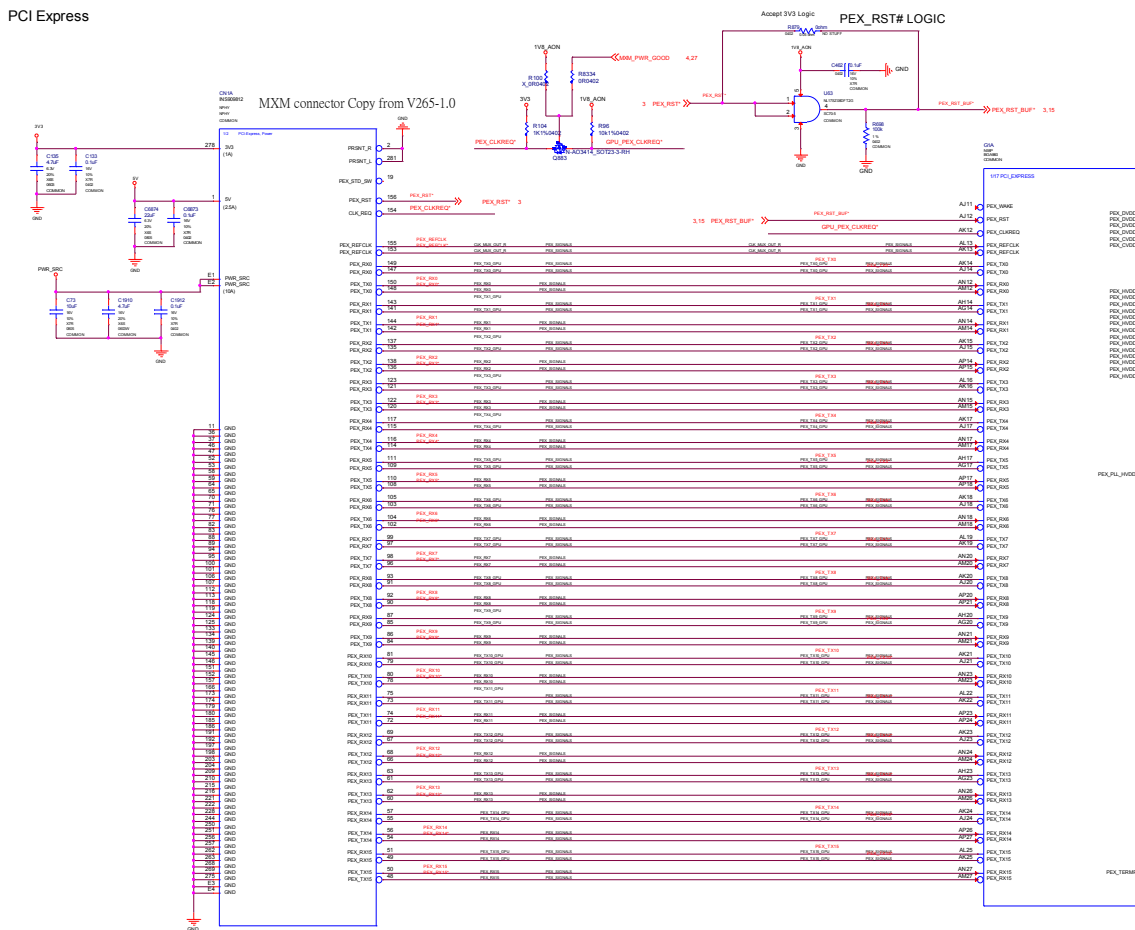


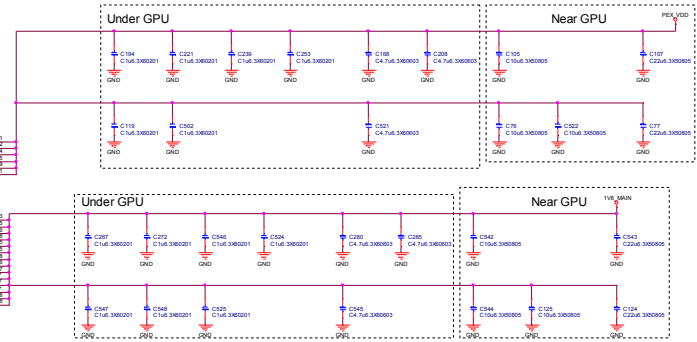
N18P GDDR5 X32 128BITS
PCIE AND MODULAR DISPLAY

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7	MEMORY: FBA[63:32]		
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16	GPU_ ROM, STRAPS		
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18	PS_ 1V8_AON		
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20	PS_ NV3V3		
21	PS_ FBVDD CONTROLLER		
22	PS_ NVVDD CONTROLLER		
23	PS_ NVVDD 2 PHASE		
24	GPIO Functional Description		
25	INPUT PREFILTER		

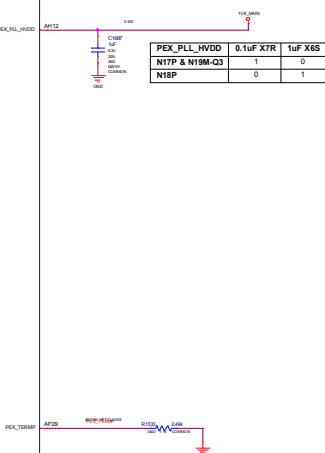


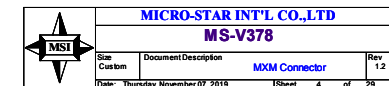
PEX_DVDD	1uF X6S	4.7uF X6S	10uF X6S	22uF X5R
N18P	6	3	3	2



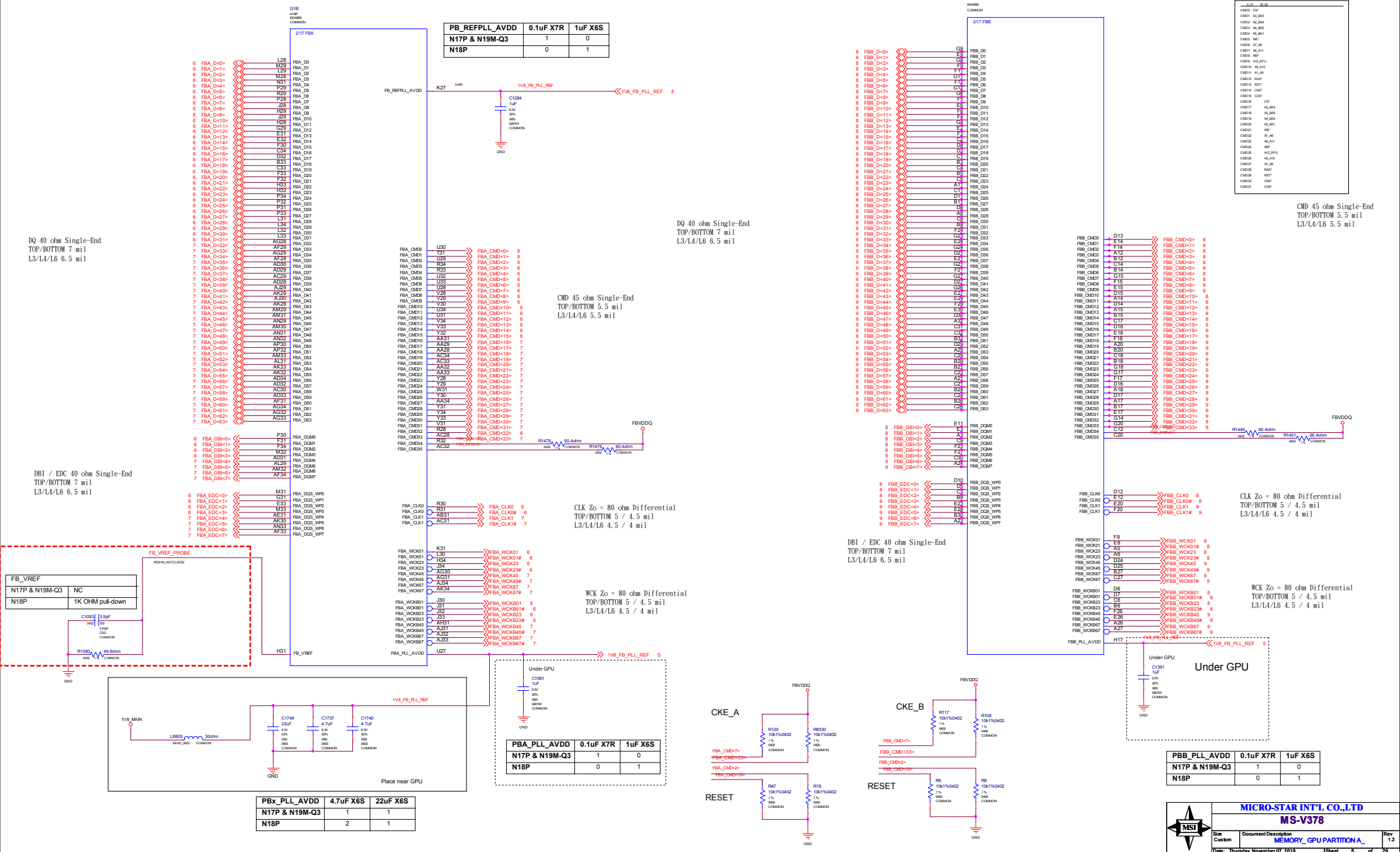
PEX_HVDD	1uF X6S	4.7uF X6S	10uF X6S	22uF X5R
N18P	7	3	3	2

