GA-970A-D3

Revision : 1.02

GIGABYTE

Title: COVER SHEET

Size: Custom | Document Number: GA-970A-D3 | Rev: 1.02

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Model Name:GA-970A-D3

Component value change history

Version: 1.02

P-Code: U98094-0

Date	Change Item		Reason
2011.03.10	0.1 9M970AD3-00-01		
2011.03.11	0.1 9M970AD3-00-01A		
2011.05.09	9M970AD3-00-10A	PCB Ver 1.0	
2011.05.10	9M970AD3-00-10B	PCB Ver 1.01	
2011.05.18	9M970AD3-00-10C	PCB Ver 1.01	
2011.05.26	9M970AD3-00-10D	PCB Ver 1.01	
2011.06.07	9M970AD3-00-10E	PCB Ver 1.02	

Circuit or PCB layout change for next version

Date	Change Item	Reason
	0.1	
2011.02.22	Modify from GA-990XA-UD3	
	移除 PCIEx8, 1394, Front USB3	
	增加PCIEx1_3	
	Vcore change 4+1 power pake 6329+6609	
2011.03.11	修改CPU Vcore OCP與RC 電阻值	
	修改超電壓由每格10mV改爲5mV	
2011.03.14	6329 PIN GVOT.PVCC add P-H VCC	
	USB3.0 Fuse 3.0A change 3.5A	
	OPTICAL add 0.1uF(靠近OPTICAL)	
	LAN:8111E LA_VD33 add 0.1uF+4.7uF	
2011.05.09	change M2CPU料號12KRC-04K812-31R_12KRC-04K812-32R]	
	820uF change 560uF	
2011.05.10	cheang ddr dimm文字面順序1.2.3.4->4.2.3.1	
2011.05.18	修改on-off charge值	
2011.05.26	修改DDR PWR Level ripple過大issue	
2011.06.07	增加R1 R5 連接 differential clock 從 CLK GEN 到北橋.	

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Title: BOM & PCB HISTORY

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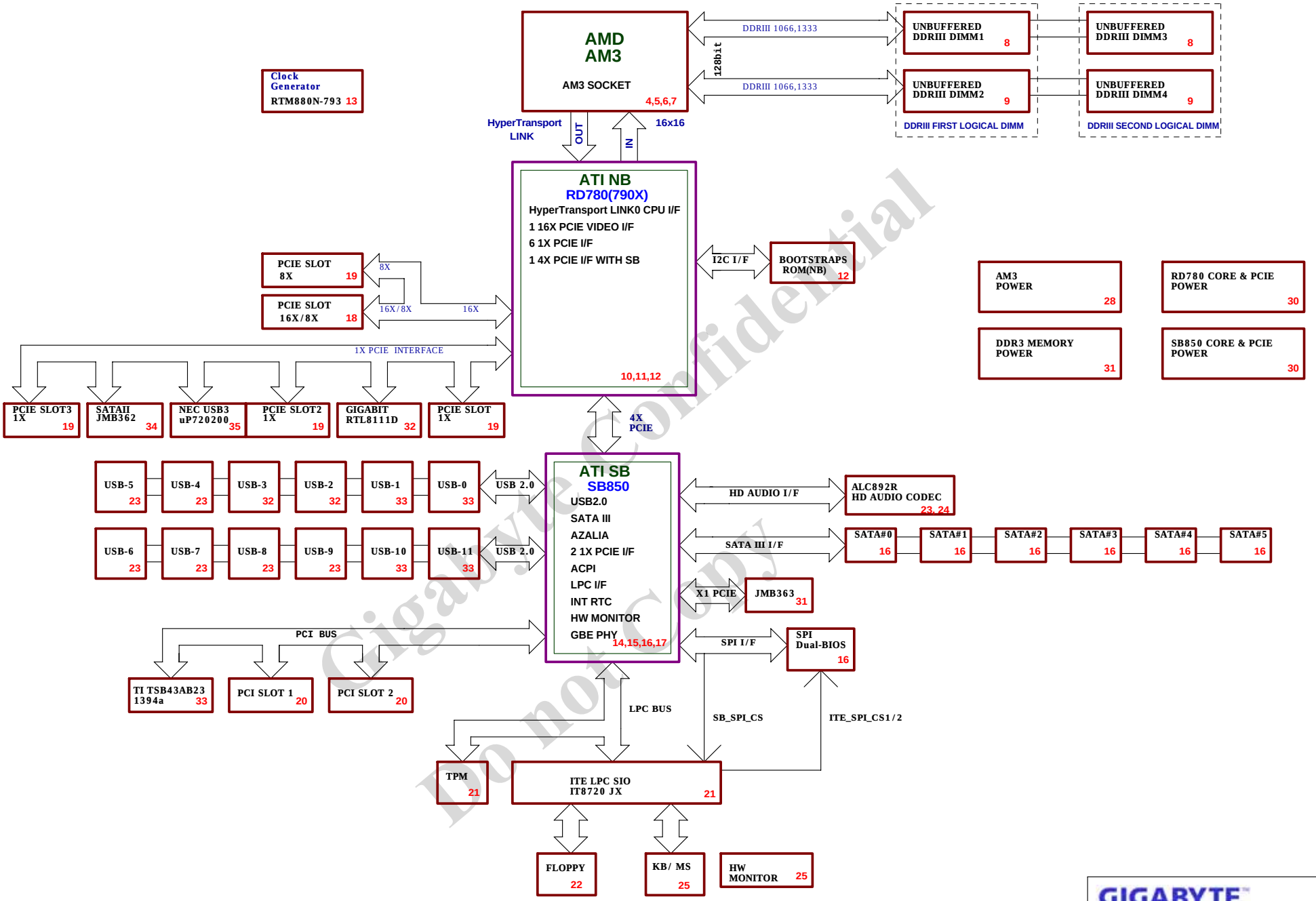

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Title: BLOCK DIAGRAM

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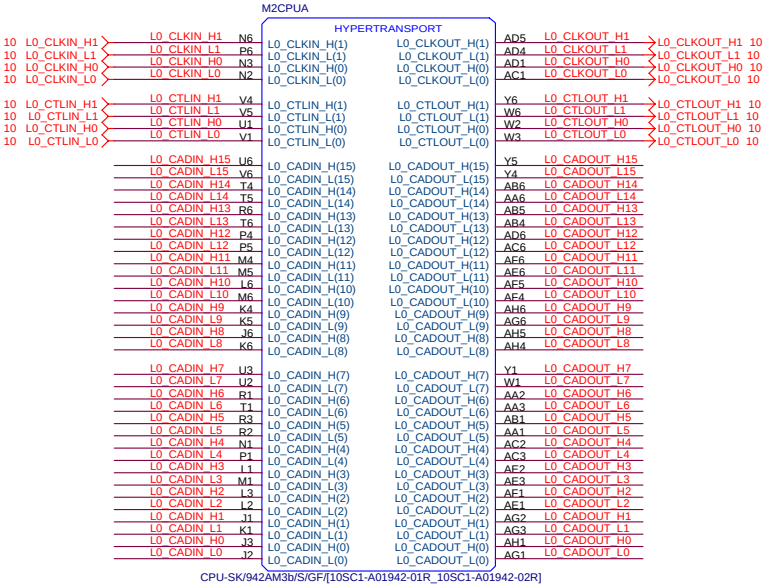
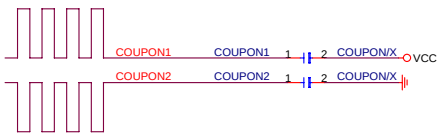
CPU_VDD_RUN = VCORE
CPU_VDDA_RUN = VDDA25
VLDT_RUN = VCC12_HT
CPU_VDDIO_SUS = DDR15V
CPU_VDDR = CPU_VDDR12

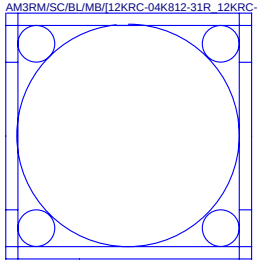
VLDT_A = VCC12_HT
VLDT_B = HT12B

L0_CADIN_L[0..15]
L0_CADIN_H[0..15]
L0_CADOUT_L[0..15]
L0_CADOUT_H[0..15]





M2CPU
AM3RM/SC/BL/MB/[12KRC-04K812-31R_12KRC-04K812-32R]



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Title	CPU HYPER TRANSPORT	
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
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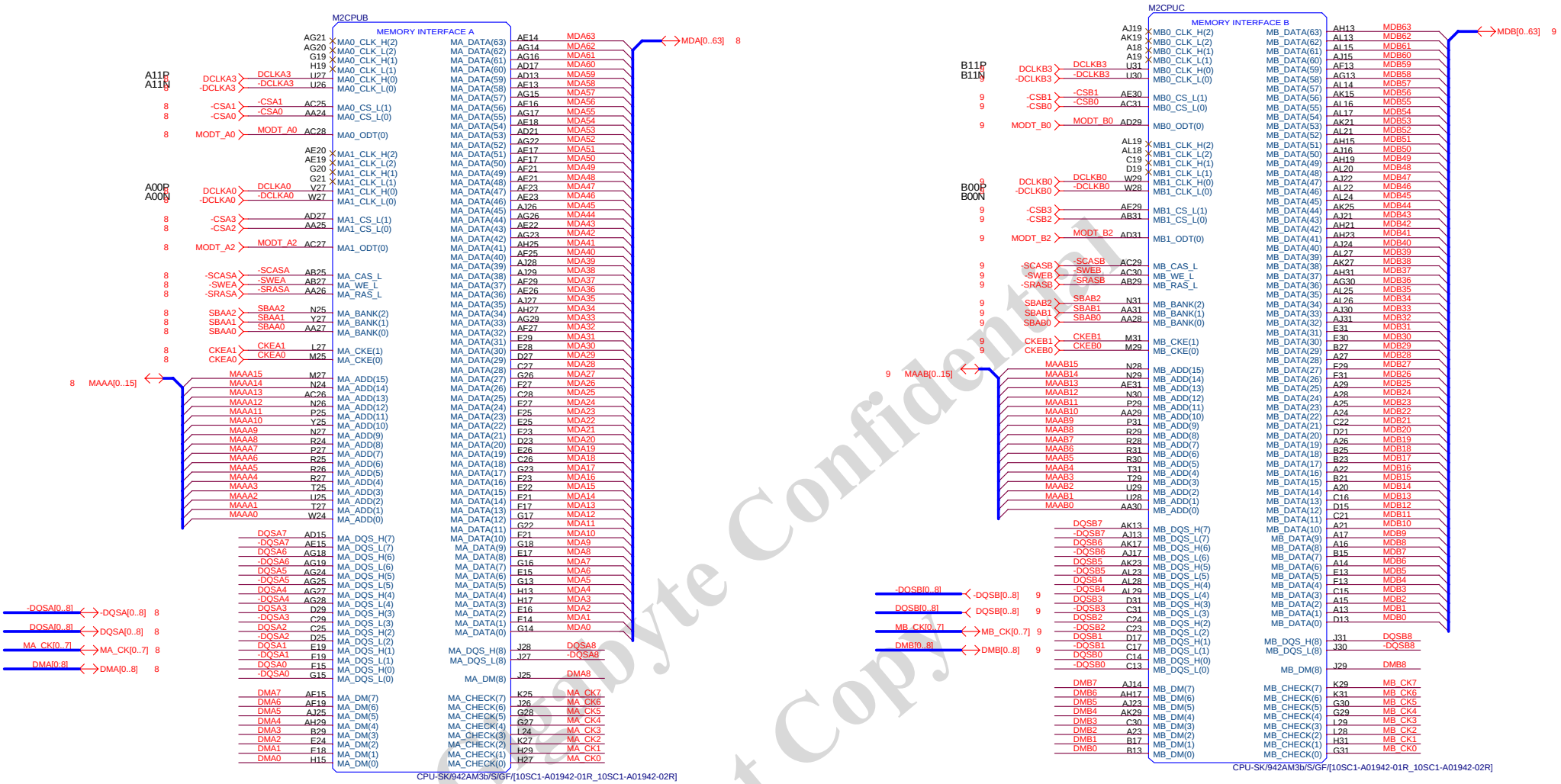

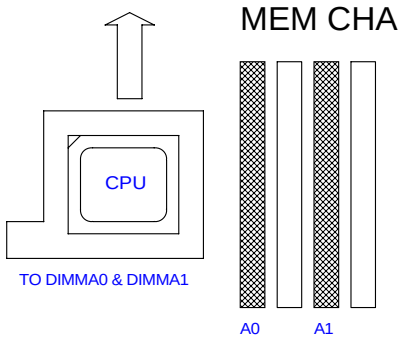

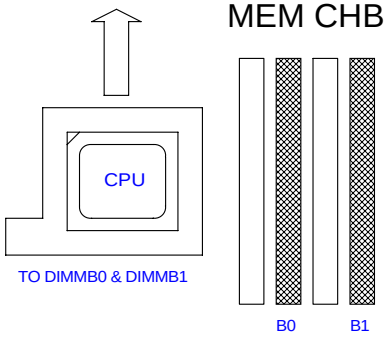

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Title: CPU DDRIII MEMORY		
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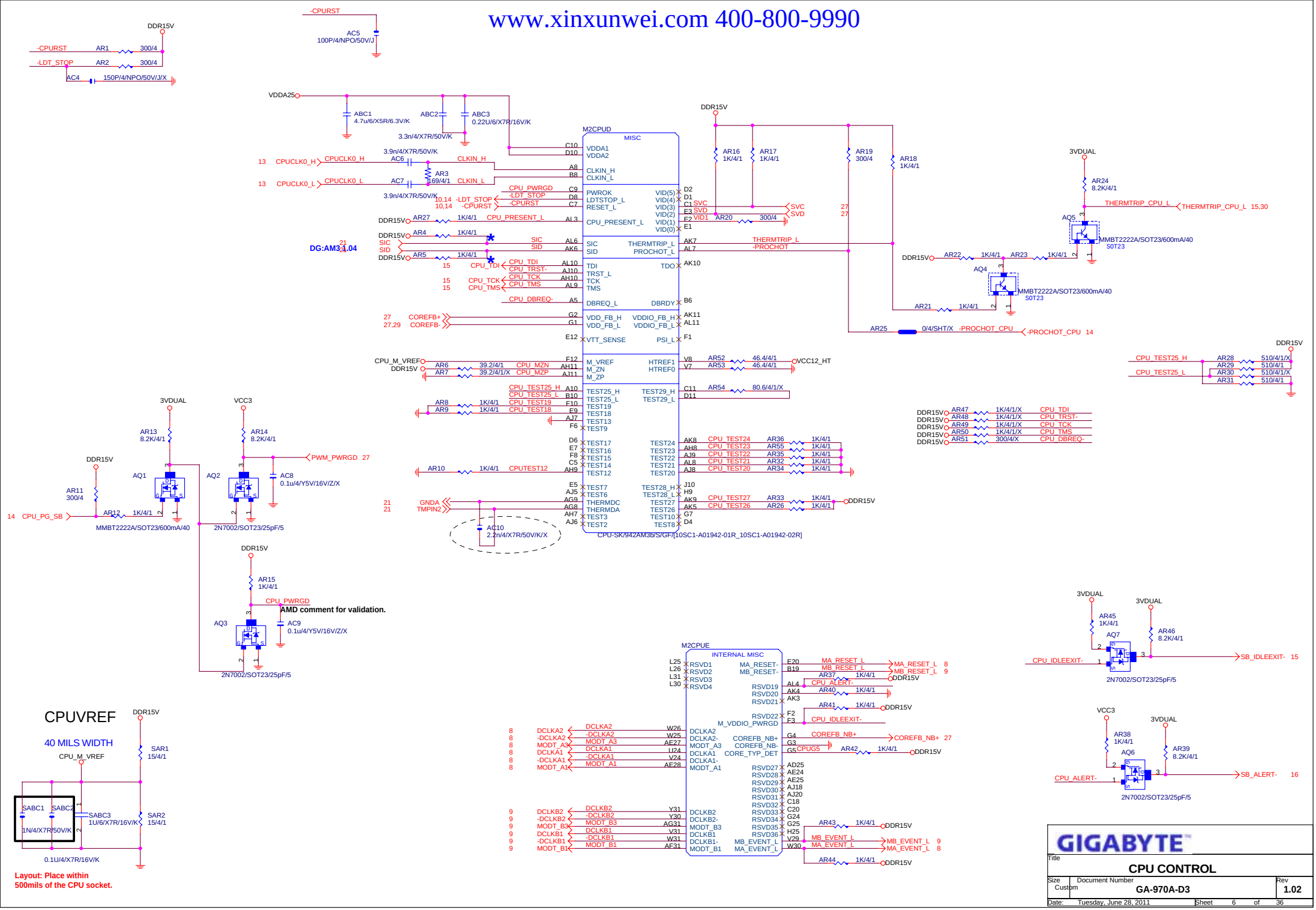

Title	CPU CONTROL
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VDDT_RUN_B is connected to the VLDT_RUN power supply through the package or on the die. It is only connected on the board to decoupling near the CPU package.

