P403-A01 DESIGN -- G84-200, 256 MB DDR2,DVI-I, VGA, HDTV

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SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-10403-0000-100	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	SKU0010	600-10403-0010-100	P403-A00 G86-300 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
2	SKU0001	600-10403-0001-100	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
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>

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ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	TABLE OF CONTENTS & REVISION HISTORY

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

NV_PN	600-10403-0001-100 A		
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NAME	hlu	DATE	11-DEC-2006

16X PCIe Interface

3V3_PEX — Place Close to fingers

C43 .01UF 25V 10% X7R 0402 COMMON
C42 .1UF 16V 10% X7R 0402 COMMON
C790 10UF 16V 20% X5R 1206 NO STUFF
GND

12V_PEX
C795 .01UF 25V 10% X7R 0402 COMMON
C796 .1UF 16V 10% X7R 0402 COMMON
C40 10UF 16V 20% X5R 1206 NO STUFF
GND

R575 0 5% 0402 COMMON

CN2 NONPHY-X16
CON_X16
CON_PCIEXP_X16_EDGE
NO STUFF

12V_PEX	B1	+12V	TRST* JTAG1	B9
	B2	+12V	TCLK JTAG2	A5
	A2	+12V	TDI JTAG3	A6
	A3	+12V	TDO JTAG4	A7
	B3	+12V/RSVD	TMS JTAG5	A8
3V3_PEX	B8	+3V3		
	A9	+3V3		
	A10	+3V3		
3V3AUX	B10	+3V3AUX		
	A1	PRSNT1	SMCLK	B5
SNN_PE_PRSNT2_A	B17	PRSNT2	SMDAT	B6
SNN_PE_RSVD2	B12	RSVD	WAKE	B11
	B4	GND	PERST	A11
	A4	GND	REFCLK	A13
	B7	GND	REFCLK*	A14
	A12	GND	PERP0	A16
	B13	GND	PERN0	A17
	A15	GND	PETP0	B14
	B16	GND	PETN0	B15
	B18	GND	PERP1	A21
	A18	GND	PERN1	A22
SNN_PE_PRSNT2_B	B31	PRSNT2	PETP1	B19
SNN_PE_RSVD3	A19	RSVD	PETN1	B20
SNN_PE_RSVD4	B30	RSVD	PERP2	A25
SNN_PE_RSVD5	A32	RSVD	PERN2	A26
	A20	GND	PETP2	B23
	B21	GND	PETN2	B24
	B22	GND	PERP3	A29
	A23	GND	PERN3	A30
	A24	GND	PETP3	B27
	B25	GND	PETN3	B28
	B26	GND	PERP4	A35
	A27	GND	PERN4	A36
	A28	GND	PETP4	B33
	B29	GND	PETN4	B34
	A31	GND	PERP5	A39
	B32	GND	PERN5	A40
SNN_PE_PRSNT2_C	B48	PRSNT2	PETP5	B37
SNN_PE_RSVD6	A33	RSVD	PETN5	B38
	A34	GND	PERP6	A43
	B35	GND	PERN6	A44
	B36	GND	PETP6	B41
	A37	GND	PETN6	B42
	A38	GND	PERP7	A47
	B39	GND	PERN7	A48
	B40	GND	PETP7	B45
	A41	GND	PETN7	B46
	A42	GND	PERP8	A52
	B43	GND	PERN8	A53
	B44	GND	PETP8	B50
	A45	GND	PETN8	B51
	A46	GND	PERP9	A56
	B47	GND	PERN9	A57
	B49	GND	PETP9	B54
	A49	GND	PETN9	B55
PRSNT	B81	PRSNT2	PERP10	A60
SNN_PE_RSVD7	A50	RSVD	PERN10	A61
SNN_PE_RSVD8	B82	RSVD	PETP10	B58
	A51	GND	PETN10	B59
	B52	GND	PERP11	A64
	B53	GND	PERN11	A65
	A54	GND	PETP11	B62
	A55	GND	PETN11	B63
	B56	GND	PERP12	A68
	B57	GND	PERN12	A69
	A58	GND	PETP12	B66
	A59	GND	PETN12	B67
	B60	GND	PERP13	A72
	B61	GND	PERN13	A73
	A62	GND	PETP13	B70
	A63	GND	PETN13	B71
	B64	GND	PERP14	A76
	B65	GND	PERN14	A77
	A66	GND	PETP14	B74
	A67	GND	PETN14	B75
	B68	GND	PERP15	A80
	B69	GND	PERN15	A81
	A70	GND	PETP15	B78
	A71	GND	PETN15	B79
	B72	GND		
	B73	GND		
	A74	GND		
	A75	GND		
	B76	GND		
	B77	GND		
	A78	GND		
	A79	GND		
	B80	GND		
	A82	GND		

END OF X1
END OF X4
END OF X8
END OF X16

JTAG_TRST* 0.05R_MAX RP501 0 0402X4 NO STUFF → OUT 16.2A<
JTAG_TCLK 0.05R_MAX RP501 0 0402X4 NO STUFF → IN 16.2A>
JTAG_TDI 0.05R_MAX RP501 0 0402X4 NO STUFF → OUT 16.2A<
JTAG_TDO 0.05R_MAX RP501 0 0402X4 NO STUFF → IN 16.2A>
JTAG_TMS R572 0 0402 5% NO STUFF 0.05R_MAX → BI 16.2A<>

PEX_I2CS_SCL R28 0 0402 5% NO STUFF I2CS_SCL → OUT 2.1C< 16.1E>
PEX_I2CS_SDA R29 0 0402 5% NO STUFF I2CS_SDA → BI 2.1C< 16.1E<>

SNN_PEXCAPD_VDDQ AG12 — RFU
SNN_PEXCALPD_GND AH13 — RFU

SNN_PEX_WAKE*
PEX_RST* → OUT 20.4C<
R533 200 0402 5% COMMON
PEX_TEST_PLLCLK_OUT AM12 → PEX_TSTCLK_OUT
PEX_TEST_PLLCLK_OUT_N AM11 → PEX_TSTCLK_OUT

PEX_REFCLK	A13	AH14	PEX_REFCLK
PEX_REFCLK*	A14	AJ14	PEX_REFCLK
PEX_TX0	A16	AJ15	PEX_TX0
PEX_TX0*	A17	AK15	PEX_TX0
PEX_RX0	B14	AK13	PEX_RX0
PEX_RX0*	B15	AK14	PEX_RX0
PEX_TX1	A21	AH16	PEX_TX1
PEX_TX1*	A22	AG16	PEX_TX1
PEX_RX1	B19	AM14	PEX_RX1
PEX_RX1*	B20	AM15	PEX_RX1
PEX_TX2	A25	AG17	PEX_TX2
PEX_TX2*	A26	AH17	PEX_TX2
PEX_RX2	B23	AL15	PEX_RX2
PEX_RX2*	B24	AL16	PEX_RX2
PEX_TX3	A29	AG18	PEX_TX3
PEX_TX3*	A30	AH18	PEX_TX3
PEX_RX3	B27	AK16	PEX_RX3
PEX_RX3*	B28	AK17	PEX_RX3
PEX_TX4	A35	AK18	PEX_TX4
PEX_TX4*	A36	AJ18	PEX_TX4
PEX_RX4	B33	AL17	PEX_RX4
PEX_RX4*	B34	AL18	PEX_RX4
PEX_TX5	A39	AJ19	PEX_TX5
PEX_TX5*	A40	AH19	PEX_TX5
PEX_RX5	B37	AM18	PEX_RX5
PEX_RX5*	B38	AM19	PEX_RX5
PEX_TX6	A43	AG20	PEX_TX6
PEX_TX6*	A44	AH20	PEX_TX6
PEX_RX6	B41	AK19	PEX_RX6
PEX_RX6*	B42	AK20	PEX_RX6
PEX_TX7	A47	AG21	PEX_TX7
PEX_TX7*	A48	AH21	PEX_TX7
PEX_RX7	B45	AL20	PEX_RX7
PEX_RX7*	B46	AL21	PEX_RX7
PEX_TX8	A52	AK21	PEX_TX8
PEX_TX8*	A53	AJ21	PEX_TX8
PEX_RX8	B50	AM21	PEX_RX8
PEX_RX8*	B51	AM22	PEX_RX8
PEX_TX9	A56	AJ22	PEX_TX9
PEX_TX9*	A57	AH22	PEX_TX9
PEX_RX9	B54	AK22	PEX_RX9
PEX_RX9*	B55	AK23	PEX_RX9
PEX_TX10	A60	AG23	PEX_TX10
PEX_TX10*	A61	AH23	PEX_TX10
PEX_RX10	B58	AL23	PEX_RX10
PEX_RX10*	B59	AL24	PEX_RX10
PEX_TX11	A64	AK24	PEX_TX11
PEX_TX11*	A65	AJ24	PEX_TX11
PEX_RX11	B62	AM24	PEX_RX11
PEX_RX11*	B63	AM25	PEX_RX11
PEX_TX12	A68	AJ25	PEX_TX12
PEX_TX12*	A69	AH25	PEX_TX12
PEX_RX12	B66	AK25	PEX_RX12
PEX_RX12*	B67	AK26	PEX_RX12
PEX_TX13	A72	AH26	PEX_TX13
PEX_TX13*	A73	AG26	PEX_TX13
PEX_RX13	B70	AL26	PEX_RX13
PEX_RX13*	B71	AL27	PEX_RX13
PEX_TX14	A76	AK27	PEX_TX14
PEX_TX14*	A77	AJ27	PEX_TX14
PEX_RX14	B74	AM27	PEX_RX14
PEX_RX14*	B75	AM28	PEX_RX14
PEX_TX15	A80	AJ28	PEX_TX15
PEX_TX15*	A81	AH27	PEX_TX15
PEX_RX15	B78	AL28	PEX_RX15
PEX_RX15*	B79	AL29	PEX_RX15

All capacitors in the PCIE_TX and PCIE_RX groups: C740–C593 .1UF 16V 10% X7R 0402 COMMON

U_GPU_G3_BGA820-NV43-U-A1NA-A
G1
G84-200-A1
BGA820
COMMON

1/14 PCI_EXPRESS

PEX_IOVDD	AD23		
PEX_IOVDD	AF23		
PEX_IOVDD	AF24		
PEX_IOVDD	AF25		
PEX_IOVDD	AG24		
PEX_IOVDD	AG25		
PEX_IOVDDQ	AC16		
PEX_IOVDDQ	AC17		
PEX_IOVDDQ	AC21		
PEX_IOVDDQ	AC22		
PEX_IOVDDQ	AE18		
PEX_IOVDDQ	AE21		
PEX_IOVDDQ	AE22		
PEX_IOVDDQ	AF12		
PEX_IOVDDQ	AF18		
PEX_IOVDDQ	AF21		
PEX_IOVDDQ	AF22		
VDD	K16		
VDD	K17		
VDD	N13		
VDD	N14		
VDD	N16		
VDD	N17		
VDD	N19		
VDD	P13		
VDD	P14		
VDD	P16		
VDD	P17		
VDD	P19		
VDD	R16		
VDD	R17		
VDD	T13		
VDD	T14		
VDD	T15		
VDD	T18		
VDD	T19		
VDD	U13		
VDD	U14		
VDD	U15		
VDD	U18		
VDD	U19		
VDD	V16		
VDD	V17		
VDD	W13		
VDD	W14		
VDD	W16		
VDD	W17		
VDD	W19		
VDD	Y13		
VDD	Y14		
VDD	Y16		
VDD	Y17		
VDD	Y19		
VDD	Y20		
VDD_LP	P20		
VDD_LP	T20		
VDD_LP	T23		
VDD_LP	U20		
VDD_LP	U23		
VDD_LP	W20		
VDD_SENSE	N20	NVVDD_SENSE	
GND_SENSE	M21	SNN_GND_SENSE	
VDD33	AC11		
VDD33	AC12		
VDD33	AC24		
VDD33	AD24		
VDD33	AE11		
VDD33	AE12		
VDD33	H7		
VDD33	J7		
VDD33	K7		
VDD33	L10		
VDD33	L7		
VDD33	L8		
VDD33	M10		
PEX_PLLAVDD	AF15	PEX_PLL_VDD	
PEX_PLLDVDD	AE15		
PEX_PLLGND	AE16		
SPDIF	J6	SPDIF → IN 17.1F< 17.3F>	

600mA
VALUES TBD — Place near balls
C671 .022UF 16V 10% X7R 0402 COMMON
C654 .022UF 16V 10% X7R 0402 COMMON
C614 .022UF 16V 10% X7R 0402 COMMON
Place Close to GPU
C604 1UF 6.3V 10% X5R 0402 COMMON
PEX1V2
C609 1UF 6.3V 10% X5R 0402 COMMON
C673 1UF 6.3V 10% X5R 0402 COMMON
16.1E> 2.1C>
16.1E< 2.1C<
GND

VALUES TBD — Place near balls
Place Close to GPU
C663 .022UF 16V 10% X7R 0402 COMMON
C625 .022UF 16V 10% X7R 0402 COMMON
C636 .01UF 25V 10% X7R 0402 COMMON
C645 .01UF 25V 10% X7R 0402 COMMON
C694 .01UF 25V 10% X7R 0402 COMMON
C640 1UF 6.3V 10% X5R 0402 COMMON
PEX1V2
C681 4.7UF 6.3V 10% X5R 0603 COMMON
GND

