MS-V378-22
E2904
4GB GDDR5, 128b, 256Mx32
modular displays

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MS-V378

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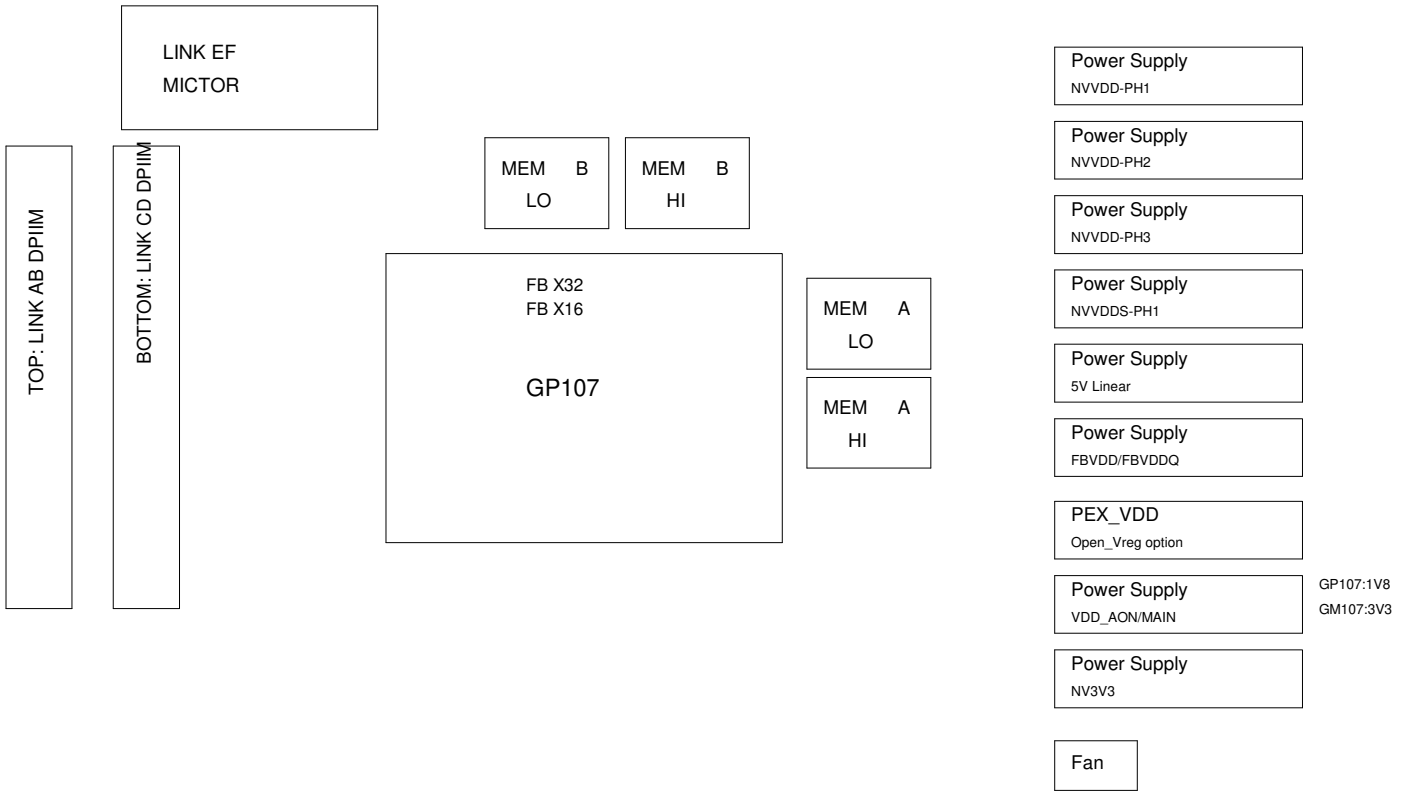

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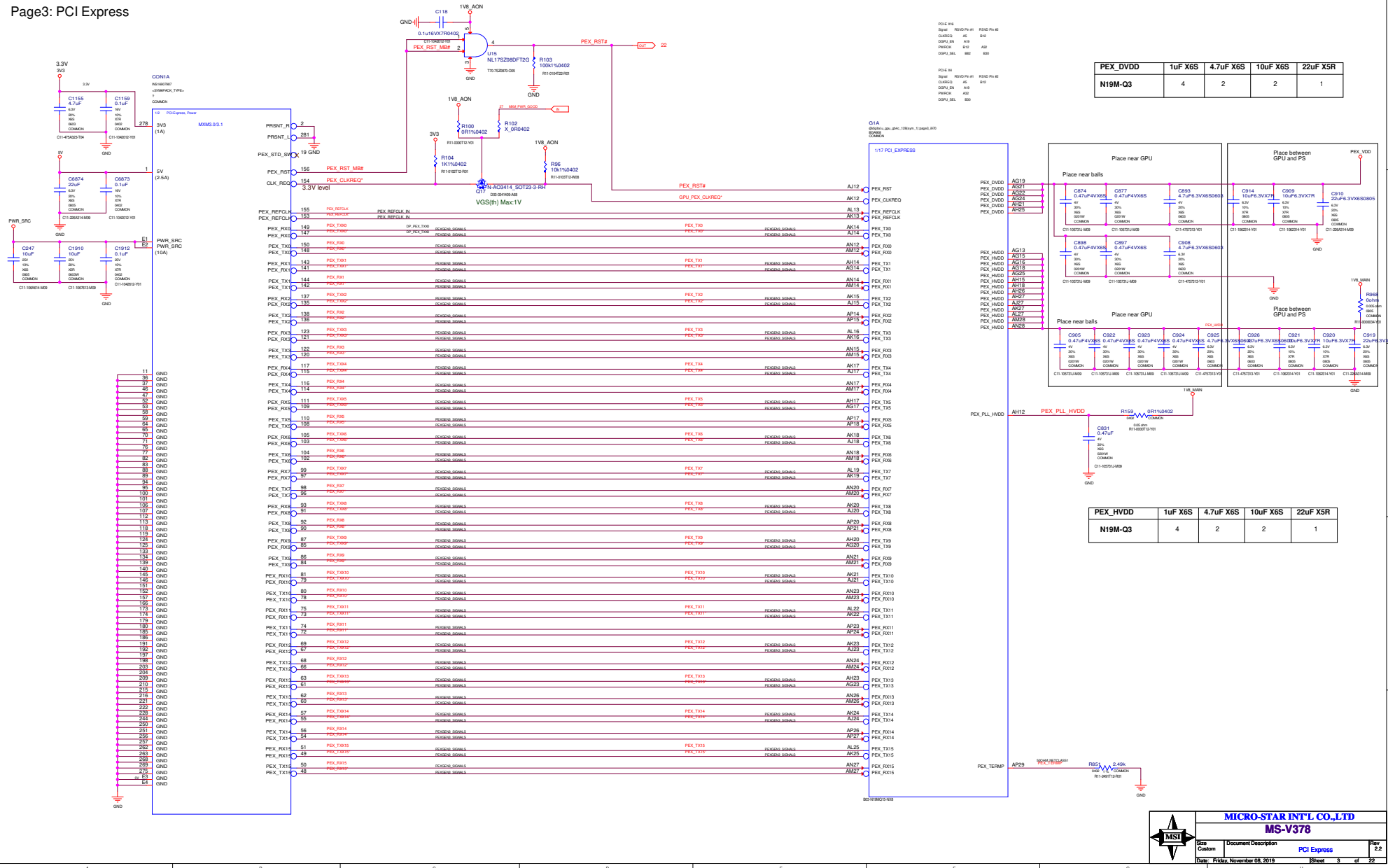
Page3: PCI Express



PEX_DVDD	1uF X6S	4.7uF X6S	10uF X6S	22uF X5R
N19M-Q3	4	2	2	1

PEX_HVDD	1uF X6S	4.7uF X6S	10uF X6S	22uF X5R
N19M-Q3	4	2	2	1

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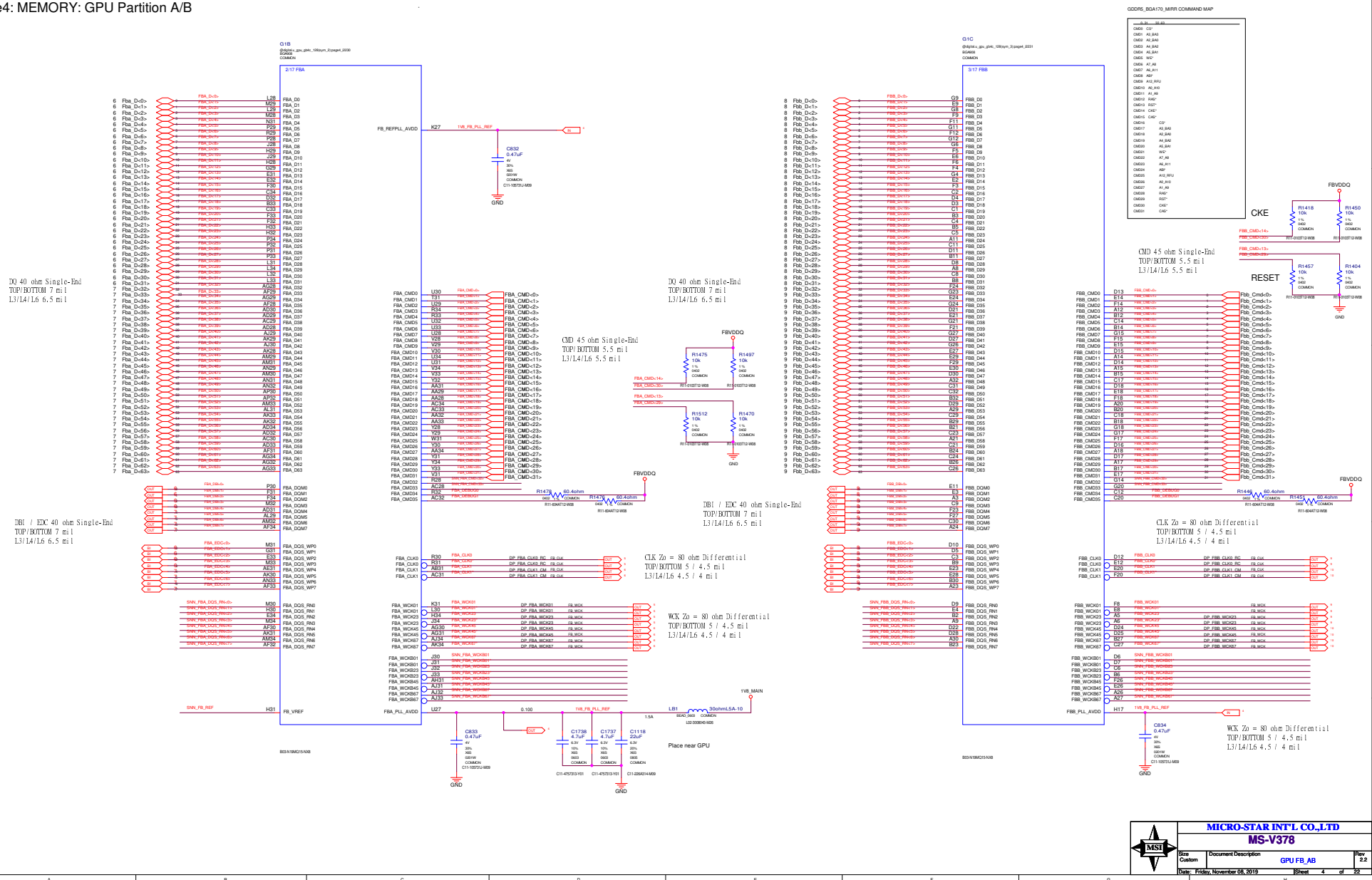
Page4: MEMORY: GPU Partition A/B



