



Part Number = X76264BOL81

SEYSAM1G@



Part Number = X76264BOL82

SEYHYN1G@



Part Number = X76264BOL55

WHISAM1G@



Part Number = X76264BOL60

WHIHYN1G@



Part Number = X76264BOL61

SAM2G@



Part Number = X76264BOL62

HYN2G@



Part Number = DA80000NI00

Compal Confidential

P7YE5/S5 Schematics Document

AMD Sabine

APU Llano / Hudson M2 / Vancouver Whistler_Seymour

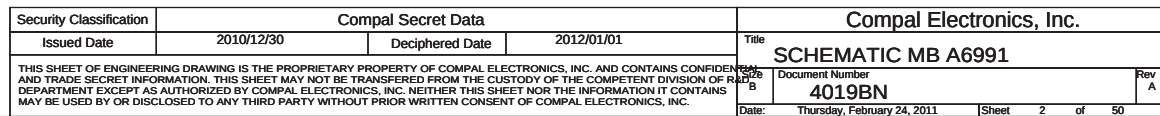
DIS only / UMA only / PX Muxless with BACO

2011-02-18

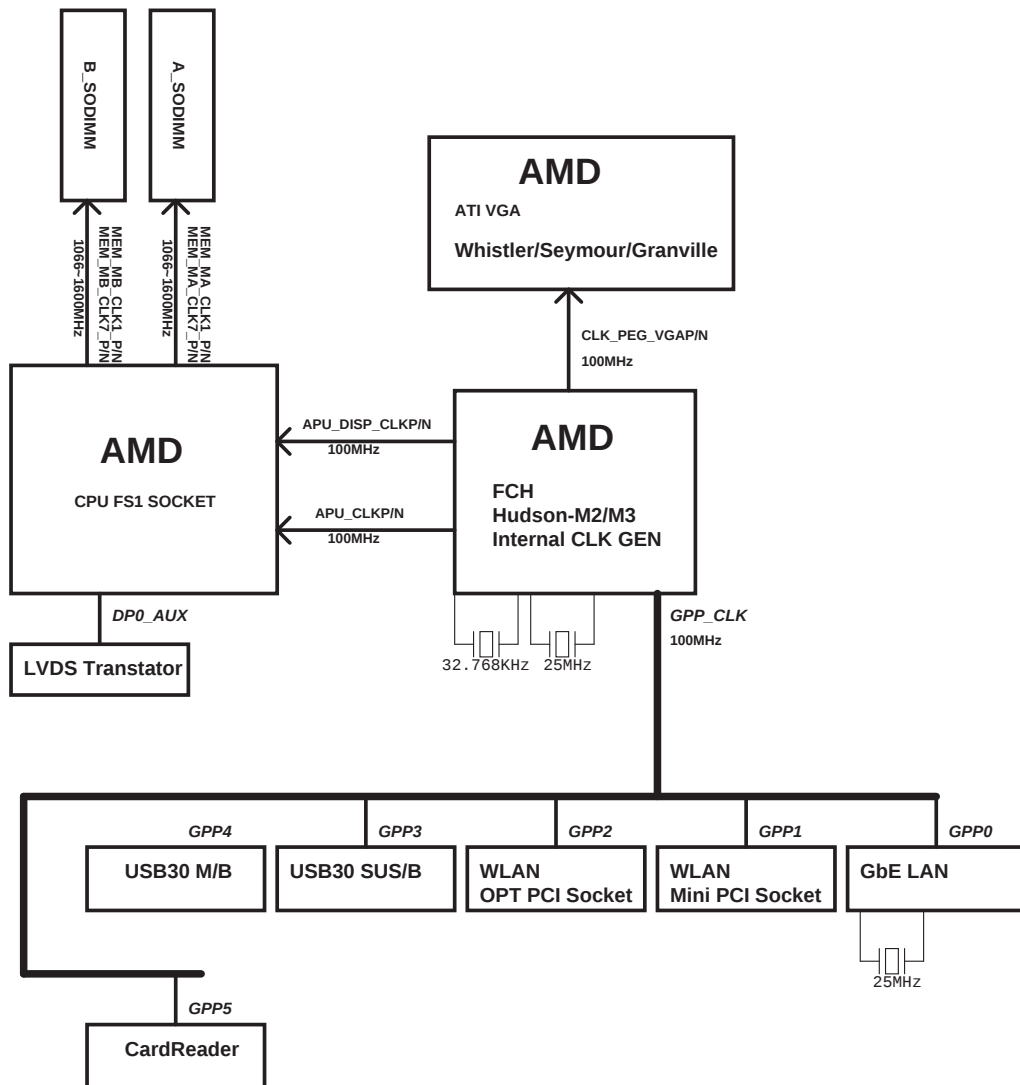
LA-6991P REV: 0.2

Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2010/12/30	Deciphered Date	2012/01/01	Title	
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Date: Thursday, February 24, 2011				Sheet	1 of 50

Sabine



CLOCK DISTRIBUTION

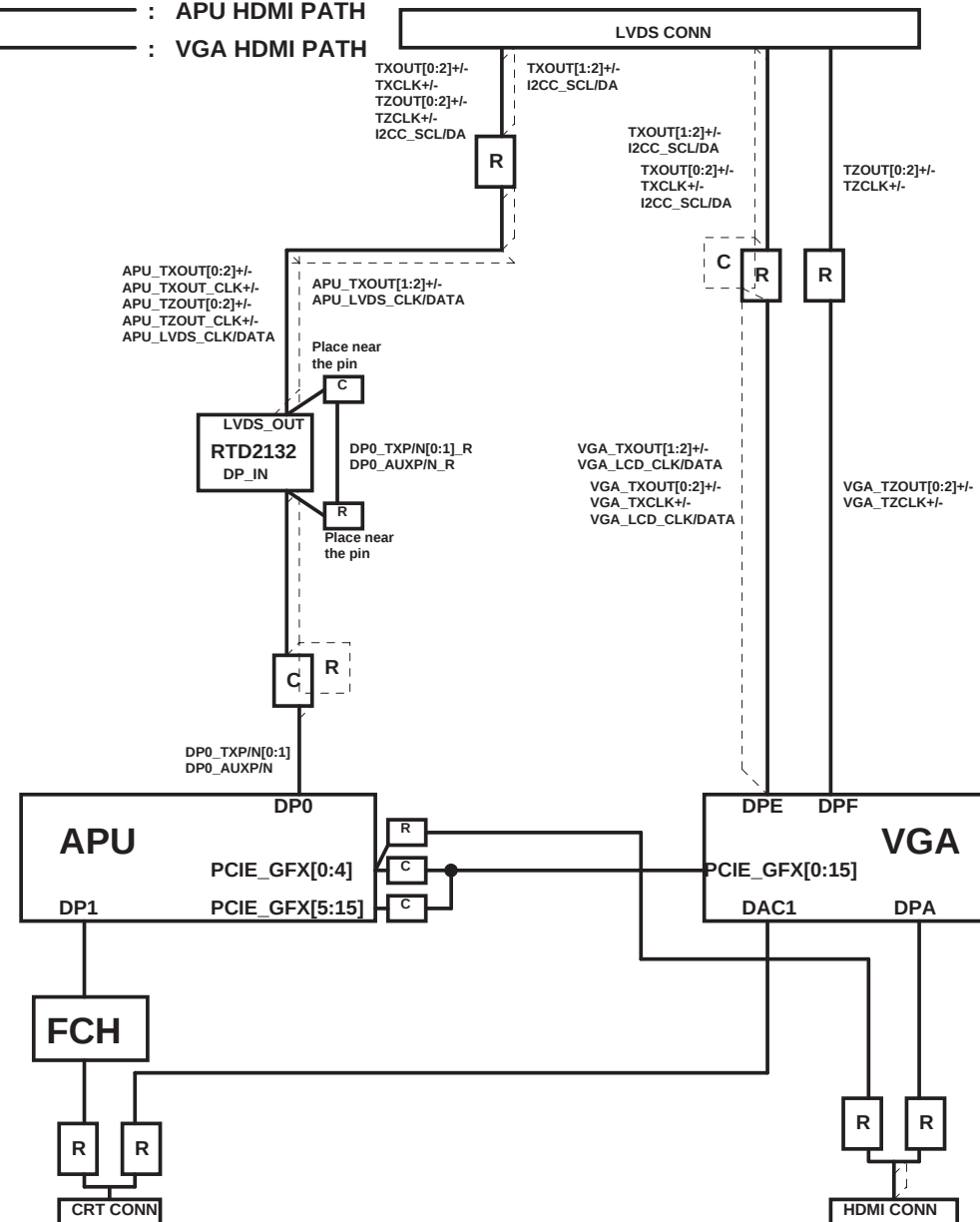


DISPLAY DISTRIBUTION

- ```

_____ : LVDS PATH
_____, --- : eDP PATH
_____ : APU HDMI PATH
_____ : VGA HDMI PATH

```



|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                 |            |        |                    |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------|------------|--------|--------------------|-----|
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                 |            | Custom | 4019BN             | A   |
| Date                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Thursday, February 24, 2011 | Sheet           | 3          | of     | 50                 |     |

Voltage Rails

| Power Plane  | Description                                  | S1  | S3  | S5  |
|--------------|----------------------------------------------|-----|-----|-----|
| VIN          | Adapter power supply (19V)                   | N/A | N/A | N/A |
| B+           | AC or battery power rail for power circuit.  | N/A | N/A | N/A |
| +CPU_CORE    | Core voltage for CPU                         | ON  | OFF | OFF |
| +CPU_CORE_1  | Core voltage for CPU (0.7-1.2V)              | ON  | OFF | OFF |
| +CPU_CORE_NB | Voltage for On-die VGA of APU                | ON  | OFF | OFF |
| +VGA_CORE    | 0.95-1.2V switched power rail                | ON  | OFF | OFF |
| +0.75VS      | 0.75V switched power rail for DDR terminator | ON  | ON  | OFF |
| +1.0VSG      | 1.0V switched power rail for VGA             | ON  | OFF | OFF |
| +1.1ALW      | 1.1V switched power rail for FCH             | ON  | ON  | ON* |
| +1.1VS       | 1.1V switched power rail for FCH             | ON  | OFF | OFF |
| +1.2VS       | 1.2V switched power rail for APU             | ON  | OFF | OFF |
| +1.5V        | 1.5V power rail for CPU VDDIO and DDR        | ON  | ON  | OFF |
| +1.5VS       | 1.5V switched power rail                     | ON  | OFF | OFF |
| +1.8VSG      | 1.8V switched power rail                     | ON  | OFF | OFF |
| +2.5VS       | 2.5V for CPU_VDDA                            | ON  | OFF | OFF |
| +3VALW       | 3.3V always on power rail                    | ON  | ON  | ON* |
| +3V_LAN      | 3.3V power rail for LAN                      | ON  | ON  | ON  |
| +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 |
| +VSB         | VSB 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 |
|--------|--------|-----------|------------|
|        |        |           |            |
|        |        |           |            |
|        |        |           |            |
|        |        |           |            |
|        |        |           |            |
|        |        |           |            |

EC SM Bus1 address

| Device        | Address     | HEX | Device                | Address     | HEX |
|---------------|-------------|-----|-----------------------|-------------|-----|
| Smart Battery | 0001 011X b | 16H | SB-TSI                | 1001 100X b | 98H |
|               |             |     | GMT G781-1 (GPU)      | 1001 101X b | 9AH |
|               |             |     | CAT24C64WJ (RTD2136S) | 1010 100X b | A8H |
|               |             |     | VGA-TSI               | 1000 001X b | 82H |
|               |             |     |                       |             |     |

FCH SM Bus 0 address

| Device    | Address    | HEX | Device | Address | HEX |
|-----------|------------|-----|--------|---------|-----|
| DDR DIMM1 | 1001 000Xb | 90  |        |         |     |
| DDR DIMM2 | 1001 010Xb | 94  |        |         |     |
|           |            |     |        |         |     |
|           |            |     |        |         |     |
|           |            |     |        |         |     |

| STATE                | SIGNAL |  | SLP_S1# | SLP_S3# | SLP_S4# | SLP_S5# | +VALW | +V  | +VS | Clock |
|----------------------|--------|--|---------|---------|---------|---------|-------|-----|-----|-------|
|                      |        |  |         |         |         |         |       |     |     |       |
| Full ON              |        |  | HIGH    | HIGH    | HIGH    | HIGH    | ON    | ON  | ON  | ON    |
| S1(Power On Suspend) |        |  | LOW     | HIGH    | HIGH    | HIGH    | ON    | ON  | ON  | LOW   |
| S3 (Suspend to RAM)  |        |  | LOW     | LOW     | HIGH    | HIGH    | ON    | ON  | OFF | OFF   |
| S4 (Suspend to Disk) |        |  | LOW     | LOW     | LOW     | HIGH    | ON    | OFF | OFF | OFF   |
| S5 (Soft OFF)        |        |  | LOW     | LOW     | LOW     | LOW     | ON    | OFF | OFF | OFF   |

Board ID / SKU ID Table for AD channel

| Vcc      | 3.3V +/- 5%  |             |             |             |
|----------|--------------|-------------|-------------|-------------|
| Ra/Rc/Re | 100K +/- 5%  |             |             |             |
| Board ID | Rb / Rd / Rf | 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     |

BTO Option Table

| BOM Structure | BTO Item                                    |
|---------------|---------------------------------------------|
| UMA@          | Display from UMA (PX4.0 or UMA only)        |
| VGA@          | Have VGA chip (Discrete only or PX4.0)      |
| DISO@         | Display from VGA (Discrete only)            |
| SEYM@         | Use Seymour (Discrete only and PX4.0)       |
| WHI@          | Use Whistler (Discrete only and PX4.0)      |
| GRAN@         | Use Granville (Discrete only and PX4.0)     |
| VAN@          | Use Vancouver VGA (Discrete only and PX4.0) |
| RT@           | Use translator RTD2136S                     |
| ANX@          | Use translator ANX3110                      |
| M2@           | Use Hudson-M2                               |
| M3@           | Use Hudson-M3                               |
| 930@          | Use KB930                                   |
| 9012@         | Use KB9012                                  |
| 128@          | Use VRAM channel A                          |
| PX@           | PX4.0                                       |
| BACO@         | Use BACO                                    |
| NOBACO@       | No use BACO                                 |
| APULVDS@      | UMA LVDS path                               |
| APUEDP@       | UMA eDP path                                |
| VGALVDS@      | VGA LVDS path                               |
| VGAEDP@       | VGA eDP path                                |
| EDP@          | eDP path                                    |
| JE@           | ACER                                        |
| SJV@          | PB and GW                                   |
| NOGRAN@       | No Use Granville                            |
|               |                                             |
|               |                                             |
|               |                                             |
|               |                                             |
|               |                                             |
|               |                                             |

| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data |                 |            | Compal Electronics, Inc. |                             |               |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Date:                    | Thursday, February 24, 2011 | Sheet 4 of 50 |

PROJECT ID Table

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

BOARD ID Table

| Board ID | PCB Revision |
|----------|--------------|
| 0        |              |
| 1        | 0.1(EVT)     |
| 2        | 0.2(DVT)     |
| 3        |              |
| 4        |              |
| 5        |              |
| 6        |              |
| 7        |              |

BOM Config

EVT

UMA only:

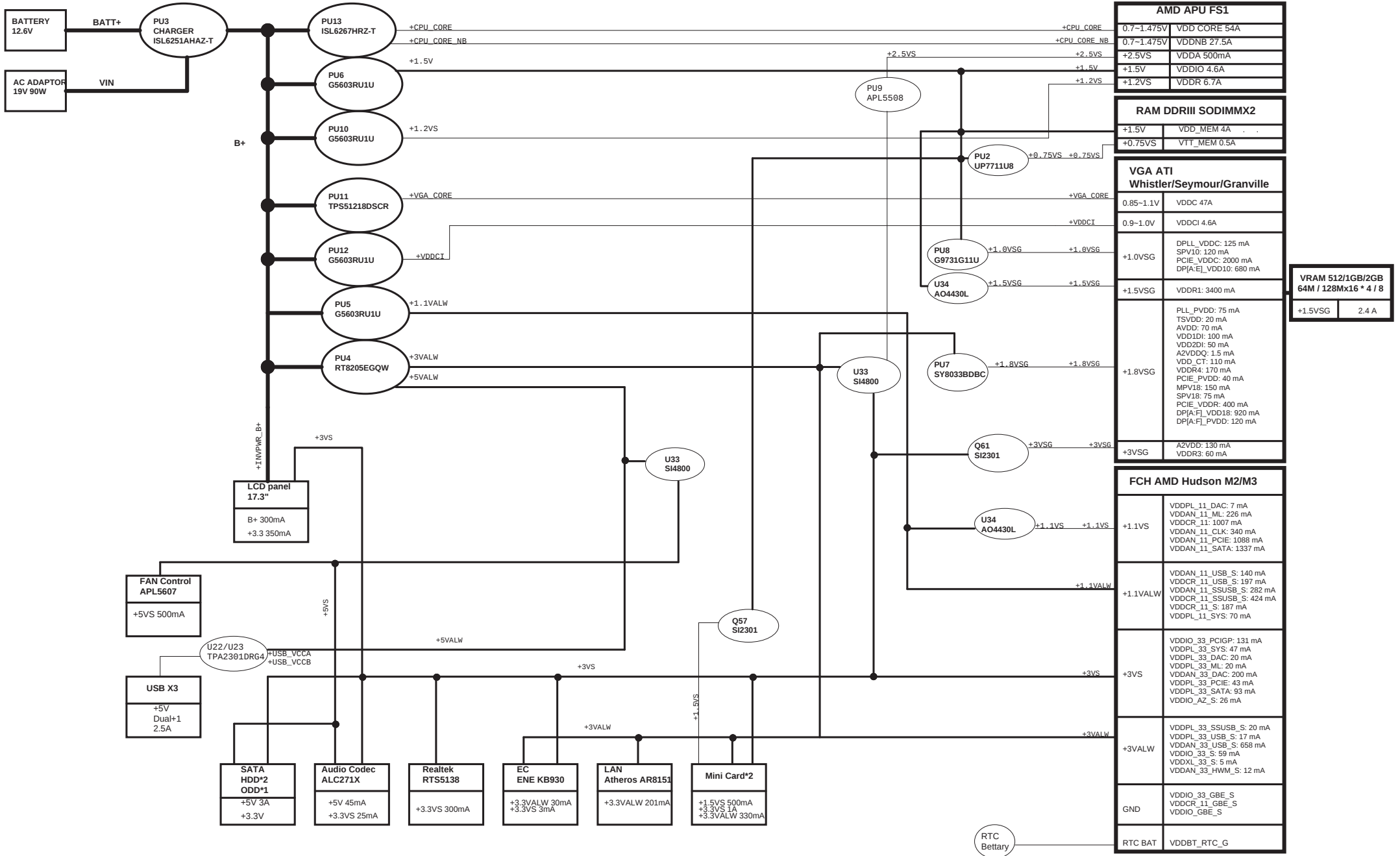
UMA@, RT@, ANX@, M3@, 930@, APULVDS@, JE@

DISO only:

VGA@, DISO@, VGALVDS@, SEYM@ or WHI@, VAN@, 128@(With WHI@), NOGRAN@, NOBACO@, M3@, 930@, JE@

PX

UMA@, VGA@, PX@, SEYM@ or WHI@, VAN@, 128@(With WHI@), NOGRAN@, RT@, ANX@, APULVDS@, BACO@, M3@, 930@, JE@



| AMD APU FS1 |              |  |
|-------------|--------------|--|
| 0.7~1.475V  | VDD CORE 54A |  |
| 0.7~1.475V  | VDDNB 27.5A  |  |
| +2.5VS      | VDDA 500mA   |  |
| +1.5V       | VDDIO 4.6A   |  |
| +1.2VS      | VDDR 6.7A    |  |

| RAM DDRIII SODIMMX2 |              |
|---------------------|--------------|
| +1.5V               | VDD_MEM 4A   |
| +0.75VS             | VTT_MEM 0.5A |

| VGA ATI Whistler/Seymour/Granville |            |
|------------------------------------|------------|
| 0.85~1.1V                          | VDDC 47A   |
| 0.9~1.0V                           | VDDCI 4.6A |

|         |                                                                                                                                                                                                                                                                   |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| +1.0VSG | DPLL_VDDC: 125 mA<br>SPV10: 120 mA<br>PCIE_VDDC: 2000 mA<br>DP[A:E]_VDD10: 680 mA                                                                                                                                                                                 |
| +1.5VSG | VDDR1: 3400 mA                                                                                                                                                                                                                                                    |
| +1.8VSG | PLL_PVDD: 75 mA<br>TSVDD: 20 mA<br>AVDD: 70 mA<br>VDD1DI: 100 mA<br>VDD2DI: 50 mA<br>AZVDDQ: 1.5 mA<br>VDD_CT: 110 mA<br>VDDR4: 170 mA<br>PCIE_PVDD: 40 mA<br>MPV18: 150 mA<br>SPV18: 75 mA<br>PCIE_VDDR: 400 mA<br>DP[A:F]_VDD18: 920 mA<br>DP[A:F]_PVDD: 120 mA |
| +3VSG   | AZVDD: 130 mA<br>VDDR3: 60 mA                                                                                                                                                                                                                                     |

| VRAM 512/1GB/2GB 64M / 128Mx16 * 4 / 8 |       |
|----------------------------------------|-------|
| +1.5VSG                                | 2.4 A |

| FCH AMD Hudson M2/M3 |                                                                                                                                                                                         |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| +1.1VS               | VDDPL_11_DAC: 7 mA<br>VDDAN_11_ML: 226 mA<br>VDDCR_11: 1007 mA<br>VDDAN_11_CLK: 340 mA<br>VDDAN_11_PCIE: 1088 mA<br>VDDAN_11_SATA: 1337 mA                                              |
| +1.1VALW             | VDDAN_11_USB_S: 140 mA<br>VDDCR_11_USB_S: 197 mA<br>VDDAN_11_SSUSB_S: 282 mA<br>VDDCR_11_SSUSB_S: 424 mA<br>VDDCR_11_S: 187 mA<br>VDDPL_11_SYS: 70 mA                                   |
| +3VS                 | VDDIO_33_PCIGP: 131 mA<br>VDDPL_33_SYS: 47 mA<br>VDDPL_33_DAC: 20 mA<br>VDDPL_33_ML: 20 mA<br>VDDAN_33_DAC: 200 mA<br>VDDPL_33_PCIE: 43 mA<br>VDDPL_33_SATA: 93 mA<br>VDDIO_AZ_S: 26 mA |
| +3VALW               | VDDPL_33_SSUSB_S: 20 mA<br>VDDPL_33_USB_S: 17 mA<br>VDDAN_33_USB_S: 658 mA<br>VDDIO_33_S: 59 mA<br>VDDXL_33_S: 5 mA<br>VDDAN_33_HWM_S: 12 mA                                            |
| GND                  | VDDIO_33_GBE_S<br>VDDCR_11_GBE_S<br>VDDIO_GBE_S                                                                                                                                         |
| RTC BAT              | VDDBT_RTC_G                                                                                                                                                                             |

<13> PCIE\_GTX\_C\_FRX\_P[0..15]

