

P2132-A01

NVG GK208 DDR3 64BIT

DVI-I/DVI-D + HDMI + VGA

TABLE OF CONTENTS


Page	Description
1	Table of Contents
2	PCI EXPRESS
3	GPU FRAME BUFFER: PARTITION A
4	DDR3 Memories
5	DECOUPLING FOR CORE POWER_TOP
6	DACA VGA
7	IFPAB TMDS
8	IFPC HDMI
9	UNUSED IFPD, IFPE & IFPF
10	MISC INTERFACES
11	STRAPS & FAN
12	POWER SUPPLY I: PEXVDD, 5V
13	POWER SUPPLY II: FBVDDQ
14	POWER SUPPLY III: NVVDD
15	DECOUPLING FOR CORE POWER_BOTTOM

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	BASIC LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	Table of Contents

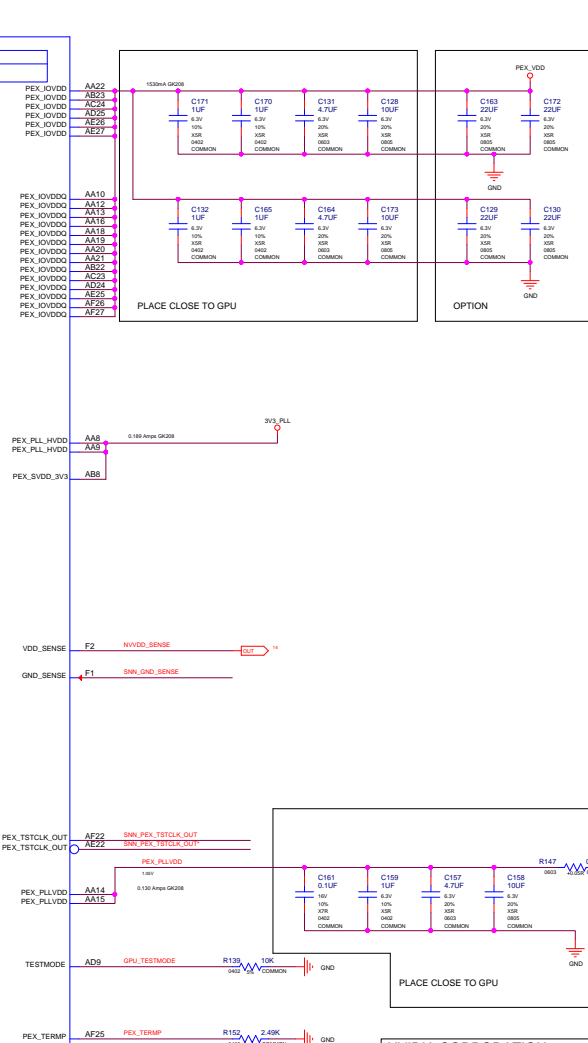
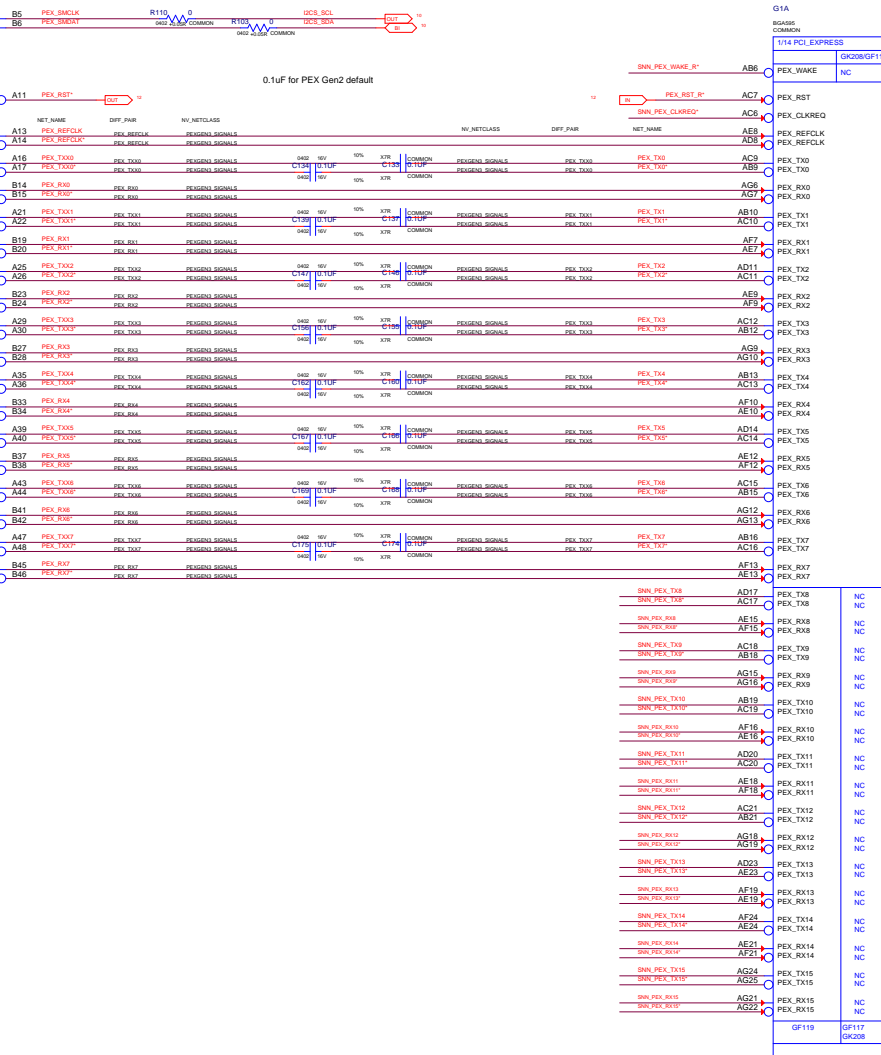
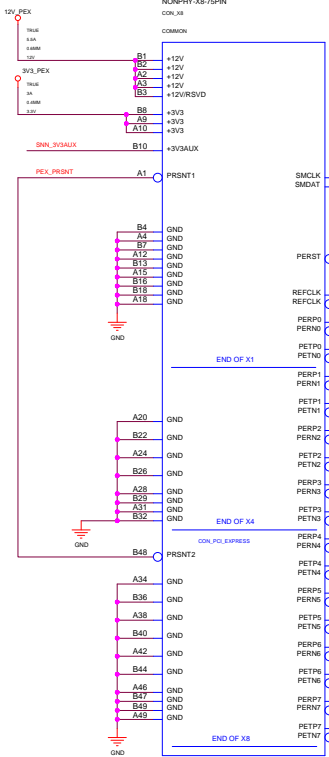
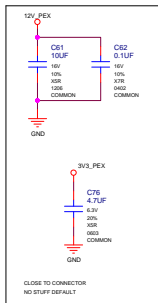
NVIDIA CORPORATION

