P977-A01: G96, GB1-128, GDDR3, DL-DVI/VGA, DL-DVI/VGA, SD/HDTV

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Page 17: BIOS ROM, HDCP ROM, STRAPPING OPTIONS

Page 18: POWER SUPPLY LINEARS: 5V, DDC5V, IFP PLLVDD, MIO VDD, TMDS_BACKDRIVE

Page 19: POWER SUPPLY: FBVDDQ , PEX_VDD

Page 20: POWER SUPPLY: NVVDD

REV HISTORY

Version : 0A

6/26 PAGE 16 add D701 for 4PIN FAN control protect

6/26 PAGE 12 DVI change to HDMI
add I2CD_SCL, I2CD_SDA
add GPIO17_HDMI_CMC
PAGE 14 disable DACB (TVfunction)

6/27 PAGE 20 change NVVDD power solution (UP6205)

6/30 PAGE 20 add GPIO5_VSEL0

PAGE 19 change FBVDD output choke footprint
add R1901 for RT9259A, add R1902 for UP6161
change Hi-Low side MOS from power pack to T0252

7/01 PAGE 19 change R511 from 0402 to 0603
change R515 to 100K ohm for 300Khz
change C558,C550 from 0603 to 0805, 25V
add R1903 for Hi-side GATE resistor

7/02 PAGE 16 add R1601,R1602,R1603 ,R1604 pull high resistor for I2CD (pull high 5V)
PAGE 17 add R1701 (no stuff), R1702(stuff), R1703(no stuff), R1704(no stuff), R1705(no stuff) pull down resistor for HDA
PAGE 18 change L5 footprint (12V input)
PAGE 16 add D1201,D1202 for protection diode (I2CD)
add LB1201, LB1202, C1201, C1202 for EMI filter
PAGE 20 change UGATE resister R7302,R7313 footprint to 0805

7/04 PAGE 11 add EMI bridge (R1101~R1107)
7/04 PAGE 11 add FM1 ~~ FM6 for optical point
7/09 PAGE 19 del output choke colay L17
change Q2 from T0252, PEX_VDD output CAP change to 1000 UF_DIP

7/09 PAGE 19 change L5 foot print to CHK_D2_P5

7/10 PAGE 15 add EM100~EM103 for EMI SPRING

Version : 10

8/22 PAGE 16 add R1216, R1217, R1218, R1219 bridge resistor for EMI

PAGE 19 del C113, add R1904 for UPI 6161 OCP resistor

SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-10977-base-100	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	SKU0001	600-10977-0001-100	G96-300, 550/800MHz 256MB 16Mx32 GDDR3 DVI+DVI+HDTV-Out
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3	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
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15	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	TABLE OF CONTENTS

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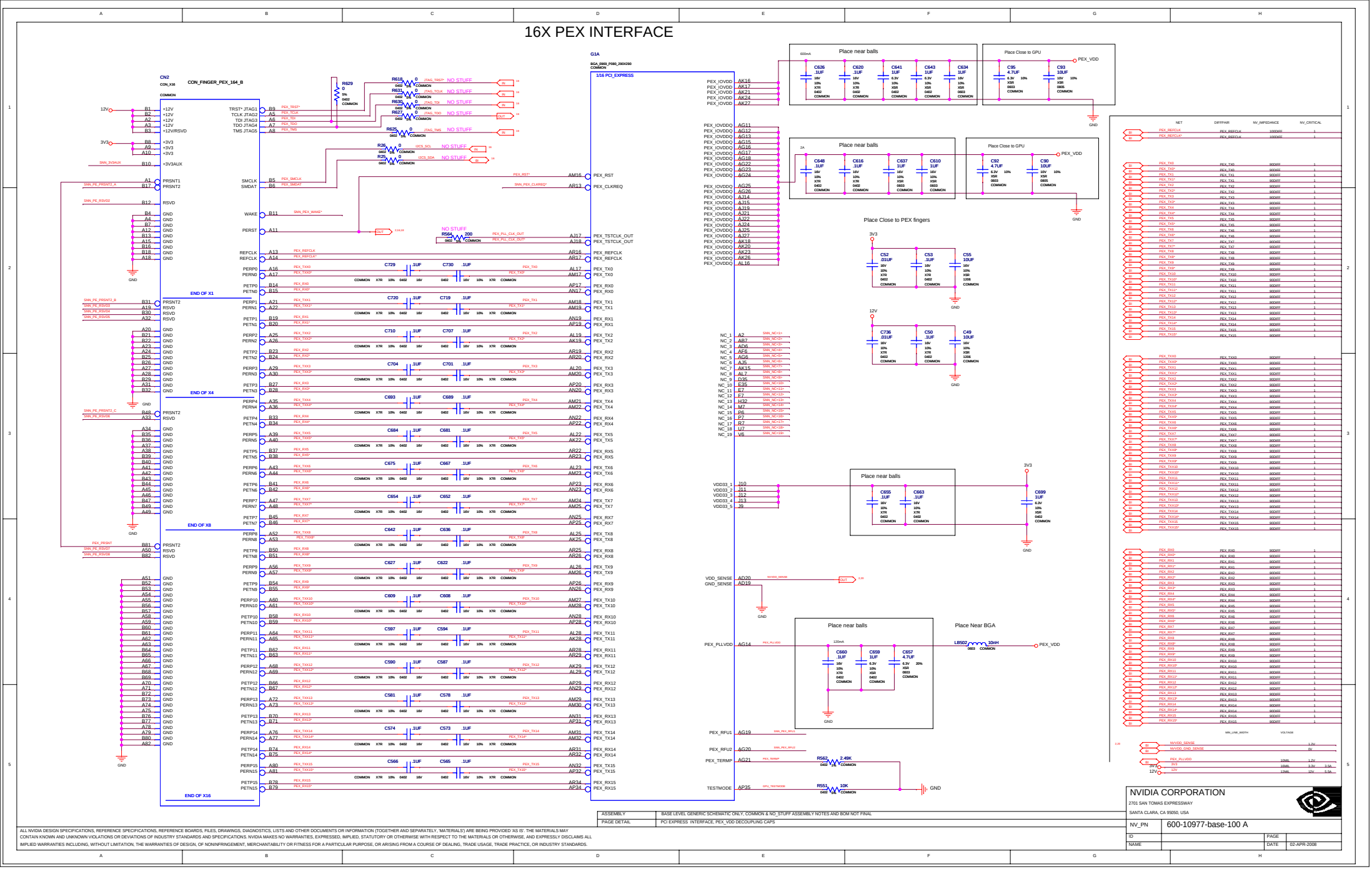
16X PEX INTERFACE



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PCI EXPRESS INTERFACE, PEX_VDD DECOUPLING CAPS

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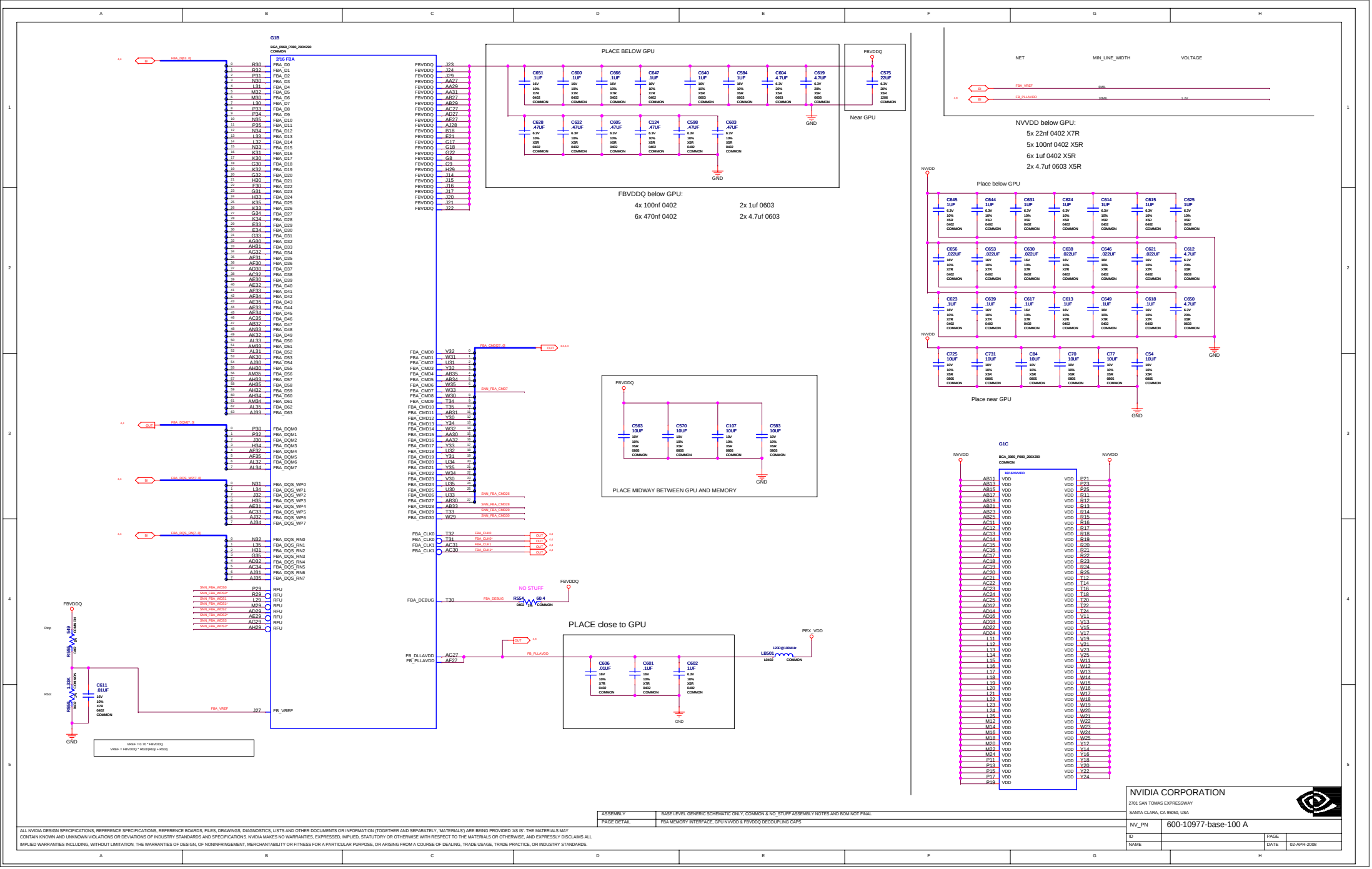

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	FBA MEMORY INTERFACE, GPU NVVDD & FBVDDQ DECOUPLING CAPS

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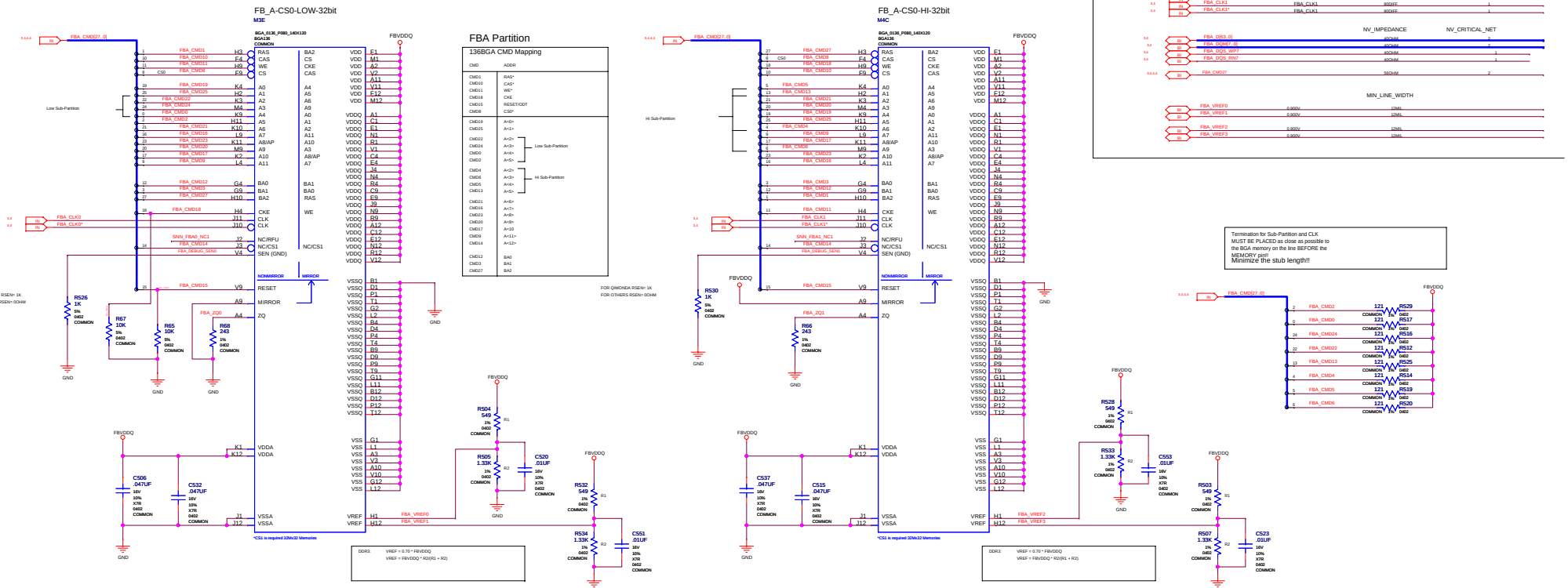
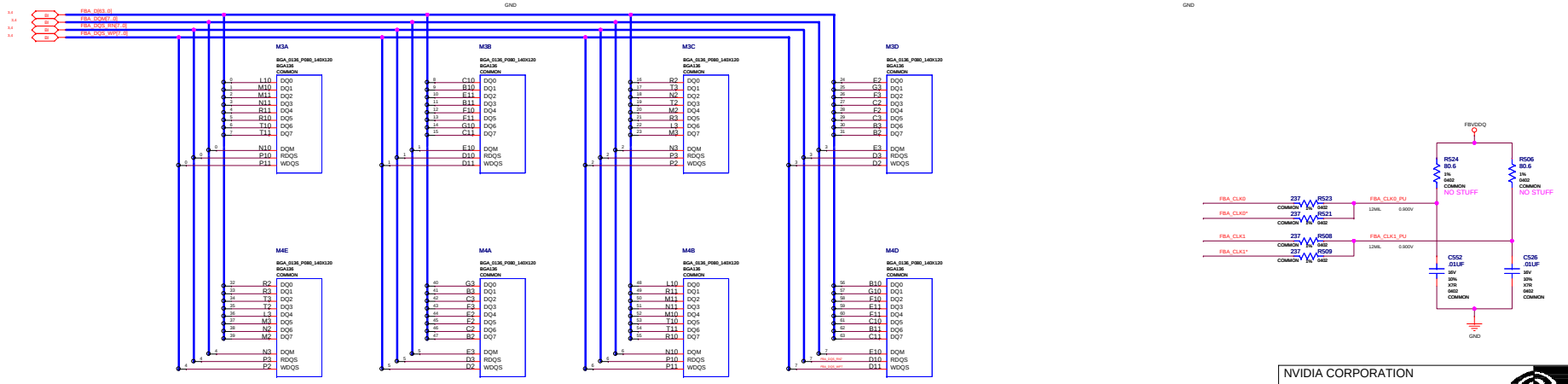
NAME		DATE	02-APR-2008

