

MS-V378-21

E2904

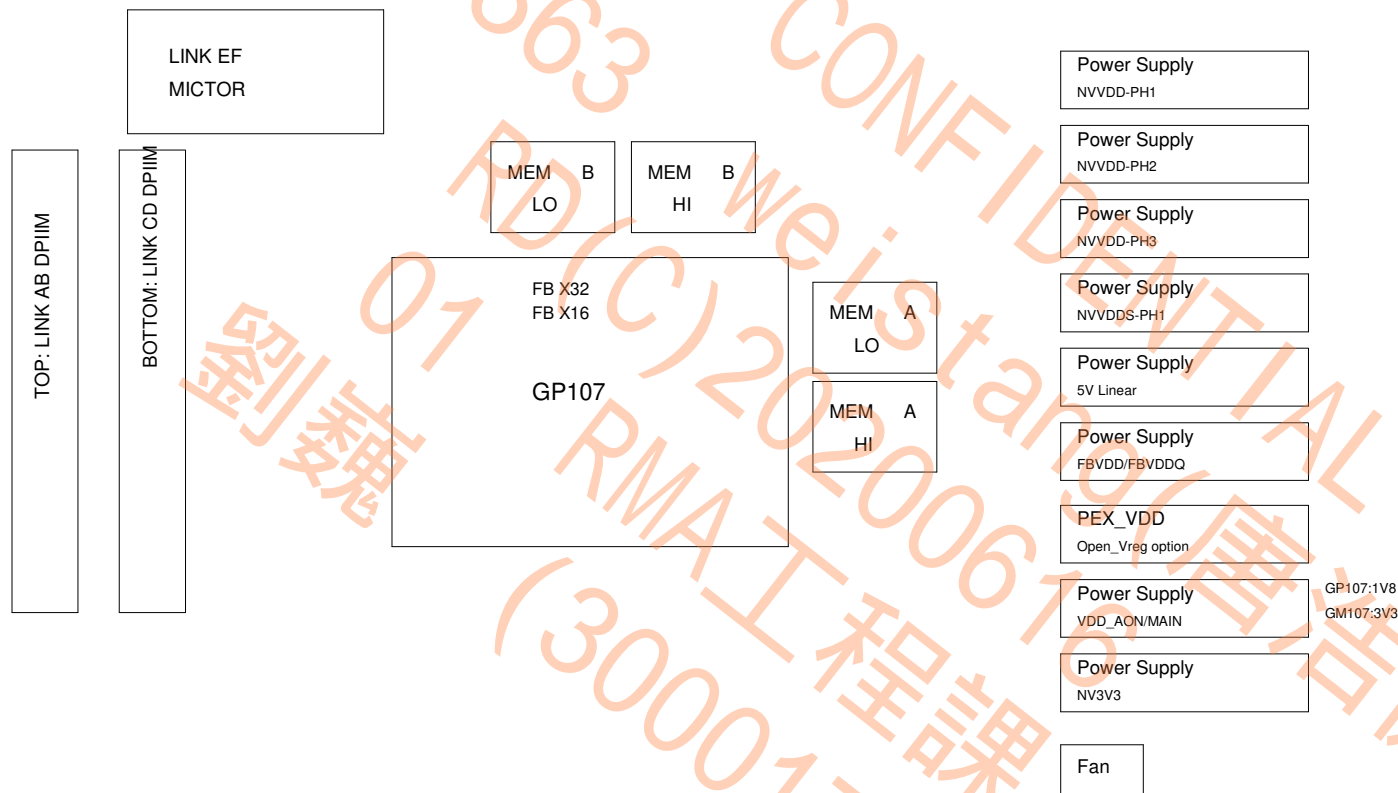
4GB GDDR5, 128b, 256Mx32

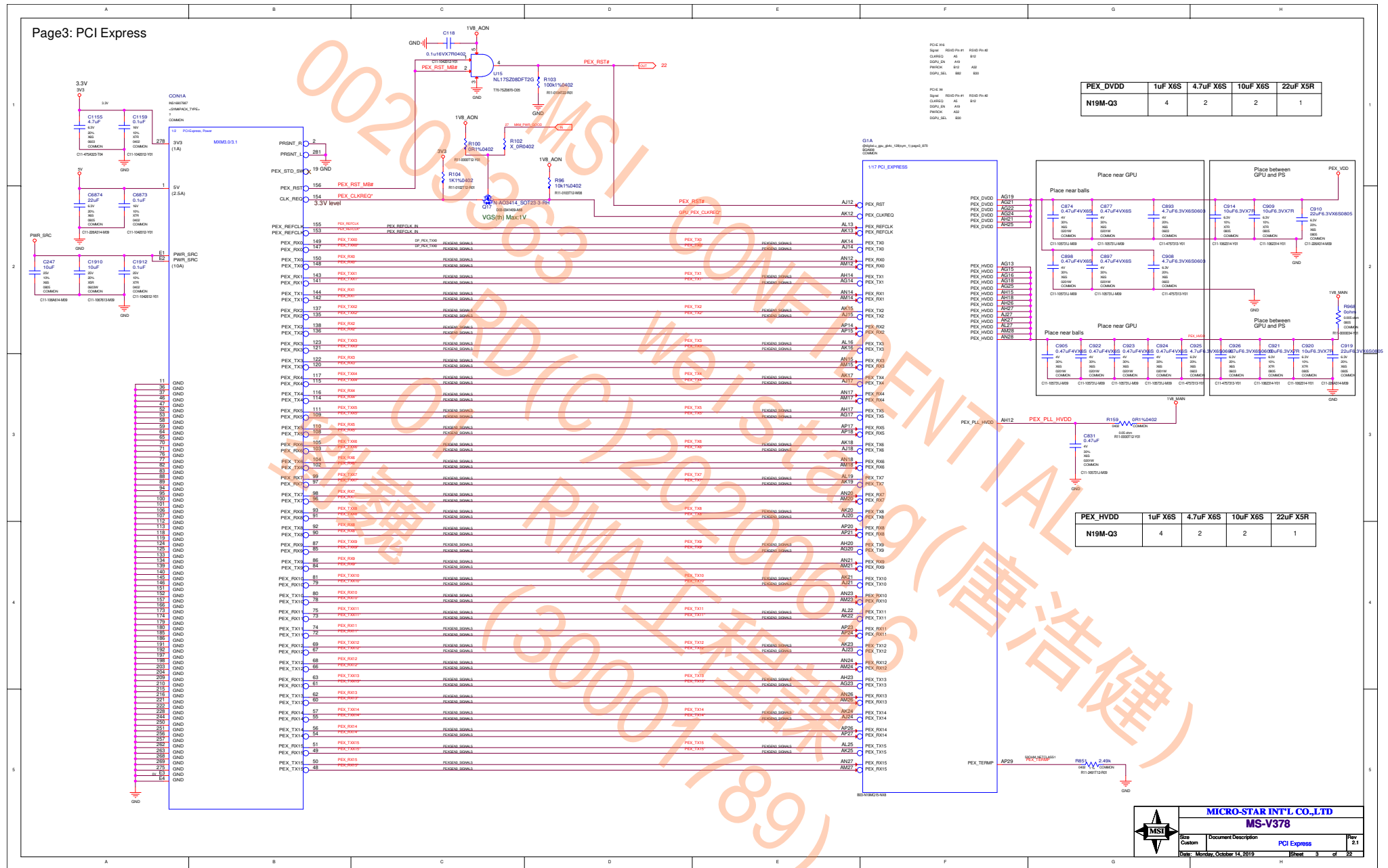
modular displays

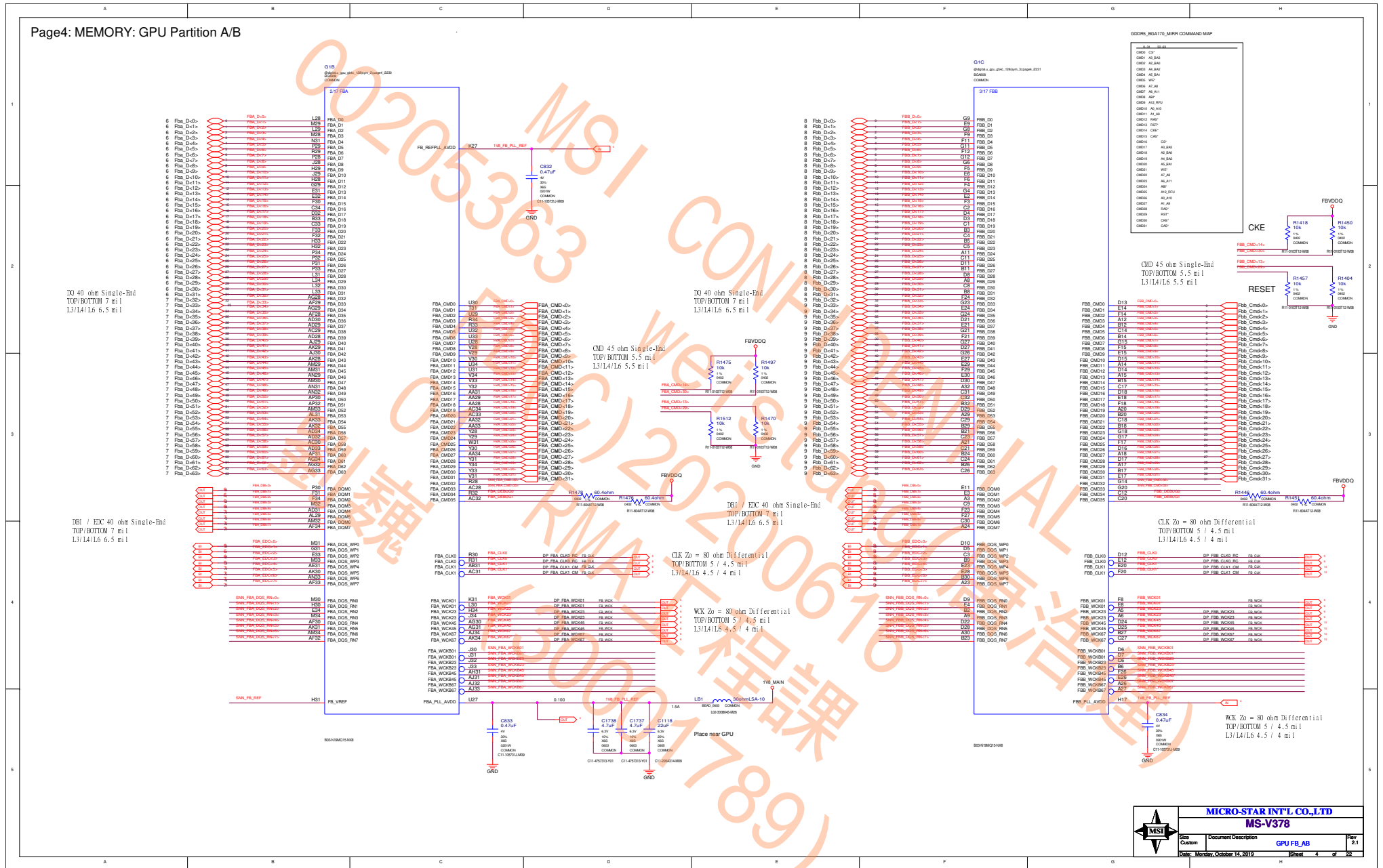
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