


Revision : 1.0

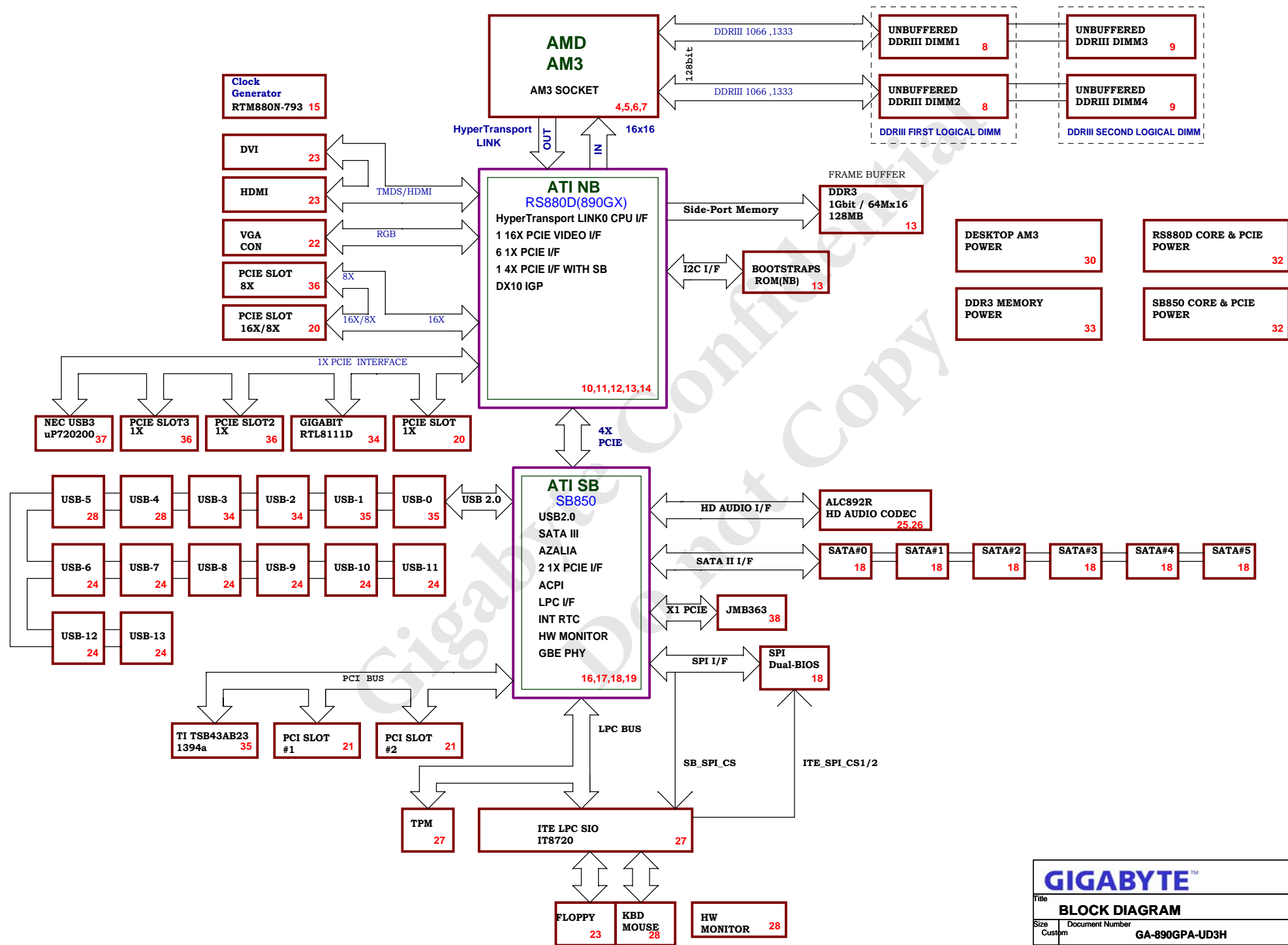
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU HYPER TRANSPORT
05	CPU DDRIII MEMORY
06	CPU CONTROL
07	CPU POWER & GND
08	DDRIII CHANNEL A
09	DDRIII CHANNEL B
10	RS880 HT-LINK I/F
11	RS880 PCIE I/F ,SWITCH
12	RS880 SYSTEM I/F
13	RS880 STRAPS ,SPMEM
14	RS880 POWER & GND
15	RTM880N-793
16	ATI SB850 PCIE/PCI/CPU/LPC
17	ATI SB850 ACPI/USB/GPIO/AUDIO
18	ATI SB850 SATA/SPI/IDE/HWM
19	ATI SB850 POWER & GND
20	PCI EXPRESS x16 ,x1
21	PCI SLOT 1, 2
22	RGB CONNECTOR
23	FDD ,HDMI ,DVI Connector
24	COM/F_USB
25	ALC892R

[illegible]

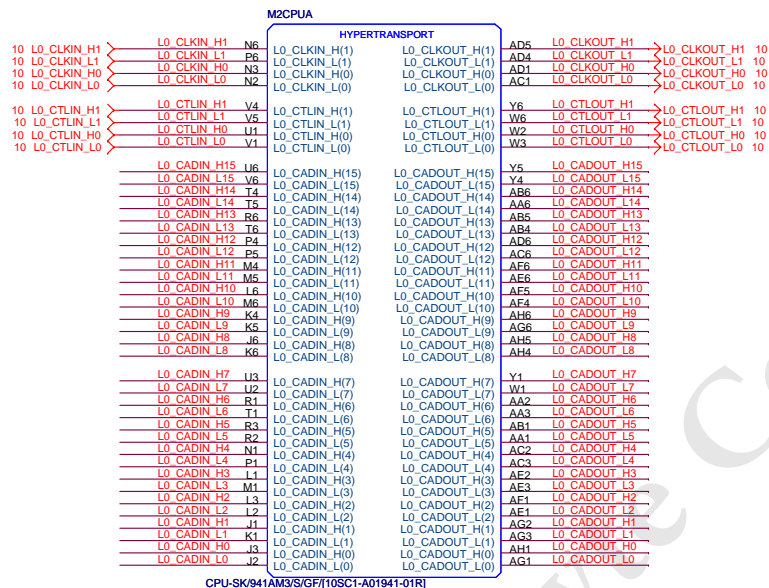
			
Title			
<h2>COVER SHEET</h2>			
Size	Document Number		Rev
Custom	GA-890GPA-UD3H		1.0
Date:	Tuesday, January 19, 2010	Sheet	1 of 38

[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]

RS880 CUSTOMER DESKTOP REFERENCE DESIGN



L0_CADIN_L[0..15] <L0_CADIN_L[0..15] 10
L0_CADIN_H[0..15] <L0_CADIN_H[0..15] 10
L0_CADOUT_L[0..15] <L0_CADOUT_L[0..15] 10
L0_CADOUT_H[0..15] <L0_CADOUT_H[0..15] 10

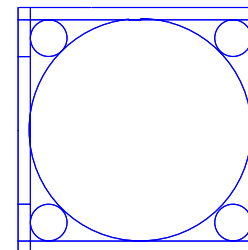


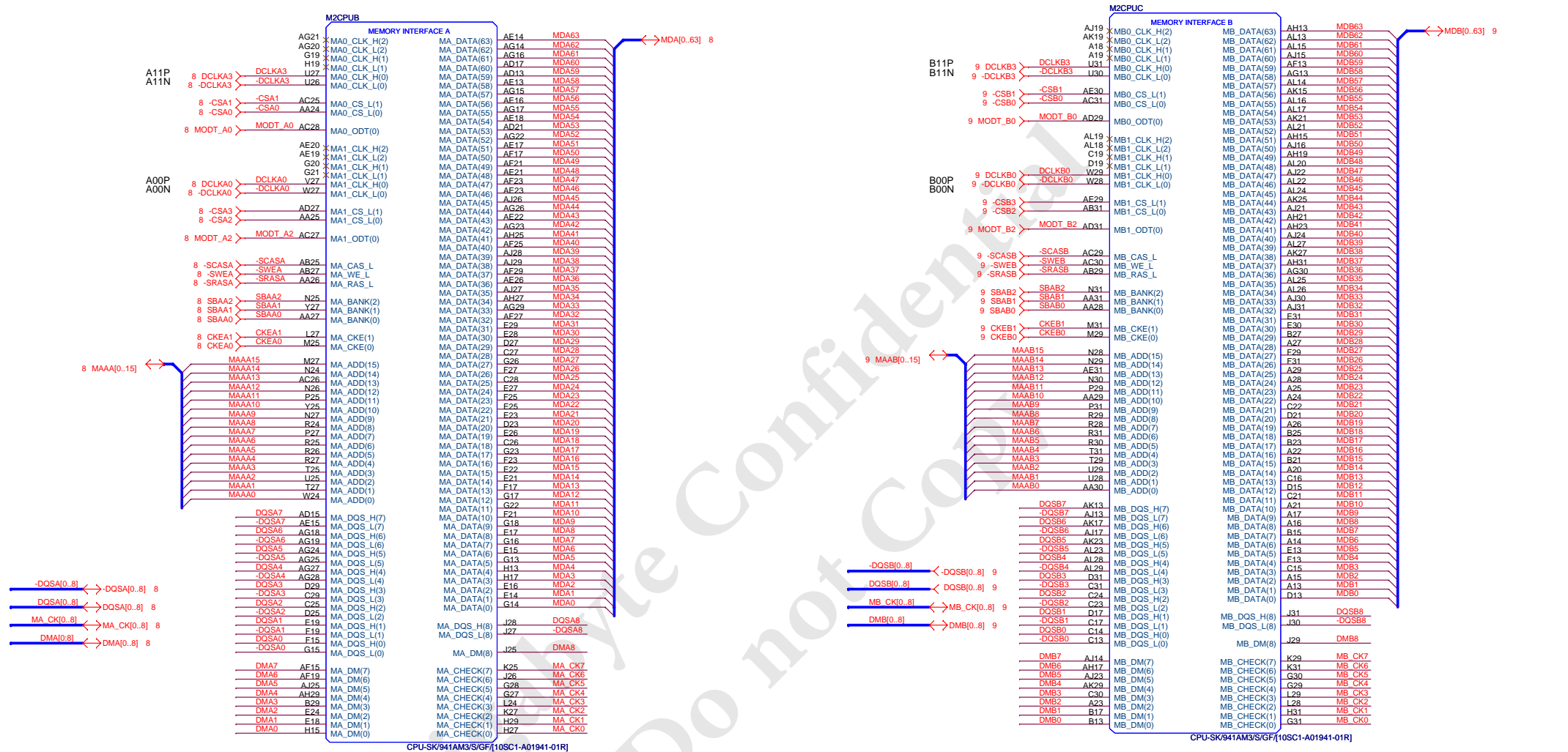
CPU_VDD_RUN = VCORE
CPU_VDDA_RUN = VDDA25
VLDT_RUN = VCC12_HT
CPU_VDDIO_SUS = DDR15V
CPU_VDDR = CPU_VDDR12

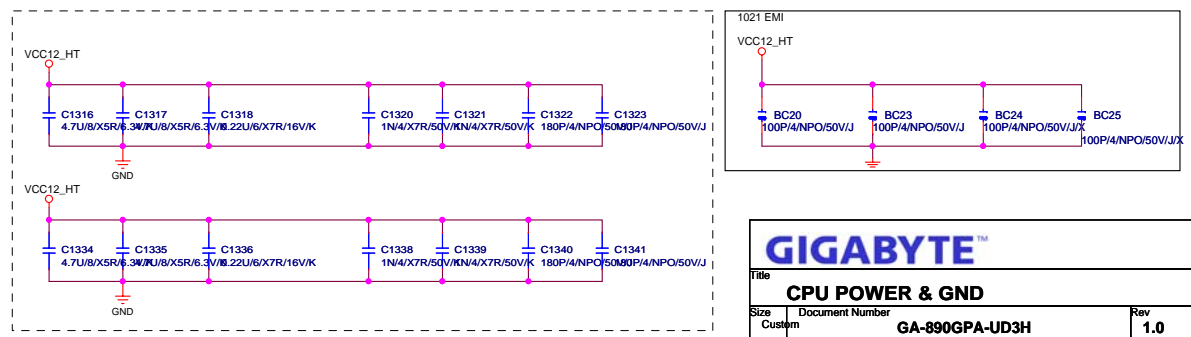
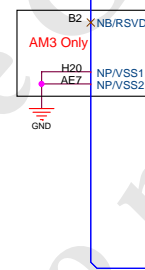
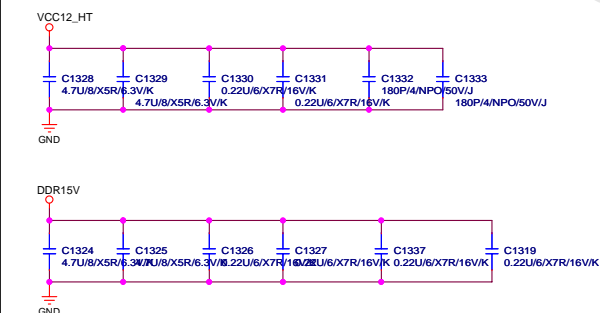
VLDT_A = VCC12_HT
VLDT_B = HT12B