<13> PCIE\_GTX\_C\_FRX\_N[0..15]

| JCPU1A             |     | CONN@       |             |
|--------------------|-----|-------------|-------------|
| PCI EXPRESS        |     |             |             |
| PCIE_GTX_C_FRX_P0  | AA8 | P_GFX_RXP0  | P_GFX_TXP0  |
| PCIE_GTX_C_FRX_N0  | AA9 | P_GFX_RXN0  | P_GFX_TXN0  |
| PCIE_GTX_C_FRX_P1  | Y7  | P_GFX_RXP1  | P_GFX_TXP1  |
| PCIE_GTX_C_FRX_N1  | Y8  | P_GFX_RXN1  | P_GFX_TXN1  |
| PCIE_GTX_C_FRX_P2  | W5  | P_GFX_RXP2  | P_GFX_TXP2  |
| PCIE_GTX_C_FRX_N2  | W6  | P_GFX_RXN2  | P_GFX_TXN2  |
| PCIE_GTX_C_FRX_P3  | W8  | P_GFX_RXP3  | P_GFX_TXP3  |
| PCIE_GTX_C_FRX_N3  | W9  | P_GFX_RXN3  | P_GFX_TXN3  |
| PCIE_GTX_C_FRX_P4  | V7  | P_GFX_RXP4  | P_GFX_TXP4  |
| PCIE_GTX_C_FRX_N4  | V8  | P_GFX_RXN4  | P_GFX_TXN4  |
| PCIE_GTX_C_FRX_P5  | U5  | P_GFX_RXP5  | P_GFX_TXP5  |
| PCIE_GTX_C_FRX_N5  | U6  | P_GFX_RXN5  | P_GFX_TXN5  |
| PCIE_GTX_C_FRX_P6  | U8  | P_GFX_RXP6  | P_GFX_TXP6  |
| PCIE_GTX_C_FRX_N6  | U9  | P_GFX_RXN6  | P_GFX_TXN6  |
| PCIE_GTX_C_FRX_P7  | T7  | P_GFX_RXP7  | P_GFX_TXP7  |
| PCIE_GTX_C_FRX_N7  | T8  | P_GFX_RXN7  | P_GFX_TXN7  |
| PCIE_GTX_C_FRX_P8  | R5  | P_GFX_RXP8  | P_GFX_TXP8  |
| PCIE_GTX_C_FRX_N8  | R6  | P_GFX_RXN8  | P_GFX_TXN8  |
| PCIE_GTX_C_FRX_P9  | R8  | P_GFX_RXP9  | P_GFX_TXP9  |
| PCIE_GTX_C_FRX_N9  | R9  | P_GFX_RXN9  | P_GFX_TXN9  |
| PCIE_GTX_C_FRX_P10 | P7  | P_GFX_RXP10 | P_GFX_TXP10 |
| PCIE_GTX_C_FRX_N10 | P8  | P_GFX_RXN10 | P_GFX_TXN10 |
| PCIE_GTX_C_FRX_P11 | N5  | P_GFX_RXP11 | P_GFX_TXP11 |
| PCIE_GTX_C_FRX_N11 | N6  | P_GFX_RXN11 | P_GFX_TXN11 |
| PCIE_GTX_C_FRX_P12 | N8  | P_GFX_RXP12 | P_GFX_TXP12 |
| PCIE_GTX_C_FRX_N12 | N9  | P_GFX_RXN12 | P_GFX_TXN12 |
| PCIE_GTX_C_FRX_P13 | M7  | P_GFX_RXP13 | P_GFX_TXP13 |
| PCIE_GTX_C_FRX_N13 | M8  | P_GFX_RXN13 | P_GFX_TXN13 |
| PCIE_GTX_C_FRX_P14 | L5  | P_GFX_RXP14 | P_GFX_TXP14 |
| PCIE_GTX_C_FRX_N14 | L6  | P_GFX_RXN14 | P_GFX_TXN14 |
| PCIE_GTX_C_FRX_P15 | L8  | P_GFX_RXP15 | P_GFX_TXP15 |
| PCIE_GTX_C_FRX_N15 | L9  | P_GFX_RXN15 | P_GFX_TXN15 |

GRAPHICS

<34> PCIE\_DTX\_C\_FRX\_P0

<34> PCIE\_DTX\_C\_FRX\_N0

<33> PCIE\_DTX\_C\_FRX\_P1

<33> PCIE\_DTX\_C\_FRX\_N1

<33> PCIE\_DTX\_C\_FRX\_P2

<33> PCIE\_DTX\_C\_FRX\_N2

| GPP        |     |
|------------|-----|
| P_GPP_RXP0 | AC5 |
| P_GPP_RXN0 | AC6 |
| P_GPP_RXP1 | AC8 |
| P_GPP_RXN1 | AC9 |
| P_GPP_RXP2 | AB7 |
| P_GPP_RXN2 | AB8 |
| P_GPP_RXP3 | AA5 |
| P_GPP_RXN3 | AA6 |

<26> UMI\_MTX\_C\_FRX\_P0

<26> UMI\_MTX\_C\_FRX\_N0

<26> UMI\_MTX\_C\_FRX\_P1

<26> UMI\_MTX\_C\_FRX\_N1

<26> UMI\_MTX\_C\_FRX\_P2

<26> UMI\_MTX\_C\_FRX\_N2

<26> UMI\_MTX\_C\_FRX\_P3

<26> UMI\_MTX\_C\_FRX\_N3

| UMI-LINK   |     |
|------------|-----|
| P_UMI_RXP0 | AE8 |
| P_UMI_RXN0 | AE7 |
| P_UMI_RXP1 | AE6 |
| P_UMI_RXN1 | AE5 |
| P_UMI_RXP2 | AE9 |
| P_UMI_RXN2 | AE8 |
| P_UMI_RXP3 | ADB |
| P_UMI_RXN3 | AD7 |

+1.2VS

P\_ZVDDP

K5

AMD\_TOPEDO\_FS-1

P\_ZVSS

| GLAN |                 |
|------|-----------------|
| AD4  | PCIE_FTX_DRX_P0 |
| AD5  | PCIE_FTX_DRX_N0 |
| AC2  | PCIE_FTX_DRX_P1 |
| AC3  | PCIE_FTX_DRX_N1 |
| AB2  | PCIE_FTX_DRX_P2 |
| AB1  | PCIE_FTX_DRX_N2 |

| WLAN |                 |
|------|-----------------|
| AB4  | PCIE_FTX_DRX_P3 |
| AB5  | PCIE_FTX_DRX_N3 |

| Option Mini2 |                |
|--------------|----------------|
| AE1          | UMI_FTX_MRX_P0 |
| AE2          | UMI_FTX_MRX_N0 |
| AE5          | UMI_FTX_MRX_P1 |
| AE4          | UMI_FTX_MRX_N1 |
| AE3          | UMI_FTX_MRX_P2 |
| AE2          | UMI_FTX_MRX_N2 |
| AD1          | UMI_FTX_MRX_P3 |
| AD2          | UMI_FTX_MRX_N3 |

P\_ZVSS

K4

PCIE\_FTX\_C\_GRX\_P[0..15]

PCIE\_FTX\_C\_GRX\_N[0..15]

To VGA

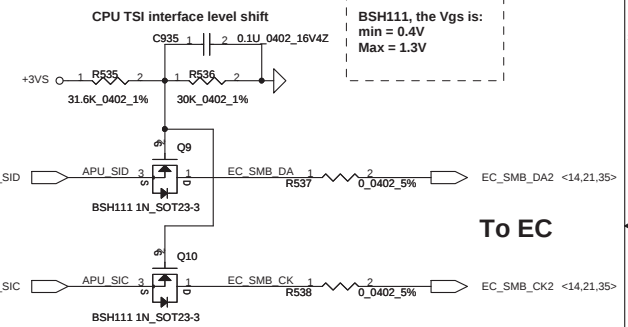
To HDMI

CLK

## APU To HDMI

PCIE\_FTX\_GRX\_P[12..15]

PCIE\_FTX\_GRX\_N[12..15]



## Power Sequence of APU

+1.5V

+2.5VS

+1.5VS

+CPU\_CORE

+CPU\_CORE\_NB

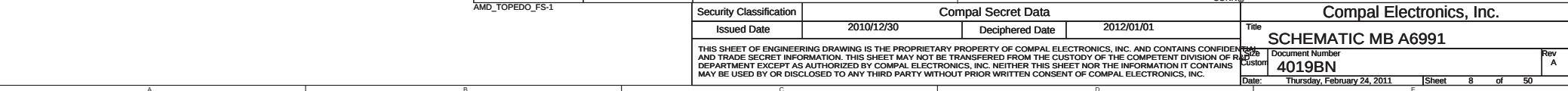
+1.2VS

Group A

Group B

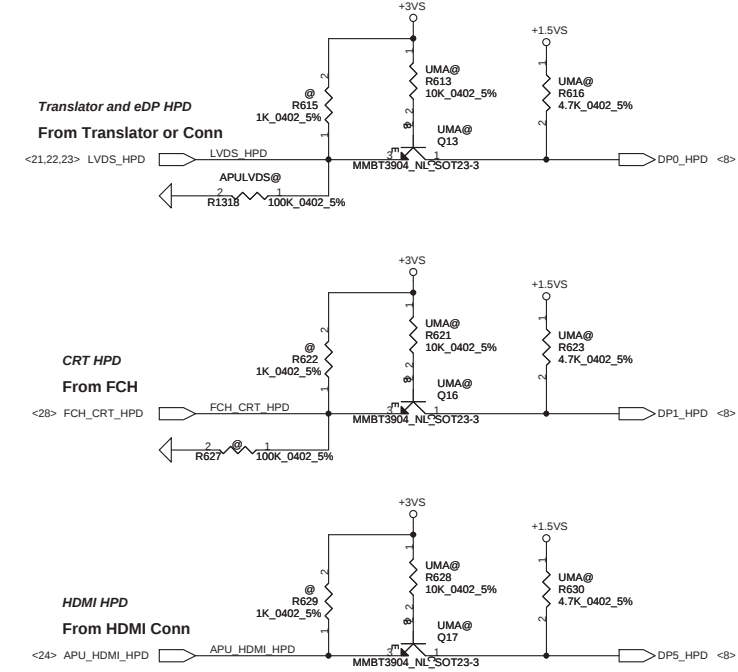
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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|--------------------------|-----------------------------|
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2010/12/30 | Deciphered Date    | 2012/01/01 | Title                    | SCHEMATIC MB A6991          |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Document Number          | 4019BN                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date:                    | Thursday, February 24, 2011 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Sheet                    | 6 of 50                     |



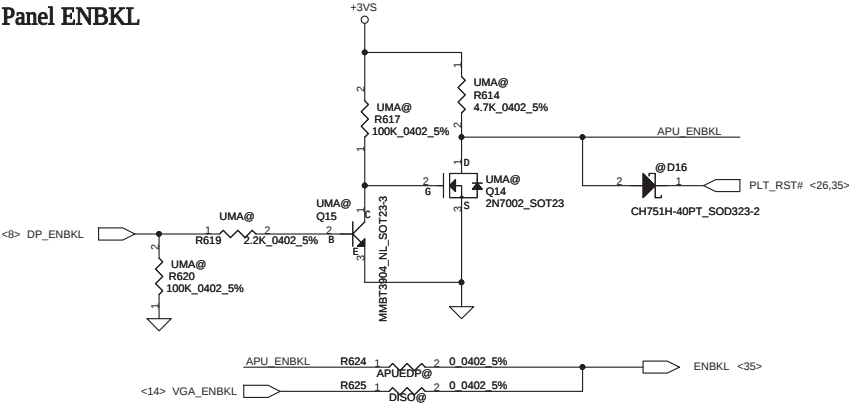




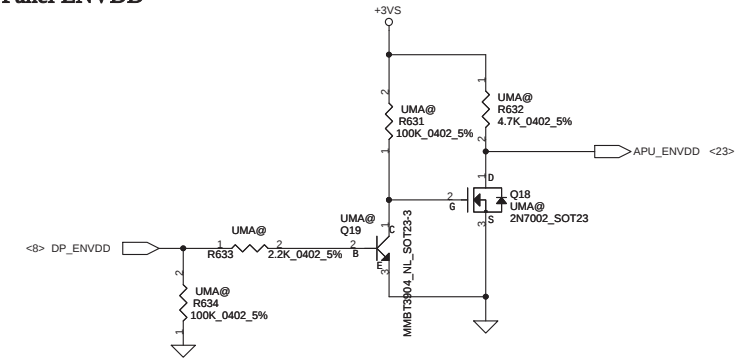
HPD



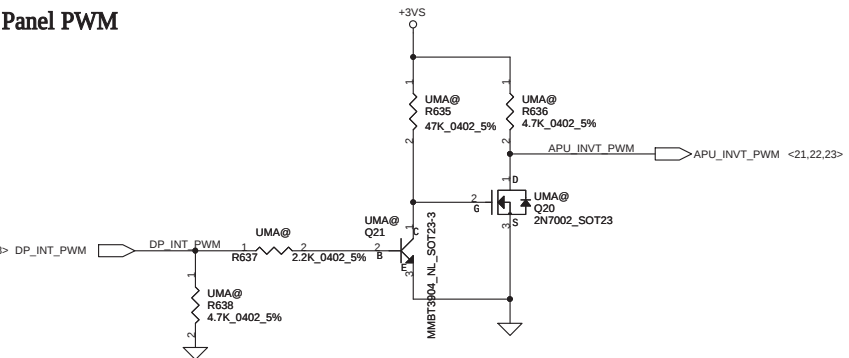
Panel ENBKL



Panel ENVDD

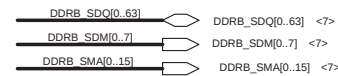


Panel PWM

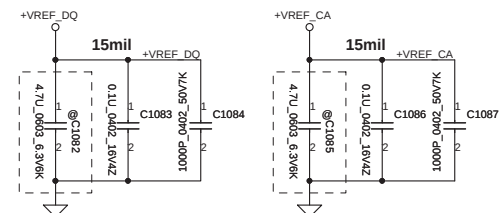


|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            |                    |                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|------------|--------------------|-----------------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data |                 |            | Title              |                             |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Date               | Thursday, February 24, 2011 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Sheet              | 10 of 50                    |





The schematic diagram shows a power supply circuit. It starts with a +1.5V input connected to a series of capacitors (C1089 to C1098) with 0.1uF 0402 16V4Z resistors. This is followed by a +0.75VS input, which is connected to a series of capacitors (C1099 to C1101) with 0.1uF 0402 16V4Z resistors. The output of this section is connected to a +1.5V input, which is then connected to a capacitor C9 (330uF 6.3V R15M). The circuit is grounded at several points.



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                 |            |                          |                             |                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|------------|--------------------------|-----------------------------|----------------|
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                 |            | Date:                    | Thursday, February 24, 2011 | Sheet 12 of 50 |

# GFX PCIE LANE REVERSAL



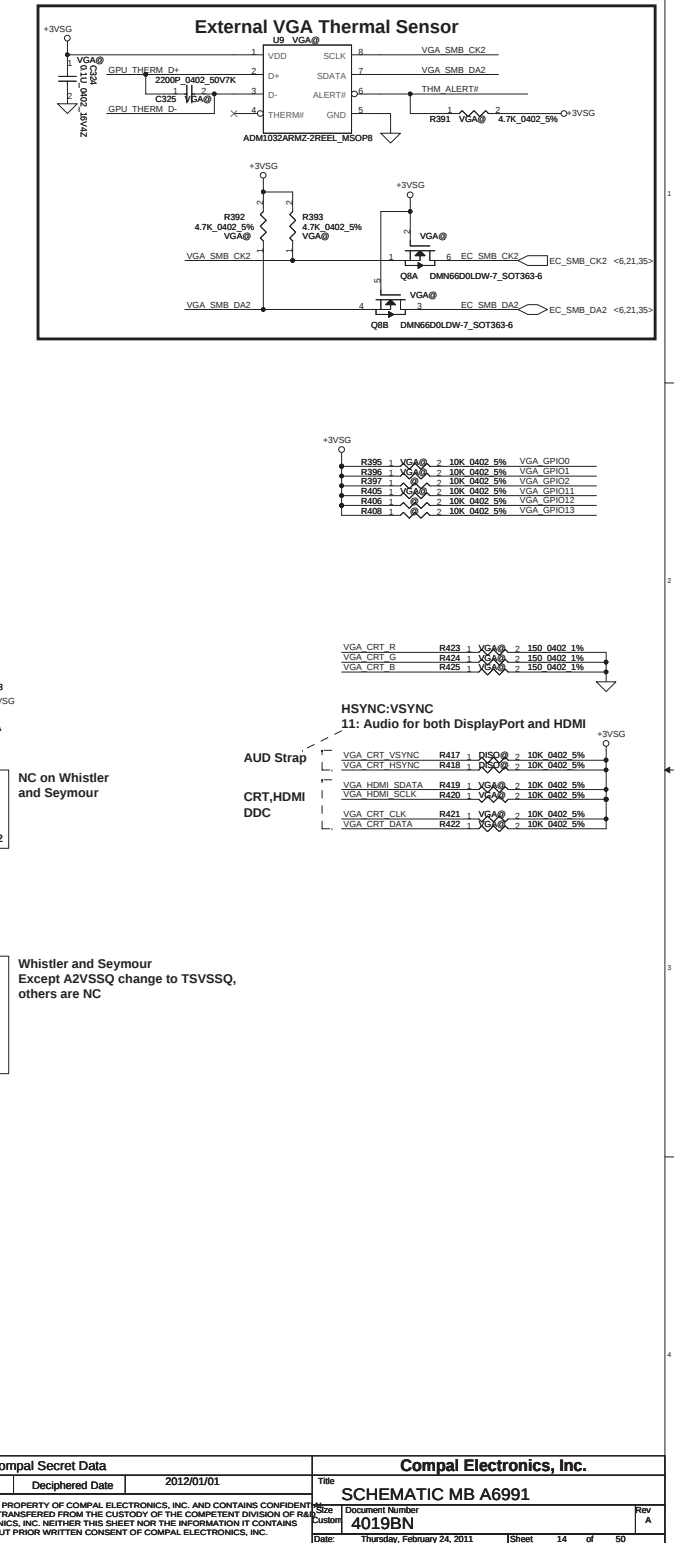
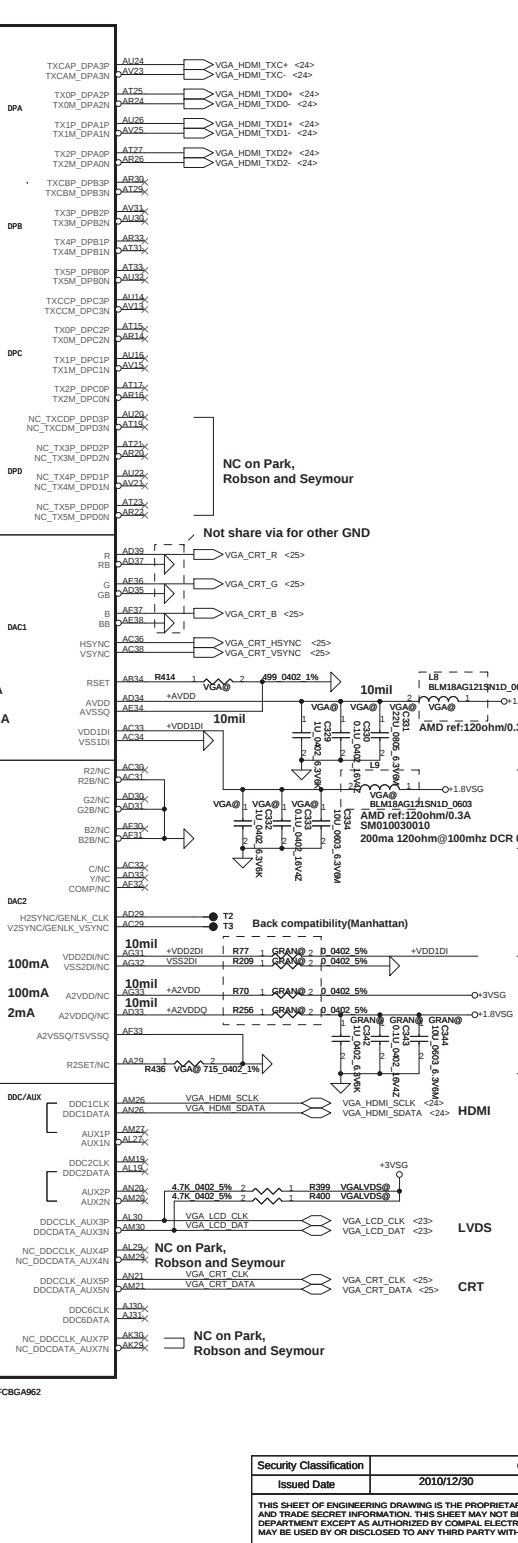
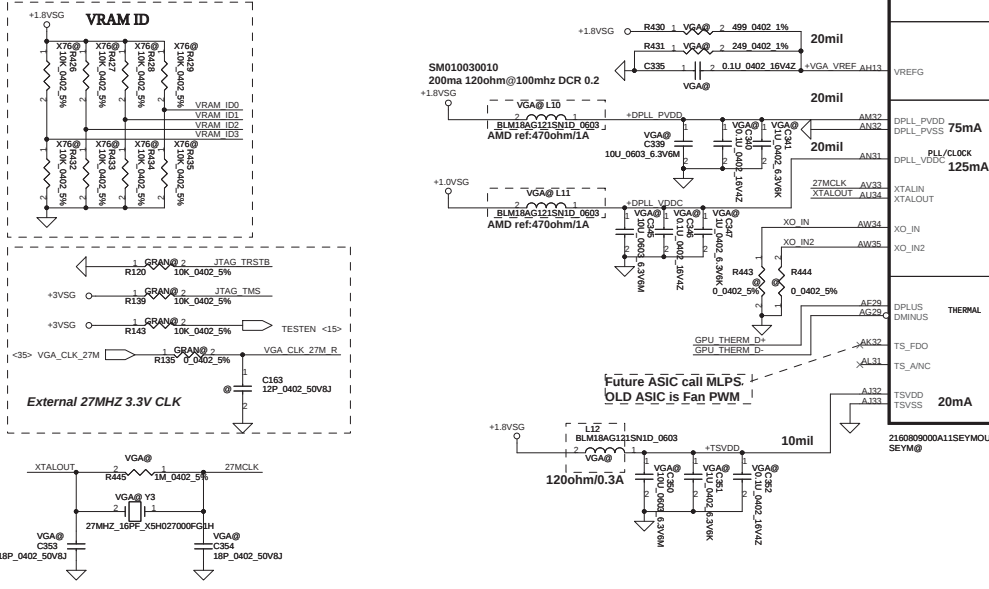
216-0810005 A11  
WHISTLER PRO M2 A11:  
SA00004C720(S IC 216-0810005 A11 WHISTLER PRO FCBGA 962P ABO !)

