GA102 DT SKU P-BOARD

350W, FH Std PCB, 384b, GDDR6X x8
DP + DP + DP + HDMI/DP

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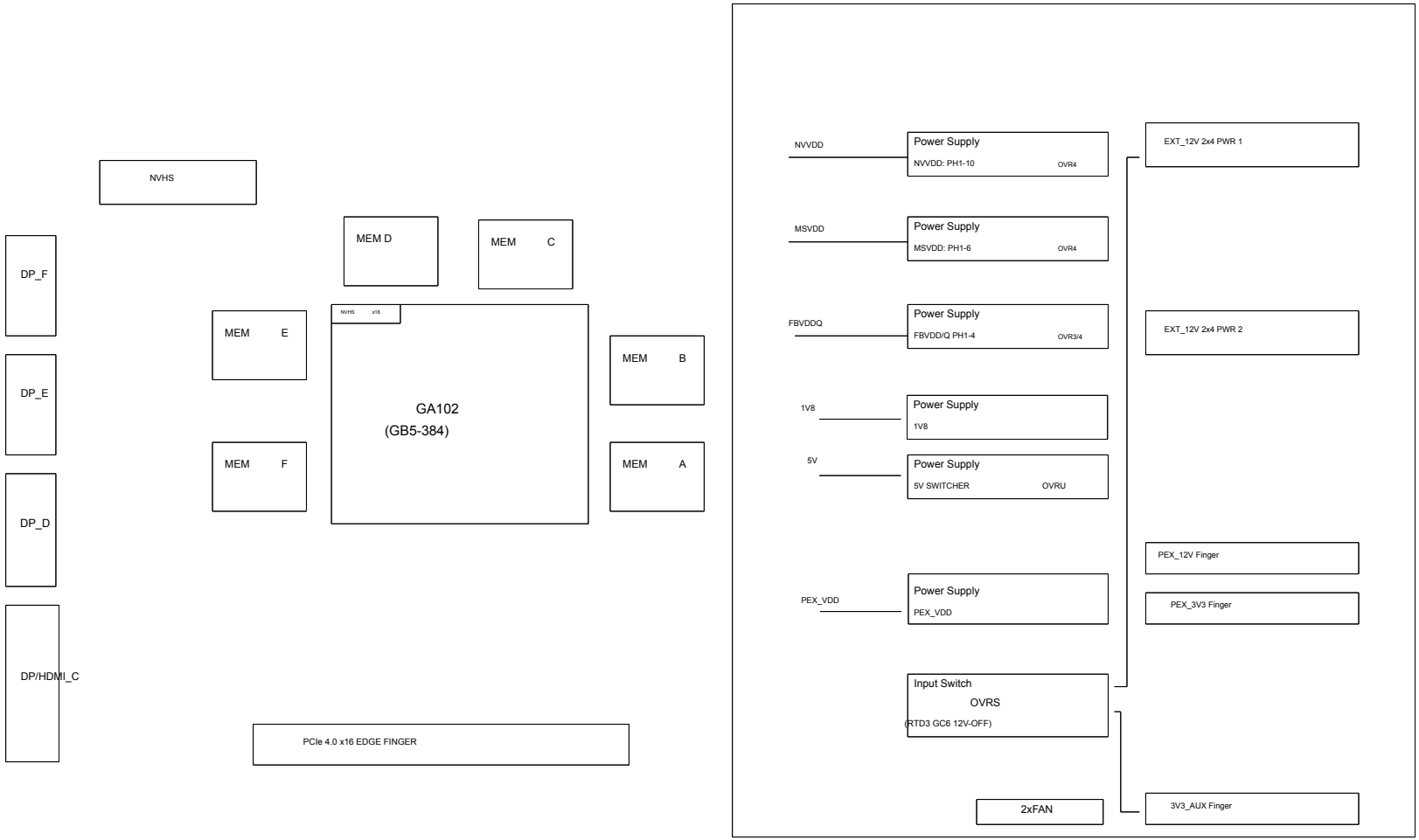
Block Diagram



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	BLOCK DIAGRAM

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2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050 USA

NV_PN	600-1G132-BASE-400		
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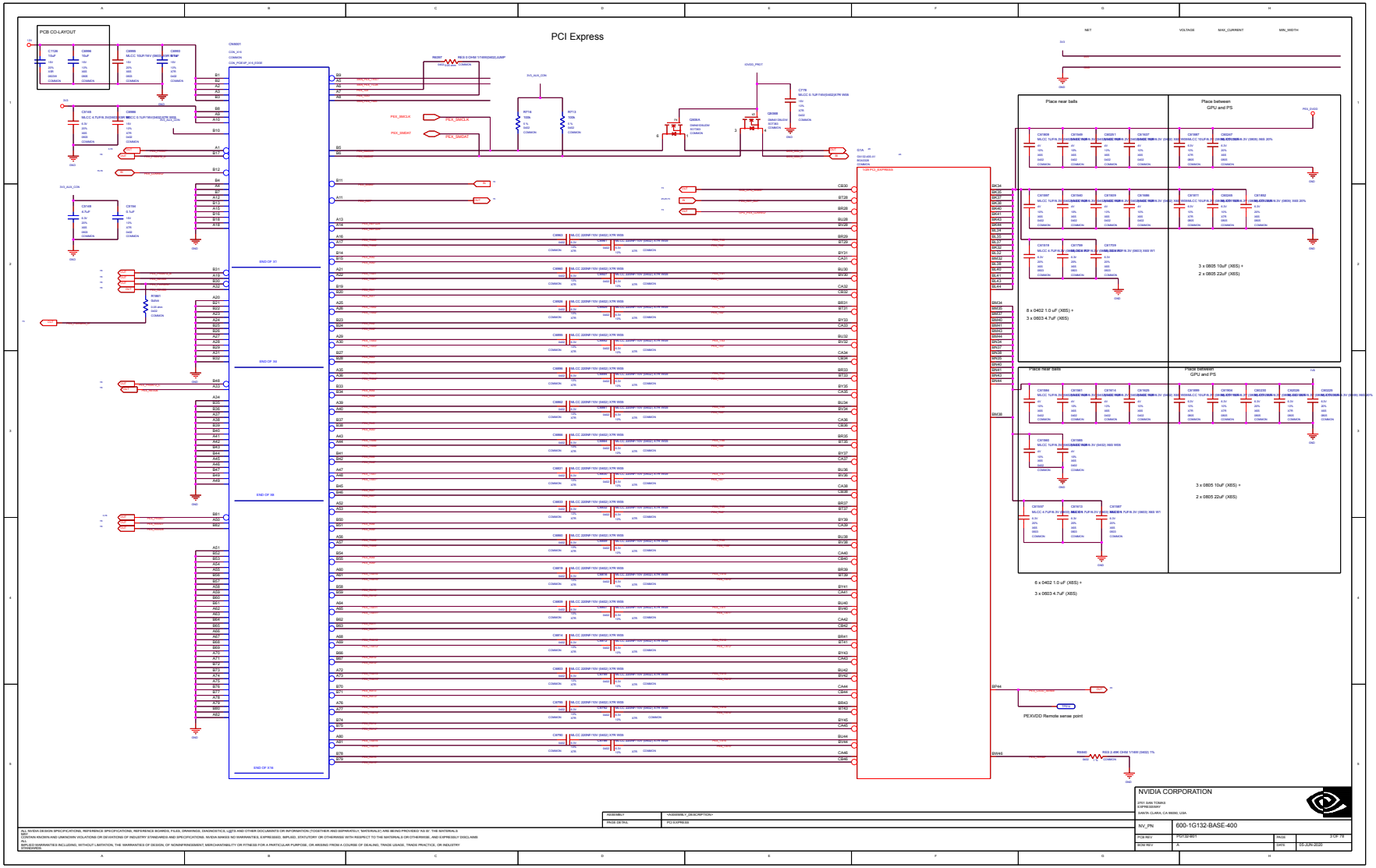
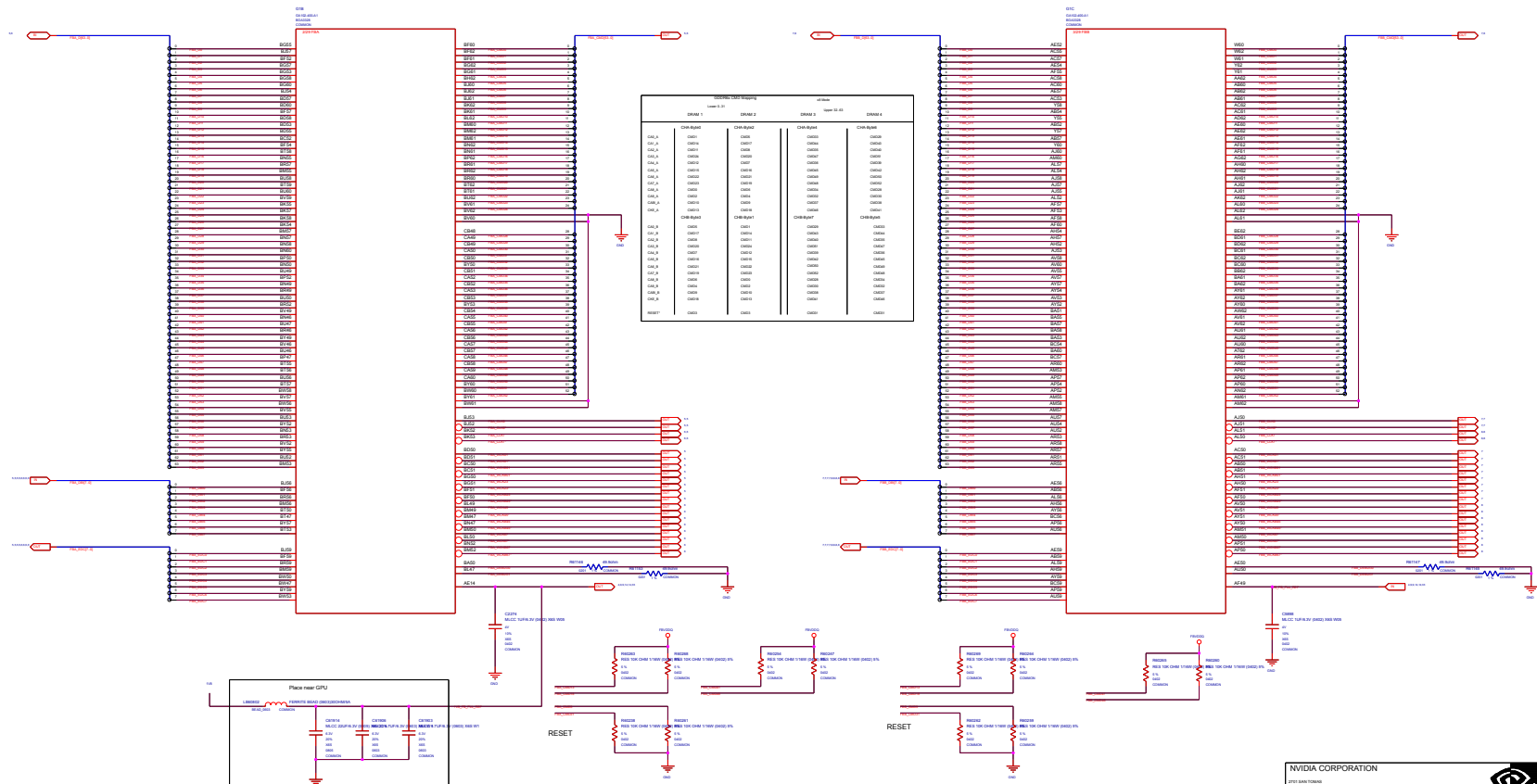
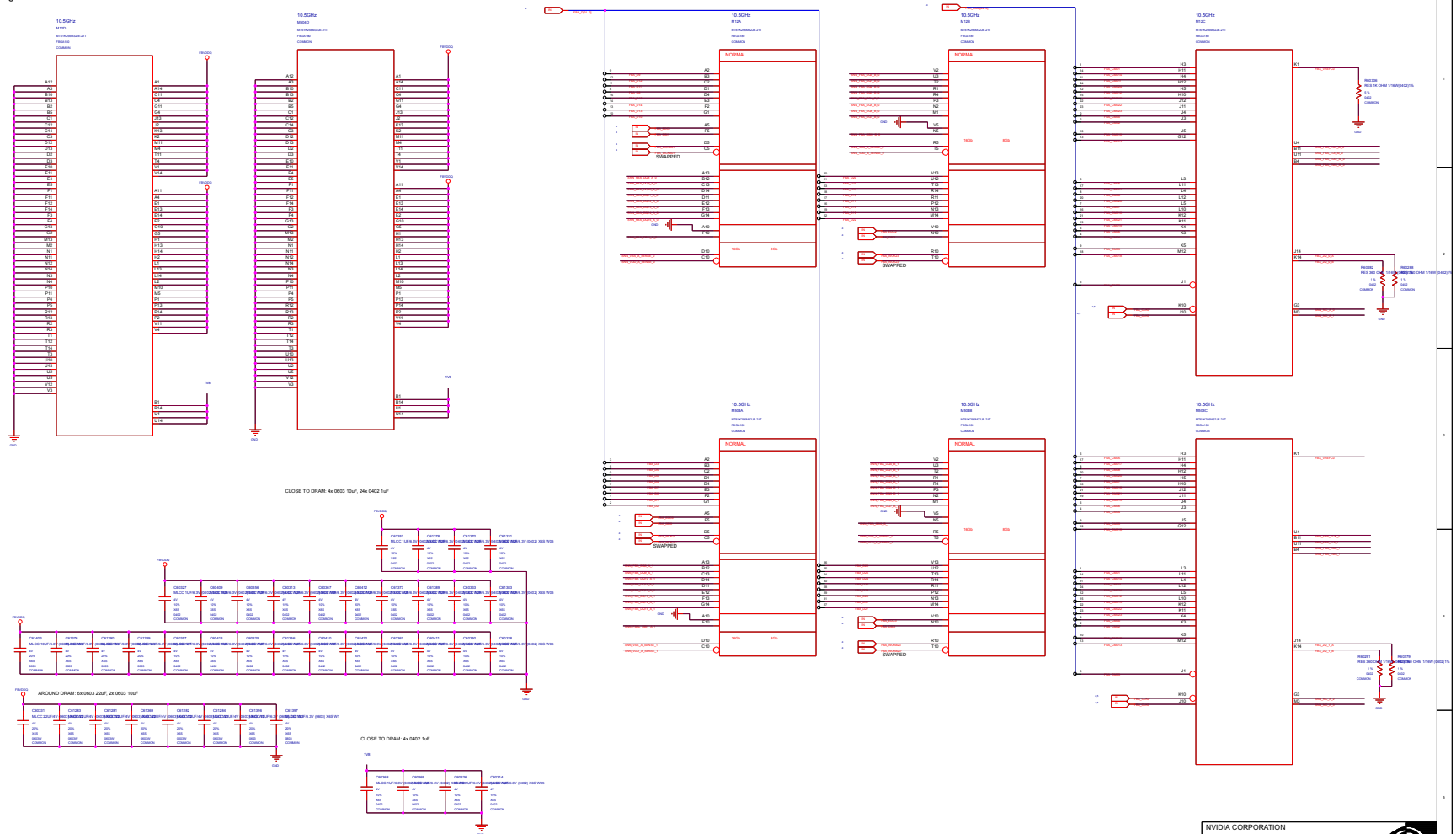

PCI Express
PCB CO-LAYOUT
Place near balls
Place between GPU and PS
3 x 0805 10uF (X6S) +
2 x 0805 22uF (X6S)
8 x 0402 1.0 uF (X6S) +
3 x 0603 4.7uF (X6S)
6 x 0402 1.0 uF (X6S) +
3 x 0603 4.7uF (X6S)
PEX_DVDD
PEX_SMCLK
PEX_SMDAT
PEX_SMBAT
PEX_SMDAT
PEXVDD Remote sense point
END OF X1
END OF X4
END OF X8
END OF X16
NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA
NV_PN
600-1G132-BASE-400
PCB REV
PCI-Ex-Gen1
A
SIZE
PAGE
DATE
10-JUN-2020
ASSEMBLY
PAGE DETAIL
PCI EXPRESS

MEMORY: GPU Partition A/B



Page5: MEMORY: FBA Partition 31..0



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBA PARTITION 31..0

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SANTA CLARA, CA 95050, USA

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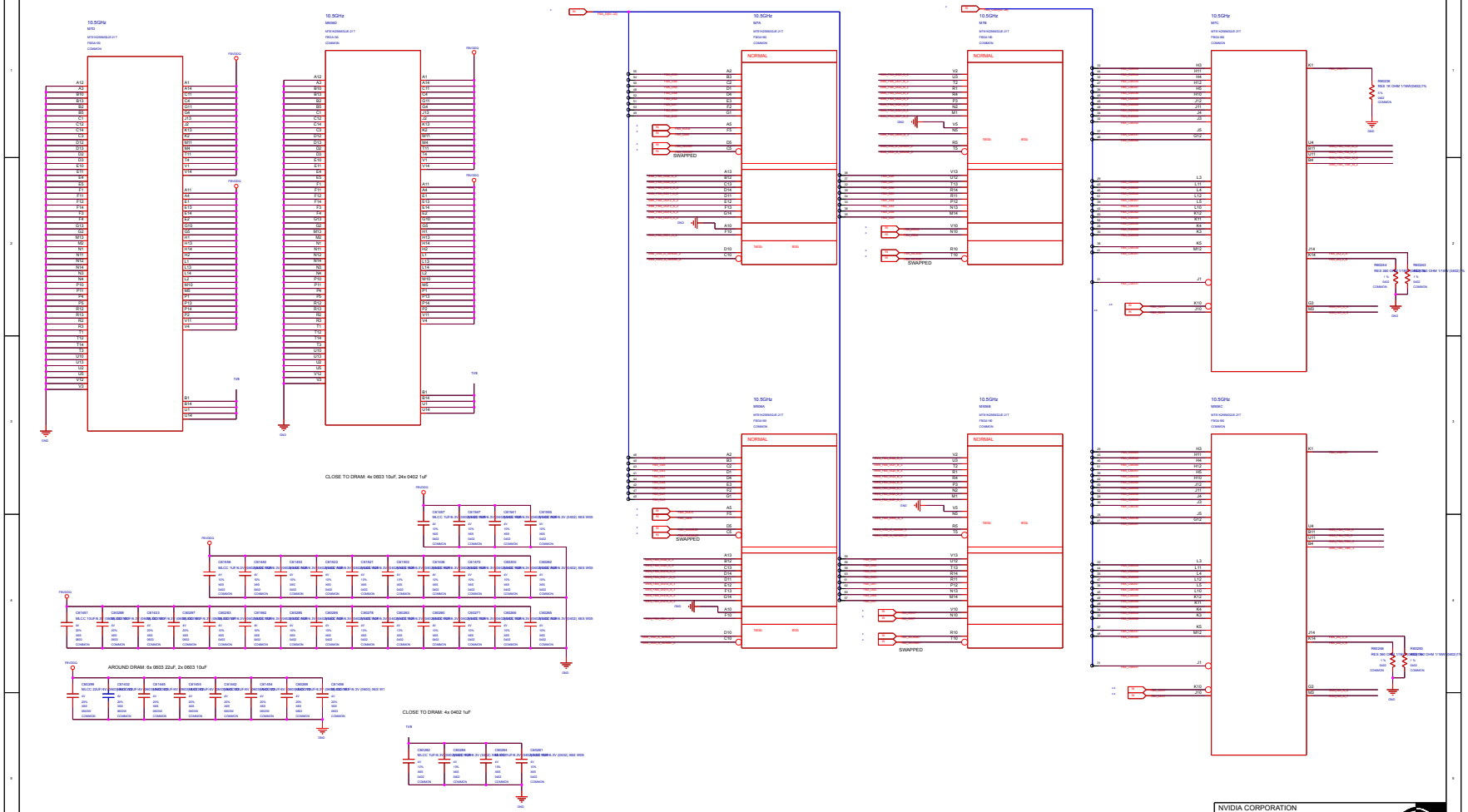
Page6: MEMORY: FBA Partition 63..32



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBA Partition 63..32

NVIDIA CORPORATION
2701 SAN TOMAS
EXPRESSWAY
SANTA CLARA, CA 95050, USA

NV_PN	600-1G132-BASE-400
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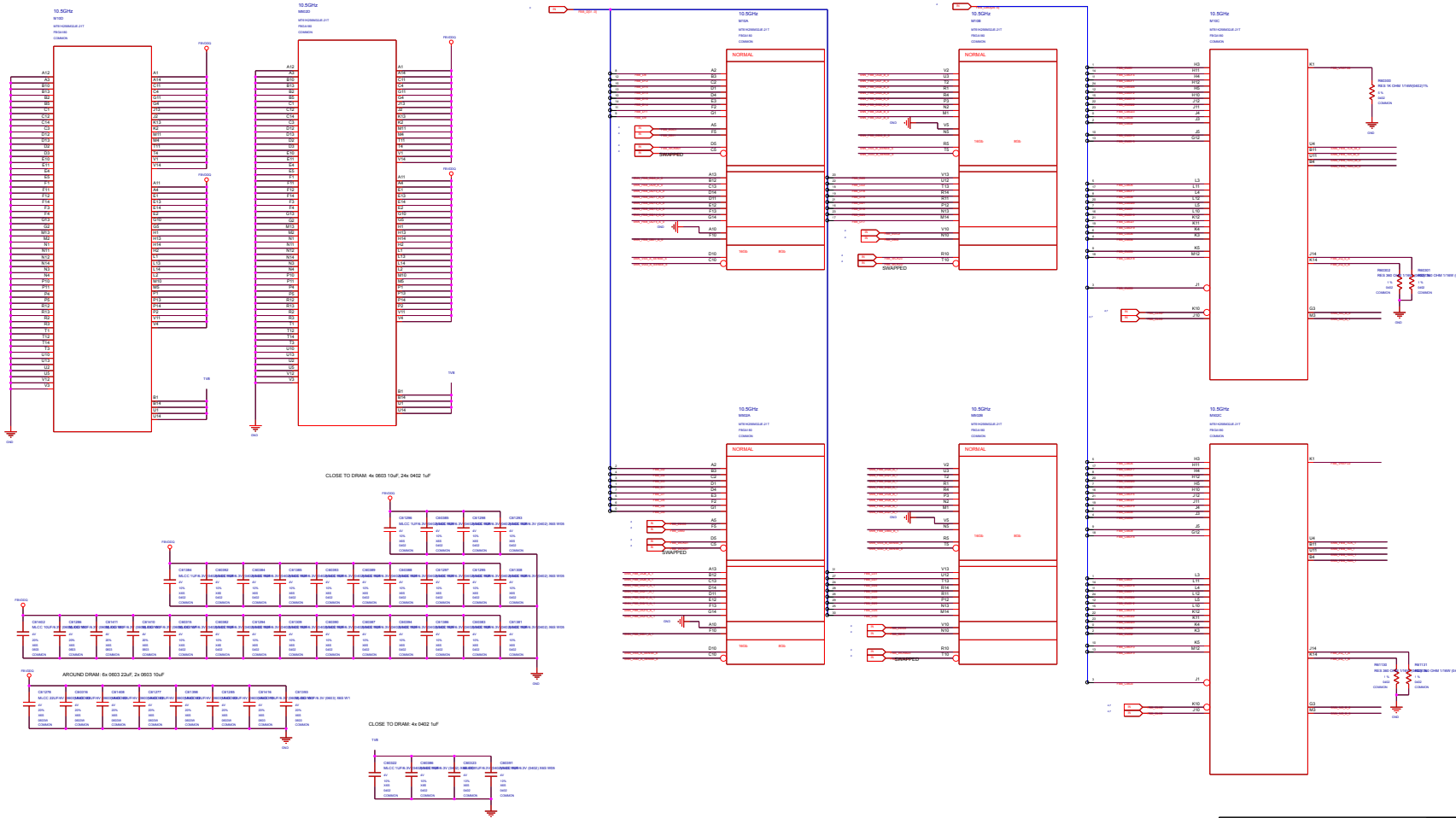
Page7: MEMORY: FBB Partition 31..0



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PAGE DETAIL	MEMORY: FBB PARTITION[31:0]

