V141-0A

P729: G96, DDR2 MEMORY 32MX16/16MX16

Page 1: P729 Overview

Page 2: PCI Express Interface

Page 3: Partition A Frame Buffer Interface

Page 4: Partition C Frame Buffer Interface

Page 5: Partition A Memories

Page 6: Partition C Memories

Page 7: Decoupling Caps

Page 8: DACA

Page 9: DACC, Slim DB15 Connector

Page 10: Internal TMDS .. Link A & B

Page 11: Internal TMDS .. Link C & D

Page 12: DACB, MINIDIN Connector

Page 13: MIOA, MIOB Interface

Page 14: Thermal Sensors, GPIOs, XTAL, JTAG, Fan

Page 15: BIOS, HDCP, SPDIF, HDA, Mechanical

Page 16: Straps

Page 17: Hybrid Power

Page 18: Power Supply I: 2V5, 3V3, 5V, IFP_IOVDD

Page 19: Power Supply II: FBVDDQ

Page 20: Power Supply III: NVVDD, PEX_VDD

REV HISTORY

Modify Power Sequencing

02/25

PAGE 14.EDIT NET

R562 : I2CD_SCL_R to I2CC_SCL_R
R563 : I2CD_SDA_R to I2CC_SDA_R
R172,R173 Pull high 5V

PAGE 19.EDIT footprint
C87 footprint 0805 to 1206

PAGE 11.Remove R130
HDMI gate pull down

02/26

PAGE 2.Change 3V3_PEX to 3V3_AUX

SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-10729-xxxx-000	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	SKU8000	600-10729-0000-000	G96-300-A1, 550/500MHz, 512MB 32Mx16 DDR2 BGA84 DVI-DL+VGA+HDTV
2	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
3	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
4	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
5	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
6	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
7	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
8	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
9	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
10	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
11	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
12	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
13	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
14	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
15	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>

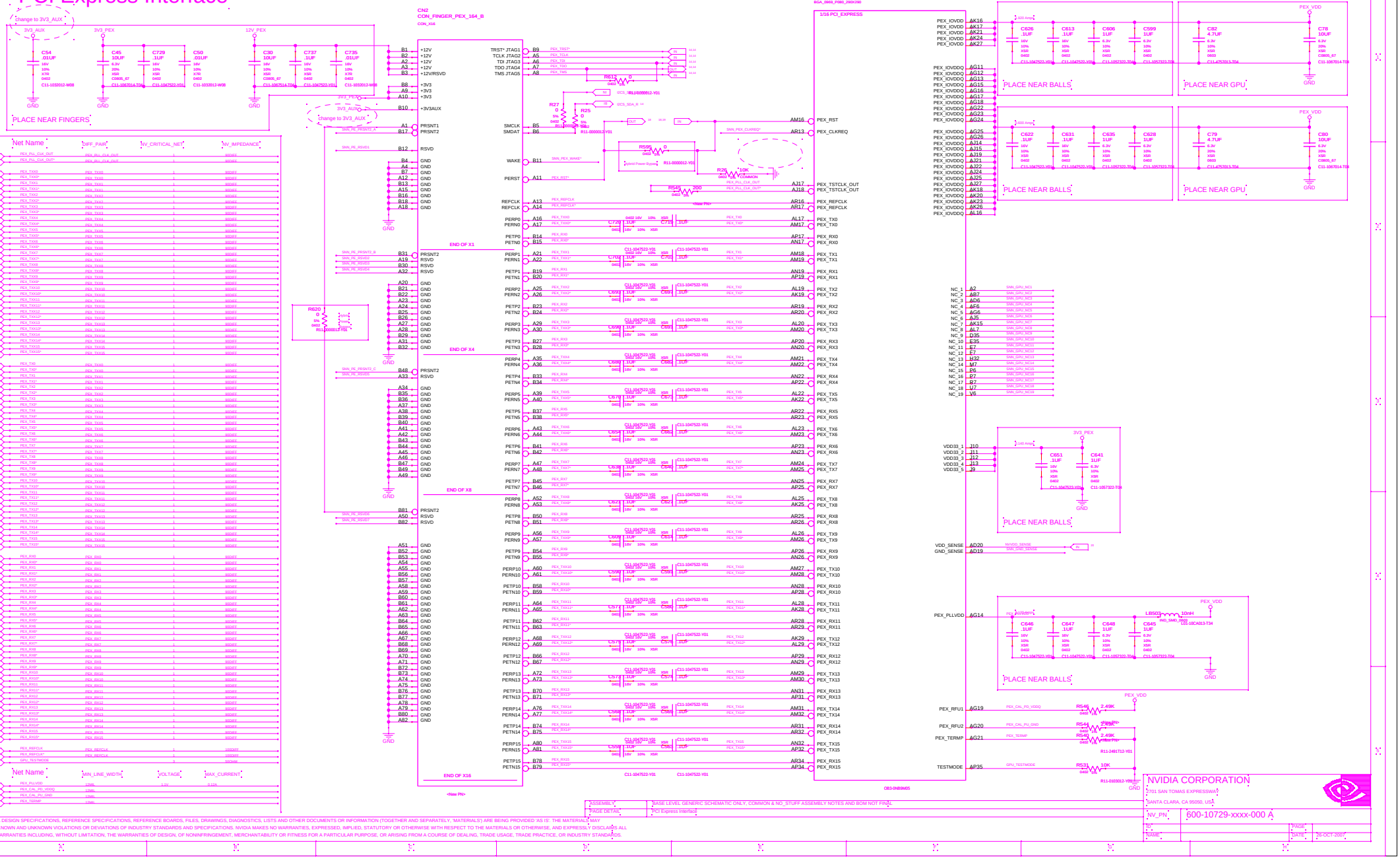
ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	P729 Overview

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

PCI Express Interface



Net Name	DIFF_PAIR	NV_CRITICAL_NET	NV_IMPEDANCE
PEX_PLL_CLK_OUT	PEX_PLL_CLK_OUT	1	90OHM
PEX_PLL_CLK_OUT*	PEX_PLL_CLK_OUT*	1	90OHM
PEX_TX00	PEX_TX00	1	90OHM
PEX_TX00*	PEX_TX00*	1	90OHM
PEX_TX01	PEX_TX01	1	90OHM
PEX_TX01*	PEX_TX01*	1	90OHM
PEX_TX02	PEX_TX02	1	90OHM
PEX_TX02*	PEX_TX02*	1	90OHM
PEX_TX03	PEX_TX03	1	90OHM
PEX_TX03*	PEX_TX03*	1	90OHM
PEX_TX04	PEX_TX04	1	90OHM
PEX_TX04*	PEX_TX04*	1	90OHM
PEX_TX05	PEX_TX05	1	90OHM
PEX_TX05*	PEX_TX05*	1	90OHM
PEX_TX06	PEX_TX06	1	90OHM
PEX_TX06*	PEX_TX06*	1	90OHM
PEX_TX07	PEX_TX07	1	90OHM
PEX_TX07*	PEX_TX07*	1	90OHM
PEX_TX08	PEX_TX08	1	90OHM
PEX_TX08*	PEX_TX08*	1	90OHM
PEX_TX09	PEX_TX09	1	90OHM
PEX_TX09*	PEX_TX09*	1	90OHM
PEX_TX10	PEX_TX10	1	90OHM
PEX_TX10*	PEX_TX10*	1	90OHM
PEX_TX11	PEX_TX11	1	90OHM
PEX_TX11*	PEX_TX11*	1	90OHM
PEX_TX12	PEX_TX12	1	90OHM
PEX_TX12*	PEX_TX12*	1	90OHM
PEX_TX13	PEX_TX13	1	90OHM
PEX_TX13*	PEX_TX13*	1	90OHM
PEX_TX14	PEX_TX14	1	90OHM
PEX_TX14*	PEX_TX14*	1	90OHM
PEX_TX15	PEX_TX15	1	90OHM
PEX_TX15*	PEX_TX15*	1	90OHM
PEX_RX00	PEX_RX00	1	90OHM
PEX_RX00*	PEX_RX00*	1	90OHM
PEX_RX01	PEX_RX01	1	90OHM
PEX_RX01*	PEX_RX01*	1	90OHM
PEX_RX02	PEX_RX02	1	90OHM
PEX_RX02*	PEX_RX02*	1	90OHM
PEX_RX03	PEX_RX03	1	90OHM
PEX_RX03*	PEX_RX03*	1	90OHM
PEX_RX04	PEX_RX04	1	90OHM
PEX_RX04*	PEX_RX04*	1	90OHM
PEX_RX05	PEX_RX05	1	90OHM
PEX_RX05*	PEX_RX05*	1	90OHM
PEX_RX06	PEX_RX06	1	90OHM
PEX_RX06*	PEX_RX06*	1	90OHM
PEX_RX07	PEX_RX07	1	90OHM
PEX_RX07*	PEX_RX07*	1	90OHM
PEX_RX08	PEX_RX08	1	90OHM
PEX_RX08*	PEX_RX08*	1	90OHM
PEX_RX09	PEX_RX09	1	90OHM
PEX_RX09*	PEX_RX09*	1	90OHM
PEX_RX10	PEX_RX10	1	90OHM
PEX_RX10*	PEX_RX10*	1	90OHM
PEX_RX11	PEX_RX11	1	90OHM
PEX_RX11*	PEX_RX11*	1	90OHM
PEX_RX12	PEX_RX12	1	90OHM
PEX_RX12*	PEX_RX12*	1	90OHM
PEX_RX13	PEX_RX13	1	90OHM
PEX_RX13*	PEX_RX13*	1	90OHM
PEX_RX14	PEX_RX14	1	90OHM
PEX_RX14*	PEX_RX14*	1	90OHM
PEX_RX15	PEX_RX15	1	90OHM
PEX_RX15*	PEX_RX15*	1	90OHM
PEX_REFCLK	PEX_REFCLK	1	100DIFF
PEX_REFCLK*	PEX_REFCLK	1	100DIFF
GPU_TESTMODE		1	50OHM

