P2012-C01

GM107/GK107 GB4B-128 sDDR3,128bit/64bit, 256M/128M/64Mx16
DVI-I DL/VGA+HDMI/DP+VGA

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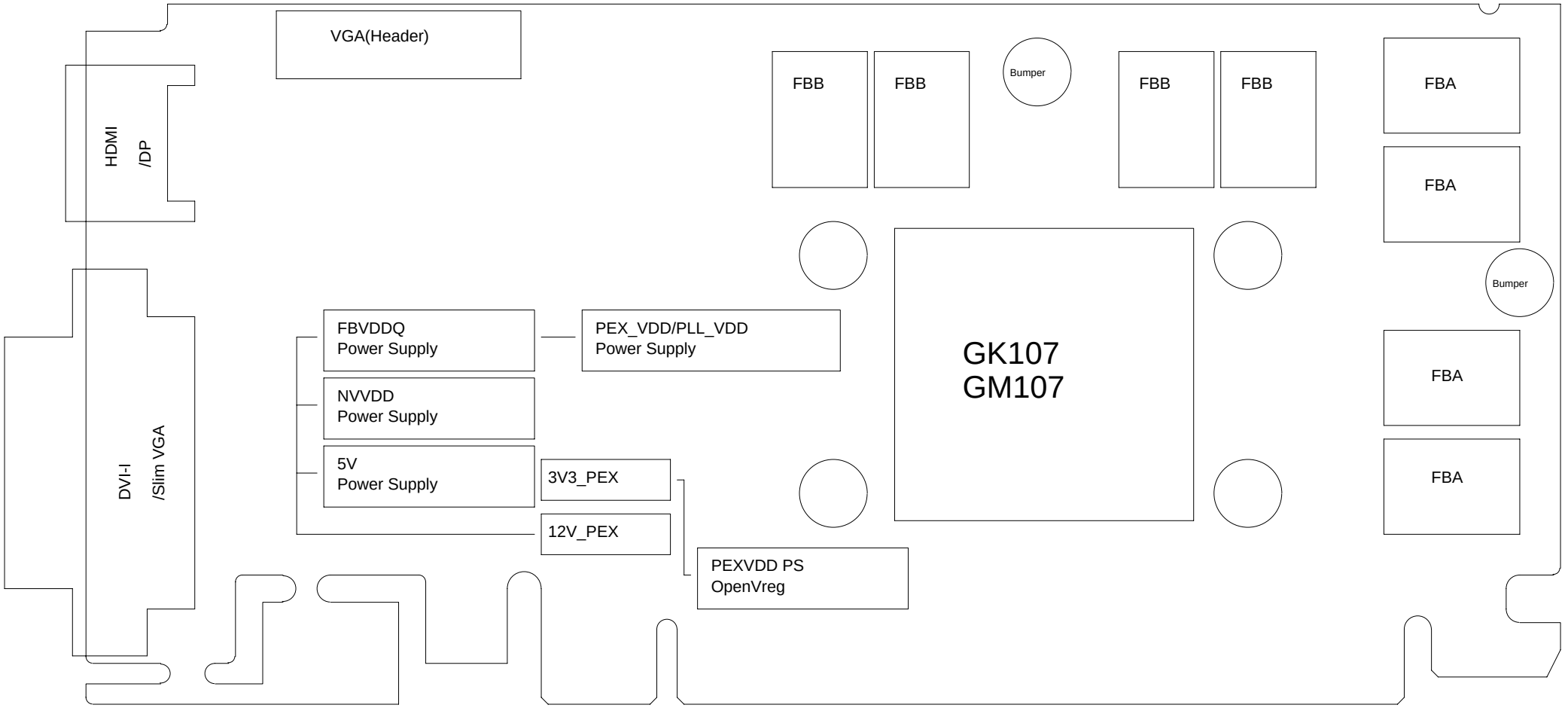
Block Diagram



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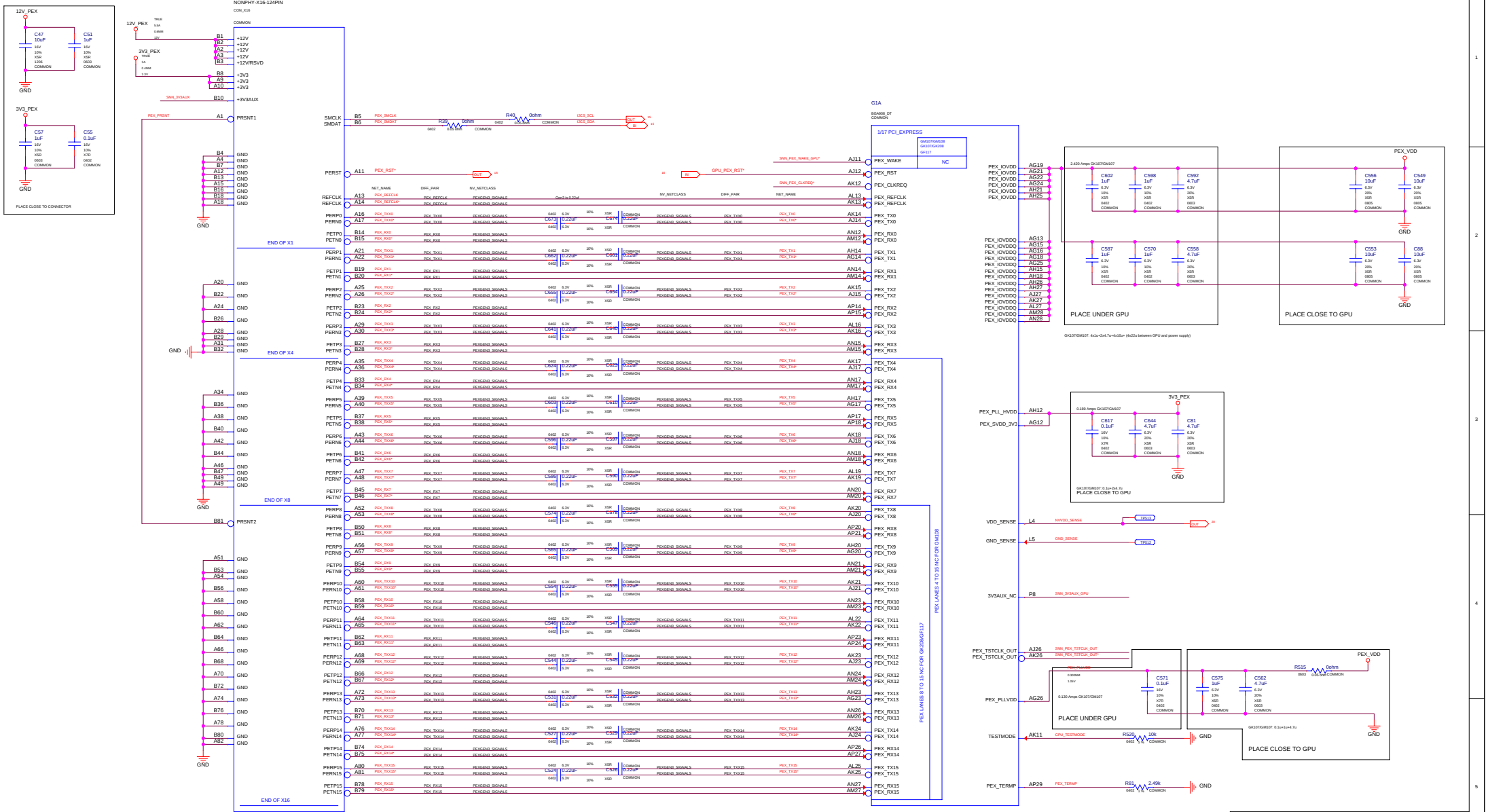
PCI Express