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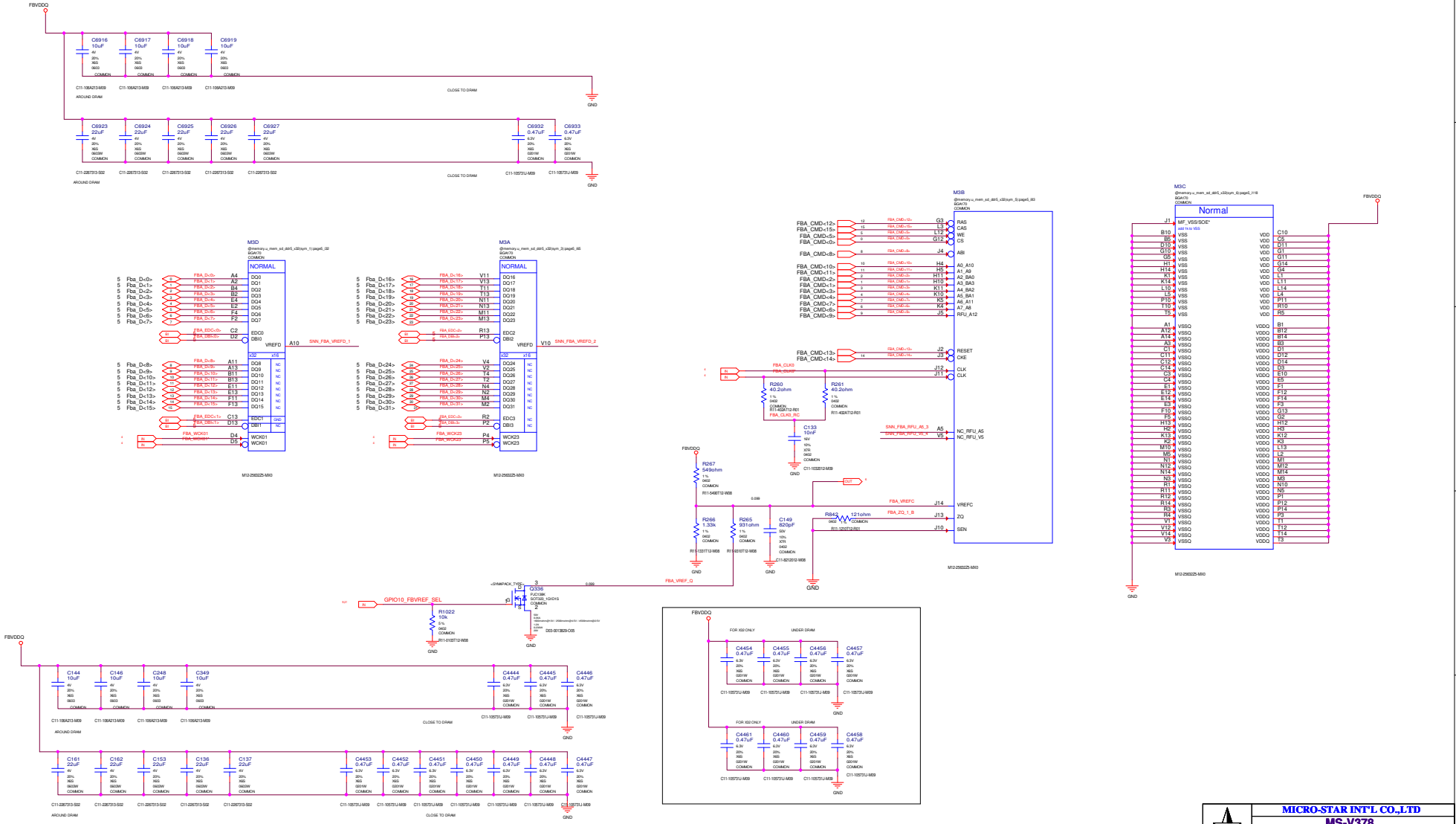

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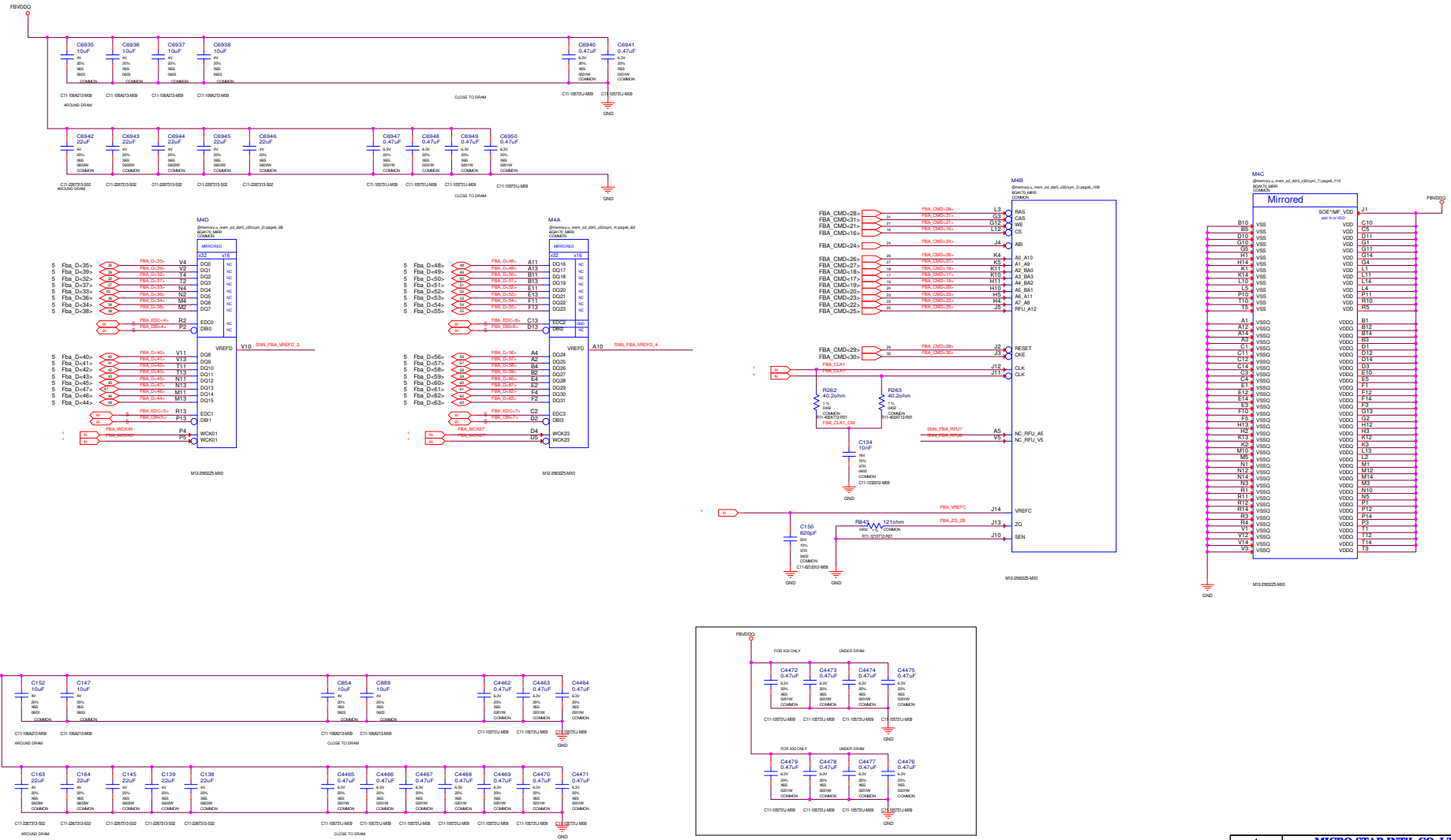
Page6: MEMORY: FBA Partition 63..32