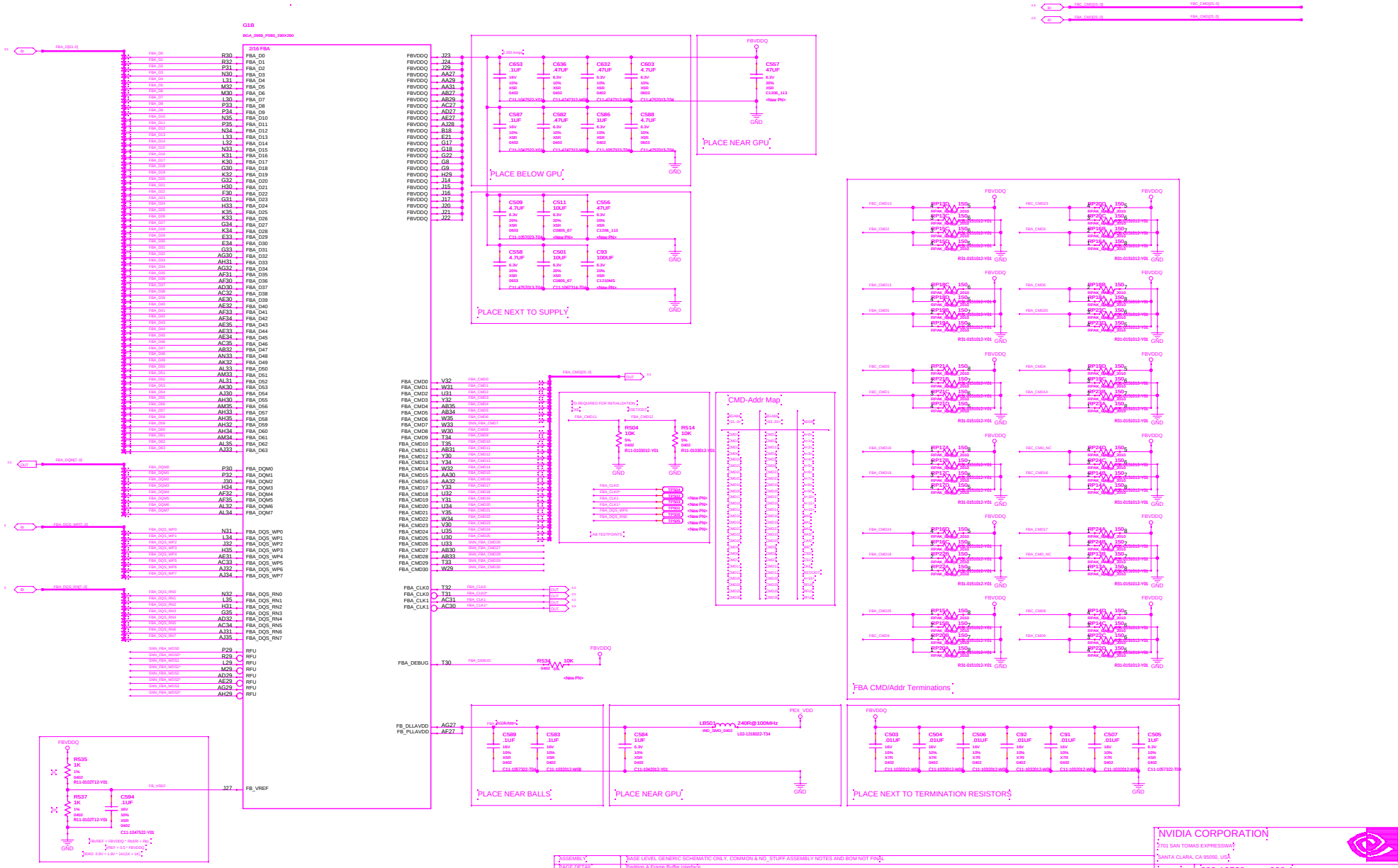
Net Name	MIN_LINE_WIDTH	VOLTAGE	MAX_CURRENT
PEX_PLLVDD	12MIL	1.1V	0.12A
PEX_CAL_PD_VDDQ	12MIL		
PEX_CAL_PU_GND	12MIL		
PEX_TERMP	12MIL		

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PCI Express Interface

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

NV_PN	600-10729-xxxx-000 A
SIZE	PAGE
NAME	DATE 28-OCT-2007

Partition A Frame Buffer Interface



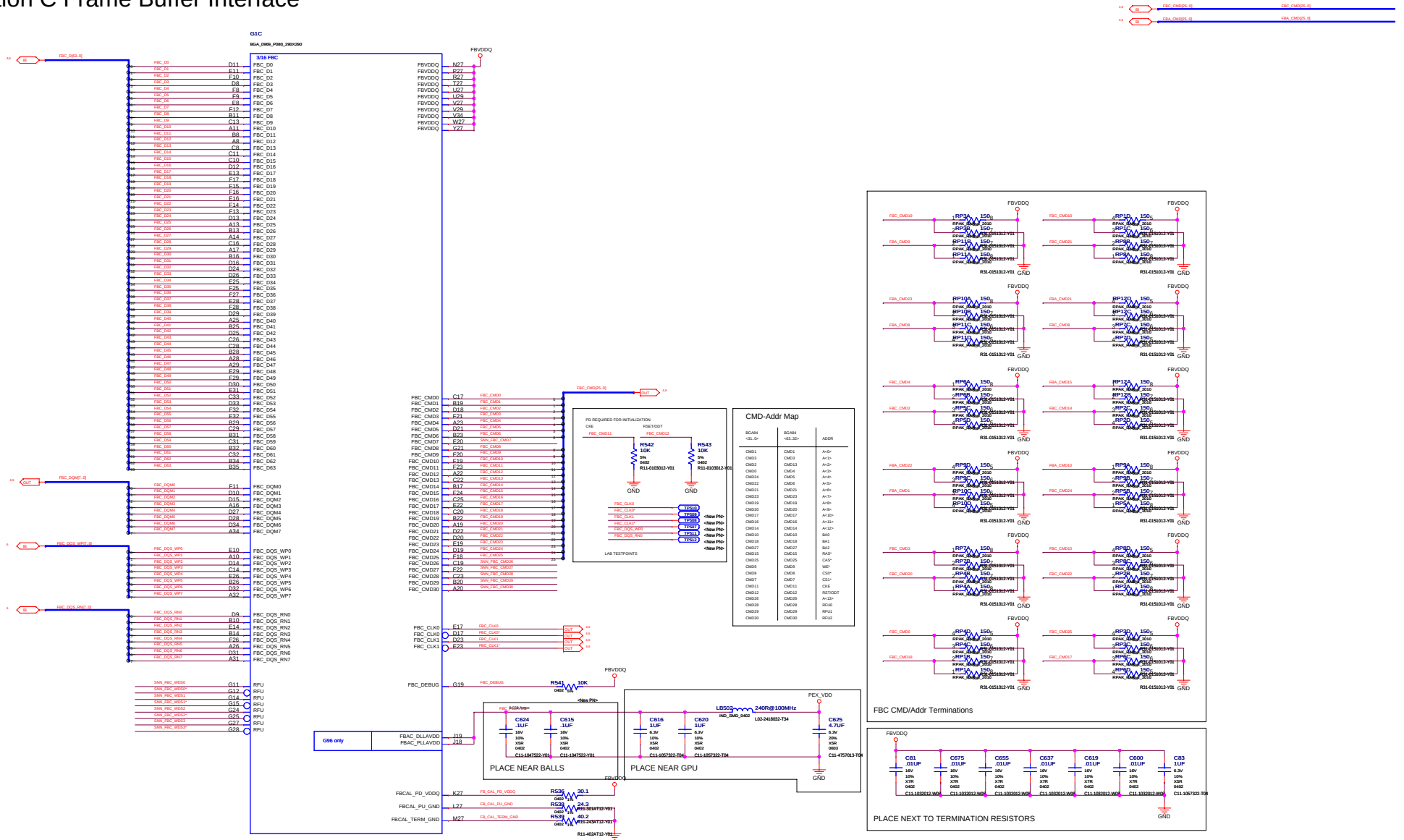
ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Partition A Frame Buffer Interface

