

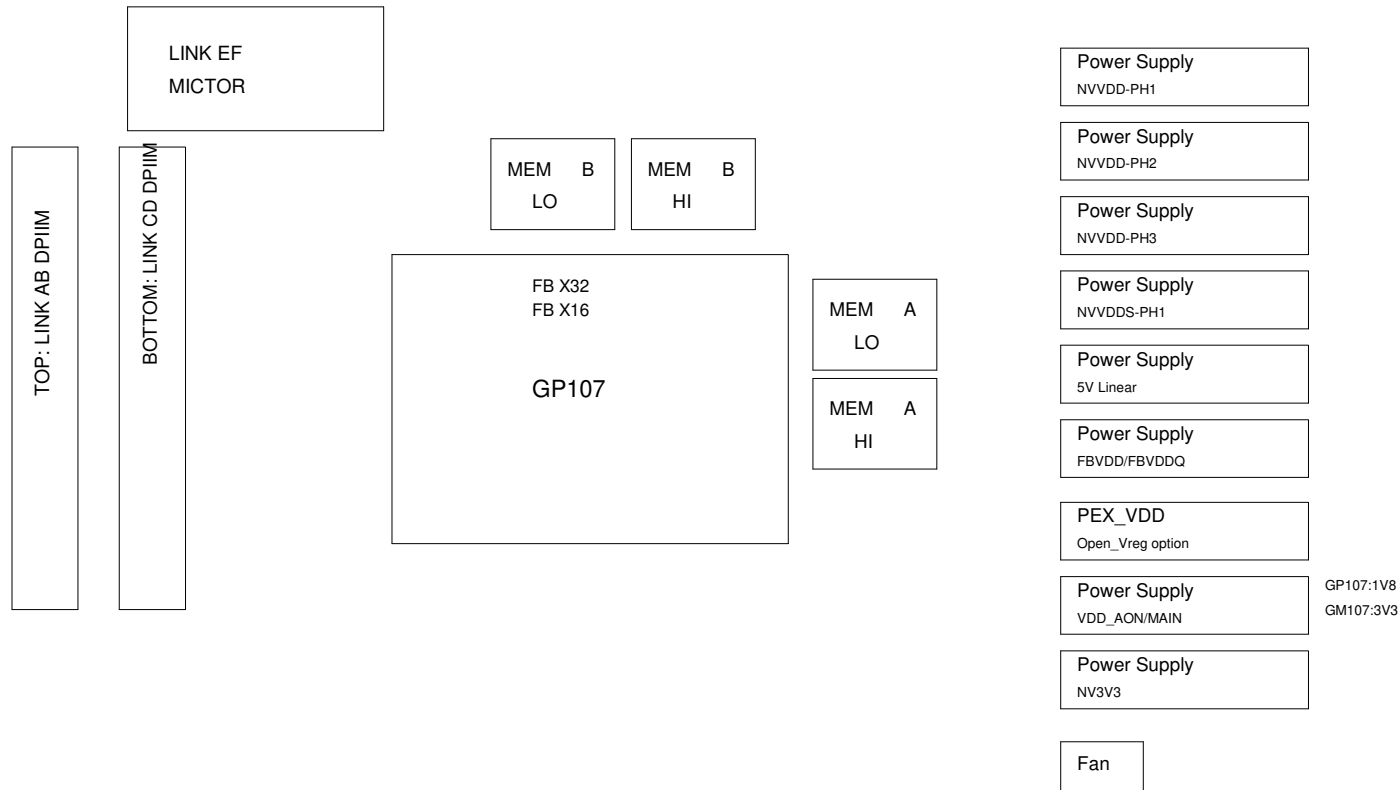
# E2904

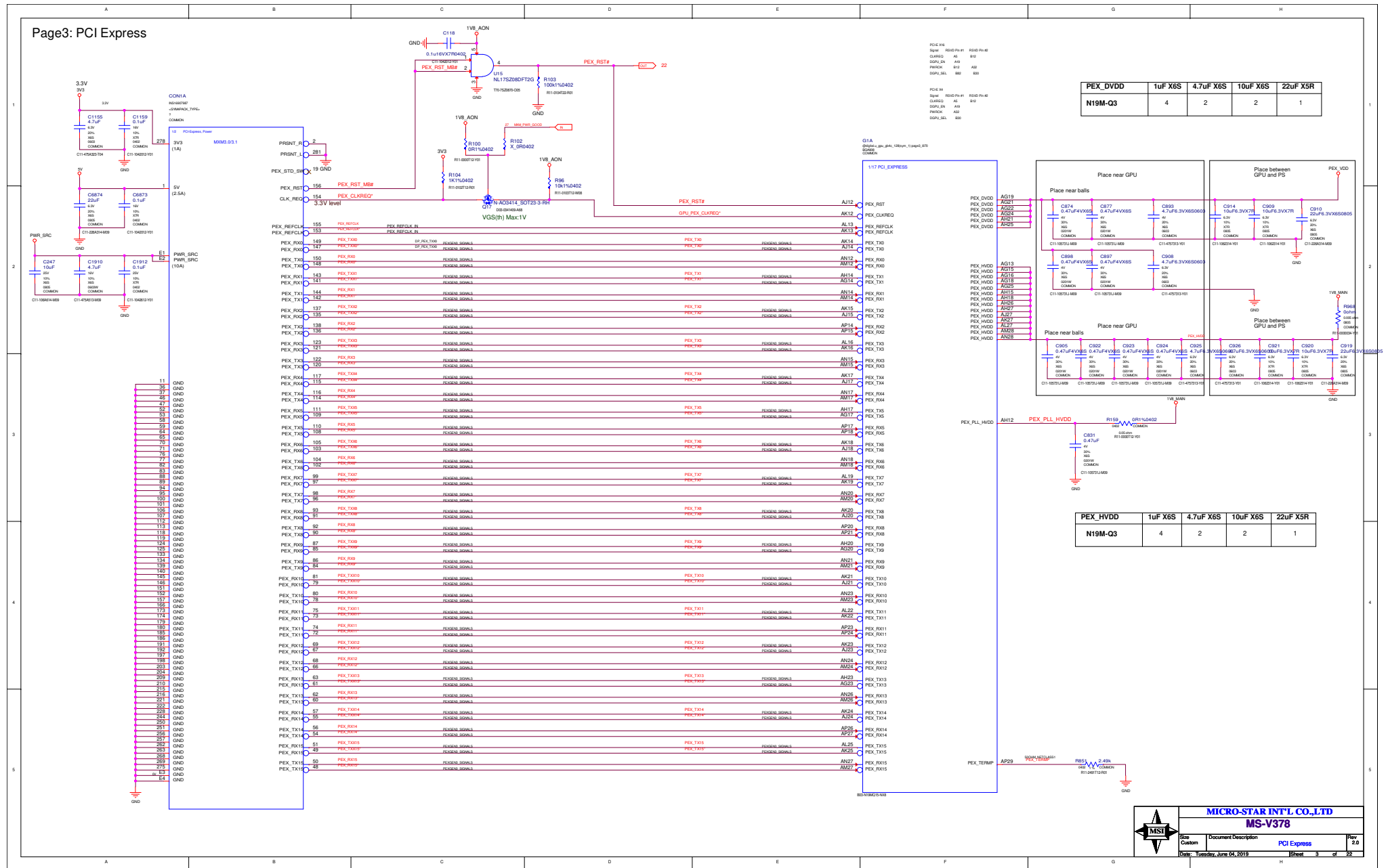
4GB GDDR5, 128b, 256Mx32  
modular displays