M2CPUE
VDD1

AE9 Missing pins on package and socket used for mechanical keying. =>AM3

M2CPUG
VDD2

H22 Missing pins on package and socket used for mechanical keying. =>AM3

M2CPUH
VDD3

AM3 Only

M2CPUI
VDDIO

HT12B

VCORE_NB

BUTTOM SIDE

AMD Validation

1021 EMI

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Title: CPU POWER & GND

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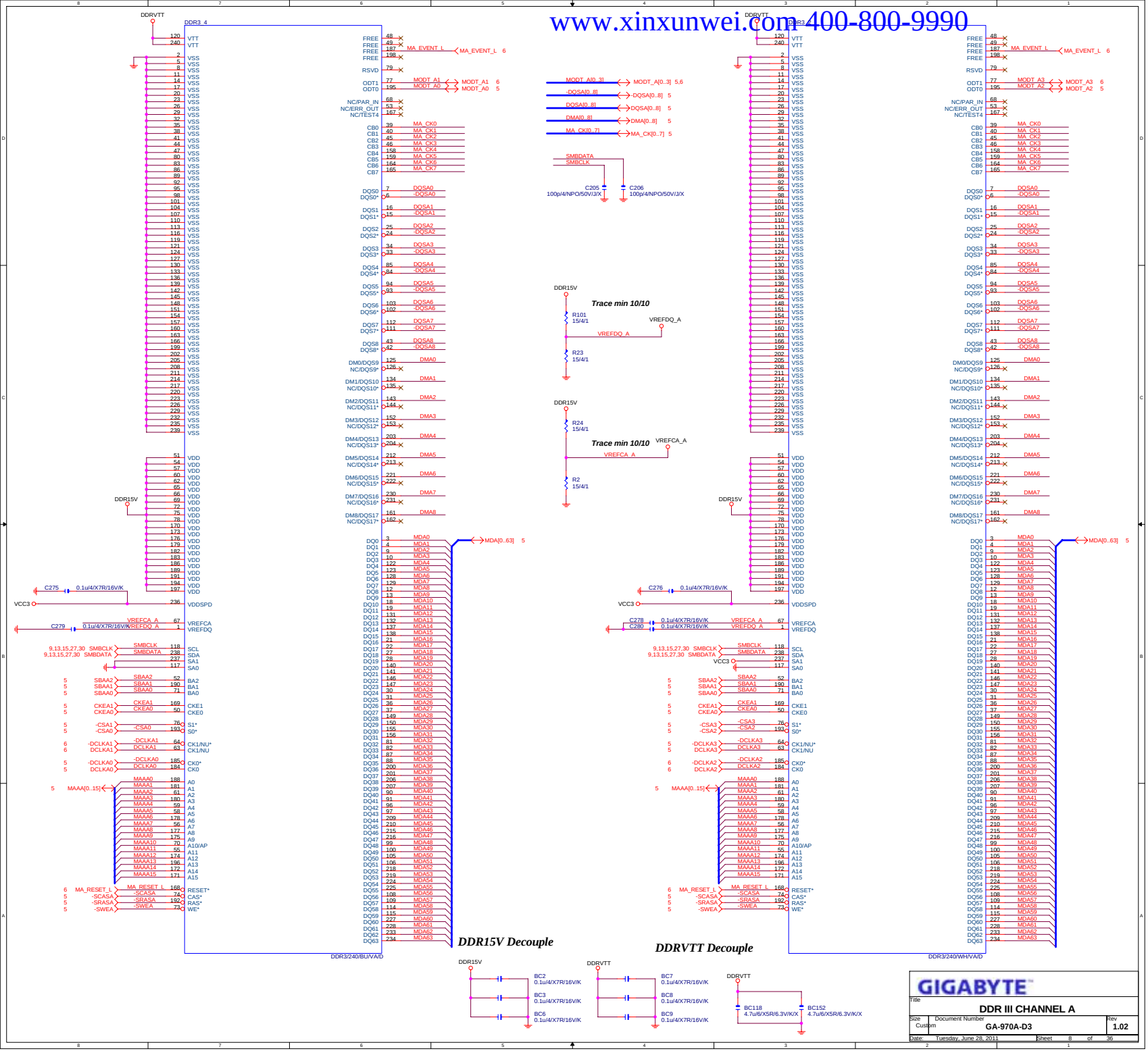

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Title: DDR III CHANNEL A

Size	Document Number	Rev
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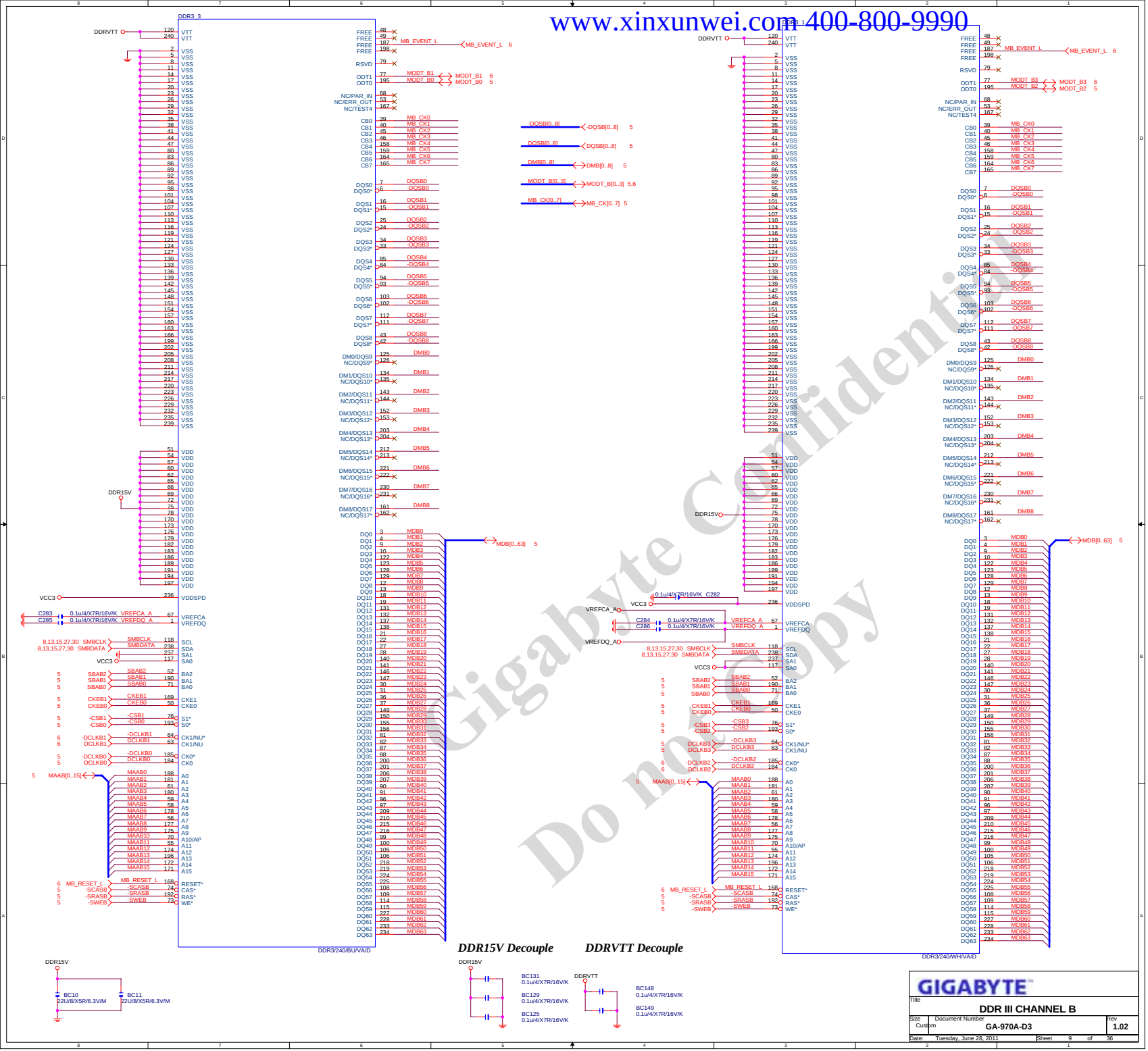

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Title: DDR III CHANNEL B

Size	Document Number	Rev
Custom	GA-970A-D3	1.02

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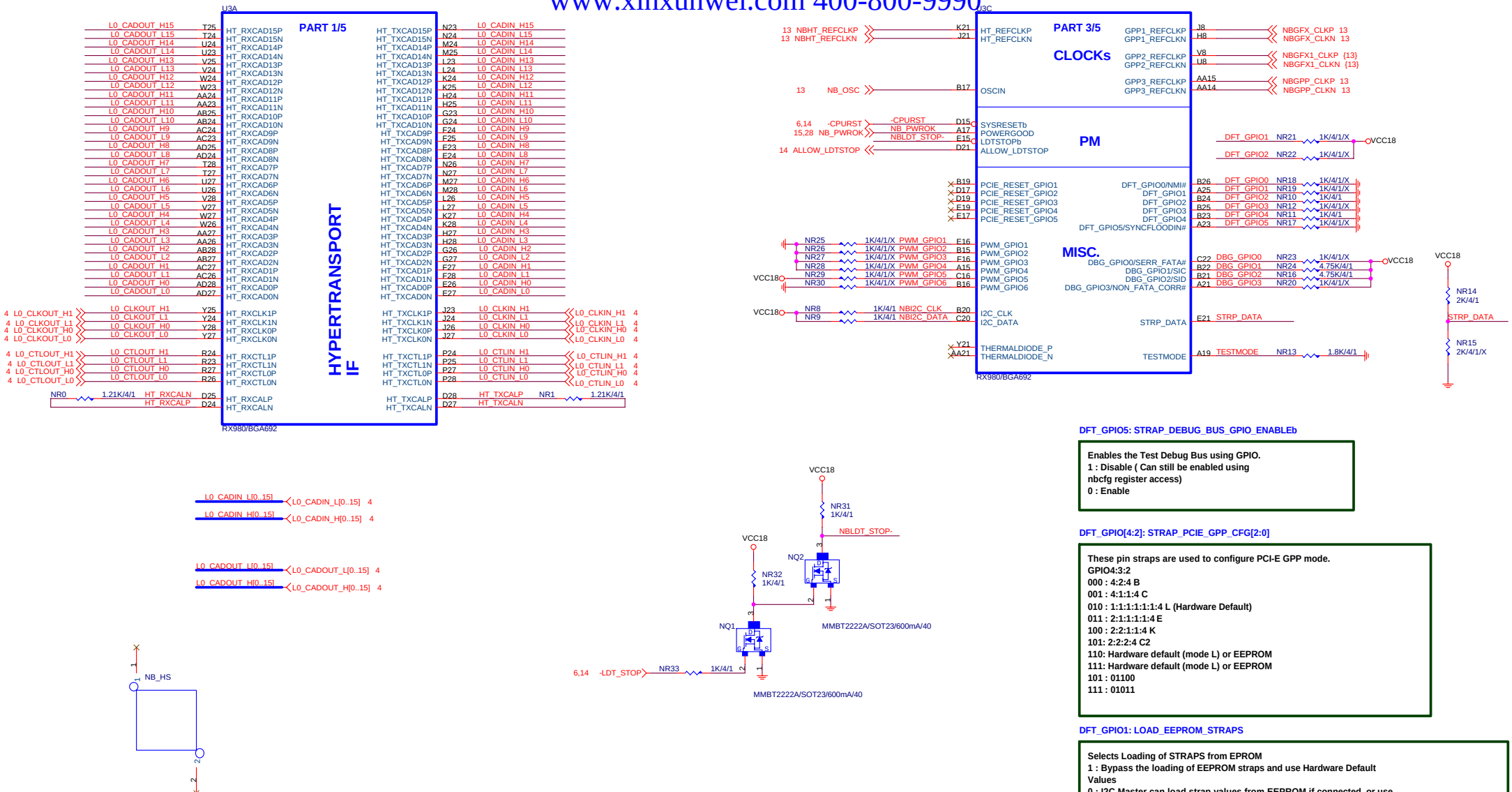

DFT_GPIO5: STRAP_DEBUG_BUS_GPIO_ENABLEb

Enables the Test Debug Bus using GPIO.
1 : Disable (Can still be enabled using nbcfg register access)
0 : Enable

DFT_GPIO[4:2]: STRAP_PCIE_GPP_CFG[2:0]

These pin straps are used to configure PCI-E GPP mode.
GPIO4:3:2
000 : 4:2:4 B
001 : 4:1:1:4 C
010 : 1:1:1:1:1:1:4 L (Hardware Default)
011 : 2:1:1:1:1:4 E
100 : 2:2:1:1:4 K
101: 2:2:2:4 C2
110: Hardware default (mode L) or EEPROM
111: Hardware default (mode L) or EEPROM
101 : 01100
111 : 01011

DFT_GPIO1: LOAD_EEPROM_STRAPS

Selects Loading of STRAPS from EPROM
1 : Bypass the loading of EEPROM straps and use Hardware Default Values
0 : I2C Master can load strap values from EEPROM if connected, or use default values if not connected

DFT_GPIO0: STRAP_DEBUG_BUS_PCIE_ENABLEb

Enables the Test Debug Bus using PCIE bus
1 : Disable (Can still be enabled using nbcfg register access)
0 : Enable

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Title	RS780 HT-LINK I/F	
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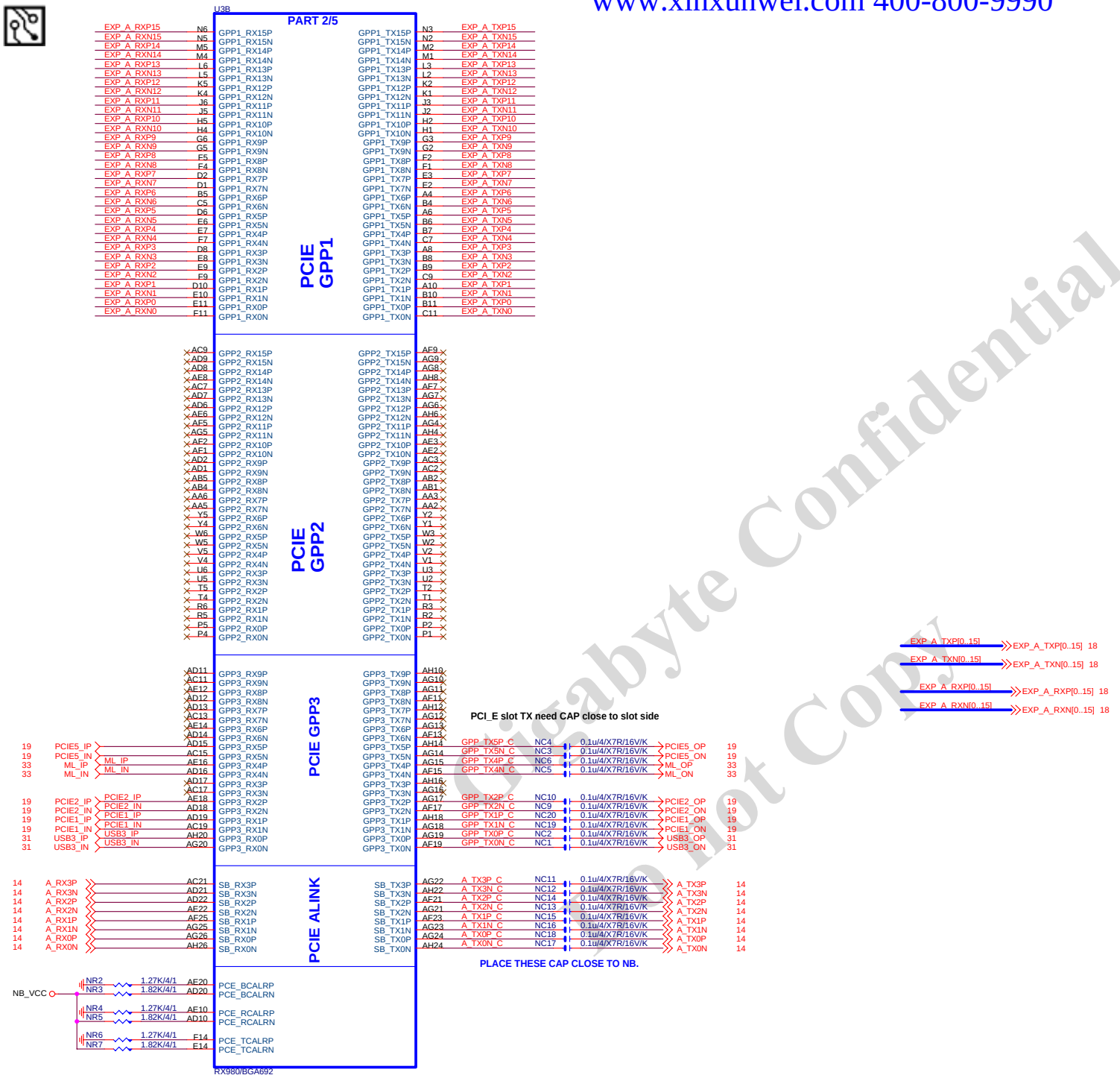