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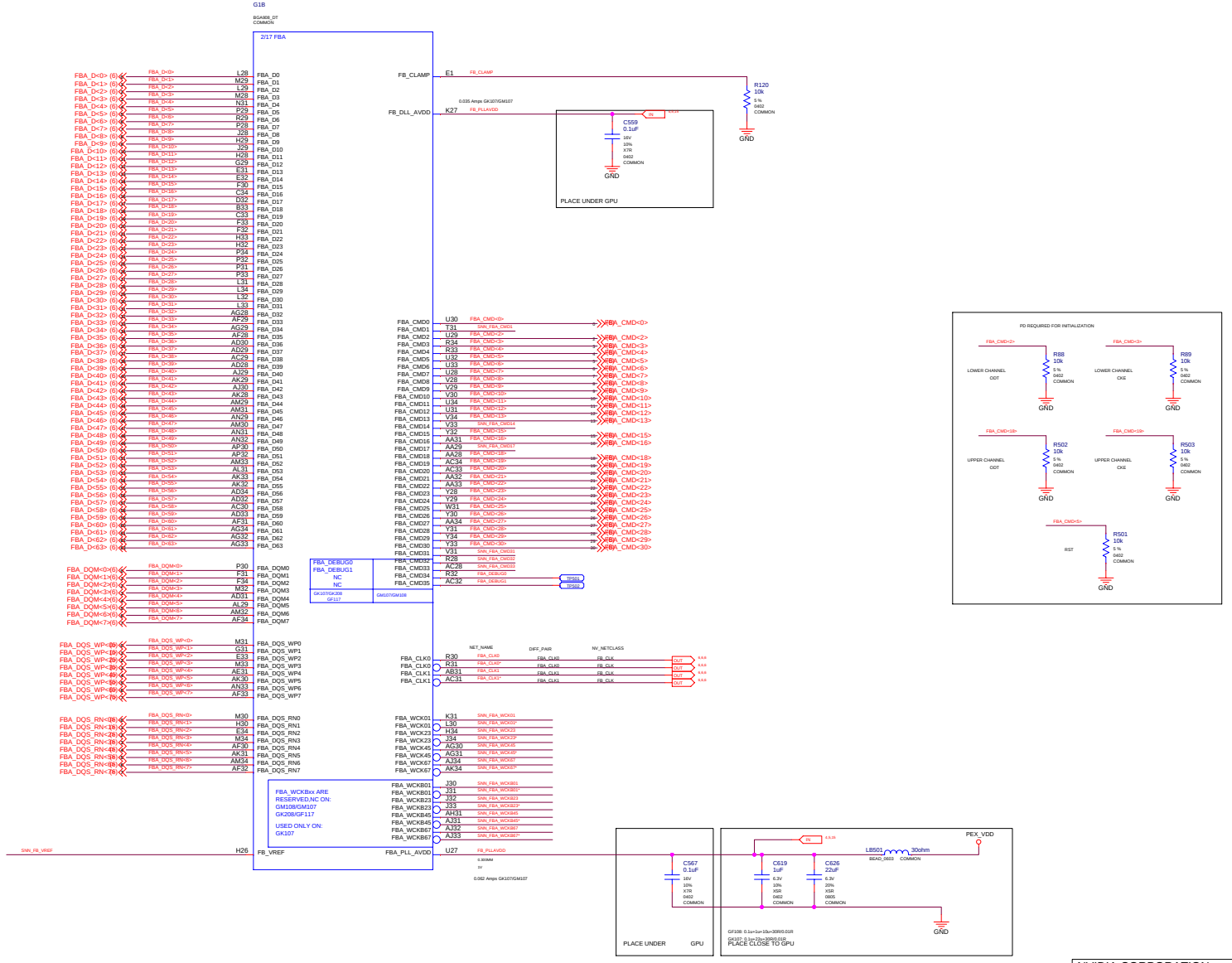
GPU Frame Buffer Partition A



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
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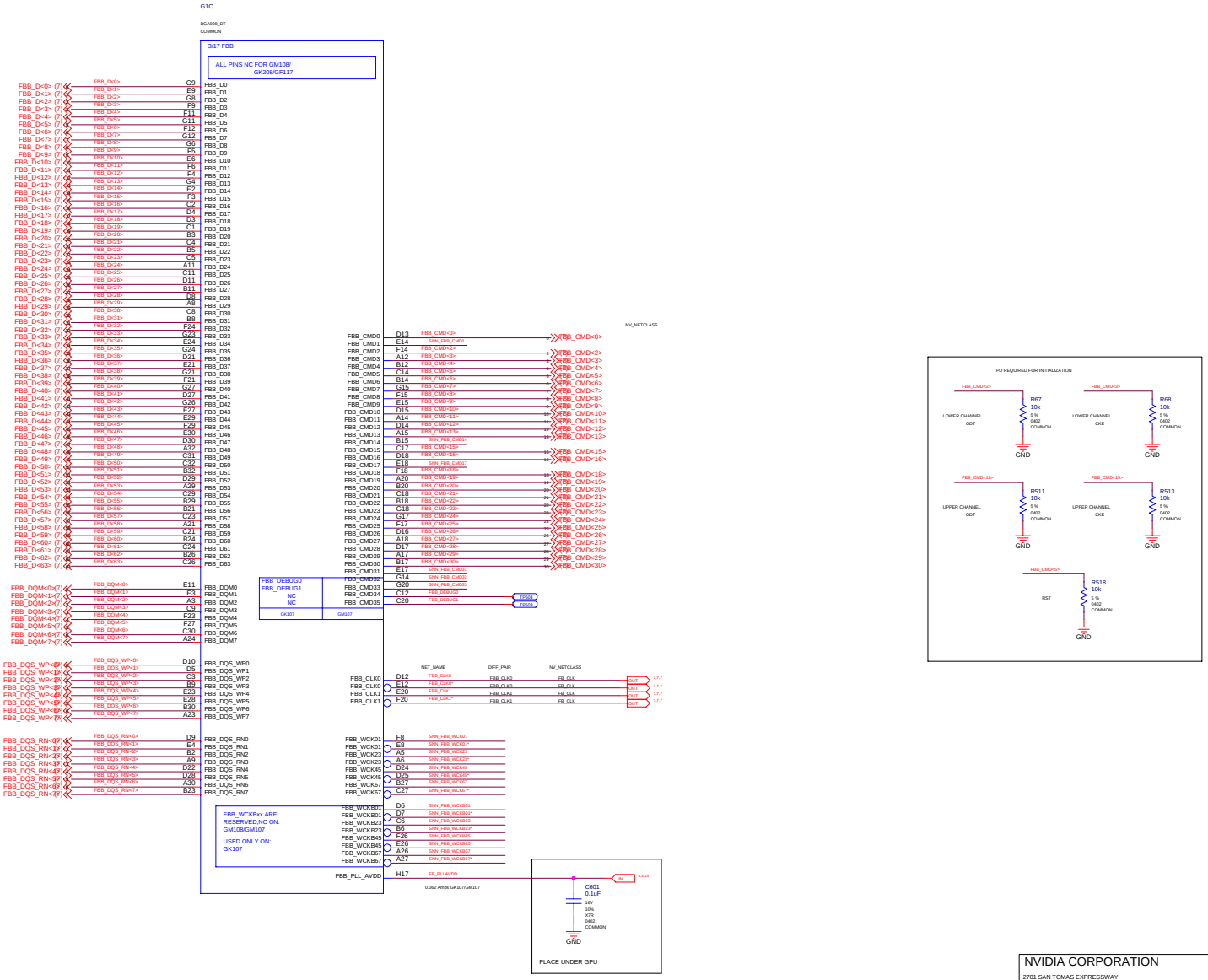
GPU Frame Buffer Partition B



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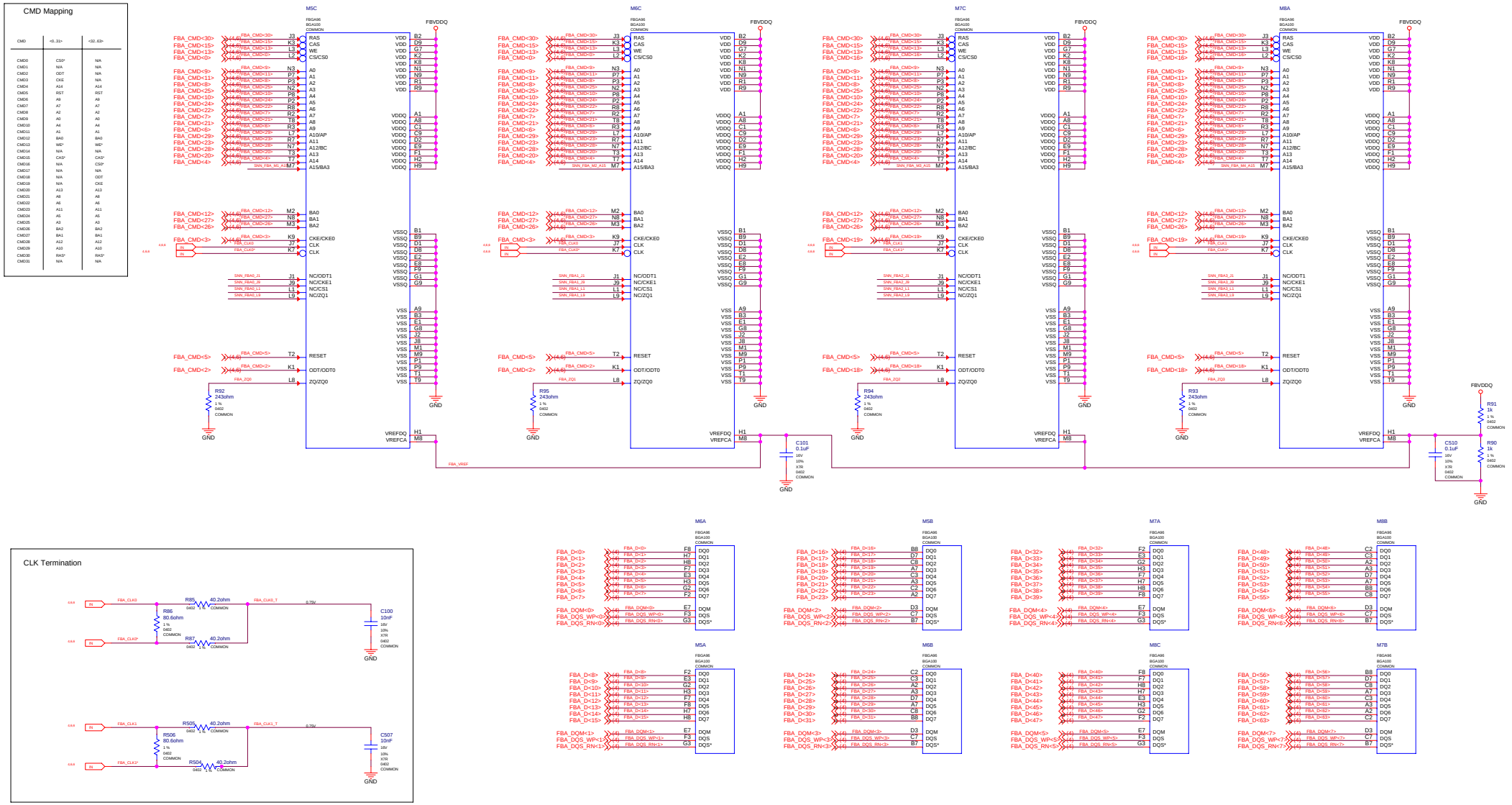
Memory FBA Partition



