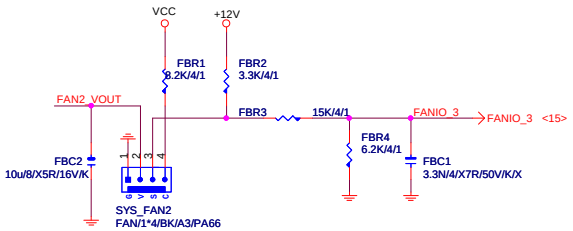


SYSTEM FAN1

Linear SYS_FAN

Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)





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Title	FAN , F_USB , R_USB	
Size: Custom	Document Number: GA-F2A68HM-DS2	Rev: 1.01
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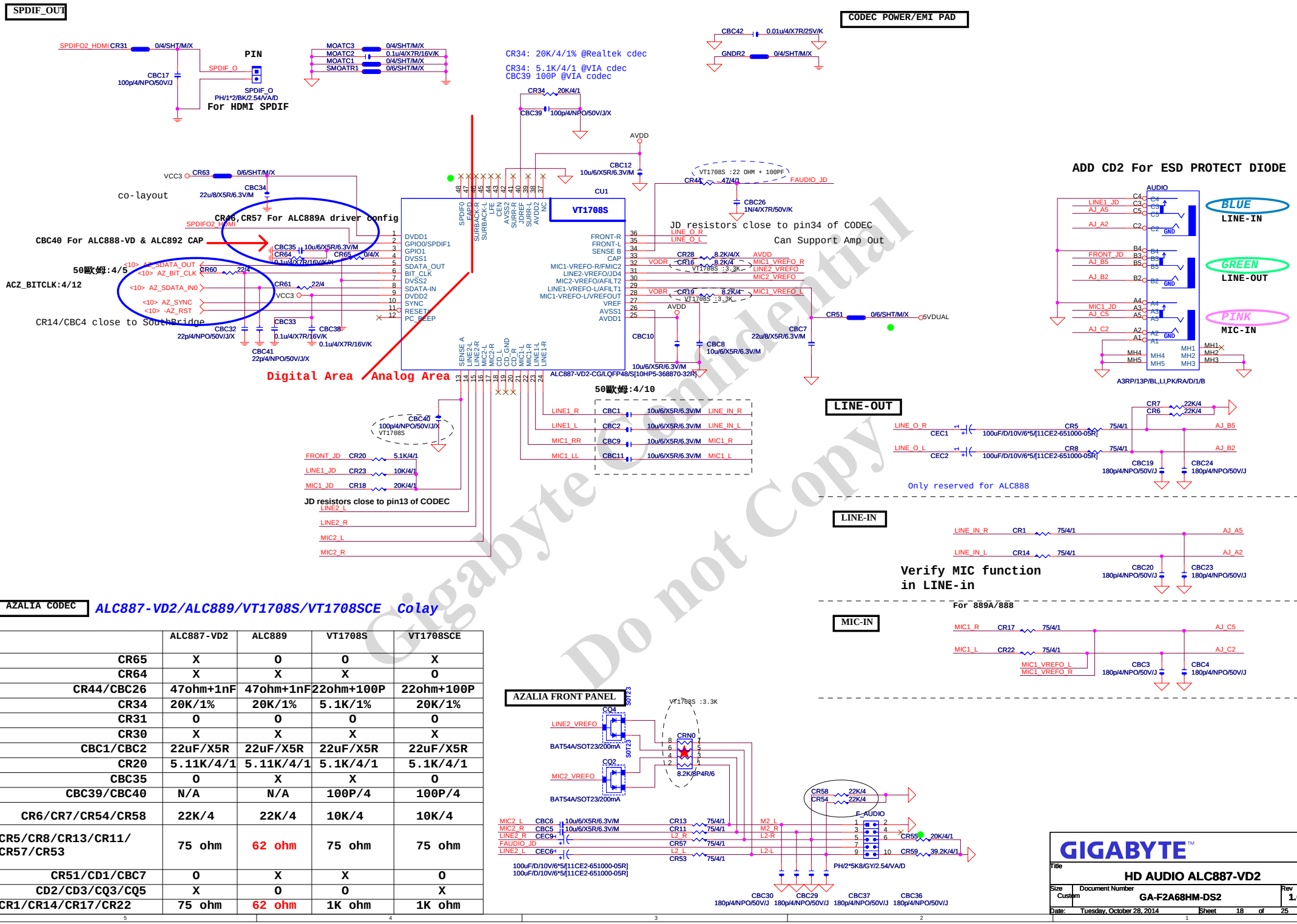