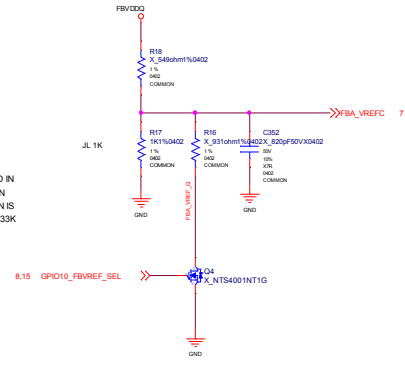
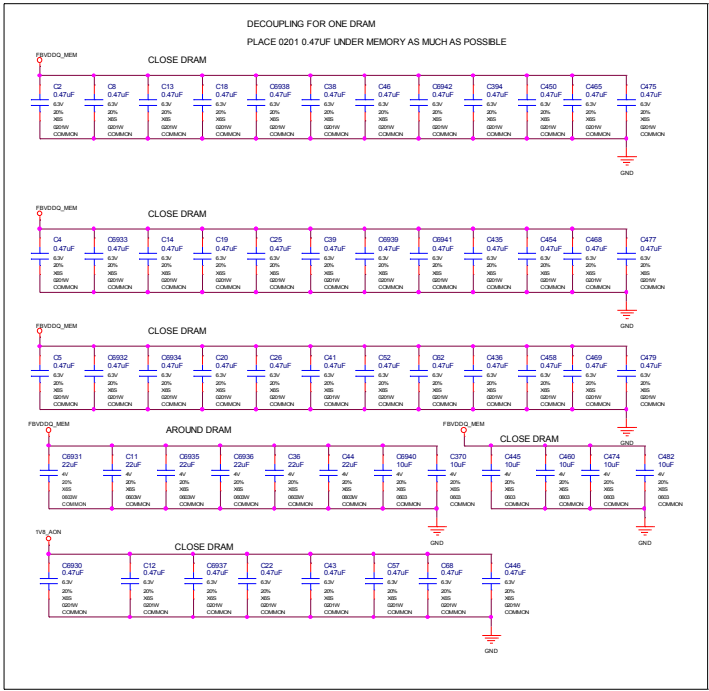
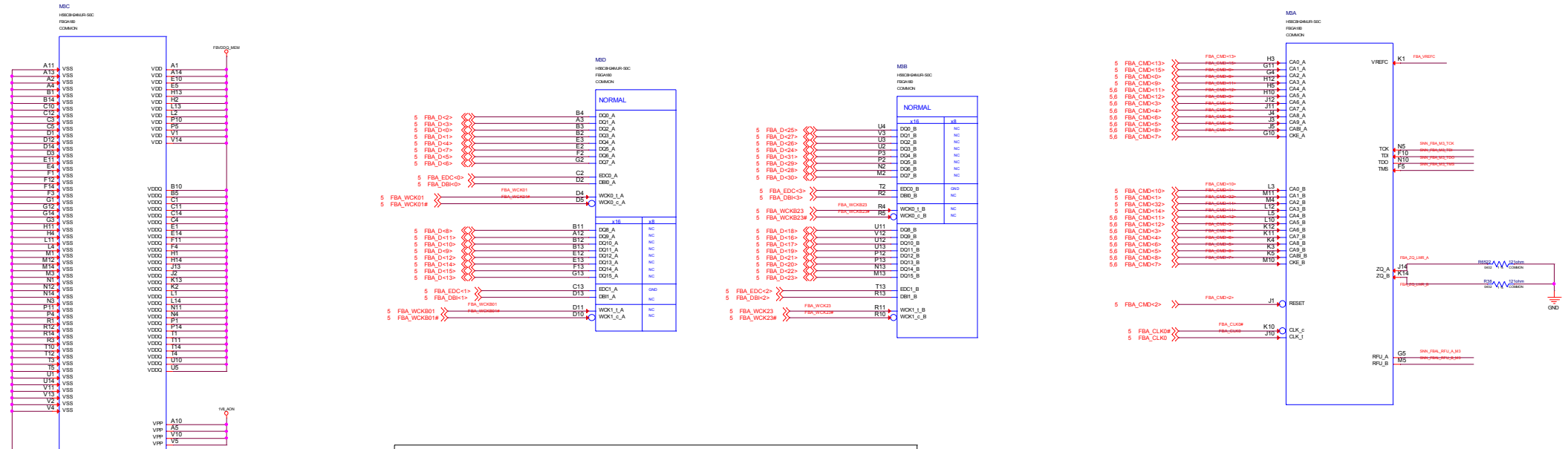
PEX_PLL_HVDD	0.1uF X7R	1uF X6S
N17P & N19M-Q3	1	0
N18P	0	1



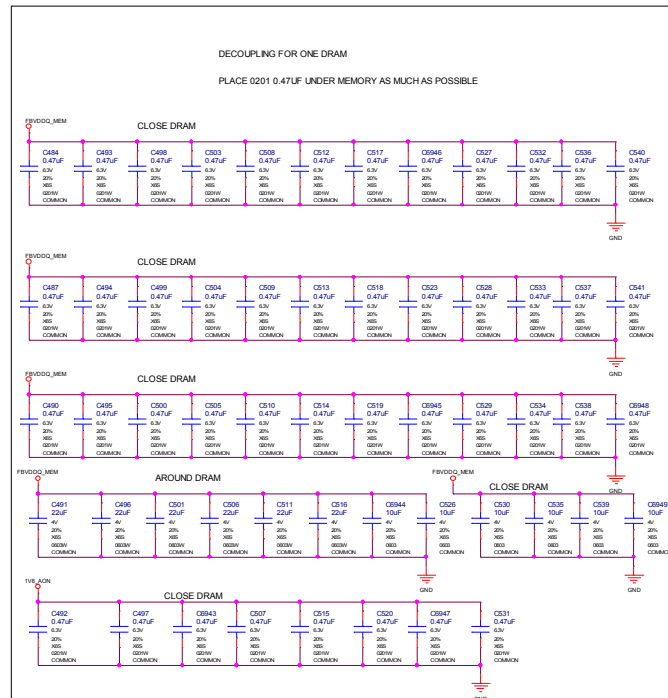
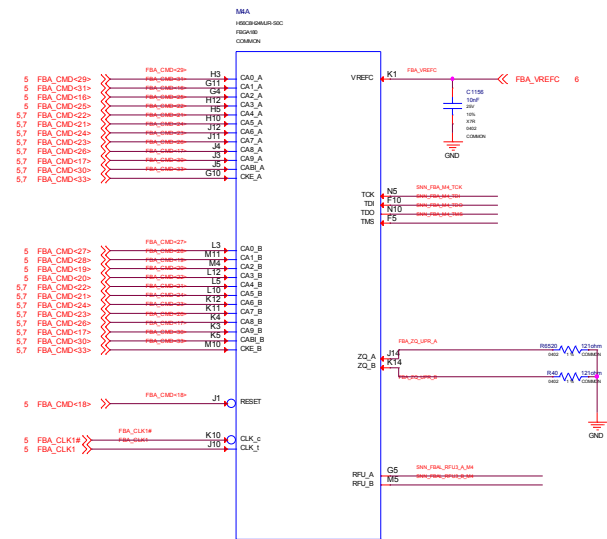
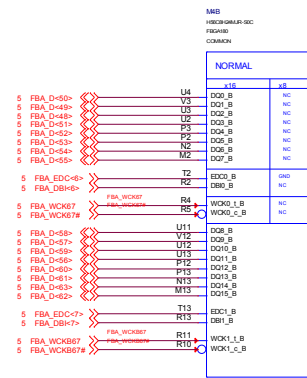
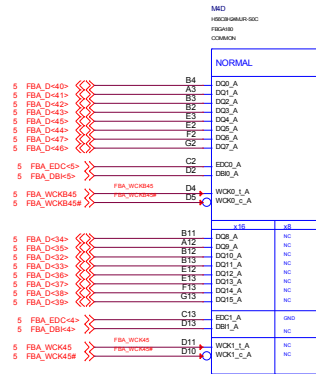
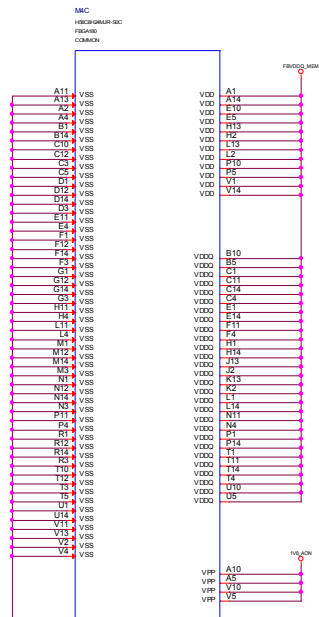


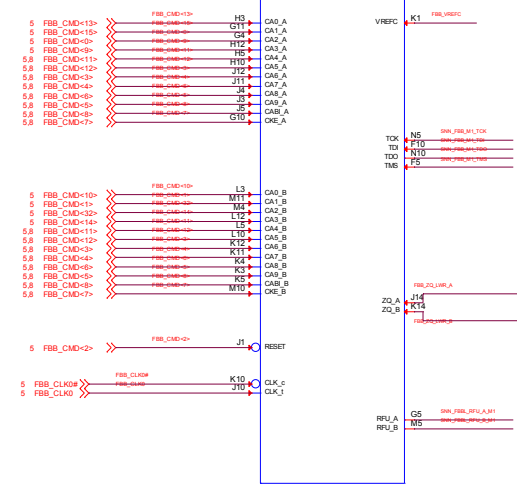
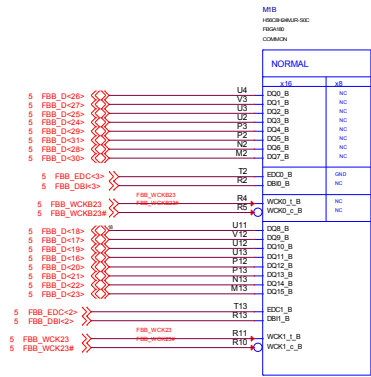
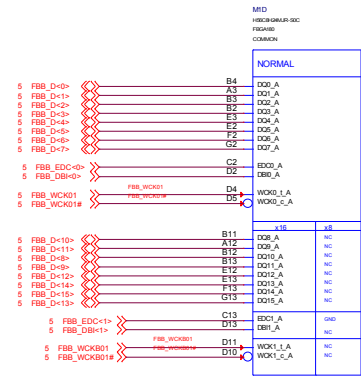
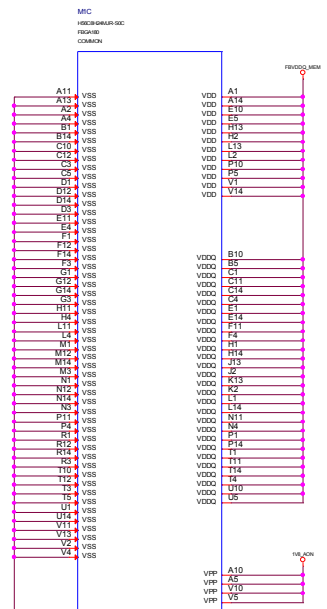
MEMORY: GPU PARTITION A/B



