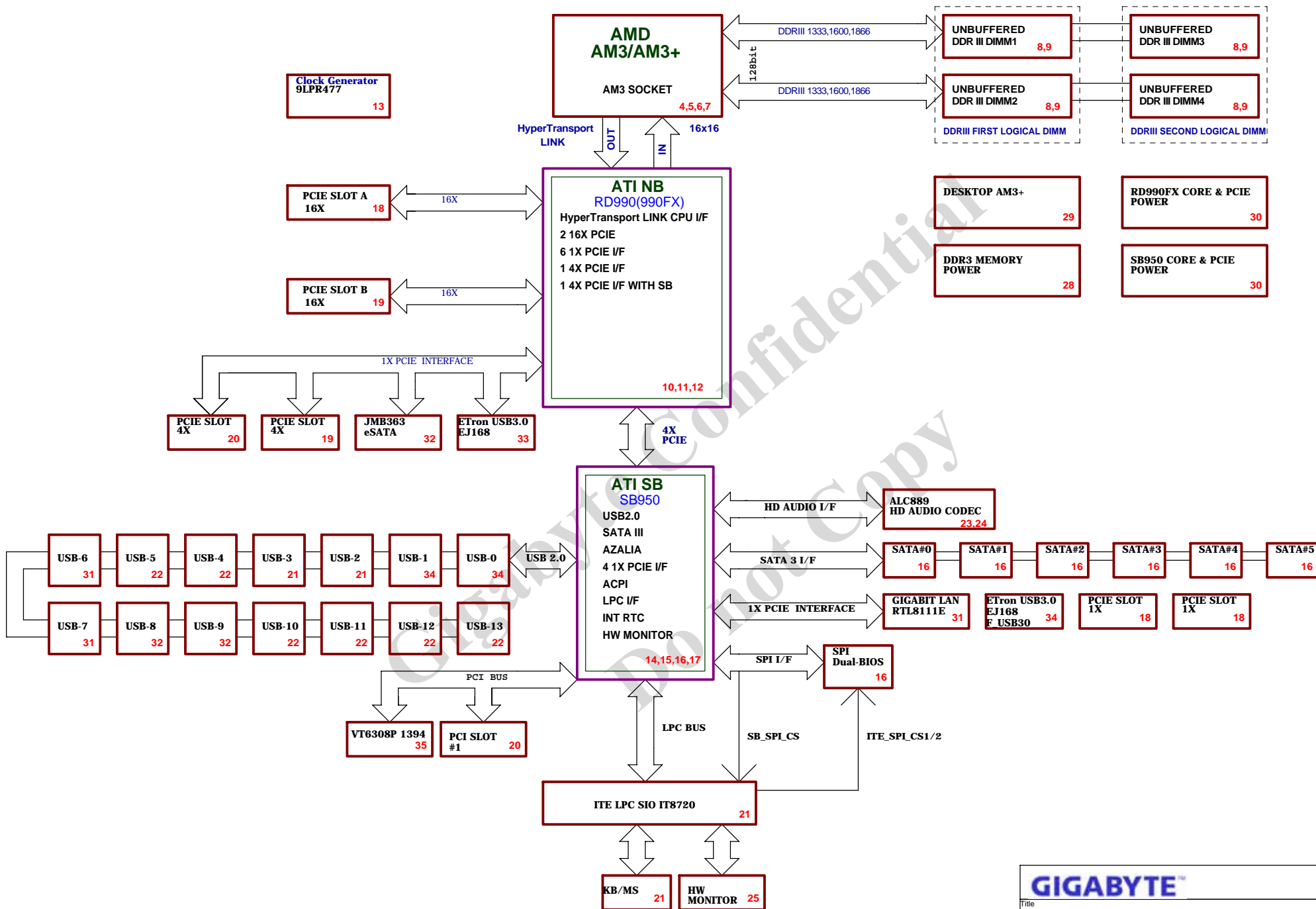


[illegible][illegible]



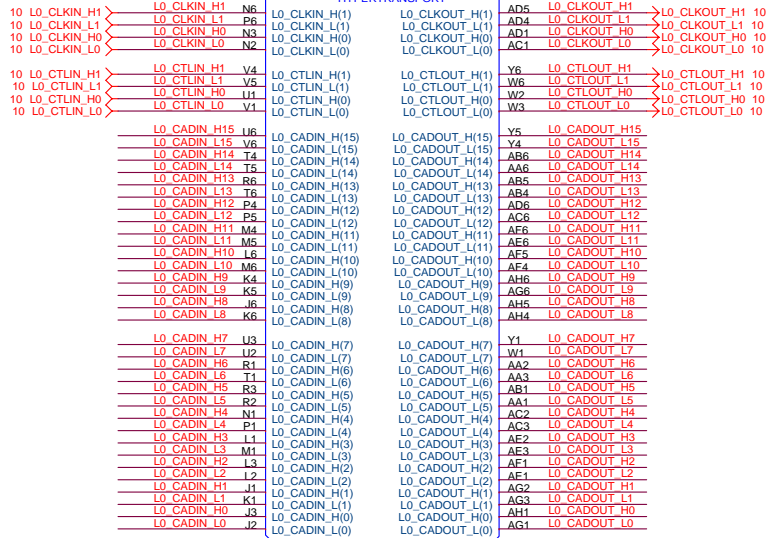
L0_CADIN_L[0..15] <L0_CADIN_L[0..15] 10
L0_CADIN_H[0..15] <L0_CADIN_H[0..15] 10
L0_CADOUT_L[0..15] <L0_CADOUT_L[0..15] 10
L0_CADOUT_H[0..15] <L0_CADOUT_H[0..15] 10

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

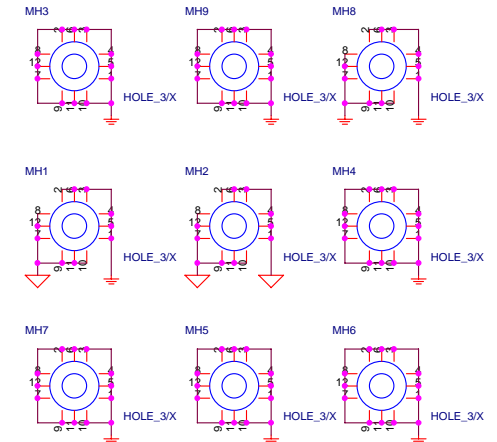
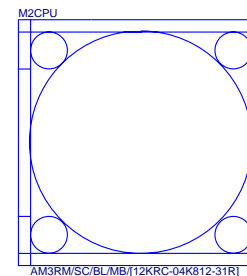
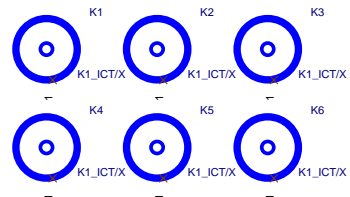
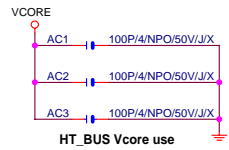
VLDT_A = VCC12_HT
VLDT_B = HT12B

M2CPUA

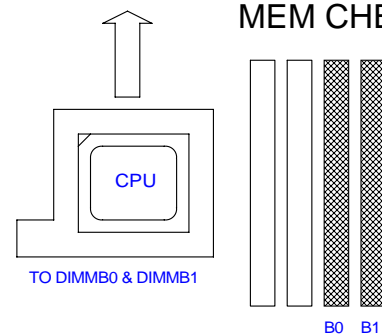
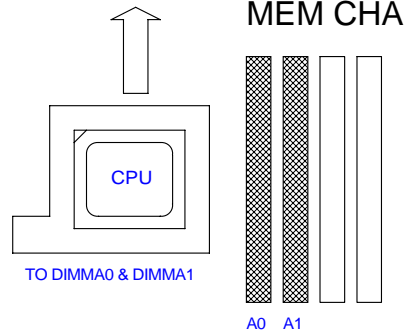
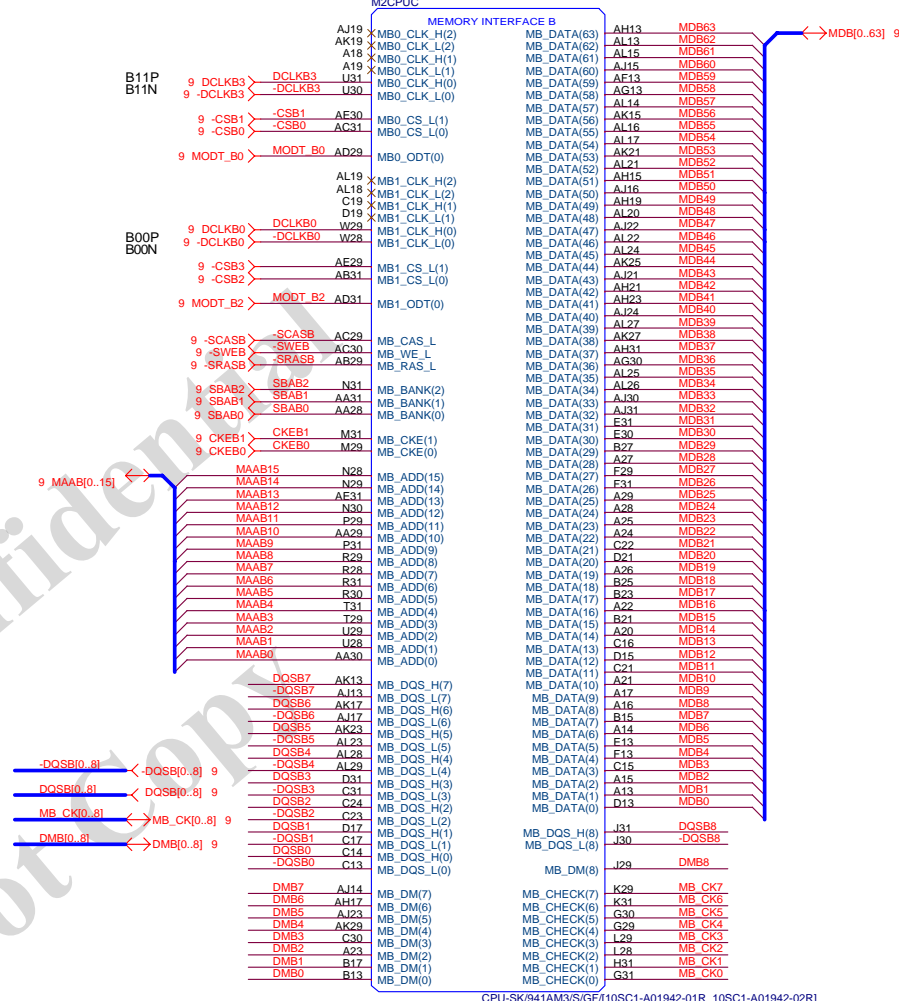
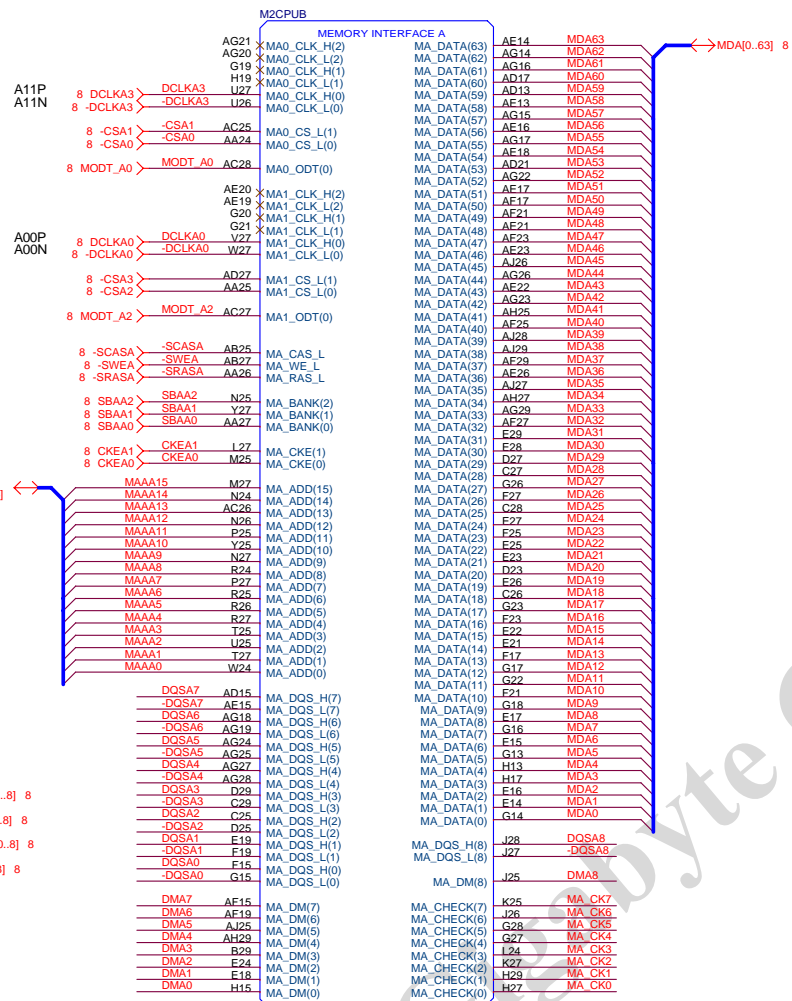
HYPERTRANSPORT



CPU-SK941AM3/S/GF/[10SC1-A01942-01R_10SC1-A01942-02R]



GIGABYTE		
Title		
COVER SHEET		
Size	Document Number	Rev
Custm	GA-990FXA-UD3	1.2
Date:	Monday, September 05, 2011	Sheet 4 of 35