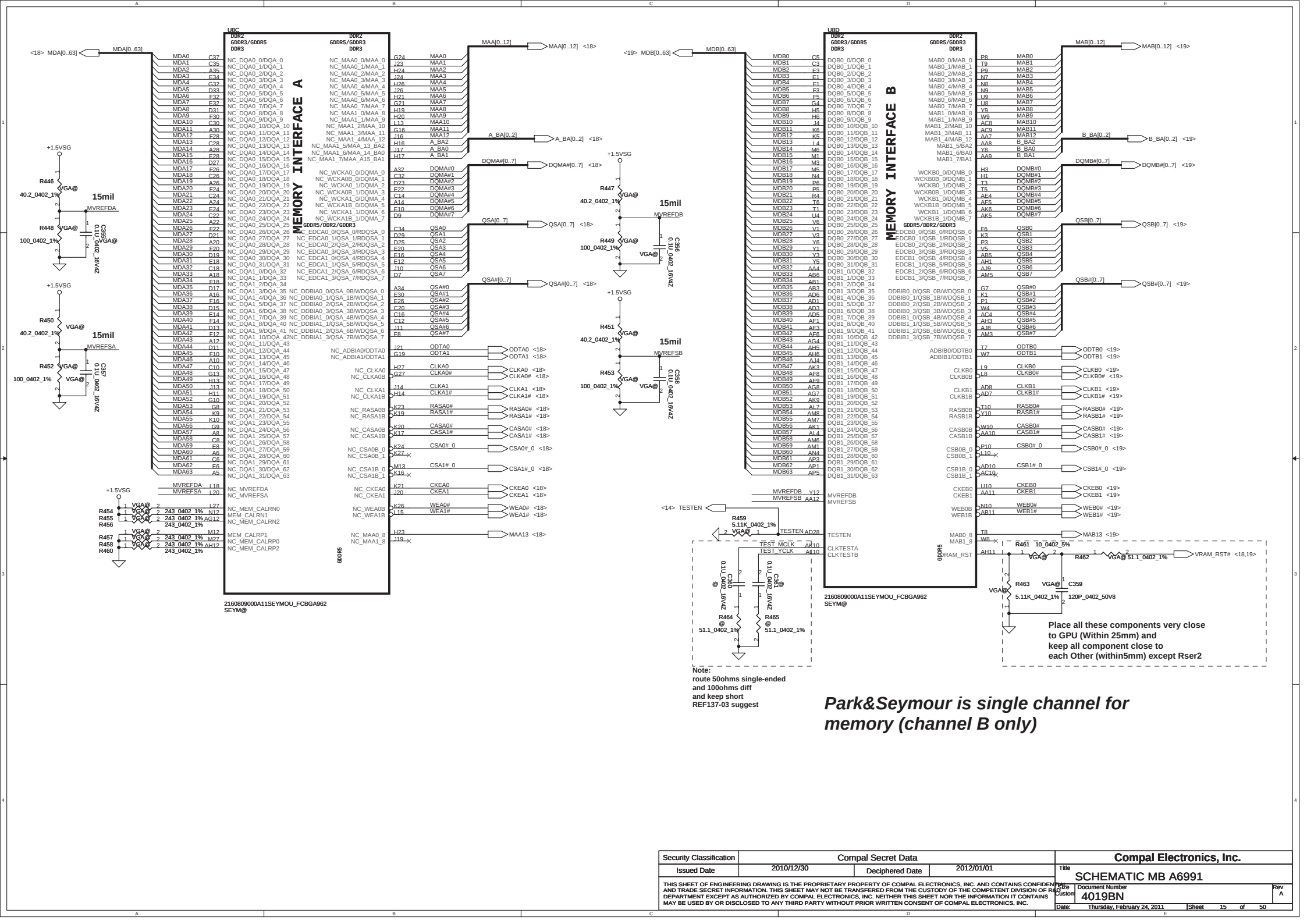
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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Compal Electronics, Inc.    |                |
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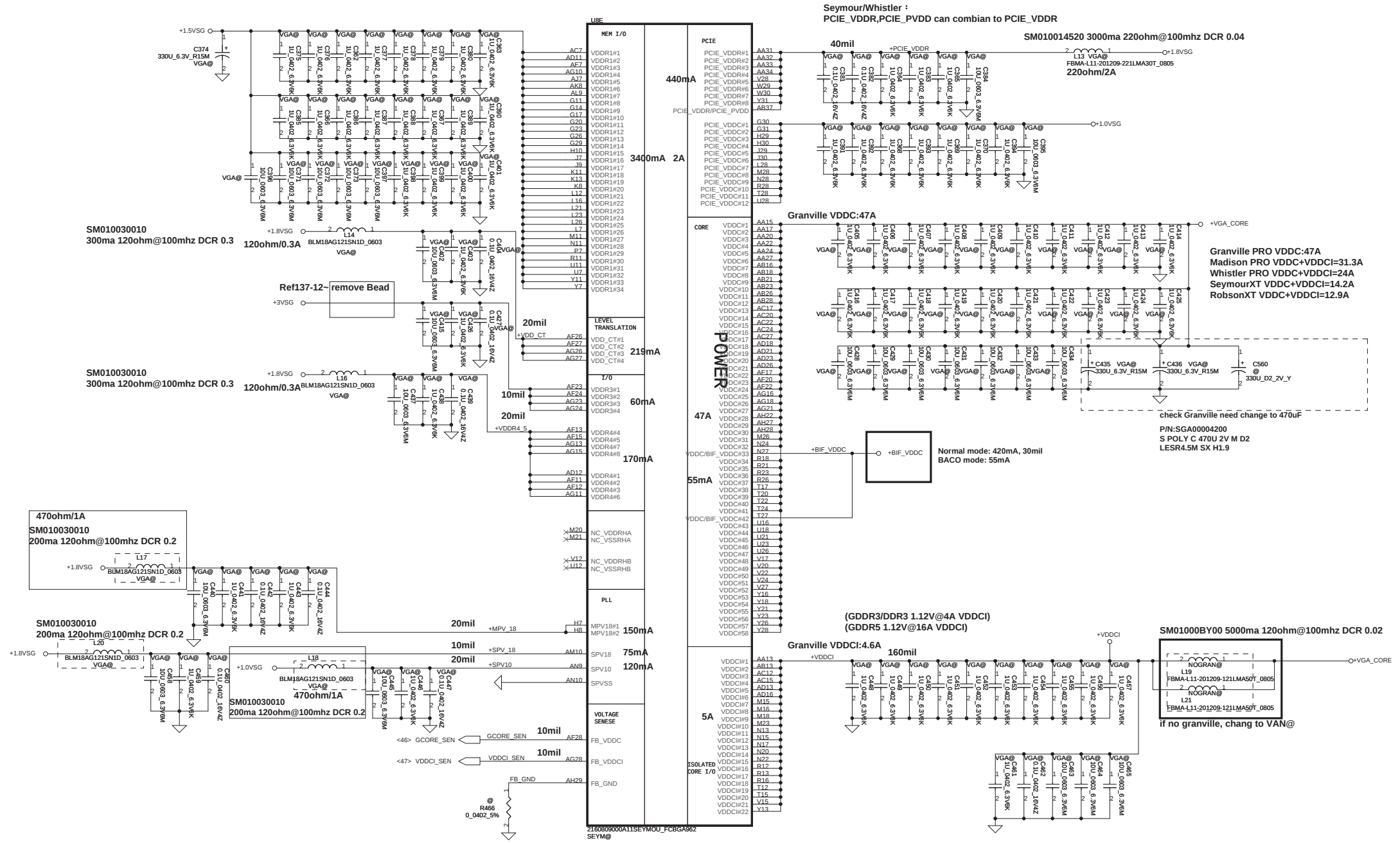
| Strap Name    |                                          | Pin Straps description <all internal PD>                                                                                                                                                              | Setting                         |
|---------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| VIP_DEVICE_EN | V2SYNC<br>(GENLK_VSYNC)                  | VIP Device Strap Enable indicates to the software driver (Internal PD)<br>0: Driver would ignore the value sampled on VHAD_0 during reset<br>1: VHAD_0 to determine whether or not a VIP slave device | 0                               |
| VGA_DIS       | GPIO9                                    | VGA Disable determines (Internal PD)<br>0: VGA Controller capacity enabled<br>1: The device will not be recognized as the system's VGA controller                                                     | 0                               |
| TX_PWRS_ENB   | GPIO0                                    | Transmitter Power Saving Enable (Internal PD)<br>0: 50% Tx output swing<br>1: full Tx output swing                                                                                                    | 1                               |
| TX_DEEMPH_EN  | GPIO1                                    | PCI Express Transmitter De-emphasis Enable (Internal PD)<br>0: Tx de-emphasis disabled<br>1: Tx de-emphasis enabled                                                                                   | 1                               |
| CONFIG[2]     | GPIO13                                   | GPIO13.12.11 (config 2.1.0) : (Internal PD)<br>a) If BIOS_ROM_EN = 1, then Config[2:0] defines the ROM type.                                                                                          | memory apertures<br>CONFIG[3:0] |
| CONFIG[1]     | GPIO12                                   | b) If BIOS_ROM_EN = 0, then Config[2:0] defines the primary memory aperture size.                                                                                                                     | 128 MB 000                      |
| CONFIG[0]     | GPIO11                                   | c) If BIOS_ROM_EN = 0, then Config[2:0] defines the primary memory aperture size.                                                                                                                     | 256 MB 001 *<br>64 MB 010       |
| BIOS_ROM_EN   | GPIO22                                   | Enable external BIOS ROM device (Internal PD)<br>0: Disable, 1: Enable                                                                                                                                | 0                               |
| AUD[1]        | HSYNC                                    | 00: No audio function;<br>01: Audio for DisplayPort and HDMI if adapter is detected;<br>11: Audio for both DisplayPort and HDMI                                                                       | 11                              |
| AUD[0]        | VSYNC                                    | 0: Advertises the PCI-E device as 2.5 GT/s capable at power-on<br>1= Advertises the PCI-E device as 5.0 GT/s capable at power-on<br>5.0 GT/s capability will be controlled by software                | 0                               |
| BIF_GEN2_EN   | GPIO2                                    |                                                                                                                                                                                                       | 0                               |
| RESERVED      | H2SYNC<br>(GENLK_CLK)<br>GPIO8<br>GPIO21 | Internal use only. THIS PAD HAS AN INTERNAL PULL-DOWN AND MUST BE 0 V AT RESET. The pad may be left unconnected                                                                                       | DNI                             |

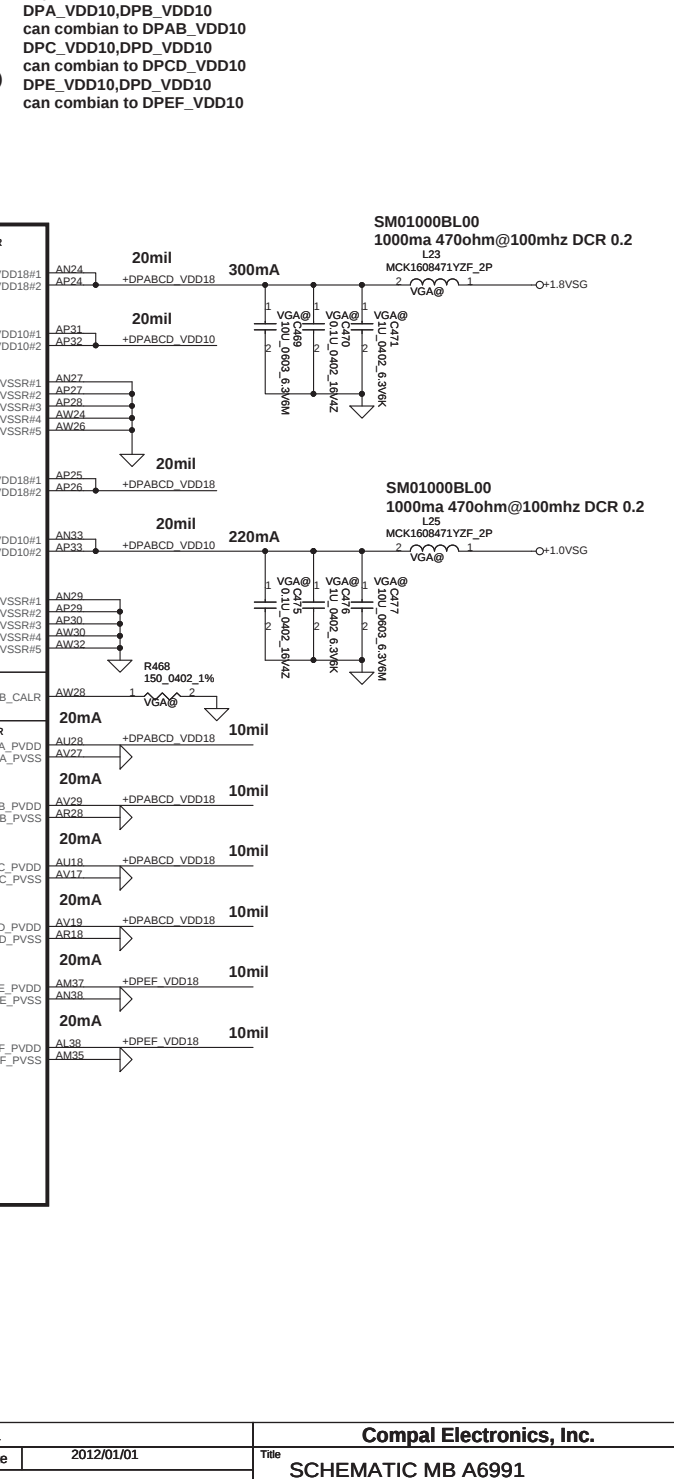
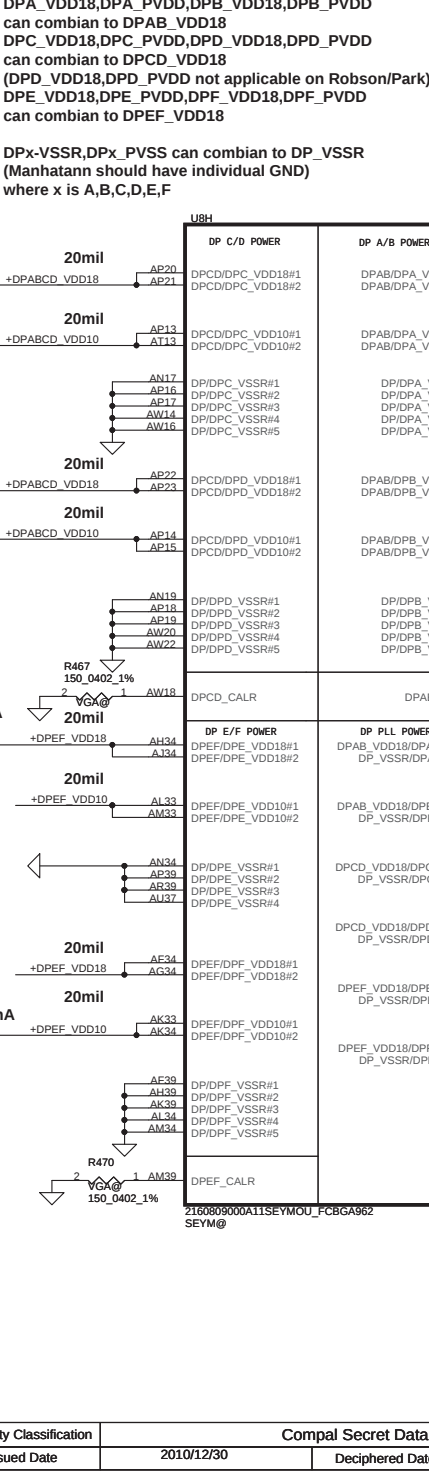
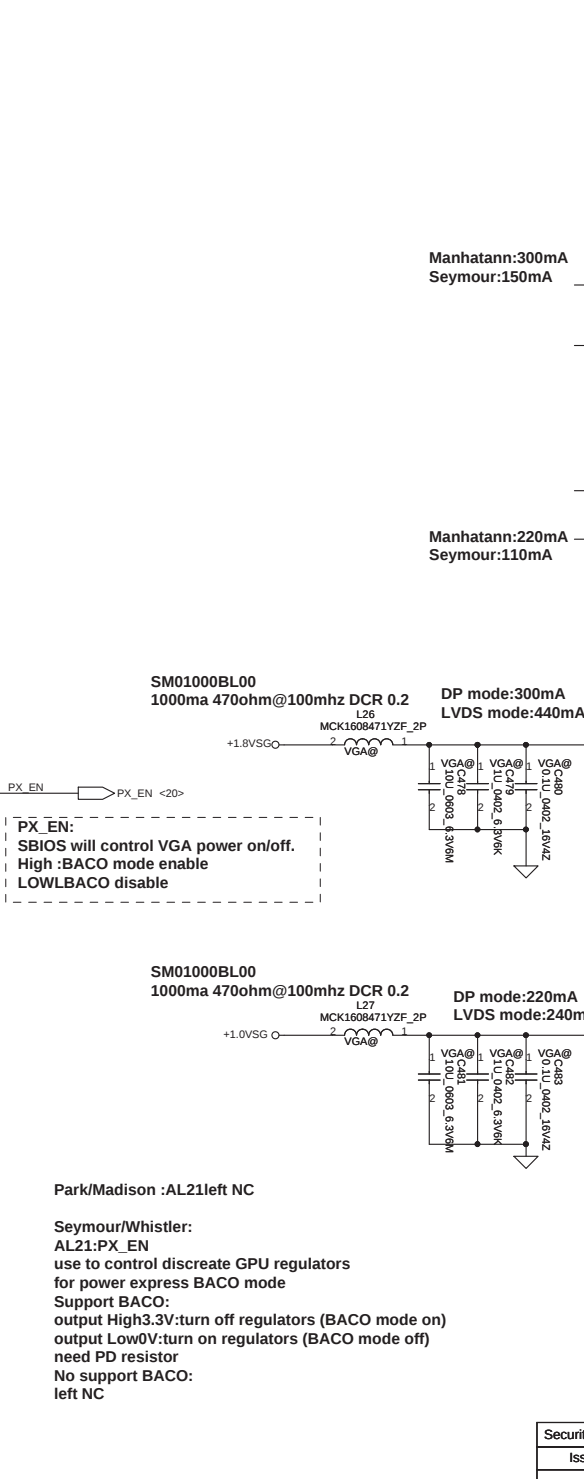
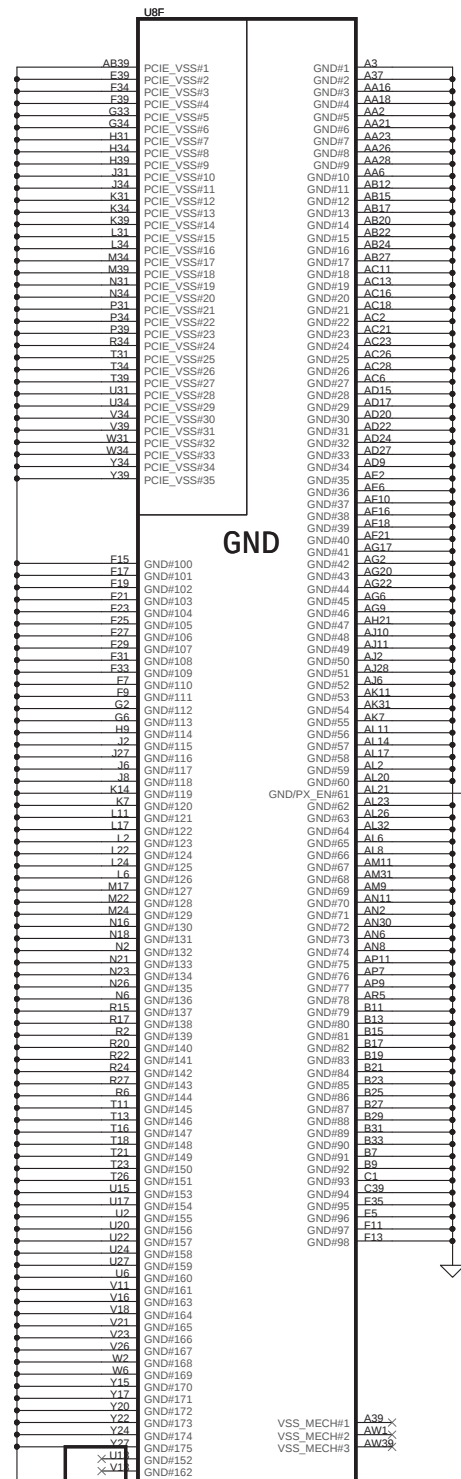
| SEYMOUR-XT |        |                 |        |              |                 |         |
|------------|--------|-----------------|--------|--------------|-----------------|---------|
| ID3-0      | Vendor | Size            | Freq   | PIN          | Description     | Quality |
| 0000       |        |                 |        |              |                 |         |
| 0001       |        |                 |        |              |                 |         |
| 0010       | SAM    | C-die 128*16    | 933MHz | SA000047Q20  | K4W2G1846C-HC11 | V       |
| 0011       | SAM    | C-die 64*16     | 933MHz | SA000046C510 | K4W1G1846C-B011 | V       |
| 0100       | SAM    | E-die 64*16     | 800MHz | SA000035720  | K4W1G1846C-HC12 | V       |
| 0101       | SAM    | C-die 128*16    | 800MHz | SA00003M360  | K4W2G1646C-HC12 | V       |
| 0110       |        |                 |        |              |                 |         |
| 0111       |        |                 |        |              |                 |         |
| 1000       |        |                 |        |              |                 |         |
| 1001       |        |                 |        |              |                 |         |
| 1010       | HYN    | Vega-die 64*16  | 800MHz | SA0000324G0  | H5T01G63DFR-12C | V       |
| 1011       | HYN    | Orion-die 64*16 | 800MHz | SA000032420  | H5T01G63BFR-12C | V       |
| 1100       | HYN    | Vega-die 128*16 | 800MHz | SA00003V510  | H5T02G63BFR-12C | V       |
| 1110       | HYN    | Vega-die 64*16  | 900MHz | SA000041340  | H5T01G63DFR-11C | V       |
| 1111       | HYN    | Vega-die 128*16 | 900MHz | SA00003Y020  | H5T02G63BFR-11C | V       |

| WHISTLER-PRO |        |                 |        |              |                 |         |
|--------------|--------|-----------------|--------|--------------|-----------------|---------|
| ID3-0        | Vendor | Size            | Freq   | PIN          | Description     | Quality |
| 0000         |        |                 |        |              |                 |         |
| 0001         | SAM    | E-die 64*16     | 800MHz | SA000035720  | K4W1G1846C-HC12 | V       |
| 0010         | SAM    | C-die 128*16    | 933MHz | SA000046C510 | K4W2G1846C-HC12 | V       |
| 0011         | SAM    | C-die 64*16     | 933MHz | SA00004G510  | K4W1G1846C-B011 | V       |
| 0100         |        |                 |        |              |                 |         |
| 0101         |        |                 |        |              |                 |         |
| 0110         |        |                 |        |              |                 |         |
| 0111         |        |                 |        |              |                 |         |
| 1000         | HYN    | Orion-die 64*16 | 800MHz | SA000032420  | H5T01G63BFR-12C | V       |
| 1001         | HYN    | Vega-die 128*16 | 800MHz | SA00003V510  | H5T02G63BFR-12C | V       |
| 1010         | HYN    | Vega-die 64*16  | 900MHz | SA000041340  | H5T01G63DFR-11C | V       |
| 1011         | HYN    | Vega-die 64*16  | 800MHz | SA0000324G0  | H5T01G63DFR-12C | V       |
| 1100         | HYN    | Vega-die 128*16 | 900MHz | SA00003Y020  | H5T02G63BFR-11C | V       |
| 1101         |        |                 |        |              |                 |         |
| 1110         |        |                 |        |              |                 |         |
| 1111         |        |                 |        |              |                 |         |



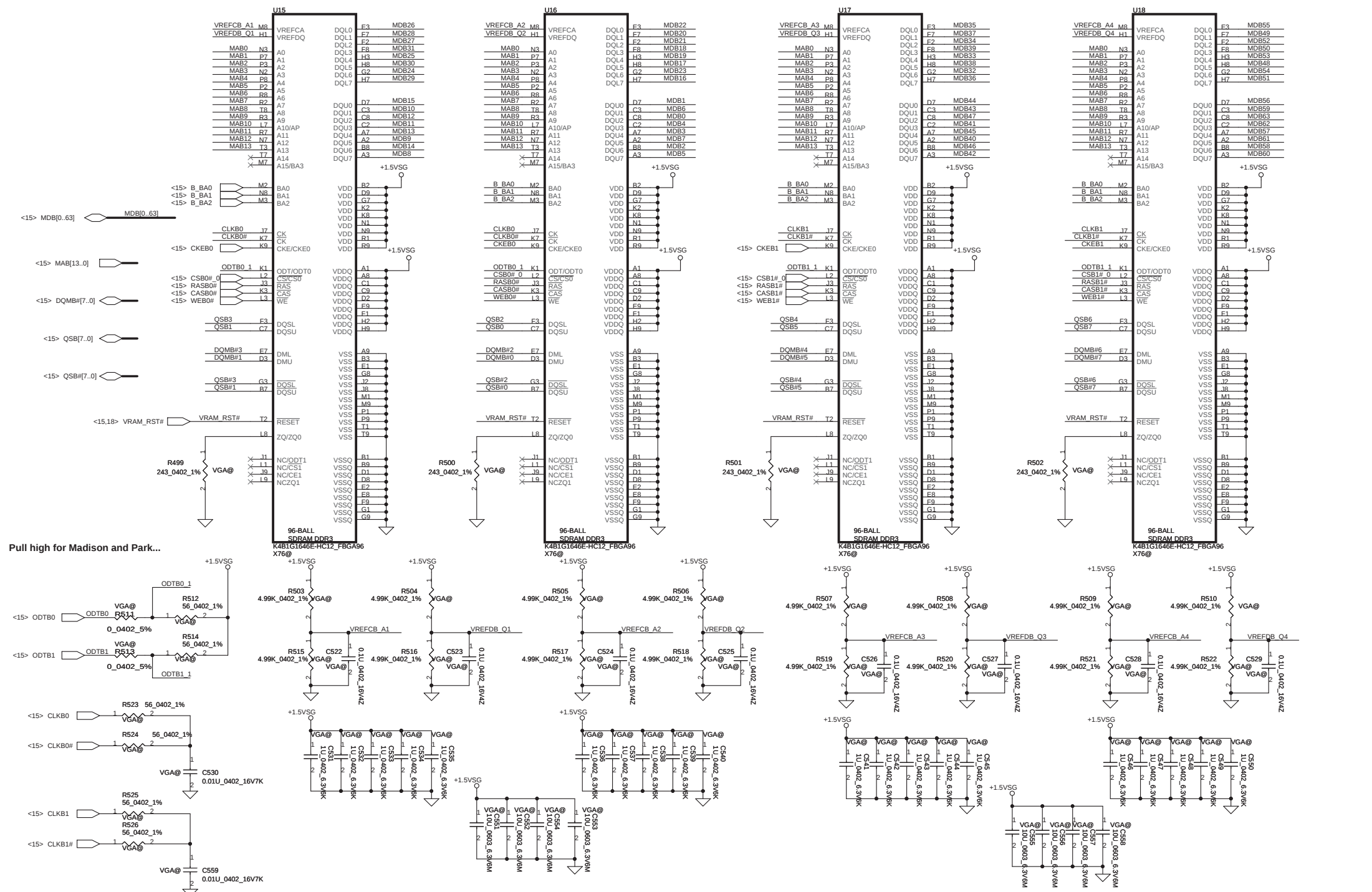






| Security Classification                                                                                                                                                                                                                                                                                                   |            | Compal Secret Data |            | Title              |                             |
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| Issued Date                                                                                                                                                                                                                                                                                                               | 2010/12/30 | Deciphered Date    | 2012/01/01 | Schematic MB A6991 |                             |
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|                                                                                                                                                                                                                                                                                                                           |            |                    |            | Sheet              | 17 of 50                    |