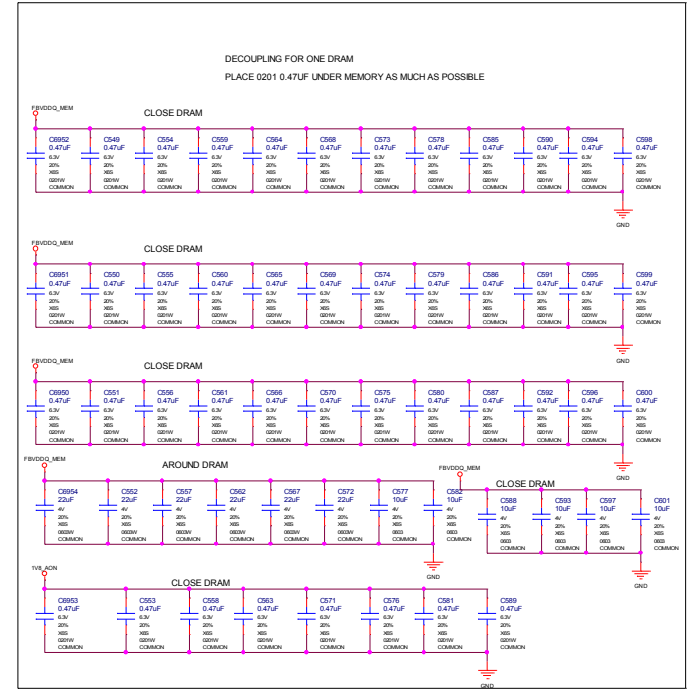


VREFC IS NOT USED IN
x16 CONFIGURATION
1K OHM PULL-DOWN IS
IN PLACE OF THE 1.33K
FOR R104

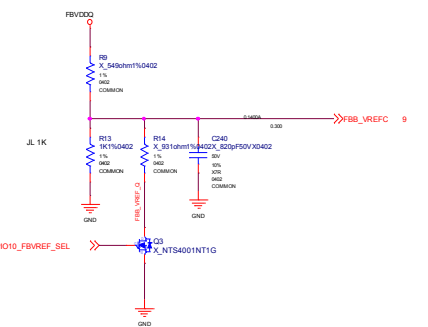




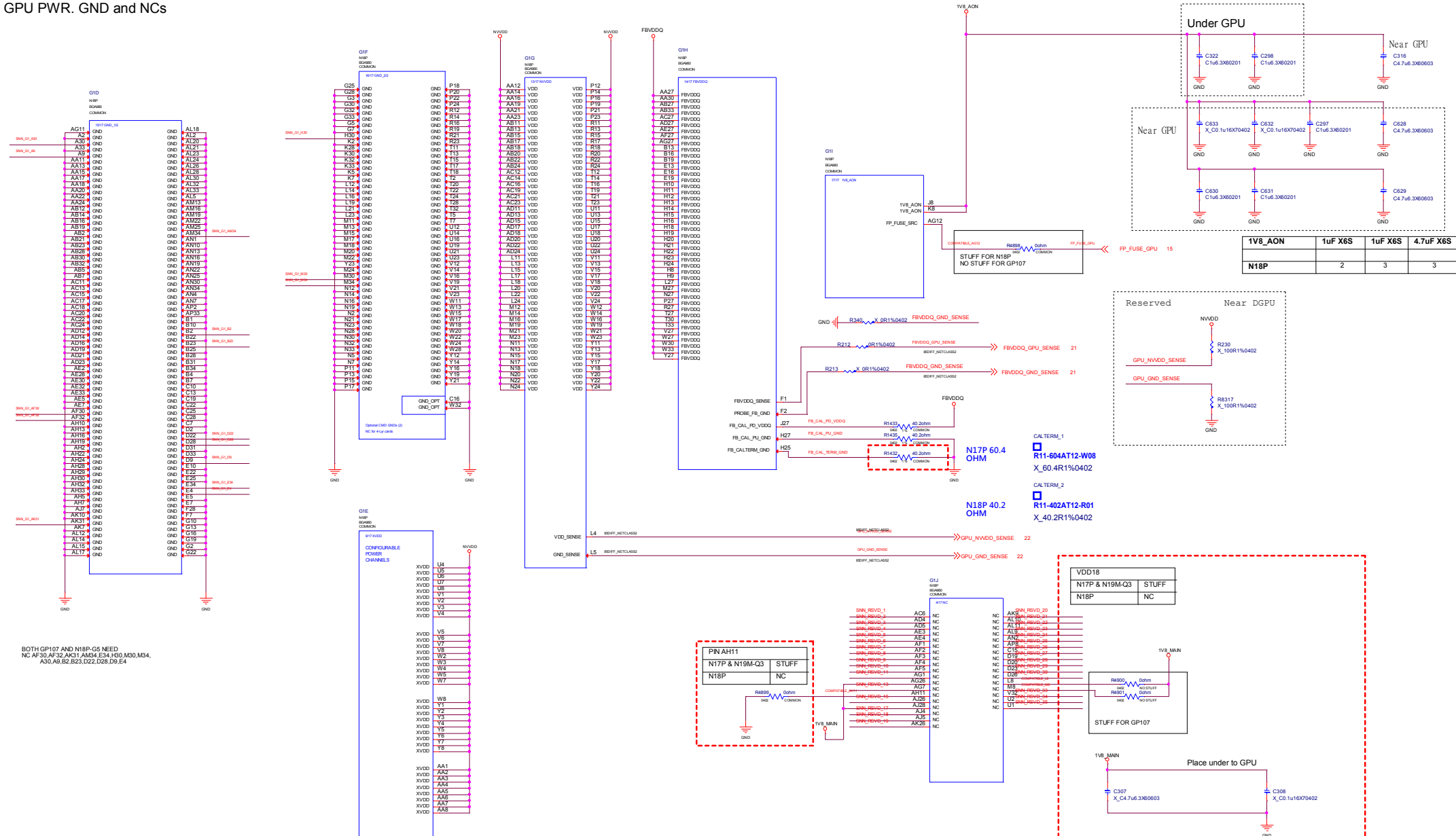
Place DRAM on TOP with PPA1 Away from GPU



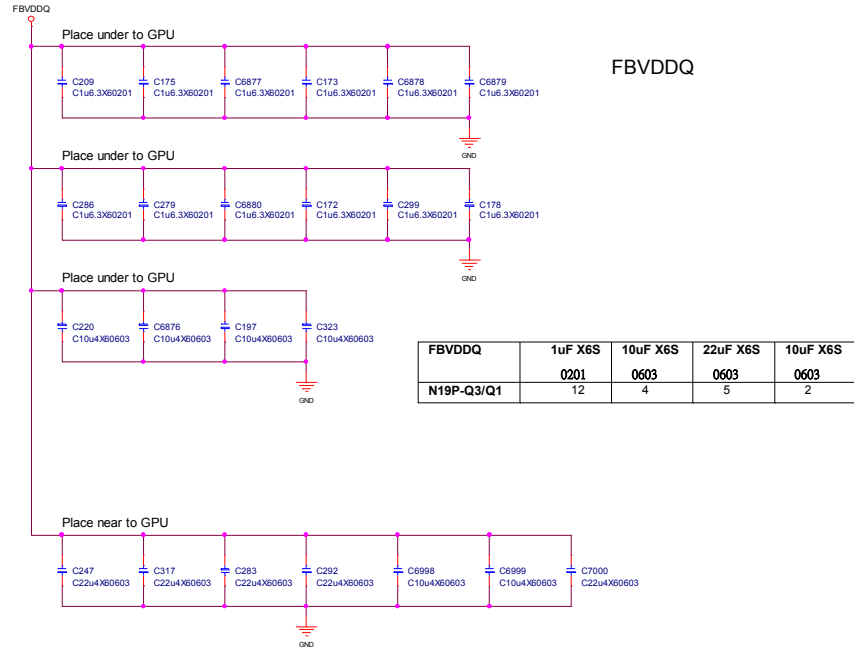
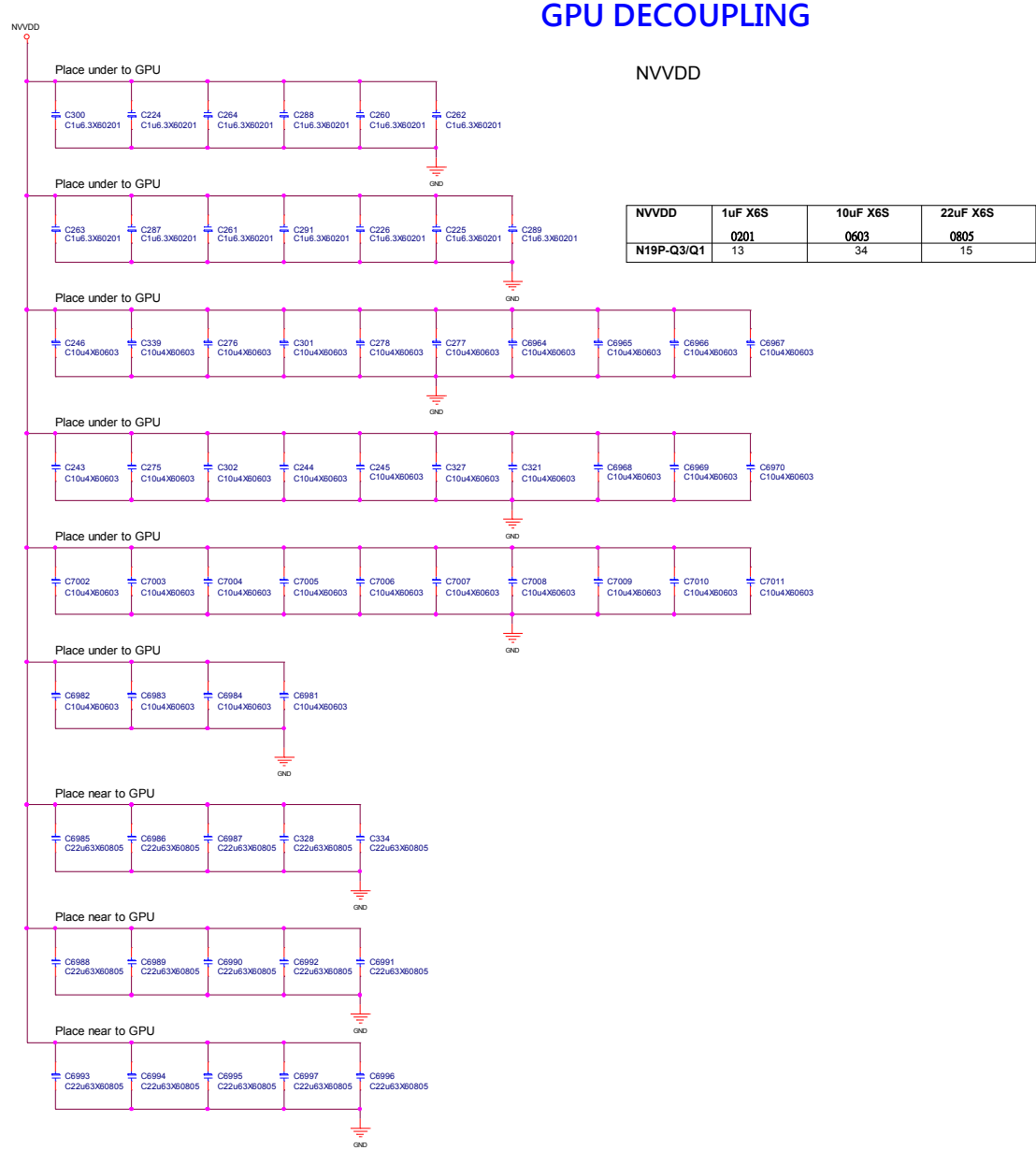
VREFC IS NOT USED IN x16 CONFIGURATION
1K OHM PULL-DOWN IS IN PLACE OF THE 1.33K FOR R104