AZALIA CODEC **ALC887-VD2/ALC889/VT1708S/VT1708SCE Colay**

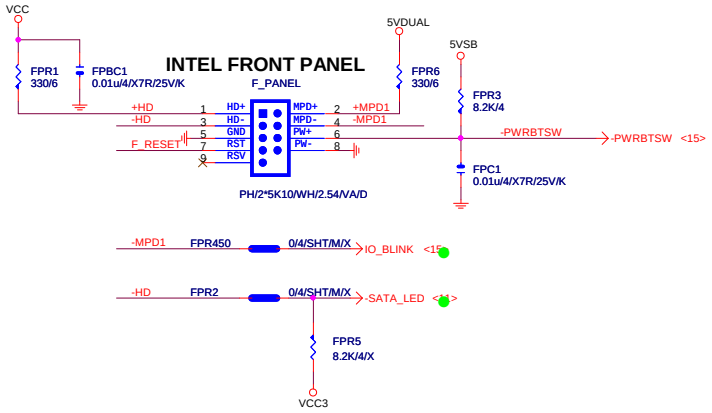
	ALC887-VD2	ALC889	VT1708S	VT1708SCE
CR65	X	0	0	X
CR64	X	X	X	0
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P
CR34	20K/1%	20K/1%	5.1K/1%	20K/1%
CR31	0	0	0	0
CR30	X	X	X	X
CBC1/CBC2	22uF/X5R	22uF/X5R	22uF/X5R	22uF/X5R
CR20	5.11K/4/1	5.11K/4/1	5.1K/4/1	5.1K/4/1
CBC35	0	X	X	0
CBC39/CBC40	N/A	N/A	100P/4	100P/4
CR6/CR7/CR54/CR58	22K/4	22K/4	10K/4	10K/4
CR5/CR8/CR13/CR11/ CR57/CR53	75 ohm	62 ohm	75 ohm	75 ohm
CR51/CD1/CBC7	0	X	X	0
CD2/CD3/CQ3/CQ5	X	0	0	X
CR1/CR14/CR17/CR22	75 ohm	62 ohm	1K ohm	1K ohm

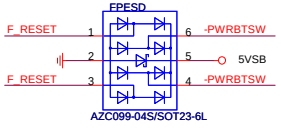
GIGABYTE

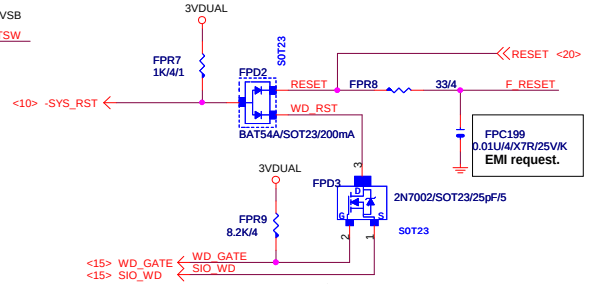
Title: HD AUDIO ALC887-VD2

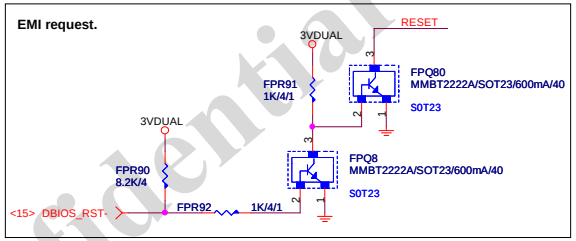
Size: Custom | Document Number: GA-F2A68HM-DS2 | Rev: 1.01

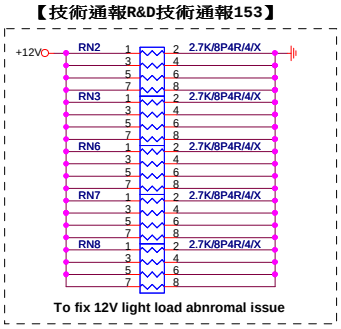
Date: Tuesday, October 28, 2014 | Sheet 18 of 25