## Power Consumption:

Pin5 (DPV33) < 20mA

Pin 11 (DPV12) < 100mA

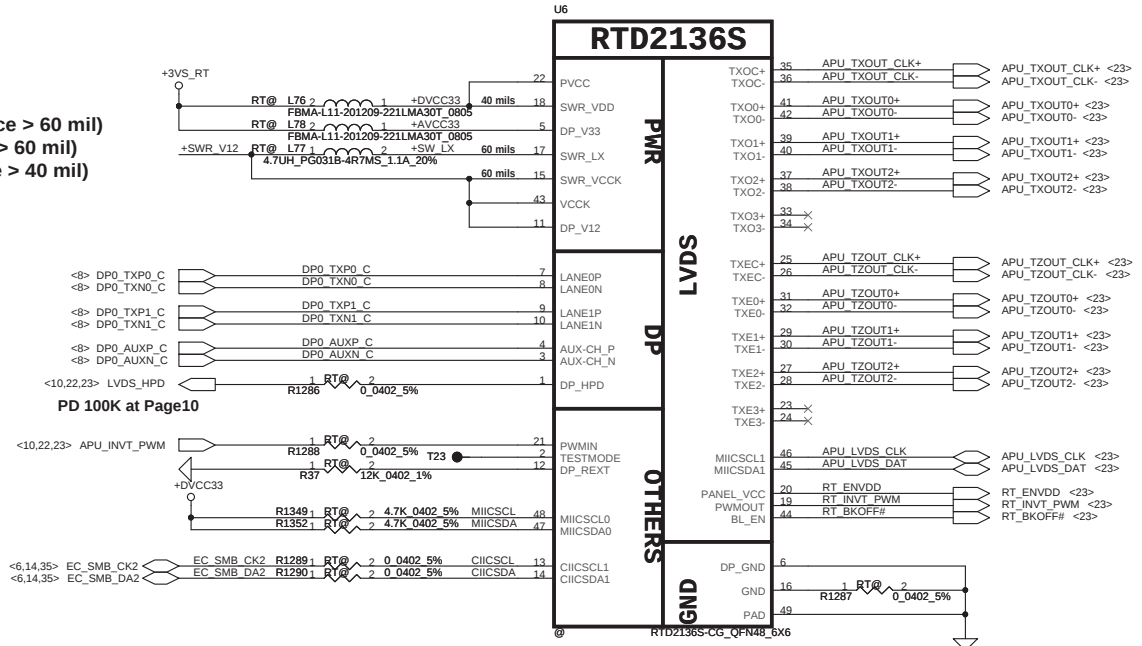
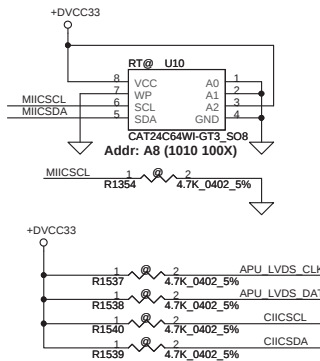
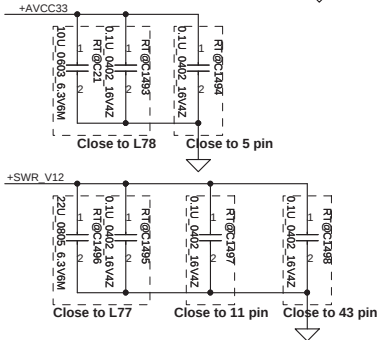
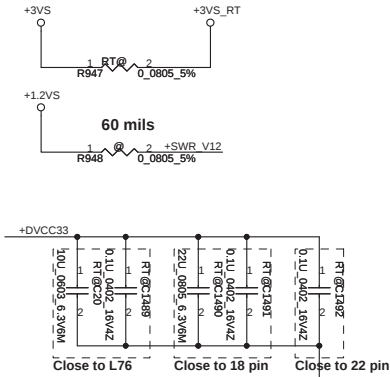
Pin 15 (SWR\_VCCK) < 100mA (layout trace > 60 mil)

Pin 17 (SWR\_LX) < 600mA (layout trace > 60 mil)

Pin 18 (SWR\_VDD) < 200mA (layout trace > 40 mil)

Pin 22 (PVCC) < 50 mA

Pin 43 (VCCK) < 50mA



## To Travis (place these resistors near PS8615's pins)

Use common via

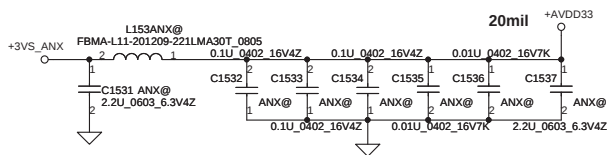
|            |       |   |   |         |           |                   |
|------------|-------|---|---|---------|-----------|-------------------|
| DP0 TXP0 C | R1274 | 1 | 2 | APUEDP@ | 0 0402 5% | DP0 TXP0 R        |
| DP0 TXN0 C | R1275 | 1 | 2 | APUEDP@ | 0 0402 5% | DP0 TXN0 R        |
| DP0 TXP1 C | R1276 | 1 | 2 | APUEDP@ | 0 0402 5% | DP0 TXP1 R        |
| DP0 TXN1 C | R1277 | 1 | 2 | APUEDP@ | 0 0402 5% | DP0 TXN1 R        |
| DP0 AUXP C | R1278 | 1 | 2 | APUEDP@ | 0 0402 5% | DP0 AUXP R        |
| DP0 AUXN C | R1279 | 1 | 2 | APUEDP@ | 0 0402 5% | DP0 AUXN R        |
| DP0 AUXN C | R1280 | 1 | 2 | ANX@    | 0 0402 5% | DP0 AUXN_ANX <22> |
| DP0 AUXP C | R1281 | 1 | 2 | ANX@    | 0 0402 5% | DP0 AUXP_ANX <22> |
| DP0 TXP0 C | R1282 | 1 | 2 | ANX@    | 0 0402 5% | DP0 TXP0_ANX <22> |
| DP0 TXN0 C | R1283 | 1 | 2 | ANX@    | 0 0402 5% | DP0 TXN0_ANX <22> |
| DP0 TXP1 C | R1284 | 1 | 2 | ANX@    | 0 0402 5% | DP0 TXP1_ANX <22> |
| DP0 TXN1 C | R1285 | 1 | 2 | ANX@    | 0 0402 5% | DP0 TXN1_ANX <22> |

Use common via

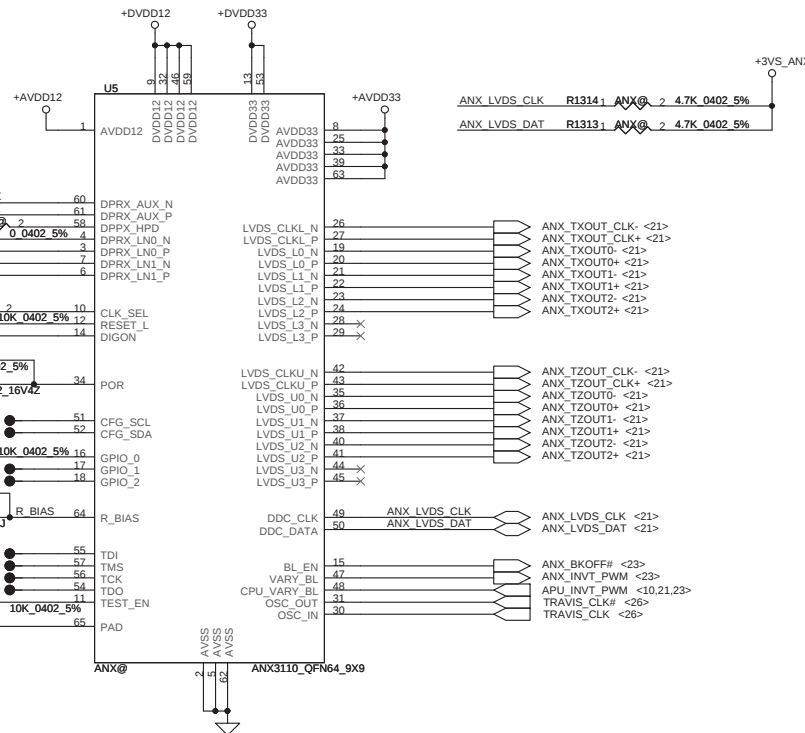
|            |           |   |   |               |              |
|------------|-----------|---|---|---------------|--------------|
| DP0 TXP0 R | 0 0402 5% | 2 | 1 | R1316 APUEDP@ | APU TXOUT2+  |
| DP0 TXN0 R | 0 0402 5% | 2 | 1 | R1320 APUEDP@ | APU TXOUT2-  |
| DP0 TXP1 R | 0 0402 5% | 2 | 1 | R1322 APUEDP@ | APU TXOUT1+  |
| DP0 TXN1 R | 0 0402 5% | 2 | 1 | R1416 APUEDP@ | APU TXOUT1-  |
| DP0 AUXP R | 0 0402 5% | 2 | 1 | R1535 APUEDP@ | APU LVDS_CLK |
| DP0 AUXN R | 0 0402 5% | 2 | 1 | R1536 APUEDP@ | APU LVDS_DAT |

|                     |           |   |   |            |                |
|---------------------|-----------|---|---|------------|----------------|
| <22> ANX_LVDS_CLK   | 0 0402 5% | 2 | 1 | R1294 ANX@ | APU LVDS_CLK   |
| <22> ANX_LVDS_DAT   | 0 0402 5% | 2 | 1 | R1295 ANX@ | APU LVDS_DAT   |
| <22> ANX_TXOUT2+    | 0 0402 5% | 2 | 1 | R1296 ANX@ | APU TXOUT2+    |
| <22> ANX_TXOUT2-    | 0 0402 5% | 2 | 1 | R1297 ANX@ | APU TXOUT2-    |
| <22> ANX_TXOUT1+    | 0 0402 5% | 2 | 1 | R1298 ANX@ | APU TXOUT1+    |
| <22> ANX_TXOUT1-    | 0 0402 5% | 2 | 1 | R1299 ANX@ | APU TXOUT1-    |
| <22> ANX_TXOUT0+    | 0 0402 5% | 2 | 1 | R1300 ANX@ | APU TXOUT0+    |
| <22> ANX_TXOUT0-    | 0 0402 5% | 2 | 1 | R1301 ANX@ | APU TXOUT0-    |
| <22> ANX_TXOUT_CLK+ | 0 0402 5% | 2 | 1 | R1302 ANX@ | APU TXOUT_CLK+ |
| <22> ANX_TXOUT_CLK- | 0 0402 5% | 2 | 1 | R1303 ANX@ | APU TXOUT_CLK- |
| <22> ANX_TZOUT0+    | 0 0402 5% | 2 | 1 | R1304 ANX@ | APU TZOUT0+    |
| <22> ANX_TZOUT0-    | 0 0402 5% | 2 | 1 | R1305 ANX@ | APU TZOUT0-    |
| <22> ANX_TZOUT1+    | 0 0402 5% | 2 | 1 | R1306 ANX@ | APU TZOUT1+    |
| <22> ANX_TZOUT1-    | 0 0402 5% | 2 | 1 | R1307 ANX@ | APU TZOUT1-    |
| <22> ANX_TZOUT2+    | 0 0402 5% | 2 | 1 | R1308 ANX@ | APU TZOUT2+    |
| <22> ANX_TZOUT2-    | 0 0402 5% | 2 | 1 | R1309 ANX@ | APU TZOUT2-    |
| <22> ANX_TZOUT_CLK+ | 0 0402 5% | 2 | 1 | R1310 ANX@ | APU TZOUT_CLK+ |
| <22> ANX_TZOUT_CLK- | 0 0402 5% | 2 | 1 | R1311 ANX@ | APU TZOUT_CLK- |

| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data |                 |            | Title           |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|------------|-----------------|----------|
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2010/12/30         | Deciphered Date | 2012/01/01 | Document Number | Rev      |
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| Date: Thursday, February 24, 2011                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                 |            | Sheet           | 21 of 50 |

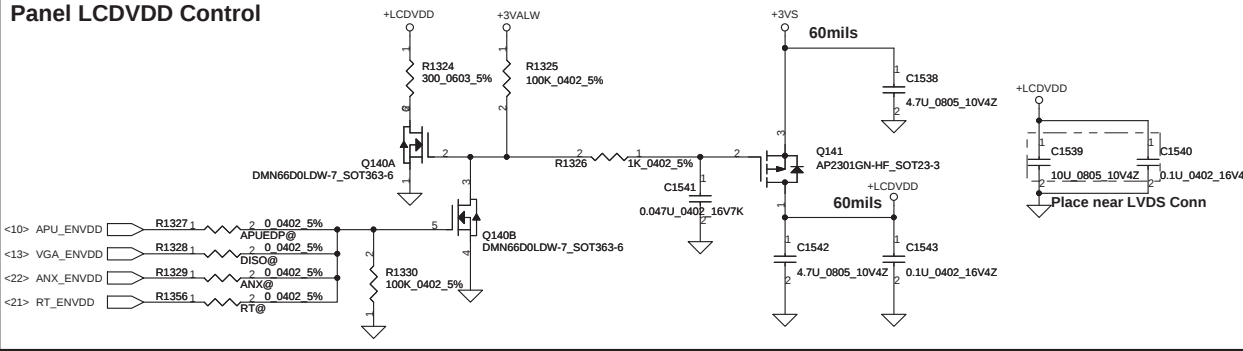


Place via on each trace bus and let resistor very close the via

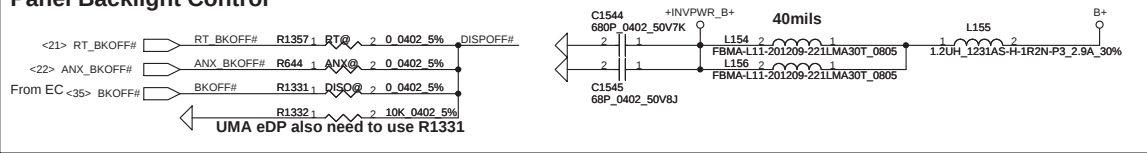


|                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                    |            |                             |                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|-----------------------------|--------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                         |            | Compal Secret Data |            | Compal Electronics, Inc.    |                    |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2010/12/30 | Deciphered Date    | 2012/01/01 | Title                       | SCHEMATIC MB A6991 |
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| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                    |            | Thursday, February 24, 2011 | Sheet 22 of 50     |

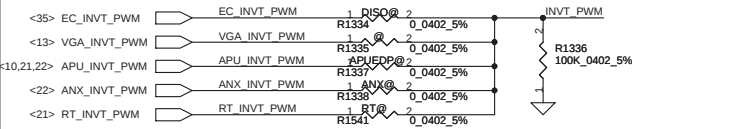
## Panel LCDVDD Control



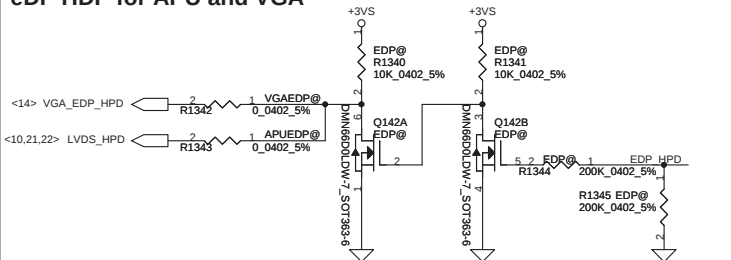
## Panel Backlight Control



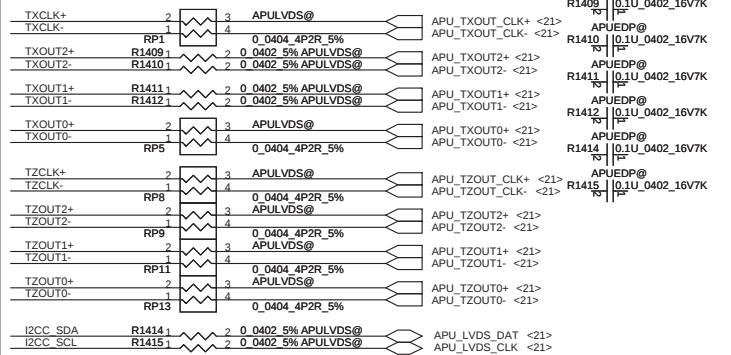
## Panel PWM Control



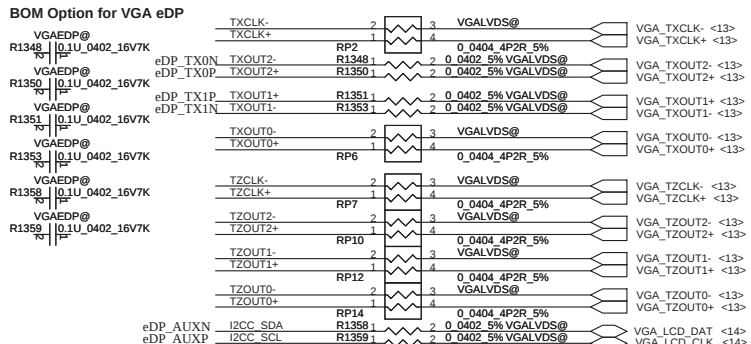
## eDP HDP for APU and VGA



## Translator LVDS Output

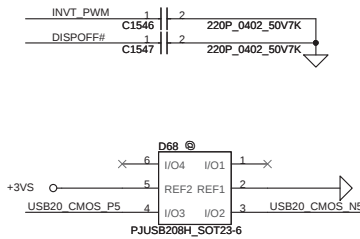
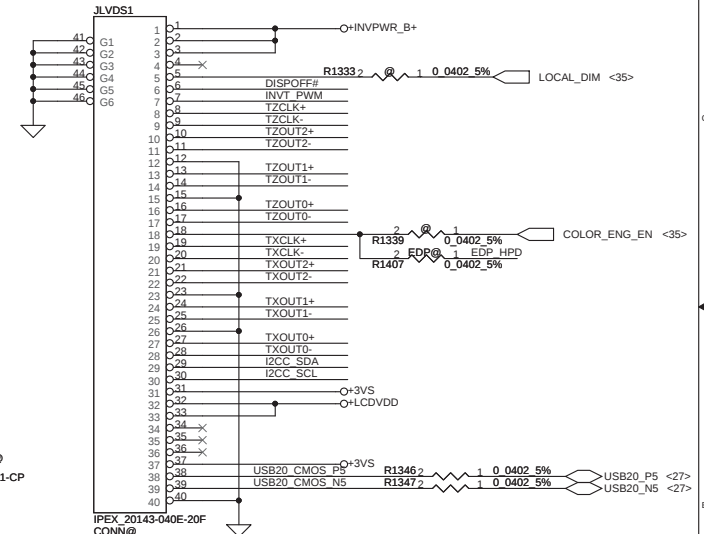


## VGA LVDS Output (Reserve eDP)



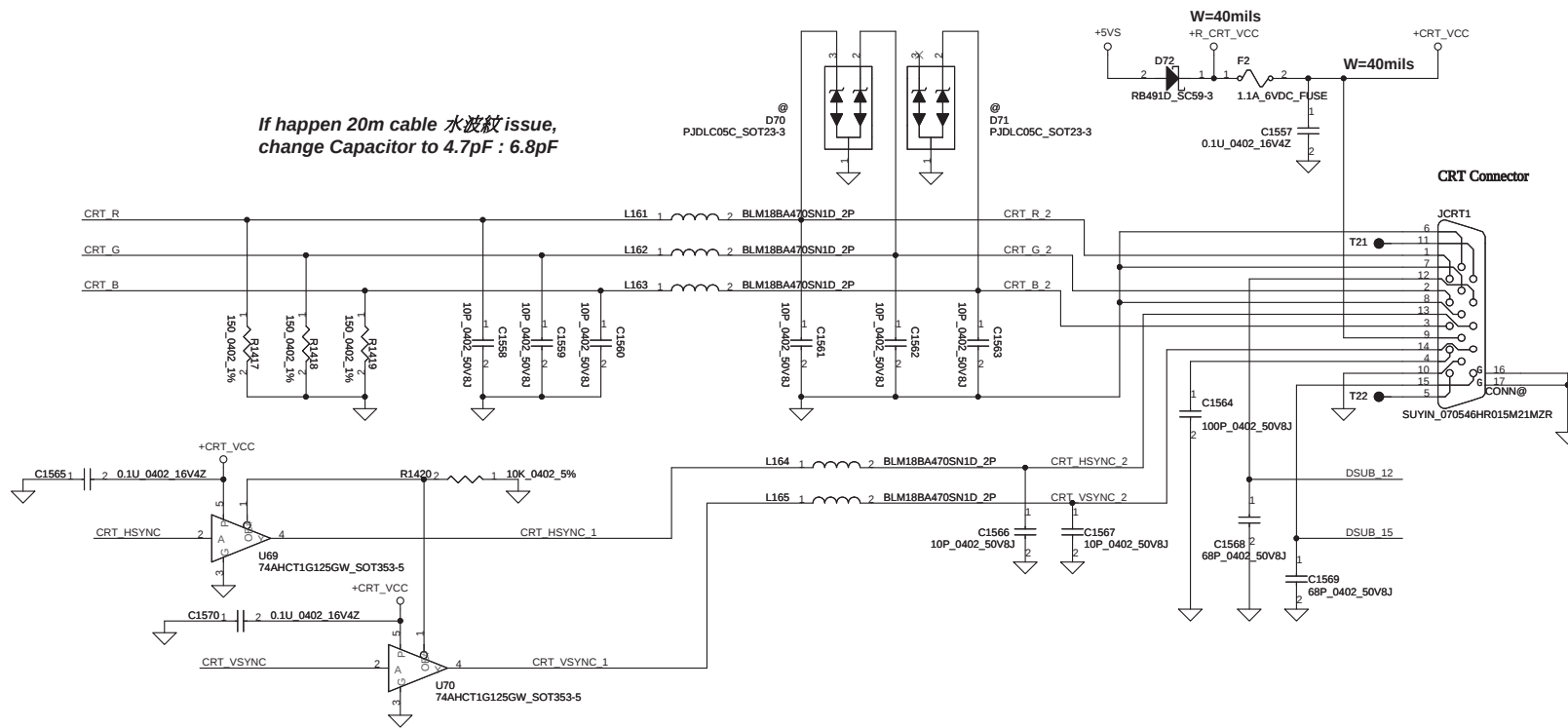
| UMA/DIS LVDS/eDP Mapping table |            |              |          |          |
|--------------------------------|------------|--------------|----------|----------|
| UMA                            |            | DIS          |          | Panel    |
| LVDS                           | eDP        | LVDS         | eDP      | Conn.    |
| APU_TXOUT0+                    |            | VGA_TXOUT0+  |          | TXOUT0+  |
| APU_TXOUT0-                    |            | VGA_TXOUT0-  |          | TXOUT0-  |
| APU_TXOUT1+                    | DP0_TXP1_R | VGA_TXOUT1+  | eDP_TX1P | TXOUT1+  |
| APU_TXOUT1-                    | DP0_TXN1_R | VGA_TXOUT1-  | eDP_TX1N | TXOUT1-  |
| APU_TXOUT2+                    | DP0_TXP0_R | VGA_TXOUT2+  | eDP_TX0P | TXOUT2+  |
| APU_TXOUT2-                    | DP0_TXN0_R | VGA_TXOUT2-  | eDP_TX0N | TXOUT2-  |
| APU_TXOUT_CLK+                 |            | VGA_TXCLK+   |          | TXCLK+   |
| APU_TXOUT_CLK-                 |            | VGA_TXCLK-   |          | TXCLK-   |
| APU_TZOUT0+                    |            | VGA_TZOUT0+  |          | TZOUT0+  |
| APU_TZOUT0-                    |            | VGA_TZOUT0-  |          | TZOUT0-  |
| APU_TZOUT1+                    |            | VGA_TZOUT1+  |          | TZOUT1+  |
| APU_TZOUT1-                    |            | VGA_TZOUT1-  |          | TZOUT1-  |
| APU_TZOUT2+                    |            | VGA_TZOUT2+  |          | TZOUT2+  |
| APU_TZOUT2-                    |            | VGA_TZOUT2-  |          | TZOUT2-  |
| APU_TZOUT_CLK+                 |            | VGA_TZCLK+   |          | TZCLK+   |
| APU_TZOUT_CLK-                 |            | VGA_TZCLK-   |          | TZCLK-   |
| APU_LVDS_CLK                   | DP0_AUXP_R | VGA_LCD_CLK  | eDP_AUXP | I2CC_SCL |
| APU_LVDS_DAT                   | DP0_AUXN_R | VGA_LCD_DATA | eDP_AUXN | I2CC_SDA |