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

Partition C Frame Buffer Interface



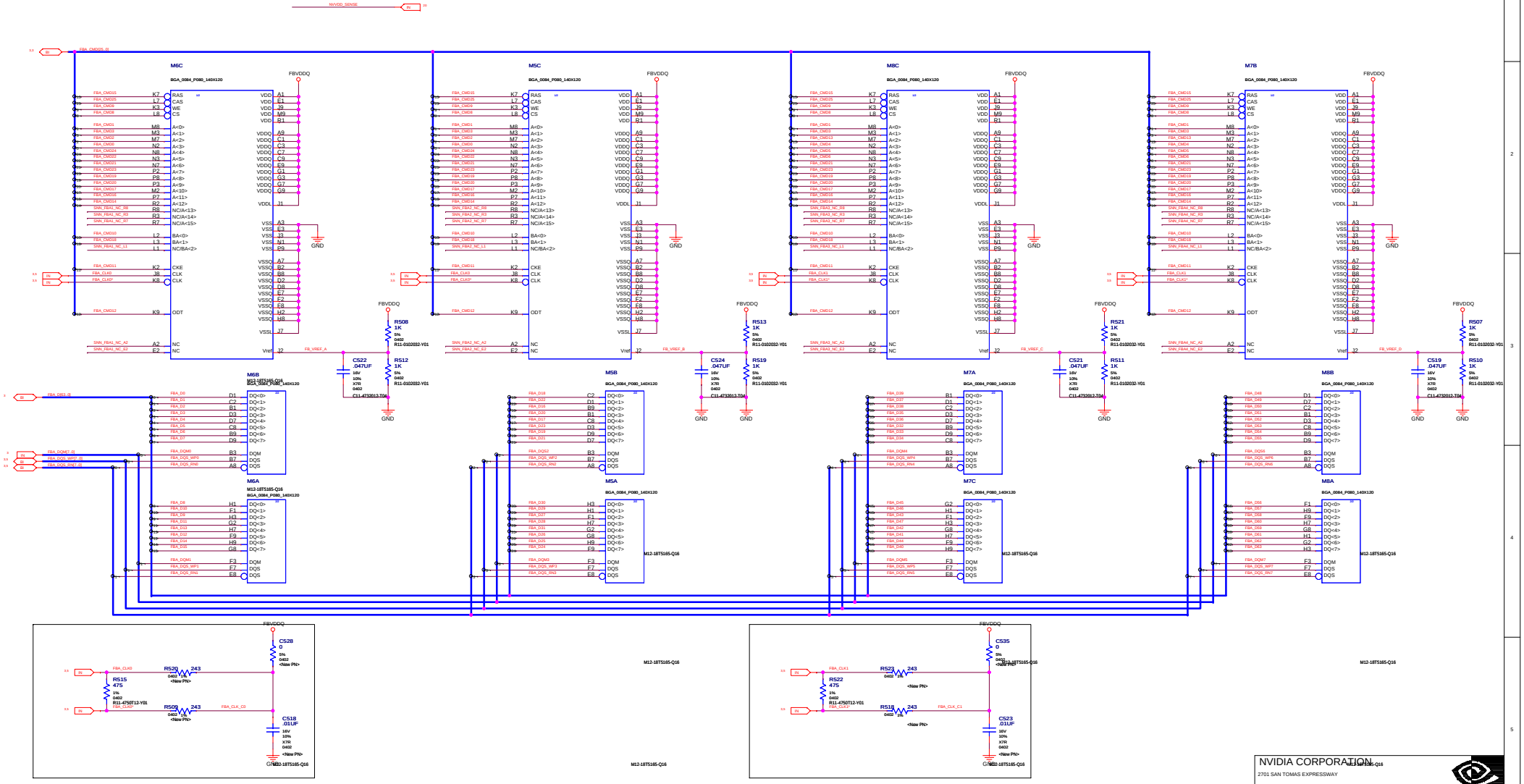
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Partition C Frame Buffer Interface

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

Partition A Memories



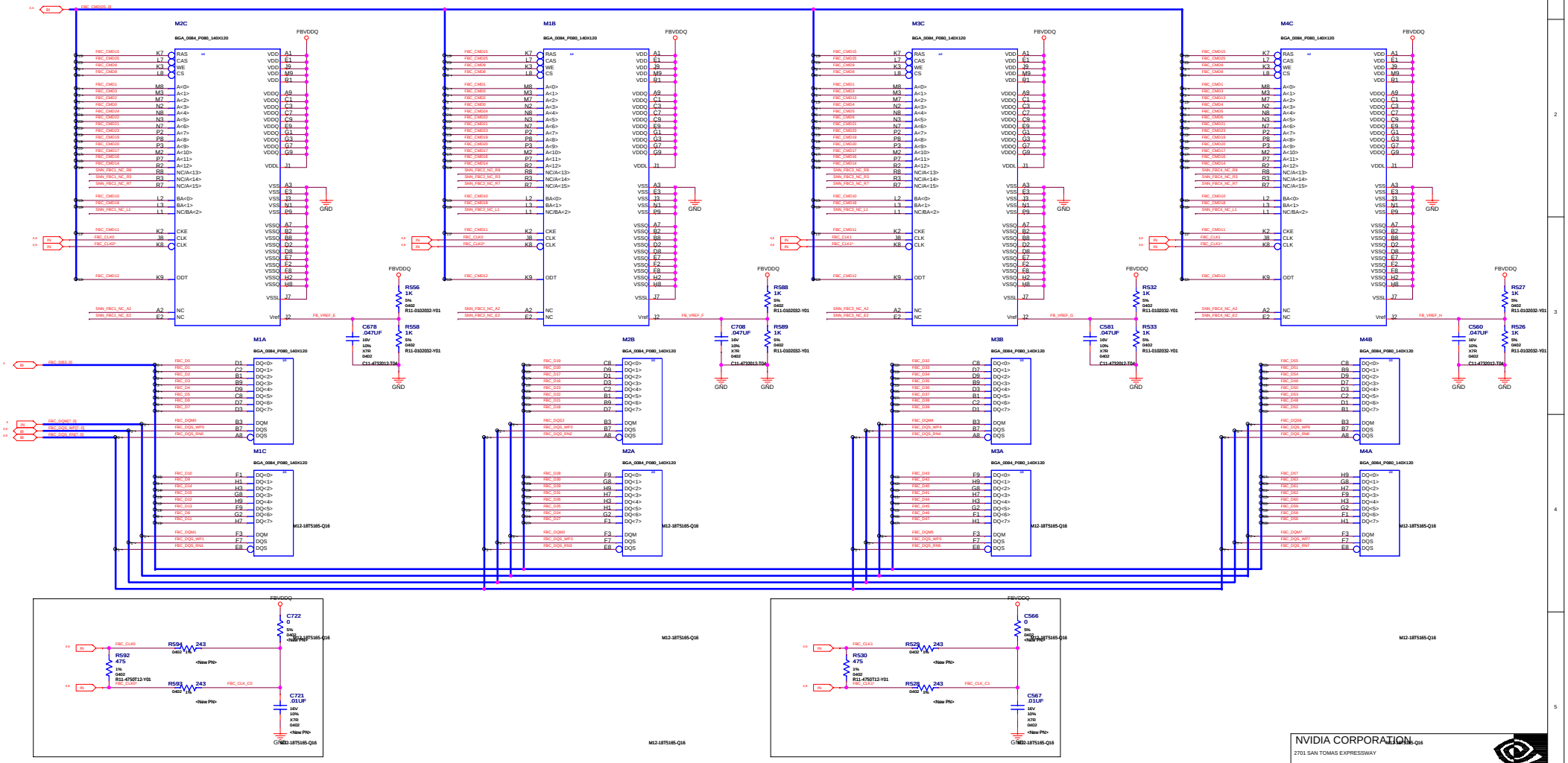
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Partition A Memories

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

Partition C Memories



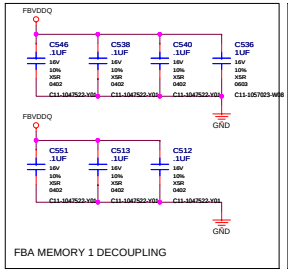
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Partition C Memories

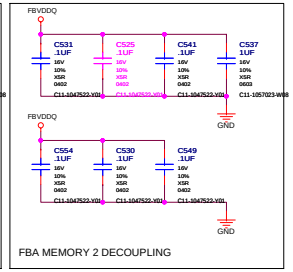
ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

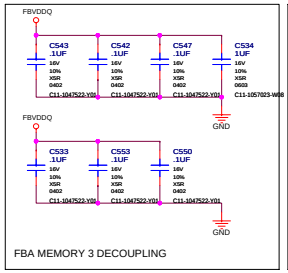
NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

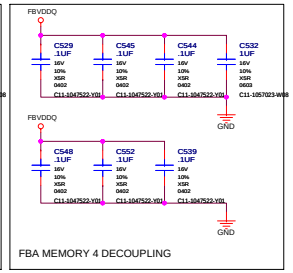
NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