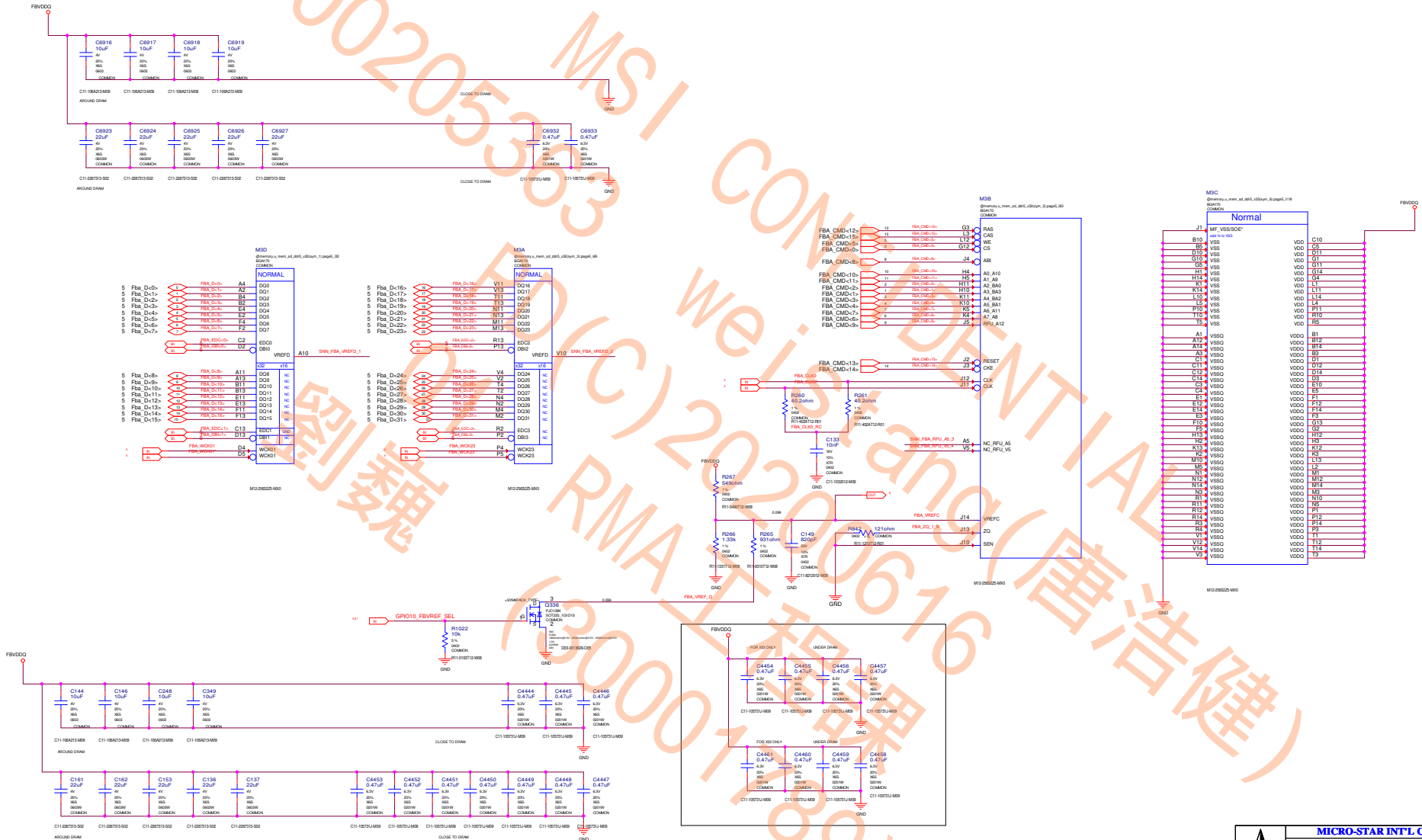
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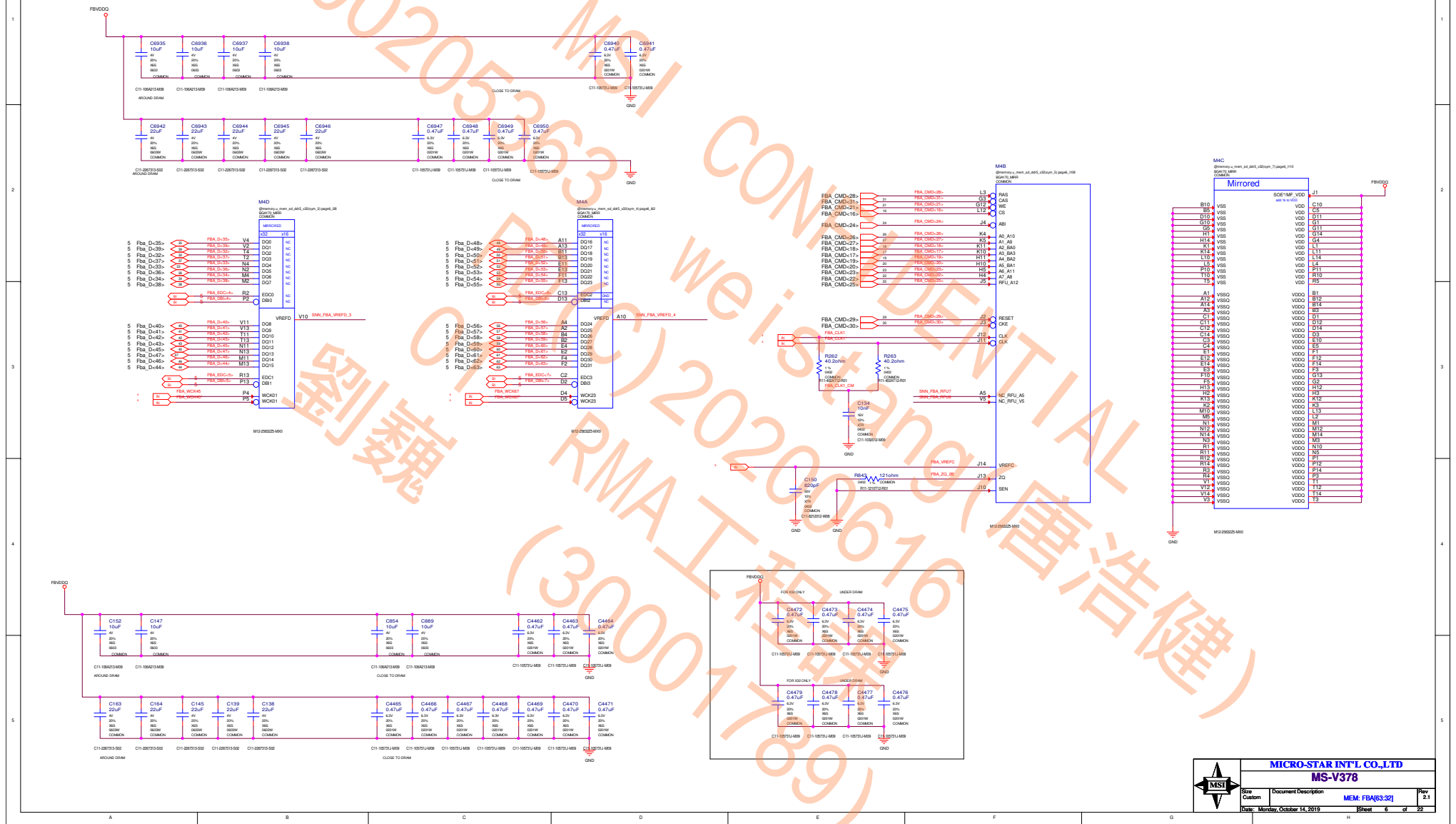
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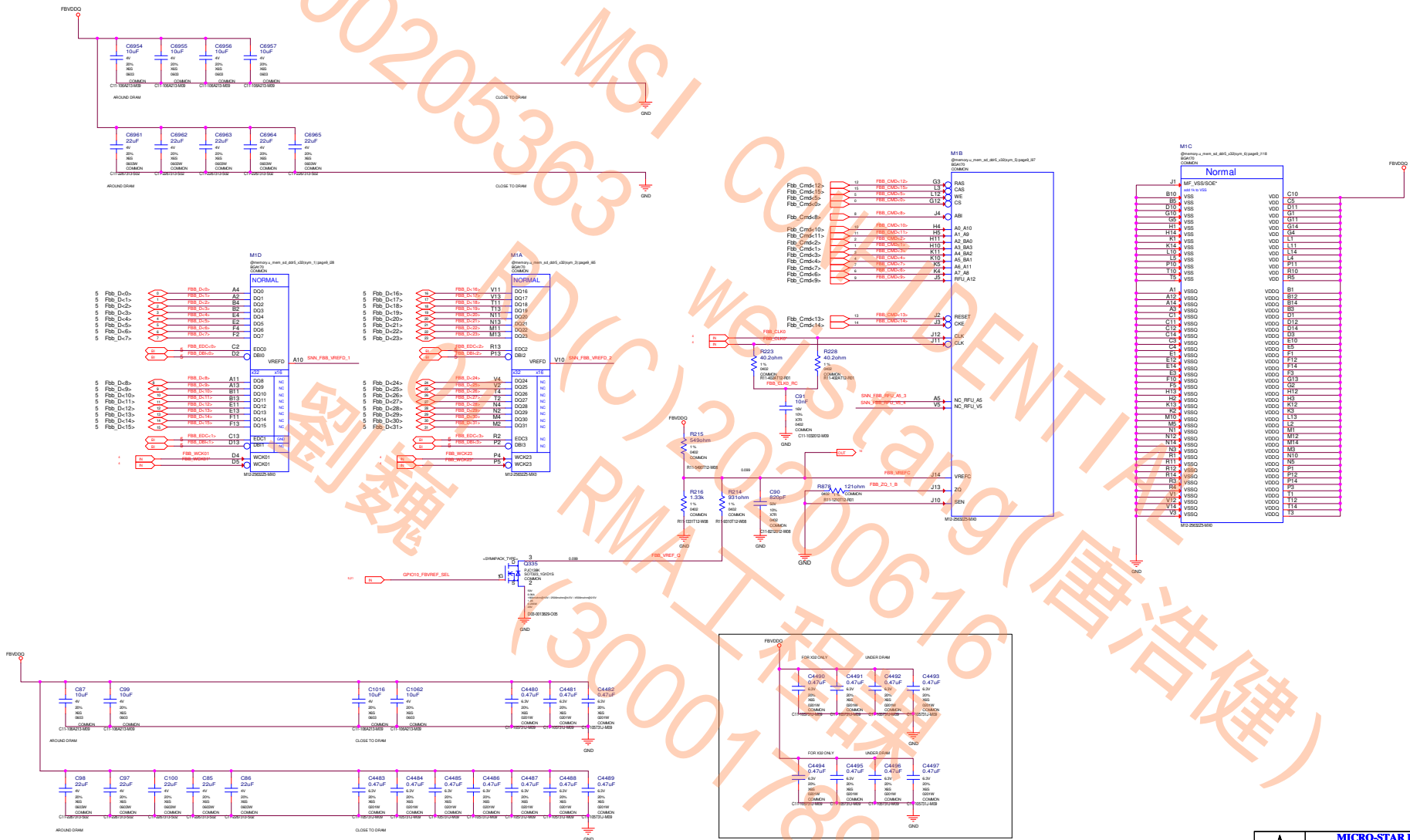