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	Memory FBA Partition

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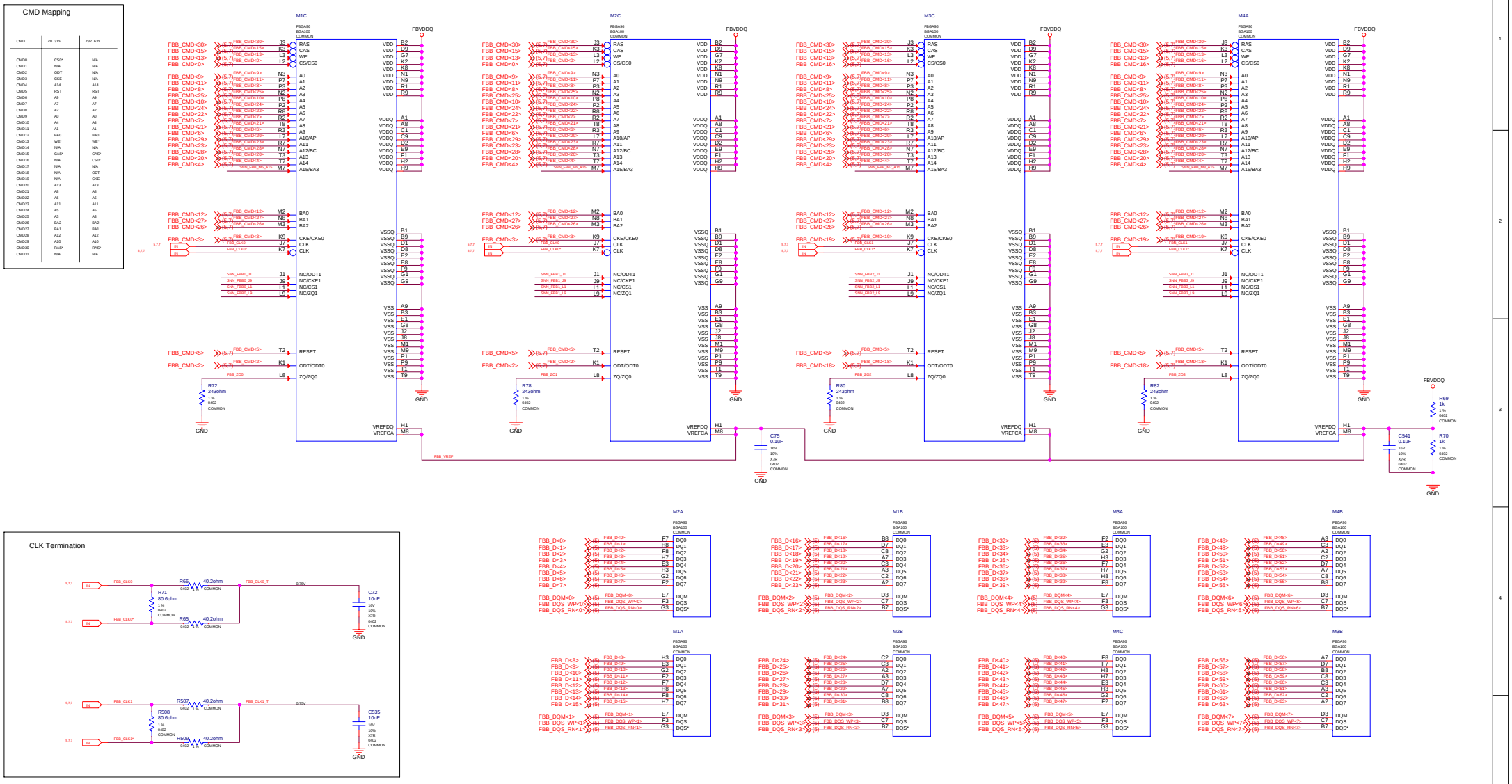
Memory FBB Partition



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PAGE DETAIL	Memory FBB Partition

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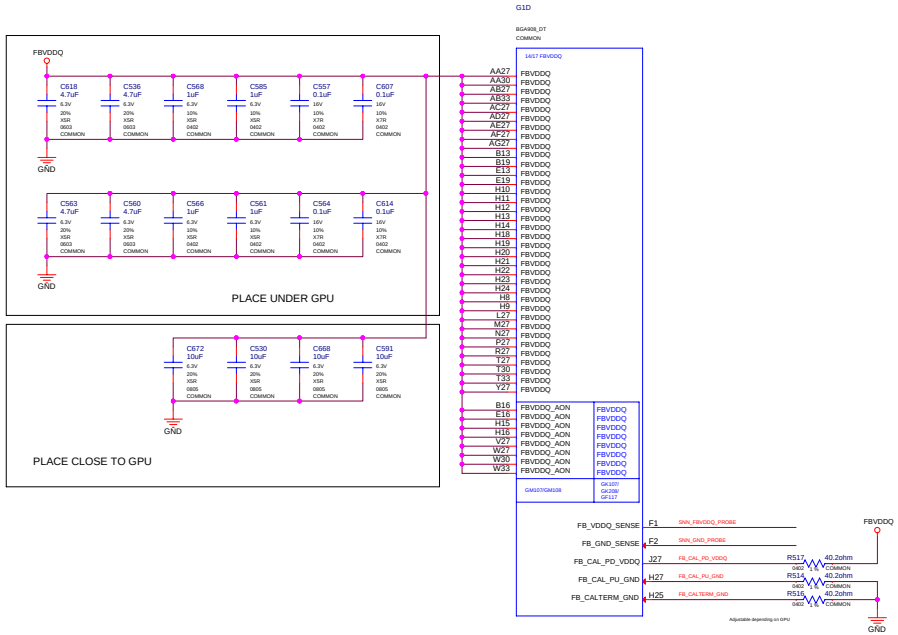
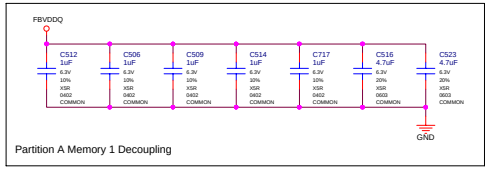
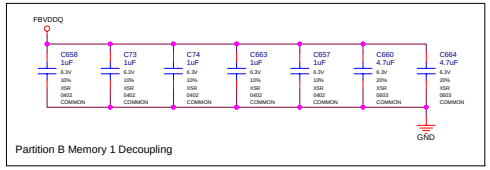
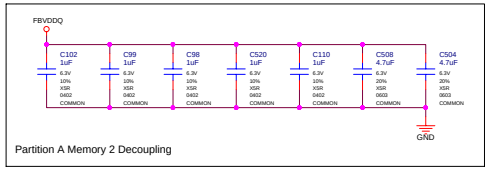
FB Decoupling(GPU,MEMORY)

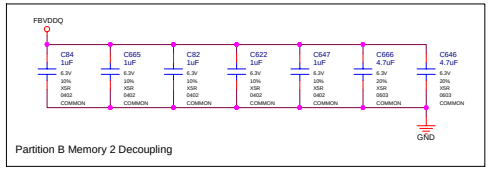


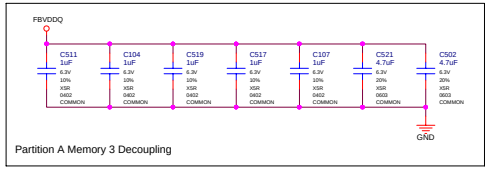
ALL PLACE UNDER MEMORY

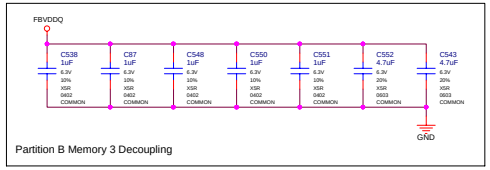


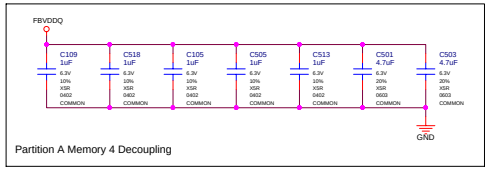


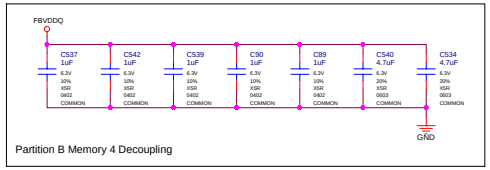


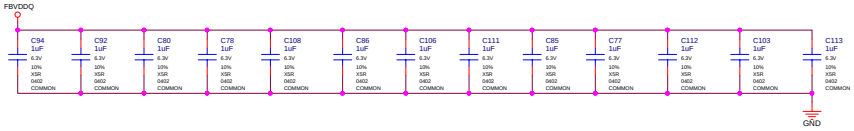












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PAGE DETAIL	FB Decoupling(GPU+MEMORY)