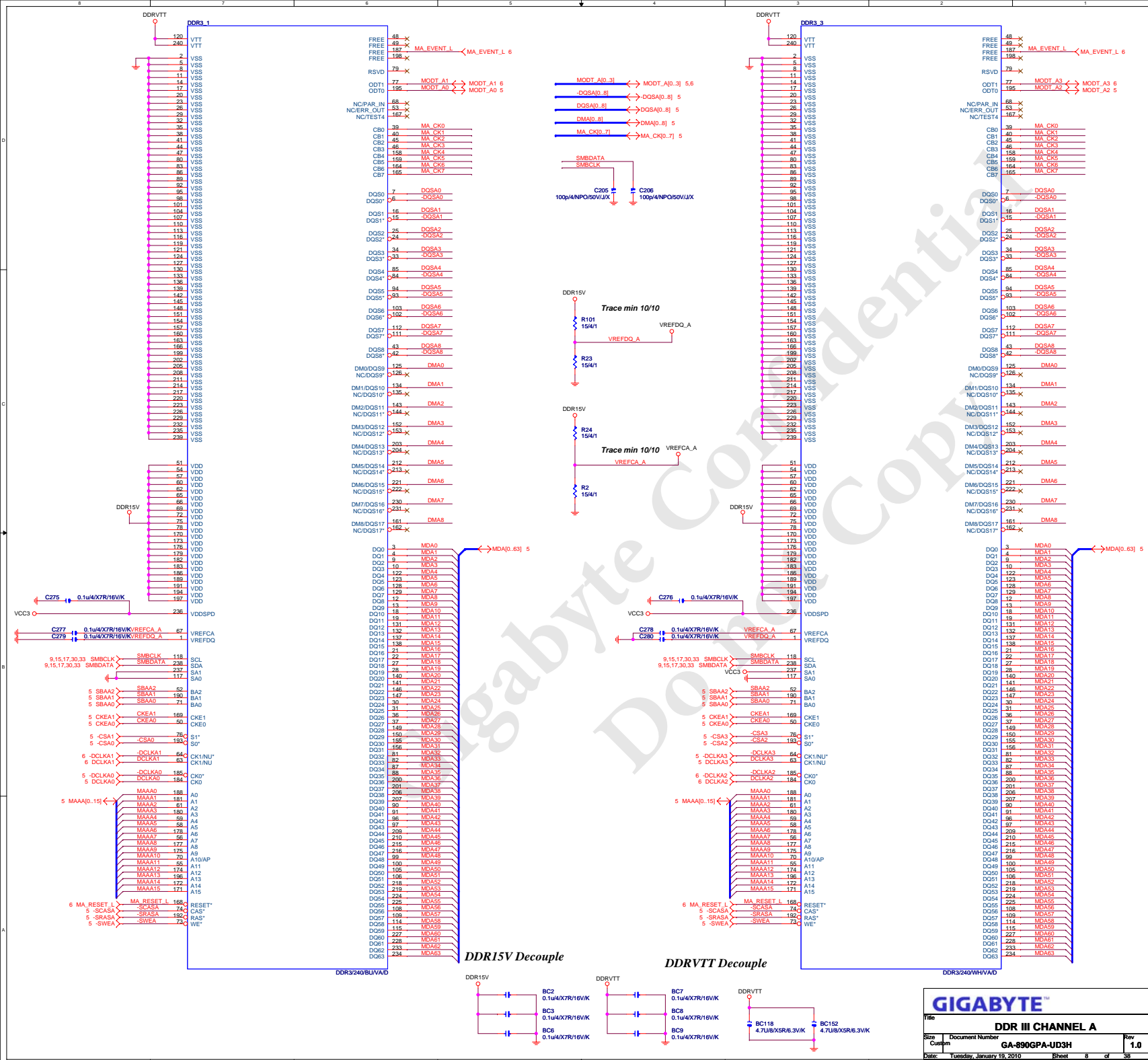
M2CPU

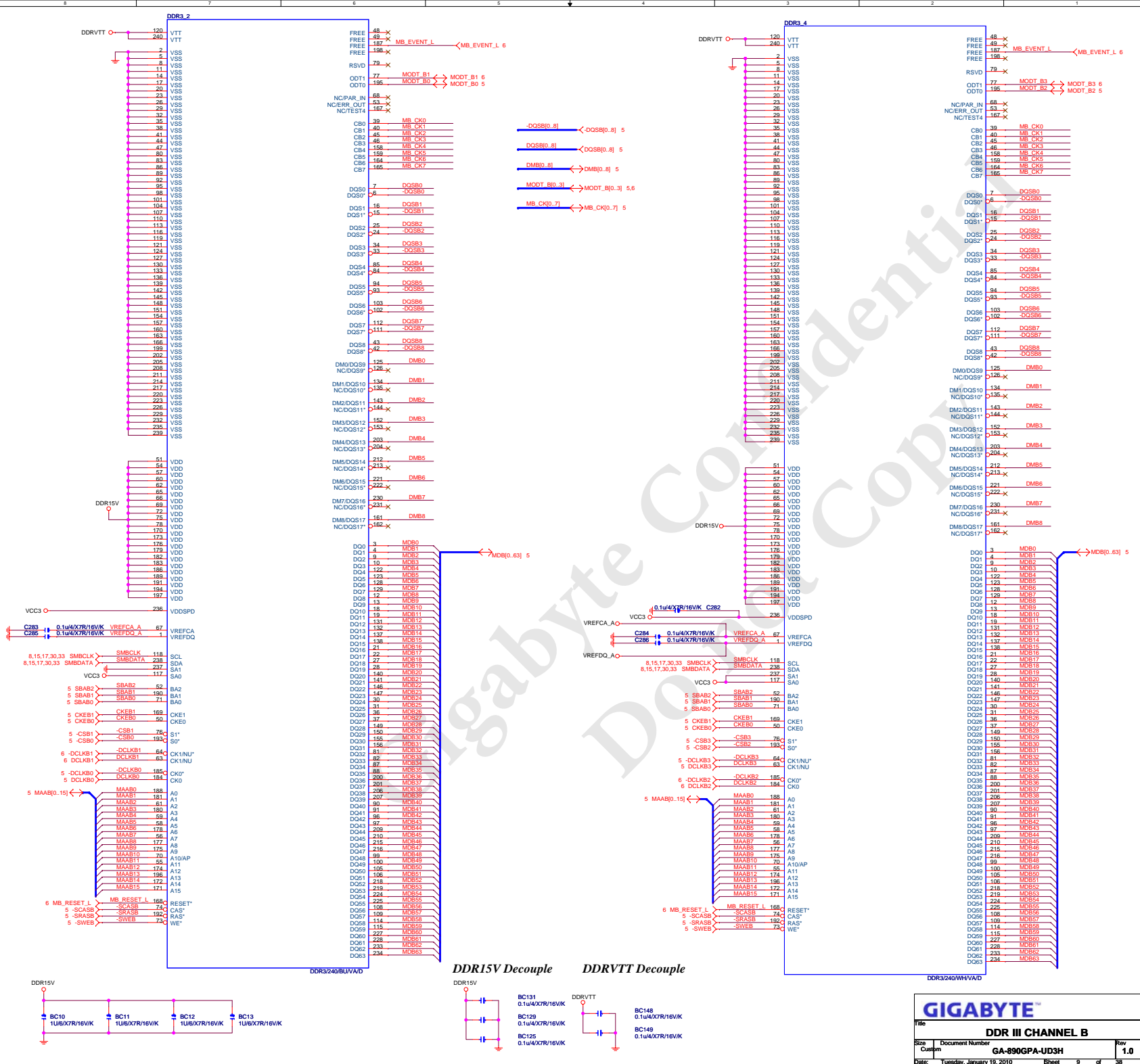
AM2RM/PP/BU/PB/[12KRC-04K812-12R]

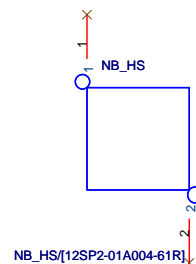
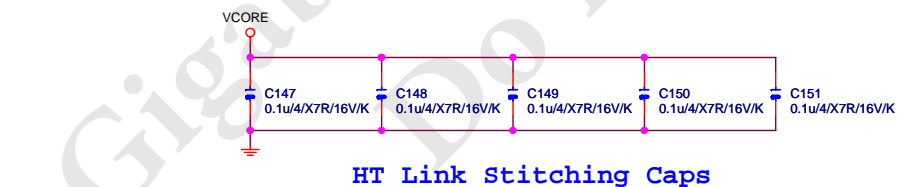
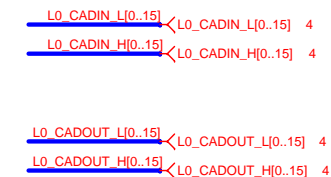












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Title
RS880 HT-LINK I/F

Size B Document Number

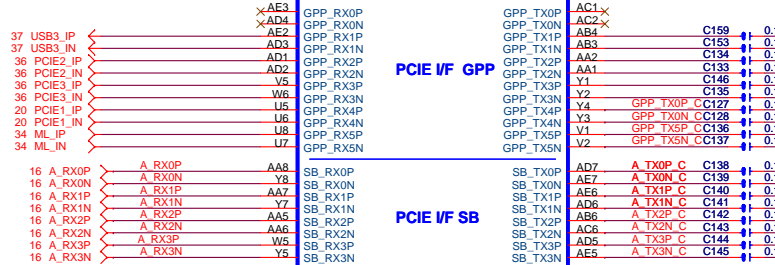
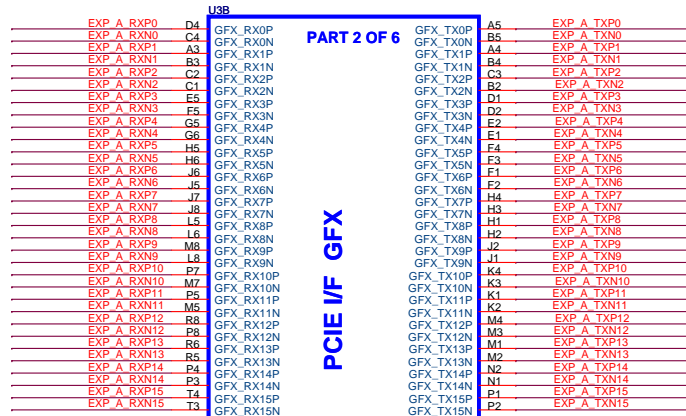
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EXP_A_RXP[0..7] >>> EXP_A_RXP[0..7] 20
EXP_A_RXN[0..7] >>> EXP_A_RXN[0..7] 20
EXP_A_TXP[0..7] >>> EXP_A_TXP[0..7] 20
EXP_A_TXN[0..7] >>> EXP_A_TXN[0..7] 20



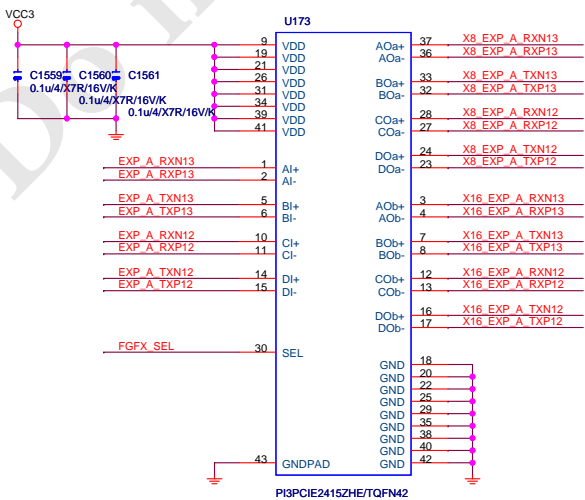
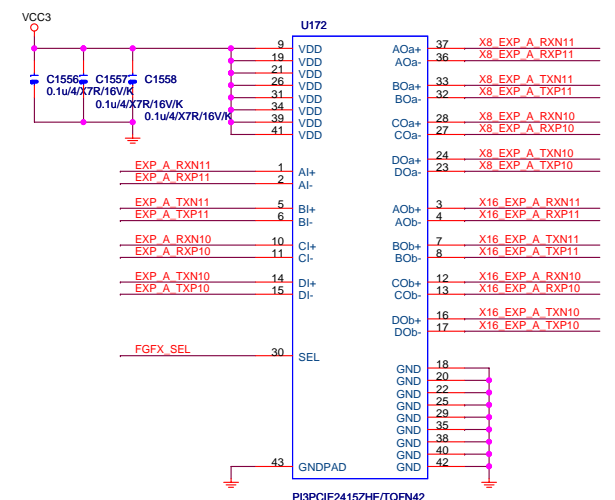
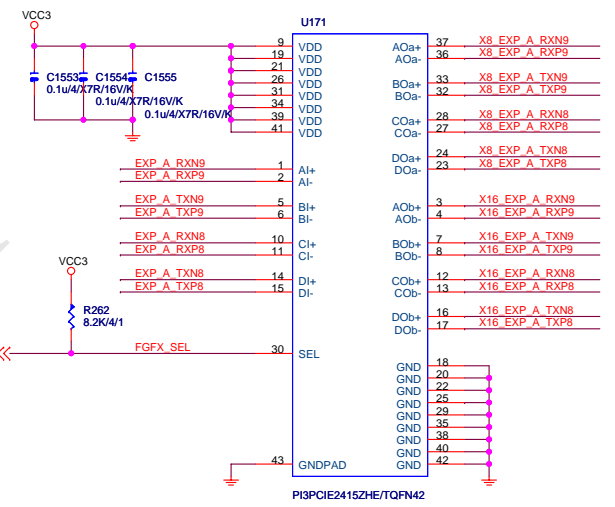
X16_EXP_A_TXP[8..15] >>> X16_EXP_A_TXP[8..15] 20
X16_EXP_A_TXN[8..15] >>> X16_EXP_A_TXN[8..15] 20
X16_EXP_A_RXP[8..15] >>> X16_EXP_A_RXP[8..15] 20
X16_EXP_A_RXN[8..15] >>> X16_EXP_A_RXN[8..15] 20

X8_EXP_A_TXP[8..15] >>> X8_EXP_A_TXP[8..15] 36
X8_EXP_A_TXN[8..15] >>> X8_EXP_A_TXN[8..15] 36
X8_EXP_A_RXP[8..15] >>> X8_EXP_A_RXP[8..15] 36
X8_EXP_A_RXN[8..15] >>> X8_EXP_A_RXN[8..15] 36

PLACE CAP CLOSE
TO CONNECTOR

NB_VCC

Function	SEL
xI--> xOa	L (X8)
xI--> xOb	H (X16)



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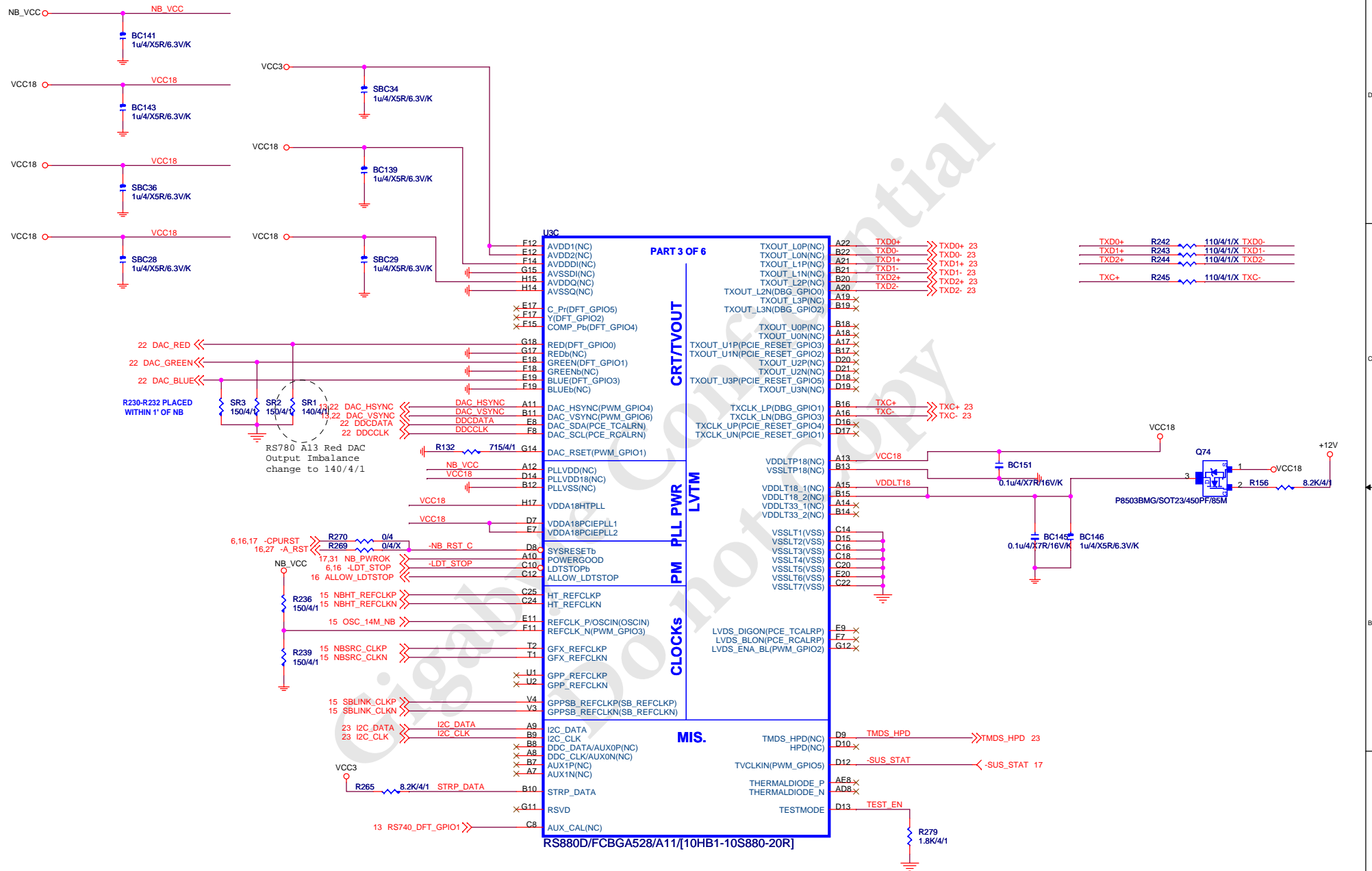
File
RS880 PCIE I/F ,Switch

Size
Custom

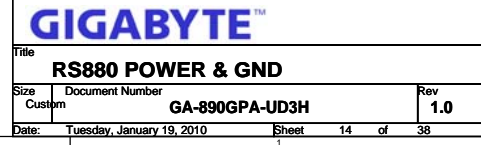
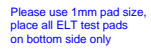
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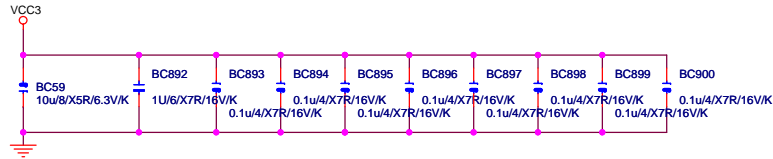