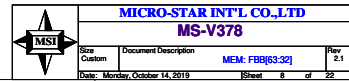


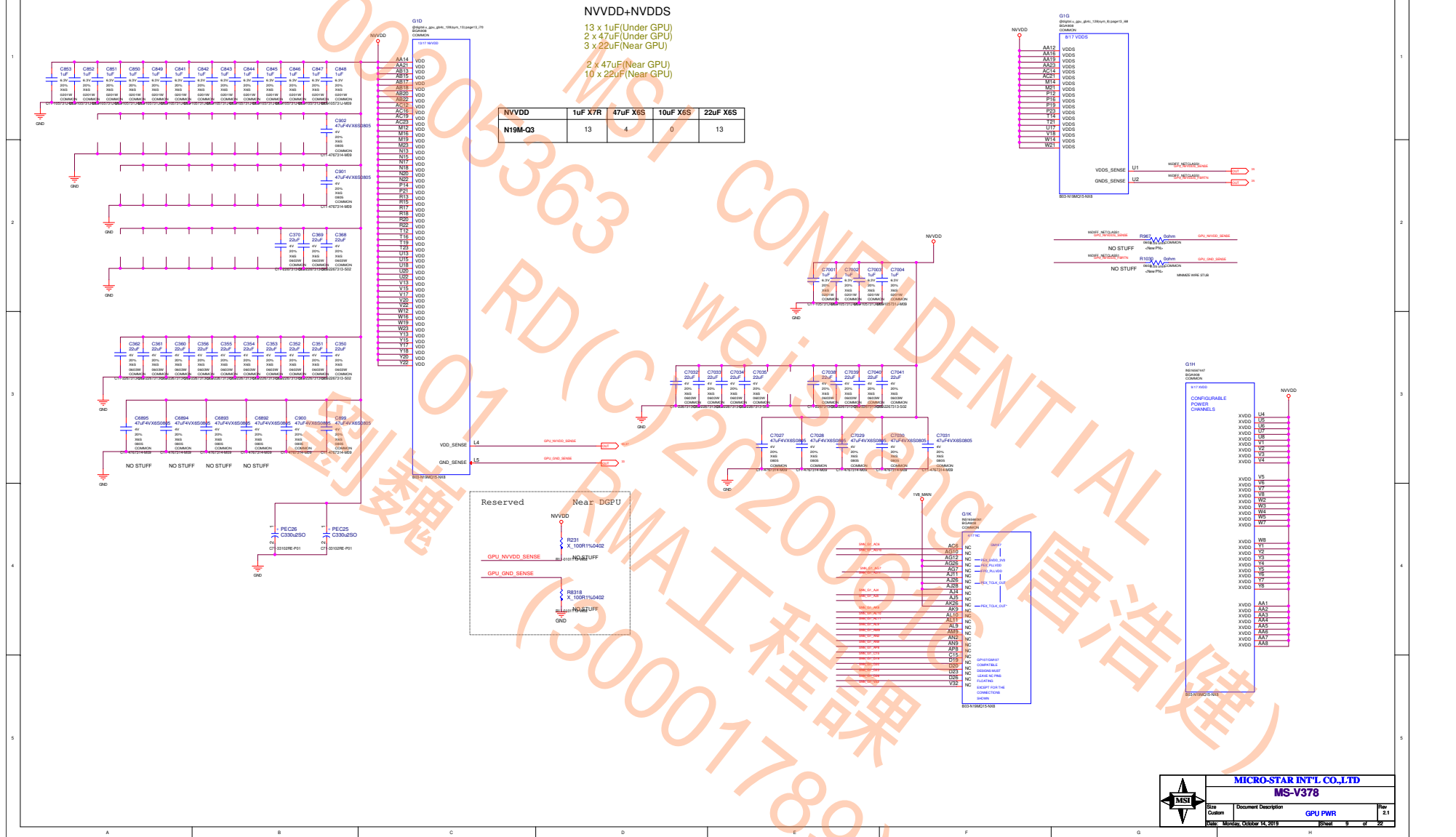


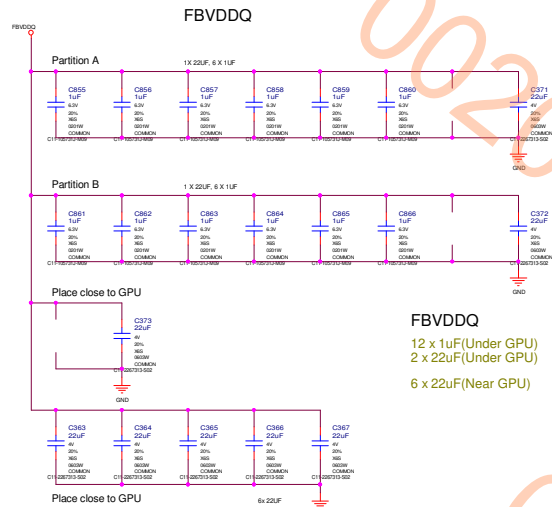




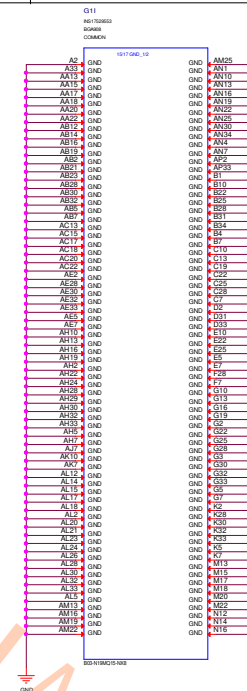
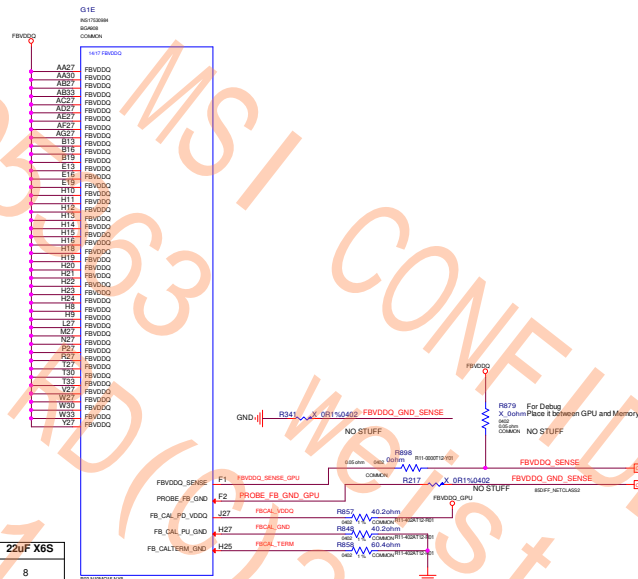




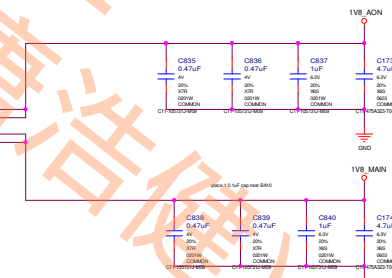
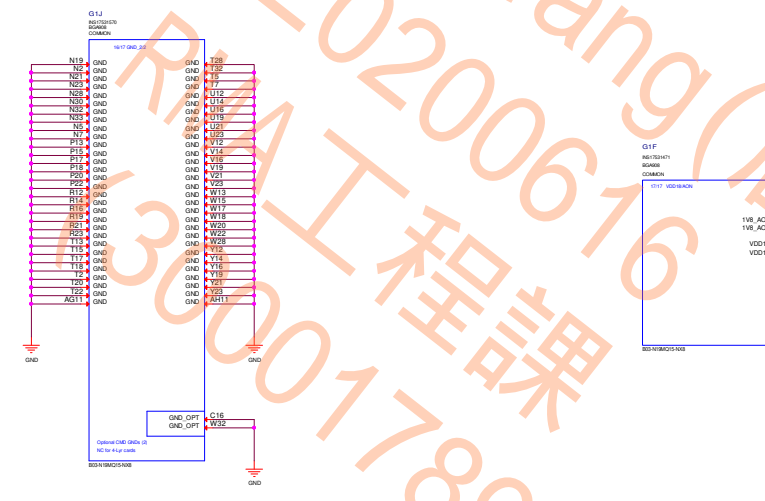
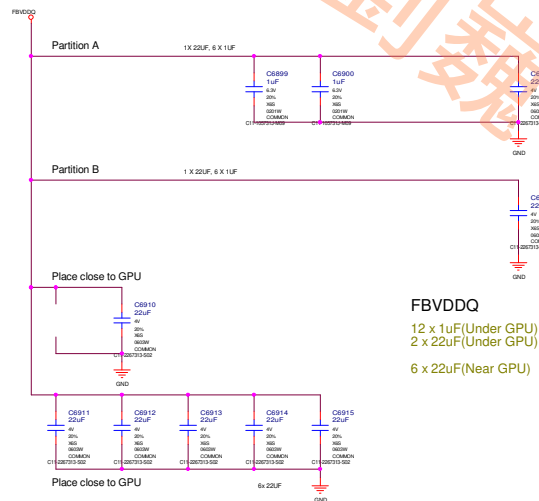