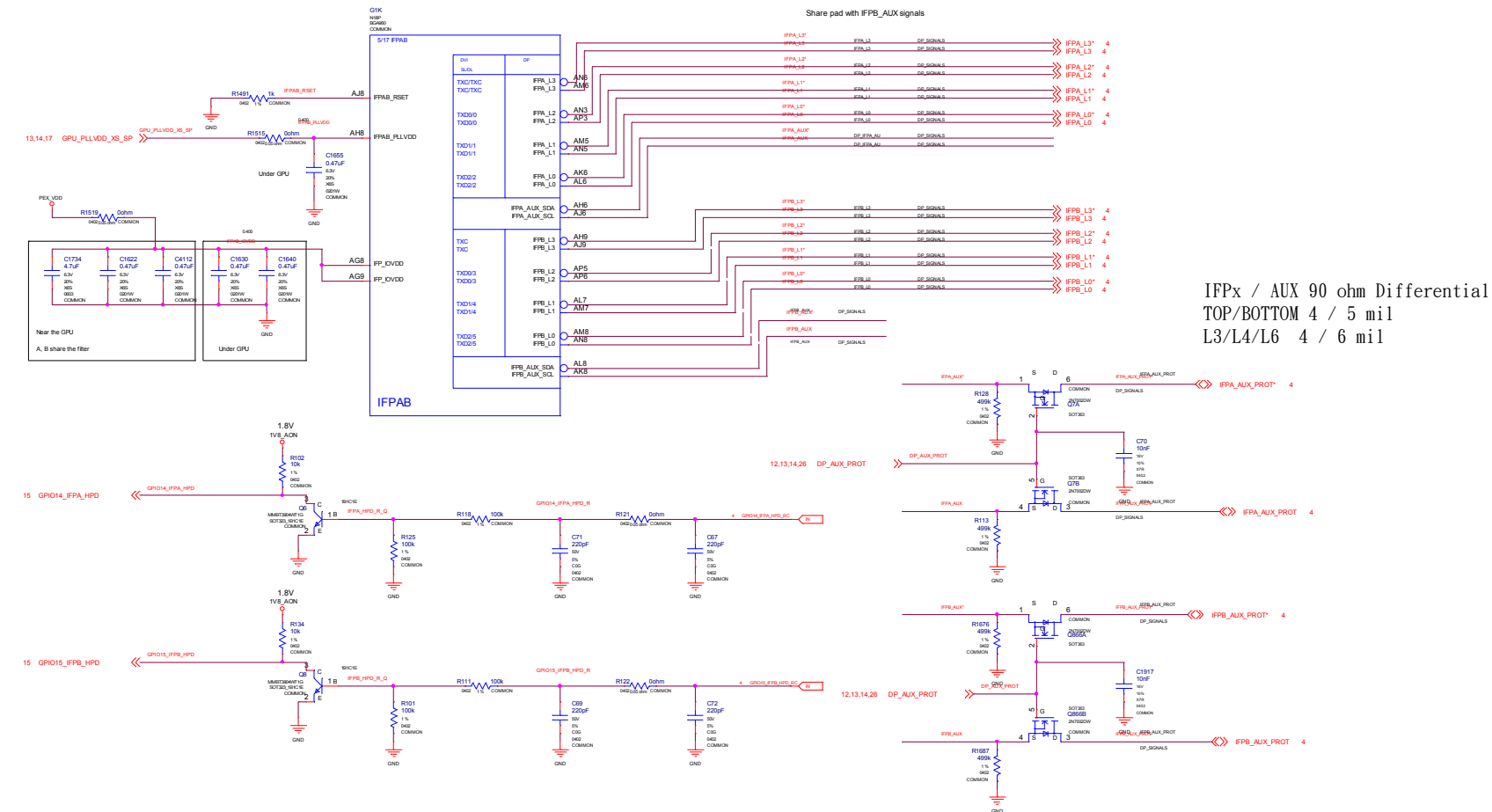


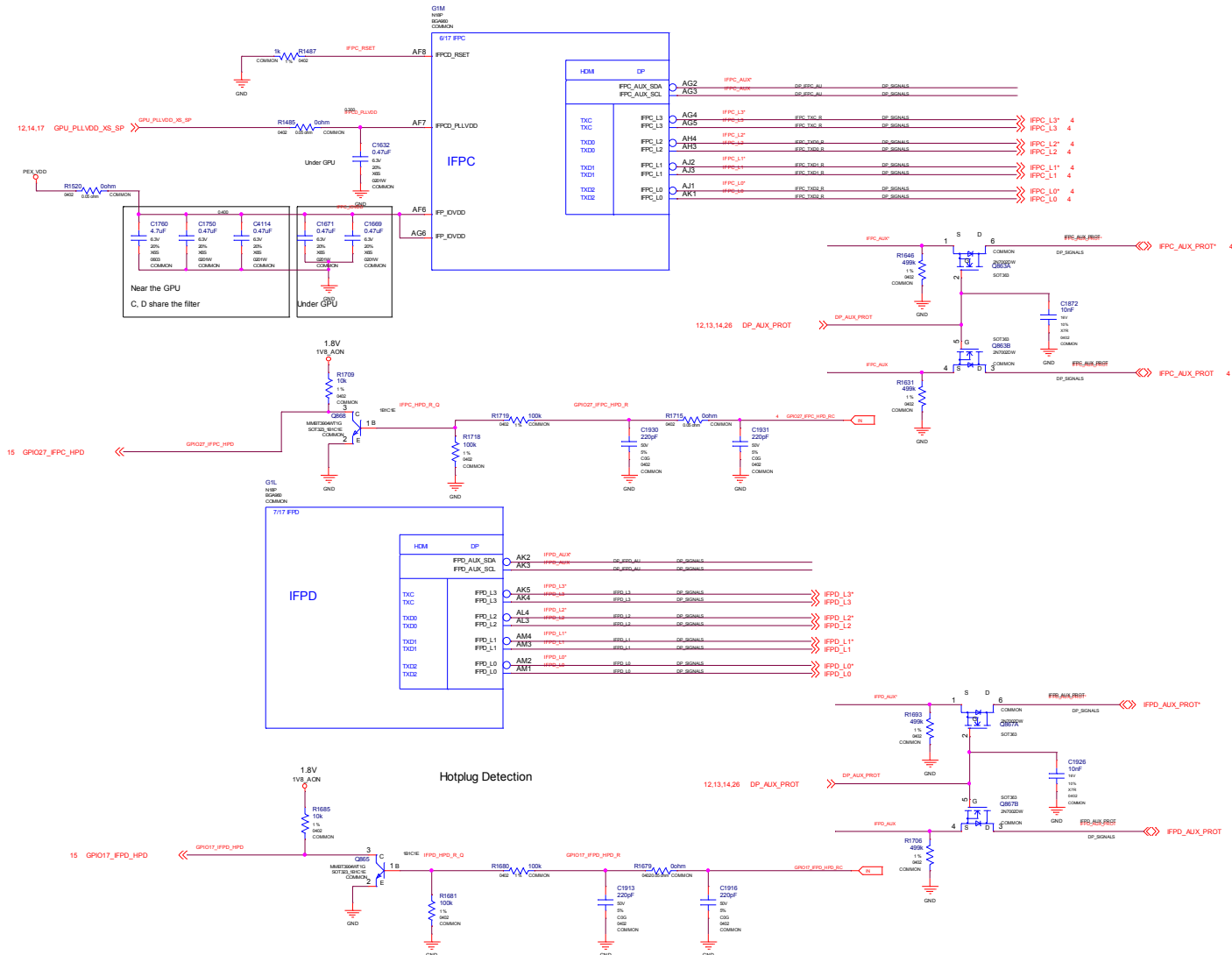
GPU PWR. GND and NCs



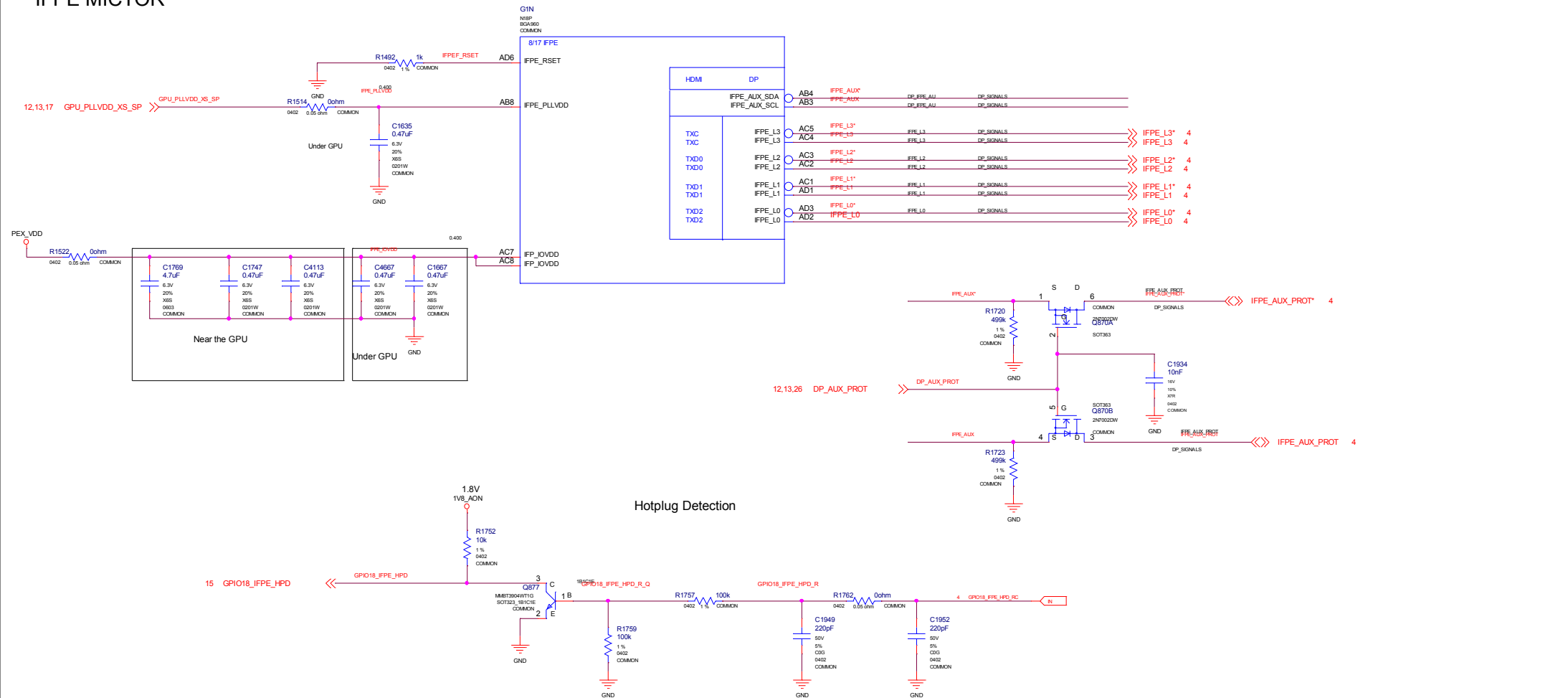
GPU DECOUPLING



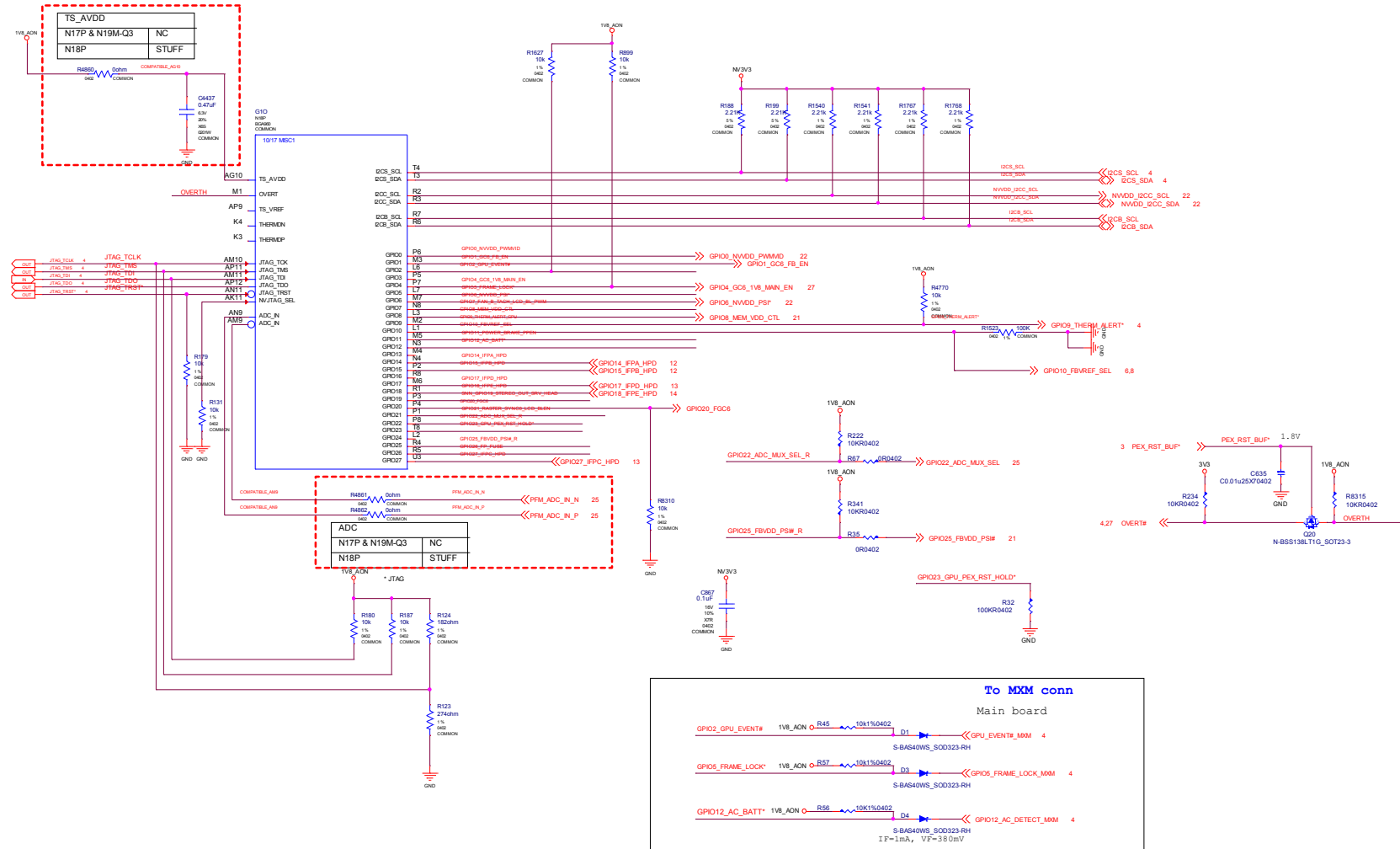
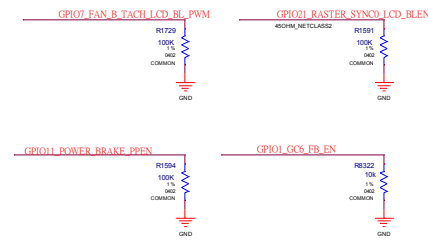
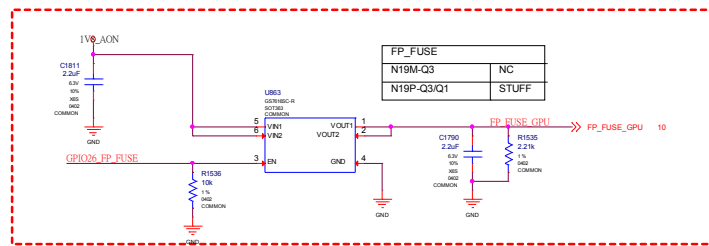




IFPE MICTOR



MISC: Fan, JTAG, GPIO, STEREO



MISC2: ROM, Straps

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]	
L	L	L	00000	RAMCFG TBD
L	H	L	00010	RAMCFG TBD
L	H	H	00011	RAMCFG TBD
H	H	L	00110	RAMCFG TBD
H	H	H	00111	RAMCFG TBD

ROM_SO	ROM_SI	ROM_SCLK	DUMMY[2:0].FS_OVERT	1:ENABLE 0:DISABLE
L	L	L	XXX1	FS_OVERT ENABLE
L	L	M	XXX0	FS_OVERT DISABLE

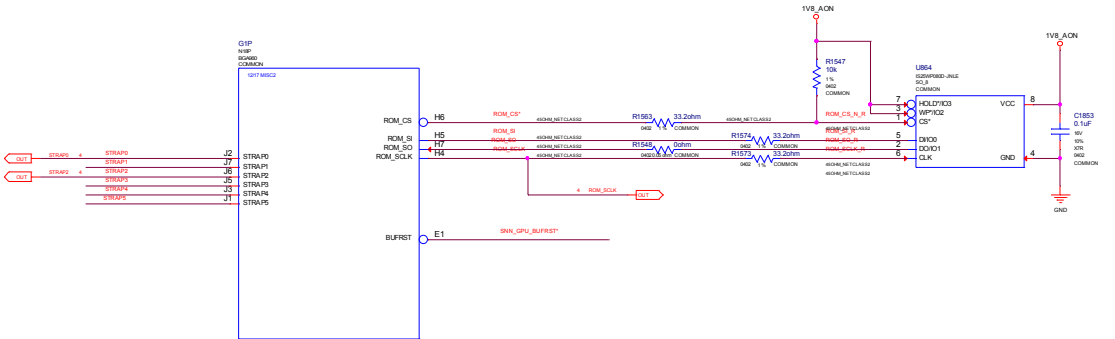
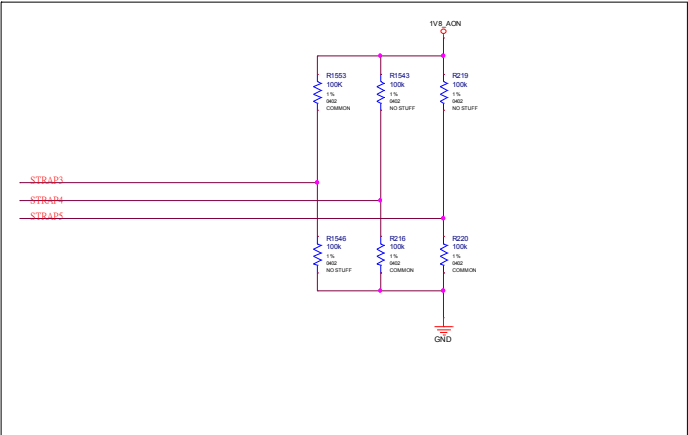
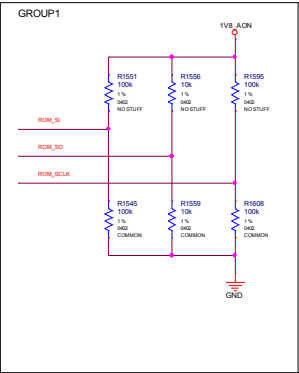
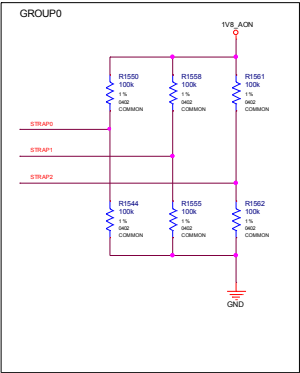