Title	RS780 PCIE I/F ,Switch
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U3E

PART 5/5

GROUND

RX980/BGA692

U3D

PART 4/5

POWER

RX980/BGA692

NB_VCC

VDDHT=>1.1V@3.25A

SC42 1U/6/X7R/16V/K

C1613 0.1U/6/X7R/25V/K

C1614 10U/8/X5R/6.3V/K

VDDPCIE=>1.1V@5.5A

C1616 10U/8/X5R/6.3V/K

SC43 1U/6/X7R/16V/K

C1618 0.1U/6/X7R/25V/K

SC44 10U/8/X5R/6.3V/K

SC45 1U/6/X7R/16V/K

SBC2 1u/4/X5R/6.3V/K

C1624 0.1U/6/X7R/25V/K

SNC2 0.1U/6/X7R/25V/K

1.1V@8500mA

SNC1 0.1U/6/X7R/25V/K

C1608 0.1U/6/X7R/25V/K

SC50 0.1U/6/X7R/25V/K

SC51 1U/6/X7R/16V/K

SC41 1U/6/X7R/16V/K

SC40 22u/8/X5R/6.3V/M

SBC3 1u/4/X5R/6.3V/K

VCC12_HT

VDDHTTX=>1.2V@1A

C1626 0.1U/6/X7R/25V/K

C1627 0.1U/6/X7R/25V/K

C1628 0.1U/6/X7R/25V/K

C1631 0.1U/6/X7R/16V/K

SC46 1U/6/X7R/16V/K

SC47 10U/8/X5R/6.3V/K

VDDA18=>1.8V@0.1A

VDDA18HTPLL=>1.8V@0.05A

VDDA18PCIE=>1.8V@2A

C1634 2.2U/6/X5R/6.3V/K

VCC18

C1635 10U/8/X5R/6.3V/K

SBC1 1U/4/X5R/6.3V/K

C1637 0.1U/4/X7R/16V/K

SC48 22U/8/X5R/6.3V/M

SC49 1U/6/X7R/16V/K

C1640 0.1U/4/X7R/16V/K

C1641 0.1U/4/X7R/16V/K

C1642 0.1U/4/X7R/16V/K

VCORE

C147 0.1u/4/X7R/16V/K/X

C148 0.1u/4/X7R/16V/K/X

C149 0.1u/4/X7R/16V/K/X

C150 0.1u/4/X7R/16V/K/X

C151 0.1u/4/X7R/16V/K/X

HT Link Stitching Caps

SBC29 1u/4/X5R/6.3V/K

SBC36 1u/4/X5R/6.3V/K

SBC38 1u/4/X5R/6.3V/K

BC141 1u/4/X5R/6.3V/K

SBC28 1u/4/X5R/6.3V/K

SBC37 1u/4/X5R/6.3V/K

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Title: RS780 POWER & GND

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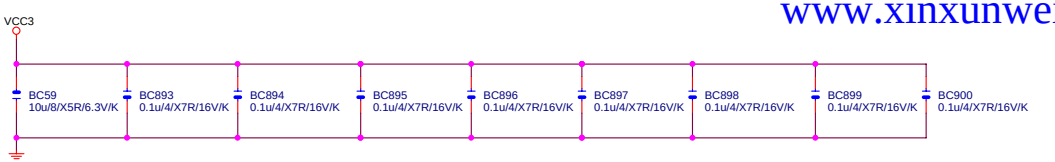


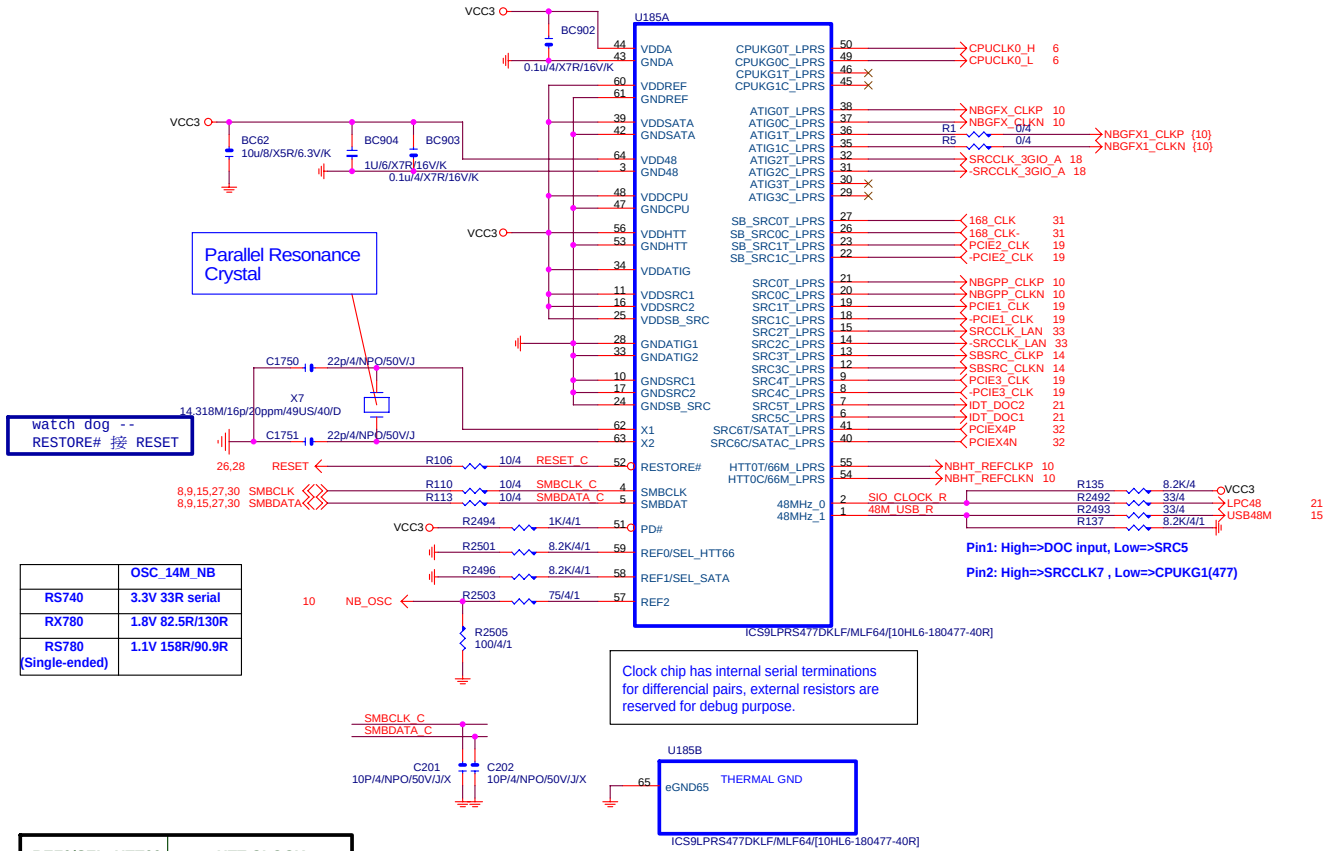
1- PLACE ALL THE SERIES TERMINATION RESISTORS AS CLOSE TO U800 AS POSSIBLE
2- ROUTE ALL SRCCLKTx AND SRCCLKCx AS DIFFERENT PAIR RULE
3- PUT DECOUPLING CAPS CLOSE TO U800 POWER PIN

NB CLOCK INPUT TABLE

NB CLOCKS	RS740	RX780	RS780	
HT_REFCLKP	66M SE(SE)	100M DIFF	100M DIFF	
HT_REFCLKN	NC	100M DIFF	100M DIFF	
REFCLK_P	14M SE (3.3V)	14M SE (1.8V)	14M SE (1.1V)	100M DIFF
REFCLK_N	NC	NC	vref	100M DIFF
GFX_REFCLK*	100M DIFF	100M DIFF	100M DIFF	
GPP_REFCLK	NC	100M DIFF	100M DIFF(OUT)	
GPPSB_REFCLK	100M DIFF	100M DIFF	100M DIFF	

* the GFX_REFCLK input is required for all cases

Place R800/801 less than 500 mils away from U800
R851 less than 100 mils away from R800/801
route CPU clock as 100ohm differential pair



Pin1: High=>DOC input, Low=>SRC5

Pin2: High=>SRCCLK7 , Low=>CPUKG1(477)

	OSC_14M_NB
RS740	3.3V 33R serial
RX780	1.8V 82.5R/130R
RS780 (Single-ended)	1.1V 158R/90.9R

Clock chip has internal serial terminations for differencial pairs, external resistors are reserved for debug purpose.

REF0/SEL_HTT66	HTT CLOCK
0	100.00 DIFFERENTIAL
1	66.66 SINGLE END

REF1/SEL_SATA	SRC6/SATA
0	100.00 DIFFERENTIAL SPREADING SRC CLOCK
1	100.00 NON-SPREADING DIFFERENTIAL SATA CLOCK

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Title: RTM880N-793

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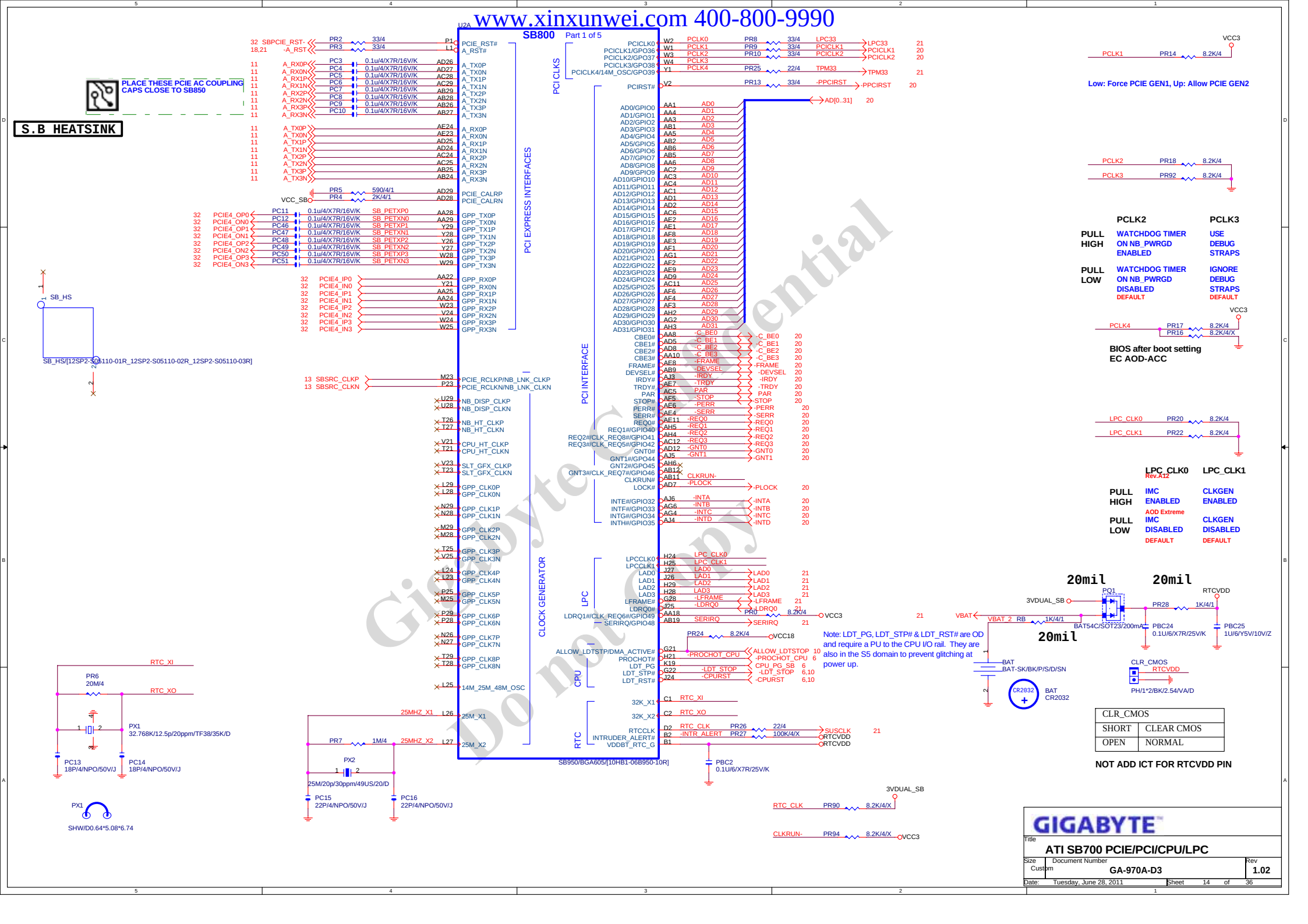

Title	ATI SB700 PCIE/PCI/CPU/LPC
Size	Custom
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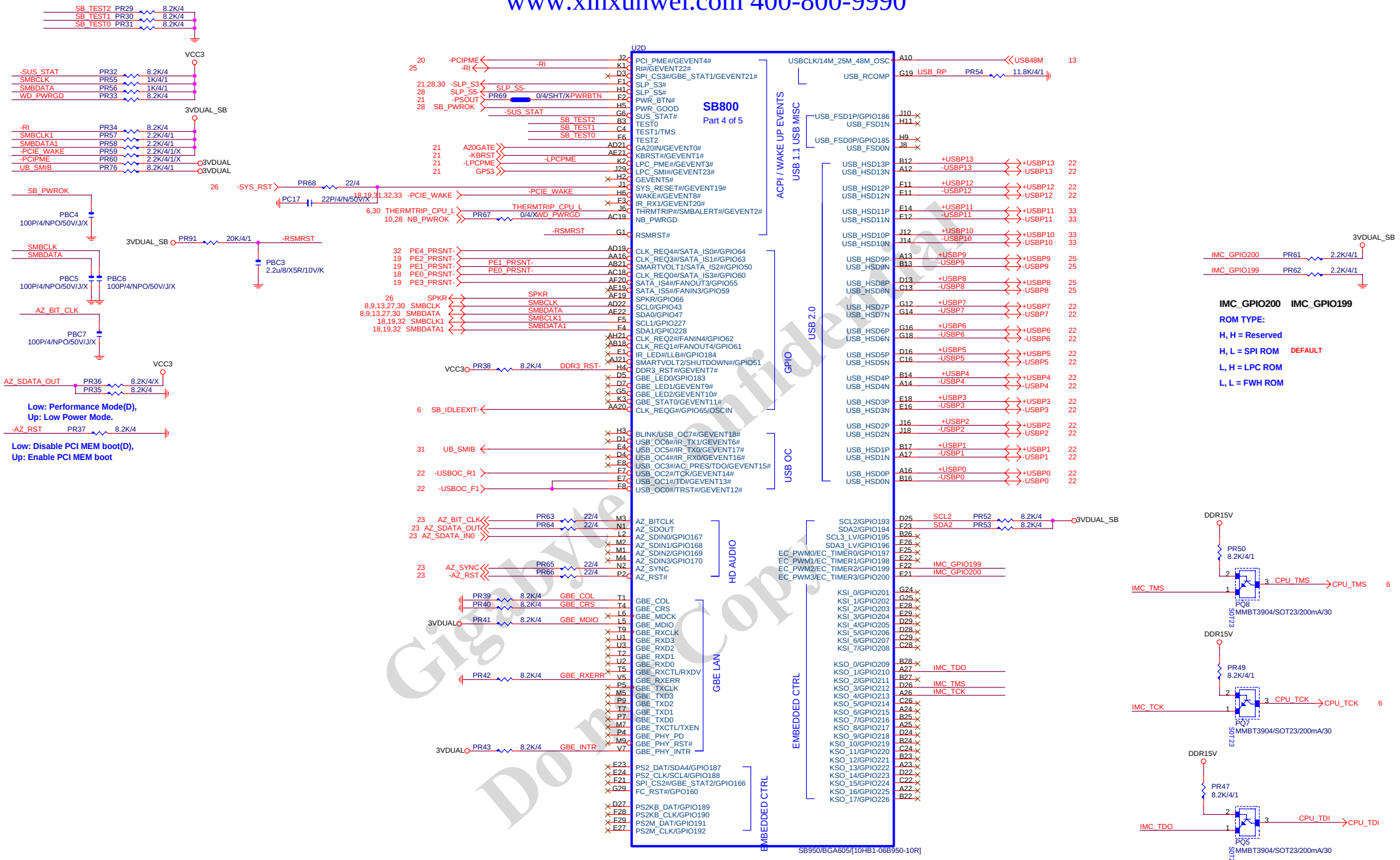