| FBVDDQ | 1uF X7R | 10uF X6S | 22uF X6S |
|---------|---------|----------|----------|
| N19M-Q3 | 12 | 0 | 8 |

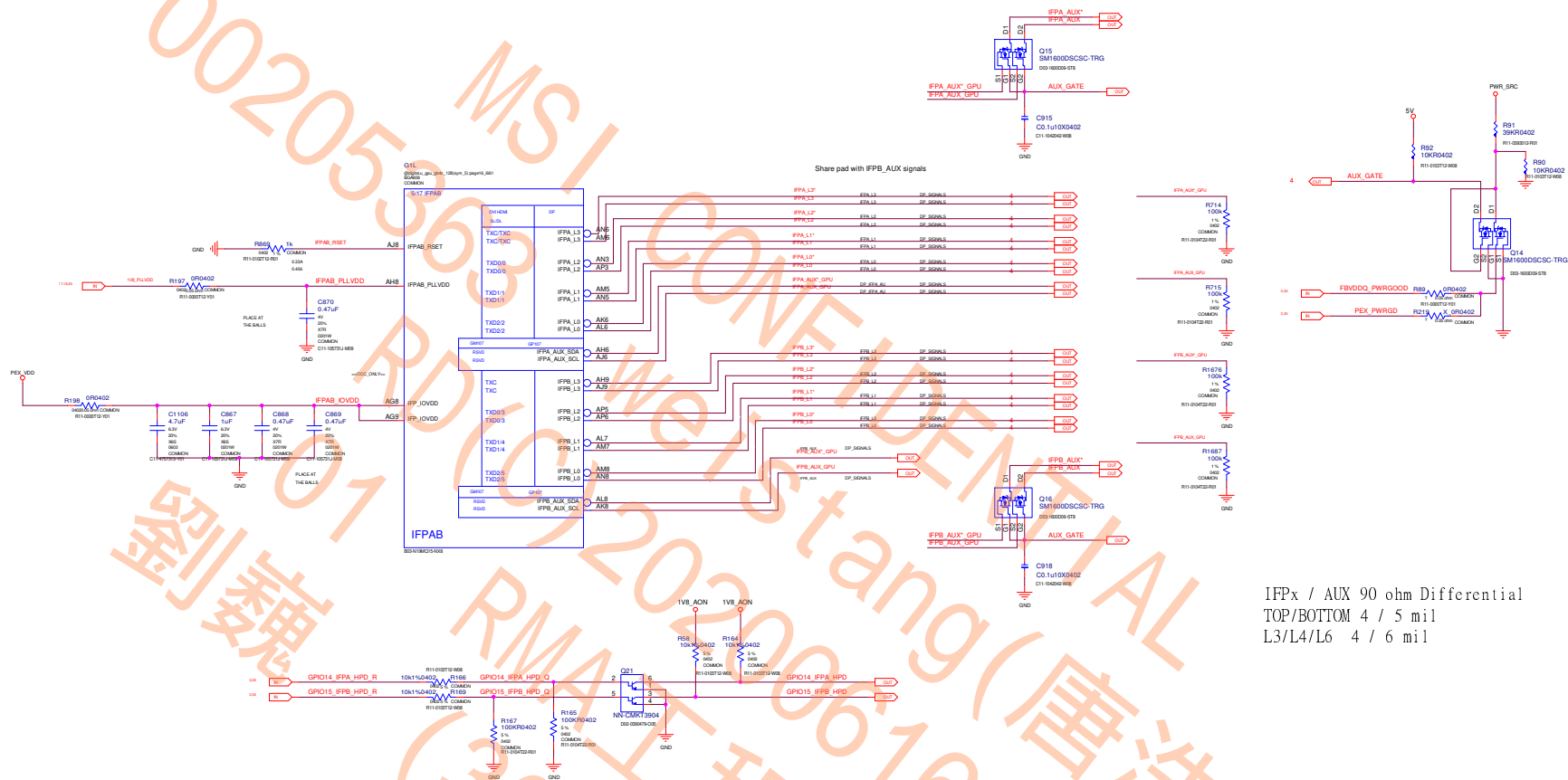


| | | | |
|---------|-----------|---------|----------|
| 1V8_AON | 0.1uF X7R | 1uF X6S | 4.7uF X6 |
| N19M-Q3 | 2 | 1 | 1 |

