

# BAP/BXP30

A02 Build

2010.05.22

**INVENTEC**

TITLE  
**BAP/BXP30**

|                |            |                      |            |
|----------------|------------|----------------------|------------|
| SIZE<br>Custom | CODE<br>CS | DOC NUMBER<br>CS-131 | REV<br>X01 |
| SHEET          | 1          | of                   | 41         |

CHANGE by IEC DATE Saturday, May 22, 2010

# 1. Schematic Page Description :

## BAP30/BXP30 Schematic Ver : X01

|                             |                            |                         |
|-----------------------------|----------------------------|-------------------------|
| 01. Title                   | 16. Processor(2/3)         | 31. EASY PORT           |
| 02. Schematic Page DESCR    | 17. Processor(3/3)         | 32. Hybrid Switch (1/2) |
| 03. Block Diagram           | 18. PCH_RTC,SATA,PCI-E,CLK | 33. Hybrid Switch (2/2) |
| 04. Power Block Diagram     | 19. PCH_DMI,MISC,LVDS,CRT  | 34. N10x PCIE/ I/O(1/6) |
| 05. Annotations             | 20. PCH_USB, PCI,NVRAM,XDP | 35. N10x Memory(2/6)    |
| 06. Schematic Modify        | 21. PCH Power 1            | 36. N10x Power(3/6)     |
| 07. Timing Diagram          | 22. PCH Power 2            | 37 1.8V/1.05V/NVDD(4/6) |
| 08. PWR_Adaptor in/Charge   | 23. Clock Generator        | 38. DDR3 VRAM           |
| 09. PWR_CPU Core Power      | 24. DDR3 SDRAM SO-DIMM 0/1 | 39. CX20672-11Z         |
| 10. PWR_Graphics Core       | 25. LCD/CAM/DVI PLUG/CRT   | 40. Card reader/ Audio  |
| 11. PWR_DDR PWR             | 26. USB/LID/LED            | 41. POWER SEQUENCE      |
| 12. PWR_1.1VS_VTT/1.1VS     | 27. BCM57760               |                         |
| 13. PWR_5VA/5VLA/3VA/3VLA   | 28. 3G/USIM                |                         |
| 14. PWR_3VS/5VS/1.8VS/5VUSB | 29. HDD/ODD/DAUGHTER CONN  |                         |
| 15. Processor(1/3)          | 30. KBC ITE8502E*          |                         |

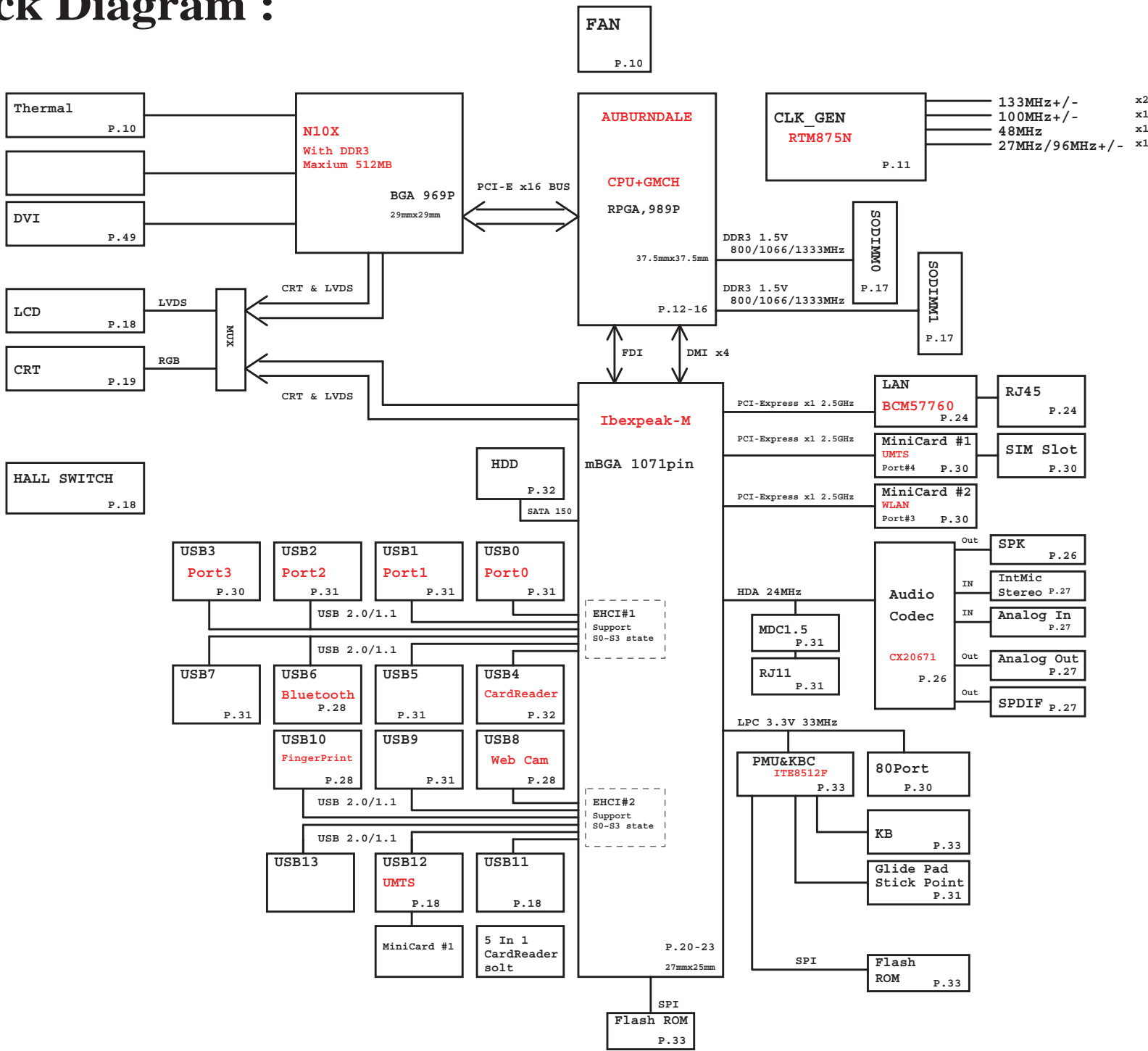
# 2. PCI & IRQ & DMA Description :

|       |      |        |      |           |      |      |
|-------|------|--------|------|-----------|------|------|
| IDSEL | CHIP | PCIINT | CHIP | Interface | REQ  | CHIP |
| None  |      | None   |      |           | None |      |

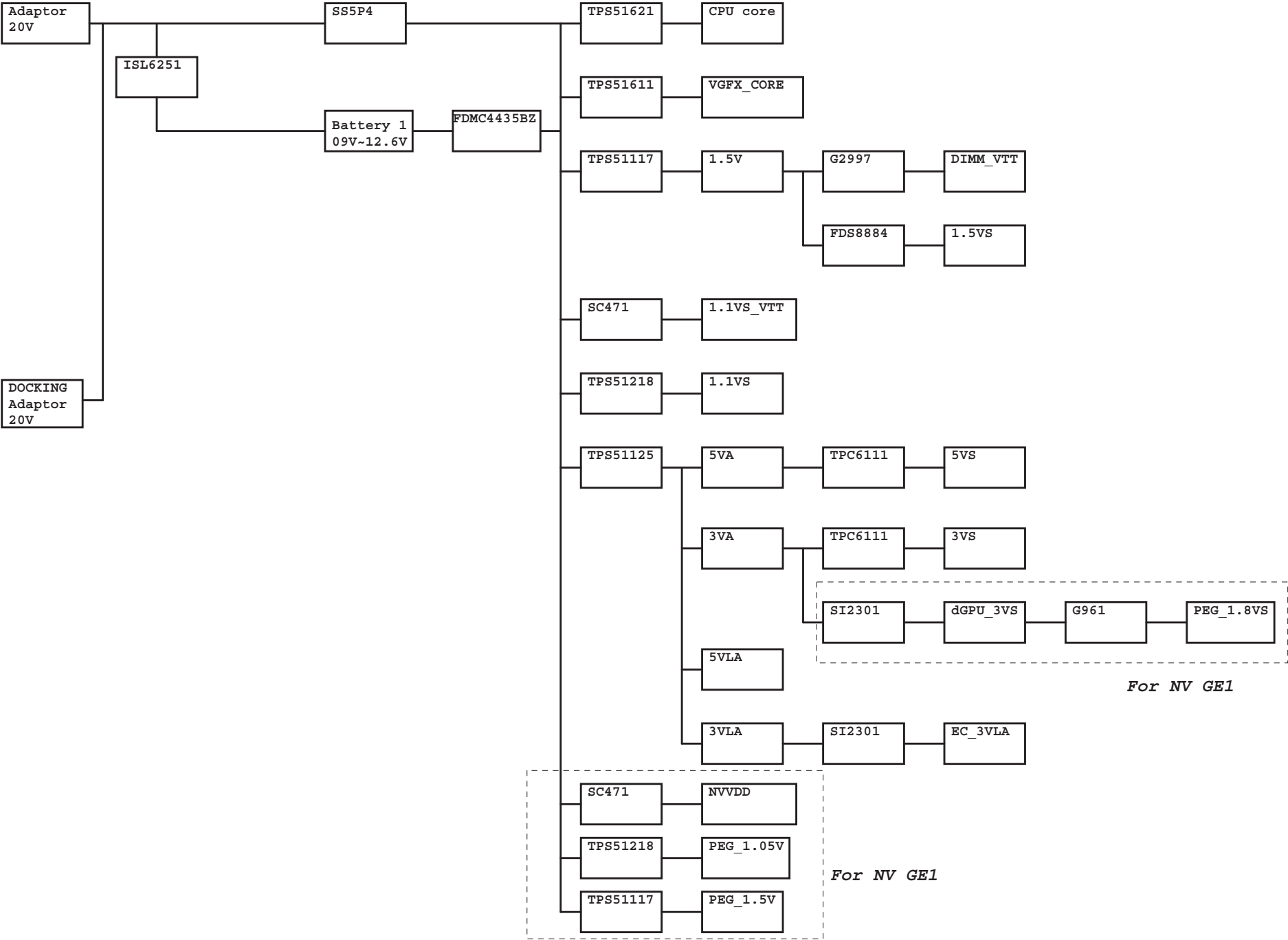
# 3. USB & PCI-Express & SATA Description :

|          |                |          |             |        |                   |        |        |
|----------|----------------|----------|-------------|--------|-------------------|--------|--------|
| USB Port | DEVICE         | USB Port | DEVICE      | PCI-E  | DEVICE            | SATA   | DEVICE |
| Port 0   | System (ESATA) | Port 7   | Bluetooth   | Port 1 | New Card          | Port 1 | HDD    |
| Port 1   | System         | Port 8   |             | Port 2 | Docking           | Port 2 | E-SATA |
| Port 2   | System         | Port 9   | Web Cam     | Port 3 | Mini Card(WLAN)   | Port 4 | BAY    |
| Port 3   | System         | Port 10  |             | Port 4 | Mini Card(3G)     | Port 5 | None   |
| Port 4   | CardReader     | Port 11  | FingerPrint | Port 5 | Mini Card(ROBSON) |        |        |
| Port 5   |                | Port 12  |             | Port 6 | Giga-LAN          |        |        |
| Port 6   |                | Port 13  | 3G          |        |                   |        |        |

# 3. Block Diagram :



# Power Block Diagram :



# 4. Net name Description :

## Voltage Rails

|               |  |
|---------------|--|
| DCIN          | Primary DC system power supply                 |
| 3VLA          | 3.3V always on power rail by DCIN              |
| 5VLA          | 5.0V always on power rail by DCIN              |
| EC 3VLA       | 3.3V always on power rail by 5VAUXON           |
| 3VA           | 3.3V always on power rail by LATCH_ON          |
| 5VA           | 5.0V always on power rail by LATCH_ON          |
| -----         |  |
| 3VM           | 3.3V power rail by SUSM#                       |
| 1.05VM        | 1.05V switched power rail by SUSM#             |
| -----         |  |
| 1.5V          | 1.5V switched power rail by SUSC#              |
| 1.8V          | 1.8V power rail by SUSC#                       |
| -----         |  |
| 3VS           | 3.3V power rail by SUSB#                       |
| 5VS           | 5.0V power rail by SUSB#                       |
| 1.5VS         | 1.5V power rail by SUSB#                       |
| 1.05VS        | 1.05V power rail by SUSB#                      |
| PWR_DIMM_VTT  | 0.75V DDR Termination Voltage by SUSB#         |
| -----         |  |
| VGFX_CORE     | 1.05V power rail for UMA by SUSB#              |
| PEG 1.8VS     | 1.8V switched power rail for NB9x by SUSB#     |
| PEG_PEX_1.1VS | 1.1V switched power rail for NB9x by SUSB#     |
| PEG_NVDD      | Variable switched power rail for NB9x by SUSB# |
| -----         |  |
| Vcore_CPU     | Core switched power rail for CPU               |

## Part Naming Conventions









|    |   |           |    |   |                        |
|----|---|-----------|----|---|------------------------|
| C  | = | Capacitor | Q  | = | Transistor             |
| CN | = | Connector | R  | = | Resistor               |
| D  | = | Diode     | RP | = | Resistor Pack          |
| F  | = | Fuse      | U  | = | Arbitrary Logic Device |
| L  | = | Inductor  | Y  | = | Crystal and Osc        |

## Name Suffix

|    |   |                   |
|----|---|-------------------|
| #  | = | Active Low signal |
| NU | = | No Stuff          |

