GA-78LMT-S2P

Revision : 4.01

9M-00

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18	PCI SLOT
19	LAN AR8151/8152
20	AUDIO VT1708S AUDIO JACK
21	RGB, COM, F_USB
22	IT8720 LPC IO ,Dual-BIOS, KB/MS
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28	DDRIII POWER, VCC18

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Title: COVER SHEET		
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Model Name:GA-78LMT-S2P

Component value change history

Version: 4.01

P-Code: U99098-0

Date	Change Item	Reason
2011.08.17	4.0A E_BOM Release. PCB: 4.0	Change From 78LMT-USB3 3.11 Remove USB3.0 / Change EC Cap LAN change to AR8151 Codec：ALC887
2011.09.23	4.0B P_BOM變更 Release. PCB:4.0	FIX SB OV RES R3203 :20K R3204: 10K CLK Change 9LPRS485C 電解改台固容
2011.10.18	4.0B ECN變更 Release. PCB:4.0	add PCB Vender "全誠信"
2011.10.18	4.0C MP BOM變更 Release. PCB:4.01	Change PCB to 4.01

Circuit or PCB layout change for next version

Date	Version	Change Item
2011.08.16	4.0 Gerber out	change From 78LMT-USB3 3.11 (RS760=RS780L)
2011.10.19	4.01 Gerber out	Remove 108dB Wording

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Title: BOM & PCB HISTORY

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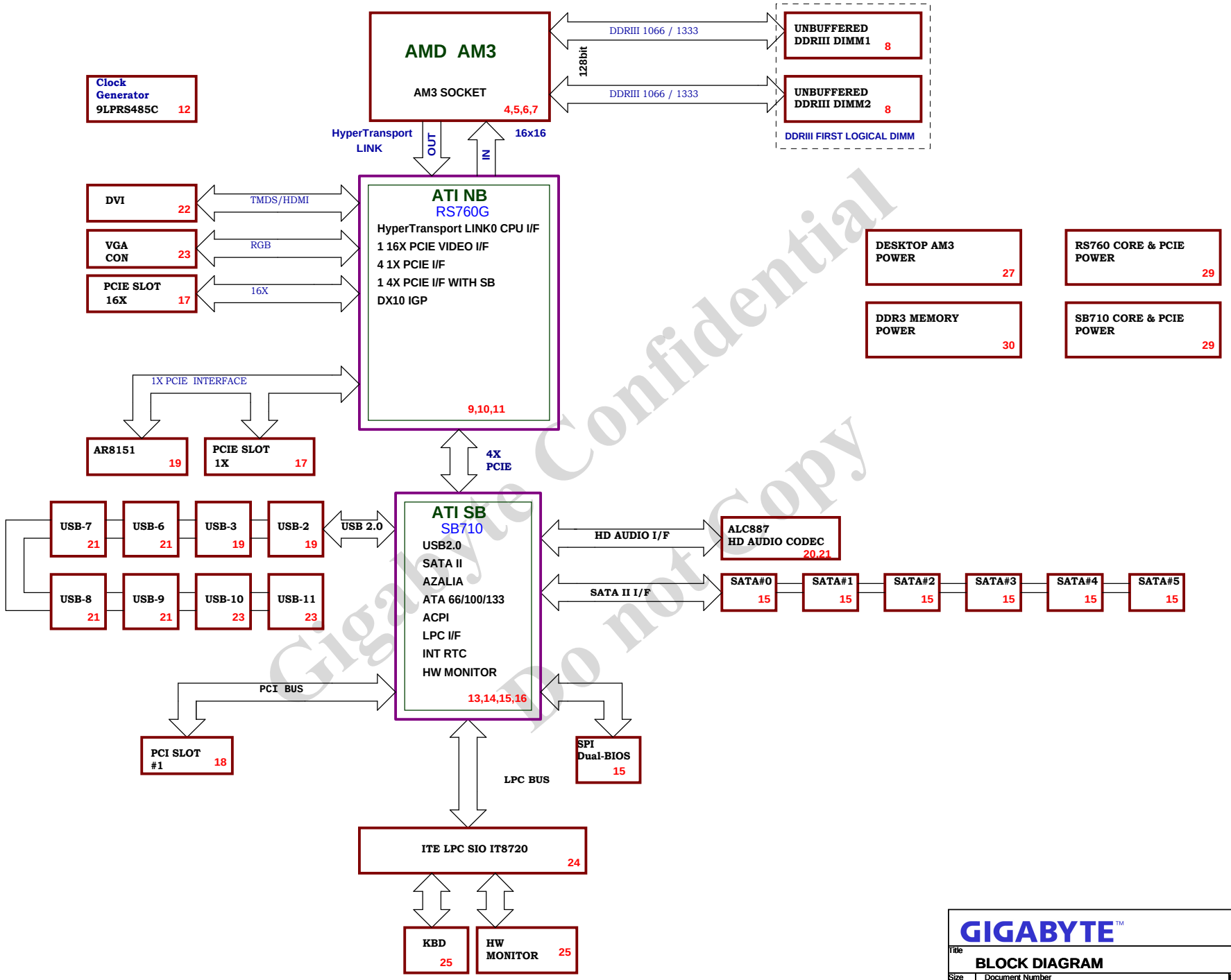
RS780L CUSTOMER DESKTOP DESIGN



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Title: BLOCK DIAGRAM

Size	Document Number	Rev
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L0_CADIN_L[0..15] L0_CADIN_L[0..15] <9>
L0_CADIN_H[0..15] L0_CADIN_H[0..15] <9>

L0_CADOUT_L[0..15] L0_CADOUT_L[0..15] <9>
L0_CADOUT_H[0..15] L0_CADOUT_H[0..15] <9>

M2CPUA

HYPERTRANSPORT

<9> L0_CLKIN_H1	L0_CLKIN_H1	N6	L0_CLKIN_H(1)	L0_CLKOUT_H(1)	AD5	L0_CLKOUT_H1	L0_CLKOUT_H1 <9>
<9> L0_CLKIN_L1	L0_CLKIN_L1	P6	L0_CLKIN_L(1)	L0_CLKOUT_L(1)	AD4	L0_CLKOUT_L1	L0_CLKOUT_L1 <9>
<9> L0_CLKIN_H0	L0_CLKIN_H0	N3	L0_CLKIN_H(0)	L0_CLKOUT_H(0)	AD1	L0_CLKOUT_H0	L0_CLKOUT_H0 <9>
<9> L0_CLKIN_L0	L0_CLKIN_L0	N2	L0_CLKIN_L(0)	L0_CLKOUT_L(0)	AC1	L0_CLKOUT_L0	L0_CLKOUT_L0 <9>
<9> L0_CTLIN_H1	L0_CTLIN_H1	V4	L0_CTLIN_H(1)	L0_CTLOUT_H(1)	Y6	L0_CTLOUT_H1	L0_CTLOUT_H1 <9>
<9> L0_CTLIN_L1	L0_CTLIN_L1	V5	L0_CTLIN_L(1)	L0_CTLOUT_L(1)	W6	L0_CTLOUT_L1	L0_CTLOUT_L1 <9>
<9> L0_CTLIN_H0	L0_CTLIN_H0	U1	L0_CTLIN_H(0)	L0_CTLOUT_H(0)	W2	L0_CTLOUT_H0	L0_CTLOUT_H0 <9>
<9> L0_CTLIN_L0	L0_CTLIN_L0	V1	L0_CTLIN_L(0)	L0_CTLOUT_L(0)	W3	L0_CTLOUT_L0	L0_CTLOUT_L0 <9>
	L0_CADIN_H15	U6	L0_CADIN_H(15)	L0_CADOUT_H(15)	Y5	L0_CADOUT_H15	
	L0_CADIN_L15	V6	L0_CADIN_L(15)	L0_CADOUT_L(15)	Y4	L0_CADOUT_L15	
	L0_CADIN_H14	T4	L0_CADIN_H(14)	L0_CADOUT_H(14)	AB6	L0_CADOUT_H14	
	L0_CADIN_L14	T5	L0_CADIN_L(14)	L0_CADOUT_L(14)	AA6	L0_CADOUT_L14	
	L0_CADIN_H13	R6	L0_CADIN_H(13)	L0_CADOUT_H(13)	AB5	L0_CADOUT_H13	
	L0_CADIN_L13	T6	L0_CADIN_L(13)	L0_CADOUT_L(13)	AB4	L0_CADOUT_L13	
	L0_CADIN_H12	P4	L0_CADIN_H(12)	L0_CADOUT_H(12)	AD6	L0_CADOUT_H12	
	L0_CADIN_L12	P5	L0_CADIN_L(12)	L0_CADOUT_L(12)	AC6	L0_CADOUT_L12	
	L0_CADIN_H11	M4	L0_CADIN_H(11)	L0_CADOUT_H(11)	AE6	L0_CADOUT_H11	
	L0_CADIN_L11	M5	L0_CADIN_L(11)	L0_CADOUT_L(11)	AE5	L0_CADOUT_L11	
	L0_CADIN_H10	L6	L0_CADIN_H(10)	L0_CADOUT_H(10)	AF4	L0_CADOUT_H10	
	L0_CADIN_L10	M6	L0_CADIN_L(10)	L0_CADOUT_L(10)	AH6	L0_CADOUT_L10	
	L0_CADIN_H9	K4	L0_CADIN_H(9)	L0_CADOUT_H(9)	AG6	L0_CADOUT_H9	
	L0_CADIN_L9	K5	L0_CADIN_L(9)	L0_CADOUT_L(9)	AH5	L0_CADOUT_L9	
	L0_CADIN_H8	J6	L0_CADIN_H(8)	L0_CADOUT_H(8)	AH4	L0_CADOUT_H8	
	L0_CADIN_L8	K6	L0_CADIN_L(8)	L0_CADOUT_L(8)		L0_CADOUT_L8	
	L0_CADIN_H7	U3	L0_CADIN_H(7)	L0_CADOUT_H(7)	Y1	L0_CADOUT_H7	
	L0_CADIN_L7	U2	L0_CADIN_L(7)	L0_CADOUT_L(7)	W1	L0_CADOUT_L7	
	L0_CADIN_H6	R1	L0_CADIN_H(6)	L0_CADOUT_H(6)	AA2	L0_CADOUT_H6	
	L0_CADIN_L6	T1	L0_CADIN_L(6)	L0_CADOUT_L(6)	AA3	L0_CADOUT_L6	
	L0_CADIN_H5	R3	L0_CADIN_H(5)	L0_CADOUT_H(5)	AB1	L0_CADOUT_H5	
	L0_CADIN_L5	R2	L0_CADIN_L(5)	L0_CADOUT_L(5)	AA1	L0_CADOUT_L5	
	L0_CADIN_H4	N1	L0_CADIN_H(4)	L0_CADOUT_H(4)	AC2	L0_CADOUT_H4	
	L0_CADIN_L4	P1	L0_CADIN_L(4)	L0_CADOUT_L(4)	AC3	L0_CADOUT_L4	
	L0_CADIN_H3	L1	L0_CADIN_H(3)	L0_CADOUT_H(3)	AE2	L0_CADOUT_H3	
	L0_CADIN_L3	M1	L0_CADIN_L(3)	L0_CADOUT_L(3)	AE3	L0_CADOUT_L3	
	L0_CADIN_H2	L3	L0_CADIN_H(2)	L0_CADOUT_H(2)	AF1	L0_CADOUT_H2	
	L0_CADIN_L2	L2	L0_CADIN_L(2)	L0_CADOUT_L(2)	AE1	L0_CADOUT_L2	
	L0_CADIN_H1	J1	L0_CADIN_H(1)	L0_CADOUT_H(1)	AG2	L0_CADOUT_H1	
	L0_CADIN_L1	K1	L0_CADIN_L(1)	L0_CADOUT_L(1)	AG3	L0_CADOUT_L1	
	L0_CADIN_H0	J3	L0_CADIN_H(0)	L0_CADOUT_H(0)	AH1	L0_CADOUT_H0	
	L0_CADIN_L0	J2	L0_CADIN_L(0)	L0_CADOUT_L(0)	AG1	L0_CADOUT_L0	

CPU-SK/941AM3/S/15u/[10SC1-A01942-01R_10SC1-A01942-02R]