Place near balls
NVVDD
C707 1UF 6.3V 10% X5R 0402 COMMON
C674 .1UF 16V 10% X7R 0402 COMMON
C690 1UF 6.3V 10% X5R 0402 COMMON
C650 1UF 6.3V 10% X5R 0402 COMMON
C665 1UF 6.3V 10% X5R 0402 COMMON
C712 1UF 6.3V 10% X5R 0402 COMMON
C648 4.7UF 6.3V 10% X5R 0603 COMMON
C695 4.7UF 6.3V 10% X5R 0603 COMMON
C652 4.7UF 6.3V 10% X5R 0603 COMMON
C683 .1UF 16V 10% X7R 0402 COMMON
C662 1UF 6.3V 10% X5R 0402 COMMON
C629 1UF 16V 10% X7R 0402 COMMON
C638 1UF 16V 10% X7R 0402 COMMON
C701 1UF 6.3V 10% X5R 0402 COMMON
C676 10UF 6.3V 20% X5R 0805 COMMON
C704 .1UF 16V 10% X7R 0402 COMMON
C658 .1UF 16V 10% X7R 0402 COMMON
C686 .1UF 16V 10% X7R 0402 COMMON
C659 .1UF 16V 10% X7R 0402 COMMON
C666 .1UF 16V 10% X7R 0402 COMMON
C642 4.7UF 6.3V 10% X5R 0603 COMMON
C699 4.7UF 6.3V 10% X5R 0603 COMMON
C639 1UF 6.3V 10% X5R 0402 COMMON
C688 .1UF 16V 10% X7R 0402 COMMON
C691 .1UF 16V 10% X7R 0402 COMMON
C660 1UF 6.3V 10% X5R 0402 COMMON
C706 4.7UF 6.3V 10% X5R 0603 COMMON
C689 1UF 6.3V 10% X5R 0402 COMMON
GND

IN 21.1F< 21.2G<
A3V3
LB505 180R@100MHz COMMON BEAD_0603 300 mA
Place near balls
C736 .1UF 16V 10% X7R 0402 COMMON
C703 4700PF 25V 10% X7R 0402 COMMON
C718 .022UF 16V 10% X7R 0402 COMMON
C616 .022UF 16V 10% X7R 0402 COMMON
C626 1UF 6.3V 10% X5R 0402 COMMON
C708 .1UF 16V 10% X7R 0402 COMMON
C711 1UF 6.3V 10% X5R 0402 COMMON
C749 1UF 6.3V 10% X5R 0402 COMMON
C725 .022UF 16V 10% X7R 0402 COMMON
GND

Place near balls
Place Near BGA
PEX1V2
180R@100MHz
LB502 BEAD_0603 COMMON
C693 .1UF 16V 10% X7R 0402 COMMON
C678 .01UF 25V 10% X7R 0402 COMMON
C656 1UF 6.3V 10% X5R 0402 COMMON
C667 1UF 6.3V 10% X5R 0402 COMMON
GND

Place near balls
C680 4700PF 25V 10% X7R 0402 COMMON
C685 470PF 50V 10% X7R 0402 COMMON
GND

NVVDD
C670 10UF 6.3V 20% X5R 0805 COMMON
C705 .1UF 16V 10% X7R 0402 COMMON
C653 .1UF 16V 10% X7R 0402 COMMON
GND

NET	NV_CRITICAL	NV_IMPEDENCE	DIFFPAIR
PEX_REFCLK	1	100DIFF	PEX_REFCLK
PEX_REFCLK*	1	100DIFF	PEX_REFCLK
I2CS_SCL	2	500HM	
I2CS_SDA	2	500HM	
PEX_I2CS_SCL	2	500HM	
PEX_I2CS_SDA	2	500HM	

PEX_TX0	1	100DIFF	PEX_TX0
PEX_TX0*	1	100DIFF	PEX_TX0
PEX_TX1	1	100DIFF	PEX_TX1
PEX_TX1*	1	100DIFF	PEX_TX1
PEX_TX2	1	100DIFF	PEX_TX2
PEX_TX2*	1	100DIFF	PEX_TX2
PEX_TX3	1	100DIFF	PEX_TX3
PEX_TX3*	1	100DIFF	PEX_TX3
PEX_TX4	1	100DIFF	PEX_TX4
PEX_TX4*	1	100DIFF	PEX_TX4
PEX_TX5	1	100DIFF	PEX_TX5
PEX_TX5*	1	100DIFF	PEX_TX5
PEX_TX6	1	100DIFF	PEX_TX6
PEX_TX6*	1	100DIFF	PEX_TX6
PEX_TX7	1	100DIFF	PEX_TX7
PEX_TX7*	1	100DIFF	PEX_TX7
PEX_TX8	1	100DIFF	PEX_TX8
PEX_TX8*	1	100DIFF	PEX_TX8
PEX_TX9	1	100DIFF	PEX_TX9
PEX_TX9*	1	100DIFF	PEX_TX9
PEX_TX10	1	100DIFF	PEX_TX10
PEX_TX10*	1	100DIFF	PEX_TX10
PEX_TX11	1	100DIFF	PEX_TX11
PEX_TX11*	1	100DIFF	PEX_TX11
PEX_TX12	1	100DIFF	PEX_TX12
PEX_TX12*	1	100DIFF	PEX_TX12
PEX_TX13	1	100DIFF	PEX_TX13
PEX_TX13*	1	100DIFF	PEX_TX13
PEX_TX14	1	100DIFF	PEX_TX14
PEX_TX14*	1	100DIFF	PEX_TX14
PEX_TX15	1	100DIFF	PEX_TX15
PEX_TX15*	1	100DIFF	PEX_TX15

PEX_RX0	1	100DIFF	PEX_RX0
PEX_RX0*	1	100DIFF	PEX_RX0
PEX_RX1	1	100DIFF	PEX_RX1
PEX_RX1*	1	100DIFF	PEX_RX1
PEX_RX2	1	100DIFF	PEX_RX2
PEX_RX2*	1	100DIFF	PEX_RX2
PEX_RX3	1	100DIFF	PEX_RX3
PEX_RX3*	1	100DIFF	PEX_RX3
PEX_RX4	1	100DIFF	PEX_RX4
PEX_RX4*	1	100DIFF	PEX_RX4
PEX_RX5	1	100DIFF	PEX_RX5
PEX_RX5*	1	100DIFF	PEX_RX5
PEX_RX6	1	100DIFF	PEX_RX6
PEX_RX6*	1	100DIFF	PEX_RX6
PEX_RX7	1	100DIFF	PEX_RX7
PEX_RX7*	1	100DIFF	PEX_RX7
PEX_RX8	1	100DIFF	PEX_RX8
PEX_RX8*	1	100DIFF	PEX_RX8
PEX_RX9	1	100DIFF	PEX_RX9
PEX_RX9*	1	100DIFF	PEX_RX9
PEX_RX10	1	100DIFF	PEX_RX10
PEX_RX10*	1	100DIFF	PEX_RX10
PEX_RX11	1	100DIFF	PEX_RX11
PEX_RX11*	1	100DIFF	PEX_RX11
PEX_RX12	1	100DIFF	PEX_RX12
PEX_RX12*	1	100DIFF	PEX_RX12
PEX_RX13	1	100DIFF	PEX_RX13
PEX_RX13*	1	100DIFF	PEX_RX13
PEX_RX14	1	100DIFF	PEX_RX14
PEX_RX14*	1	100DIFF	PEX_RX14
PEX_RX15	1	100DIFF	PEX_RX15
PEX_RX15*	1	100DIFF	PEX_RX15

NET	VOLTAGE	MIN_LINE_WIDTH
PEX_PLL_VDD	1.20000V	10.0
NV_PLLAVDD	1.20000V	10.0

NET	NV_SOURCE_POWER	VOLTAGE	MAX_CURRENT	MIN_WIDTH
12V_PEX	12V_PEX	12V	12V	5.5A	35.0
3V3_PEX	3V3_PEX	3.3V	3.3V	3.0A	25.0

ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	PCI EXPRESS 16X, NVVDD DECOUPLING CAPS,PEX_IOVDD/Q DECOUPLING CAPS

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NV_PN	600-10403-0001-100 A		
ID	p403_a01	PAGE	2 OF 22
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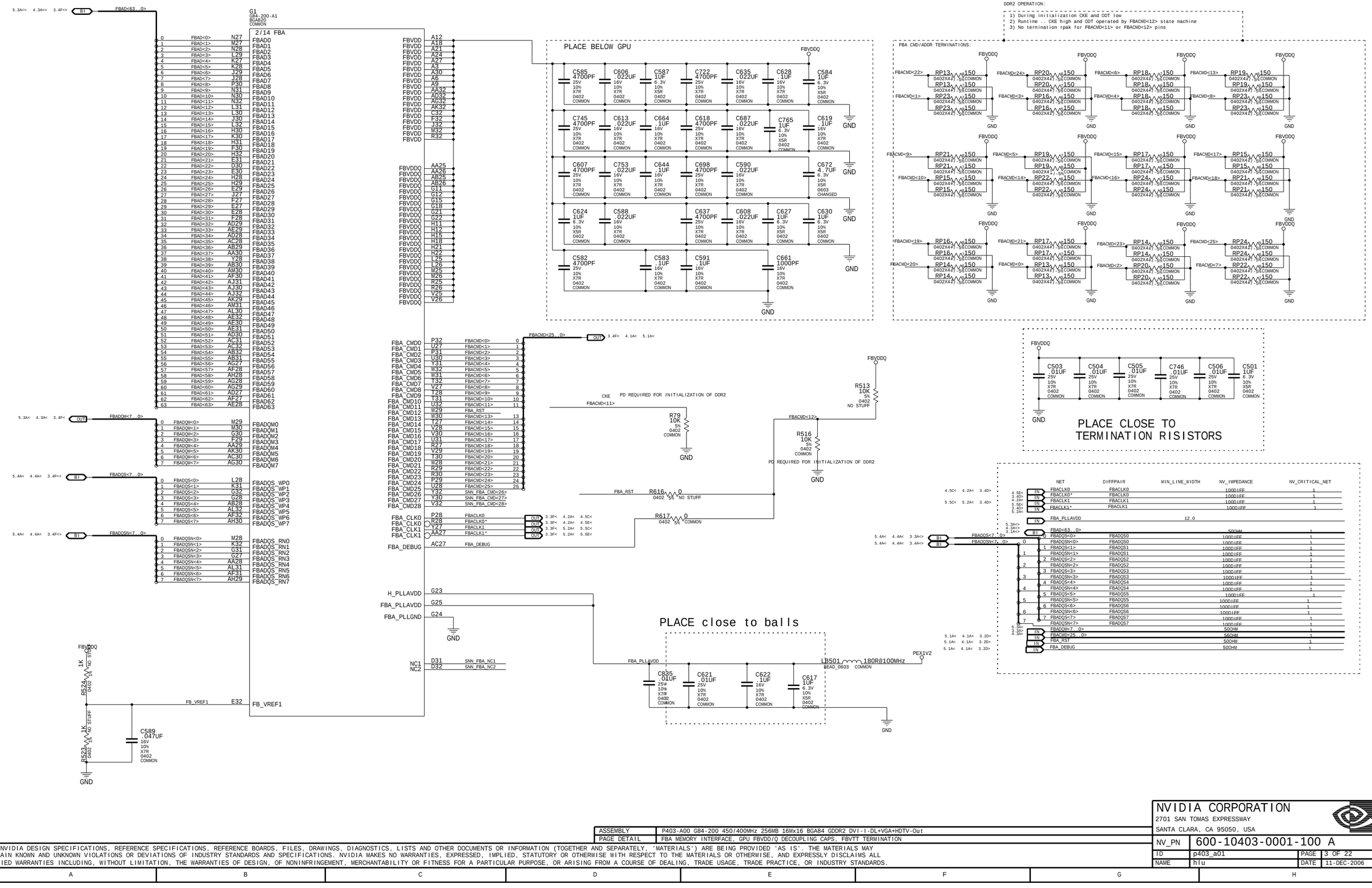

NET	DIFFPAIR	MIN_LINE_WIDTH	NV_IMPEDANCE	NV_CRITICAL_NET
FBACLK0	FBACLK0		100DIFF	1
FBACLK0*	FBACLK0		100DIFF	1
FBACLK1	FBACLK1		100DIFF	1
FBACLK1*	FBACLK1		100DIFF	1
FBA_PLLAVDD		12.0		
FBAD<63..0>			50OHM	1
FBADQS<0>	FBADQS0		100DIFF	1
FBADQSN<0>	FBADQS0		100DIFF	1
FBADQS<1>	FBADQS1		100DIFF	1
FBADQSN<1>	FBADQS1		100DIFF	1
FBADQS<2>	FBADQS2		100DIFF	1
FBADQSN<2>	FBADQS2		100DIFF	1
FBADQS<3>	FBADQS3		100DIFF	1
FBADQSN<3>	FBADQS3		100DIFF	1
FBADQS<4>	FBADQS4		100DIFF	1
FBADQSN<4>	FBADQS4		100DIFF	1
FBADQS<5>	FBADQS5		100DIFF	1
FBADQSN<5>	FBADQS5		100DIFF	1
FBADQS<6>	FBADQS6		100DIFF	1
FBADQSN<6>	FBADQS6		100DIFF	1
FBADQS<7>	FBADQS7		100DIFF	1
FBADQSN<7>	FBADQS7		100DIFF	1
FBADQM<7..0>			50OHM	1
FBACMD<25..0>			50OHM	1
FBA_RST			50OHM	1
FBA_DEBUG			50OHM	1

ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	FBA MEMORY INTERFACE, GPU FBVDD/Q DECOUPLING CAPS, FBVTT TERMINATION