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Title: ATI SB700 ACPI/USB/GPIO/AUDIO

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PLACE SATA_CAL RES VERY CLOSE TO BALL OF U600

NOTE:
R650 IS 1K 1% FOR 25MHz XTAL, 4.99K 1% FOR 100MHz INTERNAL CLOCK

U2B

SB800
Part 2 of 5

SERIAL ATA

SP_TX0P_C AH9 SATA_TX0P
SP_TX0M_C AJ9 SATA_TX0N
SP_RX0M_C AJ8 SATA_RX0N
SP_RX0P_C AH8 SATA_RX0P
SP_TX1P_C AH10 SATA_TX1P
SP_TX1M_C AJ10 SATA_TX1N
SP_RX1M_C AG10 SATA_RX1N
SP_RX1P_C AE10 SATA_RX1P
SP_TX2P_C AG12 SATA_TX2P
SP_TX2M_C AE12 SATA_TX2N
SP_RX2M_C AJ12 SATA_RX2N
SP_RX2P_C AH12 SATA_RX2P
SP_TX3P_C AH14 SATA_TX3P
SP_TX3M_C AJ14 SATA_TX3N
SP_RX3M_C AG14 SATA_RX3N
SP_RX3P_C AE14 SATA_RX3P
SP_TX4P_C AG17 SATA_TX4P
SP_TX4M_C AF17 SATA_TX4N
SP_RX4M_C AJ17 SATA_RX4N
SP_RX4P_C AH17 SATA_RX4P
SP_TX5P_C AJ18 SATA_TX5P
SP_TX5M_C AH18 SATA_TX5N
SP_RX5M_C AH19 SATA_RX5N
SP_RX5P_C AJ19 SATA_RX5P

PR75 1K/4/1 SATA_CALRP AB14 SATA_CALRP
VCC_SB PR74 931/4/1 SATA_CALRN AA14 SATA_CALRN
26 -SATA_LED -SATA_LED AD11 SATA_ACT#/GPIO67
TP5 SATA_X1 AD16 SATA_X1
TP7 SATA_X2 AC16 SATA_X2

GPIOD

FC_CLK AH28
FC_FBCLKOUT AG28
FC_FBCLKIN AF26
FC_OE#/GPIOD145 AF28
FC_AVD#/GPIOD146 AG29
FC_WE#/GPIOD148 AG26
FC_CE1#/GPIOD149 AF27
FC_CE2#/GPIOD150 AE29
FC_INT1/GPIOD144 AF29
FC_INT2/GPIOD147 AH27
FC_ADQ0/GPIOD128 AJ27
FC_ADQ1/GPIOD129 AJ26
FC_ADQ2/GPIOD130 AH25
FC_ADQ3/GPIOD131 AH24
FC_ADQ4/GPIOD132 AG23
FC_ADQ5/GPIOD133 AH23
FC_ADQ6/GPIOD134 AJ22
FC_ADQ7/GPIOD135 AG21
FC_ADQ8/GPIOD136 AF21
FC_ADQ9/GPIOD137 AH22
FC_ADQ10/GPIOD138 AJ23
FC_ADQ11/GPIOD139 AF23
FC_ADQ12/GPIOD140 AJ24
FC_ADQ13/GPIOD141 AJ25
FC_ADQ14/GPIOD142 AG25
FC_ADQ15/GPIOD143 AH26

HW MONITOR

FANOUT0/GPIO52 W5
FANOUT1/GPIO53 W6
FANOUT2/GPIO54 Y9
FANIN0/GPIO56 W7
FANIN1/GPIO57 V9
FANIN2/GPIO58 W8
TEMPIN0/GPIO171 B6
TEMPIN1/GPIO172 A6
TEMPIN2/GPIO173 A5
TEMPIN3/TALERT#/GPIO174 B5 SB_ALERT- 6
TEMP_COMM C7
VIN0/GPIO175 A3
VIN1/GPIO176 B4
VIN2/GPIO177 A4
VIN3/GPIO178 C5
VIN4/GPIO179 A7
VIN5/GPIO180 B7
VIN6/GBE_STAT3/GPIO181 B8
VIN7/GBE_LED3/GPIO182 A8

SPI ROM

SB_SPI_DI PR70 22/4 SB_SPI_DI_R J5 SPI_DI/GPIO164
SB_SPI_DO PR71 22/4 SB_SPI_DO_R E2 SPI_DO/GPIO163
SB_SPI_CLK PR72 22/4 SB_SPI_CLK_R K4 SPI_CLK/GPIO162
21 -SB_SPI_CS_ITE -SB_SPI_CS_ITE PR73 22/4 SB_SPI_CS- K9 SPI_CS1#/GPIO165
G2 ROM_RST#/GPIO161
NC1 G27
NC2 Y2

SB950/BGA605/[10HB1-06B950-10R]

PLACE SATA AC COUPLING CAPS CLOSE TO SB850

SATA3_0_1
SP_TX0P_C PC18 0.01u/4/X7R/25V/K SATA0TXPC
SP_TX0M_C PC19 0.01u/4/X7R/25V/K SATA0TXNC
SP_RX0M_C PC20 0.01u/4/X7R/25V/K SATA0RXNC
SP_RX0P_C PC21 0.01u/4/X7R/25V/K SATA0RXPC
SATA1TXPC PC30 0.01u/4/X7R/25V/K SP_TX1P_C
SATA1TXNC PC31 0.01u/4/X7R/25V/K SP_TX1M_C
SATA1RXNC PC32 0.01u/4/X7R/25V/K SP_RX1M_C
SATA1RXPC PC33 0.01u/4/X7R/25V/K SP_RX1P_C
SATA14/BU/H/OP/RA/D/2

SATA3_2_3
SP_TX2P_C PC22 0.01u/4/X7R/25V/K SATA2TXPC
SP_TX2M_C PC23 0.01u/4/X7R/25V/K SATA2TXNC
SP_RX2M_C PC24 0.01u/4/X7R/25V/K SATA2RXNC
SP_RX2P_C PC25 0.01u/4/X7R/25V/K SATA2RXPC
SATA3TXPC PC34 0.01u/4/X7R/25V/K SP_TX3P_C
SATA3TXNC PC35 0.01u/4/X7R/25V/K SP_TX3M_C
SATA3RXNC PC36 0.01u/4/X7R/25V/K SP_RX3M_C
SATA3RXPC PC37 0.01u/4/X7R/25V/K SP_RX3P_C
SATA14/BU/H/OP/RA/D/2

SATA3_4_5
SP_TX4P_C PC26 0.01u/4/X7R/25V/K SATA4TXPC
SP_TX4M_C PC27 0.01u/4/X7R/25V/K SATA4TXNC
SP_RX4M_C PC28 0.01u/4/X7R/25V/K SATA4RXNC
SP_RX4P_C PC29 0.01u/4/X7R/25V/K SATA4RXPC
SATA5TXPC PC38 0.01u/4/X7R/25V/K SP_TX5P_C
SATA5TXNC PC39 0.01u/4/X7R/25V/K SP_TX5M_C
SATA5RXNC PC40 0.01u/4/X7R/25V/K SP_RX5M_C
SATA5RXPC PC41 0.01u/4/X7R/25V/K SP_RX5P_C
SATA14/BU/H/OP/RA/D/2

VCC_SB
PBC8 1U/6/Y5V/10V/Z
PBC9 0.1u/4/Y5V/16V/Z
VCC3
PBC10 1U/6/Y5V/10V/Z
PBC11 0.1u/4/Y5V/16V/Z

M_BIOS
VCC3
21 -ITE_SPI_CS -ITE_SPI_CS 1 CS# VDD 8 SPC23 0.1U/4/Y5V/16V/Z
SB_SPI_DI 2 SO HOLD# 7 -SPI_HOLD0
-BIOS_WP 3 WP# SCK 6 SB_SPI_CLK
4 VSS SI 5 SB_SPI_DO
32M/SPI/SO8/200mil/S

B_BIOS
21 -ITE_SPI_CS1 -ITE_SPI_CS1 1 CS# VDD 8 VCC3
SB_SPI_DI 2 SO HOLD# 7 -SPI_HOLD0
-BIOS_WP 3 WP# SCK 6 SB_SPI_CLK
4 VSS SI 5 SB_SPI_DO
32M/SPI/SO8/200mil/S

VCC3
-SPI_HOLD0 PR77 1K/4/1
-BIOS_WP PR78 1K/4/1
-ITE_SPI_CS PR79 330/4
-ITE_SPI_CS1 PR80 330/4

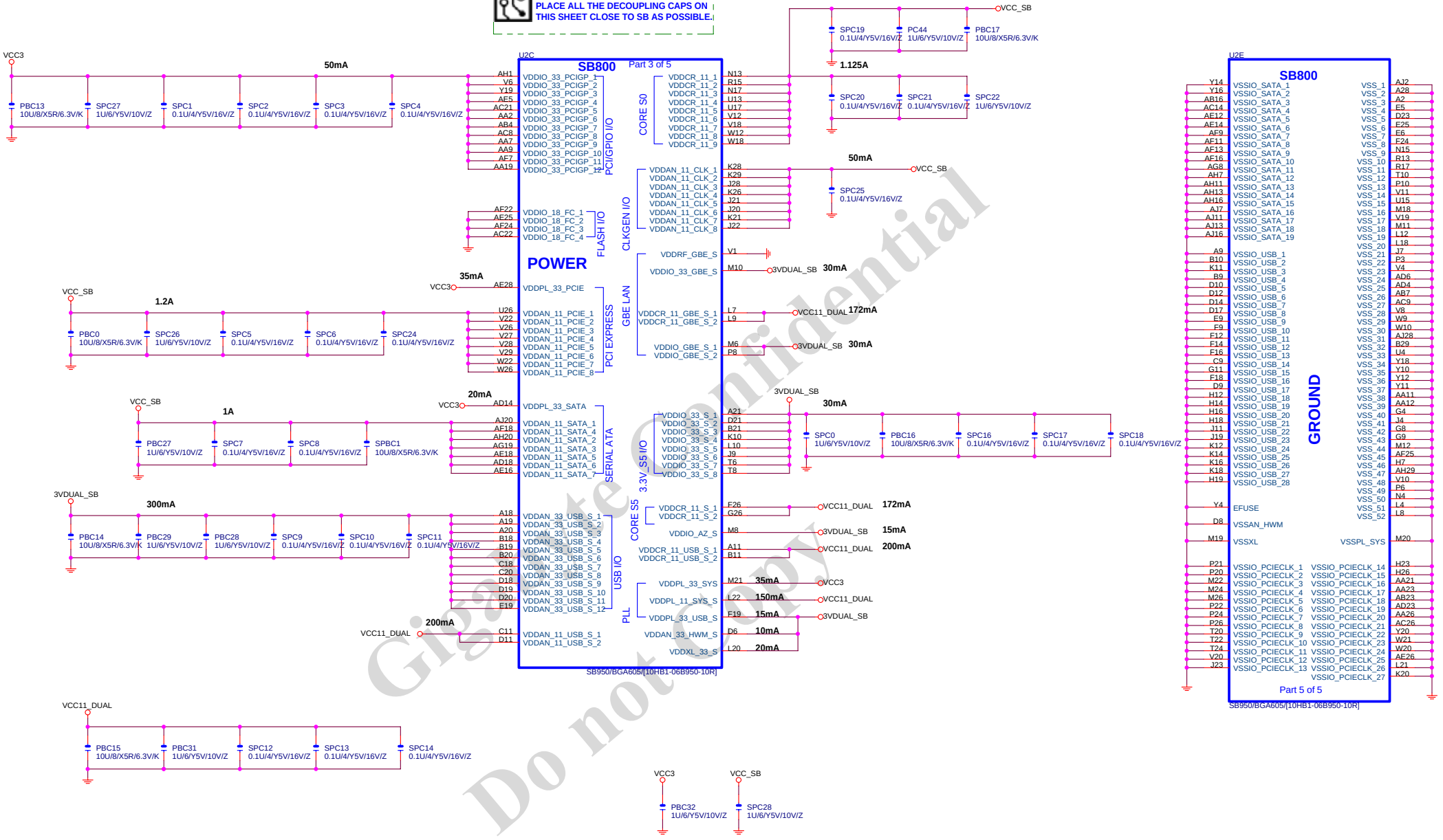
GIGABYTE

Title: ATI SB700 SATA/IDE/HWM/SPI

Size	Document Number	Rev
Custom	GA-970A-D3	1.02

Date: Tuesday, June 28, 2011 Sheet 16 of 36

PLACE ALL THE DECOUPLING CAPS ON THIS SHEET CLOSE TO SB AS POSSIBLE.