FrameBuffer: Partition A 16/32Mx32 BGA136 GDDR3





ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	FBA 16/32Mx32 GDDR3 MEMORIES; FBA COMMAND BUS PU'S; FBA CLK TERMS

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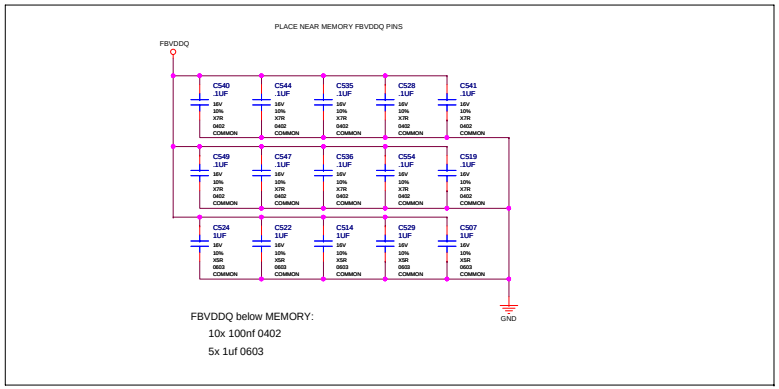
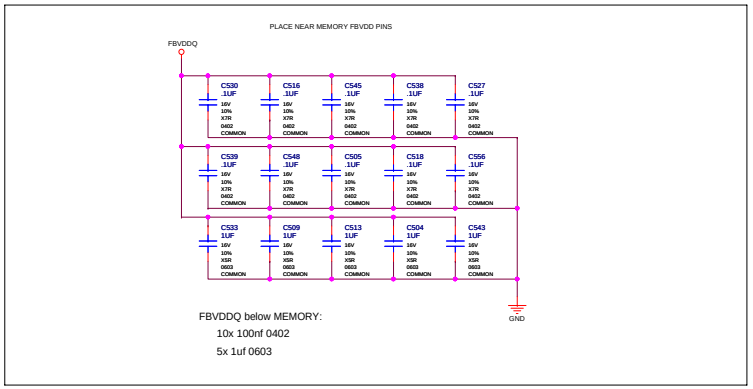
FRAME BUFFER: PARTITION A DECOUPLING

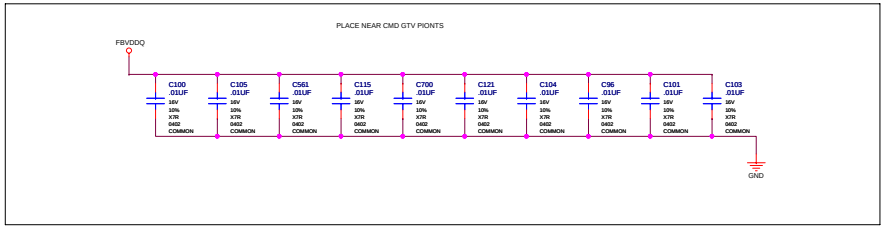
Decoupling for FBA 0..31



Decoupling for FBA 32..63



Return path coupling GND/FBVDDQ for FBA



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ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY. COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	FBA MEMORY FBVDDQ DECOUPLING CAPS

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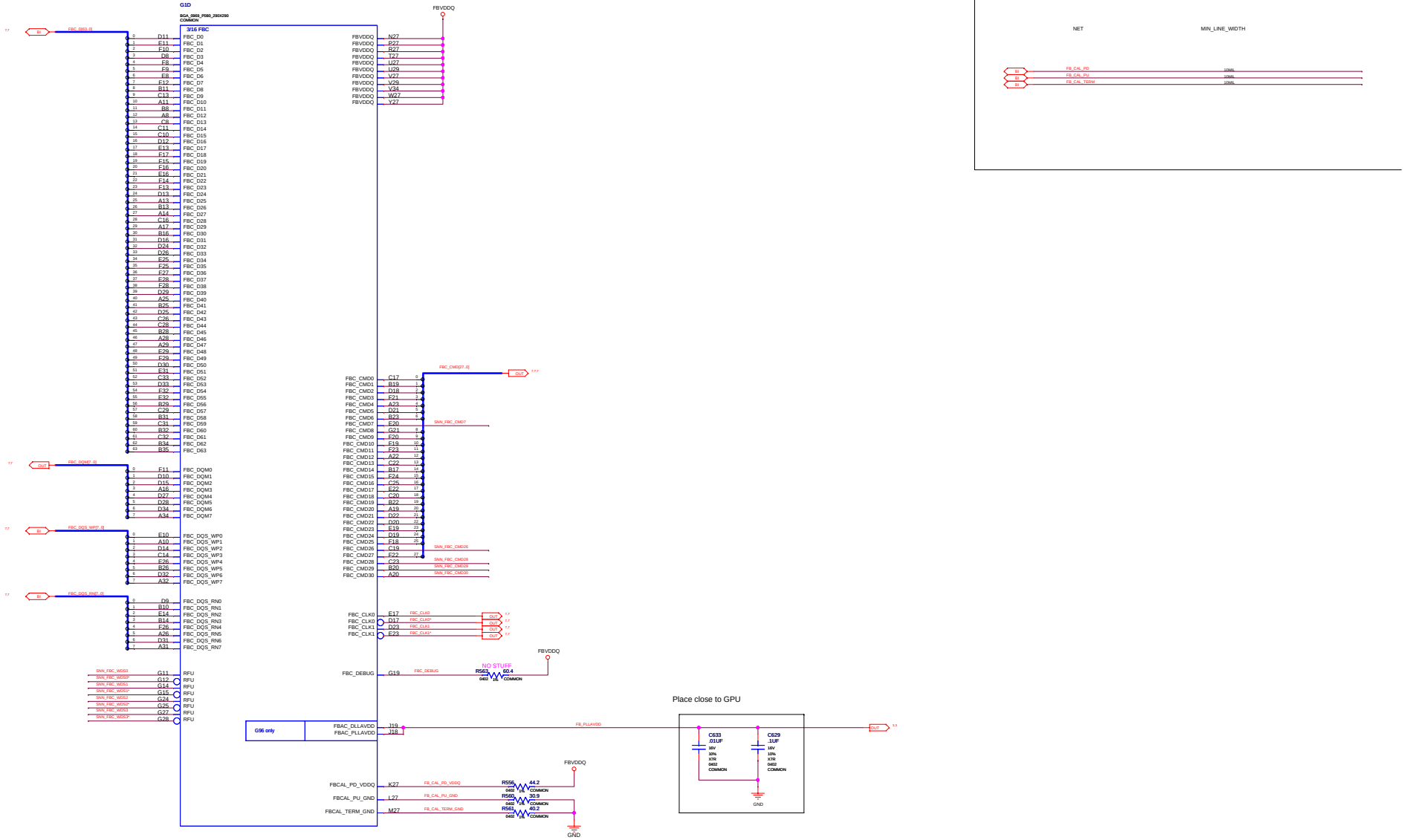

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	FBC MEMORY INTERFACE

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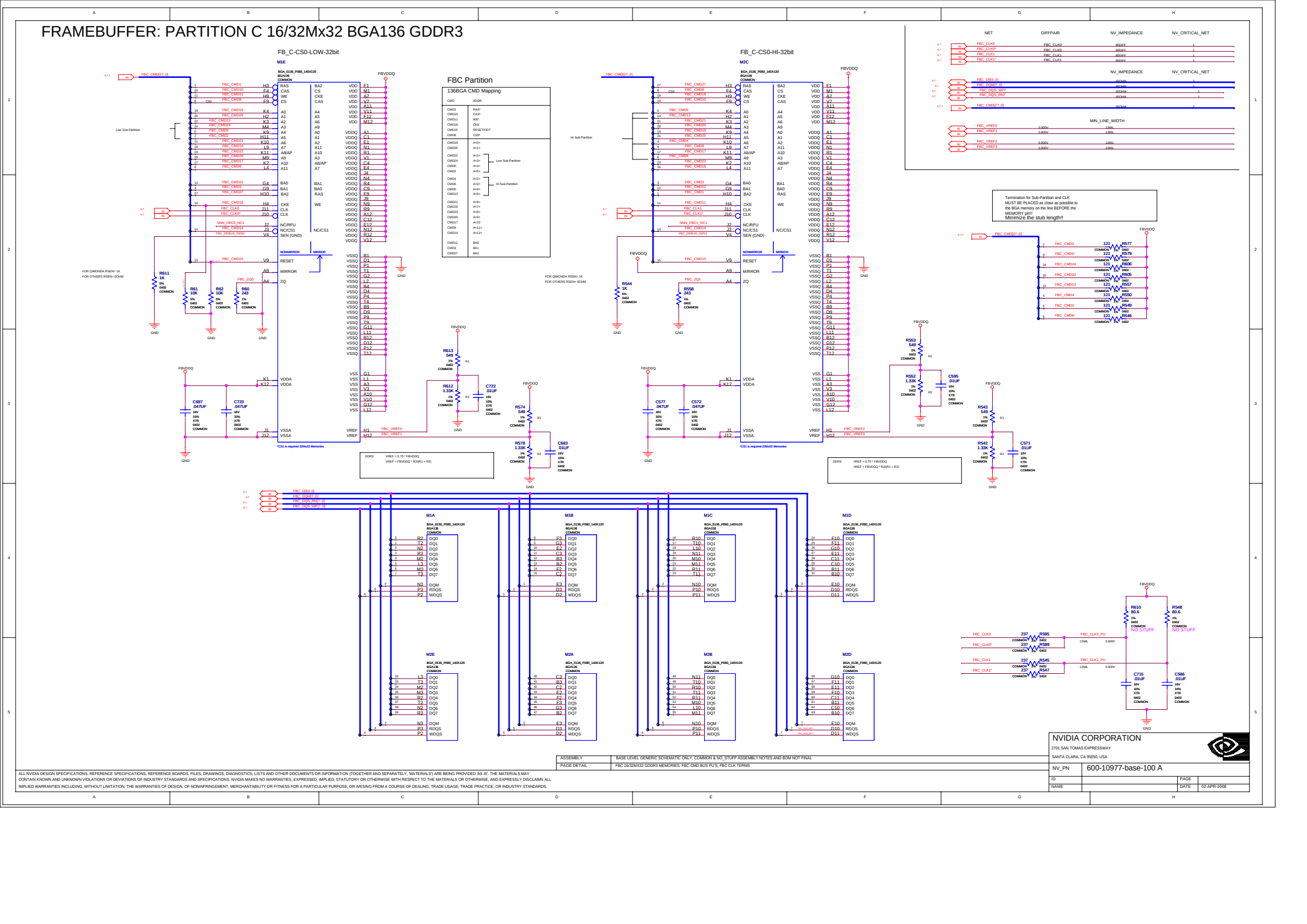
FRAMEBUFFER: PARTITION C 16/32Mx32 BGA136 GDDR3