**LCD/LED PANEL Conn.** P/N: SP010016810  
F/P: IPEX\_20143-040E-20F\_40P



| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Title                             |                |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date: Thursday, February 24, 2011 | Sheet 23 of 50 |





Use common via

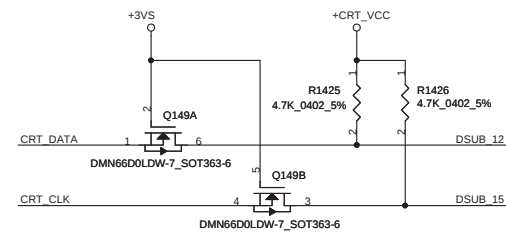
From FCH

|                      |                 |       |      |   |           |           |
|----------------------|-----------------|-------|------|---|-----------|-----------|
| <28> FCH_CRT_R       | FCH_CRT_R       | R1421 | UMA@ | 1 | 0.0402 5% | CRT_R     |
| <28> FCH_CRT_G       | FCH_CRT_G       | R1422 | UMA@ | 1 | 0.0402 5% | CRT_G     |
| <28> FCH_CRT_B       | FCH_CRT_B       | R1423 | UMA@ | 1 | 0.0402 5% | CRT_B     |
| <28> FCH_CRT_HSYNC   | FCH_CRT_HSYNC   | R1424 | UMA@ | 1 | 0.0402 5% | CRT_HSYNC |
| <28> FCH_CRT_VSYNC   | FCH_CRT_VSYNC   | R1427 | UMA@ | 1 | 0.0402 5% | CRT_VSYNC |
| <28> FCH_CRT_DDC_SDA | FCH_CRT_DDC_SDA | R1428 | UMA@ | 1 | 0.0402 5% | CRT_DATA  |
| <28> FCH_CRT_DDC_SCL | FCH_CRT_DDC_SCL | R1429 | UMA@ | 1 | 0.0402 5% | CRT_CLK   |

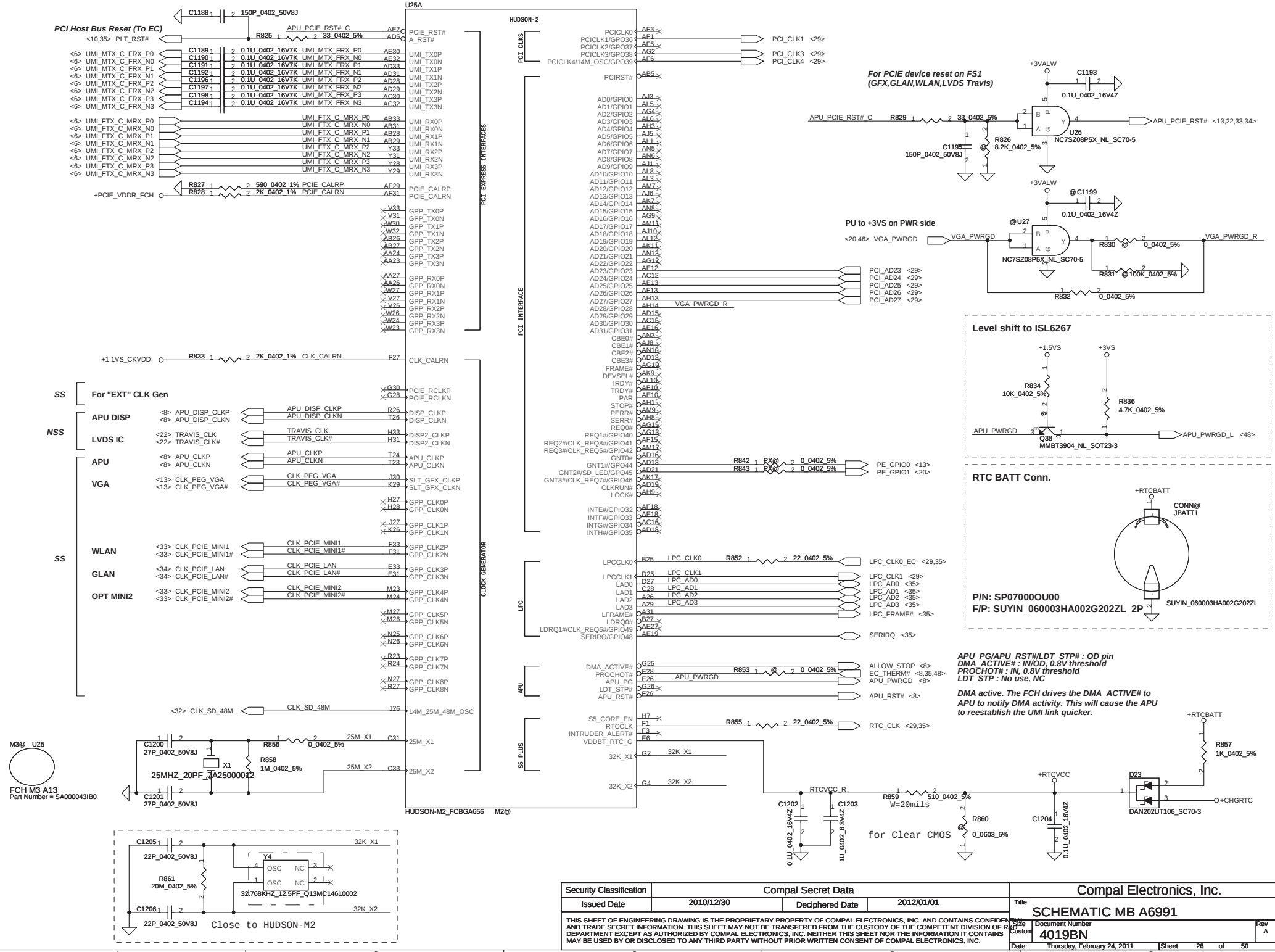
From VGA

|                    |               |       |       |   |           |           |
|--------------------|---------------|-------|-------|---|-----------|-----------|
| <14> VGA_CRT_R     | VGA_CRT_R     | R1430 | DISO@ | 1 | 0.0402 5% | CRT_R     |
| <14> VGA_CRT_G     | VGA_CRT_G     | R1431 | DISO@ | 1 | 0.0402 5% | CRT_G     |
| <14> VGA_CRT_B     | VGA_CRT_B     | R1432 | DISO@ | 1 | 0.0402 5% | CRT_B     |
| <14> VGA_CRT_HSYNC | VGA_CRT_HSYNC | R1433 | DISO@ | 1 | 0.0402 5% | CRT_HSYNC |
| <14> VGA_CRT_VSYNC | VGA_CRT_VSYNC | R1434 | DISO@ | 1 | 0.0402 5% | CRT_VSYNC |
| <14> VGA_CRT_DATA  | VGA_CRT_DATA  | R1435 | DISO@ | 1 | 0.0402 5% | CRT_DATA  |
| <14> VGA_CRT_CLK   | VGA_CRT_CLK   | R1436 | DISO@ | 1 | 0.0402 5% | CRT_CLK   |

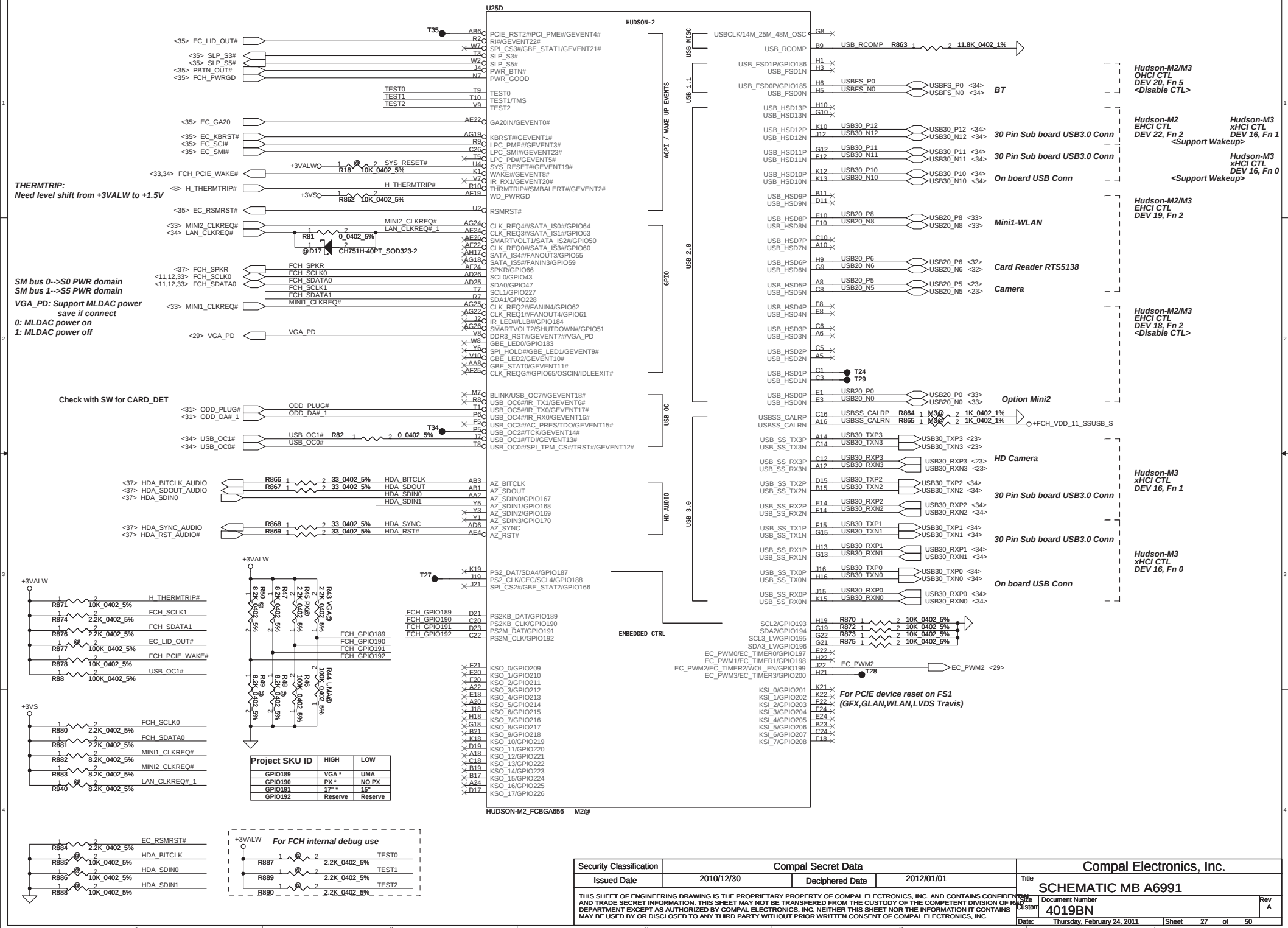
Close to Conn side

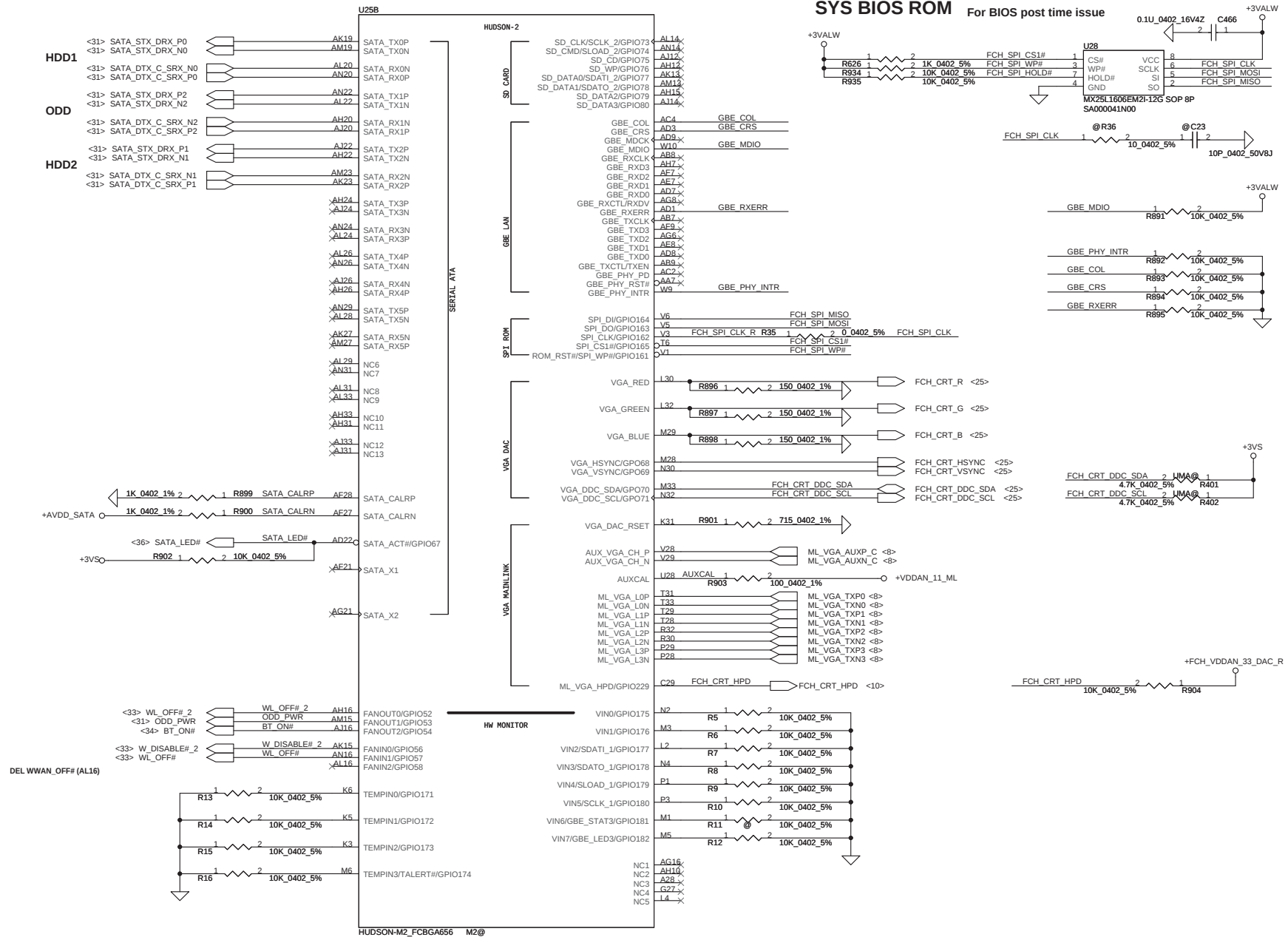


| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Compal Electronics, Inc. |                             |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Sheet                    | 25 of 50                    |



| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Compal Electronics, Inc. |                             |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Sheet                    | 26 of 50                    |

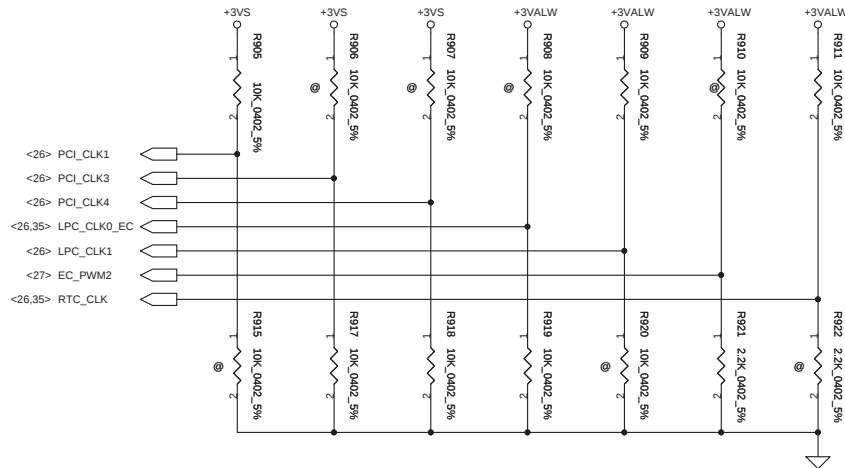




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| Date: Thursday, February 24, 2011                                                                                                                                                                                                                                                                                                                                                                                                                             |            | Sheet 28 of 50     |            |                          |                    |

## STRAP PINS

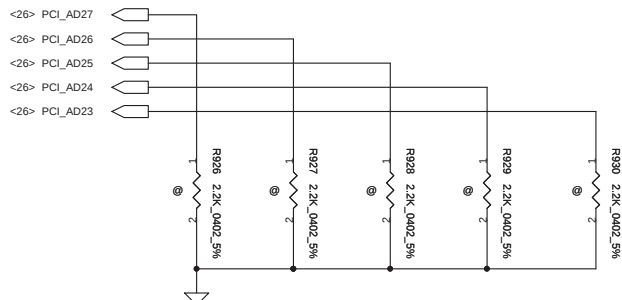
|           | PCI_CLK1                      | PCI_CLK3                            | PCI_CLK4                           | LPC_CLK0                  | LPC_CLK1                     | EC_PWM2            | RTC_CLK                                |
|-----------|-------------------------------|-------------------------------------|------------------------------------|---------------------------|------------------------------|--------------------|----------------------------------------|
| PULL HIGH | ALLOW<br>PCIE GEN2<br>DEFAULT | USE<br>DEBUG<br>STRAPS              | NON_FUSION<br>CLOCK MODE           | EC<br>ENABLED             | CLKGEN<br>ENABLED<br>DEFAULT | LPC ROM            | S5 PLUS<br>MODE<br>DISABLED<br>DEFAULT |
| PULL LOW  | FORCE<br>PCIE GEN1            | IGNORE<br>DEBUG<br>STRAP<br>DEFAULT | FUSION<br>CLOCK<br>MODE<br>DEFAULT | EC<br>DISABLED<br>DEFAULT | CLKGEN<br>DISABLE            | SPI ROM<br>DEFAULT | S5 PLUS<br>MODE<br>ENABLED             |



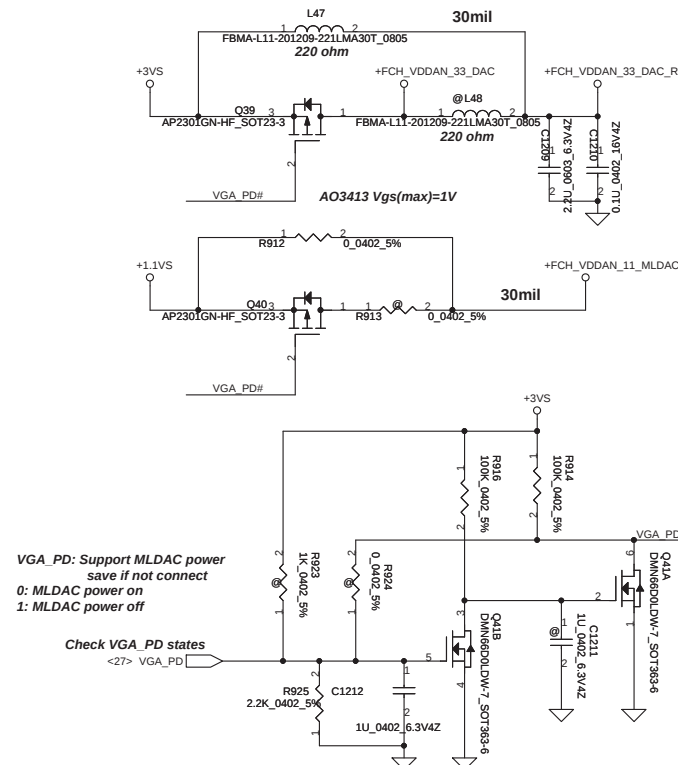
## DEBUG STRAPS

FCH HAS 15K INTERNAL PU FOR PCI\_AD[27:23]

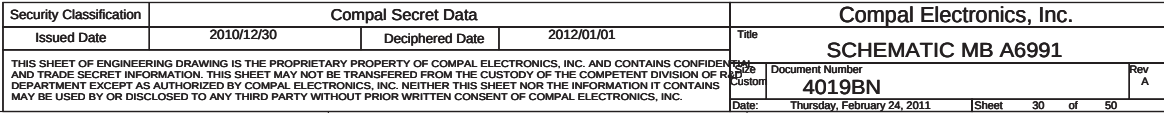
| PCI_AD26  | PCI_AD27                  |                                      | PCI_AD25                 | PCI_AD24                              | PCI_AD23                           |
|-----------|---------------------------|--------------------------------------|--------------------------|---------------------------------------|------------------------------------|
| PULL HIGH | USE PCI<br>PLL<br>DEFAULT | DISABLE<br>ILA<br>AUTORUN<br>DEFAULT | USE FC<br>PLL<br>DEFAULT | USE DEFAULT<br>PCIE STRAPS<br>DEFAULT | DISABLE PCI<br>MEM BOOT<br>DEFAULT |
| PULL LOW  | BYPASS<br>PCI PLL         | ENABLE<br>ILA<br>AUTORUN             | BYPASS<br>FC PLL         | USE EEPROM<br>PCIE STRAPS             | ENABLE PCI<br>MEM BOOT             |



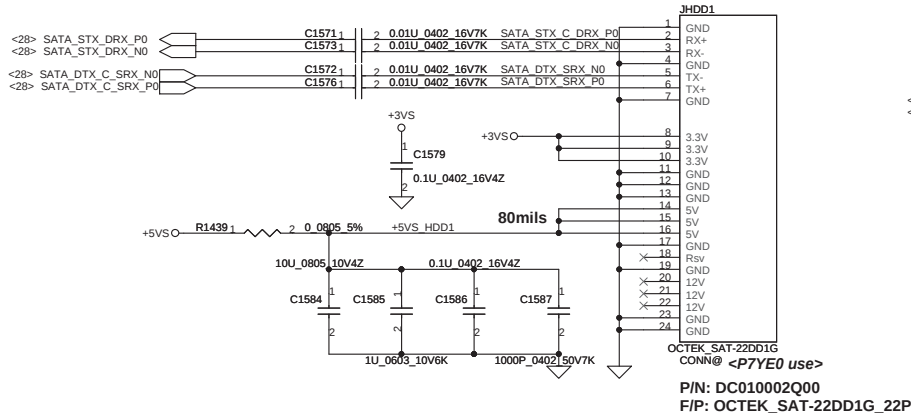
If support ML DAC power down when no VGA plug



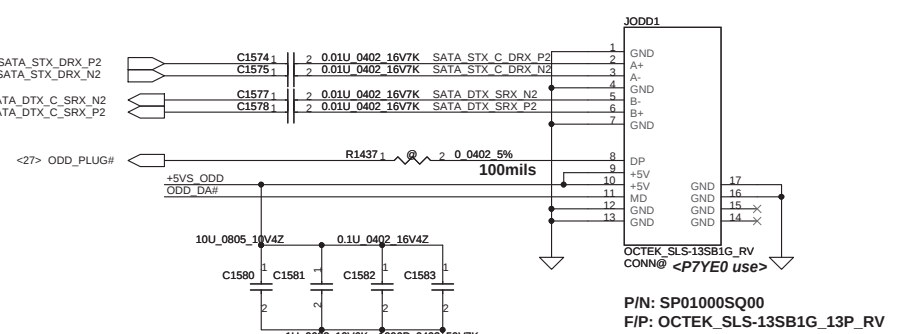
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data |                 |            | Compal Electronics, Inc. |                             |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Sheet                    | 29 of 50                    |



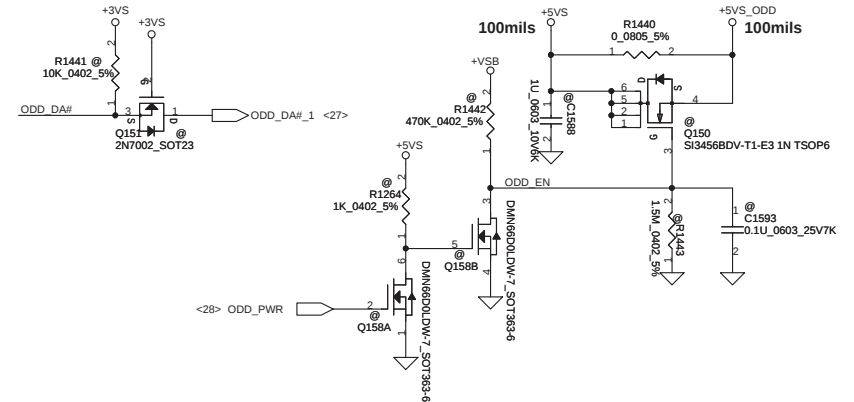
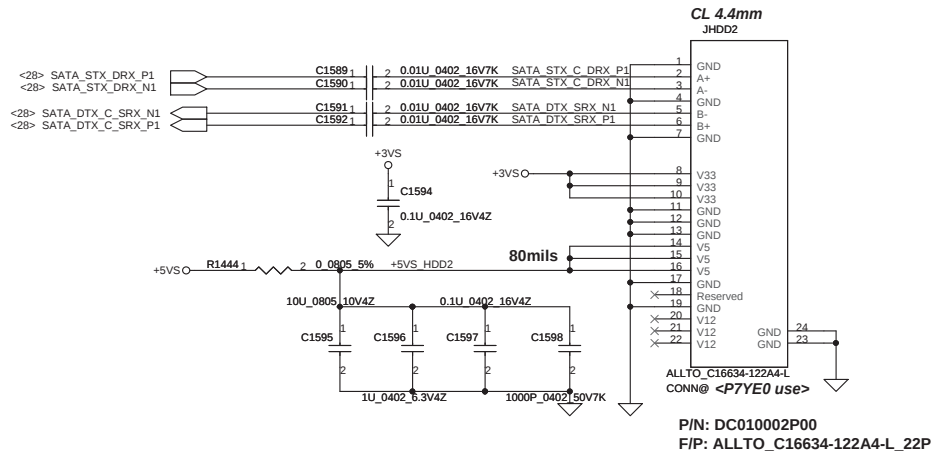
## SATA HDD1 Conn.