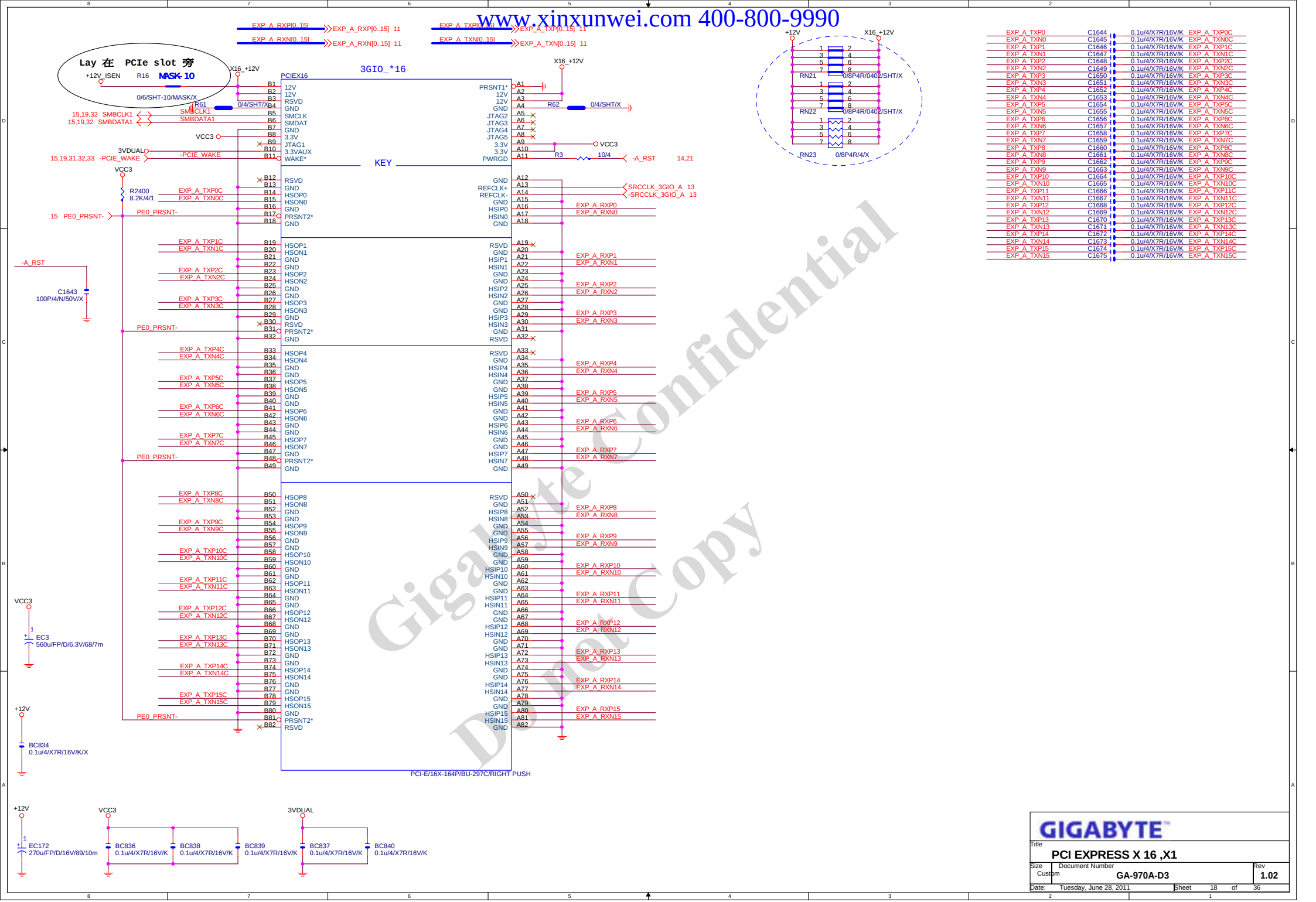


GIGABYTE

Title: ATI SB700 POWER & GND

Size	Document Number	Rev
Custom	GA-970A-D3	1.02

Date: Tuesday, June 28, 2011 Sheet 17 of 36



EXP_A_TXP0	C1644	0.1u/4/X7R/16V/K EXP_A_TXP0C
EXP_A_TXN0	C1645	0.1u/4/X7R/16V/K EXP_A_TXN0C
EXP_A_TXP1	C1646	0.1u/4/X7R/16V/K EXP_A_TXP1C
EXP_A_TXN1	C1647	0.1u/4/X7R/16V/K EXP_A_TXN1C
EXP_A_TXP2	C1648	0.1u/4/X7R/16V/K EXP_A_TXP2C
EXP_A_TXN2	C1649	0.1u/4/X7R/16V/K EXP_A_TXN2C
EXP_A_TXP3	C1650	0.1u/4/X7R/16V/K EXP_A_TXP3C
EXP_A_TXN3	C1651	0.1u/4/X7R/16V/K EXP_A_TXN3C
EXP_A_TXP4	C1652	0.1u/4/X7R/16V/K EXP_A_TXP4C
EXP_A_TXN4	C1653	0.1u/4/X7R/16V/K EXP_A_TXN4C
EXP_A_TXP5	C1654	0.1u/4/X7R/16V/K EXP_A_TXP5C
EXP_A_TXN5	C1655	0.1u/4/X7R/16V/K EXP_A_TXN5C
EXP_A_TXP6	C1656	0.1u/4/X7R/16V/K EXP_A_TXP6C
EXP_A_TXN6	C1657	0.1u/4/X7R/16V/K EXP_A_TXN6C
EXP_A_TXP7	C1658	0.1u/4/X7R/16V/K EXP_A_TXP7C
EXP_A_TXN7	C1659	0.1u/4/X7R/16V/K EXP_A_TXN7C
EXP_A_TXP8	C1660	0.1u/4/X7R/16V/K EXP_A_TXP8C
EXP_A_TXN8	C1661	0.1u/4/X7R/16V/K EXP_A_TXN8C
EXP_A_TXP9	C1662	0.1u/4/X7R/16V/K EXP_A_TXP9C
EXP_A_TXN9	C1663	0.1u/4/X7R/16V/K EXP_A_TXN9C
EXP_A_TXP10	C1664	0.1u/4/X7R/16V/K EXP_A_TXP10C
EXP_A_TXN10	C1665	0.1u/4/X7R/16V/K EXP_A_TXN10C
EXP_A_TXP11	C1666	0.1u/4/X7R/16V/K EXP_A_TXP11C
EXP_A_TXN11	C1667	0.1u/4/X7R/16V/K EXP_A_TXN11C
EXP_A_TXP12	C1668	0.1u/4/X7R/16V/K EXP_A_TXP12C
EXP_A_TXN12	C1669	0.1u/4/X7R/16V/K EXP_A_TXN12C
EXP_A_TXP13	C1670	0.1u/4/X7R/16V/K EXP_A_TXP13C
EXP_A_TXN13	C1671	0.1u/4/X7R/16V/K EXP_A_TXN13C
EXP_A_TXP14	C1672	0.1u/4/X7R/16V/K EXP_A_TXP14C
EXP_A_TXN14	C1673	0.1u/4/X7R/16V/K EXP_A_TXN14C
EXP_A_TXP15	C1674	0.1u/4/X7R/16V/K EXP_A_TXP15C
EXP_A_TXN15	C1675	0.1u/4/X7R/16V/K EXP_A_TXN15C

GIGABYTE

Title: PCI EXPRESS X 16 ,X1

Size	Document Number	Rev
Custom	GA-970A-D3	1.02

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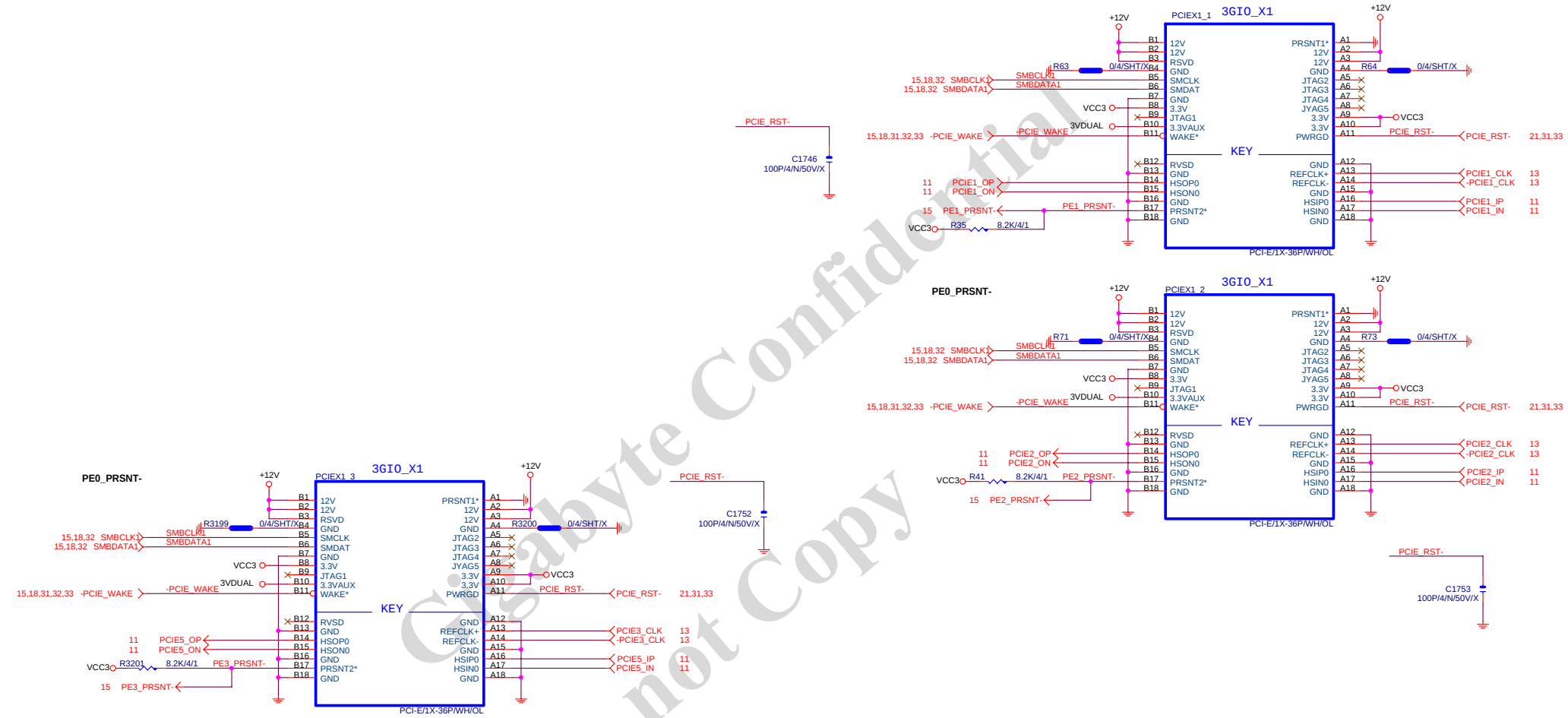

GIGABYTE

Title	PCI_E x8 ,PCI_E x1 SLOT 1,2	
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
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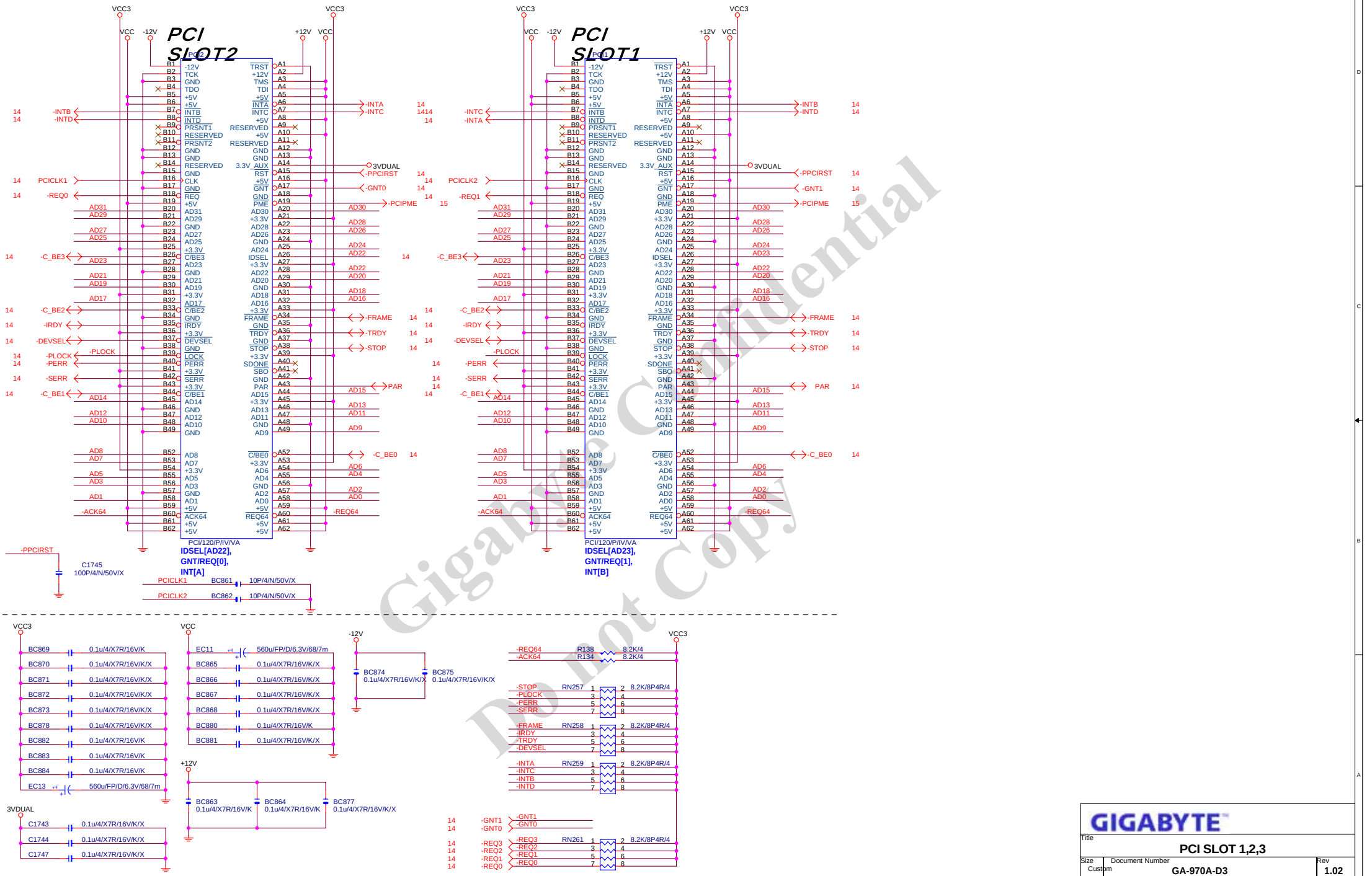
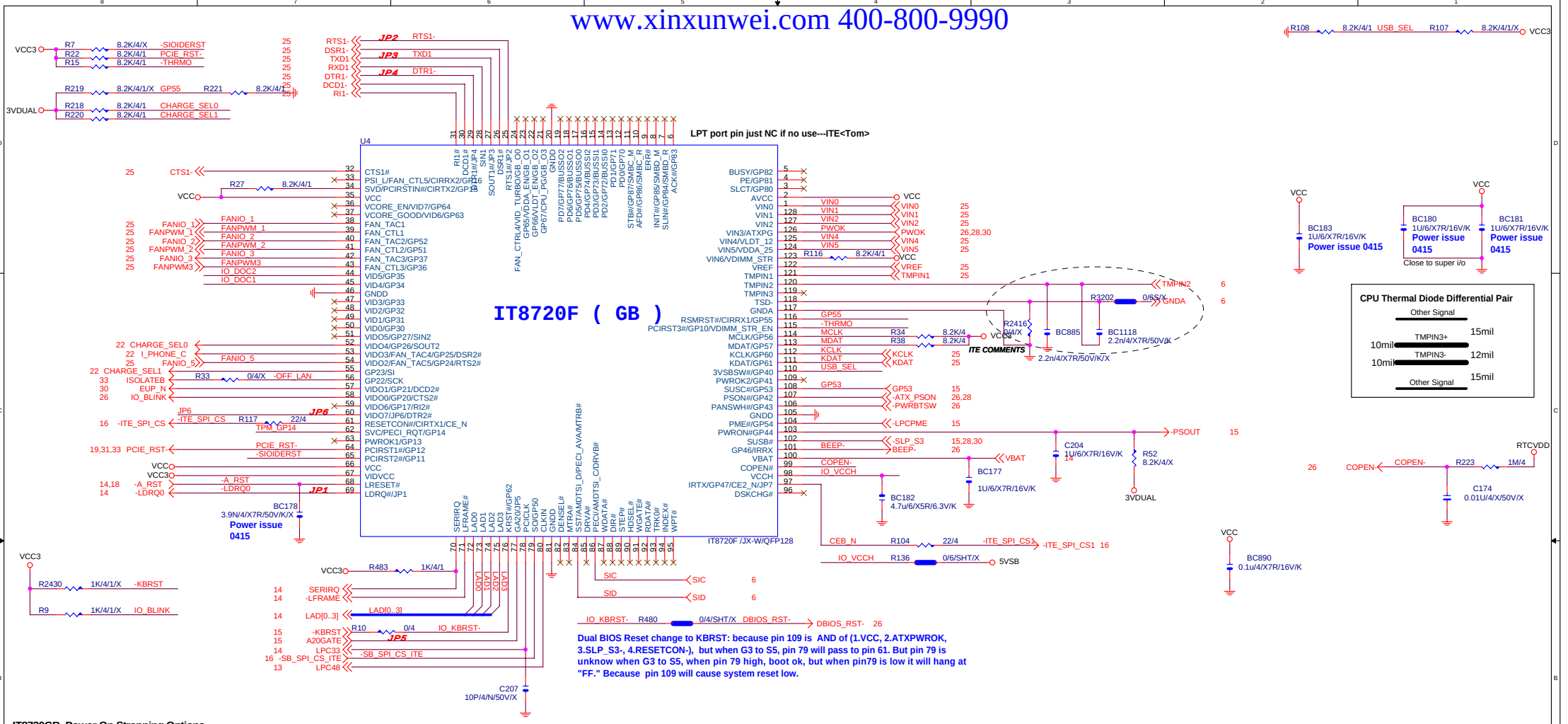
PCI SLOT 1,2



GIGABYTE		
Title	PCI SLOT 1,2,3	
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
Date: Tuesday, June 28, 2011	Sheet 20 of 36	



IT8720GB Power On Strapping Options

	Symbol	value	Description
JP1 Pin 69			
JP2 Pin 25	VIDO_EN	1	Disable VID output pins
		0	Enable VID output pins
JP3 Pin 27	Flashseg1_EN	1	Disabled.
		0	Flash I/F Address Segment 1 is enabled
JP4 Pin 29	K8PWR_EN	1	K8 power sequence disabled
		0	K8 power sequence enabled
JP3 & JP5 Pin 27 & Pin 77	FAN_CTL_SEL	11 Half Run	Default value of EC Index 15h/16h/17h is 40h
		10 No Run	Default value of EC Index 15h/16h/17h is 7Fh
		01 Full Run	Default value of EC Index 15h/16h/17h is 00h
		00 75% Run	Default value of EC Index 15h/16h/17h is 20h
JP5 Pin 77	WDT_EN	1	Disable WDT to rest PWROK
		0	Enable WDT to rest PWROK
JP6 Pin 60	SVID_EN	1	Disable SVID Function
		0	Enable SVID Function
JP7 Pin 97	Dual_BIOS_EN	1	Enable Dual BIOS Function for GigaByte Only
		0	Disable Dual BIOS Function for GigaByte Only