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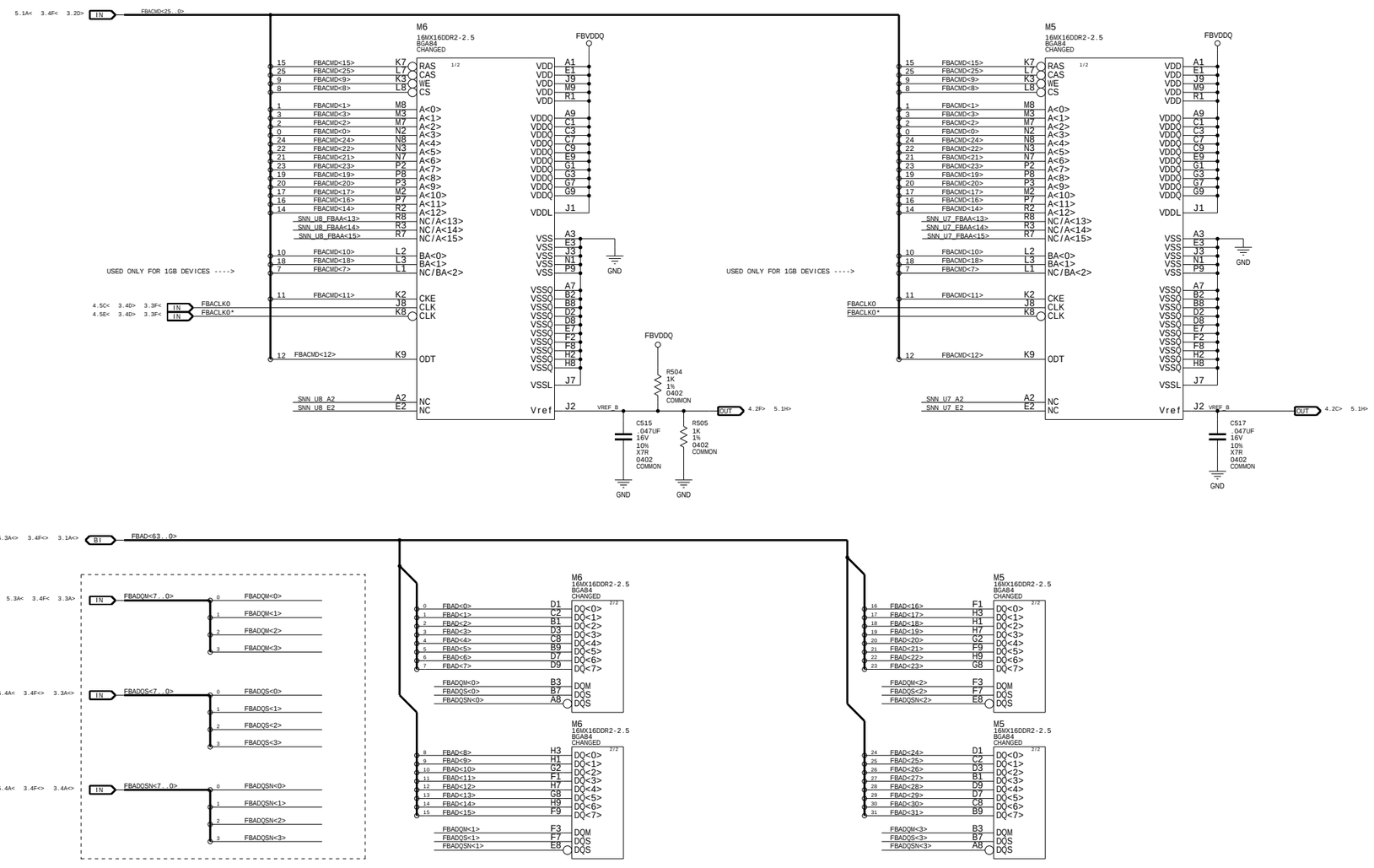
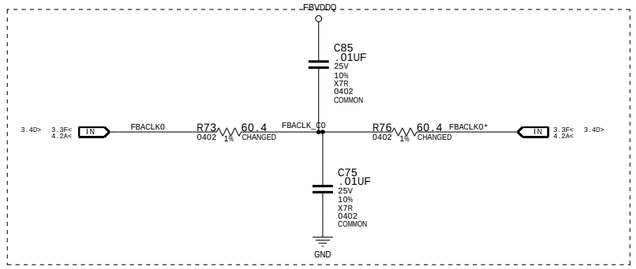
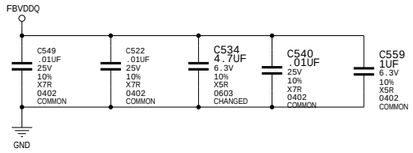
NAME	hlu	DATE	11-DEC-2006

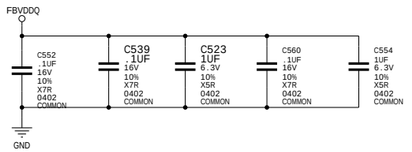
FBA MEMORY 1st bank 0..31

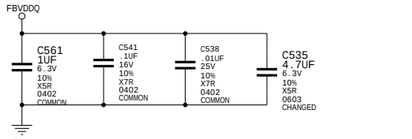
PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY

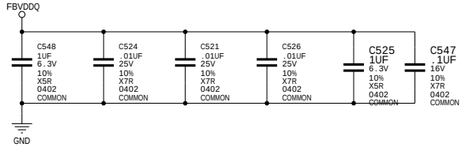


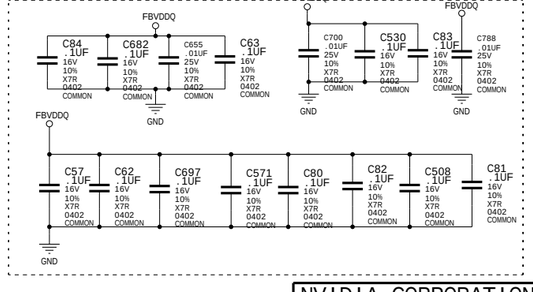












ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	FBA 16Mx16 DDR2 MEMORIES, BANK 0..31

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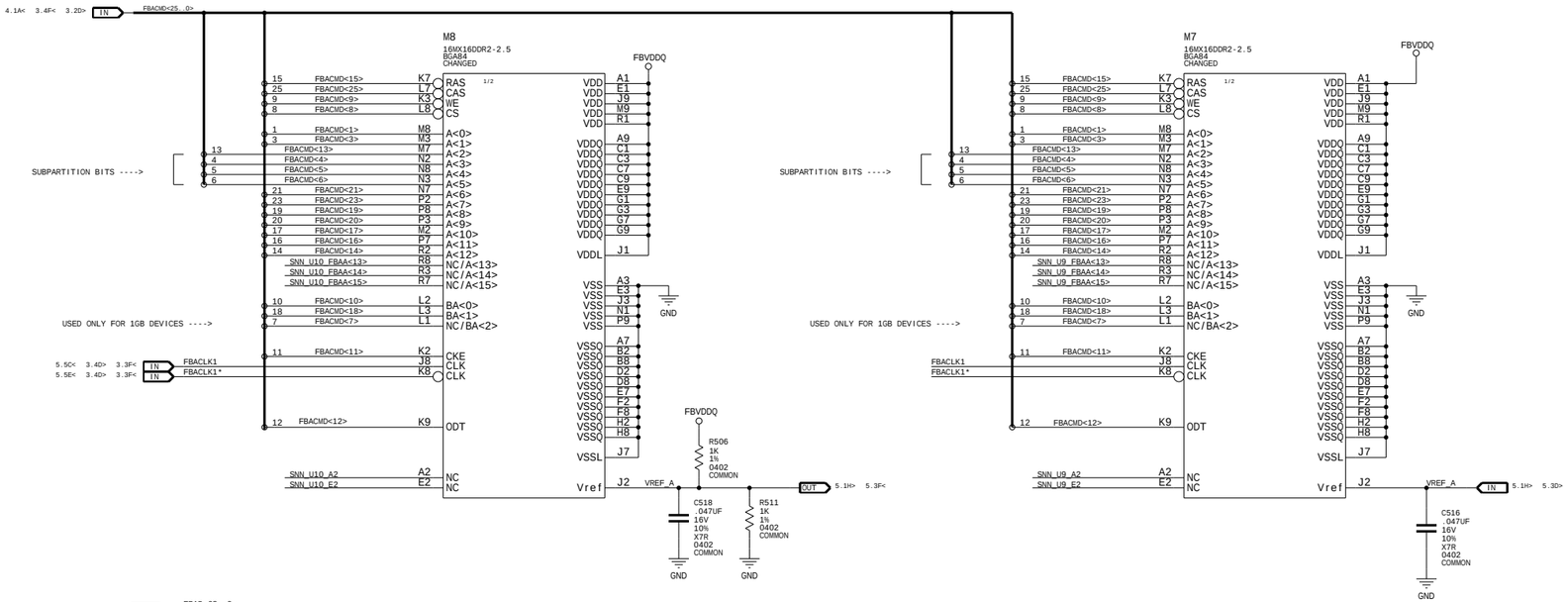
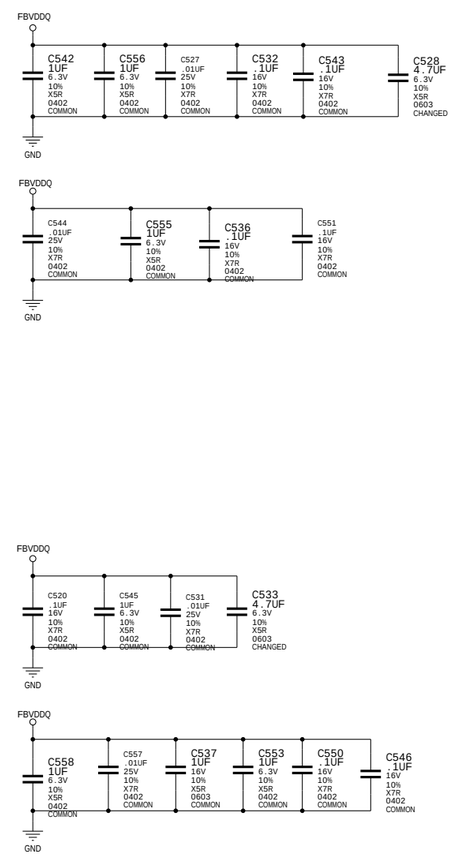
FBA MEMORY 1st bank 32..63

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY

NAME	MIN_LINE_WIDTH	
VREF_A	12.0	OUT 5.3D> 5.3F<
VREF_B	12.0	OUT 4.2C> 4.2F>





ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	FBA 16Mx16 DDR2 MEMORIES, 1ST BANK 32..63

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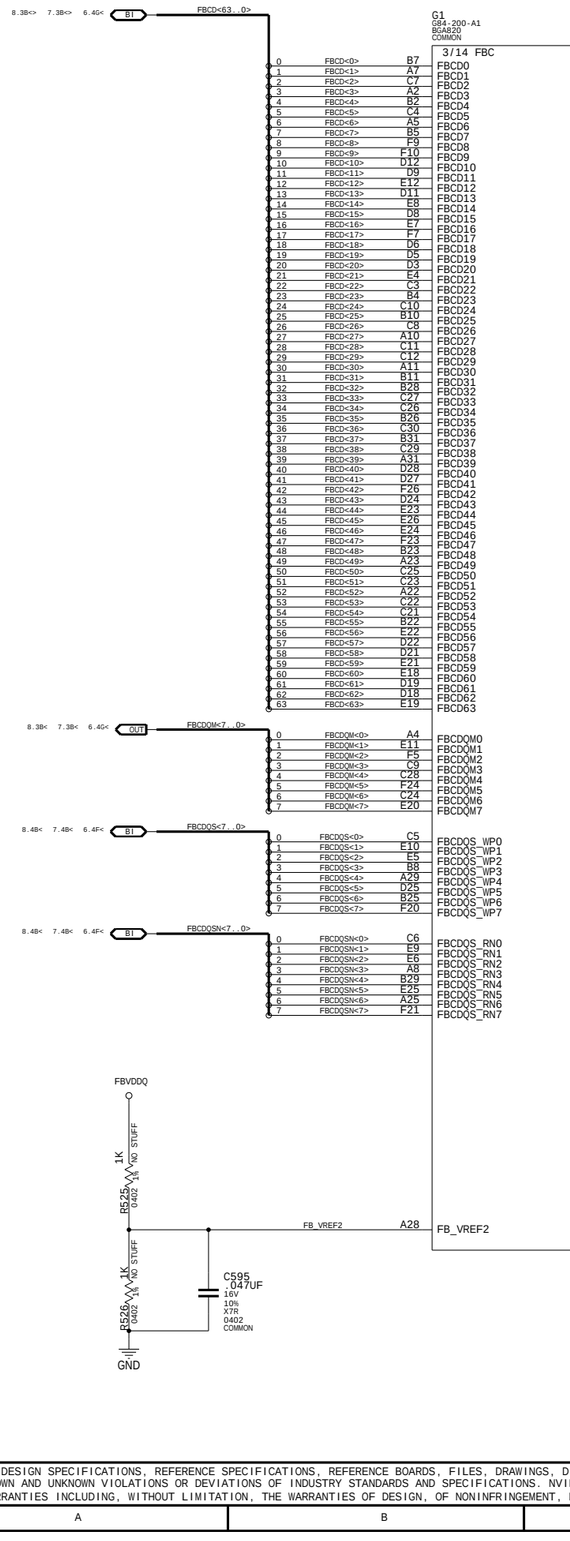

ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	FBC MEMORY INTERFACE, GPU FBVTT, FBVDDQ