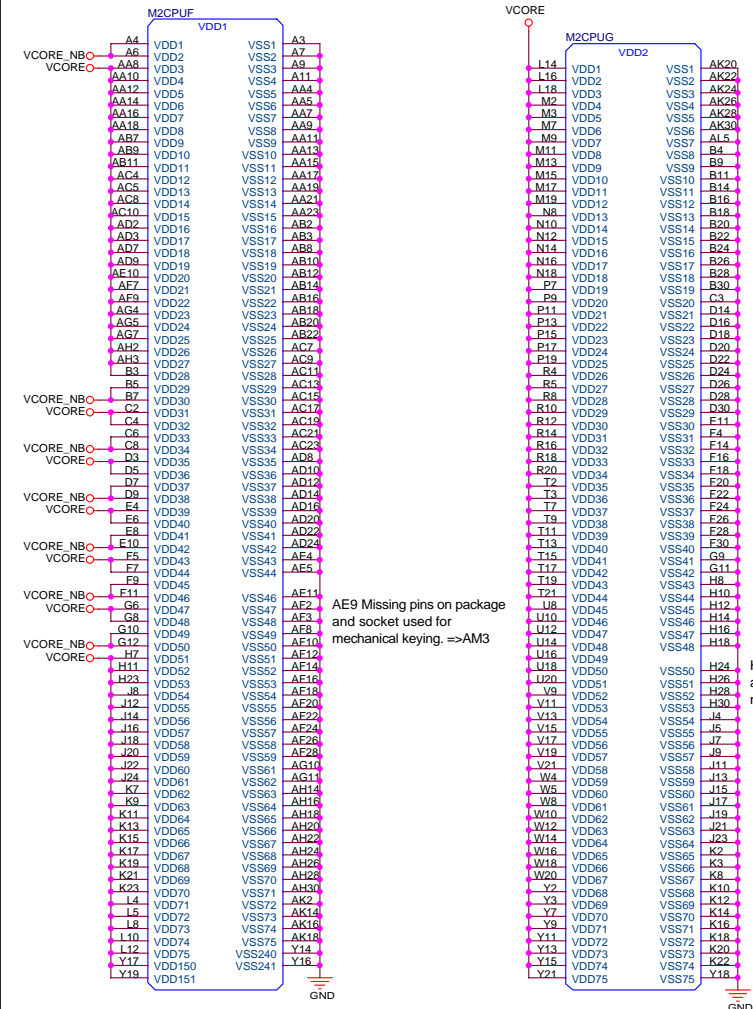
GIGABYTE

COVER SHEET

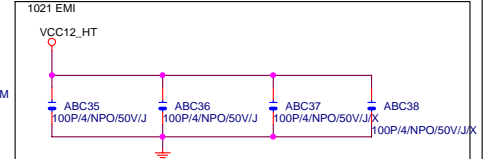
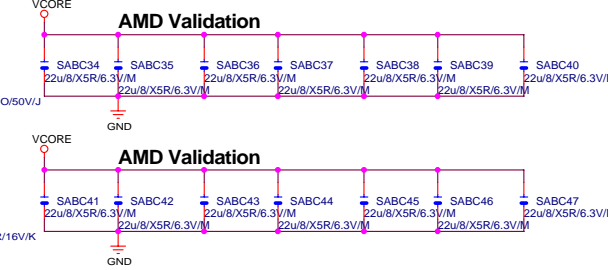
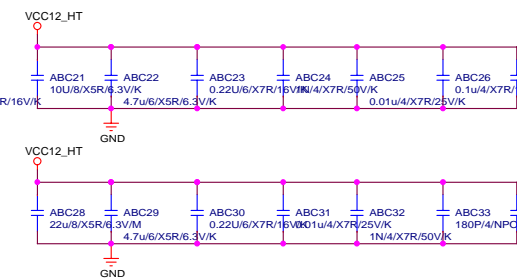
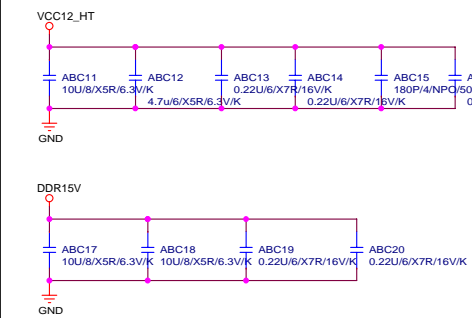
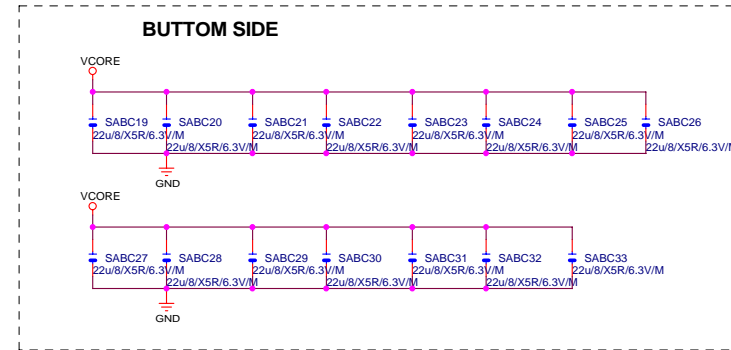
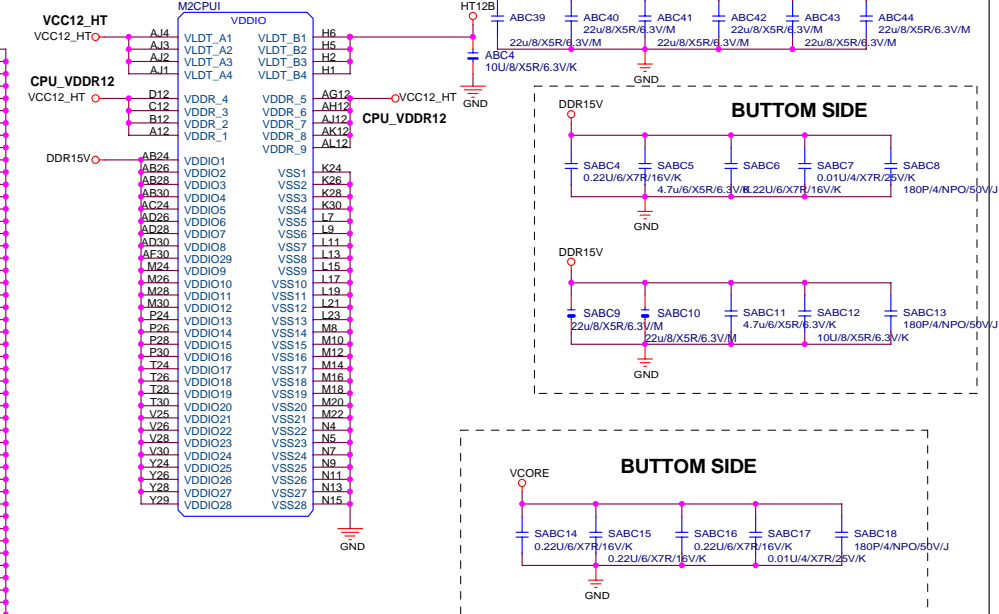
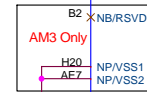
Size: Custom Document Number: GA-990FXA-UD3 Rev: 1.2

Date: Monday, September 05, 2011 Sheet 5 of 35

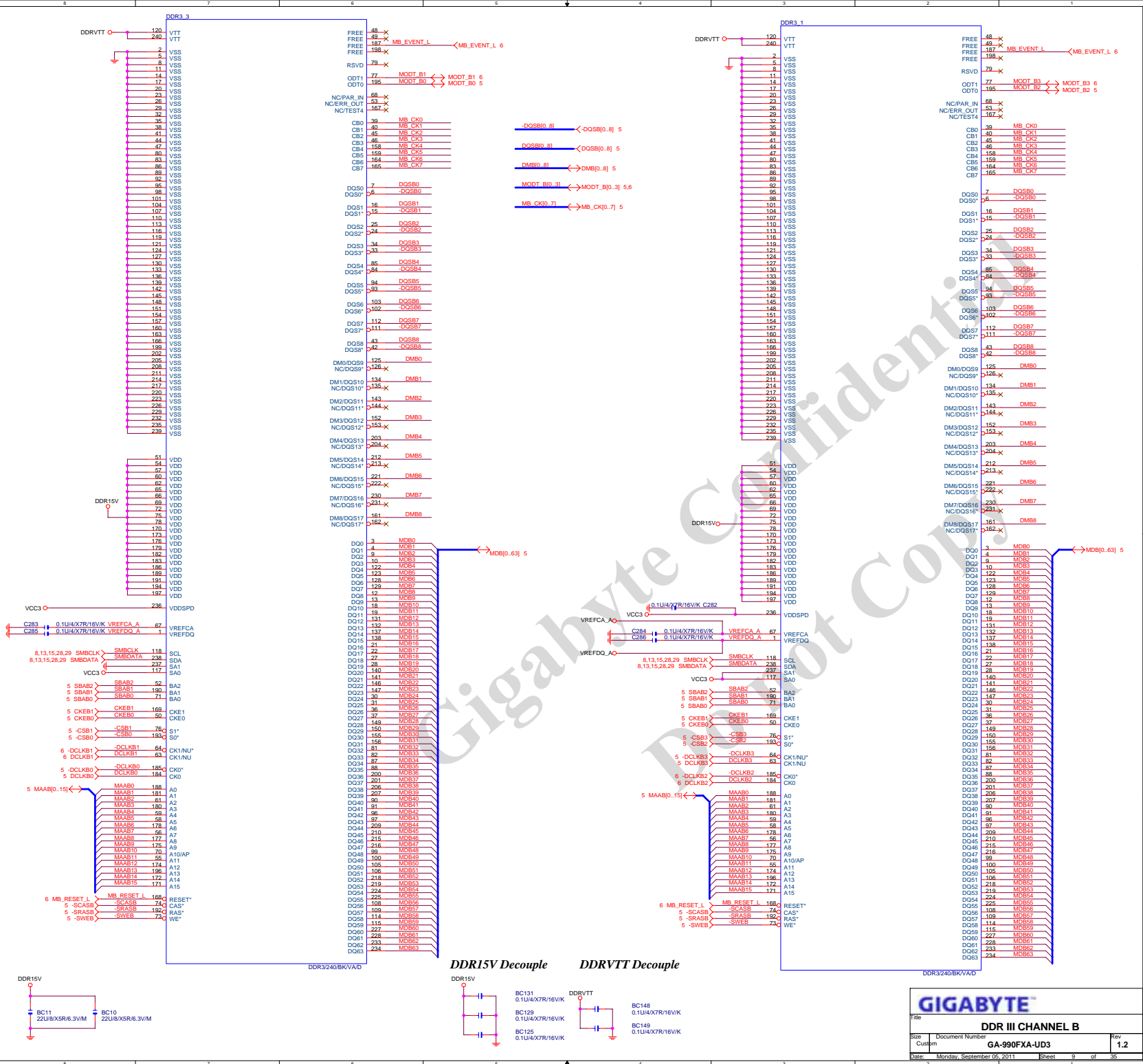
VLDT_RUN_B is connected to the VLDT_RUN power supply through the package or on the die. It is only connected on the board to decoupling near the CPU package.

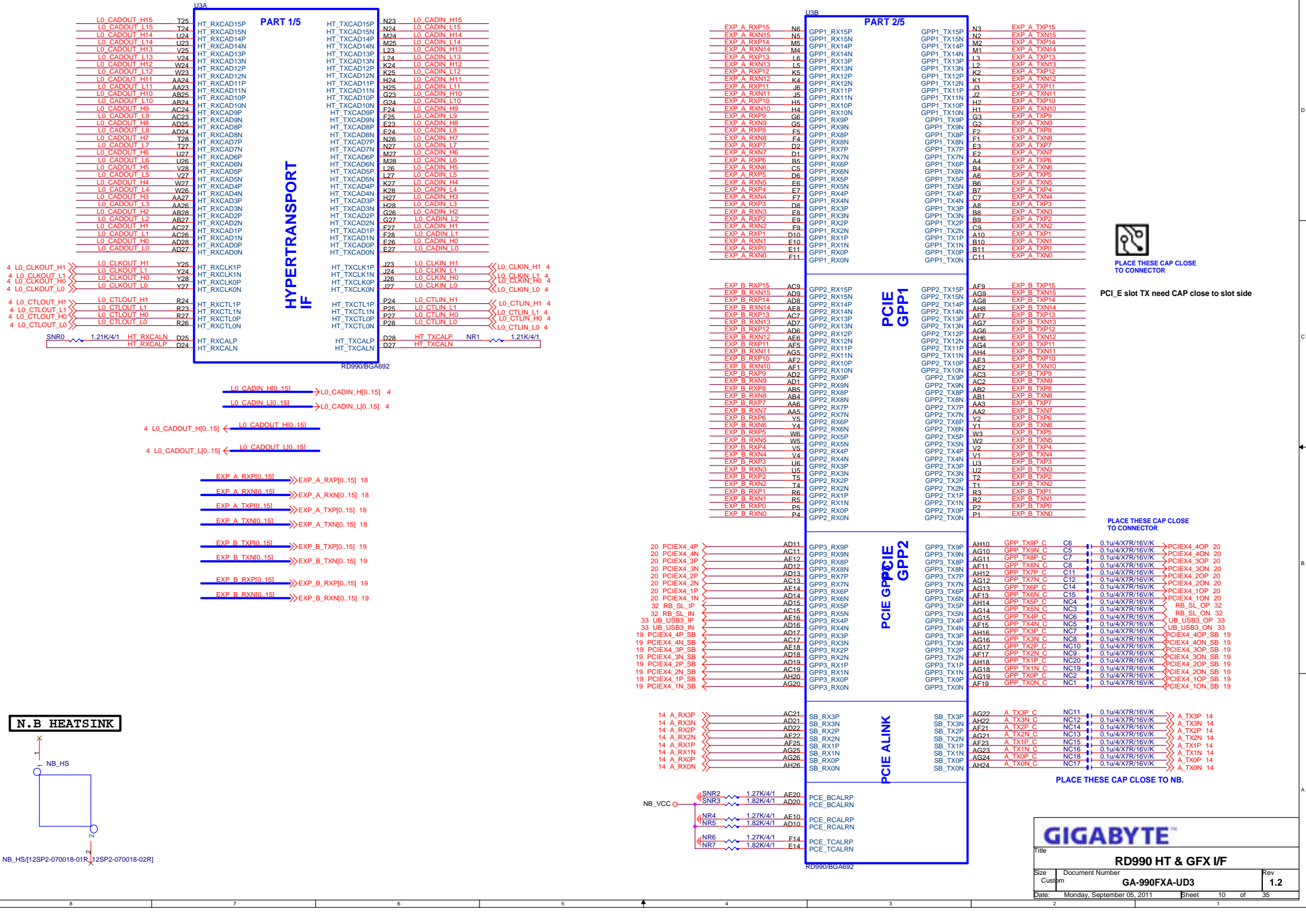


H22 Missing pins on package and socket used for mechanical keying. =>AM3

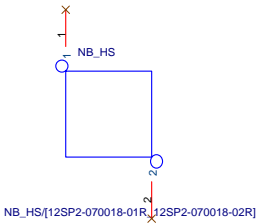








N.B HEATSINK



NB_HS[12SP2-070018-01R, 12SP2-070018-02R]