M2CPU

AMD RM/BLUE

CPU_VDD_RUN = VCORE
CPU_VDDA_RUN = VDDA25
VLDT_RUN = VCC12_HT
CPU_VDDIO_SUS = DDR18V
CPU_VTT_SUS = DDRVTT

VLDT_A = VCC12_HT
VLDT_B = HT12B

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Title: CPU HYPER TRANSPORT

Size	Document Number	Rev
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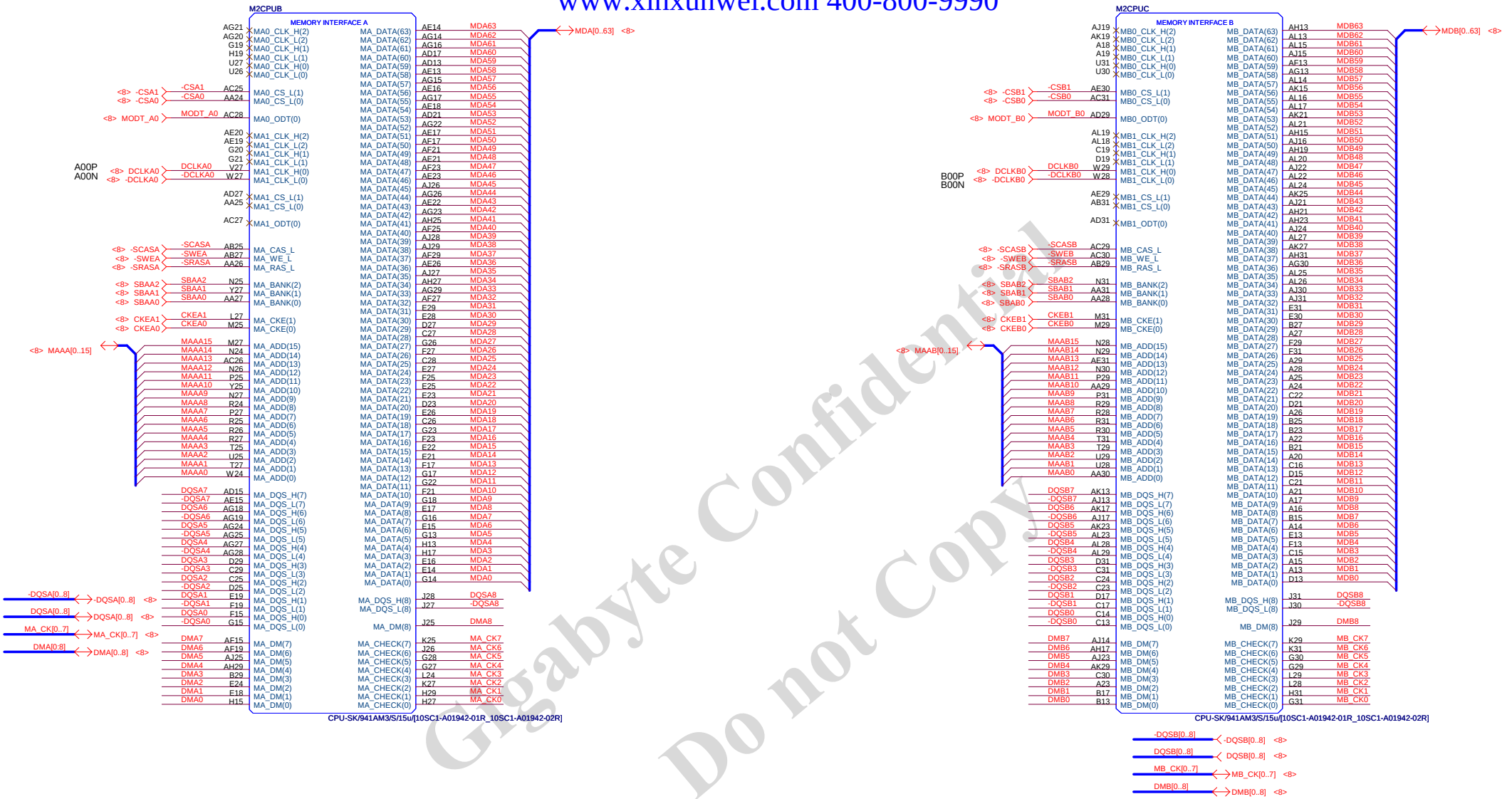

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Title	CPU DDRII MEMORY	
Size: Custom	Document Number: GA-78LMT-S2P	Rev: 4.01
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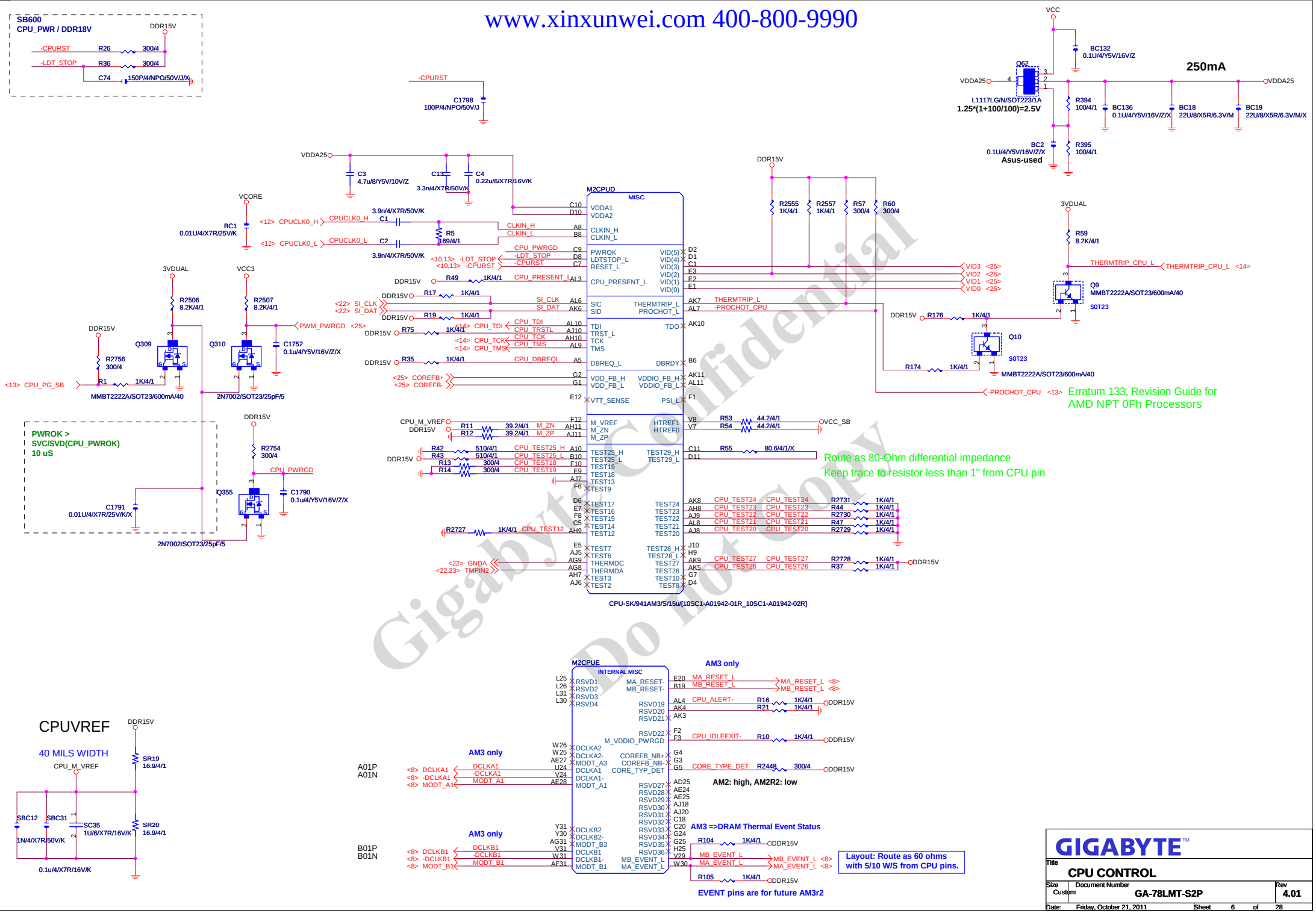
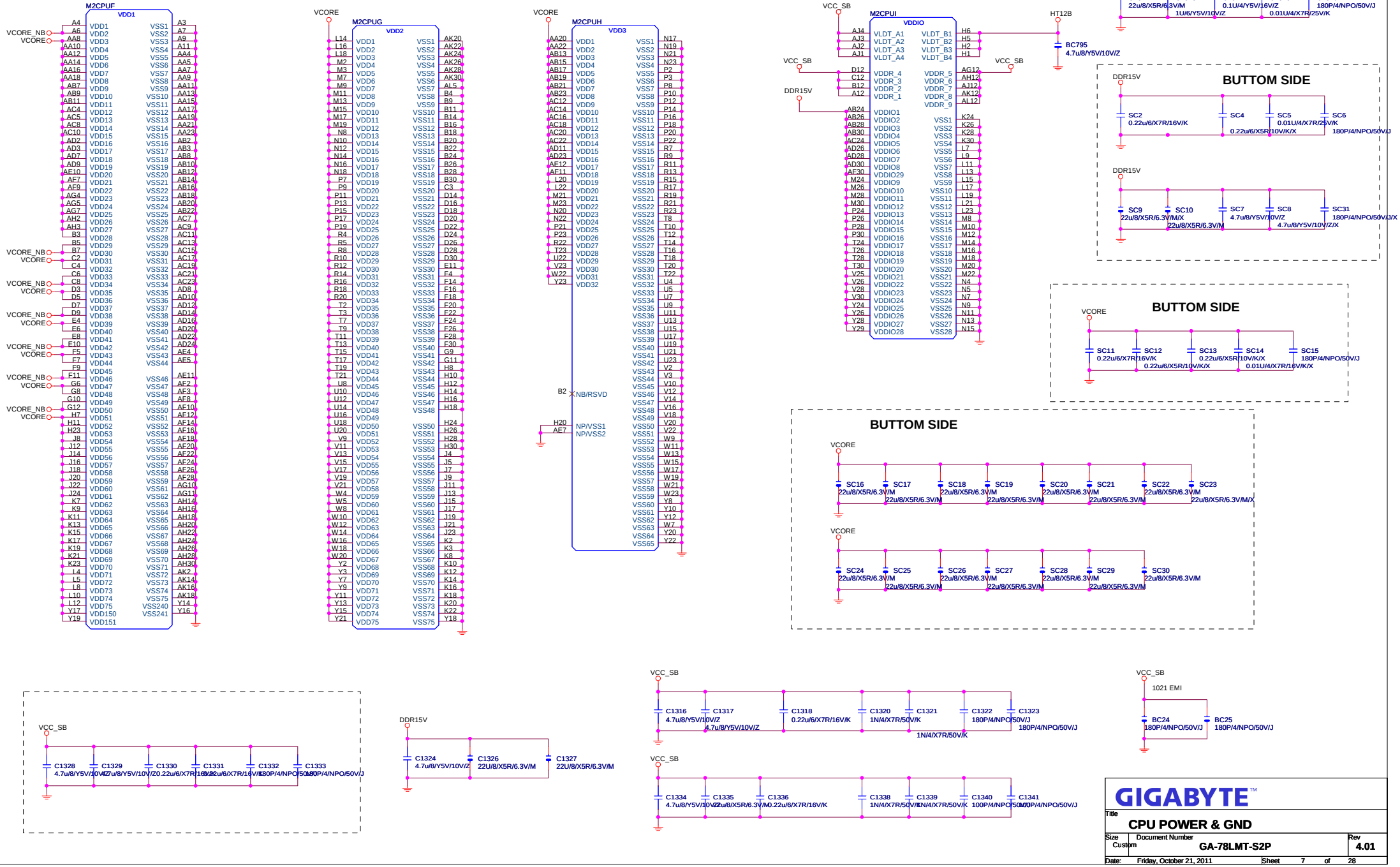


VLDT_RUN_B is connected to the VLDT_RUN power supply through the package or on the die. It is only connected on the board to decoupling near the CPU package.



Title	CPU POWER & GND
Size	Custom
Document Number	GA-78LMT-S2P
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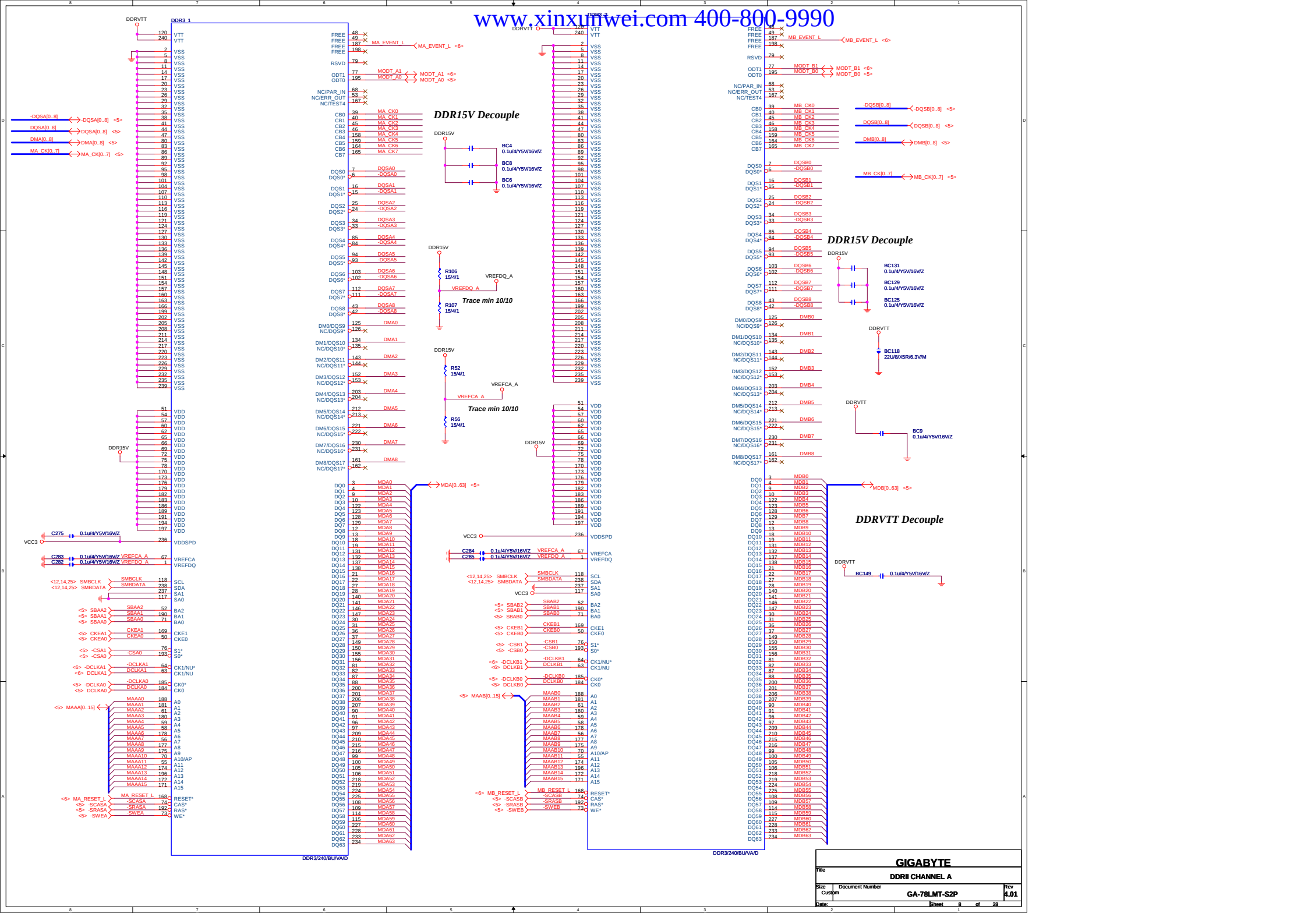