2701 SAN TOMAS EXPRESSWAY  
SANTA CLARA, CA 95050, USA



NV_PN	600-12132-BASE-QS1		
PCB REV	P2132-A01	PAGE	1 OF 15
BOM REV	A	DATE	14-MAR-2013

## PCI EXPRESS



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	PCI EXPRESS

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARD MODELS, 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 NON-INFRINGEMENT, 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

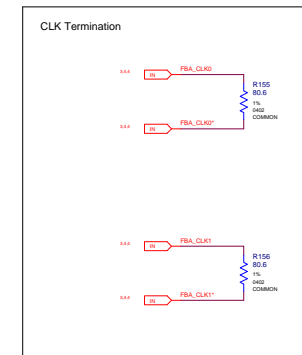
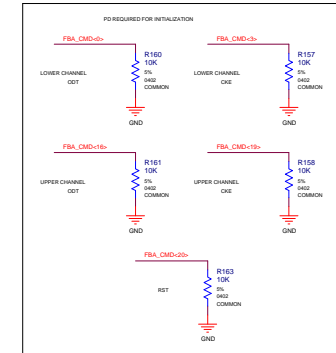
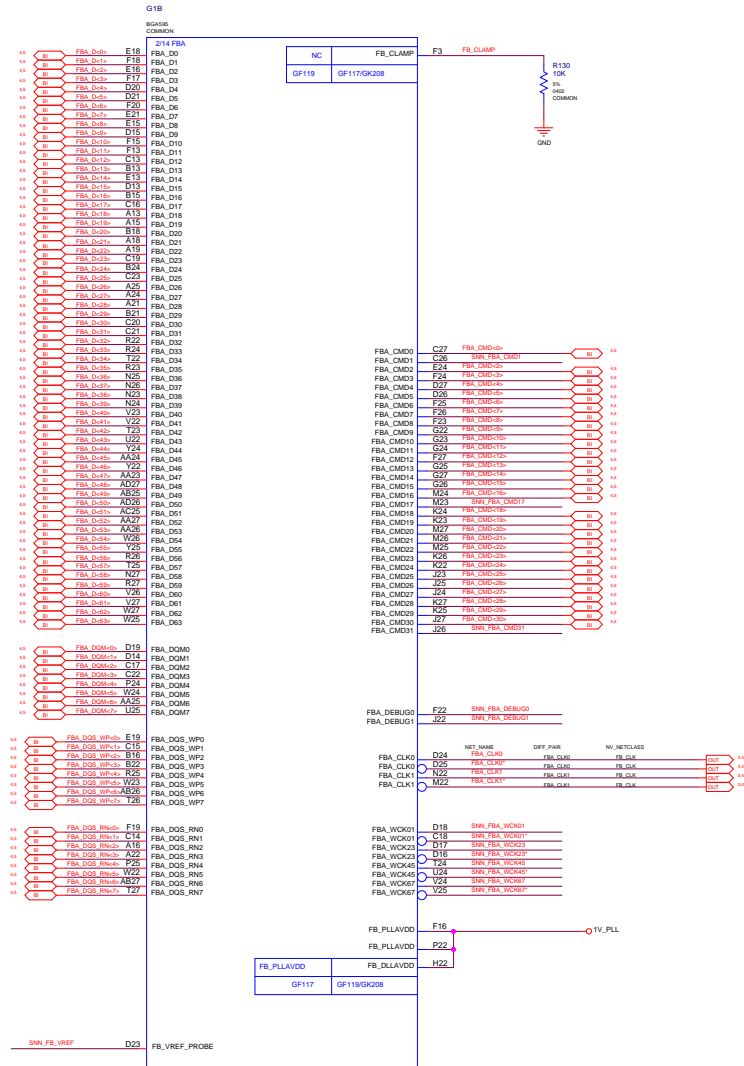
SANTA CLARA, CA 95050, USA	
NV_PN	600-12132-BASE-QS1