NVIDIA CORPORATION
2701 SAN TOMAS
EXPRESSWAY
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NV_PN	600-1G132-BASE-400
PCB REV	PCI-1G2-MB1
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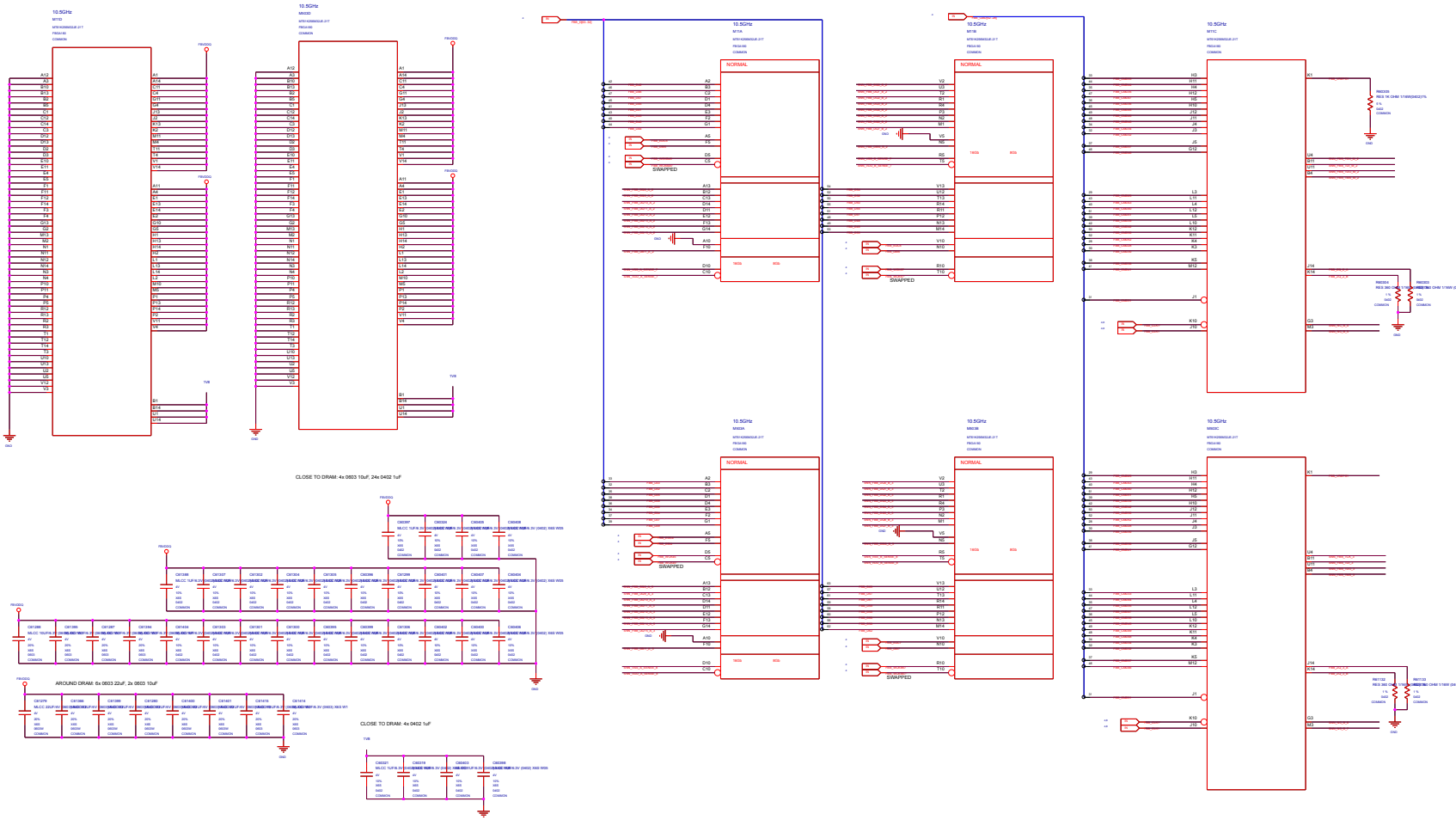
Page8: MEMORY: FBB Partition 63..32



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBB PARTITION[63:32]

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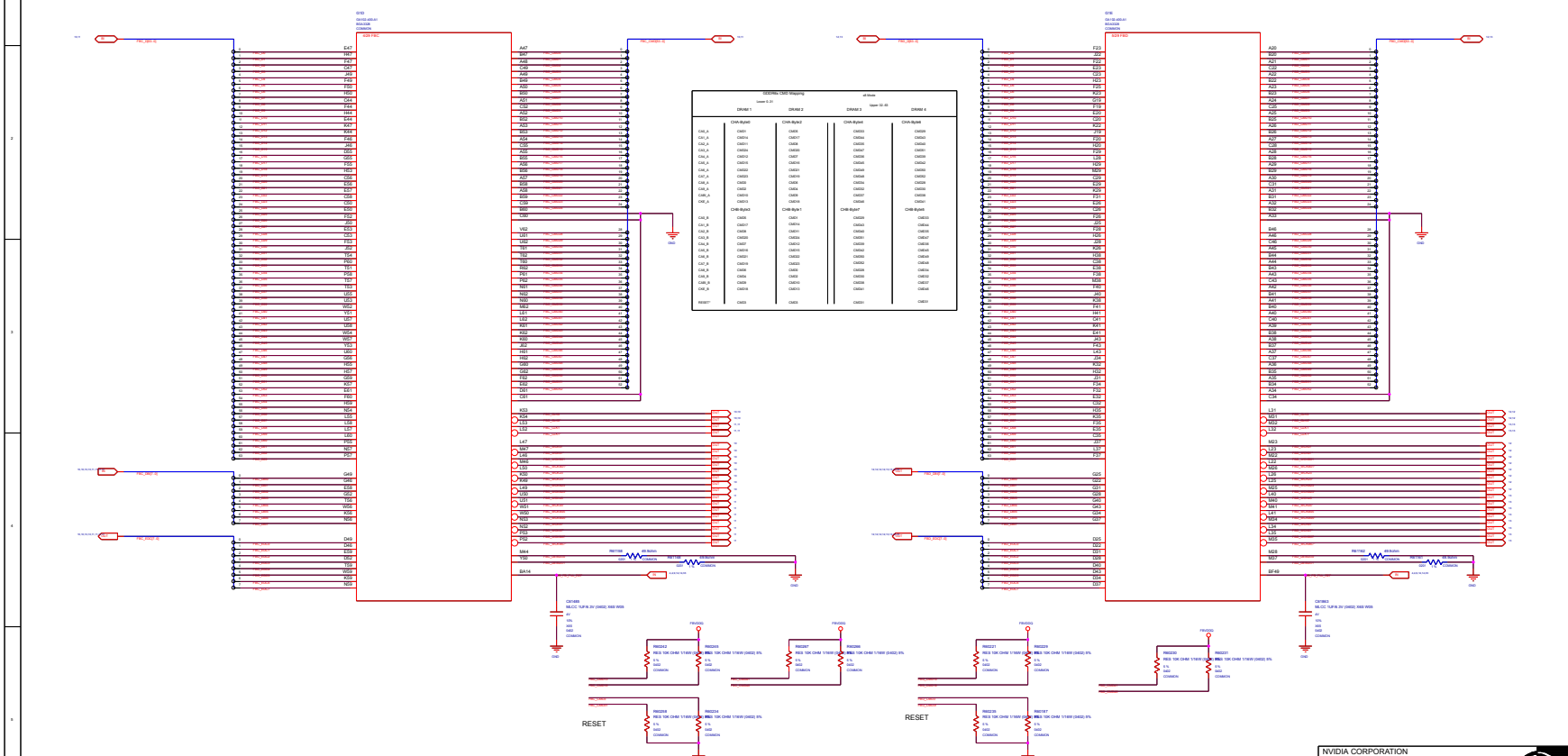
MEMORY: GPU Partition C/D



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NV_PN	600-1G132-BASE-400
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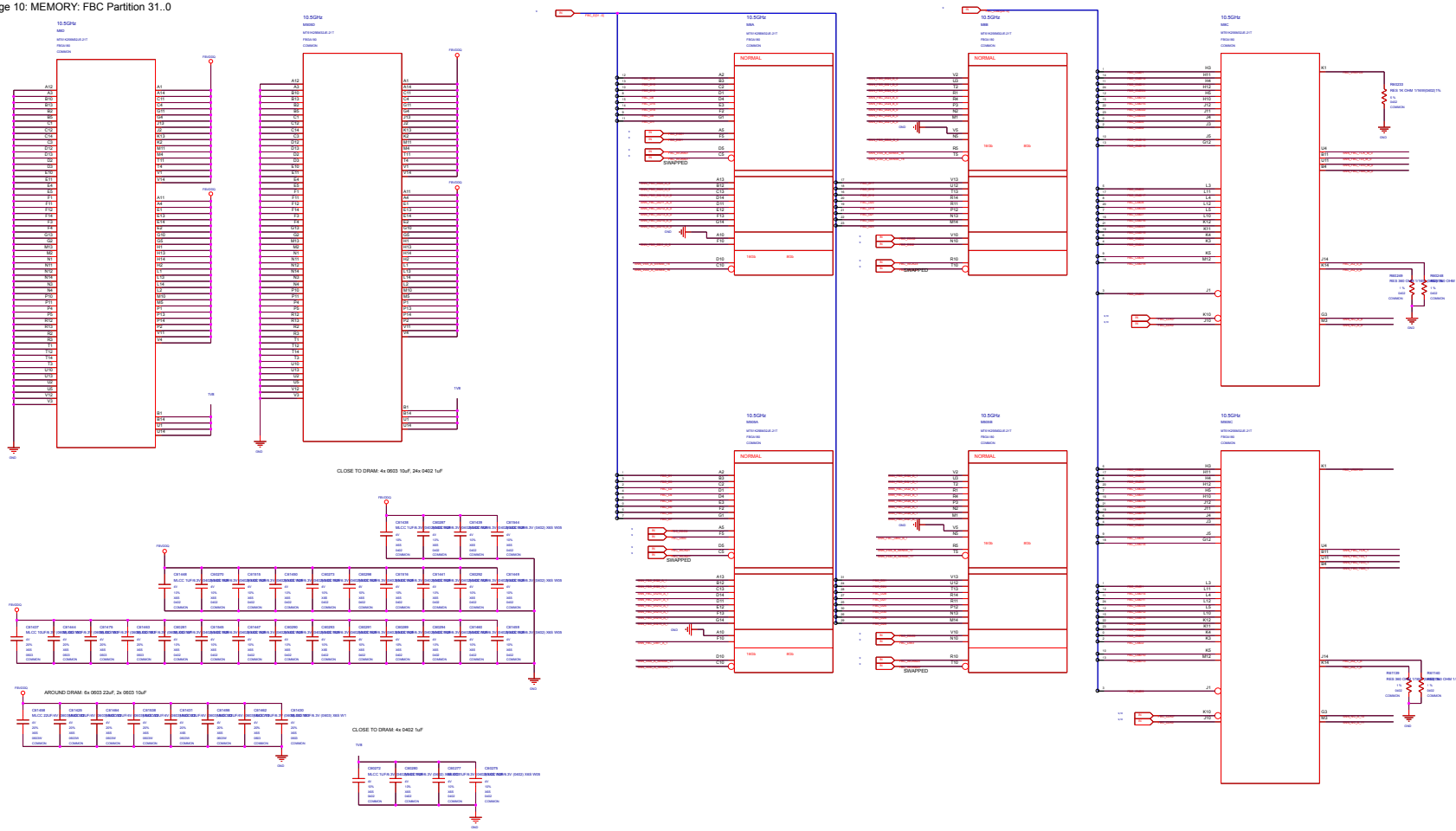
ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: GPU PARTITION C/D

Page 10: MEMORY: FBC Partition 31..0



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PAGE DETAIL	MEMORY: FBC PARTITION[31:0]

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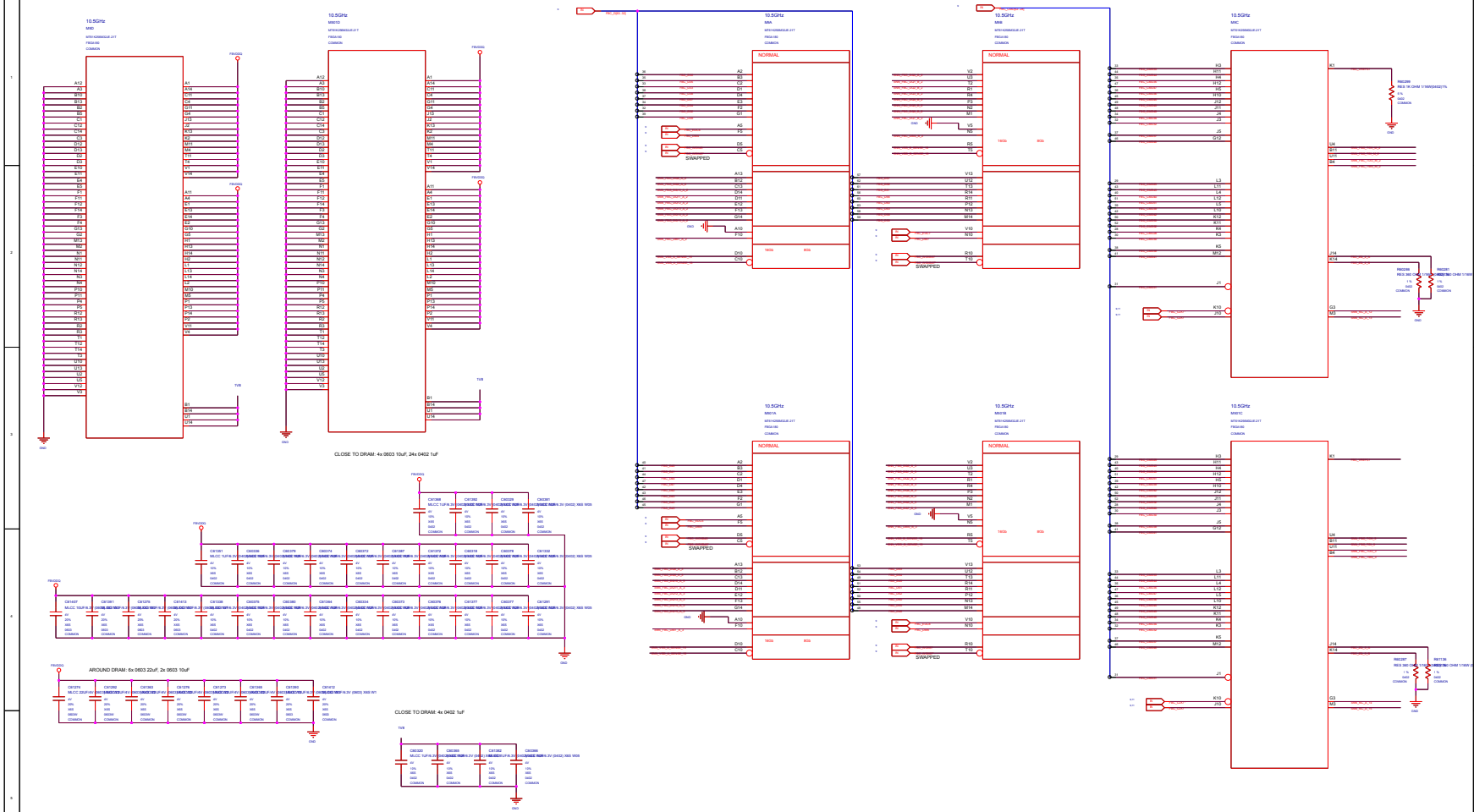
Page 11: MEMORY: FBC Partition 63..32



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBC PARTITION[63:32]

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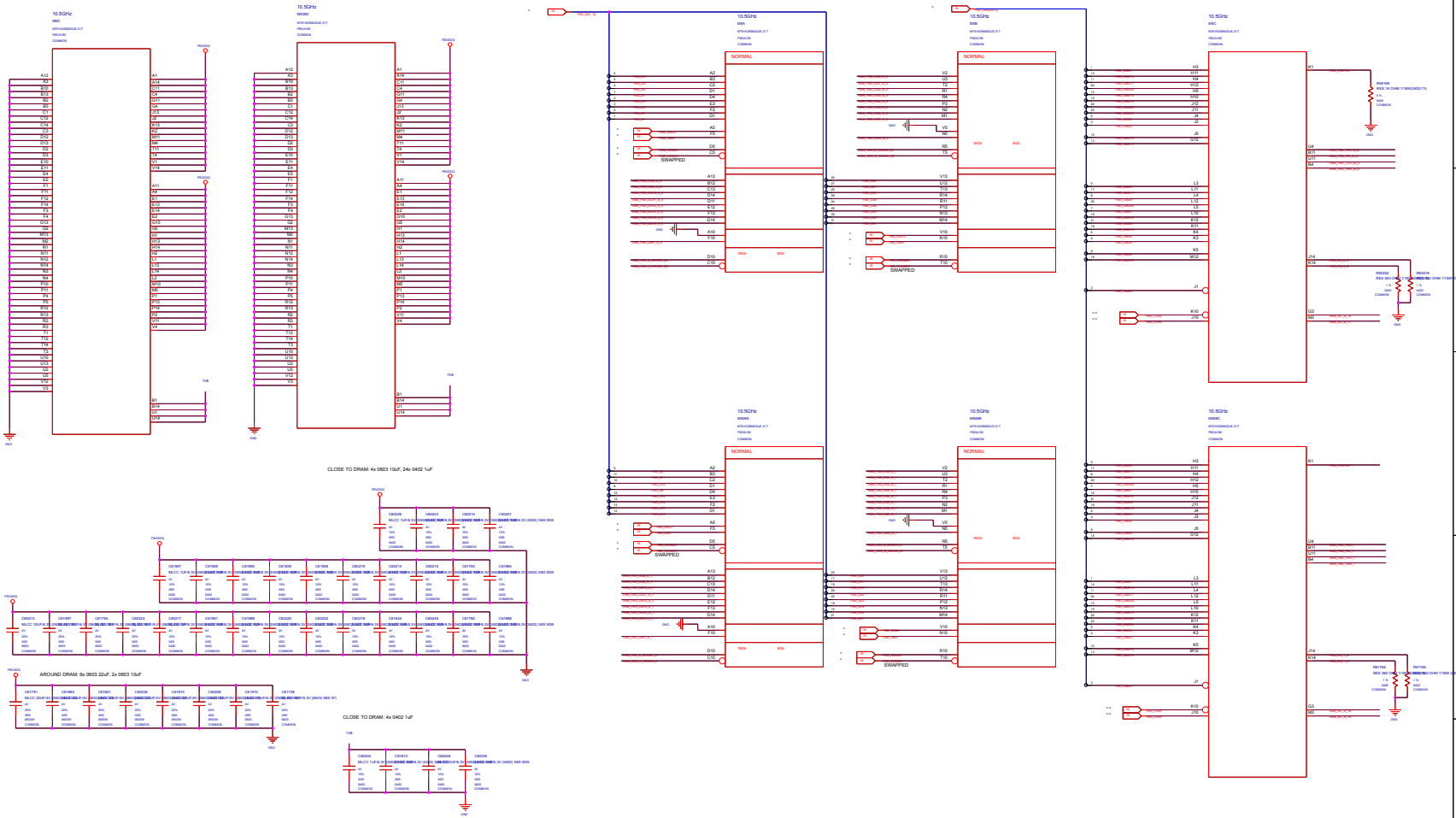
Page 12: MEMORY: FBD Partition 31..0



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
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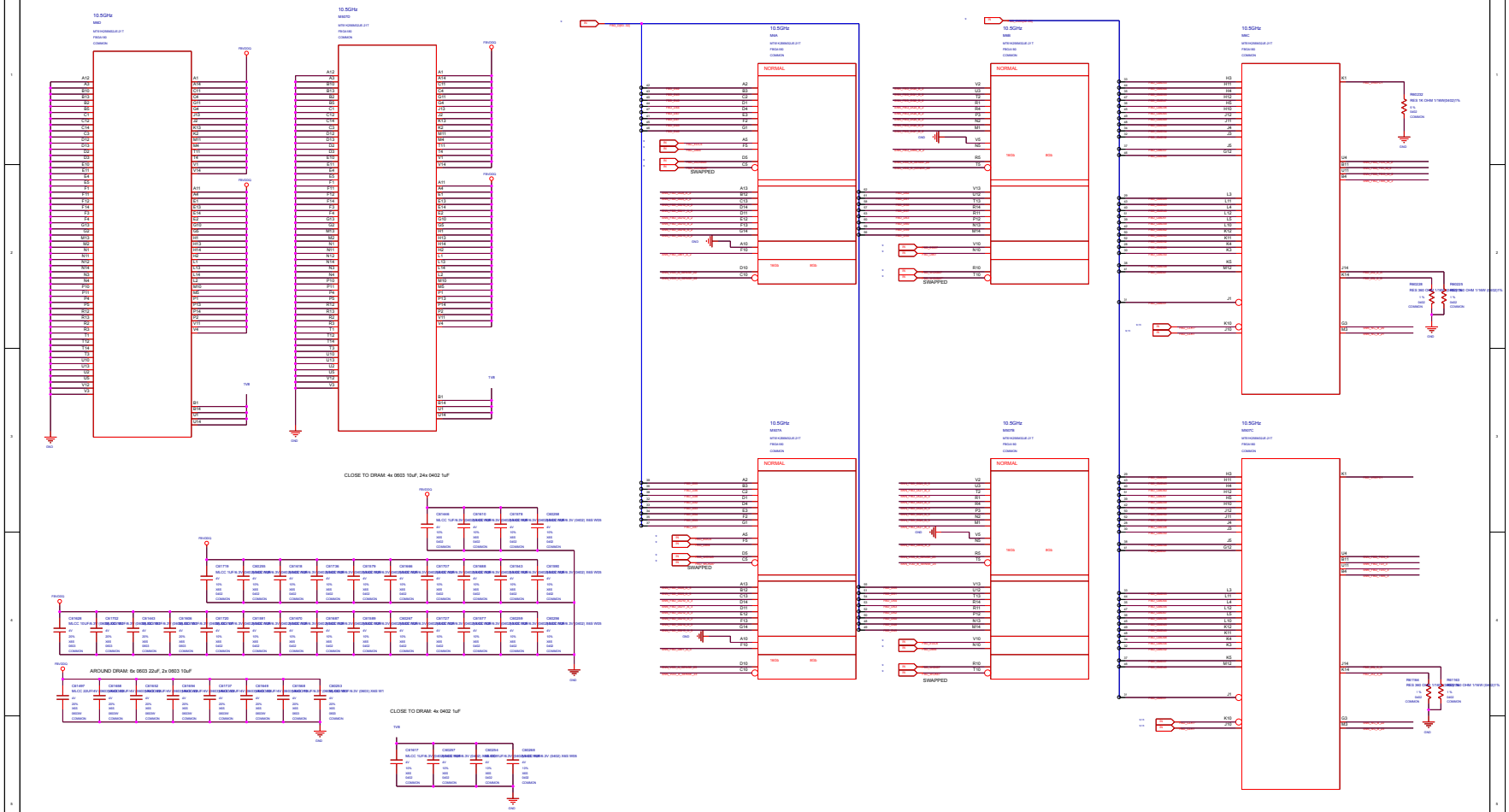
Page 13: MEMORY: FBD Partition 63..32



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBD PARTITION [63:32]

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2701 SAN TOMAS
SANTA CLARA, CA 95051, USA

NV_PN	600-1G132-BASE-400
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SCM REV	A
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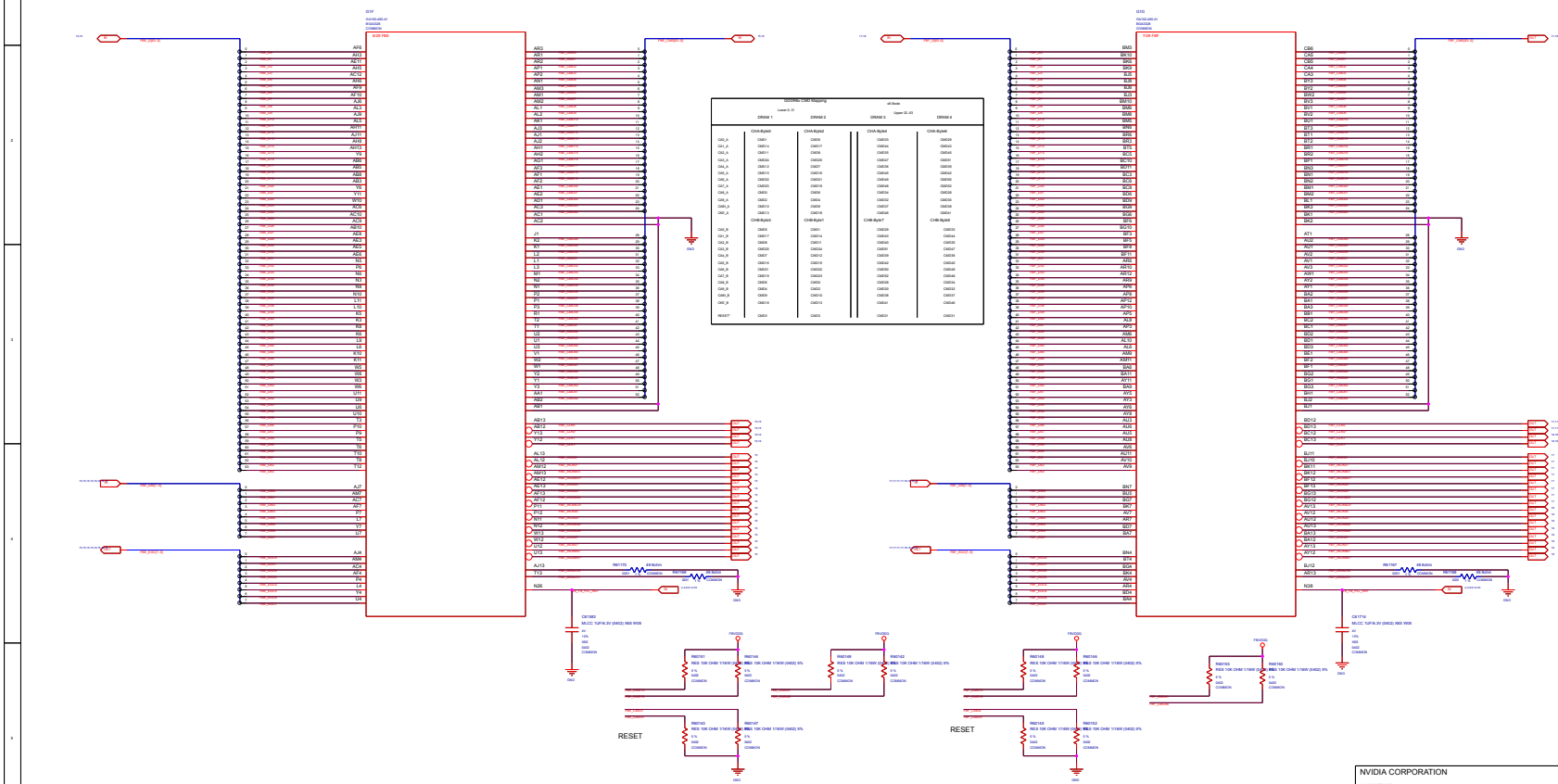
MEMORY: GPU Partition E/F