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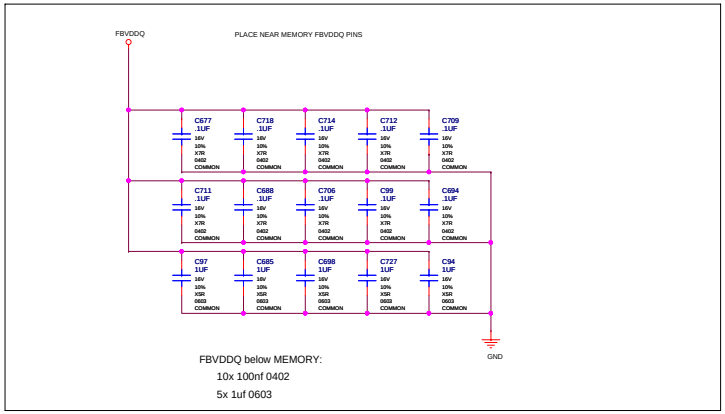
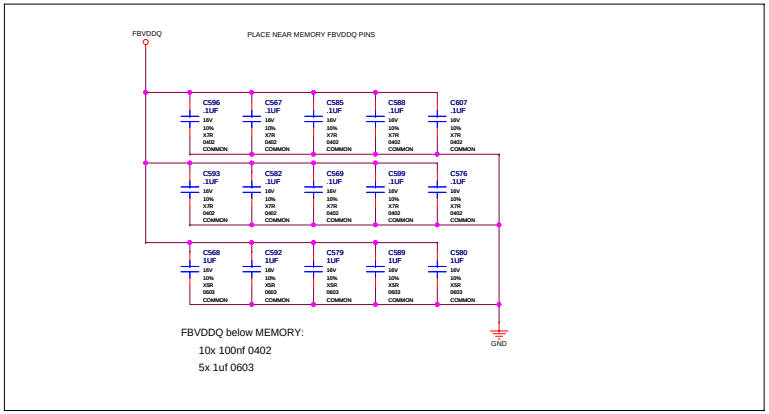
FRAMEBUFFER: PARTITION C DECOUPLING

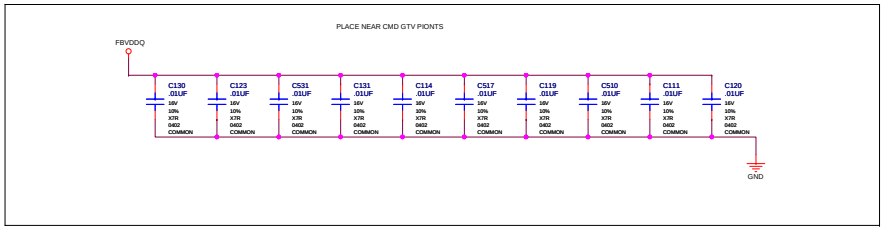
Decoupling for FBC 0..31

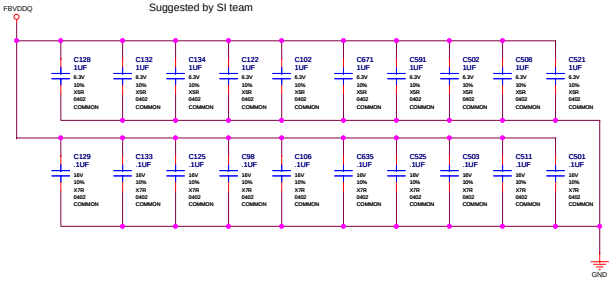


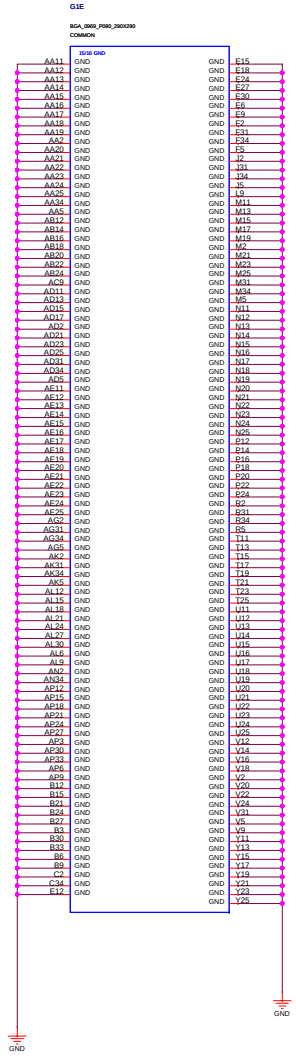
Decoupling for FBC 32..63



Return path coupling GND/FBVDDQ for FBC







ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY. COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	FBC MEMORY FBVDDQ DECOUPLING CAPS, GPU GND CONNECTIONS

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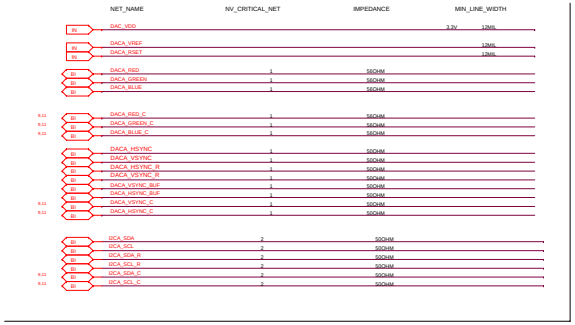
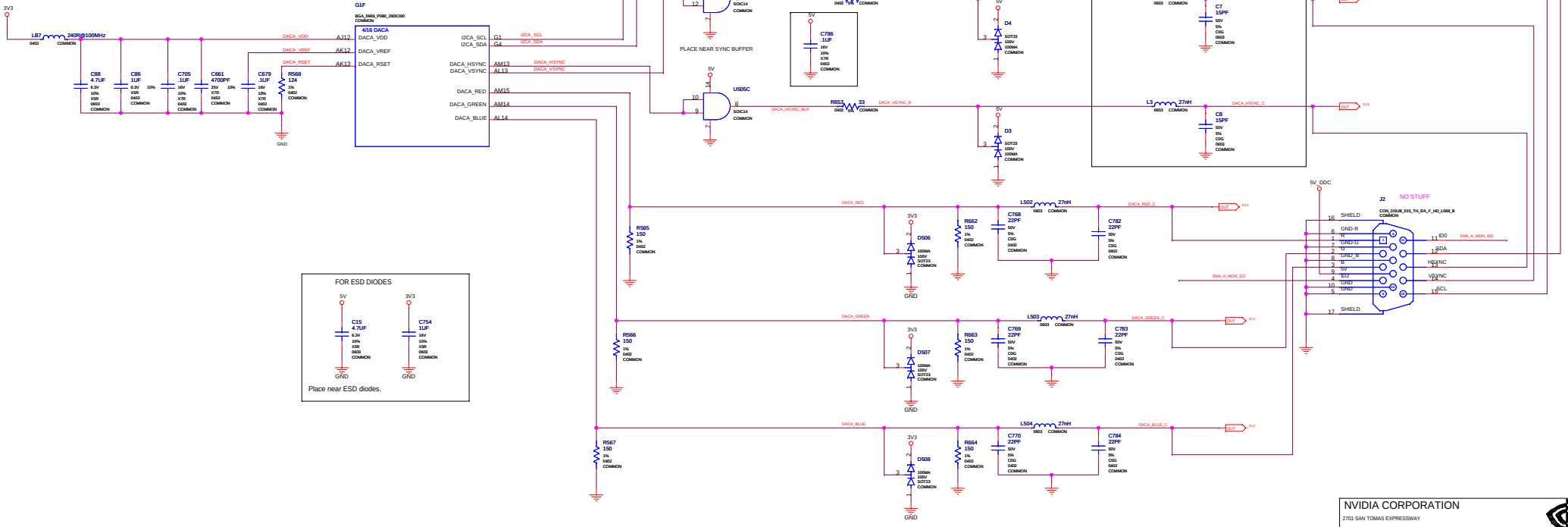
Primary Display (DACA), DVI-I

DACA RGB-FILTER





FOR ESD DIODES

Place near ESD diodes.

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	DACA FILTERS, DACA SYNC BUFFERS & DB15 SOUTH

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Secondary Display (DACC), Slim DB15

DACC RGB-FILTER

NET_NAME	NV_CRITICAL_NET	IMPEDANCE	MIN_LINE_WIDTH
DACC_VREF			12MIL
DACC_RSET			12MIL
DACC_RED	1	50OHM	
DACC_GREEN	1	50OHM	
DACC_BLUE	1	50OHM	
DACC_RED_C	1	50OHM	
DACC_GREEN_C	1	50OHM	
DACC_BLUE_C	1	50OHM	
DACC_HSYNC	1	50OHM	
DACC_VSYNC	1	50OHM	
DACC_VSYNC_R	1	50OHM	
DACC_HSYNC_R	1	50OHM	
DACC_VSYNC_BUF	1	50OHM	
DACC_HSYNC_BUF	1	50OHM	
DACC_VSYNC_C	1	50OHM	
DACC_HSYNC_C	1	50OHM	
I2CB_SDA	2	50OHM	
I2CB_SCL	2	50OHM	
I2CB_SDA_R	2	50OHM	
I2CB_SCL_R	2	50OHM	
I2CB_SDA_C	2	50OHM	
I2CB_SCL_C	2	50OHM	

FOR ESD DIODES

5V C13 1UF 16V 10% X5R 0603 COMMON GND

3V3 C785 1UF 16V 10% X5R 0603 COMMON GND

Place near ESD diodes.

3V3 LB12 240R@100MHz 0402 COMMON

C89 4.7UF 6.3V 10% X5R 0603 COMMON

C87 1UF 6.3V 10% X5R 0402 COMMON

C703 1UF 16V 10% X7R 0402 COMMON

C690 4700PF 25V X7R 10% 0402 COMMON

C691 1UF 16V 10% X7R 0402 COMMON

R59 124 1% 0402 COMMON

DACC_VDD DACC_VREF DACC_RSET

G1G BGA_096B_P080_280X280 COMMON

6/16 DACC

DACC_VDD	AG7	
DACC_VREF	AK6	
DACC_RSET	AH7	
I2CB_SCL	G3	I2CB_SCL
I2CB_SDA	G2	I2CB_SDA
DACC_HSYNC	AM1	DACC_HSYNC
DACC_VSYNC	AM2	DACC_VSYNC
DACC_RED	AK4	
DACC_GREEN	AL4	
DACC_BLUE	AJ4	

5V D14 SOT23 100V 100MA COMMON

R49 33 0402 COMMON I2CB_SDA_R

R5 2.2K 5% 0402 COMMON

R4 2.2K 5% 0402 COMMON

R53 33 0402 COMMON I2CB_SCL_R

5V D15 SOT23 100V 100MA COMMON

EMI filter, place close to DVI

LB1 180R@100MHz 0603 COMMON

C1 22PF 50V 5% C0G 0402 COMMON

LB2 180R@100MHz 0603 COMMON

C2 22PF 50V 5% C0G 0402 COMMON

I2CB_SDA_C I2CB_SCL_C

5V U505B SOIC14 COMMON

R654 33 0402 COMMON DACC_VSYNC_BUF DACC_VSYNC_R

5V D2 SOT23 100V 100mA COMMON

5V U505A SOIC14 COMMON

R671 33 0402 COMMON DACC_HSYNC_BUF DACC_HSYNC_R

5V D1 SOT23 100V 100mA COMMON

EMI filter, place close to DVI

L1 27nH 0603 COMMON

C6 15PF 50V 5% C0G 0603 COMMON

L4 27nH 0603 COMMON

C9 15PF 50V 5% C0G 0603 COMMON

DACC_VSYNC_C DACC_HSYNC_C

MIDDLE

5V_DDC

J1 N59-15F0331-A43 MINIDIM15 COMMON

18	SHIELD	MEC1	
6	GND-R		
1	R	D0	11
7	GND-G		
2	G	SDA	12
8	GND_B		
3	B	HSYNC	13
9	5V		
4	ID2	VSYNC	14
10	GND		
5	GND	SCL	15
19	SHIELD	MEC2	17

SNN_C_MON_ID0 SNN_C_MON_ID2

DACC_RED R56 150 1% 0402 COMMON

3V3 D511 100MA 100V SOT23 COMMON GND

R676 150 1% 0402 COMMON

C779 22PF 50V 5% C0G 0402 COMMON GND

L508 27nH 0603 COMMON

DACC_RED_C C778 22PF 50V 5% C0G 0402 COMMON

DACC_GREEN R57 150 1% 0402 COMMON

3V3 D510 100MA 100V SOT23 COMMON GND

R679 150 1% 0402 COMMON

C790 22PF 50V 5% C0G 0402 COMMON GND

L509 27nH 0603 COMMON

DACC_GREEN_C C791 22PF 50V 5% C0G 0402 COMMON

DACC_BLUE R55 150 1% 0402 COMMON

3V3 D509 100MA 100V SOT23 COMMON GND

R659 150 1% 0402 COMMON

C756 22PF 50V 5% C0G 0402 COMMON GND

L501 27nH 0603 COMMON

DACC_BLUE_C C755 22PF 50V 5% C0G 0402 COMMON

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	DACC FILTERS, DACC SYNC BUFFERS & DB15 MID