STRAP5	STRAP4	STRAP3	SMB_ALT_ADDR	DEVID_SEL	PCIE_CFG	VGA_DEVICE
M	H	H	1	1	1	1
M	H	L	1	1	1	0
M	L	H	1	1	0	1
M	L	L	1	1	0	0
L	H	M	1	0	1	1
L	M	H	1	0	1	0
L	M	L	1	0	0	1
L	L	M	1	0	0	0
H	H	H	0	1	1	1
H	H	L	0	1	1	0
H	L	H	0	1	0	1
H	L	L	0	1	0	0
L	H	H	0	0	1	1
L	H	L	0	0	1	0
L	L	H	0	0	0	1
L	L	L	0	0	0	0

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

DEFAULT

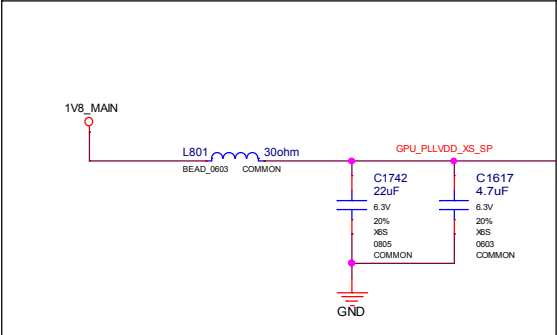
- 1:SMB_ALT_ADDR ENABLE
- 0:SMB_ALT_ADDR DISABLE
- 1:DEVID_SEL REBRAND
- 0:DEVID_SEL ORIGNAL
- 1:PCIE_CFG LOW POWER
- 0:PCIE_CFG HIGH POWER
- 1:VGA_DEVICE ENABLE
- 0:VGA_DEVICE DISABLE

Default

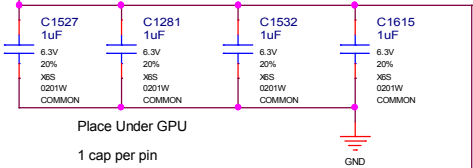


MISC2: XTAL. PLL

XSN_PLLVDD	0.1uF X7R	1uF X6S	4.7uF X6S	22uF X6S
GPCPLL_AVDD				
SP_PLLVDD				
VID_PLLVDD				
N17P & N19M-Q3	4	0	1	1
N18P	0	4	1	1