PIN NAME	RS740	RX780	RS780	PIN NAME	RS740	RX780	RS780
VDDHT	NC	+1.1V	+1.1V	IOPLLVD	+1.2V	NC	+1.1V
VDDHTRX	NC	+1.1V	+1.1V	AVDD	+3.3V	NC	+3.3V
VDDHTTX	+1.2V	+1.2V	+1.2V	AVDDDI	+1.8V	NC	+1.8V
VDDA18PCIE	NC	+1.8V	+1.8V	AVDDQ	+1.8V	NC	+1.8V
VDD18	+1.8V	+1.8V	+1.8V	PLLVD	+1.2V	NC	+1.1V
VDD18_MEM	NC	NC	+1.8V	PLLVD18	+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)	VDDLT18	+1.8V	NC	+1.8V
VDD33	+3.3V	NC	+3.3V	VDDLT18	+1.8V	NC	+1.8V
IOPLLVD18	+1.8V	NC	+1.8V	VDDLT33	+3.3V	NC	NC





- 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

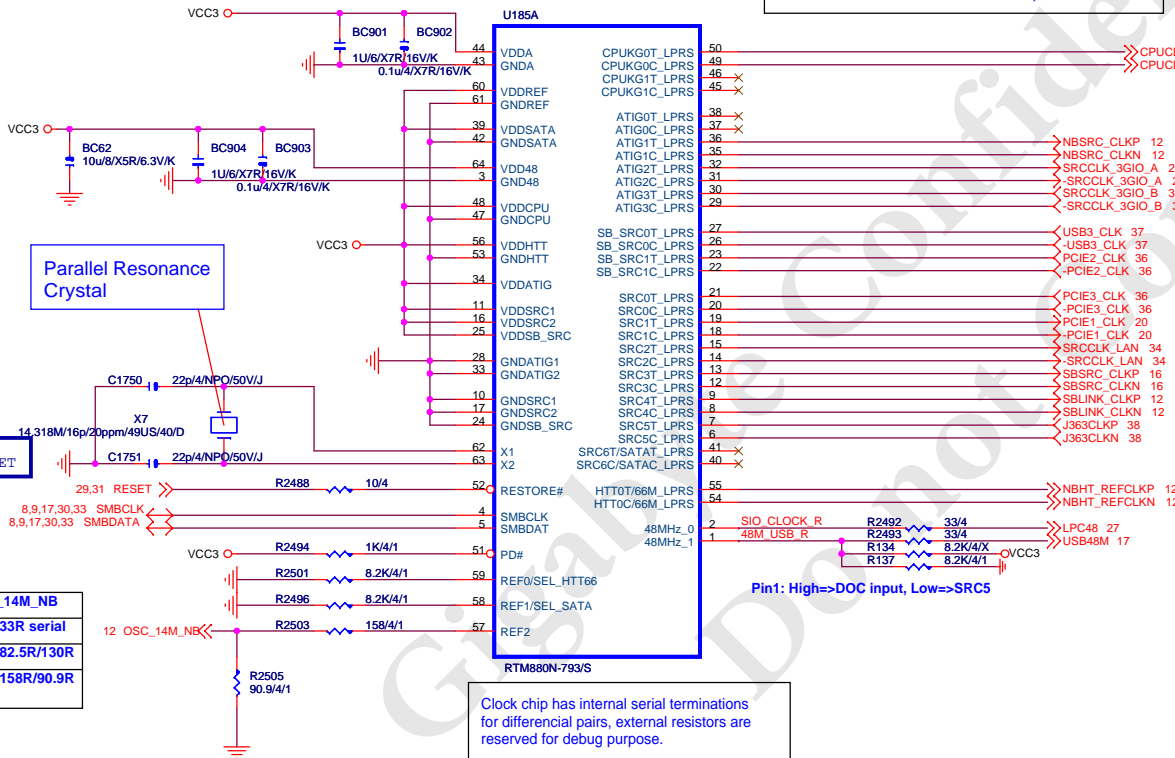


Place R800/801 less than 500 mils away from U800
R851 less than 100 mils away from R800/801
route CPU clock as 100ohm differential pair

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	100M DIFF
GPP_REFCLK	NC	100M DIFF	100M DIFF(OUT)	
GPPSB_REFCLK	100M DIFF	100M DIFF	100M DIFF	

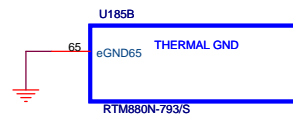
* the GFX_REFCLK input is required for all cases



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

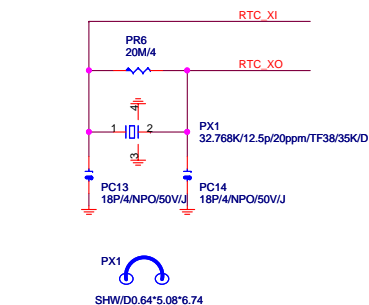
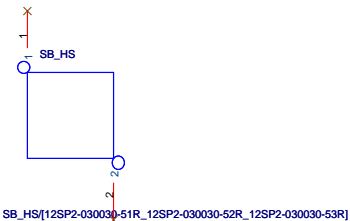
REF0/SEL_HTT66	HTT CLOCK
0	100.00 DIFFERENTIAL
1	66.66 SINGLE END

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

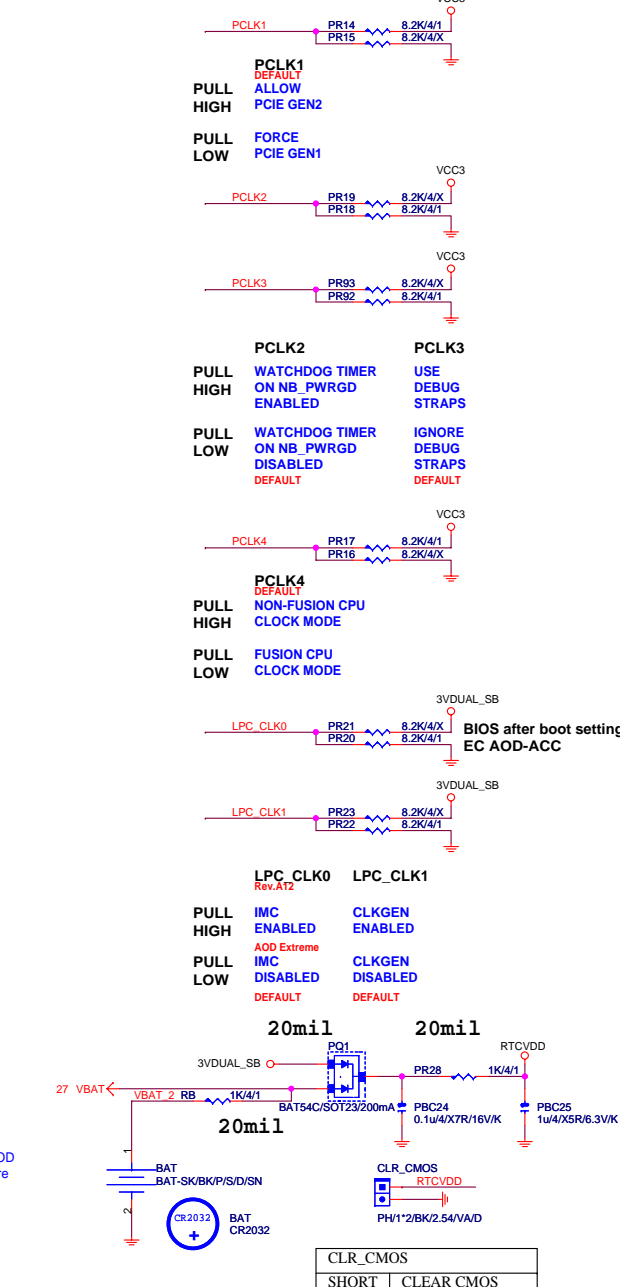
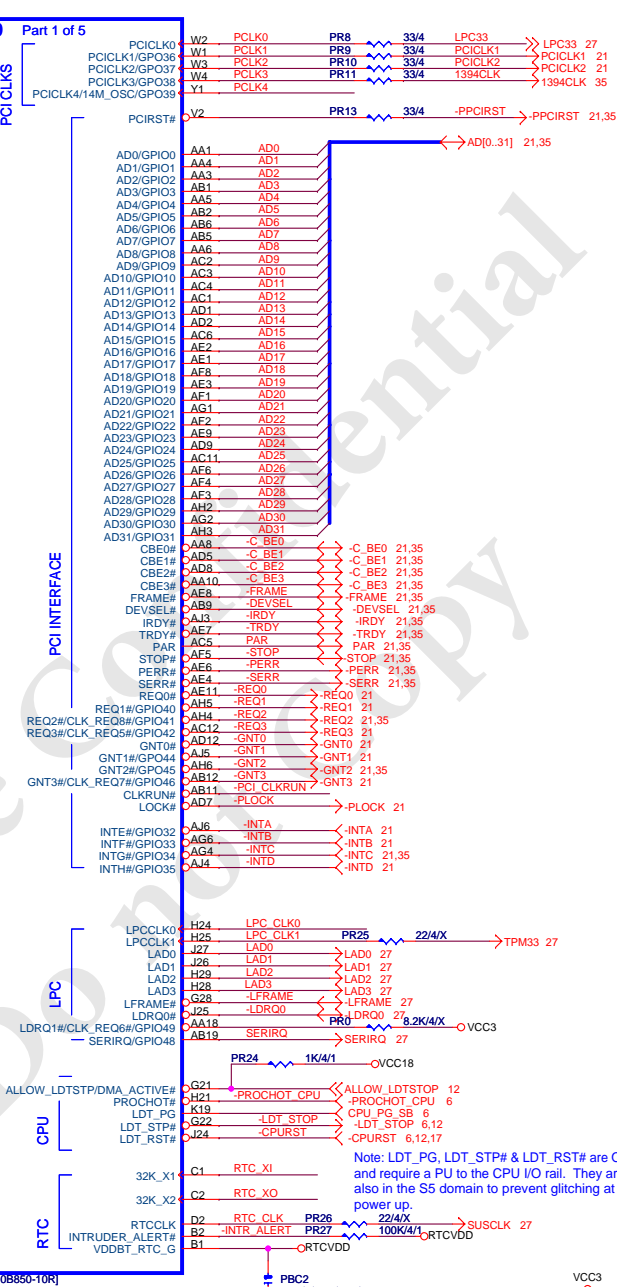
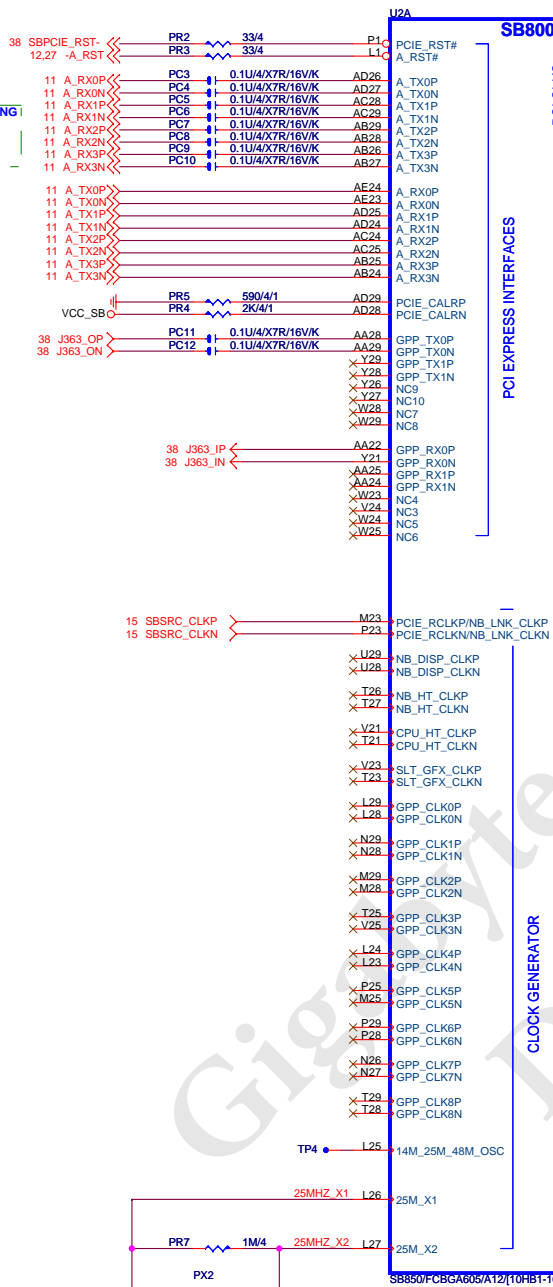


S.B HEATSINK

PLACE THESE PCIE AC COUPLING CAPS CLOSE TO SB850



SHW/D0.64*5.08*6.74



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ATI SB850 PCIE/PCI/CPU/LPC		
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SB TEST2 PR29 8.2K/4/1
SB TEST1 PR30 8.2K/4/1
SB TEST0 PR31 8.2K/4/1

SUS_STAT PR32 8.2K/4/1
SMBCLK PR55 1K/4/1
SMBDATA PR56 1K/4/1
WD_PWRGD PR33 8.2K/4/1

RI PR34 8.2K/4/1
SMBCLK1 PR57 2.2K/4/1
SMBDATA1 PR58 2.2K/4/1
PCI_WAKE PR59 2.2K/4/1
PCIPME PR60 2.2K/4/1

SB_PWROK
100P/4/NPO/50V/JX

SMBCLK
SMBDATA
100P/4/NPO/50V/JX

AZ_BIT_CLK
100P/4/NPO/50V/JX

AZ_SDATA_OUT
8.2K/4/1

AZ_RST PR37 8.2K/4/1

Low: Disable PCI MEM boot(D),
Up: Enable PCI MEM boot

3VDUAL_SB PR91 20K/4/1

PBC3 2.2U/6/X5R/6.3V/K

DDR15V
PR44 8.2K/4/1

IMC_TRST-
CPU_TRST- → CPU_TRST- 6

DDR15V
PR45 8.2K/4/1

IMC_DBREQ-
CPU_DBREQ- → CPU_DBREQ- 6

DDR15V
PR46 8.2K/4/1

6 CPU_DBRDY ← CPU_DBRDY → IMC_DBRDY

DDR15V
PR47 8.2K/4/1

IMC_TDO
CPU_TDI → CPU_TDI 6

DDR15V
PR48 8.2K/4/1

6 CPU_TDO ← CPU_TDO → IMC_TDI

6 CPU_DBRDY ← CPU_DBRDY → IMC_DBRDY

6 CPU_DBRDY ← CPU_DBRDY → IMC_DBRDY

AZ_SDOUT
PULL HIGH
LOW POWER MODE
PULL LOW
PERFORMANCE MODE
DEFAULT

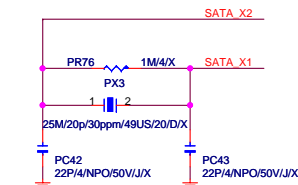
21,35 -PCIPME
24 -RI
27,31,33 SLP_S3
31 SLP_S5
27 -PSOUT
31 SB_PWROK
12 -SUS_STAT
27 A20GATE
27,29 -KBRST1
27 -LPCPME
27 GP53
29 -SYS_RST
PC17 22P/4/N50V/X
20,34,36,37 -PCIE_WAKE
6,33 THERMTRIP_CPU_L
12,31 NB_PWROK
36 PE4_PRSENT-
20 PE0_PRSENT-
29 SPKR
8,9,15,30,33 SMBCLK
20,36 SMBCLK1
20,36 SMBDATA1
VDD_MEM
DDR3_RST-
37 SMB
35,37 -USBOC_R1
24 -USBOC_F1
25 AZ_BIT_CLK
25 AZ_SDATA_OUT
25 AZ_SDATA_IN0
25 AZ_SYNC
25 -AZ_RST
PR39 8.2K/4/1
PR40 8.2K/4/1
PR41 8.2K/4/1
PR42 8.2K/4/1
PR43 8.2K/4/1
PR44 8.2K/4/1
PR45 8.2K/4/1
PR46 8.2K/4/1
PR47 8.2K/4/1
PR48 8.2K/4/1