PCB REV	P2132-A01
---------	-----------

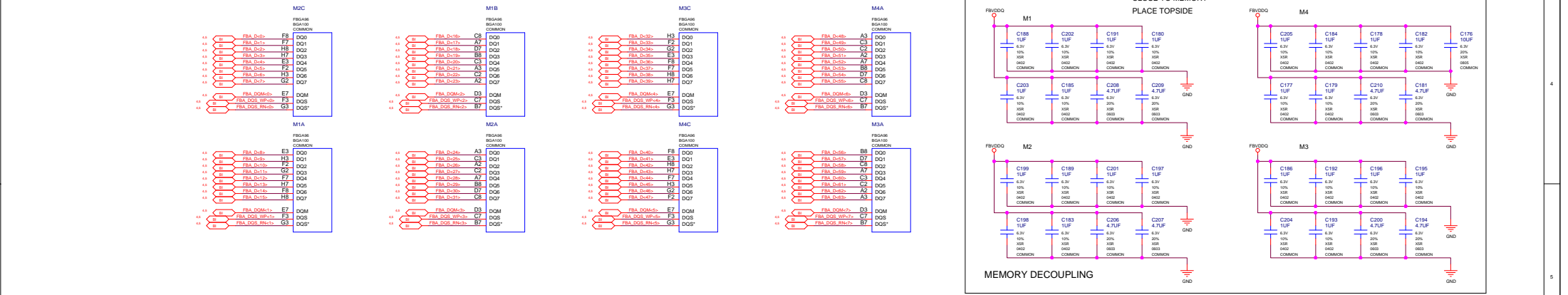
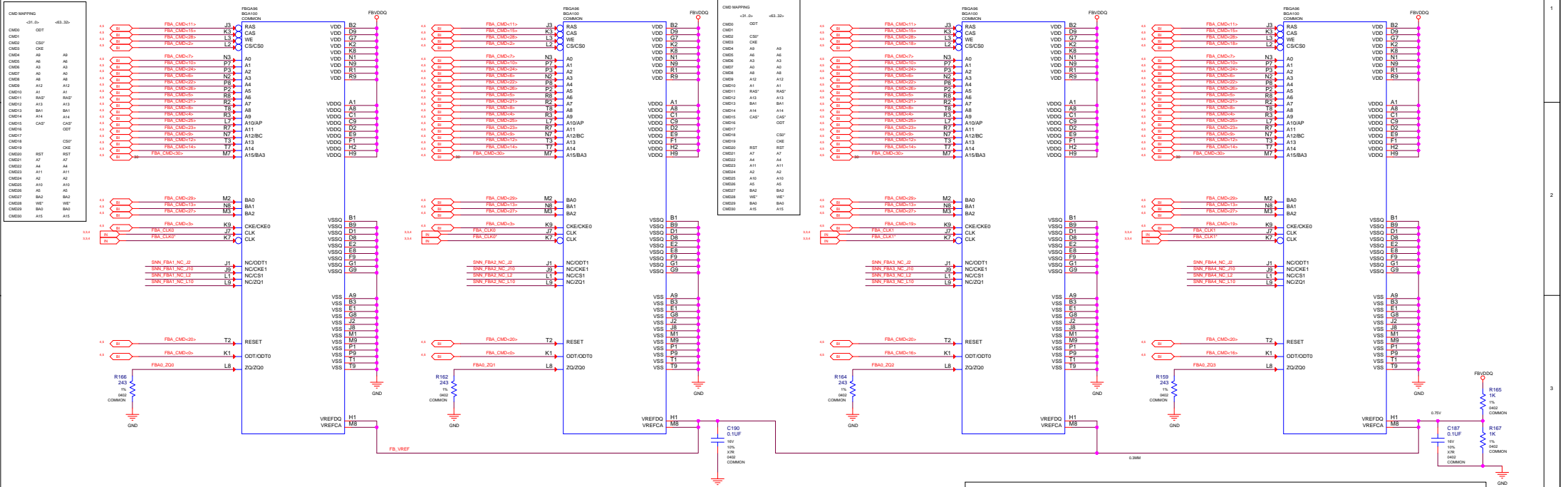
BOM REV	A
---------	---