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2701 SAN TOMAS EXPRESSWAY

SANTA CLARA, CA 95051 USA

NV_PN	600-1G132-BASE-400
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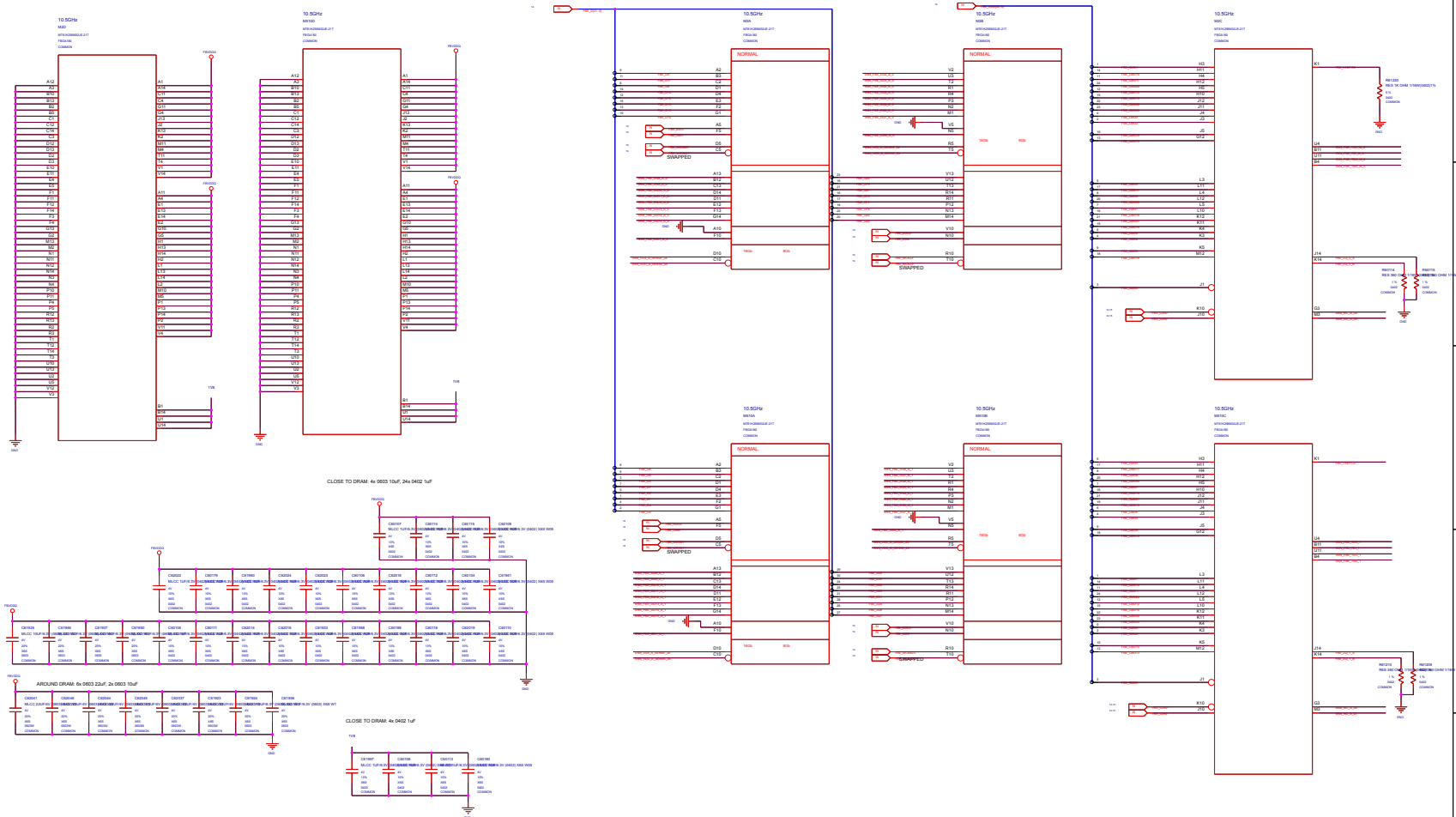
ASSEMBLY: <ASSEMBLY_DESCRIPTION>

PAGE DETAIL: MEMORY: GPU PARTITION E/F

Page 15: MEMORY: FBE Partition 31..0



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBE PARTITION[31:0]

NVIDIA CORPORATION
2701 SAN TOMAS
EXPRESSWAY
SANTA CLARA, CA 95050, USA

NV_PN	600-1G132-BASE-400		
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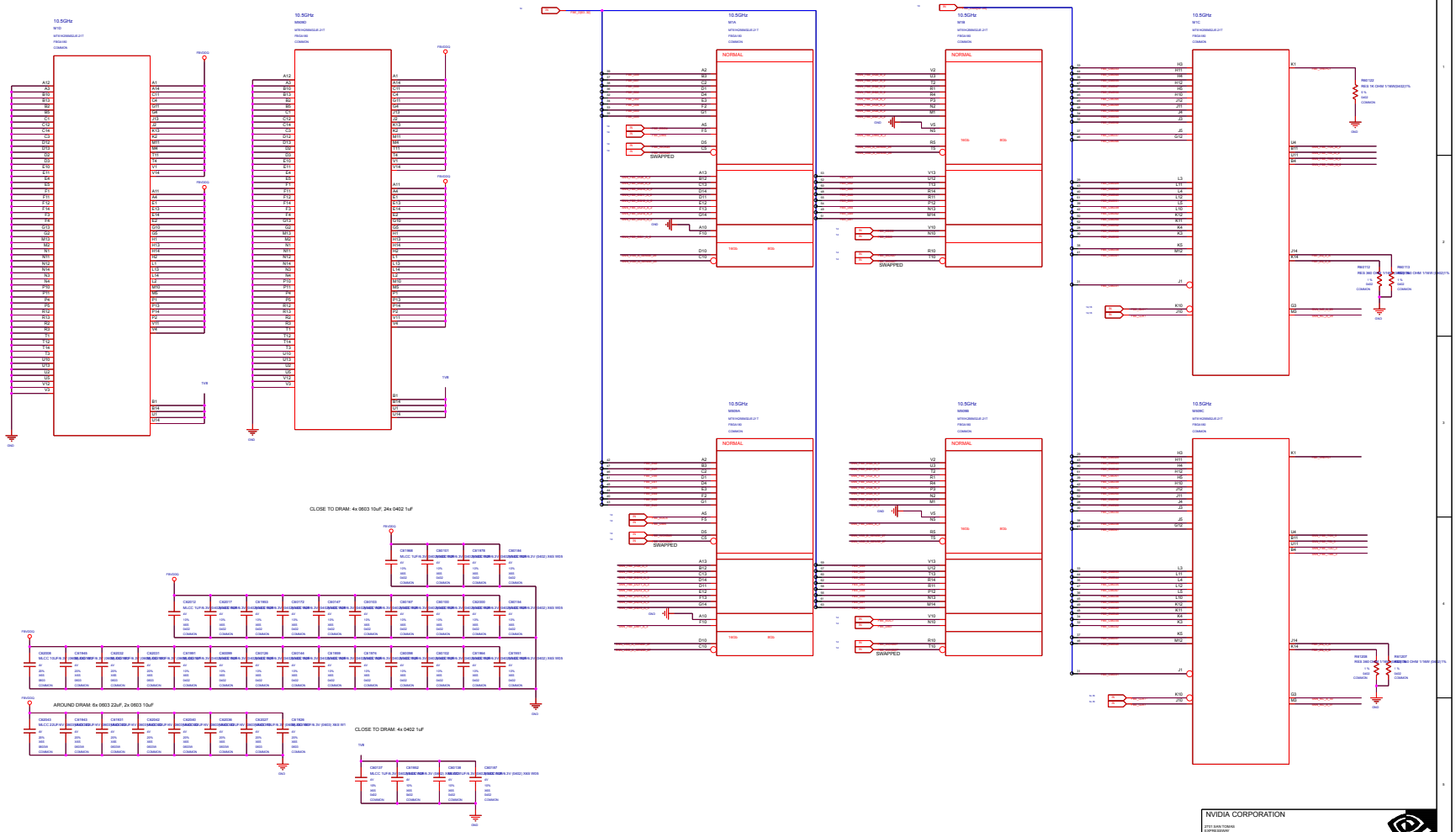
BOM REV	A	DATE	10-JUN-2020

Page 16: MEMORY: FBE Partition 63..32



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBE PARTITION[63:32]

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EXPRESSWAY
SANTA CLARA, CA 95050, USA

NV_PN	600-1G132-BASE-400
PCB REV	<PCA_ID_REV>
BOM REV	A
SIZE	D
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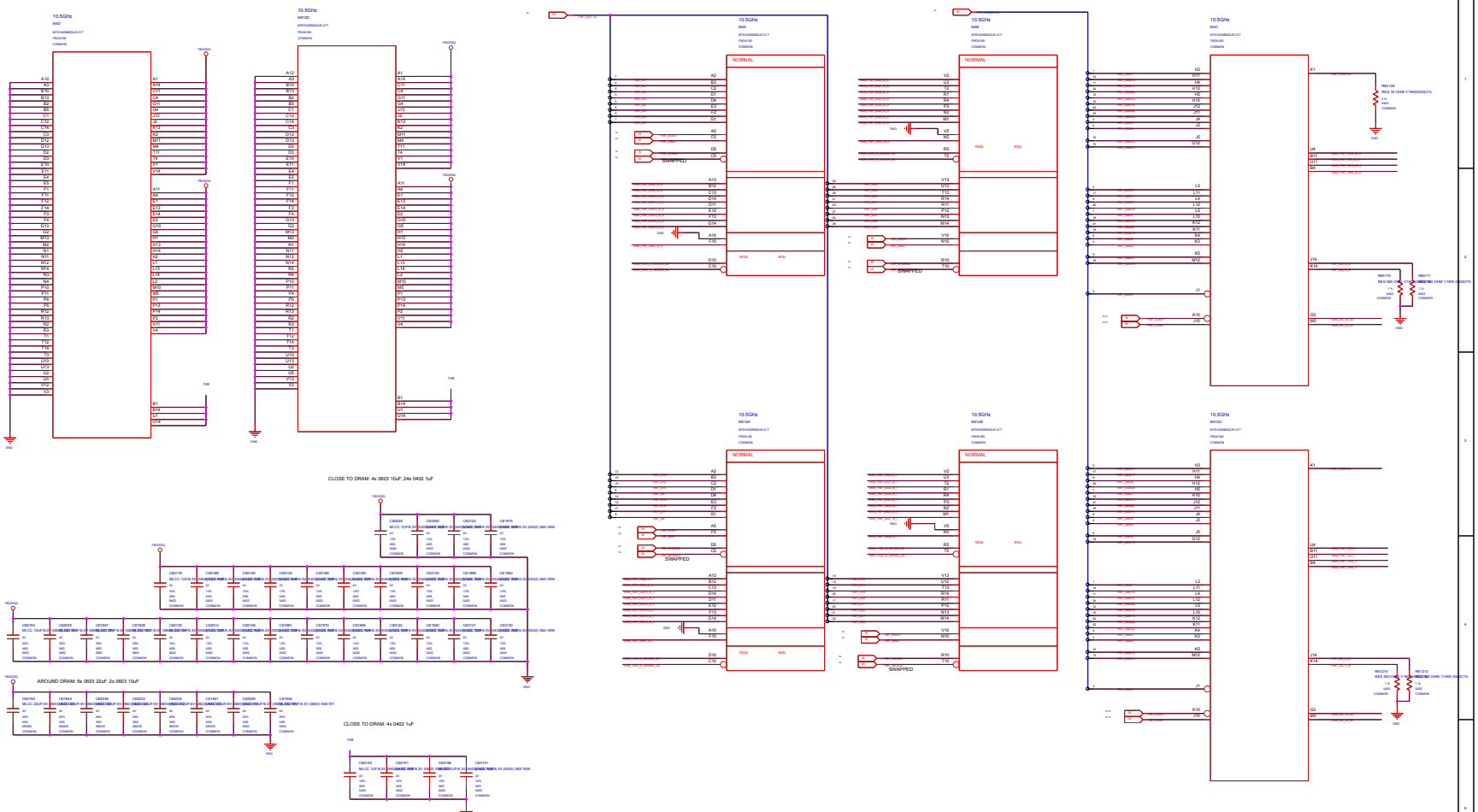
Page 17: MEMORY: FBF Partition 31..0



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
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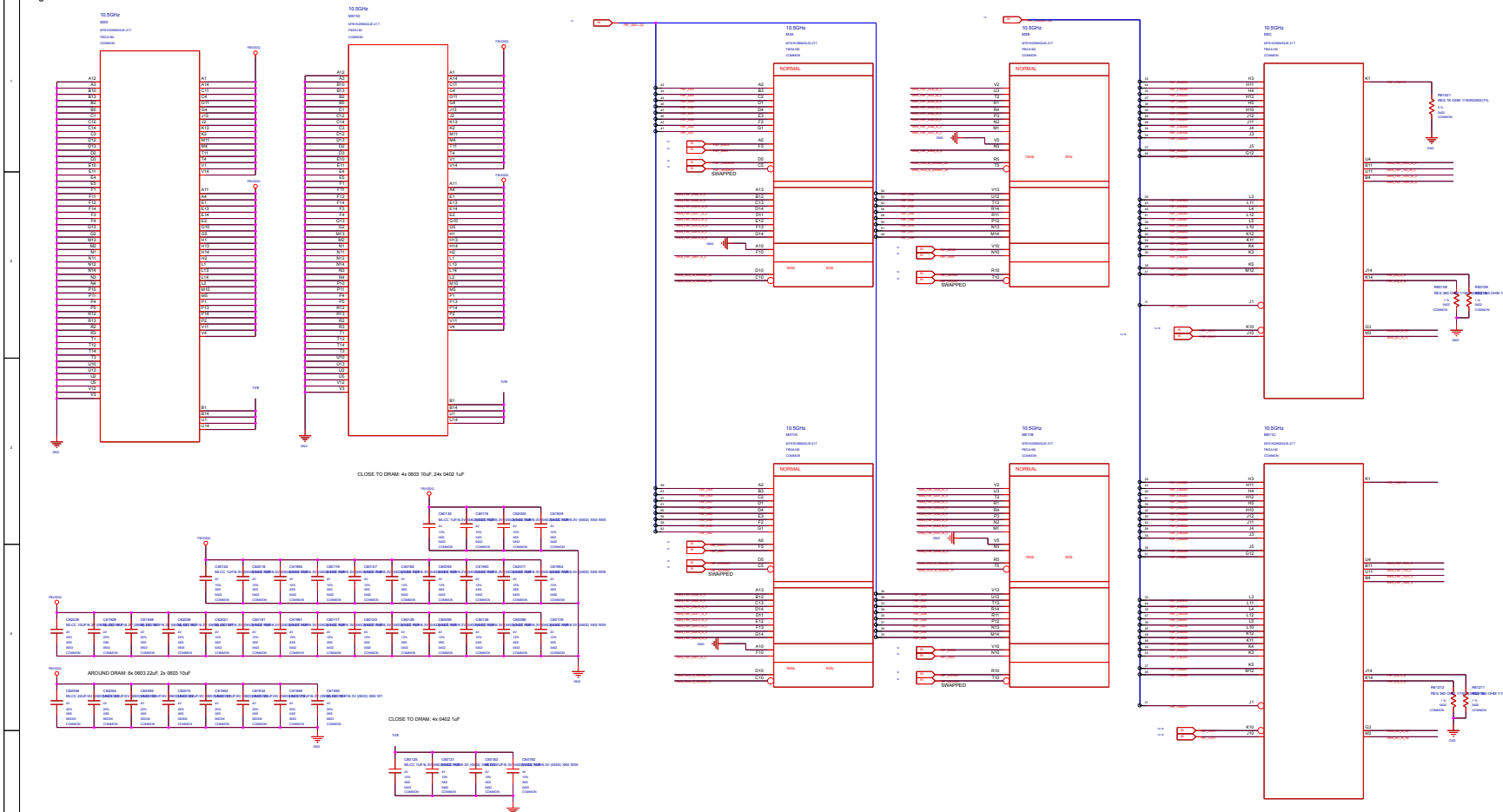
Page 18: MEMORY: FBF Partition 63..32



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBF PARTITION[63:32]

NVIDIA CORPORATION
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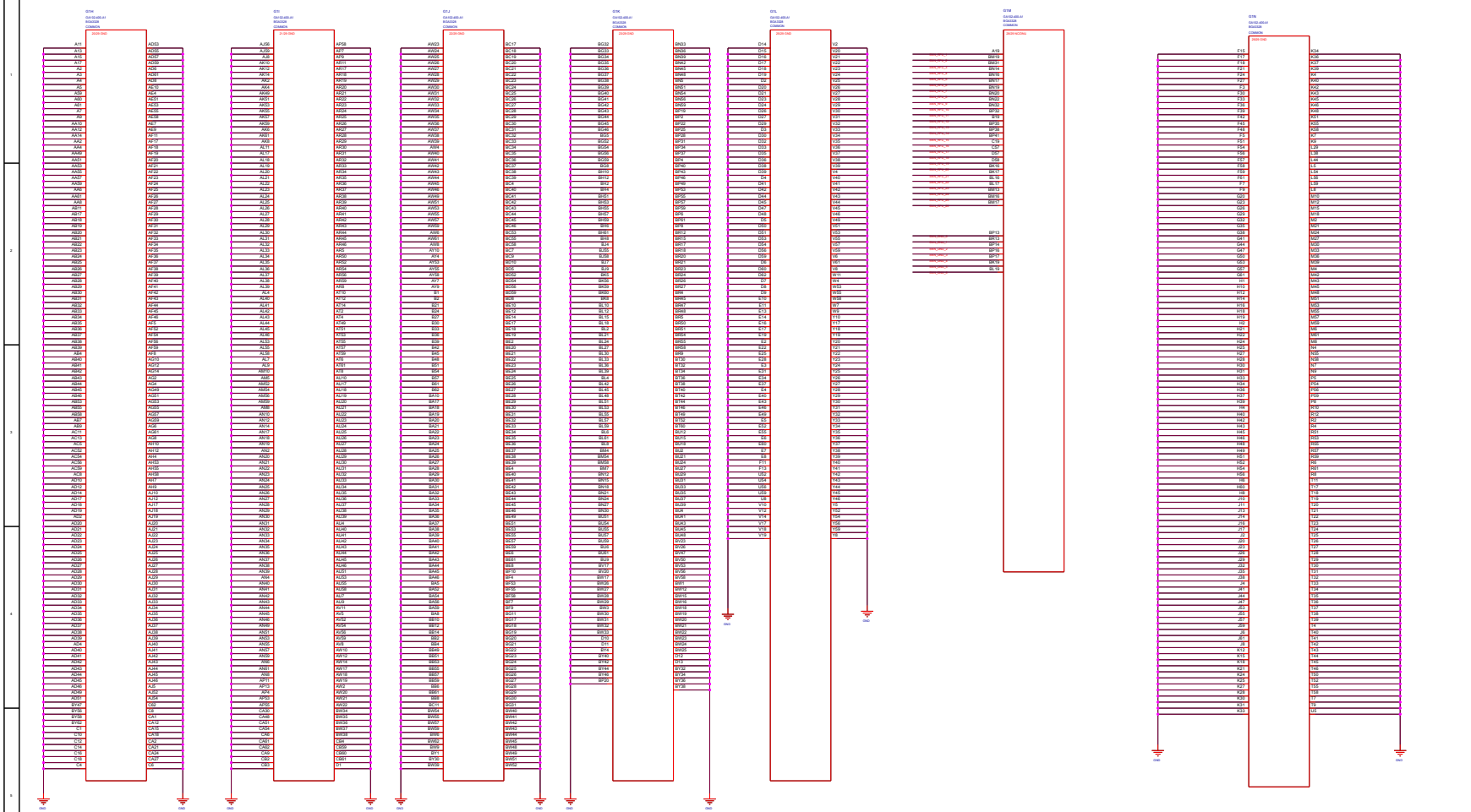
GPU GND, RFUs & RSVD



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU GND, RFUs & RSVD

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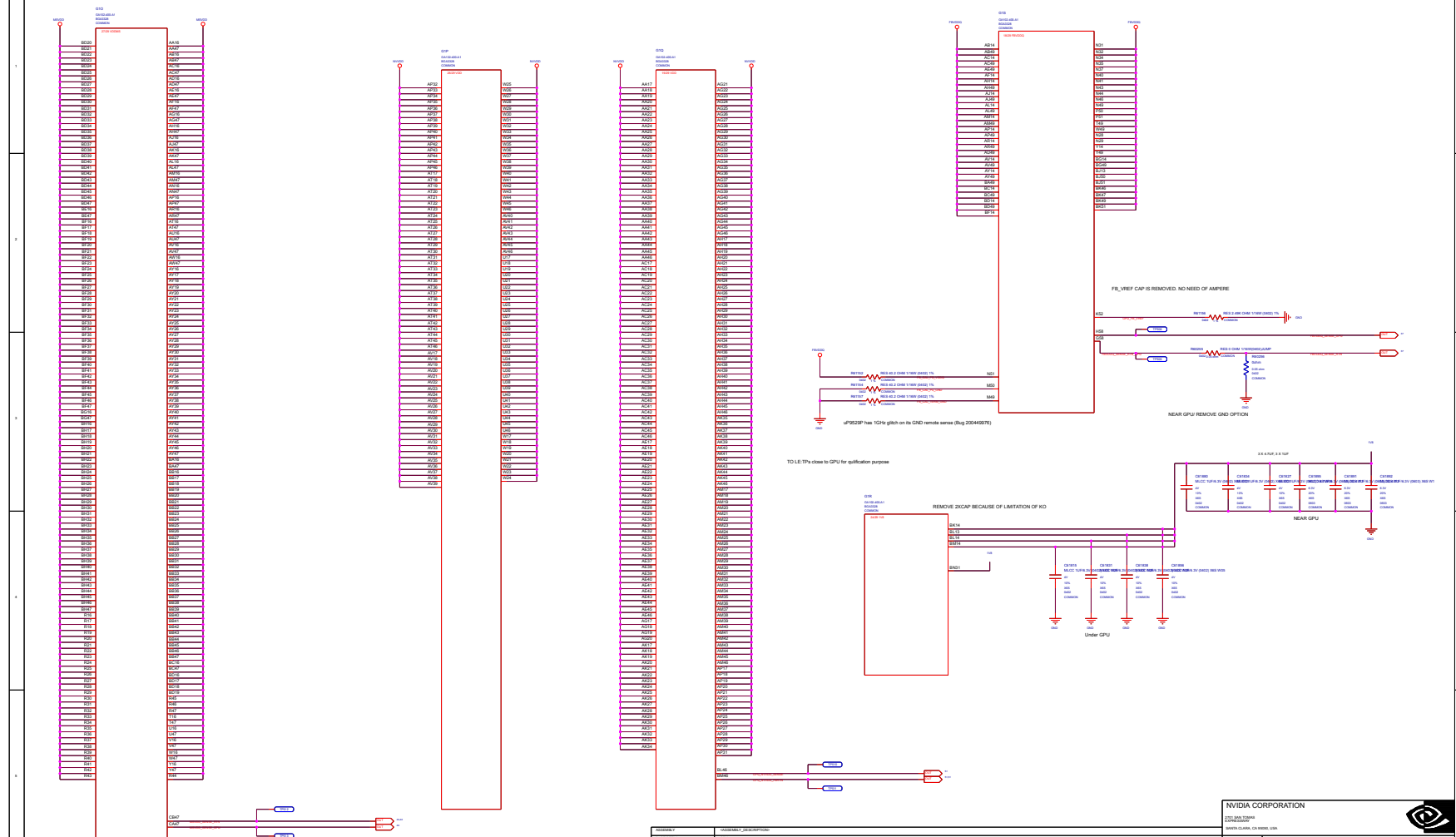
GPU PWR and GND