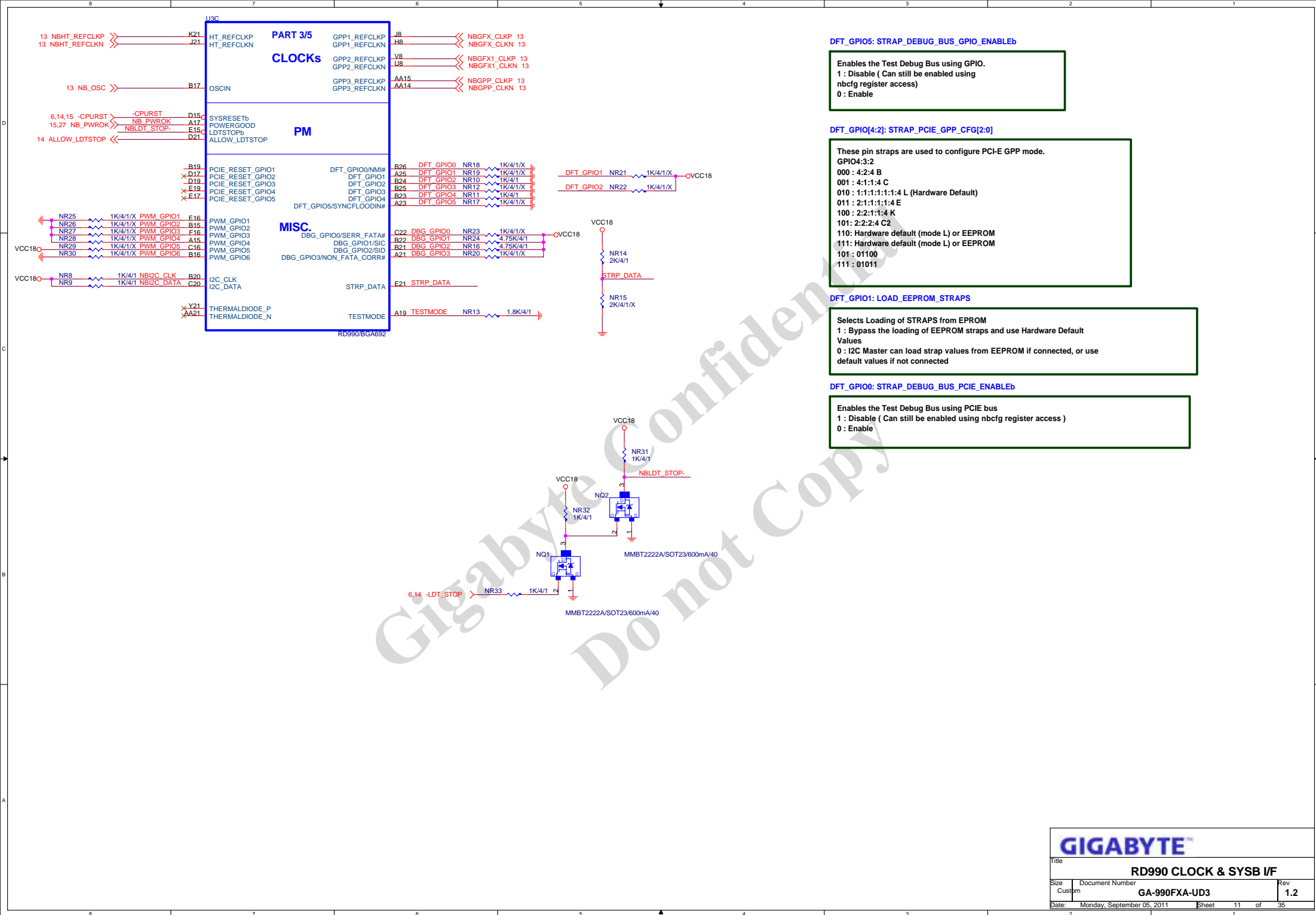
RD990 HT & GFX I/F

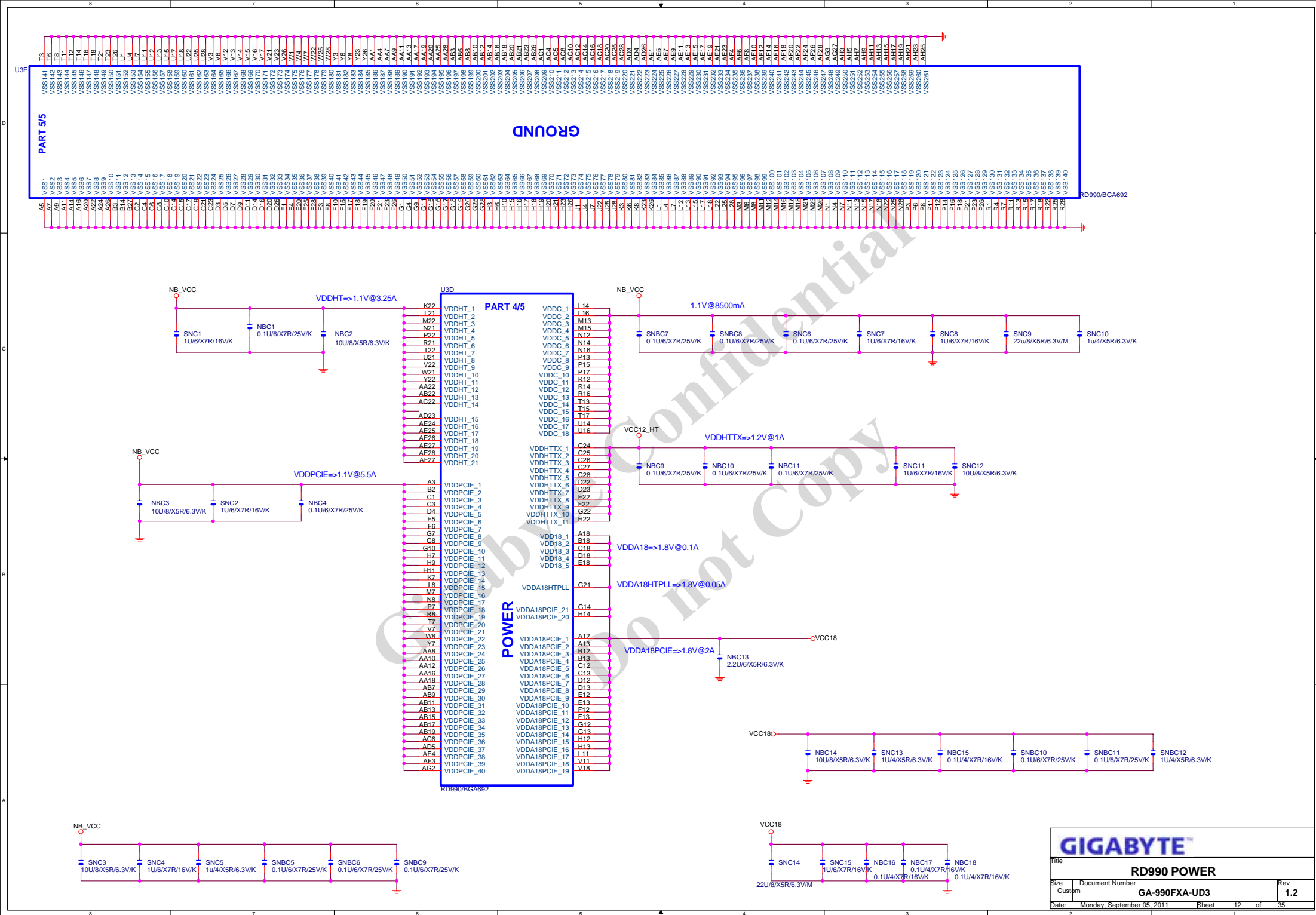
Size: 1.2

Document Number: GA-990FXA-UD3

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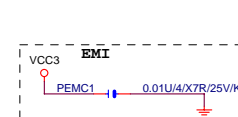
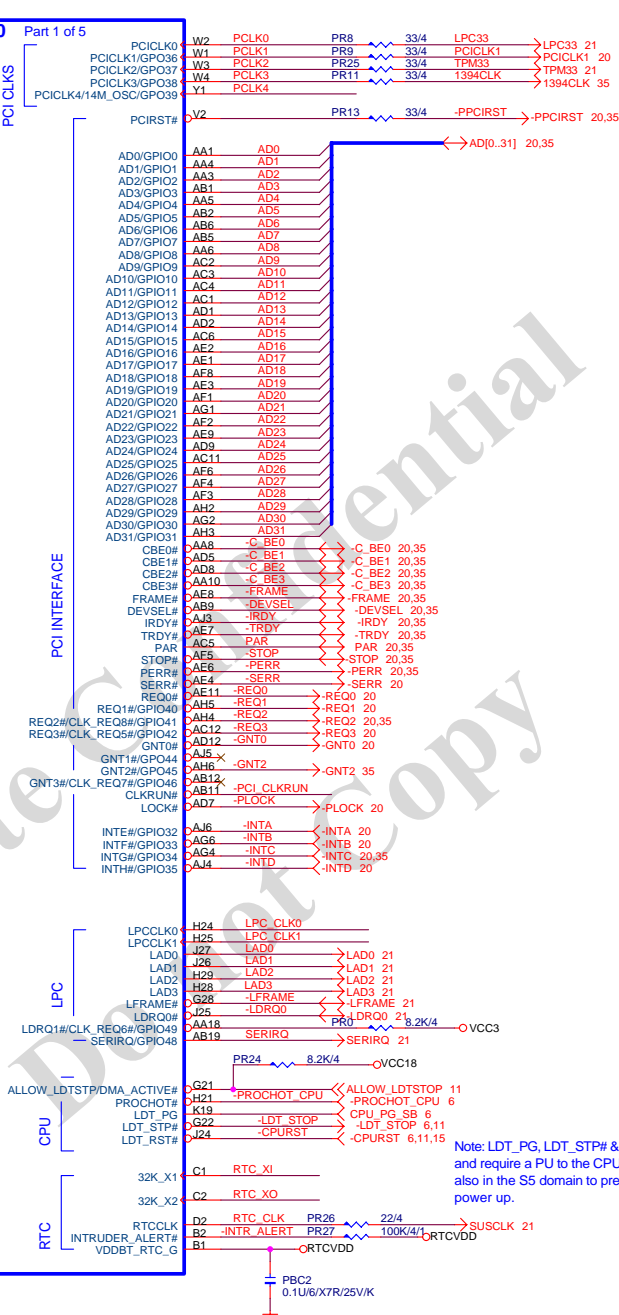
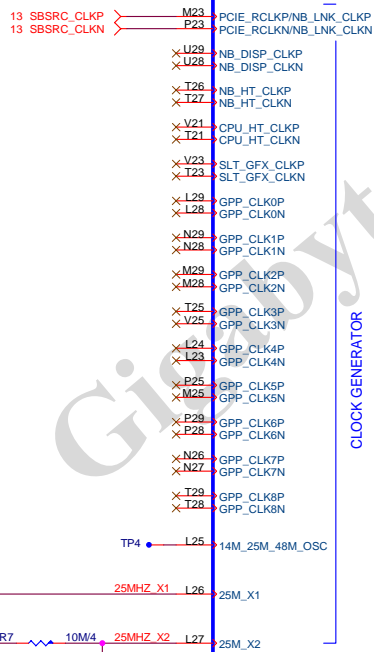
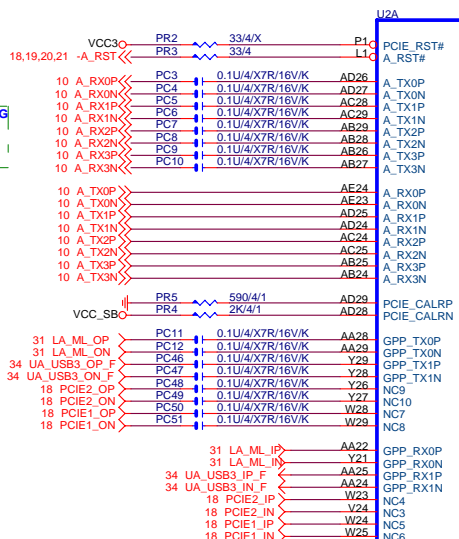
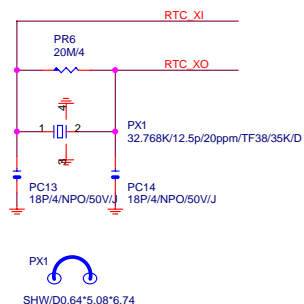




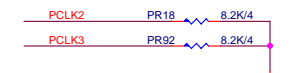


A diagram showing a square with a vertical line segment labeled SB_{HS} and a point labeled X above it.

SB_HS/[12SP2-S06510-11R_12SP2-S06510-12R_12SP2-S06510-13R]

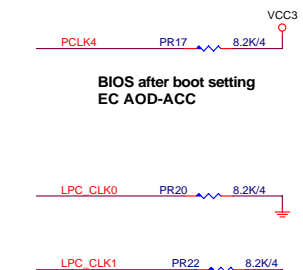


Low: Force PCIE GEN1, Up: Allow PCIE GEN2

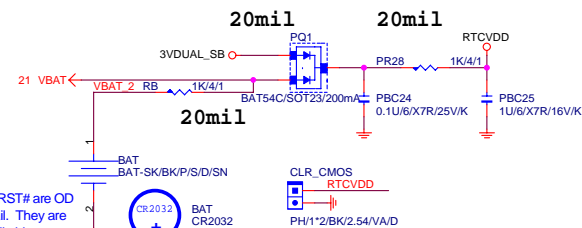


	PCLK2	PCLK3
PULL HIGH	WATCHDOG TIMER ON NB_PWRGD ENABLED	USE DEBUG STRAPS
PULL LOW	WATCHDOG TIMER ON NB_PWRGD DISABLED DEFAULT	IGNORE DEBUG STRAPS DEFAULT

BIOS after boot setting
EC AOD-ACC



	LPC_CLK0 Rev.AT2	LPC_CLK1
PULL HIGH	IMC ENABLED	CLKGEN ENABLED
PULL LOW	IMC DISABLED AOD Extreme DEFAULT	CLKGEN DISABLED DEFAULT

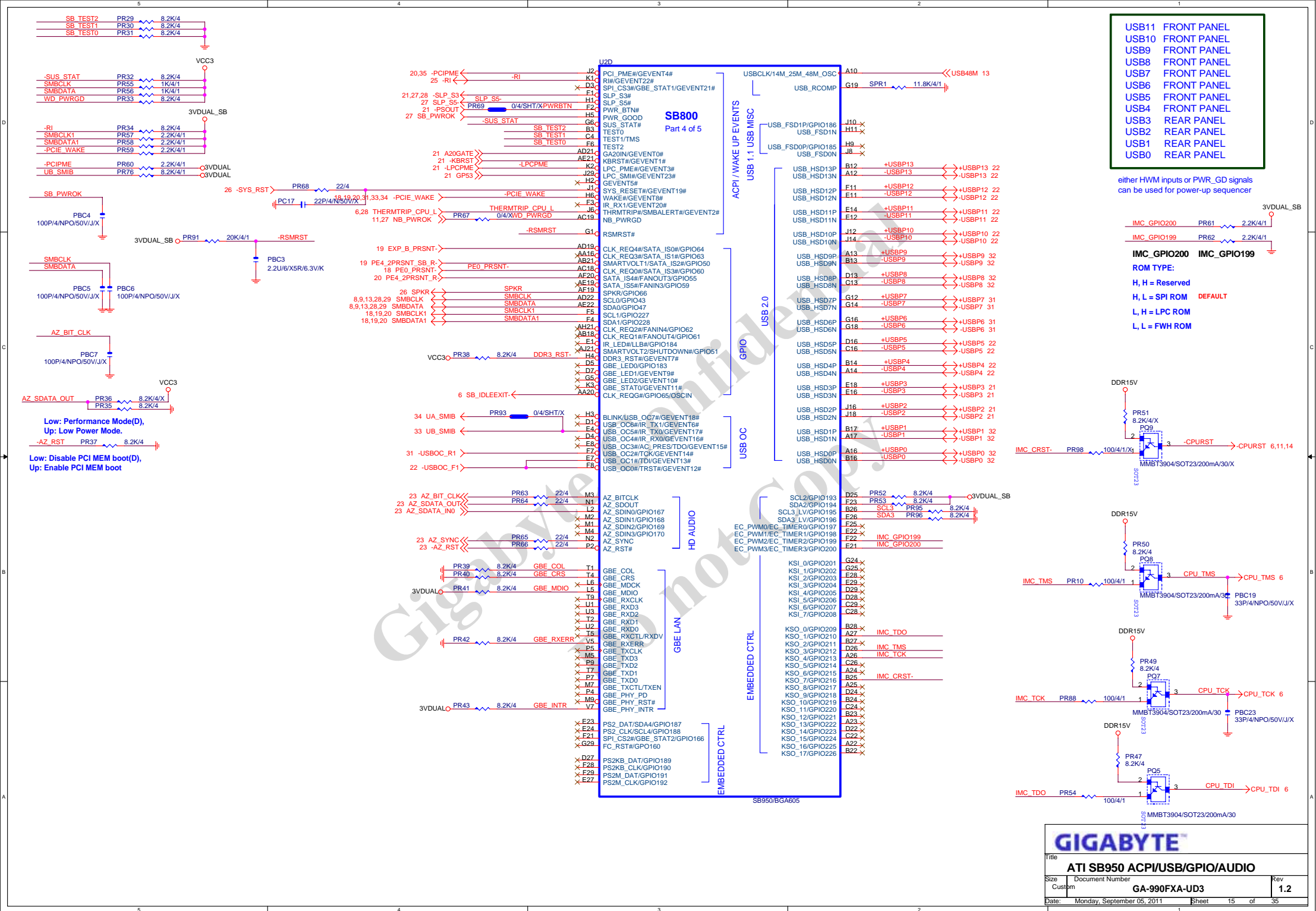


CLR_CMOS	
SHORT	CLEAR CMOS
OPEN	NORMAL

NOT ADD ICT FOR RTCVDD PIN

GIGABYTE™

Title			
ATI SB950 PCIE/PCI/CPU/LPC			
Size	Document Number	Rev	
Custom	GA-990FXA-UD3	1.2	
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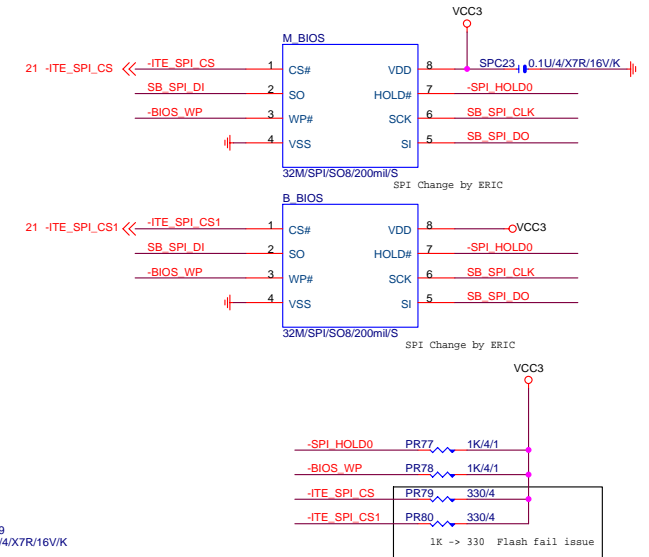
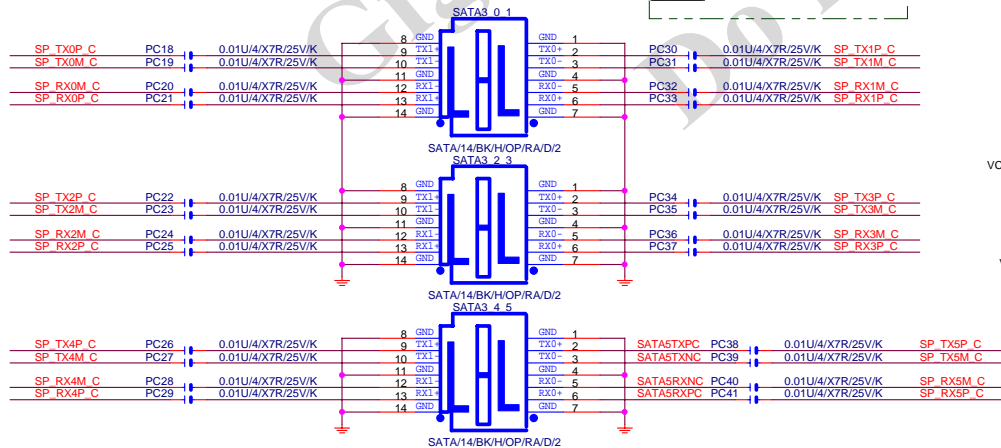
PLACE SATA_CAL
RES VERY CLOSE
TO BALL OF U600

NOTE:

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



PLACE SATA AC COUPLING
CAPS CLOSE TO SB850

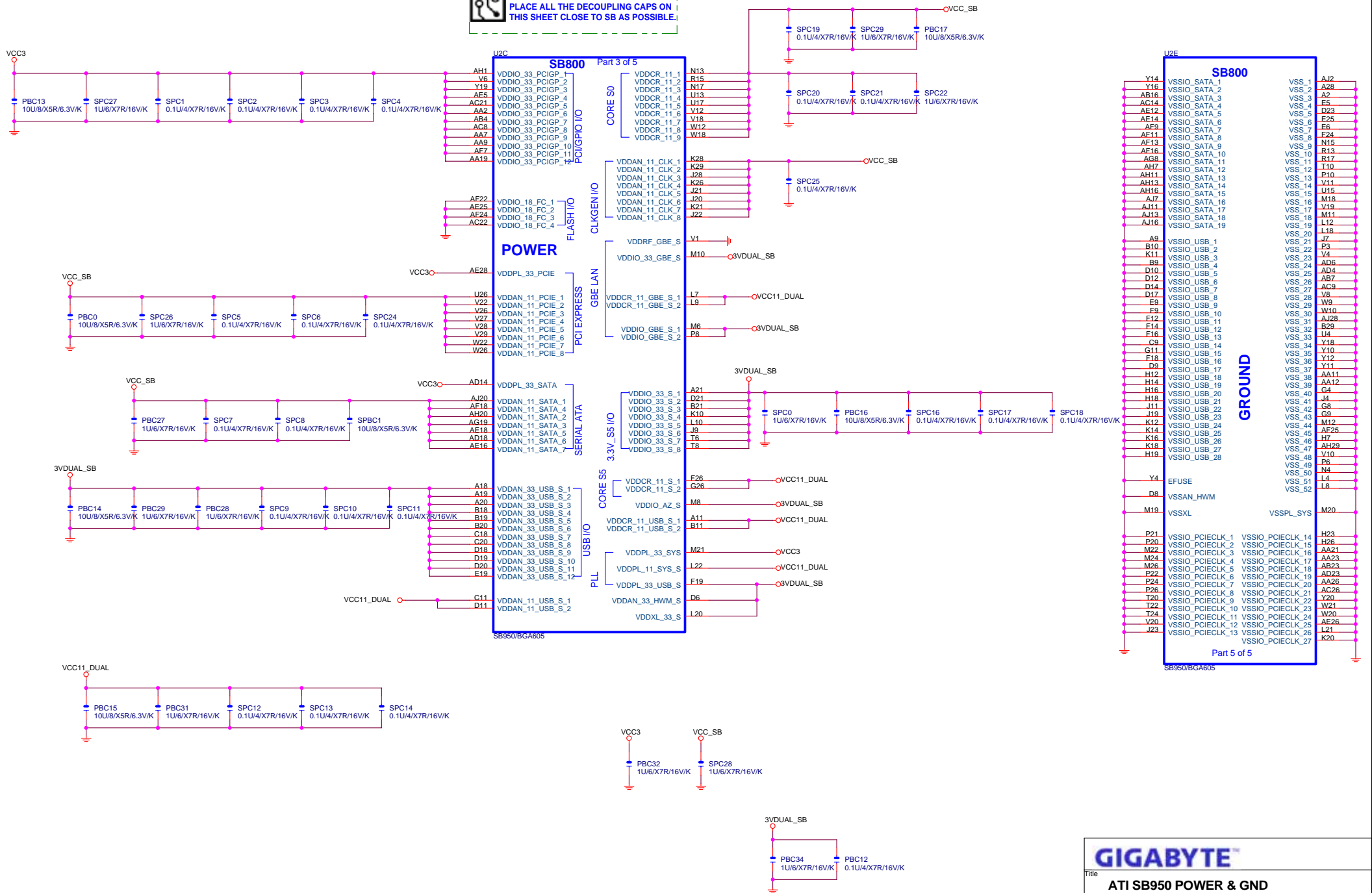


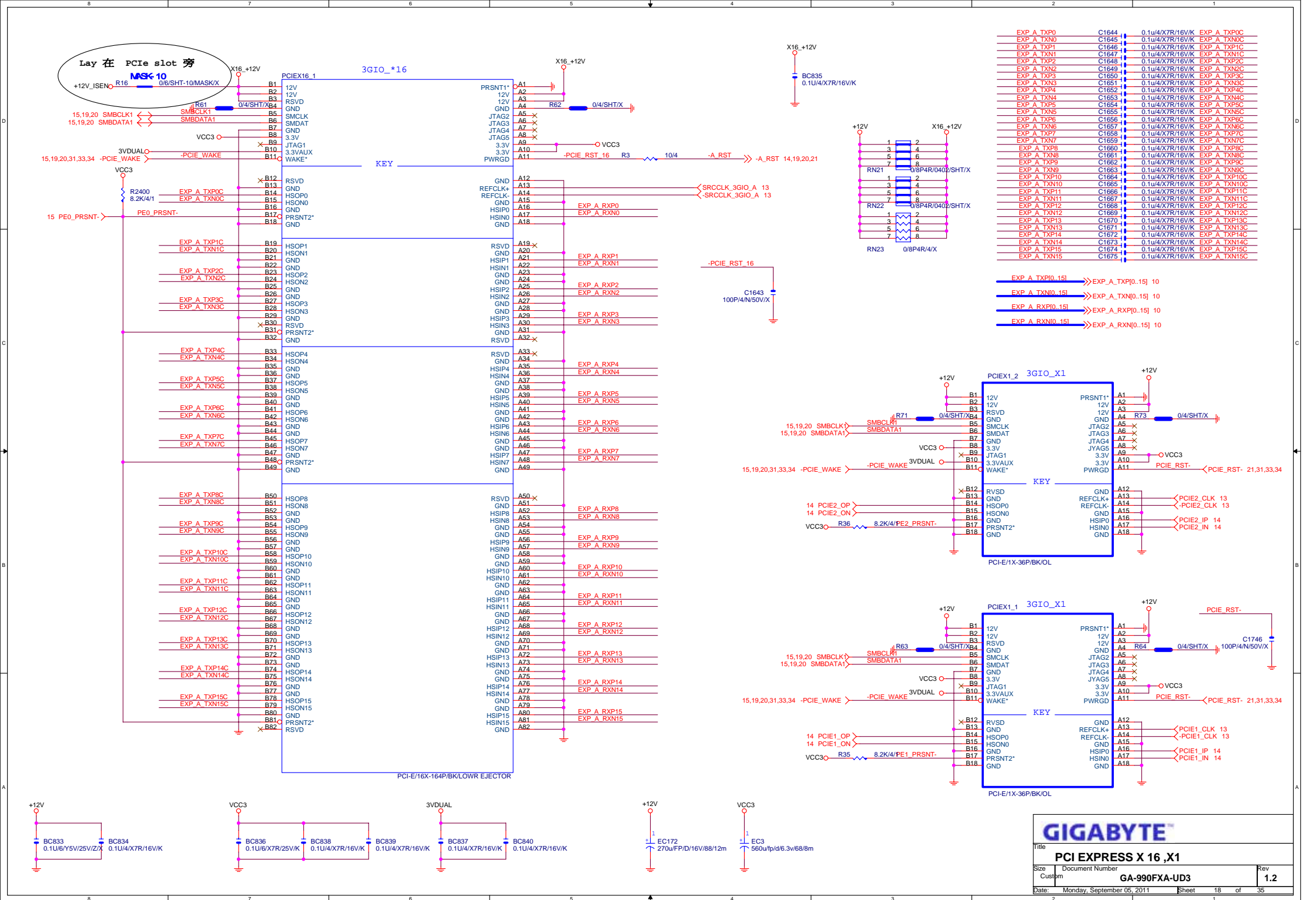
GIGABYTE

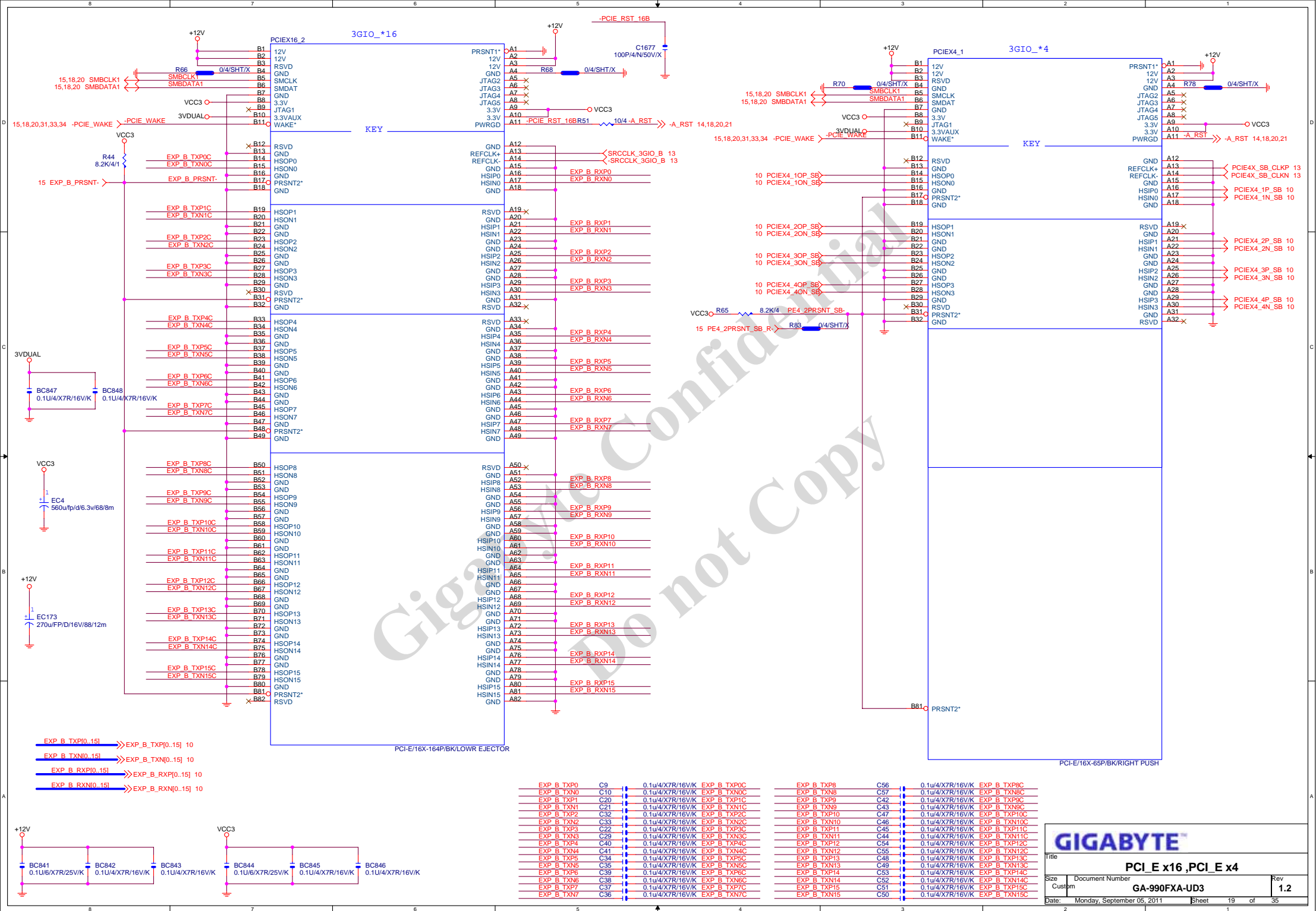
Title			ATI SB950 SATA/IDE/HWM/SPI
Size	Document Number	Rev	1.2
Custom	GA-990FXA-UD3		
Date:	Monday, September 05, 2011	Sheet	16 of 35



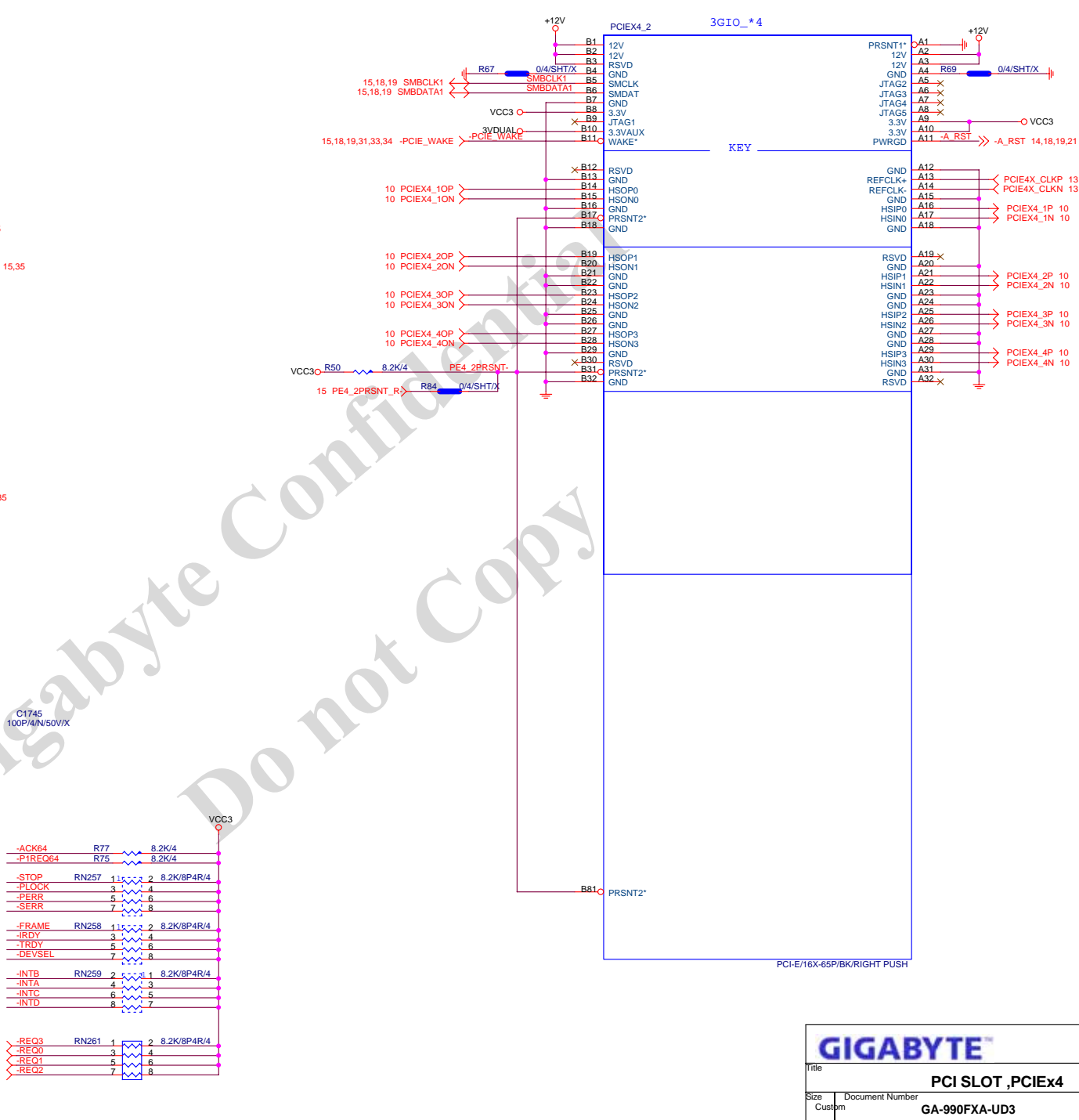
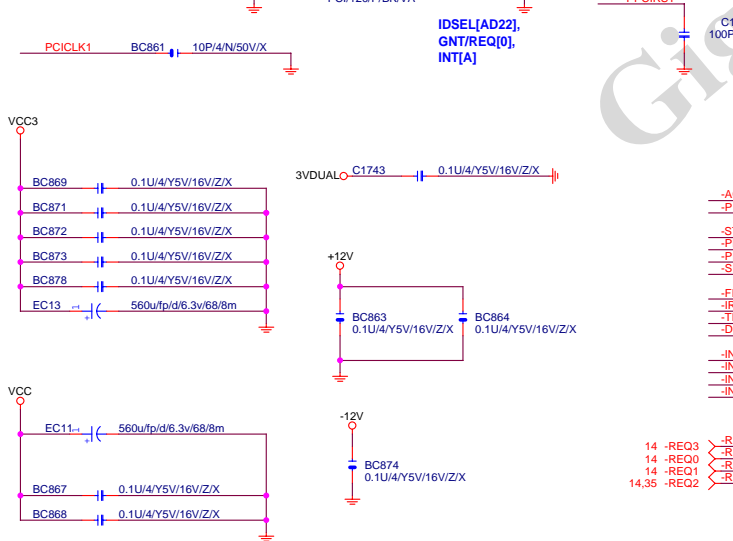
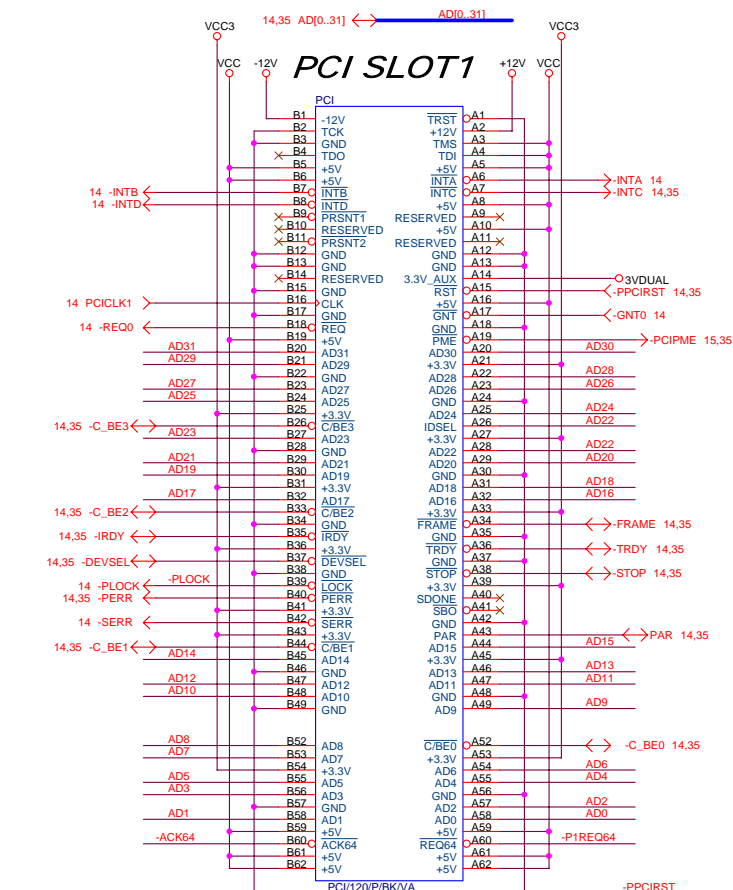
PLACE ALL THE DECOUPLING CAPS ON THIS SHEET CLOSE TO SB AS POSSIBLE.

