

COMPAL CONFIDENTIAL

MODEL NAME : **HBT10**

COMPAL P/N : **DA600001K10**

PCB NO : **LA-2811**

Revision : **1.0**

Sakhir 10E

LA-2811 Rev1.0 Schematic

HBT10 Schematics Document
uFCBGA/uFCPGA Mobile Dothan
ATI RL300MB + SB200(IXP150)
2005-05-04<A>

Function/B
LS-2811

LAN/B
LS-2812

M/B LA-2811

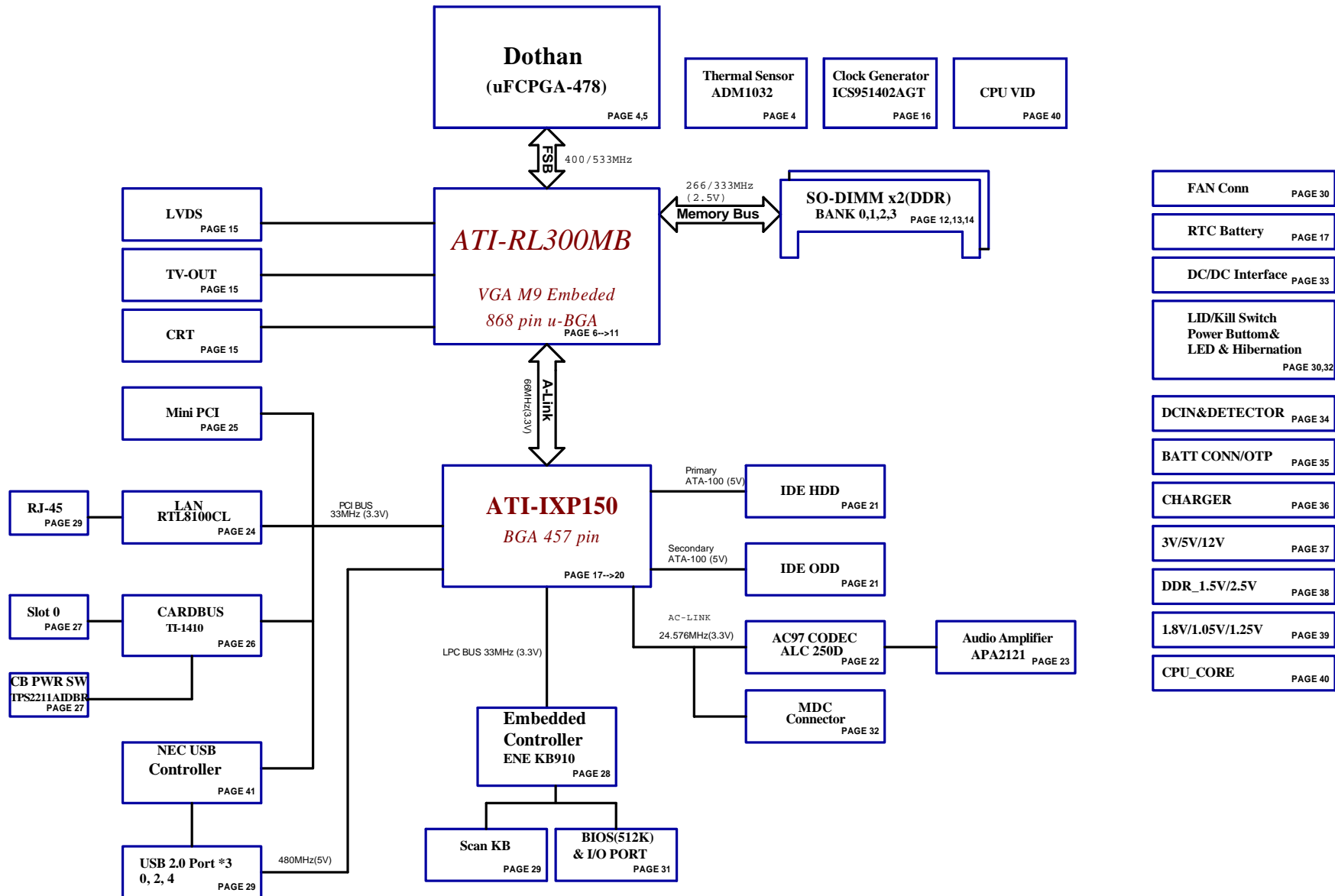
USB/B
LS-2813

TP/B
LS-2814

| | | | | | |
|---|------------|--------------------|------------|--------------------------|--------------------------------------|
| Security Classification | | Compal Secret Data | | Title | |
| Issued Date | 2005/03/01 | Deciphered Date | 2006/03/01 | Cover Sheet | |
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| | | | | Sheet 1 | of 44 |

Model Name : HBT10

File Name : LA-2811 Rev: 0.1



| | | | | | |
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| | | | | Sheet 2 | of 44 |

Voltage Rails

| Power Plane | Description | S1 | S3 | S5 |
|-------------|---|----|-----|-----|
| VIN | Adapter power supply (19V) | ON | ON | ON |
| B+ | AC or battery power rail for power circuit. | ON | ON | ON |
| +CPU_CORE | Core voltage for CPU | ON | OFF | OFF |
| +CPUVID | 1.2V switched power rail for CPU AGTL Bus | ON | OFF | OFF |
| +VGA_CORE | 1.0V/1.2V switched power rail for VGA chip | ON | OFF | OFF |
| +1.25VS | 1.25V switched power rail | ON | OFF | OFF |
| +1.5VS | AGP 4X/8X | ON | OFF | OFF |
| +1.8VS | 1.8VS switched power rail | ON | OFF | OFF |
| +2.5VALW | 2.5V always on power rail | ON | ON | ON* |
| +2.5V | 2.5V power rail | ON | ON | OFF |
| +2.5VS | 2.5V switched power rail | ON | OFF | OFF |
| +3VALW | 3.3V always on power rail | ON | ON | ON* |
| +3V | 3.3V power rail | ON | ON | OFF |
| +3VS | 3.3V switched power rail | ON | OFF | OFF |
| +5VALW | 5V always on power rail | ON | ON | ON* |
| +5VS | 5V switched power rail | ON | OFF | OFF |
| +12VALW | 12V always on power rail | ON | ON | ON* |
| +RTCVCC | RTC power | ON | ON | ON |

Note : ON* means that this power plane is ON only with AC power available, otherwise it is OFF.

External PCI Devices

| Device | IDSEL# | REQ#GNT# | Interrupts |
|-----------|--------|---------------------|-------------|
| CardBus | AD20 | 2 | PIRQA |
| LAN | AD19 | 3 | PIRQD |
| Mini-PC11 | AD18 | 1(for Wireless Lan) | PIRQC/PIRQD |

EC SM Bus1 address

| Device | Address | Device | Address |
|------------------|-------------|---------|-------------|
| Smart Battery | 0001 011X b | ADM1032 | 1001 110X b |
| EEPROM(24C16/02) | 1010 000X b | | |
| (24C04) | 1011 000Xb | | |

IXP150 SM Bus address

| Device | Address |
|-----------------------------------|------------|
| Clock Generator (1CS951402AGT) | 1101 001Xb |
| DDR DIMM0 | 1010 000Xb |
| DDR DIMM2 | 1010 001Xb |

http://laptopblue.vn

| STATE | SIGNAL | SLP_S3# | SLP_S5# | +VALW | +V | +VS | Clock |
|----------------------|--------|---------|---------|-------|-----|-----|-------|
| Full ON | | HIGH | HIGH | ON | ON | ON | ON |
| S1(Power On Suspend) | | HIGH | HIGH | ON | ON | ON | LOW |
| S3 (Suspend to RAM) | | LOW | HIGH | ON | ON | OFF | OFF |
| S4 (Suspend to Disk) | | LOW | HIGH | ON | OFF | OFF | OFF |
| S5 (Soft OFF) | | LOW | LOW | ON | OFF | OFF | OFF |

Board ID Table for AD channel

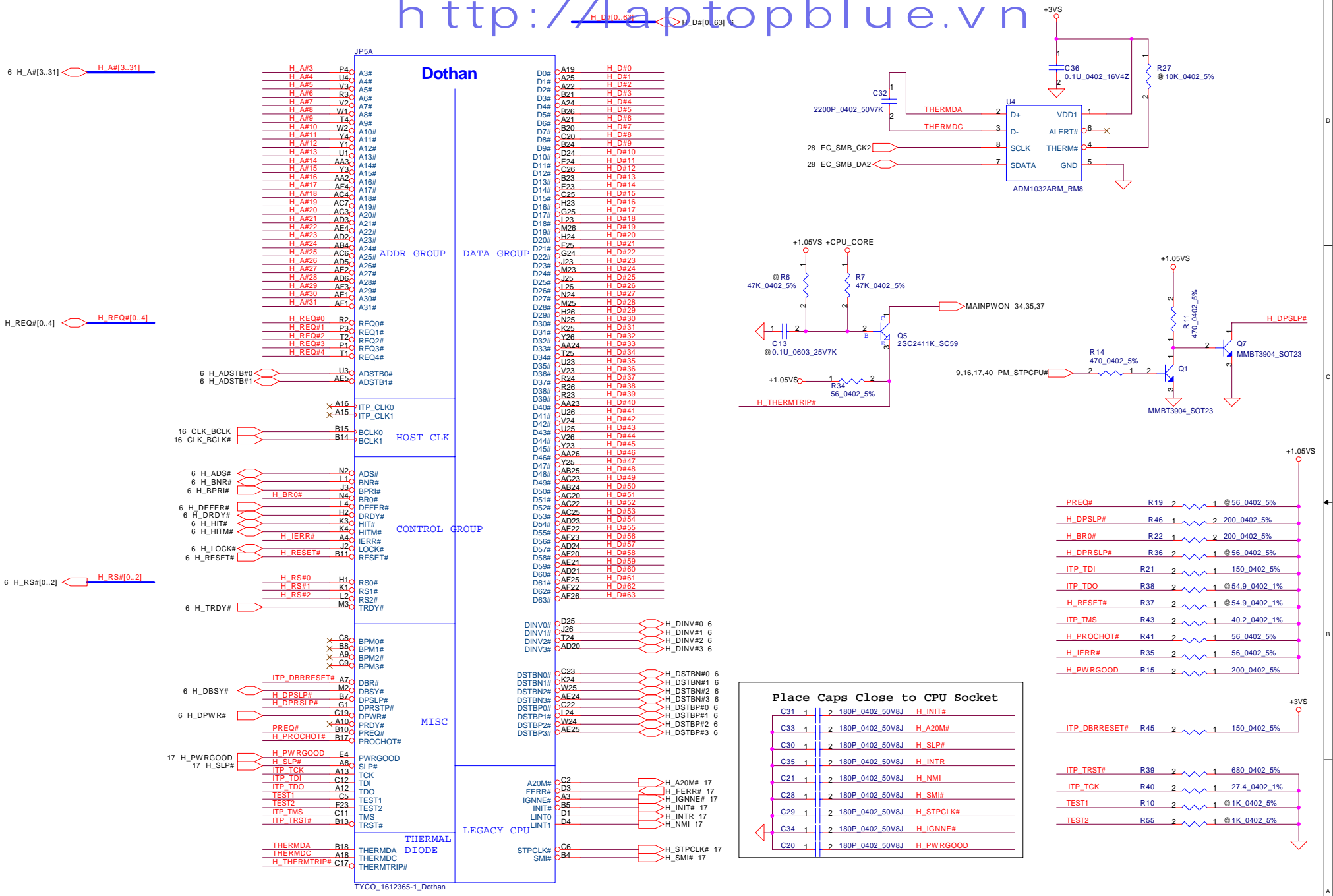
| Vcc | 3.3V +/- 5% | | | |
|----------|-------------|-------------|-------------|-------------|
| Ra | 100K +/- 5% | | | |
| Board ID | Rb | VAD_BID min | VAD_BID typ | VAD_BID max |
| 0 | 0 | 0 V | 0 V | 0 V |
| 1 | 8.2K +/- 5% | 0.216 V | 0.250 V | 0.289 V |
| 2 | 18K +/- 5% | 0.436 V | 0.503 V | 0.538 V |
| 3 | 33K +/- 5% | 0.712 V | 0.819 V | 0.875 V |
| 4 | 56K +/- 5% | 1.036 V | 1.185 V | 1.264 V |
| 5 | 100K +/- 5% | 1.453 V | 1.650 V | 1.759 V |
| 6 | 200K +/- 5% | 1.935 V | 2.200 V | 2.341 V |
| 7 | NC | 2.500 V | 3.300 V | 3.300 V |

| Board ID | PCB Revision |
|----------|--------------|
| 0 | 0.1 |
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |

SKU ID Table

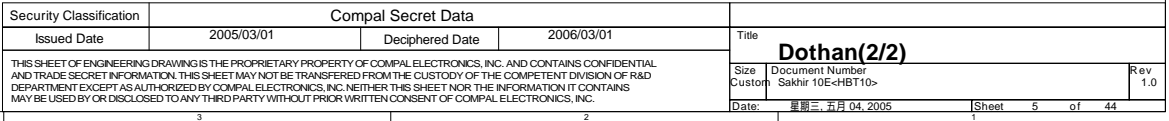
| 10E | | |
|----------------|----------|-----------|
| SKU_ID | Board ID | Scan Code |
| 1-Button | 7 | 3 |
| 7-Buttons-W | 5 | 2 |
| 7-Buttons-J | 4 | 10 |
| 1-Button-J-HDD | 3 | 11 |
| | | |
| | | |
| | | |

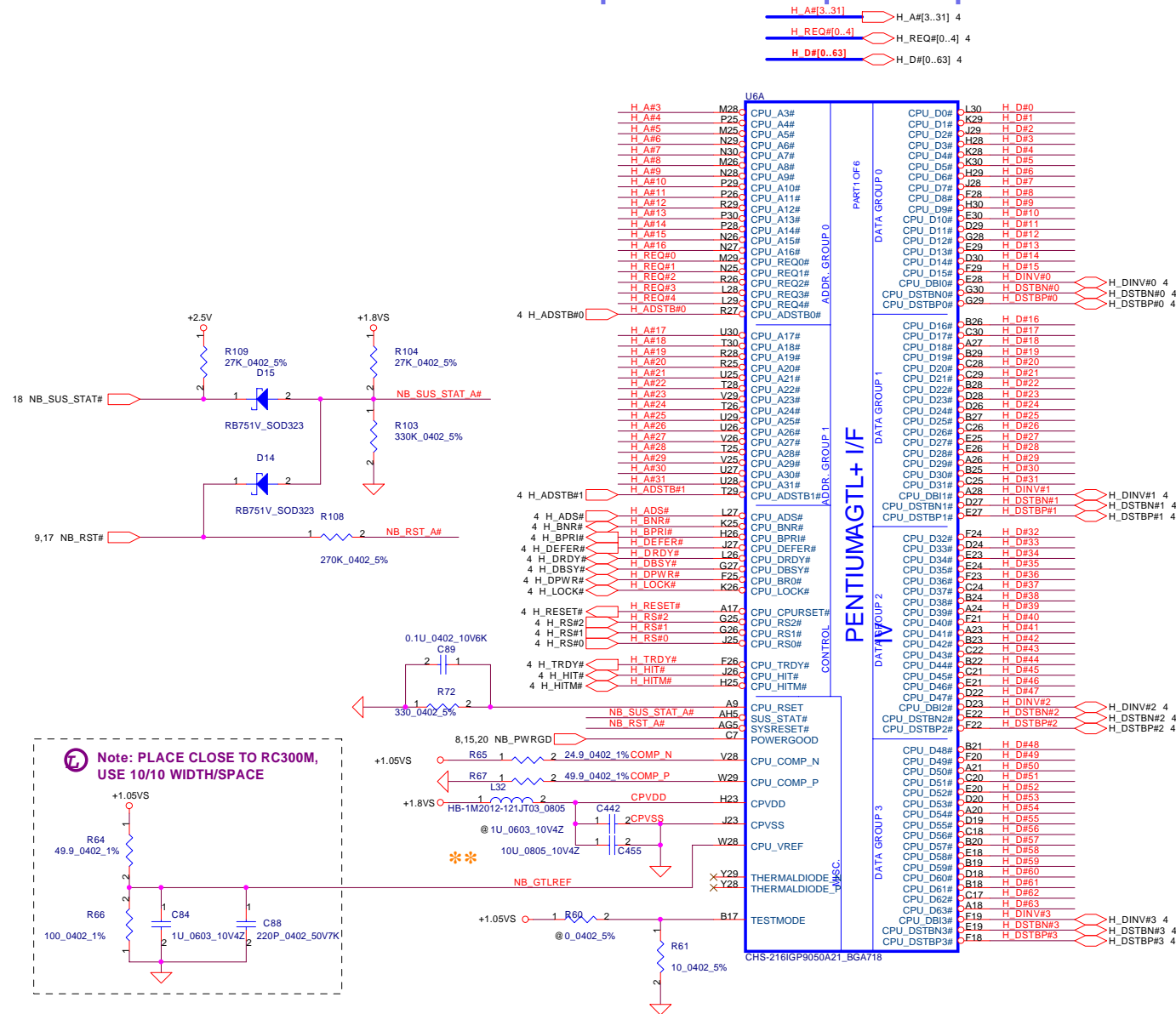
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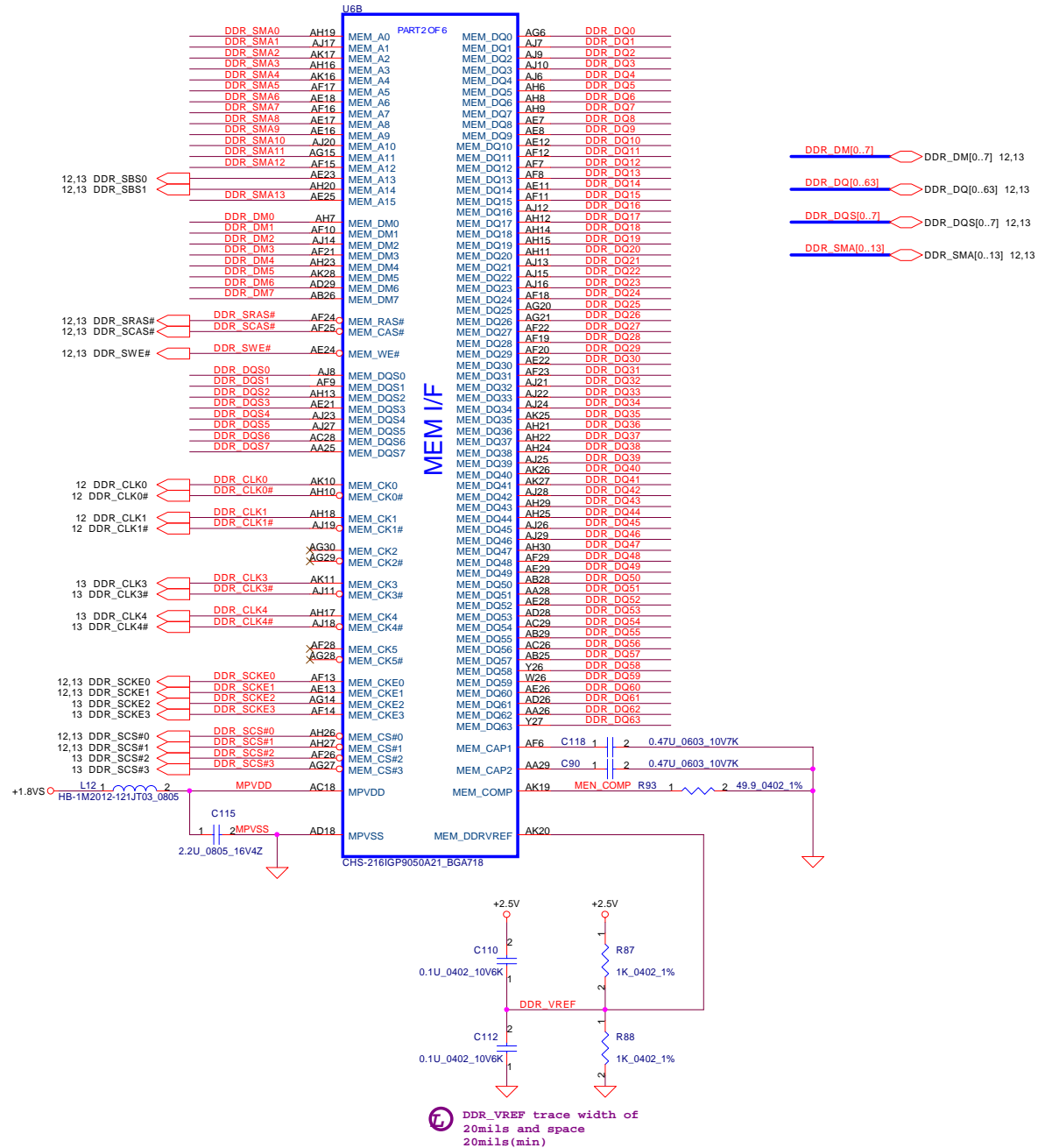