SB800
Part 4 of 5
PCI_PME#/GEVENT4#
RI#/GEVENT2#
SPI_CS#/GBE_STAT1/GEVENT21#
SLP_S3#
SLP_S5#
PWR_BTN#
PWR_GOOD
SUS_STAT#
TEST0
TEST1/TMS
TEST2
GA20IN/GEVENT0#
KBRST4#/GEVENT1#
LPC_PME#/GEVENT3#
LPC_SM#/GEVENT23#
GEVENT5#
SYS_RESET#/GEVENT19#
WAKE#/GEVENT8#
IR_RX1/GEVENT20#
THERMTRIP/SMBALERT#/GEVENT2#
NB_PWRGD
RSMRST#
CLK_REQ4#/SATA_IS0#/GPIO64
CLK_REQ3#/SATA_IS1#/GPIO63
SMARTVOLT1/SATA_IS2#/GPIO50
CLK_REQ0#/SATA_IS3#/GPIO60
SATA_IS4#/FANOUT3/GPIO55
SATA_IS5#/FANIN3/GPIO59
SPKR/GPIO64
SCL0/GPIO43
SDA0/GPIO47
SCL1/GPIO227
SDA1/GPIO228
CLK_REQ2#/FANIN4/GPIO62
CLK_REQ1#/FANOUT4/GPIO61
IR_LED1/LLB#/GPIO184
SMARTVOLT2/SHUTDOWN#/GPIO51
DDR3_RST#/GEVENT7#
GBE_LED0/GPIO183
GBE_LED1/GEVENT9#
GBE_LED2/GEVENT10#
GBE_LED3/GEVENT11#
CLK_REQ0#/GPIO65/OSCIN

AD18C
AB21
AC18C
AE18C
AF18C
AG18C
AH18C
AI18C
AJ18C
AK18C
AL18C
AM18C
AN18C
AO18C
AP18C
AQ18C
AR18C
AS18C
AT18C
AU18C
AV18C
AW18C
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OJ18C
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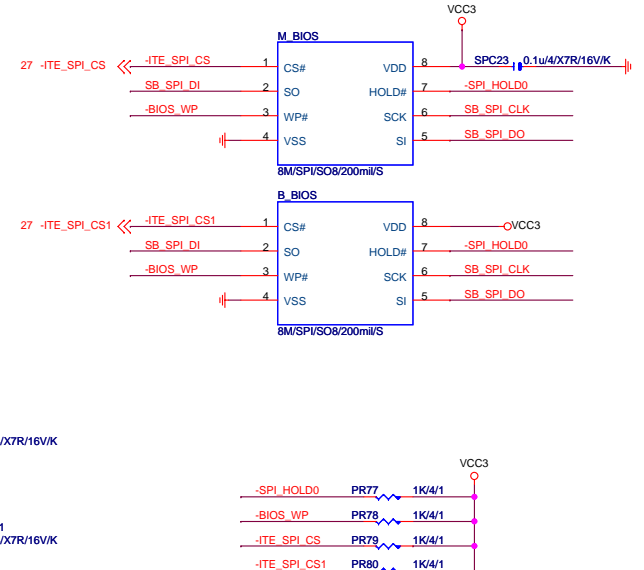
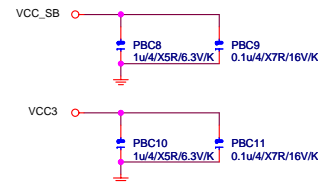
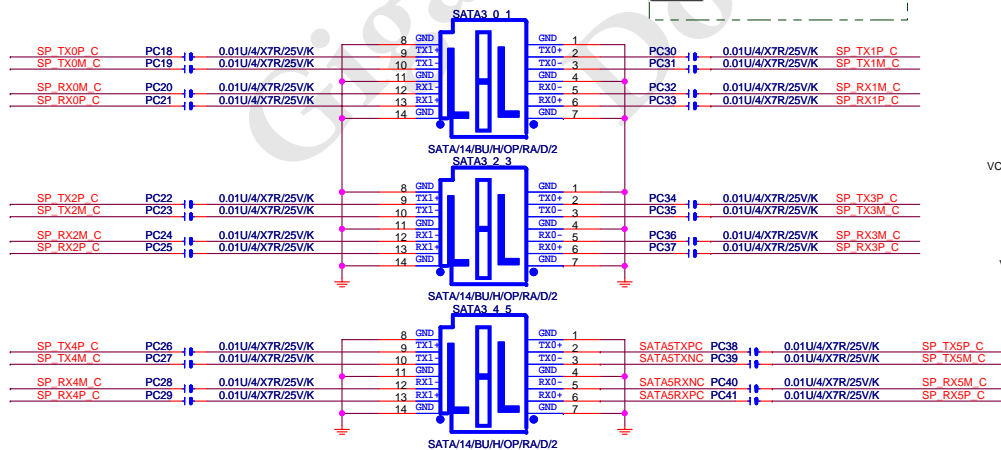
PLACE SATA CAL
RES VERY CLOSE
TO BALL OF U600

NOTE:

R650 IS 1K 1% FOR 25MHz
XTAL. 4.99K 1% FOR 100MHz
INTERNAL CLOCK

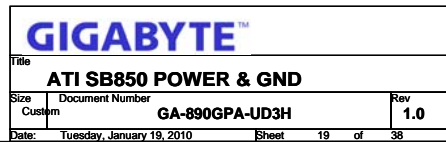


PLACE SATA AC COUPLING
CAPS CLOSE TO SB850



GIGABYTE

Title			ATI SB850 SATA/IDE/HWM/SPI		
Size	Document Number		Rev		
Custom	GA-890GPA-UD3H		1.0		
Date:	Tuesday, January 19, 2010	Sheet	18	of 38	



Lay 在 PCIe slot 旁

+12V ISEN R16 MASK-10

0/6/SHT-10/MASK/X
17.36 SMBCLK1
17.36 SMBDATA1

VCC3
17.34,36,37 -PCIE_WAKE
-PCIE_WAKE

VCC3
R2400
8.2K/4/1

17 PE0_PRSENT-
PE0_PRSENT-

EXP A TXP0C
EXP A TXN0C

EXP A TXP1C
EXP A TXN1C

EXP A TXP2C
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EXP A TXP3C
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EXP A TXP4C
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EXP A TXP6C
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EXP A TXP22C
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EXP A TXP23C
EXP A TXN23C

EXP A TXP24C
EXP A TXN24C

EXP A TXP25C
EXP A TXN25C

EXP A RXP0.7
EXP A RXN0.7
EXP A RXP0.7
EXP A RXN0.7

EXP A TXP0.7
EXP A TXN0.7
EXP A TXP0.7
EXP A TXN0.7

X16 EXP A TXP8.15
X16 EXP A TXN8.15
X16 EXP A RXP8.15
X16 EXP A RXN8.15

EXP A TXP0
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PCIE_RST-
100P/4/N/50V/X
C1643

PCIE_RST-
100P/4/N/50V/X
C1746

PCIE16
3GIO_*16

B1
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B2
12V
B3
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B4
GND
B5
SMCLK
B6
SMBDATA1
B7
GND
B8
3.3V
B9
JTAG1
B10
3.3VAUX
B11
WAKE*

B12
RSVD
B13
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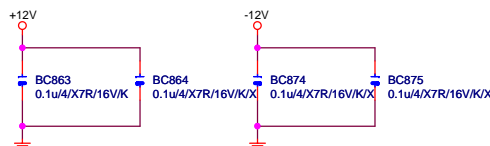
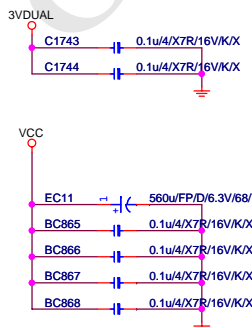
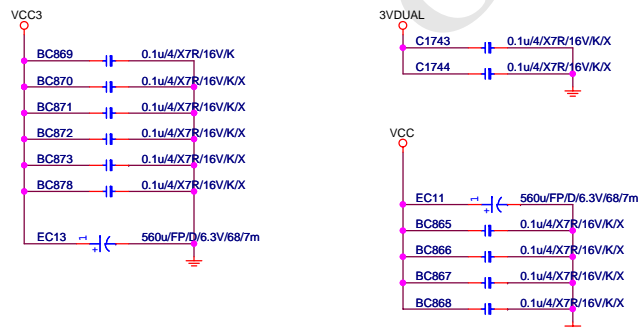
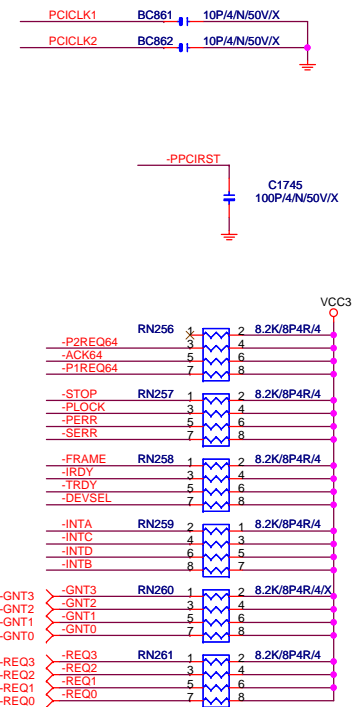
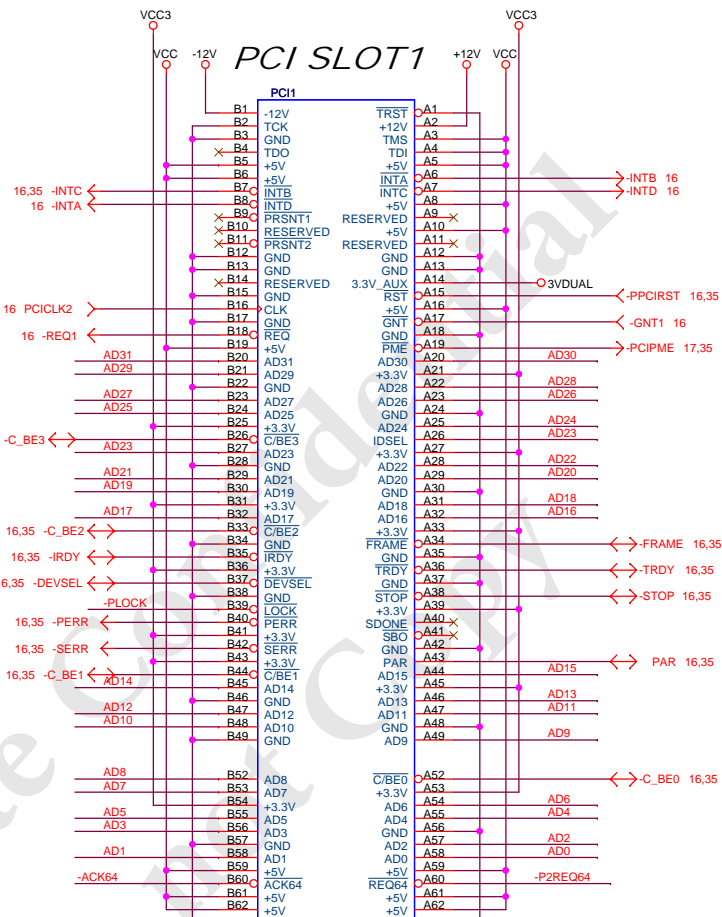
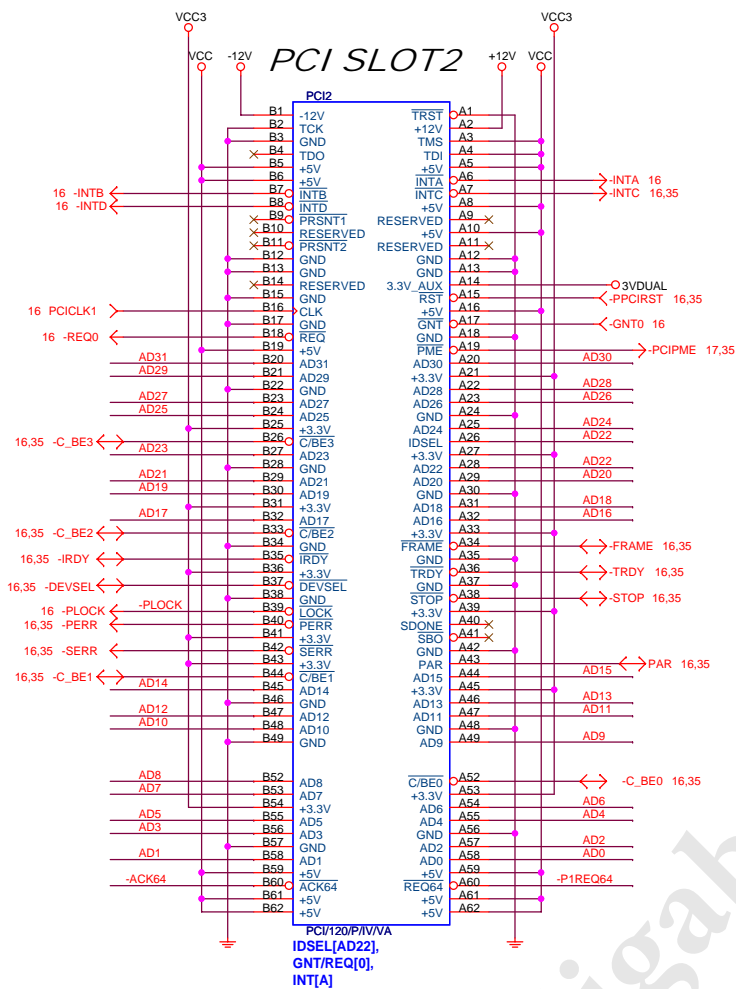
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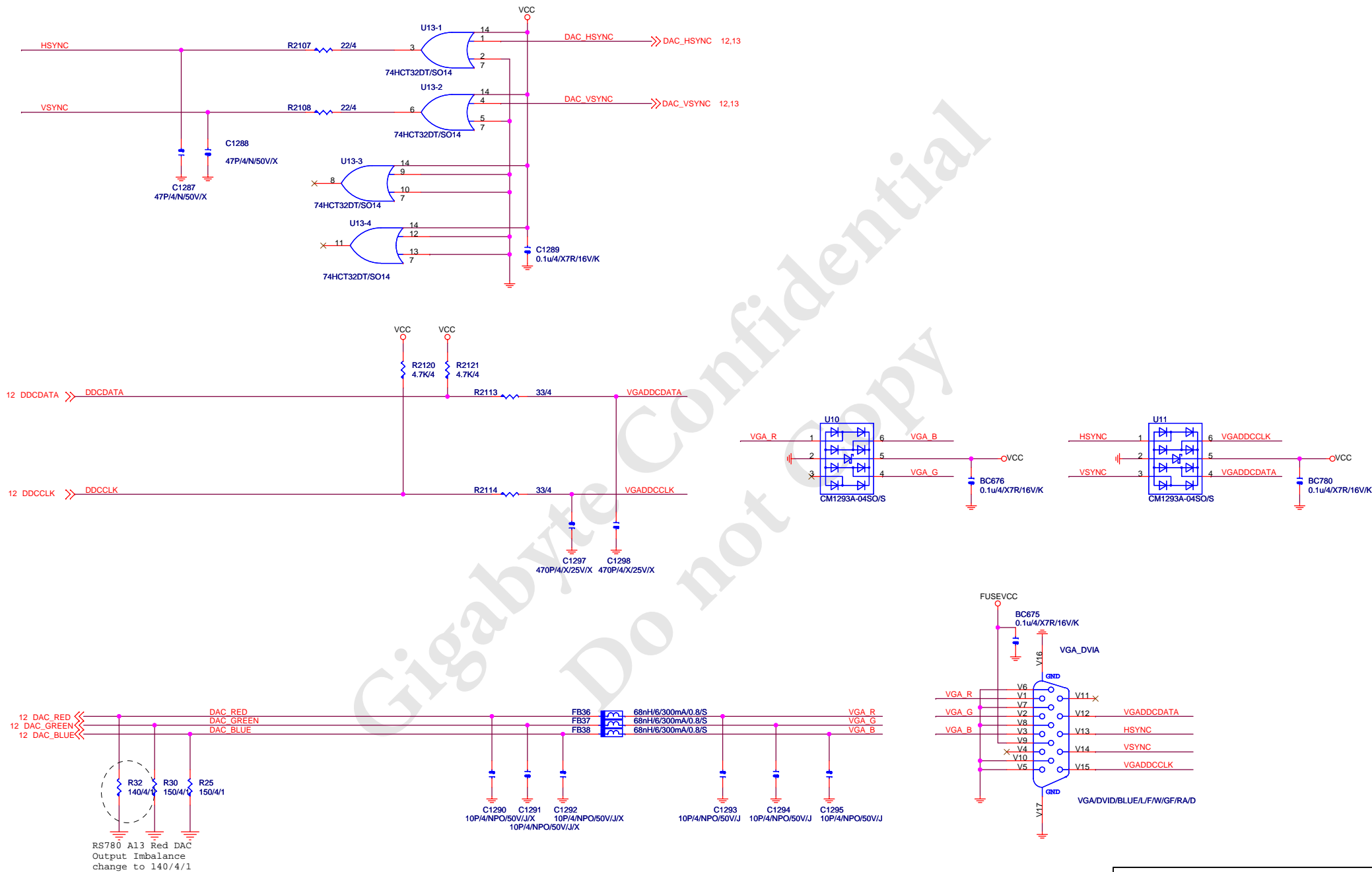
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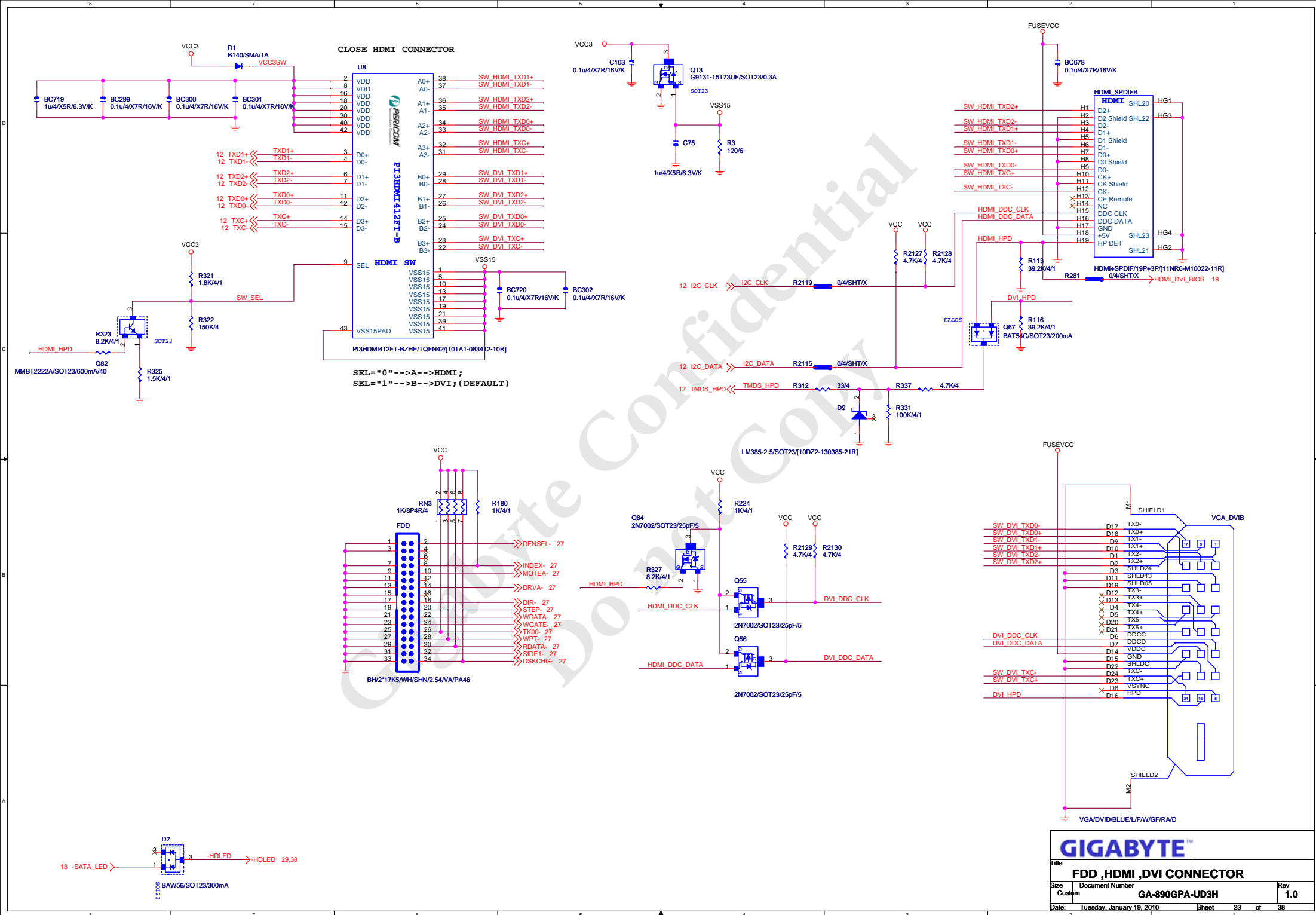
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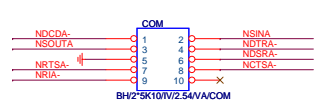
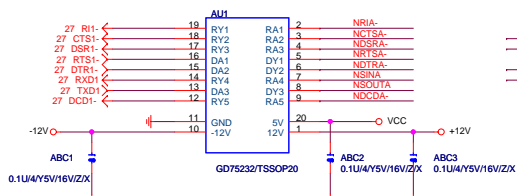
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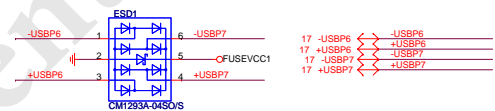
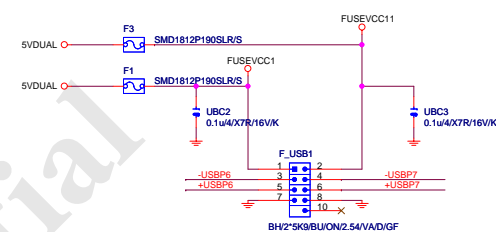