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Title	DDRII CHANNEL A	
Size: Custom	Document Number: GA-78LMT-S2P	Rev: 4.01
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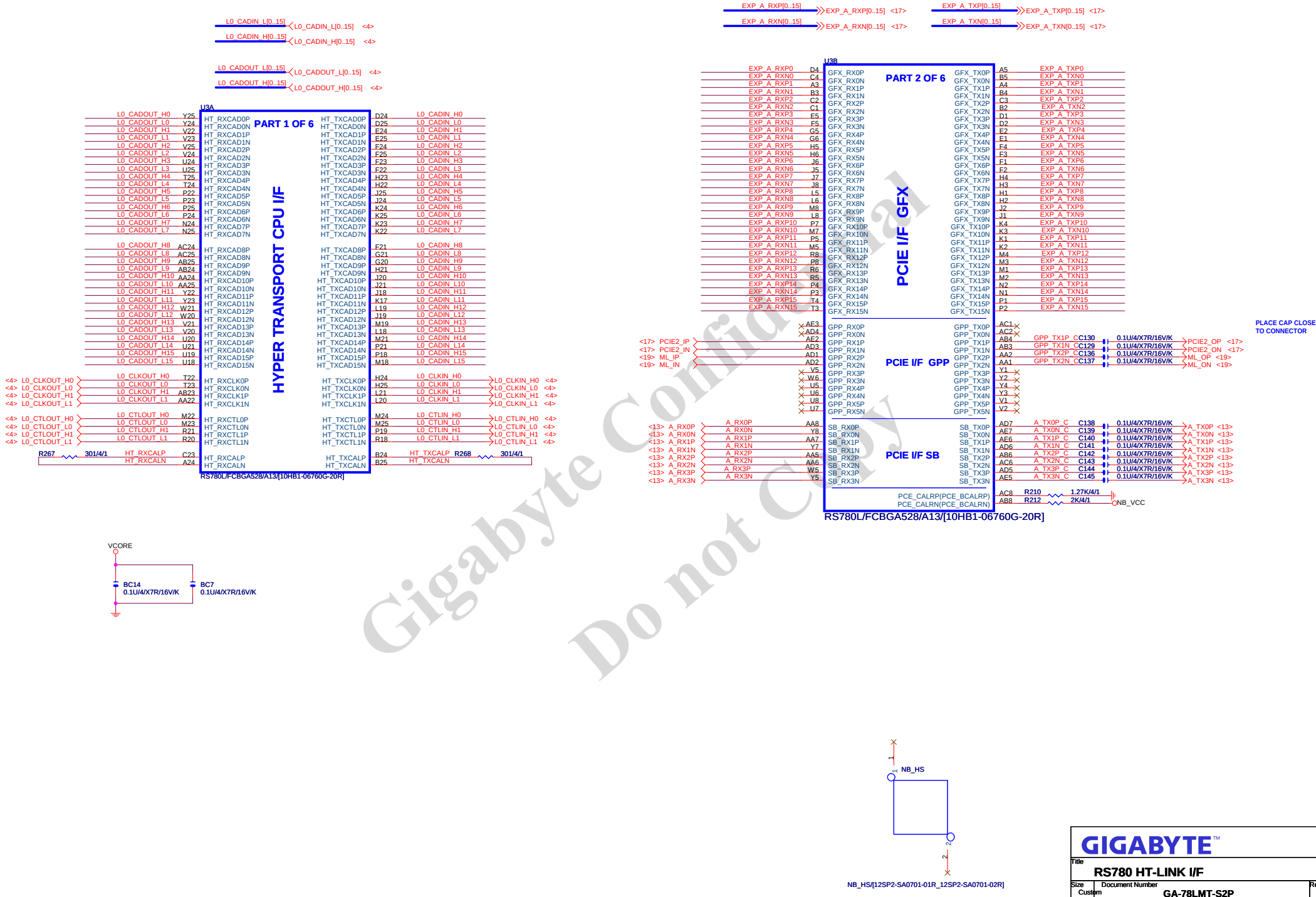

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Title	RS780 HT-LINK I/F	
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RS740/RX780/RS780 STRAPS

Note: for RS780, change R232 to 150R as AUX_CAL, place close to pin C8

RS740_DFT_GPIO1 R272 150/4/1

Note: for RX780, R217 (RX780_DFT_GPIO1) to 3K accordingly

<21> DAC_VSYNC R276 3K/4/1 VCC3

Note: for RX780, change following pull-down resistor to 3K accordingly

R912 (RX780_DFT_GPIO5)

Note: for RX780, change following pull-down resistor to 3K accordingly

R913 (RX780_DFT_GPIO4)
R218 (RX780_DFT_GPIO3)
R911 (RX780_DFT_GPIO2)

<21> DAC_HSYNC R285 3K/4/1 VCC3

Note: for RX780, change following pull-down resistor to 3K accordingly

R219 (RX780_DFT_GPIO0)

EMI 20080103
SR4 0/6/SHT/X

U3C

PART 3 OF 6

RS780L/FCBGA528/A13/[10HB1-06760G-20R]

CRT/TVOUT
PLL PWR
LVTM
PM
CLOCKs
MIS.

SR1~SR3 PLACED WITHIN 1' OF NB
SR3 150/4/1 SR2 150/4/1 SR1 140/4/1

NB_PWROK
EMI ESD ISSUE
C7 100P/4/NPO/50V/J/X

BC139 SBC29 1U/6/Y5V/10V/Z

SBC34 1U/6/Y5V/10V/Z

SBC35 10U/8/X5R/6.3V/K BC143 1U/6/Y5V/10V/Z SBC36 1U/6/Y5V/10V/Z SBC15 0.1u/4/Y5V/16V/Z

BC150 BC151 1U/6/Y5V/10V/Z 0.1U/4/Y5V/16V/Z

Q74 P8503BMG/SOT23/450pF/85m

R156 8.2K/4/1 +12V

BC145 0.1U/4/Y5V/16V/Z BC146 1U/6/Y5V/10V/Z

R159 150/4/1 REFCLKN R158 150/4/1

R271 0/4

R132 715/4/1

R265 8.2K/4/1 STRP_DATA

BC141 1U/6/Y5V/10V/Z

FUSEVCC BC678 0.1U/4/Y5V/16V/Z

R2128 4.7K/4

R2127 4.7K/4

KR2 0/4/SHT/X KR1 0/4/SHT/X

R312 33/4

D9 AME385BEETZ/SOT23/2.5V

R331 100K/4/1

DVI

DVI-D/24P/SC/RA/D

U3D

PAR 4 OF 6

SBD_MEM/DVO_I/F

RS780L/FCBGA528/A13/[10HB1-06760G-20R]

BC60 0.1u/4/Y5V/16V/Z BC61 0.1u/4/Y5V/16V/Z

ESD1 ESD2 ESD3 AZ1045-04F/MSOP10

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Title: RS780 SYSTEM I/F

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RS740/RX780/RS780 POWER DIFFERENCE TABLE

PIN NAME	RS740	RX780	RS780	PIN NAME	RS740	RX780	RS780
VDDHT	NC	+1.1V	+1.1V	IOPLLVDD	+1.2V	NC	+1.1V
VDDHTRX	NC	+1.1V	+1.1V	AVDD	+3.3V	NC	+3.3V
VDDHTTX	+1.2V	+1.2V	+1.2V	AVDDDI	+1.8V	NC	+1.8V
VDDA18PCIE	NC	+1.8V	+1.8V	AVDDQ	+1.8V	NC	+1.8V
VDD18	+1.8V	+1.8V	+1.8V	PLLVDD	+1.2V	NC	+1.1V
VDD18_MEM	NC	NC	+1.8V	PLLVDD18	+1.8V	NC	+1.8V
VDDPCIE	+1.2V	+1.1V	+1.1V	VDDA18PCIEPLL	+1.2V	+1.8V	+1.8V
VDDC	+1.2V	+1.1V	+1.1V	VDDA18HTPLL	+1.8V	+1.8V	+1.8V
VDD_MEM	+1.8V	NC	+1.8V(DDR2) +1.5V(DDR3)	VDDLTP18	+1.8V	NC	+1.8V
VDD33	+3.3V	NC	+3.3V	VDDLT18	+1.8V	NC	+1.8V
IOPLLVDD18	+1.8V	NC	+1.8V	VDDLT33	+3.3V	NC	NC

U3F — PART 6/6 — GROUND

RS780L/FCBGA528/A13/[10HB1-06760G-20R]

Please use 1mm pad size, place all ELT test pads on bottom side only

U3E — PART 5/6 — POWER

RS780L/FCBGA528/A13/[10HB1-06760G-20R]

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Title: RS780 POWER & GND

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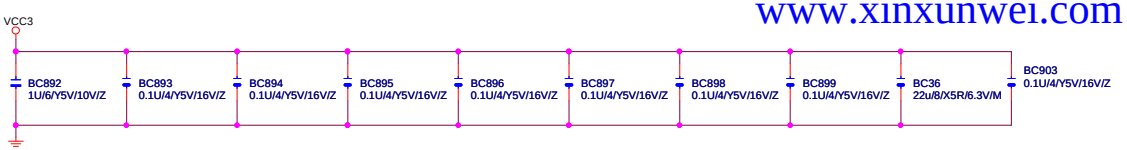


1- PLACE ALL THE SERIES TERMINATION RESISTORS AS CLOSE TO U800 AS POSSIBLE

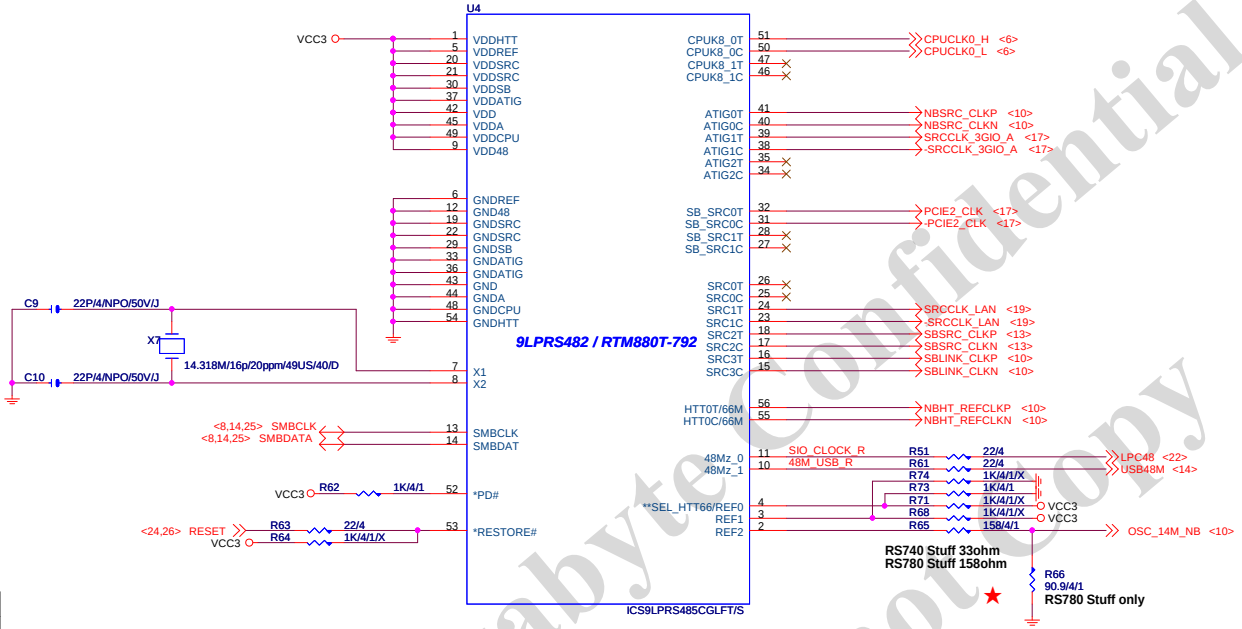
2- ROUTE ALL SRCCLKTx AND SRCCLKCx AS DIFFERENT PAIR RULE

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



watch dog --
RESTORE# 接 RESET

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

**SEL_HTT66/REF0		OUT 3.3V 14.318MHz REF output.
IN	Low	100MHz differential HT clock, (Internal 120KΩ pull-down)
	High	66MHz 3.3V single ended HT clock.

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Title: ICS9LPRS485C

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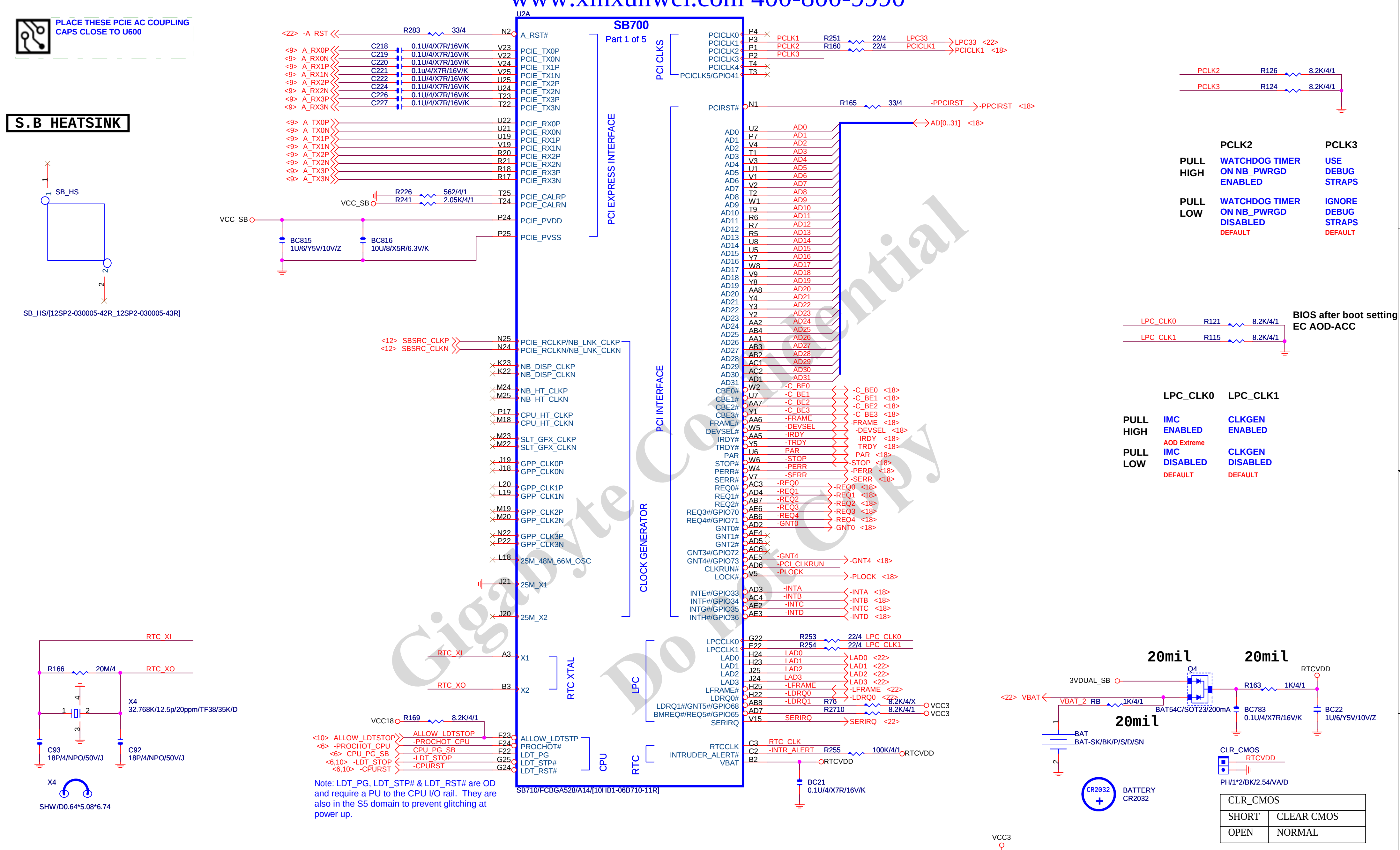

BIOS after boot setting
EC AOD-ACC

	PCLK2	PCLK3
PULL HIGH	WATCHDOG TIMER ON NB_PWRGD ENABLED	USE DEBUG STRAPS
PULL LOW	WATCHDOG TIMER ON NB_PWRGD DISABLED DEFAULT	IGNORE DEBUG STRAPS DEFAULT

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

Note: LDT_PG, LDT_STP# & LDT_RST# are OD and require a PU to the CPU I/O rail. They are also in the S5 domain to prevent glitching at power up.