GIGABYTE

Title	ITE 8720 JX LPC IO ,Dual-BIOS ,TPM	
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
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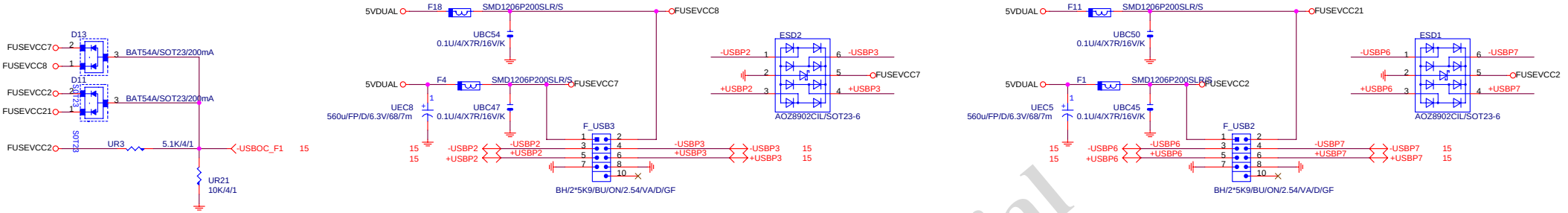
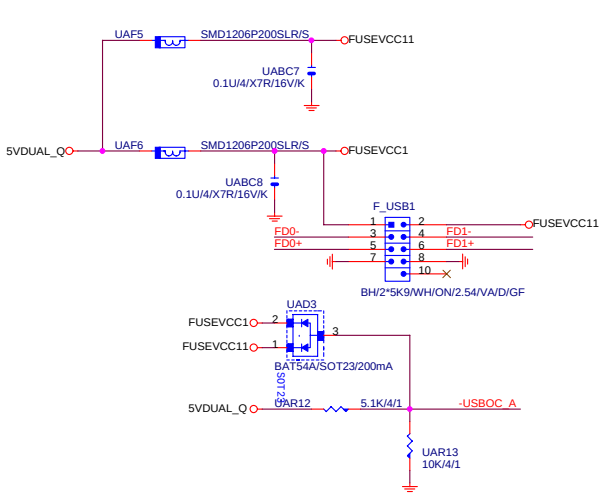
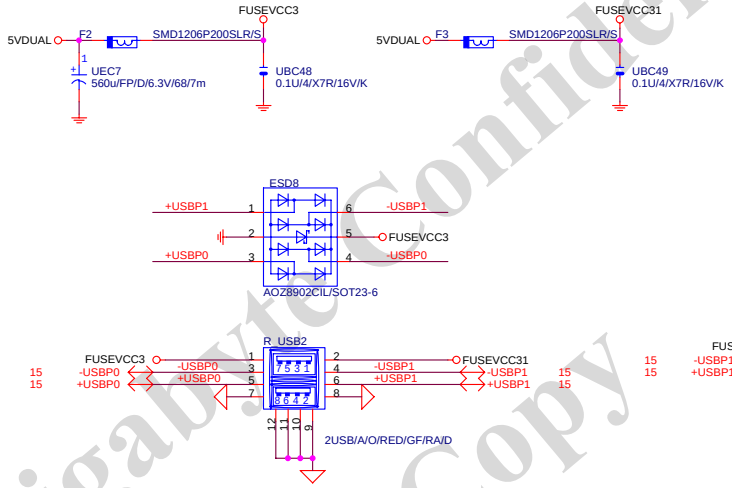
FRONT_SIDE_USB2

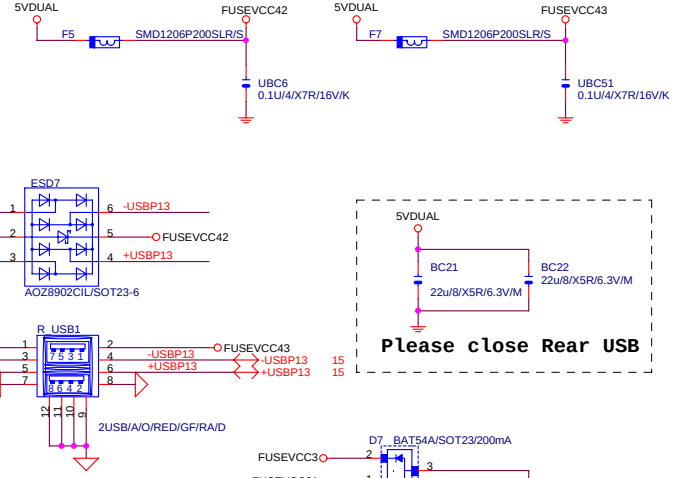


VCC
VCC3
UABC12 0.1U/4/X7R/16V/K
UABC13 0.1U/4/X7R/16V/K

FRONT_SIDE_USB1

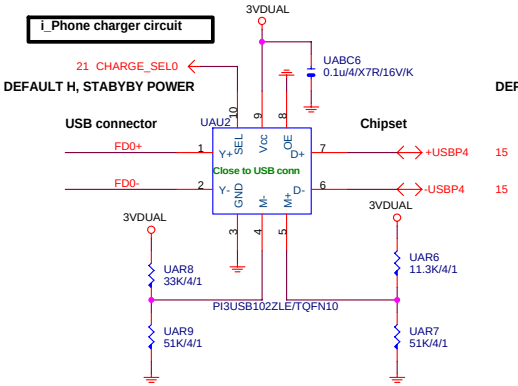


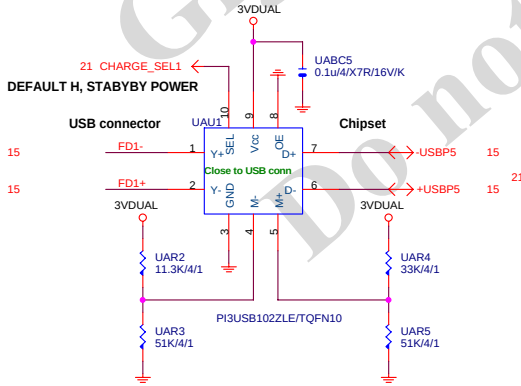


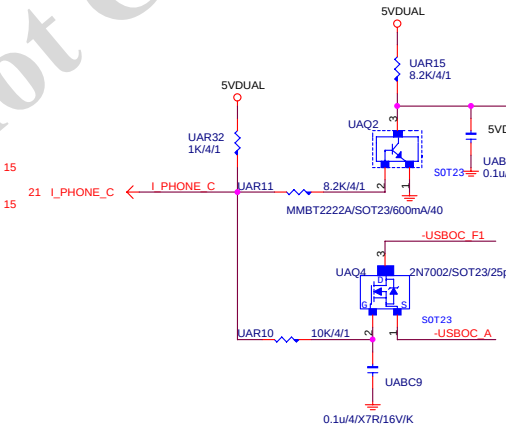


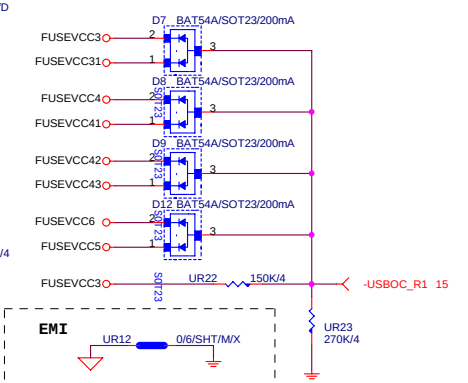
REAR_USB

i_Phone charger circuit









GIGABYTE

Title	COM/LPT/F_USB/I_PWR	
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
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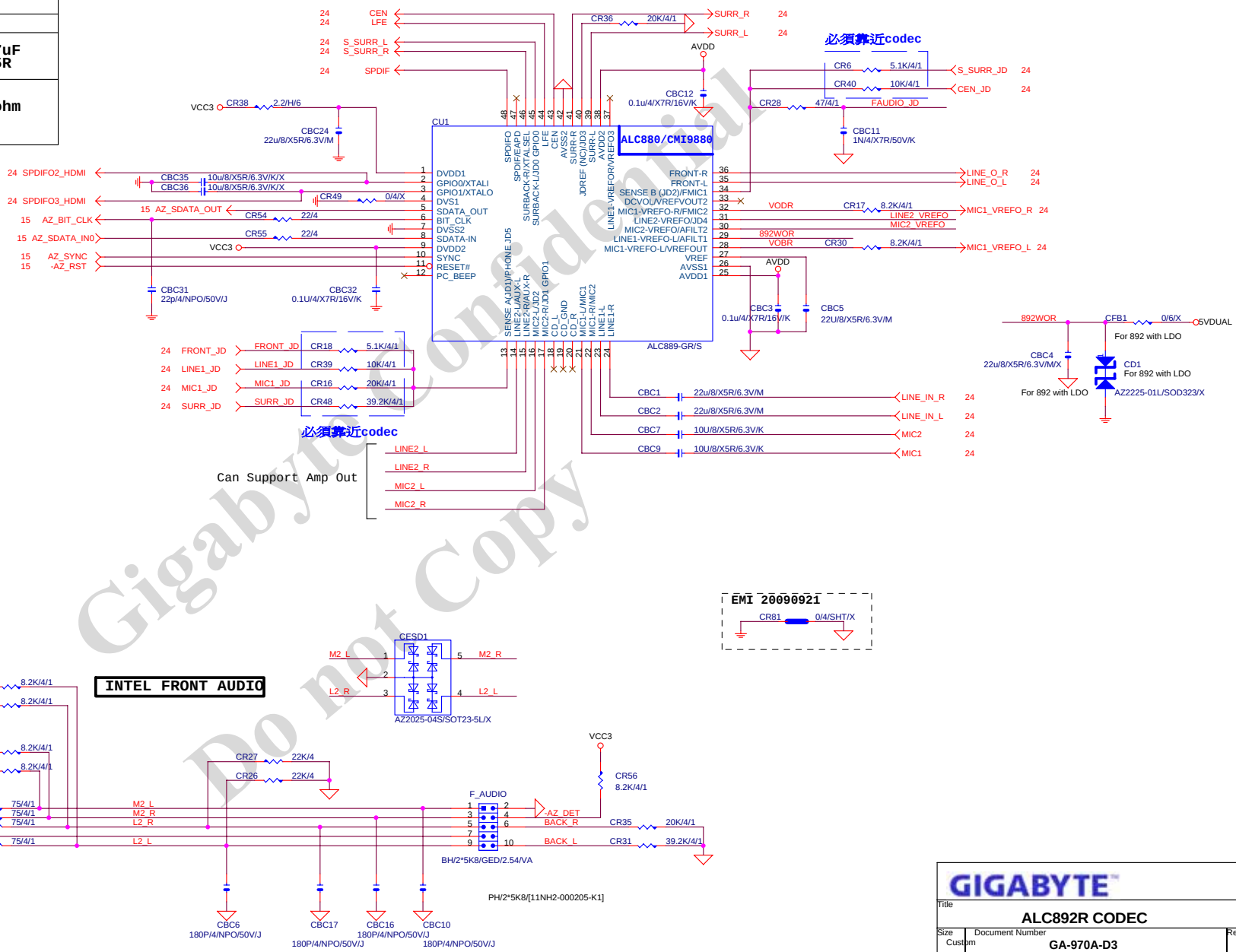
AZALIA CODEC *ALC892/ALC889/ Colay*

	ALC892R	ALC889	ALC889A
CR16	X	X	O
CR24	X	X	O
CR25	X	O	O
CBC42	10uF/X5R	X	X
CR2	20K/1%	20K/1%	20K/0.1%
CR9	O	O	X
CR10	X	X	O
CBC10/CBC11/CBC12/ CBC13/CBC44/CBC45	4.7uF /X5R	10uF /X5R	4.7uF /X5R
CR4/CR8/CR18/CR23/ CR11/CR12/CR27/CR29/ CR49/CR50/CR43/CR44/ CR45/CR48/CR59/CR60	75 ohm	66 ohm or lower	75 ohm



GIGABYTE

Title	ALC892R CODEC	
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
Date: Tuesday, June 28, 2011	Sheet 23 of 36	

CR33 0/6/X

For ESD PROTECT DIODE

AVDD, +12V, 5VDUAL, CD4 CD4148WP/1206/300mA, CQ3, CD3 CD4148WP/1206/300mA, 78L05/SOT89/0.1A, CBC8 22u/8/X5R/6.3V/M, CD2, CBC21 1U/6/X7R/16V/K, AZ2225-01L/SOD323

SPDIF

23 SPDIFO3_HDMI — CR52 0/4/X
23 SPDIFO2_HDMI — CR53 0/4
CBC37 100p/4/NPO/50V/J
SPDIF_O
For HDMI SPDIF
SPDIF_O — PH/1*2/BK/2.54/VA/D

FUSEVCC3
23 SPDIF
OPTICAL
FR/5P/BK/T/D/S(GY)

CESD2: AJ_A2, AJ_B2, AJ_C2, AJ_C5 — AZ2025-04S/SOT23-5L/X
CESD4: AJ_B5, AJ_A5, BJ_C2, BJ_A2 — AZ2025-04S/SOT23-5L/X
CESD3: BJ_B5, BJ_A5, BJ_C5, BJ_B2 — AZ2025-04S/SOT23-5L/X
CESD5: SPDIF, SPDIF_O — AZ2025-04S/SOT23-5L/X

For Audio precision test
CBC38 2.2/4

USB_LAN
R_USB2
R_USB1

AUDIOB
23 LINE1_JD — LINE1_JD, AJ_A5, AJ_A2 — LINE-IN
23 FRONT_JD — FRONT_JD, AJ_B5, AJ_B2 — LINE-OUT
23 MIC1_JD — MIC1_JD, AJ_C5, AJ_C2 — MIC-IN
2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

BLUE LINE-IN
GREEN LINE-OUT
PINK MIC-IN

AUDIOA
23 CEN_JD — CEN_JD, BJ_B5, BJ_B2 — REAR
23 SURR_JD — SURR_JD, BJ_C5, BJ_C2 — CEN
23 S_SURR_JD — S_SURR_JD, BJ_A5, BJ_A2 — FO_SIDE
2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

Orange CEN/LFE
ALC880 - SURROUND
CMI9880 - Back SURR
Black Back side Speaker Azalia Port G
Gray Left & Right Side Speaker
CMI9880 - Side SURR

A3RJ/13P/B/[11NR6-403006-01_11NR6-403006-02]
3RJ+15F/[11NR6-403004-11]
A3RJ/13P/OBG/[11NR6-403006-71]
3RJ+15F/[11NR6-403004-31]

LINE OUT FRONT OUT

23 LINE_O_R — CEC2 100u/OS/D/16V/66/24m — CR7 62/4 — AJ_B5
23 LINE_O_L — CEC3 100u/OS/D/16V/66/24m — CR9 62/4 — AJ_B2
CR10 22K/4 CBC23 180P/4/NPO/50V/J CR8 22K/4 CBC26 180P/4/NPO/50V/J

LINE-IN

23 LINE_IN_R — CR5 62/4 — AJ_A5
23 LINE_IN_L — CR13 62/4 — AJ_A2
CBC18 180P/4/NPO/50V/J CBC27 180P/4/NPO/50V/J

MIC

23 MIC2 — CR29 62/4 — AJ_C5
23 MIC1 — CR32 62/4 — AJ_C2
23 MIC1_VREFO_R — CR37 0/4/SHT/X
23 MIC1_VREFO_L — CR34 0/4/SHT/X
CBC19 180P/4/NPO/50V/J CBC22 180P/4/NPO/50V/J

SURROUND

23 SURR_R — CEC5 100u/OS/D/16V/66/24m — CR46 62/4 — BJ_C5
23 SURR_L — CEC7 100u/OS/D/16V/66/24m — CR19 62/4 — BJ_C2
CR20 22K/4 CBC29 180P/4/NPO/50V/J CR45 22K/4 CBC28 180P/4/NPO/50V/J

CEN/LFE

23 LFE — CEC9 100u/OS/D/16V/66/24m — CR50 62/4 — BJ_B5
23 CEN — CEC10 100u/OS/D/16V/66/24m — CR41 62/4 — BJ_B2
CR42 22K/4 CBC25 180P/4/NPO/50V/J CR51 22K/4 CBC34 180P/4/NPO/50V/J

SURR BACK

23 S_SURR_R — CEC8 100u/OS/D/16V/66/24m — CR21 62/4 — BJ_A5
23 S_SURR_L — CEC4 100u/OS/D/16V/66/24m — CR47 62/4 — BJ_A2
CR43 22K/4 CBC33 180P/4/NPO/50V/J CR22 22K/4 CBC30 180P/4/NPO/50V/J

GIGABYTE

Title: AUDIO JACK
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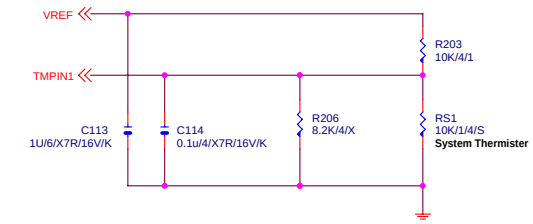
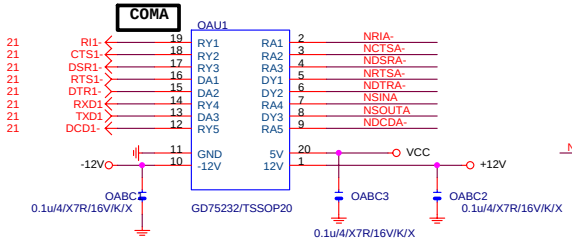
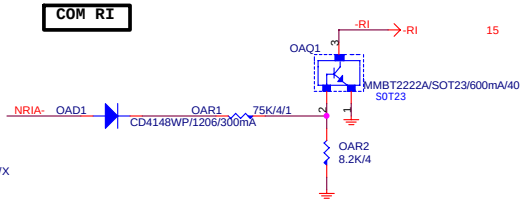
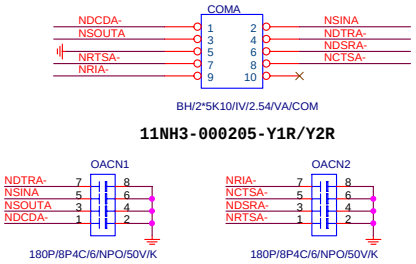
Hardware Monitor circuits