THERMDA & THERMDC Trace / Space = 10 / 10 mil

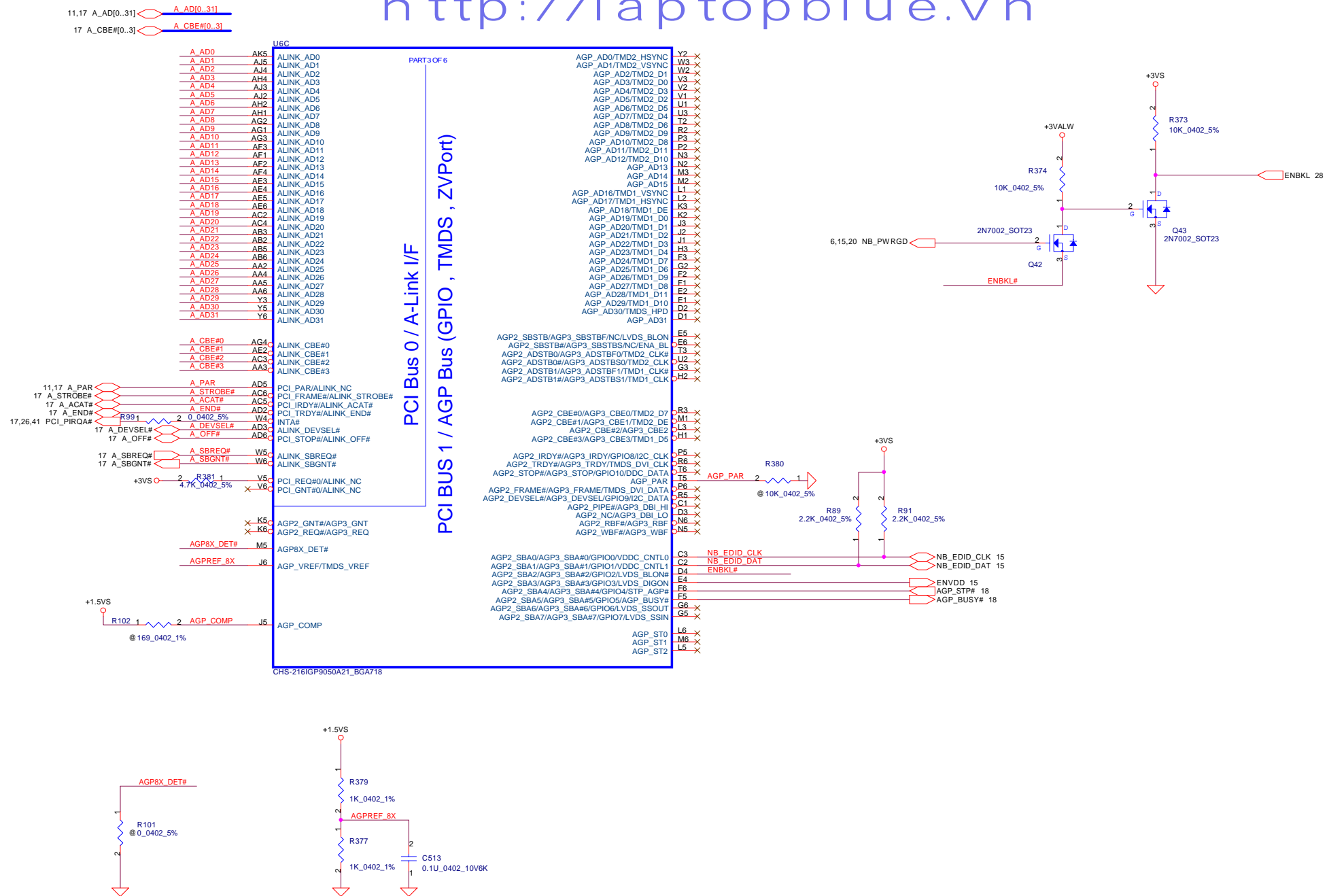
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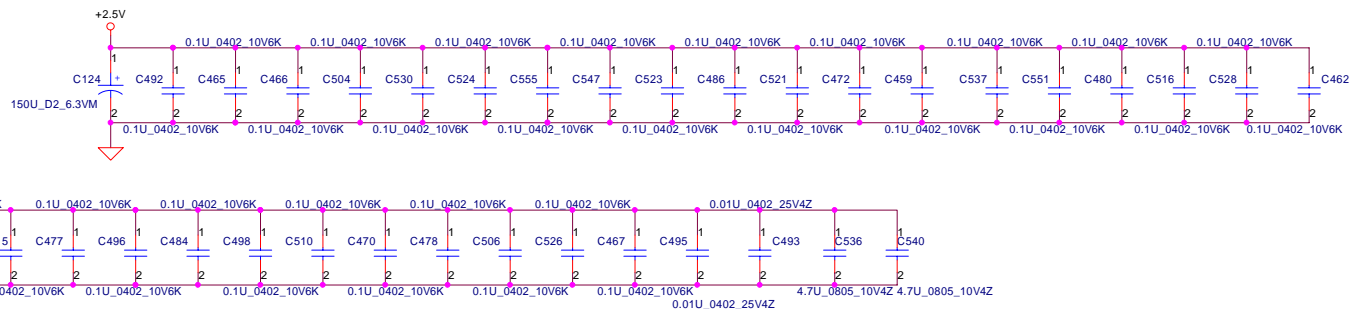
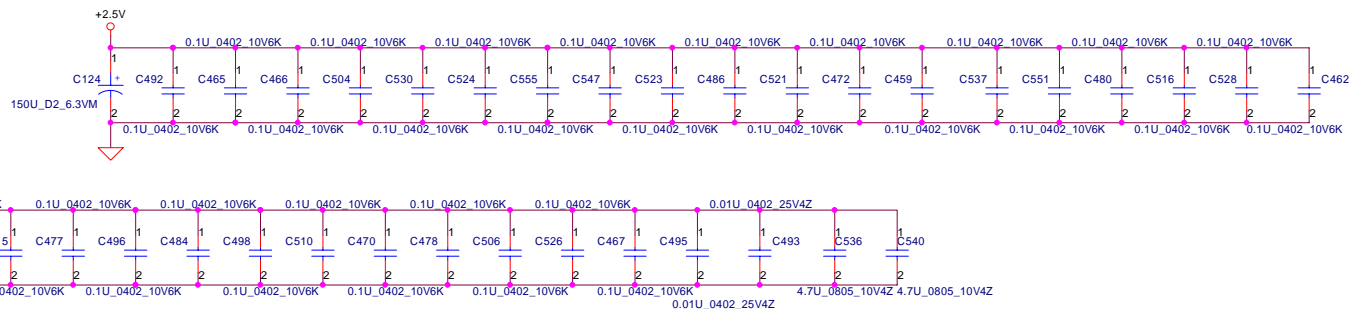
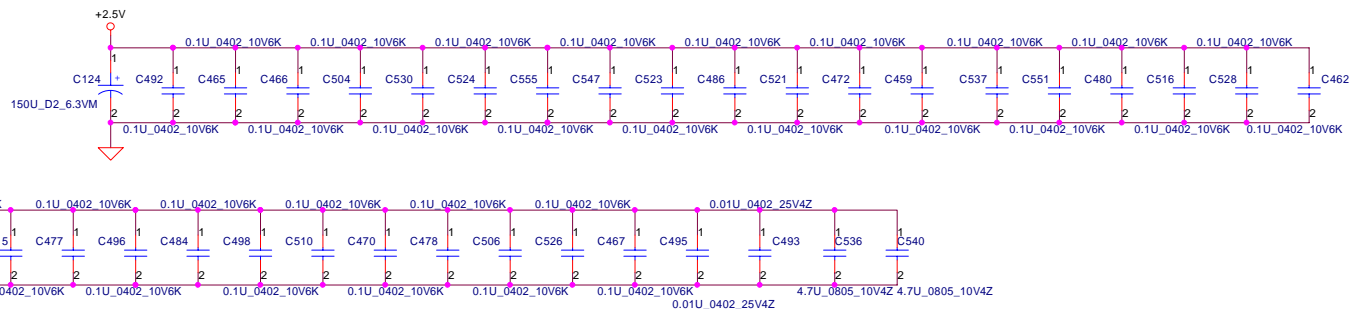
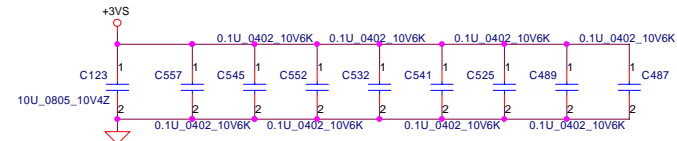
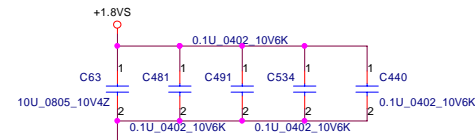
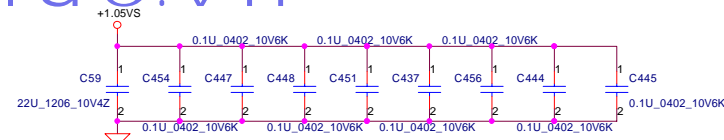
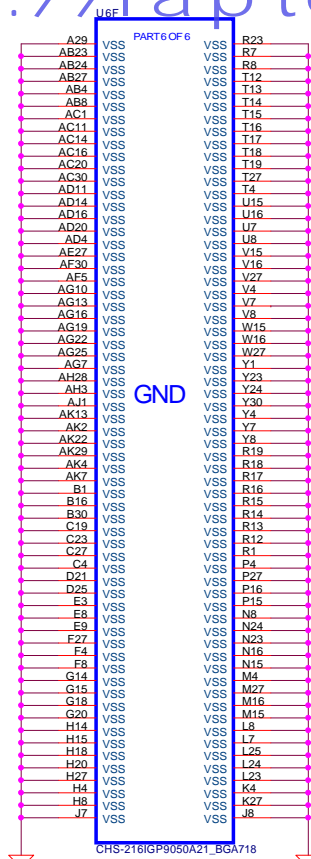
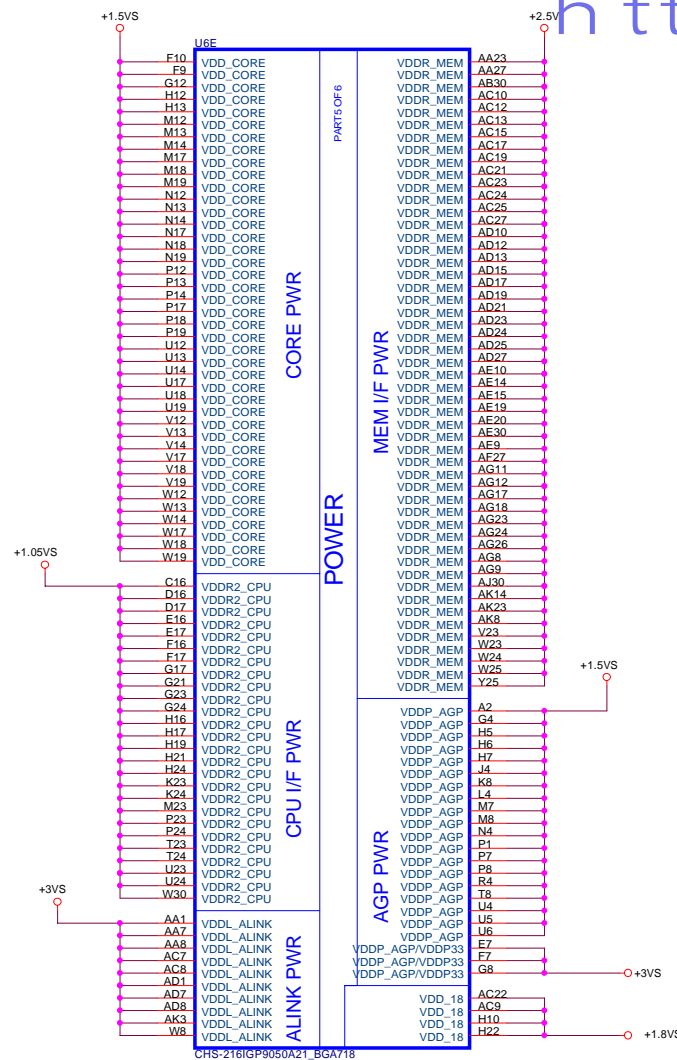




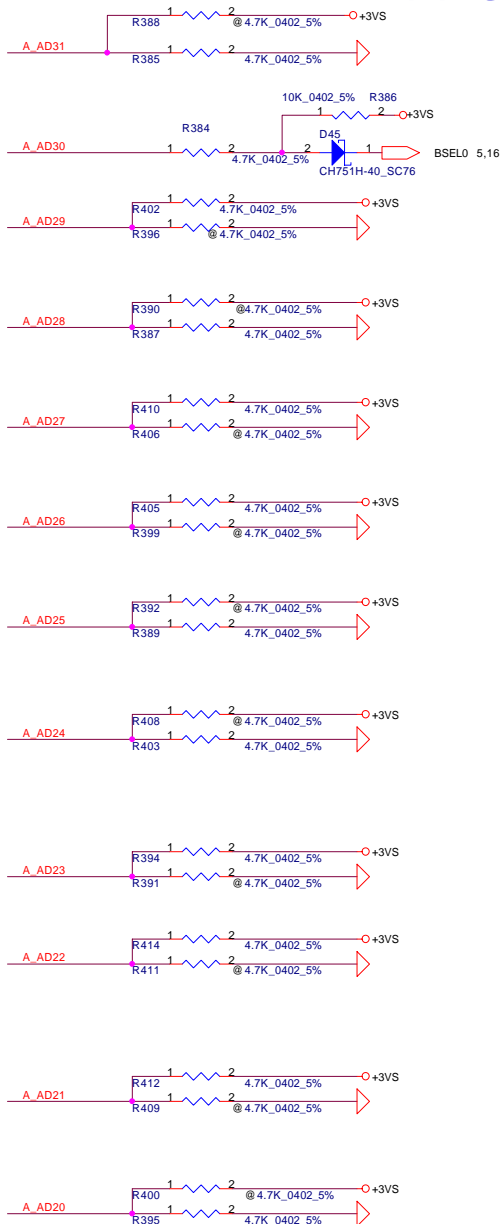


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| | | | | Sheet | 10 of 44 |



A_AD[31..30] : FSB CLK SPEED

DEFAULT: 01

00: 100 MHZ
01: 133 MHZ
10: 200MHZ
11:166 MHZ

A_AD29: STRAP CONFIGURATION

DEFAULT:1

0: REDUCE SET
1: FULL SET

A_AD28: SPREAD SPECTRUM ENABLE

DEFAULT:0

0: DISABLE
1: ENABLE

A_AD27: FrcShortReset#

DEFAULT: 1

0: TEST MODE
1: NORMAL MODE

A_AD26 : ENABLE IOQ

DEFAULT: 1

0: IOQ=1
1: IOQ=12

A_AD25/A_AD17 : CPU VOLTAGE[1..0]

DEFAULT: 10

00: 1.05V
01: 1.35V
11: 1.75V
10: 1.45V

A_AD24 : MOBILE CPU SELECT

DEFAULT: 1

0: BANIAS CPU
1: OTHER CPU

A_AD23 : CLOCK BYPASS DISABLE

DEFAULT: 1

0: TEST MODE
1: NORMAL

A_AD22 : OSC PAD OUTPUT PCICLK

DEFAULT : 1

0: PCICLK OUT
1: OSC CLK OUT

A_AD21 : AUTO_CAL ENABLE

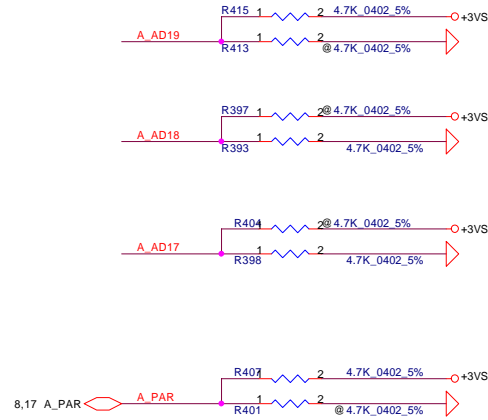
DEFAULT : 1

0: DISABLE
1: ENABLE

A_AD20 : INTERNAL CLK GEN ENABLE

DEFAULT : 0

0: DISABLE
1: ENABLE



A_AD19 : MEMORY IO VOLTAGE

DEFAULT: 1

0: 1.8V
1: 2.5V

A_AD18 : ENABLE PHASE CALIBRATION

DEFAULT: 0

0: DISABLE
1: ENABLE

A_AD25/A_AD17 : CPU VOLTAGE[1..0]