CLR_CMOS	
SHORT	CLEAR CMOS
OPEN	NORMAL

NOT ADD ICT FOR RTCVDD PIN

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Title: ATI SB710 PCIE/PCI/CPU/LPC

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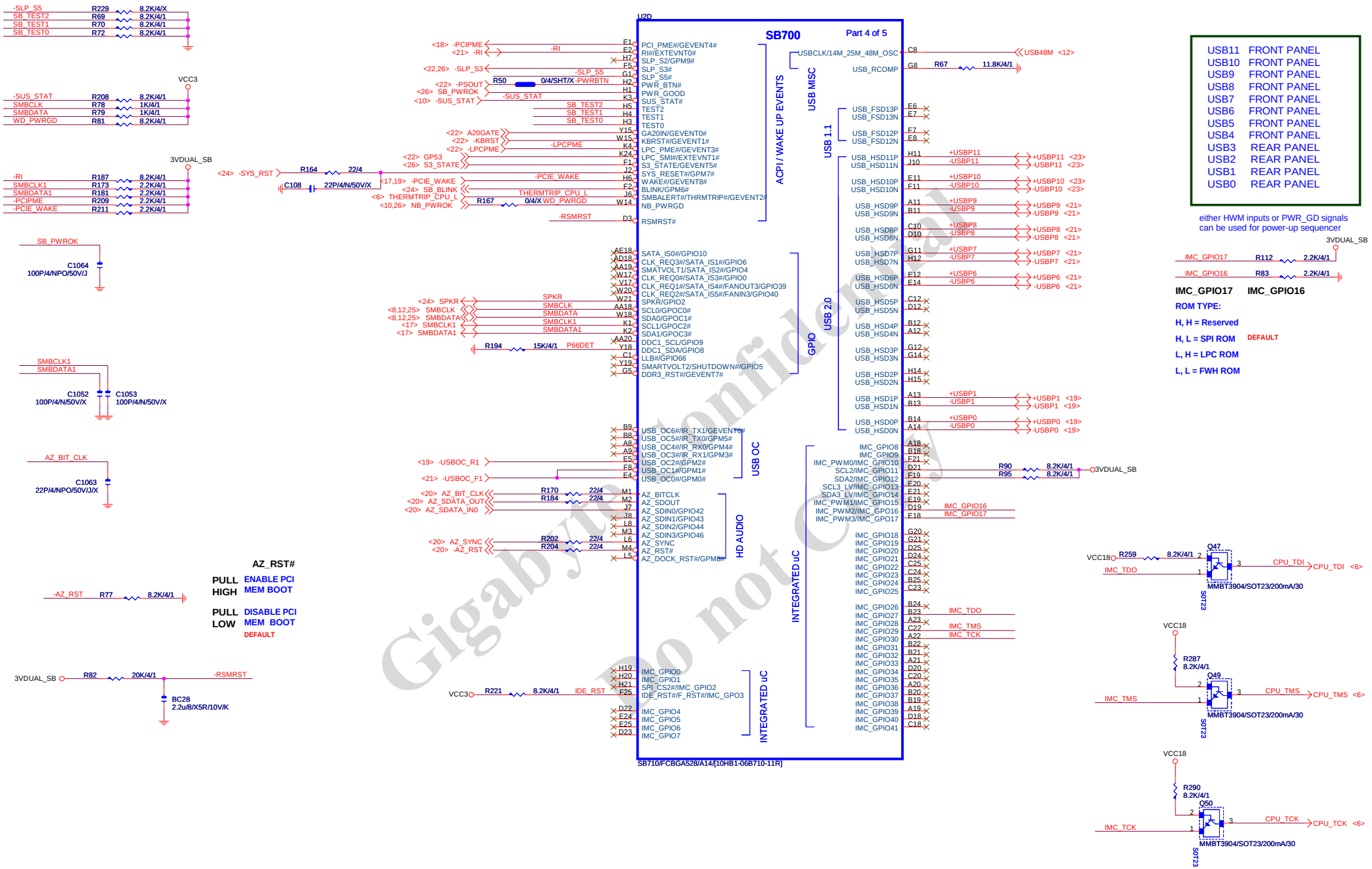

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Title: ATI SB710 ACPI/USB/GPIO/AUDIO

Size	Document Number	Rev
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PLACE SATA AC COUPLING CAPS CLOSE TO SB600

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

SB700
Part 2 of 5

SERIAL ATA

SATA_TX0P / SATA_TX0N
SATA_RX0N / SATA_RX0P
SATA_TX1P / SATA_TX1N
SATA_RX1N / SATA_RX1P
SATA_TX2P / SATA_TX2N
SATA_RX2N / SATA_RX2P
SATA_TX3P / SATA_TX3N
SATA_RX3N / SATA_RX3P
SATA_TX4P / SATA_TX4N
SATA_RX4N / SATA_RX4P
SATA_TX5P / SATA_TX5N
SATA_RX5N / SATA_RX5P
SATA_CAL
SATA_X1
SATA_X2
SATA_ACT#/GPIO67

SATA PWR

PLLVDD_SATA
XTLVDD_SATA

ATA 66/100/133

IDE_IORDY AA24 PIORDY
IDE_IRQ AA25 IRQ14
IDE_A0 Y22
IDE_A1 AB23
IDE_A2 Y23
IDE_DACK# AB24
IDE_DRQ AD25 PDDREQ
IDE_IOR# AC25
IDE_IOW# AC24
IDE_CS1# Y25
IDE_CS3# Y24
IDE_D0/GPIO15 AD24
IDE_D1/GPIO16 AD23
IDE_D2/GPIO17 AE22
IDE_D3/GPIO18 AC22
IDE_D4/GPIO19 AD21
IDE_D5/GPIO20 AE20
IDE_D6/GPIO21 AB20
IDE_D7/GPIO22 AD19 PDD7
IDE_D8/GPIO23 AE19
IDE_D9/GPIO24 AC20
IDE_D10/GPIO25 AD20
IDE_D11/GPIO26 AE21
IDE_D12/GPIO27 AB22
IDE_D13/GPIO28 AD22
IDE_D14/GPIO29 AE23
IDE_D15/GPIO30 AC23

SPI ROM

SPI_DI/GPIO12 G6 SB_SPI_DI_R R101 22/4 SB_SPI_DI
SPI_DO/GPIO11 D2 SB_SPI_DO_R R102 22/4 SB_SPI_DO
SPI_CLK/GPIO47 D1 SB_SPI_CLK_R R92 22/4 SB_SPI_CLK
SPI_HOLD#/GPIO31 E4
SPI_CS1#/GPIO32 F3 SB_SPI_CS R103 22/4 -SB_SPI_CS_ITE -SB_SPI_CS_ITE <22>
LAN_RST#/GPIO13 U15
ROM_RST#/GPIO14 J1

HW MONITOR

FANOUT0/GPIO3 M8
FANOUT1/GPIO48 M5
FANOUT2/GPIO49 M7
FANIN0/GPIO50 P5
FANIN1/GPIO51 P8
FANIN2/GPIO52 R8
TEMP_COMM C6
TEMPIN0/GPIO61 B6
TEMPIN1/GPIO62 A6 VCC_SB_OV2 <27>
TEMPIN2/GPIO63 A5 VCC_SB_OV1 <27>
TEMPIN3/TALERT#/GPIO64 B5
VIN0/GPIO53 A4
VIN1/GPIO54 B4
VIN2/GPIO55 C4 NB_VCC_OV2 <27>
VIN3/GPIO56 D4 NB_VCC_OV1 <27>
VIN4/GPIO57 D5
VIN5/GPIO58 D6
VIN6/GPIO59 A7 DDR18V_OV2 <28>
VIN7/GPIO60 B7 DDR18V_OV1 <28>

AVDD F6 3VDUAL_SB
AVSS G7

SB710/FCBGA528/A14/[10HB1-06B710-11R]

R2194 1K/4/1 SATA_CAL
SATA_X1
SATA_X2
<24> -SATA_LED
VCC_SB AA11
VCC3 W12

R168 10M/4
X6 25M/20p/30ppm/49US/20/D
C115 10P/4/NPO/50V/J
C119 10P/4/NPO/50V/J

VCC3
BC112 1U/6/Y5V/10V/Z
SBC1 0.1u/4/Y5V/16V/Z
SBC3 0.1u/4/Y5V/16V/Z

BC119 0.1u/4/Y5V/16V/Z
BC117 1U/6/Y5V/10V/Z

VCC3
R183 4.7K/4/X PIORDY SB710 DG
R185 8.2K/4/X IRQ14 SB710 DG
R189 8.2K/4/1 PDD7 SB710 DG
R191 5.6K/4/X PDDREQ SB710 DG

M_BIOS
<22> -ITE_SPI_CS
-ITE_SPI_CS 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
BC203 0.1U/4/Y5V/16V/Z
16M/SPI/SO8/200mil/S

B_BIOS
<22> -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
16M/SPI/SO8/200mil/S

VCC3
-SPI_HOLD0 R29 1K/4/1
SB_SPI_DO R34 1K/4/X
-BIOS_WP R38 1K/4/1
SB_SPI_DI R39 1K/4/X
-ITE_SPI_CS R28 220/4
-ITE_SPI_CS1 R33 220/4

SATA2_0 SATA2/7/BU/H/OP/VA/D/1/B
SATA2_1 SATA2/7/BU/H/OP/VA/D/1/B
SATA2_2 SATA2/7/BU/H/OP/VA/D/1/B
SATA2_3 SATA2/7/BU/H/OP/VA/D/1/B
SATA2_4 SATA2/7/BU/H/OP/VA/D/1/B
SATA2_5 SATA2/7/BU/H/OP/VA/D/1/B

SP_TX0P_C C1310 0.01U/4/X7R/25V/K
SP_TX0M_C C1309 0.01U/4/X7R/25V/K
SP_RX0M_C C1308 0.01U/4/X7R/25V/K
SP_RX0P_C C1302 0.01U/4/X7R/25V/K
SP_TX2P_C C1279 0.01U/4/X7R/25V/K
SP_TX2M_C C1278 0.01U/4/X7R/25V/K
SP_RX2M_C C1282 0.01U/4/X7R/25V/K
SP_RX2P_C C1283 0.01U/4/X7R/25V/K
SP_TX4P_C C1313 0.01U/4/X7R/25V/K
SP_TX4M_C C1314 0.01U/4/X7R/25V/K
SP_RX4M_C C1315 0.01U/4/X7R/25V/K
SP_RX4P_C C1303 0.01U/4/X7R/25V/K

SP_RX1P_C C1307 0.01U/4/X7R/25V/K SP_RX1P_C
SP_RX1M_C C1311 0.01U/4/X7R/25V/K SP_RX1M_C
SP_TX1M_C C1300 0.01U/4/X7R/25V/K SP_TX1M_C
SP_TX1P_C C1286 0.01U/4/X7R/25V/K SP_TX1P_C
SP_RX3P_C C1284 0.01U/4/X7R/25V/K SP_RX3P_C
SP_RX3M_C C1285 0.01U/4/X7R/25V/K SP_RX3M_C
SP_TX3M_C C1281 0.01U/4/X7R/25V/K SP_TX3M_C
SP_TX3P_C C1280 0.01U/4/X7R/25V/K SP_TX3P_C
SP_RX5P_C C1319 0.01U/4/X7R/25V/K SP_RX5P_C
SP_RX5M_C C1312 0.01U/4/X7R/25V/K SP_RX5M_C
SP_TX5M_C C1301 0.01U/4/X7R/25V/K SP_TX5M_C
SP_TX5P_C C1296 0.01U/4/X7R/25V/K SP_TX5P_C

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Title: ATI SB710 SATA/IDE/HWM/SPI

Size	Document Number	Rev
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PLACE ALL THE DECOUPLING CAPS ON THIS SHEET CLOSE TO SB AS POSSIBLE.

