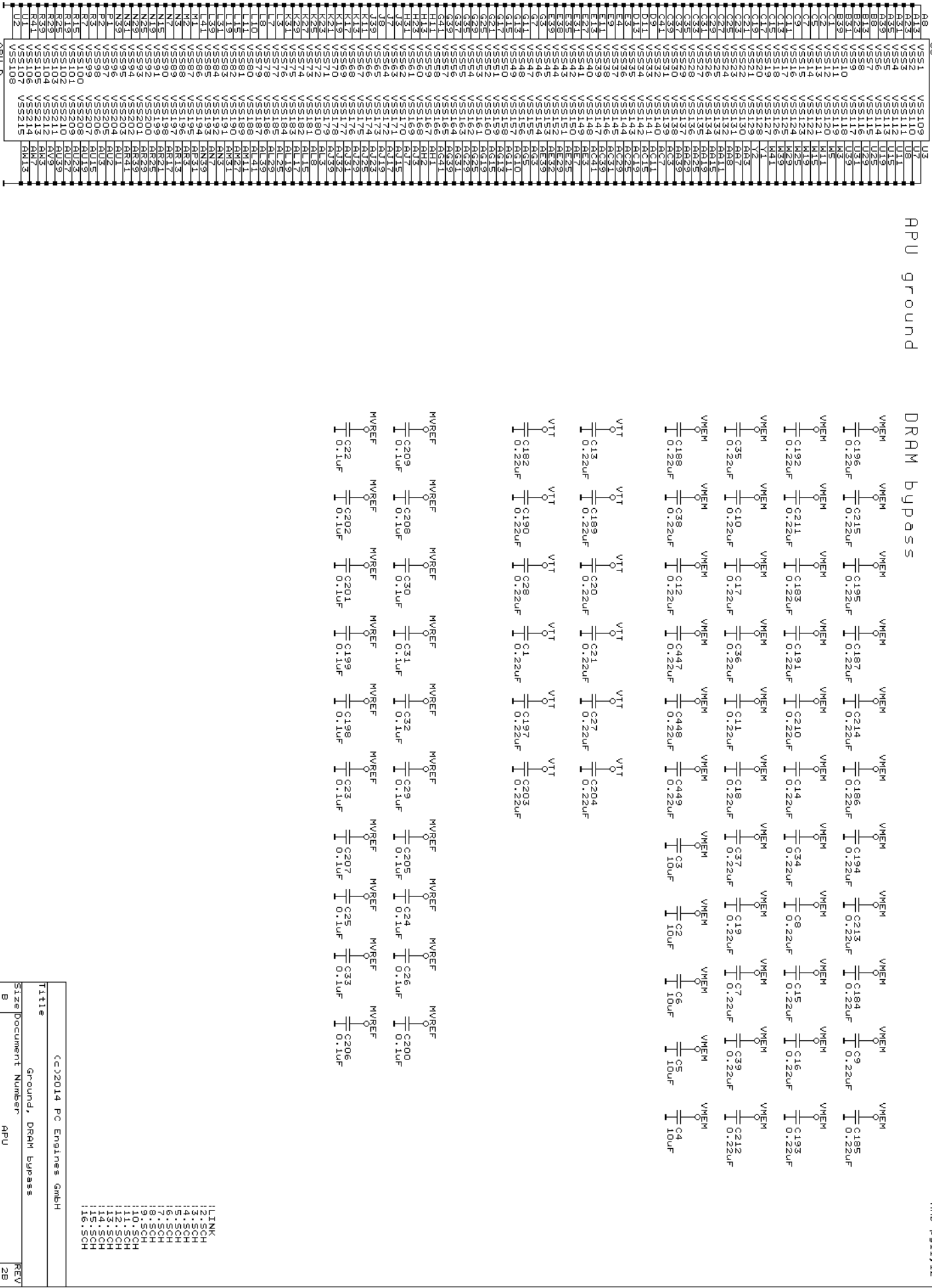


APU ground

DRAM bypass

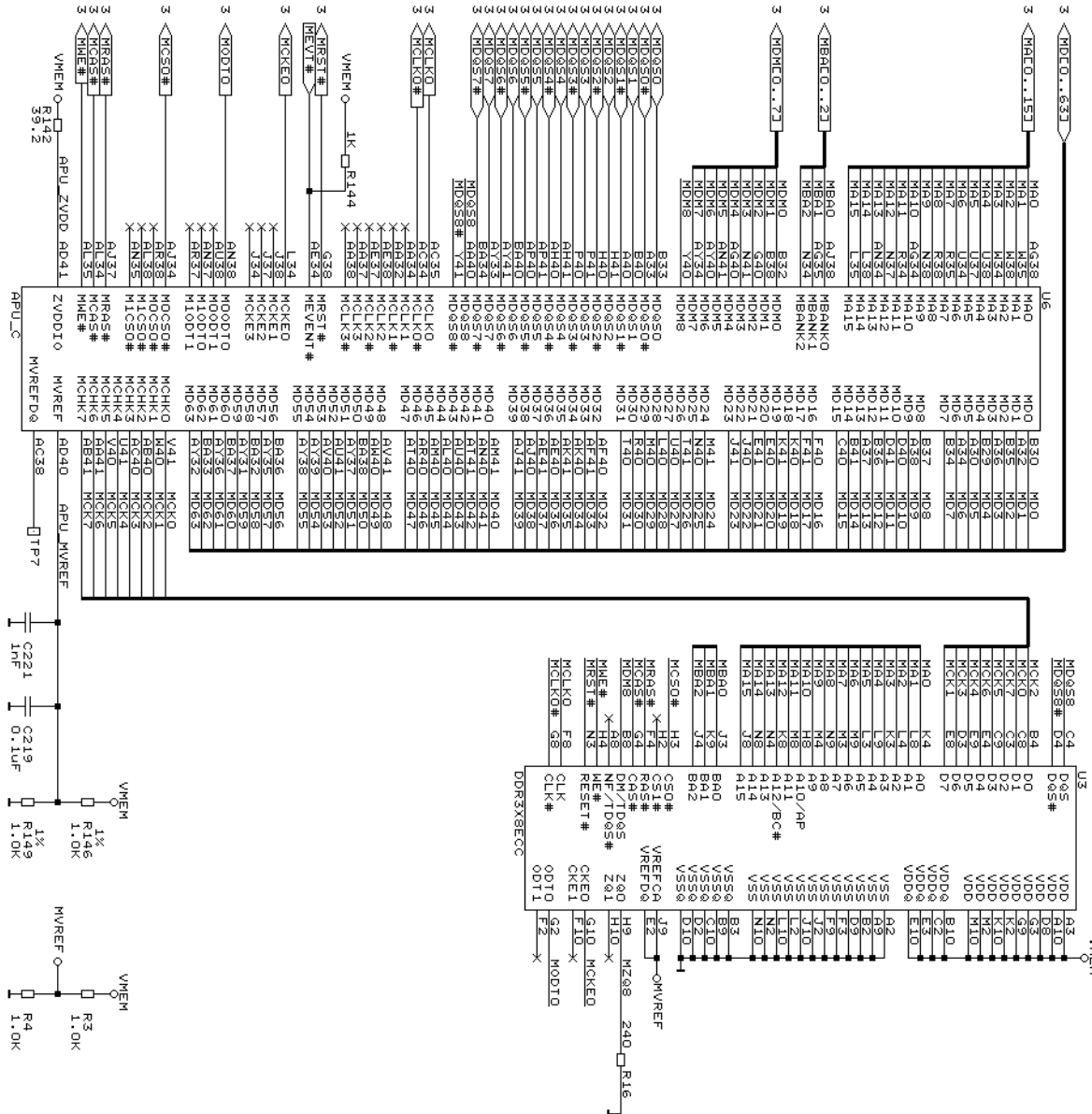


- 16.5SCH
- 14.5SCH
- 11.5SCH
- 12.5SCH
- 13.5SCH
- 7.5SCH
- 8.5SCH
- 9.5SCH
- 10.5SCH
- 11.5SCH
- 12.5SCH
- 13.5SCH
- 14.5SCH
- 15.5SCH