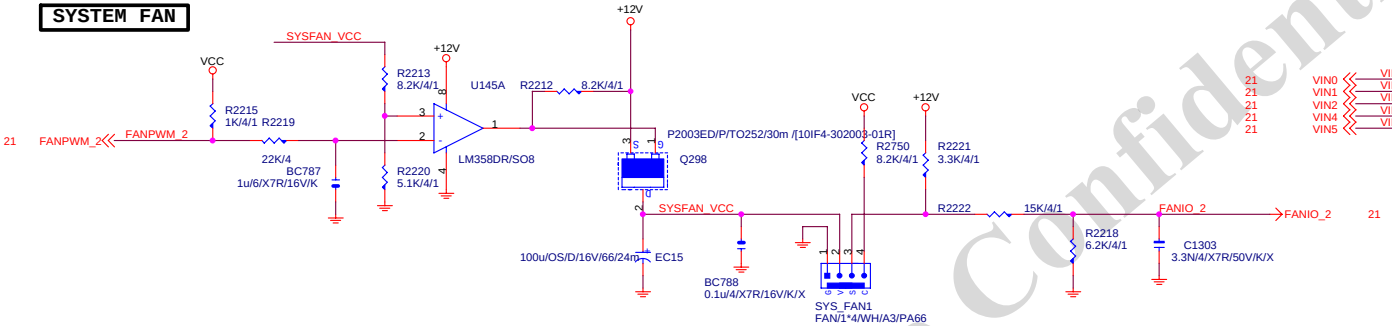


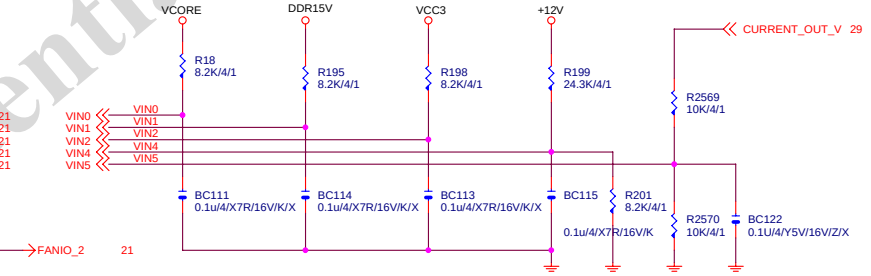




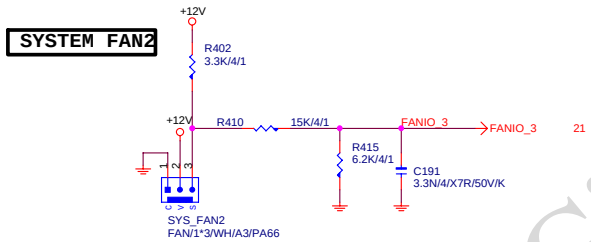


SYSTEM FAN

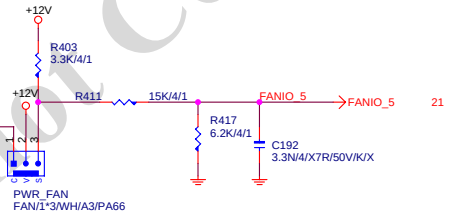




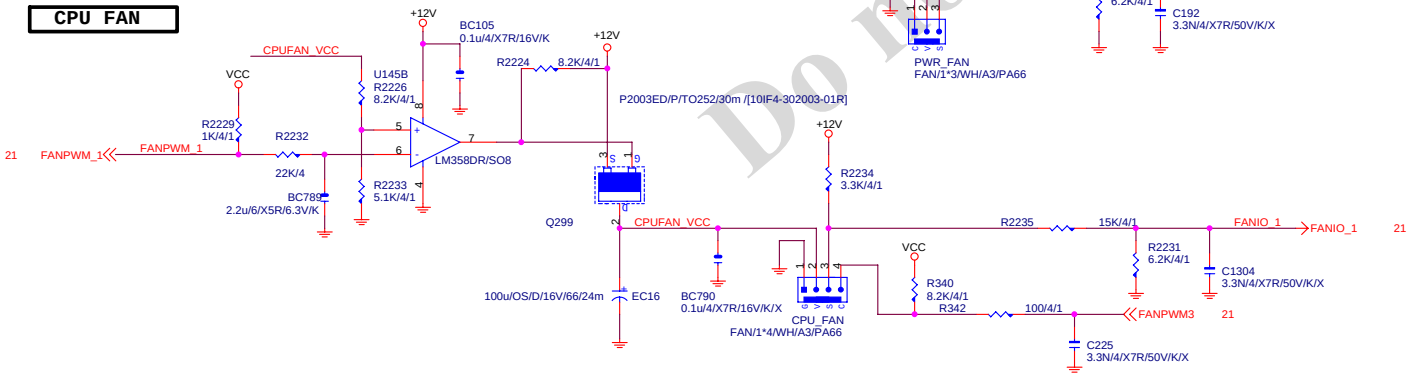
SYSTEM FAN2



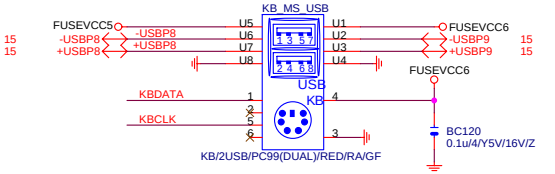
POWER FAN

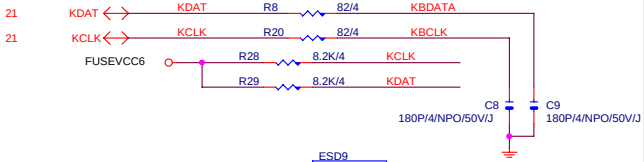


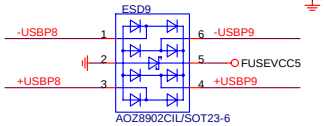
CPU FAN

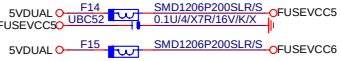


KB & USB









GIGABYTE		
Title: FAN/HWMO KB/MS		
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
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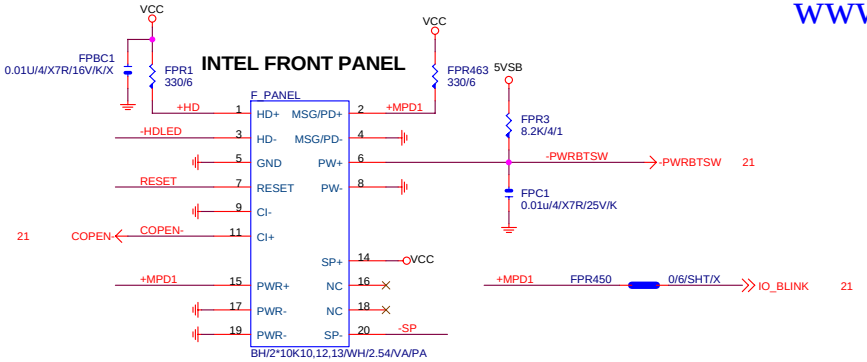
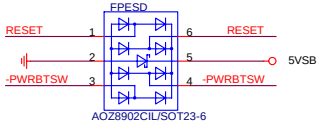
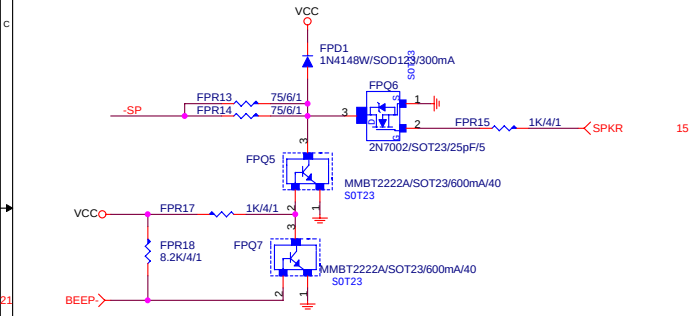
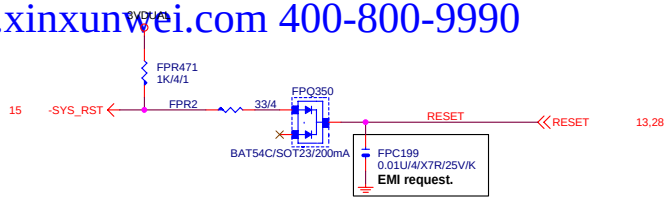
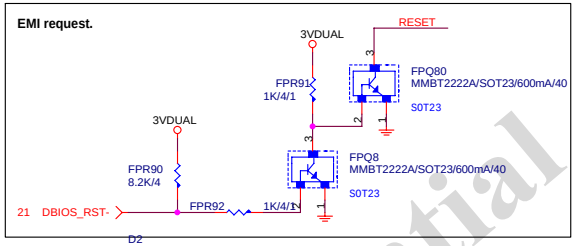
INTEL FRONT PANEL

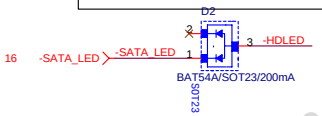


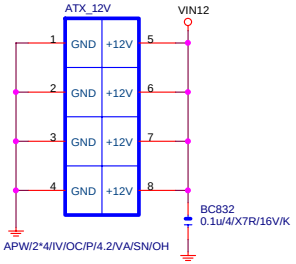


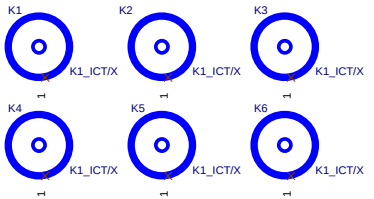


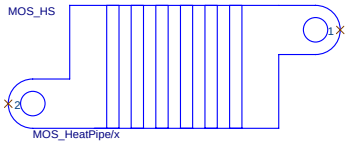




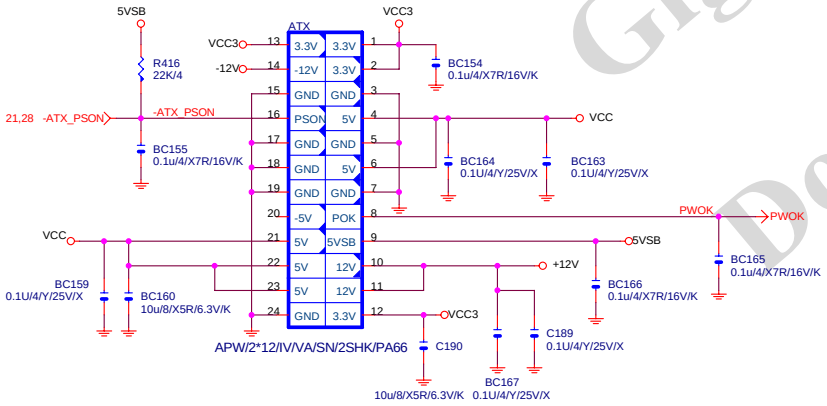


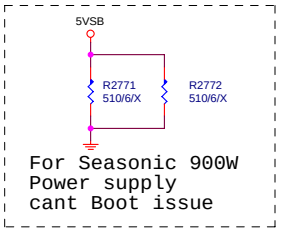


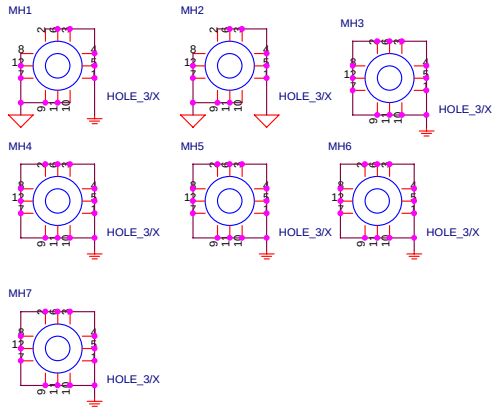




ATX POWER CONNECTOR







GIGABYTE

Title	ATX, FRONT PANEL ,EC	
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
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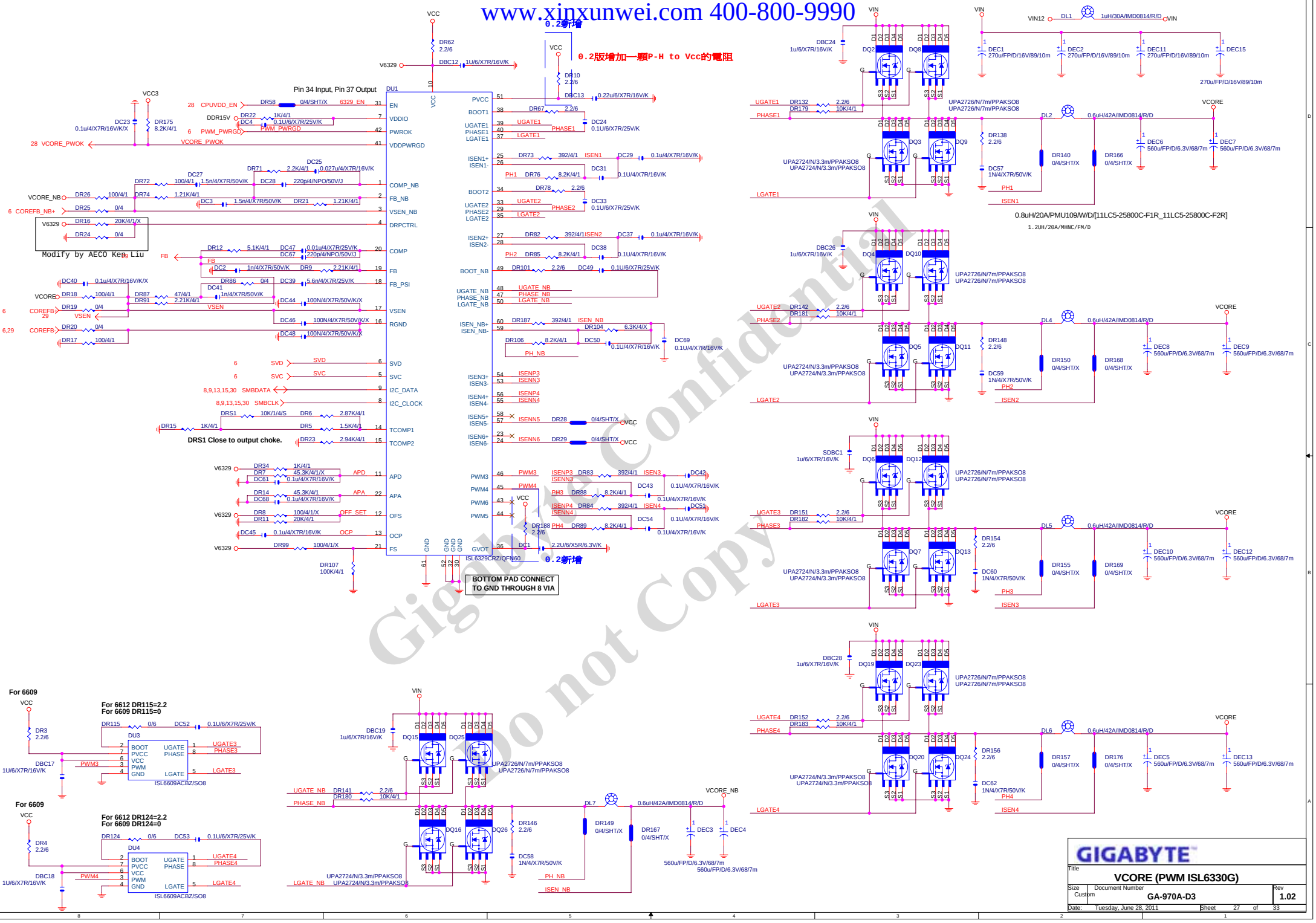
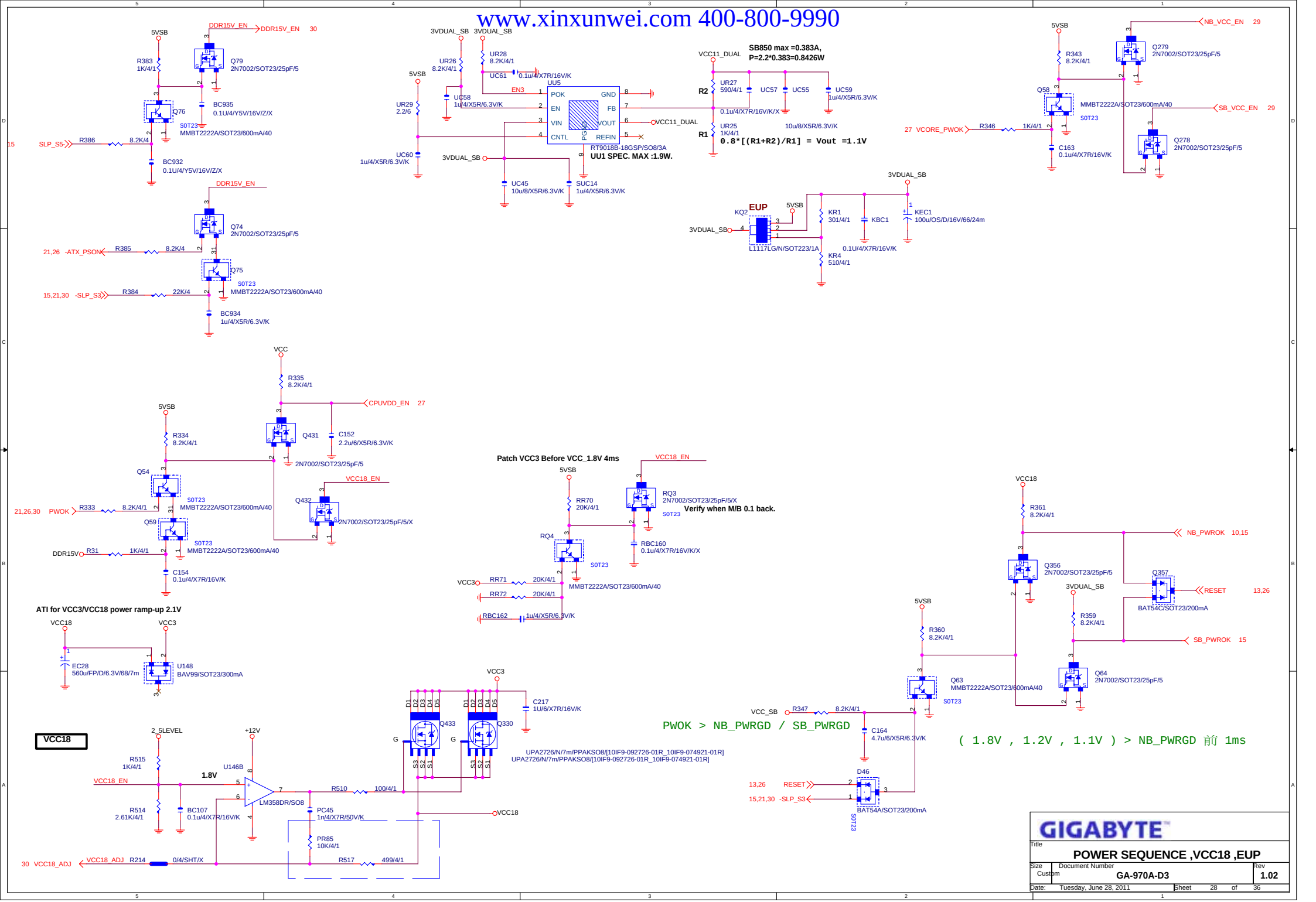