PAGE	2 OF 15
DATE	14-MAR-2014

## GPU FRAME BUFFER: PARTITION A



DDR3 Memories



ASSEMBLY

PAGE DETAIL

BASE LEVEL GENERIC SCHEMATIC ONLY

DDR3 Memories

NVIDIA CORPORATION

2701 SAN TOMAS EXPRESSWAY

SANTA CLARA, CA 95050, USA

INV\_PN

600-12132-BASE-QS1

PCB REV

P2132-001

BOB REV

A

PAGE

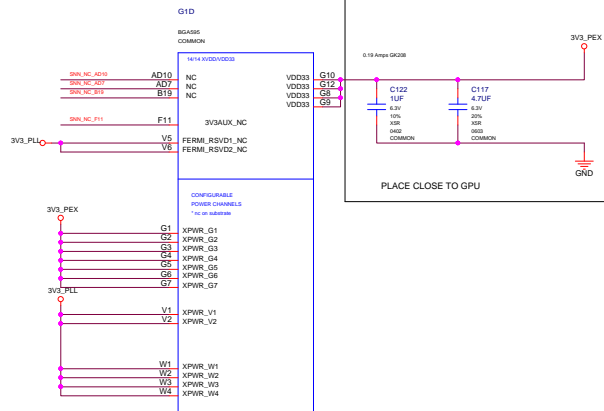
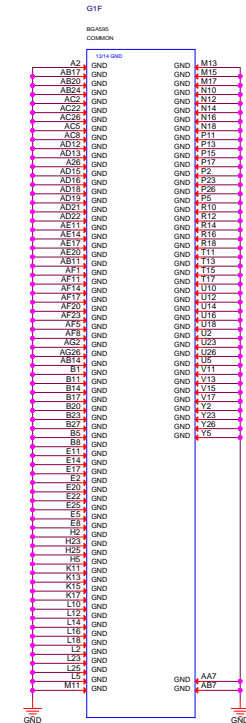
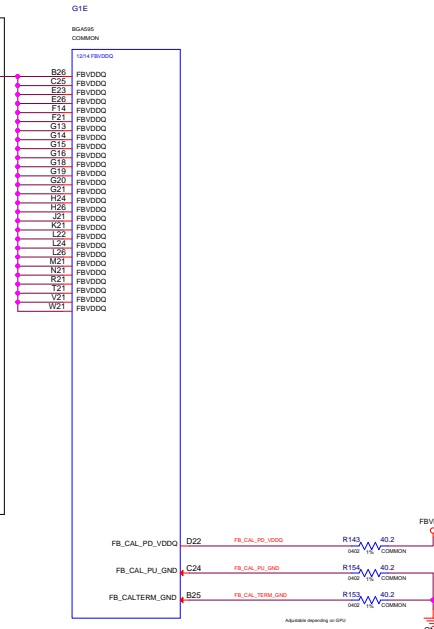
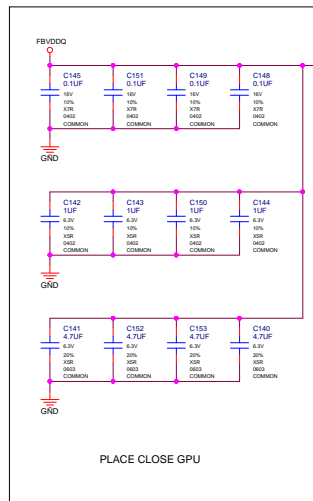
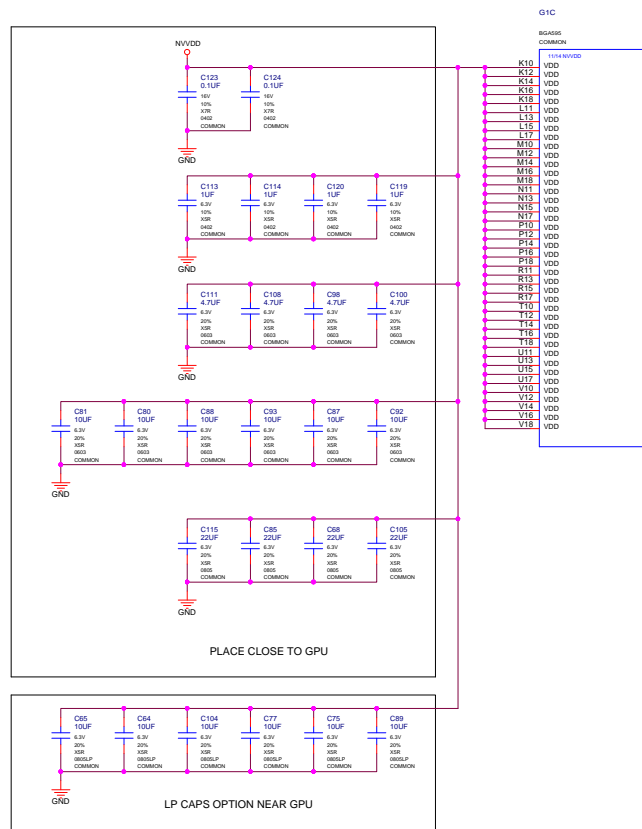
4 OF 15