U2C

SB700

Part 3 of 5

POWER

1.8V: Flash module mode
3.3V: IDE mode

SB710/FCBGA528/A14/[10HB1-06B710-11R]

U2E

SB700

GROUND

Part 5 of 5

SB710/FCBGA528/A14/[10HB1-06B710-11R]

GIGABYTE™

Title: ATI SB700 POWER & GND

Size: Custom | Document Number: GA-78LMT-S2P | Rev: 4.01

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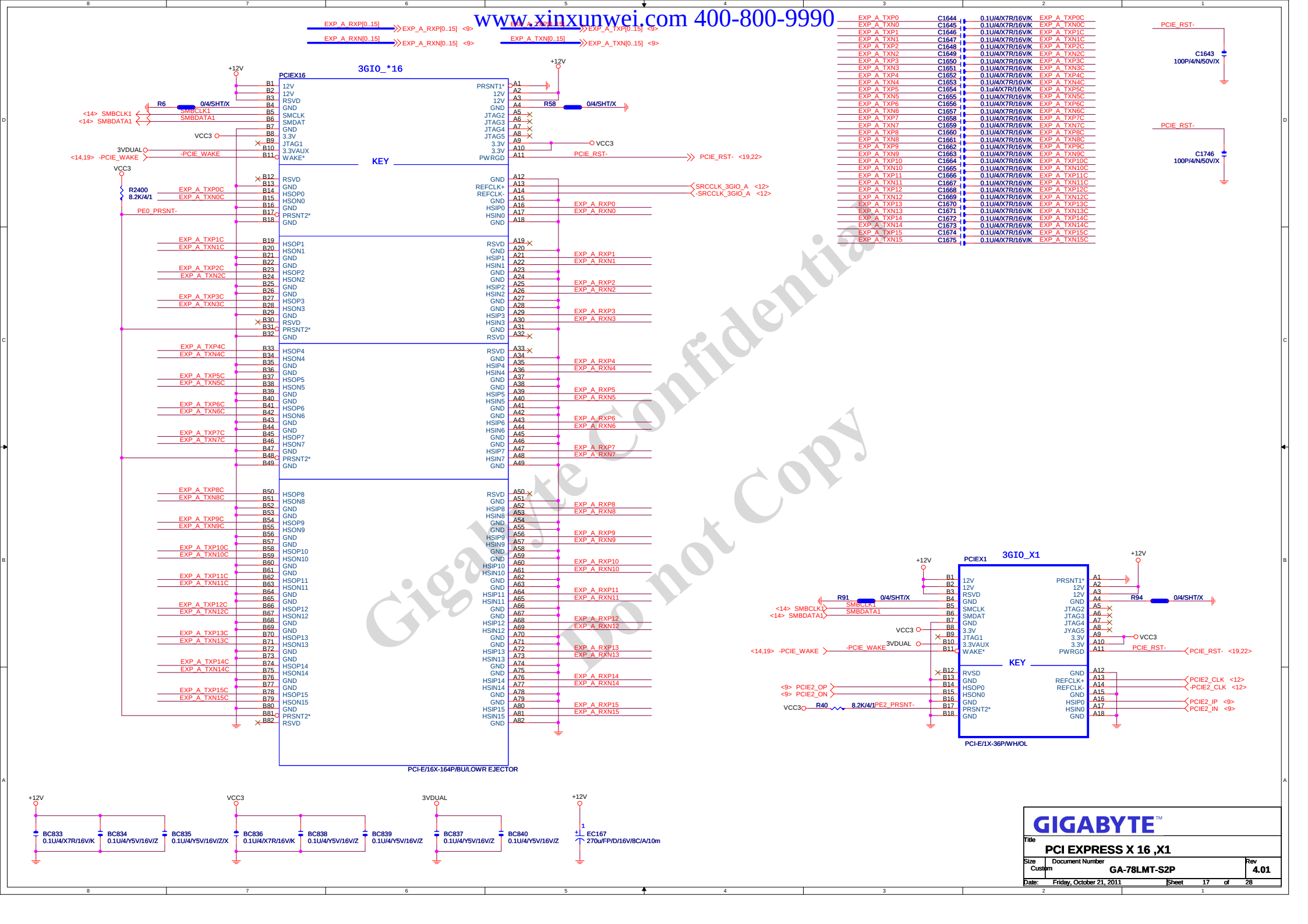

Title	PCI EXPRESS X 16 ,X1		
Size	Custom	Document Number	GA-78LMT-S2P
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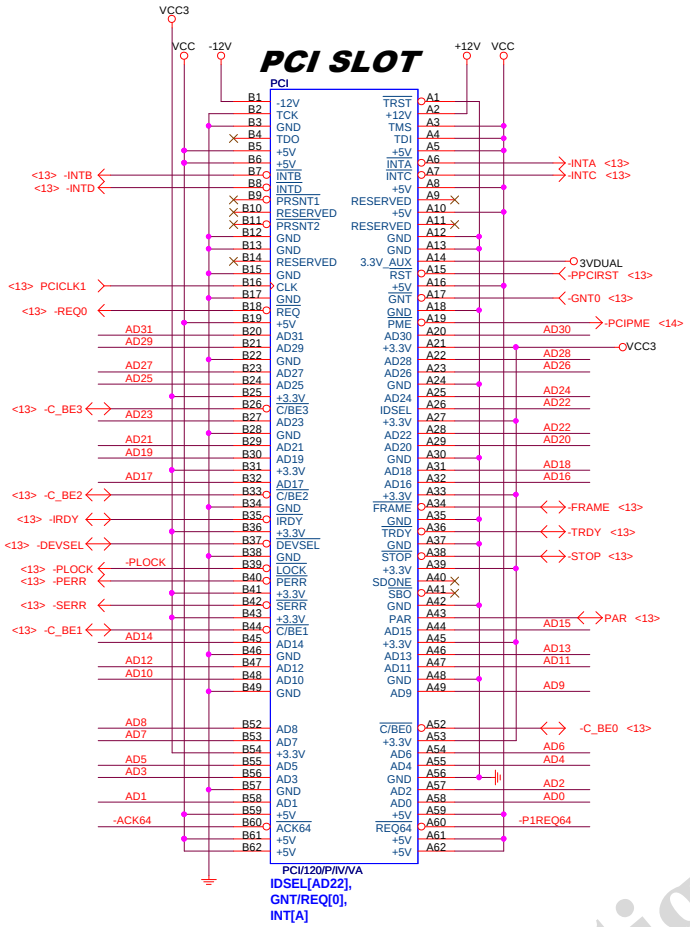
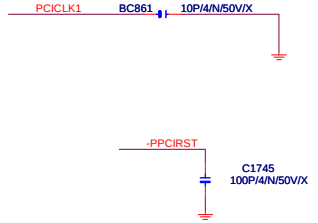
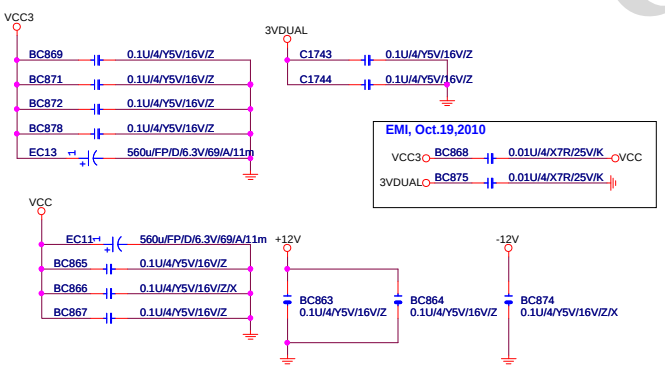
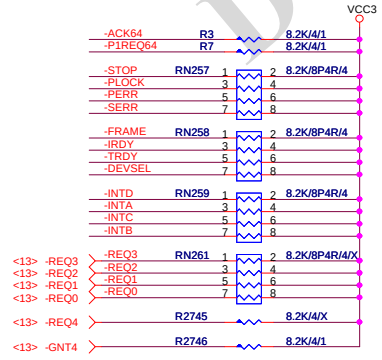
PCI SLOT 1,2









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Title: PCI SLOT 1,2			
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LAN:AR8151/AR8161

離IC近越好

<12> -SRCCLK_LAN
<12> SRCCLK_LAN
<9> ML_OP
<9> ML_ON

LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

LABC5 0.1u/4/X7R/16V/K
LABC4 1u/4/X5R/6.3V/K
LABC3 0.1u/4/X7R/16V/K
LABC6 0.1u/4/X7R/16V/K
AR8161-->N/A (LABC6)

LA_AVDDVCO
LABC7 0.1u/4/X7R/16V/K/X
LABC8 4.7u/6/X5R/6.3V/K/X
AR8161-->(O)

3VDUAL
LABC9 10u/8/X5R/6.3V/K
LABC10 1u/4/X5R/6.3V/K
LABC11 0.1u/4/X7R/16V/K

LAU1

LA_ ML-->80歐姆:[15/5/5/5/15]

離IC近越好

LAC33 100p/4/NPO/50V/J/X
LAR6 8.2K/4
<17,22> PCIE_RST-
<14,17> -PCIE_WAKE
LA_VDD33
LA_-CLKREQ
LA_VDDCT
LA_AVDDL
LA_XTALO
LA_XTALI
LA_AVDDH

Atheros
AR8151/AR8161
AR8151-BL1A-R/S

VDD3V, PERST#, WAKE#, CLKREQ#, VDDCT/ISOLAT, AVDDL_REG, XTLO, XTLI, AVDDH_REG, RBIAS
TX_P, TX_N, NC, TESTMODE, SMDATA, SMCLK, DVDDL/PPS, LED2, AVDDH, TRXN3

LA_ML_IP_C LAC12 0.1u/4/X7R/16V/K
LA_ML_IN_C LAC13 0.1u/4/X7R/16V/K
ML_IP <9>
ML_IN <9>

LAR9 0/4
LABC14 0.1u/4/X7R/16V/K
LA_DVDDL
AR8161-->N/A (LAR9,LAC18)

LA_PPS
LA_LED_LINK1000
LA_AVDDH
LA_MDI3-
LABC17 0.1u/4/X7R/16V/K

AR8161-->N/A (LABC12)

LABC12 1u/4/X5R/6.3V/K
LABC15 1u/4/X5R/6.3V/K
LABC16 0.1u/4/X7R/16V/K
LABC18 1u/4/X5R/6.3V/K
LABC19 0.1u/4/X7R/16V/K
LA_RBIAS
LAR10 2.37K/4/1

LAX1 25M/20p/30ppm/49US/20/D
LA_XTALI
LA_XTALO
LAC31 27p/4/NPO/50V/J
LAC32 27p/4/NPO/50V/J

LA_MDI0+ LA_MDI0- LA_MDI1+ LA_MDI1- LA_MDI2+ LA_MDI2- LA_MDI3+ LA_MDI3-

LABC20 0.1u/4/X7R/16V/K
AR8161-->N/A (LABC20)
LABC21 0.1u/4/X7R/16V/K

LAR19 0/4/X
LAR20 0/4
3VDUAL
LA_AVDDH
AR8151:LA_AVDDH(LAR20)
AR8161:3VDUAL(LAR19)
LABC22 1u/4/X5R/6.3V/K

SCH BOM OPT:(二擇一使用)
-->(LAC30):M/B有CLK GEN 25M
-->(LAX1,LAC31,LAC32):M/B無CLK GEN 25M

LAN POWER

NEW DESIGN ONLY FOR INTERNAL SWR
AR8151:LAR3(0),LAR5(X)
AR8161:LAR5(0),LAR3/LAR4(X)

EMI Request
Put on LAR4

LAL1 4.7uH/1A/[10LC4-5A470B-01R]
LA_LX_OUT
LA_LX
CLOSE LA_LX 200mil
LABC1 10u/8/X5R/6.3V/K
LABC2 0.1u/4/X7R/16V/K

LAESD2
AZ2225-01L/SOD323/X

LA_VDDCT
LAR3 0/4
AR8161-->N/A (LAR3,LAR4)
AR8151 POWER
LA_AVDD_CEN
LAR4 0/4

LA_DVDDL LA_AVDDL LA_AVDDVCO
LAR5 0/6/X AR8161-->(O)
LAFB2 0/6/X AR8161-->BEAD AR8151-->N/A
LAFB3 0/6 AR8161-->BEAD AR8151-->0/6
AR8161 POWER

AR8161-->(O)
LA_AVDDH
LAR7 8.2K/4/X
LAR8 8.2K/4/X
LA_LED_ACT_TXRX
LA_LED_LINK100

AR8161-->(O)
VCC3
LAR1 30K/4/X
LAR2 0/4/X
LA_VDDCT
N_ISOLATEB <22>

Power domain chart

	AR8151	AR8161
AVDD33	N/A	3.3V
VDD33	3.3V	3.3V
AVDDH	2.7V	2.7V
AVDDL/DVDDL	1.1V	1.1V
VDDCT	1.7V	

MDI : AR8161-->N/A

LA_MDI0+ LA_MDI0- LAR11 49.9/4/1 LAR12 49.9/4/1 LA_MDI_RC0 LAC26 0.1u/4/X7R/16V/K
LA_MDI1+ LA_MDI1- LAR13 49.9/4/1 LAR14 49.9/4/1 LA_MDI_RC1 LAC27 0.1u/4/X7R/16V/K
LA_MDI2+ LA_MDI2- LAR15 49.9/4/1 LAR16 49.9/4/1 LA_MDI_RC2 LAC28 0.1u/4/X7R/16V/K
LA_MDI3+ LA_MDI3- LAR17 49.9/4/1 LAR18 49.9/4/1 LA_MDI_RC3 LAC29 0.1u/4/X7R/16V/K

CLOSE LAN CHIP

USB_LAN CONNECTOR

USB_LAN
LABC23 0.1u/4/X7R/16V/K
LA_AVDD_CEN
LA_MDI0+ LA_MDI0- LA_MDI1+ LA_MDI1- LA_MDI2+ LA_MDI2- LA_MDI3+ LA_MDI3-
GND_L10
LABC25 0/4/SHT/M/X

UP
DOWN

D1 LA_LED_ACT_TXRX
D2 LA_LED_D2 LR13 150/4/1
D3 LA_LED_LINK100 LR21 150/4/1
D4 LA_LED_LINK1000 LR22 150/4/1

3VDUAL
LFB4 0/6/SHT/X
LAN_3VDUAL_LED
LBC33 0.1U/4/Y5V/25V/Z/X

U1 U2 -USBP0 <14> +USBP0 <14>
U3 U4 U5 U6 -USBP1 <14> +USBP1 <14>
U7 U8
FUSEVCC
LBC26 0.1U/4/Y5V/25V/Z/X
LBC29 0.1U/4/Y5V/25V/Z/X