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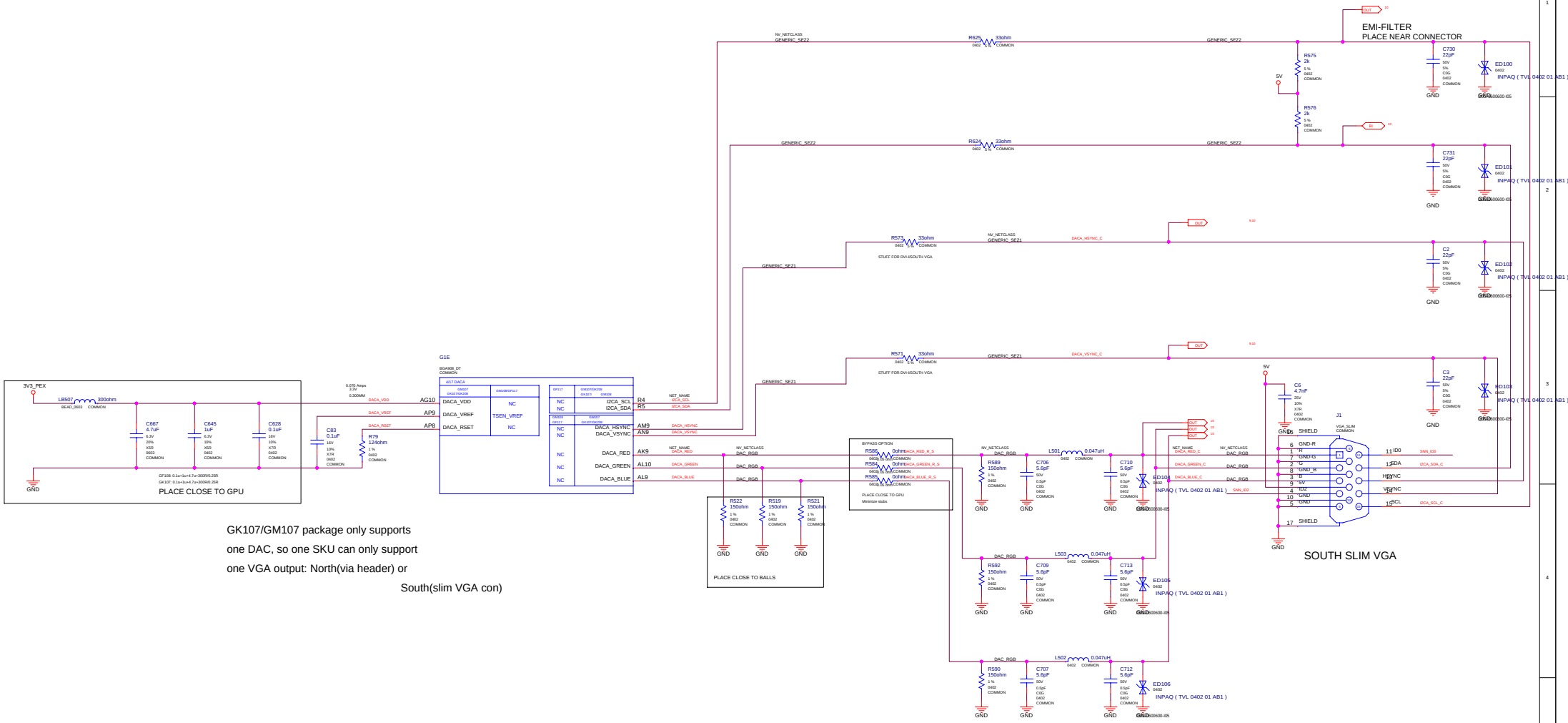
DACA Slim VGA (South)



GK107/GM107 package only supports
one DAC, so one SKU can only support
one VGA output: North(via header) or
South(slim VGA con)

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PAGE DETAIL	DACA Slim VGA (South)

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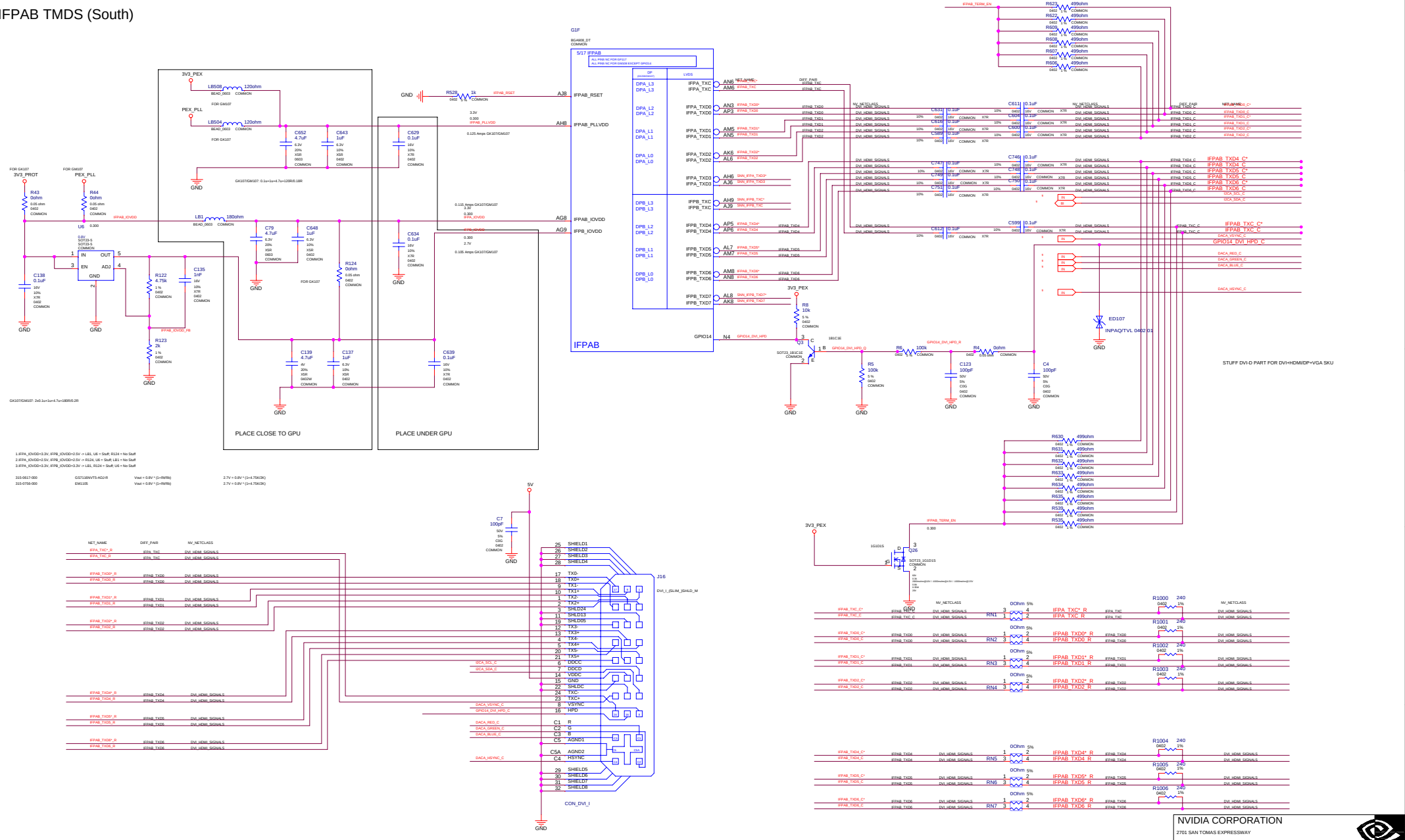
IFPAB TMDS (South)



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PAGE DETAIL	IFPAB TMDS (South)