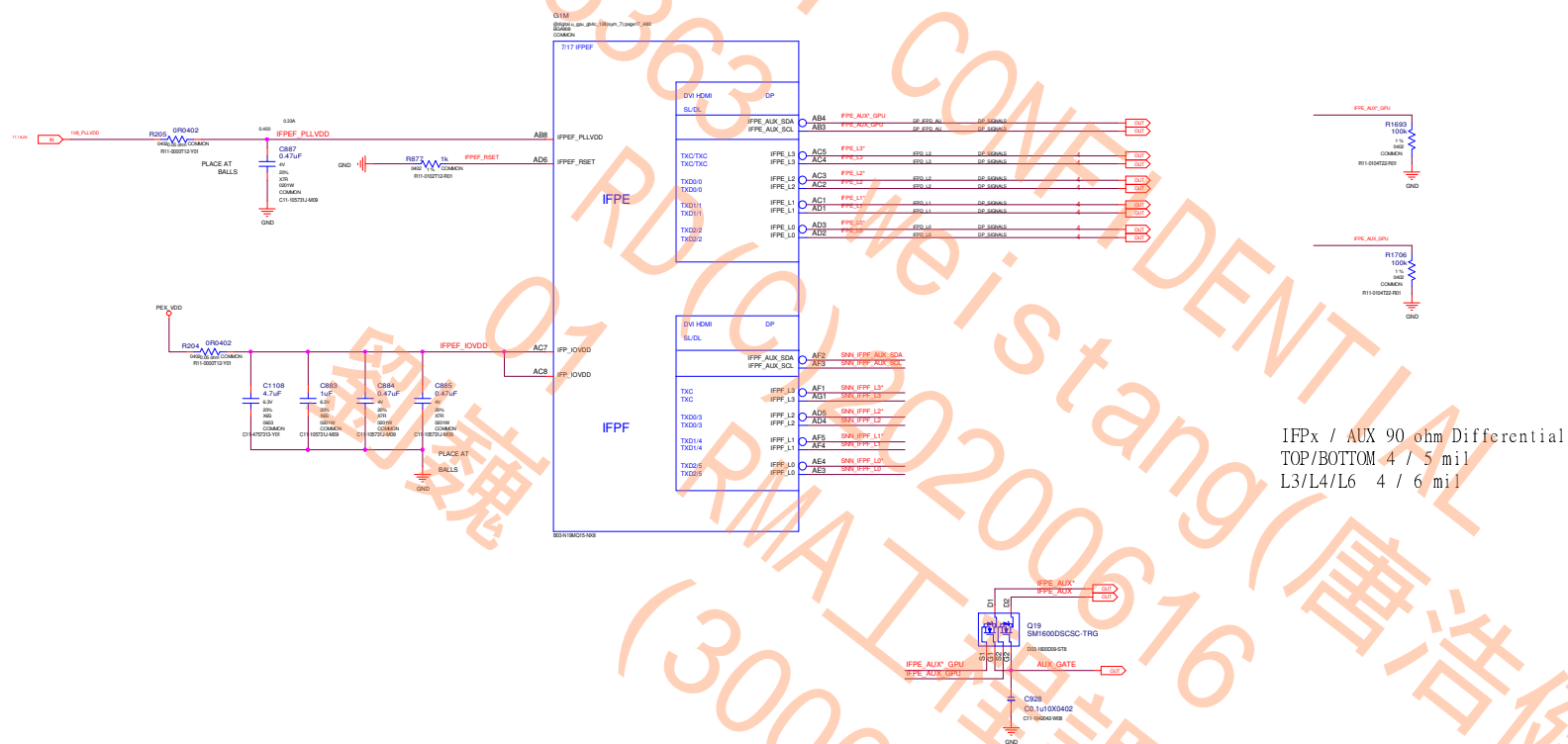


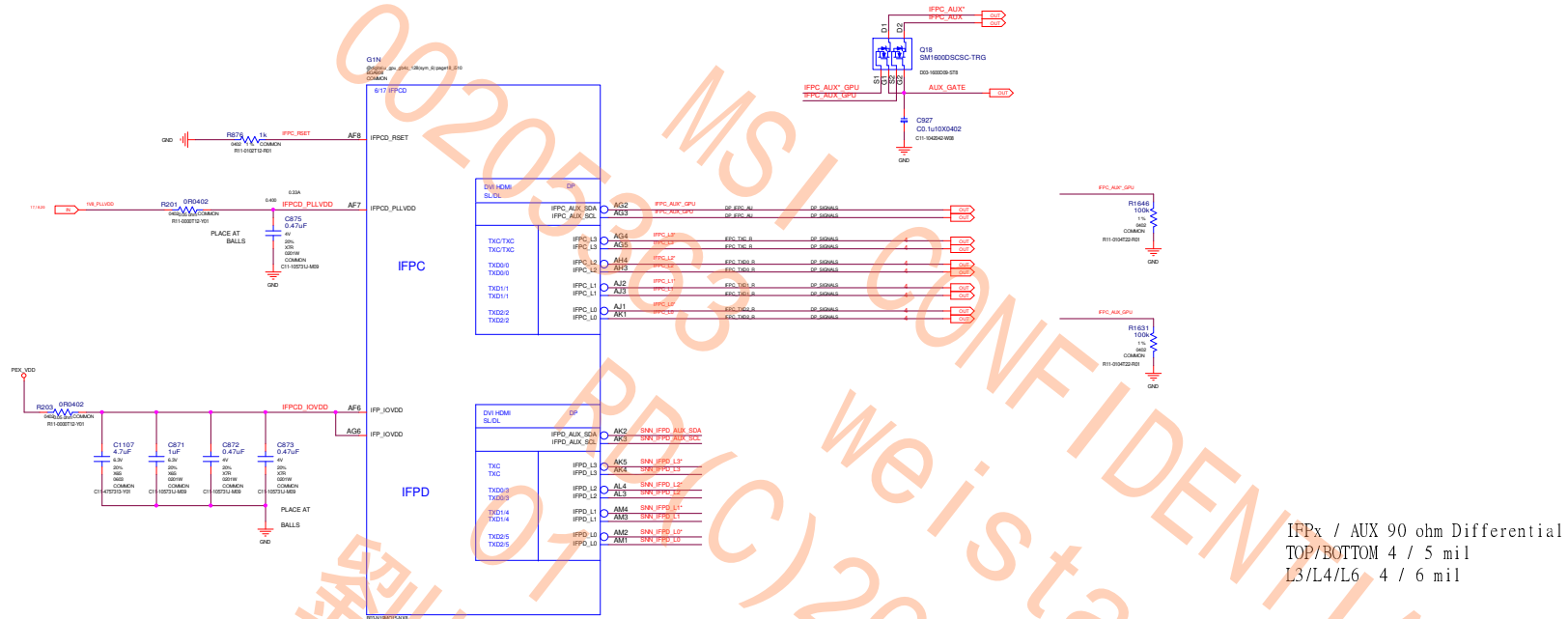
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|---------|-----------|---------|----------|
| 1V8_AON | 0.1uF X7R | 1uF X6S | 4.7uF X6 |
| N19M-Q3 | 2 | 1 | 1 |



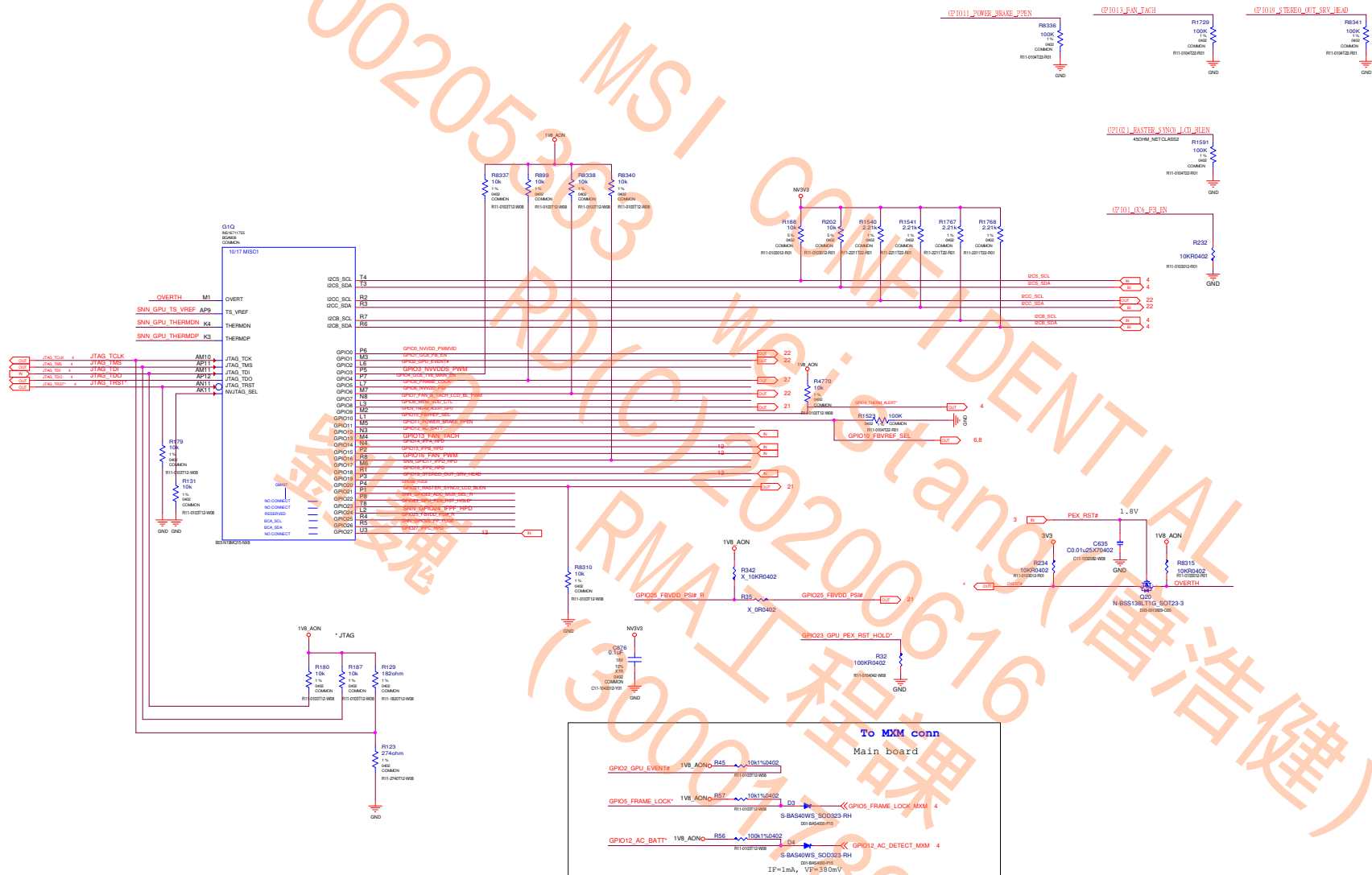


IFP_x / AUX 90 ohm Differential
TOP/BOTTOM 4 / 5 mil
L3/L4/L6 4 / 6 mil





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



Page15: Straps,ROM, XTAL

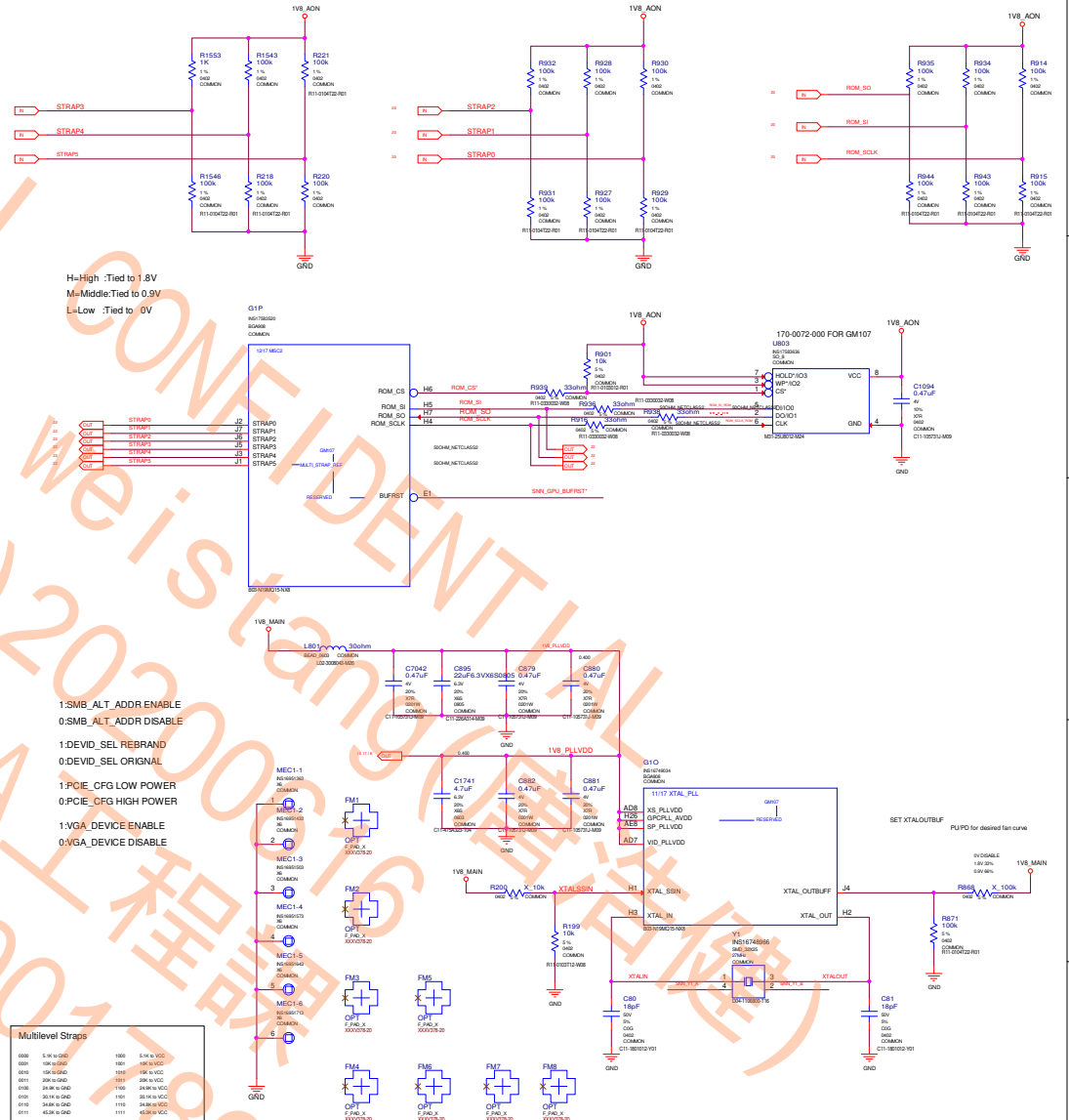
| STRAP2 | STRAP1 | STRAP0 | RAMCF[4:0] | |
|--------|--------|----------|------------------|----------------------|
| L | L | L | 0000 | SAMSUNG 256x32 |
| L | L | H | 0001 | MICRON-F 256x32 8G |
| L | H | L | 0010 | HYNIX-M 256x32 8G |
| L | H | H | 0011 | |
| H | H | L | 0110 | HYNIX-A 128Mx32 4G |
| 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 |
| 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 | M | L | 1 | 0 | 0 | 1 |
| L | L | M | 1 | 0 | 0 | 0 |
| 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