Place near GPU



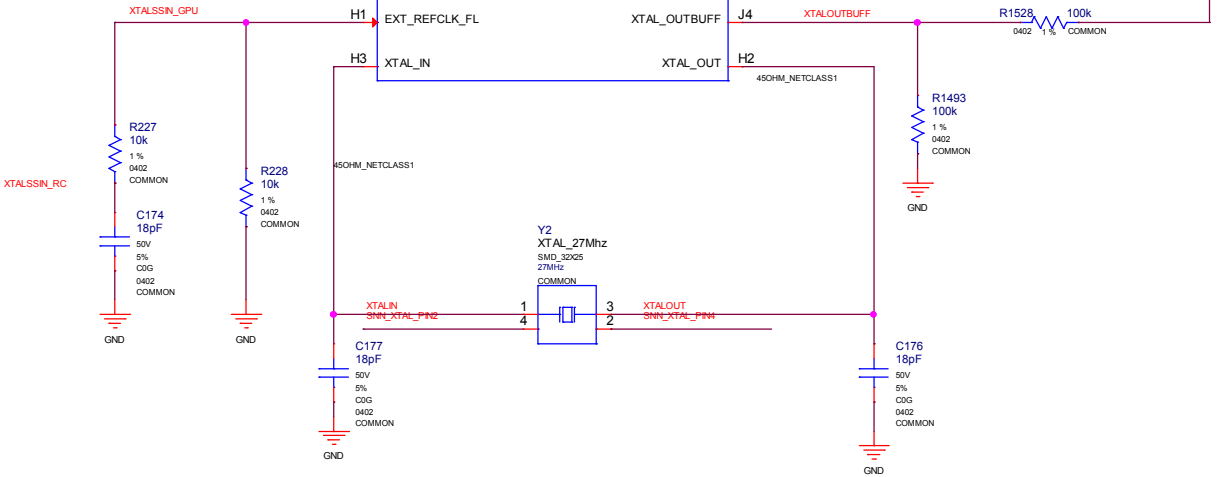
Place Under GPU
1 cap per pin

12.2.2.5 XTALOUTBUFF Circuit Node

For mobile graphics circuit designs (or other designs wherein the graphics circuit does not directly and fully control its own cooling fan), the XTALOUTBUFF circuit node must be tied to GND through 100KΩ resistors.

SmartFan Strap Table

Voltage	Inverted SmartFan PWM %
0V	GPIO DISABLED
0.9V	33% PWM
1.8V	66% PWM

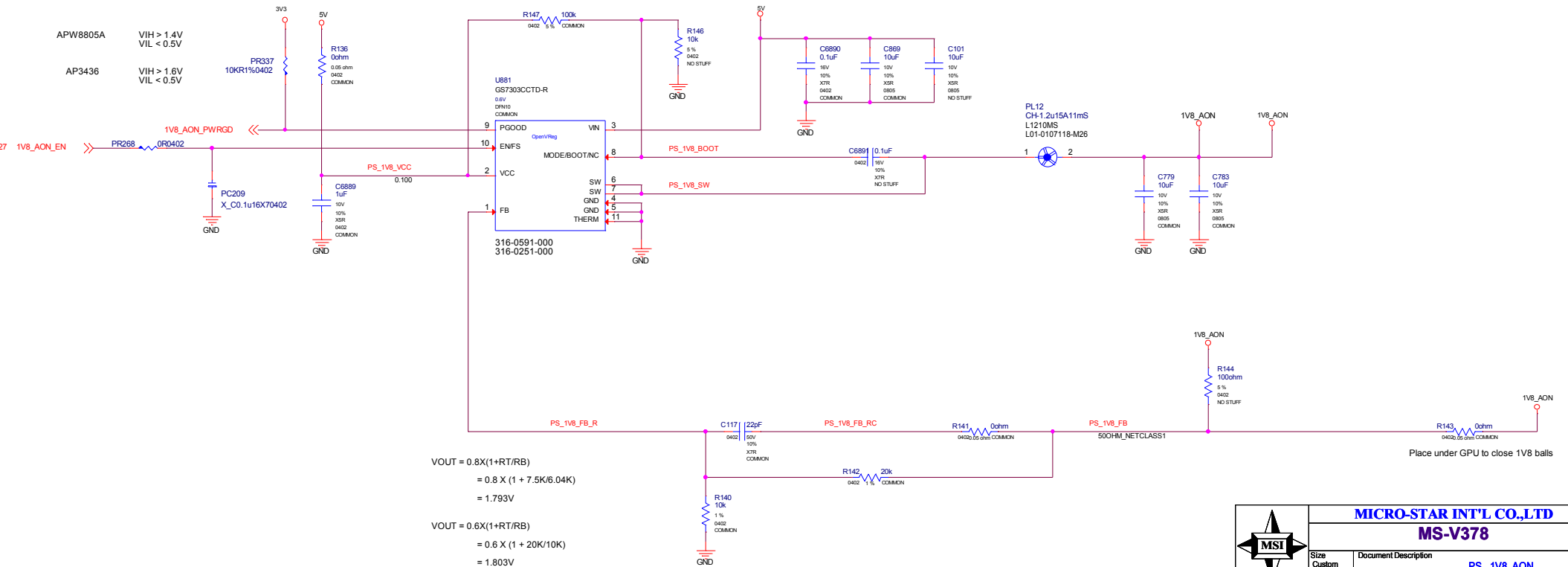


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MS-V378

Size	Document Description	Rev
B	GPU_XTAL_PLL	1.2
Date:	Thursday, November 07, 2019	Sheet 17 of 29

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

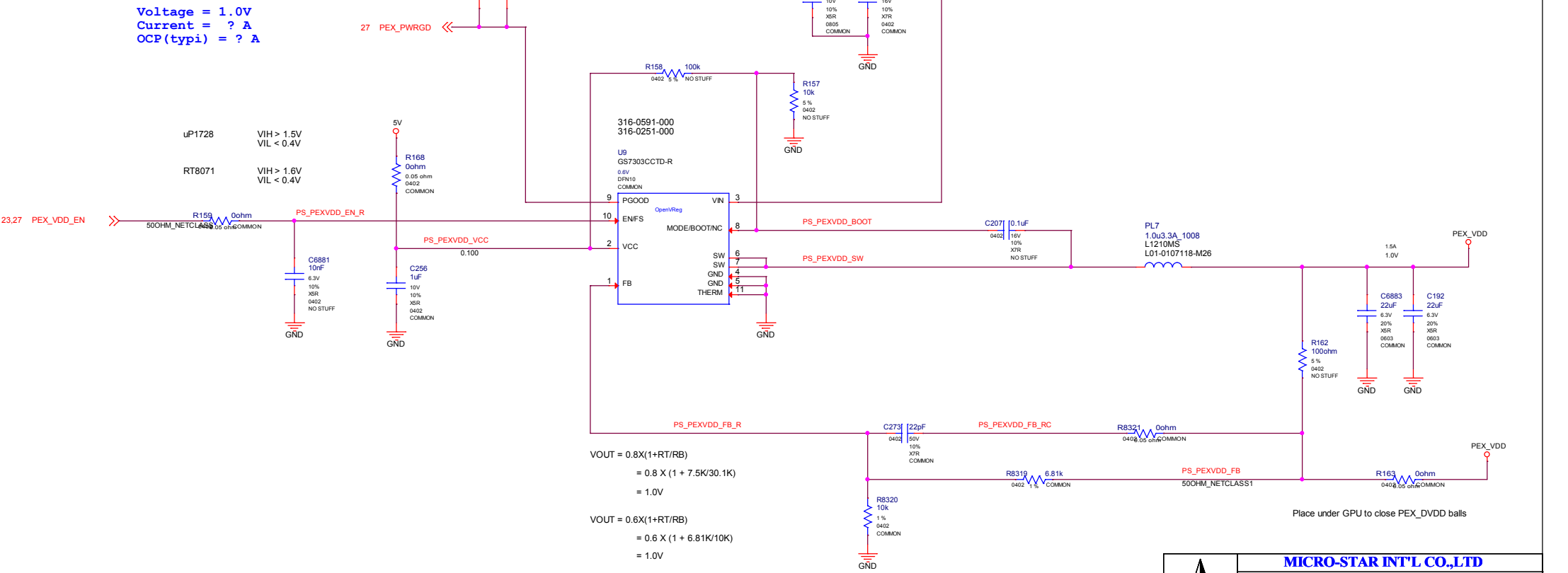
APW8805A	VIH > 1.4V VIL < 0.5V
AP3436	VIH > 1.6V VIL < 0.5V



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Size Custom	Document Description PS_1V8_AON	Rev 1.2
Date: Thursday, November 07, 2019		Sheet 18 of 29