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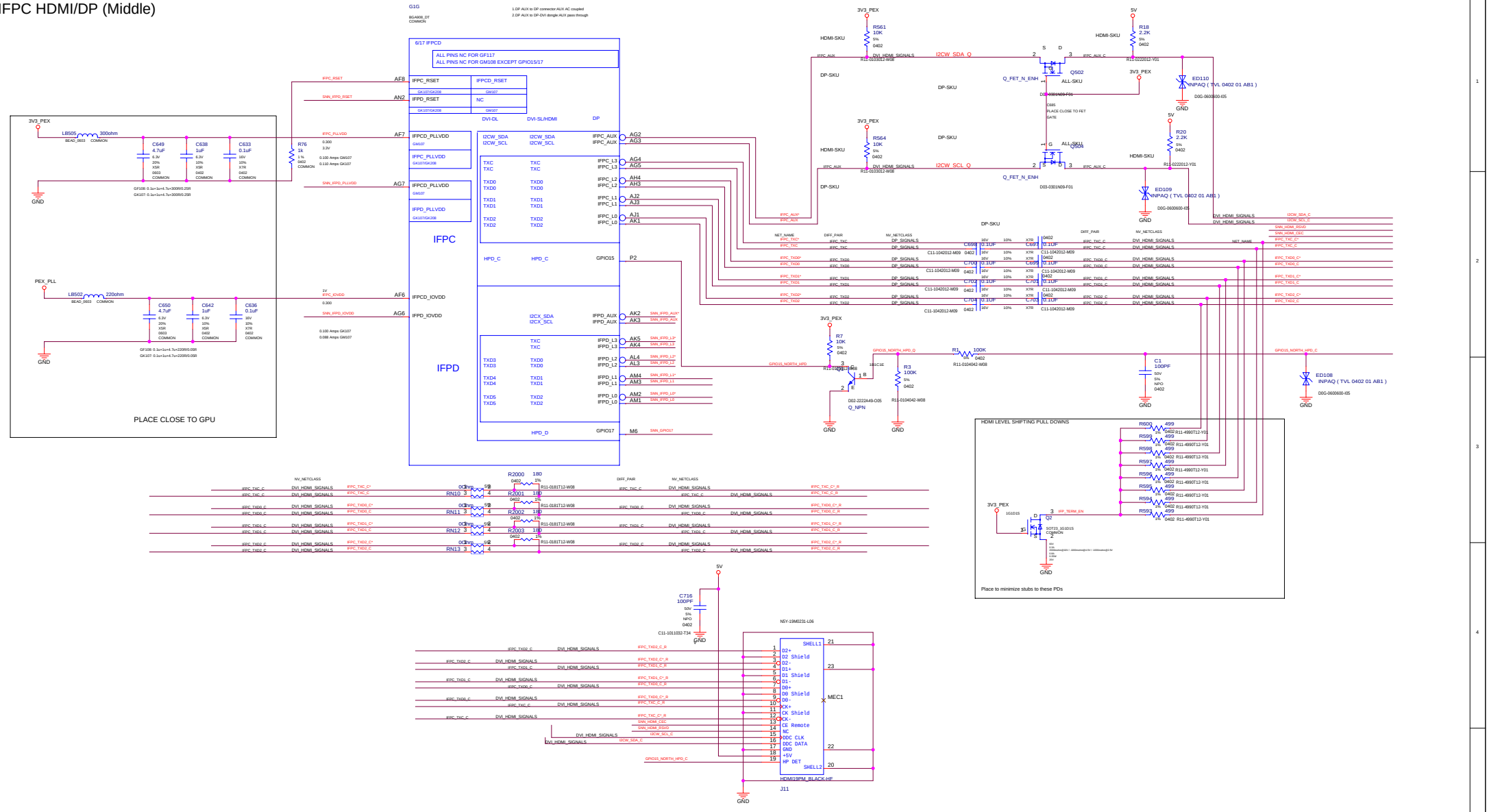
IFPC HDMI/DP (Middle)



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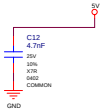
DACA VGA (North)



NORTH VGA HEADER

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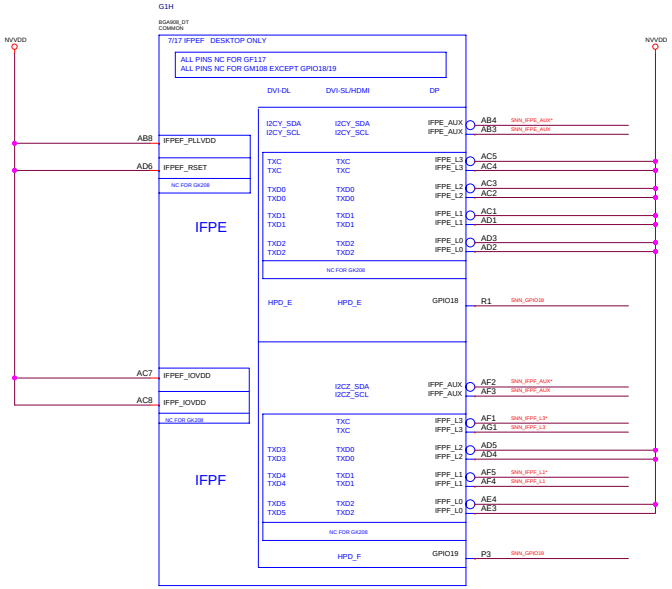
Unused IFPE & IFPF



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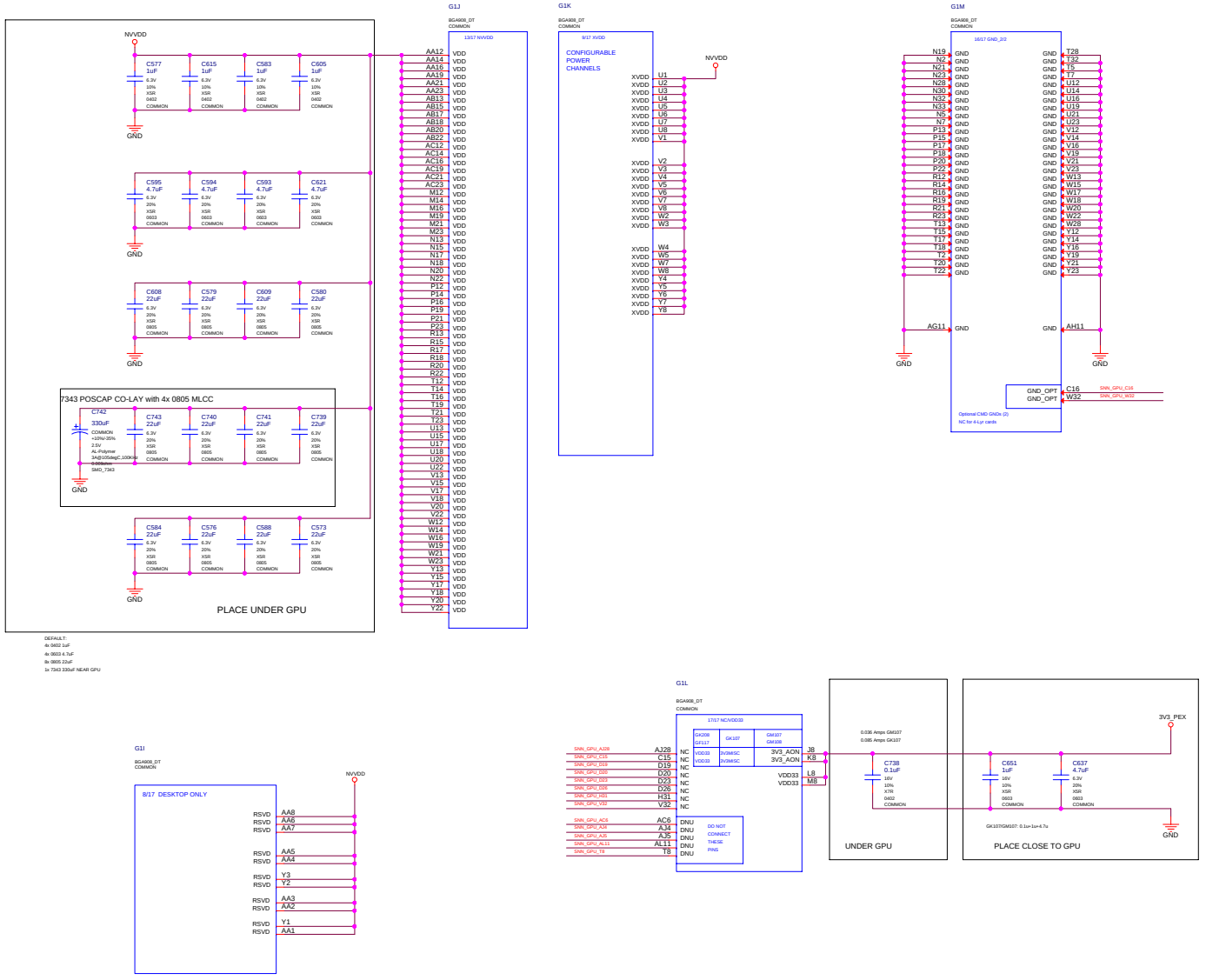
GPU Core Decoupling



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PAGE DETAIL	GPU Core Decoupling