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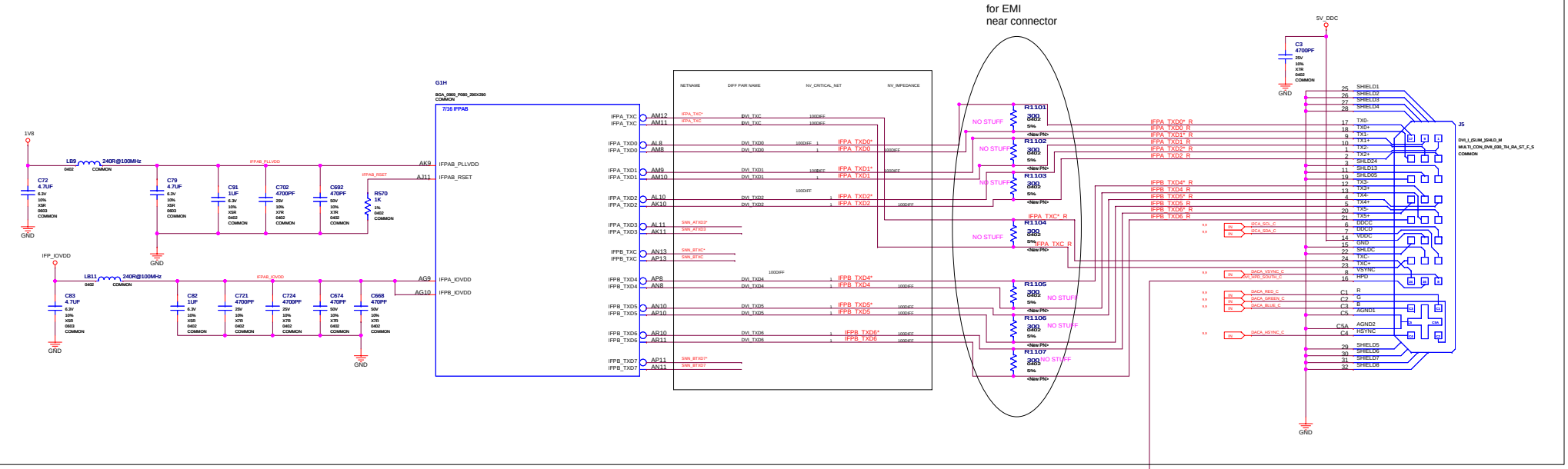
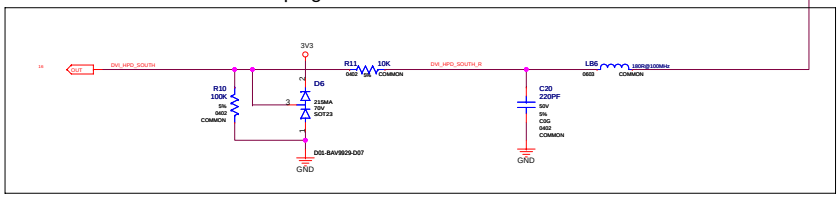
TMDS LINK: A & B



Hotplug Detection



NETNAME	MIN_LINE_WIDTH	VOLTAGE
IFPAB_PLLVDD	12MIL	1.8V
IFPAB_IOVDD	12MIL	3.3V
IFPABRSET	12MIL	

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ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	TMDS LINK A/B, DVI CONNECTOR SOUTH

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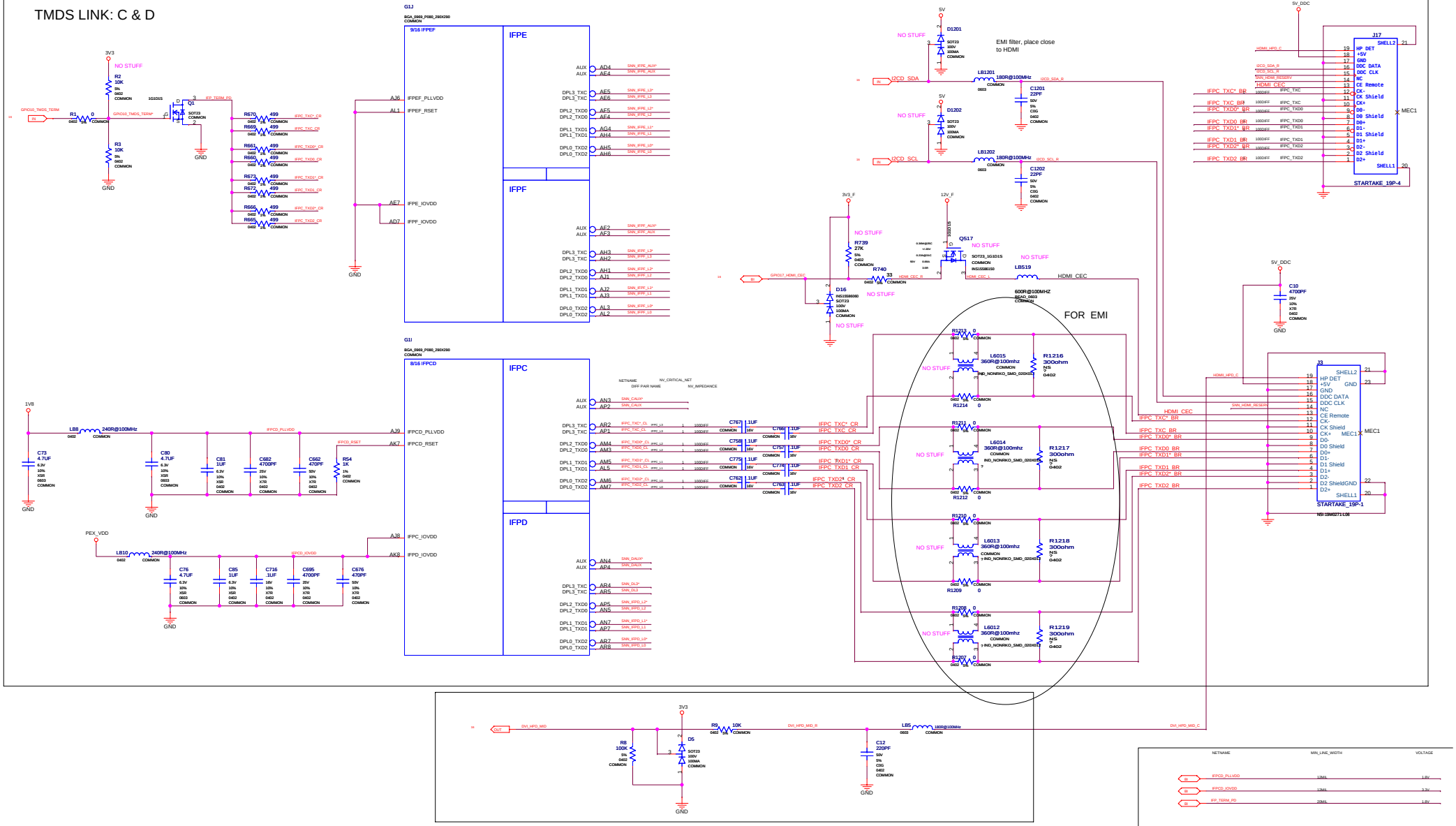
TMDS LINK: C & D



Hotplug Detection

NETNAME	MIN_LINE_WIDTH	VOLTAGE
IFPCD_PLLVDD	12MIL	1.8V
IFPCD_IOVDD	12MIL	3.3V
IFP_TERM_PD	20MIL	1.8V

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	TMDS LINK C/D, AC COUPLING, PD's, DVI CONNECTOR MID

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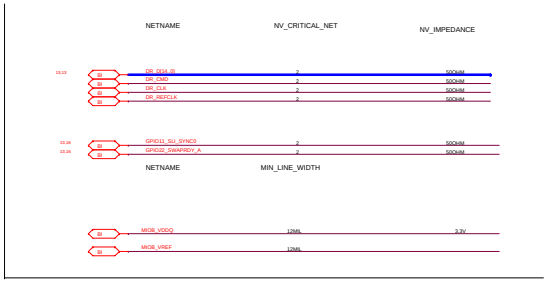
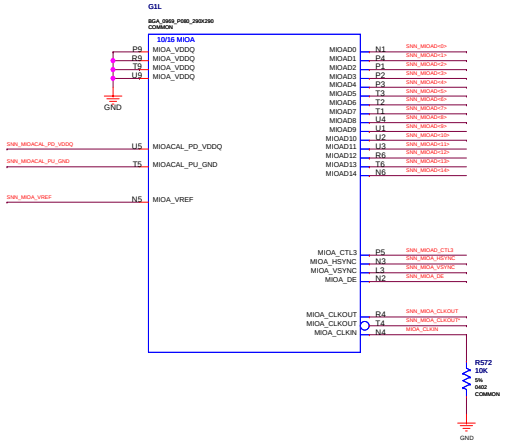
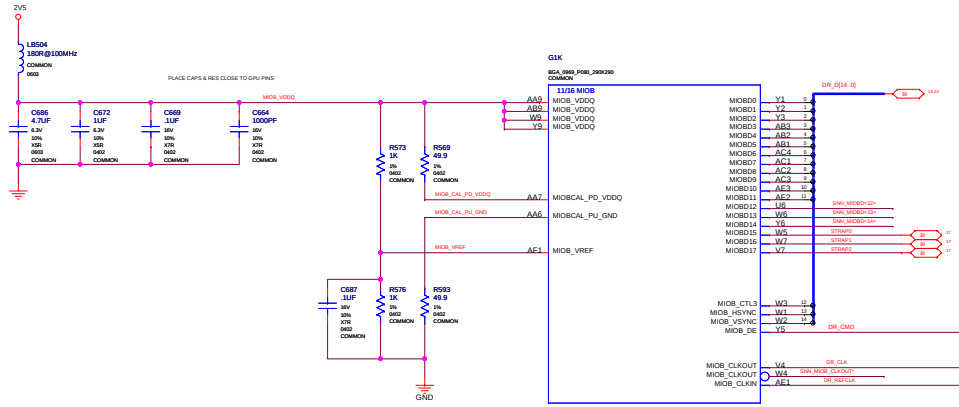
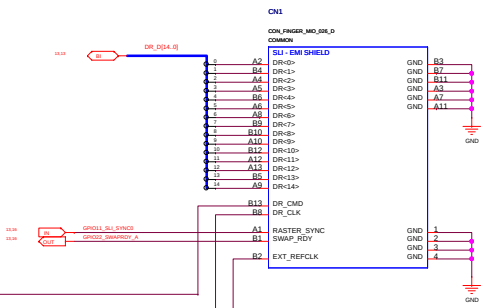
MIOA/B SLI







SLI Connector



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY. COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	MIOA & MIOB, SLI CONNECTOR

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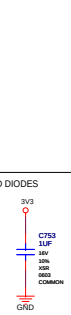
DACB: SD/HD VIDEO OUT CONNECTOR

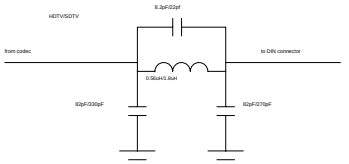
NET_NAME	MIN_LINE_WIDTH	NV_IMPEDANCE	NV_CRITICAL_NET
OUT DACB_C_OUT		50OHM	1
OUT DACB_CVBS_OUT		50OHM	1
OUT DACB_PB_OUT		50OHM	1
BI TV_PBOUT_C		50OHM	1
BI TV_COUT_C		50OHM	1
BI TV_YOUT_C		50OHM	1
IN DACB_VREF	12MIL		
IN DACB_RSET	12MIL		

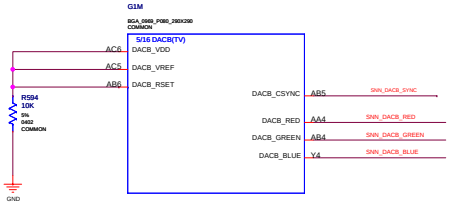
FOR ESD DIODES



Place near ESD diodes.