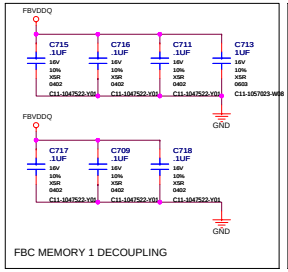
Decoupling Caps

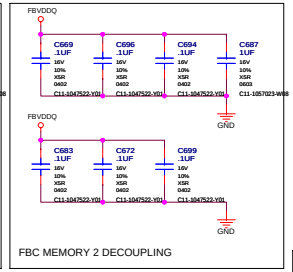


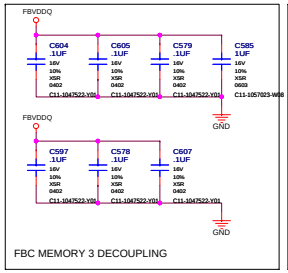


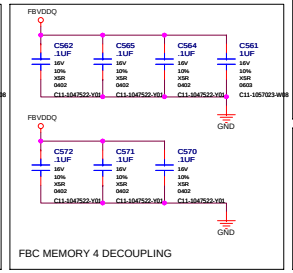


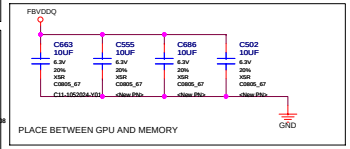


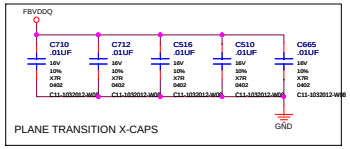


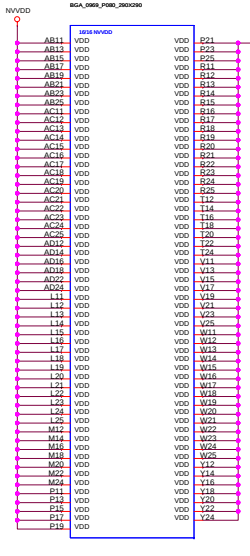


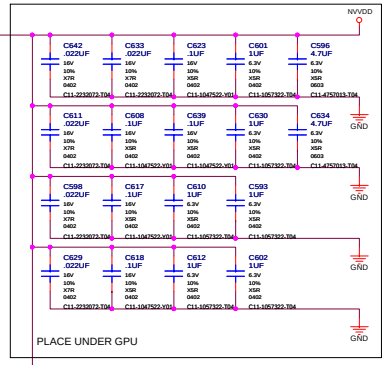


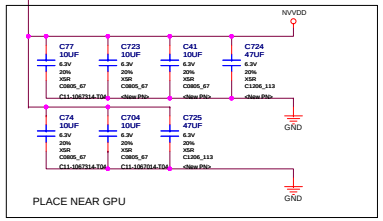


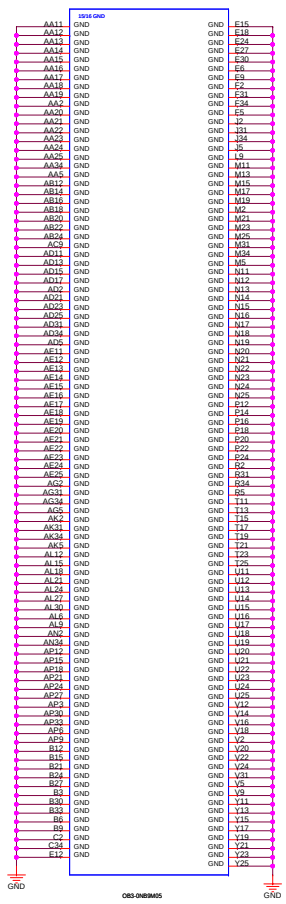












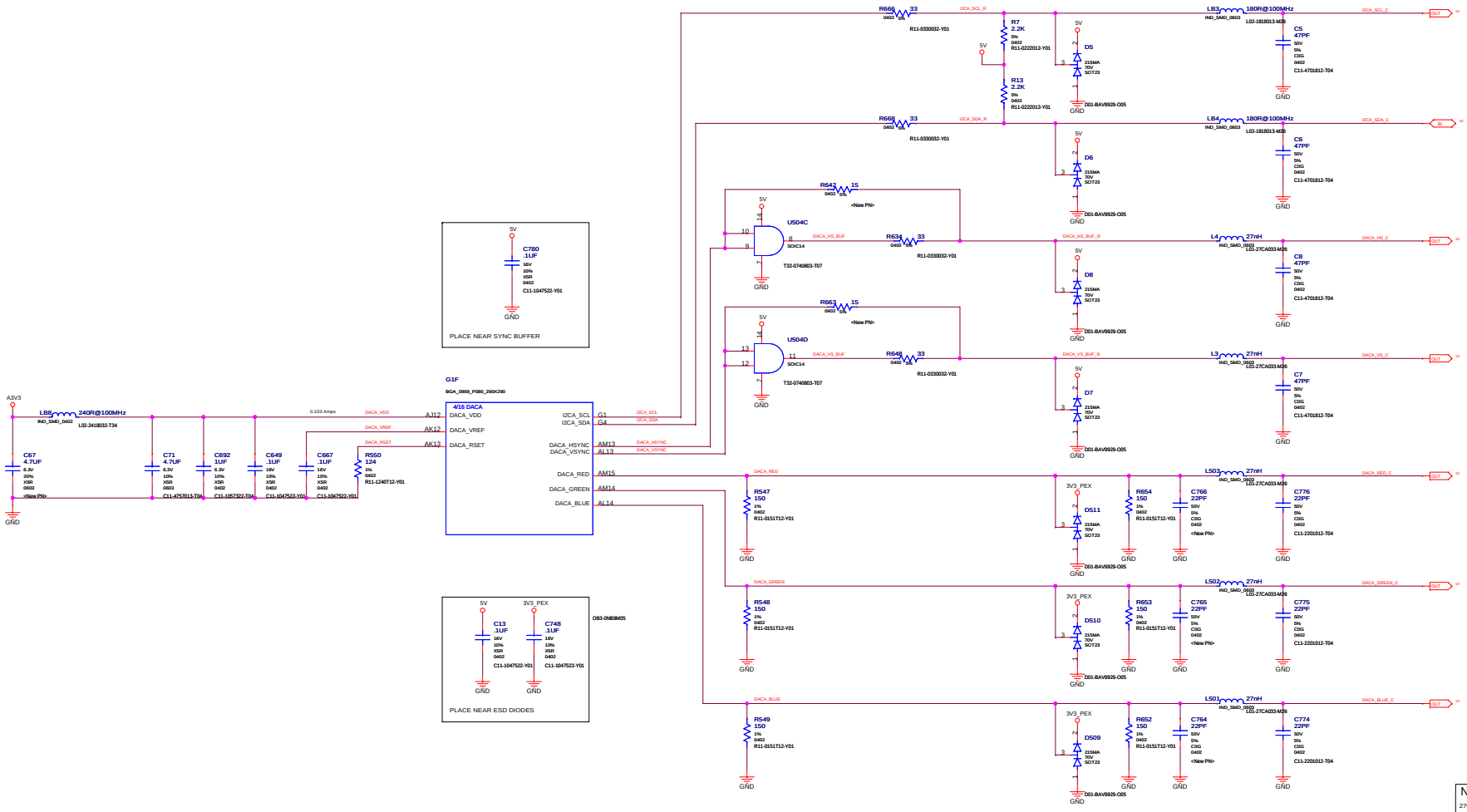
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Decoupling Caps

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A
ID	
NAME	
PAGE	
DATE	26-OCT-2007

DACA



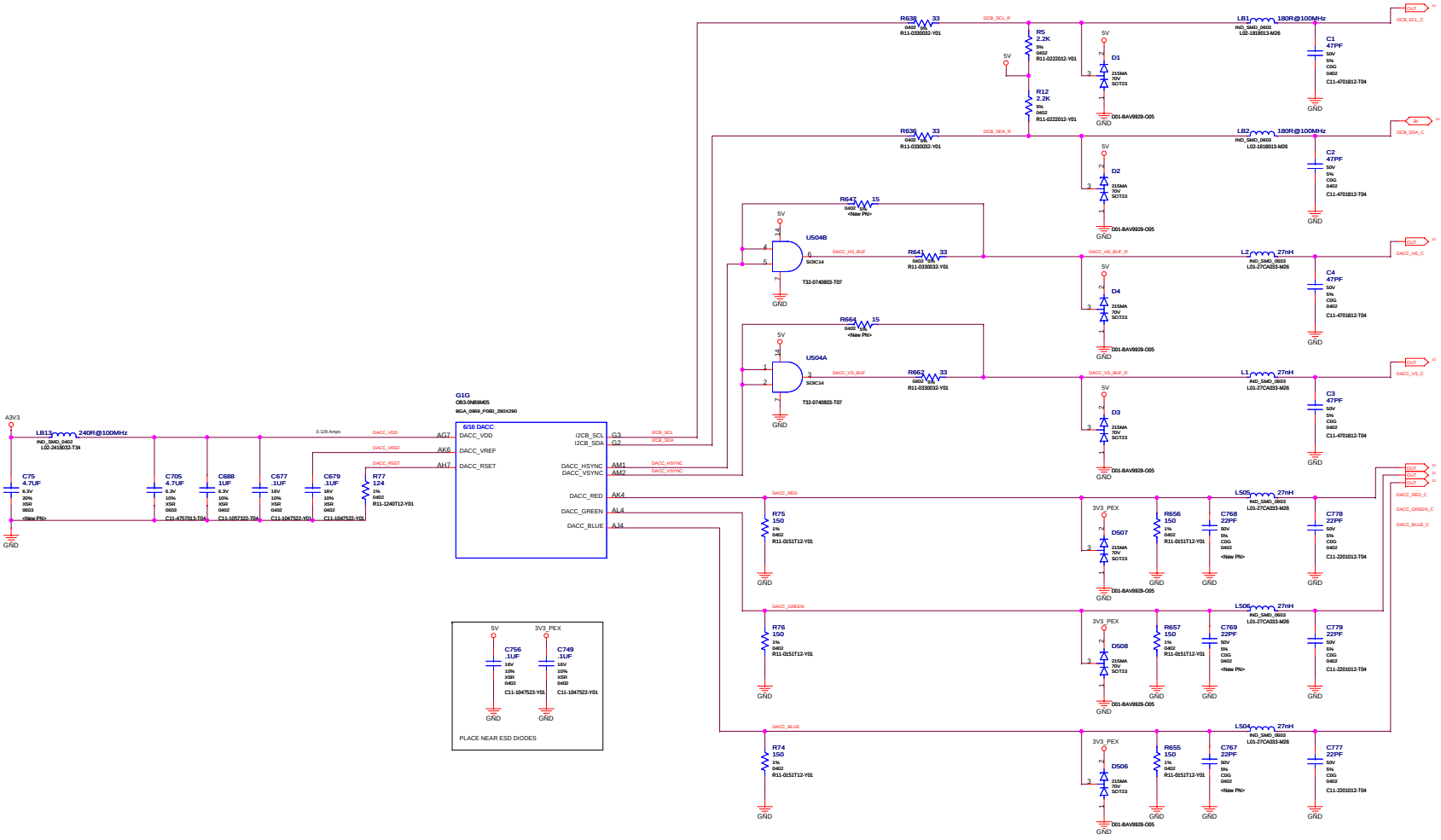
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	DACA

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

DACC, Slim DB15 Connector



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	DACC, Slim DB15 Connector

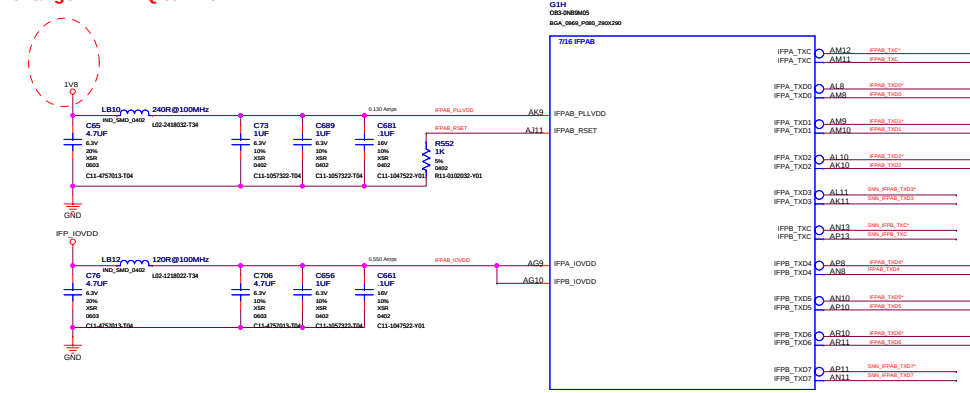
ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