DEFAULT: 0

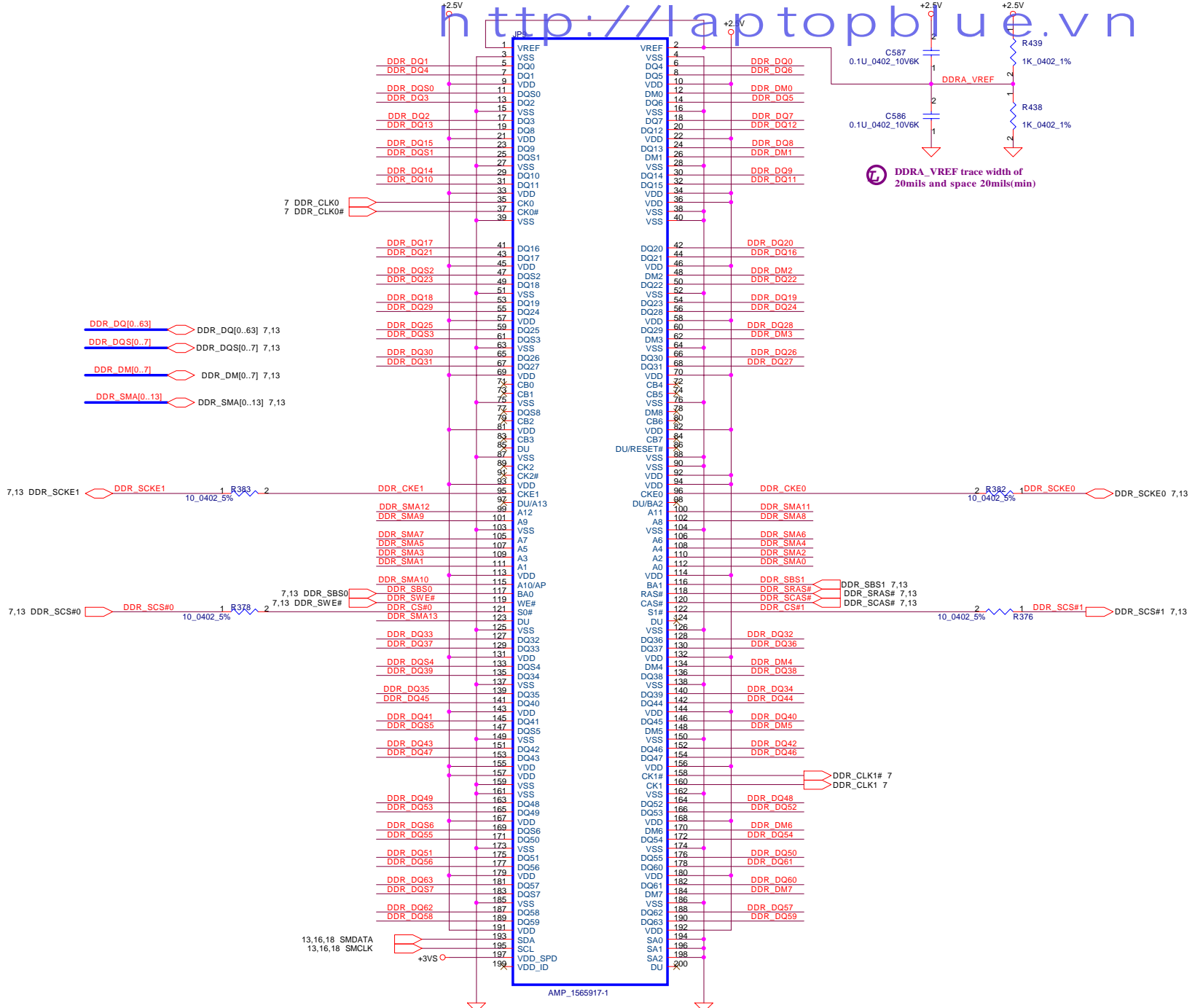
00: 1.05V
01: 1.35V
11: 1.75V
10: 1.45V

PAR: EXTENDED DEBUG MODE

DEFAULT : 1

0: DEBUG MODE
1: NORMAL

| | | | | | |
|---|------------|--------------------|------------|--------------------------|--|
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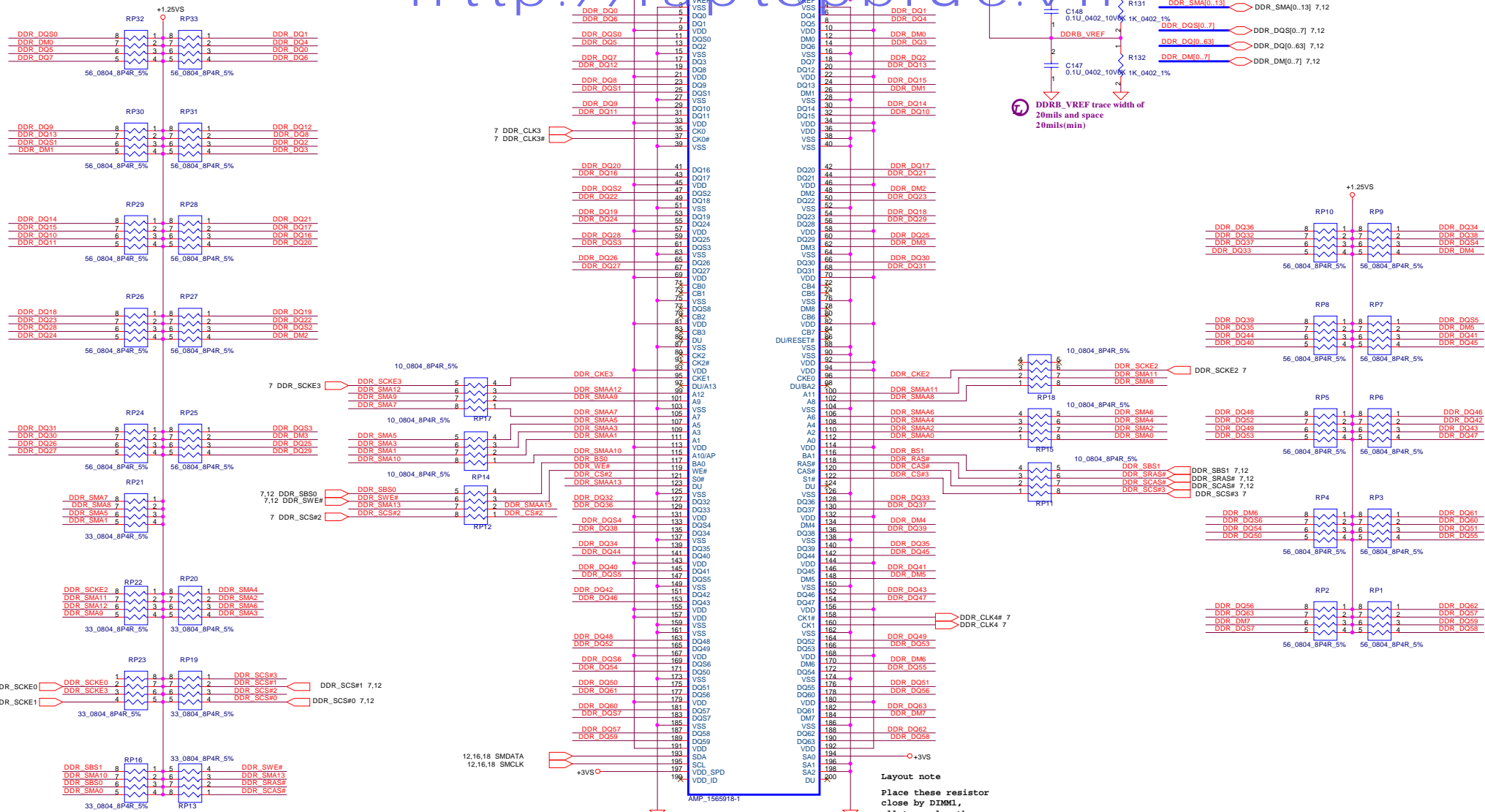


DDRA_VREF trace width of 20mils and space 20mils(min)

Layout note

Layout note
Place Add/Command resisotr
Close to Pin, max L = 300 mils

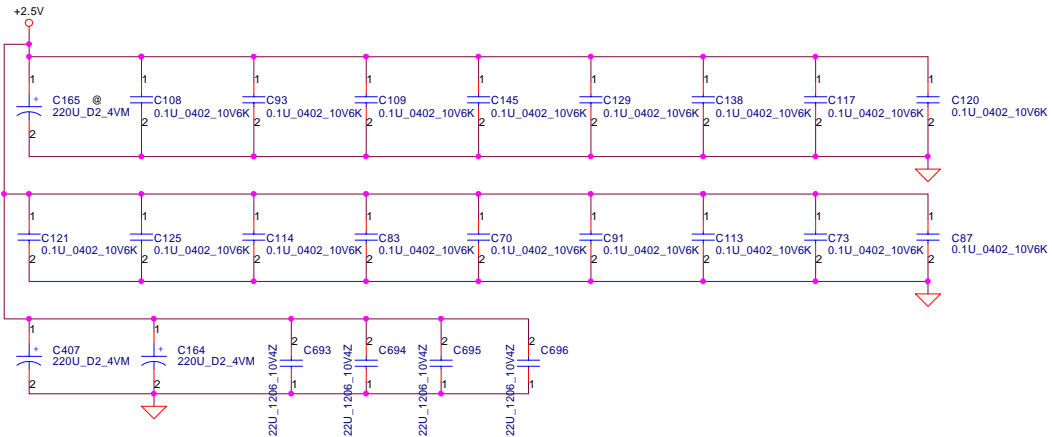
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| Issued Date | 2005/03/01 | Deciphered Date | 2006/03/01 | DDR-SODIMM SLOT0 | |
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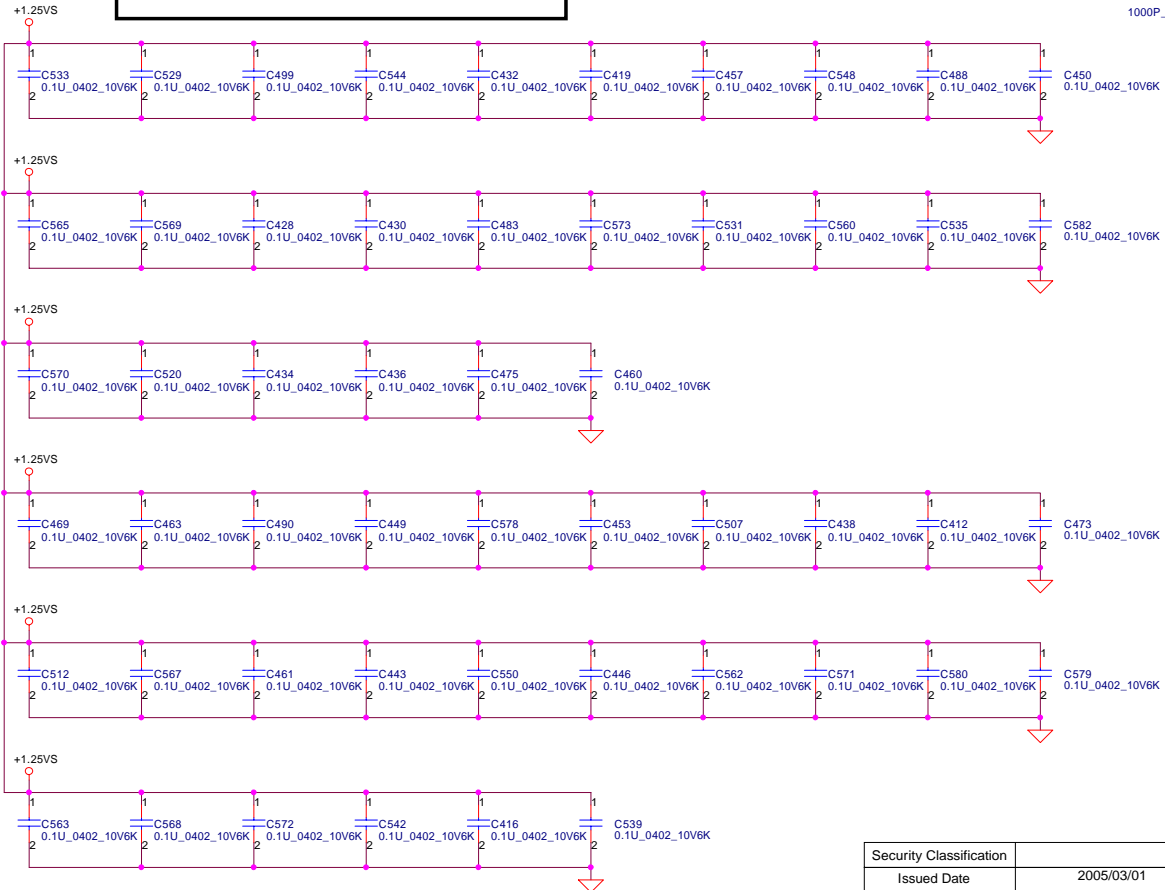
DDR TOPOLOGY 1 FOR SMAA[0, 3, 6:12], SBA[1, 0], SRAS#, SCAS#, SWE#

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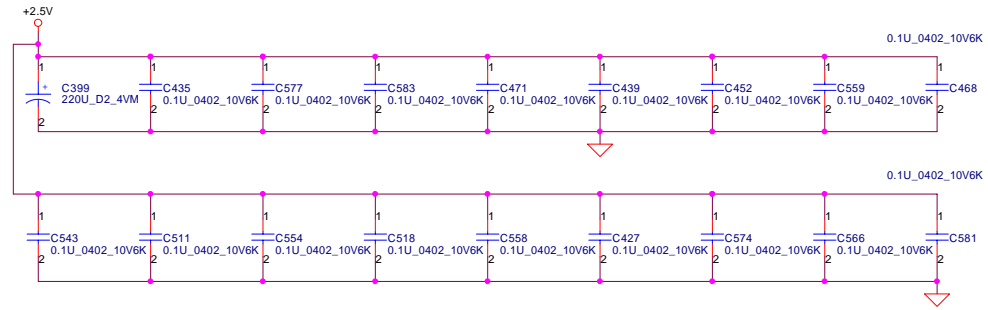
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to DDR-SODIMM0.



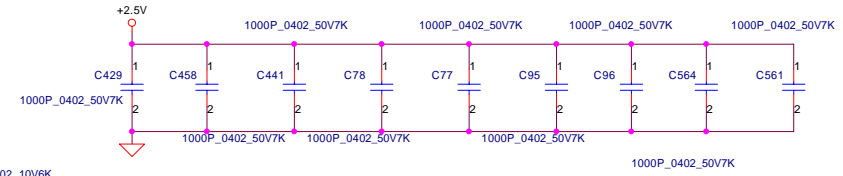
Layout note :
Place one cap close to every 2 pull up resistors termination to
+1.25VS



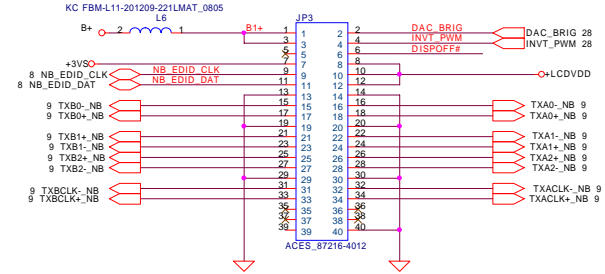
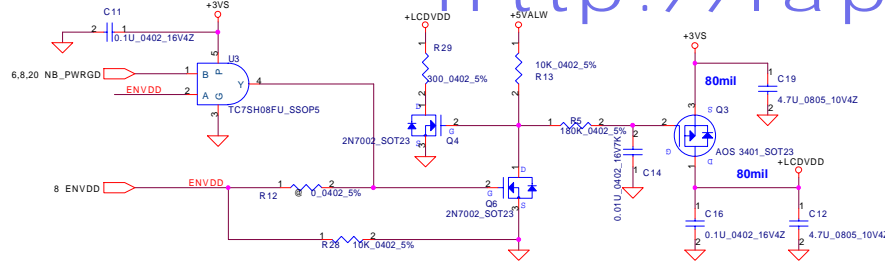
Layout note :
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to DDR-SODIMM1.



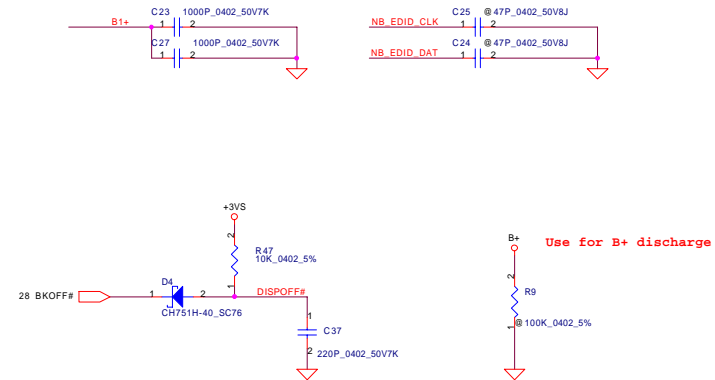
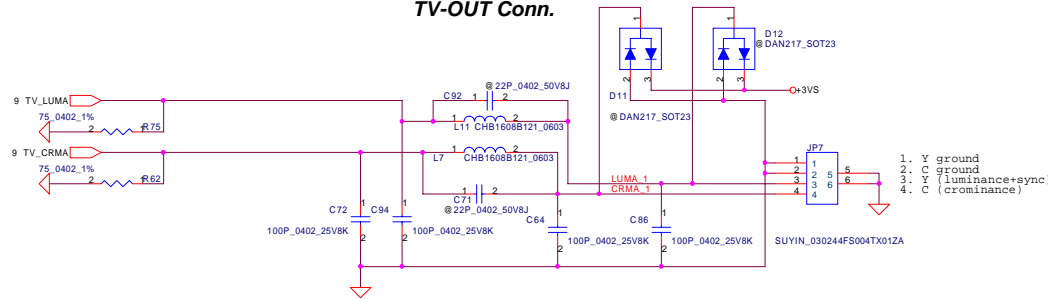
Layout note :
for EMI solution



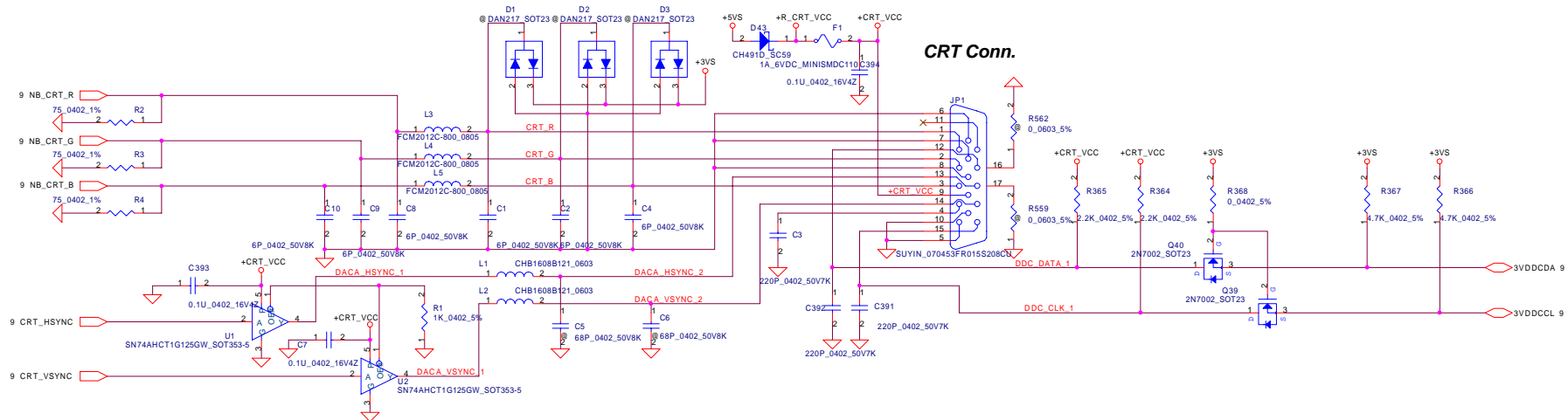
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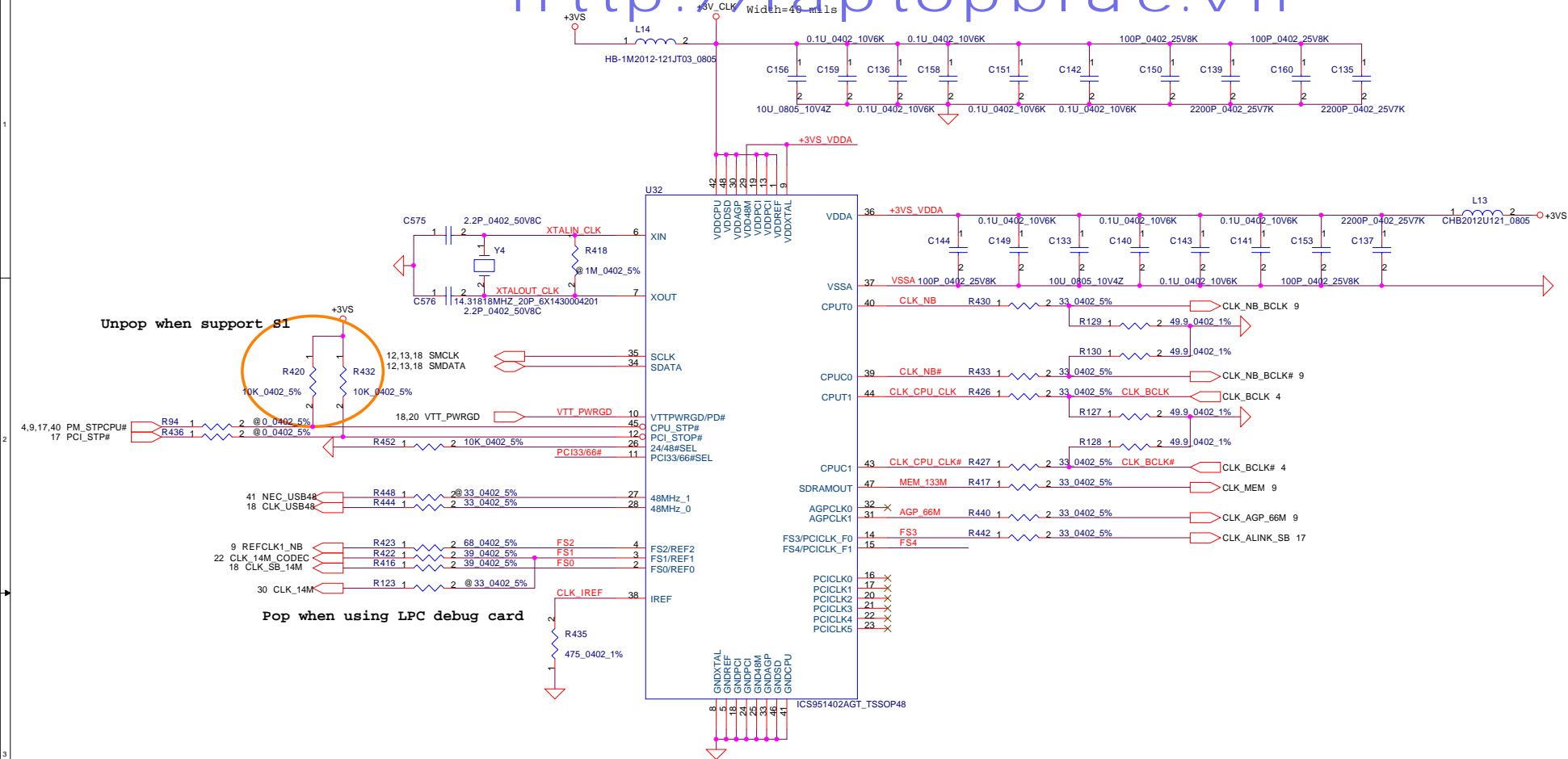


TV-OUT Conn.