# 5. Board Stack up Description

## PCB Layers

|         |   |   |
|---------|---|---|
| Layer 1 |  | Component Side, Microstrip signal Layer |
| Layer 2 |  | Ground Plane                            |
| Layer 3 |  | Stripline Layer                         |
| Layer 4 |  | Power Plane                             |
| Layer 5 |  | Stripline Layer                         |
| Layer 6 |  | Stripline Layer                         |
| Layer 7 |  | Ground Plane                            |
| Layer 8 |  | Solder Side, Microstrip signal Layer    |

|             | Differential Impedance for Microstrip(5-mils) | Differential Impedance for Stripline(4-mils) |
|-------------|---|--|
| Host Clock  | 95 ohm +/- 20%                                | 100 ohm +/- 20%                              |
| PCI-E Clock | 95 ohm +/- 20%                                | 100 ohm +/- 20%                              |
| DDR2 CLK    | 70 ohm +/- 20%                                | 70 ohm +/- 20%                               |
| DDR2 Strobe | 85 ohm +/- 20%                                | 90 ohm +/- 20%                               |
| DMI Bus     | 95 ohm +/- 20%                                | 100 ohm +/- 20%                              |
| PCIE Bus    | 95 ohm +/- 20%                                | 100 ohm +/- 20%                              |
| SDVO        | 95 ohm +/- 20%                                | 100 ohm +/- 20%                              |
| SATA        | 95 ohm +/- 20%                                | 100 ohm +/- 20%                              |
| USB         | 90 ohm +/- 20%                                | 95 ohm +/- 20%                               |
| LVDS        |   | 100 ohm +/- 20%                              |
| Lan         | 95 ohm +/- 20%                                | 100 ohm +/- 20%                              |

| Power Rail                         | Destination  | Voltage  | S0 Current  |
|------------------------------------|--|--|---|
| VCC_CORE                           | Penryn HFM:<br>LFM:  | 1.3319V-1.4375V-1.4591V<br>0.9221V-0.9625V-0.9739V   | 36A   |
| 1.05VS                             | Penryn: AGTL+ termination<br>Cantiga GM: Core<br>Cantiga GM: PCIE<br>Cantiga GM:Core+IMEL+HSIO<br>Cantiga GM:VCC_GMCH<br>Cantiga GM:VCCA_SM_CK and NCTF<br>Cantiga GM:VCC_DMI<br>Cantiga GM:VCCA_SM<br>Cantiga GM:VTT<br>ICH9M:VCC1_05<br>ICH9M:DMI<br>ICH9M:CPU_IO              | 1V-1.05V-1.10V<br>0.997V-1.05V-1.102V<br>0.9975V-1.05V-1.1025V<br>0.9975V-1.05V-1.1025V<br>0.997V-1.05V-1.102V<br>0.997V-1.05V-1.102V<br>0.997V-1.05V-1.102V<br>0.997V-1.05V-1.102V<br>0.997V-1.05V-1.102V<br>0.997V-1.05V-1.102V<br>0.997V-1.05V-1.102V | 4.5A<br>8.7A<br>1.78A<br>2.898A<br>10.154A<br>37.95mA<br>456mA<br>747.5mA<br>852mA<br>1.634A<br>48mA<br>2mA |
| 1.5VS                              | Penryn PLL<br>Cantiga GM: QDAC<br>Cantiga GM: LVDS<br>Cantiga GM: TVDAC<br>Cantiga GM: Various PLLS analog supply<br>Cantiga GM: VCC_SM_CK<br>Cantiga GM: VCC_SM<br>ICH9M:PCIE_ICH<br>ICH9M:SATA_ICH<br>ICH9M:VCC_GLAN<br>Mini Card:<br>Express Card:                            | 1.425V-1.5V-1.575V<br>1.425V-1.5V-1.575V<br>1.71V-1.8V-1.89V<br>1.425V-1.5V-1.575V<br>1.425V-1.5V-1.575V<br>1.425V-1.5V-1.575V<br>1.425V-1.5V-1.575V<br>1.425V-1.5V-1.575V<br>1.425V-1.5V-1.575V<br>1.425V-1.5V-1.575V<br>1.425V-1.5V-1.575V             | 130mA<br>0.5mA<br>60.31mA<br>35mA<br>485mA<br>149.5mA<br>3.1625A<br>646mA<br>1.342A<br>80mA<br>650mA        |
| 1.5V                               | Cantiga GM: DDRIII System Memory   | 1.425V-1.5V-1.575V   | 3.1A(800M) 4.1A(1067M)  |
| 0.75VDDT_DDRIII:DDRIII Terminator: |  | 0.7125V-0.75V-0.7875V  | 1.0A  |
| 3VS                                | Cantiga GM: HV CMOS<br>Cantiga GM: VCCS_TV DAC<br>ICH9M:VCC3_3<br>ICH9M:VCCGLAN3_3<br>Thermal Sensor:<br>Mini Card: UMTS<br>Express Card:<br>CLK Generator: ICS9LPRS397BKLF<br>Mini Card: WirelessLan<br>Bluetooth:<br>Super I/O: IT8305E<br>Azalia Codec: ALC262<br>Azalia MDC: | 3.135V-3.3V-3.465V<br>3.135V-3.3V-3.465V<br>3.135V-3.3V-3.465V<br>3.135V-3.3V-3.465V<br>3.0V-3.3V-3.6V<br>3.135V-3.3V-3.465V<br>3.135V-3.3V-3.465V<br>3.0V-3.3V-3.6V<br>3.0V-3.3V-3.6V   | 105.3mA<br>78mA<br>308mA<br>1mA<br>5mA<br>1.3A<br>500mA   |
| 1.8VS                              | DVI  | 3.0V-3.3V-3.6V   | 120mA   |
| 3VA                                | ICH9M: RTC<br>ICH9M:VCCSUS3_3<br>ICH9M:VCCCL3_3<br>ICH9M:VCCLAN3_3<br>LCD:<br>Lan:82567LM<br>Azalia MDC:<br>Flash ROM: BIOS  | 2V-3.3V-3.465V<br>3.135V-3.3V-3.465V<br>3.135V-3.3V-3.465V<br>3.135V-3.3V-3.465V<br>3.0V-3.3V-3.6V<br>1.0V and 1.8V<br>3.0V-3.3V-3.6V  | 6uA<br>212mA<br>73mA<br>78mA<br>2A<br>Each 1A   |
| 5VS                                | Cardreader: GL827<br>Azalia Codec: ALC262<br>HDD: SATA<br>ODD: SATA<br>Audio AMP: G1432<br>Inverter:<br>WebCam   | 3.0V-3.3V-3.6V<br>3.0V-3.3V-3.6V<br>4.75V-5.0V-5.25V<br>4.75V-5.0V-5.25V<br>4.75V-5.0V-5.25V   | Max: 1.5A ; R/W: 460mA ; STDBY: 70mA<br>Max: 1.5A ; R/W: 900mA ; STDBY: 45mA                                |
| 5VA                                | USB: x 2 ports<br>USB and ESATA  | 5VA<br>5VA   | 1.5A<br>2A  |
| 5VLA                               | Control Power  |  |   |
| 3VLA                               | EC: ITE8512E   | 3.0V-3.3V-3.6V   | 300mA   |

INVENTEC

TITLE

BAP/BXP30

Annotations

SIZE

CODE

DOC NUMBER

REV

Custom

CS

CS-131

5

of

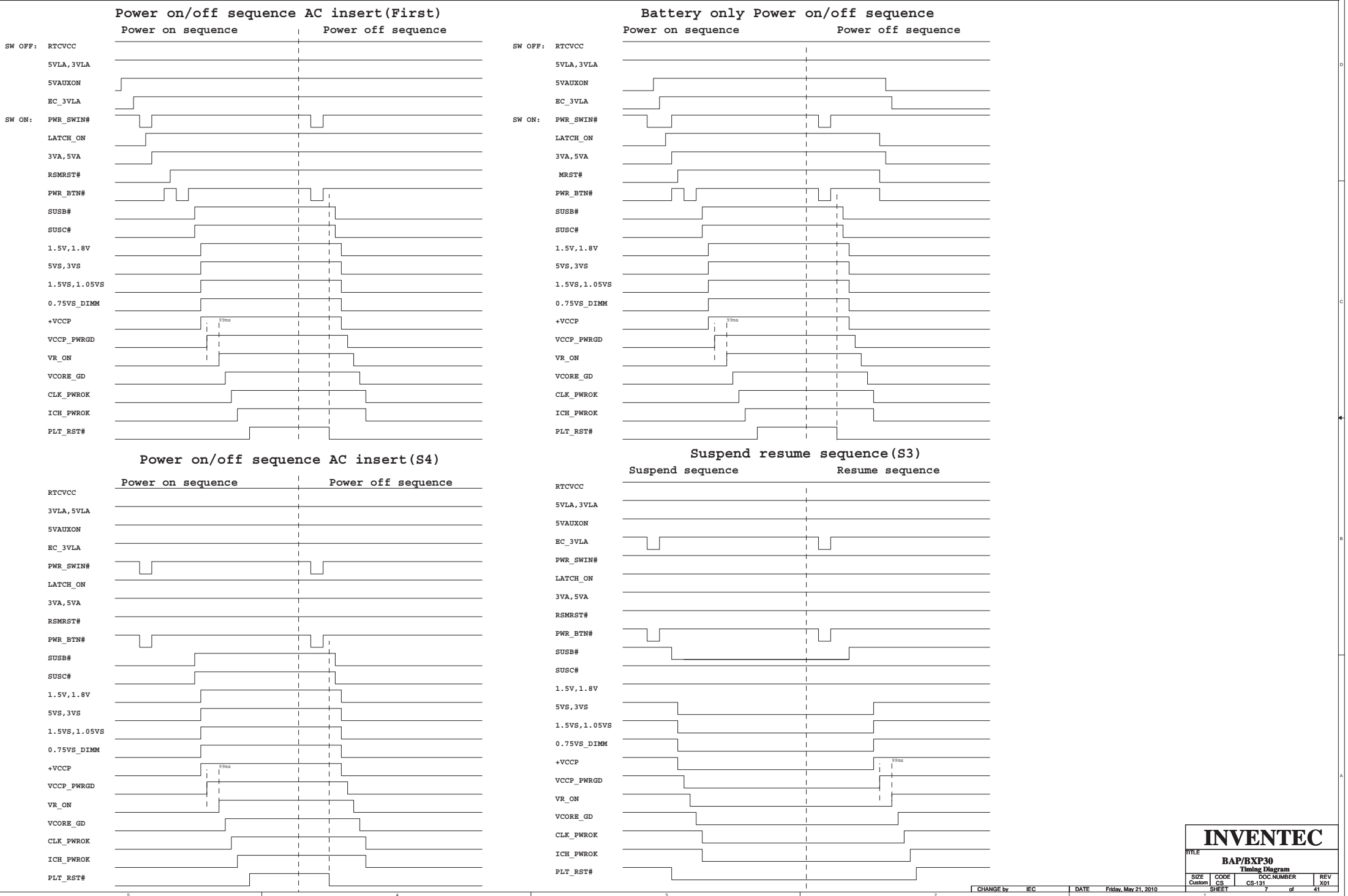
41

SHEET

# 6.Schematic modify Item and History :

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|-------------------|------|------------|-------|
| TITLE             |      |            |       |
| BAP/BXP30         |      |            |       |
| schematics modify |      |            |       |
| SIZE              | CODE | DOC NUMBER | REV   |
| Custom            | CS   | CS-131     | X01   |
| SHEET             |      | 8          | of 41 |