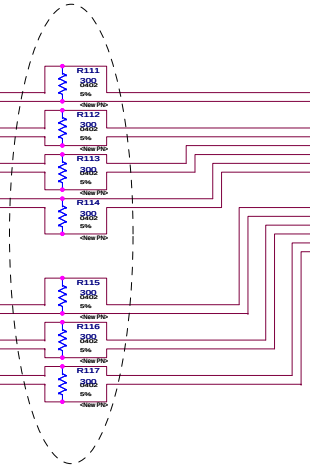
NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

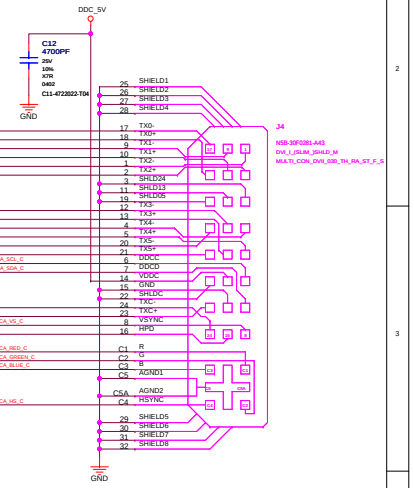
Internal TMDS .. Link A & B

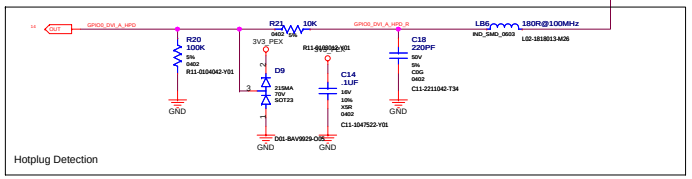
change FBVDDQ to 1V8



add EMI bridge







ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Internal TMDS .. Link A & B

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A
ID	
NAME	
PAGE	
DATE	26-OCT-2007

Internal TMDS .. Link C & D

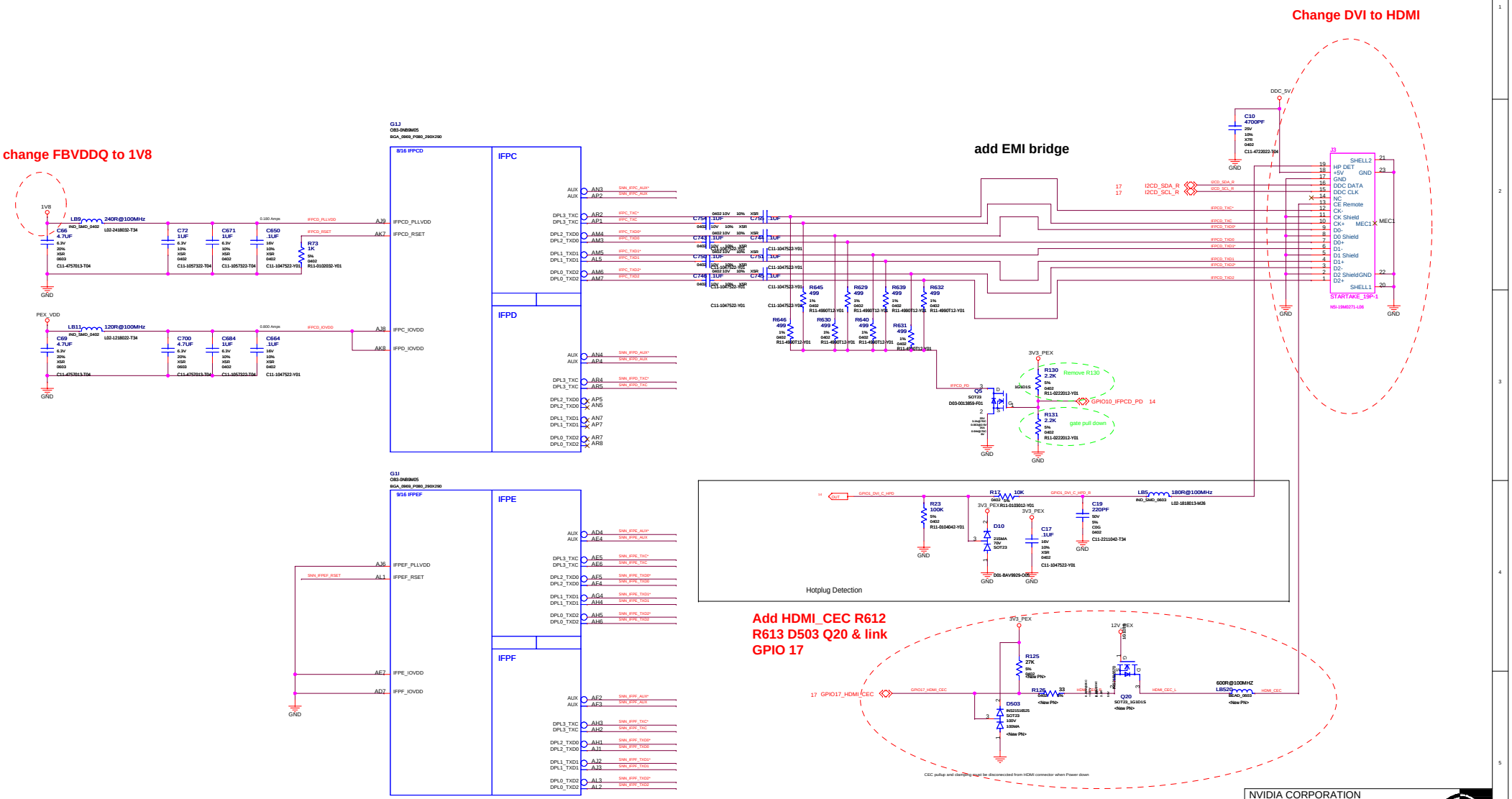
change FBVDDQ to 1V8

add EMI bridge

Change DVI to HDMI

Add HDMI_CEC R612
R613 D503 Q20 & link
GPIO 17

Hotplug Detection



CEC pullup and clamping must be disconnected from HDMI connector when Power down

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Internal TMDS .. Link C & D

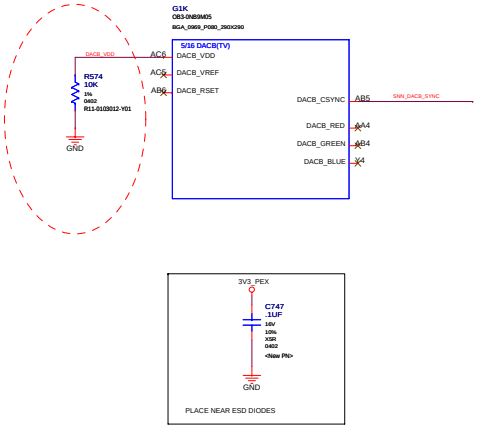
ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

DACB, MINIDIN Connector

Change R574 to 10K



Remove TV-OUT

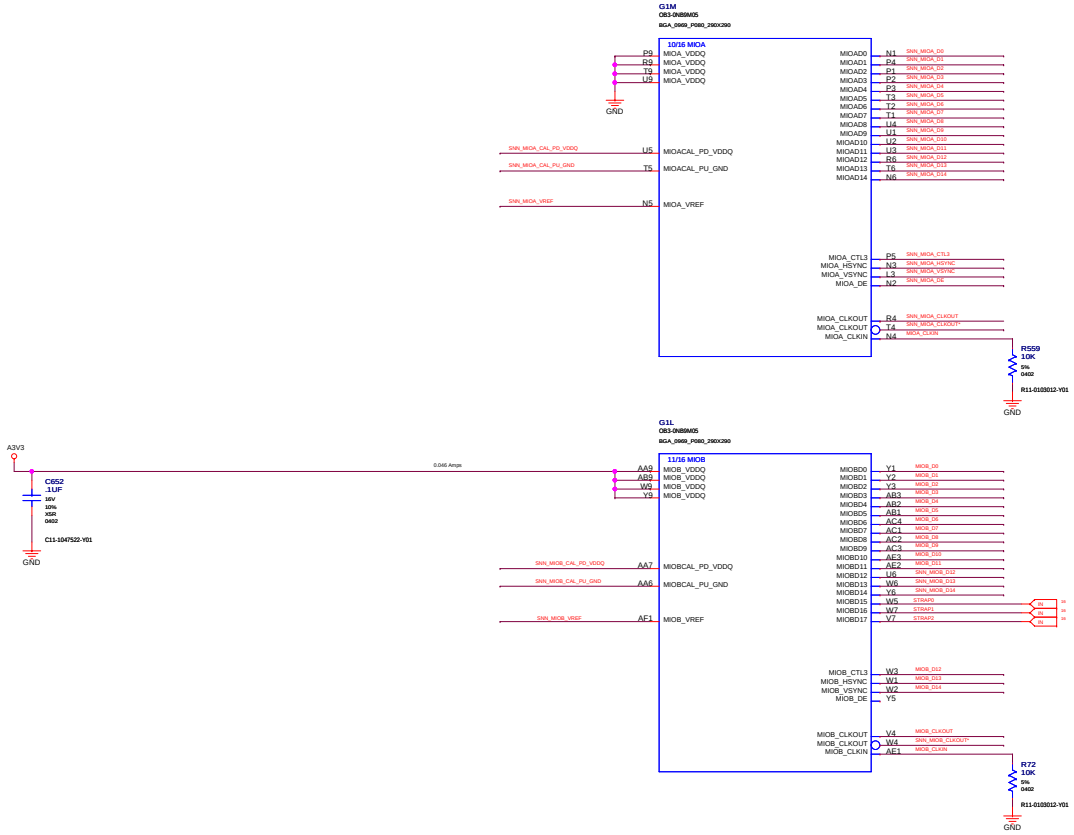
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	DACB, MINIDIN Connector