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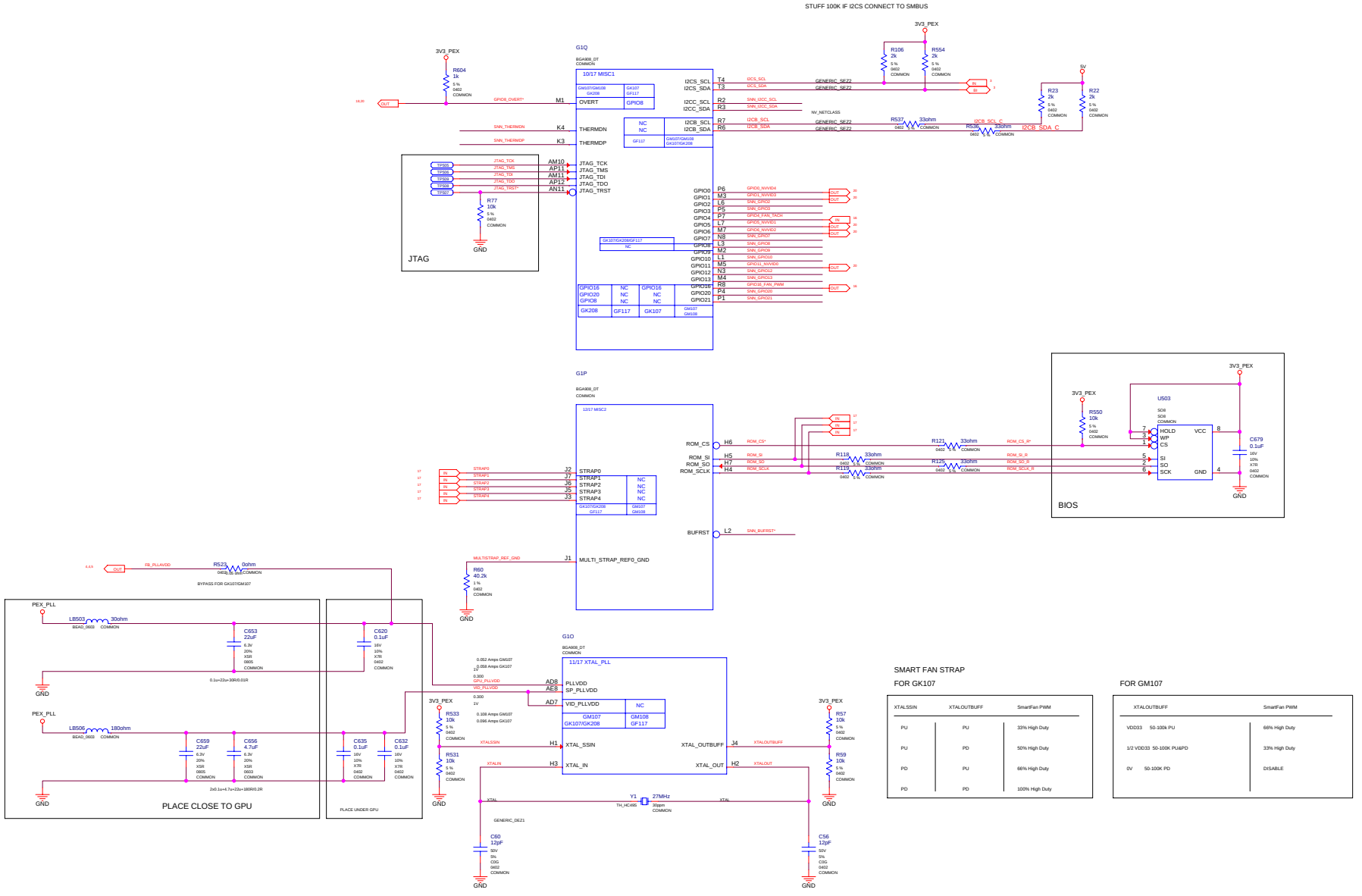
Misc Interfaces



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	Misc Interfaces

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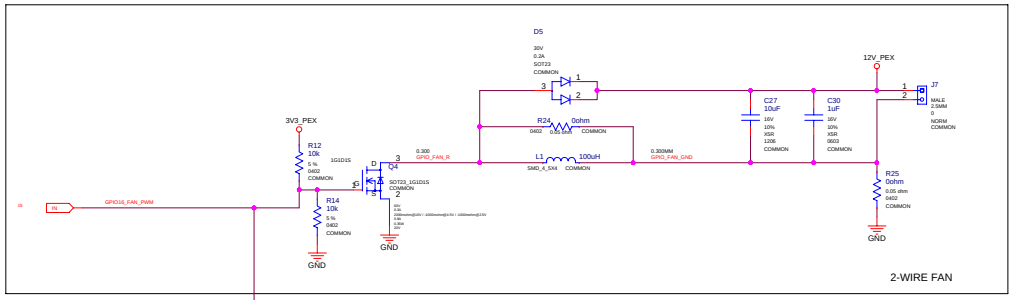
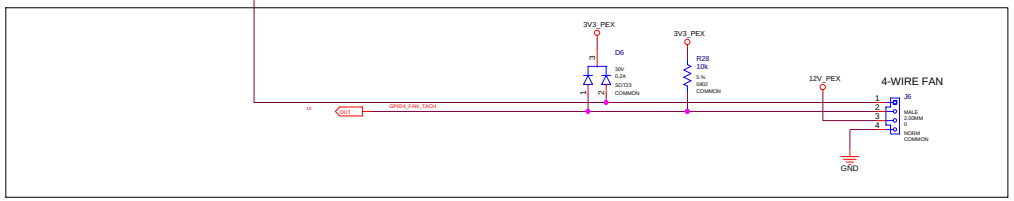
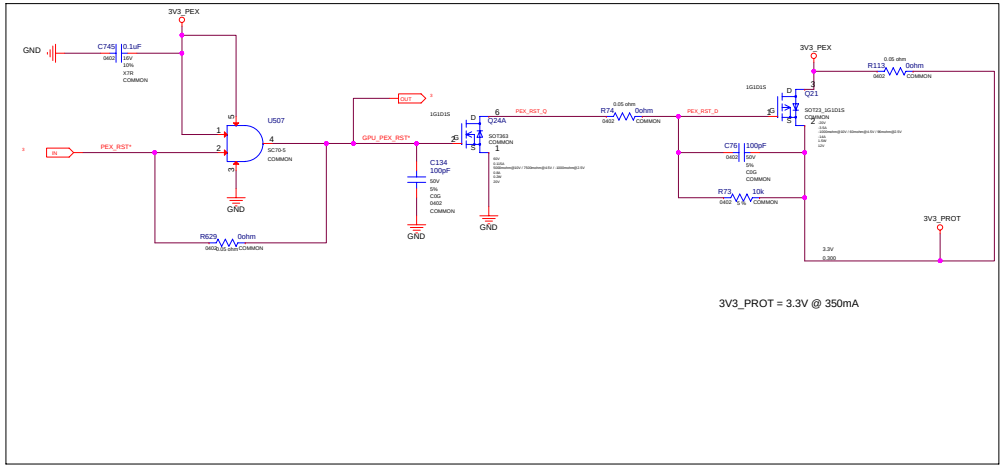
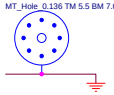
Thermal,Mechanical, Fan Control,Backdrive

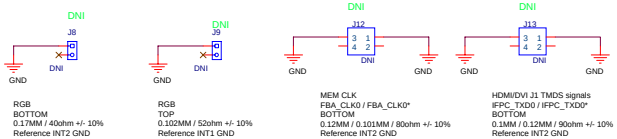


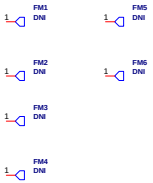






Reserve J8 J9 J12 J13 for Impedance check





ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	Thermal,Mechanical, Fan Control,Backdrive

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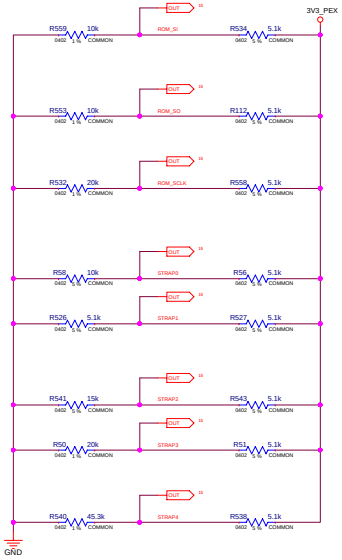
Straps



GK107 Straps

Bit	Signal	Values					
03:	RAMCFG[3]	0000	64Mx16 128bit	Reserv	1000	64Mx16 64bit	Reserv
		0001	64Mx16 128bit Micron		1001	64Mx16 64bit Micron	
02:	RAMCFG[2]	0010	64Mx16 128bit Hynix		1010	64Mx16 64bit Hynix	
		0011	64Mx16 128bit Samsung		1011	64Mx16 64bit Samsung	
01:	RAMCFG[1]	0100	128Mx16 128bit	Reserv	1100	128Mx16 64bit	Reserv
		0101	128Mx16 128bit Micron		1101	128Mx16 64bit Micron	
00:	RAMCFG[0]	0110	128Mx16 128bit Hynix		1110	128Mx16 64bit Hynix	
		0111	128Mx16 128bit Samsung		1111	128Mx16 64bit Samsung	
03:	FB[1]	01	128M				
02:	FB[0]	10	256M				
01:	SMB_ALT_ADDR	0	DISABLED		1	ENABLED	
00:	VGA_DEVICE	0	DISABLED		1	ENABLED	
03:	PCI_DEVID_EXT	0	SKU 0 GK107-200-A1		1	SKU 501 GK107-850-A01	
		0	SKU 1 GK107-320-A1		1	SKU 502 GK107-810-A01	
02:	SUB_VENDOR	0	NO_BIOS		1	BIOS	
01:	PCI_DEVID_EXT_BIT5	0	SKU 0 GK107-200-A1		1	SKU 501 GK107-850-A01	
		0	SKU 1 GK107-320-A1		1	SKU 502 GK107-810-A01	
00:	PEX_PLL_EN_TERM100	0	DISABLED		1	ENABLED	
03:	USER[3]	0000	INIT				
02:	USER[2]						
01:	USER[1]						
00:	USER[0]						
03:	3GIO_PADCFG_LUT_ADR[3]	0000	DSKTOP_DEFAULT		1000	DSKTOP_HTHRS	
		0001	MOBILE_DEFAULT		1001	MOBILE_HTHRS_NAMP	
02:	3GIO_PADCFG_LUT_ADR[2]	0010	MOBILE_NTHRS_LLAMP		1010	MOBILE_HTHRS_LLAMP	
		0011	MOBILE_NTHRS_LAMP		1011	MOBILE_HTHRS_LAMP	
01:	3GIO_PADCFG_LUT_ADR[1]	0100	MOBILE_NTHRS_HAMP		1100	MOBILE_HTHRS_HAMP	
		0101	MOBILE_NTHRS_HHAMP		1101	MOBILE_HTHRS_HHAMP	
00:	3GIO_PADCFG_LUT_ADR[0]	0110	MOBILE_NTHRS_HHHAMP		1110	MOBILE_HTHRS_HHHAMP	
		0111	MOBILE_NTHRS_HHHHAMP		1111	MOBILE_HTHRS_HHHHAMP	
03:	PCI_DEVID[3]	0010	SKU 0 GK107-200-A1		1010	SKU 501 GK107-850-A01	
02:	PCI_DEVID[2]						
01:	PCI_DEVID[1]	0000	SKU 1 GK107-320-A1		1111	SKU 502 GK107-810-A01	
00:	PCI_DEVID[0]						
03:	SOR3_EXPOSED	0	DISABLED		1	ENABLED	
02:	SOR2_EXPOSED	0	DISABLED		1	ENABLED	
01:	SOR1_EXPOSED	0	DISABLED		1	ENABLED	
00:	SOR0_EXPOSED	0	DISABLED		1	ENABLED	
02:	PCIE_SPEED_CHANGE_GEN3	0	DISABLED		1	ENABLED	
01:	PCIE_MAX_SPEED	0	GEN1		1	GEN23	
00:	DP_PLL_VDD_33V	0	USE18V		1	USE33V	