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU POWERS

NVIDIA CORPORATION

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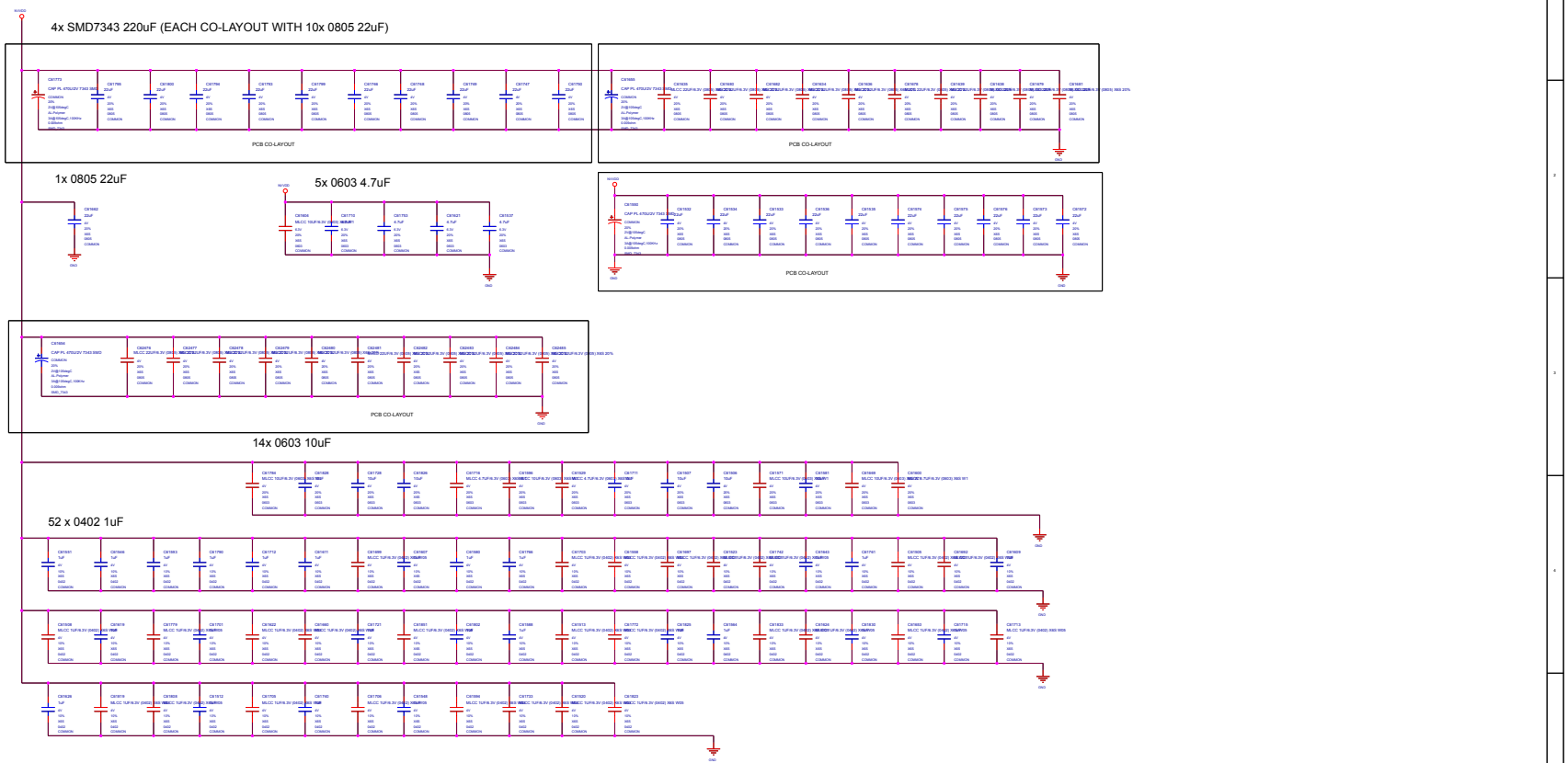
NVVDD

UNDER GPU



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU NVVDD DECOUPLING

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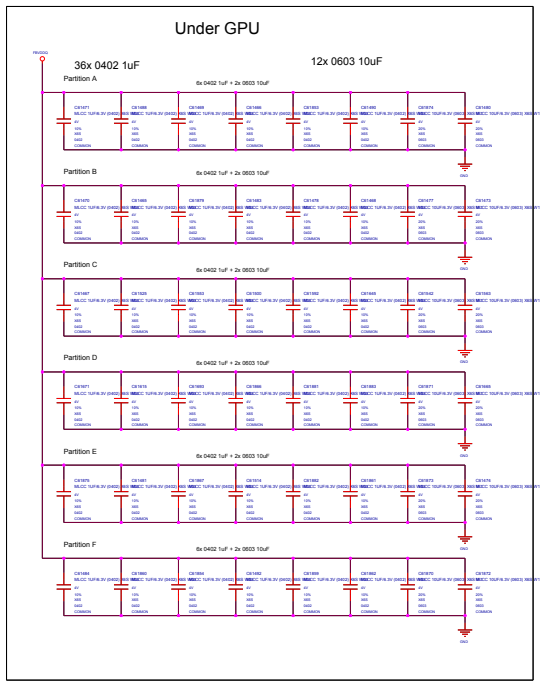
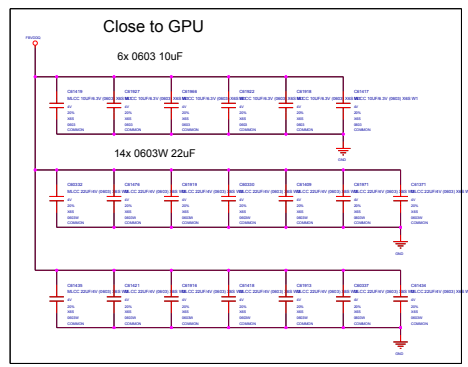
FBVDDQ





ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU: FBVDD DECOUPLING

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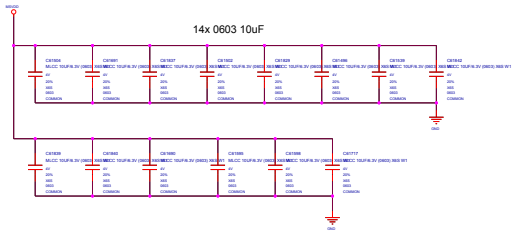
Page 23: GPU: MSVDD DECOUPLING

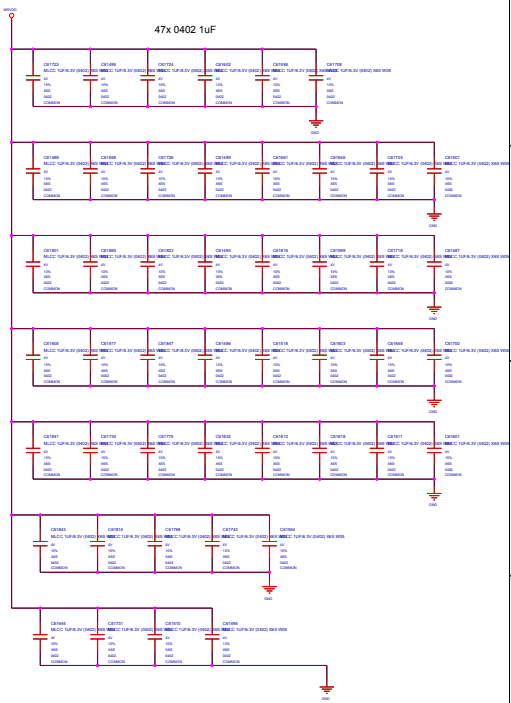
MSVDD

UNDER GPU

14x 0603 10uF

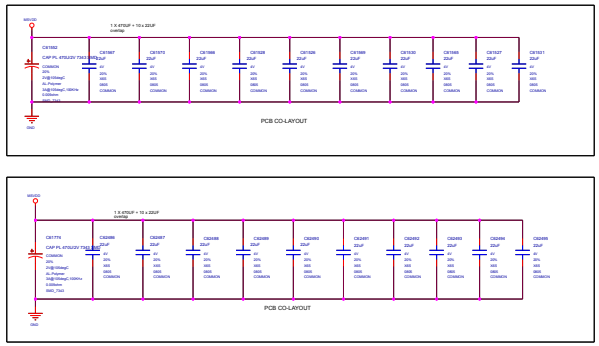


47x 0402 1uF



REMOVED 3X 1uF 0402 DUE TO SPACE RESTRICTION

2x SMD7343 220uF (EACH CO-LAYOUT WITH 10x 22uF 0805)



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU MSVDD DECOUPLING

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NV_PN	600-1G132-BASE-400
PCB REV	P5132-501
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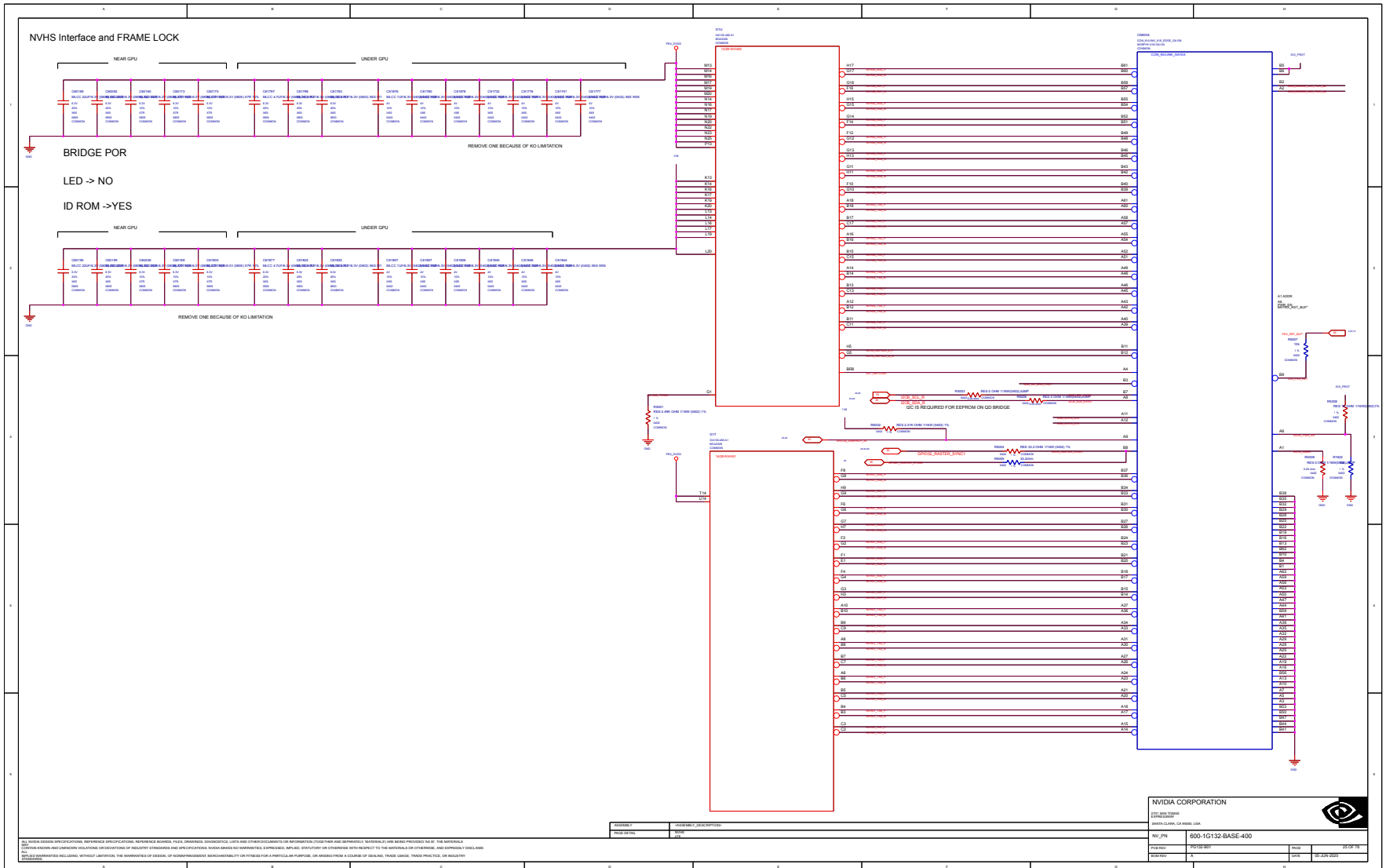
NVHS Interface and FRAME LOCK
NEAR GPU
UNDER GPU
BRIDGE POR
LED -> NO
ID ROM ->YES
REMOVE ONE BECAUSE OF KO LIMITATION
REMOVE ONE BECAUSE OF KO LIMITATION
I2C IS REQUIRED FOR EEPROM ON QD BRIDGE
GPIO13_RASTER_SYNC1
NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA
NV_PN
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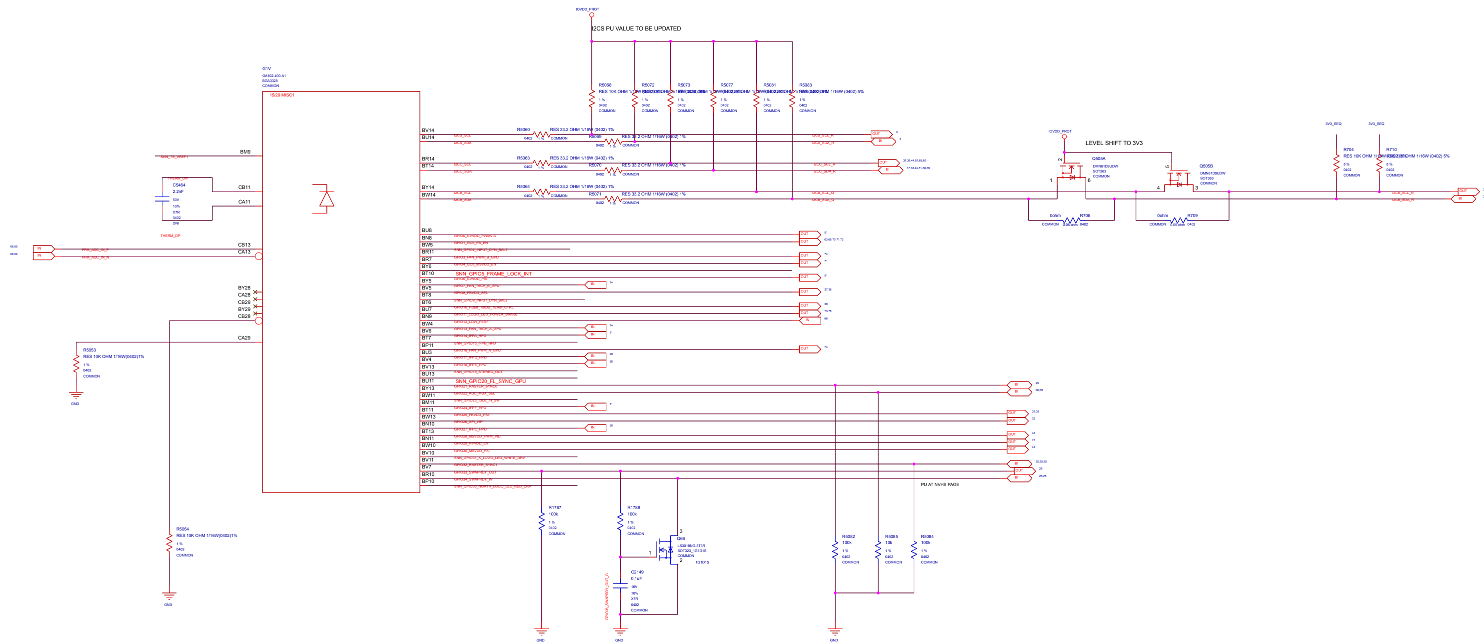
SCM REV
A
DATE
05-JUN-2020

MISC1: Fan, Thermal, JTAG, GPIO, STEREO



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MISC: THERMAL, JTAG, GPIO

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NV_PN	600-1G132-BASE-400		
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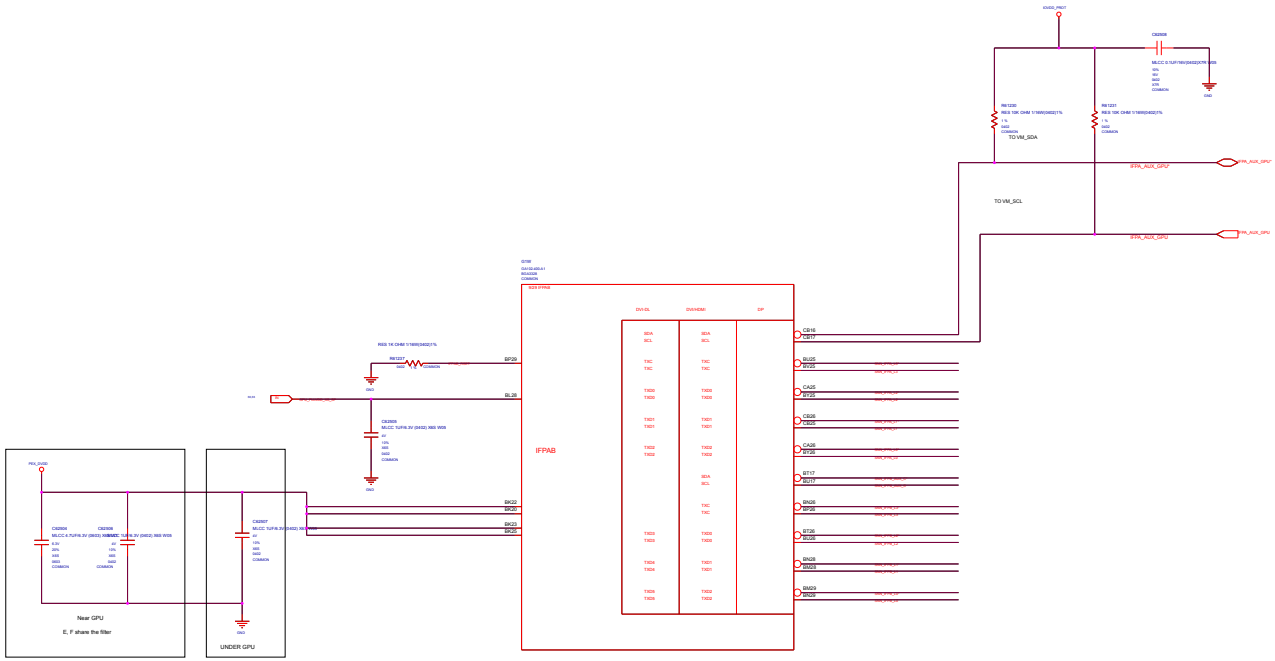
IFPA UNUSED, IFPB UNUSED



NVIDIA CORPORATION
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NV_PN	600-1G132-BASE-400
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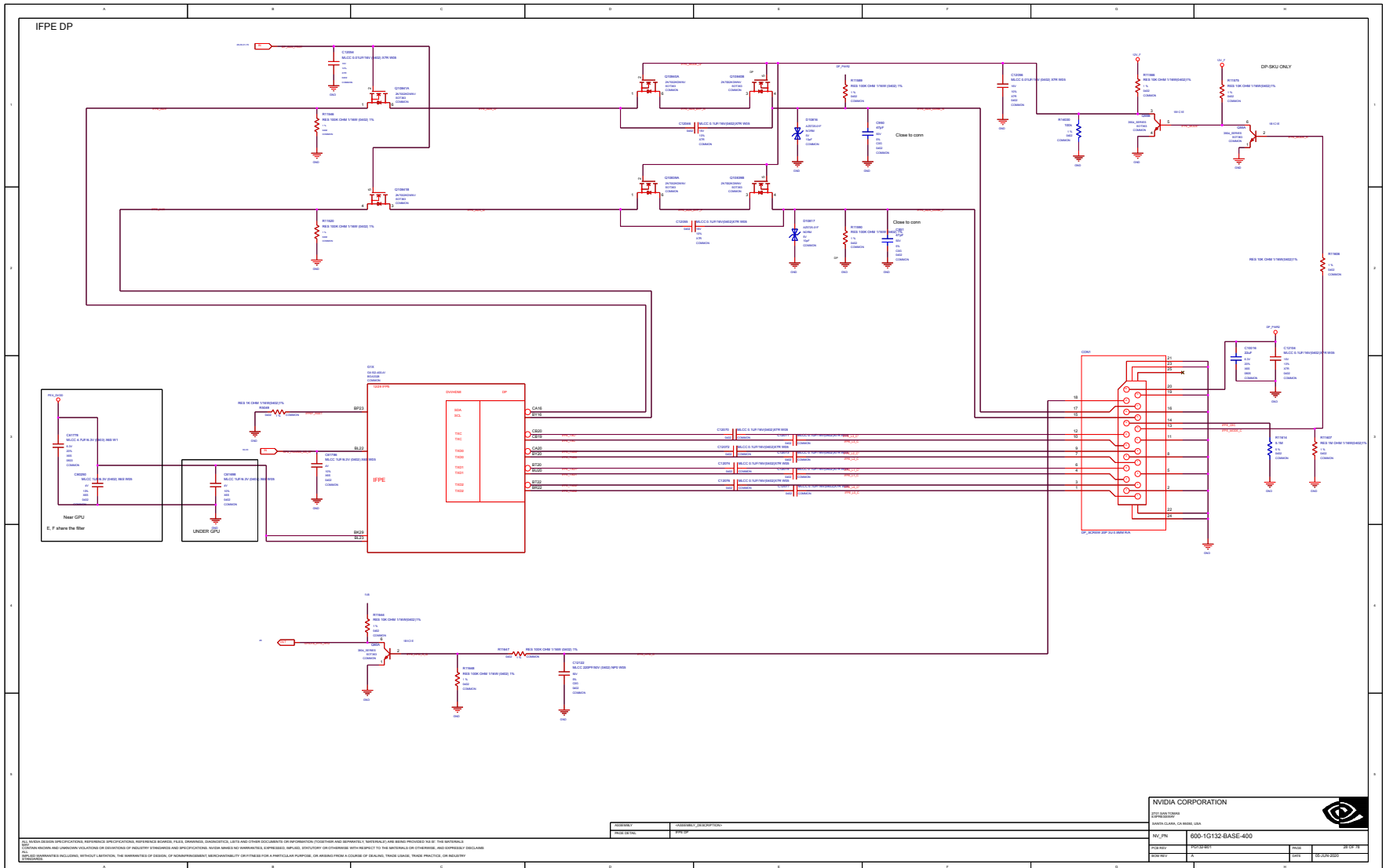
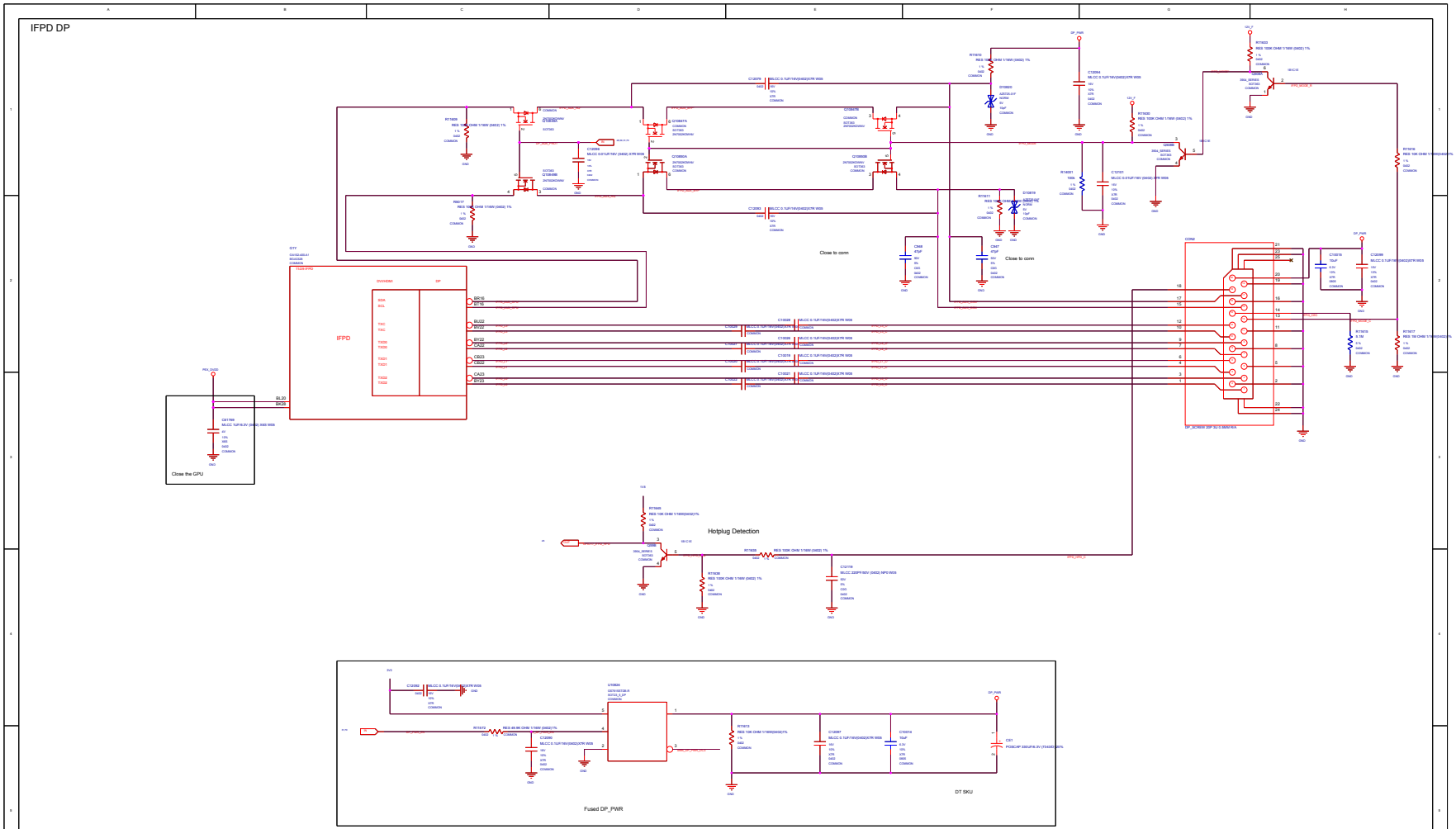
ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	IFPA UNUSED, IFPB UNUSED