DATE

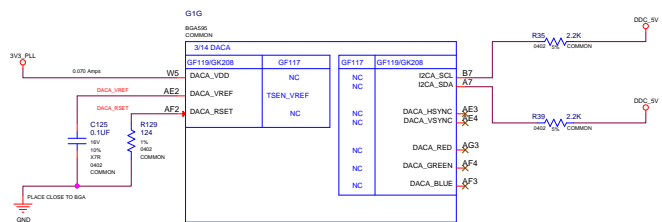
14-MAR-2013

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS (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 NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

## DECOUPLING FOR CORE POWER\_TOP



## DACA VGA



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	DACA VGA

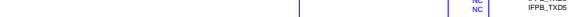
NVIDIA CORPORATION

2701 SAN TOMAS EXPRESSWAY  
SANTA CLARA, CA 95050, USA



NV_PN	600-12132-BASE-QS1		
PCB REV	P2132-A01	PAGE	6 OF 15
BOM REV	A	DATE	14-MAR-2013

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 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 CUSTOMS.



PAGE DETAIL	IFPAB TMDS
-------------	------------

3701 SAN TOMAS EXPRESSWAY

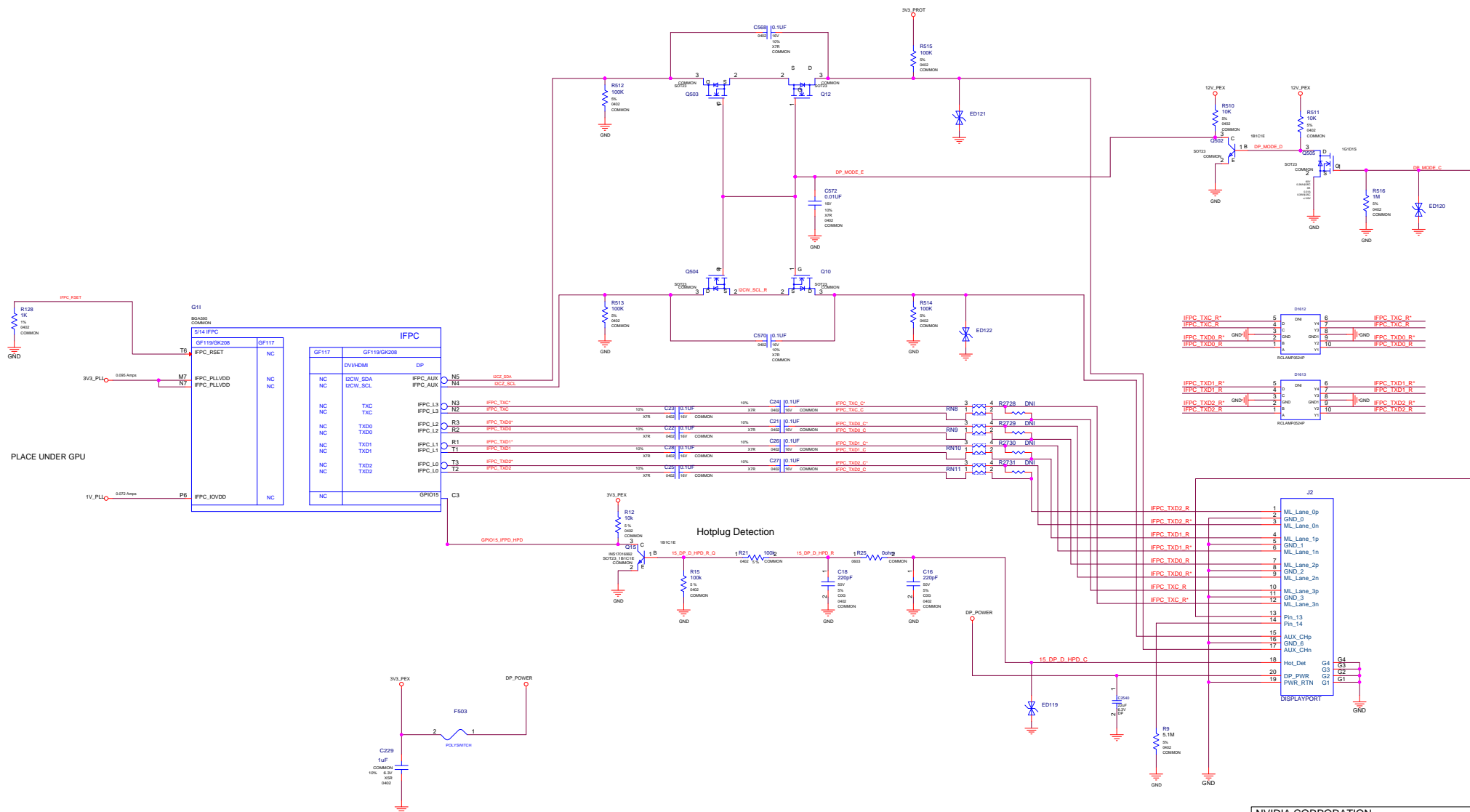