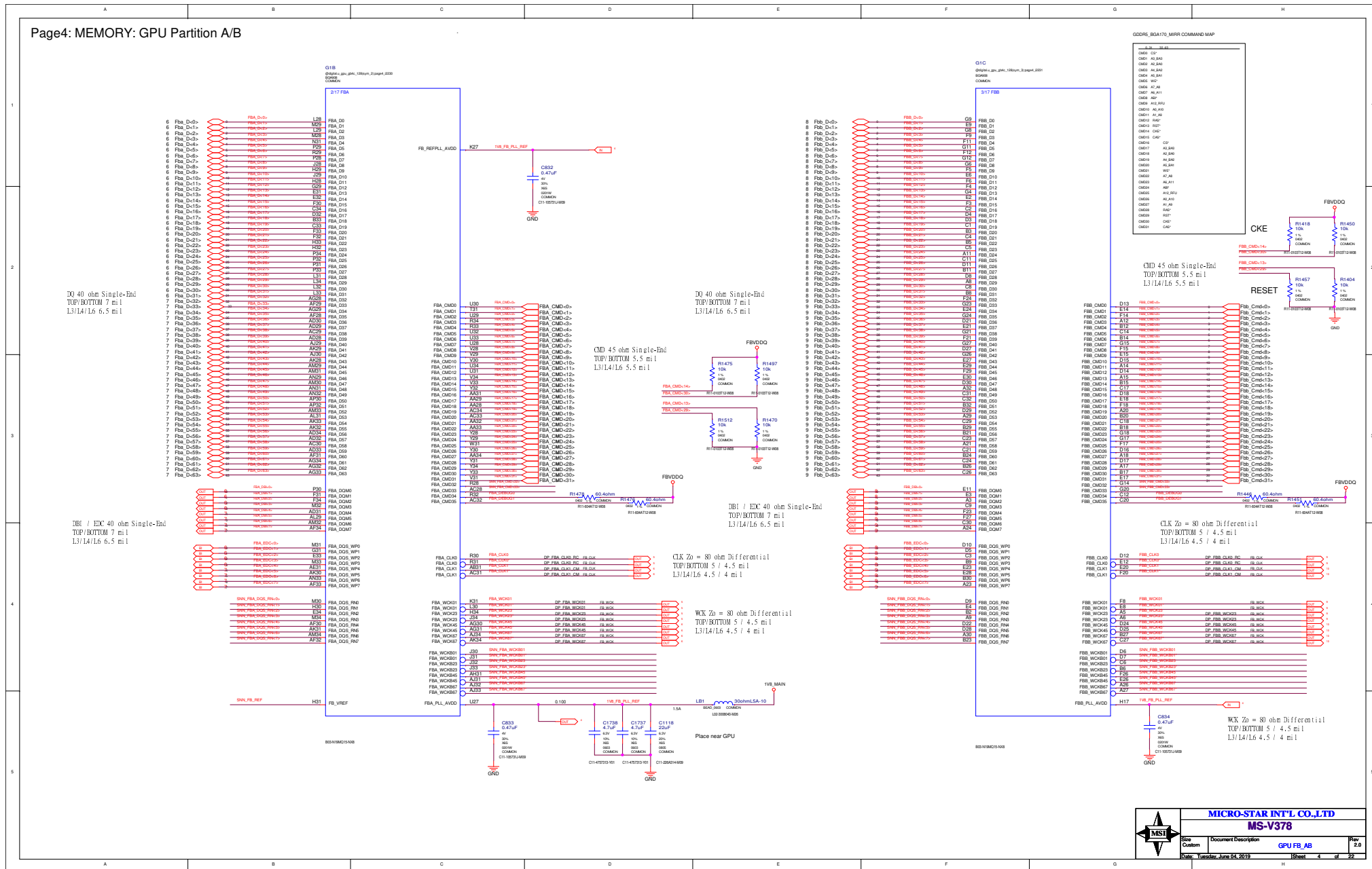
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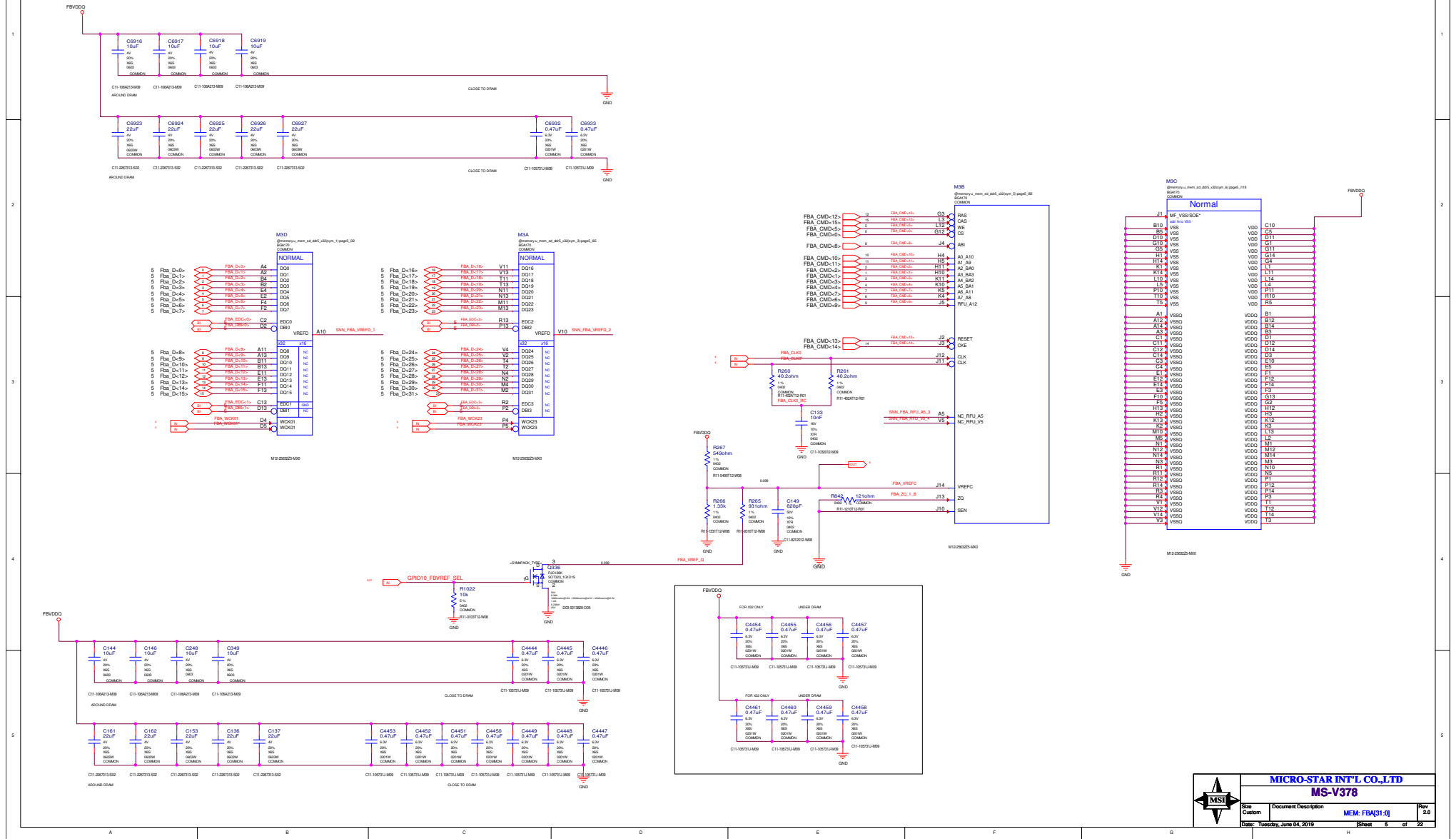
Page Description