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PAGE DETAIL	IFPD DP

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NV_PN	600-1G132-BASE-400		
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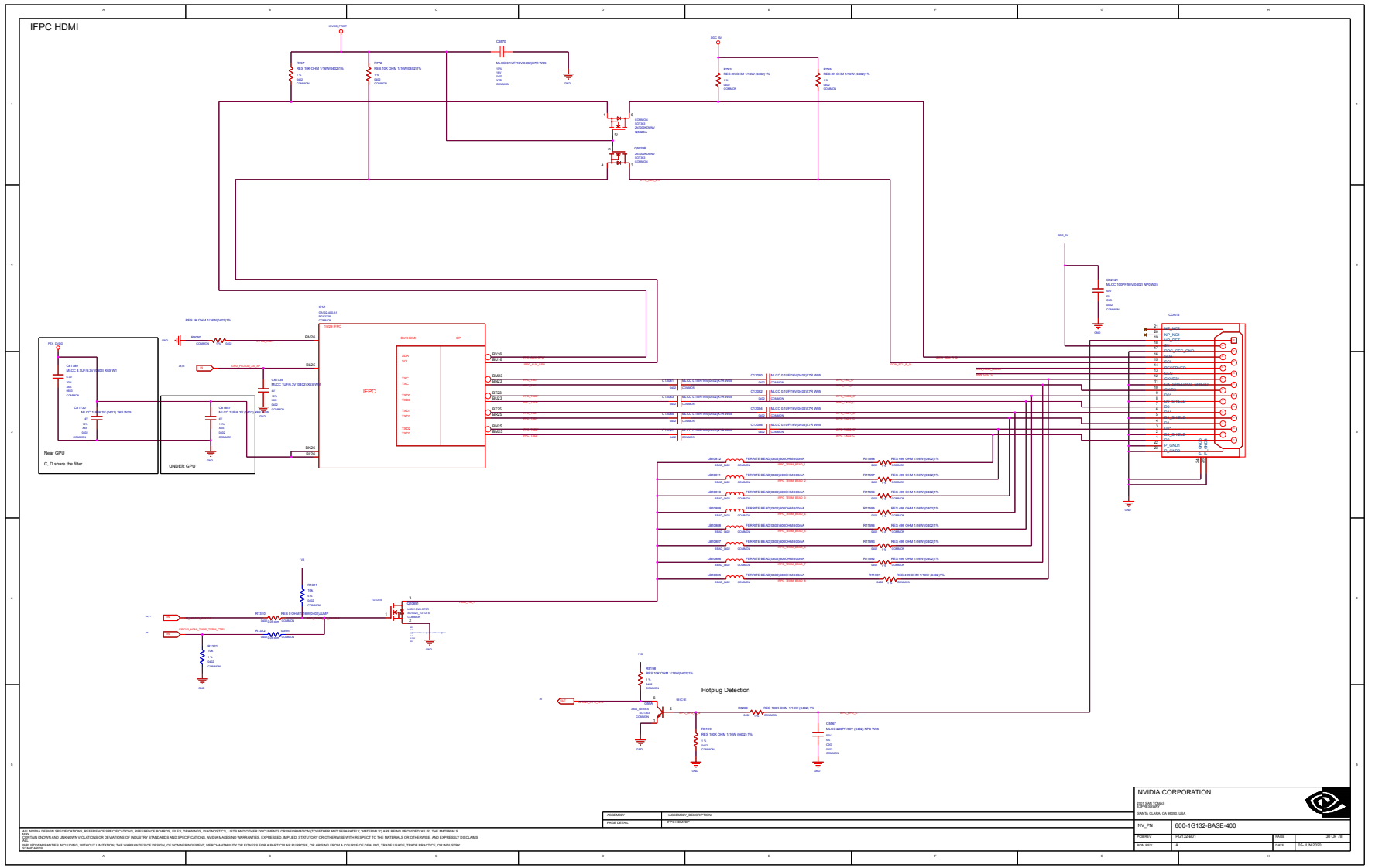
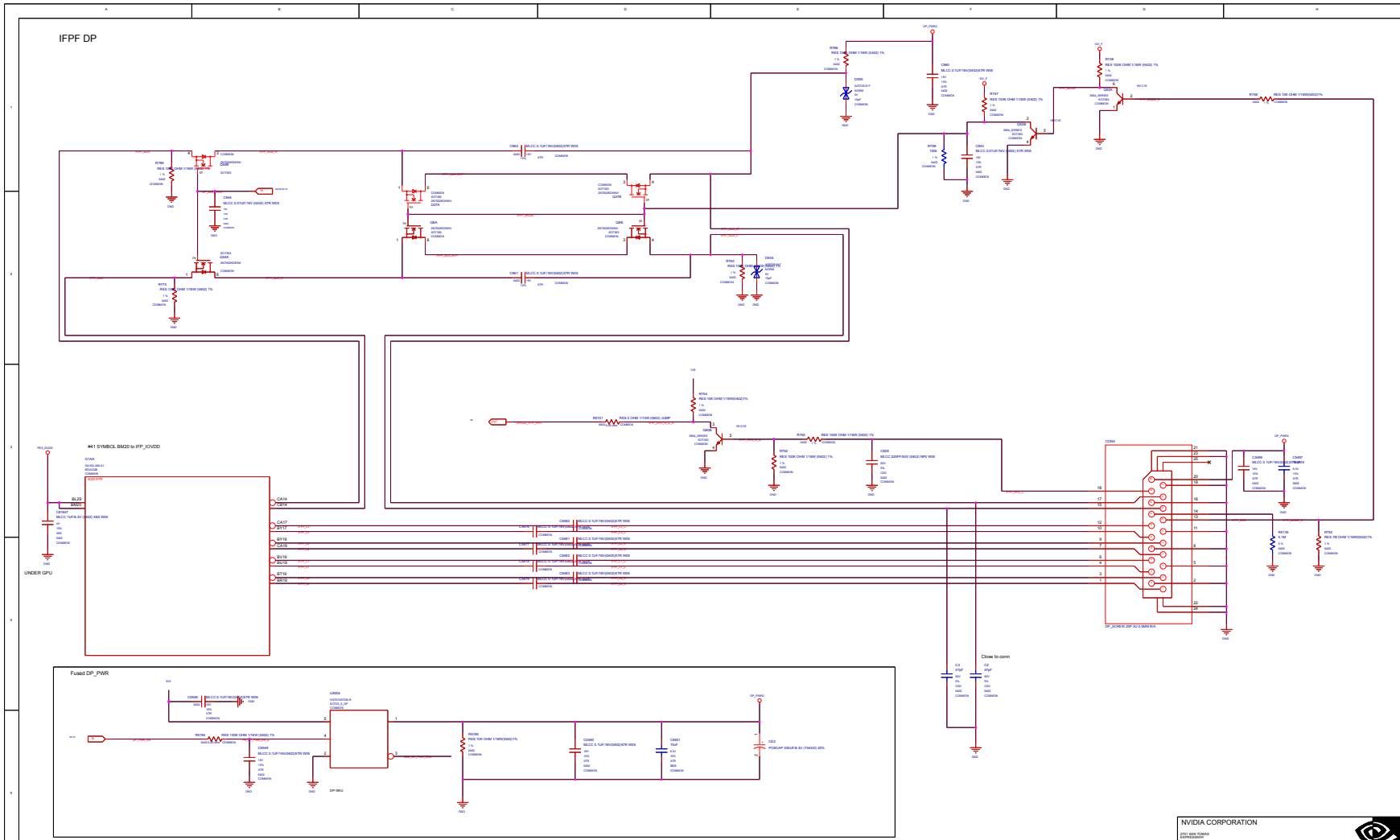



IFPF DP
#41 SYMBOL BM20 to IFP_IOVDD
UNDER GPU
Fused DP_PWR
Close to conn
DP_SCRE10 20P 3U 0.8MM R/A
NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA
NV_PN
600-1G132-BASE-400
PCB REV
PG132-B01
PAGE
31 OF 78
BOM REV
A
DATE
02-JUN-2020
ASSEMBLY
<ASSEMBLY_DESCRIPTION>
PAGE DETAIL
IFPF DP

MISC: ROM, Straps

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]	
L	L	L	00000	RAMCFG MICRON 8Gb 19Gbps
L	H	L	00010	RAMCFG TBD
H	L	L	00100	RAMCFG TBD
H	L	H	00101	RAMCFG TBD
H	L	H	00101	RAMCFG MICRON 8Gb 21Gbps

H=High :Tied to 1.8V

M=Middle:Tied to 0.9V

L=Low :Tied to 0V

DEFAULT

ROM_SO	ROM_SI	ROM_SCLK	SMARTFAN[2:0],FS_OVERT	1:ENABLE 0:DISABLE
H	H	H	0111	FS_OVERT ENABLE
L	L	L	0000	FS_OVERT DISABLE

DEFAULT

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

1:SMB_ALT_ADDR ENABLE

0:SMB_ALT_ADDR DISABLE

1:DEVID_SEL REBRAND

0:DEVID_SEL ORIGNAL

1:PCIE_CFG LOW POWER

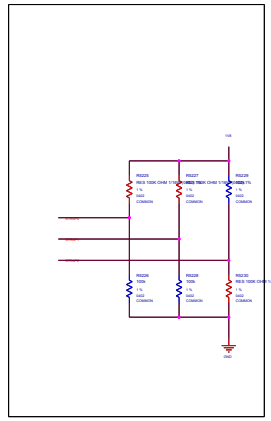
0:PCIE_CFG HIGH POWER

1:VGA_DEVICE ENABLE

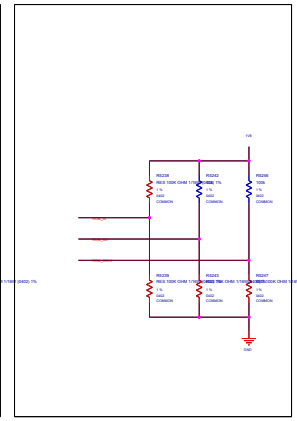
0:VGA_DEVICE DISABLE

Default

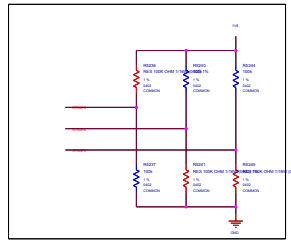
GROUP0

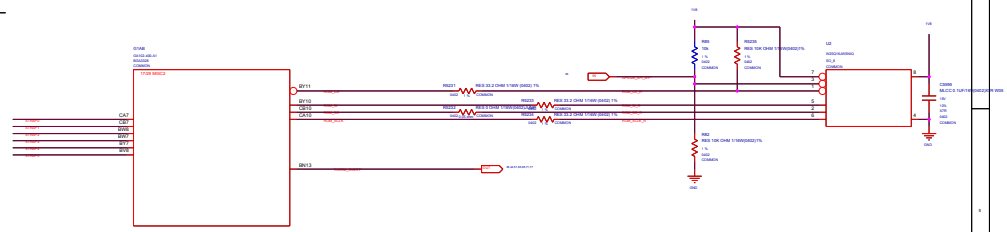


GROUP1



GROUP2

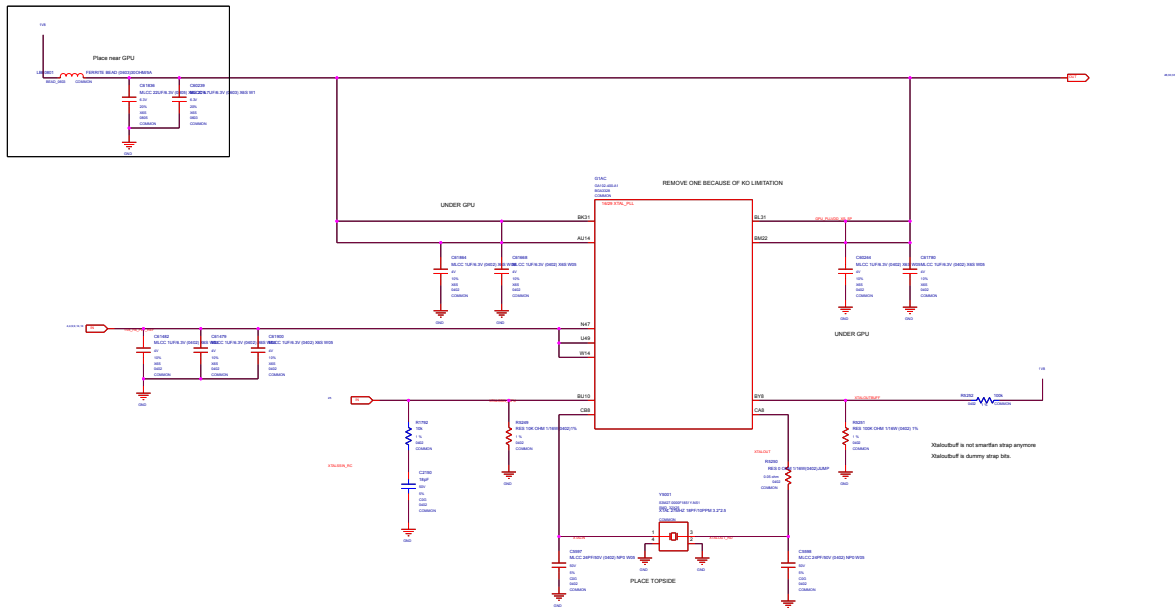




ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MISC: ROM, STRAPS

NVIDIA CORPORATION	
2701 SAN TOMAS EXPRESSWAY	
SANTA CLARA, CA 95051, USA	
NV_PN	600-1G132-BASE-400
PCB REV	PG132-001
BOM REV	A
PAGE	32 OF 78
DATE	02-JUN-2020

MISC: XTAL. PLL

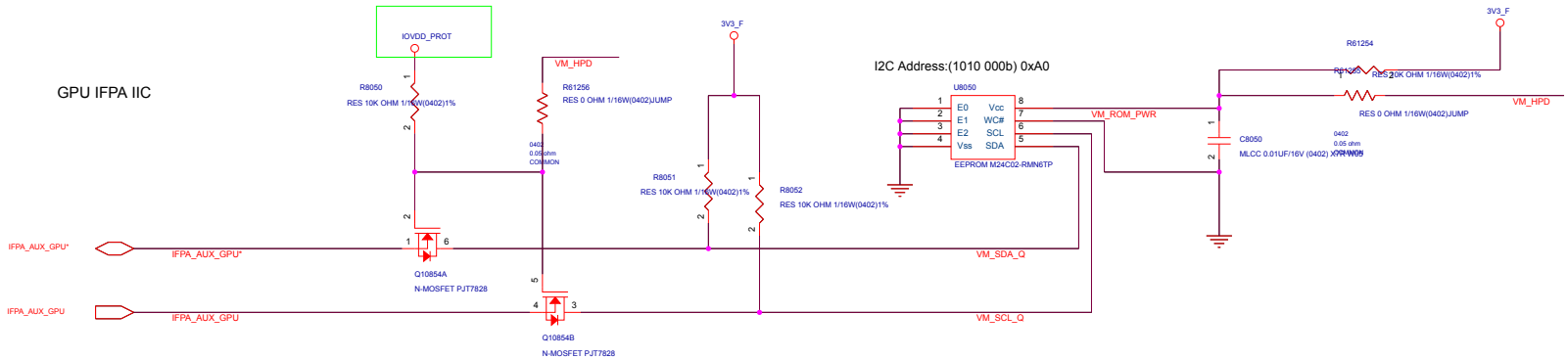


ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MISC: XTAL. PLL

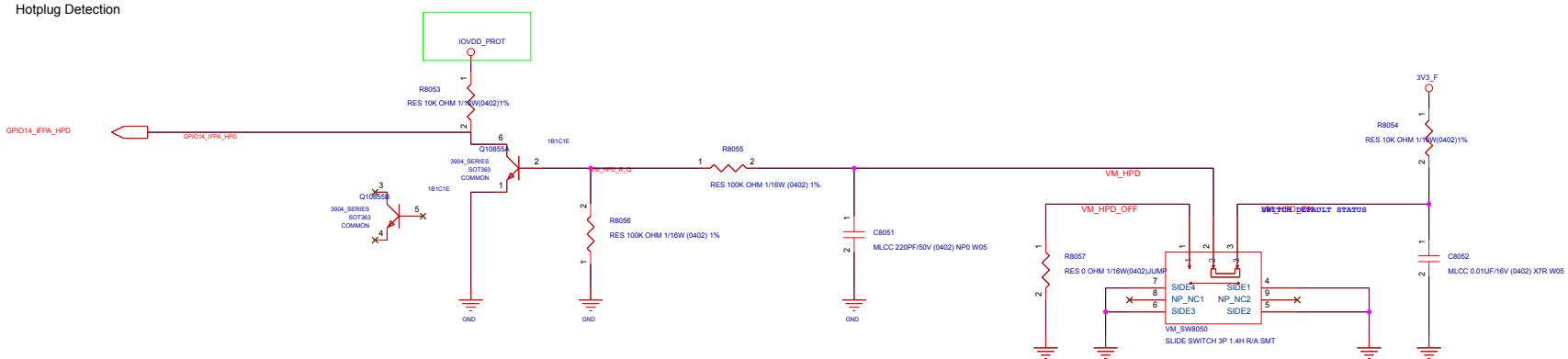
NVIDIA CORPORATION
2701 SAN TOMAS
EXPRESSWAY
SANTA CLARA, CA 95050, USA

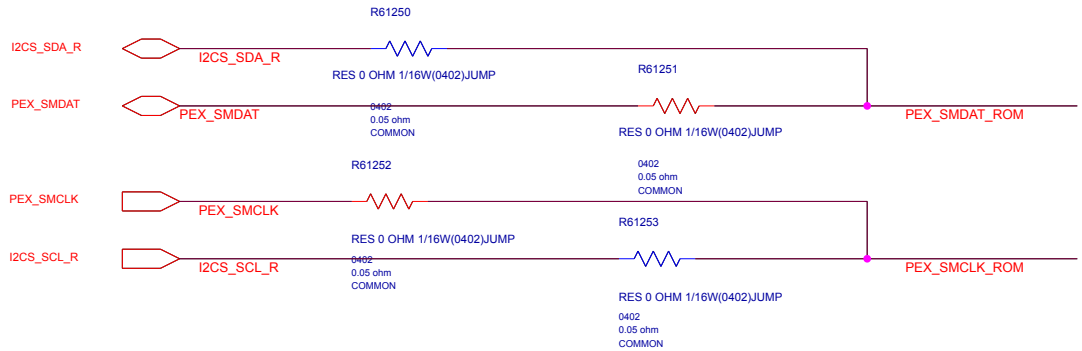
NV_PN	600-1G132-BASE-400		
PCB REV	PG132-BD1	PAGE	33 OF 76
SCM REV	A	DATE	06-JUN-2022