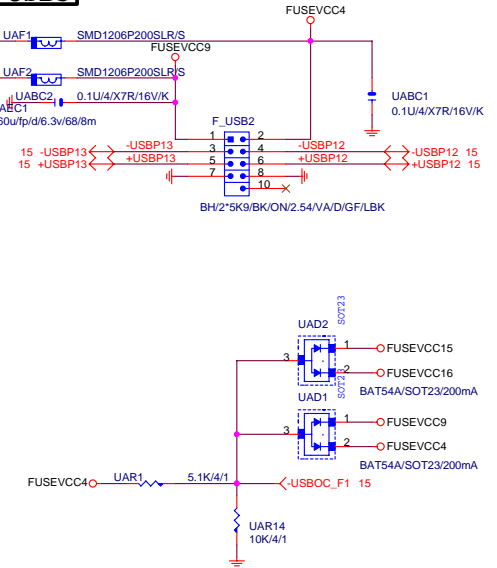
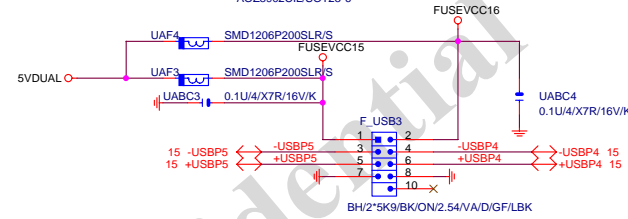
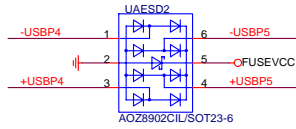
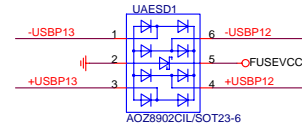
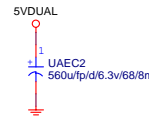
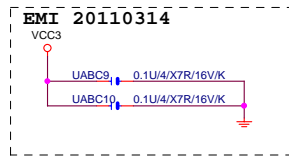




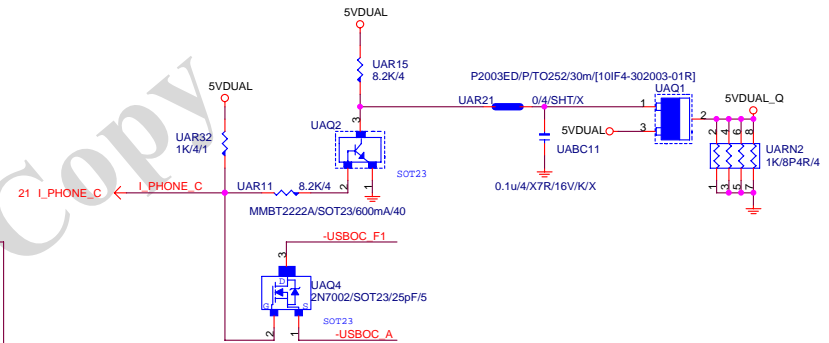
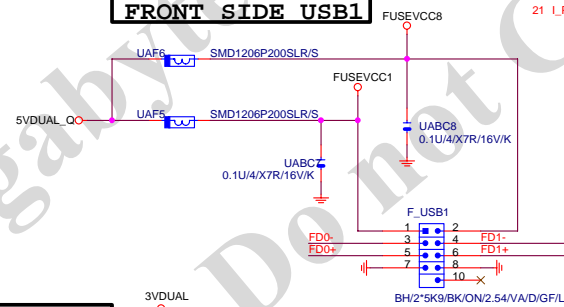


PCI SLOT1



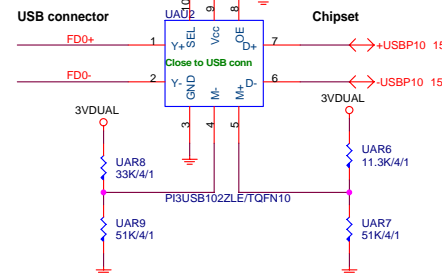


FRONT SIDE USB1

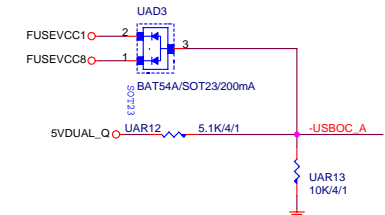
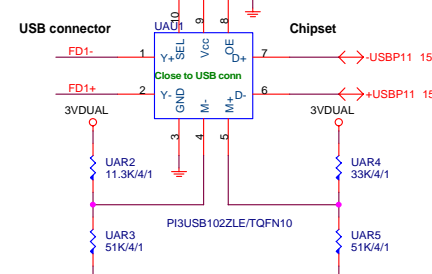


I_Phone charger circuit

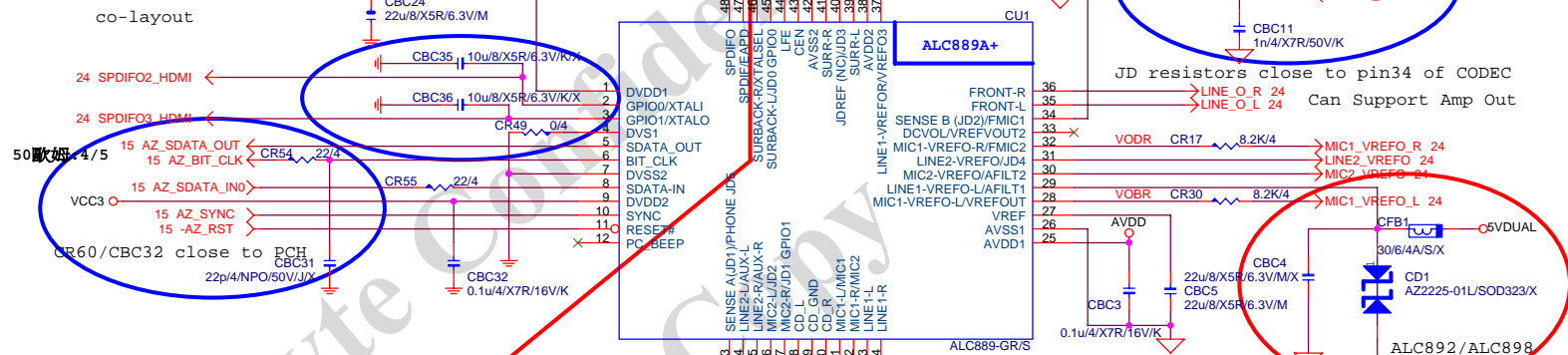
21 CHARGE_SEL0
DEFAULT H, STABBY POWER



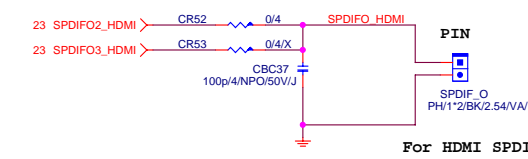
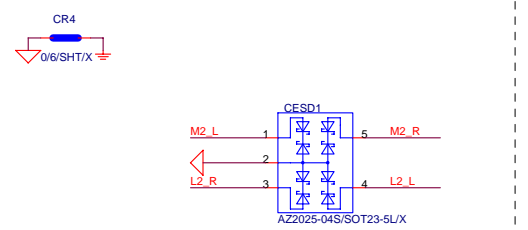
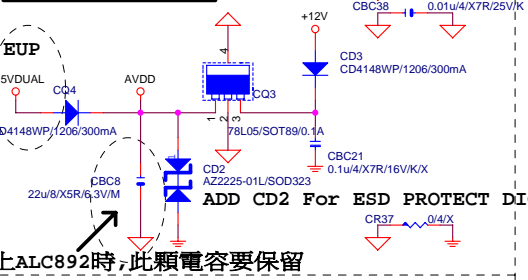
21 CHARGE_SEL1
DEFAULT H, STABBY POWER



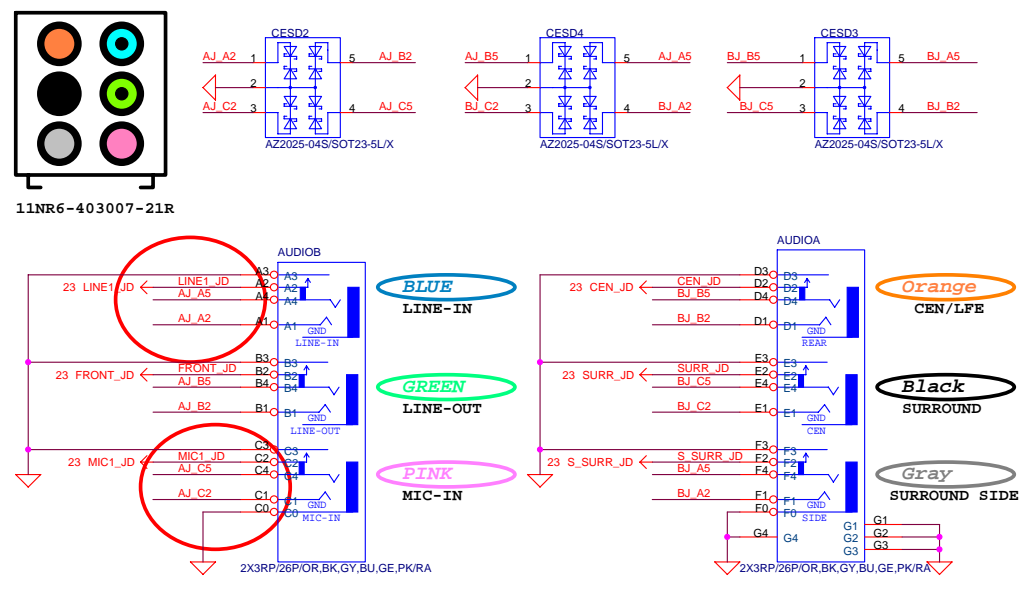
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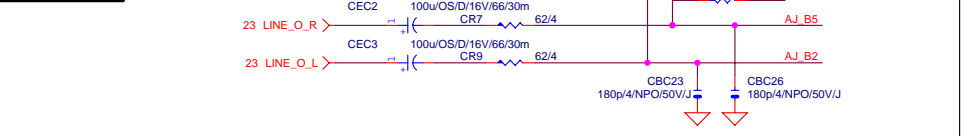
CODEC POWER/EMI PAD



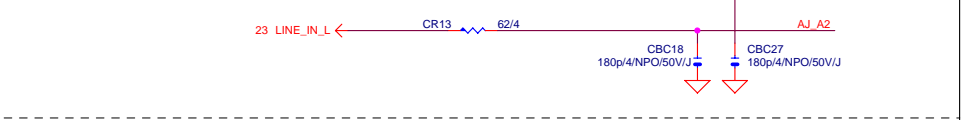
AZALIA JACK
BTX AZALIA CONNECTOR



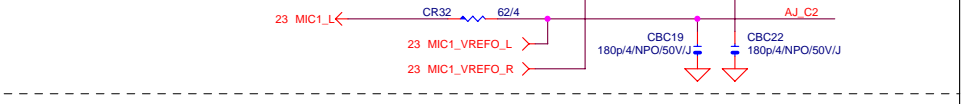
LINE-OUT



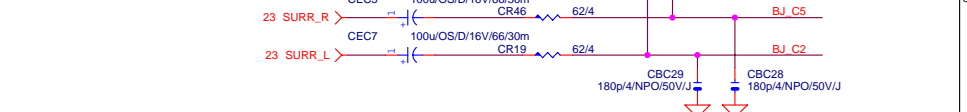
LINE-IN



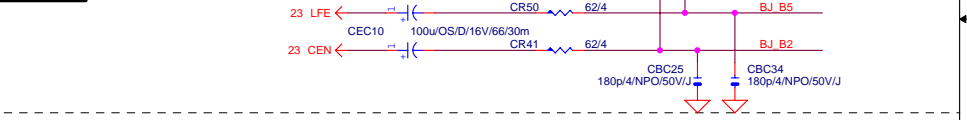
MIC-IN



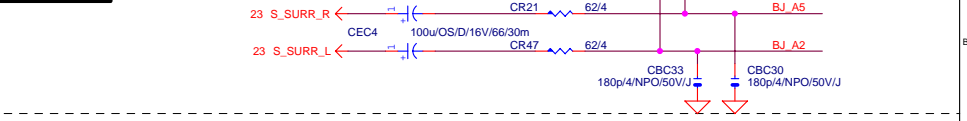
SURROUND



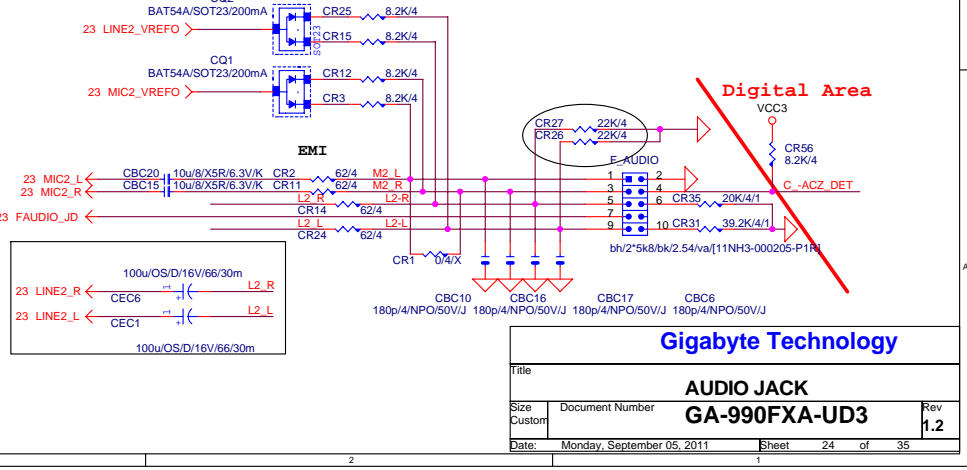
CEN/LFE



SURR BACK



AZALIA FRONT PANEL



Gigabyte Technology			
Title			
AUDIO JACK			
Size			
Document Number			
GA-990FXA-UD3			
Date:			
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Hardware Monitor circuits

21 VREF << R203 10K/4/1

21 TMPIN1 << R206 8.2K/4/X

C113 1U/6/X7R/16V/K

C114 0.1u/4/X7R/16V/K

RS1 10K/1/4/S

SYSTEM Thermister

SYSTEM FAN

21 FANPWM_2 << FANPWM_2

VCC

12V

R2215 1K/4/1 R2219

22K/4

BC787 2.2U/6/X5R/6.3V/K

LM358DR/S08

R2212 8.2K/4/1

Q299 P2003ED/P/TO252/30m [10IF4-302003-01R]

100u/OS/D/16V/66/30m

EC15

BC788 0.1U/6/Y5V/25V/Z/X

SYS_FAN1 FAN/1*4/BK/A3/PA66

VCC

R2750 +12V 8.2K/4/1

R2221 3.3K/4/1

R2222 15K/4/1

FANIO_2 21

R2218 6.2K/4/1

C1303 3.3N/4/X7R/50V/K

COMA

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1

RA2

RA3

DY1

DA1

DA2

DA3

RY5

2

3

4

5

6

7

8

9

11 GND

10 -12V

OABC1 0.1u/4/X7R/16V/K/X

GD75232/TSSOP20

5V

12V

OABC3 0.1u/4/X7R/16V/K/X

OABC2 0.1u/4/X7R/16V/K/X

COM RI

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1

RA2

RA3

DY1

DA1

DA2

DA3

RY5

2

3

4

5

6

7

8

9

11 GND

10 -12V

OABC1 0.1u/4/X7R/16V/K/X

GD75232/TSSOP20

5V

12V

OABC3 0.1u/4/X7R/16V/K/X

OABC2 0.1u/4/X7R/16V/K/X

POWER FAN

12V

R404 3.3K/4/1

12V

R412 15K/4/1

FANIO_4 21

R418 6.2K/4/1

C193 3.3N/4/X7R/50V/K

PWR_FAN FAN/1*3/BK/A3/PA66

SYSTEM FAN2

12V

R402 3.3K/4/1

12V

R410 15K/4/1

FANIO_3 21

R415 6.2K/4/1

C191 3.3N/4/X7R/50V/K

SYS_FAN2 FAN/1*3/BK/A3/PA66

CPU FAN

12V

BC105 0.1U/4/X7R/16V/K

R2224 8.2K/4/1

Q299 P2003ED/P/TO252/30m [10IF4-302003-01R]