CRT Conn.





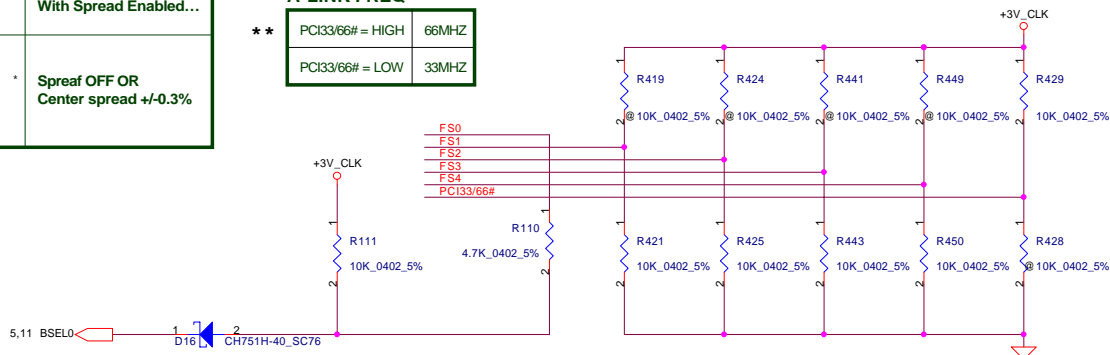
CLOCK FREQUENCY SELECT TABLE

| FS4 | FS3 | FS2 | FS1 | FS0 | CPU | MEM | With Spread Enabled... |
|-----|-----|-----|-----|-----|-----|-----|-------------------------------------|
| 0 | 0 | 0 | 1 | 0 | 200 | 200 | |
| 0 | 0 | 0 | 0 | 1 | 133 | 133 | Spread OFF OR Center spread +/-0.3% |
| 0 | 0 | 0 | 0 | 0 | 100 | 100 | |

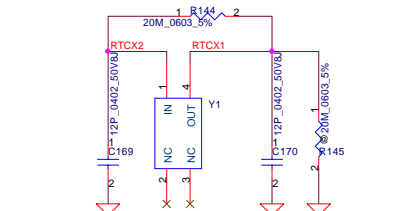
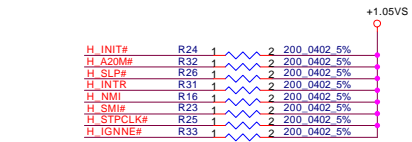
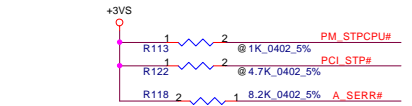
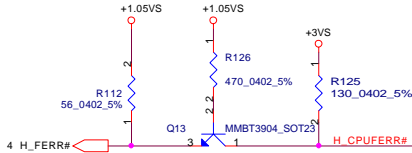
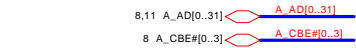
A-LINK FREQ

| | |
|------------------|-------|
| PCI33/66# = HIGH | 66MHZ |
| PCI33/66# = LOW | 33MHZ |

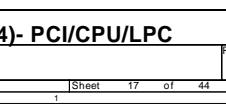
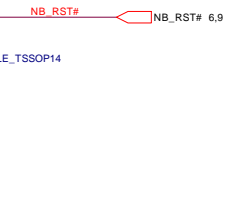
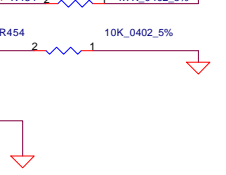
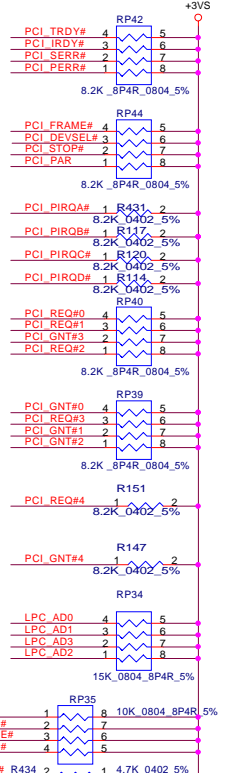
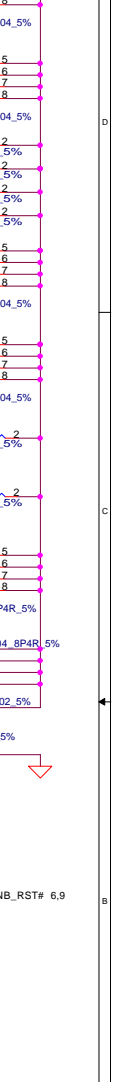
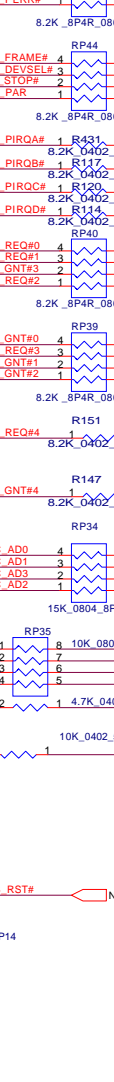
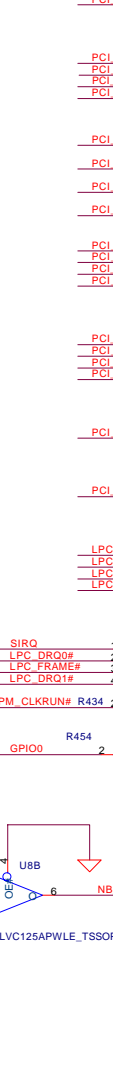
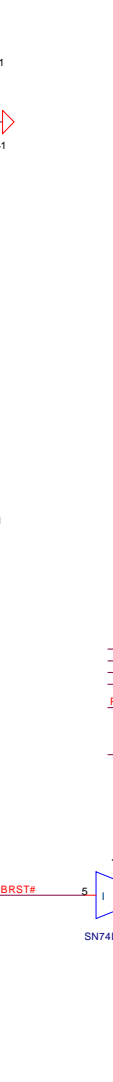
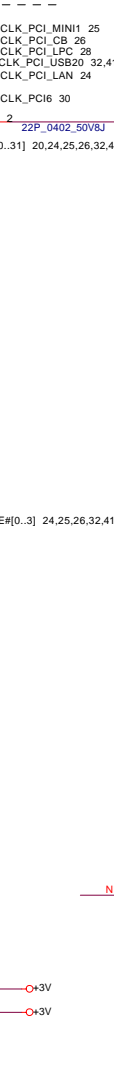
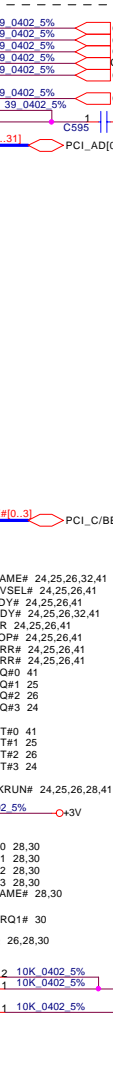
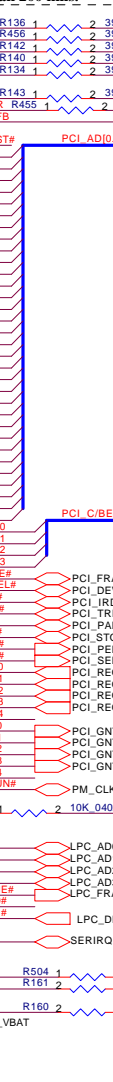
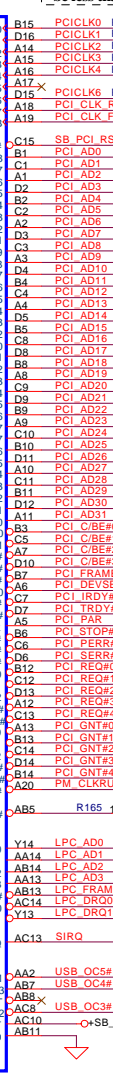
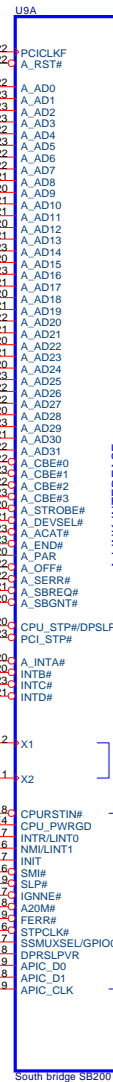
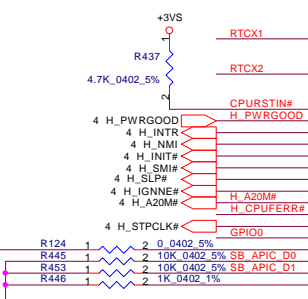
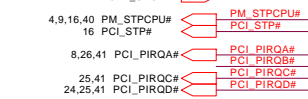
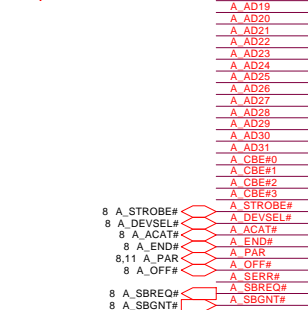
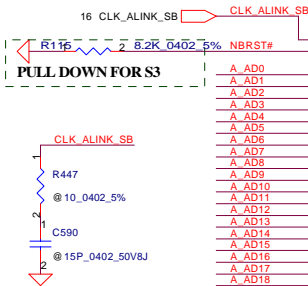
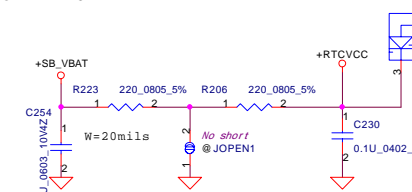
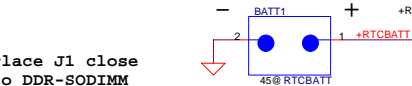
Note: 0 = PULL LOW
1 = PULL HIGH



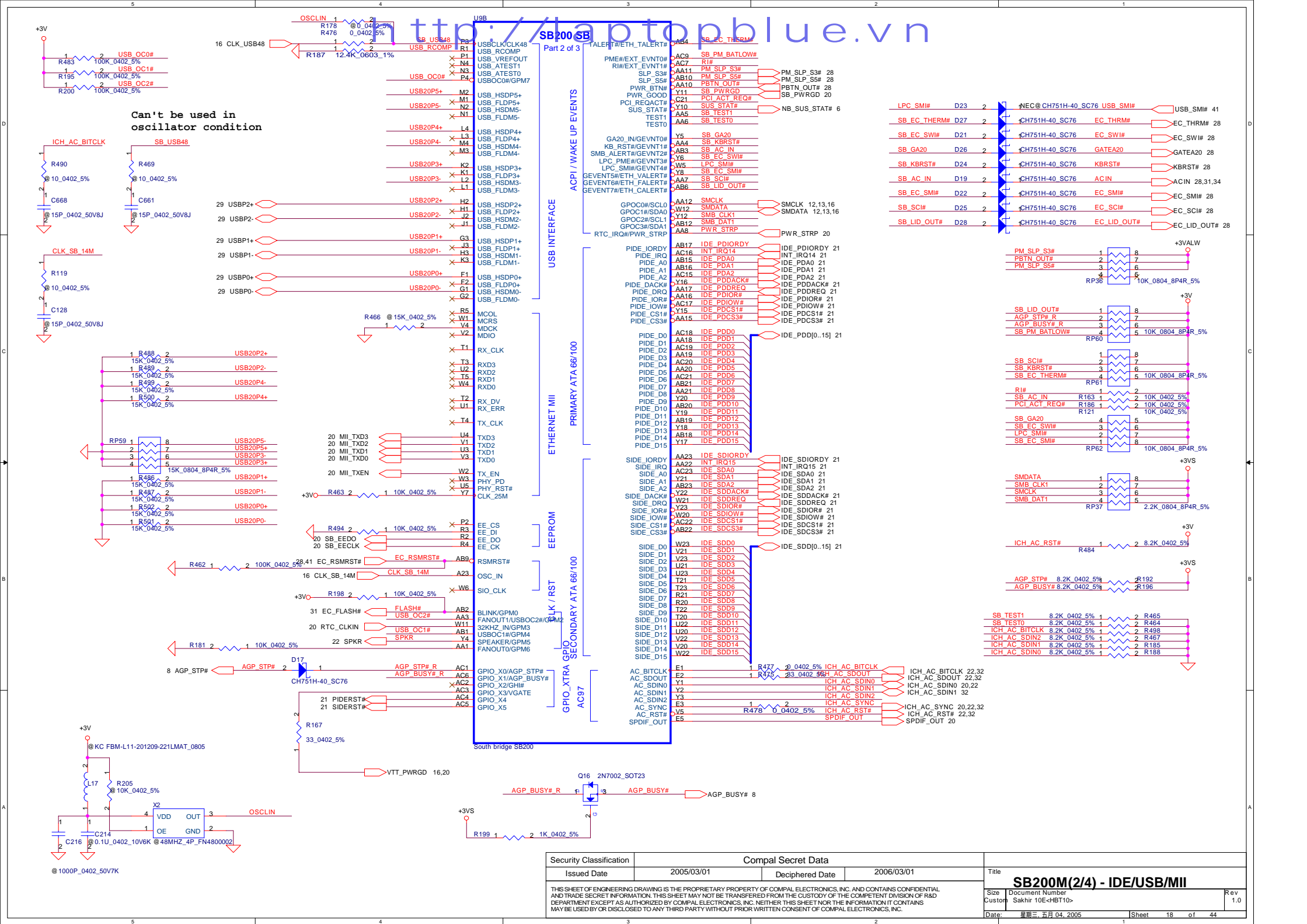
Layout note:
Trace length of PCI_CLK_R + PCI_CLK_FB should be less than 200 mils.

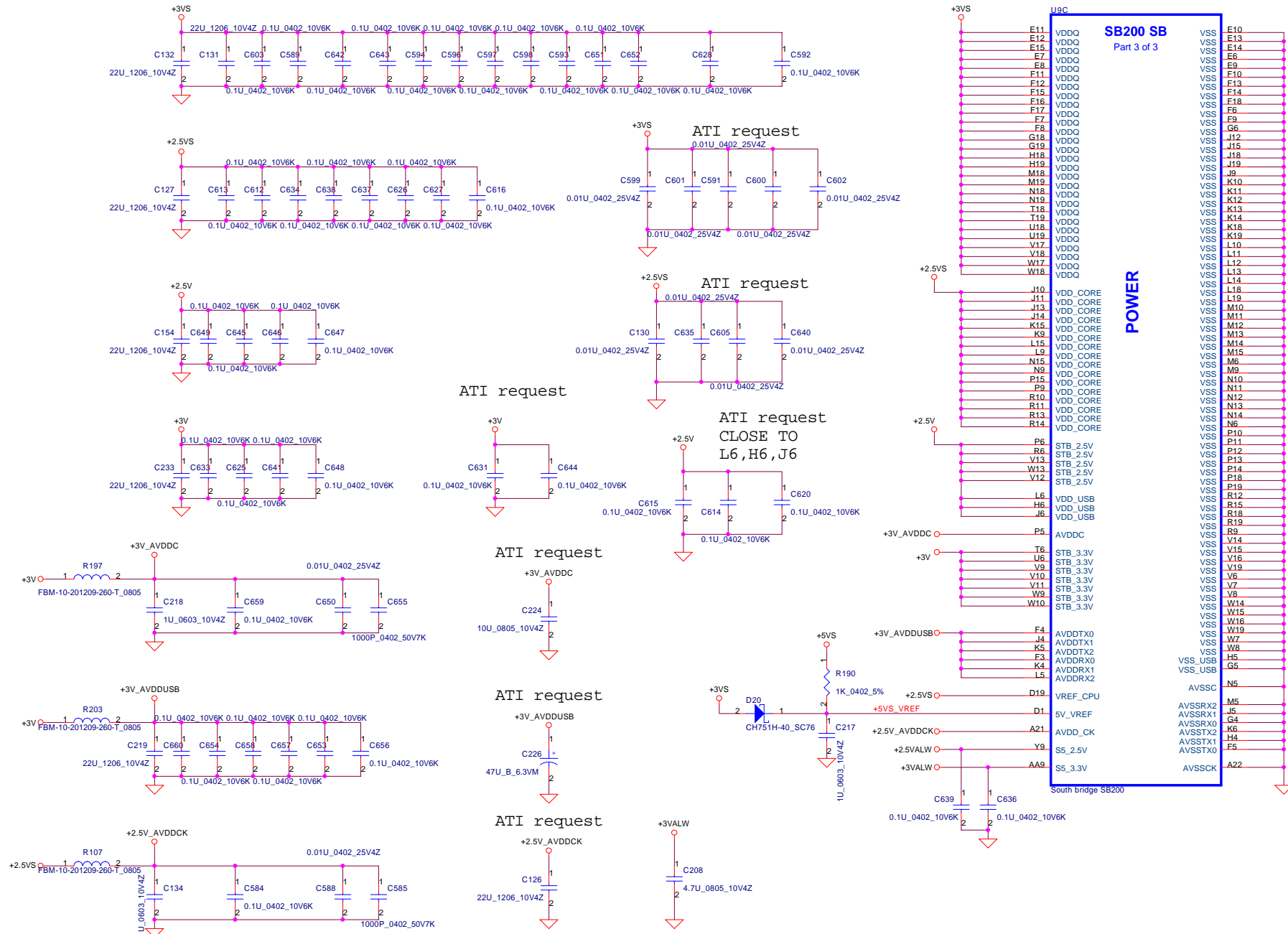


RTC Battery

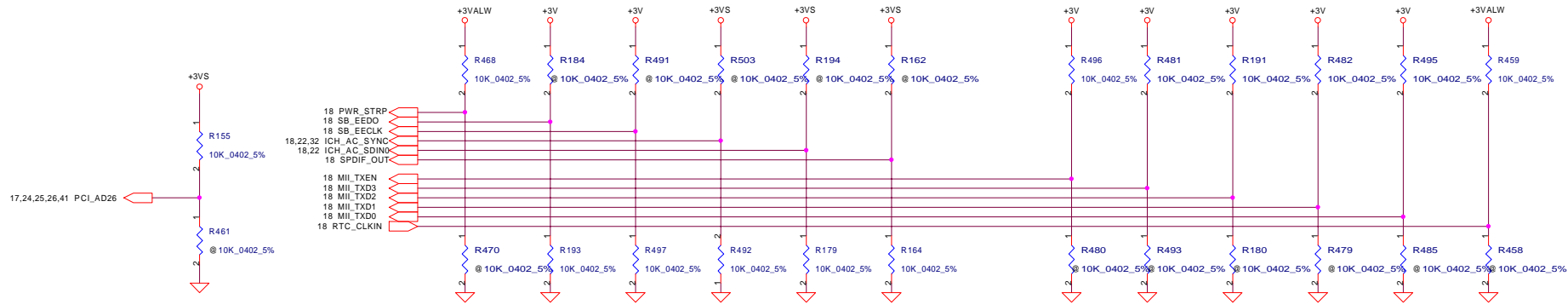


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| Security Classification | | Compal Secret Data | | Title SB200M(1/4)- PCI/CPU/LPC | | |
| Issued Date | 2005/03/01 | Decphered Date | 2006/03/01 | | | |
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| | | | | Custom | Sakhr 10E<HBT10> | 1.0 |
| 1 | | | | Date: | 星期三, 五月 04, 2005 | Sheet 17 of 44 |
| 2 | | | | 1 | | |