FILTER CIRCUIT





ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	DACB FILTERS, MINIDIN CONNECTOR NORTH, SD/HD VIDEO OUTPUT CONNECTOR

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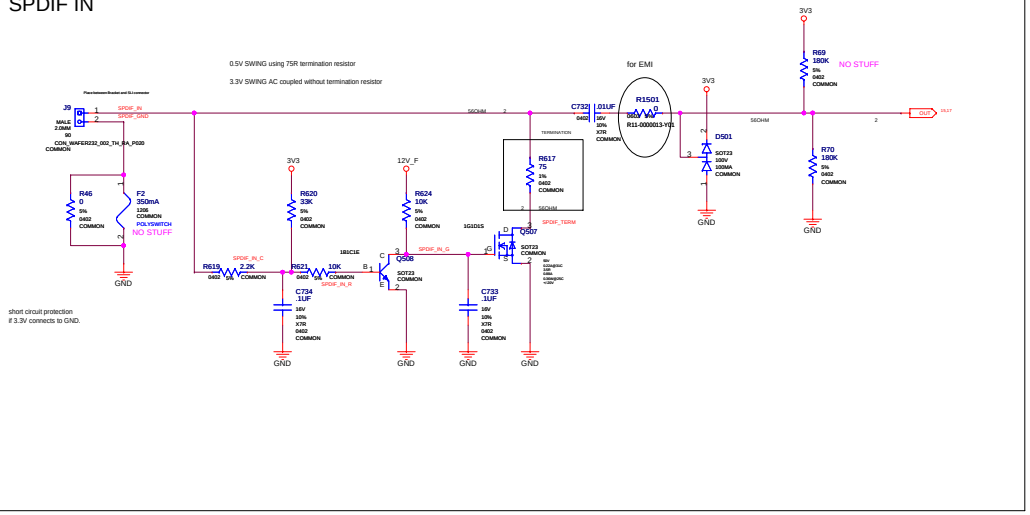
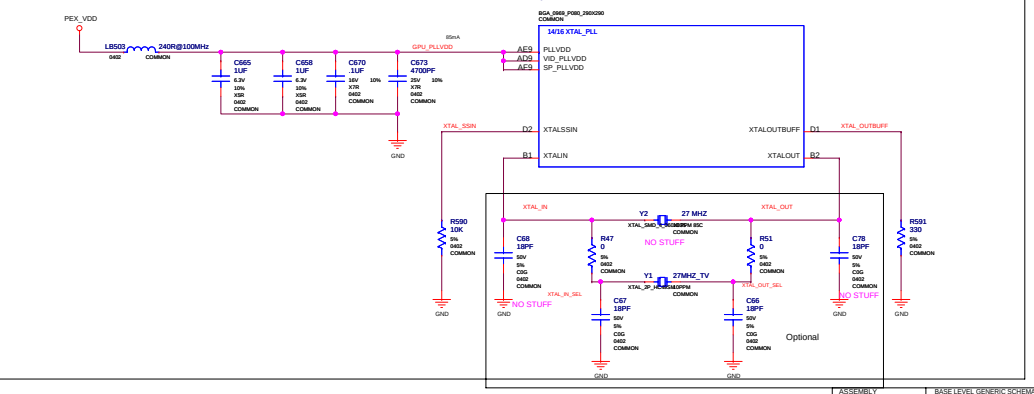
XTAL/PLLVDD/SPDIF IN

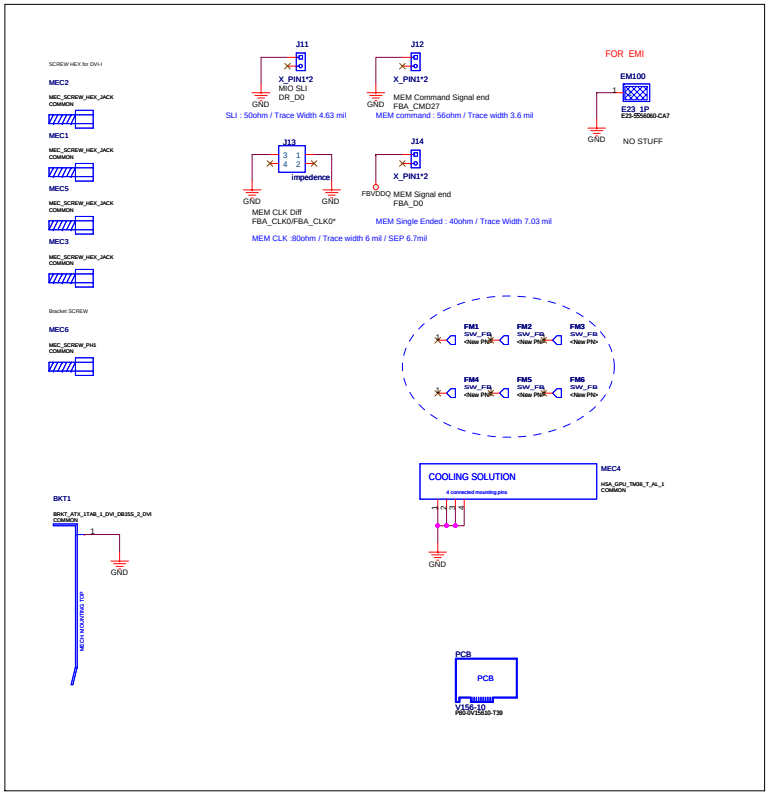
SPDIF IN



XTAL/GPU_PLLVDD



MECHANICALS & THERMALS



NETNAME	MIN_LINE_WIDTH
GPU_PLVDD	10MIL
XTAL_IN	10MIL
XTAL_OUT	10MIL
XTAL_SSIN	10MIL
XTAL_OUTBUFF	10MIL
SPDIF_IN	56OHM
SPDIF_IN_F	56OHM
SPDIF_GND	10MIL

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	SPDIF-IN, XTAL, MECHANICALS, THERMALS

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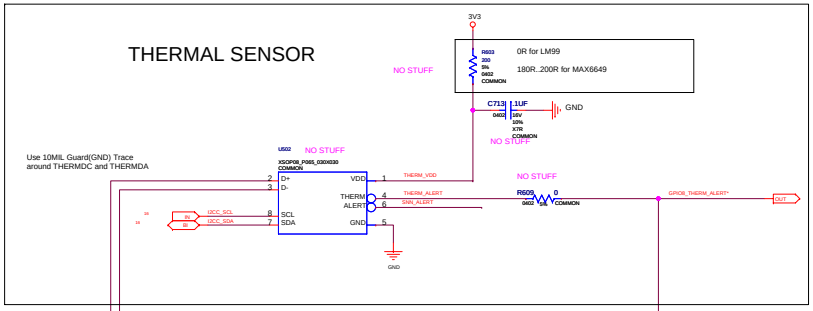
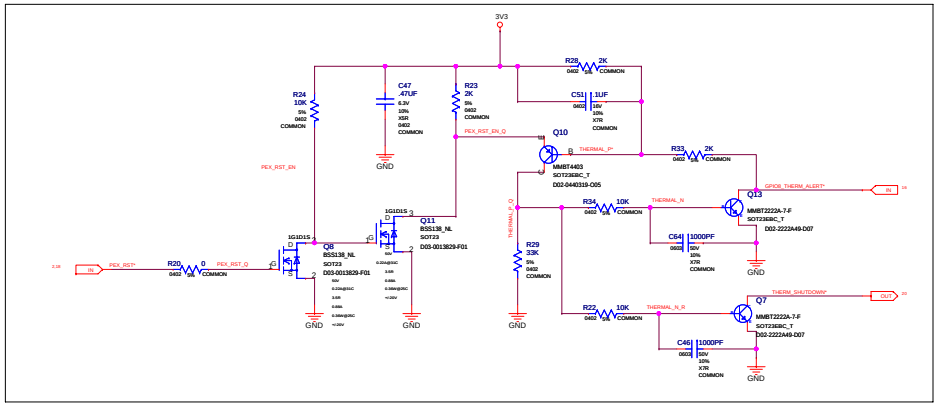
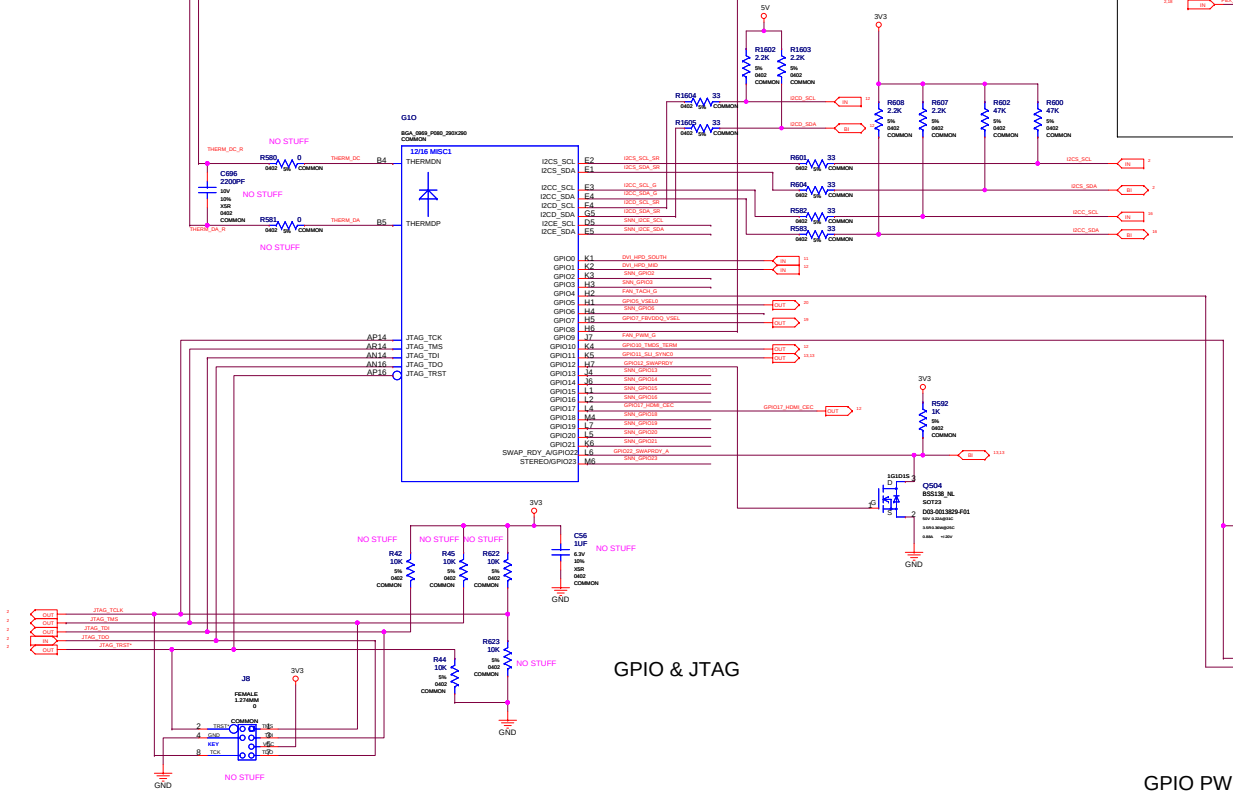
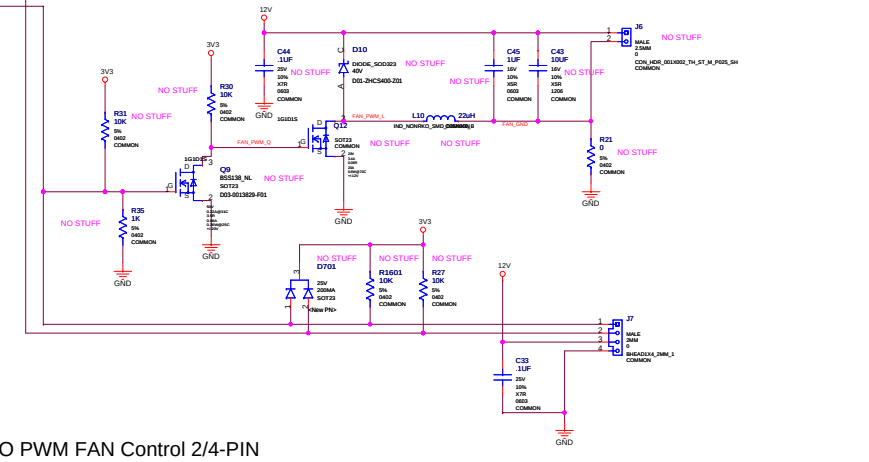
EXTERNAL THERMAL SENSOR, 4PIN FAN CONTROL, GPIO, THERMAL PROTECTION



Thermal Protection







ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	EXTERNAL THERMAL SENSOR, 2/4PIN FAN CONTROL, GPIO,THERMAL PROTECTION

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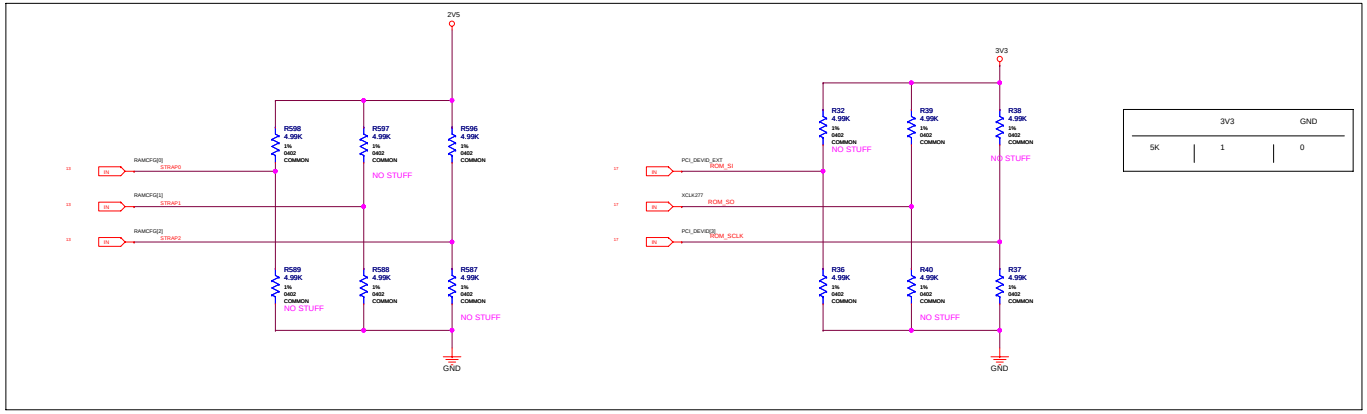
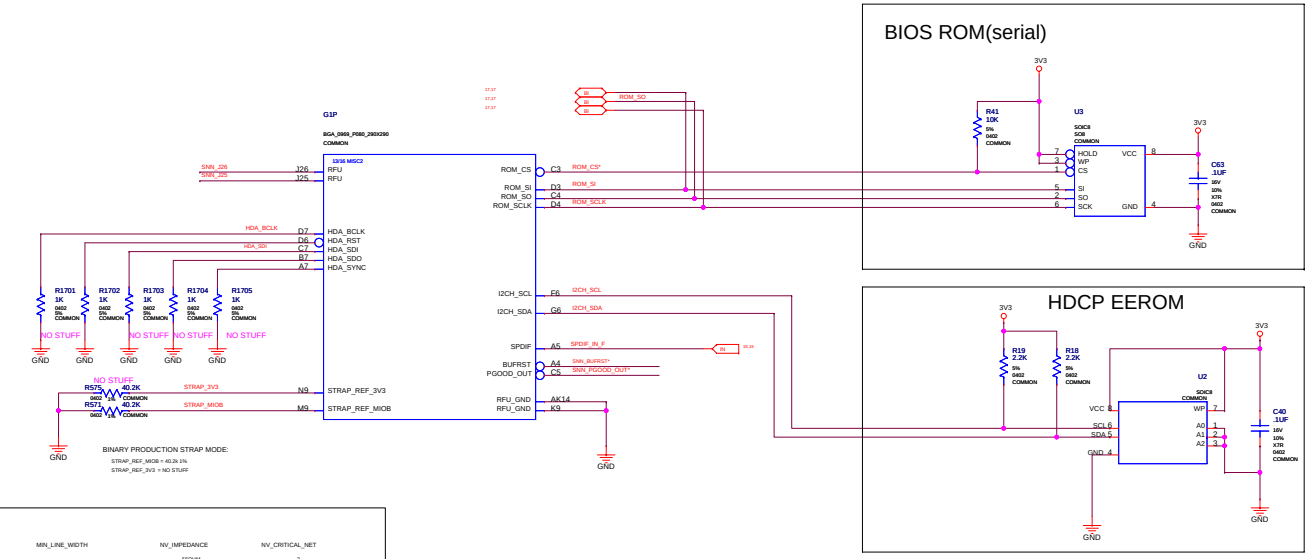
STRAPPING OPTIONS