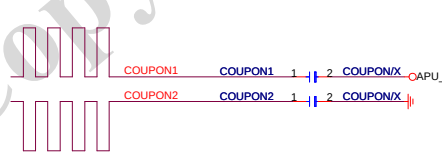


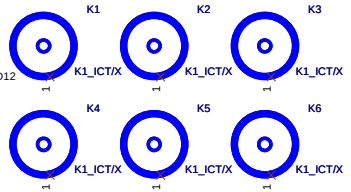


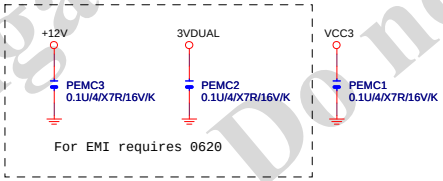


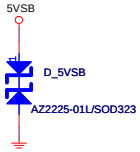


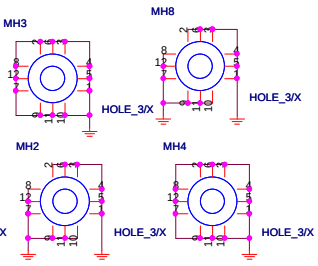


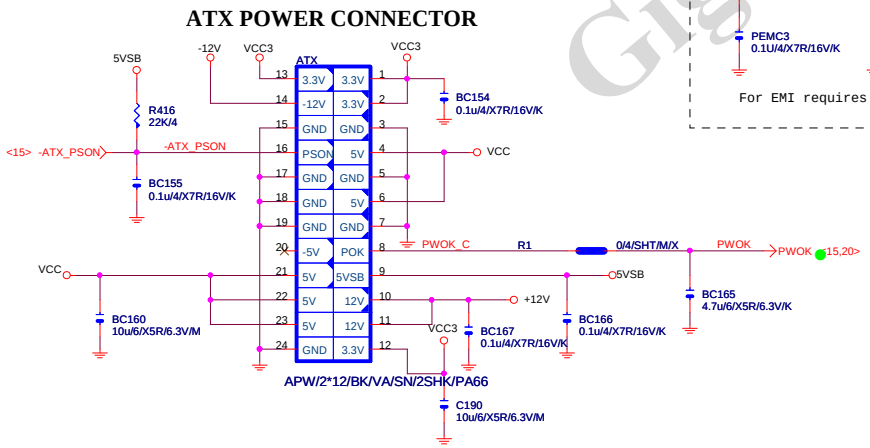


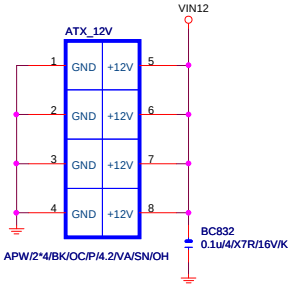


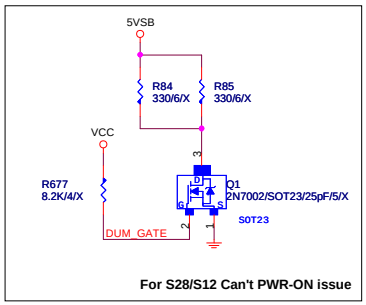












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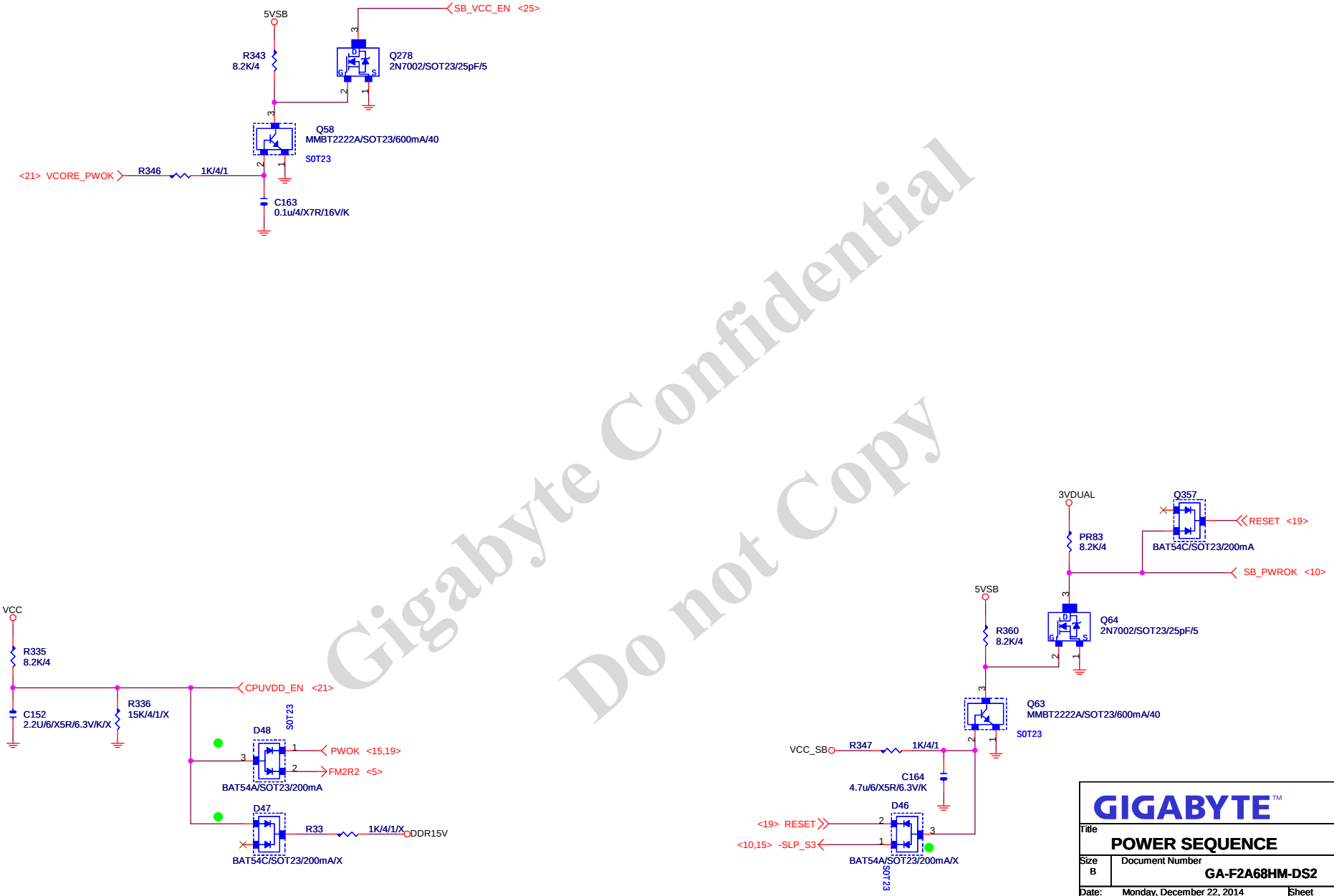
Title	ATX, FRONT PANEL	
Size: Custom	Document Number: GA-F2A68HM-DS2	Rev: 1.01
Date: Tuesday, October 28, 2014	Sheet 19 of 25	