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

MIOA, MIOB Interface



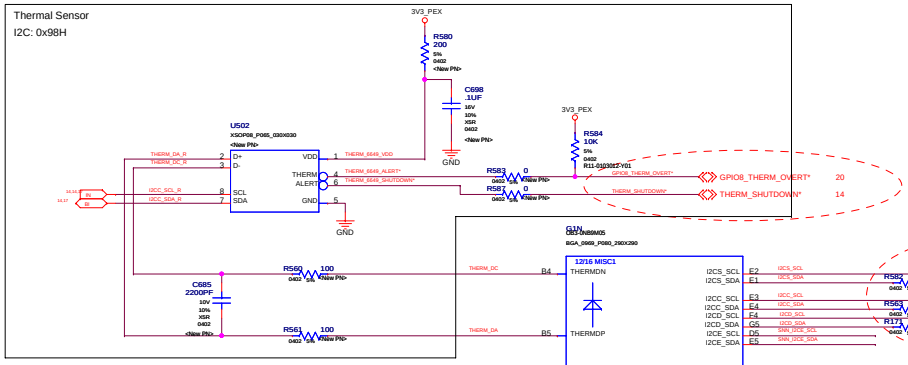
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	MIOA, MIOB Interface

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

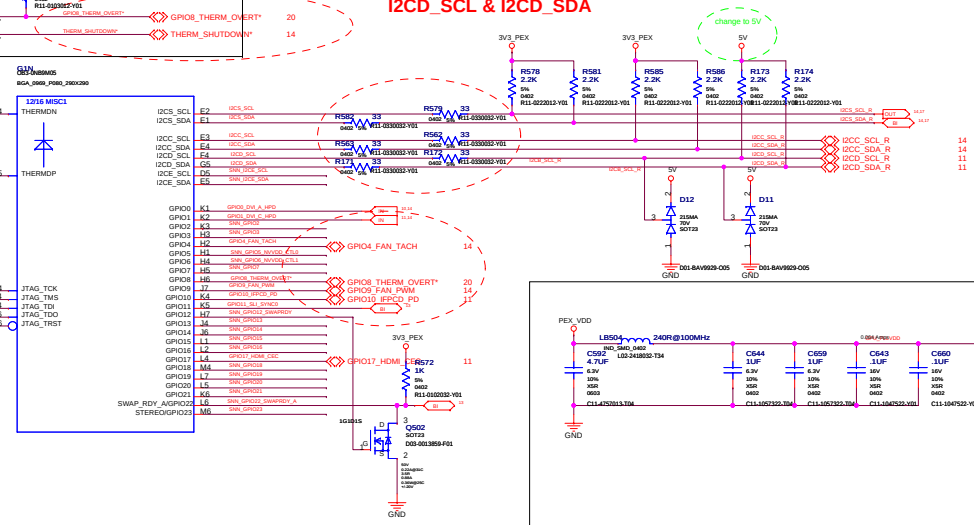
NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

Thermal Sensors, GPIOs, XTAL, JTAG, Fan



Add R171 R172 R173 R174
I2CD_SCL & I2CD_SDA

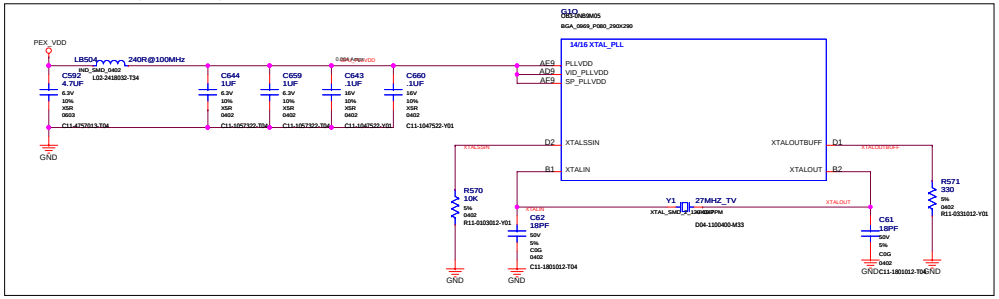


change Thermal protection

GPIO Table

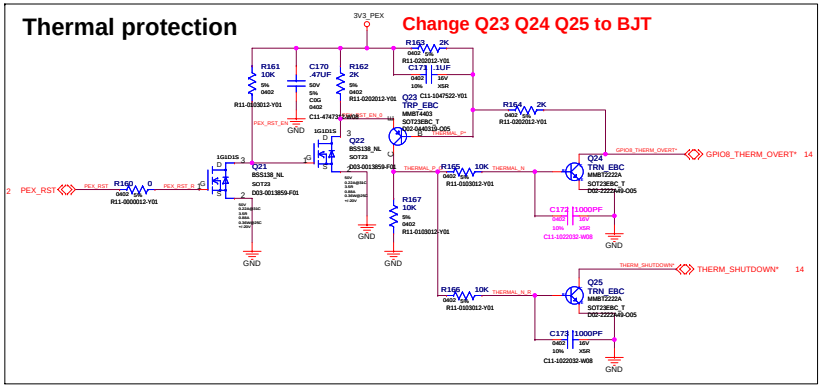
GPIO	I/O	Function
0	IN	DVI SOUTH HOTPLUG DETECT
1	IN	DVI MID HOTPLUG DETECT
2		
3		
4	OUT	PWM FAN
5	OUT	NVVDD VOLTAGE SELECT 0
6	OUT	NVVDD VOLTAGE SELECT 1
7		
8	IN	THERMAL SLOWDOWN
9	IN	FAN TACH
10		
11	IN/OUT	RASTER SYNC 0
12	OUT	SWAP READY OUT
13		
14		
15		
16		
17		
18		
19		
20		
21		
22	IN	SWAP READY IN
23		

XTAL

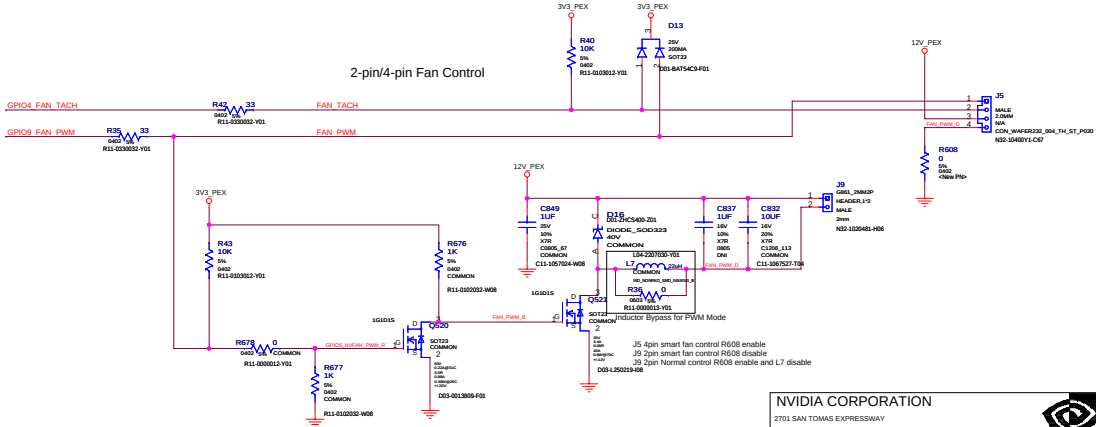


Thermal protection

Change Q23 Q24 Q25 to BJT



2-pin/4-pin Fan Control



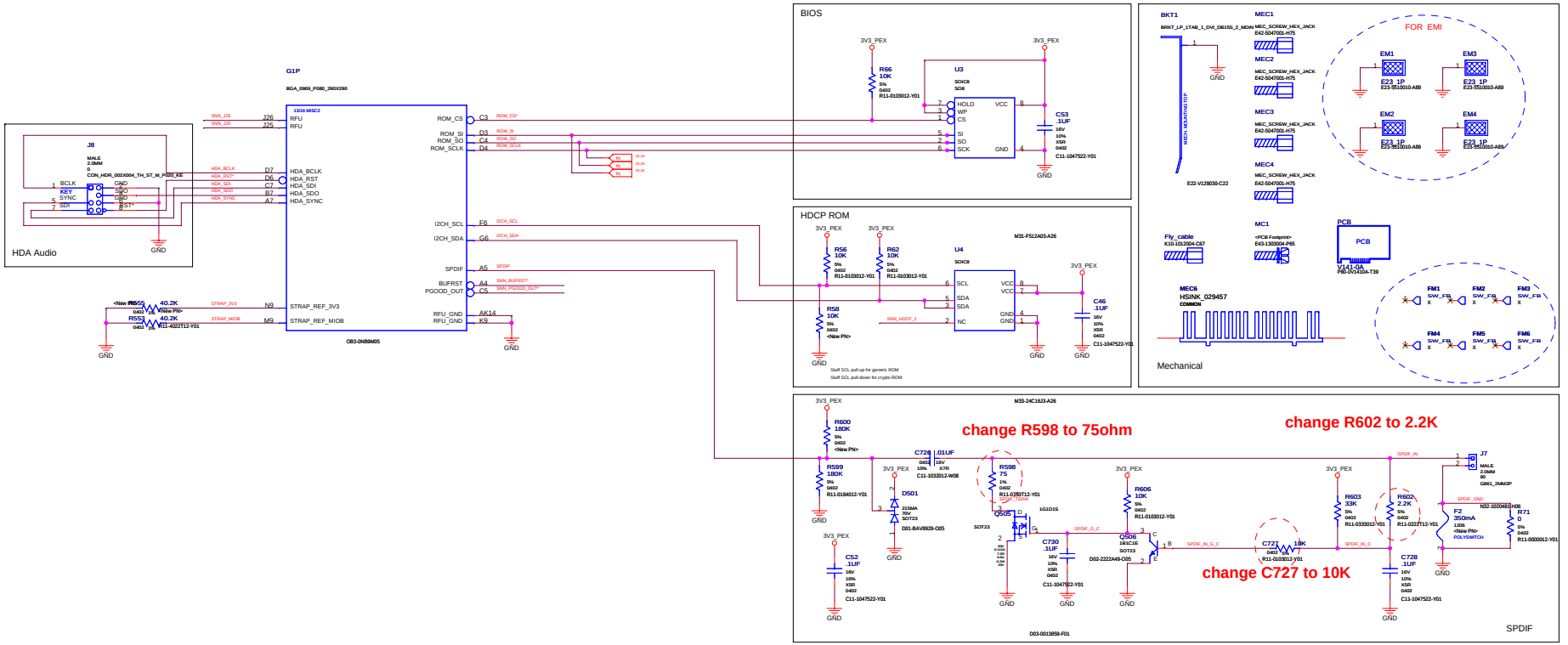
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Thermal Sensors, GPIOs, XTAL, JTAG, Fan