# 8.SYSTEM POWER SEQUENCE :



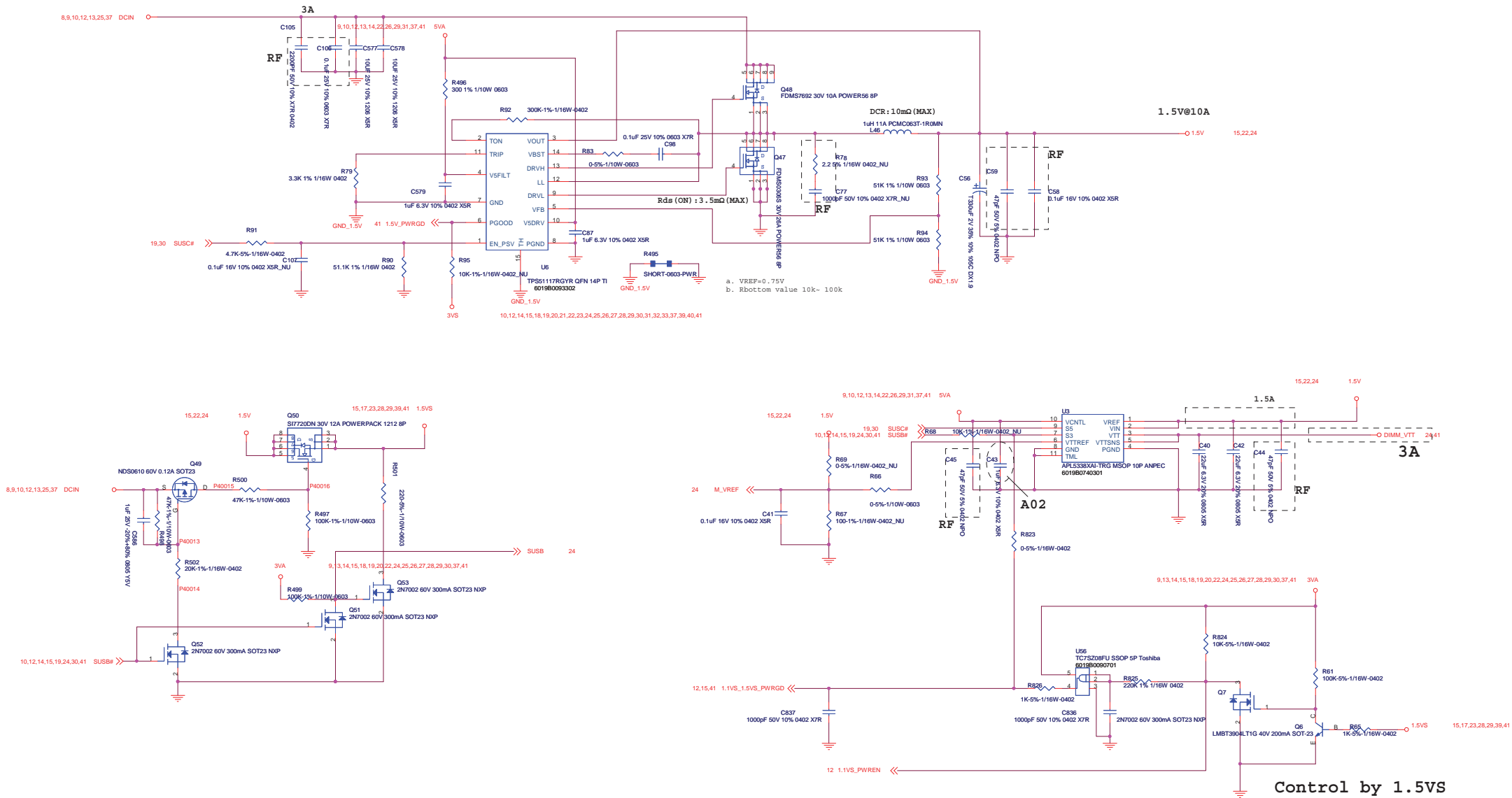




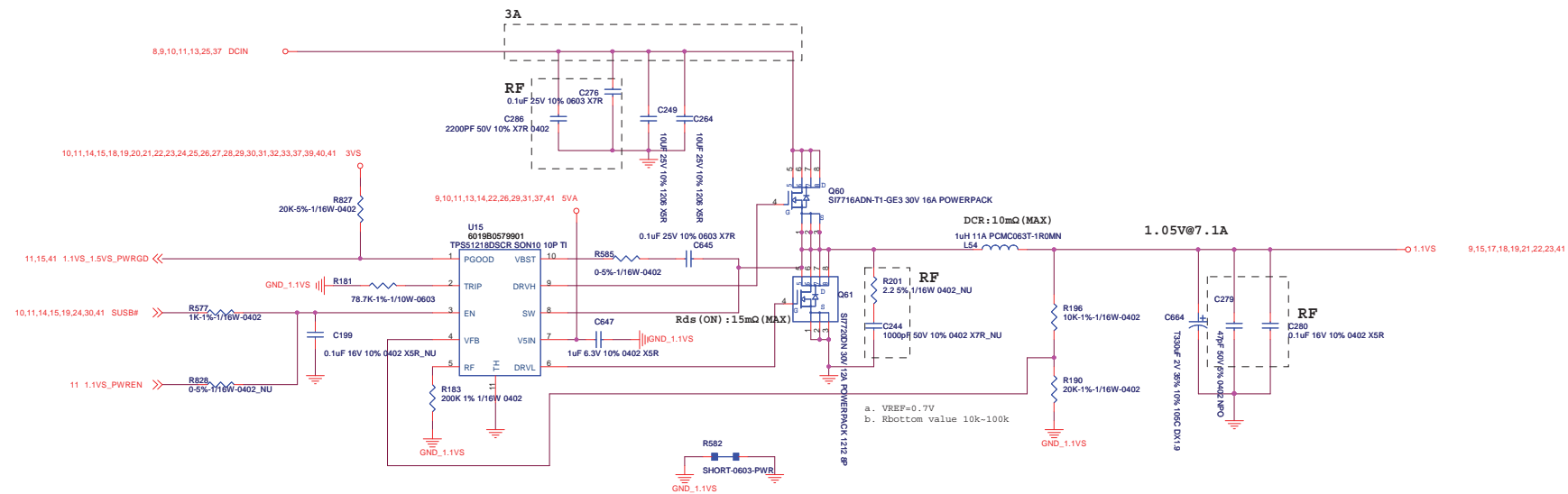
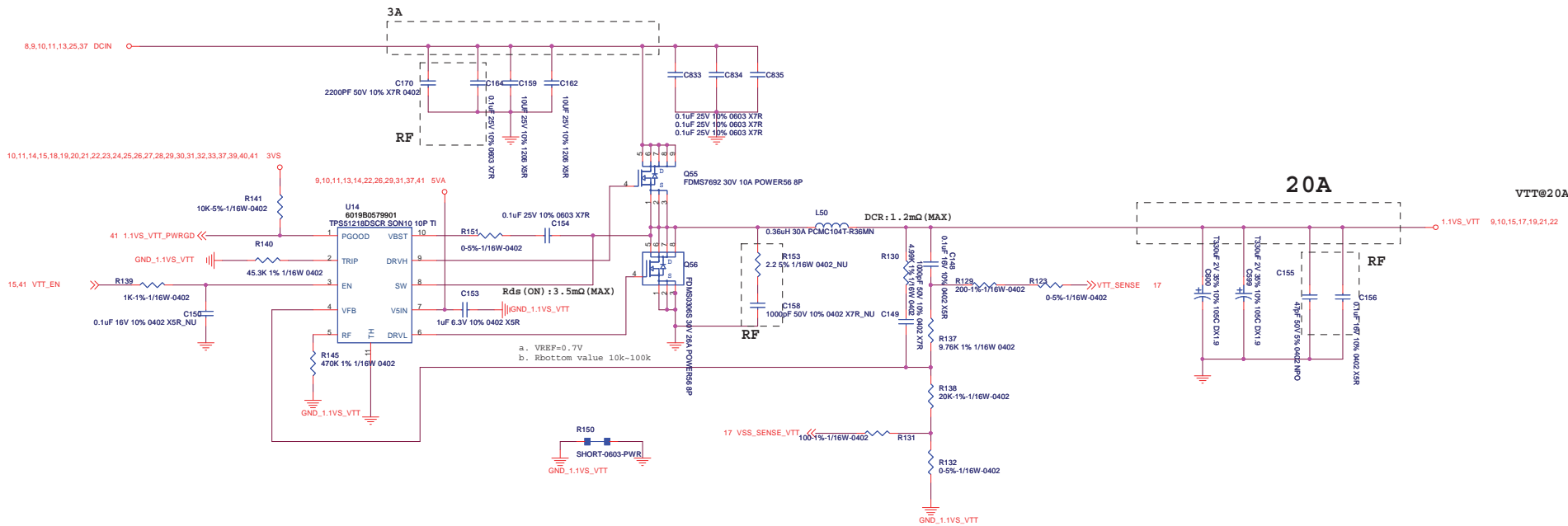




## DDR POWER

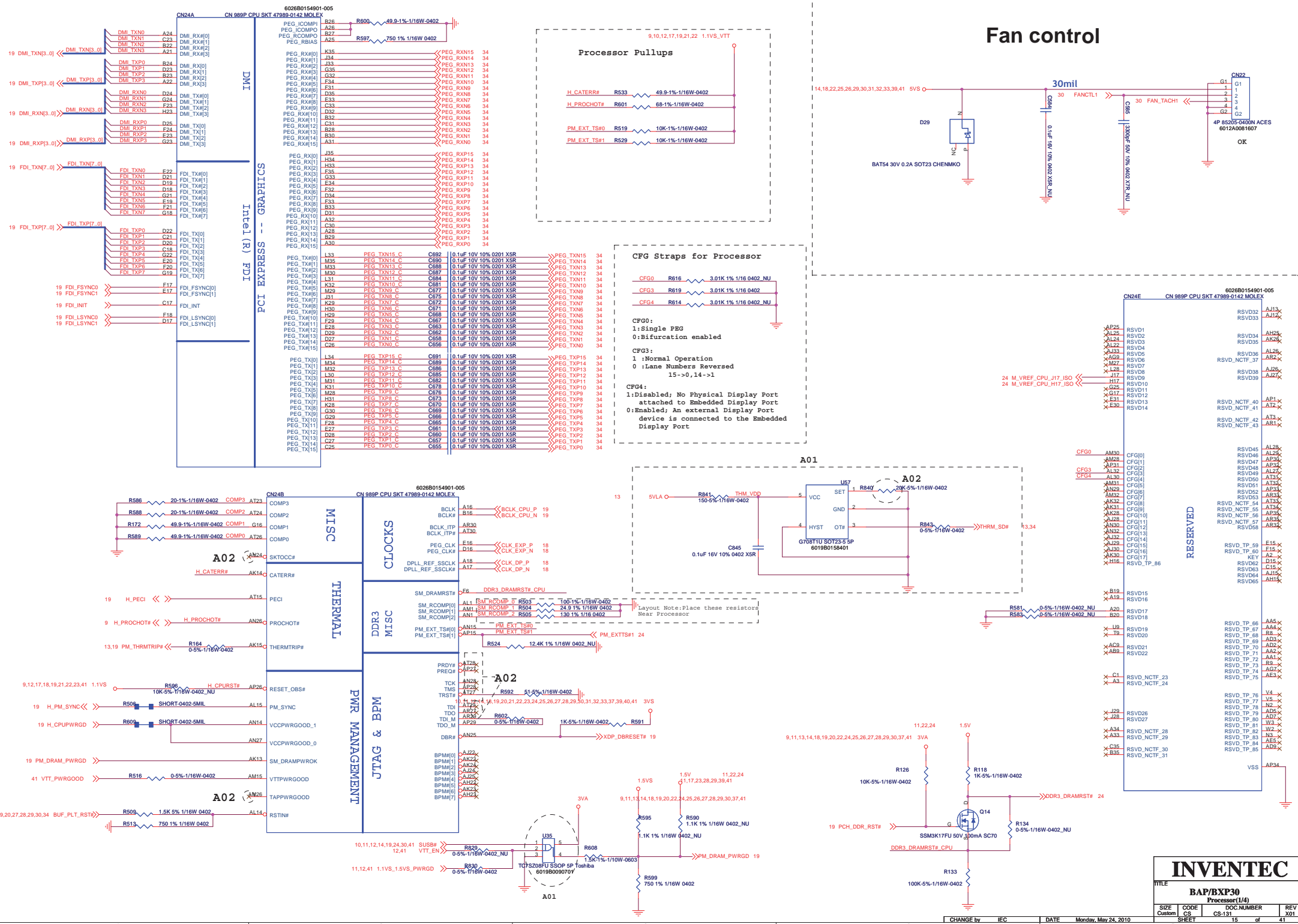


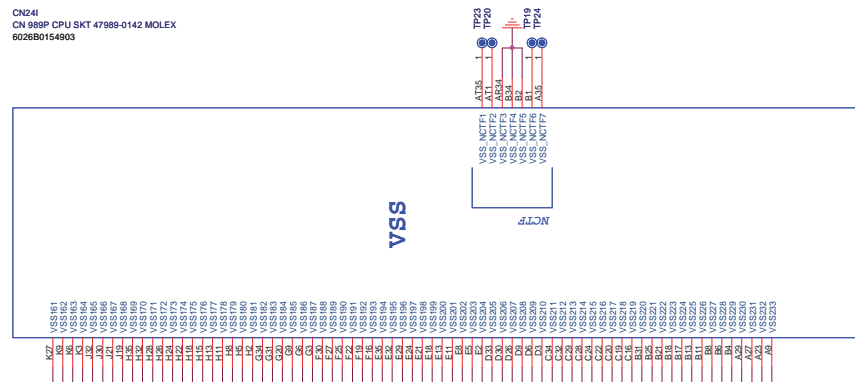
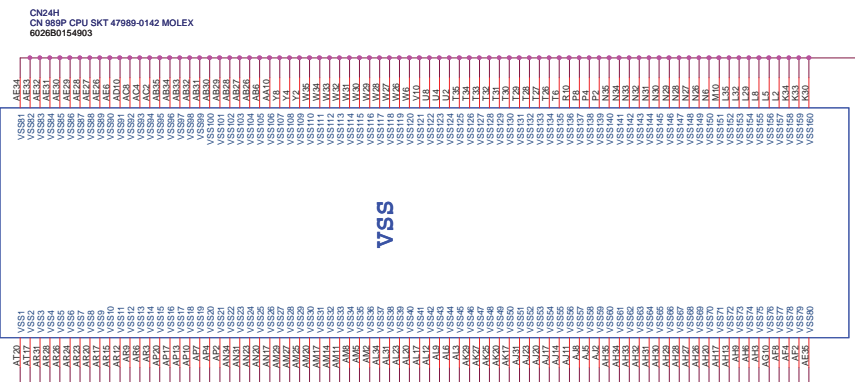
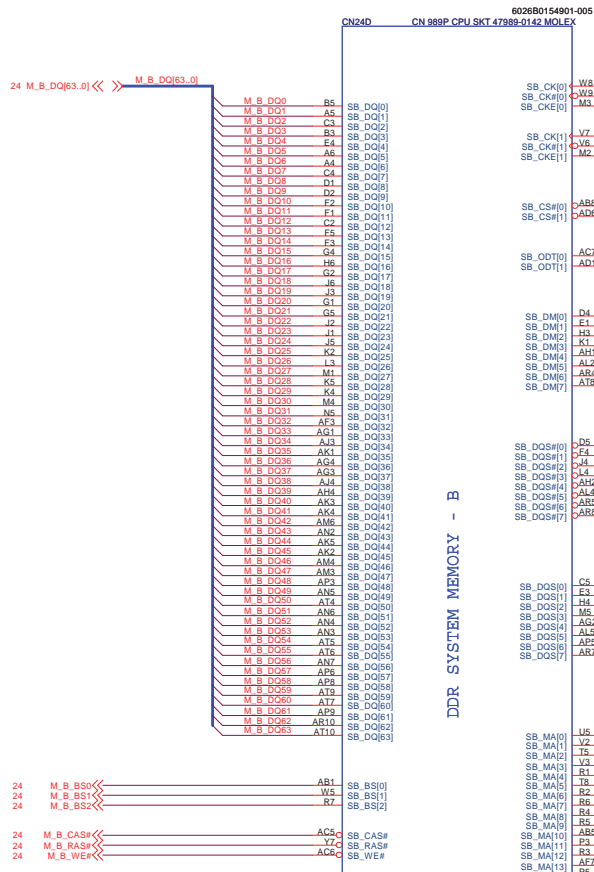
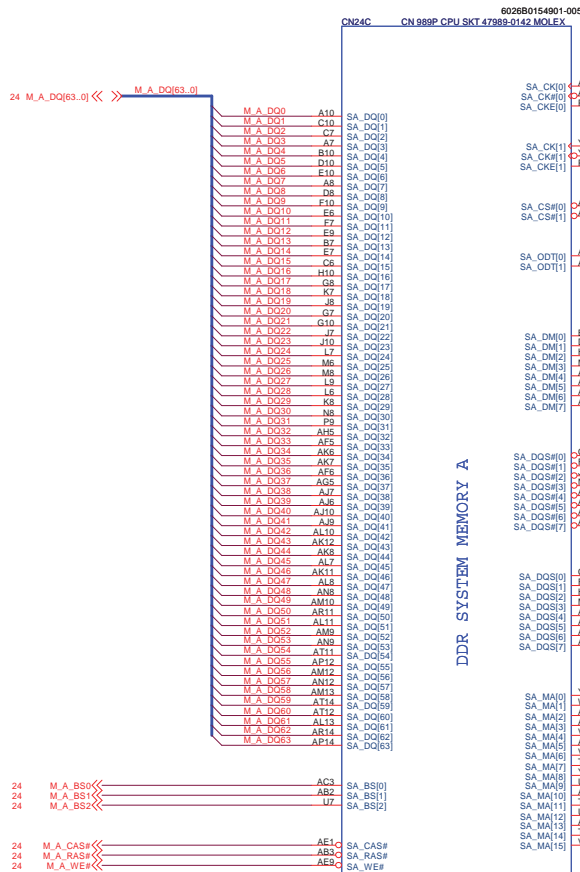
Control by 1.5VS