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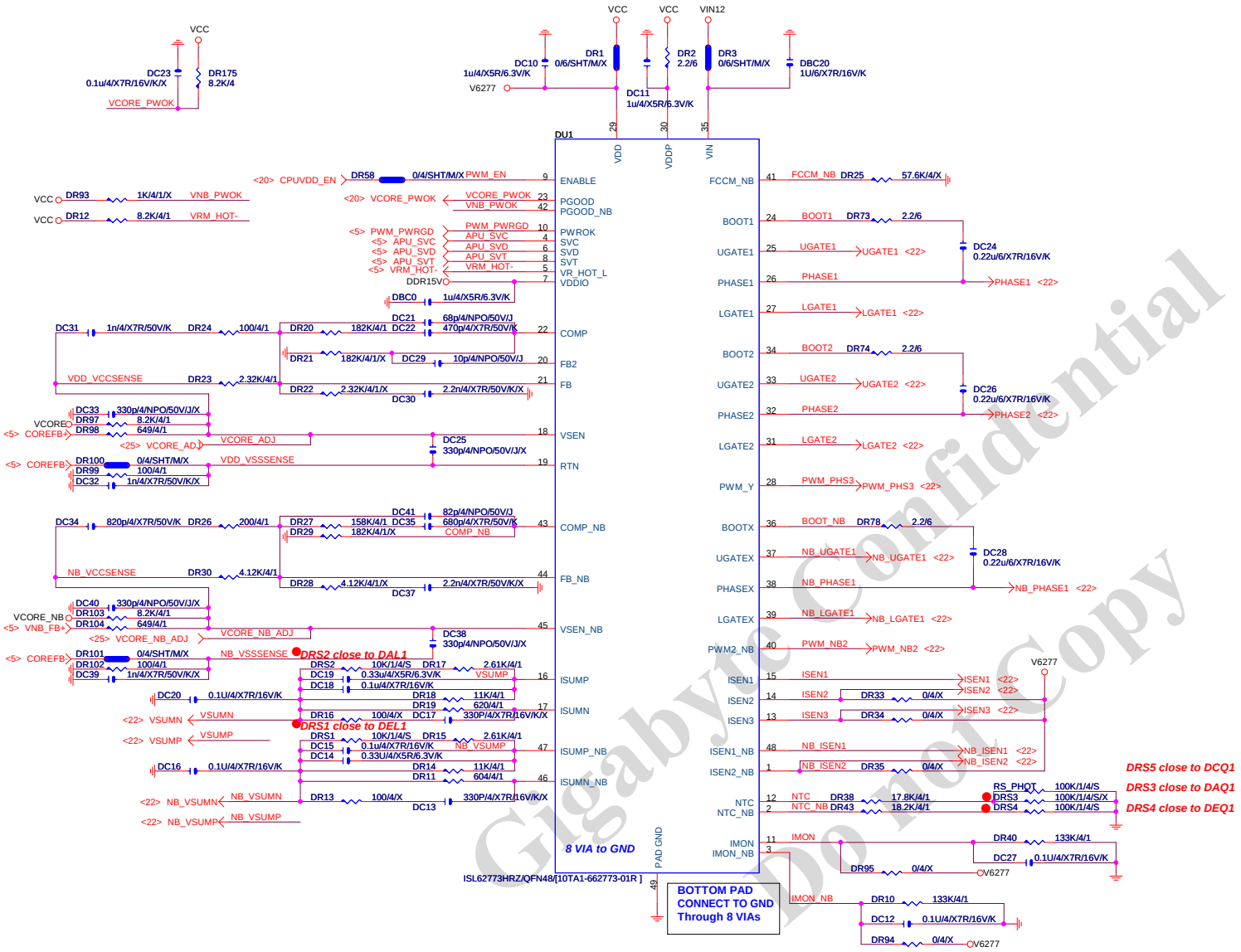
Title: POWER SEQUENCE		
Size: B	Document Number: GA-F2A68HM-DS2	Rev: 1.01
Date: Monday, December 22, 2014	Sheet 20 of 25	