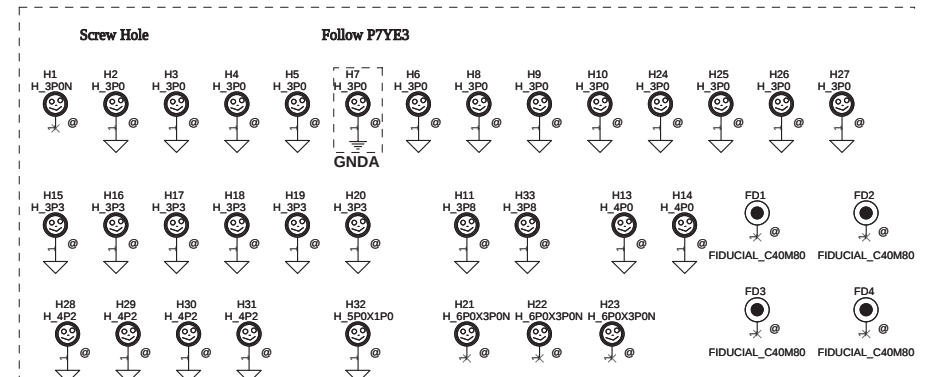
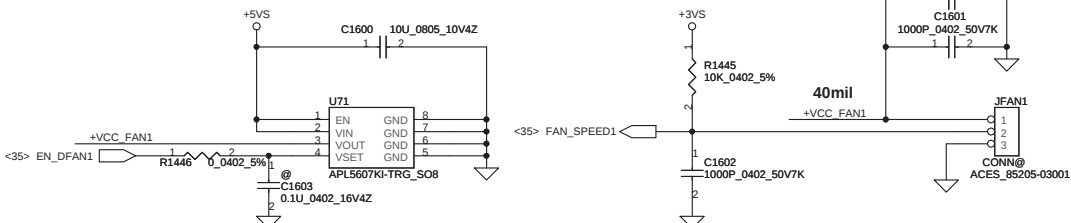
## SATA ODD Conn.



## SATA HDD2 Conn.



## FAN

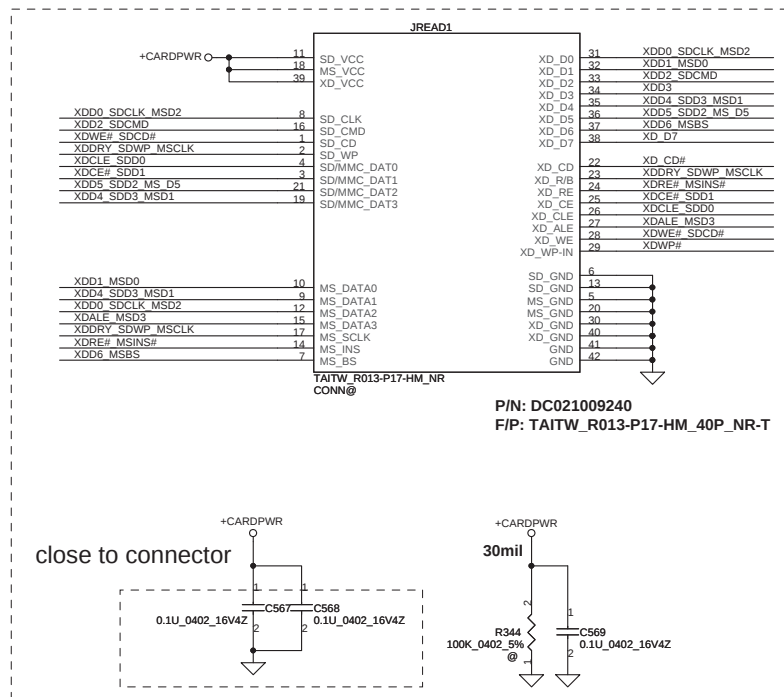
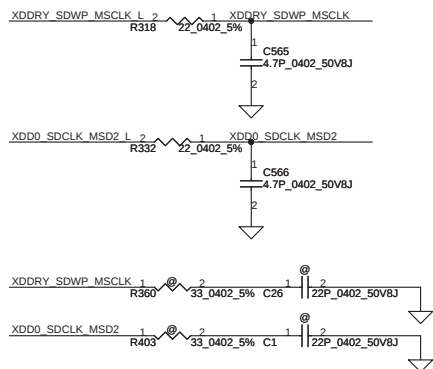


|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  |       |  |                             |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | 4019BN                   |  |       |  | A                           |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | Date                     |  |       |  | Thursday, February 24, 2011 |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | Sheet                    |  |       |  | 31 of 50                    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  |       |  |                             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  |       |  |                             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  |       |  |                             |  |



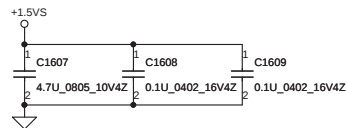
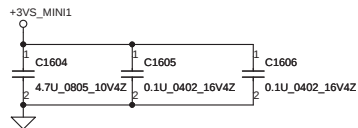
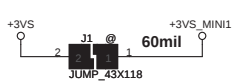
|      | XD     | SD     | MS      |
|------|--------|--------|---------|
|      | XD_CD# |        |         |
| SP1  | XD_RDY | SD_WP  | MS_CLK  |
| SP2  | XD_RE# |        | MS_INS# |
| SP3  | XD_CE# | SD_D1  |         |
| SP4  | XD_CLE | SD_D0  |         |
| SP5  | XD_ALE |        | MS_D3   |
| SP6  | XD_WE# | SD_CD# |         |
| SP7  | XD_WP  |        |         |
| SP8  | XD_D0  | SD_CLK | MS_D2   |
| SP9  | XD_D1  |        | MS_D0   |
| SP10 | XD_D2  | SD_CMD |         |
| SP11 | XD_D3  |        |         |
| SP12 | XD_D4  | SD_D3  | MS_D1   |
| SP13 | XD_D5  | SD_D2  |         |
| SP14 | XD_D6  |        | MS_BS   |
|      | XD_D7  |        |         |

## Share Pin



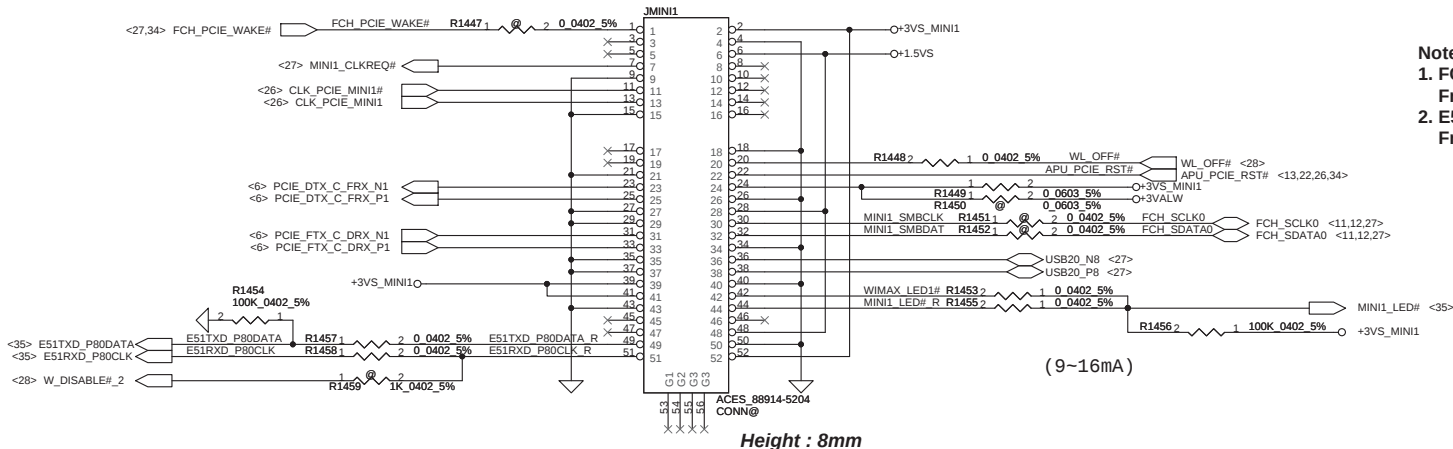
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                          |                             |       |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|--------------------------|-----------------------------|-------|----------|
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date:                    | Thursday, February 24, 2011 | Sheet | 32 of 50 |

# Mini-Express Card for WLAN



| Mini Card Power Rating |                    |        |                      |
|------------------------|--------------------|--------|----------------------|
| Power                  | Primary Power (mA) |        | Auxiliary Power (mA) |
|                        | Peak               | Normal | Normal               |
| +3VS                   | 1000               | 750    |                      |
| +3V                    | 330                | 250    | 250 (wake enable)    |
| +1.5VS                 | 500                | 375    | 5 (Not wake enable)  |

P/N: SP01000P700  
F/P: ACES\_88914-5204\_52P

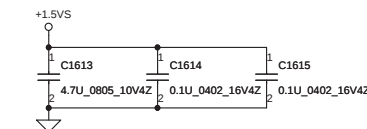
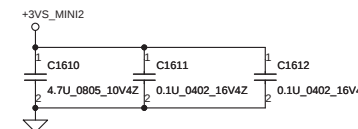


- Note:
- FCH\_SCLK0 and FCH\_SDATA0 route as daisy chain.  
From FCH->JMINI2->DDR SOCKET->JMINI1
  - E51RXD\_P80CLK and E51TXD\_P80DATA route as daisy chain.  
From EC->JMINI2->JMINI1

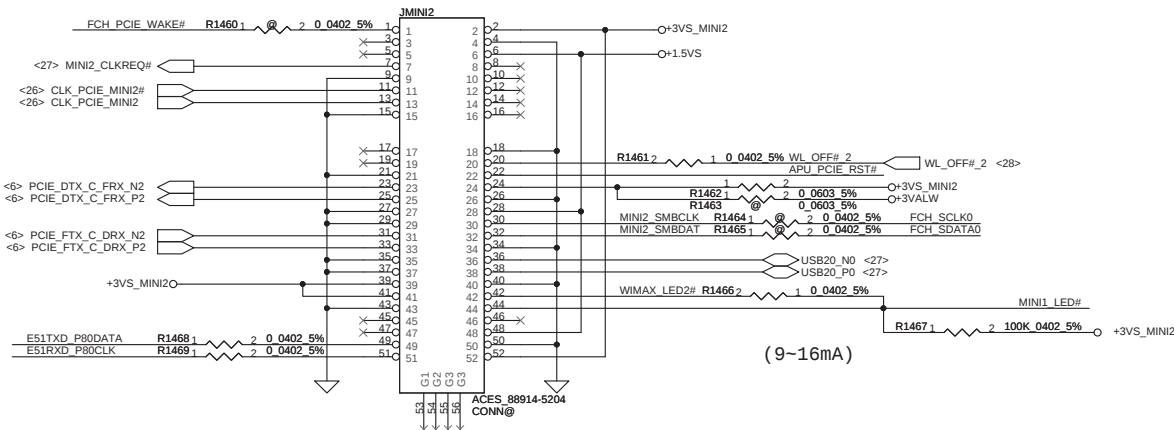
(9~16mA)

Height : 8mm

<P7WE0 use>



P/N: SP01000P700  
F/P: ACES\_88914-5204\_52P



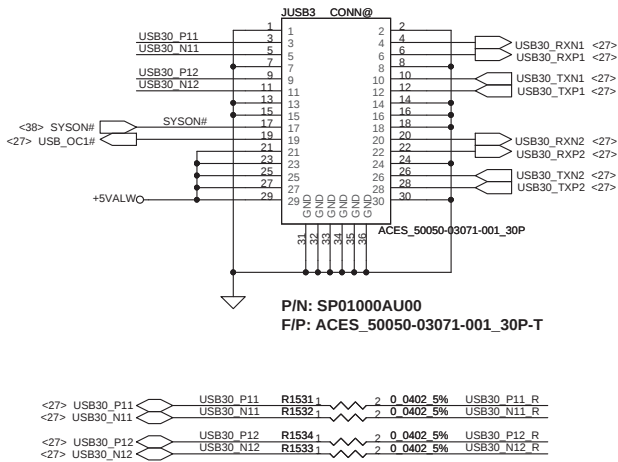
(9~16mA)

Height : 8mm

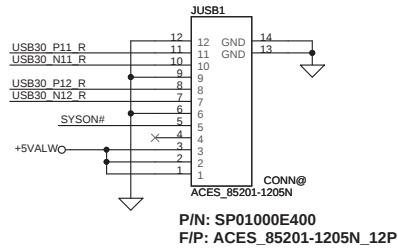
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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Compal Electronics, Inc. |                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|--------------------------|-----------------------------|
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2010/12/30 | Deciphered Date    | 2012/01/01 | Title                    | SCHEMATIC MB A6991          |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date                     | Thursday, February 24, 2011 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Sheet                    | 33 of 50                    |

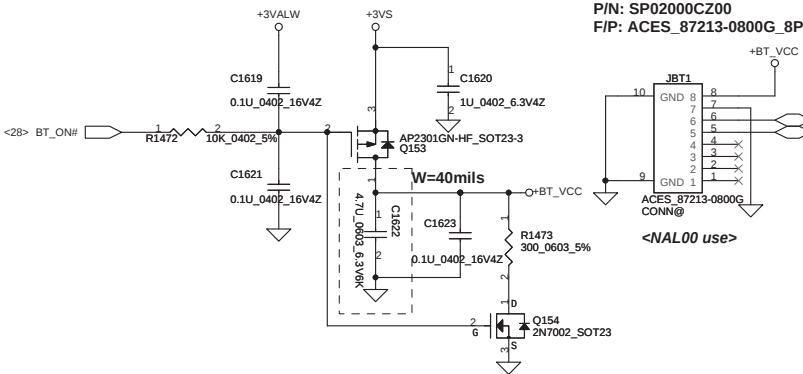
30 Pin USB/B Conn.



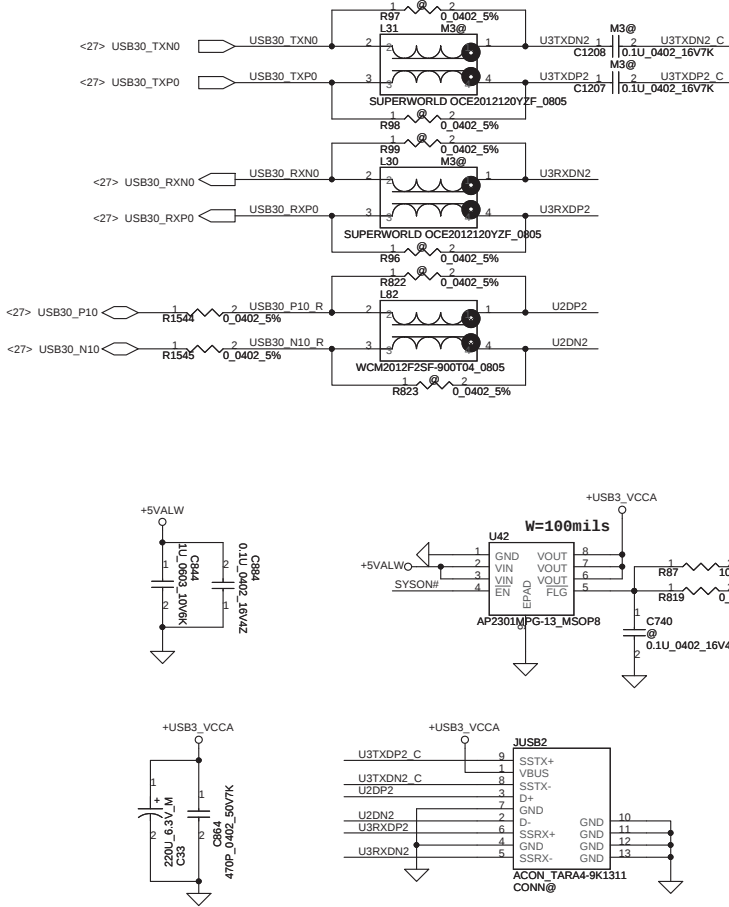
12 Pin USB/B Conn.



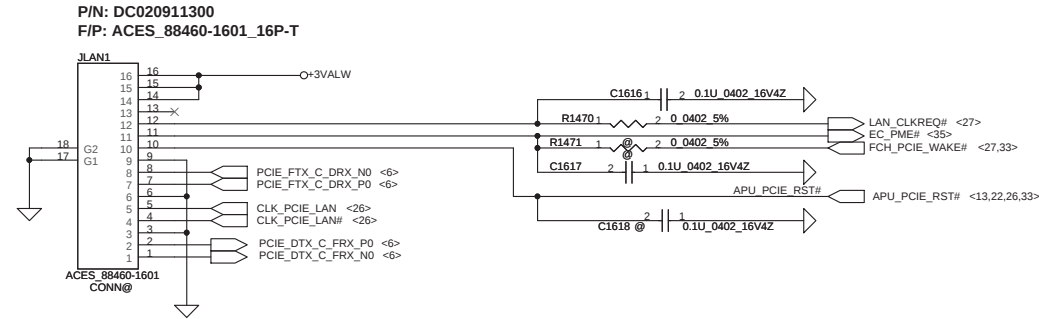
Bluetooth Conn.



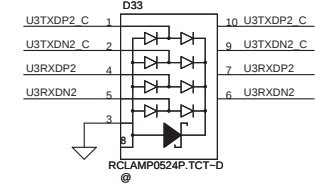
On Board USB3.0 Conn.



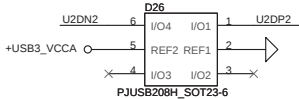
LAN/B Conn.