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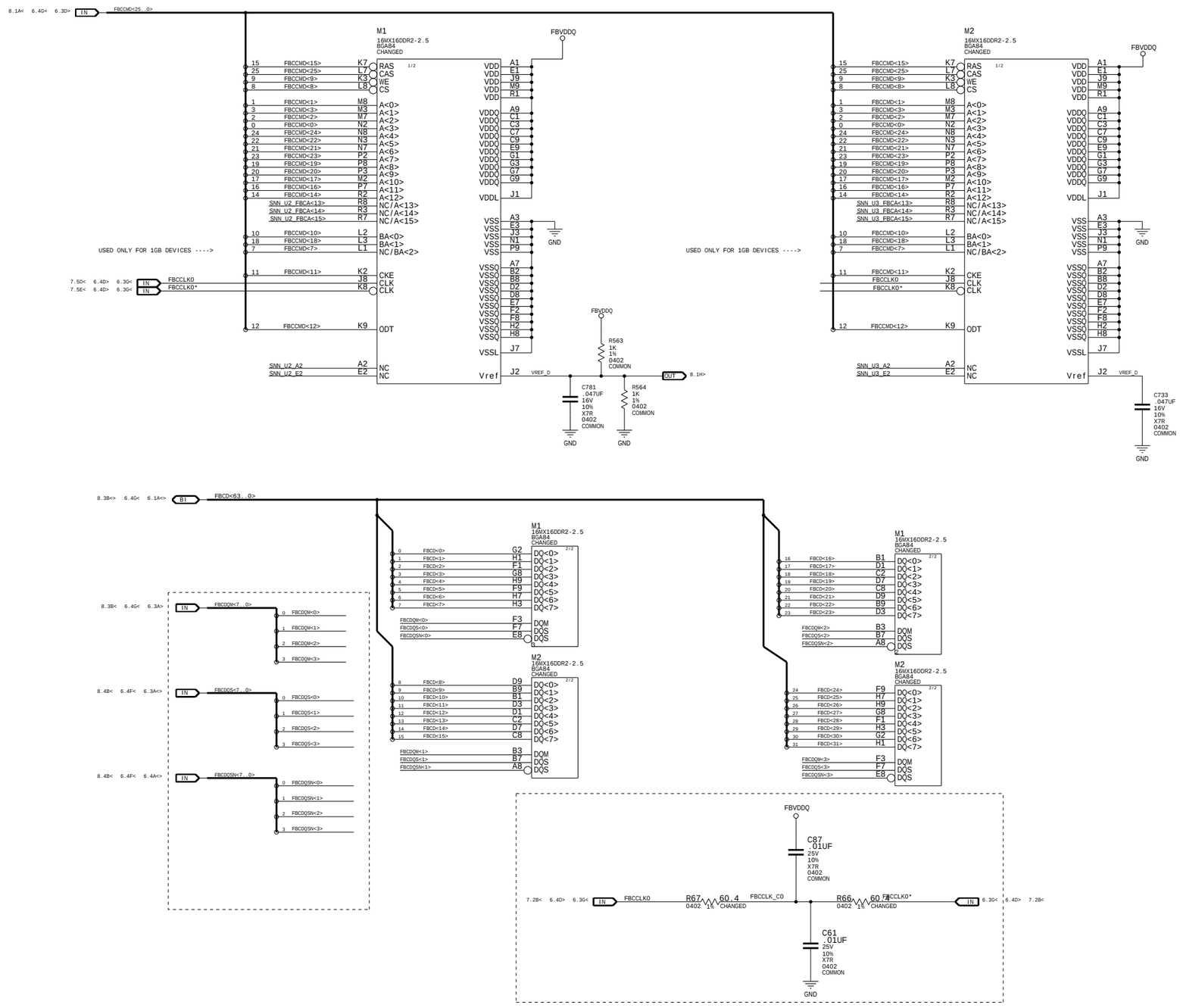
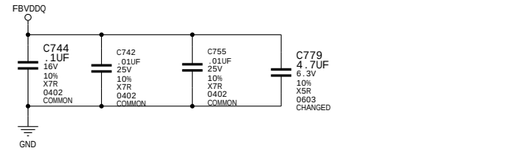
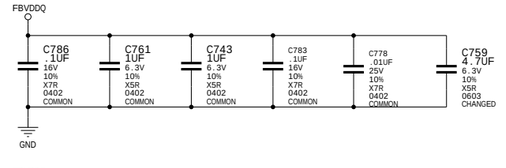
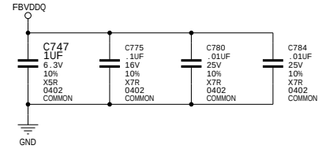
FBC MEMORY 2nd bank 0..31

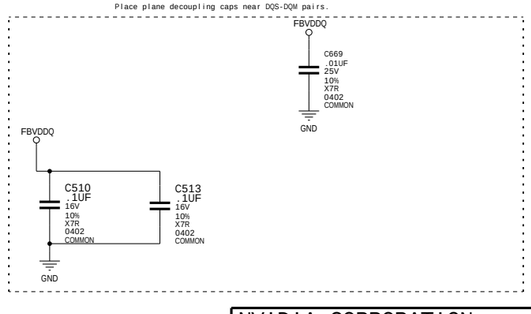
PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY











ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	FBC 16MX16 DDR2 MEMORIES, 2ND BANK 0..31

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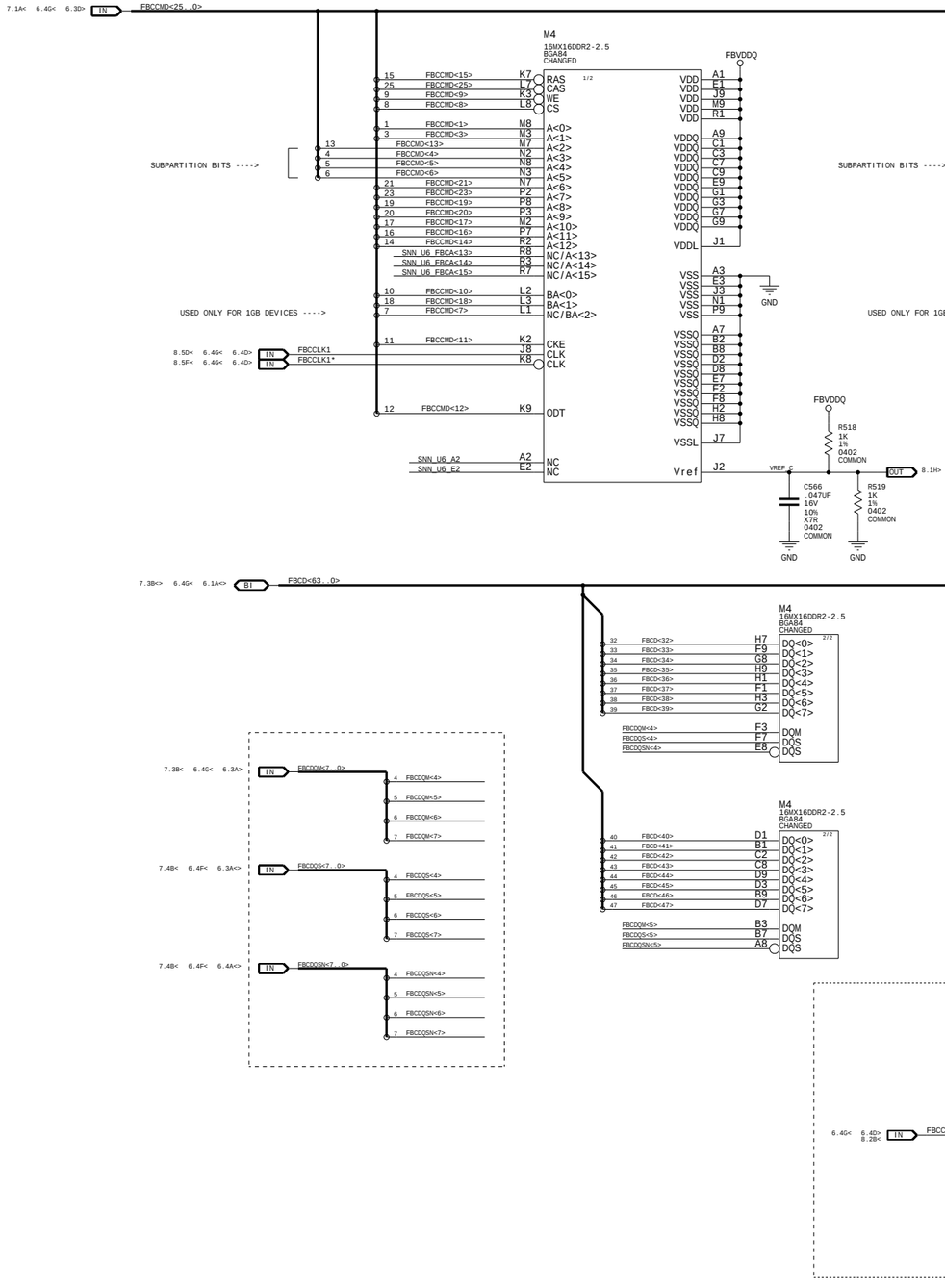
FBC MEMORY 2nd bank 32..63

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



NAME	MIN_LINE_WIDTH	
VREF_C	12.0	OUT 9.2D>
VREF_D	12.0	OUT 7.2D>

FBVDDQ

C570 .01UF 25V 10% X7R 0402 COMMON
C579 .01UF 25V 10% X7R 0402 COMMON
C646 .1UF 16V 10% X7R 0402 COMMON
C602 1UF 6.3V 10% X5R 0402 COMMON
GND

FBVDDQ

C647 .01UF 25V 10% X7R 0402 COMMON
C603 .01UF 25V 10% X7R 0402 COMMON
C598 1UF 6.3V 10% X5R 0402 COMMON
C633 1UF 6.3V 10% X5R 0402 COMMON
C574 .1UF 16V 10% X7R 0402 COMMON
C615 4.7UF 6.3V 10% X5R 0603 CHANGED
GND

FBVDDQ

C649 .01UF 25V 10% X7R 0402 COMMON
C569 1UF 6.3V 10% X5R 0402 COMMON
C632 .1UF 16V 10% X7R 0402 COMMON
C572 4.7UF 6.3V 10% X5R 0603 CHANGED
GND

FBVDDQ

C577 1UF 6.3V 10% X5R 0402 COMMON
C578 1UF 6.3V 10% X5R 0402 COMMON
C567 .1UF 16V 10% X7R 0402 COMMON
C576 .01UF 25V 10% X7R 0402 COMMON
C568 .01UF 25V 10% X7R 0402 COMMON
C599 .01UF 25V 10% X7R 0402 COMMON
GND

ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	FBC 16Mx16 DDR2 MEMORIES, 2ND BANK 32..63

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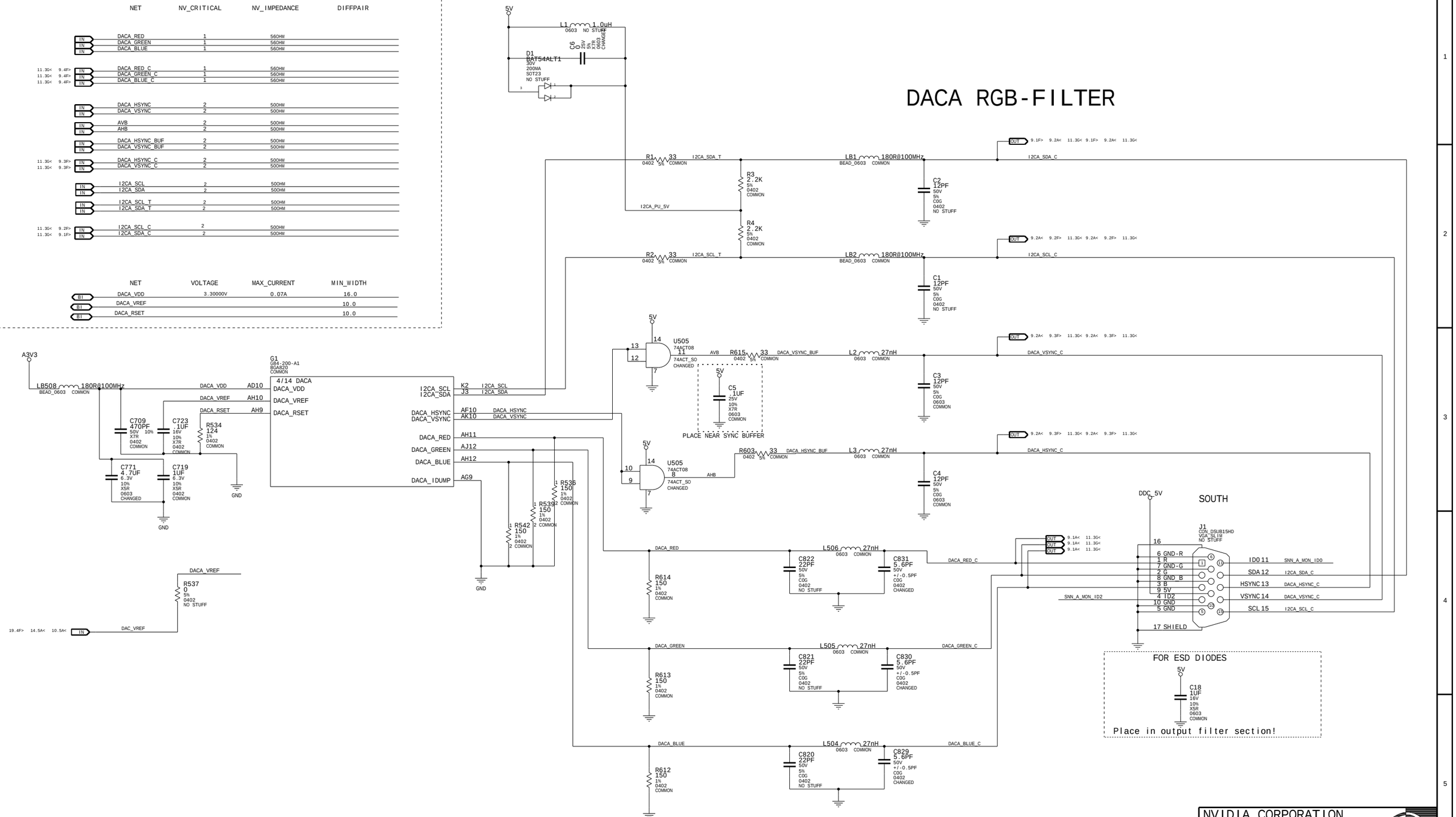
Primary Display (DACA), Slim DB15