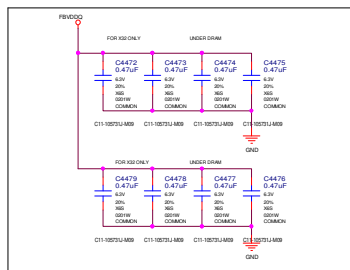
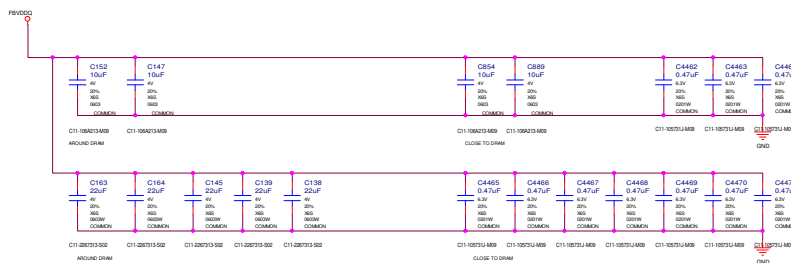
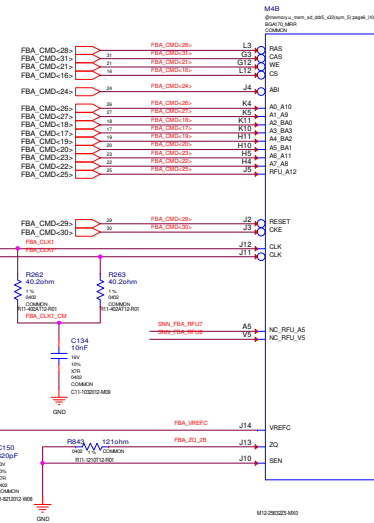
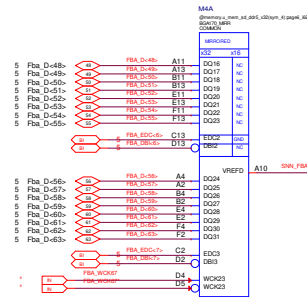
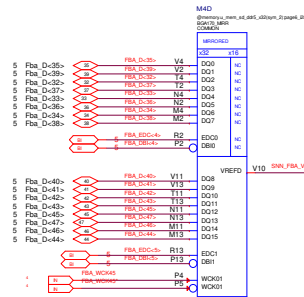
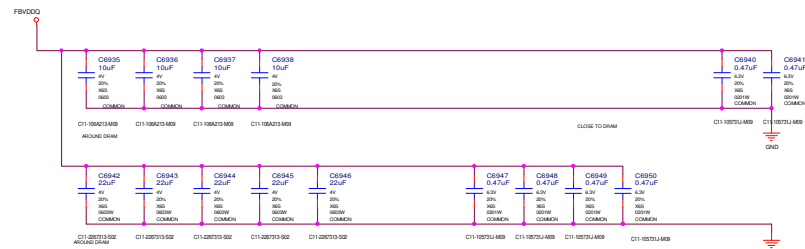
|    |                        |
|----|------------------------|
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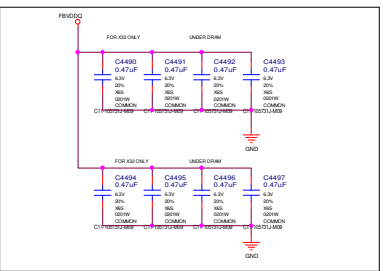
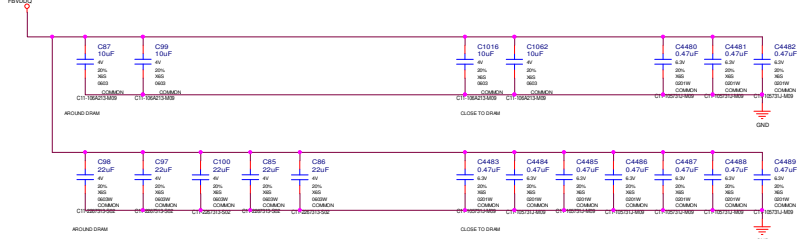
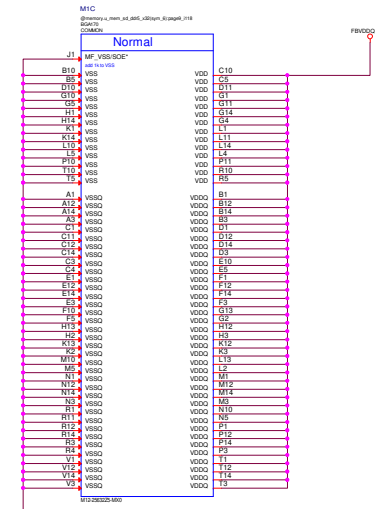
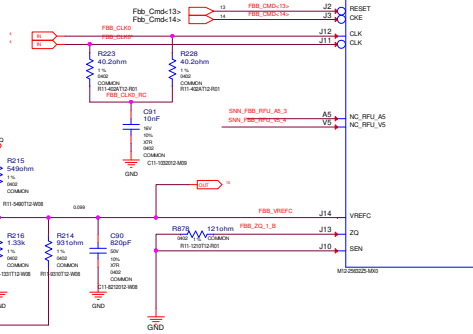
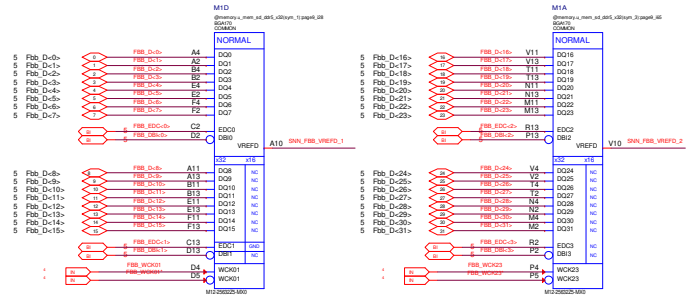
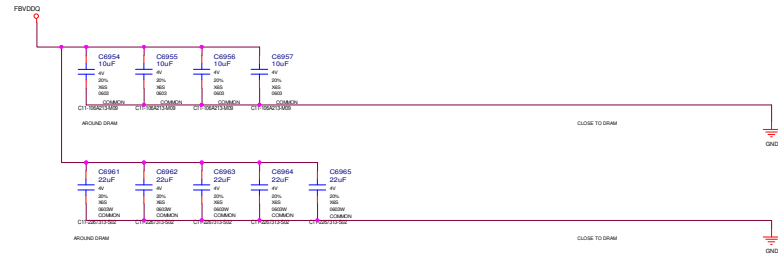