GM107 Straps

Bit	Signal	Values					
03:	RAMCFG[3]	0000	HYNIX 256Mx16		1000	RESERVED	
		0001	MICRON 256Mx16		1001	RESERVED	
02:	RAMCFG[2]	0010	SAMSUNG 256Mx16		1010	RESERVED	
		0011	HYNIX 128Mx16		1011	RESERVED	
01:	RAMCFG[1]	0100	MICRON 128Mx16		1100	RESERVED	
		0101	SAMSUNG 128Mx16		1101	RESERVED	
00:	RAMCFG[0]	0110	RESERVED		1110	RESERVED	
		0111	RESERVED		1111	RESERVED	
03:	DEVID_SEL	0	DEVID A		1	DEVID B	
02:	PCIE_CFG	0	DESKTOP		0	NOTEBOOK	
01:	SMB_ALT_ADDR	0	DISABLED		1	ENABLED	
00:	VGA_DEVICE	0	DISABLED		1	ENABLED	
03:	SOR3_EXPOSED	0	DISABLED		1	ENABLED	
02:	SOR2_EXPOSED	0	DISABLED		1	ENABLED	
01:	SOR1_EXPOSED	0	DISABLED		1	ENABLED	
00:	SOR0_EXPOSED	0	DISABLED		1	ENABLED	
	TERNARY STRAP						
	VDD33:		GCS_ENABLE			50-100K PU	
	1/2 VDD33:		FOR DEBUG			50-100K PU&PD	
	0V:		GCS_DISABLE			50-100K PD	

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

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	Straps

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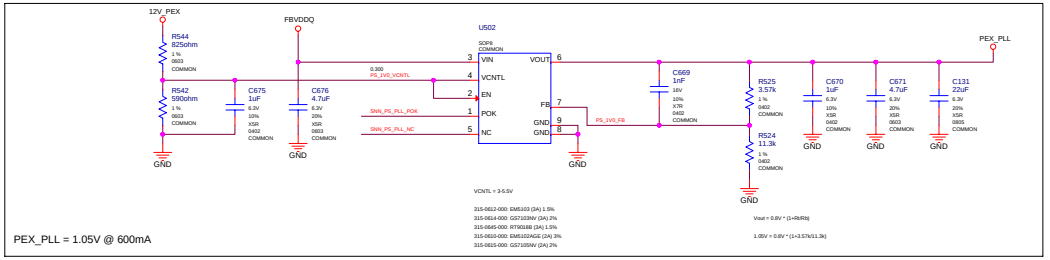
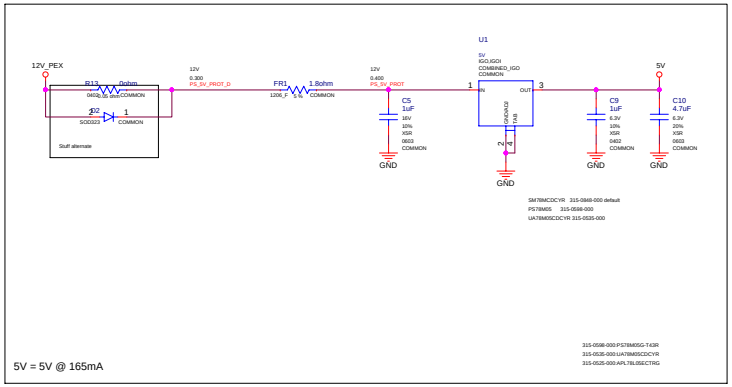
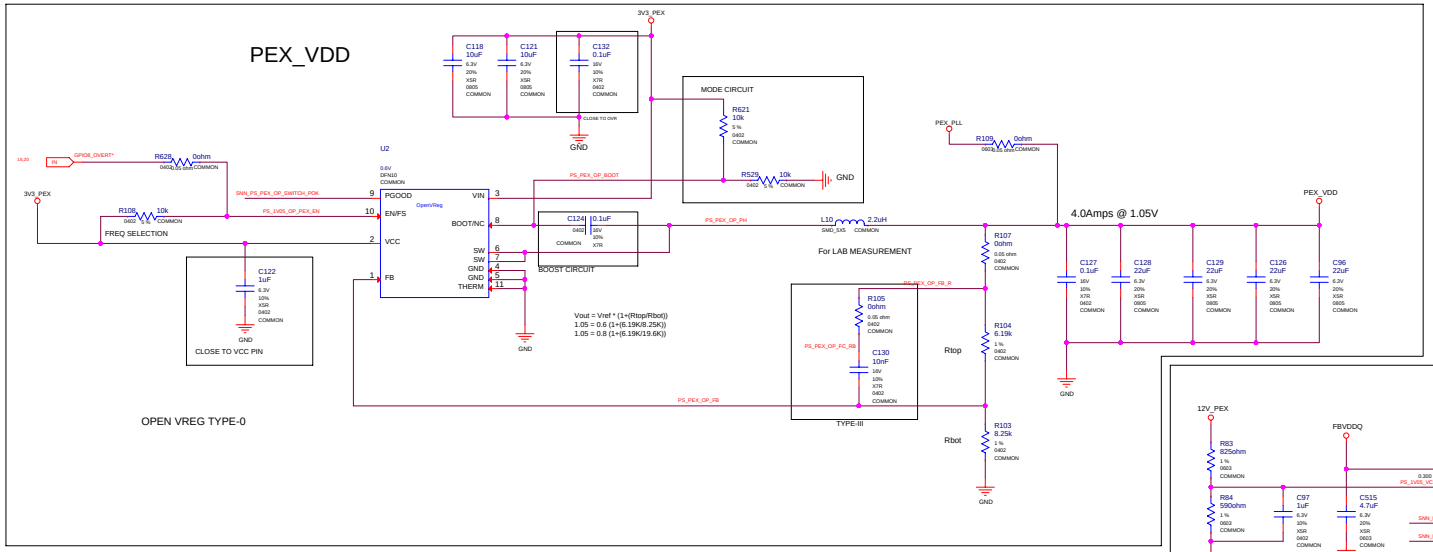
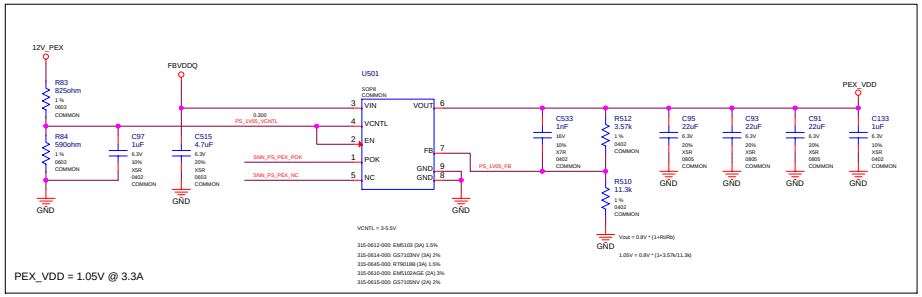
Power Supply I: PEX_VDD,PEX_PLL,5V









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PAGE DETAIL	Power Supply I: PEX_VDD,PEX_PLL,5V