100u/OS/D/16V/66/30m

EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN/1*4/BK/A3/PA66

VCC

R2234 3.3K/4/1

R2235 15K/4/1

FANIO_1 21

R2231 6.2K/4/1

C1304 3.3N/4/X7R/50V/K

R342 100/4/1

FANPWM3 21

COM RI

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1

RA2

RA3

DY1

DA1

DA2

DA3

RY5

2

3

4

5

6

7

8

9

11 GND

10 -12V

OABC1 0.1u/4/X7R/16V/K/X

GD75232/TSSOP20

5V

12V

OABC3 0.1u/4/X7R/16V/K/X

OABC2 0.1u/4/X7R/16V/K/X

GIGABYTE

Title

FAN/HWMO/COM

Size

Document Number

GA-990FXA-UD3

Rev

1.2

Date

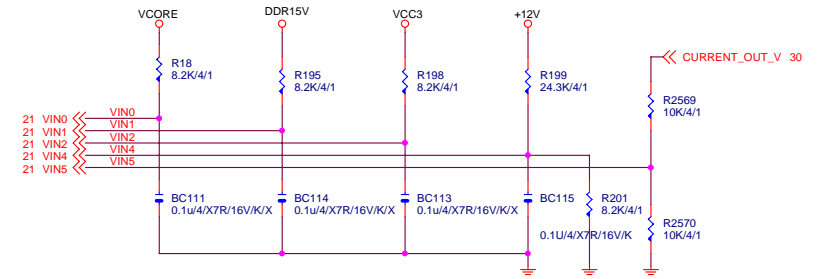
Monday, September 05, 2011

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35



Hardware Monitor circuits

21 VREF << R203 10K/4/1

21 TMPIN1 << R206 8.2K/4/X

C113 1U/6/X7R/16V/K

C114 0.1u/4/X7R/16V/K

RS1 10K/1/4/S

SYSTEM Thermister

SYSTEM FAN

21 FANPWM_2 << FANPWM_2

22K/4 BC787 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m (10IF4-302003-01R)

100u/OS/D/16V/66/30m EC15

BC788 0.1U/6/Y5V/25V/Z/X

SYS_FAN1 FAN1*4/BK/A3/PA66

22218 6.2K/4/1 C1303 3.3N/4/X7R/50V/K

22212 8.2K/4/1

22215 1K/4/1 R2219

22220 5.1K/4/1

22221 3.3K/4/1

22222 15K/4/1

22224 8.2K/4/1

22229 1K/4/1

22232 22K/4

22233 5.1K/4/1

22234 3.3K/4/1

22235 15K/4/1

22236 8.2K/4/1

22237 1K/4/1

22238 22K/4

22239 5.1K/4/1

22240 3.3K/4/1

22241 15K/4/1

22242 8.2K/4/1

22243 1K/4/1

22244 22K/4

22245 5.1K/4/1

22246 3.3K/4/1

22247 15K/4/1

22248 8.2K/4/1

22249 1K/4/1

22250 22K/4

22251 5.1K/4/1

22252 3.3K/4/1

22253 15K/4/1

22254 8.2K/4/1

22255 1K/4/1

22256 22K/4

22257 5.1K/4/1

22258 3.3K/4/1

22259 15K/4/1

22260 8.2K/4/1

22261 1K/4/1

22262 22K/4

22263 5.1K/4/1

22264 3.3K/4/1

22265 15K/4/1

22266 8.2K/4/1

22267 1K/4/1

22268 22K/4

22269 5.1K/4/1

22270 3.3K/4/1

22271 15K/4/1

22272 8.2K/4/1

22273 1K/4/1

22274 22K/4

22275 5.1K/4/1

22276 3.3K/4/1

22277 15K/4/1

22278 8.2K/4/1

22279 1K/4/1

22280 22K/4

22281 5.1K/4/1

22282 3.3K/4/1

22283 15K/4/1

22284 8.2K/4/1

22285 1K/4/1

22286 22K/4

22287 5.1K/4/1

22288 3.3K/4/1

22289 15K/4/1

22290 8.2K/4/1

22291 1K/4/1

22292 22K/4

22293 5.1K/4/1

22294 3.3K/4/1

22295 15K/4/1

22296 8.2K/4/1

22297 1K/4/1

22298 22K/4

22299 5.1K/4/1

22300 3.3K/4/1

22301 15K/4/1

22302 8.2K/4/1

22303 1K/4/1

22304 22K/4

22305 5.1K/4/1

22306 3.3K/4/1

22307 15K/4/1

22308 8.2K/4/1

22309 1K/4/1

22310 22K/4

22311 5.1K/4/1

22312 3.3K/4/1

22313 15K/4/1

22314 8.2K/4/1

22315 1K/4/1

22316 22K/4

22317 5.1K/4/1

22318 3.3K/4/1

22319 15K/4/1

22320 8.2K/4/1

22321 1K/4/1

22322 22K/4

22323 5.1K/4/1

22324 3.3K/4/1

22325 15K/4/1

22326 8.2K/4/1

22327 1K/4/1

22328 22K/4

22329 5.1K/4/1

22330 3.3K/4/1

22331 15K/4/1

22332 8.2K/4/1

22333 1K/4/1

22334 22K/4

22335 5.1K/4/1

22336 3.3K/4/1

22337 15K/4/1

22338 8.2K/4/1

22339 1K/4/1

22340 22K/4

22341 5.1K/4/1

22342 3.3K/4/1

22343 15K/4/1

22344 8.2K/4/1

22345 1K/4/1

22346 22K/4

22347 5.1K/4/1

22348 3.3K/4/1

22349 15K/4/1

22350 8.2K/4/1

22351 1K/4/1

22352 22K/4

22353 5.1K/4/1

22354 3.3K/4/1

22355 15K/4/1

22356 8.2K/4/1

22357 1K/4/1

22358 22K/4

22359 5.1K/4/1

22360 3.3K/4/1

22361 15K/4/1

22362 8.2K/4/1

22363 1K/4/1

22364 22K/4

22365 5.1K/4/1

22366 3.3K/4/1

22367 15K/4/1

22368 8.2K/4/1

22369 1K/4/1

22370 22K/4

22371 5.1K/4/1

22372 3.3K/4/1

22373 15K/4/1

22374 8.2K/4/1

22375 1K/4/1

22376 22K/4

22377 5.1K/4/1

22378 3.3K/4/1

22379 15K/4/1

22380 8.2K/4/1

22381 1K/4/1

22382 22K/4

22383 5.1K/4/1

22384 3.3K/4/1

22385 15K/4/1

22386 8.2K/4/1

22387 1K/4/1

22388 22K/4

22389 5.1K/4/1

22390 3.3K/4/1

22391 15K/4/1

22392 8.2K/4/1

22393 1K/4/1

22394 22K/4

22395 5.1K/4/1

22396 3.3K/4/1

22397 15K/4/1

22398 8.2K/4/1

22399 1K/4/1

22400 22K/4

22401 5.1K/4/1

22402 3.3K/4/1

22403 15K/4/1

22404 8.2K/4/1

22405 1K/4/1

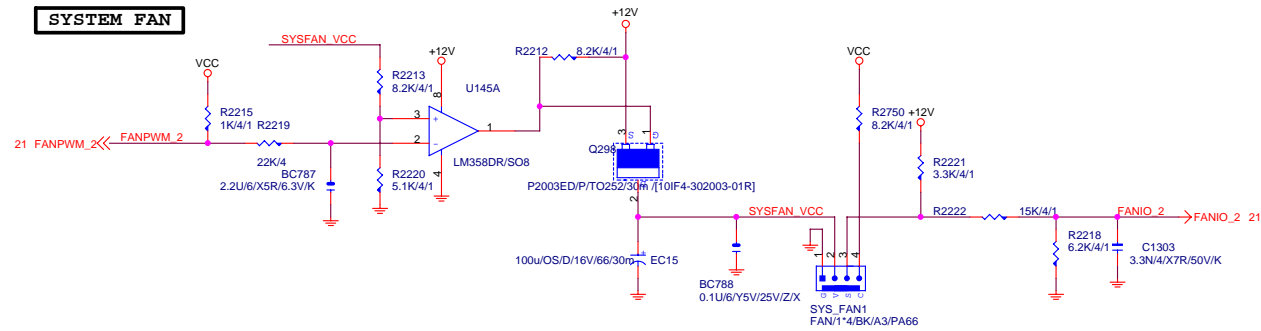
22406 22K/4

22407 5.1K/4/1

22408 3.3K/4/1

22409 15K/4/1

22410 8.2K/4



Hardware Monitor circuits

21 VREF << R203 10K/4/1

21 TMPIN1 << R206 8.2K/4/X

C113 1U/6/X7R/16V/K

C114 0.1u/4/X7R/16V/K

RS1 10K/1/4/S

SYSTEM Thermister

SYSTEM FAN

21 FANPWM_2 << FANPWM_2

22K/4 BC787 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m (10IF4-302003-01R)

100u/OS/D/16V/66/30m EC15

BC788 0.1U/6/Y5V/25V/Z/X

SYS_FAN1 FAN/1*4/BK/A3/PA66

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

COMA

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1 2

RA2 3

RA3 4

DY1 5

DY2 6

RA4 7

DA3 8

RY5 9

NR1A- << NCTSA- << NDSRA- << NRTSA- << NDTRA- << NSINA- << NSOUTA- << NDCDA- <<

GD75232/TSSOP20

11 GND

10 -12V

5V

12V

1

20

12V

12V

0.1u/4/X7R/16V/K/X OABC1

0.1u/4/X7R/16V/K/X OABC3

0.1u/4/X7R/16V/K/X OABC2

COM RI

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1 2

RA2 3

RA3 4

DY1 5

DY2 6

RA4 7

DA3 8

RY5 9

NR1A- << NCTSA- << NDSRA- << NRTSA- << NDTRA- << NSINA- << NSOUTA- << NDCDA- <<

CD4148WP/1206/300mA

75K/4/1

MMBT2222A/SOT23/600mA/40 SOT23

8.2K/4 OAR2

POWER FAN

21 FANPWM_1 << FANPWM_1

22K/4 BC789 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m (10IF4-302003-01R)

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN/1*4/BK/A3/PA66

22K/4/1 R2229

8.2K/4/1 R2230

12V

22K/4/1 R2232

5.1K/4/1 R2233

3.3K/4/1 R2234

3.3N/4/X7R/50V/K C1304

21 FANPWM_1 << FANPWM_1

SYSTEM FAN2

21 FANPWM_3 << FANPWM_3

22K/4 BC790 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m (10IF4-302003-01R)

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN/1*4/BK/A3/PA66

22K/4/1 R2224

8.2K/4/1 R2225

12V

22K/4/1 R2226

5.1K/4/1 R2227

3.3K/4/1 R2228

3.3N/4/X7R/50V/K C1304

21 FANPWM_3 << FANPWM_3

CPU FAN

21 FANPWM_1 << FANPWM_1

22K/4 BC789 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m (10IF4-302003-01R)

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN/1*4/BK/A3/PA66

22K/4/1 R2229

8.2K/4/1 R2230

12V

22K/4/1 R2232

5.1K/4/1 R2233

3.3K/4/1 R2234

3.3N/4/X7R/50V/K C1304

21 FANPWM_1 << FANPWM_1

COM RI

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1 2

RA2 3

RA3 4

DY1 5

DY2 6

RA4 7

DA3 8

RY5 9

NR1A- << NCTSA- << NDSRA- << NRTSA- << NDTRA- << NSINA- << NSOUTA- << NDCDA- <<

CD4148WP/1206/300mA

75K/4/1

MMBT2222A/SOT23/600mA/40 SOT23

8.2K/4 OAR2

GIGABYTE

Title FAN/HWMO/COM

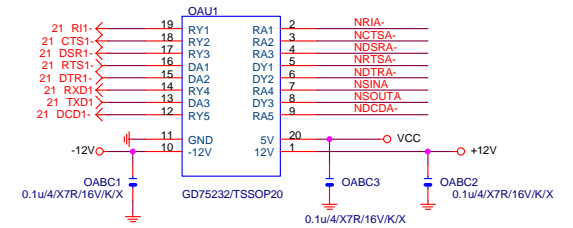
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Hardware Monitor circuits

21 VREF << R203 10K/4/1

21 TMPIN1 << R206 8.2K/4/X RS1 10K/1/4/S

C113 1U/6/X7R/16V/K C114 0.1u/4/X7R/16V/K

SYSTEM Thermister

SYSTEM FAN

21 FANPWM_2 << FANPWM_2

22K/4 BC787 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m [10IF4-302003-01R]

100u/OS/D/16V/66/30m EC15

BC788 0.1U/6/Y5V/25V/Z/X

SYS_FAN1 FAN1*4/BK/A3/PA66

COMA

21 RI1- << 19 RY1 RA1 2 NR1A- << 3

21 CTS1- << 18 RY2 RA2 4 NCTSA- << 5

21 DSR1- << 17 RY3 RA3 5 NDSRA- << 6

21 RTS1- << 16 DA1 DY1 6 NDTRA- << 7

21 DTR1- << 15 DA2 DY2 7 NSINA- << 8

21 RXD1- << 14 RY4 RA4 8 NSOUTA- << 9

21 TXD1- << 13 DA3 DY3 9 NDCDA- << 10

21 DCD1- << 12 RY5 RA5 10

GD75232/TSSOP20

OABC1 0.1u/4/X7R/16V/K/X OABC3 0.1u/4/X7R/16V/K/X OABC2 0.1u/4/X7R/16V/K/X

COM RI

MMBT2222A/SOT23/600mA/40 SOT23

CD4148WP/1206/300mA

POWER FAN

21 FANPWM_1 << FANPWM_1

22K/4 BC789 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m [10IF4-302003-01R]

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN1*4/BK/A3/PA66

SYSTEM FAN2

21 FANPWM_3 << FANPWM_3

22K/4 BC790 0.1U/6/Y5V/25V/Z/X

LM358DR/S08

Q299 P2003ED/P/TO252/30m [10IF4-302003-01R]

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN1*4/BK/A3/PA66

CPU FAN

21 FANPWM_1 << FANPWM_1

22K/4 BC789 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m [10IF4-302003-01R]

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN1*4/BK/A3/PA66

COM RI

MMBT2222A/SOT23/600mA/40 SOT23

CD4148WP/1206/300mA

GIGABYTE

Title FAN/HWMO/COM

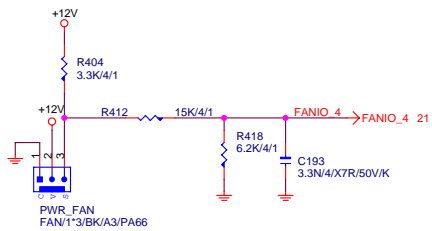
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Document Number GA-990FXA-UD3

Date: Monday, September 05, 2011

Rev 1.2

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Hardware Monitor circuits

21 VREF << R203 10K/4/1

21 TMPIN1 << R206 8.2K/4/X

C113 1U/6/X7R/16V/K

C114 0.1u/4/X7R/16V/K

RS1 10K/1/4/S

SYSTEM Thermister

SYSTEM FAN

21 FANPWM_2 << FANPWM_2

22K/4 BC787 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m (10IF4-302003-01R)

100u/OS/D/16V/66/30m EC15

BC788 0.1U/6/Y5V/25V/Z/X

SYS_FAN1 FAN1*4/BK/A3/PA66

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/4/1 R2222

15K/4/1 R2218

6.2K/4/1 R2221

3.3K/4/1 R2222

3.3N/4/X7R/50V/K C1303

21 FANPWM_2 << FANPWM_2

22K/4/1 R2212

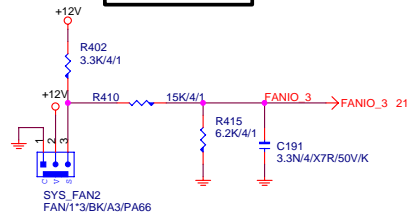
8.2K/4/1 R2213

12V

22K/4/1 R2220

5.1K/4/1 R2221

3.3K/



Hardware Monitor circuits

21 VREF << R203 10K/4/1

21 TMPIN1 << R206 8.2K/4/X

C113 1U/6/X7R/16V/K

C114 0.1u/4/X7R/16V/K

RS1 10K/1/4/S

SYSTEM Thermister

SYSTEM FAN

21 FANPWM_2 << FANPWM_2

22K/4 BC787 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m [10IF4-302003-01R]

100u/OS/D/16V/66/30m EC15

BC788 0.1U/6/Y5V/25V/Z/X

SYS_FAN1 FAN1*4/BK/A3/PA66

COMA

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1 2

RA2 3

RA3 4

DY1 5

DY2 6

RA4 7

DA3 8

RY5 9

NR1A- << NCTSA- << NDSRA- << NRTSA- << NDTRA- << NSINA- << NSOUTA- << NDCDA- <<

GD75232/TSSOP20

OABC1 0.1u/4/X7R/16V/K/X

OABC3 0.1u/4/X7R/16V/K/X

OABC2 0.1u/4/X7R/16V/K/X

COM RI

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1 2

RA2 3

RA3 4

DY1 5

DY2 6

RA4 7

DA3 8

RY5 9

NR1A- << NCTSA- << NDSRA- << NRTSA- << NDTRA- << NSINA- << NSOUTA- << NDCDA- <<

MMBT2222A/SOT23/600mA/40

POWER FAN

21 FANPWM_1 << FANPWM_1

22K/4 BC789 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m [10IF4-302003-01R]

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN1*4/BK/A3/PA66

SYSTEM FAN2

21 FANPWM_3 << FANPWM_3

22K/4 BC790 0.1U/6/Y5V/25V/Z/X

LM358DR/S08

Q299 P2003ED/P/TO252/30m [10IF4-302003-01R]