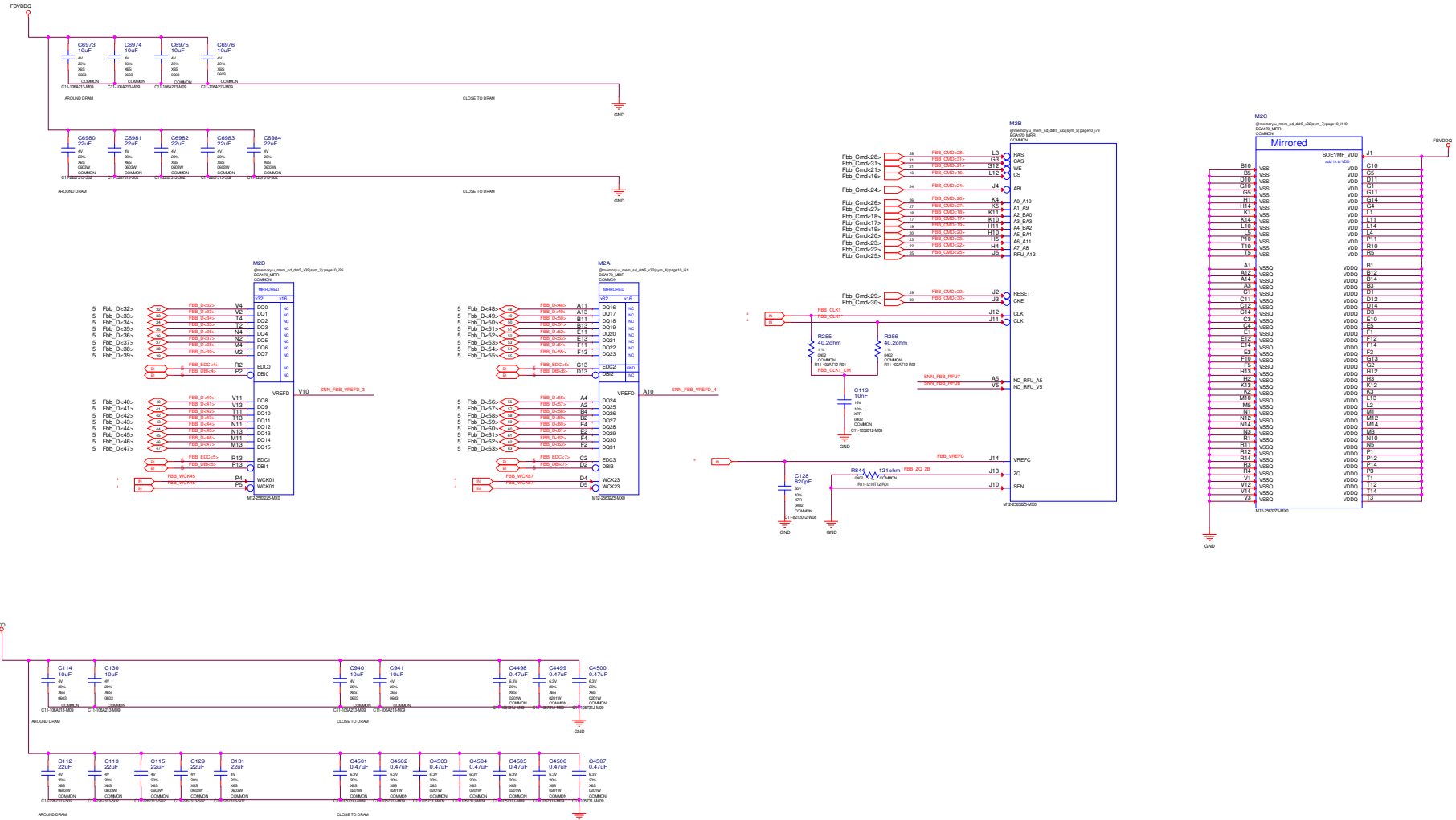










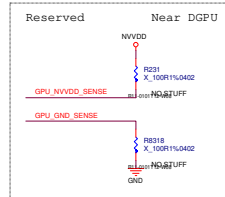
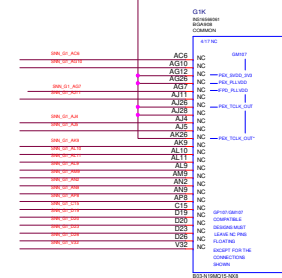
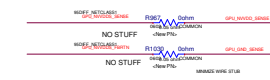
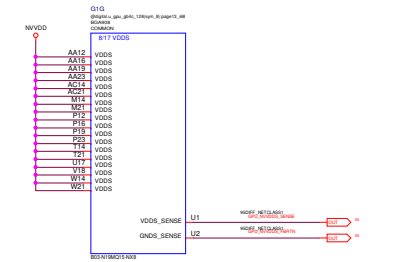


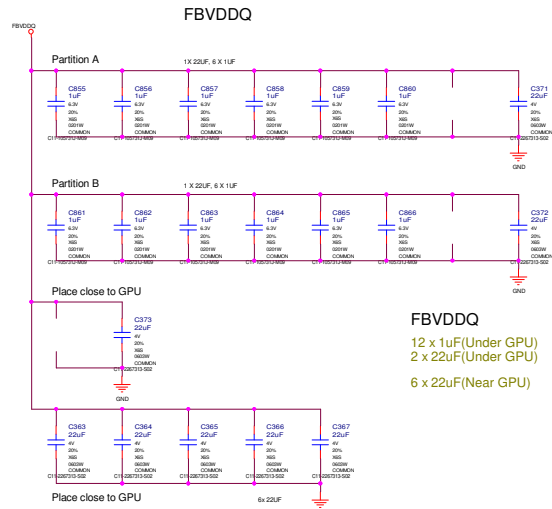
## NVVDD+NVDDS

13 x 1uF(Under GPU)  
2 x 47uF(Under GPU)  
3 x 22uF(Near GPU)

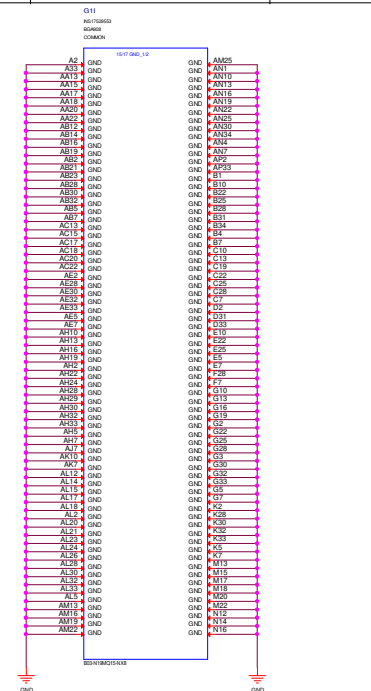
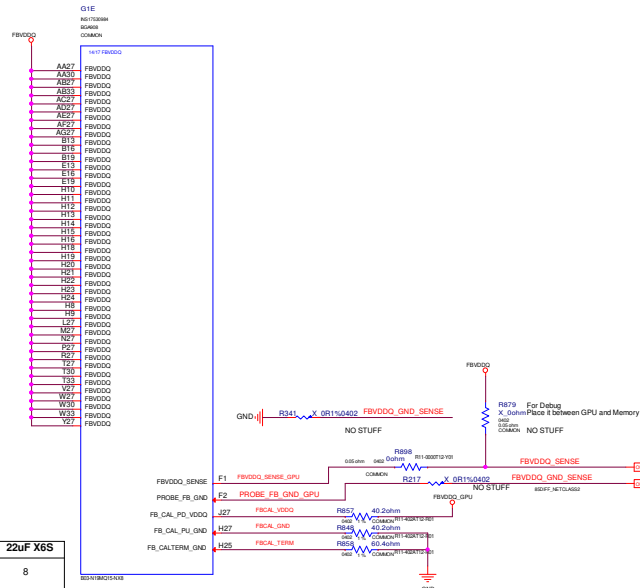
2 x 47uF(Near GPU)  
10 x 22uF(Near GPU)

| NVVD    | 1uF X7R | 47uF X6S | 10uF X6S | 22uF X6S |
|---------|---------|----------|----------|----------|
| N19M-Q3 | 13      | 4        | 0        | 13       |

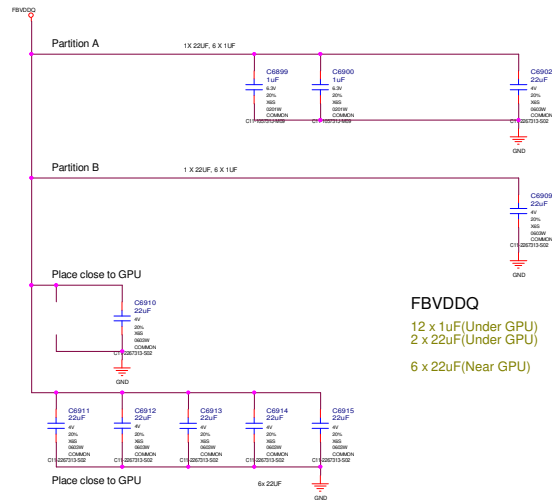




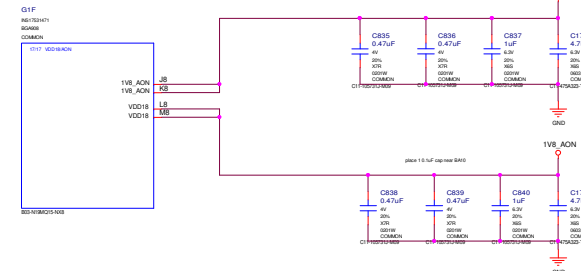
| FBVDDQ  | 1uF X7R | 10uF X6S | 22uF X6S |
|---------|---------|----------|----------|
| N19M-Q3 | 12      | 0        | 8        |

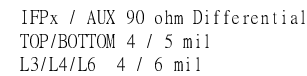


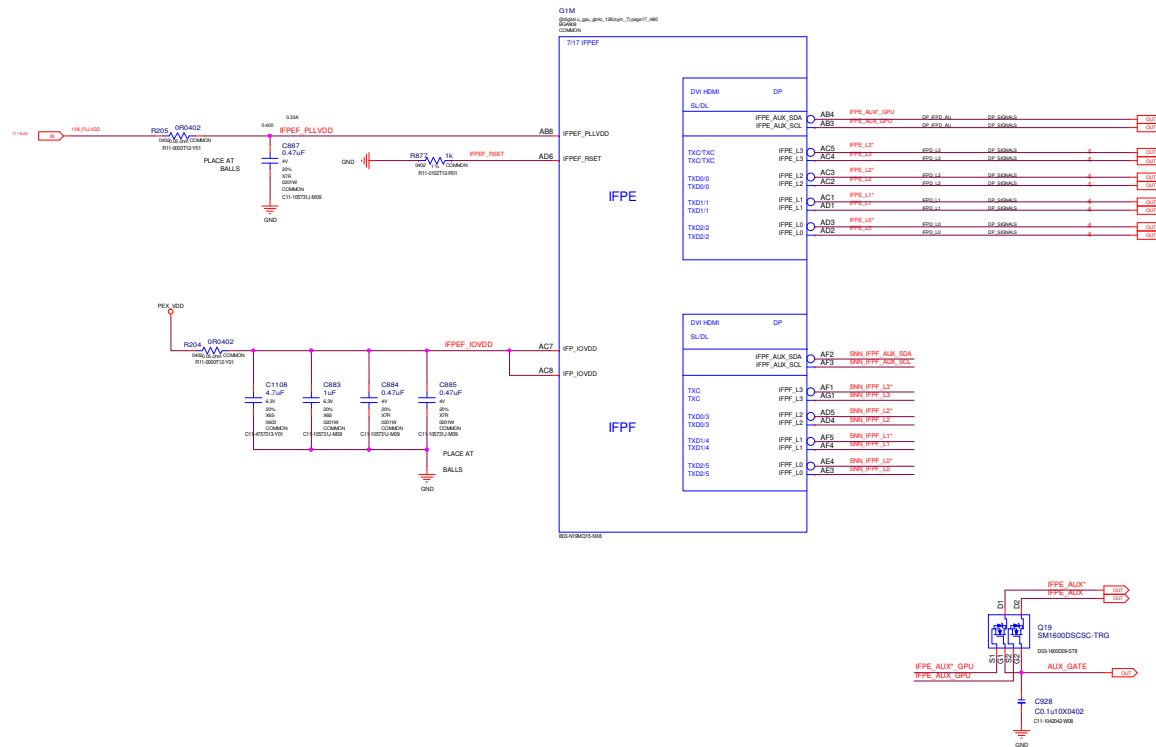
|         |           |         |           |
|---------|-----------|---------|-----------|
| 1V8_AON | 0.1uF X7R | 1uF X6S | 4.7uF X6S |
| N19M-Q3 | 2         | 1       | 1         |