DACA NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
DACA_RED	1	56OHM	
DACA_GREEN	1	56OHM	
DACA_BLUE	1	56OHM	
DACA_RED_C	1	56OHM	
DACA_GREEN_C	1	56OHM	
DACA_BLUE_C	1	56OHM	
DACA_HSYNC	2	50OHM	
DACA_VSYNC	2	50OHM	
AVB	2	50OHM	
AHB	2	50OHM	
DACA_HSYNC_BUF	2	50OHM	
DACA_VSYNC_BUF	2	50OHM	
DACA_HSYNC_C	2	50OHM	
DACA_VSYNC_C	2	50OHM	
I2CA_SCL	2	50OHM	
I2CA_SDA	2	50OHM	
I2CA_SCL_T	2	50OHM	
I2CA_SDA_T	2	50OHM	
I2CA_SCL_C	2	50OHM	
I2CA_SDA_C	2	50OHM	

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
DACA_VDD	3.30000V	0.07A	16.0
DACA_VREF			10.0
DACA_RSET			10.0

DACA RGB-FILTER



ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	DACA FILTERS, DACA SYNC BUFFERS & DB15 SOUTH

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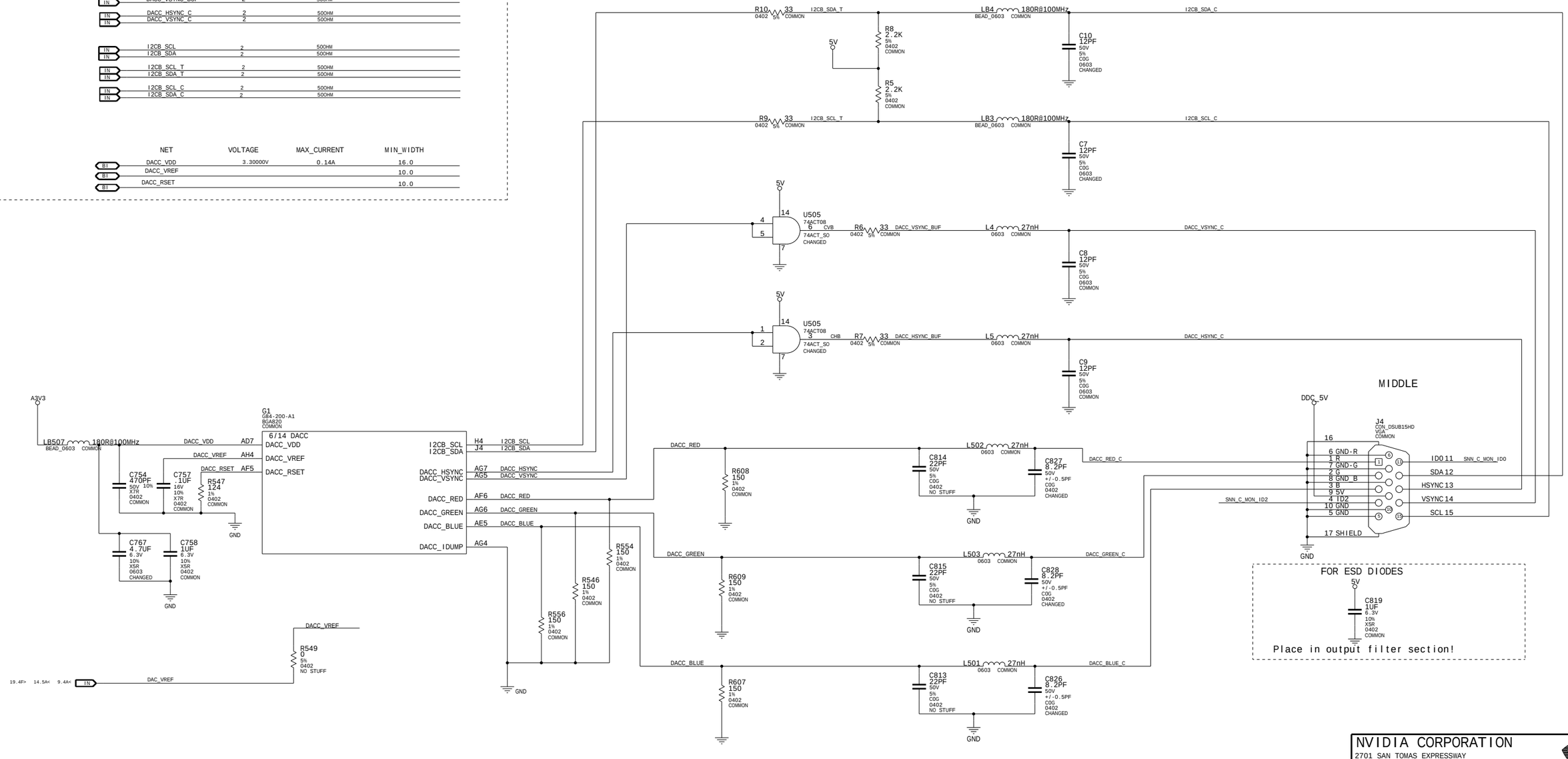
Secondary Display (DACC), DB15

DACC NET RULES

	NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
IN	DACC_RED	1	56OHM	
IN	DACC_GREEN	1	56OHM	
IN	DACC_BLUE	1	56OHM	
IN	DACC_RED_C	1	56OHM	
IN	DACC_GREEN_C	1	56OHM	
IN	DACC_BLUE_C	1	56OHM	
IN	DACC_HSYNC	2	50OHM	
IN	DACC_VSYNC	2	50OHM	
IN	CVB	2	50OHM	
IN	CHB	2	50OHM	
IN	DACC_HSYNC_BUF	2	50OHM	
IN	DACC_VSYNC_BUF	2	50OHM	
IN	DACC_HSYNC_C	2	50OHM	
IN	DACC_VSYNC_C	2	50OHM	
IN	I2CB_SCL	2	50OHM	
IN	I2CB_SDA	2	50OHM	
IN	I2CB_SCL_T	2	50OHM	
IN	I2CB_SDA_T	2	50OHM	
IN	I2CB_SCL_C	2	50OHM	
IN	I2CB_SDA_C	2	50OHM	

	NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
BI	DACC_VDD	3.30000V	0.14A	16.0
BI	DACC_VREF			10.0
BI	DACC_RSET			10.0

DACC RGB-FILTER



ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	DACC FILTERS, DACC SYNC BUFFERS & DB15 MID

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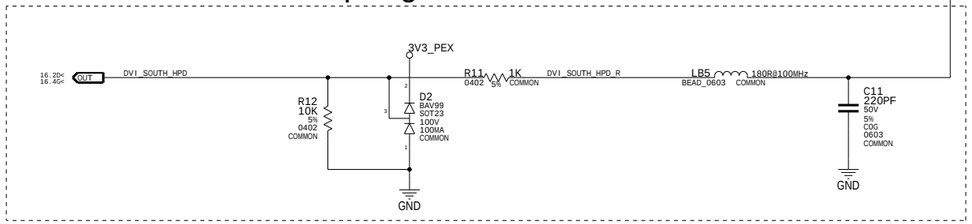
INTERNAL TMDS .. LINK A & B

IFPAB NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
IN IFPAB_PLLVDD	1.80000V	0.04A	16.0
IN IFPABRSET			12.0

Hotplug Detection



ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	TMDS LINK A & PU's, DVI CONNECTOR SOUTH

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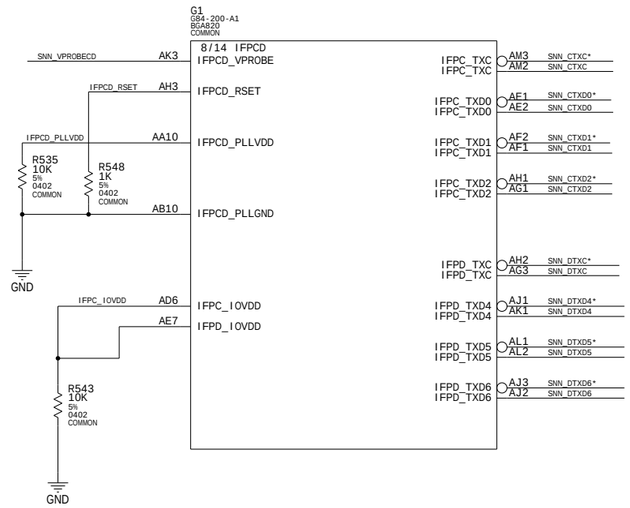
INTERNAL TMDS .. LINK C

IFPAB NET RULES

NET	MIN_WIDTH
IN IFPCD_RSET	12.0



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ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	TMDS LINK C

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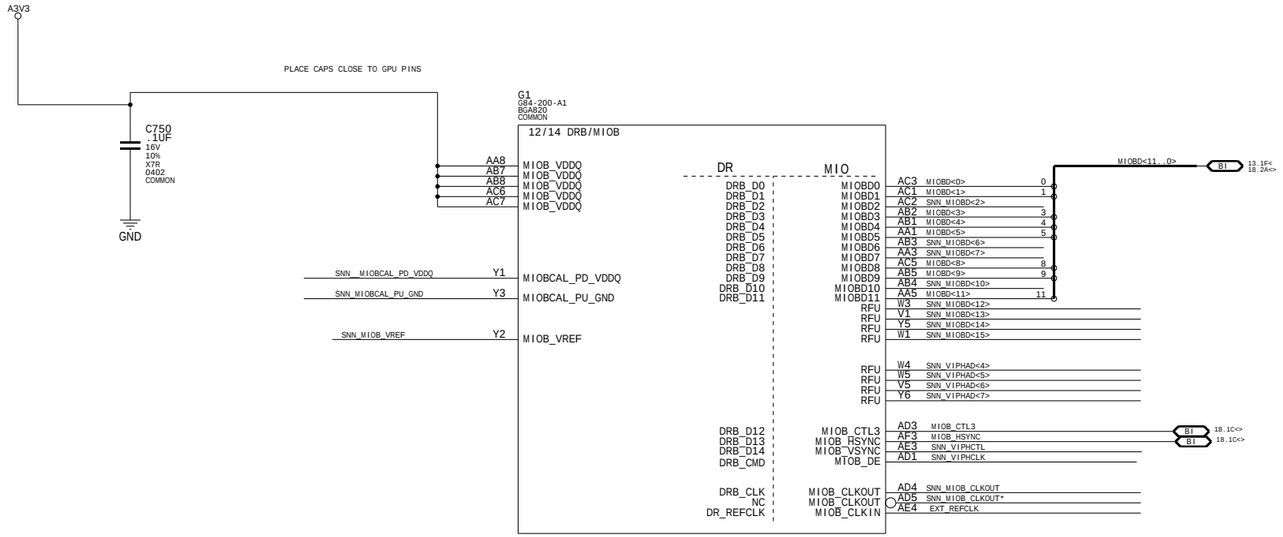
G3 VIP/MIOB

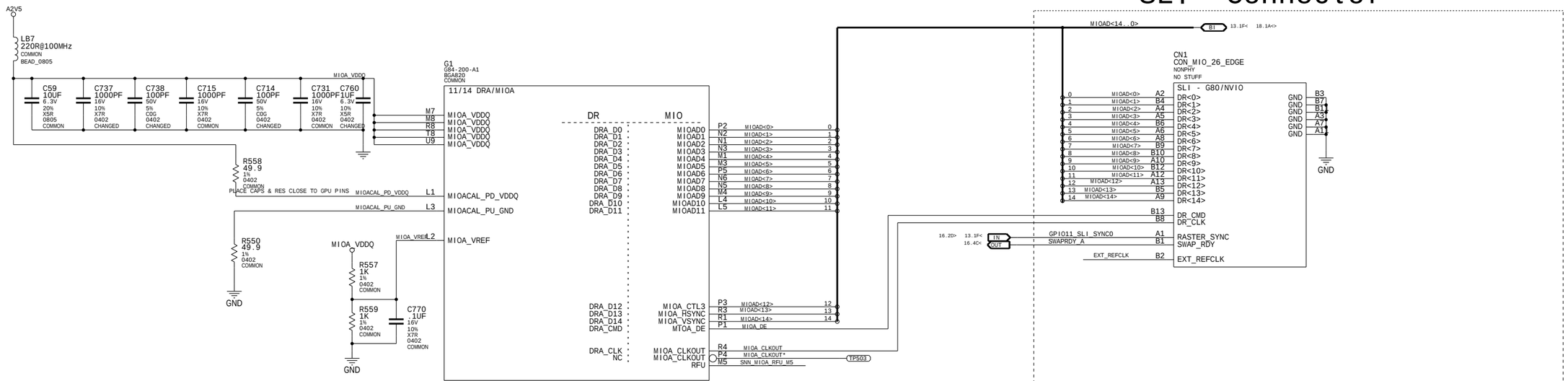


MIO NET RULES

	NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
18.1A<> 13.3F<> IN	MIOAD<14..0>	2	50OHM	
IN	EXT_REFCLK	2	50OHM	
IN	MIOA_CLKOUT	2	50OHM	
IN	MIOA_DE	2	50OHM	
16.2D> 13.4E< IN	GPIO11_SLI_SYNC0	2	50OHM	
18.2A<> 13.1E<> IN	MIOBD<11..0>	2	50OHM	

	NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
MIOA_VDDQ	MIOA_VDDQ	2.50000V	0.8A	12.0
IN	MIOA_VREF	1.25000V		12.0
IN	MIOACAL_PD_VDDQ	2.50000V		12.0
IN	MIOACAL_PU_GND	0.000000V		12.0

G3 MIOA



SLI Connector

ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	MIOA & MIOB

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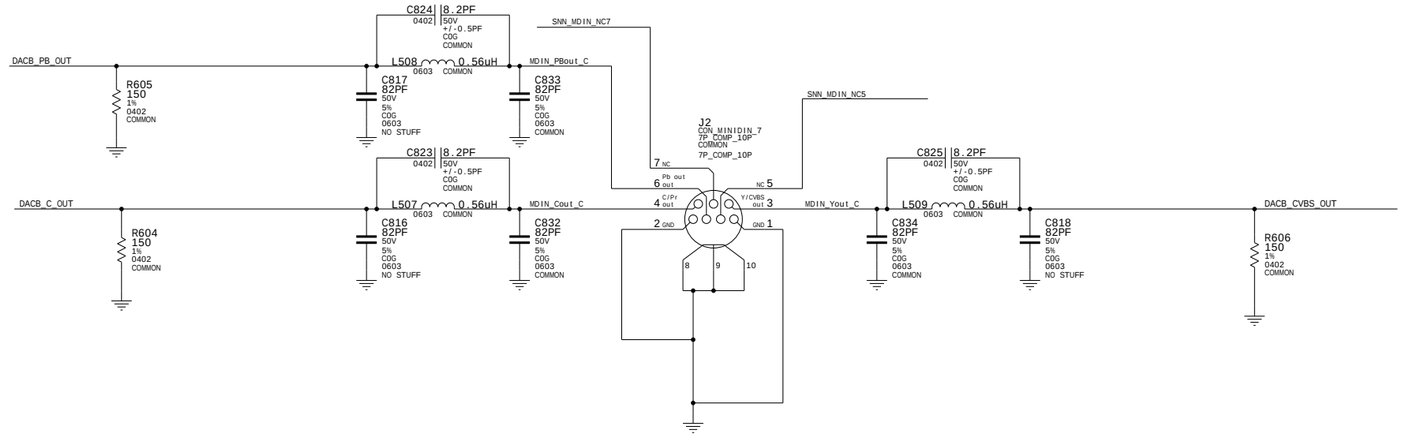
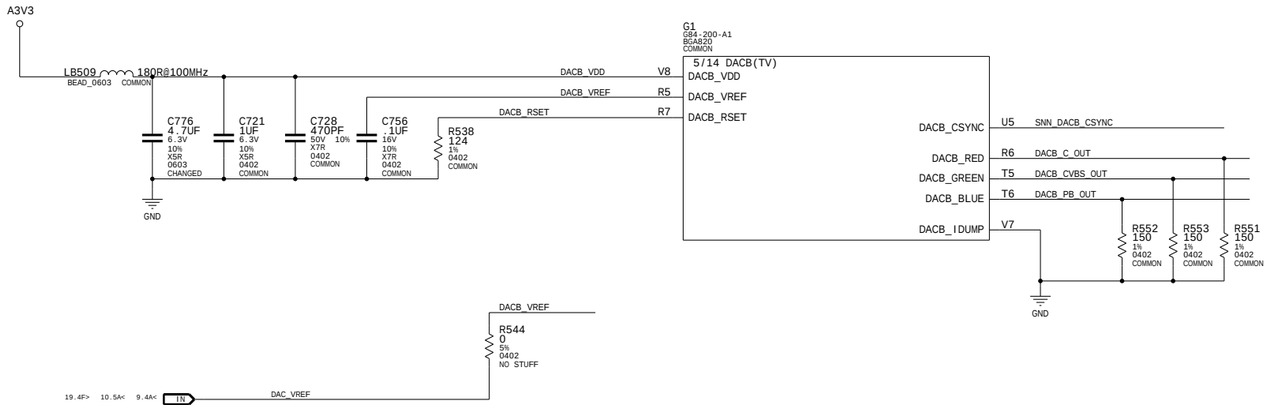
DACB .. MiniDIN VIDEO OUT CONNECTOR

DACB NET RULES

	NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
IN	DACB_C_OUT	1	56OHM	
IN	MDIN_COUT_C	1	56OHM	
IN	DACB_CVBS_OUT	1	56OHM	
IN	MDIN_YOUT_C	1	56OHM	
IN	DACB_PB_OUT	1	56OHM	
IN	MDIN_PBOUT_C	1	56OHM	
IN	MDIN_SCL_C	2	50OHM	
IN	MDIN_SDA_C	2	50OHM	

	NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
IN	DACB_VDD	3.30000V	0.07A	16.0
IN	DACB_VREF			16.0
IN	DACB_RSET			16.0





ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	DACB FILTERS, SYNC STRIPPER, MINIDIN CONNECTOR NORTH,HDTV HEADER

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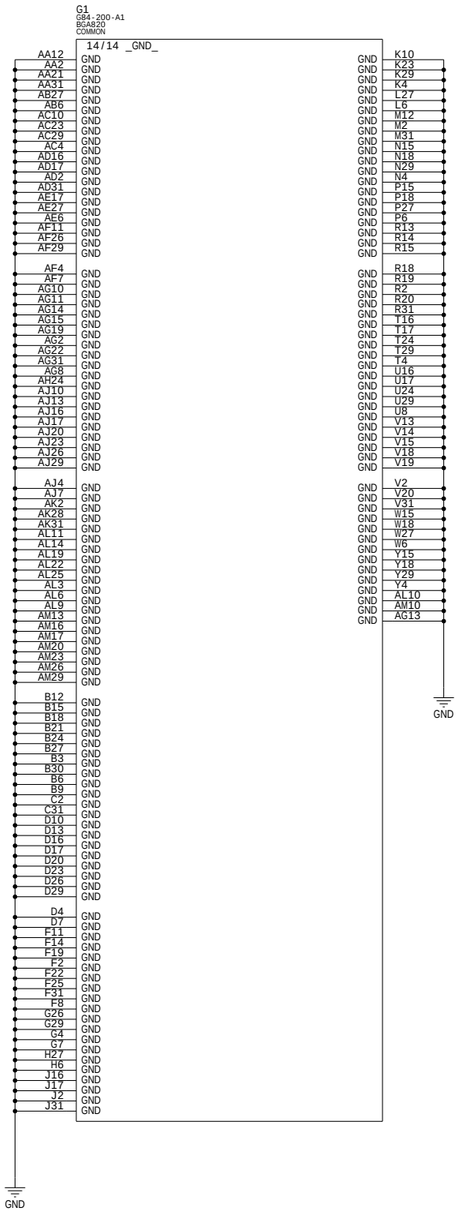
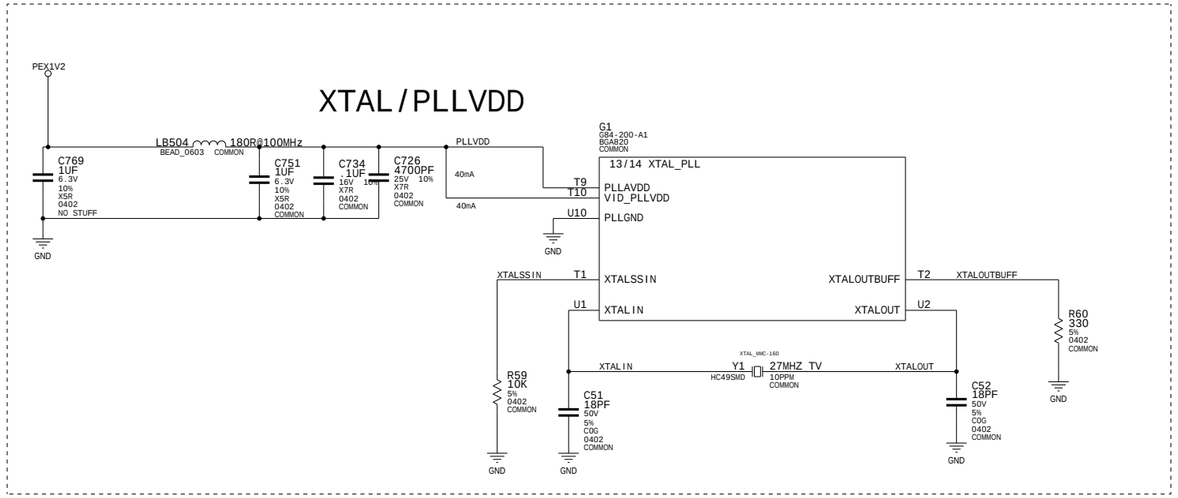
GPU GND CONNECTION, XTAL





NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
IN XTALIN	1	50OHM	
IN XTALOUT	1	50OHM	

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
IN PLLVDD	1.2V	0.3A	12MIL

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ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	GPU GND CONNECTION, XTAL

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Use 10MIL Guard(GND) Trace around THERMDC and THERMDA

C773 1000PF 16V 10% X7R 0402 NO STUFF

3V3_PEX

R31 180 5% 0402 COMMON
R30 10K 5% 0402 COMMON
R37 10K 5% 0402 COMMON

G1 G84-200-A1 BGA820 COMMON

9/14 MISC1

SNN_THERMAL V6 THERMALSENSOR_OBS
THERMDC J1 THERMDN
THERMDA K1 THERMDP

I2CS_SCL C1 I2CS_SCL_G
I2CS_SDA B1 I2CS_SDA_G
I2CC_SCL G2 I2CC_SCL
I2CC_SDA G1 I2CC_SDA

CLAMP F6 SNN_CLAMP

GPIO0 K3 SNN_GPIO0
GPIO1 H1 DVI_SOUTH_HPD
GPIO2 K5 SNN_GPIO2_BRICK_SENSE
GPIO3 G5 SNN_GPIO3_BRICK_POWER
GPIO4 E2 GPIO4_NVFAN_TACH
GPIO5 J5 GPIO5_NVVDDCTRL0
GPIO6 G6 GPIO6_NVVDDCTRL1
GPIO7 K6 SNN_GPIO7_FL_IO
GPIO8 E1 GPIO8_THERM_ALERT*
GPIO9 D2
GPIO10 H5 SNN_GPIO10_FL_INT
DRA_SYNC/GPIO11 F4 GPIO11_SLI_SYNC0
GPIO12 E3 SNN_GPIO12_EXT12V_PRSTN
GPIO13 U3 SNN_GPIO13
DRB_SYNC/GPIO14 U4 SNN_GPIO14

R42 10K 5% 0402 CHANGED
R43 10K 5% 0402 CHANGED
R52 33 0402 5% COMMON
R51 33 0402 5% COMMON
I2CS_SCL OUT 2.1C> 2.1G<
I2CS_SDA BI 2.1C<> 2.1G<

5V
R610 2.2K 5% 0402 COMMON
R611 2.2K 5% 0402 COMMON

JTAG_TCLK AJ11 JTAG_TCK
JTAG_TMS AK11 JTAG_TMS
JTAG_TDI AK12 JTAG_TDI
JTAG_TDO AL12 JTAG_TDO
JTAG_TRST* AL13 JTAG_TRST

R32 270 5% 0402 COMMON
R36 10K 5% 0402 COMMON

J7 HDR_2F4 FEMALE 1.27MM KEY6_JTAG_SMALL NO STUFF

C44 1UF 6.3V 10% X5R 0402 NO STUFF

GND

GPIO & JTAG

NVFAN

R88 10K 5% 0402 COMMON

GPIO Assignment Table

GPIO	I/O	FUNCTION
0	IN	RESERVED
1	IN	DVI_SOUTH HOTPLUG DET
2	IN	RESERVED
3	IN	RESERVED
4	IN	RESERVED
5	OUT	NVVDDCTRL0
6	OUT	NVVDDCTRL1
7	IN	RESERVED
8	IN	RESERVED
9	OUT	FAN_Control(ON/OFF)
10	OUT	RESERVED
11	IN	SLI_SYNC0
12	IN	RESERVED
13	IN	RESERVED
14	IN	RESERVED

GPIO ON/OFF FAN Control

12V_PEX
3V3_PEX

R33 33 0402 5% NV_FAN_CTRL_R NO STUFF

J6 HDR_1M4 MALE 2.0MM N/A NORM NO STUFF

R34 2.2K 5% 0402 NO STUFF

D4 BAT54ALT1 30V 200MA SOT23 NO STUFF

C33 1UF 16V 10% X5R 0603 COMMON

J5 HDR_1M2_FAN MALE 2.5MM G NORM COMMON
FAN +12V
GND

FAN_C

1G1D1S

Q6 TRLML2502 SOT23_1G1D1S NO STUFF

MAX_VOLTAGE=20V
CONTINUOUS_CURRENT=3.4A
PULSED_CURRENT=
MAX_RATTAGE=0.8W@70C
V_GE_SS=+/-12V

R27 0 0603 5% COMMON

R72 10K 0402 5% COMMON

GND

BIOS (serial)

SROM MAPPING

ROM	NV4x
SO	ROM_SO
SI	ROM_SI
SCK	ROM_SCK
CS*	ROM_CS*

3V3_PEX

R561 10K 5% 0402 COMMON

U502 S25FL512 SO8 SO8 COMMON
HOLD WP CS SI SO SCK VCC GND

C50 .1UF 16V 10% X7R 0402 COMMON

16.4C> BI ROMCS*
18.5C<> 16.4G< 16.4C> BI ROM_SI
16.4G< 16.4C> BI ROM_SO
18.5C<> 16.4G< 16.4C> BI ROM_SCLK

GND

A3V3

U2 HDCP_KEYROM_PROGD_V2 G98 NO STUFF
VCC VCC GND GND SCL SDA SDA NC

R24 10K 5% 0402 NO STUFF
R26 10K NO STUFF 0402 5%
SNN_CRYPT0 2

GND

G1 GB4-200-A1 BGA820 COMMON

10/14 MISC2

SNN_STRAP F1 STRAP

SNN_MEMSTRAPSEL0 AE26 MEMSTRAPSEL0
SNN_MEMSTRAPSEL1 AD26 MEMSTRAPSEL1
SNN_LOFBVDDQSEL AH31 MEMSTRAPSEL2
SNN_LOFBVDDSEL_ AH32 MEMSTRAPSEL3