GIGABYTE

Title	VCORE (PWM ISL6330G)	
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
Date: Tuesday, June 28, 2011	Sheet 27 of 33	



GIGABYTE

Title	POWER SEQUENCE ,VCC18 ,EUP	
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
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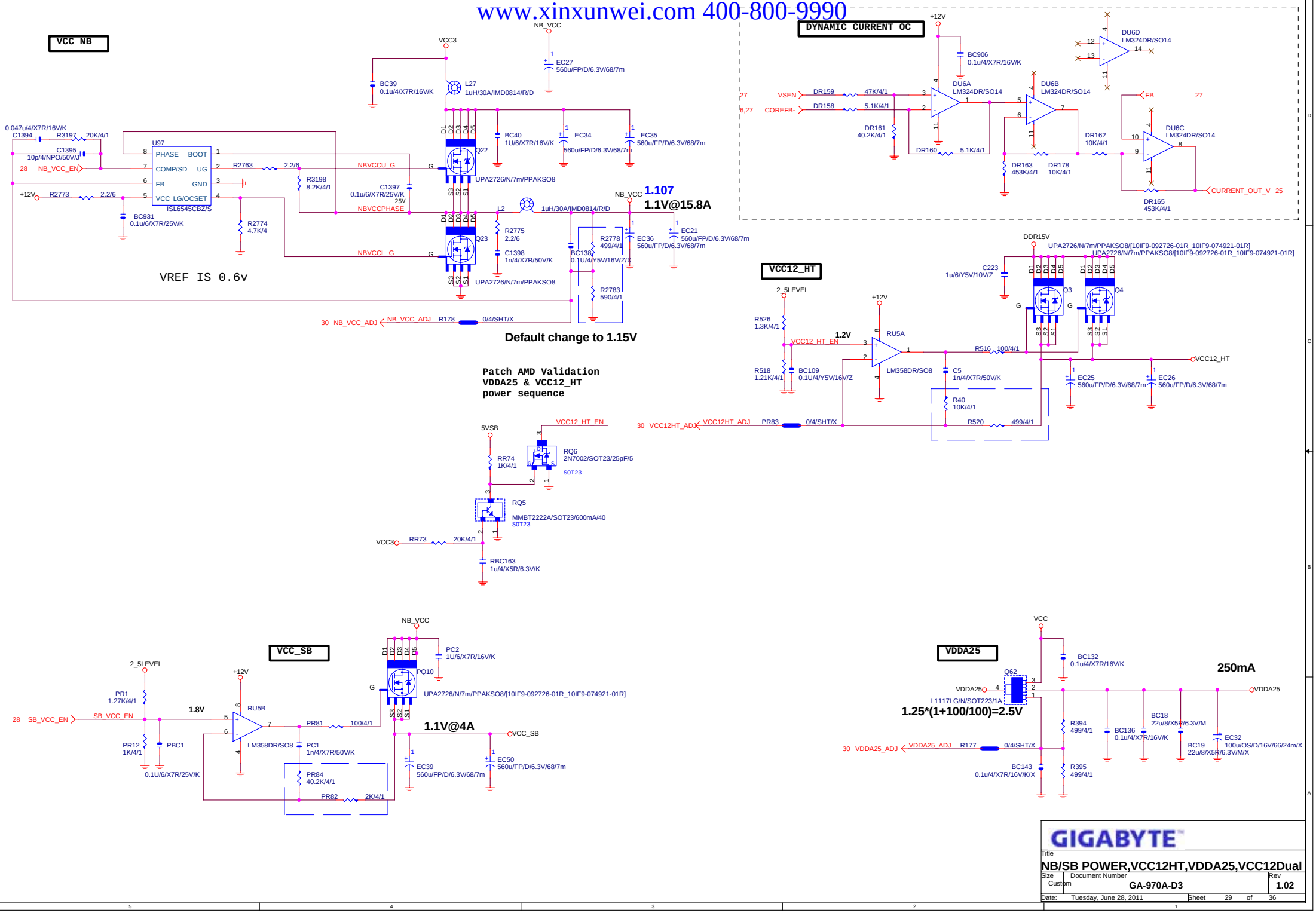

R2038不能上,會導致LM324 PIN1不能完全拉Lo

5VDUAL

9.5V / 25A protect

9.5*(1.21K/(13.3K+1.21K))=0.792V

3VDUAL

1.25*(1+169/100)=3.36V

EUP

3V

0x2A

0X20 = 100% xVCC

VREF IS 0.6V

1.507V

1.5V@20A

Default: 1.5V, from AMD

0.6*(1+1.5K/1K)=1.5V

DDR POWER

GIGABYTE

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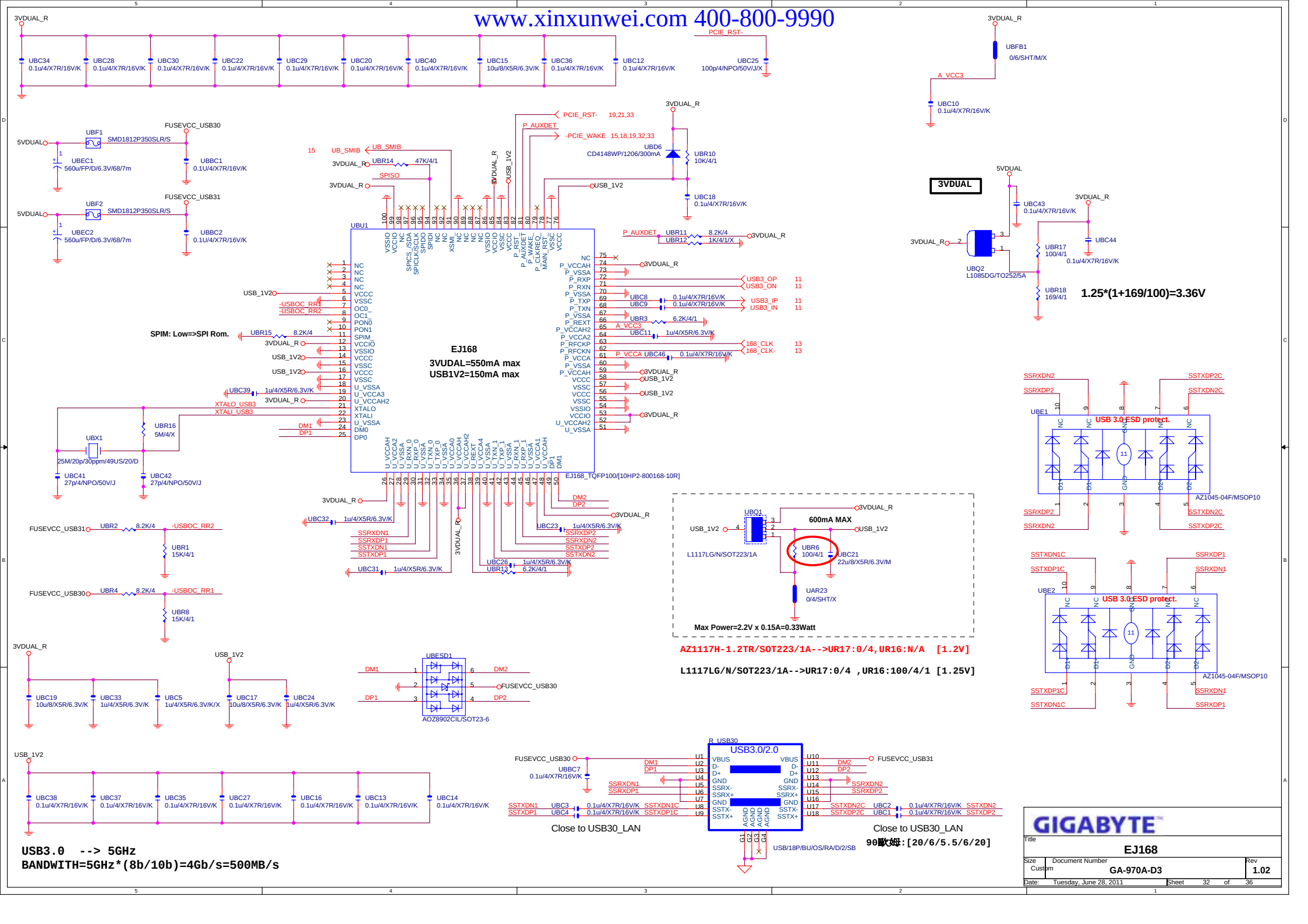
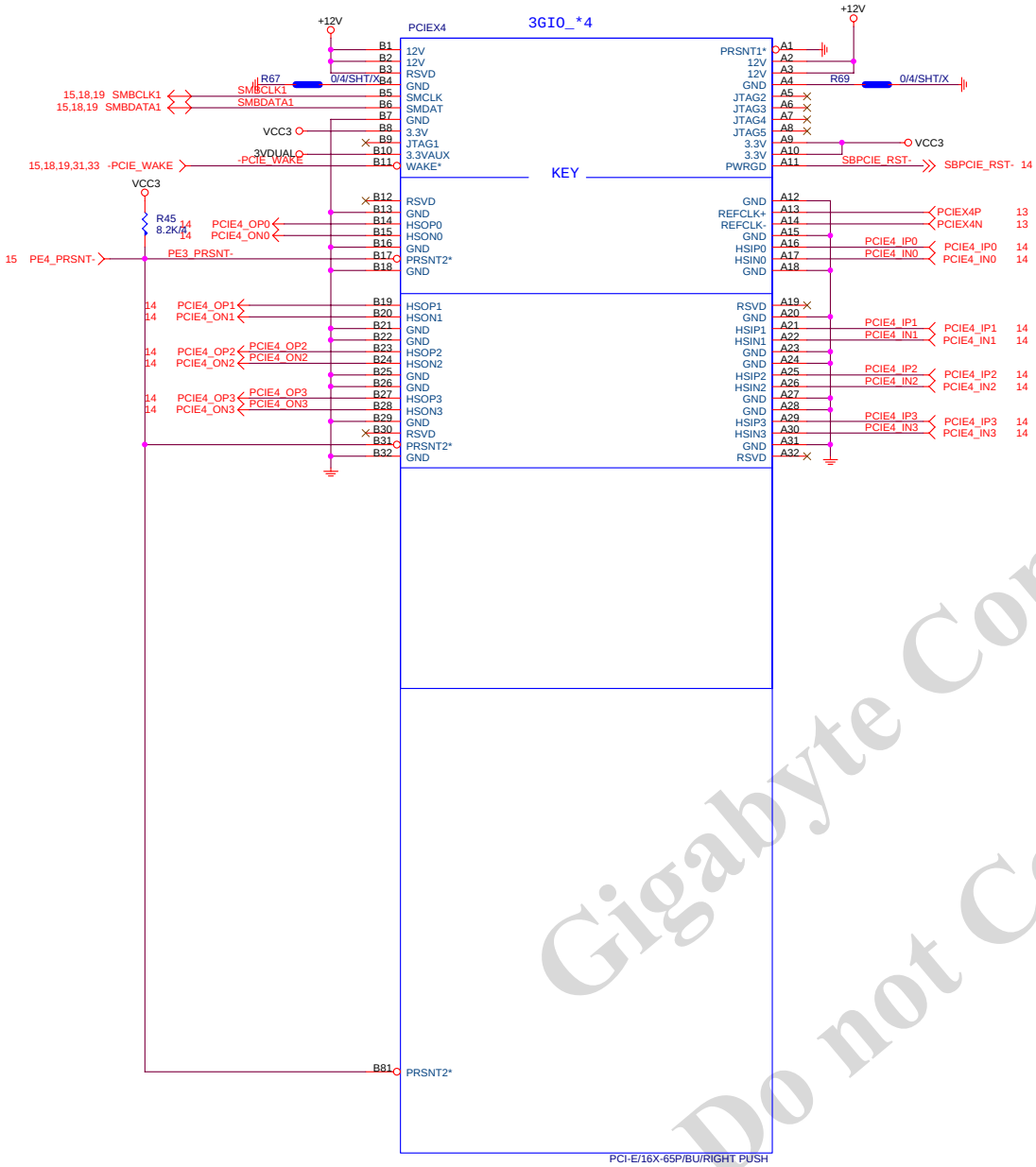


Title	EJ168
Size	Custom
Document Number	GA-970A-D3
Rev	1.02
Date:	Tuesday, June 28, 2011
Sheet	32 of 36



GIGABYTE

Title	JMB362	
Size: Custom	Document Number: GA-970A-D3	Rev: 1.02
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PCIE-1G LAN

要用1% 的電阻,trace不能太長,建議在200 mil以內

Pin34/35(VDDREG) 接到3VDUAL的trace 建議寬度大於 40mil

Data trace(MDI0~3)的+/-線長需等長,誤差在5mils以內,Pair跟Pair之間線長,最長跟最短data trace請勿超過800 mil

0.2版要修改

RTL8111E-VL-CG/QFN48/S

CLOSE LAN CHIP 離IC近越好200mil以內

(CLOSE LU1)

USB_LAN CONNECTOR

P35-152-19W9

YELLOW ORANGE (+,-) GREEN (-,+)

建議使用X5R電容

USB_LAN

RTL8101E:LR38/LC5/LR43/LC6-->O

RTL8111C:LC6-->O

RTL8102E:LC5/LC6-->O

FOR EMI

UP

DOWN

USB+LAN/1G/GO,Y/OS/RA/D/1/RED

RTL8101E :L1+L10-->AVDD18+0.1U(BIOS DISABLE MDI-X FUNCTION)

1G :USB+LAN/1G/GO,Y/OS/RA/D/1

100M:USB+LAN/100/GO,Y/OS/RA/D/1

EMI

AOZ8902CIL/SOT23-6

GIGABYTE

Title: REALTK RTL8111C

Size: Custom | Document Number: GA-970A-D3 | Rev: 1.02

Date: Tuesday, June 28, 2011 | Sheet 34 of 36