SANTA CLARA, CA 95050, USA

NV_PN	600-12132-BASE-QS1
-------	--------------------

PCB REV	P2132-A01	PAGE	7 OF 15
---------	-----------	------	---------

BOM REV	A	DATE	14-MAR-2013
---------	---	------	-------------





ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	IFPC HDMI

NVIDIA CORPORATION

2701 SAN TOMAS EXPRESSWAY

SANTA CLARA, CA 95050, USA

NV_PN	600-12132-BASE-QS1
-------	--------------------

RCB REV	P2132-ADD
---------	-----------

PCB REV	F2132-A01
BOM REV	A

PAGE 18 OF 15

PAGE	8 OF 15
DATE	14-MAR-2013

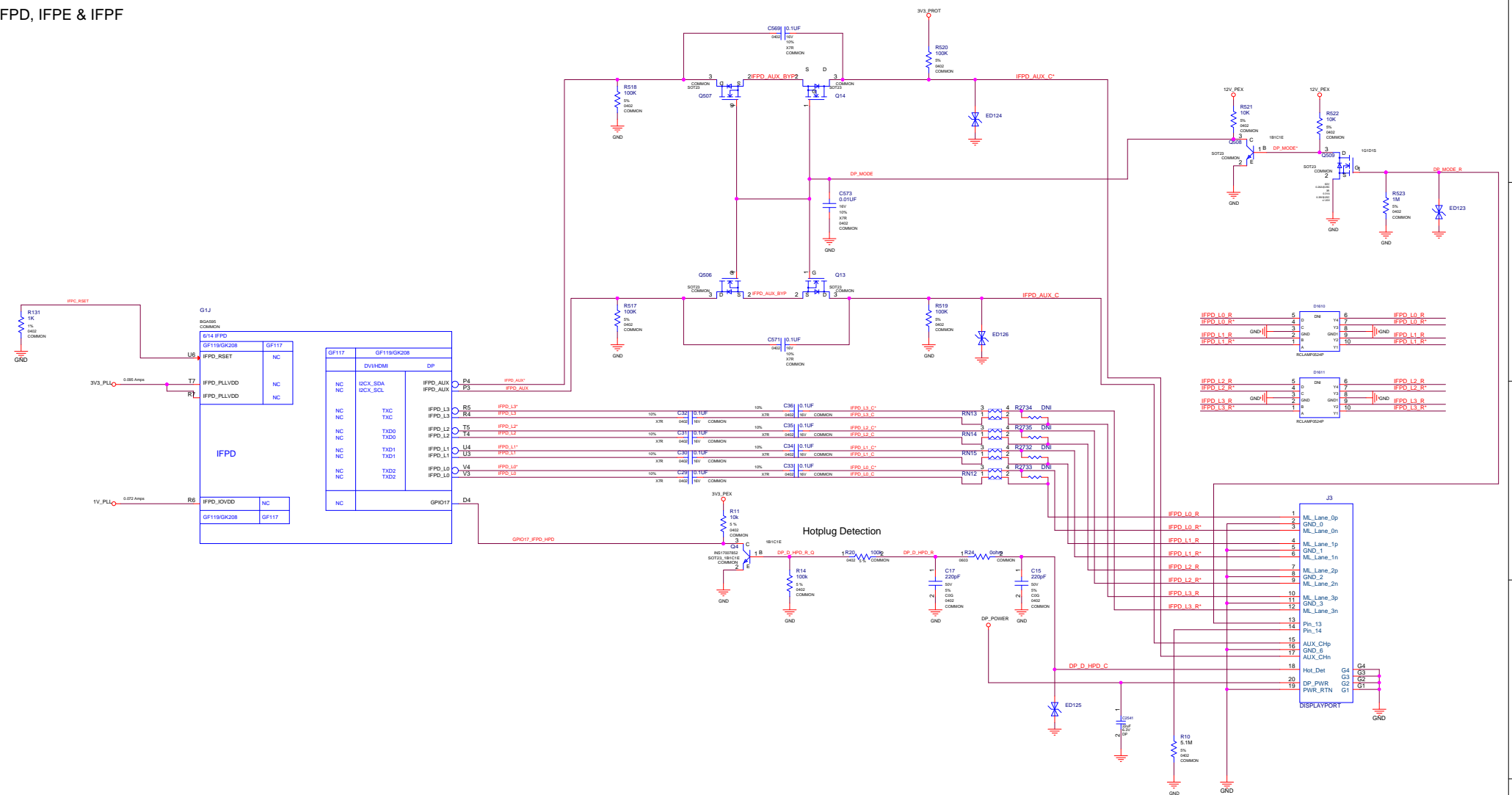
	DATE	14-NOV-2012
--	------	-------------




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 OTHERS. NVIDIA 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 CUSTOMS.