| 1V8_AON | 0.1uF X7R | 1uF X6S | 4.7uF X6S |
|---------|-----------|---------|-----------|
| N19M-Q3 | 2         | 1       | 1         |

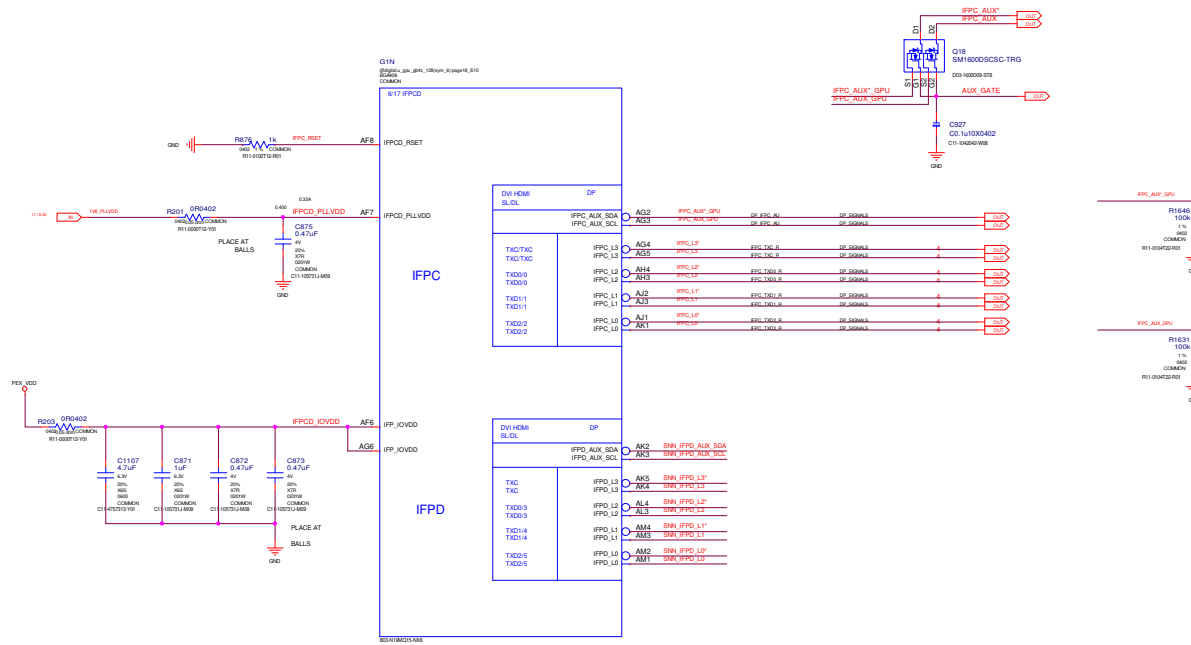




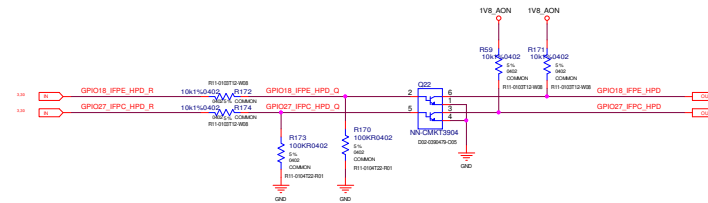


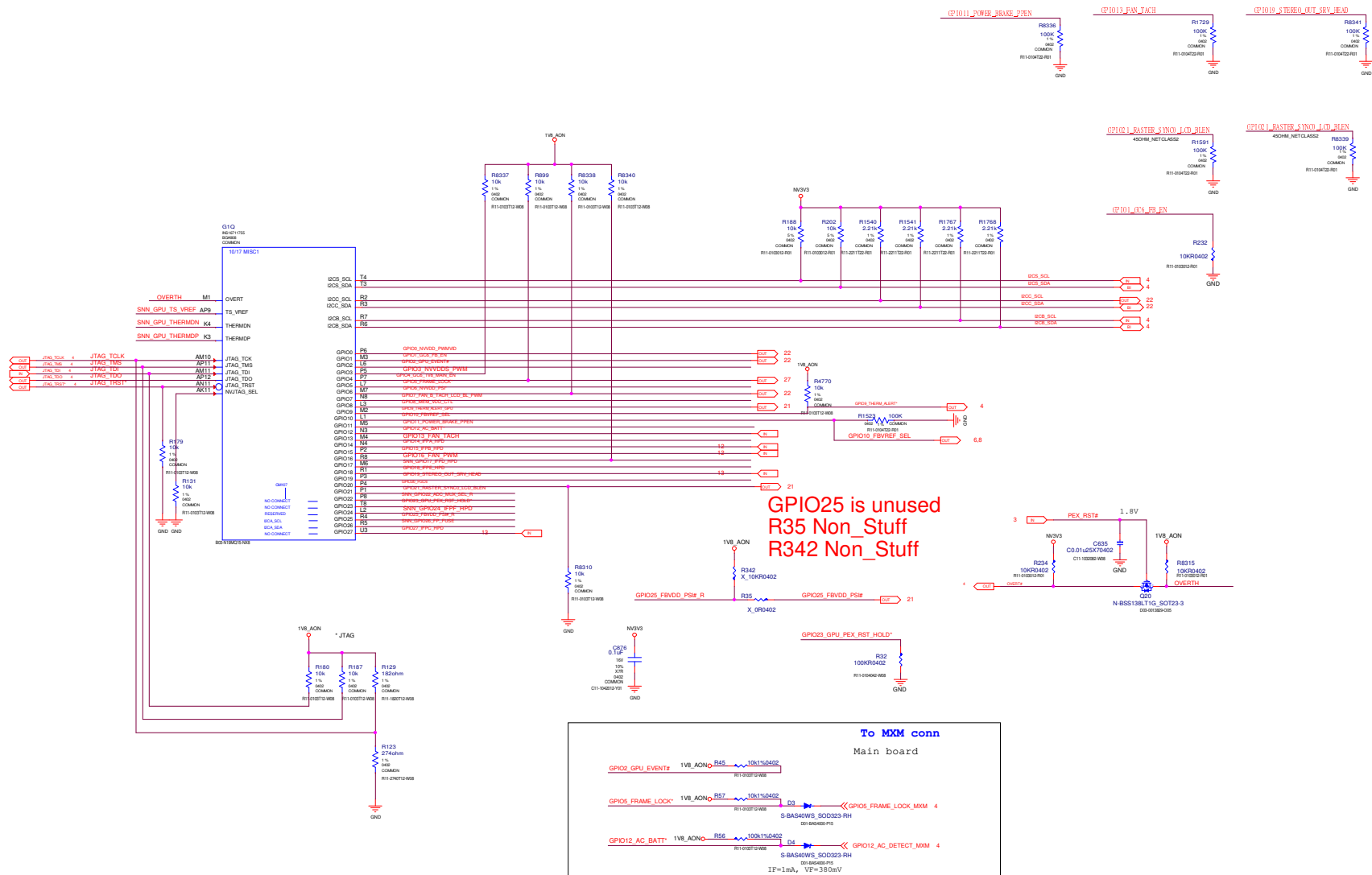
IFP<sub>x</sub> / AUX 90 ohm Differential  
TOP/BOTTOM 4 / 5 mil  
L3/L4/L6 4 / 6 mil