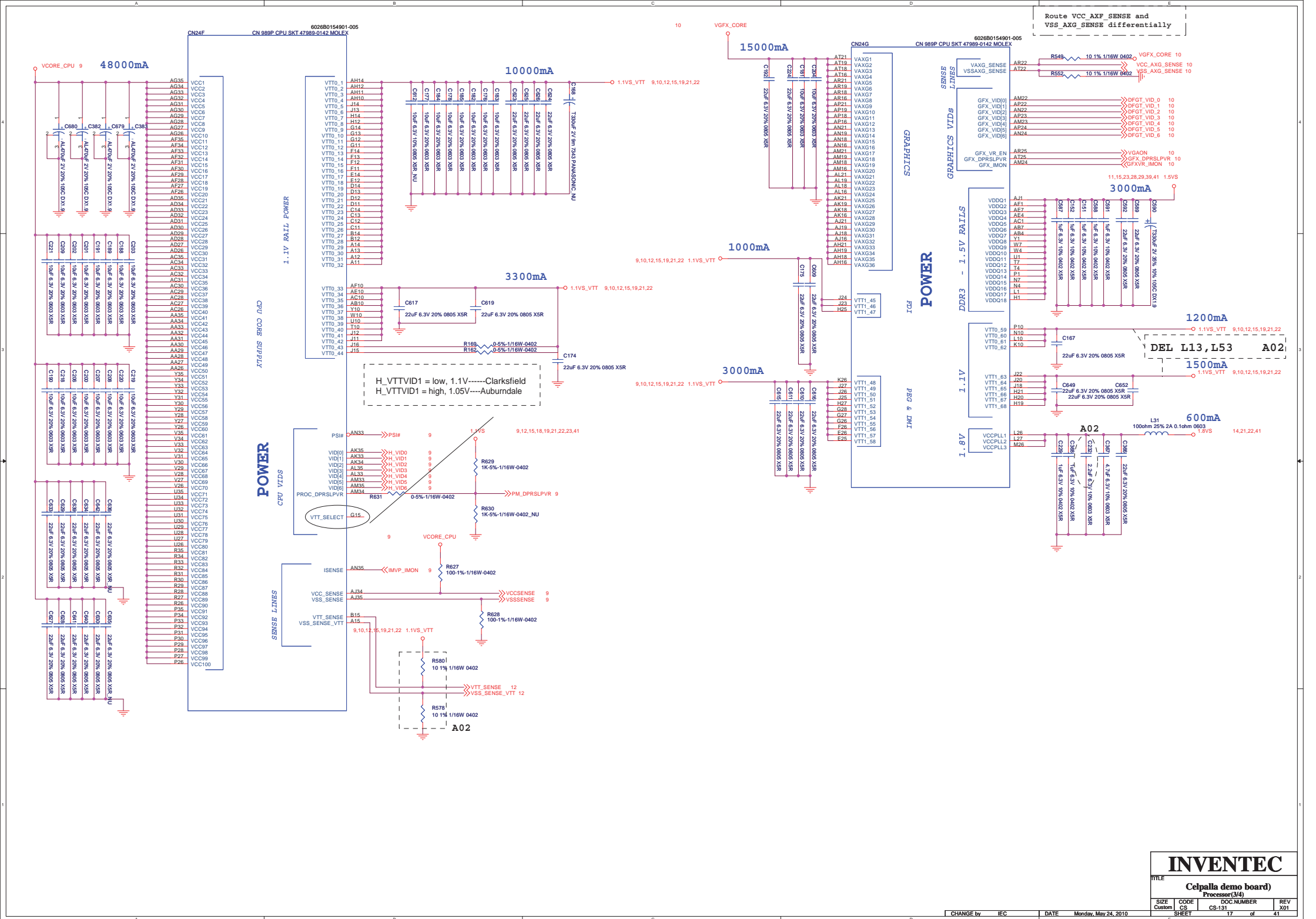




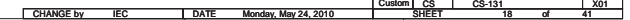


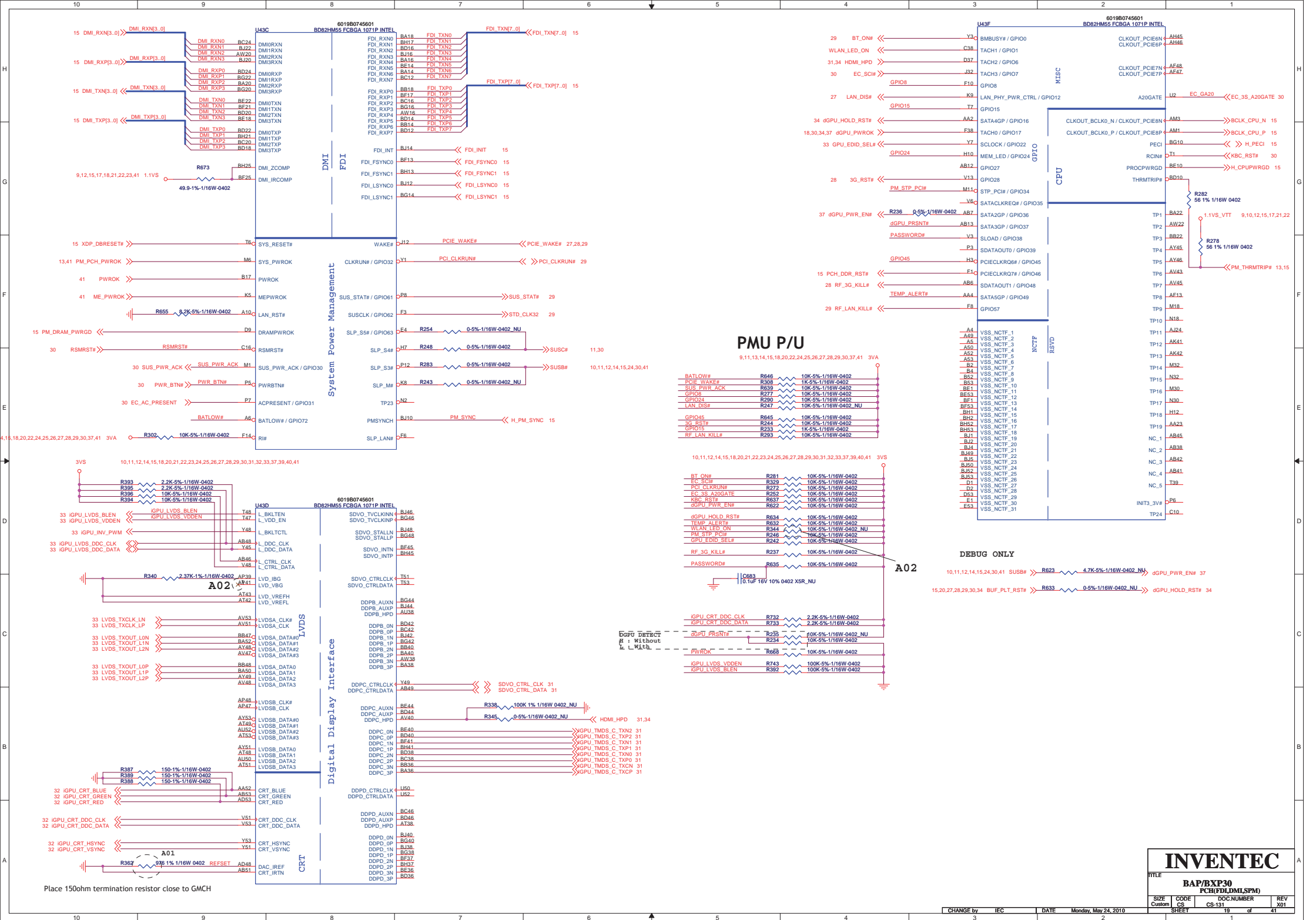




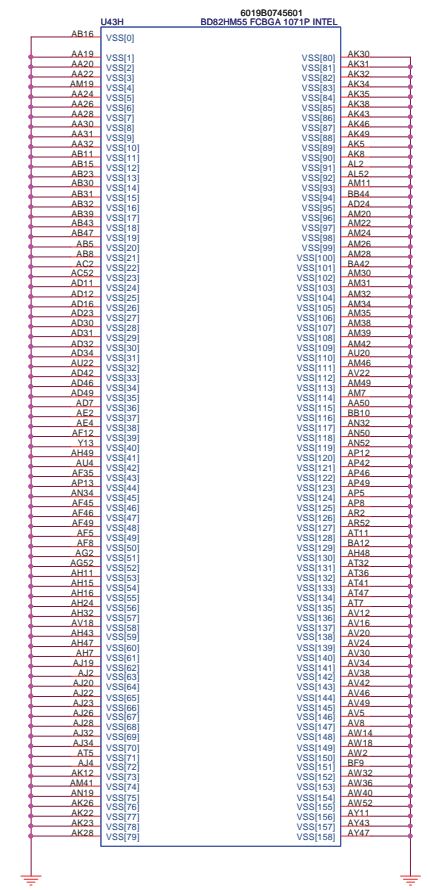
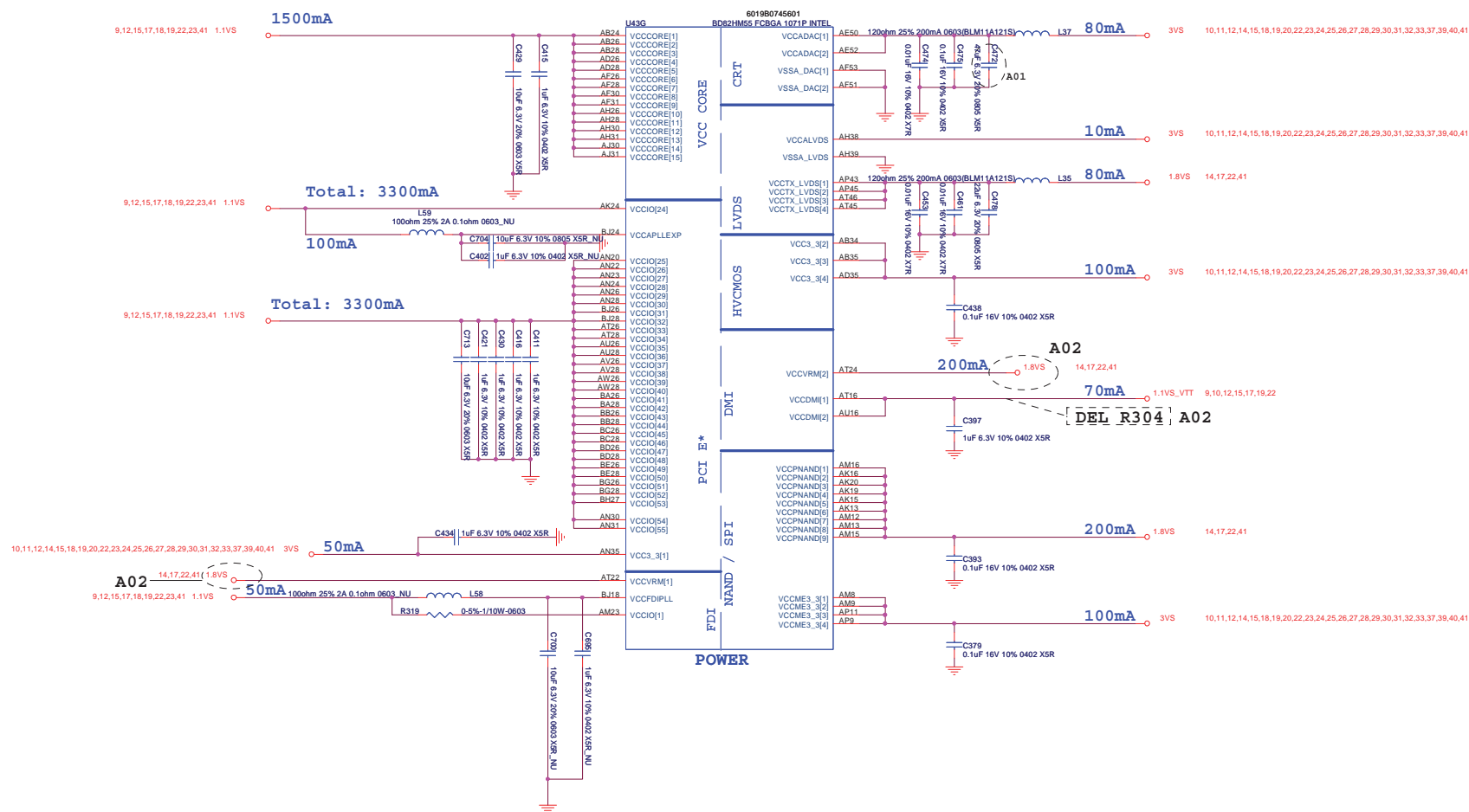


## A01

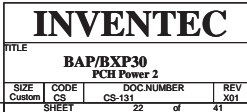


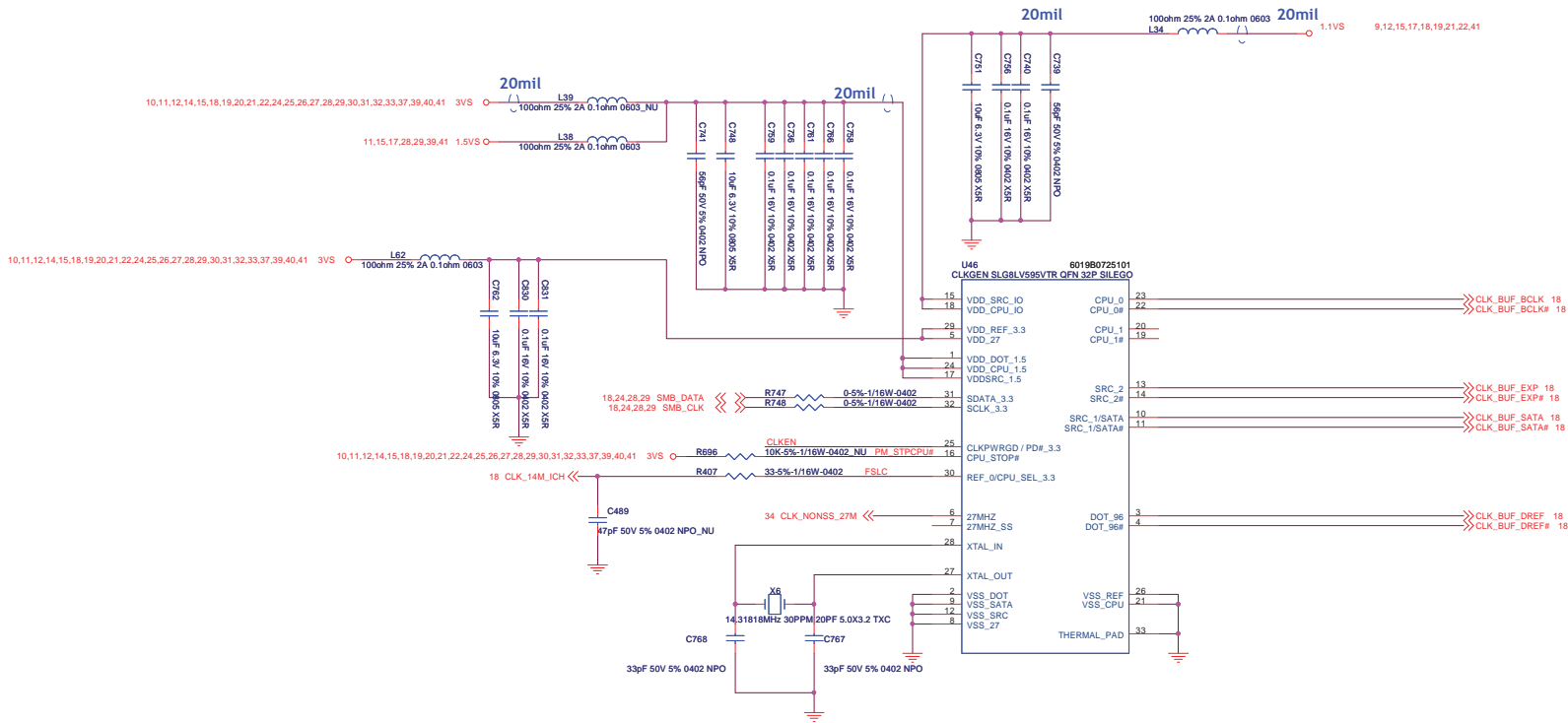




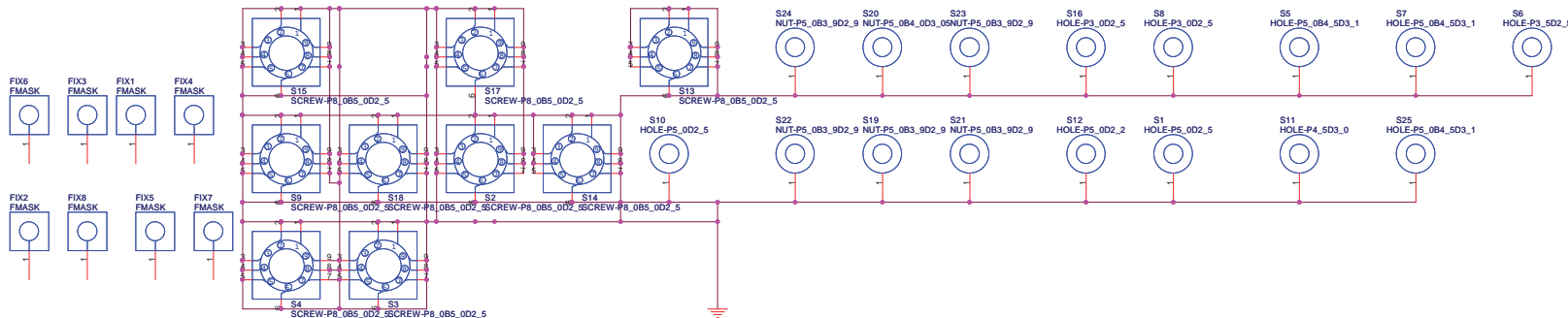
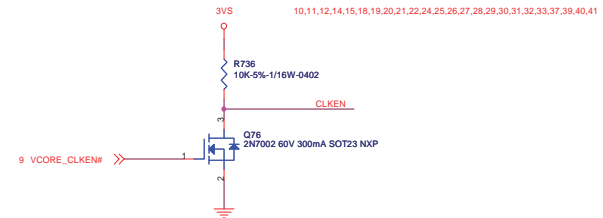