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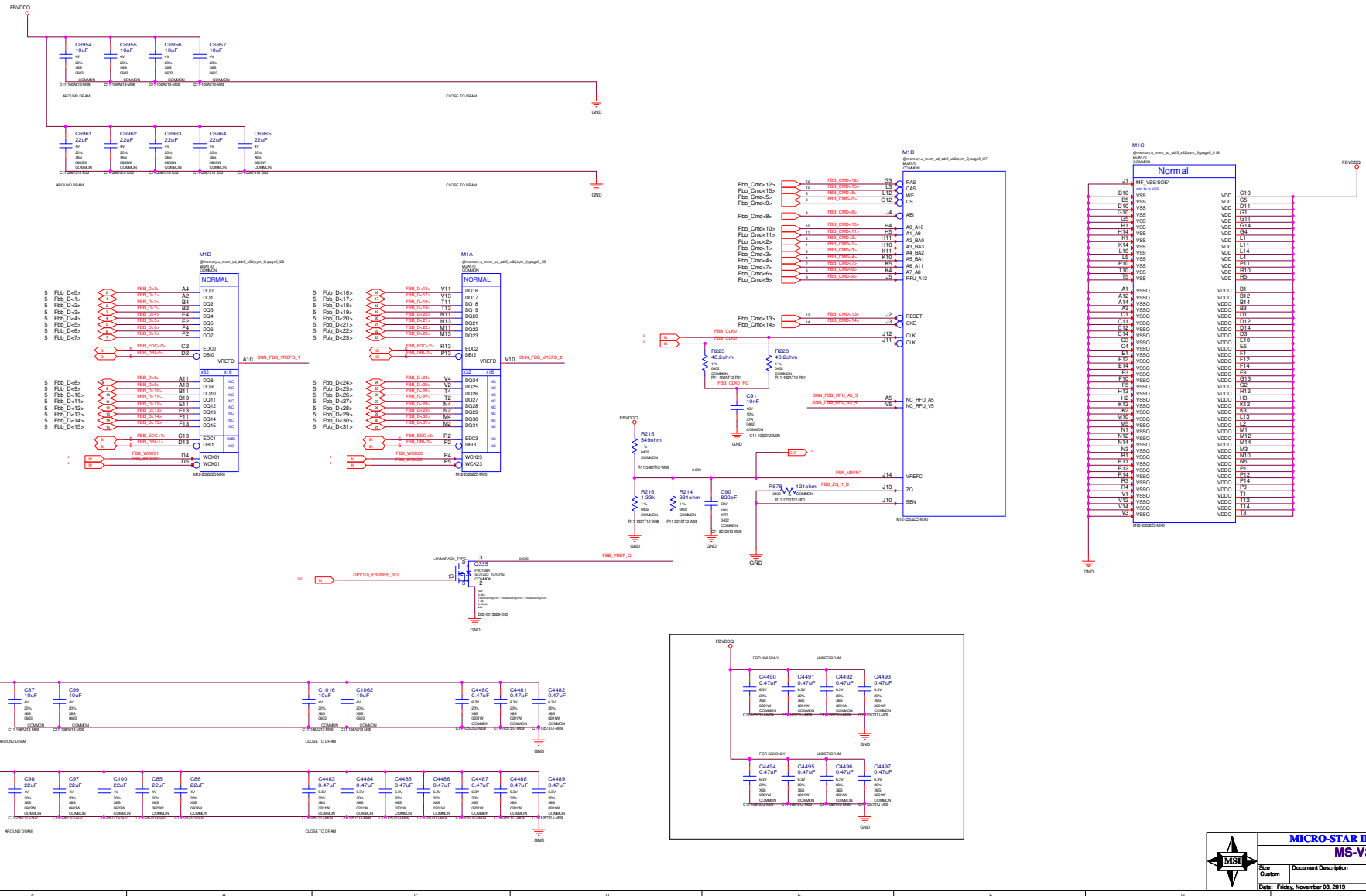
Page7: MEMORY: FBB Partition 31..0



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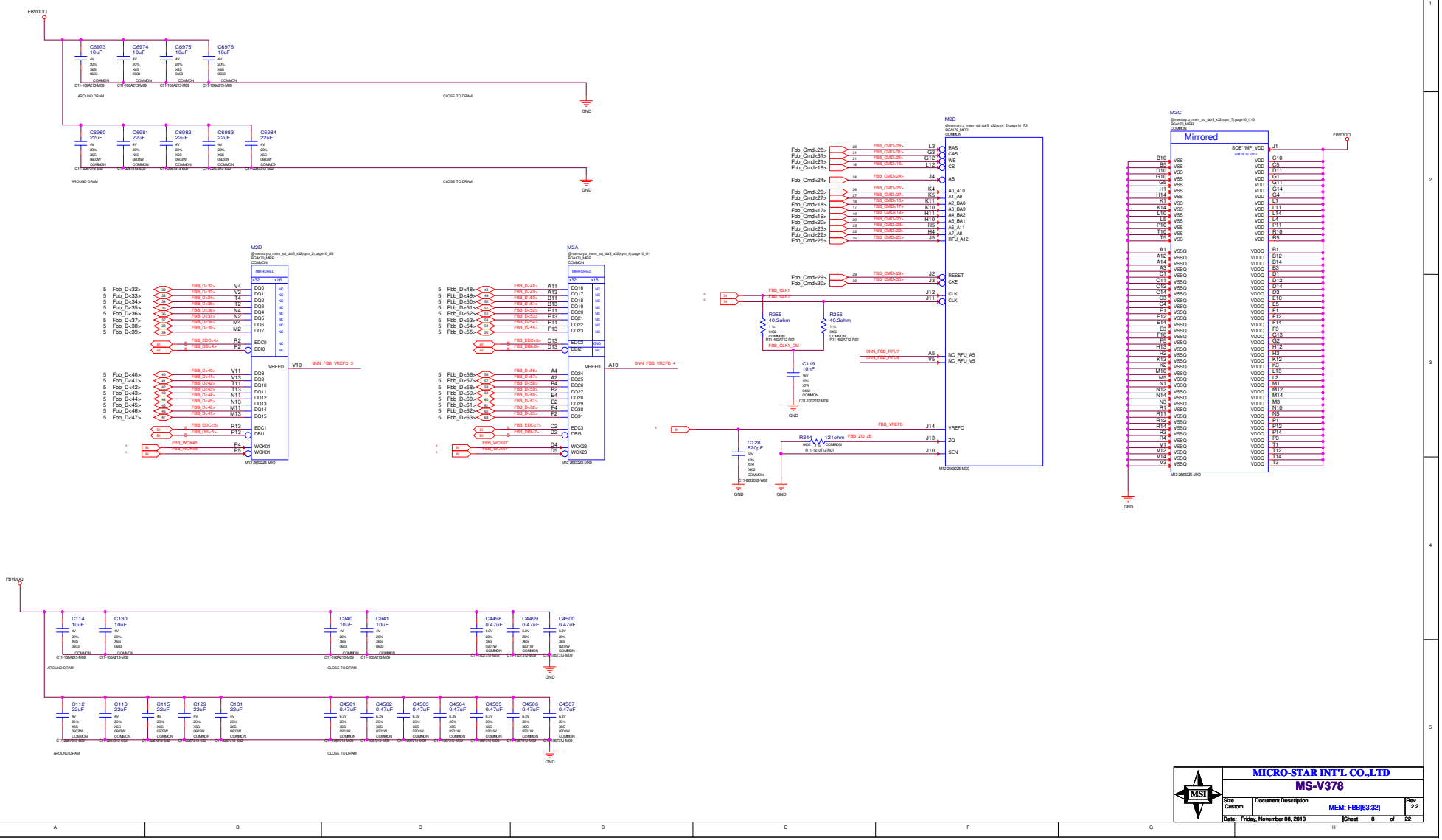