IFPx / AUX 90 ohm Differential  
TOP/BOTTOM 4 / 5 mil  
L3/L4/L6 4 / 6 mil





# Page15: Straps,ROM, XTAL

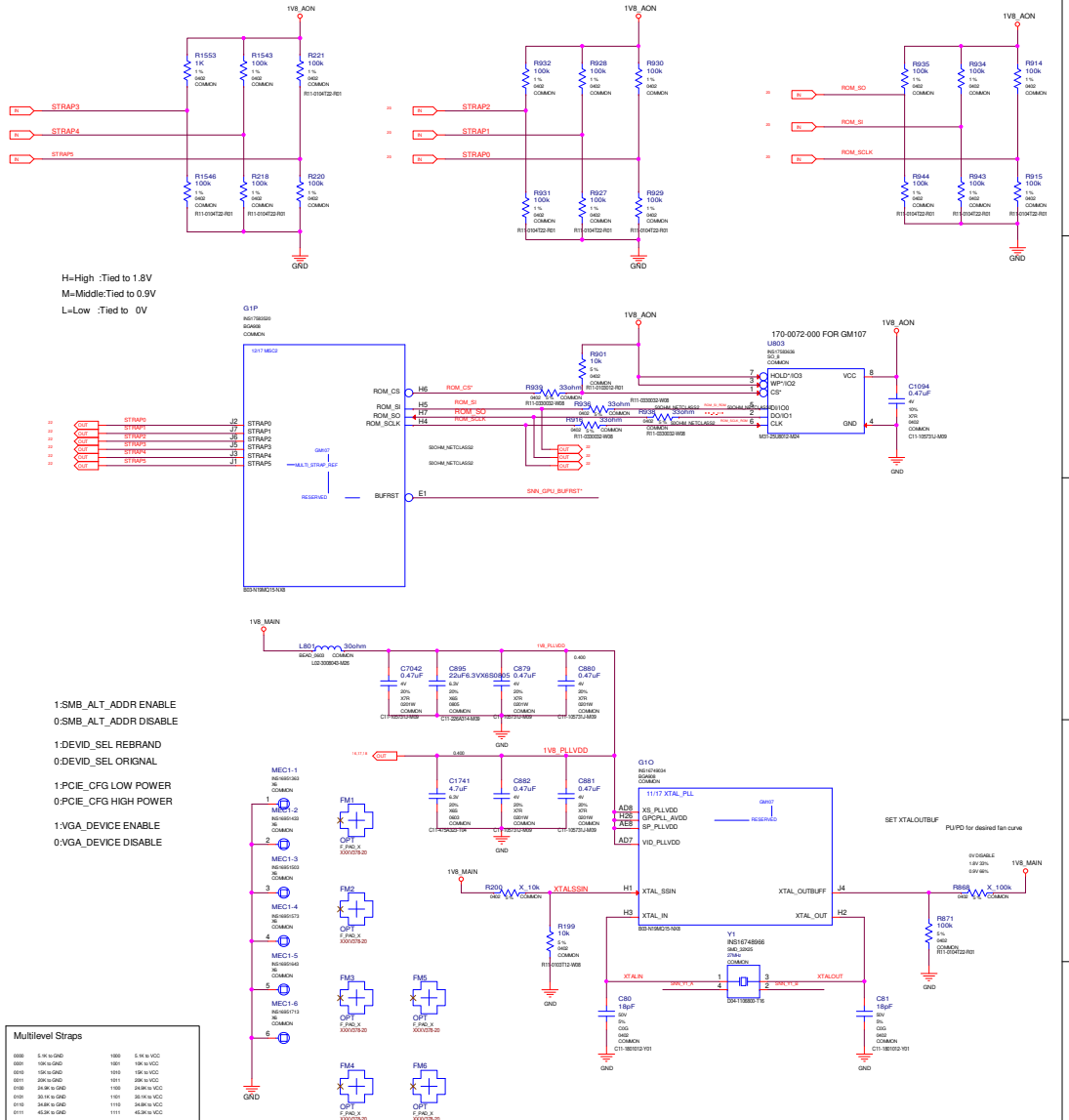
| STRAP2 | STRAP1 | STRAP0   | RAMCFQ[4:0]      |                      |
|--------|--------|----------|------------------|----------------------|
| L      | L      | L        | 0000             | SAMSUNG 256x32       |
| L      | L      | H        | 0001             | MICRON-F 256x32 8G   |
| L      | H      | L        | 0010             | HYNIX-M 256x32 8G    |
| L      | H      | H        | 0011             |                      |
| H      | H      | L        | 0110             | HYNIX-A 128Mx32 4G   |
| H      | H      | H        | 0111             | SAMSUNG-E 128Mx32 4G |
| L      | L      | M        | 1000             | HYNIX-B 128x32 4G    |
| ROM_SO | ROM_SI | ROM_SCLK | SOR_EXPOSED[3:0] | 1:ENABLE 0:DISABLE   |
| L      | L      | L        | 1111 DEFAULT     | SOR01/2/3 ENABLE     |
| L      | L      | H        | 1110             |                      |
| L      | H      | L        | 1101             |                      |
| L      | H      | H        | 1100             |                      |
| H      | L      | L        | 1011             |                      |
| H      | L      | H        | 1010             |                      |
| H      | H      | L        | 1001             |                      |
| H      | H      | H        | 1000             |                      |
| L      | L      | M        | 0111             |                      |
| L      | M      | L        | 0110             |                      |
| L      | M      | H        | 0101             |                      |
| L      | H      | M        | 0100             |                      |
| H      | L      | M        | 0011             |                      |
| H      | M      | L        | 0010             |                      |
| H      | M      | H        | 0001             |                      |
| H      | H      | M        | 0000             |                      |

| STRAP5 | STRAP4 | STRAP3 | SMB_ALT_ADDR | DEVID_SEL | PCIE_CFG | VGA_DEVICE |
|--------|--------|--------|--------------|-----------|----------|------------|
| M      | H      | H      | 1            | 1         | 1        | 1          |
| M      | H      | L      | 1            | 1         | 1        | 0          |
| M      | L      | H      | 1            | 1         | 0        | 1          |
| M      | L      | L      | 1            | 1         | 0        | 0          |
| L      | H      | M      | 1            | 0         | 1        | 1          |
| L      | M      | H      | 1            | 0         | 1        | 0          |
| L      | L      | M      | 1            | 0         | 0        | 0          |
| L      | L      | L      | 1            | 0         | 0        | 1          |
| H      | H      | H      | 0            | 1         | 1        | 1          |
| H      | H      | L      | 0            | 1         | 1        | 0          |
| H      | L      | H      | 0            | 1         | 0        | 1          |
| H      | L      | L      | 0            | 1         | 0        | 0          |
| L      | H      | H      | 0            | 0         | 1        | 1          |
| L      | H      | L      | 0            | 0         | 1        | 0          |
| L      | L      | H      | 0            | 0         | 0        | 1          |
| L      | L      | L      | 0            | 0         | 0        | 0          |