PS_PEXVDD

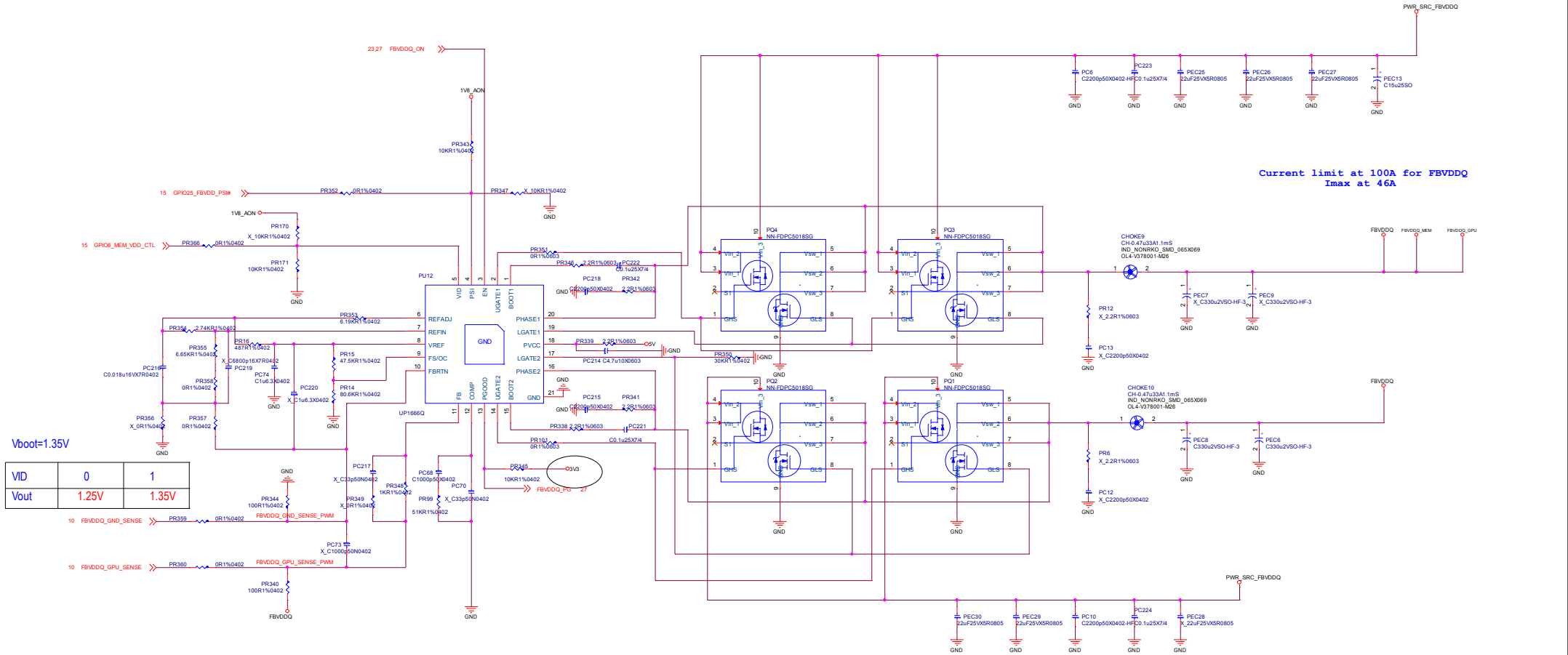


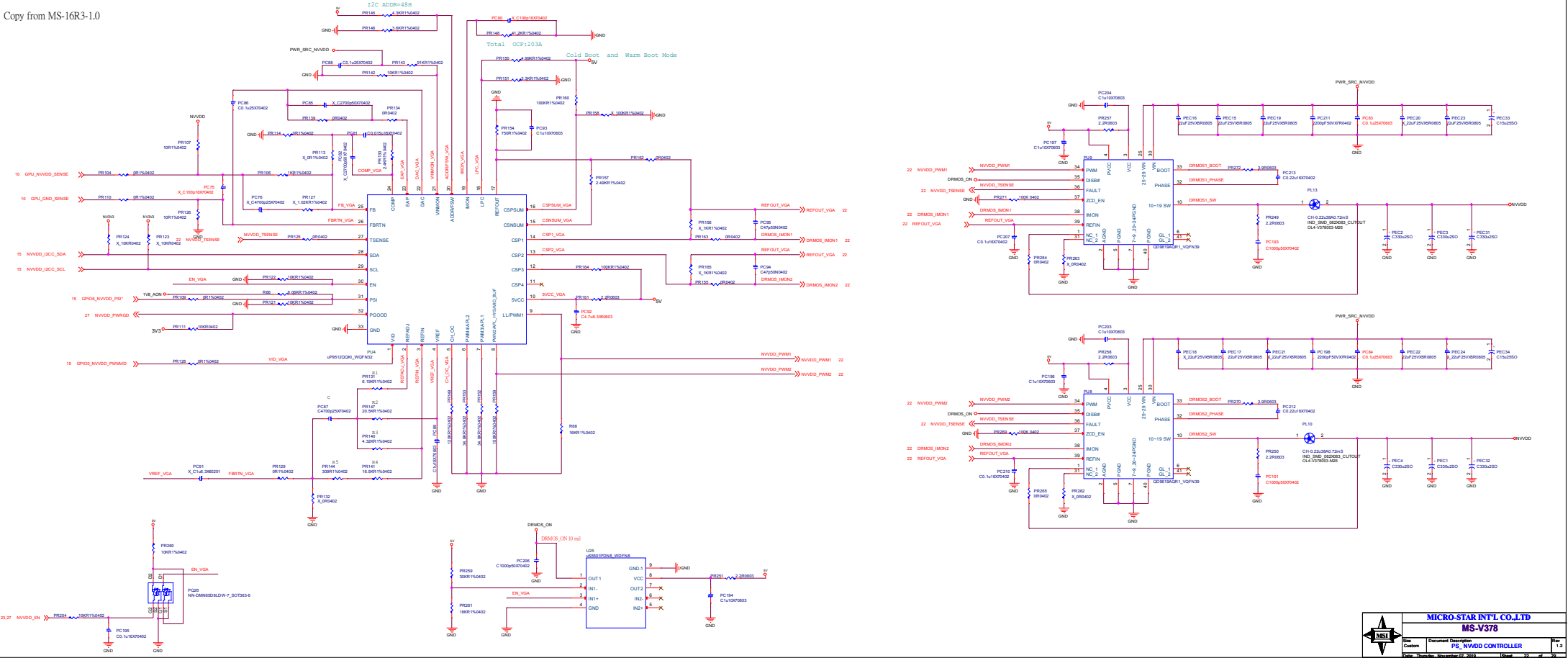


MICRO-STAR INT'L CO.,LTD		
MS-V378		
Size Custom	Document Description PS_PEXVDD	Rev 1.2
Date: Thursday, November 07, 2019		Sheet 19 of 29

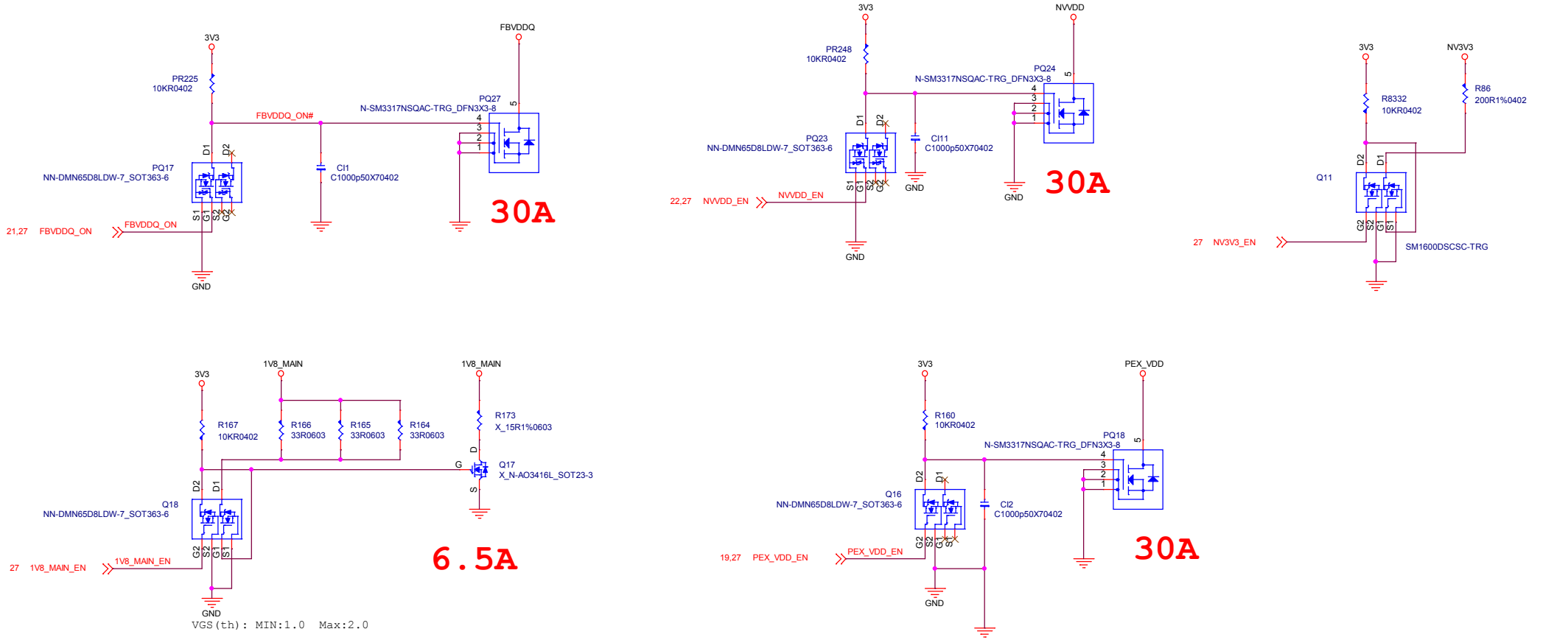
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	MICRO-STAR INT'L CO.,LTD		
	MS-V378		
	Size A	Document Description PS_ NV3V3	Rev 1.2
	Date: Thursday, November 07, 2019	Sheet 20 of	29

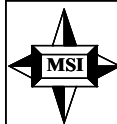




Discharge



Pin Name	N17P	N18P	N17P Functional Description	N17P Recommended Default Pull-up or Pull-down	N18P Recommended Default Pull-up or Pull-down
GPIO0	NVVD_PWM	NVVD_PWM_VID	PWM Output to control NVVD	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	NVVD_PWM	UNUSED	PWM output to control the NVVD 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	NVVD_PSI	NVVD_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 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 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