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| Security Classification | | Compal Secret Data | | Title | |
| Issued Date | 2005/03/01 | Deciphered Date | 2006/03/01 | Size | Document Number |
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| | | | | Rev | 1.0 |
| | | | | Date | 星期三, 五月 04, 2005 |
| | | | | Sheet | 19 of 44 |

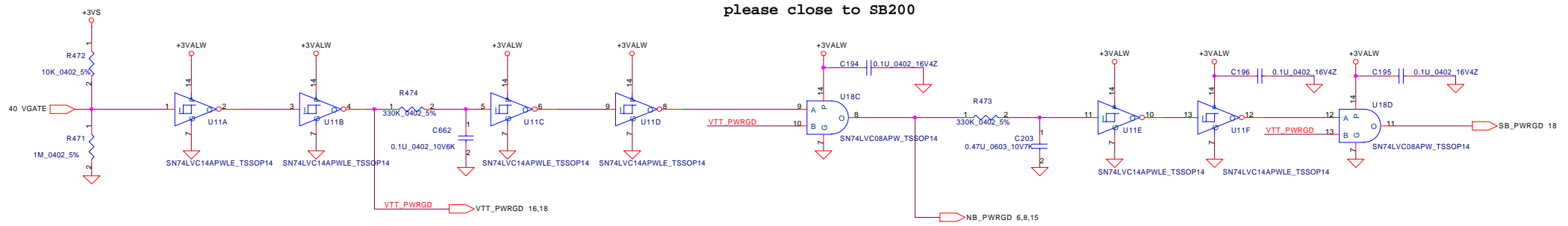


PCI_AD26 H: ENE910
L: NS87591

REQUIRED SYSTEM STRAPS

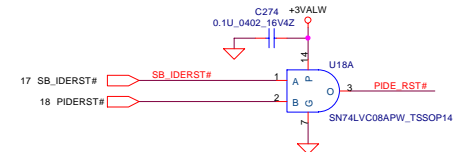
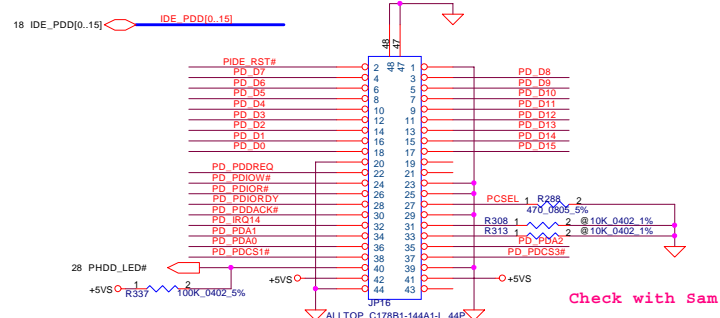
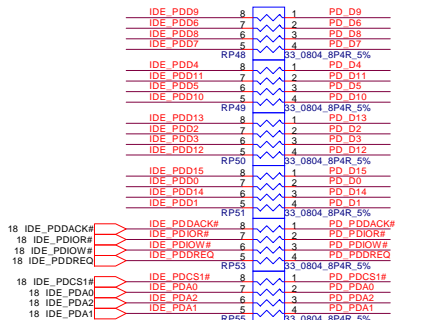
| | PWR_STRP | IGN DEBUG EEDO | EECK | IAC_SYNC | IAC_SDAT0A | SPDIF_OUT | FREQLTCH TX_EN | ETHERNET TXD[3:0] | 32KHZ S5 RTC_CLKIN |
|------------|--------------------------|--------------------------------|---------------------------|-----------------------------------|----------------------------|----------------------|-------------------------------------|---------------------------|--|
| STRAP HIGH | MANUAL PWR ON DEFAULT | USE DEBUG STRAPS | ROM ON PCI BUS | INIT ACTIVE HIGH | 33MHz NB BUS | SIO 24MHz | DISABLE CPU FREQ SETTING DEFAULT | PROCESSOR FREQ MULTIPLIER | 32KHZ OUTPUT FROM SB200 (INT RTC) DEFAULT |
| STRAP LOW | AUTO PWR ON | IGNORE DEBUG STRAPS DEFAULT | ROM ON LPC BUS DEFAULT | INIT ACTIVE LOW (PIII) DEFAULT | HI SPEED A-LINK DEFAULT | SIO 48MHz DEFAULT | ENABLE CPU FREQSETTING | | 32KHZ INPUT TO SB200 (EXT RTC) |

please close to SB200

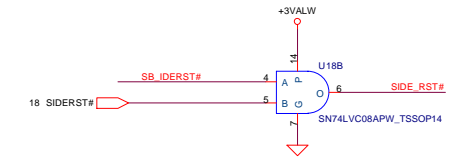


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| Security Classification | | Compal Secret Data | | | |
| Issued Date | | 2005/03/01 | Deciphered Date | | 2006/03/01 |
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| | | | | SB200M(4/4) - STRAPS | |
| | | | | Size | Document Number |
| | | | | Custom | Sakhr 10E4HB110> |
| | | | | Rev | 1.0 |
| Date: 星期三, 2005年3月23日 | | | | | |
| Sheet 20 of 44 | | | | | |

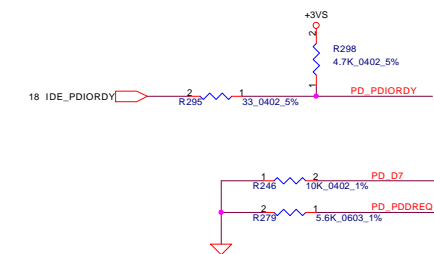
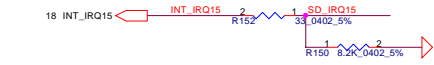
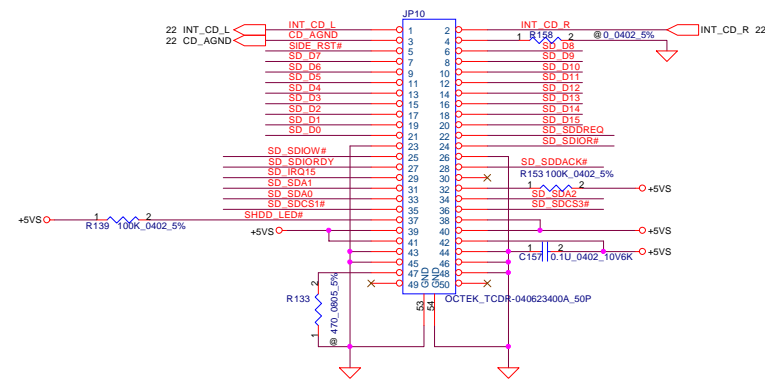
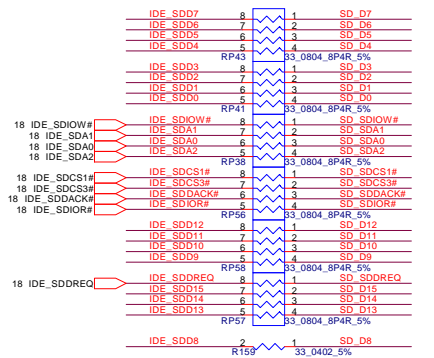
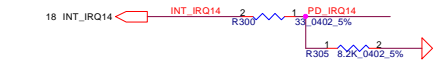
HDD CONNECTOR



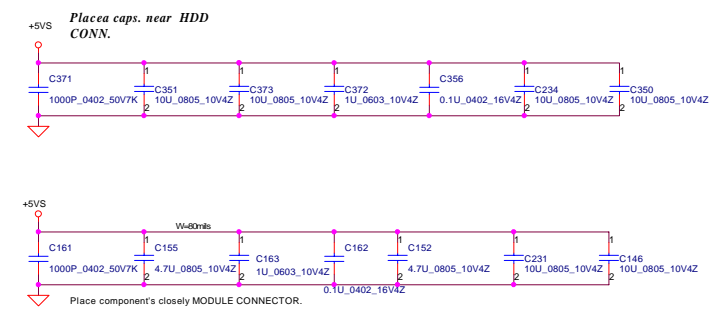
Place U11 near SB side



Check with ME new connector and Pin 1

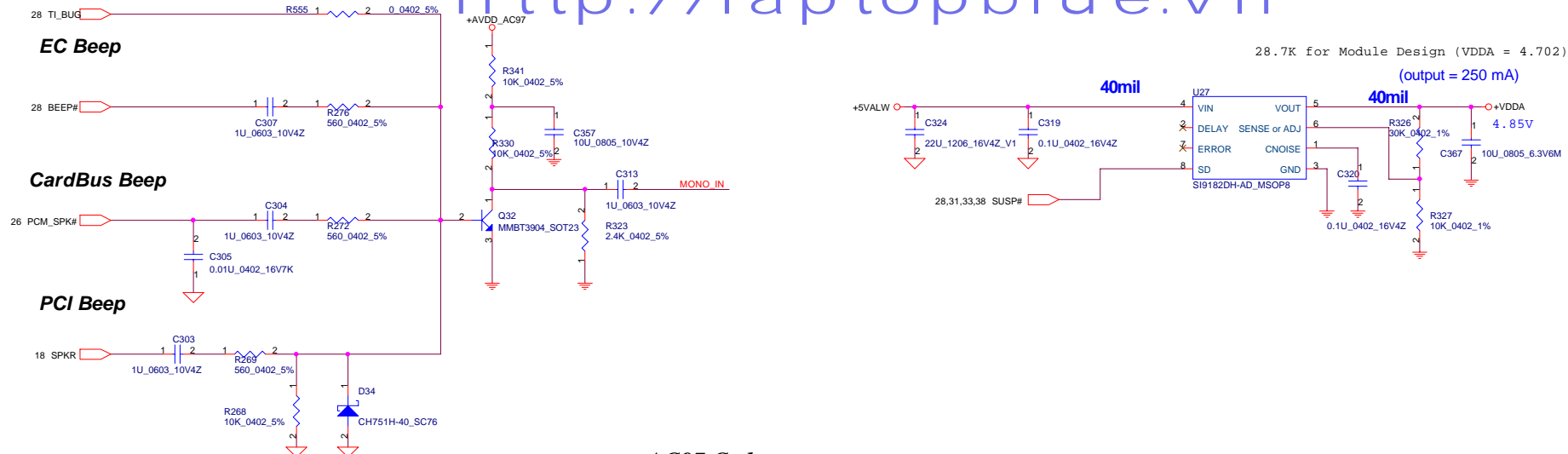


Should place close to SB side

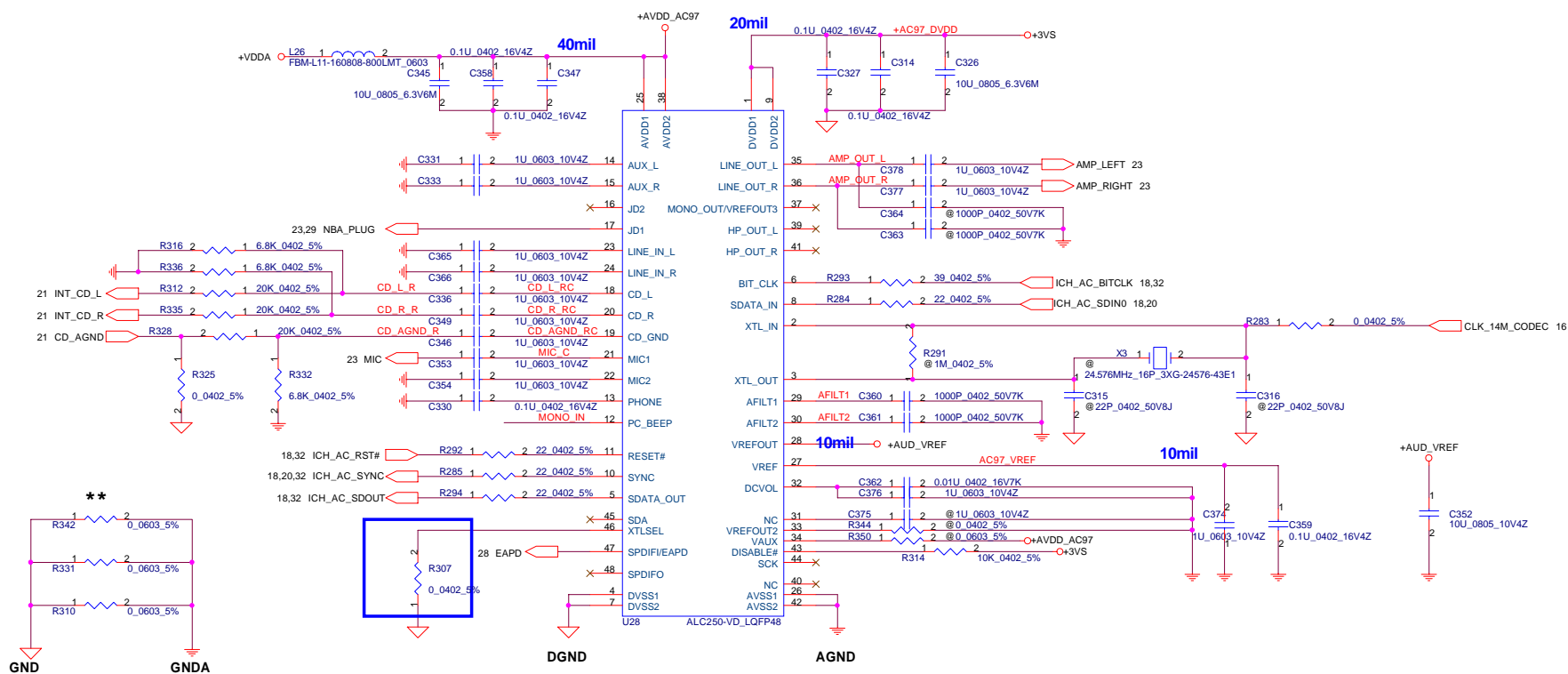


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| Security Classification | Compal Secret Data | | | Title | |
| Issued Date | 2005/03/01 | Deciphered Date | 2006/03/01 | IDE/ FDD MODULE CONN. | |
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| Date: | 星期二, 五月 04, 2005 | Sheet | 21 | of | 44 |

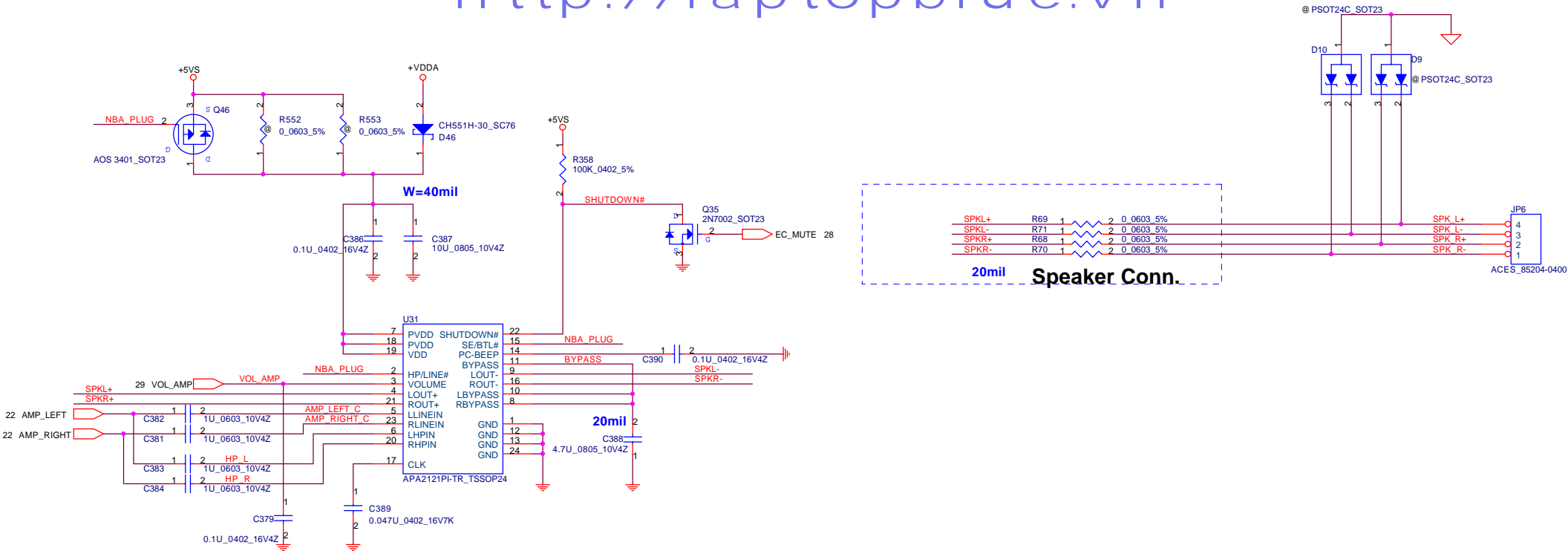
http://laptopblue.vn



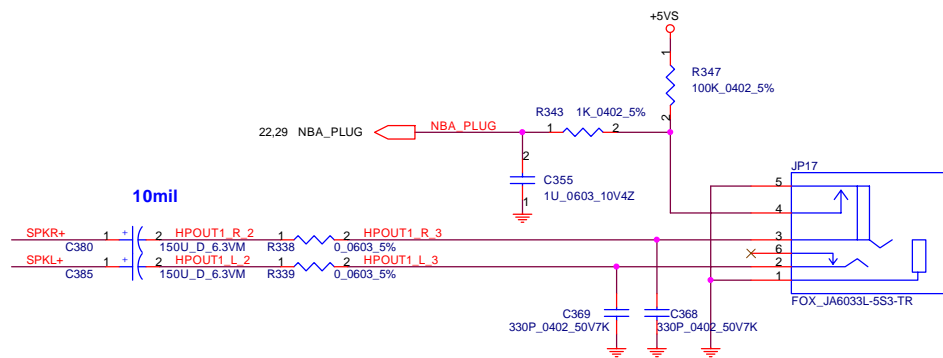
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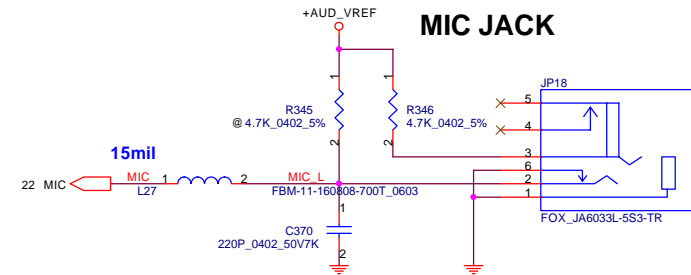
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| | | | | Custom | Sakhr 10E<HBT10> |
| Date: | | | | 星期三, 五月 04, 2005 | Sheet 22 of 44 |