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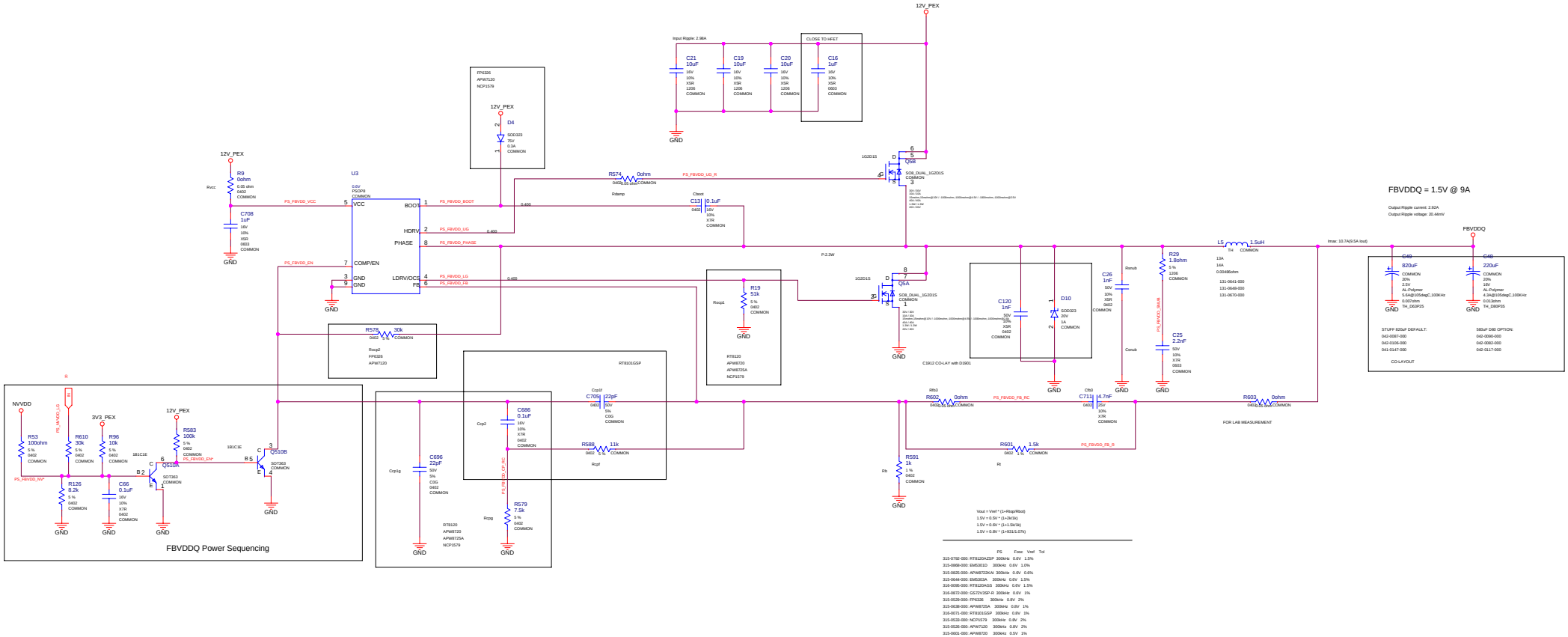
Power Supply II: FBVDD/Q



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PAGE DETAIL	Power Supply II:FBVDD/Q

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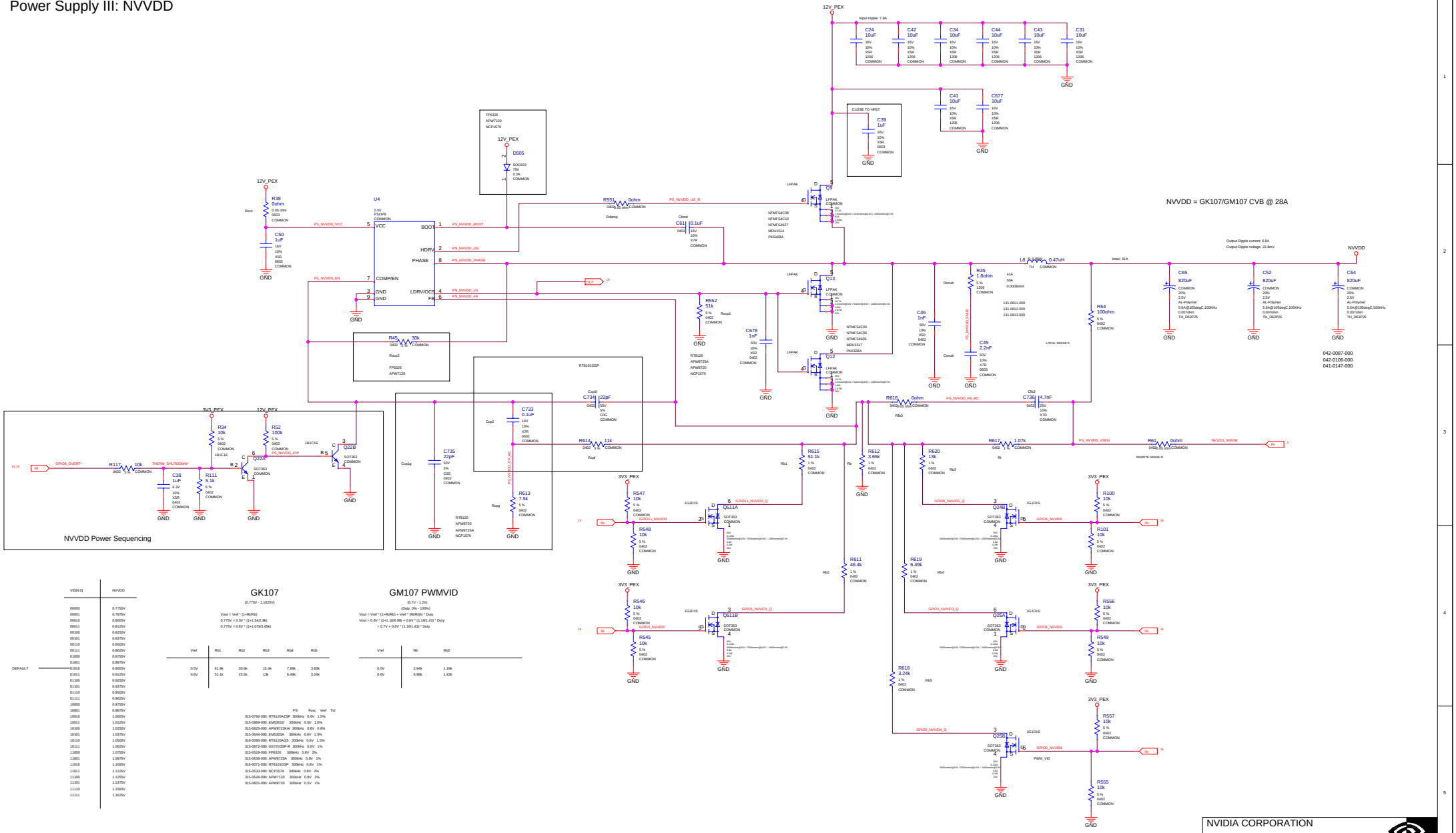
Power Supply III: NVVDD



VID[4:0]	NVVDD
00000	0.7750V
00001	0.7875V
00010	0.8000V
00011	0.8125V
00100	0.8250V
00101	0.8375V
00110	0.8500V
00111	0.8625V
01000	0.8750V
01001	0.8875V
01010	0.9000V
01011	0.9125V
01100	0.9250V
01101	0.9375V
01110	0.9500V
01111	0.9625V
10000	0.9750V
10001	0.9875V
10010	1.0000V
10011	1.0125V
10100	1.0250V
10101	1.0375V
10110	1.0500V
10111	1.0625V
11000	1.0750V
11001	1.0875V
11010	1.1000V
11011	1.1125V
11100	1.1250V
11101	1.1375V
11110	1.1500V
11111	1.1625V

DEFAULT

GK107

(0.775V - 1.1625V)

Vout = Vref * (1+Rb/Rb)
0.775V = 0.5V * (1+1.54Ω /Bk)
0.775V = 0.6V * (1+1.07kΩ /6Bk)

Vref	Rb1	Rb2	Rb3	Rb4	Rb5
0.5V	61.9k	30.9k	15.4k	7.68k	3.83k
0.6V	51.1k	25.5k	13k	6.49k	3.24k

GM107 PWMVID

(0.7V - 1.2V)
(Duty: 0% - 100%)

Vout = Vref * (1+Rb/Rs) + Vref * (Rb/Rs) * Duty
Vout = 0.6V * (1+1.18/6.6B) + 0.6V * (1.18/1.43) * Duty
= 0.7V + 0.6V * (1.18/1.43) * Duty

Vref	Rb	Rb5
0.5V	2.94k	1.18k
0.6V	6.98k	1.43k

	PS	Fosc	Vref	Tol
315-0792-000: RT8120AZSP	300kHz	0.6V	1.5%	
315-0868-000: EM53010	300kHz	0.6V	1.0%	
315-0825-000: APW8723KAI	300kHz	0.6V	0.6%	
315-0644-000: EM5303A	300kHz	0.6V	1.5%	
316-0095-000: RT8129AGS	300kHz	0.6V	1.5%	
315-0872-000: GS72V3SP-R	300kHz	0.6V	1%	
315-0529-000: FP6326	300kHz	0.8V	3%	
315-0638-000: APW8725A	300kHz	0.8V	1%	
316-0071-000: RT8101GSP	300kHz	0.8V	1%	
315-0533-000: NCP1579	300kHz	0.8V	2%	
315-0526-000: APW7120	300kHz	0.8V	2%	
315-0601-000: APW8720	300kHz	0.5V	1%	

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	Power Supply III: NVVDD

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