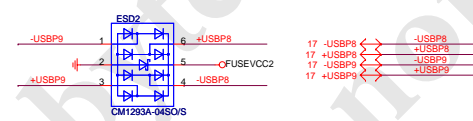
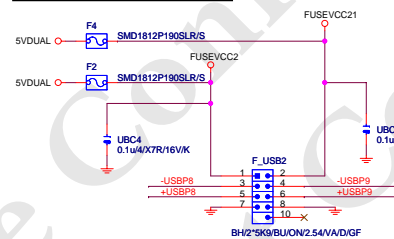




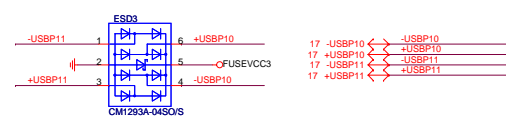
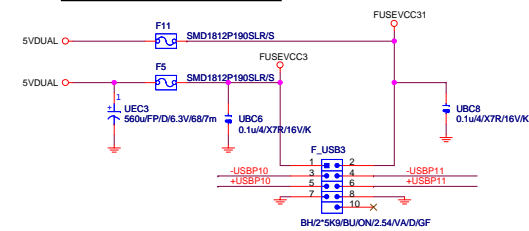
FRONT SIDE USB1



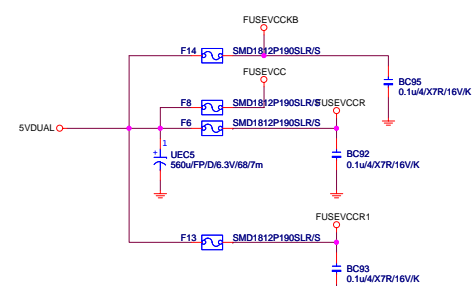
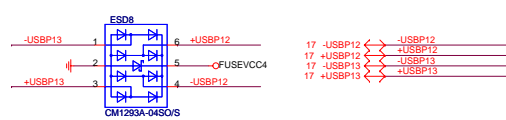
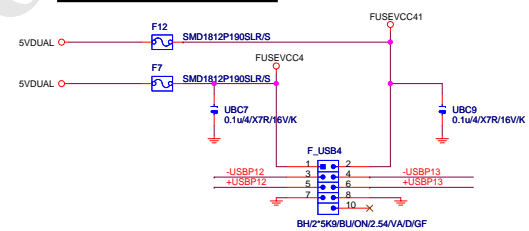
FRONT SIDE USB2



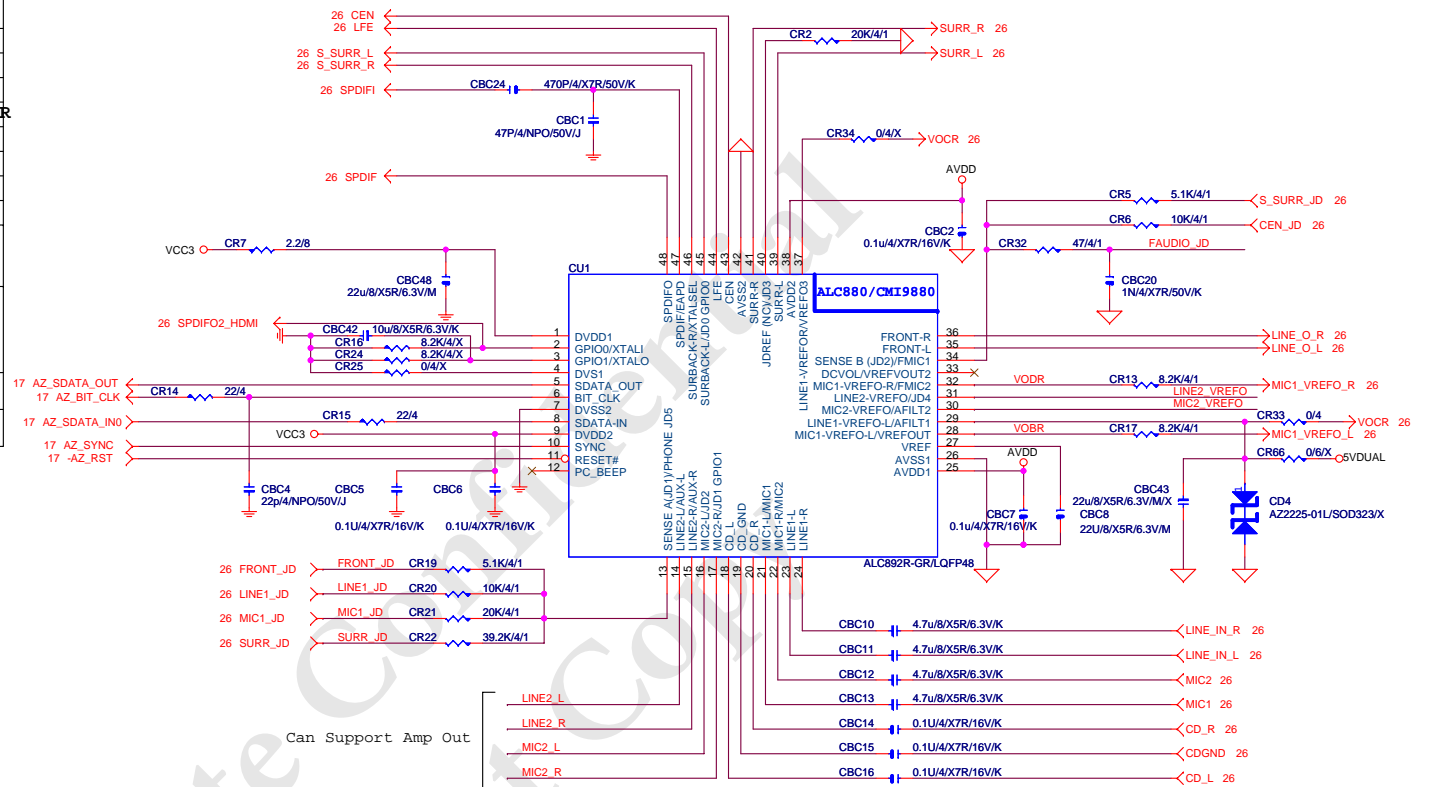
FRONT SIDE USB3



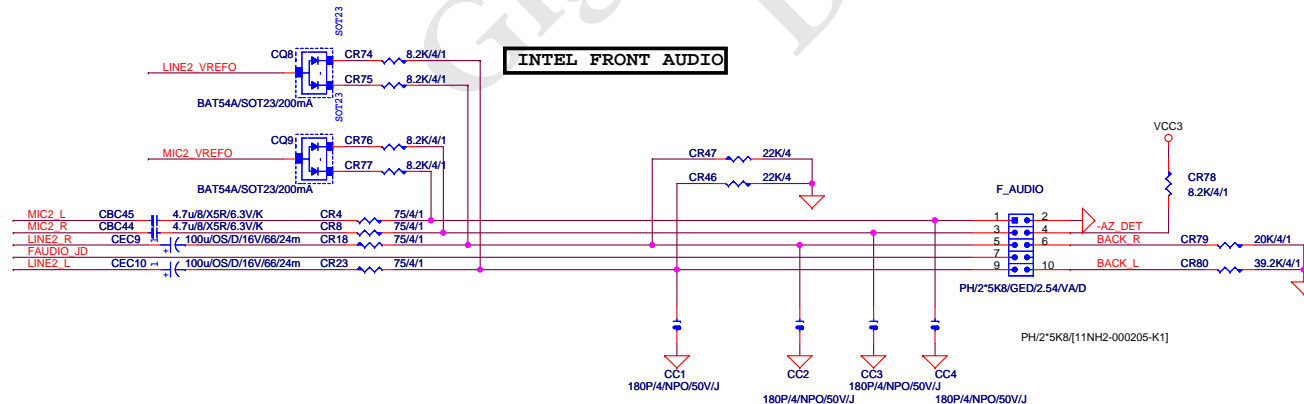
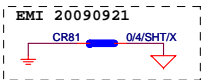
FRONT SIDE USB4

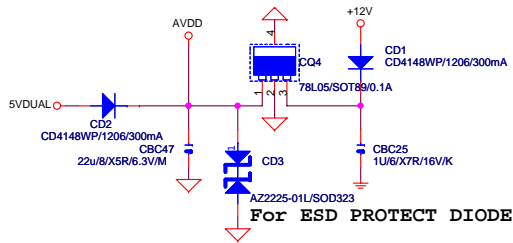
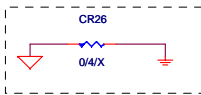


	ALC892R	ALC889	ALC889A	ALC888	ALC892
CR16	X	X	O	X	X
CR24	X	X	O	X	X
CR25	X	O	O	O	X
CBC42	10uF/X5R	X	X	X	10uF/X5R
CR2	20K/1%	20K/1%	20K/0.1%	20K/1%	20K/1%
CR9	O	O	X	X	O
CR10	X	X	O	O	X
CBC10/CBC11/CBC12/ CBC13/CBC44/CBC45	4.7uF /X5R	10uF /X5R	4.7uF /X5R	4.7uF /X5R	4.7uF /X5R
CR4/CR8/CR18/CR23/ CR11/CR12/CR27/CR29/ CR49/CR50/CR43/CR44/ CR45/CR48/CR59/CR60	75 ohm 66 ohm or lower		75 ohm	75 ohm	75 ohm
CR33/CD1/CD2/CD3/CQ4/ CBC25	O	O	O	O	X
CR34/CR66/CBC43/CD4	X	X	X	X	O



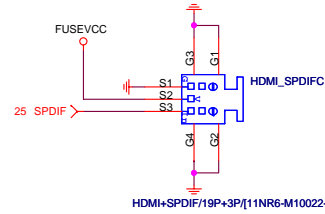
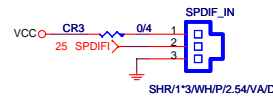
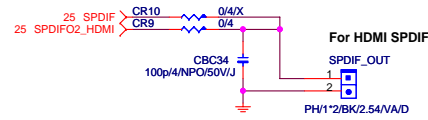
Can Support Amp Out