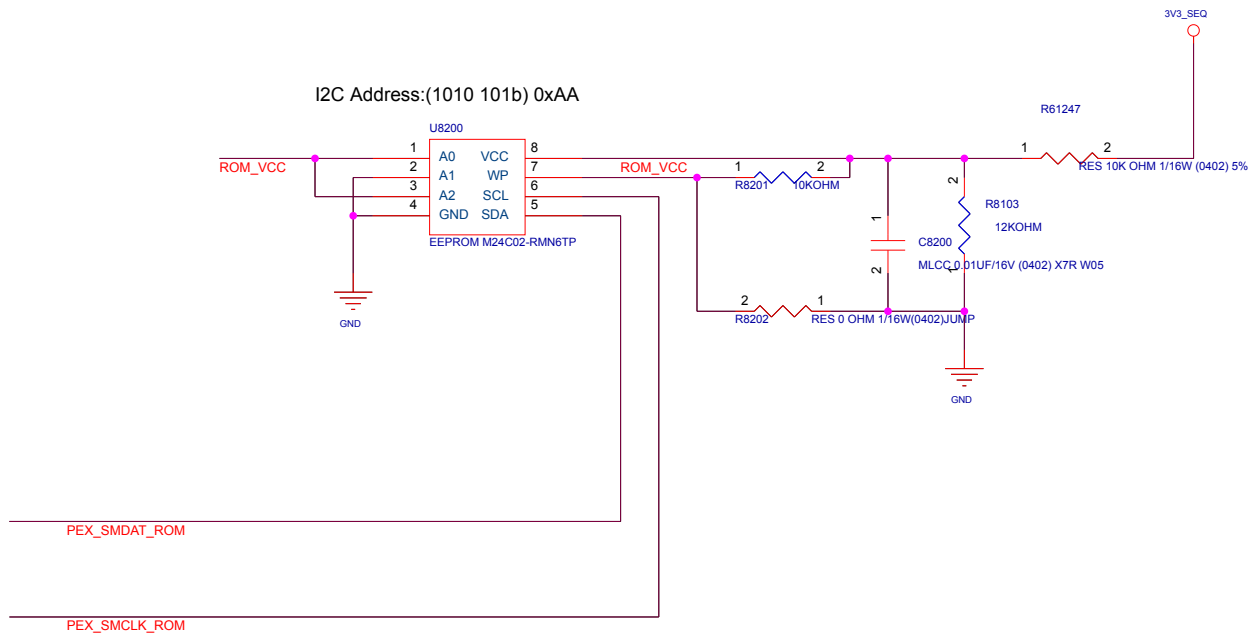
GPU IFPA IIC

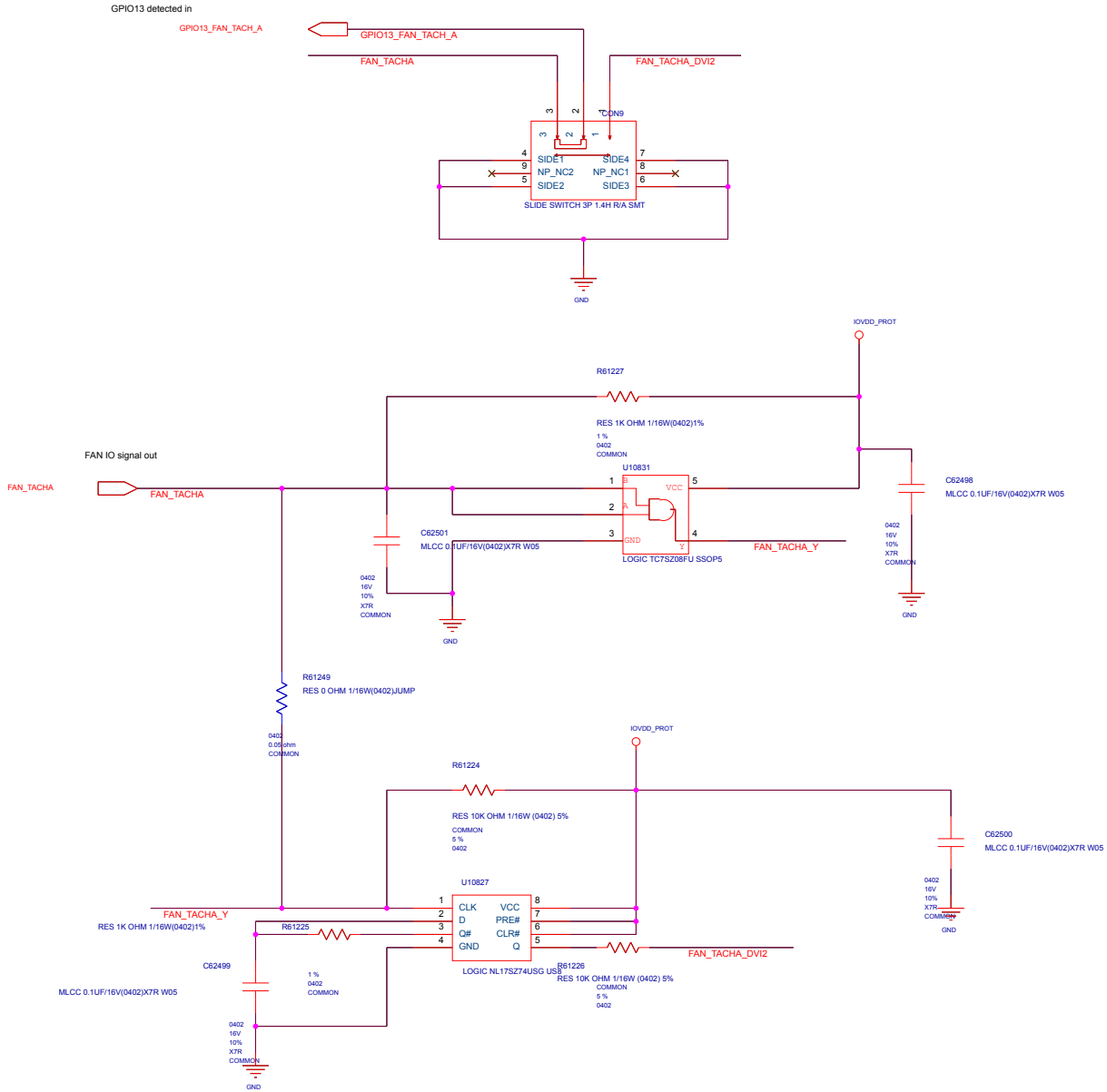


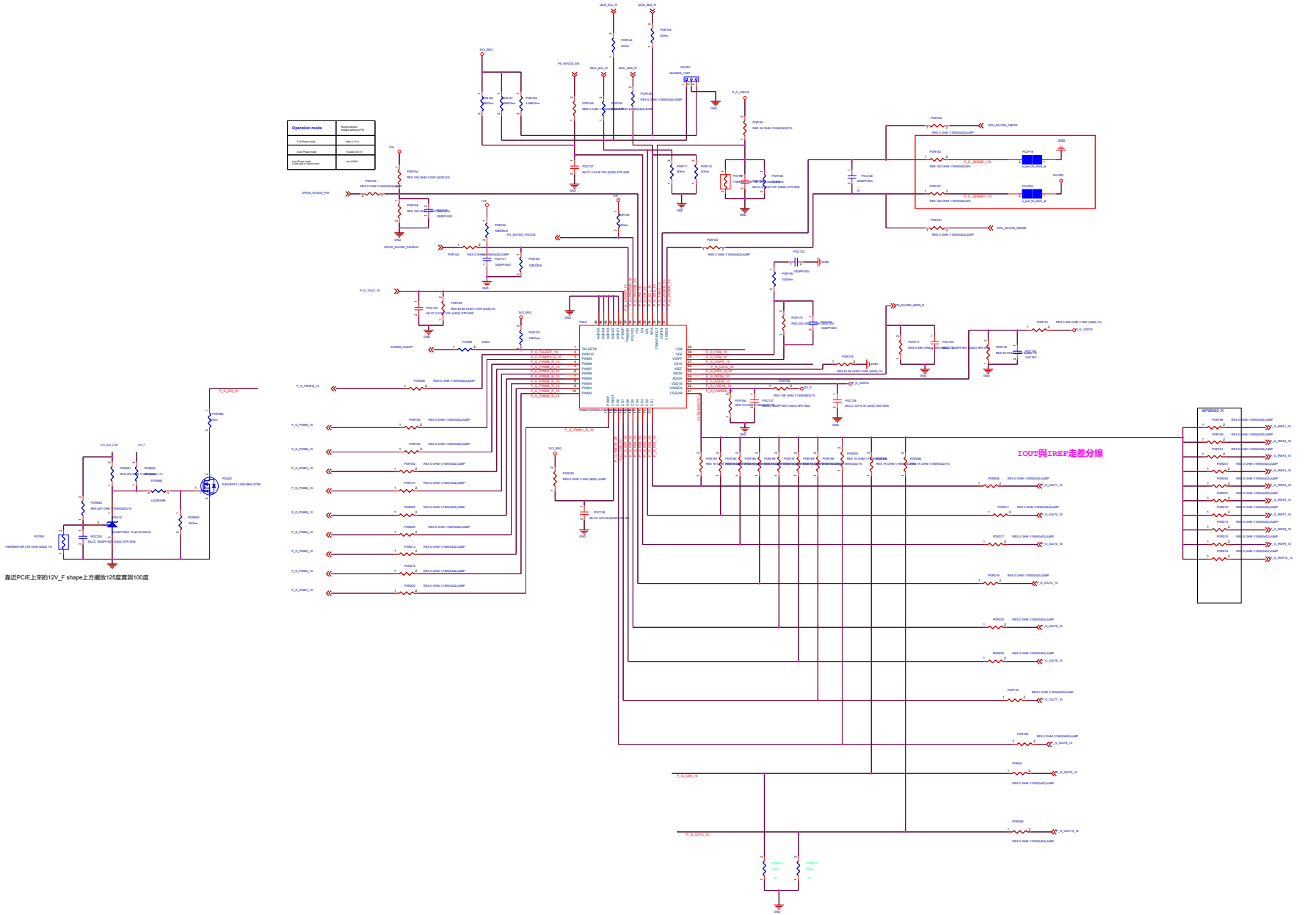
Hotplug Detection

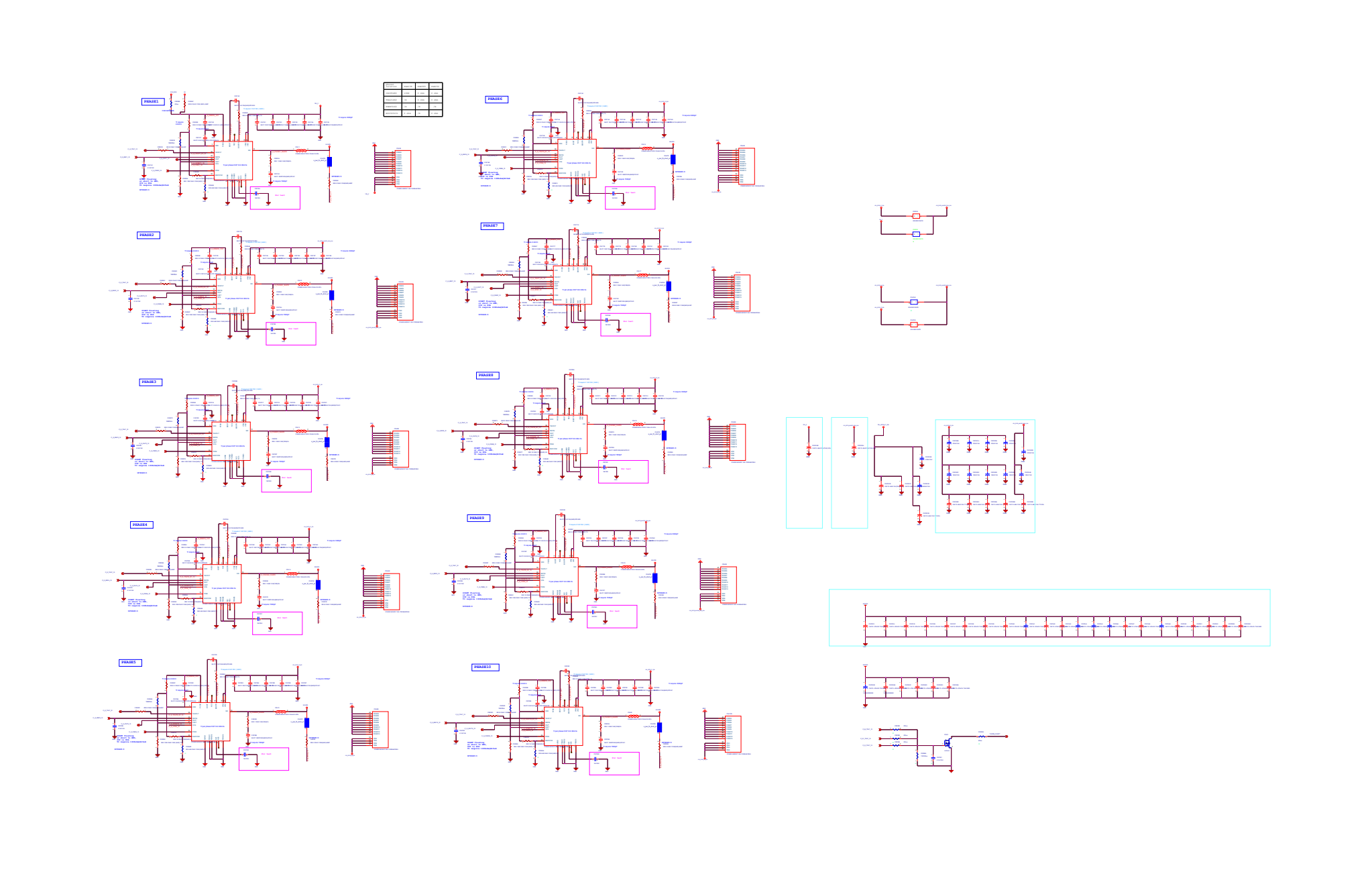


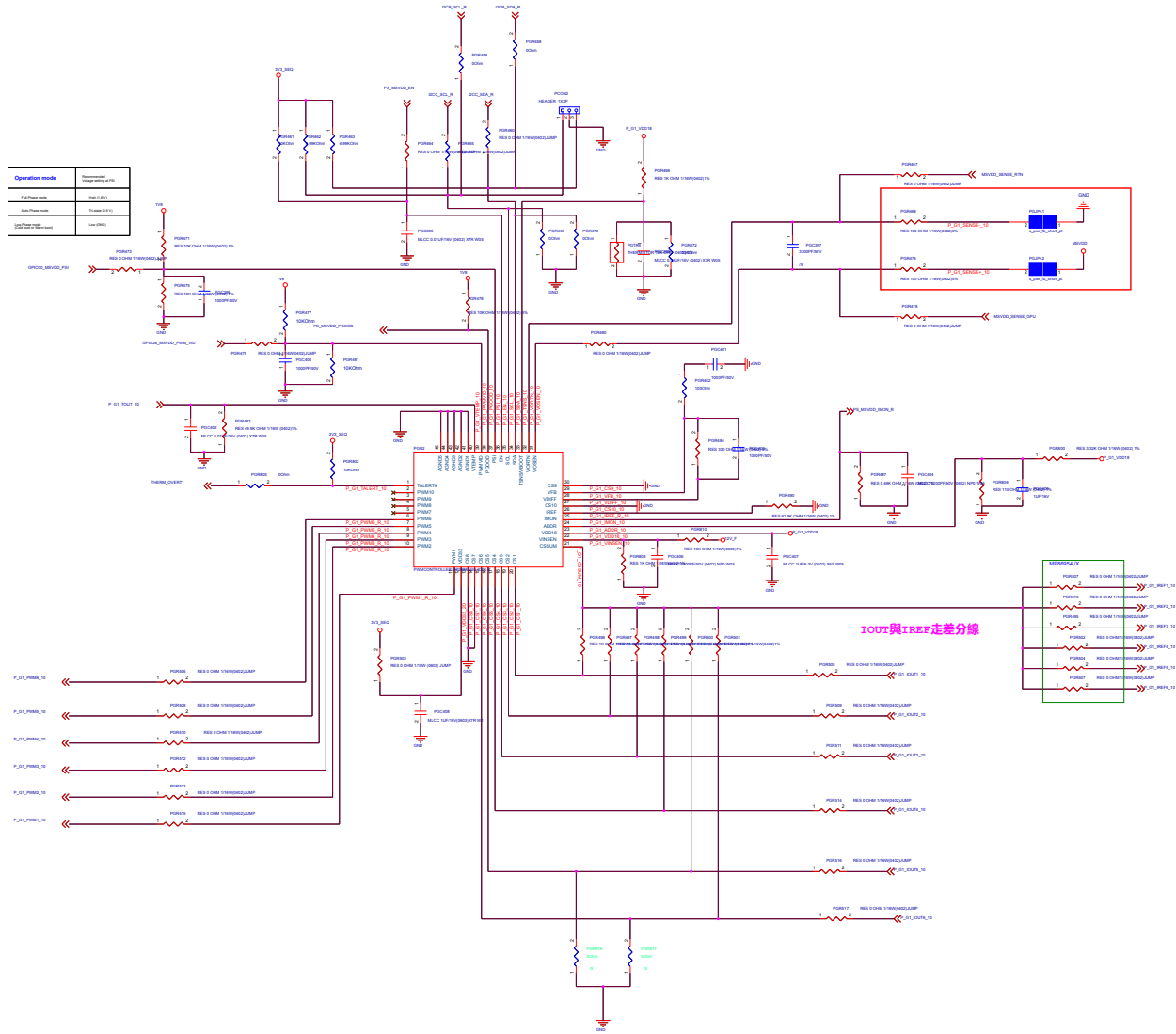

R61250
I2CS_SDA_R
I2CS_SDA_R
RES 0 OHM 1/16W(0402)JUMP
R61251
PEX_SMDAT
PEX_SMDAT
0402
0.05 ohm
COMMON
RES 0 OHM 1/16W(0402)JUMP
PEX_SMDAT_ROM
R61252
0402
0.05 ohm
COMMON
PEX_SMCLK
PEX_SMCLK
R61253
RES 0 OHM 1/16W(0402)JUMP
I2CS_SCL_R
I2CS_SCL_R
0402
0.05 ohm
COMMON
PEX_SMCLK_ROM
RES 0 OHM 1/16W(0402)JUMP
0402
0.05 ohm
COMMON

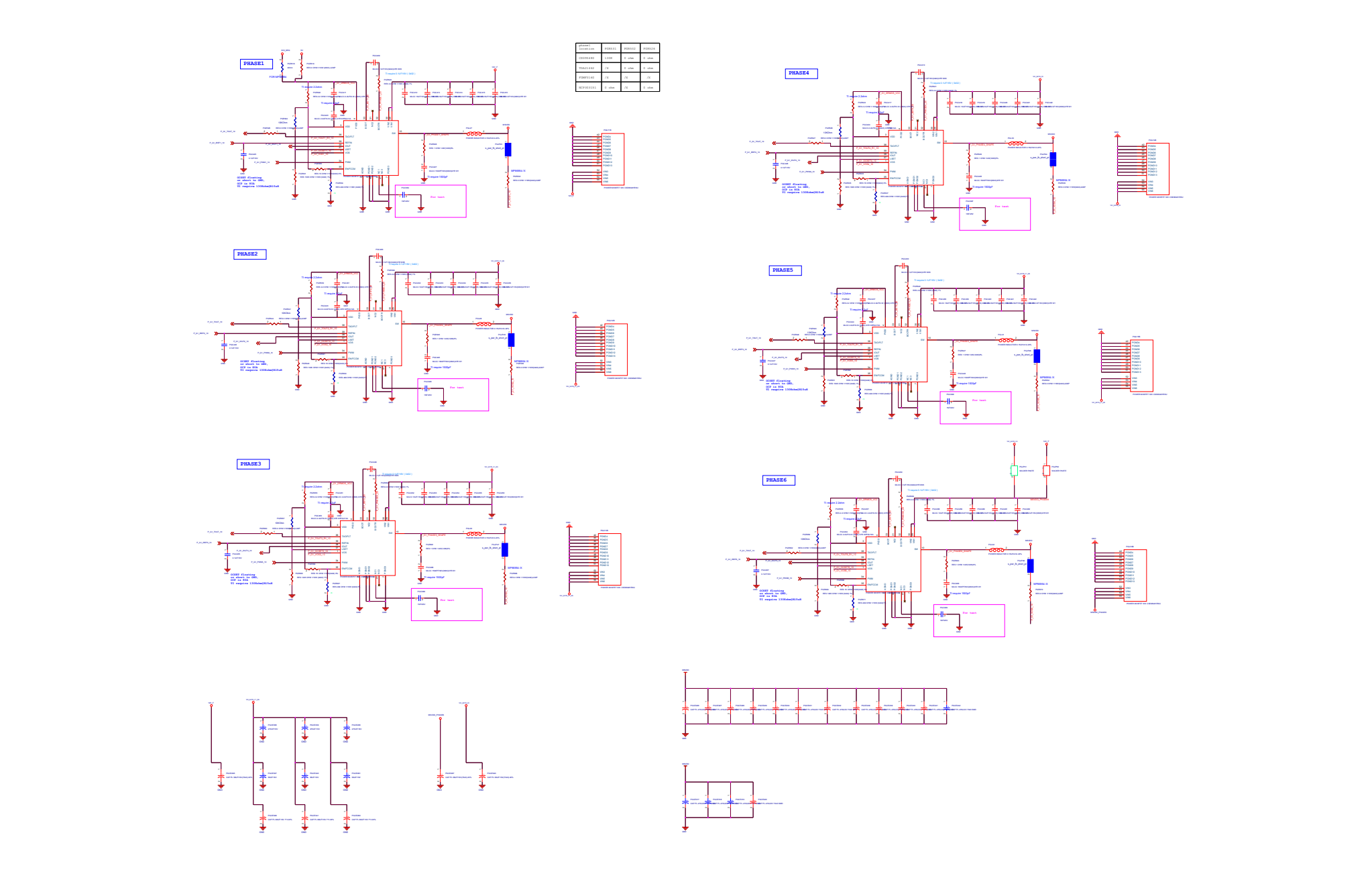

I2C Address:(1010 101b) 0xAA
3V3_SEQ
R61247
U8200
ROM_VCC
A0
A1
A2
GND
VCC
WP
SCL
SDA
EEPROM M24C02-RMN6TP
ROM_VCC
R8201
10KOHM
RES 10K OHM 1/16W (0402) 5%
R8103
12KOHM
C8200
MLCC 0.01UF/16V (0402) X7R W05
R8202
RES 0 OHM 1/16W(0402)JUMP
GND
GND
PEX_SMDAT_ROM
PEX_SMCLK_ROM

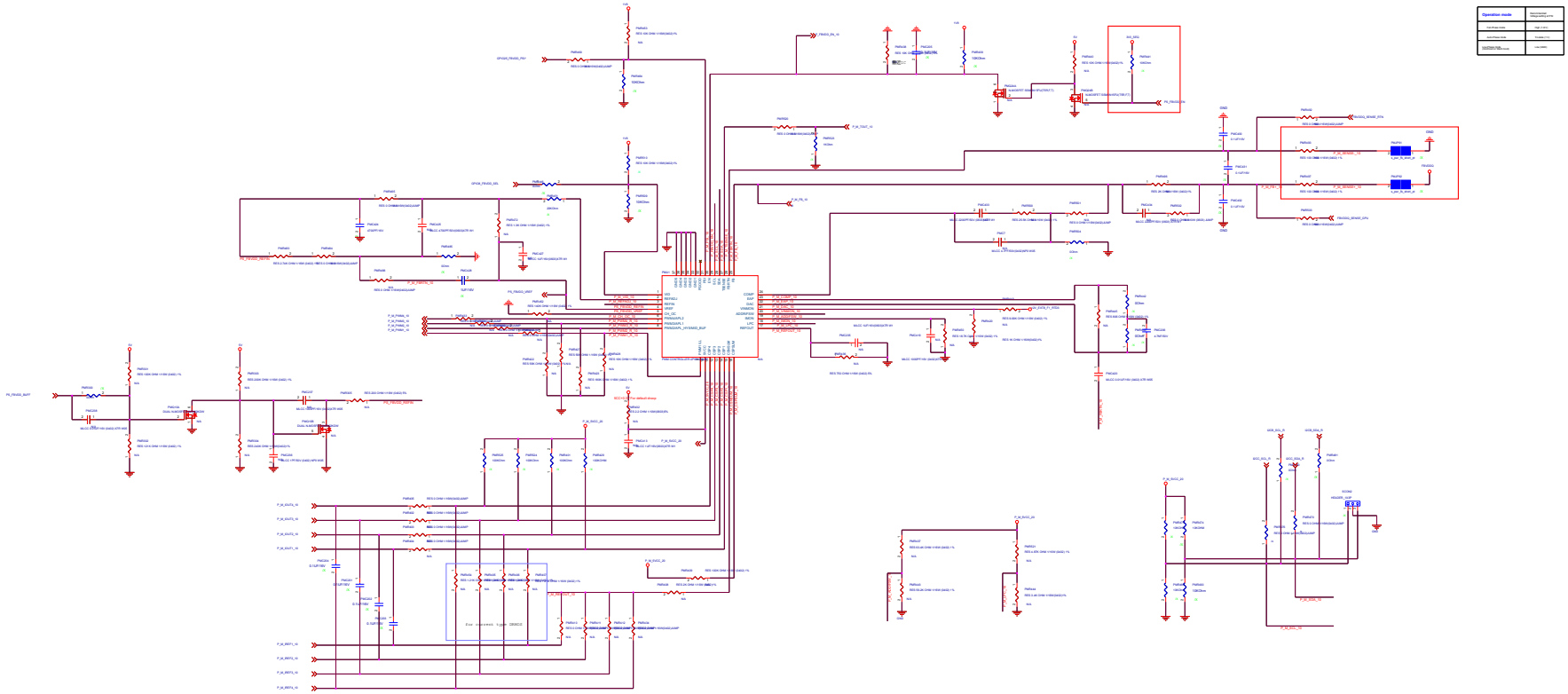

GPIO13 detected in
GPIO13_FAN_TACH_A
GPIO13_FAN_TACH_A
FAN_TACHA
FAN_TACHA_DVI2
CON9
SIDE1
SIDE4
NP_NC2
NP_NC1
SIDE2
SIDE3
SLIDE SWITCH 3P 1.4H R/A SMT
GND
IOVDD_PROT
R61227
RES 1K OHM 1/16W(0402)1%
1 %
0402
COMMON
FAN IO signal out
FAN_TACHA
FAN_TACHA
U10831
VCC
GND
LOGIC TC7SZ08FU SSOP5
FAN_TACHA_Y
C62501
MLCC 0.1UF/16V(0402)X7R W05
0402
16V
10%
X7R
COMMON
C62498
MLCC 0.1UF/16V(0402)X7R W05
R61249
RES 0 OHM 1/16W(0402)JUMP
0402
0.05ohm
COMMON
R61224
RES 10K OHM 1/16W (0402) 5%
COMMON
5 %
0402
C62500
MLCC 0.1UF/16V(0402)X7R W05
U10827
CLK
VCC
D
PRE#
Q#
CLR#
GND
Q
LOGIC NL17SZ74USG USB
FAN_TACHA_Y
RES 1K OHM 1/16W(0402)1%
R61225
FAN_TACHA_DVI2
R61226
RES 10K OHM 1/16W (0402) 5%
C62499
MLCC 0.1UF/16V(0402)X7R W05


Operation mode
Recommended Voltage setting at PG
Full Phase mode
High (1.8 V)
Auto Phase mode
Tristate (0.8 V)
Low (GND)
IOUT與IREF走差分線
靠近PCIE上來的12V_F shape上方擺放125度實測100度


PHASE1
PHASE2
PHASE3
PHASE4
PHASE5
PHASE6
PHASE7
PHASE8
PHASE9
PHASE10

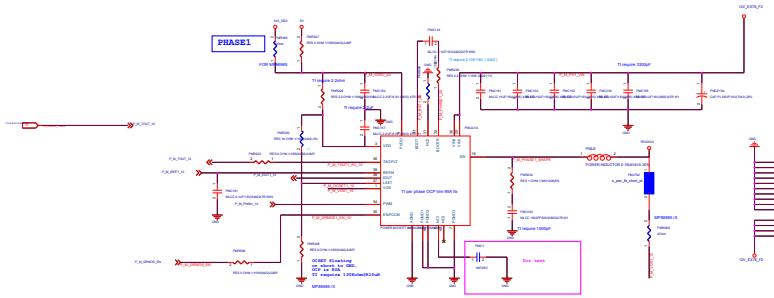

Operation mode
Full Power mode
Auto Power mode
Low Power mode (Until boot or Warm boot)
IOUT與IREF走差分線
MP86954 /X
MP86952 /X
PWM CONTROLLER

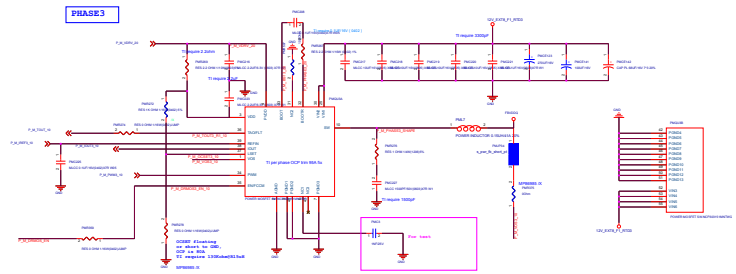

PHASE1
PHASE2
PHASE3
PHASE4
PHASE5
PHASE6

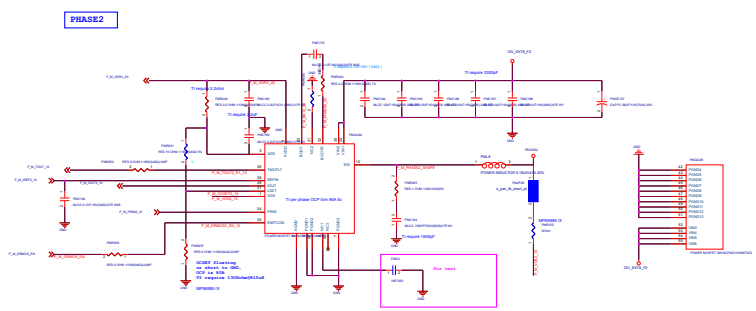


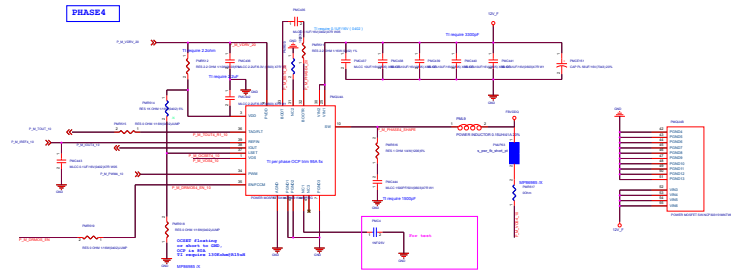
		R15 (09516-00360500) L=0.15uH DCR=0.82mohm	R30 (09516-00130800) L=0.30uH DCR=0.78mohm
RC match	Csum	0.1uF	0.1uF
	Rcsp	14.7K ohm	30k ohm
Total OCP (41.0A)	Rsum	0.5K ohm	0.5K ohm
	Isum	85.7uA	80uA

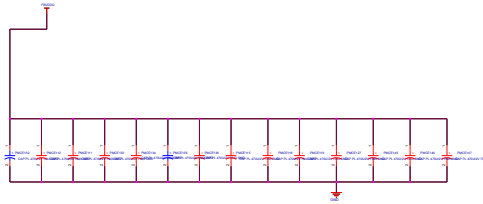
phase1 resistors	PMR238	PMR232	PMR424
P3WF9170	/X	0 ohm	/X
P3WF9140	/X	/X	0 ohm
RCW303516	0 ohm	0 ohm	/X