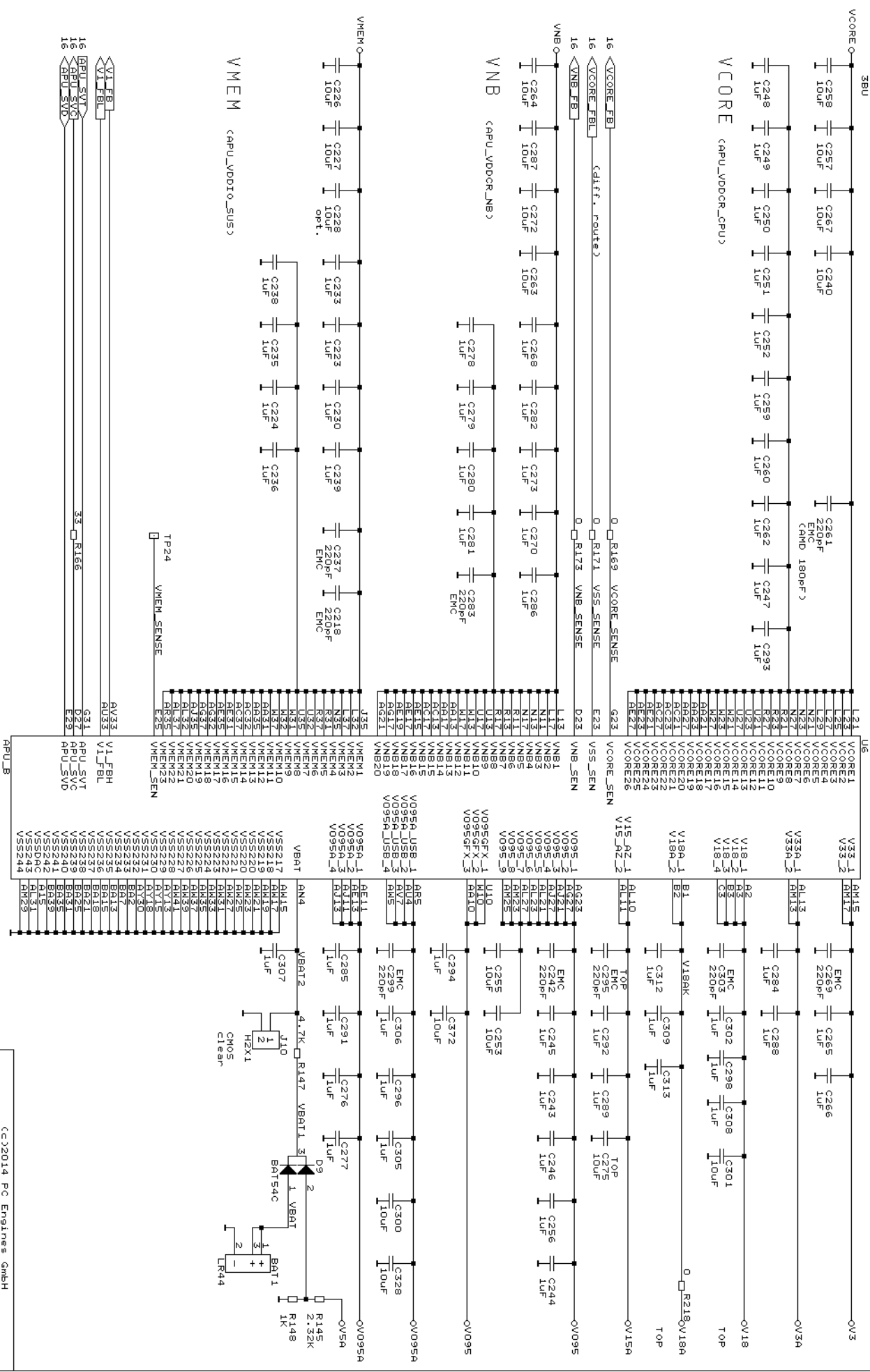
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| Title | | Ground, DRAM Bypass | |
| Size/Document Number | | APU | |
| Date: | | February 4, 2015/Sheet | |
| | | 1 of 16 | |

APU DRAM Interface

ECC DRAM

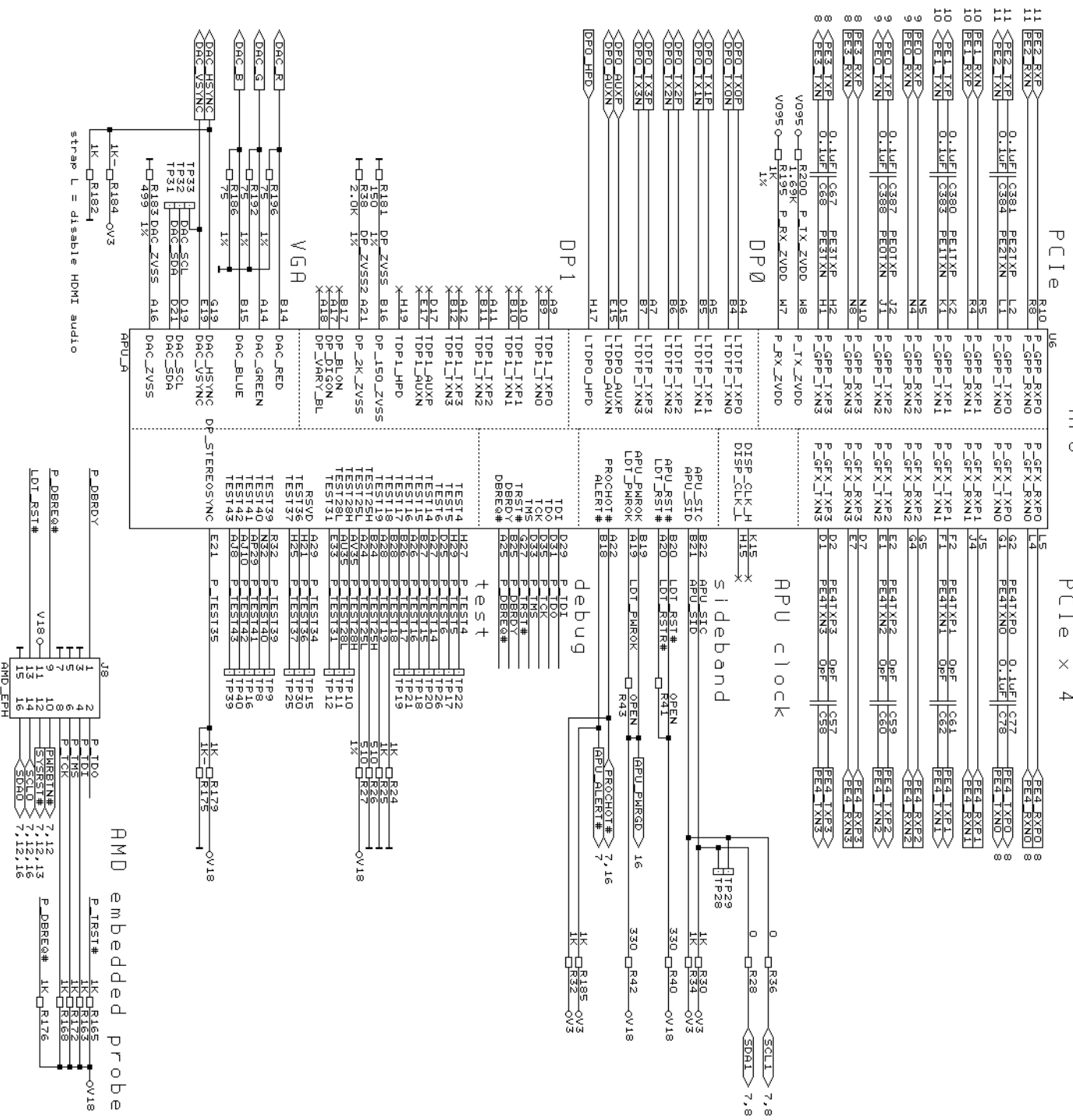


APU power



| | | | |
|------------------------|--|-----------|---------|
| Title | | APU power | |
| Size/Document Number | | APU | |
| Date: February 4, 2015 | | Sheet | 4 of 15 |