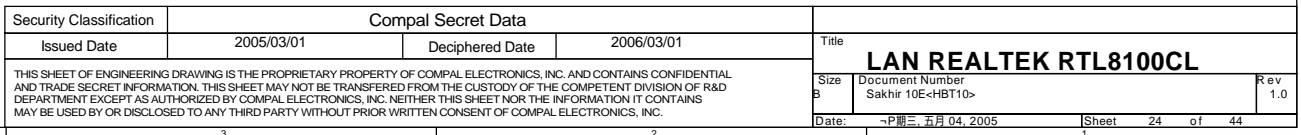
Headphone JACK 1

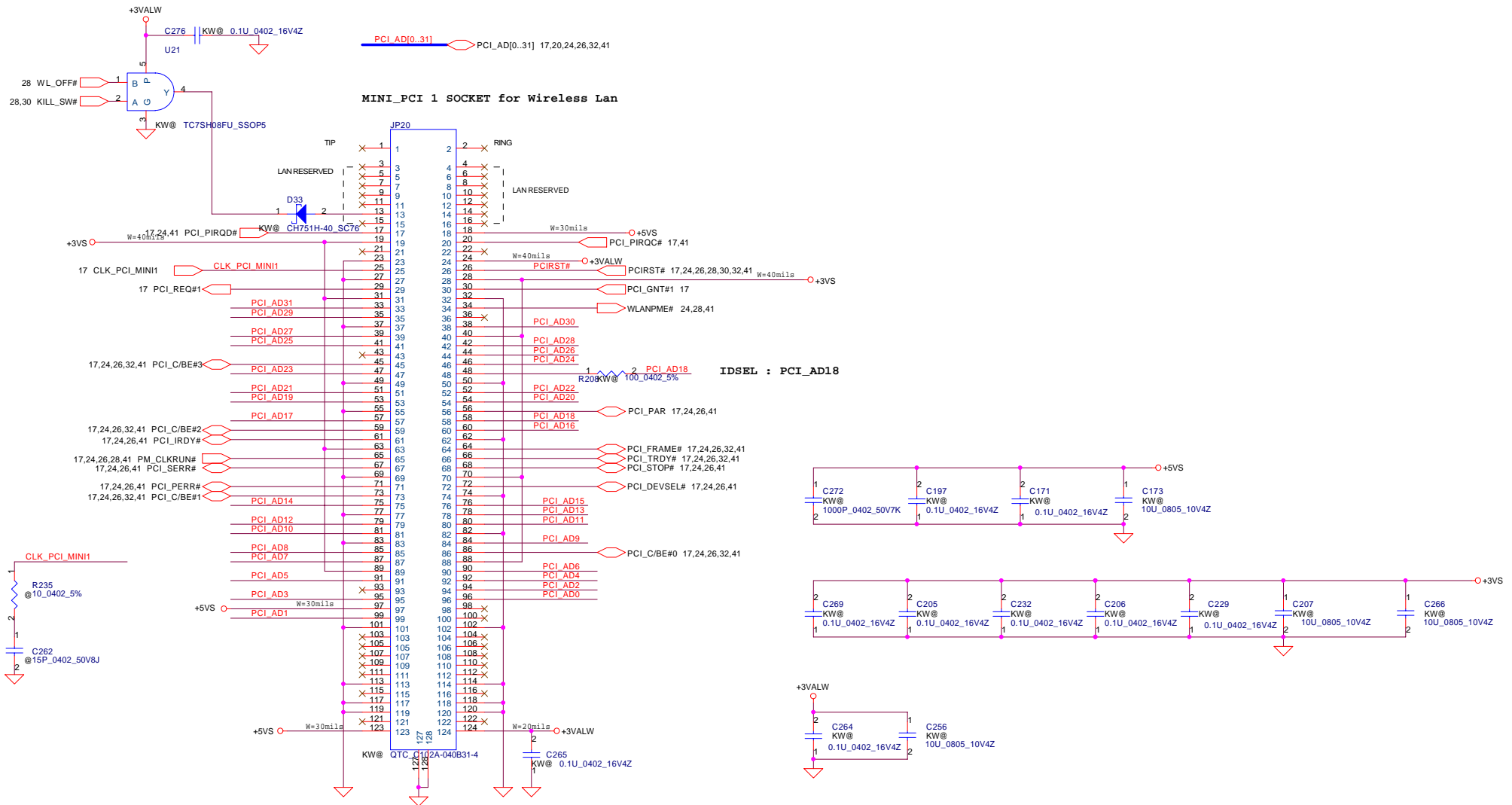


MIC JACK

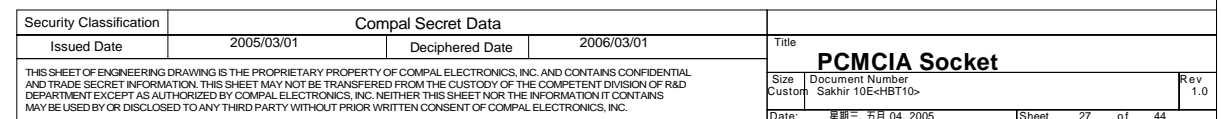
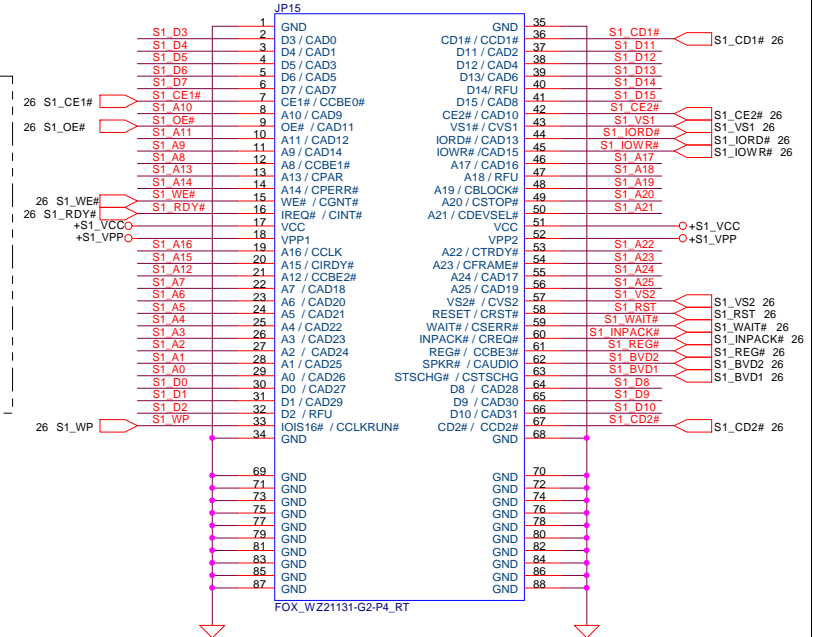


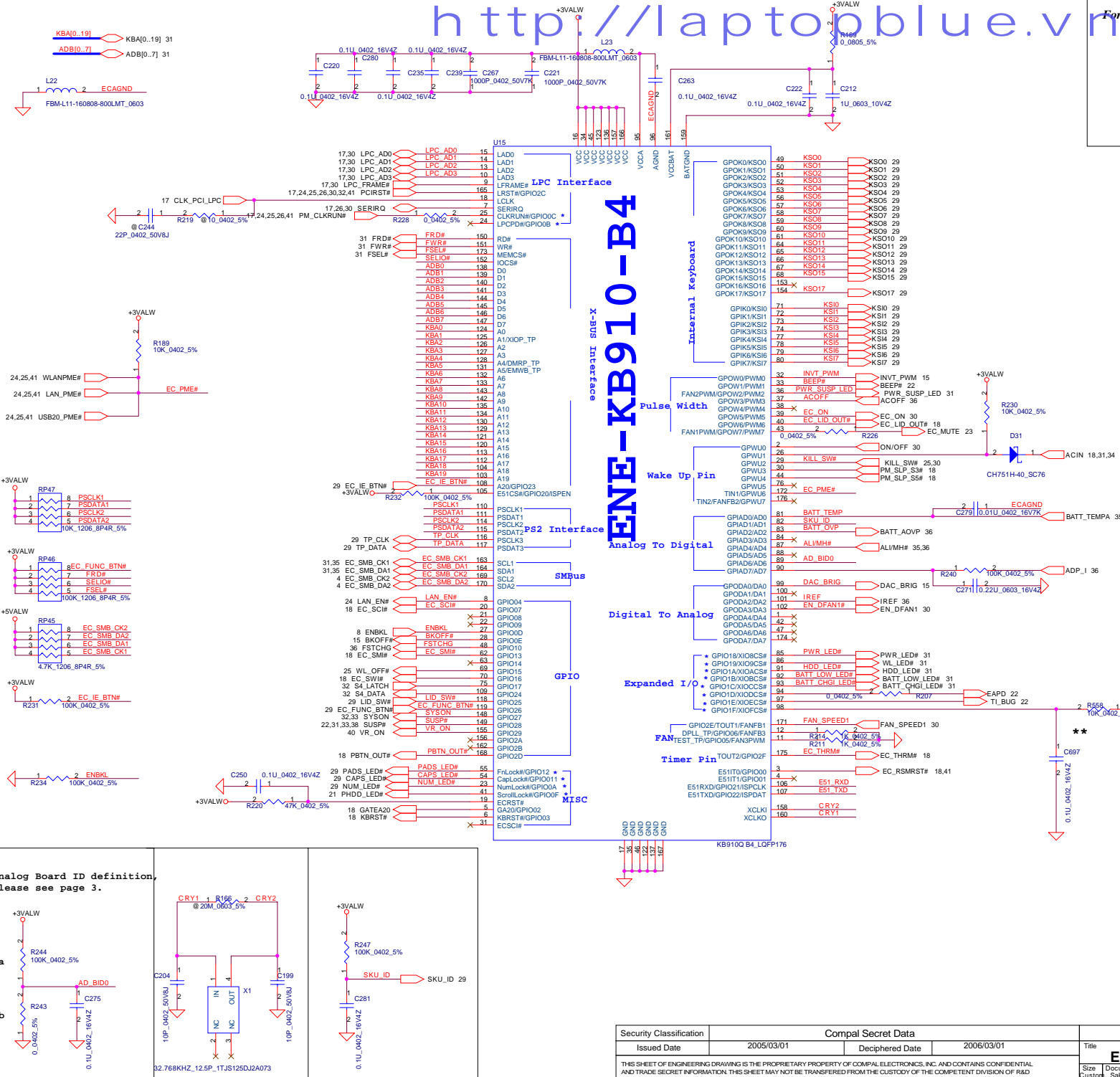
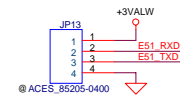
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| Issued Date | 2005/03/01 | Deciphered Date | 2006/03/01 | AMP & Audio Jack | |
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| | | | | Date: ~P 星期三, 五月 04, 2005 | Rev 1.0 |
| | | | | Sheet 23 of 44 | |





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| Issued Date | 2005/03/01 | Deciphered Date | 2006/03/01 | Title | |
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| | | | | <div> <div>Date: 星期三, 五月 04, 2005</div> <div> <div>Sheet 25 of 44</div> </div> </div> | |
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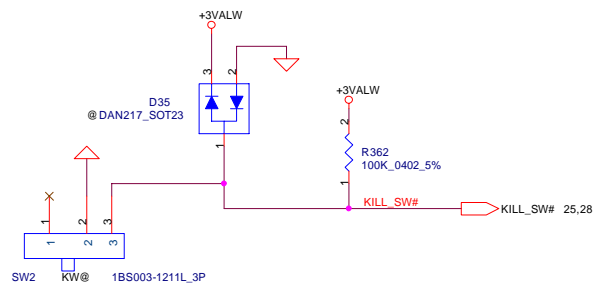
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| Issued Date | | 2005/03/01 | Deciphered Date | 2006/03/01 | Title | | |
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| | | | | | Size Custom | Document Number Sakhril 10E<HBT10> | Rev 1 |
| | | | | | Date: | 中華民國 五月 04, 2005 | Sheet 28 of 44 |

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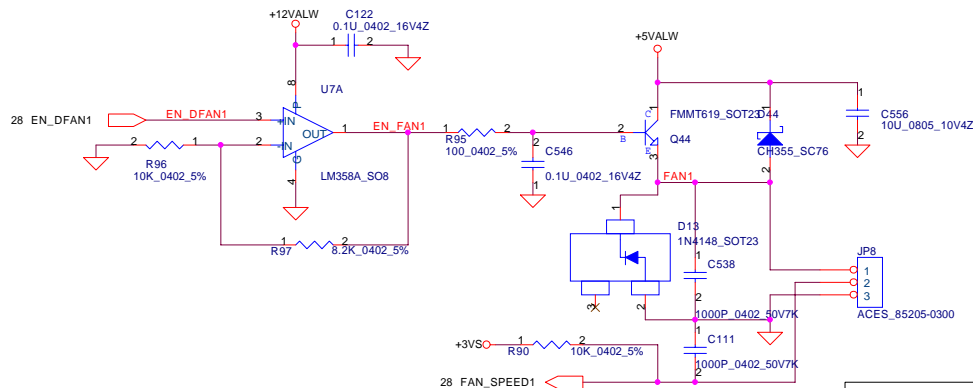


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| Issued Date | 2005/03/01 | Deciphered Date | 2006/03/01 | Title | | |
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| | | | | Size | Document Number | Rev |
| | | | | Custom | Sakhr 10E-HBT10> | |
| | | | | Date | 星期三 五月 04, 2005 | Sheet 29 of 44 |

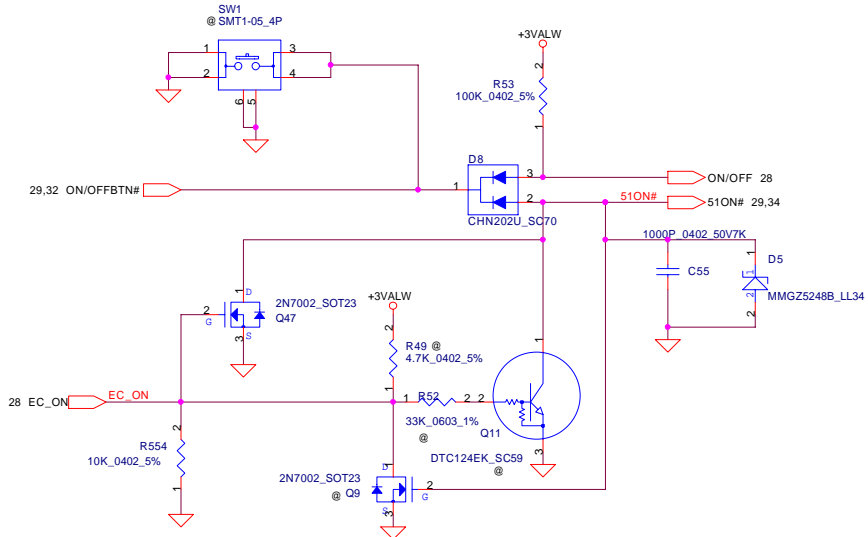
Kill SWITCH



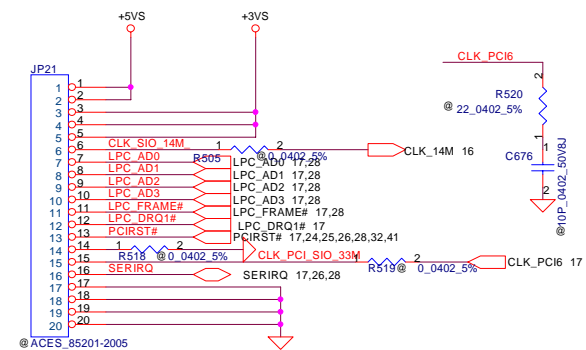
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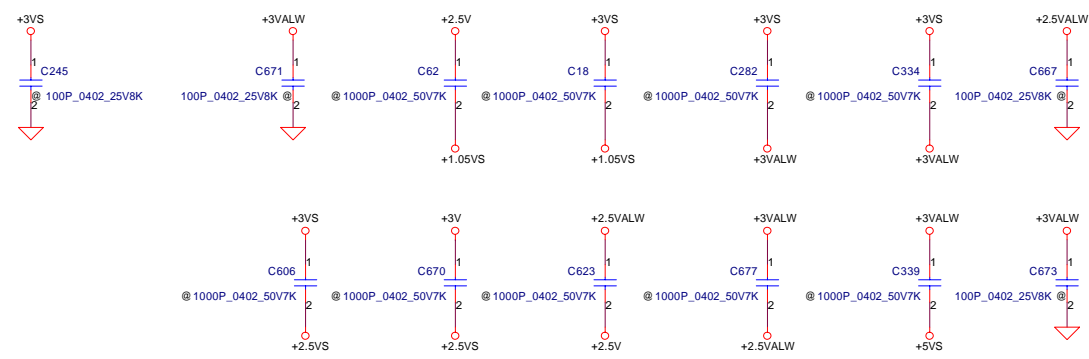
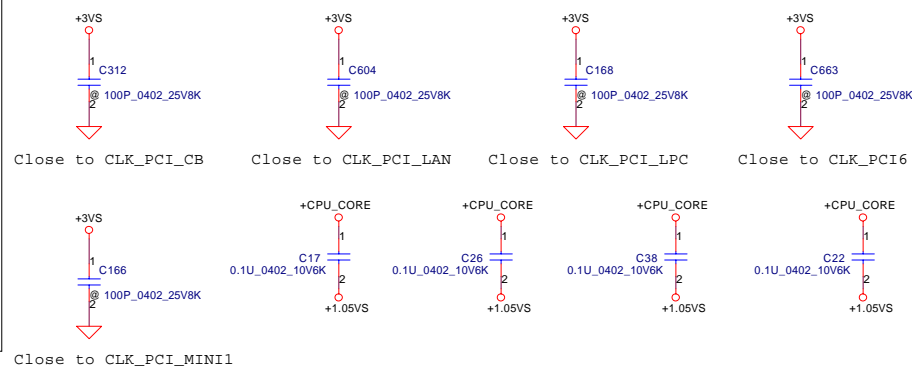
Power Button