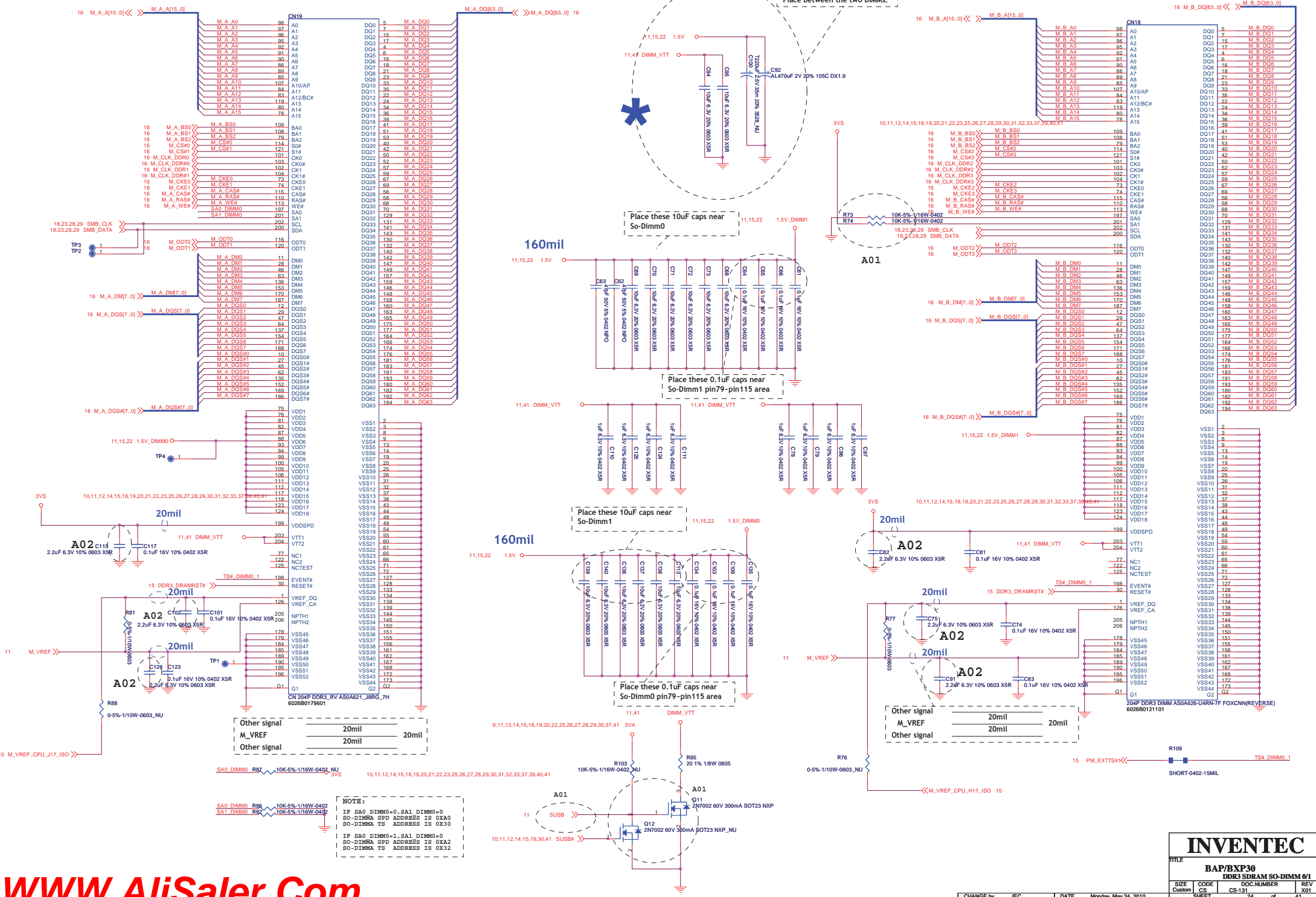
FSLC = 0 , 133 MHz -->DEFAULT  
FSLC = 1, 100 MHz



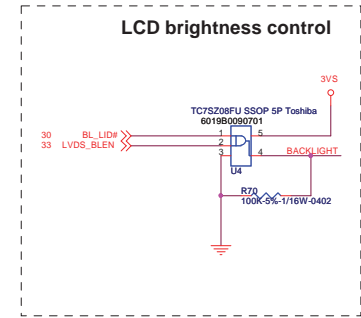
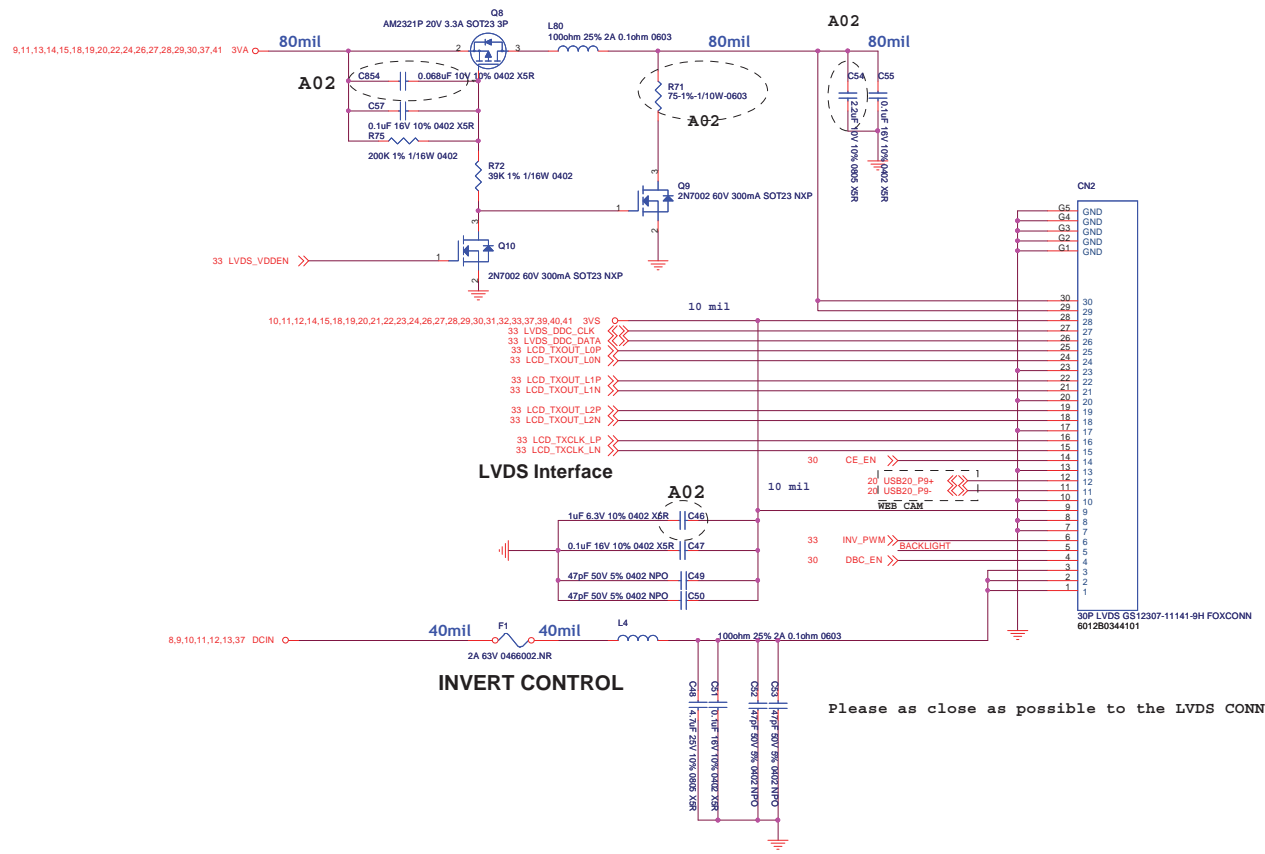
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|-----------------|------|------------|-----|
| TITLE           |      |            |     |
| BAP/BXP30       |      |            |     |
| Clock Generator |      |            |     |
| SIZE            | CODE | DOC NUMBER | REV |
| Custom          | CS   | CS-131     | X01 |
| SHEET           | 23   | of         | 41  |

## SO-DIMM0

## SO-DIMM1



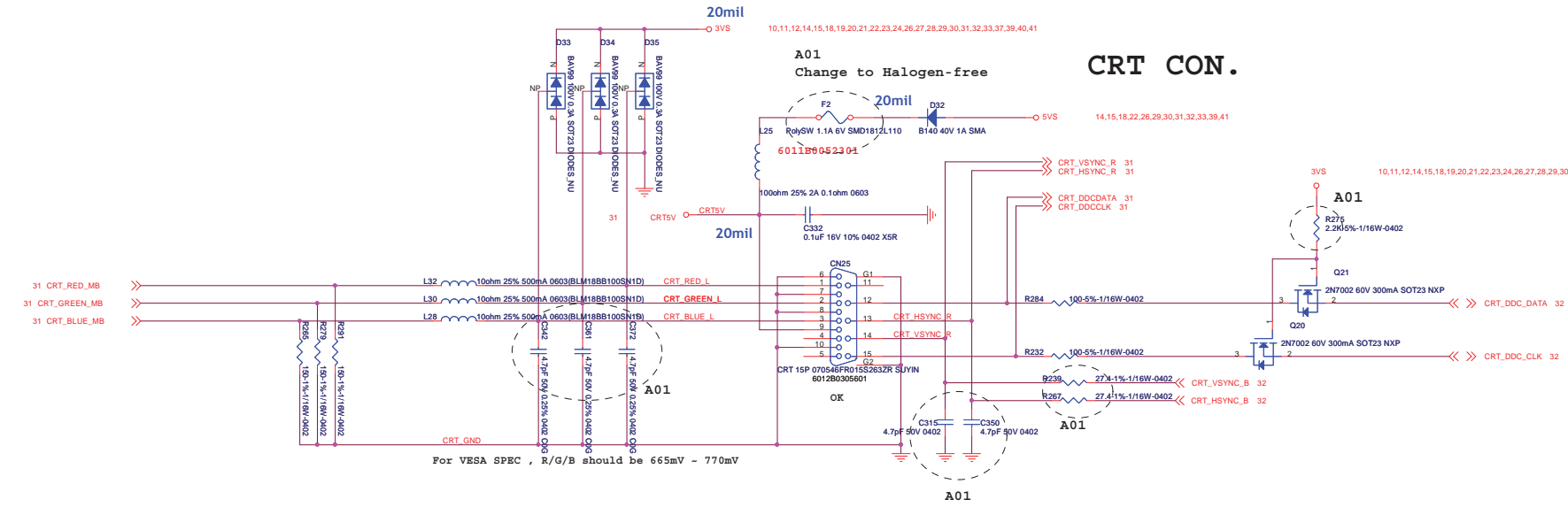




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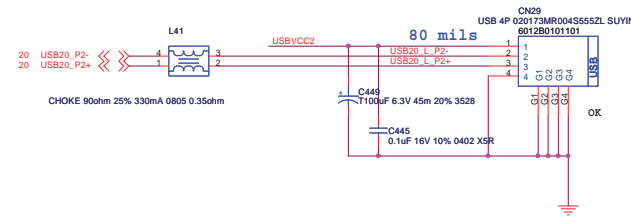
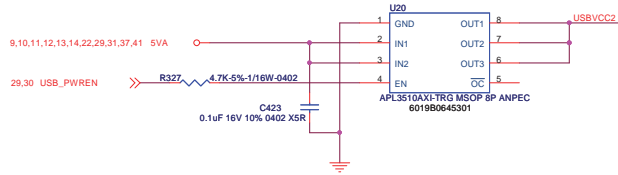
Please as close as possible to the LVDS CONN

## CRT CON.

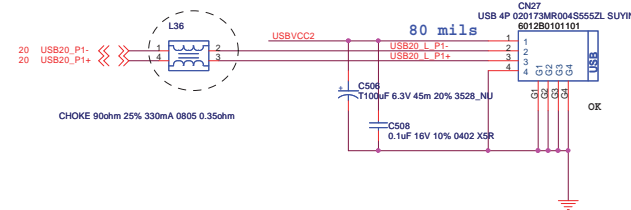


| INVENTEC             |      |            |     |
|----------------------|------|------------|-----|
| TITLE                |      |            |     |
| Celpella demo board) |      |            |     |
| LCD/LID/NVRAM        |      |            |     |
| SIZE                 | CODE | DOC NUMBER | REV |
| Custom               | CS   | CS-131     | X01 |
| SHEET                | 25   | of         | 41  |