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AMD embedded probe header

| | | | |
|----------------------|-----------------|---------------------------|---------|
| Title | | APU PCIe / display / test | |
| Size/Document Number | | APU | |
| Date: | January 8, 2015 | Sheet | 5 of 16 |

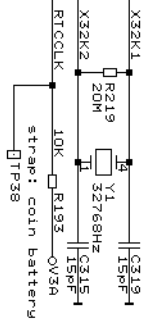
APU USB

| | | | | |
|--------------|---------|----------|---------|---------|
| APU USB | APU USB | APU USB | APU USB | APU USB |
| USB_ZV55 | AP4 | USB_RCMP | R203 | 1:1.8K |
| USB_HSD0F | AL4 | | | |
| USB_HSD0N | AL9 | | | |
| USB_HSD1P | AL4 | | | |
| USB_HSD1N | AL5 | | | |
| USB_HSD2F | AG7 | | | |
| USB_HSD2N | AG6 | | | |
| USB_HSD3F | AG1 | | | |
| USB_HSD3N | AG2 | | | |
| USB_HSD4F | AF1 | USB4P | | |
| USB_HSD4N | AF2 | USB8N | | |
| USB_HSD5F | AE1 | USB8P | | |
| USB_HSD5N | AE2 | USB8N | | |
| USB_HSD6F | AD1 | USB8F | | |
| USB_HSD6N | AD2 | USB8N | | |
| USB_HSD7F | AC1 | USB7F | 8 | |
| USB_HSD7N | AC2 | USB7N | 8 | |
| USB_HSD8F | AB1 | USB8P | | |
| USB_HSD8N | AB2 | USB8N | | |
| USB_HSD9F | AA1 | USB9P | | |
| USB_HSD9N | AA2 | USB9N | | |
| USB_SS_ZV55 | AE10 | SS_CALRN | R204 | |
| | | | RK94 | 0V095A |
| USB_SS_ZV50 | AE9 | SS_CALRP | R194 | |
| USB_SS_T1X0P | T2 | SSTXP | | |
| USB_SS_T1X0N | T1 | SSTXON | | |
| USB_SS_FXP | V2 | SSRXOP | | |
| USB_SS_RXN | V1 | SSRXON | | |
| USB_SS_TXP | R1 | SSTXIP | | |
| USB_SS_XIN | R2 | SSTXIN | | |
| USB_SS_RX1P | M1 | SSRX1P | | |
| USB_SS_RX1N | M2 | SSRX1N | | |
| USB_OC1# | A17 | USBDC1# | 10K | R48 |
| USB_OC2# | A11 | USBDC2# | 10K | R49 |
| USB_OC3# | A11 | USBDC3# | 10K | R208 |
| | | | | V3A |

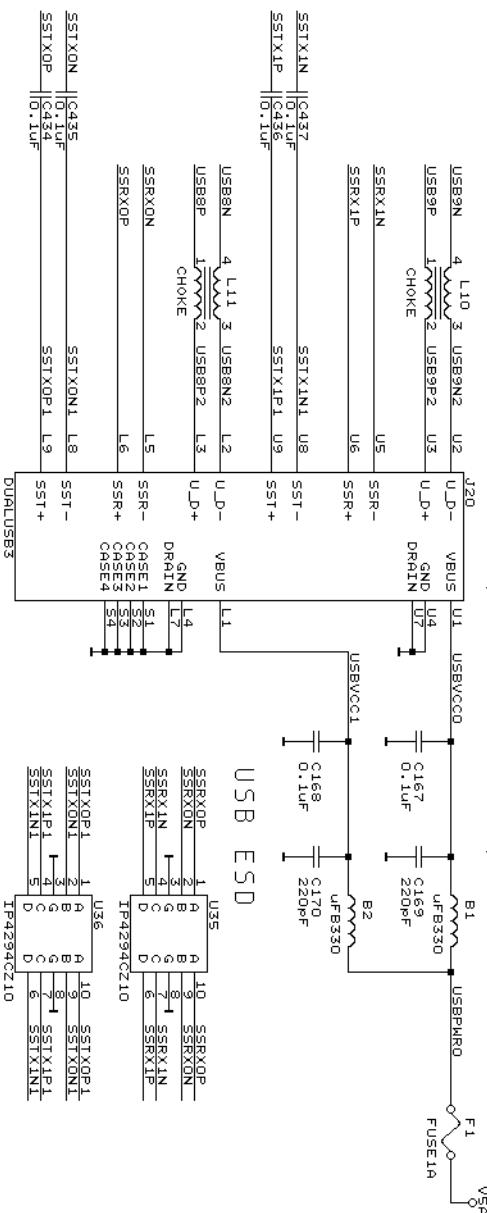
APU clock

| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| APU clock | APU clock | APU clock | APU clock | APU clock |
| GFX_CLKP | U4 | PE4_CLKP | 8 | |
| GFX_CLKN | US | PE4_CLKN | 8 | |
| GPP_CLKOP | AC9 | PE0_CLKP | 9 | |
| GPP_CLKON | AC10 | PE0_CLKN | 9 | |
| GPP_CLK1P | AE4 | PE1_CLKP | 10 | |
| GPP_CLK1N | AE5 | PE1_CLKN | 10 | |
| GPP_CLK2F | AG4 | PE2_CLKP | 11 | |
| GPP_CLK2N | AG5 | PE2_CLKN | 11 | |
| GPP_CLK3F | AA5 | PE3_CLKP | 8 | |
| GPP_CLK3N | AA6 | PE3_CLKN | 8 | |
| CLKREG0# | AU29 | CLKREG0# | 9 | |
| CLKREG1# | AU29 | CLKREG1# | 10 | |
| CLKREG2# | AR27 | CLKREG2# | 10 | |
| CLKREG3# | AV23 | CLKREG3# | 11 | |
| CLKREG4# | AV23 | CLKREG4# | 8 | |
| CLK48 | AP13 | CK48 | 12 | |
| CLK14 | M4 | X | | |
| LPCKD | AV2 | LPCKD | 33 | R55 |
| LPCKK1 | AN2 | LPCKK1 | 33 | R56 |
| LPCKK1 | AN2 | LPCKK1 | 7, 12 | |
| X48M1 | N2 | X48M1 | 27pF | |
| X48M1 | N2 | X48M1 | 27pF | |
| N1 | X48M2 | N1 | X48M2 | 48MHz |
| | | | | 27pF |