For USB3.0 ESD diode



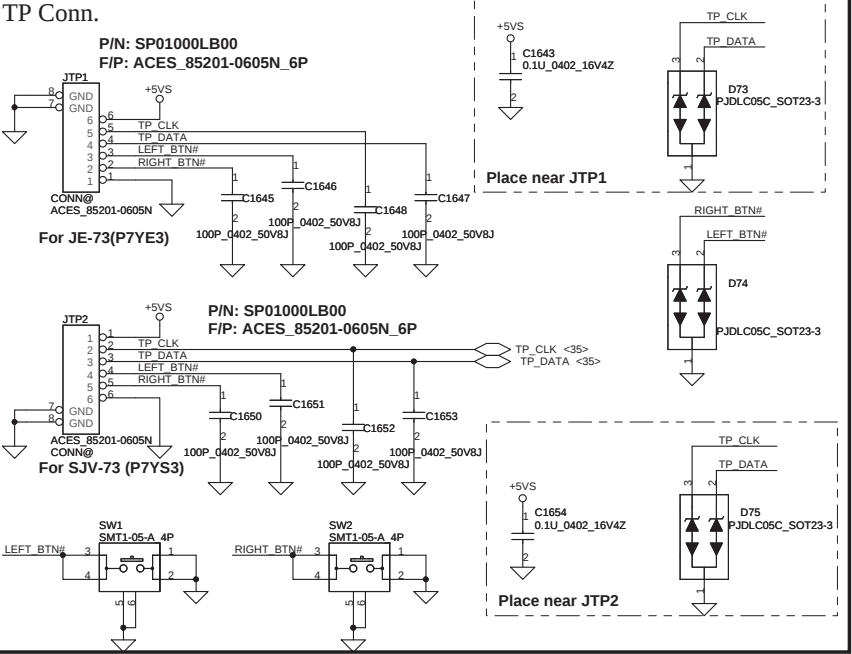
For USB2.0 ESD diode



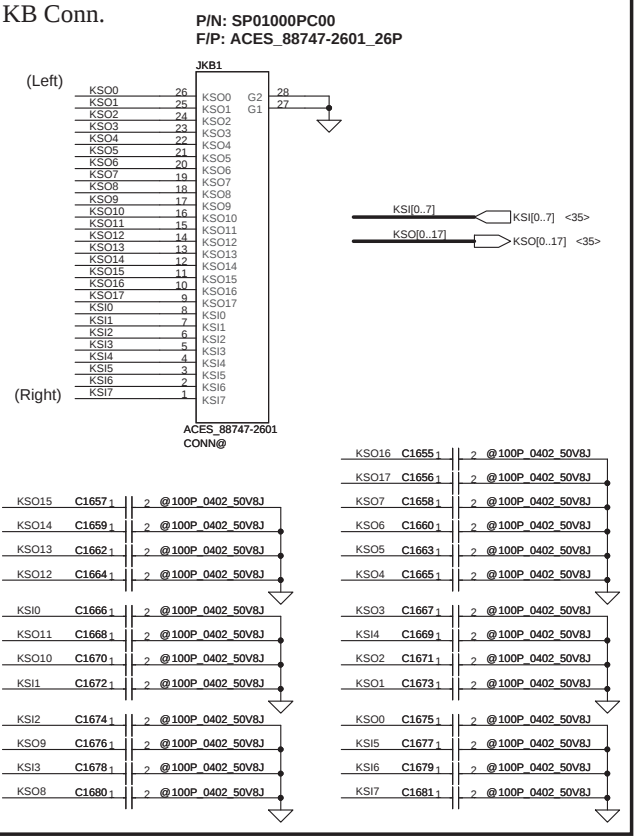
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  |                                   |  |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------|--|-----------------|--|--------------------------|--|-----------------------------------|--|-------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Compal Secret Data |  |                 |  | Compal Electronics, Inc. |  |                                   |  |       |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  | 4019BN                            |  |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  | Date: Thursday, February 24, 2011 |  |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | Sheet              |  | 34              |  | of                       |  | 50                                |  |       |



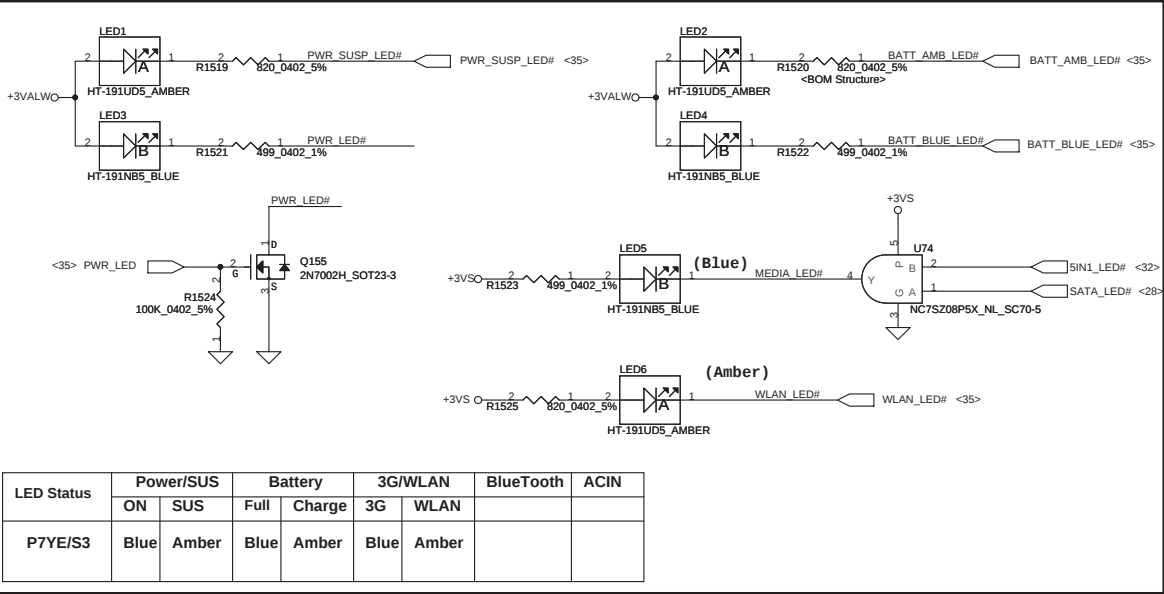
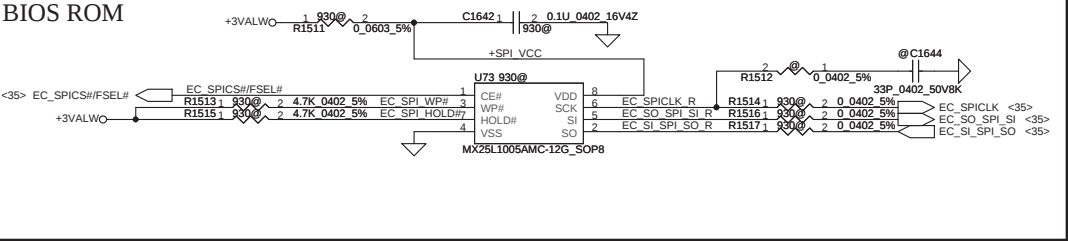
TP Conn.



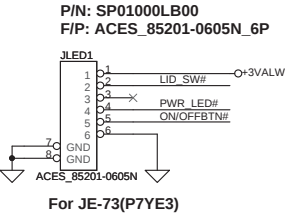
KB Conn.



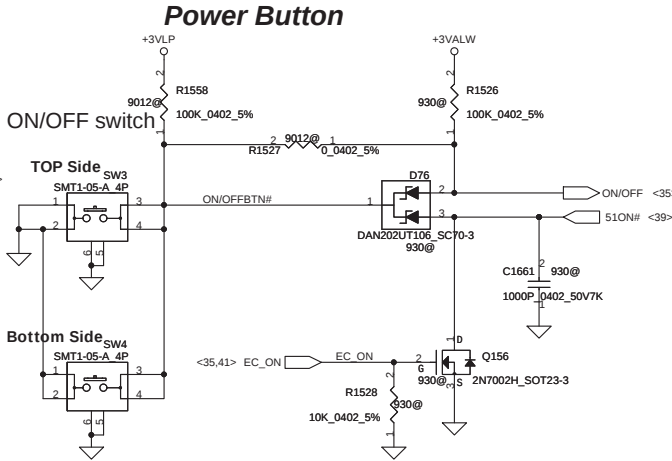
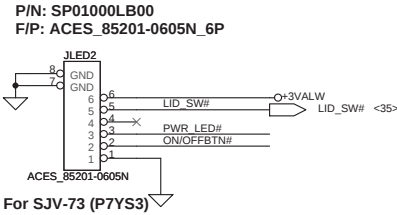
BIOS ROM



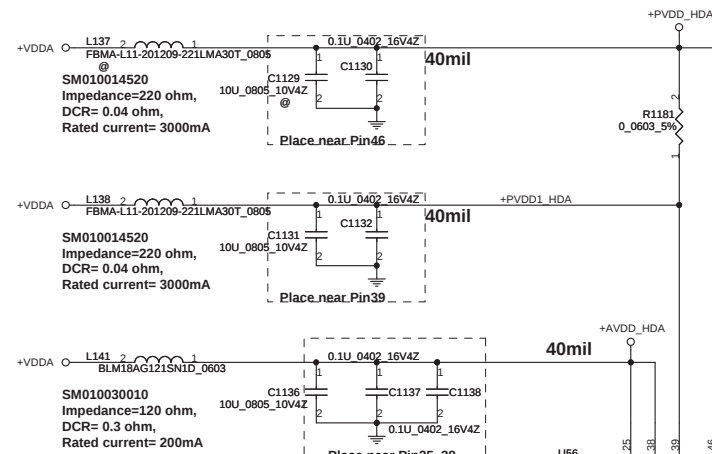
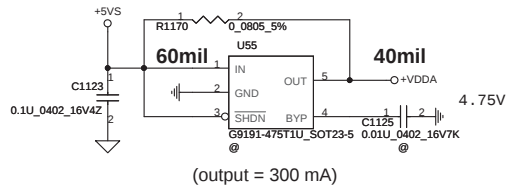
LS-6913P



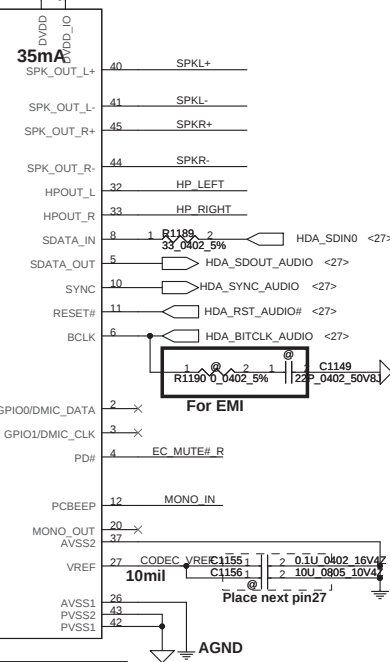
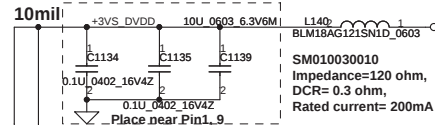
LS-6913P



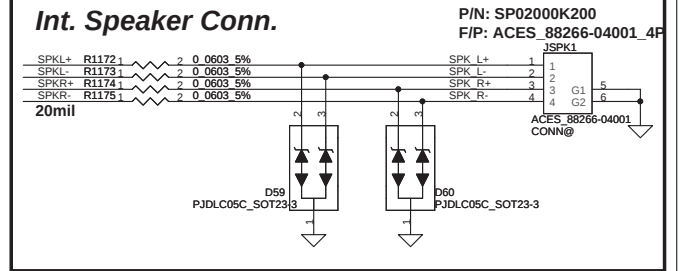
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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data |                 |            | Compal Electronics, Inc. |                             |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2010/12/30         | Deciphered Date | 2012/01/01 | Title                    | SCHEMATIC MB A6991          |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Date:                    | Thursday, February 24, 2011 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Sheet                    | 36 of 50                    |



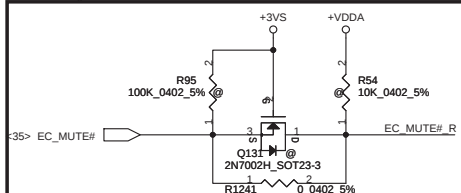
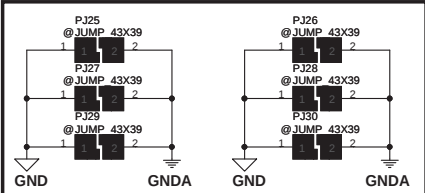
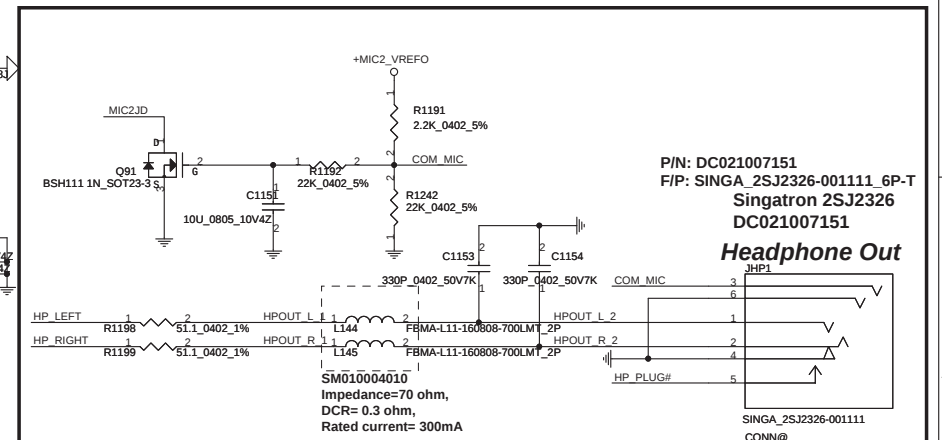
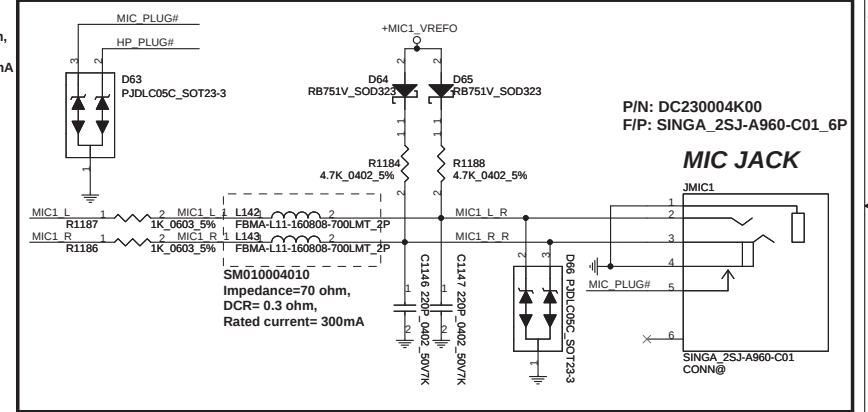
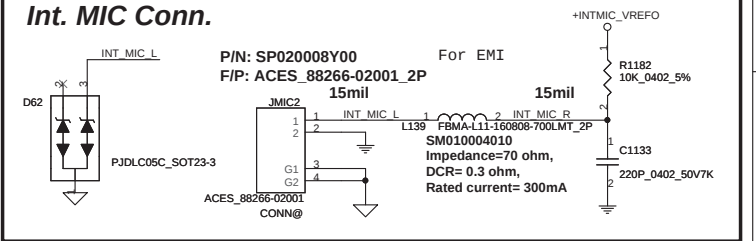
## HD Audio Codec



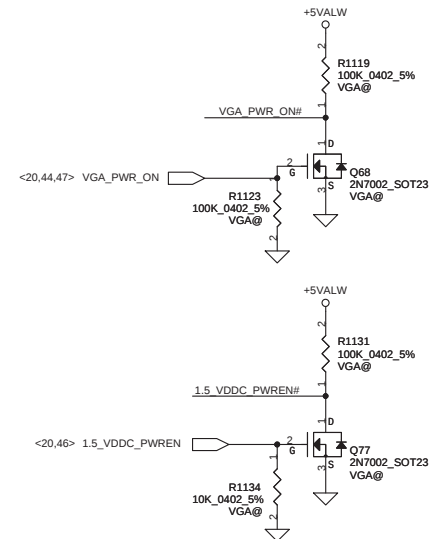
## Int. Speaker Conn.



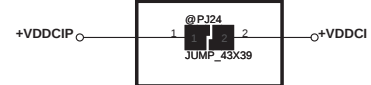
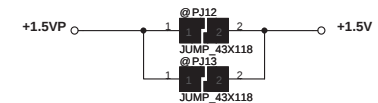
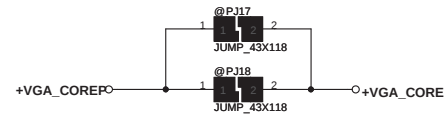
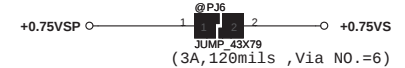
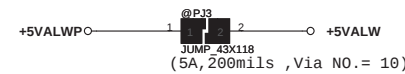
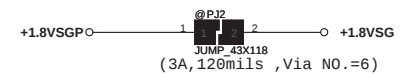
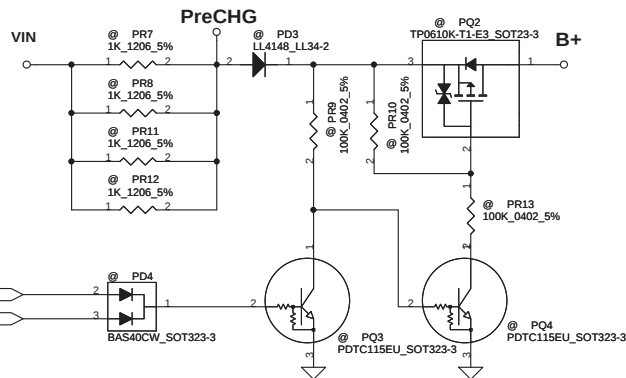
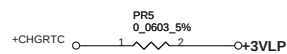
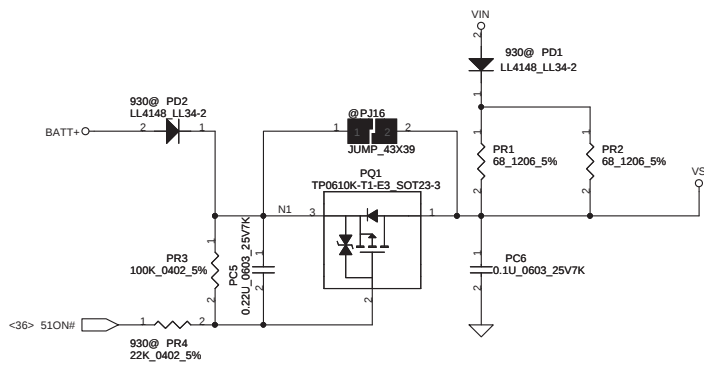
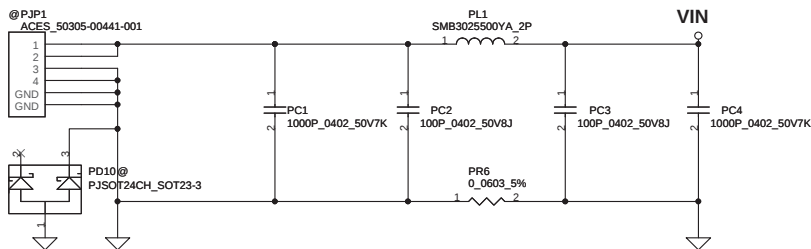
## Int. MIC Conn.



| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Title                             |                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|-----------------------------------|----------------|
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2010/12/30 | Deciphered Date    | 2010/08/04 | Compal Electronics, Inc.          |                |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Document Number                   | Rev A          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | 4019BN                            |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date: Thursday, February 24, 2011 | Sheet 37 of 50 |

[illegible][illegible][illegible]

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                             |            |                          |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------|------------|--------------------------|-------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data          |            | Compal Electronics, Inc. |                   |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2010/12/30 | Deciphered Date             | 2012/01/01 | Title                    | SCHMATIC MB A6991 |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                             |            | 4019BN                   |                   |
| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            | Thursday, February 24, 2011 |            | Sheet                    | 38 of 50          |



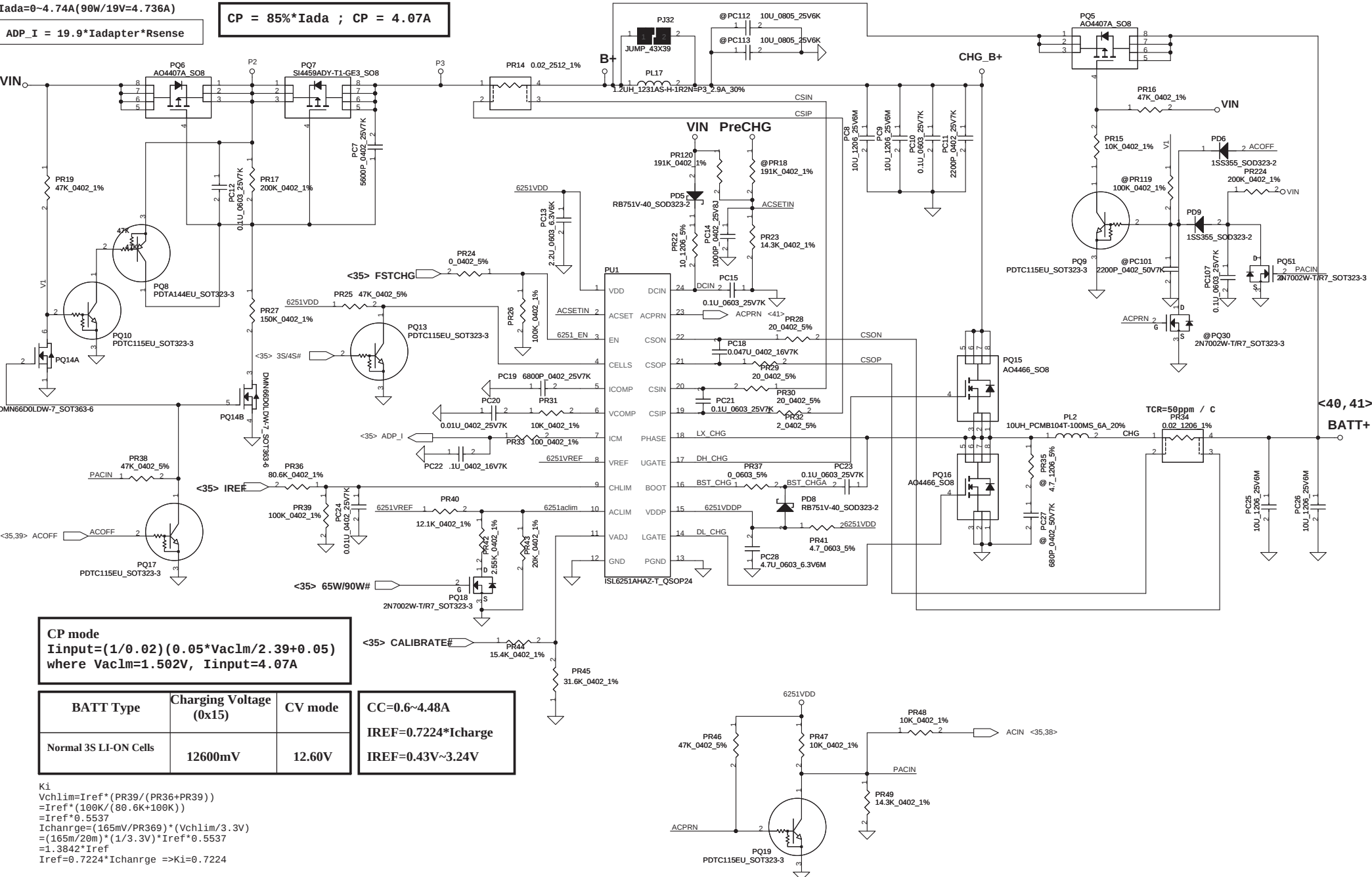
When use Granville, short PJ24

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                             |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|-----------------------------|----------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Title                       |          |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2010/12/30 | Deciphered Date    | 2011/07/13 | Compal Electronics, Inc.    |          |
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Iada=0~4.74A(90W/19V=4.736A)

CP = 85%\*Iada ; CP = 4.07A

ADP\_I = 19.9\*Iadapter\*Rsense



**CP mode**  
 $I_{input} = (1/0.02)(0.05 \cdot V_{ac1m}/2.39 + 0.05)$   
where  $V_{ac1m} = 1.502V$ ,  $I_{input} = 4.07A$

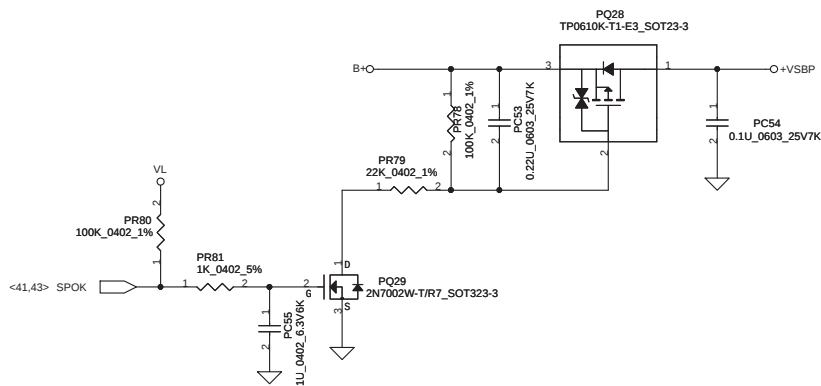
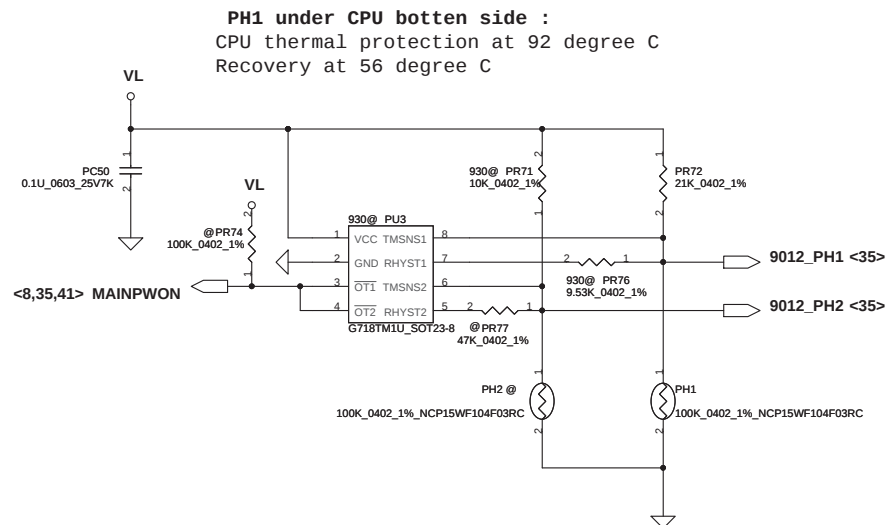
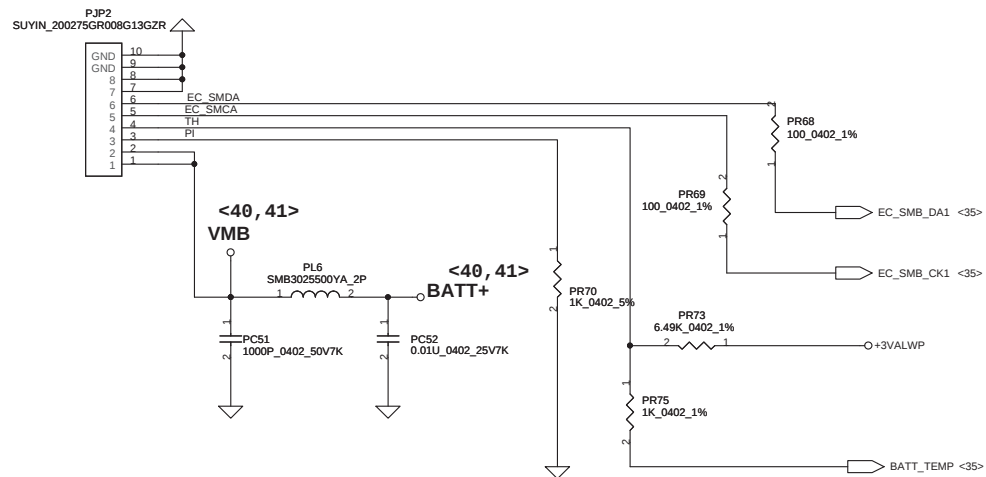
| BATT Type             | Charging Voltage (0x15) | CV mode |
|-----------------------|-------------------------|---------|
| Normal 3S LI-ON Cells | 12600mV                 | 12.60V  |

|                     |
|---------------------|
| CC=0.6~4.48A        |
| IREF=0.7224*Icharge |
| IREF=0.43V~3.24V    |