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

BIOS, HDCP, SPDIF, HDA, Mechanical



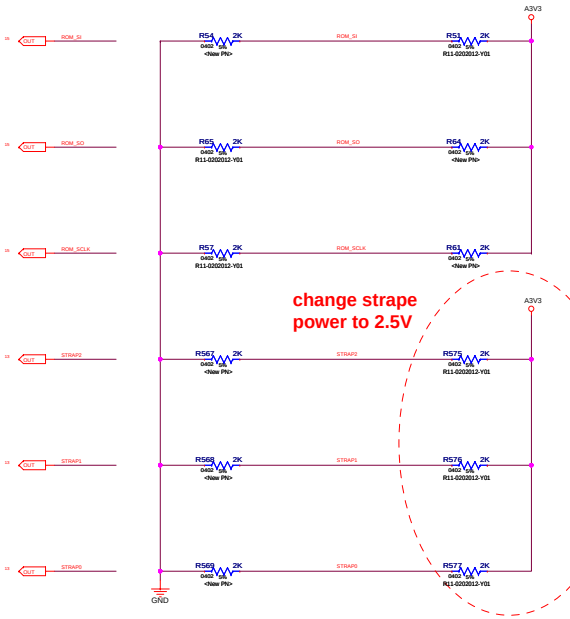
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	BIOS, HDCP, SPDIF, HDA, Mechanical

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

Straps



change strape power to 2.5V

G94 Straps
Multilevel Mode

Bit	Signal	Values
03:	XCLK_277	0 DISABLED 1 ENABLED
02:	TVMODE[2]	000 NTSC_M 001 NTSC_J 010 PAL_M 011 PAL_N 100 PAL_CN 101 PAL_BDGHI 110 RESERVED0 111 RESERVED1
01:	TVMODE[1]	
00:	TVMODE[0]	
03:	PCI_DEVID_EXT	1 G96-300-A1
02:	SUB_VENDOR	0 NO BIOS 1 BIOS
01:	SLOT_CLK_CFG	0 DISABLE 1 ENABLE
00:	PEX_PLL_EN_TERM100	0 DIS 1 EN
03:	RAMCFG[3]	0000 32Mx16/16Mx16 DDR2 128-bit Elpida 0001 16Mx16 DDR2 128-bit Samsung, Micron 0010 16Mx16 DDR2 128-bit Qimonda 0011 16Mx16 DDR2 128-bit Hynix 0100 32Mx16/16Mx16 DDR2 128-bit Nanya 0101 32Mx16 DDR2 128-bit Samsung 0110 32Mx16 DDR2 128-bit Qimonda 0111 32Mx16 DDR2 128-bit Hynix 1000 32Mx16/16Mx16 DDR2 64-bit Elpida 1001 16Mx16 DDR2 64-bit Samsung, Micron 1010 16Mx16 DDR2 64-bit Qimonda 1011 16Mx16 DDR2 64-bit Hynix 1100 32Mx16/16Mx16 DDR2 64-bit Nanya 1101 32Mx16 DDR2 64-bit Samsung 1110 32Mx16 DDR2 64-bit Qimonda 1111 32Mx16 DDR2 64-bit Hynix
02:	RAMCFG[2]	
01:	RAMCFG[1]	
00:	RAMCFG[0]	
03:	PCI_DEVID[3]	0001 G96-300-A1
02:	PCI_DEVID[2]	
01:	PCI_DEVID[1]	
00:	PCI_DEVID[0]	
03:	3GIO_PADCFG_1UG_ADR[3]	0000 DSKTOP_DEFAULT 0001 MOBILE_DEFAULT 0010 MOBILE_NTHRS_LLAMP 0011 MOBILE_NTHRS_LAMP 0100 MOBILE_NTHRS_HAMP 0101 MOBILE_NTHRS_HHAMP 0110 MOBILE_NTHRS_HHHAMP 0111 MOBILE_NTHRS_HHHHAMP 1000 DSKTOP_HTHRS 1001 MOBILE_HTHRS_NAMP 1010 MOBILE_HTHRS_LLAMP 1011 MOBILE_HTHRS_LAMP 1100 MOBILE_HTHRS_HAMP 1101 MOBILE_HTHRS_HHAMP 1110 MOBILE_HTHRS_HHHAMP 1111 MOBILE_HTHRS_HHHHAMP
02:	3GIO_PADCFG_1UG_ADR[2]	
01:	3GIO_PADCFG_1UG_ADR[1]	
00:	3GIO_PADCFG_1UG_ADR[0]	
03:	USER[3]	0000 DEFAULT
02:	USER[2]	
01:	USER[1]	
00:	USER[0]	

Multilevel Straps

5K to GND	0000
10K to GND	0001
15K to GND	0010
20K to GND	0011
25K to GND	0100
30K to GND	0101
35K to GND	0110
45K to GND	0111
5K to VCC	1000
10K to VCC	1001
15K to VCC	1010
20K to VCC	1011
25K to VCC	1100
30K to VCC	1101
35K to VCC	1110
45K to VCC	1111

G94 Straps
Binary-Bringup Mode

Bit	Signal	Values
	SUB_VENDOR	0 NO BIOS 1 BIOS
	SLOT_CLK_CFG	0 DISABLE 1 ENABLE
	3GIO_PADCFG_1UT_ADR[3]	0000 DSKTOP_DEFAULT 0001 MOBILE_DEFAULT 0010 MOBILE_NTHRS_LLAMP 0011 MOBILE_NTHRS_LAMP 0100 MOBILE_NTHRS_HAMP 0101 MOBILE_NTHRS_HHAMP 0110 MOBILE_NTHRS_HHHAMP 0111 MOBILE_NTHRS_HHHHAMP 1000 DSKTOP_HTHRS 1001 MOBILE_HTHRS_NAMP 1010 MOBILE_HTHRS_LLAMP 1011 MOBILE_HTHRS_LAMP 1100 MOBILE_HTHRS_HAMP 1101 MOBILE_HTHRS_HHAMP 1110 MOBILE_HTHRS_HHHAMP 1111 MOBILE_HTHRS_HHHHAMP
	3GIO_PADCFG_1UT_ADR[2]	
	3GIO_PADCFG_1UT_ADR[1]	
	3GIO_PADCFG_1UT_ADR[0]	

G94 Straps
Binary-Production Mode

Bit	Signal	Values
	SLOT_CLK_CFG	0 DISABLE 1 ENABLE
	PCI_DEVID_EXT	10 G96-300-A1
	PCI_DEVID[3]	
	RAMCFG[2]	000 32Mx16/16Mx16 DDR2 Elpida 001 16Mx16 DDR2 Samsung, Micron 010 16Mx16 DDR2 Qimonda 011 16Mx16 DDR2 Hynix 100 32Mx16/16Mx16 DDR2 Nanya 101 32Mx16 DDR2 Samsung 110 32Mx16 DDR2 Qimonda 111 32Mx16 DDR2 Hynix
	RAMCFG[1]	
	RAMCFG[0]	

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

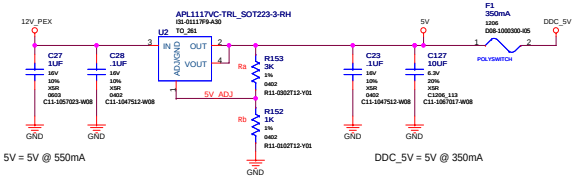
ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

Power Supply I: 1V8, A3V3, 5V, IFP_IOVDD

5V



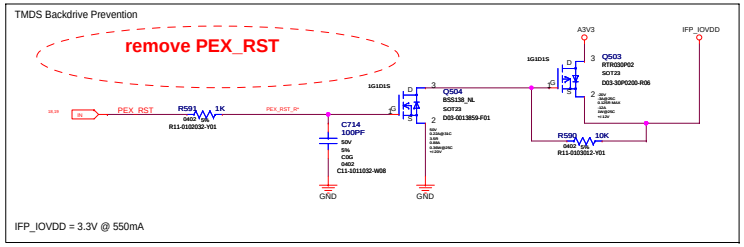
5V = 5V @ 550mA

DDC_5V = 5V @ 350mA

Vout = VRef * [1+(Ra/Rb)]

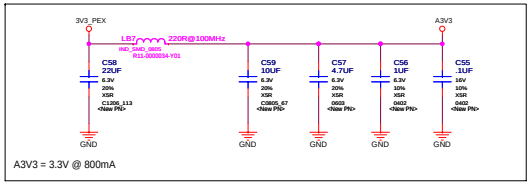
5V = 1.25V * [1+(3000/1000)]