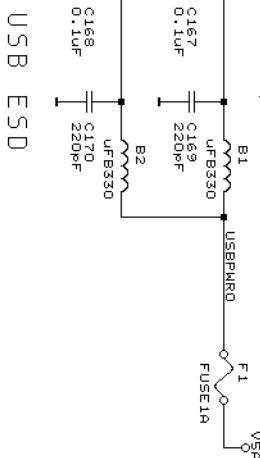
RTC



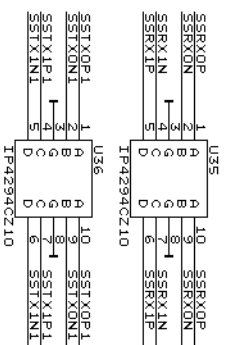
USB 3.0 port



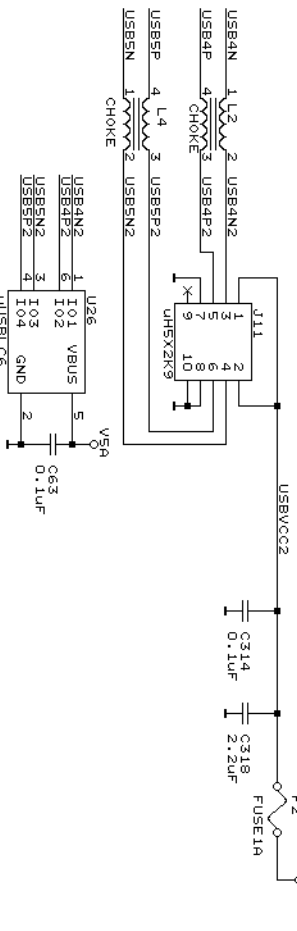
USB power



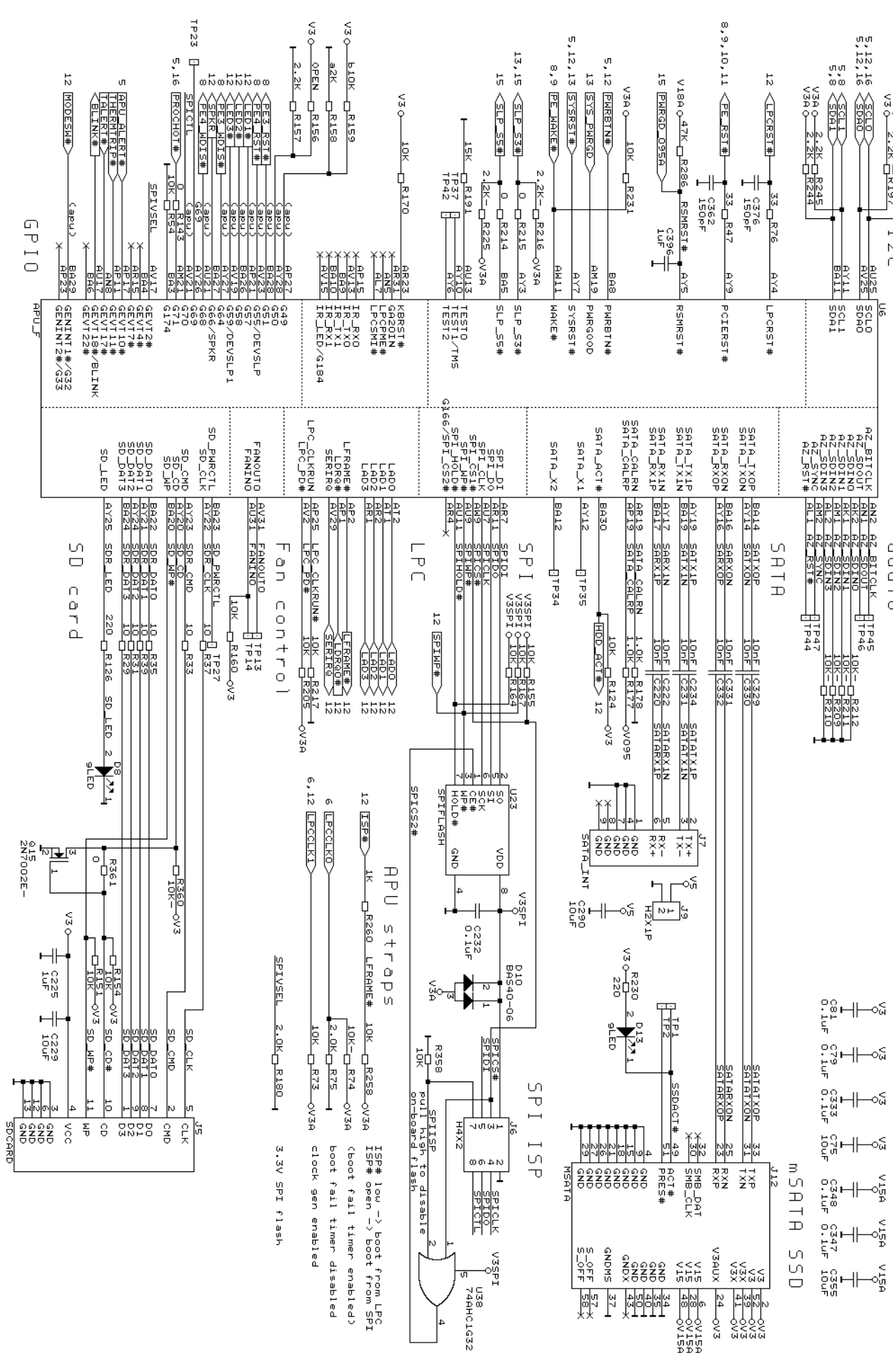
USB ESD



USB 2.0 header



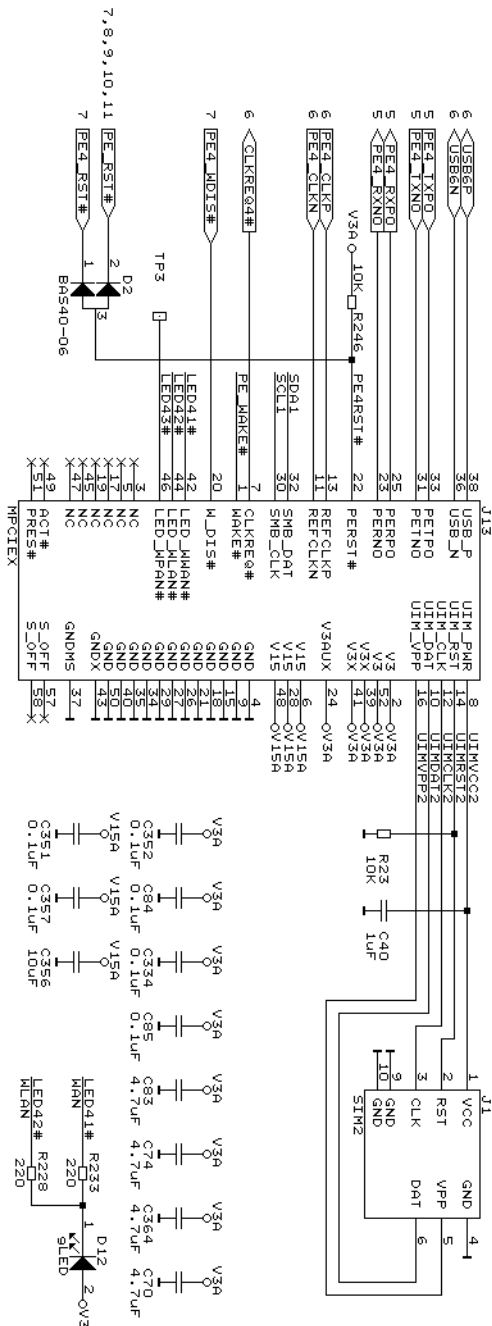
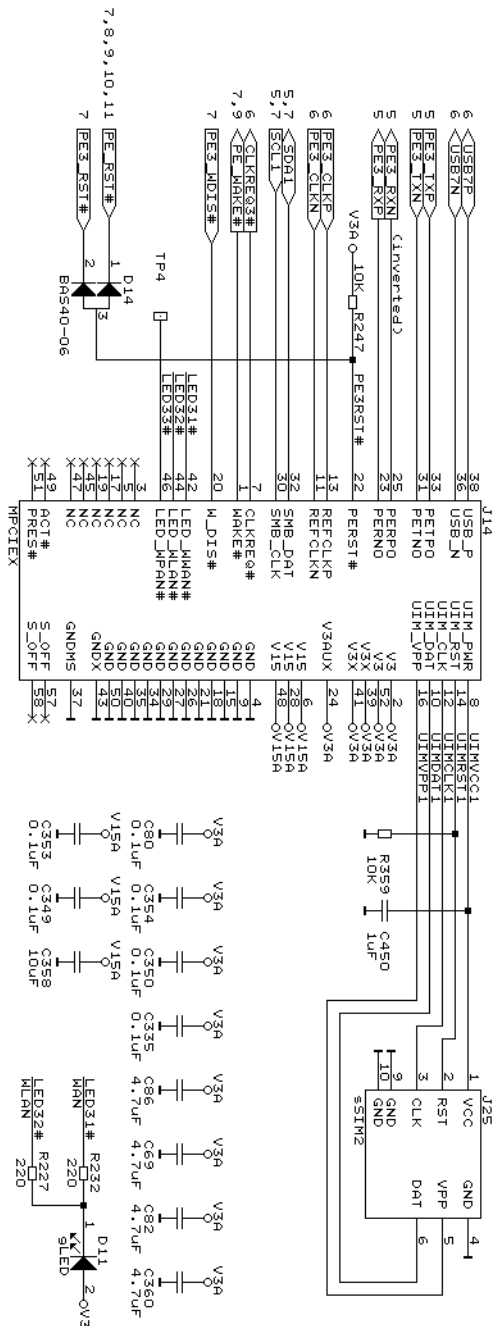
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| Title | | (C)2014 PC Engines GmbH |
| Size | | USB, clock |
| Document Number | | APU |
| Date: | | August 11, 2015 sheet 6 of 16 |
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| | | |
|----------------------|--|-------------------------------|
| Title | | (C)2014 PC Engines GmbH |
| Size/Document Number | | SATA, LPC, SPI, SD |
| Date: | | August 21, 2015/Sheet 7 of 16 |