LPC Debug Port



For EMI solution

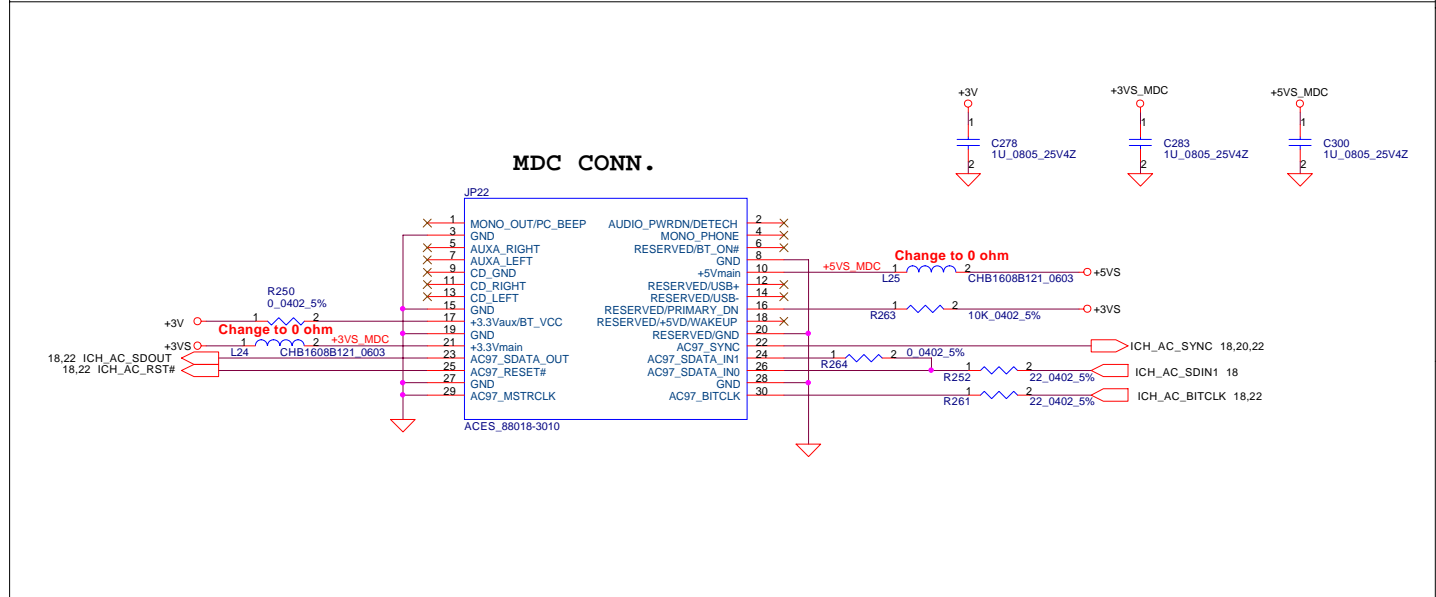
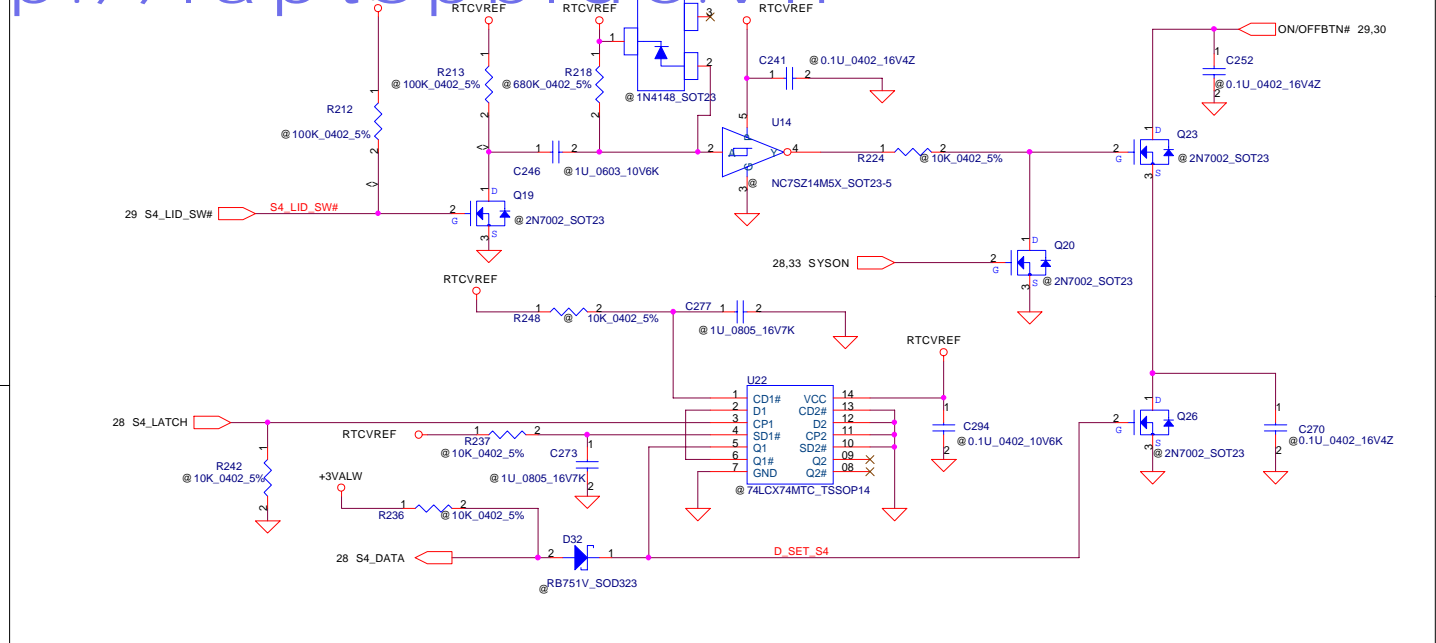


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| Security Classification | | Compal Secret Data | | <div> <div>Title</div> <div>Switches & Connectors</div> </div> | |
| Issued Date | 2005/03/01 | Deciphered Date | 2006/03/01 | | |
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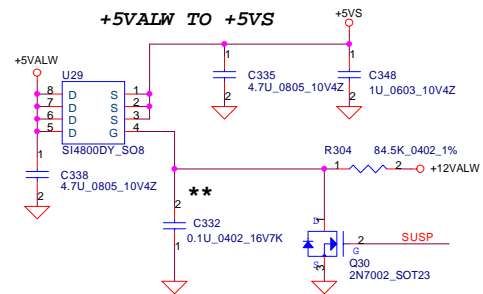
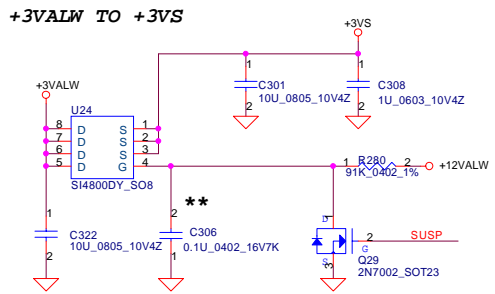
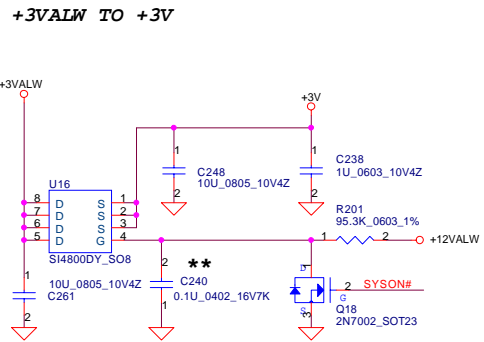
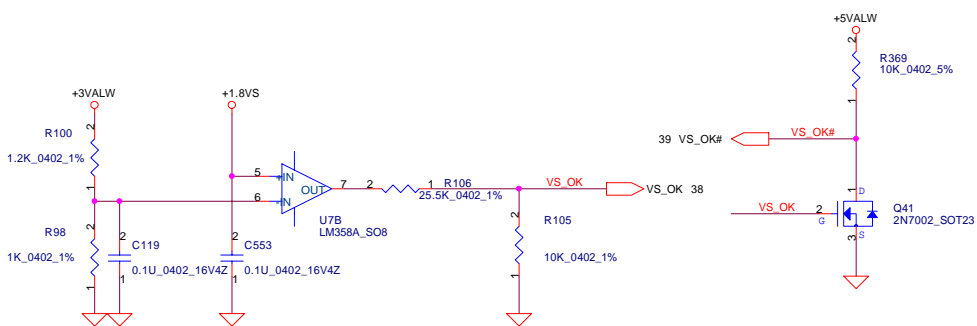
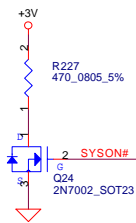
h t t p : / / l a p t o p b l u e . v n

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| | | | | Size | Document Number | Rev |
| | | | | Custom | Sakhir 10E<HB710> | 1.0 |
| Date | | 日期 | | Sheet | | |
| 2005 | | 五月 04 | | 31 of 44 | | |

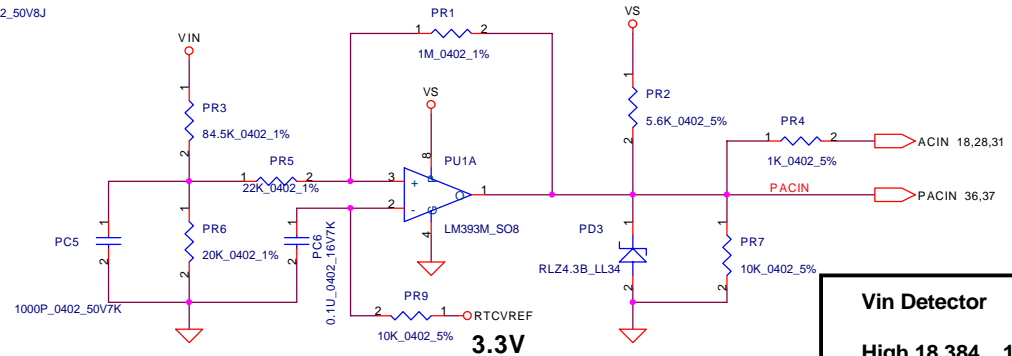
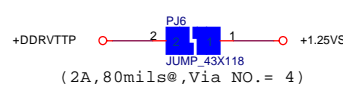
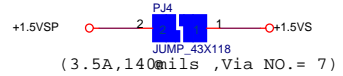
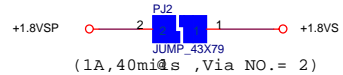
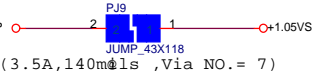
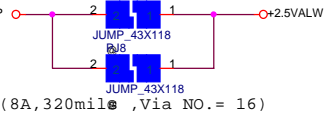
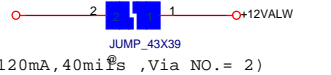
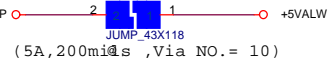
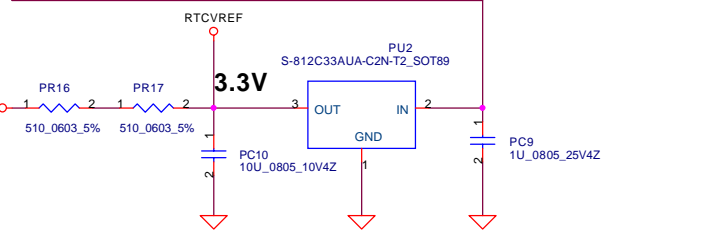
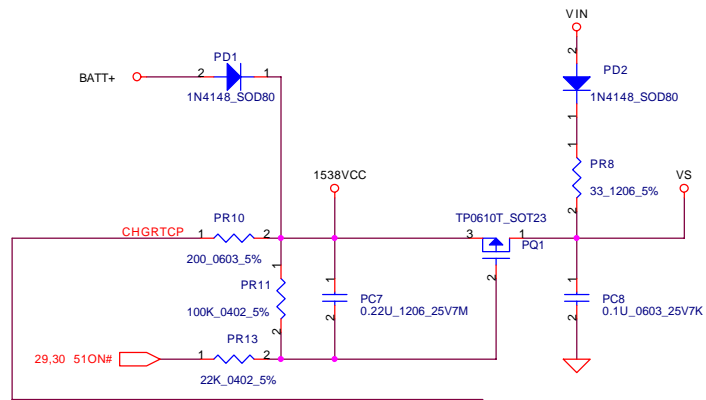
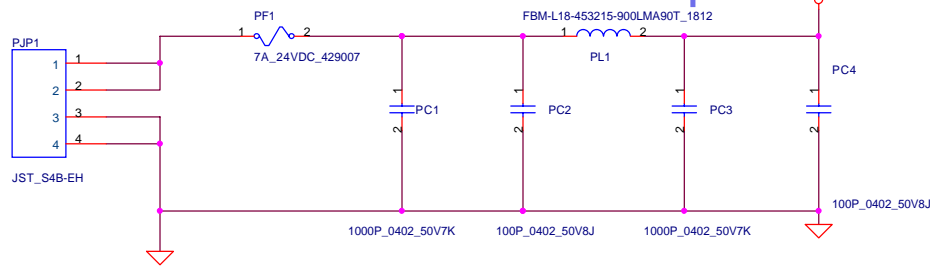
http://laptopblue.vn



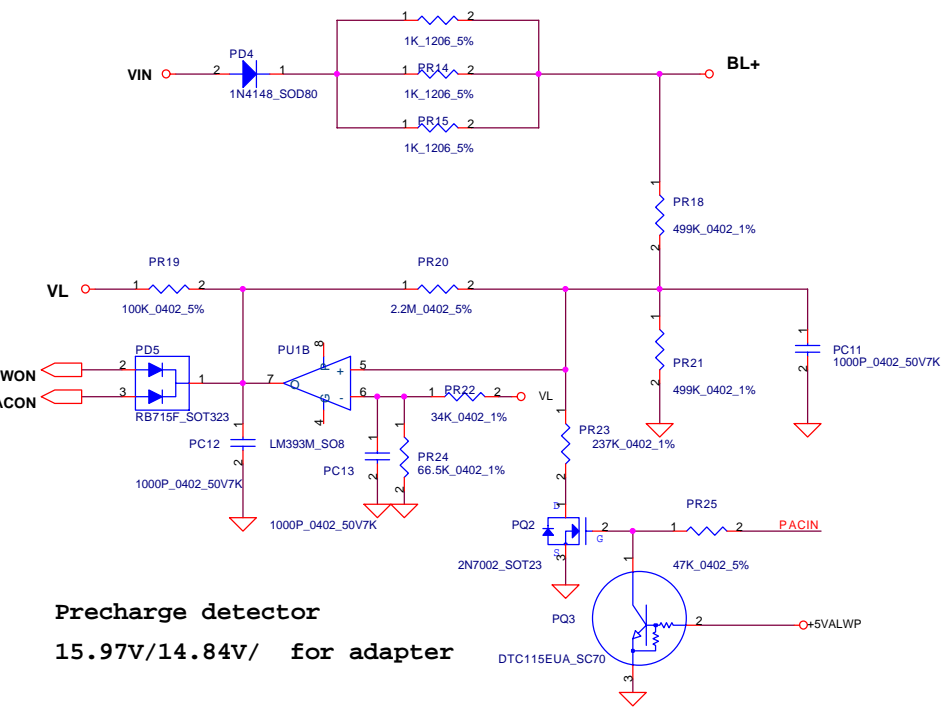
| | | | | |
|-----------------|---|---|---|---|
| 5 | 4 | 3 | 2 | 1 |
| zROM Structures | | | | |



| | | | | | |
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| | | | | Size | |
| | | | | Document Number | Rev |
| | | | | Cust | Sakhr 10E-4B710 |
| | | | | Date: | 星期三, 五月 04, 2005 |
| | | | | Sheet | 33 of 44 |



| Vin Detector | | | |
|--------------|--------|--------|--------|
| High | 18.384 | 17.901 | 17.430 |
| Low | 17.728 | 17.257 | 16.976 |

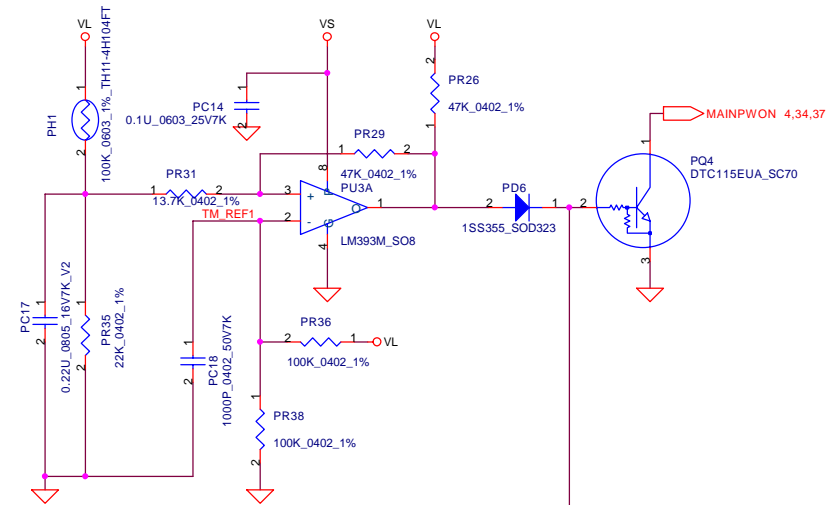
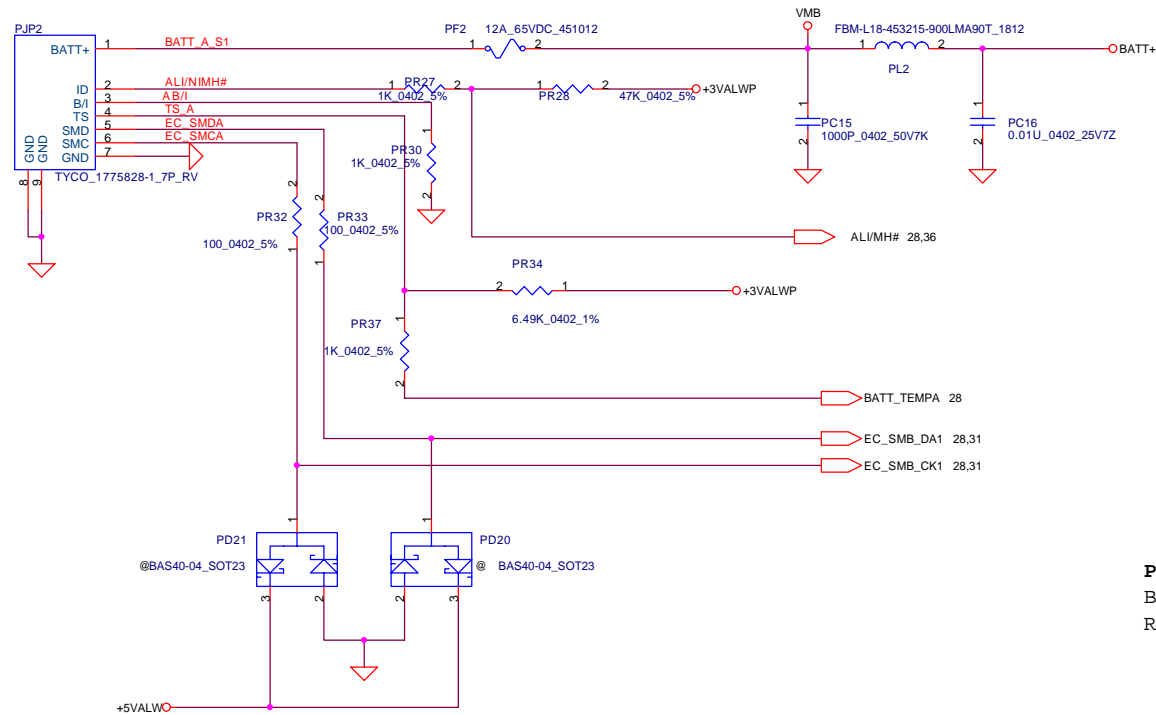


Precharge detector
15.97V/14.84V/ for adapter

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| 2006/03/10 | | | | Title | | | | DCIN & DETECTOR | | | |
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| | | | | | | | | 1.0 | | | |
| | | | | | | | | Date: 星期三, 五月 04, 2005 | | | |
| | | | | | | | | Sheet 34 of 44 | | | |

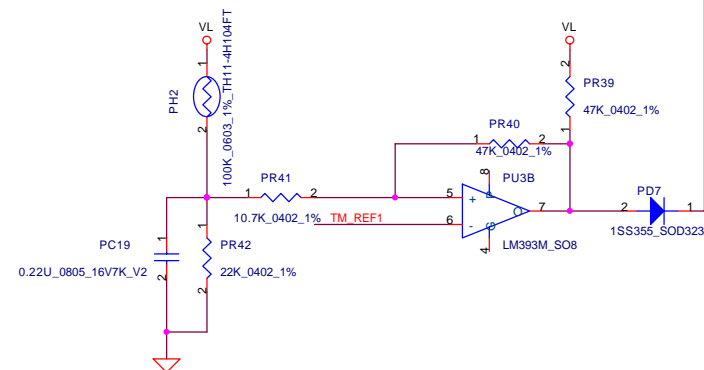
PH1 under CPU botten side :