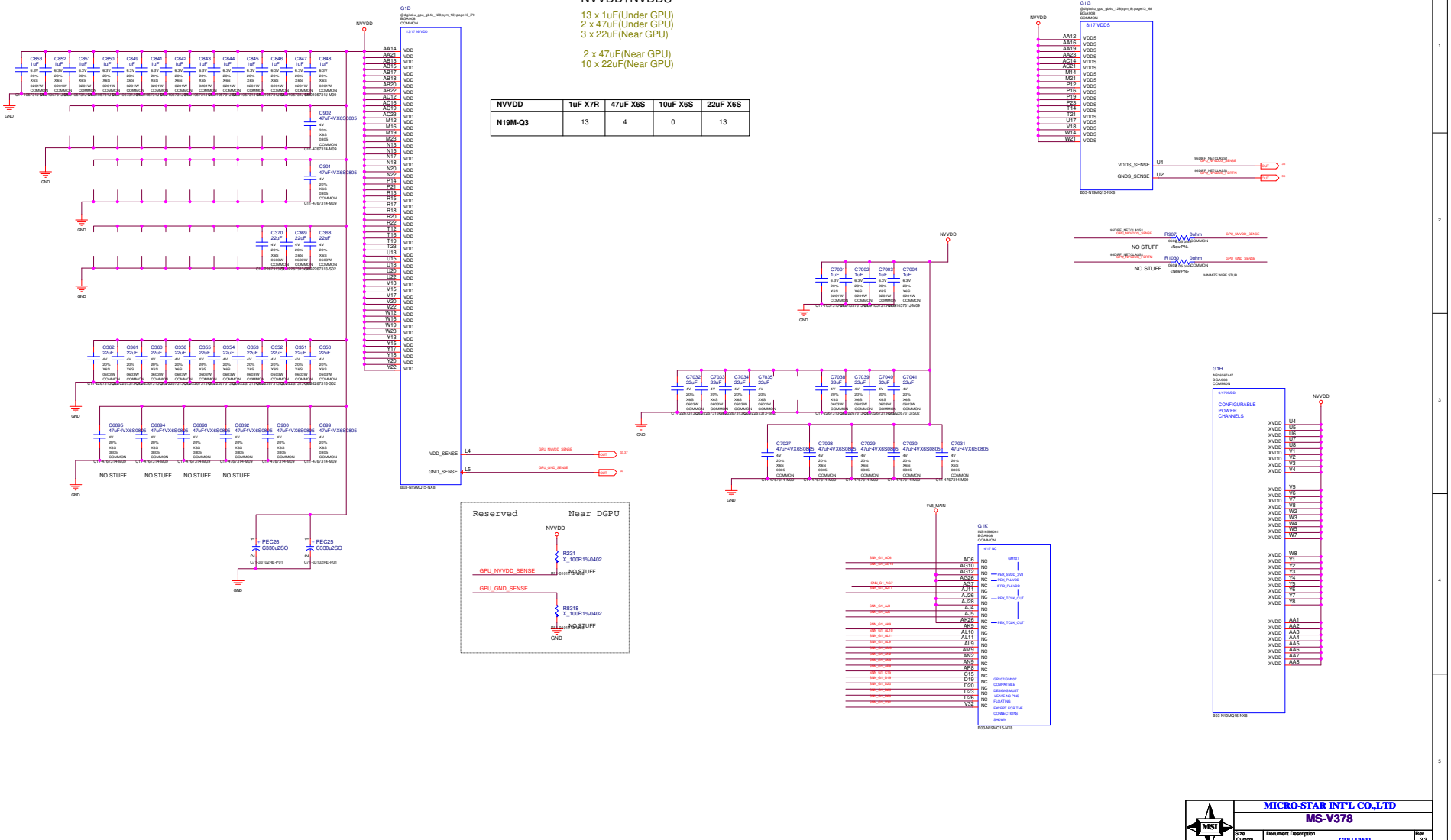
Page09: GPU PWR

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)

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



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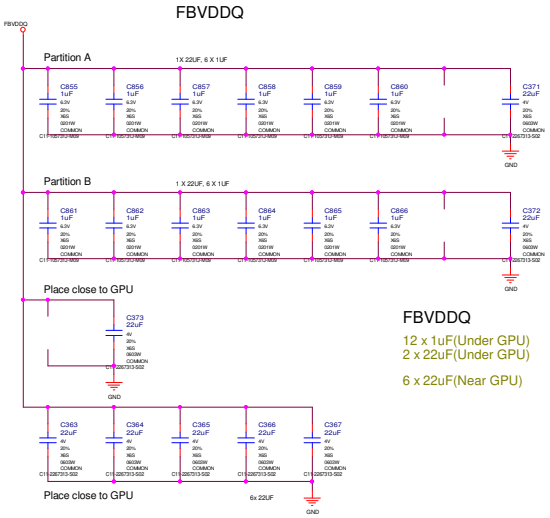
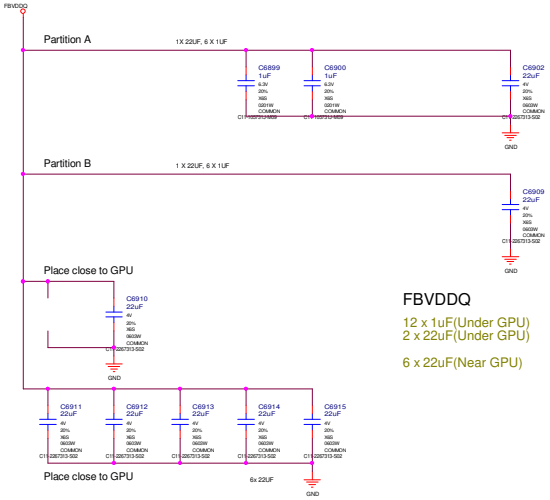


FBVDDQ

12 x 1uF(Under GPU)
2 x 22uF(Under GPU)

6 x 22uF(Near GPU)

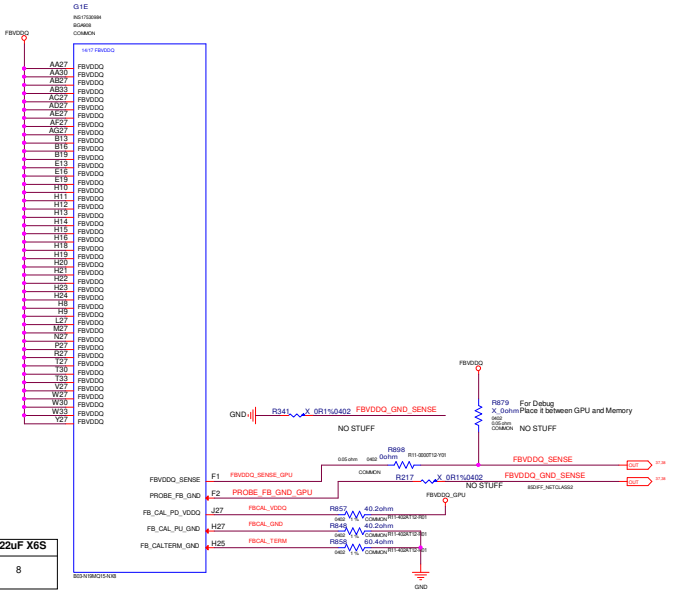
FBVDDQ	1uF X7R	10uF X6S	22uF X6S
N19M-Q3	12	0	8

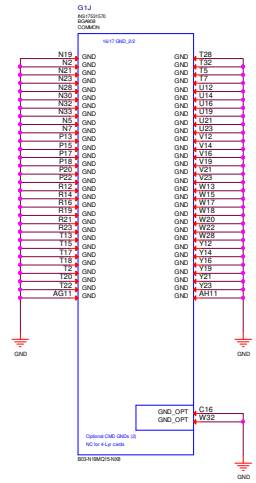


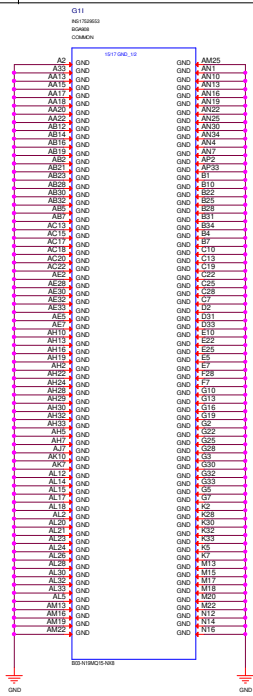
FBVDDQ

12 x 1uF(Under GPU)
2 x 22uF(Under GPU)

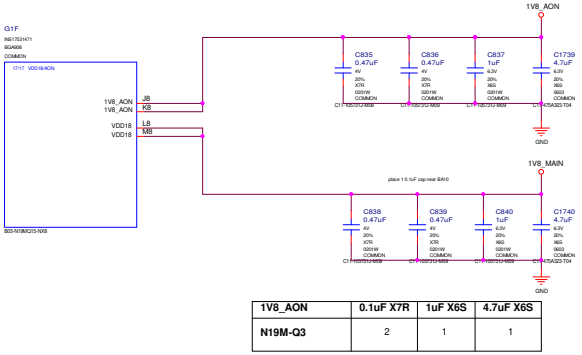
6 x 22uF(Near GPU)







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

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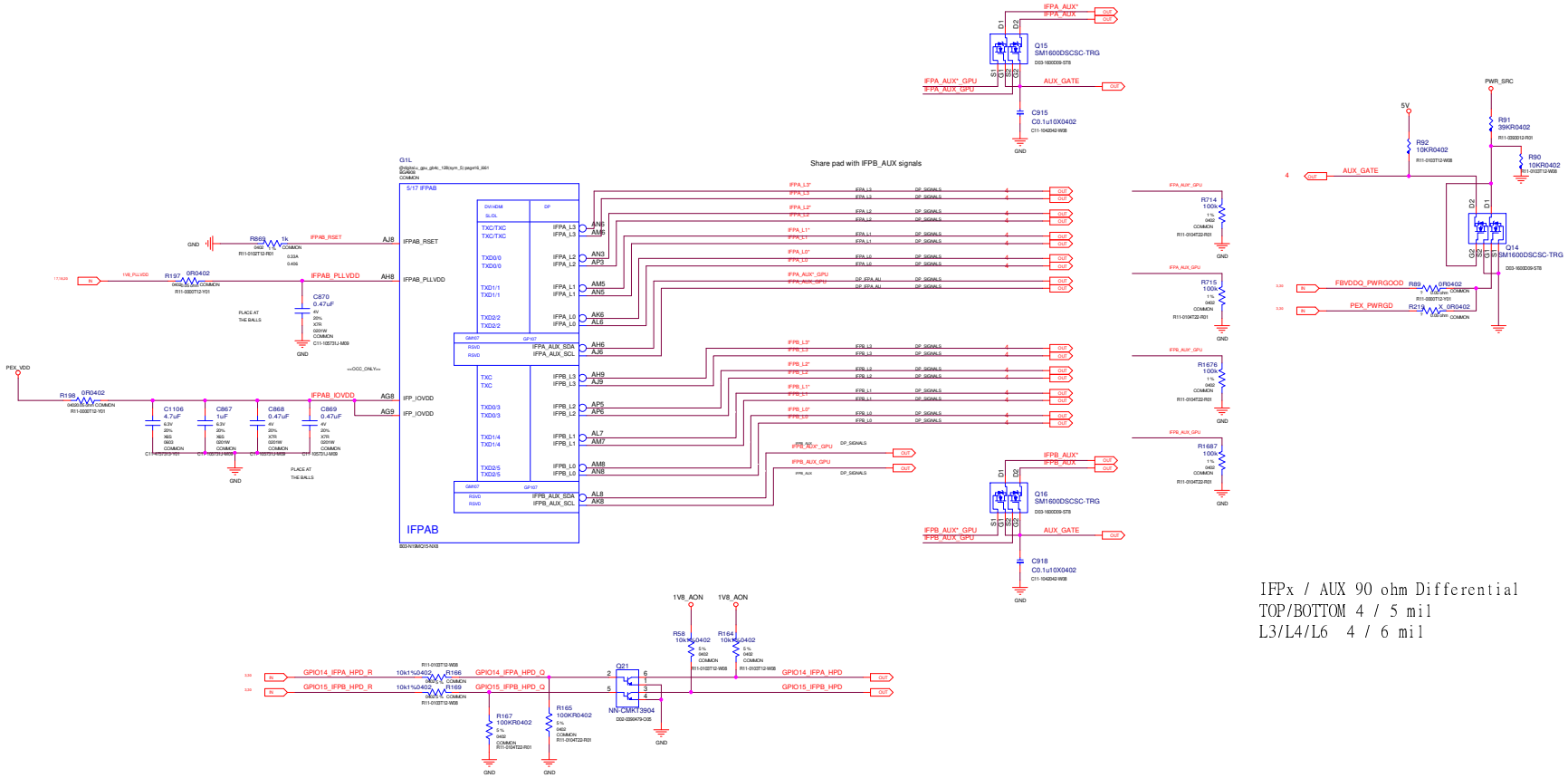
Page11: IFPAB