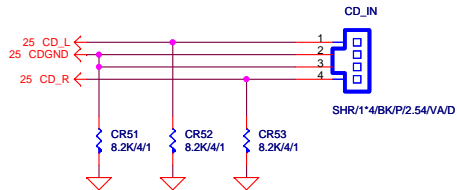


For ESD PROTECT DIODE

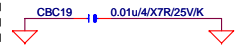
SPDIF



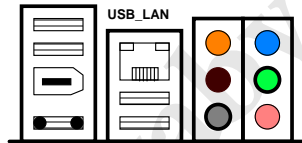
CD IN



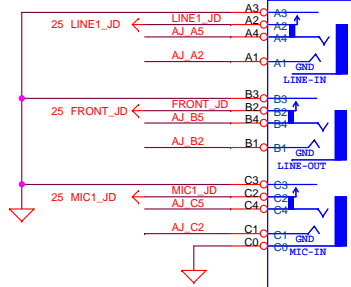
For Audio precision test



USB_1394_ESATA



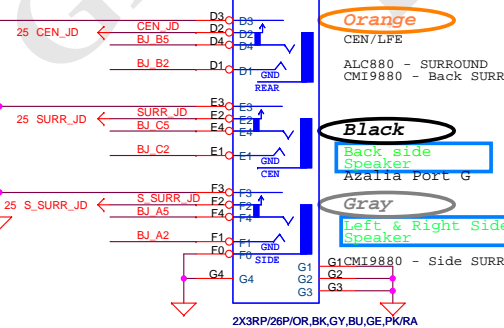
AUDIOB



2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

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

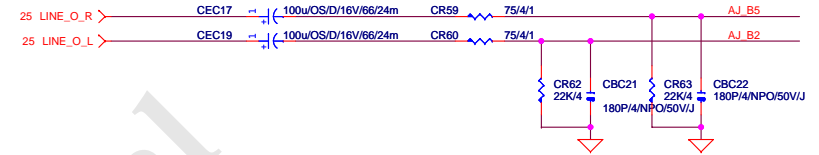
AUDIOA



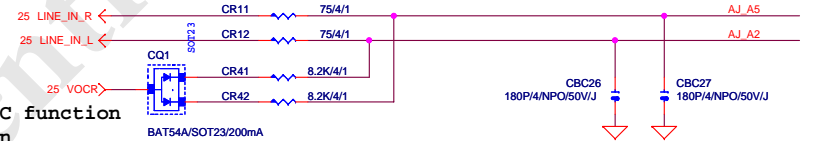
2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

A3RJ/13P/OMB/[11NR6-403006-71]
3RJ+15P/[11NR6-403004-31]

LINE OUT FRONT OUT

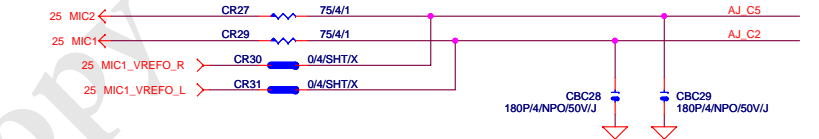


LINE-IN

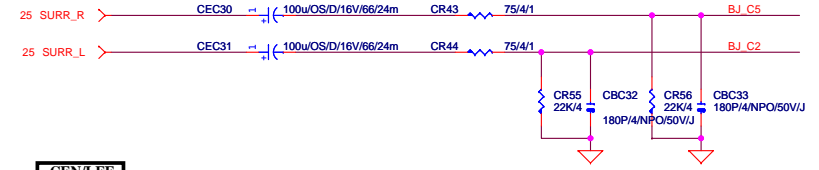


Verify MIC function
in LINE-in

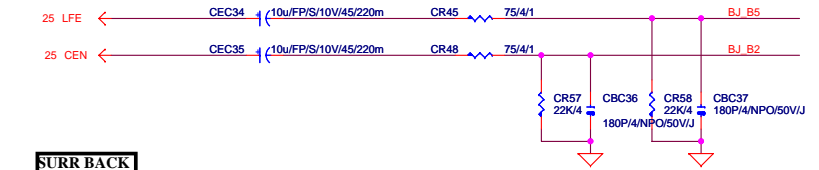
MIC



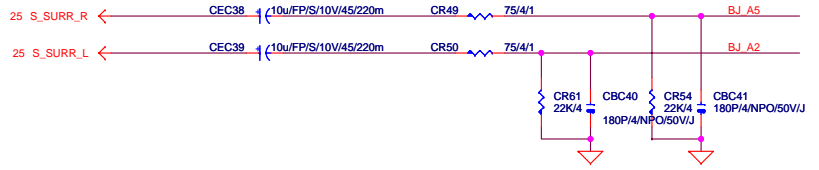
SURROUND



CEN/LFE



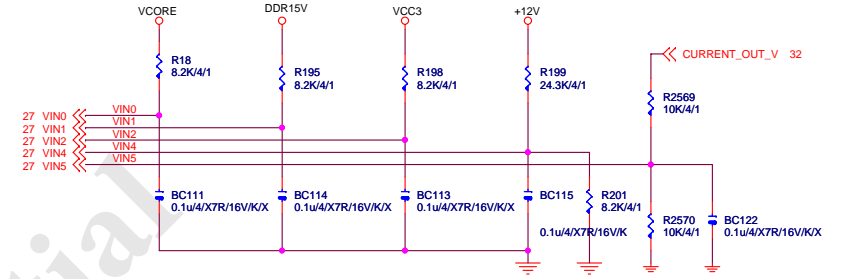
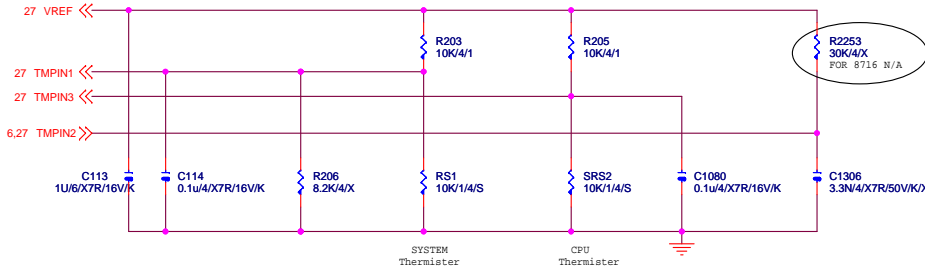
SURR BACK



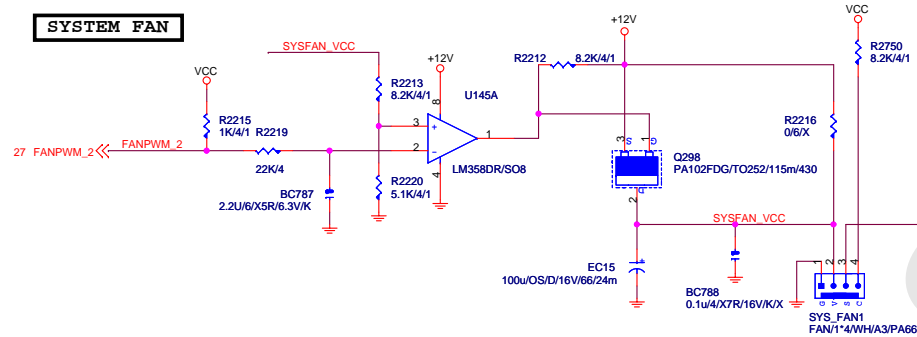
GIGABYTE

Title		
AUDIO JACK		
Size	Document Number	Rev
Custom	GA-890GPA-UD3H	1.0
Date:	Tuesday, January 19, 2010	Sheet 26 of 38

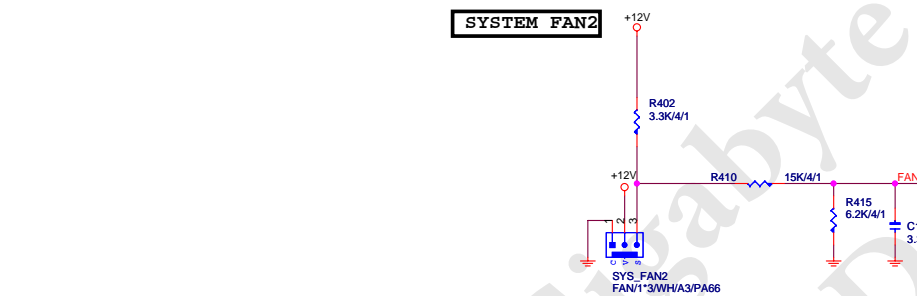
Hardware Monitor circuits



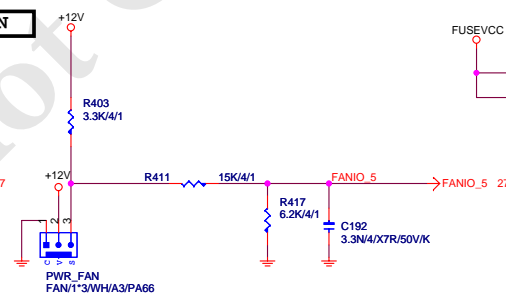
SYSTEM FAN



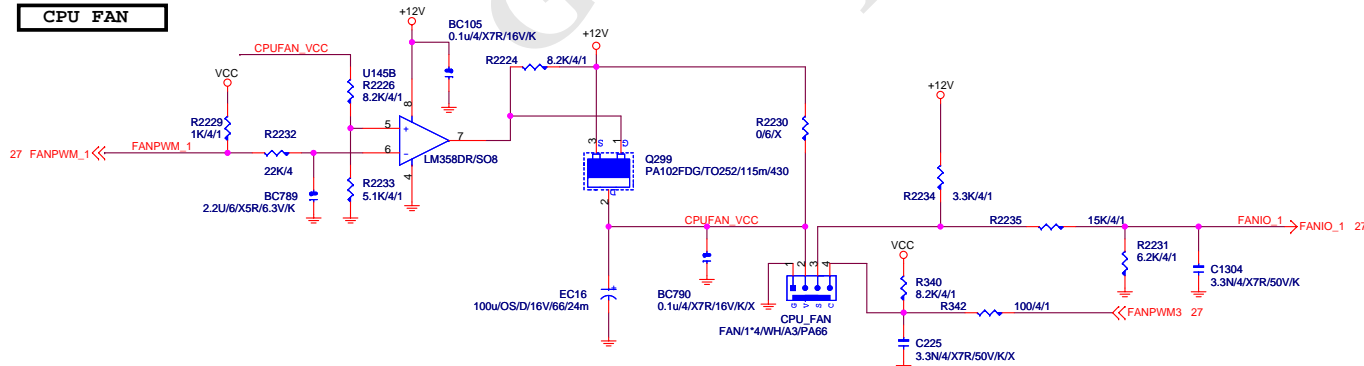
SYSTEM FAN2



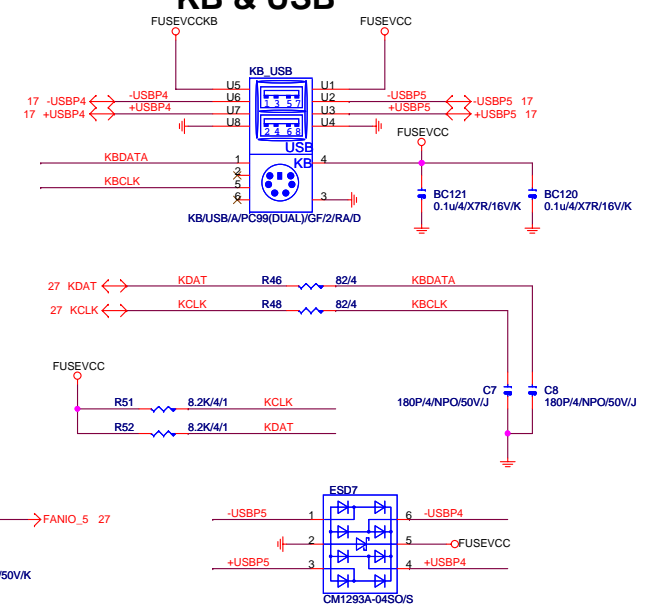
POWER FAN

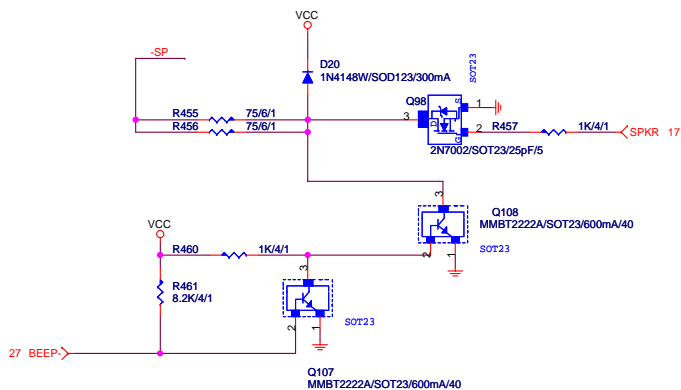
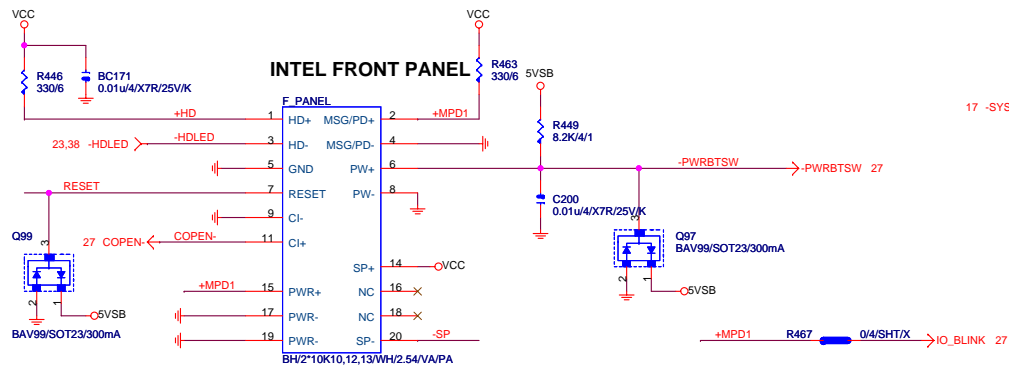


CPU FAN

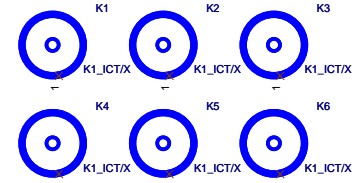
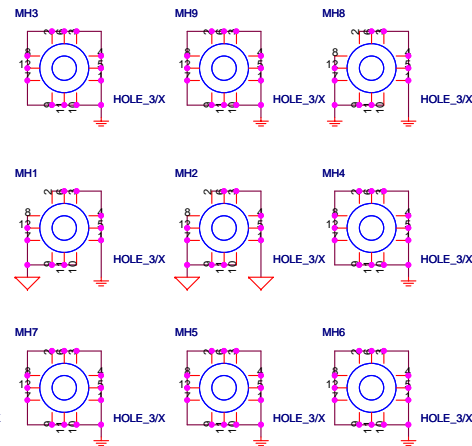
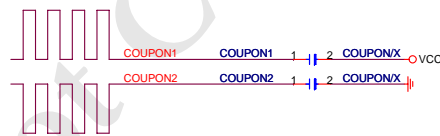
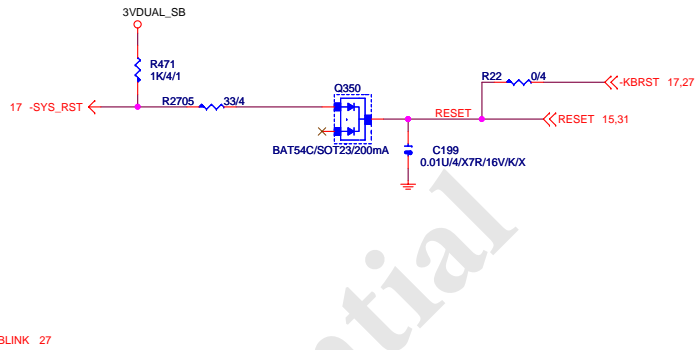
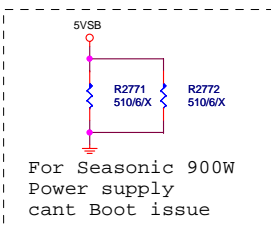
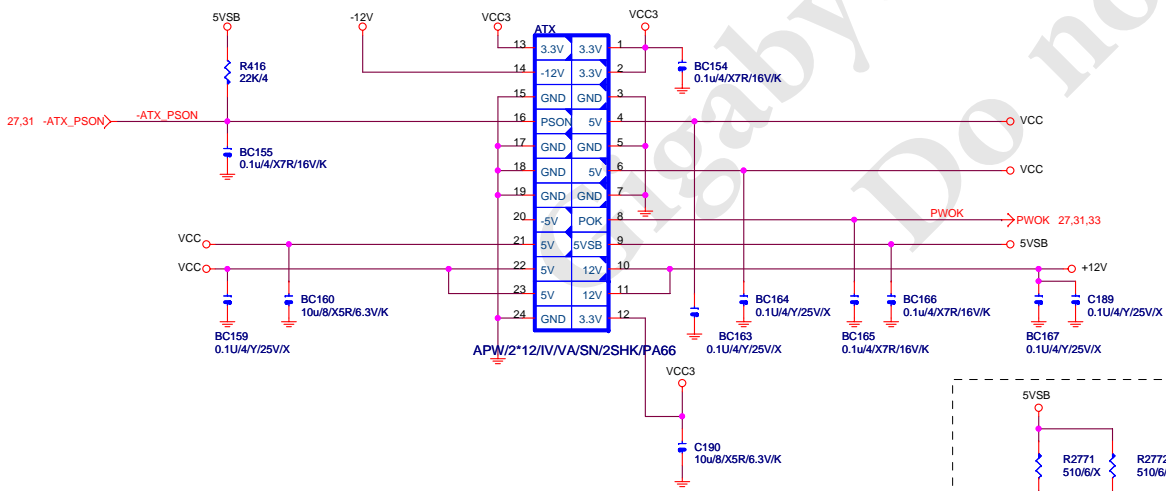