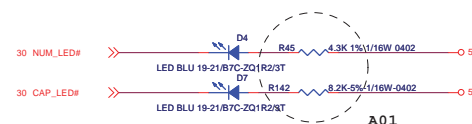
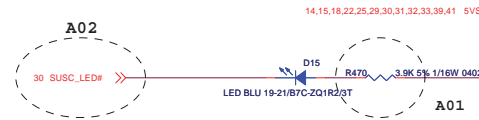
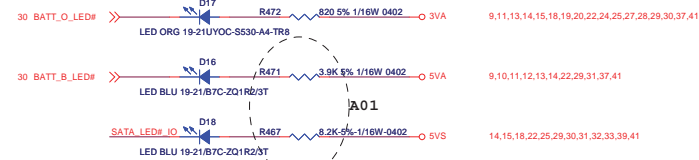
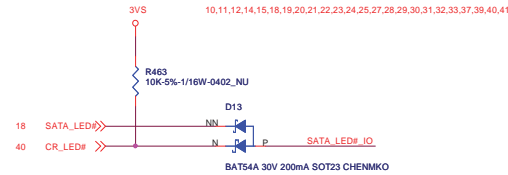
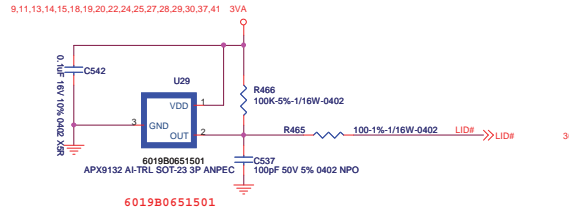
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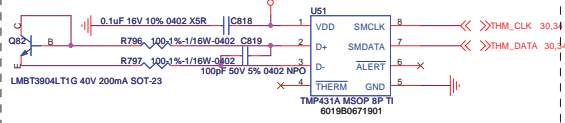
move to bottom side



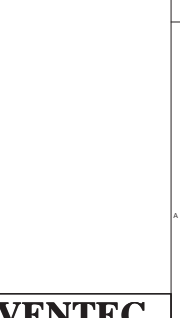
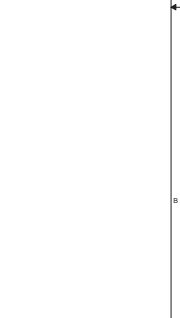
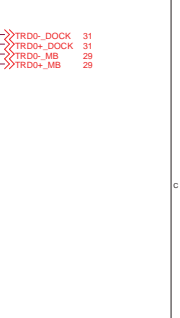
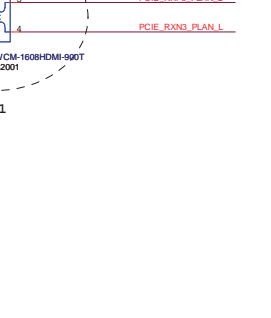
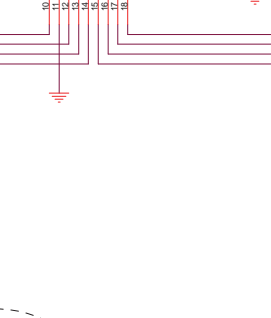
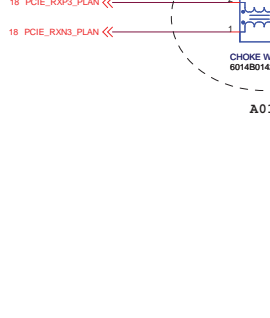
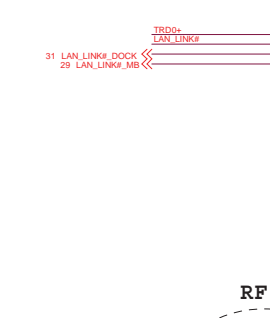
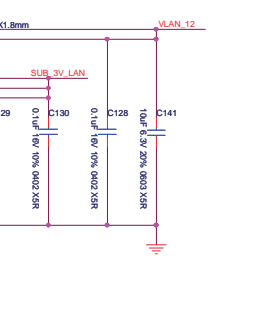
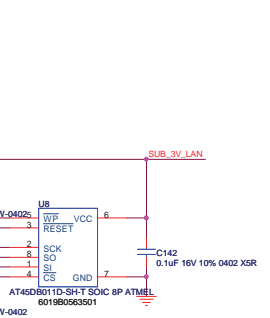
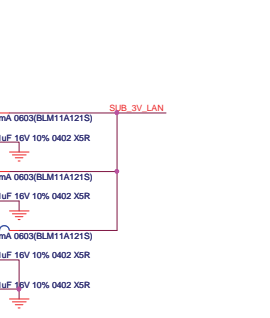
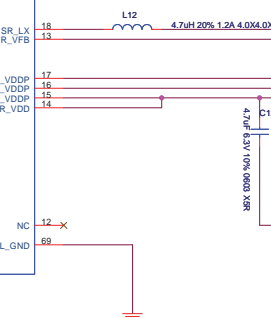
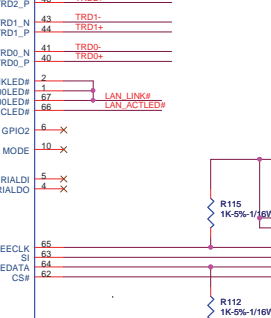
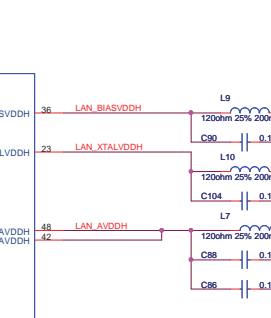
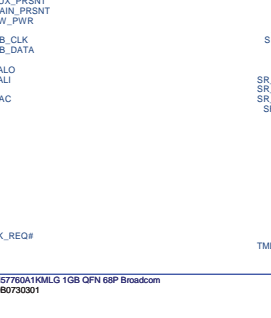
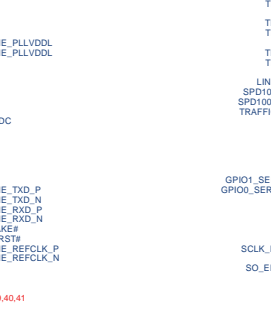
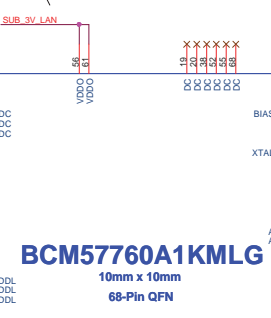
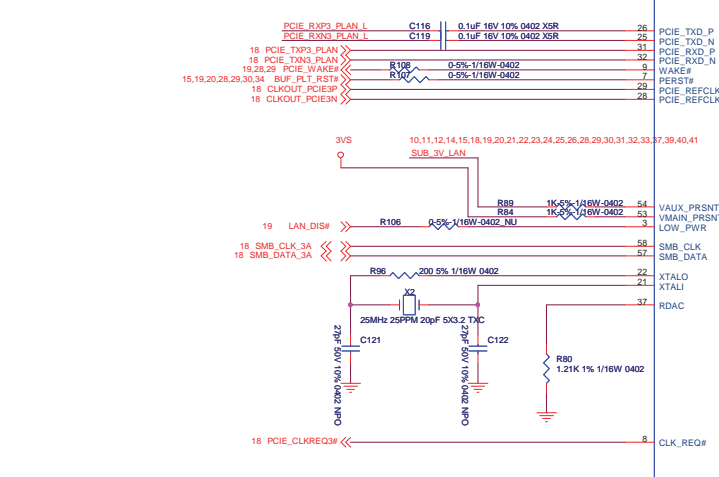
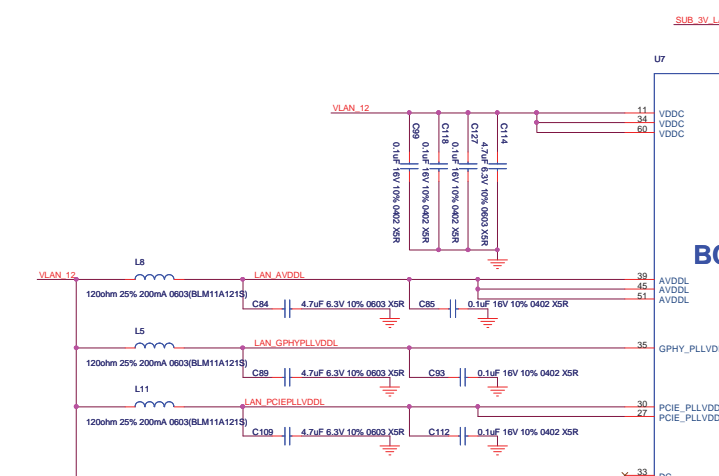
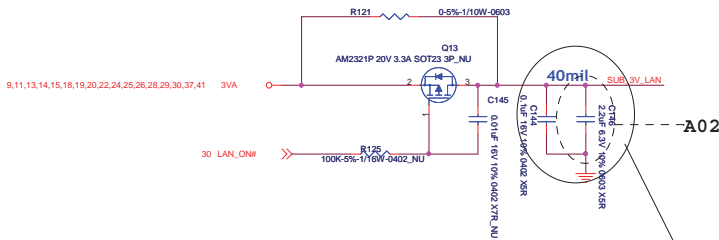
# HALL Switch



REMOTE thermal sensor  
Place near the hottest spot area under Palm-rest

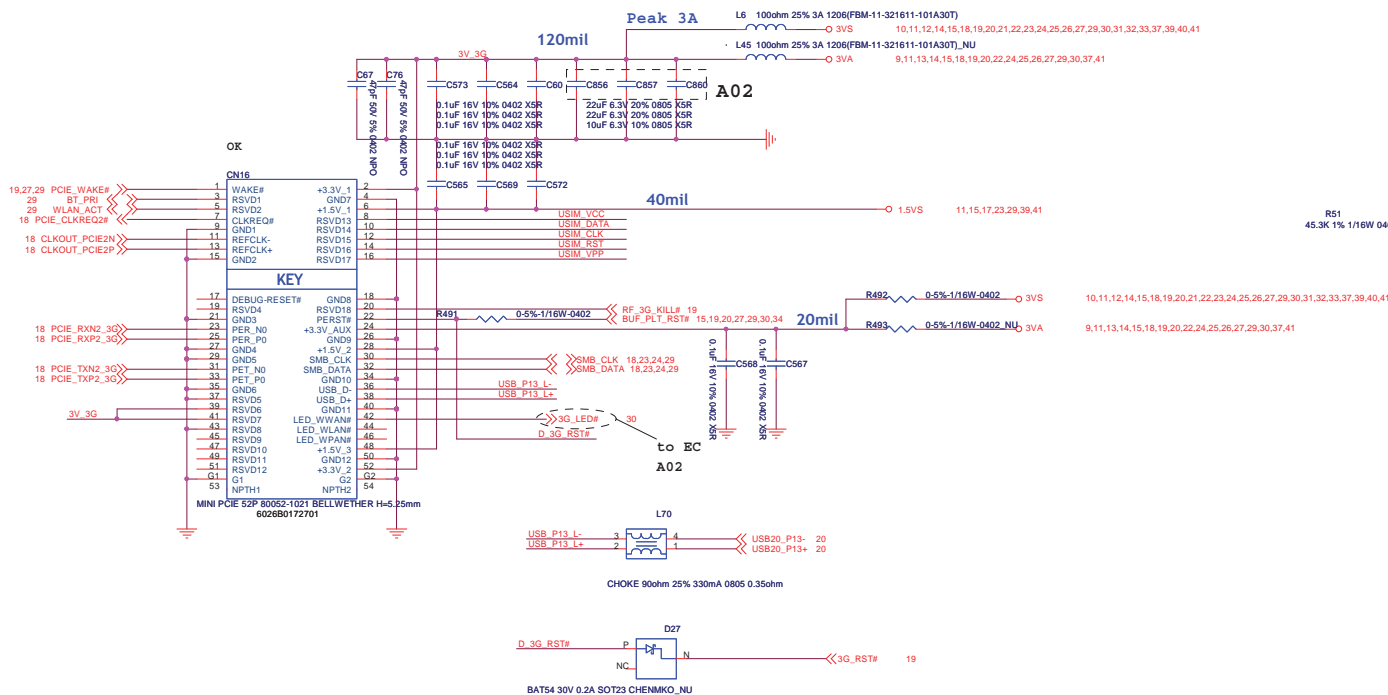


| INVENTEC               |      |            |     |
|------------------------|------|------------|-----|
| BAP/BXP30              |      |            |     |
| HDD/DAUGHTER CONNECTOR |      |            |     |
| SIZE                   | CODE | DOC NUMBER | REV |
| Custom                 | CS   | CS-131     | X01 |
| SHEET                  | 26   | of         | 41  |

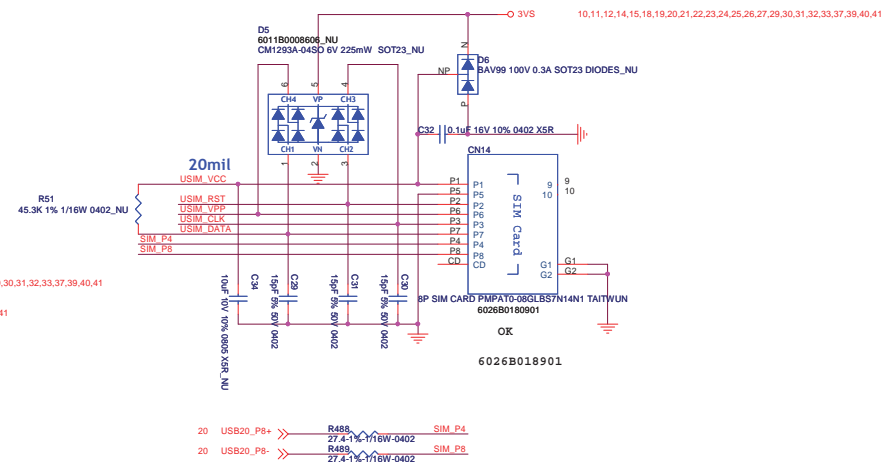


# PCIE Mini Card for 3G

On Chip 5V to 3.3V regulator. No external regulator required  
On-Chip power MOSFETs for supplying flash media card power.