GIGABYTE		
Title: VCORE (ISL62773)		
Size: Custom	Document Number: GA-F2A68HM-DS2	Rev: 1.01
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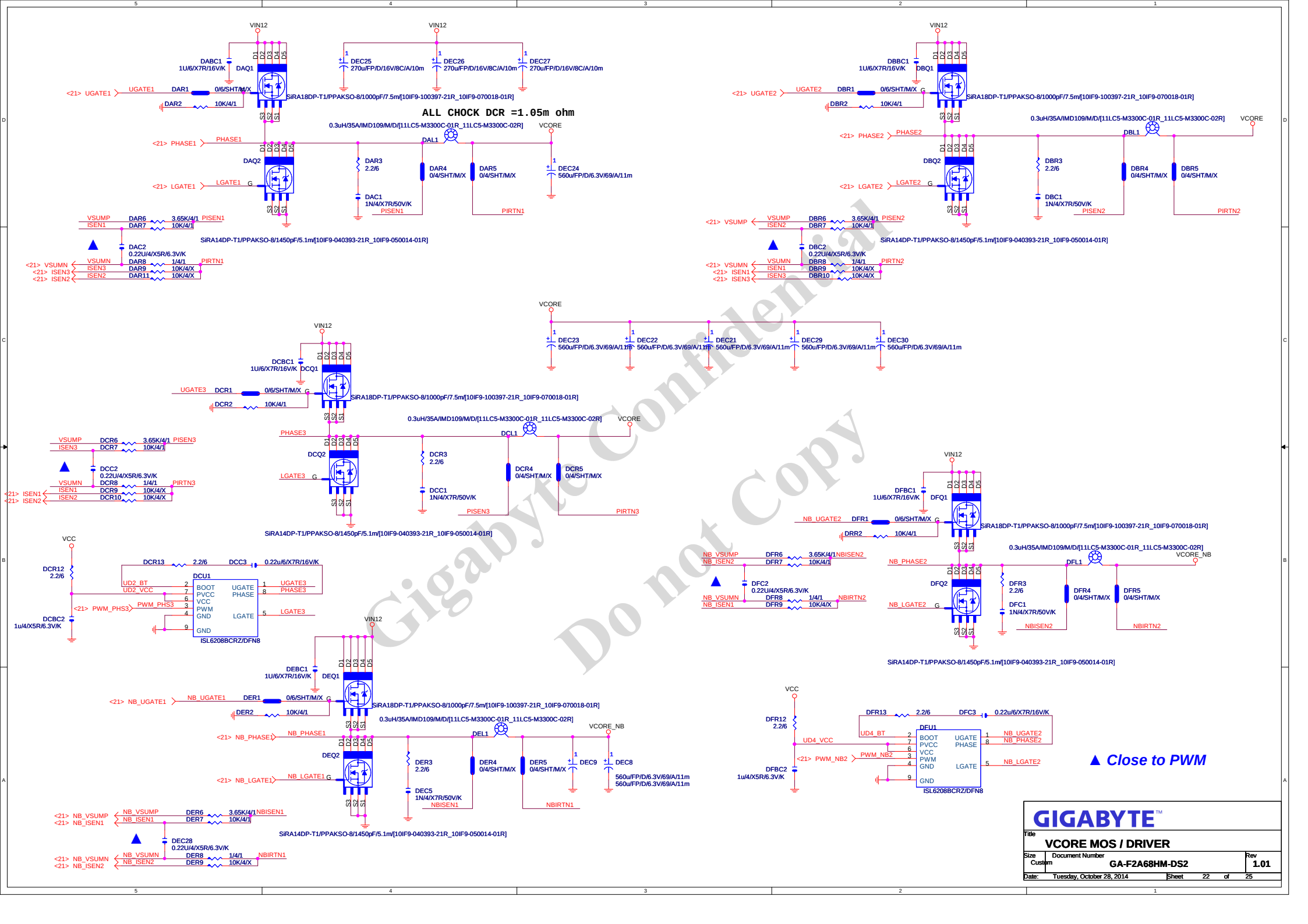
ALL CHOCK DCR =1.05m ohm
SiRA18DP-T1/PPAKSO-8/1000pF/7.5m/[10IF9-100397-21R_10IF9-070018-01R]
SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-040393-21R_10IF9-050014-01R]
0.3uH/35A/IMD109/M/D/[11LC5-M3300C-01R_11LC5-M3300C-02R]
ISL6208BCRZ/DFN8
▲ Close to PWM
GIGABYTE
VCORE MOS / DRIVER
GA-F2A68HM-DS2
1.01
Tuesday, October 28, 2014
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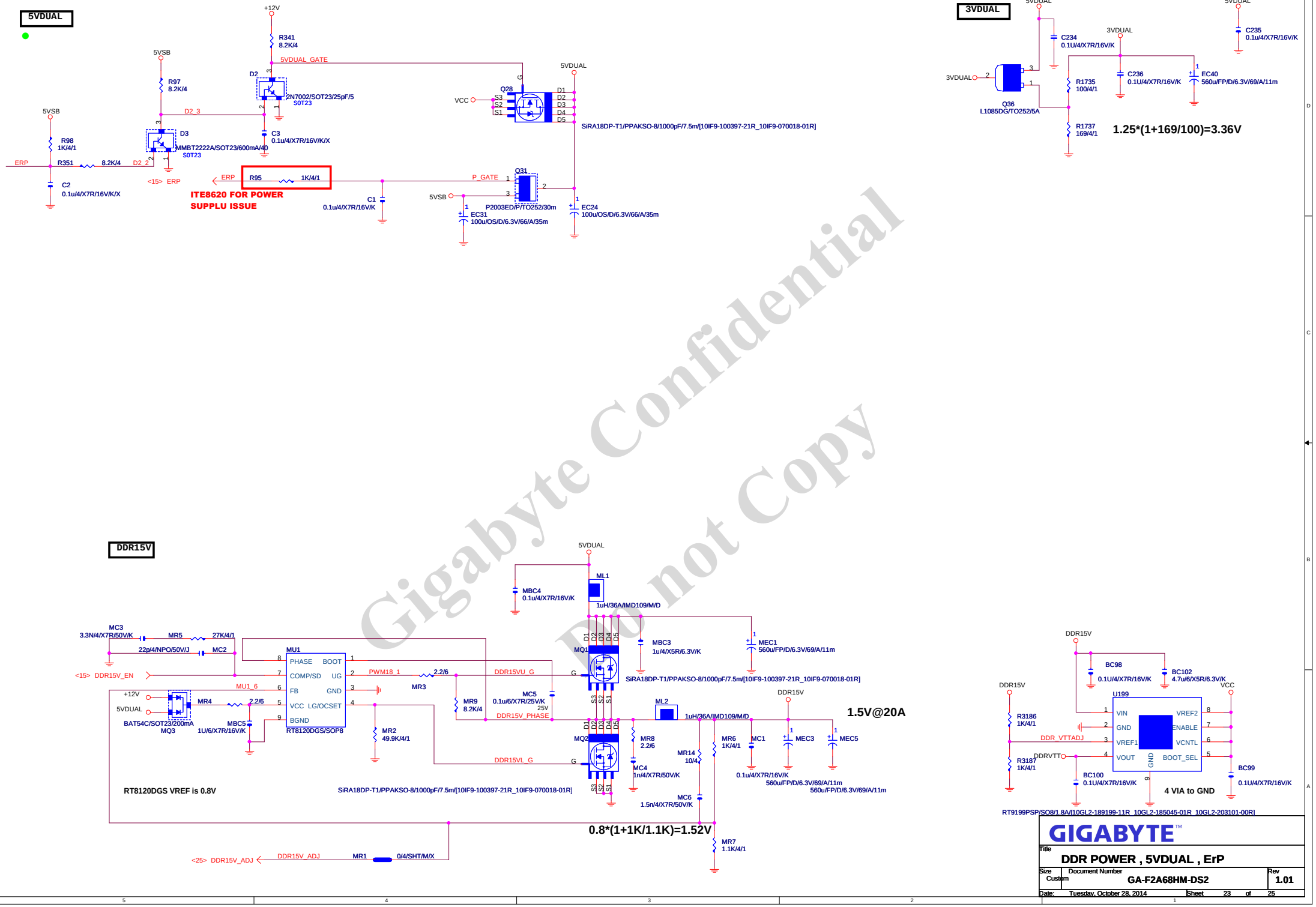
Do not Copy