KB & USB



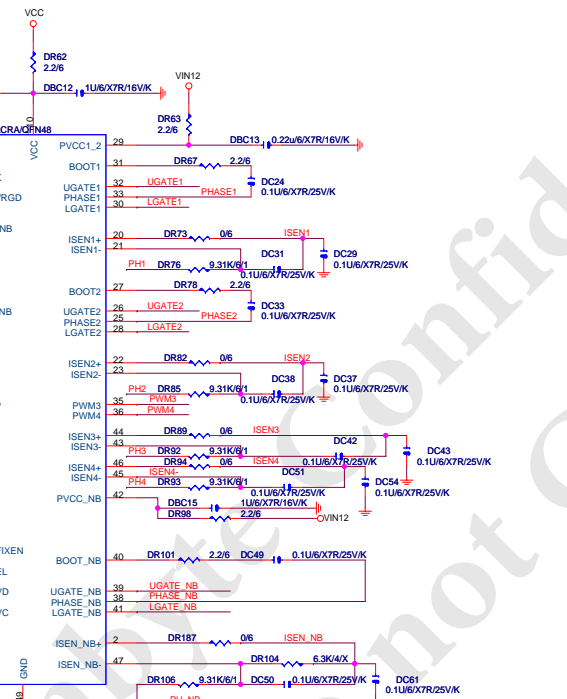
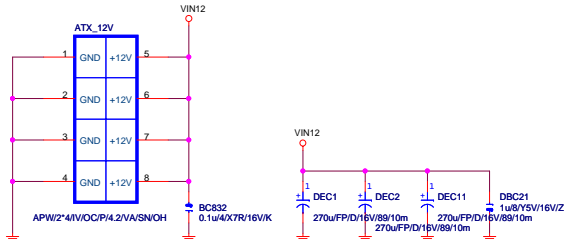


ATX POWER CONNECTOR

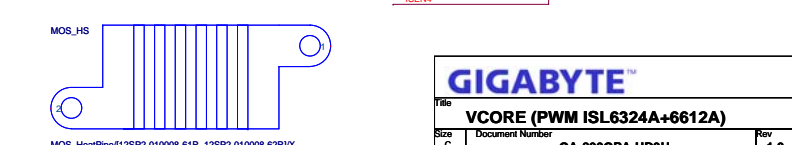
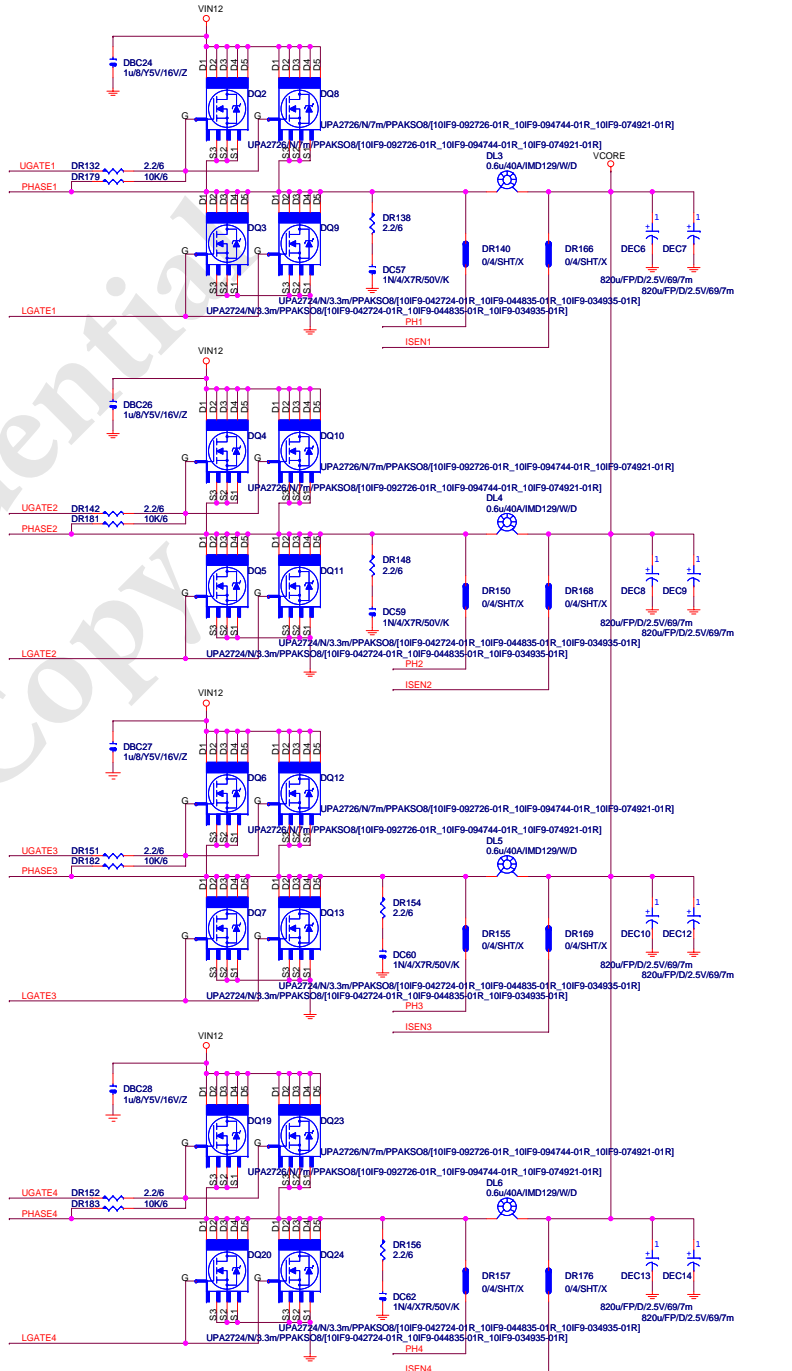
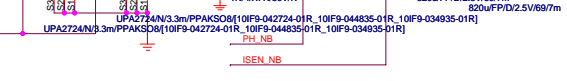


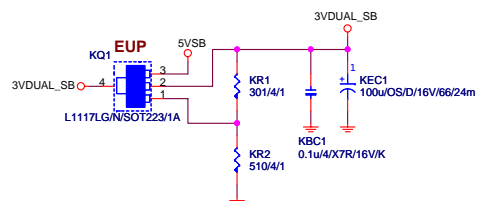
GIGABYTE™			
Title			
ATX, FRONT PANEL			
Size	Document Number	Rev	
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AM2: high, AM2R2: low

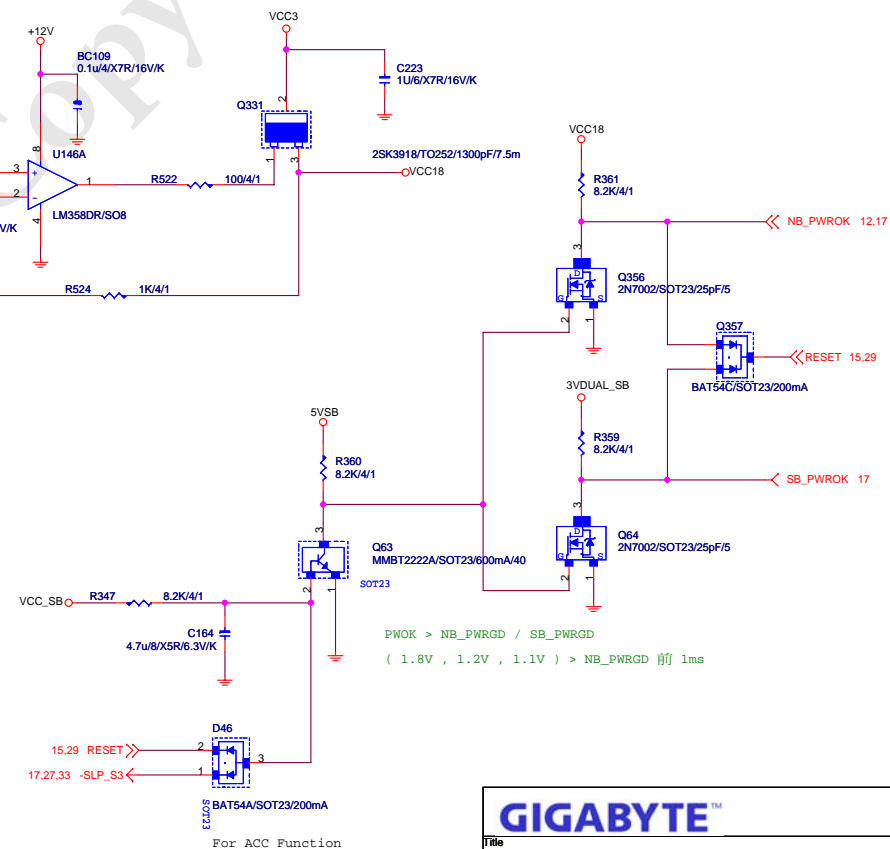
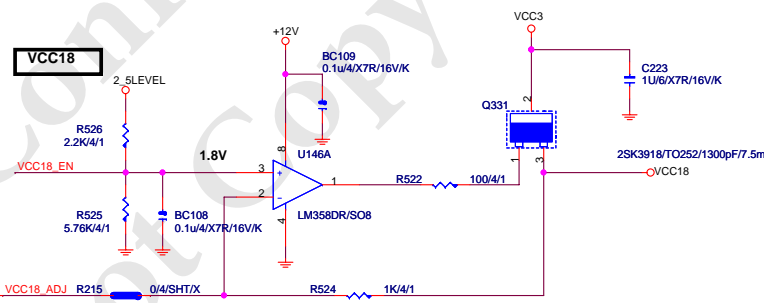
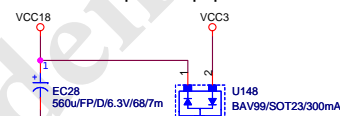


BOTTOM PAD CONNECT TO GND THROUGH 8 VIA

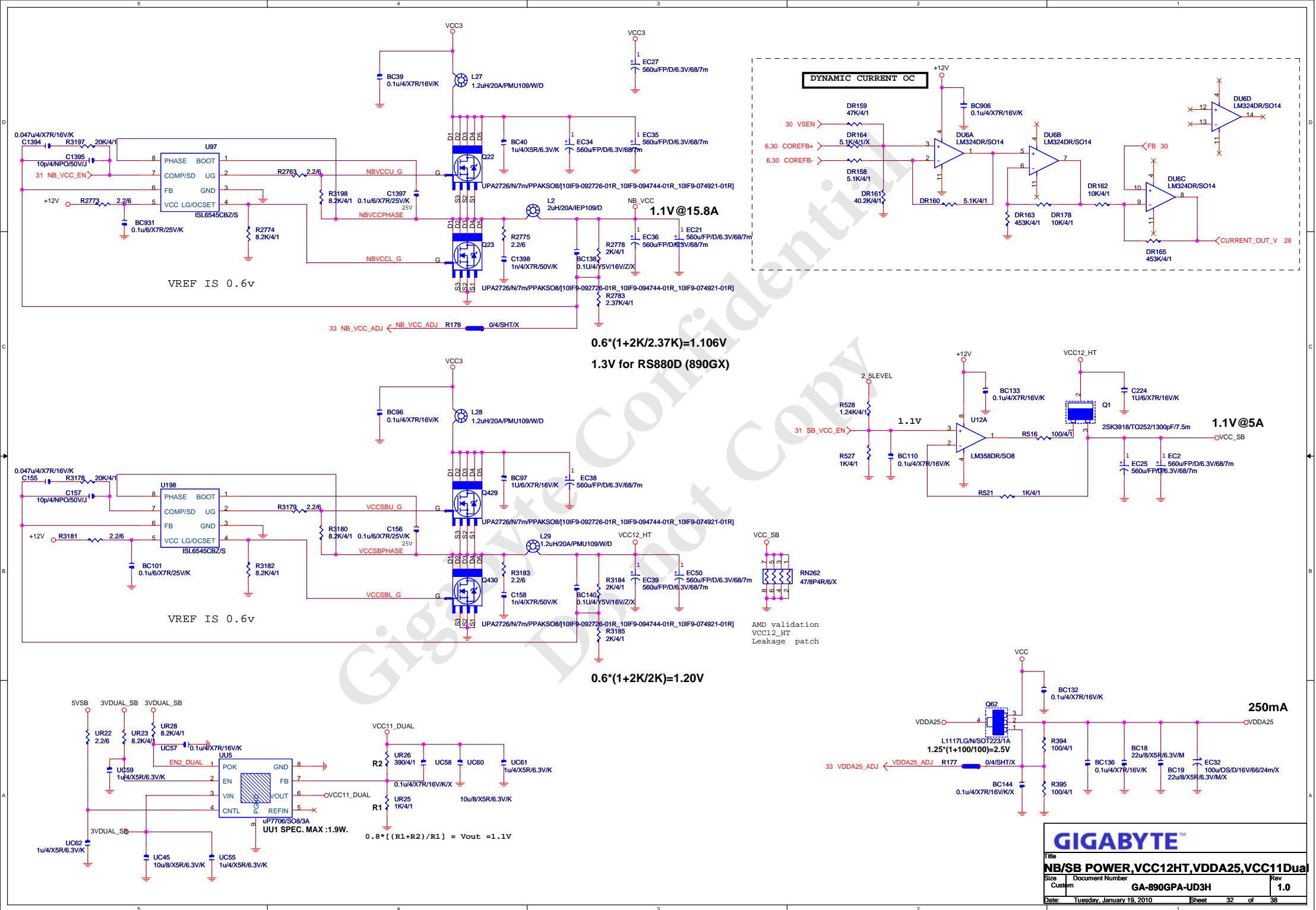




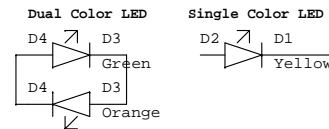
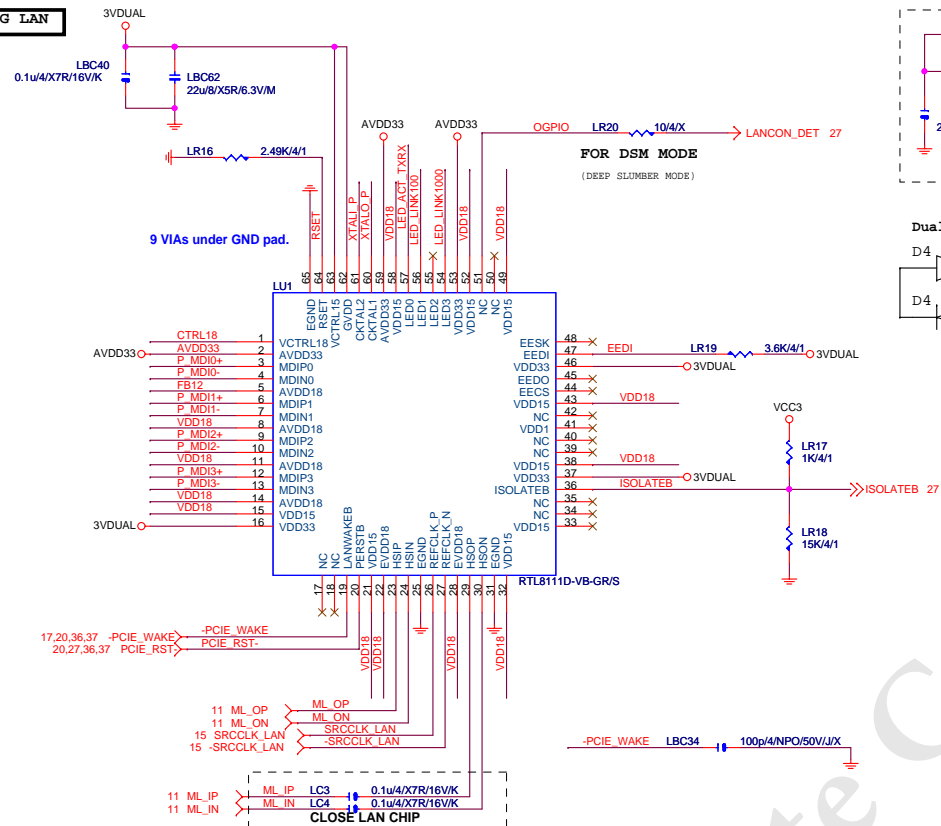
ATI for VCC3/VCC18 power ramp-up 2.1V