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN1*4/BK/A3/PA66

CPU FAN

21 FANPWM_1 << FANPWM_1

22K/4 BC789 2.2U/6/X5R/6.3V/K

LM358DR/S08

Q299 P2003ED/P/TO252/30m [10IF4-302003-01R]

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN1*4/BK/A3/PA66

COM RI

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1 2

RA2 3

RA3 4

DY1 5

DY2 6

RA4 7

DA3 8

RY5 9

NR1A- << NCTSA- << NDSRA- << NRTSA- << NDTRA- << NSINA- << NSOUTA- << NDCDA- <<

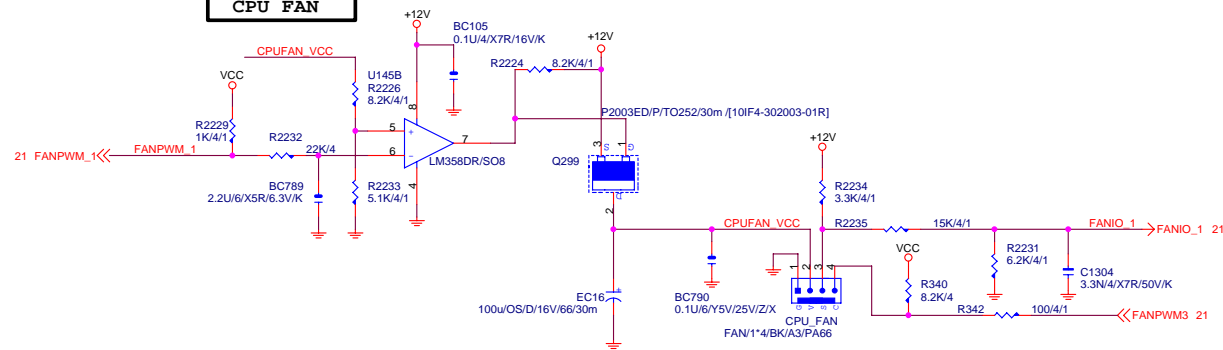
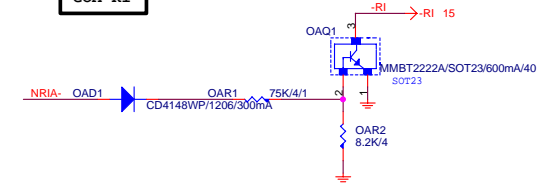
MMBT2222A/SOT23/600mA/40

GIGABYTE

Title FAN/HWMO/COM

Size Document Number GA-990FXA-UD3

Date Monday, September 05, 2011 Sheet 25 of 35

[illegible]

Hardware Monitor circuits

21 VREF << R203 10K/4/1

21 TMPIN1 << R206 8.2K/4/X

C113 1U/6/X7R/16V/K

C114 0.1u/4/X7R/16V/K

R206 8.2K/4/X

RS1 10K/1/4/S

SYSTEM Thermister

SYSTEM FAN

21 FANPWM_2 << FANPWM_2

VCC

22215 1K/4/1 R2219

22K/4 BC787 2.2U/6/X5R/6.3V/K

22220 5.1K/4/1

LM358DR/S08

22212 8.2K/4/1

22221 3.3K/4/1

22222 15K/4/1

22218 6.2K/4/1

C1303 3.3N/4/X7R/50V/K

100u/OS/D/16V/66/30m EC15

BC788 0.1U/6/Y5V/25V/Z/X

SYS_FAN1 FAN1*4/BK/A3/PA66

VCC

R2750 +12V 8.2K/4/1

22218 6.2K/4/1

22222 15K/4/1

22218 6.2K/4/1

C1303 3.3N/4/X7R/50V/K

100u/OS/D/16V/66/30m EC15

BC788 0.1U/6/Y5V/25V/Z/X

SYS_FAN1 FAN1*4/BK/A3/PA66

COMA

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1

RA2

RA3

DY1

DY2

RA4

DA3

DY3

RA5

2

3

4

5

6

7

8

9

11 GND

10 -12V

20 5V

12V

1

VCC

+12V

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

OABC1

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

GD75232/TSSOP20

OABC3

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

OABC2

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

COM RI

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1

RA2

RA3

DY1

DY2

RA4

DA3

DY3

RA5

2

3

4

5

6

7

8

9

11 GND

10 -12V

20 5V

12V

1

VCC

+12V

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

OABC1

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

GD75232/TSSOP20

OABC3

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

OABC2

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

POWER FAN

21 FANPWM_1 << FANPWM_1

VCC

22229 1K/4/1 R2232

22K/4 BC789 2.2U/6/X5R/6.3V/K

22233 5.1K/4/1

LM358DR/S08

22224 8.2K/4/1

22235 3.3K/4/1

22234 15K/4/1

22231 6.2K/4/1

C1304 3.3N/4/X7R/50V/K

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN1*4/BK/A3/PA66

VCC

R2234 3.3K/4/1

22235 3.3K/4/1

22234 15K/4/1

22231 6.2K/4/1

C1304 3.3N/4/X7R/50V/K

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN1*4/BK/A3/PA66

SYSTEM FAN2

21 FANPWM_2 << FANPWM_2

VCC

22215 1K/4/1 R2219

22K/4 BC787 2.2U/6/X5R/6.3V/K

22220 5.1K/4/1

LM358DR/S08

22212 8.2K/4/1

22221 3.3K/4/1

22222 15K/4/1

22218 6.2K/4/1

C1303 3.3N/4/X7R/50V/K

100u/OS/D/16V/66/30m EC15

BC788 0.1U/6/Y5V/25V/Z/X

SYS_FAN1 FAN1*4/BK/A3/PA66

VCC

R2750 +12V 8.2K/4/1

22218 6.2K/4/1

22222 15K/4/1

22218 6.2K/4/1

C1303 3.3N/4/X7R/50V/K

100u/OS/D/16V/66/30m EC15

BC788 0.1U/6/Y5V/25V/Z/X

SYS_FAN1 FAN1*4/BK/A3/PA66

CPU FAN

21 FANPWM_1 << FANPWM_1

VCC

22229 1K/4/1 R2232

22K/4 BC789 2.2U/6/X5R/6.3V/K

22233 5.1K/4/1

LM358DR/S08

22224 8.2K/4/1

22235 3.3K/4/1

22234 15K/4/1

22231 6.2K/4/1

C1304 3.3N/4/X7R/50V/K

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN1*4/BK/A3/PA66

VCC

R2234 3.3K/4/1

22235 3.3K/4/1

22234 15K/4/1

22231 6.2K/4/1

C1304 3.3N/4/X7R/50V/K

100u/OS/D/16V/66/30m EC16

BC790 0.1U/6/Y5V/25V/Z/X

CPU_FAN FAN1*4/BK/A3/PA66

COM RI

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

21 DTR1- << 15 DA2

21 RXD1- << 14 RY4

21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1

RA2

RA3

DY1

DY2

RA4

DA3

DY3

RA5

2

3

4

5

6

7

8

9

11 GND

10 -12V

20 5V

12V

1

VCC

+12V

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

OABC1

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

GD75232/TSSOP20

OABC3

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

OABC2

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

COMA

21 RI1- << 19 RY1

21 CTS1- << 18 RY2

21 DSR1- << 17 RY3

21 RTS1- << 16 DA1

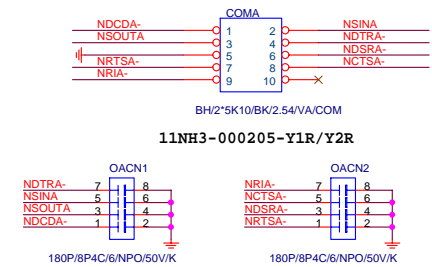
21 DTR1- << 15 DA2

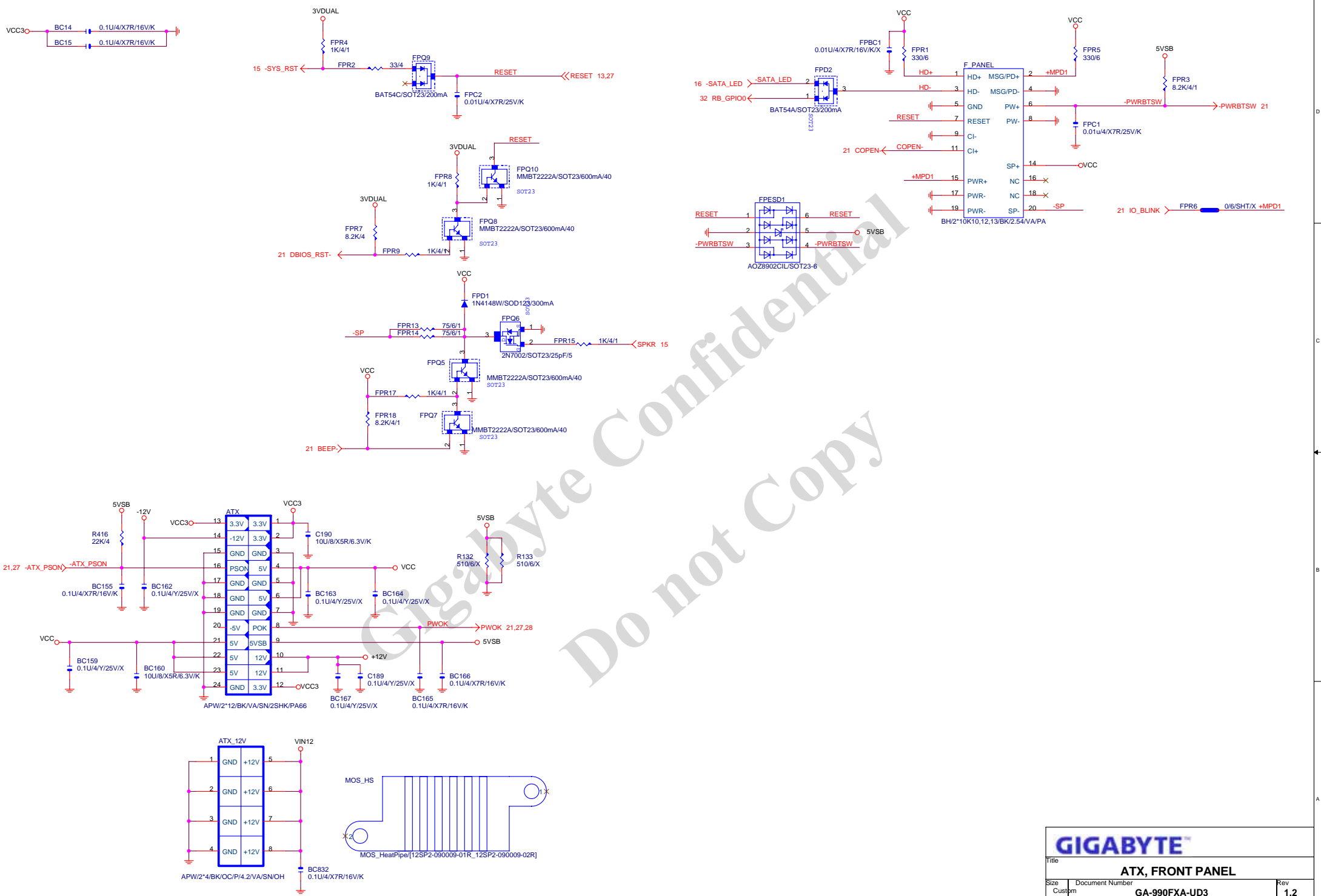
21 RXD1- << 14 RY4

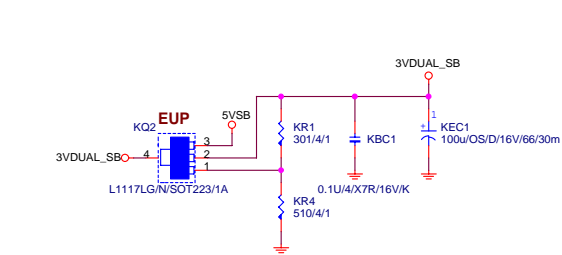
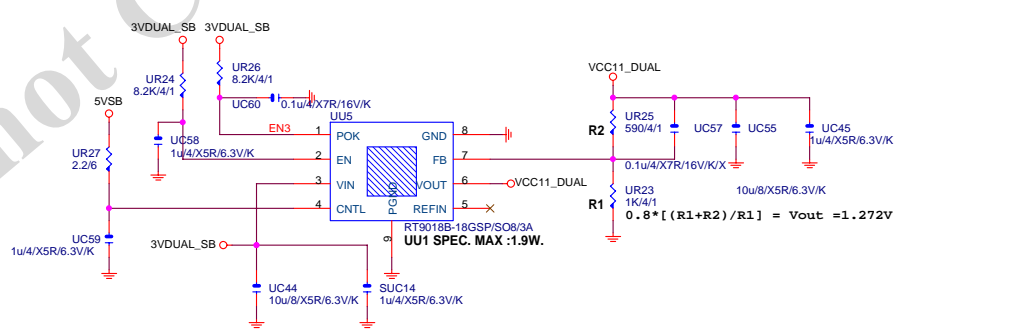
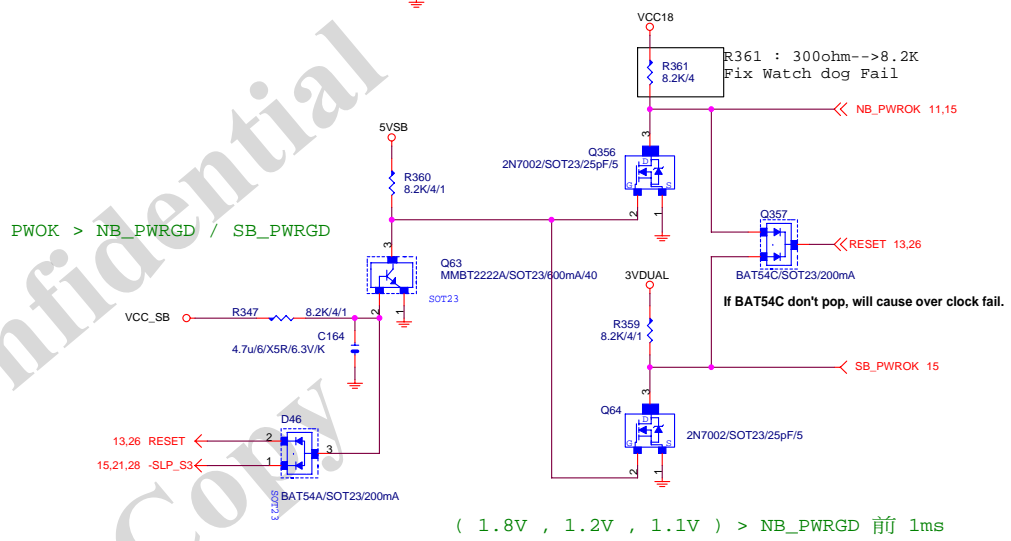
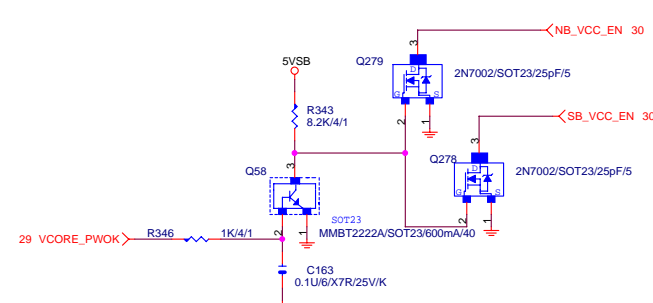
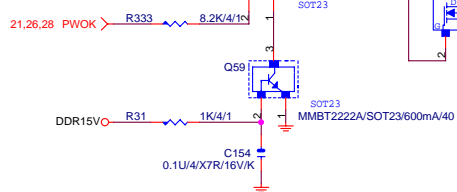
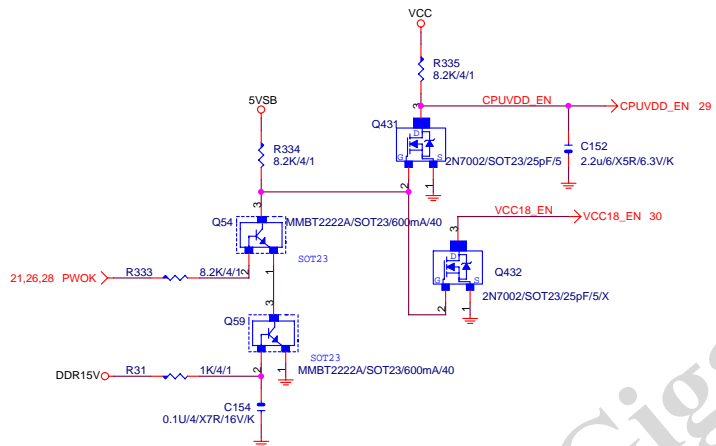
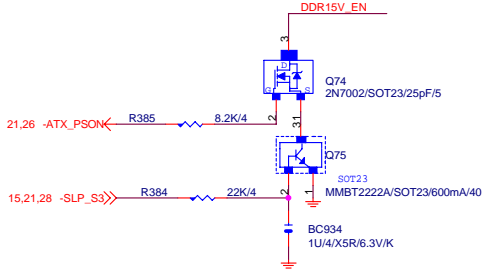
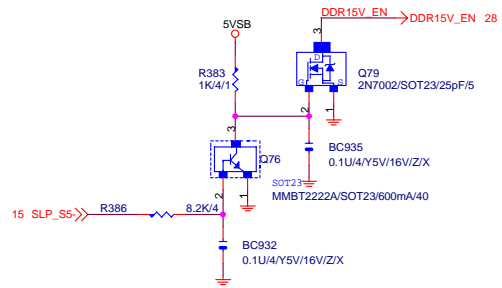
21 TXD1- << 13 DA3