LAN:RTL8111G

LAX1
25M/16p/30ppm/49US/20/D
LA_XTALI
LA_XTALO
LAC5 20p/4/NPO/50V/J
LAC6 20p/4/NPO/50V/J

LAR12 2.49K/4/1

LAU1
RTL8111G(S)/8106E
RTL8111G-CG/QFN32

33	GND		
LA_MDI0+	1 MDIP0	REGOUT(NC) 24	LA_REGOUT
LA_MDI0-	2 MDIN0	VDDREG(VDD33) 23	AVDD33_REG LAR9 0/6/SHT/M/X LA_VDD33
LA_DVDD10	3 AVDD10(NC)	DVDD10(NC) 22	LA_DVDD10
LA_MDI1+	4 MDIP1	LANWAKEB 21	-PCIE_WAKE <10,13>
LA_MDI1-	5 MDIN1	ISOLATEB 20	N_ISOLATEB
LA_MDI2+	6 MDIP2(NC)	PERSTB 19	APUPCIE_RST-
LA_MDI2-	7 MDIN2(NC)	HSON 18	LA_ML_IN_C LAC4 0.1u/4/X7R/16V/K APUPCIE_RST- <9,13>
LA_DVDD10	8 AVDD10	HSOP 17	LA_ML_IP_C LAC1 0.1u/4/X7R/16V/K ML_IN <6> ML_IP <6>

APUPCIE_RST- LABC4 100p/4/NPO/50V/J/X

VCC3 LAR4 1K/4/1 LAR5 15K/4/1/X

32	LA_VDD33	AVDD33	MDIP3(NC) 9
31	LA_RSET	RSET	MDIN3(NC) 10
30	LA_DVDD10	AVDD10	AVDD33(NC) 11
29	LA_XTALO	CLKXTAL2	CLKREQB 12
28	LA_XTALI	CKXTAL1	HSIP 13
27	LA_LED_ACT_TXRX	LED1/GPO	HSIN 14
26	LA_LED_LINK100	LED2(LED1)	REFCLK_P 15
25	LA_LED_LINK1000		REFCLK_N 16

VCC3 LAR1 8.2K/4/X

<6> LA_ML_OP_C
<6> LA_ML_ON_C
<9> SRCCLK_LAN
<9> -SRCCLK_LAN

LA_ ML-->80歐姆:[15/5/5/5/15]
SRCCLK-->50歐姆:[18/4/10/4/18]

LAN POWER

(CLOSE LAU1 PIN22,30,3,8)
LA_DVDD10
PIN22 LABC2 1u/4/X5R/6.3V/K
PIN30 LABC9 0.1u/4/X7R/16V/K
PIN3 LABC3 0.1u/4/X7R/16V/K
PIN8 LABC8 0.1u/4/X7R/16V/K
LABC2:1U CLOSE PIN22[REALTEK REQ]

3VDUAL
AVDD33_REG
PIN23 LABC6 0.1u/4/X7R/16V/K
(CLOSE LAU1 PIN23)

LA_VDD33
(CLOSE LAU1 PIN:11,32)
PIN11 LABC18 0.1u/4/X7R/16V/K
LABC27 4.7u/6/X5R/6.3V/K PWR SURGE
PIN32 LABC14 0.1u/4/X7R/16V/K
LABC20 4.7u/6/X5R/6.3V/K PWR SURGE
LABC18,27:CLOSE PIN11[REALTEK SURGE]
LABC14,20:CLOSE PIN32[REALTEK SURGE]

LA_REGOUT
PIN24 LABC5 0.1u/4/X7R/16V/K
LAR8 0/6/SHT/M/X
LA_DVDD10 LA_DVDD10
(CLOSE LAU1 PIN24)

NOTE:
RT8106E:PIN3,11,22,24-->NC
LABC2LABC3,LABC5,LABC18,LABC27-->N/A

USB_LAN

LAESD3
AZC099-04S/SOT23-6L/X
LA_MDI3- 1 6 LA_MDI3+
2 5 5VDUAL
LA_MDI2+ 3 4 LA_MDI2-

LAESD2
AZC099-04S/SOT23-6L/X
LA_MDI1- 1 6 LA_MDI1+
2 5 5VDUAL
LA_MDI0+ 3 4 LA_MDI0-

ESD2
+USBP7 1 6 -USBP7
2 5 FUSEVCC
-USBP6 3 4 +USBP6
AZC099-04S/SOT23-6L

LAN 100 Ohm
USB 90 Ohm

EMI GNDR1 0/6/SHT/M/X

5VDUAL
UBEC5 560u/FP/D/6.3V/69/A/11m

USB_LAN CONNECTOR

USB_LAN
LABC22 0.01u/4/X7R/25V/K
LA_MDI0+ L1
LA_MDI0- L2
LA_MDI1+ L3
LA_MDI1- L4
LA_MDI2+ L5
LA_MDI2- L6
LA_MDI3+ L7
LA_MDI3- L8
L9
L10
UP
DOWN

D1 LA_LED_ACT_TXRX
D2 LA_LED_D2 LAR13 150/4/1 LAN_3VDUAL_LED
D3 LA_LED_LINK100
D4 LA_LED_LINK1000
U1 FUSEVCC
U2 -USBP6 -USBP6 <10>
U3 +USBP6 +USBP6 <10>
U4
U5 FUSEVCC
U6 -USBP7 -USBP7 <10>
U7 +USBP7 +USBP7 <10>
U8
BC121 0.1u/4/X7R/16V/K