Mini PCI Express

SIM (option 5)

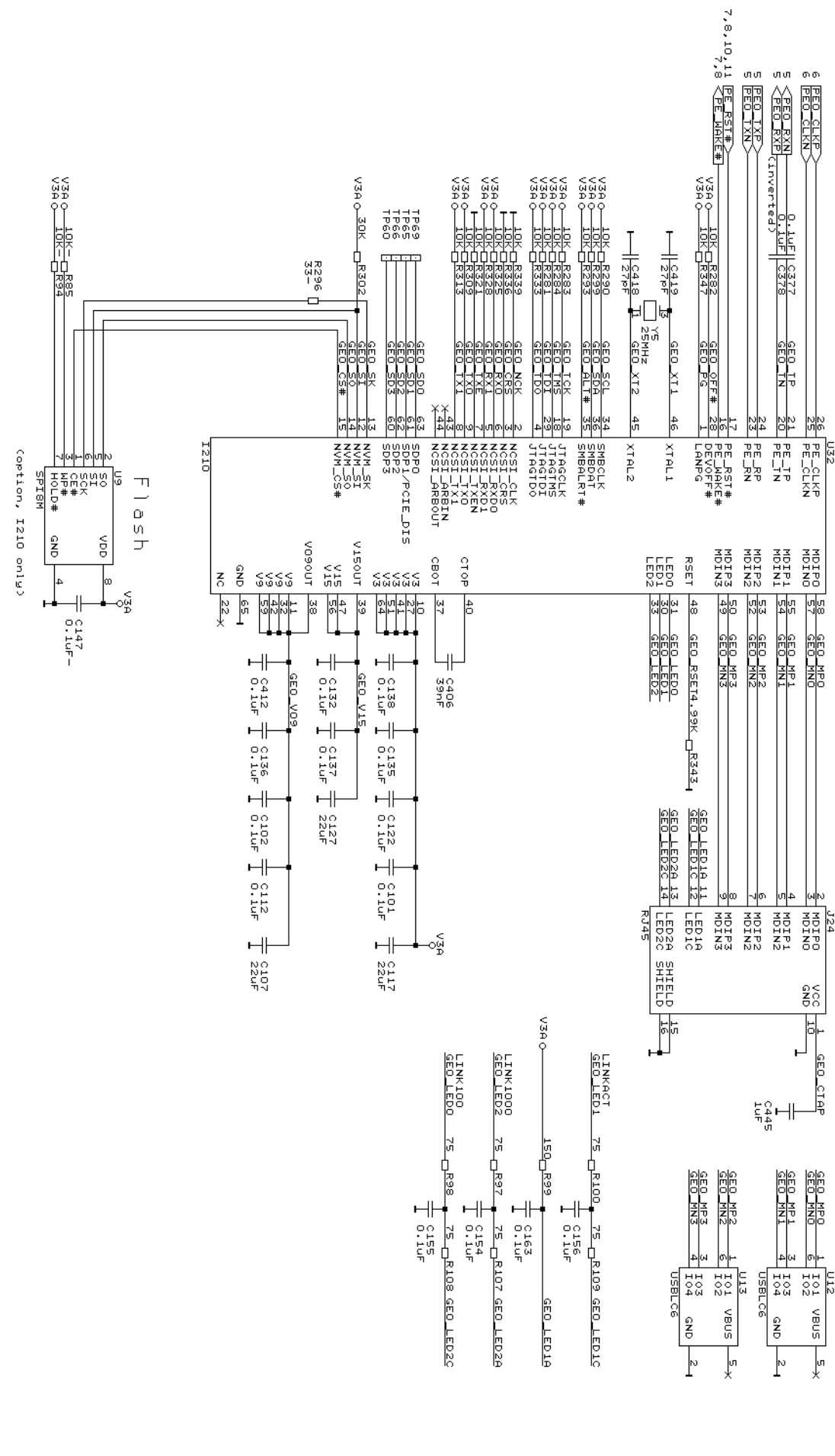


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| Title | | C:\2014 PC Engines GmbH | |
| Size | | MiniPCI express | |
| Document Number | | APU | |
| Date: | | August 21, 2015 | |
| REV | | 28 | |
| Sheet | | 8 of 16 | |