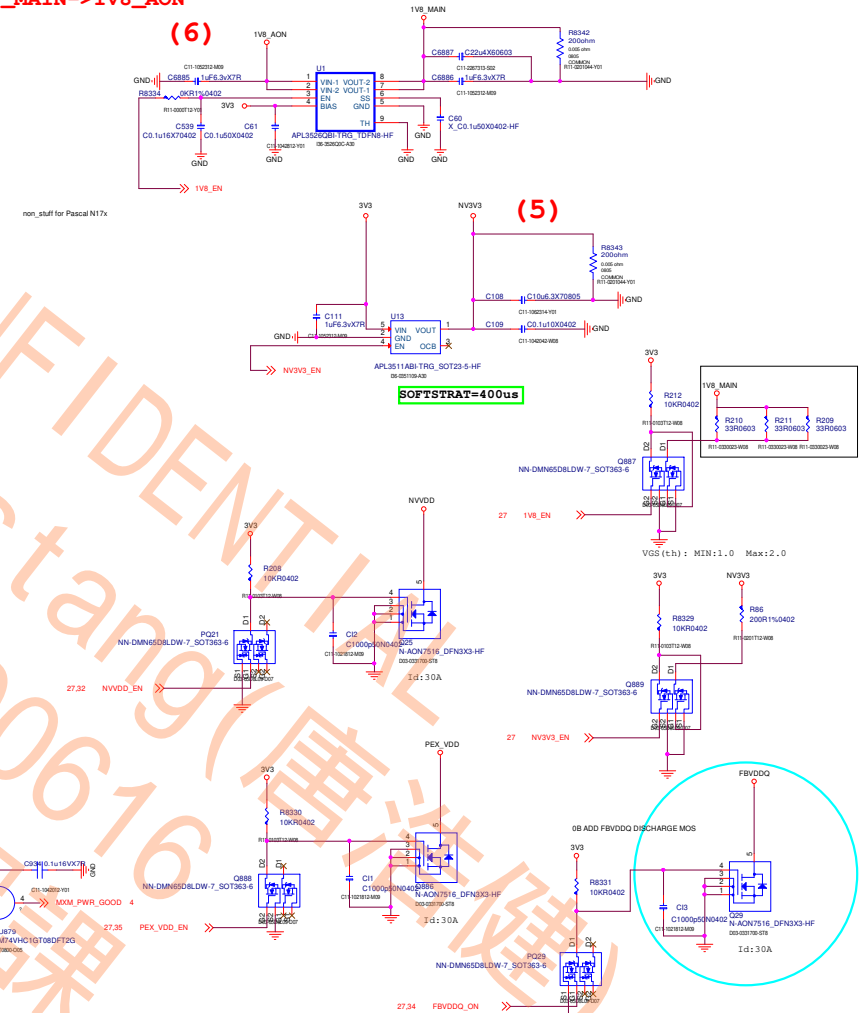
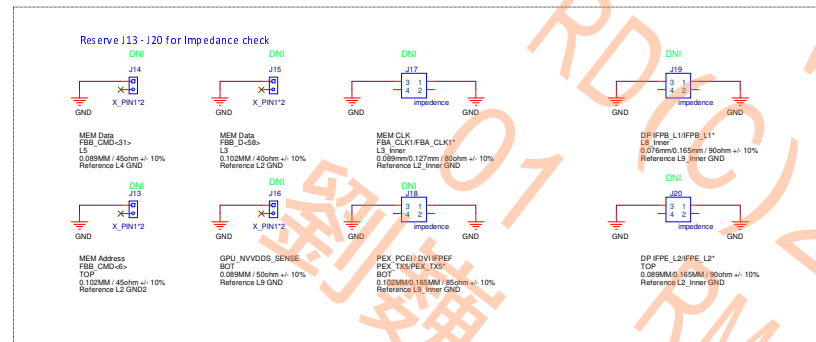
- 1:SMB_ALT_ADDR ENABLE
- 0:SMB_ALT_ADDR DISABLE
- 1:DEVID_SEL REBRAND
- 0:DEVID_SEL ORIGINAL
- 1:PCIE_CFG LOW POWER
- 0:PCIE_CFG HIGH POWER
- 1:VGA_DEVICE ENABLE
- 0:VGA_DEVICE DISABLE

| 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 |



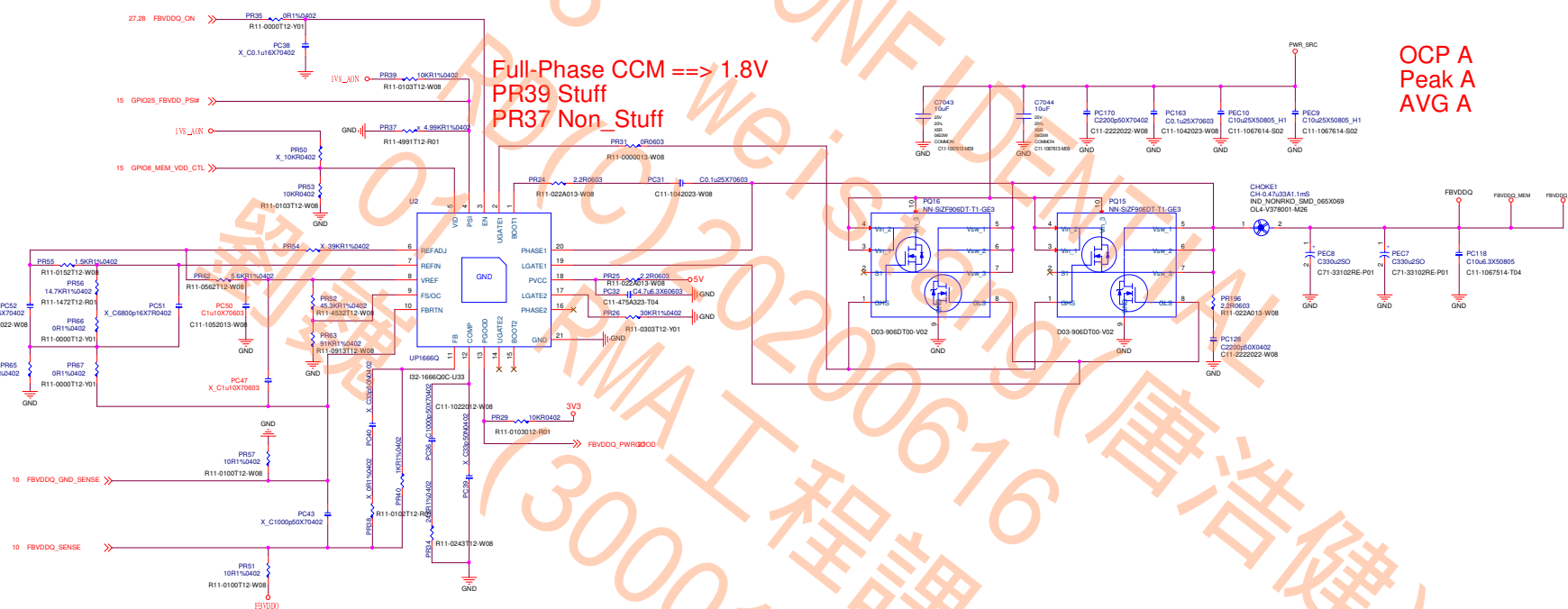
N17x POWER ON= 1V8_AON->1V8_MAIN->NVVDD->PEX_VDD->FBVDDQ->DGPU_PWRGD