## SIM CARD slot

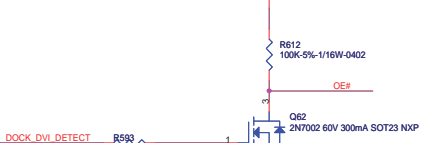
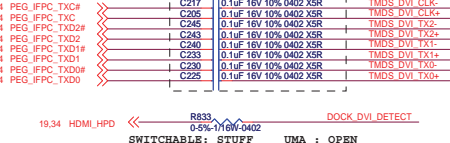
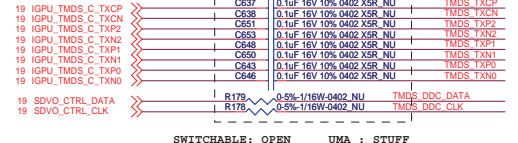
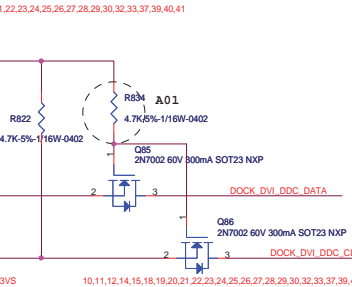
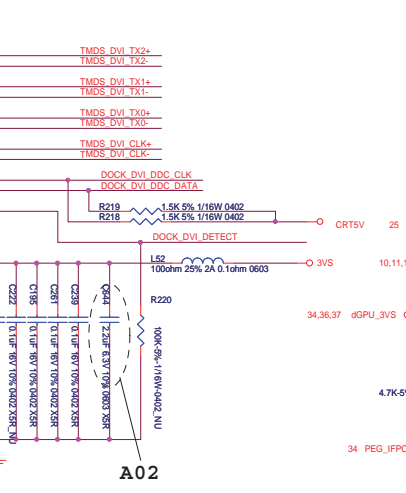
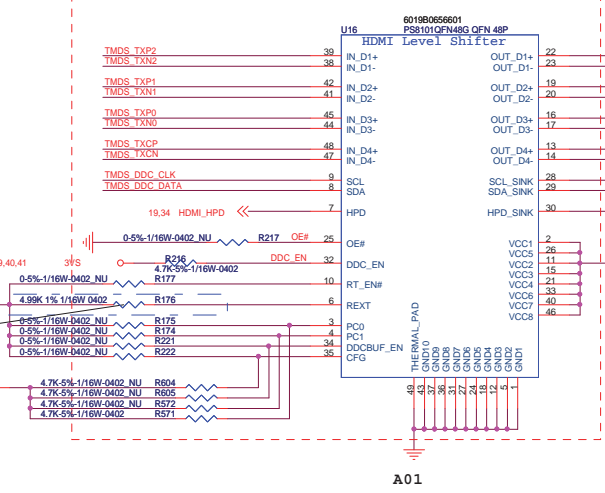
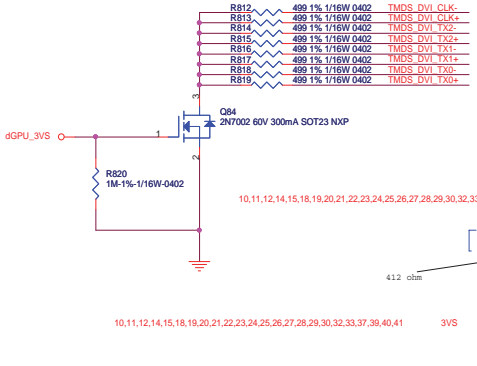
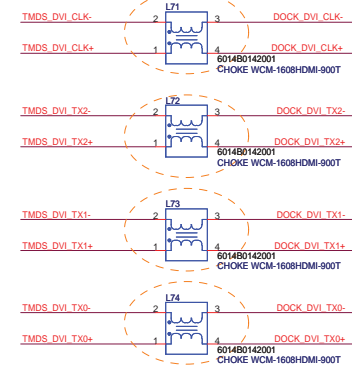
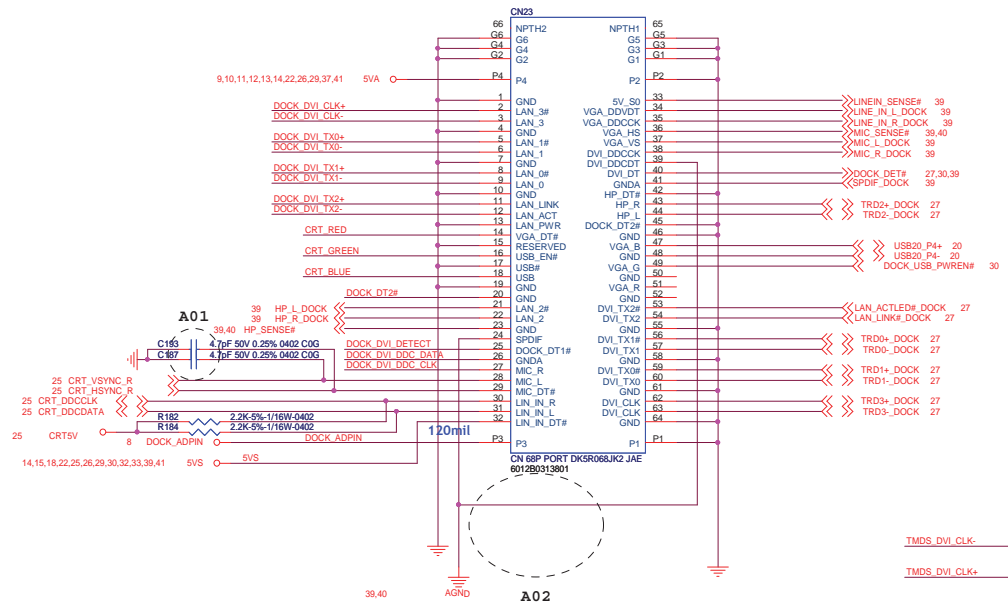
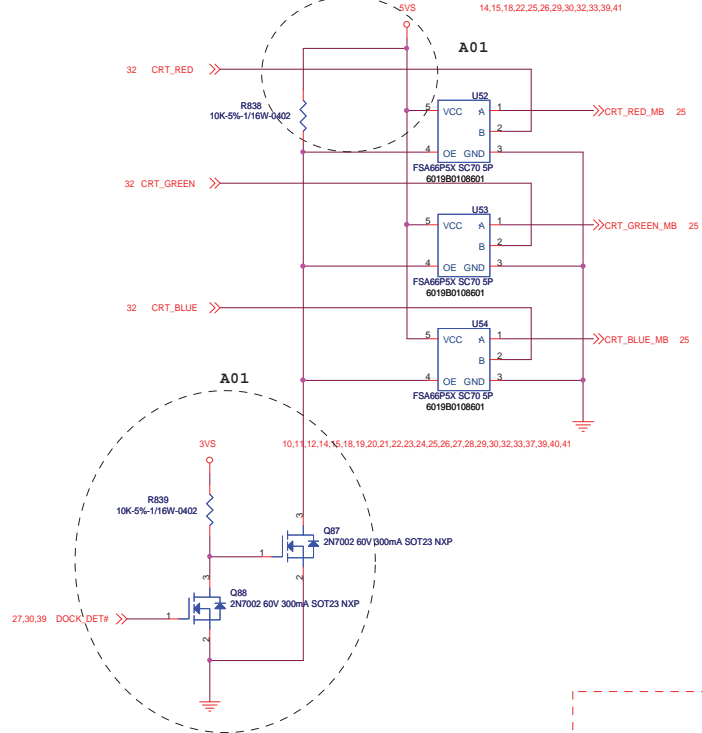


INVENTEC

|           |      |            |     |
|-----------|------|------------|-----|
| TITLE     |      |            |     |
| BAP/BXP30 |      |            |     |
| WLAN/3G   |      |            |     |
| SIZE      | CODE | DOC NUMBER | REV |
| Custom    | CS   | CS-131     | X01 |
| SHEET     | 28   | of         | 41  |

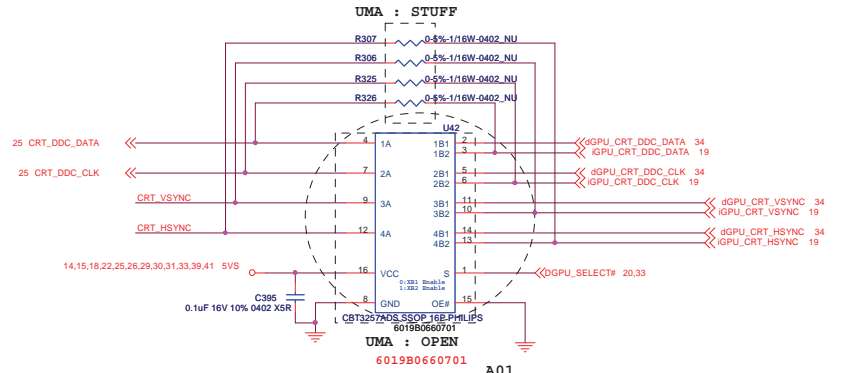
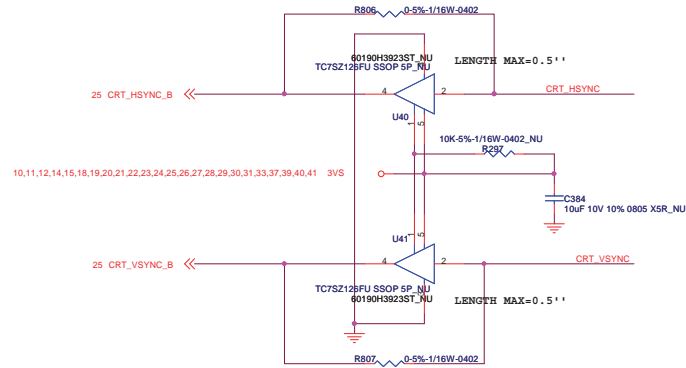




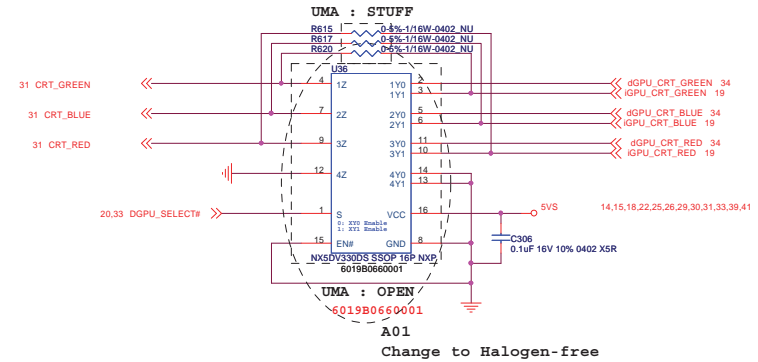


**INVENTEC**  
 TITLE: BAP31 EASY Board  
 EASY CNN  
 SIZE: C CODE: CS DOC: NUMBER: REV: X01  
 SHEET: 31 of 41

## CRT HSYNC/VSNC SW For Dock



## CRT HSYNC/VSNC/DDC SW



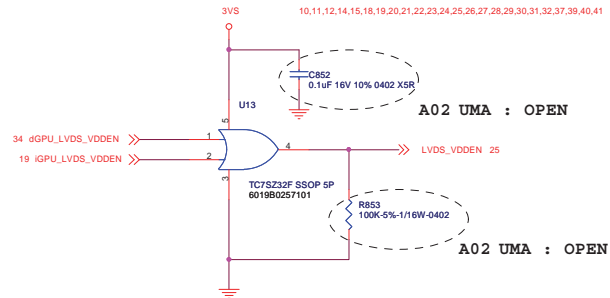
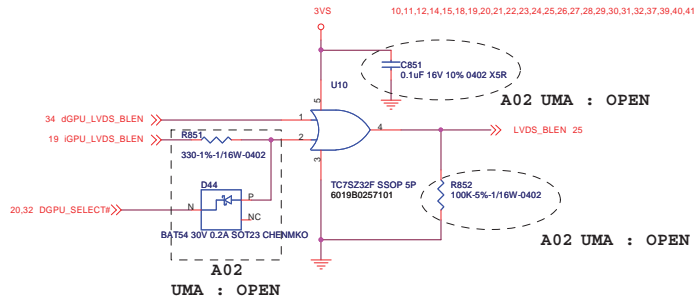
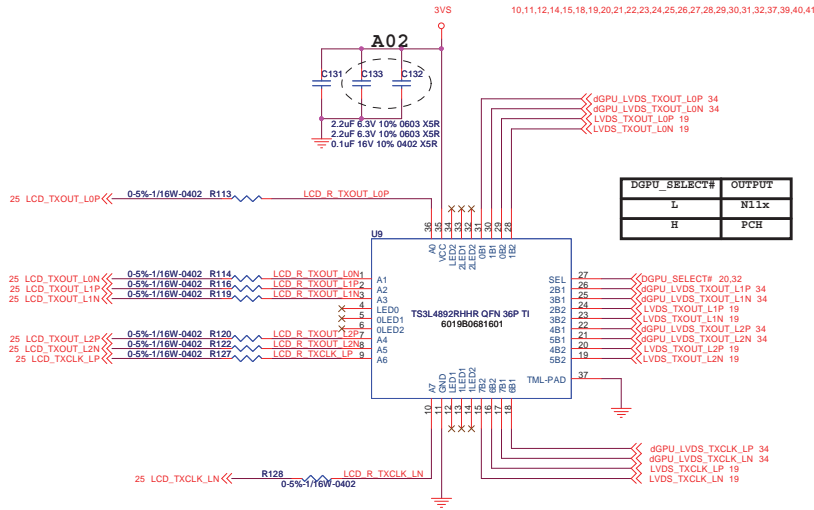
## CRT R/G/B SW

| Signal           | During Reset | After Reset | Description  |
|------------------|--------------|-------------|--|
| DGPU_PWR_EN#     | High         | High        | 0 : dGPU power switch turned on<br>1 : power switch turned off               |
| DGPU_PWROK       |              |             | 0 : dGPU power is not stable<br>1 : dGPU power is stable                     |
| DGPU_HOLD_RST#   | Low          | Low         | 0 : Keep dGPU in reset<br>1 : Reset is released                              |
| DGPU_SELECT#     | High         | High        | 0 : Display switch enabled for dGPU<br>1 : Display switch enabled for iGPU   |
| HPD_INT#         |              |             | 0 : DVI insertion<br>1 : No DVI insertion                                    |
| DGPU_PWM_SELECT# |              | High        | 0 : PWM switch enabled for dGPU<br>1 : PWM switch enabled for iGPU           |
| GPU_EDID_SEL#    |              | High        | 0 : EDID/DDC switch enabled for dGPU<br>1 : EDID/DDC switch enabled for iGPU |

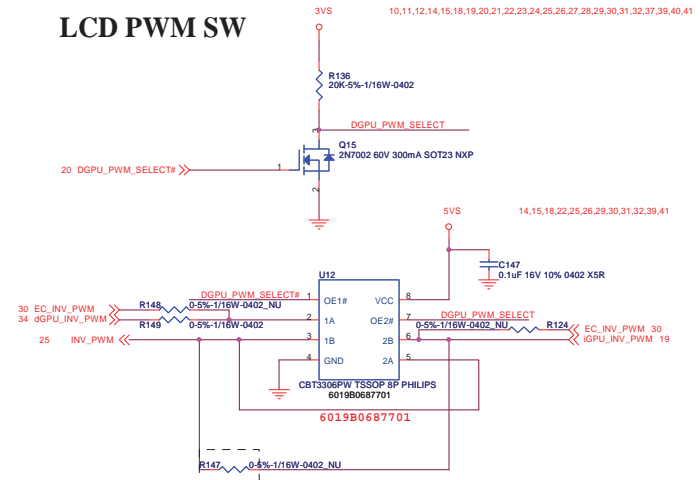
| INVENTEC            |            |                      |            |
|---------------------|------------|----------------------|------------|
| TITLE<br>BAP/BXP30  |            |                      |            |
| Hybrid Switch (1/2) |            |                      |            |
| SIZE<br>Custom      | CODE<br>CS | DOC NUMBER<br>CS-131 | REV<br>X01 |
| SHEET               | 32         | of                   | 41         |