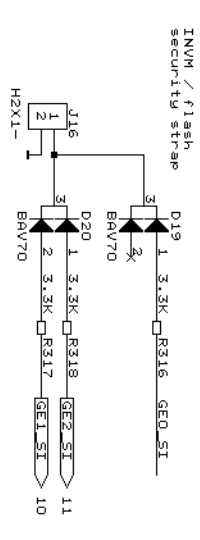
1 G1gabit Ethernet 1

RJ45

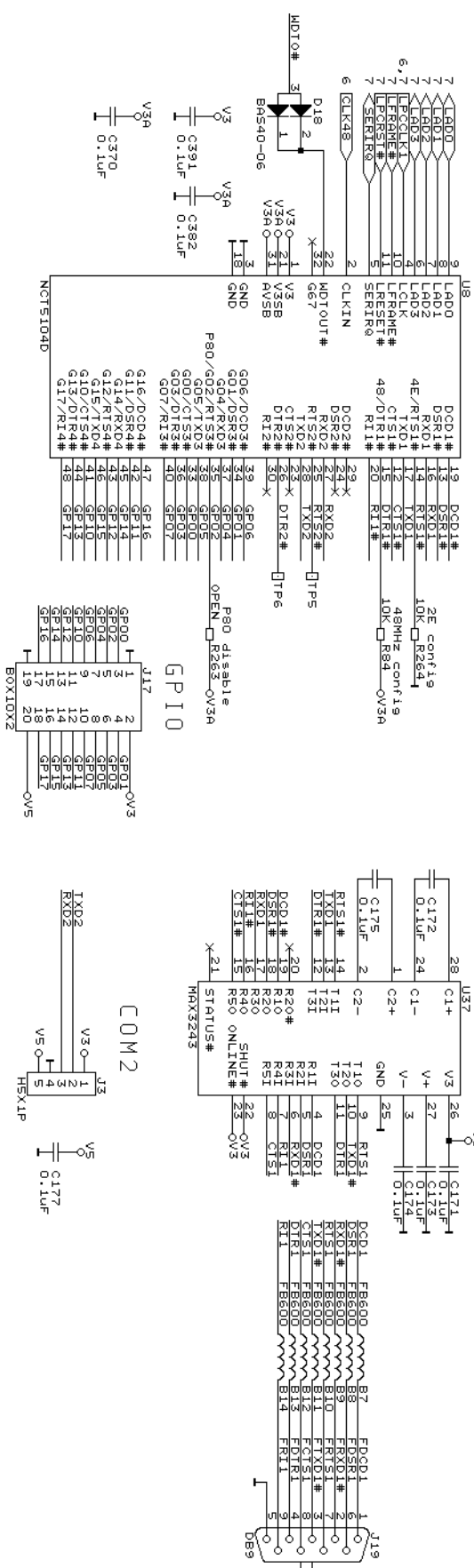
ESD protection



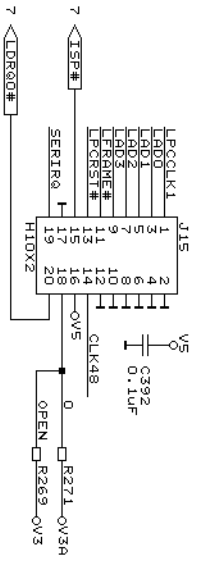
Flash (option, I210 only)



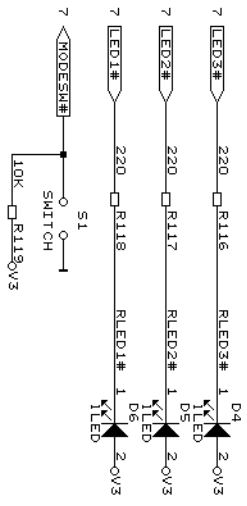
LPC UART



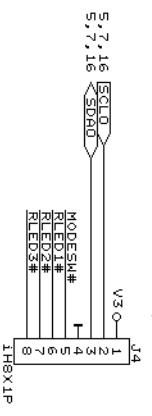
LPC expansion + ISP



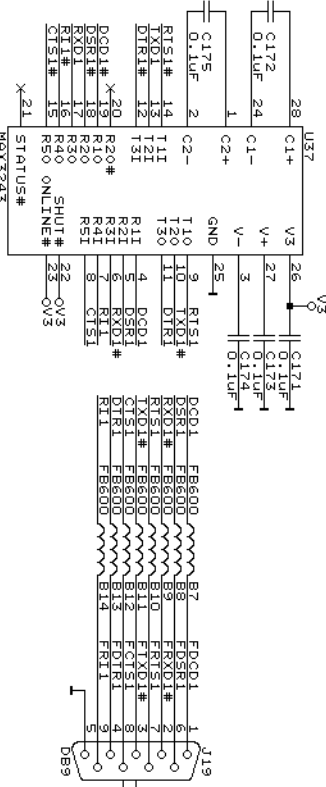
LED + switch



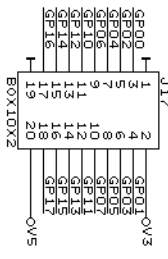
I2C option



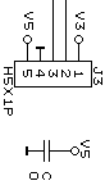
COM1



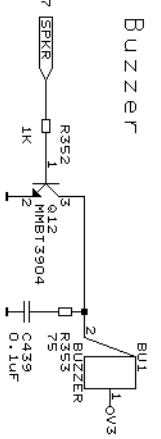
GPIO



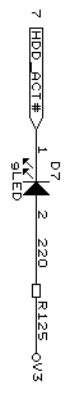
COM2



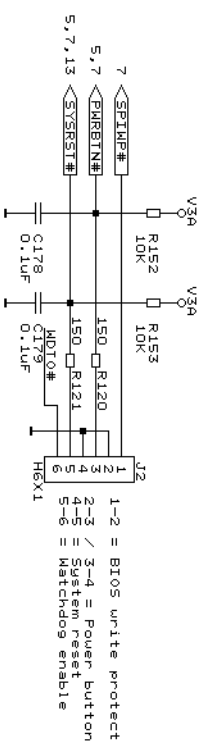
Buzzer



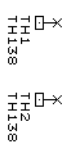
SATA activity LED



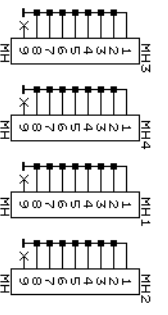
Power / reset / watchdog header



Heat spreader mounting



Mounting holes

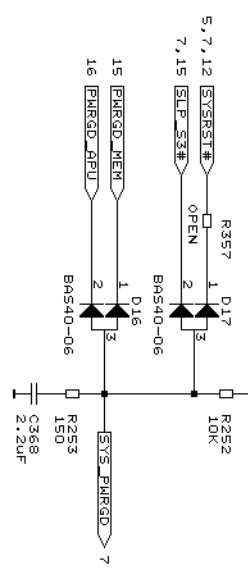


Fiducial marks

- FM7 FIDMARK
- FM8 FIDMARK
- FM9 FIDMARK
- FM10 FIDMARK
- FM11 FIDMARK
- FM12 FIDMARK
- FM13 FIDMARK
- FM14 FIDMARK
- FM15 FIDMARK
- FM16 FIDMARK
- FM17 FIDMARK
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- FM98 FIDMARK
- FM99 FIDMARK
- FM100 FIDMARK

| | | |
|----------------------|--------------------------------|----------------|
| Title | LPC bus, LPC UART, front panel | |
| Size/Document Number | APU | REV 28 |
| Date: | August 21, 2015 | Sheet 12 of 16 |

Power good v18a

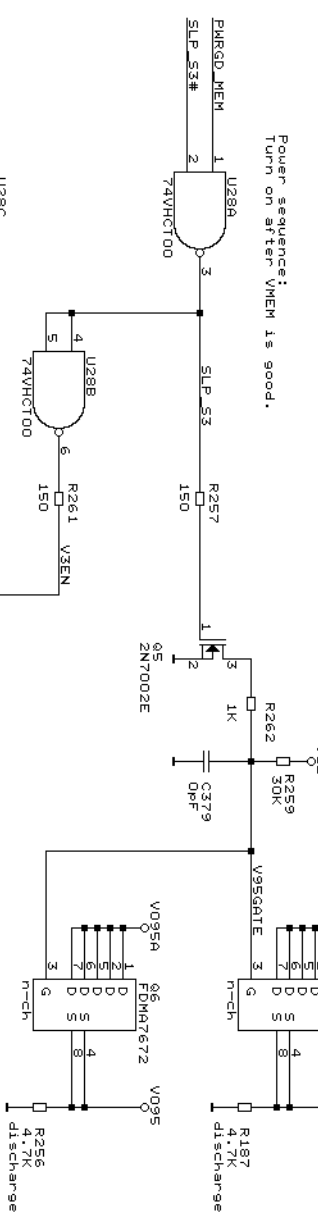


VRM test points

| | |
|--------------|-------------|
| V5A-O-TP570 | V5-O-TP57 |
| V3A-O-TP56 | V3-O-TP55 |
| V18A-O-TP49 | V18-O-TP48 |
| V15A-O-TP52 | V15-O-TP51 |
| VMEM-O-TP41 | VT-O-TP36 |
| V095A-O-TP54 | V095-O-TP53 |
| VCORE-O-TP50 | VNB-O-TP51 |

AMD P924

Power switch



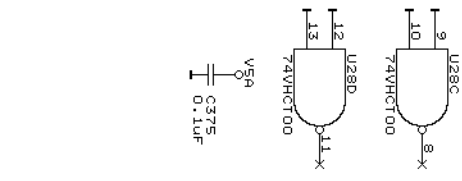
1.8V

0.95V

3.3V

5V

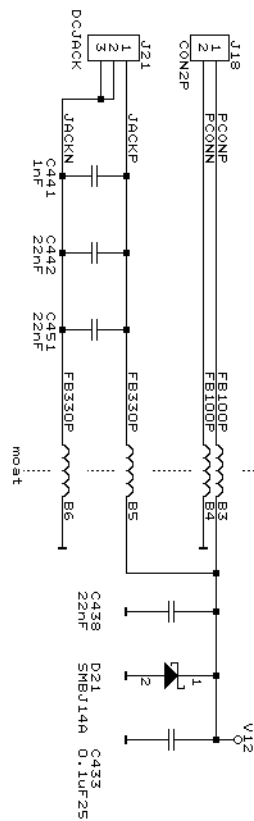
AMD P922



Power sequence:
Turn on after VMEM is good.