H=High :Tied to 1.8V  
M=Middle:Tied to 0.9V  
L=Low :Tied to 0V

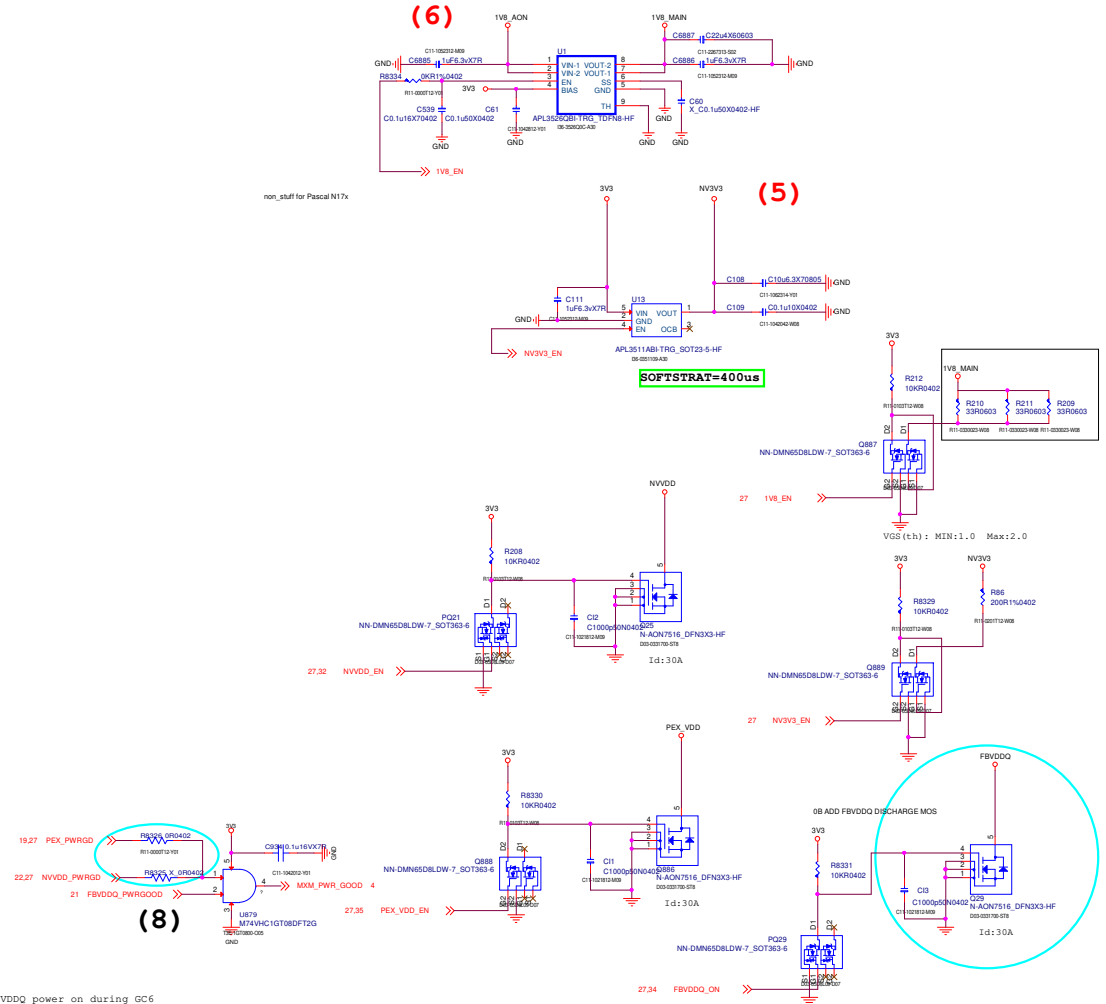
- 1:SMB\_ALT\_ADDR ENABLE
- 0:SMB\_ALT\_ADDR DISABLE
- 1:DEVID\_SEL REBRAND
- 0:DEVID\_SEL ORIGINAL
- 1:PCIE\_CFG LOW POWER
- 0:PCIE\_CFG HIGH POWER
- 1:VGA\_DEVICE ENABLE
- 0:VGA\_DEVICE DISABLE

| Multilevel Straps |              |      |              |
|-------------------|--------------|------|--------------|
| 0000              | 5.1K to GND  | 1000 | 5.1K to VCC  |
| 0001              | 10K to GND   | 1001 | 10K to VCC   |
| 0010              | 15K to GND   | 1010 | 15K to VCC   |
| 0011              | 20K to GND   | 1011 | 20K to VCC   |
| 0100              | 24.9K to GND | 1100 | 24.9K to VCC |
| 0101              | 30.1K to GND | 1101 | 30.1K to VCC |
| 0110              | 34.8K to GND | 1110 | 34.8K to VCC |
| 0111              | 45.3K to GND | 1111 | 45.3K to VCC |



**N17x POWER ON= 1V8\_AON->1V8\_MAIN->NVVDD->PEX\_VDD->FBVDDQ->DGPU\_PWRGD**

**N17x POWER OFF= PEX\_VDD->FBVDDQ/NVVDD->1V8\_MAIN->1V8\_AON**



GPIO1\_GC6FBEN: it is high for keeping FBVDDQ power on during GC6

|          |                  |                                                              |
|----------|------------------|--------------------------------------------------------------|
| OR GATE  | M74VHC1GT32DFT2G | VCC=3V (V <sub>IH</sub> Min=1.4 V <sub>I</sub> LH Max=0.53V) |
| AND GATE | M74VHC1GT08DFT2G | VCC=3V (V <sub>IH</sub> Min=1.4 V <sub>I</sub> LH Max=0.53V) |