Assembly: BIOS





BIOS ROM(serial)

HDCP EEROM

NET_NAME	MIN_LINE_WIDTH	NV_IMPEDANCE	NV_CRITICAL_NET
HDA_BCLK		55OHM	2
HDA_RST*		55OHM	2
HDA_SDI		55OHM	2
HDA_SDO		55OHM	2
HDA_SYNC		55OHM	2
HDA_SDI_R		55OHM	2

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PAGE DETAIL	BIOS ROM, HDCP ROM, STRAPPING OPTIONS

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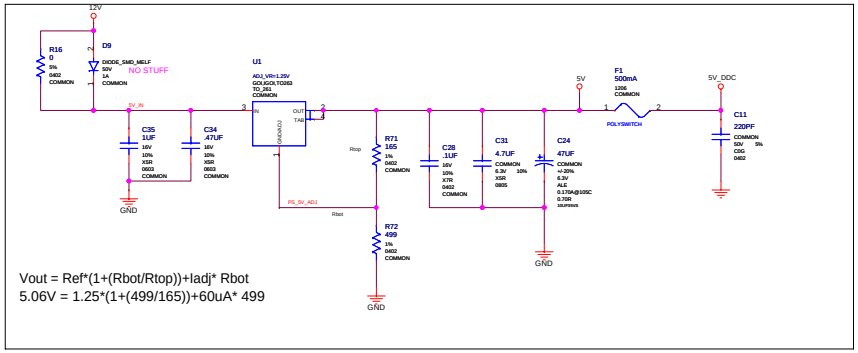
Power Supply: 5V, 5V_DDC, IFP_PLLVDD, MIOA_VDD,

TMDS BACKDRIVE

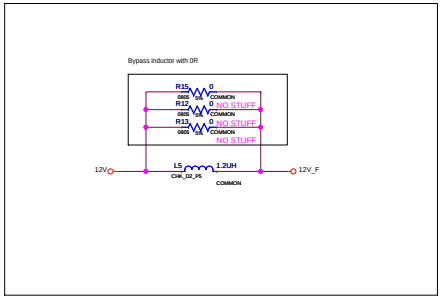
5V REGULATOR

5V DDC



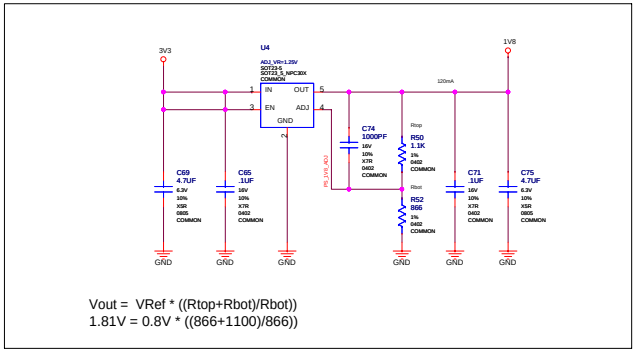
Vout = Ref*(1+(Rbot/Rtop))+Iadj* Rbot
5.06V = 1.25*(1+(499/165))+60uA* 499

12V filter



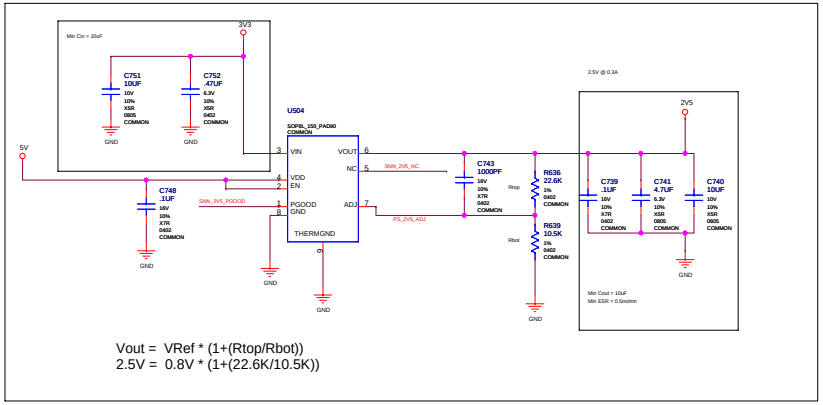
NETNAME	MAX_CURRENT	MIN_LINE_WIDTH	VOLTAGE
5V_DDC	0.1A	12Mil	5V
5V	0.15A	12Mil	5V
1V8	0.12A	12Mil	1.8V
2V5	0.3A	12Mil	2.5V
GND		16Mil	0
12V_F	6A	20Mil	12V

IFP PLL Supply 1.8V



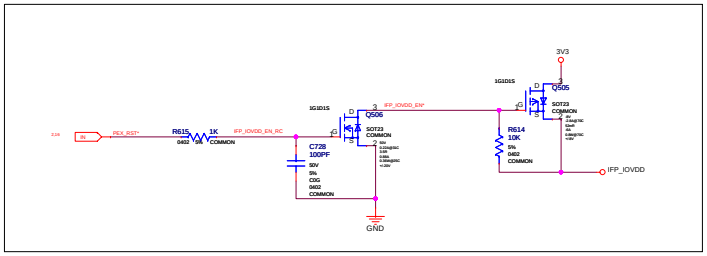
Vout = VRef * ((Rtop+Rbot)/Rbot))
1.81V = 0.8V * ((866+1100)/866))

MIO_VDD 2.5V



Vout = VRef * (1+(Rtop/Rbot))
2.5V = 0.8V * (1+(22.6K/10.5K))

TMDS BACKDRIVE



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	5V,DDC5V,IFP PLLVDD,MIO_VDD,TMDS_BACKDRIVE

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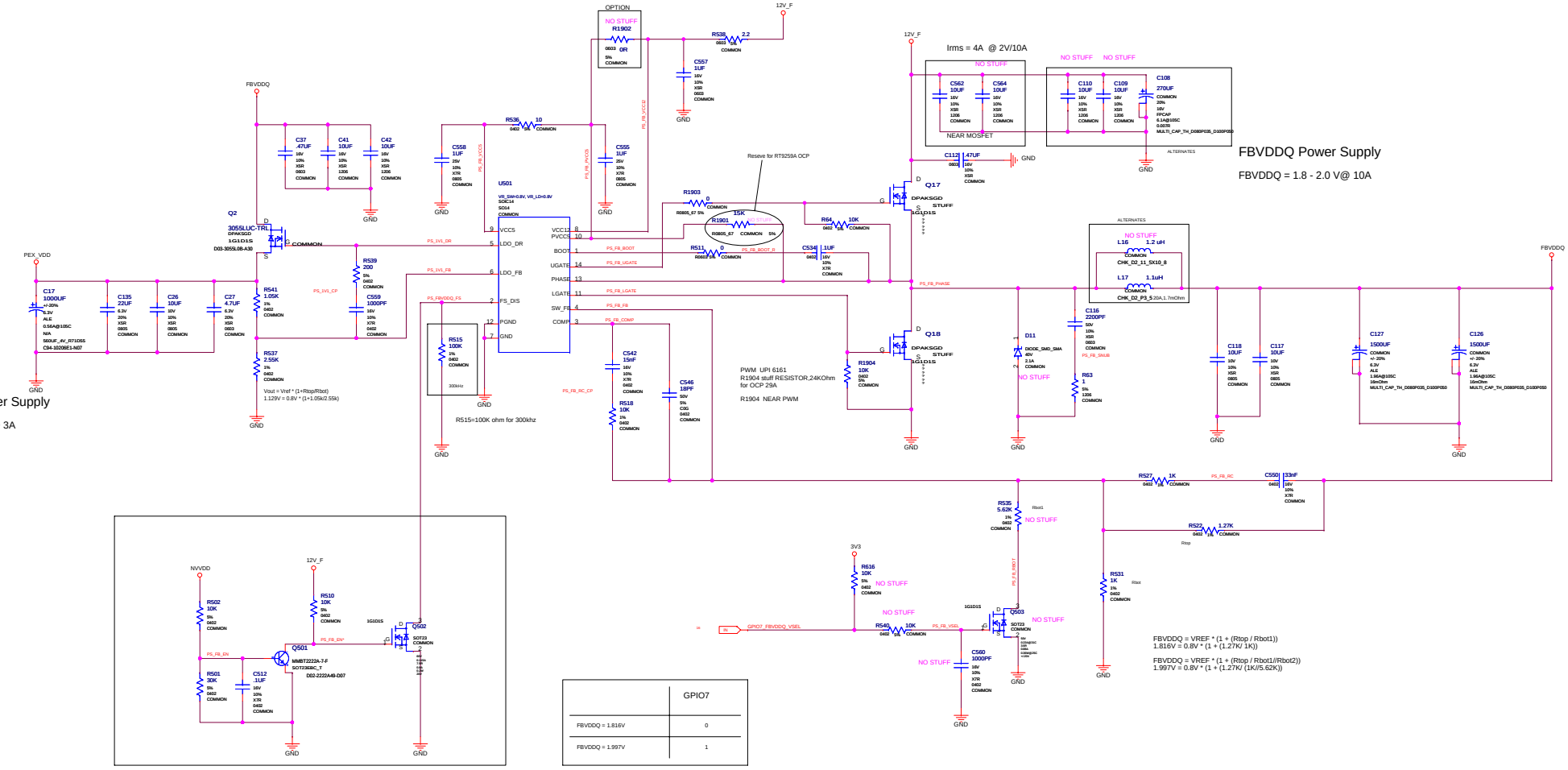
POWER SUPPLY: FBVDD/Q,PEX_VDD

NETNAME	MAX_CURRENT	MIN_LINE_WIDTH	VOLTAGE
FBVDDQ	10A	20MIL	1.8V
PEX_VDD	3A	16MIL	1.1V



PEXVDD Power Supply

PEXVDD = 1.1V @ 3A

FBVDDQ Power Supply

FBVDDQ = 1.8 - 2.0 V@ 10A

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	POWER SUPPLY: FBVDDQ , PEX_VDD