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

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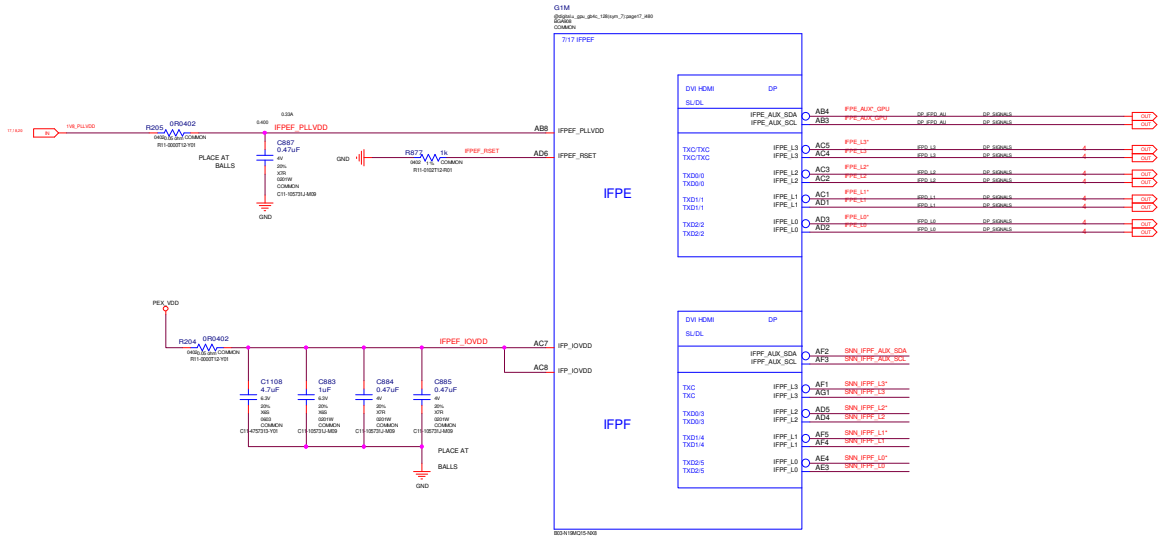
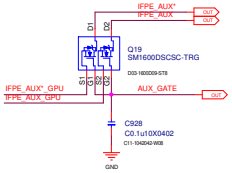
Page12: IFPEF



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



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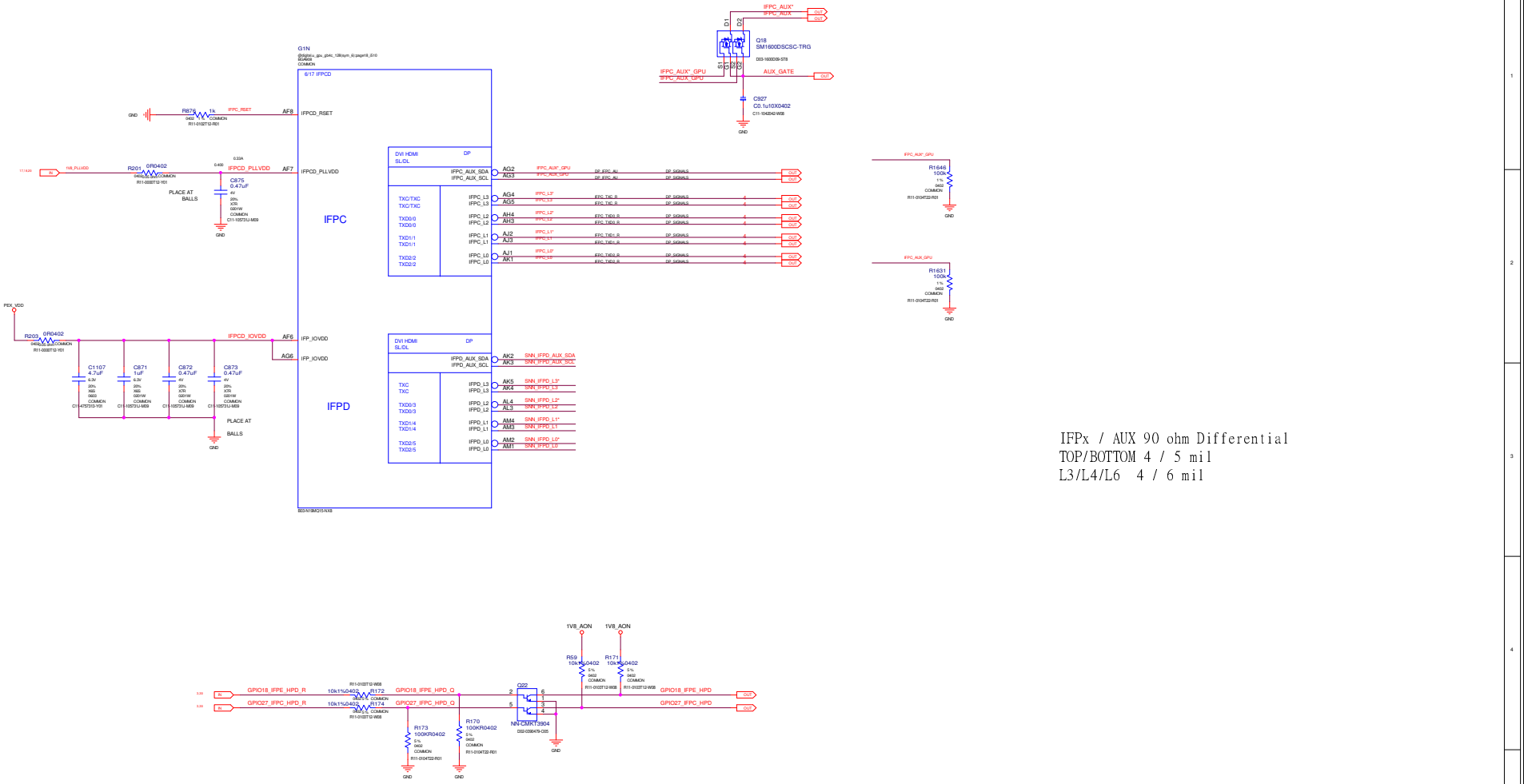
Page13: IFPCD



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

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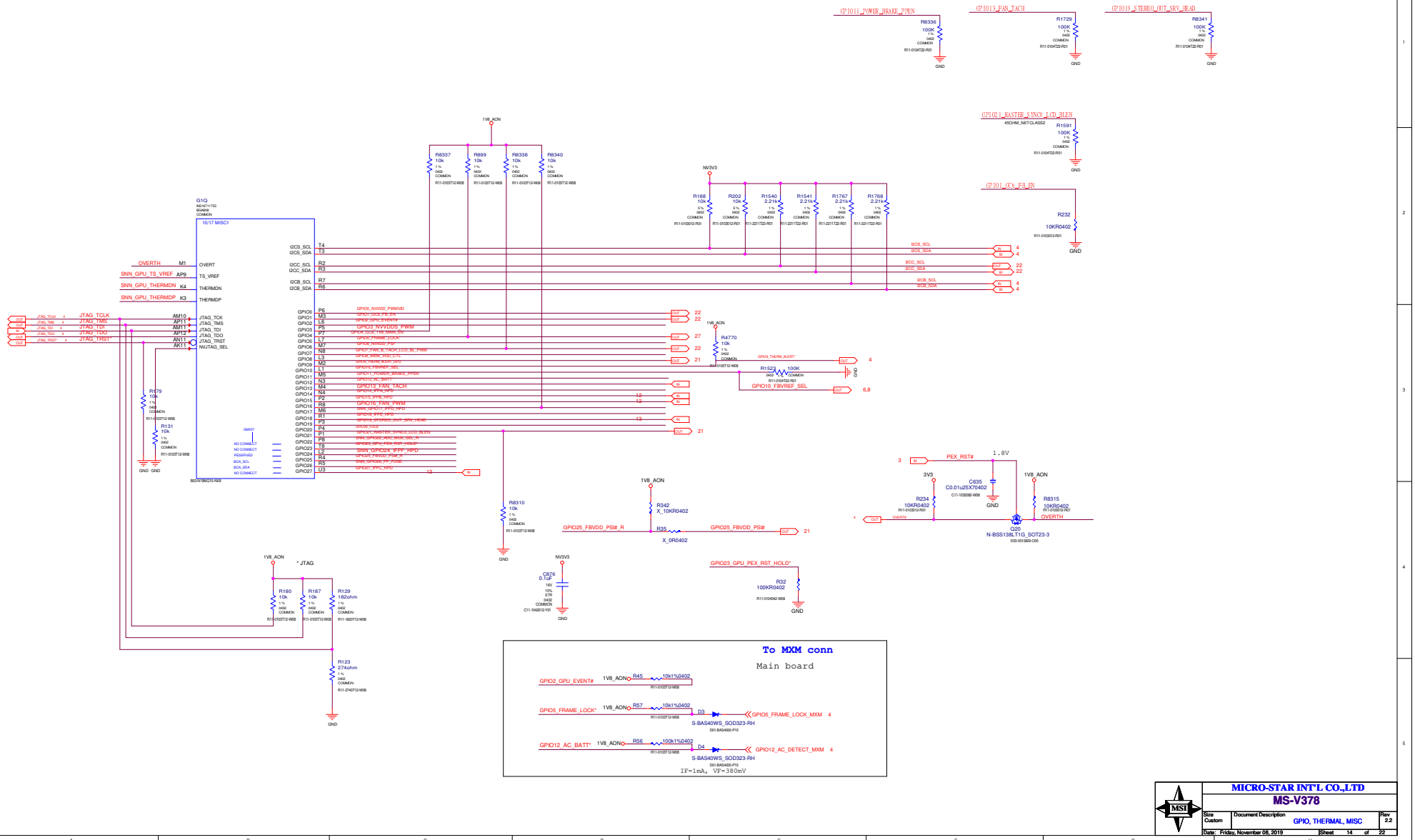
Page14: GPIO, THERMAL, MISC