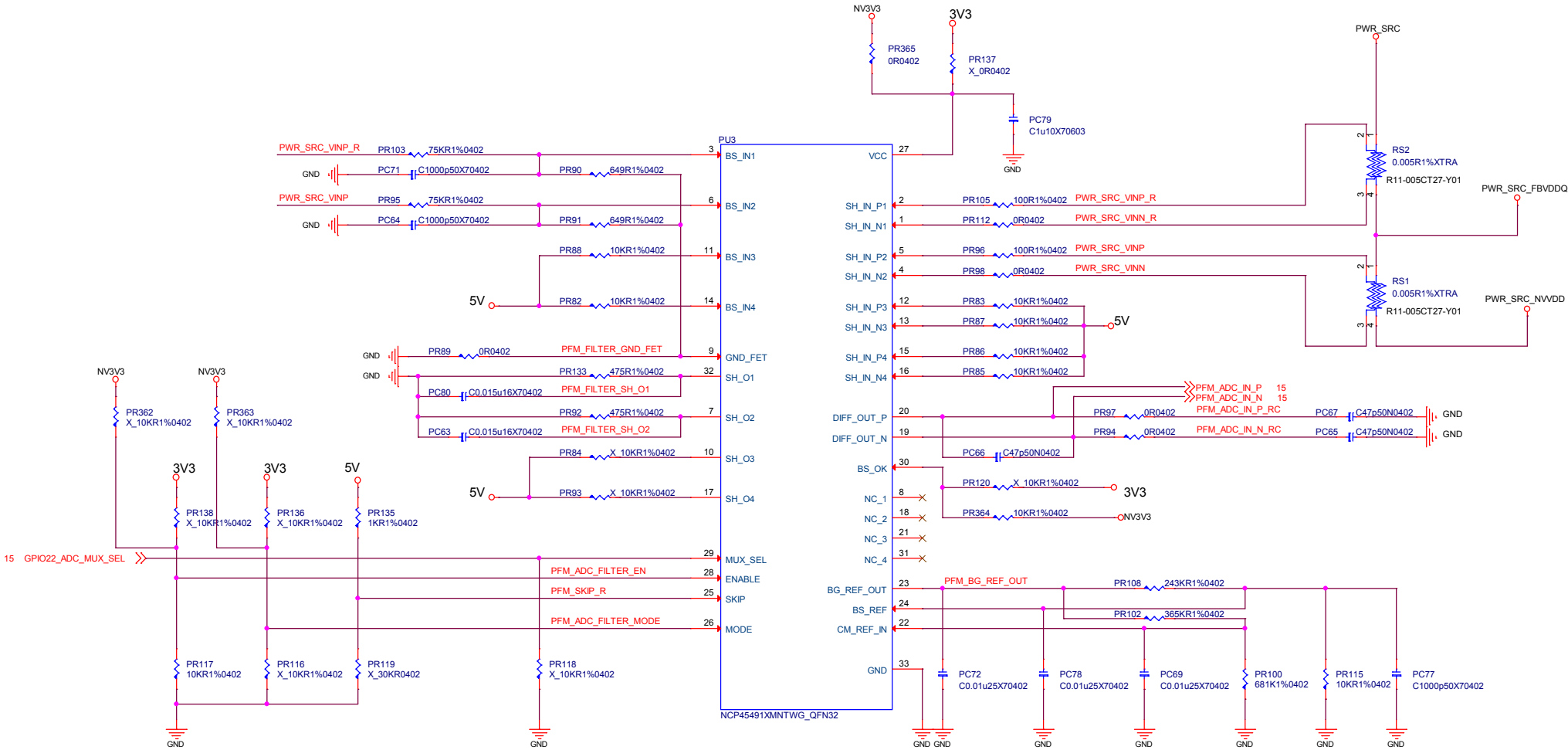


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MS-V378

Size B	Document Description GPIO Functional Description	Rev 1.2
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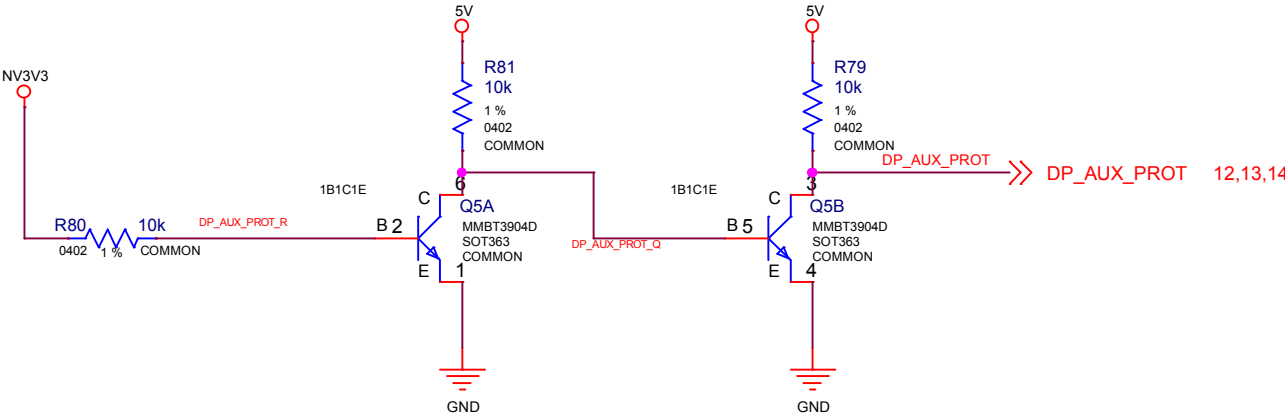
INPUT PREFILTER

On Semi	PR90, PR91	PR92, PR133	PR108	PR95, PR103	PC64, PC71
CONFIG	R954, R924	R977, R923	R950	R953, R952	C841, C836
N18P-G0	649R	475R	243K	75K	1.0nF



SEQUENCE:5V,1V8,NV3V3 ENABLE

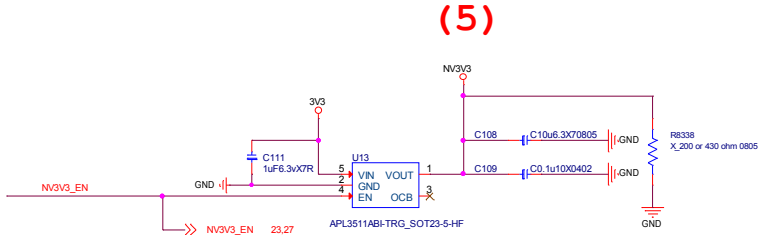
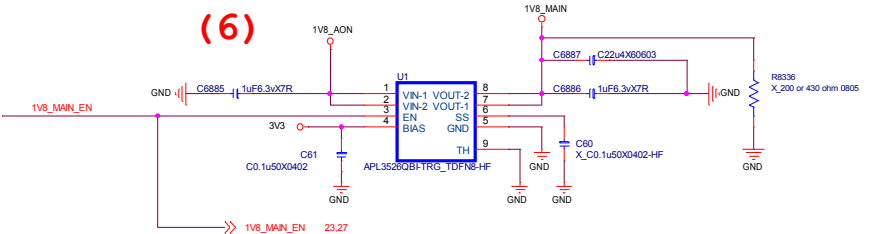
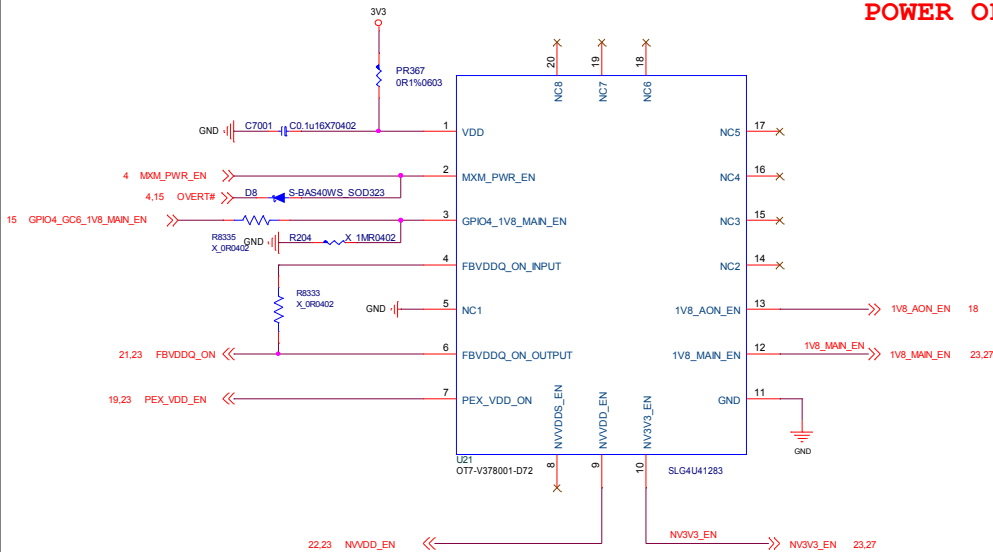
DP_AUX Protection



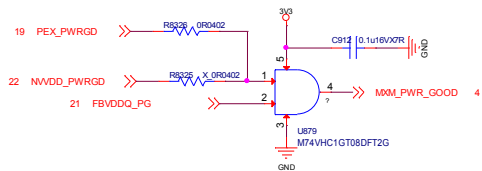
Power Sequence Control

POWER ON= 1V8_AON->1V8_MAIN->NV3V3->NVVDD->PEX_VDD->FBVDDQ->>DGPU_PWRGD

POWER OFF= PEX_VDD/FBVDDQ->NVVDD->NV3V3->1V8_MAIN->1V8_AON

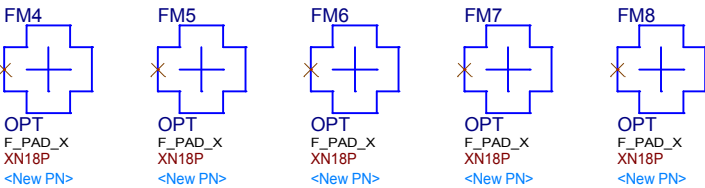
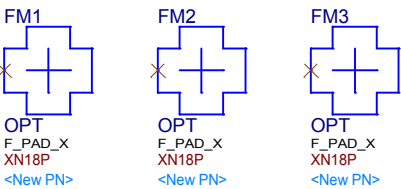
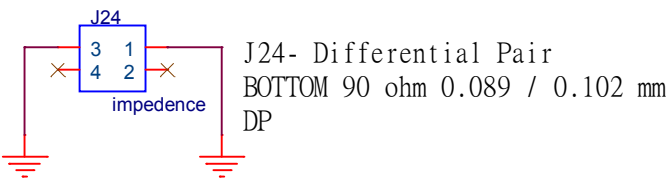
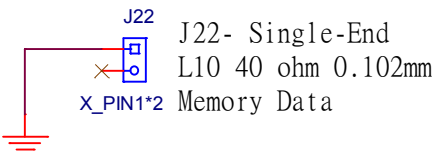
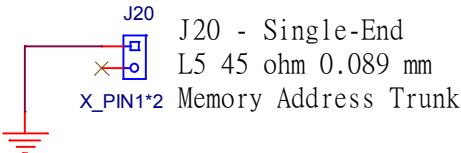
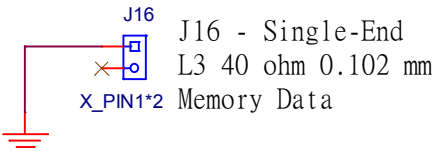
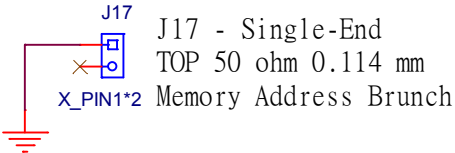
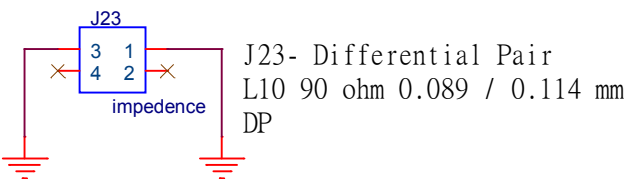
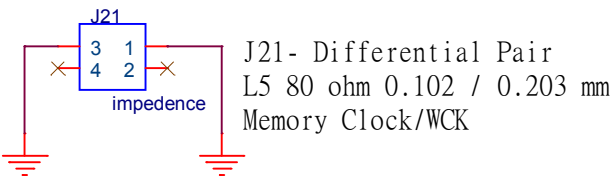
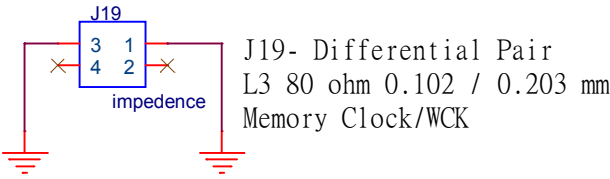
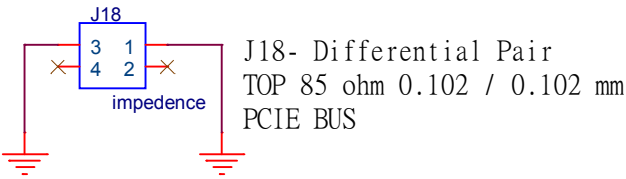
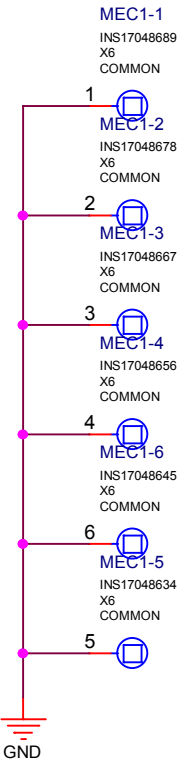


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Mounting Holes



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