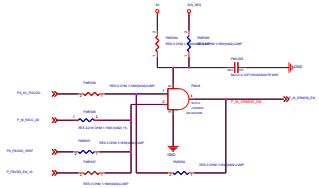


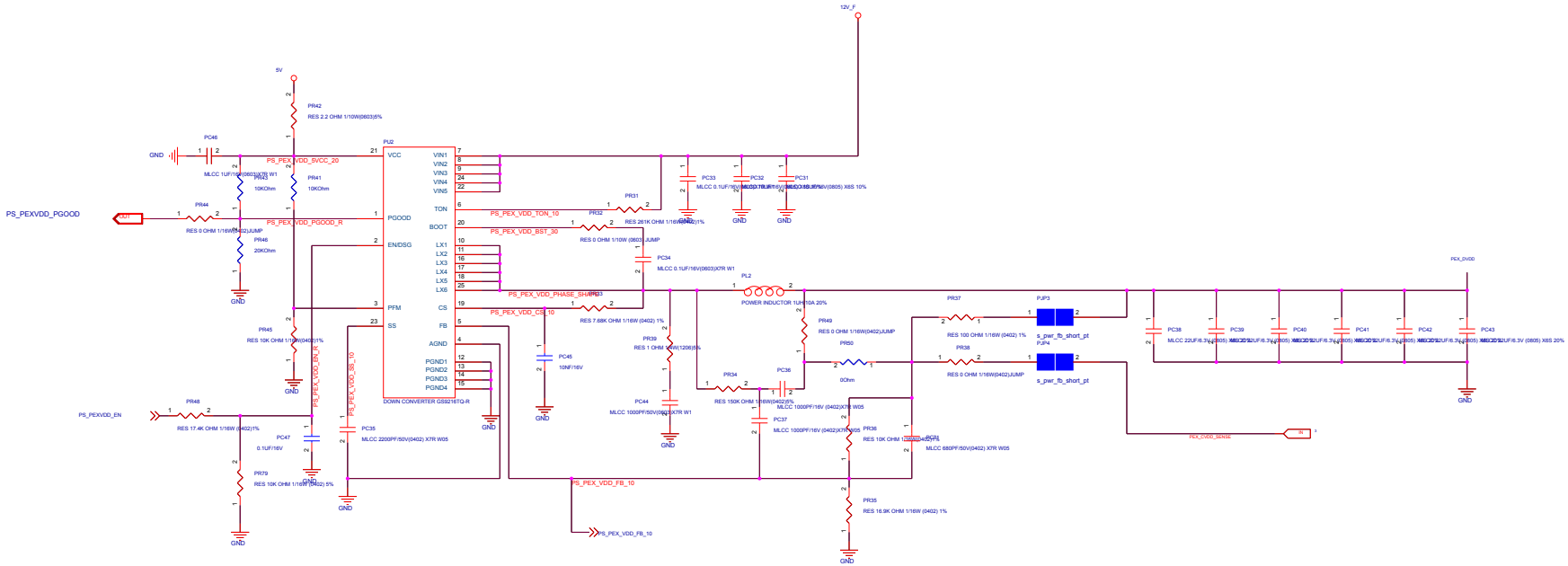


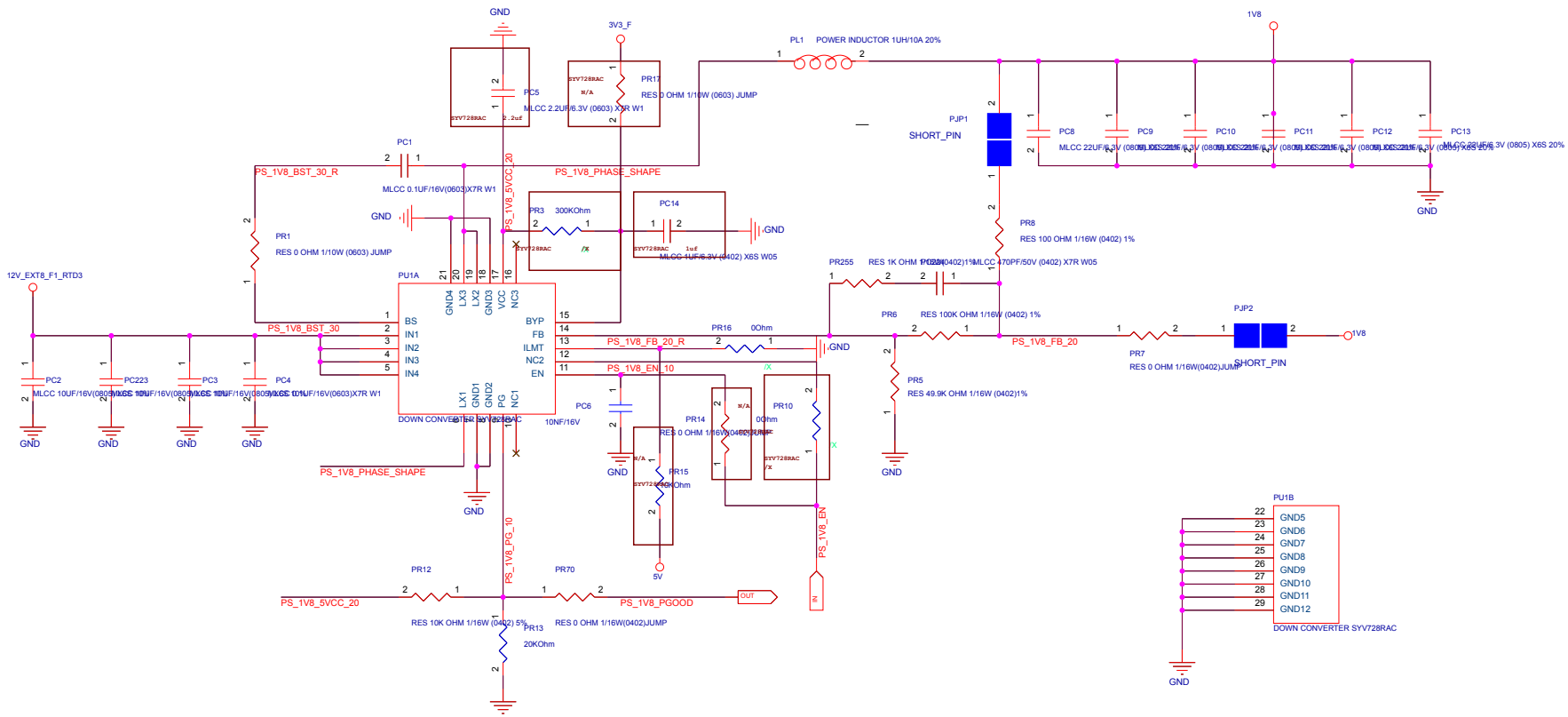


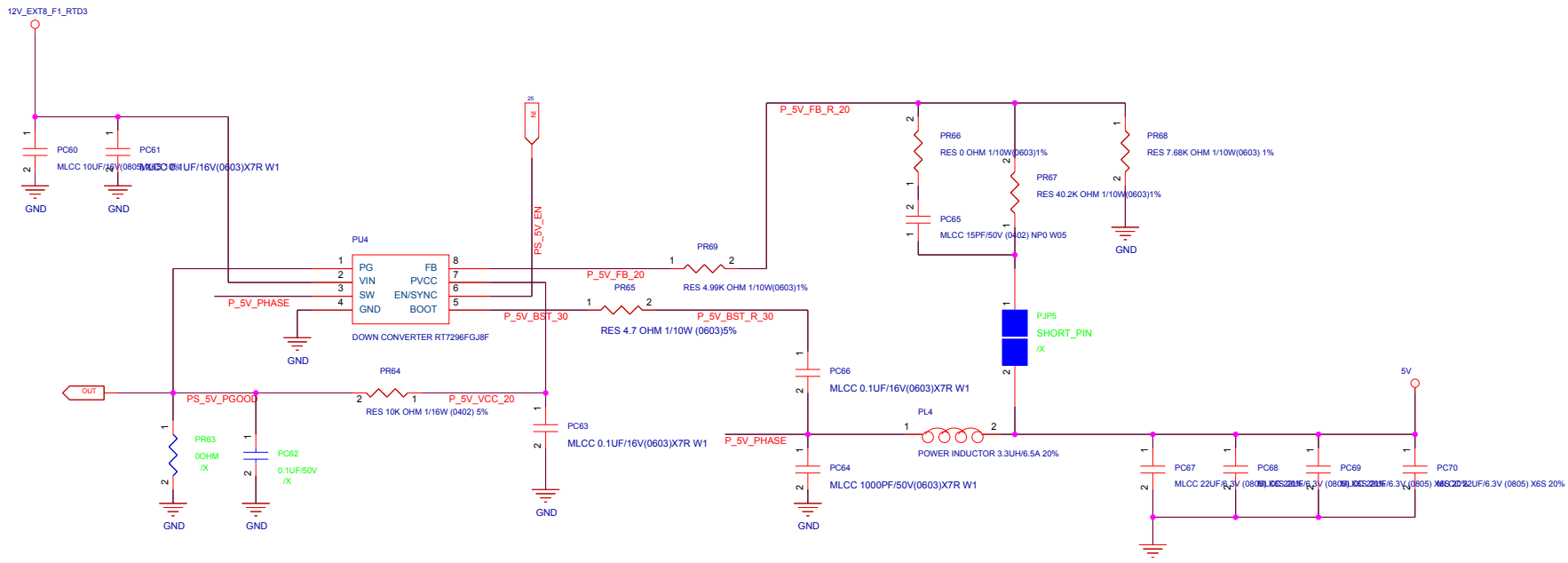






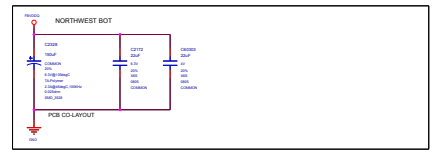

12V_F
5V
PR42
RES 2.2 OHM 1/10W(0603)5%
PC46
GND
PS_PEX_VDD_SVCC_20
MLCC 1UF/16V(0603)X7R W1
PR43
10KOhm
PR41
10KOhm
PS_PEXVDD_PGOOD
OUT
PR44
RES 0 OHM 1/16W(0402)JUMP
PS_PEX_VDD_PGOOD_R
PR46
20KOhm
PL2
VCC
EN/DSG
PFM
SS
AGND
PGND1
PGND2
PGND3
PGND4
VIN1
VIN2
VIN3
VIN4
VIN5
TON
BOOT
LX1
LX2
LX3
LX4
LX5
LX6
CS
FB
DOWN CONVERTER GS8216TQ-R
PS_PEX_VDD_TON_10
PR32
RES 261K OHM 1/16W(0402)1%
PR31
PS_PEX_VDD_BST_30
RES 0 OHM 1/10W (0603) JUMP
PC34
MLCC 0.1UF/16V(0603)X7R W1
PS_PEX_VDD_PHASE_SHARE
PR33
RES 7.68K OHM 1/16W (0402) 1%
PS_PEX_VDD_CS_10
PC45
10NF/16V
PC33
MLCC 0.1UF/16V(0603)X7R W1
PC32
PC31
MLCC 10UF/6.3V(0805) X6S 10%
PR45
RES 10K OHM 1/16W(0402)1%
PS_PEX_VDD_SS_10
PS_PEX_VDD_FB_R
PC35
MLCC 2200PF/50V(0402) X7R W05
PR48
RES 17.4K OHM 1/16W (0402)1%
PS_PEXVDD_EN
PC47
0.1UF/16V
PR79
RES 10K OHM 1/16W (0402) 5%
PS_PEX_VDD_FB_10
PR35
RES 16.9K OHM 1/16W (0402) 1%
PL2
POWER INDUCTOR 1UH/15A 20%
PR49
RES 0 OHM 1/16W(0402)JUMP
PR50
0Ohm
PR39
RES 1 OHM 1/4W(1206)5%
PR34
RES 150K OHM 1/16W(0402)5%
PC36
MLCC 1000PF/16V (0402)X7R W05
PC44
MLCC 1000PF/50V(0402)X7R W1
PC37
MLCC 1000PF/16V (0402)X7R W05
PR36
RES 10K OHM 1/16W(0402)1%
PC41
MLCC 680PF/50V(0402) X7R W05
PR37
RES 100 OHM 1/16W (0402) 1%
PR38
RES 0 OHM 1/16W(0402)JUMP
PJP3
PJP4
s_pwr_fb_short_pt
s_pwr_fb_short_pt
PEX_SVDD_SENSE
PEX_SVDD
PC38
PC39
PC40
PC41
PC42
PC43
MLCC 22UF/6.3V(0805) X6S 20%

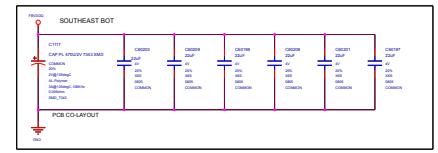

GND
3V3_F
PL1 POWER INDUCTOR 1UH/10A 20%
1V8
PC5
MLCC 2.2UF/6.3V (0603) X5R W1
PR17
RES 0 OHM 1/10W (0603) JUMP
PJP1
SHORT_PIN
PC8
MLCC 22UF/6.3V (0805) X6S 20%
PC9
PC10
PC11
PC12
PC13
PC1
MLCC 0.1UF/16V(0603)X7R W1
PS_1V8_BST_30_R
PS_1V8_PHASE_SHAPE
PS_1V8_5VCC_20
PR3 300KOhm
PC14
MLCC 1UF/6.3V (0402) X6S W05
PR1
RES 0 OHM 1/10W (0603) JUMP
PR8
RES 100 OHM 1/16W (0402) 1%
PR255 RES 1K OHM 1/16W (0402)1%
MLCC 470PF/50V (0402) X7R W05
12V_EXT8_F1_RTD3
PU1A
PS_1V8_BST_30
PS_1V8_FB_20_R
PR16 0Ohm
PR6 RES 100K OHM 1/16W (0402) 1%
PJP2
PS_1V8_FB_20
PR7
RES 0 OHM 1/16W(0402)JUMP
PC2
MLCC 10UF/16V(0805)X6S 10%
PC223
PC3
PC4
MLCC 0.1UF/16V(0603)X7R W1
PS_1V8_EN_10
PR5
RES 49.9K OHM 1/16W(0402)1%
PC6
10NF/16V
PR14
RES 0 OHM 1/16W(0402)JUMP
PR10
0Ohm
PR15
20KOhm
PS_1V8_EN
PS_1V8_PG_10
PR12
RES 10K OHM 1/16W (0402) 5%
PR70
RES 0 OHM 1/16W(0402)JUMP
PR13
20KOhm
PS_1V8_PGOOD
5V
PU1B
GND5
GND6
GND7
GND8
GND9
GND10
GND11
GND12
DOWN CONVERTER SYV728RAC

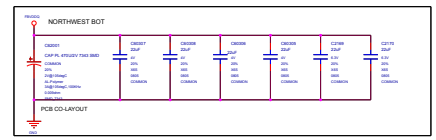

12V_EXT8_F1_RTD3
PC60
MLCC 10UF/16V(0805)X5S
PC61
MLCC 0.1UF/16V(0603)X7R W1
GND
GND
PU4
PG
VIN
SW
GND
FB
PVCC
EN/SYNC
BOOT
DOWN CONVERTER RT7296FGJ8F
PS_5V_EN
P_5V_PHASE
P_5V_FB_20
P_5V_FB_R_20
PR69
RES 4.99K OHM 1/10W(0603)1%
PR65
RES 4.7 OHM 1/10W (0603)5%
P_5V_BST_30
P_5V_BST_R_30
PR66
RES 0 OHM 1/10W(0603)1%
PR67
RES 40.2K OHM 1/10W(0603)1%
PR68
RES 7.68K OHM 1/10W(0603) 1%
PC65
MLCC 15PF/50V (0402) NP0 W05
PJP5
SHORT_PIN
/X
OUT
PS_5V_PGOOD
PR64
RES 10K OHM 1/16W (0402) 5%
P_5V_VCC_20
PR63
0OHM
/X
PC62
0.1UF/50V
/X
PC63
MLCC 0.1UF/16V(0603)X7R W1
PC66
MLCC 0.1UF/16V(0603)X7R W1
PL4
POWER INDUCTOR 3.3UH/6.5A 20%
PC64
MLCC 1000PF/50V(0603)X7R W1
5V
PC67
PC68
PC69
PC70

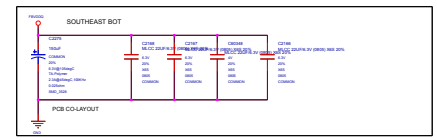
PS: FBVDD OUTPUT CAP

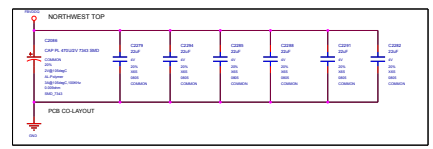
REFER TO PCB FOR BOM STUFFING

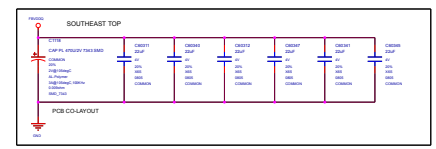


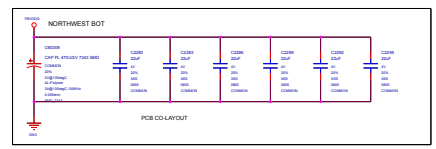


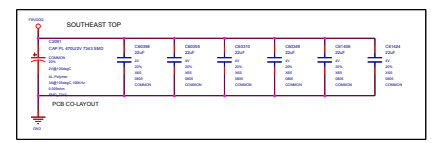


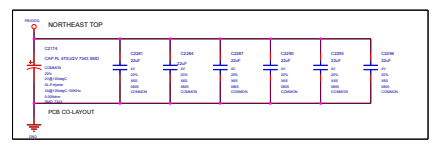


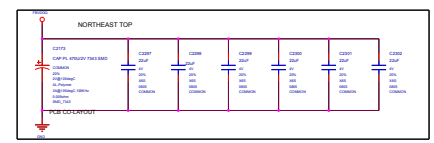


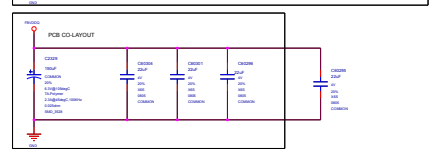


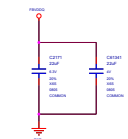












ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: FBVDD OUTPUT CAP

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PS: INPUT SWITCH RTD3

AND GATE LOGIC FOR P-BOARD

GPIO1	GPIO23	SWITCH	VOUT
0	0	0	12V_F
0	1	0	12V_F
1	0	0	12V_F
1	1	1	3V3A

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: INPUT SWITCH RTD3

NVIDIA CORPORATION

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EXPRESSWAY

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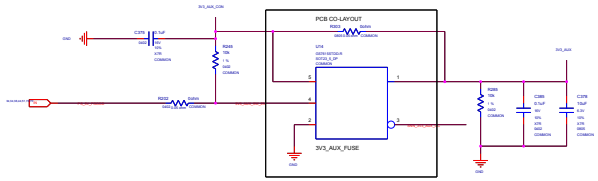
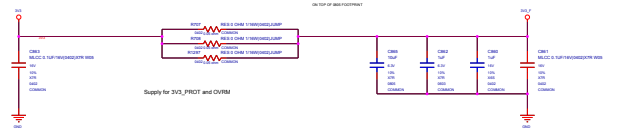
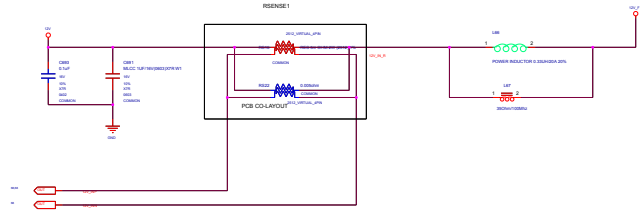
PS: Inputs, Filtering, and Monitoring



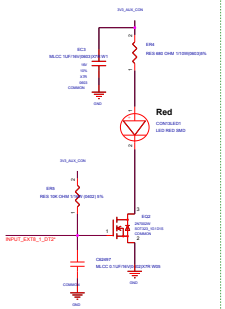
PEX 3V3 INPUT - 10W



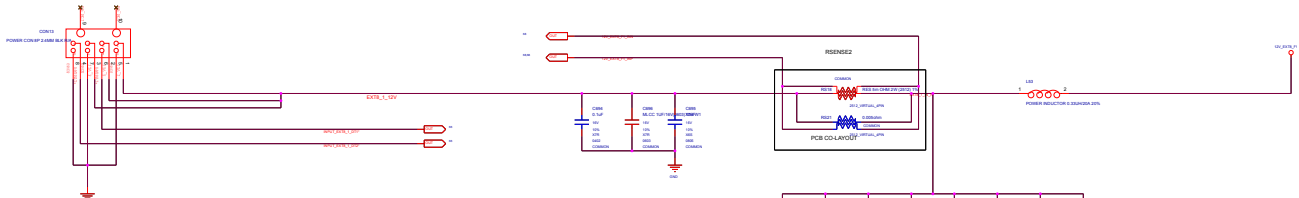
PEX_12V INPUT - 66W



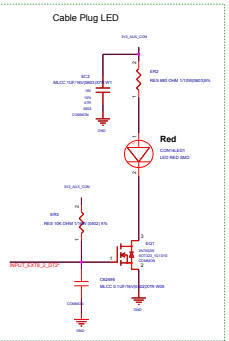
Cable Plug LED



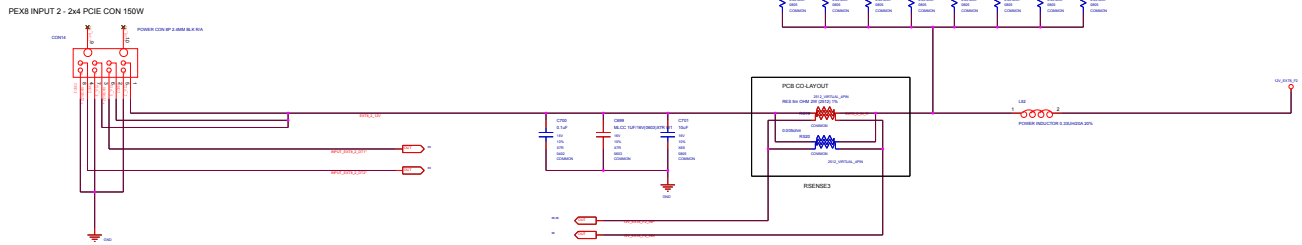
PEX8 INPUT 1 - 2x4 PCIE CON 150W



Cable Plug LED



PEX8 INPUT 2 - 2x4 PCIE CON 150W



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: INPUTS, FILTERING, and MONITORING

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EXPRESSWAY
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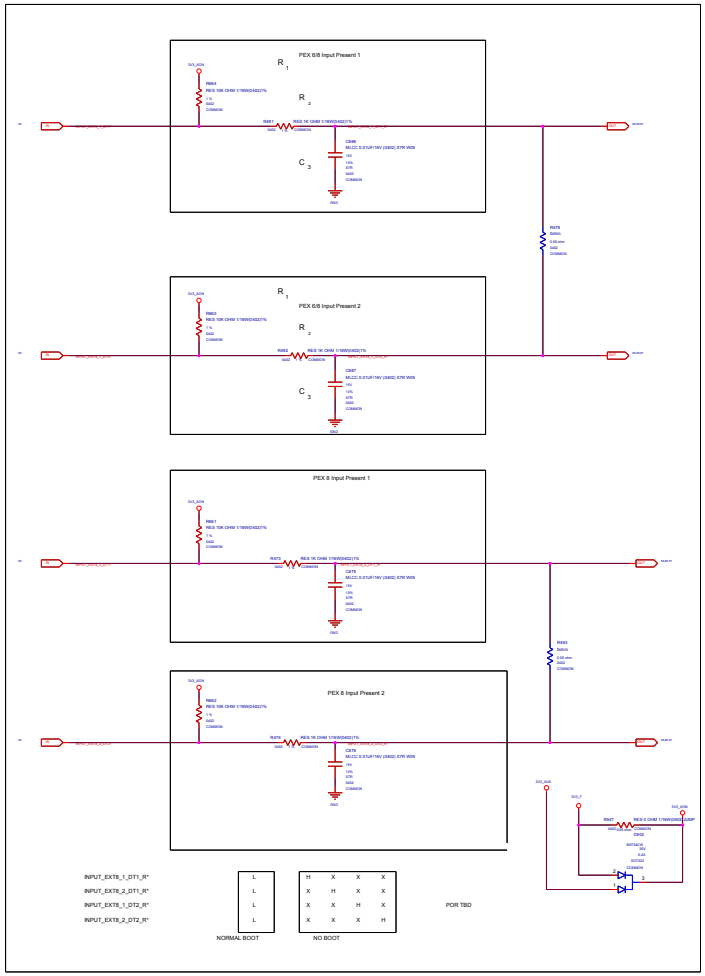
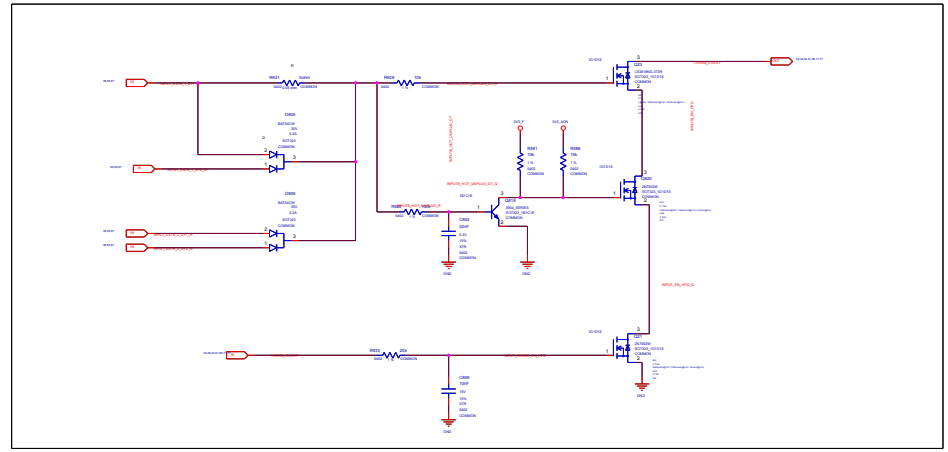
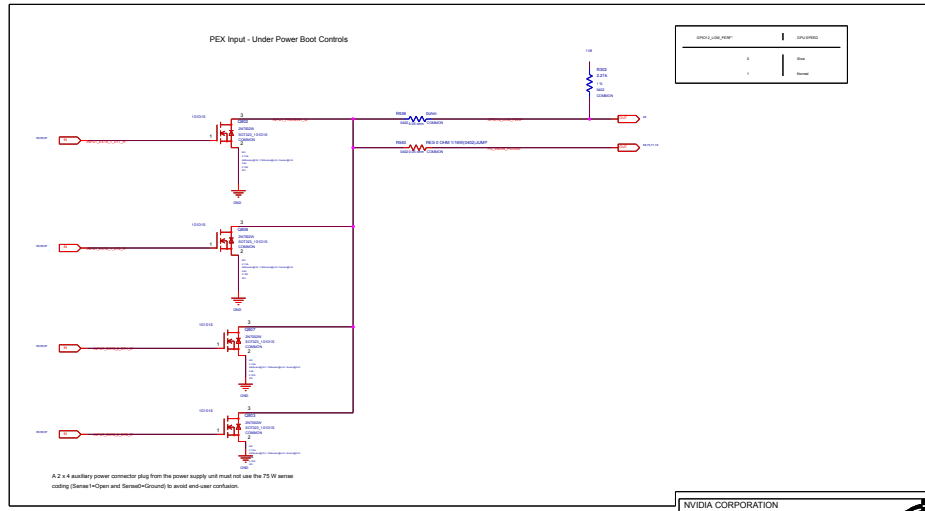
PS: 12V Current Steering & Hot Unplug Detect







ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PRUE DETAIL	FOR TEST DEPLOY

NVIDIA CORPORATION
2701 SAN TOMAS
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SANTA CLARA, CA 95050, USA

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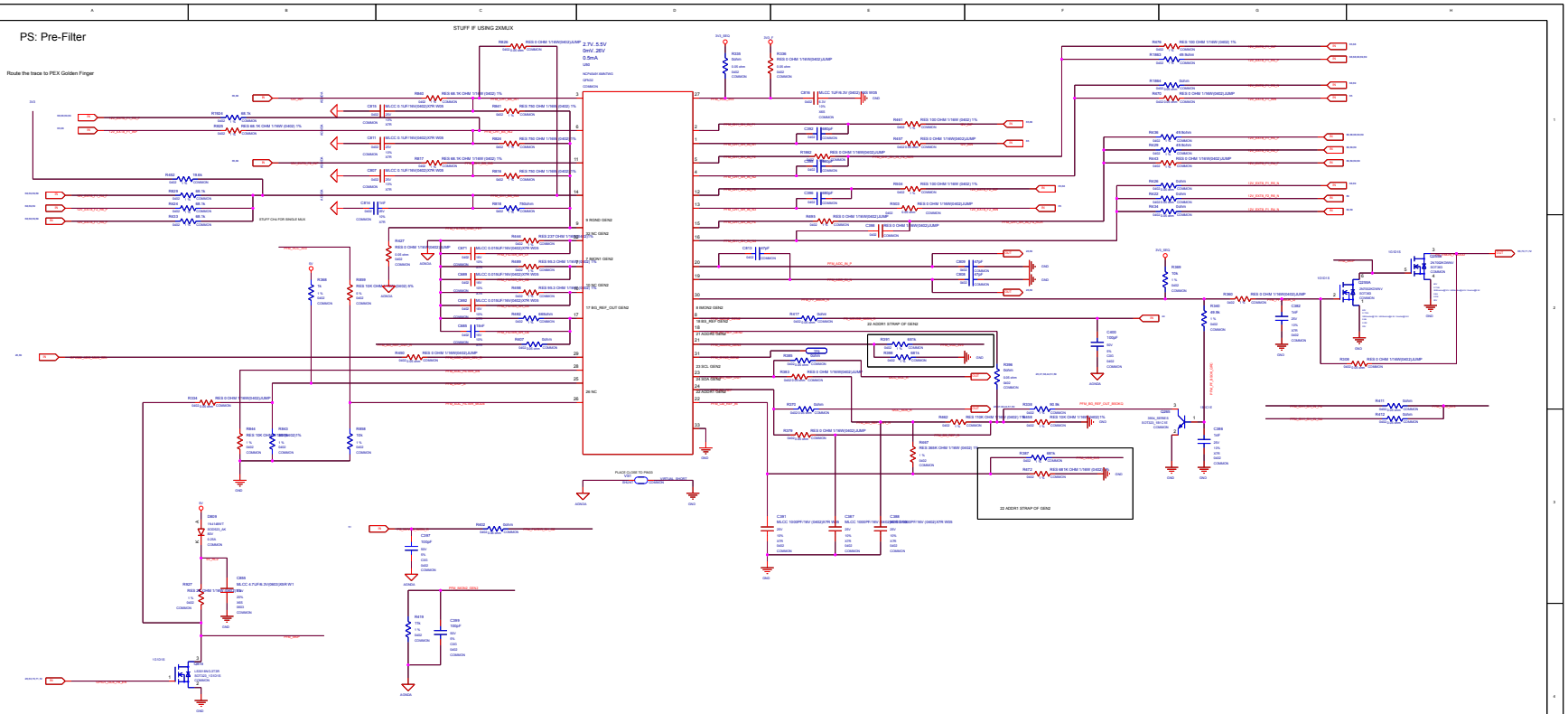
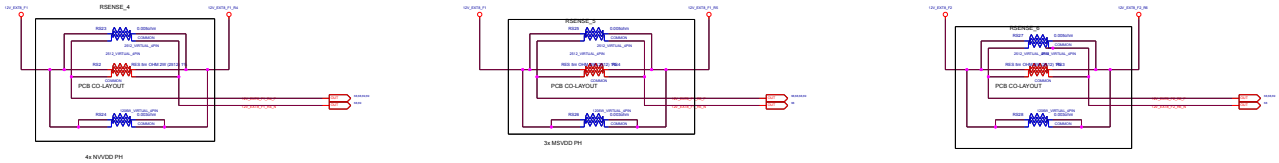
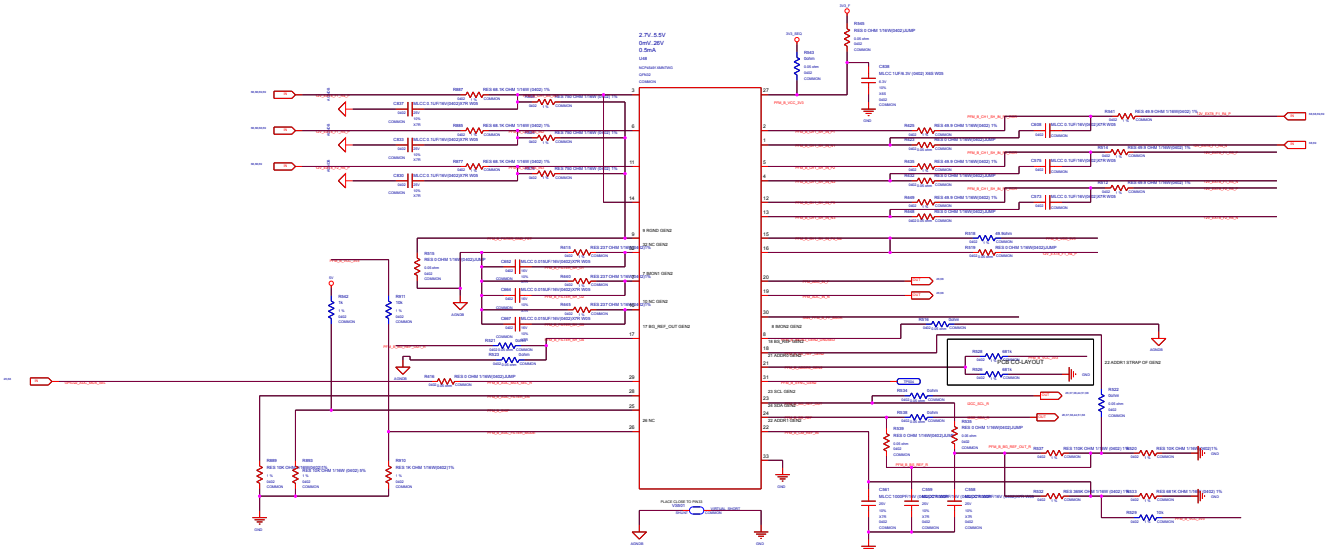


PS: Pre-Filter B





ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: PREFILTER B

NVIDIA CORPORATION
2701 SAN TOMAS
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NV_PN	600-1G132-BASE-400
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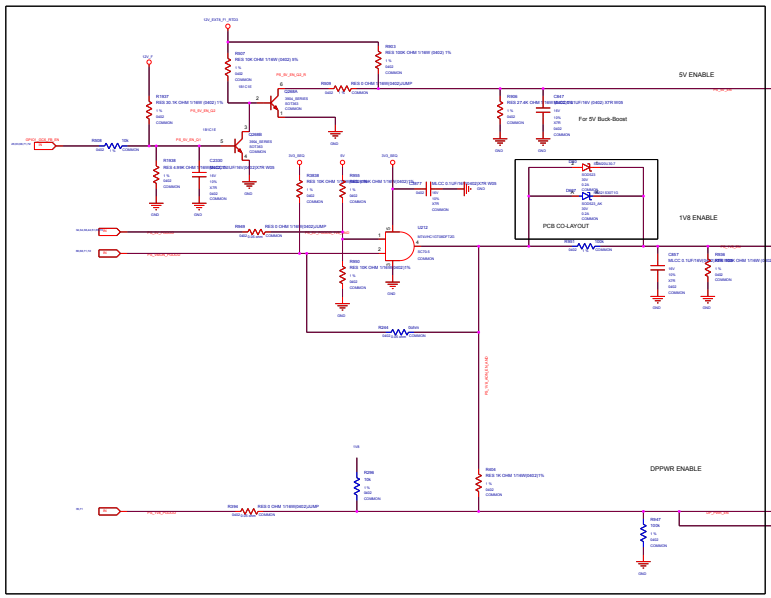
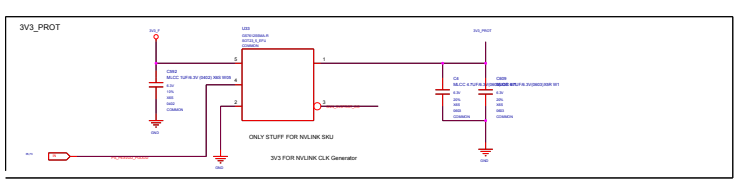
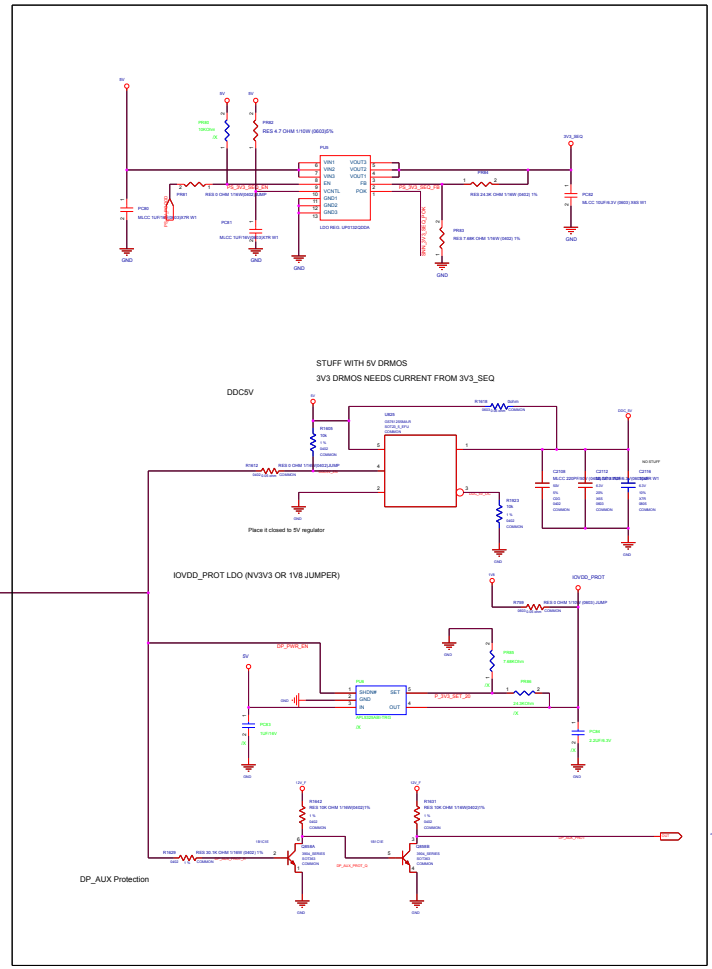
SEQUENCE:5V,1V8,3V3_SEQ ENABLE







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PAGE DETAIL | Sequencer 5V, 1V8, 3V3_SEQ

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NV_PN	600-1G132-BASE-400
PCB REV	P0132-001
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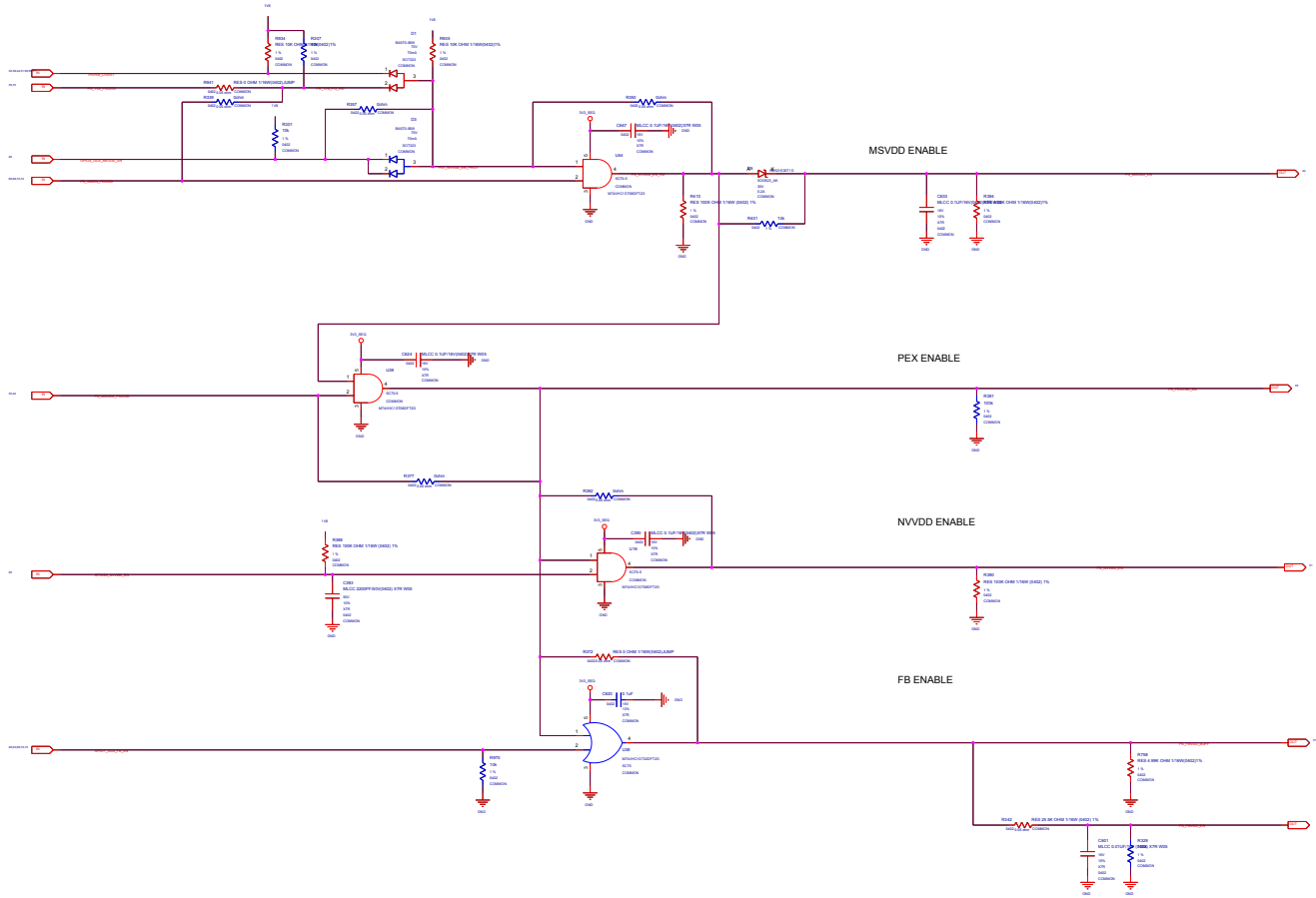
SEQUENCE:NV,PEX,FB ENABLE



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PAGE DETAIL	Sequence: NV, PEX, FB EN

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2701 SAN TOMAS EXPRESSWAY
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NV_PN	600-1G132-BASE-400
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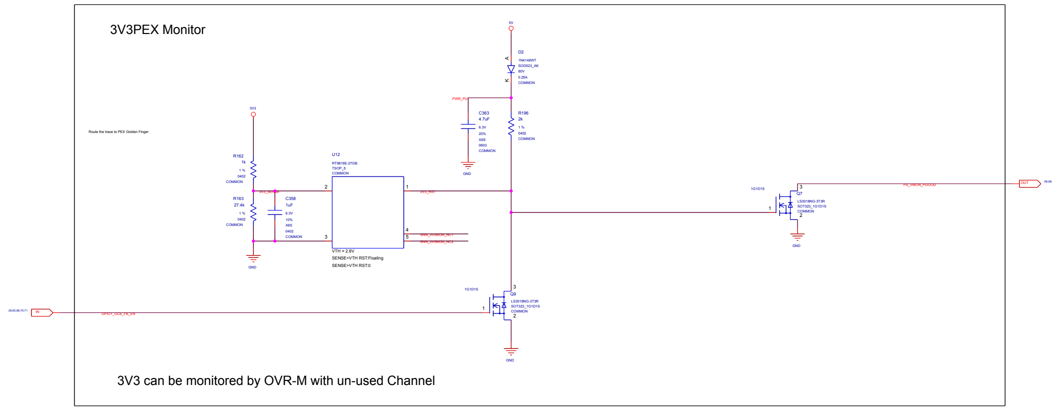
BOM REV	A
DATE	10-JUN-2020

Sequence: 3V3 MONITOR



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	Sequence: 3V3 MONITOR

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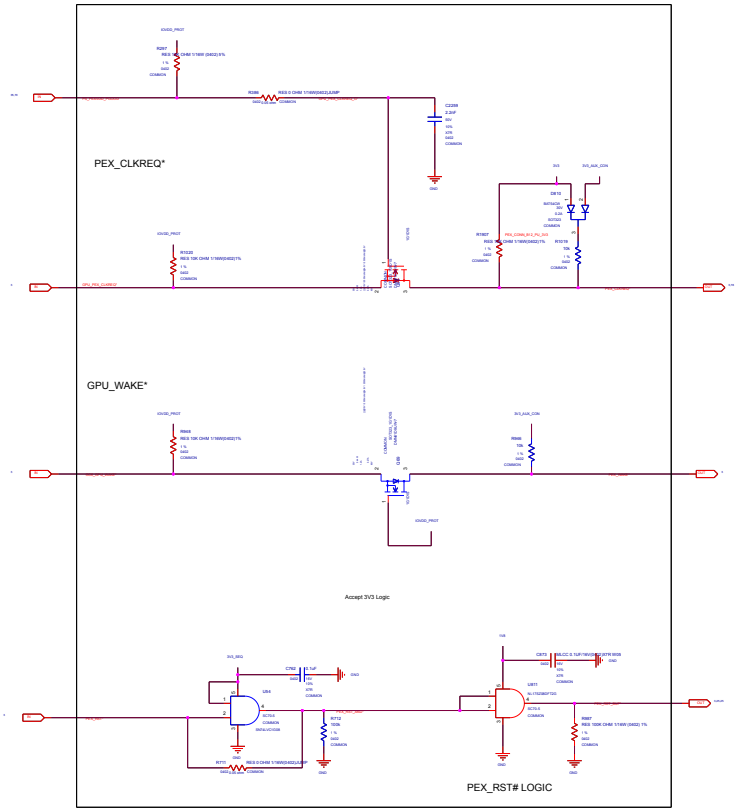
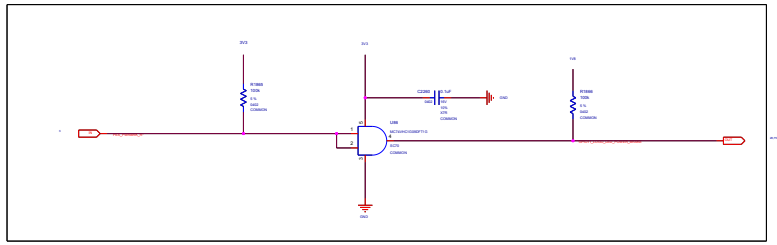
SEQUENCE:MISC





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NV_PN	600-1G132-BASE-400
PCB REV	PG132-B01
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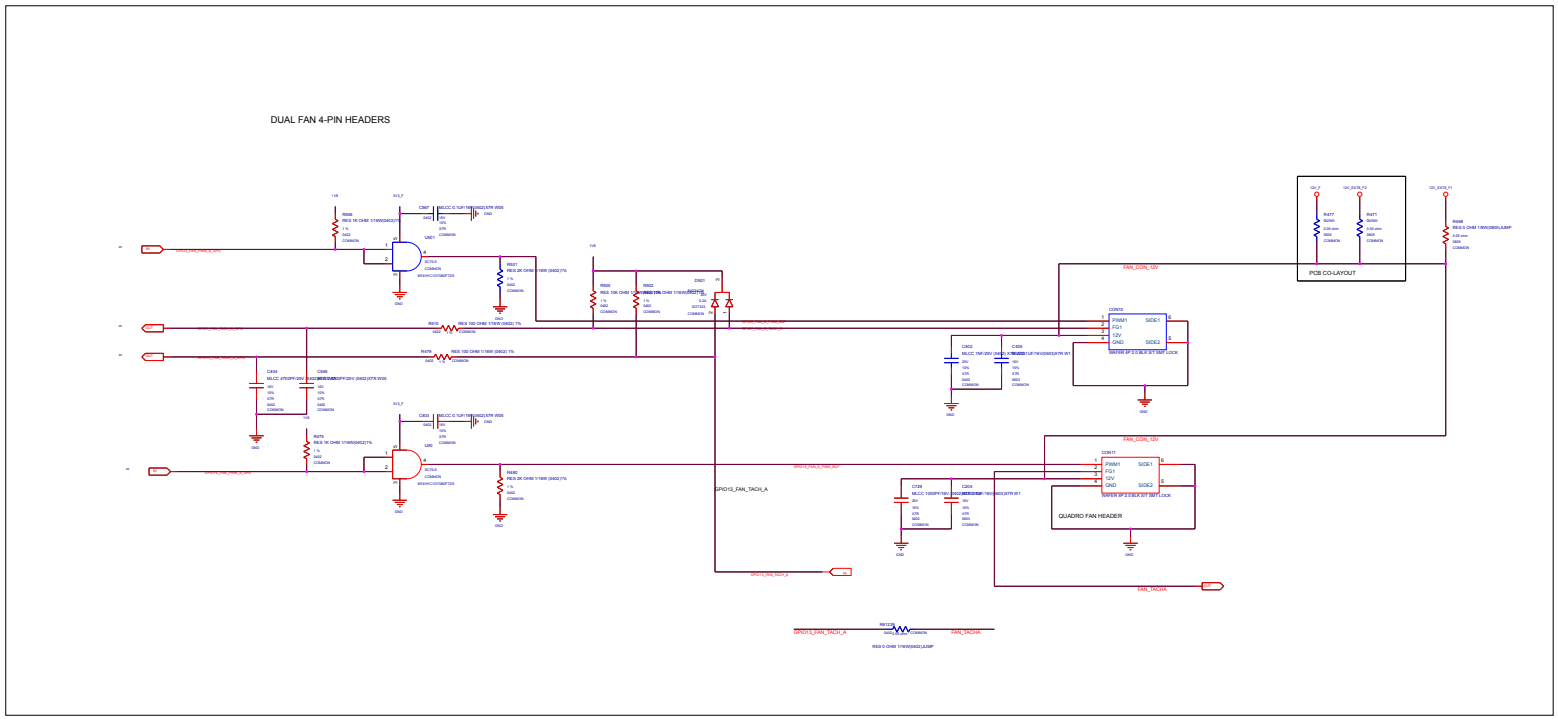
ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	Sequence: MISC

MISC: LED & FAN



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MISC: LED & FAN

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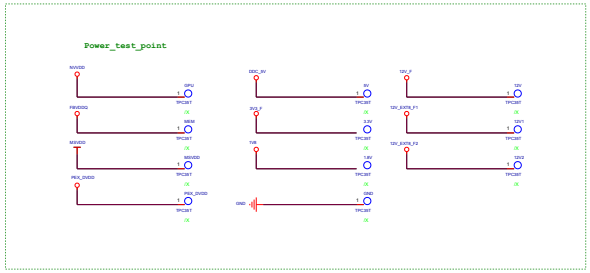
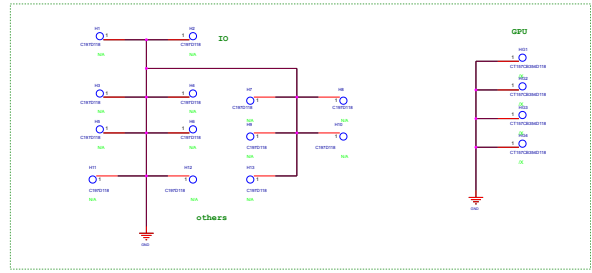
Mechanical: Mounting holes





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PAGE DETAIL	MECH

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NV_PN	600-1G132-BASE-400		
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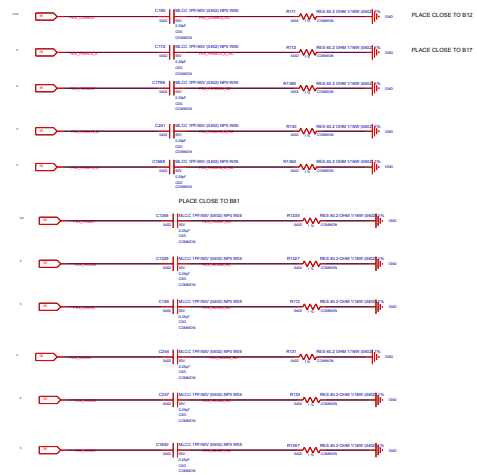
PCI TERM



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PCIE TERM

NVIDIA CORPORATION
2701 SAN TOMAS
EXPRESSWAY
SANTA CLARA, CA 95050, USA

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