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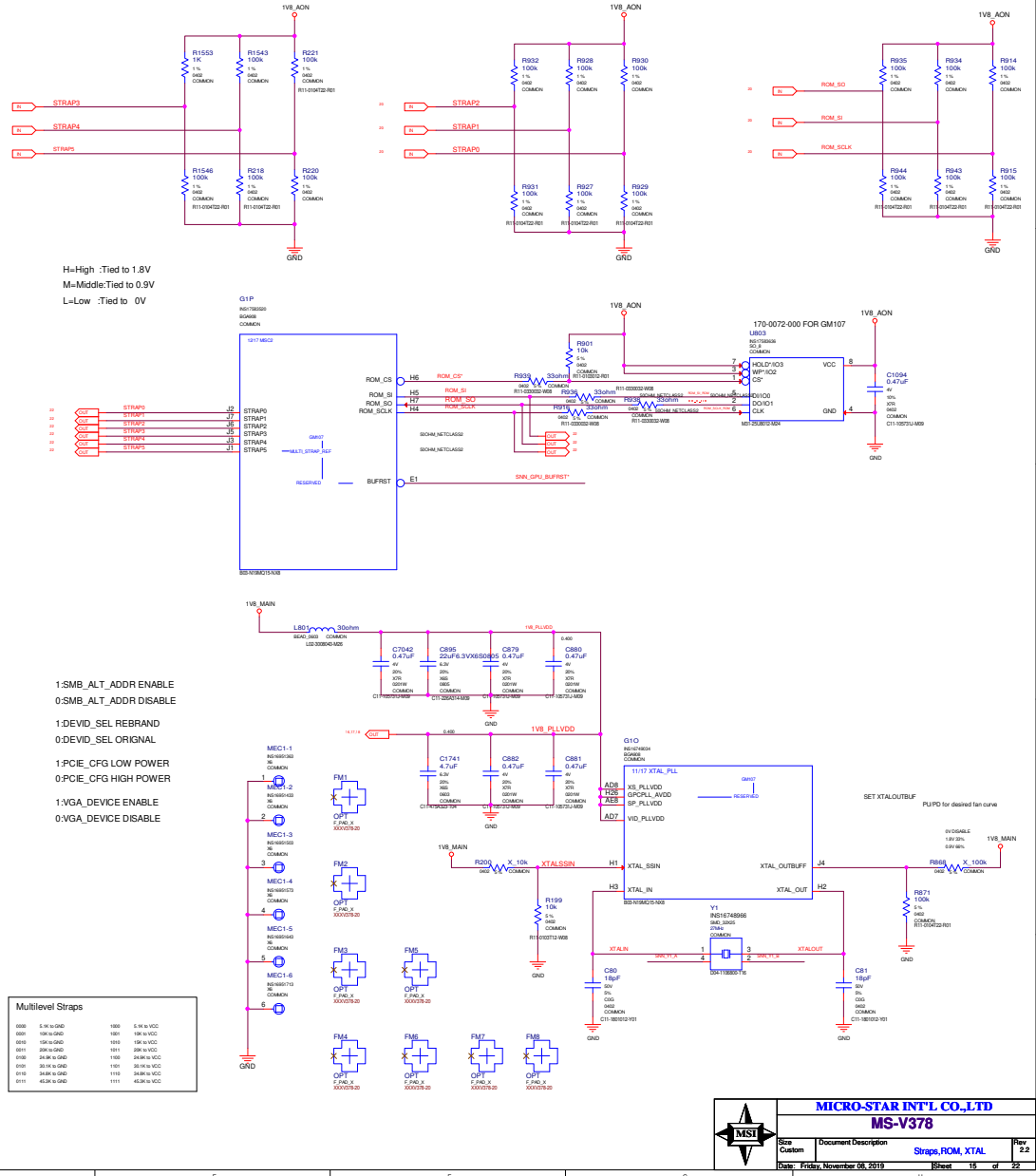
Page15: Straps,ROM, XTAL

STRAP2	STRAP1	STRAP0	RAMCFG[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	SOR0/1/2/3 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	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 DEFAULT
L	L	L	0	0	0	0



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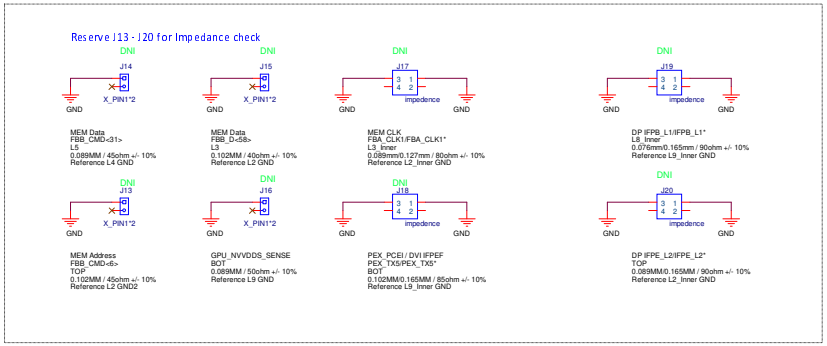
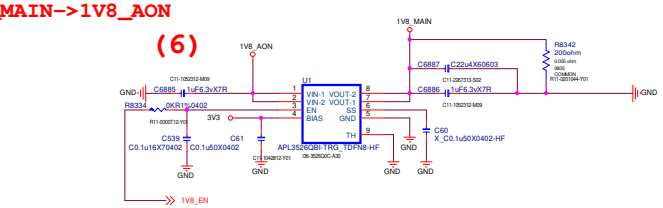
Page16: Power Sequence Control

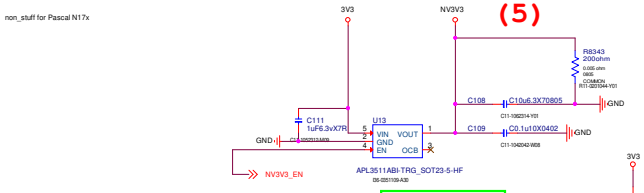
N17x POWER ON= 1V8_AON->1V8_MAIN->NVVDD->PEX_VDD->FBVDDQ->DGPU_PWRGD

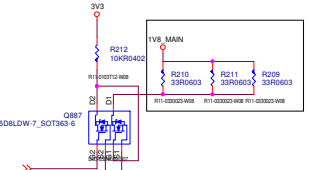
N17x POWER OFF= PEX_VDD->FBVDDQ/NVVDD->1V8_MAIN->1V8_AON

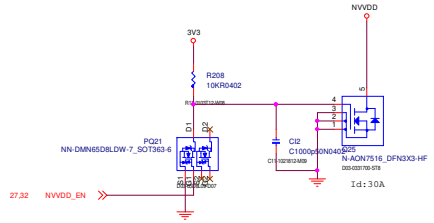


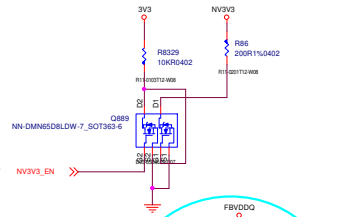


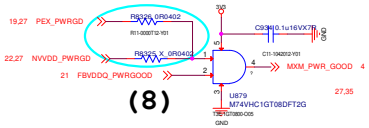
non_stuff for Pascal N17x

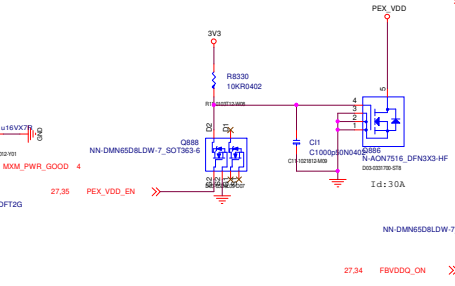


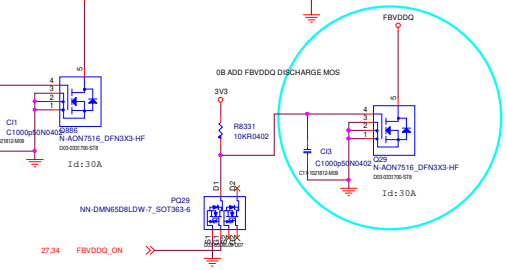












GPIO1_GC6FBEN: it is high for keeping FBVDDQ power on during GC6

OR GATE	M74VHC1GT32DFT2G	VCC=3V (VIH Min=1.4 V; LH Max=0.53V)
AND GATE	M74VHC1GT08DFT2G	VCC=3V (VIH Min=1.4 V; LH Max=0.53V)