USB+LAN/1G/GO,Y/OS/RA/D/8C/[11NR6-702009-0ER]

LAESD1
LA_LED_LINK100
LA_LED_LINK1000
LA_LED_ACT_TXRX
LAN_3VDUAL_LED
LA_LED_D2
AOZ8902CIL/SOT23-6

FUSEVCC
LEC4 560u/FP/D/6.3V/69/A/11m
EC要靠近USB_PORT的FUSEVCC

USB_LAN
EMI
LR28 0/6/SHT/X

SU1
-USBP0 +USBP0 -USBP1 FUSEVCC +USBP1
AOZ8902CIL/SOT23-6

5VDUAL F6 SMD1812P260/6V FUSEVCC
FUSEVCC R3161 150K/4 -USBOC_R1 <14>
R3162 270K/4

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LINE OUT FRONT OUT

LINE_O_R CEC17 100u/OS/D/6.3V/66/A/35m — CR59 75/4/1 — AJ_B5
LINE_O_L CEC19 100u/OS/D/6.3V/66/A/35m — CR60 75/4/1 — AJ_B2
CR3 22K/4 CR4 22K/4
CBC21 CBC22 180P/4/NPO/50V/J
180P/4/NPO/50V/J

LINE-IN

LINE_IN_R CR61 75/4/1 LINE_IN_RR
LINE_IN_L CR62 75/4/1 LINE_IN_LL
CBC26 CBC27
180P/4/NPO/50V/J 180P/4/NPO/50V/J

MIC

MIC2 CR63 75/4/1 MIC22
MIC1 CR64 75/4/1 MIC11
CBC28 CBC29 180P/4/NPO/50V/J
180P/4/NPO/50V/J

ALC880/CMI9880

CU1 — ALC887-VD2-CG/LQFP48/S

CR2 20K/4/1 AVDD
CBC2 0.1u/4/X7R/16V/K
VCC3 CR7 2.2/H/6
CBC48 22u/8/X5R/6.3V/M
CBC42 10u/8/X5R/6.3V/K
CR16 8.2K/4/X
CR27 8.2K/4/X
CR26 0/4/X
<14> AZ_SDATA_OUT
<14> AZ_BIT_CLK
CR14 22/4
<14> AZ_SDATA_IN0
CR15 22/4
<14> AZ_SYNC
<14> -AZ_RST
VCC3
CBC4 22p4/4/NPO/50V/J
CBC5 0.1U/4/X7R/16V/K
CBC6 0.1U/4/X7R/16V/K

DVDD1 GPIO0/XTALI GPIO1/XTALO DVS1 SDATA_OUT BIT_CLK DVSS2 SDATA-IN DVDD2 SYNC RESET# PC_BEEP
SPDIFO SPDIFI/EAPD SURBACK-R/JD4 SURBACK-L/JD0 GPIO0 LFE CEN AVSS2 SURR-R JDREF (NC)/JD3 SURR-L AVDD2 LINE1-VREFO/VREFO3
SENSE A/JD1/PHONE JD5 LINE2-R/AUX-R MIC2-L/JD2 MIC2-R/JD1 GPIO1 CD_L CD_GND CD_R MIC1-L/MIC1 MIC1-R/MIC2 LINE1-L LINE1-R

FRONT-R FRONT-L SENSE B (JD2)/FMIC1 DCVOL/VREFVOUT2 MIC1-VREFO-R/FMIC2 LINE2-VREFO/JD4 MIC2-VREFO/AFILT2 LINE1-VREFO-L/AFILT1 MIC1-VREFO-L/VREFOUT VREF AVSS1 AVDD1

CR32 47/4/1 FAUDIO_JD
CBC20 1N/4/X7R/50V/K
LINE_O_R
LINE_O_L
VODR CR13 8.2K/4/1 MIC22
LINE2_VREFO
MIC2_VREFO
892WOR
VOBR CR17 8.2K/4/1 MIC11
AVDD
CBC7 0.1u/4/X7R/16V/K
CBC8 22U/8/X5R/6.3V/M

892WOR CR35 0/6 5VDUAL
For 892 with LDO
CBC49 22u/8X5R/6.3V/M
CD4 For 892 with LDO
For 892 with LDO
AZ2225-01L/SOD323

FRONT_JD CR19 5.1K/4/1
LINE1_JD CR20 10K/4/1
MIC1_JD CR21 20K/4/1

CBC10 22U/8/X5R/6.3V/M LINE_IN_R
CBC11 22U/8/X5R/6.3V/M LINE_IN_L
CBC12 10U/8/X5R/6.3V/K MIC2
CBC13 10U/8/X5R/6.3V/K MIC1

Can Support Amp Out
LINE2_L
LINE2_R
MIC2_L
MIC2_R

CODEC POWER/EMI PAD

5VDUAL CD1 CD4148WP/1206/300mA/X
AVDD
CQ3
+12V
CD2 CD4148WP/1206/300mA/X
CD3 AZ2225-01L/SOD323/X
78L05/SOT89/0.1A/X
CBC31 22u/8/X5R/6.3V/M
CBC30 0.1u/4/Y5V/16V/Z/X

USB_LAN

USB

CESD1

LINE2_R LINE2_L MIC2_R MIC2_L
AOZ8902CIL/SOT23-6
AVDD
CBC59 0.1u/4/Y5V/16V/Z
SSOP6-1

CR1 0/SHT/X

INTEL FRONT AUDIO

CQ8 CR74 8.2K/4 CR75 8.2K/4 LINE2_VREFO
BAT54A/SOT23/200mA
CQ9 CR76 8.2K/4 CR77 8.2K/4 MIC2_VREFO
BAT54A/SOT23/200mA

MIC2_L CBC46 10U/8/X5R/6.3V/K CR24 75/4/1
MIC2_R CBC44 10U/8/X5R/6.3V/K CR25 75/4/1
LINE2_R CEC9 100u/OS/D/6.3V/66/A/35m CR18 75/4/1
LINE2_L CEC10 100u/OS/D/6.3V/66/A/35m CR23 75/4/1

CR45 22K/4
CR46 22K/4
FAUDIO_JD

F_AUDIO
PH/2*5K8/GED/2.54/VA/D
-ACZ_DET
BACK_R CR79 20K/4/1
BACK_L CR80 39.2K/4/1
VCC3
CR78 8.2K/4

CC1 CC2 CC3 CC4 180P/4/NPO/50V/J

UR6 0.01U/4/X7R/25V/K
Fix AP issue
0713 realtek fix 0 ohm

SR5 0/6/SHT/X
Realtek recommand for AP
Put on Codec Bottom side

AUDIO
LINE1_JD LINE_IN_RR LINE_IN_LL
FRONT_JD AJ_B5 AJ_B2
MIC1_JD MIC22 MIC11
GND
BLUE LINE-IN
GREEN LINE-OUT
PINK MIC-IN
MH1 MH2 MH3 MH4 MH5
A3RP/13P/BL,LI,PK/RA/D/1/B

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Title	ALC888B CODEC	
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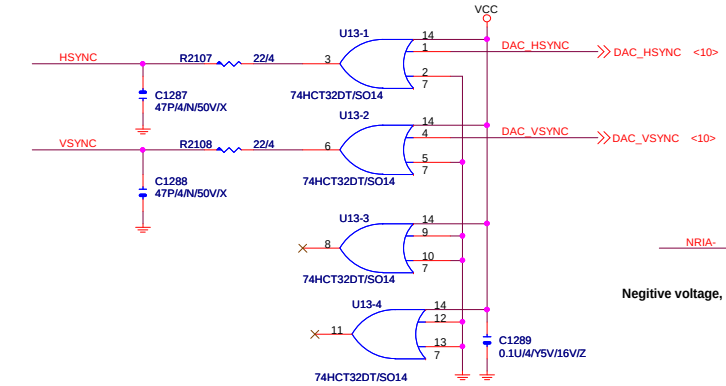

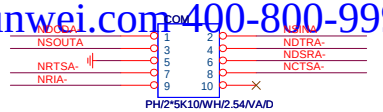

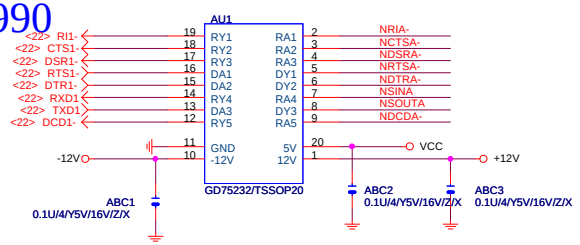

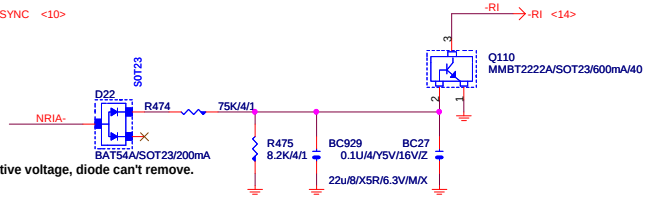

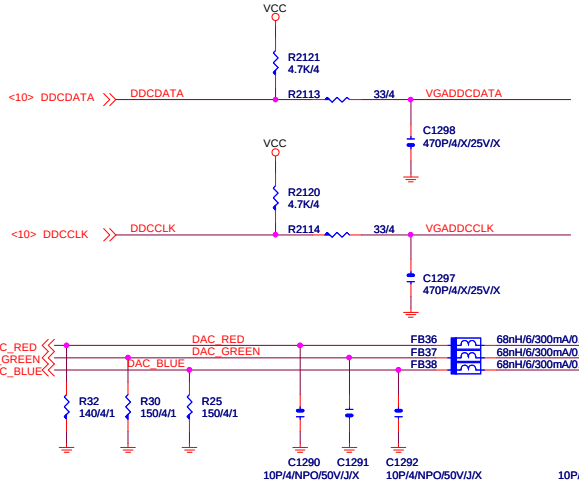

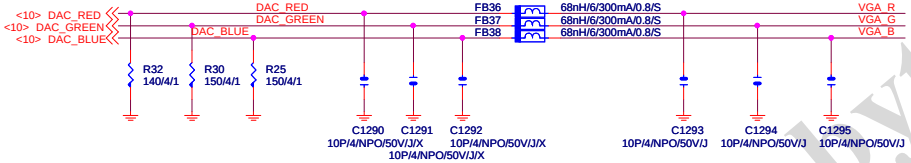

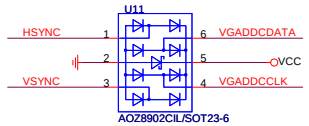

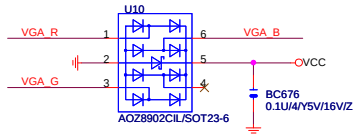

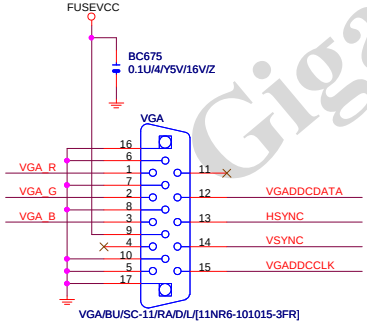

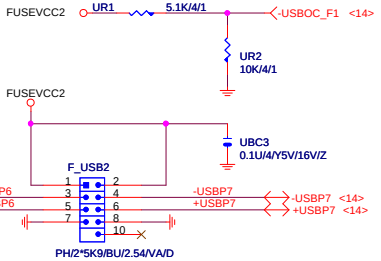

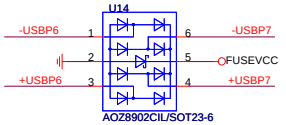

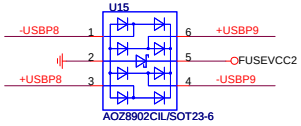

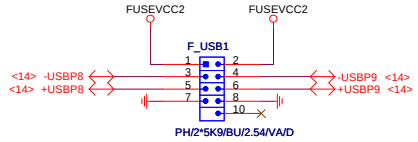

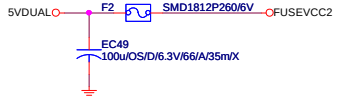

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Title	RGB ,TV CONNECTOR	
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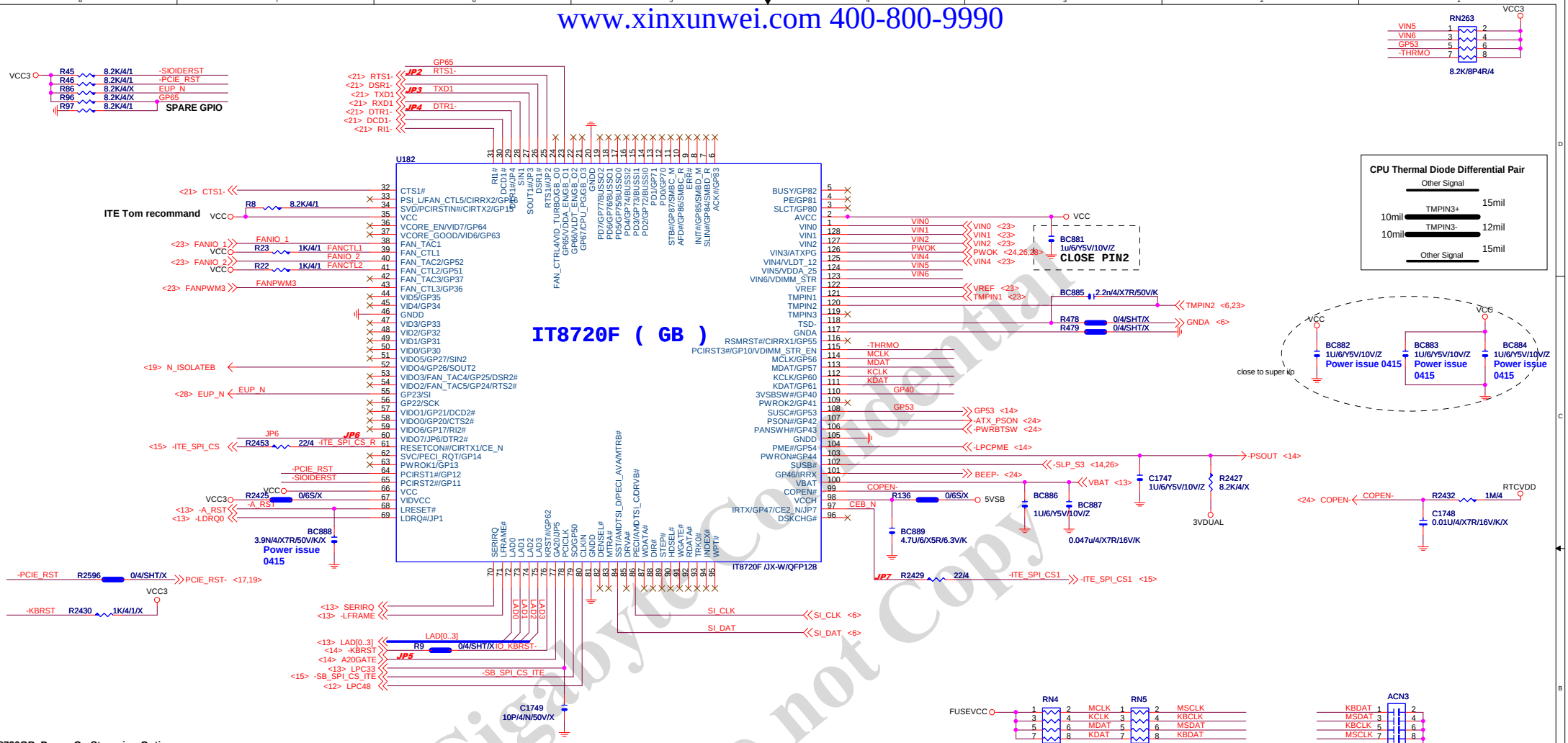