SNN_GPU_U3_RFU V3
SNN_GPU_V3_RFU V4
SNN_GPU_U6_RFU AM8
SNN_GPU_U5_RFU AM9
SNN_GPU_U4_RFU B32
SNN_GPU_V4_RFU U6
SNN_GPU_V6_RFU AC26
SNN_GPU_RFUB D1
RFU

ROMCS AA4 ROMCS* OUT 16.3F<>
ROM_SI W2 ROM_SI OUT 16.3F<> 16.4G< 18.5C<>
ROM_SO AA6 ROM_SO OUT 16.3F<> 16.4G<
ROM_SCLK AA7 ROM_SCLK OUT 16.3F<> 16.4G< 18.5C<>

I2CH_SCL G3 I2CH_SCL
I2CH_SDA H3 I2CH_SDA

A3V3
R560 10K COMMON 0402 5%

BUFRST F3 SNN_RESET_BUF*
STEREO T3 SNN_STEREO
SWAPRDY_A M6 SWAPRDY_A
TESTMEMCLK A26 TESTMEMCLK
TESTMODE H2 TESTMODE

13.4E> IN

R555 10K COMMON 0402 5%
R527 10K COMMON 0402 5%

GND

MISC NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
IN I2CC_SCL	2	50OHM	
IN I2CC_SDA	2	50OHM	
IN I2CH_SCL	2	50OHM	
IN I2CH_SDA	2	50OHM	
IN ROM_CS*	2	50OHM	
18.5C<> 16.4C> 16.3F<> IN ROM_SI	2	50OHM	
16.4C> 16.3F<> IN ROM_SO	2	50OHM	
18.5C<> 16.4C> 16.3F<> IN ROM_SCLK	2	50OHM	
IN I2CS_SCL_G	2	50OHM	
IN I2CS_SDA_G	2	50OHM	
16.2D< 11.5D> IN DVI_SOUTH_HPD	2	50OHM	
20.3E< 16.2D> IN GPIO5_NVVDDCTRL0			10MIL
20.2E< 16.2D> IN GPIO6_NVVDDCTRL1			10MIL

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ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	JTAG, BIOS ROM, HDCP ROM, FAN CONTROL, GPIO

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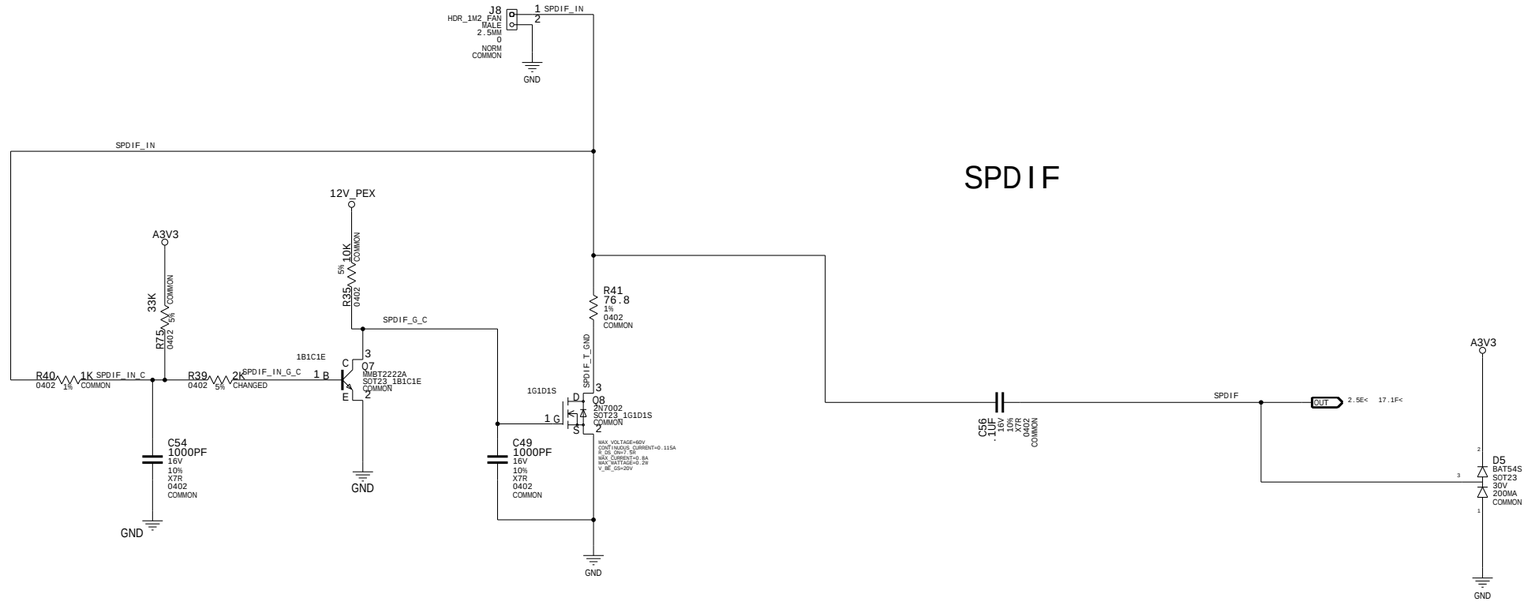
SPDIF

17.3F> 2.5E< IN SPDIF 1 560HM
IN SPDIF_IN 1 560HM



SPDIF

place close to GPU

ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	SPDIF

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BIOS, Straps, Misc

Straps

Assembly: BIOS

13.3F<> 13.1F< BI MIOAD<14..0>
0 MIOAD<0>
1 MIOAD<1>
2 MIOAD<2>
6 MIOAD<6>
8 MIOAD<8>
9 MIOAD<9>
13 MIOAD<13>

MIOB_HSYNC BI 13.2E<>
MIOB_CTL3 BI 13.2E<>

13.1F< 13.1E<> BI MIOBD<11..0>
0 MIOBD<0>
1 MIOBD<1>
3 MIOBD<3>
4 MIOBD<4>
5 MIOBD<5>
8 MIOBD<8>
9 MIOBD<9>
11 MIOBD<11>

A3V3

R21 2K 0402 5% NO STUFF MIOAD<1>
R62 10K 0402 5% NO STUFF MIOBD<0>
R65 10K 0402 5% NO STUFF MIOBD<1>
R61 10K 0402 5% COMMON MIOBD<8>
R541 10K 0402 5% COMMON MIOBD<9>
R57 10K 0402 5% COMMON
R56 10K 0402 5% COMMON
R55 10K 0402 5% NO STUFF
R540 10K 0402 5% NO STUFF

MIOBD<4> R54 2K 0402 5% COMMON
MIOBD<5> R58 2K 0402 5% COMMON
MIOBD<3> R53 2K 0402 5% NO STUFF
MIOBD<11> R562 2K 0402 5% NO STUFF
MIOB_CTL3 R63 2K 0402 5% NO STUFF

A2V5

R22 10K 0402 5% CHANGED MIOAD<2>
R23 2K 0402 5% NO STUFF

R77 10K 0402 5% CHANGED MIOAD<0>
R25 2K 0402 5% NO STUFF
MIOAD<6> R17 2K 0402 5% NO STUFF
MIOAD<8> R16 2K 0402 5% NO STUFF
MIOAD<9> R15 2K 0402 5% NO STUFF
MIOB_HSYNC R64 2K 0402 5% NO STUFF

A3V3

R19 2K 0402 5% NO STUFF MIOAD<13>
R18 10K 0402 5% CHANGED

R46 2K 0402 5% CHANGED ROM_SI BI 16.3F<> 16.4C> 16.4G<
R567 10K 0402 5% NO STUFF ROM_SCLK BI 16.3F<> 16.4C> 16.4G<

GND

REG: NV_PEXTDEV_BOOT_0

Bit	Signal	VALUE_ID	VALUEs
00:	GV_WIDTH	GV_WIDTH	0=Wide (G80) 1=Narrow (all other)
01:	SUB_VENDOR	SUB_VENDOR	0 NO_BIOS 1 read from BIOS
02:	RAM_CFG_0	RAM_CFG[3:0]	0000=16Mx32 DDR3 256-bit Infineon 0001=16Mx32 DDR3 256-bit Samsung 0100=8Mx32 DDR3 256-bit Infineon 0101=8Mx32 DDR3 256-bit Hynix 0110=8Mx32 DDR3 256-bit Samsung 0111=8Mx32 DDR3 256-bit Samsung 1001=16Mx32 DDR3 128-bit Infineon 1010=16Mx32 DDR3 128-bit Hynix 1011=16Mx32 DDR3 128-bit Samsung 1100=8Mx32 DDR3 128-bit Infineon 1101=8Mx32 DDR3 128-bit Hynix 1111=8Mx32 DDR3 128-bit Samsung
03:	RAM_CFG_1		
04:	RAM_CFG_2		
05:	RAM_CFG_3		
06:	CRYSTAL_0	CRYSTAL	0=27MHz 1=14.31818MHz
07:	TV_MODE_0	TV_MODE[2:0]	000=NTSC_M 111=Reserved_1 001=NTSC_J 010=PAL_M 011=PAL_N 100=PAL_CN 101=PAL_BDGHI 110=Reserved_0
08:	TV_MODE_1		
09:	TVMODE[2]		
10:	PCI_DEVID_0	PCI_DEVID[3:0]	
11:	PCI_DEVID_1		
12:	PCI_DEVID_2		
13:	PCI_DEVID_3		
28:	PCI_DEVID_EXT	PCI DevID (G9x+)	
14:	FB[0]		Frame Buffer Max Size 000=64MB 001=128MB 010=256MB 011=512MB 100=1GB Reserved 101=2GB Reserved 110=4GB Reserved 111=Reserved
15:	FB[1]		
16:	FB[2]		
22:	ROM_TYPE_0	ROM_TYPE[1:0]	00 Parallel 01 Serial_AT25F 10 Serial_SST45VF 11 RFU
23:	ROM_TYPE_1		
24:	USER_0	STRAP_USER[3:0]	0000 (default)
25:	USER_1		
26:	USER_2		
27:	USER_3		
17:	PEX_PLL_EN_TERM100		0 (default -- internal term on)
18:	3GIO_PADCFG_LUT_ADR[0]		0000=Desktop 0001=Mobile 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=Desktop 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
19:	3GIO_PADCFG_LUT_ADR[1]		
20:	3GIO_PADCFG_LUT_ADR[2]		
21:	3GIO_PADCFG_LUT_ADR[3]		

31: StrapOverride per SW

REG: NV_STRAP_1

Bit	Signal	VALUE_ID	VALUEs
15:	Slot Clock Configuration		0=Disable 1=Enable
12:	MIO_EN_33V_0	MIOA_VDDQ Voltage	0=2.5V 1=3.3V
13:	MIO_EN_33V_1	MIOB_VDDQ Voltage	0=2.5V 1=3.3V
16:	PCI_IOBAR		0=Disable 1=Enable

Mechanical parts

155-00003-0000-000
SCREW HEX JACK 4-40 x 12.1MM STANDARD

MEC1 HEX_JACK_SCREW STD COMMON
MEC3 HEX_JACK_SCREW STD COMMON
MEC4 HEX_JACK_SCREW STD COMMON
MEC2 HEX_JACK_SCREW STD COMMON

151-10001-0006-001 -- > DVI-DB15-MDIN
BKT1 DVI3152_DB1552_MDIN490_TAB ATX_1X_TOP_ALT2 COMMON
MECH: MOUNTING TOP
GND

MC1 PH_4.40X.1875_SCREW STD COMMON

COOLING SOLUTION
No connected mounting pins
MEC7 TM31-2_4400RPM_BUMPERS NOPIN NO STUFF

COOLING SOLUTION
4 connected mounting pins
MEC5 TM36 4PIN COMMON
1 2 3 4
GND

BOARD STIFFENER
4 connected mounting pins
MEC8 G84_GPU STIFFENER 4PIN NO STUFF
1 2 3 4
GND

COOLING SOLUTION
4 connected mounting pins
MEC6 HS115_EMI 4PIN NO STUFF
1 2 3 4
GND

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ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	BIOS STRAPS & MECHANICALS

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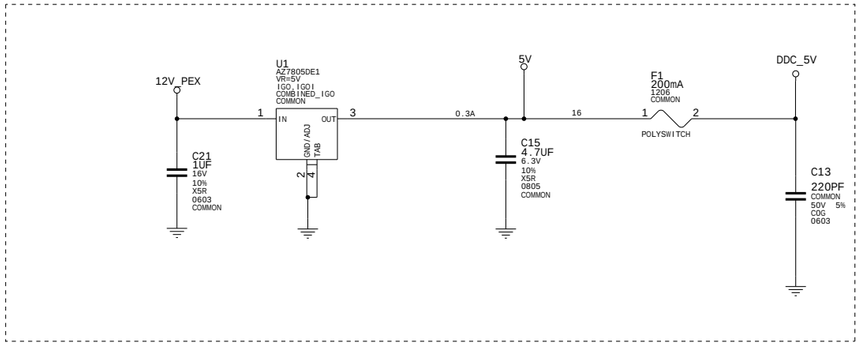
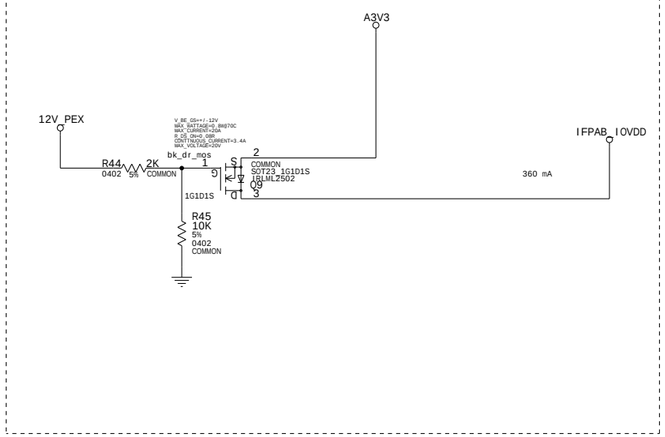
NAME	hlu	DATE	11-DEC-2006