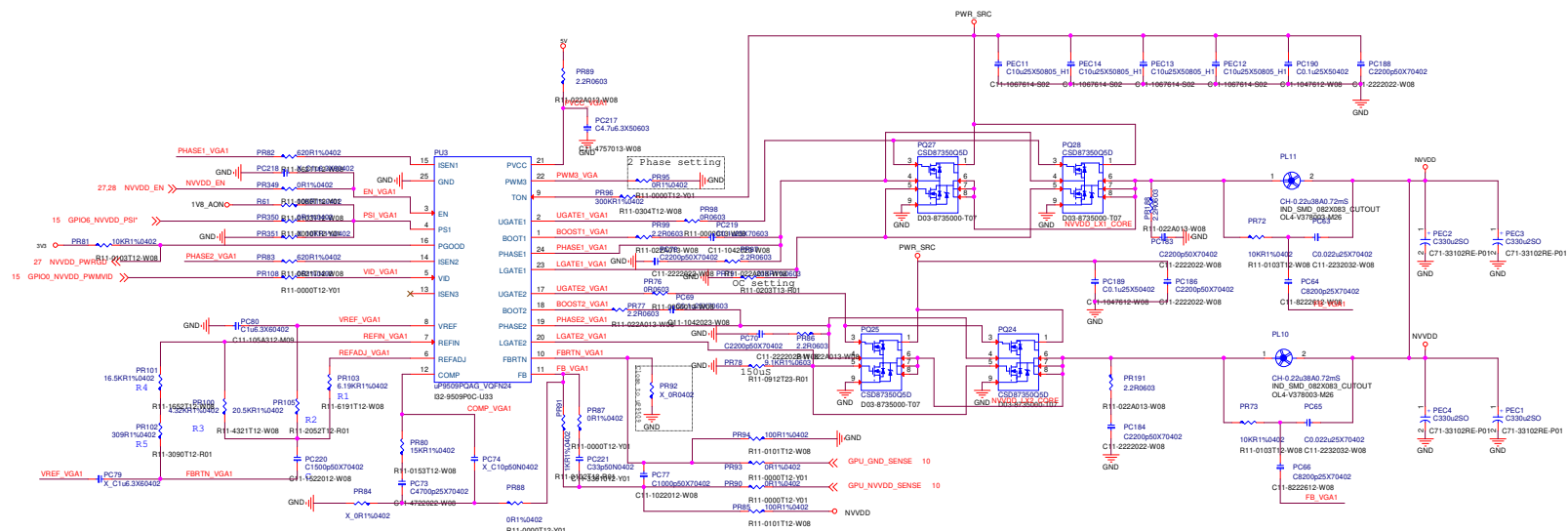






EDP-Peak 90A  
EDP-Con 47A

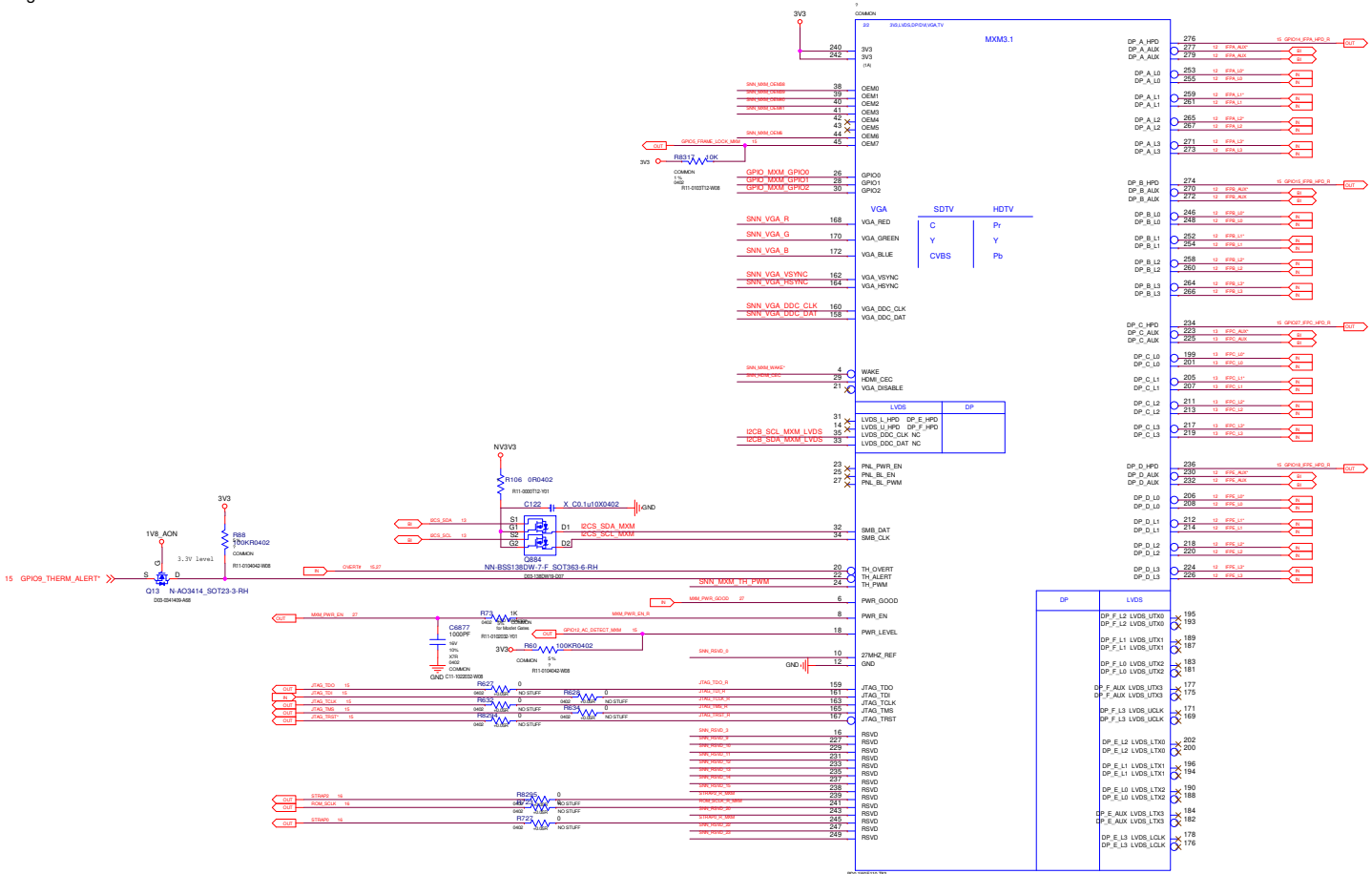
VBoot:0.8V  
Vmin:0.5V / Vmax:1.25V



**MICRO-STAR INT'L CO.,LTD**  
**MS-V378**

|                              |                                                |     |
|------------------------------|------------------------------------------------|-----|
| Size Custom                  | Document Description<br><b>NVDD CONTROLLER</b> | Re: |
| Date: Tuesday, June 04, 2019 | Sheet 26 of 22                                 |     |

MXM connector  
Copy from  
V265-1.0



# Page23: GPIO Pin Define

| Pin Name | N17P              | N18P          | N17P Functional Description                    | N17P Recommended Default Pull-up or Pull-down         | N18P Recommended Default Pull-up or Pull-down         |
|----------|-------------------|---------------|------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
| GPIO0    | NVVDD_PWM         | NVVDD_PWM_VID | PWM Output to control NVVDD                    | 0 to 1V8 PWM output                                   |                                                       |
| GPIO1    | GC6_FB_EN         | GC6_FB_EN     | FB Enable for GC6 2.1                          | 0Ω, 10K pull-down                                     | 0Ω, 10K pull-down                                     |
| GPIO2    | GPU_EVENT#        | GPU_EVENT#    | GPU wake signal for GC6 2.1                    | 10K pull-up to 1V8 _ACN                               | 10K pull-up to 1V8 _ACN                               |
| GPIO3    | NVVDDS_PWM        | UNUSED        | PWM output to control the NVVDDS power supply  | 0 to 1V8 output                                       |                                                       |
| GPIO4    | 1V8_MAIN_EN       | 1V8_MAIN_EN   | GPU POWER Sequencing for GC6 2.1               | 0Ω, 10K pull-up to 1V8 _ACN                           | 0Ω, 10K pull-up to 1V8 _ACN                           |
| GPIO5    | FRM_LCK#          | FRM_LCK#      | Active low Frame Lock                          | 0Ω, 10K pull-up to 1V8 _ACN                           | 0Ω, 10K pull-up to 1V8 _ACN                           |
| GPIO6    | NVVDD_PSI         | NVVDD_PSI     | Phase shedding                                 | 10K pull-up to 1V8 _ACN                               | 10K pull-up to 1V8 _ACN                               |
| GPIO7    | LCD_BL_PWM        | LCD_BL_PWM    | Panel Backlight PWM Brightness Control         | 100K pull-down                                        | 100K pull-down                                        |
| GPIO8    | MEM_VDD_CTL       | MEM_VDD_CTL   | Memory Voltage Control                         | pull-up/pull-down to set the PSVDD/G power-on voltage | pull-up/pull-down to set the PSVDD/G power-on voltage |
| GPIO9    | THERM_ALERT       | THERM_ALERT   | Active Low Thermal Alert                       | 0Ω, 10K pull-up to 1V8_AON                            | 0Ω, 10K pull-up to 1V8_AON                            |
| GPIO10   | MEM_VREF_CTL      | MEM_VREF_CTL  | Memory VREF Control                            | 100K pull-down                                        | 100K pull-down                                        |
| GPIO11   | LCD_VCC           | LCD_VCC       | Panel Power Enable                             | 100K pull-down                                        | 100K pull-down                                        |
| GPIO12   | PWR_LEVEL         | PWR_LEVEL     | AC power detect or power supply overdraw input | 100K pull-up to 1V8_AON                               | 10K pull-up to 1V8_AON                                |
| GPIO13   | LCD_BLEN          | UNUSED        | Panel Backlight Enable                         | 100K pull-down                                        |                                                       |
| GPIO14   | HPD_A             | HPD_A         | Hot Plug Detect for IFPA                       |                                                       | 10K pull-up to 1V8_AON                                |
| GPIO15   | HPD_B             | HPD_B         | Hot Plug Detect for IFPB                       |                                                       | 10K pull-up to 1V8_AON                                |
| GPIO16   | SYS_FEX_RST_MON#  | UNUSED        | System side PCIe reset monitor                 | 10K pull-up to 1V8 _ACN                               |                                                       |
| GPIO17   | HPD_D             | HPD_D         | Hot Plug Detect for IFPD                       |                                                       | 10K pull-up to 1V8_AON                                |
| GPIO18   | HPD_E             | HPD_E         | Hot Plug Detect for IFPE                       |                                                       | 10K pull-up to 1V8_AON                                |
| GPIO19   | 3Dvision          | UNUSED        | 3D Vision L/R signal                           | 100K pull-down                                        | 1V8_AON                                               |
| GPIO20   | GC5_MODE          | NB_GC6        |                                                |                                                       | 10K pull-down                                         |
| GPIO21   | UNUSED            | LCD_BLEN      |                                                |                                                       | 100K pull-down                                        |
| GPIO22   | UNUSED            | ADC_MUX_SEL   |                                                |                                                       | 2.2K pull-up See Circuit                              |
| GPIO23   | GPU_PEX_RST_HOLD# | RESERVED      | GPU PCIe self-reset control                    | 0Ω, 10K pull-up to a gated 3V3                        | 100K pull-down                                        |
| GPIO24   | HPD_F             | UNUSED        | Hot Plug Detect for IFPF                       |                                                       |                                                       |
| GPIO25   | UNUSED            | FBVDD_PSI#    |                                                |                                                       |                                                       |
| GPIO26   | UNUSED            | FP_FUSE       |                                                |                                                       | 10K pull-down                                         |
| GPIO27   | HPD_C             | HPD_C         | Hot Plug Detect for IFPC                       |                                                       | 10K pull-up to 1V8_AON                                |