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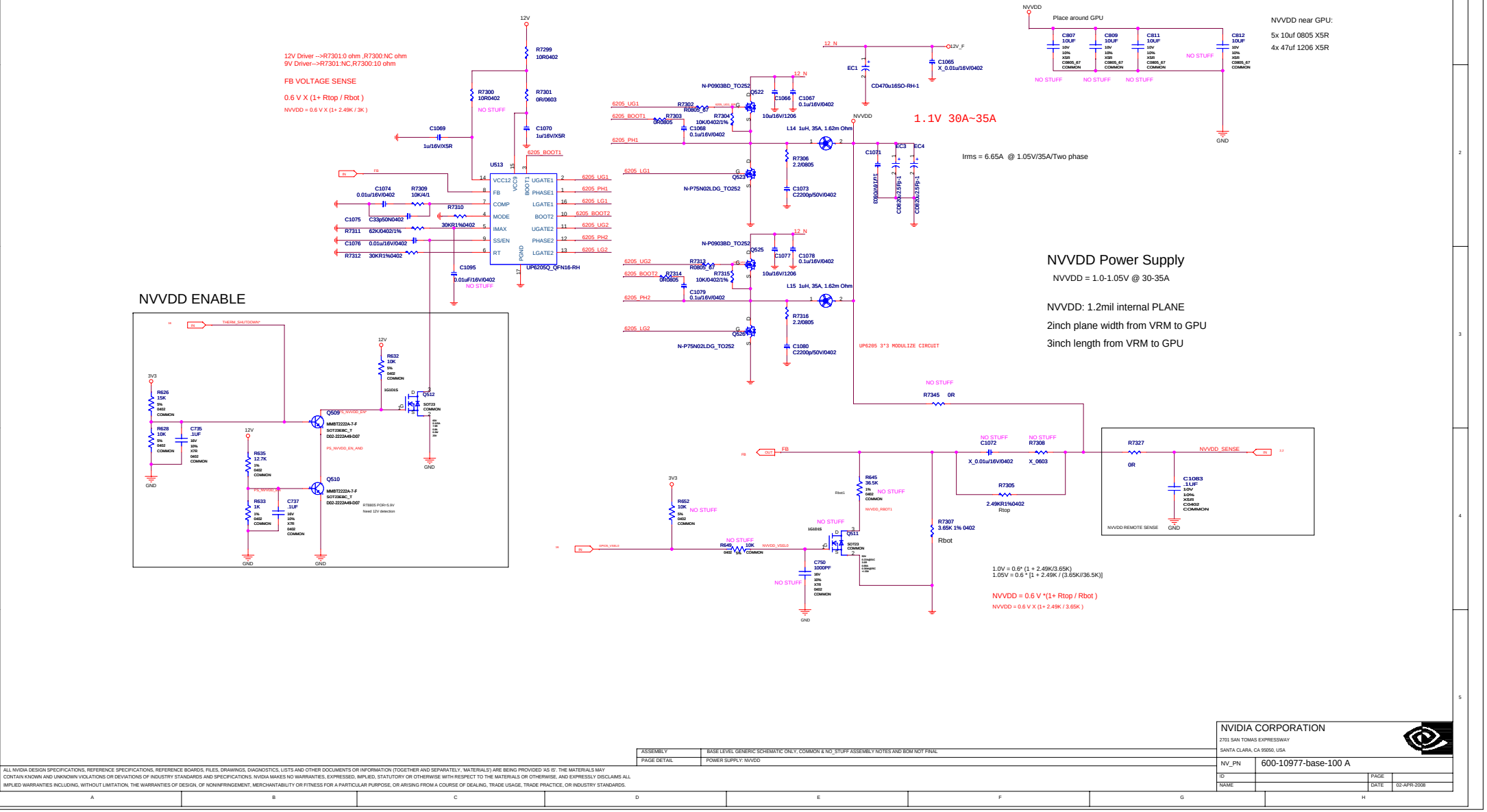
NV_PN	600-10977-base-100 A		
ID		PAGE	
NAME		DATE	02-APR-2008

POWER SUPPLY: NVVDD

UP6205 3*3 Modulize circuit ver:1

NETNAME	MAX_CURRENT	MIN_LINE_WIDTH	VOLTAGE
NVVDD	35A	16MIL	1.05V



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	POWER SUPPLY: NVVDD

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NV_PN	600-10977-base-100 A		
ID		PAGE	
NAME		DATE	02-APR-2008

Title: Basenet Report
Design: p977_a00
Date: Jan 16 15:30:01 2008

Base nets and synonyms for
p977_lib.P977_A00(@p977_lib.p977_a00(sch
_1))
Base Signal Location([Zone][dir])

1V8 18.1G
2V5 18.1G
3V3 2.5G
5V 18.1G
5V_DDC 18.1G
5V_IN 18.2A
12V 2.5G
12V_F 18.1G
DACA_BLUE 9.1A<> 9.5E
DACA_BLUE_C 9.1A<> 9.5G> 11.3G<
DACA_GREEN 9.1A<> 9.4E
DACA_GREEN_C 9.1A<> 9.4G> 11.3G<
DACA_HSYNC 9.1A<> 9.3C
DACA_HSYNC_BUF 9.1A<> 9.3D
DACA_HSYNC_C 3.1F<> 3.5B
DACA_HSYNC_R 9.1A<> 9.3E
DACA_RED 9.1A<> 9.4E
DACA_RED_C 9.1A<> 9.4G> 11.3G<
DACA_RSET 9.1A< 9.3B
DACA_VDD 9.3B
DACA_VREF 9.1A< 9.3B
DACA_VSYNC 9.1A<> 9.3C
DACA_VSYNC_BUF 9.1A<> 9.3D
DACA_VSYNC_C 9.1A<> 9.3G> 11.3G<
DACA_VSYNC_R 9.1A<> 9.3E
DACB_CVBS_OUT 14.1A> 14.3F 14.4C
DACB_C_OUT 14.1A> 14.4C 14.4F
DACB_PB_OUT 14.1A> 14.4C 14.4F
DACB_RSET 14.1A< 14.3B
DACB_VDD 14.3B
DACB_VREF 14.1A< 14.3B
DACC_BLUE 10.1A<> 10.4C 10.5D
DACC_BLUE_C 10.1A<> 10.5G> 12.4G<
DACC_GREEN 10.1A<> 10.4C 10.4D
DACC_GREEN_C 10.1A<> 10.4G> 12.4G<
DACC_HSYNC 10.1A<> 10.4C
DACC_HSYNC_BUF 10.1A<> 10.3D
DACC_HSYNC_C 10.2A<> 10.3H> 12.4G<
DACC_HSYNC_R 10.1A<> 10.3E
DACC_RED 10.1A<> 10.4C 10.4D
DACC_RED_C 10.1A<> 10.4G> 12.4G<
DACC_RSET 10.1A<> 10.4B
DACC_VDD 10.3B
DACC_VREF 10.1A<> 10.4B
DACC_VSYNC 10.1A<> 10.4C
DACC_VSYNC_BUF 10.1A<> 10.3D
DACC_VSYNC_C 10.2A<> 10.3H> 12.4G<
DACC_VSYNC_R 10.1A<> 10.3E
DAC_VDD 9.1A<
DR_CLK 13.1G<> 13.5D
DR_CMD 13.1G<> 13.5D
DR_D<14..0> 13.1G<> 13.4D<>
13.4F<>
DR_REFCLK 13.1G<> 13.5D
DVI_HPD_MID 12.5C> 16.3D<
DVI_HPD_MID_C 12.4G
DVI_HPD_MID_R 12.5E
DVI_HPD_SOUTH 11.5C> 16.3D<
DVI_HPD_SOUTH_C 11.3G
DVI_HPD_SOUTH_R 11.5E
FAN_GND 16.4G
FAN_PWM_G 16.3C
FAN_PWM_L 16.4F
FAN_PWM_Q 16.4F
FAN_TACH_G 16.3C
FBA_CLK0 3.4D> 4.1G< 4.2A<
4.4G
FBA_CLK0* 3.4D> 4.1G< 4.2A<
4.4G
FBA_CLK0_PU 4.4H
FBA_CLK1 3.4D> 4.1G< 4.2D<
4.5G
FBA_CLK1* 3.4D> 4.1G< 4.2D<
4.5G
FBA_CLK1_PU 4.5H
FBA_CMD<0> 4.1B 4.2G
FBA_CMD<27..0> 3.2D> 4.1A< 4.1D<
4.1G> 4.2G<
FBA_CMD<1> 4.1B 4.2E
FBA_CMD<2> 4.1B 4.2G
FBA_CMD<3> 4.2B 4.2E
FBA_CMD<4> 4.1E 4.2G
FBA_CMD<5> 4.1E 4.3G
FBA_CMD<6> 4.1E 4.3G
FBA_CMD<8> 4.1B 4.1E
FBA_CMD<9> 4.1B 4.1E
FBA_CMD<10> 4.1B 4.1E

FBA_CMD<11> 4.1B 4.2E
FBA_CMD<12> 4.2B 4.2E
FBA_CMD<13> 4.1E 4.2G
FBA_CMD<14> 4.2B 4.2E
FBA_CMD<15> 4.2B 4.2E
FBA_CMD<16> 4.1B 4.1E
FBA_CMD<17> 4.1B 4.1E
FBA_CMD<18> 4.1E 4.2B
FBA_CMD<19> 4.1B 4.1E
FBA_CMD<20> 4.1B 4.1E
FBA_CMD<21> 4.1B 4.1E
FBA_CMD<22> 4.1B 4.2G
FBA_CMD<23> 4.1B 4.1E
FBA_CMD<24> 4.1B 4.2G
FBA_CMD<25> 4.1B 4.1E
FBA_CMD<27> 4.1E 4.2B
FBA_D<63..0> 3.1A<> 4.1G<> 4.4B<>
FBA_DEBUG 3.4C
FBA_DEBUG_SEN0 4.2B
FBA_DEBUG_SEN1 4.2E
FBA_DQM<7..0> 3.3A> 4.1G<> 4.4B<>
FBA_DQS_RN<7..0> 3.4A<> 4.1G<> 4.4B<>
FBA_DQS_WP<7..0> 3.3A<> 4.1G<> 4.4B<>
FBA_VREF 3.1F<> 3.5B
FBA_VREF0 4.1G<> 4.3C
FBA_VREF1 4.1G<> 4.3C
FBA_VREF2 4.1G<> 4.3F
FBA_VREF3 4.1G<> 4.3F
FBA_ZQ0 4.2B
FBA_ZQ1 4.2E
FBC_CLK0 6.4D> 7.1G< 7.2A<
7.4G
FBC_CLK0* 6.4D> 7.1G< 7.2A<
7.5G
FBC_CLK0_PU 7.4G
FBC_CLK1 6.4D> 7.1G< 7.2D<
7.5G
FBC_CLK1* 6.4D> 7.1G< 7.2D<
7.5G
FBC_CLK1_PU 7.5G
FBC_CMD<0> 7.1B 7.2G
FBC_CMD<27..0> 6.3D> 7.1A< 7.1D
7.1G< 7.2G<
FBC_CMD<1> 7.2B 7.2E
FBC_CMD<2> 7.1B 7.2G
FBC_CMD<3> 7.2B 7.2E
FBC_CMD<4> 7.1E 7.2G
FBC_CMD<5> 7.1E 7.2G
FBC_CMD<6> 7.1E 7.2G
FBC_CMD<8> 7.1B 7.1E
FBC_CMD<9> 7.1B 7.1E
FBC_CMD<10> 7.1B 7.1E
FBC_CMD<11> 7.1B 7.2E
FBC_CMD<12> 7.2B 7.2E
FBC_CMD<13> 7.1E 7.2G
FBC_CMD<14> 7.2B 7.2E
FBC_CMD<15> 7.2B 7.2E
FBC_CMD<16> 7.1B 7.1E
FBC_CMD<17> 7.1B 7.1E
FBC_CMD<18> 7.1E 7.2B
FBC_CMD<19> 7.1B 7.1E
FBC_CMD<20> 7.1B 7.1E
FBC_CMD<21> 7.1B 7.1E
FBC_CMD<22> 7.1B 7.2G
FBC_CMD<23> 7.1B 7.1E
FBC_CMD<24> 7.1B 7.2G
FBC_CMD<25> 7.1B 7.1E
FBC_CMD<27> 7.1E 7.2B
FBC_D<63..0> 6.1A<> 7.1G<> 7.4B<>
FBC_DEBUG 6.4C
FBC_DEBUG_SEN0 7.2B
FBC_DEBUG_SEN1 7.2E
FBC_DQM<7..0> 6.3A> 7.1G<> 7.4B<>
FBC_DQS_RN<7..0> 6.4A<> 7.1G<> 7.4B<>
FBC_DQS_WP<7..0> 6.3A<> 7.1G<> 7.4B<>
FBC_VREF0 7.1G<> 7.3C
FBC_VREF1 7.1G<> 7.3C
FBC_VREF2 7.1G<> 7.3F
FBC_VREF3 7.1G<> 7.3F
FBC_ZQ0 7.2B
FBC_ZQ1 7.2E
FBVDDQ 19.1G
FB_CAL_PD 6.1F<>
FB_CAL_PD_VDDQ 6.5C
FB_CAL_PU 6.1F<>
FB_CAL_PU_GND 6.5C
FB_CAL_TERM 6.1F<>
FB_CAL_TERM_GND 6.5C
FB_PLLAVDD 3.1F<> 3.4D> 6.4F>
GPIO5_VSEL0 16.3D> 20.4D<
GPIO7_FBVDDQ_VSEL 16.3D> 19.4D<
GPIO8_THERM_ALERT* 16.2D> 16.2H<
GPIO10_TMDS_TERM 12.1D< 16.3D>
GPIO10_TMDS_TERM* 12.1E
GPIO11_SLI_SYNC0 13.1G<> 13.4F< 16.3D>
GPIO12_SWAPRDY 16.3C