3VDUAL
LAFB2 0/6/SHT/M/X
LABC24 0.1u/4/Y5V/16V/Z/X

USB+LAN/1G/GO,Y/OS/RA/D/12C/ES/[11NR6-702009-Z1R_11NR6-702009-R2R]
Close to USB_LAN

UAD5
FUSEVCC_RUSB30
FUSEVCC
BAT54A/SOT23/200mA
SOT23
5VDUAL UBR7 5.1K/4/1 -USBOC_R1 <10>
UBR9 10K/4/1
5VDUAL UAFB5 SPR-P200T/6V/8/S FUSEVCC

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Title: REALTK RTL8111G
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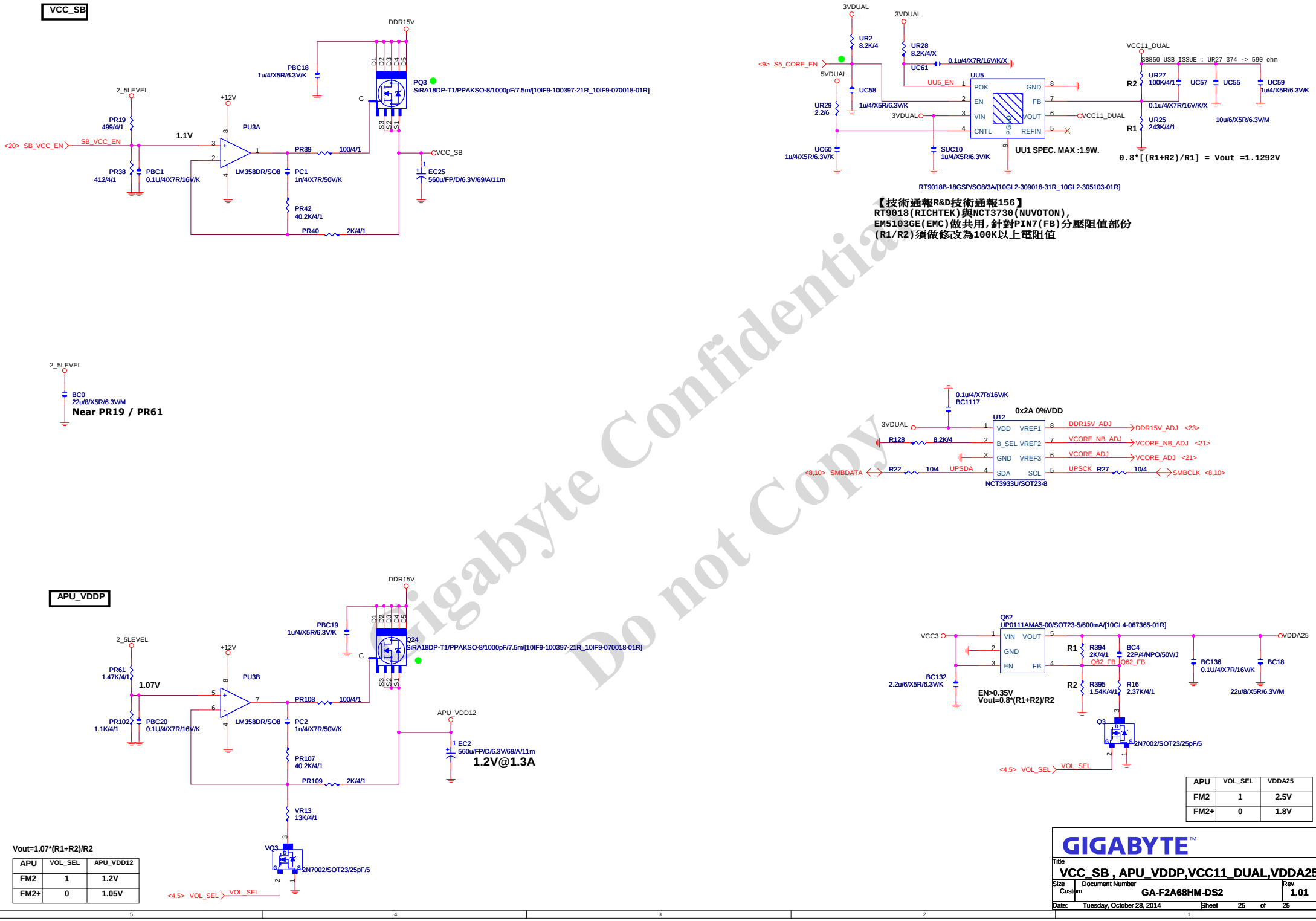

APU	VOL_SEL	APU_VDD12
FM2	1	1.2V
FM2+	0	1.05V

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

GIGABYTE™

Title: VCC_SB , APU_VDDP,VCC11_DUAL,VDDA25

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