## LVDS SW



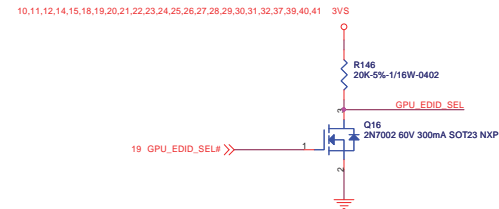
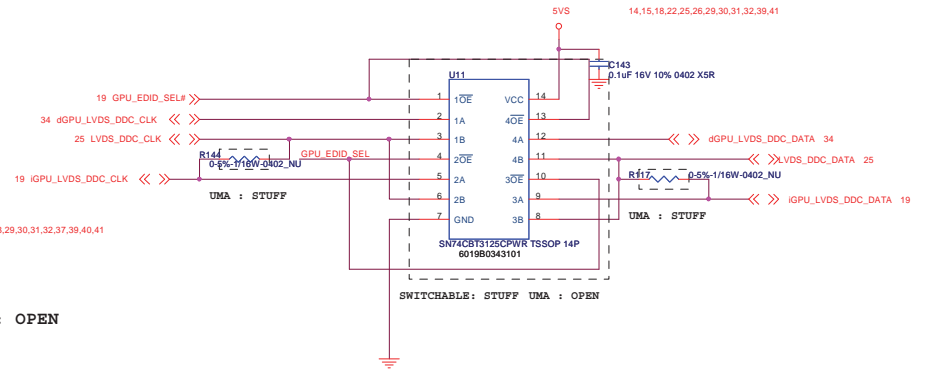
## LCD PWM SW

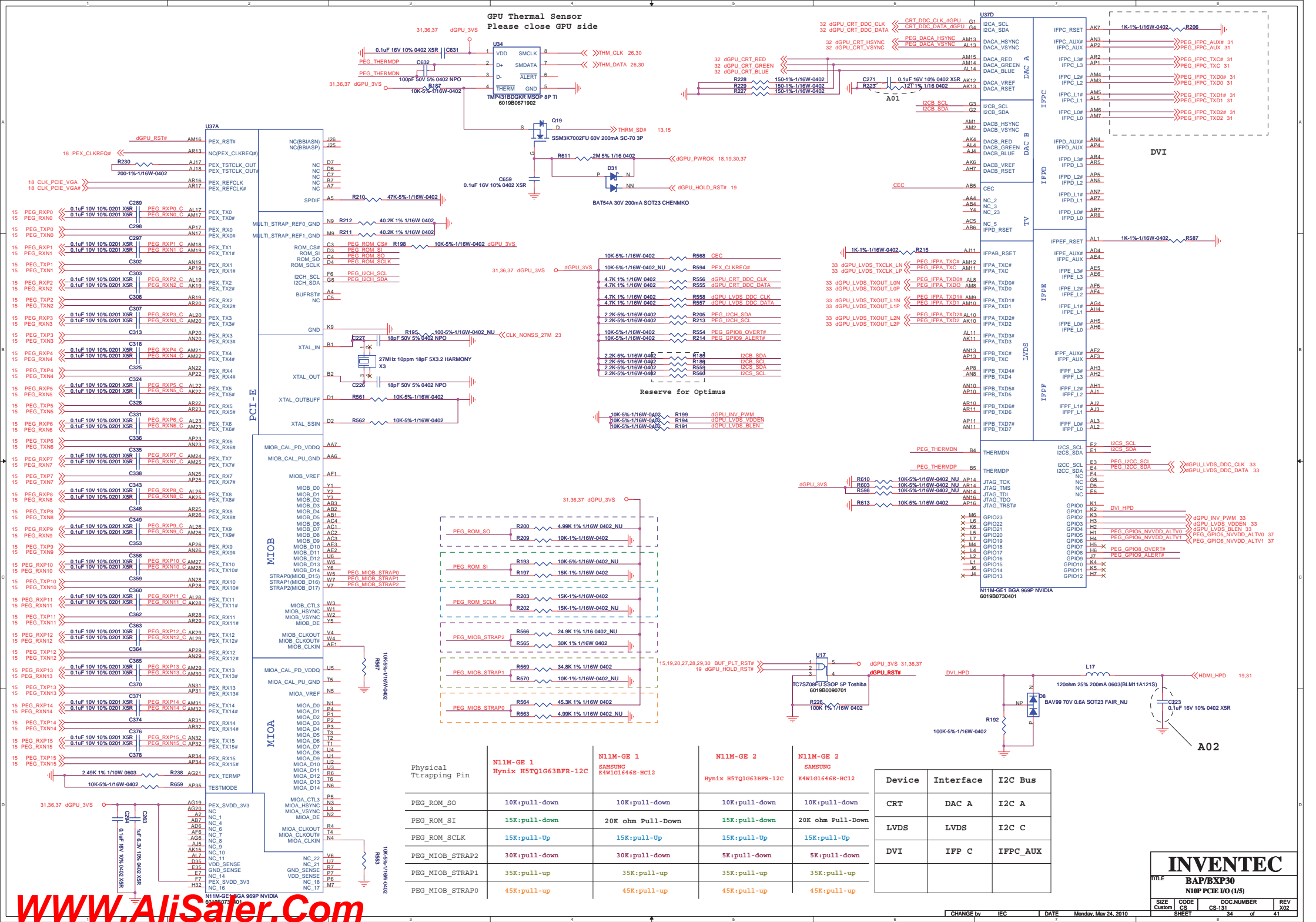


SW Gfx:OPEN

## UMA: Stuff

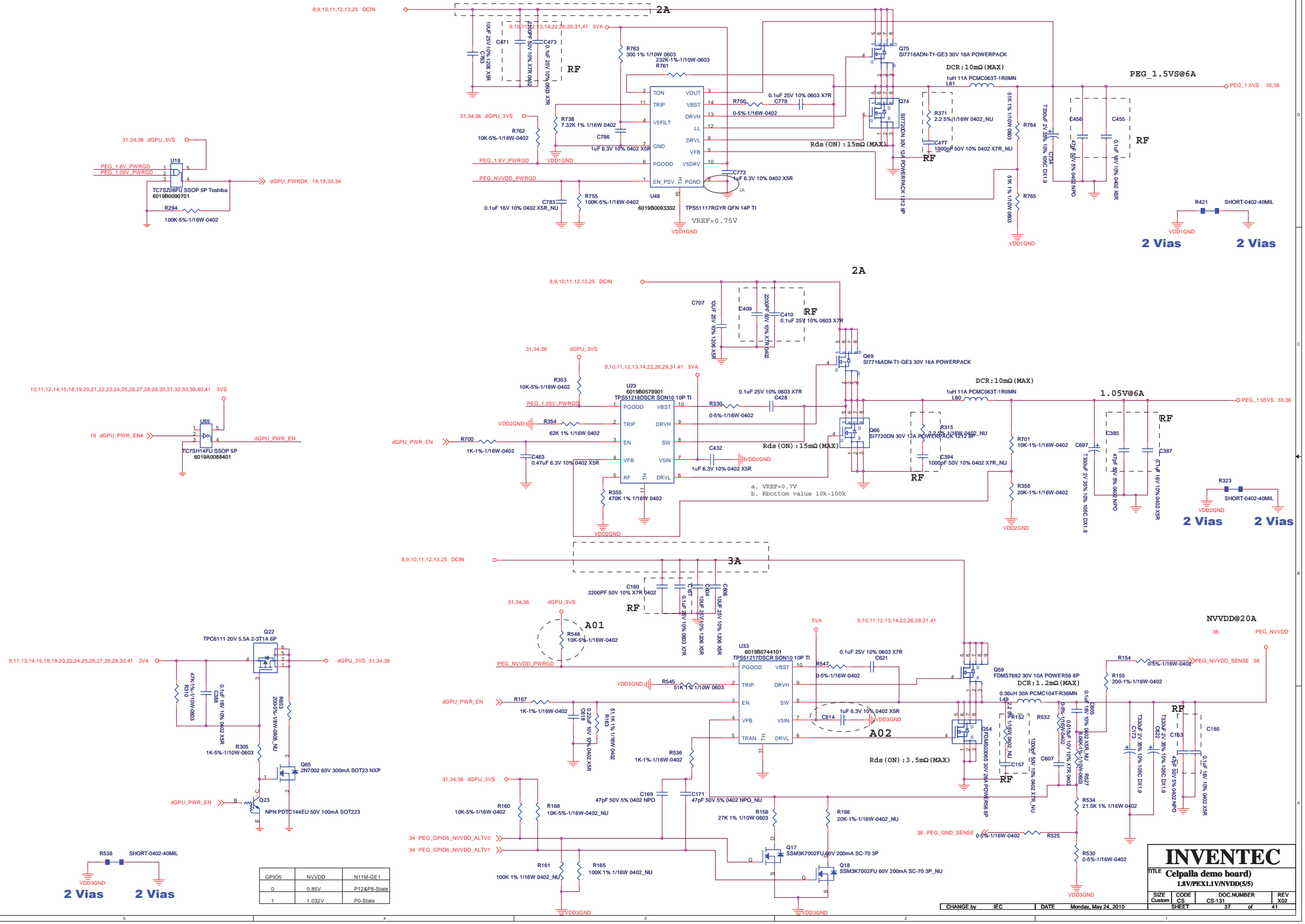
## LCD DDC SW







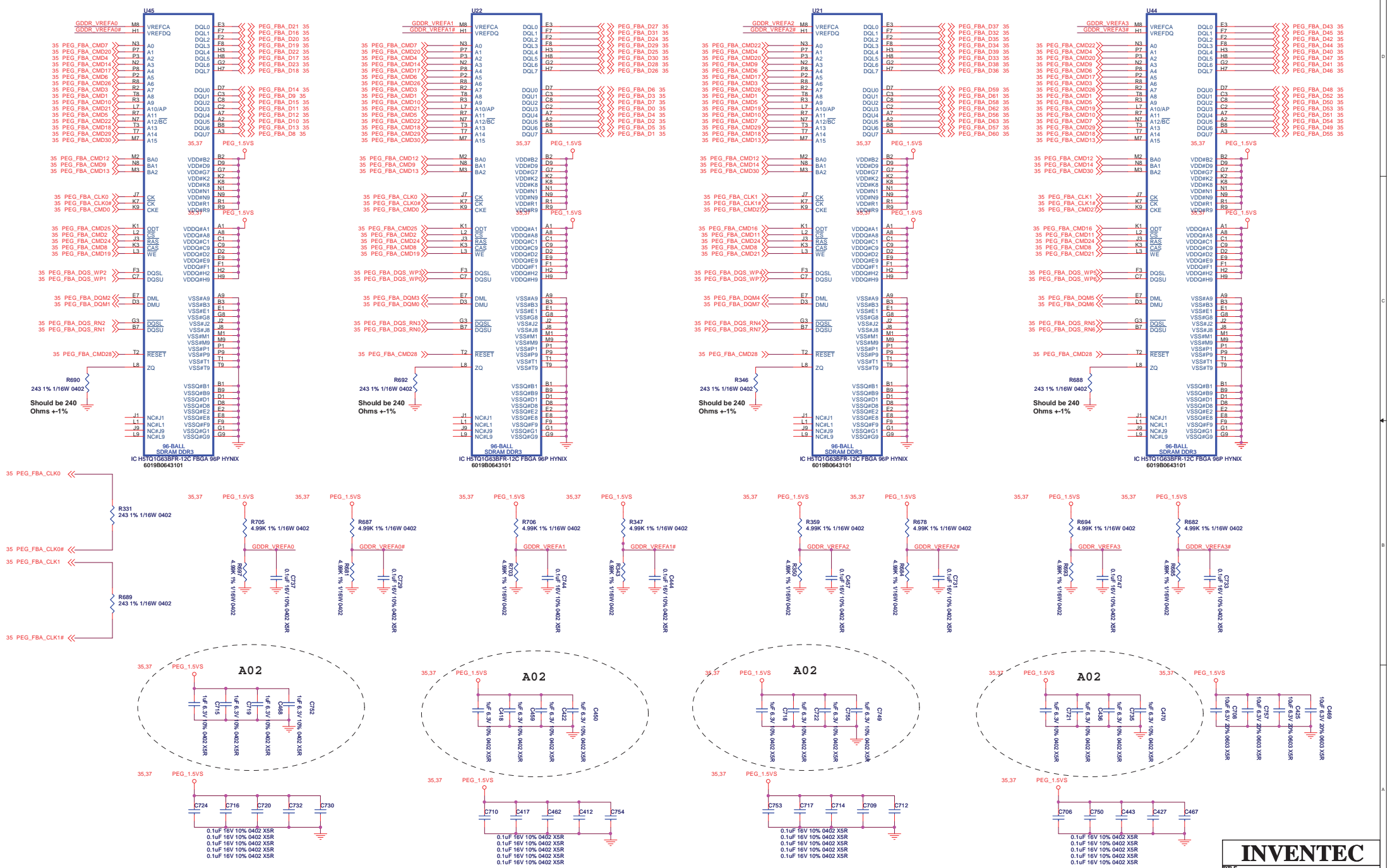




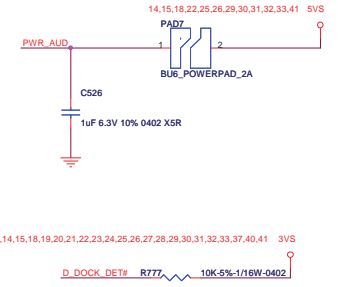
| GPIO5 | NVDD   | N11M-GE1     |
|-------|--------|--------------|
| 0     | 0.85V  | P12APB-State |
| 1     | 1.032V | PO-State     |

**INVENTEC**  
TITLE Celpalla demo board)  
1.8V/PEX1.1V/NVDD(5/5)  
SIZE CODE DOCNUMBER REV  
Custom CS CS-131 37 of 41  
CHANGE by IEC DATE Monday, May 24, 2010 SHEET

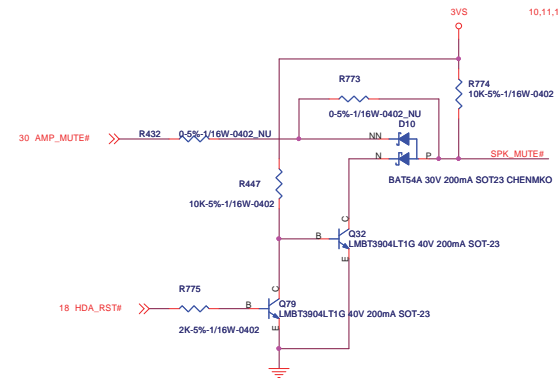




## AUDIO CODEC



Port A: Headphone jack (jack shared with S/PDIF)  
Port B: Internal analog mono mic (stereo option)  
Port C: Microphone jack  
Port G: Internal stereo speakers  
Port J: Optional Internal stereo digital mic  
Port H: S/PDIF (jack shared with headphone)



|           |     |      |                      |
|-----------|-----|------|----------------------|
| CHANGE by | IEC | DATE | Monday, May 24, 2010 |
|-----------|-----|------|----------------------|