CPU thermal protection at 84 degree C
Recovery at 45 degree C

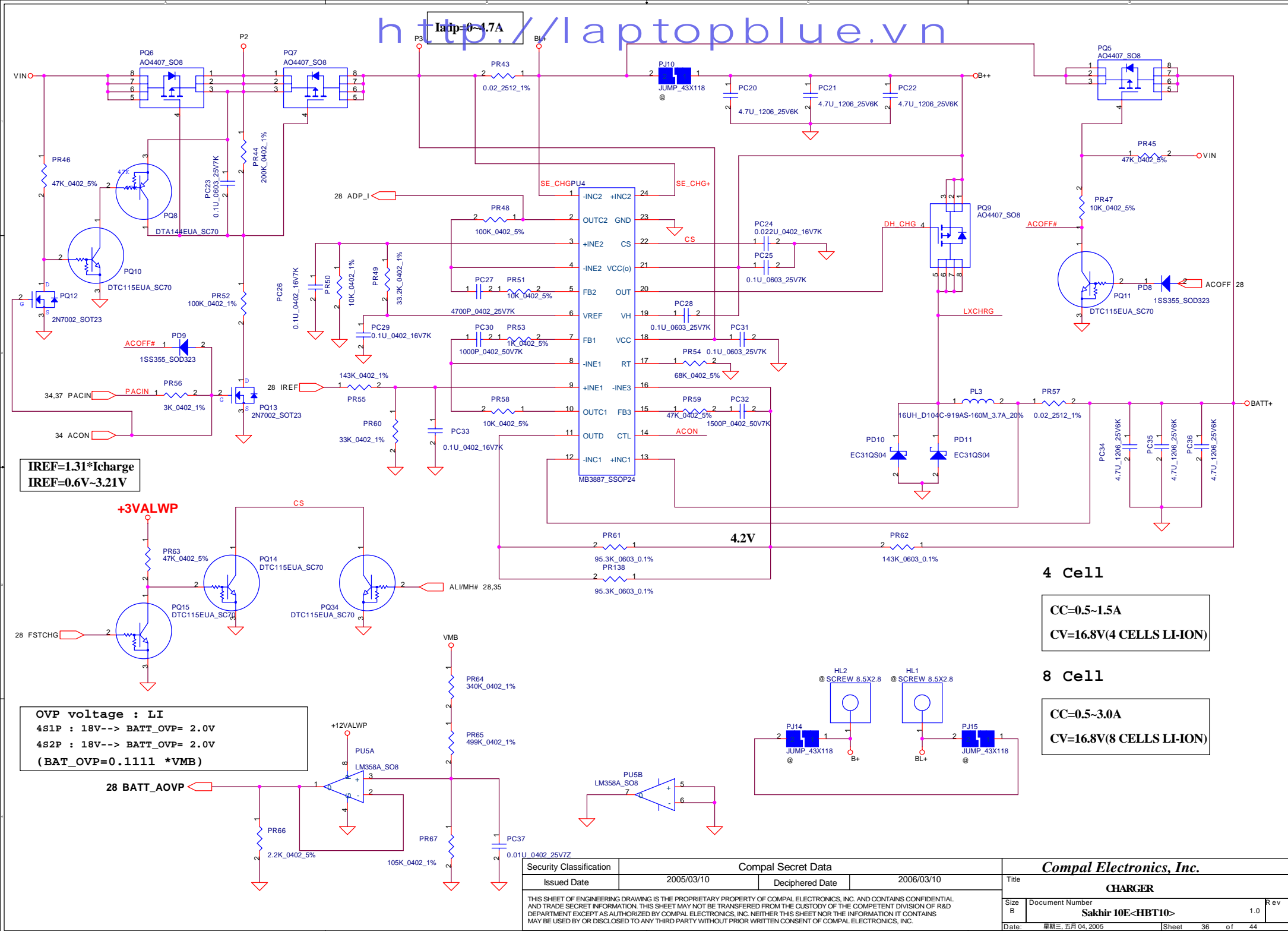


PH2 near main Battery CONN :

BAT. thermal protection at 79 degree C
Recovery at 45 degree C



| | | | | | |
|---|------------|--------------------|------------|--------------------------|------------------|
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| | | | | Sakhr 10E<HBT10> | |
| | | | | Date: | 星期三, 五月 04, 2005 |
| | | | | Sheet | 35 of 44 |



IREF=1.31*Icharge
IREF=0.6V~3.21V

OVP voltage : LI
4S1P : 18V--> BATT_OVP= 2.0V
4S2P : 18V--> BATT_OVP= 2.0V
(BATT_OVP=0.1111 *VMB)

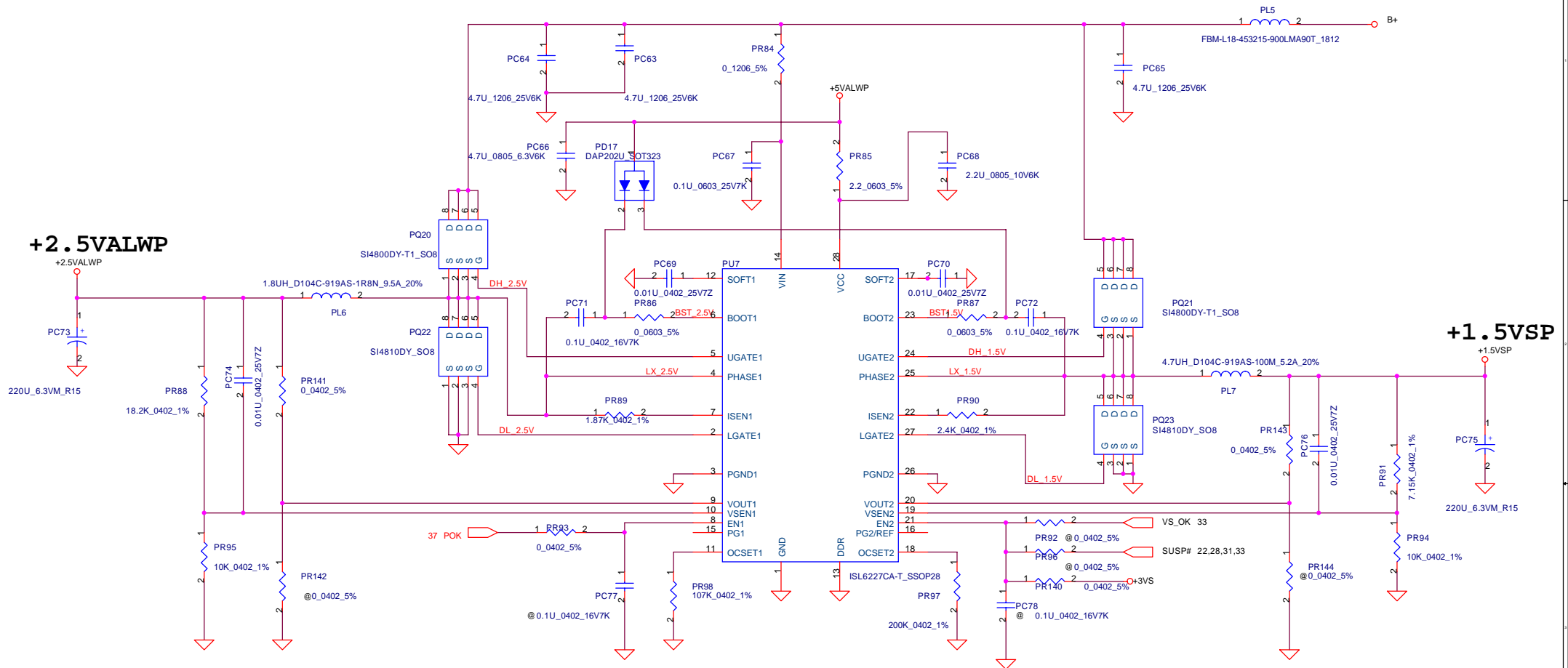
4 Cell

CC=0.5~1.5A
CV=16.8V(4 CELLS LI-ION)

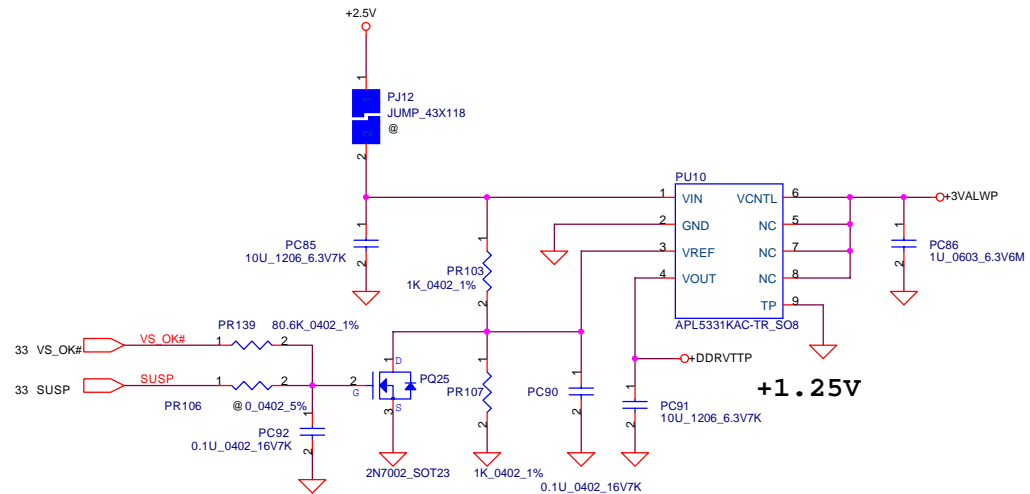
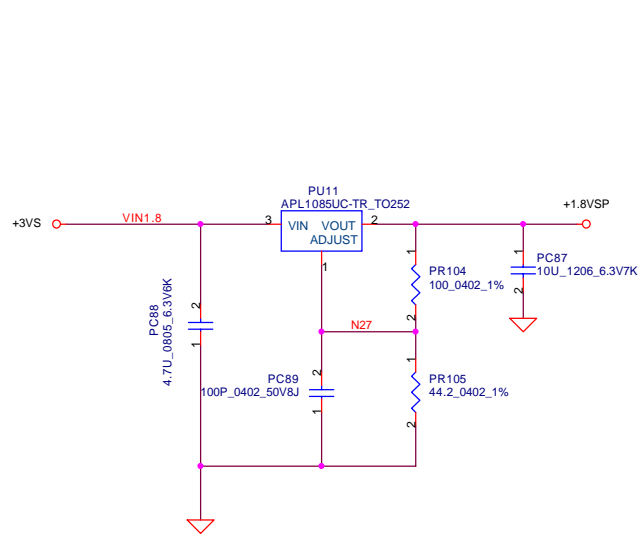
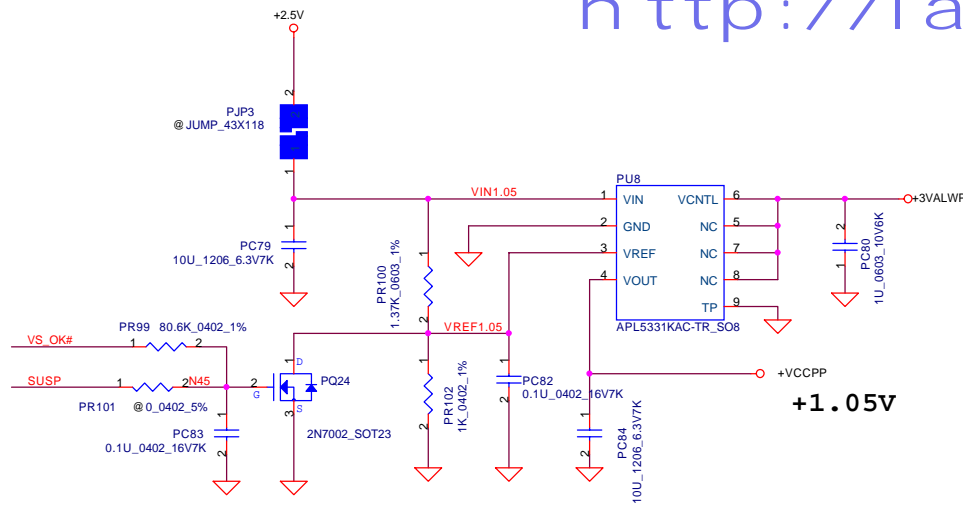
8 Cell

CC=0.5~3.0A
CV=16.8V(8 CELLS LI-ION)

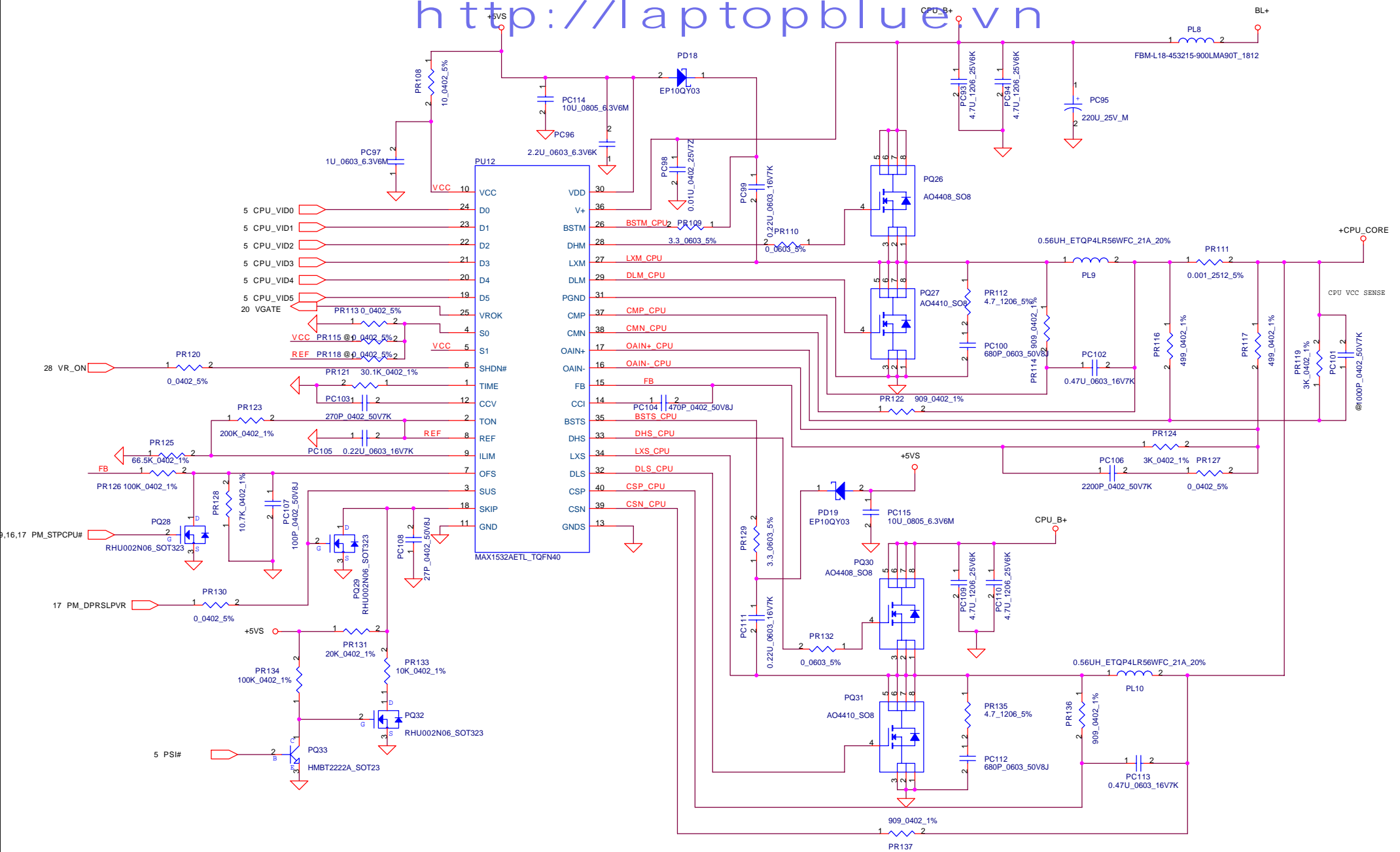
| Security Classification | | | | Compal Secret Data | | | | Compal Electronics, Inc. | | | |
|---|--|--|--|--------------------|--|--|--|--------------------------|--|--|--|
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| Deciphered Date | | | | 2006/03/10 | | | | CHARGER | | | |
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| | | | | | | | | Sheet 36 of 44 | | | |



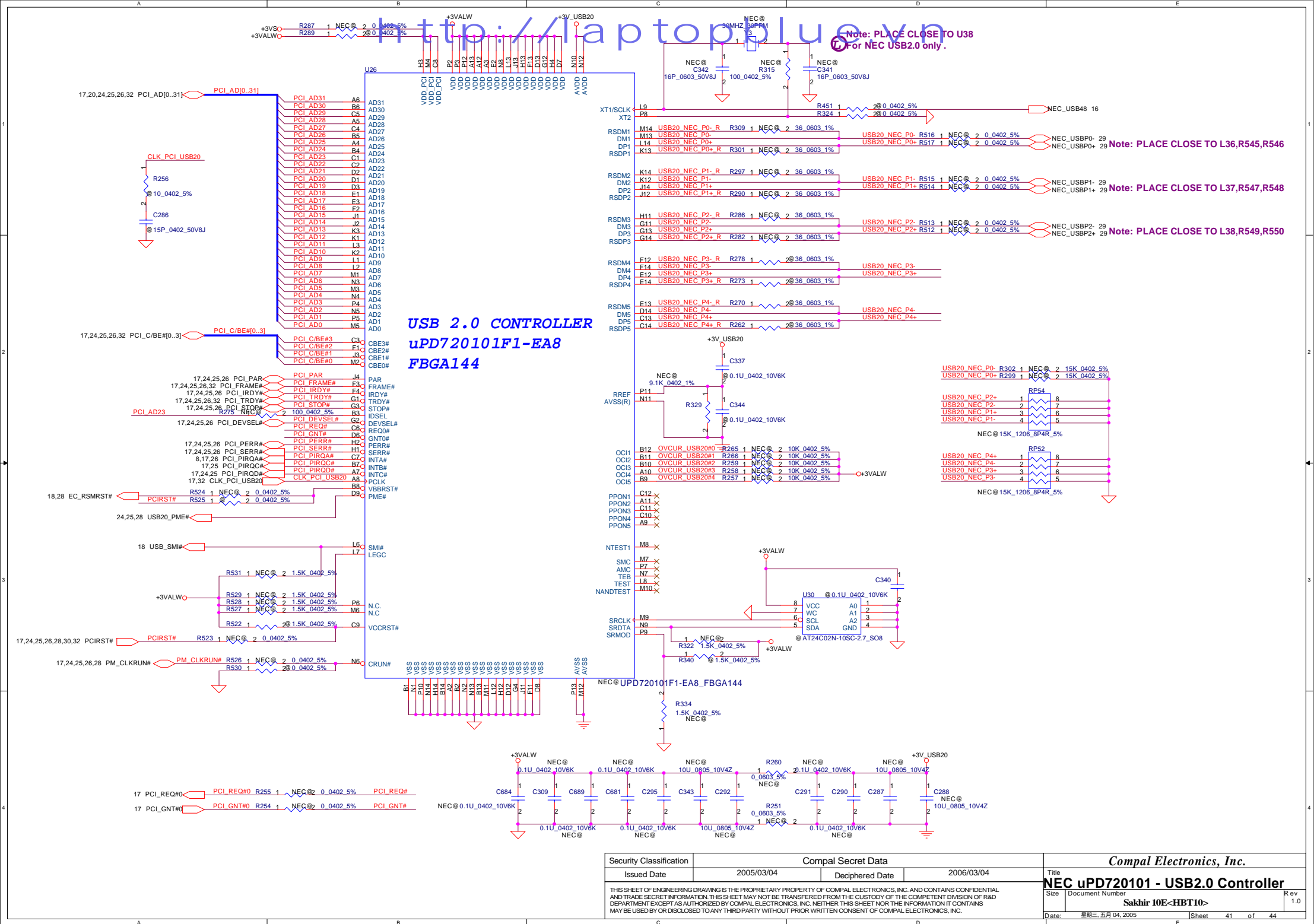
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| Size B | Document Number | Sakbir 10E<HBT10> | | 1.0 | Rev |
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| Custom | Sakhir 10E<HBT10> | 1.0 | | Date: 星期三, 五月 04, 2005 | |
| Sheet | | 39 | | of 44 | |



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| Size A3 | Document Number | Sakhir 10E<HBT10> | 1.0 | Rev |
| Date: | 星期三, 五月 04, 2005 | Sheet | 40 | of 44 |



h t t p : / / l a p t o p b l u e . v n

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LA-2811

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| Size | Document Number | Rev |
| B | EBQ10 M/B LA-2741 | 1.0 |
| Date: | 星期三, 五月 04, 2005 | Sheet 42 of 44 |

Version Change List (P. I. R. List) for HW Circuit

[illegible]

| | | | |
|---------------------------------|------------------|-------|------------|
| Compal Electronics, Inc. | | | |
| Title | | | |
| Changed-List History-1 | | | |
| Size | Document Number | | Rev |
| | LA-2811 | | 1.0 |
| Date: | 星期三, 五月 04, 2005 | Sheet | 43 of 44 |

List) for Power Circuit

A vertical bar is divided into four segments labeled A, B, C, and D from bottom to top. An arrow points to the boundary between segments B and C.

| | | | | | |
|-------|------------------|-------|----|----|----|
| Date: | 星期三, 五月 04, 2005 | Sheet | 44 | of | 44 |
|-------|------------------|-------|----|----|----|