IT8720GB Power On Strapping Options

	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

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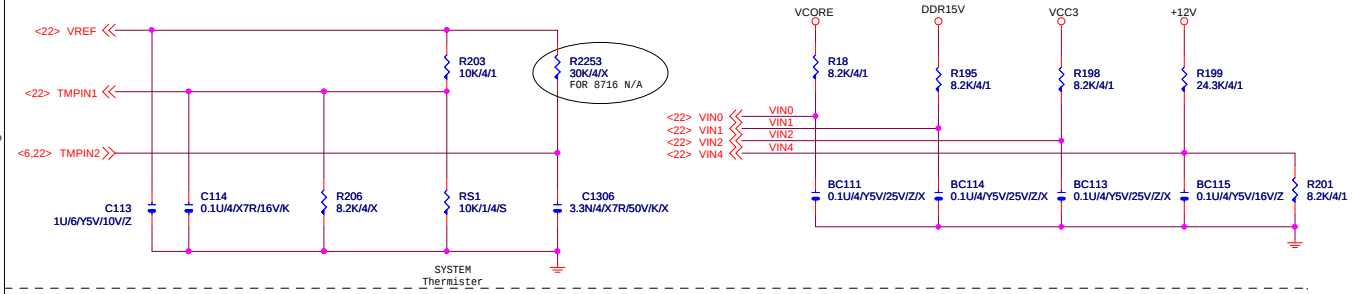
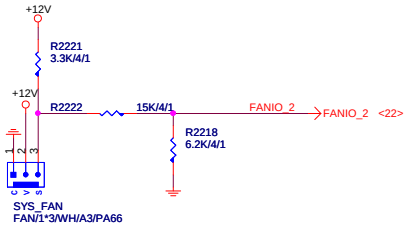
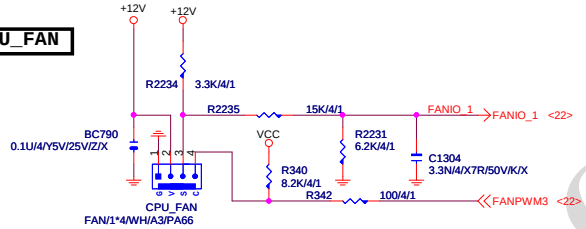
Hardware Monitor circuits

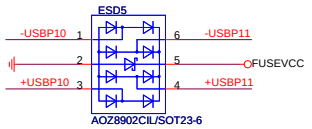


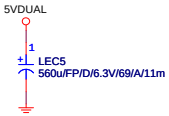
SYSTEM_FAN

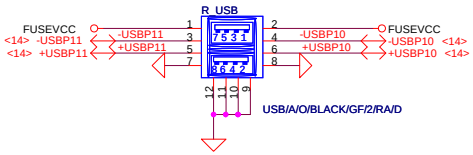


CPU_FAN









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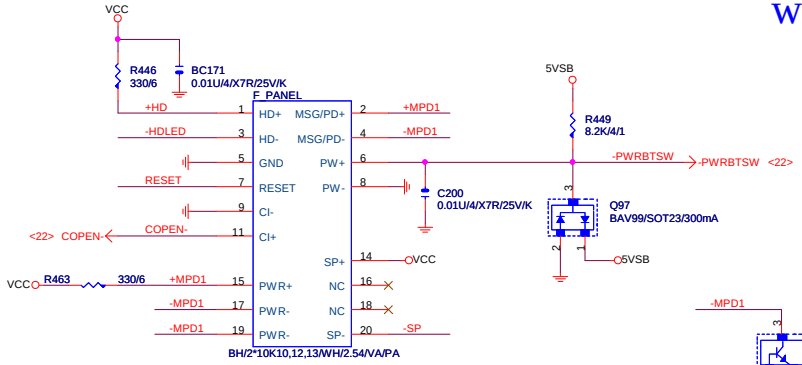
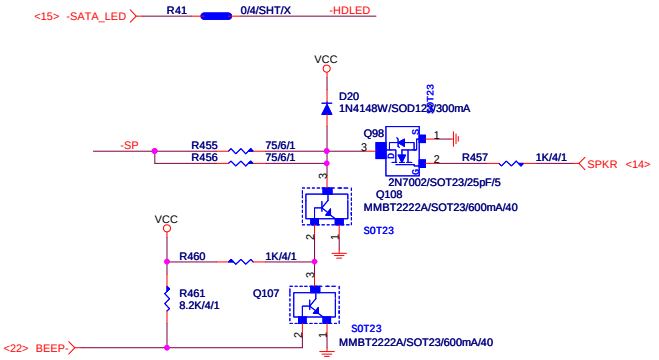
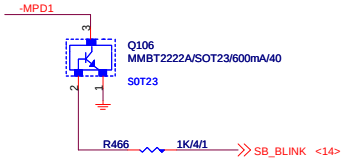
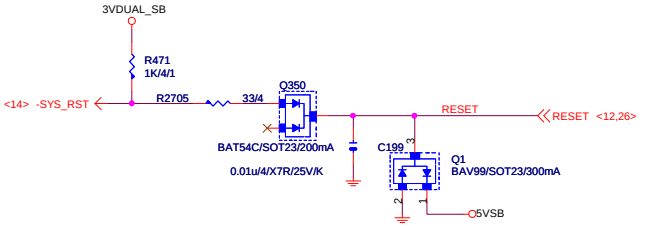
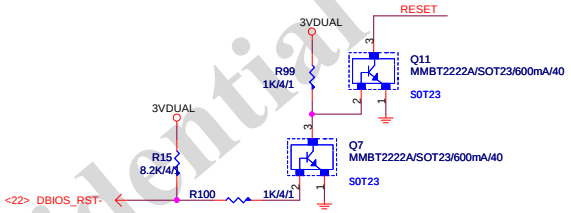


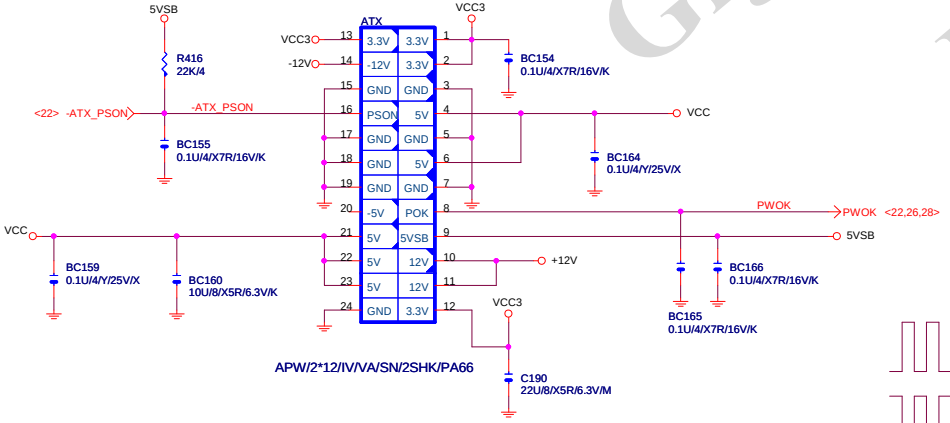


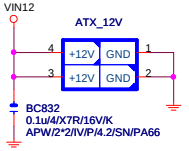


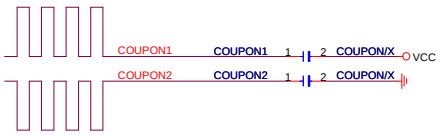


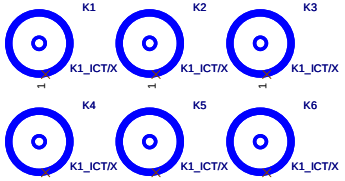


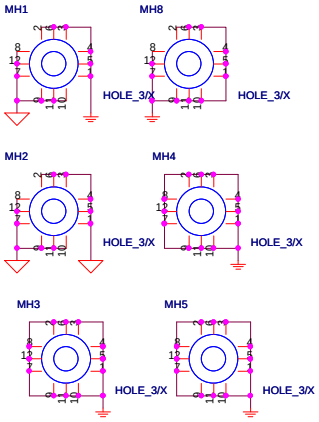
ATX POWER CONNECTOR











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Title	ATX, FRONT PANEL	
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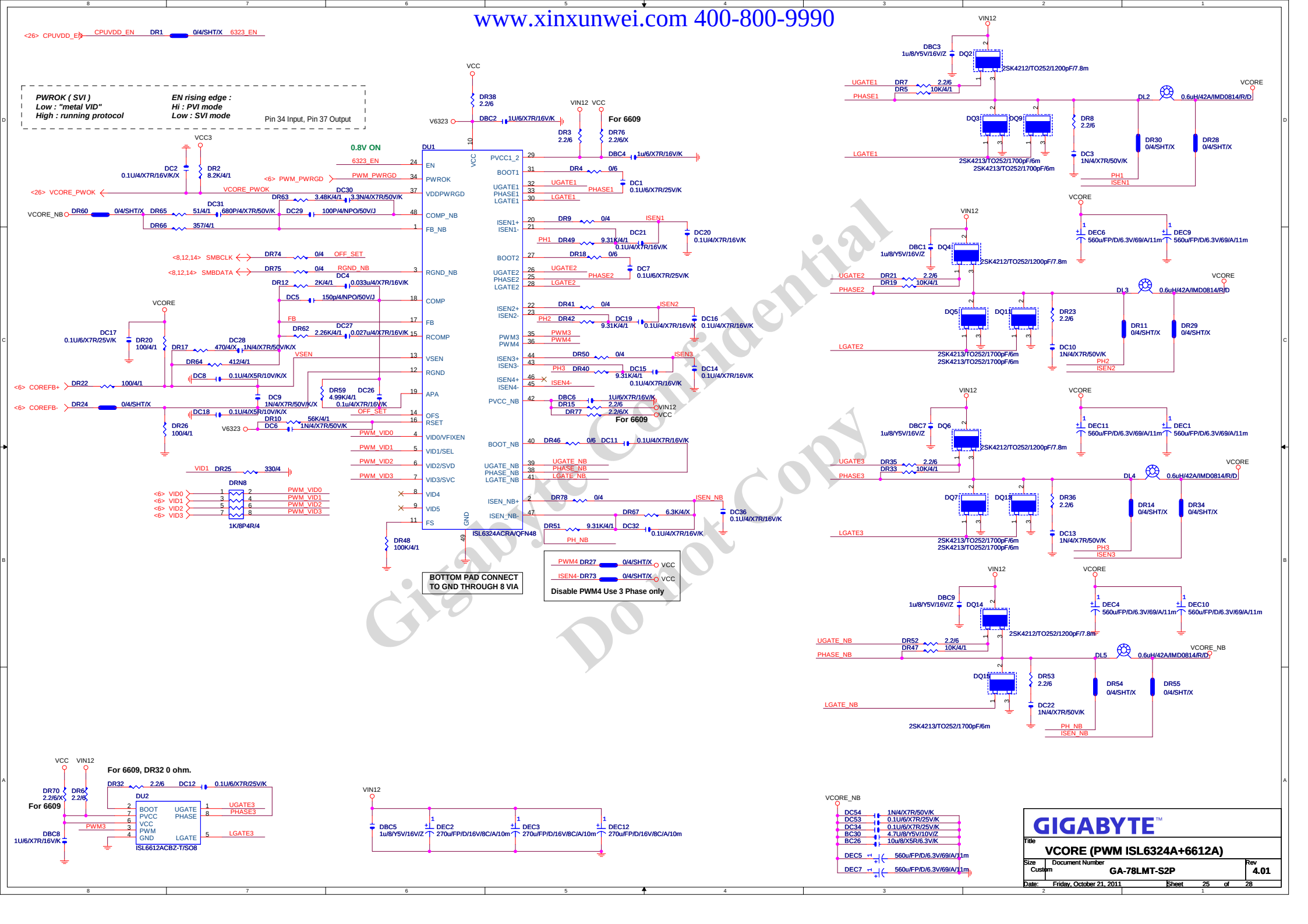