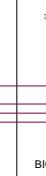
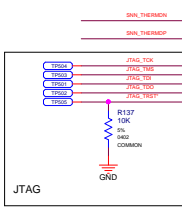
UNUSED IFPD, IFPE & IFPF



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	UNUSED IFPD, IFPE & IFPF

<b>NVIDIA CORPORATION</b> 2701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050, USA			
<b>NV_PN</b> <b>600-12132-BASE-QS1</b>			
PCB REV	P2132-A01	PAGE	9 OF 15
BOM REV	A	DATE	14-MAR-2013

A	B	C	D	E	F	G	
---	---	---	---	---	---	---	--



SMART FAN STRAP		
XTAL_SSIN	XTAL_OUTBLUFF	Inverted PWM%
0 0	0 (100% HIGH)	
0 1	33 (67% HIGH)	
1 0	50 (50% HIGH)	
1 1	67 (33% HIGH)	

NVIDIA CORPORATION

2701 SAN TOMAS EXPRESSWAY

SANTA CLARA, CA 95050, USA

NV_PN	600-12132-BASE-QS1
-------	--------------------

PCB REV	P2132-A01
---------	-----------

BOM REV	A
---------	---

PAGE	10 OF 15
------	----------

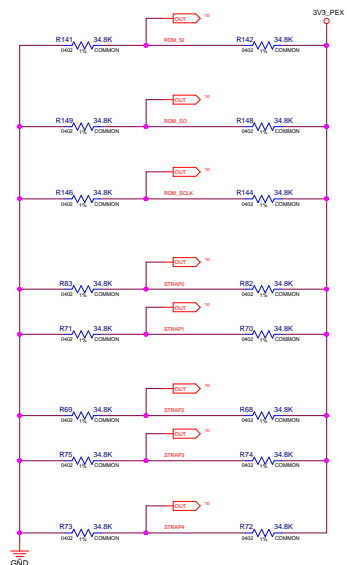
DATE	14-MAR-2013
------	-------------

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS (OR INFORMATION (WHETHER OR NOT SEPARATELY, MATERIALS) ARE BEING PROVIDED) AS IS. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VULNERABILITIES OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY (OR OTHERWISE WITH RESPECT TO THE MATERIALS) 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.

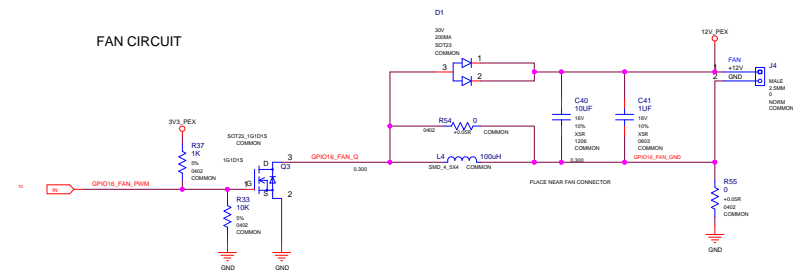
ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	MISC INTERFACES

0000	5.1K to GND	0000	5.1K to VCC
0001	10K to GND	0001	10K to VCC
0010	15K to GND	0010	15K to VCC
0011	20K to GND	0011	20K to VCC
0100	24.9K to GND	0100	24.9K to VCC
0101	30.1K to GND	0101	30.1K to VCC
0110	34.9K to GND	0110	34.9K to VCC
0111	45.3K to GND	0111	45.3K to VCC