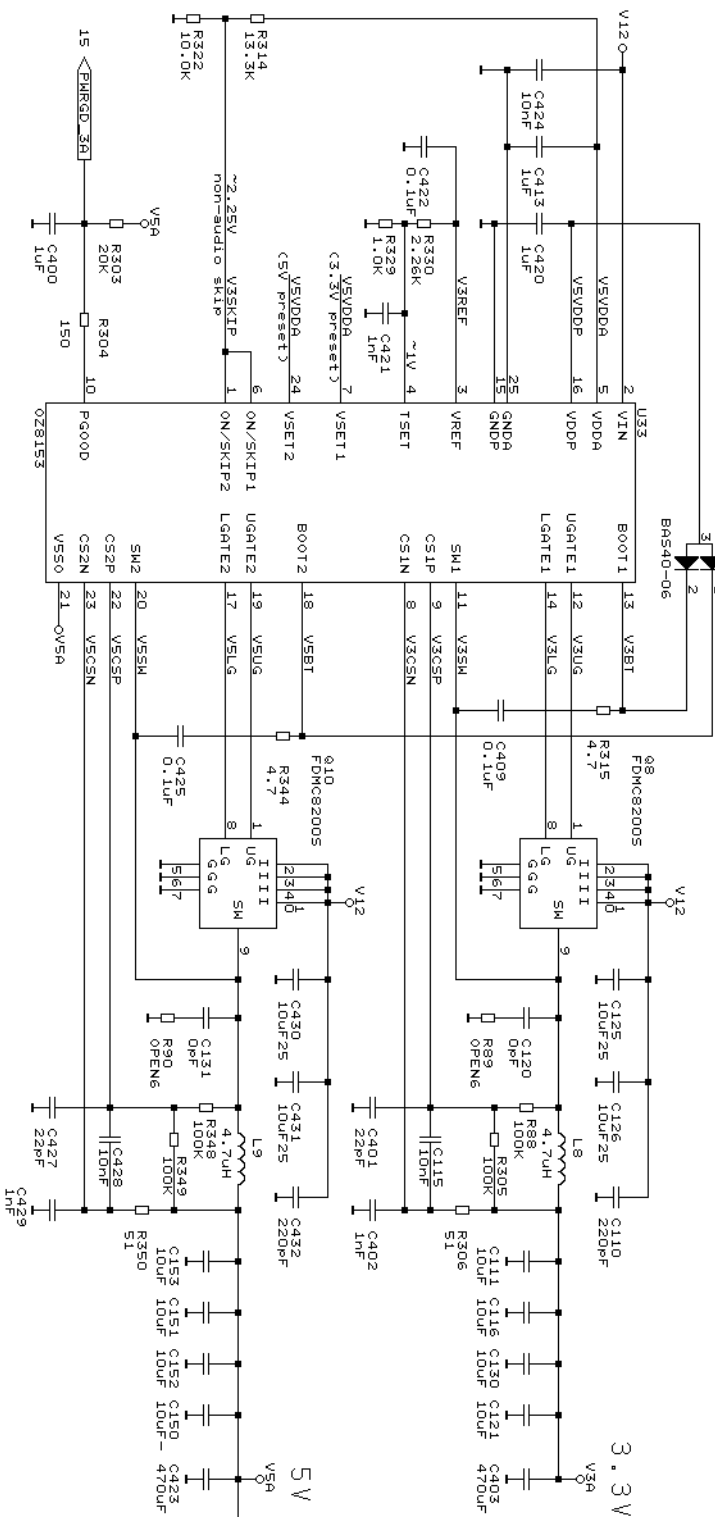
| | |
|------------------------|--------------------------|
| C©2014 PC Engines GmbH | |
| Title | power good, power switch |
| Size | Document Number |
| B | APU |
| Date: | February 5, 2015 |
| Sheet | 13 of 16 |
| REV | 28 |

Power input +12V



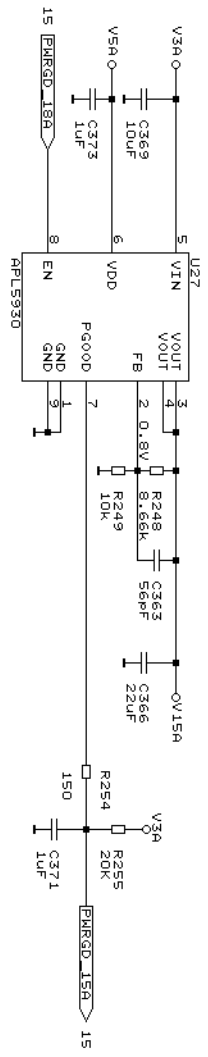
AMD P920

3.3V and 5V converter



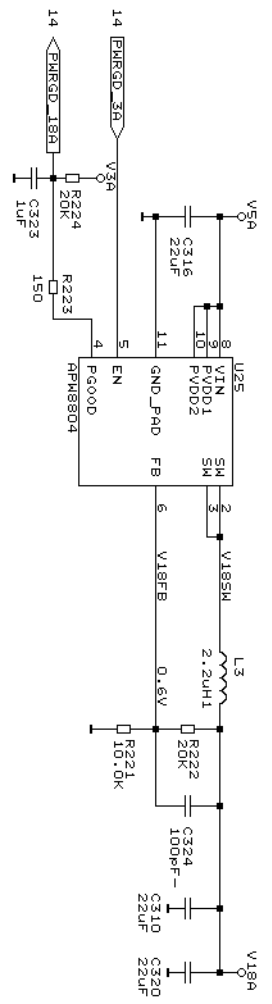
AMD P922

3.3V -> 1.5V LDO

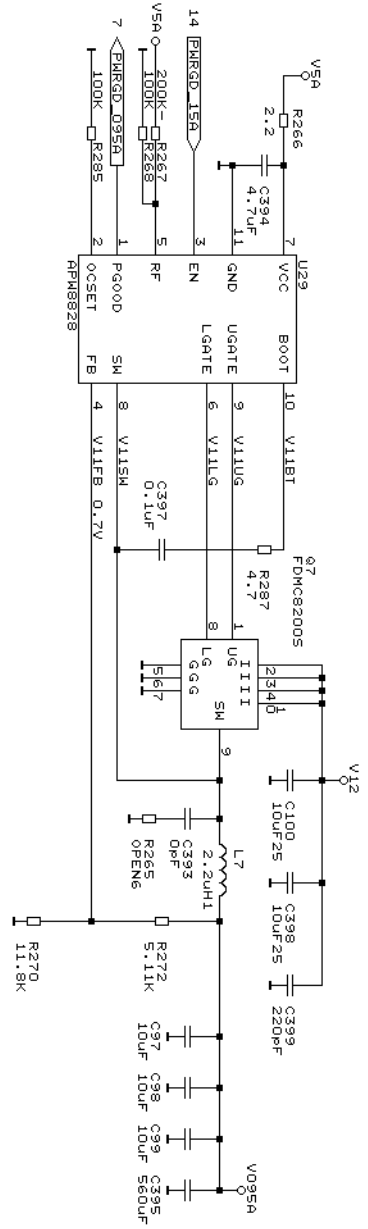


AMD P922

| | | | |
|----------------------|-----------------|--------------------------|----------|
| Title | | power In, 3.3V, 5V, 1.5V | |
| Size/Document Number | | APU | |
| Date: | August 19, 2015 | Sheet | 14 of 15 |