IFP_IOVDD



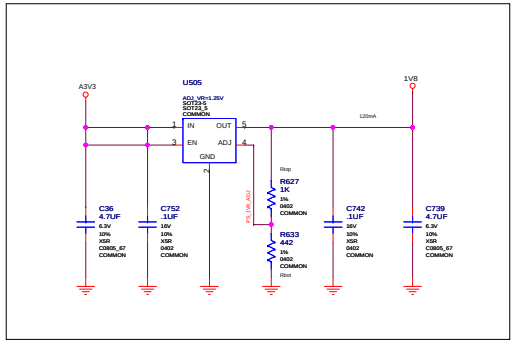
IFP_IOVDD = 3.3V @ 550mA

A3V3



A3V3 = 3.3V @ 800mA

1V8



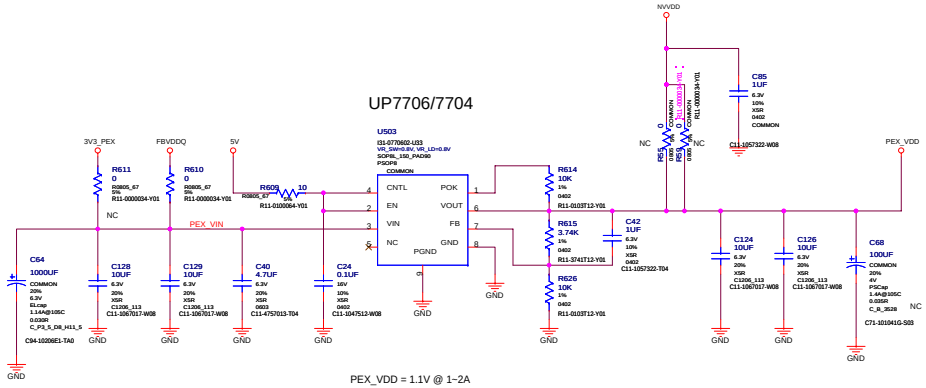
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Power Supply I: 2V5, 3V3, 5V, IFP_IOVDD

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

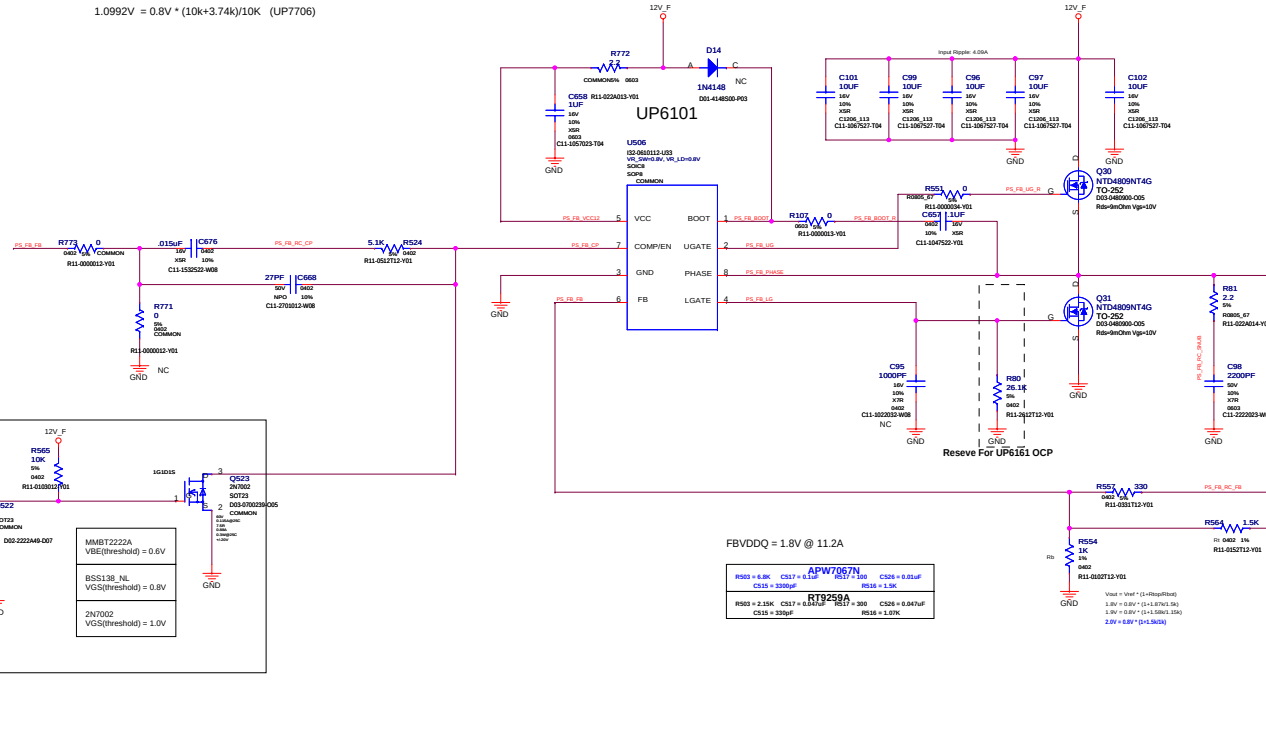
Power Supply II: FBVDDQ,PEX_VDD

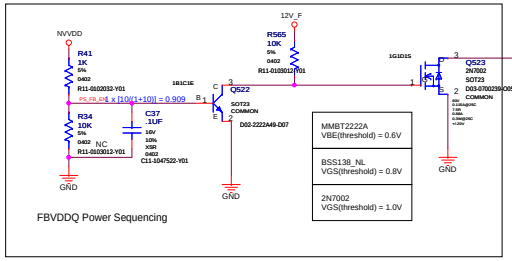


PEX_VDD = 1.1V @ 1~2A

Vout = Vref * (R626+R615)/R626 (UP7706)

1.0992V = 0.8V * (10k+3.74k)/10K (UP7706)





FBVDDQ = 1.8V @ 11.2A

APW7067N	
R503 = 6.8K	CS17 = 0.1uF
CS15 = 3300pF	RS17 = 100
	CS26 = 0.01uF
	RS16 = 1.5K

RT9259A	
R503 = 2.15K	CS17 = 0.047uF
CS15 = 3300pF	RS17 = 300
	CS26 = 0.047uF
	RS16 = 1.07K

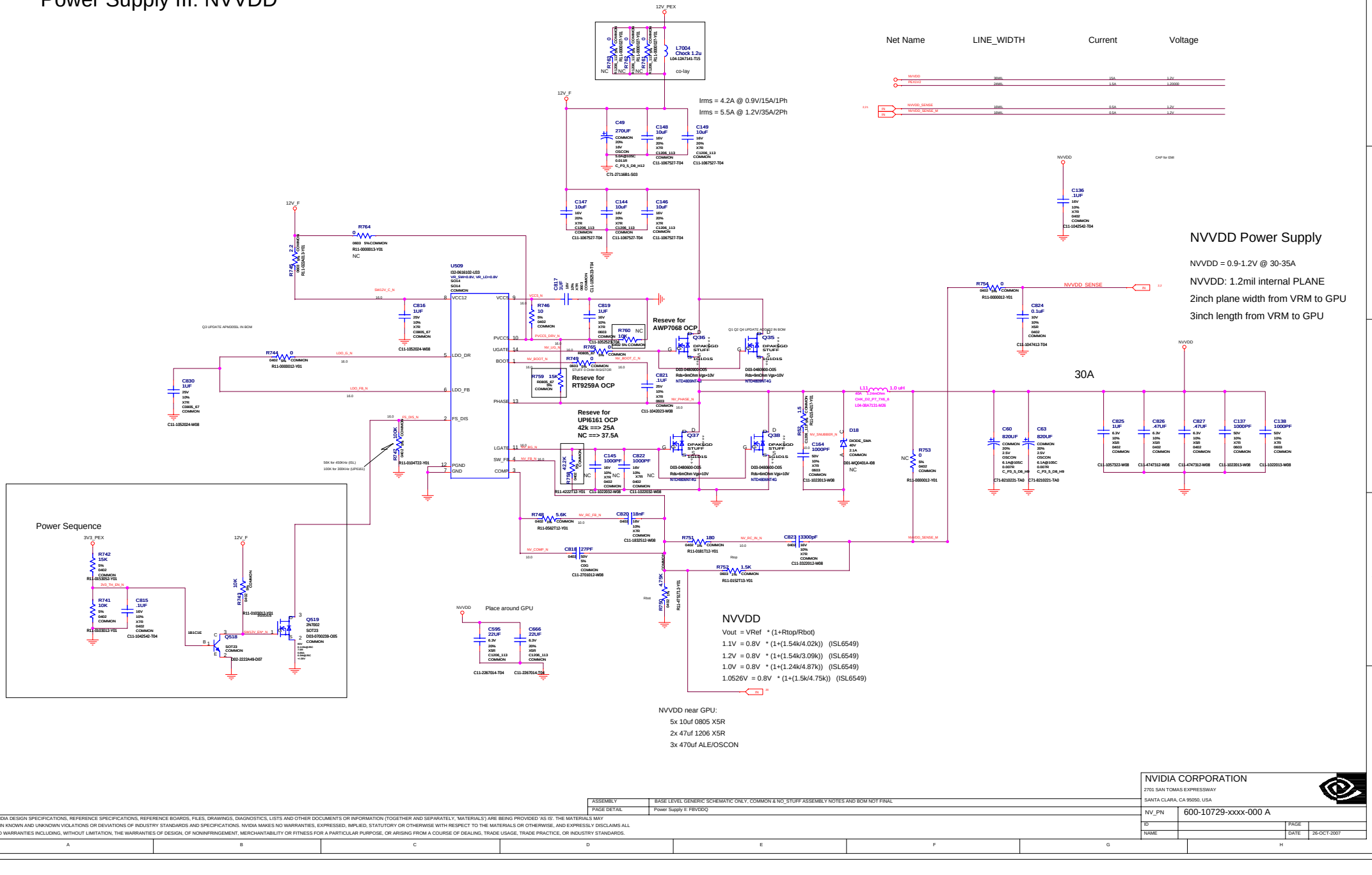
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Power Supply II: FBVDDQ

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007

Power Supply III: NVVDD



Net Name | LINE_WIDTH | Current | Voltage

NVVDD Power Supply

NVVDD = 0.9-1.2V @ 30-35A

NVVDD: 1.2mil internal PLANE

2inch plane width from VRM to GPU

3inch length from VRM to GPU

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	Power Supply II: FBVDDQ

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

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

NV_PN	600-10729-xxxx-000 A		
ID		PAGE	
NAME		DATE	26-OCT-2007