GPIO22_SWAPRDY_A 13.1G<> 13.4F>
16.4D<>
GPU_PLLVDD 15.4B 15.4G<
GPU_TESTMODE 2.5E
HDA_BCLK 17.4B 17.5A<
HDA_RST* 17.4B 17.5A<
HDA_SDI 17.4B 17.5A>
HDA_SDI_R 17.4A 17.5A>
HDA_SDO 17.4B 17.5A<
HDA_SYNC 17.4B 17.5A<
I2CA_SCL 9.1A<> 9.3C
I2CA_SCL_C 9.2A<> 9.2G> 11.3G<
I2CA_SCL_R 9.2A<> 9.2F
I2CA_SDA 9.1A<> 9.3C
I2CA_SDA_C 9.2A<> 9.2G> 11.3G<
I2CA_SDA_R 9.2A<> 9.2F
I2CB_SCL 10.2A<> 10.3C
I2CB_SCL_C 10.2A<> 10.2H> 12.3G<
I2CB_SCL_R 10.2A<> 10.2D
I2CB_SDA 10.2A<> 10.3C
I2CB_SDA_C 10.1H> 10.2A<> 12.3G<
I2CB_SDA_R 10.2A<> 10.2D
I2C2_SCL 16.2B< 16.3E<
I2C2_SCL_G 16.3C
I2C2_SDA 16.2B<> 16.3E<>
I2C2_SDA_G 16.3C
I2CH_SCL 17.4C
I2CH_SDA 17.4C
I2CS_SCL 2.1C< 16.3E<
I2CS_SCL_SR 16.3C
I2CS_SDA 2.1C<> 16.3E<>
I2CS_SDA_SR 16.3C
IFPABRSET 11.5G<>
IFPAB_IOVDD 11.3B 11.5G<>
IFPAB_PLLVDD 11.2B 11.5G<>
IFPAB_RSET 11.2B
IFPA_TXC 11.2D
IFPA_TXC* 11.2D
IFPA_TXD0 11.2D
IFPA_TXD0* 11.2D
IFPA_TXD1 11.2D
IFPA_TXD1* 11.2D
IFPA_TXD2 11.3D
IFPA_TXD2* 11.2D
IFPB_TXD4 11.3D
IFPB_TXD4* 11.3D
IFPB_TXD5 11.3D
IFPB_TXD5* 11.3D
IFPB_TXD6 11.3D
IFPB_TXD6* 11.3D
IFPCD_IOVDD 12.4B 12.5G<>
IFPCD_PLLVDD 12.3B 12.5G<>
IFPCD_RSET 12.3B
IFPC_L0 12.3D
IFPC_L0* 12.3D
IFPC_L1 12.3D
IFPC_L1* 12.3D
IFPC_L2 12.3D
IFPC_L2* 12.3D
IFPC_L3 12.3D
IFPC_L3* 12.3D
IFPC_TXC 12.1F 12.3E
IFPC_TXC* 12.1F 12.3E
IFPC_TXD0 12.1F 12.3E
IFPC_TXD0* 12.1F 12.3E
IFPC_TXD1 12.2F 12.3E
IFPC_TXD1* 12.1F 12.3E
IFPC_TXD2 12.2F 12.3E
IFPC_TXD2* 12.2F 12.3E
IFPC_TXD3 12.2F 12.4E
IFPC_TXD3* 12.2F 12.4E
IFPC_TXD4 12.2F 12.4E
IFPC_TXD4* 12.2F 12.4E
IFPC_TXD5 12.2F 12.4E
IFPC_TXD5* 12.2F 12.4E
IFPD_L0 12.4D
IFPD_L0* 12.4D
IFPD_L1 12.4D
IFPD_L1* 12.4D
IFPD_L2 12.4D
IFPD_L2* 12.4D
IFP_IOVDD_EN* 18.5B
IFP_IOVDD_EN_RC 18.5B
IFP_TERM_PD 12.1F 12.5G<>
JTAG_TCLK 2.1C< 16.4A>
JTAG_TDI 2.1C< 16.4A>
JTAG_TDO 2.1C> 16.5A<
JTAG_TMS 2.1C< 16.4A>
JTAG_TRST* 2.1C< 16.5A>
MIOA_CLKIN 13.2D
MIOB_CAL_PD_VDDQ 13.4C
MIOB_CAL_PU_GND 13.4C
MIOB_VDDQ 13.1G<> 13.4B
MIOB_VREF 13.2G<> 13.4C
NVVDD 20.1A
NVVDD_GND_SENSE 2.5G<>

NVVDD_RBOT1 20.4E
NVVDD_SENSE 2.4F> 2.5G<> 20.4H<
NVVDD_VSEL0 20.4E
PEX_PLLVDD 2.4E 2.5G<>
PEX_PLL_CLK_OUT 2.2C
PEX_PLL_CLK_OUT* 2.2C
PEX_PRSNT 2.1A 2.4A
PEX_REFCLK 2.1G<> 2.2B
PEX_REFCLK* 2.1G<> 2.2B
PEX_RST* 2.2C> 2.2C> 16.2E<
18.5A<
PEX_RST_EN 16.2F
PEX_RST_EN_Q 16.2G
PEX_RST_Q 16.2F
PEX_RX0 2.2B 2.4G<>
PEX_RX0* 2.2B 2.4G<>
PEX_RX1 2.2B 2.4G<>
PEX_RX1* 2.2B 2.4G<>
PEX_RX2 2.2B 2.4G<>
PEX_RX2* 2.3B 2.4G<>
PEX_RX3 2.3B 2.4G<>
PEX_RX3* 2.3B 2.4G<>
PEX_RX4 2.3B 2.4G<>
PEX_RX4* 2.3B 2.4G<>
PEX_RX5 2.3B 2.4G<>
PEX_RX5* 2.3B 2.4G<>
PEX_RX6 2.3B 2.4G<>
PEX_RX6* 2.3B 2.4G<>
PEX_RX7 2.3B 2.4G<>
PEX_RX7* 2.3B 2.4G<>
PEX_RX8 2.4B 2.4G<>
PEX_RX8* 2.4B 2.4G<>
PEX_RX9 2.4B 2.4G<>
PEX_RX9* 2.4B 2.4G<>
PEX_RX10 2.4B 2.4G<>
PEX_RX10* 2.4B 2.4G<>
PEX_RX11 2.4B 2.4G<>
PEX_RX11* 2.4B 2.4G<>
PEX_RX12 2.4B 2.5G<>
PEX_RX12* 2.5B 2.5G<>
PEX_RX13 2.5B 2.5G<>
PEX_RX13* 2.5B 2.5G<>
PEX_RX14 2.5B 2.5G<>
PEX_RX14* 2.5B 2.5G<>
PEX_RX15 2.5B 2.5G<>
PEX_RX15* 2.5B 2.5G<>
PEX_SMCLK 2.1B
PEX_SMDAT 2.1B
PEX_TCLK 2.1B
PEX_TDI 2.1B
PEX_TDO 2.1B
PEX_TERMP 2.5E
PEX_TMS 2.1B
PEX_TRST* 2.1B
PEX_TX0 2.1G<> 2.2D
PEX_TX0* 2.1G<> 2.2C
PEX_TX1 2.1G<> 2.2D
PEX_TX1* 2.1G<> 2.2C
PEX_TX2 2.2D 2.2G<>
PEX_TX2* 2.2C 2.2G<>
PEX_TX3 2.2G<> 2.3D
PEX_TX3* 2.2G<> 2.3C
PEX_TX4 2.2G<> 2.3D
PEX_TX4* 2.2G<> 2.3C
PEX_TX5 2.2G<> 2.3D
PEX_TX5* 2.2G<> 2.3C
PEX_TX6 2.2G<> 2.3D
PEX_TX6* 2.2G<> 2.3C
PEX_TX7 2.2G<> 2.3D
PEX_TX7* 2.2G<> 2.3C
PEX_TX8 2.2G<> 2.4D
PEX_TX8* 2.2G<> 2.4C
PEX_TX9 2.2G<> 2.4D
PEX_TX9* 2.2G<> 2.4C
PEX_TX10 2.2G<> 2.4D
PEX_TX10* 2.2G<> 2.4C
PEX_TX11 2.2G<> 2.4D
PEX_TX11* 2.2G<> 2.4C
PEX_TX12 2.2G<> 2.4C
PEX_TX12* 2.2G<> 2.4C
PEX_TX13 2.2G<> 2.5D
PEX_TX13* 2.2G<> 2.5C
PEX_TX14 2.2G<> 2.5D
PEX_TX14* 2.2G<> 2.5C
PEX_TX15 2.2G<> 2.5D
PEX_TX15* 2.2G<> 2.5C
PEX_TX0D 2.2B 2.3G<>
PEX_TX0D* 2.2B 2.3G<>
PEX_TX1D 2.2B 2.3G<>
PEX_TX1D* 2.2B 2.3G<>
PEX_TX2D 2.2B 2.3G<>
PEX_TX2D* 2.2B 2.3G<>
PEX_TX3D 2.3B 2.3G<>
PEX_TX3D* 2.3B 2.3G<>
PEX_TX4D 2.3B 2.3G<>
PEX_TX4D* 2.3B 2.3G<>

PEX_TX5 2.3B 2.3G<>
PEX_TX5* 2.3B 2.3G<>
PEX_TX6 2.3B 2.3G<>
PEX_TX6* 2.3B 2.3G<>
PEX_TX7 2.3B 2.3G<>
PEX_TX7* 2.3B 2.3G<>
PEX_TX8 2.3G<> 2.4B
PEX_TX8* 2.3G<> 2.4B
PEX_TX9 2.3G<> 2.4B
PEX_TX9* 2.3G<> 2.4B
PEX_TX10 2.3G<> 2.4B
PEX_TX10* 2.3G<> 2.4B
PEX_TX11 2.3G<> 2.4B
PEX_TX11* 2.3G<> 2.4B
PEX_TX12 2.3G<> 2.4B
PEX_TX12* 2.3G<> 2.4B
PEX_TX13 2.3G<> 2.5B
PEX_TX13* 2.3G<> 2.5B
PEX_TX14 2.3G<> 2.5B
PEX_TX14* 2.4G<> 2.5B
PEX_TX15 2.4G<> 2.5B
PEX_TX15* 2.4G<> 2.5B
PEX_VDD 19.1G
PS_1V1_CP 19.2C
PS_1V1_DR 19.2C
PS_1V1_FB 19.2C
PS_1V8_ADJ 18.3B
PS_2V5_ADJ 18.3E
PS_FBVDDQ_FS 19.2C
PS_FB_BOOT 19.2D
PS_FB_BOOT_R 19.2E
PS_FB_COMP 19.3D
PS_FB_EN 19.4B
PS_FB_EN* 19.4C
PS_FB_FB 19.2D
PS_FB_LGATE 19.2D
PS_FB_PHASE 19.2E
PS_FB_PVCC5 19.2D
PS_FB_RBOT 19.4F
PS_FB_RC 19.3G
PS_FB_RC_CP 19.3D
PS_FB_SNUB 19.3F
PS_FB_UGATE 19.2D
PS_FB_VCC5 19.2C
PS_FB_VCC12 19.2D
PS_FB_VSEL 19.4E
PS_NVVDD_BOOT1 20.1D 20.2C
PS_NVVDD_BOOT1_RC 20.1C
PS_NVVDD_BOOT2 20.1D 20.2C
PS_NVVDD_BOOT2_RC 20.3C
PS_NVVDD_CP 20.2B
PS_NVVDD_DRVH1 20.1D
PS_NVVDD_DRVH2 20.2C
PS_NVVDD_DRVL1 20.2C
PS_NVVDD_DRVL2 20.3C
PS_NVVDD_EN 20.5B
PS_NVVDD_EN* 20.4B
PS_NVVDD_EN_AND 20.5B
PS_NVVDD_FB 20.2B
PS_NVVDD_FS 20.2B
PS_NVVDD_OC 20.3C
PS_NVVDD_PGOOD 19.4B< 20.2B>
PS_NVVDD_PH1 20.2C
PS_NVVDD_PH2 20.2C
PS_NVVDD_RC 20.4G
PS_NVVDD_RC1 20.2F
PS_NVVDD_RC2 20.3F
PS_NVVDD_RC_CP 20.1B
PS_NVVDD_SS 20.2B
PS_NVVDD_VCC 20.2C
PS_NVVDD_VSEN 20.4G
PWM_CS* 17.3C
ROM_SCLK 17.2D< 17.3C<>
17.3C<>
ROM_SI 17.2D< 17.3C<>
17.3C<>
ROM_SO 17.2D< 17.3C<>
17.3C<>
SNN_2V5_NC 18.3E
SNN_2V5_PGOOD 18.3D
SNN_3V3AUX 2.1A
SNN_ALERT 16.2B
SNN_ATXD3 11.3D
SNN_ATXD3* 11.3D
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SNN_A_MON_ID2 9.4G
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SNN_BTXC* 11.3D
SNN_BTXD7 11.3D
SNN_BTXD7* 11.3D
SNN_BUFRST* 17.4C
SNN_CAUX 12.3D
SNN_CAUX* 12.3D
SNN_C_MON_ID0 10.4H
SNN_C_MON_ID2 10.4G
SNN_DACB_SYNC 14.3C

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SNN_DAUX* 12.4D
SNN_DL3 12.4D
SNN_DL3* 12.4D
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SNN_FBA_CMD26 3.3C
SNN_FBA_CMD28 3.3C
SNN_FBA_CMD29 3.3C
SNN_FBA_CMD30 3.3C
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SNN_J26 17.3B
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SNN_MIOACAL_PU_GND 13.2B
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SNN_NVVDD_NC4 20.3C
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SPDIF_TERM 15.2C
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STRAP1 13.4E<> 17.2B<
STRAP2 13.4E<> 17.2B<
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STRAP_MIOB 17.4B
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THERMAL_N_R 16.2G
THERMAL_P* 16.2G
THERMAL_P_Q 16.2G
THERMAL_ALERT 16.2B
THERM_DA 16.3B
THERM_DA_R 16.3A
THERM_DC 16.3B
THERM_DC_R 16.3A
THERM_SHUTDOWN* 16.2H> 20.4A<
THERM_VDD 16.2B
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TV_PBOUT_C 14.1A<> 14.4G
TV_YOUT_C 14.1A<> 14.3G
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XTAL_IN_SEL 15.5C
XTAL_OUT 15.4G< 15.5D
XTAL_OUTBUFF 15.4D 15.5G<
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