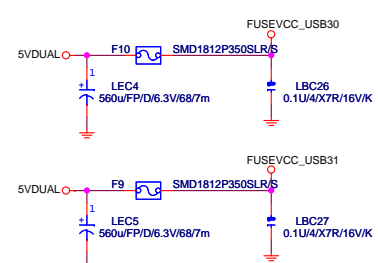
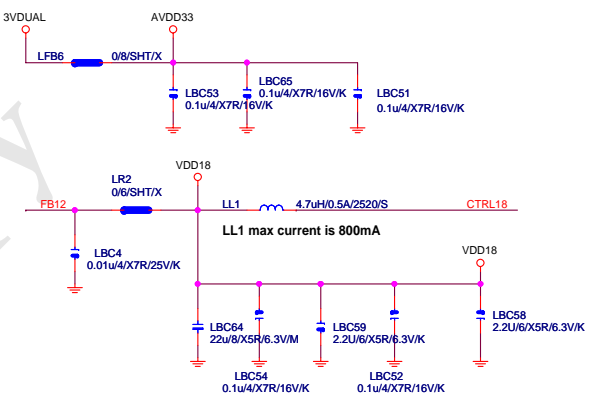
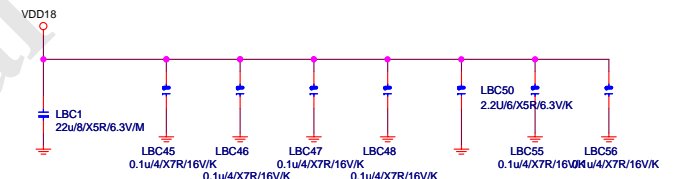
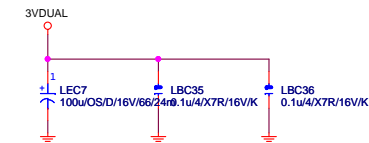
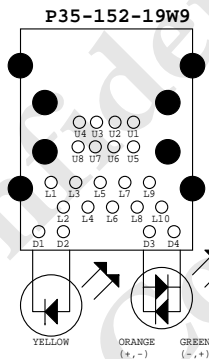
For ACC Function



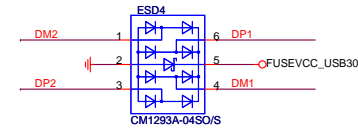
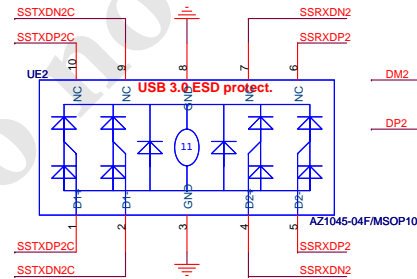
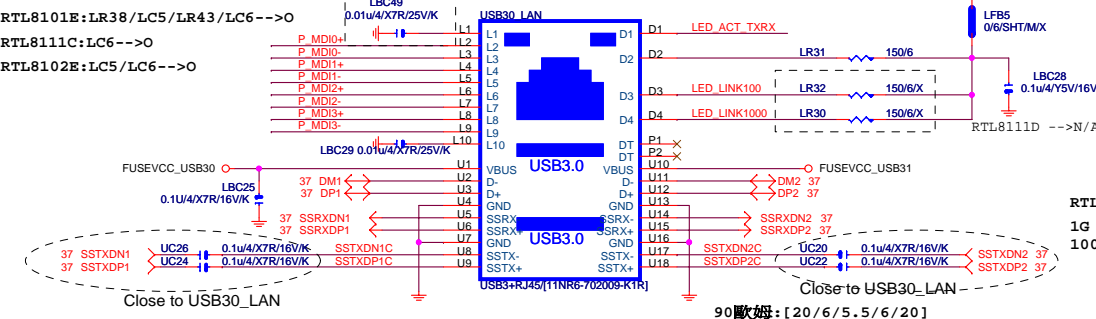
PCIE-1G LAN



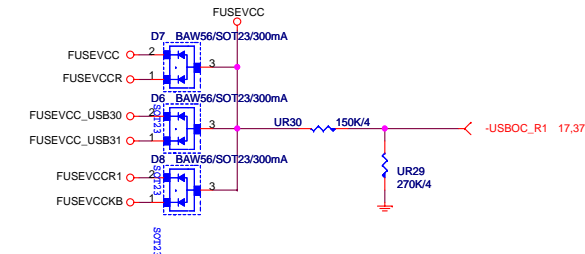
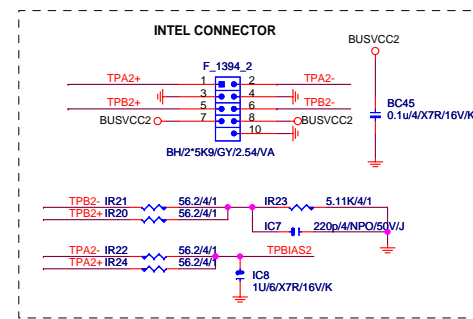
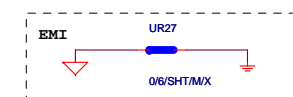
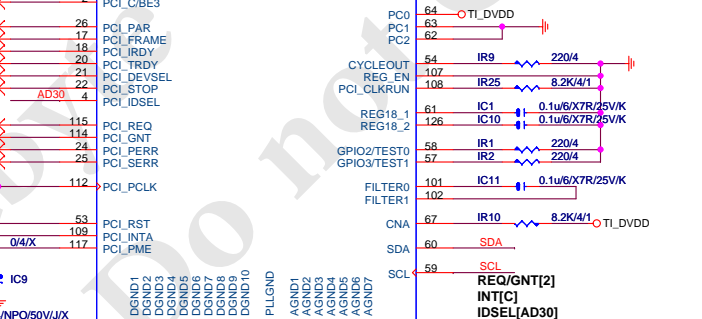
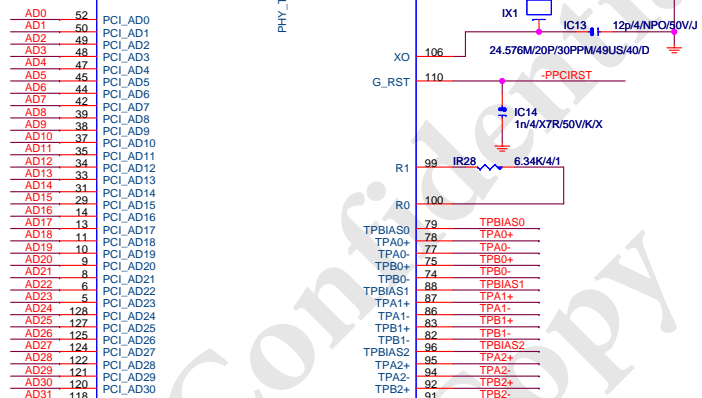
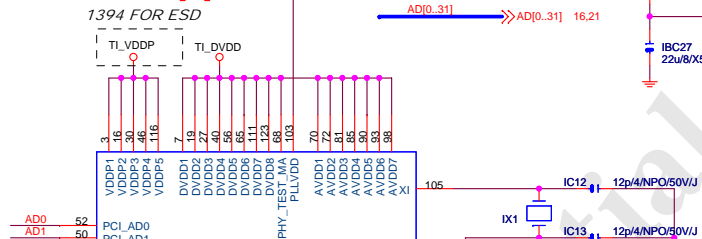
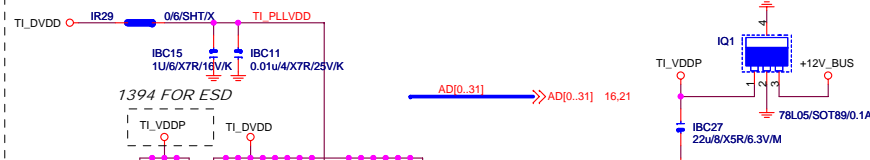
USB_LAN CONNECTOR

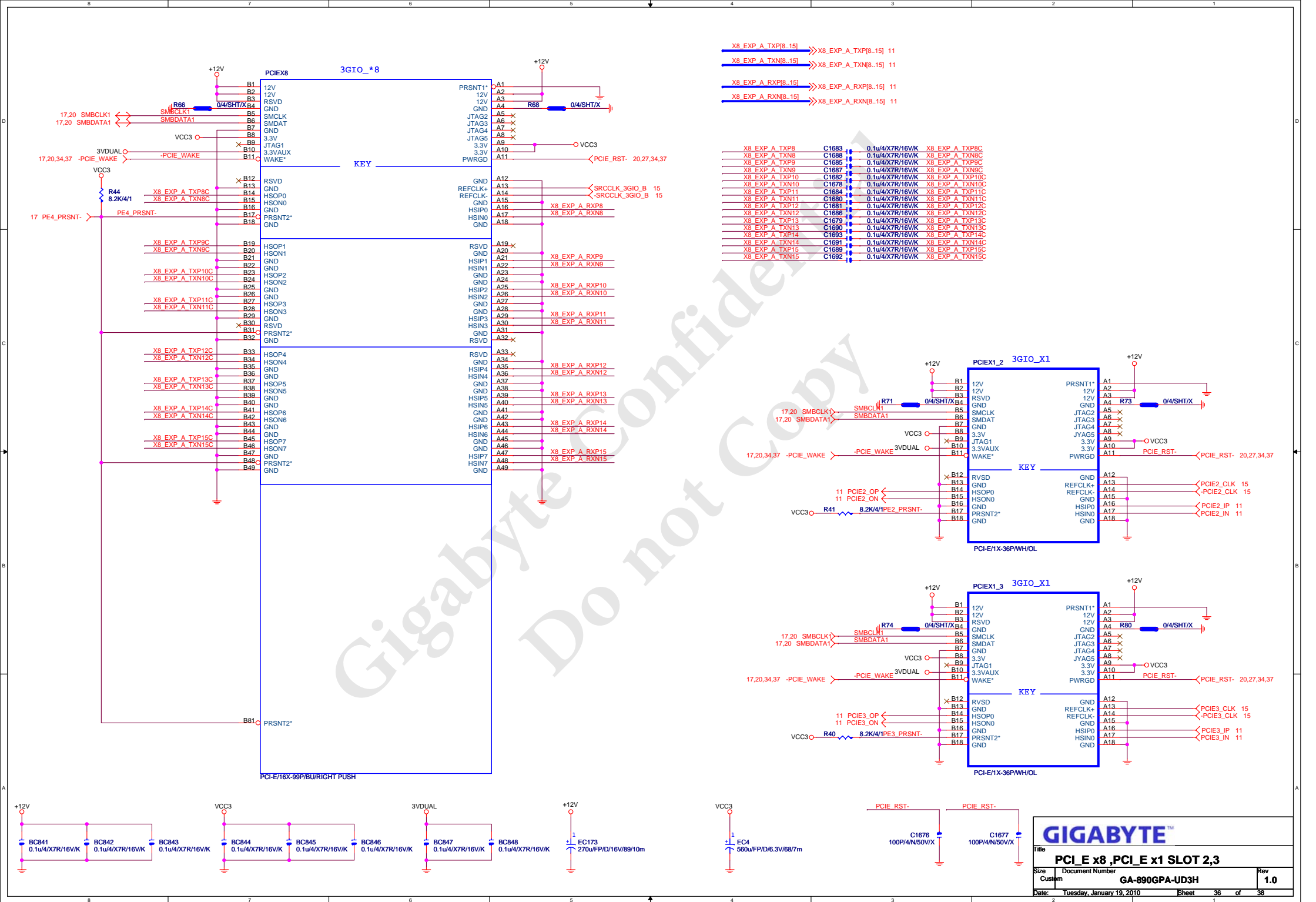


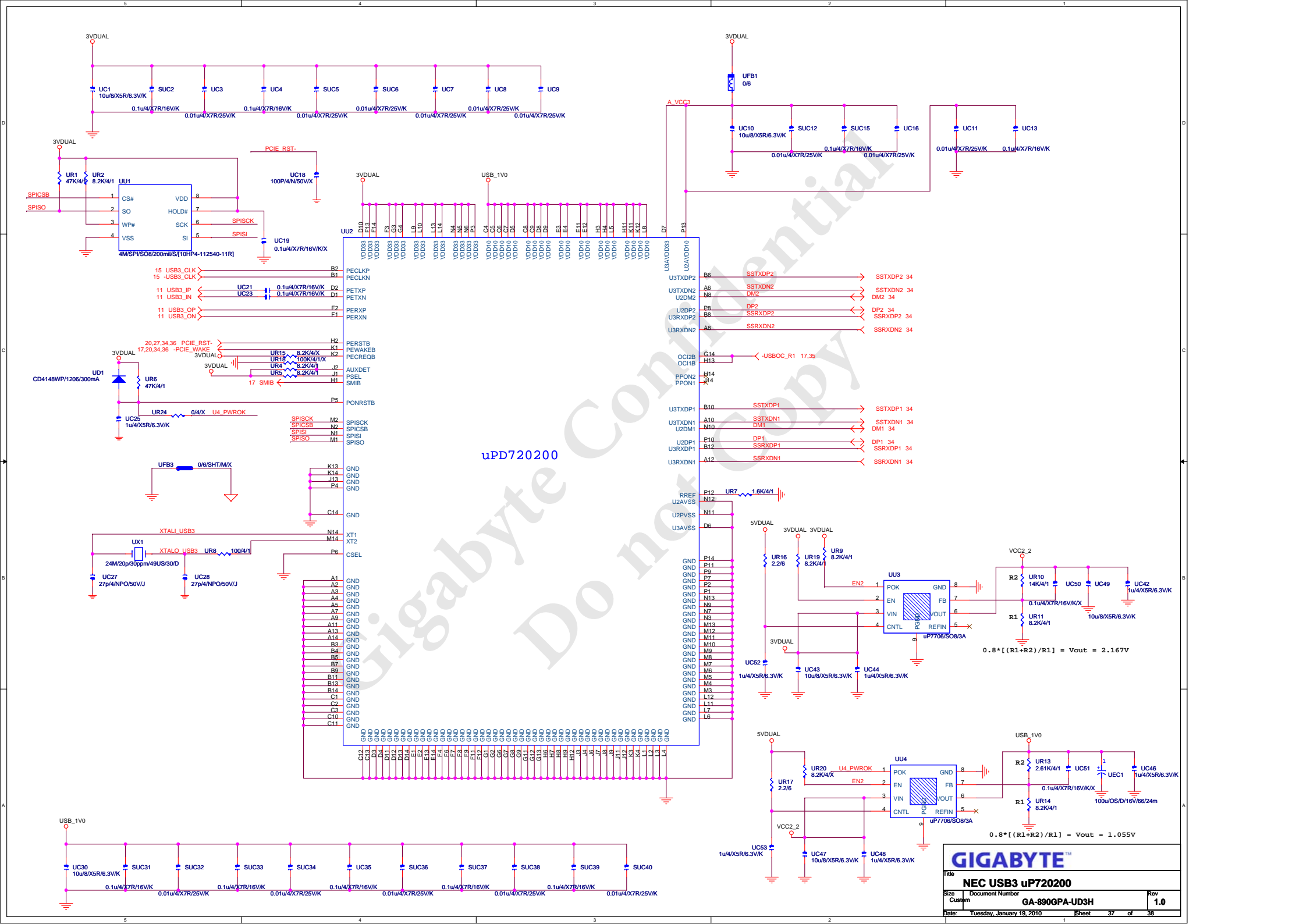
USB_LAN



```
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
```







3.3V to 1.8V Voltage Regulator