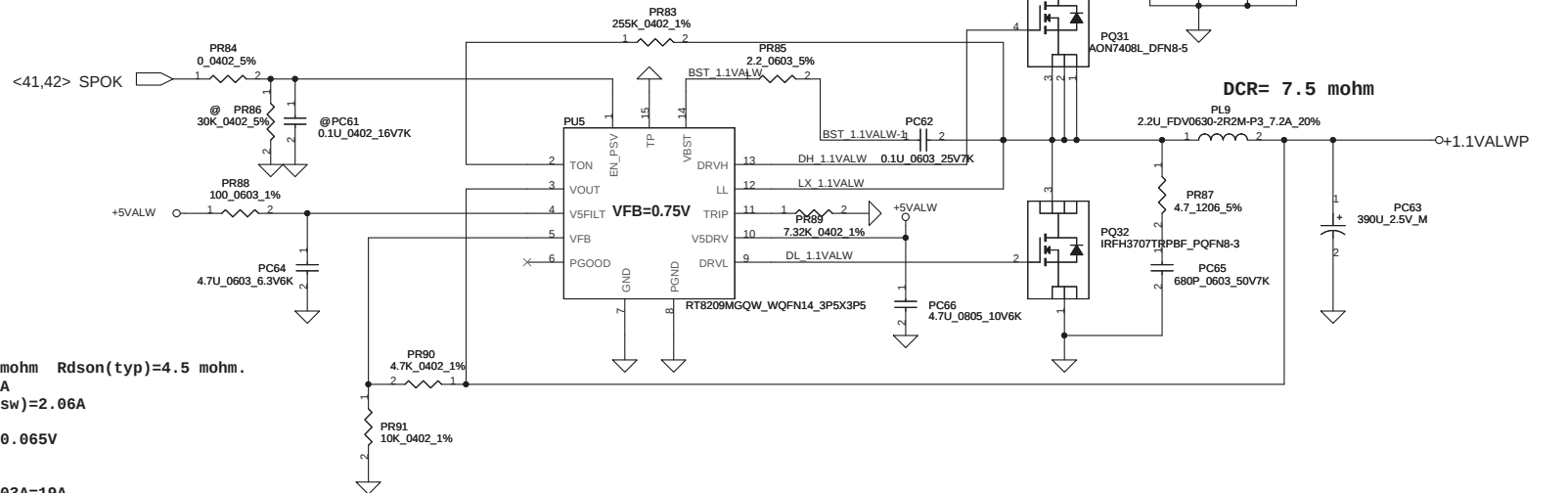
Ki  
 $V_{chlim} = I_{ref} \cdot (PR39 / (PR36 + PR39))$   
 $= I_{ref} \cdot (100K / (80.6K + 100K))$   
 $= I_{ref} \cdot 0.5537$   
 $I_{charge} = (165mV / PR369) \cdot (V_{chlim} / 3.3V)$   
 $= (165m / 20m) \cdot (1/3.3V) \cdot I_{ref} \cdot 0.5537$   
 $= 1.3842 \cdot I_{ref}$   
 $I_{ref} = 0.7224 \cdot I_{charge} \Rightarrow Ki = 0.7224$

Kv  
Rinternal ic=514K Rec=3K R1=PR44=15.4K R2=PR45=31.6K  
 $R = 514K / (31.6K / (15.4K + 3K)) = 11.372K$   
 $r = 514K / (514K / (31.6K + 28.14K))$   
 $V_{cell} = 0.175 \cdot V_{adj} + 3.99V \Rightarrow V_{adj} = 1.2V$   
 $V_{adj} = V_{ref} \cdot (R / (R + 514K)) + CALIBRATE \cdot (r / (r + 514K))$   
 $1.1483 = CALIBRATE \cdot 0.6046 \Rightarrow CALIBRATE = 1.899$   
 $1.899 = (4.2 - (V_{cell} + A \cdot 0.175)) \cdot Kv = (4.2 - (4.2 + A \cdot 0.175)) \cdot Kv$   
 $A = V_{ref} \cdot (R / (R + 514K)) = 0.052$   
 $Kv = 9.451$

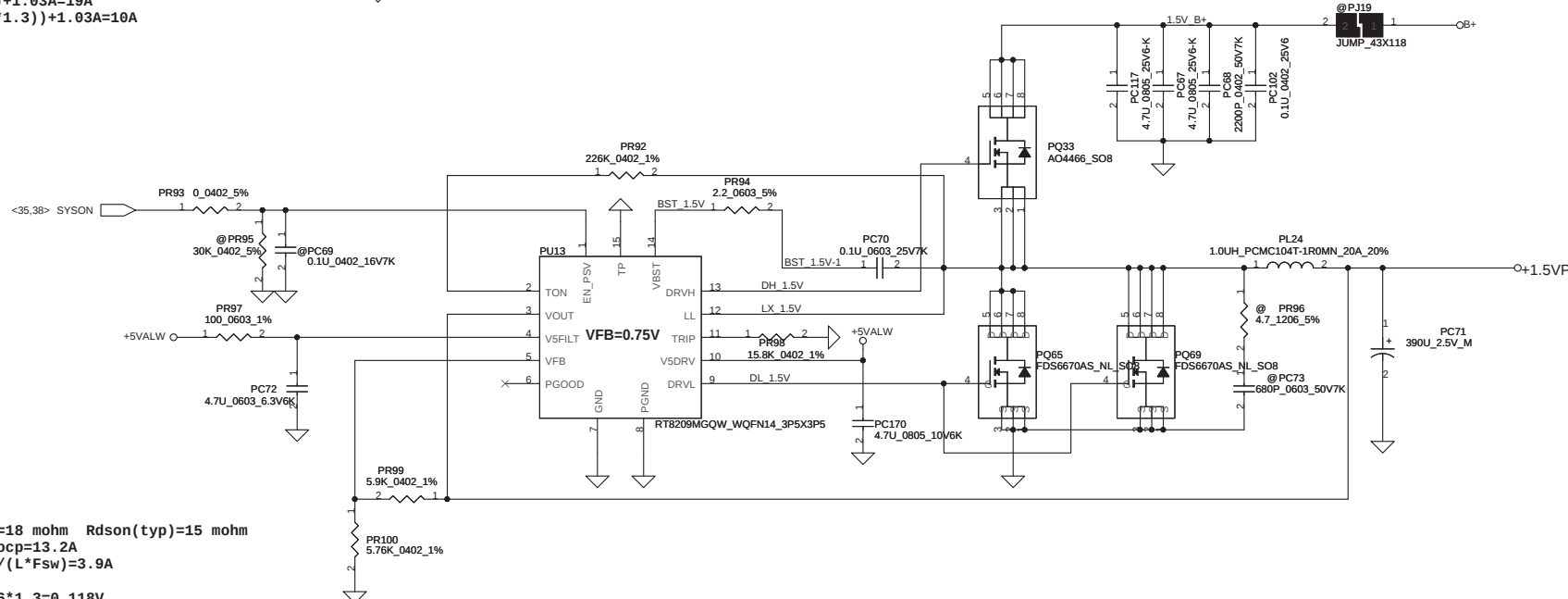




|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            |                          |                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|------------|--------------------------|-----------------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data |                 |            | Compal Electronics, Inc. |                             |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2010/12/30         | Deciphered Date | 2011/07/13 | Title                    | SCHEMATIC MB A6991          |
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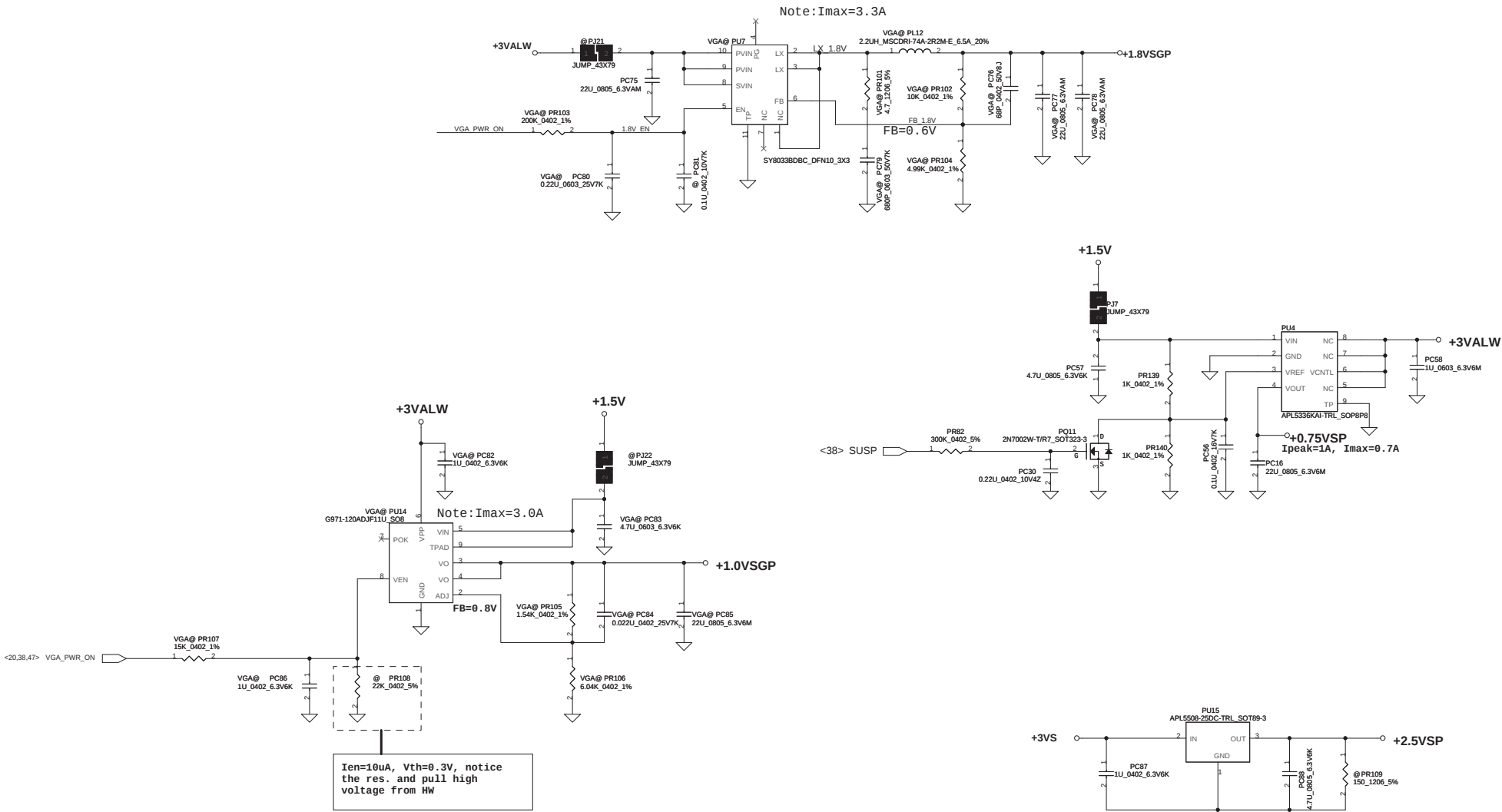


$<V_o=1.1V>$  VFB=0.75V  
 $V=0.75*(1+4.7K/10K)=1.1V$   
 $F_{sw}=280KHz$   
 $C_{out} ESR=15m\ ohm\ R_{dson}(max)=5.6\ mohm\ R_{dson}(typ)=4.5\ mohm.$   
 $I_{peak}=5.5A, I_{max}=3.85A, I_{ocp}=8.9A$   
 $\Delta I=((19-1.1)*(1.1/19))/(L*F_{sw})=2.06A$   
 $\Rightarrow 1/2\Delta I I=1.03A$   
 $V_{tripmax}=I_{ocp}*R_{dson}=8.9*5.6*1.3=0.065V$   
 $R_{cs}=V_{trip}/9\mu A=0.065V/9\mu A=7.2K$   
 $choose\ R_{cs}=7.32K$   
 $I_{ocpmax}(((7.32K*11\mu A)/0.0045)+1.03A)=19A$   
 $I_{ocpmin}(((7.32K*9\mu A)/0.0056*1.3))+1.03A=10A$   
 $I_{ocp}=10A-19A$

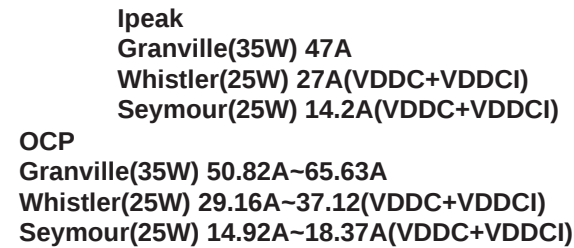


$<V_o=1.5V>$  VFB=0.75V  
 $V_o=0.75*(1+5.9K/5.76K)=1.5V$   
 $F_{sw}=335KHz$   
 $C_{out} ESR=17\ mohm\ R_{dson}(max)=18\ mohm\ R_{dson}(typ)=15\ mohm$   
 $I_{peak}=27.7A, I_{max}=19.39A, I_{ocp}=13.2A$   
 $\Delta I=((19-1.5)*(1.5/19))/(L*F_{sw})=3.9A$   
 $\Rightarrow 1/2\Delta I I=1.95A$   
 $V_{tripmax}=I_{ocp}*R_{dson}=16.2*5.6*1.3=0.118V$   
 $R_{cs}=V_{trip}/9\mu A=0.118V/9\mu A=13.1K$   
 $choose\ R_{cs}=13K$   
 $I_{ocpmax}(((13K*11\mu A)/0.0045)+1.95A)=32A$   
 $I_{ocpmin}(((13K*9\mu A)/0.0056*1.3))+1.95A=18A$   
 $I_{ocp}=9.94A-13.2A$

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  |                             |  |                |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------|--|-----------------|--|--------------------------|--|-----------------------------|--|----------------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Compal Secret Data |  |                 |  | Compal Electronics, Inc. |  |                             |  |                |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | Docu- ment Number        |  | 4019BN                      |  | Rev A          |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | Date:                    |  | Thursday, February 24, 2011 |  | Sheet 43 of 50 |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  |                             |  |                |  |

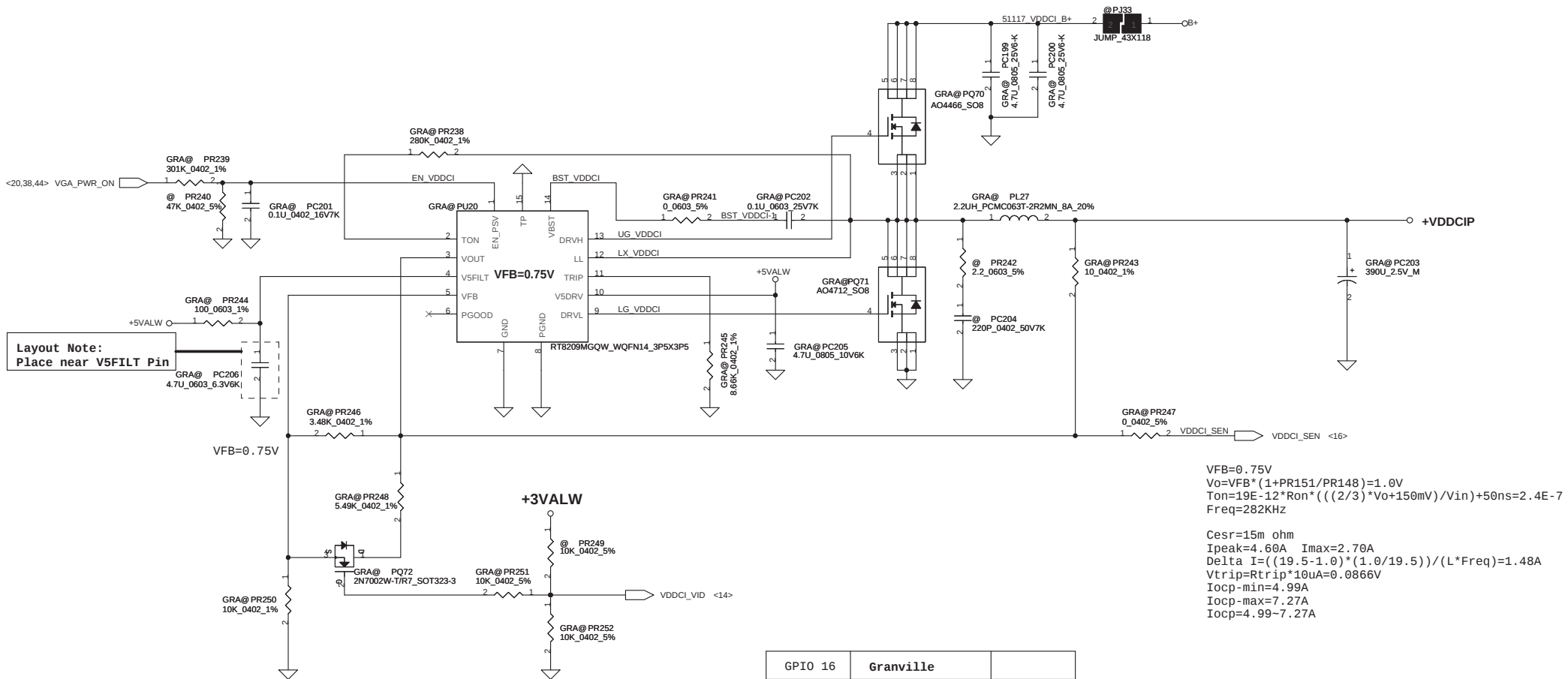




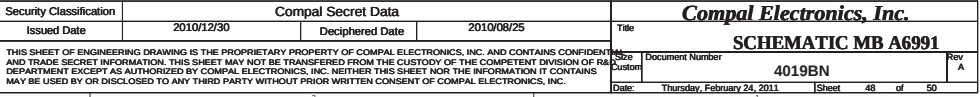


| GPIO_20  | GPIO_15  | Granville                | Whistler                 | Seymour                  |
|----------|----------|--------------------------|--------------------------|--------------------------|
| GPU_VID1 | GPU_VID0 | Core Voltage Level       | Core Voltage Level       | Core Voltage Level       |
| 1        | 1        | 0.90V(0.901V)            | 0.90V(0.901V)            | 0.90V(0.901V)            |
| 1        | 0        | 0.95V(0.950V)            | 0.95V(0.950V)            | 1.00V(1.001V)            |
| 0        | 1        | 1.00V(1.002V)            | 1.00V(1.002V)            | 1.05V(1.052V)            |
| 0        | 0        | 1.05V(1.051V)<br>Default | 1.05V(1.051V)<br>Default | 1.15V(1.152V)<br>Default |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                                                              |                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|--------------------------------------------------------------|-----------------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | <b>Compal Electronics, Inc.</b><br><b>SCHEMATIC MB A6991</b> |                             |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Custom                                                       | 4019BN                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                                                              | Rev A                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date:                                                        | Thursday, February 24, 2011 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Sheet                                                        | 46 of 50                    |



|           |                     |         |
|-----------|---------------------|---------|
| GPIO 16   | Granville           |         |
| VDDCI_VID | VDDCI Voltage Level | Comment |
| 0         | 1.00 V              | Default |
| 1         | 0.90 V              |         |



| Item | Fixed Issue | Reason for change | Rev. | PG# | Modify List                       | Date          | Phase |
|------|-------------|-------------------|------|-----|-----------------------------------|---------------|-------|
| 1    |             | Prevent ESD       |      |     | Change SB000006800 to SB000009Q80 | 2011<br>02/09 | DVT   |
| 2    |             |                   |      |     |                                   |               |       |
| 3    |             |                   |      |     |                                   |               |       |
| 4    |             |                   |      |     |                                   |               |       |
| 5    |             |                   |      |     |                                   |               |       |
| 6    |             |                   |      |     |                                   |               |       |
| 7    |             |                   |      |     |                                   |               |       |
| 8    |             |                   |      |     |                                   |               |       |
| 9    |             |                   |      |     |                                   |               |       |
| 10   |             |                   |      |     |                                   |               |       |
| 11   |             |                   |      |     |                                   |               |       |
| 12   |             |                   |      |     |                                   |               |       |
| 13   |             |                   |      |     |                                   |               |       |
| 14   |             |                   |      |     |                                   |               |       |
| 15   |             |                   |      |     |                                   |               |       |
| 16   |             |                   |      |     |                                   |               |       |

Version change list (P.I.R. List)

- 0.1 -> 0.2
1. R1244 change to BACO@; Q136, Q139, R1262, R1259, R1260, R1261 change to @.
  2. Change TEST35 to PU (pop R558; unpopR559).
  3. EC\_PME# PU (Pop R1503).
  4. Change U56 pin 42,43 to DGND.
  5. Change U6, R1537, R1538, R1539, R1540 to @.
  6. ALLOW\_STOP, APU\_SVC, APU\_SVD PU to +1.5V (add R604, R607, R618).
  7. Reserve +1.2VS to replace U6 SW power (add R948 pad).
  8. Unpop R25, add Q145.
  9. Add component for KBC930 and KBC9012 colay:  
R1518 (9012@), R1546 (@), R1547 (930@), R1548 (@), R1549 (930@), R1550 (9012@),  
R1551 (@), R1552 (9012@), R1553 (9012@), R1556 (930@), R1557 (9012@),  
R1558 (9012@).
  10. Add Net for KBC930 and KBC9012 colay:  
9012\_PH2, GPXO06, GPXO07, GPXO10, 9012\_PH1, GPXID7, +EC\_VCC.
  11. Reserve R1554, R1555 for FFC USB/B.
  12. Delete RTS5209 PCIE port (del C1376, C1377, C158, C248); delete CLK req (del R55);  
delete Card det (del R144).
  13. For RTS5138, add USB port 6 and one 48MHz clock from FCH.
  14. Add R88 for USB/B oc pin.
  15. Change D33 to @.
  16. Change R1529, R1530, C1682 to @.
  17. For DVT board ID, change R1475 to 18K.
  18. Change R1526 to 930@.
  19. Change C1486 to PX@.
  20. Reserve R360, R403, C1 and C26 for EMI.
  21. Del R1554, R1555 for FFC USB/B.
  22. Change mini2 USB port from port 9 to port 0 (del R1542, R1543).
  23. Change R1289, R1290 to RT@.
  24. Add C1468, C1469 on SYSON# for ESD reserve.
  25. Change R417, R148 to DISO@.
  26. Add TP on JCRT1.5, JCRT1.11, USB port2.
  27. Add all EMI solution on TP Conn(include JE and SJV).
  28. Change U25 from A12 to A13 (unpop Q145, pop R25).
  29. Change U73, R1513, R1515, R1514, R1516, R1517, R1511, C1642 to 930@.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |                             |  |                          |       |          |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | Size<br>C          | Document Number<br>4019BN   |  |                          |       |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | Date:              | Thursday, February 24, 2011 |  |                          | Sheet | 50       |