Power Supply:TMDS_IOVDD A3V3 DDC_5V IFP_PLLVDD

DDC 5V

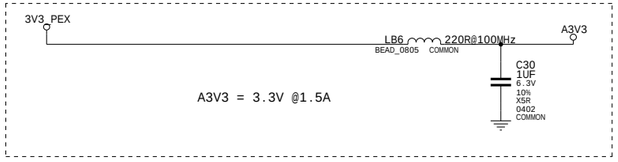


TMDS IO SUPPLY WITH BACKDRIVE PROTECTION

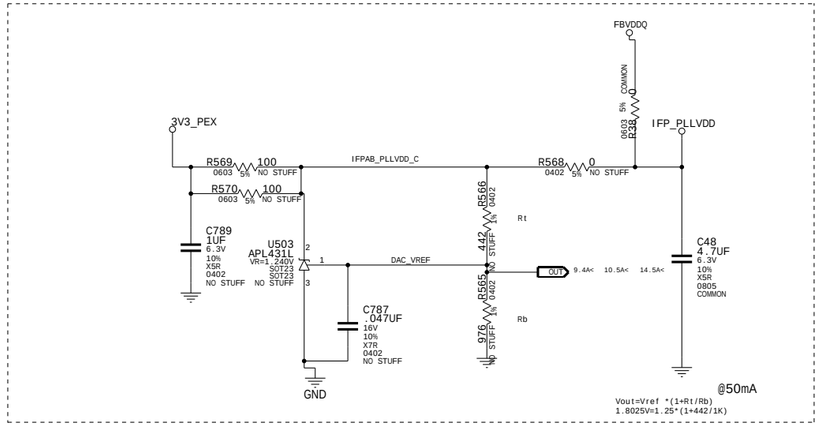


NETNAME	MAX_CURRENT	MIN_LINE_WIDTH	VOLTAGE
DDC_5V	0.1A	12.0	5.00000V
A3V3	1.5A	30.0	3.30000V
IFPAB_IOVDD	0.3A	16	3.30000V
GND		35.0	0.000000V
IFP_PLLVDD	0.3A	16	1.80000V

A3V3 Power Supply



IFP_PLL SUPPLY



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ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	POWER SUPPLY: TMDS IOVDD,5V,A3V3

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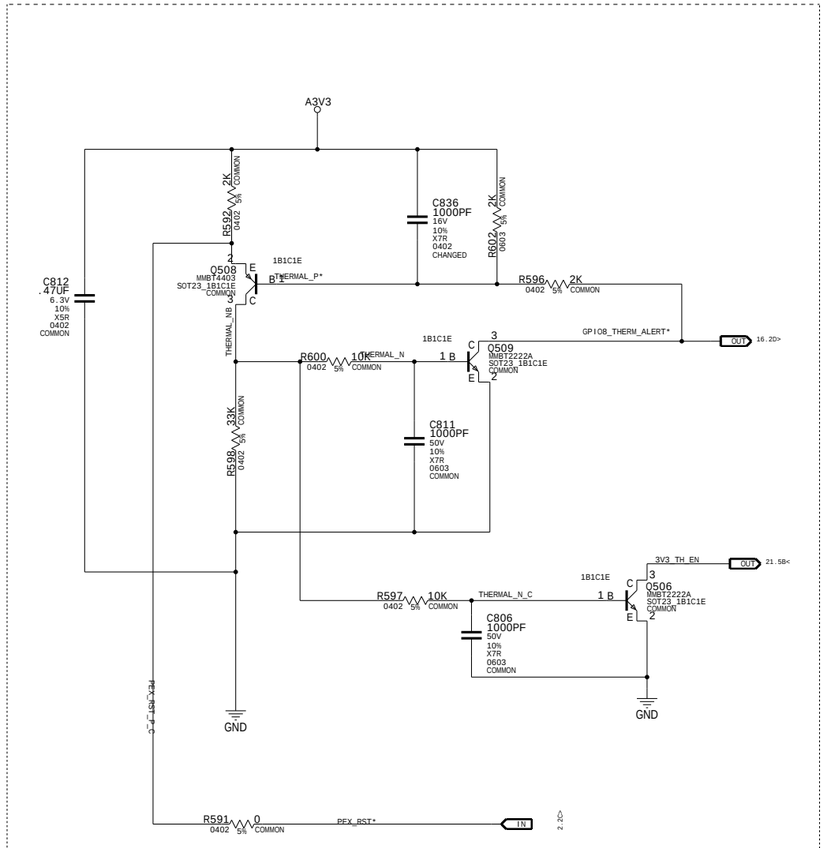
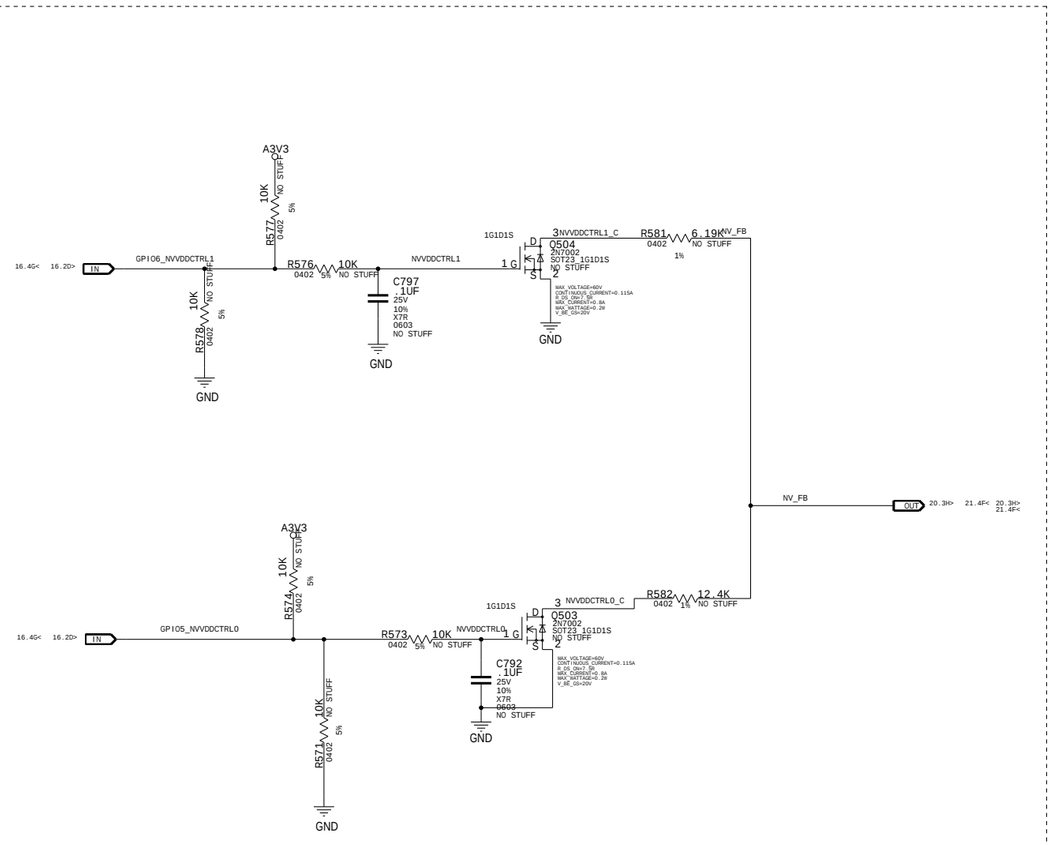
thermal protection and dynamic NVVDD



Thermal protection



dynamic NVVDD

ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	thermal protection and dynamic NVVDD

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PowerSupplyII: NVVDD, 2.5V

Net Name	LINE_WIDTH	Current	Voltage
NVVDD	36MIL	15A	1.2V
PEX1V2	24MIL	1.5A	1.2V
NVVDD_SENSE	16MIL	0.5A	1.2V
NVVDD_SENSE_M	16MIL	0.5A	1.2V
A2V5	16MIL	0.8A	2.5V

A2V5

Vout = VRef * (1+Rtop/Rbot)
2.52V = 0.8V * (1+(2.26k/1.05k)) (ISL6549)

ISL6549

U504
ISL6549CB_600KHZ
VR_SW=0.8V, VR_LD=0.8V
SO14
SO14
COMMON

NVVDD

Vout = VRef * (1+Rtop/Rbot)
1.1V = 0.8V * (1+(1.54k/4.02k)) (ISL6549)
1.2V = 0.8V * (1+(1.54k/3.09k)) (ISL6549)

Power Sequence

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ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	PowerSupplyI: NVVDD, A2V5

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PowerSupplyIII: FBVDDQ, PEX1V2

PEX1V2

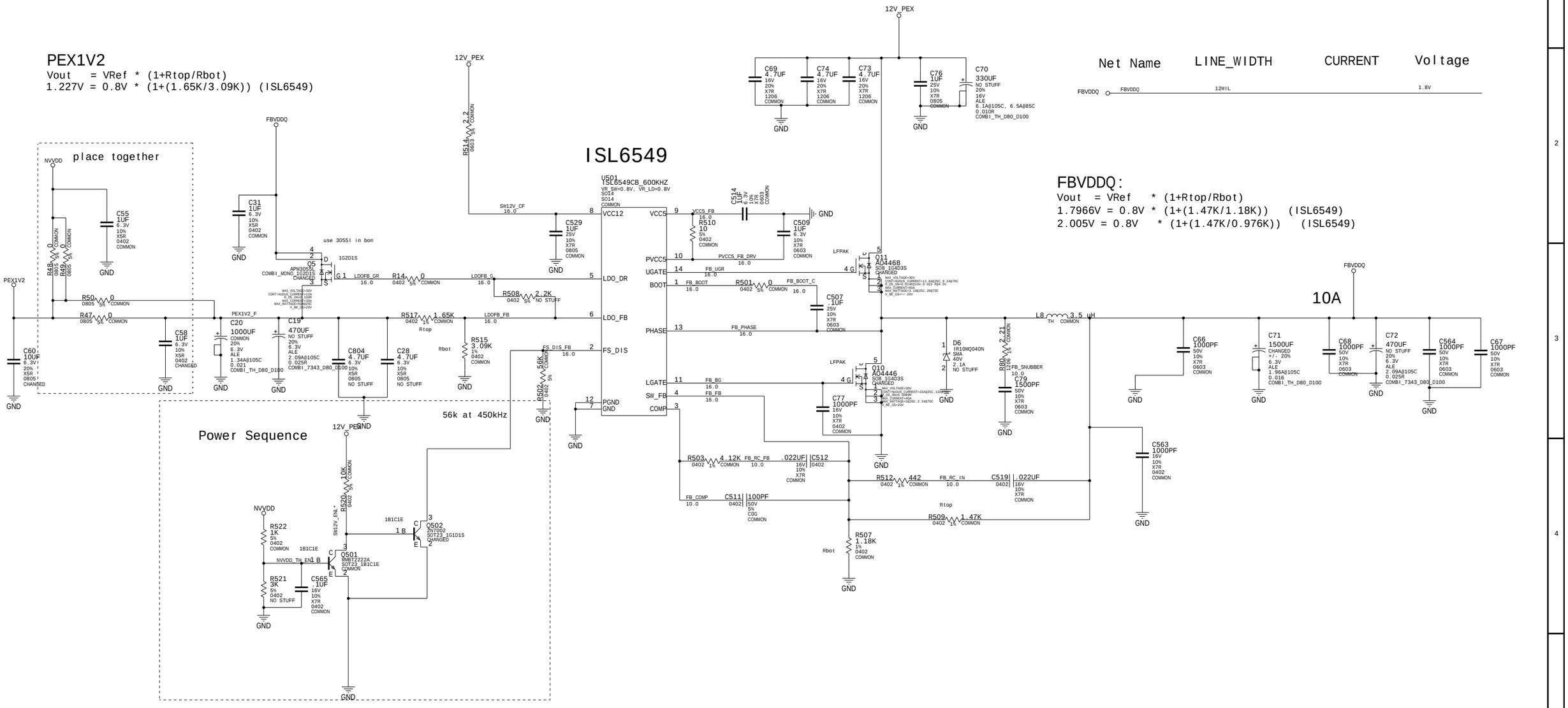
Vout = VRef * (1+Rtop/Rbot)
1.227V = 0.8V * (1+(1.65K/3.09K)) (ISL6549)

ISL6549

FBVDDQ:

Vout = VRef * (1+Rtop/Rbot)
1.7966V = 0.8V * (1+(1.47K/1.18K)) (ISL6549)
2.005V = 0.8V * (1+(1.47K/0.976K)) (ISL6549)

Net Name	LINE_WIDTH	CURRENT	Voltage
FBVDDQ	12MIL		1.8V



ASSEMBLY	P403-A00 G84-200 450/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I-DL+VGA+HDTV-Out
PAGE DETAIL	PowerSupplyIII: FBVDDQ, PLLVDD

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