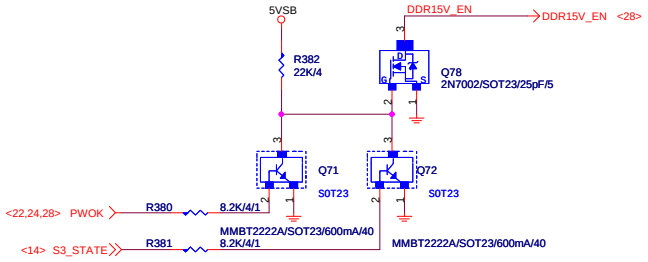

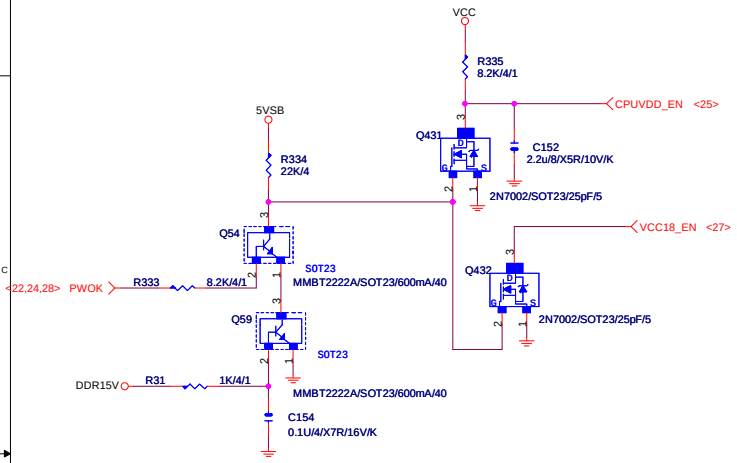

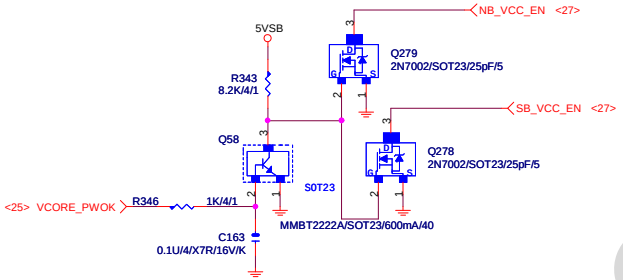

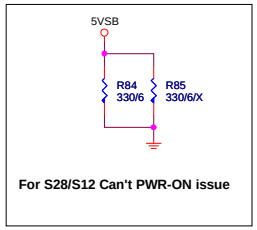

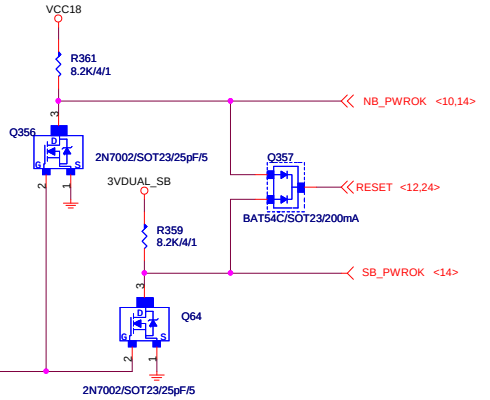

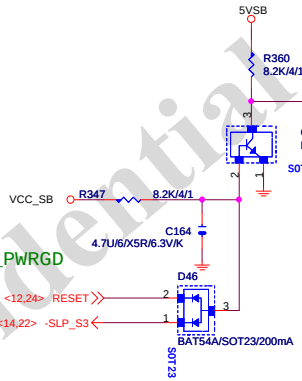

PWOK > NB_PWRGD / SB_PWRGD

(1.8V , 1.2V , 1.1V) > NB_PWRGD 前 1ms

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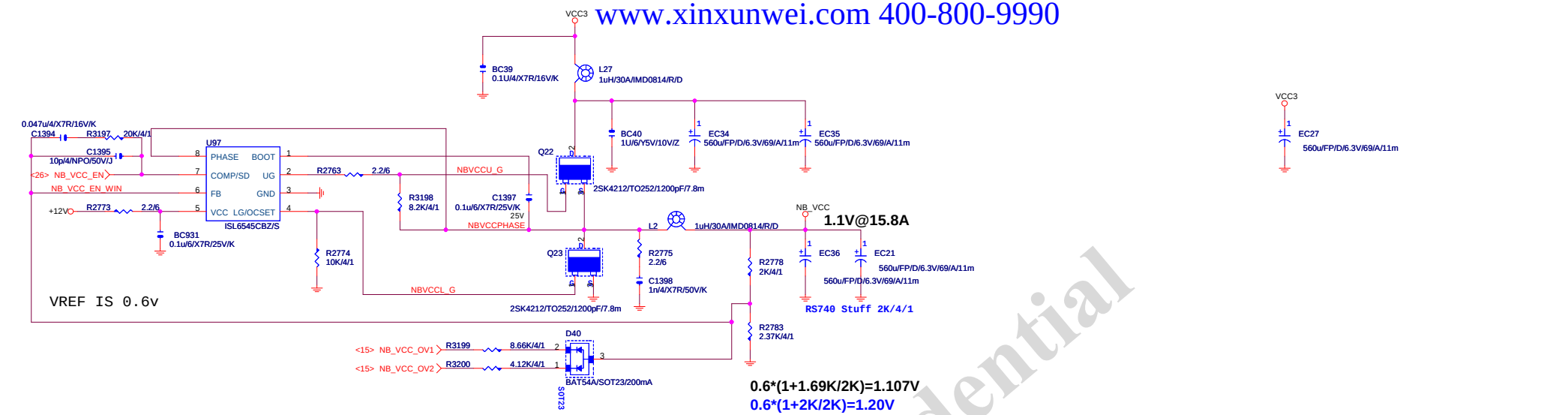
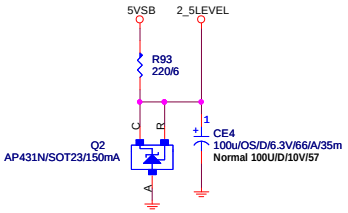
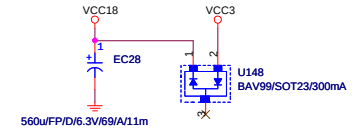


0.6*(1+1.69K/2K)=1.107V

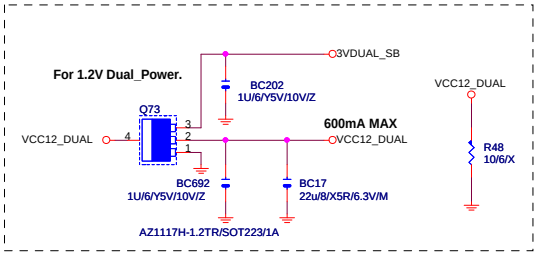
0.6*(1+2K/2K)=1.20V

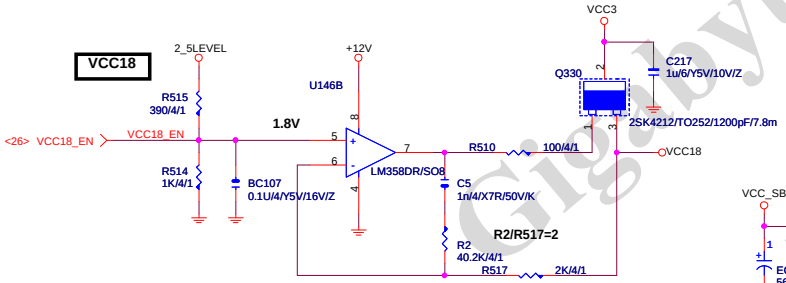
NB_VCC_OV1	NB_VCC_OV2	NB_VCC
L	X	1.20V
X	L	1.30V
L	L	1.40V

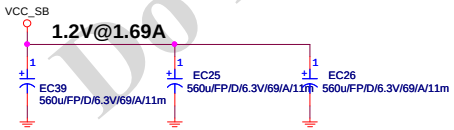


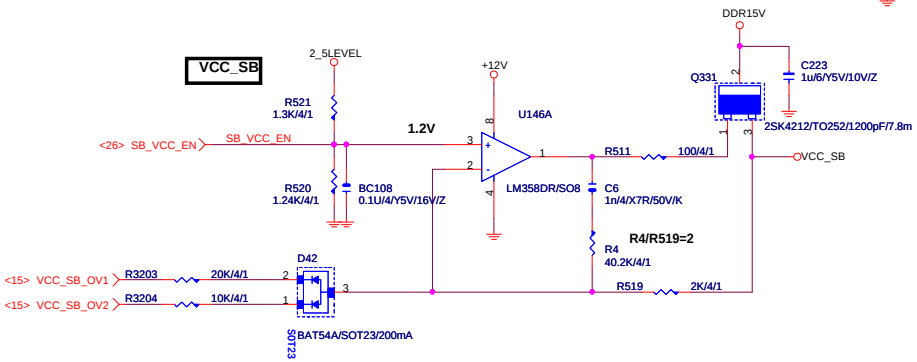


ATI for vcc3/vcc18 power ramp-up 2.1V









VCC_SB_OV1	VCC_SB_OV2	VCC_SB
L	X	1.30V
X	L	1.40V
L	L	1.50V

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Title: NB/SB POWER,VCC12HT,VDDA25,VCC12Dual

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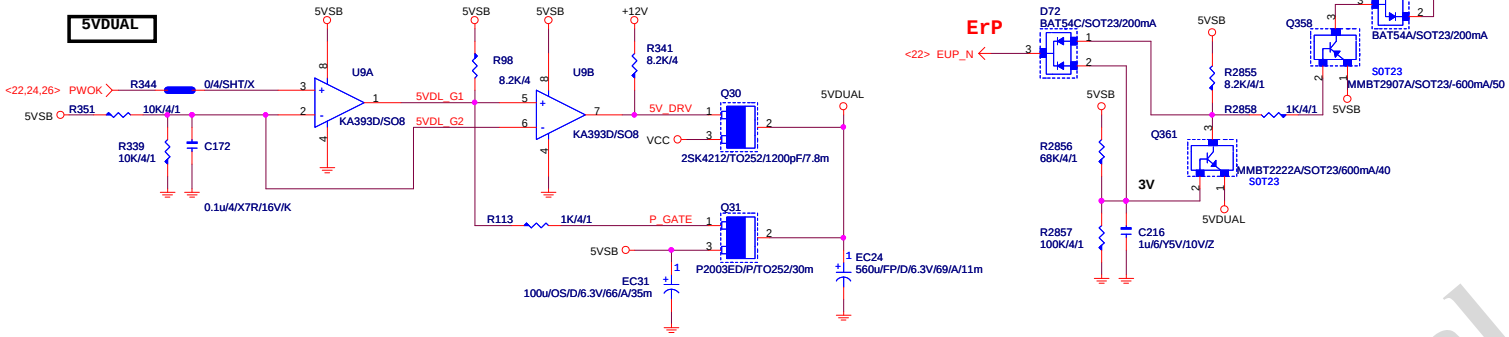

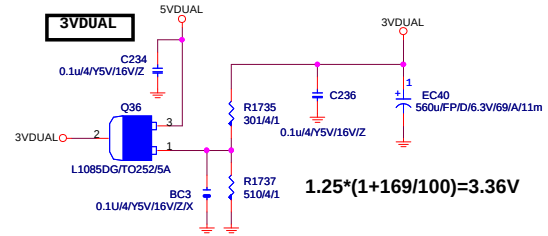

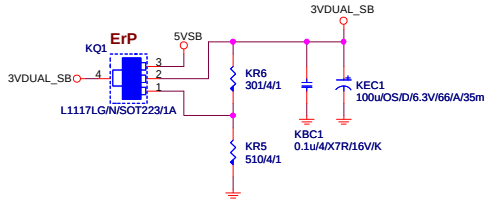

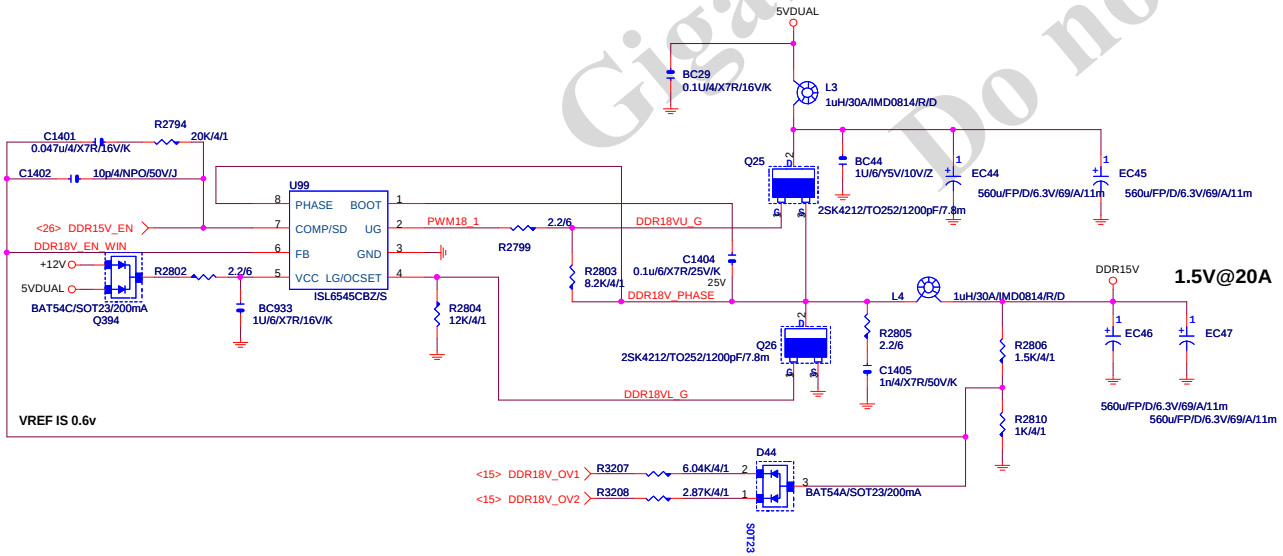

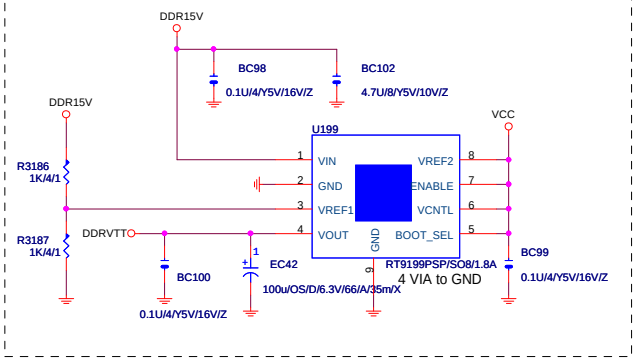

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Title: DDRII POWER , VCC18

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