N17x POWER OFF= PEX_VDD->FBVDDQ/NVVDD->1V8_MAIN->1V8_AON



GPIO1_GC6FBEN: it is high for keeping FBVDDQ power on during GC6

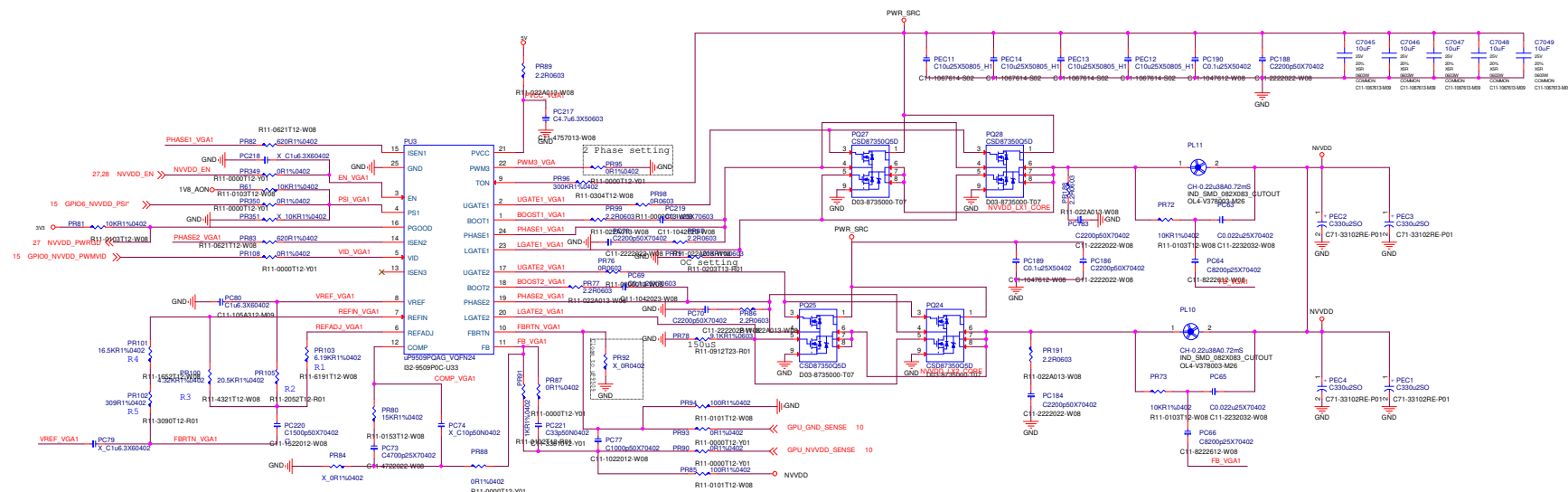
| | | |
|----------|------------------|--------------------------------------------------------------------------|
| OR GATE | M74VHC1GT32DFT2G | VCC=3V (V _{IH} Min=1.4 V _I L _H Max=0.53V) |
| AND GATE | M74VHC1GT08DFT2G | VCC=3V (V _{IH} Min=1.4 V _I L _H Max=0.53V) |



OCP A
Peak A
AVG A

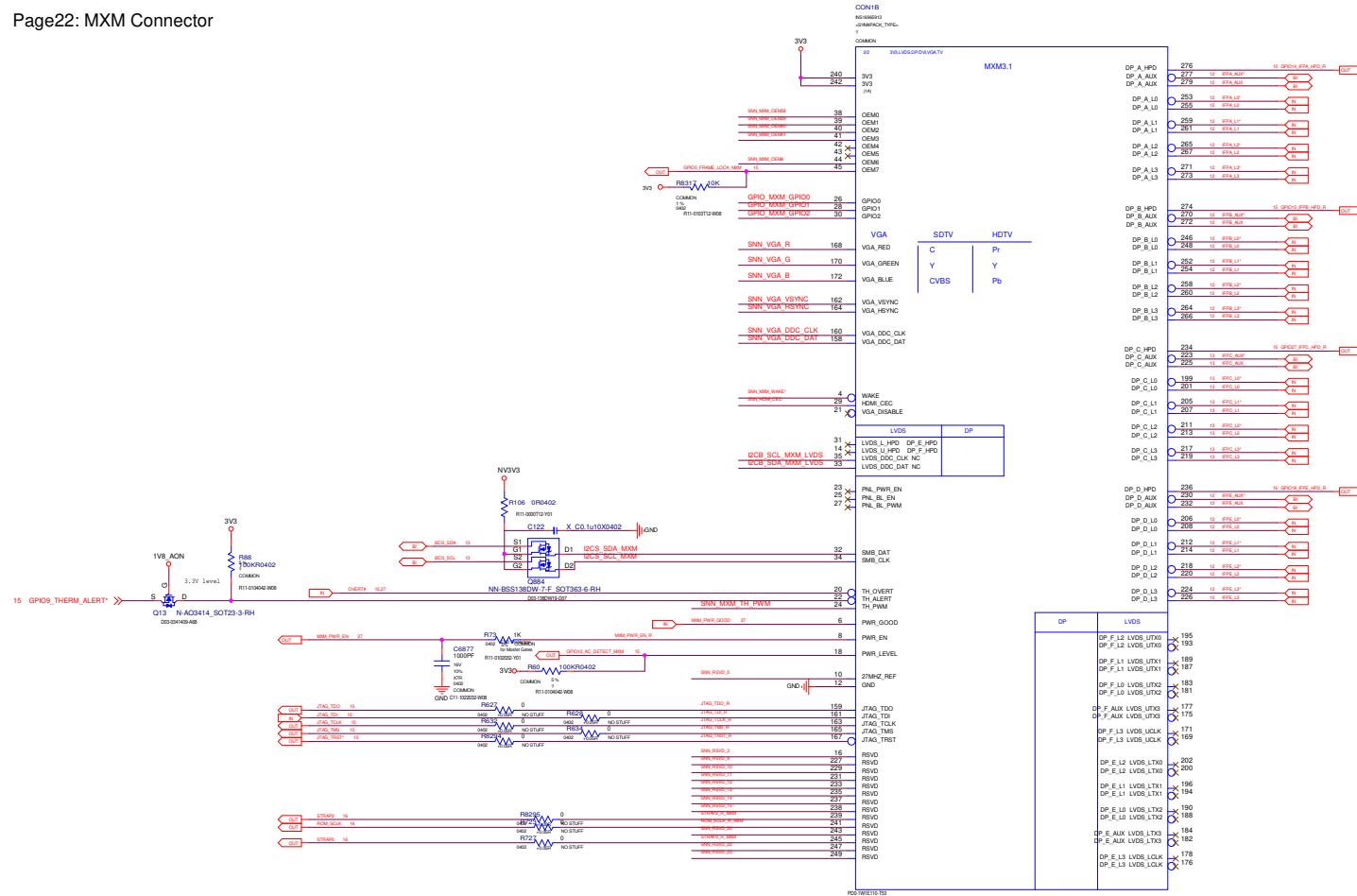
EDP-Peak 90A
EDP-Con 47A

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



MS-V378

| | | |
|--------------------------------|----------------------|----------------|
| Size | Document Description | Rev |
| Custom | NVDD CONTROLLER | 2 |
| Date: Monday, October 14, 2019 | | Sheet 20 of 22 |



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 | |
| 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 |