21 DCD1- << 12 RY5

RA1







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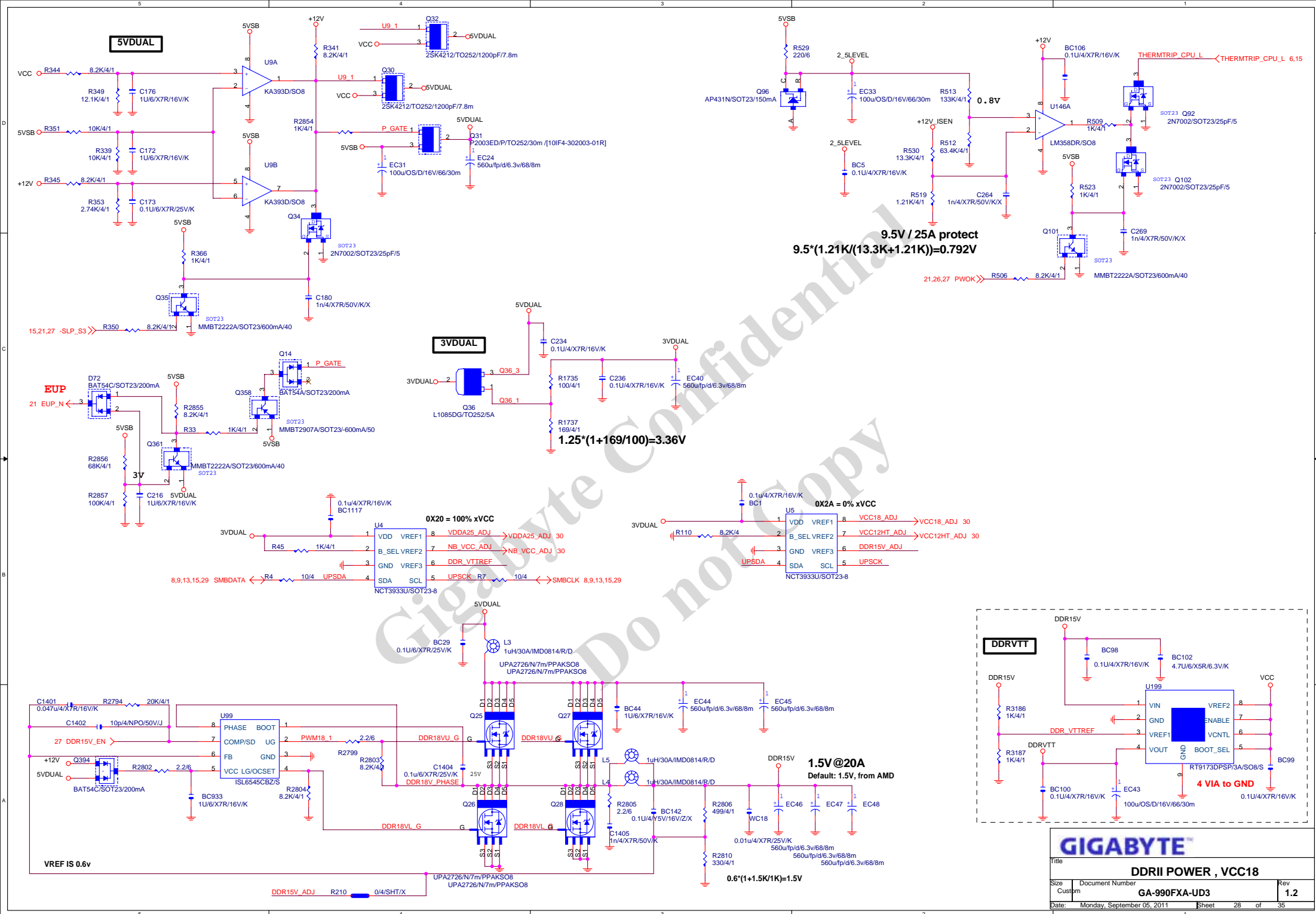
PWOK > NB_PWRGD / SB_PWRGD

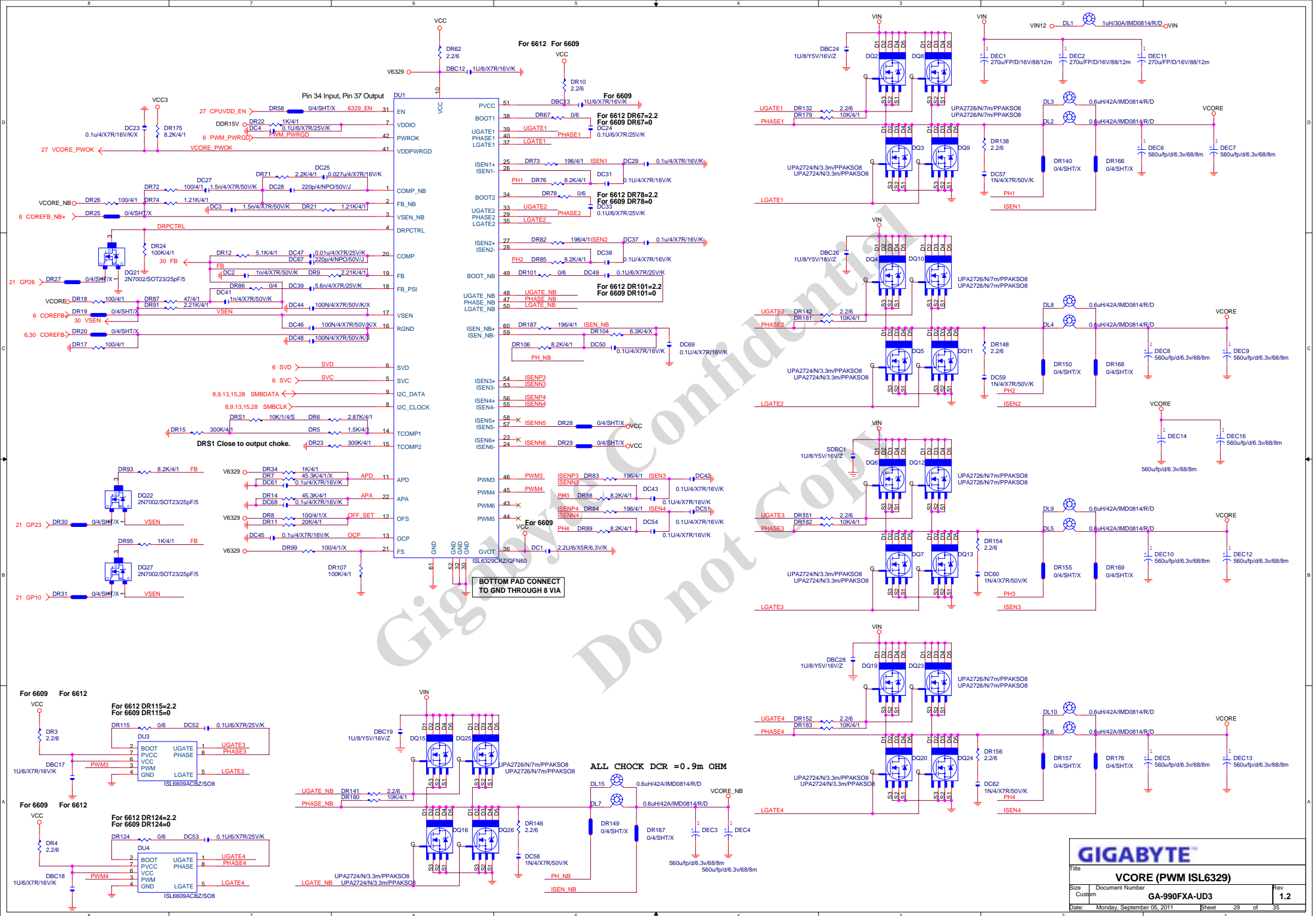
(1.8V , 1.2V , 1.1V) > NB_PWRGD 前 1ms

R361 : 300ohm-->8.2K
Fix Watch dog Fail

If BAT54C don't pop, will cause over clock fail.

GIGABYTE		
Title		
POWER SEQUENCE		
Size	Document Number	Rev
Custom	GA-990FXA-UD3	1.2
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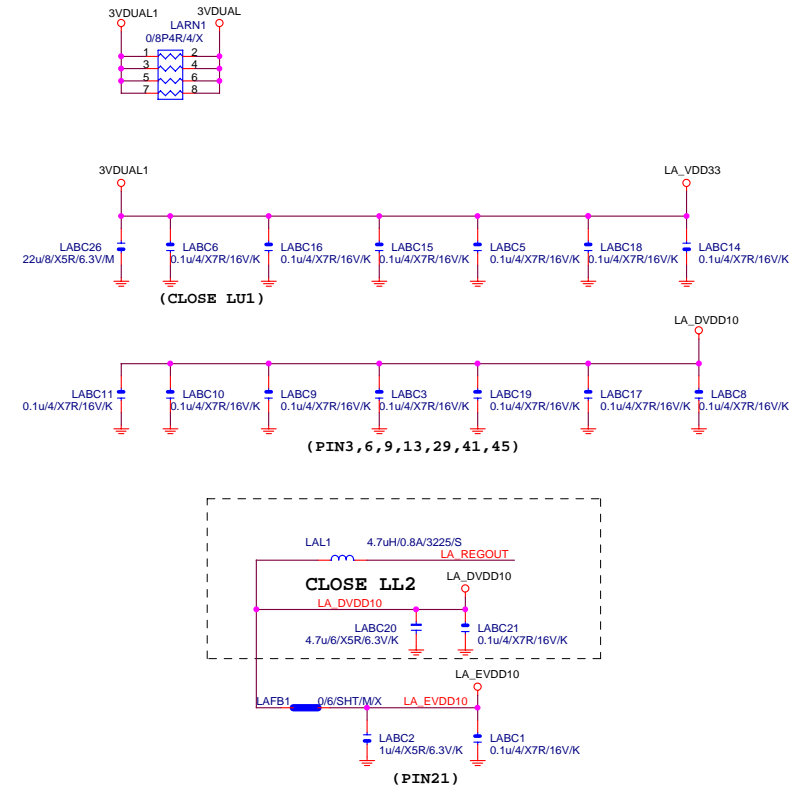
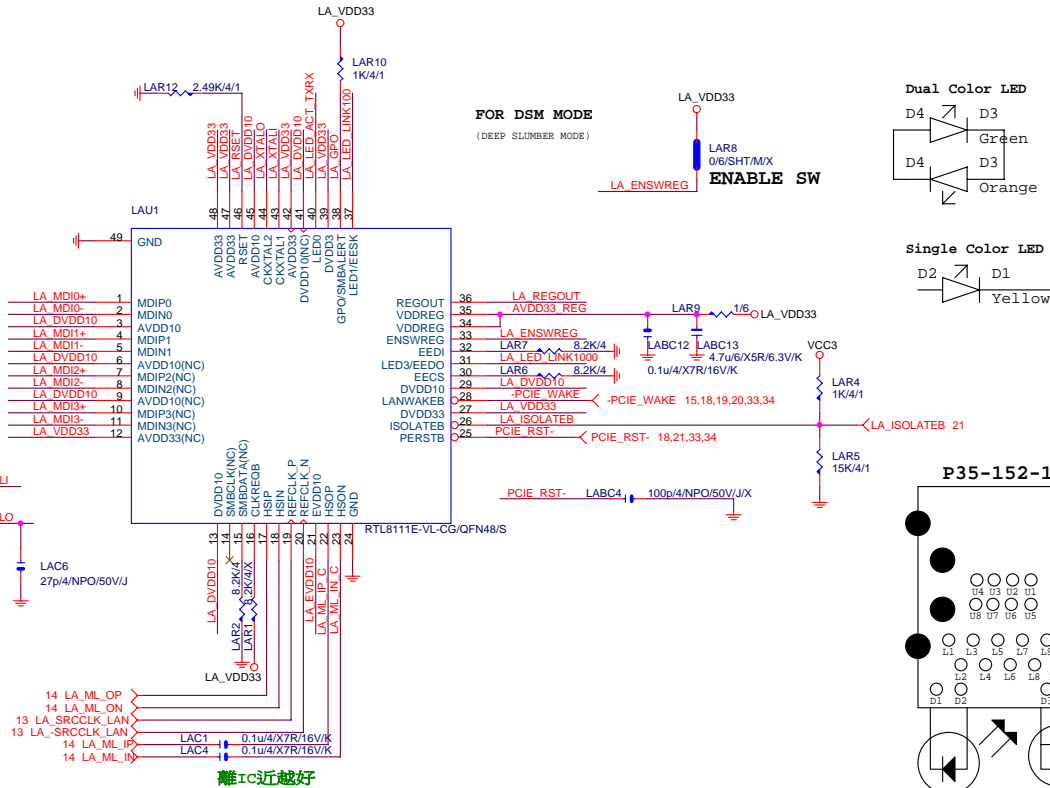




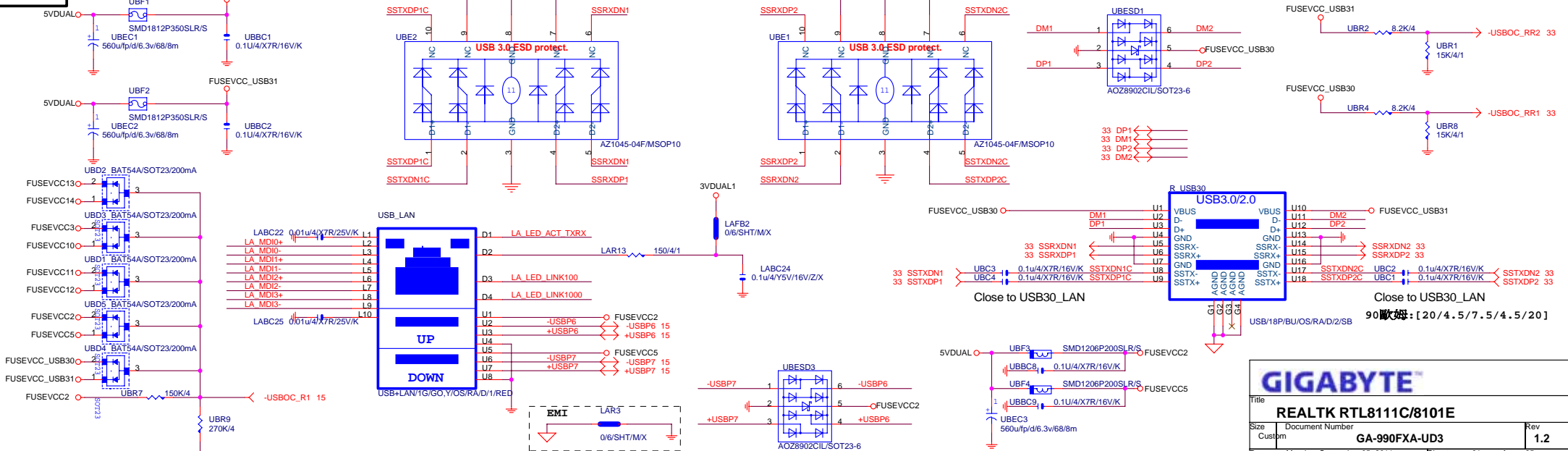
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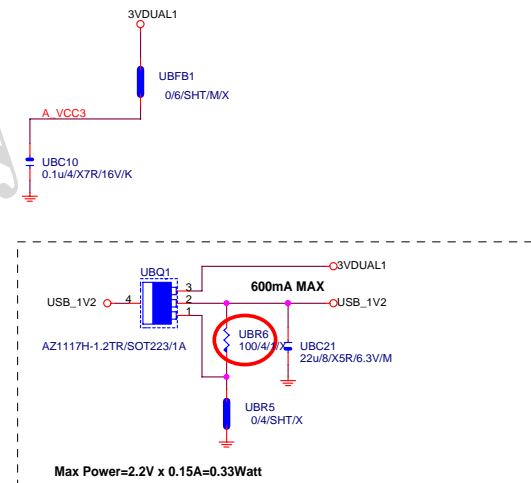
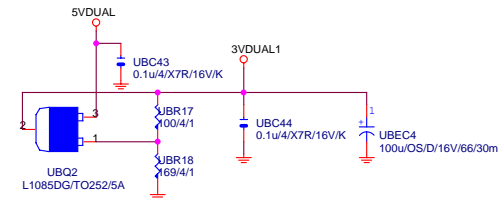
Power domain chart

	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V



USB_LAN





USB3.0 --> 5GHz
 BANDWIDTH=5GHz*(8b/10b)=4Gb/s=500MB/s