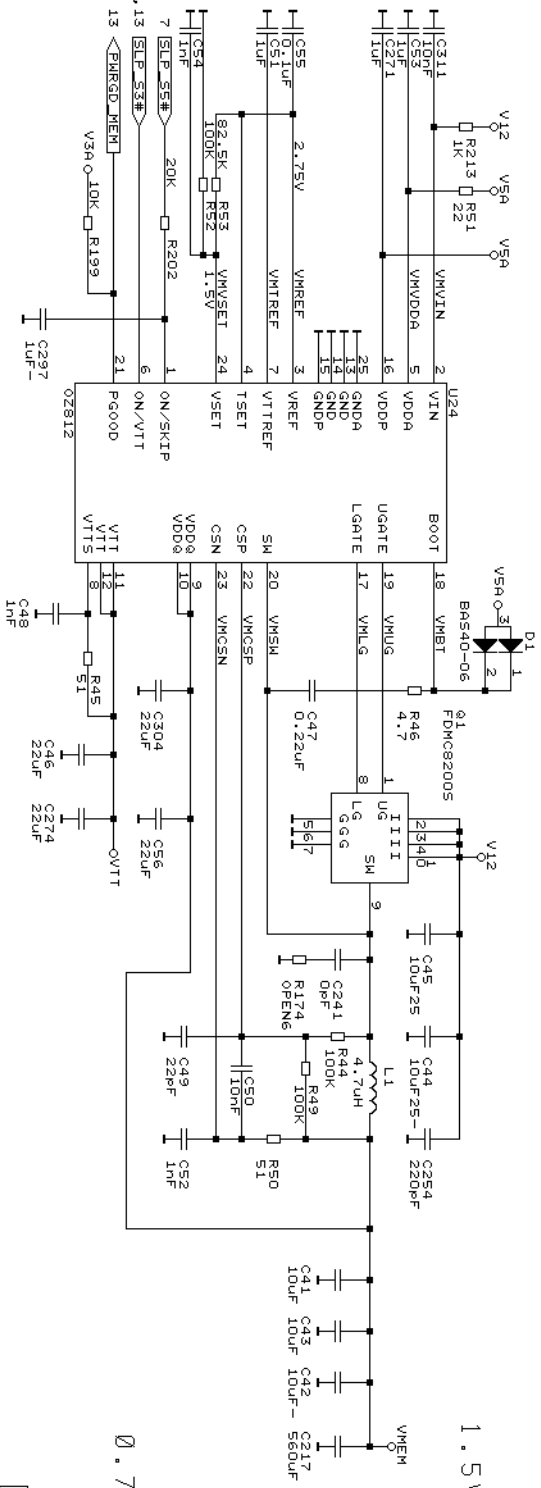


1.8V, 2A



0.95A, 5A

VMEM converter and VTT LDO

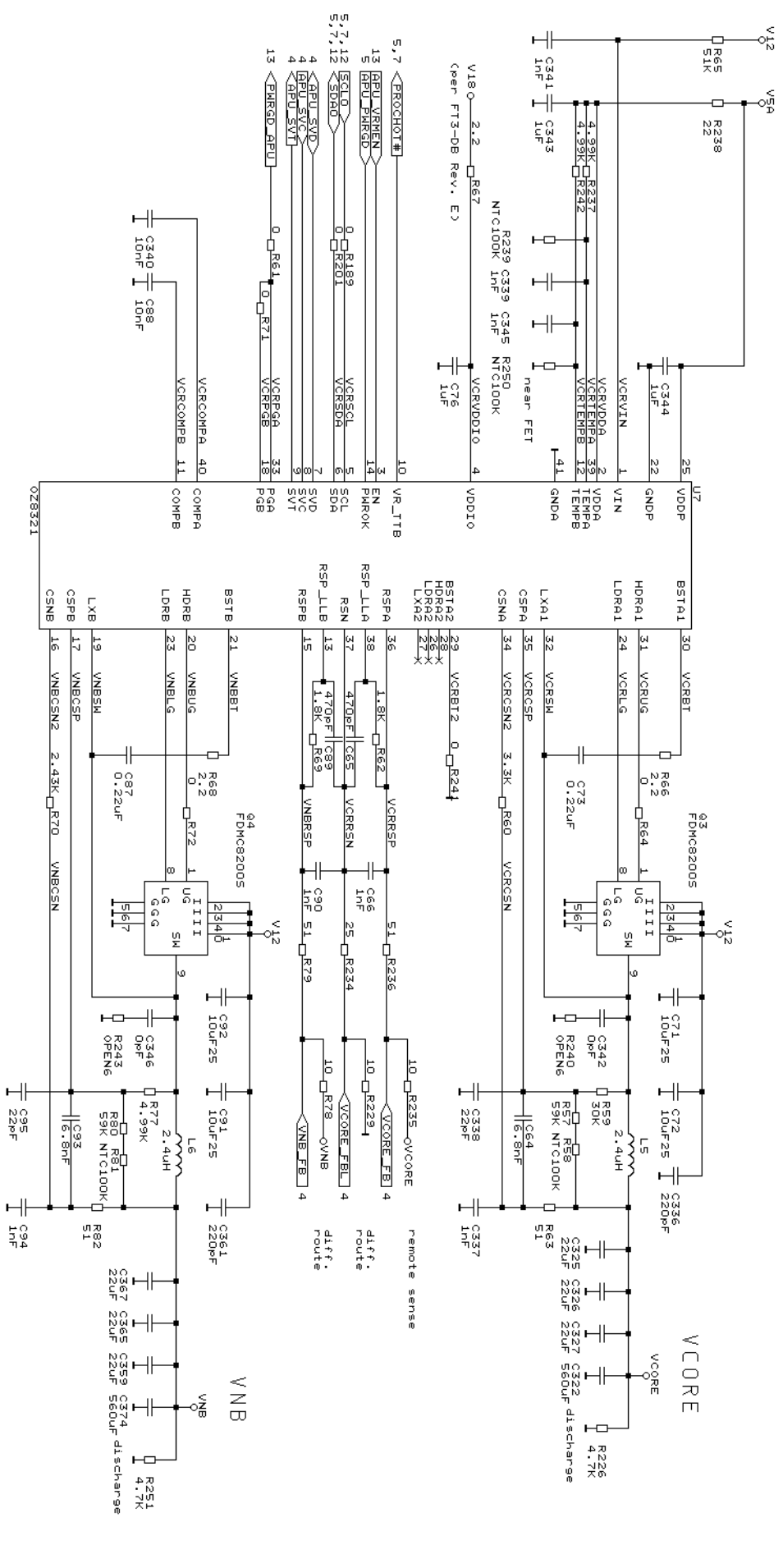


1.5V VMEM

0.75V VTT

| | | | |
|-----------------|--|------------------------|--|
| Title | | C12014 PC Engines GmbH | |
| Size | | 1.8V, 0.95V, VMEM, VTT | |
| Document Number | | APU | |
| Date | | February 19, 2015 | |
| Sheet | | 15 of 16 | |
| REV | | 28 | |

VCORE and VNB converter



| | | | |
|----------------------|--|---------------------------------|--|
| Title | | VCORE, VNB | |
| Size/Document Number | | APU | |
| Date: | | January 21, 2015/Sheet 16 of 16 | |
| REV | | 28 | |

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