Bit Signal	Values
------------	--------

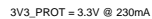


Bit Signal		Values			
03	RAMCFG[2]	0000	Reserved		
		0001	256Mh DCR3 X16 64kb Memory		ROM_S1
03	RAMCFG[2]	0010	256Mh DCR3 X16 64k Memory		
01	RAMCFG[2]	0011	256Mh DCR3 X16 64k Samsung		
		0101	128Mh DCR3 X16 64k Memory		
		0110	128Mh DCR3 X16 64k Hynix		
		0111	128Mh DCR3 X16 64k Samsung		
03	FB[0]	01	USB0		ROM_SO
03	FB[0]	10	USB0H		
	SMB_ALT_ADDR	0	DISABLED	1	ENABLED
	VGA_DEVICE	0	DISABLED	1	ENABLED
03	PCI_DEVICE_EXT	SWU0	0	SWU1	TBD
	SUB_VENDOR	0	NO_BIOS	1	BIOS
01	PCI_DEVICE_EXT_BITS	SWU0	0	SWU1	TBD
					ROM_SCL1
00	PEX_FLT_EN_TERMIN0	0	DISABLED	1	ENABLED
00	USER[0]	0000	NOT		Strap0
00	USER[0]				
01	USER[0]				
01	USER[0]				
00	GPIO_PCFG0_LUT_ADDR[0]	0000	GPIO_TOP_DEFAULT	1000	GPIO_TOP_ITHRES
		0001	MOBILE_ITHRES_LAMP	1001	MOBILE_ITHRES_JNAMP
00	GPIO_PCFG0_LUT_ADDR[0]	0010	MOBILE_ITHRES_LAMP	1100	MOBILE_ITHRES_LAMP
01	GPIO_PCFG0_LUT_ADDR[0]	0011	MOBILE_ITHRES_LAMP	1011	MOBILE_ITHRES_LAMP
		0100	MOBILE_ITHRES_JNAMP	1101	MOBILE_ITHRES_JNAMP
00	GPIO_PCFG0_LUT_ADDR[0]	0101	MOBILE_ITHRES_JNAMP	1100	MOBILE_ITHRES_JNAMP
		0110	MOBILE_ITHRES_JNAMP	1110	MOBILE_ITHRES_JNAMP
		0111	MOBILE_ITHRES_JNAMP	1111	MOBILE_ITHRES_JNAMP
00	PCI_DEVICE0	SWU0	DIS00		Strap2
02	PCI_DEVICE0				
01	PCI_DEVICE0				
00	PCI_DEVICE0				
00	SORL_EXPOSED	0	DISABLED	1	ENABLED
00	SORL_EXPOSED	0	DISABLED	1	ENABLED
01	SORL_EXPOSED	0	DISABLED	1	ENABLED
00	SORH_EXPOSED	0	DISABLED	1	ENABLED
					Strap3
02	PCI_SPEED_CHANGE_GEN0	0	DISABLED	1	ENABLED
	PCI_MAX_SPEED	0	GEN0	1	GEN2
00	DP_FLT_VDD_3V3	0	USER[0]	1	USER[0]
					Strap4



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 NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	POWER SUPPLY I: PEXVDD, 5V

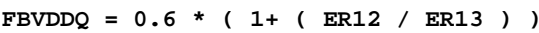


SANTA CLARA, CA 95050, USA

NV_PN	600-12132-BASE-QS1		
PCB REV	P2132-A01	PAGE	12 OF 15
BOM REV	A	DATE	14-MAR-2013

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.

A	B	C	D	E	F	G	
---	---	---	---	---	---	---	--



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 NON-INFRINGEMENT, 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
PAGE DETAIL	POWER SUPPLY II: FBVDDQ

### NVDD Power Sequencing

Bootup Voltage set to 0.9000V

$$0.8V = 0.6V * (1 + 1.18k/3.4k)$$

values for Rb1, Rb2  
Rb3, Rb4 and Rb5  
will be calculated based  
on the needed voltages

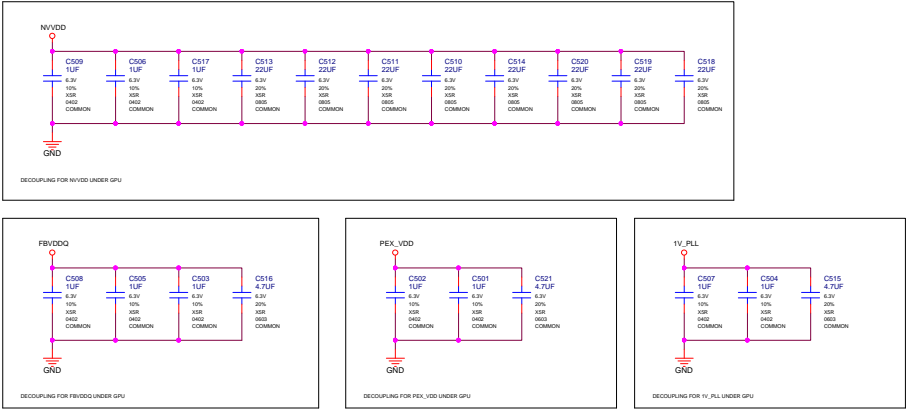
Vref	Rb1	Rb2	Rb3	Rb4	Rb5
0.6V	60.4k	29.4k	14.3k	7.15k	3.57k

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY
PAGE DETAIL	POWER SUPPLY III: NVDD

NV_PN	600-12132-BASE-QS1		
PCB REV	P2132-A01	PAGE	14 OF 15
BOM REV	A	DATE	14-MAR-2013

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 NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

DECOUPLING FOR CORE POWER\_BOTTOM



ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS (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

PAGE DETAIL

BASE LEVEL GENERIC SCHEMATIC ONLY

DECOUPLING FOR CORE POWER\_BOTTOM

NVIDIA CORPORATION

2701 SAN TOMAS EXPRESSWAY

SANTA CLARA, CA 95050, USA

NV\_PN

PCB REV

BOX REV

600-12132-BASE-QS1

P2132-A01

A

PAGE

DATE

15 OF 15

14-MAR-2013