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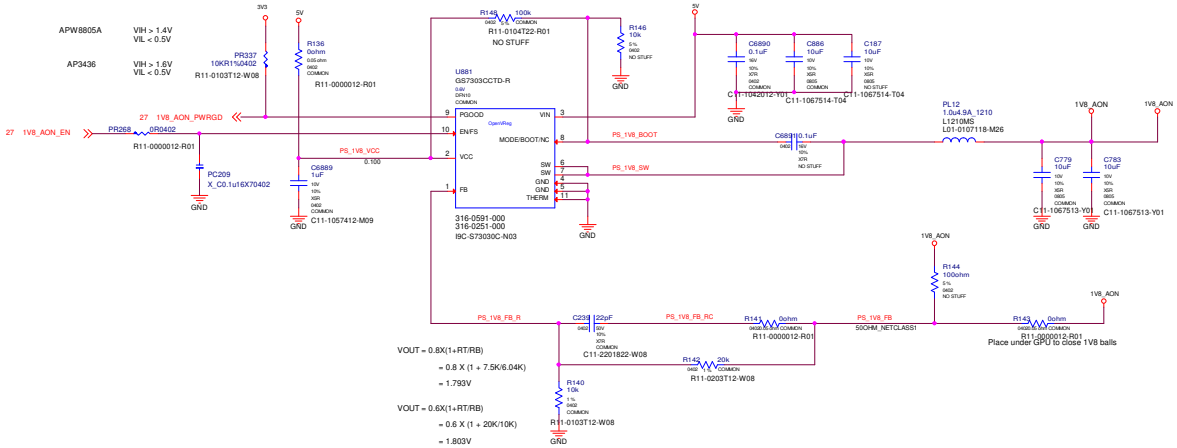
PAGE 17: 1V8_AON

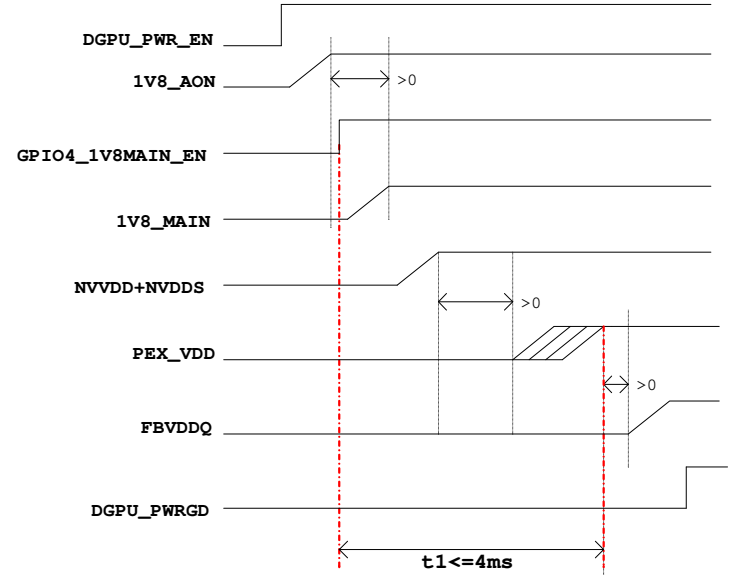
POWER UP Sequence

1V8_AON -> 1V8_MAIN->NV3V3 -> NVVDD -> NVVDDS / PEX_VDD -> FBVDDQ

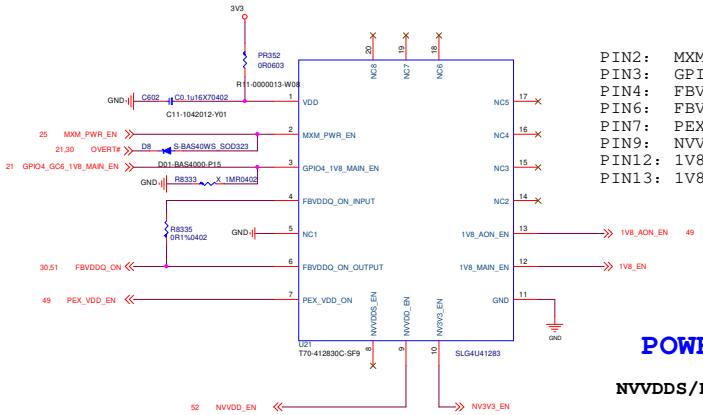
Voltage = 1.8V
Current = ? A
OCP(typi) = ? A

1V8_AON





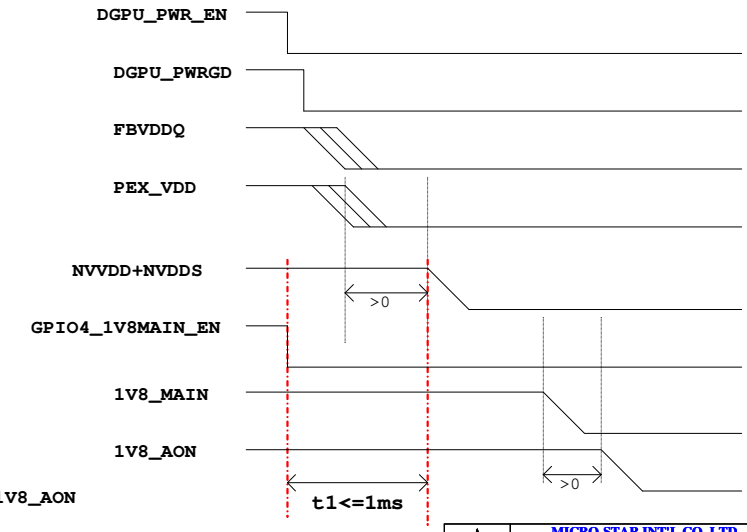
Power Sequence Control




```
PIN2:  MXM_PWR_EN is 3.3V          INPUT
PIN3:  GPIO4_GC6_PWR_EN is 1.8V    INPUT
PIN4:  FBVDDQ_ON_INPUT 3.3V        INPUT
PIN6:  FBVDDQ_ON_OUTPUT 3.3V       OUTPUT
PIN7:  PEX_VDD_EN_IC 3.3V          OUTPUT
PIN9:  NVVDD_EN_IC 3.3V            OUTPUT
PIN12: 1V8_MAIN_EN_IC 3.3V         OUTPUT
PIN13: 1V8_AON_EN_IC 3.3V          OUTPUT
```

POWER Down Sequence

NVVDDS/PEX_VDD/FBVDDQ ->NVVDD/NV3V3->1V8_MAIN> 1V8_AON



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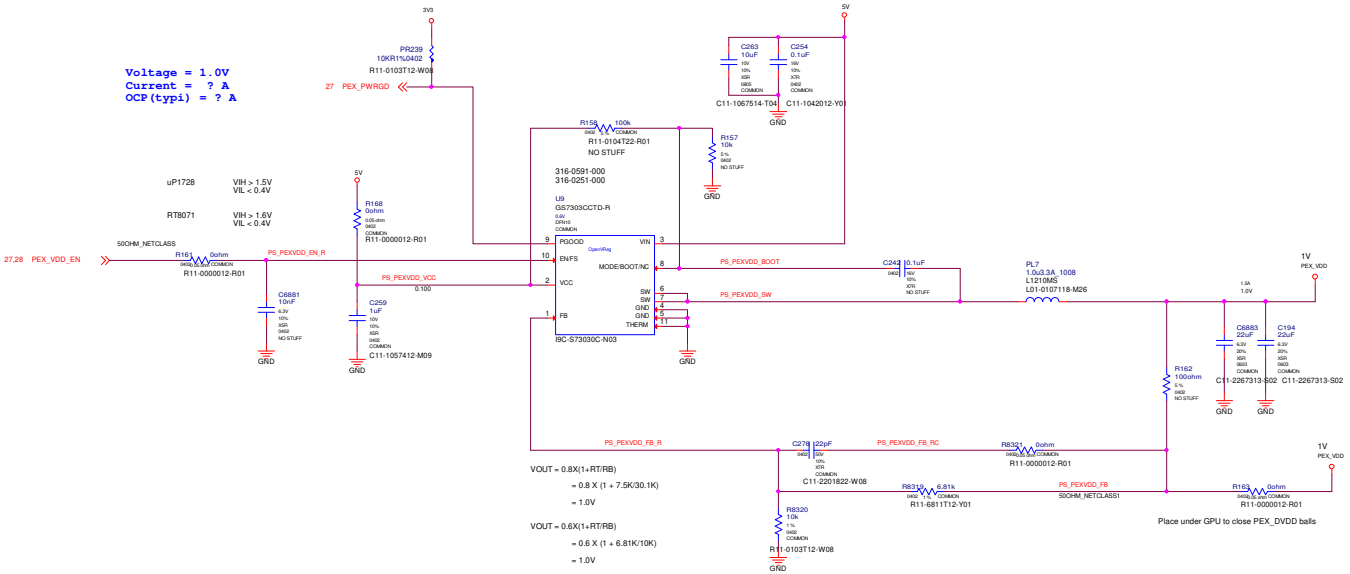
PAGE 18: PEXVDD



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Page 19: FBVDD CONTROLLER

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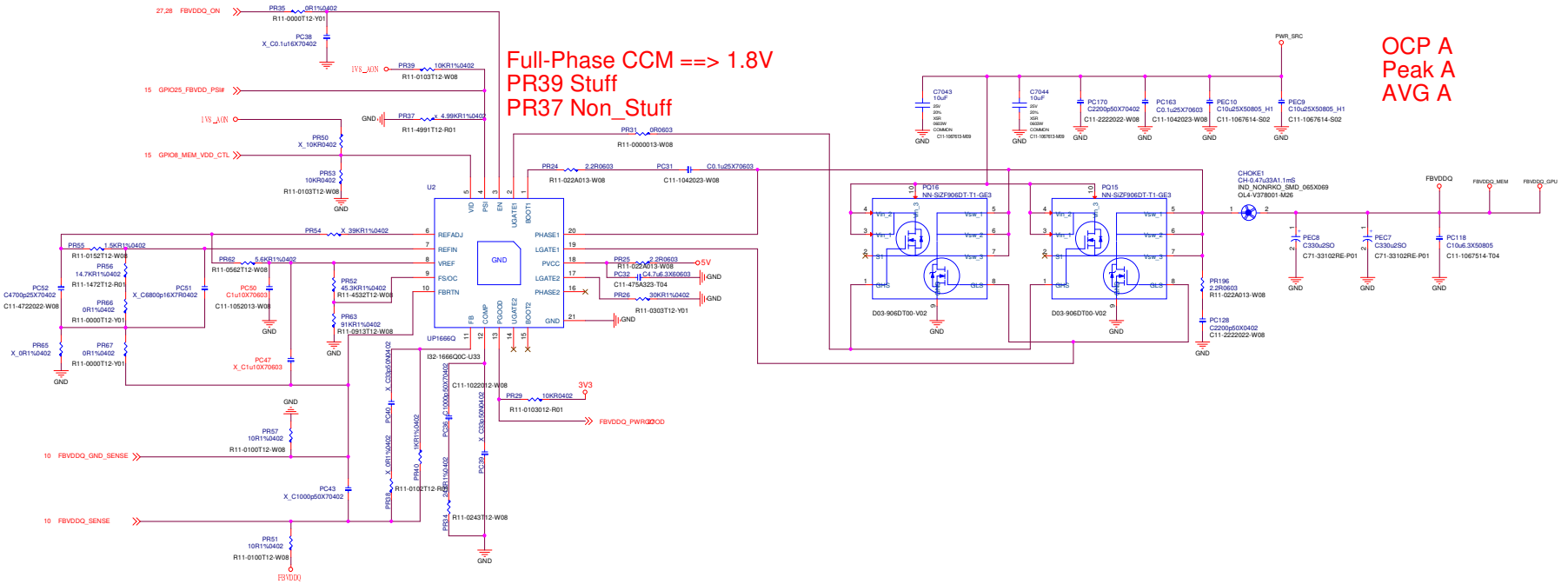
MS-16R3-1.0



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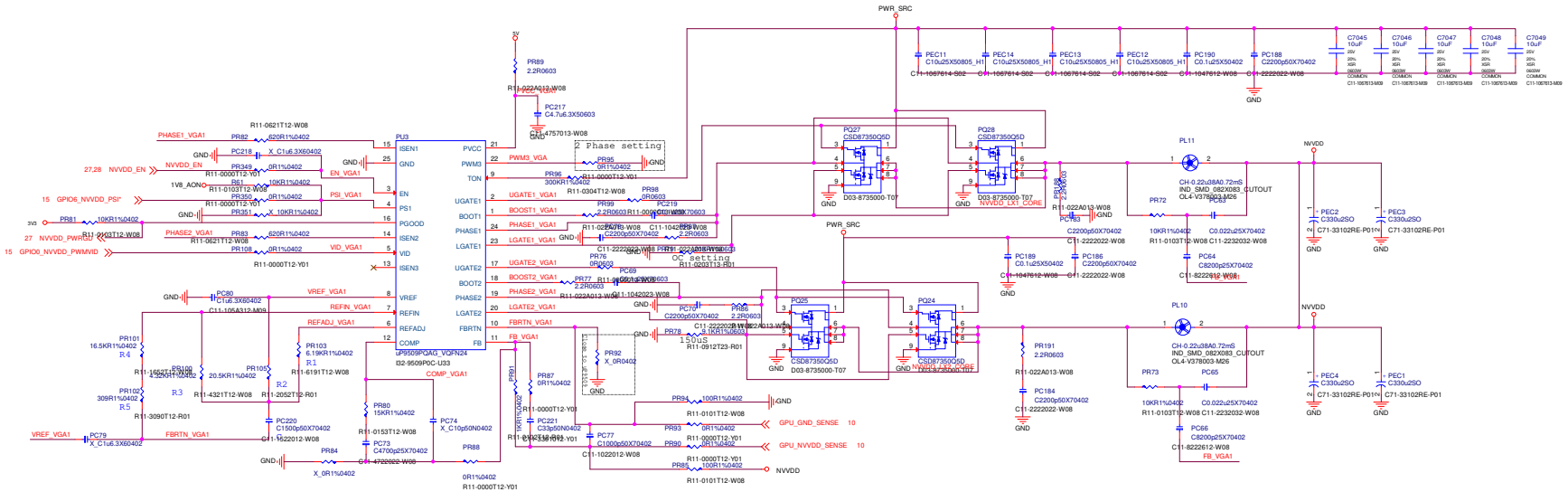
Page20: NVVDD CONTROLLER

Copy from
MS-16R1-1.0

UP9509P

EDP-Peak 90A
EDP-Con 47A

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



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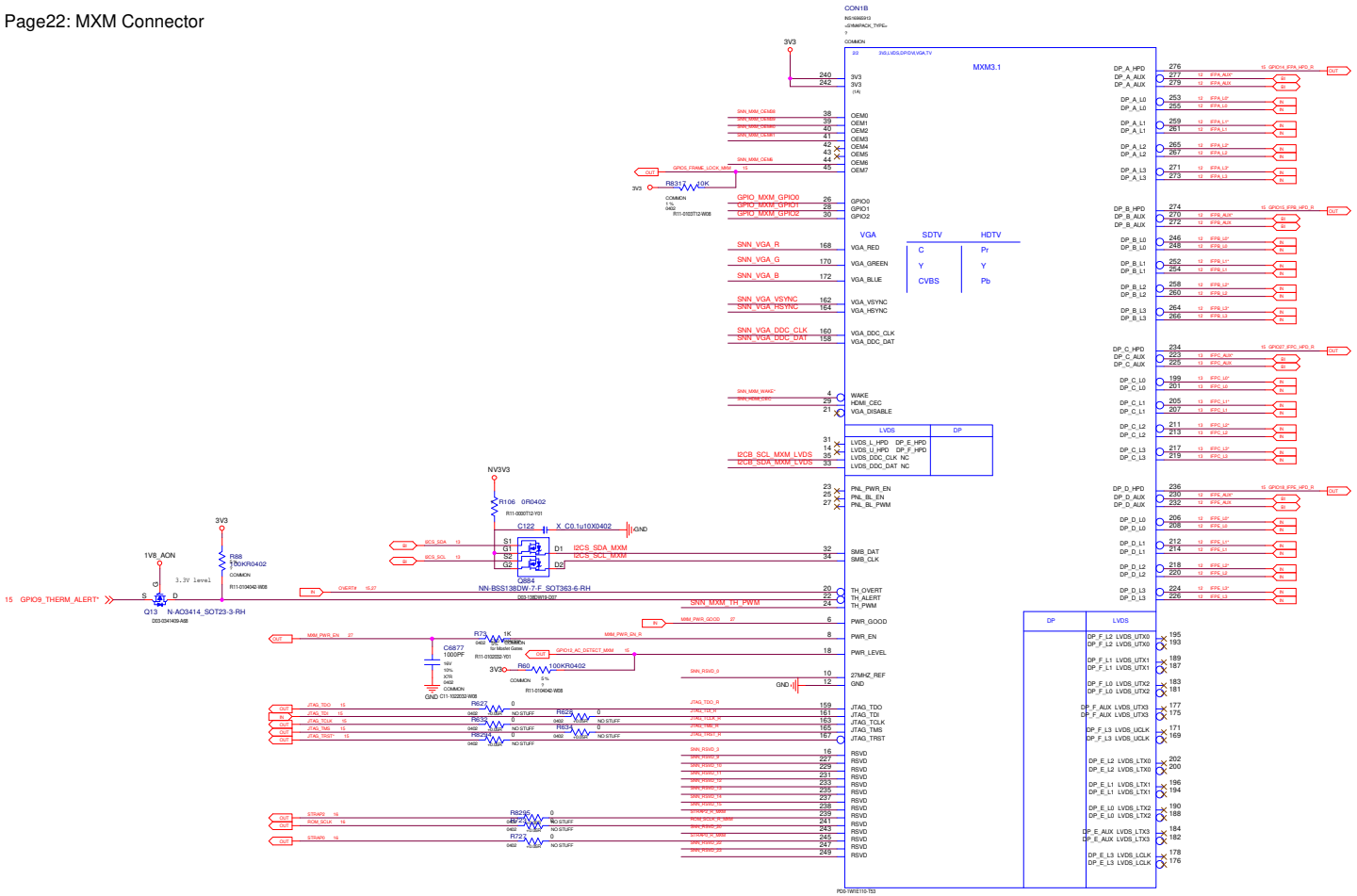
Page22: MXM Connector



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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	OD, 10K pull-down	OD, 10K pull-down
GPIO2	GPU_EVENT#	GPU_EVENT#	GPU wake signal for GC6 2.1	10K pull-up to 1V8 _AON	10K pull-up to 1V8 _AON
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	OD, 10K pull-up to 1V8 _AON	OD, 10K pull-up to 1V8 _AON
GPIO5	FRM_LCK#	FRM_LCK#	Active low Frame Lock	OD, 10K pull-up to 1V8 _AON	OD, 10K pull-up to 1V8 _AON
GPIO6	NVVDD_PSI	NVVDD_PSI	Phase shedding	10K pull-up to 1V8 _AON	10K pull-up to 1V8 _AON
GPIO7	LCD_BL_PWM	LCD_BL_PWM	Panel Backlight PWM Brighteness Control	100K pull-down	100K pull-down
GPIO8	MEM_VDD_CTL	MEM_VDD_CTL	Memory Voltage Control	pull-up/pull-down to set the FBVDD/Q power-on voltage	pull-up/pull-down to set the FBVDD/Q power-on voltage
GPIO9	THERM_ALERT	THERM_ALERT	Active Low Thermal Alert	OD, 10K pull-up to 1V8_AON	OD, 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_PEX_RST_MON#	UNUSED	System side PCIe reset monitor	10K pull-up to 1V8 _AON	
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	OD, 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